62SDA23

Label1

A Few Words About Safety

Service Information

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you or others. It could also damage the vehicle or create an unsafe condition.
This manual describes the proper methods and procedures for performing service, maintenance, and repairs. Some procedures require the use of specially designed tools and dedicated equipment. Any person who intends to use a replacement part, service procedure or a tool that is not recommended by Honda, must determine the risks to their personal safety and the safe operation of the vehicle.
If you need to replace a part, use Honda parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

FOR YOUR CUSTOMER'S SAFETY

Proper service and maintenance are essential to the customer's safety and the reliability of the vehicle. Any error or oversight while servicing a vehicle can result in faulty operation, damage to the vehicle, or injury to others.

⚠ WARNING

Improper service or repairs can create an unsafe condition that can cause your customer or others to be seriously hurt or killed.
Follow the procedures and precautions in this manual and other service materials carefully.

FOR YOUR SAFETY

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (e.g., Hot parts - wear gloves). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practices, we recommend that you do not attempt to perform the procedures described in this manual.

⚠ WARNING

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.
Follow the procedures and precautions in this manual carefully.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing service and repair procedures. Only you can decide whether or not you should perform a given task.

IMPORTANT SAFETY PRECAUTIONS

- Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:
  - Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
  - Protect your eyes by using proper safety glasses, goggles or face shields anytime you hammer, drill, grind, or work around pressurized air or liquids and springs or other stored-energy components. If there is any doubt, put on eye protection.
  - Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
  - Protect yourself and others whenever you have the vehicle up in the air. Anytime you lift the vehicle, either with a hoist or a jack, make sure that it is always securely supported. Use jack stands.
  - Protect yourself by wearing an approved welding helmet, gloves, and safety shoes anytime you are welding. You can receive burns from hot parts; allow the parts to cool before working in that area.
  - Protect yourself from paints and harmful chemicals by wearing an approved respirator, eye protection, and gloves whenever you are painting. Spray paint only in an approved paint booth that is well ventilated.

- Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:
  - Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
  - Burns from hot parts or coolant. Let the engine and exhaust system cool before working in those areas.
  - Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers, and clothing are out of the way.

- Gasoline vapors and hydrogen gases from batteries are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.
  - Use only a nonflammable solvent, not gasoline to clean parts.
  - Never drain or store gasoline in an open container.
  - Keep all cigarettes, sparks and flames away from the battery and all fuel-related parts.

INTRODUCTION

How to Use This Manual

This supplement contains information for the 2004 HONDA ACCORD. Refer to following shop manual for service procedures and data not included in this supplement.

Description	Code. No.
HONDA ACCORD MAINTENANCE, REPAIR and CONSTRUCTION 2003	62SDA00A/B
HONDA ACCORD 2-door SUPPLEMENT 2003	62SDA20
HONDA ACCORD 4-door SUPPLEMENT 2003	62SDA21
HONDA ACCORD SUPPLEMENT 2004	62SDA22
HONDA ACCORD SUPPLEMENT 2004	62SDA22K

The first page of each section is marked with a black tab that lines up with one of the thumb index tabs on this page. You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.

Safety Messages

Your safety, and the safety of others, is very important. To help you make informed decisions, we have provided safety messages, and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing this vehicle. You must use your own good judgement.
You will find important safety information in a variety of forms including:

- **Safety Labels** — on the vehicle.
- **Safety Messages** — preceded by a safety alert symbol ⚠ and one of three signal words, DANGER, WARNING, or CAUTION. These signal words mean:

⚠ DANGER You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.

⚠ WARNING You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.

⚠ CAUTION You CAN be HURT if you don't follow instructions.

- **Instructions** — how to service this vehicle correctly and safely.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at anytime without notice. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. This includes text, figures, and tables.

As you read this manual, you will find information that is preceded by a **NOTICE** symbol. The purpose of this message is to help prevent damage to your vehicle, other property, or the environment.

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HONDA MOTOR CO., LTD.
Service Publication Office

As sections with * include SRS components; special precautions are required when servicing.
▒▒▒ marked sections are not included in this manual.

General Info
Specifications
Maintenance
Engine Electrical
Engine
Cooling
Fuel and Emissions
*Transaxle
*Steering
Suspension
*Brakes (Including ABS)
*Body
*Heating Ventilation and Air Conditioning
*Body Electrical
*Restraints

SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

The Accord/Accord Coupe SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in the Shop Manual, P/N 62SDA00B. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items will require special precautions and tools, and should be done only by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal collision, all SRS service work must be performed by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS could lead to personal injury caused by unintentional deployment of the airbags and side airbags.
- Do not bump or impact the SRS unit, front impact sensors, side impact sensors whenever the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF. Otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, and around the floor. Do not use electrical test equipment on these circuits.

General Information

Chassis and Engine Numbers **1-2**

Applicable Area List **1-3**

Identification Number Locations **1-5**

Warning/Caution Label Locations **1-6**

Abbreviations **1-8**

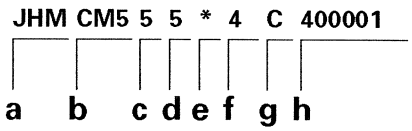
NOTE: Refer to the 2003 Accord 4-door Shop Manual, P/N 62SDA00A, 2003 Accord 2-door Shop Manual, P/N 62SDA20, 2004 Accord Shop Manual Supplement, P/N 62SDA22 for items not shown in this section.

Outline of Model Changes

- America factory production model has been added for KX model.
- Mexico factory production model has been added for KK model.
- J30A4 engine model has been added for KP model.

Chassis and Engine Numbers

Vehicle Identification Number



a. Manufacturer, Make, and Type of Vehicle
- JHM: HONDA MOTOR CO., LTD. HONDA passenger vehicle
- 1HG: HONDA OF AMERICA MFG., INC., U.S.A. HONDA passenger vehicle
- 3HG: HONDA DE MEXICO S.A.DE. C.V. HONDA passenger vehicle
- MRH: HONDA AUTOMOBILE (Thailand) CO., LTD. HONDA passenger vehicle
- LHG: Guangzhou HONDA Automobile CO., LTD. HONDA passenger vehicle
- MAK: HONDA Siel Cars India Pvt LTD. INDIA
- PMH: HONDA Malaysia SDN BHD.
- RKT: HONDA Taiwan CO., LTD.

b. Line, Body, and Engine Type
- CM4: ACCORD 4-door/K20A7, K20A8
- CM5: ACCORD 4-door/K24A4
- CM6: ACCORD 4-door/J30A4
- CM8: ACCORD 2-door/J30A4

c. Body Type and Transmission Type
- 2: 2-door Coupe/5-speed Automatic
- 5: 4-door Sedan/5-speed Manual
- 6: 4-door Sedan/5-speed Automatic

d. Vehicle Grade (Series)
- 2: VTi, VTi-L, 2.0VTi-C, EXi, 2.0VX
- 3: EXi-H, 2.0EXA, 2.0EXS, LX, LX-V6
- 4: VTi, VTi-L, 2.4VTi for NZ/Brunei, 2.4VTi-L for NZ/HK, 2.0VTi-L, 2.0VTi-E, LX-CH, EX V6
- 5: 2.4VTi for HK/sin, 2.4VTi-L for sin/Brunei, 2.4VTi-L, VTi-E, EX V6, EX V6C, EX
- 6: VTi-E, EX, EXL
- 7: VTi-EH, VTi-L, VTi, 2.4VTi-E, EX CH, EXL CH
- 8: V6, V6L, 3.0SiR for NZ/sin/Brunei, 3.0EX, 3.0SiR-C, 3.0V6
- 9: V6-H, 3.0SiR for HK

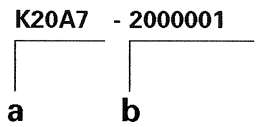
e. Fixed Code or Check Digit

f. Model Year
- 4: 2004

g. Factory Code
- A: Marysville, Ohio Factory in U.S.A.
- C: Saitama Factory in Japan
- D: MELAKA Factory in Malaysia
- F: Ping Tung Factory in Taiwan
- G: GUADALAJARA Factory in Mexico
- N: NOIDA Factory in India
- P: Ayuthaya Factory in Thailand
- 2: Guangzhou Factory in China

h. Serial Number

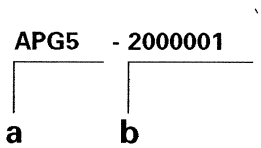
Engine Number



a. Engine Type
- K20A7: 2.0 ℓ DOHC i-VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter
- K20A8: 2.0 ℓ DOHC i-VTEC Sequential Multiport Fuel-injected engine without three way catalytic converter
- K24A4: 2.4 ℓ DOHC i-VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter
- J30A4: 3.0 ℓ SOHC VTEC Sequential Multiport Fuel-injected engine with three way catalytic converter

b. Serial Number

Transmission Number



a. Transmission Type
- APG5: 5-speed Manual
- APG6: 5-speed Manual
- APG7: 5-speed Manual
- BAYA: 5-speed Automatic
- BCLA: 5-speed Automatic
- MAYA: 5-speed Automatic
- MCLA: 5-speed Automatic
- DCLA: 5-speed Automatic

b. Serial Number

Applicable Area List

APPLICABLE AREA CODE	BODY TYPE	TRANSMISSION TYPE	GRADE NAME	ENGINE TYPE	MANUFACTURER NAME
KY	4-door	5MT	2.4VTi-L, 2.4VTi-E	K24A4	HONDA MOTOR CO., LTD.
		5AT	2.4VTi-L, 2.4VTi-E		
		5AT	3.0V6	J30A4	
KW	4-door	5MT	2.0VTi-L, 2.0VTi-E	K20A8	
		5AT	2.0VTi-L, 2.0VTi-E		
KK	4-door	5MT	LX, EX	K24A4	HONDA OF AMERICA MFG., INC., U.S.A.
		5AT	LX, EX		
		5MT	LX CH, EX CH		
		5AT	LX CH, EX CH		
		5MT	EXL		
		5AT	EXL		
		5MT	EXL CH		
		5AT	EXL CH		
			EX V6	J30A4	
			EX V6C LX EX	K24A4	HONDA DE MEXICO S.A.DE. C.V.
			EXL		
KM	4-door	5AT	LX, EX	K24A4	
			EX V6	J30A4	
KX	4-door	5AT	LX	K24A4	
			EX		
			LX V6, EX V6	J30A4	
	2-door		EX	J30A4	HONDA OF AMERICA MFG., INC., U.S.A.
KP	4-door	5AT	VTi	K20A7	HONDA Automobile (Thailand) CO., LTD.
			VTi-L		
			V6	J30A4	
KQ	4-door	5AT	VTi	K24A4	
			V6, V6L	J30A4	
KS	4-door	5MT	VTi	K24A4	
		5AT	VTi		
		5MT	VTi-L		
		5AT	VTi-L		
KU	4-door	5MT	2.4VTi for NZ/HK/sin/ Brunei		
		5AT 5MT	2.4VTi for NZ/HK/sin/ Brunei 2.4VTi-L for NZ/HK/sin/ Brunei		
		5AT	2.4VTi-L for NZ/HK/sin/ Brunei		
			3.0SiR for NZ/HK/sin/ Brunei	J30A4	
			2.0VTi-C	K20A7	HONDA MOTOR CO., LTD.
			3.0SiR-C	J30A4	
KZ	4-door	5AT	VTi, VTi-L, VTi-E	K24A4	HONDA Automobile (Thailand) CO., LTD.
			V6	J30A4	

(cont'd)

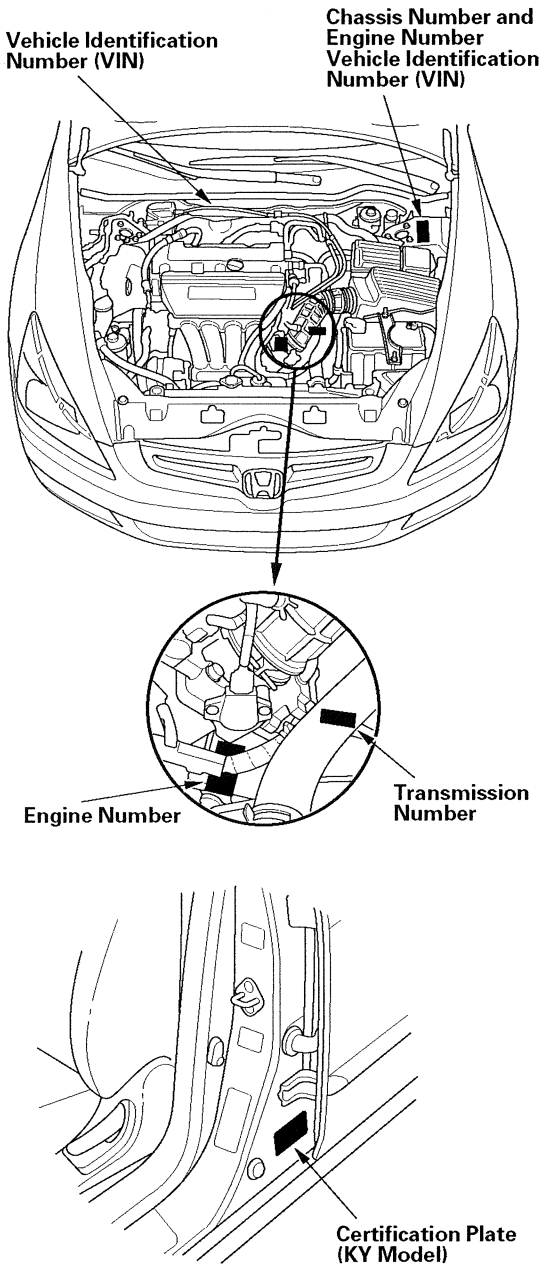
Chassis and Engine Numbers (cont'd)

Applicable Area List

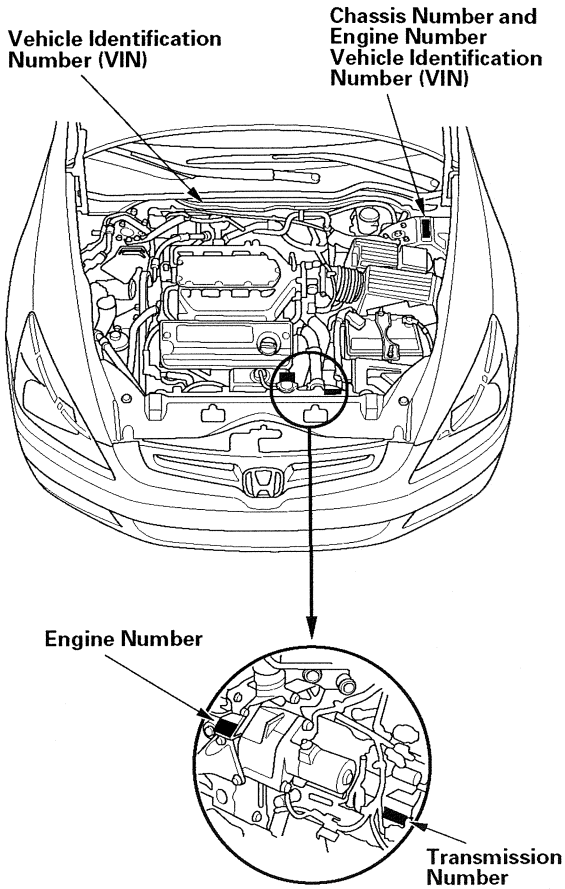
APPLICABLE AREA CODE	BODY TYPE	TRANSMISSION TYPE	GRADE NAME	ENGINE TYPE	MANUFACTURER NAME
KH	4-door	5MT	EXi, EXi-H	K20A7	Guangzhou HONDA Automobile CO., LTD.
		5AT	EXi, EXi-H		
			VTi-L, VTi-E, VTi-EH	K24A4	
			V6, V6-H	J30A4	
FO	4-door	5AT	2.0VX, 2.0EXA, 2.0EXS	K20A7	HONDA Taiwan CO., LTD.
			3.0EX	J30A4	
ID	4-door	5MT	VTi	K24A4	HONDA Siel Cars India Pvt LTD. INDIA
		5AT	VTi		
		5MT	VTi-L		
		5AT	VTi-L		
			V6	J30A4	
MA	4-door	5AT	VTi, VTi-L	K24A4	HONDA Malaysia SDN BHD.
			V6	J30A4	

Identification Number Locations

K20A7, K20A8 and K24A4 Engine Models:



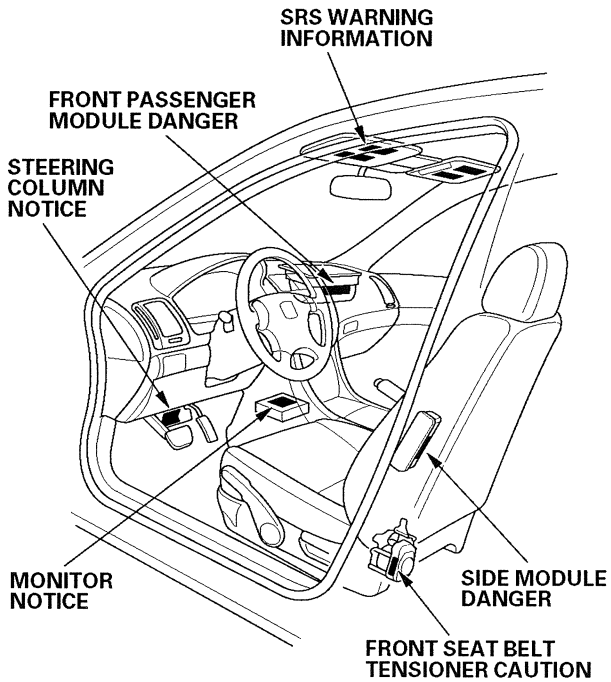
J30A4 Engine Model:



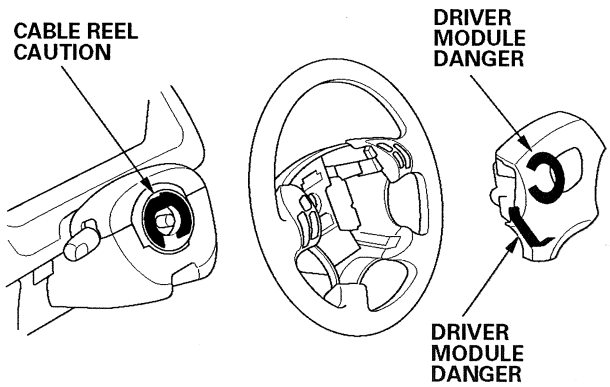
Warning/Caution Label Locations

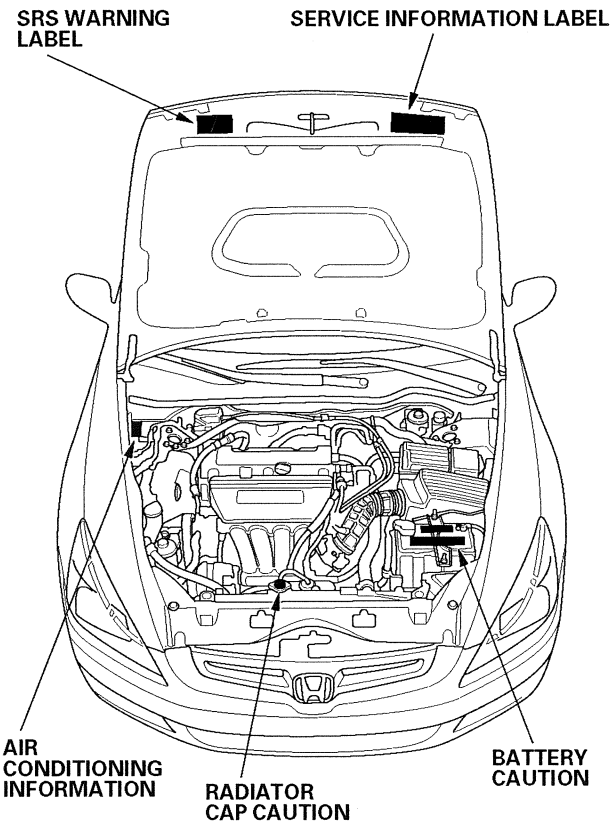
Passenger's Compartment:

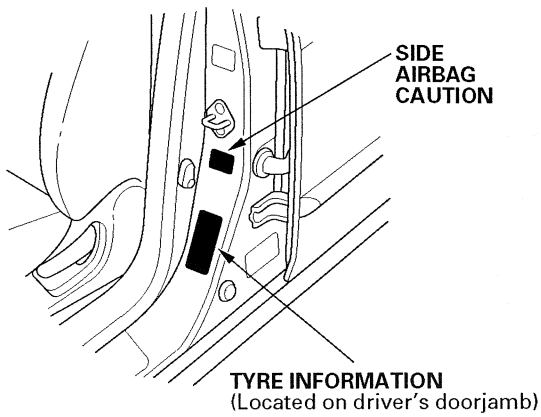
NOTE: The illustlation shows the LHD models; RHD is symmetrical.



Steering Wheel:




SRS WARNING LABEL
SERVICE INFORMATION LABEL
AIR CONDITIONING INFORMATION
RADIATOR CAP CAUTION
BATTERY CAUTION


SIDE AIRBAG CAUTION
TYRE INFORMATION
(Located on driver's doorjamb)

Abbreviations

List of automotive abbreviations which may be used in shop manual.

ABS	Anti-lock Brake System
A/C	Air Conditioning, Air Conditioner
ACL	Air Cleaner
A/F	Air Fuel Ratio
ALR	Automatic Locking Retractor
ALT	Alternator
AMP	Ampere(s)
ANT	Antenna
API	American Petroleum Institute
APP	Accelerator Pedal Position
APPROX.	Approximately
ASSY	Assembly
A/T	Automatic Transmission
ATDC	After Top Dead Center
ATF	Automatic Transmission Fluid
ATT	Attachment
AUTO	Automatic
AUX	Auxiliary
BARO	Barometric
BAT	Battery
BDC	Bottom Dead Center
BTDC	Before Top Dead Center
CARB	Carburetor
CAT or CATA	Catalytic Converter
CD	Compact Disc
CHG	Charge
CKF	Crankshaft Speed Fluctuation
CKP	Crankshaft Position
CMP	Camshaft Position
CO	Carbon Monoxide
COMP	Complete
CPB	Clutch Pressure Back up
CPC	Clutch Pressure Control
CPU	Central Processing Unit
CVT	Continuously Variable Transmission
CYL	Cylinder
CYP	Cylinder Position
DIFF	Differential
DLC	Data Link Connector
DOHC	Double Overhead Camshaft
DOT	Department of Transportation
DPI	Dual Point Injection
DPSF	Dual Pump System Fluid
DTC	Diagnostic Trouble Code
EBD	Electronic Brake Distribution
ECM	Engine Control Module
ECT	Engine Coolant Temperature
EGR	Exhaust Gas Recirculation
ELD	Electrical Load Detector
EPR	Evaporator Pressure Regulator
EPS	Electrical Power Steering
EVAP	Evaporative Emission
EX	Exhaust
F	Front
FIA	Fuel Injection Air
FL	Front Left
FP	Fuel Pump
FR	Front Right
FSR	Fail Safe Relay
FWD	Front Wheel Drive
GAL	Gallon
GND	Ground
GPS	Global Positioning System
H/B	Hatchback
HBA	Hydraulic Brake Assist
HC	Hydrocarbons
HDS	Honda Diagnostic System
HID	High Intensity Discharge
HO2S	Heated Oxygen Sensor
HVAC	Heating, Ventilation and Air Conditioning
IAB	Intake Air Bypass
IAC	Idle Air Control
IACV	Idle Air Control Valve
IAR	Intake Air Resonator
IAT	Intake Air Temperature
ICM	Ignition Control Module
ID	Identification
ID or I.D.	Inside Diameter
IG or IGN	Ignition
IMA	Idle Mixture Adjustment Integrated Motor Assisted
IMMOBI.	Immobilizer (Immobiliser)
IN	Intake
INJ	Injection
INT	Intermittent
IQA	Injector Quantity Adjustment (Diesel model)
KS	Knock Sensor
L	Left
L/C	Lock-up Clutch
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LEV	Low Emission Vehicle
LF	Left Front
LH	Left Handle
LHD	Left Handle Drive

LR	Left Rear
LSD	Limited Slip Differential
L4	In-line Four Cylinder (engine)
MAP	Manifold Absolute Pressure
MAX.	Maximum
MBS	Mainshaft Brake System
MCK	Motor Check
MCU	Moment Control Unit
MICS	Multiplex Integrated Control System
MICU	Multiplex Integrated Control Unit
MIL	Malfunction Indicator Lamp
MIN.	Minimum
MPI	Multi Point Injection
MTF	Manual Transmission Fluid
M/S	Manual Steering
M/T	Manual Transmission
NOx	Oxides of Nitrogen
OBD	On-board Diagnostic
O2S	Oxygen Sensor
OD or O.D.	Outside Diameter
OPDS	Occupant Position Detection System
PAIR	Pulsed Secondary Air Injection
PCM	Powertrain Control Module
PCV	Positive Crankcase Ventilation Proportioning Control Valve
PDU	Power Drive Unit
PGM-FI	Programmed-fuel Injection
PGM-IG	Programmed Ignition
PH	Pressure High
PL	Pilot Light or Pressure Low
PMR	Pump Motor Relay
P/N	Part Number
PRI	Primary
P/S	Power Steering
PSF	Power Steering Fluid
PSP	Power Steering Pressure
PSW	Pressure Switch
Qty	Quantity
R	Right
REF	Reference
RH	Right Handle
RHD	Right Handle Drive
RL	Rear Left
RON	Research Octane Number
RR	Rear Right
SAE	Society of Automotive Engineers
SCS	Service Check Signal
SEC	Second Secondary
SOHC	Single Overhead Camshaft
SOL	Solenoid
SPEC	Specification
S/R	Sun Roof
SRS	Supplemental Restraint System
STD	Standard
SW	Switch
T	Torque
TB	Throttle Body
T/B	Timing Belt
TC	Torque Converter
TCM	Transmission Control Module
TCS	Traction Control System
TDC	Top Dead Center
TFT	Thin Film Transistor
T/N	Tool Number
TP	Throttle Position
TWC	Three Way Catalytic Converter
VC	Viscous Coupling
VIN	Vehicle Identification Number
VSS	Vehicle Speed Sensor
VTEC	Variable Valve Timing & Valve Lift Electronic Control
VVIS	Variable Volume Intake System
V6	V-engine Six cylinder
W	With
W/O	Without
WOT	Wide Open Throttle
2WD	Two Wheel Drive
4WD	Four Wheel Drive
4AT	4-speed Automatic Transmission
5AT	5-speed Automatic Transmission
5MT	5-speed Manual Transmission
6MT	6-speed Manual Transmission
P	Park
R	Reverse
N	Neutral
D4	Drive (1st through 4th gear)
D3	Drive (1st through 3rd gear)
D	Drive
M	Manual mode
S	Second
L	Low
O/D	Over Drive
1ST	Low (gear)
2ND	Second (gear)
3RD	Third (gear)
4TH	Fourth (gear)
5TH	Fifth (gear)
6TH	Sixth (gear)

Specifications

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Standards and Service Limits

Engine Electrical (K20A7, K20A8 and K24A4 engines)

Item	Measurement	Qualification	Standard or New	Service Limit
Ignition coil	Rated voltage		12 V	
	Firing order		1−3−4−2	
Spark plug	Type		NGK: ZFR6K-11 DENSO: KJ20DR-M11	
	Gap		1.0−1.1 mm (0.039−0.043 in.)	———
Ignition timing		At idle (check the *red* mark)	M/T (in neutral): 8±2° BTDC at idle	
			A/T (in N or P position): 8±2° BTDC at idle	
Alternator	Output	At 13.5 V and normal engine temperature	105A	
	Coil (rotor) resistance	At 20°C (68°F)	2.5 Ω	
	Slip ring O.D.		14.4 mm (0.57 in.)	14.0 mm (0.55 in.)
	Brush length		10.5 mm (0.41 in.)	1.5 mm (0.06 in.)
	Brush spring tension		3.2 N (0.33 kgf, 0.7 lbf)	
Starter (MITSUBISHI)	Output		1.7 kW	
	Commutator mica depth		0.4−0.6 mm (0.016−0.024 in.)	0.2 mm (0.008 in.)
	Commutator runout		0.05 mm (0.002 in.) max.	0.1 mm (0.004 in.)
	Commutator O.D.		29.3−29.5 mm (1.154−1.161 in.)	28.8 mm (1.134 in.)
	Brush length		7.7−8.0 mm (0.30−0.31 in.)	0.9 mm (0.04 in.)
Starter (MITSUBA)	Output		1.2 kW, 1.6 kW	
	Commutator mica depth		0.4−0.5 mm (0.016−0.020 in.)	0.15 mm (0.006 in.)
	Commutator runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
	Commutator O.D.		28.0−28.1 mm (1.102−1.106 in.)	27.5 mm (1.083 in.)
	Brush length		11.1−11.5 mm (0.44−0.45 in.)	4.3 mm (0.17 in.)
Starter (DENSO)	Output		1.1 kW	
	Commutator mica depth		0.50−0.80 mm (0.020−0.031 in.)	0.2 mm (0.008 in.)
	Commutator runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
	Commutator O.D.		28.0 mm (1.10 in.)	27.0 mm (1.06 in.)
	Brush length		14.0−14.5 mm (0.55−0.57 in.)	9.0 mm (0.35 in.)
	Brush spring tension		13.7−17.7 N (1.40−1.80 kgf, 3.09−3.98 lbf)	

Engine Electrical (J30A4 engine)

Item	Measurement	Qualification	Standard or New	Service Limit
Ignition coil	Rated voltage		12 V	
	Firing order		1−4−2−5−3−6	
Spark plug	Type		NGK: ZFR6K-11 DENSO: KJ20DR-M11	
	Gap		1.0−1.1 mm (0.039−0.043 in.)	———
Ignition timing		At idle (check the *red* mark)	A/T (in N or P position): 10±2° BTDC at idle	
Alternator	Output	At 13.5 V and normal engine temperature	105A	
Starter (MITSUBA)	Output		1.6 kW	
	Commutator mica depth		0.4−0.5 mm (0.016−0.020 in.)	0.2 mm (0.006 in.)
	Commutator runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
	Commutator O.D.		28.0−28.1 mm (1.102−1.106 in.)	27.5 mm (1.083 in.)
	Brush length		15.8−16.2 mm (0.62−0.64 in.)	11.0 mm (0.43 in.)
	Brush spring tension		15.7−17.7 N (1.60−1.80 kgf, 3.53−3.97 lbf)	

Engine Assembly (K20A7, K20A8 and K24A4 engines)

Item	Measurement	Qualification	Standard or New	Service Limit
Compression	Pressure	Minimum	930 kPa (9.5 kgf/cm², 135 psi)	———
	Check at stater crank the engine with wide open throttle.	Maximum variation	200 kPa (2.0 kgf/cm², 28 psi)	———

Engine Assembly (J30A4 engine)

Item	Measurement	Qualification	Standard or New	Service Limit
Compression	Pressure	Minimum	930 kPa (9.5 kgf/cm², 135 psi)	———
	Check at stater crank the engine with wide open throttle.	Maximum variation	200 kPa (2.0 kgf/cm², 28 psi)	———

Cylinder Head (K20A7, K20A8 and K24A4 engines)

Item	Measurement	Qualification	Standard or New	Service Limit
Head	Warpage		———	0.05 mm (0.002 in.)
	Height		103.95 – 104.05 mm (4.093 – 4.096 in.)	———
Camshaft	End play		0.05 – 0.20 mm (0.002 – 0.008 in.)	0.4 mm (0.02 in.)
	Camshaft-to-holder oil clearance	No. 1 journal	0.030 – 0.069 mm (0.001 – 0.003 in.)	0.15 mm (0.006 in.)
		No. 2, 3, 4, 5 journals	0.060 – 0.099 mm (0.002 – 0.004 in.)	0.15 mm (0.006 in.)
	Total runout		0.03 mm (0.001 in.) max.	0.04 mm (0.002 in.)
	Cam lobe height	Intake, primary	33.925 mm (1.3356 in.)	———
		Intake, secondary	29.638 mm (1.1668 in.)	———
		Exhaust	34.092 mm (1.3422 in.)	———
Valve	Clearance (cold)	Intake	0.21 – 0.25 mm (0.008 – 0.010 in.)	———
		Exhaust	0.28 – 0.32 mm (0.011 – 0.013 in.)	———
	Stem O.D.	Intake	5.475 – 5.485 mm (0.2156 – 0.2159 in.)	5.445 mm (0.214 in.)
		Exhaust	5.450 – 5.460 mm (0.2146 – 0.2150 in.)	5.420 mm (0.213 in.)
	Stem-to-guide clearance	Intake	0.030 – 0.055 mm (0.0012 – 0.0022 in.)	0.08 mm (0.003 in.)
		Exhaust	0.055 – 0.080 mm (0.0022 – 0.0031 in.)	0.11 mm (0.004 in.)
Valve seat	Width	Intake	1.25 – 1.55 mm (0.049 – 0.061 in.)	2.00 mm (0.079 in.)
		Exhaust	1.25 – 1.55 mm (0.049 – 0.061 in.)	2.00 mm (0.079 in.)
	Stem installed height	Intake	44.0 – 44.6 mm (1.73 – 1.76 in.)	———
		Exhaust	44.0 – 44.6 mm (1.73 – 1.76 in.)	———
Valve spring	Free length	Intake	47.61 mm (1.874 in.)	———
		Exhaust	49.64 mm (1.954 in.) 49.63 mm (1.954 in.)	———
Valve guide	I.D.	Intake	5.515 – 5.530 mm (0.2171 – 0.2177 in.)	5.55 mm (0.219 in.)
		Exhaust	5.515 – 5.530 mm (0.2171 – 0.2177 in.)	5.55 mm (0.219 in.)
	Installed height	Intake	15.2 – 16.2 mm (0.598 – 0.638 in.)	———
		Exhaust	15.5 – 16.5 mm (0.610 – 0.650 in.)	———
Rocker arm	Arm-to-shaft clearance	Intake	0.025 – 0.052 mm (0.0010 – 0.0020 in.)	0.08 mm (0.003 in.)
		Exhaust	0.018 – 0.056 mm (0.0007 – 0.0022 in.)	0.08 mm (0.003 in.)

Standards and Service Limits

Cylinder Head (J30A4 engine)

Item	Measurement	Qualification	Standard or New	Service Limit
Head	Warpage		———	0.05 mm (0.002 in.)
	Height		120.95 – 121.05 mm (4.762 – 4.766 in.)	———
Camshaft	End play		0.05 – 0.20 mm (0.002 – 0.008 in.)	0.20 mm (0.008 in.)
	Camshaft-to-holder oil clearance		0.050 – 0.089 mm (0.0020 – 0.0035 in.)	0.15 mm (0.006 in.)
	Total runout		0.03 mm (0.001 in.) max.	0.04 mm (0.002 in.)
	Cam lobe height	Intake, primary	35.041 mm (1.3796 in.)	———
		Intake, mid	36.445 mm (1.4348 in.)	———
		Intake, secondary	35.284 mm (1.3891 in.)	———
		Exhaust	36.326 mm (1.4302 in.)	———
Valve	Clearance (cold)	Intake	0.20 – 0.24 mm (0.008 – 0.009 in.)	———
		Exhaust	0.28 – 0.32 mm (0.011 – 0.013 in.)	———
	Stem O.D.	Intake	5.485 – 5.495 mm (0.2159 – 0.2163 in.)	5.455 mm (0.2148 in.)
		Exhaust	5.450 – 5.460 mm (0.2146 – 0.2150 in.)	5.420 mm (0.2134 in.)
	Stem-to-guide clearance	Intake	0.020 – 0.045 mm (0.0008 – 0.0018 in.)	0.08 mm (0.003 in.)
		Exhaust	0.055 – 0.080 mm (0.0022 – 0.0031 in.)	0.11 mm (0.004 in.)
Valve seat	Width	Intake	1.25 – 1.55 mm (0.049 – 0.061 in.)	2.00 mm (0.079 in.)
		Exhaust	1.25 – 1.55 mm (0.049 – 0.061 in.)	2.00 mm (0.079 in.)
	Stem installed height	Intake	46.75 – 47.55 mm (1.841 – 1.872 in.)	47.80 mm (1.882 in.)
		Exhaust	46.68 – 47.48 mm (1.838 – 1.869 in.)	47.73 mm (1.879 in.)
Valve spring	Free length	Intake	51.54 mm (2.029 in.)	———
		Exhaust	51.06 mm (2.010 in.)	———
Valve guide	I.D.	Intake	5.515 – 5.530 mm (0.2171 – 0.2177 in.)	5.55 mm (0.219 in.)
		Exhaust	5.515 – 5.530 mm (0.2171 – 0.2177 in.)	5.55 mm (0.219 in.)
	Installed height	Intake	21.20 – 22.20 mm (0.835 – 0.874 in.)	———
		Exhaust	20.63 – 21.63 mm (0.812 – 0.852 in.)	———
Rocker arm	Arm-to-shaft clearance	Intake	0.026 – 0.067 mm (0.0010 – 0.0026 in.)	0.067 mm (0.0026 in.)
		Exhaust	0.026 – 0.077 mm (0.0010 – 0.0030 in.)	0.077 mm (0.0030 in.)

Engine Block (K20A7, K20A8 and K24A4 engines)

Item	Measurement	Qualification	Standard or New	Service Limit
Block	Warpage of deck		0.07 mm (0.003 in.) max.	0.10 mm (0.004 in.)
	Bore diameter (K20A7, K20A8 engines)	A or I	86.010–86.020 mm (3.3862–3.3866 in.)	86.070 mm (3.3886 in.)
		B or II	86.000–86.010 mm (3.3858–3.3862 in.)	86.070 mm (3.3886 in.)
	Bore diameter (K24A4 engine)	A or I	87.010–87.020 mm (3.4256–3.4260 in.)	87.070 mm (3.4279 in.)
		B or II	87.000–87.010 mm (3.4252–3.4256 in.)	87.070 mm (3.4279 in.)
	Bore taper		———	0.05 mm (0.002 in.)
	Reboring limit		———	0.25 mm (0.01 in.)
Piston	Skirt O.D. at 11 mm (0.4 in.) from bottom of skirt (K20A7, K20A8 engines)	No letter or A	85.980–85.990 mm (3.3850–3.3854 in.)	85.930 mm (3.3831 in.)
		Letter B	85.970–85.980 mm (3.3846–3.3850 in.)	85.920 mm (3.3827 in.)
	Skirt O.D. at 13 mm (0.5 in.) from bottom of skirt (K24A4 engine)	No letter or A	86.980–86.990 mm (3.4244–3.4248 in.)	86.930 mm (3.4224 in.)
		Letter B	86.970–86.980 mm (3.4240–3.4244 in.)	86.920 mm (3.4220 in.)
	Clearance in cylinder		0.020–0.040 mm (0.0008–0.0016 in.)	0.05 mm (0.002 in.)
	Ring groove width	Top (K20A8 engine)	1.220–1.230 mm (0.0480–0.0484 in.)	1.25 mm (0.049 in.)
		Top (K20A7, K24A4 engines)	1.230–1.240 mm (0.0484–0.0488 in.)	1.26 mm (0.0450 in.)
		Second (K20A7, K20A8 engines)	1.220–1.230 mm (0.0480–0.0484 in.)	1.25 mm (0.049 in.)
		Second (K24A4 engine)	1.240–1.250 mm (0.0488–0.0492 in.)	1.270 mm (0.050 in.)
		Oil (K20A7, K24A4 engines)	2.005–2.025 mm (0.0789–0.0797 in.)	2.05 mm (0.081 in.)
		Oil (K20A8 engine)	2.805–2.825 mm (0.1104–0.1112 in.)	2.85 mm (0.112 in.)
Piston ring	Ring-to-groove clearance	Top (K20A8 engine)	0.030–0.055 mm (0.0012–0.0022 in.)	0.13 mm (0.005 in.)
		Top (K20A7, K24A4 engines)	0.045–0.070 mm (0.0018–0.0028 in.)	0.13 mm (0.005 in.)
		Second (K20A7, K20A8 engines)	0.030–0.055 mm (0.0012–0.0022 in.)	0.13 mm (0.005 in.)
		Second (K24A4 engine)	0.050–0.075 mm (0.0020–0.0030 in.)	0.13 mm (0.005 in.)
	Ring end gap	Top	0.20–0.35 mm (0.008–0.014 in.)	0.60 mm (0.024 in.)
		Second	0.40–0.55 mm (0.016–0.022 in.)	0.70 mm (0.028 in.)
		Oil (K20A7 engine)	0.25–0.65 mm (0.010–0.026 in.)	0.75 mm (0.030 in.)
		Oil (K20A8, K24A4 engines)	0.20–0.70 mm (0.008–0.028 in.)	0.80 mm (0.031 in.)
Piston pin	O.D.		21.961–21.965 mm (0.8646–0.8648 in.)	21.953 mm (0.8643 in.)
	Pin-to-piston clearance		−0.005–+0.002 mm (−0.00020–+0.00008 in.)	0.005 mm (0.0002 in.)
Connecting rod	Pin-to-rod clearance		0.005–0.015 mm (0.0002–0.0006 in.)	0.02 mm (0.0008 in.)
	Small-end bore diameter		21.970–21.976 mm (0.8650–0.8652 in.)	———
	Large-end bore diameter (Normal)	K20A7, K20A8 engines	48.0 mm (1.89 in.)	———
		K24A4 engine	51.0 mm (2.01 in.)	———
	End play installed on crankshaft		0.15–0.35 mm (0.006–0.014 in.)	0.40 mm (0.016 in.)

(cont'd)

Standards and Service Limits

Engine Block (K20A7, K20A8 and K24A4 engines) (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Crankshaft	Main journal diameter	No. 1 journal No. 2 journal No. 4 journal No. 5 journal	54.984 – 55.008 mm (2.1648 – 2.1657 in.)	———
		No. 3 journal	54.976 – 55.000 mm (2.1644 – 2.1654 in.)	———
	Rod journal diameter	K20A7, K20A8 engines	44.976 – 45.000 mm (1.7707 – 1.7717 in.)	———
		K24A4 engine	47.976 – 48.000 mm (1.8888 – 1.8898 in.)	———
	Rod/main journal taper		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	Rod/main journal out-of-round		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	End play		0.10 – 0.35 mm (0.004 – 0.014 in.)	0.45 mm (0.018 in.)
	Runout		0.03 mm (0.0012 in.) max.	0.04 mm (0.0016 in.)
Crankshaft bearing	Main bearing-to-journal oil clearance	No. 1 journal No. 2 journal No. 4 journal No. 5 journal	0.017 – 0.041 mm (0.0007 – 0.0016 in.)	0.050 mm (0.0020 in.)
		No. 3 journal	0.025 – 0.049 mm (0.0010 – 0.0019 in.)	0.055 mm (0.0022 in.)
	Rod bearing clearance		0.020 – 0.050 mm (0.0008 – 0.0020 in.)	0.060 mm (0.0024 in.)

Engine Block (J30A4 engine)

Item	Measurement	Qualification	Standard or New	Service Limit
Block	Warpage of deck		0.07 mm (0.003 in.) max.	0.10 mm (0.004 in.)
	Bore diameter		86.000 – 86.015 mm (3.3858 – 3.3864 in.)	86.065 mm (3.3884 in.)
	Bore taper		———	0.05 mm (0.002 in.)
	Reboring limit		———	0.5 mm (0.02 in.)
Piston	Skirt O.D. at 16.0 mm (0.63 in.) from bottom of skirt		85.975 – 85.985 mm (3.3848 – 3.3852 in.)	85.965 mm (3.3844 in.)
	Clearance in cylinder		0.015 – 0.040 mm (0.0006 – 0.0016 in.)	0.08 mm (0.003 in.)
	Ring groove width	Top	1.240 – 1.250 mm (0.0488 – 0.0492 in.)	1.27 mm (0.050 in.)
		Second	1.220 – 1.230 mm (0.0480 – 0.0484 in.)	1.25 mm (0.049 in.)
		Oil	2.805 – 2.825 mm (0.1104 – 0.1112 in.)	2.85 mm (0.112 in.)
Piston ring	Ring-to-groove clearance	Top	0.055 – 0.080 mm (0.0022 – 0.0031 in.)	0.15 mm (0.006 in.)
		Second	0.030 – 0.055 mm (0.0012 – 0.0022 in.)	0.13 mm (0.005 in.)
	Ring end gap	Top	0.20 – 0.35 mm (0.008 – 0.014 in.)	0.60 mm (0.024 in.)
		Second	0.40 – 0.55 mm (0.0016 – 0.022 in.)	0.70 mm (0.028 in.)
		Oil	0.20 – 0.70 mm (0.008 – 0.028 in.)	0.80 mm (0.031 in.)
Piston pin	O.D.		21.962 – 21.965 mm (0.8646 – 0.8648 in.)	21.954 mm (0.8643 in.)
	Pin-to-piston clearance		– 0.0050 – + 0.0010 mm (– 0.00020 – + 0.00004 in.)	0.004 mm (0.0002 in.)
Connecting rod	Pin-to-rod clearance		0.005 – 0.014 mm (0.0002 – 0.0006 in.)	0.019 mm (0.0007 in.)
	Small-end bore diameter		21.970 – 21.976 mm (0.8650 – 0.8652 in.)	———
	Large-end bore diameter	Normal	56.0 mm (2.20 in.)	———
	End play installed on crankshaft		0.15 – 0.35 mm (0.006 – 0.014 in.)	0.45 mm (0.018 in.)
Crankshaft	Main journal diameter		71.976 – 72.000 mm (2.8337 – 2.8346 in.)	———
	Rod journal diameter		52.976 – 53.000 mm (2.0857 – 2.0866 in.)	———
	Rod/main journal taper		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	Rod/main journal out-of-round		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	End play		0.10 – 0.35 mm (0.004 – 0.014 in.)	0.45 mm (0.018 in.)
	Runout		0.020 mm (0.0008 in.) max.	0.03 mm (0.0012 in.)
Crankshaft bearing	Main bearing-to-journal oil clearance		0.020 – 0.044 mm (0.0008 – 0.0017 in.)	0.050 mm (0.0020 in.)
	Rod bearing clearance		0.020 – 0.044 mm (0.0008 – 0.0017 in.)	0.050 mm (0.0020 in.)

Standards and Service Limits

Engine Lubrication (K20A7, K20A8 and K24A4 engines)

Item	Measurement	Qualification	Standard or New	Service Limit
Engine oil	Capacity	Engine overhaul	5.3 ℓ (5.6 US qt, 4.7 Imp qt)	
		Oil change including filter	4.2 ℓ (4.4 US qt, 3.7 Imp qt)	
		Oil change without filter	4.0 ℓ (4.2 US qt, 3.5 Imp qt)	
Oil pump	Inner-to-outer rotor clearance	K20A7, K20A8 engines	0.10 – 0.17 mm (0.004 – 0.007 in.)	0.20 mm (0.008 in.)
		K24A4 engine	0.06 – 0.16 mm (0.002 – 0.006 in.)	0.20 mm (0.008 in.)
	Pump housing-to-outer rotor clearance	K20A7, K20A8 engines	0.035 – 0.090 mm (0.0014 – 0.0035 in.)	0.23 mm (0.009 in.)
		K24A4 engine	0.15 – 0.21 mm (0.006 – 0.008 in.)	0.23 mm (0.009 in.)
	Pump housing-to-rotor axial clearance	K20A7, K20A8 engines	0.030 – 0.075 mm (0.0012 – 0.0030 in.)	0.12 mm (0.005 in.)
		K24A4 engine	0.035 – 0.070 mm (0.0014 – 0.0028 in.)	0.12 mm (0.005 in.)
	Balancer shafts, journal diameter	No. 1 journal, front shaft	19.938 – 19.950 mm (0.7850 – 0.7854 in.)	19.92 mm (0.784 in.)
		No. 1 journal, rear shaft	23.938 – 23.950 mm (0.9424 – 0.9429 in.)	23.92 mm (0.942 in.)
		No. 2 journal, front and rear shaft	32.949 – 32.961 mm (1.2972 – 1.2977 in.)	32.93 mm (1.296 in.)
	Balancer shafts, journal taper		0.005 mm (0.0002 in.) max.	———
	Balancer shafts, end play (K20A7, K20A8 engines)	Front	0.060 – 0.140 mm (0.0024 – 0.0055 in.)	0.15 mm (0.006 in.)
		Rear	0.060 – 0.140 mm (0.0024 – 0.0055 in.)	0.15 mm (0.006 in.)
	Balancer shafts, end play (K24A4 engine)	Front	0.063 – 0.108 mm (0.0025 – 0.0043 in.)	0.14 mm (0.0055 in.)
		Rear	0.063 – 0.108 mm (0.0025 – 0.0043 in.)	0.14 mm (0.0055 in.)
	Balancer shafts, shaft-to-bearing clearance	No. 1 journal, front shaft	0.050 – 0.082 mm (0.0020 – 0.0032 in.)	0.10 mm (0.004 in.)
		No. 1 journal, rear shaft	0.050 – 0.082 mm (0.0020 – 0.0032 in.)	0.10 mm (0.004 in.)
		No. 2 journal, front and rear shaft	0.060 – 0.120 mm (0.0024 – 0.0047 in.)	0.15 mm (0.006 in.)
	Balancer shaft bearings, I.D.	No. 1 journal, front shaft	20.000 – 20.020 mm (0.7874 – 0.7882 in.)	20.03 mm (0.789 in.)
		No. 1 journal, rear shaft	24.000 – 24.020 mm (0.9449 – 0.9457 in.)	24.03 mm (0.946 in.)
		No. 2 journal, front and rear shaft	33.021 – 33.069 mm (1.3000 – 1.3019 in.)	33.09 mm (1.303 in.)
	Relief valve, oil pressure with oil temperature at 80°C (176°F)	At idle	70 kPa (0.7 kgf/cm², 10 psi) min.	
		At 3,000 rpm (min⁻¹)	300 kPa (3.1 kgf/cm², 44 psi) min.	

Engine Lubrication (J30A4 engine)

Item	Measurement	Qualification	Standard or New	Service Limit
Engine oil	Capacity	Engine overhaul	5.0 ℓ (5.3 US qt, 4.4 Imp qt)	
		Oil change including filter	4.3 ℓ (4.5 US qt, 3.8 Imp qt)	
		Oil change without filter	4.0 ℓ (4.2 US qt, 3.5 Imp qt)	
Oil pump	Inner-to-outer rotor clearance		0.04 – 0.16 mm (0.002 – 0.006 in.)	0.20 mm (0.008 in.)
	Pump housing-to rotor clearance		0.10 – 0.19 mm (0.004 – 0.007 in.)	0.20 mm (0.008 in.)
	Pump housing-to rotor axial clearance		0.02 – 0.07 mm (0.001 – 0.003 in.)	0.12 mm (0.005 in.)
	Oil pressure with oil temperature at 80°C (176°F)	At idle	70 kPa (0.7 kgf/cm², 10 psi)	
		At 3,000 rpm (min⁻¹)	490 kPa (5.0 kgf/cm², 71 psi)	

Cooling (K20A7, K20A8 and K24A4 engines)

Item	Measurement	Qualification	Standard or New
Radiator	Coolant capacity for K20A7 and K20A8 engines (including engine, heater, hoses, and reservoir)	M/T: engine overhaul	7.0 ℓ (7.4 US qt, 6.2 Imp qt)
		M/T: coolant change	4.9 ℓ (5.2 US qt, 4.3 Imp qt)
		A/T: engine overhaul	6.9 ℓ (7.3 US qt, 6.1 Imp qt)
		A/T: coolant change	4.8 ℓ (5.1 US qt, 4.2 Imp qt)
	Coolant capacity for K24A4 engine (including engine, heater, hoses, and reservoir)	M/T at engine overhaul	7.2 ℓ (7.6 US qt, 6.3 Imp qt)
		M/T at coolant change	5.1 ℓ (5.4 US qt, 4.5 Imp qt)
		A/T at engine overhaul	7.1 ℓ (7.5 US qt, 6.2 Imp qt)
		A/T at coolant change	5.0 ℓ (5.3 US qt, 4.4 Imp qt)
Reservoir	Coolant capacity		0.6 ℓ (0.6 US qt, 0.5 Imp qt)
Radiator cap	Opening pressure		93 – 123 kPa (0.95 – 1.25 kgf/cm², 14 – 18 psi)
Thermostat	Opening temperature	Begins to open	76 – 80°C (169 – 176°F)
		Fully open	90°C (194°F)
	Valve lift at fully open		8.0 mm (0.31 in.) min.

Cooling (J30A4 engine)

Item	Measurement	Qualification	Standard or New
Radiator	Coolant capacity (including engine, heater, hoses, and reservoir)	LHD model: engine overhaul	8.4 ℓ (8.9 US qt, 7.4 Imp qt)
		RHD model: engine overhaul	8.3 ℓ (8.8 US qt, 7.3 Imp qt)
		Coolant change	6.7 ℓ (7.1 US qt, 5.9 Imp qt)
Reservoir	Coolant capacity		0.6 ℓ (0.6 US qt, 0.5 Imp qt)
Radiator cap	Opening pressure		93 – 123 kPa (0.95 – 1.25 kgf/cm², 14 – 18 psi)
Thermostat	Opening temperature	Begins to open	76 – 80°C (169 – 176°F)
		Fully open	90°C (194°F)
	Valve lift at fully open		10.0 mm (0.39 in.) min.

Standards and Service Limits

Fuel and Emissions (K20A7, K20A8 and K24A4 engines)

Item	Measurement	Qualification	Standard
Fuel pressure regulator	Pressure with regulator vacuum hose disconnected		320 – 370 kPa (3.3 – 3.8 kgf/cm², 47 – 54 psi)
Fuel tank	Capacity		64.8 ℓ (17.12 US gal, 14.26 Imp gal)
Engine idle	Idle speed without no load	M/T in neutral position	700 ± 50 rpm (min⁻¹)
		A/T in N or P position	800 ± 50 rpm (min⁻¹)
	Idle speed with high electric load [A/C switch ON, temperature set to MAX Cool, blower fan High, rear window defogger ON (if applicable), and headlights at high beams ON]	M/T in neutral position	720 ± 50 rpm (min⁻¹)
		A/T in N or P position	800 ± 50 rpm (min⁻¹)
	Idle CO	K20A7, K24A4 engines	0.1 % max.
		K20A8 engine	1.5 % max.

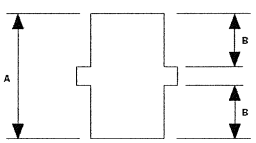
Fuel and Emissions (J30A4 engine)

Item	Measurement	Qualification	Standard
Fuel pressure regulator	Pressure with regulator vacuum hose disconnected		380 – 430 kPa (3.9 – 4.4 kgf/cm², 55 – 62 psi)
Fuel tank	Capacity		64.8 ℓ (17.12 US gal, 14.26 Imp gal)
Engine idle	Idle speed without no load	In N or P position	790 ± 50 rpm (min⁻¹)
	Idle speed with high electric load [A/C switch ON, temperature set to MAX Cool, blower fan High, rear window defogger ON (if applicable), and headlights at high beams ON]	In N or P position	790 ± 50 rpm (min⁻¹)
	Idle CO		0.1 % max.

Clutch

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch pedal	Height from floor		191 mm (7.52 in.)	———
	Stroke		130 – 140 mm (5.12 – 5.51 in.)	———
	Play		10 – 18 mm (0.37 – 0.71 in.)	———
	Disengagement height from floor		95 mm (3.74 in.) min.	———
Flywheel	Runout on clutch mating surface		0.05 mm (0.002 in.) max.	0.15 mm (0.006 in.)
Clutch disc	Rivet head depth		1.65 – 2.25 mm (0.065 – 0.089 in.)	0.7 mm (0.03 in.)
	Thickness		8.6 – 9.2 mm (0.34 – 0.36 in.)	6.0 mm (0.24 in.)
Pressure plate	Warpage		0.03 mm (0.001 in.) max.	0.15 mm (0.006 in.)
	Height of diaphragm spring fingers measured with special tool and feeler gauge		0.6 mm (0.02 in.) max.	0.8 mm (0.03 in.)

Manual Transmission and M/T Differential

Item	Measurement	Qualification	Standard or New	Service Limit
Transmission fluid	Capacity	At fluid change	1.9 ℓ (2.0 US qt, 1.7 Imp qt)	
	Use Honda MTF	At overhaul	2.1 ℓ (2.2 US qt, 1.8 Imp qt)	
Mainshaft	End play		0.11 – 0.17 mm (0.004 – 0.007 in.)	Adjust
	Diameter of bushing surface		20.80 – 20.85 mm (0.8189 – 0.8209 in.)	20.75 mm (0.817 in.)
	Diameter of distance collar		31.984 – 32.000 mm (1.2594 – 1.2598 in.)	31.93 mm (1.257 in.)
	Diameter of ball bearing contact area (clutch housing side)		27.977 – 27.990 mm (1.1015 – 1.1020 in.)	27.94 mm (1.100 in.)
	Diameter of needle bearing contact area		38.984 – 39.000 mm (1.5348 – 1.5354 in.)	38.93 mm (1.533 in.)
	Diameter of ball bearing contact area (transmission housing side)		27.987 – 28.000 mm (1.1019 – 1.1024 in.)	27.94 mm (1.100 in.)
	Runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
Mainshaft 3rd, 4th, and 5th gears	I.D.		44.009 – 44.025 mm (1.7326 – 1.7333 in.)	44.08 mm (1.735 in.)
	End play		0.06 – 0.16 mm (0.002 – 0.006 in.)	0.25 mm (0.010 in.)
	Thickness		23.92 – 23.97 mm (0.941 – 0.944 in.)	23.80 mm (0.937 in.)
Countershaft	Diameter of needle bearing contact area (clutch housing side)		40.000 – 40.015 mm (1.5748 – 1.5754 in.)	39.95 mm (1.573 in.)
	Diameter of distance collar contact area		39.937 – 39.950 mm (1.5723 – 1.5728 in.)	39.88 mm (1.570 in.)
	Diameter of ball bearing contact area (transmission housing side)		30.020 – 30.033 mm (1.1819 – 1.1824 in.)	29.97 mm (1.180 in.)
	Runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
	35 mm shim-to-bearing inner race clearance		0.04 – 0.10 mm (0.0016 – 0.0039 in.)	Adjust
Countershaft 1st gear	I.D.		52.010 – 52.029 mm (2.0476 – 2.0484 in.)	52.08 mm (2.050 in.)
	End play		0.06 – 0.16 mm (0.002 – 0.006 in.)	0.25 mm (0.010 in.)
	Thickness		22.92 – 22.97 mm (0.902 – 0.904 in.)	22.87 mm (0.900 in.)
Countershaft 2nd gear	I.D.		52.010 – 52.029 mm (2.0476 – 2.0484 in.)	52.08 mm (2.050 in.)
	End play		0.06 – 0.16 mm (0.002 – 0.006 in.)	0.25 mm (0.010 in.)
	Thickness		27.92 – 27.97 mm (1.099 – 1.101 in.)	27.87 mm (1.097 in.)
Countershaft 1st gear distance collar	I.D.		39.95 – 39.96 mm (1.5728 – 1.5732 in.)	39.97 mm (1.574 in.)
	O.D.		46.989 – 47.000 mm (1.8499 – 1.8504 in.)	46.94 mm (1.848 in.)
	Length		23.03 – 23.08 mm (0.907 – 0.909 in.)	———
Countershaft 2nd gear distance collar	I.D.		39.95 – 39.96 mm (1.5728 – 1.5732 in.)	39.97 mm (1.574 in.)
	O.D.		46.989 – 47.000 mm (1.8499 – 1.8504 in.)	46.94 mm (1.848 in.)
	Length		28.03 – 28.08 mm (1.104 – 1.106 in.)	———
Mainshaft 4th and 5th gears distance collar	I.D.		32.00 – 32.01 mm (1.2598 – 1.2602 in.)	32.02 mm (1.261 in.)
	O.D.		38.989 – 39.000 mm (1.5350 – 1.5354 in.)	38.94 mm (1.533 in.)
	Length	A	51.95 – 52.05 mm (2.045 – 2.049 in.)	———
		B	24.03 – 24.08 mm (0.946 – 0.947 in.)	———
MBS distance collar	I.D.		28.00 – 28.01 mm (1.102 – 1.103 in.)	28.02 mm (1.103 in.)
	Length		23.95 – 24.05 mm (0.943 – 0.947 in.)	———

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Standards and Service Limits

Manual Transmission and M/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Reverse idler gear	I.D.		20.016 – 20.043 mm (0.7880 – 0.7891 in.)	20.90 mm (0.832 in.)
	Gear-to-reverse gear shaft clearance		0.036 – 0.084 mm (0.0014 – 0.0033 in.)	0.16 mm (0.006 in.)
Synchro ring	Ring-to-gear clearance	Ring pushed against gear	0.70 – 1.49 mm (0.028 – 0.059 in.)	0.4 mm (0.016 in.)
Double cone synchro	Outer synchro ring-to-synchro cone clearance	Ring pushed against gear	0.70 – 1.19 mm (0.028 – 0.047 in.)	0.3 mm (0.012 in.)
	Synchro cone-to-gear clearance	Ring pushed against gear	0.50 – 1.04 mm (0.020 – 0.041 in.)	0.3 mm (0.012 in.)
	Outer synchro ring-to-gear cone clearance	Ring pushed against gear	0.95 – 1.68 mm (0.037 – 0.066 in.)	0.6 mm (0.024 in.)
Triple cone synchro	Outer synchro ring-to-synchro cone clearance	Ring pushed against gear	0.70 – 1.19 mm (0.028 – 0.047 in.)	0.3 mm (0.012 in.)
	Synchro cone-to-gear clearance	Ring pushed against gear	0.50 – 1.04 mm (0.020 – 0.041 in.)	0.3 mm (0.012 in.)
	Outer synchro ring-to-gear cone clearance	Ring pushed against gear	0.95 – 1.68 mm (0.037 – 0.066 in.)	0.6 mm (0.024 in.)
Shift fork	Finger thickness		7.4 – 7.6 mm (0.29 – 0.30 in.)	———
	Fork-to-synchro sleeve clearance		0.35 – 0.65 mm (0.014 – 0.026 in.)	1.0 mm (0.039 in.)
Reverse shift fork	Finger thickness		13.4 – 13.7 mm (0.527 – 0.539 in.)	———
	Fork-to-reverse idler gear clearance		0.20 – 0.59 mm (0.007 – 0.024 in.)	1.2 mm (0.047 in.)
Shift arm	I.D.		13.973 – 14.000 mm (0.5501 – 0.5512 in.)	———
	Shift fork diameter at contact area		16.9 – 17.0 mm (0.665 – 0.669 in.)	———
	Shift arm-to-shift lever clearance		0.2 – 0.5 mm (0.008 – 0.020 in.)	0.6 mm (0.023 in.)
Select lever	Finger width		14.85 – 14.95 mm (0.585 – 0.589 in.)	———
Shift lever	Shaft-to-select lever clearance		0.05 – 0.25 mm (0.002 – 0.010 in.)	0.5 mm (0.020 in.)
	Groove (to select lever)		15.00 – 15.10 mm (0.591 – 0.594 in.)	———
	Shaft-to-shift arm clearance		0.013 – 0.07 mm (0.0005 – 0.003 in.)	0.1 mm (0.004 in.)
M/T differential carrier	Pinion shaft contact area I.D.		18.010 – 18.028 mm (0.7091 – 0.7098 in.)	———
	Carrier-to-pinion shaft clearance		0.027 – 0.057 mm (0.0011 – 0.0022 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		28.025 – 28.045 mm (1.1033 – 1.1041 in.)	———
M/T differential pinion gear	Backlash		0.05 – 0.15 mm (0.002 – 0.006 in.)	———
	I.D.		18.042 – 18.066 mm (0.7103 – 0.7113 in.)	———
	Pinion gear-to-pinion shaft clearance		0.059 – 0.095 mm (0.0023 – 0.0037 in.)	0.15 mm (0.006 in.)
80 mm shim	80 mm shim-to-bearing outer race clearance in transmission housing		0 – 0.10 mm (0 – 0.0039 in.)	Adjust

BCLA, MCLA, DCLA Automatic Transmission and A/T Differential

Item	Measurement	Qualification	Standard or New	Service Limit
ATF (Automatic Transmission Fluid)	Capacity Use Honda ATF-Z1	Fluid change	2.8 ℓ (3.0 US qt, 2.5 Imp qt)	
		Overhaul	6.5 ℓ (6.9 US qt, 5.7 Imp qt)	
ATF pressure	Line pressure	At 2,000 rpm (min^{-1}) in P or N position	900–960 kPa (9.2–9.8 kgf/cm^2, 130–140 psi)	850 kPa (8.7 kgf/cm^2, 120 psi)
	1st clutch pressure	At 2,000 rpm (min^{-1}) in 1 position	890–970 kPa (9.1–9.9 kgf/cm^2, 130–140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	2nd clutch pressure	At 2,000 rpm (min^{-1}) in 2 position	890–970 kPa (9.1–9.9 kgf/cm^2, 130–140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	3rd clutch pressure	At 2,000 rpm (min^{-1}) in 3rd gear in D3 position	890–970 kPa (9.1–9.9 kgf/cm^2, 130–140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	4th clutch pressure	At 2,000 rpm (min^{-1}) in 4th gear in D position	890–970 kPa (9.1–9.9 kgf/cm^2, 130–140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	5th clutch pressure	At 2,000 rpm (min^{-1}) in 5th gear in D position	890–970 kPa (9.1–9.9 kgf/cm^2, 130–140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
Torque converter	Stall speed Check with vehicle on level ground	K20A7, K20A8 engines	2,320 rpm (min^{-1})	2,170–2,470 rpm (min^{-1})
		K24A4 engine	2,100 rpm (min^{-1})	1,950–2,250 rpm (min^{-1})
Clutch	Clutch end plate-to-top disc clearance (K20A7, K20A8 engines)	1st	—	1.23–1.43 mm (0.048–0.056 in.)
		2nd	—	0.75–0.95 mm (0.030–0.037 in.)
		3rd	—	0.83–1.03 mm (0.033–0.041 in.)
		4th and 5th	—	0.73–0.93 mm (0.029–0.037 in.)
	Clutch end plate-to-top disc clearance (K20A4 engine)	1st	—	1.28–1.48 mm (0.050–0.058 in.)
		2nd	—	0.88–1.08 mm (0.035–0.043 in.)
		3rd	—	0.93–1.13 mm (0.037–0.044 in.)
		4th and 5th	—	0.73–0.93 mm (0.029–0.037 in.)
	Clutch return spring free length	1st, 2nd, and 3rd	50.8 mm (2.00 in.)	48.8 mm (1.92 in.)
		4th and 5th	33.5 mm (1.32 in.)	31.5 mm (1.24 in.)
	Clutch disc thickness		1.94 mm (0.076 in.)	—
	Clutch plate thickness (K20A7, K20A8 engines)		2.0 mm (0.079 in.)	When discolored
	Clutch plate thickness (K24A4 engine)	1st and 3rd	1.6 mm (0.063 in.)	When discolored
		2nd	2.0 mm (0.079 in.)	When discolored
			4.0 mm (0.157 in.)	When discolored
		4th and 5th	2.3 mm (0.090 in.)	When discolored
	Clutch waved-plate phase difference		0.07–0.20 mm (0.003–0.008 in.)	0.05 mm (0.002 in.)

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BCLA, MCLA, DCLA Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch	1st and 3rd clutch end plate thickness (K20A7, K20A8 engines)	Mark 1	2.3 mm (0.090 in.)	When discolored
		Mark 2	2.4 mm (0.094 in.)	When discolored
		Mark 3	2.5 mm (0.098 in.)	When discolored
		Mark 4	2.6 mm (0.102 in.)	When discolored
		Mark 5	2.7 mm (0.106 in.)	When discolored
		Mark 6	2.8 mm (0.110 in.)	When discolored
		Mark 7	2.9 mm (0.114 in.)	When discolored
		Mark 8	3.0 mm (0.118 in.)	When discolored
		Mark 9	3.1 mm (0.122 in.)	When discolored
		Mark 10	3.2 mm (0.126 in.)	When discolored
		Mark 11	3.3 mm (0.130 in.)	When discolored
		Mark 12	3.4 mm (0.134 in.)	When discolored
	2nd clutch end plate thickness (K20A7, K20A8 engines)	Mark 1	2.6 mm (0.102 in.)	When discolored
		Mark 2	2.7 mm (0.106 in.)	When discolored
		Mark 3	2.8 mm (0.110 in.)	When discolored
		Mark 4	2.9 mm (0.114 in.)	When discolored
		Mark 5	3.0 mm (0.118 in.)	When discolored
		Mark 6	3.1 mm (0.122 in.)	When discolored
		Mark 7	3.2 mm (0.126 in.)	When discolored
		Mark 8	3.3 mm (0.130 in.)	When discolored
		Mark 9	3.4 mm (0.134 in.)	When discolored
	4th and 5th clutch end plate thickness (K20A7, K20A8 engines)	Mark 11	3.1 mm (0.122 in.)	When discolored
		Mark 12	3.2 mm (0.126 in.)	When discolored
		Mark 13	3.3 mm (0.130 in.)	When discolored
		Mark 14	3.4 mm (0.134 in.)	When discolored
		Mark 15	3.5 mm (0.138 in.)	When discolored
		Mark 16	3.6 mm (0.142 in.)	When discolored
		Mark 17	3.7 mm (0.146 in.)	When discolored
		Mark 18	3.8 mm (0.150 in.)	When discolored
		Mark 19	3.9 mm (0.154 in.)	When discolored
	1st, 2nd, and 3rd clutch end plate thickness (K24A4 engine)	Mark 1	2.6 mm (0.102 in.)	When discolored
		Mark 2	2.7 mm (0.106 in.)	When discolored
		Mark 3	2.8 mm (0.110 in.)	When discolored
		Mark 4	2.9 mm (0.114 in.)	When discolored
		Mark 5	3.0 mm (0.118 in.)	When discolored
		Mark 6	3.1 mm (0.122 in.)	When discolored
		Mark 7	3.2 mm (0.126 in.)	When discolored
		Mark 8	3.3 mm (0.130 in.)	When discolored
		Mark 9	3.4 mm (0.134 in.)	When discolored
	4th and 5th clutch end plate thickness (K24A4 engine)	Mark 1	2.1 mm (0.082 in.)	When discolored
		Mark 2	2.2 mm (0.086 in.)	When discolored
		Mark 3	2.3 mm (0.090 in.)	When discolored
		Mark 4	2.4 mm (0.094 in.)	When discolored
		Mark 5	2.5 mm (0.098 in.)	When discolored
		Mark 6	2.6 mm (0.102 in.)	When discolored
		Mark 7	2.7 mm (0.106 in.)	When discolored
		Mark 8	2.8 mm (0.110 in.)	When discolored
		Mark 9	2.9 mm (0.114 in.)	When discolored

Item	Measurement	Qualification	Standard or New	Service Limit
Mainshaft	Diameter of needle bearing contact area	At stator shaft	22.984 – 23.000 mm (0.905 – 0.906 in.)	When worn or damaged
		At 5th gear	51.975 – 51.991 mm (2.046 – 2.047 in.)	When worn or damaged
		4th gear collar	33.975 – 33.991 mm (1.3376 – 1.3382 in.)	When worn or damaged
	I.D. of gears	5th gear	57.000 – 57.019 mm (2.2441 – 2.2448 in.)	When worn or damaged
		4th gear	40.000 – 40.016 mm (1.5748 – 1.5754 in.)	When worn or damaged
	End play of gears	5th gear	0.03 – 0.11 mm (0.001 – 0.004 in.)	———
		4th gear	0.1 – 0.22 mm (0.004 – 0.009 in.)	———
	41 x 68 mm thrust washer thickness	No. 1	6.35 mm (0.250 in.)	When worn or damaged
		No. 2	6.40 mm (0.252 in.)	When worn or damaged
		No. 3	6.45 mm (0.254 in.)	When worn or damaged
		No. 4	6.50 mm (0.256 in.)	When worn or damaged
		No. 5	6.55 mm (0.258 in.)	When worn or damaged
		No. 6	6.60 mm (0.260 in.)	When worn or damaged
	4th gear collar length		66.3 – 66.4 mm (2.610 – 2.614 in.)	———
	Length of 4th gear collar flange from end		19.15 – 19.30 mm (0.754 – 0.760 in.)	When worn or damaged
	Sealing ring thickness		1.91 – 1.97 mm (0.0752 – 0.0776 in.)	1.86 mm (0.0732 in.)
	Width of sealing ring groove		2.025 – 2.060 mm (0.0797 – 0.0811 in.)	2.080 mm (0.0819 in.)
	Clutch feed pipe O.D.		7.97 – 7.98 mm (0.3138 – 0.3142 in.)	7.95 mm (0.313 in.)
	Clutch feed pipe bushing I.D.		8.000 – 8.015 mm (0.3150 – 0.3156 in.)	8.030 mm (0.3161 in.)
Countershaft	Diameter of needle bearing contact area	At torque converter housing	36.005 – 36.015 mm (1.4175 – 1.4179 in.)	When worn or damaged
		At 4th gear	34.982 – 34.998 mm (1.3772 – 1.3779 in.)	When worn or damaged
		At reverse gear collar	39.979 – 40.000 mm (1.5740 – 1.5748 in.)	When worn or damaged
	I.D. of gears	4th gear	41.000 – 41.016 mm (1.6142 – 1.6148 in.)	When worn or damaged
		Reverse gear	46.000 – 46.016 mm (1.8110 – 1.8116 in.)	When worn or damaged
	End play of gears	5th gear	0.00 – 0.48 mm (0.000 – 0.019 in.)	———
		4th gear	0.04 – 0.27 mm (0.002 – 0.011 in.)	———
		Reverse gear	0.10 – 0.25 mm (0.004 – 0.010 in.)	———
	Collar, 35 x 47 x 7.8 mm thickness		7.8 mm (0.31 in.)	———
	Distance collar length		57.75 – 57.80 mm (2.274 – 2.276 in.)	———
	Reverse selector hub width		25.45 – 25.65 mm (1.002 – 1.010 in.)	———
	Reverse selector hub O.D.		55.87 – 55.90 mm (2.200 – 2.201 in.)	When worn or damaged

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Standards and Service Limits

BCLA, MCLA, DCLA Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Secondary shaft	Diameter of needle bearing contact area	At 1st gear	39.986 – 39.999 mm (1.5742 – 1.5748 in.)	When worn or damaged
		At 2nd gear	39.986 – 39.999 mm (1.5742 – 1.5748 in.)	When worn or damaged
		3rd gear collar	36.975 – 36.991 mm (1.4557 – 1.4563 in.)	When worn or damaged
	I.D. of gears	1st gear	47.000 – 47.016 mm (1.8504 – 1.8510 in.)	When worn or damaged
		2nd gear	46.000 – 46.016 mm (1.8110 – 1.8116 in.)	When worn or damaged
		3rd gear	43.000 – 43.016 mm (1.6929 – 1.6935 in.)	When worn or damaged
	End play of gears	1st gear	0.04 – 0.12 mm (0.002 – 0.005 in.)	———
		2nd gear	0.04 – 0.12 mm (0.002 – 0.005 in.)	———
		3rd gear	0.10 – 0.22 mm (0.004 – 0.009 in.)	———
	37 x 58 mm thrust washer thickness	No. 1	3.900 mm (0.154 in.)	When worn or damaged
		No. 2	3.925 mm (0.155 in.)	When worn or damaged
		No. 3	3.950 mm (0.156 in.)	When worn or damaged
		No. 4	3.975 mm (0.156 in.)	When worn or damaged
		No. 5	4.000 mm (0.157 in.)	When worn or damaged
		No. 6	4.025 mm (0.158 in.)	When worn or damaged
		No. 7	4.050 mm (0.159 in.)	When worn or damaged
		No. 8	4.075 mm (0.160 in.)	When worn or damaged
		No. 9	4.100 mm (0.161 in.)	When worn or damaged
		No. 10	4.125 mm (0.162 in.)	When worn or damaged
		No. 11	4.150 mm (0.163 in.)	When worn or damaged
		No. 12	4.175 mm (0.164 in.)	When worn or damaged
		No. 13	4.200 mm (0.165 in.)	When worn or damaged
		No. 14	4.225 mm (0.166 in.)	When worn or damaged
		No. 15	4.250 mm (0.167 in.)	When worn or damaged
		No. 16	4.275 mm (0.168 in.)	When worn or damaged
		No. 17	4.300 mm (0.169 in.)	When worn or damaged
		No. 18	4.325 mm (0.170 in.)	When worn or damaged
		No. 19	4.350 mm (0.171 in.)	When worn or damaged
		No. 20	4.375 mm (0.172 in.)	When worn or damaged
	40 x 51.5 mm thrust washer thickness	No. 1	4.80 mm (0.189 in.)	When worn or damaged
		No. 2	4.85 mm (0.191 in.)	When worn or damaged
		No. 3	4.90 mm (0.193 in.)	When worn or damaged
		No. 4	4.95 mm (0.195 in.)	When worn or damaged
		No. 5	5.00 mm (0.197 in.)	When worn or damaged
		No. 6	5.05 mm (0.199 in.)	When worn or damaged
	3rd gear collar length		43.9 – 44.0 mm (1.728 – 1.732 in.)	———
	Length of 3rd gear collar flange from end		5.25 – 5.40 mm (0.207 – 0.213 in.)	When worn or damaged
	Sealing ring thickness		1.91 – 1.97 mm (0.0752 – 0.0776 in.)	1.86 mm (0.0732 in.)
	Width of sealing ring groove		2.025 – 2.060 mm (0.0797 – 0.0811 in.)	2.080 mm (0.0819 in.)
	Clutch feed pipe O.D.	3rd clutch feed pipe	11.47 – 11.48 mm (0.4516 – 0.4520 in.)	11.45 mm (0.4508 in.)
		1st clutch feed pipe	6.97 – 6.98 mm (0.2744 – 0.2748 in.)	6.95 mm (0.2736 in.)
	Clutch feed pipe bushing O.D.	3rd clutch feed pipe	11.500 – 11.518 mm (0.4528 – 0.4553 in.)	11.530 mm (0.4539 in.)
		1st clutch feed pipe	7.018 – 7.030 mm (0.2763 – 0.2768 in.)	7.045 mm (0.2774 in.)
	ATF guide of sealing ring contact I.D.		29.000 – 29.021 mm (1.1417 – 1.1426 in.)	29.05 mm (1.144 in.)

Item	Measurement	Qualification	Standard or New	Service Limit
Idler gear shaft	Diameter of needle bearing contact area	End cover side	32.003 – 32.013 mm (1.2600 – 1.2604 in.)	When worn or damaged
	Thickness of cotters		1.39 – 1.42 mm (0.0547 – 0.0559 in.)	———
Reverse idler gear	Reverse idler gear shaft diameter at needle bearing contact area		14.99 – 15.00 mm (0.5902 – 0.5906 in.)	When worn or damaged
	I.D.		20.007 – 20.020 mm (0.7877 – 0.7882 in.)	When worn or damaged
	I.D. of reverse idler gear shaft contact area on transmission housing		14.800 – 14.818 mm (0.5827 – 0.5834 in.)	———
	I.D. of reverse idler gear shaft holder		14.800 – 14.824 mm (0.5827 – 0.5836 in.)	When worn or damaged
ATF pump	ATF pump thrust clearance		0.03 – 0.06 mm (0.001 – 0.002 in.)	0.07 mm (0.003 in.)
	ATF pump gear-to-body clearance	Drive gear	0.210 – 0.265 mm (0.08 – 0.010 in.)	———
		Driven gear	0.070 – 0.125 mm (0.003 – 0.005 in.)	———
	ATF pump driven gear I.D.		14.016 – 14.034 mm (0.5518 – 0.5525 in.)	When worn or damaged
	ATF pump driven gear shaft O.D.		13.980 – 13.990 mm (0.5504 – 0.5508 in.)	When worn or damaged
Stator shaft	Needle bearing contact I.D.	Torque converter side	27.000 – 27.021 mm (1.063 – 1.064 in.)	When worn or damaged
		ATF pump side	29.000 – 29.021 mm (1.1417 – 1.1426 in.)	———
	Sealing ring contact area I.D.		29.000 – 29.021 mm (1.1417 – 1.1426 in.)	29.05 mm (1.144 in.)
Reverse shift fork	Fork finger thickness		5.90 – 6.00 mm (0.232 – 0.236 in.)	5.40 mm (0.213 in.)
Park gear and pawl			———	When worn or damaged
Servo body	Shift fork shaft bore I.D.		14.000 – 14.010 mm (0.5512 – 0.5516 in.)	———
	Shift fork shaft valve bore I.D.		37.000 – 37.039 mm (1.4567 – 1.4582 in.)	37.045 mm (1.4585 in.)
Regulator valve body	Sealing ring contact I.D.		29.000 – 29.021 mm (1.1417 – 1.1426 in.)	29.05 mm (1.144 in.)

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coil
Main valve body spring	Shift valve A spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	Shift valve B spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	Shift valve C spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	Relief valve spring		1.0 mm (0.039 in.)	9.6 mm (0.378 in.)	34.1 mm (1.343 in.)	10.2
	Lock-up control valve spring		0.65 mm (0.026 in.)	7.1 mm (0.280 in.)	23.1 mm (0.909 in.)	12.7
	Cooler check valve spring		0.85 mm (0.035 in.)	6.6 mm (0.260 in.)	27.0 mm (1.063 in.)	11.3
	Servo control valve spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	35.7 mm (1.406 in.)	17.2
	Shift valve E spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9

(cont'd)

Standards and Service Limits

BCLA, MCLA, DCLA Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coil
Regulator valve body spring	Stator reaction spring		4.5 mm (0.177 in.)	35.4 mm (1.394 in.)	30.3 mm (1.193 in.)	1.92
	Regulator valve spring A		1.9 mm (0.075 in.)	14.7 mm (0.579 in.)	80.6 mm (3.173 in.)	16.1
	Regulator valve spring B		1.6 mm (0.063 in.)	9.2 mm (0.362 in.)	44.0 mm (1.732 in.)	12.5
	Torque converter check valve spring		1.2 mm (0.047 in.)	8.6 mm (0.339 in.)	33.8 mm (1.331 in.)	12.2
	Lock-up shift valve spring		1.0 mm (0.039 in.)	6.6 mm (0.260 in.)	35.5 mm (1.398 in.)	18.2
	3rd accumulator spring		2.5 mm (0.098 in.)	14.6 mm (0.575 in.)	29.9 mm (1.177 in.)	4.9
	1st accumulator spring A		2.4 mm (0.094 in.)	18.6 mm (0.732 in.)	49.0 mm (1.929 in.)	7.1
	1st accumulator spring B		2.3 mm (0.091 in.)	12.2 mm (0.480 in.)	31.5 mm (1.240 in.)	6.6
Servo body spring	Shift valve D spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	4th accumulator spring B		2.3 mm (0.091 in.)	12.2 mm (0.480 in.)	31.5 mm (1.240 in.)	6.6
	4th accumulator spring A		2.4 mm (0.094 in.)	18.6 mm (0.732 in.)	49.0 mm (1.929 in.)	7.1
	2nd accumulator spring B		2.0 mm (0.079 in.)	10.6 mm (0.417 in.)	34.0 mm (1.339 in.)	8.0
	2nd accumulator spring A		2.2 mm (0.087 in.)	16.6 mm (0.654 in.)	48.2 mm (1.898 in.)	8.5
	5th accumulator spring		2.5 mm (0.098 in.)	14.6 mm (0.575 in.)	29.9 mm (1.177 in.)	4.9

Item	Measurement	Qualification	Standard or New	Service Limit
A/T differential carrier	Pinion shaft contact area I.D.		18.010 – 18.025 mm (0.709 – 0.719 in.)	———
	Carrier-to-pinion shaft clearance		0.013 – 0.054 mm (0.001 – 0.002 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		28.015 – 28.045 mm (1.103 – 1.104 in.)	———
	Carrier-to-driveshaft clearance		0.035 – 0.086 mm (0.002 – 0.003 in.)	0.12 mm (0.005 in.)
	Carrier bearing starting torque (preload)	For new bearing	2.7 – 3.9 N·m (28 – 40 kgf·cm, 24 – 35 lbf·in.)	Adjust
		For bearing reused	2.5 – 3.6 N·m (25 – 37 kgf·cm, 22 – 32 lbf·in.)	Adjust
	Final driven gear backlash	(References)	0.085 – 0.144 mm (0.003 – 0.006 in.)	0.2 mm (0.008 in.)
A/T differential pinion gear	Backlash		0.05 – 0.15 mm (0.002 – 0.006 in.)	———
	I.D.		18.042 – 18.066 mm (0.7103 – 0.7113 in.)	———
	Pinion gear-to-pinion shaft clearance		0.055 – 0.095 mm (0.0022 – 0.0037 in.)	0.12 mm (0.005 in.)

Item	Measurement	Qualification	Standard or New	Service Limit
ATF (Automatic Transmission Fluid)	Capacity Use Honda ATF-Z1	Fluid change	2.9 ℓ (3.1 US qt, 2.6 Imp qt)	
		Overhaul	7.2 ℓ (7.6 US qt, 6.3 Imp qt)	
ATF pressure	Line pressure	At 1,500 rpm (min^{-1}) in N or P position	900 – 960 kPa (9.2 – 9.8 kgf/cm^2, 130 – 140 psi)	850 kPa (8.7 kgf/cm^2, 120 psi)
	5th clutch pressure	At 2,000 rpm (min^{-1}) in D position	890 – 970 kPa (9.1 – 9.9 kgf/cm^2, 130 – 140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	4th clutch pressure	At 2,000 rpm (min^{-1}) in D position	890 – 970 kPa (9.1 – 9.9 kgf/cm^2, 130 – 140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	3rd clutch pressure	At 2,000 rpm (min^{-1}) in D3 position	890 – 970 kPa (9.1 – 9.9 kgf/cm^2, 130 – 140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	2nd clutch pressure	At 2,000 rpm (min^{-1}) in 2 position	890 – 970 kPa (9.1 – 9.9 kgf/cm^2, 130 – 140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	1st clutch pressure	At 2,000 rpm (min^{-1}) in 1 position	890 – 970 kPa (9.1 – 9.9 kgf/cm^2, 130 – 140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	1st-hold clutch pressure	At 2,000 rpm (min^{-1}) in 1 position	760 – 830 kPa (7.7 – 8.5 kgf/cm^2, 110 – 120 psi)	710 kPa (7.2 kgf/cm^2, 100 psi)
Torque converter	Stall speed	Check with vehicle on level ground		2,050 – 2,350 rpm (min^{-1})
Clutch	Clutch end plate-to-top disc clearance	1st		1.1 – 1.3 mm (0.043 – 0.051 in.)
		2nd		0.7 – 0.9 mm (0.028 – 0.035 in.)
		3rd		0.7 – 0.9 mm (0.028 – 0.035 in.)
		4th, 5th		0.55 – 0.75 mm (0.022 – 0.030 in.)
		1st-hold		0.5 – 0.9 mm (0.020 – 0.035 in.)
	Clutch return spring free length	1st	68.3 mm (2.69 in.)	66.3 mm (2.61 in.)
		2nd	53.4 mm (2.10 in.)	51.4 mm (2.02 in.)
		3rd	52.0 mm (2.05 in.)	50.0 mm (1.97 in.)
		4th	33.5 mm (1.32 in.)	31.5 mm (1.24 in.)
		5th	33.5 mm (1.32 in.)	31.5 mm (1.24 in.)
	Clutch disc thickness		1.94 mm (0.076 in.)	———
	Clutch plate thickness	1st, 2nd	1.6 mm (0.063 in.)	When discolored
		3rd, 4th	2.3 mm (0.091 in.)	When discolored
		5th	2.0 mm (0.079 in.)	When discolored
		1st-hold	1.8 mm (0.071 in.)	When discolored

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BAYA, MAYA Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch (cont'd)	1st clutch end plate thickness	Mark 1	3.10 mm (0.122 in.)	When discolored
		Mark 2	3.20 mm (0.126 in.)	When discolored
		Mark 3	3.30 mm (0.130 in.)	When discolored
		Mark 4	3.40 mm (0.134 in.)	When discolored
		Mark 5	3.50 mm (0.138 in.)	When discolored
		Mark 6	3.60 mm (0.142 in.)	When discolored
		Mark 7	3.70 mm (0.146 in.)	When discolored
		Mark 8	3.80 mm (0.150 in.)	When discolored
		Mark 9	3.90 mm (0.154 in.)	When discolored
	1st-hold clutch end plate thickness		5.00 mm (0.197 in.)	When discolored
	2nd, 4th and 5th clutch end plate thickness	Mark 1	2.10 mm (0.083 in.)	When discolored
		Mark 2	2.20 mm (0.087 in.)	When discolored
		Mark 3	2.30 mm (0.091 in.)	When discolored
		Mark 4	2.40 mm (0.094 in.)	When discolored
		Mark 5	2.50 mm (0.098 in.)	When discolored
		Mark 6	2.60 mm (0.102 in.)	When discolored
		Mark 7	2.70 mm (0.106 in.)	When discolored
		Mark 8	2.80 mm (0.110 in.)	When discolored
		Mark 9	2.90 mm (0.114 in.)	When discolored
	3rd clutch end plate thickness	Mark 1	3.10 mm (0.122 in.)	When discolored
		Mark 2	3.20 mm (0.126 in.)	When discolored
		Mark 3	3.30 mm (0.130 in.)	When discolored
		Mark 4	3.40 mm (0.134 in.)	When discolored
		Mark 6	2.60 mm (0.102 in.)	When discolored
		Mark 7	2.70 mm (0.106 in.)	When discolored
		Mark 8	2.80 mm (0.110 in.)	When discolored
		Mark 9	2.90 mm (0.114 in.)	When discolored
		Mark 0	3.00 mm (0.118 in.)	When discolored
Valve body	Stator shaft needle bearing contact I.D.	Torque converter side	27.000 – 27.021 mm (1.0630 – 1.0638 in.)	When worn or damaged
		ATF pump side	29.000 – 29.021 mm (1.1417 – 1.1426 in.)	When worn or damaged
	ATF pump gear thrust clearance		0.03 – 0.06 mm (0.001 – 0.002 in.)	0.07 mm (0.003 in.)
	ATF pump gear-to-body clearance	Drive gear	0.210 – 0.265 mm (0.0083 – 0.0104 in.)	———
		Driven gear	0.070 – 0.125 mm (0.0028 – 0.0049 in.)	———
	ATF pump driven gear I.D.		14.016 – 14.034 mm (0.5518 – 0.5525 in.)	When worn or damaged
	ATF pump driven gear shaft O.D.		13.980 – 13.990 mm (0.5504 – 0.5508 in.)	When worn or damaged
Reverse shift fork	Fork finger thickness		5.60 – 6.00 mm (0.220 – 0.236 in.)	5.40 mm (0.213 in.)
Park gear and pawl			———	When worn or damaged
Servo body	Shift fork shaft bore I.D.		14.000 – 14.010 mm (0.5512 – 0.5516 in.)	———
	Shift fork shaft valve bore I.D.		37.000 – 37.039 mm (1.4567 – 1.4582 in.)	37.045 mm (1.4585 in.)
Regulator valve body	Sealing ring contact I.D.		32.000 – 32.025 mm (1.2598 – 1.2608 in.)	32.050 mm (1.2618 in.)
Accumulator body	Sealing ring contact I.D.		35.000 – 35.025 mm (1.3780 – 1.3789 in.)	35.05 mm (1.3799 in.)
Stator shaft	Sealing ring contact I.D.		29.000 – 29.021 mm (1.1417 – 1.1423 in.)	29.050 mm (1.1437 in.)

Item	Measurement	Qualification	Standard or New	Service Limit
Mainshaft	Diameter of needle bearing contact area	At stator shaft	22.984 – 23.000 mm (0.9049 – 0.9055 in.)	When worn or damaged
		At 4th gear	52.975 – 52.991 mm (2.0856 – 2.0863 in.)	When worn or damaged
		At 5th gear collar	33.975 – 33.991 mm (1.3376 – 1.3382 in.)	When worn or damaged
	I.D. of 4th gear		59.000 – 59.019 mm (2.3228 – 2.3236 in.)	When worn or damaged
	I.D. of 5th gear		40.000 – 40.016 mm (1.5748 – 1.5754 in.)	When worn or damaged
	End play of 4th gear		0.03 – 0.31 mm (0.001 – 0.012 in.)	———
	End play of 5th gear		0.10 – 0.22 mm (0.004 – 0.009 in.)	———
	41 x 73 mm thrust shim thickness	No. 1	7.85 mm (0.309 in.)	When worn or damaged
		No. 2	7.90 mm (0.311 in.)	When worn or damaged
		No. 3	7.95 mm (0.313 in.)	When worn or damaged
		No. 4	8.00 mm (0.315 in.)	When worn or damaged
		No. 5	8.05 mm (0.317 in.)	When worn or damaged
		No. 6	8.10 mm (0.319 in.)	When worn or damaged
	Thrust washer thickness	27 x 47 x 5 mm	5.00 mm (0.197 in.)	When worn or damaged
	Length of 5th gear collar		58.5 – 58.6 mm (2.303 – 2.307 in.)	———
	5th gear collar flange thickness		4.45 – 4.60 mm (0.175 – 0.181 in.)	When worn or damaged
	Sealing ring thickness	32 mm sealing ring	1.87 – 1.97 mm (0.074 – 0.078 in.)	1.800 mm (0.071 in.)
		29 mm sealing ring	1.87 – 1.97 mm (0.074 – 0.078 in.)	1.800 mm (0.071 in.)
	Width of sealing ring groove		2.025 – 2.060 mm (0.080 – 0.081 in.)	2.080 mm (0.082 in.)
	Clutch feed pipe O.D.	4th clutch	5.97 – 5.98 mm (0.2350 – 0.2354 in.)	5.95 mm (0.2343 in.)
		5th clutch	11.47 – 11.48 mm (0.4516 – 0.4520 in.)	11.45 mm (0.4508 in.)
	Clutch feed pipe bushing I.D.	4th clutch	6.018 – 6.030 mm (0.2369 – 0.2374 in.)	6.045 mm (0.2380 in.)
		5th clutch	11.500 – 11.518 mm (0.4528 – 0.4535 in.)	11.530 mm (0.4539 in.)

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BAYA, MAYA Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Countershaft	Diameter of needle bearing contact area	At 5th gear	34.975 – 34.991 mm (1.3770 – 1.3776 in.)	When worn or damaged
		At 2nd gear	39.979 – 40.000 mm (1.574 – 1.575 in.)	When worn or damaged
		At park gear	41.964 – 41.980 mm (1.6521 – 1.6528 in.)	When worn or damaged
		At right end	38.505 – 38.515 mm (1.5159 – 1.5163 in.)	When worn or damaged
	I.D. of 5th gear		41.000 – 41.016 mm (1.6142 – 1.6148 in.)	When worn or damaged
	I.D. of 3rd gear		50.000 – 50.016 mm (1.9685 – 1.9691 in.)	When worn or damaged
	I.D. of reverse gear		46.000 – 46.016 mm (1.8110 – 1.8116 in.)	When worn or damaged
	End play of 1st gear		0.00 – 0.33 mm (0.000 – 0.013 in.)	———
	End play of 5th gear		0.04 – 0.27 mm (0.002 – 0.011 in.)	———
	End play of 3rd gear		0.015 – 0.045 mm (0.0006 – 0.0018 in.)	———
	End play of reverse gear		0.10 – 0.25 mm (0.004 – 0.010 in.)	———
	31 x 63.5 x 8.5 mm splined washer	A	3.503 – 3.515 mm (0.1379 – 0.1384 in.)	When worn or damaged
		B	3.490 – 3.502 mm (0.1374 – 0.1379 in.)	When worn or damaged
		C	3.477 – 3.489 mm (0.1369 – 0.1374 in.)	When worn or damaged
		D	3.464 – 3.476 mm (0.1364 – 0.1369 in.)	When worn or damaged
	Length of distance collar	35 x 47 x 45.6	45.56 – 45.60 mm (1.794 – 1.795 in.)	———
		35 x 47 x 7.8	5.92 – 5.96 mm (0.233 – 0.235 in.)	———
	Cotter thickness		1.99 – 2.02 mm (0.078 – 0.080 in.)	———
	Reverse selector hub O.D.		55.87 – 55.90 mm (2.1996 – 2.2008 in.)	When worn or damaged
	Clutch feed pipe O.D.		8.97 – 8.98 mm (0.353 – 0.354 in.)	8.95 mm (0.352 in.)
	Clutch feed pipe bushing I.D.		9.000 – 9.015 mm (0.354 – 0.355 in.)	9.030 mm (0.356 in.)

Item	Measurement	Qualification	Standard or New	Service Limit
Secondary shaft	Diameter of needle bearing contact area	At 1st gear	37.978 – 37.993 mm (1.4951 – 1.4958 in.)	When worn or damaged
		At 2nd gear	33.986 – 33.999 mm (1.3380 – 1.3385 in.)	When worn or damaged
	I.D. of 1st gear		44.000 – 44.016 mm (1.7323 – 1.7329 in.)	When worn or damaged
	I.D. of 2nd gear		40.000 – 40.016 mm (1.5748 – 1.5754 in.)	When worn or damaged
	End play of 1st gear		0.07 – 0.15 mm (0.003 – 0.006 in.)	———
	End play of 2nd gear		0.04 – 0.12 mm (0.002 – 0.005 in.)	———
	38 x 56.5 mm splined washer thickness	No. 1	6.85 mm (0.270 in.)	When worn or damaged
		No. 2	6.90 mm (0.272 in.)	When worn or damaged
		No. 3	6.95 mm (0.274 in.)	When worn or damaged
		No. 4	7.00 mm (0.276 in.)	When worn or damaged
		No. 5	7.05 mm (0.278 in.)	When worn or damaged
		No. 6	7.10 mm (0.280 in.)	When worn or damaged
	37 x 55 mm thrust shim thickness	No. 1	4.90 mm (0.193 in.)	When worn or damaged
		No. 2	4.95 mm (0.195 in.)	When worn or damaged
		No. 3	5.00 mm (0.197 in.)	When worn or damaged
		No. 4	5.05 mm (0.199 in.)	When worn or damaged
		No. 5	5.10 mm (0.201 in.)	When worn or damaged
		No. 6	5.15 mm (0.203 in.)	When worn or damaged
		No. 7	5.20 mm (0.205 in.)	When worn or damaged
	Cotter thickness		1.99 – 2.02 mm (0.078 – 0.080 in.)	———
	Sealing ring thickness		1.890 – 1.950 mm (0.074 – 0.077 in.)	1.800 mm (0.071 in.)
	Width of sealing ring groove		2.025 – 2.060 mm (0.080 – 0.081 in.)	2.080 mm (0.082 in.)
	Clutch feed pipe O.D.		7.97 – 7.98 mm (0.3138 – 0.3142 in.)	7.95 mm (0.3130 in.)
	Clutch feed pipe bushing I.D.		8.000 – 8.015 mm (0.3150 – 0.3156 in.)	8.030 mm (0.3161 in.)
Reverse idler gear	Diameter of needle bearing contact area	At reverse idler gear shaft	13.990 – 14.000 mm (0.5508 – 0.5512 in.)	When worn or damaged
	End play		0.06 – 0.38 mm (0.002 – 0.015 in.)	———
	I.D.		18.007 – 18.020 mm (0.7089 – 0.7094 in.)	When worn or damaged
	Thrust washer thickness	Transmission housing side	0.96 – 1.04 mm (0.038 – 0.041 in.)	———
		Reverse idler gear shaft holder side	0.97 – 1.05 mm (0.038 – 0.041 in.)	———
	I.D. of reverse idler gear shaft holder		14.006 – 14.024 mm (0.5514 – 0.5521 in.)	When worn or damaged
	I.D. of transmission housing of reverse idler gear shaft contact area		14.006 – 14.024 mm (0.5514 – 0.5521 in.)	———

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Standards and Service Limits

BAYA, MAYA Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coils
Main valve body spring	Shift valve D spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	33.7 mm (1.327 in.)	11.6
	Shift valve C spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	Kick-down valve spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	Modulator valve spring		1.6 mm (0.063 in.)	10.4 mm (0.409 in.)	33.5 mm (1.319 in.)	9.8
	Relief valve spring		1.2 mm (0.047 in.)	11.1 mm (0.437 in.)	39.0 mm (1.535 in.)	9.9
	Lock-up shift valve spring		0.9 mm (0.035 in.)	7.6 mm (0.299 in.)	63.0 mm (2.480 in.)	22.4
	Cooler check valve spring		0.6 mm (0.024 in.)	5.8 mm (0.228 in.)	14.5 mm (0.571 in.)	6.8
	Torque converter check valve spring		1.2 mm (0.047 in.)	8.6 mm (0.339 in.)	34.4 mm (1.354 in.)	11.7
	Servo control valve spring		0.9 mm (0.035 in.)	6.4 mm (0.252 in.)	32.5 mm (1.280 in.)	17.5
	Reverse CPC valve spring		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
Regulator valve body spring	Stator reaction spring		5.5 mm (0.217 in.)	37.4 mm (1.472 in.)	30.3 mm (1.193 in.)	2.1
	Regulator valve spring A		1.9 mm (0.075 in.)	14.7 mm (0.579 in.)	80.6 mm (3.173 in.)	16.1
	Regulator valve spring B		1.6 mm (0.063 in.)	9.2 mm (0.362 in.)	44.0 mm (1.732 in.)	12.5
	Lock-up control valve spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	42.9 mm (1.689 in.)	14.2
	Lock-up timing valve spring		0.65 mm (0.026 in.)	6.6 mm (0.260 in.)	34.8 mm (1.370 in.)	15.6
Servo body spring	CPC valve B		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
	CPC valve A		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
	Shift valve B		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	Shift valve A		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
Top accumulator body spring	Shift valve E		0.8 mm (0.031 in.)	7.1 mm (0.280 in.)	49.0 mm (1.929 in.)	17.2
	CPC valve C		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
	5th accumulator spring A		2.2 mm (0.087 in.)	16.4 mm (0.646 in.)	75.7 mm (2.980 in.)	14.2
	5th accumulator spring B		2.0 mm (0.079 in.)	10.0 mm (0.394 in.)	45.5 mm (1.791 in.)	11.6
	4th/1st-hold accumulator spring		3.4 mm (0.134 in.)	19.6 mm (0.772 in.)	57.4 mm (2.260 in.)	8.4

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coils
Accumulator body spring	1st accumulator spring B		2.3 mm (0.091 in.)	12.6 mm (0.496 in.)	42.0 mm (1.654 in.)	9.9
	1st accumulator spring A		2.4 mm (0.094 in.)	19.5 mm (0.768 in.)	67.7 mm (2.665 in.)	10.2
	2nd accumulator spring B		2.6 mm (0.102 in.)	13.2 mm (0.520 in.)	44.0 mm (1.732 in.)	8.5
	2nd accumulator spring A		2.3 mm (0.091 in.)	19.6 mm (0.772 in.)	57.7 mm (2.272 in.)	6.6
3rd accumulator spring	3rd accumulator spring		3.1 mm (0.122 in.)	19.6 mm (0.772 in.)	39.4 mm (1.551 in.)	5.5

Item	Measurement	Qualification	Standard or New	Service Limit
A/T differential carrier	Pinion shaft contact area I.D.		18.000 – 18.025 mm (0.7087 – 0.7096 in.)	———
	Carrier-to-pinion shaft clearance		0.013 – 0.054 mm (0.001 – 0.002 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		30.025 – 30.055 mm (1.182 – 1.183 in.)	———
	Carrier-to-driveshaft clearance		0.045 – 0.096 mm (0.002 – 0.004 in.)	0.12 mm (0.005 in.)
	Carrier-to-intermediate shaft clearance		0.080 – 0.126 mm (0.003 – 0.005 in.)	———
	Tapered roller bearing starting torque (preload)	For new bearing	2.7 – 3.9 N·m (28 – 40 kgf·cm, 24 – 35 lbf·in.)	Adjust
		For used bearing	2.5 – 3.6 N·m (25 – 37 kgf·cm, 22 – 32 lbf·in.)	Adjust
A/T differential pinion gear	Backlash		0.175 – 0.275 mm (0.007 – 0.011 in.)	———
	I.D.		18.042 – 18.066 mm (0.7103 – 0.7113 in.)	———
	Pinion gear-to-pinion shaft clearance		0.055 – 0.095 mm (0.0022 – 0.0037 in.)	0.12 mm (0.005 in.)

Standards and Service Limits

Steering

Item	Measurement	Qualification	Standard or New
Steering wheel	Rotational play measured at outside edge with engine running		0−10 mm (0−0.39 in.)
	Starting load measured at outside edge with engine running		29 N (3.0 kgf, 6.6 lbf)
Gearbox	Angle of rack guide screw loosened from locked position		10°−20°
Pump	Output pressure with shut-off valve closed	K20A7, K20A8, K24A4 engines	7,160−7,850 kPa (73−80 kgf/cm², 1,040−1,140 psi)
		J30A4 engine	7,940−8,630 kPa (81−88 kgf/cm², 1,150−1,250 psi)
Power steering fluid	Capacity	Fluid change	0.4 ℓ (0.42 US qt, 0.35 Imp qt)
	Use Honda power steering fluid	System overhaul	1.1 ℓ (1.16 US qt, 0.96 Imp qt)
Drive belt	Tension		Auto tensioner

Suspension

Item	Measurement	Qualification	Standard or New	Service Limit
Wheel alignment	Camber	Front	0°00′±45′	
		Rear	−1°00′±30′	
	Caster	Front	3°15′±45°	
	Total toe	Front	0±2 mm (0±0.08 in.)	
		Rear	IN 2±2 mm (0.08±0.08 in.)	
	Front wheel turning angle	Inside wheel	38°50′±2°	
		Outside wheel	31°40′ (Reference)	
Wheel	Aluminum wheel runout	Axial	0−0.7 mm (0−0.03 in.)	2.0 mm (0.08 in.)
		Radial	0−0.7 mm (0−0.03 in.)	1.5 mm (0.06 in.)
	Steel wheel runout	Axial	0−1.0 mm (0−0.04 in.)	2.0 mm (0.08 in.)
		Radial	0−1.0 mm (0−0.04 in.)	1.5 mm (0.06 in.)
Wheel bearing	End play	Front	0−0.05 mm (0−0.002 in.)	
		Rear	0−0.05 mm (0−0.002 in.)	

Brakes

Item	Measurement	Qualification	Standard or New	Service Limit
Parking brake lever	Distance traveled when lever pulled with 196 N (20 kgf, 44 lbf) of force	Disc brake	6 to 9 clicks	
		Drum brake	4 to 7 clicks	
Brake pedal	Pedal height (carpet removed)	LHD M/T	144 mm (5.67 in.)	
		RHD M/T	134 mm (5.28 in.)	
		LHD A/T	148 mm (5.83 in.)	
		RHD A/T	138 mm (5.43 in.)	
	Free play		1.0 – 5.0 mm (0.003 – 0.20 in.)	
Master cylinder	Piston-to-pushrod clearance		No adjust	
Brake disc	Thickness	Front	22.9 – 23.1 mm (0.90 – 0.91 in.)	21.0 mm (0.83 in.)
		Rear	9.9 – 10.1 mm (0.39 – 0.40 in.)	8.0 mm (0.31 in.)
	Runout	Front	———	0.10 mm (0.004 in.)
		Rear	———	0.10 mm (0.004 in.)
	Parallelism	Front and rear	———	0.015 mm (0.0006 in.)
Brake pads	Thickness	Front	10.5 – 11.5 mm (0.41 – 0.45 in.)	1.6 mm (0.06 in.)
		Rear	8.9 – 9.1 mm (0.350 – 0.358 in.)	1.6 mm (0.06 in.)
Brake drum	I.D.		219.9 – 220.0 mm (8.657 – 8.661 in.)	221 mm (8.700 in.)
Brake shoes	Lining thickness		4.5 mm (0.18 in.)	2.0 mm (0.08 in.)

Air Conditioning

Item	Measurement	Qualification	Standard or New
Refrigerant	Type		HFC-134a (R-134a)
	Capacity of system		500 – 550 g (17.6 – 19.4 oz)
Refrigerant oil	Type		DENSO: ND-OIL8 (P/N 38897-PR7-003, 38898-PR7-003 or 38899-PR7-A01)
	Capacity of components	Condenser	25 mℓ (5/6 fl oz, 0.9 Imp oz)
		Evaporator	45 mℓ (1 1/2 fl oz, 1.6 Imp oz)
		Each line and hose	10 mℓ (1/3 fl oz, 0.4 Imp oz)
		Compressor	160 – 175 mℓ (5 1/3 – 6 fl oz, 5.1 – 6.1 Imp oz)
Compressor	Starter coil resistance	At 20°C (68°F)	3.05 – 3.35 Ω
	Pulley-to-pressure plate clearance		0.35 – 0.5 mm (0.014 – 0.020 in.)
Drive belt	Tension		Auto tensioner

Design Specifications

Item	Measurement	Qualification	Specification
DIMENSIONS	Overall length	KK, KM, KU, KW, KX, KY models	4,813 mm (189.5 in.)
		KH, KP, KQ, KS, KU, KZ, FO, ID, MA models	4,830.7 mm (190.2 in.)
	Overall width	KK, KM, KU, KW, KX, KY models	1,820 mm (71.7 in.)
		KH, KP, KQ, KS, KU, KZ, FO, ID, MA models	1,821 mm (71.7 in.)
	Overall height	KQ (VTi), KU (VTi-C), KZ (VTi), KY (2.4VTi-L, 2.4VTi-E), FO (2.0VX, 2.0EXA, 2.0EXS) models	1,453 mm (57.2 in.)
		KU (VTi-L, 3.0SiR), KY (3.0V6), KQ (V6, V6L), KS, KZ (VTi-L, VTi-E, V6), FO (3.0EX), MA models	1,456 mm (57.3 in.)
		KK (LX), KW (VTi-L), KH (EXi, VTi-L, VTi-E), KP (VTi), ID models	1,463 mm (57.6 in.)
		KK (EX, EXL, EXV6), KM, KW (VTi-E), KX, KH (V6), KP (VTi-L) models	1,466 mm (57.7 in.)
	Wheelbase	KK, KM, KW, KX, KH, KP, ID models	2,738 mm (107.8 in.)
		KU, KY, KQ, KS, KZ, FO, MA models	2,740 mm (107.9 in.)
	Track front/track rear	KK, KM, KX models KU, KW, KY, KH, KP, KQ, KS, FO, ID, MA models	1,551 mm (61.1 in.)/1,551 mm (61.1 in.) 1,553 mm (61.1 in.)/1,554 mm (61.2 in.)
	Seating capacity		5 (five)
WEIGHT	Curb weight	KK-M/T model	1,391 – 1,422 kg (3,067 – 3,135 lbs)
		KK-A/T model	1,418 – 1,524 kg (3,126 – 3,360 lbs)
		KM model	1,419 – 1,525 kg (3,128 – 3,362 lbs)
		KU model	1,430 – 1,530 kg (3,153 – 3,373 lbs)
		KW-M/T model	1,405 kg (3,097 lbs)
		KW-A/T model	1,430 kg (3,153 lbs)
		KX model	1,413 – 1,517 kg (3,115 – 3,344 lbs)
		KY-M/T model	1,405 kg (3,097 lbs)
		KY-A/T model	1,430 – 1,505 kg (3,153 – 3,318 lbs)
		KH-M/T model	1,409 kg (3,106 lbs)
		KH-A/T model	1,434 – 1,562 kg (3,162 – 3,444 lbs)

Item	Measurement	Qualification	Specification
ENGINE K20A7, K20A8, K24A4 engines	Type		Water-cooled, 4-stroke DOHC i-VTEC gasoline engine
	Cylinder arrangement		Inline 4-cylinder, transverse
	Bore and stroke	K20A7, K20A8 engines	86 x 86 mm (3.39 x 3.39 in.)
		K24A4 engine	87 x 99 mm (3.43 x 3.90 in.)
	Displacement	K20A7, K20A8 engines	1,998 cm^3 (122 cu in.)
		K24A4 engine	2,354 cm^3 (144 cu in.)
	Compression ratio	K20A7, K20A8 engines	9.8
		K24A4 engine	9.6
	Valve train		Chain drive, DOHC i-VTEC 4 valves per cylinder
	Lubrication system		Forced, wet sump, with trochoid pump
	Oil pump displacement	At 6,000 rpm (min^{-1})	54.3 ℓ (57.4 US qt, 47.8 Imp qt) minute
	Water pump displacement	At 6,500 rpm (min^{-1})	162 ℓ (171 US qt, 143 Imp qt) minute
	Fuel required	K24A4 engine KM, KX, KK, KU, KY, KH, KZ, KQ, MA models	UNLEADED gasoline with 91 research octane number or higher
		K24A4 engine, KS model	UNLEADED gasoline with 88 research octane number or higher
		K24A4 engine, ID model	UNLEADED gasoline with 87 research octane number or higher
		K20A7 engine, KH, FO, MA, KP, KU models	UNLEADED gasoline with 91 research octane number or higher
		K20A8 engine, KW model	LEADED gasoline with 88 research octane number or higher UNLEADED gasoline with 88 research octane number or higher may also be used

(cont'd)

Design Specifications

(cont'd)

Item	Measurement	Qualification	Specification
ENGINE J30A4 engine	Type		Water-cooled, 4-stroke SOHC VTEC gasoline engine
	Cylinder arrangement		60° V6-cylinder, transverse
	Bore and stroke		86 x 86 mm (3.39 x 3.39 in.)
	Displacement		2,997 cm^3 (183 cu in.)
	Compression ratio		10.0
	Valve train		Belt driven, SOHC VTEC 4 valves per cylinder
	Lubrication system		Forced, wet sump, with trochoid pump
	Oil pump displacement	At 6,000 rpm (min^{-1})	58.4 ℓ (61.7 US qt, 51.4 Imp qt)/minute
	Water pump displacement	At 6,000 rpm (min^{-1})	176 ℓ (186 US qt, 155 Imp qt)/minute
	Fuel required		UNLEADED gasoline with 91 research octane number or higher
STARTER	Type		Gear reduction
	Normal output		1.1 kW, 1.2 kW, 1.6 kW, 1.7 kW
	Normal voltage		12 V
	Hour rating		30 seconds
	Rotation direction	K20A7, K20A8, K24A4 engines	Clockwise as viewed from gear end
		J30A4 engine	Counter clockwise as viewed from gear end
CLUTCH	Clutch type	M/T A/T	Single plate dry, diaphragm spring 3-element torque converter with lock-up clutch
	Clutch friction material area	M/T	221cm^2 (34.22 sq in.)
MANUAL TRANSMISSION	Type	APG6	Synchronized, 5-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	3.267
		2nd	1.769
		3rd	1.147
		4th	0.872
		5th	0.659
		Reverse	3.583
	Final reduction	Final Type	KK, ID models: 4.105 Other models: 4.389 Single helical gear

Item	Measurement	Qualification	Specification
AUTOMATIC TRANSMISSION (MCLA, BCLA, DCLA)	Type	MCLA, BCLA, DCLA	Electronically controlled automatic, 5-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	2.652
		2nd	1.517
		3rd	1.037
		4th	0.738
		5th	0.566
		Reverse	2.000
	Final reduction	Type	Single helical gear
		Gear ratio (K20A7, K20A8 engines)	4.562
		Gear ratio (K24A4 engine)	4.438
AUTOMATIC TRANSMISSION (MAYA, BAYA)	Type	MAYA, BAYA	Electronically controlled automatic, 5-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	2.563
		2nd	1.552
		3rd	1.022
		4th	0.727
		5th	0.520
		Reverse	1.846
	Final reduction	Type	Single helical gear
		Gear ratio	4.429
STEERING	Type		Power-assisted rack and pinion
	Overall ratio		15.21
	Turns, lock-to-lock		2.98
	Steering wheel diameter		380 mm (15.0 in.)
SUSPENSION	Type	Front	Independent double wishbone with stabilizer, coil spring
		Rear	Independent double wishbone with stabilizer, coil spring
	Shock absorber	Front	Telescopic, hydraulic, nitrogen gas-filled
		Rear	Telescopic, hydraulic, nitrogen gas-filled
BRAKES	Type of service brake	Front	Power-assisted self-adjusting ventilated disc
		Rear	Power-assisted self-adjusting solid disc
			Power-assisted self-adjusting drum
	Type of parking brake		Mechanical actuating, rear wheels
	Pad friction surface area	Front	49 cm^2 x 2 (7.6 sq in. x 2)
			58 cm^2 x 2 (9.0 sq in. x 2)
		Rear	28 cm^2 x 2 (4.3 sq in. x 2)
	Shoe friction surface	Rear	74 cm^2 x 2 (11.5 sq in. x 2)
TYRES	Size of front and rear tyres		See tyre information label.
	Size of spare tyres		See tyre information label.

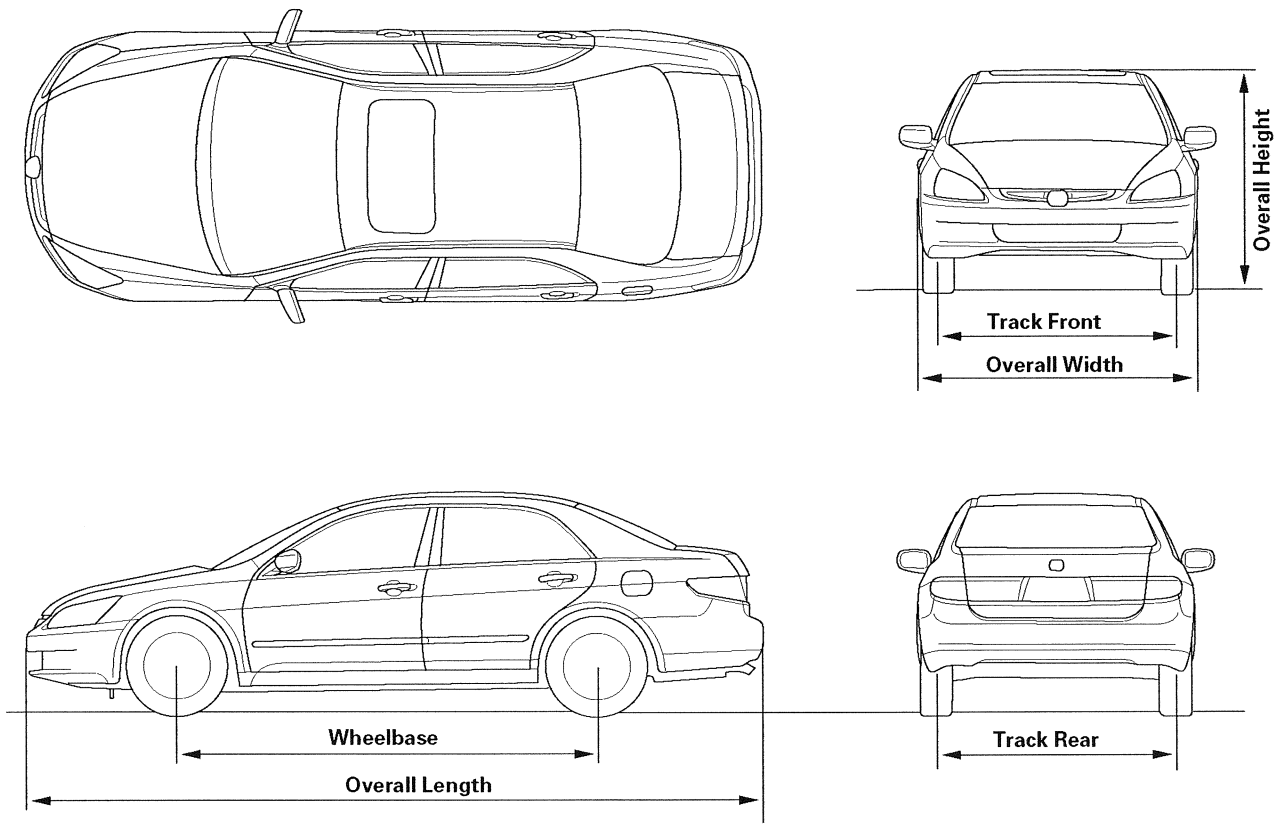
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Design Specifications

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Item	Measurement	Qualification	Specification
AIR CONDITIONING	Compressor	Type	Swash plate
		Capacity	188 mℓ (11.47 cu in.)/rev.
		Maximum speed K20A7, K20A8, K24A4 engines	7,922 rpm (min^{-1})
		Maximum speed J30A4 engine	7,600 rpm (min^{-1})
		Lubricant capacity Lubricant type	160 mℓ (5 1/3 fl oz) DENSO ND-OIL8
	Condenser	Type	Corrugated fin
	Evaporator	Type	Corrugated fin
	Blower	Type	Radial
		Motor type	226 W/12 V
		Speed control	Infinite variable
		Maximum capacity	505 m^3/h (17,800 cu ft/h)
	Temperature control		Air-mix type
	Compressor clutch	Type	Dry, signal plate, poly V-belt drive
		Electrical power consumption at 20°C (68°F)	35 W maximum at 12 V
	Refrigerant	Type	HFC-134a (R-134a)
		Capacity	500 – 550 g (17.6 – 19.4 oz)
ELECTRICAL RATINGS	Battery		12 V – 36 AH/5 hours
	Fuses	Under-hood fuse/ relay box	100A, 50A, 40A, 30A, 20A, 15A, 10A, 7.5A
		Under-dash fuse/ relay box	30A, 20A, 15A, 10A, 7.5A
	Light bulbs	Headlight high beam	12 V – 60 W
		Headlight low beam	12 V – 51 W, 12 V – 35 W (HID)
		Front turn signal/ front side marker lights	12 V – 21 W/5 W (two filaments)
		Front parking lights	12 V – 5 W
		Side turn signal lights	12 V – 5 W
		Rear turn signal lights	12 V – 21 W
		Brake/taillights	12 V – 21/5 W
		Inner taillight	12 V – 5 W
		High-mount brake light	12 V – 21 W
		Back-up light	12 V – 21 W
		License plate light	12 V – 5 W
		Front fog lights Rear fog lights	12 V – 55 W 12 V – 21 W
		Ceiling light	12 V – 8 W
		Spotlights	12 V – 8 W
		Trunk light	12 V – 5 W
		Door courtesy lights	12 V – 3.8 W
		Glove box light	12 V – 3.4 W
		Vanity mirror lights	14 V – 0.1A
		Gauge lights	12 V LED (non-replaceable)
		Indicator lights	12 V LED 14 V – 0.84 W
		Panel and pilot lights	14 V – 0.56 W, 0.84 W 12 V LED
		Heater control panel climate control unit	12 V LED

Body Specifications



*: Refer to Design Specifications for the dimensions in the illustration.

Maintenance

Lubricants and Fluids 3-2

Maintenance Schedule
Listed by Maintenance Item for
Normal Conditions
(Australia and New Zealand Models) 3-4

Listed by Maintenance Item for
Severe Conditions
(Australia and New Zealand Models) 3-6

Engine Oil Service Schedule for
Except Australia and
New Zealand Models 3-8

Engine Oil Filter Service Schedule for
Except Australia and
New Zealand Models 3-9

Listed by Maintenance Item for
Normal and Severe Conditions
(Except Australia and
New Zealand Models) 3-10

NOTE: Refer to the 2003 Accord 4-door Shop Manual, P/N 62SDA00 for items not shown in this section.

Lubricants and Fluids

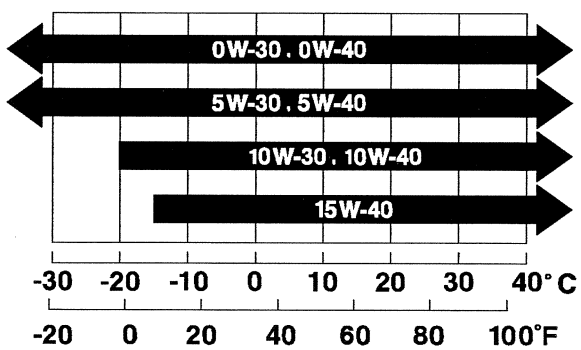
⚠CAUTION

Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

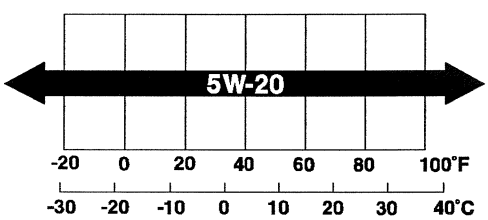
For the details of lubrication points and type of lubricants to be applied, refer to the illustrated index and various work procedures (such as Assembly/Reassembly, Replacement, Overhaul, Installation, etc.) contained in each section.

No.	Lubrication Points	Lubricant
A	Engine	API Service Grade: SJ or SL fuel-efficient oil SAE Viscosity: See chart below.
B	Manual transmission	Honda Manual Transmission Fluid (MTF) Always use Honda MTF. Using motor oil can cause stiffer shifting because it does not contain the proper additives.
	Automatic transmission	Honda ATF-Z1 Always use Honda ATF-Z1. Using a non-Honda ATF can affect shift quality.
C	Brake system (includes ABS line)	Brake fluid DOT 3 or DOT 4 We recommend Honda Brake Fluid. Using a non-Honda brake fluid can cause corrosion and decrease the life of the system.
D	Power steering gearbox	Honda steering grease (P/N 08733-B070E)
E	Throttle cable end (throttle link)	Super High Temp Urea Grease (P/N 41211-PY5-305)
F	Throttle cable end (dashboard lower panel hole)	Silicone grease
G H I J K L M	Brake booster clevis Battery terminals Pedal linkage Fuel fill door Hood hinges and hood latch Door hinges Tailgate hinges	Multi-purpose grease
N	Caliper piston boot, caliper pins, and boots	Caliper grease
O	Power steering system	Honda Power Steering Fluid (V or II) Always use Honda Power Steering Fluid. Using any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.
P	Air conditioning compressor	Compressor oil: DENSO ND-OIL8 (P/N 38897-PR7-003, 38898-PR7-003 or 38899-PR7-A01) for refrigerant HFC (R-134a)

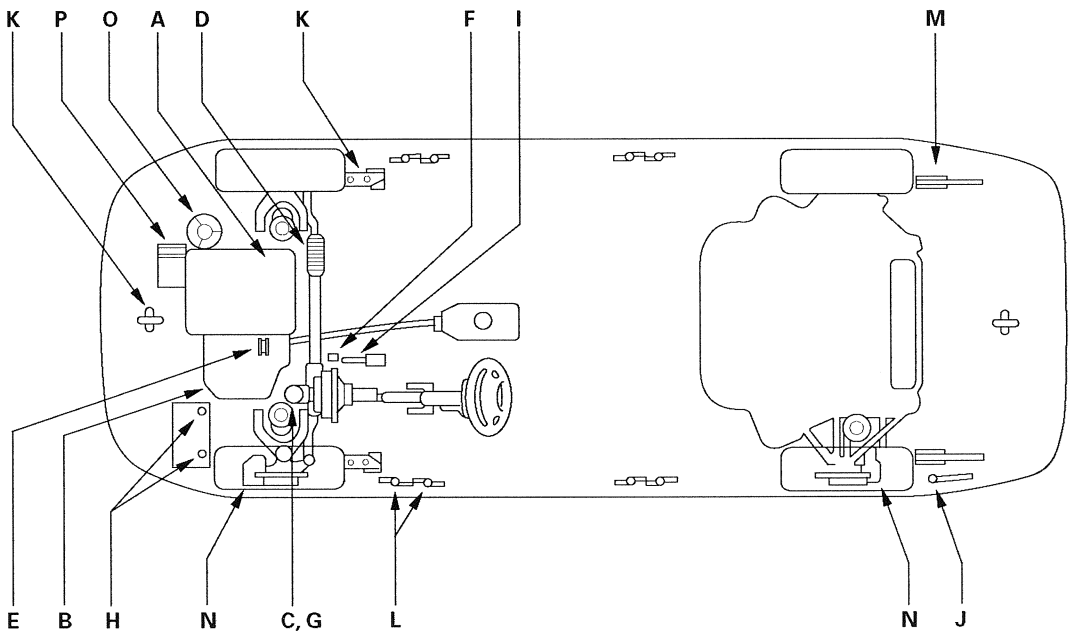
Recommended Engine Oil except for KX model
Engine oil viscosity for ambient temperature ranges



Recommended Engine Oil for KX model
Engine oil viscosity for ambient temperature ranges



NOTE: The illustration shows the LHD model, RHD is symmetrical.



Maintenance Schedule

Listed by Maintenance Item for Normal Conditions (Australia and New Zealand Models)

Follow the Normal Conditions Maintenance Schedule if the severe driving conditions specified in the Severe Conditions Maintenance Schedule do not apply.

Service at the indicated distance or time whichever comes first	km x 1,000	20	40	60	80	100	120	140	160	180	200
	miles x 1,000	12.5	25.0	37.5	50.0	62.5	75.0	87.5	100.0	112.5	125.0
	months	12	24	36	48	60	72	84	96	108	120
Replace engine oil L4 (see page 8-5)*, V6 (see page 8-21)*		Every 10,000 km (6,250 miles) or 1 year									
Replace engine oil filter L4 (see page 8-6)*, V6 (see page 8-21)*		●	●	●	●	●	●	●	●	●	●
Replace air cleaner element L4 (see page 11-220)*, V6 (see page 11-487)*			●		●		●		●		●
Inspect the valve clearance Check valve clearance (see page 6-9)*			●		●		●		●		●
Replace fuel filter (see page 11-208)*					●				●		
Replace spark plugs (see page 4-32)*			●		●		●		●		●
Replace timing belt and inspect water pump Only for J30A4 engine model						●					●
Inspect drive belts Check for cracks, damage, deflection, and tension L4 (see page 4-39)*, V6 (see page 4-89)*			●		●		●		●		●
Inspect idle speed (see page 11-192)* Except J30A4 engine model						●					●
Replace engine coolant Use Honda All Season Antifreeze/Coolant Type 2 L4 (see page 10-6)*, V6 (see page 10-24)*		At 200,000 km (120,000 miles) or 10 years, then replace every 100,000 km (60,000 miles) or 5 years									
Replace manual transmission fluid Use Honda Manual Transmission Fluid (MTF) (see page 13-3)*							●				
Replace automatic transmission fluid Use Honda ATF-Z1: L4 (see page 14-179)*, V6 (see page 14-466)*		At 120,000 km (75,000 miles) or 6 years, then replace every 80,000 km (50,000 miles) or 4 years									
Inspect front and rear brakes • Check the brake pad and disc thickness. Check for damage or cracks • Check the brake linings for cracking, grazing, wear, or contamination • Check the calipers for damage, leaks, and tightness (see page 19-3)*		●	●	●	●	●	●	●	●	●	●
Replace brake fluid • Use only DOT 3 or DOT 4 brake fluid. We recommend Honda Brake Fluid • Check that brake fluid level is between upper and lower marks on the reservoir (see page 19-9)*		Every 3 years									
Check parking brake adjustment Check the parking brake operation (see page 19-7)*		●	●		●		●		●		●
Replace dust and poller filter		Every 30,000 km (18,750 miles) or 1 year									
Check light alignment (see page 22-186)* Check the position of the headlight		●	●	●	●	●	●	●	●	●	●
Test drive Check for road stability, noise, vibrations, and dashboard operation		●	●	●	●	●	●	●	●	●	●
Rotate tyres Check tyre inflation and condition at least once per month		Every 10,000 km (6,250 miles)									

*: Refer to the 2003 Accord 4-door Shop Manual, P/N 62SDA00.

Service at the indicated distance or time whichever comes first	km x 1,000	20	40	60	80	100	120	140	160	180	200
	miles x 1,000	12.5	25.0	37.5	50.0	62.5	75.0	87.5	100.0	112.5	125.0
	months	12	24	36	48	60	72	84	96	108	120
Visually inspect the following items: • Check for correct installation and position, check for cracks, deterioration, rust, and leaks • Check tightness of screws, nuts, and joints. If necessary, retighten											
Tie rod ends, steering gearbox, and boots Check rack grease and steering linkage. Check the boot for damage and leaking grease L4 (see page 17-3)*, V6 (see page 17-4)*		●	●	●	●	●	●	●	●	●	●
Suspension components • Check the bolts for tightness • Check all dust cover for deterioration and damage (see page 18-3)*											
Driveshaft boots • Check the boot and boot band for cracks • Check rack grease (see page 16-3)*											
Brake hoses and lines (including ABS) Check the master cylinder, proportioning control valve, and ABS modulator and leakage (see page 19-3)*											
All fluid levels and condition of fluid • Engine coolant (see page 10-6)* • MTF (see page 13-3)* • ATF: L4 (see page 14-178)*, V6 (see page 14-465)* • Power steering fluid L4 (see page 17-13)*, V6 (see page 17-14)* • Brake fluid (see page 19-9)* • Windshield washer											
Exhaust system Check the exhaust pipe and muffler for damage, leaks, and tightness L4 (see page 9-9)*, V6 (see page 9-16)*											
Fuel lines and connections Check fuel lines for loose connections, cracks, and deterioration. Retighten loose connections and replace any damaged parts L4 (see page 11-202)*, V6 (see page 11-476)*											

*: Refer to the 2003 Accord 4-door Shop Manual, P/N 62SDA00.

Maintenance Schedule

Listed by Maintenance Item for Severe Conditions (Australia and New Zealand Models)

Follow the Severe Conditions Maintenance Schedule if the vehicle is driven MAINLY under one or more of the following conditions:

- Driving less than 8 km (5 miles) per trip or, in freezing temperatures, driving less than 16 km (10 miles) per trip.
- Driving in extremely hot over 35°C (95°F) conditions.
- Extensive idling, or long periods of stop-and-go-driving.
- Trailer towing, driving with a car-top carrier, or driving in mountainous conditions.
- Driving on muddy, dusty, or de-iced roads.

NOTE: If the vehicle is driven OCCASIONALLY under severe conditions, follow the Normal Conditions Maintenance Schedule.

Service at the indicated distance or time whichever comes first	km x 1,000	20	40	60	80	100	120	140	160	180	200
	miles x 1,000	12.5	25.0	37.5	50.0	62.5	75.0	87.5	100.0	112.5	125.0
	months	12	24	36	48	60	72	84	96	108	120
Replace engine oil L4 (see page 8-5)*, V6 (see page 8-21)*		Every 5,000 km (3,125 miles) or 6 months									
Replace engine oil filter L4 (see page 8-6)*, V6 (see page 8-21)*		Every 10,000 km (6,250 miles) or 6 months									
Replace air cleaner element Use normal schedule except in dusty conditions L4 (see page 11-220)*, V6 (see page 11-487)*		●	●	●	●	●	●	●	●	●	●
Inspect the valve clearance Check valve clearance (see page 6-9)*			●		●		●		●		●
Replace fuel filter (see page 11-208)* Replace every 40,000 km (25,000 miles) or 2 years when the customer suspects if the fuel filter is clogged by fuel cotamination. The filter may be clogged when driving in high dust environmental conditions, and when used with contaminated fuel					●				●		
Replace spark plugs L4 (see page 4-32)*, V6 (see page 4-82)*			●		●		●		●		●
Replace timing belt and inspect water pump Only for J30A4 engine model						●					●
Inspect drive belts Check for cracks, damage, deflection, and tension L4 (see page 4-39)*, V6 (see page 4-89)*			●		●		●		●		●
Inspect idle speed (see page 11-192)* Except J30A4 engine model						●					●
Replace engine coolant Use Honda All Season Antifreeze/Coolant Type 2 (see page 10-6)*		At 200,000 km (120,000 miles) or 10 years, then replace every 100,000 km (60,000 miles) or 5 years									
Replace manual transmission fluid Use Honda Manual Transmission Fluid (MTF) (see page 13-3)*				●			●			●	
Replace automatic transmission fluid Use Honda ATF-Z1: L4 (see page 14-179)*, V6 (see page 14-466)*				●		●		●		●	
Inspect front and rear brakes • Check the brake pad and disc thickness. Check for damage or cracks • Check the brake linings for cracking, grazing, wear, or contamination • Check the calipers for damage, leaks, and tightness (see page 19-3)*		Every 10,000 km (6,250 miles) or 6 months									
Replace brake fluid • Use only DOT 3 or DOT 4 brake fluid. We recommend Honda Brake Fluid • Check that brake fluid level is between upper and lower marks on the reservoir (see page 19-9)*		Every 3 years									
Check parking brake adjustment Check the parking brake operation (see page 19-7)*		●	●		●		●		●		●
Replace dust and poller filter		Every 30,000 km (18,750 miles) or 1 year									
Check lights alignment (see page 22-186)* Check the position of the headlight		●	●	●	●	●	●	●	●	●	●
Test drive Check for road stability, noise, vibrations, and dashboard operation		●	●	●	●	●	●	●	●	●	●
Rotate tyres Check tyre inflation and condition at least once per month		Every 10,000 km (6,250 miles)									

*: Refer to the 2003 Accord 4-door Shop Manual, P/N 62SDA00.

Service at the indicated distance or time whichever comes first	km x 1,000	20	40	60	80	100	120	140	160	180	200
	miles x 1,000	12.5	25.0	37.5	50.0	62.5	75.0	87.5	100.0	112.5	125.0
	months	12	24	36	48	60	72	84	96	108	120
Visually inspect the following items: • Check for correct installation and position, check for cracks, deterioration, rust, and leaks • Check tightness of screws, nuts, and joints. If necessary, retighten											
Tie rod ends, steering gearbox, and boots Check rack grease and steering linkage. Check the boot for damage and leaking grease L4 (see page 17-3)*, V6 (see page 17-4)*	Every 10,000 km (6,250 miles) or 6 months										
Suspension components • Check the bolts for tightness • Check all dust cover for deterioration and damage (see page 18-3)*											
Driveshaft boots • Check the boot and boot band for cracks • Check rack grease (see page 16-3)*											
Brake hoses and lines (including ABS) Check the master cylinder, proportioning control valve, and ABS modulator and leakage (see page 19-3)*		●	●	●	●	●	●	●	●	●	●
All fluid levels and condition of fluid • Engine coolant (see page 10-6)* • MTF (see page 13-3)* • ATF: L4 (see page 14-178)*, V6 (see page 14-465)* • Power steering fluid L4 (see page 17-13)*, V6 (see page 17-14)* • Brake fluid (see page 19-9)* • Windshield washer											
Exhaust system Check the exhaust pipe and muffler for damage, leaks, and tightness L4 (see page 9-9)*, V6 (see page 9-16)*											
Fuel lines and connections Check fuel lines for loose connections, cracks, and deterioration. Retighten loose connections and replace any damaged parts L4 (see page 11-202)*, V6 (see page 11-476)*											

*: Refer to the 2003 Accord 4-door Shop Manual, P/N 62SDA00.

Maintenance Schedule

Engine Oil Service Schedule (Except Australia and New Zealand Models)

This maintenance schedule outlines the minimum required maintenance that you should perform to ensure the trouble-free operation of the vehicle. Due to regional and climatic differences, some additional servicing may be required. Please consult the warranty handbook for a more detailed description.

Follow the Normal Conditions Schedule for replacing engine oil, if the severe driving conditions specified in the severe driving conditions below do not apply, and if only OCCASIONALLY driven in severe driving conditions.

Follow the Severe Conditions Schedule, if the vehicle is driven MAINLY under one or more of the following severe driving conditions.

Severe Driving Conditions:

- Driving less than 8 km (5 miles) per trip or, in freezing temperatures, driving less than 16 km (10 miles) per trip.
- Driving in extremely hot over 35°C (95°F) conditions.
- Extensive idling, or long periods of stop-and-go-driving.
- Trailer towing, driving with a car-top carrier, or driving in mountainous conditions.
- Driving on muddy, dusty, or de-iced roads.

Service at the indicated distance or time whichever comes first	km x 1,000	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	miles x 1,000	3.1	6.3	9.4	12.5	15.6	18.8	21.9	25.0	28.1	31.3	34.4	37.5	40.6	43.8	46.9	50.0	53.1	56.3	59.4	62.5
	months	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
Replace engine oil, refer to the Shop Manual, P/N 62SDA00 (see page 8-5)	Normal Conditions		●		●		●		●		●		●		●		●		●		●
	Severe Conditions	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Engine Oil Filter Service Schedule (Except Australia and New Zealand Models)

This maintenance schedule outlines the minimum required maintenance that you should perform to ensure the trouble-free operation of the vehicle. Due to regional and climatic differences, some additional servicing may be required. Please consult the warranty handbook for a more detailed description.

Follow the Normal Conditions Schedule for replacing engine oil filter, if the severe driving conditions specified in the severe driving conditions below do not apply, and if only OCCASIONALLY driven in severe driving conditions.

Follow the Severe Conditions Schedule, if the vehicle is driven MAINLY under one or more of the following severe driving conditions.

Severe Driving Conditions:

- Driving less than 8 km (5 miles) per trip or, in freezing temperatures, driving less than 16 km (10 miles) per trip.
- Driving in extremely hot over 35°C (95°F) conditions.
- Extensive idling, or long periods of stop-and-go-driving.
- Trailer towing, driving with a car-top carrier, or driving in mountainous conditions.
- Driving on muddy, dusty, or de-iced roads.

Service at the indicated distance or time whichever comes first	km x 1,000	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	miles x 1,000	3.1	6.3	9.4	12.5	15.6	18.8	21.9	25.0	28.1	31.3	34.4	37.5	40.6	43.8	46.9	50.0	53.1	56.3	59.4	62.5
	months	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
Replace engine oil filter, refer to the Shop Manual, P/N 62SDA00 (see page 8-6)	Normal Conditions				●				●				●				●				●
	Severe Conditions		●		●		●		●		●		●		●		●		●		●

Maintenance Schedule

Listed by Maintenance Item (Except Australia and New Zealand Models)

This maintenance schedule outlines the minimum required maintenance that you should perform to ensure the trouble-free operation of the vehicle. Due to regional and climatic differences, some additional servicing may be required. Please consult the warranty handbook for a more detailed description.

Follow the Normal Conditions Schedule for replacing fuel filter and transmission fluid, if the severe driving conditions specified in the severe driving conditions below do not apply, and if only OCCASIONALLY driven in severe driving conditions.

Follow the Severe Conditions Schedule, if the vehicle is driven MAINLY under one or more of the following severe driving conditions.

Severe Driving Conditions:

- Driving less than 8 km (5 miles) per trip or, in freezing temperatures, driving less than 16 km (10 miles) per trip.
- Driving in extremely hot over 35°C (95°F) conditions.
- Extensive idling, or long periods of stop-and-go-driving.
- Trailer towing, driving with a car-top carrier, or driving in mountainous conditions.
- Driving on muddy, dusty, or de-iced roads.

- **Maintenance Items and Schedule expect engine oil and engine oil filter:**

Service at the indicated distance or time whichever comes first											
	km x 1,000	20	40	60	80	100	120	140	160	180	200
	miles x 1,000	12.5	25.0	37.5	50.0	62.5	75.0	87.5	100.0	112.5	125.0
	months	12	24	36	48	60	72	84	96	108	120
Clean air cleaner element	KH model	Every 10,000 km (6,250 miles)									
Replace air cleaner element L4 (see page 11-220)*, V6 (see page 11-487)*		Every 20,000 km (12,500 miles)									
Inspect the valve clearance (see page 6-9)*	K20A7, K24A4, J30A4 engines	Every 40,000 km (25,000 miles)									
	K20A8 engine	Every 20,000 km (12,500 miles)									
Replace fuel filter (see page 11-208)*	Normal conditions				●				●		
	Severe conditions	Replace every 40,000 km (25,000 miles) or 2 years when the customer suspects if the fuel filter is clogged by fuel cotamination. The filter may be clogged when driving in high dust environmental conditions, and when used with contaminated fuel.									
Replace spark plugs L4 (see page 4-32)*, V6 (see page 4-82)*	FO model	Every 50,000 km (31,300 miles)									
	K20A7, K24A4, J30A4 engines	Every 40,000 km (25,000 miles)									
	K20A8 engine	Every 20,000 km (12,500 miles)									
Replace timing belt and inspect water pump Only for J30A4 engine model						●					●
Inspect drive belts (see page 4-39)*			●		●		●		●		●
Inspect idle speed	K20A7, K24A4, J30A4 engines						●				
	K20A8 engine			●			●			●	
Replace engine coolant (see page 10-6)*		At 200,000 km (120,000 miles) or 10 years, then replace every 100,000 km (60,000 miles) or 5 years.									

*: Refer to the 2003 Accord 4-door Shop Manual, P/N 62SDA00.

Service at the indicated distance or time whichever comes first		km x 1,000	20	40	60	80	100	120	140	160	180	200
		miles x 1,000	12.5	25.0	37.5	50.0	62.5	75.0	87.5	100.0	112.5	125.0
		months	12	24	36	48	60	72	84	96	108	120
Replace manual transmission fluid Use Honda Manual Transmission Fluid (MTF) (see page 13-3)*	Normal Conditions							●				
	Severe Conditions				●			●			●	
	KH model											
Replace automatic transmission fluid Use Honda ATF-Z1: L4 (see page 14-179)*, V6 (see page 14-466)*	Normal Conditions							●				
	Severe Conditions				●		●		●		●	
	KH model											
Inspect front and rear brakes • Check the brake pad and disc thickness. Check for damage or cracks • Check the brake linings for cracking, grazing, wear, or contamination • Check the calipers for damage, leaks, and tightness (see page 19-3)*		Every 10,000 km (6,250 miles) or 6 months										
Replace brake fluid • Use only DOT 3 or DOT 4 brake fluid. We recommend Honda Brake Fluid • Check that brake fluid level is between upper and lower marks on the reservoir (see page 19-9)*		Every 3 years										
Check parking brake adjustment Check the parking brake operation (see page 19-7)*		●	●		●		●		●		●	
Replace dust and pollen filter	Except KH model	Every 30,000 km (18,750 miles) or 1 year										
	KH model	Every 20,000 km (12,500 miles) or 1 year										
Rotate tyres Check tyre inflation and condition at least once per month		Every 10,000 km (6,250 miles)										
Visually inspect the following items: • Check for correct installation and position, check for cracks, deterioration, rust, and leaks • Check tightness of screws, nuts, and joints. If necessary, retighten												
Tie rod ends, steering gearbox, and boots Check rack grease and steering linkage. Check the boot for damage and leaking grease L4 (see page 17-3)*, V6 (see page 17-4)*		Every 10,000 km (6,250 miles) or 6 months										
Suspension components • Check the bolts for tightness • Check all dust cover for deterioration and damage (see page 18-3)*												
Driveshaft boots • Check the boot and boot band for cracks • Check rack grease (see page 16-3)*												
Brake hoses and lines (including ABS) Check the master cylinder, proportioning control valve, and ABS modulator and leakage (see page 19-3)*		●	●	●	●	●	●	●	●	●	●	●
All fluid levels and condition of fluid • Engine coolant (see page 10-6)* • MTF (see page 13-3)* • ATF: L4 (see page 14-178)*, V6 (see page 14-465)* • Power steering fluid L4 (see page 17-13)*, V6 (see page 17-14)* • Brake fluid (see page 19-9)* • Windshield washer												
Exhaust system Check the exhaust pipe and muffler for damage, leaks, and tightness L4 (see page 9-9)*, V6 (see page 9-16)*												
Fuel lines and connections Check fuel lines for loose connections, cracks, and deterioration. Retighten loose connections and replace any damaged parts L4 (see page 11-202)*, V6 (see page 11-476)*												

*: Refer to the 2003 Accord 4-door Shop Manual, P/N 62SDA00.

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J30A4 engine

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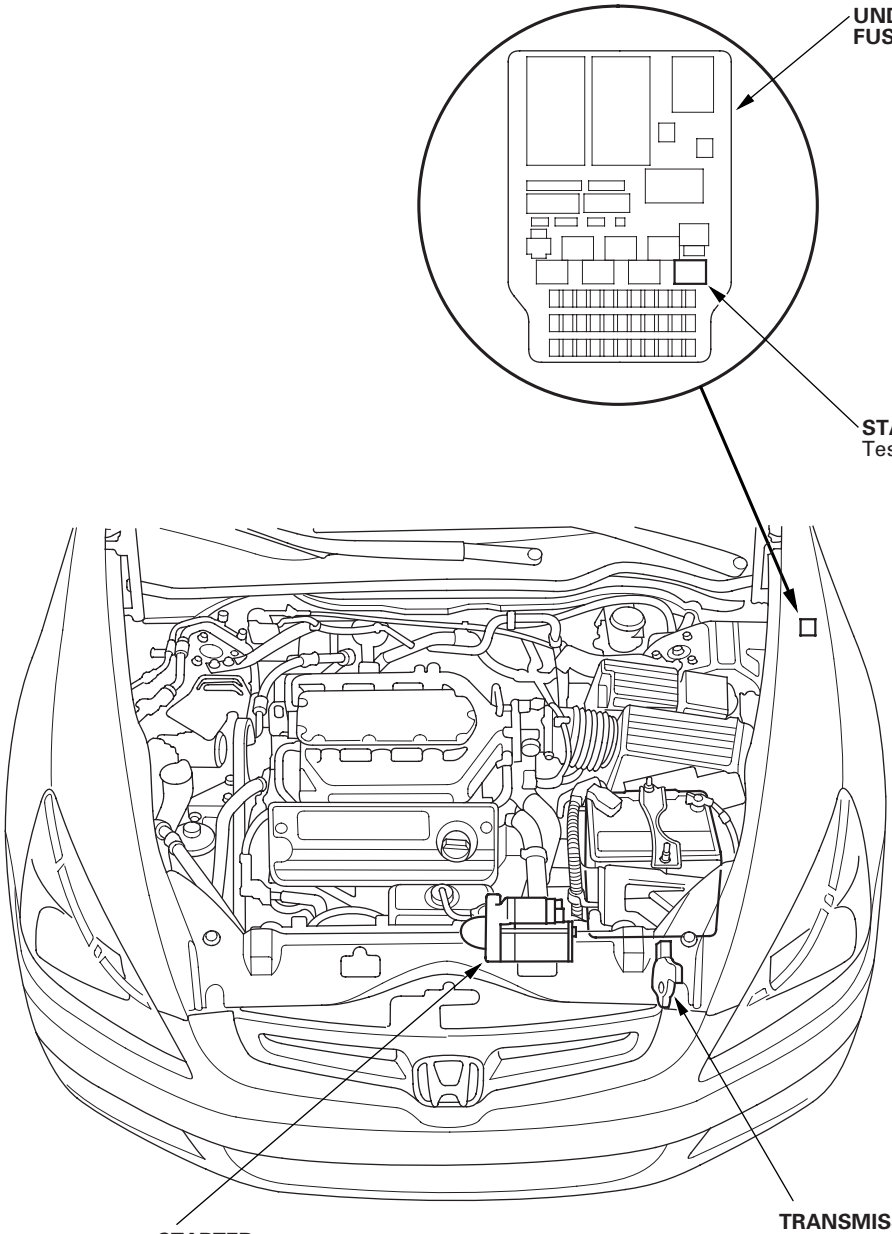
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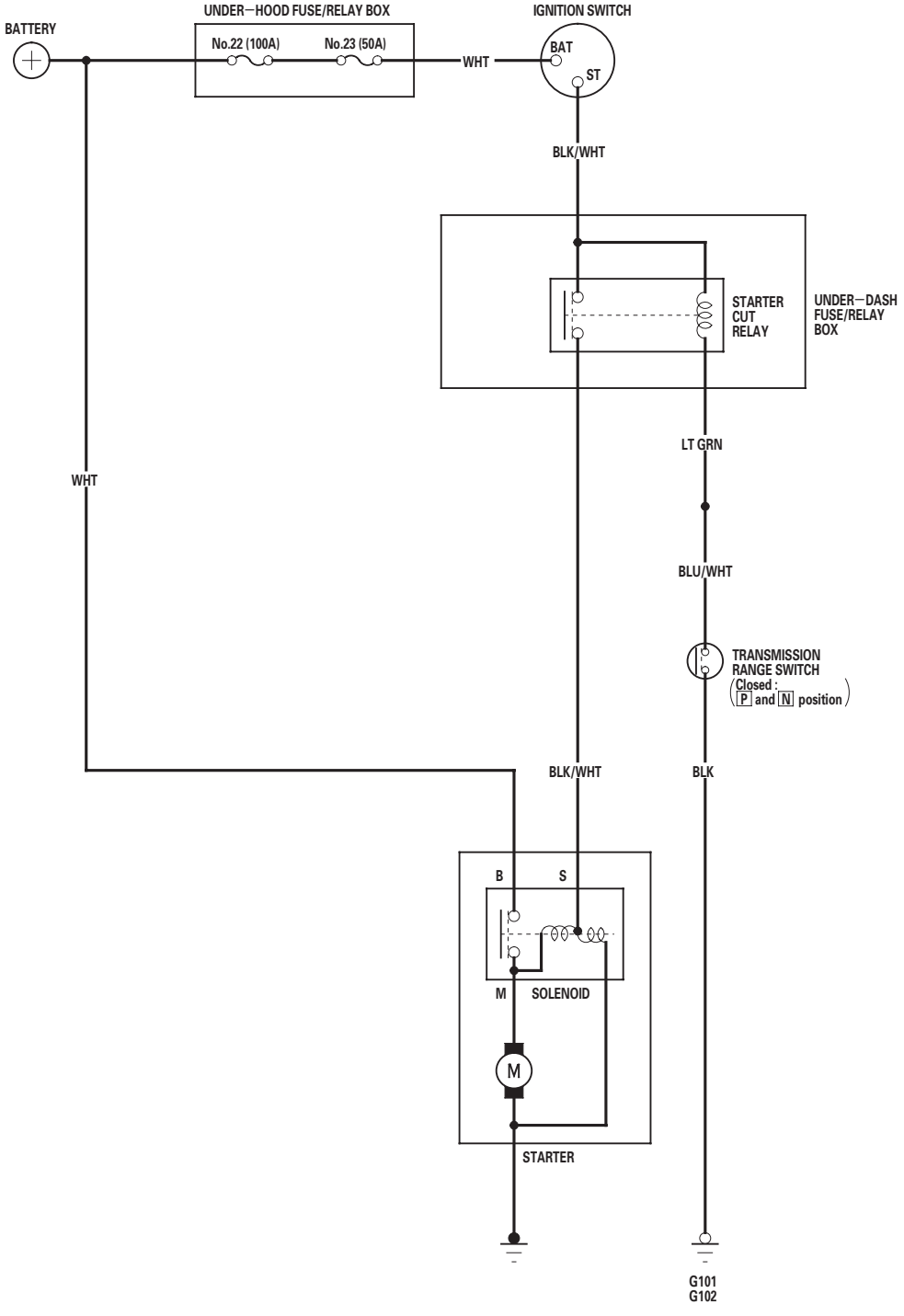
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Component Location Index



Circuit Diagram



Starter Circuit Troubleshooting

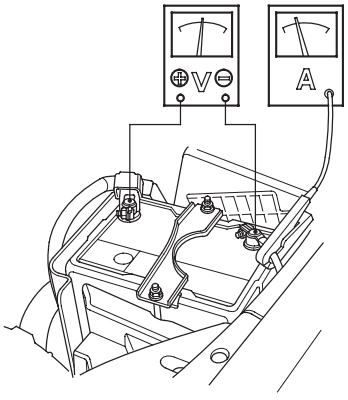
NOTE:
- Air temperature must be between 15° and 38°C (59° and 100°F) during this procedure.
- Temporary DTCs or DTCs may be set during this procedure. Check the temporary DTCs or DTCs, and clear them as necessary (see page 11-240).
- After this inspection, you must select the EXIT button to stop the ALL INJECTORS OFF function on the Honda PGM Tester or the Honda Diagnostic System (HDS) otherwise powertrain control module (PCM) continues to stop the fuel injectors.
- The battery must be in good condition and fully charged.

Recommended Procedure:
- Use a starter system tester.
- Connect and operate the equipment in accordance with the manufacturer's instructions.

Alternate Procedure

1. Hook up the following equipment:

   - Ammeter, 0 — 400 A
   - Voltmeter, 0 — 20 V (accurate within 0.1 volt)



2. Connect the Honda PGM Tester or the HDS to the data link connector (DLC) (see page 11-239).

3. Select the ALL INJECTORS OFF function on the Honda PGM Tester or HDS.

4. With the shift lever in Park or Neutral, turn the ignition switch to start (III).

   Did the starter crank the engine normally?

   YES — The starting system is OK. ■

   NO — Go to step 5.

5. Check the battery condition. Check electrical connections at the battery, battery negative cable connected to the body, engine ground cables, and the starter for looseness and corrosion. Then try starting the engine again.

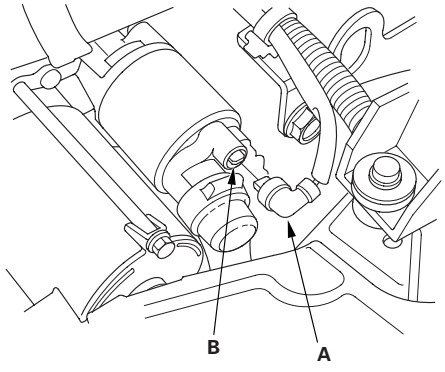
   Did the starter crank the engine?

   YES — Repairing the loose connection fixed the problem. The starting system is now OK. ■

   NO — If the starter will not crank the engine at all, go to step 6. If it cranks the engine erratically or too slowly, go to step 9. If it won't disengage from the torque converter ring gear when you release the key, check for the following until you find the cause.

   - Solenoid plunger and switch malfunction
   - Dirty drive gear or damaged overrunning clutch

6. Make sure the transmission is in Park or Neutral, then disconnect the BLK/WHT wire (A) from the starter solenoid (B). Connect a jumper wire from the battery positive terminal to the solenoid terminal.



   Did the starter crank the engine?

   YES — Go to step 7.

   NO — Remove the starter, and repair or replace as neccesary. ■

7. Select the EXIT button to stop the ALL INJECTORS OFF function on the Honda PGM Tester or the HDS.

8. Check the following items in the order listed until you find the open circuit.

   - Check the BLK/WHT wire and connectors between the under-dash fuse/relay box and the ignition switch, and between the under-dash fuse/relay box and the starter.
   - Check the ignition switch (see page 22-217).
   - Check the transmission range switch and connector.
   - Substitute a known-good starter relay.

9. Check the cranking voltage and current draw.

   Is cranking voltage greater than or equal to 8.5 V and current draw less than or equal to 380A?

   YES — Go to step 10.

   NO — Replace the starter, or remove and disassemble it, and check for the following until you find the cause. ■

   - Starter armature dragging
   - Shorted armature winding
   - Excessive drag in engine

10. Check the engine speed while cranking the engine.

    Is the engine speed above 100 rpm (min^{-1})?

    YES — Go to step 11.

    NO — Replace the starter, or remove and disassemble it, and check for the following until you find the cause. ■

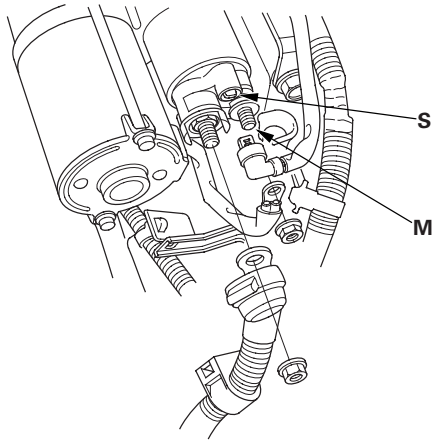
    - Open circuit in starter armature commutator segments
    - Excessively worn starter brushes
    - Open circuit in commutator brushes
    - Dirty or damaged helical splines or drive gear
    - Faulty drive gear clutch

11. Remove the starter, and inspect its drive gear and the torque converter ring gear for damage. Replace any damaged parts.

Starter Solenoid Test

1. Check the hold-in coil for continuity between the S terminal and the armature housing (ground). There should be continuity.

   - If there is continuity, go to step 2.
   - If there is no continuity, replace the solenoid.

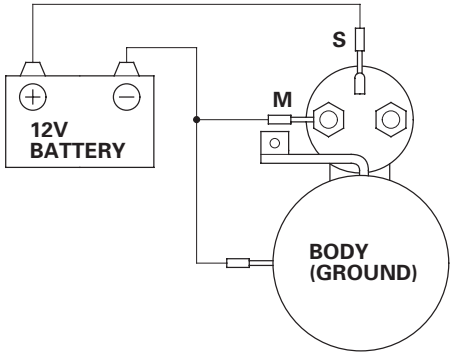


2. Check the pull-in coil for continuity between the S terminal and M terminal. There should be continuity.

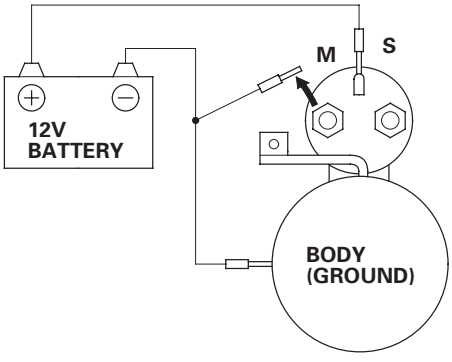
   - If there is continuity, the solenoid is OK.
   - If there is no continuity, replace the solenoid.

Starter Performance Test

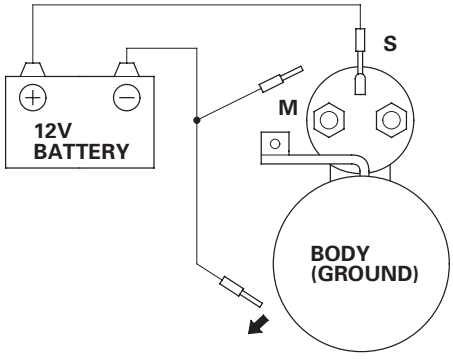
1. Disconnect the wire from the M terminal.
2. Make a connection as described below using as heavy a wire as possible (preferably equivalent to the wire used for the vehicle). To avoid damaging the starter, never leave the battery connected for more than 10 seconds.
3. Connect the battery as shown. Be sure to disconnect the starter motor wire from the solenoid. If the starter pinion moves out, it is working properly.



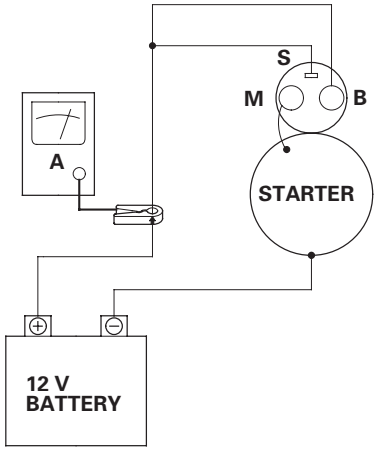
4. Disconnect the battery from the M terminal. If the pinion does not retract, the hold-in coil of the solenoid is working properly.



5. Disconnect the battery from the starter body. If the pinion retracts immediately, it is working properly.



6. Clamp the starter firmly in a vise.
7. Reconnect the wire to the M terminal.
8. Connect the starter to the battery as described in the diagram below, and confirm that the motor starts and keeps rotating.



9. If the electric current and motor speed meet the specifications when the battery voltage is at 11.5 V, the starter is working properly.

Specifications:

Electric current:	**80A or less**
Motor speed:	**2,600 rpm or more**

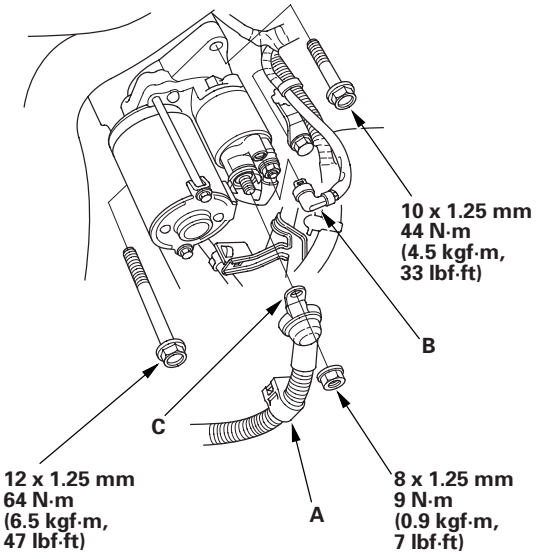
Starter Replacement

1. Make sure you have the anti-theft code for the radio, and the navigation system, then write down the frequencies for the radio's preset buttons.

2. Disconnect the negative cable from the battery, then disconnect the positive cable.

3. Remove the battery.

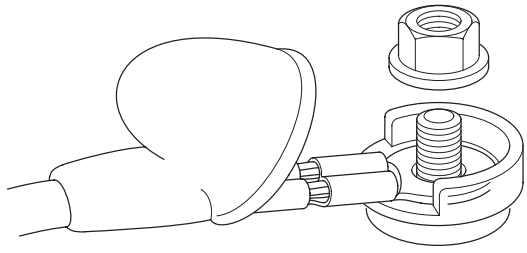
4. Remove the harness clamp (A).



5. Disconnect the starter cable (B) from the B terminal, then disconnect the BLK/WHT wire (C) from the S terminal.

6. Remove the two bolts holding the starter, then remove the starter.

7. Install in the reverse order of removal. Make sure the crimped side of the ring terminal is facing out.



8. Connect the battery positive cable and negative cable to the battery.

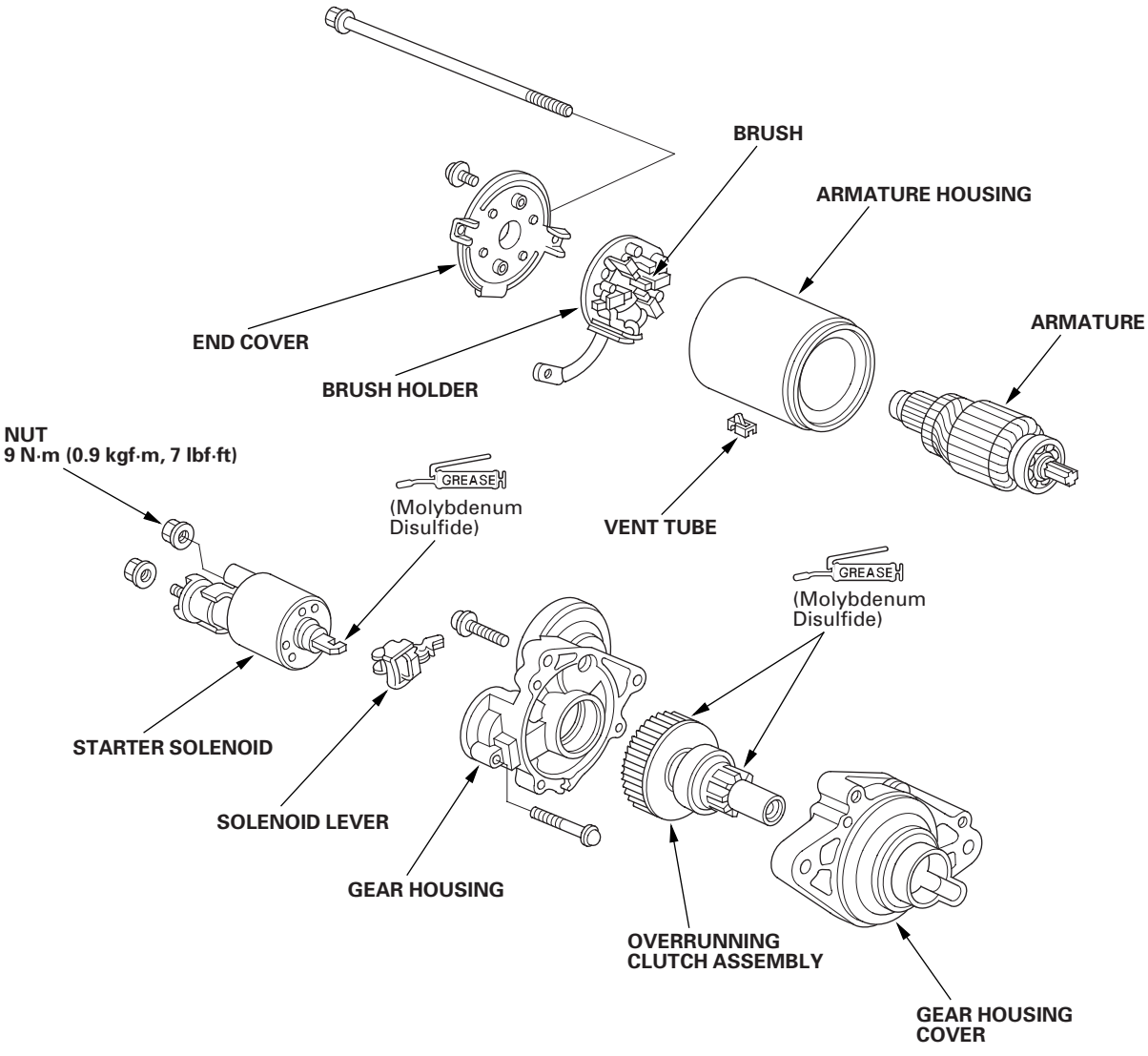
9. Start the engine to make sure the starter works properly.

10. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets. Set the clock.

11. Perform the powertrain control module (PCM) idle learn procedure (see page 11-193), and power window control unit reset procedure (see page 22-219).

Starter Overhaul

Disassembly/Reassembly

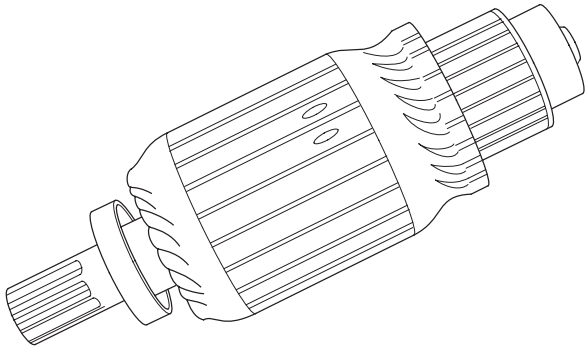


Armature Inspection and Test

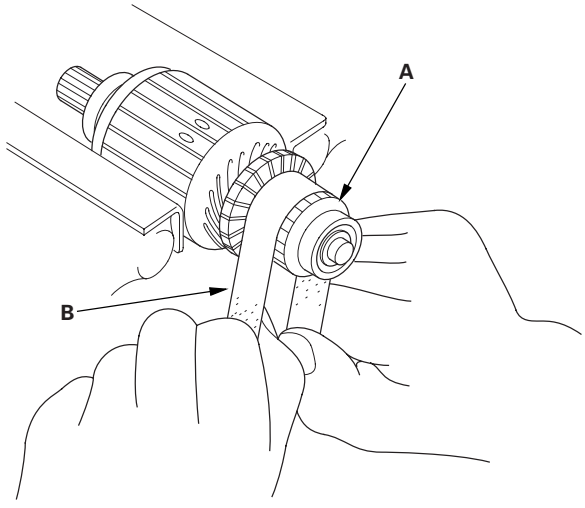
1. Remove the starter (see page 4-71).

2. Disassemble the starter as shown at the beginning of this procedure.

3. Inspect the armature for wear or damage from contact with the permanent magnet. If there is wear or damage, replace the armature.

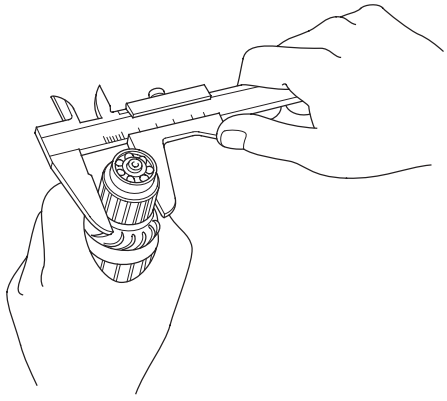


4. Check the commutator (A) surface. If the surface is dirty or burnt, resurface with emery cloth or a lathe within the following specifications, or recondition with # 500 or # 600 sandpaper (B).



5. Check the commutator diameter. If the diameter is below the service limit, replace the armature.

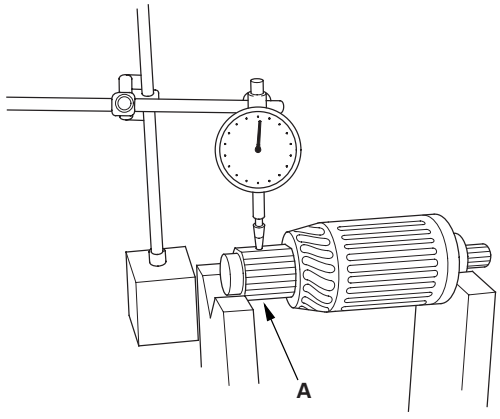
Commutator Diameter
Standard (New): 28.0—28.1 mm (1.102—1.106 in.)
Service Limit: 27.5 mm (1.083 in.)



6. Measure the commutator (A) runout.

- If the commutator runout is within the service limit, check the commutator for carbon dust or brass chips between the segments.
- If the commutator runout is not within the service limit, replace the armature.

Commutator Runout
Standard (New): 0.02 mm (0.001 in.) max.
Service Limit: 0.05 mm (0.002 in.)

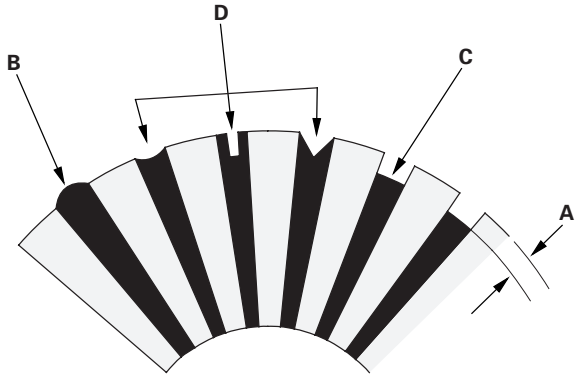


(cont'd)

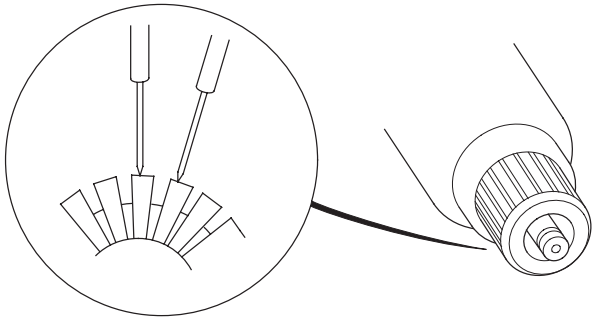
Starter Overhaul (cont'd)

7. Check the mica depth (A). If the mica is too high (B), undercut the mica with a hacksaw blade to the proper depth. Cut away all the mica (C) between the commutator segments. The undercut should not be too shallow, too narrow, or V-shaped (D).

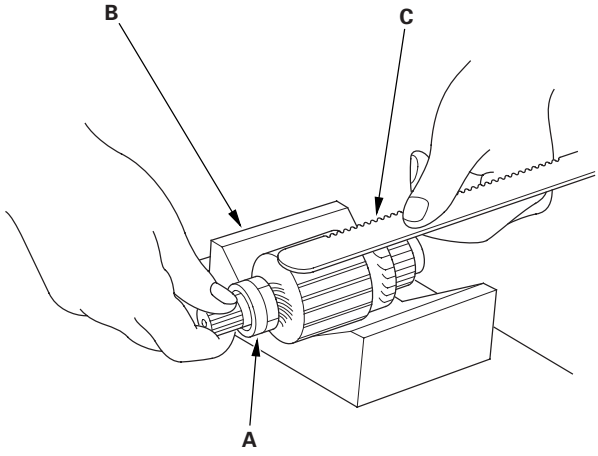
   Commutator Mica Depth
   Standard (New): 0.4—0.5 mm (0.016—0.020 in.)
   Service Limit: 0.15 mm (0.006 in.)



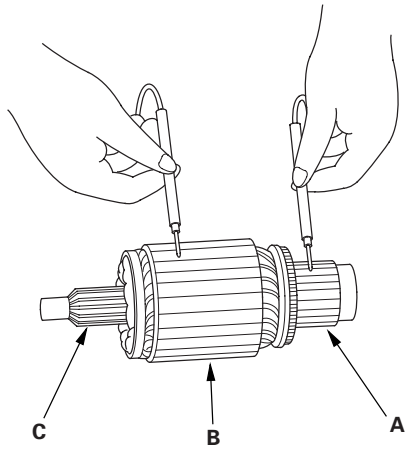
8. Check for continuity between the segments of the commutator. If an open circuit exists between any segments, replace the armature.



9. Place the armature (A) on an armature tester (B). Hold a hacksaw blade (C) on the armature core. If the blade is attracted to the core or vibrates while the core is turned, the armature is shorted. Replace the armature.



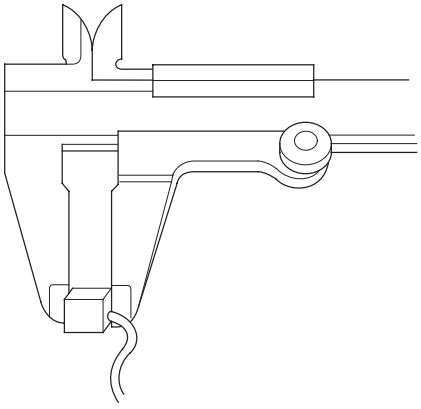
10. Check with an ohmmeter that no continuity exists between the commutator (A) and armature coil core (B), and between the commutator and armature shaft (C). If continuity exists, replace the armature.



Starter Brush Inspection

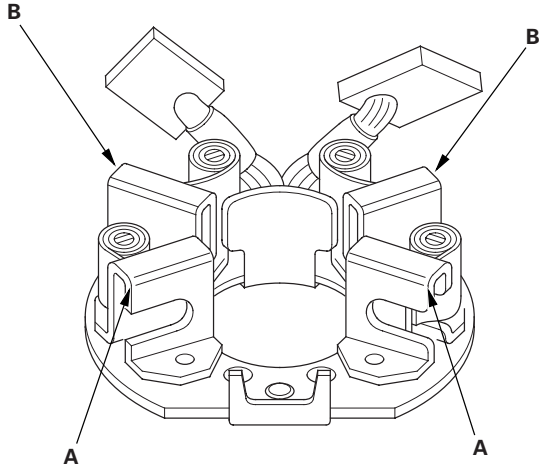
11. Measure the brush length. If it is not within the service limit, replace the brush holder assembly.

    Brush Length
    Standard (New): 15.8－16.2 mm (0.62－0.64 in.)
    Service Limit: 11.0 mm (0.43 in.)



Starter Brush Holder Test

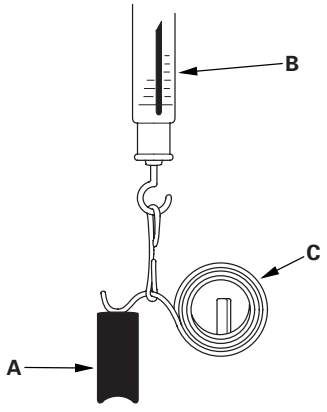
12. Check that there is no continuity between the (＋) brush holder (A) and (－) brush holder (B). If there is continuity, replace the brush holder assembly.



Brush Spring Inspection

13. Insert the brush (A) into the brush holder, and bring the brush into contact with the commutator, then attach a spring scale (B) to the spring (C). Measure the spring tension at the moment the spring lifts off the brush. If the spring tension is not within specification, replace the spring.

    Spring Tension:
    15.7－17.7 N (1.60－1.80 kgf, 3.53－3.97 lbf)

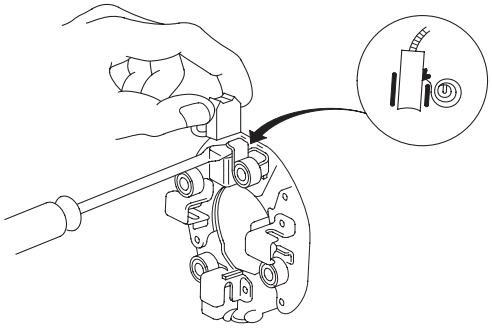


(cont'd)

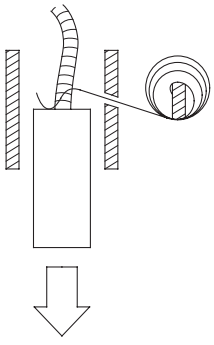
Starter Overhaul (cont'd)

14. Pry back each brush spring with a screwdriver, then position the brush about halfway out of its holder, and release the spring to hold it there.

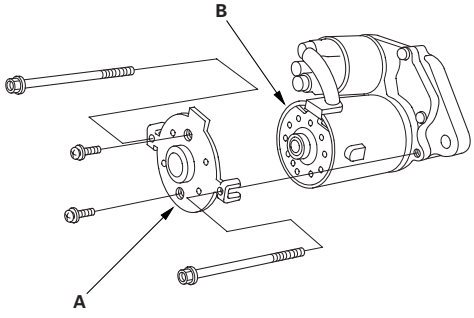
    NOTE: To seat new brushes, slip a strip of # 500 or # 600 sandpaper, with the grit side up, between the commutator and each brush, and smoothly rotate the armature. The contact surface of the brushes will be sanded to the same contour as the commutator.



15. Install the armature in the housing. Next, pry back each brush spring again, and push the brush down until it seats against the commutator, then release the spring against the end of the brush.



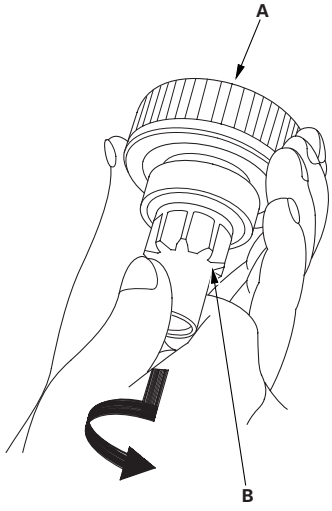
16. Install the starter end cover (A) to retain the brush holder (B).



Overrunning Clutch Inspection

17. Slide the overrunning clutch along the shaft. Replace it if it does not slide smoothly.

18. Rotate the overrunning clutch (A) both ways. If it does not lock in either direction or it locks in both directions, replace it.

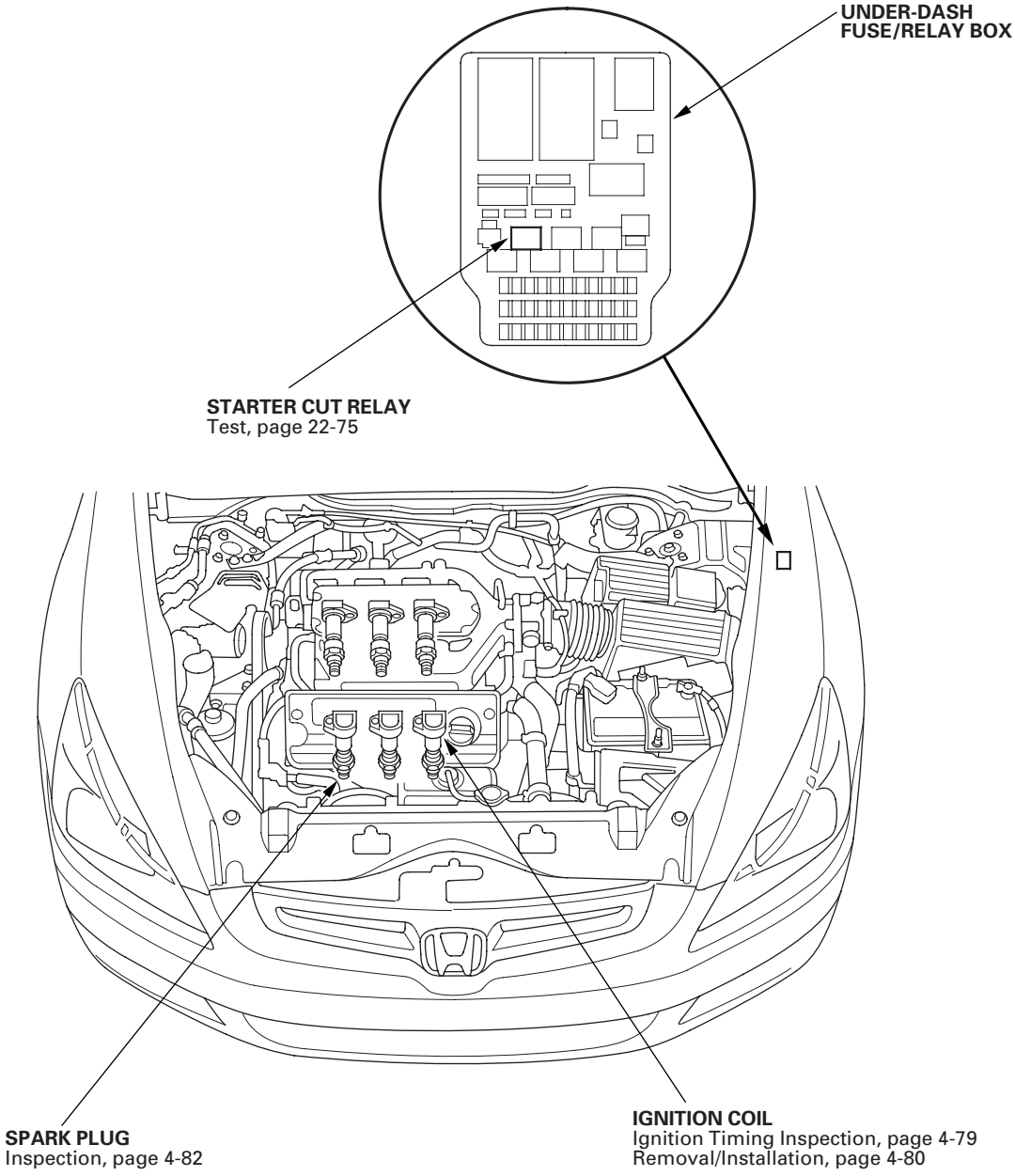


19. If the starter drive gear (B) is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately.

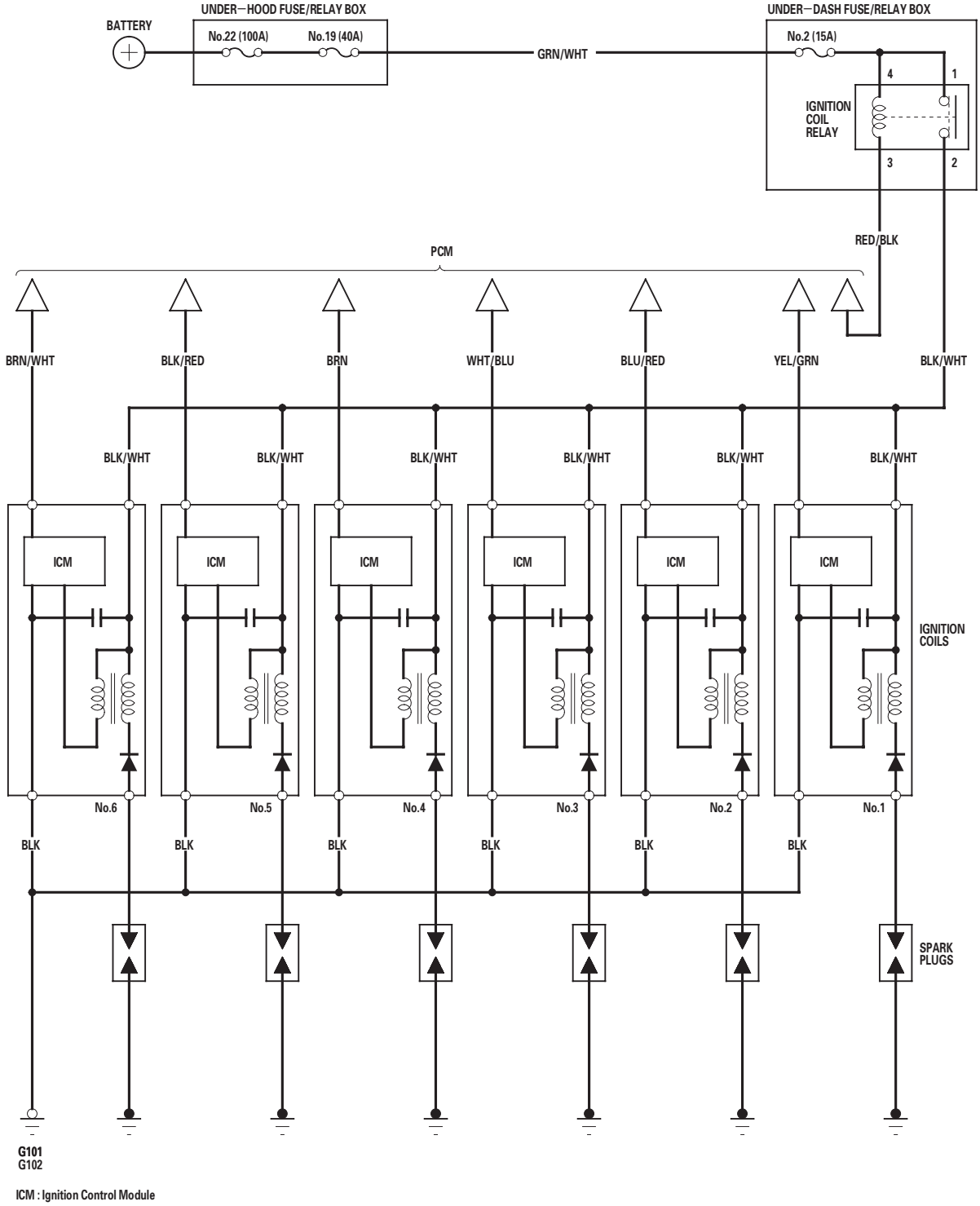
    Check the condition of the torque converter ring gear to see if the starter drive gear teeth are damaged.

20. Reassemble the starter in the reverse order of disassembly.

Component Location Index



Circuit Diagram



ICM : Ignition Control Module

Ignition Timing Inspection

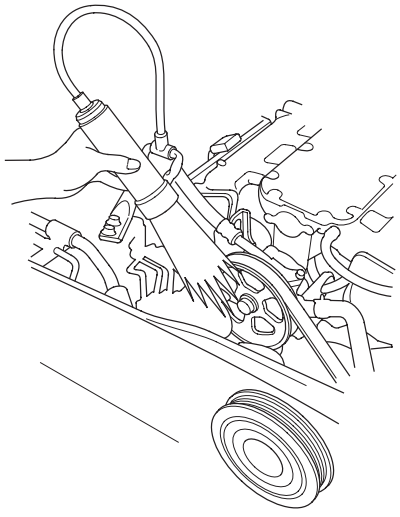
1. Connect the Honda PGM Tester or the Honda Diagnostic System (HDS) to the data link connector (DLC), and check for DTC's (see page 11-239). If a DTC is present, diagnose and repair the cause before inspecting the ignition timing.

2. Start the engine. Hold the engine at 3,000 rpm (min^{-1}) with no load (in Neutral) until the radiator fan comes on, then let it idle.

3. Check the idle speed (see page 11-465).

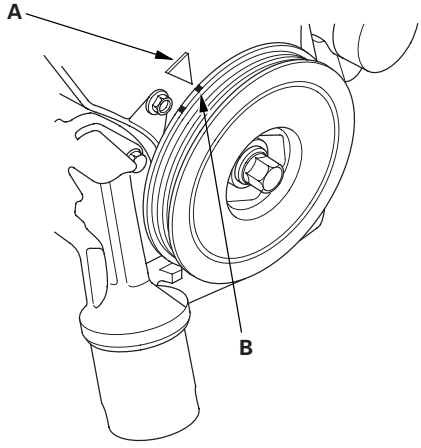
4. Follow the tester's prompts to get the tester in the ''SCS'' mode (see the tester operator's manual).

5. Connect the timing light to the service loop.



6. Aim the light toward the pointer (A) on the timing belt cover. Check the ignition timing under no load condition: headlights, blower fan, rear window defogger, and air conditioner are not operating.

   Ignition Timing:
   10° ±2° BTDC (RED mark (B)) at idle in Park or Neutral

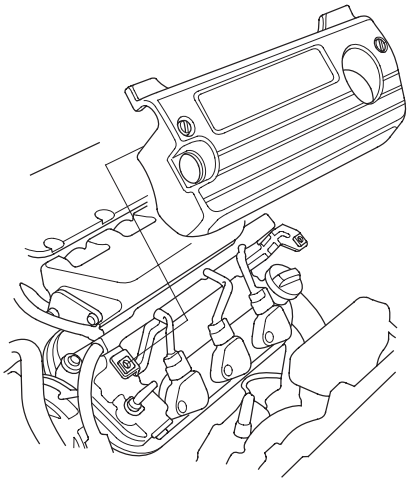


7. If the ignition timing differs from the specification, update the powertrain control module (PCM) if it does not have the latest software, or substitute a known-good PCM (see page 11-242), then recheck. If the system works properly, replace the original PCM (see page 11-241).

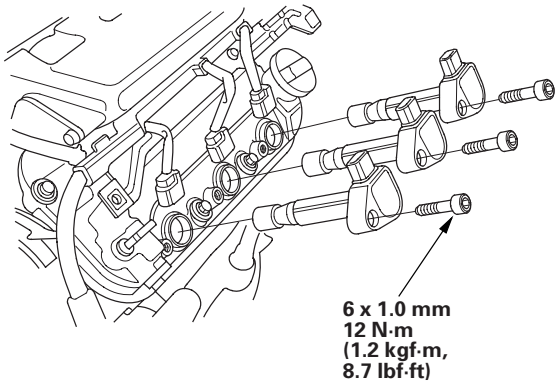
8. Disconnect the Honda PGM Tester or the HDS and the timing light.

Ignition Coil Removal/Installation

1. Remove the ignition coil cover.



2. Remove the ignition coils.



3. Install the ignition coils in the reverse order of removal.

Ignition Coil Relay Circuit Troubleshooting

1. Check the No. 2 (15A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES — Go to step 2.

   NO — Replace the fuse. ■

2. Remove the ignition coil relay from the under-dash fuse/relay box and test it (see page 22-75).

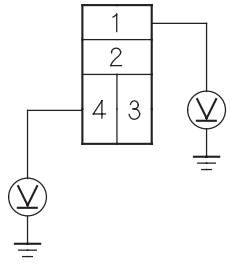
   Is the relay OK?

   YES — Go to step 3.

   NO — Replace the ignition coil relay. ■

3. Measure the voltage between ignition coil relay 4P socket terminal No. 1 then No. 4 and body ground.

IGNITION COIL RELAY 4P SOCKET



Terminal side of female terminals

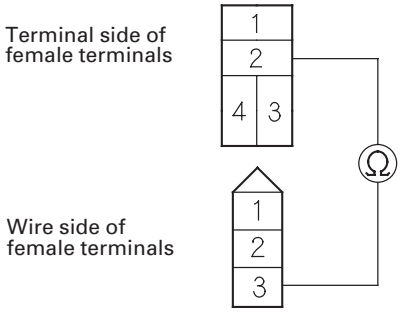
   Is there battery voltage?

   YES — Go to step 4.

   NO — Replace the under-dash fuse/relay box. ■

4. Check for continuity between ignition coil relay 4P socket terminal No. 2 and the No. 1 ignition coil 3P connector terminal No. 3.

IGNITION COIL RELAY 4P SOCKET



No.1 IGNITION COIL 3P CONNECTOR

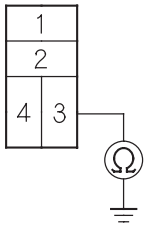
Is there continuity?

YES — Go to step 5.

NO — Repair an open in the wire between ignition coil relay 4P socket terminal No. 2 and ignition coil 3P connector terminal No. 3. ■

5. Check for continuity between ignition coil relay 4P socket terminal No. 3 and body ground.

IGNITION COIL RELAY 4P SOCKET



Terminal side of female terminals

Is there continuity?

YES — Repair a short in the wire between ignition coil relay 4P socket terminal No. 3 and PCM. ■

NO — Repair an open in the wire between ignition coil relay 4P socket terminal No. 3 and PCM. ■

Spark Plug Inspection

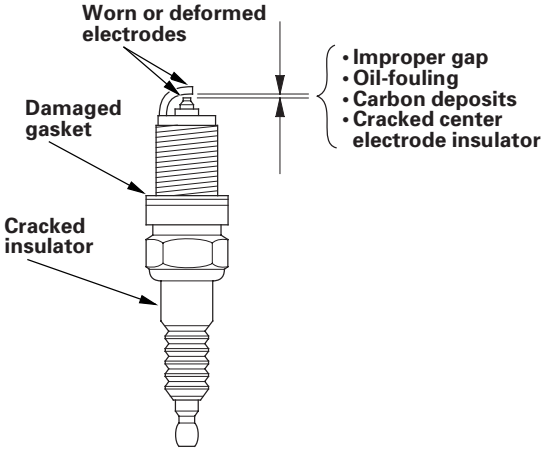
1. Inspect the electrodes and ceramic insulator.

   Burned or worn electrodes may be caused by:

   - Advanced ignition timing
   - Loose spark plug
   - Plug heat range too hot
   - Insufficient cooling

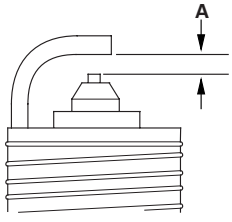
   Fouled plug may be caused by:

   - Retarded ignition timing
   - Oil in combustion chamber
   - Incorrect spark plug gap
   - Plug heat range too cold
   - Excessive idling/low speed running
   - Clogged air cleaner element
   - Deteriorated ignition coils



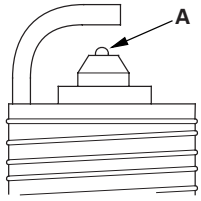
2. Check the electrode gap (A). If the gap is over the standard, adjust the gap with suitable gapping tool.

   Electrode Gap:
   Standard (New): 1.0—1.1 mm (0.039—0.043 in.)



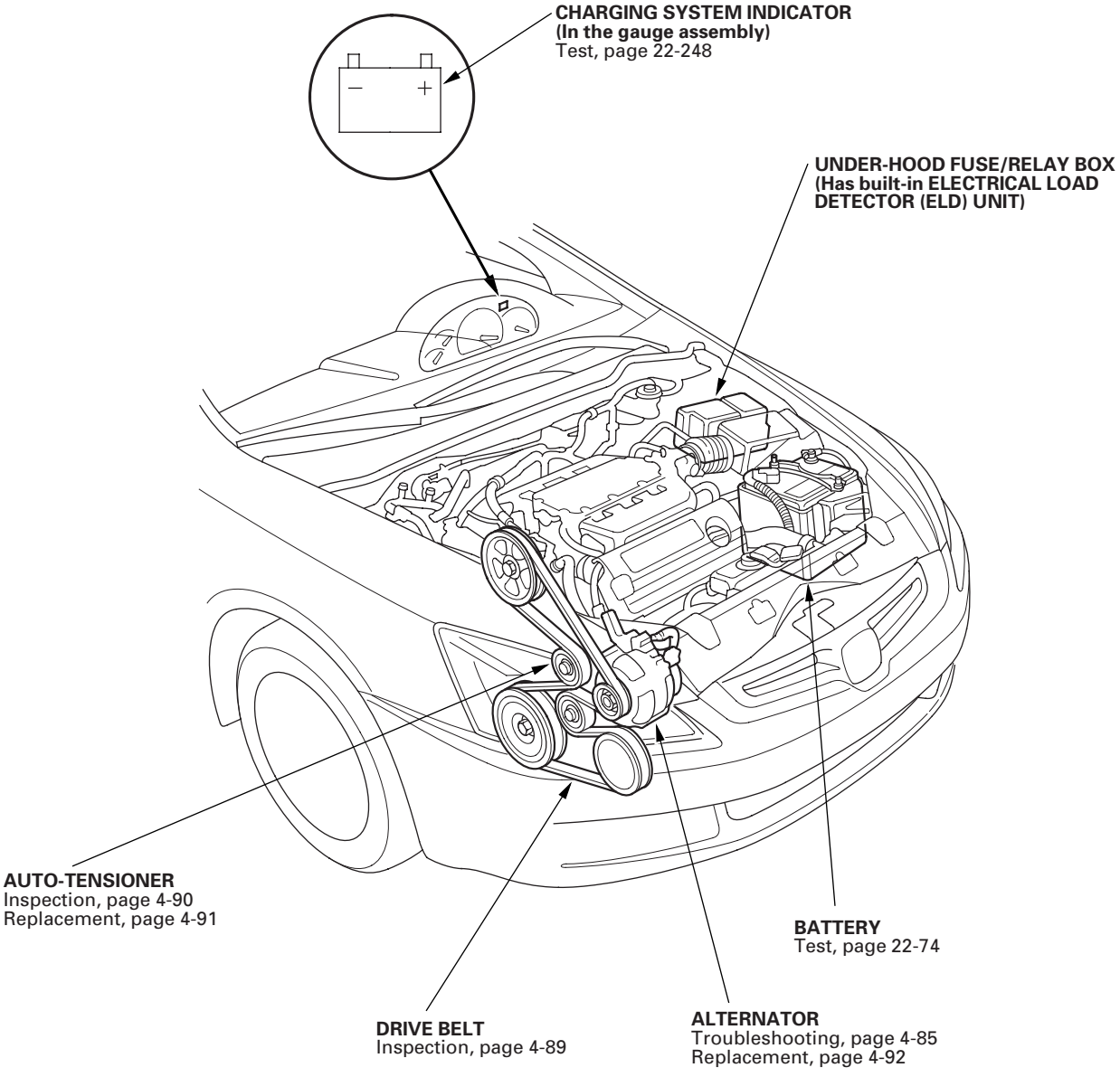
3. Replace the plug at the specified interval, or if the center electrode is rounded (A). Use only the spark plugs listed below.

   Spark Plugs:
   ZFR6K-11 (NGK)
   KJ20DR-M11 (DENSO)

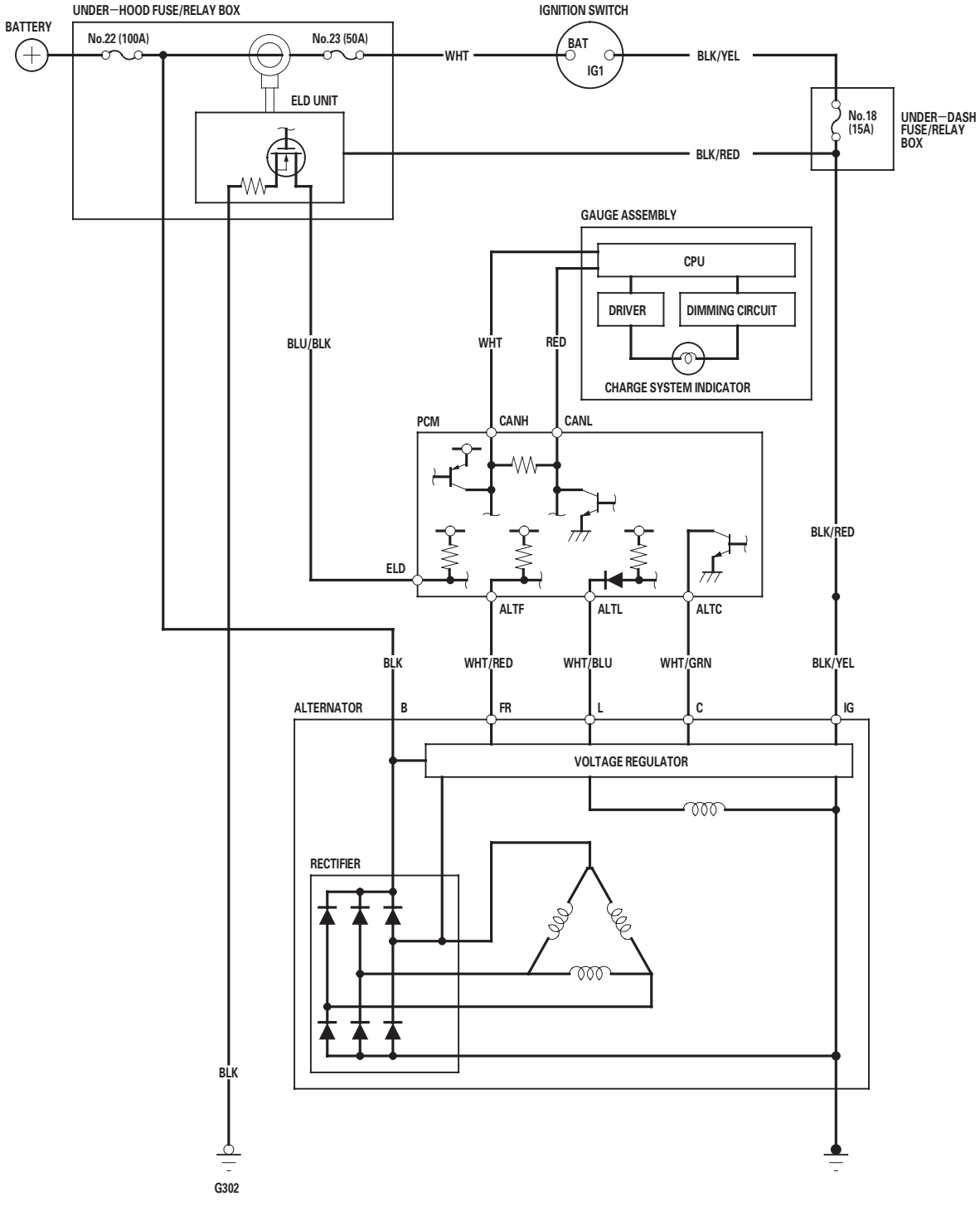


4. Apply a small quantity of anti-seize compound to the plug threads, and screw the plugs into the cylinder head finger-tight. Then torque them to 18 N·m (1.8 kgf·m, 13 lbf·ft).

Component Location Index



Circuit Diagram



Charging Circuit Troubleshooting

If the charging system indicator does not come on or does not go off, or the battery is dead or low, test the following items in the order listed below:

Battery (see page 22-74)
Charging system indicator test
Alternator and regulator circuit test
Alternator control system test

Charging System Indicator Test

1. Turn the ignition switch ON (II).

   Does the charging system indicator come on?

   YES — Go to step 2.

   NO — Go to step 3.

2. Start the engine.

   Does the charging system indicator go off?

   YES — Charging system indicator circuit is OK. Go to the Alternator and Regulator Circuit Test. ■

   NO — Go to step 3.

3. Troubleshoot the multiplex integrated control system (see page 22-98).

   Is the multiplex integrated control system OK?

   YES — Go to step 4.

   NO — Check the multiplex integrated control system as indicated by the DTC (see page 22-114).

4. Parform the gauge control module self test procedure (see page 22-248).

   Does the charge indicator flash?

   YES — Go to step 5.

   NO — Replace the gauge control module.

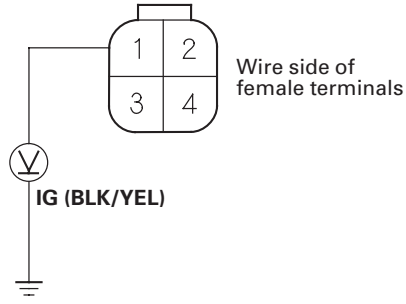
5. Turn the ignition switch OFF.

6. Disconnect the alternator 4P connector.

7. Turn the ignition switch ON (II).

8. Measure the voltage between alternator 4P connector terminal No. 1 and body ground.

ALTERNATOR 4P CONNECTOR



   Is there battery voltage?

   YES — Go to step 9.

   NO — Check for a blown No. 18 (15A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the alternator and under-dash fuse/relay box. ■

9. Turn the ignition switch OFF.

10. Connect the Honda PGM Tester or the Honda Diagnostic System (HDS) to the data link connector (DLC) (see page 11-239). Turn the ignition switch ON (II), and jump the SCS line with the Honda PGM Tester or the HDS, then turn the ignition switch OFF.

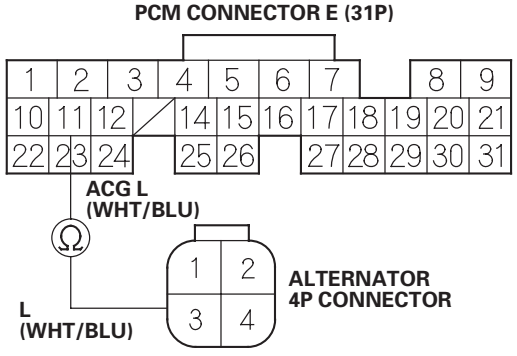
    NOTE: This step must be done to protect the Powertrain Control Module (PCM) from damage.

11. Disconnect PCM connector E (31P).

(cont'd)

Charging Circuit Troubleshooting (cont'd)

12. Check for continuity between PCM connector terminal E11 and alternator 4P connector terminal No. 3.



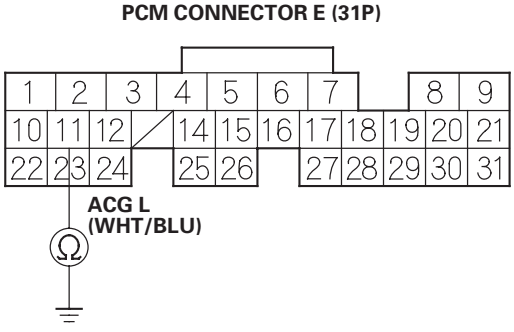
Wire side of female terminals

Is there continuity?

YES — Go to step 13.

NO — Repair an open in the wire between the alternator and the PCM. ■

13. Check for continuity between PCM connector terminal E11 and body ground.



Wire side of female terminals

Is there continuity?

YES — Repair a short in the wire between the alternator and the PCM. ■

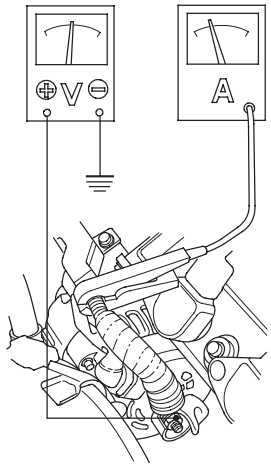
NO — Go to the Alternator and Regulator Test. ■

Alternator and Regulator Circuit Test

1. Be sure the battery is sufficiently charged (see page 22-74).

2. Hook up the following equipment:

   • Ammeter, 0 — 400A
   • Voltmeter, 0 — 20 V (accurate within 0.1 V)



3. Start the engine. Hold the engine at 3,000 rpm (min^{-1}) with no load shift lever in Park or Neutral, until the radiator fan comes on then let it idle.

4. Raise the engine speed to 2,000 rpm (min^{-1}) and hold it there.

5. Turn the headlights (high beam) on, and measure voltage at the alternator terminal.

   Is the voltage between 13.9 and 15.1 V?

   YES — Go to step 6.

   NO — Replace the alternater (see page 4-92). ■

6. Read the voltrage at 13.5 V.

   NOTE: Adjust the voltage by turn the blower motor, rear window defogger, brake lights and etc. on.

   Is the amperage 60A or more?

   YES—Alternator/regulator operation is OK. If the charge system indicator is still on, replace the alternator. ■

   NO—Replace the alternater (see page 4-92). ■

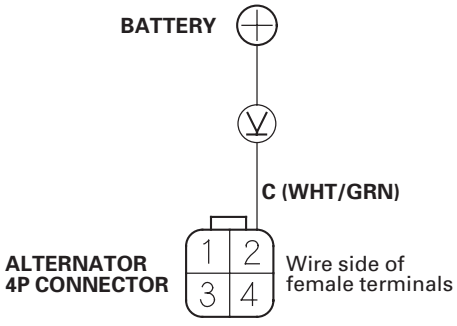
Alternator Control System Test

1. Check for proper operation of the electrical load detector (ELD) by checking the malfunction indicator lamp (MIL) (see page 11-239). If a DTC is present, diagnose and repair the cause before continuing with this test.

2. Disconnect the alternator 4P connector from the alternator.

3. Start the engine, and turn the headlights (high beam) ON.

4. Measure voltage between alternator 4P connector terminal No. 2 and the positive terminal of the battery.



   Is there 1 V or less?

   YES—Go to step 9.

   NO—Go to step 5.

5. Turn the headlight and ignition switch OFF.

6. Connect the Honda PGM Tester or the HDS to the DLC (see page 11-239). Turn the ignition switch ON (II), and jump the SCS line with the Honda PGM Tester or the HDS, then turn the ignition switch OFF.

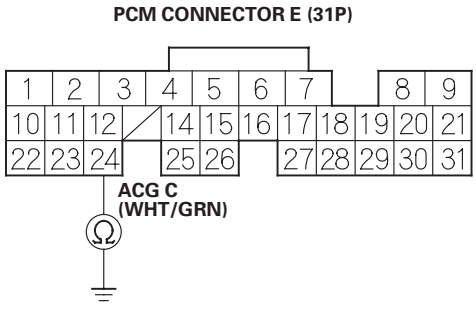
   NOTE: This step must be done to protect the PCM from damage.

7. Disconnect PCM connector E (31P).

(cont'd)

Charging Circuit Troubleshooting (cont'd)

8. Check for continuity between PCM connector E terminal No. 24 and body ground.



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between the alternator and PCM. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242), then recheck. If prescribed voltage is now available, replace the original PCM (see page 11-241). ■

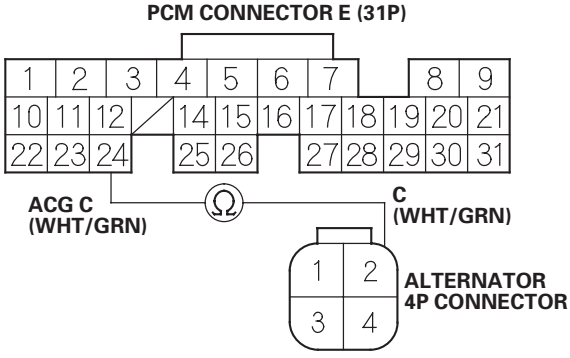
9. Turn the headlight and ignition switch OFF.

10. Connect the Honda PGM Tester or the HDS to the DLC. Turn the ignition switch ON (II), and jump the SCS line with the Honda PGM Tester or the HDS, then turn the ignition switch OFF.

    NOTE: This step must be done to protect the PCM from damage.

11. Disconnect PCM connector E (31P).

12. Check for continuity between PCM connector E terminal No. 24 and alternator 4P connector terminal No. 2.



Wire side of female terminals

Is there continuity?

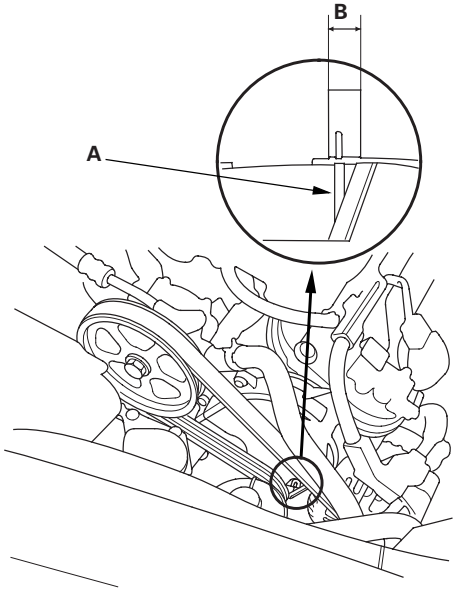
YES—Replace the alternator (see page 4-92). ■

NO—Repair an open in the wire between the alternator and PCM. ■

Drive Belt Inspection

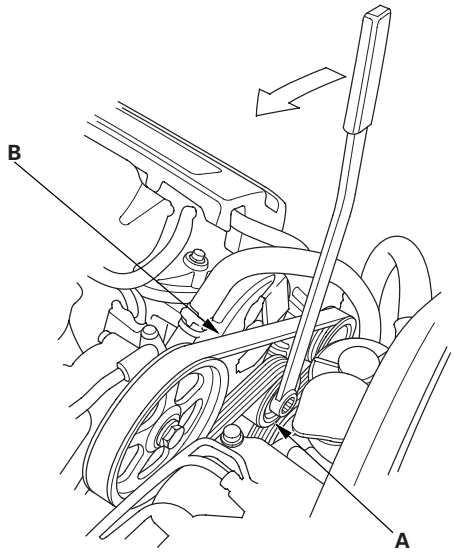
1. Inspect the belt for cracks and damaged. If the belt is cracked or damaged, replace it.

2. Check that the auto-tensioner indicator (A) is within the standard range (B) as shown. If it is out of the standard range, replace the drive belt (see page 4-89).



Drive Belt Replacement

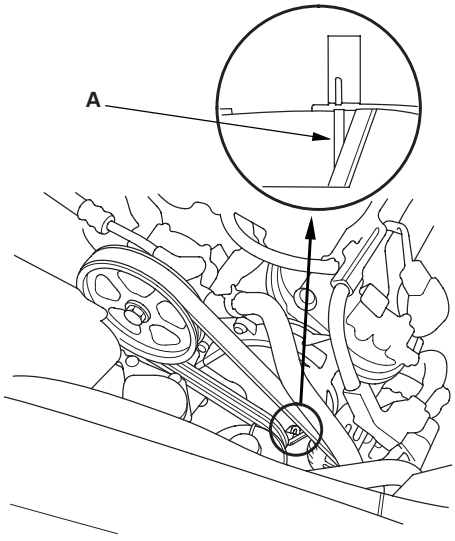
1. Move the auto-tensioner (A) to relieve tension from the drive belt (B), then remove the drive belt.



2. Install the new belt in the reverse order of removal.

Drive Belt Auto-tensioner Inspection

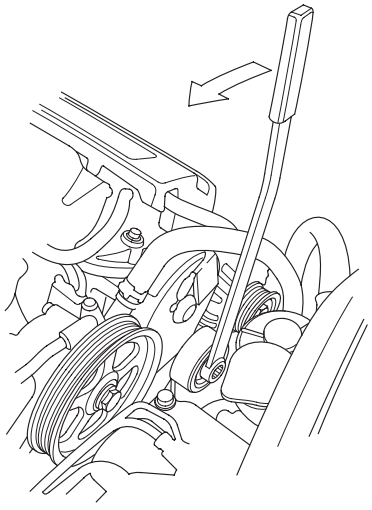
1. Check the position of the auto-tensioner indicator's pointer (A), start the engine, then check the position of the pointer again. If the position changes, replace the auto-tensioner.



2. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the auto-tensioner pulley.

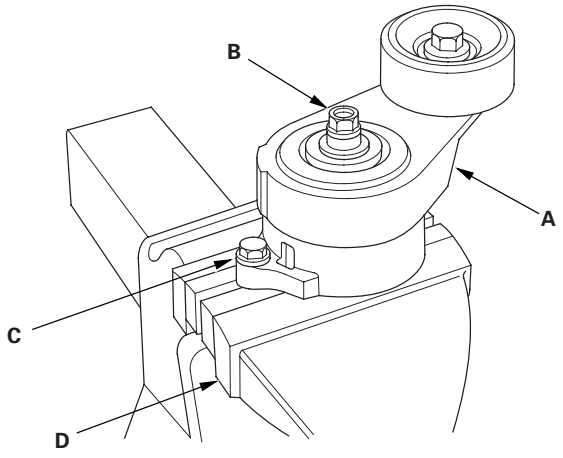
3. Remove the drive belt (see page 4-89).

4. Move the auto-tensioner within its limit with the wrench in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly or there is abnormal noise, replace the auto-tensioner.



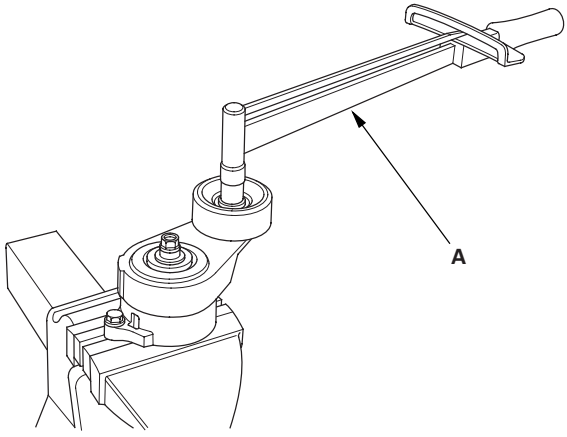
5. Remove the auto-tensioner (see page 4-91).

6. Clamp the auto-tensioner (A) by using a 10 mm bolt (B), 8 mm bolt (C) and a vise (D) as shown. Do not clamp the auto-tensioner itself.



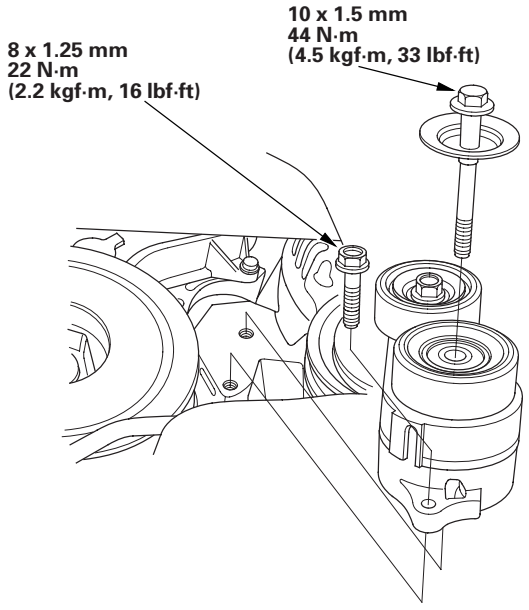
7. Attach a torque wrench (A) to the pulley bolt. measure the torque when the tensioner is turned counterclockwise. If the torque is less than the specified value, replace the auto-tensioner.

50.5 N·m (5.15 kgf·m, 37.2 lbf·ft)



Drive Belt Auto-tensioner Replacement

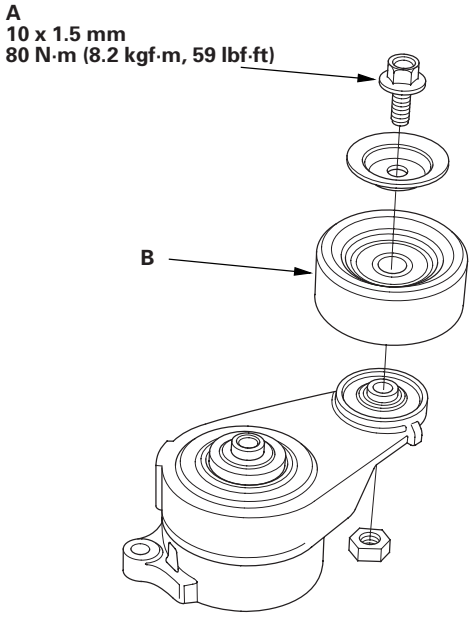
1. Remove the drive belt (see page 4-89).
2. Remove the splash shield.
3. Remove the auto-tensioner.



4. Install the auto-tensioner in the reverse order of removal.

Tensioner Pulley Replacement

1. Remove the auto-tensioner (see page 4-91).
2. Remove the pulley bolt (A) (left-hand threads), and remove the tensioner pulley (B).



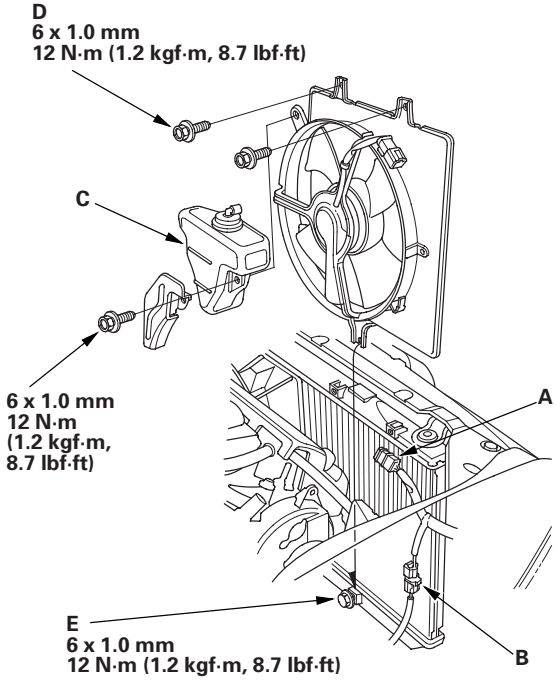
3. Install the tensioner pulley in the reverse order of removal.

Alternator Replacement

1. Make sure you have the anti-theft code for the radio, and the navigation system, then write down the frequencies for the radio's preset buttons.

2. Disconnect the negative cable from the battery, then disconnect the positive cable.

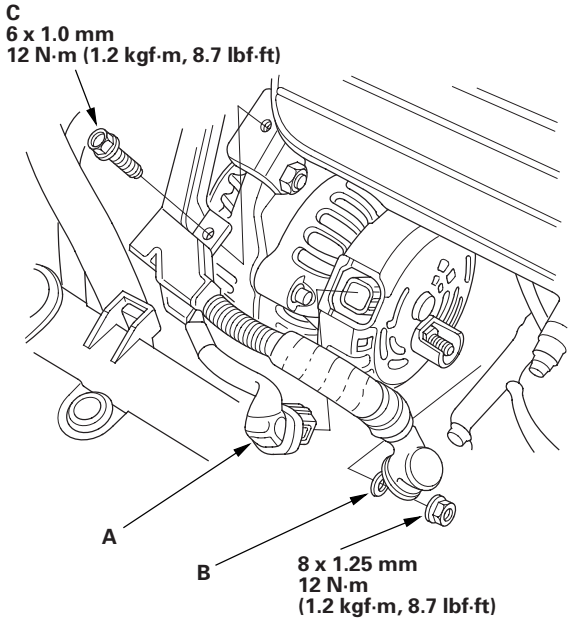
3. Disconnect the fan motor connector (A) and compressor clutch connector (B), then remove the reserve tank (C).



4. Remove the two bolts (D), and loosen a bolt (E), then remove the condenser fan shroud.

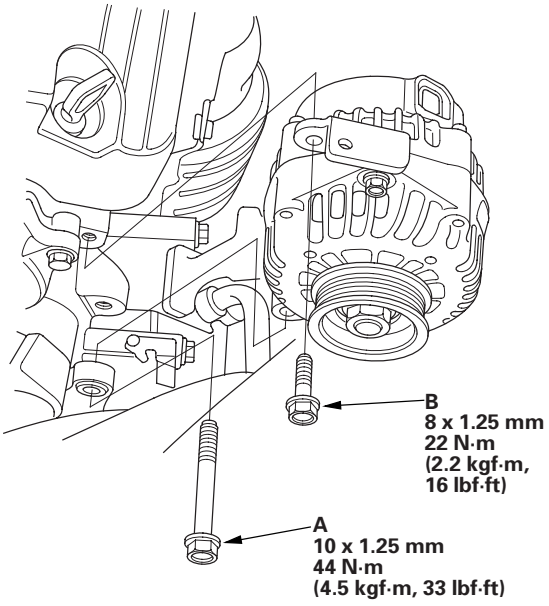
5. Remove the drive belt (see page 4-89).

6. Disconnect the alternator connector (A) and BLK wire (B) from the alternator.



7. Remove the bolt (C) securing the harness holder.

8. Remove the mounting bolt (A) and alternator bracket mounting bolt (B), then remove the alternator.



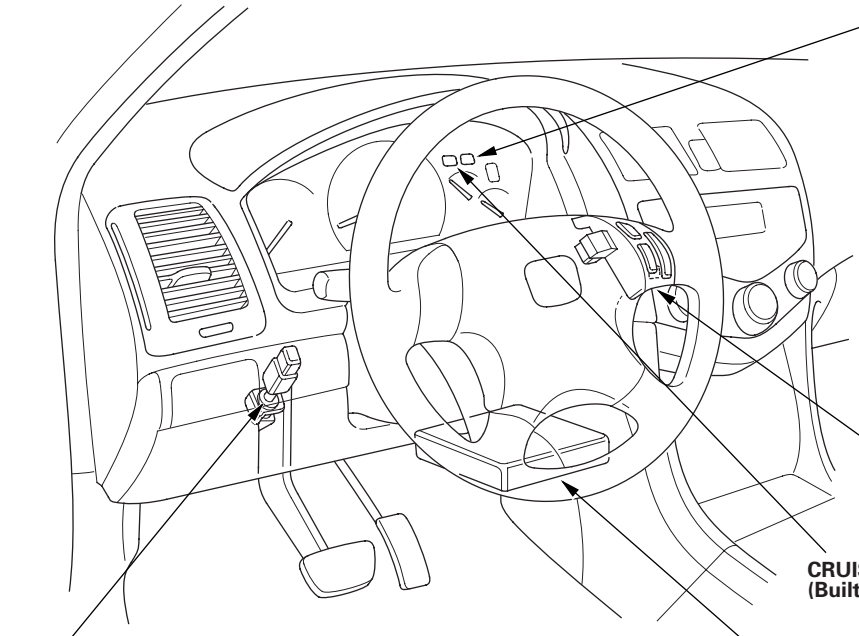
9. Install the alternator and drive belt in the reverse order of removal.

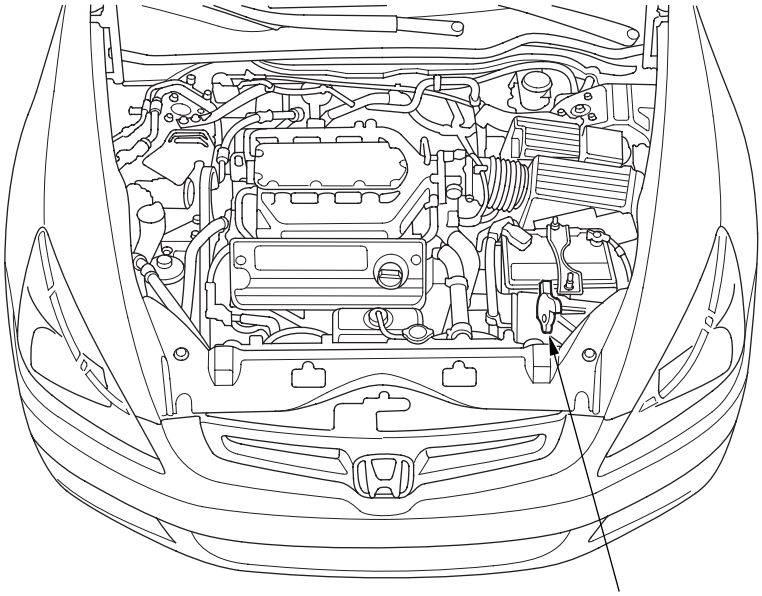
10. Connect the positive cable and negative cable to the battery.

11. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station preset. Set the clock.

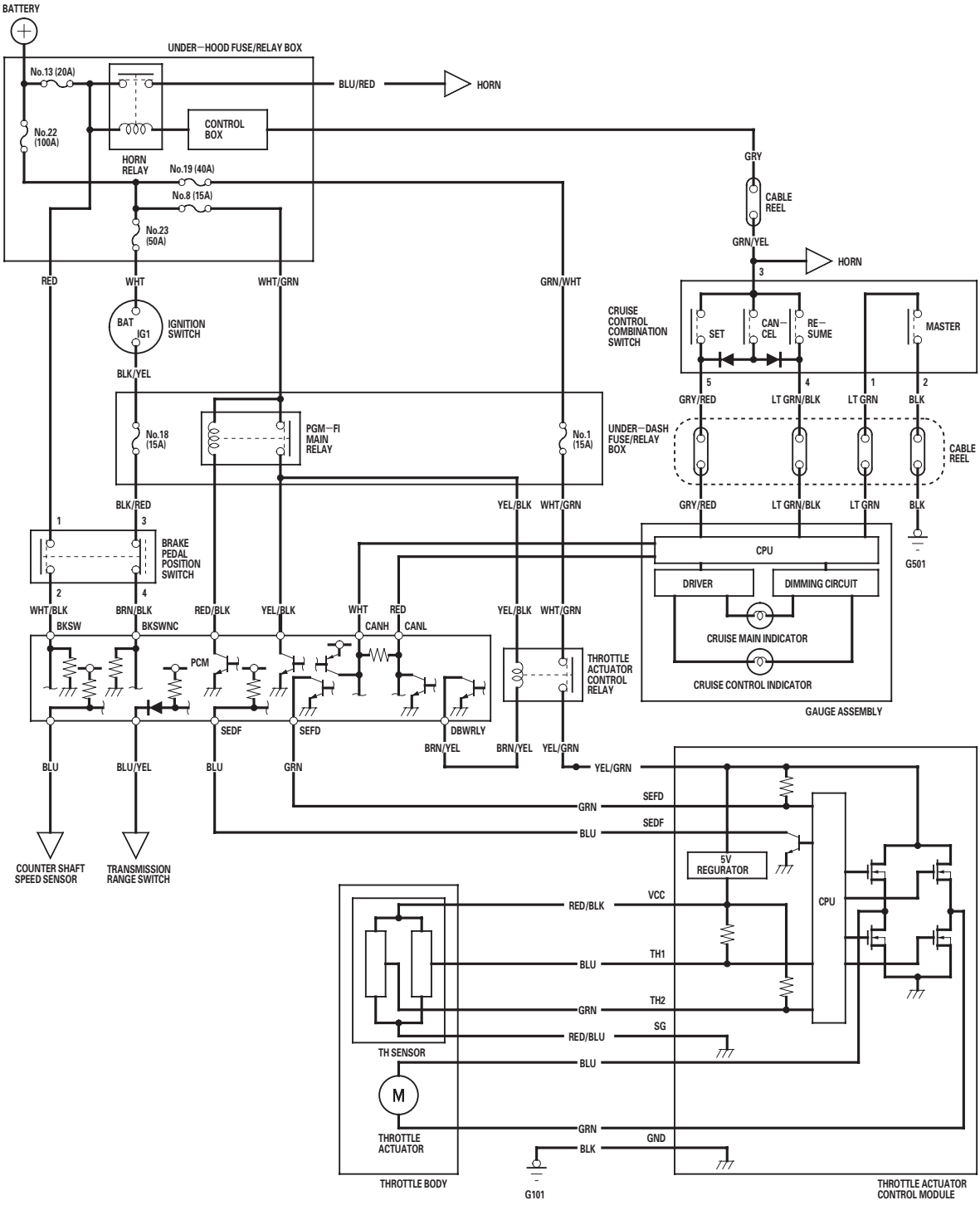
12. Perform the powertrain control module (PCM) idle learn procedure (see page 11-193), and power window control unit reset procedure (see page 22-219).

Component Location Index





Circuit Diagram



Symptom Troubleshooting Index

NOTE:
Before troubleshooting.
- Check the No.13 (20A) fuse in the under-hood fuse relay box, and the No. 18 (15A) fuse in the under-dash fuse relay box.
- Check that the horn sounds.
- Check the speed meter to see if it works properly.

Symptom	Diagnostic procedure
Cruise control cannot be set	Perform the cruise control input test (see page 4-97).
Cruise control can be set, but cruise main indicator light does not go on	Perform the cruise control input test (see page 4-97).
Cruise control can be set, but cruise control indicator light does not go on	Perform the cruise control input test (see page 4-97).
Vehicle does not decelerate or accelerate accordingly when SET/RESUME/CANCEL button is pushed	Perform the cruise control input test (see page 4-97).
Set speed does not cancel when brake pedal is pressed	Perform the cruise control input test (see page 4-97).
Set speed does not cancel when MASTER button is turned OFF	Perform the cruise control input test (see page 4-97).
Set speed does not cancel when CANCEL button is pressed	Perform the cruise control input test (see page 4-97).
Set speed will not resume when RESUME button is pressed, (with MASTER button ON, and set speed temporarily cancelled by pressing the brake pedal)	Perform the cruise control input test (see page 4-97).

Cruise Control Input Test

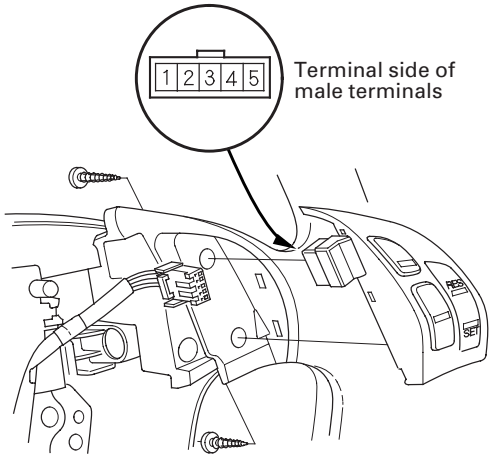
1. Connect the Honda PGM Tester of the HDS to the Data Link Connector (DLC).
2. Turn the ignition switch ON (II).
3. Perform the following tests while monitoring parameters in the PGM-FI DATA LIST.

Signal to be tested	Test condition	Parameter: Desired result	Possible cause if result is not obtained
Brake switch signal	Brake pedal pressed, then released	CRUISE BRK SW should indicate OFF when the brake pedal is pressed and ON should be indicated when the brake pedal is released.	• Faulty brake pedal position switch • Blown No.18 (15A) fuse in the under-dash fuse/relay box • An open in the wire between the PCM and the brake pedal position switch • A wire shorted to ground between the PCM and the brake pedal position switch
Cruise control master button signal	Cruise control master button ON and OFF	CRUISE MAIN SW should indicated ON when the cruise control master button is turned on and OFF when the cruise control master button is turned off.	• Faulty cruise control combination switch • An open in the wire between the gauge assembly and the cruise control combination switch • A wire shorted to ground between the gauge assembly and the cruise control combination switch • An open in the wire between the cruise control combination switch and the ground
Set button signal	Set button pressed and released	CRUISE SET SW should indicate ON when the set button is pressed and OFF when the set button is released.	• Faulty cruise control combination switch • An open in the wire between the gauge assembly and the cruise control combination switch • A wire shorted to ground between the gauge assembly and the cruise control combination switch
Resume button signal	Resume button pressed and released	CRUISE RESUME SW should indicate ON when the resume button is pressed and OFF when the resume button is released.	• Faulty cruise control combination switch • An open in the wire between the gauge assembly and the cruise control combination switch • A wire shorted to ground between the gauge assembly and the cruise control combination switch
Cancel button signal	Cancel button pressed and released	CRUISE CANCEL SW should indicate ON when the cancel button is pressed and OFF when the cancel button is released.	• Faulty cruise control combination switch
Cruise control indicator signal	Start the engine, turn the cruise control master button on and drive the vehicle to speeds over 25 mph (40 km/h) with the cruise control set and cancel the cruise control.	CRUISE LIGHT should indicate ON when the cruise control is set and OFF when the cruise control is cancelled.	• Faulty gauge assembly • A burnt cruise control indicator bulb

Cruise Control Combination Switch Test/Replacement

1. Remove the driver's airbag (see page 23-145).

2. Remove the two screws, then disconnect the connector, and remove the switch.

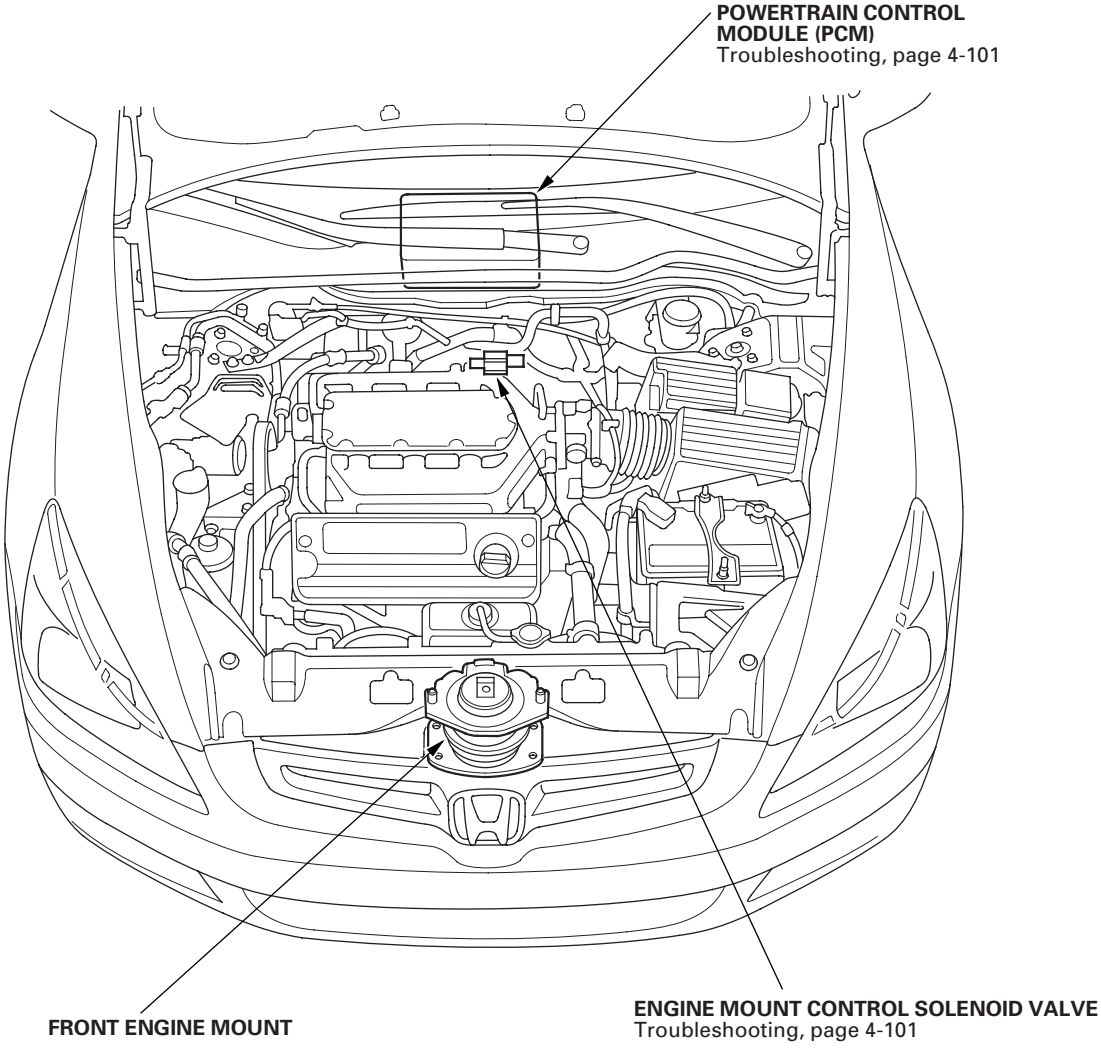


3. Check for continuity between the terminals in each switch position according to the table.

   - If there is continuity, and it matches the table, but switch failure occurred on the cruise control input test, check and repair the wire harness on the switch circuit.
   - If there is no continuity in the appropriate positions, replace the switch.

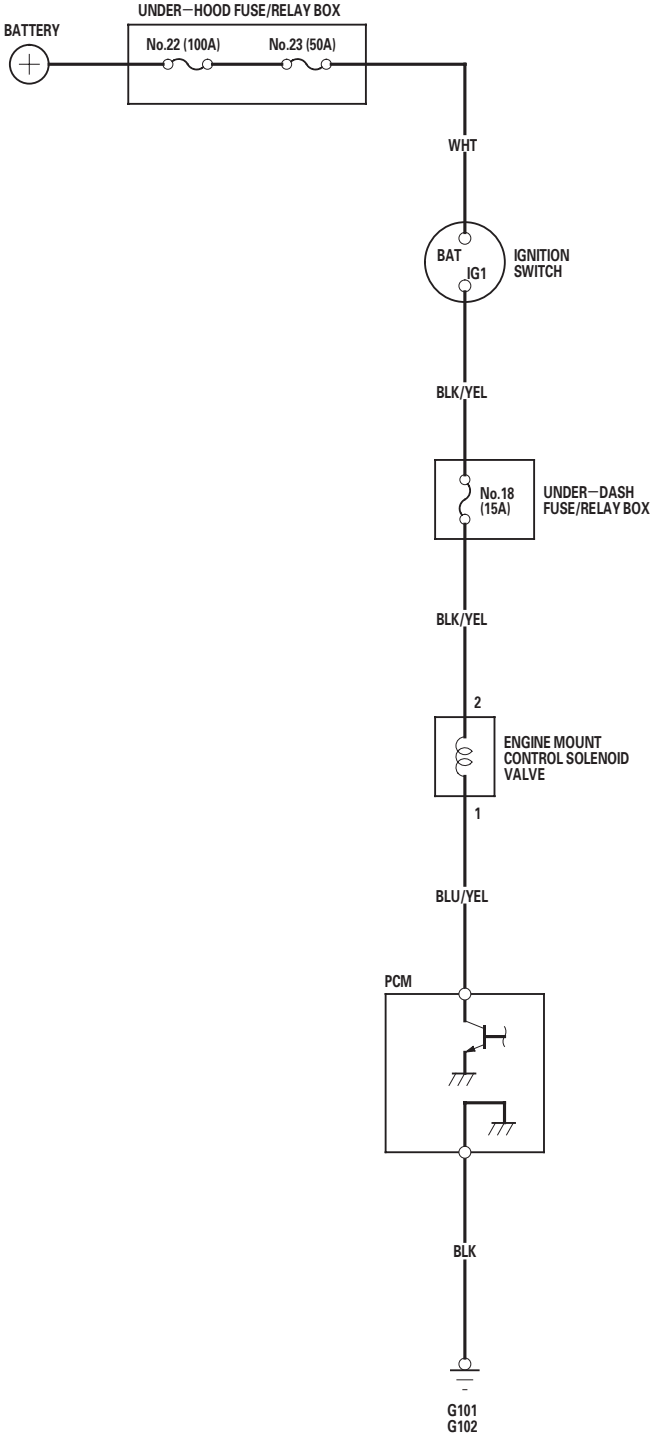
Terminal / Position	1	2	3		4	5
MASTER (ON)	○	○				
MASTER (OFF)						
SET (ON)			○			○
RESUME (ON)			○		○	
CANCEL (ON)			○	▷		○
				▷	○	

Component Location Index



Engine Mount Control System

Circuit Diagram



Troubleshooting

NOTE: Check the vacuum hoses and lines for damage and proper connections before troubleshooting.

Follow this procedure if the engine vibrates excessively when idling.

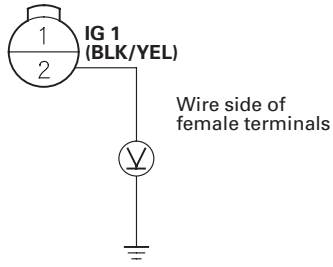
1. Connect the Honda PGM Tester or the Honda Diagnostic System (HDS) to the data link connector (DLC) (see page 11-239).
2. Start the engine and let it idle.
3. Raise the engine speed from idling to 2,000 rpm (min^{-1}).
4. Check the MOUNT CTRL SOL in the PGM-FI DATA LIST with the Honda PGM Tester or the HDS.

   Is ON indicated at idling and OFF indicated at 2,000 rpm (min^{-1})?

   YES — Go to step 4.

   NO — Update the powertrain control module (PCM) if it does not have the latest software, or substitute a known-good PCM (see page 11-242), then recheck. If the engine mount control system works properly, replace the original PCM (see page 11-241).
5. Shift to Park or Neutral position.
6. Disconnect the engine mount control solenoid valve 2P connector from the engine mount control solenoid valve.
7. Measure voltage between engine mount control solenoid valve 2P connector terminal No. 2 and body ground.

ENGINE MOUNT CONTROL SOLENOID VALVE 2P CONNECTOR



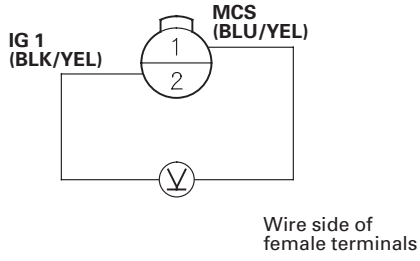
Is there battery voltage?

YES — Go to step 8.

NO — Repair an open in the wire between engine mount control solenoid valve and No. 18 (15 A) fuse in the under-dash fuse/relay box. ■

8. Measure voltage between engine mount control solenoid valve 2P connector terminals No. 1 and No. 2.

ENGINE MOUNT CONTROL SOLENOID VALVE 2P CONNECTOR



Is there battery voltage?

YES — Go to step 9.

NO — Repair an open in the wire between PCM (B7) and the engine mount control solenoid valve 2P connector. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242), then recheck. If the engine mount control system works properly, replace the original PCM (see page 11-241). ■

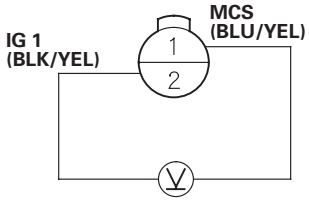
(cont'd)

Troubleshooting (cont'd)

9. Raise the engine speed above 1,000 rpm (min^{-1}).

10. Measure voltage between engine mount control solenoid valve 2P connector terminals No. 1 and No. 2.

ENGINE MOUNT CONTROL SOLENOID VALVE 2P CONNECTOR

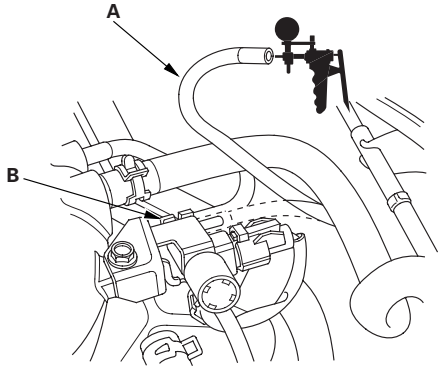


Is there battery voltage?

YES — Repair a short to body ground in the wire between PCM (B7) and the engine mount control solenoid valve. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242), then recheck. If the engine mount control system works properly, replace the original PCM (see page 11-241). ■

NO — Go to step 11.

11. Disconnect the vacuum hose (A) that is closest to the solenoid connector from the engine mount control solenoid valve (B), and connect a vacuum pump/gauge to the hose. Apply vacuum for 20 seconds.



Does the engine mount hold vacuum?

YES — Go to step 12.

NO — Either the vacuum hose or the engine mount has a vacuum leak. Repair as needed. ■

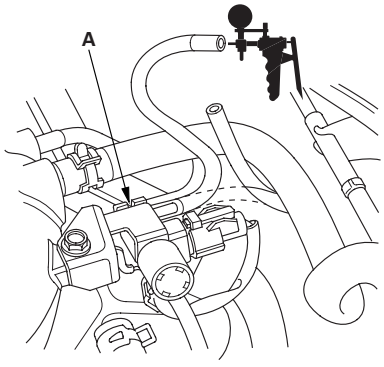
12. Release the vacuum, then apply vacuum again.

Is there a noticeable change in idle smoothness with and without vacuum applied?

YES — Go to step 13.

NO — Replace the front engine mount. ■

13. Connect a vacuum pump/gauge to the engine mount control solenoid valve port (A) that is closest to the solenoid connector.



Is there manifold vacuum at idle, and a decrease in manifold vacuum when you raise the engine speed above 1,000 rpm (min^{-1})?

YES — The system is OK. ■

NO — Replace the engine mount control solenoid valve. ■

Engine Mechanical

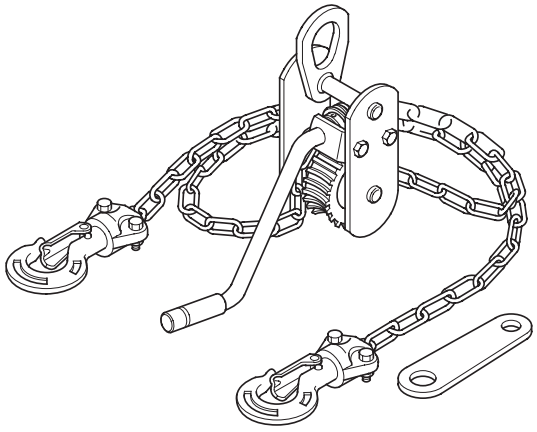


Engine Assembly-J30A4 engine

Special Tools 5-20
Engine Removal 5-21
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Special Tools

Ref. No.	Tool Number	Description	Qty
①	07KAK-SJ40101	Engine Tilt Hanger Set	1



①

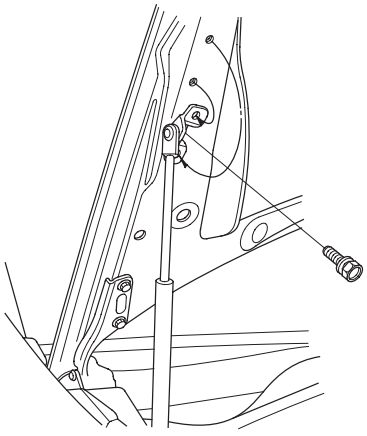
Engine Removal

Special Tool Required
Engine tilt hanger set 07KAK-SJ40101

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- To avoid damage, unplug the wiring connectors carefully while holding the connector portion.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring, hoses, or interfere with other parts.

1. Remove the support struts from the engine hood. Move the engine hood to a vertical position, then reinstall the right side support strut as shown.

   NOTE: Do not attempt to close the hood with the support strut in the vertical position, as it will damage the support strut and hood.



2. Drain the power steering system fluid (see page 17-13).

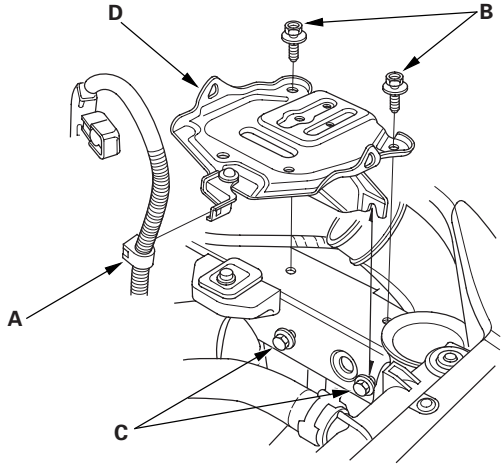
3. Make sure you have the anti-theft codes for the radio and navigation system, then write down the frequencies for the radio's preset buttons.

4. Disconnect the negative cable from the battery first, then the positive cable.

5. Remove the battery.

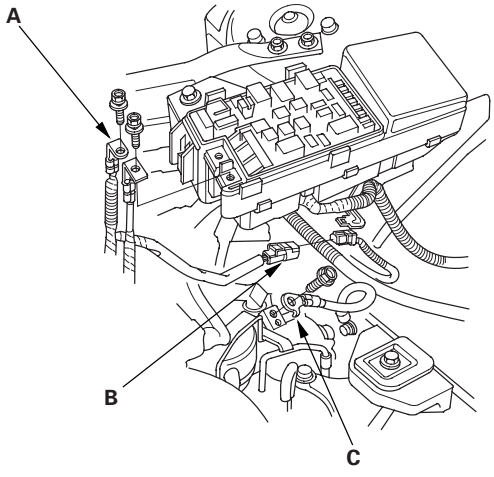
6. Remove the air cleaner housing (see page 11-484).

7. Remove the harness clamp (A).



8. Remove the two bolts (B), and loosen the two bolts (C) securing the battery base, then remove the battery base (D).

9. Remove the battery cables (A) from the under-hood fuse/relay box, then disconnect the harness connector (B).

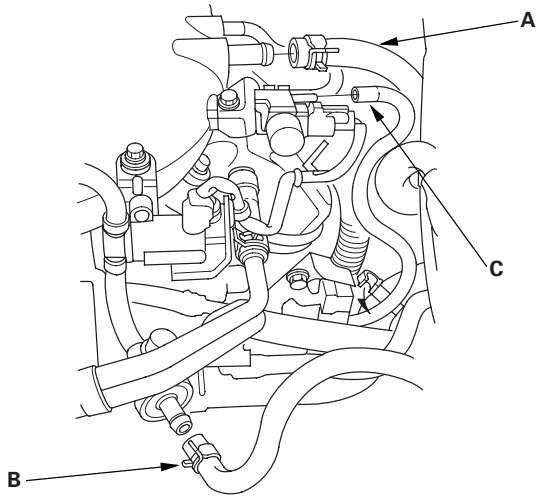


10. Remove the ground cable (C).

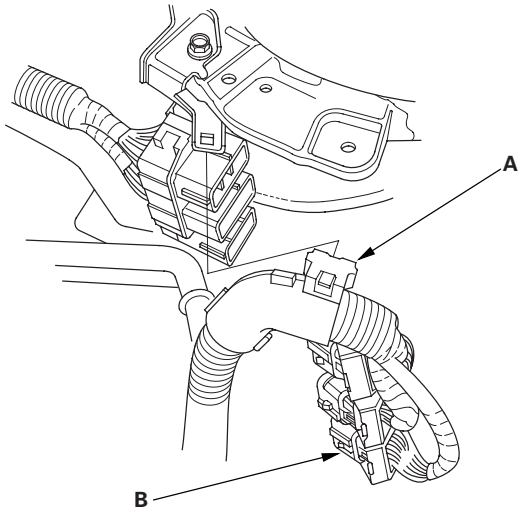
(cont'd)

Engine Removal (cont'd)

11. Remove the brake booster vacuum hose (A), evaporative emission (EVAP) canister hose (B) and vacuum hose (C).



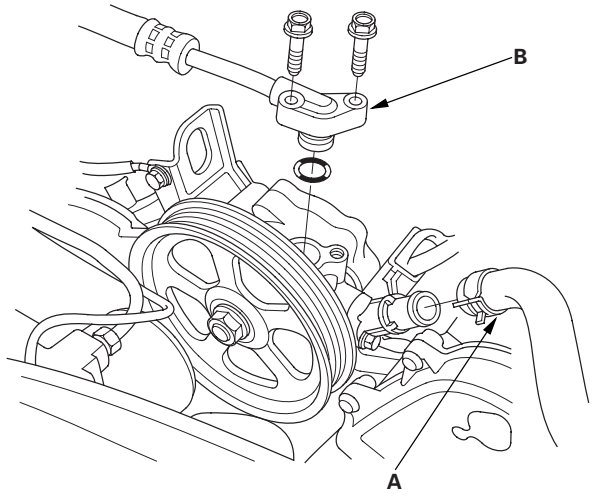
12. Remove the harness clamp (A), and disconnect the engine wire harness connectors (B) on the left side of the engine compartment.



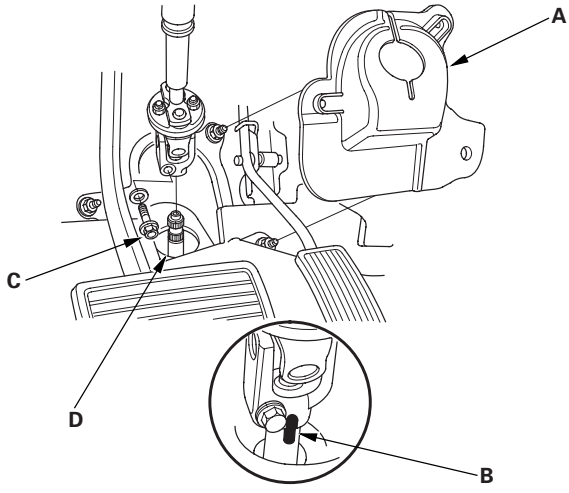
13. Relieve the fuel pressure (see page 11-471).

14. Remove the drive belt (see page 4-89).

15. Remove the power steering (P/S) pump inlet hose (A) and P/S pump outlet hose (B) from the P/S pump.

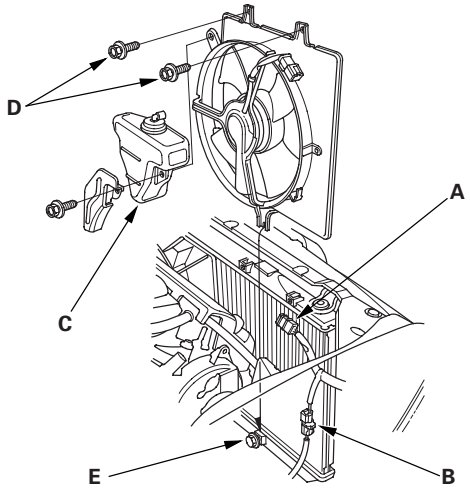


16. Remove the steering joint cover (A).



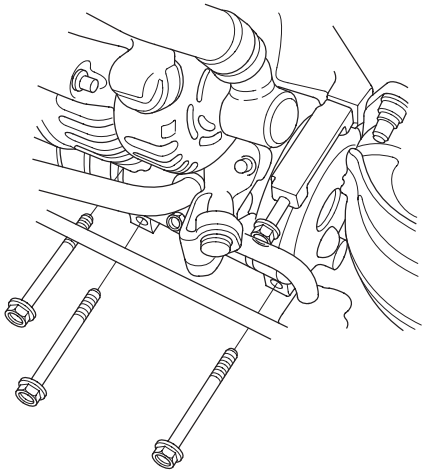
17. Make a reference mark (B) across the steering joint and steering gearbox pinion shaft. Remove the steering joint bolt (C), and disconnect the steering joint from the steering gearbox pinion shaft (D).

18. Disconnect the fan motor connector (A) and compressor clutch connector (B), then remove the reserve tank (C).



19. Remove the two bolts (D), and loosen the bolt (E), then remove the condenser fan shroud.

20. Remove the four bolts securing the A/C compressor.

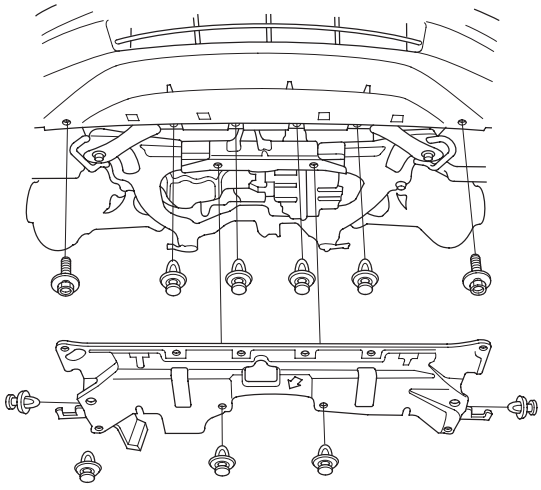


21. Remove the radiator cap.

22. Raise the hoist to full height.

23. Remove the front tires/wheels.

24. Remove the splash shield.



25. Loosen the drain plug in the radiator, and drain the engine coolant (see page 10-24).

26. Drain the automatic transmission fluid (ATF) (see page 14-466).

27. Drain the engine oil (see page 8-21).

28. Disconnect the stabilizer links (see page 18-23).

29. Remove the damper fork (see page 18-26).

30. Disconnect the tie-rod end ball joints (see step 10 on page 18-15).

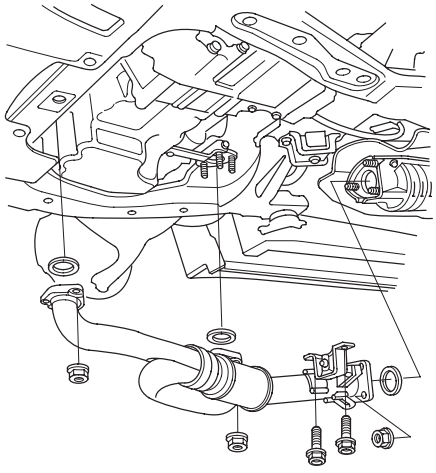
31. Disconnect the suspension lower arm ball joints (see page 18-21).

32. Remove the driveshafts (see step 12 on page 16-5). Coat all precision-finished surfaces with clean engine oil. Tie plastic bags over the driveshaft ends.

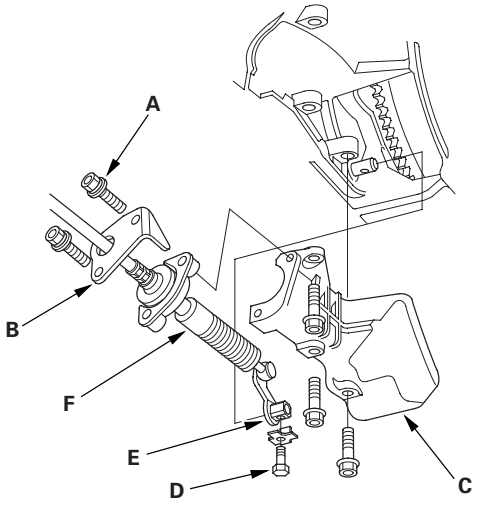
(cont'd)

Engine Removal (cont'd)

33. Remove exhaust pipe A.

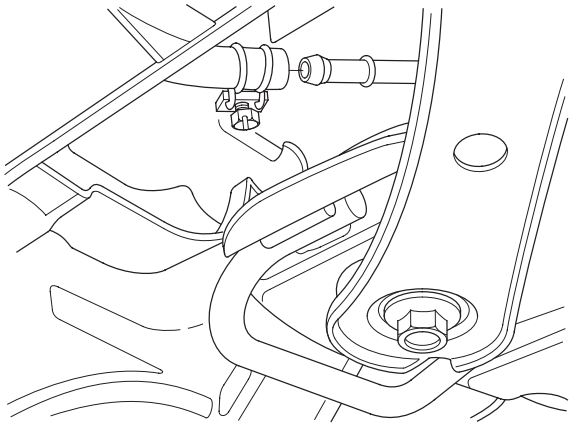


34. Remove the bolts (A) securing the shift cable holder (B), then remove the shift cable cover (C). To prevent damage to the control lever joint, be sure to remove the bolts securing the shift cable holder before removing the bolts securing the shift cable cover.

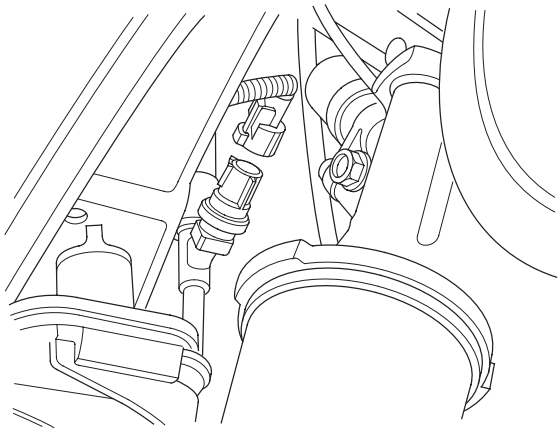


35. Remove the lock bolt (D) securing the control lever (E), then remove the shift cable (F) with the control lever. Do not bend the shift cable excessively.

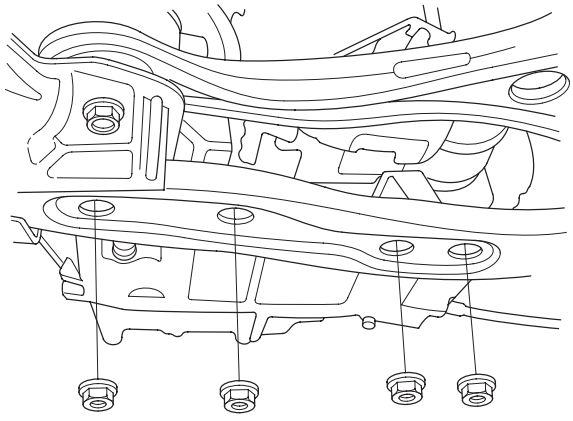
36. Remove the P/S hose.



37. Disconnect the power steering pressure switch connector.

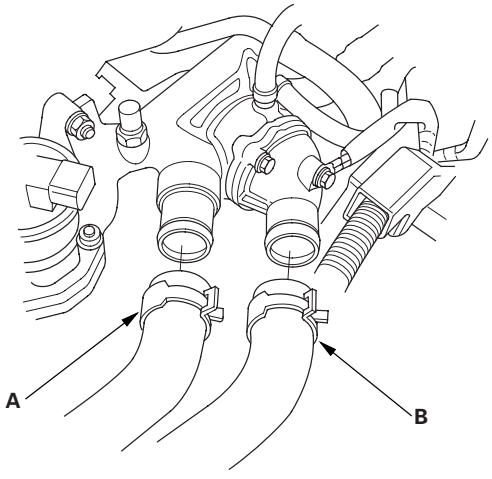


38. Remove the nuts securing the transmission lower front mount and transmission lower rear mount.

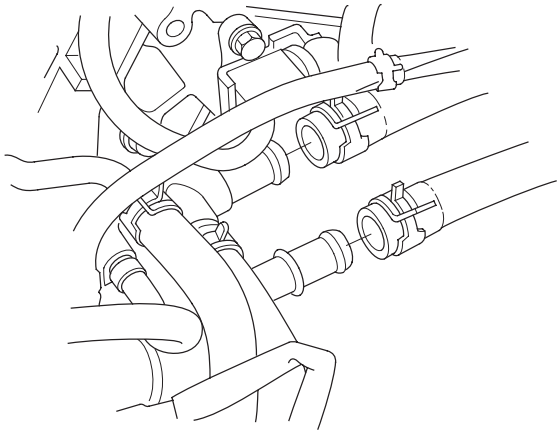


39. Lower the hoist.

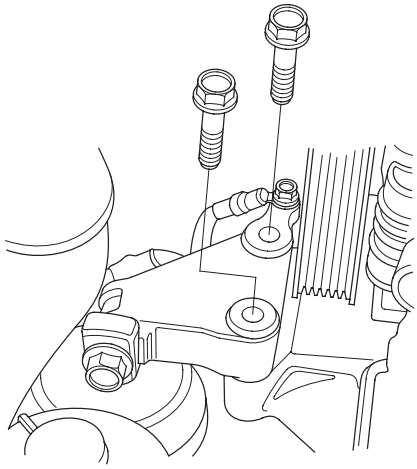
40. Remove the upper radiator hose (A) and lower radiator hose (B).



41. Remove the heater hoses.



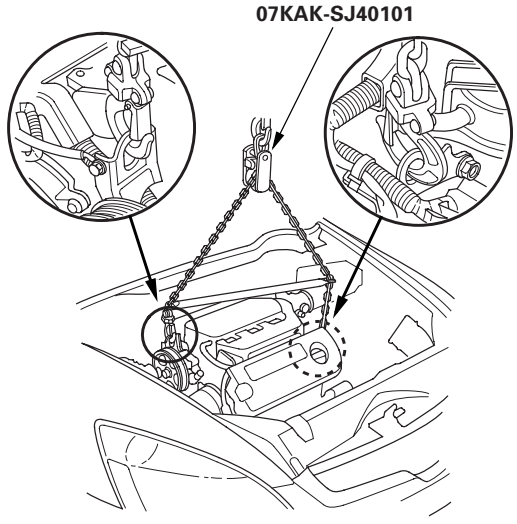
42. Remove the two bolts securing the side engine mount bracket.



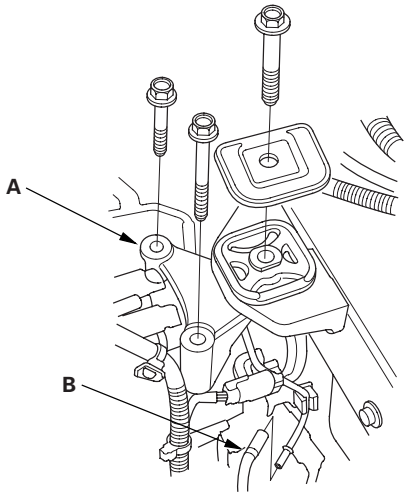
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Engine Removal (cont'd)

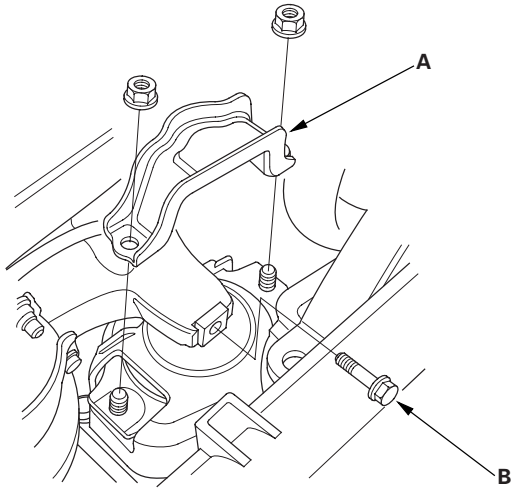
43. Attach the engine tilt hanger set to the engine as shown.



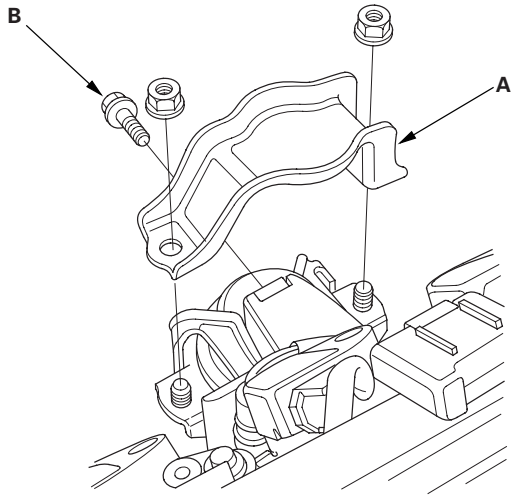
44. Remove the transmission upper mount bracket (A), and remove the vacuum hose (B).



45. Remove the front mount stop (A), then remove the front mount bolt (B).

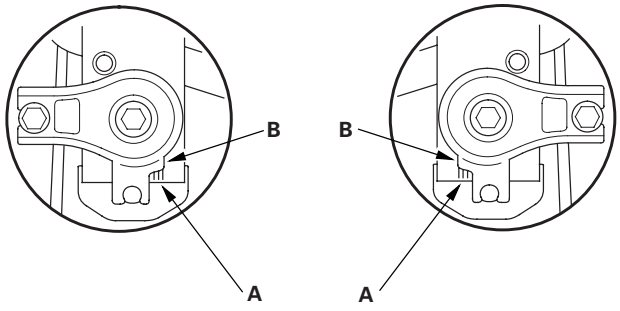


46. Remove the rear mount stop (A), then remove the rear mount bolt (B).

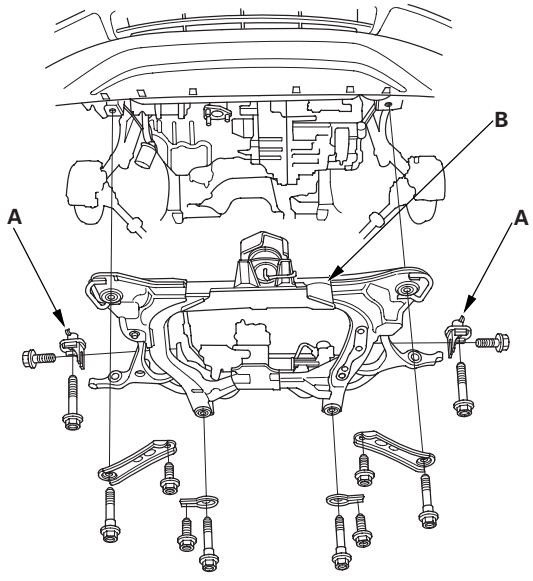


47. Make sure the hoist brackets are positioned properly. Raise the hoist to full height.

48. Make the appropriate lines (A) at the subframe that line up with the edge of the subframe stiffer (B).



49. Remove the subframe mid mounts (A), then remove the subframe (B).



50. Check that the engine/transmission is completely free of vacuum hoses, fuel and coolant hoses, and electrical wiring.

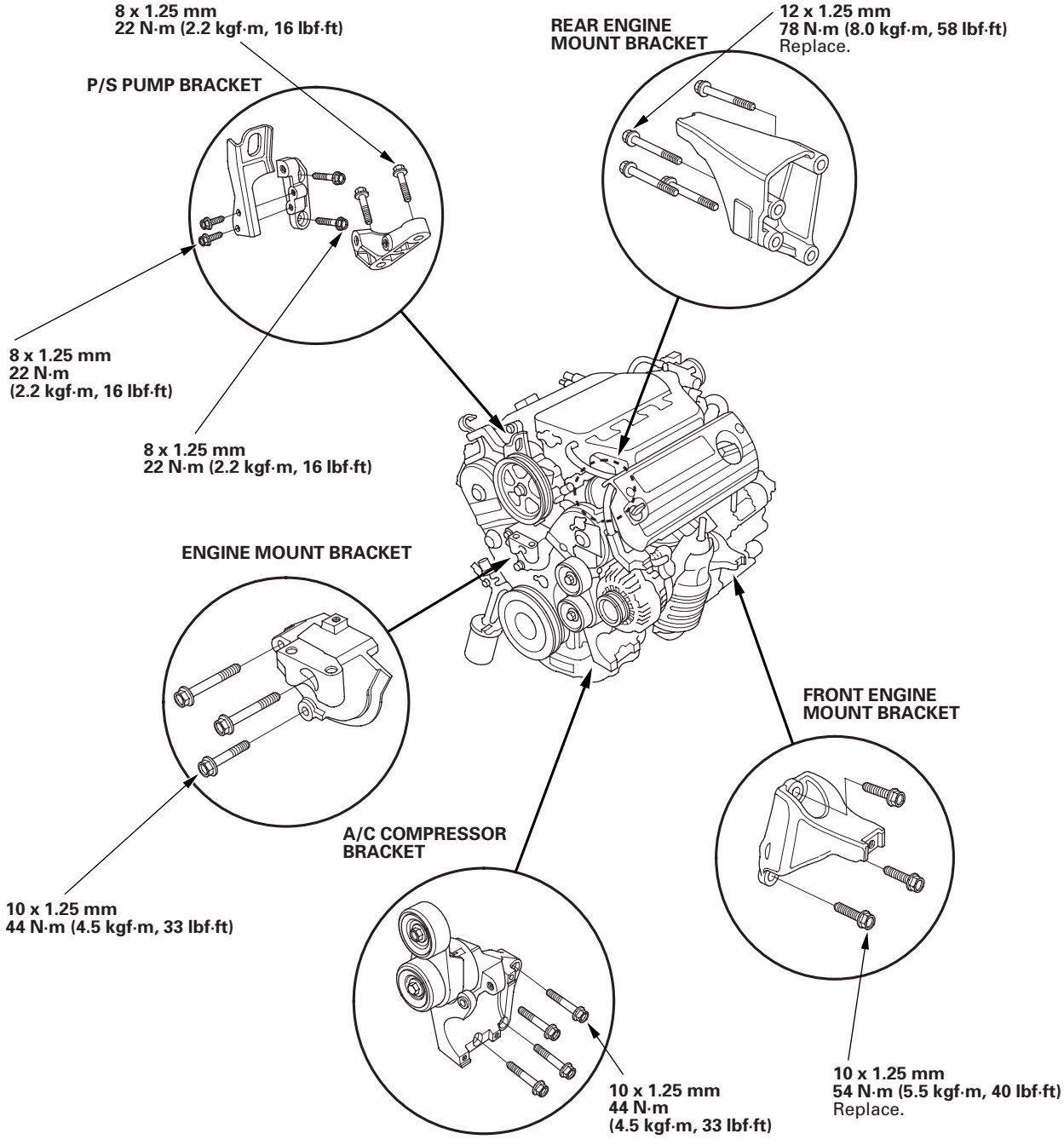
51. Slowly lower the engine about 150 mm (6 in.). Check once again that all hoses and wires are disconnected from the engine/transmission.

52. Lower the engine all the way. Remove the chain hoist from the engine.

53. Remove the engine from under the vehicle.

Engine Installation

1. Install the accessory brackets and tighten their bolts and nuts to the specified torques.

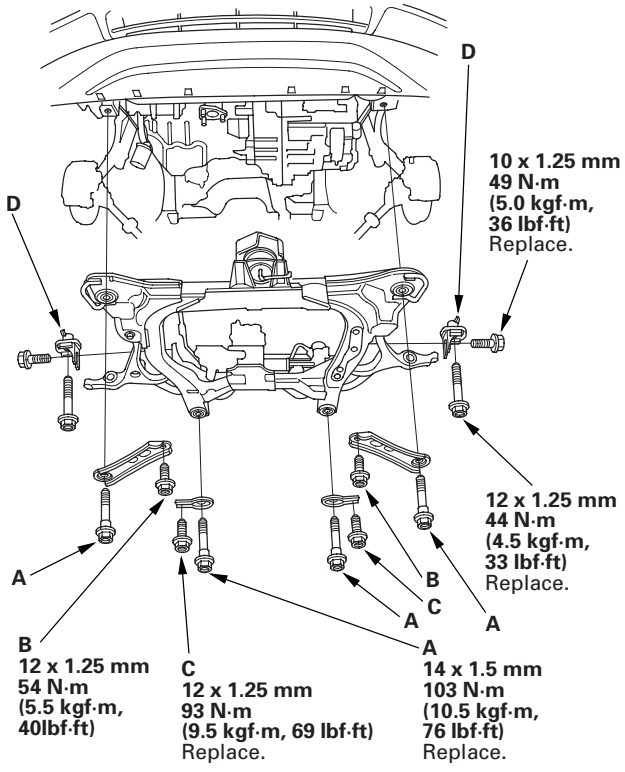


2. Position the engine under the vehicle. Attach the engine tilt hanger set to the engine, then lift the engine into position in the vehicle.

NOTICE

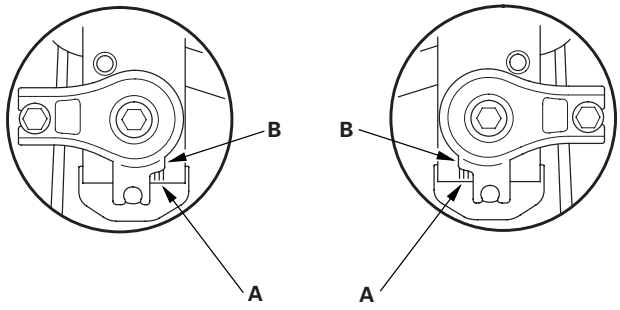
Reinstall the mounting bolts/support nuts in the sequence given. Failure to follow this sequence may cause excessive noise and vibration, and reduce bushing life.

3. Loosely install the four front subframe mounting bolts (A) and the four 12 x 1.25 mm bolts (B), (C) with the stiffeners.



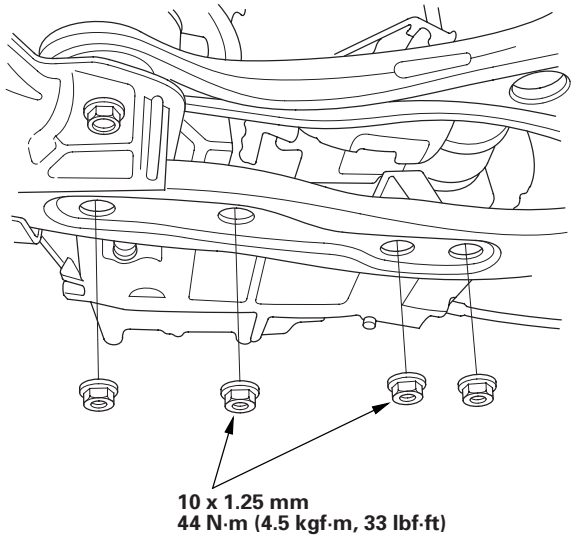
4. Loosely install the subframe mid mounts (D), then remove the special tool.

5. Align the reference marks (A) with the edge of the subframe stiffener (B), then tighten the subframe mounting bolts, and 12 x 1.25 mm bolts.



6. Tighten the bolts securing the subframe mid mounts.

7. Tighten the nuts securing the transmission lower rear mount.

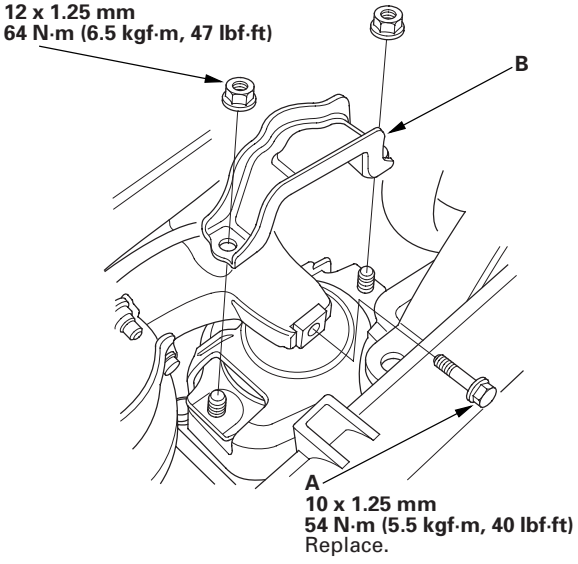


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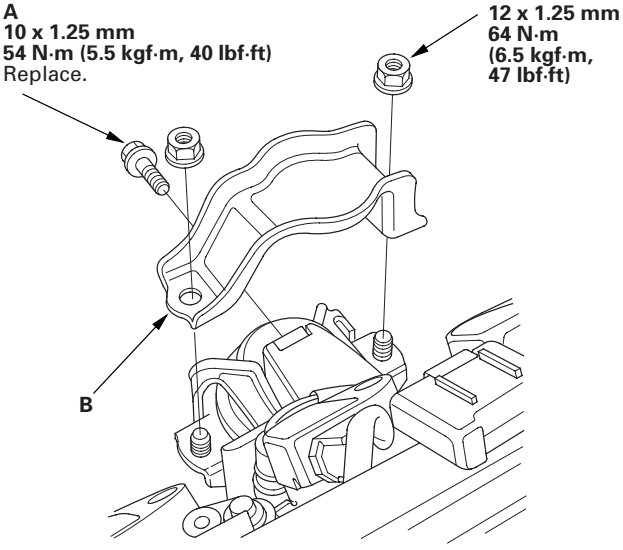
Engine Installation (cont'd)

8. Lower the hoist.

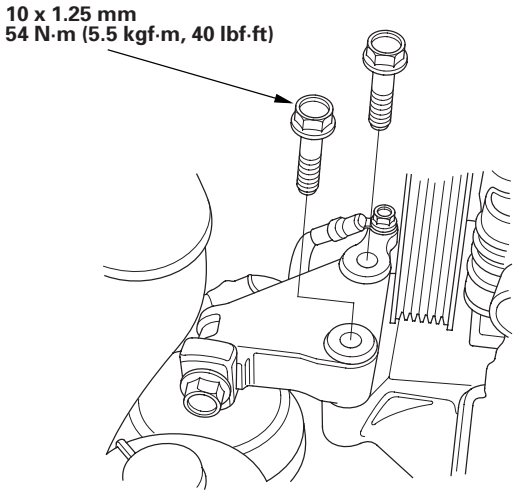
9. Tighten the front mount bolt (A), then install the front mount stop (B).



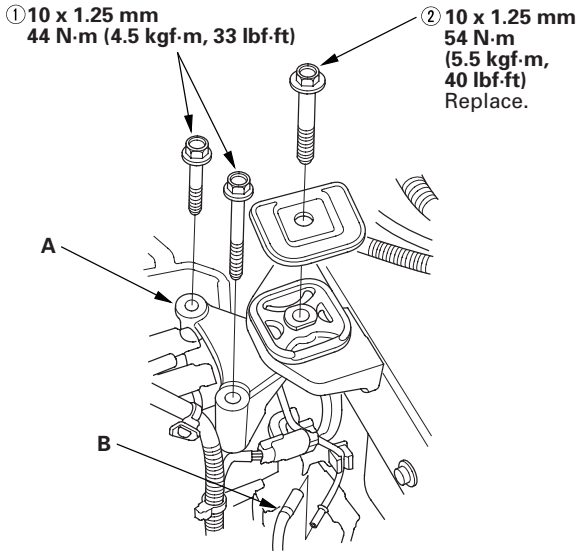
10. Tighten the rear mount bolt (A), then install the rear mount stop (B).



11. Tighten the two bolts securing the side engine mount bracket.



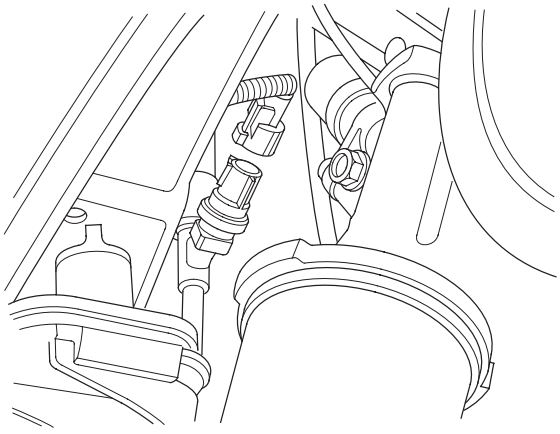
12. Install the transmission upper mount bracket (A), then tighten the bolts in the numbered sequence shown.



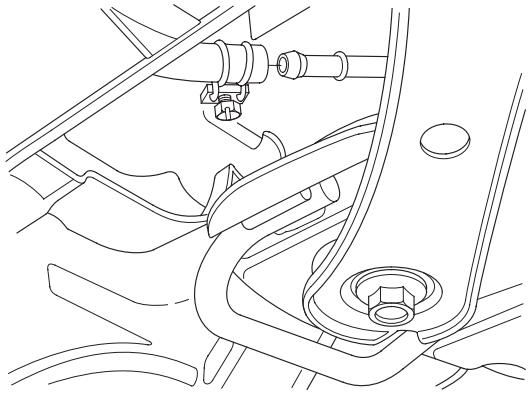
13. Install the vacuum hose (B).

14. Raise the hoist full height.

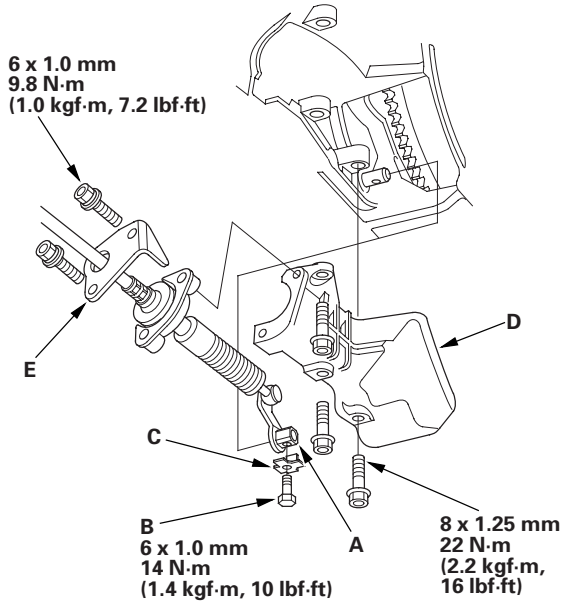
15. Connect the power steering pressure switch connector.



16. Install the power steering (P/S) hose.



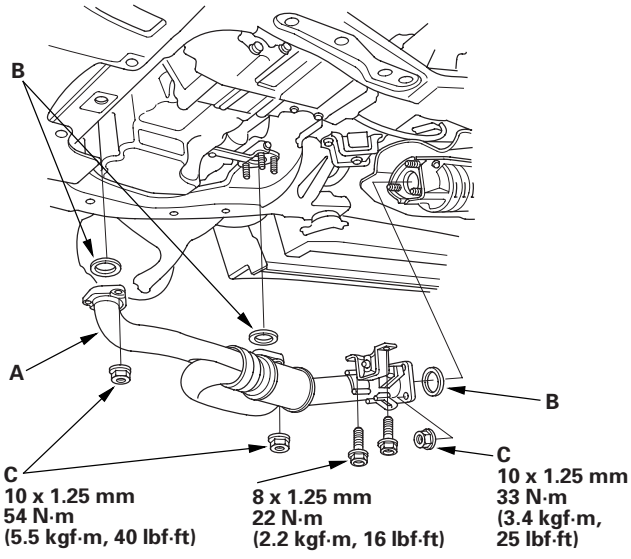
17. Install the control lever (A) with the shift cable on the control shaft. Do not bend the shift cable excessively.



18. Install the lock bolt (B) with a new lock washer (C), then bend the lock washer tab against the bolt.

19. Install the shift cable cover (D), then install the shift cable holder (E) on the shift cable cover.

20. Install exhaust pipe A using new gaskets (B) and new self locking nuts (C).



(cont'd)

Engine Installation (cont'd)

21. Install a new set ring on the end of each driveshaft, then install the driveshafts. Make sure each ring ''clicks'' into place in the differential and intermediate shaft.

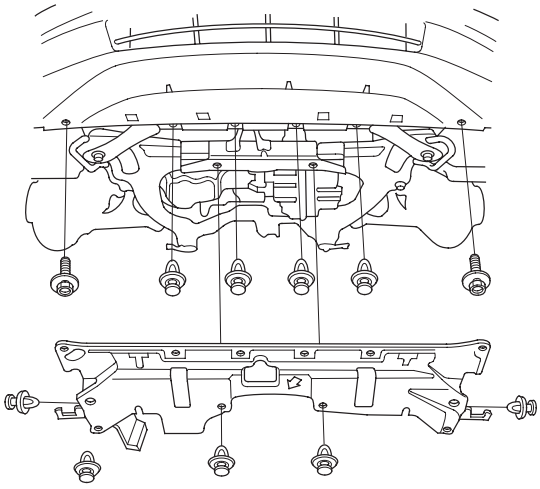
22. Connect the suspension lower arm ball joints (see page 18-21).

23. Connect the tie-rod end ball joints (see step 10 on page 18-15).

24. Install the damper fork (see page 18-26).

25. Connect the stabilizer links (see page 18-23).

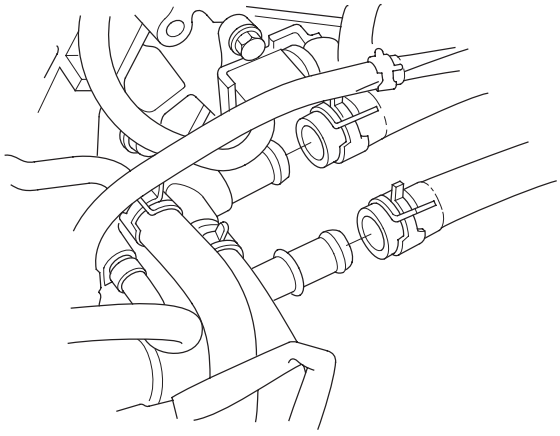
26. Install the splash shield.



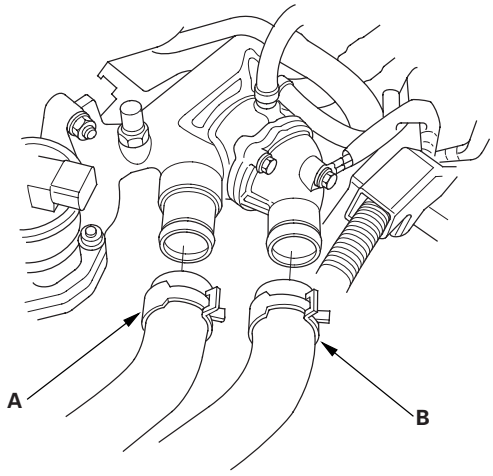
27. Install the front tires/wheels.

28. Lower the hoist.

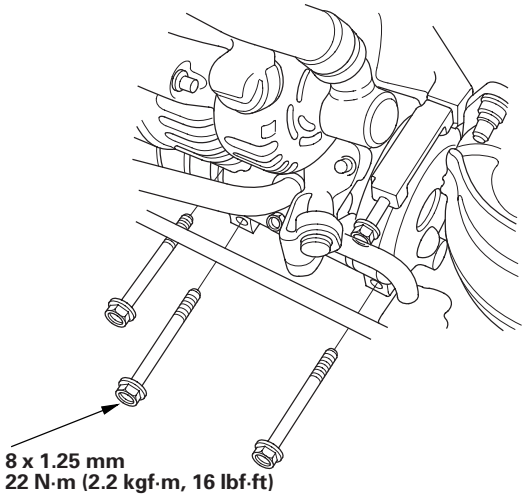
29. Install the heater hoses.



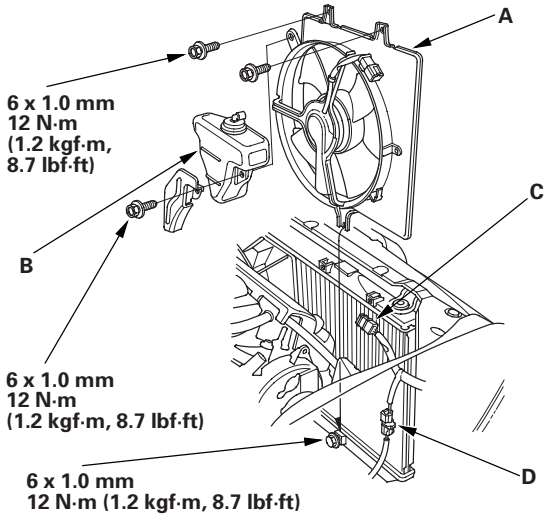
30. Install the upper radiator hose (A) and lower radiator hose (B).



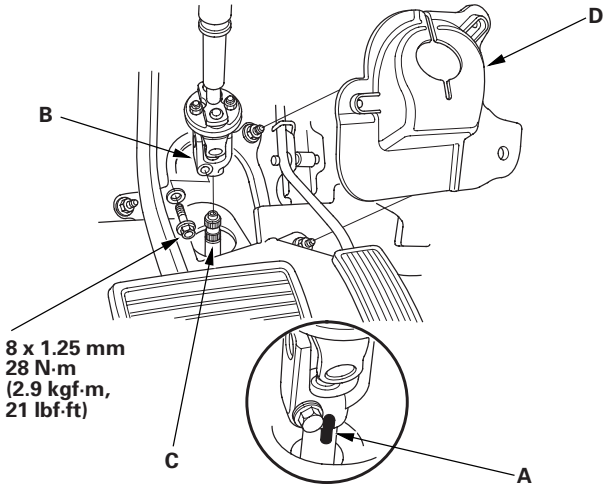
31. Install the A/C compressor.



32. Install the condenser fan shroud (A), and reserve tank (B), then connect the fan motor connector (C) and compressor clutch connector (D).

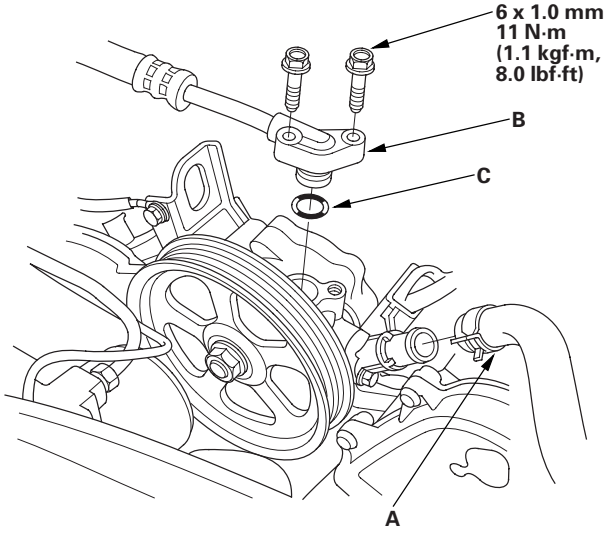


33. Align the reference mark (A) on the steering joint and steering gearbox pinion shaft. Connect the steering joint (B) to the steering gearbox pinion shaft (C). Tighten the steering joint bolt.



34. Install the steering joint cover (D).

35. Install the P/S pump inlet hose (A) and P/S pump outlet hose (B) with a new O-ring (C).



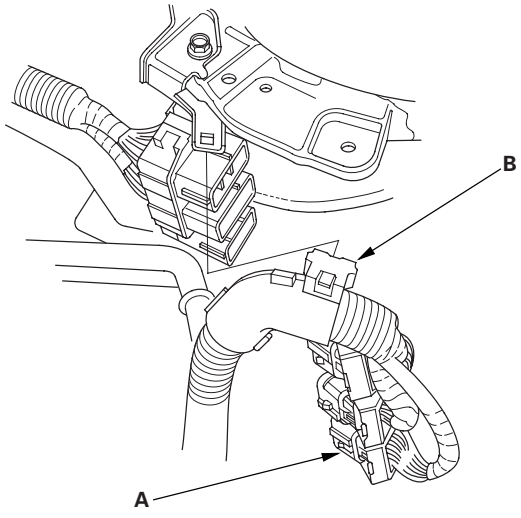
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Engine Installation (cont'd)

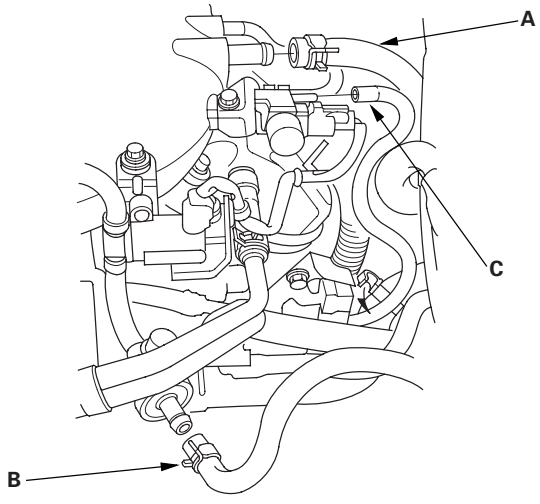
36. Install the drive belt.

37. Install the fuel line (see page 11-477).

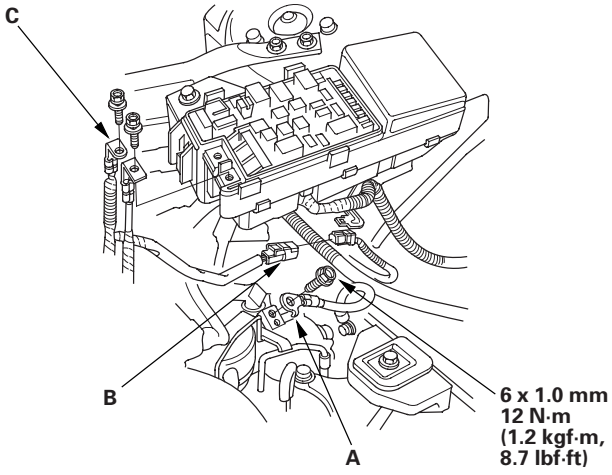
38. Connect the engine wire harness connectors (A), then install the harness clamp (B).



39. Install the brake booster vacuum hose (A), evaporative emission (EVAP) canister hose (B) and vacuum hose (C).

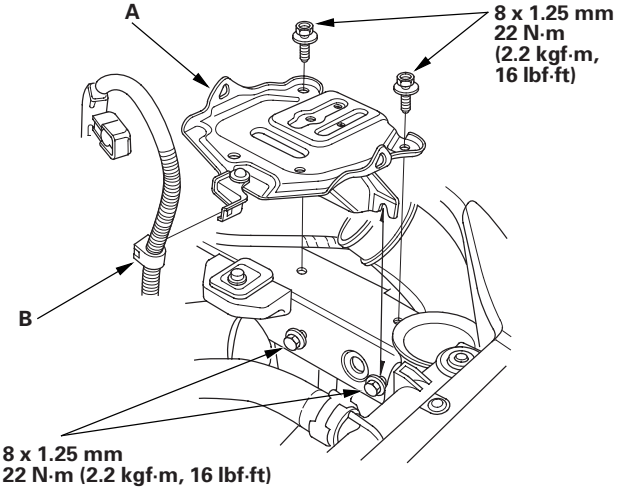


40. Install the ground cable (A), and connect the harness connector (B).



41. Install the battery cable (C).

42. Install the battery base (A), then install the harness clamp (B).



43. Install the air cleaner housing (see page 11-484).

44. Install the battery. Clean the battery posts and cable terminals with sandpaper, then assemble them and apply grease to prevent corrosion.

45. Move the shift lever to each gear, and verify that the A/T gear position indicator follows the transmission range switch.

46. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.

47. Refill the engine with engine oil (see page 8-21).

48. Refill the transmission with automatic transmission fluid (ATF) (see page 14-466).

49. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see page 10-24).

50. Refill the power steering system fluid (see page 17-13).

51. Perform the powertrain control module (PCM) reset procedure (see page 11-240).

52. Perform the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-240).

53. Perform the powertrain control module (PCM) idle learn procedure (see page 11-193), and power window control unit reset procedure (see page 22-219).

54. Inspect the idle speed (see page 11-465).

55. Inspect the ignition timing (see page 4-79).

56. Check the wheel alignment (see page 18-6).

57. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets. Set the clock.

58. Set the clock.

Engine Mechanical

Cylinder Head—J30A4 engine

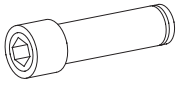
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Special Tools

Ref. No.	Tool Number	Description	Qty
①	07HAH-PJ70100	Valve Guide Reamer, 5.525 mm	1
②	07JAA-0010200	Socket Wrench, 19 mm	1
③	07JAB-0010200	Handle	1
④	07LAJ-PR30102	Valve Inspection Set	1
⑤	07MAB-PY30100	Pulley Holder Attachment, HEX 50 mm	1
⑥	07PAD-0010000	Stem Seal Driver	1
⑦	07VAJ-P8A010A	VTEC Air Adapter	1
⑧	070AJ-0030100	VTEC Air Stopper	1
⑨	07742-0010100	Valve Guide Driver, 5.5 mm	1
⑩	07757-0010000	Valve Spring Compressor	1



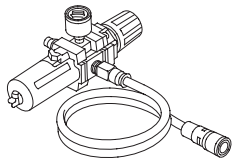
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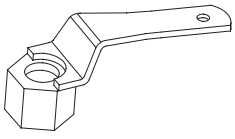
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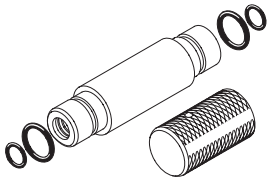
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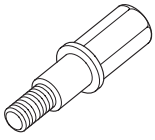
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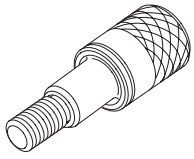
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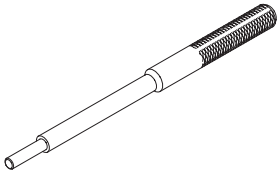
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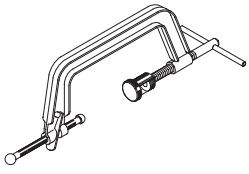
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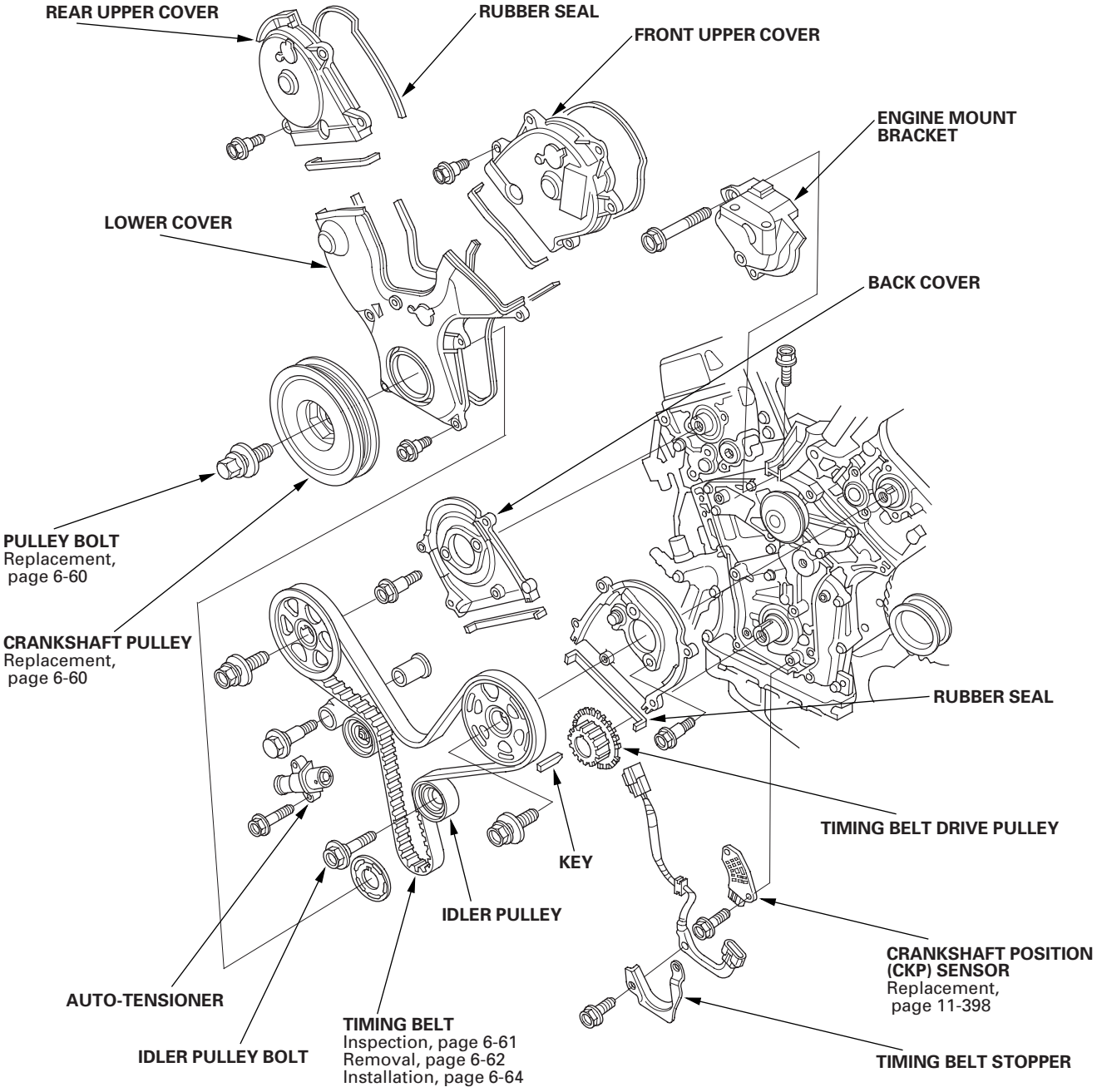


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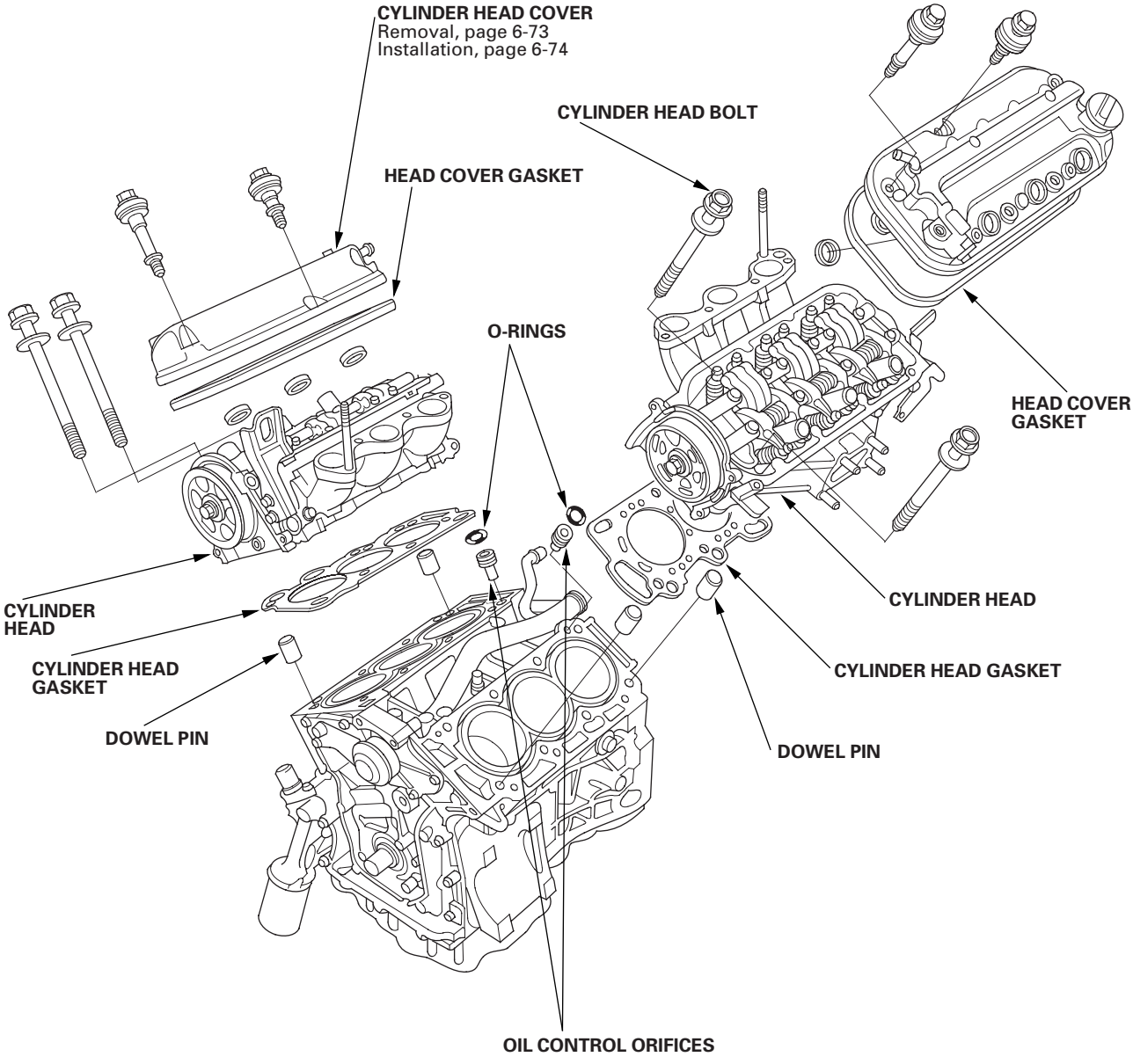
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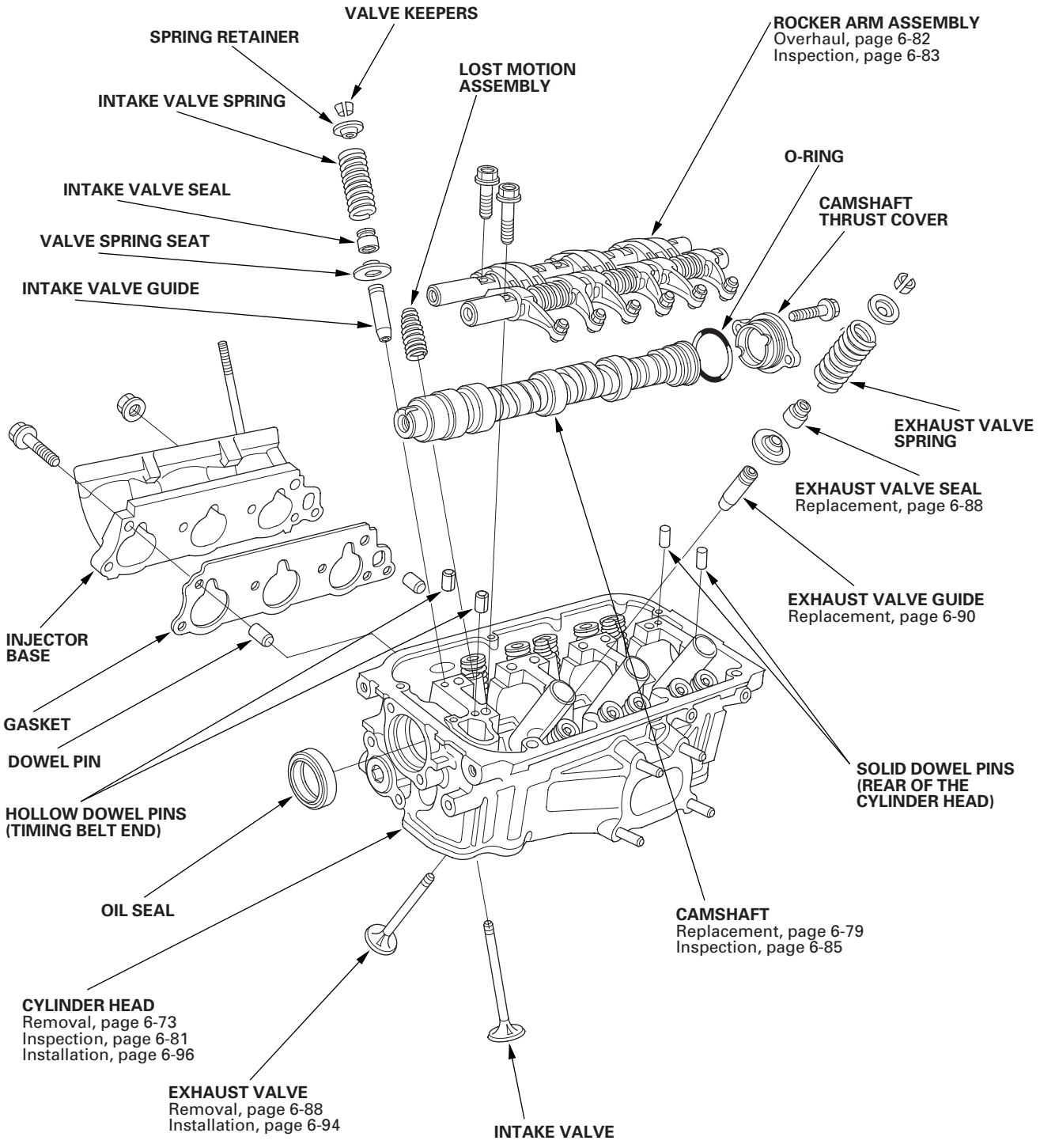
Component Location Index



(cont'd)

Component Location Index (cont'd)

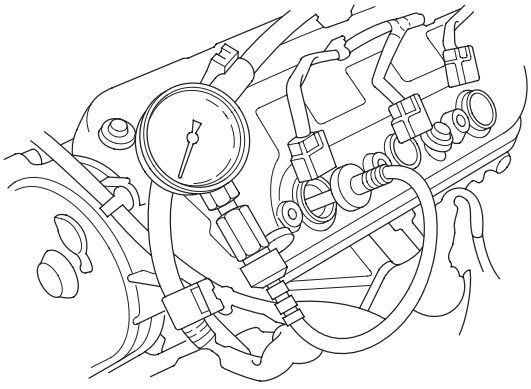



VALVE KEEPERS
SPRING RETAINER
INTAKE VALVE SPRING
INTAKE VALVE SEAL
VALVE SPRING SEAT
INTAKE VALVE GUIDE
LOST MOTION ASSEMBLY
ROCKER ARM ASSEMBLY
Overhaul, page 6-82
Inspection, page 6-83
O-RING
CAMSHAFT THRUST COVER
EXHAUST VALVE SPRING
EXHAUST VALVE SEAL
Replacement, page 6-88
EXHAUST VALVE GUIDE
Replacement, page 6-90
INJECTOR BASE
GASKET
DOWEL PIN
HOLLOW DOWEL PINS (TIMING BELT END)
SOLID DOWEL PINS (REAR OF THE CYLINDER HEAD)
OIL SEAL
CAMSHAFT
Replacement, page 6-79
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CYLINDER HEAD
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EXHAUST VALVE
Removal, page 6-88
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INTAKE VALVE

Engine Compression Inspection

NOTE:
- Temporary DTCs or DTCs may be set during this procedure. Check the temporary DTCs or DTCs, and clear them as necessary (see page 11-239).
- After this inspection, you must select the EXIT button to stop the ALL INJECTORS OFF function on the Honda PGM tester or the Honda Diagnostic System (HDS) otherwise powertrain control module (PCM) continues to stop the fuel injectors.

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Turn the ignition switch OFF.
3. Remove the six ignition coils (see page 4-80).
4. Remove the six spark plugs.
5. Connect the Honda PGM tester or the HDS to the data link connector (DLC) (see page 11-239).
6. Select the ALL INJECTORS OFF function on the Honda PGM Tester or the HDS.
7. Attach the compression gauge to a spark plug hole.



8. Connect a tachometer.
9. Open the throttle fully then crank the engine with the starter motor and measure the compression.

   Compression Pressure:
   Above 930 kPa (9.5 kgf/cm^2, 135 psi)

10. Parform the same measurement on the remaining cylinders.

    Maximum Variation:
    Within 200 kPa (2.0 kgf/cm^2, 28 psi)

11. If the compression is not within specifications, check the following items, then remeasure the compression.

    - Damaged or worn valves and seats.
    - Damaged cylinder head gasket.
    - Damaged or worn piston rings.
    - Damaged or worn piston and cylinder bore.

12. Select the EXIT button to stop the ALL INJECTORS OFF function on the Honda PGM tester or the HDS.

VTEC Rocker Arms Test

Special Tools Required
- Valve inspection set 07LAJ-PR30102
- VTEC air adapter 07VAJ-P8A010A
- VTEC air stopper 070AJ-0030100

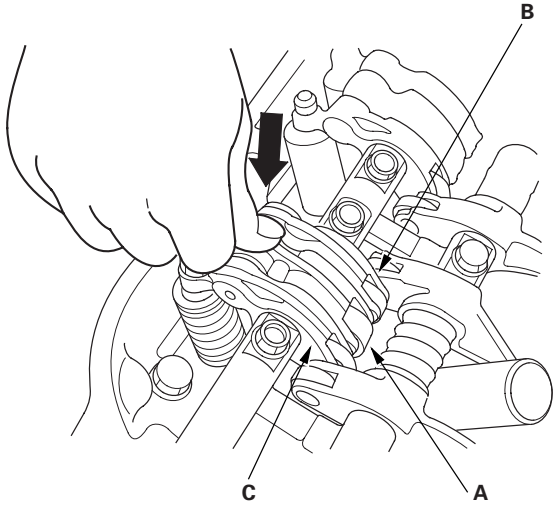
1. Start the engine and let it run for 5 minutes, then turn OFF the ignition switch.

2. Remove the cylinder head covers (see page 6-73).

3. Set the No. 1 piston at top dead center (TDC) (see step 2 on page 6-56).

4. Push on the intake mid rocker arm (A) for the No. 1 cylinder. The mid rocker arm should move independently of the primary rocker arm (B) and secondary rocker arm (C).

   - If the intake mid rocker arm does not move, remove the mid, primary, and secondary intake rocker arms as an assembly, then check that the pistons in the mid and primary rocker arms move smoothly. If any rocker arm needs replacing, replace the primary, mid, and secondary rocker arms as an assembly, and retest.
   - If the mid rocker arm moves freely, go to step 5.



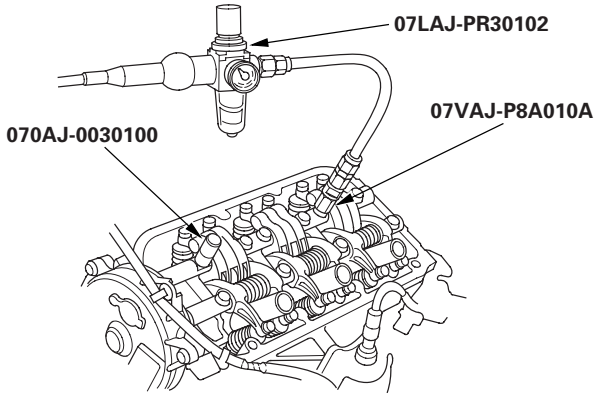
5. Repeat step 4 on the remaining intake mid rocker arms with each piston at TDC. When all the mid rocker arms pass the test, go to step 6.

6. Check that the air pressure on the shop air compressor gauge indicates over 690 kPa (7.0 kgf/cm^2, 100 psi).

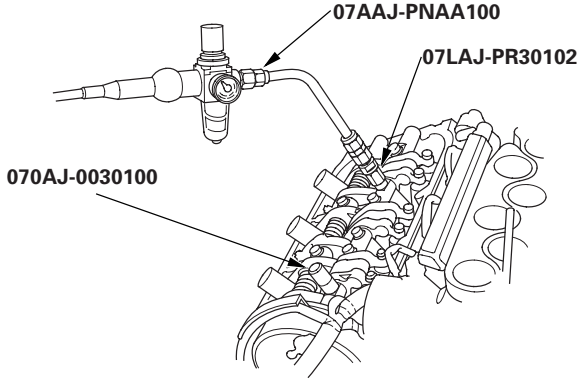
7. Inspect the valve clearance (see page 6-56).

8. Remove the No. 1 and No. 5 intake rocker shaft mounting bolts, then install and connect the special tools as shown below.

   FRONT:



   REAR:



9. Loosen the valve on the regulator, and apply the specified air pressure.

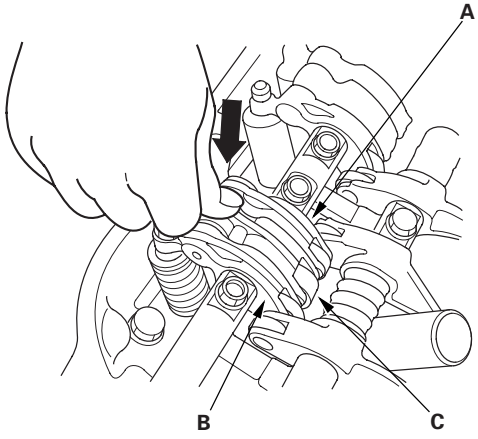
   Specified Air Pressure:
   440—540 kPa (4.5—5.5 kgf/cm^2, 64—78 psi)

   NOTE: If the synchronizing pistons A and B do not move after applying air pressure, move the primary or secondary rocker arm up and down manually.

(cont'd)

VTEC Rocker Arms Test (cont'd)

10. Make sure that the intake primary rocker arm (A) and intake secondary rocker arm (B) are mechanically connected by the piston and that the mid rocker arm (C) does not move when pushed manually. If any intake mid rocker arm moves independently of the primary and secondary rocker arms, replace the rocker arms as a set.

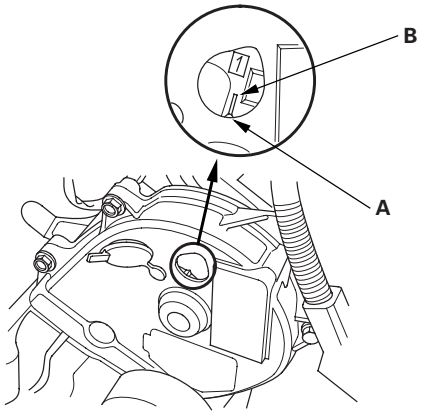


11. Remove the tools.
12. Tighten the rocker shaft bolts to 24 N·m (2.4 kgf·m, 17 lbf·ft)
13. Install the cylinder head covers (see page 6-74).

Valve Clearance Adjustment

NOTE: Adjust the valves only when the cylinder head temperature is less than 38°C (100°F).

1. Remove the cylinder head covers (see page 6-73).
2. Set the No. 1 piston at top dead center (TDC). Align the pointer (A) on the front upper cover with the No. 1 piston TDC mark (B) on the front camshaft pulley.

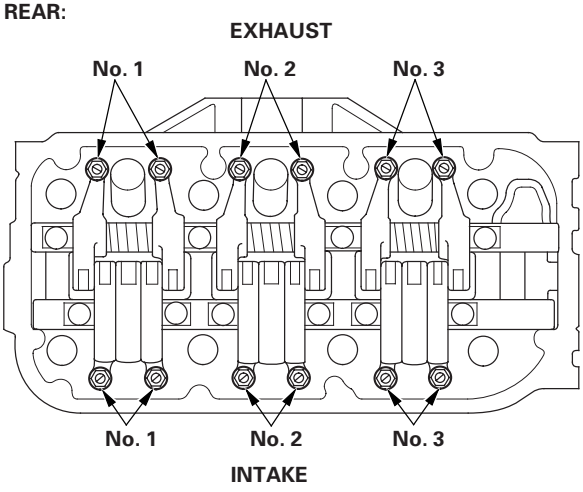


3. Select the correct thickness feeler gauge for the valves you're going to check.

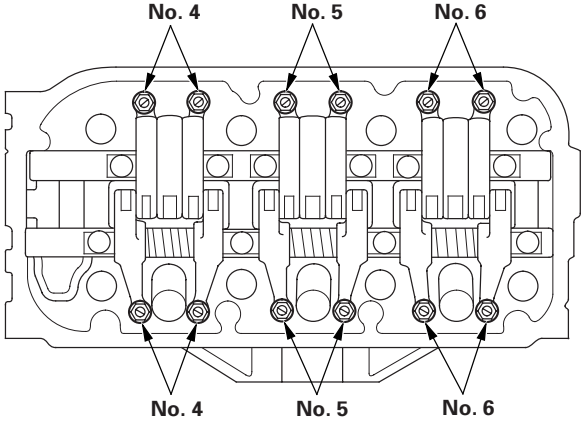
   Intake: 0.20—0.24 mm (0.008—0.009 in.)
   Exhaust: 0.28—0.32 mm (0.011—0.013 in.)

   Adjusting screw locations:

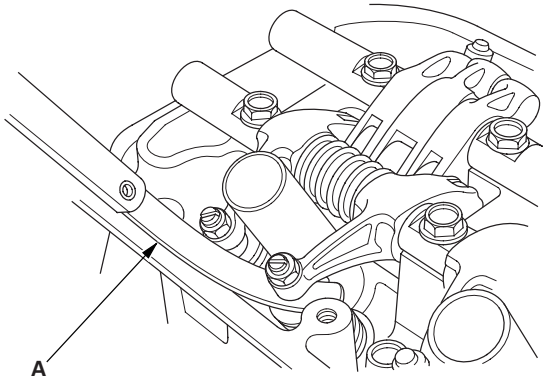
REAR:



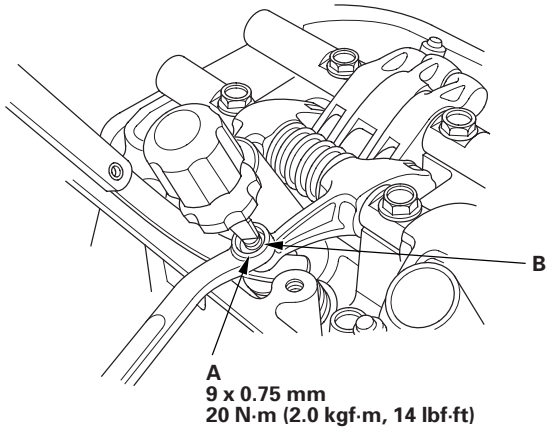
FRONT:



4. Insert the feeler gauge (A) between the adjusting screw and the end of the valve stem and slide it back and forth; you should feel a slight amount of drag.



5. If you feel too much or too little drag, loosen the locknut (A), and turn the adjusting screw (B) until the drag on the feeler gauge is correct.

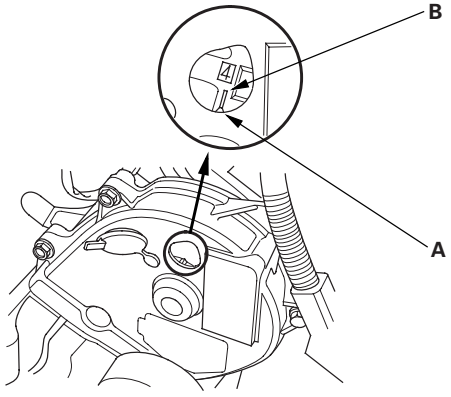


6. Tighten the locknut and recheck the clearance. Repeat the adjustment, if necessary.

(cont'd)

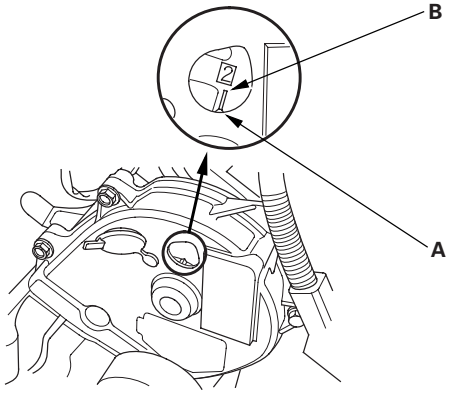
Valve Clearance Adjustment (cont'd)

7. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 4 piston TDC mark (B) on the front camshaft pulley.



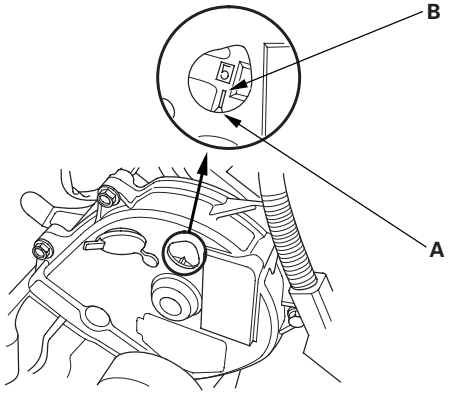
8. Check and, if necessary, adjust the valve clearance on No. 4 cylinder.

9. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 2 piston TDC mark (B) on the front camshaft pulley.



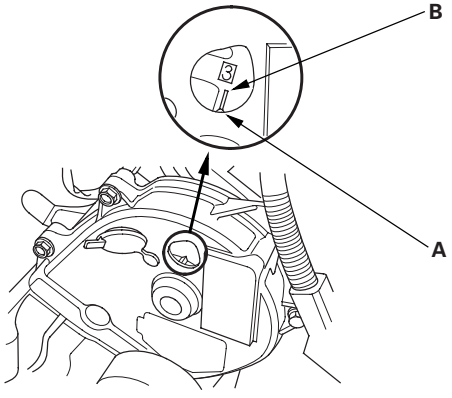
10. Check and, if necessary, adjust the valve clearance on No. 2 cylinder.

11. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 5 piston TDC mark (B) on the front camshaft pulley.



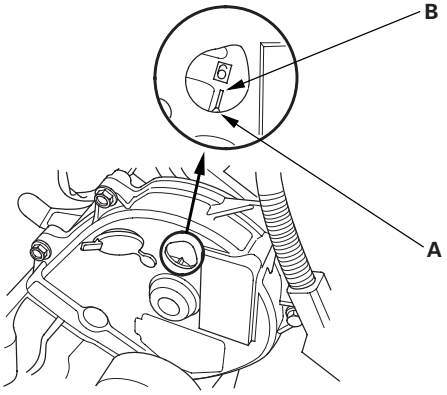
12. Check and, if necessary, adjust the valve clearance on No. 5 cylinder.

13. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 3 piston TDC mark (B) on the front camshaft pulley.



14. Check and, if necessary, adjust the valve clearance on No. 3 cylinder.

15. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 6 piston TDC mark (B) on the front camshaft pulley.



16. Check and, if necessary, adjust the valve clearance on No. 6 cylinder.

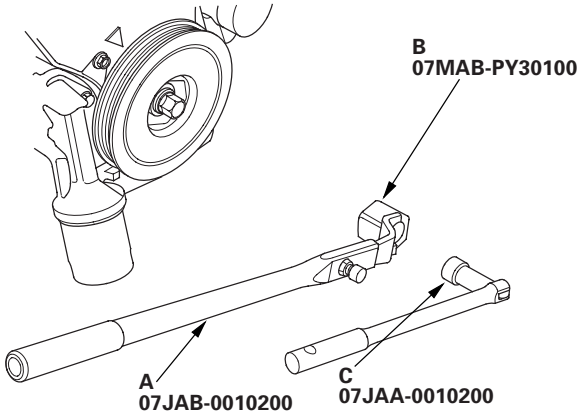
17. Install the cylinder head covers (see page 6-74).

Crankshaft Pulley Removal and Installation

Special Tools Required
- Handle 07JAB-0010200
- Pulley holder attachment, HEX 50 mm 07MAB-PY30100
- Socket wrench, 19 mm 07JAA-0010200

Removal

1. Remove the right front wheel.
2. Remove the splash shield (see step 24 on page 5-23).
3. Hold the pulley with the holder handle (A) and holder attachment (B).

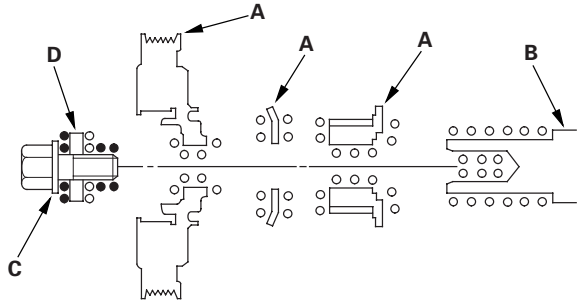


4. Remove the bolt with a heavy duty 19 mm socket (C) and breaker bar, then remove the crankshaft pulley.

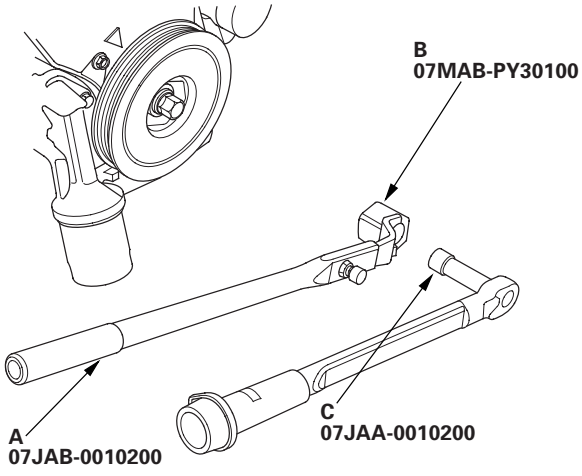
Installation

1. Remove any oil from the pulleys (A), crankshaft (B), bolt (C), and washer (D). Clean and lubricate the points shown below.

●: Clean
○: Lubricate



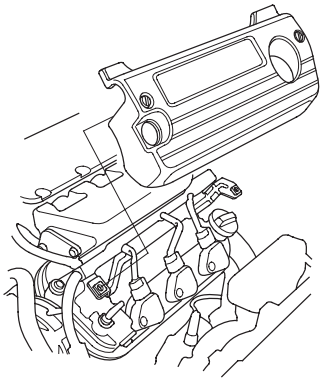
2. Install the crankshaft pulley, and tighten the bolt to 245 N·m (25.0 kgf·m, 181 lbf·ft). Do not use an impact wrench.
   1. Hold the pulley with the holder handle (A) and holder attachment (B).
   2. Tighten the bolt with a torque wrench and 19 mm socket (C).



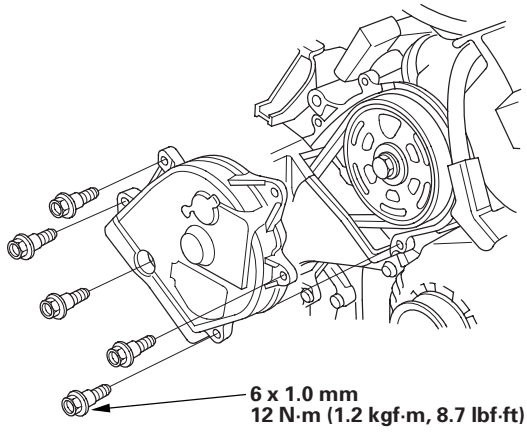
3. Install the splash shield (see step 26 on page 5-32).
4. Install the right front wheel.

Timing Belt Inspection

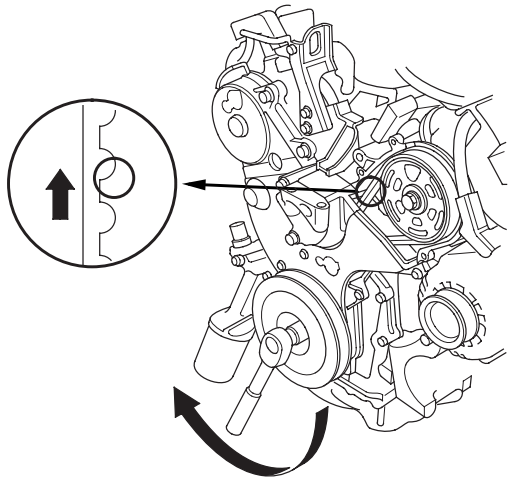
1. Remove the ignition coil cover.



2. Remove the front upper cover.

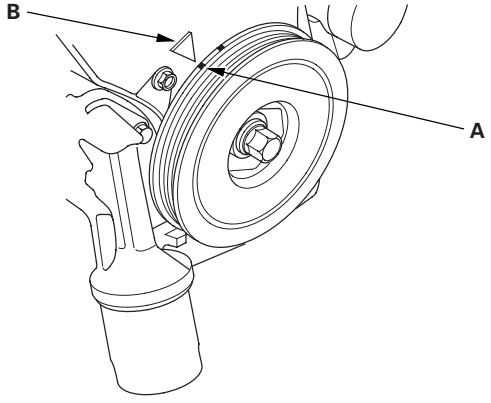


3. Inspect the timing belt for cracks and oil or coolant soaking. Replace the belt if it is cracked, or is oil or coolant soaked. Remove any oil or solvent that gets on the belt.

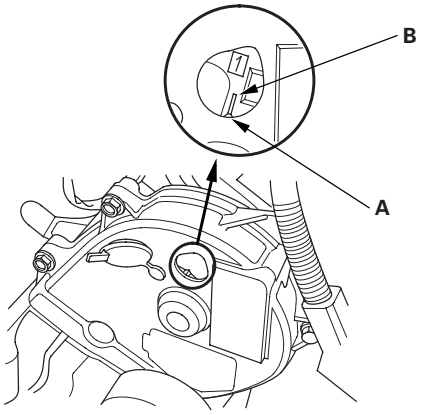


Timing Belt Removal

1. Turn the crankshaft so its white mark (A) lines up with the pointer (B).

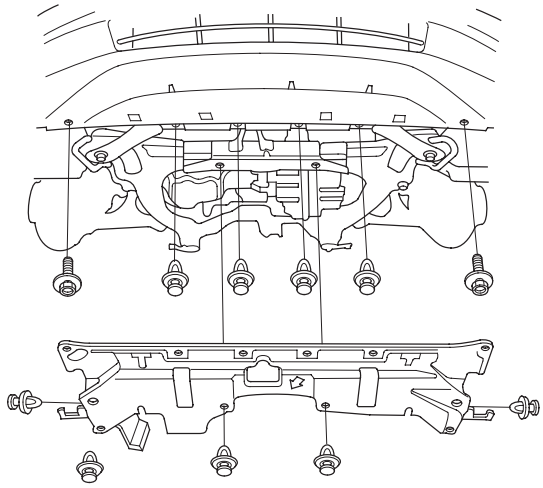


2. Check that the No. 1 piston top dead center (TDC) mark (A) on the front camshaft pulley and the pointer (B) on the front upper cover are aligned.



3. Remove the front tires/wheels.

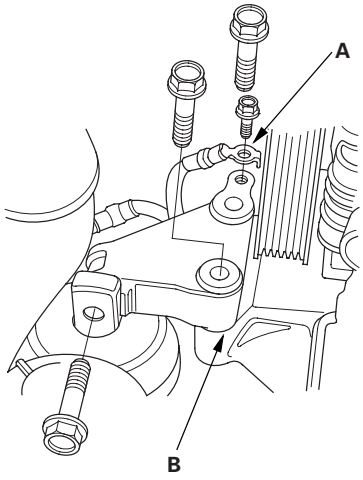
4. Remove the splash shield.



5. Remove the drive belt. (see page 4-89).

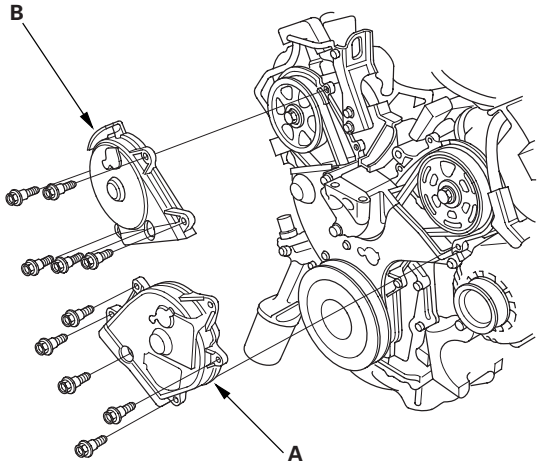
6. Support the engine with a jack and wood block under the oil pan.

7. Remove the ground cable (A), then remove the side engine mount bracket (B).

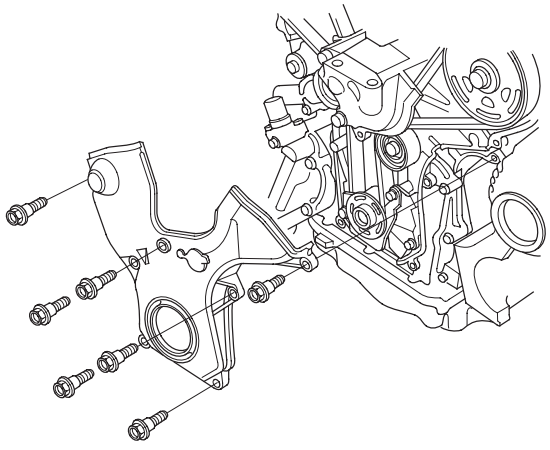


8. Remove the crankshaft pulley (see page 6-60).

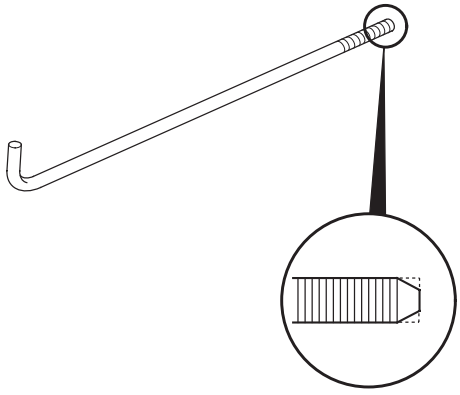
9. Remove the front upper cover (A) and rear upper cover (B).



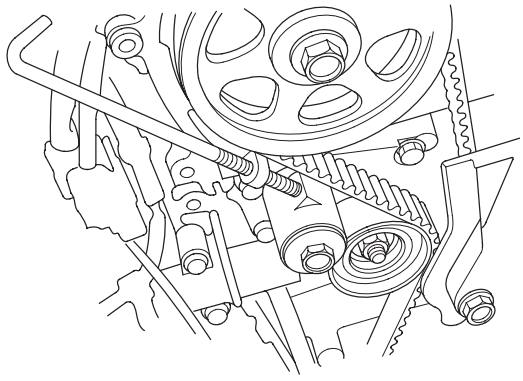
10. Remove the lower cover.



11. Remove one of the battery clamp bolts from the battery tray, and grind the end of it as shown.



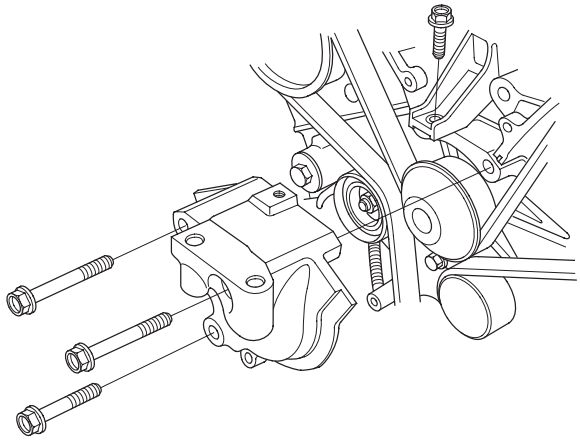
12. Screw the battery clamp bolt in as shown to hold the timing belt adjuster in its current position. Tighten it by hand, do not use a wrench.



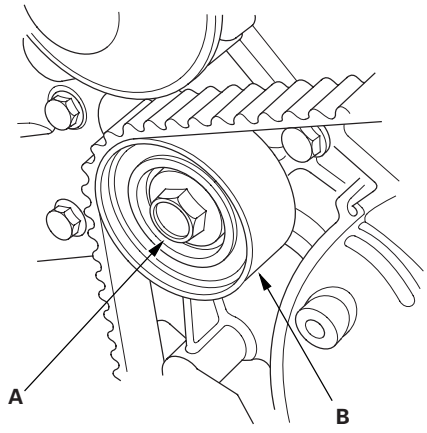
(cont'd)

Timing Belt Removal (cont'd)

13. Remove the engine mount bracket.



14. Remove the idler pulley bolt (A) and idler pulley (B), then remove the timing belt.



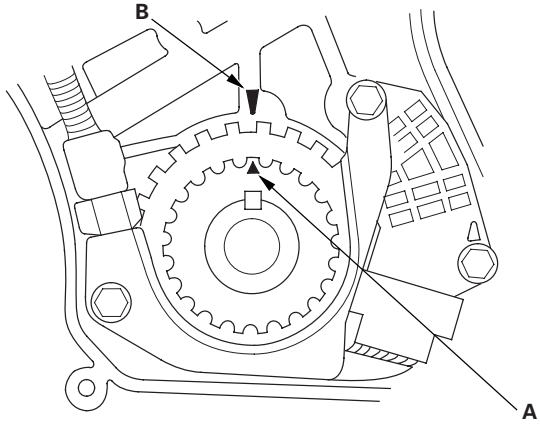
Timing Belt Installation

NOTE: The following procedure is for installing a new timing belt. If you are installing a used belt, refer to the next procedure.

New Belt

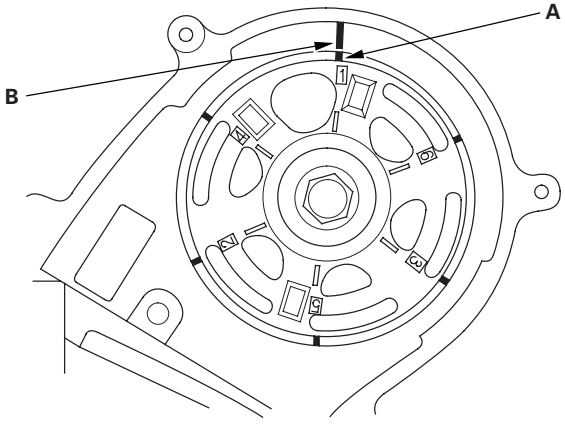
1. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.

2. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.

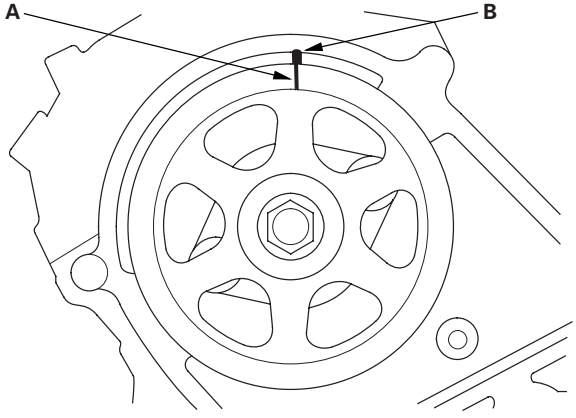


3. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT:

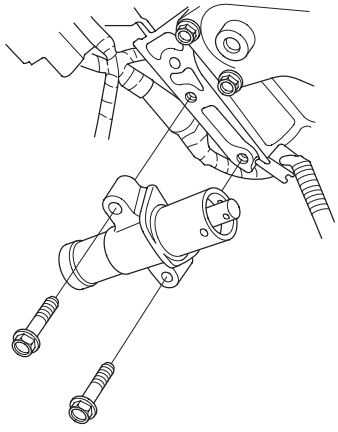


REAR:

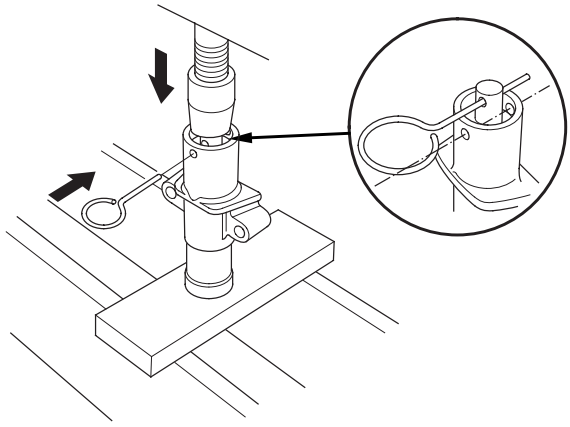


4. Remove the battery clamp bolt from the back cover.

5. Remove the auto-tensioner.



6. Align the holes on the rod and housing of the auto-tensioner.



7. Use a hydraulic press to slowly compress the auto-tensioner. Insert a 2.0 mm (0.08 in.) pin through the housing and the rod.

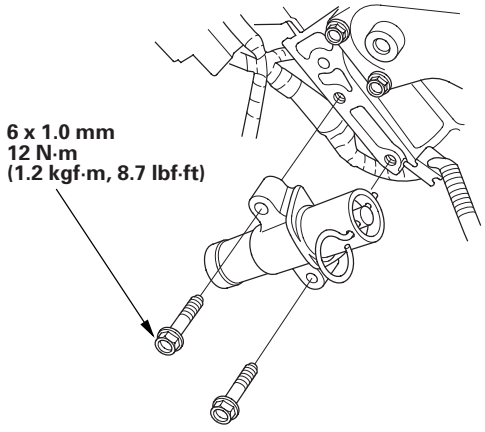
   NOTE: The compression pressure should not exceed 9,800 N (1,000 kgf, 2,200 lbf).

(cont'd)

Timing Belt Installation (cont'd)

8. Install the auto-tensioner.

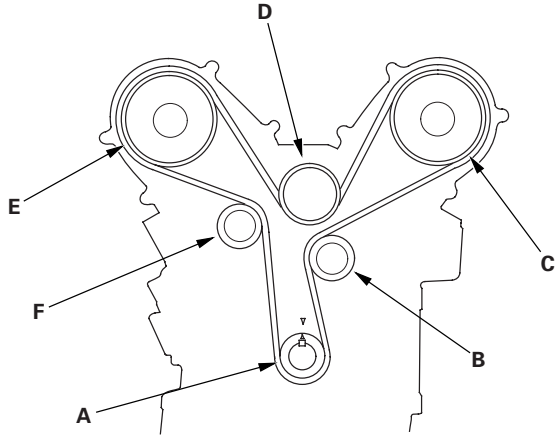
   NOTE: Make sure the pin stays in place.



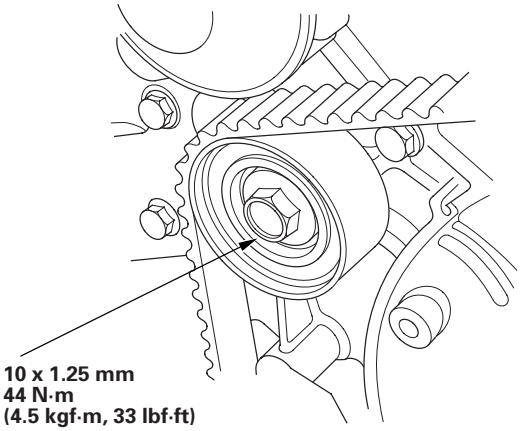
9. Apply liquid thread lock to the idler pulley bolt, then loosely install the idler pulley.

10. Install the timing belt in a counterclockwise sequence starting with the drive pulley.

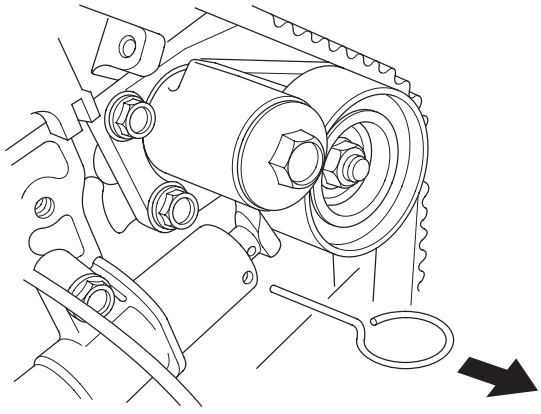
    1. Drive pulley (A).
    2. Idler pulley (B).
    3. Front camshaft pulley (C).
    4. Water pump pulley (D).
    5. Rear camshaft pulley (E).
    6. Adjusting pulley (F).



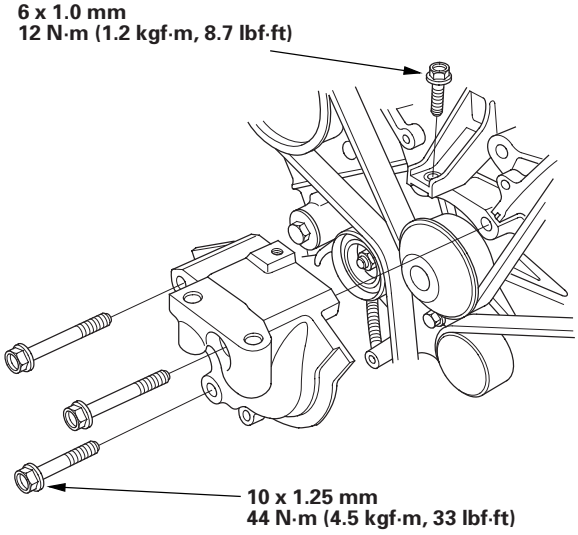
11. Tighten the idler pulley bolt.



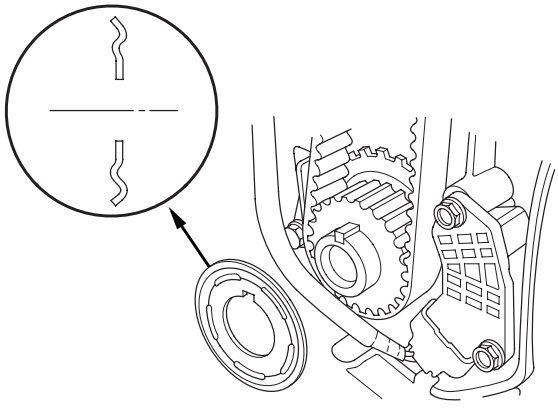
12. Remove the pin from the auto-tensioner.



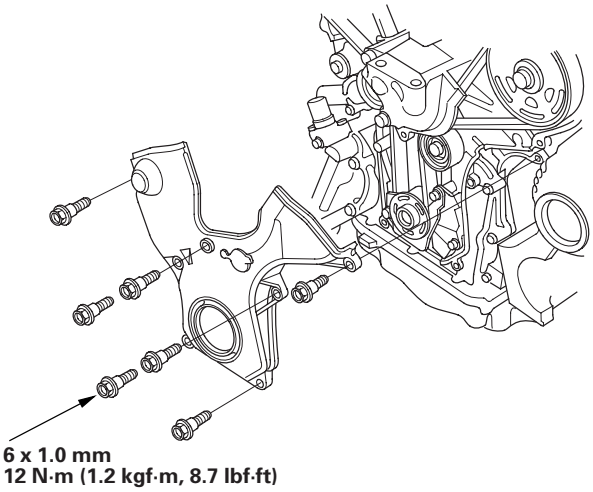
13. Install the engine mount bracket.



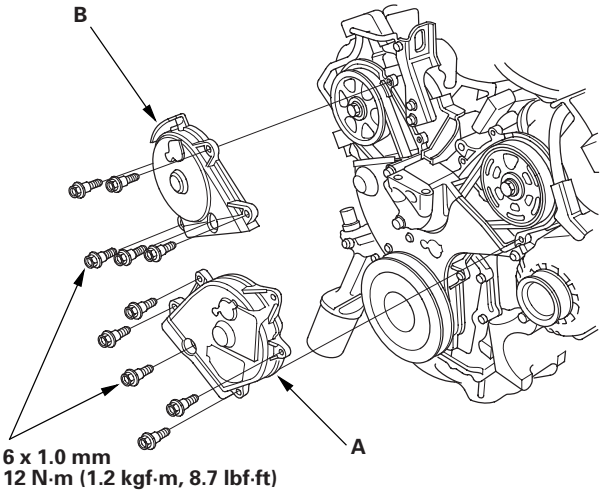
14. Install the timing belt guide plate as shown.



15. Install the lower cover.



16. Install the front upper cover (A) and rear upper cover (B).



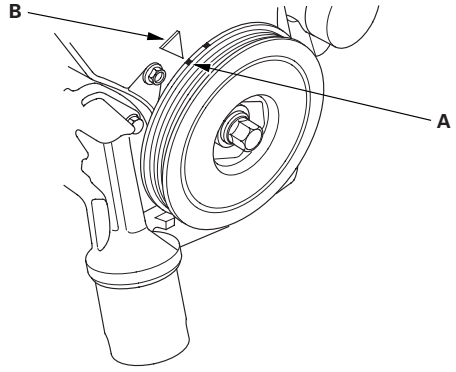
17. Install the crankshaft pulley (see page 6-60).

18. Rotate the crankshaft pulley about five or six turns clockwise so the timing belt positions itself on the pulleys.

(cont'd)

Timing Belt Installation (cont'd)

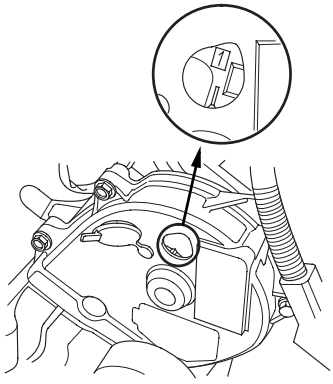
19. Turn the crankshaft pulley so its white mark (A) lines up with the pointer (B).



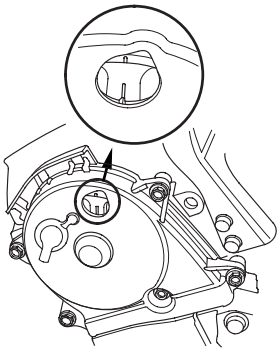
20. Check the camshaft pulley marks.

    - If the camshaft pulley marks are at TDC, go to step 21.
    - If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 2 through 20.

FRONT CAMSHAFT PULLEY:

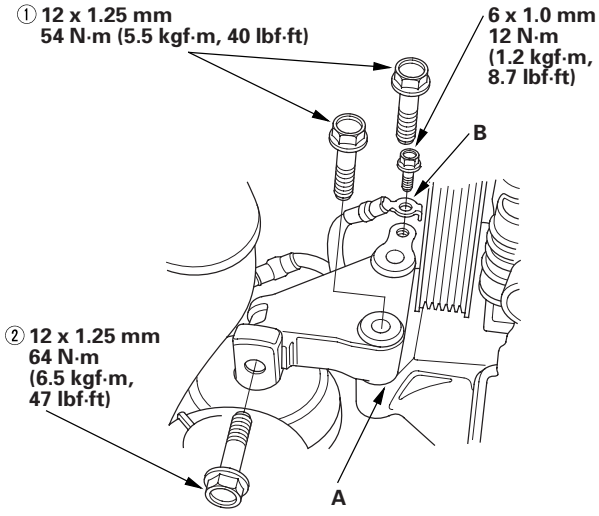


REAR CAMSHAFT PULLEY:



21. Install the drive belt.

22. Install the side engine mount bracket (A), then tighten the bolts in the numbered sequence shown.



23. Install the ground cable (B).

24. Perform the powertrain control module (PCM) reset procedure. (see page 11-240).

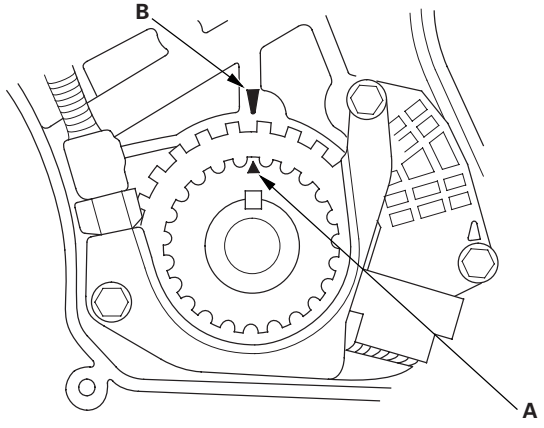
25. Perform the crankshaft position (CKP) pattern clear/ CKP pattern learn procedure (see page 11-240).

Used Belt

Follow this procedure when installing a used timing belt.

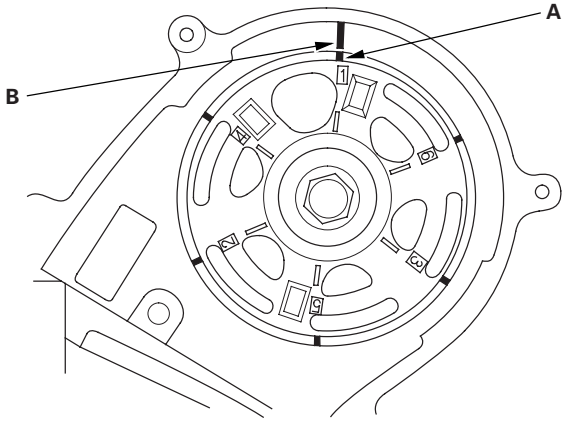
1. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.

2. Set the timing belt drive pulley to TDC by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.

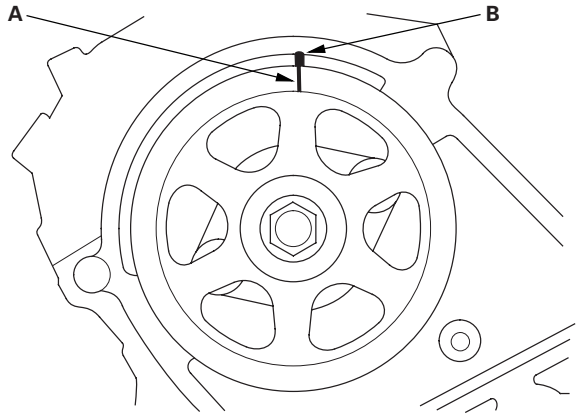


3. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT:



REAR:



(cont'd)

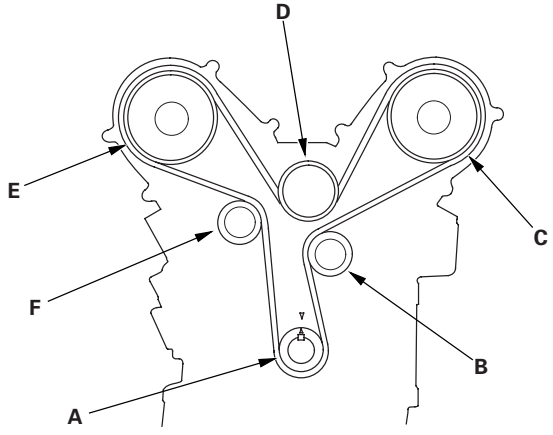
Timing Belt Installation (cont'd)

4. Apply liquid thread lock to the idler pulley bolt, then loosely install the idler pulley.

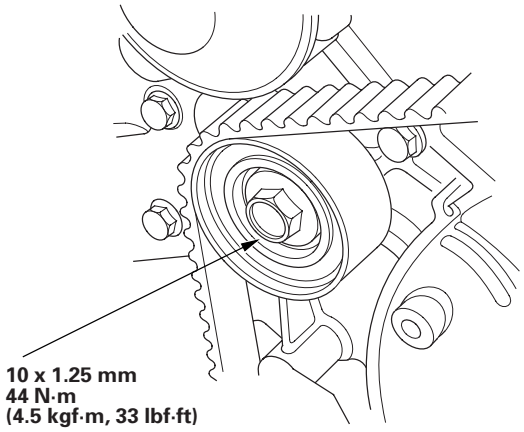
5. If the auto-tensioner has extended and the timing belt cannot be installed, perform the new belt installation procedure.

6. Install the timing belt in a counterclockwise sequence starting with the drive pulley. Take care not to damage the timing belt when installing it.

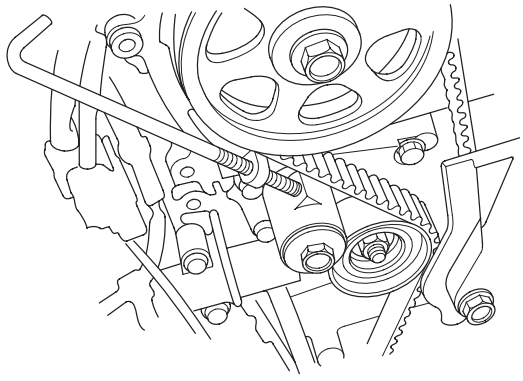
   1. Drive pulley (A).
   2. Idler pulley (B).
   3. Front camshaft pulley (C).
   4. Water pump pulley (D).
   5. Rear camshaft pulley (E).
   6. Adjusting pulley (F).



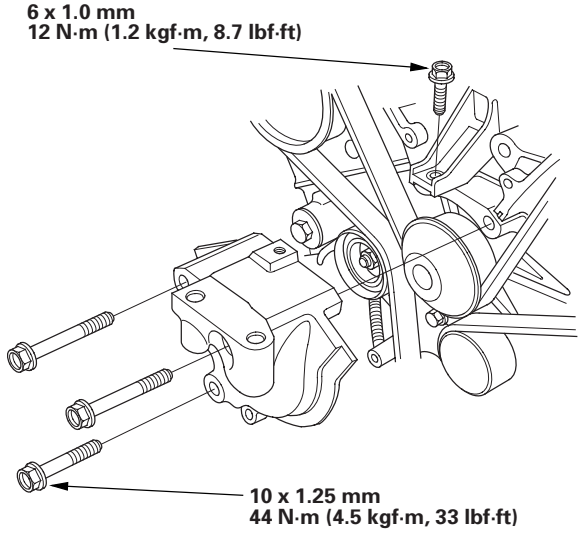
7. Tighten the idler pulley bolt.



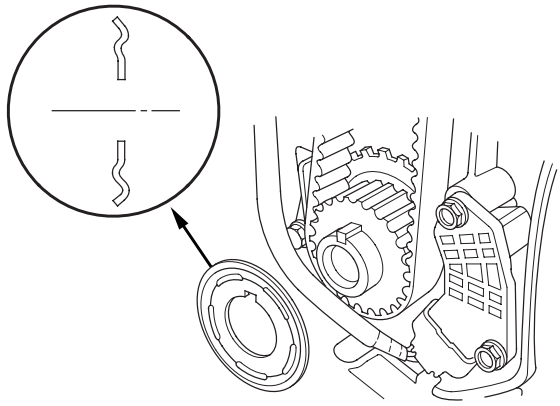
8. Remove the battery clamp bolt from the back cover.



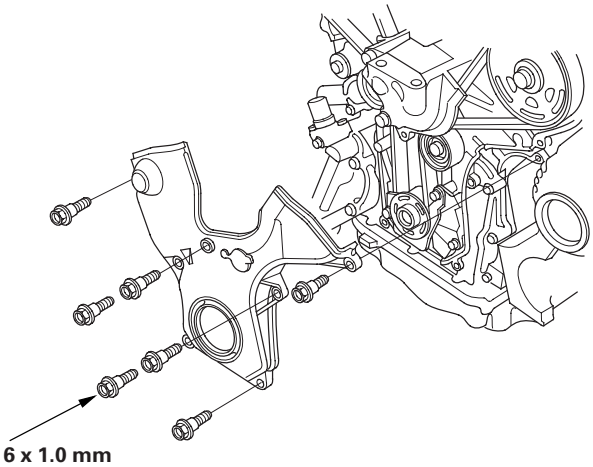
9. Install the engine mount bracket.



10. Install the timing belt guide plate as shown.

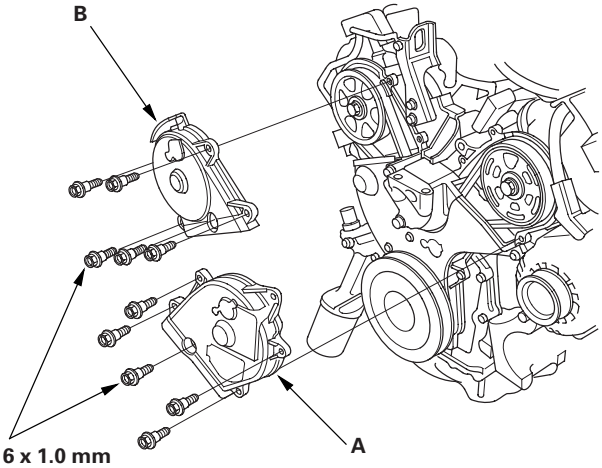


11. Install the lower cover.



6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

12. Install the front upper cover (A) and rear upper cover (B).

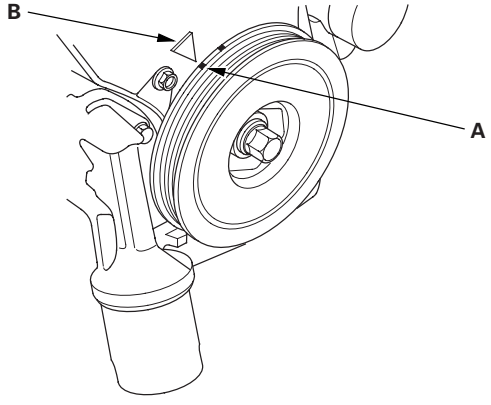


6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

13. Install the crankshaft pulley (see page 6-60).

14. Rotate the crankshaft pulley about five or six turns clockwise so the timing belt positions itself on the pulleys.

15. Turn the crankshaft pulley so its white mark (A) lines up with the pointer (B).



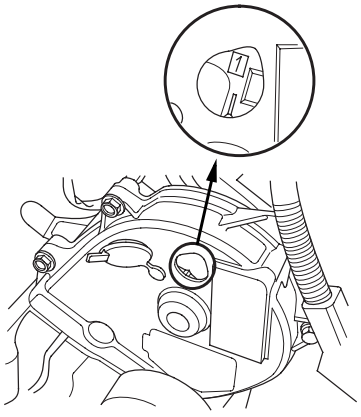
(cont'd)

Timing Belt Installation (cont'd)

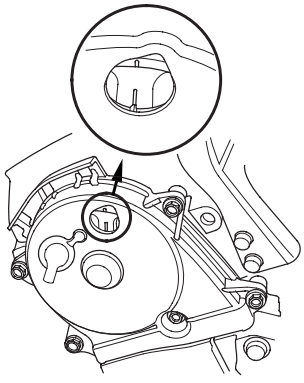
16. Check the camshaft pulley marks.

    - If the camshaft pulley marks are at TDC, go to step 17.
    - If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 2 through 16.

FRONT CAMSHAFT PULLEY:

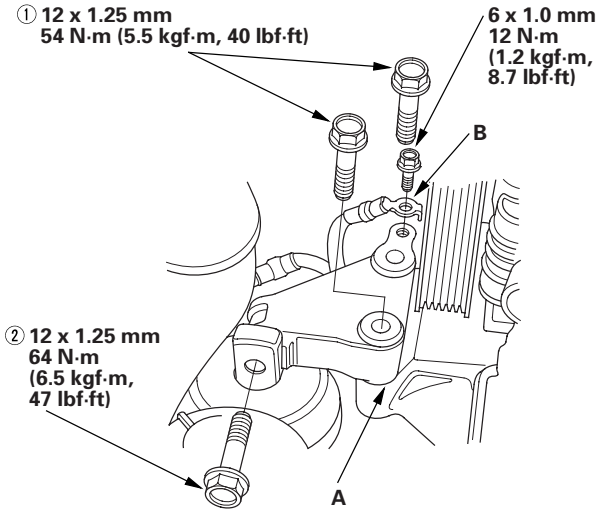


REAR CAMSHAFT PULLEY:



17. Install the drive belt.

18. Install the upper bracket (A), then tighten the bolts in the numbered sequence shown.



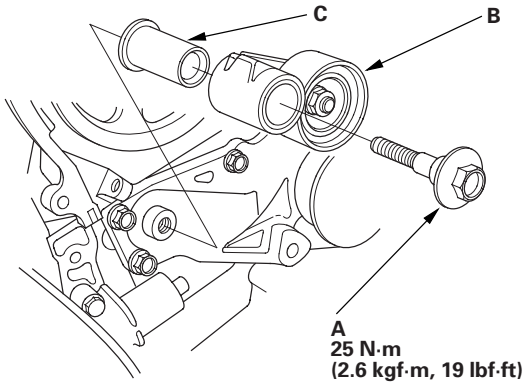
19. Install the ground cable (B).

20. Perform the powertrain control module (PCM) reset procedure (see page 11-240).

21. Perform the crankshaft position (CKP) pattern clear/ CKP pattern learn procedure (see page 11-240).

Timing Belt Adjuster Replacement

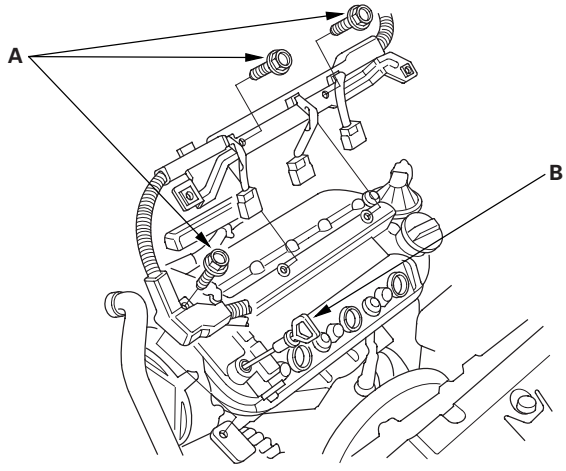
1. Remove the timing belt (see page 6-62).
2. Remove the auto-tensioner.
3. Remove the bolt (A), then remove the timing belt adjuster (B) and collar (C).



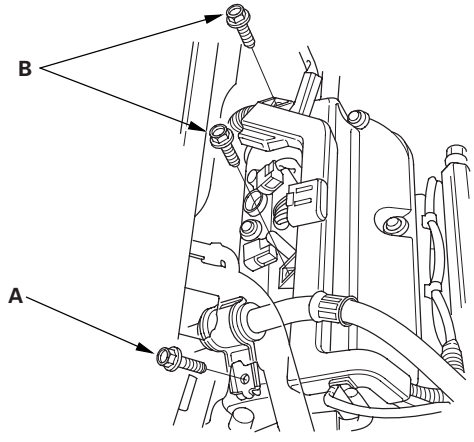
4. Install in the reverse order of removal.

Cylinder Head Cover Removal

1. Remove the intake manifold (see page 9-13).
2. Remove the six ignition coils (see page 4-80).
3. Remove the three bolts (A) securing the harness holder, and remove the dipstick (B).



4. Remove the bolt (A) securing the power steering hose bracket.



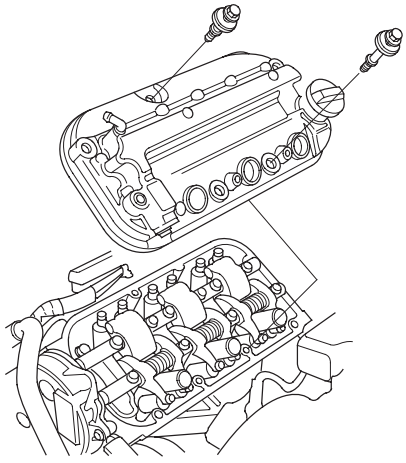
5. Remove the two bolts (B) securing the harness holder.

(cont'd)

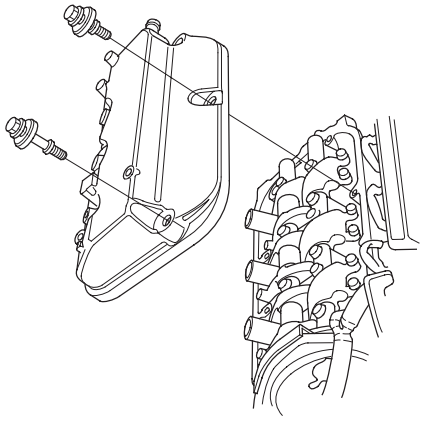
Cylinder Head Cover Removal (cont'd)

6. Remove the cylinder head covers.

FRONT:



REAR:

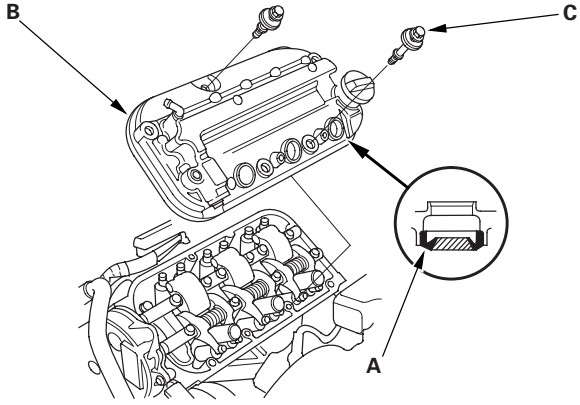


Cylinder Head Cover Installation

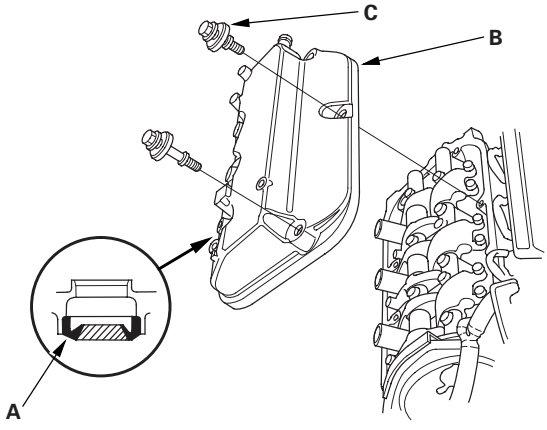
1. Clean the head cover contacting surfaces with a shop towel.

2. Set the spark plug seals (A) on the spark plug tubes, and install the cylinder head covers (B).

FRONT:



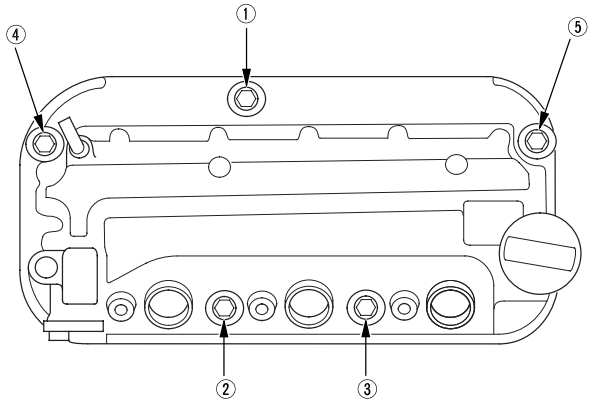
REAR:



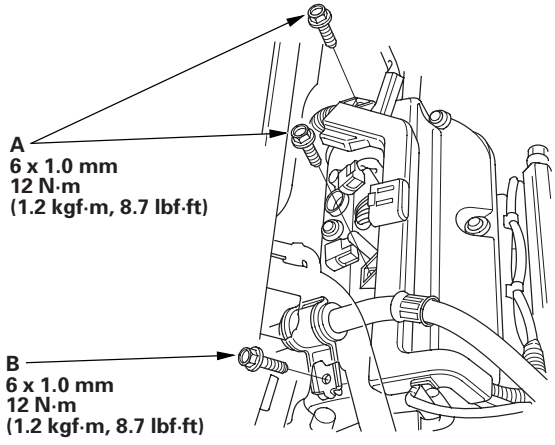
3. Visually check the spark plug seals for damage.

4. Inspect the cover washer (C). Replace any washer that is damaged or deteriorated.

5. Tighten the bolts in two or three steps. In the final step, tighten all bolts in sequence, 12 N·m (1.2 kgf·m, 8.7 lbf·ft)

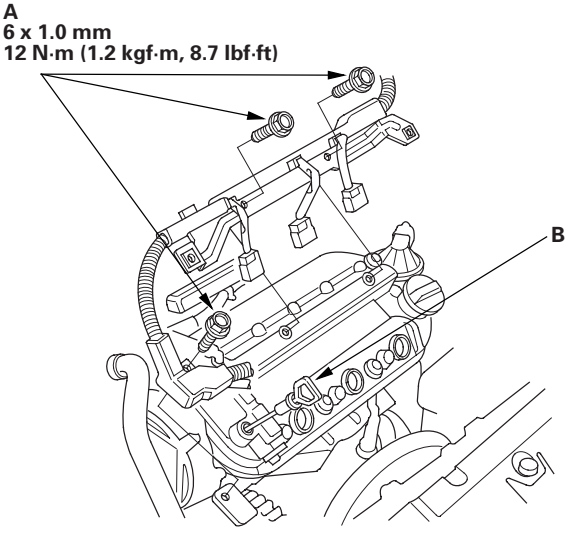


6. Tighten the two bolts (A) securing the harness holder.



7. Tighten the bolt (B) securing the power steering hose bracket.

8. Tighten the three bolts (A) securing the harness holder, and Install the dipstick (B).



9. Install the six ignition coils (see page 4-80).

10. Install the intake manifold (see page 9-14).

Cylinder Head Removal

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- To avoid damage, unplug the wiring connectors carefully while holding the connector portion.
- To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 38 ℃ (100 ℉) before loosening the cylinder head bolts.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.

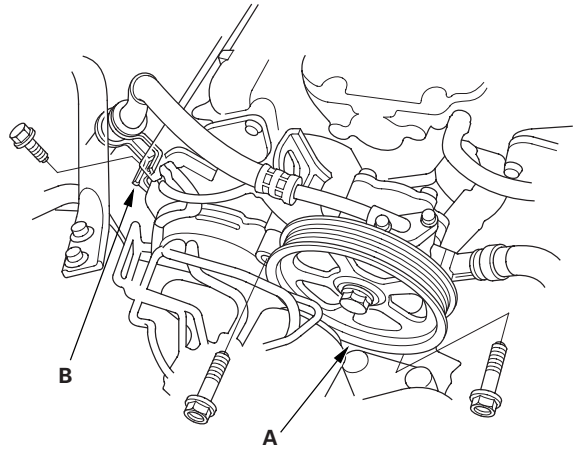
1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the radio's preset buttons.

2. Disconnect the battery negative cable from the battery.

3. Drain the engine coolant (see page 10-24).

4. Remove the drive belt (see page 4-89).

5. Remove the power steering pump (A), and P/S hose bracket (B).



6. Remove the alternator (see page 4-92).

7. Relieve fuel pressure (see page 11-471).

8. Remove the intake manifold (see page 9-13).

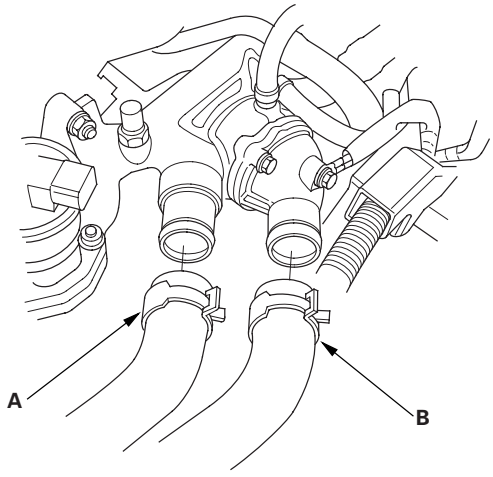
9. Remove the six ignition coils (see page 4-80).

10. Remove the timing belt (see page 6-62).

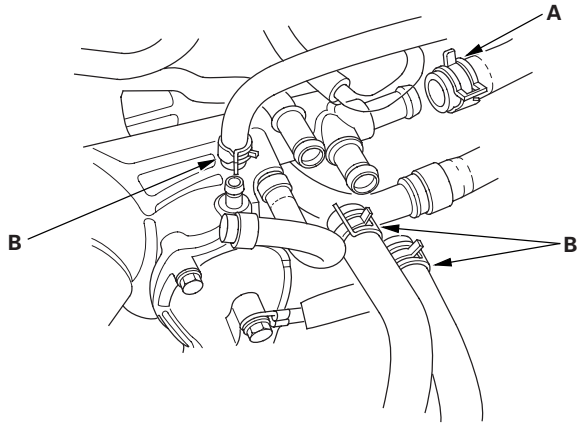
11. Remove these engine wire harness connectors and wire harness clamps from the cylinder head.

    - Six injector connectors
    - Engine coolant temperature (ECT) sensor connector
    - Crankshaft position (CKP) sensor connector
    - Exhaust gas recirculation (EGR) valve connector
    - VTEC solenoid valve connector
    - VTEC oil pressure switch connector
    - Oil pressure switch connector
    - Two air fuel ratio (A/F) sensor connectors
    - Two secondary heated oxygen sensor (secondary HO2S) connectors

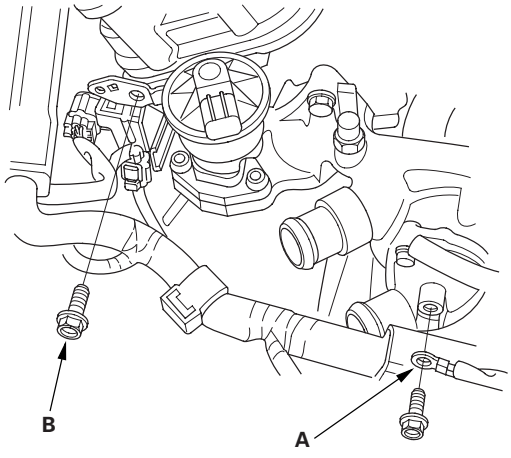
12. Remove the upper radiator hose (A), and lower radiator hose (B).



13. Remove the heater hose (A) and water bypass hoses (B).

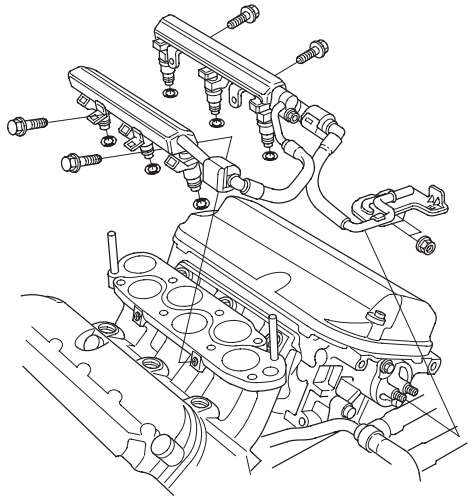


14. Remove the ground cable (A).

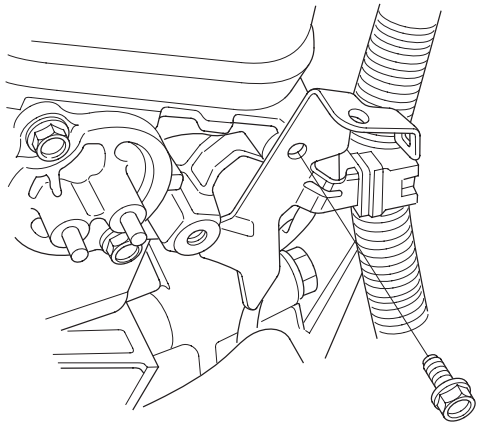


15. Remove the bolt (B) securing the harness bracket.

16. Remove the fuel rails.



17. Remove the bolt securing the harness bracket.

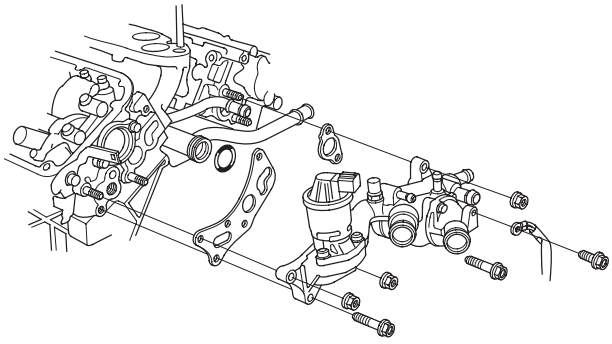


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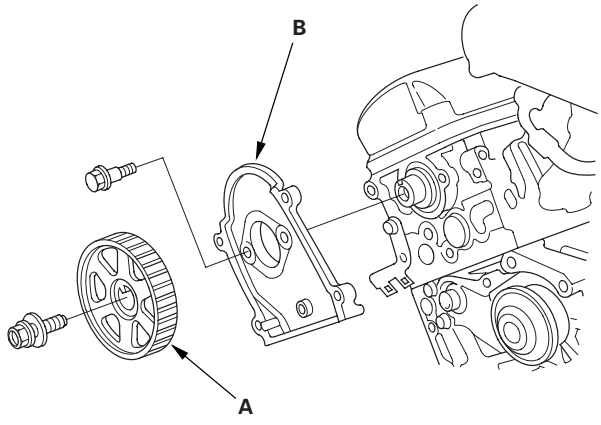
Cylinder Head Removal (cont'd)

18. Remove the front and rear warm up three way catalytic converter (WU-TWC) (see page 11-492).

19. Remove the water passage.

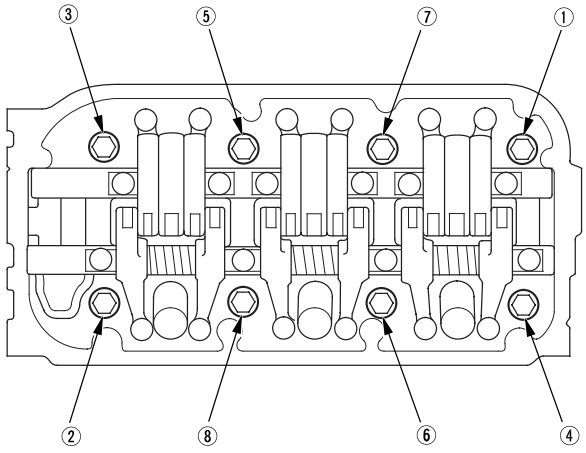


20. Remove the camshaft pulleys (A) and back covers (B).



21. Remove the cylinder head covers (see page 6-73).

22. Remove the cylinder head bolts. To prevent warpage, unscrew the bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

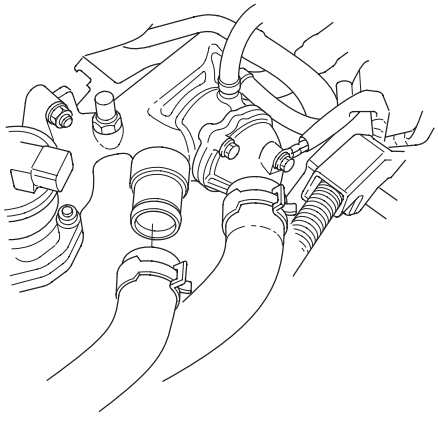


23. Remove the cylinder heads.

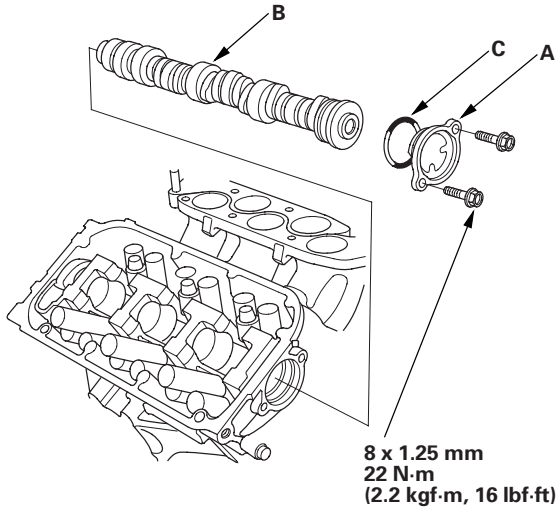
Camshaft Replacement

FRONT:

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the radio's preset buttons.
2. Disconnect the negative cable from the battery first, then the positive cable.
3. Remove the battery.
4. Drain the engine coolant (see page 10-24).
5. Remove the upper radiator hose.



6. Remove the exhaust gas recirculation (EGR) valve (see page 11-506).
7. Remove the timing belt (see page 6-62).
8. Remove the rocker arm assembly (see page 6-81).
9. Remove the front camshaft pulley.
10. Remove the thrust cover (A), then remove the front camshaft (B).



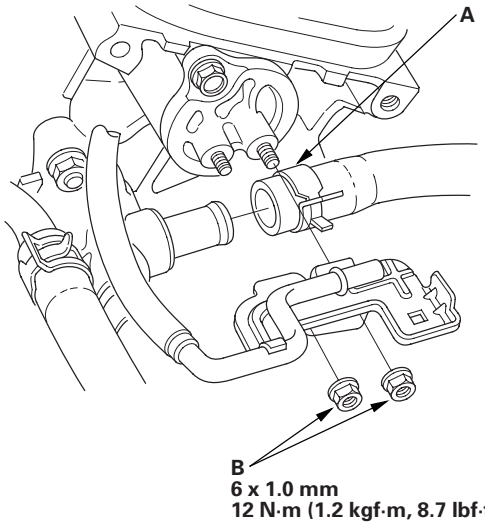
11. Install the front camshaft in the reverse order of removal. Always use a new O-ring (C).
12. Fill the radiator with engine coolant and bleed air (see page 10-24).
13. Install the battery. Clean the battery posts and cable terminals with sandpaper, then assemble them and apply grease to prevent corrosion.
14. Perfom the powertrain control module (PCM) idle learn procedure (see page 11-193), and power window control unit reset procedure (see page 22-219).
15. Perform the powertrain control module (PCM) reset procedure (see page 11-240).
16. Perform the crankshaft position (CKP) pattern clear/ CKP pattern learn procedure (see page 11-240).
17. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets. Set the clock.

(cont'd)

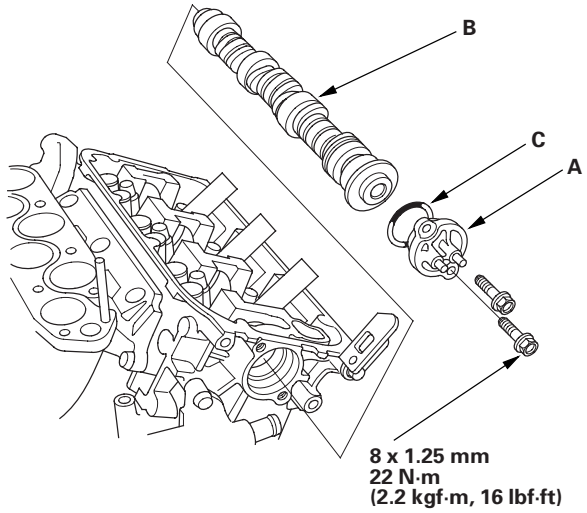
Camshaft Replacement (cont'd)

REAR:

1. Remove the under-hood fuse/relay box.
2. Drain the engine coolant (see page 10-24).
3. Relieve fuel pressure (see page 11-471).
4. Remove the heater hose (A), and two nuts (B) securing the fuel line.



5. Remove the timing belt (see page 6-62).
6. Remove the rocker arm assembly (see page 6-81).
7. Remove the rear camshaft pulley.
8. Remove the thrust cover (A), then remove the rear camshaft (B).



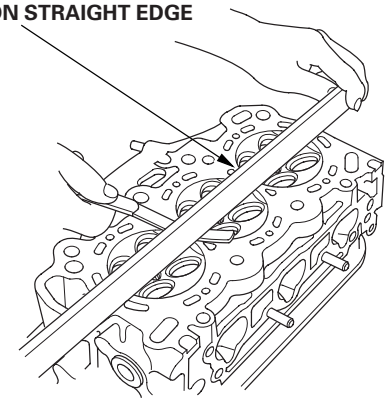
9. Install the rear camshaft in the reverse order of removal. Alway use a new O-ring (C).
10. Fill the radiator with engine coolant and bleed air (see page 10-24).
11. Perform the powertrain control module (PCM) reset procedure (see page 11-240).
12. Perform the crankshaft position (CKP) pattern clear/ CKP pattern learn procedure (see page 11-240).

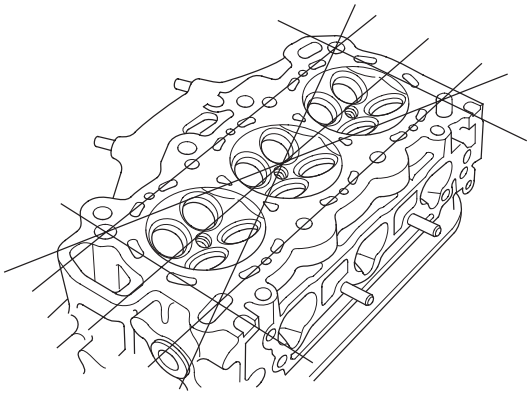
Cylinder Head Inspection for Warpage

1. Remove the cylinder head (see page 6-76).
2. Inspect the camshaft (see page 6-85).
3. Check the cylinder head for warpage. Measure along the edges, and three ways across the center.
   - If warpage is less than 0.05 mm (0.002 in.), cylinder head resurfacing is not required.
   - If warpage is between 0.05 mm (0.002 in.) and 0.2 mm (0.008 in.), resurface the cylinder head.
   - Maximum resurface limit is 0.2 mm (0.008 in.) based on a height of 121 mm (4.76 in.).

Cylinder Head Height
Standard (New): 120.95—121.05 mm (4.762—4.766 in.)

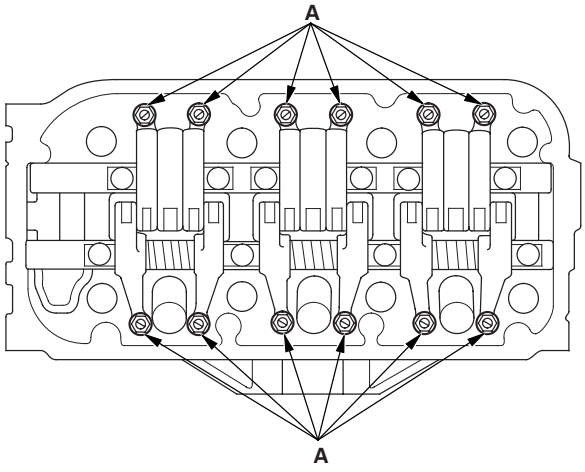
PRECISION STRAIGHT EDGE





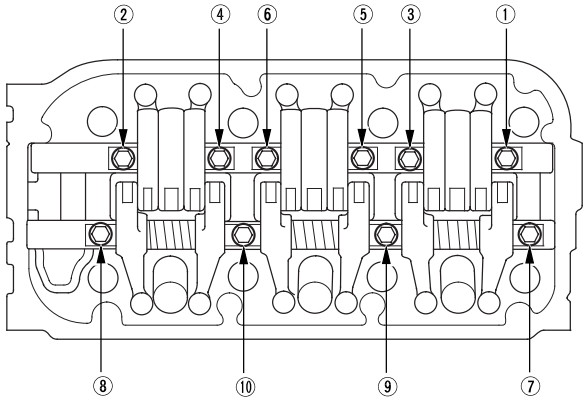
Rocker Arm Assembly Removal

1. Remove the cylinder head cover (see page 6-73).
2. Loosen the adjusting screws (A).



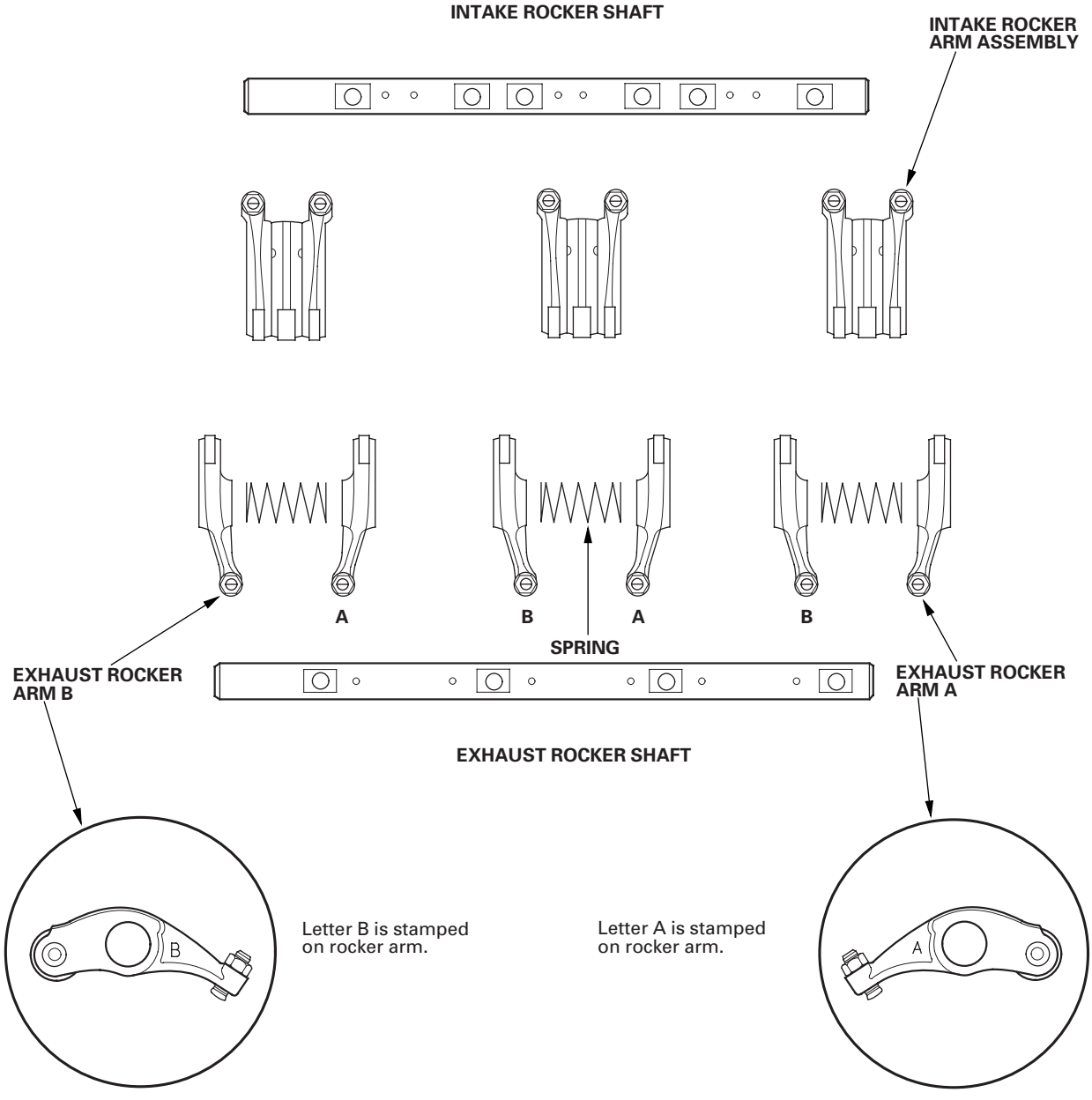
3. Remove the bolts and the rocker arm assembly.
   - 1 Unscrew the rocker shaft mounting bolts two turns at a time, in a crisscross pattern, to prevent damaging the valves or rocker arm assembly.
   - 2 When removing the rocker arm assembly, do not remove the rocker shaft mounting bolts. The bolts will keep the springs and the rocker arms on the shafts.

Camshaft Holder Bolt Loosening Sequence:



Rocker Arms and Shafts Disassembly/Reassembly

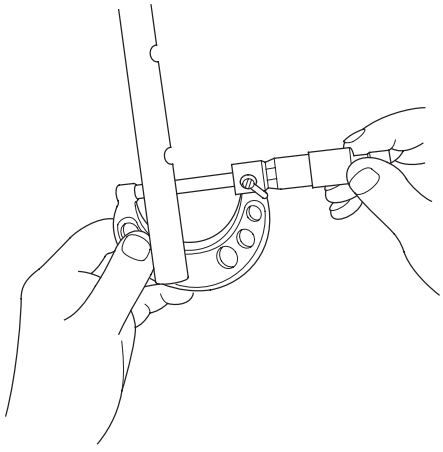
NOTE:
- Identify parts as they are removed so they can be reinstalled in their original locations.
- Inspect the rocker shafts and rocker arms (see page 6-83).
- Rocker arms must be installed in the same positions if reused.
- When removing or installing the rocker arm assembly, do not remove the rocker shaft mounting bolts. The bolts will keep the springs and rocker arms on the shaft.
- Bundle the intake rocker arms with rubber bands to keep them together as a set.
- Prior to reassembling, clean all the parts in solvent, dry them and apply lubricant to any contact points.



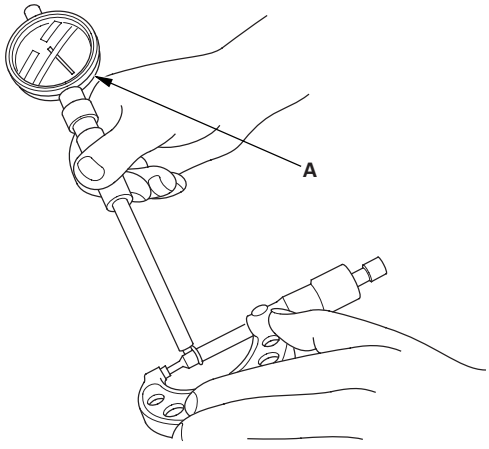
Rocker Arms and Shafts Inspection

1. Remove the rocker arm assembly (see page 6-81).

2. Measure the diameter of the shaft at the first rocker location.

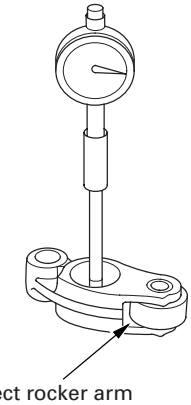


3. Zero the gauge (A) to the shaft diameter.



4. Measure the inside diameter of the rocker arm, and check it for an out-of-round condition.

Rocker Arm-to-Shaft Clearance
Standard (New):
Intake: 0.026—0.067 mm (0.0010—0.0026 in.)
Service Limit: 0.067 mm (0.0026 in.)
Exhaust: 0.026—0.077 mm (0.0010—0.0030 in.)
Service Limit: 0.077 mm (0.0030 in.)



5. Repeat for all rockers and both shafts. If the clearance is over the limit, replace the rocker shaft and all over-tolerance rocker arms. If any intake rocker arm needs replacement, replace all three rocker arms in that set (primary, mid, and secondary).

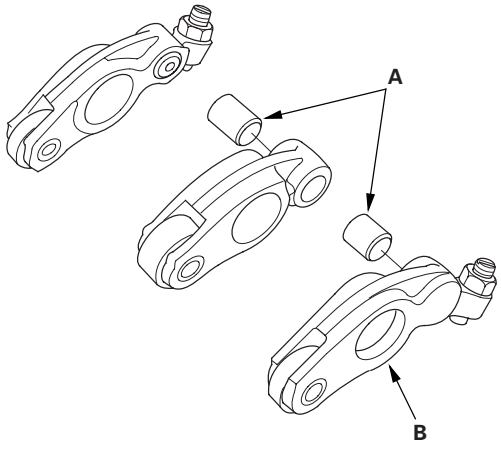
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Rocker Arms and Shafts Inspection (cont'd)

VTEC Rocker Arms

6. Inspect the rocker arm synchronizing pistons (A). Push them manually. If they do not move smoothly, replace the rocker arm set.

   NOTE:
   - Apply oil to the pistons when reassembling.
   - When reassembling the primary rocker arm (B), carefully apply air pressure to the oil passage of the rocker arm.



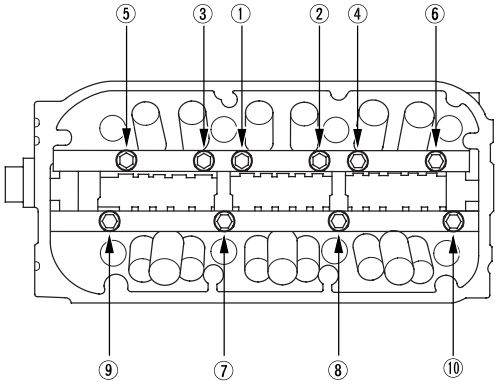
Camshaft Inspection

1. Remove the cylinder head (see page 6-76).

2. Remove the rocker arms (see page 6-81).

3. Put the rocker shafts on the cylinder head, then tighten the bolts to the specified torque.

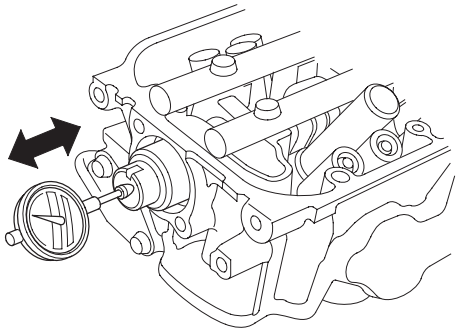
   Specified torque:
   8 x 1.25 mm
   24 N·m (2.4 kgf·m, 17 lbf·ft)
   Apply engine oil to the threads and flange of the exhaust rocker shaft mounting bolts.



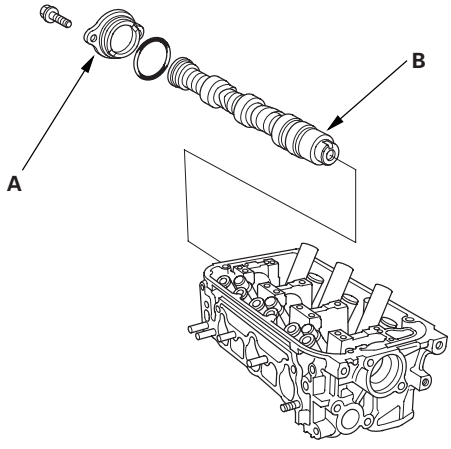
4. Seat the camshaft by pushing it toward the rear of the cylinder head.

5. Zero the dial indicator against the end of the camshaft. Push the camshaft back and forth and read the end play. If the end play is beyond the service limit, replace the thrust cover and recheck. If it is still beyond the service limit, replace the camshaft.

   Camshaft End Play
   Standard (New): 0.05—0.20 mm (0.002—0.008 in.)
   Service Limit: 0.20 mm (0.008 in.)



6. Remove the camshaft thrust cover (A), then pull out the camshaft (B).

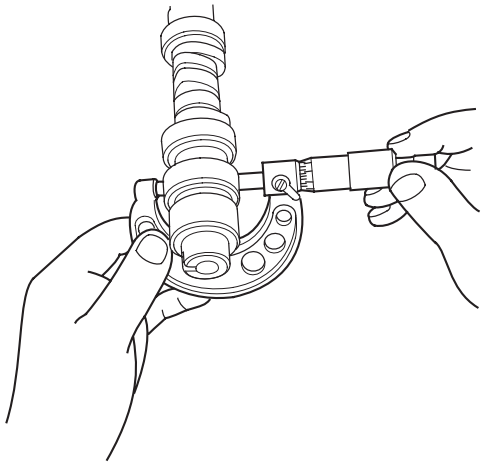


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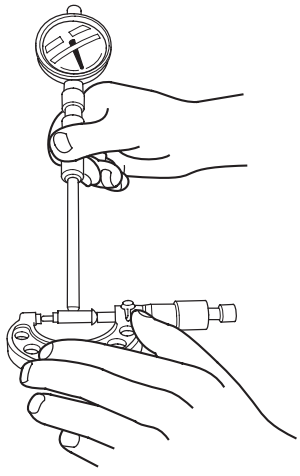
Camshaft Inspection (cont'd)

7. Wipe the camshaft clean, then inspect the lift ramps. Replace the camshaft if any lobes are pitted, scored, or excessively worn.

8. Measure the diameter of each camshaft journal.



9. Zero the gauge to the journal diameter.

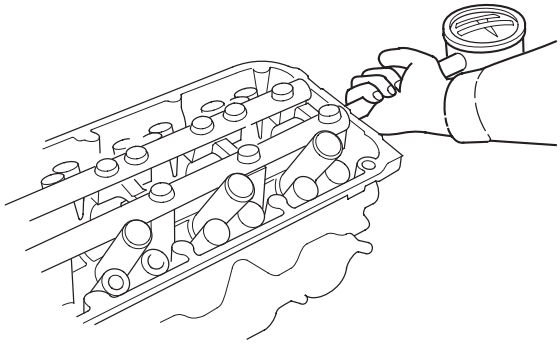


10. Clean the camshaft bearing surfaces in the cylinder head. Measure the inside diameter of each camshaft bearing surface, and check for an out-of-round condition.

    - If the camshaft-to-holder clearance is within limits, go to step 12.
    - If the camshaft-to-holder clearance is beyond the service limit and the camshaft has been replaced, replace the cylinder head.
    - If the camshaft-to-holder clearance is beyond the service limit and the camshaft has not been replaced, go to step 11.

Camshaft-to-Holder Oil Clearance

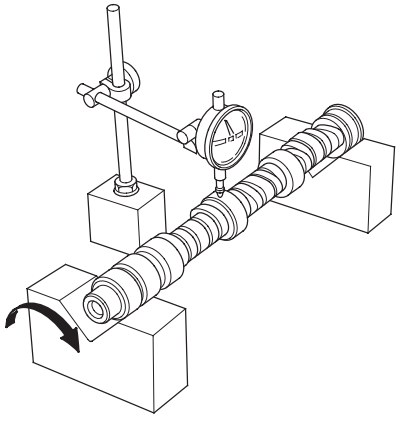
Standard (New):	**0.050—0.089 mm (0.0020—0.0035 in.)**
Service Limit:	**0.15 mm (0.006 in.)**



11. Check total runout with the camshaft supported on V-blocks.

    • If the total runout of the camshaft is within the service limit, replace the cylinder head.
    • If the total runout is beyond the service limit, replace the camshaft and recheck the oil clearance. If the oil clearance is still out of tolerance, replace the cylinder head.

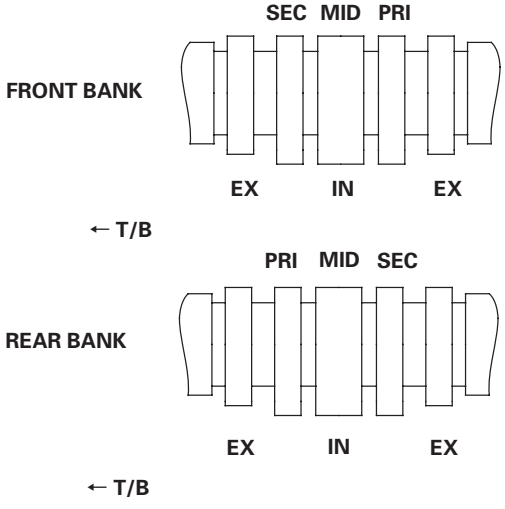
    Camshaft Total Runout
    Standard (New): 0.03 mm (0.001 in.) max.
    Service Limit: 0.04 mm (0.002 in.)



12. Measure cam lobe height.

    Cam Lobe Height Standard (New):

	INTAKE	EXHAUST
PRI	35.041 mm (1.3796 in.)	36.326 mm (1.4302 in.)
MID	36.445 mm (1.4348 in.)	
SEC	35.284 mm (1.3891 in.)	



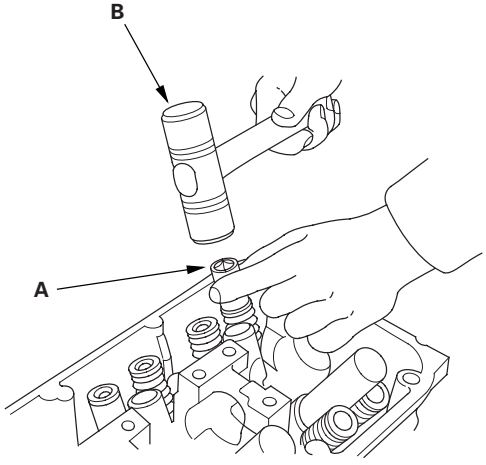
Valves, Springs, and Valve Seals Removal

Special Tools Required
Valve spring compressor 07757-0010000

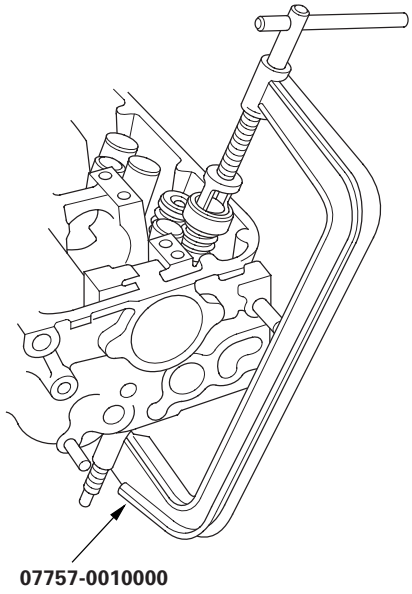
Identify the valves and valve springs as they are removed so that each item can be reinstalled in its original position.

1. Remove the cylinder head (see page 6-76).

2. Using an appropriate-sized socket (A) and plastic mallet (B), lightly tap the valve retainer to loosen the valve keepers.



3. Install the valve spring compressor. Compress the spring and remove the valve keepers.



Valve Inspection

1. Remove the valves (see page 6-88).

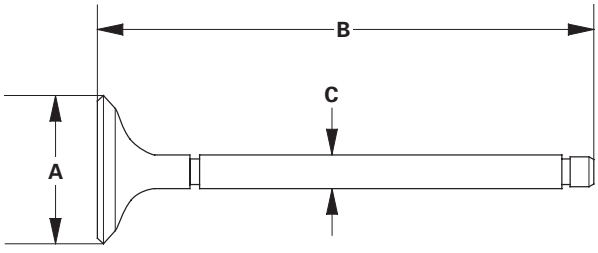
2. Measure the valve in these areas.

Intake Valve Dimensions

A Standard (New):	**34.90—35.10 mm (1.374—1.382 in.)**
B Standard (New):	**115.70—116.30 mm (4.555—4.579 in.)**
C Standard (New):	**5.485—5.495 mm (0.2159—0.2163 in.)**
C Service Limit:	**5.455 mm (0.2148 in.)**

Exhaust Valve Dimensions

A Standard (New):	**29.90—30.10 mm (1.177—1.185 in.)**
B Standard (New):	**113.90—114.50 mm (4.484—4.508 in.)**
C Standard (New):	**5.450—5.460 mm (0.2146—0.2150 in.)**
C Service Limit:	**5.420 mm (0.2134 in.)**



Valve Stem-to-Guide Clearance Inspection

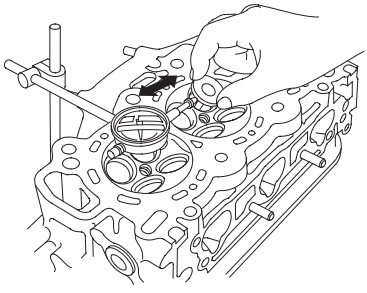
1. Remove the valves (see page 6-88).

2. Slide the valve out of its guide about 10 mm, then measure the guide-to-stem clearance with a dial indicator while rocking the stem in the direction of normal thrust (wobble method).

   - If the measurement exceeds the service limit, recheck it using a new valve.
   - If the measurement is now within the service limit, reassemble using a new valve.
   - If the measurement with a new valve still exceeds the service limit, go to step 3.

   Intake Valve Stem-to-Guide Clearance
   Standard (New): 0.04—0.09 mm (0.002—0.004 in.)
   Service Limit: 0.16 mm (0.006 in.)

   Exhaust Valve Stem-to-Guide Clearance
   Standard (New): 0.11—0.16 mm (0.004—0.006 in.)
   Service Limit: 0.22 mm (0.009 in.)



3. Subtract the O.D. of the valve stem, measured with a micrometer, from the I.D. of the valve guide, measured with an inside micrometer or ball gauge. Take the measurements in three places along the valve stem and three places inside the valve guide. The difference between the largest guide measurement and the smallest stem measurement should not exceed the service limit.

   Intake Valve Stem-to-Guide Clearance
   Standard (New): 0.020—0.045 mm (0.0008—0.0018 in.)
   Service Limit: 0.08 mm (0.003 in.)

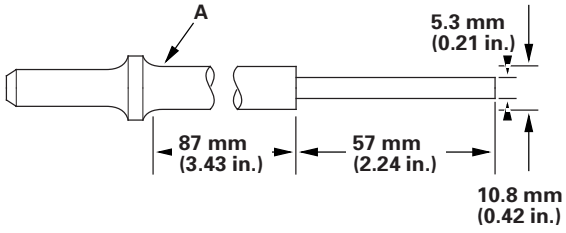
   Exhaust Valve Stem-to-Guide Clearance
   Standard (New): 0.055—0.080 mm (0.0022—0.0031 in.)
   Service Limit: 0.11 mm (0.004 in.)

Valve Guide Replacement

Special Tools Required
- Valve guide driver, 5.5 mm 07742-0010100
- Valve guide reamer, 5.525 mm 07HAH-PJ70100

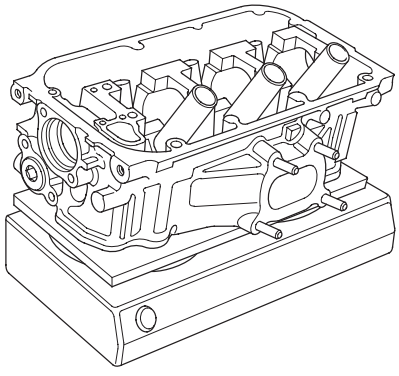
1. Inspect valve stem-to-guide clearance (see page 6-89).

2. As illustrated below, use a commercially available air-impact valve guide driver (A) modified to fit the diameter of the valve guides. In most cases, the same procedure can be done using the special tool and a conventional hammer.



3. Select the proper replacement guides, and chill them in the freezer section of a refrigerator for about an hour.

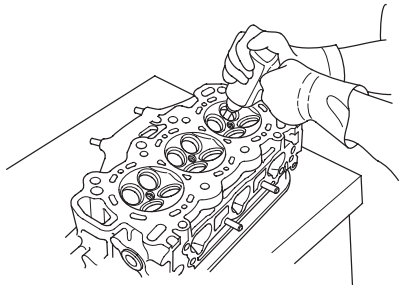
4. Use a hot plate or oven to evenly heat the cylinder head to 150°C (300°F). Monitor the temperature with a cooking thermometer. Do not get the head hotter than 150°C (300°F); excessive heat may loosen the valve seats.

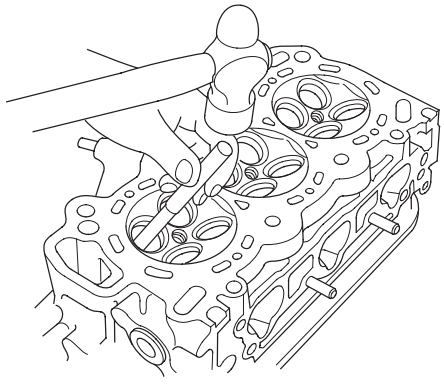


5. Working from the camshaft side, use the driver and an air hammer to drive the guide about 2 mm (0.1 in.) towards the combustion chamber. This will knock off some of the carbon and make removal easier. Hold the air hammer directly in line with the valve guide to prevent damaging the driver. Wear safety goggles or a face shield.

6. Turn the head over, and drive the guide out toward the camshaft side of the head.







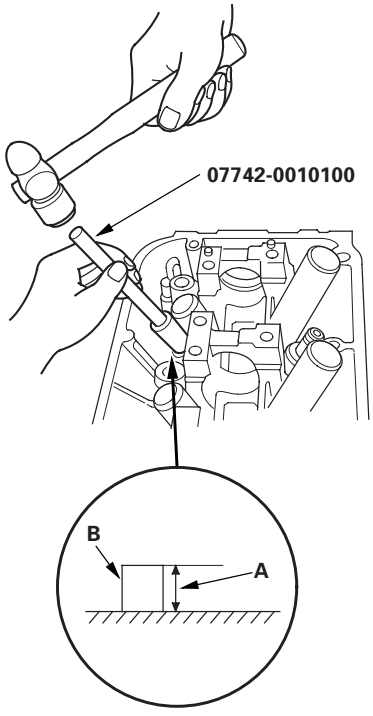
7. If a valve guide still won't move, drill it out with a 8 mm (5/16 inch) bit, then try again.

   NOTE: Drill guides only in extreme cases; you could damage the cylinder head if the guide breaks.

8. Remove the new guide(s) from the freezer, one at a time, as you need them.

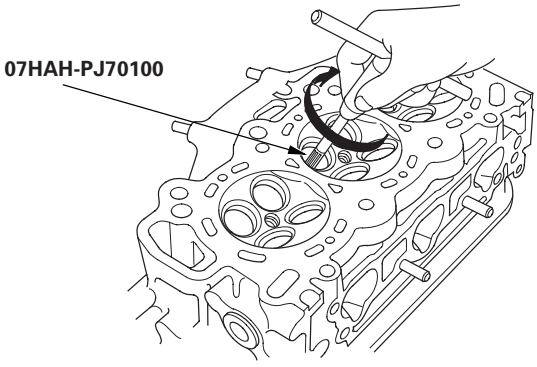
9. Apply a thin coat of clean engine oil to the outside of the new valve guide. Install the guide from the camshaft side of the head; use the special tool to drive the guide to the specified installed height (A) of the guide (B). If you have all 12 guides to do, you may have to reheat the head.

Valve Guide Installed Height
Intake: 21.20—22.20 mm (0.835—0.874 in.)
Exhaust: 20.63—21.63 mm (0.812—0.852 in.)



10. Coat both the reamer and the valve guide with cutting oil.

11. Rotate the reamer clockwise the full length of the valve guide bore.



12. Continue to rotate the reamer clockwise while removing it from the bore.

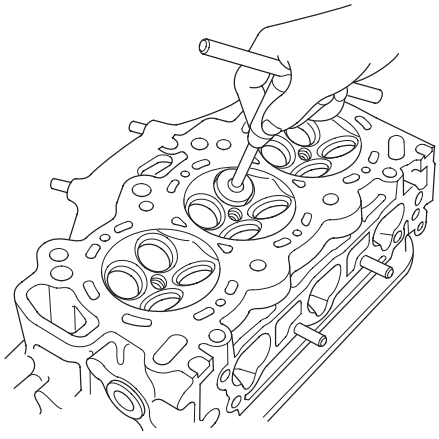
13. Thoroughly wash the guide in detergent and water to remove any cutting residue.

14. Check the clearance with a valve (see page 6-89). Verify that a valve slides in the intake and exhaust valve guides without exerting pressure.

Valve Seat Reconditioning

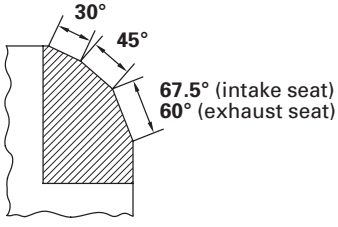
1. Inspect valve stem-to-guide clearance (see page 6-89). If the valve guides are worn, replace them (see page 6-90) before cutting the valve seats.

2. Renew the valve seats in the cylinder head using a valve seat cutter.



3. Carefully cut a 45° seat, removing only enough material to ensure a smooth and concentric seat.

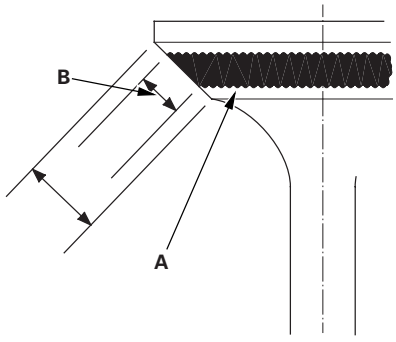
4. Bevel the upper edge of the seat with the 30° cutter and the lower edge of the seat with the 67.5° cutter (intake seat) or the 60° cutter (exhaust seat). Check the width of the seat and adjust accordingly.



5. Make one more very light pass with the 45° cutter to remove any possible burrs caused by the other cutters.

   Valve Seat Width
   Standard (New): 1.25—1.55 mm (0.049—0.061 in.)
   Service Limit: 2.00 mm (0.079 in.)

6. After resurfacing the seat, inspect it for even valve seating: Apply Prussian Blue compound (A) to the valve face. Insert the valve in its original location in the head, then lift it and snap it closed against the seat several times.



7. The actual valve seating surface (B), as shown by the blue compound, should be centered on the seat.

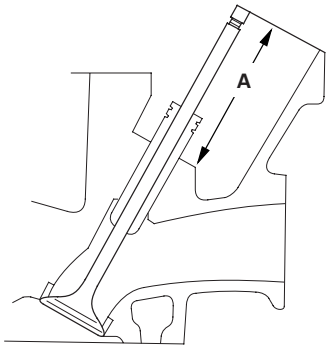
   - If it is too high (closer to the valve stem), you must make a second cut with the 67.5° cutter (intake seat) or the 60° cutter (exhaust seat) to move it down, then one more cut with the 45° cutter to restore seat width.
   - If it is too low (closer to the valve edge), you must make a second cut with the 30° cutter to move it up, then one more cut with the 45° cutter to restore seat width.

   NOTE: The final cut should always be made with the 45° cutter.

8. Insert the intake and exhaust valves in the head, and measure the valve stem installed height (A).

Intake Valve Stem Installed Height
Standard (New): 46.75—47.55 mm (1.841—1.872 in.)
Service Limit: 47.80 mm (1.882 in.)

Exhaust Valve Stem Installed Height
Standard (New): 46.68—47.48 mm (1.838—1.869 in.)
Service Limit: 47.73 mm (1.879 in.)



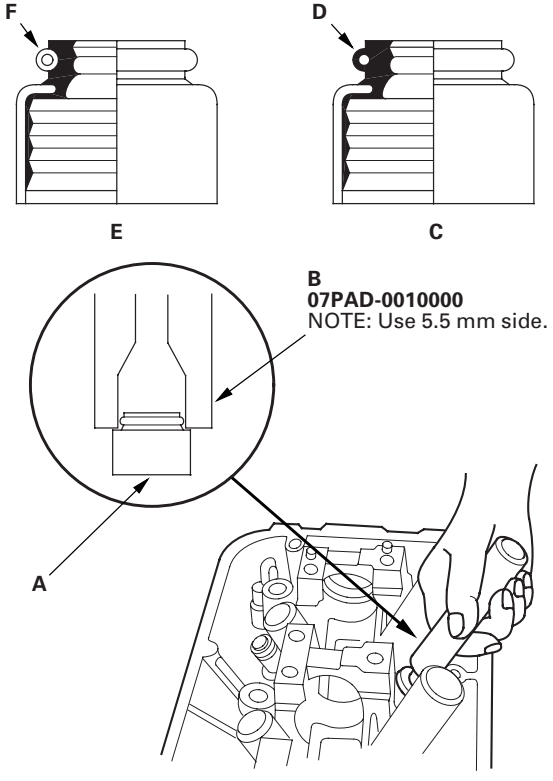
9. If the valve stem installed height is over the service limit, replace the valve and recheck. If it is still over the service limit, replace the cylinder head; the valve seat in the head is too deep.

Valves, Springs, and Valve Seals Installation

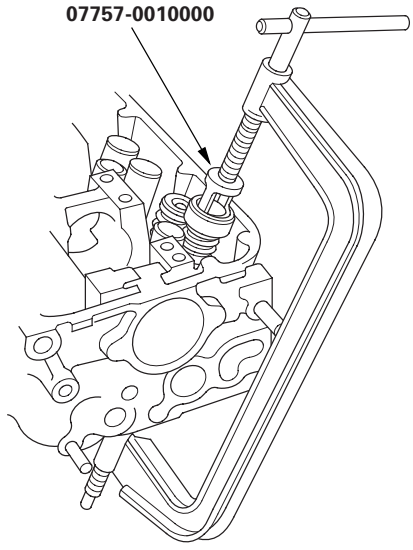
Special Tools Required
- Stem seal driver 07PAD-0010000
- Valve spring compressor 07757-0010000

1. Coat the valve stems with engine oil. Install the valves in the valve guides.
2. Check that the valves move up and down smoothly.
3. Install the spring seats on the cylinder head.
4. Install the new valve seals (A) using the valve guide seal driver (B).

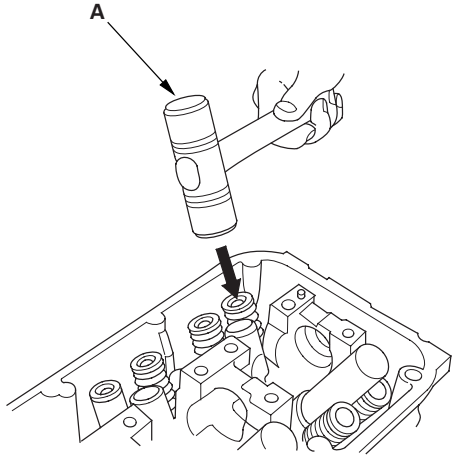
   NOTE: Exhaust valve seals (C) have a black spring (D) and intake valve seals (E) have a white spring (F); they are not interchangeable.



5. Install the valve spring and valve retainer. Place the end of the valve spring with closely wound coils toward the cylinder head.
6. Install the valve spring compressor. Compress the spring and install the valve keepers.



7. Lightly tap the end of each valve stem two or three times with a plastic mallet (A) to ensure proper seating of the valve and valve keepers. Tap the valve stem only along its axis so you do not bend the stem.



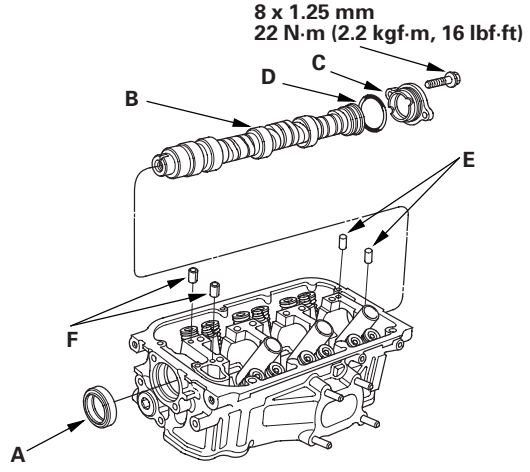
Camshaft/Rocker Arms, Camshaft Seal, and Pulley Installation

1. Apply a light coat of oil around the camshaft oil seal.

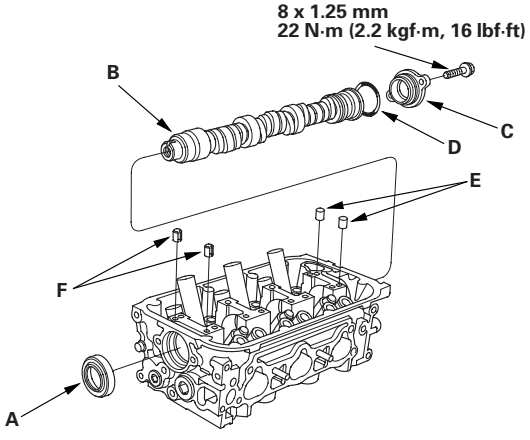
2. Gently tap the new camshaft oil seal (A) into the cylinder head.

   –1 Tap the camshaft oil seal in squarely.
   –2 Install the oil seal about 0.5 —1.5 mm (0.02 — 0.06 in.) below the surface of the cylinder head.

FRONT:



REAR:



3. Insert the camshaft (B) into the cylinder head, then install the camshaft thrust cover (C). Always use a new O-ring (D).

4. Check that the oil seal lips are not distorted.

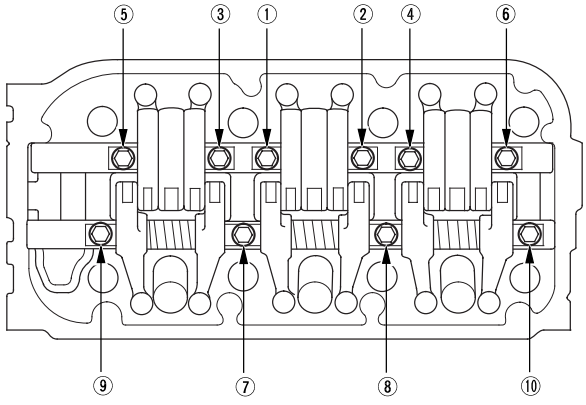
5. Install the solid dowel pins (E) and the hollow dowel pins (F).

6. Loosen the valve adjusting screws.

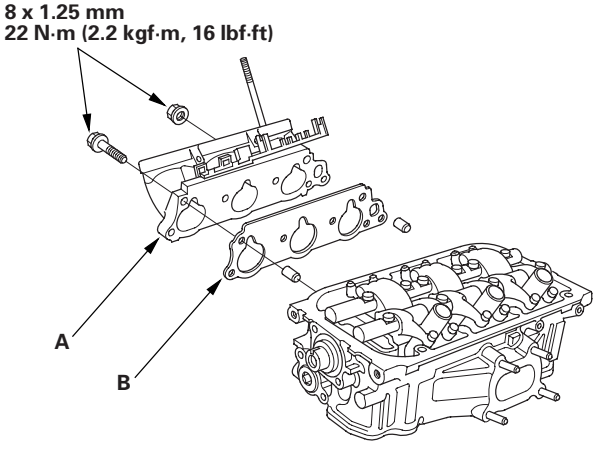
7. Set the rocker arm assembly in place, and loosely install the bolts. Make sure that the rocker arms are properly positioned on the valve stems.

8. Tighten each bolt two turns at a time in the sequence shown below to ensure that the rockers do not bind on the valves.

Specified torque:
8 x 1.25 mm
24 N·m (2.4 kgf·m, 17 lbf·ft)
Apply engine oil to the threads and flange of the exhaust rocker shaft mounting bolts.



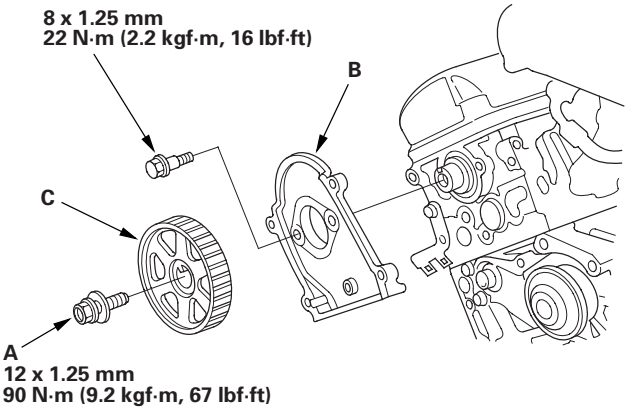
9. Install the injector base (A). Always use a new gasket (B).



(cont'd)

Camshaft/Rocker Arms, Camshaft Seal, and Pulley Installation (cont'd)

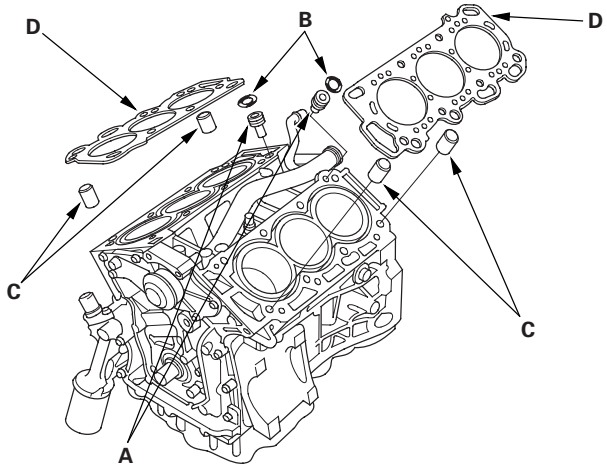
10. Apply engine oil to the threads of the camshaft pulley mounting bolt (A). Install the back cover (B), then install the camshaft pulley (C).



Cylinder Head Installation

Install the cylinder head in the reverse order of removal:

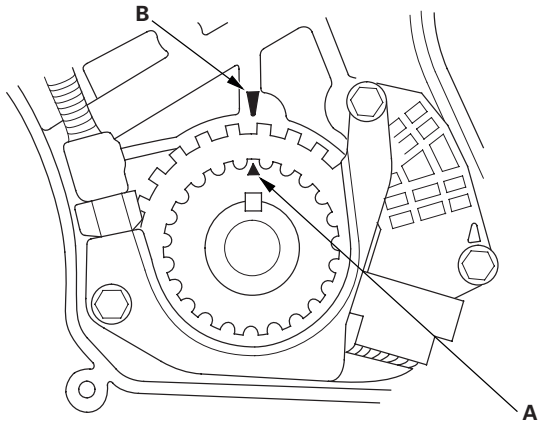
1. Clean the cylinder head and block surface.
2. Clean and install the oil control orifices (A) with new O-rings (B).



3. Install the dowel pins (C) and new cylinder head gaskets (D).

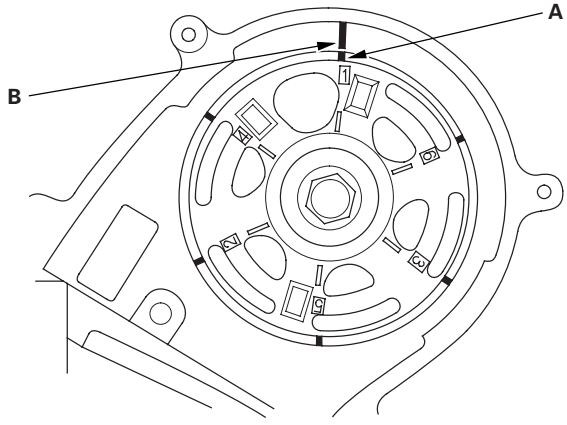
4. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.

5. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.

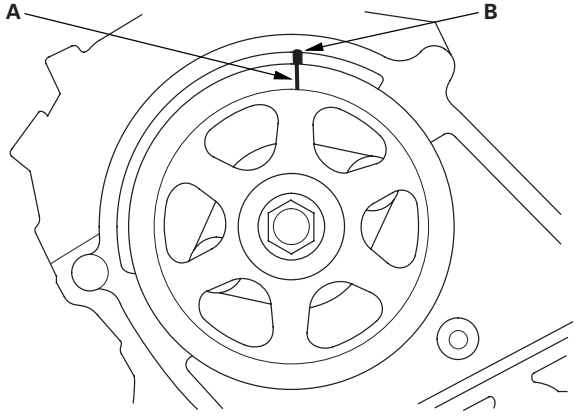


6. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT:



REAR:



(cont'd)

Cylinder Head Installation (cont'd)

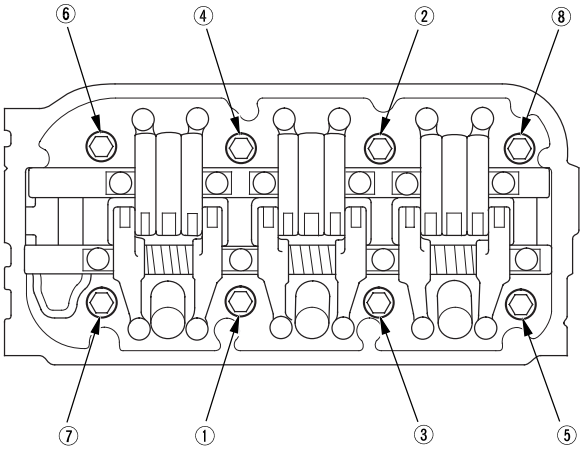
7. Apply clean engine oil to the threads and flanges of the cylinder head bolts.

8. Tighten the cylinder head bolts sequentially in three steps.

   NOTE: Perform each step twice.

   1st step torque: 39 N·m (4.0 kgf·m, 29 lbf·ft)
   2nd step torque: 69 N·m (7.0 kgf·m, 51 lbf·ft)
   3rd step torque: 98.1 N·m (10.0 kgf·m, 72.3 lbf·ft)

   Use a beam-type torque wrench. When using a preset-type torque wrench, be sure to tighten slowly and not to overtighten. If a bolt makes any noise while you are torquing it, loosen the bolt, and retighten it from the 1st step.



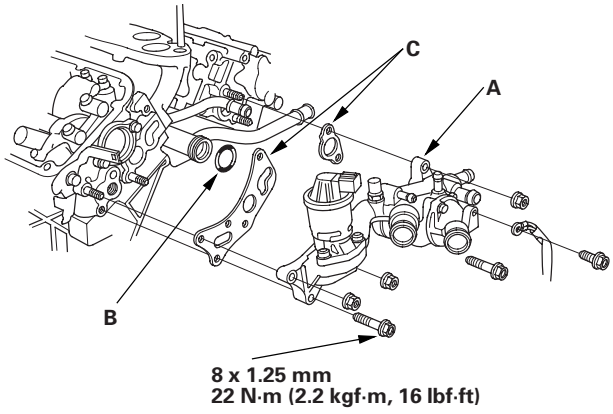
9. Install the timing belt (see page 6-64).

10. Adjust the valve clearance (see page 6-56).

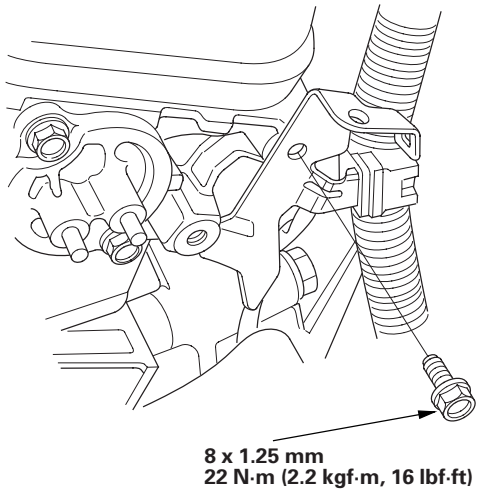
11. Install the cylinder head covers (see page 6-74).

12. Install the front and rear warm up three way catalytic converter (WU-TWC) (see page 11-492).

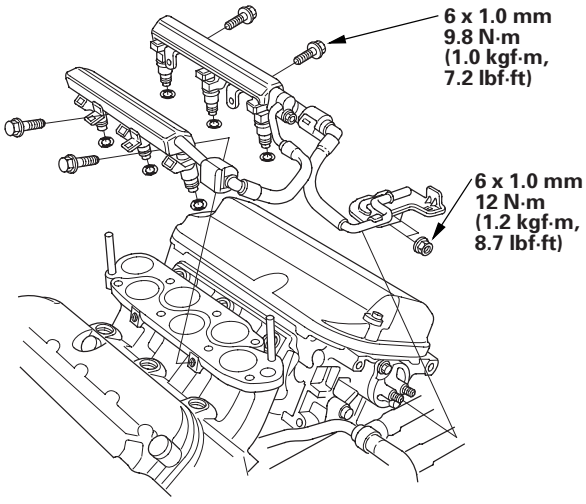
13. Install the water passage (A). Always use a new O-ring (B) and new gaskets (C).



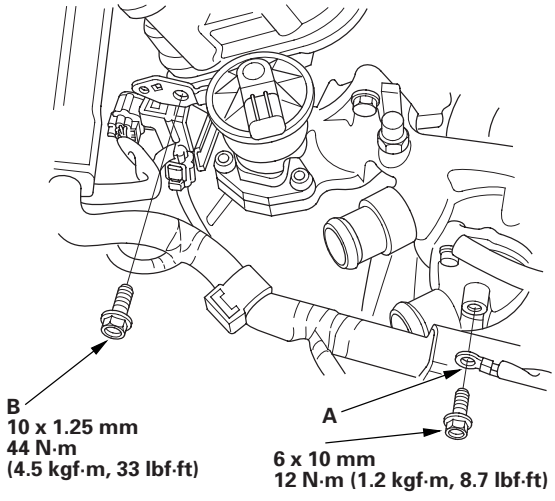
14. Tighten the bolt securing the harness bracket.



15. Set the new O-ring on the injectors, then install the fuel rails.

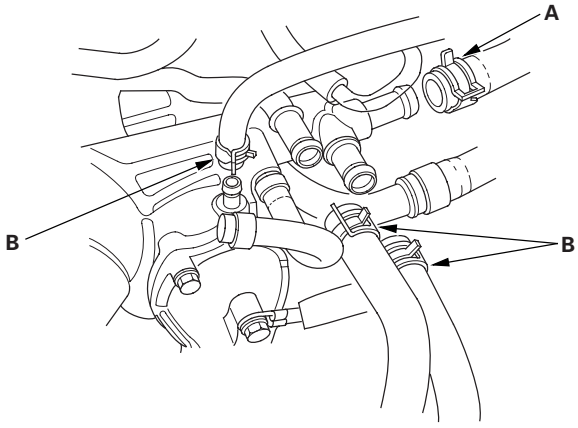


16. Install the ground cable (A).

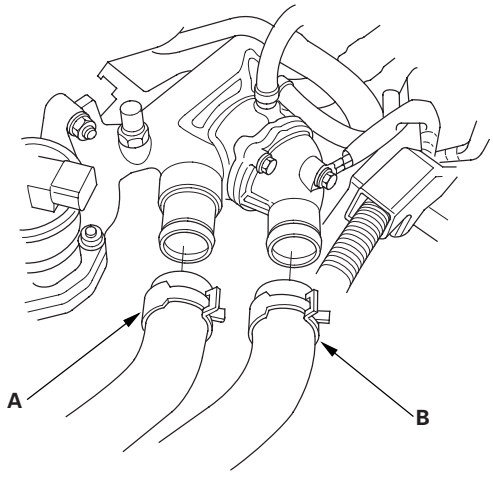


17. Tighten the bolt (B) securing the harness bracket.

18. Install the heater hose (A) and water bypass hoses (B).



19. Install the upper radiator hose (A), and lower radiator hose (B).

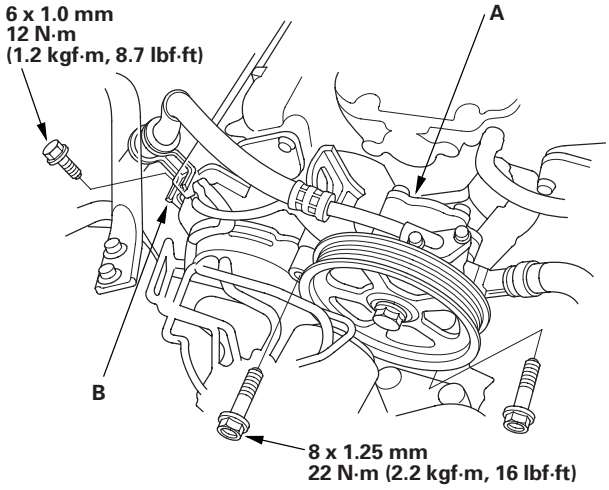


(cont'd)

Cylinder Head Installation (cont'd)

20. Install the intake manifold (see page 9-14).

21. Install the power steering (P/S) pump (A) and P/S hose bracket (B).



22. Install the alternator (see page 4-92).

23. Install the drive belt.

24. Install the fuel line (see page 11-477).

25. Clean the battery posts and cable terminals with sandpaper. Assemble them and apply grease to prevent corrosion.

26. After installation, check that all tubes, hoses and connectors are installed correctly.

27. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.

28. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see page 10-24).

29. Perform the powertrain control module (PCM) idle learn procedure (see page 11-193), and power window control unit reset procedure (see page 22-219).

30. Inspect the idle speed (see page 11-465).

31. Inspect the ignition timing (see page 4-79).

32. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets. Set the clock.

Engine Mechanical

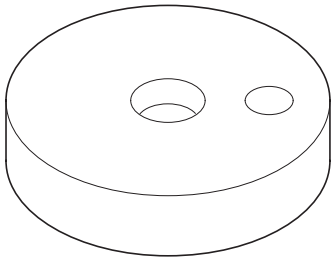


Engine Block — J30A4 engine

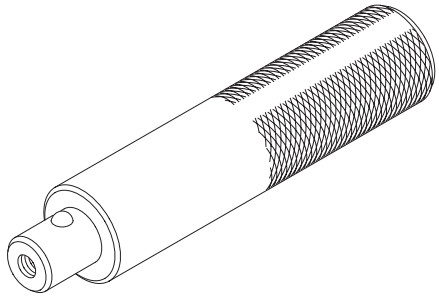
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Special Tools

Ref. No.	Tool Number	Description	Qty
①	070AD-RCA0200	Driver Attachment 106	1
②	07749-0010000	Handle Driver	1

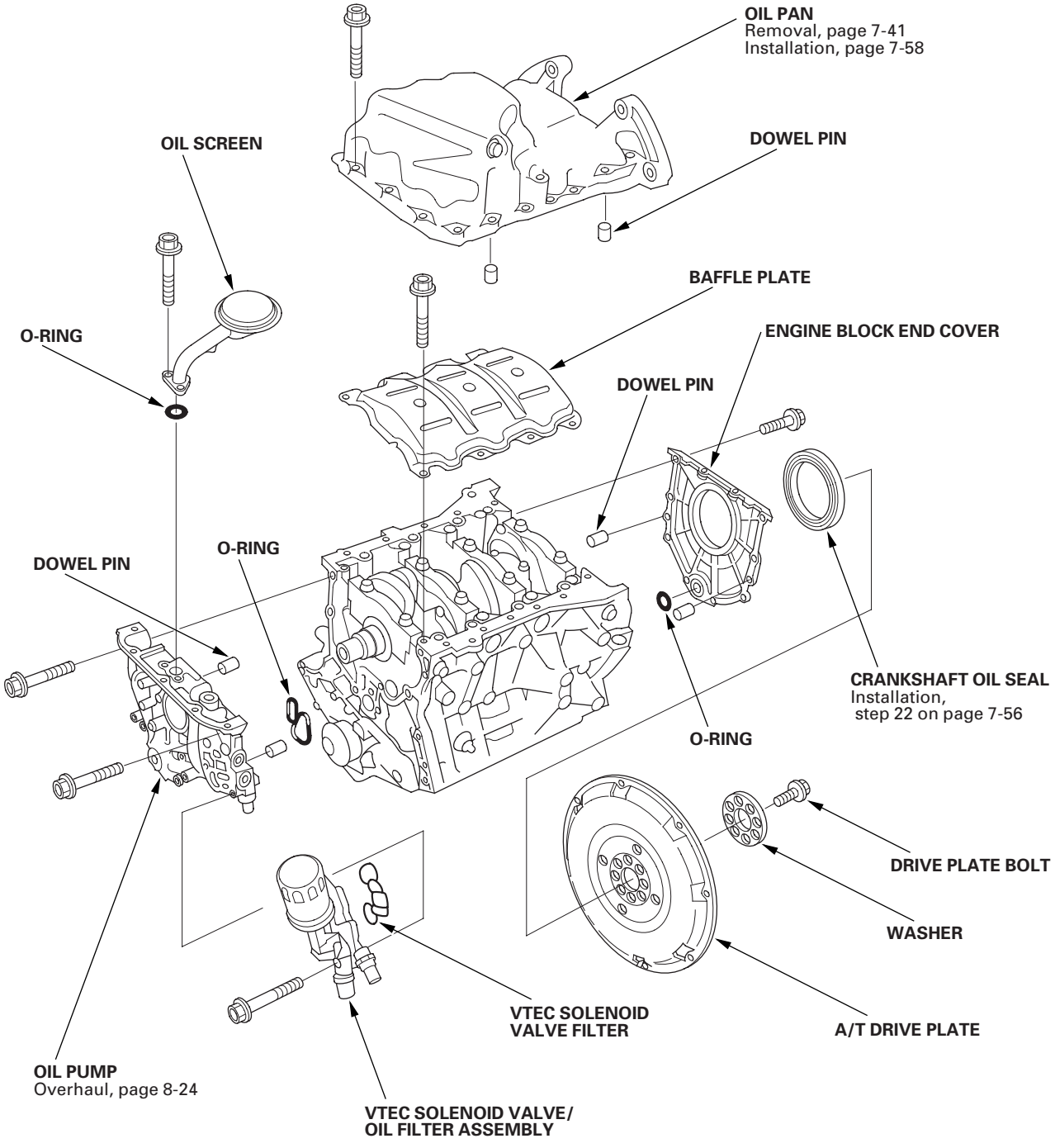


①



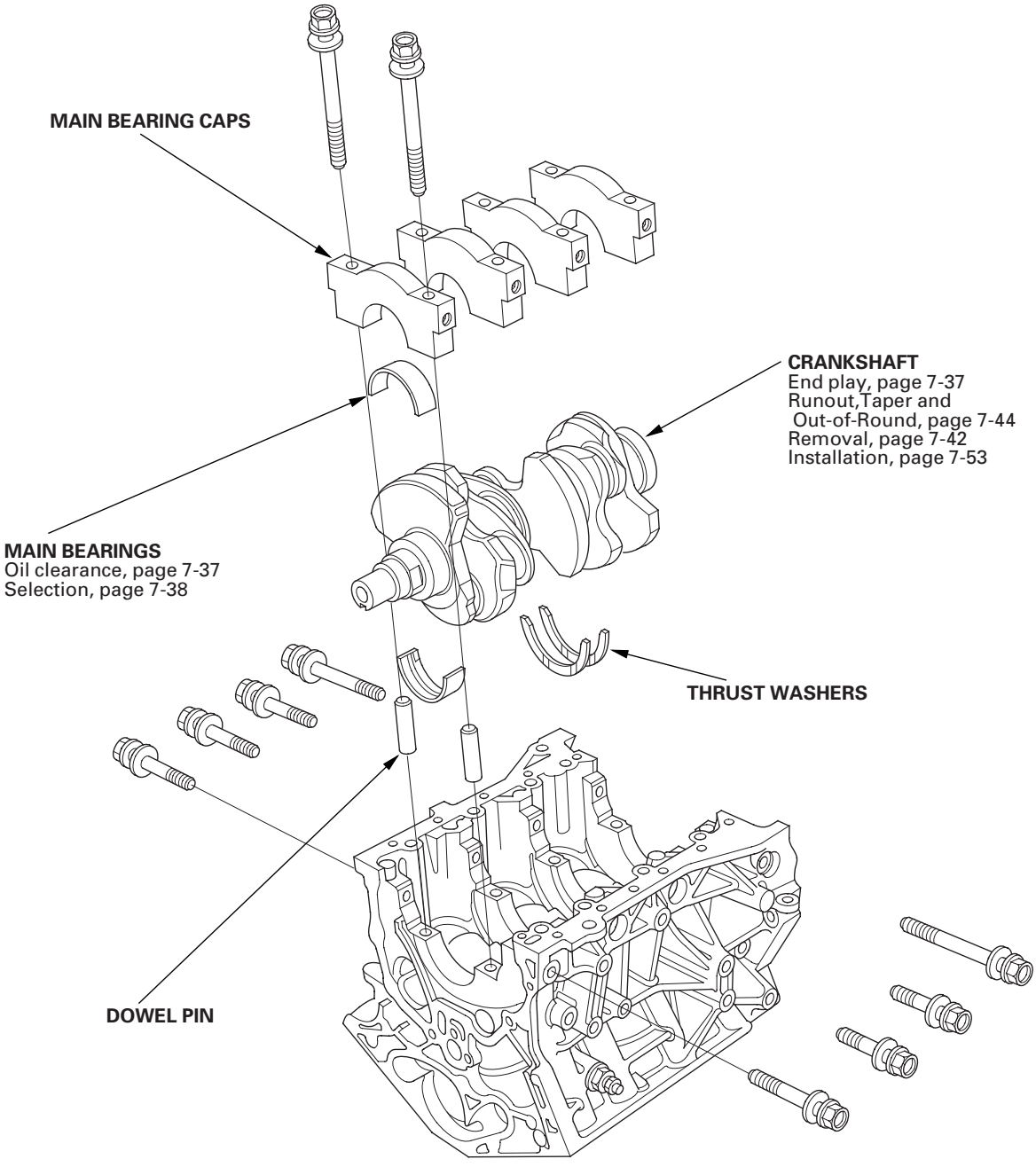
②

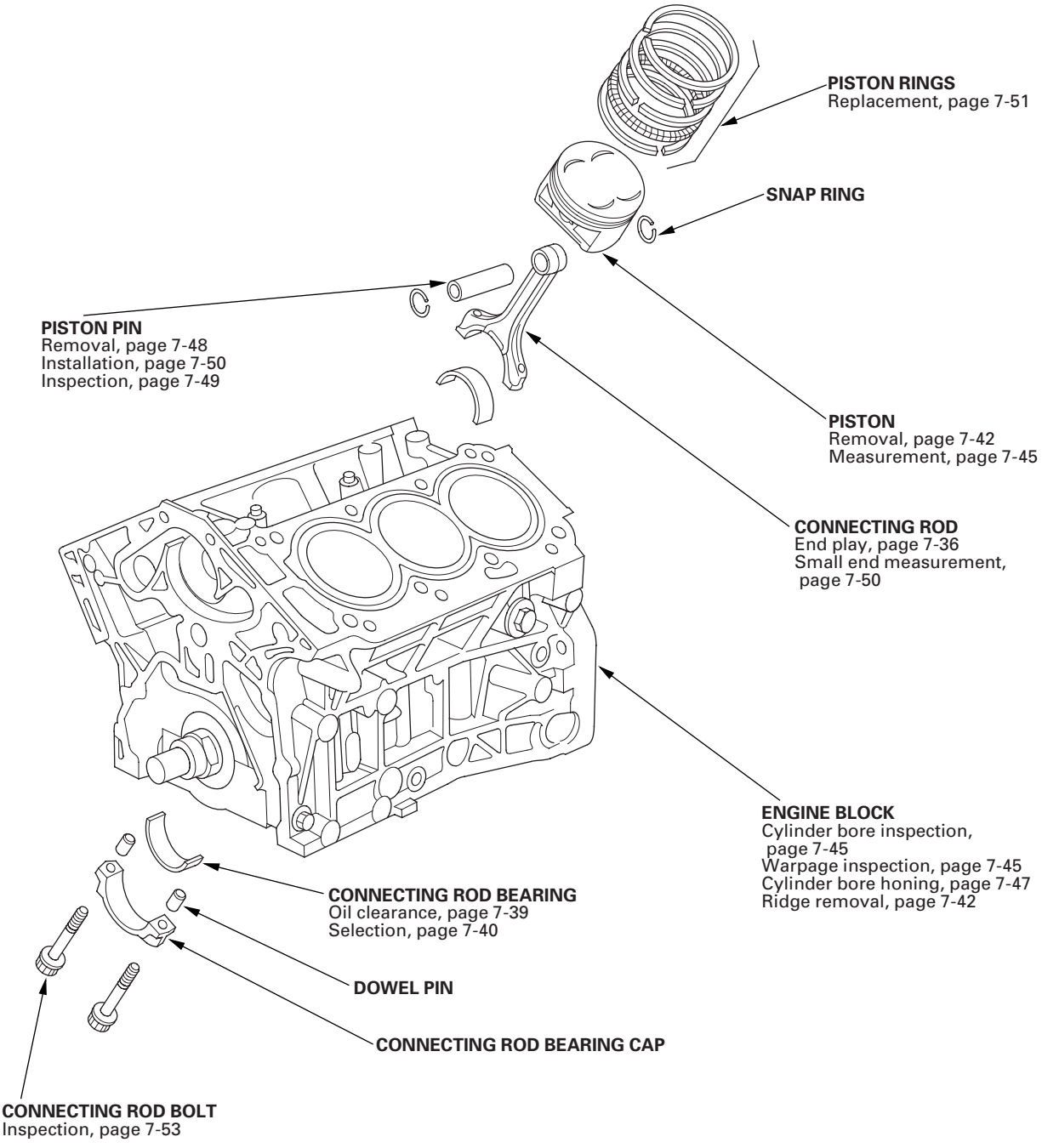
Component Location Index



(cont'd)

Component Location Index (cont'd)




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DOWEL PIN
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CONNECTING ROD BOLT
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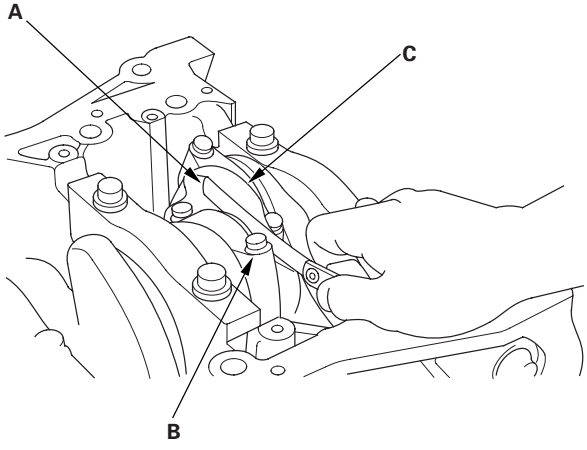
Connecting Rod and Crankshaft End Play Inspection

1. Remove the oil pump (see page 8-25).

2. Remove the baffle plate (see page 7-42).

3. Measure the connecting rod end play with a feeler gauge (A) between the connecting rod (B) and crankshaft (C).

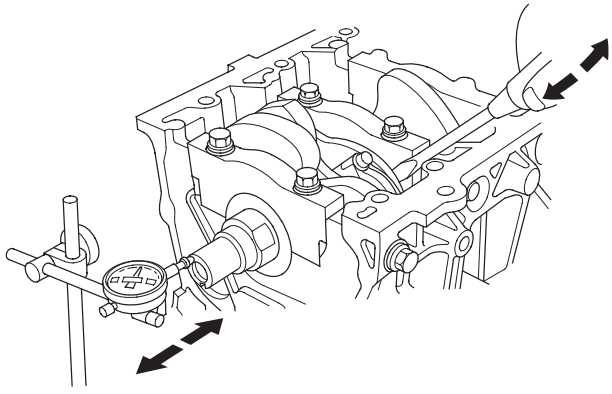
   Connecting Rod End Play
   Standard (New): 0.15—0.35 mm (0.006—0.014 in.)
   Service Limit: 0.45 mm (0.018 in.)



4. If the connecting rod end play is out-of-tolerance, install a new connecting rod and recheck. If it is still out-of-tolerance, replace the crankshaft (see page 7-42).

5. Push the crankshaft firmly away from the dial indicator, and zero the dial against the end of the crankshaft. Then pull the crankshaft firmly back toward the indicator; the dial reading should not exceed the service limit.

   Crankshaft End Play
   Standard (New): 0.10—0.35 mm (0.004—0.014 in.)
   Service Limit: 0.45 mm (0.018 in.)



6. If the end play is excessive, replace the thrust washers and recheck. If it is still out-of-tolerance, replace the crankshaft.

Crankshaft Main Bearing Replacement

Main Bearing Clearance Inspection

1. To check main bearing-to-journal oil clearance, remove the main caps and bearing halves (see page 7-42).

2. Clean each main journal and bearing half with a clean shop towel.

3. Place one strip of plastigage across each main journal.

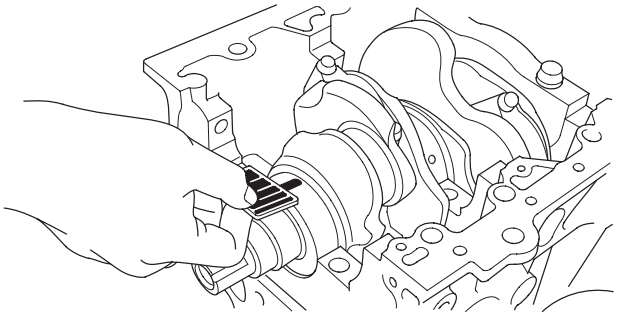
   NOTE: If the engine is still in the vehicle when you bolt the main cap down to check the clearance, the weight of the crankshaft and drive plate will flatten the plastigage further than just the torque on the cap bolt and give you an incorrect reading. For an accurate reading, support the crank with a jack under the counterweights, and check only one bearing at a time.

4. Reinstall the bearings and caps, then torque the bearing cap bolts to 74 N·m (7.5 kgf·m, 54 lbf·ft), and the bearing cap side bolts to 49 N·m (5.0 kgf·m, 36 lbf·ft).

   NOTE: Do not rotate the crankshaft during inspection.

5. Remove the cap and bearing half, and measure the widest part of the plastigage.

   Main Bearing-to-Journal Oil Clearance
   Standard (New): 0.020–0.044 mm (0.0008–0.0017 in.)
   Service Limit: 0.050 mm (0.0020 in.)



6. If the plastigage measures too wide or too narrow, remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the same color code, and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.

7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over.

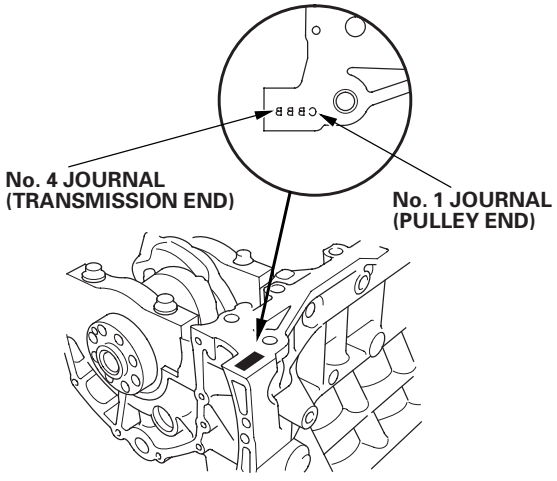
(cont'd)

Crankshaft Main Bearing Replacement (cont'd)

Main Bearing Selection

Crankshaft Bore Code Location
Letters or bars have been stamped on the end of the block as a code for the size of each of the four main journal bores.

Use them, and the numbers stamped on the crankshaft (codes for main journal size), to choose the correct bearings. If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.



Bearing Identification

Color code is on the edge of the bearing

Larger crank bore →

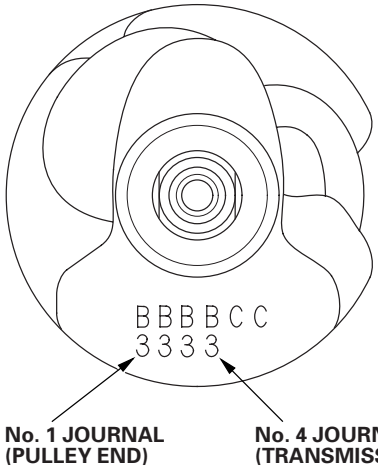
	A or I	B or II	C or III	D or IIII
Smaller bearing (Thicker) ↓				
1 or I	Red/ Pink	Pink	Pink/ Yellow	Yellow
2 or II	Pink	Pink/ Yellow	Yellow	Yellow/ Green
3 or III	Pink/ Yellow	Yellow	Yellow/ Green	Green
4 or IIII	Yellow	Yellow/ Green	Green	Green/ Brown
5 or IIIII	Yellow/ Green	Green	Green/ Brown	Brown
6 or IIIIII	Green	Green/ Brown	Brown	Brown/ Black

Smaller main Journal ↓

Smaller bearing (Thicker) ↓

NOTE: When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

Main Journal Code Locations (Numbers or Bars)



Connecting Rod Bearing Replacement

Rod Bearing Clearance Inspection

1. Remove the connecting rod cap and bearing half (see page 7-42).

2. Clean the crankshaft rod journal and bearing half with a clean shop towel.

3. Place a strip of plastigage across the rod journal.

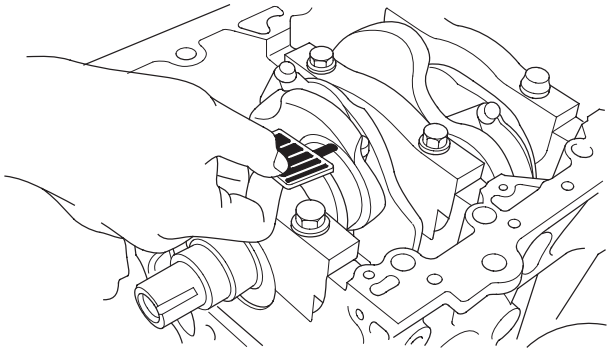
4. Reinstall the bearing half and cap, and torque the bolts.

   Tightening torque:
   20 N·m (2.0 kgf·m, 14 lbf·ft) + 90°
   Apply engine oil to the bolt threads

   NOTE: Do not rotate the crankshaft during inspection.

5. Remove the rod cap and bearing half and measure the widest part of the plastigage.

   Connecting Rod Bearing-to-Journal Oil Clearance
   Standard (New): 0.020−0.044 mm
   (0.0008−0.0017 in.)
   Service Limit: 0.050 mm (0.0020 in.)



6. If the plastigage measures too wide or too narrow, remove the upper half of the bearing, then install a new, complete bearing with the same color code, and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.

7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check clearance again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over.

(cont'd)

Connecting Rod Bearing Replacement (cont'd)

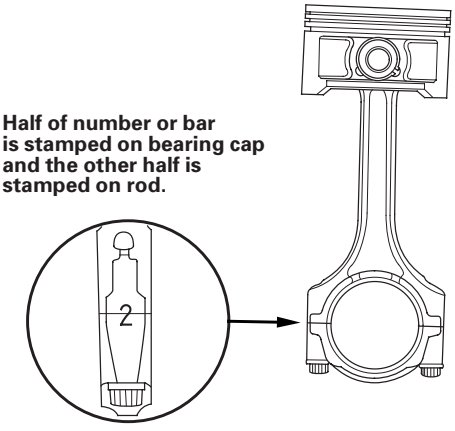
Rod Bearing Selection

Each rod falls into one of four tolerance ranges (from 0 to 0.024 mm (0.0009 in.), in 0.006 mm (0.0002 in.) increments) depending on the size of its big end bore. It's then stamped with a number or bar (1,2,3, or 4/I, II, III, or IIII) indicating the range. You may find any combination of 1,2,3, or 4/I, II, III, or IIII in any engine.

Normal Bore Size: 56.0 mm (2.20 in.)

Inspect the connecting rod for cracks and heat damage.

Connecting Rod Journal Code Locations
Numbers or bars have been stamped on the side of each connecting rod as a code for the size of the big end. Use them, and the letters or bars stamped on the crank (codes for rod journal size), to choose the correct bearings. If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.



Larger big end bore →

Bearing Identification

Color code is on the edge of the bearing

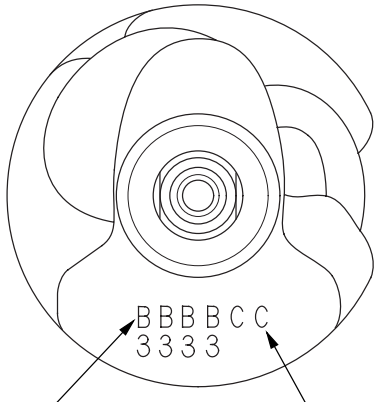
	1 or I	2 or II	3 or III	4 or IIII
Smaller bearing (Thicker) →				
A or I	Pink	Pink/ Yellow	Yellow	Yellow/ Green
B or II	Pink/ Yellow	Yellow	Yellow/ Green	Green
C or III	Yellow	Yellow/ Green	Green	Green/ Brown
D or IIII	Yellow/ Green	Green	Green/ Brown	Brown
E or IIIII	Green	Green/ Brown	Brown	Brown/ Black
F or IIIIII	Green/ Brown	Brown	Brown/ Black	Black

Smaller rod Journal ↓

Smaller bearing (Thicker) ↓

NOTE: When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

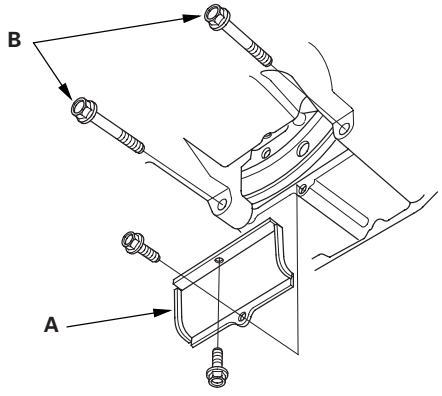
Connecting Rod Journal Code Locations (Letters or Bars)



Oil Pan Removal

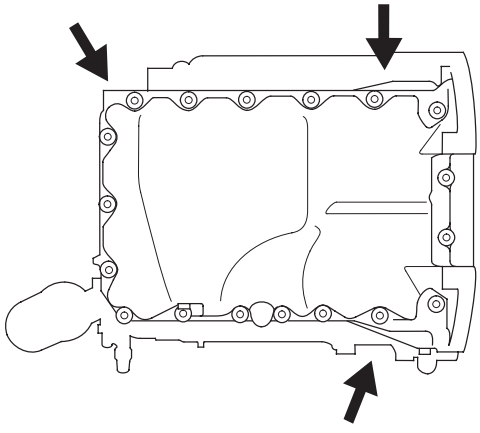
1. If the engine is still in the vehicle, drain the engine oil (see page 8-21).

2. Remove the torque converter cover (A) and the two bolts (B) securing the transmission.



3. Remove the bolts securing the oil pan.

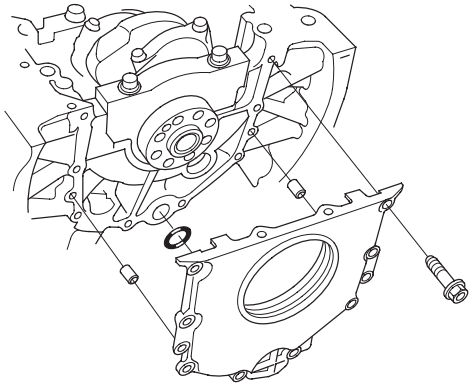
4. Using a flat blade screwdriver, separate the oil pan from the block in the places shown.



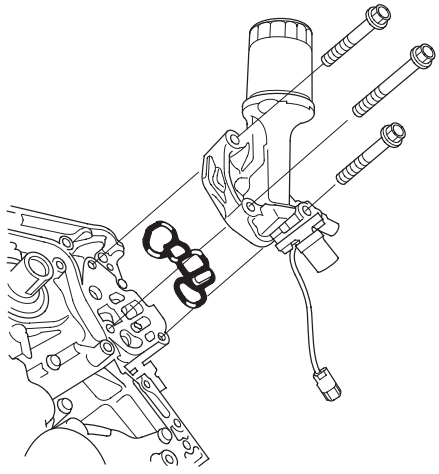
5. Remove the oil pan.

Crankshaft and Piston Removal

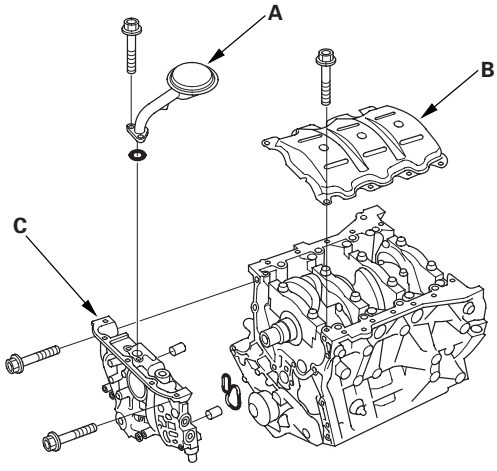
1. Remove the engine assembly (see page 5-21).
2. Remove the transmission (see page 14-467).
3. Remove the cylinder heads (see page 6-76).
4. Remove the crankshaft position (CKP) sensor (see page 11-157).
5. Remove the timing belt drive pulley from the crankshaft.
6. Remove the oil pan (see page 7-41).
7. Remove the engine block end cover.



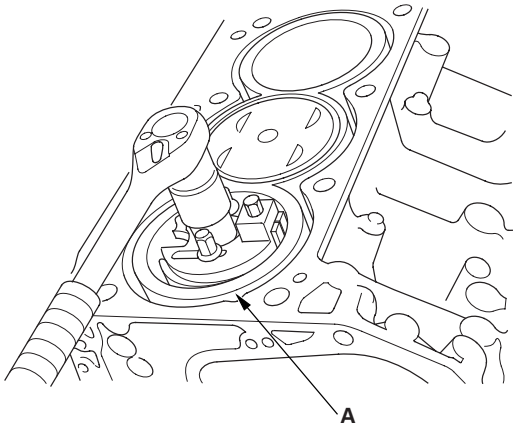
8. Remove the VTEC solenoid valve/oil filter assembly.



9. Remove the oil screen (A), baffle plate (B), and oil pump (C).

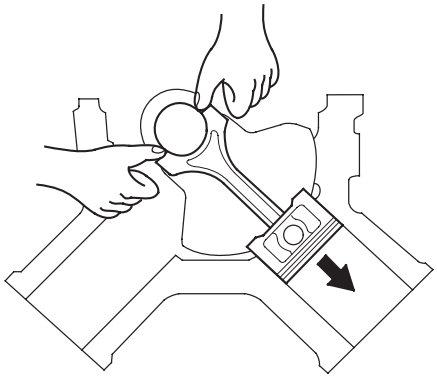


10. If you can feel a ridge of metal or hard carbon around the top of any cylinder, remove it with a ridge reamer (A). Follow the reamer manufacturer's instructions. If the ridge is not removed, it may damage the piston as it's pushed out.

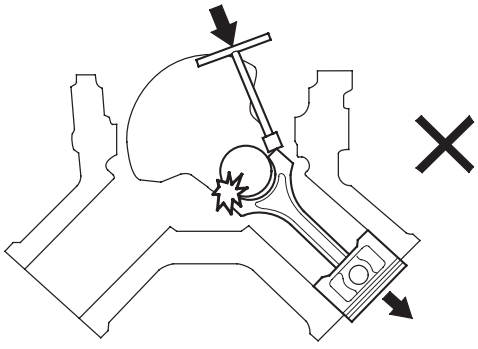


11. Remove the connecting rod caps after setting the crank pin at bottom dead center (BDC) for each cylinder. Remove the piston assembly by pushing on the connecting rod. Take care not to damage the crank pin or cylinder with the connecting rod.

CORRECT



INCORRECT



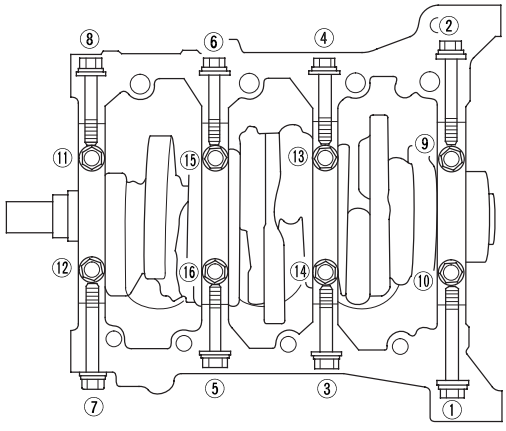
12. Remove the bearing from the cap. Keep all caps/bearings in order.

13. Remove the upper bearing halves from the connecting rods, and set them aside with their respective caps.

14. After removing a piston/connecting rod assembly, reinstall the cap on the rod.

15. To avoid mixup during reassembly, mark each piston/connecting rod assembly with its cylinder number.

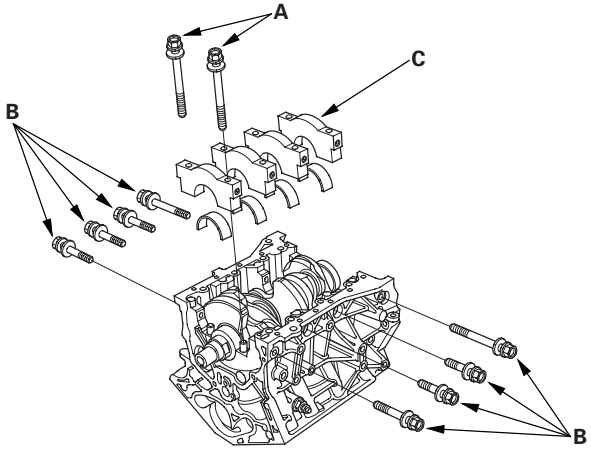
16. Unscrew the bearing cap bolts and bearing cap side bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.



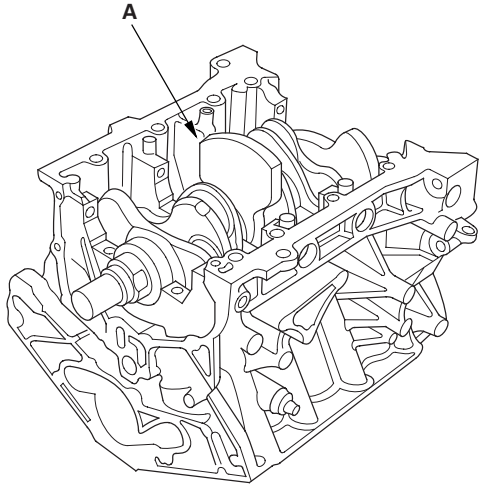
(cont'd)

Crankshaft and Piston Removal (cont'd)

17. Remove the bearing cap bolts (A) and bearing cap side bolts (B), then remove the bearing cap (C).



18. Lift the crankshaft (A) out of the cylinder block, being careful not to damage the journals.



19. Reinstall the main caps and bearings on the cylinder block in the proper order.

Crankshaft Inspection

Out-of-Round and Taper

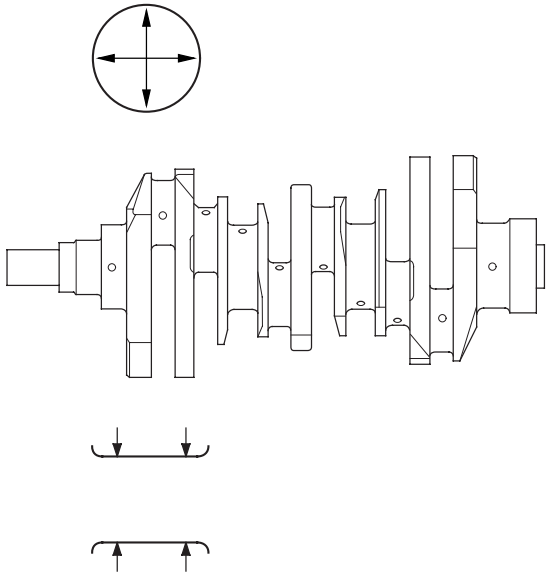
1. Remove the crankshaft from the cylinder block (see page 7-42).

2. Clean the crankshaft oil passages with pipe cleaners or a suitable brush.

3. Check the keyway and threads.

4. Measure out-of-round at the middle of each rod and main journal in two places. The difference between measurements on each journal must not be more than the service limit.

Journal Out-of-Round
Standard (New): 0.005 mm (0.0002 in.) max.
Service Limit: 0.010 mm (0.0004 in.)



5. Measure taper at the edges of each rod and main journal. The difference between measurements on each journal must not be more than the service limit.

Journal Taper
Standard (New): 0.005 mm (0.0002 in.) max.
Service Limit: 0.010 mm (0.0004 in.)

Straightness

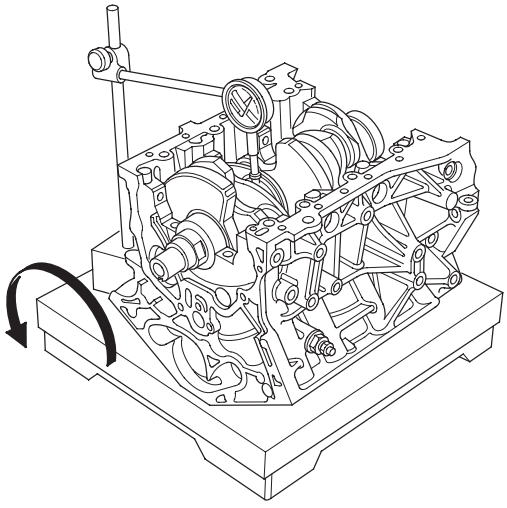
6. Place the cylinder block on the surface plate.

7. Clean and install the bearings on the No. 1 and No. 4 journal of the cylinder block.

8. Lower the crankshaft into the block.

9. Measure runout on all main journals. Rotate the crankshaft two complete revolutions. The difference between measurements on each journal must not be more than the service limit.

Crankshaft Total Runout
Standard (New): 0.020 mm (0.0008 in.) max.
Service Limit: 0.030 mm (0.0012 in.)



Block and Piston Inspection

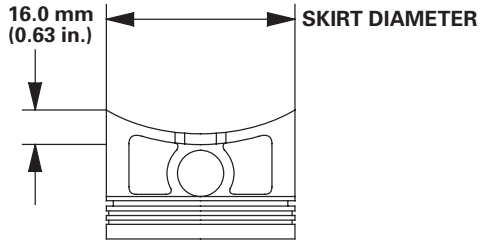
1. Remove the piston from the cylinder block (see page 7-42).

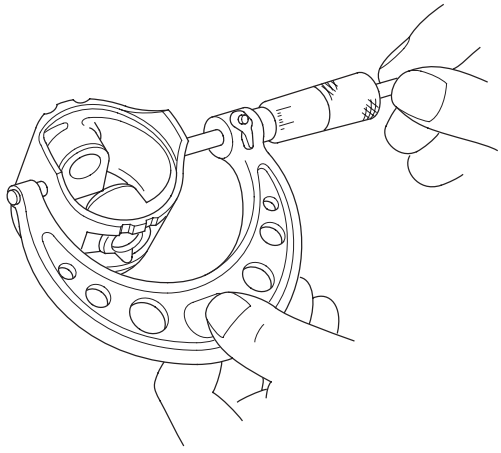
2. Check the piston for distortion or cracks.

3. Measure the piston diameter at a point 16.0 mm (0.63 in.) from the bottom of the skirt.

Piston Diameter
Standard (New): 85.975—85.985 mm (3.3848—3.3852 in.)
Service Limit: 85.965 mm (3.3844 in.)

Oversize Piston Diameter
0.25: 86.225—86.235 mm (3.3947—3.3951 in.)
0.50: 86.475—86.485 mm (3.4045—3.4049 in.)



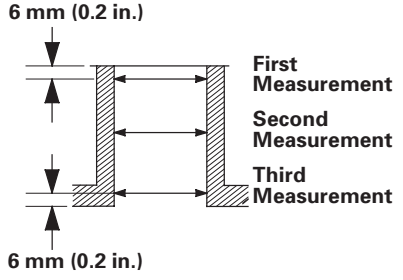


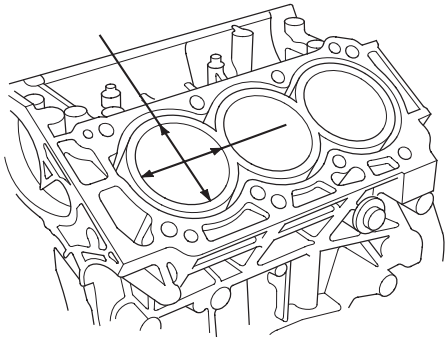
(cont'd)

Block and Piston Inspection (cont'd)

4. Measure wear and taper in direction X and Y at three levels in each cylinder as shown. If measurements in any cylinder are beyond the Oversize Bore Service Limit, replace the block. If the block has to be rebored, refer to step 7 after reboring.

Cylinder Bore Size
Standard (New): 86.000—86.015 mm (3.3858—3.3864 in.)
Service Limit: 86.065 mm (3.3884 in)
Oversize
0.25: 86.250—86.265 mm (3.3957—3.3963 in.)
0.50: 86.500—86.515 mm (3.4055—3.4061 in.)
Reboring Limit: 0.5 mm (0.02 in.)
Bore Taper
Limit: (Difference between first and third measurement) 0.05 mm (0.002 in.)

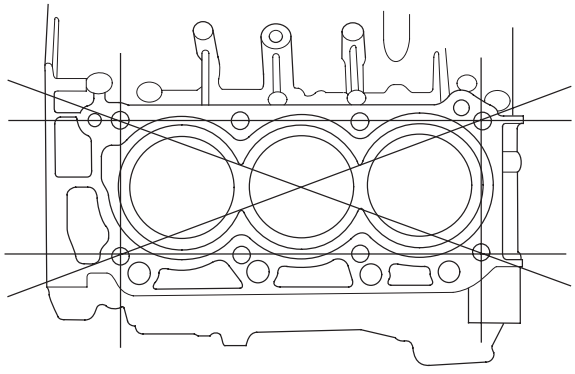


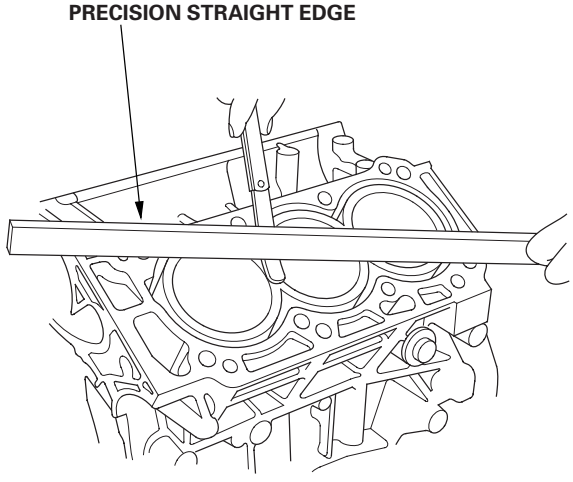


5. Scored or scratched cylinder bores must be honed.

6. Check the top of the cylinder block for warpage. Measure along the edges and across the center as shown.

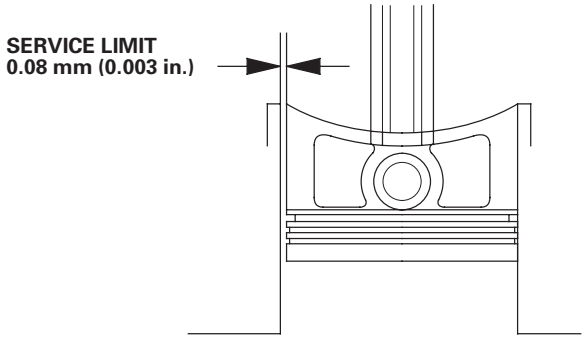
Cylinder Block Warpage
Standard (New): 0.07 mm (0.003 in.) max.
Service Limit: 0.10 mm (0.004 in.)





7. Calculate the difference between cylinder bore diameter and piston diameter. If the clearance is near or exceeds the service limit, inspect the piston and cylinder block for excessive wear.

Piston-to-Block Clearance
Standard (New): 0.015—0.040 mm (0.0006—0.0016 in.)
Service Limit: 0.08 mm (0.003 in.)

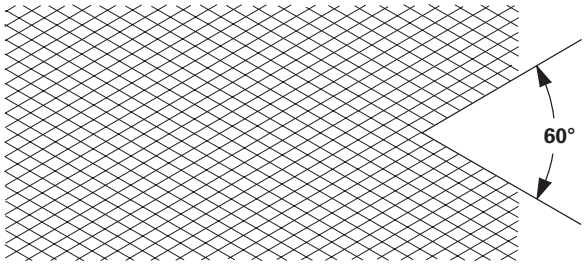


Cylinder Honing

1. Measure the cylinder bores (see step 4 on page 7-46). If the cylinder block is to be reused, hone the cylinders and remeasure the bores. Only scored or scratched cylinder bores must be honed.

2. Hone the cylinder bores with honing oil and a fine (400 grit) stone in a 60 degree crosshatch pattern.

   NOTE:
   - Use only a rigid hone with 400 grit or finer stone, such as Sunnen, Ammco, or equivalent.
   - Do not use stones that are worn or broken.



3. When honing is complete, thoroughly clean the cylinder block of all metal particles. Wash the cylinder bores with hot soapy water, then dry and oil them immediately to prevent rusting. Never use solvent, it will only redistribute the grit on the cylinder walls.

4. If scoring or scratches are still present in the cylinder bores after honing to the service limit, rebore the cylinder block. Some light vertical scoring and scratching is acceptable if it is not deep enough to catch your fingernail and does not run the full length of the bore.

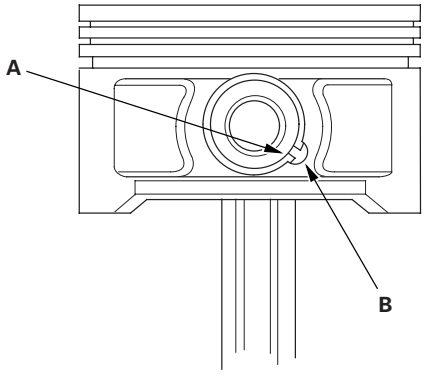
Piston, Pin, and Connecting Rod Replacement

Disassembly

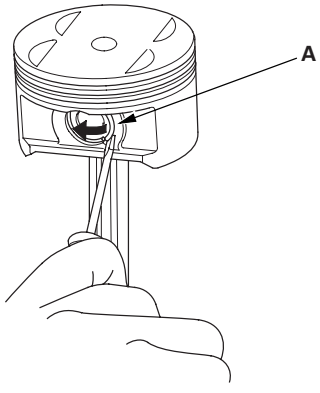
1. Remove the piston from the cylinder block (see page 7-42).

2. Apply engine oil to the piston pin snap rings (A) and turn them in the ring grooves until the end gaps are lined up with the cutouts in the piston pin bores (B).

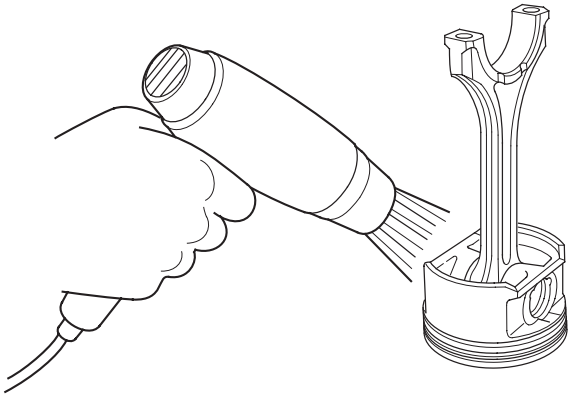
   NOTE: Take care not to damage the ring grooves.



3. Remove snap rings (A) from both sides of the piston. Start at the cutout in the piston pin bore. Remove the snap rings carefully so they do not go flying or get lost. Wear eye protection.



4. Heat the piston and connecting rod assembly to about 70°C (158°F), then remove the piston pin.

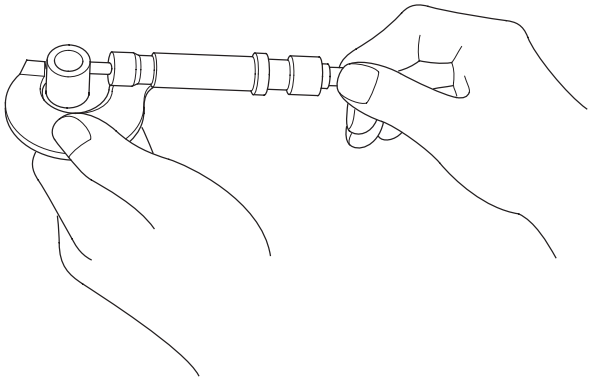


Inspection

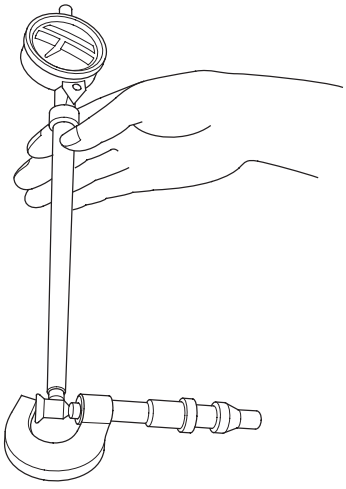
NOTE: Inspect the piston, piston pin, and connecting rod when they are at room temperature.

1. Measure the diameter of the piston pin.

   Piston Pin Diameter
   Standard (New): 21.962−21.965 mm (0.8646−0.8648 in.)
   Service Limit: 21.954 mm (0.8643 in.)

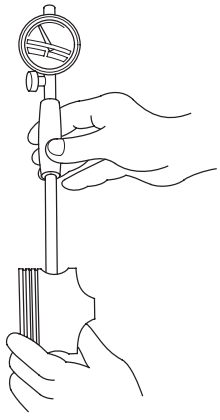


2. Zero the dial indicator to the piston pin diameter.



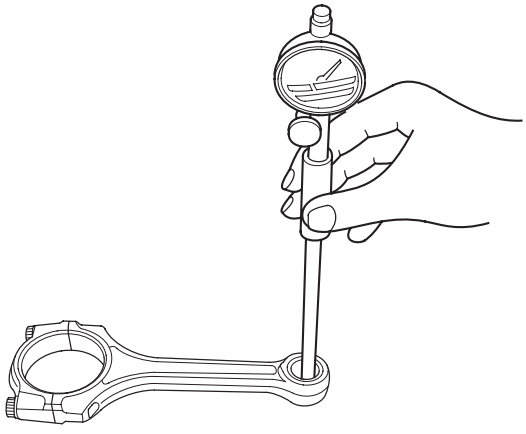
3. Check the difference between the piston pin diameter and piston pin hole diameter on the piston.

   Piston Pin-to-Piston Clearance
   Standard (New): −0.0050 to +0.0010 mm (−0.00020 to +0.00004 in.)
   Service Limit: 0.004 mm (0.0002 in.)



4. Measure the piston pin-to-connecting rod clearance.

   Piston Pin-to-Connecting Rod Clearance
   Standard (New): 0.005−0.014 mm (0.0002−0.0006 in.)
   Service Limit: 0.019 mm (0.0007 in.)

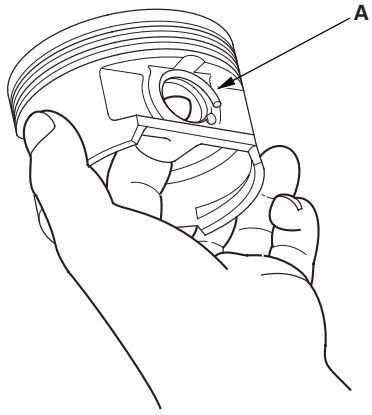


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Piston, Pin, and Connecting Rod Replacement (cont'd)

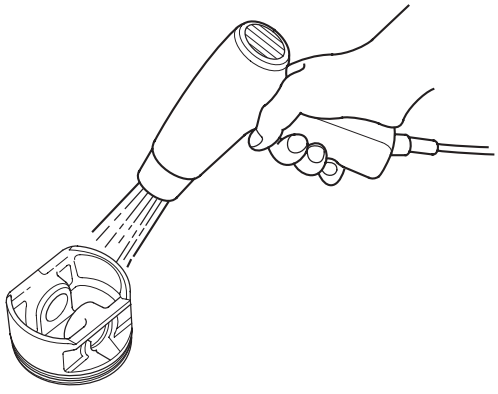
Reassembly

1. Install a piston pin snap ring (A).

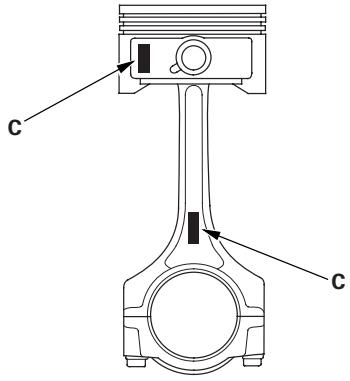


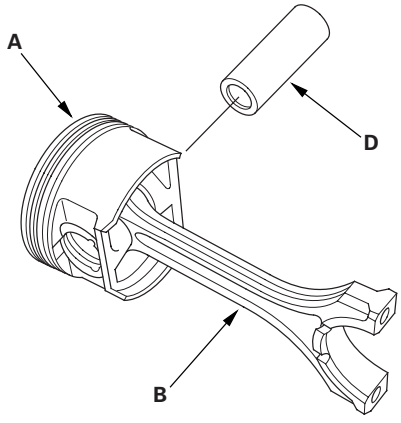
2. Coat the piston pin bore in the piston, the bore in the connecting rod, and the piston pin with engine oil.

3. Heat the piston to about 70°C (158°F).



4. Assemble the piston (A) and connecting rod (B) with the embossed marks (C) on the same side. Install the piston pin (D).



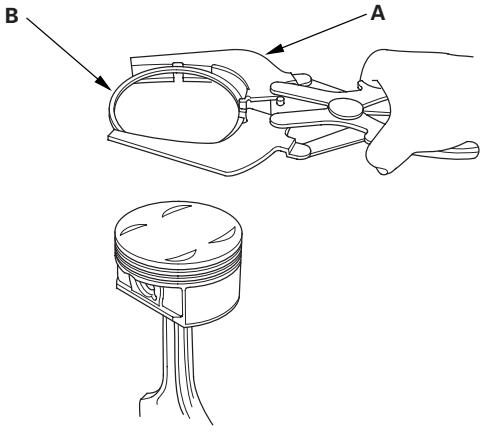


5. Install the remaining snap ring.

Piston Ring Replacement

1. Remove the piston from the cylinder block (see page 7-42).

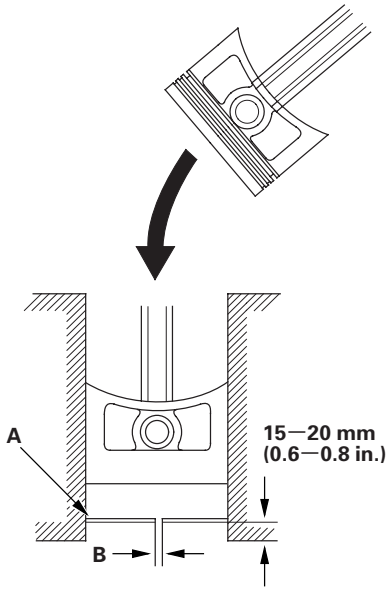
2. Using a ring expander (A), remove the old piston rings (B).



3. Clean all the ring grooves thoroughly with a squared-off broken ring, or a ring groove cleaner with a blade to fit the piston grooves. File down the blade, if necessary. The top ring and second ring grooves are 1.2 mm (0.05 in.) wide, and the oil ring groove is 2.8 mm (0.11 in.) wide. Do not use a wire brush to clean the ring grooves, or cut the ring grooves deeper with the cleaning tool.

   NOTE: If the piston is to be separated from the connecting rod, do not install new rings yet.

4. Using a piston, push a new ring (A) into the cylinder bore 15—20 mm (0.6—0.8 in.) from the bottom.



5. Measure the piston ring end-gap (B) with a feeler gauge:

   - If the gap is too small, check to see if you have the proper rings for your engine.
   - If the gap is too large, recheck the cylinder bore diameter against the wear limits (see step 4 on page 7-46). If the bore is over the service limit, the cylinder block must be rebored.

Piston Ring End-Gap

Top Ring
Standard (New): 0.20—0.35 mm (0.008—0.014 in.)
Service Limit: 0.60 mm (0.024 in.)

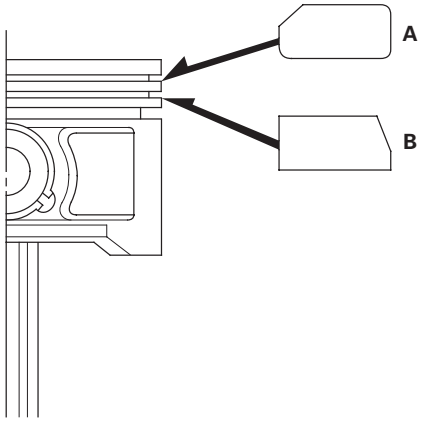
Second Ring
Standard (New): 0.40—0.55 mm (0.016—0.022 in.)
Service Limit: 0.70 mm (0.028 in.)

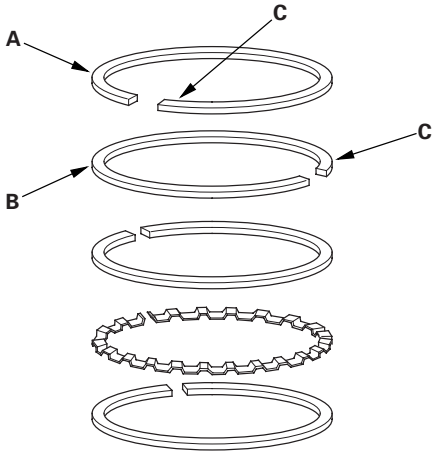
Oil Ring
Standard (New): 0.20—0.70 mm (0.008—0.028 in.)
Service Limit: 0.80 mm (0.031 in.)

(cont'd)

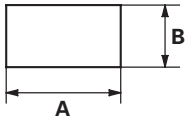
Piston Ring Replacement (cont'd)

6. Install the rings as shown. The top ring (A) has a 1A mark and the second ring (B) has a 2B mark. The manufacturing marks (C) must be facing upward.





Piston Ring Dimensions:



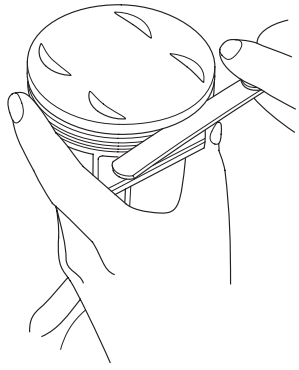
Top Ring (Standard)
A: 3.1 mm (0.12 in.)
B: 1.2 mm (0.05 in.)

Second Ring (Standard)
A: 3.4 mm (0.13 in.)
B: 1.2 mm (0.05 in.)

7. After installing a new set of rings, measure the ring-to-groove clearance:

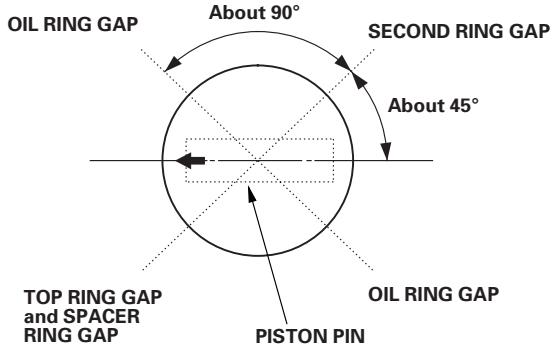
Top Ring Clearance
Standard (New): 0.055—0.080 mm (0.0022—0.0031 in.)
Service Limit: 0.15 mm (0.006 in.)

Second Ring Clearance
Standard (New): 0.030—0.055 mm (0.0012—0.0022 in.)
Service Limit: 0.13 mm (0.005 in.)



8. Rotate the rings in their grooves to make sure they do not bind.

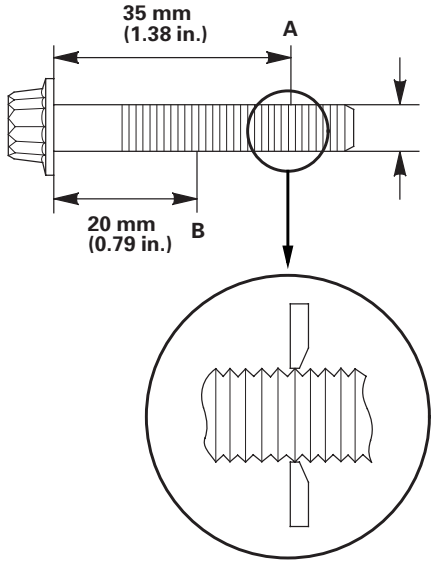
9. Position the ring end gaps as shown:



Crankshaft and Piston Installation

Special Tools Required
- Handle driver 07749-0010000
- Driver attachment 106 070AD-RCA0200

1. Measure the diameter of each connecting rod bolt at point A and point B.



2. Calculate the difference in diameter between point A and point B.

   Point A − Point B = Difference in Diameter

   Difference in Diameter
   Specification: 0 − 0.1 mm (0 − 0.004 in.)

3. If the difference in diameter is out of tolerance, replace the connecting rod bolt.

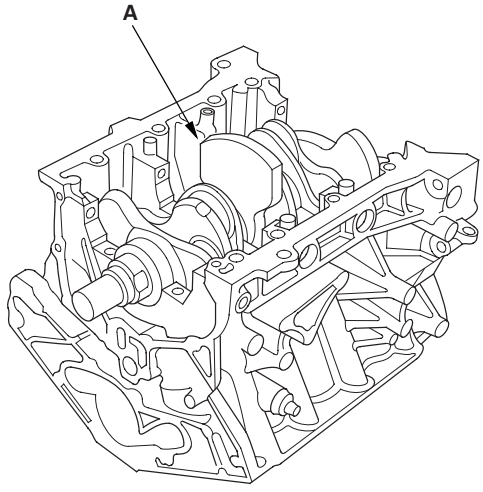
4. Check the connecting rod bearing clearance with plastigage (see page 7-39).

5. Check the main bearing clearance with plastigage (see page 7-37).

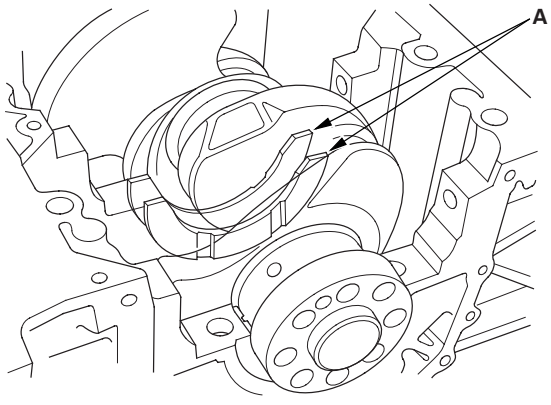
6. Install the bearing halves in the cylinder block and connecting rods.

7. Apply engine oil to the main bearings and rod bearings.

8. Lower the crankshaft (A) into the block.



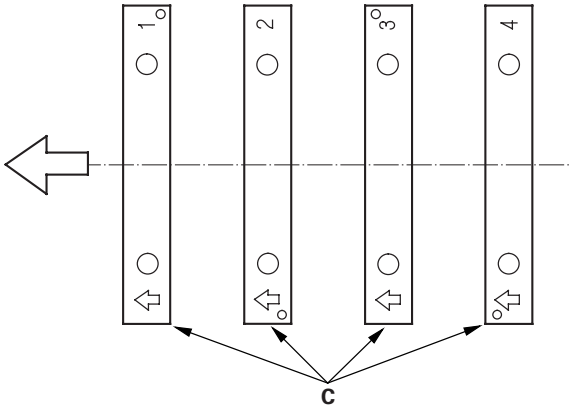
9. Oil the thrust washer surfaces. Install the thrust washers (A) in the No. 3 journal.

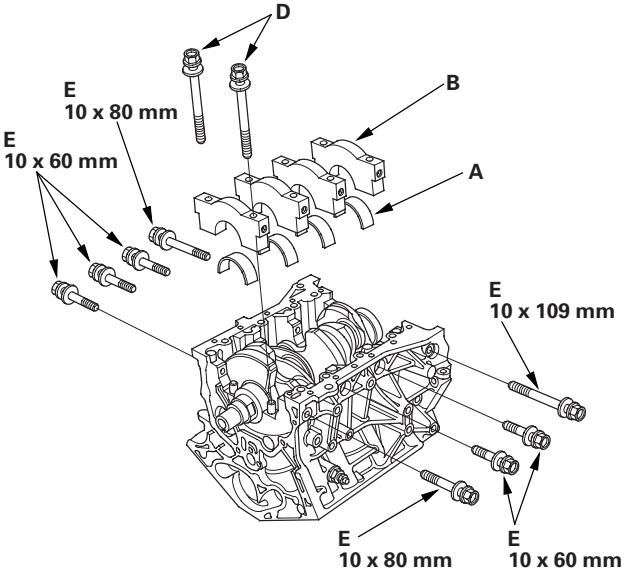


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Crankshaft and Piston Installation (cont'd)

10. Install the bearings (A) and bearing caps (B) with the arrow (C) facing the timing belt end of the engine.



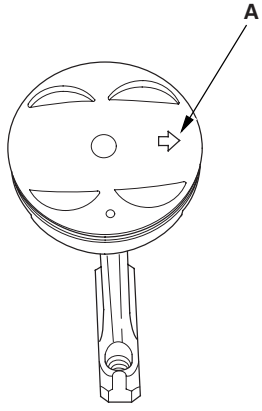


11. Apply engine oil to the bolt threads and flanges, then loosely install the bearing cap bolts (D) and bearing cap side bolts (E).

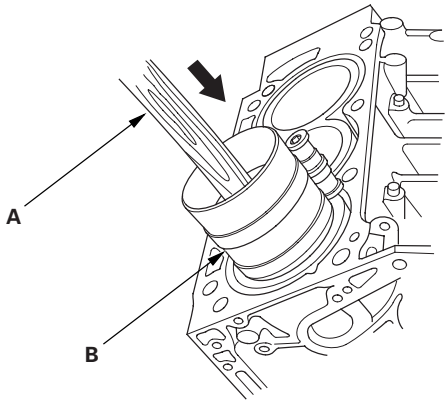
12. Set the crankshaft to bottom dead center (BDC) for the cylinder you are installing the piston in.

13. Remove the connecting rod cap. Install the ring compressor, and check that the bearing is securely in place.

14. Position the piston with the arrow (A) facing the timing belt side of the engine.

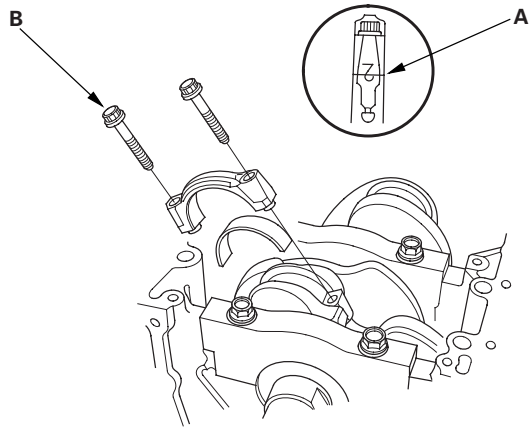


15. Position the piston in the cylinder, and tap it in using the wooden handle of a hammer (A). Maintain downward force on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.



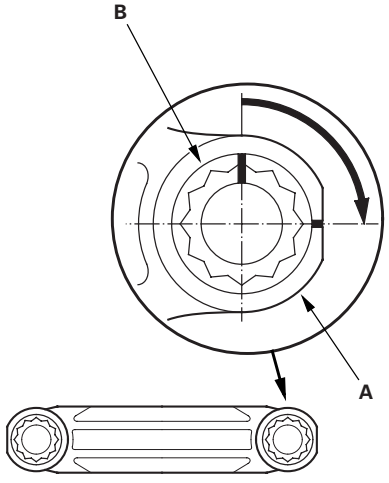
16. Stop after the ring compressor pops free, and check the connecting rod-to-crank journal alignment before pushing the piston into place.

17. Line up the mark (A) on the connecting rod and cap, then install the cap.



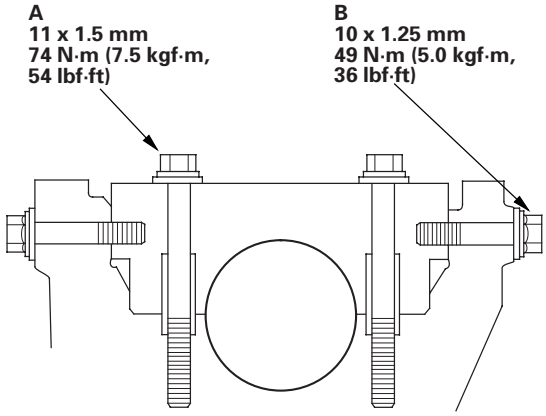
18. Apply engine oil to the bolt threads. Torque the bolts (B) to 20 N·m (2.0 kgf·m, 14 lbf·ft).

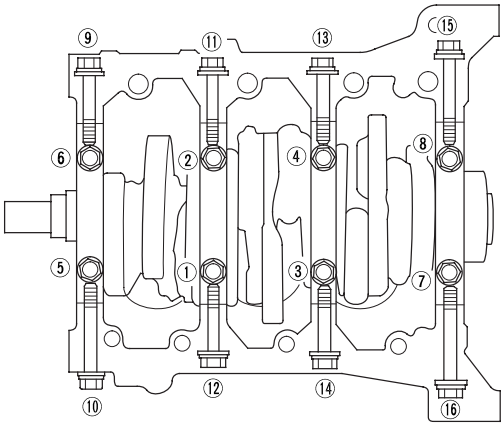
19. Mark the connecting rod (A) and bolt head (B) as shown.



20. Tighten the bolt until the mark on the bolt head lines up with the mark on the connecting rod (turn the bolt 90°).

21. Tighten the bearing cap bolts, and then the bearing cap side bolts to the specified torque in the sequence shown below. Repeat the torque sequence again to asure the bolts are properly torqued.



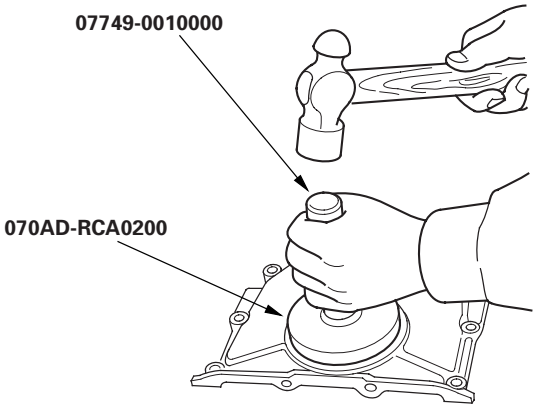


(cont'd)

Crankshaft and Piston Installation (cont'd)

22. The seal mating surface on the engine block end cover should be dry. Apply a light coat of grease to the crankshaft and to the lip of the seal.

23. Drive the new crankshaft oil seal until the special tool bottoms on the engine block end cover.

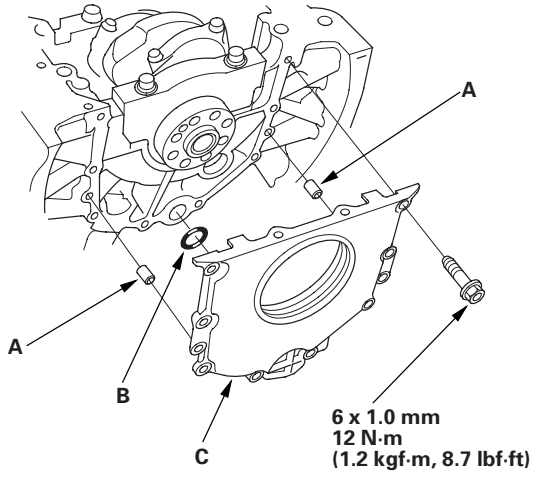


24. Remove old liquid gasket from the engine bock end cover mating surfaces, bolts, and bolt holes.

25. Clean and dry the engine block end cover mating surfaces.

26. Apply liquid gasket, P/N 08C70-K0234M, 08C70-K0334M or 08C70-X0331S, evenly to the block mating surface of the engine block end cover and to the inner threads of the bolt holes. Install the dowel pins (A), new O-ring (B), and the engine block end cover (C) on the cylinder block.

    NOTE: Do not install the parts if 5 minutes or more have elapsed since applying the liquid gasket. Instead, re-apply liquid gasket after removing the old residue.

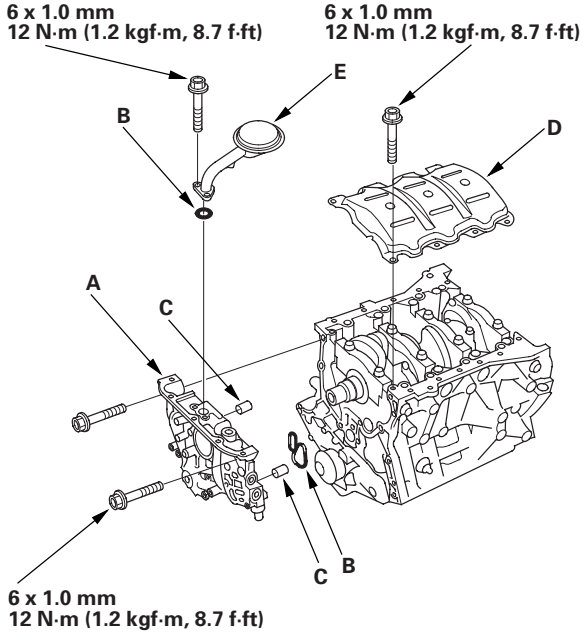


27. Remove old liquid gasket from the oil pump mating surfaces, bolts, and bolt holes.

28. Clean and dry the oil pump mating surfaces.

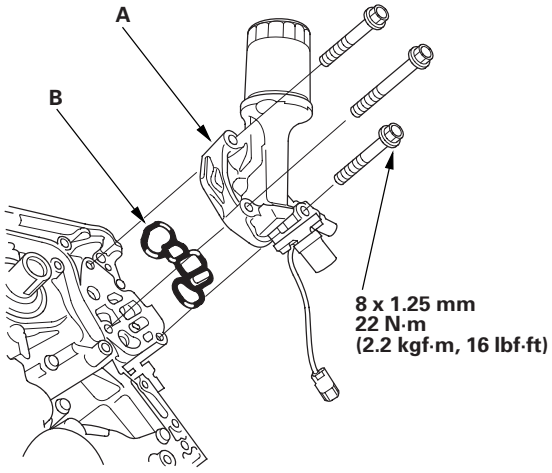
29. Install the oil pump (A).

    1. Install a new crankshaft oil seal in the oil pump (see step 2 on page 8-26).
    2. Apply liquid gasket, P/N 08C70-K0234M, 08C70-K0334M or 08C70-X0331S, evenly to the block mating surface of the oil pump and to the inner threads of the bolt holes.
       NOTE: Do not install the parts if 4 minutes or more have elapsed since applying the liquid gasket. Instead, re-apply liquid gasket after removing the old residue.
    3. Grease the lip of the oil seal, and apply oil to the new O-rings (B).
    4. Install the dowel pins (C), then align the inner rotor with the crankshaft, and install the oil pump.
    5. Clean the excess grease off the crankshaft, and check the seal for distortion.



30. Install the baffle plate (D), then install the oil screen (E).

31. Install the VTEC solenoid valve/oil filter assembly (A), with a new VTEC solenoid valve filter (B).



32. Install the oil pan (see page 7-58).

33. Install the crankshaft position (CKP) sensor (see page 11-157).

34. Install the cylinder heads (see page 6-96).

35. Install the transmission (see page 14-477).

36. Install the engine assembly (see page 5-28).

    NOTE: When any crankshaft or connecting rod bearing is replaced, after assembly it is necessary to run the engine at idling speed until it reaches normal operating temperature, then continue to run it for about 15 minutes.

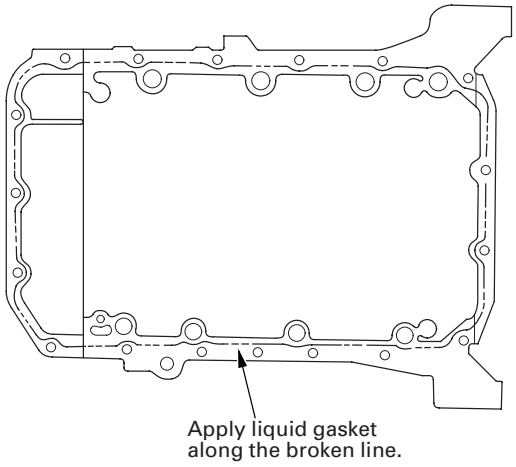
Oil Pan Installation

1. Remove old liquid gasket from the oil pan mating surfaces, bolts and bolt holes.

2. Clean and dry the oil pan mating surfaces.

3. Apply liquid gasket, P/N 08C70-K0234M, 08C70-K0334M or 08C70-X0331S, evenly to the oil pan mating surface of the cylinder block and to the inner threads of the bolt holes.

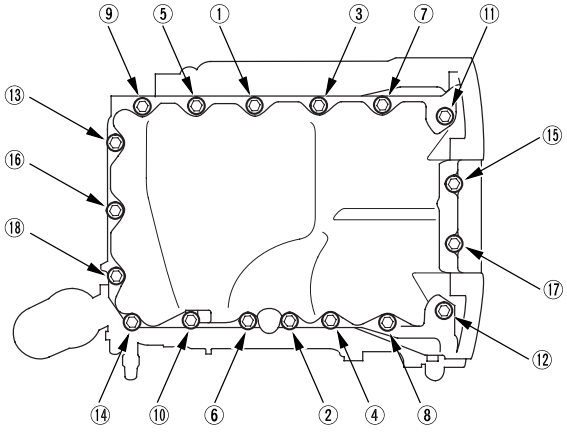
   NOTE: Do not install the parts if 5 minutes or more have elapsed since applying liquid gasket. Instead, re-apply liquid gasket after removing old residue.



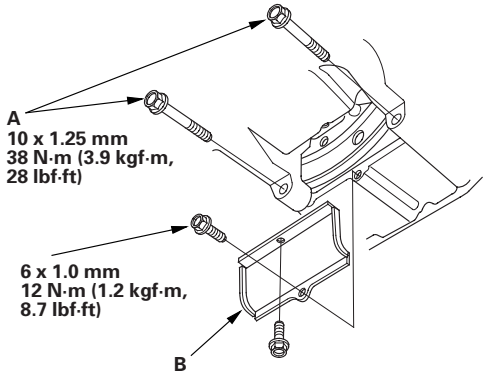
4. Install the oil pan on the cylinder block.

5. Tighten the bolts in two or three steps. In the final step, tighten all bolts, in sequence, to 12 N·m (1.2 kgf·m, 8.7 lbf·ft).

   NOTE: After assembly, wait at least 30 minutes before filling the engine with oil.



6. Tighten the two bolts (A) securing the transmission, then install the torque converter cover (B).



7. Refill the engine with oil (see page 8-21).

Engine Mechanical

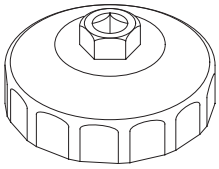


Engine Lubrication —J30A4 engine

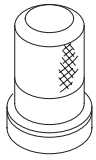
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Oil Pressure Test 8-20
Engine Oil Replacement 8-21
Engine Oil Filter Replacement 8-21
Oil Filter Feed Pipe Replacement 8-23
Oil Pump Overhaul 8-24
Oil Pressure Switch Replacement 8-27

Special Tools

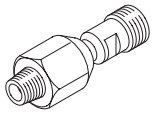
Ref. No.	Tool Number	Description	Qty
①	07HAA-PJ70100	Oil Filter Wrench	1
②	070AD-RCA0100	Oil Seal Driver 64	1
③	07406-0030000	Oil Pressure Gauge Attachment	1
④	07506-3000001	Oil Pressure Gauge	1



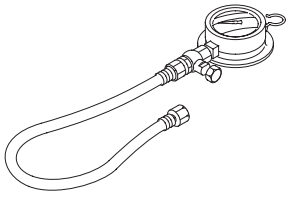
①



②

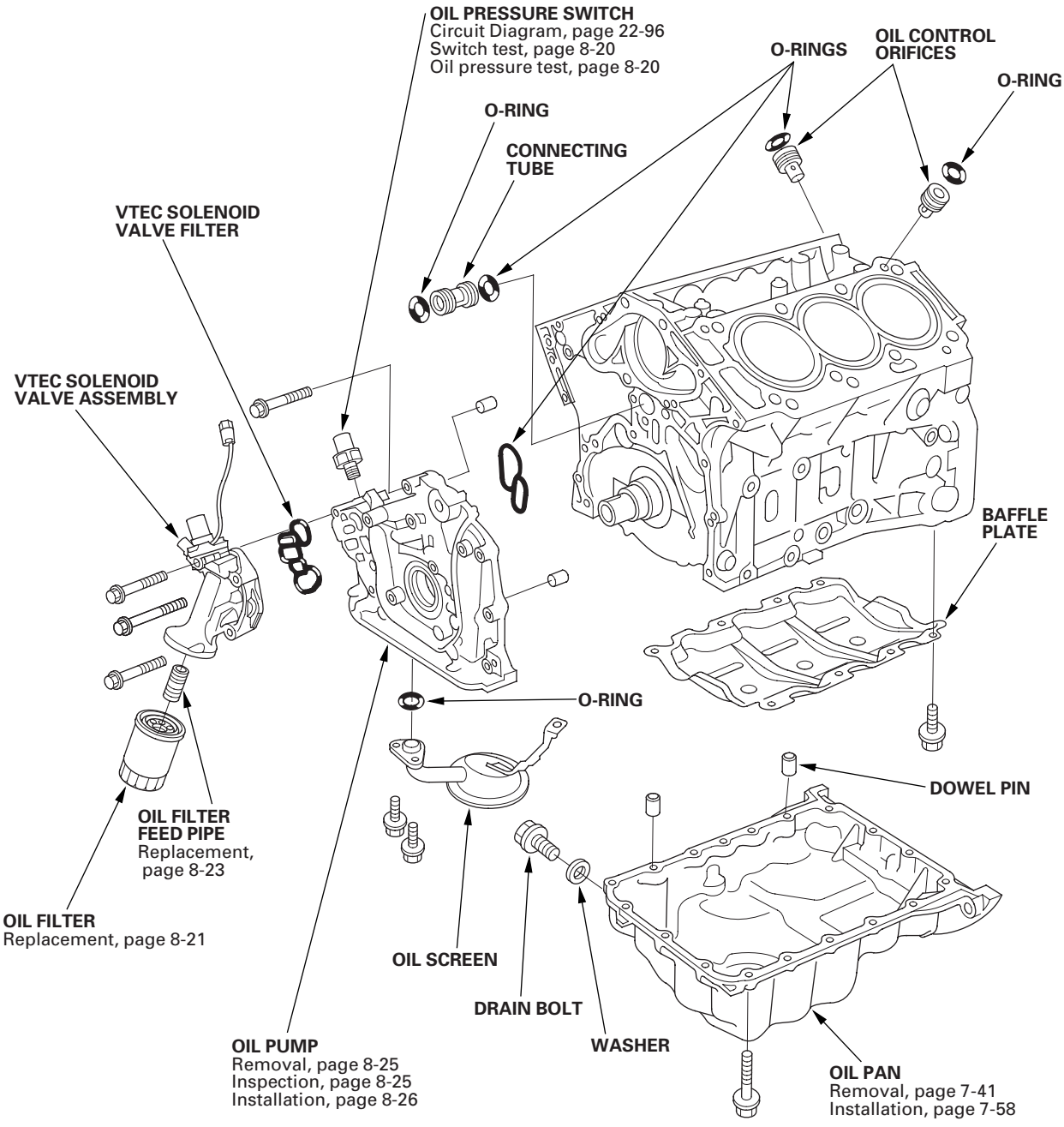


③



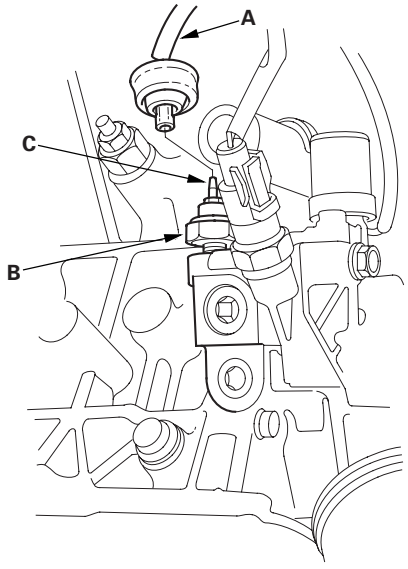
④

Component Location Index



Oil Pressure Switch Test

1. Remove the YEL/RED wire (A) from the engine oil pressure switch (B).



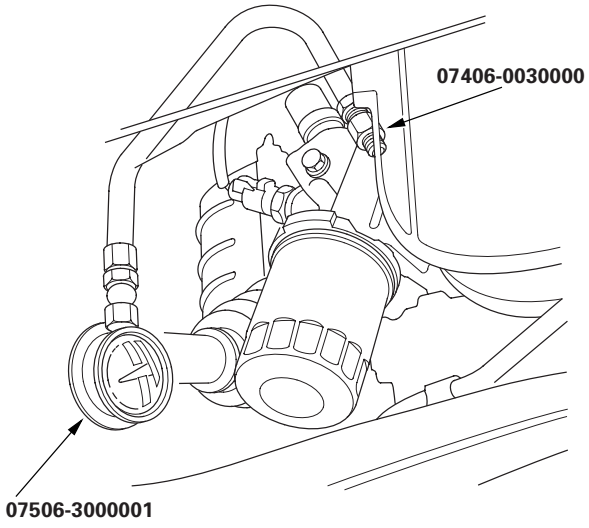
2. Check for continuity between the positive terminal (C) and the engine (ground). There should be continuity with the engine stopped. There should be no continuity with the engine running.

Oil Pressure Test

Special Tools Required
- Oil pressure gauge attachment 07406-0030000
- Oil pressure gauge 07506-3000001

If the low oil pressure indicator stays on with the engine running, check the engine oil level. If the oil level is correct:

1. Remove the engine oil pressure switch, then install the special tools.



2. Start the engine. Shut it off immediately if the gauge registers no oil pressure. Repair the problem before continuing.

3. Allow the engine to reach operating temperature (fan comes on at least twice). The pressure should be:

Engine Oil Temperature: 80°C (176°F)
Engine Oil Pressure:
At Idle: 70 kPa (0.7 kgf/cm², 10 psi) minimum
At 3,000 rpm (min⁻¹): 490 kPa (5.0 kgf/cm², 71 psi) minimum

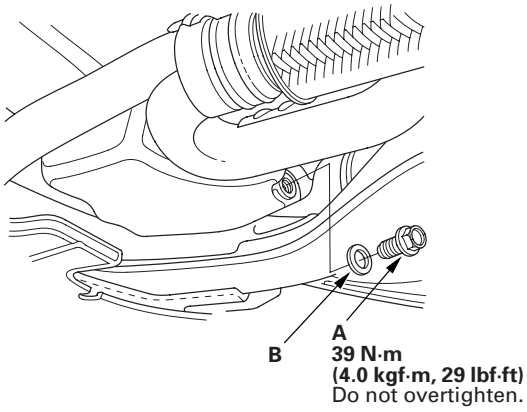
4. If oil pressure is NOT within specifications, inspect these items:

   - Check the oil screen for clogging.
   - Check the oil pump (see page 8-24).

Engine Oil Replacement

1. Warm up the engine.

2. Remove the drain bolt (A), and drain the engine oil.



3. Reinstall the drain bolt with a new washer (B).

4. Refill with the recommended oil (see page 3-2).

   Capacity:
   4.0 ℓ (4.2 US qt, 3.5 Imp qt) at oil change.
   4.3 ℓ (4.5 US qt, 3.8 Imp qt) at oil change including filter.
   5.0 ℓ (5.3 US qt, 4.4 Imp qt) after engine overhaul.

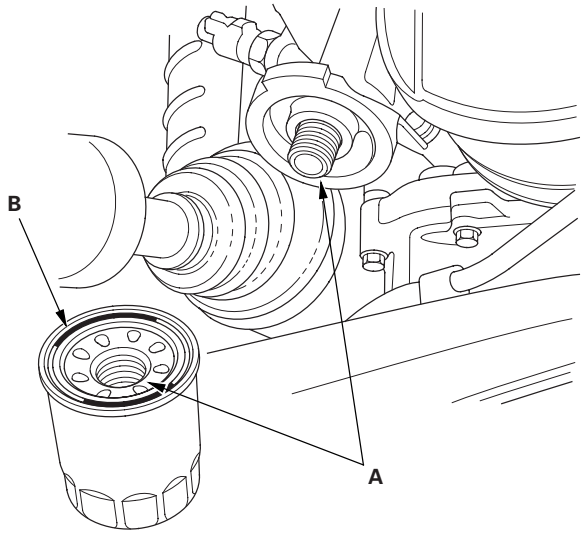
5. Run the engine for more than 3 minutes, then check for oil leakage.

Engine Oil Filter Replacement

Special Tools Required
Oil filter wrench 07HAA-PJ70100

1. Remove the oil filter with the special oil filter wrench.

2. Inspect the threads (A) and rubber seal (B) on the new filter. Clean the seat on the engine block, then apply a light coat of oil to the filter rubber seal. Use only filters with a built-in bypass system.



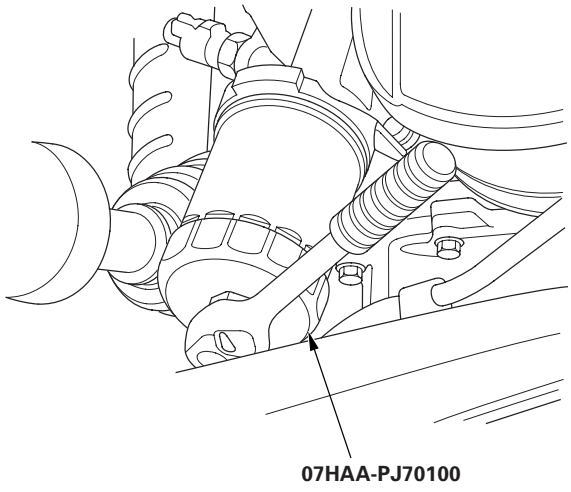
(cont'd)

Engine Oil Filter Replacement (cont'd)

3. Install the oil filter by hand.

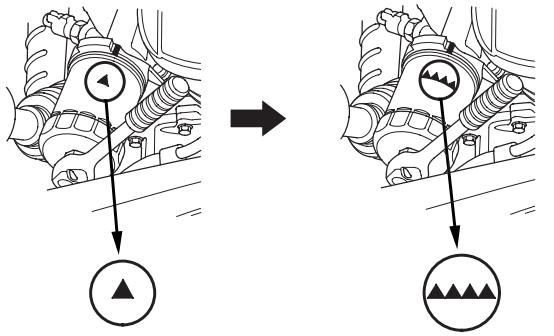
4. After the rubber seal seats, tighten the oil filter clockwise with the special tool.

   Tighten: 3/4 turn clockwise.
   Tightening torque: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)



5. If four numbers or marks (1 to 4 or ▼ to ▼▼▼▼) are printed around the outside of the filter, you can use the following procedure to tighten the filter.

   - Spin the filter on until its seal lightly seats against the block, and note which number or mark is at the bottom.
   - Tighten the filter by turning it clockwise three numbers or marks from the one you noted. For example, if mark ▼ is at the bottom when the seal is lightly seated, tighten the filter until the mark ▼▼▼▼ comes around to the bottom.



Mark when rubber seal is seated.

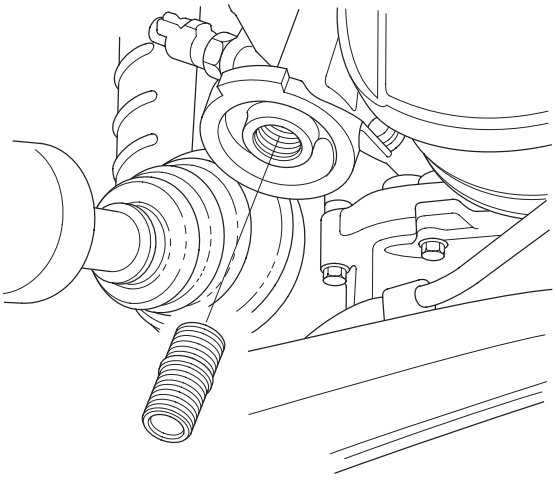
Mark after tightening.

Number or Mark when rubber seal is seated	1 or ▼	2 or ▼▼	3 or ▼▼▼	4 or ▼▼▼▼
Number or Mark after tightening	4 or ▼▼▼▼	1 or ▼	2 or ▼▼	3 or ▼▼▼

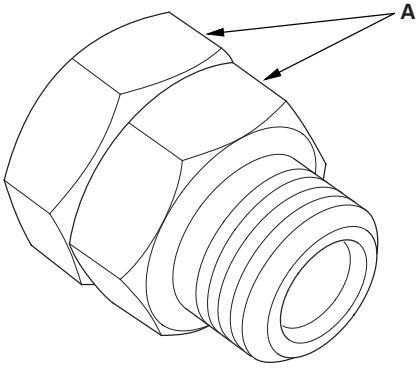
6. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

Oil Filter Feed Pipe Replacement

1. Remove the filter (see page 8-21).
2. Remove the oil filter feed pipe.



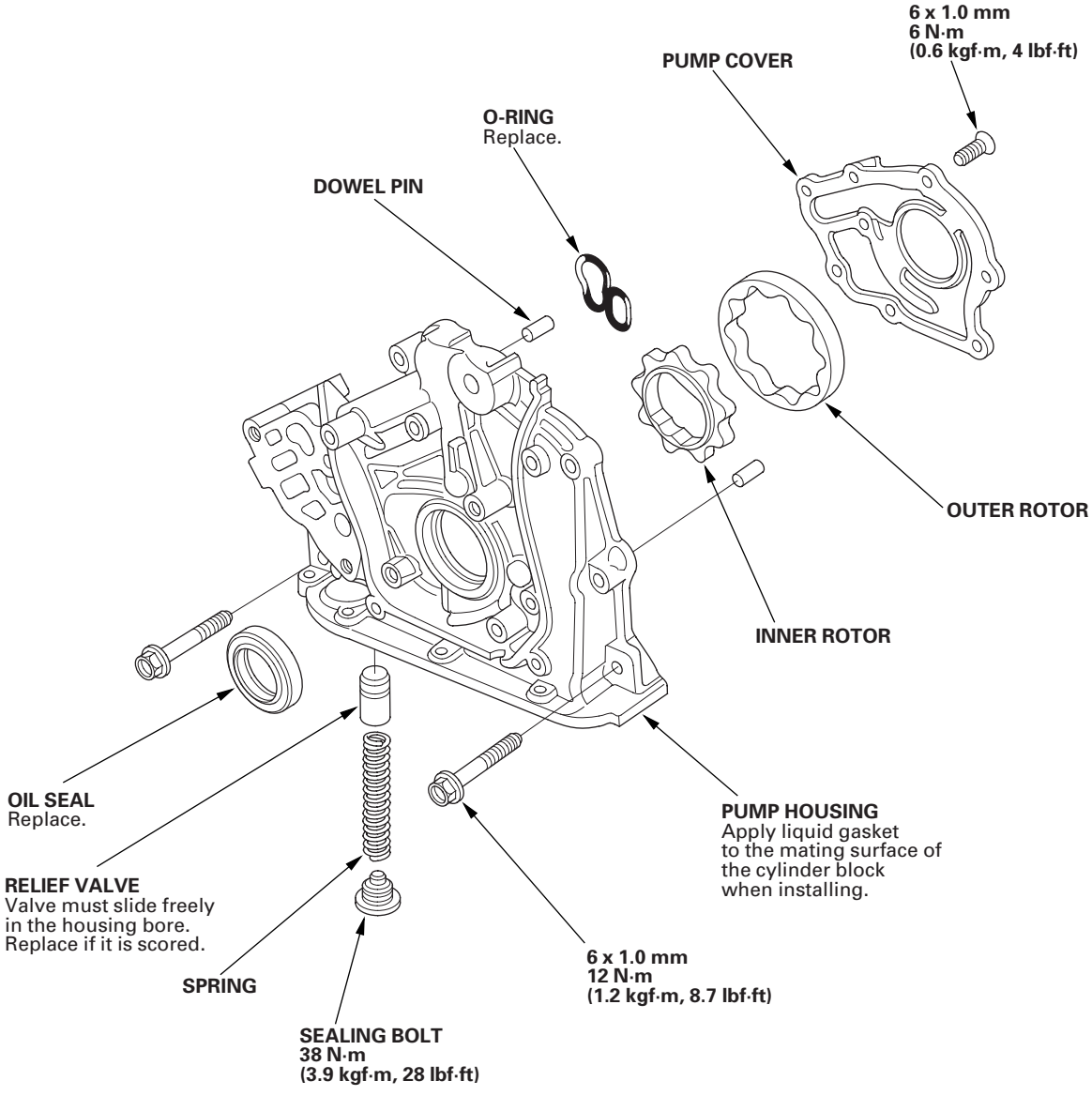
3. Install the two 20 x 1.5 mm nuts (A) onto the new oil filter feed pipe and hold the nut with wrench, then tighten the other nut.



4. Tighten the oil filter feed pipe to 49 N·m (5.0 kgf·m, 36 lbf·ft), then remove the nuts from the oil filter feed pipe.

Oil Pump Overhaul

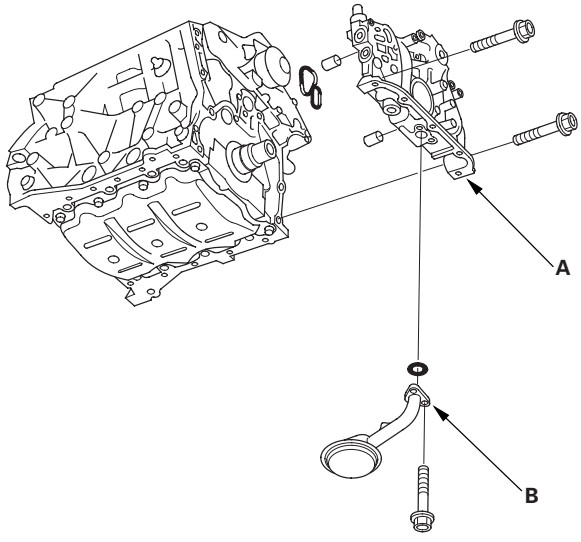
Exploded View



Special Tools Required
Oil seal driver 64 070AD-RCA0100

Removal

1. Drain the engine oil.
2. Turn the crankshaft so that the No. 1 piston is at top dead center (see page 6-62).
3. Remove the timing belt (see page 6-62).
4. Remove the idler pulley.
5. Remove the crankshaft position (CKP) sensor (see page 11-398).
6. Remove the VTEC solenoid valve and oil filter assembly (see page 11-457).
7. Remove the oil pan (see page 7-41).
8. Remove the oil screen (A).

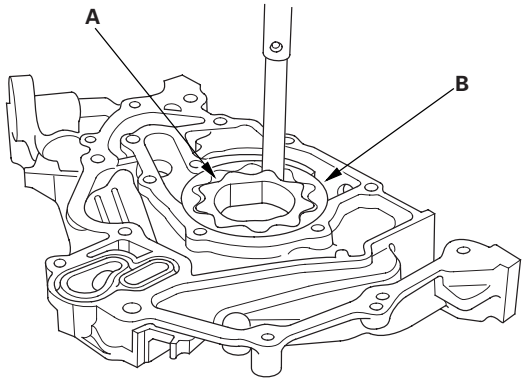


9. Remove the mounting bolts and the oil pump assembly (B).

Inspection

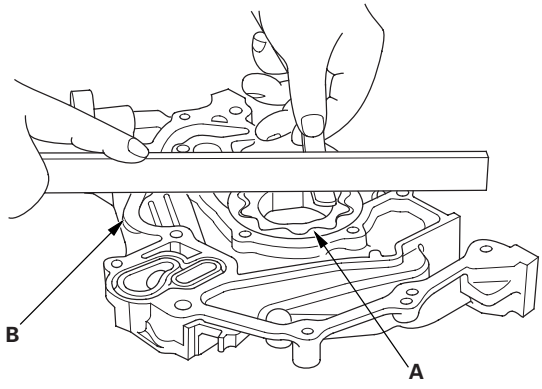
1. Remove the screws from the pump housing, then separate the housing and cover.
2. Check the inner-to-outer rotor radial clearance between the inner rotor (A) and outer rotor (B). If the inner-to-outer rotor clearance exceeds the service limit, replace the oil pump assembly.

Inner Rotor-to-Outer Rotor Radial Clearance
Standard (New): 0.04—0.16 mm (0.002—0.006 in.)
Service Limit: 0.20 mm (0.008 in.)



3. Check the housing-to-rotor axial clearance between the rotors (A) and pump housing (B). If the housing-to-rotor axial clearance exceeds the service limit, replace the oil pump assembly.

Housing-to-Rotor Axial Clearance
Standard (New): 0.02—0.07 mm (0.001—0.003 in.)
Service Limit: 0.12 mm (0.005 in.)

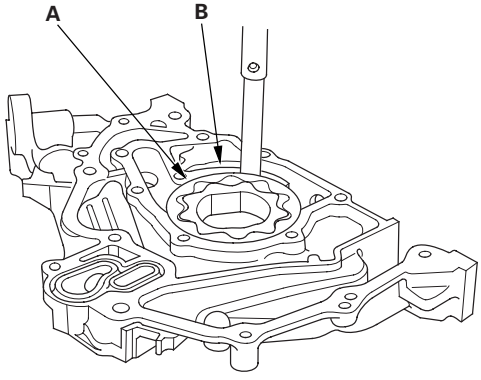


(cont'd)

Oil Pump Overhaul (cont'd)

4. Check the housing-to-outer rotor radial clearance between the outer rotor (A) and pump housing (B). If the housing-to-outer rotor radial clearance exceeds the service limit, replace the oil pump assembly.

   Housing-to-Outer Rotor Radial Clearance
   Standard (New): 0.10—0.19 mm (0.004—0.007 in.)
   Service Limit: 0.20 mm (0.008 in.)



5. Inspect both rotors and pump housing for scoring or other damage. Replace parts if necessary.

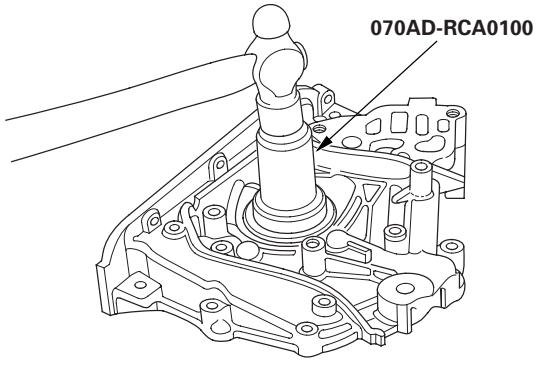
6. Apply liquid thread lock to the pump housing screws, then install the oil pump cover.

7. Check that the oil pump turns freely.

Installation

1. Remove the old oil seal from the oil pump.

2. Gently tap in the new oil seal until the special tool bottoms on the pump.

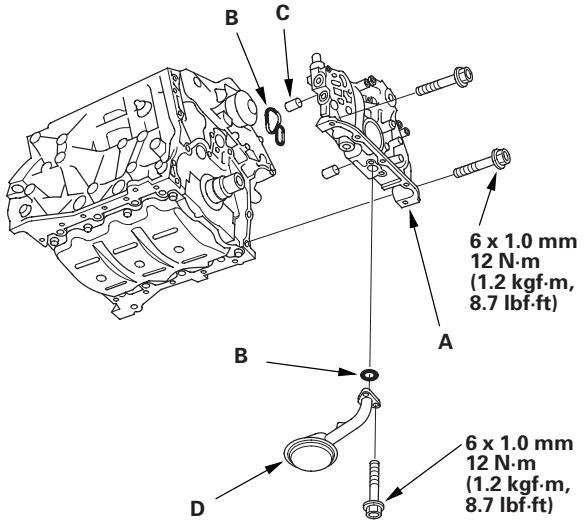


3. Remove old liquid gasket from the oil pump mating surfaces, bolts and bolt holes.

4. Clean and dry the oil pump mating surfaces.

5. Install the oil pump (A).

   1 Apply liquid gasket, P/N 08C70-K0234M, 08C70-K0334M or 08C70-X0331S, evenly to the block mating surface of the oil pump and to the inner threads of the bolt holes.
   NOTE: Do not install the parts if 4 minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing old residue.
   2 Grease the lip of the oil seal, and apply oil to the new O-rings (B).
   3 Install the dowel pins (C), then align the inner rotor with the crankshaft and install the oil pump.
   4 Clean the excess grease off the crankshaft, and check the seal for distortion.



6. Install the oil screen (D).

7. Install the oil pan (see page 7-58).

8. Install the VTEC solenoid valve and oil filter assembly (see page 11-457).

9. Install the CKP sensor (see page 11-398).

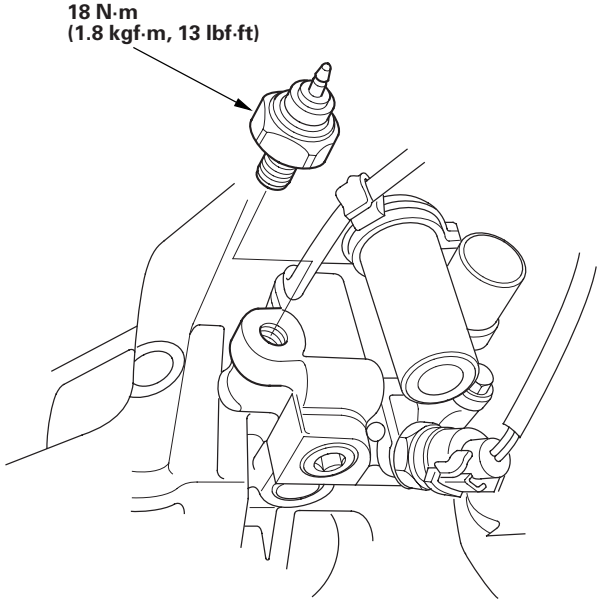
10. Install the idler pulley.

11. Install the timing belt (see page 6-64).

12. After assembly, wait at least 30 minutes before filling the engine with oil.

Oil Pressure Switch Replacement

1. Disconnect the oil pressure switch connector, then remove the oil pressure switch.



2. Apply liquid gasket to the oil pressure switch, then install the oil pressure switch.

Engine Mechanical

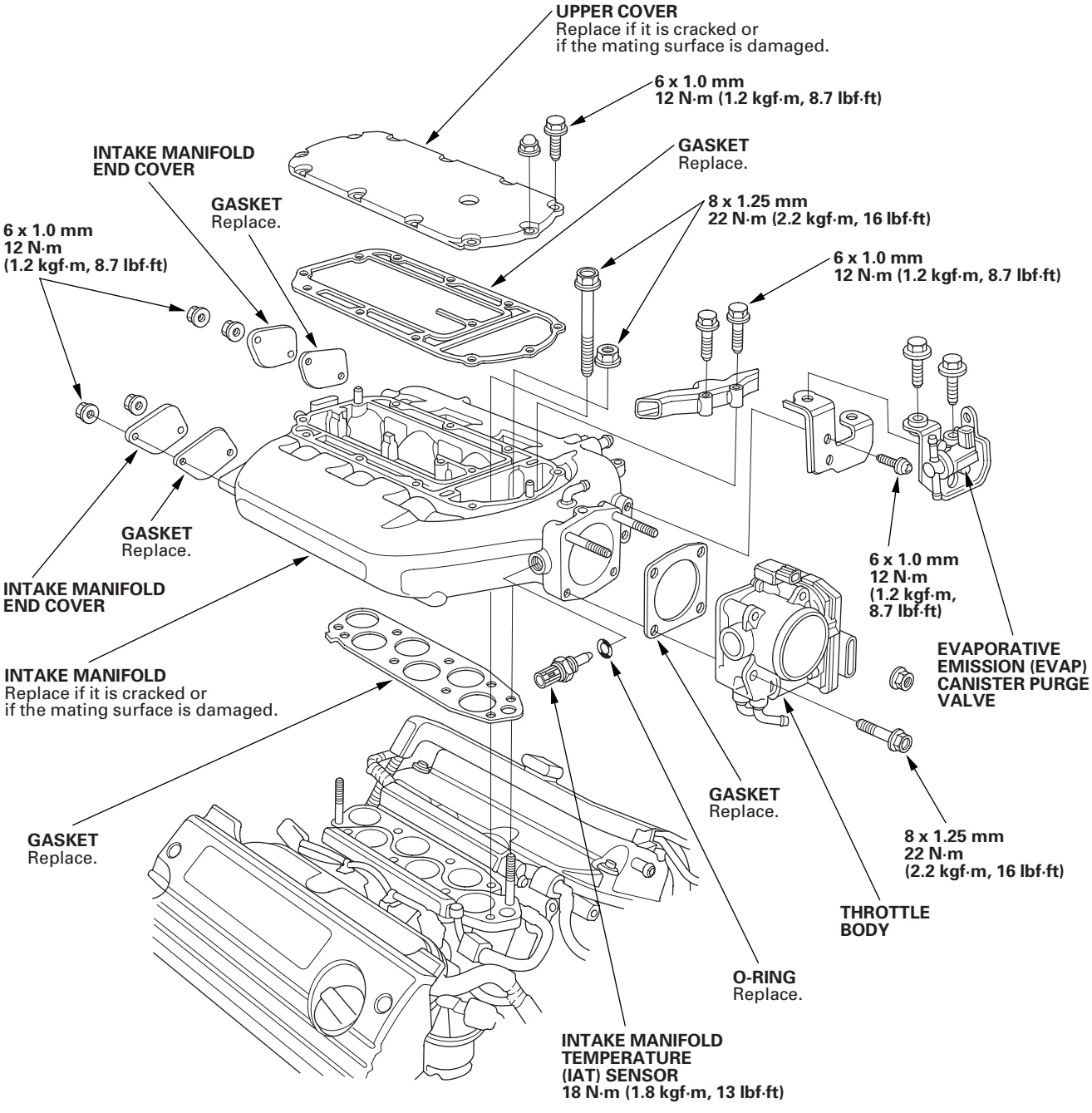


Intake Manifold and Exhaust System —J30A4 engine

Intake Manifold Removal and Installation 9-12
Exhaust Pipe and Muffler Replacement 9-16

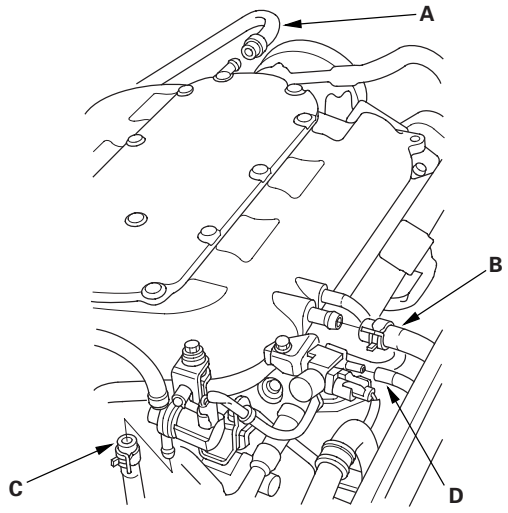
Intake Manifold Removal and Installation

Exploded View:

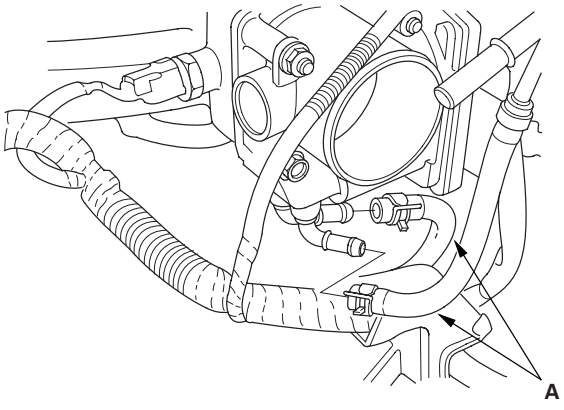


Removal:

1. Remove the positive crankcase ventilation (PCV) hose (A), brake booster vacuum hose (B), evaporative emission (EVAP) canister hose (C), and vacuum hose (D).



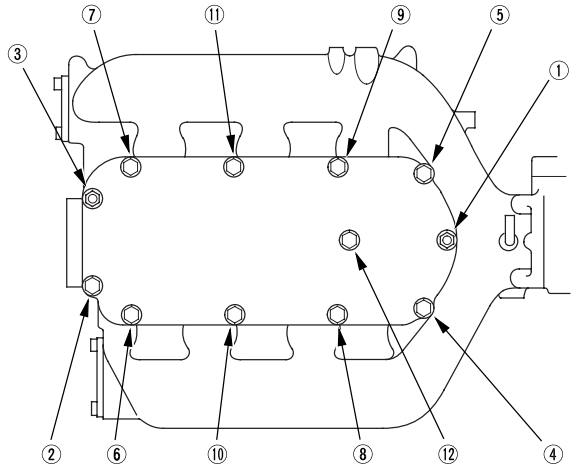
2. Remove the water bypass hoses (A), and plug them.



3. Remove these engine wire harness connectors and wire harness clamps from the intake manifold.

   - Intake air temperature (IAT) sensor connector
   - Idle air control (IAC) valve connector
   - Throttle actuator connector
   - Manifold absolute pressure (MAP) sensor connector
   - Evaporative emission (EVAP) canister purge valve connector
   - Engine mount control solenoid valve connector

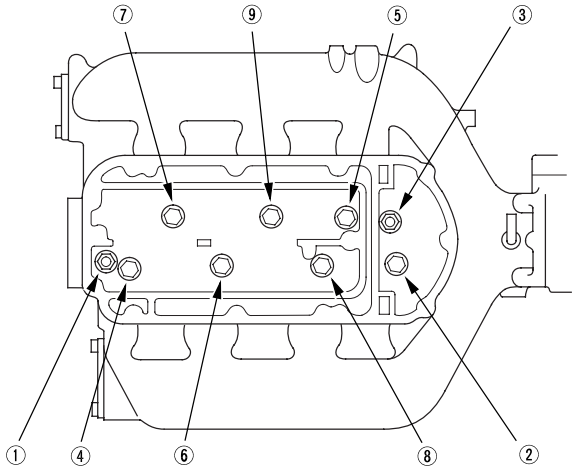
4. Remove the upper cover mounting bolts and nuts sequentially in two or three steps.



(cont'd)

Intake Manifold Removal and Installation (cont'd)

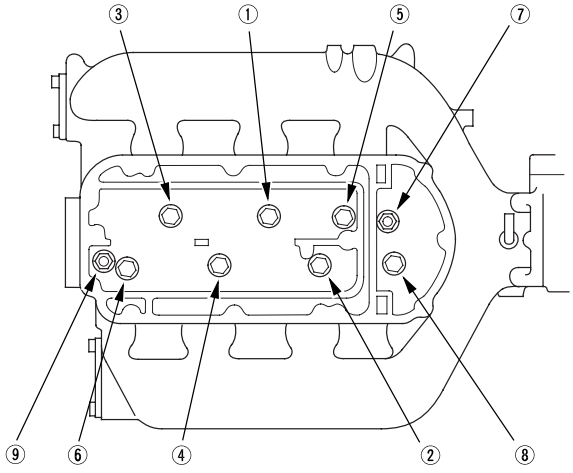
5. Remove the intake manifold mounting bolts and nuts sequentially in two or three steps.



Installation:

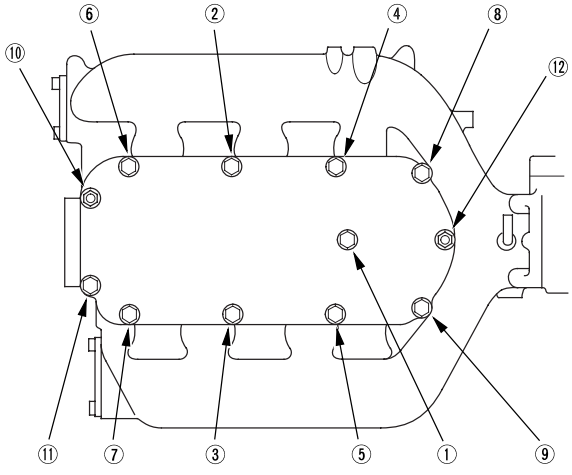
1. Install the intake manifold. Tighten the bolts and nuts sequentially in two or three steps. Always use a new intake manifold gasket.

Specified torque:
8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)

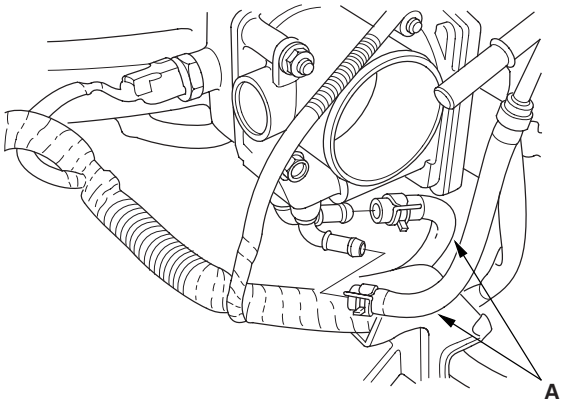


2. Install the upper cover. Tighten the bolts and nuts sequentially in two or three steps. Always use a new gasket.

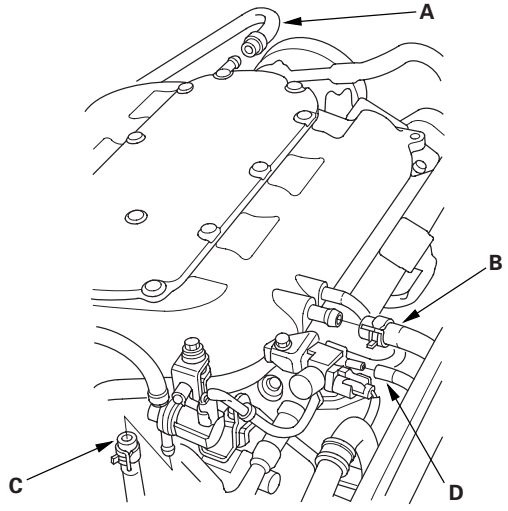
Specified torque:
6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)



3. Install the water bypass hoses (A).



4. Install the positive crankcase ventilation (PCV) hose (A), brake boostor vacuum hose (B), evaporative emission (EVAP), canister hose (C), and vacuum hose (D).



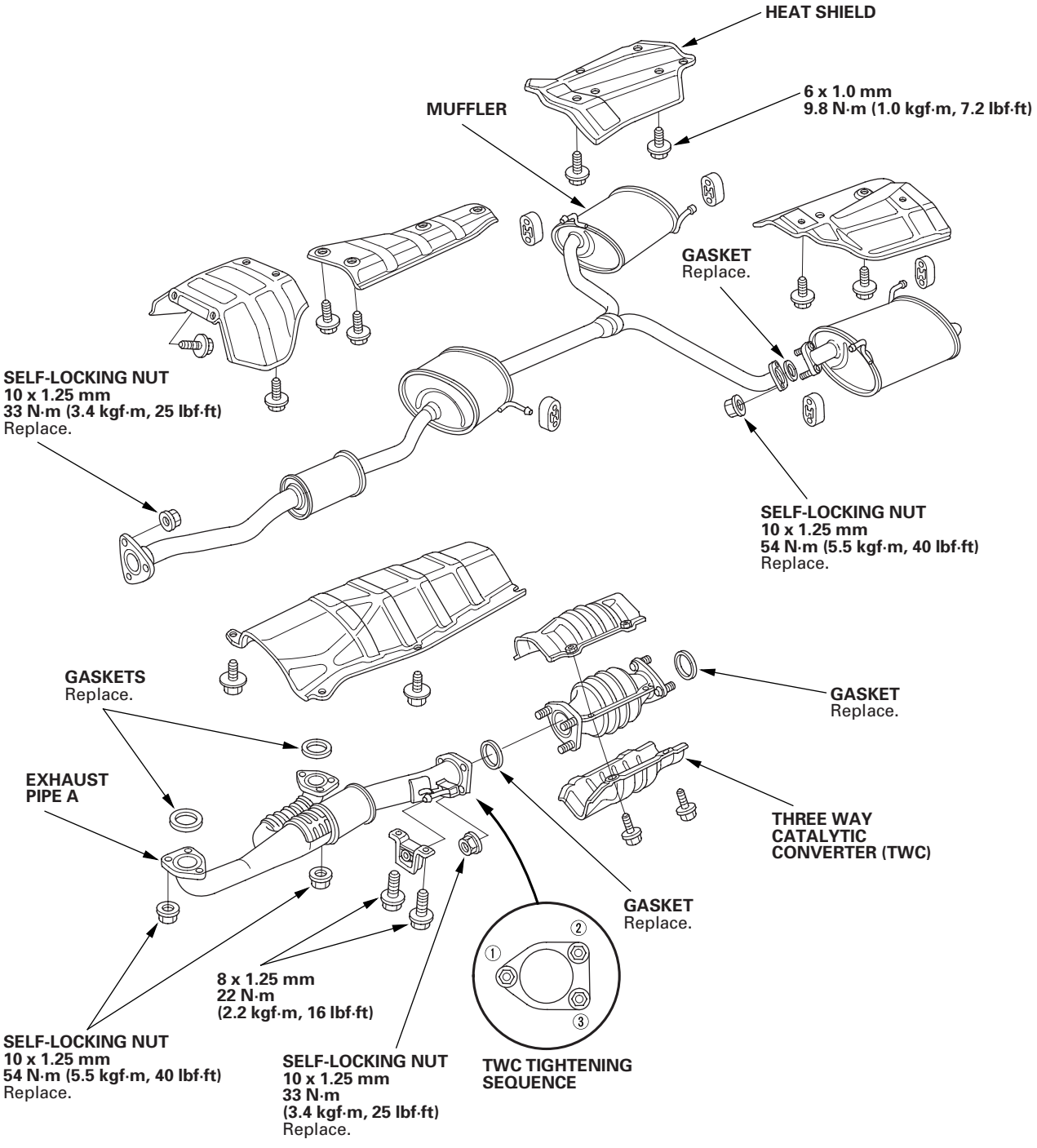
5. Clean up any spilled engine coolant.

6. After installation, check that all tubes, hoses and connectors are installed correctly.

7. Refill the radiator with engine coolant, then bleed air from the cooling system with the heater valve open (see page 10-24).

Exhaust Pipe and Muffler Replacement

NOTE: Use new gaskets and self-locking nuts when reassembling.



Engine Cooling
J30A4 engine

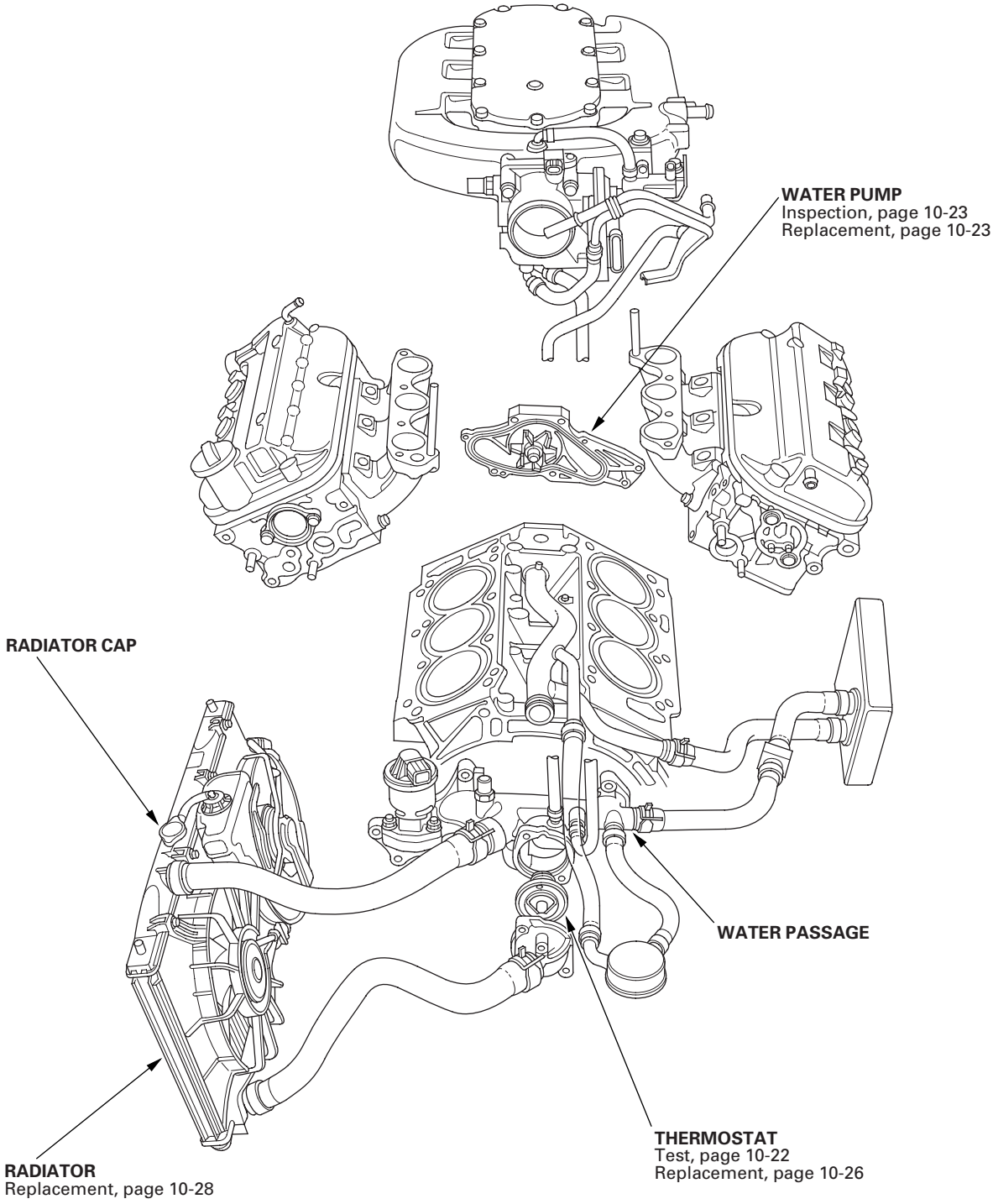
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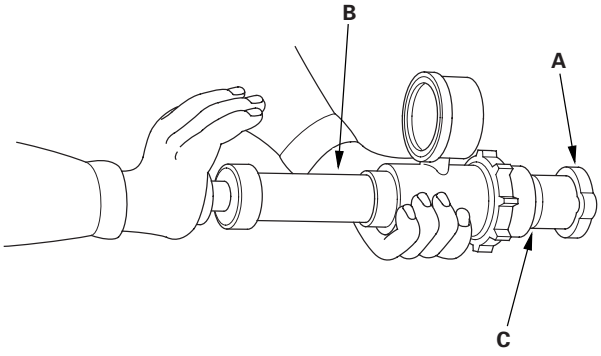
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Radiator Cap Test

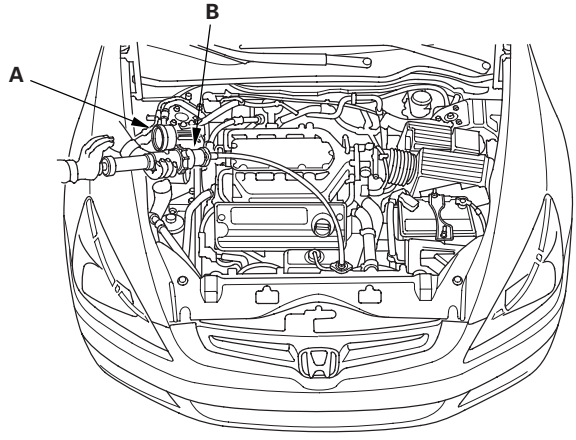
1. Remove the radiator cap (A), wet its seal with engine coolant, then install it on the pressure tester (B) (commercially available). Use a small adapter H-901122-09 (C) (commercially available) to install the radiator cap.



2. Apply a pressure of 93 — 123 kPa (0.95 — 1.25 kgf/cm^2, 14 — 18 psi).
3. Check for a drop in pressure.
4. If the pressure drops, replace the cap.

Radiator Test

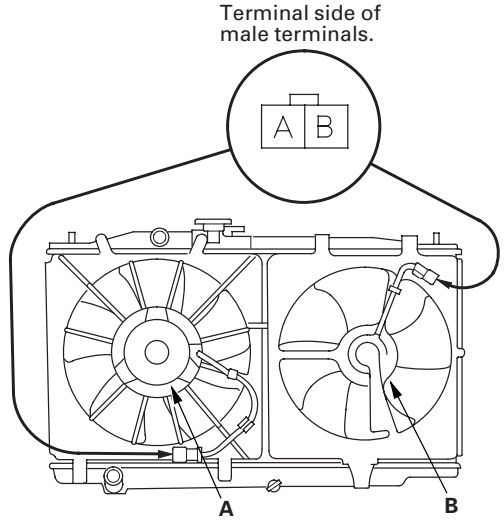
1. Wait until the engine is cool, then carefully remove the radiator cap and fill the radiator with engine coolant to the top of the filler neck.
2. Attach the pressure tester (A) (commercially available) to the radiator. Use a small adapter H-901122-09 (B) (commercially available) to attach the pressure tester.



3. Apply a pressure of 93 — 123 kPa (0.95 — 1.25 kgf/cm^2, 14 — 18 psi).
4. Inspect for engine coolant leaks and a drop in pressure.
5. Remove the tester, and reinstall the radiator cap.
6. Check for engine oil in the coolant and/or coolant in the engine oil.

Fan Motor Test

1. Disconnect the 2P connectors from the radiator fan motor (A) and condenser fan motor (B).



2. Test the motor by connecting battery power to the B terminal and ground to the A terminal.

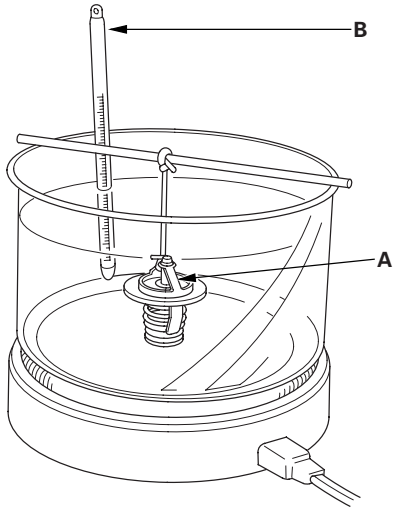
3. If the motor fails to run or does not run smoothly, replace it.

Thermostat Test

Replace the thermostat if it is open at room temperature.

To test a closed thermostat:

1. Suspend the thermostat (A) in a container of water. Do not let the thermometer (B) touch the bottom of the hot container.



2. Heat the water and check the temperature with a thermometer. Check the temperature at which the thermostat first opens, and at which it is fully open.

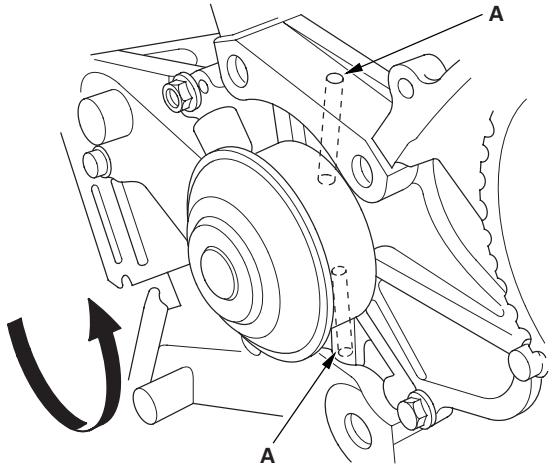
3. Measure the lift height of the thermostat when it is fully open.

Standard Thermostat

Lift height:	**above 10.0 mm (0.39 in.)**
Starts opening:	**76－80℃ (169－176℉)**
Fully open:	**90℃ (194℉)**

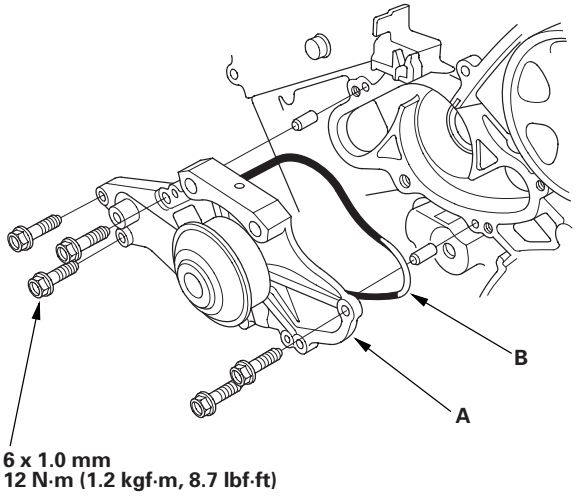
Water Pump Inspection

1. Remove the timing belt (see page 6-62).
2. Turn the water pump pulley counterclockwise. Check that it turns freely.
3. Check for signs of seal leakage. A small amount of ''weeping'' from the bleed holes (A) is normal.



Water Pump Replacement

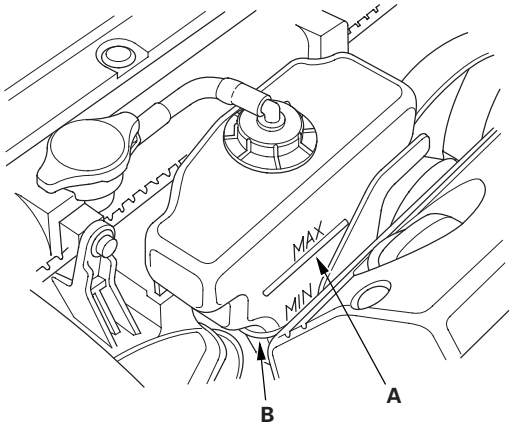
1. Drain the engine coolant (see page 10-24).
2. Remove the timing belt (see page 6-62).
3. Remove the timing belt adjuster (see page 6-73).
4. Remove the water pump (A) by removing the five bolts.



5. Inspect and clean the O-ring groove and the mating surface with the cylinder block.
6. Install the water pump with a new O-ring (B) in the reverse order of removal.
7. Clean up any spilled engine coolant.
8. Install the timing belt adjuster (see page 6-73).
9. Install the timing belt (see page 6-64).
10. Refill the radiator with engine coolant, then bleed the air from the cooling system (see page 10-24).

Coolant Check

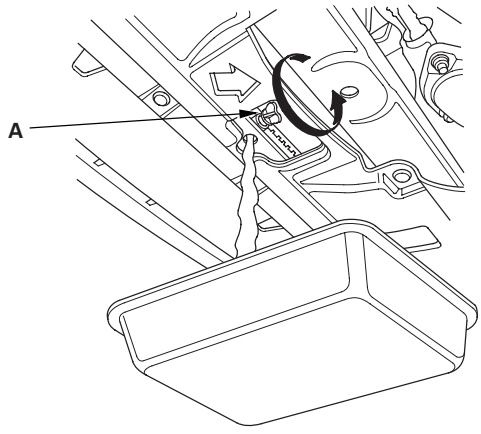
1. Look at the coolant level in the reserve tank. Make sure it is between the MAX mark (A) and MIN mark (B).



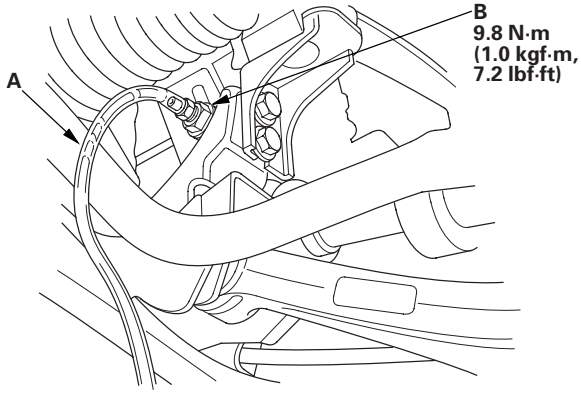
2. If the coolant level in the reserve tank is at or below the MIN mark, add coolant to bring it up to the MAX mark, and inspect the cooling system for leaks.

Coolant Replacement

1. Start the engine. Set the heater temperature control dial to maximum heat, then turn off the ignition switch. Make sure the engine and radiator are cool to the touch.
2. Remove the radiator cap.
3. Loosen the drain plug (A), and drain the coolant.



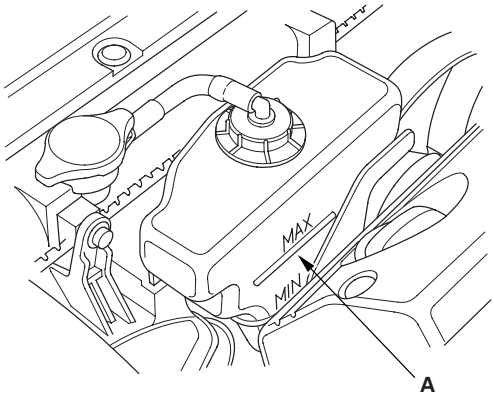
4. Install a rubber hose (A) on the drain bolt (B) located at the rear of the cylinder block, then loosen the drain bolt.



5. When the coolant stops draining, tighten the drain bolt.
6. Tighten the radiator drain plug securely.

7. Remove, drain, and reinstall the reserve tank.

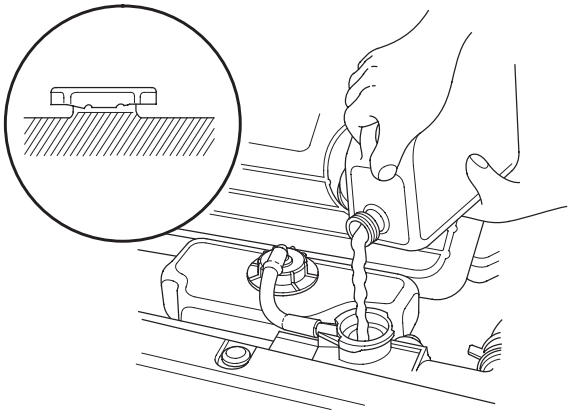
8. Fill the reserve tank to MAX mark (A) with genuine Honda All Season Antifreeze/Coolant Type 2 (P/N OL999-9001).



9. Pour genuine Honda All Season Antifreeze/Coolant Type 2 into the radiator up to the base of the filler neck.

   NOTE:
   - Always use genuine Honda All Season Antifreeze /Coolant Type 2 (P/N OL999-9001). Using a non-Honda coolant can result in corrosion, causing the cooling system to malfunction or fail.
   - Genuine Honda All Season Antifreeze/Coolant Type 2 is a mixture of 50 % antifreeze and 50 % water. Do not add water.

   Engine Coolant Refill Capacity (including the reserve tank capacity of 0.6 ℓ (0.6 US qt, 0.5 Imp qt)):
   6.7 ℓ (7.1 US qt, 5.9 Imp qt)



10. Install the radiator cap loosely.

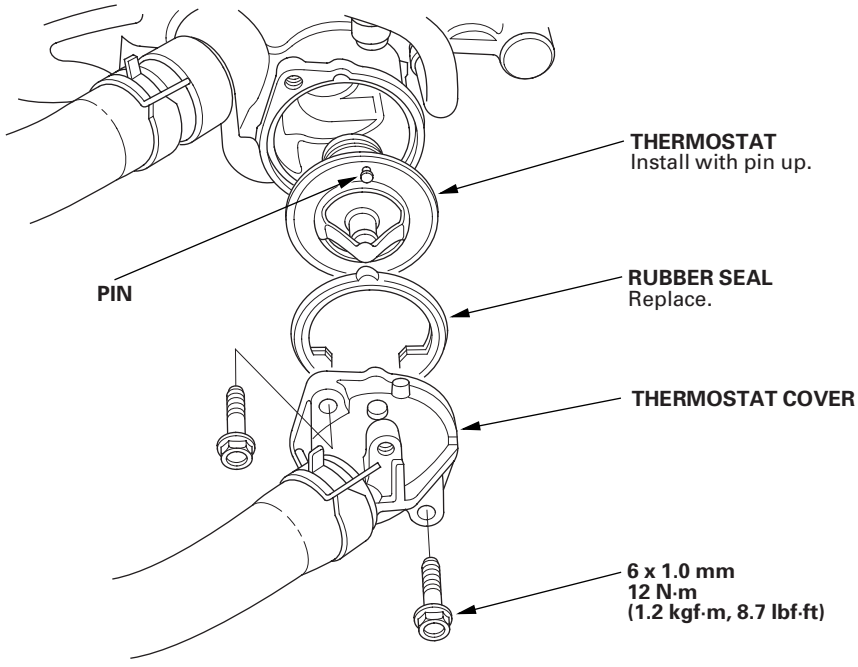
11. Start the engine and let it run until it warms up (the radiator fan comes on at least twice).

12. Turn off the engine. Check the level in the radiator and add genuine Honda All Season Antifreeze/ Coolant Type 2, if needed.

13. Put the radiator cap on tightly, then run the engine again, and check for leaks.

Thermostat Replacement

1. Make sure you have the anti-theft codes for the radio and navigation system, then write down the frequencies for the radio's preset buttons.
2. Disconnect the negative cable from the battery first, then the positive cable.
3. Remove the battery.
4. Drain the engine coolant (see page 10-24).
5. Remove the thermostat cover, then remove the thermostat.



6. Install the thermostat with new rubber seal.
7. Clean up any spilled engine coolant.
8. Install the battery. Clean the battery posts and cable terminals with sandpaper, then assemble them and apply grease to prevent corrosion.
9. Refill the radiator with engine coolant, then bleed air from the cooling system (see page 10-24).
10. Perform the powertrain control module (PCM) idle learn procedure (see page 11-193), and the power window control unit reset procedure (see page 22-219).
11. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets. Set the clock.

Water Passage Replacement

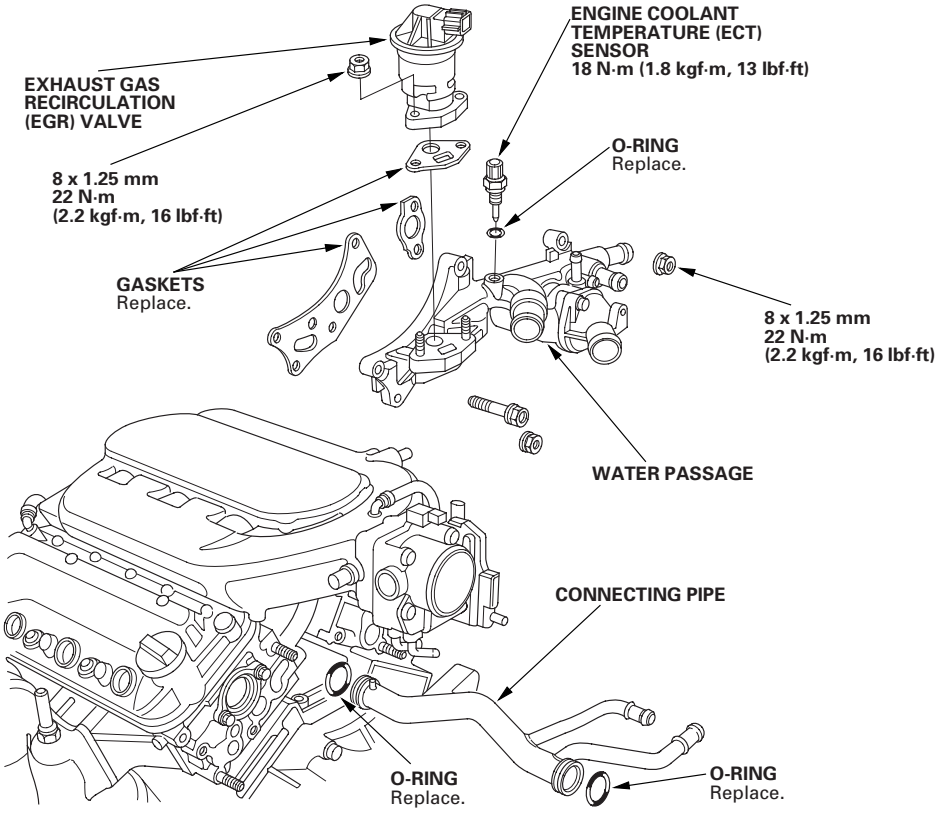
1. Make sure you have the anti-theft codes for the radio and navigation system, then write down the frequencies for the radio's preset buttons.

2. Disconnect the negative cable from the battery first, then the positive cable. Remove the battery.

3. Drain the engine coolant (see page 10-24).

4. Remove the vacuum hoses, breather pipe, and the intake air duct.

5. Remove the upper radiator hose, lower radiator hose, heater hoses, and water bypass hoses from the water passage. Remove the water passage.



6. Install the water passage in the reverse order of removal.

7. Clean up any spilled engine coolant.

8. Install the battery. Clean the battery posts and cable terminals with sandpaper, then assemble them and apply grease to prevent corrosion.

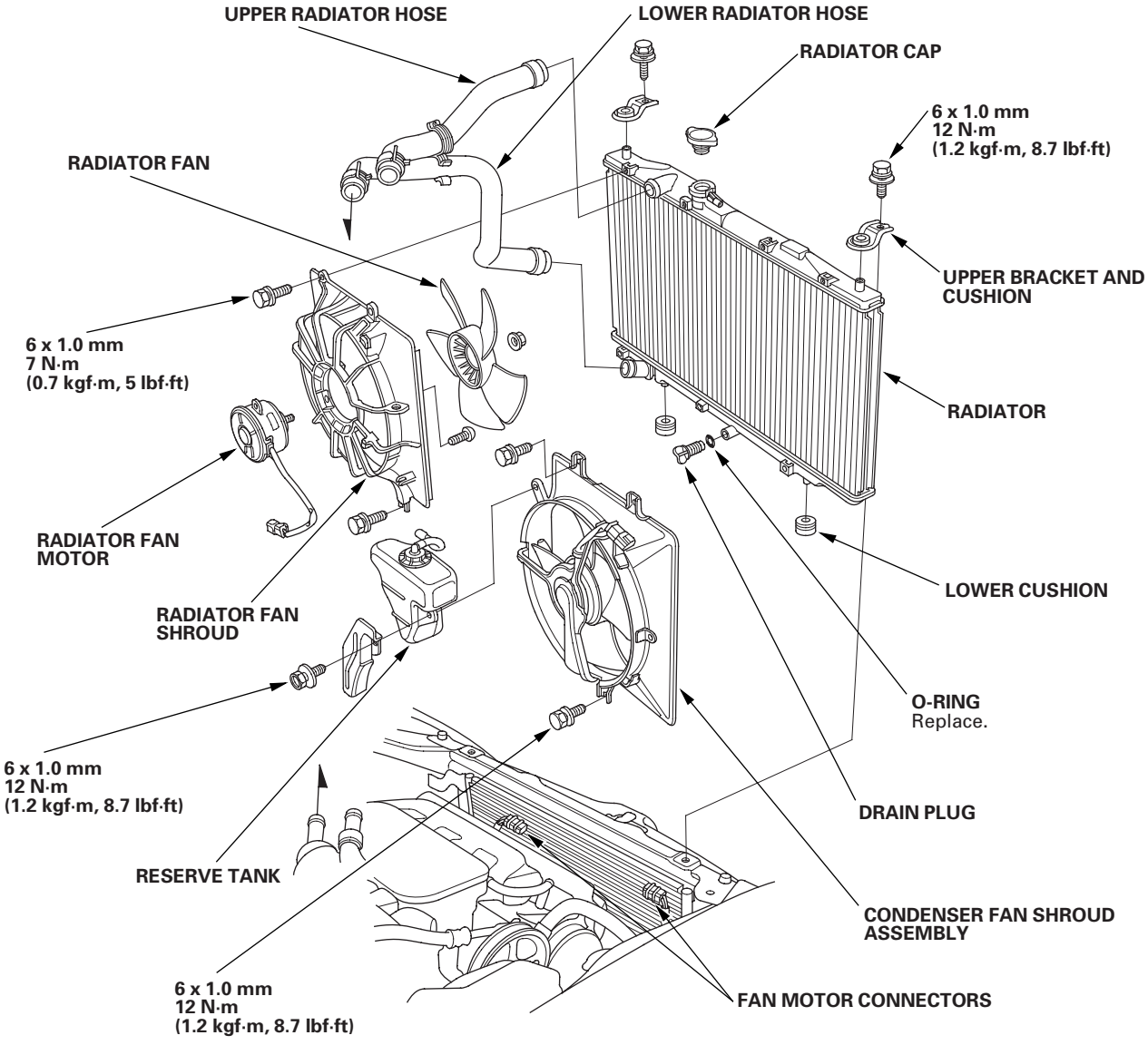
9. Refill the radiator with engine coolant, then bleed air from the cooling system (see page 10-24).

10. Perform the powertrain control module (PCM) idle learn procedure (see page 11-193), and the power window control unit reset procedure (see page 22-219).

11. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets. Set the clock.

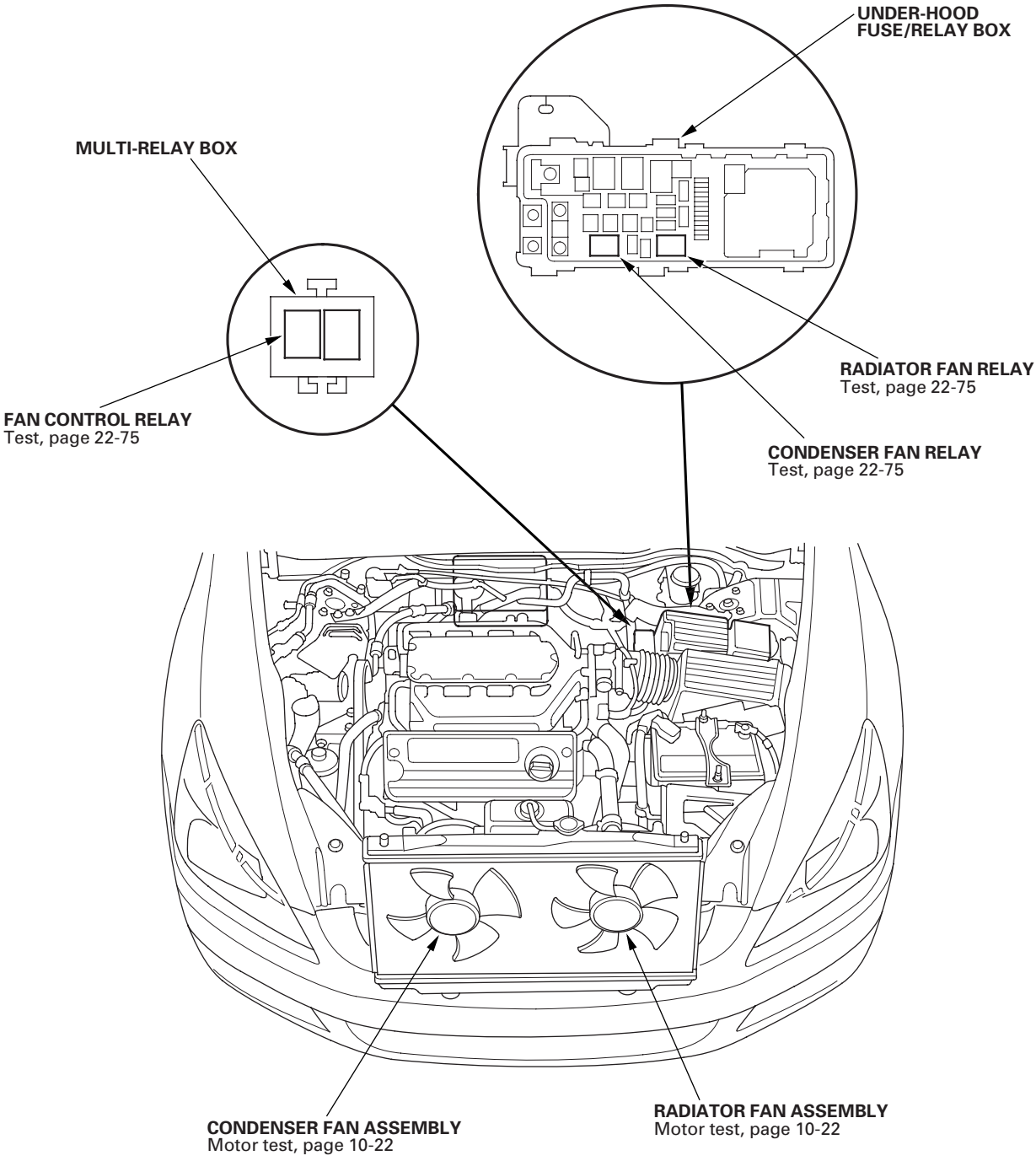
Radiator and Fans Replacement

1. Drain engine coolant (see page 10-24).
2. Remove the front bulkhead cover (see page 20-135).
3. Remove the upper radiator hose and lower radiator hose from the radiator.



4. Disconnect the fan motor connectors.
5. Remove the upper bracket cushions, then pull up the radiator.
6. Remove the fan shroud assemblies and other parts from the radiator.
7. Install the radiator in the reverse order of removal. Make sure the upper and lower cushions are set securely.
8. Fill the radiator with engine coolant, then bleed air from the cooling system (see page 10-24).

Component Location Index

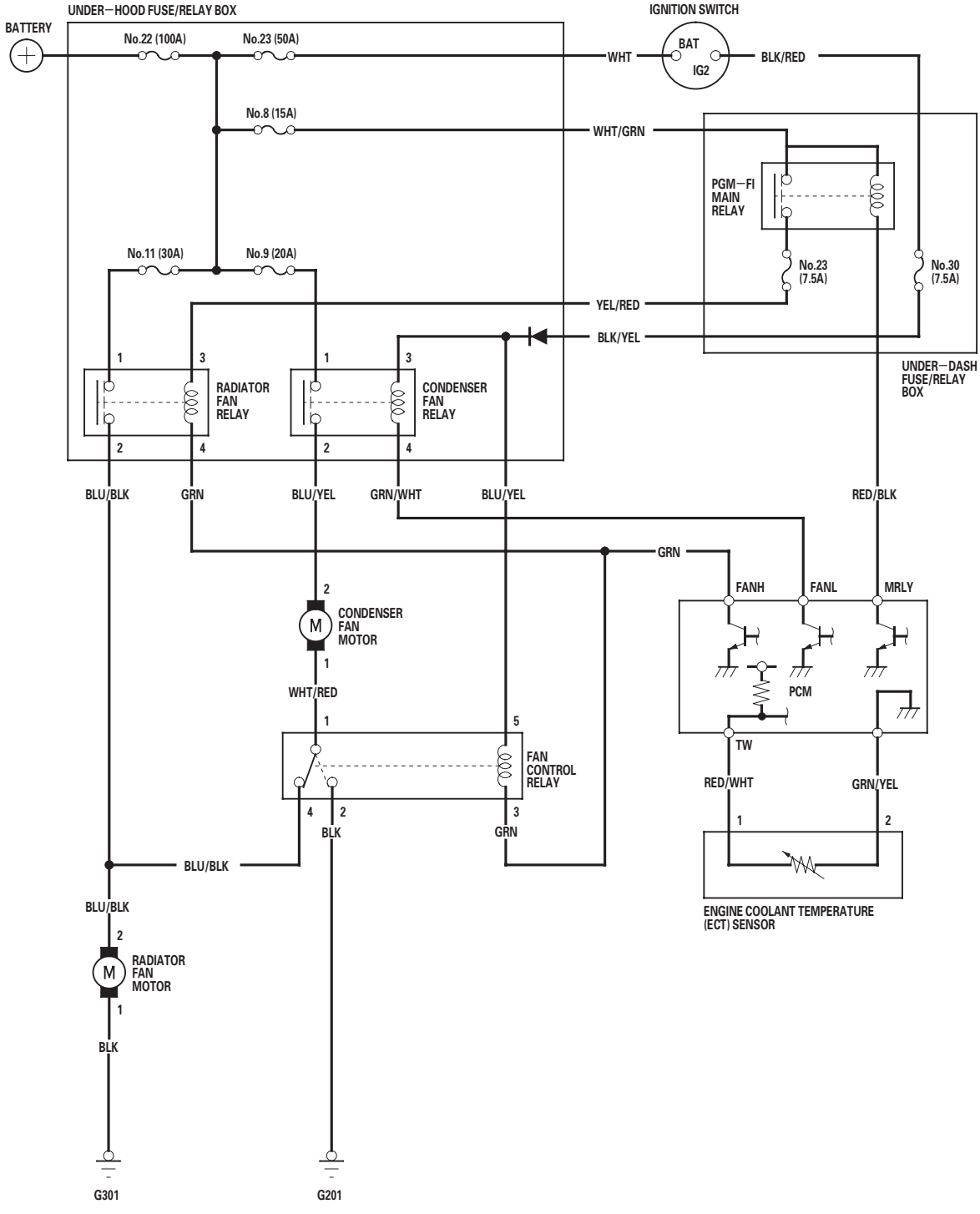


Symptom Troubleshooting Index

Before performing any troubleshooting procedures check:
- Fuses
- Grounds
- Cleanliness and tightness of all connectors

SYMPTOM	PROCEDURE
Radiator fan runs at low speed, but does not run at high speed when the engine coolant temperature is above 96.9℃ (206.4℉)	Radiator fan high speed circuit troubleshooting (see page 10-32)
Condenser fan runs at high speed, but radiator fan does not run with the A/C OFF, and radiator fan runs at high speed when the engine coolant temperature is above 96.9℃ (206.4℉)	Remove the fan control relay, and test. • If the relay is faulty, replace it. • If the relay is OK, repair a short in the wire between fan control relay 5P socket terminal No.1 and condenser fan motor 2P connector terminal No.1
Radiator fan and condenser fan run on high speed with the ignition switch ON (II), the A/C OFF, and engine temperature below 95.4℃ (203.7℉)	Repair a short in the wire between radiator fan relay 4P socket terminal No.4 and PCM connector terminal A7.
Radiator fan and condenser fan run on low speed with the ignition switch ON (II) and the A/C OFF	Repair a short in the wire between condenser fan relay 4P socket terminal No.4 and PCM connector terminal A6.
Radiator fan and condenser fan do not run at low speed with the A/C ON	Radiator and condenser fans low speed circuit troubleshooting (see page 21-40)
Condenser fan does not run at all. Radiator fan does not run at low speed, but runs at high speed	Condenser fans high speed circuit troubleshooting (see page 21-43)
Both condenser fan and radiator fan do not run at high speed when the engine coolant temperature is above 96.9℃ (206.4℉)	Repair an open in the wire between radiator fan relay 4P socket terminal No.4 and PCM connector terminal A7.
Miscellaneous fan problems (such as always on or off) and hard starting	Connect the Honda PGM Tester or Honda Diagnostic System (HDS) to the data link connector (DLC), and check for DTC's. If a DTC is present, diagnose and repair the cause.

Circuit Diagram



Radiator Fan High Speed Circuit Troubleshooting

1. Remove the radiator fan relay from the under-hood fuse/relay box and test it (see page 22-75).

   Is the relay OK?

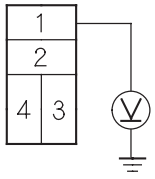
   YES — Go to step 2.

   NO — Replace the radiator fan relay. ■

2. Turn the ignition switch ON (II).

3. Measure the voltage between radiator fan relay 4P socket terminal No.1 and body ground.

RADIATOR FAN RELAY 4P SOCKET



Terminal side of female terminals

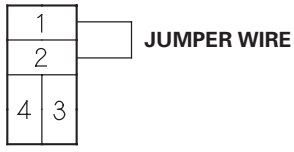
Is there battery voltage?

YES — Go to step 4.

NO — Replace the under-hood fuse/relay box. ■

4. Connect radiator fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

RADIATOR FAN RELAY 4P SOCKET



Terminal side of female terminals

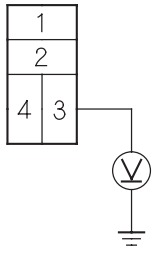
Does the radiator fan run at high speed?

YES — Go to step 5.

NO — Repair an open in the wire between radiator fan relay 4P socket terminal No. 2 and radiator fan motor 2P connector terminal No. 2. ■

5. Measure voltage between radiator fan relay 4P socket terminal No. 3 and body ground.

RADIATOR FAN RELAY 4P SOCKET



Terminal side of female terminals

Is there battery voltage?

YES — Repair an open in the wire between radiator fan relay 4P socket terminal No. 4 and the PCM. ■

NO — Repair an open in the wire between radiator fan relay 4P socket terminal No. 3 and the under-dash fuse/relay box. ■

Fuel and Emissions

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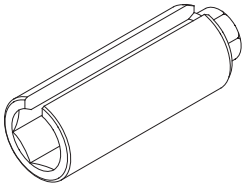
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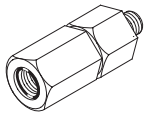


Special Tools

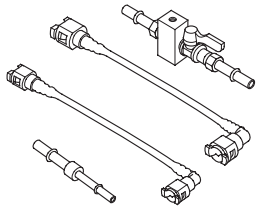
Ref. No.	Tool Number	Description	Qty
①	07LAA-PT50101	O_2 Sensor Socket Wrench	1
②	07NAJ-P070100	Oil Pressure Gauge Attachment	1
③	07ZAJ-S5A0100	Fuel Pressure Gauge Set	1
④	07ZAJ-S7C0100	Fuel Hose Attachment	1
⑤	07ZAJ-S5A0200	Hose, Oil Pressure	1
⑥	07406-0070001	Low Pressure Gauge	1
⑦	07406-0040002	Fuel Pressure Gauge	1



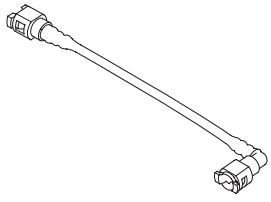
①



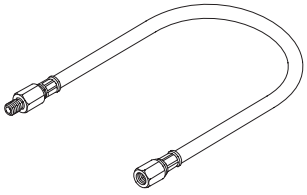
②



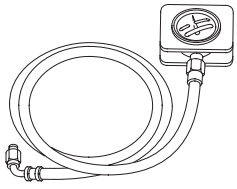
③



④



⑤



⑥



⑦

General Troubleshooting Information

Intermittent Failures

The term ''intermittent failure'' means a system may have had a failure, but it checks OK now. If the malfunction indicator lamp (MIL) on the dash does not come on, check for poor connections or loose pins at all connectors related to the circuit that you are troubleshooting.

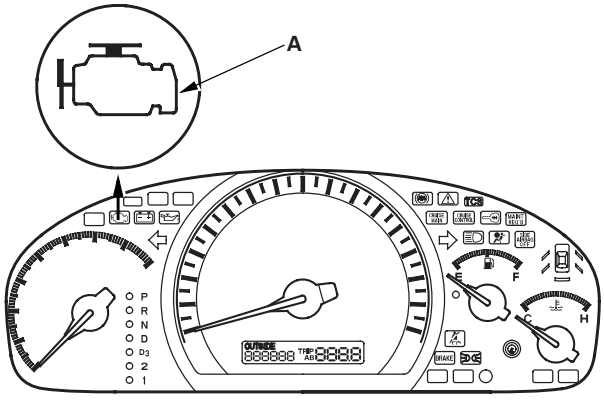
Opens and Shorts

''Open'' and ''Short'' are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as PCMs) this can sometimes mean something works, but not the way it's supposed to.

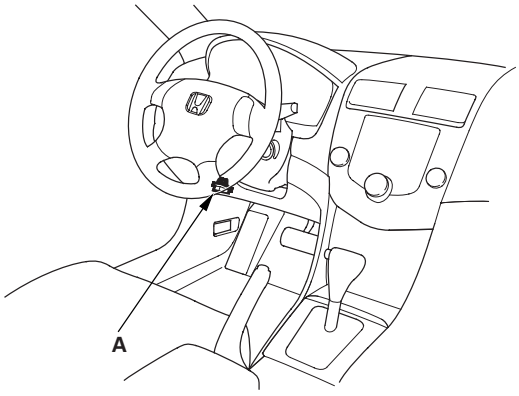
How to Use the PGM Tester or HDS (Honda Diagnostic System)

If the MIL (Malfunction Indicator Lamp) has come on

1. Start the engine and check the MIL (A).



2. If the MIL stays on, connect the Honda PGM Tester or the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



*: The illustration shows LHD model.

3. Turn the ignition switch ON (II).

4. Check the diagnostic trouble code (DTC) and note it. Also check the freeze data. Refer to the DTC Troubleshooting Index and begin the appropriate troubleshooting procedure.

   - Freeze data indicates the engine conditions when the first malfunction, misfire, or fuel trim malfunction was detected.
   - The Honda PGM Tester or the HDS can read the DTC, freeze data, current data, and other powertrain control module (PCM) data.
   - For specific operations, refer to the user's manual that came with Honda PGM Tester or the HDS.

5. If no DTCs are found, go to MIL troubleshooting (see page 11-381).

If the MIL did not stay on
If the MIL did not stay on but there is a driveability problem, refer to the Symptom Troubleshooting Index in this section.

If you can't duplicate the DTC
Some of the troubleshooting in this section requires you to reset the PCM and try to duplicate the DTC. If the problem is intermittent and you can't duplicate the code, do not continue through the procedure. To do so will only result in confusion and, possibly, a needlessly replaced PCM.

(cont'd)

General Troubleshooting Information (cont'd)

Honda PGM Tester or HDS Clear Command

The inside PCM stores various specific data to correct the system even when there is no electrical power such as the battery negative terminal or No. 8 FI ECU (ECM/PCM) (15A) fuse are disconnected. But stored data based on failure parts should be cleared by using the ''CLEAR COMMAND'' of the Honda PGM Tester or the HDS, if parts are replaced.

Honda PGM Tester and the HDS has three kings of clear command to meet the purpose.
They are DTC clear, PCM clear and CKP pattern clear.
DTC clear command erases all stored DTC codes and Freeze Data.
This must be done with the Honda PGM Tester or the HDS after reproducing DTC during troubleshooting in this service manual.
PCM clear command erases all stored DTC codes, Freeze Data and all specific data to correct the system except CKP pattern. If the CKP pattern data inside of PCM was cleared, you must do the CKP pattern learn procedure by test drive. CKP pattern clear command erase only CKP pattern data.
This command is for the repair of the misfire or CKP sensor.

DTC CLEAR

1. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS with the engine stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II). Wait for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the Honda PGM Tester or the HDS from the DLC.

PCM RESET

This command clears stored specific data from each vehicle such as DTC and Freeze Data. It does not clear CKP pattern data.

1. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS with the engine stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II). Wait for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the Honda PGM Tester or the HDS from the DLC.

CKP PATTERN CLEAR/CKP Pattern Learn Procedure

Enable Criteria

ECT at 176℉ (80℃) or higher.

Procedure

1. Do the CKP PATTERN CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS with the engine stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II). Wait for 30 seconds.
4. Test-drive the vehicle on a level road and decelerate (with the throttle fully closed) from engine speed of 2, 500 rpm (min^{-1}) to 1, 000 rpm (min^{-1}) with in 2 or D3 position.
5. Stop the vehicle. Do not turn the ignition off.
6. Select the ALL DATA LIST in the DATA LIST MENU of the Honda PGM Tester or the HDS.
7. Check the status of PULSER F/B LEARN. If it is set to NG, the enable criteria was probably not met; repeat the procedure from the beginning.

How to End a Troubleshooting Session (required after any troubleshooting)

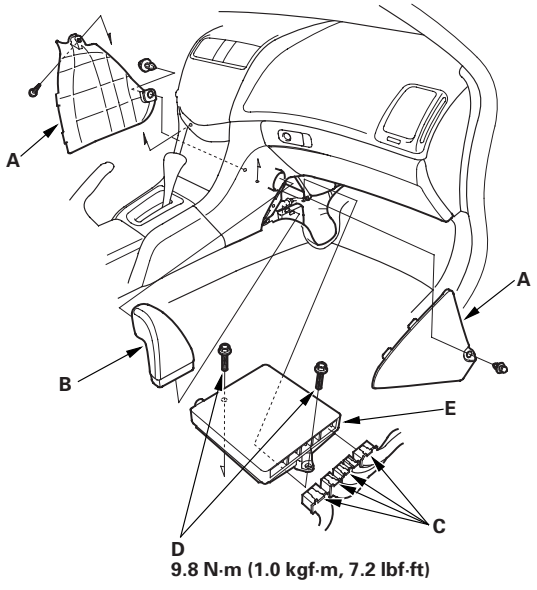
1. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
2. Do the PCM idle learn procedure (see page 11-193).
3. Turn the ignition switch OFF.
4. Disconnect the Honda PGM Tester or the HDS from the DLC.

   NOTE: The PCM is part of the immobilizer system. If you replace the PCM, it will have a different immobilizer code. In order for the engine to start, you must rewrite the immobililzer code with the Honda PGM Tester or the HDS.

How to Remove the PCM for Testing

If DTC troubleshooting requires voltage or resistance checks at the PCM connectors, remove the PCM and test it:

1. Make sure you have the anti-theft code for the radio, then write down the radio station presets.
2. Disconnect the negative cable from the battery.
3. Remove the center lower covers (A).

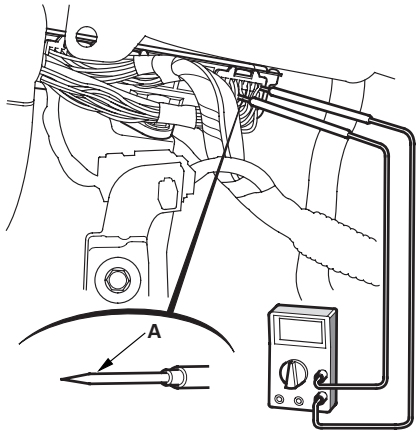


*: The illustration shows LHD model.

4. Remove the duct (B).
5. Disconnect the PCM connectors (C).
6. Remove the bolts (D), then remove the PCM (E).
7. Install the PCM in the reverse order of removal.
8. Reconnect the negative cable to the battery and do the folowing items:
   - Power window control unit reset procedure (see page 22-219).
   - Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets.
   - Reset the clock.

How to Troubleshoot Circuits at the PCM

1. Gently slide the sharp tester probe (A) into the connector from wire side until it touches the end of the wire terminal.

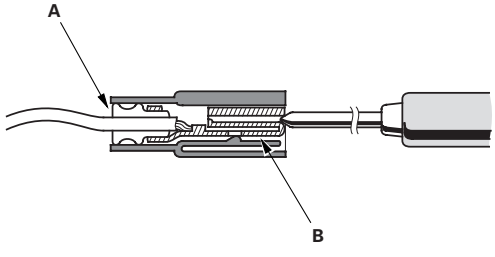


*: The illustration shows LHD model.

2. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.
3. If you cannot get to the wire side of the connector or the wire side is sealed (A), disconnect the connector and probe the terminals (B) from the terminal side. Do not force the probe into the connector.

NOTICE

Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.



(cont'd)

General Troubleshooting Information (cont'd)

PCM Updating and Substitution for Testing

Special Tools Required
Honda Interface Module (HIM) EQS05A35570

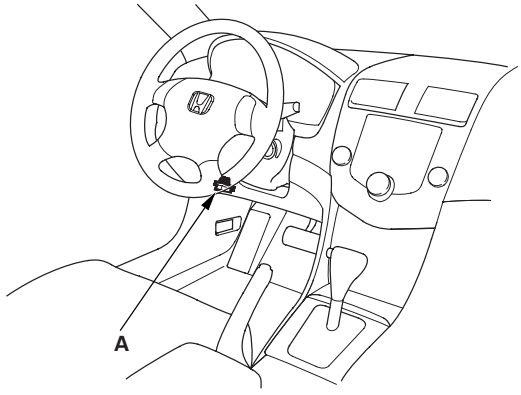
Use this procedure when you have to substitute a known-good PCM in a troubleshooting procedure. Update the PCM only if the PCM does not already have the latest software loaded.

NOTE: Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF before completion, the PCM can be damaged.

How to Update the PCM

NOTE:
- To ensure the latest program is installed, do an PCM update whenever the PCM is substituted or replaced.
- You can not update an PCM with the program it already has. It will only accept a new program.
- Before you update the PCM, make sure the vehicle's battery is fully charged.
- To prevent PCM damage, do not operate anything electrical (audio system, brakes, A/C, power windows, moonroof, door locks, etc.) during the update.
- If you need to diagnose the Honda Interface Module (HIM) because the HIM's red (#3) light came on or was flashing during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the data link connector (DLC). This will prevent PCM damage.

1. Turn the ignition switch ON (II). Do not start the engine.
2. Connect the HDS or the Honda Interface Module (HIM) to the data link connector (DLC) (A) located under the driver's side of the dashboard.



* : The illustration shows LHD model.

3. Do the PCM update procedure as described on the HIM label and in the initial screen of the PCM update system.
4. Do the PCM RESET with the Honda PGM Tester or the HDS.
5. Do the PCM idle learn procedure (see page 11-193).
6. Do the CKP PATTERN Learn Procedure, if you did the troubleshooting of the DTC P0300, 0301, 0302, 0303, 0304, 0305, 0306, 0335, 0339, 0385, 0389.

How to Substitute the PCM

1. Remove the PCM from the vehicle.
2. Install a known-good PCM in the vehicle.
3. Rewrite the immobilizer code with the PCM replacement procedure in the Honda PGM Tester or the HDS; it allows you to start the engine.
4. After completing your tests, reinstall the original PCM and rewrite the immobilizer code with the PCM replacement procedure in the Honda PGM Tester or the HDS.

OBD Status

The OBD Status shows the current system status of each DTC and all of the parameters. This function is used to see if the technician's repair was successfully finished. The results of diagnostic tests for the DTC are displayed as:

- PASS: On Board Diagnosis is successfully finished.
- FAILED: On Board Diagnosis has finished but failed.
- EXECUTING: The vehicle is in Enable criteria conditions for the DTC and The On Board Diagnosis is running.
- NOT COMPLETED: The On Board diagnosis was running but is out of the Enable conditions of the DTC.
- Out of COND: The vehicle has stayeded out of the Enable conditions of the DTC.

DTC Troubleshooting Index

DTC (MIL indication*1)	Temporary DTC (Temporary)	Detection Item	MIL	Note
P0107 (3)	———	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON	(see page 11-294)
P0108 (3)	———	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON	(see page 11-297)
P0112 (10)	———	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	ON	(see page 11-299)
P0113 (10)	———	Intake Air Temperature (IAT) Sensor Circuit High Voltage	ON	(see page 11-301)
P0117 (6)	———	Engine Coolant Temperature (ECT) Circuit Low Voltage	ON	(see page 11-303)
P0118 (6)	———	Engine Coolant Temperature (ECT) Circuit High Voltage	ON	(see page 11-306)
P0122 (7)	———	Throttle Position (TP) Sensor A Circuit Low voltage	ON	(see page 11-402)
P0123 (7)	———	Throttle Position (TP) Sensor A Circuit High voltage	ON	(see page 11-405)
P0133 (157)*3	P0133	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Slow Response	ON	(see page 11-308)
P0134 (151)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Heater System Malfunction	ON	(see page 11-309)
P0135 (151)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Heater Circuit Malfunction	ON	(see page 11-310)
P0137 (161)	P0137	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit Low Voltage	ON	(see page 11-335)
P0138 (161)	P0138	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit High Voltage	ON	(see page 11-337)
P0139 (161)*3	P0139	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit Slow Response	ON	(see page 11-340)
P0141 (163)	———	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-341)
P0153 (158)*3	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Slow Response	ON	(see page 11-308)
P0154 (152)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Heater System Malfunction	ON	(see page 11-309)
P0155 (152)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Heater Circuit Malfunction	ON	(see page 11-310)
P0157 (162)	———	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit Low Voltage	ON	(see page 11-335)
P0158 (162)	———	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit High Voltage	ON	(see page 11-337)
P0159 (162)*3	———	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit Slow Response	ON	(see page 11-340)
P0161 (164)	———	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-341)
P0171 (153)*3	P0171	Rear Bank (Bank 1) Fuel System Too Lean	ON	(see page 11-340)
P0172 (153)*3	P0172	Rear Bank (Bank 1) Fuel System Too Rich	ON	(see page 11-340)
P0174 (154)*3	P0174	Front Bank (Bank 2) Fuel System Too Lean	ON	(see page 11-340)
P0175 (154)*3	P0175	Front Bank (Bank 2) Fuel System Too Rich	ON	(see page 11-340)
P0222 (7)	———	Throttle Position (TP) Sensor B Circuit low voltage	ON	(see page 11-408)
P0223 (7)	———	Throttle Position (TP) Sensor B Circuit High voltage	ON	(see page 11-411)
P0300 and some of P0301 (71), P0302 (72), P0303 (73), P0304 (74), P0305 (75), P0306 (76)*3	P0300 and some of P0301 (71), P0302 (72), P0303 (73), P0304 (74), P0305 (75), P0306 (76)	Random Misfire	ON	(see page 11-346)
P0301 (71)*3	P0301 (71)	No. 1 Cylinder Misfire	ON	(see page 11-349)
P0302 (72)*3	P0302 (72)	No. 2 Cylinder Misfire	ON	(see page 11-349)
P0303 (73)*3	P0303 (73)	No. 3 Cylinder Misfire	ON	(see page 11-349)
P0304 (74)*3	P0304 (74)	No. 4 Cylinder Misfire	ON	(see page 11-349)
P0305 (75)*3	P0305 (75)	No. 5 Cylinder Misfire	ON	(see page 11-349)
P0306 (76)*3	P0306 (76)	No. 6 Cylinder Misfire	ON	(see page 11-349)
P0325 (23)	———	Knock Sensor Circuit Malfunction	ON	(see page 11-357)
P0335 (4)	———	Crankshaft Position (CKP) Sensor A No Signal	ON	(see page 11-359)
P0339 (4)	———	Crankshaft Position (CKP) Sensor A Intermittent Interruption	ON	(see page 11-361)
P0340 (9)	———	Camshaft Position (CMP) Sensor No signal	ON	(see page 11-362)
P0344 (9)	———	Camshaft Position (CMP) Sensor Intermittent Interruption	ON	(see page 11-364)
P0385 (54)	———	Crankshaft Position (CKP) Sensor B No Signal	ON	(see page 11-359)
P0389 (54)	———	Crankshaft Position (CKP) Sensor B Intermittent Interruption	ON	(see page 11-361)
P0401 (80)*3	P0401	Exhaust Gas Recirculation (EGR) Insufficient Flow	ON	(see page 11-495)
P0404 (12)	P0404	Exhaust Gas Recirculation (EGR) Control Circuit Range/Performance Problem	ON	(see page 11-497)
P0406 (12)	———	Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit High Voltage	ON	(see page 11-500)

* 1: These DTCs will be indicated by the blinking of the Malfunction Indicator Lamp (MIL) when the SCS service signal line is jumped with the Honda PGM Tester or the HDS.

* 3: KU (Hong Kong, Shingapore), KZ models

DTC (MIL indication *1)	Temporary DTC (Temporary)	Detection Item	MIL	Note
P0420 (165) *3	P0420	Rear Bank Catalyst System Efficiency Below Threshould (Bank 1)	ON	(see page 11-489)
P0430 (166) *3	———	Front Bank Catalyst System Efficiency Below Threshould (Bank 2)	ON	(see page 11-489)
P0443 (92)	———	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	ON	(see page 11-509)
P0563 (34)	———	Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	ON	(see page 11-365)
P0603 (131)	———	PCM Internal Control Module Keep Alive Memory (KAM) Error	ON	(see page 11-368)
P0606 (0)	———	PCM Processor Malfunction	ON	(see page 11-368)
P0685 (135)	———	PCM Power Control Circuit Malfunction	ON	(see page 11-369)
P0700 (70) *2	———	Automatic Transaxle System Malfunction	ON	Refer to the Automatic Transmission DTC Troubleshooting Index
P0700 (—)	———	Automatic Transaxle System Malfunction	OFF	Refer to the Automatic Transmission DTC Troubleshooting Index
P1297 (20)	———	Electric Load Detector (ELD) Circuit Low Voltage	OFF	(see page 11-370)
P1298 (20)	———	Electric Load Detector (ELD) Circuit High Voltage	OFF	(see page 11-372)
P1683 (40)	———	Throttle Valve Default Position Spring Performance Problem	ON	(see page 11-430)
P1684 (40)	———	Throttle Valve Return Spring Performance Problem	ON	(see page 11-431)
P2101 (40)	———	Throttle Actuator System Malfunction	ON	(see page 11-432)
P2108 (40)	———	Throttle Actuator Control Module Problem	ON	(see page 11-434)
P2118 (40)	———	Throttle Actuator Current Range/Performance Problem	ON	(see page 11-435)
P2122 (37)	———	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit Low Voltage	ON	(see page 11-416)
P2123 (37)	———	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit High Voltage	ON	(see page 11-420)
P2127 (37)	———	Accelerator Pedal Position (APP) Sensor B (Throttle Position Sensor E) Circuit Low Voltage	ON	(see page 11-422)
P2128 (37)	———	Accelerator Pedal Position (APP) Sensor B (Throttle Position Sensor E) Circuit High Voltage	ON	(see page 11-426)
P2135 (7)	———	Throttle Position (TP) Sensor 1/2 Incorrect Voltage Correlation	ON	(see page 11-414)
P2138 (37)	———	Accelerator Pedal Position (APP) Sensor 1/2 (Throttle Position Sensor D/E) Incorrect Voltage Correlation	ON	(see page 11-428)

* 1: These DTCs will be indicated by the blinking of the MIL when the SCS service signal line is jumped with the Honda PGM Tester or the HDS.
* 2: The D indicator light and the MIL may come on simultaneously.
* 3: KU (Hong Kong, Shingapore), KZ models

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC (MIL indication *1)	Temporary DTC (Temporary)	Detection Item	MIL	Note
P2176 (40)	———	Throttle Actuator Control System Idle Position Not Learned	ON	(see page 11-436)
P2195 (155) *3	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Signal Stuck Learn	ON	(see page 11-316)
P2197 (156) *3	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Signal Stuck Learn	ON	(see page 11-316)
P2228 (13)	———	Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON	(see page 11-374)
P2229 (13)	———	Barometric Pressure (BARO) Sensor Circuit High Voltage	ON	(see page 11-376)
P2237 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) IP Line High Voltage	ON	(see page 11-317)
P2238 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) IP Line Low Voltage	ON	(see page 11-319)
P2240 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) IP Line High Voltage	ON	(see page 11-317)
P2241 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) IP Line Low Voltage	ON	(see page 11-319)
P2243 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VCENT Line High Voltage	ON	(see page 11-321)
P2245 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VCENT Line Low Voltage	ON	(see page 11-324)
P2247 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VCENT Line High Voltage	ON	(see page 11-321)
P2249 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VCENT Line Low Voltage	ON	(see page 11-324)
P2251 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VS Line High Voltage	ON	(see page 11-326)
P2252 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VS Line Low Voltage	ON	(see page 11-328)
P2254 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VS Line High Voltage	ON	(see page 11-326)
P2255 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VS Line Low Voltage	ON	(see page 11-328)
P2413 (12)	P2413	Exhaust Gas Recirculation (EGR) System Malfunction	ON	(see page 11-501)
P2552 (40)	———	Throttle Actuator Control Module Relay Malfunction	ON	(see page 11-438)
P2627 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) LABEL Circuit Low Voltage	ON	(see page 11-330)
P2628 (155)	———	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) LABEL Circuit High Voltage	ON	(see page 11-333)
P2630 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) LABEL Circuit Low Voltage	ON	(see page 11-330)
P2631 (156)	———	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1)LABEL Circuit High Voltage	ON	(see page 11-333)
P2646 (22)	———	VTEC Oil Pressure Switch Circuit Low Voltage	ON	(see page 11-448)
P2647 (22)	———	VTEC Oil Pressure Switch Circuit High Voltage	ON	(see page 11-450)
P2648 (21)	———	VTEC Solenoid Valve Circuit Low Voltage	ON	(see page 11-452)
P2649 (21)	———	VTEC Solenoid Valve Circuit High Voltage	ON	(see page 11-454)
P2A00 (157)	———	Rear A/F Sensor Circuit Range/Performance Problem (Bank 1, Sensor 1)	ON	(see page 11-314)
P2A03 (158)	———	Front A/F Sensor Circuit Range/Performance Problem (Bank 2, Sensor 1)	ON	(see page 11-314)
U0073 (126)	———	F CAN Malfanction (BUS-OFF)	OFF	(see page 11-377)
U0107 (30)	———	Lost Communication With Throttle Actuator Control Module	ON	(see page 11-440)
U0121 (15)	———	F CAN Malfanction (TCS-PCM)	OFF	(see page 11-379)
U0155 (126)	———	F CAN Malfanction (Gauge Control Module-PCM)	OFF	(see page 11-377)

* 1: These DTCs will be indicated by the blinking of the MIL when the SCS service signal line is jumped with the Honda PGM Tester or the HDS.
* 3: KU (Hong Kong, Shingapore), KZ models

Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check the diagnostic trouble code (DTC) with the scan tool. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-74). 2. Test the starter (see page 4-8). 3. Check the fuel pressure (see page 11-472). 4. Troubleshoot the fuel pump circuit (see page 11-467).	• Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken timing belt • Contaminated fuel
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set)	Troubleshoot the MIL circuit (see page 11-381).	
Engine will not start (immobilizer indicator stays on or flashes)	Troubleshoot the immobilizer system (see page 22-359).	
Hard starting (MIL works OK, no DTCs set)	1. Test the battery (see page 22-74). 2. Check the fuel pressure (see page 11-472).	• Low compression • Intake air leaks • Contaminated fuel • Weak spark
Cold fast idle too low (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-193). 2. Check the idle speed (see page 11-465).	
Cold fast idle too high (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-193). 2. Check the idle speed (see page 11-465). 3. Inspect/adjust the throttle cable (see page 11-485).	
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-193). 2. Check the idle speed (see page 11-465). 3. Inspect/adjust the throttle cable (see page 11-485).	Intake vacuum leaks
After warming up, idle speed is below specifications with no load (MIL works OK, no DTCs set)	Troubleshoot the alternator FR signal circuit (see page 11-460).	Vacuum hose clogged/cracked/ poor connection
After warming up, idle speed is above specifications with no load (MIL works OK, no DTCs set)	1. Inspect/adjust the throttle cable (see page 11-485). 2. Troubleshoot the alternator FR signal circuit (see page 11-460).	
After warming up, idle speed drops when steering wheel is turning (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-193). 2. Troubleshoot the PSP switch signal circuit (see page 11-462).	Power steering system
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-193). 2. Test the fuel pressure (see page 11-472). 3. Test the injectore (see page 11-392). 4. Troubleshoot the alternator FR signal circuit (see page 11-460). 5. Inspect and test the PCV valve (see page 11-507).	Contaminated fuel

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Misfire or rough running * (MIL works OK, no DTCs set)	1. Check the spark plugs (see page 4-32). 2. Test the fuel pressure (see page 11-472). 3. Test the injectors (see page 11-392). 4. Troubleshoot the fuel pump circuit (see page 11-467).	• Low compression • Valve clearance • Contaminated fuel
Fails emission test* (MIL works OK, no DTCs set)	1. Inspect the three way catalytic converter (TWC) (see page 11-491). 2. Check the spark plugs (see page 4-32). 3. Test the fuel pressure (see page 11-472). 4. Test the injectors (see page 11-392). 5. Check the EVAP emission control system (see page 11-233).	• Contaminated fuel • Low compression • Slipped/ broken timing belt
Low power (MIL works OK, no DTCs set)	1. Test the fuel pressure (see page 11-472). 2. Check the air cleaner element (see page 11-484). 3. Inspect/adjust the throttle cable (see page 11-485). 4. Inspect the three way catalytic converter (TWC) (see page 11-491).* 5. Test the injectors (see page 11-392).*	• Contaminated fuel • Low compression • Camshaft timing • Engine oil level
Engine stalls (MIL works OK, no DTCs)	1. Do the PCM idle learn procedure (see page 11-193). 2. Test the fuel pressure (see page 11-472). 3. Check the idle speed (see page 11-465). 4. Troubleshoot the brake pedal position switch signal circuit (see page 11-464). 5. Check the spark plugs (see page 4-32).*	• Intake air leaks • Faulty harness and sensor connections

*: except KU (Hong Kong, Shingapore), KZ models

System Descriptions

Electronic Control System

The functions of the fuel and emission control systems are managed by the powertrain control module (PCM) on vehicles with automatic transmissions.

Fail-safe Function
When an abnormality occurs in the signal from a sensor, the PCM ignores that signal and assumes a pre-programmed value for that sensor that allows the engine to continue to run.

Back-up Function
When an abnormality occurs in the PCM, the injectors are controlled by a back-up circuit independent of the system to permit minimal driving.

Self-diagnosis
When an abnormality occurs in the signal from a sensor, the PCM supplies ground for the malfunction indicator lamp (MIL) and stores the diagnostic trouble code (DTC) in erasable memory. When the ignition is first turned on, the PCM supplies ground to the MIL for 2 seconds to check the MIL bulb condition.

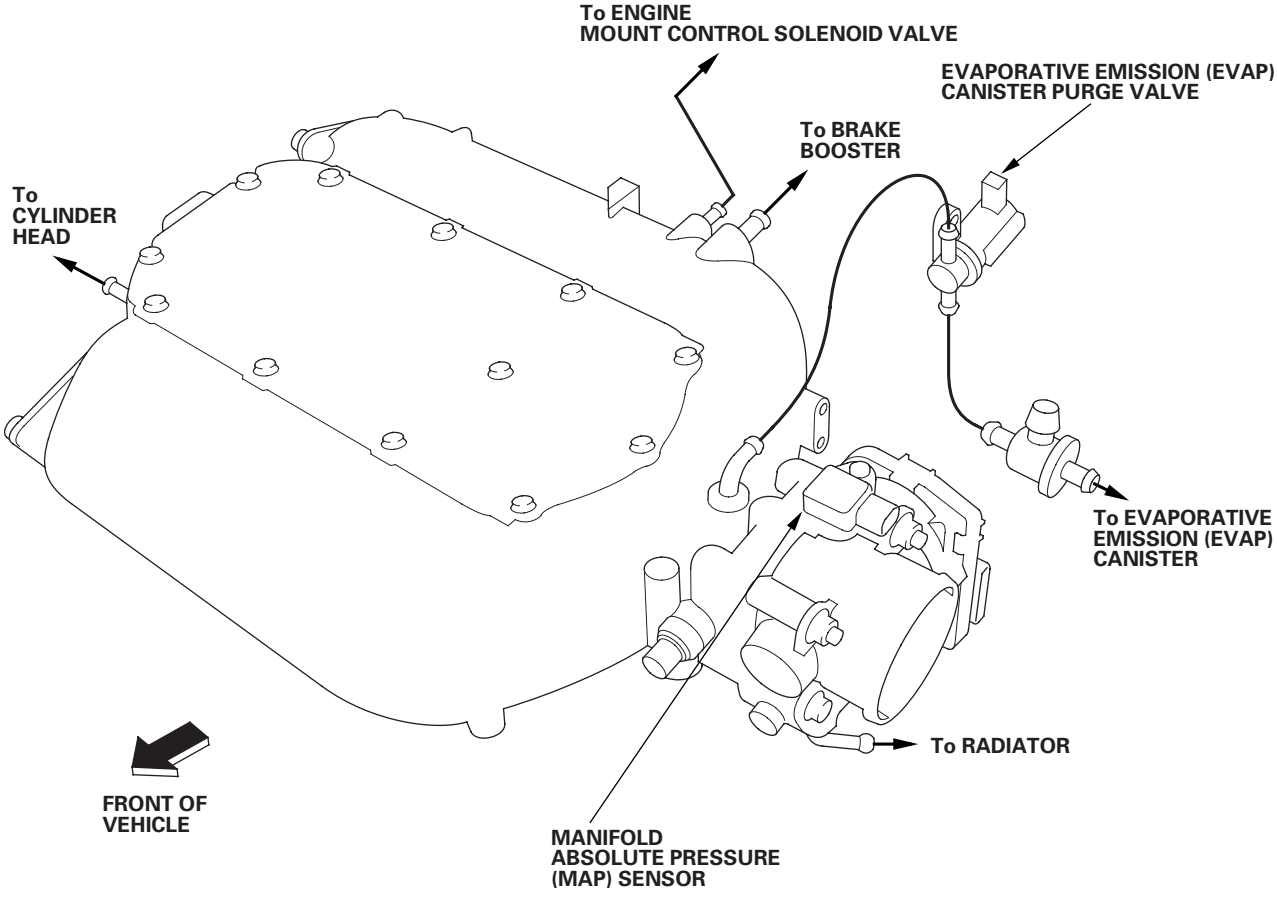
Two Driving Cycle Detection Method
To prevent false indications, the ''two driving cycle detection method'' is used for some self-diagnostic functions. When an abnormality occurs, the PCM stores it in its memory. When the same abnormality recurs after the ignition switch is turned OFF and ON (II) again, the PCM turns on the MIL.

Self Shut Down Mode (SSD)
After the ignition switch is turned off, the PCM stays ON (Up to 15 minutes).
If the PCM connector is disconnected during this mode, the PCM may be damaged.
To cancel this mode, disconnect the negative cable from the battery or jump the SCS line with the Honda PGM Tester or the HDS after the ignition switch is turned off.

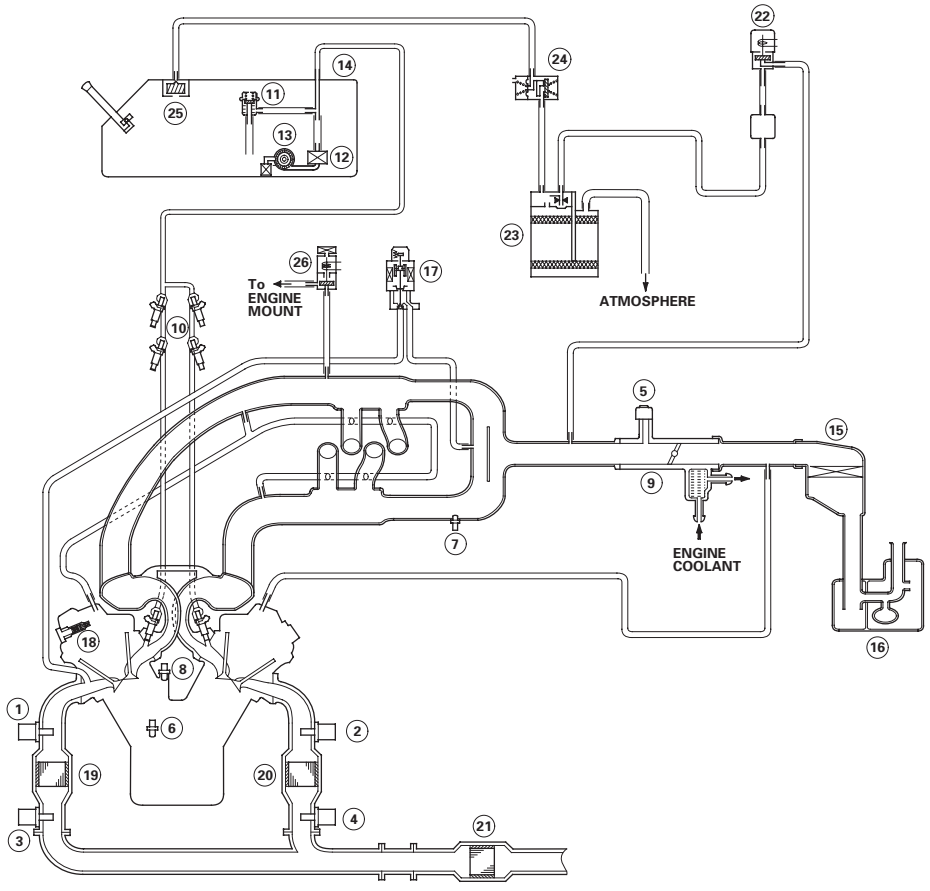
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System Descriptions (cont'd)

Vacuum Hose Routing



Vaccum Distribution

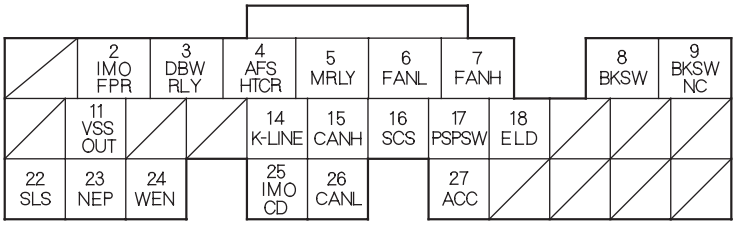


① FRONT AIR FUEL RATIO (A/F) SENSOR (BANK 2, SENSOR 1)
② REAR AIR FUEL RATIO (A/F) SENSOR (BANK 1, ENSOR 1)
③ FRONT SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (BANK 2, SENSOR 2)
④ REAR SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (BANK 1, SENSOR 2)
⑤ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
⑥ ENGINE COOLANT TEMPERATURE (ECT) SENSOR
⑦ INTAKE AIR TEMPERATURE (IAT) SENSOR
⑧ KNOCK SENSOR
⑨ THROTTLE BODY
⑩ INJECTOR
⑪ FUEL PRESSURE REGULATOR
⑫ FUEL FILTER
⑬ FUEL PUMP
⑭ FUEL TANK
⑮ AIR CLEANER
⑯ RESONATOR
⑰ EXHAUST GAS RECIRCULATION (EGR) VALVE and POSITION SENSOR
⑱ POSITIVE CRANKCASE VENTILATION (PCV) VALVE
⑲ FRONT WARM UP THREE WAY CATALYTIC CONVERTER
⑳ REAR WARM UP THREE WAY CATALYTIC CONVERTER
㉑ THREE WAY CATALYTIC CONVERTER
㉒ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
㉓ EVAPORATIVE EMISSION (EVAP) CANISTER
㉔ EVAPORATIVE EMISSION (EVAP) TWO WAY VALVE
㉕ FUEL TANK VAPOR/LIQUID SEPARATION VALVE
㉖ ENGINE MOUNT CONTROL SOLENOID VALVE

(cont'd)

System Descriptions (cont'd)

PCM Inputs and Outputs at Connector A (31P)

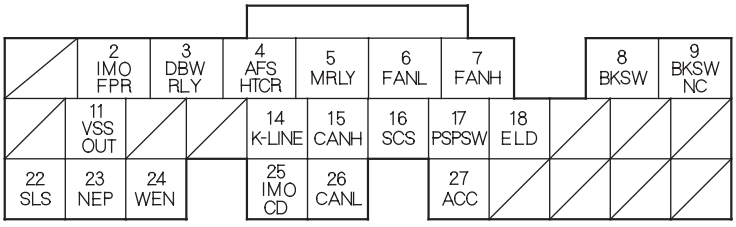


Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
2	GRN/YEL	IMOFPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2 (FUEL PUMP)	0 V for 2 seconds after tuming ignition switch ON (II), then battery voltage
3	BRN/YEL	DBWRLY (THROTTLE ACTUATOR CONTROL MODULE (DBW) RELAY)	Drives throttle actuator control module (DBW) relay	With ignition switch ON (II): 0 V
4	PNK	AFSHTCR (AIR FUEL RATIO (A/F) SENSOR RELAY)	Drives A/F sensor relay	With ignition switch ON (II): 0 V
5	RED/BLK	MRLY (PGM-FI MAIN RELAY)	Drives PGM-FI main relay 1 (FI MAIN) Power source for the DTC memory	With ignition switch ON (II): 0 V With ignition switch OFF: battery voltage
6	GRN/WHT	FANL (RADIATOR FAN RELAY LOW)	Drives condenser fan relay	With ignition switch ON (II): battery voltage
7	GRN	FANH (RADIATOR FAN RELAY, FAN CONTROL RELAY HIGH)	Drives radiator fan relay, fan control relay	With ignition switch ON (II): battery voltage
8	WHT/BLK	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage
9	BRN/BLK	BKSWNC (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With ignition switch ON (II) and brake pedal released: battery voltage With ignition switch ON (II) and brake pedal pressed: about 0 V
11	BLU/WHT			
14	BLU	K-LINE	Sends and receives scan tool signal	With ignition switch ON (II): pulses or battery voltage
15	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II): pulses
16	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With the service check signal shorted with the PGM tester: about 0 V With the service check signal opened: about 5V
17	BLU/YEL	PSPSW (POWER STEERING PRESSURE SWITCH SIGNAL)	Detects PSP switch signal	At idle with steering wheel in straight ahead position: about 0 V At idle with steering wheel at full lock: battery voltage

PCM Inputs and Outputs at Connector A (31P)



Wire side of female terminals

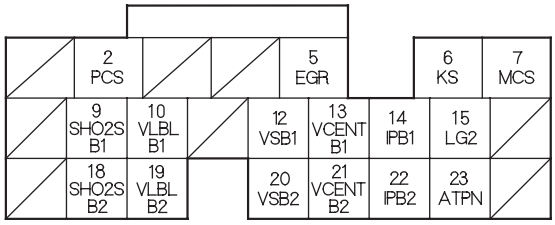
NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
18	BLU/BLK	ELD (ELECTRICAL LOAD DETECTOR (ELD))	Detects ELD signal	With ignition switch ON (II): about 0.1－4.8 V (depending on electrical load)
22	YEL/BLK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in the Park position, brake pedal pressed, and accelerator released: battery voltage
23	BLU/RED	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulse	With engine running: pulses
24	RED/WHT	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II): about 0 V
25	RED/BLU	IMOCD (IMMOBILIZER CODE)	Detects immobilizer signal	
26	RED	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends communication signal	With ignition switch ON (II): pulses
27	RED	ACC (A/C CLUTCH RELAY)	Drives A/C clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage

(cont'd)

System Descriptions (cont'd)

PCM Inputs and Outputs at Connector B (24P)

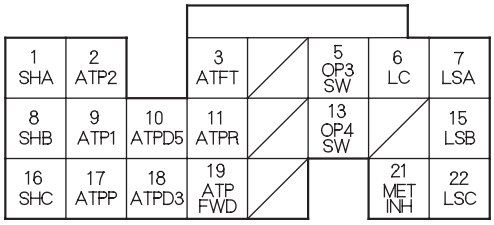


Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
2	RED/YEL	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 149°F (65°C): battery voltage With engine running, engine coolant above 149°F (65°C): duty controlled
5	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V
6	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
7	BLU/YEL	MCS (ENGINE MOUNT CONTROL SOLENOID VALVE)	Drives engine mount control solenoid valve	At idle: about 0 V Above idle: battery voltage
9	GRN	SHO2S B1 (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) BANK 1, SENSOR 2)	Detects rear secondary HO2S (Bank 1, sensor 2) signal	With throttle fully opened from idle with fully warmed up engine: above 0.6 V With throttle quickly closed: below 0.4 V
10	WHT	VLBL B1 (LABEL RESISTER BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) LABEL signal	With engine running: 0.4－4.6 V
12	BLU	VS B1 (VS CELL＋BANK 1)	Detects the rear A/F sensor (Bank 1, sensor 1) VS CELL signal	With engine running: 3.4－4.8 V
13	RED	VCENT B1 (VIRTUAL GROUND BANK 1)	Reference voltage supply for rear A/F sensor (Bank 1, sensor 1)	With fully warmed up engine at idle: 3.4－3.8 V
14	GRN	IP B1 (IP CELL＋BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) pump cell	With engine running: 2.0－5.6 V
15	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for the PCM	Less than 1.0 V at all times
18	WHT	SHO2S B2 (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) BANK 2, SENSOR 2)	Detects front secondary HO2S (Bank 2, sensor 2) signal	With throttle fully opened from idle with fully warmed up engine: above 0.6 V With throttle quickly closed: below 0.4 V
19	WHT/RED	VLBL B2 (LABEL RESISTER BANK 2)	Detects front A/F (BAnk 2, sensor 1) LABEL signal	With engine running: 0.4－4.6 V
20	RED/BLU	VS B2 (VS CELL＋BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) VS CELL signal	With engine running with fully warmed up engine: 3.4－4.8 V
21	RED/WHT	VCENT B2 (VIRTUAL GROUND BANK 2)	Reference voltage supply for front A/F sensor (Bank 2, sensor 1)	With fully warmed up engine at idle: 3.4－4.8 V
22	GRN/RED	IP B2 (IP CELL＋BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) pump cell	With engine running: 2.0－5.6 V
23	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH NEUTRAL POSITION)	Detects transmission range switch Neutral position signal	In Neutral position: 0 V In any other position: battery voltage

PCM Inputs and Outputs at Connector C (22P)



Wire side of female terminals

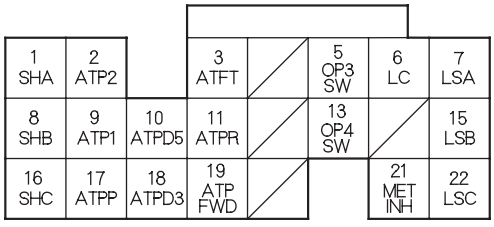
NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLU/YEL	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in 1st, 2nd position, or D3, D position (in 1st, 2nd gear), or D position (in 5th gear): battery voltage With engine running in Neutral, Park, R position, or D (in 4th gear), D, D3 (in 3rd gear): about 0 V
2	BLU	ATP2 (TRANSMISSION RANGE SWITCH 2ND POSITION)	Detects transmission range switch 2nd position signal	In 2nd position:0 V In any other position: about 5 V
3	BLU/YEL	ATFT (ATF TEMPERATURE SENSOR)	Detects ATF temperature signal	With the ignition ON (II): about 0.2－4.0 V (about 1.8 V at operating temperature) (depending on ATF temperature)
5	BLU/WHT	OP3SW (3RD OIL PRESSURE SWITCH)	Detects 3rd oil pressure switch input	With the ignition switch ON (II): • Without 3rd clutch pressure: battery voltage • With 3rd clutch pressure: about 0 V
6	YEL	LC (TORQUE CONVERTER CLUTCH (TCC) SOLENOID VALVE)	Drives TCC solenoid valve	With lock-up ON: battery voltage With lock-up OFF: 0 V
7	RED	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With the ignition switch ON(II): duty controlled
8	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running 1st, 2nd position, or D3. D position (in 1st, 2nd, 3rd gear), or, Neutral, Park, R position: battery voltage With engine running in D position (in 4th, 5th gear): about 0 V
9	BRN	ATP1 (TRANSMISSION RANGE SWITCH 1ST POSITION)	Detects transmission range switch 1st position signal input	In 1st position: 0 V In any other position: battery voltage
10	YEL/GRN	ATPD5 (TRANSMISSION RANGE SWITCH D POSITION)	Detects transmission range switch D position signal input	In D position: 0 V In any other position: battery voltage
11	WHT	ATPR (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch R position signal input	In R position: 0 V In any other position: battery voltage
13	BLU/YEL	OP4SW (4TH OIL PRESSURE SWITCH)	Detects 4th oil pressure switch input	With the ignition switch ON (II): • Without 4th clutch pressure: battery voltage • With 4th clutch pressure: about 0 V

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System Descriptions (cont'd)

PCM Inputs and Outputs at Connector C (22P)

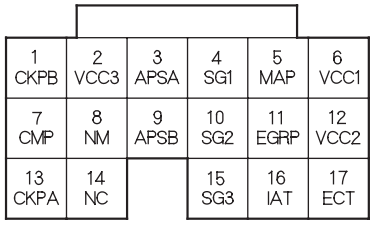


Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
15	BRN/WHT	LSB (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With the ignition switch ON (II): duty controlled
16	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in 1st position, or D, D3 position (in 1st, 3rd, 5th gear): battery voltage With engine running in Neutral, Park R position, 2nd, D position (in 4 th gear), D, D3 position (in 2nd gear): about 0 V
17	BLU/BLK	ATPP (TRANSMISSIONNN RANGE SWITCH PARK POSITION)	Detects transmission range switch park position signal	In Park position: 0 V In any other position: battery voltage
18	RED	ATPD3 (TRANSMISSIONNN RANGE SWITCH D3 POSITION)	Detects transmission range switch D3 position signal	In D3 position: 0 V In any other position: battery voltage
19	BLU/YEL	ATPFWD (TRANSMISSIONNN RANGE SWITCH D3/D POSITION)	Detects transmission range switch D3/D position signal	In D3 or D position: 0 V In any other position: battery voltage
21	GRN/WHT	METINH (METER DISPLAY INHIBIT SIGNAL)	Sends inhibit signal	With the ignition switch ON (II): battery voltage
22	GRN/RED	LSC (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With the ignition switch ON (II): duty controlled

PCM Inputs and Outputs at Connector D (17P)



Wire side of female terminals

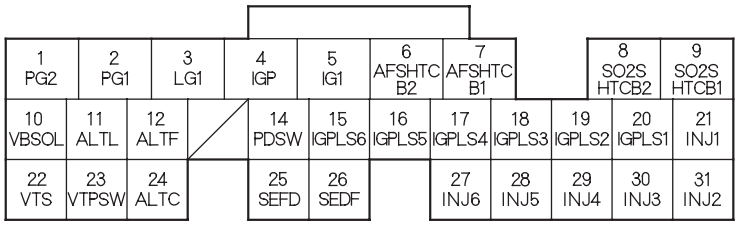
NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLU/RED	CKPB (CRANKSHAFT POSITION (CKP) SENSOR B)	Detects CKP sensor B signal	With engine running: pulses
2	YEL/GRN	VCC3 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: 0 V
3	RED/BLU	APSA (ACCELERATOR PEDAL POSITION (APP) SENSOR A)	Detects APP sensor A signal	With ignition switch ON (II) and accelerator pedal pressed: about 4.5 V With ignition switch ON (II) and accelerator pedal released: about 0.5 V
4	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
5	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3 V At idle: about 1.0 V (depending on engine speed)
6	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: 0 V
7	YEL	CMP (CAMSHAFT POSITION (CMP) SENSOR)	Detects CMP sensor signal	With engine running: pulses
8	RED	NM (MAINSHAFT SPEED SENSOR)	Detects mainshaft speed sensor signals	With ignition switch ON (II): 0 V or about 5 V With engine at idling in the Neutral position: about 2.5 V
9	RED/YEL	APS2 (ACCELERATOR PEDAL POSITION (APP) SENSOR B)	Detects APP sensor B signal	With ignition switch ON (II) and accelerator pedal pressed: about 2.3 V With ignition switch ON (II) and accelerator pedal released: about 0.2 V
10	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
11	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: 1.2—3.0 V (depending on EGR valve lift)
12	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: 0 V
13	BLU	CKPA (CRANKSHAFT POSITION (CKP) SENSOR A)	Detects CKP sensor A signal	With engine running: pulses
14	BLU	NC (COUNTERSHAFT SPEED SENSOR)	Detects Countershaft speed sensor signals	With ignition switch ON (II), and front wheels rotated by hand: pulses
15	GRN	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
16	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1—4.8 V (depending on intake air temperature)
17	RED/WHT	ECT (ENGINE COOLANT TEMPERATURE (ECT) SENSOR)	Detects ECT sensor signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)

(cont'd)

System Descriptions (cont'd)

PCM Inputs and Outputs at Connector E (31P)

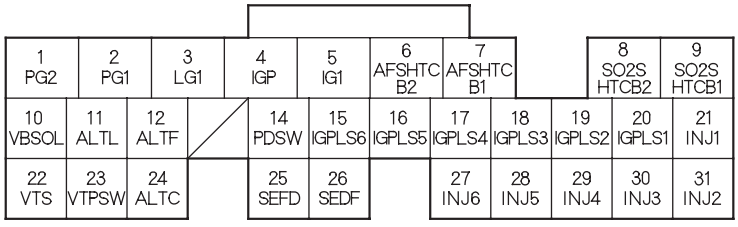


Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK	PG2 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
2	BLK	PG1 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
3	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
4	YEL/BLK	IGP (POWER SOURCE)	Power source for PCM circuit	With the ignition switch ON (II): battery voltage With the ignition switch OFF: about 0 V
5	BLK/YEL	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage With ignition switch OFF: 0 V
6	GRN/WHT	AFSHTC B2 (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL BANK 2)	Drives front A/F sensor heater (Bank 2, sensor 1)	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V or pulses
7	BLK/WHT	AFSHTC B1 (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL BANK1)	Drives rear A/F sensor heater (Bank 1, sensor 1)	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V or pulses
8	GRN/RED	SO2SHTC B2 (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER CONTROL BANK2)	Drives front secondary HO2S heater (Bank 2, sensor 2)	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
9	BLK/WHT	SO2SHTC B1 (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER CONTROL BANK 1)	Drives rear secondary HO2S heater (Bank 1, sensor 2)	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
10	BLK/YEL	VBSOL (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valve	With ignition switch ON (II): battery voltage With ignition switch OFF: 0 V
11	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
12	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: 0—5 V(depending on electrical load)
14	RED/GRN	PDSW (A/C PRESSURE SWITCH)	Detects A/C pressure switch signal	With A/C pressure switch ON: about 0 V With A/C pressure switch OFF: battery voltage

PCM Inputs and Outputs at Connector E (31P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
15	BRN/WHT	IGPLS6 (No. 6 IGNITION COIL PULSE)	Drives No. 6 ignition coil	With ignition switch ON (II): 0 V With engine running: pulses
16	BLK/RED	IGPLS5 (No. 5 IGNITION COIL PULSE)	Drives No. 5 ignition coil	
17	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	
18	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
19	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
20	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	
21	BRN	INJ1(No. 1 INJECTOR)	Drives No. 1 injector	At idle: duty controlled With the ignition switch ON (II): battery voltage
22	GRN/YEL	VTS (VTEC SOLENOID VALVE)	Drives VTEC solenoid valve	At idle: about 0 V
23	BLU/BLK	VTPSW (VTEC OIL PRESSURE SWITCH)	Detects VTEC oil pressure switch signal	With engine at low engine speed: about 0 V With engine at high engine speed: battery voltage
24	WHT/GRN	ALTC (ALTERNATOR CONTROL)	Sends alternator control signal	With engine running and fully warmed up: battery voltage (depending on electrical load)
25	GRN	SEFD (THROTTLE ACTUATOR CONTROL SERIAL SIGNAL)	Sends throttle actuator control serial signal	
26	BLU	SEFD (THROTTLE ACTUATOR CONTROL SERIAL SIGNAL)	Detects throttle actuator control serial signal	
27	WHT/BLU	INJ6 (No. 6 INJECTOR)	Drives No. 6 injector	At idle: duty controlled With the ignition switch ON (II): battery voltage
28	BLK/RED	INJ5 (No. 5 INJECTOR)	Drives No. 5 injector	
29	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	
30	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
31	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	

(cont'd)

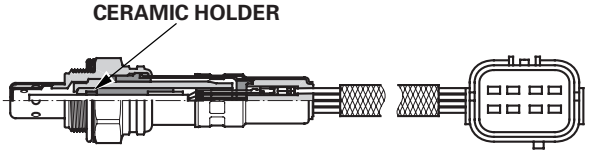
System Descriptions (cont'd)

PGM-FI System

The Programmed Fuel Injection (PGM-FI) system is a sequential multiport fuel injection system.

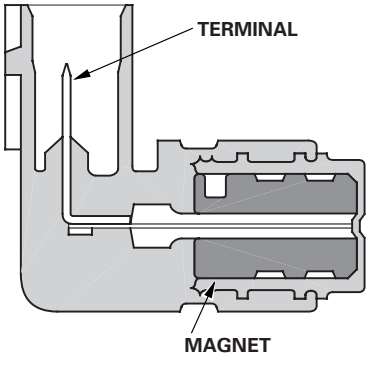
Air Conditioning (A/C) Compressor Clutch Relay
When the PCM receives a demand for cooling from the A/C system, it delays the compressor from being energized, and enriches the mixture to assure smooth transition to the A/C mode.

Air Fuel Ratio (A/F) Sensor
The A/F Sensor operates over a wide air/fuel range. The A/F Sensor is installed upstream of the TWC, and sends signals to the PCM which varies the duration of fuel injection accordingly.

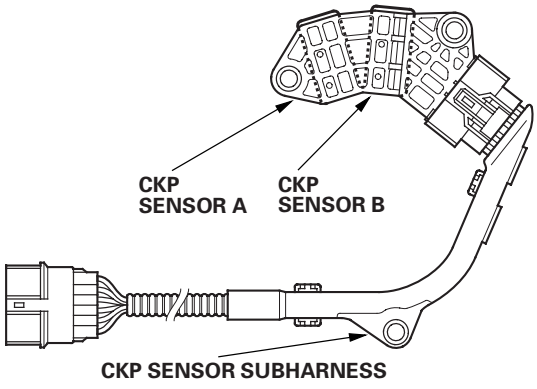


Barometric Pressure (BARO) Sensor
The BARO sensor is inside the PCM. It converts atmospheric pressure into a voltage signal that modifies the basic duration of the fuel injection discharge.

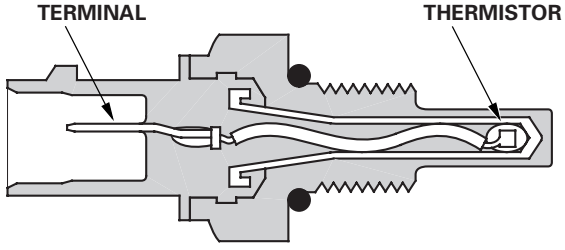
Crankshaft Position (CMP) Sensor
The CMP sensor input is used by the PCM to determines ignition timing at start up (cranking) and when crank angle is abnormal.



Crankshaft Position (CKP) Sensor
This CKP sensor detects crankshaft speed and determines ignition timing and timing for fuel injection of each cylinder as well as detecting engine misfire.



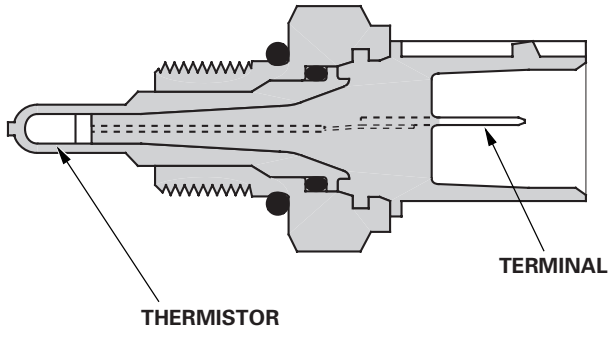
Engine Coolant Temperature (ECT) Sensor
The ECT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the engine coolant temperature increases.



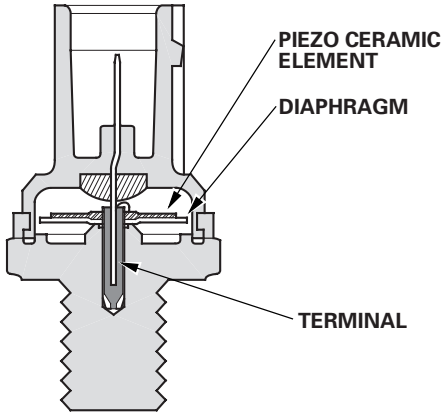
Ignition Timing Control
The PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressure. It also adjusts the timing according to engine coolant temperature.

Injector Timing and Duration
The PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.
By monitoring long term fuel trim, the PCM detects long term malfunctions in the fuel system and sets a diagnostic trouble code (DTC).

Intake Air Temperature (IAT) Sensor
The IAT sensor is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the intake air temperature increases.

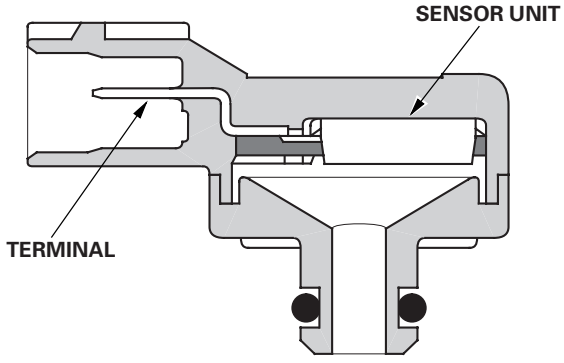


Knock Sensor
The knock control system adjusts the ignition timing to minimize knock.



Malfunction Indicator Lamp (MIL) Indication
If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the PCM has been reset, these codes are reset. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the test, or the test cannot be finished.

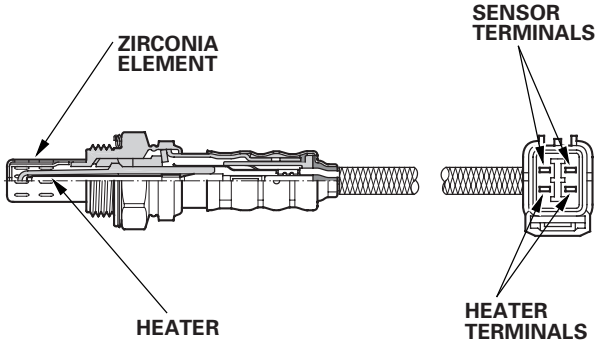
Manifold Absolute Pressure (MAP) Sensor
The MAP sensor converts manifold absolute pressure into electrical signals to the PCM.



(cont'd)

System Descriptions (cont'd)

Secondary Heated Oxygen Sensor (Secondary HO2S)
The secondary HO2S detects the oxygen content in the exhaust gas downstream of the warm up three way catalytic converter (WU-TWC), and sends signals to the PCM which varies the duration of fuel injection accordingly. To stabilize its output, the sensor has an internal heater. The PCM compares the HO2S output with the A/F sensor output to determine catalyst efficiency. The secondary HO2S is on the WU-TWC.



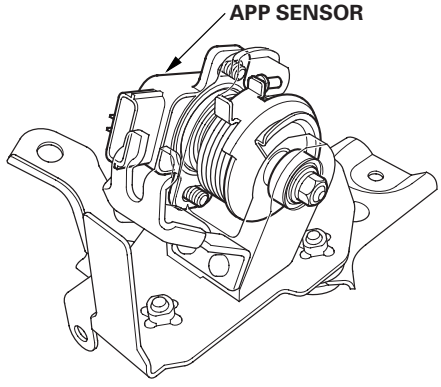
Electronic Throttle Control System

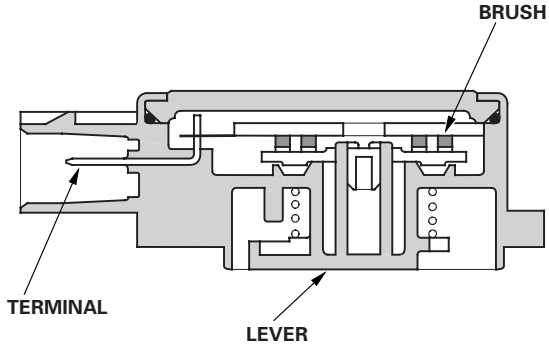
The throttle is electronically controlled by the electronic throttle control system. Refer to the System Diagram to see the functional layout of the system.

Idle control: When the engine is idling, the PCM controls the throttle actuator to maintain the proper idle speed according to engine loads.

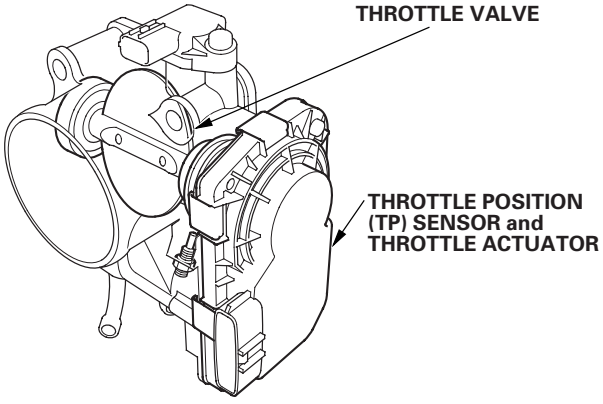
Acceleration control: When the accelerator pedal is pressed, the PCM opens the throttle valve depending on the accelerator pedal position (APP) sensor signal.
Cruise control: The PCM controls the throttle actuator to maintain set speed when the cruise control is operating. The throttle actuator takes the place of the cruise control actuator.

Accelerator Pedal Position (APP) Sensor
As the accelerator pedal position changes, the sensor varies the signal voltage to the PCM.





Throttle Body
The throttle body is a single-barrel side draft type. The lower portion of the throttle valve is heated by engine coolant from the cylinder head to prevent icing of the throttle plate.



Idle Control System

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the PCM controls current to the throttle actuator to maintain the correct idle speed.

Brake Pedal Position Switch
The brake pedal position switch signals the PCM when the brake pedal is pressed.

Power Steering Pressure (PSP) Switch
The PSP switch signals the PCM when the power steering load is high.

Fuel Supply System

Fuel Cut-off Control
During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at engine speeds over 950 rpm (min^{-1}). Fuel cut-off control also occurs when the engine speed exceeds 6,900 rpm (min^{-1}), regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the PCM cuts the fuel at engine speeds over 5,000 rpm (min^{-1}).

Fuel Pump Control
When the ignition is turned on, the PCM grounds the PGM-FI main relay which feeds current to the fuel pump for 2 seconds to pressurize the fuel system. With the engine running, the PCM grounds the PGM-FI main relay and feeds current to the fuel pump. When the engine is not running and the ignition is on, the PCM cuts ground to the PGM-FI main relay which cuts current to the fuel pump.

PGM-FI Main Relay 1 and 2
The PGM-FI relay consists of two separate relays. PGM-FI main relay 1 (FI MAIN) is energized whenever the ignition switch is ON (II) to supply battery voltage to the PCM, power to the injectors, and power for PGM-FI main relay 2 (FUEL PUMP). PGM-FI main relay 2 (FUEL PUMP) is energized to supply power to the fuel pump for 2 seconds when the ignition switch is turned ON (II), and when the engine is cranking or running.

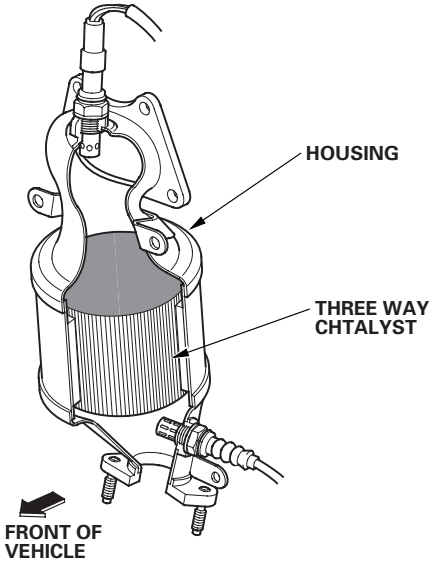
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System Descriptions (cont'd)

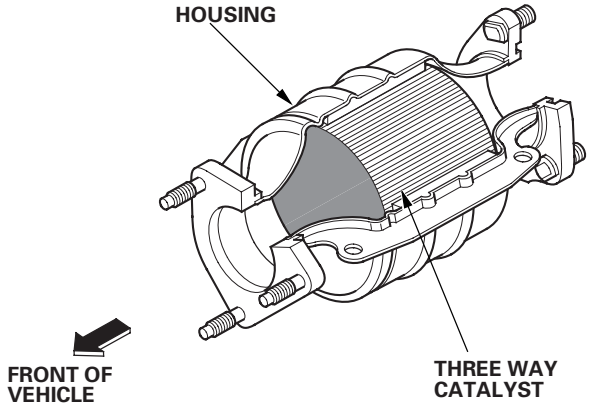
Catalytic Converter System

Warm UP Three Way Catalytic Converter (WU-TWC) and Three Way Catalytic Converter (TWC)
The WU-TWC/TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO2), nitrogen (N2), and water vapor.

WU-TWC:



TWC:



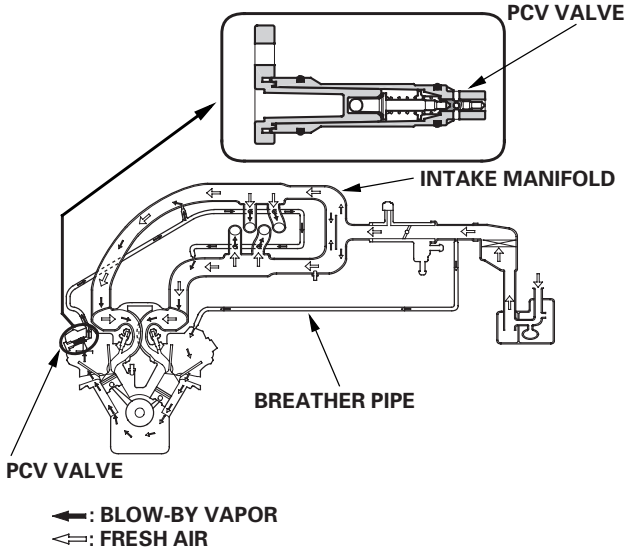
Exhaust Gas Recirculation (EGR) System

Refer to the System Diagram to see the functional layout of the system.

EGR Valve
The EGR valve lowers peak combustion temperatures and reduces oxides of nitrogen emissions (NOx) by recirculating exhaust gas through the intake manifold and into the combustion chambers.

Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.



Evaporative Emission (EVAP) Control System

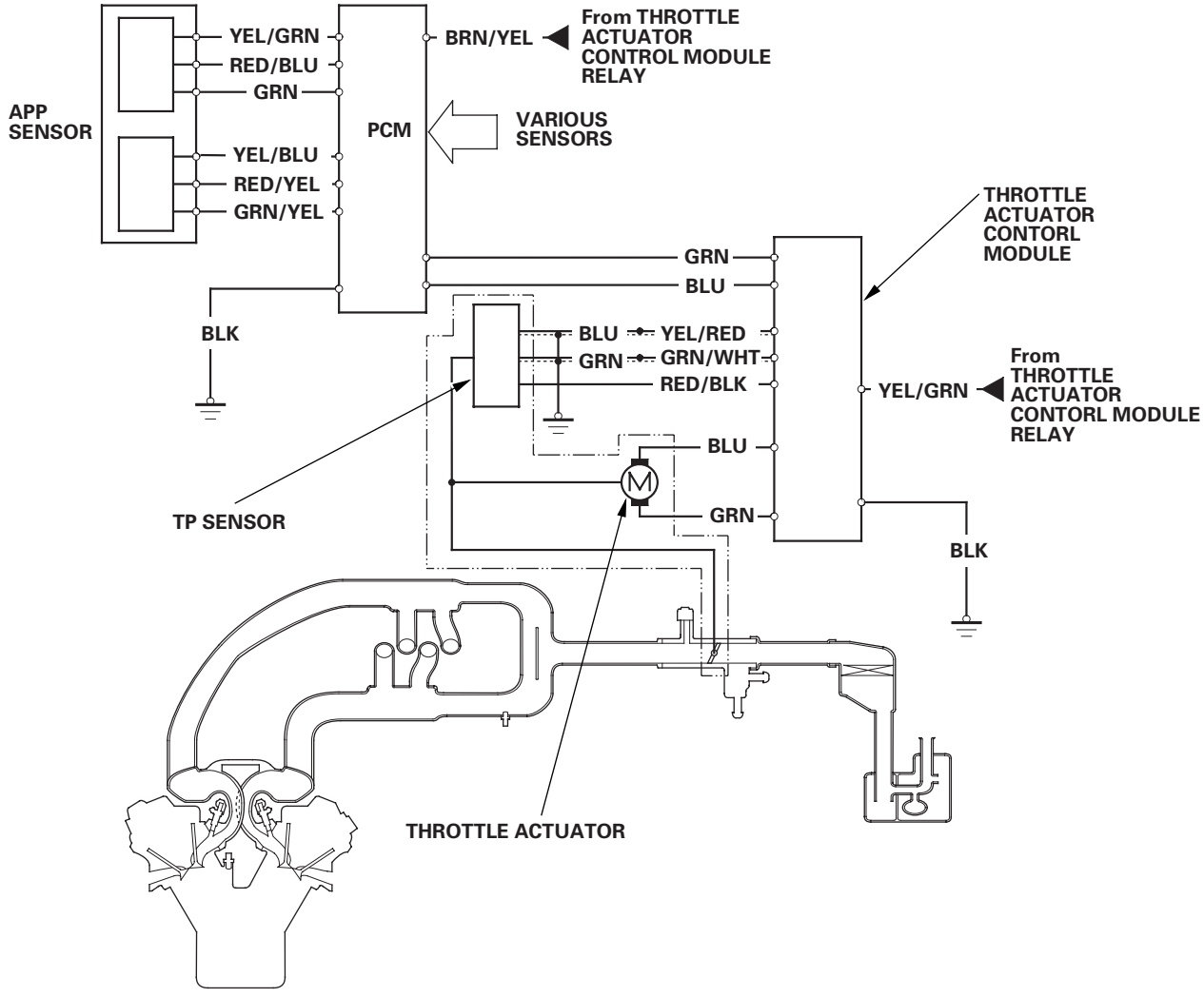
Refer to the System Diagram to see the functional layout of the system.

EVAP Canister
The EVAP canister temporarily stores fuel vapor from the fuel tank until it can be purged from the EVAP canister into the engine and burned.

EVAP Canister Purge Valve
When the engine coolant temperature is below 65°C (149°F), the PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.

Electronic Throttle Control System Diagram

The electronic throttle control system consists of the throttle actuator, throttle position (TP) sensor, accelator pedal position (APP) sensor, throttle actuator control module, and the PCM. The throttle is electronically controlled by this system.



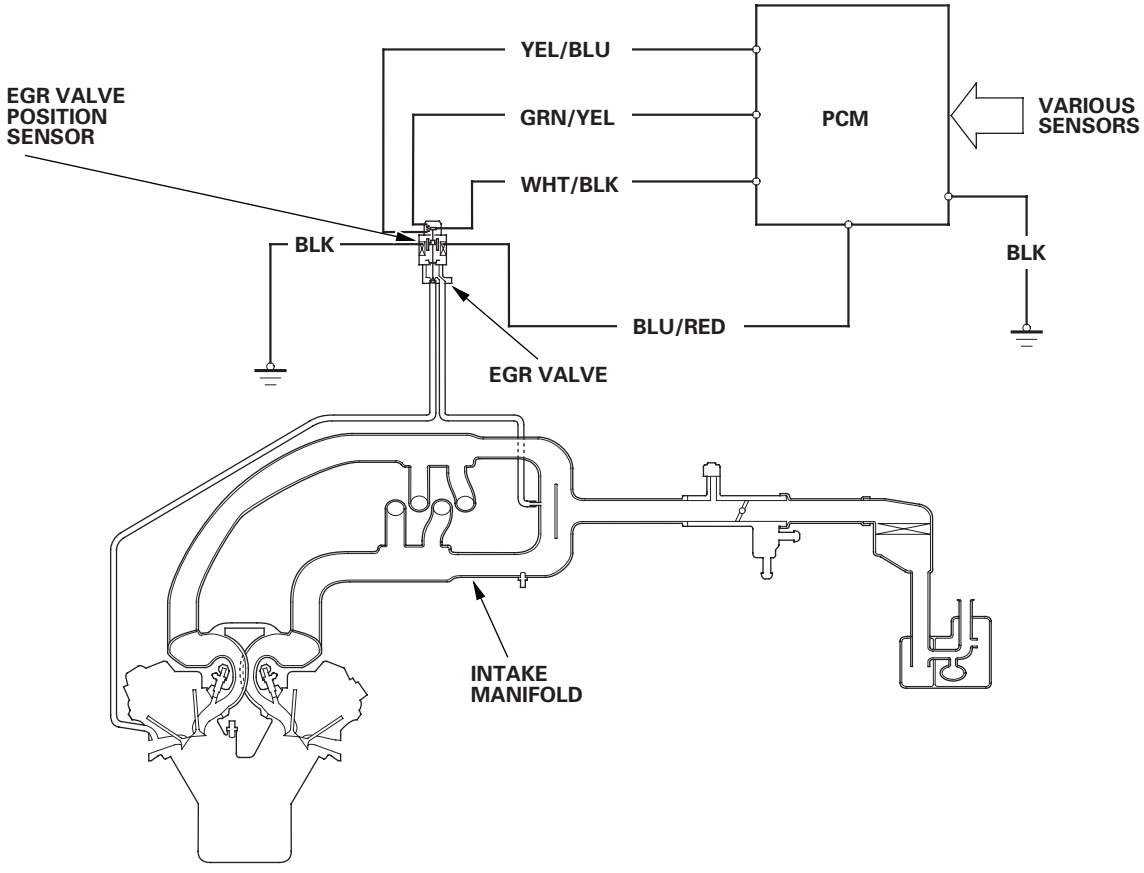
(cont'd)

System Descriptions (cont'd)

Exhaust Gas Recirculation (EGR) System Diagram

The EGR system reduces oxides of nitrogen (NOx) emissions by recirculating exhaust gas through the EGR valve and the intake manifold into the combustion chambers. The PCM memory includes the ideal EGR valve position for varying operating conditions.

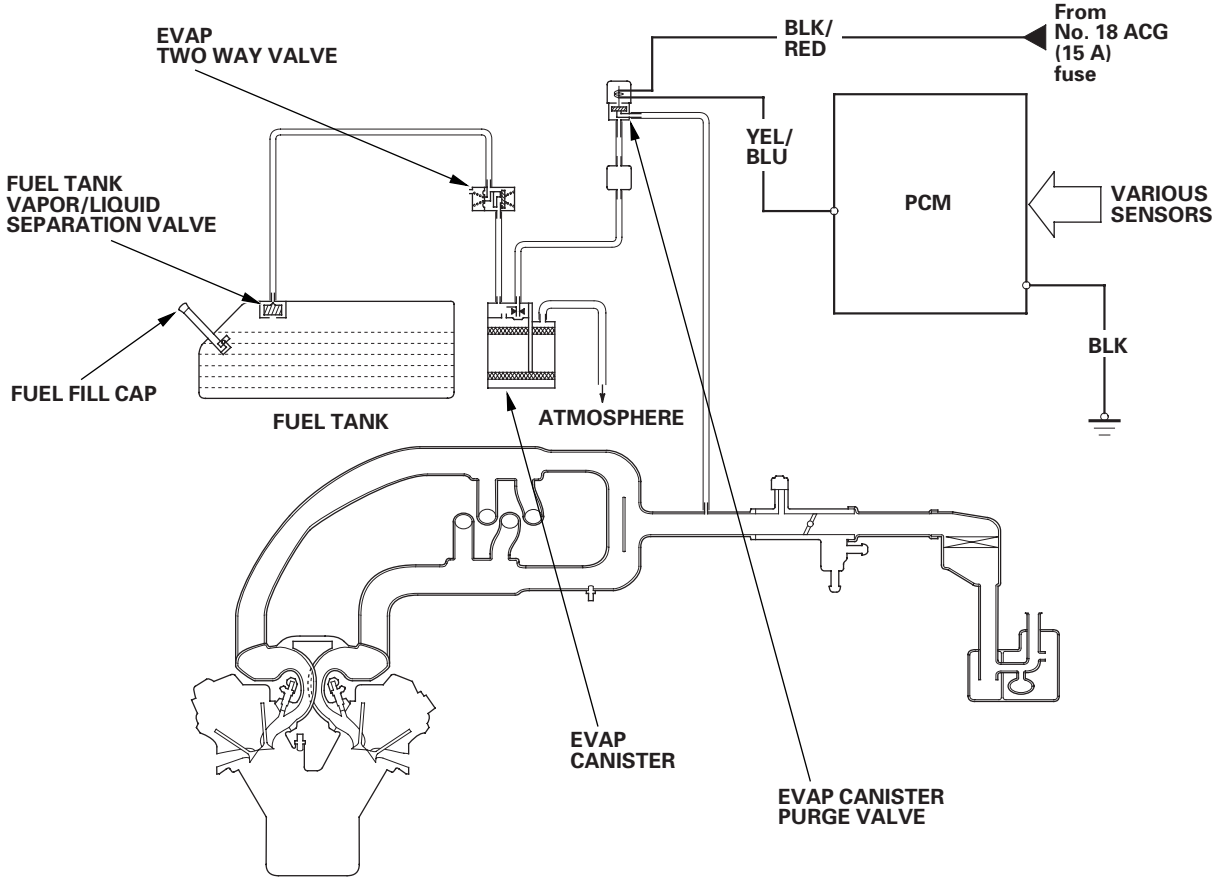
The EGR valve position sensor detects the amount of EGR valve lift and sends it to the PCM. The PCM then compares it with the ideal lift in its memory (based on signals sent from other sensors). If there is any difference between the two, the PCM cuts current to the EGR valve.



Evaporative Emission (EVAP) Control Diagram

The EVAP controls minimize the amount of fuel vapor escaping to the atmosphere. Vapor from the fuel tank is temporarily stored in the EVAP canister until it can be purged from the canister into the engine and burned.

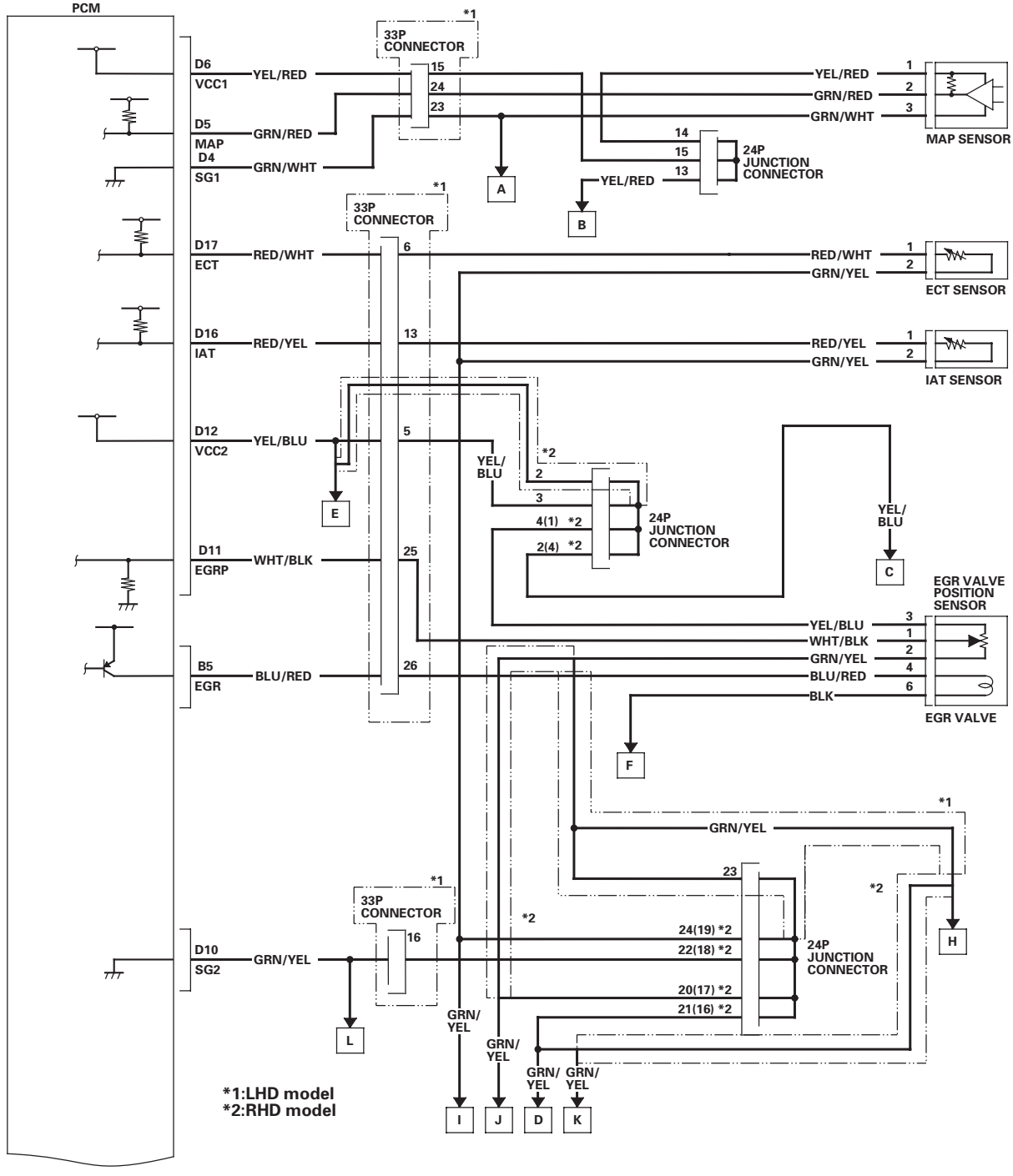
- The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold. The purging vacuum is controlled by the EVAP canister purge valve, which operates whenever engine coolant temperature is above 65°C (149°F).

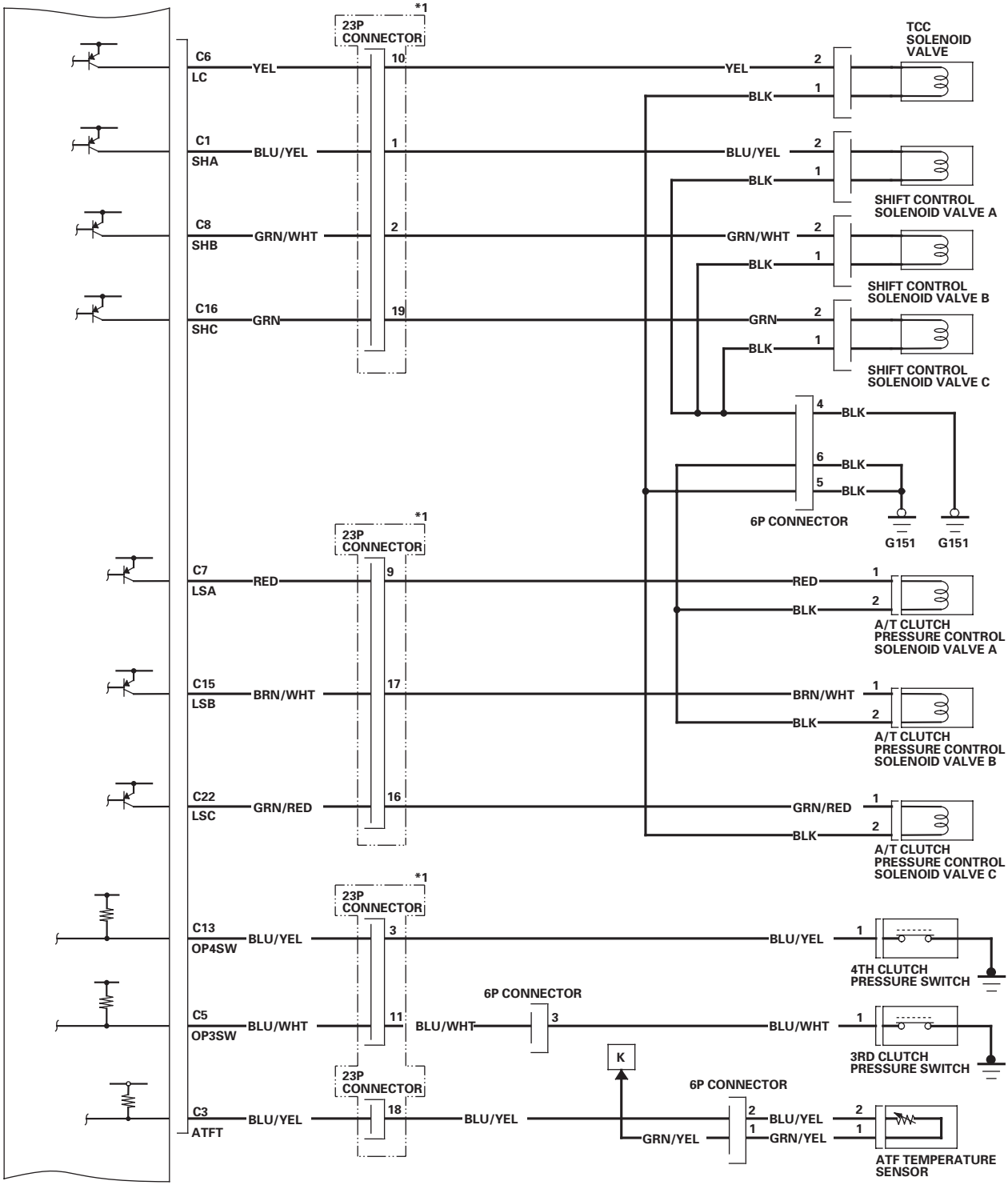


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System Descriptions (cont'd)

PCM Circuit Diagram

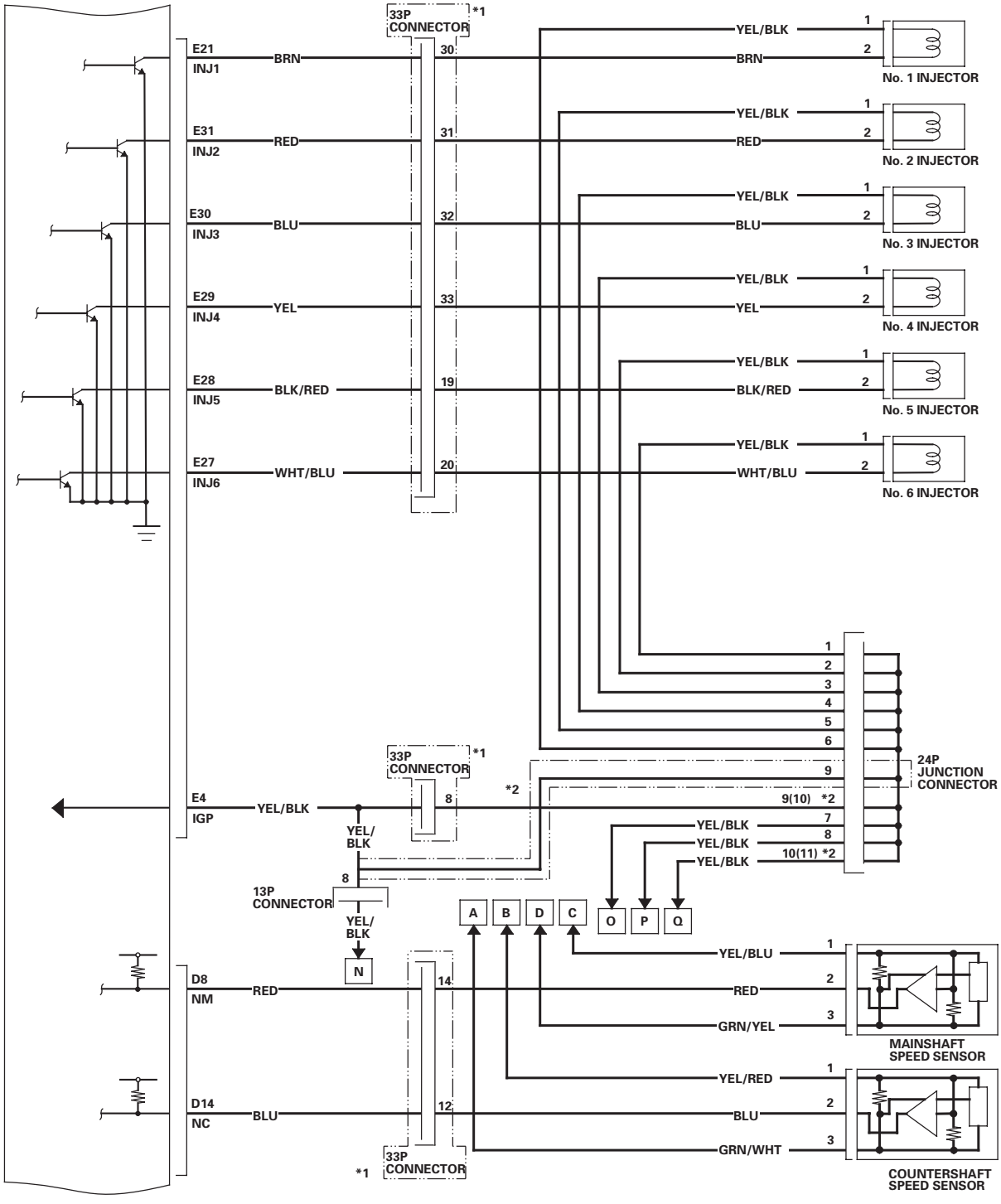


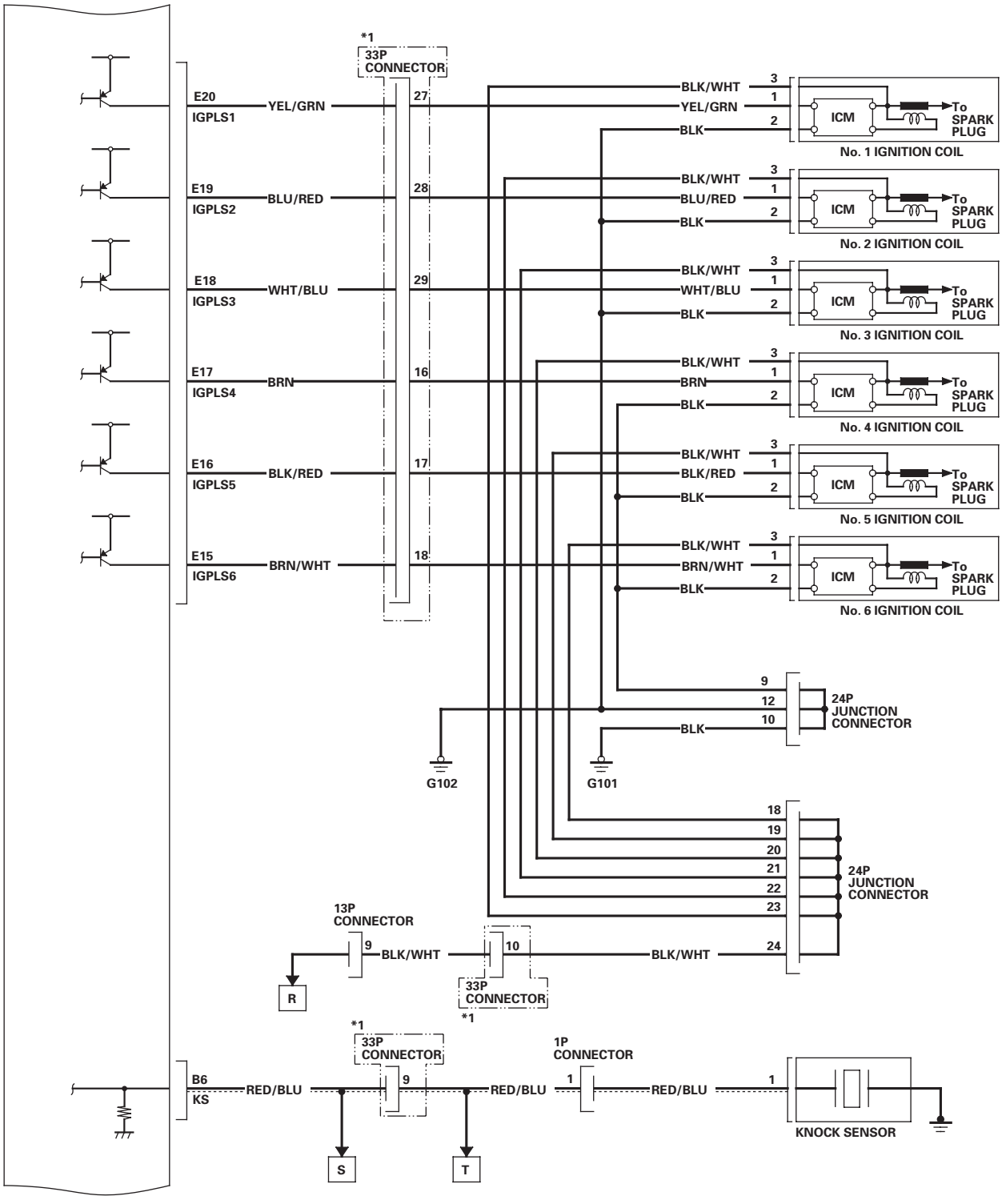

*1
23P CONNECTOR
C6
LC
YEL
10
YEL
2
1
BLK
TCC SOLENOID VALVE
C1
SHA
BLU/YEL
1
BLU/YEL
2
1
BLK
SHIFT CONTROL SOLENOID VALVE A
C8
SHB
GRN/WHT
2
GRN/WHT
2
1
BLK
SHIFT CONTROL SOLENOID VALVE B
C16
SHC
GRN
19
GRN
2
1
BLK
SHIFT CONTROL SOLENOID VALVE C
4
BLK
6
BLK
5
BLK
6P CONNECTOR
G151
G151
*1
23P CONNECTOR
C7
LSA
RED
9
RED
1
2
BLK
A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A
C15
LSB
BRN/WHT
17
BRN/WHT
1
2
BLK
A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B
C22
LSC
GRN/RED
16
GRN/RED
1
2
BLK
A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C
*1
23P CONNECTOR
C13
OP4SW
BLU/YEL
3
BLU/YEL
1
4TH CLUTCH PRESSURE SWITCH
6P CONNECTOR
C5
OP3SW
BLU/WHT
11
BLU/WHT
3
BLU/WHT
1
3RD CLUTCH PRESSURE SWITCH
K
23P CONNECTOR
6P CONNECTOR
C3
ATFT
BLU/YEL
18
BLU/YEL
2
BLU/YEL
2
1
GRN/YEL
1
GRN/YEL
ATF TEMPERATURE SENSOR

(cont'd)

System Descriptions (cont'd)

PCM Circuit Diagra

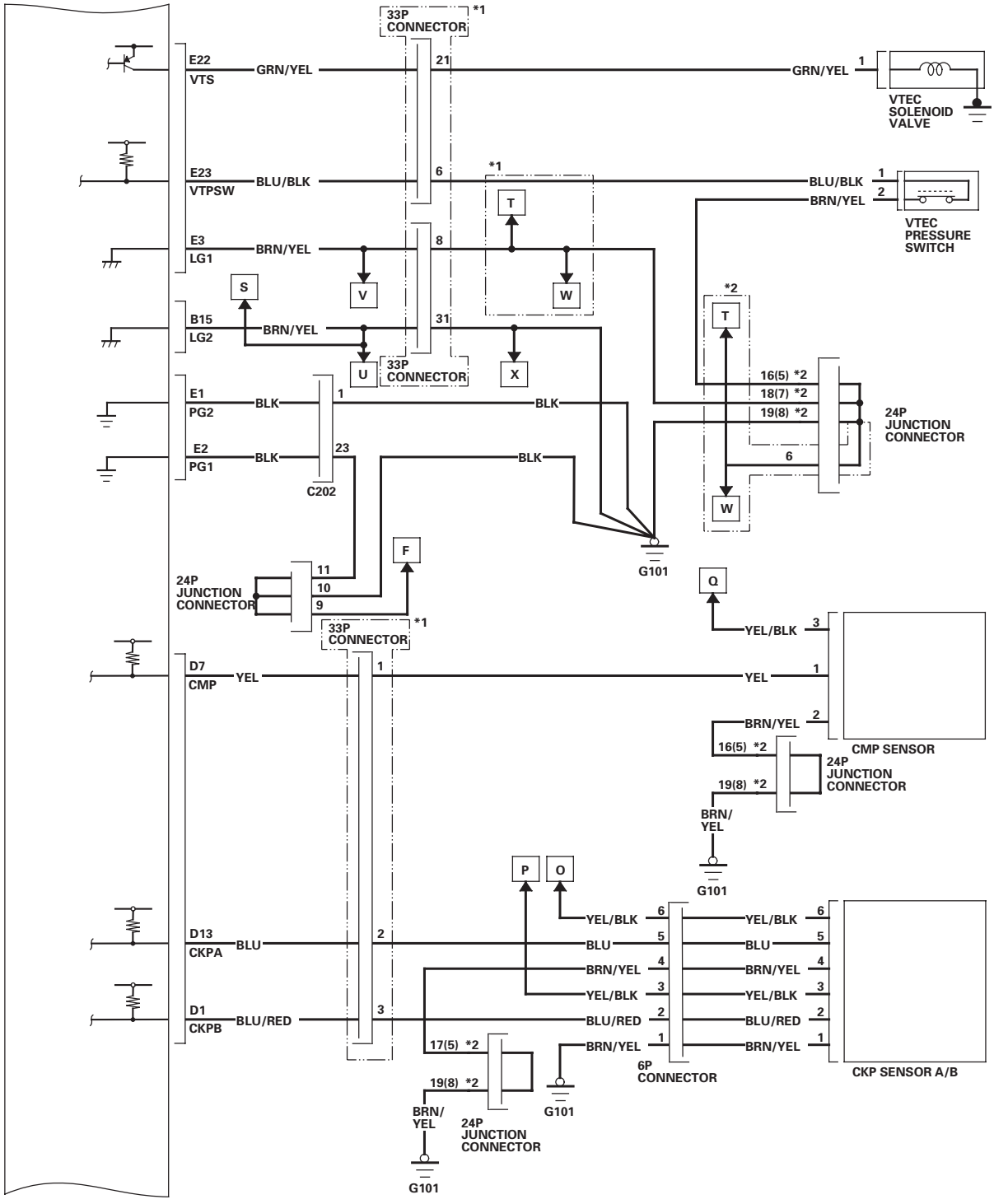


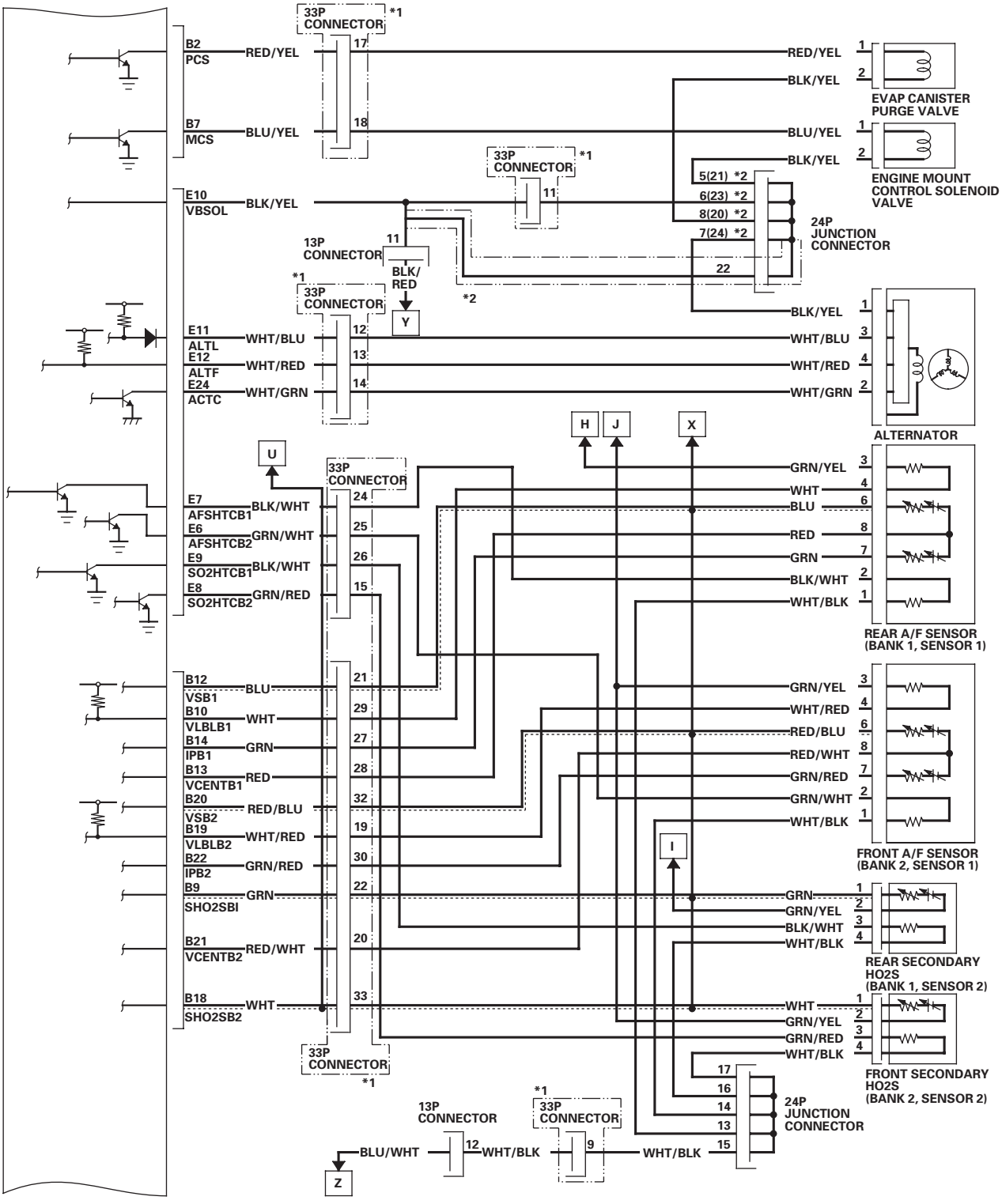

*1
33P CONNECTOR
E20
IGPLS1
YEL/GRN
27
E19
IGPLS2
BLU/RED
28
E18
IGPLS3
WHT/BLU
29
E17
IGPLS4
BRN
16
E16
IGPLS5
BLK/RED
17
E15
IGPLS6
BRN/WHT
18
BLK/WHT
YEL/GRN
BLK
ICM
To SPARK PLUG
No. 1 IGNITION COIL
BLK/WHT
BLU/RED
BLK
No. 2 IGNITION COIL
BLK/WHT
WHT/BLU
BLK
No. 3 IGNITION COIL
BLK/WHT
BRN
BLK
No. 4 IGNITION COIL
BLK/WHT
BLK/RED
BLK
No. 5 IGNITION COIL
BLK/WHT
BRN/WHT
BLK
No. 6 IGNITION COIL
9
12
10
BLK
24P JUNCTION CONNECTOR
G102
G101
18
19
20
21
22
23
24
24P JUNCTION CONNECTOR
13P CONNECTOR
9
BLK/WHT
10
BLK/WHT
R
33P CONNECTOR
*1
*1
33P CONNECTOR
9
1P CONNECTOR
1
B6
KS
RED/BLU
RED/BLU
RED/BLU
1
KNOCK SENSOR
S
T

(cont'd)

System Descriptions (cont'd)

PCM Circuit Diagram (cont'd)

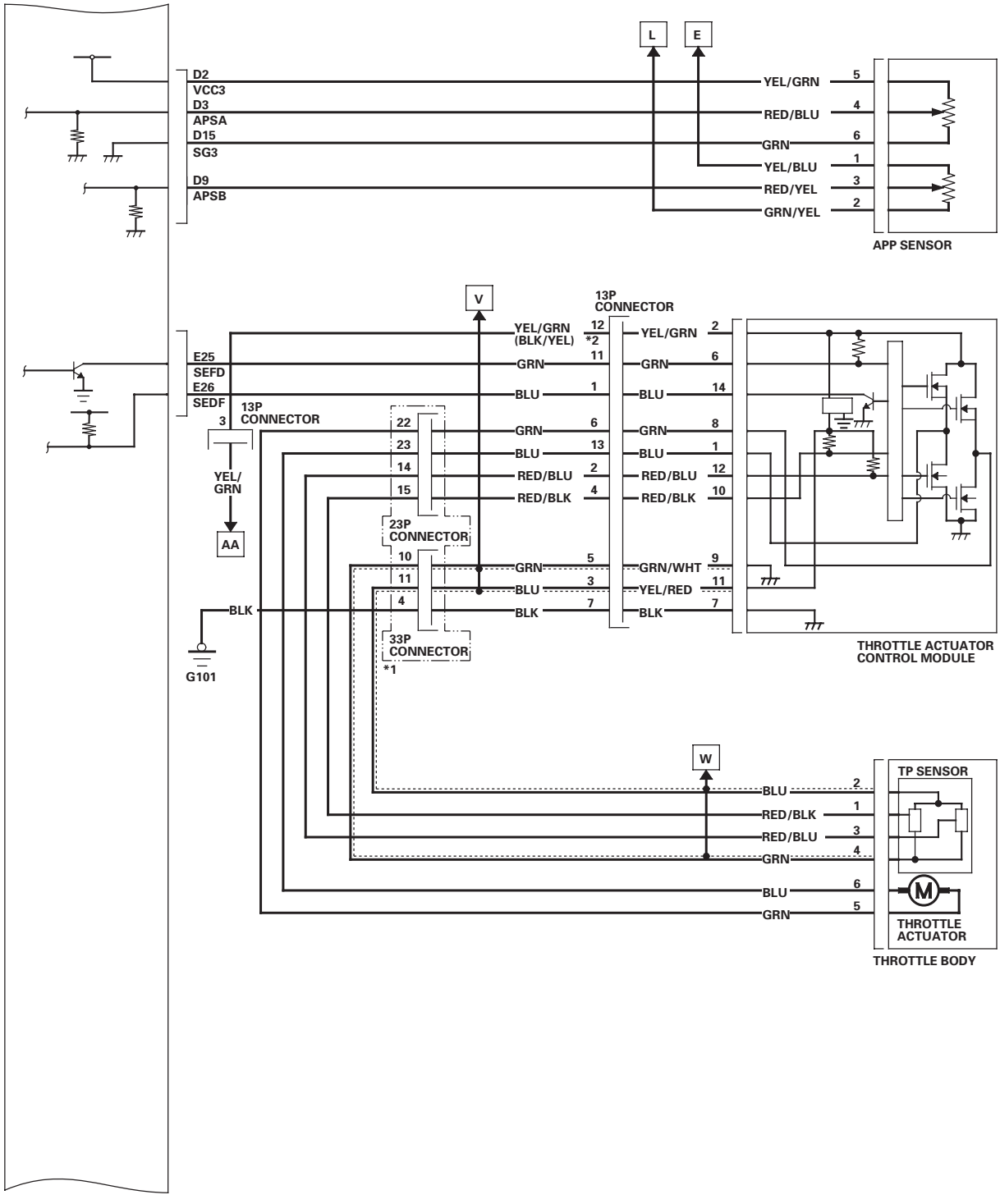


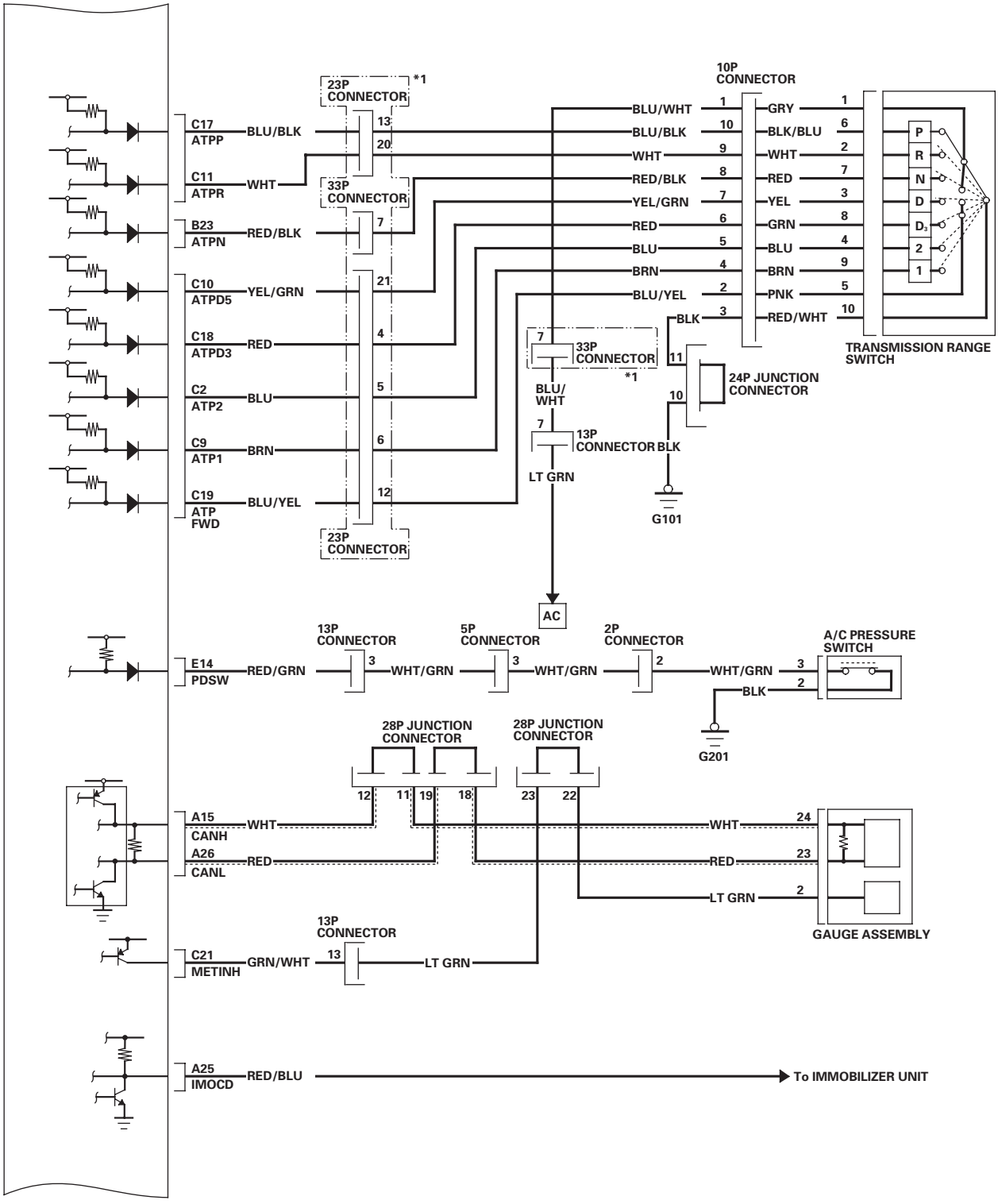

33P CONNECTOR *1
B2 PCS
RED/YEL
17
B7 MCS
BLU/YEL
18
RED/YEL
BLK/YEL
EVAP CANISTER PURGE VALVE
BLU/YEL
BLK/YEL
ENGINE MOUNT CONTROL SOLENOID VALVE
33P CONNECTOR *1
11
E10 VBSOL
BLK/YEL
5(21) *2
6(23) *2
8(20) *2
7(24) *2
22
24P JUNCTION CONNECTOR
13P CONNECTOR
11
BLK/ RED
Y
*2
33P CONNECTOR *1
BLK/YEL
E11 ALTL
WHT/BLU
12
E12 ALTF
WHT/RED
13
E24 ACTC
WHT/GRN
14
WHT/BLU
WHT/RED
WHT/GRN
ALTERNATOR
H
J
X
U
33P CONNECTOR
E7 AFSHTCB1
BLK/WHT
24
E6 AFSHTCB2
GRN/WHT
25
E9 SO2HTCB1
BLK/WHT
26
E8 SO2HTCB2
GRN/RED
15
GRN/YEL
WHT
BLU
RED
GRN
BLK/WHT
WHT/BLK
REAR A/F SENSOR (BANK 1, SENSOR 1)
B12 VSB1
BLU
21
B10 VLBLB1
WHT
29
B14 IPB1
GRN
27
B13 VCENTB1
RED
28
B20 VSB2
RED/BLU
32
B19 VLBLB2
WHT/RED
19
B22 IPB2
GRN/RED
30
B9 SHO2SBI
GRN
22
B21 VCENTB2
RED/WHT
20
B18 SHO2SB2
WHT
33
GRN/YEL
WHT/RED
RED/BLU
RED/WHT
GRN/RED
GRN/WHT
WHT/BLK
FRONT A/F SENSOR (BANK 2, SENSOR 1)
I
GRN
GRN/YEL
BLK/WHT
WHT/BLK
REAR SECONDARY HO2S (BANK 1, SENSOR 2)
WHT
GRN/YEL
GRN/RED
WHT/BLK
FRONT SECONDARY HO2S (BANK 2, SENSOR 2)
33P CONNECTOR *1
17
16
14
13
15
24P JUNCTION CONNECTOR
13P CONNECTOR
*1
33P CONNECTOR
BLU/WHT
12
WHT/BLK
9
WHT/BLK
Z

(cont'd)

System Descriptions (cont'd)

PCM Circuit Diagram (cont'd)

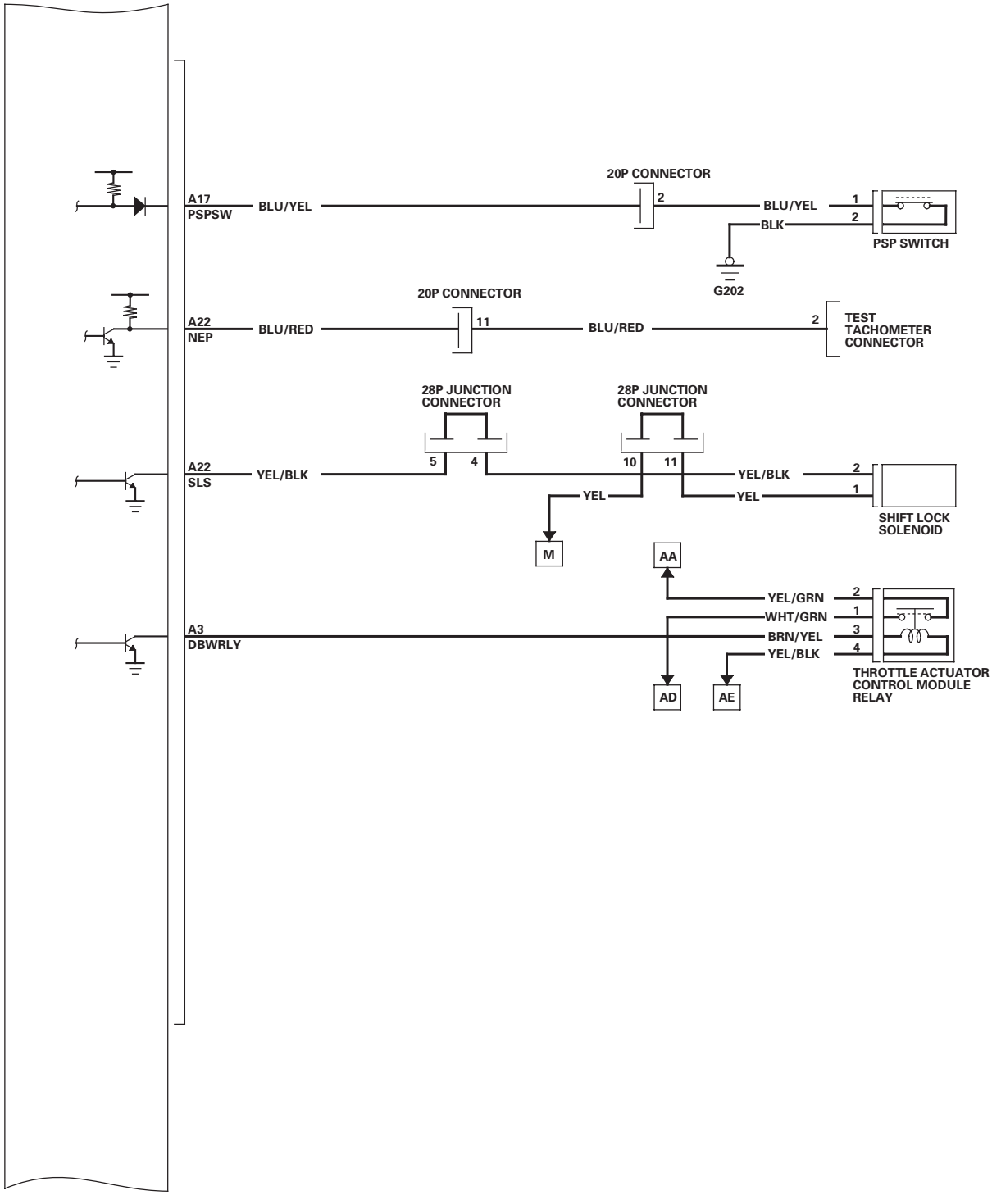


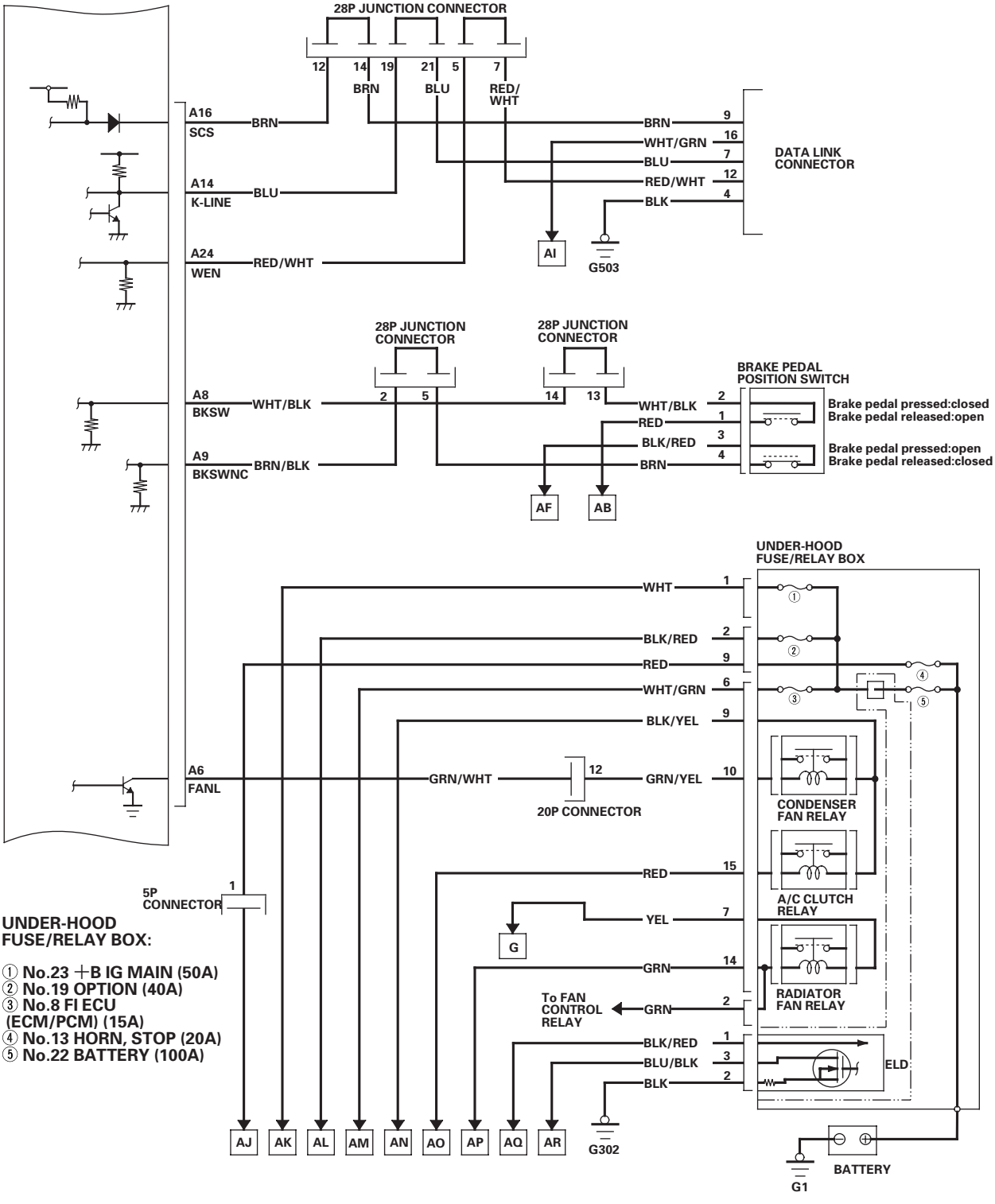

C17
ATPP
BLU/BLK
C11
ATPR
WHT
B23
ATPN
RED/BLK
C10
ATPD5
YEL/GRN
C18
ATPD3
RED
C2
ATP2
BLU
C9
ATP1
BRN
C19
ATP
FWD
BLU/YEL
23P
CONNECTOR
*1
13
20
33P
CONNECTOR
7
21
4
5
6
12
23P
CONNECTOR
10P
CONNECTOR
BLU/WHT
BLU/BLK
WHT
RED/BLK
YEL/GRN
RED
BLU
BRN
BLU/YEL
BLK
GRY
BLK/BLU
WHT
RED
YEL
GRN
BLU
BRN
PNK
RED/WHT
TRANSMISSION RANGE
SWITCH
P
R
N
D
D3
2
1
33P
CONNECTOR
*1
24P JUNCTION
CONNECTOR
BLU/
WHT
13P
CONNECTOR
BLK
LT GRN
G101
AC
E14
PDSW
RED/GRN
13P
CONNECTOR
WHT/GRN
5P
CONNECTOR
WHT/GRN
2P
CONNECTOR
WHT/GRN
BLK
A/C PRESSURE
SWITCH
G201
28P JUNCTION
CONNECTOR
28P JUNCTION
CONNECTOR
A15
CANH
WHT
A26
CANL
RED
WHT
RED
LT GRN
GAUGE ASSEMBLY
C21
METINH
GRN/WHT
13P
CONNECTOR
LT GRN
A25
IMOCD
RED/BLU
To IMMOBILIZER UNIT

(cont'd)

System Descriptions (cont'd)

PCM Circuit Diagram (cont'd)

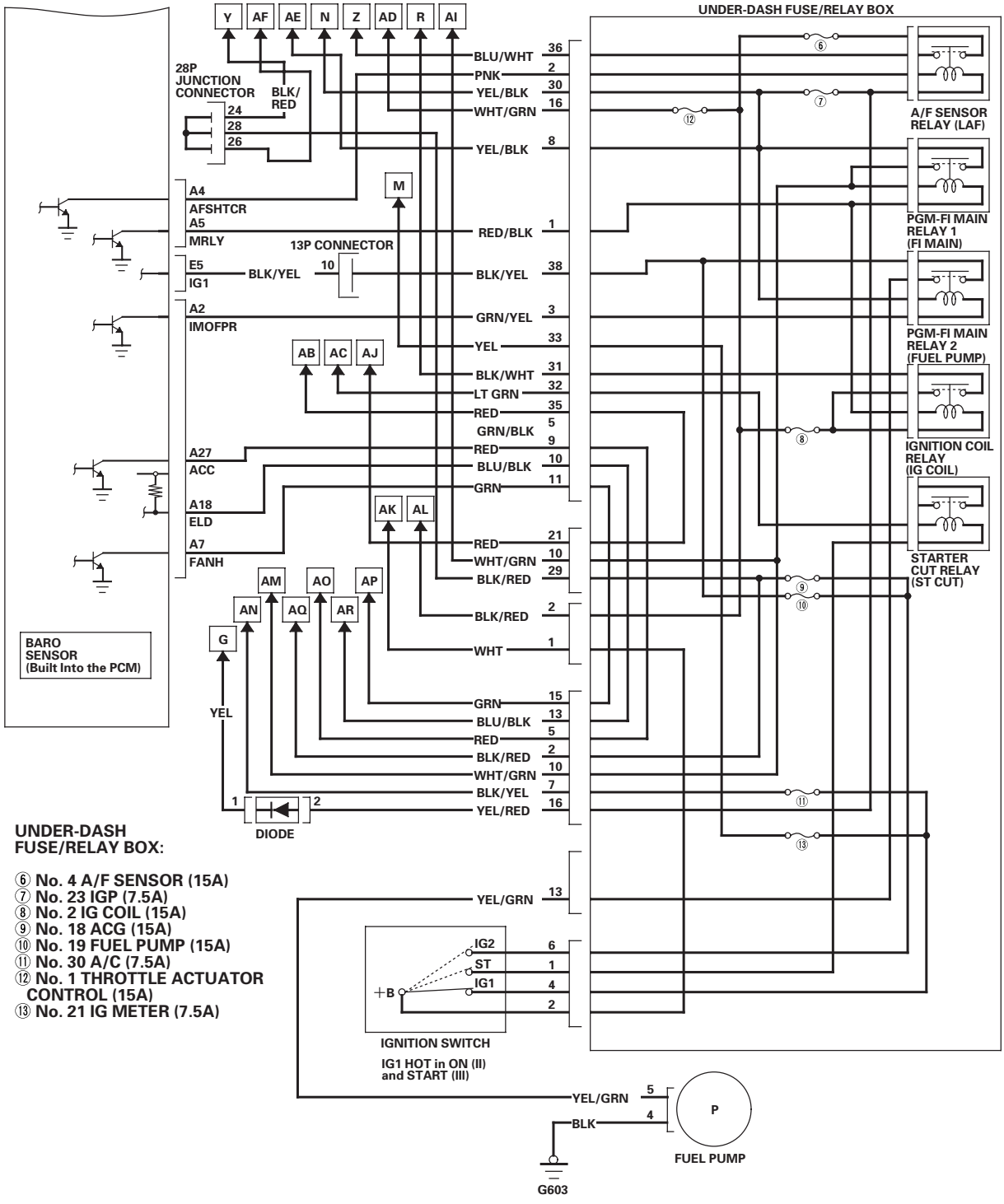



28P JUNCTION CONNECTOR
12
14
19
21
5
7
BRN
BLU
RED/
WHT
A16
SCS
BRN
A14
K-LINE
BLU
A24
WEN
RED/WHT
BRN
9
WHT/GRN
16
BLU
7
RED/WHT
12
BLK
4
DATA LINK
CONNECTOR
AI
G503
28P JUNCTION
CONNECTOR
28P JUNCTION
CONNECTOR
BRAKE PEDAL
POSITION SWITCH
A8
BKSW
WHT/BLK
2
5
14
13
WHT/BLK
2
RED
1
BLK/RED
3
BRN
4
Brake pedal pressed:closed
Brake pedal released:open
Brake pedal pressed:open
Brake pedal released:closed
A9
BKSWNC
BRN/BLK
AF
AB
UNDER-HOOD
FUSE/RELAY BOX
WHT
1
BLK/RED
2
RED
9
WHT/GRN
6
BLK/YEL
9
A6
FANL
GRN/WHT
12
GRN/YEL
10
20P CONNECTOR
CONDENSER
FAN RELAY
RED
15
A/C CLUTCH
RELAY
5P
CONNECTOR
1
YEL
7
G
GRN
14
RADIATOR
FAN RELAY
To FAN
CONTROL
RELAY
GRN
2
BLK/RED
1
BLU/BLK
3
BLK
2
ELD
AJ
AK
AL
AM
AN
AO
AP
AQ
AR
G302
G1
BATTERY
UNDER-HOOD
FUSE/RELAY BOX:
① No.23 +B IG MAIN (50A)
② No.19 OPTION (40A)
③ No.8 FI ECU
(ECM/PCM) (15A)
④ No.13 HORN, STOP (20A)
⑤ No.22 BATTERY (100A)

(cont'd)

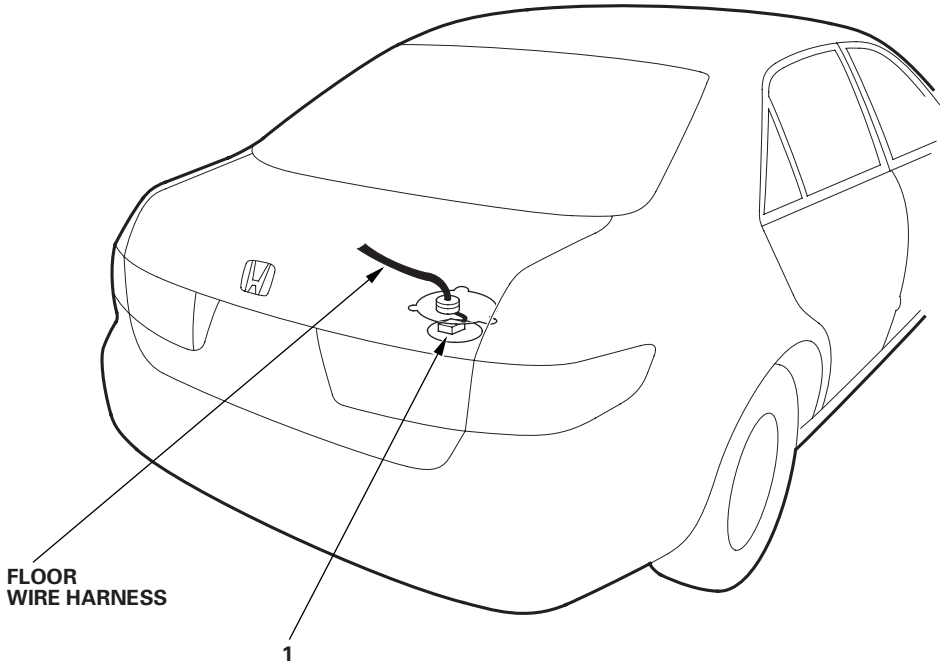
System Descriptions (cont'd)

PCM Circuit Diagram (cont'd)

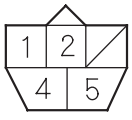


UNDER-DASH FUSE/RELAY BOX:

⑥ No. 4 A/F SENSOR (15A)
⑦ No. 23 IGP (7.5A)
⑧ No. 2 IG COIL (15A)
⑨ No. 18 ACG (15A)
⑩ No. 19 FUEL PUMP (15A)
⑪ No. 30 A/C (7.5A)
⑫ No. 1 THROTTLE ACTUATOR CONTROL (15A)
⑬ No. 21 IG METER (7.5A)



FUEL PUMP (1)



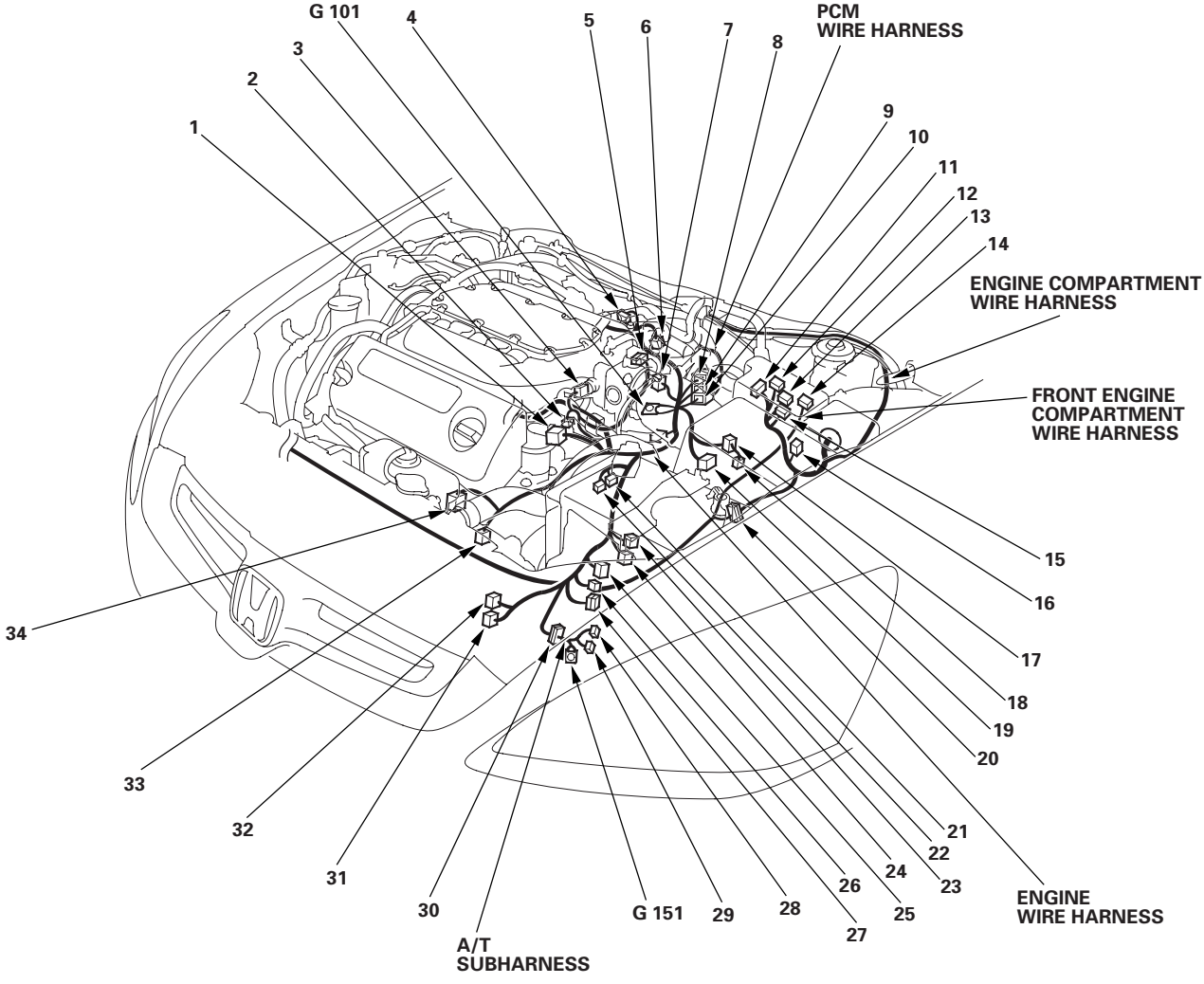
NOTE:
- Connector with male terminals (double outline): view from terminal side
- Connector with female terminals (single outline): view from wire side

(cont'd)

System Descriptions (cont'd)

PCM Circuit Diagram (cont'd)

LHD model:



EGR VALVE (1)



ECT SENSOR (2)



IAT SENSOR (3)



ENGINE MOUNT CONTROL SOLENOID VALVE (4)



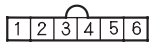
MAP SENSOR (5)



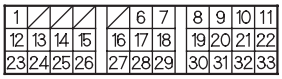
EVAP CANISTER PURGE VALVE (6)



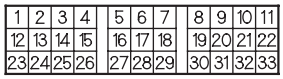
THROTTLE BODY (7)



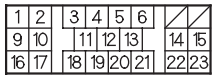
33P CONNECTOR (8)



33P CONNECTOR (9)



23P CONNECTOR (10)



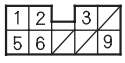
UNDER-HOOD FUSE/RELAY BOX (11)



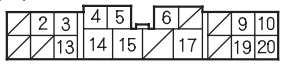
ELD (11)



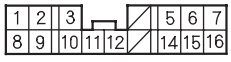
UNDER-HOOD FUSE/RELAY BOX (13)



UNDER-HOOD FUSE/RELAY BOX (14)



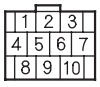
UNDER-HOOD FUSE/RELAY BOX (15)



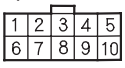
TEST TACHOMETER CONNECTOR (16)



10P CONNECTOR (17)



TRANSMISSION RANGE SWITCH (18)



COUNTERSHAFT SPEED SENSOR (19)



6P CONNECTOR (20) (Except KY model)



2P CONNECTOR (20) (KY model)



TCC SOLENOID VALVE (21)



SHIFT CONTOL SOLENOID VALVE B (22)



A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A (23)



A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B (24)



MAINSHAFT SPEED SENSOR (25)



4HT CLUTCH PRESSURE SWITCH (26)



A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C (27)



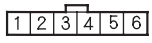
3RD CLUTCH PRESSURE SWITCH (28)



ATF TEMPERATURE SENSOR (29)



6P CONNECTOR (30)



SHIFT CONTROL SOLENOID VALVE C (31)



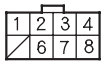
SHIFT CONTROL SOLENOID VALVE A (32)



FRONT SECONDARY SHO2S (BANK 2, SENSOR 2) (33)



FRONT A/F (BANK 2, SENSOR 1) (34)



NOTE:

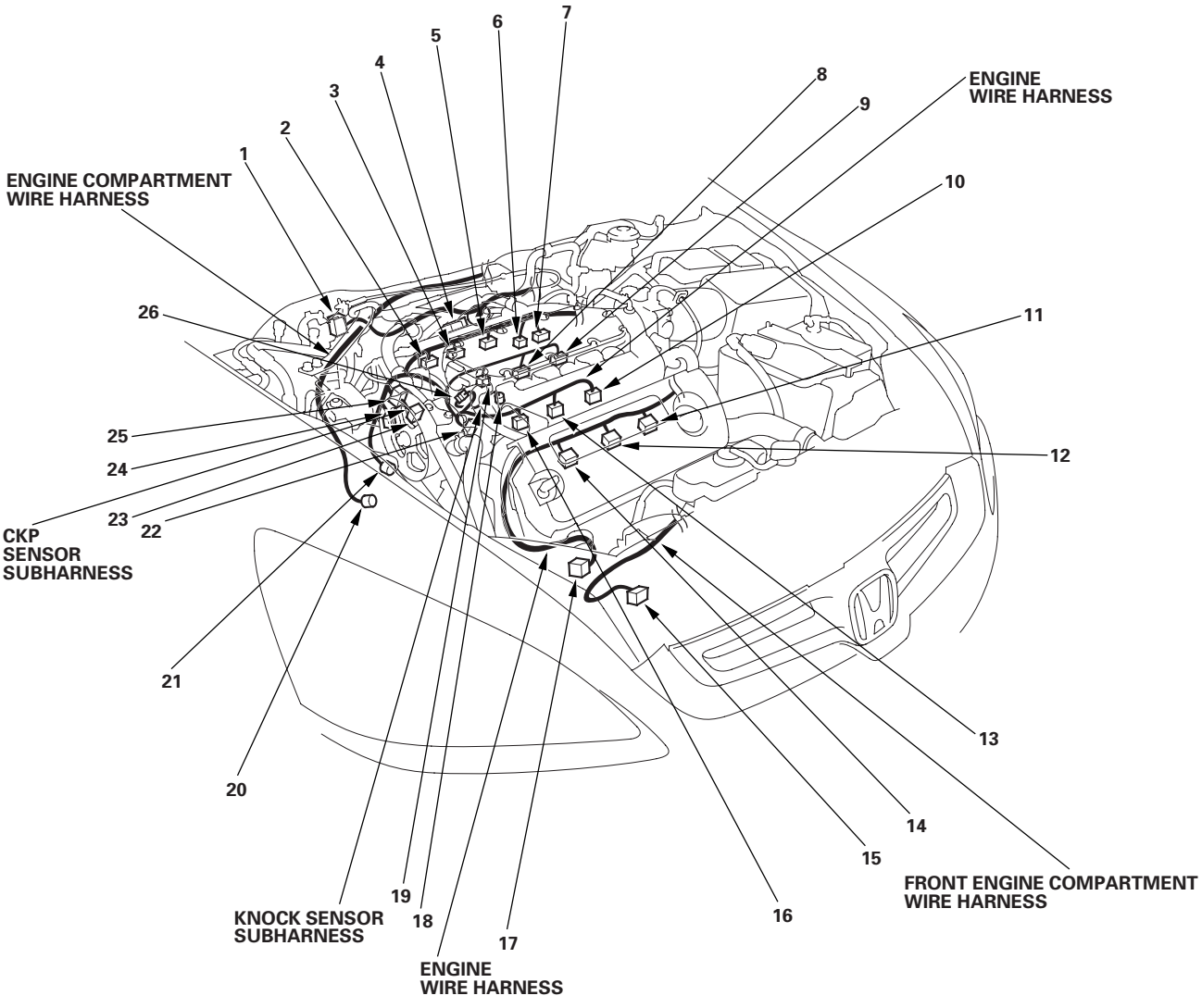
- Connector with male terminals (double outline): view from terminal side
- Connector with female terminals (single outline): view from wire side

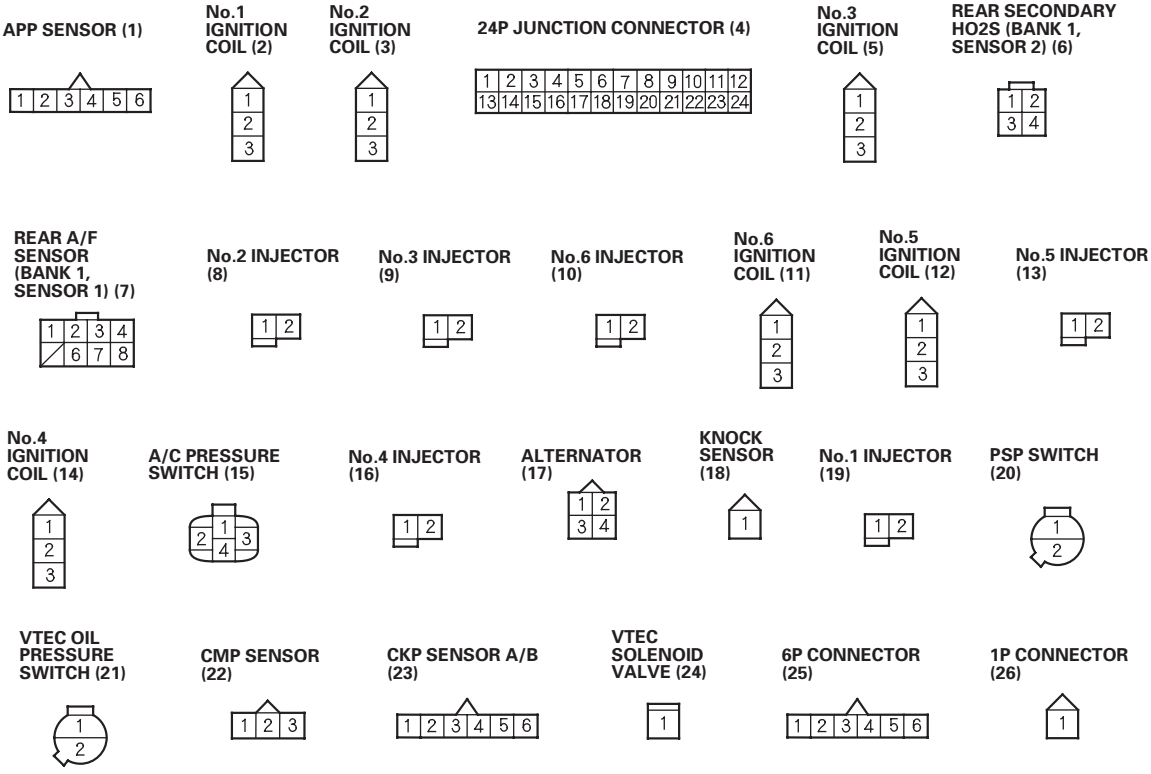
(cont'd)

System Descriptions (cont'd)

PCM Circuit Diagram (cont'd)

LHD model:





NOTE:

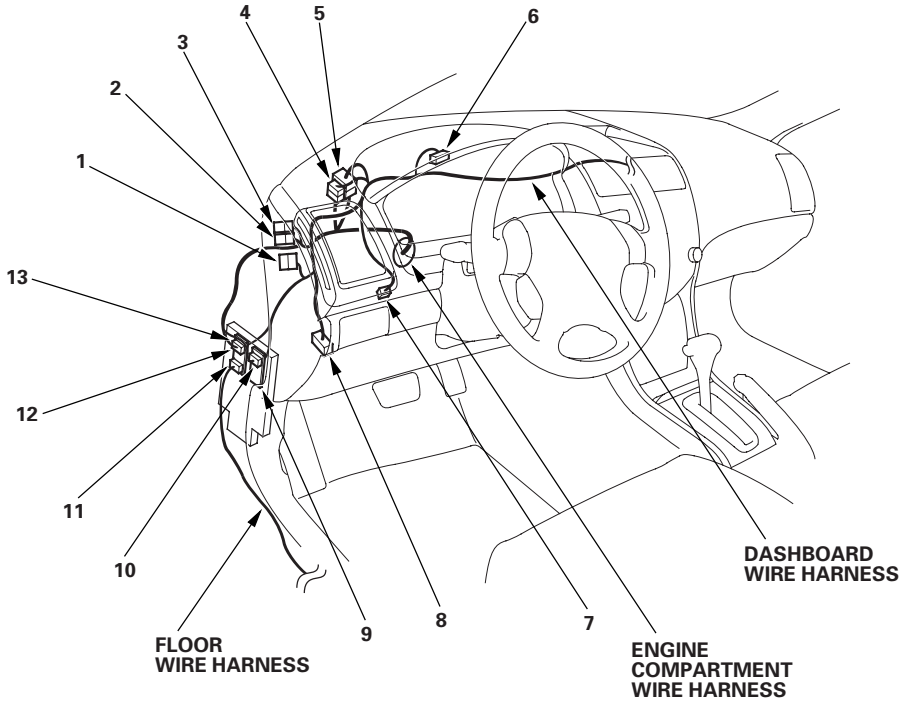
- Connector with male terminals (double outline): view from terminal side
- Connector with female terminals (single outline): view from wire side

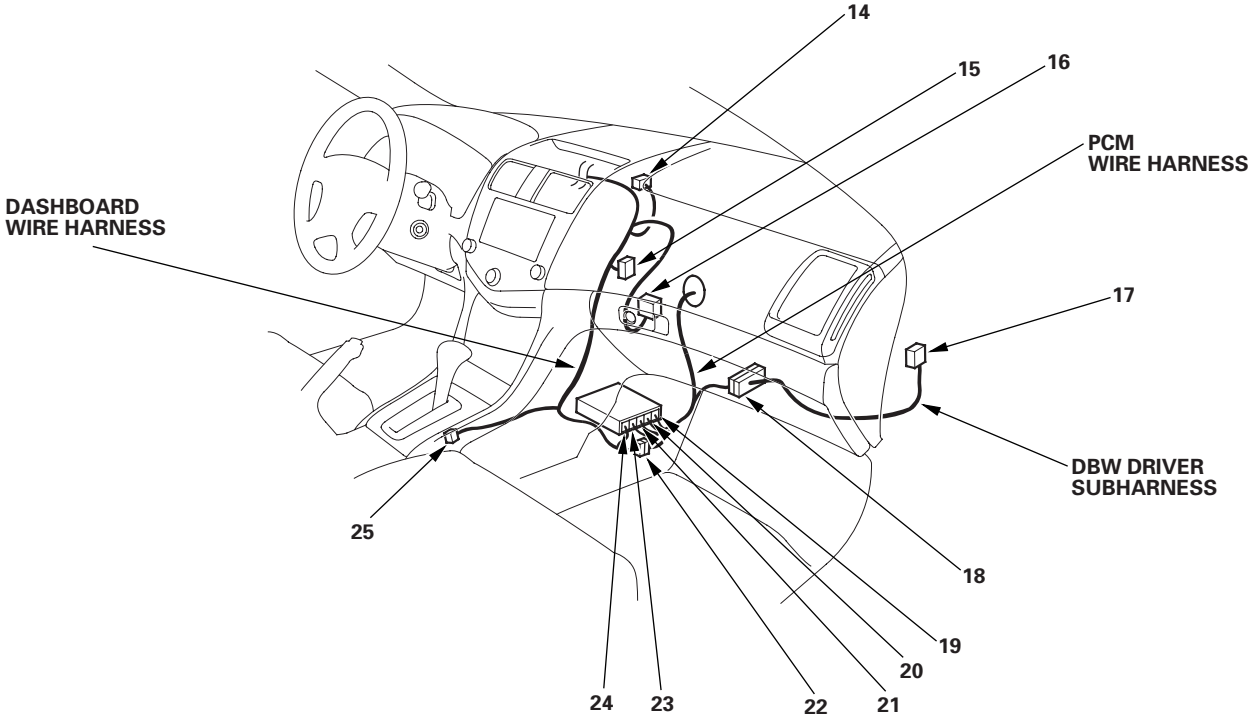
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System Descriptions (cont'd)

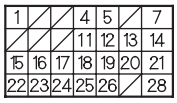
PCM Circuit Diagram (cont'd)

LHD model:

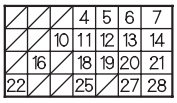




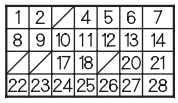
28P JUNCTION CONNECTOR (1)



28P JUNCTION CONNECTOR (2)



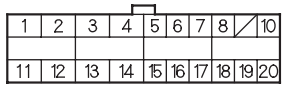
28P JUNCTION CONNECTOR (3)



5P CONNECTOR (4)



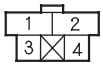
20P CONNECTOR (5)



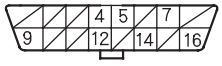
GAUGE B (6)



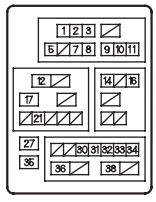
BRAKE PEDAL POSITION SWITCH (7)



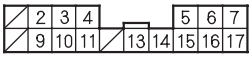
DATA LINK CONNECTOR (8)**



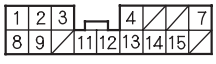
UNDER-DASH FUSE/RELAY BOX (9)



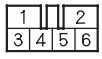
UNDER-DASH FUSE/RELAY BOX (10)



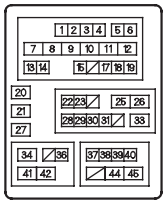
UNDER-DASH FUSE/RELAY BOX (11)



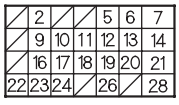
UNDER-DASH FUSE/RELAY BOX (12)



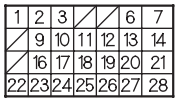
UNDER-DASH FUSE/RELAY BOX (13)



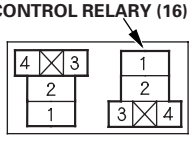
28P JUNCTION CONNECTOR (14)



28P JUNCTION CONNECTOR (15)



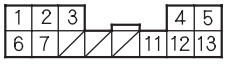
THROTTLE ACTUATOR CONTROL RELARY (16)



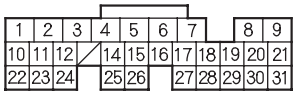
THROTTLE ACTUATOR CONTROL MODULE (17)



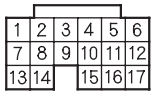
13P CONNECTOR (18)



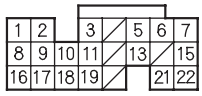
PCM E (19)



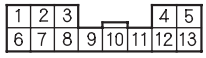
PCM D (20)



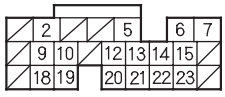
PCM C (21)



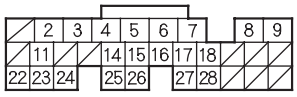
13P CONNECTOR (22)



PCM B (23)



PCM A (24)



SHIFT LOCK SOLENOID (25)



NOTE:

- Connector with male terminals (double outline): view from terminal side
- Connector with female terminals (single outline): view from wire side

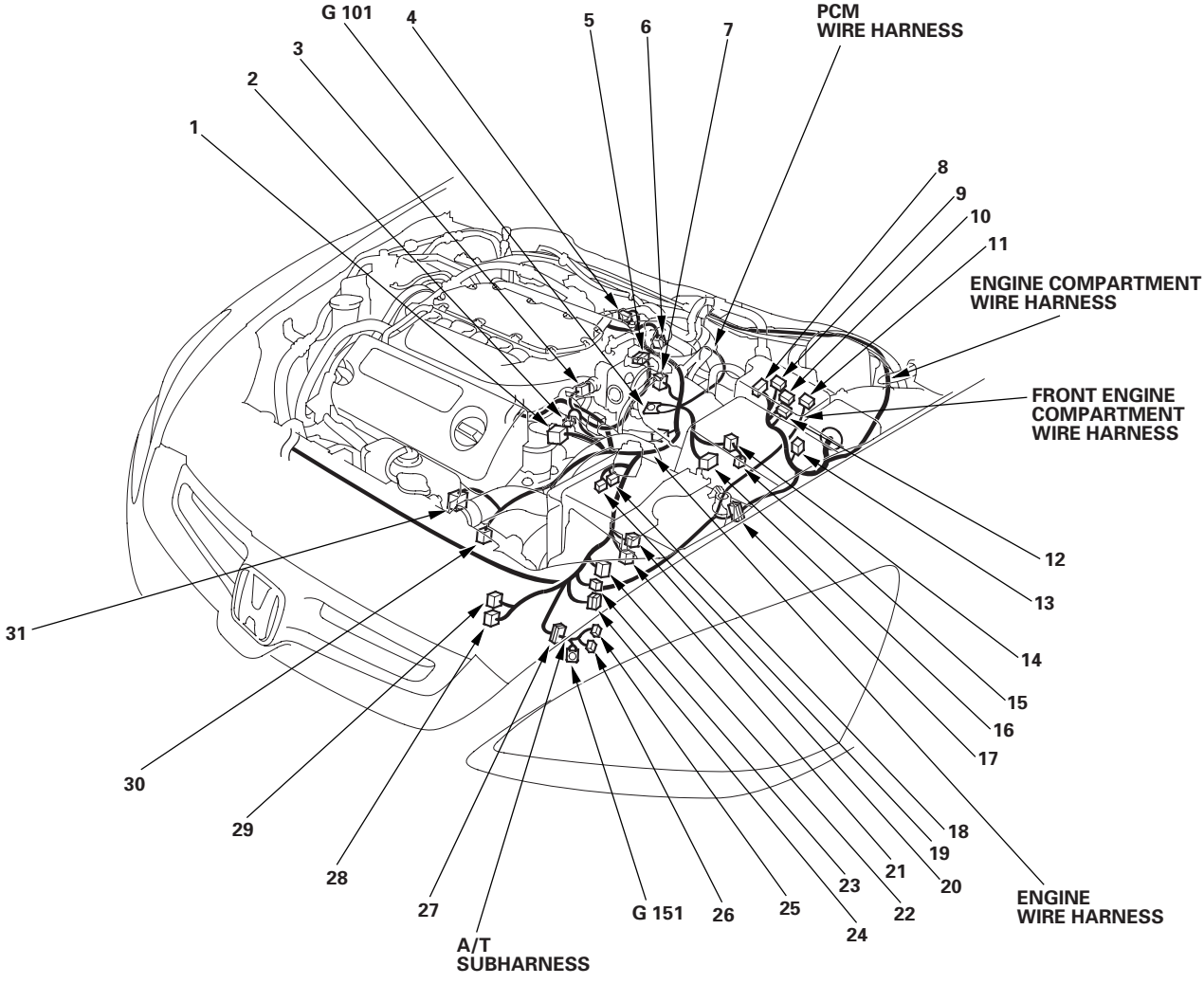
* *: Connector with female terminals (single outline): view from terminal side

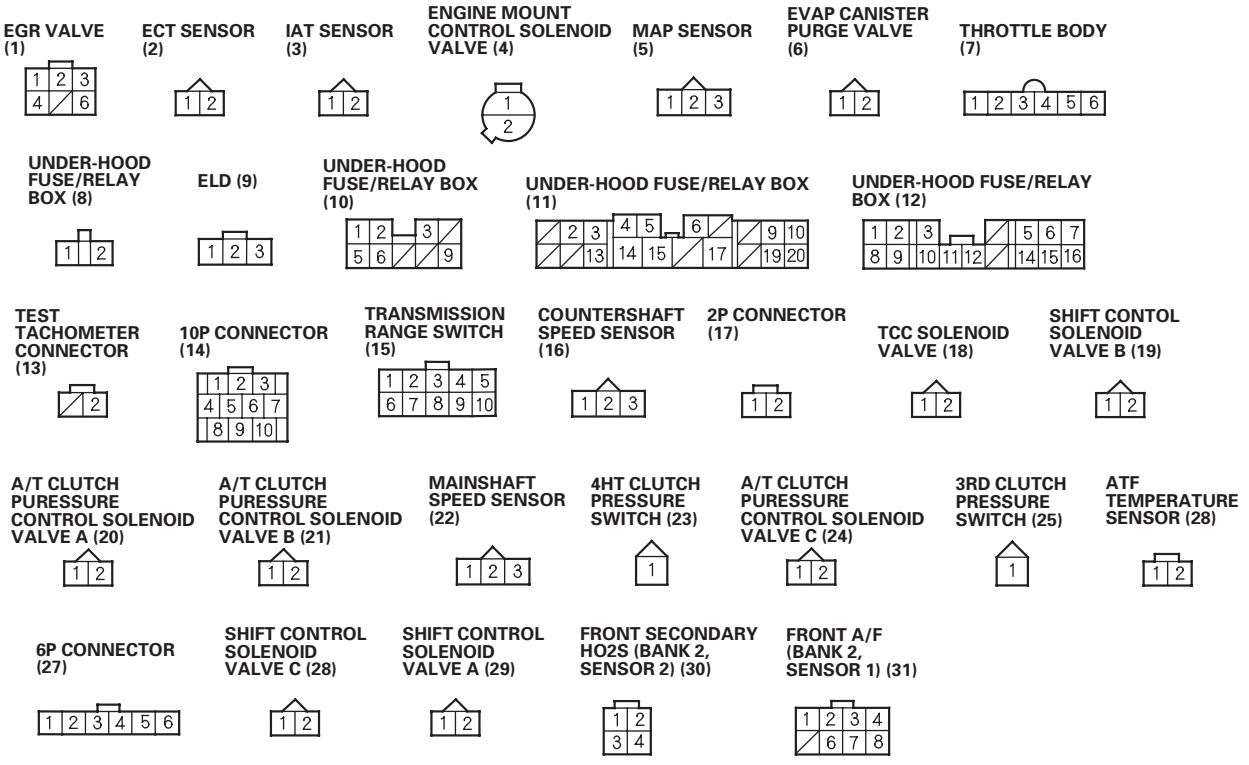
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System Descriptions (cont'd)

PCM Circuit Diagram (cont'd)

RHD model:





NOTE:

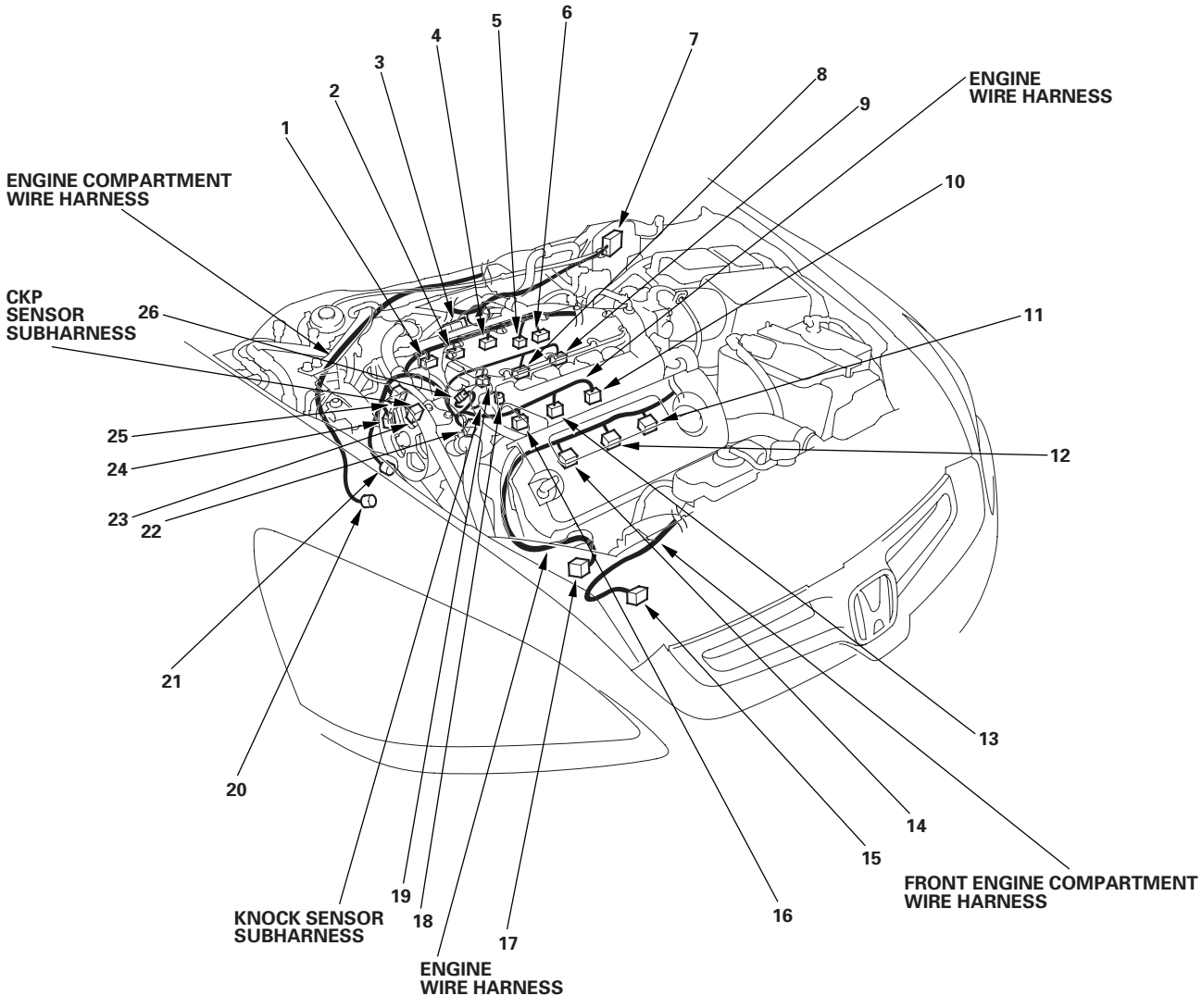
- Connector with male terminals (double outline): view from terminal side
- Connector with female terminals (single outline): view from wire side

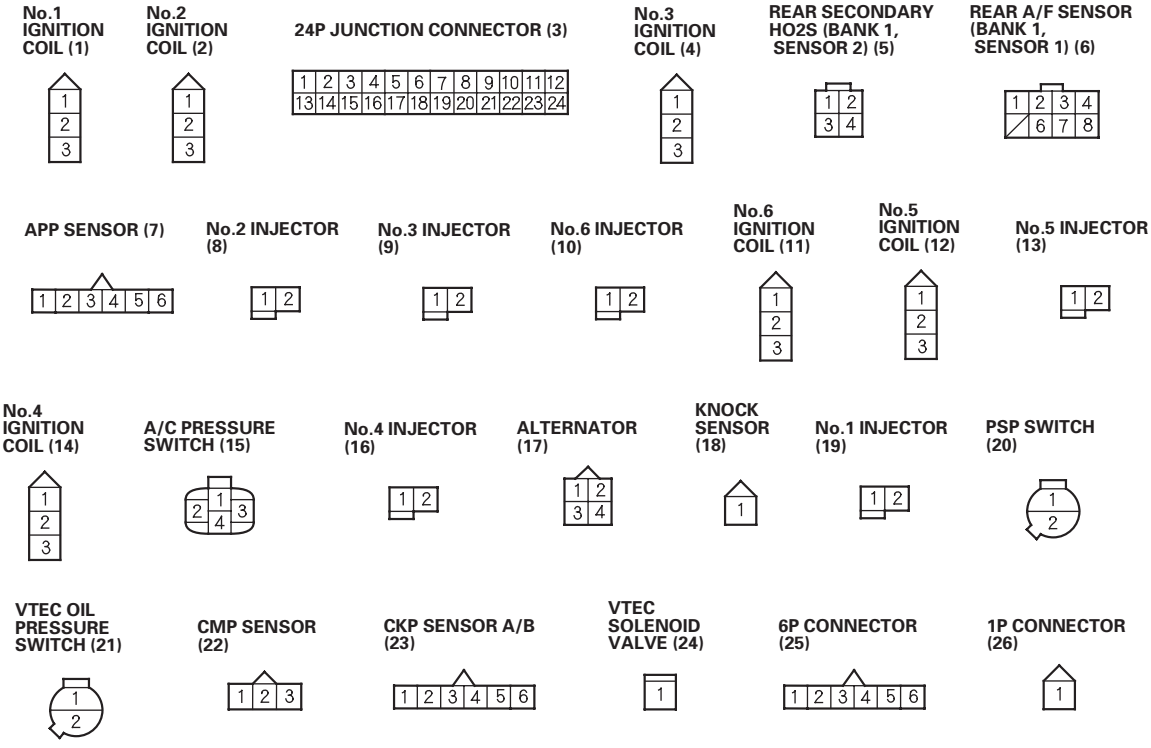
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System Descriptions (cont'd)

PCM Circuit Diagram (cont'd)

RHD model:





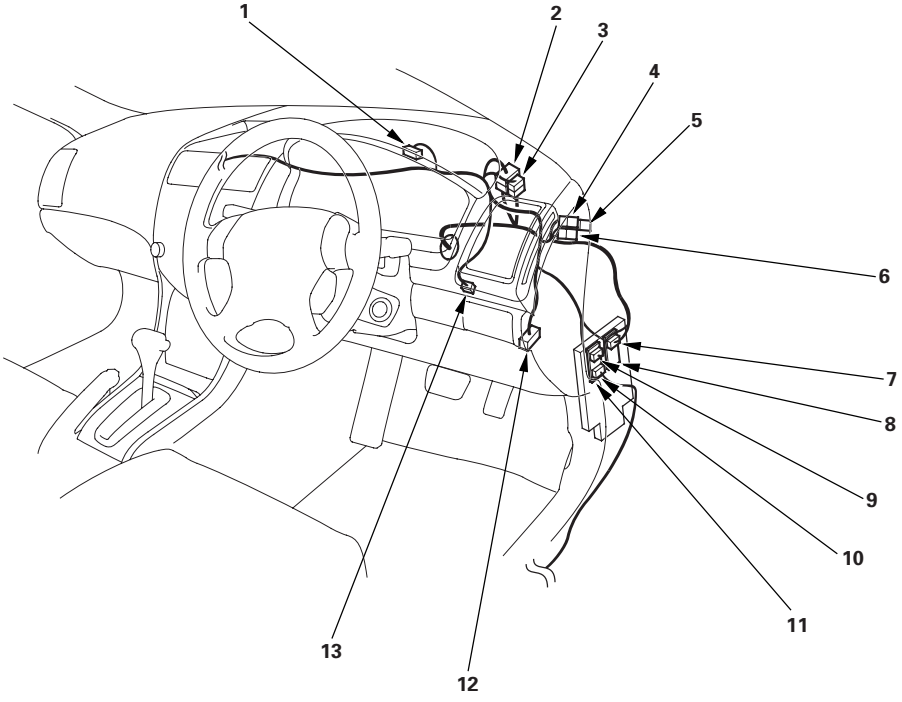
NOTE:
- Connector with male terminals (double outline): view from terminal side
- Connector with female terminals (single outline): view from wire side

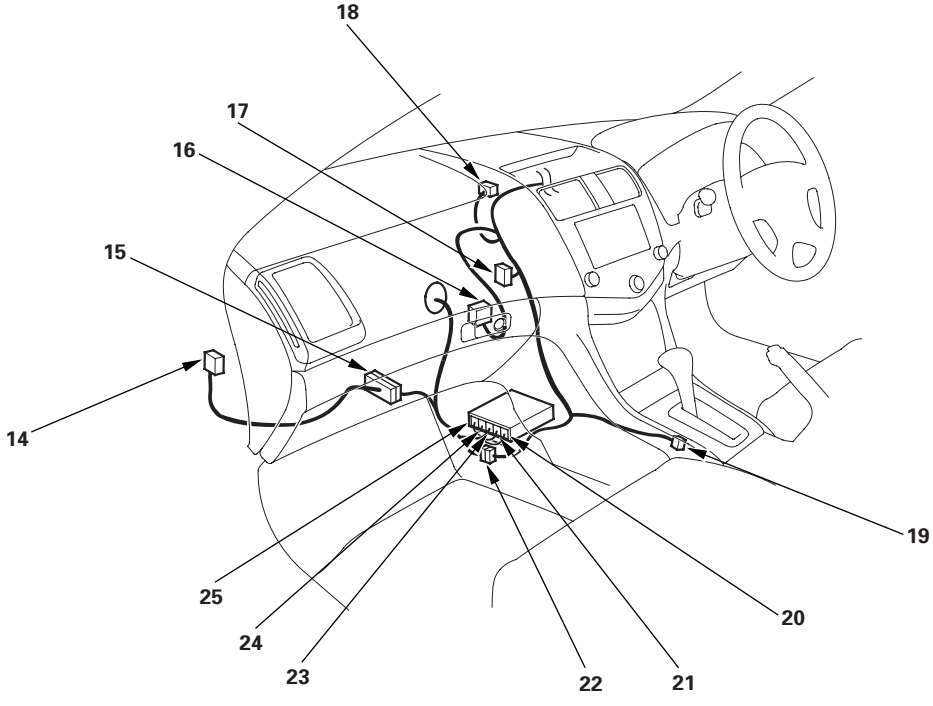
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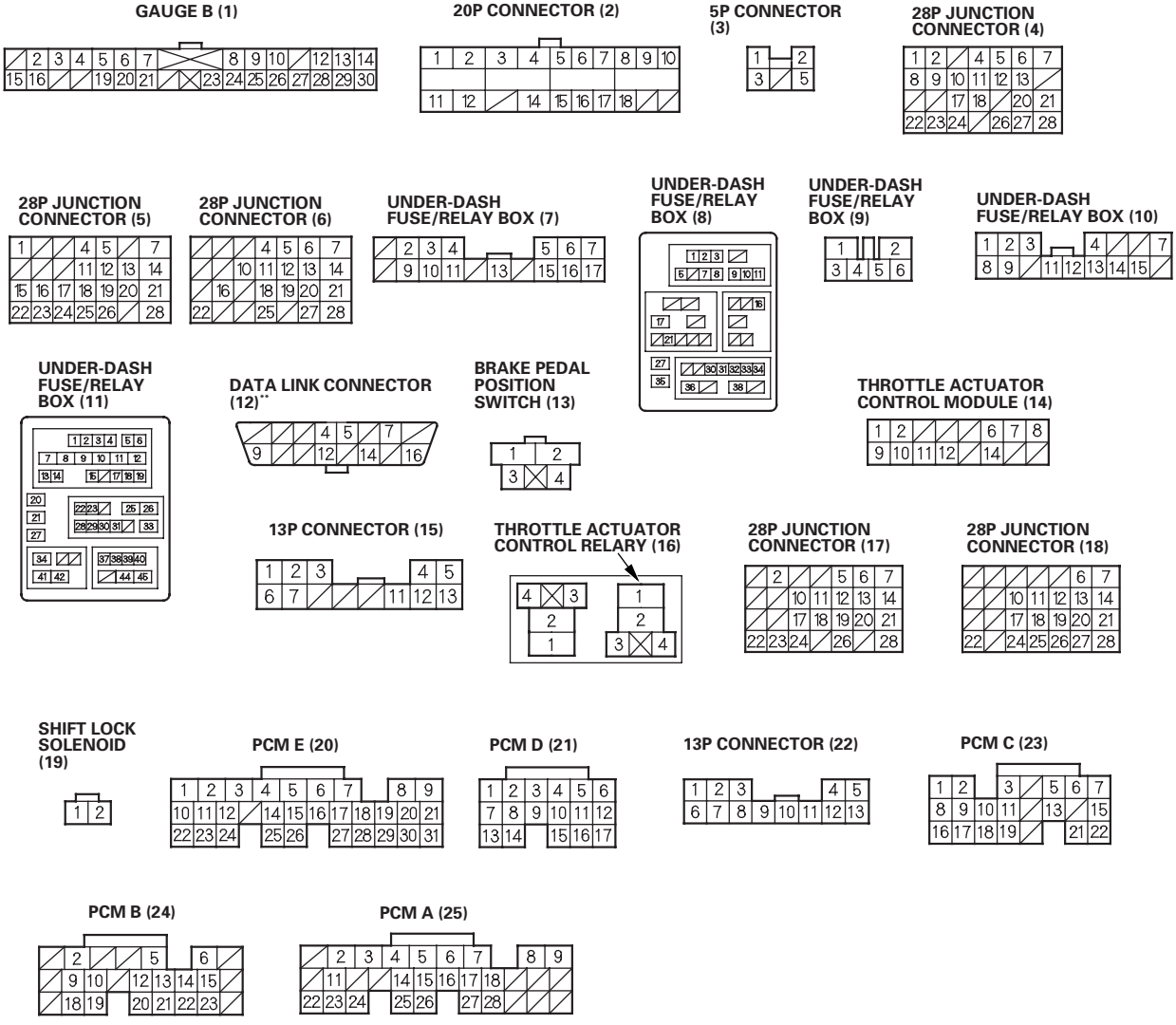
System Descriptions (cont'd)

PCM Circuit Diagram (cont'd)

RHD model:





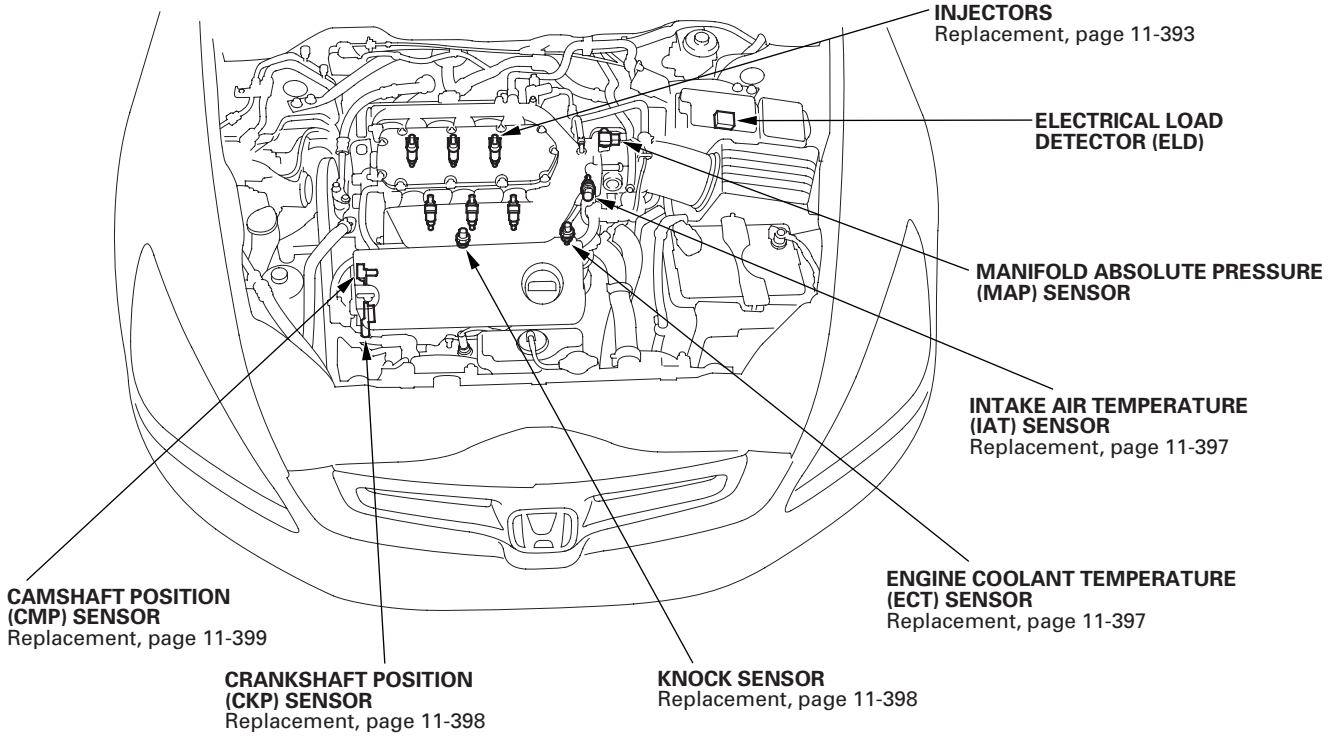


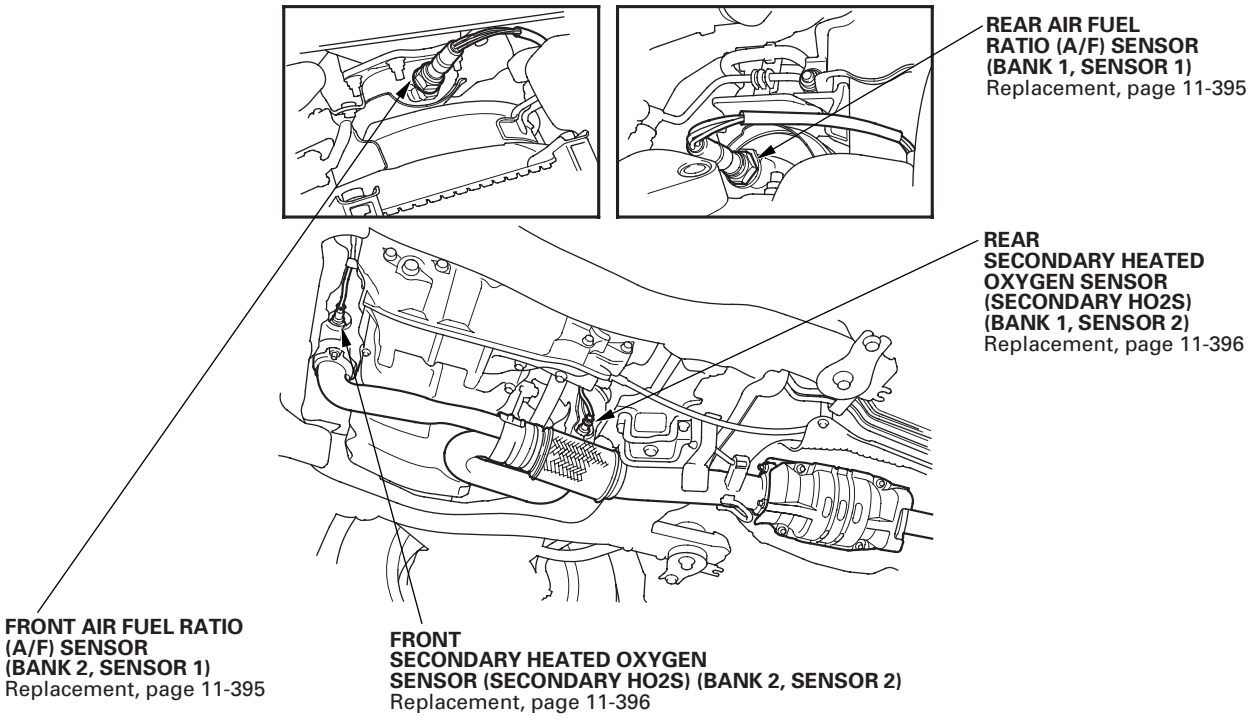
NOTE:

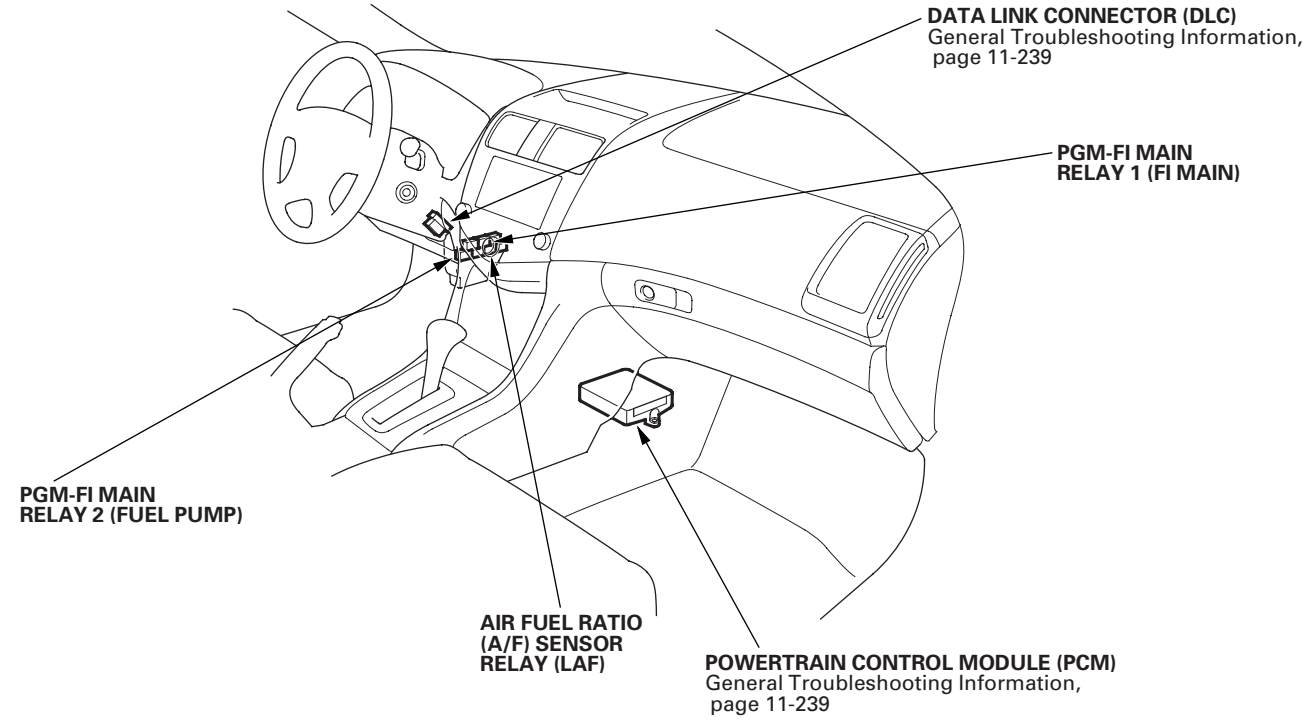
- Connector with male terminals (double outline): view from terminal side
- Connector with female terminals (single outline): view from wire side

* *: Connector with female terminals (single outline): view from terminal side

Component Location Index




REAR AIR FUEL RATIO (A/F) SENSOR (BANK 1, SENSOR 1)
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REAR SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (BANK 1, SENSOR 2)
Replacement, page 11-396
FRONT AIR FUEL RATIO (A/F) SENSOR (BANK 2, SENSOR 1)
Replacement, page 11-395
FRONT SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (BANK 2, SENSOR 2)
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DATA LINK CONNECTOR (DLC)
General Troubleshooting Information, page 11-239
PGM-FI MAIN RELAY 1 (FI MAIN)
PGM-FI MAIN RELAY 2 (FUEL PUMP)
AIR FUEL RATIO (A/F) SENSOR RELAY (LAF)
POWERTRAIN CONTROL MODULE (PCM)
General Troubleshooting Information, page 11-239

DTC Troubleshooting

DTC P0107: MAP Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are DTC P0107, P0112, P0117, P2122, P2127, P2228, P0700, P2627 and P2630 simultaneously indicated?

   YES — Go to step 17.

   NO — Go to step 6.
6. Check the MAP SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

   Is 3 kPa (26 mmHg, 1.0 in.Hg), or 0.23 V or less indicated?

   YES — Go to step 7.

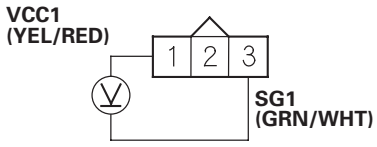
   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. ■
7. Turn the ignition switch OFF.
8. Disconnect the MAP sensor 3P connector.
9. Turn the ignition switch ON (II).
10. Check the MAP SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

    Is 3 kPa (26 mmHg, 1.0 in.Hg), or 0.23 V or less indicated?

    YES — Go to step 13.

    NO — Go to step 11.
11. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

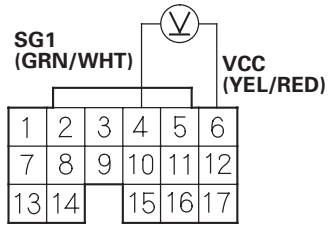
Is there about 5 V?

YES — Go to step 26.

NO — Go to step 12.

12. Measure voltage between PCM connector terminals D6 and D4.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 5 V?

YES — Repair open in the wire between the PCM (D6) and the MAP sensor, then go to step 21.

NO — Go to step 32.

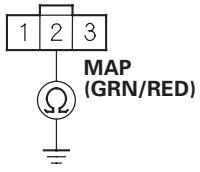
13. Turn the ignition switch OFF.

14. Jump the SCS line with the Honda PGM Tester or the HDS.

15. Disconnect PCM connector D (17P).

16. Check for continuity between MAP sensor 3P connector terminal No. 2 and body ground.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (D5) and the MAP sensor, then go to step 28.

NO—Go to step 32.

17. Turn the ignition switch OFF.

18. Jump the SCS line with the Honda PGM Tester or the HDS.

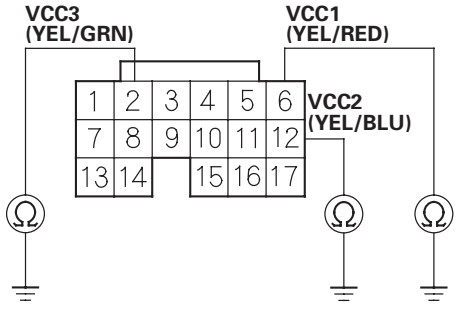
19. Disconnect PCM connector D (17P).

20. Disconnect the connectors from the these sensors:

- MAP sensor
- APP sensor
- EGR valve
- Mainshaft speed sensor
- Countershaft speed sensor

21. Check for continuity between body ground and PCM connector terminals D2, D6 and D12 individually.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (D2, D6 or D12) and the each sensor, then go to step 28.

NO—Go to step 22.

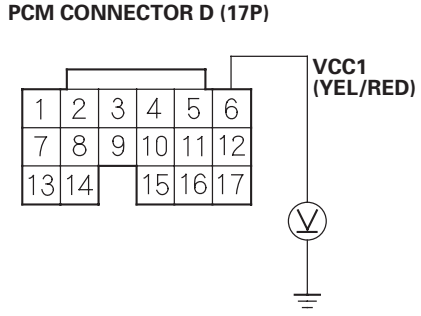
(cont'd)

DTC Troubleshooting (cont'd)

22. Reconnect PCM connector D (17P).

23. Turn the ignition switch ON (II).

24. Measure voltage between PCM connector terminal D6 and body ground.



Wire side of female terminals

Is there about 5 V?

YES — Go to step 25.

NO — Go to step 32.

25. Continue to monitor voltage at the PCM connector terminal D6 while reconnecting the following sensors, one at a time.

    - MAP sensor
    - APP sensor
    - EGR valve
    - Mainshaft speed sensor
    - Countershaft speed sensor

    Did the voltage drop to about 0 V?

    YES — Replace the sensor that caused the voltage to drop, then Go to step 28.

    NO — Go to step 32.

26. Turn the ignition switch OFF.

27. Replace the MAP sensor (see page 11-488).

28. Turn the ignition switch ON (II).

29. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

30. Do the PCM idle learn procedure (see page 11-193).

31. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P0107 indicated, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — Troubleshooting is completed. ■

32. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

33. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P0107 is indicated, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — If the PCM was updated, troubleshooting was completed. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P0108: MAP Sensor Circuit High Voltage

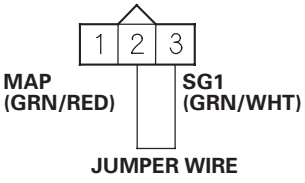
1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

   Is 160 kPa (1,197 mmHg, 47.1 in.Hg), 4.49 V or more indicated?

   YES — Go to step 3.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Connect MAP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

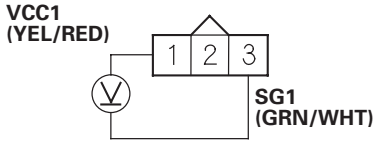
6. Turn the ignition switch ON (II).
7. Check the MAP SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

   Is 160 kPa (1,197 mmHg, 47.1 in.Hg), 4.49 V or more indicated?

   YES — Go to step 8.

   NO — Go to step 14.
8. Remove the jumper wire.
9. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

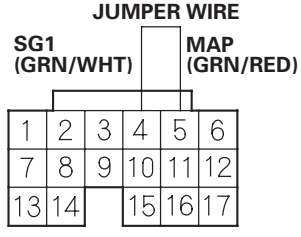
Is there about 5 V?

YES — Go to step 10.

NO — Repair open in the wire between the PCM (D4) and the MAP sensor, then go to step 16.

10. Turn the ignition switch OFF.
11. Connect PCM connector terminals D5 and D4 with a jumper wire.

PCM CONNECTOR D (17P)



Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch ON (II).

13. Check the MAP SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

    Is 160 kPa (1,197 mmHg, 47.1 in.Hg),4.49 V or more indicated?

    YES—Go to step 20.

    NO—Repair open in the wire between the PCM (D5) and the MAP sensor, then go to step 16.

14. Turn the ignition switch OFF.

15. Replace the MAP sensor (see page 11-488).

16. Turn the ignition switch ON (II).

17. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

18. Do the PCM idle learn procedure (see page 11-193).

19. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0108 is indicated, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

20. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

21. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0108 is indicated, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P0112: IAT Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are DTC P0107, P0112, P0117, P2122, P2127, P2228, P0700, P2627 and P2630 simultaneously indicated?

   YES — Go to step 15.

   NO — Go to step 6.
6. Check the IAT SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

   Is about 180°C (356°F) or higher, or 0.08 V or less indicated?

   YES — Go to step 7.

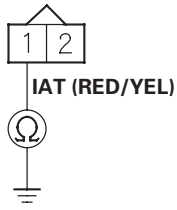
   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the PCM. ■
7. Turn the ignition switch OFF.
8. Disconnect the IAT sensor 2P connector.
9. Turn the ignition switch ON (II).
10. Check the IAT SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

    Is about 180°C (356°F) or higher, or 0.08 V or less indicated?

    YES — Go to step 11.

    NO — Go to step 24.
11. Turn the ignition switch OFF.
12. Jump the SCS line with the Honda PGM Tester or the HDS.
13. Disconnect PCM connector D (17P).
14. Check for continuity between IAT sensor 2P connector terminal No. 1 and body ground.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES — Repair short in the wire between the IAT sensor and PCM (D16), then go to step 22.

NO — Go to step 30.

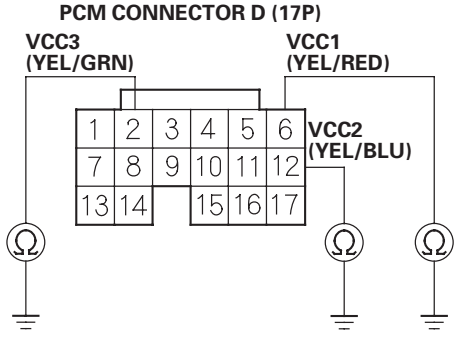
15. Turn the ignition switch OFF.
16. Jump the SCS line with the Honda PGM Tester or the HDS.
17. Disconnect PCM connector D (17P).
18. Disconnect the connectors from the these sensors:

    - MAP sensor
    - APP sensor
    - EGR valve
    - Mainshaft speed sensor
    - Countershaft speed sensor

(cont'd)

DTC Troubleshooting (cont'd)

19. Check for continuity between body ground and PCM connector terminals D2, D6 and D12 individually.



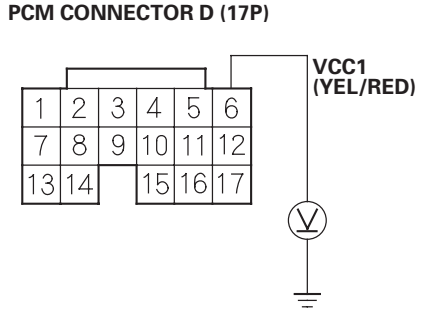
Wire side of female terminals

Is there continuity?

YES — Repair short in the wire between the PCM (D2, D6 or D12) and the each sensor, then go to step 26.

NO — Go to step 20.

20. Reconnect PCM connector D (17P).
21. Turn the ignition switch ON (II).
22. Measure voltage between PCM connector terminal D6 and body ground.



Wire side of female terminals

Is there about 5 V?

YES — Go to step 23.

NO — Go to step 30.

23. Continue to monitor voltage at the PCM connector terminal D6 while reconnecting the following sensors, one at a time.

    - MAP sensor
    - APP sensor
    - EGR valve
    - Mainshaft speed sensor
    - Countershaft speed sensor

    Did the voltage drop to about 0 V?

    YES — Replace the sensor that caused the voltage to drop, then go to step 27.

    NO — Go to step 30.

24. Turn the ignition switch OFF.
25. Replace the IAT sensor (see page 11-397).
26. Turn the ignition switch ON (II).
27. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
28. Do the PCM idle learn procedure (see page 11-193).
29. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P0112 is indicated, check for poor connections or loose terminals at the IAT sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — Troubleshooting is complete. ■

30. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).
31. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P0112 is indicated, check for poor connections or loose terminals at the IAT sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P0113: IAT Sensor Circuit High Voltage

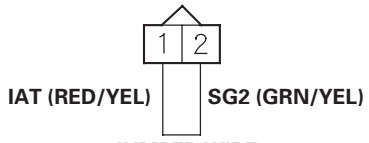
1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

   Is about −40°C (−40°F) or less, or 4.90 V or higher indicated?

   YES − Go to step 3.

   NO − Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the IAT sensor 2P connector.
5. Connect the IAT sensor 2P connector terminals No.1 and No.2 with a jumper wire.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

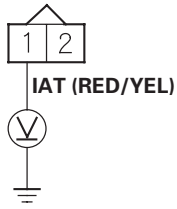
6. Turn the ignition switch ON (II).
7. Check the IAT SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

   Is about −40°C (−40°F) or less, or 4.90 V or higher indicated?

   YES − Go to step 8.

   NO − Go to step 13.
8. Turn the ignition switch OFF.
9. Remove the jumper wire.
10. Turn the ignition switch ON (II).
11. Measure voltage between IAT sensor 2P connector terminal No.1 and body ground.

IAT SENSOR 2P CONNECTOR



Wire side of female terminals

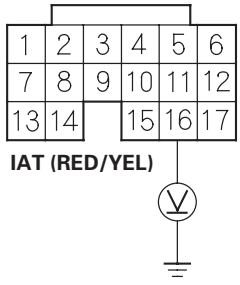
Is there about 5 V?

YES − Repair open in the wire between the PCM (D10) and the IAT sensor, then go to step 15.

NO − Go to step 12.

12. Measure voltage between PCM connector terminal D16 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 5 V?

YES − Repair open in the wire between the PCM (D16) and the IAT sensor, then go to step 15.

NO − Go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

13. Turn the ignition switch OFF.

14. Replace the IAT sensor (see page 11-397).

15. Turn the ignition switch ON (II).

16. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

17. Do the PCM idle learn procedure (see page 11-193).

18. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0113 is indicated, check for poor connections or loose terminals at the IAT sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

19. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

20. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0113 is indicated, check for poor connections or loose terminals at the IAT sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P0117: ECT Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are DTC P0107, P0112, P0117, P2122, P2127, P2228, P0700, P2627 and P2630 simultaneously indicated?

   YES — Go to step 15.

   NO — Go to step 6.
6. Check the ECT SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

   Is about 180°C (356°F) or higher, or 0.08 V or less indicated?

   YES — Go to step 7.

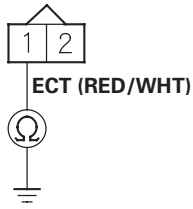
   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ECT sensor and the PCM. ■
7. Turn the ignition switch OFF.
8. Disconnect the ECT sensor 2P connector.
9. Turn the ignition switch ON (II).
10. Check the ECT SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

    Is about 180°C (356°F) or higher, or 0.08 V or less indicated?

    YES — Go to step 11.

    NO — Go to step 24.
11. Turn the ignition switch OFF.
12. Jump the SCS line with the Honda PGM Tester or the HDS.
13. Disconnect PCM connector D (17P).
14. Check for continuity between ECT sensor 2P connector terminal No.1 and body ground.

ECT SENSOR 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES — Repair short in the wire between the ETC sensor and PCM (D17), then go to step 26.

NO — Go to step 30.

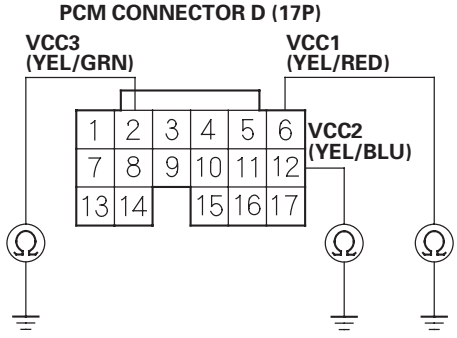
15. Turn the ignition switch OFF.
16. Jump the SCS line with the Honda PGM Tester or the HDS.
17. Disconnect PCM connectors D (17P).
18. Disconnect the connectors from the these sensors:

    - MAP sensor
    - APP sensor
    - EGR valve
    - Mainshaft speed sensor
    - Countershaft speed sensor

(cont'd)

DTC Troubleshooting (cont'd)

19. Check for continuity between body ground and PCM connector terminals D2, D6 and D12 individually.



Wire side of female terminals

Is there continuity?

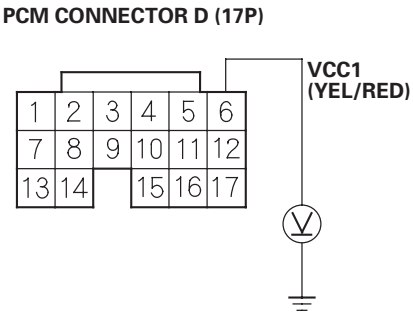
YES — Repair short in the wire between the PCM (D2, D6 or D12) and the each sensor, then go to step 26.

NO — Go to step 20.

20. Reconnect PCM connectors D (17P).

21. Turn the ignition switch ON (II).

22. Measure voltage between PCM connector terminal D6 and body ground.



Wire side of female terminals

Is there continuity?

YES — Go to step 23.

NO — Go to step 30.

23. Continue to monitor voltage at the PCM connector terminal D6 while reconnecting the following sensors, one at a time.

- MAP sensor
- APP sensor
- EGR valve
- Mainshaft speed sensor
- Countershaft speed sensor

Did the voltage drop to about 0 V?

YES — Replace the sensor that caused the voltage to drop, then go to step 27.

NO — Go to step 30.

24. Turn the ignition switch OFF.

25. Replace the ECT sensor (see page 11-397).

26. Turn the ignition switch ON (II).

27. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

28. Do the PCM idle learn procedure (see page 11-193).

29. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0117 is indicated, check for poor connections or loose terminals at the ECT sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

30. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

31. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0117 is indicated, check for poor connections or loose terminals at the ECT sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substitute, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P0118: ECT Sensor Circuit High Voltage

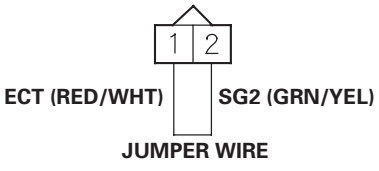
1. Turn the ignition switch ON (II).
2. Check the ECT SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

   Is about −40°C (−40°F) or less, or 4.90 V or higher indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ECT sensor and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 2P connector.
5. Connect the ECT sensor 2P connector terminals No.1 and No.2 with a jumper wire.

ECT SENSOR 2P CONNECTOR



Wire side of female terminals

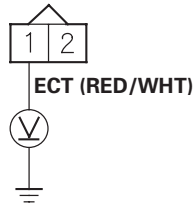
6. Turn the ignition switch ON (II).
7. Check the ECT SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

   Is about −40°C (−40°F) or less, or 4.90 V or higher indicated?

   YES—Go to step 8.

   NO—Go to step 13.
8. Turn the ignition switch OFF.
9. Remove the jumper wire.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECT sensor 2P connector terminal No.1 and body ground.

ECT SENSOR 2P CONNECTOR



Wire side of female terminals

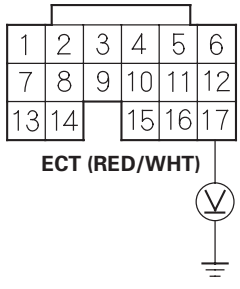
Is there about 5 V?

YES—Repair open in the wire between the PCM (D10) and the ECT sensor, then go to step 15.

NO—Go to step 12.

12. Measure voltage between PCM connector terminal D17 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (D17) and the IAT sensor, then go to step 15.

NO—Go to step 19.

13. Turn the ignition switch OFF.

14. Replace the ECT sensor (see page 11-397).

15. Turn the ignition switch ON (II).

16. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

17. Do the PCM idle learn procedure (see page 11-193).

18. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0118 is indicated, check for poor connections or loose terminals at the ECT sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

19. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

20. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0118 is indicated, check for poor connections or loose terminals at the ECT sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P0133: Rear A/F sensor (Bank 1, Sensor 1) Circuit Slow Response

DTC P0153: Front A/F sensor (Bank 2, Sensor 1) Circuit Slow Response

NOTE:
- If DTC P0139 and/or P0159* is stored at the same time as DTC P0133 and/or P0159*, troubleshoot DTC P0139 and/or P0159* first, then recheck for DTC P0133 and/or P0159*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under the following conditions.
   - Engine coolant temperature more than 158°F (70°C)
   - Transmission in D position
   - Vehicle speed at 48 km/h (30 mph) or more, and engine speed between 1,350 rpm (min^{-1}) and 2,350 rpm (min^{-1})
5. Check the AF FB AVE in the DATA LIST with the Honda PGM Tester or the HDS.

   Is the value 0.8-1.2?

   YES — Go to step 6.

   NO — Go to step 4, then recheck.
6. Monitor the OBD STATUS for DTC P0139 and/or P0159* in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is it FAILED?

   YES — Go to step 7.

   NO — If it is PASSED, intermittent failure, system is OK at this time. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 2 and recheck.
7. Turn the ignition switch OFF.
8. Replace the A/F sensor (Sensor 1) (see page 11-395).
9. Turn the ignition switch ON (II).
10. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
11. Do the PCM idle learn procedure (see page 11-193).
12. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
13. Test-drive under the following conditions.
    - Engine coolant temperature more than 70°C (158°F)
    - Transmission in D position
    - Vehicle speed at 48 km/h (30 mph) or more, and engine speed between 1,350 rpm (min^{-1}) and 2,350 rpm (min^{-1}).
14. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P0139 and/or P0159* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — Go to step 15.
15. Monitor the OBD STATUS for DTC P0139 and/or P0159* in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES — Troubleshooting is complete. ■

    NO — If it is FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 12 and recheck.

DTC P0134: Rear A/F Sensor (Bank 1, Sensor 1) Heater System Malfunction

DTC P0154: Front A/F Sensor (Bank 2, Sensor 1) Heater System Malfunction

NOTE:
- If DTC P2251, P2237, P2240* and/or P2254* is stored at the same time as DTC P0134 and/or P0154*, troubleshoot DTC P2251, P2237, P2240* and/or P2254* first, then recheck for P0134 and/or P0154*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P0134 and/or P0154 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Replace the A/F sensor (Sensor 1) (see page 11-395).
7. Turn the ignition switch ON (II).
8. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
9. Do the PCM idle learn procedure (see page 11-193).
10. Start the engine with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
11. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0134 and/or P0154* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Go to step 12.
12. Monitor the OBD STATUS for DTC P0134 and/or P0154* in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES—Troubleshooting is complete. ■

    NO—If it is FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If it is NOT COMPLETED, go to step 10 and recheck.

DTC Troubleshooting (cont'd)

DTC P0135: Rear A/F sensor (Bank 1, Sensor 1) Heater Circuit Malfunction

DTC P0155: Front A/F sensor (Bank 2, Sensor 1) Heater Circuit Malfunction

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P0135 and/or P0155 indicated?*

   YES — Go to step 5.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Check the following fuse:

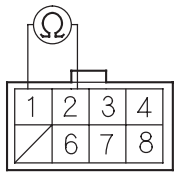
   - No. 19 OPTION (40A) fuse in under-hood fuse/relay box.
   - No. 4 A/F SENSOR (15A) fuse in under-dash fuse/relay box.
   - No. 23 IGP (7.5A) fuse in under-dash fuse/relay box.

   Are any of the fuses blown?

   YES — Repair short in the wire between the A/F sensors, A/F sensor relay and the fuses, then go to step 23.

   NO — Go to step 7.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. At the sensor side, measure resistance between the A/F sensor (Sensor 1) 8P connector terminals No. 1 and No. 2.

   A/F SENSOR (SENSOR 1) 8P CONNECTOR



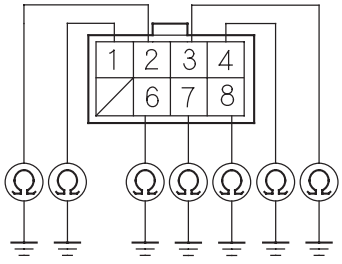
   Terminal side of male terminals

   Is there 2.5-3.2 Ω at room temperature?

   YES — Go to step 9.

   NO — Go to step 23.
9. Check for continuity between each terminal at the A/F sensor (Sensor 1) 8P connector and body ground.

   A/F SENSOR (SENSOR 1) 8P CONNECTOR



   Terminal side of male terminals

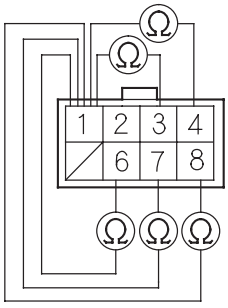
   Is there continuity?

   YES — Go to step 23.

   NO — Go to step 10.

10. Check for continuity between the A/F sensor (Sensor 1) 8P connector terminals No. 1 and No. 3, No. 4, No. 6, No. 7 and No. 8 individually.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES — Go to step 23.

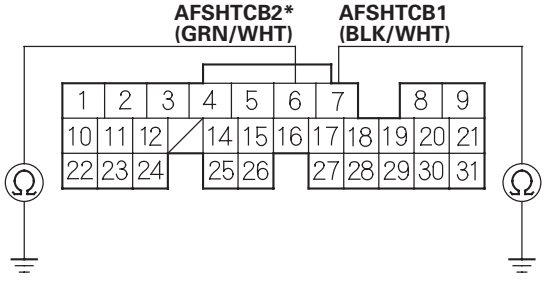
NO — Go to step 11.

11. Jump the SCS line with the Honda PGM Tester or the HDS.

12. Disconnect PCM connector E (31P).

13. Check for continuity between PCM connector terminals E7(E6)* and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

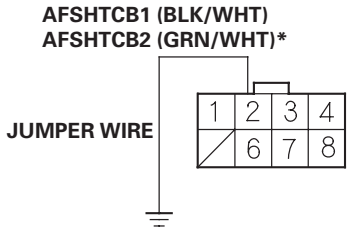
Is there continuity?

YES — Repair short in the wire between the PCM (E7(E6)*) and the A/F sensor (Sensor 1), then go to step 23.

NO — Go to step 14.

14. Connect the A/F sensor (Sensor 1) 8P connector terminal No. 2 to body ground with a jumper wire.

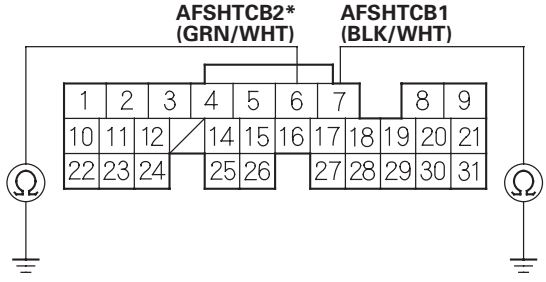
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

15. Check for continuity between PCM connector terminal E7(E6)* and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES — Go to step 16.

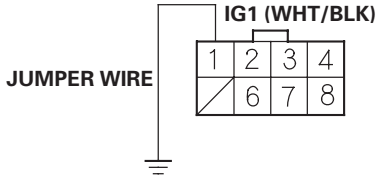
NO — Repair open in the wire between the PCM (E7(E6)*) and the A/F sensor (Sensor 1), then go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

16. Connect the A/F sensor (Sensor 1) 8P connector terminal No. 1 to body ground with a jumper wire.

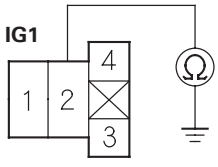
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

17. Check for continuity between A/F sensor relay terminal No.2. and body ground.

A/F SENSOR RELAY 4P CONNECTOR



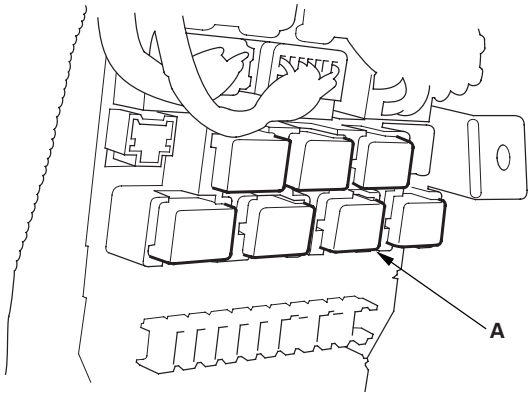
Terminal side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the A/F sensor (Sensor 1) and the A/F sensor relay, then go to step 23.

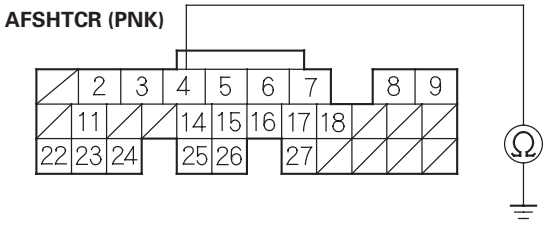
18. Remove the A/F sensor relay (A).



19. Disconnect PCM connector A (31P).

20. Check for continuity between PCM connector terminals A4 and body ground.

PCM CONNECTOR A (31P)



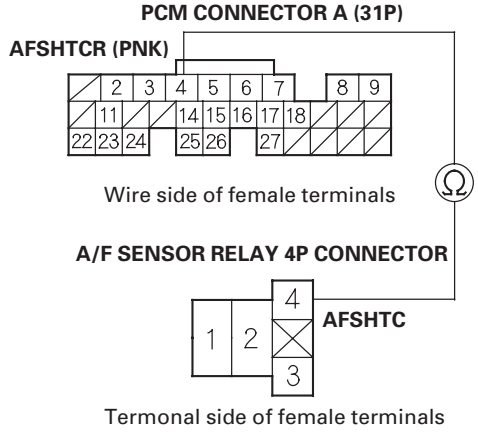
Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A4) and the A/F sensor relay, then go to step 23.

NO—Go to step 21.

21. Check for continuity between PCM connector terminal A4 and the A/F sensor relay terminal No.4.



Is there continuity?

YES — Go to step 22.

NO — Repair open in the wire between the PCM (A4) and the A/F sensor relay, then go to step 23.

22. Check the A/F sensor relay (see page 22-75).

Is the A/F sensor relay OK?

YES — Go to step 29.

NO — Replace the A/F sensor relay, then go to step 23.

23. Replace the A/F sensor (Sensor 1) (see page 11-395).

24. Turn the ignition switch ON (II).

25. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

26. Do the PCM idle learn procedure (see page 11-193).

27. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P0135 and/or P0155* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — Go to step 28.

28. Monitor the OBD STATUS for DTC P0135 and/or P0155* in the DTCs MENU with the Honda PGM Tester or the HDS.

Is it PASSED?

YES — Troubleshooting is complete. ■

NO — If it is FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If it is NOT COMPLETED, go to step 25 and recheck.

29. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

30. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P0135 and/or P0155* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241).

DTC Troubleshooting (cont'd)

DTC P2A00: Rear A/F Sensor (Bank 1, Sensor 1) Range/Performance Problem

DTC P2A03: Front A/F Sensor (Bank 2, Sensor 1) Range/Performance Problem

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check the AF FB AVE in the DATA LIST with the Honda PGM Tester or the HDS.

   Is the value 0.8— 1.2?

   YES—Go to step 5.

   NO—Go to step 2. then recheck.
5. Test-drive under the following conditions.

   - Engine coolant temperature more than 70℃ (158℉)
   - Transmission in D position
   - Vehicle speed at 48 km/h (30 mph) or more, and engine speed at 2,600 rpm (min^{-1}) or less
   - Drive with the throttle fully opened for 5 seconds from engine speed 1,600 rpm, (min^{-1}) then slow down withe the throttle completely closed.
6. Monitor the OBD STATUS for DTC P2A00 and/or P2A03* in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is it FAILED?

   YES—Go to step 7.

   NO—If it is PASSED, intermittent failure, system is OK at this time. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 3. and recheck.
7. Turn the ignition switch OFF.
8. Replace the A/F sensor (Sensor 1) (see page 11-395).
9. Turn the ignition switch ON (II).
10. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
11. Do the PCM idle learn procedure (see page 11-193).
12. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
13. Check the AF FB AVE in the DATA LIST with the Honda PGM Tester or the HDS.

    Is the value 0.8— 1.2?

    YES—Go to step 14.

    NO—Go to step 12. then recheck.
14. Test-drive under the following conditions.

    - Engine coolant temperature more than 70℃ (158℉)
    - Transmission in D position
    - Vehicle speed at 48 km/h (30 mph) or more, and engine speed at 2,600 rpm (min^{-1}) or less
    - Drive with the throttle fully opened for 5 seconds from engine speed 1,600 rpm (min^{-1}), then slow down with the throttle completely closed.
15. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P2A00 and/or P2A03* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Go to step 16.

16. Monitor the OBD STATUS for DTC P2A00 and/or P2A03* in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES—Troubleshooting is complete. ■

    NO—If it is FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 12 and recheck.

DTC Troubleshooting (cont'd)

DTC P2195: Rear A/F Sensor (Bank 1, Sensor 1) Signal Stuck Lean

DTC P2197: Front A/F Sensor (Bank2, Sensor 1) Signal Stuck Lean

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Inspect the condition of the A/F sensor (Sensor 1).

   Is it loose in the exhaust pipe?

   YES – Go to step 2.

   NO – Go to step 4.

2. Turn the ignition switch OFF.

3. Reinstall the A/F sensor (Sensor 1) (see page 11-395).

4. Turn the ignition switch ON (II).

5. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

6. Do the PCM idle learn procedure (see page 11-193).

7. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

8. Check for Temporary DTCs or DTCs MENU with the Honda PGM Tester or the HDS.

   Are any DTCs or DTCs indicated?

   YES – If DTC P2195 and/or P2197* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 9. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

   NO – Intermittent failure, system is OK at this time. Check poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

9. Monitor the OBD STATUS for DTC P2195 and/or P2197* in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is it PASSED?

   YES – Troubleshooting is complete. ■

   NO – If it is FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then then go to step 4. If it is NOT COMPLETED, go to step 2 and recheck.

DTC P2237: Rear A/F Sensor (Bank 1, Sensor 1) IP Line High Voltage

DTC P2240: Front A/F Sensor (Bank 2, Sensor 1) IP Line High Voltage

NOTE:
- If DTC P2237 and/or P2240* is stored at the same time as DTC P0134 and/or P0154*, troubleshoot DTC P2237 and/or P2240* first, then recheck for P0134 and/or P0154*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

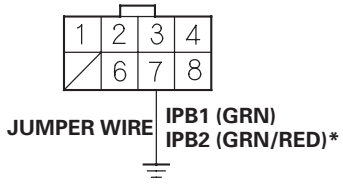
1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P1153 and/or P1173 indicated?*

   YES — Go to step 5.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the Honda PGM Tester or the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).
9. Connect the A/F sensor (Sensor 1) 8P connector terminal No. 7 to body ground with a jumper wire.

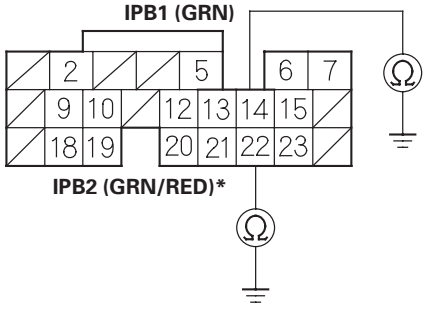
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminals B14 (B22)* and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES — Go to step 11.

NO — Repair open in the wire between the PCM (B14 (B22)*) and the A/F sensor (Sensor 1), then go to step 15.

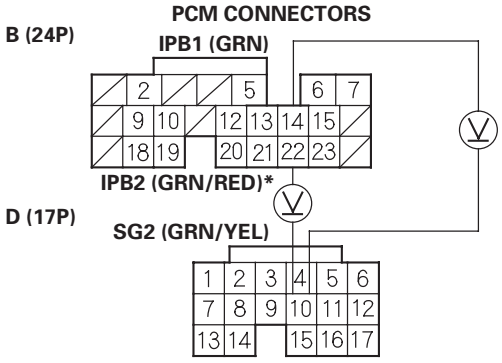
(cont'd)

DTC Troubleshooting (cont'd)

11. Reconnect PCM connector B (24P).

12. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

13. Measure voltage between PCM connector terminals B14 (B24)* and D10.



Is there about 0.2 V or less?

YES — Go to step 22.

NO — Go to step 14.

14. Replace the A/F sensor (Sensor 1) (see page 11-395).

15. Reconnect PCM connector B (24P).

16. Turn the ignition switch ON (II).

17. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

18. Do the PCM idle learn procedure (see page 11-193).

19. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

20. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2237 and/or P2240* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — Go to step 21.

21. Monitor the OBD STATUS for DTC P2237 and/or P2240* in the DTCs MENU with the Honda PGM Tester or the HDS.

Is it PASSED?

YES — Troubleshooting is complete. ■

NO — If it is FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If it is NOT COMPLETED, go to step 18 and recheck.

22. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

23. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

24. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2237 and/or P2240* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P2238: Rear A/F Sensor (Bank 1, Sensor 1) IP Line Low Voltage

DTC P2241: Front A/F Sensor (Bank 2, Sensor 1) IP Line Low Voltage

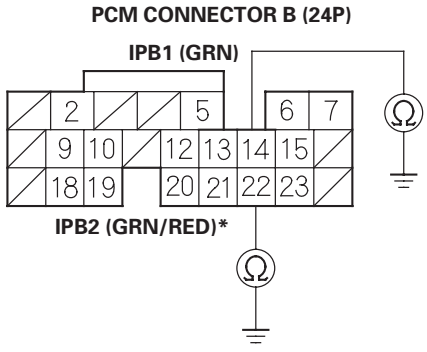
NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2238 and/or P2241 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and at the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the Honda PGM Tester or the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).
9. Check for continuity between PCM connector terminals B14 (B22)* and body ground.



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B14 (B22)*) and the A/F sensor (Sensor 1), then go to step 14.

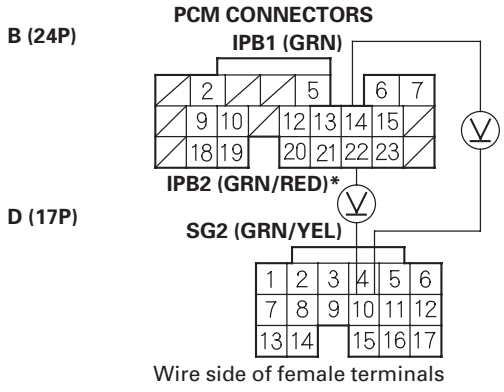
NO—Go to step 10.

10. Reconnect PCM connector B (24P).
11. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

12. Measure voltage between PCM connector terminals B14 (B22)* and D10.



Is there about 0.2 V or less?

YES — Go to step 21.

NO — Go to step 13.

13. Replace the A/F sensor (see page 11-395).

14. Reconnect PCM connector B (24P).

15. Turn the ignition switch ON (II).

16. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

17. Do the PCM idle learn procedure (see page 11-193).

18. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

19. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2238 and/or P2241* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — Go to step 20.

20. Monitor the OBD STATUS for DTC P2238 and/or P2241* in the DTCs MENU with the Honda PGM Tester or the HDS.

Is it PASSED?

YES — Troubleshooting is complete. ■

NO — If it is FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If it is NOT COMPLETED, go to step 18 and recheck.

21. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

22. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

23. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2238 and/or P2241* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P2243: Rear A/F Sensor (Bank 1, Sensor 1) VCENT Line High Voltage

DTC P2247: Front A/F Sensor (Bank 2, Sensor 1) VCENT Line High Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

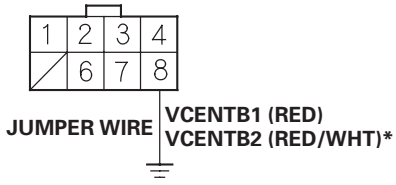
1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2243 and/or P2247 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the Honda PGM Tester or the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).
9. Connect the A/F sensor (Sensor 1) 8P connector terminal No. 8 to body ground with a jumper wire.

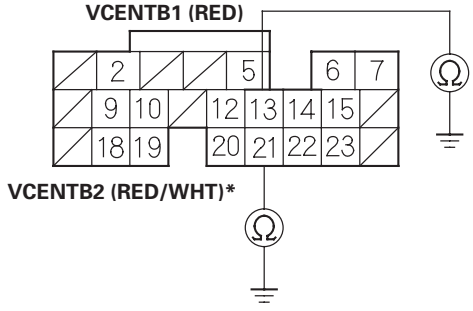
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminals B13 (B21)* and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the PCM (B13 (B21)*) and the A/F sensor (Sensor 1), then go to step 15.

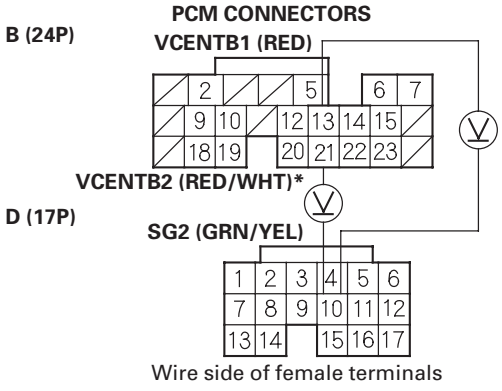
(cont'd)

DTC Troubleshooting (cont'd)

11. Reconnect PCM connector B (24P).

12. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

13. Measure voltage between PCM connector terminals B13 (B21)* and D10.



Is there about 0.2 V or less?

YES — Go to step 22.

NO — Go to step 14.

14. Replace the A/F sensor (Sensor 1) (see page 11-395).

15. Reconnect PCM connector B (24P).

16. Turn the ignition switch ON (II).

17. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

18. Do the PCM idle learn procedure (see page 11-193).

19. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

20. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2243 and/or P2247* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — Go to step 21.

21. Monitor the OBD STATUS for DTC P2243 and/or P2247* in the DTCs MENU with the Honda PGM Tester or the HDS.

Is it PASSED?

YES — Troubleshooting is complete. ■

NO — If it is FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If it is NOT COMPLETED, go to step 18 and recheck.

22. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

23. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

24. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P2243 and/or P2247* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P2245: Rear A/F Sensor (Bank 1, Sensor 1) VCENT Line Low voltage

DTC P2249: Front A/F Sensor (Bank 2, Sensor 1) VCENT Line Low Voltage

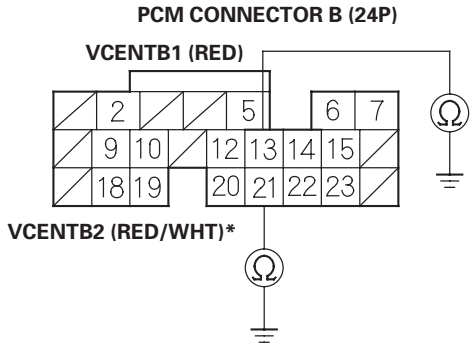
NOTE: Information marked with an asterisk (*) applies to the front bank (Bank2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2245 and/or P2249 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and at the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the Honda PGM Tester or the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).
9. Check for continuity between PCM connector terminals B13 (B21)* and body ground.



Wire side of female terminals

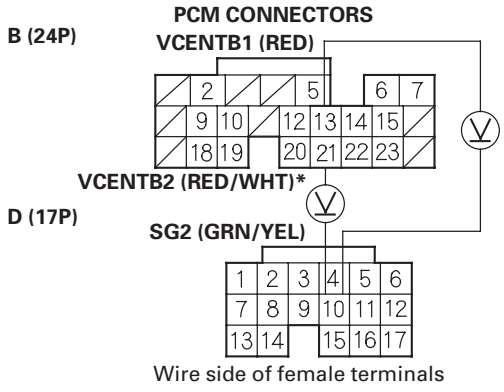
Is there continuity?

YES—Repair short in the wire between the PCM (B13 (B21)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect PCM connector B (24P).
11. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

12. Measure voltage between PCM connector terminals B13 (B21)* and D10.



Is there about 0.2 V or less?

YES — Go to step 21.

NO — Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-395).

14. Reconnect PCM connector B (24P).

15. Turn the ignition switch ON (II).

16. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

17. Do the PCM idle learn procedure (see page 11-193).

18. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

19. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2245 and/or P2249* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — Go to step 20.

20. Monitor the OBD STATUS for DTC P2245 and/or P2249* in the DTCs MENU with the Honda PGM Tester or the HDS.

Is it PASSED?

YES — Troubleshooting is complete. ■

NO — If it is FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If it is NOT COMPLETED, go to step 18 and recheck.

21. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

22. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

23. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2245 and/or P2249* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P2251: Rear A/F Sensor (Bank 1, Sensor 1) VS Line High Voltage

DTC P2254: Front A/F Sensor (Bank 2, Sensor 1) VS Line High Voltage

NOTE:
- If DTC P2251 and/or P2254* is stored at the same time as DTC P0134 and/or P0154*, troubleshoot DTC P2251 and/or P2254* first, then recheck for P0134 and/or P0154*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

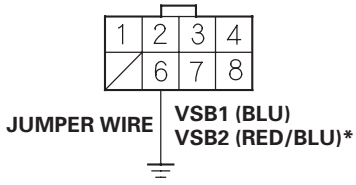
1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2251 and/or P2254 indicated?*

   YES — Go to step 5.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the Honda PGM Tester or the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).
9. Connect the A/F sensor (Sensor 1) 8P connector terminal No. 6 to body ground with a jumper wire.

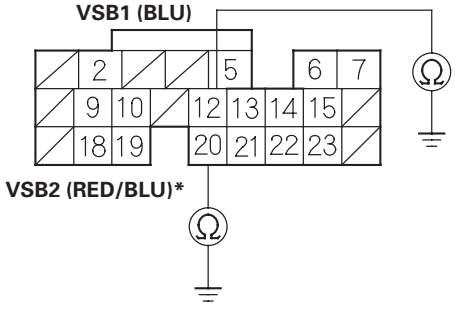
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminals B12 (B20)* and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

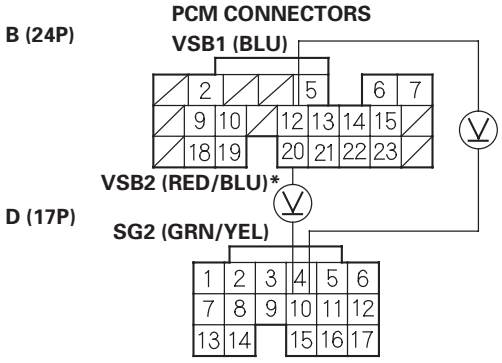
YES — Go to step 11.

NO — Repair open in the wire between the PCM (B12 (B20)*) and the A/F sensor (Sensor 1), then go to step 15.

11. Reconnect PCM connector B (24P).

12. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

13. Measure voltage between PCM connector terminals B12 (B20)* and D10.



Wire side of female terminals

Is there about 0.2 V or less?

YES — Go to step 22.

NO — Go to step 14.

14. Replace the A/F sensor (see page 11-395).

15. Reconnect PCM connector B (24P).

16. Turn the ignition switch ON (II).

17. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

18. Do the PCM idle learn procedure (see page 11-193).

19. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

20. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2251 and/or P2254* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — Go to step 21.

21. Monitor the OBD STATUS for DTC P2251 and/or P2254* in the DTCs MENU with the Honda PGM Tester or the HDS.

Is it PASSED?

YES — Troubleshooting is complete. ■

NO — If it is FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If it is NOT COMPLETED, go to step 18 and recheck.

22. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

23. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

24. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2251 and/or P2254* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P2252: Rear A/F Sensor (Bank 1, Sensor 1) VS Line Low Voltage

DTC P2255: Front A/F Sensor (Bank 2, Sensor 1) VS Line Low Voltage

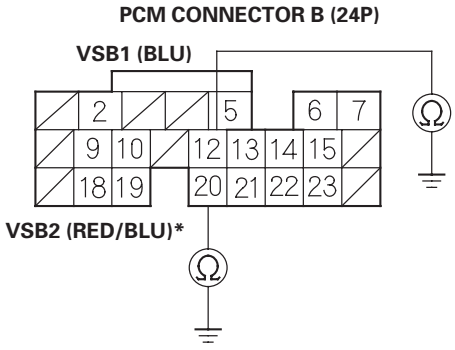
NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2252 and/or P2255 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the Honda PGM Tester or the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).
9. Check for continuity between PCM connector terminals B12 (B20)* and body ground.



Wire side of female terminals

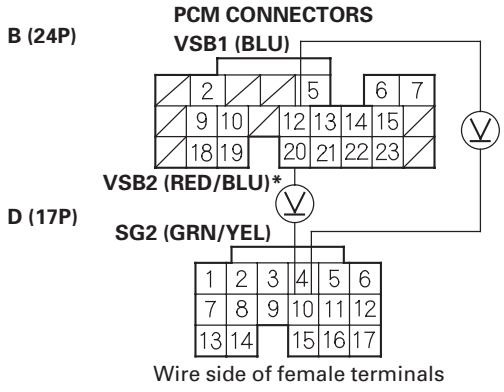
Is there continuity?

YES—Repair short in the wire between the PCM (B12 (B20)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect PCM connector B (24P).
11. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

12. Measure voltage between PCM connector terminals B12 (B20)* and D10.



Is there about 0.2 V or less?

YES — Go to step 21.

NO — Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-395).

14. Reconnect PCM connector B (24P).

15. Turn the ignition switch ON (II).

16. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

17. Do the PCM idle learn procedure (see page 11-193).

18. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

19. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2252 and/or P2255* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — Go to step 20.

20. Monitor the OBD STATUS for DTC P2252 and/or P 2255* in the DTCs MENU with the Honda PGM Tester or the HDS.

Is it PASSED?

YES — Troubleshooting is complete. ■

NO — If it is FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If it is NOT COMPLETED, go to step 18 and recheck.

21. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

22. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

23. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2252 and/or P2255* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241).

DTC Troubleshooting (cont'd)

DTC P2627: Rear A/F Sensor (Bank 1, Sensor 1) Label Circuit Low voltage

DTC P2630: Front A/F Sensor (Bank 2, Sensor 1) Label Circuit Low voltage

NOTE: Information marked with an asterisk (*) applies to the front bank(Bank 2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are DTC P0107, P0112, P0117, P2122, P2127, P2228, P0700, P2627 and P2630 simultaneously indicated?

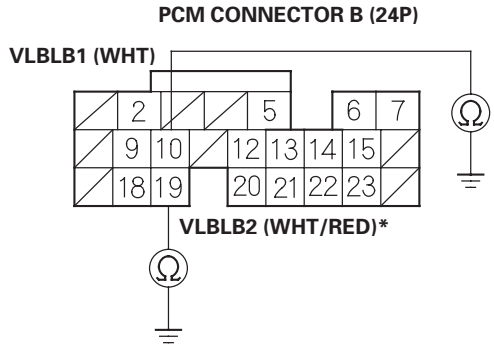
   YES – Go to step 12.

   NO – Go to step 5.
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2627 and/or P2630 indicated?*

   YES – Go to step 6.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and at the PCM. ■
6. Turn the ignition switch OFF.
7. Jump the SCS line with the Honda PGM Tester or the HDS.
8. Disconnect PCM connector B (24P).
9. Check for continuity between PCM connector terminals B10 (B19)* and body ground.



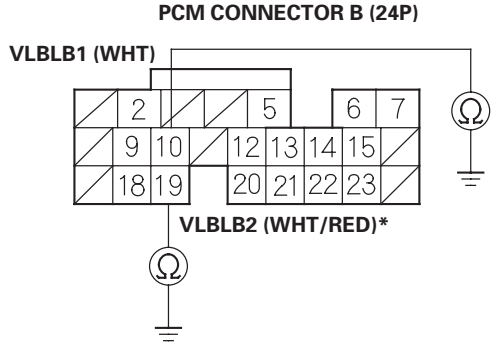
Wire side of female terminals

Is there continuity?

YES – Go to step 10.

NO – Go to step 29.

10. Disconnect the A/F sensor (Sensor 1) 8P connector.
11. Check for continuity between PCM connector terminals B10 (B19)* and body ground.



Wire side of female terminals

Is there continuity?

YES – Repair short in the wire between the PCM (B10 (B19)*) and the A/F sensor (Sensor 1), then go to step 18.

NO – Go to step 21.

12. Turn the ignition switch OFF.

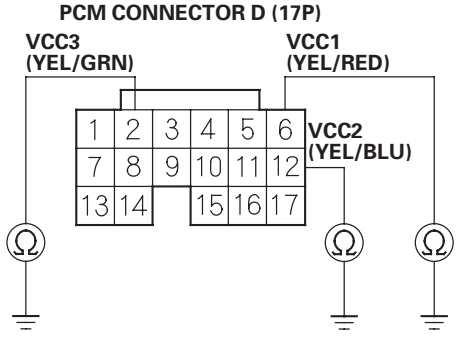
13. Jump the SCS line with the Honda PGM Tester or the HDS.

14. Disconnect PCM connector D (17P).

15. Disconnect the connectors from the these sensors:

    - MAP sensor
    - APP sensor
    - EGR sensor
    - Mainshaft speed sensor
    - Countershaft sensor

16. Check for continuity between body ground and PCM connector terminals D2, D6 and D12 individually.



Wire side of female terminals

Is there continuity?

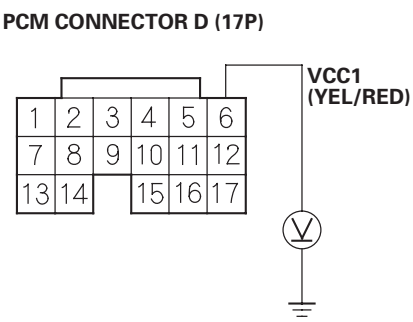
YES — Repair short in the wire between the PCM (D 2, D6 or D12) and the each sensor, then go to step 22.

NO — Go to step 17.

17. Reconnect PCM connector D (17P).

18. Turn the ignition switch ON (II).

19. Measure voltage between PCM connector terminal D6 and body ground.



Wire side of female terminals

Is there about 5 V?

YES — Go to step 20.

NO — Go to step 29.

20. Continue to monitor voltage at the PCM connector terminal D6 while reconnecting the following sensors, one at a time.

    - MAP sensor
    - APP sensor
    - EGR sensor
    - Mainshaft speed sensor
    - Countershaft spped sensor

Did the voltage drop to about 0 V?

YES — Replace the sensor that caused the voltage to drop, then go to step 24.

NO — Go to step 29.

(cont'd)

DTC Troubleshooting (cont'd)

21. Replace the A/F sensor (Sensor 1) (see page 11-395).

22. Reconnect each sensor connectors.

23. Reconnect PCM connectors.

24. Turn the ignition switch ON (II).

25. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

26. Do the PCM idle learn procedure (see page 11-193).

27. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

28. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P2627 and/or P2630* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

29. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

30. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

31. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P2627 and/or P2630* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P2628: Rear A/F Sensor (Bank 1, Sensor 1) Lobel Circuit High Voltage

DTC P2631: Front A/F Sensor (Bank 2, Sensor 1) Lobel Circuit High Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

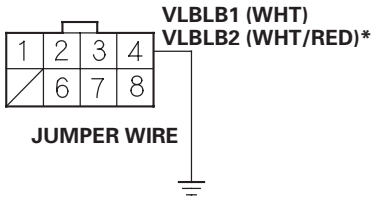
1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2628 and/or P2631 indicated?*

   YES—Go to step 5.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and at the PCM. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the Honda PGM Tester or the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).
9. Disconnect the A/F sensor (Sensor 1) 8P connector terminal No. 4 to body ground with a jumper wire.

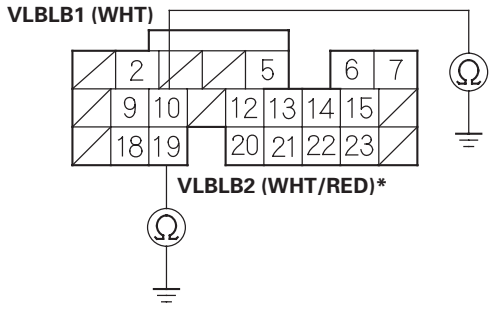
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminals B10 (B19)* and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the PCM (B10 (B19)*) and the A/F sensor (Sensor 1), then go to step 15.

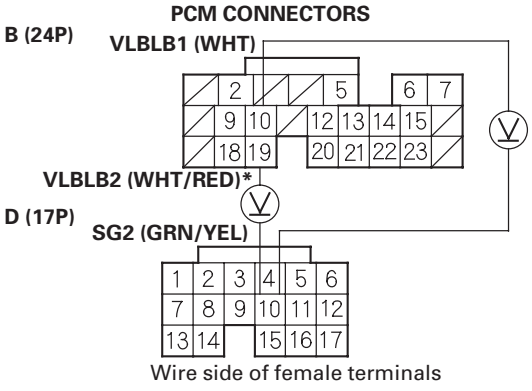
(cont'd)

DTC Troubleshooting (cont'd)

11. Reconnect PCM connector B (24P).

12. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

13. Measure voltage between PCM connector terminals B10 (B19)* and D10.



Wire side of female terminals

Is there about 5 V?

YES — Go to step 14.

NO — Go to step 21.

14. Replace the A/F sensor (Sensor 1) (see page 11-395).

15. Reconnect PCM connector B (24P).

16. Turn the ignition switch ON (II).

17. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

18. Do the PCM idle learn procedure (see page 11-193).

19. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

20. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2628 and/or P2631* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — Troubleshooting is complete. ■

21. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

22. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

23. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2628 and/or P2631* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P0137: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Low Voltage

DTC P0157: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Low Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check the AF FB AVE in the DATA LIST with the Honda PGM Tester or the HDS.

   Is the 1.00 or more?

   YES — Go to step 5.

   NO — Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.
5. Check the HO2S S2 in the DATA LIST with the Honda PGM Tester or the HDS.

   Does the voltage stay at 0.29 V or less?

   YES — Go to step 6.

   NO — Go to step 10.
6. Turn the ignition switch OFF.
7. Disconnect the secondary HO2S (Sensor 2) 4P connector.
8. Turn the ignition switch ON (II).
9. Check the HO2S S2 in the DATA LIST with the Honda PGM Tester or the HDS.

   Does voltage stay at 0.29 V or less?

   YES — Go to step 12.

   NO — Go to step 16.
10. Test-drive under the following conditions.

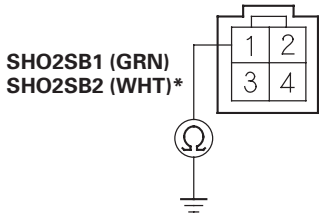
    - Engine coolant temperature more than 70°C (158°F)
    - Transmission in D position
    - Engine speed at 2,000 — 3,000 rpm (min^{-1})
    - Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds
11. Monitor the OBD STATUS for DTC P1037 in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it FAILED?

    YES — Go to step 16.

    NO — If it is PASSED, intermittent failure, system is OK at this time. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 10 and recheck.
12. Turn the ignition switch OFF.
13. Jump the SCS line with the Honda PGM Tester or the HDS.
14. Disconnect PCM connector E (31P).
15. Check for continuity between Secondary HO2S (Sensor 2) 4P connector terminal No. 1 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES — Repair short in the wire between the PCM (B9 (B18)*) and the secondary HO2S (Sensor 2), then go to step 18.

NO — Go to step 25.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch OFF.

17. Replace the secondaty HO2S (Sensor 2) (see page 11-395).

18. Turn the ignition switch ON (II).

19. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

20. Do the PCM idle learn procedure (see page 11-193).

21. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

22. Test-drive under the following conditions.

    - Engine coolant temperature more than 70°C (158°F)
    - Transmission in D position
    - Engine speed at 2,000 – 3,000 rpm (min^{-1})
    - Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds

23. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES – If DTC P0137 and/or P0157* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO – Go to step 24.

24. Monitor the OBD STATUS for DTC P0137 and /or P0157* in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES – Troubleshooting is complete. ■

    NO – If it is FAILED, check for poor connections or loose terminals at the secondary (Sensor 2) and the PCM, then go to step 1. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 21 and recheck.

25. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

26. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

27. Test-drive under the following conditions.

    - Engine coolant temperature more than 70° C (158 °F)
    - Transmission in D position
    - Engine speed at 2,000 – 3,000 rpm (min^{-1})
    - Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds

28. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES – If DTC P0137 and/or P0157* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO – If the PCM was updated, troubleshooting is completed. If the PCM was subtituted, replace the original PCM (see page 11-241).

DTC P0138: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit High Voltage

DTC P0158: Front Secondary HO2S (Bank 2, Sensor 2) Circuit High Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check the AF FB AVE in the DATA LIST with the Honda PGM Tester or the HDS.

   Is the value 1.00 or more?

   YES — Go to step 5.

   NO — Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.
5. Check the HO2S S2 in the DATA LIST with the Honda PGM tester or the HDS.

   Does the voltage stay at 0.75 V or higher?

   YES — Go to step 8.

   NO — Go to step 6.
6. Test-drive under the following conditions.

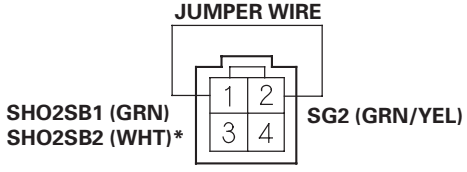
   - Engine coolant temperature more than 70°C (158°F)
   - Transmission in D position
   - Engine speed at 2,000 — 3,000 rpm (min^{-1})
   - Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds
7. Monitor the OBD STATUS for DTC P0138 and/or P0158* in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is it FAILED?

   YES — Go to step 20.

   NO — If it is PASSED, intermittent failure, system is OK at this time. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 6. and recheck.
8. Turn the ignition switch OFF.
9. Disconnect the Secondary HO2S (Sensor 2) 4P connector.
10. Connect the Secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

11. Turn the ignition switch ON (II).
12. Check the HO2S S2 in the DATA LIST with the Honda PGM Tester or the HDS.

    Does the voltage stay at 0.75 V or higher?

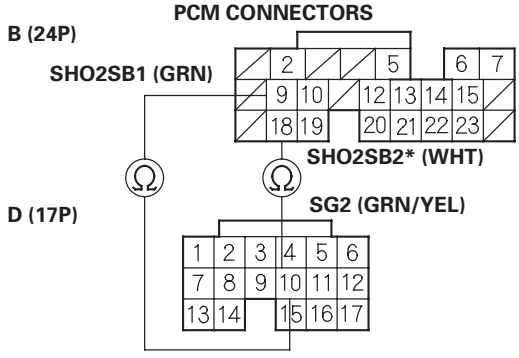
    YES — Go to step 13.

    NO — Go to step 20.
13. Turn the ignition switch OFF.
14. Jump the SCS line with the PGM Tester or the HDS.
15. Disconnect PCM connector B (24P) and D (17P).

(cont'd)

DTC Troubleshooting (cont'd)

16. Check for continuity between PCM connector terminals D10 and B9 (B18)*.



Wire side of female terminals

Is there continuity?

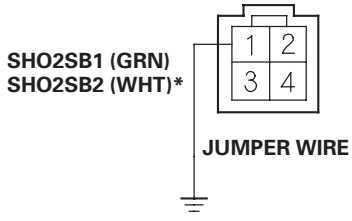
YES — Go to step 29.

NO — Go to step 17.

17. Remove the jumper wire from the secondary HO2S (Sensor 2) 4P connector.

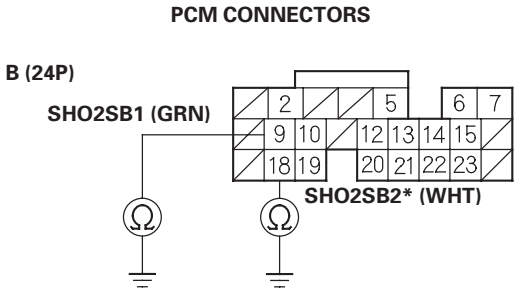
18. Connect the secondary HO2S (Sensor 2) 4P connector terminal No. 1 to body ground with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

19. Check for continuity between PCM connector terminal B9 (B18)* and body ground.



Wire side of female terminals

Is there continuity?

YES — Repair open in the wire between the PCM (D10) and the secondary HO2S (Sensor 2) , then go to step 22.

NO — Repair open in the wire between the PCM (B9 (B18)*) and the secondary HO2S (Sensor 2) , then go to step 22.

20. Turn the ignition switch OFF.

21. Replace the secondary HO2S (Sensor 2) (see page 11-396).

22. Turn the ignition switch ON (II).

23. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

24. Do the PCM idle learn procedure (see page 11-193).

25. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

26. Test-drive under the following conditions.

- Engine coolant temperature more than 70℃ (158℉)
- Transmission in D position
- Engine speed at 2,000 — 3,000 rpm (min^{-1})
- Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds

27. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0138 and/or P0158* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0138 and/or P0158* in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES—Troubleshooting is complete. ■

    NO—If it is FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, go to step 1. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 23 and recheck.

29. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

30. Start the engine. Hold the engine speed at 3,000rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

31. Test-drive under the following conditions.

    - Engine coolant temperature more than 70°C (158°F)
    - Transmission in D position
    - Engine speed at 2,000—3,000 rpm (min^{-1})
    - Drive about 10 minutes, then decelerate (with the throttle fully closed) for 5 seconds

32. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0138 and/or P0158* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is completed. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P0139: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Slow Response

DTC P0159: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Slow Response

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive with the throttle fully opened, then slow down with the throttle completely closed for 3 seconds.
5. Monitor the OBD STATUS for DTC P0139 and/or P0159* in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is it FAILED?

   YES—Go to step 6.

   NO—If it is PASSED, intermittent failure, system is OK at this time. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 3 and recheck.
6. Turn the ignition switch OFF.
7. Replace the secondary HO2S (Sensor 2) (see page 11-396).
8. Turn the ignition switch ON (II).
9. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
10. Do the PCM idle learn procedure (see page 11-193).
11. Test-drive with the throttle fully opened, then slow down with the throttle completely closed for 3 seconds.
12. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0139 and/or P0159* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Go to step 13.
13. Monitor the OBD STATUS for DTC P0139 and/or P0159* in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES—Troubleshooting is complete. ■

    NO—If it is FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 11 and recheck.

DTC P0141: Rear Secondary HO2S (Bank 1, Sensor 2) Heater Circuit Malfunction

DTC P0161: Front Secondary HO2S (Bank 2, Sensor 2) Heater Circuit Malfunction

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P0141 and/or P0161 indicated?*

   YES — Go to step 5.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. ■
5. Turn the ignition switch OFF.
6. Check the following fuse:

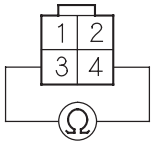
   - No. 19 OPTION (40A) fuse in under-hood fuse/relay box.
   - No. 4 A/F SENSOR (15A) fuse in under-dash fuse/relay box.
   - No. 23 IGP (7.5A) fuse in under-dash fuse/relay box.

   Are any of the fuses blown?

   YES — Repair short in the wire between the A/F sensors, A/F sensor relay and the fuses, then go to step 23.

   NO — Go to step 7.
7. Disconnect the secondary HO2S (Sensor 2) 4P connector.
8. At the secondary HO2S (Sensor 2) side, measure resistance between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

   SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



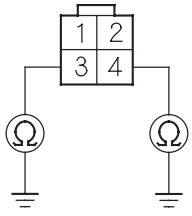
   Wire side of female terminals

   Is there 5.4 — 6.6Ω at room temperature?

   YES — Go to step 9.

   NO — Go to step 22.
9. Check for continuity between body ground and secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4 individually.

   SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



   Wire side of female terminals

   Is there continuity?

   YES — Go to step 22.

   NO — Go to step 10.

(cont'd)

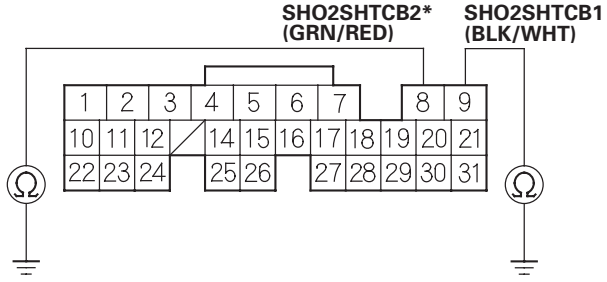
DTC Troubleshooting (cont'd)

10. Jump the SCS line with the Honda PGM Tester or the HDS.

11. Disconnect PCM connector E (31P).

12. Check for continuity between PCM connector terminals E9 (E8)* and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

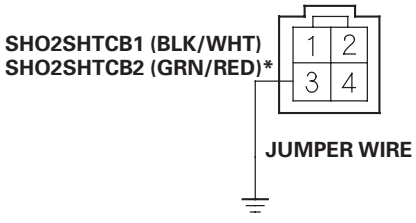
Is there continuity?

YES — Repair short in the wire between the PCM (E9 (E8)*) and the secondary HO2S (Sensor 2), then go to step 23.

NO — Go to step 13.

13. Connect the secondary HO2S (Sensor 2) 4P connector terminal No. 3 to body ground with a jumper wire.

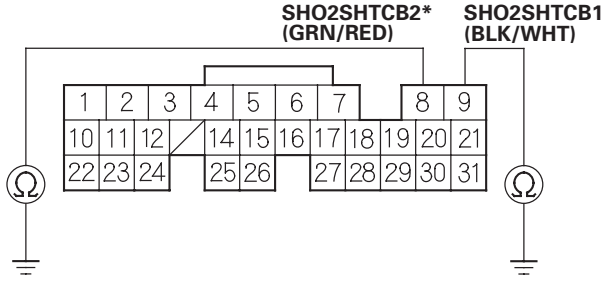
SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

14. Check for continuity between PCM connector terminal E9 (E8)* and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

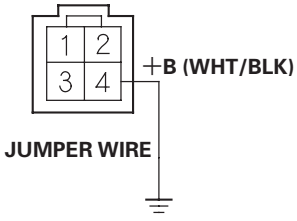
Is there continuity?

YES — Go to step 15.

NO — Repair open in the wire between the PCM (E9 (E8)*) and the secondary HO2S (Sensor 2), then go to step 23.

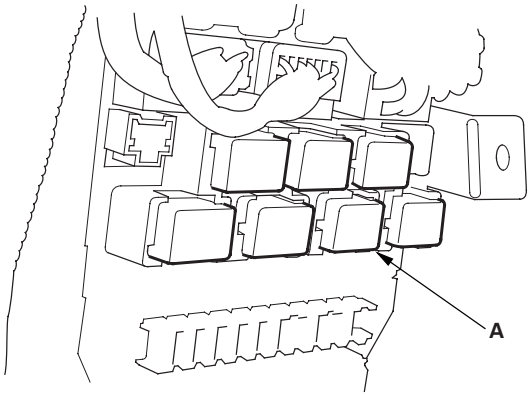
15. Connect the secondary HO2S (Sensor 2) 4P connector terminal No. 4 to body ground with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



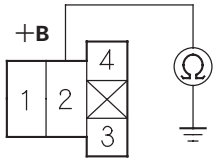
Terminal side of male terminals

16. Remove the A/F sensor relay (A).



17. Check for continuity between A/F sensor relay terminal No. 2. and body ground.

A/F SENSOR RELAY 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

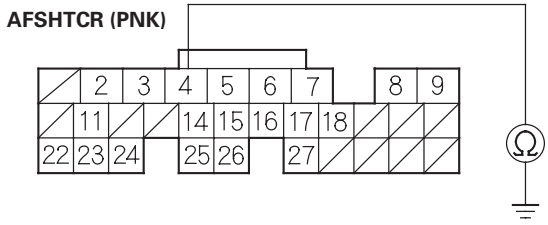
YES — Go to step 18.

NO — Repair open in the wire between the A/F sensor (Sensor 1) and the A/F sensor relay, then go to step 23.

18. Disconnect PCM connector A (31P).

19. Check for continuity between PCM connector terminals A4 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

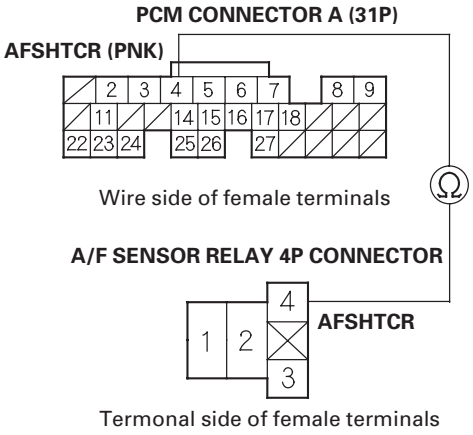
YES — Repair short in the wire between the PCM (A4) and the A/F sensor relay, then go to step 23.

NO — Go to step 20.

(cont'd)

DTC Troubleshooting (cont'd)

20. Check for continuity between PCM connector terminal A4 and the A/F sensor relay terminal No. 4.



Is there continuity?

YES — Go to step 21.

NO — Repair open in the wire between the PCM (E8) and the A/F sensor relay, then go to step 23.

21. Test the A/F sensor relay (see page 22-75).

Is the A/F sensor relay OK?

YES — Go to step 29.

NO — Replace the A/F sensor relay, then go to step 24.

22. Replace the secondary HO2S (Sensor 2) (see page 11-396).

23. Turn the ignition switch ON (II).

24. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

25. Do the PCM idle learn procedure (see page 11-193).

26. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P0141 and/or P0161* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — Go to step 28.

27. Monitor the OBD STATUS for DTC P0141 and/or P0161* in the DTCs MENU with the Honda PGM Tester or the HDS.

Is it PASSED?

YES — Troubleshooting is complete. ■

NO — If it is FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If it is NOT COMPLETED, go to step 26 and recheck.

28. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

29. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P0141 and/or P0161* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — If the PCM was updated, troubleshooting is completed. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P0171: Rear Bank (Bank 1) Fuel System Too Lean

DTC P0172: Rear Bank (Bank 1) Fuel System Too Rich

DTC P0174: Front Bank (Bank 2) Fuel System Too Lean

DTC P0175: Front Bank (Bank 2) Fuel System Too Rich

NOTE: If some of the DTCs listed below are stored at the same time as DTC P0171, P0172, P0174 and/or P0175, troubleshoot those DTCs first, then recheck for P0171, P0172, P0174 and/or P0175.
P0107, P0108: Manifold absolute pressure (MAP) sensor
P0133, P0153, P2195, P2197, P2237, P2238, P2240, P 2241, P2243, P2245, P2247, P2249, P2251, P2252, P2254, P2255, P2627, P2628, P2630, P2631, P2A00, P2A03: Air fuel ratio (A/F) sensor (Sensor 1)
P0134, P0135, P0154, P0155: Air fuel ratio (A/F) sensor (Sensor 1) heater
P0137, P0138, P0139, P0157, P0158, P0159: Secondary HO2S (Sensor 2)
P0141, P0161: Secondary HO2S (Sensor 2) heater
P2646, P2647, P2648, P2649: VTEC system
P0401, P0404, P0406, P2413: Exhaust Gas Recirculation (EGR) system

1. Check the following parts for vacuum leaks:

   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Brake booster hose

   Are the parts OK?

   YES—Go to step 2.

   NO—Repair or replace parts with leaks, then go to step 3.

2. Check the fuel pressure (see page 11-472).

   Is the fuel pressure OK?

   YES—Check the valve clearances and adjust if necessary. If the valve clearances are OK, replace the injectors (see page 11-393), then go to step 3.

   NO—Check these items:

   - If the pressure is too high, replace the fuel pressure regulator (see page 11-208), then go to step 3. If the pressure is too low, check the fuel pump, and the fuel feed pipe, then go to step 3.

3. Turn the ignition switch ON (II).

4. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

5. Do the PCM idle learn procedure (see page 11-193).

6. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
7. Test-drive under the following conditions.

   - Engine coolant temperature more than 70°F (158°C)
   - Transmission in D position
   - Drive at a steady speed between 40—88 mph (25—55 km/h) for 5 minutes, then drive at a steady speed between 24—120 km/h (15—75 mph) for 15 minutes.

   NOTE: DTC P0171, P0172, P0174 and/or P0175 may take up to 40 minutes of test driving to set. Using the Honda PGM Tester or HDS monitor the long term fuel trim (LTFT) or air fuel feed back AVE (AFFBAVE) for 15 minutes of driving. If the fuel trim /AFAVE stays within 10 % of 1.0 (0.0 %), there is no problem at this time.

8. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES—If DTC P0171, P0172, P0174 or P0175 is indicated, go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

   NO—Troubleshooting is complete. ■

DTC Troubleshooting (cont'd)

DTC P0300: Random Misfire and Any Combination of the Following:

DTC P0301: No. 1 Cylinder Misfire

DTC P0302: No. 2 Cylinder Misfire

DTC P0303: No. 3 Cylinder Misfire

DTC P0304: No. 4 Cylinder Misfire

DTC P0305: No. 5 Cylinder Misfire

DTC P0306: No. 6 Cylinder Misfire

Special Tools Required
- Oil Pressure gauge attachment 07NAJ-P070100
- Low pressure gauge 07406-0070001
- Hose oil pressure 07ZAJ-S5A0200

NOTE:
- If the misfire is frequent enough to trigger detection of increased emissions during 2 consecutive driving cycles, the MIL will come on, and DTC P0300 (and some combination of P0301 through P0306) will be stored.
- If the misfire is frequent enough to damage the catalyst, the MIL will blink whenever the misfire occurs, and DTC P0300 (and some combination of P0301 through P0306) will be stored. When the misfire stops, the MIL will remain on.
- Troubleshoot the following DTCs first if any of them were stored along with the random misfire DTC(s):

P0107, P0108: Manifold absolute pressure (MAP) sensor
P0171, P0172: Fuel system
P0335, P0339, P0385, P0389: Crankshaft position (CKP) sensor A/B
P0340, P0344: Camshaft position (CMP) sensor
P0401, P0404, P0406, P2413: Exhaust Gas Recirculation (EGR) system

1. Note the following freeze data.

   - Engine speed
   - Vehicle speed
   - Throttle position
   - CLV
   - Gear position

2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

3. Start the engine with no load (in Park or neutral), then let it idle.

4. Monitor the OBD STATUS for DTC P0301, P0302 P0303, P0304, P0305 or P0306 in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is it FAILED?

   YES—Go to step 9.

   NO—If it is PASSED, go to step 5. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, wait for several minutes, and recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the Honda PGM Tester or the HDS.

   Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Go to step 6.

6. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305 or P0306 in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is it FAILED?

   YES — Go to step 9.

   NO — If it is PASSED, go to step 8. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 6 and recheck.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the Honda PGM Tester or the HDS.

   Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE show misfire counts?

   YES — Go to step 9.

   NO — Intermittent failure, system is OK at this time. ■

9. Turn the ignition switch OFF.

10. Check fuel quality.

    Is the quality good?

    YES — Go to step 11.

    NO — Drain tank and fill with known-good fuel, go to step 20.

11. Clean the all spark plugs.

12. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the Honda PGM Tester or the HDS.

    Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE show misfire counts?

    YES — Go to step 14.

    NO — Go to step 20.

14. Check the fuel pressure (see page 11-472).

    Is the fuel pressure OK?

    YES — Go to step 15.

    NO —
    - If the pressure is too high, replace the fuel pressure regulator (see page 11-208) then to step 20.
    - If the pressure is too low, check the fuel pump, the fuel feed pipe, and the fuel filter. If they are OK, replace the fuel pressure regulator (see page 11-208), then go to step 20.

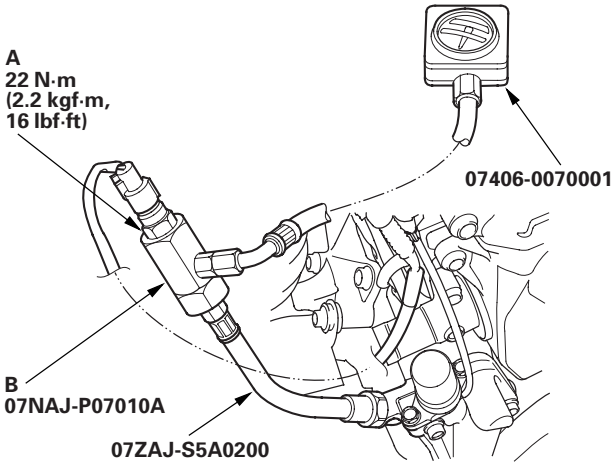
15. Turn the ignition switch OFF.

(cont'd)

DTC Troubleshooting (cont'd)

16. Remove the VTEC oil pressure switch (A), and install the special tools as shown, then install the VTEC oil pressure switch (A) in the pressure gauge adapter (B).

    NOTE: Install the part in the reverse order of removal with a new O-ring.



17. Reconnect the VTEC oil pressure switch 2P connector.

18. Start the engine. Hold the engine at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on.

19. Check the oil pressure at engine speeds of 1,000 and 2,000 rpm (min^{-1}). Keep the measuring time as short as possible (less than 1 minute) because the engine is running with no load.

    Is the oil pressure below 49 kPa (0.5 kgf/cm^2, 7 psi)?

    YES — Check for air in the fuel line, then go to step 20.

    NO — Inspect the VTEC system oil line, then go to step 20.

20. Turn the ignition switch ON (II).

21. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

22. Do the CKP PATTERN CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

23. Do the PCM idle learn procedure (see page 11-193).

24. Do the CKP Pattern Learn Procedure (see page 11-240).

25. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

26. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P0301, P0302, P0303, P0304, P0305 or P0306 are indicated, check for poor connections or loose terminals at the ignition coil, the injector, and the PCM, then go to troubleshooting DTC P0301, P0302, P0303, P0304, P0305 or P0306 (see page 11-349). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — Go to step 27.

27. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305 or P0306 in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES — Troubleshooting is complete. ■

    NO — If it is FAILED, then go to step 1. and recheck. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 25 and recheck.

DTC P0301: No. 1 Cylinder Misfire

DTC P0302: No. 2 Cylinder Misfire

DTC P0303: No. 3 Cylinder Misfire

DTC P0304: No. 4 Cylinder Misfire

DTC P0305: No. 5 Cylinder Misfire

DTC P0306: No. 6 Cylinder Misfire

1. Note the following freeze data.

   - Engine speed
   - Vehicle speed
   - Throttle position
   - CLV
   - Gear position

2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

3. Start the engine with no load (in Park or neutral), then let it idle.

4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305 or P0306 in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is it FAILED?

   YES—Go to step 9.

   NO—If it is PASSED, go to step 5. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, wait for several minutes, and recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the Honda PGM Tester or the HDS.

   Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Go to step 6.

6. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305 or P0306 in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is it FAILED?

   YES—Go to step 9.

   NO—If it is PASSED, go to step 8. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 6. and recheck.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the Honda PGM Tester or the HDS.

   Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Intermittent failure, system is OK at this time. Check the fuel and ignition system circuit connectors for loose wires or poor connections. ■

9. Turn the ignition switch OFF.

10. Exchange the ignition coil from the problem cylinder with one from another cylinder.

11. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

(cont'd)

DTC Troubleshooting (cont'd)

12. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the Honda PGM Tester or the HDS.

    Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE show misfire counts?

    YES — Go to step 13.

    NO — Intermittent misfire due to poor contact at the ignition coil connector. (no misfire at this time). Make sure the coil connections are secure. ■

13. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the ignition coil was moved?

    YES — Replace the faulty ignition coil (see page 4-30), then go to step 60.

    NO — Go to step 14.

14. Turn the ignition switch OFF.

15. Exchange the spark plug from the problem cylinder with one from another cylinder.

16. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

17. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the Honda PGM Tester or the HDS.

    Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE show misfire counts?

    YES — Go to step 18.

    NO — Intermittent misfire due to spark plug fouling (no misfire at this time). ■

18. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the spark plug was moved?

    YES — Replace the faulty spark plug, then go to step 63.

    NO — Go to step 19.

19. Turn the ignition switch OFF.

20. Exchange the injector from the problem cylinder with one from the another cylinder.

21. Start the engine, and let it idle for 2 minutes.

22. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

23. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL 6 MISFIRE in the DATA LIST for 10 minutes with the Honda PGM Tester or the HDS.

    Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE show misfire counts?

    YES — Go to step 24.

    NO — Intermittent misfire due to bad contact in the injector connector (no misfire at this time). Check for poor connections or loose terminals at the injector. ■

24. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the injector was exchanged?

    YES — Replace the faulty injector (see page 11-393), then go to step 60.

    NO — Go to step 25.

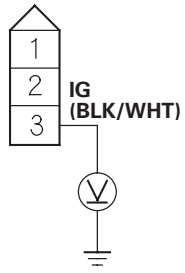
25. Turn the ignition switch OFF.

26. Disconnect the ignition coil 3P connector from the problem cylinder.

27. Turn the ignition switch ON (II).

28. Measure voltage between ignition coil 3P connector terminal No. 3 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

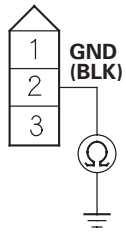
YES — Go to step 29.

NO — Repair open in the wire between the ignition coil and the ignition coil relay, go to step 60.

29. Turn the ignition switch OFF.

30. Check for continuity between ignition coil 3P connector terminal No. 2 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES — Go to step 31.

NO — Repair open in the wire between the ignition coil and G101, go to step 60.

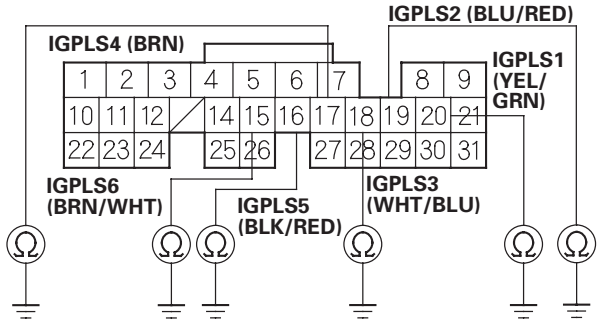
31. Turn the ignition switch OFF.

32. Jump the SCS line with the Honda PGM Tester or the HDS.

33. Disconnect PCM connector E (31P).

34. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PCM CONNECTOR E (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	E20	YEL/GRN
No. 2	P0302	E19	BLU/RED
No. 3	P0303	E18	WHT/BLU
No. 4	P0304	E17	BRN
No. 5	P0305	E16	BLK/RED
No. 6	P0306	E15	BRN/WHT

Is there continuity?

YES — Repair short in the wire between the PCM and the ignition coil, then go to step 60.

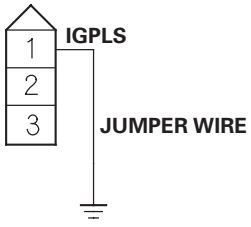
NO — Go to step 35.

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DTC Troubleshooting (cont'd)

35. Connect the appropriate ignition coil 3P connector terminal No. 1 and body ground with a jumper wire (see table).

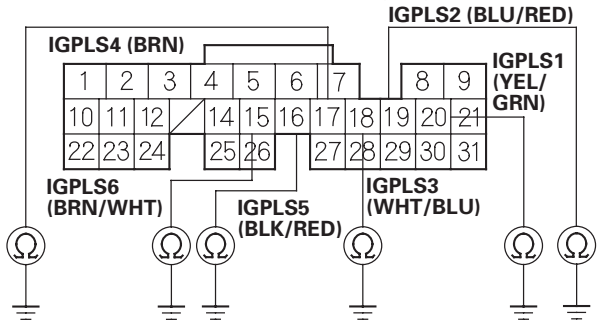
IGNITION COIL 3P CONNECTOR



PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	E20	YEL/GRN
No. 2	P0302	E19	BLU/RED
No. 3	P0303	E18	WHT/BLU
No. 4	P0304	E17	BRN
No. 5	P0305	E16	BLK/RED
No. 6	P0306	E15	BRN/WHT

36. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PCM CONNECTOR E (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	E20	YEL/GRN
No. 2	P0302	E19	BLU/RED
No. 3	P0303	E18	WHT/BLU
No. 4	P0304	E17	BRN
No. 5	P0305	E16	BLK/RED
No. 6	P0306	E15	BRN/WHT

Is there continuity?

YES—Go to step 37.

NO—Repair open in the wire between the PCM and the ignition coil, then go to step 60.

37. Reconnect the ignition coil 3P connector and PCM connector E (31P).

38. Do an engine compression and a cylinder leakdown test.

    Did the engine pass both tests?

    YES — Go to step 39.

    NO — Repair the engine, then go to step 60.

39. Do the VTEC rocker arm test (see page 6-7).

    Did the engine pass test?

    YES — Go to step 40.

    NO — Repair the VTEC rocker arm, then go to step 60.

40. Turn the ignition switch OFF.

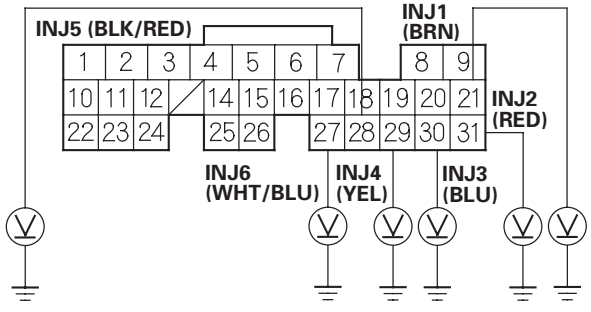
41. Jump the SCS line with the Honda PGM Tester or the HDS.

42. Disconnect PCM connector E (31P).

43. Turn the ignition switch ON (II).

44. Measure voltage between body ground and the appropriate PCM connector terminal (see table).

PCM CONNECTOR E (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	E21	BRN
No. 2	P0302	E31	RED
No. 3	P0303	E30	BLU
No. 4	P0304	E29	YEL
No. 5	P0305	E28	BLK/RED
No. 6	P0306	E27	WHT/BLU

Is there battery voltage?

YES — Go to step 54.

NO — Go to step 45.

45. Turn the ignition switch OFF.

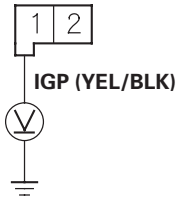
46. Remove the intake manifold (see page 9-2).

47. Disconnect the injector 2P connector from the problem cylinder.

48. Turn the ignition switch ON (II).

49. Measure voltage between injector 2P connector terminal No. 1 and body ground.

INJECTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES — Go to step 50.

NO — Repair open in the wire between the injector and the PGM-FI main relay, then go to step 60.

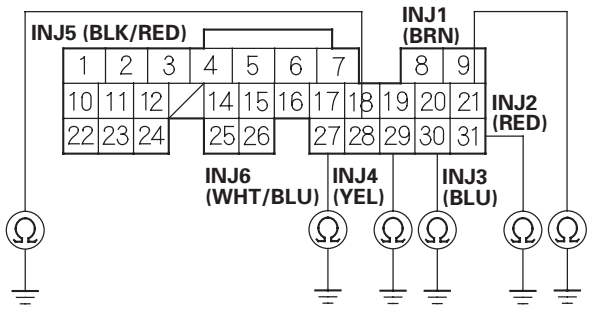
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DTC Troubleshooting (cont'd)

50. Turn the ignition switch OFF.

51. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PCM CONNECTOR E (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	E21	BRN
No. 2	P0302	E31	RED
No. 3	P0303	E30	BLU
No. 4	P0304	E29	YEL
No. 5	P0305	E28	BLK/RED
No. 6	P0306	E27	WHT/BLU

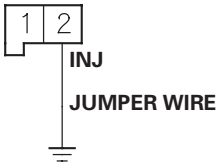
Is there continuity?

YES — Repair short in the wire between the PCM and the injector, then go to step 60.

NO — Go to step 52.

52. Connect the appropriate injector 2P connector terminal No. 2 to body ground with a jumper wire (see table).

INJECTOR 2P CONNECTOR

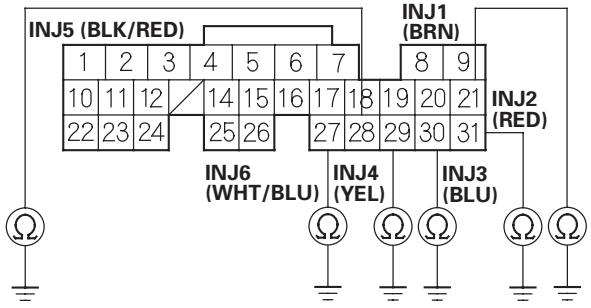


Wire side of female terminals

PROBLEM CYLINDER	DTC	WIRE COLOR
No. 1	P0301	BRN
No. 2	P0302	RED
No. 3	P0303	BLU
No. 4	P0304	YEL
No. 5	P0305	BLK/RED
No.6	P0306	WHT/BLU

53. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PCM CONNECTOR E (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	E21	BRN
No. 2	P0302	E31	RED
No. 3	P0303	E30	BLU
No. 4	P0304	E29	YEL
No. 5	P0305	E28	BLK/RED
No. 6	P0306	E27	WHT/BLU

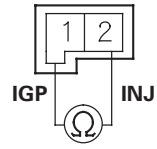
Is there continuity?

YES — Go to step 54.

NO — Repair open in the wire between the PCM and the injector, then go to step 60.

54. Measure the resistance between the injector 2P connector terminals No. 1 and No. 2.

INJECTOR 2P CONNECTOR



Terminal side of male terminals

Is there 10 — 13 Ω ?

YES — Go to step 55.

NO — Replace the injector (see page 11-393), then go to step 60.

55. Substitute a known-good injector from another cylinder to the problem cylinder.

56. Reconnect PCM connector E (31P).

57. Start the engine, and let it idle for 2 minutes.

58. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

59. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the Honda PGM Tester or the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE and/or CYL6 MISFIRE show misfire counts?

YES — Go to step 68.

NO — Replace the original injector (see page 11-393), then go to step 60.

(cont'd)

DTC Troubleshooting (cont'd)

60. Turn the ignition switch ON (II).

61. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

62. Do the CKP PATTERN CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

63. Do the PCM idle learn procedure (see page 11-193).

64. Do the CKP Pattern Learn Procedure (see page 11-240).

65. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

66. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0301, P0302, P0303, P0304, P0305 or P0306 are indicated, check for poor connections or loose terminals at the ignition coil, the injector, and the PCM, then go to troubleshooting DTC P0301, P0302, P0303, P0304, P0305 or P0306 (see page 11-346). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Go to step 67.

67. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305 or P0306 in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES—Troubleshooting is complete. ■

    NO—If it is FAILED, then go to step 1 and recheck. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 65 and recheck.

68. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

69. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

70. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0301, P0302, P0303, P0304, P0305 or P0306 are indicated, check for poor connections or loose terminals at the injector, the ignition coil, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P0325: Knock Sensor Circuit Malfunction

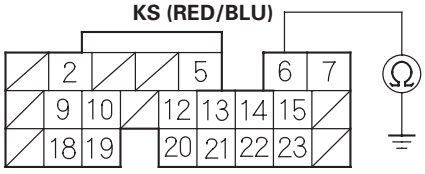
1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Hold the engine at 3,000 – 4,000 rpm (min^{-1}) at least 60 seconds.
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P0325 indicated?

   YES – Go to step 6.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the knock sensor and the PCM. ■
6. Turn the ignition switch OFF.
7. Jump the SCS line with the Honda PGM Tester or the HDS.
8. Disconnect at the knock sensor subharness 1P connector.
9. Disconnect PCM connector B (24P).
10. Check for continuity between PCM connector terminal B6 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

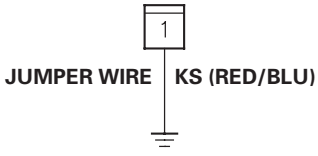
Is there continuity?

YES – Repair short in the wire between the PCM (B6) and the knock sensor, then go to step 17.

NO – Go to step 11.

11. Connect the knock sensor knock sensor subharness 1P connector terminals No. 1 to body ground with a jumper wire.

KNOCK SENSOR SUBHARNESS 1P CONNECTOR

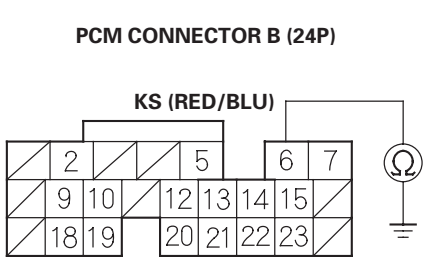


Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

12. Check for continuity between PCM connector terminal B6 and body ground.



Wire side of female terminals

Is there continuity?

YES — Go to step 13.

NO — Repair open in the wire between the PCM (B6) and the knock sensor, then go to step 17.

13. Remove the intake manifold (see page 9-2).

14. Check the knock sensor subharness 1P connector and the knock sensor for an open or short.

Is it OK?

YES — Go to step 15.

NO — Repair the knock sensor subharness, then go to step 17.

15. Replace the knock sensor (see page 11-398).

16. Install the intake manifold (see page 9-2).

17. Turn the ignition switch ON (II).

18. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

19. Do the PCM idle learn procedure (see page 11-193).

20. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

21. Hold the engine at 3,000 — 4,000 rpm (min^{-1}) at least 60 seconds.

22. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — Go to step 24.

NO — Go to step 23.

23. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the Honda PGM Tester or the HDS.

Is it PASSED?

YES — Troubleshooting is complete. ■

NO — If it is FAILED, then go to step 1. If it is NOT COMPLETED, go to step 20 and recheck.

24. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

25. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

26. Hold the engine at 3,000 — 4,000 rpm (min^{-1}) at least 60 seconds.

27. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P0325 is indicated, check for poor connections or loose terminals at the knock sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — If the PCM was updated, troubleshooting is complete. If PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P0335: CKP Sensor A No Signal

DTC P0385: CKP Sensor B No Signal

NOTE: Information marked with an asterisk (*) applies to the CKP sensor B.

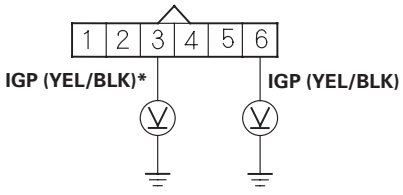
1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P0335 and/or P0385 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the CKP sensor A/B and the PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect the CKP sensor A/B 6P connector (see page 11-398)
7. Turn the ignition switch ON (II).
8. Measure voltage between CKP sensor A/B 6P connector terminal No. 6 (No. 3)* and body ground.

CKP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

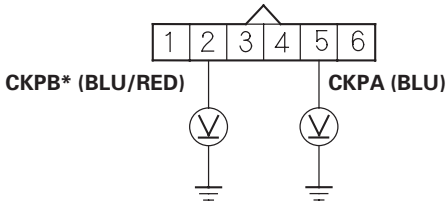
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the CKP sensor A/B and the PGM-FI main relay 1 (FI MAIN), then go to step 19.

9. Measure voltage between CKP sensor A/B 6P connector terminal No. 5 (No. 2)* and body ground.

CKP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

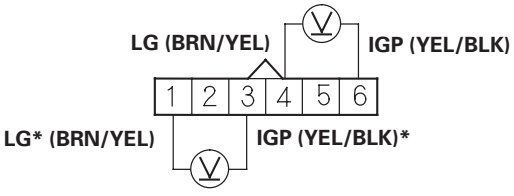
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure voltage between CKP sensor A/B 6P connector terminal No. 4 (No. 1)* and No. 6 (No. 3)*.

CKP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

Is there battery voltage?

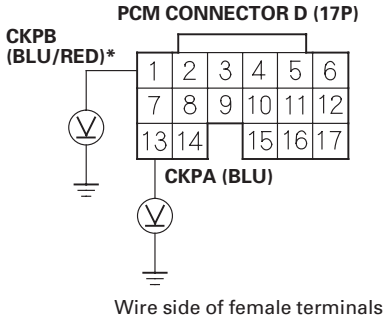
YES—Go to step 16.

NO—Repair open in the wire between the CKP sensor A/B and G101, then go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

11. Measure voltage between PCM connector terminal D13 (D1)* and body ground.



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (A7) and the CKP sensor A/B, then go to step 19.

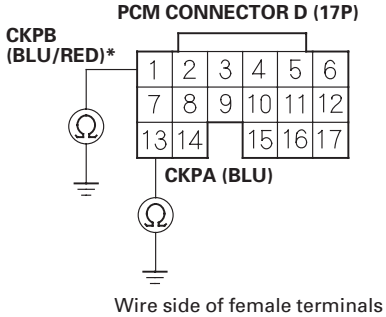
NO—Go to step 12.

12. Turn the ignition switch OFF.

13. Jump the SCS line with the Honda PGM Tester or the HDS.

14. Disconnect PCM connector D (17P).

15. Check for continuity between PCM connector terminal D13 (D1)* and body ground.



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (D13 (D1)*) and the CKP sensor A/B, then go to step 18.

NO—Go to step 24.

16. Turn the ignition switch OFF.

17. Replace the CKP sensor A/B (see page 11-398).

18. Turn the ignition switch ON (II).

19. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

20. Do the CKP PATTERN CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

21. Do the PCM idle learn procedure (see page 11-193).

22. Do the CKP Pattern Learn Procedure (see page 11-240).

23. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0335 and/or P0385* is indicated, check for poor connections or loose terminals at the CKP sensor A/B and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—Troubleshooting is complete. ■

24. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

25. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0335 and/or P0385* is indicated, check for poor connections or loose terminals at the CKP sensor A/B and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—If the PCM was updated, troubleshooting is completed. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P0339: CKP Sensor A Intermittent Interruption

DTC P0389: CKP Sensor B Intermittent Interruption

NOTE: Information marked with an asterisk (*) applies to the CKP sensor B.

1. Note the following freeze data.

   • Engine speed
   • Vehicle speed

2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

3. Start the engine, and let it idle for 10 seconds.

4. Check the CKP NOISE 1 or 2* count in the DATA LIST with the Honda PGM Tester or the HDS.

   Is 0 counts indicated?

   YES — Go to step 5.

   NO — Go to step 8.

5. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

6. Check the CKP NOISE 1 or 2* count in the DATA LIST with the Honda PGM Tester or the HDS.

   Is 0 counts indicated?

   YES — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the CKP sensor A/B and the PCM. ■

   NO — Go to step 7.

7. Check for poor or loose at the following connectors and terminals.

   • CKP sensor A/B
   • PCM
   • Engine ground
   • Body ground

   Are the connections OK?

   YES — Go to step 8.

   NO — Reconnect the connectors or terminals, then go to step 11.

8. Check for damage on the CKP sensor A/B pulse plate on the timing belt drive pulley (see page 6-3).

   Is it damaged?

   YES — Replace the CKP sensor A/B pulse plate/ timing belt drive pulley (see page 6-3), then go to step 11.

   NO — Go to step 9.

9. Turn the ignition switch OFF.

10. Replace the CKP sensor A/B (see page 11-398).

11. Turn the ignition switch ON (II).

12. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

13. Do the CKP PATTERN CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

14. Do the PCM idle learn procedure (see page 11-193).

15. Do the CKP Pattern Learn Procedure (see page 11-240).

16. Start the engine, and let it idle for 10 seconds.

17. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P0339 and/or P0389 is indicated, check for poor connections or loose terminals at the CKP sensor A/B and the PCM, then go to step 1. If any other Temporary DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — Troubleshooting is complete. ■

DTC Troubleshooting (cont'd)

DTC P0340: CMP sensor No Signal

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

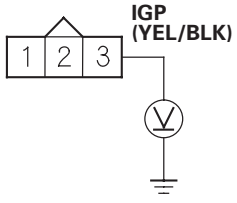
   Is DTC P0340 indicated?

   YES — Go to step 5.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect the CMP sensor 3P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between CMP sensor 3P connector terminal No. 3 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

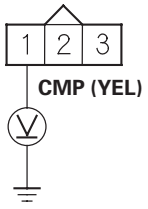
Is there battery voltage?

YES — Go to step 9.

NO — Repair open in the wire between the CMP sensor and the PGM-FI main relay 1 (FI MAIN), then go to step 19.

9. Measure voltage between CMP sensor 3P connector terminal No. 1 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

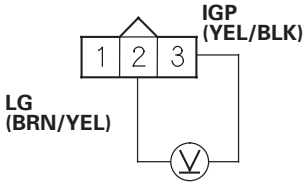
Is there about 5 V?

YES — Go to step 10.

NO — Go to step 11.

10. Measure voltage between CMP sensor 3P connector terminal No. 2 and No. 3.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

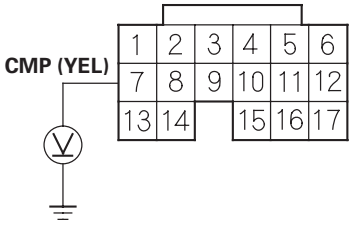
Is there battery voltage?

YES — Go to step 16.

NO — Repair open in the wire between the CMP sensor and G101, then go to step 19.

11. Measure voltage between PCM connector terminal D7 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (A7) and the CMP sensor, then go to step 19.

NO—Go to step 12.

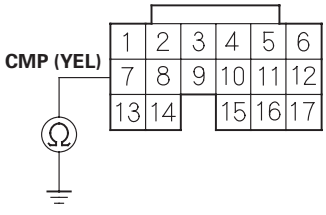
12. Turn the ignition switch OFF.

13. Jump the SCS line with the Honda PGM Tester or the HDS.

14. Disconnect PCM connector D (17P).

15. Check for continuity between PCM connector terminal D7 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (D7) and the CMP sensor, then go to step 19.

NO—Go to step 23.

16. Turn the ignition switch OFF.

17. Replace the CMP Sensor (see page 11-399).

18. Turn the ignition switch ON (II).

19. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

20. Do the PCM idle learn procedure (see page 11-193).

21. Start the engine.

22. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0340 is indicated, check for poor connections or loose terminals at the CMP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—Troubleshooting is complete.■

23. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

24. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0340 is indicated, check for poor connections or loose terminals at the CMP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—If the PCM was updated, troubleshooting is completed. If the PCM was substituted, replace the original PCM (see page 11-241).■

DTC Troubleshooting (cont'd)

DTC P0344: CMP sensor Intermittent Interruption

1. Note the following freeze data.

   • Engine speed
   • Vehicle speed

2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

3. Start the engine, and let it idle for 10 seconds.

4. Check the CMP NOISE 2 COUNT in the DATA LIST with the Honda PGM Tester or the HDS.

   Is 0 counts indicated?

   YES — Go to step 5.

   NO — Go to step 8.

5. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

6. Check the CMP NOISE 2 COUNT in the DATA LIST with the Honda PGM Tester or the HDS.

   Is 0 counts indicated?

   YES — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the PCM. ■

   NO — Go to step 7.

7. Check for poor or loose at the following connectors and terminals.

   • CKP sensor
   • PCM
   • Engine ground
   • Body ground

   Are the connections OK?

   YES — Go to step 8.

   NO — Reconnect the connectors or terminals, then go to step 11.

8. Check for damage on the CMP sensor pulse plate on the front camshaft pully (see page 6-27).

   Is it damaged?

   YES — Replace the CMP sensor pulse plate/front camshaft pully (see page 6-27), then go to step 11.

   NO — Go to step 9.

9. Turn the ignition switch OFF.

10. Replace the CMP sensor (see page 11-399).

11. Turn the ignition switch ON (II).

12. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

13. Do the PCM idle learn procedure (see page 11-193).

14. Start the engine, and let it idle for 10 seconds.

15. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P0344 is indicated, check for poor connections or loose terminals at the CKP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — Troubleshooting is complete. ■

DTC P0563: PCM Power Source Circuit Unexpected Voltage

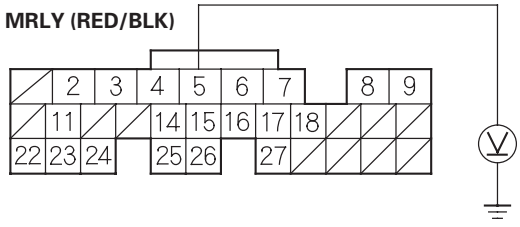
1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Turn the ignition switch OFF.
4. Wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P0563 indicated?

   YES—Go to step 7.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the No. 8 FI-ECU (PCM) (15A) fuse in the under-hood fuse/relay box and at the PCM. ■
7. Turn the ignition switch OFF.
8. Jump the SCS line with the Honda PGM Tester or the HDS.
9. Disconnect PCM connector A (31P).
10. Measure voltage between PCM connector terminal A5 and body ground.

PCM CONNECTOR A (31P)



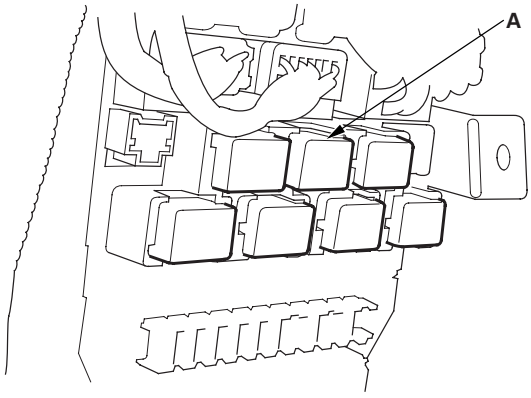
Wire side of female terminals

Is there battery voltage?

YES—Go to step 13.

NO—Go to step 11.

11. Remove the kick panel (see page 20-72), then remove the PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.

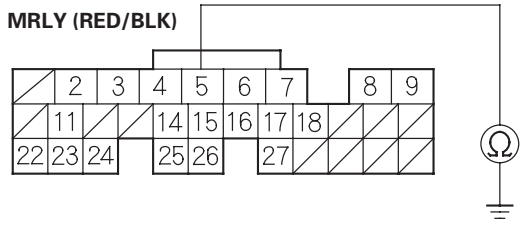


(cont'd)

DTC Troubleshooting (cont'd)

12. Check for continuity between PCM connector terminal A5 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

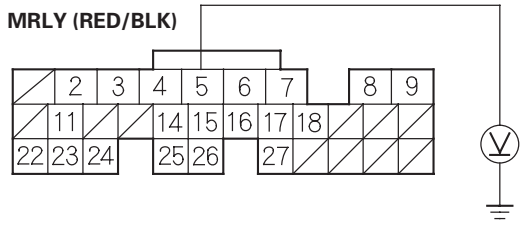
YES — Repair short in the wire between the PCM (A5) and PGM-FI main relay 1 (FI MAIN), then go to step 20.

NO — Go to step 19.

13. Reconnect PCM connector A (31P).

14. Measure voltage between PCM connector terminal A5 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there battery voltage?

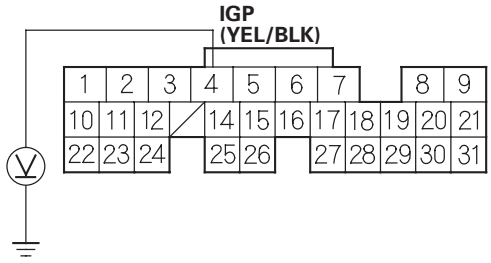
YES — Go to step 15.

NO — Go to step 26.

15. Disconnect PCM connector E (31P).

16. Measure voltage between PCM connector terminal E4 and body ground.

PCM CONNECTOR E (31P)



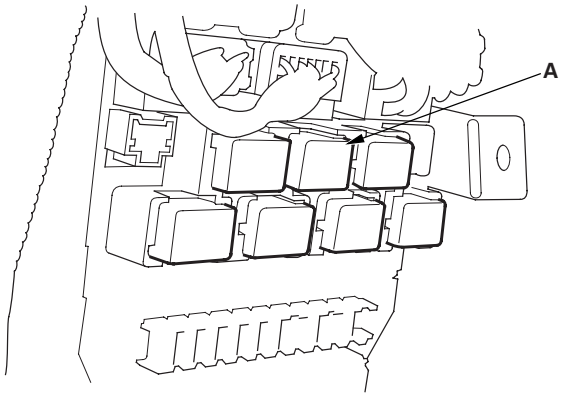
Wire side of female terminals

Is there battery voltage?

YES — Go to step 17.

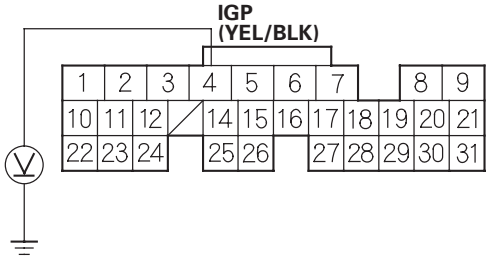
NO — Go to step 26.

17. Remove the kick panel (see page 20-72), then remove the PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.



18. Measure voltage between PCM connector terminal E4 and body ground.

PCM CONNECTOR E (31P)



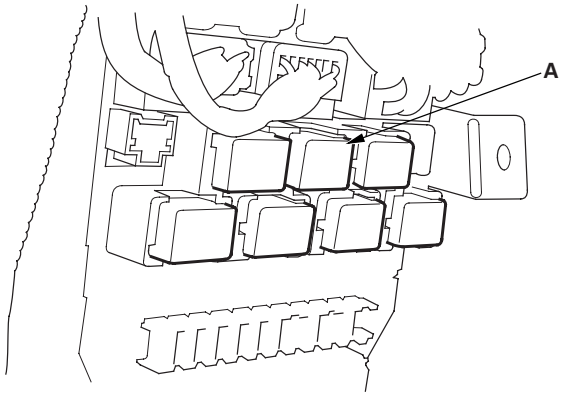
Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the PCM (E4) and the PGM-FI main relay 1 (FI MAIN), then go to step 20.

NO—Go to step 19.

19. Replace the PGM-FI main relay 1 (FI MAIN).



20. Turn the ignition switch ON (II).

21. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

22. Turn the ignition switch OFF.

23. Wait 10 seconds.

24. Turn the ignition switch ON (II).

25. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0563 is indicated, check for poor connections or loose terminals at the PGM-FI main relay 1 (FI MAIN) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—Troubleshooting is complete.■

26. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

27. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0563 is indicated, check for poor connections or loose terminals at the PGM-FI main relay 1 (FI MAIN) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—If the PCM was updated, troubleshooting is completed. If the PCM was substituted, replace the original PCM (see page 11-241).■

DTC Troubleshooting (cont'd)

DTC P0603: PCM Internal Control Module Keep Alive Memory (KAM) Error

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Wait 1 second.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

   NO—Intermittent failure, system is OK at this time. ■

DTC P0606: PCM Processer Malfunction

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Wait 40 seconds.
6. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P0606 indicated?

   YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

   NO—Intermittent failure, system is OK at this time. ■

DTC P0685: PCM Power Control Malfunction

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Wait 1 second.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

   NO—Intermittent failure, system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC P1297: ELD Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the ELD in the DATA LIST with the Honda PGM Tester or the HDS.

   Is 72A or more indicated?

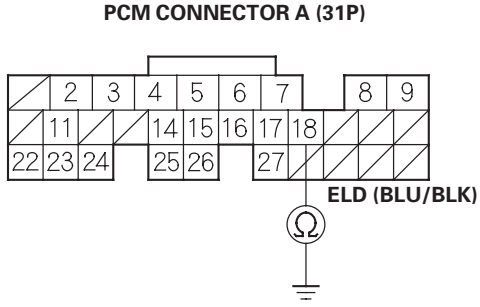
   YES — Go to step 3.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ELD and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Check the ELD in the DATA LIST with the Honda PGM Tester or the HDS.

   Is 72A or more indicated?

   YES — Go to step 7.

   NO — Go to step 11.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the Honda PGM Tester or the HDS.
9. Disconnect PCM connector A (31P).
10. Check for continuity between PCM connector terminal A18 and body ground.



Wire side of female terminals

   Is there continuity?

   YES — Repair short in the wire between the PCM (A18) and the ELD, then go to step 13.

   NO — Go to step 19.
11. Turn the ignition switch OFF.
12. Replace the under-hood fuse/relay box (see page 22-44).
13. Turn the ignition switch ON (II).
14. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
15. Do the PCM idle learn procedure (see page 11-193).
16. Start the engine.
17. Turn on the headlight.

18. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P1297 is indicated, check for poor connections or loose terminals at the ELD and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

19. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

20. Start the engine.

21. Turn on the headlight.

22. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P1297 is indicated, check for poor connections or loose terminals at the ELD and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is completed. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P1298: ELD Circuit High Voltage

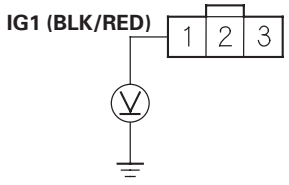
1. Start the engine and let it idle.
2. Check the ELD in the DATA LIST with the Honda PGM Tester or the HDS.

   Is 0.2A or less indicated?

   YES — Go to step 3.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ELD and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between ELD 3P connector terminal No. 1 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

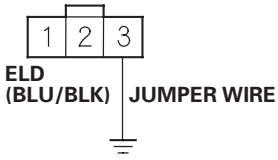
Is there battery voltage?

YES — Go to step 7.

NO — Repair open in the wire between the No.18 ACG (15A) fuse and the ELD, then go to step 14.

7. Turn the ignition switch OFF.
8. Connect ELD 3P connector terminal No. 3 to body ground with a jumper wire.

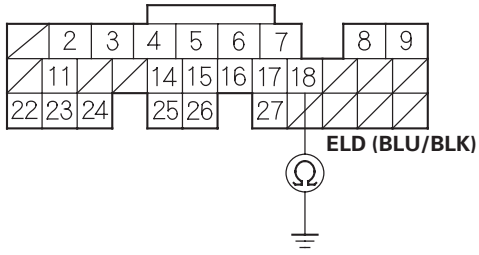
ELD 3P CONNECTOR



Wire side of female terminals

9. Jump the SCS line with the Honda PGM Tester or the HDS.
10. Disconnect PCM connector A (31P).
11. Check for continuity between PCM connector terminal A18 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

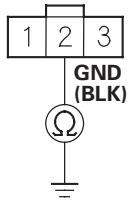
Is there continuity?

YES — Go to step 12.

NO — Repair open in the wire between the PCM (A18) and the ELD, then go to step 14.

12. Check for continuity between ELD 3P connector terminal No. 2 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES — Go to step 13.

NO — Repair open in the wire between the ELD and G302, then go to step 14.

13. Replace the under-hood fuse/relay box (see page 22-44).

14. Turn the ignition switch ON (II).

15. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

16. Do the PCM idle learn procedure (see page 11-193).

17. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — Go to step 18.

NO — Troubleshooting is complete. ■

18. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

19. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P1298 is indicated, check for poor connections or loose terminals at the ELD and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P2228: BARO Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are DTC P0107, P0112, P0117, P2122, P2127, P2228, P0700, P2627 and P2630 simultaneously indicated?

   YES — Go to step 7.

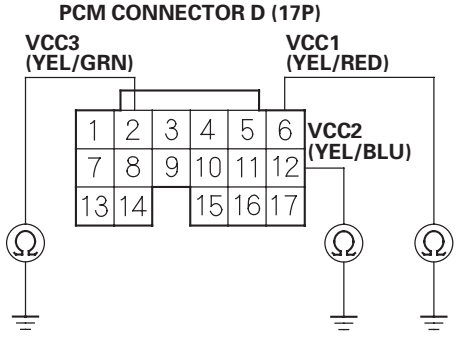
   NO — Go to step 6.
6. Check the BARO SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

   Is about 53 kPa (397 mmHg, 15.6 in.Hg), 1.58 V, or less indicated?

   YES — Go to step 12.

   NO — Intermittent failure, system is OK at this time. ■
7. Turn the ignition switch OFF.
8. Jump the SCS line with the Honda PGM Tester or the HDS.
9. Disconnect PCM connector D (17P).
10. Disconnect the connectors from the these sensors:

    • MAP sensor
    • APP sensor
    • EGR valve
    • Mainshaft speed sensor
    • Countershaft speed sensor
11. Check for continuity between body ground and PCM connector terminals, D2, D6 and D12 individually.



Wire side of female terminals

Is there continuity?

YES — Repair short in the wire between the PCM (D2, D6 or D12) and the each sensor, then go to step 18.

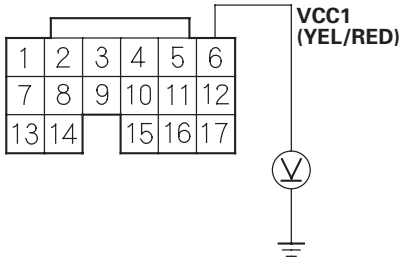
NO — Go to step 12.

12. Reconnect PCM connector D (17P).

13. Turn the ignition switch ON (II).

14. Measure voltage between PCM connector terminal D6 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 5 V?

YES—Go to step 15.

NO—Go to step 16.

15. Continue to monitor voltage at the PCM connector terminal D6 while reconnecting the following sensors, one at a time.

- MAP sensor
- APP sensor
- EGR valve
- Mainshaft speed sensor
- Countershaft speed sensor

Did the voltage drop to about 0 V?

YES—Replace the sensor that caused the voltage to drop, then go to step 19.

NO—Go to step 16.

16. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

17. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2228 is indicated, check for poor connections or loose terminals at the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241).■

18. Turn the ignition switch ON (II).

19. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

20. Do the PCM idle learn procedure (see page 11-193).

21. Turn the ignition switch OFF.

22. Turn the ignition switch ON (II).

23. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2228 is indicated, check for poor connections or loose terminals at the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—Troubleshooting is complete.■

DTC Troubleshooting (cont'd)

DTC P2229: BARO Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the Honda PGM Tester or the HDS.

   Is about 160 kPa (1200 mmHg, 47.2 in.Hg), 4.5 V, or higher indicated?

   YES — Go to step 3.

   NO — Intermittent failure, system is OK at this time. ■
3. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).
4. Check for a Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES — If DTC P2229 is indicated, check for poor connections or loose terminals at the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

   NO — If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC U0073: FCAN Malfunction (Bus-Off)

DTC U0155: FCAN Malfunction (Gauge Control Module-PCM)

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC U0073 and/or U0155 indicated?

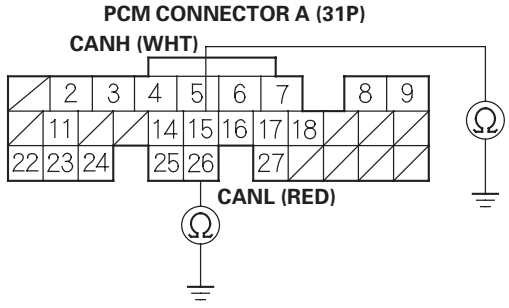
   YES — Go to step 4.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the gauge control modure, ABS/TCS control unit, the navigation unit and the PCM. ■
4. Check for DTCs in the DTCs MENU in the Body Electrical system with the Honda PGM Tester or the HDS.

   Is DTC B1168, B1169 and/or B1178 indicated?

   YES — Go to step 5.

   NO — Perform the gauge control module input test (see page 22-125). ■
5. Turn the ignition switch OFF.
6. Remove the gauge control module (see page 22-257).
7. Disconnect the gauge control module 30P connector.
8. Disconnect the ABS/TCS control unit 47P connector.
9. If equipped with the Honda navigation system, disconnect the navigation unit 20P connector.
10. Jump the SCS line with the Honda PGM Tester or HDS.
11. Disconnect PCM connector A (31P).
12. Check for continuity between PCM connector terminals A15, A26 and body ground individually.



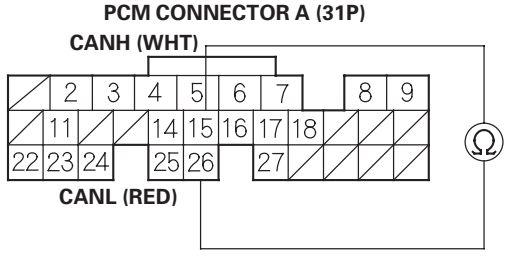
Wire side of female terminals

Is there continuity?

YES — Repair short in the wire between the gauge control module, ABS/TCS control unit, the navigation unit and the PCM (A15 (A26)*), then go to step 18.

NO — Go to step 13.
*: CANL line

13. Check for continuity between PCM connector terminals A15 and A26.



Wire side of female terminals

Is there continuity?

YES — Repair short in the wire between the PCM A15 (CANH line) and A26 (CANL line), then go to step 18.

NO — Go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for continuity between PCM connector terminal A15 and the following connector terminals:

Connector	Terminal
Gauge control module 30P	No. 24 (WHT)
ABS/TCS control unit 47P	No. 14 (WHT)
Navigation unit 20P	No.8 (WHT)

Is there continuity between the PCM terminal and each of the terminals in the chart?

YES — Go to step 15.

NO — Repair open in the wire between the PCM and the appropriate connector, then go to step 18.

15. Check for continuity between PCM connector terminal A26 and the following connector terminals:

Connector	Terminal
Gauge control module 30P	No. 23 (RED)
ABS/TCS control unit 47P	No. 30 (RED)
Navigation unit 20P	No.18 (RED)

Is there continuity between the PCM terminal and each of the terminals in the chart?

YES — Go to step 16.

NO — Repair open in the wire between the PCM and the appropriate connector, then go to step 18.

16. Refer to the following chart. Select the row that most closely represents the combination of DTCs retrieved from the PGM-FI, ABS/TCS, and Body Electrical systems: Check connections at the control module indicated in the last column. If all connections are OK, then substitute the control module. After substitute the control module, go to step 18 and recheck.

PGM-FI	ABS/TCS	Body Electrical	Control module
U0155	86-1	B1168 B1169 B1178	Gauge Control Module
U0073 U0121 U0155	68-1 86-1	B1168 B1169 B1178	PCM
U0073 U0121 U0155	68-1 86-1	B1168 B1178	ABS/TCS control unit

Are the DTCs still indicated?

YES — Substitute the remaining control module's one at time until the DTCs are no longer present then replace that control module. After replacing the control module that is faulty, go to step 18.

NO — Replace the faulty control module, then go to step 18.

17. Reconnect all the connectors.

18. Turn the ignition switch ON (II).

19. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

20. Do the PCM idle learn procedure (see page 11-193).

21. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC U0073 and/or U0155 is indicated, check for poor connections or loose terminals at the gauge assembly, ABS/TCS control unit, the navigation unit and the PCM, then go to step 1. If any other DTCs are indicated, go to the indicated DTC troubleshooting.

NO — Troubleshooting is complete. ■

DTC U0121: FCAN Malfunction (TCS-PCM)

NOTE: If DTC U0073 is stored at the same time as DTC U0121, troubleshoot DTC U0073 first, then recheck for DTC U0121.

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC U0121 indicated?

   YES — Go to step 4.

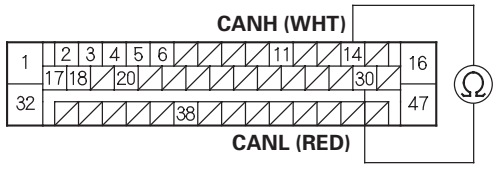
   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the gauge assembly, the ABS/TCS control unit and the PCM. ■
4. Check for a DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is TCS DTC 86 indicated?

   YES — Go to step 5.

   NO — Go to step 9.
5. Turn the ignition switch OFF.
6. Disconnect the ABS/TCS control unit 47P connector.
7. Check for continuity between ABS/TCS control unit 47P connector terminals No. 14 and No. 30.

   ABS/TCS CONTROL UNIT 47P CONNECTOR



   Wire side of female terminals

   Is there continuity?

   YES — Go to step 8.

   NO — Repair open in the wire between the ABS/TCS control unit (No. 14 (No. 30)*) and the PCM (A15 (A26)*), then go to step 14.
   *: CANL line
8. Check for poor connection at the cabin wire harness/dashboard wire harness 20P connector.

   Is it OK?

   YES — Substitute a known-good ABS/TCS control unit, then go to step 14.and recheck. If any DTC does not indicated, replace the original ABS/TCS control unit, then go to step 14.

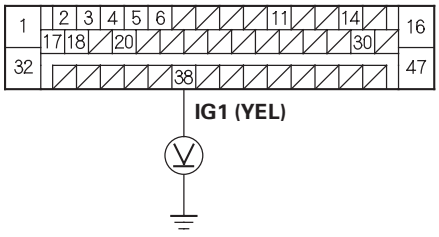
   NO — Reconnect the cabin wire harness/dashboard wire harness 20P connector, then go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

9. Turn the ignition switch OFF.
10. Disconnect the ABS/TCS control unit 47P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between ABS/TCS control unit 47P connector terminal No. 38 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

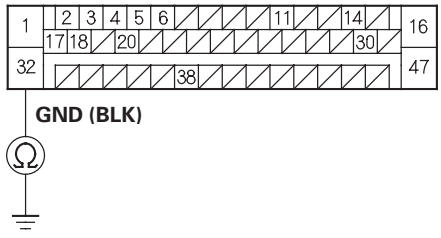
Is there battery voltage?

YES — Go to step 13.

NO — Check the No. 21 IG METER (7.5A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 21 IG METER (7.5A) fuse and the ABS/TCS control unit, then go to step 14.

13. Check for continuity between ABS/TCS control unit 47P connector terminal No. 32 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES — Substitute a known-good ABS/TCS control unit, then go to step 14. and recheck. If any DTC does not indicated, replace the original ABS/TCS control unit, then go to step 14.

NO — Repair open in the wire between the ABS/TCS control unit and G203, then go to step 14.

14. Turn the ignition switch ON (II).
15. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
16. Do the PCM idle learn procedure (see page 11-193).
17. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC U0121 is indicated, check for poor connections or loose terminals at the gauge assembly, the ABS/TCS control unit and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — Troubleshooting is complete. ■

MIL Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Do the gauges self-diagnostic procedure (see page 22-248).

   Does the MIL indicator flash?

   YES — Go to step 3.

   NO — Substitute a known-good gauge assembly, and recheck. If the MIL circuit is OK, replace the original gauge assembly. ■
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II), and watch the MIL.

   Does the MIL stay off?

   YES — Go to step 18.

   NO — Go to step 5.
5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II), and wait 20 seconds, and watch the MIL.

   Does the MIL stay on or flash more than 5 times?

   YES — Go to step 7.

   NO — The MIL circuit is OK. ■
7. Turn the ignition switch OFF.
8. Connect the Honda PGM Tester or the HDS (see page 11-239).
9. Turn the ignition switch ON (II), and read the Honda PGM Tester or the HDS.

   Does the Honda PGM Tester or the HDS communicate with the PCM?

   YES — Go to step 10.

   NO — Go to ''DLC Circuit Troubleshooting'' (see page 11-390). If no problem is found in the DLC troubleshooting, go to step 21.
10. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — Go to the DTC Troubleshooting Index.

    NO — Go to step 11.
11. Check the MIL in the DATA LIST with the Honda PGM Tester or the HDS.

    Does it indicate ON?

    YES — Go to step 12.

    NO — Substitute a known-good gauge assembly, and recheck. If the MIL circuit is OK, replace the original gauge assembly. ■
12. Check the SCS in the DATA LIST with the Honda PGM Tester or the HDS.

    Does it indicate short?

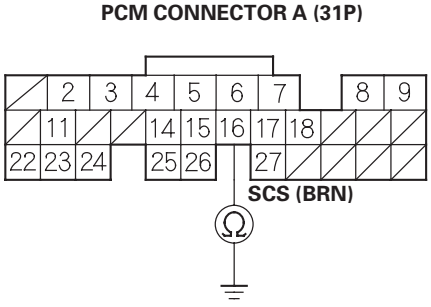
    YES — Go to step 13.

    NO — Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■
13. Turn the ignition switch OFF.
14. Jump the SCS line with the Honda PGM Tester or the HDS.
15. Disconnect PCM connector E (31P).

(cont'd)

MIL Circuit Troubleshooting (cont'd)

16. Check for continuity between PCM connector terminal A16 and body ground.



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A16) and the DLC. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

17. Try to start the engine.

Does the engine start?

YES—Go to step 18.

NO—Go to step 22.

18. Turn the ignition switch OFF.

19. Connect the Honda PGM Tester or the HDS (see page 11-239).

20. Turn the ignition switch ON (II), and read the Honda PGM Tester or the HDS.

Does the Honda PGM Tester or the HDS communicate with the PCM?

YES—Go to step 21.

NO—Go to ''DLC Circuit Troubleshooting'' (see page 11-390). If no problem is found in the DLC troubleshooting, go to step 21.

21. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Is DTC U0073 and/or U0155 indicated?

YES—Go to indicated DTCs troubleshooting. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

22. Turn the ignition swtich OFF.

23. Inspect the No. 23 +B IG MAIN (50A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Repair open in the wire between the No. 20 IG (50A) fuse and the ignition switch.
If the wire is OK, go to step 24.

NO—Repair short in the wire between No. 23 +B IG MAIN (50A) fuse and the under-dash fuse/relay box. Also replace the No. 23 +B IG MAIN (50A) fuse. ■

24. Inspect the No. 8 FI ECU (PCM) (15A) fuse in the under-hood fuse/relay box.

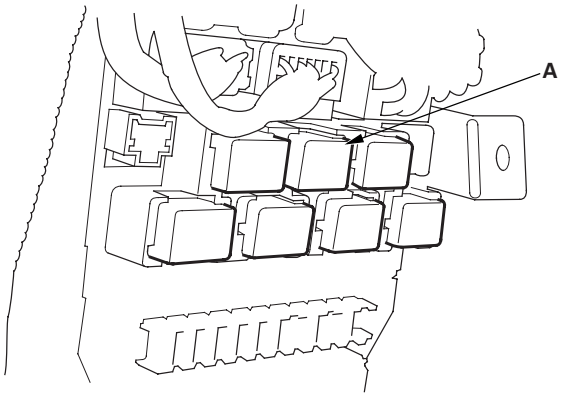
    Is the fuse OK?

    YES — Go to step 31.

    NO — Go to step 25.

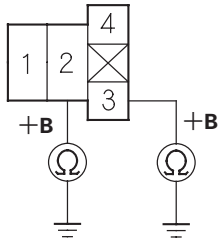
25. Remove the blown No. 8 FI ECU (15A) fuse from the under-dash fuse/relay box.

26. Remove the kick panel (see page 20-72), then remove the PGM-FI main relay 1 (FI MAIN) (A) from the under-hood fuse/relay box.



27. Check for continuity between body ground and PGM-FI main relay 1 (FI MAIN) 4P connector terminals No. 2 and Np. 3 individually.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES — Repair short in the wire between the No. 8 FI ECU (PCM) (15A) and PGM-FI main relay 1. Also replace the No. 8 FI ECU (PCM) (15A) fuse. ■

NO — Go to step 28.

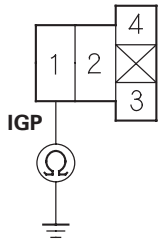
(cont'd)

MIL Circuit Troubleshooting (cont'd)

28. Disconnect each of the components or connectors below, one at a time, and check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 1 and body ground.

    - PGM-FI main relay 2 (FUEL PUMP)
    - PCM connector E (31P)
    - Each injector 2P connector
    - Camshaft position (CMP) sensor 3P connector
    - Crankshaft position (CKP) sensor 6P connector

    PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR

    Terminal side of female terminals

    Is there continuity?

    YES — Go to step 29.

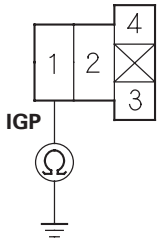
    NO — Replace the component that made the short to body ground go away when disconnected. If the item is the PCM, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/indication goes aaway with a known-good PCM, replace the original PCM.
    Also replace the No. 8 FI ECU (PCM) (15A) fuse. ■

29. Disconnect the connectors of all these components.

    - PGM-FI main relay 2 (FUEL PUMP)
    - PCM connector E (31P)
    - Injectors
    - Camshaft position (CMP) sensor
    - Crankshaft position (CKP) sensor

30. Check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 1 and body ground.

    PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR

    Terminal side of female terminals

    Is the fuse OK?

    YES — Repair short in the wire between PGM-FI main relay (FI MAIN) and each item. Also replace the No. 8 FI ECU (PCM) (15A) fuse. ■

    NO — Replace PGM-FI main relay (FI MAIN). Also replace the No. 8 FI ECU (PCM) (15A) fuse. ■

31. Inspect the No. 19 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.
    Is there continuity?

    YES — Go to step 44.

    NO — Go to step 32.

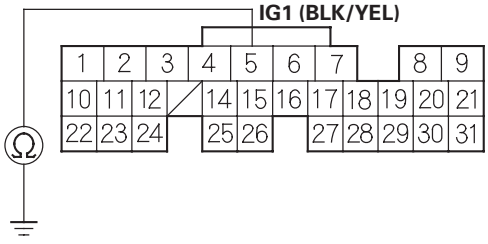
32. Remove the blown No. 19 FUEL PUMP (15A) fuse in the under-dash fuse/relay box.

33. Jump the SCS line with the Honda PGM Tester or the HDS.

34. Disconnect PCM connector E (31P).

35. Check for continuity between PCM connector terminal E5 and body ground.

PCM CONNECTOR E (31P)



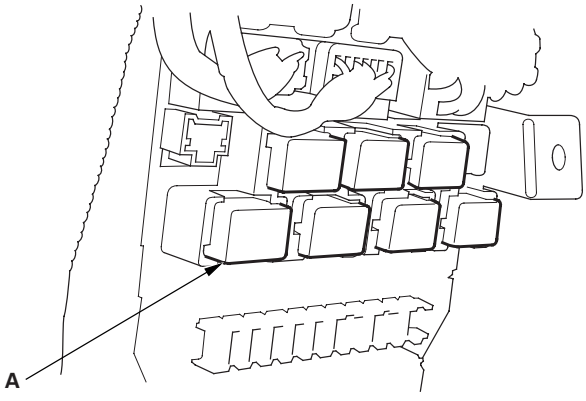
Wire side of female terminals

Is there continuity?

YES — Go to step 36.

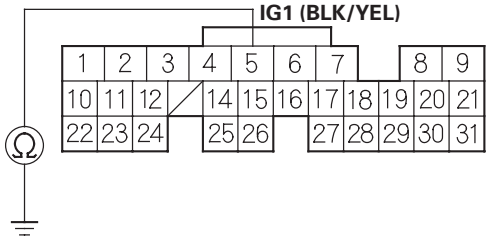
NO — Replace the No. 19 FUEL PUMP (15 A) fuse, and update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

36. Remove the kick panel (see page 20-72), then remove the PGM-FI main relay 2 (FUEL PUMP) (A) ftom the under-hood fuse/relay box.



37. Check for continuity between PCM connector terminal E5 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES — Repair short in the wire between the No. 19 FUEL PUMP (15A) fuse and the PCM (E5), or between the No. 19 FUEL PUMP (15A) fuse and the PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 19 FUEL PUMP (15A) fuse. ■

NO — Go to step 38.

38. Remove the trunk floor trim panel.

39. Remove the access panel from the floor.

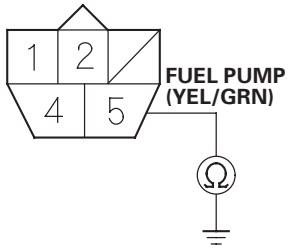
40. Disconnect the fuel pump 5P connector.

(cont'd)

MIL Circuit Troubleshooting (cont'd)

41. Check for continuity between fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



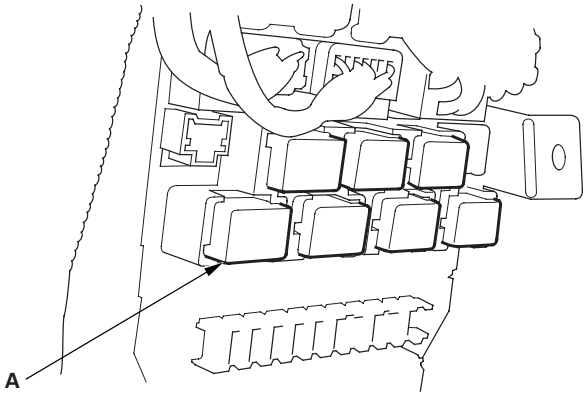
Wire side of female terminals

Is there continuity?

YES — Repair short in the wire between the fuel pump and PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 19 FUEL PUMP (15A) fuse. ■

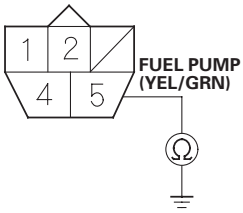
NO — Go to step 42.

42. Reinstall PGM-FI main relay 2 (FUEL PUMP) (A).



43. Check for continuity between fuel pump 5P connector terminal No. 5 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES — Replace PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 19 FUEL PUMP (15A) fuse. ■

NO — Check the fuel pump, and replace it if necessary. Also replace the No. 19 FUEL PUMP (15A) fuse. ■

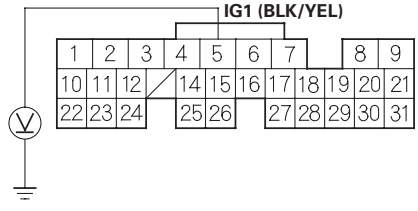
44. Jump the SCS line with the Honda PGM Tester or the HDS.

45. Disconnect PCM connector E (31P).

46. Turn the ignition switch ON (II).

47. Measure voltage between PCM connector terminal E5 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

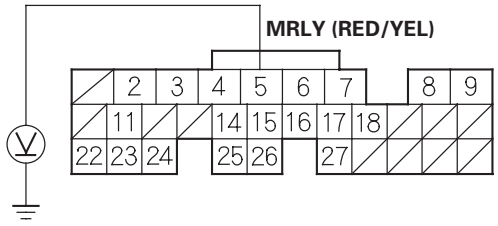
Is there battery voltage?

YES — Go to step 48.

NO — Repair open in the wire between the No. 19 FUEL PUMP (15A) fuse and the PCM (E5). ■

48. Measure voltage between PCM connector terminal A5 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

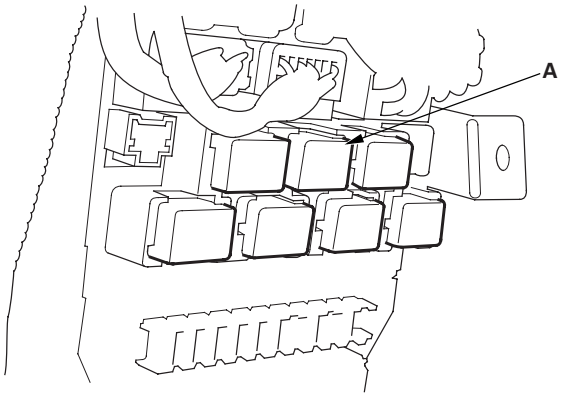
Is there battery voltage?

YES—Go to step 53.

NO—Go to step 49.

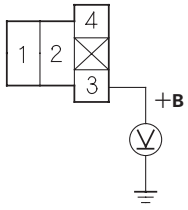
49. Turn the ignition switch OFF.

50. Remove the kick panel (see page 20-72), then remove the PGM-FI main relay 1 (FI MAIN) (A) from the under-hood fuse/relay box.



51. Measure voltage between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 3 and body ground.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

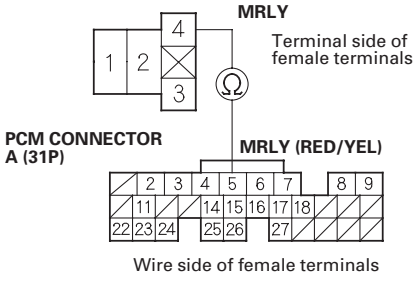
Is there battery voltage?

YES—Go to step 52.

NO—Repair open in the wire between the No. 8 FI ECU (PCM) (15A) fuse and PGM-FI main relay 1.■

52. Check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 4 and PCM connector terminal A5.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Test PGM-FI main relay 1 (FI MAIN) (see page 22-75). If the relay is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/indication goes away with a known-good PCM, replace the original PCM.■

NO—Repair open in the wire between PGM-FI main relay 1 (FI MAIN) and the PCM (A5).■

(cont'd)

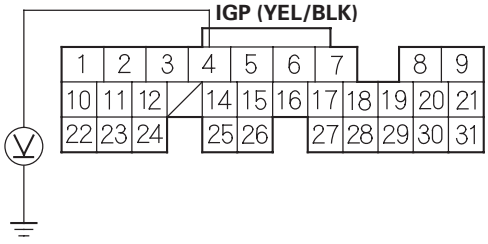
MIL Circuit Troubleshooting (cont'd)

53. Reconnect PCM connector E (31P).

54. Turn the ignition switch ON (II).

55. Measure voltage between body ground and PCM connector terminals E4.

PCM CONNECTOR E (31P)



Wire side of female terminals

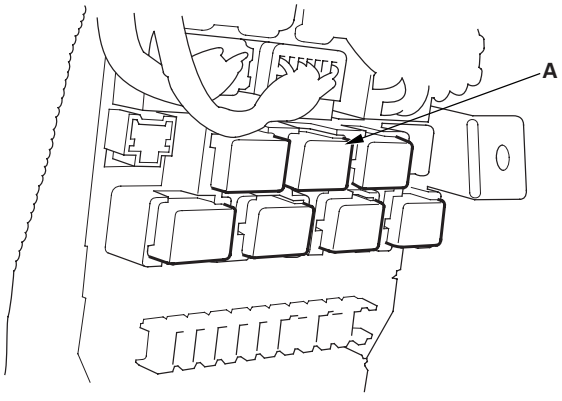
Is there battery voltage?

YES — Go to step 62.

NO — Go to step 56.

56. Turn the ignition switch OFF.

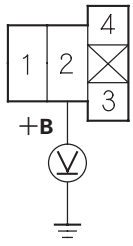
57. Remove the kick panel (see page 20-72), then remove the PGM-FI main relay 1 (FI MAIN) (A) from the under-hood fuse/relay box.



58. Turn the ignition switch ON (II).

59. Measure voltage between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

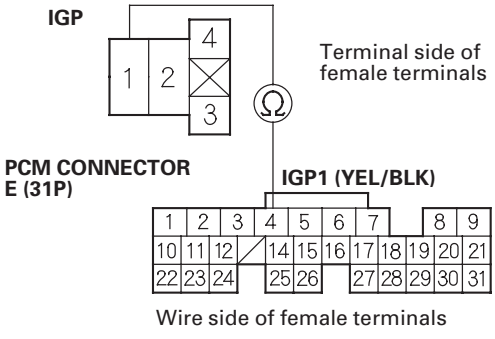
YES — Go to step 60.

NO — Repair open in the wire between the No. 8 FI ECU (PCM) (15A) fuse and PGM-FI main relay 1 (FI MAIN). ■

60. Turn the ignition switch OFF.

61. Check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 1 and PCM connector terminal E4.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



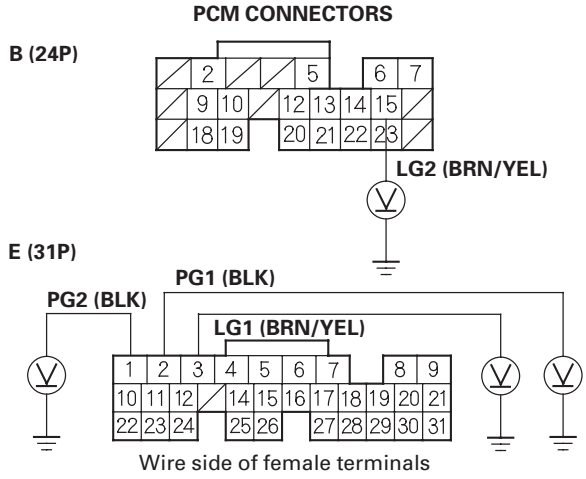
Wire side of female terminals

Is there continuity?

YES — Replace PGM-FI main relay 1 (FI MAIN). ■

NO — Repair open in the wire between PGM-FI main relay 1 (FI MAIN) and the PCM (E4). ■

62. Measure voltage between body ground and PCM connector terminals B15, E1, E2, and E3 individually.



Is there more than 0.2 V?

YES—Repair open in the wire(s) that had more than 0.2 V between G101 and the PCM (B15, E1, E2, E3). ■

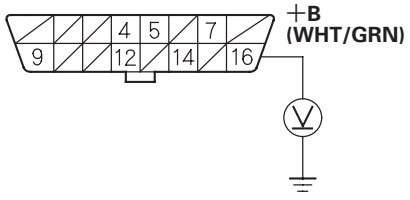
NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

DLC Circuit Troubleshooting

NOTE:
- If the PCM does not communicate with the Honda PGM Tester or HDS, do this troubleshooting procedure.
- Check that MIL circuit is normal, then do this troubleshooting.

1. Measure voltage between DLC terminal No. 16 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

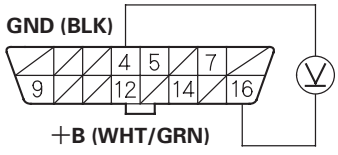
Is there battery voltage?

YES — Go to step 2.

NO — Repair open in the wire between DLC terminal No. 16 and the No. 8 FI ECU (PCM) (15A) fuse in the under-hood fuse/relay box. ■

2. Measure voltage between DLC terminals No. 4 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

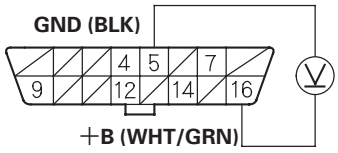
Is there battery voltage?

YES — Go to step 3.

NO — Repair open in the wire between DLC terminal No. 4 and body ground (G503). ■

3. Measure voltage between DLC terminals No. 5 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there battery voltage?

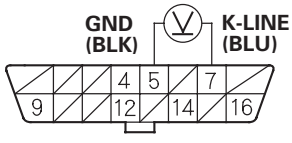
YES — Go to step 4.

NO — Repair open in the wire between DLC terminal No. 5 and body ground (G503). ■

4. Turn the ignition switch ON (II).

5. Measure voltage between DLC terminals No. 5 and No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there 8.5 V or more?

YES — Go to step 11.

NO — Go to step 6.

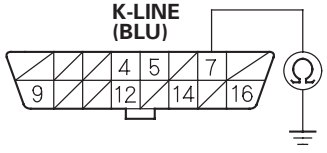
6. Turn the ignition switch OFF.

7. Jump the SCS line with the Honda PGM Tester or the HDS.

8. Disconnect PCM connector E (31P).

9. Check for continuity between DLC terminal No. 7 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

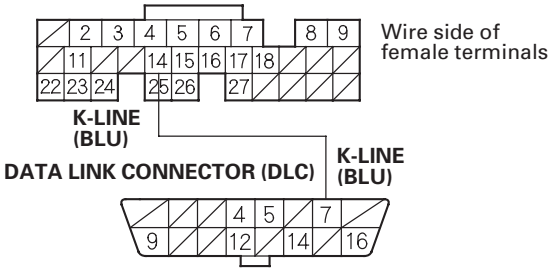
Is there continuity?

YES — Repair short to ground in the wire between DLC terminal No. 7 and the PCM (A14). After repairing the wire, check for a DTC with the Honda PGM Tester or the HDS and go to the DTC Troubleshooting index. ■

NO — Go to step 10.

10. Check for continuity between DLC terminal No. 7 and PCM terminal A14.

PCM CONNECTOR A (31P)



Terminal side of female terminals

Is there continuity?

YES — Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

NO — Repair open in the wire between DLC terminal No. 7 and the PCM (A14). After repairing the wire, check for a DTC with the Honda PGM Tester or the HDS and go to the DTC Troubleshooting index. ■

11. Turn the ignition switch OFF.

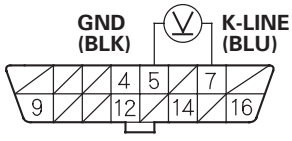
12. Jump the SCS line with the Honda PGM Tester or the HDS.

13. Disconnect ECM/PCM connector A (31P).

14. Turn the ignition switch ON (II).

15. Measure voltage between DLC terminals No. 5 and No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there 0 V?

YES — Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

NO — Repair short to power in the wire between DLC terminal No. 7 and the PCM (A14). After repairing the wire, check for a DTC with the Honda PGM Tester or the HDS, and go to the DTC Troubleshooting index. ■

Injector Test

NOTE: Check the following items before testing: idle speed, ignition timing and idle CO%.

1. Try to start the engine.

   Does the engine start?

   YES — Go to step 2.

   NO — Go to step 4.

2. Select ONE INJECTOR in INSPECTON menu with the Honda PGM Tester or the HDS.

3. Disable each injetor at a time by selecting number of a injector which you want to stop.

4. Inspect the change in the idle speed.

   - If the idle speed drop is almost the same for each cylinder, the fuel injectors are normal.
   - If the idle speed or quality remains the same when you disable a particular injector, faulty injector is suspected. Replace the injector and retest (see page 11-393).

5. Check the clicking sound of each fuel injector by means of a stethoscope when the engine is idling.

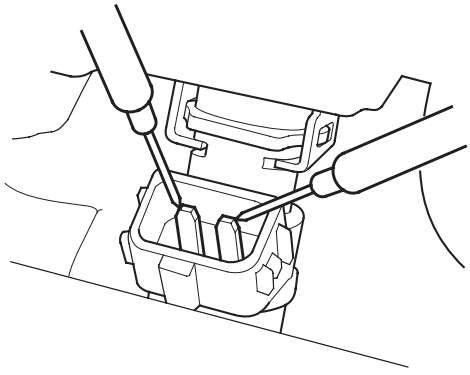
   - If any injector fails to make the typical clicking sound, check the sound again after replacing the injector (see page 11-393).
   - If clicking sound is still absent, check the following.
     – Whether there is wire breakage or poor connection in the YEL/BLK wire between the PGM-FI main relay and the junction connector.
     – Whether the junction connector is open or corroded.
     – Whether there is wire breakage or poor connection in the YEL/BLK wire between the junction connector and the injector.
     – Whether there is any short-circuiting, wire breakage or poor connection in the wire between the fuel injector and the PCM.
   - If all is OK, the test is complete.

6. Turn the ignition switch OFF.

7. Remove the intake manifold (see page 9-2).

8. Remove the injector connector.

9. Measure the resistance between injector terminals No. 1 and No. 2.



   Is there 10— 13 Ω ?

   YES — Go to step 10.

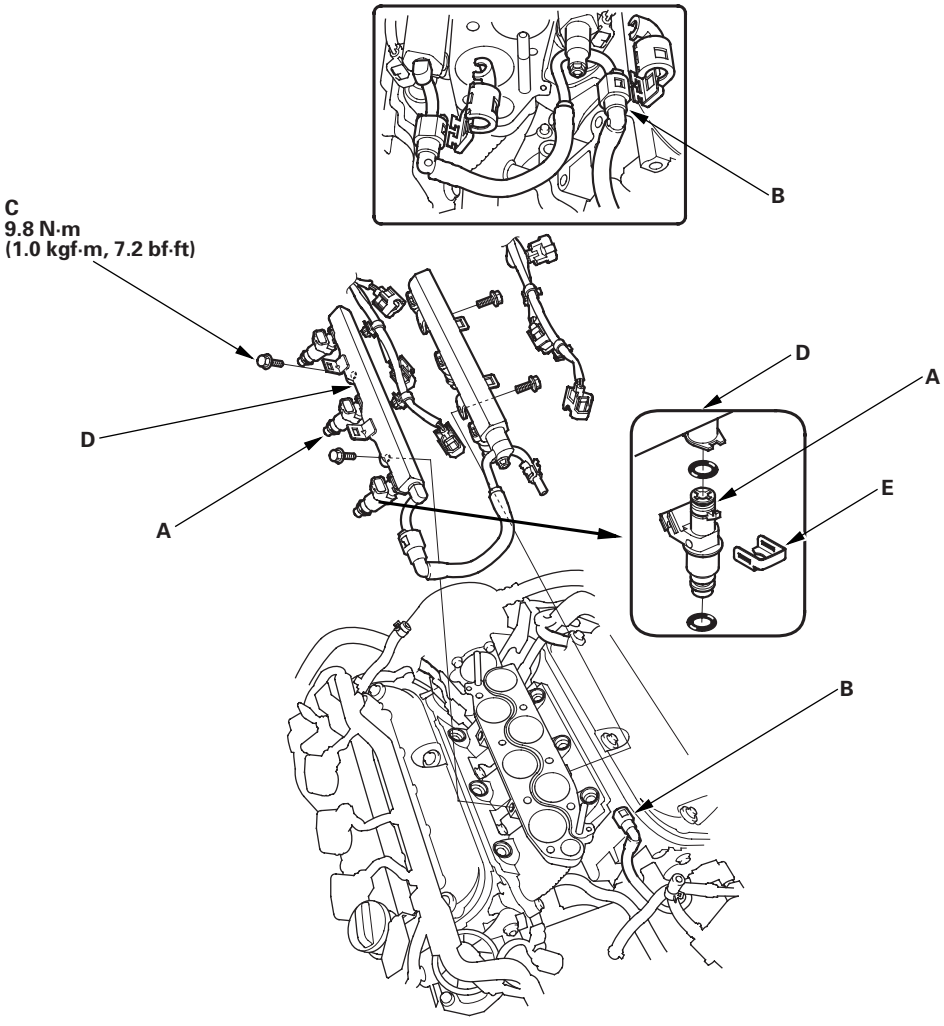
   NO — Replace the injector (see page 11-393). ■

10. Check the fuel pressure (see page 11-472).

    - If the fuel pressure is as specified, check the following:
      – Whether there is wire breakage, or poor connection in the YEL/BLK wire between the PGM-FI main relay and the junction connector.
      – Whether the junction connector is open or corroded.
      – Whether there is wire breakage, or poor connection in the YEL/BLK wire between the junction connector and the injector.
      – Whether there is any short-circuiting, wire breakage or poor connection in the wire between the injector and the PCM.
    - If the fuel pressure is not as specified, recheck the fuel pressure (see page 11-472).

Injector Replacement

1. Relieve fuel pressure (see page 11-471).
2. Remove the intake manifold (see page 9-2).
3. Disconnect the connectors from the injectors (A).

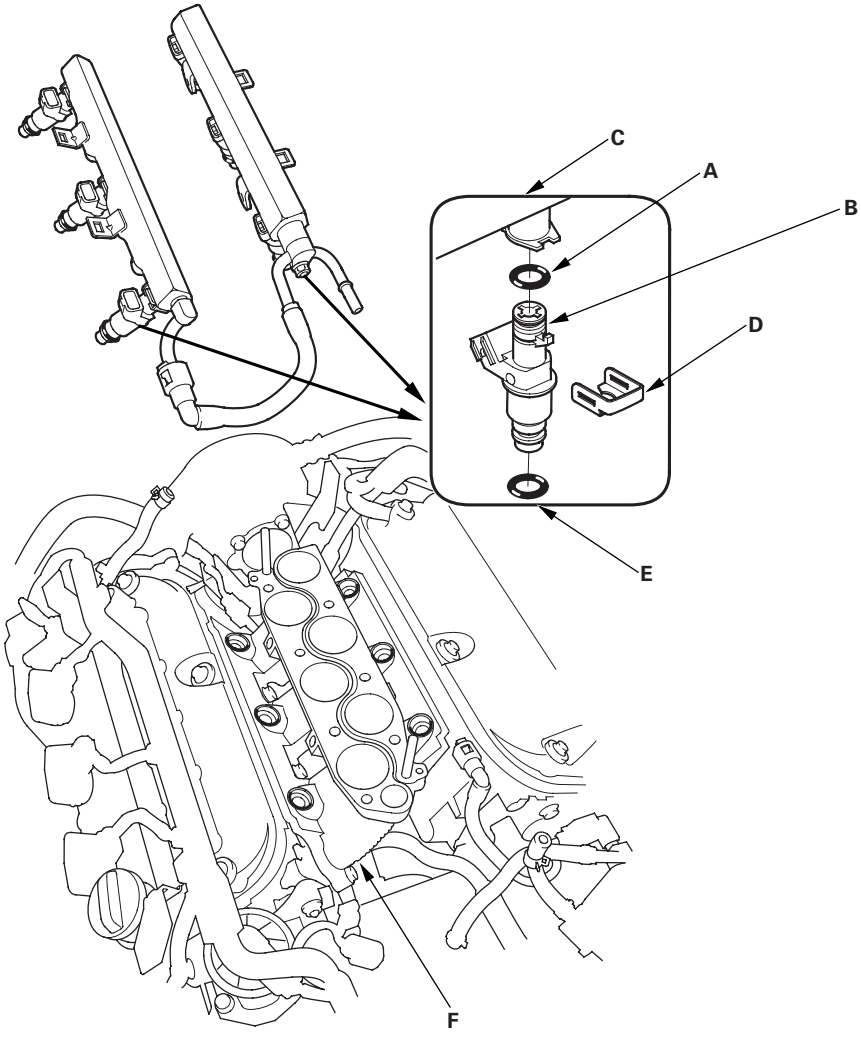


4. Disconnect the quick-connect fittings (B).
5. Remove the fuel rail mounting bolts (C) from the fuel rail (D).
6. Remove the injector clip (E) from the injector.
7. Remove the injector from the fuel rail.

(cont'd)

Injector Replacement (cont'd)

8. Coat the new O-rings (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).

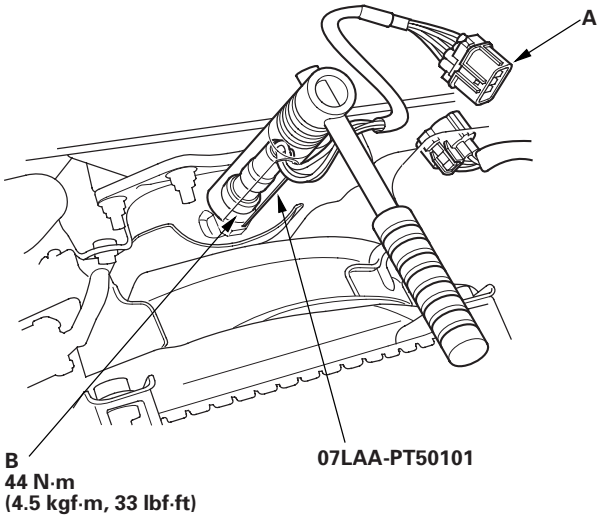


9. Install the injector clip (D).
10. Coat the injector O-ring (E) with clean engine oil.
11. Install the injectors in the fuel rail first, then install the injectors in the injector base (F).
12. Install the fuel rail mounting nuts.
13. Connect the connectors on the injectors.
14. Connect the quick-connect fittings.
15. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for about 2 seconds, the fuel pressure in the fuel line rises. Repeat this two or three times, then check for fuel leakage.

Front A/F Sensor Replacement

Special Tools Required
O2 sensor socket wrench 07LAA-PT50101

1. Disconnect the front A/F sensor 8P connector (A), then remove the front A/F sensor (B).

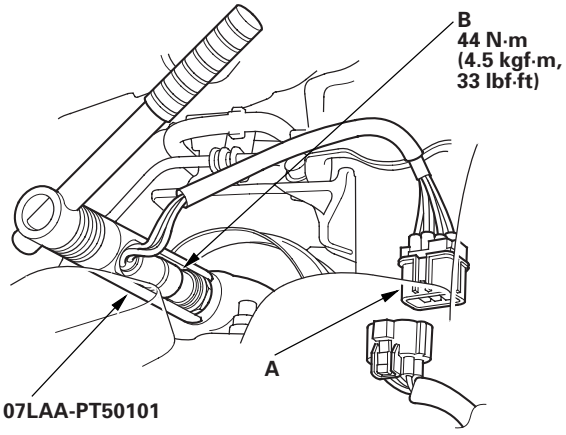


2. Install the front A/F sensor in the reverse order of removal.

Rear A/F Sensor Replacement

Special Tools Required
O2 sensor socket wrench 07LAA-PT50101

1. Disconnect the rear A/F sensor 8P connector (A), then remove the rear A/F sensor (B).

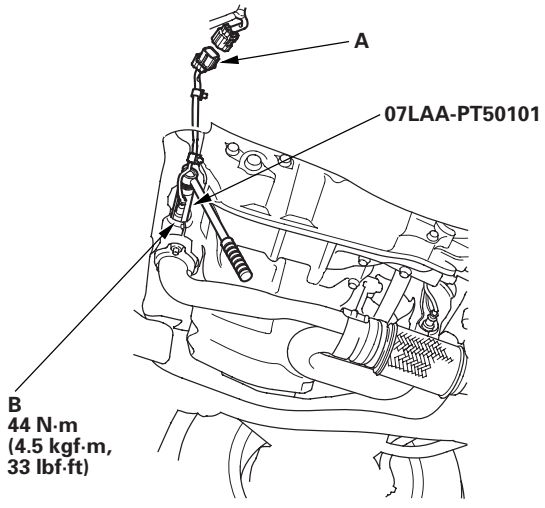


2. Install the rear A/F sensor in the reverse order of removal.

Front Secondary HO2S Replacement

Special Tools Required
O2 sensor socket wrench 07LAA-PT50101

1. Disconnect the front secondary HO2S 4P connector (A), then remove the front A/F sensor (B).

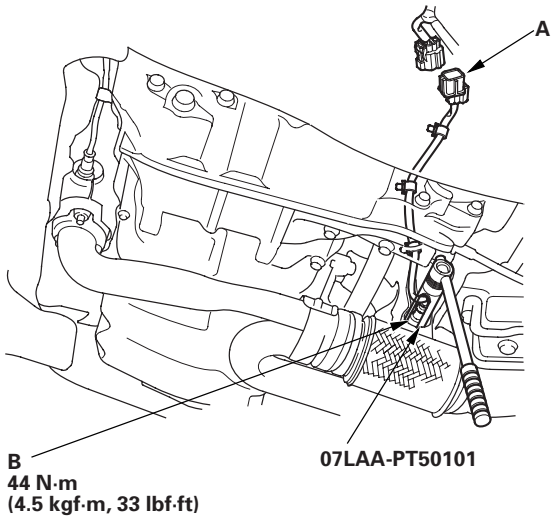


2. Install the front secondary HO2S in the reverse order of removal.

Rear Secondary HO2S Replacement

Special Tools Required
O2 sensor socket wrench 07LAA-PT50101

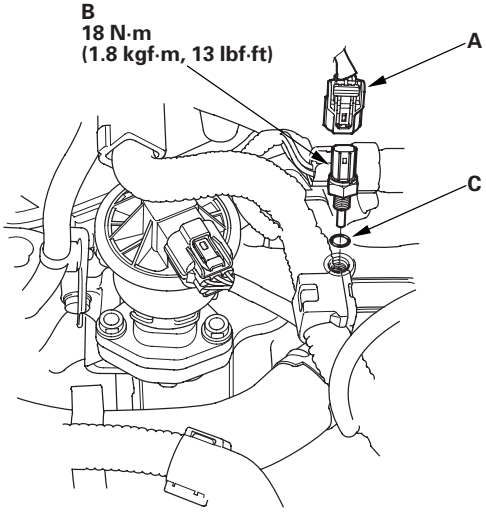
1. Disconnect the rear secondary HO2S 4P connector (A), then remove the front A/F sensor (B).



2. Install the rear secondary HO2S in the reverse order of removal.

ECT Sensor Replacement

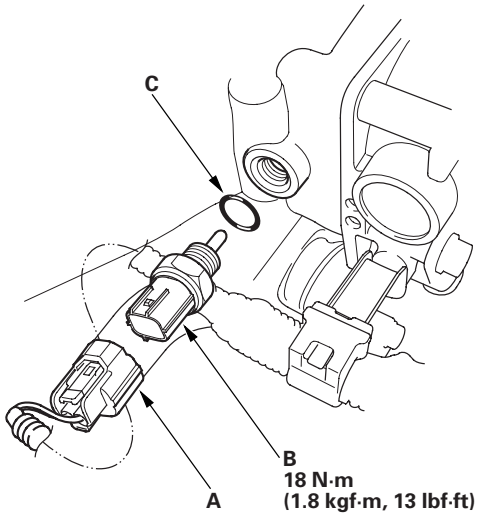
1. Remove the air cleaner (see page 11-220).
2. Disconnect the ECT sensor connector (A).



3. Remove the ECT sensor (B).
4. Install the sensor in the reverse order of removal with a new O-ring (C).

IAT Sensor Replacement

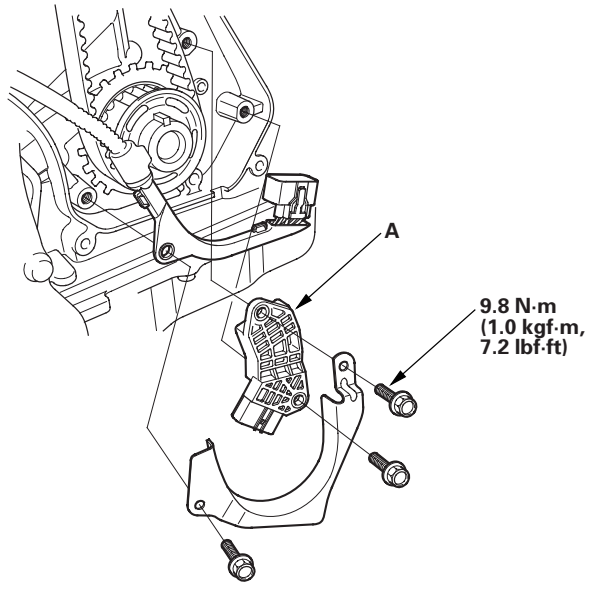
1. Disconnect the IAT sensor connector (A).



2. Remove the IAT sensor (B).
3. Install the sensor in the reverse order of removal with a new O-ring (C).

CKP Sensor Replacement

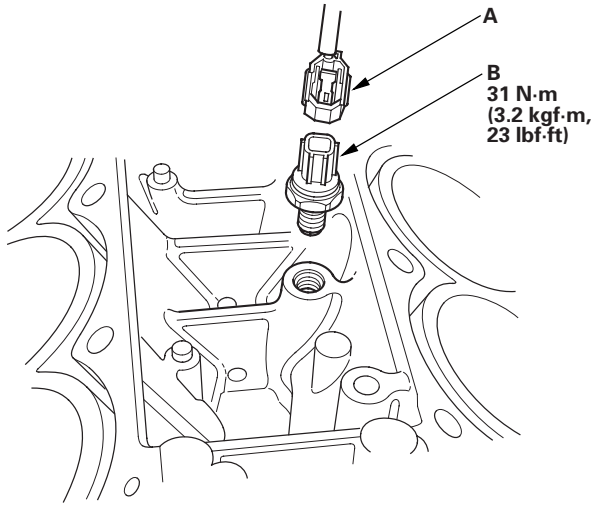
1. Move the auto-tensioner to remove tension from the alternator belt, then remove the belt (see step 5 on page 6-62).
2. Remove the crankshaft pulley (see page 6-62).
3. Remove the upper and lower front covers from the engine (see page 6-62).
4. Remove the CKP sensor A/B (A) from the oil pump.



5. Install the sensor in the reverse order of removal.

Knock Sensor Replacement

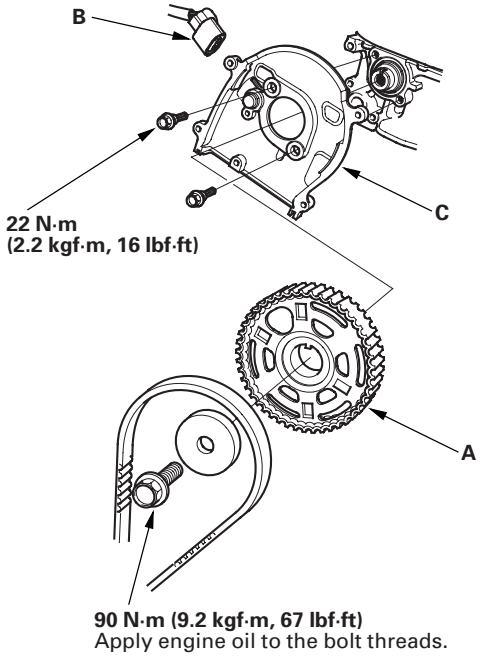
1. Remove the intake manifold (see page 9-2).
2. Remove the fuel rails and the intake runner base.
3. Disconnect the knock sensor connector (A), then remove the knock sensor (B).



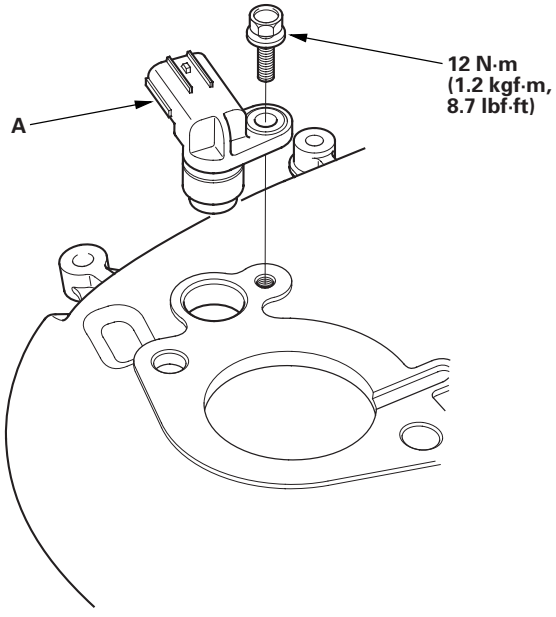
4. Install the sensor in the reverse order of removal.

CMP Sensor Replacement

1. Set the No. 1 piston at top dead center (see page 6-64).
2. Move the auto-tensioner to remove tension from the drive belt, then remove the belt (see page 4-89).
3. Remove the crankshaft pulley (see page 6-62).
4. Remove the upper and lower front covers from the engine (see page 6-62).
5. To hold the timing belt adjuster in its current position, thread in the battery clamp bolt hand-tight (see page 6-62).
6. Loosen the idler pulley bolt about five or six turns, then remove the timing belt from the front camshaft pulley (see page 6-64).
7. Remove the front camshaft pulley (A).



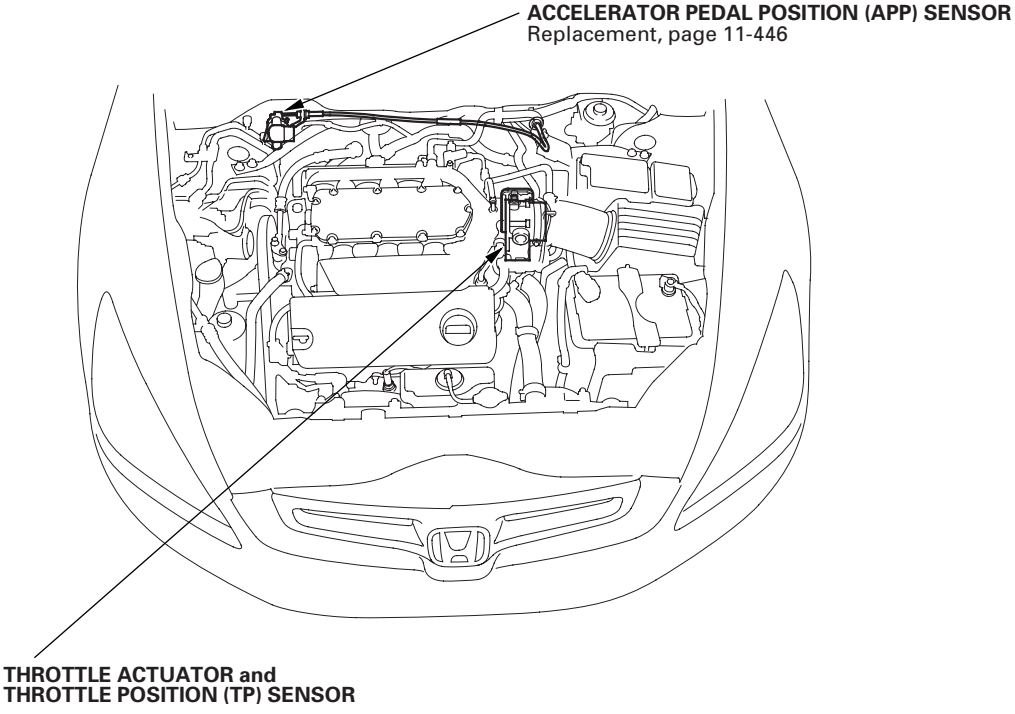
8. Disconnect the CMP sensor connector (B), then remove the back cover (C).
9. Remove the CMP sensor (A) from the back cover.



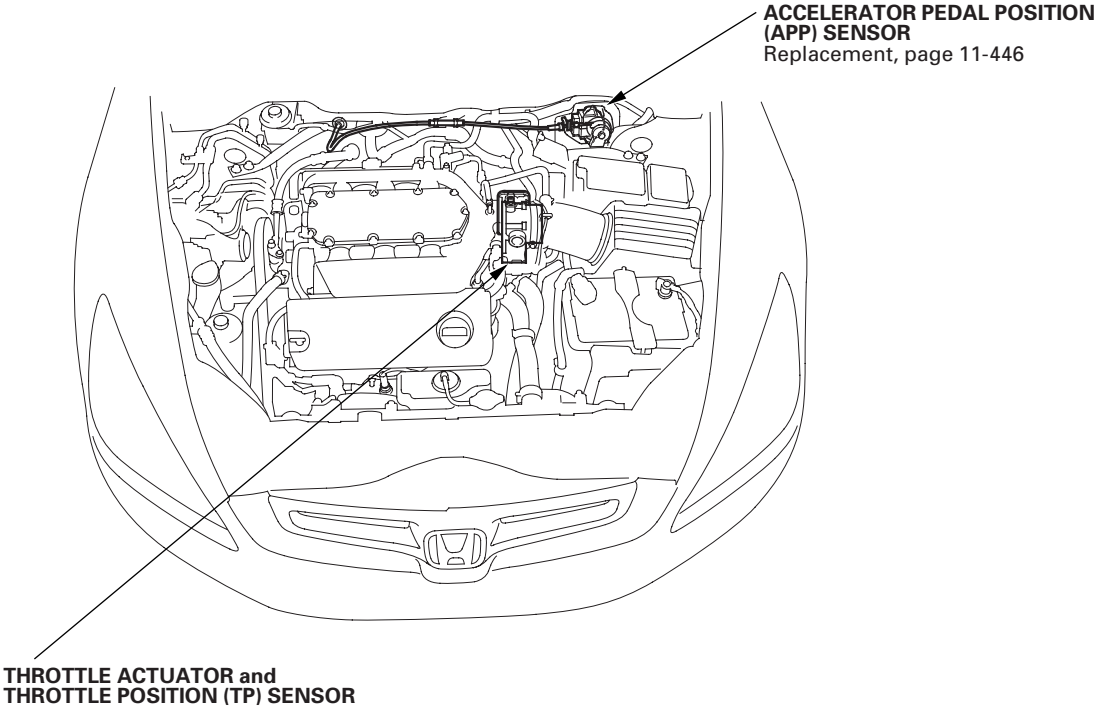
10. Install the sensor in the reverse order of removal. To install the timing belt (see page 6-64).

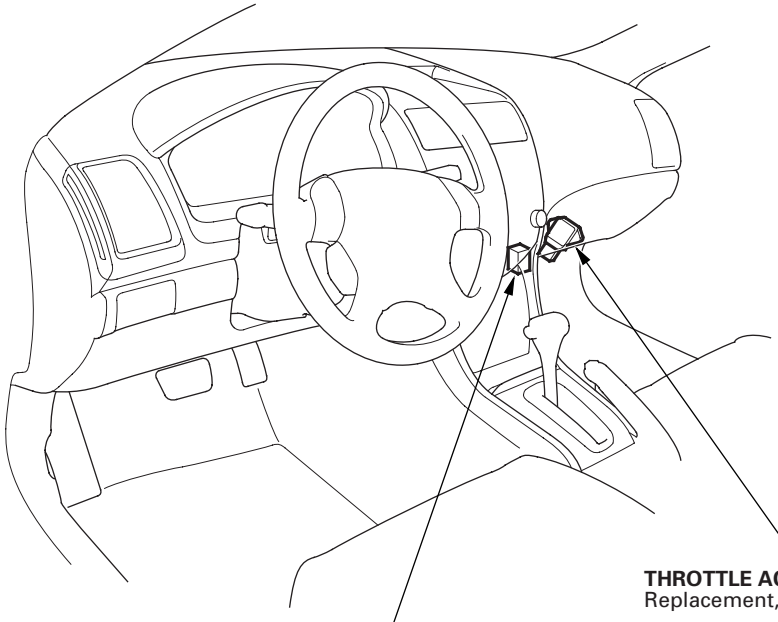
Component Location Index

LHD model



RHD model





THROTTLE ACTUATOR CONTROL MODULE
Replacement, page 11-446

THROTTLE ACTUATOR CONTROL MODULE RELAY

* : The illustration shows LHD model.

DTC Troubleshooting

DTC P0122: TP Sensor A Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are DTC P0122 and P0222 simultaneously indicated?

   YES – Go to step 9.

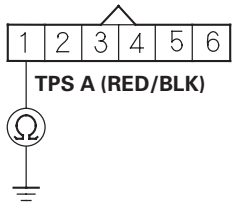
   NO – Go to step 3.
3. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
4. Check the TP SENSOR-1 in the DATA LIST with the Honda PGM Tester or the HDS.

   Is there about 0°, 0 % or 0.3 V when the throttle is fully opened?

   YES – Go to step 5.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module. ■
5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Disconnect the throttle actuator control module 16P connector.
8. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

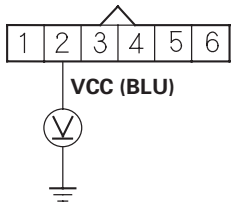
Is there continuity?

YES – Repair short in the wire between the throttle body and the throttle actuator control module (TPS A line), then go to step 17.

NO – Substitute a known-good throttle actuator control module, then go to step 17. and recheck. If DTC P0122 is not indicated, replace the original throttle actuator control module, then go to step 17. If DTC P0122 is indicated, then go to step 15.

9. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

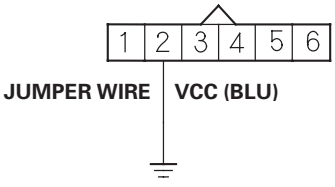
Is there about 5 V?

YES — Go to step 15.

NO — Go to step 10.

10. Turn the ignition switch OFF.
11. Disconnect the throttle actuator control module 16P connector.
12. Disconnect the throttle body 6P connector.
13. Connect the throttle body 6P connector terminal No. 2 to body ground with a jumper wire.

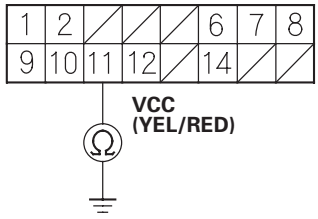
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

14. Check for continuity between throttle actuator control module 16P connector terminal No. 11 and body ground.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES — Substitute a known-good throttle actuator control module, then go to step 17. and recheck. If DTC P0122 is not indicated, replace the original throttle actuator control module, then go to step 17. If DTC P0122 is indicated, then go to step 15.

NO — Repair open in the wire between the throttle body and the throttle actuator control module (VCC line), then go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

15. Turn the ignition switch OFF.
16. Replace the throttle body (see page 11-487).
17. Turn the ignition switch ON (II).
18. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
19. Do the PCM idle learn procedure (see page 11-193).
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0122 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

DTC P0123: TP Sensor A Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are DTC P0123 and P0223 simultaneously indicated?

   YES – Go to step 11.

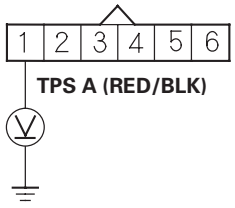
   NO – Go to step 3.
3. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
4. Check the TP SENSOR-1 in the DATA LIST with the Honda PGM Tester or the HDS.

   Is there about 86°, 86 % or 4.8 V?

   YES – Go to step 5.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module. ■
5. Measure voltage between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

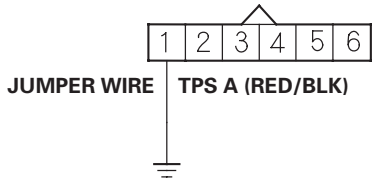
Is there about 5 V?

YES – Go to step 16.

NO – Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect the throttle actuator control module 16P connector.
8. Disconnect the throttle body 6P connector.
9. Connect the throttle body 6P connector terminal No. 1 to body ground with a jumper wire.

THROTTLE BODY 6P CONNECTOR



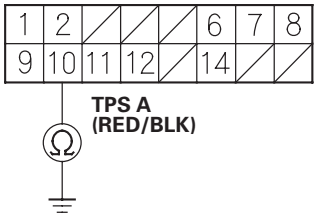
Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between throttle actuator control module 16P connector terminal No. 10 and body ground.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module, then go to step 18. and recheck. If DTC P0123 is not indicated, replace the original throttle actuator control module, then go to step 18. If DTC P0123 is indicated, then go to step 16.

NO—Repair open in the wire between the throttle body and the throttle actuator control module (TPS A line), then go to step 18.

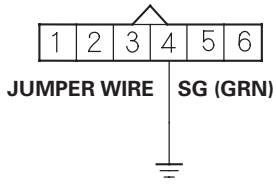
11. Turn the ignition switch OFF.

12. Disconnect the throttle body 6P connector.

13. Disconnect the throttle actuator control module 16P connector.

14. Connect the throttle body 6P connector terminal No. 4 to body ground with a jumper wire.

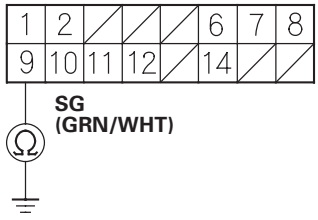
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

15. Check for continuity between throttle actuator control module 16P connector terminal No. 9 and body ground.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module, then go to step 18. and recheck. If DTC P0123 is not indicated, replace the original throttle actuator control module, then go to step 18. If DTC P0123 is indicated, then go to step 16.

NO—Repair open in the wire between the throttle body and the throttle actuator control module (SG line), then go to step 18.

16. Turn the ignition switch OFF.

17. Replace the throttle body (see page 11-487).

18. Turn the ignition switch ON (II).

19. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

20. Do the PCM idle learn procedure (see page 11-193).

21. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If is DTC P0123 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting. ■

    NO—Troubleshooting is complete. ■

DTC Troubleshooting (cont'd)

DTC P0222: TP Sensor B Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are DTC P0122 and P0222 simultaneously indicated?

   YES – Go to step 9.

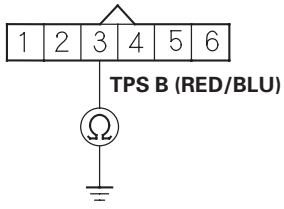
   NO – Go to step 3.
3. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
4. Check the TP SENSOR-2 in the DATA LIST with the Honda PGM Tester or the HDS.

   Is there about 0°, 0 % or 0.3 V when the throttle is fully opened?

   YES – Go to step 5.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module. ■
5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Disconnect the throttle actuator control module 16P connector.
8. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

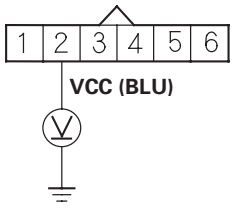
Is there continuity?

YES – Repair short in the wire between the throttle body and the throttle actuator control module (TPS B line), then go to step 17.

NO – Substitute a known-good throttle actuator control module, then go to step 17. and recheck. If DTC P0222 is not indicated, replace the original throttle actuator control module, then go to step 17. If DTC P0222 is indicated, then go to step 15.

9. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

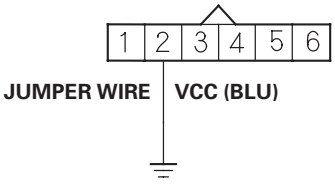
Is there about 5 V?

YES—Go to step 15.

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Disconnect the throttle actuator control module 13P connector.
12. Disconnect the throttle body 6P connector.
13. Connect the thottle body 6P connector terminal No. 2 to body ground with a jumper wire.

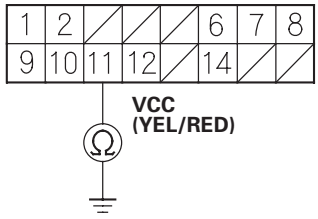
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

14. Check for continuity between throttle actuator control module 16P connector terminal No. 11 and body ground.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module, then go to step 17. and recheck. If DTC P0222 is not indicated, replace the original throttle actuator control module, then go to step 17. If DTC P0222 is indicated, then go to step 15.

NO—Repair open in the wire between the throttle body and the throttle actuator control module (VCC line), then go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

15. Turn the ignition switch OFF.
16. Replace the throttle body (see page 11-487).
17. Turn the ignition switch ON (II).
18. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
19. Do the PCM idle learn procedure (see page 11-193).
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0222 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

DTC P0223: TP Sensor B Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are DTC P0123 and P0223 simultaneously indicated?

   YES — Go to step 11.

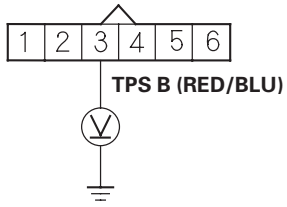
   NO — Go to step 3.
3. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
4. Check the TP SENSOR-2 in the DATA LIST with the Honda PGM Tester or the HDS.

   Is there about 86°, 86 % or 4.8 V?

   YES — Go to step 5.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module. ■
5. Measure voltage between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

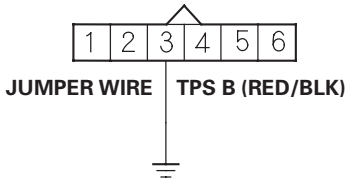
Is there about 5 V?

YES — Go to step 16.

NO — Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect the throttle actuator control module 16P connector.
8. Disconnect the throttle body 6P connector.
9. Connect the throttle body 6P connector terminal No. 3 to body ground with a jumper wire.

THROTTLE BODY 6P CONNECTOR



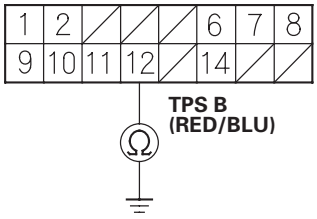
Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between throttle actuator control module 16P connector terminal No. 12 and body ground.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module, then go to step 18. and recheck. If DTC P0223 is not indicated, replace the original throttle actuator control module, then go to step 18. If DTC P0223 is indicated, then go to step 16.

NO—Repair open in the wire between the throttle body and the throttle actuator control module (TPS B line), then go to step 18.

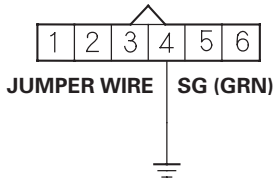
11. Turn the ignition switch OFF.

12. Disconnect the throttle body 6P connector.

13. Disconnect the throttle actuator control module 16P connector.

14. Connect the throttle body 6P connector terminal No. 4 to body ground with a jumper wire.

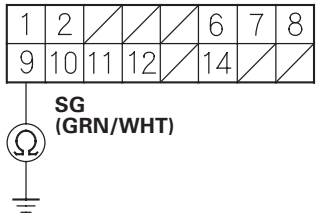
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

15. Check for continuity between throttle actuator control module 16P connector terminal No. 9 and body ground.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module, then go to step 18. and recheck. If DTC P0223 is not indicated, replace the original throttle actuator control module, then go to step 18. If DTC P0223 is indicated, then go to step 16.

NO—Repair open in the wire between the throttle body and the throttle actuator control module (SG line), then go to step 18.

16. Turn the ignition switch OFF.

17. Replace the throttle body (see page 11-487).

18. Turn the ignition switch ON (II).

19. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

20. Do the PCM idle learn procedure (see page 11-193).

21. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0223 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

DTC Troubleshooting (cont'd)

DTC P2135: TP Sensor A/B Voltage Incorrect correlation

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Do the TAC TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2135 indicated?

   YES – Go to step 5.

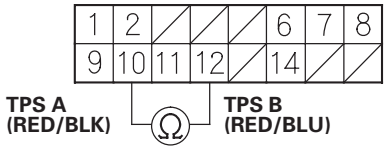
   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module. ■
5. Check the TP SENSOR-1 and TP SENSOR-2 in the DATA LIST with the Honda PGM Tester or the HDS.

   Are they the same voltage?

   YES – Go to step 6.

   NO – Go to step 11.
6. Turn the ignition switch OFF.
7. Disconnect the throttle actuator control module 16P connector.
8. Check for continuity between throttle actuator control module 16P connector terminals No. 10 and No. 12.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

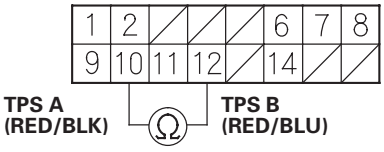
YES – Go to step 9.

NO – Substitute a known-good throttle actuator control module, then go to step 13. and recheck. If DTC P2135 is not indicated, replace the original throttle actuator control module, then go to step 13.

9. Disconnect the throttle body 6P connector.

10. Check for continuity between throttle actuator control module 16P connector terminals No. 10 and No. 12.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the TPS A line and the TPS B line, then go to step 13.

NO—Go to step 11.

11. Turn the ignition switch OFF.

12. Replace the throttle body (see page 11-487).

13. Turn the ignition switch ON (II).

14. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

15. Do the PCM idle learn procedure (see page 11-193).

16. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2135 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—Troubleshooting is complete. ■

DTC Troubleshooting (cont'd)

DTC P2122: APP Sensor A (Throttle Position Sensor D) Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are DTC P0107, P0112, P0117, P2122, P2127, P 2228, P0700, P2627 and P2630 simultaneously indicated?

   YES — Go to step 18.

   NO — Go to step 4.

4. Check the APP SENSOR-1 in the DATA LIST with the Honda PGM Tester or the HDS.

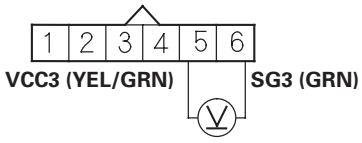
   Is there about 0°, 0 % or 0.1 V or less with the throttle fully opened?

   YES — Go to step 5.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the APP sensor and at the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect the APP sensor 6P connector.
7. Turn the ignition switch ON (II).
8. At wire harness side, measure voltage between the APP sensor 6P connector terminals No.5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

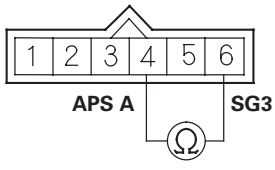
Is there about 5 V?

YES — Go to step 9.

NO — Go to step 17.

9. Turn the ignition switch OFF.
10. At sensor side, measure resistance between the APP sensor 6P connector terminals No. 4 and No. 6 with the throttle fully closed.

APP SENSOR 6P CONNECTOR



Terminal side of male termonals

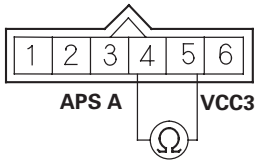
Is there about 0.35 — 0.45 kΩ ?

YES — Go to step 11.

NO — Go to step 27.

11. At sensor side, measure resistance between the APP sensor 6P connector terminals No. 4 and No. 5 with the throttle fully closed.

APP SENSOR 6P CONNECTOR



Terminal side of male terminals

Is there about 2.7—3.3 kΩ ?

YES—Go to step 12.

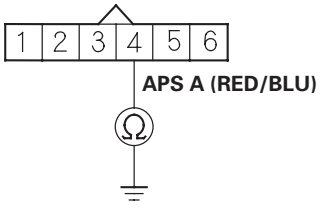
NO—Go to step 27.

12. Jump the SCS line with the Honda PGM Tester or the HDS.

13. Disconnect PCM connector D (17P).

14. At wire harness side, check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

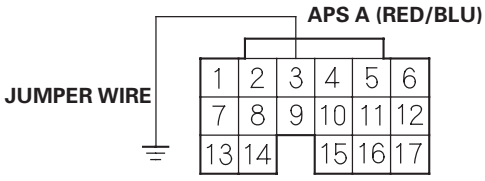
Is there continuity?

YES—Repair short in the wire between the APP sensor A and PCM (D3), then go to step 28.

NO—Go to step 15.

15. Connect PCM connector terminal D3 to body ground with a jumper wire.

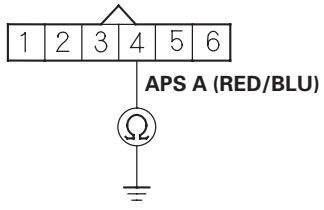
PCM CONNECTOR D (17P)



Wire side of female terminals

16. At wire harness side, check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

Is there continuity?

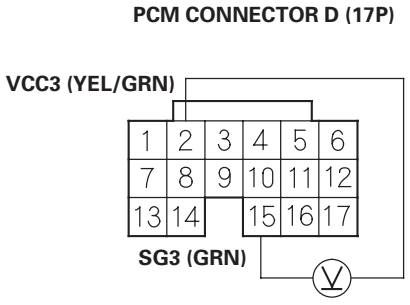
YES—Go to step 33.

NO—Repair open in the wire between the APP sensor A and PCM (D3), then go to step 28.

(cont'd)

DTC Troubleshooting (cont'd)

17. Measure voltage between PCM connector terminals D2 and D15.



Wire side of female terminals

Is there about 5 V?

YES — Repair open in the wire between the PCM (D 2) and the APP sensor A, then go to step 28.

NO — Go to step 33.

18. Turn the ignition switch OFF.

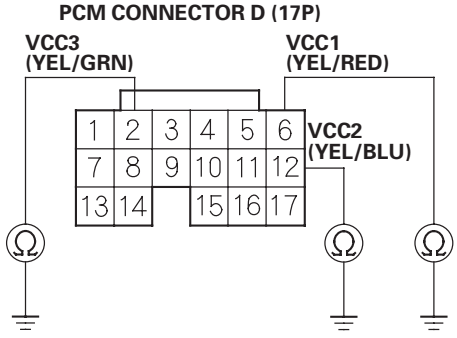
19. Jump the SCS line with the Honda PGM Tester or the HDS.

20. Disconnect PCM connector D (17P).

21. Disconnect the connectors from the these sensors:

    - MAP sensor
    - APP sensor
    - EGR valve
    - Mainshaft speed sensor
    - Countershaft speed sensor

22. Check for continuity between body ground and PCM connector terminals D2, D6 and D12 individually.



Wire side of female terminals

Is there continuity?

YES — Repair short in the wire between the PCM (D2, D6 or D12) and the each sensor, then go to step 28.

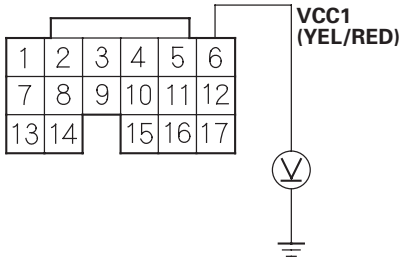
NO — Go to step 23.

23. Reconnect PCM connector D (17P).

24. Turn the ignition switch ON (II).

25. Measure voltage between PCM connector terminal D6 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 5 V?

YES—Go to step 26.

NO—Go to step 33.

26. Continue to monitor voltage at the PCM connector terminal D6 while reconnecting the following sensors, one at a time.

- MAP sensor
- APP sensor
- EGR sensor
- Mainshaft speed sensor
- Countershaft sensor

Did the voltage drop to about 0 V?

YES—Replace the sensor that caused the voltage to drop, then go to step 30.

NO—Go to step 33.

27. Replace the APP sensor (see page 11-446).

28. Reconnect PCM connectors.

29. Turn the ignition switch ON (II).

30. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

31. Do the PCM idle learn procedure (see page 11-193).

32. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2122 is indicated, check for poor connections or loose terminals at the APP sensor A and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—Troubleshooting is complete. ■

33. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

34. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2122 is indicated, check for poor connections or loose terminals at the APP sensor A and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241).

DTC Troubleshooting (cont'd)

DTC P2123: APP sensor A (Throttle Position Sensor D) Circuit High Voltage

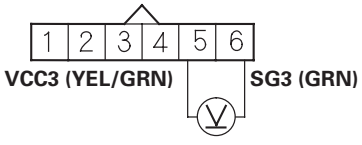
1. Turn the ignition switch ON (II).
2. Check the APP SENSOR-1 in the DATA LIST with the Honda PGM Tester or the HDS.

   Is there about 88°, 88 % or 4.9 V or more?

   YES — Go to step 3.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the APP sensor and at the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. At wire harness side, measure voltage between the APP sensor 6P connector terminals No. 5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

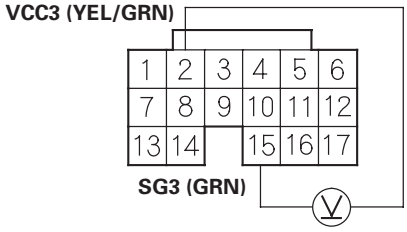
Is there about 5 V?

YES — Go to step 8.

NO — Go to step 7.

7. Measure voltage between PCM connector terminals D2 and D15.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 5 V?

YES — Repair open in the wire between the PCM (D15) and the APP sensor A, then go to step 10.

NO — Go to step 14.

8. Turn the ignition switch OFF.
9. Replace the APP sensor (see page 11-446).
10. Turn the ignition switch ON (II).
11. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
12. Do the PCM idle learn procedure (see page 11-193).
13. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P2123 is indicated, check for poor connections or loose terminals at the APP sensor A and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — Troubleshooting is complete. ■

14. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

15. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P2123 is indicated, check for poor connections or loose terminals at the APP sensor A and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P2127: APP Sensor B (Throttle Position Sensor E) Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Are DTC P0107, P0112, P0117, P2122, P2127, P2228, P0700, P2627 and P2630 simultaneously indicated?

   YES — Go to step 18.

   NO — Go to step 4.

4. Check the APP SENSOR-2 in the DATA LIST with the Honda PGM Tester or the HDS.

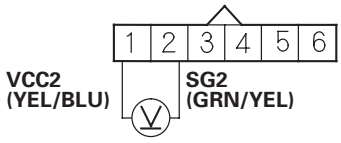
   Is there about 0°, 0 % or 0.1 V or less with the throttle fully opened?

   YES — Go to step 5.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the APP sensor and at the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect the APP sensor 6P connector.
7. Turn the ignition switch ON (II).
8. At wire harness side, measure voltage between the APP sensor 6P connector terminals No.1 and No. 2.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

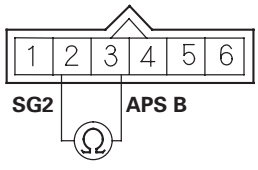
Is there about 5 V?

YES — Go to step 9.

NO — Go to step 17.

9. Turn the ignition switch OFF.
10. At sensor side, measure resistance between the APP sensor 6P connector terminals No. 2 and No. 3 with the throttle fully closed.

APP SENSOR 6P CONNECTOR



Terminal side of male terminals

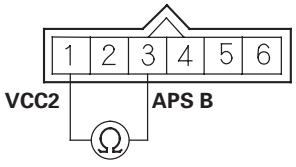
Is there about 0.35 — 0.45 kΩ?

YES — Go to step 11.

NO — Go to step 27.

11. At sensor side, measure resistance between the APP sensor 6P connector terminals No. 1 and No. 3 with the throttle fully closed.

APP SENSOR 6P CONNECTOR



Terminal side of male terminals

Is there about 5.6—6.8 kΩ ?

YES—Go to step 12.

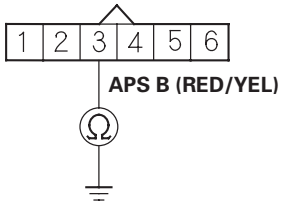
NO—Go to step 27.

12. Jump the SCS line with the Honda PGM Tester or the HDS.

13. Disconnect PCM connector D (17P).

14. At wire harness side, check for continuity between APP sensor 6P connector terminal No. 3 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

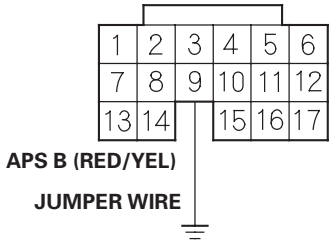
Is there continuity?

YES—Repair short in the wire between the APP sensor B and PCM (D9), then go to step 28.

NO—Go to step 15.

15. Connect PCM connector terminal D3 to body ground with a jumper wire.

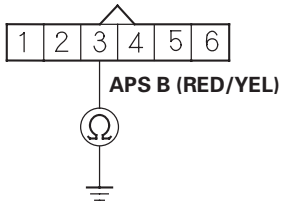
PCM CONNECTOR D (17P)



Wire side of female terminals

16. At wire harness side, check for continuity between APP sensor 6P connector terminal No. 3 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

Is there continuity?

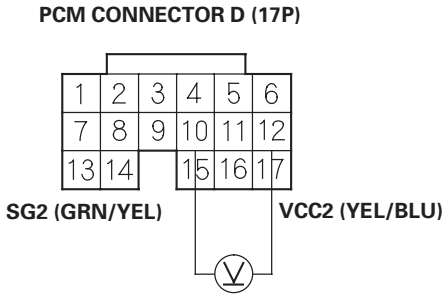
YES—Go to step 29.

NO—Repair open in the wire between the APP sensor B and PCM (D9), then go to step 28.

(cont'd)

DTC Troubleshooting (cont'd)

17. Measure voltage between PCM connector terminals D2 and D15.



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (D12) and the APP sensor B, then go to step 28.

NO—go to step 18.

18. Turn the ignition switch OFF.

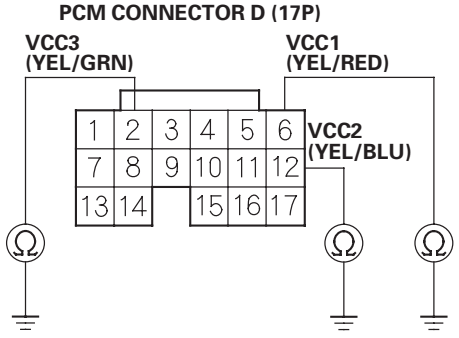
19. Jump the SCS line with the Honda PGM Tester or the HDS.

20. Disconnect PCM connector D (17P).

21. Disconnect the connectors from the these sensors:

- MAP sensor
- APP sensor
- EGR valve
- Mainshaft speed sensor
- Countershaft speed sensor

22. Check for continuity between body ground and PCM connector terminals D12, D6 and D12 individually.



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (D2, D6 or D12) and the each sensor, then go to step 28.

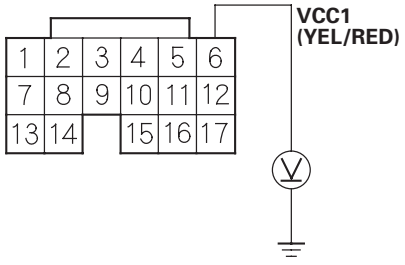
NO—Go to step 23.

23. Reconnect PCM connector D (17P).

24. Turn the ignition switch ON (II).

25. Measure voltage between PCM connector terminal D6 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 5 V?

YES—Go to step 26.

NO—Go to step 33.

26. Continue to monitor voltage at the PCM connector terminal D6 while reconnecting the following sensors, one at a time.

- MAP sensor
- APP sensor
- EGR sensor
- Mainshaft speed sensor
- Countershaft sensor

Did the voltage drop to about 0 V?

YES—Replace the sensor that caused the voltage to drop, then go to step 30.

NO—Go to step 33.

27. Replace the APP sensor (see page 11-446).

28. Reconnect PCM connectors.

29. Turn the ignition switch ON (II).

30. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

31. Do the PCM idle learn procedure (see page 11-193).

32. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2127 is indicated, check for poor connections or loose terminals at the APP sensor B and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—Troubleshooting is complete.■

33. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

34. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2127 is indicated, check for poor connections or loose terminals at the APP sensor B and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241).■

DTC Troubleshooting (cont'd)

DTC P2128: APP sensor B (Throttle Position Sensor E) Circuit High Voltage

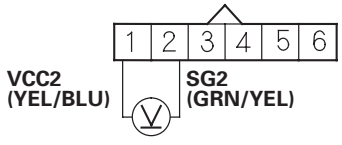
1. Turn the ignition switch ON (II).
2. Check the APP SENSOR-2 in the DATA LIST with the Honda PGM Tester or the HDS.

   Is there about 186°, 186 % or 4.9 V or more?

   YES — Go to step 3.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the APP sensor and at the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. At wire harness side, measure voltage between the APP sensor 6P connector terminals No.1 and No. 2.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

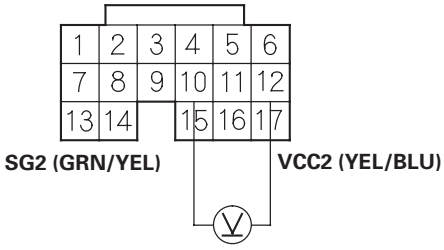
Is there about 5 V?

YES — Go to step 8.

NO — Go to step 7.

7. Measure voltage between PCM connector terminals D10 and D12.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 5 V?

YES — Repair open in the wire between the PCM (D10) and the APP sensor B, then go to step 10.

NO — Go to step 14.

8. Turn the ignition switch OFF.
9. Replace the APP sensor (see page 11-446).
10. Turn the ignition switch ON (II).
11. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
12. Do the PCM idle learn procedure (see page 11-193).
13. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P2128 is indicated, check for poor connections or loose terminals at the APP sensor B and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — Troubleshooting is complete. ■

14. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

15. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P2128 is indicated, check for poor connections or loose terminals at the APP sensor B and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P2138: APP Sensor A/B Incorrect Voltage correlation

1. Turn the ignition switch ON (II).
2. Check the APP SENSOR-1 and APP SENSOR-2 in the DATA LIST with the Honda PGM Tester or the HDS.

   Does APP SENSOR-1 and APP SENSOR-2 change in the same throttle angle when the throttle is fully opened?

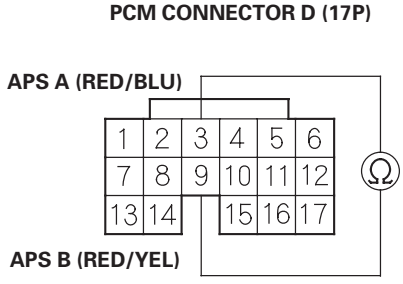
   YES — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the APP sensor and at the PCM. ■

   NO — Go to step 3.
3. Check the APP SENSOR-1 and APP SENSOR-2 in the DATA LIST with the Honda PGM Tester or the HDS.

   Are they the same voltage?

   YES — Go to step 4.

   NO — Go to step 9.
4. Turn the ignition switch OFF.
5. Jump the SCS line with the Honda PGM Tester or the HDS.
6. Disconnect the APP sensor 6P connector.
7. Disconnect PCM connector D (17P).
8. Check for continuity between PCM connector terminals D3 and D9.



Wire side of female terminals

   Is there continuity?

   YES — Repair short in the wire between the PCM (D3) and the PCM (D9), then go to step 11.

   NO — Go to step 16.
9. Turn the ignition switch OFF.
10. Replace the APP sensor (see page 11-446).
11. Reconnect PCM connector D (17P).
12. Turn the ignition switch ON (II).
13. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
14. Do the PCM idle learn procedure (see page 11-193).
15. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P2138 is indicated, check for poor connections or loose terminals at the APP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — Troubleshooting is complete. ■

16. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

17. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P2138 is indicated, check for poor connections or loose terminals at the APP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P1683: Throttle Valve Default Position Spring Performance Problem

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P1683 indicated?

   YES—Go to step 7.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and at the throttle actuator control module. ■
7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Push the throttle valve to close side as shown.

   NOTE:
   - Do not operate the ignition switch during check.
   - Be careful not to pinch a finger during check.



10. Release the throttle valve.

    Does the throttle valve return?

    YES—Do the throttle body cleaning (see page 11-483).

    NO—Go to step 11.
11. Turn the ignition switch OFF.
12. Replace the throttle body (see page 11-487).
13. Turn the ignition switch ON (II).
14. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
15. Do the PCM idle learn procedure (see page 11-193).
16. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
17. Turn the ignition switch OFF.
18. Turn the ignition switch ON (II).
19. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P1683 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

DTC P1684: Throttle Valve Return Spring Performance Problem

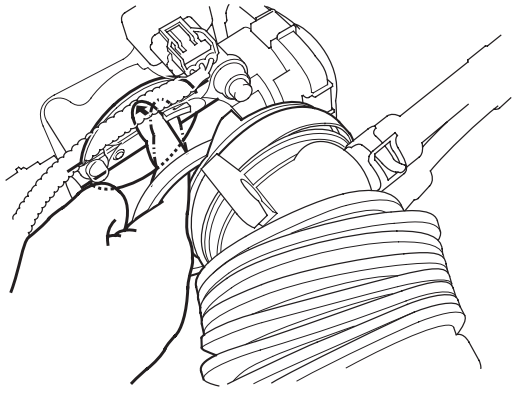
1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P1684 indicated?

   YES—Go to step 7.

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and at the throttle actuator control module. ■
7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Push the throttle valve to open side as shown.

   NOTE:
   - Do not operate the ignition switch during check.
   - Be careful not to pinch a finger during check.



10. Release the throttle valve.

    Does the throttle valve return?

    YES—Do the throttle body cleaning (see page 11-483), then go to step 13.

    NO—Go to step 11.
11. Turn the ignition switch OFF.
12. Replace the throttle body (see page 11-487).
13. Turn the ignition switch ON (II).
14. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
15. Do the PCM idle learn procedure (see page 11-193).
16. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
17. Turn the ignition switch OFF.
18. Turn the ignition switch ON (II).
19. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P1684 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

DTC Troubleshooting (cont'd)

DTC P2101: Throttle Actuator System Malfunction

1. Record the following freeze data.

   • Engine speed
   • Vehicle speed
   • Accelerator position

2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

3. Do the TAC TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.

4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2101 indicated?

   YES — Go to step 7.

   NO — Go to step 5.

5. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

6. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2101 indicated?

   YES — Go to step 7.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and at the throttle actuator control module, then do the throttle body cleaning (see page 11-483). ■

7. Turn the ignition switch OFF.

8. Disconnect the intake air duct from the throttle body.

9. Turn the ignition switch ON (II).

10. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

11. Do the TAC TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.

12. Visually check the throttle valve operation.

    NOTE: Be careful not to pinch a finger during check.

    Does a throttle valve operate smoothly?

    YES — Go to step 13.

    NO — Do the throttle body cleaning (see page 11-483), then go to step 20. and recheck. If DTC P2101 is indicated, then go to step 18.

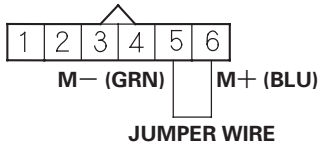
13. Turn the ignition switch OFF.

14. Disconnect the throttle body 6P connector.

15. Disconnect the throttle actuator control module 16P connector.

16. Connect the throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

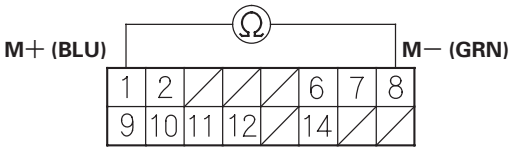
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

17. Check for continuity between throttle actuator control module 16P connector terminals No. 1 and No. 8.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module (see page 11-446), then go to step 20. and recheck. If DTC P2101 is not indicated, replace the original throttle actuator control module (see page 11-446), then go to step 20. If DTC P2101 is indicated, then go to step 18.

NO—Repair open in the wires between the throttle body and the throttle actuator control module (motor drive lines), then go to step 20.

18. Turn the ignition switch OFF.

19. Replace the throttle body (see page 11-487).

20. Turn the ignition switch ON (II).

21. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

22. Do the PCM idle learn procedure (see page 11-193).

23. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

24. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

25. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2101 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then do the throttle body cleaning (see page 11-483), then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—Troubleshooting is complete. ■

DTC Troubleshooting (cont'd)

DTC P2108: Throttle Actuator Control Module Problem

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2108 indicated?

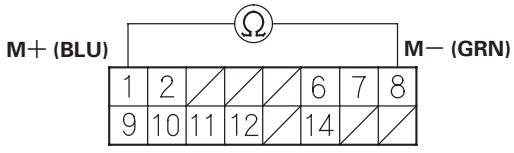
   YES—Substitute a known-good throttle actuator control module (see page 11-446), and recheck. If DTC P2108 is not indicated, replace the original throttle actuator control module (see page 11-446). ■

   NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body, the throttle actuator control module and at the PCM. ■

DTC P2118: Throttle Actuator Current Range/ Performance Problem

1. Disconnect the throttle actuator control module 16P connector.
2. Measure resistance between throttle actuator control module 16P connector terminals No. 1 and No. 8.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

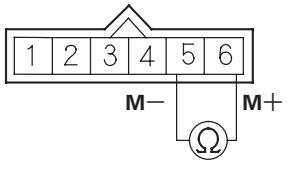
Is there about 1.0 Ω or less?

YES—Go to step 3.

NO—Substitute a known-good throttle actuator control module (see page 11-446), then go to step 7. and recheck. If DTC P2118 is not indicated, replace the original throttle actuator control module (see page 11-446), then go to step 7.

3. Disconnect the throttle body 6P connector.
4. At throttle body side, measure resistance between the throttle body 6P connector terminals No. 5 and No. 6 with the throttle fully closed.

THROTTLE BODY 6P CONNECTOR



Terminal side of male terminals

Is there about 1.0 Ω or less?

YES—Go to step 5.

NO—Repair short in the wires between the throttle body and throttle actuator control module (motor drive lines), then go to step 6.

5. Replace the throttle body (see page 11-487).
6. Reconnect the throttle body 6P connector.
7. Reconnect the throttle actuator control module 16P connector.
8. Turn the ignition switch ON (II).
9. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
10. Do the PCM idle learn procedure (see page 11-193).
11. Turn the ignition switch OFF.
12. Turn the ignition switch ON (II).
13. Open the throttle pedal to full open position slowly.
14. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2118 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—Troubleshooting is complete.■

DTC Troubleshooting (cont'd)

DTC P2176: Throttle Actuator Control System Idle Position Not Learned

NOTE: If DTC P2135 is stored at the same time as DTC P2176, troubleshoot DTC P2135 first, then recheck for DTC P2176.

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II) and wait 10 seconds.
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2176 indicated?

   YES – Go to step 6.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and at the throttle actuator control module, then do the throttle body cleaning (see page 11-483). ■
6. Turn the ignition switch OFF.
7. Disconnect the intake air duct from the throttle body.
8. Turn the ignition switch ON (II).
9. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
10. Do the TAC TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.
11. Visually check the throttle valve operation.

    NOTE: Be careful not to pinch a finger during work. Keep hands away from the throttle valve.

    Does the throttle valve operate to the full close position?

    YES – Go to step 12.

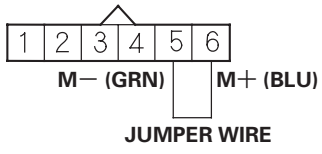
    NO – Go to step 13.
12. Check for sludge or carbon on the throttle valve.

    Is there sludge or carbon on the throttle valve?

    YES – Do the throttle body cleaning (see page 11-483), then go to step 21 and recheck.

    NO – Go to step 19.
13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Disconnect the throttle actuator control module 16P connector.
16. Connect the throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

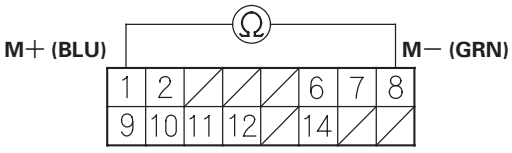
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

17. Check for continuity between throttle actuator control module 16P connector terminals No. 1 and No. 8.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module (see page 11-446), then go to step 20. and recheck. If DTC P2176 is not indicated, replace the original throttle actuator control module (see page 11-446), then go to step 20.

NO—Repair open in the wires between the throttle body and the throttle actuator control module (motor drive lines), then go to step 20.

18. Turn the ignition switch OFF.

19. Replace the throttle body (see page 11-487).

20. Turn the ignition switch ON (II).

21. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

22. Do the PCM idle learn procedure (see page 11-193).

23. Turn the ignition switch OFF.

24. Turn the ignition switch ON (II) and wait 10 seconds.

25. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2176 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then do the throttle body cleaning (see page 11-483), then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—Troubleshooting is complete.■

DTC Troubleshooting (cont'd)

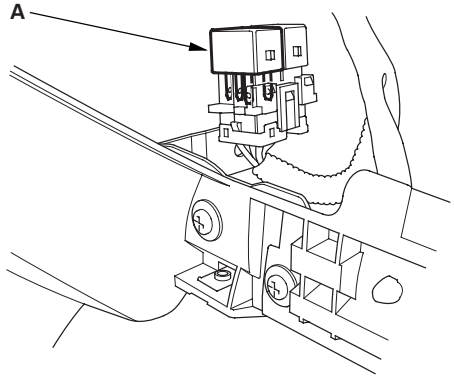
DTC P2552: Throttle Actuator Control Module Relay Malfunction

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Do the TAC TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.

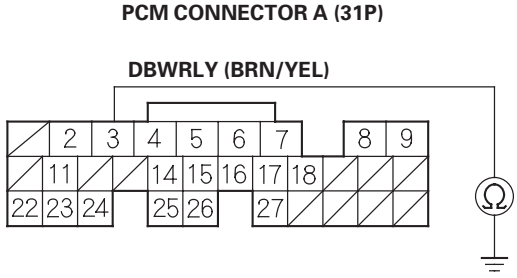
   Is the RELAY Circuit OK?

   YES — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module and at the PCM. ■

   NO — Go to step 4.
4. Turn the ignition switch OFF.
5. Jump the SCS line with the Honda PGM Tester or the HDS.
6. Remove the throttle actuator control module relay (A).



7. Disconnect PCM connectors A (31P).
8. Check for continuity between PCM connector terminal A3 and body ground.



Wire side of female terminals

Is there continuity?

YES — Repair short in the wire between the throttle actuator control module relay and PCM (A3), then go to step 10.

NO — Go to step 9.

9. Test the throttle actuator control module relay (see page 22-75).

   Is the relay OK?

   YES — Go to step 17.

   NO — Replace the throttle actuator control module relay, then go to step 10.

10. Reconnect PCM connectors A (31P).

11. Turn the ignition switch ON (II).

12. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

13. Do the PCM idle learn procedure (see page 11-193).

14. Turn the ignition switch OFF.

15. Turn the ignition switch ON (II) and wait 10 seconds.

16. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P2552 is indicated, check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

17. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

18. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P2552 is indicated, check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC U0107: Lost Communication With Throttle Actuator Control Module

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC U0107 indicated?

   YES – Go to step 6.

   NO – Go to step 4.
4. Start the engine.
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC U0107 indicated?

   YES – Go to step 50.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module and at the PCM. ■
6. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Open the throttle pedal to full open position.
10. Turn the ignition switch ON (II).
11. Visually check the throttle valve operation.

    Does it open, after a throttle valve closes at once?

    YES – Go to step 12.

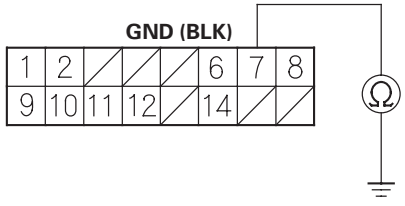
    NO – Go to step 13.
12. Check the throttle valve operation again.

    Is a throttle valve opened fully?

    YES – Go to step 44.

    NO – Go to step 38.
13. Turn the ignition switch OFF.
14. Disconnect the throttle actuator control module 16P connector.
15. Check for continuity between throttle actuator control module 16P connector terminal No. 7 and body ground.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES – Go to step 16.

NO – Repair open in the wire between the throttle body and the throttle actuator control module and G101, then go to step 54.

16. Reconnect the throttle actuator control module 16P connector.
17. Turn the ignition switch ON (II).
18. Check the DBW RLY in the DATA LIST with the Honda PGM Tester or the HDS.

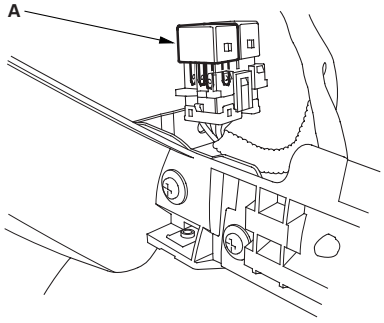
    Is it ON indicated?

    YES – Go to step 19.

    NO – Go to step 60.

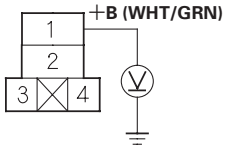
19. Turn the ignition switch OFF.

20. Remove the throttle actuator control module relay (A).



21. Measure voltage between throttle actuator control module relay terminal No. 1. and body ground.

THROTTLE ACTUATOR CONTROL RELAY 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES — Go to step 23.

NO — Go to step 22.

22. Check the No. 1 THROTTLE ACTUATOR CONTROL (15A) fuse in under-dash fuse/relay box.

Is the fuse OK?

YES — Repair open in the wire between the throttle actuator control module relay (+B line) and the No. 1 THROTTLE ACTUATOR CONTROL (15A) fuse, then go to step 54.

NO — Repair short in the wire between the throttle actuator control module relay (+B line) and the No. 1 THROTTLE ACTUATOR CONTROL (15A) fuse, then go to step 54.

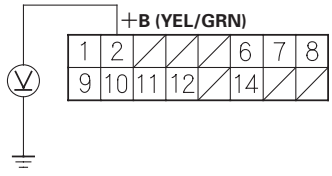
23. Install the throttle actuator control module relay.

24. Disconnect the throttle actuator control module 16P connector.

25. Turn the ignition switch ON (II).

26. Measure voltage between throttle actuator control module 16P connector terminal No. 2 and body ground.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

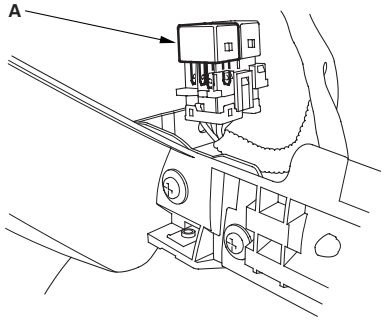
Is there battery voltage?

YES — Substitute a known-good throttle actuator control module (see page 11-446), then go to step 54. and recheck. If DTC U0107 is not indicated, replace the original throttle actuator control module (see page 11-446), then go to step 54.

NO — Go to step 27.

27. Turn the ignition switch OFF.

28. Remove the throttle actuator control module relay (A).



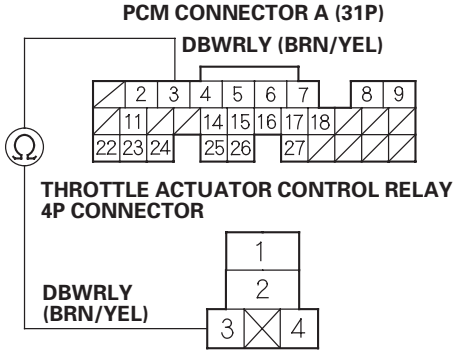
29. Jump the SCS line with the Honda PGM Tester or the HDS.

30. Disconnect PCM connector A (31P).

(cont'd)

DTC Troubleshooting (cont'd)

31. Check for continuity between PCM connector terminal A3 and the throttle actuator control module relay terminal No. 3.



Wire side of female terminals

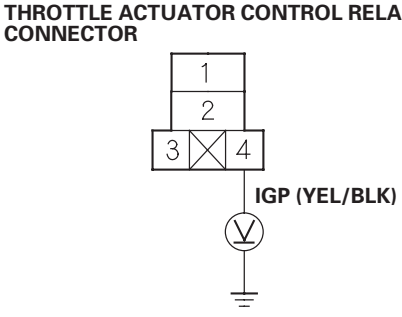
Is there continuity?

YES — Go to step 32.

NO — Repair open in the wire between the PCM (A3) and the throttle actuator control module relay, then go to step 54.

32. Turn the ignition switch ON (II).

33. Measure voltage between throttle actuator control module relay terminal No. 4 and body ground.



Wire side of female terminals

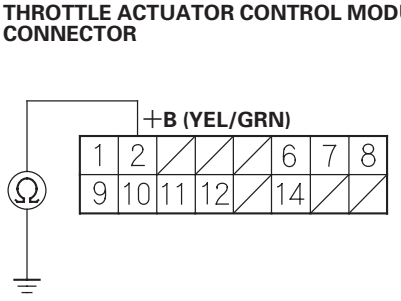
Is there battery voltage?

YES — Go to step 34.

NO — Repair open in the wire between the throttle actuator control module relay and the PGM-FI maim relay 1 (FI-MAIN), then go to step 54.

34. Turn the ignition switch OFF.

35. Check for continuity between throttle actuator control module 16P connector terminal No. 2 and body ground.



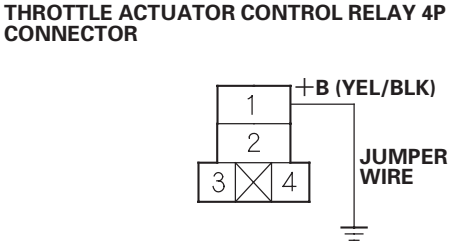
Wire side of female terminals

Is there continuity?

YES — Repair short in the wire between the throttle actuator control module and the throttle actuator control module relay (+B line), then go to step 54.

NO — Go to step 36.

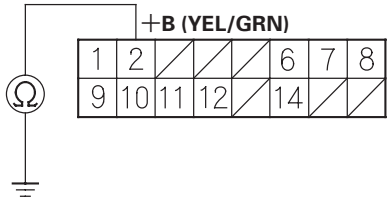
36. Connect the throttle actuator control module relay terminal No. 1 to body ground with a jumper wire.



Wire side of female terminals

37. Check for continuity between throttle actuator control module 16P connector terminal No. 2 and body ground.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the throttle actuator control module relay, then go to step 54.

NO—Repair open in the wire between the throttle actuator control module and the throttle actuator control module relay (+B line), then go to step 54.

38. Turn the ignition switch OFF.

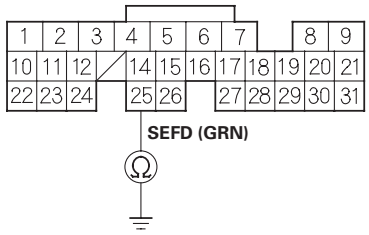
39. Jump the SCS line with the Honda PGM Tester or the HDS.

40. Disconnect the throttle actuator control module 16P connector.

41. Disconnect PCM connector E (31P).

42. Check for continuity between PCM connector terminal E25 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

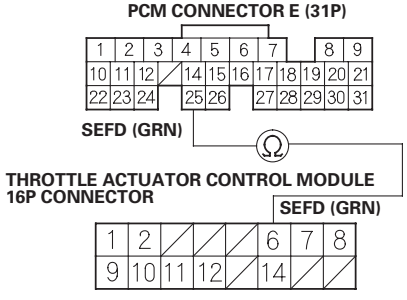
Is there continuity?

YES—Repair short in the wire between the PCM (E25) and the throttle actuator control module, then go to step 54.

NO—Go to step 43.

43. Check for continuity between PCM connector terminal E25 and throttle actuator control module 16P connector terminals No. 6.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module (see page 11-446), then go to step 54. and recheck. If DTC U0107 is not indicated, replace the original throttle actuator control module (see page 11-446), then go to step 54. If DTC U0107 is indicated, then go to step 60.

NO—Repair open in the wire between the PCM (E25) and the throttle actuator control module, then go to step 54.

(cont'd)

DTC Troubleshooting (cont'd)

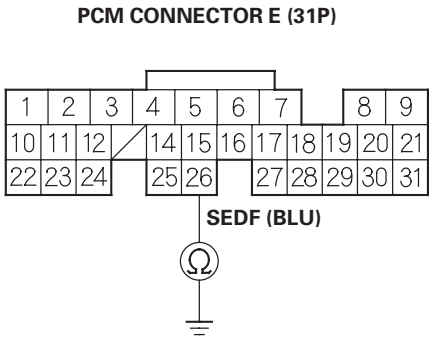
44. Turn the ignition switch OFF.

45. Jump the SCS line with the Honda PGM Tester or the HDS.

46. Disconnect the throttle actuator control module 16P connector.

47. Disconnect PCM connector E (31P).

48. Check for continuity between PCM connector terminal E26 and body ground.

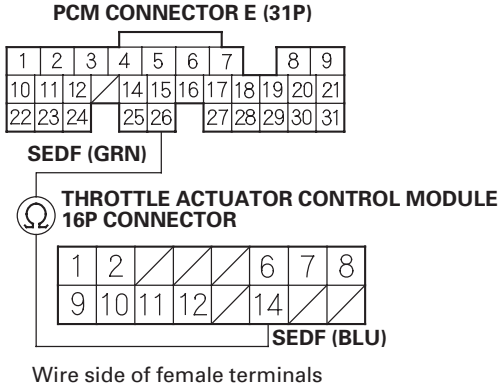


Is there continuity?

YES—Repair short in the wire between the PCM (E26) and the throttle actuator control module, then go to step 54.

NO—Go to step 49.

49. Check for continuity between PCM connector terminal E26 and throttle actuator control module 16P connector terminal No. 14.



Is there continuity?

YES—Substitute a known-good throttle actuator control module (see page 11-446), then go to step 54. and recheck. If DTC U0107 is not indicated, replace the original throttle actuator control module (see page 11-446), then go to step 54. If DTC U0107 is indicated, then go to step 60.

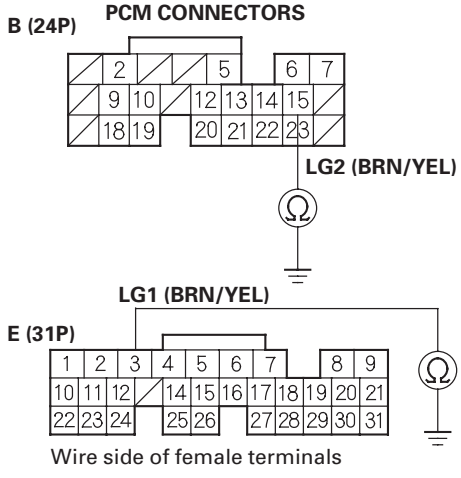
NO—Repair open in the wire between the PCM (E25) and the throttle actuator control module, then go to step 54.

50. Turn the ignition switch OFF.

51. Jump the SCS line with the Honda PGM Tester or the HDS.

52. Disconnect PCM connector B (24P) and E (31P).

53. Check for continuity between body ground and PCM connector terminals B15 and E3 individually.



Is there continuity?

YES—Check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module and at the PCM, then go to step 1.

NO—Repair open in the wire between the PCM (B15, E3) and G101, then go to step 54.

54. Turn the ignition switch OFF.

55. Reconnect all connectors.

56. Turn the ignition switch ON (II).

57. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

58. Do the PCM idle learn procedure (see page 11-193).

59. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC U0107 is indicated, check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module and at the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

60. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

61. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.
    Are any Temporary DTCs or DTCs indicated?

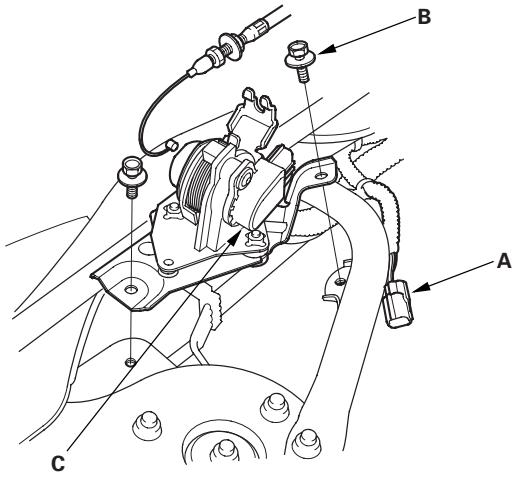
    YES—If DTC U0107 is indicated, check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module and at the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241).

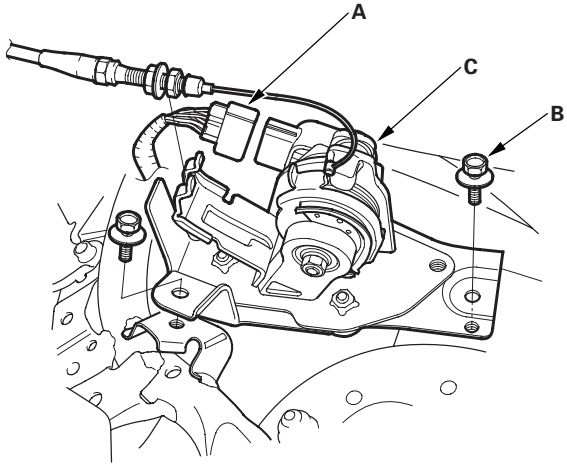
APP Sensor Replacement

1. Remove the throttle cable (see page 11-486).
2. Disconnect the accelerator pedal position (APP) sensor 6P connector (A).

LHD model:



RHD model:

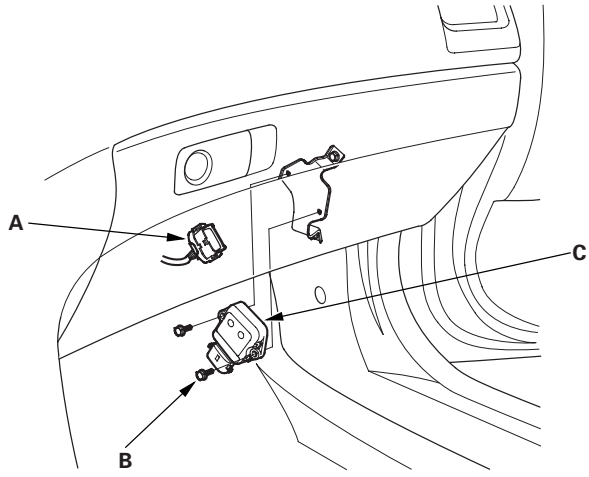


3. Remove the bolts (B), and the APP sensor (C).
4. Install the sensor in the reverse order of removal.

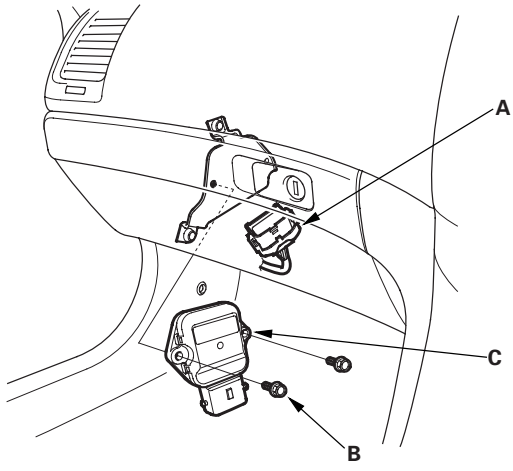
Throttle Actuator Control Module Replacement

1. Remove the kick panel (see page 20-72).
2. Disconnect the throttle actuator control module 16P connector (A).

LHD model:

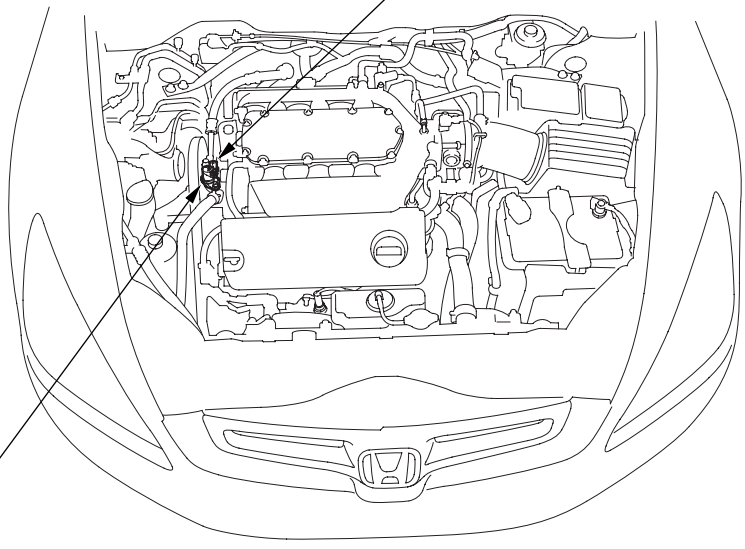


RHD model:



3. Remove the bolts (B), and the throttle actuator control module (C).
4. Install the control module in the reverse order of removal.

Component Location Index



DTC Troubleshooting

DTC P2646: VTEC Oil Pressure Switch Circuit Low Voltage

Special Tools Required
- Oil Pressure gauge attachment 07NAJ-P070100
- Low pressure gauge 07406-0070001
- Oil pressure hose 07ZAJ-S5A0200

1. Check the engine oil level.

   Is the level OK?

   YES — Go to step 2.

   NO — Adjust the engine oil to the proper level, then go to step 20.

2. Turn the ignition switch ON (II).

3. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

4. Do the VTEC TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.

   Is the result OK?

   YES — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the VTEC oil pressure switch, the VTEC solenoid valve and the PCM. ■

   NO — Go to step 5.

5. Turn the ignition switch OFF.

6. Disconnect the VTEC oil pressure switch 2P connector.

7. Turn the ignition switch ON (II).

8. Check the VTEC in the DATA LIST with the Honda PGM Tester or the HDS.

   Is the VTEC oil pressure switch indicated ON?

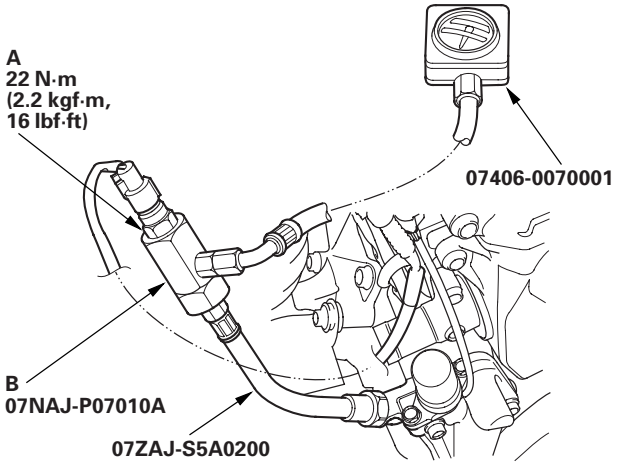
   YES — Go to step 9.

   NO — Replace the VTEC oil pressure switch (see page 11-457), then go to step 20.

9. Turn the ignition switch OFF.

10. Remove the VTEC oil pressure switch (A) and install the special tools as shown, then install the VTEC oil pressure switch (A) to the oil pressure gauge adapter (B).

    NOTE: Install the part in the reverse order of removal with a new O-ring.



11. Turn the ignition switch ON (II).

12. Do the VTEC TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.

    Is the oil pressure below 49 kPa (0.5 kgf/cm², 7 psi)?

    YES — Inspect the VTEC system oil line. If it is OK. Replace the VTEC solenoid valve (see page 11-457), then go to step 20.

    NO — Go to step 13.

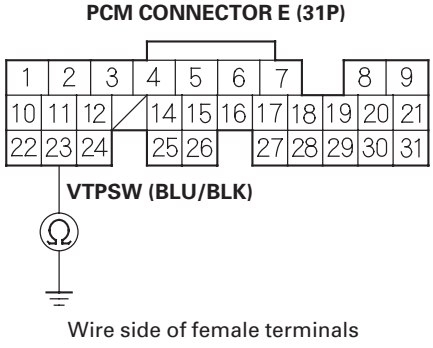
13. Turn the ignition switch OFF.

14. Jump the SCS line with the Honda PGM Tester or the HDS.

15. Disconnect the VTEC oil pressure switch 2P connector.

16. Disconnect PCM connector E (31P).

17. Check for continuity between PCM connector terminal E23 and body ground.



Is there continuity?

YES—Repair short in the wire between the PCM (E 23) and the VTEC oil pressure switch, then go to step 18.

NO—Go to step 26.

18. Reconnect the VTEC oil pressure switch 2P connector.

19. Reconnect PCM connector E (31P).

20. Turn the ignition switch ON (II).

21. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

22. Do the PCM idle learn procedure (see page 11-193).

23. Test-drive under the following conditions: Accelerate in 1st position to an engine speed over 4,000 rpm (min^{-1}). Hold the speed for at least 2 seconds.

24. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2646 is indicated, check for poor connections or loose terminals at the VTEC oil pressure switch, the VTEC solenoid valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the Honda PGM Tester or the HDS.

Is it PASSED?

YES—Troubleshooting is completed. ■

NO—If it is FAILED, then go to step 1. and recheck. If it is NOT COMPLETED, go to step 23. and recheck.

26. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

27. Test-drive under the following conditions: Accelerate in 1st position to an engine speed over 4,000 rpm (min^{-1}). Hold the speed for at least 2 seconds.

28. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2646 is indicated, check for poor connections or loose terminals at the VTEC oil pressure switch, the VTEC solenoid valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P2647: VTEC Oil Pressure Switch Circuit High Voltage

1. Check the engine oil level.

   Is the level OK?

   YES — Go to step 2.

   NO — Adjust the engine oil to the proper level, then go to step 14.

2. Turn the ignition switch ON (II).

3. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

4. Do the VTEC TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.

   Is the result OK?

   YES — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the VTEC oil pressure switch and the PCM. ■

   NO — Go to step 5.

5. Check the result in the display.

   Does it indicate ''Possible Problem''?

   YES — Check for poor connections or loose terminals at the VTEC oil pressure switch. If the switch is OK, replace the VTEC solenoid valve (see page 11-457), then go to step 15.

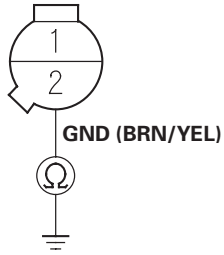
   NO — Go to step 6.

6. Turn the ignition switch OFF.

7. Disconnect the VTEC oil pressure switch 2P connector.

8. Check for continuity between VTEC oil pressure switch terminal No. 2 and body ground.

VTEC OIL PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES — Go to step 9.

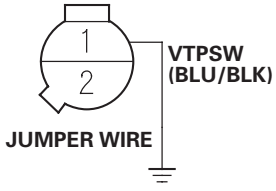
NO — Repair open in the wire between the VTEC oil pressure switch and G101, then go to step 14.

9. Jump the SCS line with the Honda PGM Tester or the HDS.

10. Disconnect PCM connector B (24P).

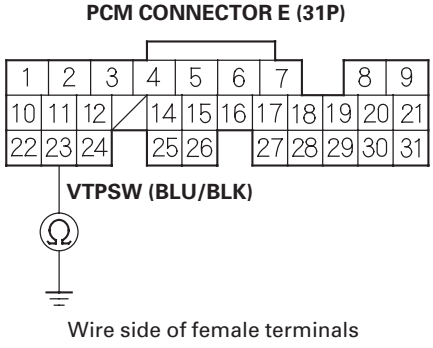
11. Connect VTEC oil pressure switch 2P connector terminal No. 1 to body ground with a jumper wire.

VTEC OIL PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

12. Check for continuity between PCM connector terminal E23 and body ground.



Is there continuity?

YES — Go to step 21.

NO — Repair open in the wire between the PCM (E 23) and the VTEC oil pressure switch, then go to step 13.

13. Reconnect PCM connector E (31P).

14. Reconnect the VTEC oil pressure switch 2P connector.

15. Turn the ignition switch ON (II).

16. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

17. Do the PCM idle learn procedure (see page 11-193).

18. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

19. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2647 is indicated, check for poor connections or loose terminals at the VTEC oil pressure switch and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — Go to step 20.

20. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the Honda PGM Tester or the HDS.

Is it PASSED?

YES — Troubleshooting is complete. ■

NO — If it is FAILED, then go to step 1. and recheck. If it is NOT COMPLETED, go to step 18. and recheck.

21. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

22. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

23. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

Are any Temporary DTCs or DTCs indicated?

YES — If DTC P2647 is indicated, check for poor connections or loose terminals at the VTEC oil pressure switch and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO — If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P2648: VTEC Solenoid Valve Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.

   Is the result OK?

   YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the VTEC solenoid valve and the PCM. ■

   NO—Go to step 4.
4. Turn the ignition switch OFF.
5. Disconnect the VTEC solenoid valve 1P connector.
6. Measure resistance between VTEC solenoid valve 1P connector terminal No. 1 and solenoid valve body.

VTEC SOLENOID VALVE 1P CONNECTOR



Terminal side of male terminals

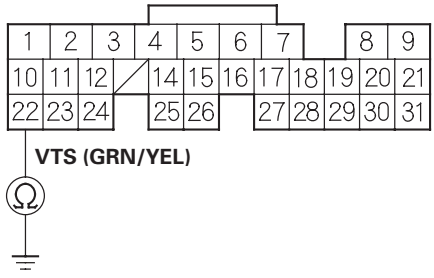
Is there 14—30 Ω?

YES—Go to step 7.

NO—Replace the VTEC solenoid valve (see page 11-457), then go to step 11.

7. Jump the SCS line with the Honda PGM Tester or the HDS.
8. Disconnect PCM connector E (31P).
9. Check for continuity between PCM connector terminal E22 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (E 22) and the VTEC solenoid valve, then go to step 10.

NO—Go to step 18.

10. Reconnect PCM connector B (24P).
11. Reconnect the VTEC solenoid valve 1P connector.
12. Turn the ignition switch ON (II).
13. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
14. Do the PCM idle learn procedure (see page 11-193).
15. Test-drive under the following conditions: Accelerate in 1st gear to an engine speed over 4,000 rpm (min^{-1}). Hold the speed for at least 2 seconds.
16. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P2648 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Go to step 17.

17. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES—Troubleshooting is complete. ■

    NO—If it is FAILED, then go to step 1. and recheck. If it is NOT COMPLETED, go to step 15. and recheck.

18. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

19. Test-drive under the following conditions: Accelerate in 1st gear to an engine speed over 4,000 rpm. Hold the speed for at least 2 seconds.

20. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P2648 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC Troubleshooting (cont'd)

DTC P2649: VTEC Solenoid Valve Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P2649 indicated?

   YES — Go to step 5.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the VTEC solenoid valve and the PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect the VTEC solenoid valve 1P connector.
7. Measure resistance between VTEC solenoid valve 1P connector terminal No. 1 and solenoid valve body.

VTEC SOLENOID VALVE 1P CONNECTOR



Terminal side of male terminals

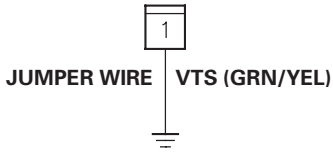
Is there 14 — 30 Ω ?

YES — Go to step 8.

NO — Replace the VTEC solenoid valve, then go to step 14.

8. Jump the SCS line with the Honda PGM Tester or the HDS.
9. Disconnect PCM connector E (31P).
10. Connect the VTEC solenoid valve 1P connector terminal No. 1 to body ground with a jumper wire.

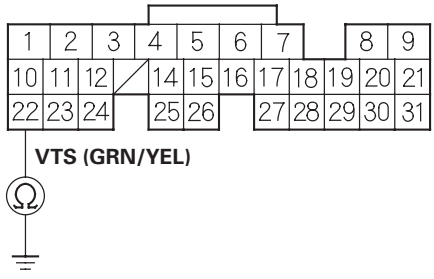
VTEC SOLENOID VALVE 1P CONNECTOR



Wire side of female terminals

11. Check for continuity between PCM connector terminal E22 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES — Go to step 20.

NO — Repair open in the wire between the PCM (E22) and the VTEC solenoid valve, then go to step 13.

12. Reconnect PCM connector E (31P).

13. Reconnect the VTEC solenoid valve 1P connector.

14. Turn the ignition switch ON (II).

15. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

16. Do the PCM idle learn procedure (see page 11-193).

17. Start the engine. Hold the engine speed at 3,000rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

18. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P2649 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — Go to step 20.

19. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES — Troubleshooting is complete. ■

    NO — If it is FAILED, then go to step 1. and recheck. If it is NOT COMPLETED, go to step 17. and recheck.

20. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

21. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

22. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P2649 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — If the PCM was updated, troubleshooting is completed. If the PCM was substituted, replace the original PCM (see page 11-241). ■

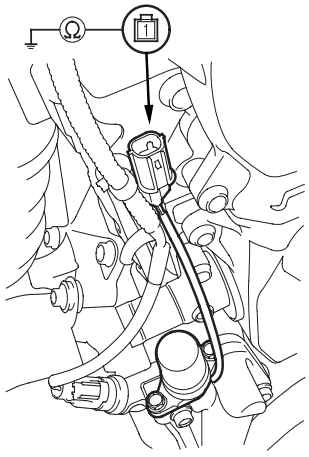
VTEC Solenoid Valve Test

1. Disconnect the VTEC solenoid valve connector.

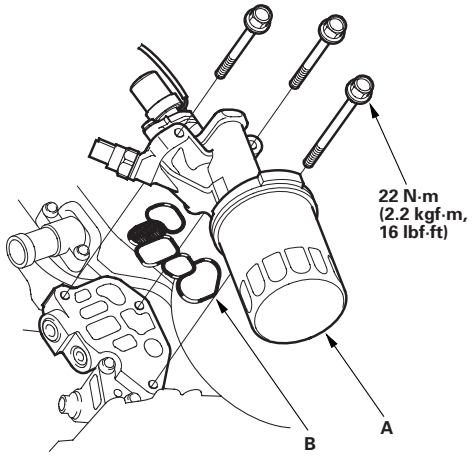
2. Measure resistance between the VTEC solenoid valve 1P connector terminal No. 1 (A) and body ground.

   - If the resistance is as specified, go to step 3.
   - If the resistance is not as specified, replace the VTEC solenoid valve.

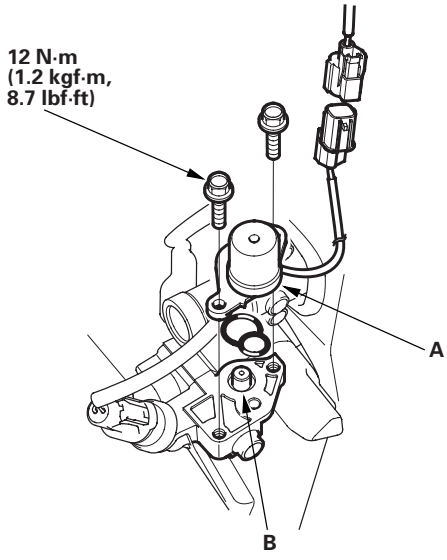
   Resistance: 14—30 Ω



3. Remove the VTEC solenoid valve/oil filter assembly (A) from the oil pump, and check the VTEC solenoid valve filter (B) for a restriction. If there is a restriction, replace the VTEC solenoid valve filter, the engine oil filter, and the engine oil.

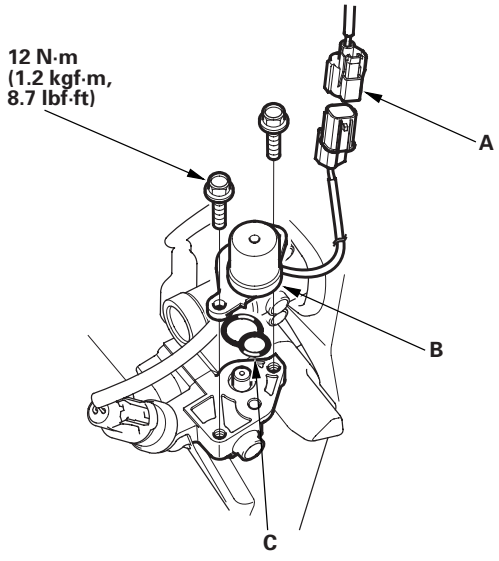


4. If the filter is not restricted, remove the VTEC solenoid valve (A) and push the valve (B) with your finger to check its movement. If the valve moves freely, it is normal, check the engine oil pressure. If the valve binds or sticks, replace the VTEC valve assembly.



VTEC Solenoid Valve Removal/ Installation

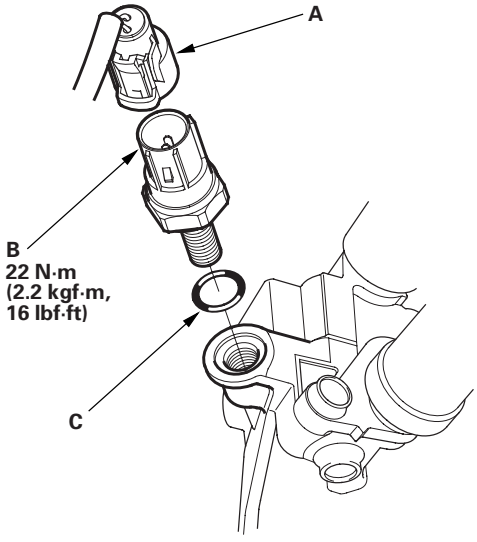
1. Disconnect the VTEC solenoid valve connector (A).



2. Remove the VTEC solenoid valve (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).

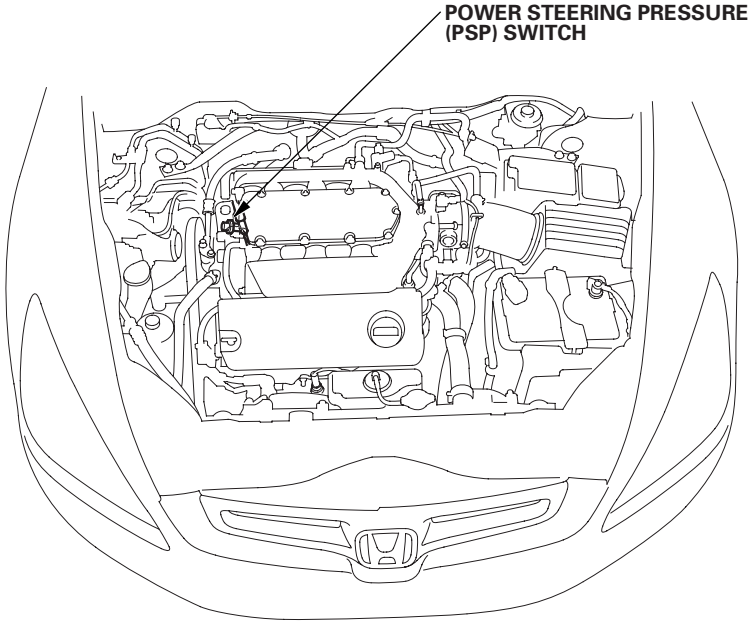
VTEC Oil Pressure Switch Replacement

1. Disconnect the VTEC oil pressure switch connector (A), then remove the VTEC oil pressure switch (B).



2. Install the swtich in the reverse order of removal with a new O-ring (C).

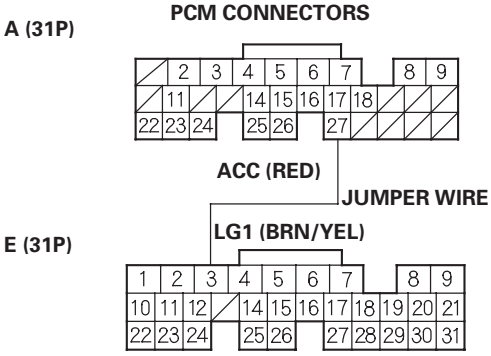
Component Location Index



A/C Signal Circuit Troubleshooting

1. Turn the ignition switch ON (II).

2. Momentarily connect PCM connector terminals A27 and E3 with a jumper wire several times.



Wire side of female terminals

Is there a clicking noise from the A/C compressor clutch?

YES — Go to step 3.

NO — Go to step 6.

3. Start the engine.

4. Turn the blower switch ON.

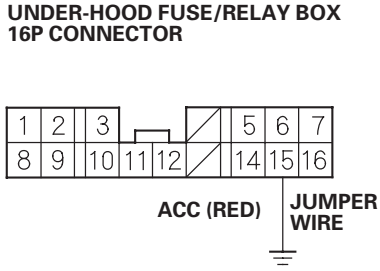
5. Turn the A/C switch ON.

Does the A/C operate?

YES — The air conditioning signal is OK. ■

NO — Go to step 7.

6. Momentarily connect under-hood fuse/relay box 16P connector terminal No. 15 to body ground with a jumper wire several times.



Wire side of female terminals

Is there clicking noise from the A/C compressor clutch?

YES — Repair open in the wire between the PCM (A27) and the A/C clutch relay. ■

NO — Check the A/C system for other symptoms. ■

7. Check the A/C switch input on the PGM Tester or the HDS data list.

Does it indicate ON?

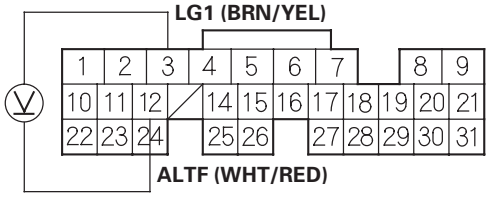
YES — Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO — Check the A/C control system.

Alternator FR Signal Circuit Troubleshooting

1. Disconnect the alternator 4P connector.
2. Turn the ignition switch ON (II).
3. Measure voltage between PCM connector terminals E3 and E12.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there about 5 V?

YES — Go to step 4.

NO — Go to step 14.

4. Turn the ignition switch OFF.
5. Reconnect the alternator 4P connector.
6. Start the engine. Hold the engine at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
7. Measure voltage between PCM connector terminals E3 and E12.

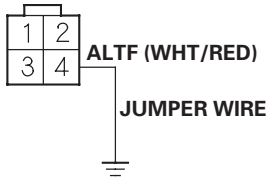
Does the voltage decrease when the headlights and rear window defogger are turned on?

YES — The ALT FR signal is OK. ■

NO — Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the Honda PGM Tester or the HDS.
10. Disconnect PCM connector B (24P).
11. Disconnect the alternator 4P connector.
12. Connect alternator 4P connector terminal No. 4 to body ground with a jumper wire.

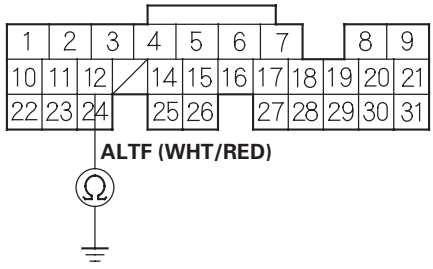
ALTERNATOR 4P CONNECTOR



Wire side of female terminals

13. Check for continuity between body ground and PCM connector terminal E12.

PCM CONNECTOR E (31P)



Wire side of female terminals

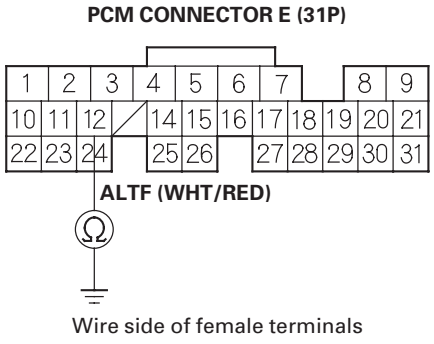
Is there continuity?

YES — Test the alternator (see page 11-242). ■

NO — Repair open in the wire between the PCM (E13) and the alternator. ■

14. Turn the ignition switch OFF.
15. Jump the SCS line with the Honda PGM Tester or the HDS.
16. Disconnect PCM connector E (31P).

17. Check for continuity between body ground and PCM connector terminal E12.



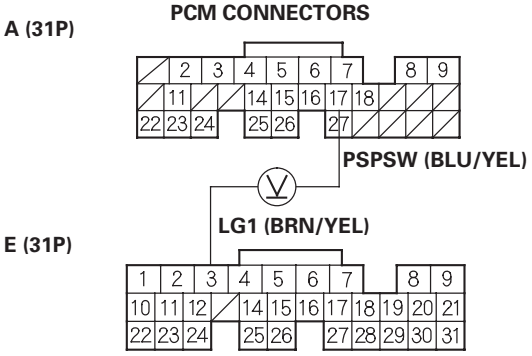
Is there continuity?

YES—Repair short in the wire between the PCM (E12) and the alternator. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

PSP Switch Signal Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Measure voltage between PCM connector terminals A17 and E3.



Wire side of female terminals

Is there less than 1.0 V?

YES — Go to step 3.

NO — Go to step 6.

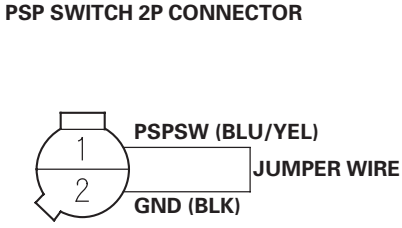
3. Start the engine.
4. Turn the steering wheel to the full lock position.
5. Measure voltage between PCM connector terminals A17 and E3.

Is there battery voltage?

YES — The PSP switch signal is OK. ■

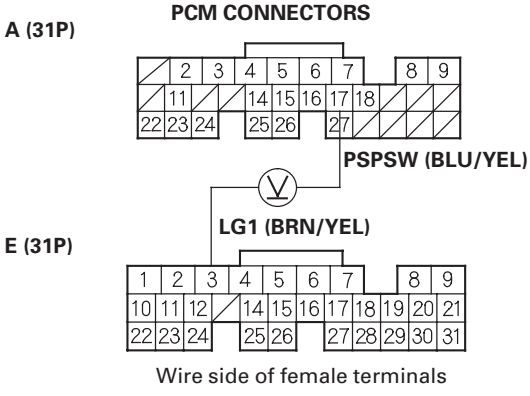
NO — Go to step 13.

6. Turn the ignition switch OFF.
7. Disconnect the PSP switch 2P connector.
8. Turn the ignition switch ON (II).
9. At the harness side, connect PSP switch 2P connector terminals No. 1 and No. 2 with a jumper wire.



Wire side of female terminals

10. Measure voltage between PCM connector terminals A17 and E3.



Wire side of female terminals

Is there less than 1.0 V?

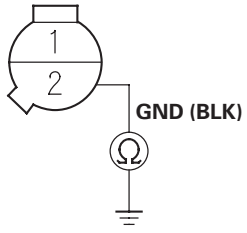
YES — Replace the PSP switch. ■

NO — Go to step 11.

11. Turn the ignition switch OFF.

12. Check for continuity between PSP switch 2P connector terminal No. 2 and body ground.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair open in the wire between the PSP switch and PCM (A17). ■

NO—Repair open in the wire between the PSP switch and G202. ■

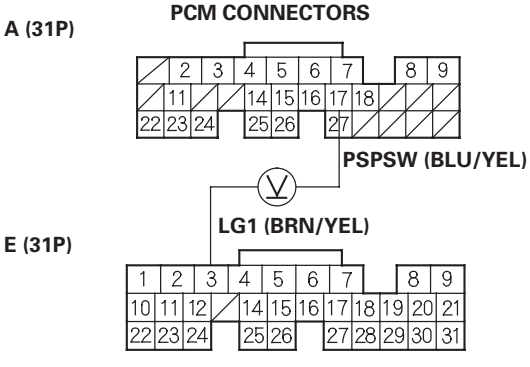
13. Turn the ignition switch OFF.

14. Disconnect the PSP switch 2P connector.

15. Turn the ignition switch ON (II).

16. Measure voltage between PCM connector terminals A17 and E3.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Replace the PSP switch. ■

NO—Go to step 17.

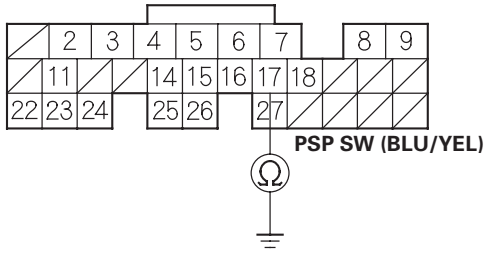
17. Turn the ignition switch OFF.

18. Jump the SCS line with the Honda PGM Tester or the HDS.

19. Disconnect PCM connector A (31P).

20. Check for continuity between body ground and PCM connector terminal A17.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM (A17) and the PSP switch.

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

Brake Pedal Position Switch Signal Circuit Troubleshooting

1. Check the brake lights.

   Are the brake lights on without pressing the brake pedal?

   YES — Inspect the brake pedal position switch (see page 19-11). ■

   NO — Go to step 2.

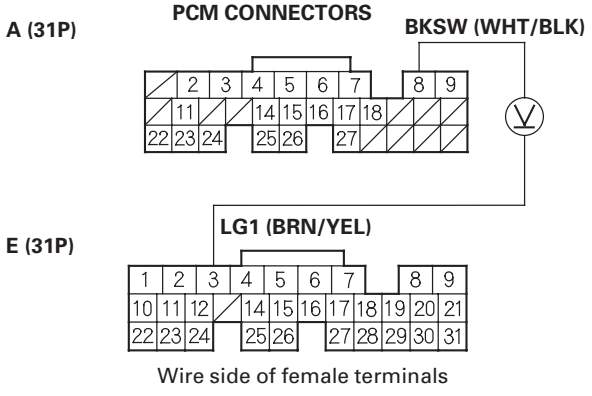
2. Press the brake pedal.

   Do the brake lights come on?

   YES — Go to step 3.

   NO — Go to step 4.

3. Measure voltage between PCM connector terminals A8 and E3 with the brake pedal pressed.



Wire side of female terminals

   Is there battery voltage?

   YES — The brake pedal position switch signal is OK. ■

   NO — Repair open in the wire between the PCM (A8) and the brake pedal position switch. ■

4. Inspect the No. 13 HORN, STOP (20A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES — Repair open in the wire between the brake pedal position switch and the No. 13 HORN, STOP (20A) fuse. Inspect the brake pedal position switch (see page 19-11). ■

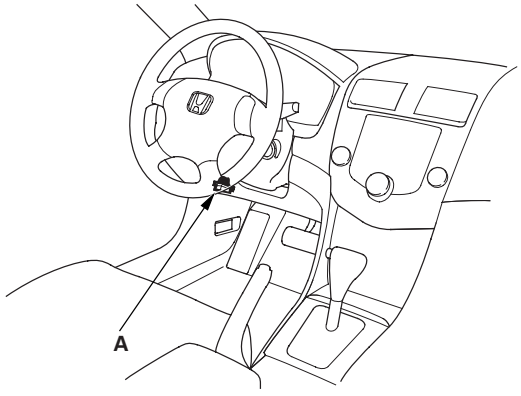
   NO — Repair short in the wire between the PCM (A8) and the No.13 HORN, STOP (20A) fuse. Replace the No. 13 HORN, STOP (20A) fuse. ■

Idle Speed Inspection

NOTE:
- Before checking the idle speed, check these items:
  – The malfuction indicator lamp (MIL) has not been reported on.
  – Ignition timing
  – Speak plugs
  – Air cleaner
  – PCV system

1. Disconnect the evaporative emission (EVAP) canister purge valve connector.

2. Connect the Honda PGM Tester or the HDS to the date link connector (DLC) (A) located under the driver's side of the dashboard.



3. Start the engine. Hold the engine at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the rediator fan comes on, then let it idle.

4. Check the idle speed with no-load conditions: headlights, blower fan, radiator fan, and air conditioner off.

   Idle speed should be: 790 ± 50 rpm (min^{-1}) (in Park or neutral)

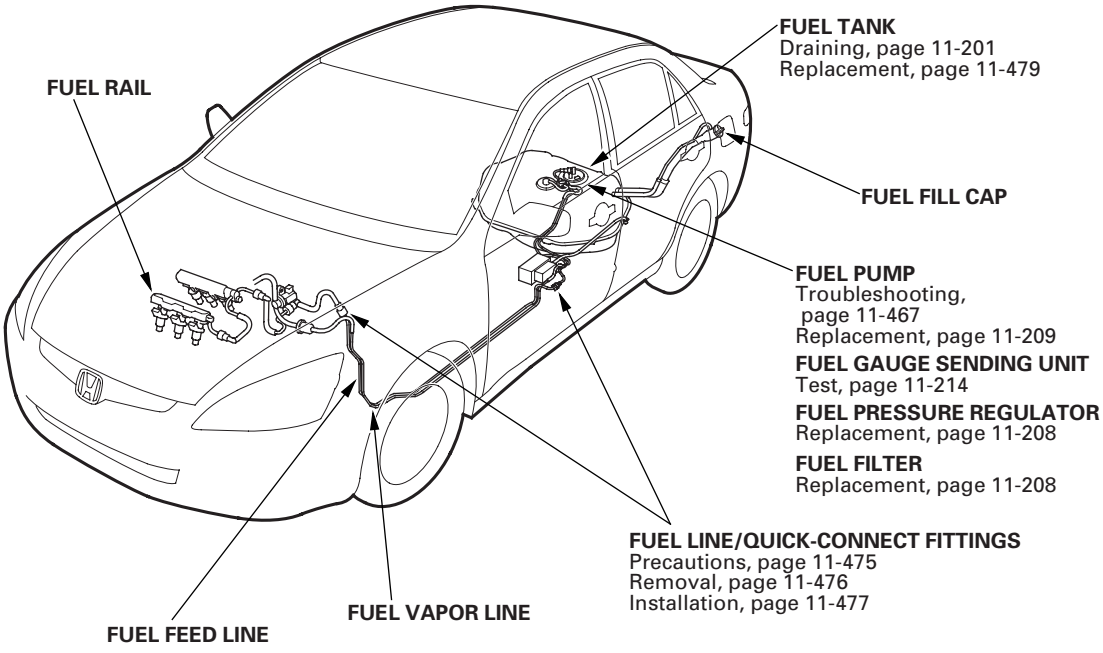
5. Let the engine idle for 1 minute with the heater fan, and air conditioner off.

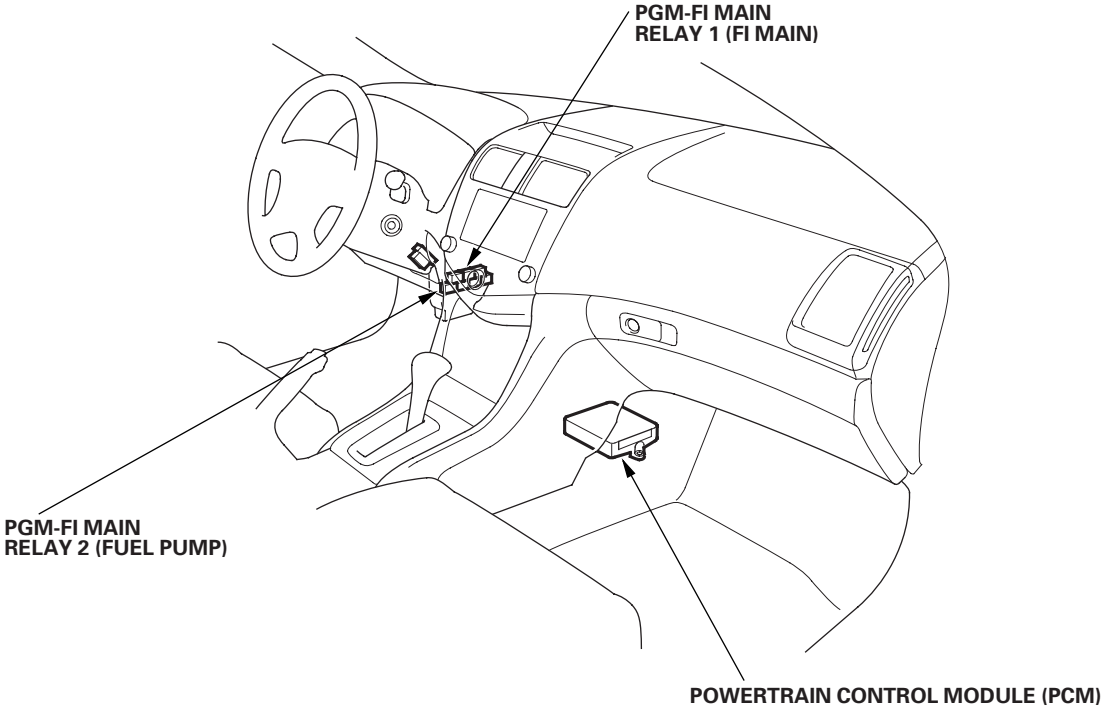
   Idle speed should be: 790 ± 50 rpm (min^{-1}) (in Park or neutral)

   NOTE: If the idle speed is not within specification, go to Symptom Troubleshooting Index.

6. Reconnect the EVAP canister purge valve connector.

Component Location Index



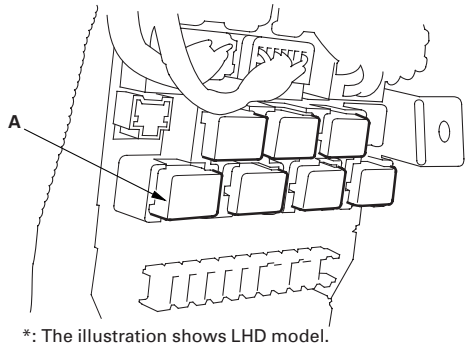


Fuel Pump Circuit Troubleshooting

If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is on, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on. If the fuel pump does not make noise, check as follows:

1. Turn the ignition switch OFF.

2. Remove the left kick panel (see page 20-72), then remove the PGM-FI main relay 2 (FUEL PUMP) (A) from the under-hood fuse/relay box.

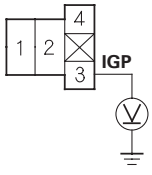


*: The illustration shows LHD model.

3. Turn the ignition switch ON (II).

4. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 3 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

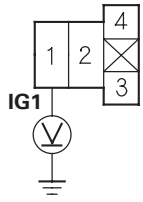
Is there battery voltage?

YES — Go to step 5.

NO —
- Replace the PGM-FI main relay 1 (FI MAIN). ■
- Replace the under-dash fuse/relay box. ■

5. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

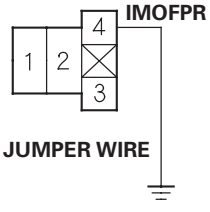
YES — Go to step 6.

NO —
- Check the No. 19 FUEL PUMP (15A) fuse in the under-dash fuse/relay box. ■
- Replace the under-dash fuse/relay box. ■

6. Turn the ignition switch OFF.

7. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 4 to body ground with a jumper wire.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



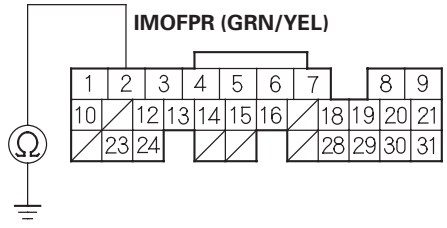
Terminal side of female terminals

(cont'd)

Fuel Pump Circuit Troubleshooting (cont'd)

8. Turn the ignition switch OFF.
9. Jump the SCS line with the Honda PGM Tester or the HDS.
10. Disconnect PCM connector A (31P).
11. Check for continuity between body ground and PCM connector terminal A2.

PCM CONNECTOR A (31P)



Wire side of female terminals

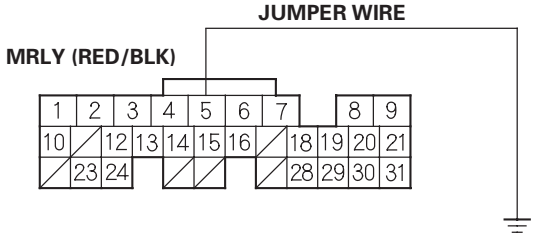
Is there continuity?

YES — Go to step 12.

NO — Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the PCM (A2). ■

12. Reinstall PGM-FI main relay 2 (FUEL PUMP).
13. Connect the PCM connector terminal A5 to body ground with jumper wire.

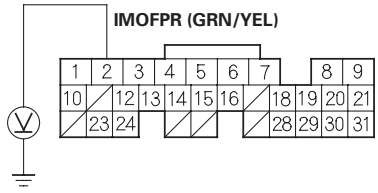
PCM CONNECTOR A (31P)



Wire side of female terminals

14. Turn the ignition switch ON (II).
15. Measure voltage between PCM connector terminal A2 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

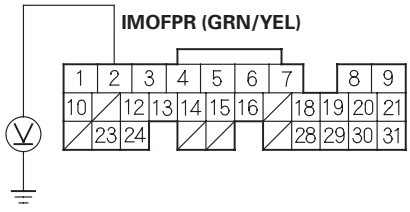
Is there battery voltage?

YES — Go to step 16.

NO — Replace the PGM-FI main relay 2 (FUEL PUMP). ■

16. Turn the ignition switch OFF.
17. Reconnect PCM connector A (31P).
18. Open the SCS line with the Honda PGM Tester or the HDS.
19. Turn ignition switch OFF.
20. Turn the ignition switch ON (II), and measure voltage between PCM connector terminal A2 and body ground within the first 2 seconds after the ignition switch was turned on.

PCM CONNECTOR A (31P)



Wire side of female terminals

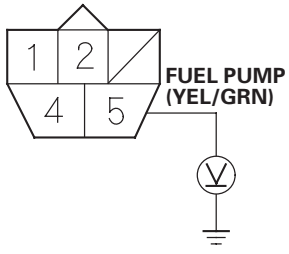
Is there battery voltage?

YES — Update the PCM if it does not have the latest software, or substitute a known-good PCM, then recheck (see page 11-242). If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

NO — Go to step 21.

21. Turn the ignition switch OFF.
22. Remove the trunk floor trim panel.
23. Remove the access panel from the floor.
24. Measure voltage between fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned on.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

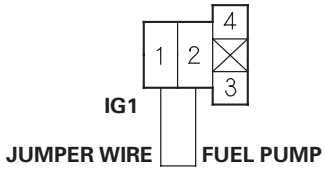
Is there battery voltage?

YES — Go to step 30.

NO — Go to step 25.

25. Turn the ignition switch OFF.
26. Remove the PGM-FI main relay 2 (FUEL PUMP).
27. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminals No. 1 and No. 2 with a jumper wire.

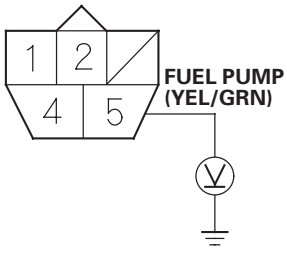
PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

28. Turn the ignition switch ON (II).
29. Measure voltage between fuel pump 5P connector terminal No. 5 and body ground within the first 2 seconds after the ignition switch was turned on.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES — Replace PGM-FI main relay 2 (FUEL PUMP). ■

NO — Repair open in the wire between the PGM-FI main relay 2 (FUEL PUMP) and the fuel pump 5P connector. ■

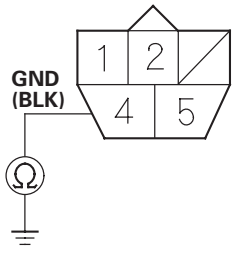
30. Turn the ignition switch OFF.

(cont'd)

Fuel Pump Circuit Troubleshooting (cont'd)

31. Check for continuity between fuel pump 5P connector terminal No. 4 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the fuel pump. ■

NO—Repair open in the wire between the fuel pump 5P connector and G603. ■

Fuel Pressure Relieving

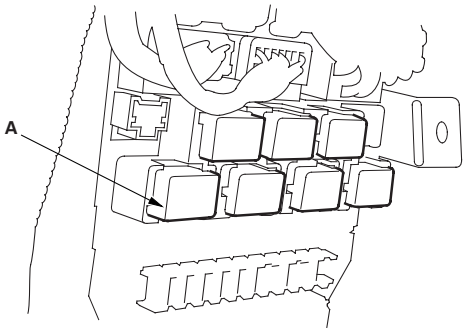
Without Honda PGM Tester or HDS

Before disconnecting fuel lines or hoses, relieve pressure from the system by disconnecting the fuel tube/quick connect fitting in the engine compartment.

1. Make sure you have the anti-theft codes for the radio, then write down the frequencies for the radio's preset buttons.

2. Turn the ignition switch OFF.

3. Remove the left kick panel (see page 20-72), then remove the PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.



* : The illustration shows LHD model.

4. Start the engine, and let it idle until it is stalls.

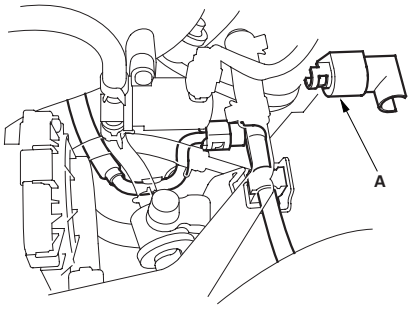
   NOTE: If any DTCs are stored, clear and ignore them.

5. Turn the ignition switch OFF.

6. Remove the fuel fill cap, and relieve the pressure in the fuel tank.

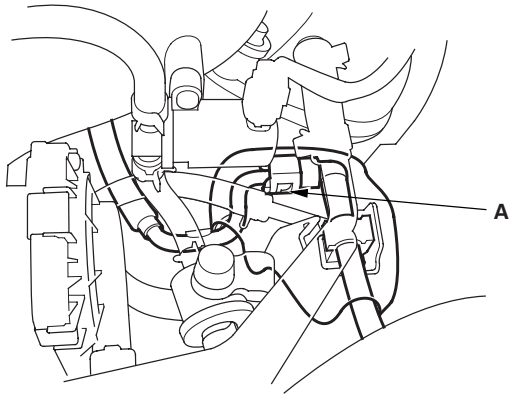
7. Disconnect the negative cable from the battery.

8. Remove the quick-connect fitting cover (A).



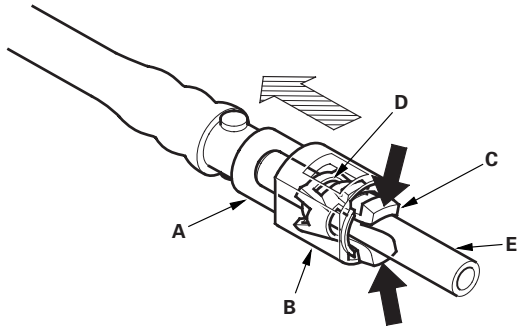
9. Check the fuel quick-connect fitting for dirt, and clean if necessary.

10. Place a rag or shop towel over the quick-connect fitting (A).



11. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand and squeeze the retainer tabs (C) with the other hand to release them from the locking pawls (D). Pull the connector off.

    NOTE:
    - Prevent the remaining fuel in the fuel feed line or hose from flowing out with a rag or shop towel.
    - Be careful not to damage the line (E) or other parts.
    - Do not use tools.
    - If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
    - Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



12. After disconnecting the quick-connect fitting, check it for dirt or damage (see page 11-476).

(cont'd)

Fuel Pressure Relieving (cont'd)

13. Reconnect the negative cable to the battery and do the flollowing items:
    - Power window control unit reset procedure (see page 22-219).
    - Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio station presets.
    - Reset the clock.

With Honda PGM Tester or HDS

Before disconnecting fuel lines or hoses, relieve fuel pressure from the system by stopping the fuel pump with the Honda PGM Tester or the Honda Diagnostic System (HDS).

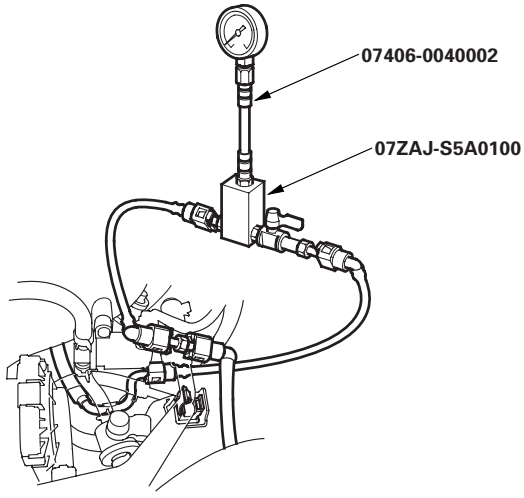
1. Remove the fuel fill cap.
2. Start the engine and let it idle.
3. From the inspection menu of the Honda PGM Tester or HDS, select Fuel Pump ON, and let the engine idle until it stalls.
4. Turn the ignition switch OFF.

   NOTE:
   - Do not allow the engine to idle below 1,000 rpm (min^{-1}) or the PCM will continue to operate the fuel pump.
   - A DTC or a temporary DTC may be set during this procedure. Check for DTCs, and clear them as necessary (see page 11-3).

Fuel Pressure Test

Special Tools Required
- Fuel pressure gauge 07406-0040002
- Fuel pressure gauge set 07ZAJ-S5A0100

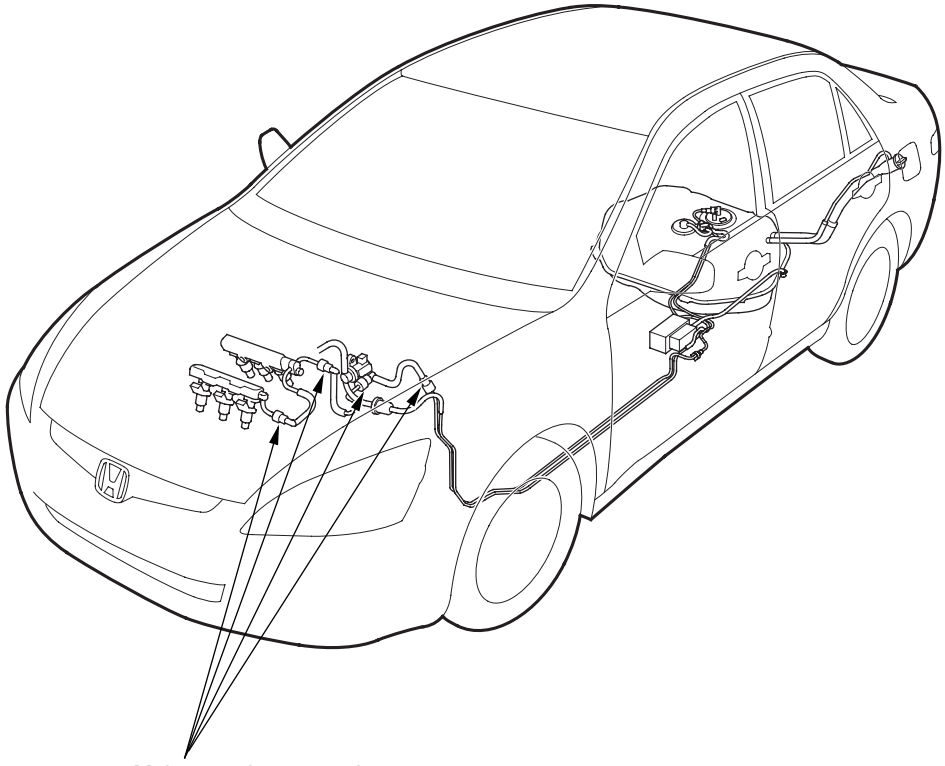
1. Relieve the fuel pressure (see page 11-471).
2. Disconnect the quick-connect fitting (A). Attach the fuel pressure gauge set and the fuel pressure gauge.



3. Start the engine and let it idle.
   - If the engine starts, go to step 5.
   - If the engine does not start, go to step 4.
4. Check to see if the fuel pump is running: listen to the fuel fill port with the fuel cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on.
   - If the pump runs, go to step 5.
   - If the pump does not run, do the fuel pump circuit troubleshooting (see page 11-467).
5. Read the fuel pressure gauge. The pressure should be 380 — 430 kpa (3.9 — 4.4 kgf/cm^2, 55 — 62 psi)
   - If the pressure is OK, the test is complete.
   - If the pressure is out of specification, replace the fuel pressure regulator and the fuel filter (see page 11-208), then recheck the fuel pressure.

Fuel Line Inspection

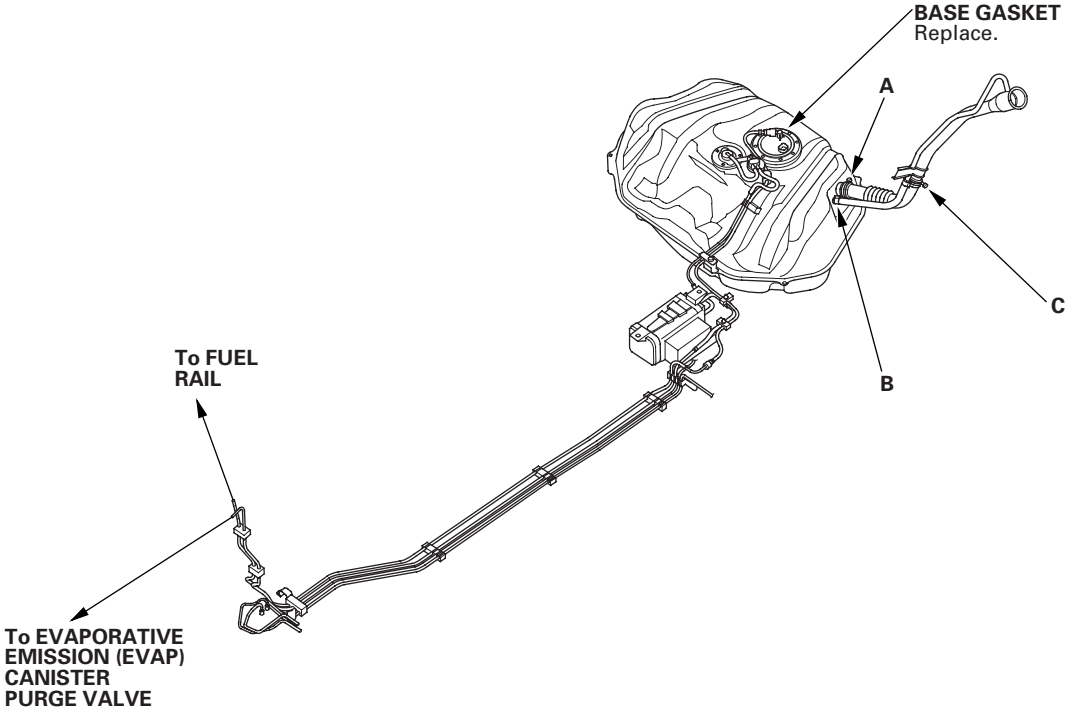
Check the fuel system lines, hoses, and fuel filter for damage, leaks, and deterioration. Replace any damaged parts.

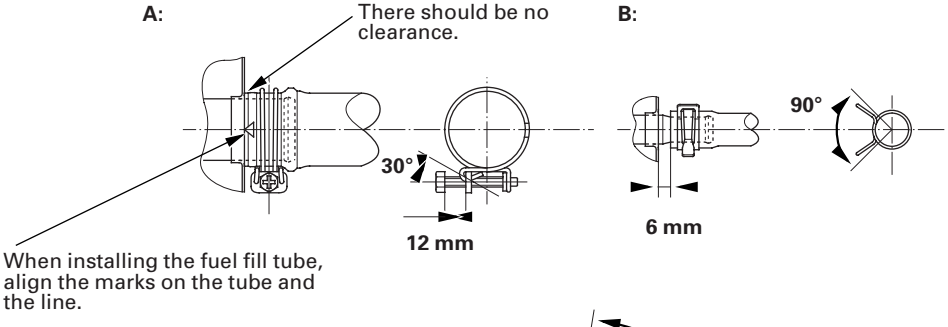


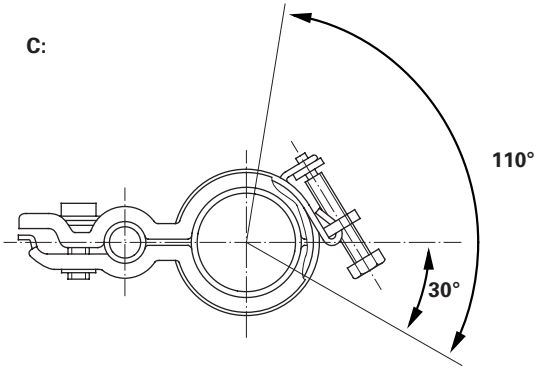
(cont'd)

Fuel Line Inspection (cont'd)

Check all clamps and retighten if necessary.



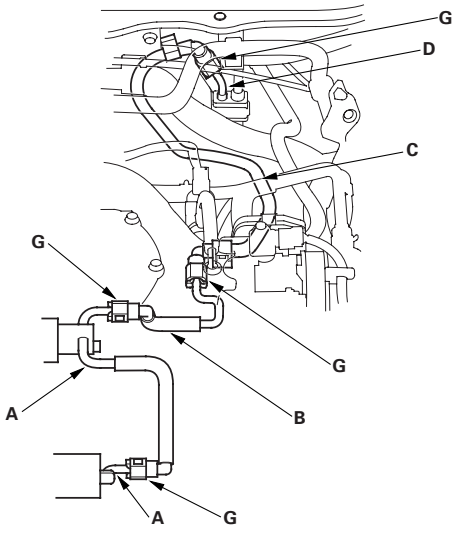


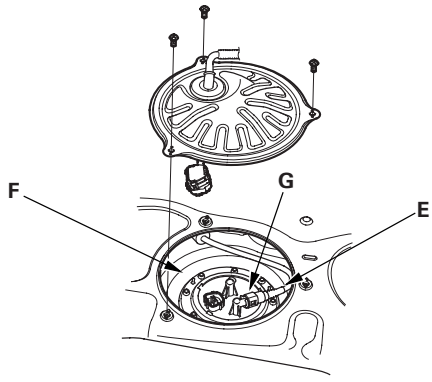


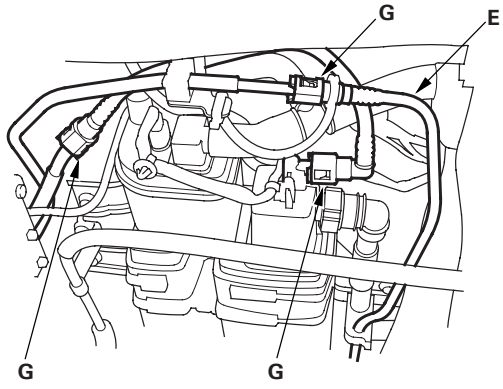
Fuel Line/Quick-Connect Fittings Precaution

The fuel line/quick-connect fittings connect the fuel rail (A) to fuel feed hose (B), fuel feed hose (B) to the fuel feed hose (C), the fuel feed hose (C) to the fuel line (D), and the fuel line (E) to the fuel tank unit (F). When removing or installing the fuel feed hose, fuel tank unit or fuel tank, it is necessary to disconnect or connect the quick-connect fittings.
Pay attention to the following:

- The fuel feed hose (B), fuel feed hose (C), fuel line (E), and quick-connect fittings (G) are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hose (B), fuel feed hose (C), fuel line (E), and quick-connect fittings (G) are not acid-proof; do not touch them with a shop towel that was used for wiping battery electrolyte. Replace them if they came into contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hose (B), fuel feed hose (C), fuel line (E), and quick-connect fittings (G), be careful not to bend or twist them excessively. Replace them if they are damaged.







A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line. Replace the retainer when

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- it has been removed from the line.
- it is damaged.

Retainer locarion	Manufacturer	Retainer color
Engine compartment	Tokai	Blue green
Fuel tank unit: Fuel feed line	Tokai	Orange

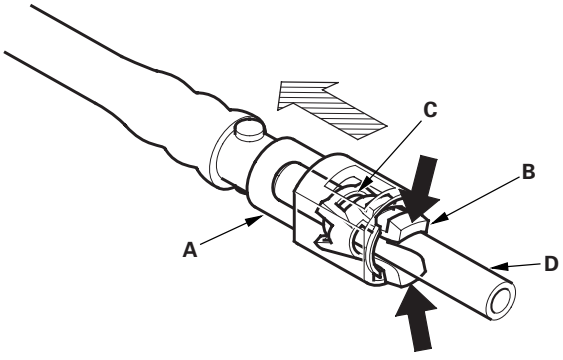
Fuel Line/Quick-Connect Fittings Removal

1. Relieve the fuel pressure (see page 11-471).

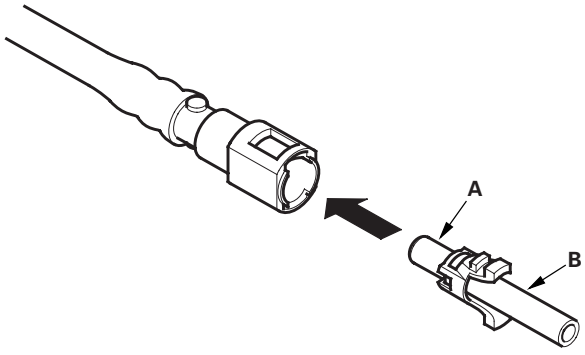
2. Check the fuel quick-connect fitting for dirt, and clean it if necessary.

3. Hold the connector (A) with one, hand and squeeze the retainer tabs (B) with the other hand to release them from the locking pawls (C). Pull the connector off.

   NOTE:
   - Be careful not to damage the line (D) or other parts. Do not use tools.
   - If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
   - Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.

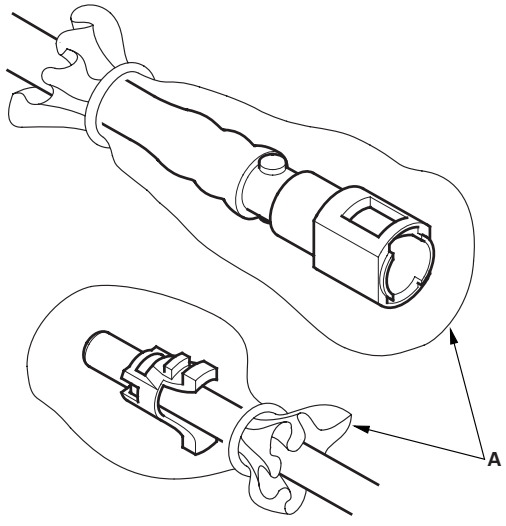


4. Check the contact area (A) of the line (B) for dirt or damage.
   - If the surface is dirty, clean it.
   - If the surface is rusty or damaged, replace the fuel pump, fuel filter, or fuel feed line.



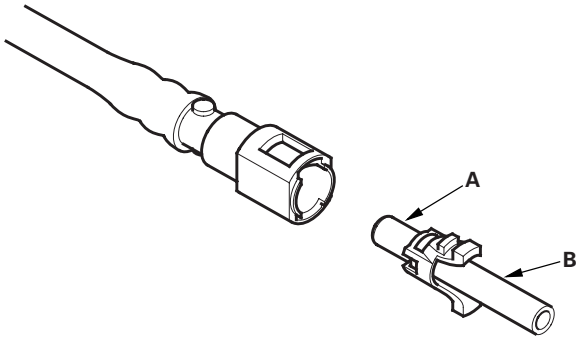
5. To prevent damage and keep foreign matter out, cover the disconnected connector and line ends with plastic bags (A).

   NOTE:
   - The retainer cannot be reused once it has been removed from the line.
     Replace the retainer when
     – replacing the fuel rail.
     – replacing the fuel feed line.
     – replacing the fuel pump.
     – replacing the fuel filter.
     – replacing the fuel gauge sending unit.
     – it has been removed from the line.
     – it is damaged.



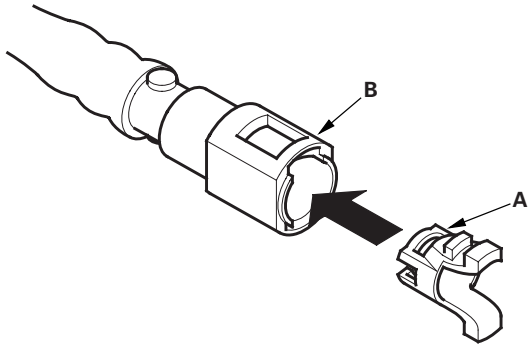
Fuel Line/Quick-Connect Fittings Installation

1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if necessary.

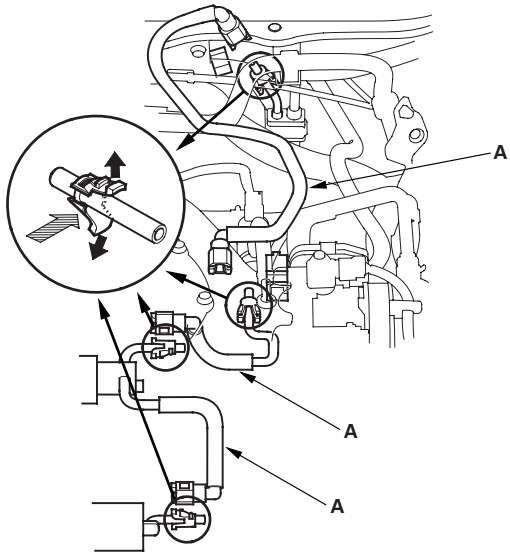


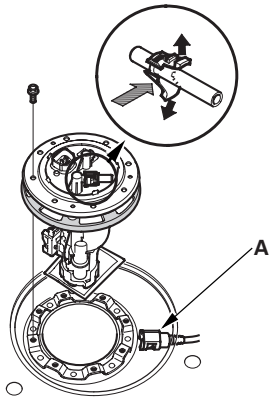
2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after

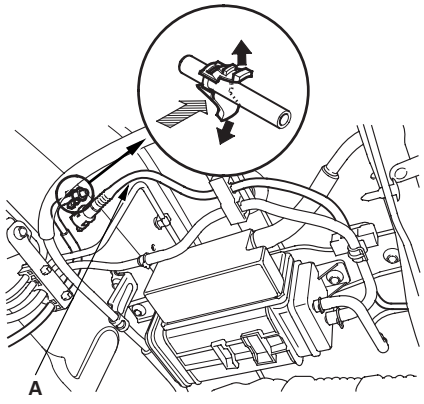
   - replacing the fuel rail.
   - replacing the fuel feed line.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit
   - removing the retainer from the line.



3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating line.







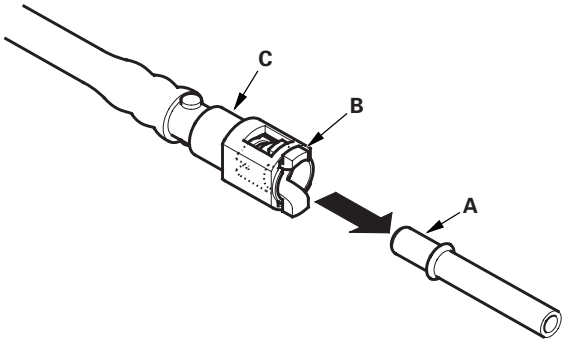
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Fuel Line/Quick-Connect Fittings Installation (cont'd)

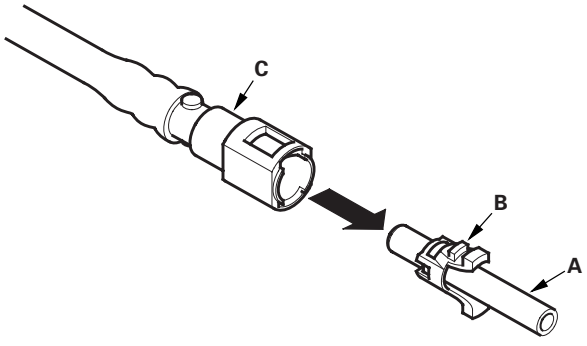
4. Align the quick-connect fittings with the line (A), and align the retainer (B) locking pawls with the connector (C) grooves. Then press the quick-connect fittings onto the line until both retainer pawls lock with a clicking sound.

   NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

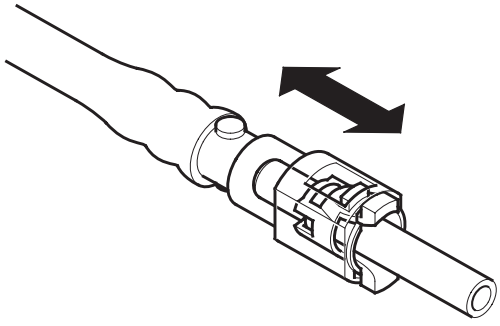
   Connection with new retainer:



   Reconnection to existing retainer:



5. Make sure the connection is secure and that the pawls are firmly locked into place; check visually and by pulling the connector.

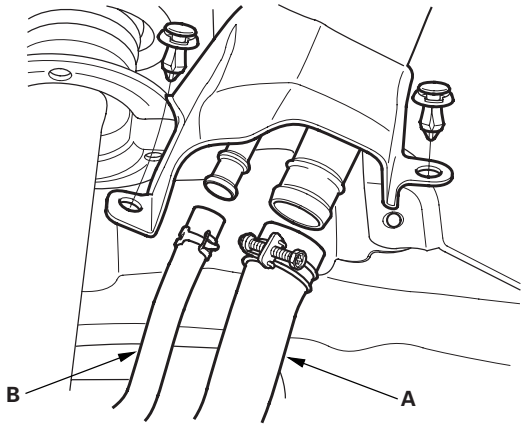


6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat two or three times, and check that there is no leakage in the fuel supply system.

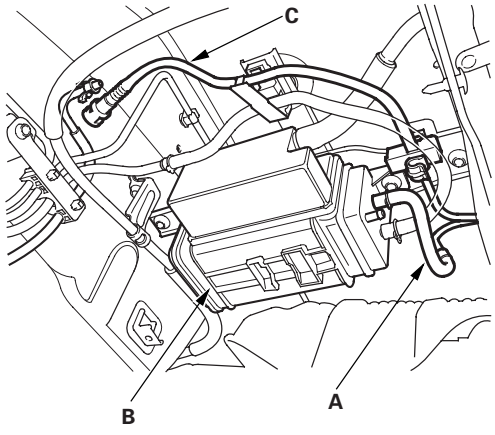
Fuel Tank Replacement

Removal

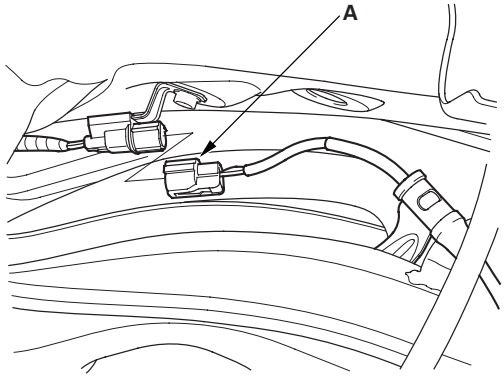
1. Relieve the fuel pressure (see page 11-471).
2. Drain the fuel tank (see page 11-201).
3. Loosen the rear wheel nuts slightly, then raise the vehicle and make sure it is securely supported. Remove the rear wheels.
4. Release the parking brake.
5. Remove the exhaust and muffler (see page 9-16).
6. Disconnect the fuel fill neck tube (A) and breather hose (B).



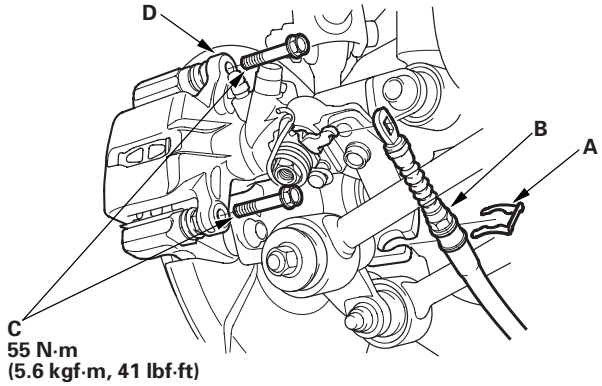
7. Disconnect the vapor line (A) from the EVAP canister (B). then disconnect the fuel line (C).



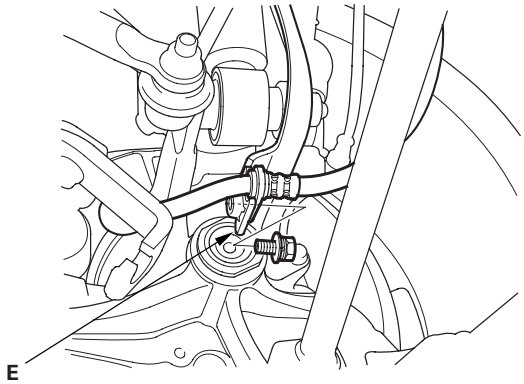
8. Disconnect the wheel sensor 2P connector (A).



9. Remove the clip (A), parking brake cable (B), two caliper bolts (C), and caliper body (D).



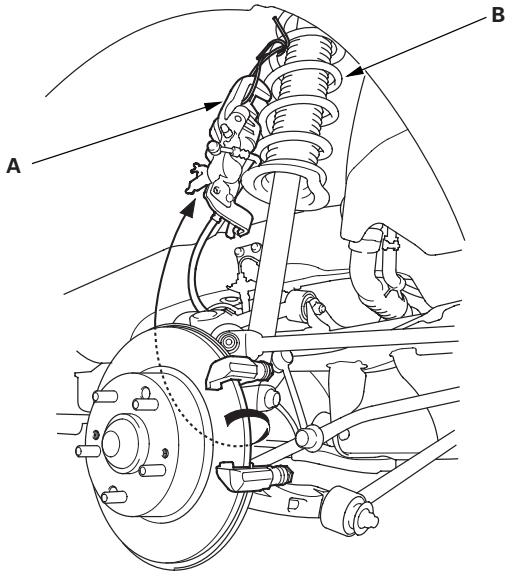
10. Remove the brake hose bracket (E).



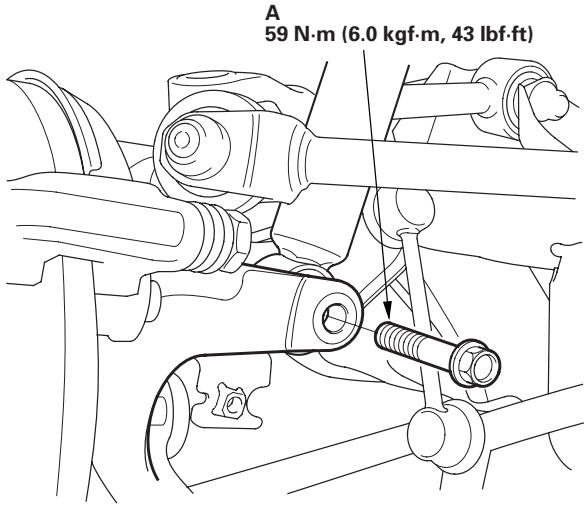
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Fuel Tank Replacement (cont'd)

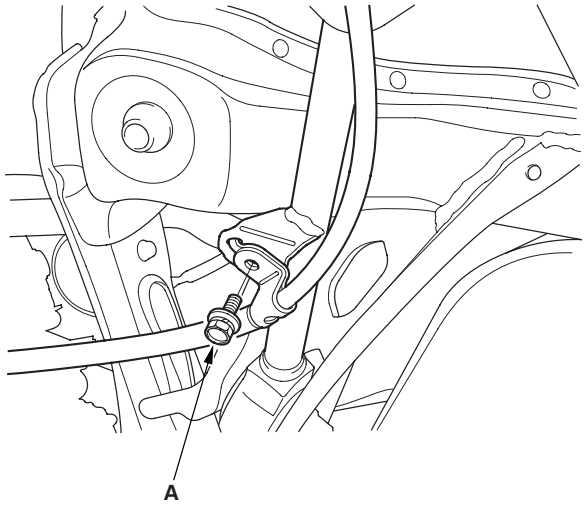
11. Hook the caliper body (A) onto the damper spring (B).



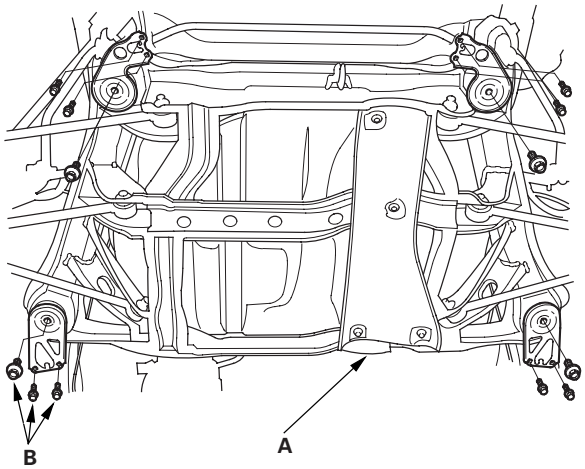
12. Remove the flange bolt (A).



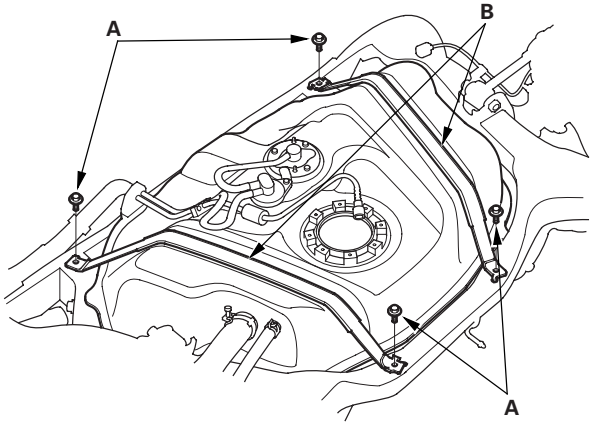
13. Remove the parking brake cable bracket bolt (A).



14. Remove the heat shield (A). place a jack or support under the rear suspension subframe. Remove the mounting bolts (B). Remove the rear suspension subframe.



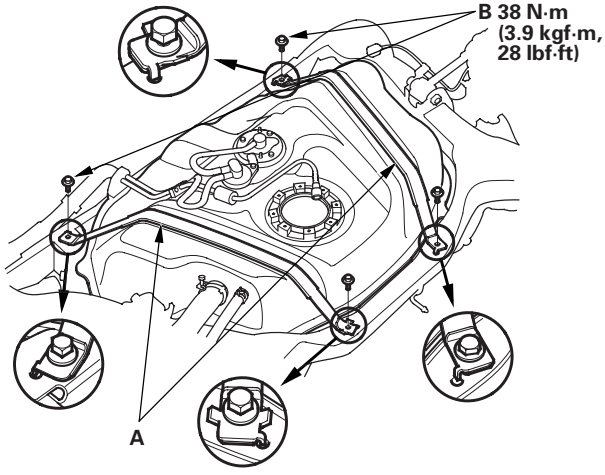
15. Remove the bolts (A) and the fuel tank straps (B).



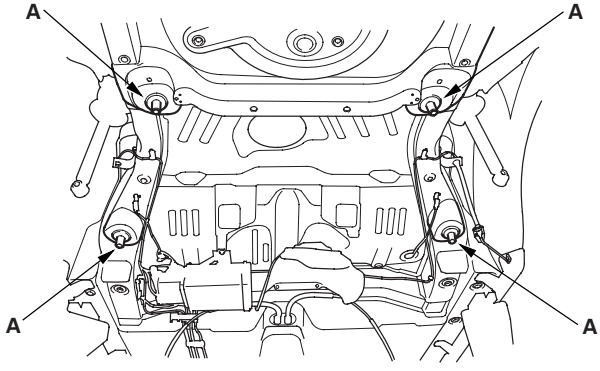
16. Lift the fuel tank put of the subframe.

Installation

1. Install the fuel tank straps (A), and tighten the bolts (B).



2. Place a jack or support under the rear suspension subframe. Install the rear suspension subframe, aligning the pins (A) with the holes in the rear suspension subframe.

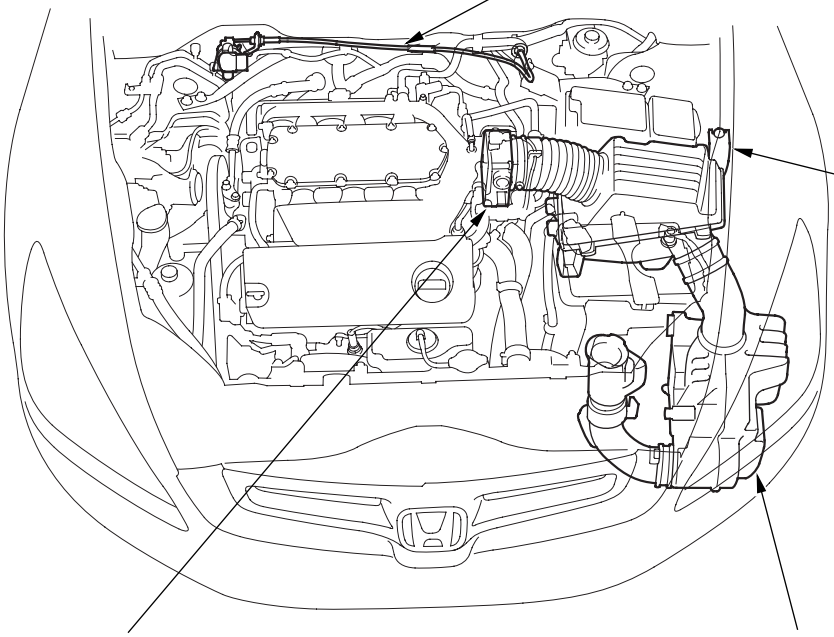


3. Install the remaining parts in the reverse order of removal.

4. If equipped with drum brakes, bleed the brake system after installing the brake hose (see page 19-9). If not, go to step 5.

5. After installation, do the wheel alignment (see page 18-6).

Component Location Index



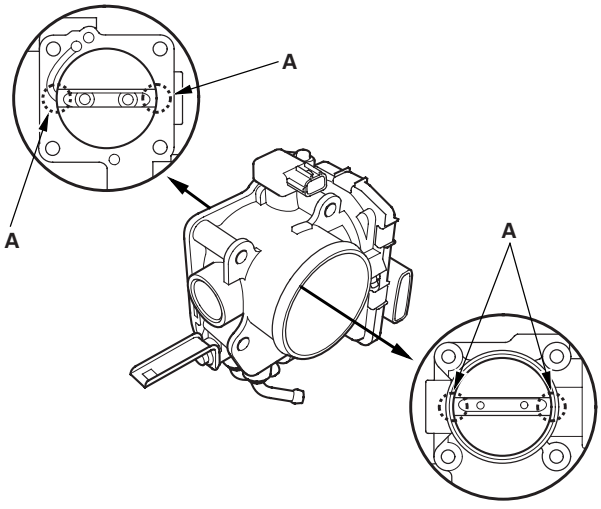
* : The illustration shows LHD model.

Throttle Body Cleaning

NOTE:
- Do not insert your fingers into throttle body when you turn the ignition switch ON(II) or during the ignition switch is ON (II).
  Otherwise, you will have serious injury on your fingers if the throttle valve was activated.
- Use Honda genuine carburetor cleaner.

1. Check for damage to the air cleaner.
2. Remove the throttle body (see page 11-487).
3. Wipe off carbon from the throttle valve and inside of the throttle body with paper towel soaked carburetor cleaner.

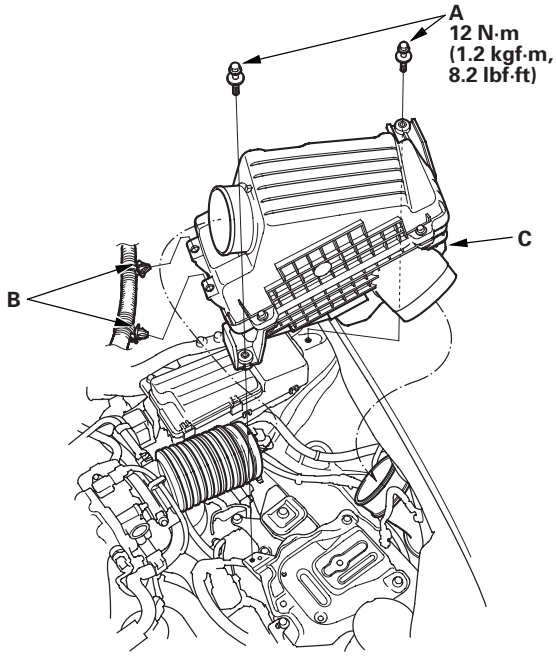
   NOTE:
   - Be careful not to pinch a finger during clean.
   - Because molybdenum grease is rinsed out, do not spray the carburetor cleaner directly to the bearing area of throttle valve axis (A).



4. Install the throttle body (see page 11-487).
5. Execute the ALL CLEAR MENU with the Honda PGM Tester or the HDS.
6. Turn the ignition switch ON (II), and wait for 2 seconds.
7. Do the PCM idle learn procedure (see page 11-193).

Air Cleaner Removal/Installation

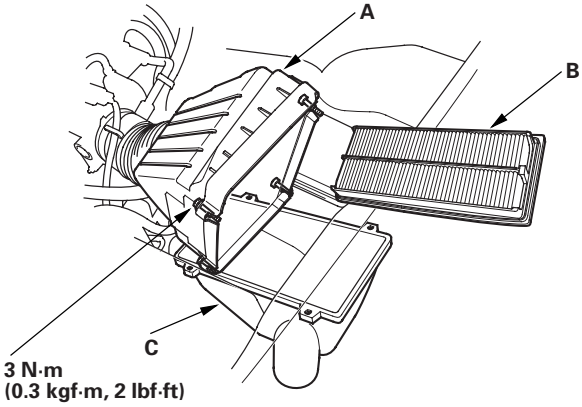
1. Remove the bolts (A) and clamps (B).



2. Remove the air cleaner (C).
3. Install the parts in the reverse order of removal.

Air Cleaner Element Replacement

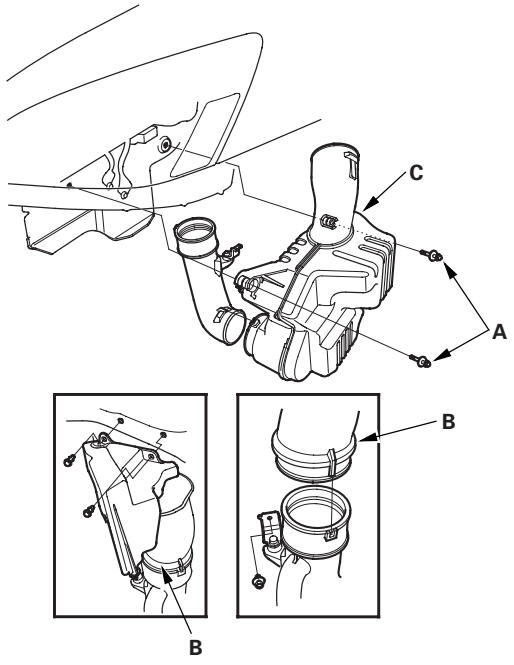
1. Open the air cleaner housing cover (A).



2. Remove the air cleaner (B) from the air cleaner housing (C).
3. Install the parts in the reverse order of removal.

Resonator Removal/Installation

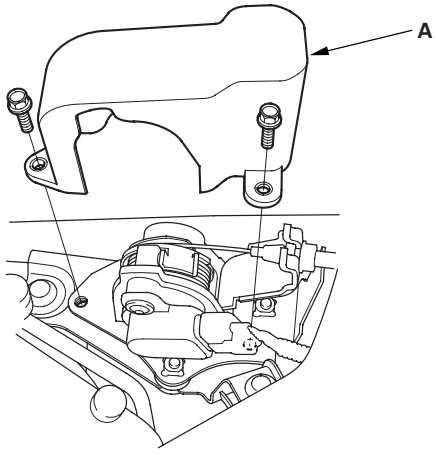
1. Remove the front bumper (see page 20-135).
2. Remove the bolts (A) and the intake air duct (B).



3. Remove the resonator (C).
4. Install the parts in the reverse order of removal.

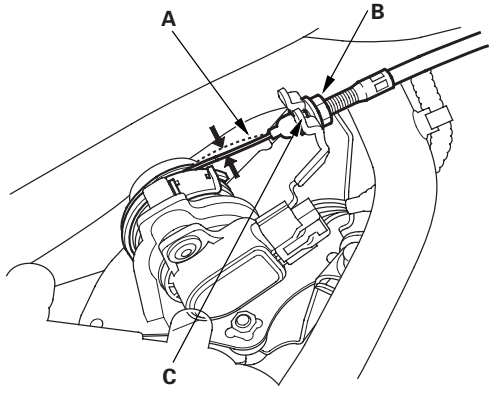
Throttle Cable Adjustment

1. Remove the throttle cable cover (A).



* : The illustration shows LHD model.

2. Check cable free play at the throttle linkage. Cable free pley (A) should be 10－12 mm (3/8－1/2 in.).

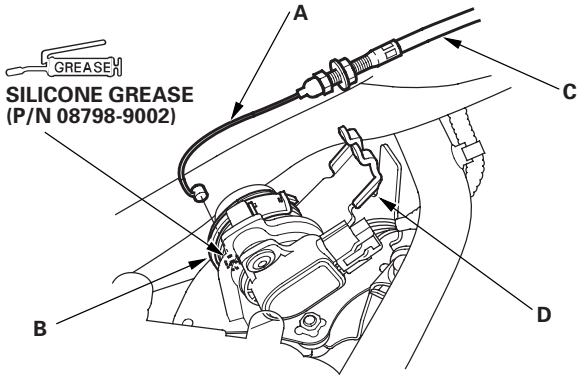


* : The illustration shows LHD model.

3. If free play (A) is not within spec (10－12 mm, 3/8－1/2 in.), loosen the locknut (B), turn the adjusting nut (C) until the deflection (A) is as specified, then retighten the locknut (B).
4. With the cable properly adjusted, Check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

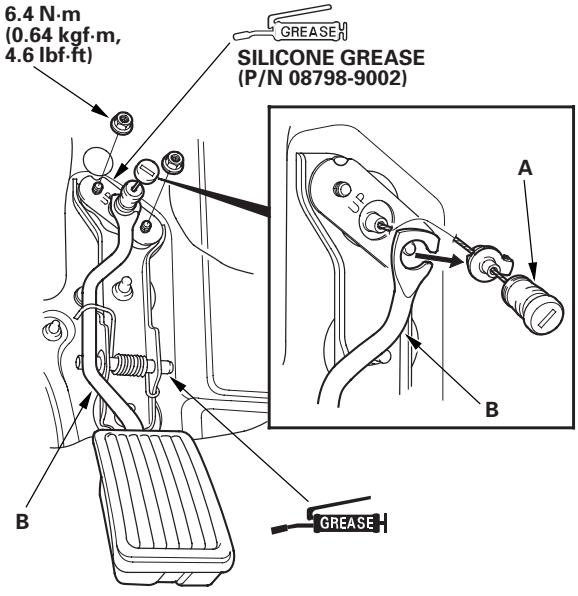
Throttle Cable Removal/Installation

1. Remove the throtlle cable cover (see page 11-485).
2. Fully open the throttle valve, then remove the throttle cable (A) from the throttle link (B).

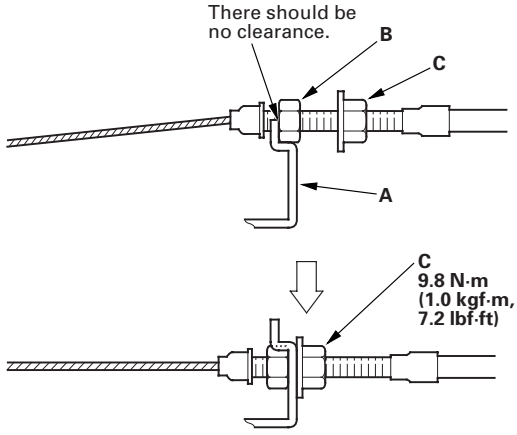


* : The illustration shows LHD model.

3. Remove the cable housing (C) from the cable bracket (D).
4. Remove the throttle cable (A) from the accelerator pedal (B).



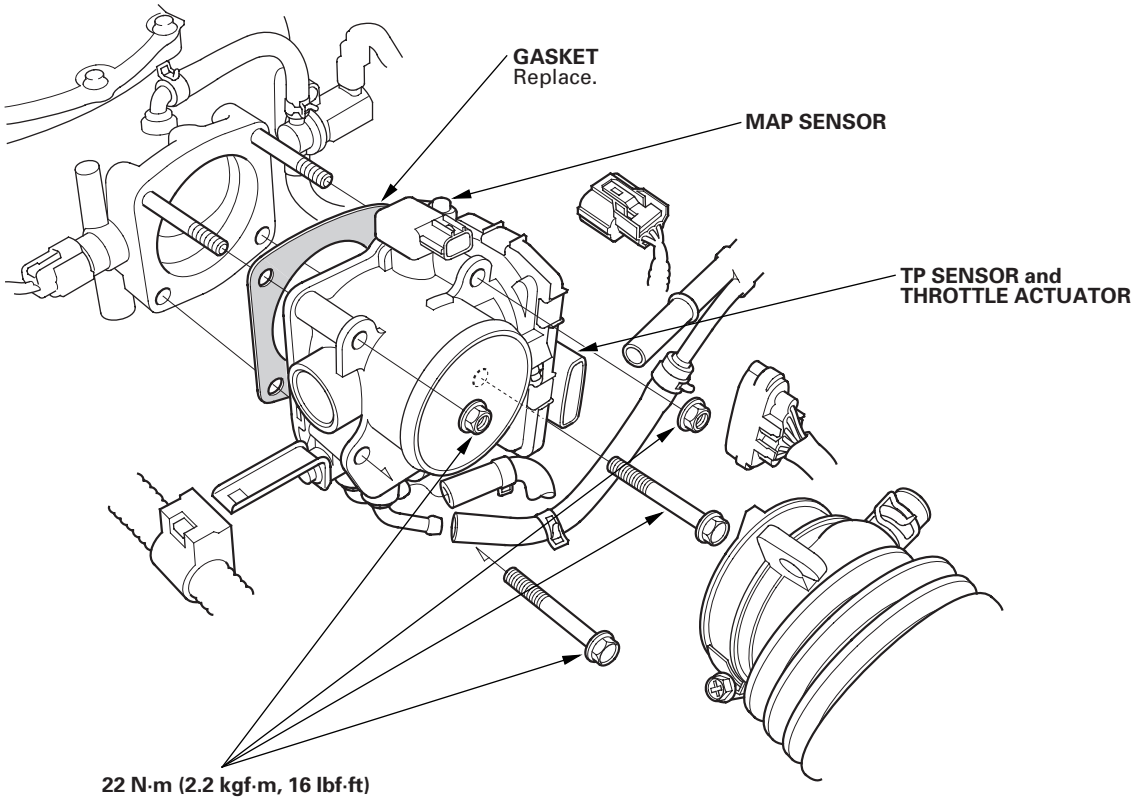
5. Install in the reverse order of removal.
6. Start the engine. Hold the engine at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
7. Hold the cable, removing all slack from it.
8. Set the locknut on the cable bracket (A). Adjust the adjusting nut (B) so that its free play is 0 mm.



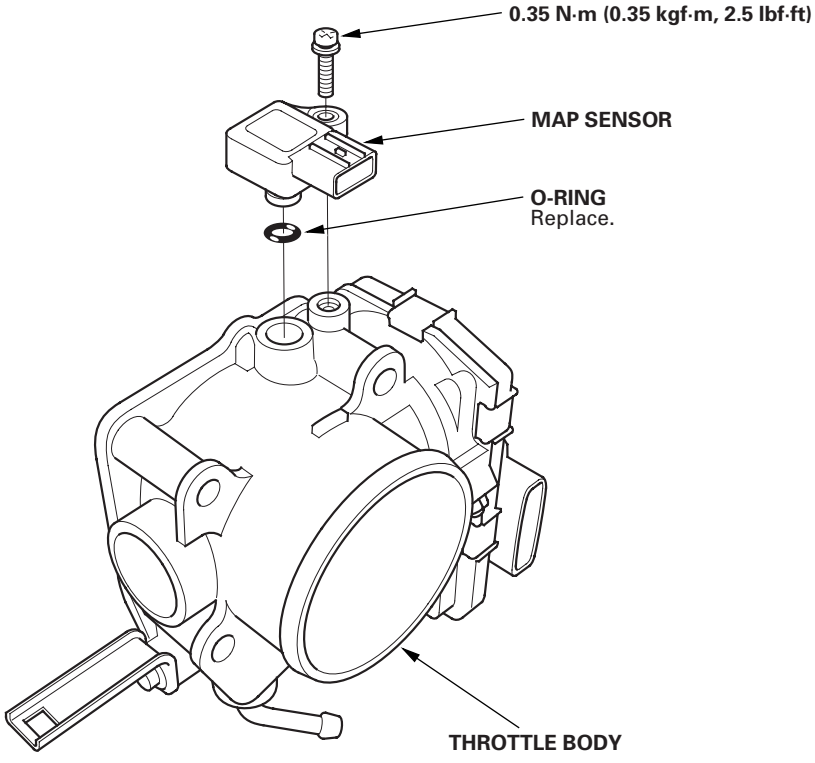
9. Remove the cable from the throttle bracket (A). Reset the adjusting nut (B) and tighten the locknut (C).
10. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

Throttle Body Removal/Installation

NOTE: Do the PCM idle learn procedure after the throttle body replaced (see page 11-193).



Throttle Body Disassembly/Reassembly



DTC Troubleshooting

DTC P0420: Catalyst System Efficiency Below Threshold (Rear Bank (Bank 1))
DTC P0430: Catalyst System Efficiency Below Threshold (Front Bank (Bank 2))

NOTE:
- If some of the DTCs listed below are stored at the same time as DTC P0420 and/or P0430*, troubleshoot those DTCs first, then recheck for DTC P0420 and/or P0430*.
  P0137, P0138, P0157, P0158: Secondary HO2S (Sensor 2)
  P0141, P0161: Secondary HO2S (Sensor 2) Heater
- When poor quality FUEL is used, this DTC may indicate.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under the following conditions.
   - Engine coolant temperature more than (70℃) 158℉
   - Transmission in D position
   - Vehicle speed between (80km/h) 50mph and 88km/h (55mph) with cruise control
   - Drive about 2 minutes, then decelerate for at least 4 seconds with the throttle completely closed, then accelerate to 88km/h (55mph) for 20 minutes with cruise control
5. Monitor the OBD STATUS for DTC P0420 and/or P 0430* in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is it EXECUTING?

   YES—Go to step 6.

   NO—Go to step 4. and recheck.
6. Contine test driving until a result comes on.
7. Monitor the OBD STATUS for DTC P0420 and/or P 0430* in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is it FAILED?

   YES—Go to step 8.

   NO—If it is PASSED, intermittent failure, system is OK at this time. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 5 and recheck.
8. Turn the ignition switch OFF.
9. Replace the TWC (see page 11-492).
10. Turn the ignition switch ON (II).
11. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
12. Do the PCM idle learn procedure (see page 11-193).
13. Start the engine. Hold the engine speed at 3,000 rpm(min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
14. Test-drive for about 10 minutes. Then it drives, changing the vehicle speed.
15. Check the CATA MON TEMP in the DATA LIST with the Honda PGM Tester or the HDS.

    Is the temperature OK?

    YES—Go to step 16.

    NO—Go to step 13. and recheck.

(cont'd)

DTC Troubleshooting (cont'd)

16. Test-drive under the following conditions.

    - Engine coolant temperature more than 70 ℃ (158 ℉)
    - Transmission in D position
    - Vehicle speed between 80 km/h (50 mph) and 88 km/h (55 mph) with cruise control
    - Drive about 2 minutes, then decelerate for at least 4 seconds with the throttle completely closed, then accelerate to 88 km/h (55 mph) for 20 minutes with cruise control

17. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is It EXECUTING?

    YES — Go to step 18.

    NO — Go to step 16. and recheck.

18. Contine test driving until a result comes on.

19. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — Go to the indicated DTC troubleshooting. ■

    NO — Go to step 20.

20. Monitor the OBD STATUS for DTC P0420 and//or P0430* in the DTCs MENU with the Honda PGM tester or the HDS.

    Is it PASSED?

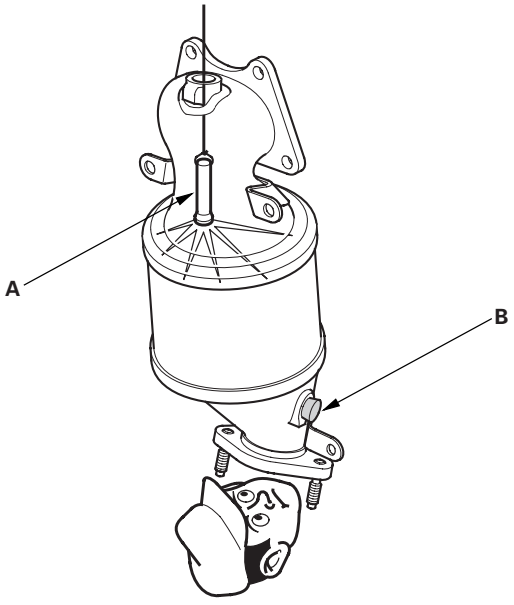
    YES — Troubleshooting is complete. ■

    NO — If it is FAILED, check the fuel quality. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 13 and recheck.

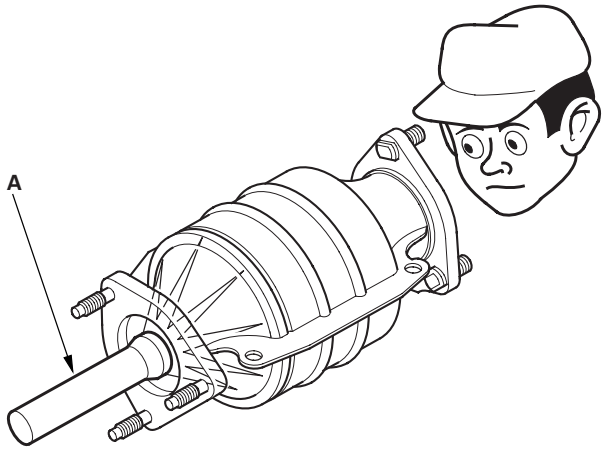
Catalytic Converter Inspection

If excessive exhaust system back-pressure is suspected, remove the, TVU-TWC and the TWC from the vehicle. Using a flashlight (A) and plug (B) make a visual check for plugging, melting cracking of the catalyst.
Replace the TWC if any of the visible area is damaged or plugged.

WU-TWC:



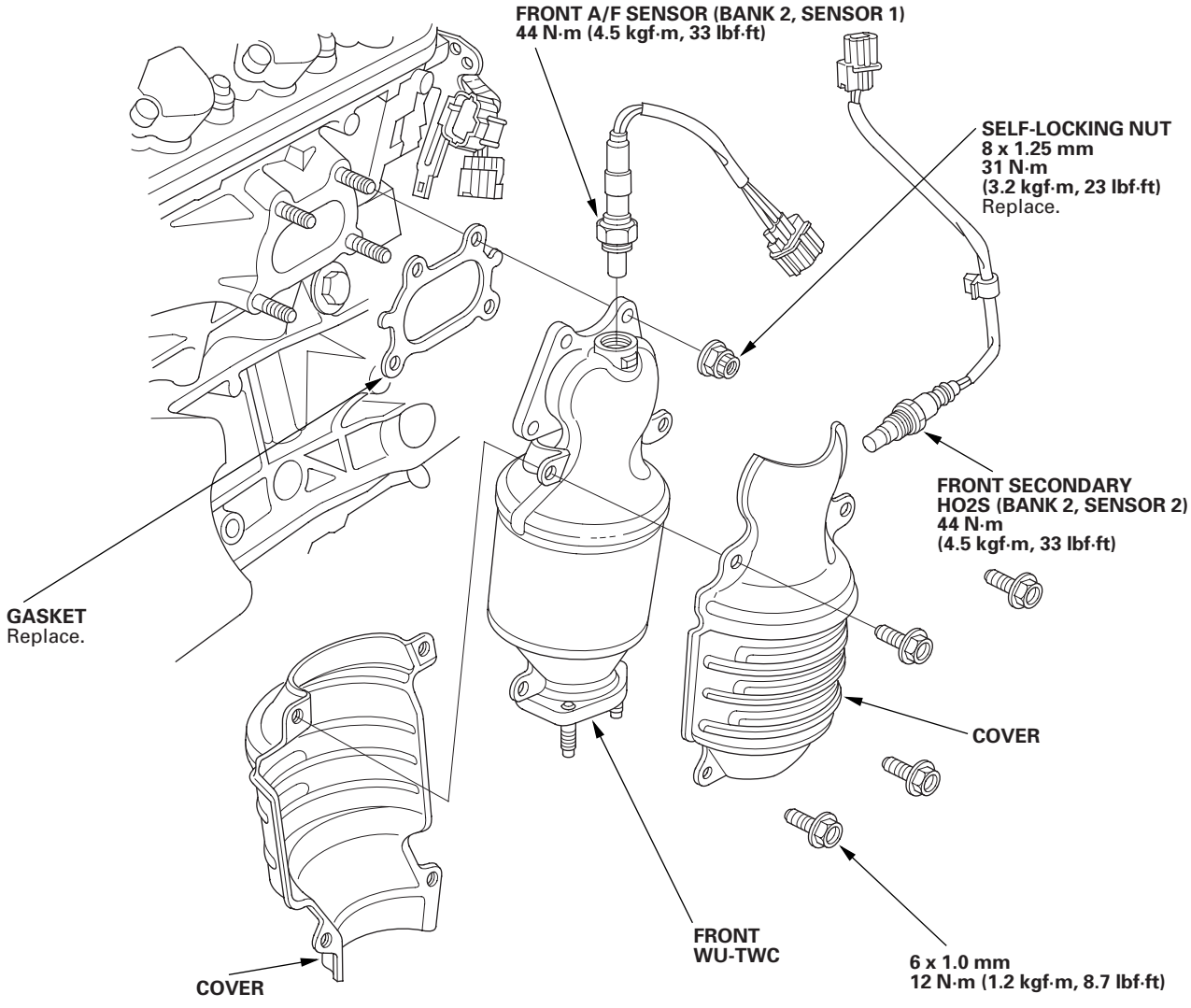
TWC:



Warm Up TWC Removal/Installation

FRONT:

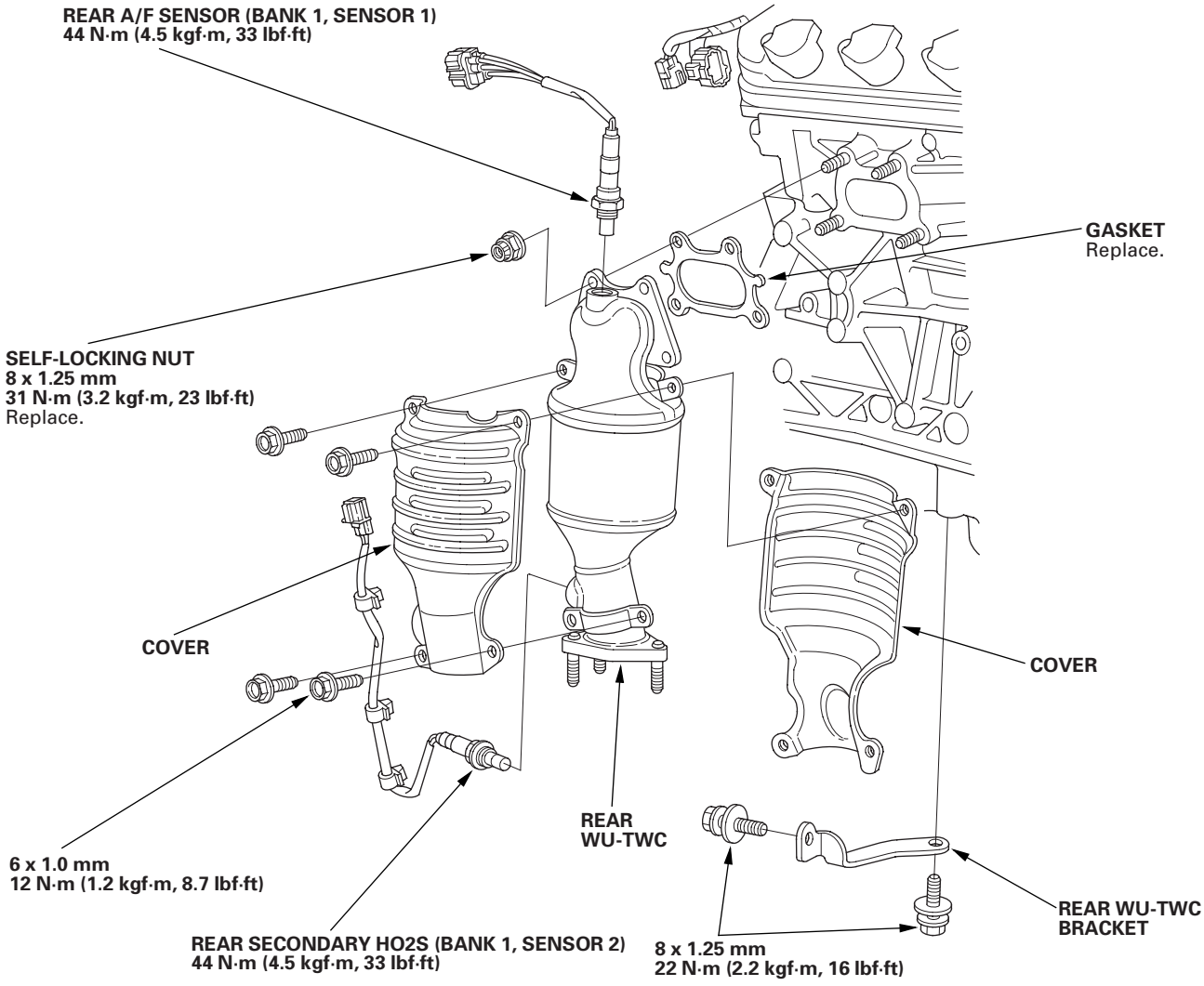
1. Remove the condenser fan shroud (see page 10-28).
2. Disconnect the front fuel air ratio (A/F) sensor connector and front secondary heated oxygen sensor (secondary HO2S) connector.
3. Remove the front WU-TWC.



4. Install the front WU-TWC, and tighten the nuts in a crisscross pattern in two or three steps.
5. Install the other parts in the reverse order of removal.

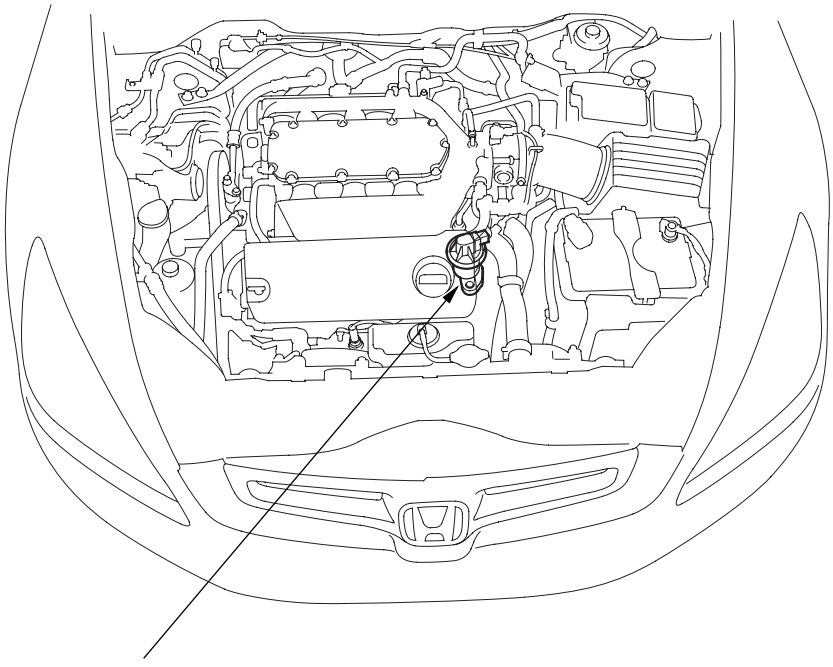
REAR:

1. Remove the intermediate shaft (see page 16-23).
2. Disconnect the rear air fuel ratio (A/F) sensor connector and rear secondary heated oxygen sensor (secondary HO2S) connector.
3. Remove the rear WU-TWC bracket, then remove the rear WU-TWC.



4. Install the rear WU-TWC, and tighten the nuts in a crisscross pattern in two or three steps.
5. Install the other parts in the reverse order of removal.

Component Location Index



EXHAUST GAS RECIRCULATION (EGR) VALVE
Replacement, page 11-506

DTC Troubleshooting

DTC P0401: EGR Insufficient Flow

1. Turn the ignition switch ON (II).

2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.

3. Start the engine. Hold the engine speed at 3,000rpm (min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

4. Do the EGR TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.

   Is the result OK?

   YES — Go to step 5.

   NO — Go to step 7.

5. Test-drive under the following conditions.

   - Engine Coolant temperature more than 70°C (158°F)
   - Transmission in D position
   - Vehicle speed at 40km/h (25mph) or more, and engine speed between 1,100rpm(min^{-1}) and 3,000rpm(min^{-1}).
   - During the drive, decelerate (with the throttle fully closed) for 5 seconds

6. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is It FAILED?

   YES — Remove the EGR plate (see page 9-2) and, clean the intake manifold port with carburetor cleaner, then go to step 9.

   NO — If it is PASSED, intermittent failure, system is OK at this time. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 5 and recheck.

7. Turn the ignition switch OFF.

8. Replace the EGR valve (see page 11-506).

9. Turn the ignition switch ON (II).

10. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

11. Do the PCM idle learn procedure (see page 11-193).

12. Test-drive under the following conditions.
    - Engine coolant temperature more than 70°C (158°F)
    - Transmission in D position
    - Vehicle speed at 40km/h (25mph) or more, and engine speed between 1,100rpm(min^{-1}) and 3,000rpm(min^{-1})
    - During the drive, decelerate (with the throttle fully closed) for 5 seconds

13. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated OK?

    YES — If DTC P0401 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If connections are OK, go to step 15. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — Go to step 14.

14. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES — Troubleshooting is complete. ■

    NO — If it is FAILED, then go to step 1. and recheck. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 12 and recheck.

(cont'd)

DTC Troubleshooting (cont'd)

15. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

16. Test-drive under the following conditions.

    - Engine coolant temperature more than 70°C (158°F)
    - Transmission in D position
    - Vehicle speed at 40 km/h (25 mph) or more, and engine speed between 1,100 rpm (min^{-1}) and 3,000 rpm (min^{-1})
    - During the drive, decelerate (with the throttle fully closed) for 5 seconds

17. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0401 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241)

DTC P0404: EGR Control Circuit Range/ Performance Problem

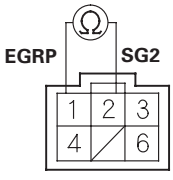
1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm(min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.

   Is the result OK?

   YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the PCM. ■

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the EGR valve 6P connector.
7. At the sensor side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 2. EGR VALVE 6P CONNECTOR.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

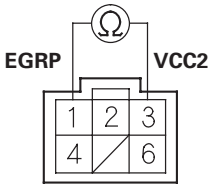
Is there resistance of 100 kΩ or more?

YES—Go to step 26.

NO—Go to step 8.

8. Measure resistance between EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

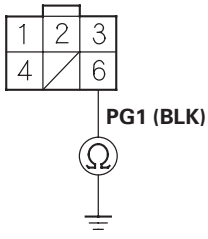
Is there 100 kΩ or more?

YES—Go to step 26.

NO—Go to step 9.

9. Check for continuity between EGR valve 6P connector terminal No. 6 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the EGR valve and G101, then go to step 27.

(cont'd)

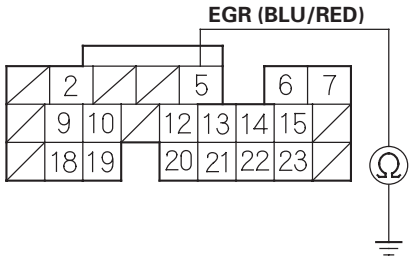
DTC Troubleshooting (cont'd)

10. Jump the SCS line with the Honda PGM Tester or the HDS.

11. Disconnect PCM connector B (24P).

12. Check for continuity between PCM connector terminal B5 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

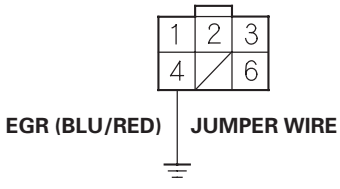
Is there continuity?

YES — Repair short in the wire between the PCM (B5) and the EGR valve, then go to step 27.

NO — Go to step 13.

13. Connect EGR valve 6P connector terminal No. 4 to body ground with a jumper wire.

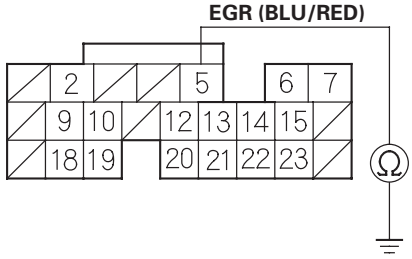
EGR VALVE 6P CONNECTOR



Wire side of female terminals

14. Check for continuity between PCM connector terminal B5 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES — Go to step 15.

NO — Repair open in the wire between the PCM (B5) and the EGR valve, then go to step 27.

15. Remove the EGR valve (see page 11-506).

16. Clean the intake manifold EGR port with carburetor cleaner. Also, clean the passage inside the EGR valve with carburetor cleaner.

17. Install the EGR valve (see page 11-506).

18. Reconnect the EGR valve 6P connector.

19. Reconnect PCM connector B (24P).

20. Turn the ignition switch ON (II).

21. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

22. Do the PCM idle learn procedure (see page 11-193).

23. Start the engine. Hold the engine speed at 3,000rpm(min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

24. Do the EGR TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.

    Is the result OK?

    YES — Go to step 31.

    NO — Go to step 25.

25. Turn the ignition switch OFF.

26. Replace the EGR valve (see page 11-506).

27. Turn the ignition switch ON (II).

28. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

29. Do the PCM idle learn procedure (see page 11-193).

30. Start the engine. Hold the engine speed at 3,000 rpm(min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

31. Test-drive the vehicle under load for about 10 minutes. Try to keep the engine speed in the 1,700 — 2,500 rpm(min^{-1}) range.

32. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P0404 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1.If connections are OK, Go to step 34. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — Go to step 33.

33. Monitor the OBD STATUS for DTC P0404 in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES — Troubleshooting is complete. ■

    NO — If it is FAILED, then go to step 1. and recheck. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 30. and recheck.

34. Update the PCM if it does not have the latest software, or substitute a know-good PCM (see page 11-242).

35. Test-drive the vehicle under load for about 10 minutes. Try to keep the engine speed in the 1,700 — 2,500(min^{-1}) rpm range.

36. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES — If DTC P0404 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO — If the PCM was updated, troubleshooting is complete. If PCM was substituted, replace the original PCM (see page 11-241)

DTC Troubleshooting (cont'd)

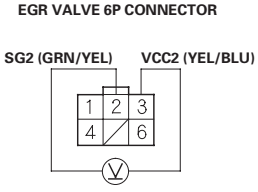
DTC P0406: EGR Valve Position Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the EGR VLS in the DATA LIST with the Honda PGM Tester or the HDS.

   Is 4.88 V or higher indicated?

   YES – Go to step 3.

   NO – Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the EGR valve 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between EGR valve 6P connectorterminals No. 2 and No. 3.

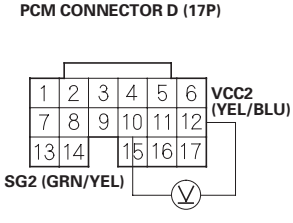


Wire side of female terminals

   Is there about 5 V?

   YES – Go to step 8.

   NO – Go to step 7.
7. Measure voltage between PCM connector terminals D12 and D10.



Wire side of female terminals

   Is there about 5 V?

   YES – Repair open in the wire between the EGR valve and the PCM (D10) , then go to step 10.

   NO – Go to step 14.
8. Turn the ignition switch OFF.
9. Replace the EGR valve (see page 11-506).
10. Turn the ignition switch ON (II).
11. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
12. Do the PCM idle learn procedure (see page 11-193).
13. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES – If DTC P0406 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO – Troubleshooting is complete. ■
14. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).
15. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES – If DTC P0406 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO – If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

DTC P2413: EGR System Malfunction

1. Turn the ignition switch ON (II).
2. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Start the engine. Hold the engine speed at 3,000rpm(min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.

   Is SYSTEM OK?

   YES — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the PCM. ■

   NO — Go to step 5.
5. Check the result in display on the Honda PGM Tester or the HDS.

   Is the reading ''System Failure''?

   YES — Go to step 6.

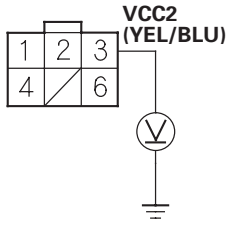
   NO — Go to step 20.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).
8. Check the EGR VLS in the DATA LIST with the Honda PGM Tester or the HDS.

   Is about 0 V indicated?

   YES — Go to step 9.

   NO — Go to step 32.
9. Turn the ignition switch OFF.
10. Disconnect the EGR valve 6P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between EGR valve 6P connector terminal No. 3 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

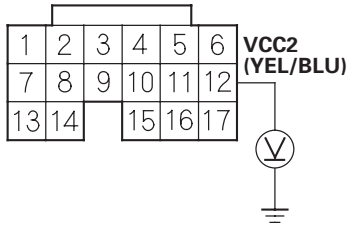
Is there about 5 V?

YES — Go to step 14.

NO — Go to step 13.

13. Measure voltage between PCM connector terminal D12 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 5 V?

YES — Repair open in the wire between the EGR valve and the PCM (D12) , then go to step 49.

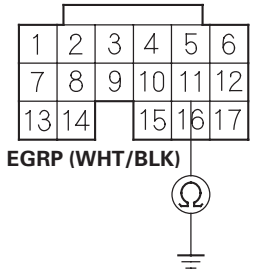
NO — Go to step 55.

(cont'd)

DTC Troubleshooting (cont'd)

14. Turn the ignition switch OFF.
15. Jump the SCS line with the Honda PGM Tester or the HDS.
16. Disconnect PCM connector D (17P).
17. Check for continuity between PCM connector terminal D11 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

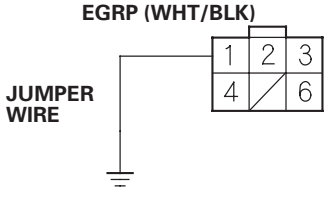
Is there continuity?

YES — Repair short in the wire between the PCM (D11) and the EGR valve, then go to step 48.

NO — Go to step 18.

18. Connect EGR valve 6P connector terminal No. 1 to body ground with a jumper wire.

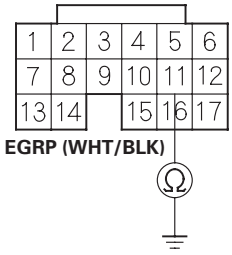
EGR VALVE 6P CONNECTOR



Wire side of female terminals

19. Check for continuity between PCM connector terminal D11 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

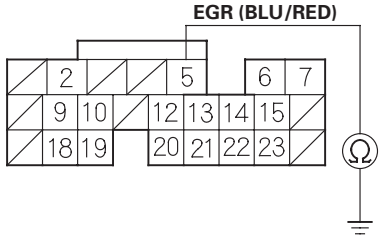
Is there continuity?

YES — Go to step 34.

NO — Repair open in the wire between the PCM (D11) and the EGR valve, then go to step 48.

20. Turn the ignition switch OFF.
21. Disconnect the EGR valve 6P connector.
22. Jump the SCS line with the Honda PGM Tester or the HDS.
23. Disconnect PCM connector B (24P).
24. Check for continuity between PCM connector terminal B5 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

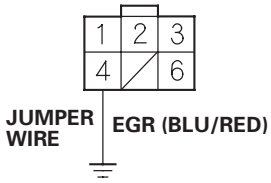
Is there continuity?

YES — Repair short in the wire between the PCM (B5) and the EGR valve, then go to step 48.

NO — Go to step 25.

25. Connect EGR valve 6P connector terminal No. 4 to body ground with a jumper wire.

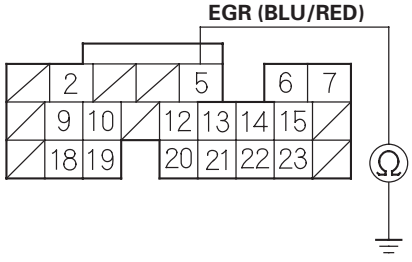
EGR VALVE 6P CONNECTOR



Wire side of female terminals

26. Check for continuity between PCM connector terminal B5 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

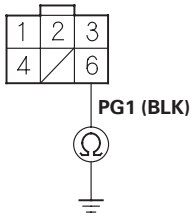
YES — Go to step 27.

NO — Repair open in the wire between the PCM (B5) and the EGR valve, then go to step 48.

27. Remove the jumper wire from the EGR valve 6P connector.

28. Remove the jumper wire from the EGR valve 6P connector.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there continuity?

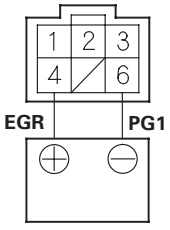
YES — Go to step 29.

NO — Repair open in the wire between the EGR valve and G101, then go to step 48.

29. Reconnect PCM connector B (24P).

30. Connect the battery positive terminal to EGR valve 6P connector terminal No. 4 with a jumper wire.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

31. Start the engine and let it idle, then connect the battery negative terminal to EGR valve 6P connector terminal No. 6 with a jumper wire.

Does the engine stall or run rough?

YES — Go to step 55.

NO — Go to step 36.

(cont'd)

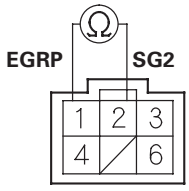
DTC Troubleshooting (cont'd)

32. Turn the ignition switch OFF.

33. Disconnect the EGR valve 6P connector.

34. At the sensor side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 2.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

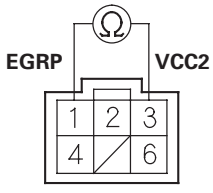
Is there continuity or resistance of 100 kΩ or more?

YES — Go to step 47.

NO — Go to step 35.

35. Measure resistance between EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

Is there 100 kΩ or more?

YES — Go to step 47.

NO — Go to step 36.

36. Remove the EGR valve (see page 11-506) and the EGR plate (see page 9-2).

37. Clean the intake manifold EGR ports with carburetor cleaner. Also, clean the passage inside the EGR valve.

38. Install the EGR valve (see page 11-506) and the EGR plate.

39. Reconnect PCM connectors B (24P) and D (17P). (Skip this step, if the connectors are already connected.)

40. Reconnect the EGR valve 6P connector.

41. Turn the ignition switch ON (II).

42. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

43. Do the PCM idle learn procedure (see page 11-193)

44. Start the engine. Hold the engine speed at 3,000rpm(min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

45. Do the EGR TEST in the INSPECTION MENU with the Honda PGM Tester or the HDS.

Is SYSTEM OK?

YES — Go to step 52.

NO — Go to step 46.

46. Turn the ignition switch OFF. (Skip this step, if the ignition switch is already OFF.)

47. Replace the EGR valve (see page 11-506).

48. Turn the ignition switch ON (II).

49. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

50. Do the PCM idle learn procedure (see page 11-193).

51. Start the engine. Hold the engine speed at 3,000 rpm(min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

52. Test-drive the vehicle under load for about 10 minutes. Try to keep the engine speed in the 1,700—2,500 rpm(min^{-1}) range.

53. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P2413 is the indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to indicated DTCs troubleshooting.

    NO—Go to step 54.

54. Monitor the OBD STATUS for DTC P2413 in the DTCs MENU with the Honda PGM Tester or the HDS.

    Is it PASSED?

    YES—Troubleshooting is complete. ■

    NO—If it is FAILED, then go to step 1. and recheck. If it is EXECUTING, keep the driving condition continually until a result comes on. If it is Out of CONDITION, go to step 51 and recheck.

55. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

56. Start the engine. Hold the engine speed at 3,000 rpm(min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

57. Test-drive the vehicle under load for about 10 minutes. Try to keep the engine speed in the 1,700—2,500(min^{-1}) rpm range.

58. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

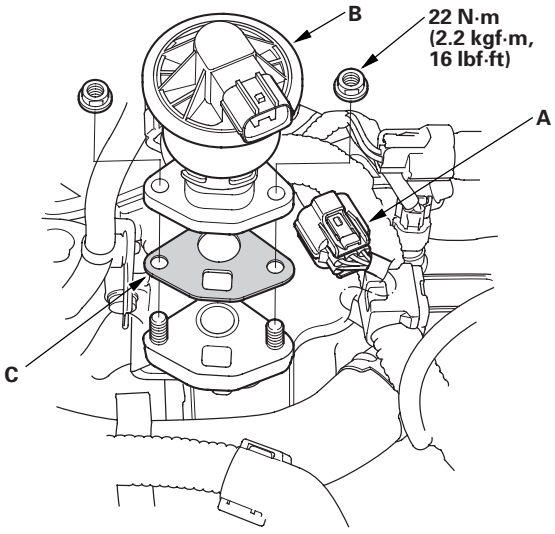
    YES—If DTC P2413 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

EGR Valve Replacement

1. Remove the ignition coil cover (see step 1 on page 4-80).

2. Disconnect the EGR valve 6P connector (A).



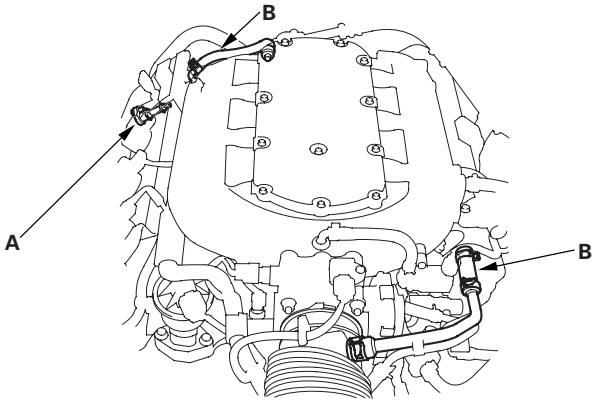
3. Remove the EGR valve (B).

4. Install the valve in the reverse order of removal with a new gasket (C).

5. Install the ignition coil cover (see step 1 on page 4-80).

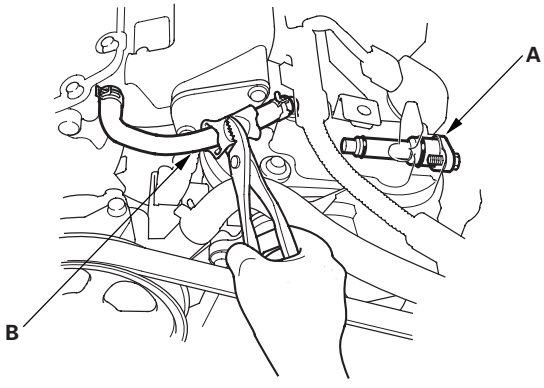
PCV Valve Inspection and Test

1. Remove the ignition cover (see step 1 on page 4-80).
2. Check the PCV valve (A), hoses (B), and connections for leaks or restrictions.



3. At idle, listen to the PCV valve (A) with a stethoscope as you lightly pinch the PCV hose (B) with your fingers or pliers several times. Each time the hose is pinched, the valve should click.

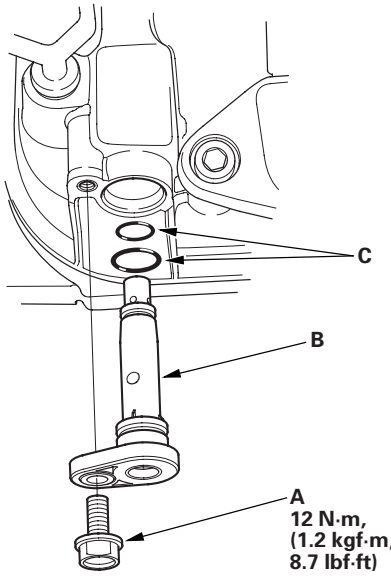
   If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.



PCV Valve Replacement

1. Remove the ignition cover (see step 1 on page 4-80).
2. Disconnect the bolt (A).

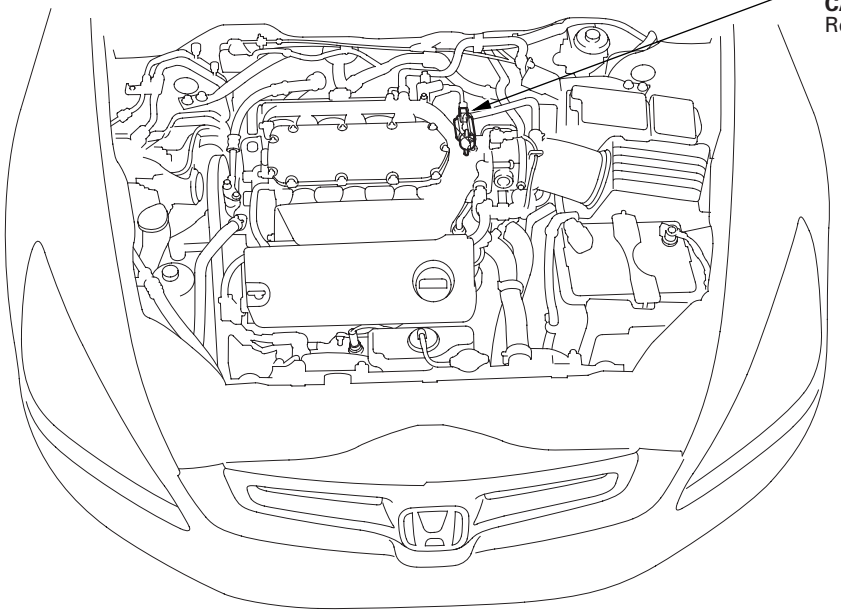
   NOTE: Take care not to spill the oil on hot exhaust manifold.

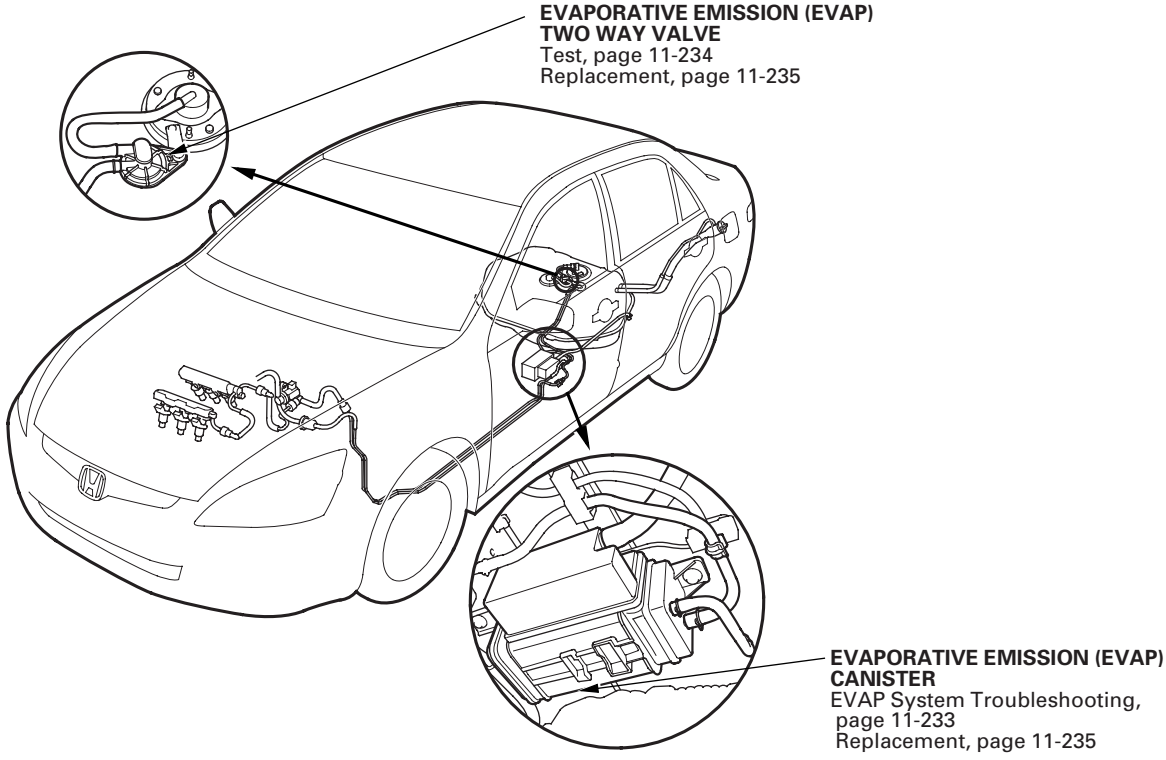


3. Remove the PCV valve (B).
4. Install the valve in the reverse order of removal.

   NOTE:
   - When installing a new PCV valve, make sure the O-rings (C) is in place.
   - When installing a used PCV valve, use a new O-rings (C).

Component Location Index





DTC P0443: EVAP Canister Purge Valve Circuit Malfunction

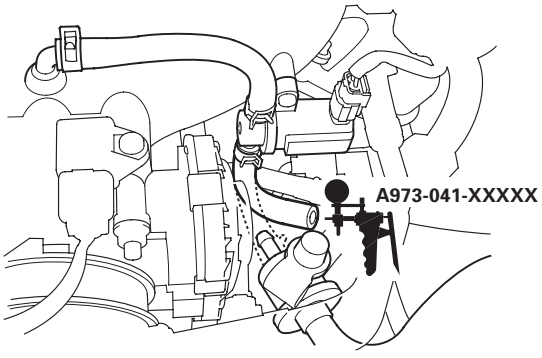
Special Tools Required
• Vacuum Pump/Gauge, 0 30 in.Hg A973X-041-XXXXX

1. Turn the ignition switch ON (II).
2. Do the DTC CLEAR in the CLEAR MENU with the Honda PGM Tester or the HDS.
3. Turn the ignition switch ON (II).
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

   Is DTC P0443 indicated?

   YES — Go to step 5.

   NO — Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) and connect a vacuum pump/gauge to the hose.



7. Start the engine and let it idle.

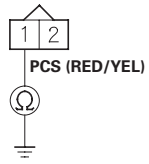
   NOTE: The ECT SENSOR in the DATA LIST must be below 65℃ (149℉).

   Is there vacuum?

   YES — Go to step 8.

   NO — Go to step 14.
8. Turn the ignition switch OFF.
9. Disconnect the EVAP canister purge valve 2P connector.
10. Check for continuity between the EVAP canister purge valve 2P connector No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



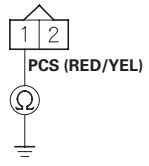
Wire side of female terminals

   Is there continuity?

   YES — Go to step 11.

   NO — Go to step 24.
11. Jump the SCS line with the Honda PGM Tester or the HDS.
12. Disconnect PCM connector B (24P).
13. Check for continuity between the EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

   Is there continuity?

   YES — Repair short in the wire between the EVAP canister purge valve and the PCM (B2), then go to step 25.

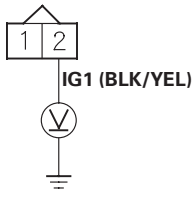
   NO — Go to step 32.

(cont'd)

DTC Troubleshooting (cont'd)

14. Turn the ignition switch OFF.
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch ON (II).
17. Measure voltage between the EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

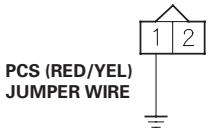
Is there battery voltage?

YES — Go to step 18.

NO — Repair open in the wire between the EVAP canister purge valve and the No. 18 ACG (15A) fuse in the under-dash fuse/relay box, then go to step 26.

18. Turn the ignition switch OFF.
19. Jump the SCS line with the Honda PGM Tester or the HDS.
20. Disconnect PCM connector B (24P).
21. Connect the EVAP canister purge valve 2P connector terminal No. 1 to body ground with a jumper wire.

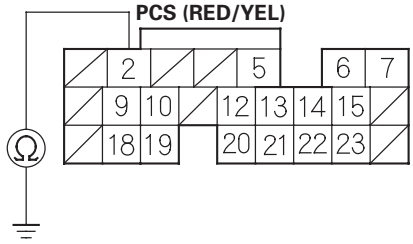
EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

22. Check for continuity between PCM connector terminal B2 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

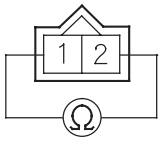
Is there continuity?

YES — Go to step 23.

NO — Repair open in the wire between the EVAP canister purge valve and the PCM (B2), then go to step 25.

23. Measure resistance between the EVAP canister purge valve 2P connector terminals No. 1 and No. 2.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Terminal side of male terminals

Is there about 33 Ω at room temperature?

YES — Go to step 32.

NO — Go to step 24.

24. Replace the EVAP canister purge valve (see page 11-512).

25. Reconnect PCM connector B (24P).

26. Reconnect the EVAP canister purge valve 2P connector.

27. Turn the ignition switch ON (II).

28. Do the PCM RESET in the CLEAR MENU with the Honda PGM Tester or the HDS.

29. Do the PCM idle learn procedure (see page 11-193).

30. Start the engine. Hold the engine speed at 3,000 rpm(min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

31. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0443 is indicated, check for poor connections or loose terminals at the EVAP canister purge valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—Troubleshooting is complete. ■

32. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-242).

33. Start the engine. Hold the engine speed at 3,000 rpm(min^{-1}) with no load (in Park or neutral) until the radiator fan comes on, then let it idle.

34. Check for Temporary DTCs or DTCs in the DTCs MENU with the Honda PGM Tester or the HDS.

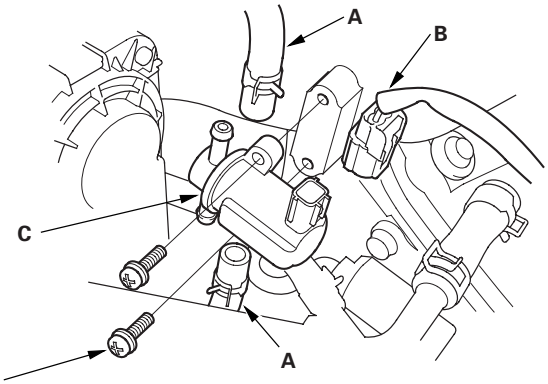
    Are any Temporary DTCs or DTCs indicated?

    YES—If DTC P0443 is indicated, check for poor connections or loose terminals at the EVAP canister purge valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-241). ■

EVAP Canister Purge Valve Replacement

1. Disconnect the hoses (A) and the EVAP canister purge valve 2P connector (B).



2. Remove the EVAP canister purge valve (C).
3. Install the valve in the reverse order of removal.

BAYA, MAYA
Automatic Transmission

Automatic Transmission
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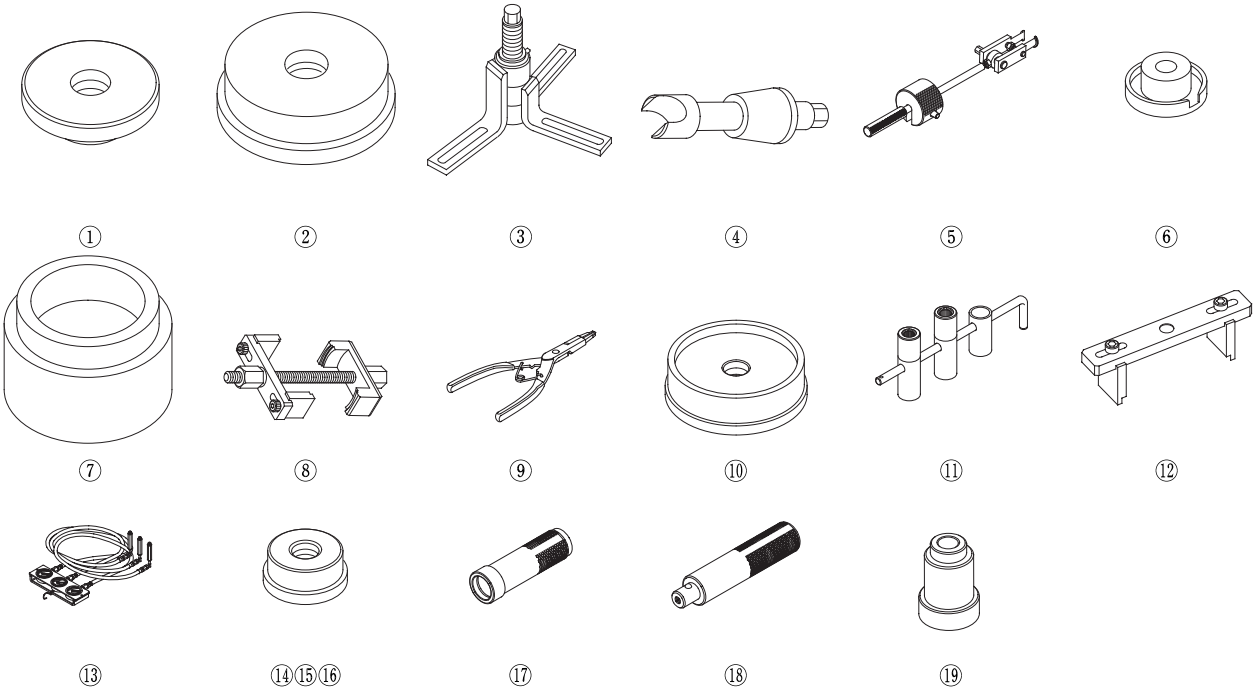
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Special Tools

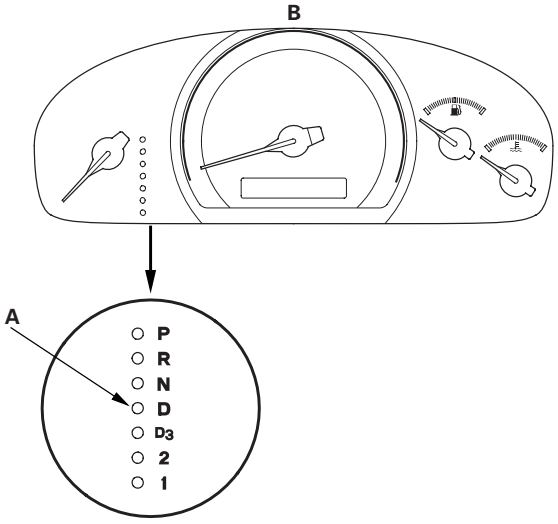
Ref.No.	Tool Number	Description	Qty
①	07GAD-PG40101 or 07GAD-PG40100	Oil Seal Driver Attachment	1
②	07GAD-SD40101	Driver Attachment, 78 x 90mm	1
③	07HAC-PK40102	Housing Puller	1
④	07HAJ-PK40201	Preload Inspection Tool	1
⑤	07JAC-PH80000	Adjustable Bearing Remover Set	1
⑤-1	07JAC-PH80100	Bearing Remover Attachment	1
⑤-2	07JAC-PH80200	Remover Handle Assembly	1
⑤-3	07741-0010201	Remover Weight	1
⑥	07JAD-PH80101	Oil Seal Driver Attachment	1
⑦	07LAD-PW50601	Attachment, 40 x 50mm	1
⑧	07LAE-PX40000	Clutch Spring Compressor Set	1
⑧-1	07LAE-PX40100	Clutch Spring Compressor Attachment	1
⑧-2	07HAE-PL50101	Clutch Spring Compressor Attachment	1
⑧-3	07GAE-PG40200	Clutch Spring Compressor Bolt Assembly	1
⑨	07LGC-0010100	Snap Ring Pliers	1
⑩	07NAD-PX40100	Driver Attachment, 78 x 80 mm	1
⑪	07PAB-0010000	Mainshaft Holder Set	1
⑫	07ZAE-PRP0100	Clutch Compressor Attachment	1
⑬	07406-0020004	A/T Oil Pressure Gauge Set	1
⑭	07746-0010500	Driver Attachment, 62 x 68 mm	1
⑮	07746-0010600	Driver Attachment, 72 x 75 mm	1
⑯	07746-0010800	Driver Attachment, 22 x 28 mm	1
⑰	07746-0030100	Driver 40 mm I.D.	1
⑱	07749-0010000	Handle Driver	1
⑲	07947-6340500	Driver Attachment	1



General Troubleshooting Information

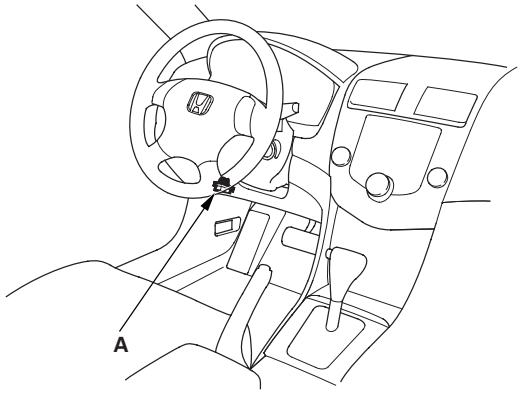
How to Check for DTCs with the Honda PGM Tester or Honda Diagnostic System

When the powertrain control module (PCM) senses an abnormality in the input or output systems, the D indicator (A) in the gauge assembly (B) will usually blink.



When the data link connector (DLC) (A) (located under the left end of the dash) is connected to the Honda PGM Tester or Honda diagnostic system (HDS), it will indicate the diagnostic trouble code (DTC) when the ignition switch is turned ON (II).

NOTE: The illustration shows LHD model; RHD model is symmetrical.



If the D indicator or malfunction indicator lamp (MIL) has been reported on, or if a driveability problem is suspected, follow this procedure:

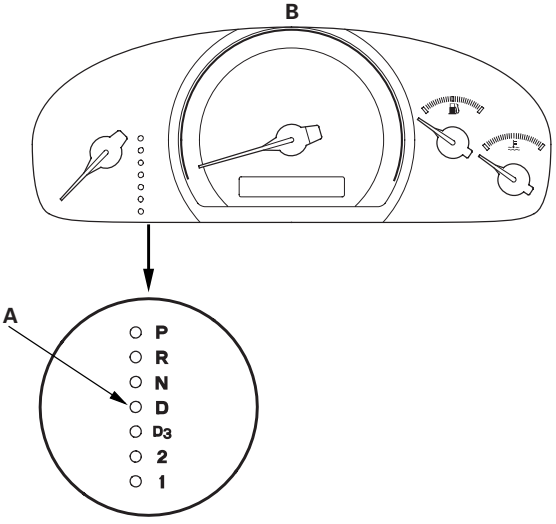
1. Connect the Honda PGM Tester or HDS to the DLC. (See the Honda PGM Tester or HDS user's manual for specific instructions.)
2. Turn the ignition switch ON (II), select A/T system and observe the DTC in the DTCs MENU on the tester screen.
3. Record all fuel and emissions DTCs, A/T DTCs, and freeze data.
4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except for DTC P0700, DTC P0700 means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).
5. Clear the DTC and data in the CLEAR MENU.
6. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for a DTC. If the A/T DTC returns, go to the DTC troubleshooting Index. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

(cont'd)

General Troubleshooting Information (cont'd)

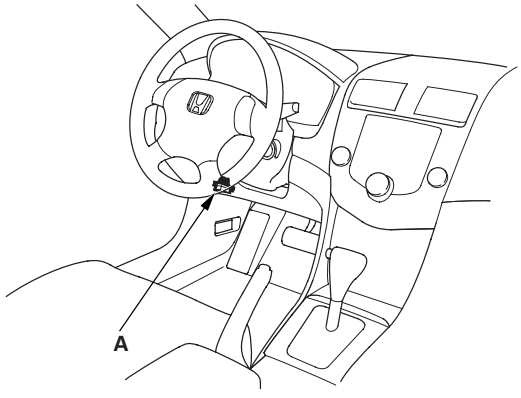
How to Check for DTCs with the SCS Mode (retrieving the flash codes)

When the PCM senses an abnormality in the input or output system, the D indicator (A) in the gauge assembly (B) will usually blink.



When the D indicator has been reported on, connect the Honda PGM Tester or HDS to the DLC (A) (located under the left end of the dash). Turn the ignition switch ON (II), select SCS mode, then the D indicator will indicate the DTC.

NOTE: The illustration shows LHD model; RHD model is symmetrical.

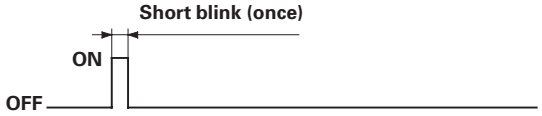


If the D indicator and the MIL come on at the same time, or if a driveability problem is suspected, follow this procedure:

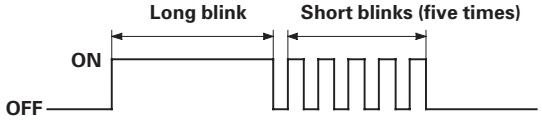
1. Connect the Honda PGM Tester or HDS to the DLC. (See the Honda PGM Tester or HDS user's manual for specific instructions.)

2. Turn the ignition switch ON (II), select SCS mode, then observe the D indicator in the gauge assembly.
   Code 1 through 9 are indicated by individual short blinks. Code 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code.

Example: DTC 1-1



Example: DTC 15-5



3. Record all fuel and emissions DTCs and A/T DTCs.

4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except DTC 70, DTC 70 means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).

5. Clear the DTC and data in the CLEAR MENU.

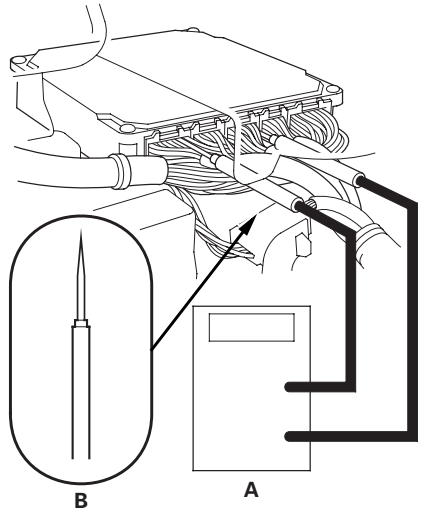
6. Drive the vehicle for several minutes under the same cobditions as those indicated by the freeze data, and then recheck for DTC. If the A/T DTC returns, go to the DTC Troubleshooting Index. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

Clear A/T DTCs, and PCM Reset Procedures

1. Make sure you have the anti-theft code for the radio, then write down the radio station presets.
2. Turn the ignition switch OFF.
3. Connect the Honda PGM Tester or HDS to the DLC.
4. Turn the ignition switch ON (II).
5. Select the A/T system, then CLEAR on the tester screen.
6. Clear the DTC(s) or reset the PCM in CLEAR MENU.

How to Troubleshoot Circuits at the PCM

1. Pull back the carpet, and remove the passenger's console side trim (see page 20-85).
2. Inspect the circuit on the PCM, according to the DTC troubleshooting with a digital multitester (A) and tapered tip probe (B) as shown.



3. If you cannot get to the wire side of the connector or the wire side is sealed, disconnect the connector and use the tester probe to probe the connectors from the terminal side. Do not force the probe into the connector.

(cont'd)

General Troubleshooting Information (cont'd)

PCM Updating and Substitution for Testing

Special Tools Required
Honda Interface Module (HIM) EQS05A35570

Use this procedure when you have to substitute a known-good PCM in a troubleshooting procedure. Update the PCM only if the PCM does not already have the latest software loaded.

Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF, the PCM can be damaged.

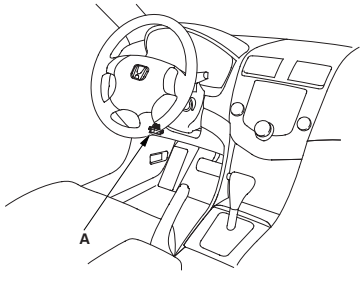
How to Update the PCM

NOTE:
- To ensure the latest program is installed, update a PCM whenever the PCM is substituted or replaced.
- You cannot update a PCM with the program it already has. It will only accept a new program.
- Before you update the PCM, make sure the vehicle's battery is fully charged.
- To prevent PCM damage, do not operate any electrical system; audio system, brakes, air conditioning, power windows, moonroof, and door locks, during the update.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) light came on or was flashing during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the DLC. This will prevent PCM damage.

1. Turn the ignition switch ON (II). Do not start the engine.

2. Connect the Honda interface module (HIM) to the DLC (A) located under the left end of the dash.

   NOTE: The illustration shows LHD model; RHD model is symmetrical.



3. Update the PCM according to the procedures described on the HIM label. If the software in the PCM is the latest, replace the PCM.

How to Substitute the PCM

1. Connect the Honda PGM Tester or HDS to the DLC.

2. Turn the ignition switch OFF.

3. Jump the SCS line with the Honda PGM Tester or HDS.

4. Remove the PCM, and install a known-good PCM.

5. Rewrite the immobilizer code with the PCM replacement procedure in the Honda PGM Tester or HDS; this will allow you to start the engine.

6. After completing your test, reinstall the original PCM and rewrite the immobilizer code with the PCM replacement procedure in the Honda PGM Tester or HDS again.

How to Remove and Install the PCM

1. Pull back the carpet, and remove the driver's and passenger's console side trims (see page 20-85).
2. Connect the Honda PGM Tester or HDS to the DLC.
3. Turn the ignition switch OFF.
4. Jump the SCS line with the PGM Tester or HDS.
5. Disconnect PCM connectors.
6. Remove the two bolts, and remove the PCM.
7. Install the PCM in the reverse order of the removal.

How to End a Troubleshooting Session

This procedure must be done after any troubleshooting.

1. Turn the ignition switch OFF.
2. Connect the Honda PGM Tester or HDS to the DLC.
3. Turn the ignition switch ON (II).
4. Select the A/T system, then CLEAR on the tester screen.
5. Clear the DTC(s) or reset the PCM in CLEAR MENU.
6. Turn the ignition switch ON (II).
7. Enter the radio code, reset the preset stations, and set the clock.
8. Start the engine in the P or N position, and warm it up to normal operating temperature (the radiator fan comes on). Do the PCM idle learn procedure (see page 11-193).
9. Do the power window control unit reset procedure (see page 22-219).
10. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 30 mph (50 km/h) or in freeze data range.

DTC Troubleshooting Index

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

DTC *(1)	D Indicator	MIL	Detection Item	Page
P0705 (5-2) *(2)	Blinks	ON	Transmission range switch (multiple shift-position input)	(see page 14-370)
P0706 (6-2) *(2)	OFF	ON	Transmission range switch (open)	(see page 14-375)
P0711 (28-5) *(2)	Blinks	OFF	ATF temperature sensor (range/performance)	(see page 14-378)
P0712 (28-3) *(2)	Blinks	OFF	ATF temperature sensor (short)	(see page 14-379)
P0713 (28-4) *(2)	Blinks	OFF	ATF temperature sensor (open)	(see page 14-380)
P0716 (15-5) *(2)	Blinks	ON	Mainshaft speed sensor (range/performance)	(see page 14-382)
P0717 (15-3) *(2)	Blinks	ON	Mainshaft speed sensor (no signal input)	(see page 14-386)
P0718 (15-6) *(2)	Blinks	ON	Mainshaft speed sensor (intermittent failure)	(see page 14-390)
P0721 (9-5) *(2)	Blinks	ON	Countershaft speed sensor (range/performance)	(see page 14-392)
P0722 (9-3) *(2)	Blinks	ON	Countershaft speed sensor (no signal input)	(see page 14-396)
P0723 (9-6) *(2)	Blinks	ON	Countershaft speed sensor (intermittent failure)	(see page 14-400)
P0746 (76-3)	Blinks	ON	A/T clutch pressure control solenoid valve A stuck OFF	(see page 14-402)
P0747 (76-4)	Blinks	ON	A/T clutch pressure control solenoid valve A stuck ON	(see page 14-403)
P0751 (70-3)	Blinks	ON	Shift solenoid valve A stuck OFF	(see page 14-404)
P0752 (70-4)	Blinks	ON	Shift solenoid valve A stuck ON	(see page 14-405)
P0756 (71-3)	Blinks	ON	Shift solenoid valve B stuck OFF	(see page 14-406)

NOTE:

* (1): The DTC in parentheses is the Honda code that you will see when you use the PGM Tester or the HDS. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector (DLC) is connected to the Honda PGM Tester, or the HDS, and the tester in SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

DTC *(1)	D Indicator	MIL	Detection Item	Page
P0757 (71-4)	Blinks	ON	Shift solenoid valve B stuck ON	(see page 14-407)
P0761 (72-3)	Blinks	ON	Shift solenoid valve C stuck OFF	(see page 14-408)
P0762 (72-4)	Blinks	ON	Shift solenoid valve C stuck ON	(see page 14-409)
P0776 (77-3)	Blinks	ON	A/T clutch pressure control solenoid valve B stuck OFF	(see page 14-410)
P0777 (77-4)	Blinks	ON	A/T clutch pressure control solenoid valve B stuck ON	(see page 14-411)
P0780 (45-1)	Blinks	ON	Shift control system	(see page 14-412)
P0847 (26-3) *(2)	Blinks	OFF	3rd clutch transmission fluid pressure switch (short or stuck ON)	(see page 14-413)
P0848 (26-4) *(2)	Blinks	OFF	3rd clutch transmission fluid pressure switch (short or stuck OFF)	(see page 14-415)
P0872 (27-3) *(2)	Blinks	OFF	4th clutch transmission fluid pressure switch (short or stuck ON)	(see page 14-417)
P0873 (27-4) *(2)	Blinks	OFF	4th clutch transmission fluid pressure switch (short or stuck OFF)	(see page 14-419)
P0962 (16-3) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve A (open/short)	(see page 14-421)
P0963 (16-4) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve A	(see page 14-423)
P0966 (23-3) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve B (open/short)	(see page 14-425)
P0967 (23-4) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve B	(see page 14-427)
P0970 (29-3) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve C (open/short)	(see page 14-429)
P0971 (29-4) *(2)	Blinks	ON	A/T clutch pressure control solenoid valve C	(see page 14-431)
P0973 (7-3) *(2)	Blinks	ON	Shift solenoid valve A (short)	(see page 14-433)
P0974 (7-4) *(2)	Blinks	ON	Shift solenoid valve A (open)	(see page 14-435)
P0976 (8-3) *(2)	Blinks	ON	Shift solenoid valve B (short)	(see page 14-437)
P0977 (8-4) *(2)	Blinks	ON	Shift solenoid valve B (open)	(see page 14-439)
P0979 (22-3) *(2)	Blinks	ON	Shift solenoid valve C (short)	(see page 14-441)
P0980 (22-4) *(2)	Blinks	ON	Shift solenoid valve C (open)	(see page 14-443)
P2769 (1-3) *(2)	Blinks	ON	Torque converter clutch solenoid valve circuit (short)	(see page 14-445)
P2770 (1-4) *(2)	Blinks	ON	Torque converter clutch solenoid valve circuit (open)	(see page 14-447)

NOTE:

* (1): The DTC is parentheses is the Honda code that you will see when you use the PGM Tester or the HDS. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector (DLC) is connected to the Honda PGM Tester, or the HDS, and the tester in SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

Symptom Troubleshooting Index

These symptoms DO NOT trigger diagnostic trouble codes (DTCs) or cause the D indicator to blink. If the malfunction indicator lamp (MIL) was reported ON or the D indicator has been blinking, check for DTCs. If the vehicle has one of the symptoms in the following chart, check the probable cause(s) for it, in the sequence listed, until you find the problem.

Symptom	Probable cause(s)	Notes
Shift lever cannot be moved from the P position while you're pushing on the brake pedal	A problem in the shift lock system of the interlock system	Check the interlock system - shift lock system circuit (see page 14-506).
Ignition key cannot be moved from ACC (I) position to LOCK (0) position (key is pushed in, shift lever in the P position)	A problem in the key interlock system of the interlock system	Check the interlock system - key interlock system circuit (see page 14-507).

Symptom	Probable cause(s)	Notes
Engine runs, but vehicle does not move in any gear	1. Low ATF level 2. Shift cable broken or out of adjustment 3. Shift cable worn 4. ATF pump worn or binding 5. Regulator valve stuck or spring worn 6. ATF strainer clogged 7. Mainshaft worn or damaged 8. Final gears worn or damaged 9. Transmission-to-engine assembly error 10. Axle disengaged	• Check the ATF level and check the ATF lines for leakage and loose connections. • Check for a loose shift cable at the shift lever and the transmission control shaft. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Check the line pressure. • If the strainer is clogged, find the damaged components that caused debris. • Inspect the differential pinion gears for wear. If the differential pinion gears are worn, replace the differential assembly, replace the ATF strainer, thoroughly clean the transmission, and flush the cooler and lines. Replace the torque converter. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools. • Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage.
Vehicle moves in R, but not in the D, D3, or 1 position	1. 1st accumulator defective 2. 1st clutch defective	• Check the 1st clutch pressure. • Inspect the secondary shaft and 1st/1st-hold/2nd clutch assembly for wear and damage. • Inspect the clutch piston and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn and damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance.
Vehicle moves in 2 and R, but not in the D, D3, or 1 position	1. 1st gear one-way clutch defective 2. 1st gears worn or damaged 3. 1st clutch defective	• Check the 1st clutch pressure. • Inspect the secondary shaft and 1st/1st-hold/2nd clutch assembly for wear and damage. • Inspect the clutch piston and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance.

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle moves in D, D3, 2 and R, but not in the 1 position	1. 1st-hold accumulator defective 2. 1st-hold clutch defective	• Check the 1st-hold clutch pressure. • Inspect the secondary shaft and 1st/1st-hold/2nd clutch assembly for wear and damage. • Inspect the clutch piston and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance.
Vehicle moves in D, D3, 1, R, but not in the 2 position	1. 2nd accumulator defective 2. 2nd gears worn or damaged 3. 2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the secondary shaft and 1st/1st-hold/2nd clutch assembly for wear and damage. • Inspect the clutch piston and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance.
Vehicle moves in D, D3, 2, 1, but not in the R position (or moves forward in the R position)	1. Shift fork shaft stuck 2. Modulator valve defective 3. Reverse CPC valve defective 4. 5th accumulator defective 5. 5th clutch defective 6. Reverse gears worn or damaged	• Check the line pressure and 5th clutch pressure. • Check for a missing shift fork bolt on the shift fork shaft. • If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, and no cause for the contamination is found, replace the torque converter. • Inspect the reverse selector gear teeth chamfers, and inspect engagement teeth chamfers of the countershaft 5th gear and reverse gear. Replace the reverse gears and the reverse selector if they are worn or damaged. If the transmission makes clicking, grinding, or whirring noises, also replace the mainshaft 5th gear, reverse idler gear, and countershaft 5th gear. • If the 5th clutch feed pipe guide in the end cover is scored by the mainshaft, inspect the ball bearing for excessive movement in the transmission housing. If the ball bearing is OK, replace the end cover as it is dented. The O-ring under the guide is probably worn. • Replace the mainshaft if the bushing for the 4th and 5th clutch feed pipes are loose or damaged. If the 5th clutch feed pipe is damaged or out of round, replace the end cover. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clearance with the clutch end plate.

Symptom	Probable cause(s)	Notes
Poor acceleration; flares on starting off in the D and D3 positions: Stall speed high in the D, D3, 2, and 1 positions	1. Low ATF level 2. Shift cable broken or out of adjustment 3. ATF pump worn or binding 4. Regulator valve stuck or spring worn 5. ATF strainer clogged 6. Torque converter check valve defective	• Check the ATF level and check the ATF lines for leakage and loose connections. • Check for a loose shift cable at the shift lever and the transmission control shaft. • Check the line pressure. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptom is mostly an rpm-ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools.
Poor acceleration; flares on starting off in the D and D3 positions: Stall speed high in the 2 position	2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the clutch piston and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance.
Poor acceleration; flares on starting off in the R position: Stall speed high in the R position	1. Shift cable broken or out of adjustment 2. 5th clutch defective	• Check for a loose shift cable at the shift lever and the transmission control shaft. • Check the 5th clutch pressure. • Inspect the clutch piston and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance.

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Poor acceleration; Stall speed low	1. Torque converter clutch solenoid valve defective 2. Engine output low 3. Lock-up clutch piston defective 4. Lock-up shift valve defective	Check for a stuck lock-up valve in the valve body.
Engine idle vibration	1. Low ATF level 2. Torque converter clutch solenoid valve defective 3. Drive plate defective or transmission misassembled 4. Engine output low 5. Lock-up clutch piston defective 6. ATF pump worn or binding 7. Lock-up shift valve defective	• Set idle rpm in gear to the specified idle speed. If still no good, adjust the engine and transmission mounts as outlined in the engine section of this shop manual. • Check the ATF level and check the ATF lines for leakage and loose connections.
Vehicle moves in the N position	1. Excessive ATF 2. Foreign material in separator plate orifice 3. Relief valve defective 4. 1st-hold clutch defective 5. 1st clutch defective 6. 2nd clutch defective 7. 3rd clutch defective 8. 4th clutch defective 9. 5th clutch defective 10. Clutch clearance incorrect 11. Needle bearing seized up, worn, or damaged 12. Thrust washer seized up, worn, or damaged	• Check the ATF level, and drain the ATF if necessary. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance. • Check all clutch pressures.

Symptom	Probable cause(s)	Notes
Late shift from the N position to the D and D3 positions	1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. Shift cable broken or out of adjustment 6. Joint in shift cable and transmission or body worn 7. Mainshaft speed sensor defective 8. Countershaft speed sensor defective 9. ATF temperature sensor defective 10. CPC valve C stuck 11. Foreign material in separator plate orifice 12. Shift valve C defective 13. Shift valve E defective 14. Servo control valve defective 15. 1st accumulator defective 16. 1st check ball stuck 17. 1st clutch defective	• Check the D indicator, and check for loose connectors. Inspect the O-ring, and check the shift solenoid valve for seizure. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check for a loose shift cable at the shift lever and the transmission control shaft. • If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, and no cause for the contamination is found, replace the torque converter. • Check the 1st clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance.
Late shift from the N position to the R position	1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. Shift cable broken or out of adjustment 6. Joint in shift cable and transmission or body worn 7. Mainshaft speed sensor defective 8. Countershaft speed sensor defective 9. ATF temperature sensor defective 10. Shift fork shaft stuck 11. CPC valve C stuck 12. Reverse CPC valve defective 13. Foreign material in separator plate orifice 14. Shift valve E defective 15. 5th accumulator defective 16. 5th clutch defective	• Check the D indicator, and check for loose connectors. Inspect the O-ring, and check the shift solenoid valve for seizure. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check for a loose shift cable at the shift lever and the transmission control shaft. • If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, and no cause for the contamination is found, replace the torque converter. • Check the 5th clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance.

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
No shift	1. Mainshaft speed sensor defective 2. Countershaft speed sensor defective 3. Modulator valve defective	• Check the D indicator, and check for loose connectors. • Check the line pressure.
Erratic shifting gears: Fails to shift in the D and D3 positions; starts off in 5th. Fails to shift in the 2 position; starts off in 4th	1. Shift solenoid valve B defective 2. Shift valve B defective	Check the D indicator, and check for loose connectors. Inspect the O-ring, and check the shift solenoid valve for seizure.
Erratic shifting gears: Fails to shift in the D, D3 and 1 positions; starts off in 3rd	1. Shift solenoid valve A defective 2. Shift valve A defective	Check the D indicator, and check for loose connectors. Inspect the O-ring, and check the shift solenoid valve for seizure.
Excessive shock, or flares on all upshifts and downshifts	1. A/T clutch pressure control solenoid valve A defective 2. A/T clutch pressure control solenoid valve B defective 3. Mainshaft speed sensor defective 4. Countershaft speed sensor defective 5. ATF temperature sensor defective 6. CPC valve A defective 7. Foreign material in separator plate orifice	• Check the D indicator, and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Inspect the sensor O-rings.
Excessive shock, or flares on 1-2 upshift or 2-1 downshift	1. Foreign material in separator plate orifice 2. 2nd accumulator defective 3. 2nd check ball stuck 4. 2nd clutch defective	• Check the 1st and 2nd clutch pressures. • Inspect the clutch piston and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance.

Symptom	Probable cause(s)	Notes
Excessive shock, or flares on 2-3 upshift or 3-2 downshift	1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. 3rd clutch transmission fluid pressure switch defective 5. CPC valve B defective 6. Foreign material in separator plate orifice 7. Shift valve C defective 8. 2nd accumulator defective 9. 3rd accumulator defective 10. 2nd check ball stuck 11. 2nd clutch defective 12. 3rd clutch defective	• Check the D indicator, and check for loose connectors. Inspect the O-rings, and check the shift solenoid valve for seizure. • Check for clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check the 2nd and 3rd clutch pressures. • Inspect the clutch piston and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance.
Excessive shock, or flares on 3-4 upshift or 4-3 downshift	1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. 4th clutch transmissson fluid pressure switch defective 5. CPC valve B defective 6. Foreign material in separator plate orifice 7. Shift valve C defective 8. 3rd accumulator defective 9. 4th accumulator defective 10. 3rd clutch defective 11. 4th clutch defective	• Check the D indicator, and check for loose connectors. Inspect the O-rings, and check the shift solenoid valve for seizure. • Check for clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check the 3rd and 4th clutch pressures. • Inspect the clutch piston and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance.

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive shock, or flares on 4-5 upshift or 5-4 downshift	1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. CPC valve B defective 6. CPC valve C defective 7. Foreign material in separator plate orifice 8. Shift valve C defective 9. Shift valve E defective 10. Kick-down valve or kick-down short valve defective 11. 4th accumulator defective 12. 5th accumulator defective 13. 4th clutch defective 14. 5th clutch defective	• Check the D indicator, and check for loose connectors. Inspect the O-rings, and check the shift solenoid valve for seizure. • Check the 4th and 5th clutch pressures. • Inspect the clutch piston and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs and plates are worn or damaged, replace them as a set. If they are OK, adjust the clutch end plate clearance.

Symptom	Probable cause(s)	Notes
Noise from transmission in all shift lever positions	1. ATF pump worn or binding 2. Torque converter housing or transmission housing bearing worn or damaged	• Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Inspect the contact of the countershaft and secondary shaft with the bearings. Check the ATF guide plates for damage and wear. Inspect the 1st clutch feed pipe for damage and out of round. If the 1st clutch feed pipe is damaged or out of round, replace it. Replace the secondary shaft if the bushing for the 1st clutch feed pipe is damaged or out of round.
Vehicle does not accelerate more than 31 mph (50 km/h)	Torque converter one-way clutch defective	Replace the torque converter.
Vibration in all shift lever positions	Drive plate defective or transmission misassembled	• Set idle rpm in gear to the specified idle speed. If still no good, adjust the engine mounts as described in the engine section of this shop manual. • Check the stall speed.
Shift lever does not operate smoothly	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Joint in shift cable and transmission or body worn	• Check the D indicator, and check for loose connectors. Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and the shift cable. • Check for a loose shift cable at the shift lever and the transmission control shaft.
Transmission does not shift into the P position	1. Shift cable broken or out of adjustment 2. Joint in shift cable and transmission or body worn 3. Park mechanism defective	• Check for a loose shift cable at the shift lever and the transmission control shaft. • Check the park pawl spring installation and the park lever spring installation. If installation is incorrect, install the spring correctly. Make sure that the park lever stop is not installed upside down. Check the distance between the park pawl shaft and the park lever roller pin. If the distance is out of tolerance, adjust the distance with the park lever stop.
Lock-up clutch does not disengage	1. Torque converter clutch solenoid valve defective 2. A/T clutch pressure control solenoid valve C defective 3. Lock-up clutch piston defective 4. Lock-up shift valve defective 5. Lock-up control valve defective 6. Lock-up timing valve defective	Check the D indicator, and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve body gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves.

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Lock-up clutch does not operate smoothly	1. Torque converter clutch solenoid valve defective 2. A/T clutch pressure control solenoid valve C defective 3. Lock-up clutch piston defective 4. Torque converter check valve defective 5. Lock-up shift valve defective 6. Lock-up control valve defective 7. Lock-up timing valve defective 8. Non-Honda ATF used	• Check the D indicator, and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve body gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Center all engine mounts.
Lock-up clutch does not engage	1. Torque converter clutch solenoid valve defective 2. A/T clutch pressure control solenoid valve C defective 3. Mainshaft speed sensor defective 4. Countershaft speed sensor defective 5. Lock-up clutch piston defective 6. Torque converter check valve defective 7. Lock-up shift valve defective 8. Lock-up control valve defective	Check the D indicator, and check for loose connectors. Inspect the A/T clutch pressure control solenoid valve body gasket for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves.
A/T gear position indicator does not indicate shift lever positions	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Joint in shift cable and transmission or body worn	• Check the D indicator, and check for loose connectors. Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and the shift cable. • Check for a loose shift cable at the shift lever and the transmission control shaft.
Speedometer and odometer do not operate	Countershaft speed sensor defective	Check the D indicator, and check for loose connectors.
Engine does not rev up to high speed, and the transmission shifts up during low-rev condition. (Engine at normal operating temperature)	VTEC rocker arms defective	Check the engine rocker arms as described in the engine section of this shop manual.

System Description

General Operation

The automatic transmission is a combination of a 3-element torque converter and triple-shaft electronically controlled unit which provides 5 speeds forward and 1 reverse. The entire unit is positioned in line with the engine.

Torque Converter, Gears, and Clutches

The torque converter consists of a pump, turbine, and stator assembly in a single unit. The converter housing (pump) is connected to the engine crankshaft and turns as the engine turns. Around the outside of the torque converter is a ring gear which meshes with the starter pinion when the engine is being started. The entire torque converter assembly serves as a flywheel, transmitting power to the transmission mainshaft. The transmission has three parallel shafts: the mainshaft, the countershaft, and the secondary shaft. The mainshaft is in line with the engine crankshaft. The mainshaft includes the 4th and 5th clutches, and gears for 3rd, 4th, 5th, and reverse (reverse gear is integral with the 5th gear). The countershaft includes the 3rd clutch, and gears for the final drive, 1st, 4th, 5th, reverse, 2nd, park, and 3rd (the final drive gear is integral with the countershaft). The secondary shaft includes the 1st, 1st-hold and 2nd clutches, and gears for 1st, 2nd, and idler. The countershaft 5th gear and the countershaft reverse gear can be locked to the countershaft at its center, providing 5th gear or reverse, depending with which way the selector is moved. The gears on the mainshaft and the secondary shaft are in constant mesh with those on the countershaft. When certain combinations of gears in the transmission are engaged by the clutches, power is transmitted through the mainshaft, then to the secondary shaft, and/or to the countershaft to provide drive.

Electronic Control

The electronic control system consists of the powertrain control module (PCM), sensors, and seven solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions. The PCM is located below the dashboard, under the front lower panel behind the center console.

Hydraulic Control

The valve bodies include the main valve body, the regulator valve body, the servo body, and the accumulator body. They are bolted to the torque converter housing. The main valve body contains the manual valve, the modulator valve, the shift valve C, the shift valve D, the kick-down valve, the servo control valve, the torque converter check valve, the reverse CPC valve, the lock-up shift valve, the relief valve, the cooler check valve, and the ATF pump gears. The regulator valve body contains the regulator valve, the lock-up timing valve, and the lock-up control valve. The servo body contains the servo valve, the shift valve A, the shift valve B, the CPC valves A and B. The top accumulator body contains shift valve E, CPC valve C, 1st-hold accumulator piston, 4th accumulator piston, and 5th accumulator piston. The accumulator body contains the 1st and 2nd accumulators and lubrication check valve. Fluid from the regulator passes through the manual valve to the various control valves. The 1st, 3rd, 4th, and 5th clutches receive fluid from their respective feed pipes, and the 1st-hold and 2nd clutches receive fluid from the internal hydraulic circuit.

Shift Control Mechanism

The PCM controls shift solenoid valves A, B, and C, and automatic transaxle (A/T) clutch pressure control solenoid valves A and B, while receiving input signals from various sensors and switches located throughout the vehicle. The shift solenoid valves shift the positions of the shift valves to switch the port leading hydraulic pressure to the clutch. The A/T clutch pressure control solenoid valves A and B control the CPC valves A and B to shift smoothly between lower gear and higher gear. This pressurizes a line to one of the clutches, engaging the clutch and its corresponding gear.

Lock-up Mechanism

In the D position (2nd, 3rd, 4th, and 5th), and D3 position (2nd and 3rd), pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the lock-up piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with hydraulic control, the PCM optimizes the timing of the lock-up mechanism. When the torque converter clutch solenoid valve activates, modulator pressure changes to switch lock-up on and off. The lock-up control valve and the lock-up timing valve control the range of lock-up according to A/T clutch pressure control solenoid valve C. The torque converter clutch solenoid valve is mounted on the torque converter housing, and A/T clutch pressure control solenoid valve C is mounted on the transmission housing. They are all controlled by the PCM.

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System Description (cont'd)

Gear Selection
The shift lever has seven positions: P PARK, R REVERSE, N NEUTRAL, D 1st through 5th gear ranges, D3 1st through 3rd gear ranges, 2 2nd gear, and 1 1st gear.

Position	Description
P PARK	Front wheels locked; park pawl engaged with park gear on countershaft. All clutches are released.
R REVERSE	Reverse; reverse selector engaged with countershaft reverse gear and 5th clutch locked.
N NEUTRAL	All clutches are released.
D DRIVE (1st through 5th)	General driving; starts off in 1st, shifts automatically to 2nd, 3rd, 4th, then 5th, depending on vehicle speed and throttle position. Downshifts through 4th, 3rd, 2nd, and 1st on deceleration to stop. The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gear.
D3 DRIVE (1st through 3rd)	Used for rapid acceleration at highway speeds and general driving; up-hill and down-hill driving; starts off in 1st, shifts automatically to 2nd, then 3rd, depending on vehicle speed and throttle position. Downshifts through 2nd to 1st on deceleration to stop. The lock-up mechanism operates in 2nd and 3rd gear.
2 SECOND	Used for engine braking or better traction starting off on loose or slippery surfaces; stays in 2nd gear; does not shift up or down.
1 FIRST	Used for engine braking; stays in 1st gear; does not shift up.

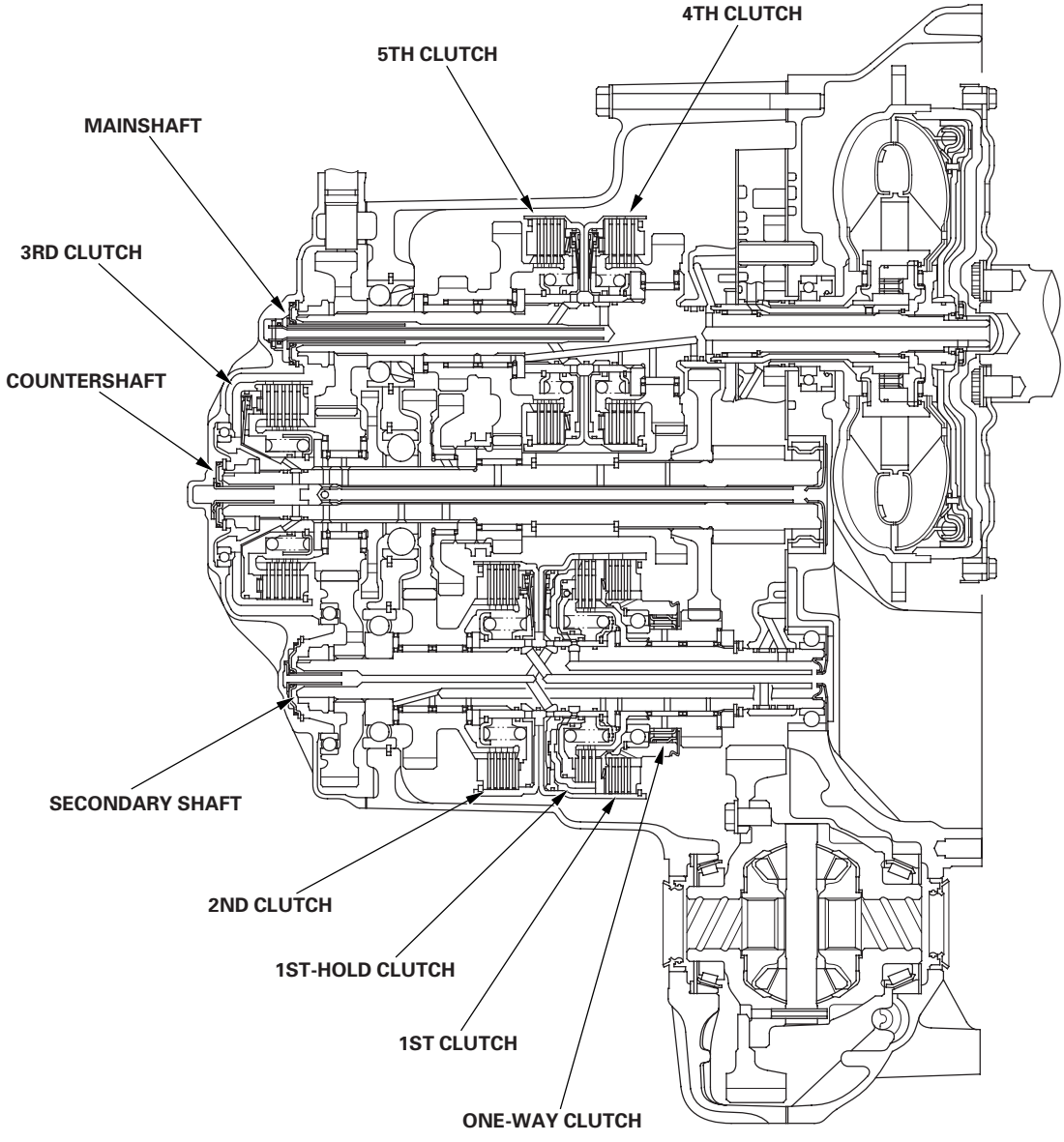
Starting is possible only in the P and N positions because of a slide-type neutral-safety switch.

Automatic Transaxle (A/T) Gear Position Indicator
The A/T gear position indicator in the instrument panel shows which shift lever position has been selected without having to look down at the shift lever.

Clutches

The five-speed automatic transmission uses hydraulically-actuated clutches to engage or disengage the transmission gears. When hydraulic pressure is introduced into the clutch drum, the clutch piston moves. This presses the friction discs and steel plates together, locking them so they don't slip. Power is then transmitted through the engaged clutch pack to its hub-mounted gear. Likewise, when the hydraulic pressure is bled from the clutch pack, the piston releases the friction discs and steel plates, and they are free to slide past each other. This allows the gear to spin independently on its shaft, transmitting no power.

Transmission Cutway View:



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System Description (cont'd)

Clutches (cont'd)

1st Clutch
The 1st clutch engages/disengages 1st gear, and is located at the middle of the secondary shaft. The 1st clutch is joined back-to-back to the 2nd clutch. The 1st clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

1st-hold Clutch
The 1st-hold clutch engages/disengages 1st-hold or 1 position, and is located in the 1st clutch drum. The 1st-hold clutch is supplied hydraulic pressure through the orifice inside the secondary shaft by a circuit connected to the internal hydraulic circuit.

2nd Clutch
The 2nd clutch engages/disengages 2nd gear, and is located at the middle of the secondary shaft. The 2nd clutch is joined back-to-back to the 1st clutch. The 2nd clutch is supplied hydraulic pressure through the orifice inside the secondary shaft by a circuit connected to the internal hydraulic circuit.

3rd Clutch
The 3rd clutch engages/disengages 3rd gear, and is located at the end of the countershaft, just behind the end cover. The 3rd clutch is supplied hydraulic pressure by its ATF feed pipe in the countershaft.

4th Clutch
The 4th clutch engages/disengages 4th gear, and is located at the middle of the mainshaft. The 4th clutch is joined back-to-back to the 5th clutch. The 4th clutch is supplied hydraulic pressure by its ATF feed pipe within the mainshaft.

5th Clutch
The 5th clutch engages/disengages 5th gear, as well as reverse gear, and is located at the middle of the mainshaft. The 5th clutch is joined back-to-back to the 4th clutch. The 5th clutch is supplied hydraulic pressure by its ATF feed pipe within the mainshaft.

One-way Clutch
The one-way clutch is positioned between the 1st clutch hub and the secondary shaft 1st gear. The secondary shaft 1st gear is splined to the 1st-hold clutch hub, with the 1st-hold clutch hub splined to the secondary shaft. The secondary shaft 1st gear provides the outer race surface, and the 1st clutch hub provides the inner race surface. The one-way clutch locks when power is transmitted from the secondary shaft 1st gear to the countershaft 1st gear. The 1st clutch and gears remain engaged in the 1st, 2nd, 3rd, 4th, and 5th gear ranges in the D, D3, or 2 position.
However, the one-way clutch disengages when the 2nd, 3rd, 4th, or 5th clutches and gears are applied in the D, D3, or 2 position. This is because the increased rotational speed of the gears on the secondary shaft causes the one-way clutch to free-wheels with the 1st clutch still engaged.

Power Flow

Gear Operation

Gears on the mainshaft:

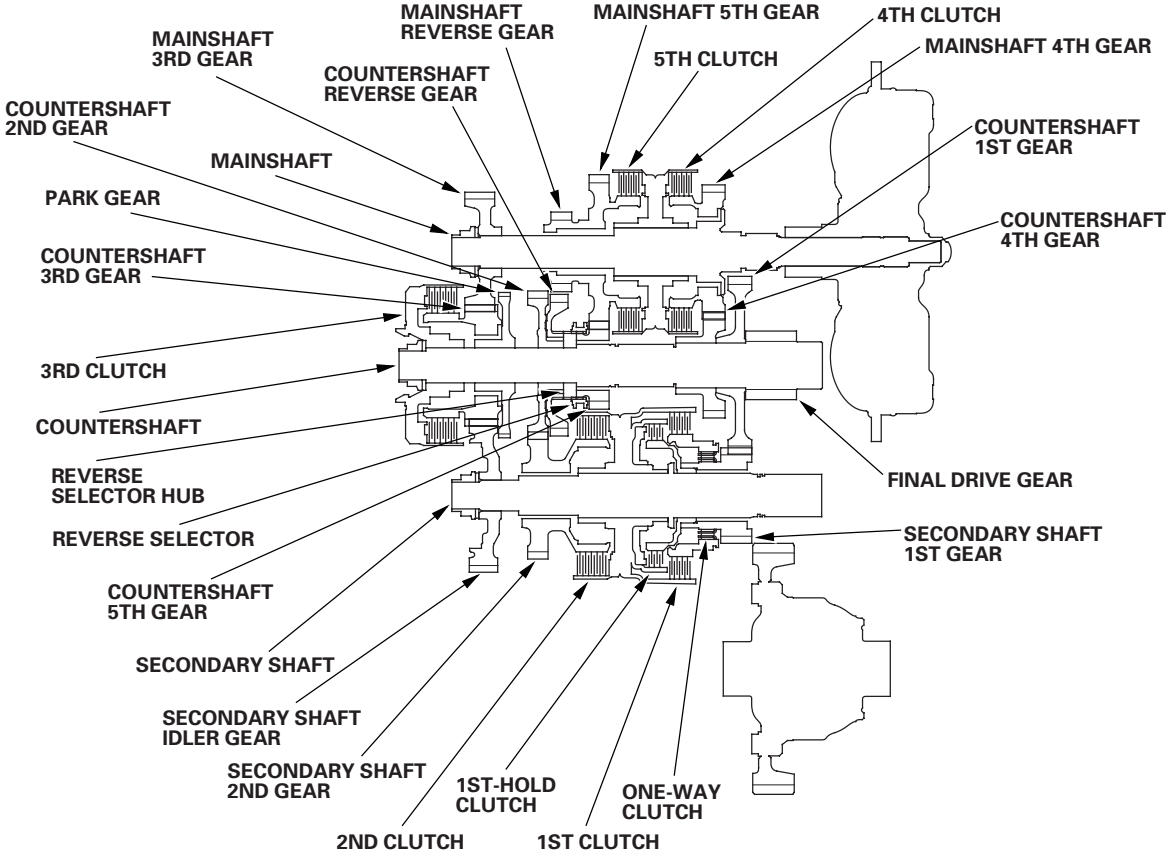
- 4th gear is engaged/disengaged with the mainshaft by the 4th clutch.
- 5th gear is engaged/disengaged with the mainshaft by the 5th clutch.
- Reverse gear is engaged/disengaged with the mainshaft by the 5th clutch.
- 3rd gear is splined with the mainshaft and rotates with the mainshaft.

Gears on the countershaft:

- Final gear is integral with the countershaft.
- 1st gear, 4th gear, 2nd gear, and park gear are splined with the countershaft, and rotate with the countershaft.
- 5th gear and reverse gear rotate freely from the countershaft. The reverse selector engages 5th gear and reverse gear with the reverse selector hub. The reverse selector hub is splined to the countershaft so 5th gear and reverse gear engage with the countershaft.
- 3rd gear is engaged/disengaged with the countershaft by the 3rd clutch.

Gears on the secondary shaft:

- 1st gear is engaged/disengaged with the secondary shaft by the 1st clutch. 1st gear is engaged with the secondary shaft by the one-way clutch and the 1st-hold clutch when decelerating for engine braking.
- 2nd gear is engaged/disengaged with the secondary shaft by the 2nd clutch.
- Idler gear is splined with the secondary shaft, and rotates with the secondary shaft.



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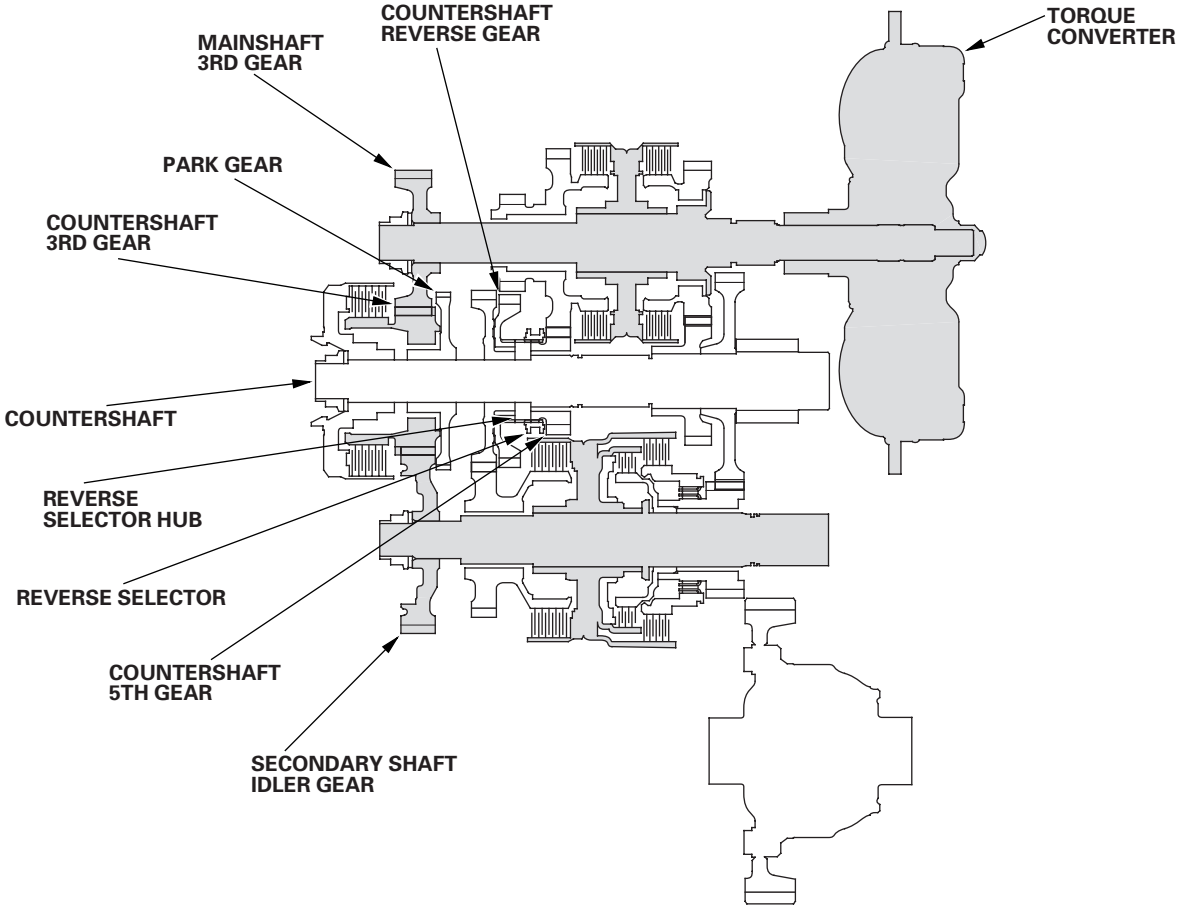
System Description (cont'd)

Power Flow (cont'd)

P Position
Hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. The countershaft is locked by the park pawl interlocking the park gear.

N Position
Engine power transmitted from the countershaft drives the mainshaft 3rd gear, the countershaft 3rd gear, and the secondary shaft idler gear, but hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. In this position, the position of the reverse selector differs according to whether the shift lever shifted from the D or P position:

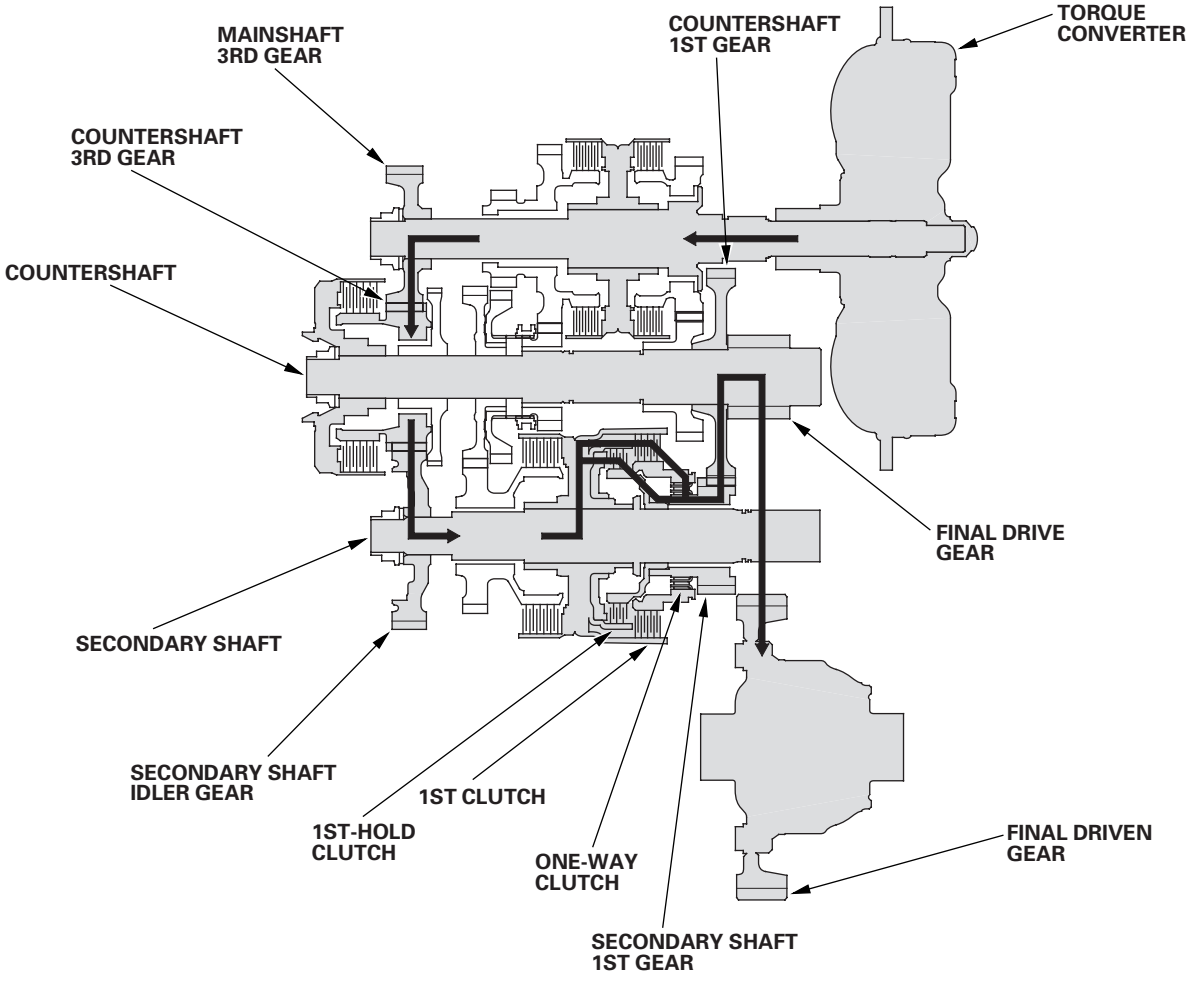
- When shifted from the D position, the reverse selector engages with the countershaft 5th gear and the reverse selector hub, and the 5th gear engages with the countershaft.
- When shifted from the R position, the reverse selector engages with the countershaft reverse gear and the reverse selector hub, and the reverse gear engages with the countershaft.



1 Position

In the 1 position, hydraulic pressure is applied to the 1st clutch and the 1st-hold clutch. The power flow when accelerating is as follows:

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft by the one-way clutch.
- Hydraulic pressure is also applied to the 1st-hold clutch, and the 1st-hold clutch engages the secondary shaft 1st gear with the secondary shaft.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft 3rd gear and the secondary shaft idler gear.
- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



(cont'd)

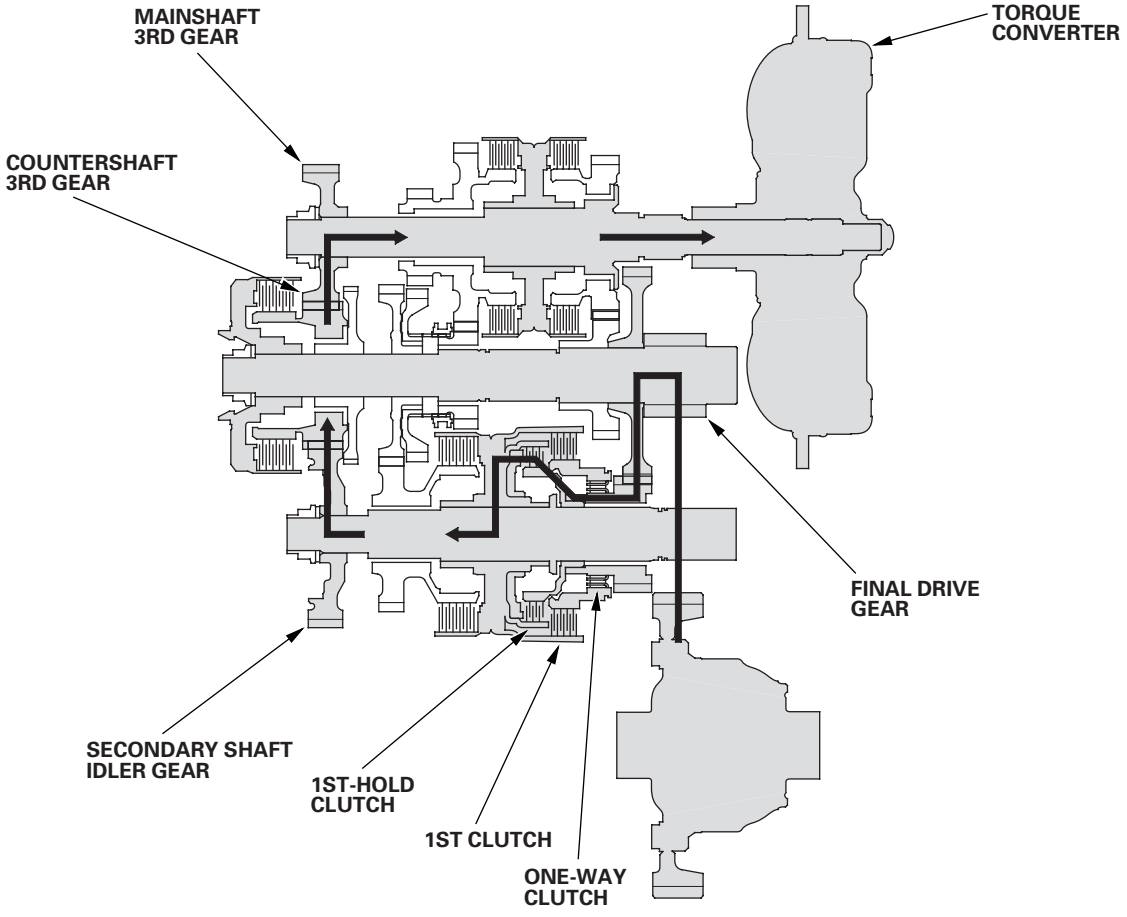
System Description (cont'd)

Power Flow (cont'd)

1 Position

The Power flow when decelerating as follows:

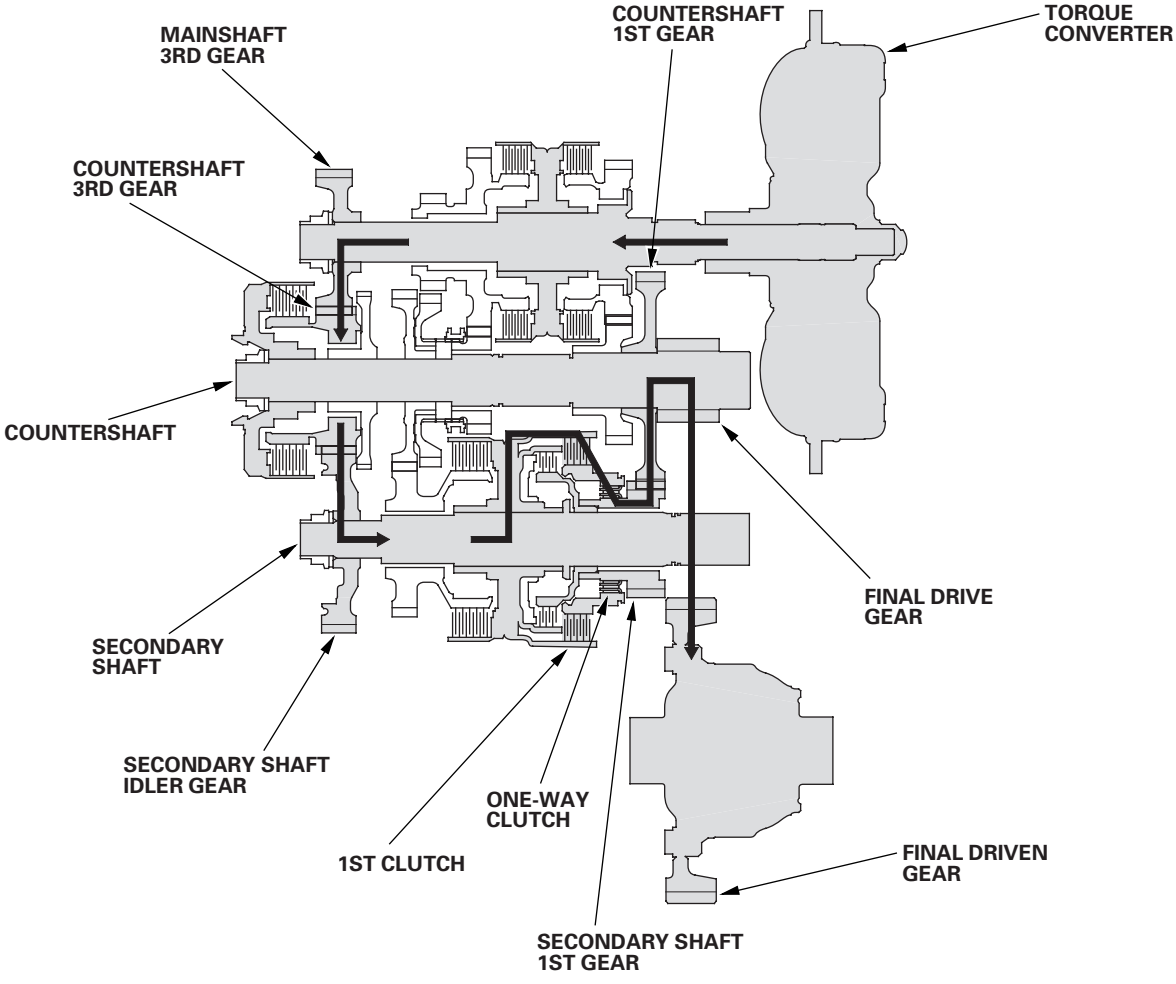
- Hydraulic pressure is applied to the 1st clutch and the 1st-hold clutch. Rolling resistance from the road surface goes through the front wheels to the final drive gear, then to the secondary shaft idler gear.
- The one-way clutch disengages because the application of torque is reversed.
- The counterforce conveyed to the secondary shaft idler gear turns the mainshaft 3rd gear via the countershaft 3rd gear. As a result, engine braking can be obtained with 1st gear.



In the D or D3 position, the optimum gear is automatically selected from the 1st, 2nd, 3rd, 4th, and 5th gears according to conditions such as the balance between the throttle opening (engine loading) and vehicle speed.

D or D3 Position in 1st gear

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft by the one-way clutch.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft 3rd gear and secondary shaft idler gear.
- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



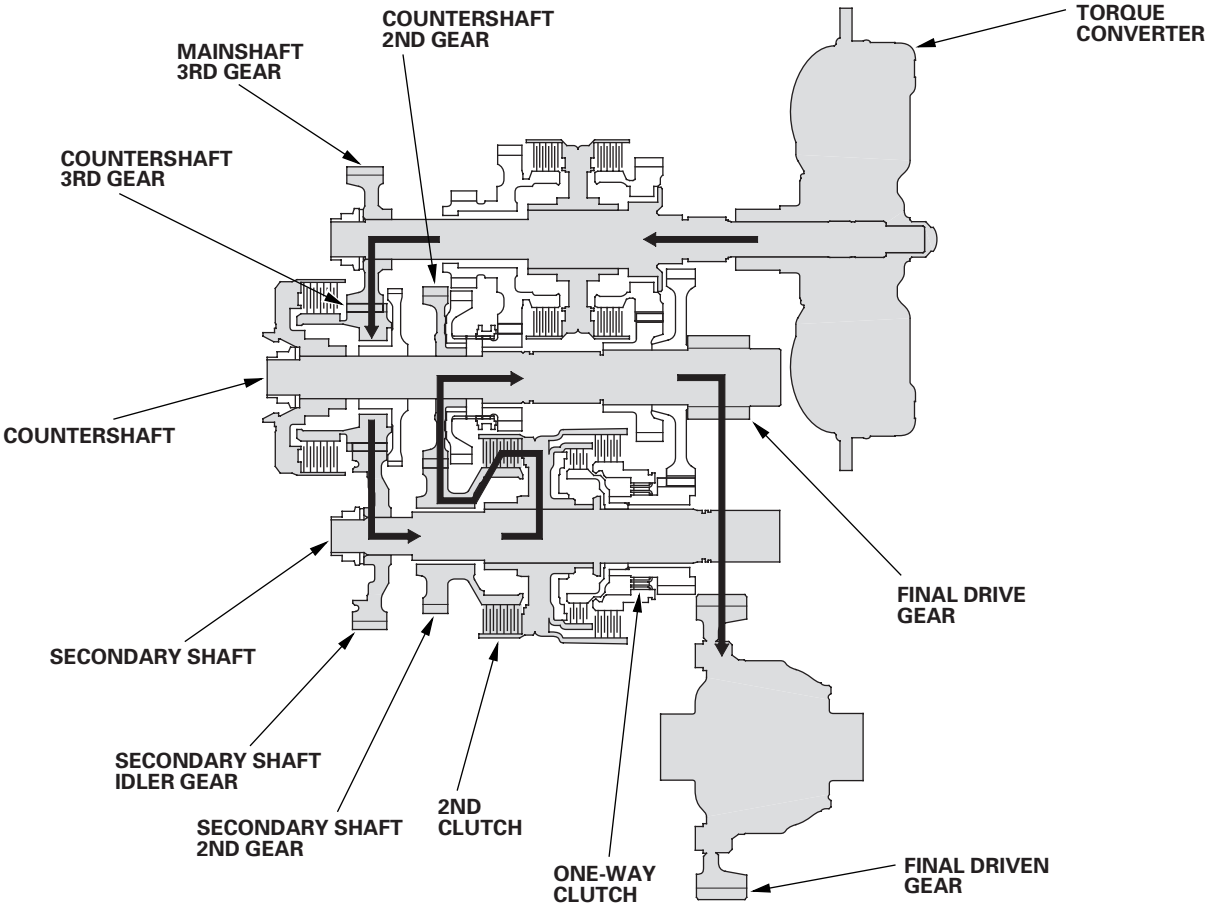
(cont'd)

System Description (cont'd)

Power Flow (cont'd)

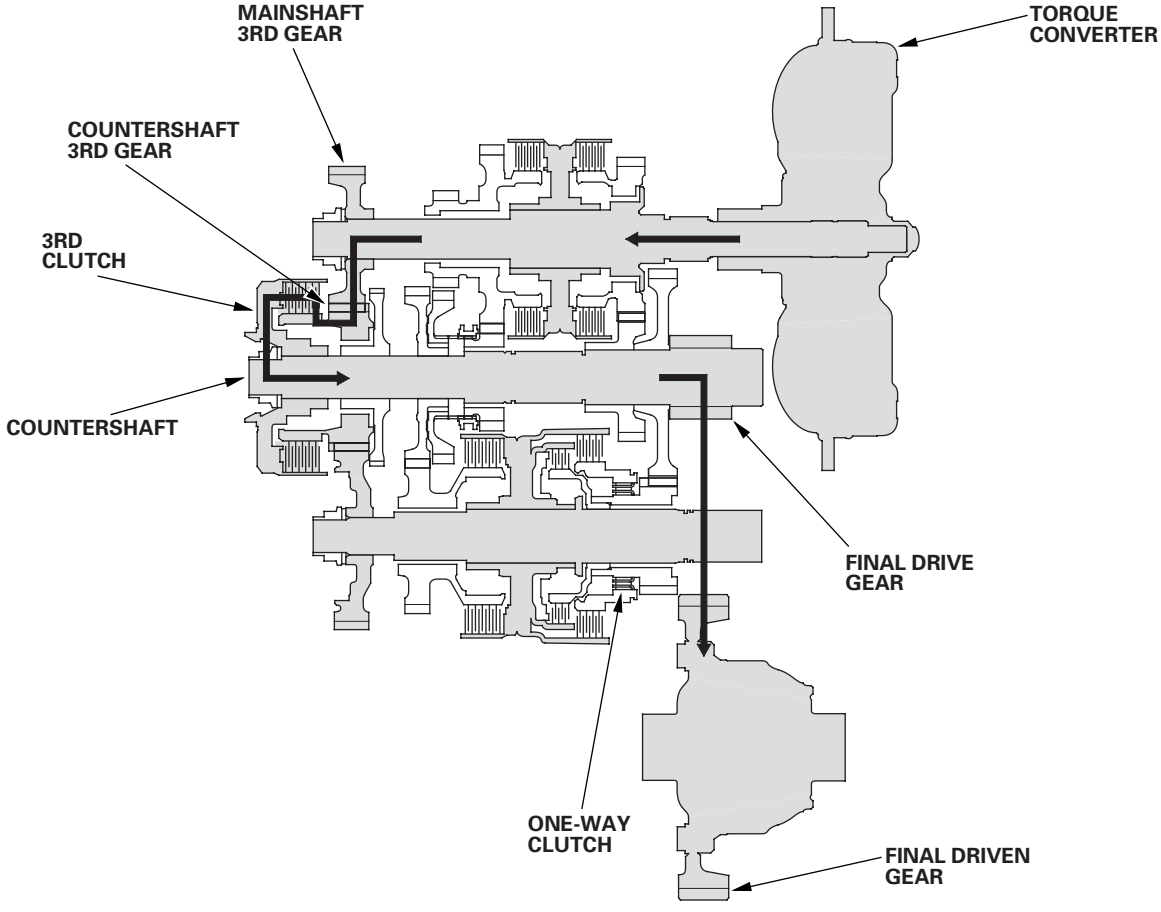
D or D3 Position in 2nd gear and 2 Position

- Hydraulic pressure is applied to the 2nd clutch, then the 2nd clutch engages the secondary shaft 2nd gear with the secondary shaft.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft 3rd gear and secondary shaft idler gear.
- The secondary shaft 2nd gear drives the countershaft 2nd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 2nd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



D or D3 Position in 3rd gear

- Hydraulic pressure is applied to the 3rd clutch, then 3rd clutch engages the countershaft 3rd gear with the countershaft.
- The mainshaft 3rd gear drives the countershaft 3rd gear and countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 3rd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



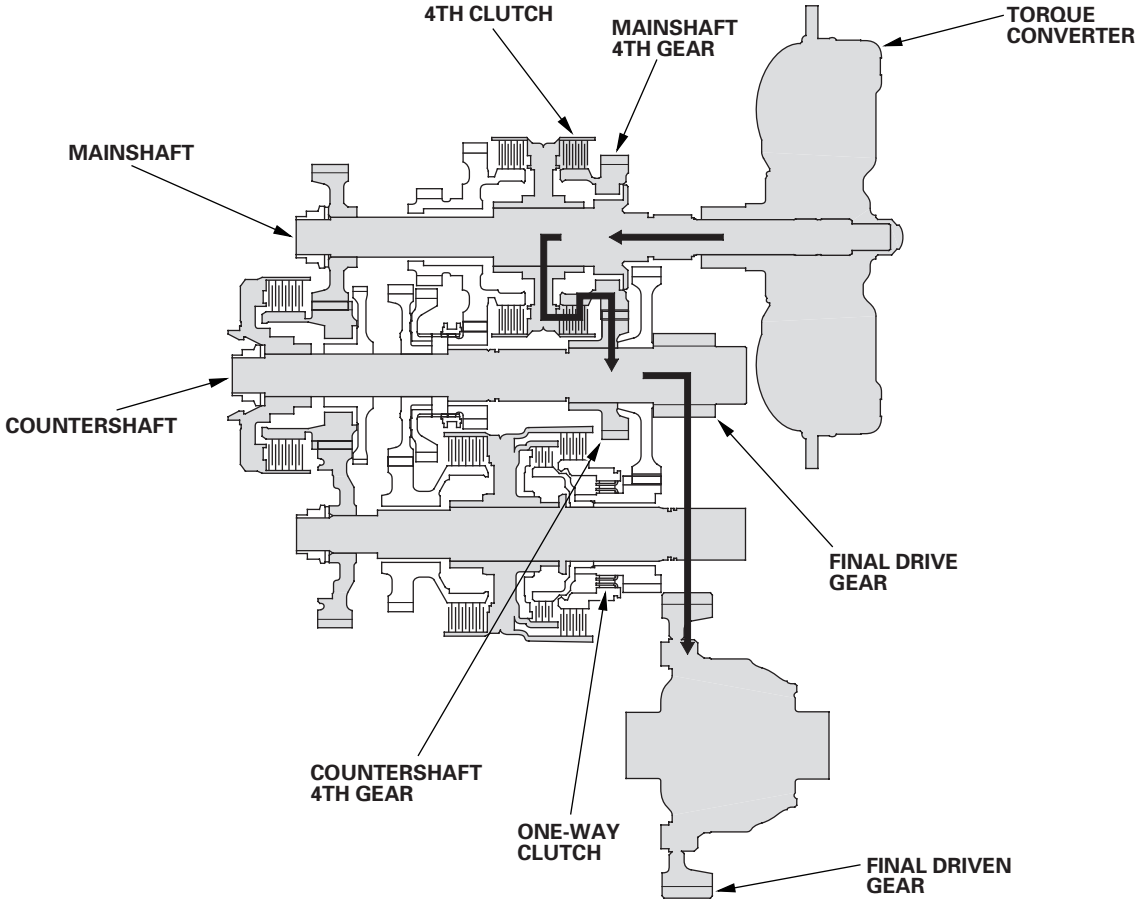
(cont'd)

System Description (cont'd)

Power Flow (cont'd)

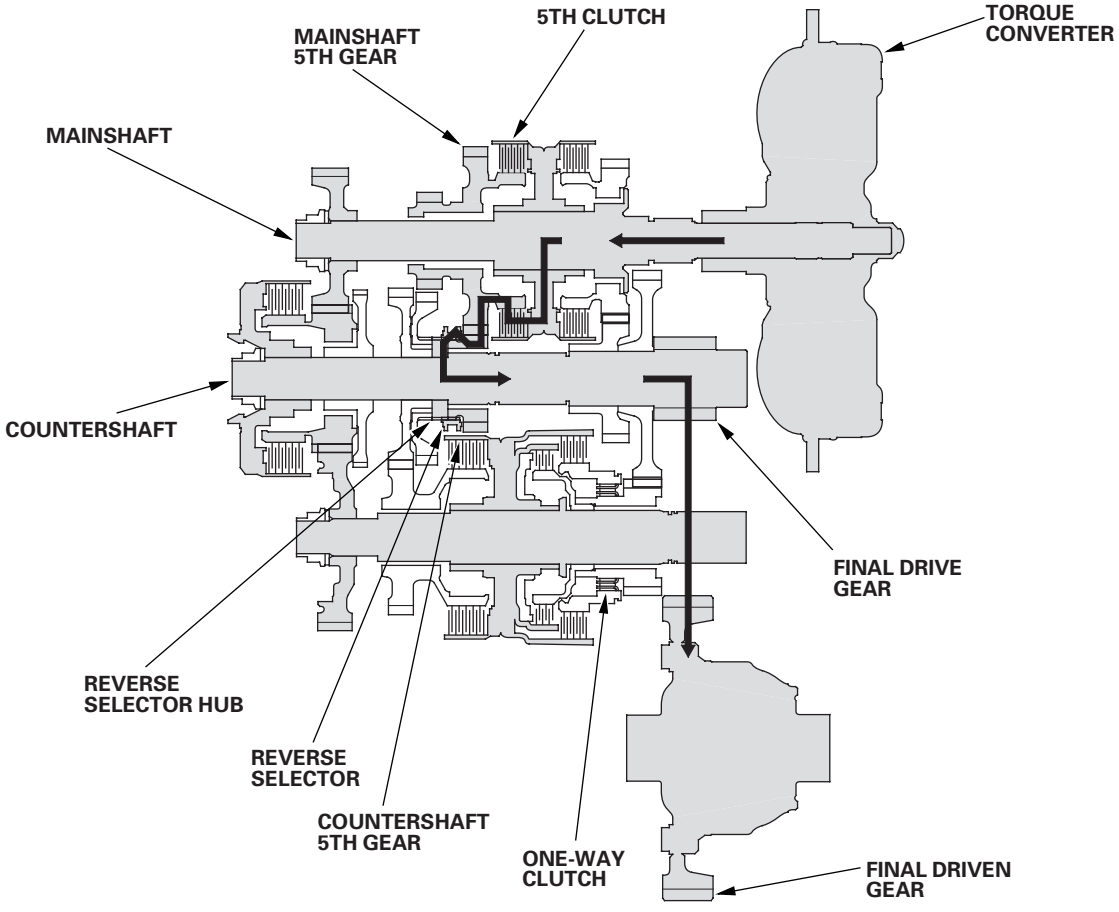
D Position in 4th Gear

- Hydraulic pressure is applied to the 4th clutch, them the 4th clutch engages the mainshaft 4th gear with the mainshaft.
- The mainshaft 4th gear drives the countershaft 4th gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 4th gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



D Position in 5th Gear

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 5th gear while the shift lever in the forward range (D, D_3, 2, and 1 position).
- Hydraulic pressure is also applied to the 5th clutch, then the 5th clutch engages the mainshaft 5th gear with the mainshaft.
- The mainshaft 5th gear drives the countershaft 5th gear, which drives the reverse selector hub and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 5th gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



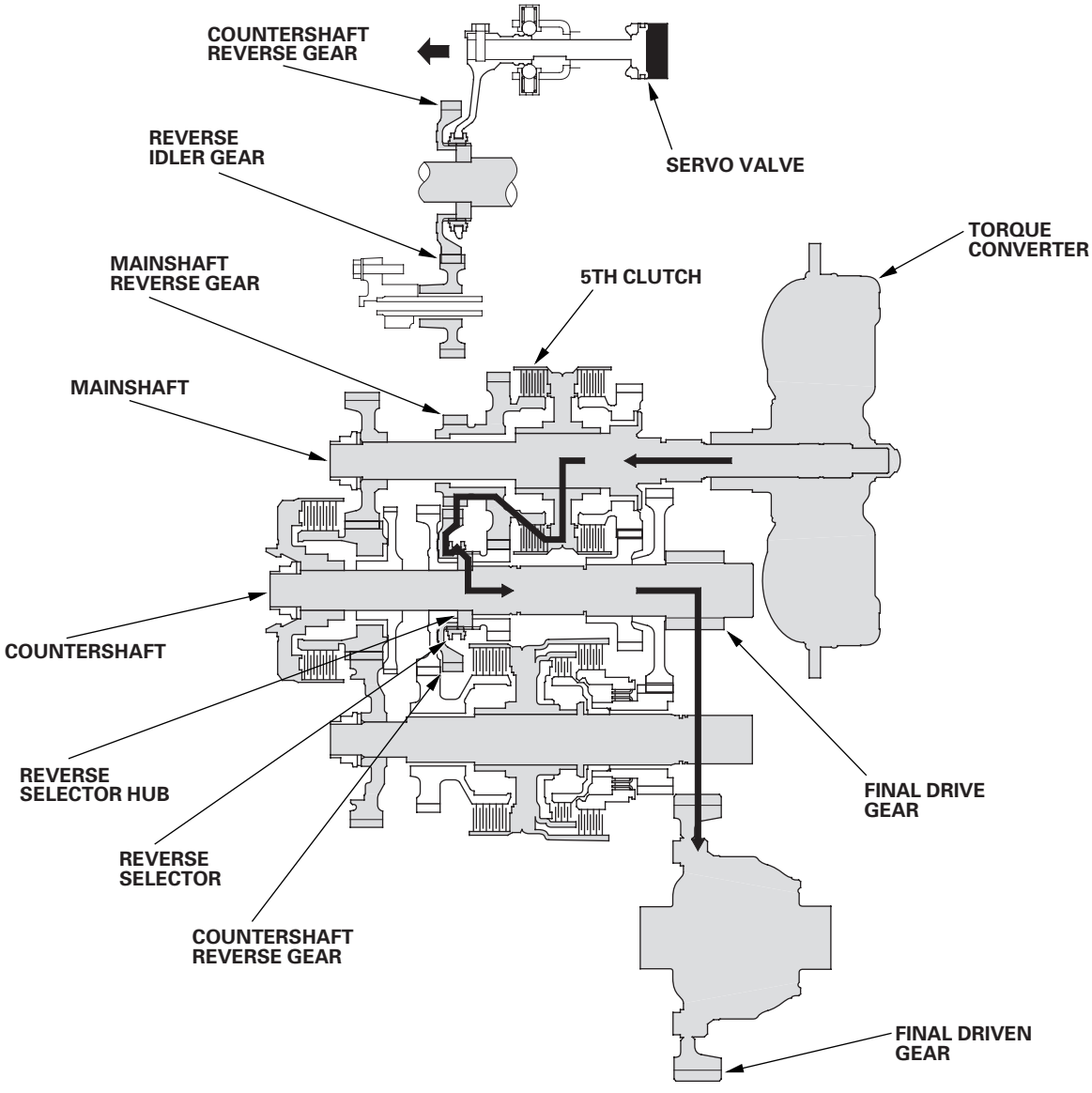
(cont'd)

System Description (cont'd)

Power Flow (cont'd)

R Position

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft (reverse gear while the shift lever is in R position).
- Hydraulic pressure is also applied to the 5th clutch, then the 5th clutch engages the mainshaft reverse gear with the mainshaft.
- The mainshaft reverse gear drives the countershaft reverse gear via the reverse idler gear.
- The rotation direction of the countershaft reverse gear is changed via the reverse idler gear.
- The countershaft reverse gear drives the countershaft via the reverse selector which drives the reverse selector hub.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

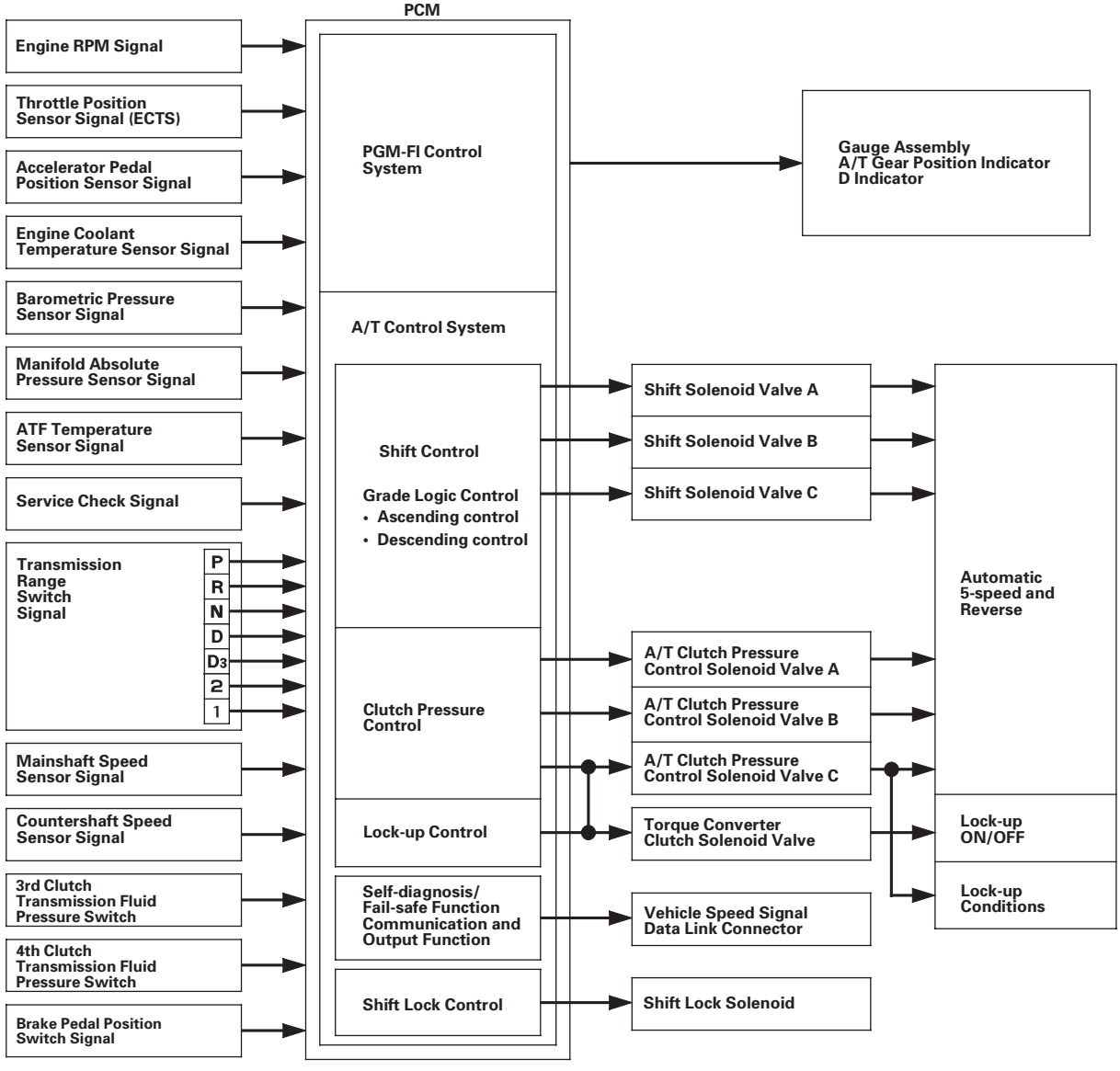


Electronic Control System

Functional Diagram

The electronic control system consists of the powertrain control module (PCM), sensors, and solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

The PCM recieves input signals from the sensors, switches, and other control units, perform processing data, and outputs signals for the engine control system and A/T control system. The A/T control system includes shift control, grade logic control, clutch pressure control, and lock-up control is stored in the PCM.
The PCM switches the shift solenoid valves and the A/T clutch pressure control solenoid valves to control shifting transmission gears and lock-up torque converter clutch.



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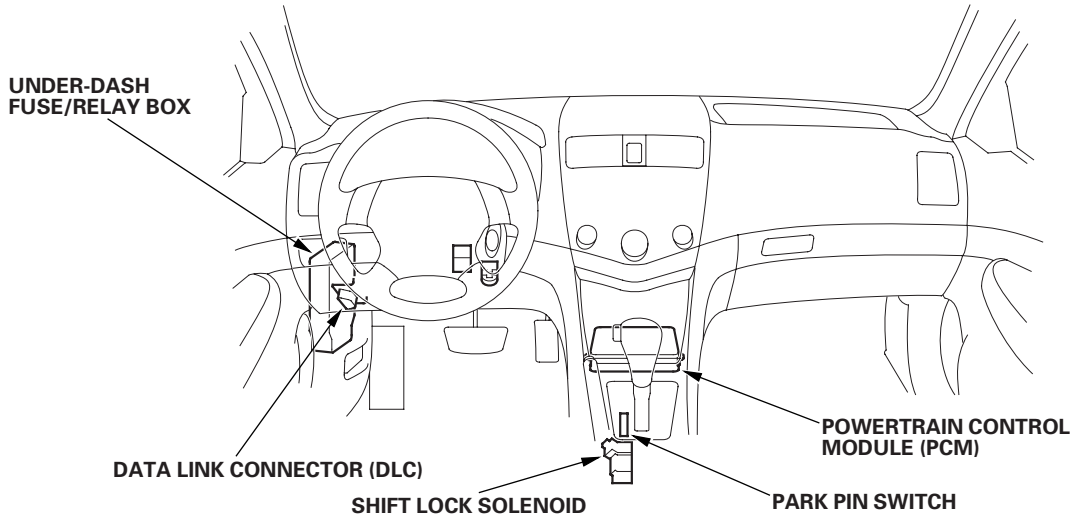
System Description (cont'd)

Electronic Control System (cont'd)

Electrical Control Locations

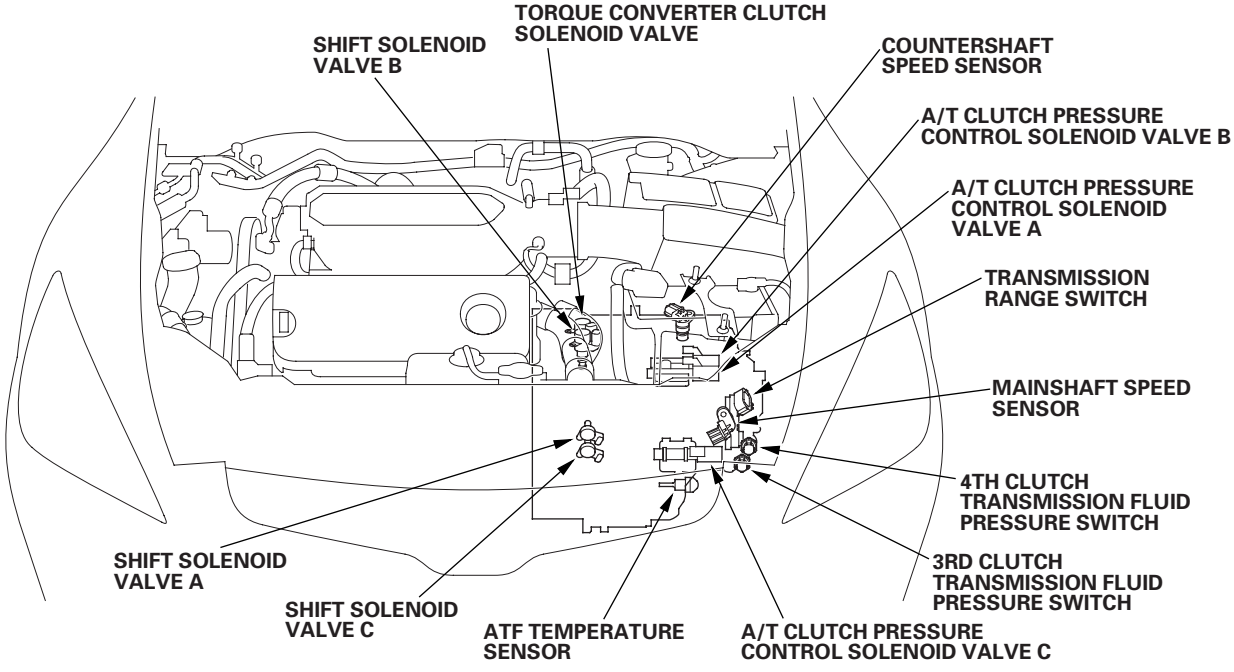
Cabin

NOTE: The illustration shows LHD model; RHD model is symmetrical.



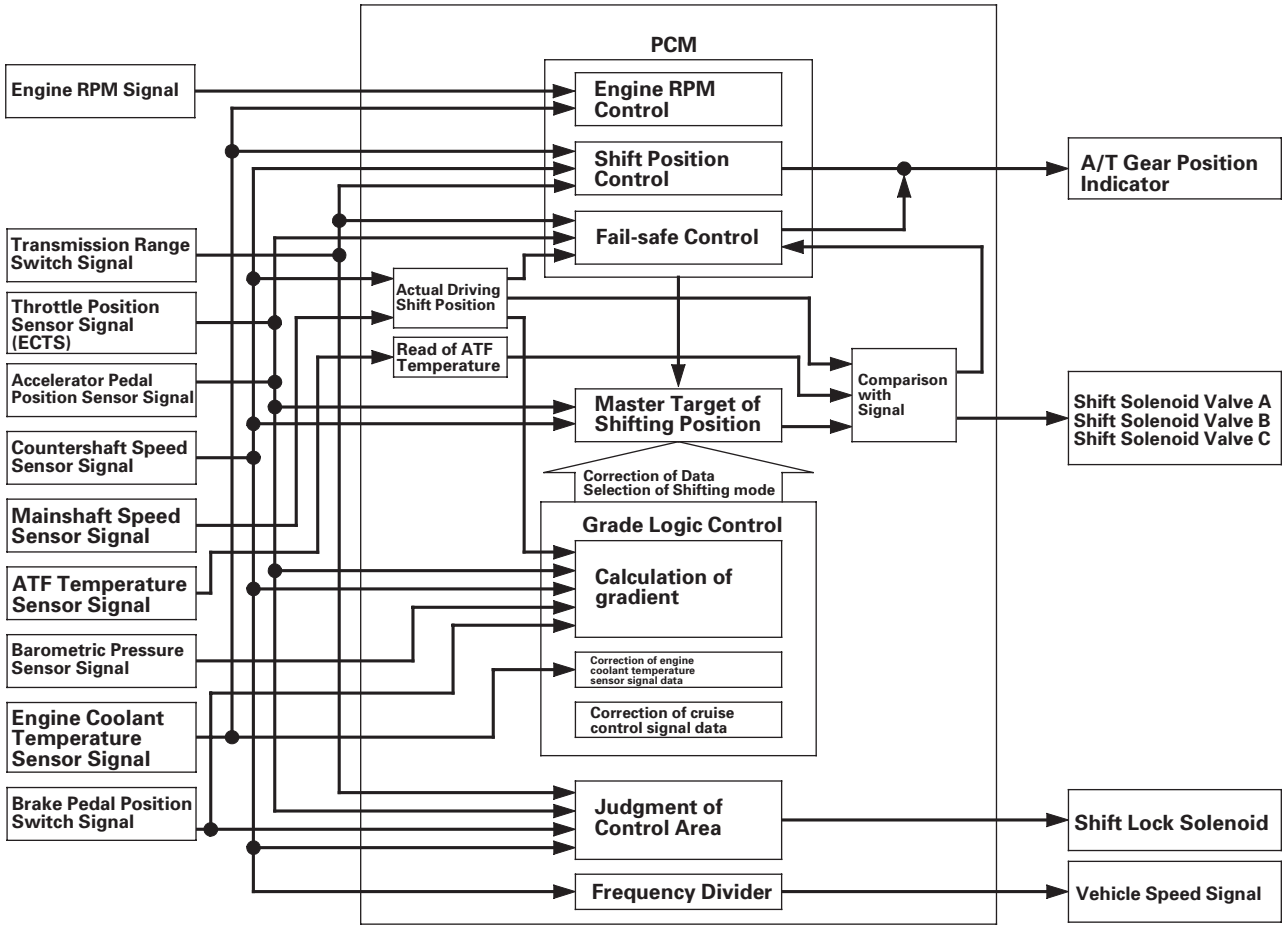
Engine Compartment

NOTE: The illustration shows LHD model; RHD model is similar.



Shift Control
The PCM instantly determines which gear should be selected by various signals sent from sensors and switches, and it actuates the shift solenoid valves A, B, and C to control shifting.

Also, as grade logic control system has been adopted to control shifting in the D and D3 positions. The PCM compares actual driving conditions with memorized driving conditions, based on the input from the throttle position sensor, the engine coolant temperature sensor, the barometric pressure sensor, the brake pedal position switch signal, and the shift lever position signal, to control shifting while the vehicle is ascending or descending a slope.



(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

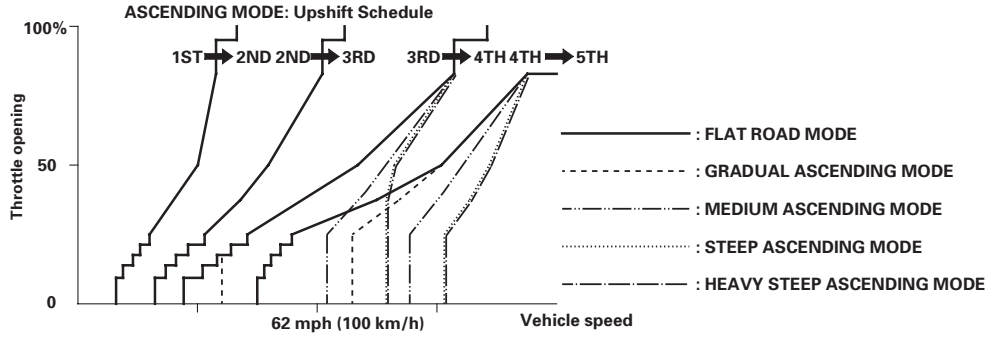
Shift control (cont'd)
The PCM turns on and off the shift solenoid valves A, B, and C to control shifting of the transmission gears.
The combination of driving signals to shift solenoid valves A, B, and C are shown in the table below.

Position	Gear position	Shift solenoid valves		
		A	B	C
D, D3	Shifting from the N position	OFF	ON	OFF
	Stays in 1st	ON	ON	ON
	Shifting gears between 1st and 2nd	ON	ON	ON
	Stays in 2nd	ON	ON	OFF
	Shifting gears between 2nd and 3rd	OFF	ON	OFF
	Stays in 3rd	OFF	ON	ON
D	Shifting gears between 3rd and 4th	OFF	OFF	ON
	Stays in 4th	OFF	OFF	OFF
	Shifting gears between 4th and 5th	ON	OFF	OFF
	Stays in 5th	ON	OFF	ON
2	2nd	ON	ON	OFF
1	1st	ON	ON	ON
R	Shifting from the P and N position	OFF	ON	ON
	Stays in reverse	OFF	ON	OFF
	Reverse inhibit	ON	ON	ON
P	Park	OFF	ON	OFF
N	Neutral	OFF	ON	OFF

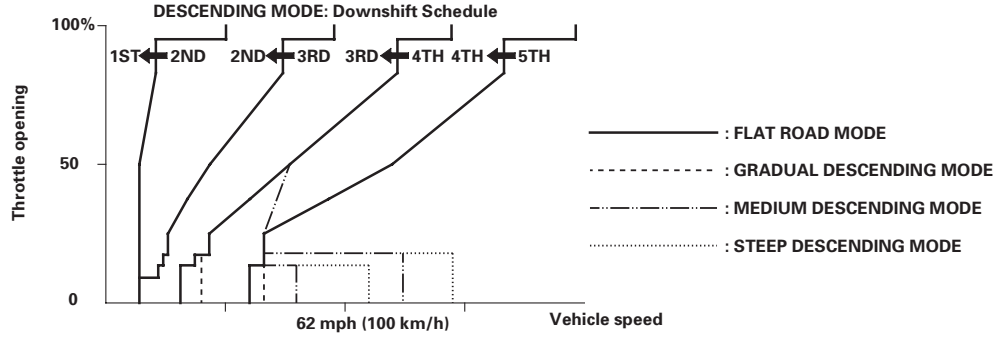
NOTE: For a description of the reverse inhibit mode, refer to page 14-362.

Ascending Control
When the PCM determines that the vehicle is climbing a hill in the D, and D3 positions, the system extends the engagement area of 2nd gear, 3rd gear, and 4th gear to prevent the transmission from frequently shifting between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, so the vehicle can run smooth and have more power when needed.

NOTE: Shift schedules stored in the PCM between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, enable the PCM to automatically select the most suitable gear according to the magnitude of a gradient.



Descending Control
When the PCM determines that the vehicle is going down a hill in the D, and D3 positions, the shift-up speed from 4th to 5th gear, 3rd to 4th gear, and from 2nd to 3rd (when the throttle is closed) becomes faster than the set speed for flat road driving to widen the 4th gear, 3rd gear, and 2nd gear driving areas. This, in combination with engine braking from the deceleration lock-up, achieves smooth driving when the vehicle is descending. There are three descending modes with different 4th gear driving areas, 3rd gear driving areas and 2nd gear driving areas according to the magnitude of a gradient stored in the PCM. When the vehicle is in 5th or 4th gear and you are decelerating while applying the brakes on a steep hill, the transmission will downshift to a lower gear. When you accelerate, the transmission will then return to a higher gear.



Deceleration Control
When the vehicle goes around a corner and needs to decelerate first and then accelerate, the PCM sets the data for deceleration control to reduce the number of times the transmission shifts. When the vehicle is decelerating from speeds above 27 mph (43 km/h), the PCM shifts the transmission from 5th or 4th to 2nd earlier than normal to cope with upcoming acceleration.

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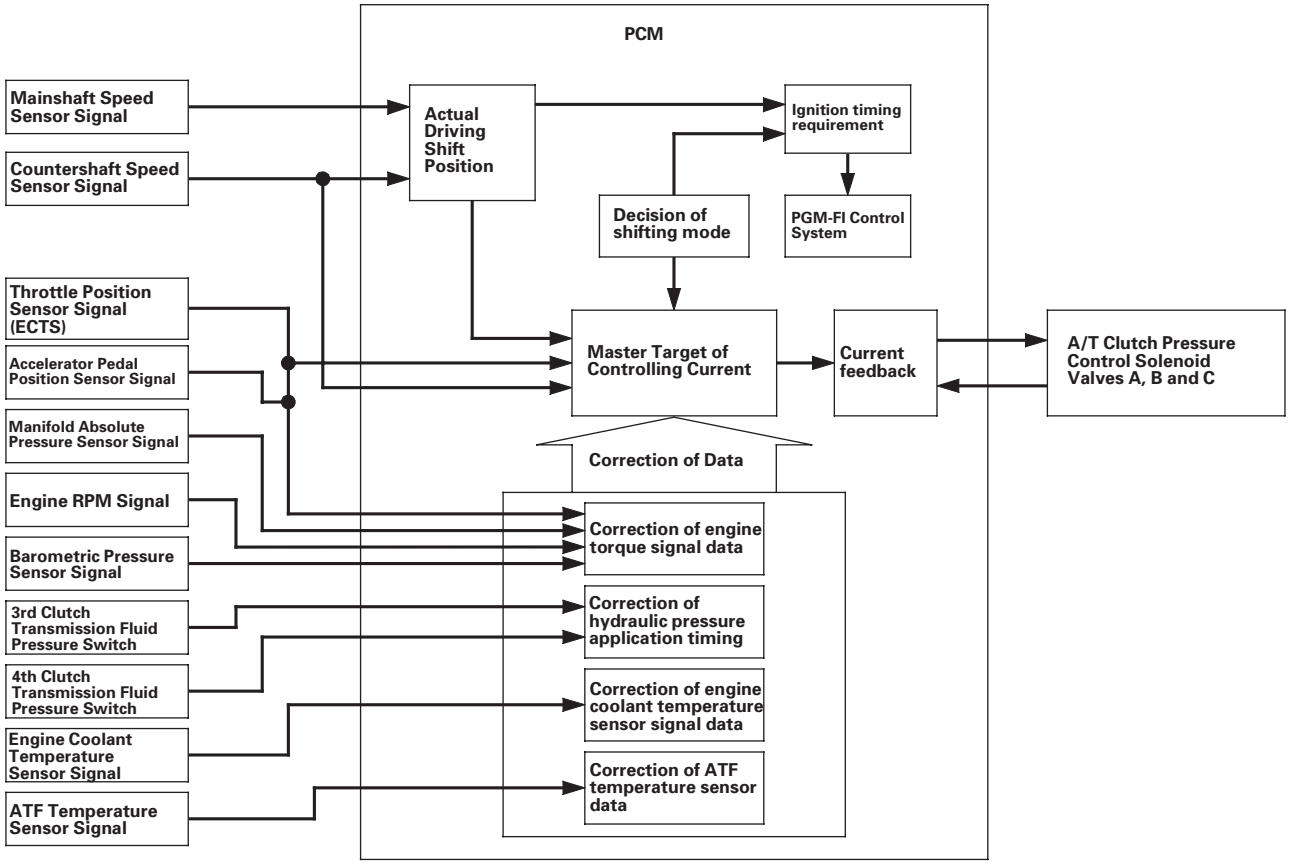
System Description (cont'd)

Electronic Control System (cont'd)

Clutch Pressure Control

The PCM actuates the A/T clutch pressure control solenoid valves A, B, and C to control the clutch pressure. When shifting between lower and higher gears, the clutch pressure regulated by the A/T clutch pressure control solenoid valves A, B, and C engages and disengages the clutch smoothly.

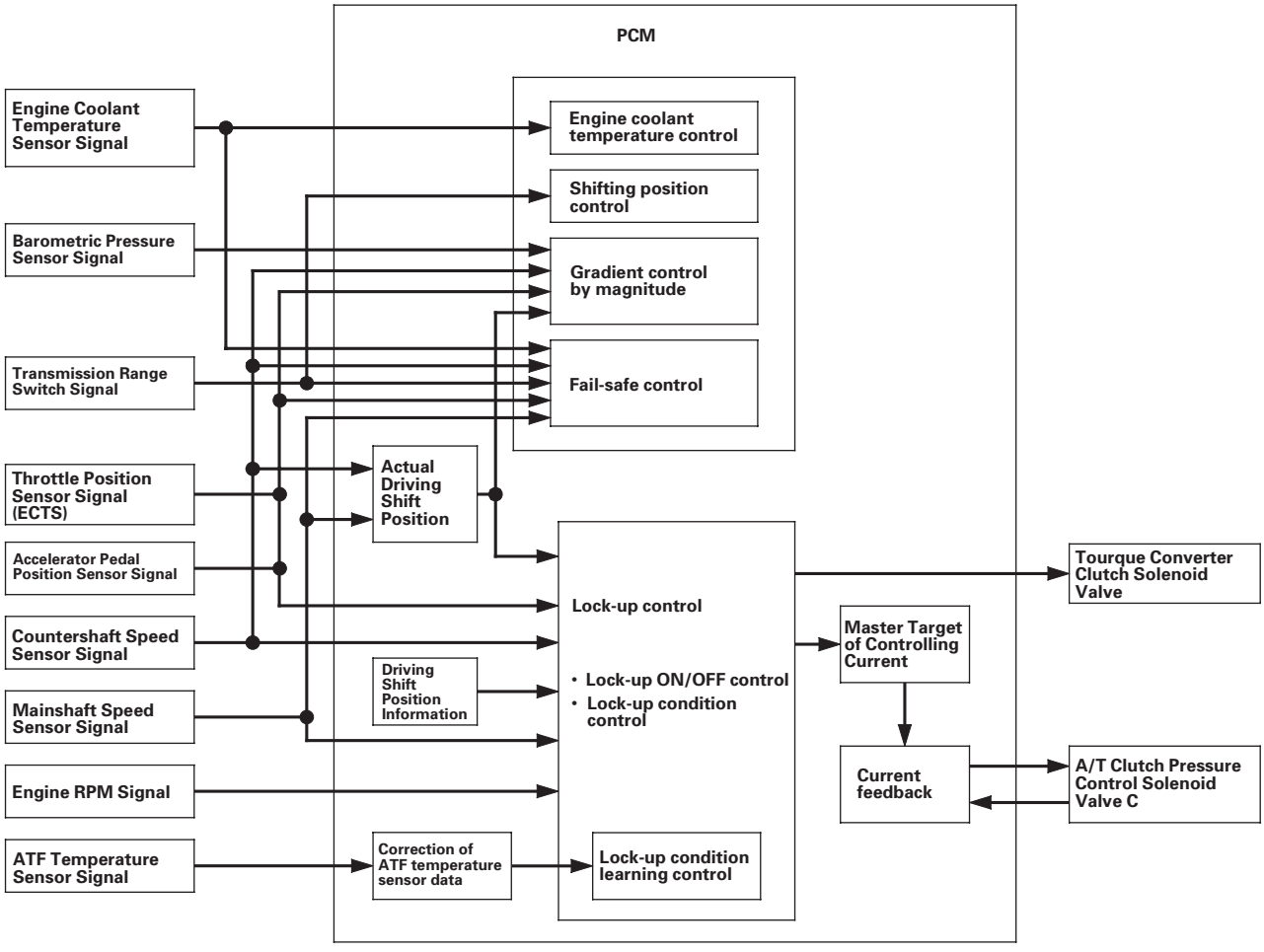
The PCM receives input signals from the various sensors and switches, performs processing data, and outputs a current to the A/T clutch pressure control solenoid valves A, B, and C.



Lock-up Control

The torque converter clutch solenoid valve controls the hydraulic pressure to switch the lock-up shift valve and lock-up ON and OFF. The PCM actuates the torque converter clutch solenoid valve and the A/T clutch pressure control solenoid valve ON, the condition of the lock-up starts. The A/T clutch pressure control solenoid valve C regulates and apply the hydraulic pressure to the lock-up control valve to control the amount of the lock-up.

The lock-up mechanism operates in the D position (2nd, 3rd, 4th, and 5th), and in the D_3 position (2nd and 3rd).

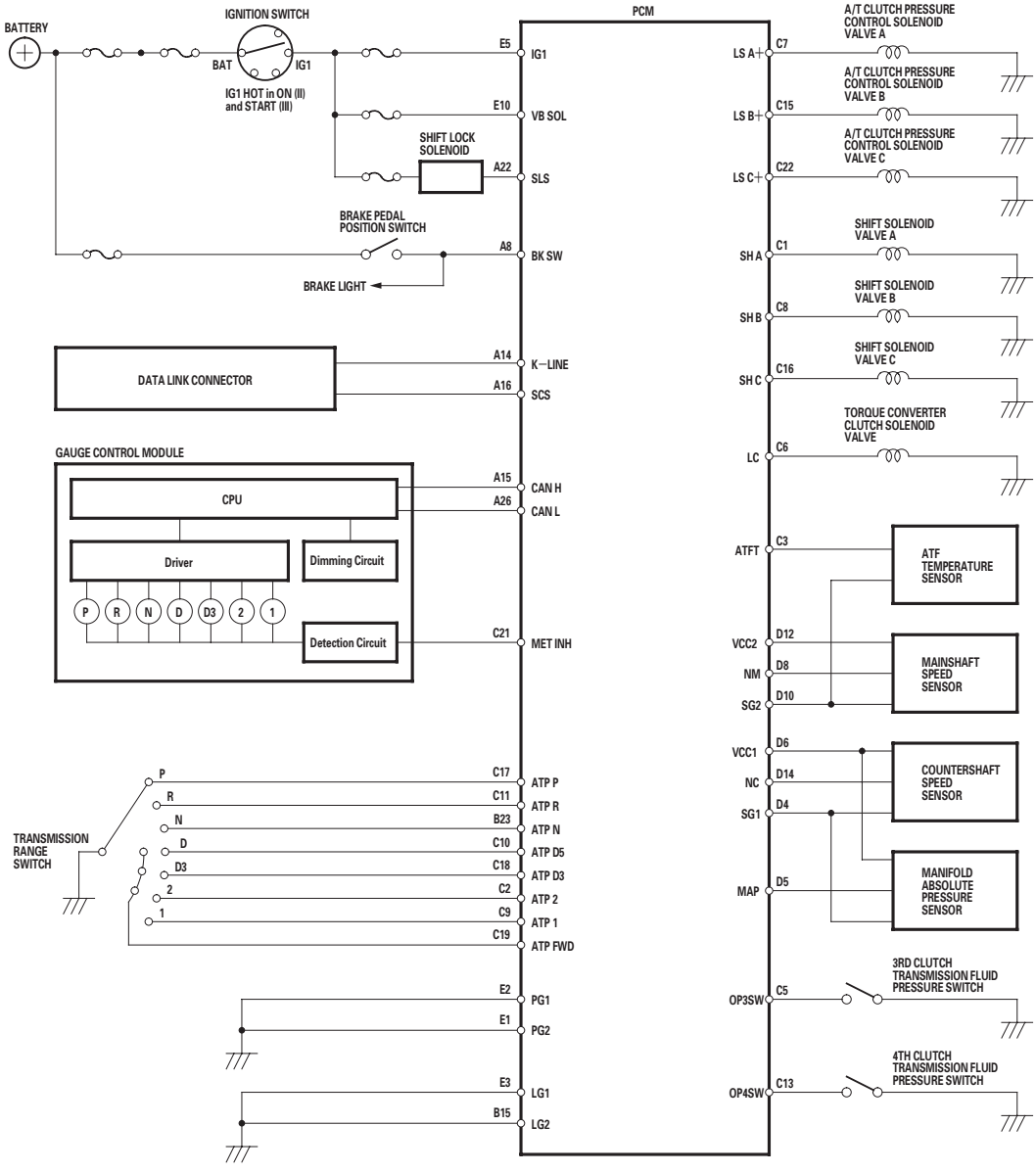


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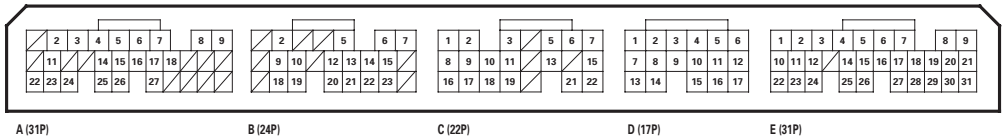
System Description (cont'd)

Electronic Control System (cont'd)

PCM Electrical Connections



PCM Connector Terminal Locations

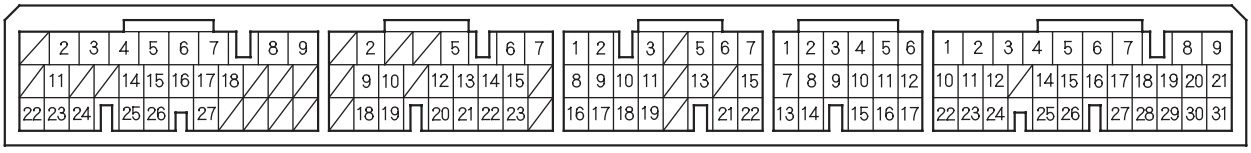


A (31P) B (24P) C (22P) D (17P) E (31P)

PCM Inputs and Outputs

The PCM terminal voltage and measuring conditions for the A/T control system are shown. Other PCM terminal voltage and measuring conditions are described in section 11.

PCM Connector Terminal Locations



A (31P) **B (24P)** **C (22P)** **D (17P)** **E (31P)**

PCM CONNECTOR A (31P)

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
A5	RED/BLK	MRLY	Main relay control	With ignition switch ON (II): 0V With ignition switch OFF: Battery voltage
A8	WHT/BLK	BKSW	Brake pedal position switch signal input	Brake pedal pressed: Battery voltage Brake pedal released: 0V
A11	BLU/WHT	VSSOUT	Vehicle speed signal detected from countershaft speed sensor and sent to speedometer and odometer	Depending on vehicle speed: Pulsing signal
A14	BLU	K-LINE	Communication line PCM-to-DLC	With ignition switch ON (II): Battery voltage
A15	WHT	CAN H	F-CAN communication with network	With ignition switch ON (II): Pulsing signal
A16	BRN	SCS	Detects service check signal	With the SCS shorted with the PGM Tester to the HDS: About 0 V With the SCS open: About 5 V
A22	YEL/BLK	SLS	Shift lock solenoid control	With ignition switch ON (II), in the P position, brake pedal pressed, and accelerator released: Battery voltage
A26	RED	CAN L	F-CAN communication with network	With ignition switch ON (II): Pulsing signal

PCM CONNECTOR B (24P)

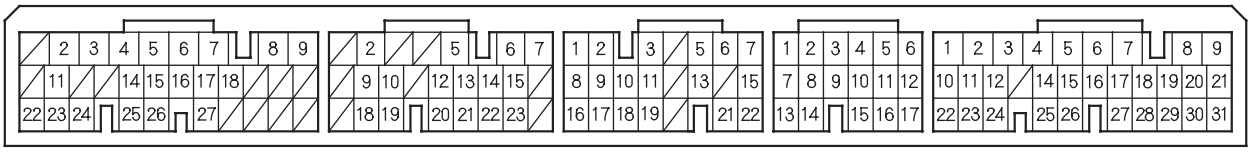
Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
B15	BRN/YEL	LG2	Ground	
B23	RED/BLK	ATP N	Transmission range switch N position signal input	In the N position: 0 V In other than the N position: About 5 V

(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

PCM Connector Terminal Locations



PCM CONNECTOR C (22P)

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
C1	BLU/YEL	SH A	Shift solenoid valve A control	Battery voltage in these positions: • 1, 2 • D, and D3 in 1st and 2nd gear • D in 5th gear 0 V in these positions: • D, and D3 in 3rd gear • D in 4th gear • P, R, and N
C2	BLU	ATP 2	Transmission range switch 2 position signal input	In the 2 position: 0 V In other than the 2 position: Battery voltage
C3	BLU/YEL	ATFT	ATF temperature sensor signal input	With ignition switch ON (II): 0.2 — 0.4 V With ignition switch OFF: 0 V
C5	BLU/WHT	OP3SW	3rd clutch transmission fluid pressure switch signal input	With ignition switch ON (II): • Without 3rd clutch pressure: Battery voltage • With 3rd clutch pressure: About 0 V
C6	YEL	LC	Torque converter clutch solenoid valve control	During lock-up condition: Battery voltage During no lock-up condition: 0 V
C7	RED	LS A	A/T clutch pressure control solenoid valve A power supply positive electrode	With ignition switch ON (II): Pulsing signal

PCM CONNECTOR C (22P)

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
C8	GRN/WHT	SH B	Shift solenoid valve B control	Battery voltage in these positions: • 1, 2 • D, and D3 in 1st, 2nd, and 3rd gear • P, R, and N 0 V in these positions: • D in 4th and 5th gear
C9	BRN	ATP 1	Transmission range switch 1 position signal input	In the 1 position: 0 V In other than the 1 position: Battery voltage
C10	YEL/GRN	ATP D5	Transmission range switch D position signal input	In the D position: 0 V In other than the D position: Battery voltage
C11	WHT	ATP R	Transmission range switch R position signal input	In the R position: 0 V In other than the R position: Battery voltage
C13	BLU/YEL	OP4SW	4th clutch transmission fluid pressure switch signal input	With ignition switch ON (II): • Without 4th clutch pressure: Battery voltage • With 4th clutch pressure: About 0 V
C15	BRN/WHT	LS B	A/T clutch pressure control solenoid valve B power supply positive electrode	With ignition switch ON (II): Pulsing signal
C16	GRN	SH C	Shift solenoid valve C control	Battery voltage in these positions: • 1 • D, and D3 in 1st, 3rd and 5th gear 0 V in these positions: • 2 • D, and D3 in 2nd gear • D in 4th gear • P, R, and N
C17	BLU/BLK	ATP P	Transmission range switch P position signal input	In the P position: 0 V In other than the P position: Battery voltage
C18	RED	ATP D3	Transmission range switch D3 position signal input	In the D3 position: 0 V In other than the D3 position: Battery voltage
C19	BLU/YEL	ATP FWD	Transmission range switch D, D3, and 2 positions signal input	In the D, D3, and 2 positions: 0 V In other than the D, D3, and 2 positions: Battery voltage
C21	GRN/WHT	METINH	A/T gear position indicator control signal output	With ignition switch ON (II): Battery voltage
C22	GRN/RED	LS C	A/T clutch pressure control solenoid valve C power supply positive electrode	With ignition switch ON (II): Pulsing signal

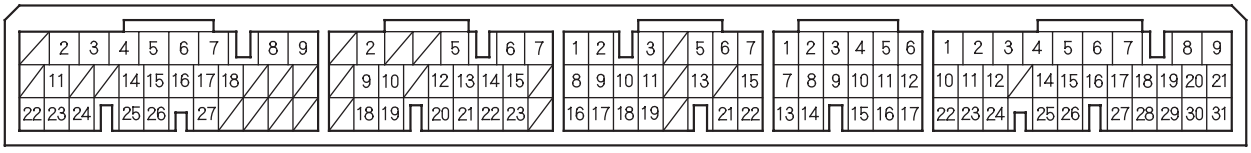
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System Description (cont'd)

Electronic Control System (cont'd)

PCM Inputs and Outputs (cont'd)

PCM Connector Terminal Locations



PCM CONNECTOR D (17P)

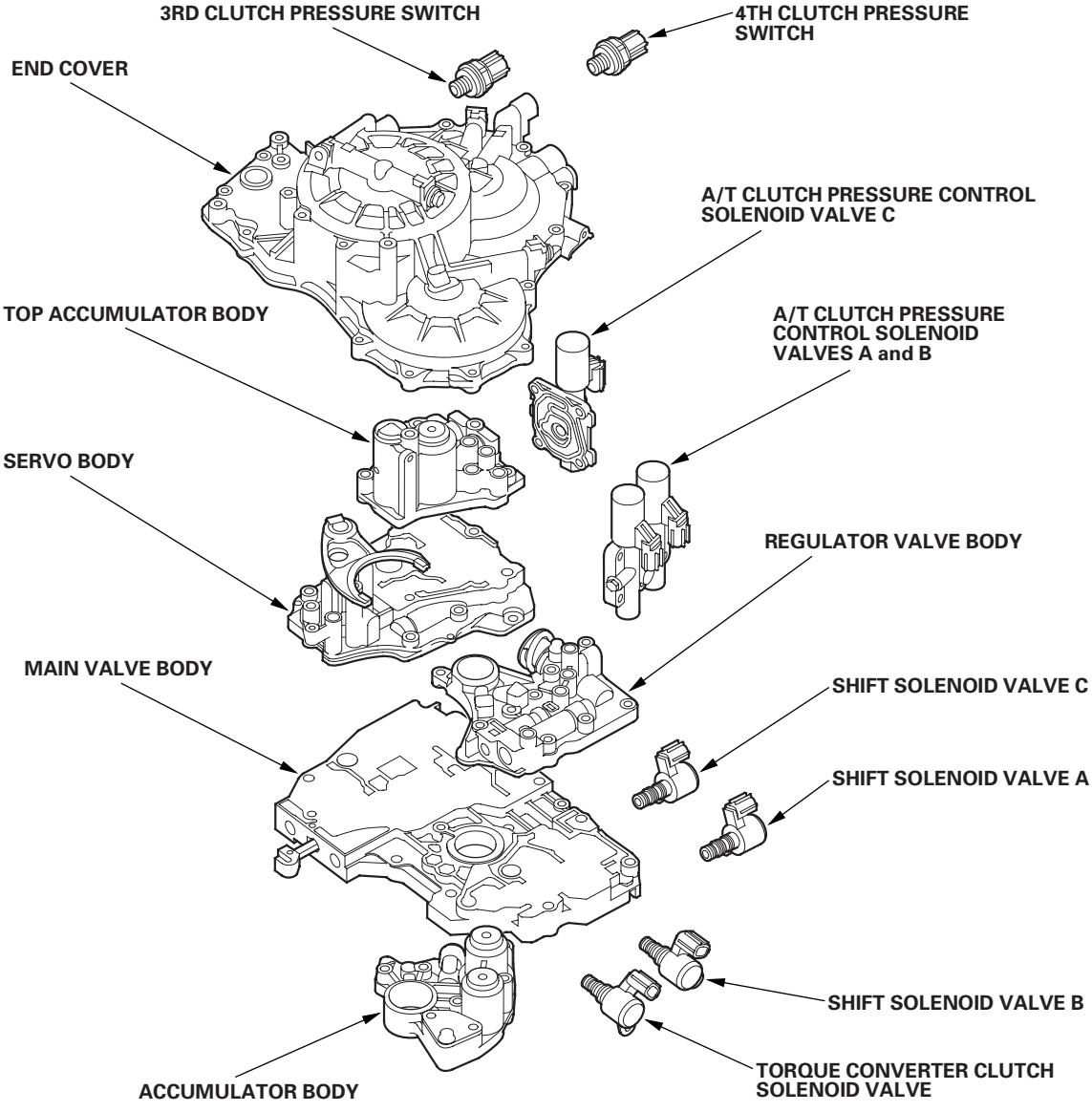
Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
D4	GRN/WHT	SG1	Sensor ground	
D6	YEL/RED	VCC1	Power supply for sensors	With ignition switch ON (II): 5 V With ignition switch OFF: 0 V
D8	RED	NM	Mainshaft speed sensor signal input	With ignition switch ON (II): 0 V or about 5 V With engine at idling in the N position: Pulsing signal (0—5V)
D10	GRN/YEL	SG2	Sensor ground	
D12	YEL/BLU	VCC2	Power supply for sensors	With ignition switch ON (II): 5 V With ignition switch OFF: 0 V
D14	BLU	NC	Countershaft speed sensor signal input	With ignition switch ON (II): 0 V or about 5 V With driving: Pulsing signal (0—5V)

PCM CONNECTOR E (31P)

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
E1	BLK	PG2	Ground	
E2	BLK	PG1	Ground	
E3	BRN/YEL	LG1	Ground	
E4	YEL/BLK	IGP	Power supply circuit from main relay	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
E5	BLK/YEL	IG1	Power supply circuit	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
E10	BLK/YEL	VBSOL	Power supply circuit for solenoid valves	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V

Hydraulic Controls

The valve body includes the main valve body, the regulator valve body, the servo body, the top accumulator body, and the accumulator body. The ATF pump is driven by splines on the left end of the torque converter which is attached to the engine. Fluid flows through the regulator valve to maintain specified pressure through the main valve body to the manual valve, directing pressure to each of the clutches. The shift solenoid valves A and C are mounted on the outside of the torque converter housing. The shift solenoid valve B and the torque converter clutch solenoid valve are mounted on the torque converter housing. The A/T clutch pressure control solenoid valves A and B, and the A/T clutch pressure control solenoid valve C are mounted on the transmission housing.



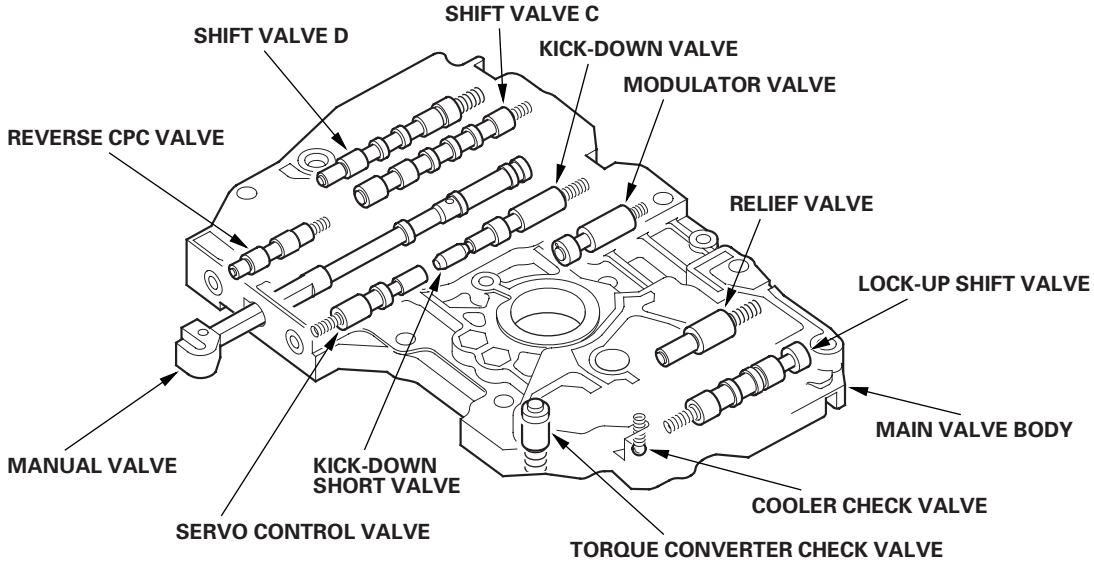
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System Description (cont'd)

Hydraulic Controls (cont'd)

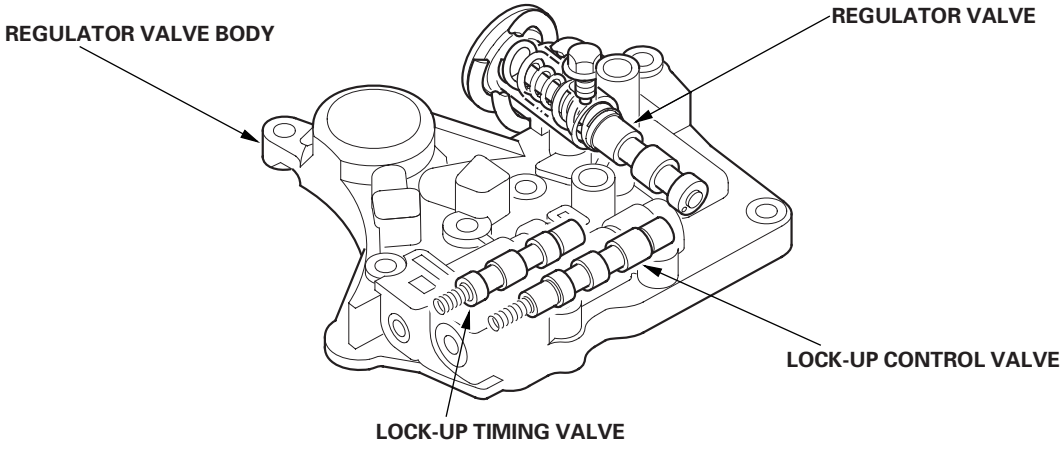
Main Valve Body

The main valve body contains the manual valve, the modulator valve, the shift valve C, the shift valve D, the servo control valve, the cooler check valve, the torque converter check valve, the reverse CPC valve, the lock-up shift valve, the relief valve, the kick-down valve, the kick-down short valve, and the ATF pump gears. The primary function of the main valve body is to switch fluid pressure on and off and to control hydraulic pressure going to the hydraulic control system.



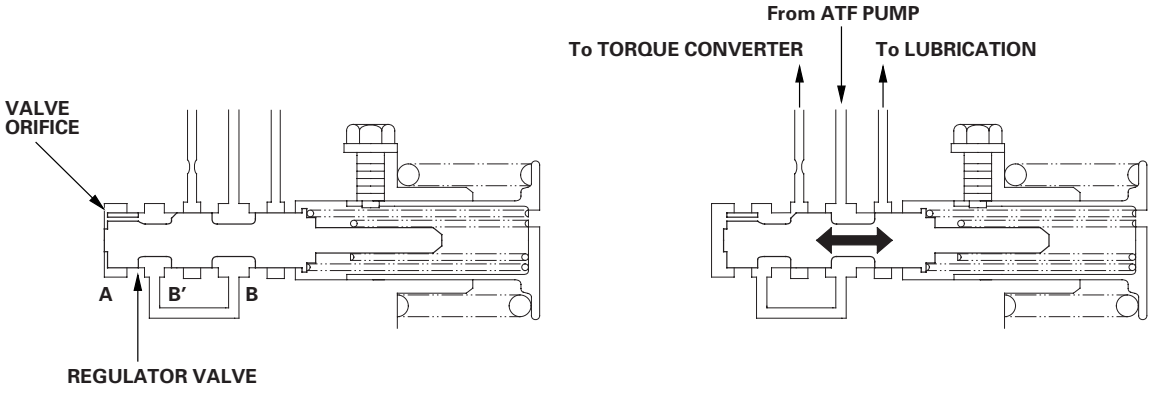
Regulator Valve Body

The regulator valve body is located on the main valve body. The regulator valve body contains the regulator valve, the lock-up timing valve, and the lock-up control valve.

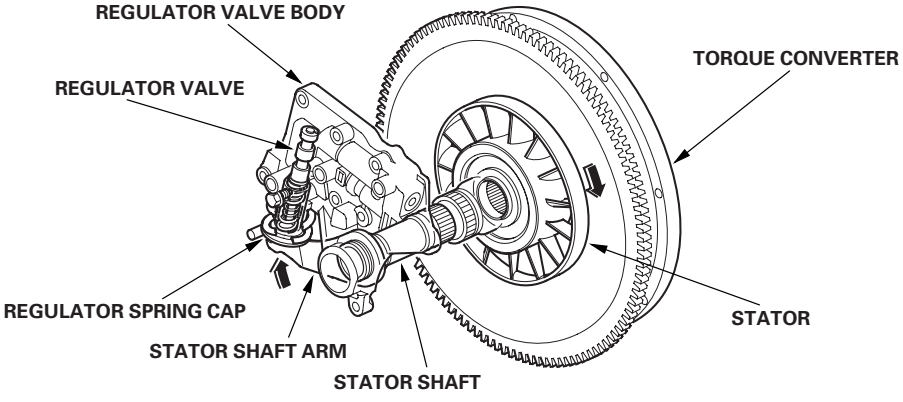


Regulator Valve

The regulator valve maintains constant hydraulic pressure from the ATF pump to the hydraulic control system, while also furnishing fluid to the lubricating system and torque converter. Fluid from the ATF pump flows through B and B′. Fluid entering from B flows through the valve orifice to the A cavity. This pressure of the A cavity pushes the regulator valve to the right side, and this movement of the regulator valve uncovers the fluid port to the torque converter and the relief valve. The fluid flows out to the torque converter and the relief valve, and the regulator valve moves to the left side. According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from B′ through the torque converter changes. This operation is continued, maintaining the line pressure.



Increases in hydraulic pressure according to torque are performed by the regulator valve using stator torque reaction. The stator shaft is splined to the stator in the torque converter, and its arm end contacts the regulator spring cap. When the vehicle is accelerating or climbing (torque converter range), stator torque reaction acts on the stator shaft, and the stator arm pushes the regulator spring cap in the direction of the arrow in proportion to the reaction. The stator reaction spring compresses, and the regulator valve moves to increase the line pressure which is regulated by the regulator valve. The line pressure reaches its maximum when the stator torque reaction reaches its maximum.

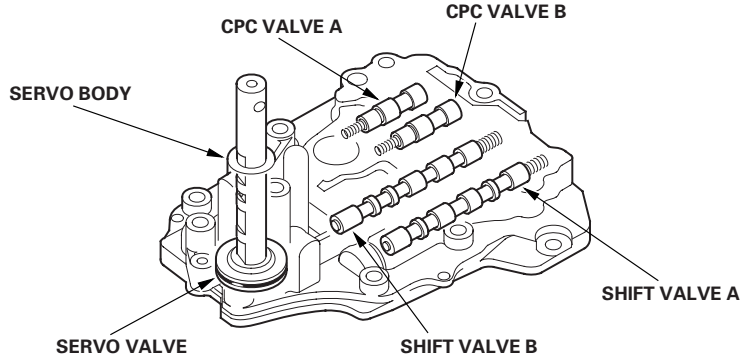


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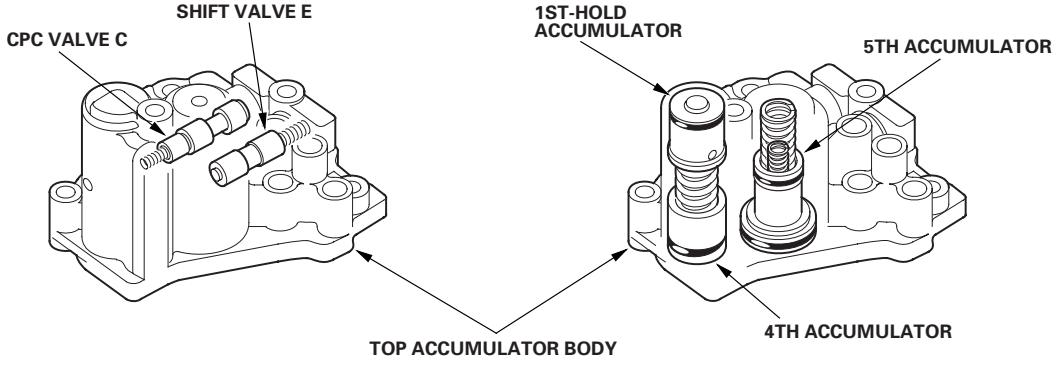
System Description (cont'd)

Hydraulic Controls (cont'd)

Servo Body
The servo body is on the main valve body. It contains the servo valve, shift valve A, shift valve B, and CPC valves A and B.

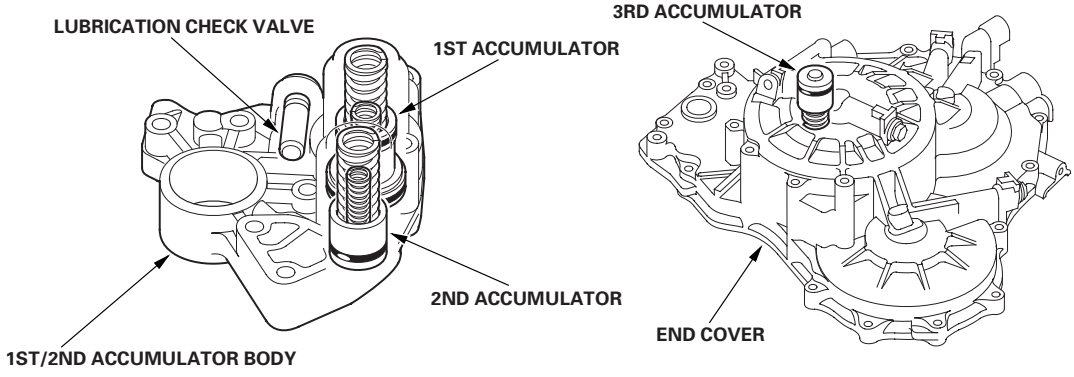


Top Accumulator Body
The top accumulator body contains shift valve E, CPC valve C, 4th/1st-hold accumulator, and 5th accumulator.



Accumulator Body
The accumulator body is on the torque converter housing, next to the main valve body. It contains the 1st and 2nd accumulators and the lubrication check valve.

3rd Accumulator
The 3rd accumulator is in the end cover.



Hydraulic Flow

Distribution of Hydraulic Pressure

As the engine runs, the ATF pump starts to operate. Automatic transmission fluid (ATF) is drawn through the ATF strainer (filter) and discharged into the hydraulic circuit. Then, ATF flowing from the ATF pump becomes line pressure that's regulated by the regulator valve. Torque converter pressure from the regulator valve enters the torque converter through the lock-up shift valve and it is discharged from the torque converter. The torque converter check valve prevents torque converter pressure from rising.

The PCM controls the shift solenoid valves ON and OFF, and the shift solenoid valves control shift solenoid pressure to the shift valves. Applying shift solenoid pressure to the shift valves moves the position of the shift valve, and switches the port of hydraulic pressure. The PCM also controls A/T clutch pressure control solenoid valves A and B. The A/T clutch pressure control solenoid valves A and B regulate the A/T clutch pressure control solenoid pressure and apply the A/T clutch pressure control solenoid pressure to CPC valves A and B.

When shifting between upper gear and lower gear, the clutch is engaged by pressure from the CPC pressure mode. The PCM controls one of the shift solenoid valves to move the position of the shift valve. This movement switches the port of the CPC and line pressure. Line pressure is then applied to the clutch, and the CPC pressure is intercepted. Engaging the clutch with line pressure happens after CPC pressure mode has completed.

Hydraulic pressure at the ports is as follows:

PORT NO.	DESCRIPTION OF PRESSURE	PORT NO.	DESCRIPTION OF PRESSURE	PORT NO.	DESCRIPTION OF PRESSURE
1	LINE	5N	CPC A or LINE	56	LS A
2	LINE	5D	CPC B or LINE	57	LS B
3	LINE	5G	CPC B or LINE	58	LS C
3′	REVERSE CPC or LINE	5K	CPC B or LINE	90	TORQUE CONVERTER
3′′	REVERSE CPC or LINE	6	MODULATE	90′	TORQUE CONVERTER
4	LINE	SA	SH A	91	TORQUE CONVERTER
4′	LINE	SB	SH B	91′	TORQUE CONVERTER
4′′	LINE	SC	SH C	92	TORQUE CONVERTER
4A	CPC A	LA	LC A	93	ATF COOLER
4B	CPC B	9	LINE	94	TORQUE CONVERTER
4C	CPC C	10	1ST CLUTCH	95	LUBRICATION
5B	CPC A	15	1ST-HOLD CLUTCH	95′	LUBRICATION
5C	CPC B	20	2ND CLUTCH	96	TORQUE CONVERTER
5H	CPC B	25	LINE	99	SUCTION
5J	CPC B	30	3RD CLUTCH	X	DRAIN
5A	CPC A or LINE	40	4TH CLUTCH	HX	HIGH POSITION DRAIN
5E	CPC A or LINE	50	5TH CLUTCH	AX	AIR DRAIN
5F	CPC A or LINE	51	5TH CLUTCH		
5M	CPC A or LINE	55	CPC C or LINE		

NOTE:
- CPC: Clutch Pressure Control pressure
- SH: Shift Solenoid pressure
- LS A: A/T Clutch Pressure Control Solenoid A pressure
- LS B: A/T Clutch Pressure Control Solenoid B pressure
- LS C: A/T Clutch Pressure Control Solenoid C pressure
- LC: Torque Converter Clutch Solenoid pressure

(cont'd)

System Description (cont'd)

Hydraulic Flow (cont'd)

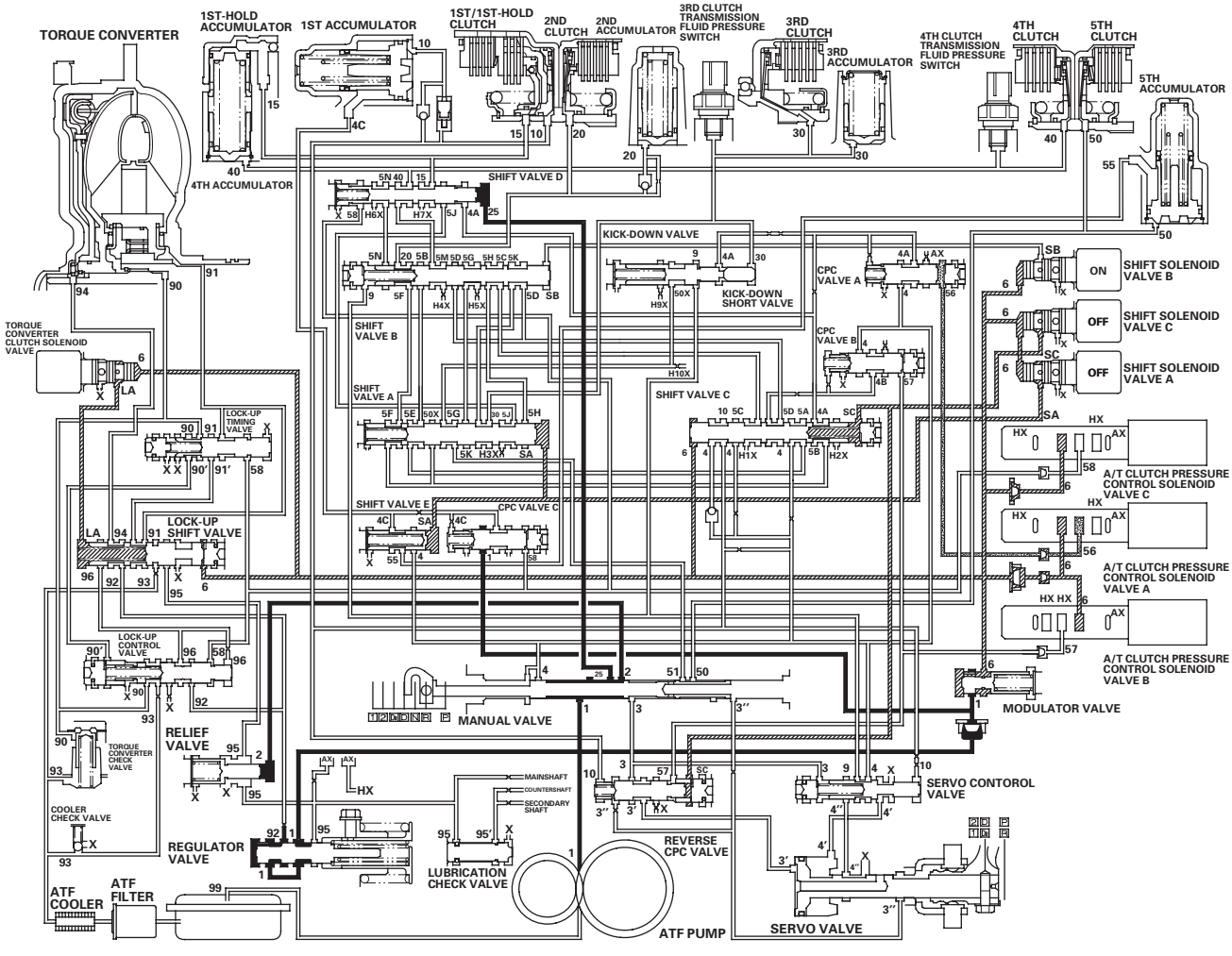
N Position

The PCM controls the shift solenoid valves. The conditions of the shift solenoid valve and positions of the shift valve are as follows:

- The shift solenoid valve A is turned OFF, and the shift valve A is moved to the left side.
- The shift solenoid valve B is turned ON, and the shift valve B remains in the right side.
- The shift solenoid valve C is turned OFF, and the shift valve C remains in the left side.

Line pressure (1) passes through the manual valve and becomes line pressure (25). Line pressure (25) stops at shift valve D. Line pressure (1) also flows to the modulator valve and becomes modulator pressure (6). Modulator pressure (6) flows to the shift solenoid valves and the A/T clutch pressure control solenoid valves. Under this condition, hydraulic pressure is not applied to the clutches.

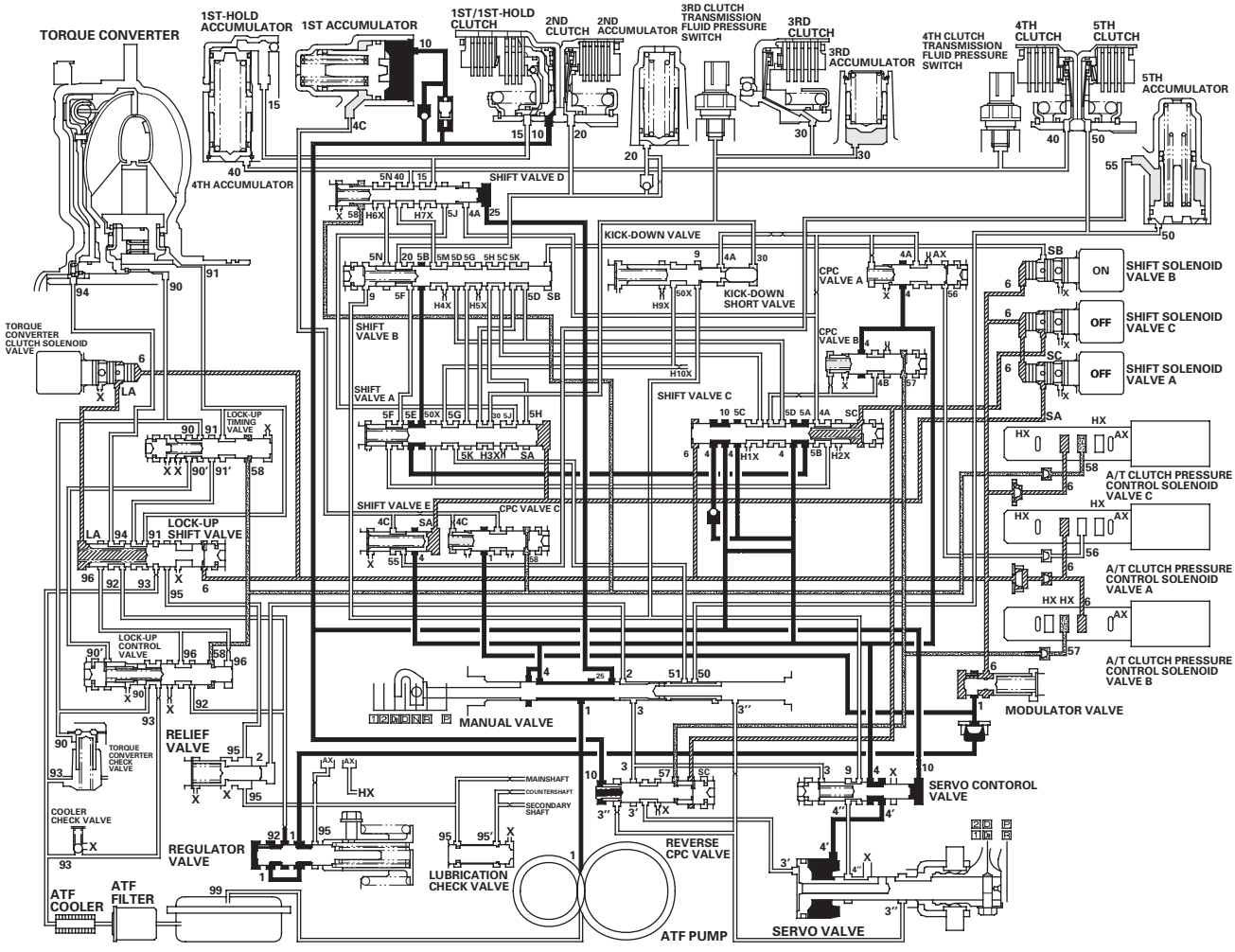
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



D Position: 1st gear shifting from the N position

Shift solenoid valves remain the same as in the N position when shifting to the D position from the N position. The manual valve is moved to the D position, and switches the port of line pressure (4) leading to shift valve C and CPC valve B. Line pressure (4) flows to the 1st clutch via the orifice. Line pressure (1) becomes CPC C pressure (4C) at CPC valve C, then goes to the 1st accumulator back side. Line pressure (4) also becomes the CPC B pressure (4B) at the CPC B valve. CPC B pressure goes to the 3rd clutch, via the shift valves C, B, and A, and the 3rd clutch is engaged. The 1st clutch is engaged gently when shifting to the D position from the N position.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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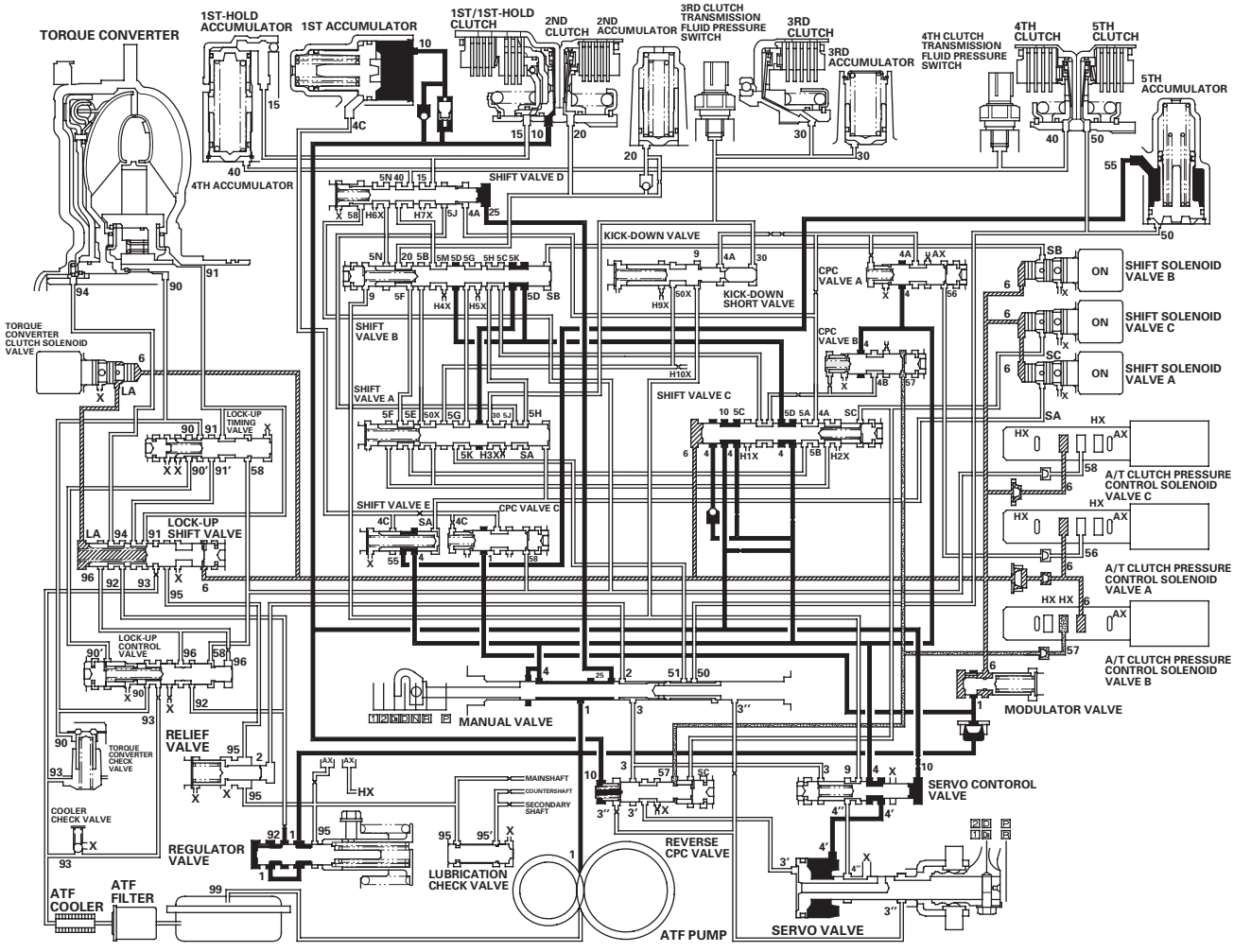
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Driving in 1st gear

The PCM turns shift solenoid valves A and C ON, and shift solenoid valve B remains ON. SH A pressure (SA) in the right side of shift valves A and E is released, and shift valves A and E are moved to the right side. SH C pressure (SC) in the right side of shift valve C is released, and modulator pressure (6) is applied to the left side of shift valve C. Shift valve C is moved to the right side. These valve movements release CPC C pressure (4C) from the back of the 1st accumulator and the 3rd clutch, and the 1st clutch is engaged securely.

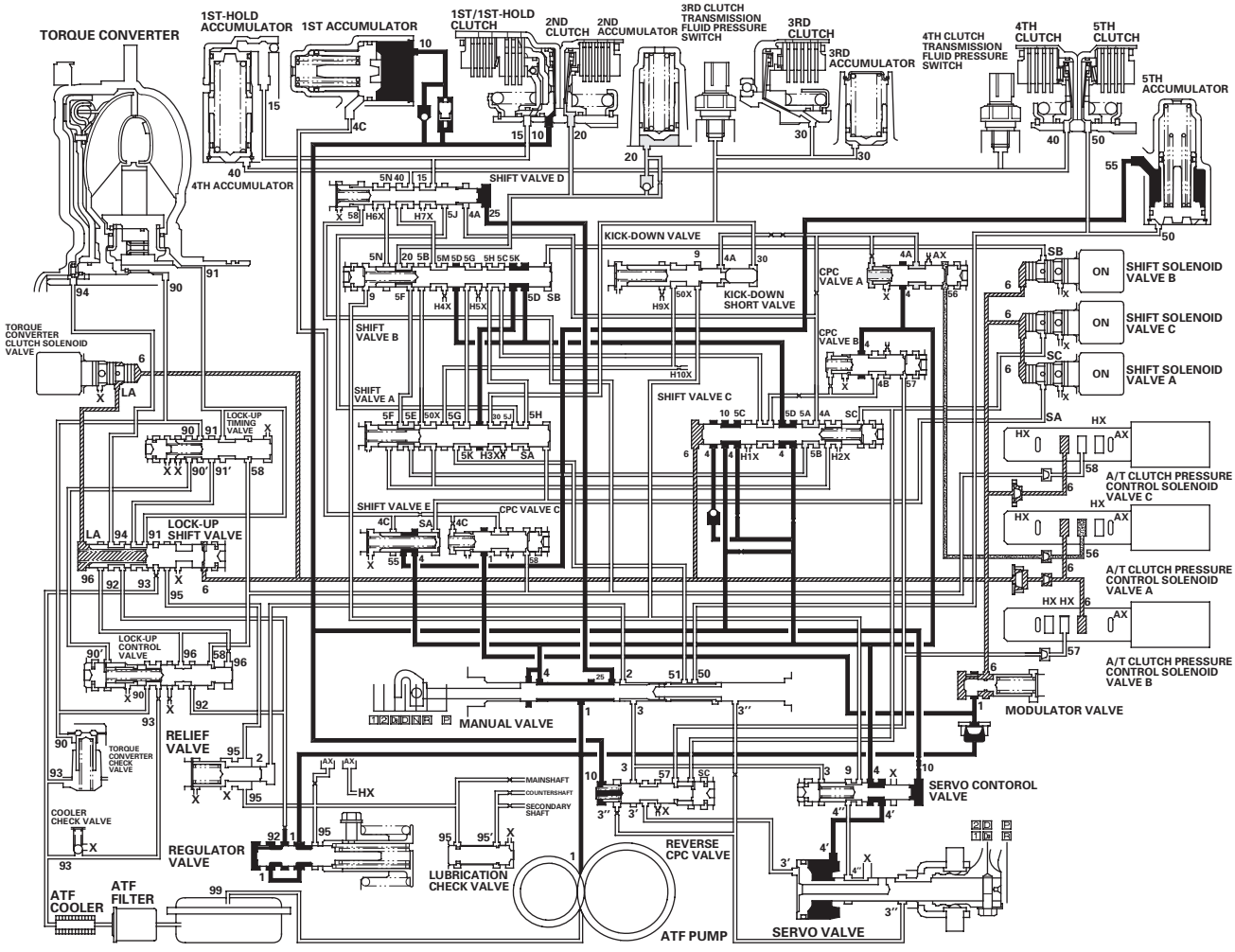
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



D Position: Shifting between 1st gear and 2nd gear

As the speed of the vehicle reaches the prescribed value, the PCM controls the A/T clutch pressure control solenoid valves. LS B pressure (57) in the right side of CPC valve B is released, and LS A pressure (56) is applied to the right side of CPC valve A. Line pressure (4) becomes CPC A pressure (4A) at CPC valve A, and CPC A pressure passes through shift valves C, A, and B, to become 2nd clutch pressure. The 2nd clutch is engaged with CPC pressure, and the 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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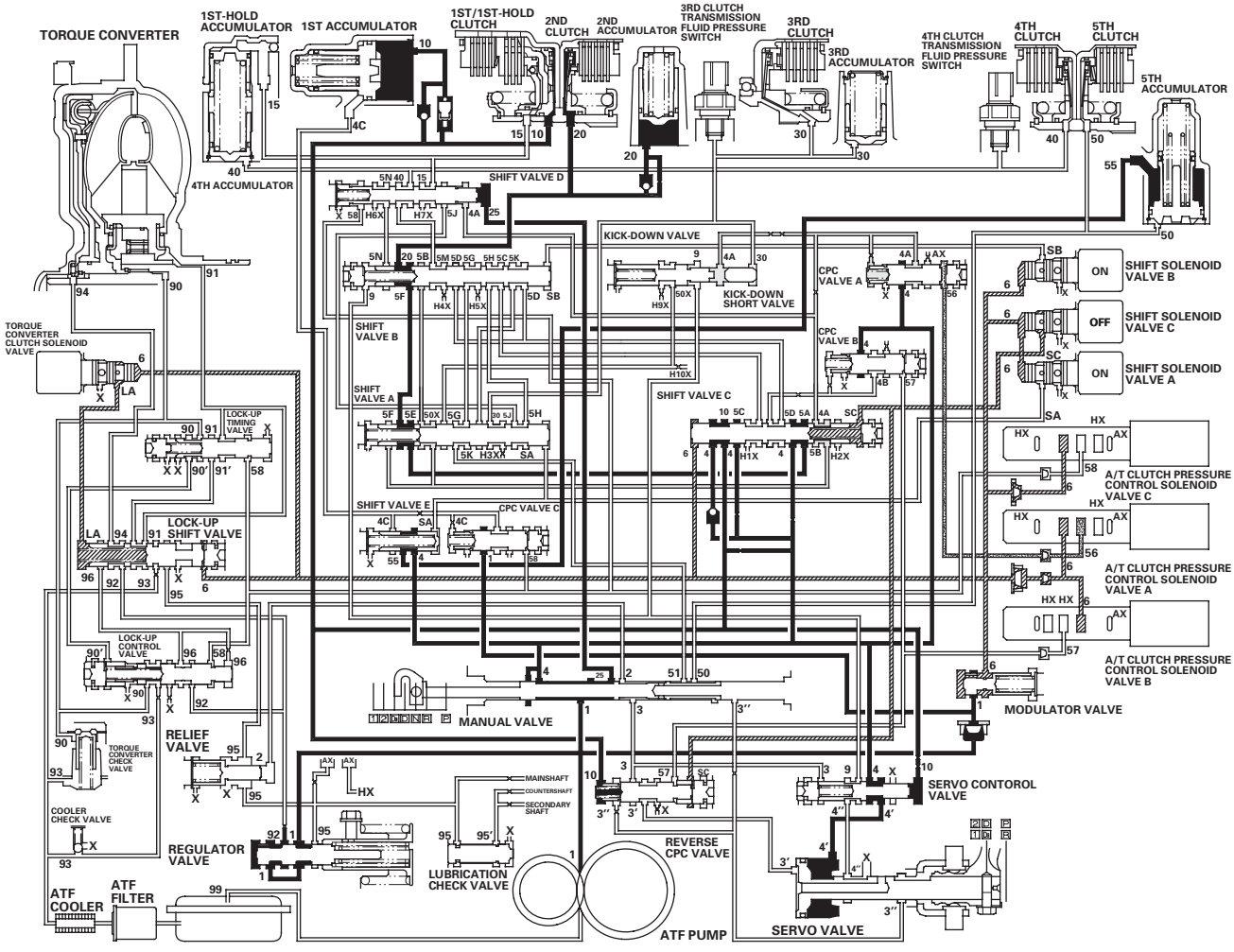
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Driving in 2nd gear

The PCM turns shift solenoid valve C OFF, and shift solenoid valves A and B remain ON. Shift solenoid valve C is turned OFF, and SH C pressure (SC) is applied to the right side of shift valve C. Then shift valve C is moved to the left side to switch the port of line pressure and CPC pressure. The 2nd clutch pressure is changed to line pressure mode, and the 2nd clutch is engaged securely. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

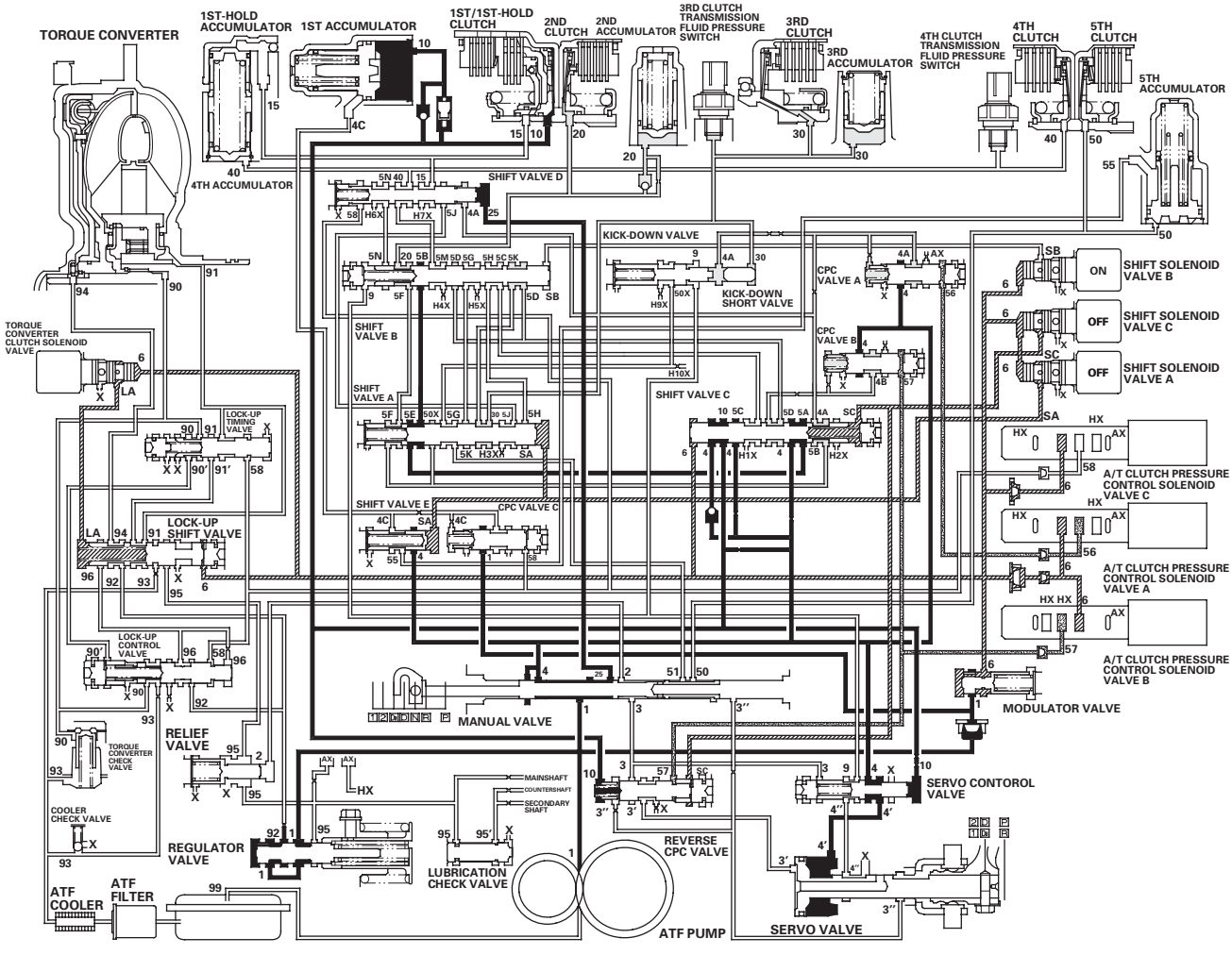
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



D Position: Shifting between 2nd gear and 3rd gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valve A OFF. The PCM also controls the A/T clutch pressure control solenoid valve B to apply LS B pressure (57) to CPC valve B. Shift solenoid valve B remains ON, and C remains OFF. Shift solenoid valve A is turned OFF, and SH A pressure (SA) is applied to the right side of shift valves A and E. Then shift valves A and E are moved to the left side to switch the port of line pressure and CPC pressure. Line pressure (4) becomes CPC A pressure (4A) at CPC valve A, and becomes CPC B pressure (4B) at CPC valve B. CPC B pressure (4B) becomes 3rd clutch pressure (30) at shift valve A via shift valves C and B, and flows to the 3rd clutch. The 2nd clutch pressure is changed to CPC pressure mode by switching the position of shift valve A. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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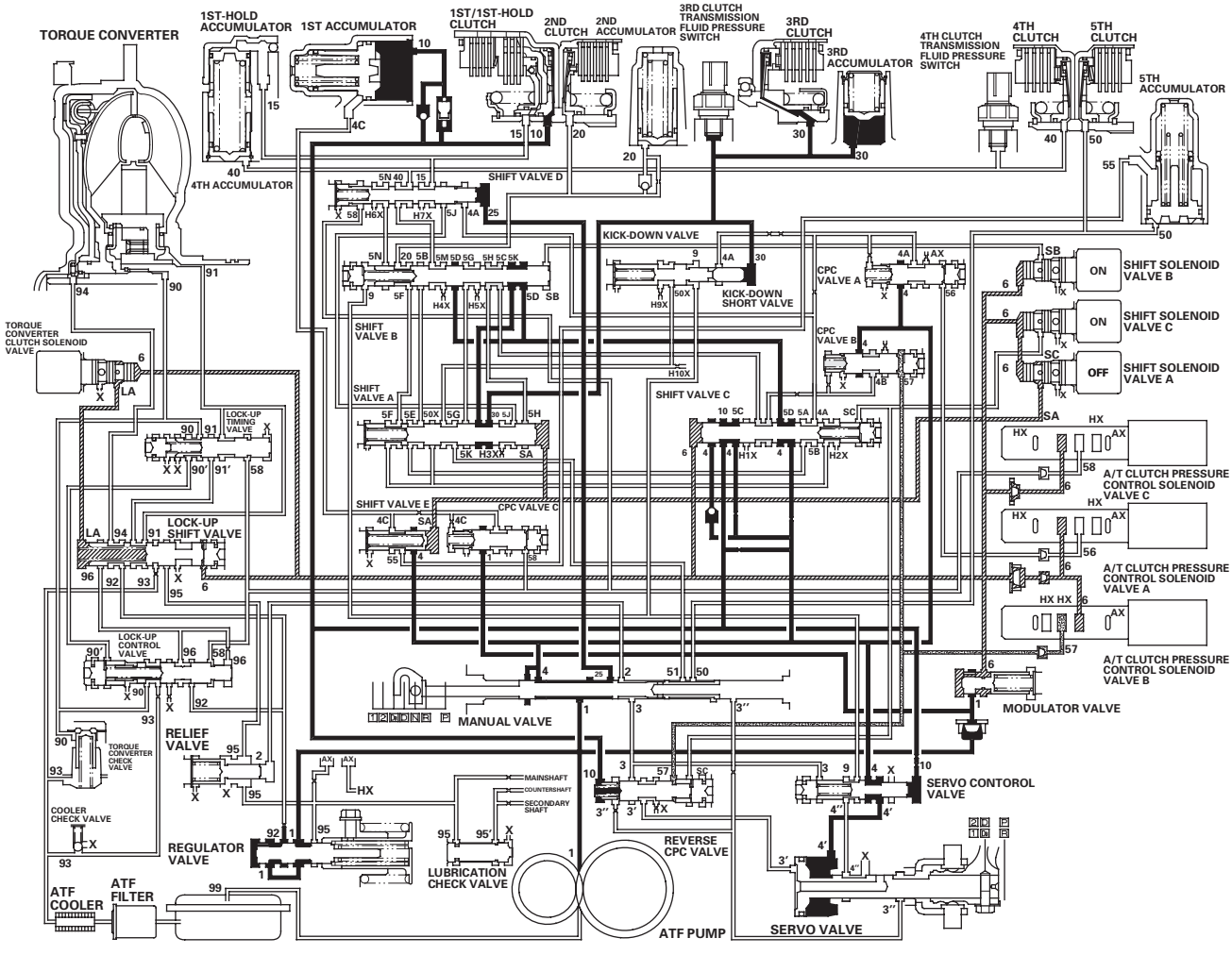
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Driving in 3rd gear

The PCM turns shift solenoid valve C ON, and controls A/T clutch pressure control solenoid valve A to release LS A pressure (56) in CPC valve A. Shift solenoid valve A remains OFF, and B remains ON. Releasing LS A pressure (56) in CPC valve A releases CPC A pressure in the 2nd clutch pressure circuit. Shift solenoid valve C is turned ON, and SH C pressure (SC) in the right side of shift valve C is released. Then shift valve C is moved to the right side to switch the port of line pressure and CPC pressure. The 3rd clutch pressure is changed to line pressure mode, and the 3rd clutch is engaged securely. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

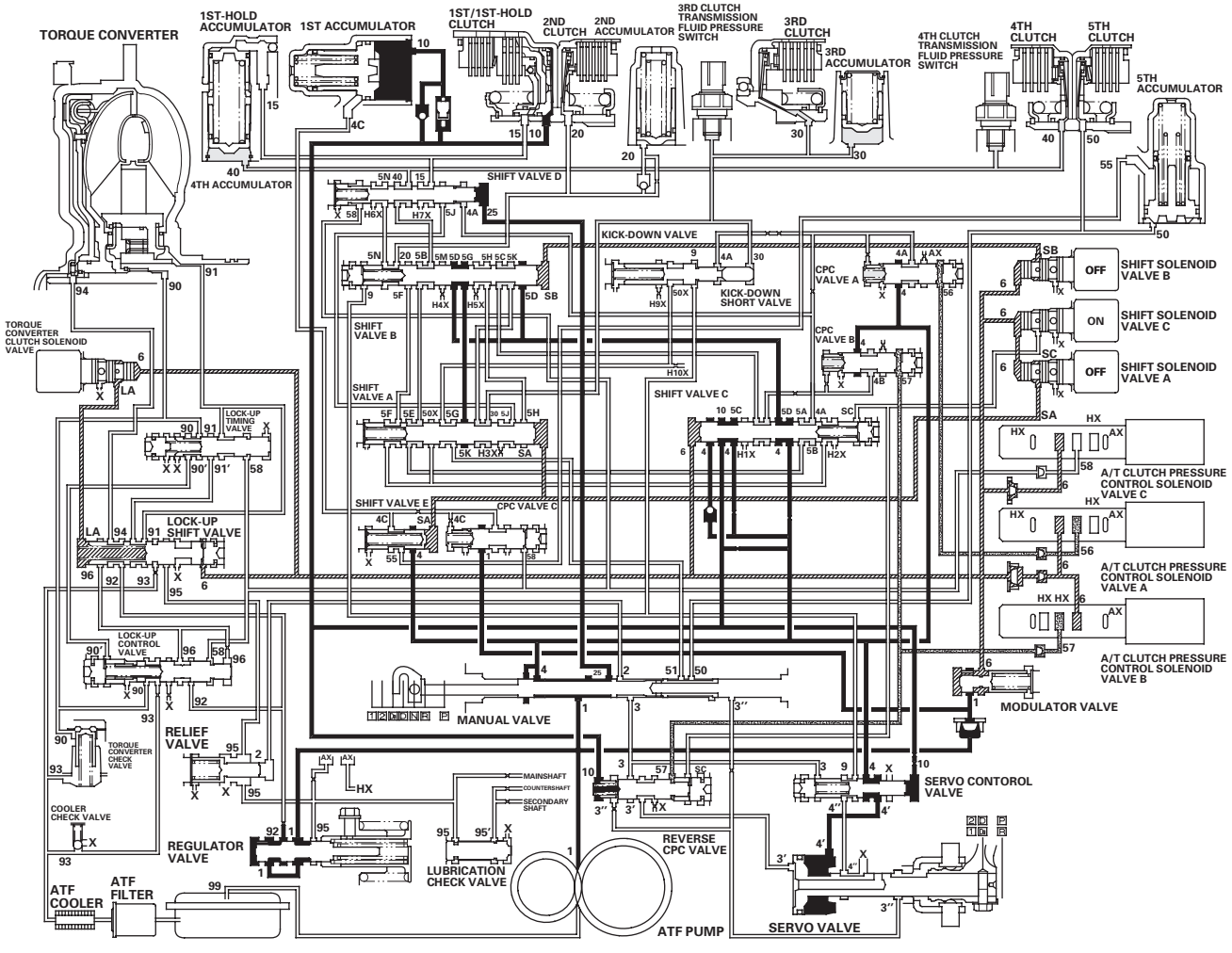
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



D Position: Shifting between 3rd gear and 4th gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valve B OFF. The PCM also controls the A/T clutch pressure control solenoid valve A to apply LS A pressure (56) to CPC valve A. Shift solenoid valve A remains OFF, and C remains ON. Shift solenoid valve B is turned OFF, and SH B pressure (SB) is applied to the right side of shift valve B. Then shift valve B is moved to the left side to switch the port of line pressure and CPC pressure. Line pressure (4) becomes CPC A pressure (4A) at CPC valve A, and becomes CPC B pressure (4B) at CPC valve B. CPC A pressure (4A) becomes 4th clutch pressure (40) at shift valve D via shift valves C, A, and B, and flows to the 4th clutch. The 3rd clutch pressure is changed to CPC pressure mode by switching the position of shift valve B. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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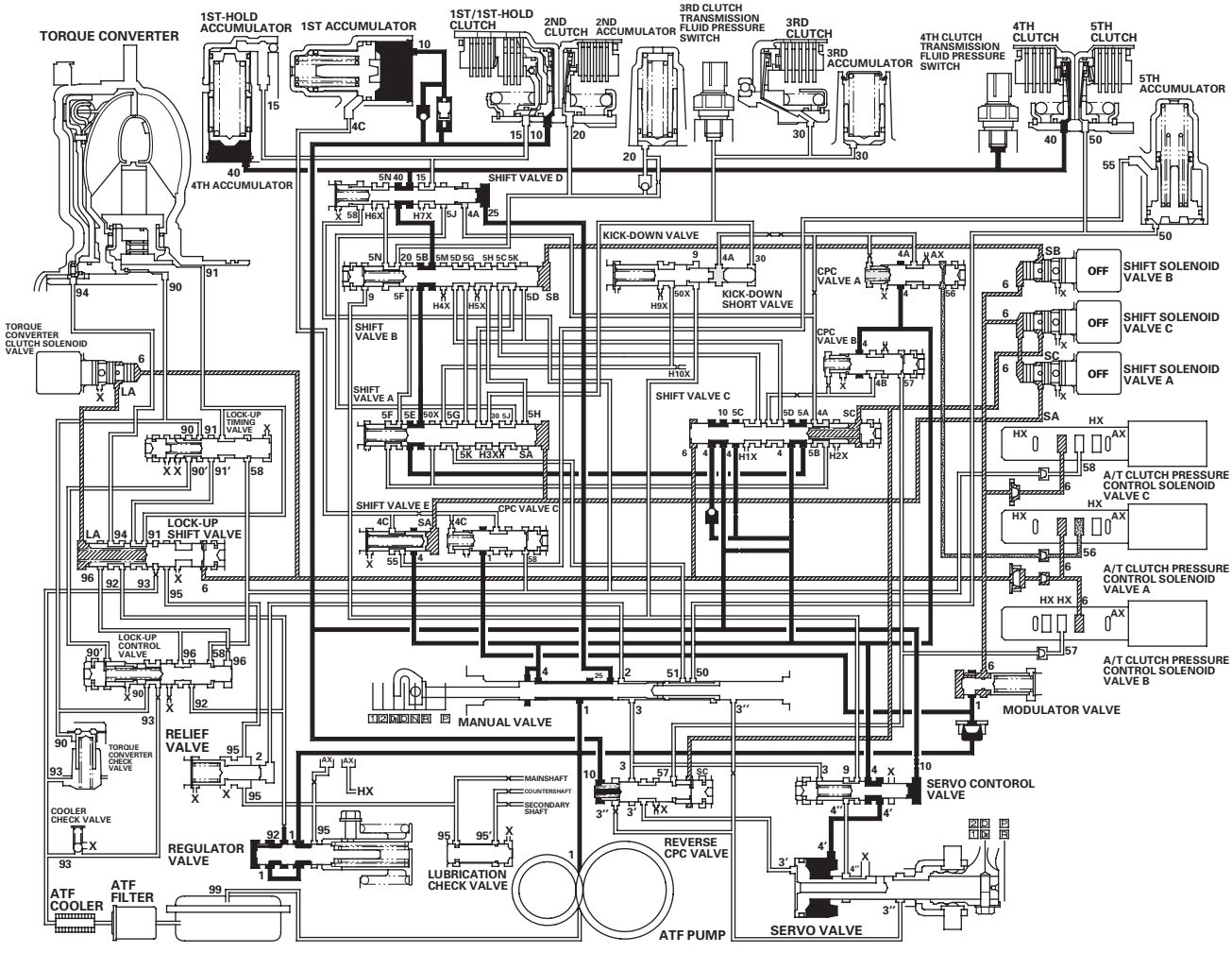
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Driving in 4th gear

The PCM turns shift solenoid valve C OFF, and controls A/T clutch pressure control solenoid valve B to release LS B pressure (57) in CPC valve B. Shift solenoid valves A and B remain OFF. Releasing LS B pressure (57) in CPC valve B releases CPC B pressure in the 3rd clutch pressure circuit. Shift solenoid valve C is turned OFF, and SH C pressure (SC) is applied to the right side of shift valve C. Then shift valve C is moved to the left side to switch the port of line pressure and CPC pressure. Line pressure (4) from the manual valve becomes 4th clutch pressure (40) at shift valve D via shift valves C, A, and B, and flows to the 4th clutch. The 4th clutch pressure is changed to line pressure mode by switching the position of shift valve C, and the 4th clutch is engaged securely. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.

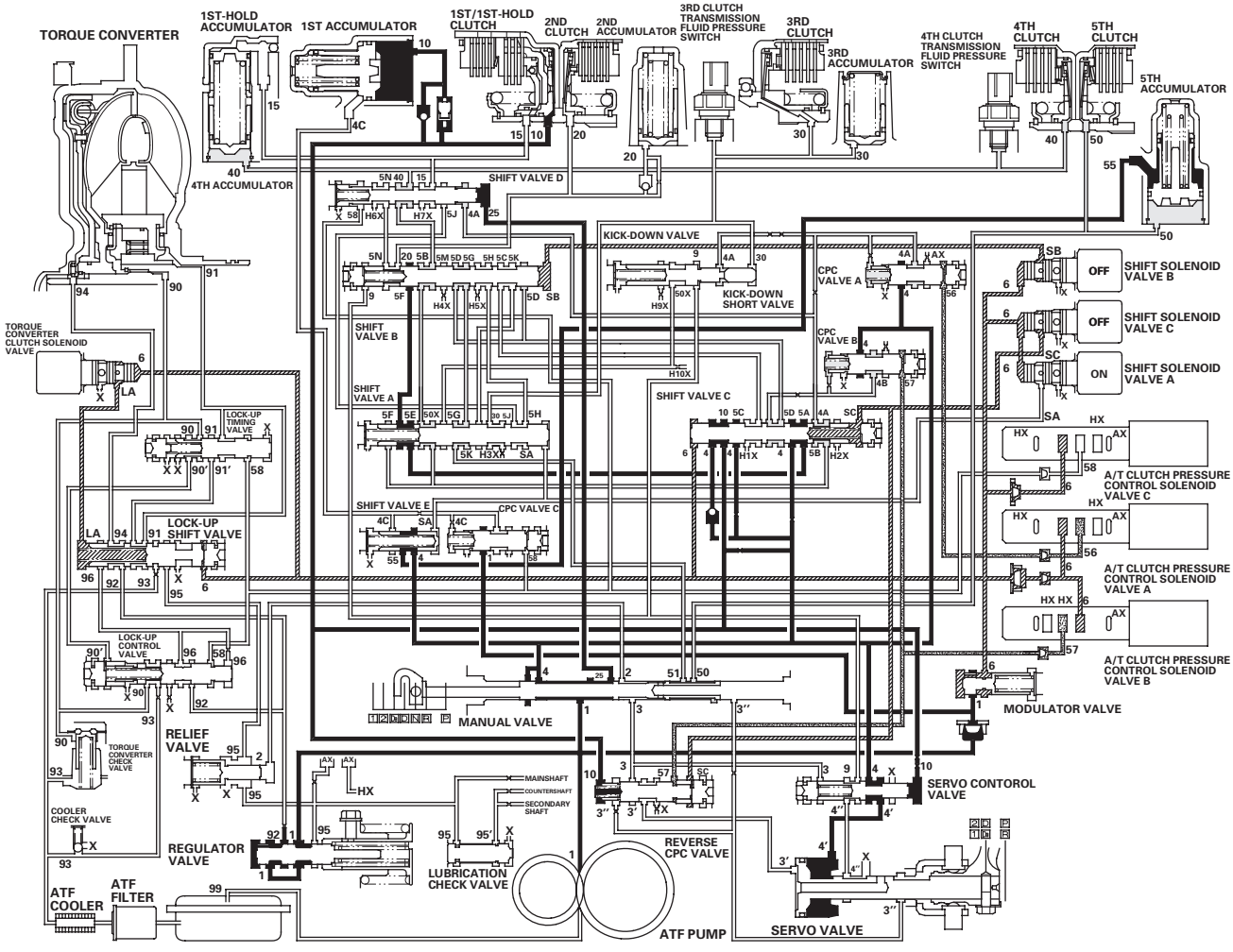


D Position: Shifting between 4th gear and 5th gear

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valve A ON. The PCM also controls the A/T clutch pressure control solenoid valve B to apply LS B pressure (57) to CPC valve B.

Shift solenoid valve B and C remain OFF. Shift solenoid valve A is turned ON, and SH A pressure (SA) in the right side of shift valves A and E is released. Then shift valves A and E are moved to the left side to switch the port of line pressure and CPC pressure. Line pressure (4) becomes CPC A pressure (4A) at CPC valve A, and becomes CPC B pressure (4B) at CPC valve B. CPC B pressure (4B) becomes 5th clutch pressure (50) at shift valve C, and flows to the 5th clutch via shift valves B and A and the manual valve. The 4th clutch pressure is changed to CPC pressure mode by switching the position of shift valve A. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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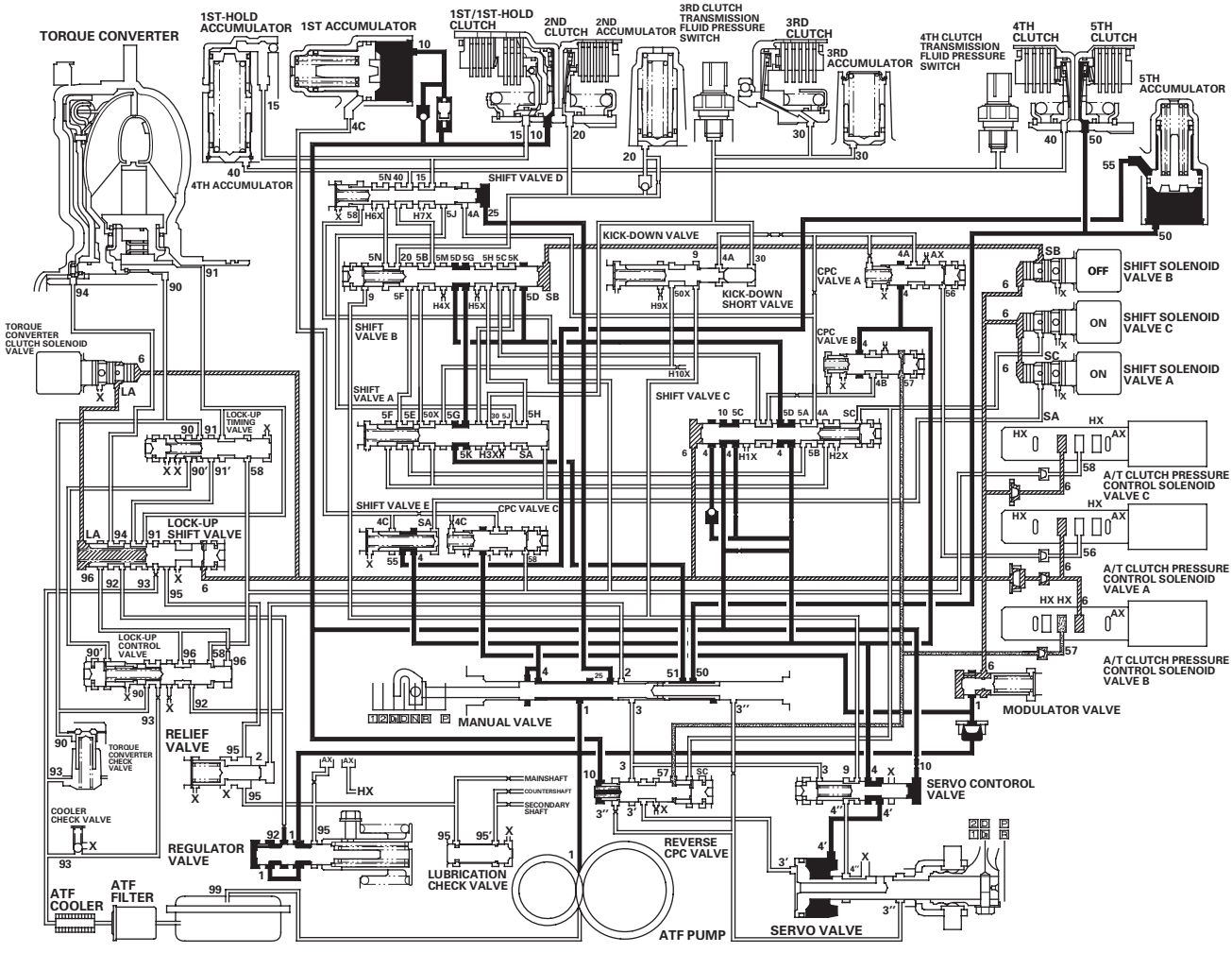
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Driving in 5th gear

The PCM turns shift solenoid valve C ON, and controls A/T clutch pressure control solenoid valve A to release LS A pressure (56) in CPC valve A. Shift solenoid valve A remains ON, and B remains OFF. Releasing LS A pressure (56) in CPC valve A releases CPC A pressure in the 4th clutch pressure circuit. Shift solenoid valve C is turned ON, and SH C pressure (SC) in the right side of shift valve C is released. Then shift valve C is moved to the right side to switch the port of line pressure and CPC pressure. Line pressure (4) from the manual valve becomes 5th clutch pressure (50) at the manual valve, via shift valves C, B, and A, and flows to the 5th clutch. The 5th clutch pressure is changed to line pressure mode by switching the position of shift valve C. The 5th clutch is engaged securely, and the 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



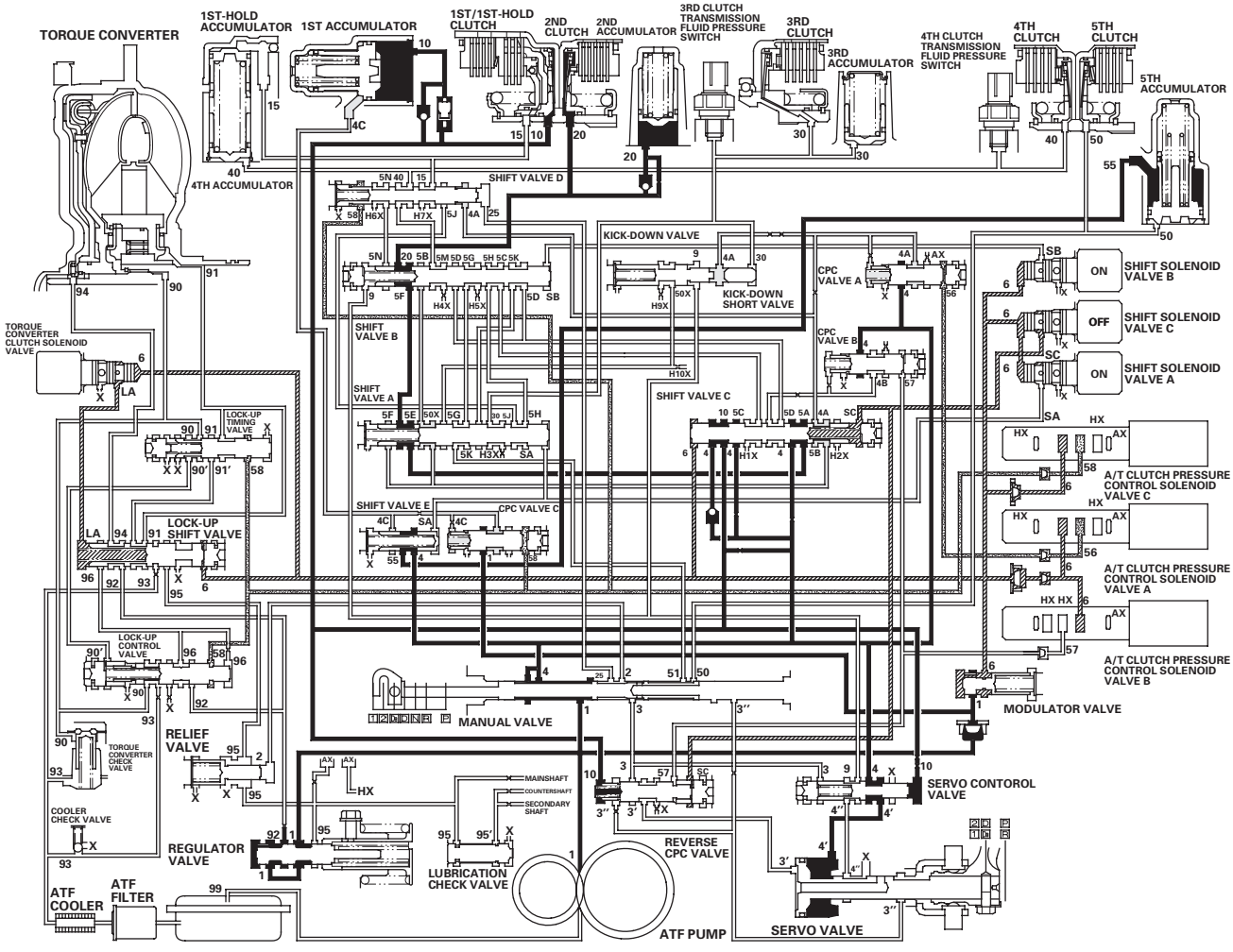
2 Position

The PCM controls the shift solenoid valves and the A/T clutch pressure control solenoid valves. The conditions of the shift solenoid valves and the positions of shift valves are as follows:

- Shift solenoid valve A is turned ON, and shift valve A is in the right side.
- Shift solenoid valve B is turned ON, and shift valve B is in the right side.
- Shift solenoid valve C is turned OFF, and shift valve C is in the left side.

The PCM also controls A/T clutch pressure control solenoid valve A to apply LS A pressure (56) to CPC valve A. Line pressure (4) from the manual valve becomes 2nd clutch pressure (20) at shift valve B, via shift valves C and A. 2nd clutch pressure (20) is applied to the 2nd clutch, and the 2nd clutch is engaged. The 1st clutch is also engaged. No power is transmitted because of the one-way clutch.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

System Description (cont'd)

Hydraulic Flow (cont'd)

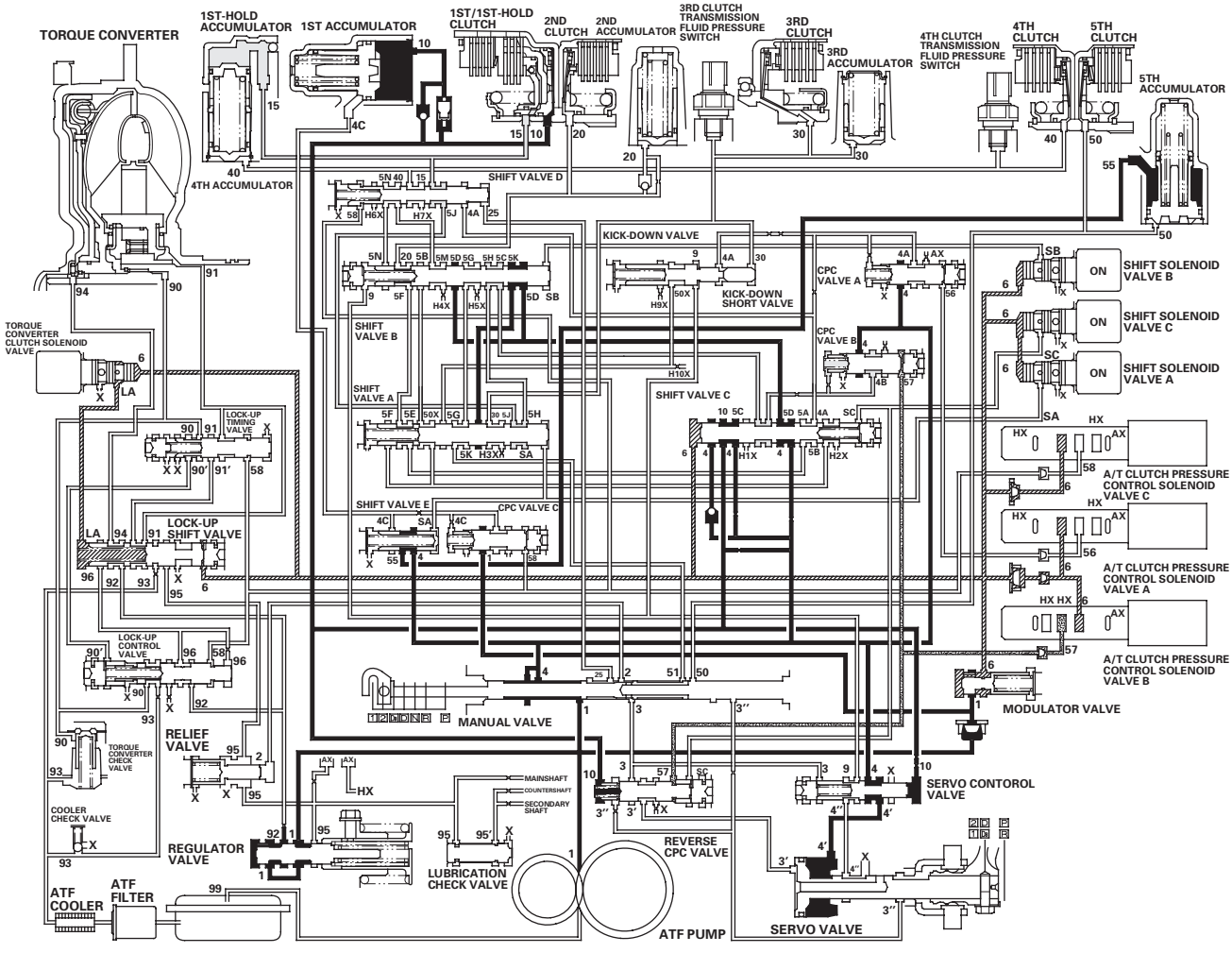
1 Position

The PCM controls the shift solenoid valves and the A/T clutch pressure control solenoid valves. The conditions of the shift solenoid valves and the positions of shift valves are as follows:

- Shift solenoid valve A is turned ON, and shift valve A is in the right side.
- Shift solenoid valve B is turned ON, and shift valve B is in the right side.
- Shift solenoid valve C is turned ON, and shift valve C is moved to the right side by modulator pressure (6).

The PCM also controls A/T clutch pressure control solenoid valve B to apply LS B pressure (57) to CPC valve B. Line pressure (4) from the manual valve becomes 1st clutch pressure (10) at shift valve C. 1st clutch pressure (10) is applied to the 1st clutch, and the 1st clutch is engaged. Line pressure (4) also flows to CPC valve B, and becomes CPC B pressure (4B). CPC B pressure (4B) becomes 1st-hold clutch pressure (15) at shift valve D, via shift valves C, B, and A. 1st-hold clutch pressure (15) is applied to the 1st-hold clutch, and the 1st-hold clutch is engaged.

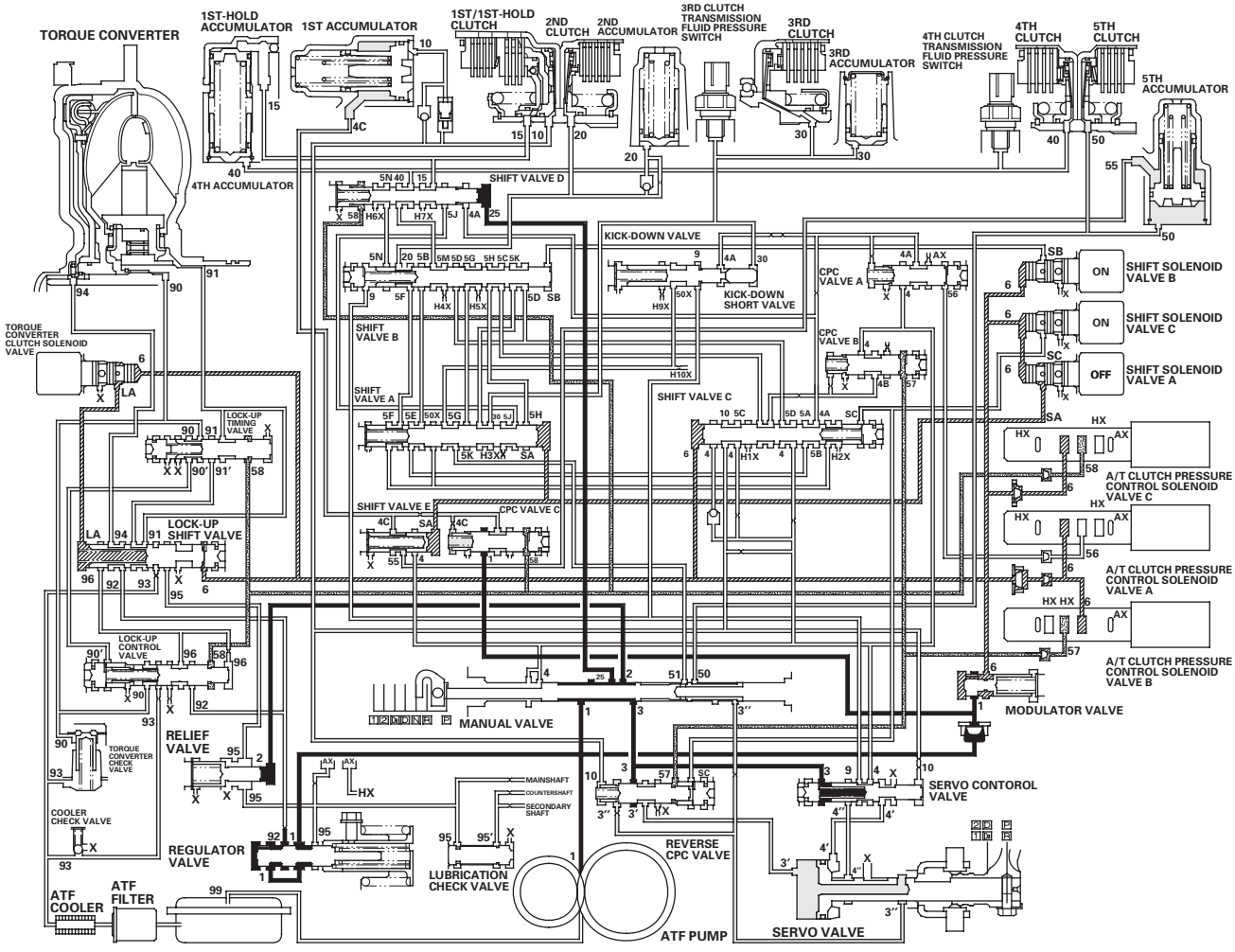
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



R Position: Shifting to the R position from the P or N position

Line pressure (1) becomes line pressure (3) at the manual valve, and flows to the reverse CPC valve. Line pressure (3) is regulated by the reverse CPC valve and becomes line pressure (3′). Line pressure (3′) pushes the servo valve to the reverse position, passes through the servo valve, and flows to the manual valve. Line pressure (3′′) becomes 5th clutch pressure (50). The 5th clutch pressure (50) is applied to the 5th clutch, and 5th clutch is engaged with the reverse CPC pressure mode.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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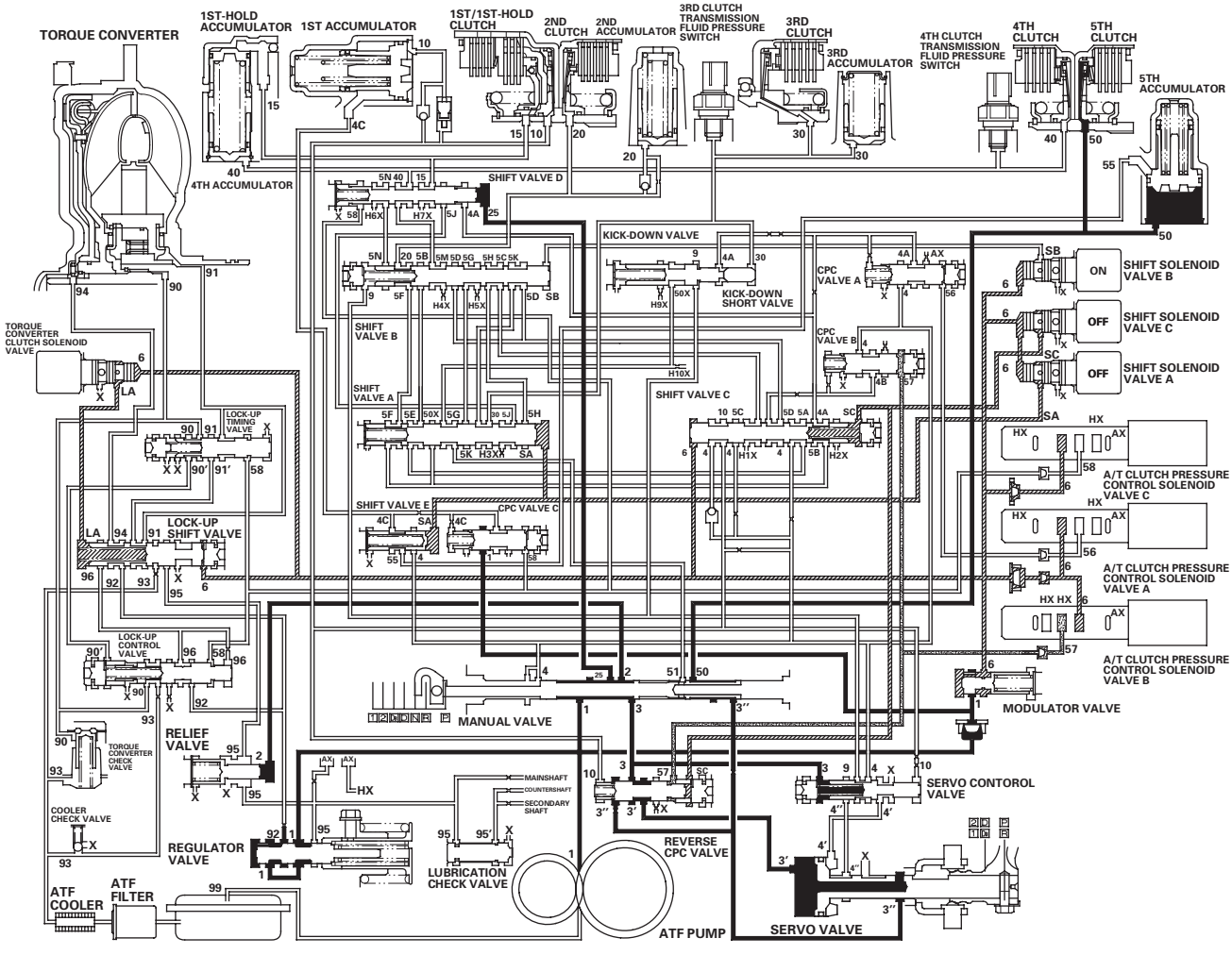
System Description (cont'd)

Hydraulic Flow (cont'd)

R Position: Driving in reverse gear
The PCM turns shift solenoid valve C OFF. Shift solenoid valve A remains OFF and B remains ON. Shift solenoid valve C is turned OFF, and SH C pressure (SC) is applied to the right side of the reverse CPC valve. Then the reverse CPC valve moves to the left side, creating full line pressure. Line pressure to the 5th clutch is the same as when shifting to the R position, and 5th clutch pressure increases. The 5th clutch is engaged with line pressure mode.

Reverse Inhibitor Control
When the R position is selected while the vehicle is moving forward at speeds over 6 mph (10 km/h), the PCM outputs to turn shift solenoid valves A and C ON; and shift solenoid valve B remains ON. The reverse CPC valve is moved to right side and covers the port to stop the line pressure (3') to the servo valve. The line pressure (3') is not applied to the servo valve, and the 5th clutch pressure (50) is not applied to the 5th clutch. As a result, power is not transmitted to the reverse position.

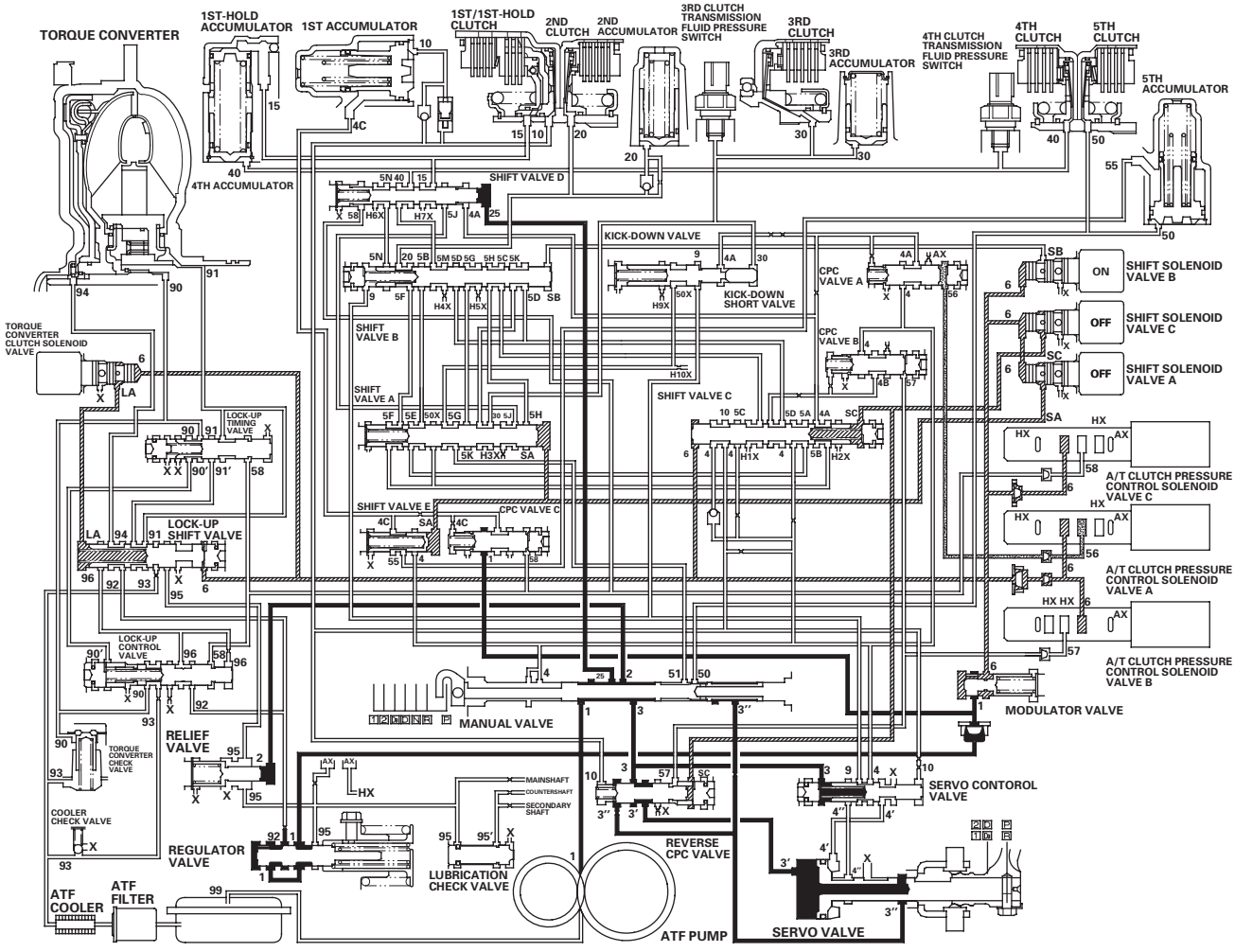
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



P Position

Shift solenoid valve C is turned OFF by the PCM, and SH C pressure (SC) is applied to the right side of the reverse CPC valve. Then the reverse CPC valve is moved to the left side to uncover the port leading line pressure (3) to the servo valve. Line pressure (3′) passes through the servo valve and flows to the manual valve. Line pressure (3′′) is intercepted at the manual valve, and is not applied to the clutches.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

System Description (cont'd)

Lock-up System

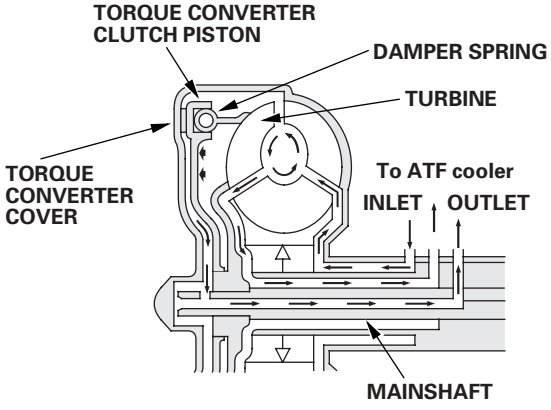
The lock-up mechanism of the torque converter clutch operates in D position (2nd, 3rd, 4th and 5th), and in D3 position (2nd and 3rd). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing and volume of the lock-up mechanism. When the shift solenoid valve E is turned on by the PCM, shift solenoid valve E pressure switches the lock-up shift valve lock-up on and off. The A/T clutch pressure control solenoid valve A and the lock-up control valve control the amount of the lock-up conditions.

Torque Converter Clutch Lock-up ON (Engaging Torque Converter Clutch)
Fluid in the chamber between the torque converter cover and the torque converter clutch piston is drained off, and fluid entered from the chamber between the pump and stator exerts pressure through the torque converter clutch piston against the torque converter cover. The torque converter clutch piston engages with the torque converter cover; the torque converter clutch lock-up is ON, and the mainshaft rotates at the same speed as the engine.

Power flow

The power flows by way of:

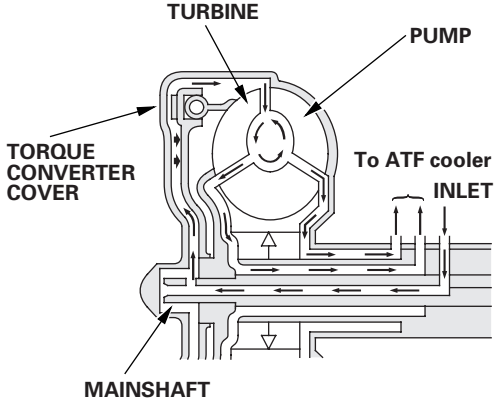
Engine
↓
Drive plate
↓
Torque converter cover
↓
Torque converter clutch piston
↓
Damper spring
↓
Turbine
↓
Mainshaft



Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch)
Fluid entered from the chamber between the torque converter cover and the torque converter clutch piston passes through the torque converter and goes out from the chambers between the turbine and the stator, and between the pump and the stator. As a result, the torque converter clutch piston moves away from the torque converter, and the torque converter clutch lock-up is released; torque converter clutch lock-up is OFF.

Power flow

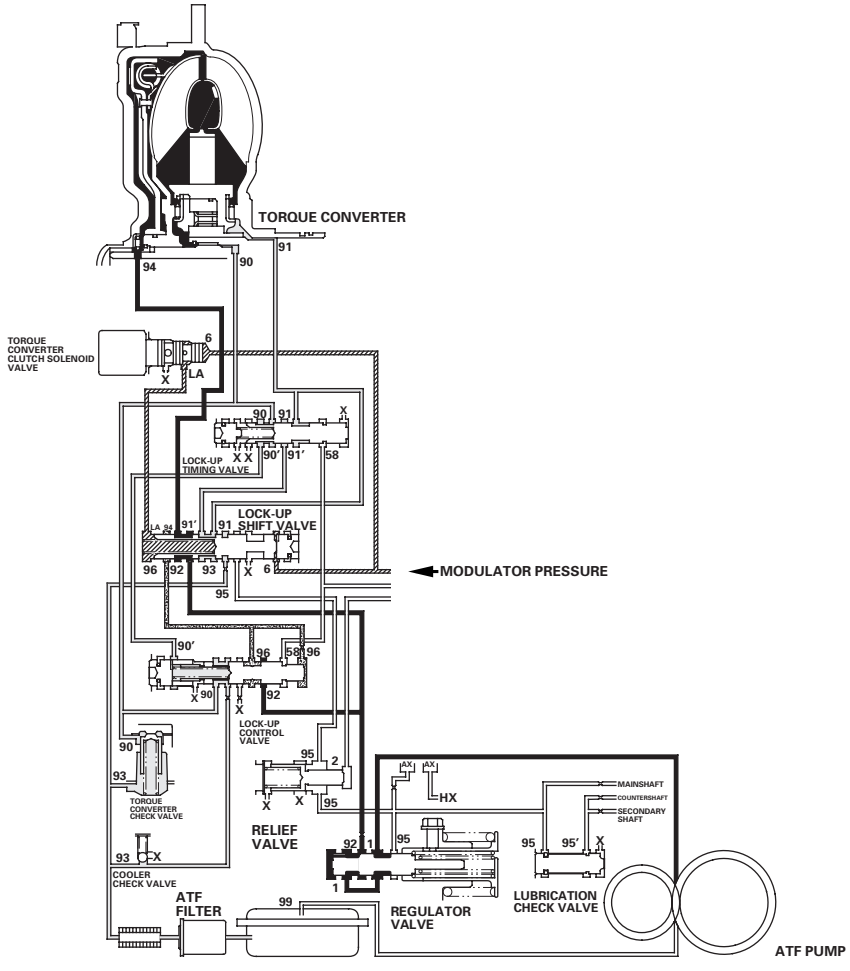
Engine
↓
Drive plate
↓
Torque converter cover
↓
Pump
↓
Turbine
↓
Mainshaft



No Lock-up

The torque converter clutch solenoid valve is turned OFF by the PCM. The lock-up shift valve receives LC pressure (LA) on the left side, and modulator pressure (6) on the right side. The lock-up shift valve is in the right side to uncover the port leading torque converter pressure (92) to the left side of the torque converter. Torque converter pressure (92) becomes torque converter pressure (94), and enters into the left side of the torque converter to disengage the lock-up clutch. The lock-up clutch is OFF.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

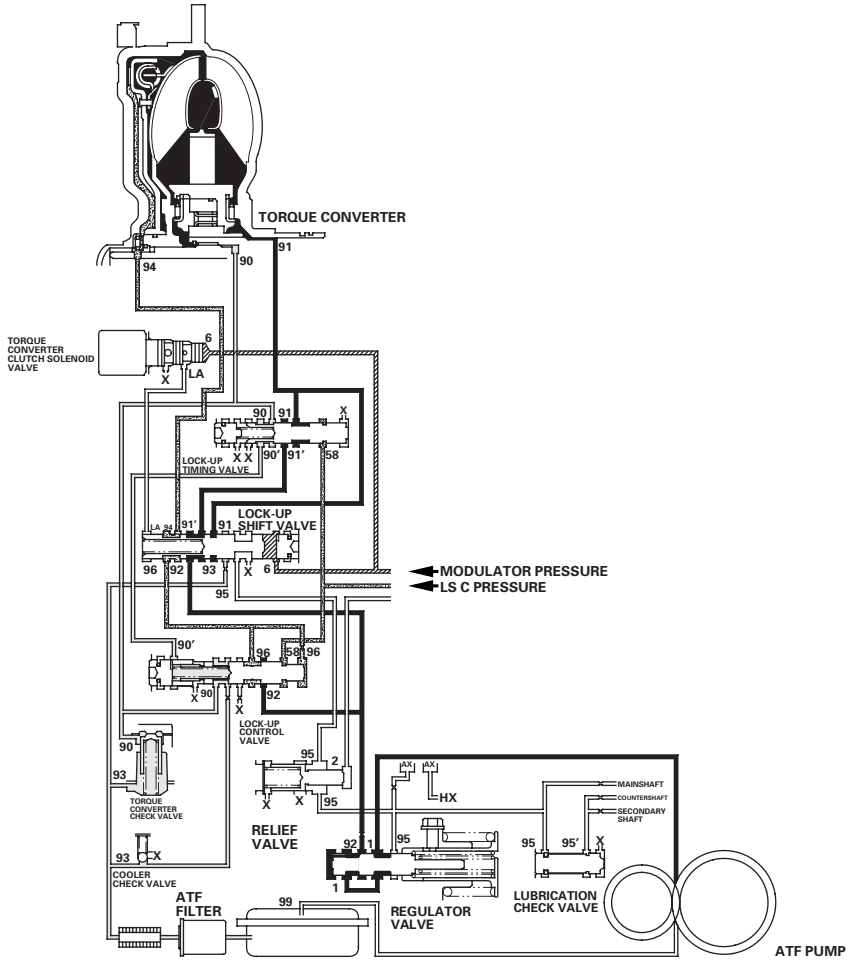
System Description (cont'd)

Lock-up System (cont'd)

Partial Lock-up

As the speed of the vehicle reaches the prescribed value, the torque converter clutch solenoid valve is turned ON by the PCM to release LC pressure (LA) in the left cavity of the lock-up shift valve. Modulator pressure (6) is applied to the right side of the lock-up shift valve, then the lock-up shift valve is moved in the left side to switch the port leading torque converter pressure to the right side of the torque converter. Torque converter pressure (91) is applied to the right side of the torque converter to engage the torque converter clutch. The PCM also controls A/T clutch pressure control solenoid valve C, and LS C pressure (58) is applied to the lock-up control valve and the lock-up timing valve. When LS C pressure (58) is lower, torque converter pressure (91) from the lock-up timing valve is lower. The torque converter clutch is engaged partially. LS C pressure (58) increases, and the lock-up timing valve is moved to the left side to uncover the port leading torque converter pressure to high. The torque converter clutch is then engaged securely. Under this condition, the torque converter clutch is engaged by pressure from the right side of the torque converter; this lock-up condition is in partial lock-up.

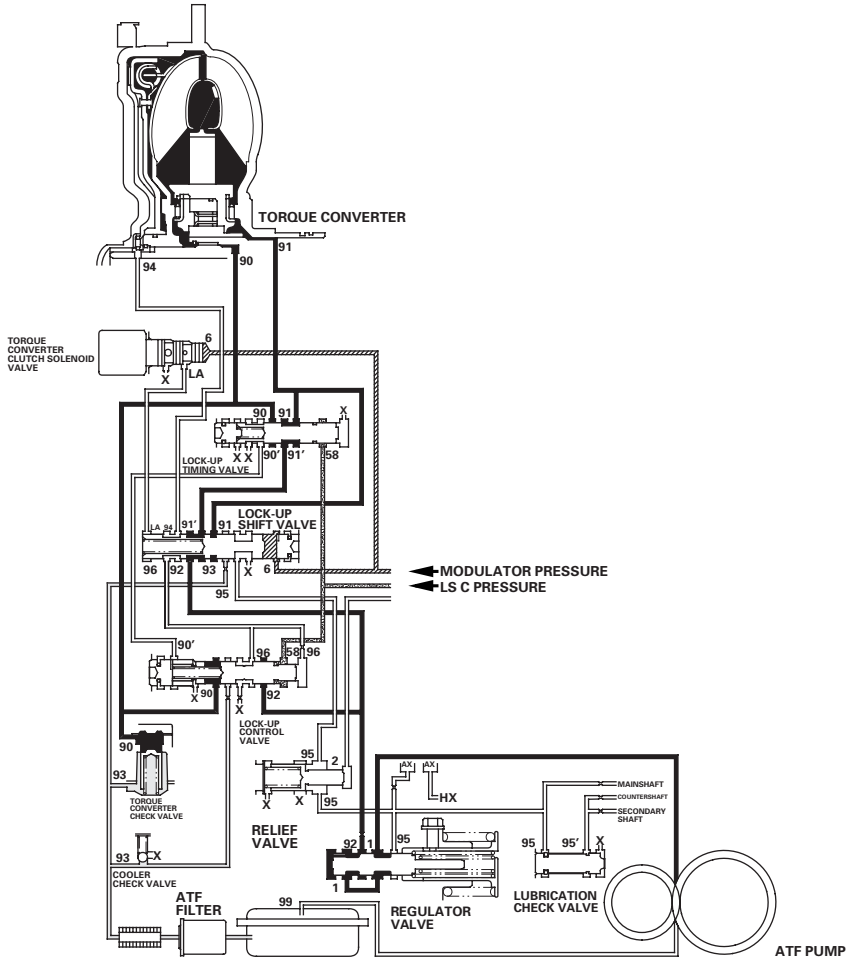
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



Full Lock-up

When the vehicle speed increases, the PCM sends a signal to the A/T clutch pressure control solenoid valve C to increase LS C pressure (58). The LS C pressure (58) is applied to the lock-up control valve and the lock-up timing valve, and moves them to the left side. Under this condition, torque converter back pressure (F2) is released fully, causing the torque converter clutch to be fully engaged.

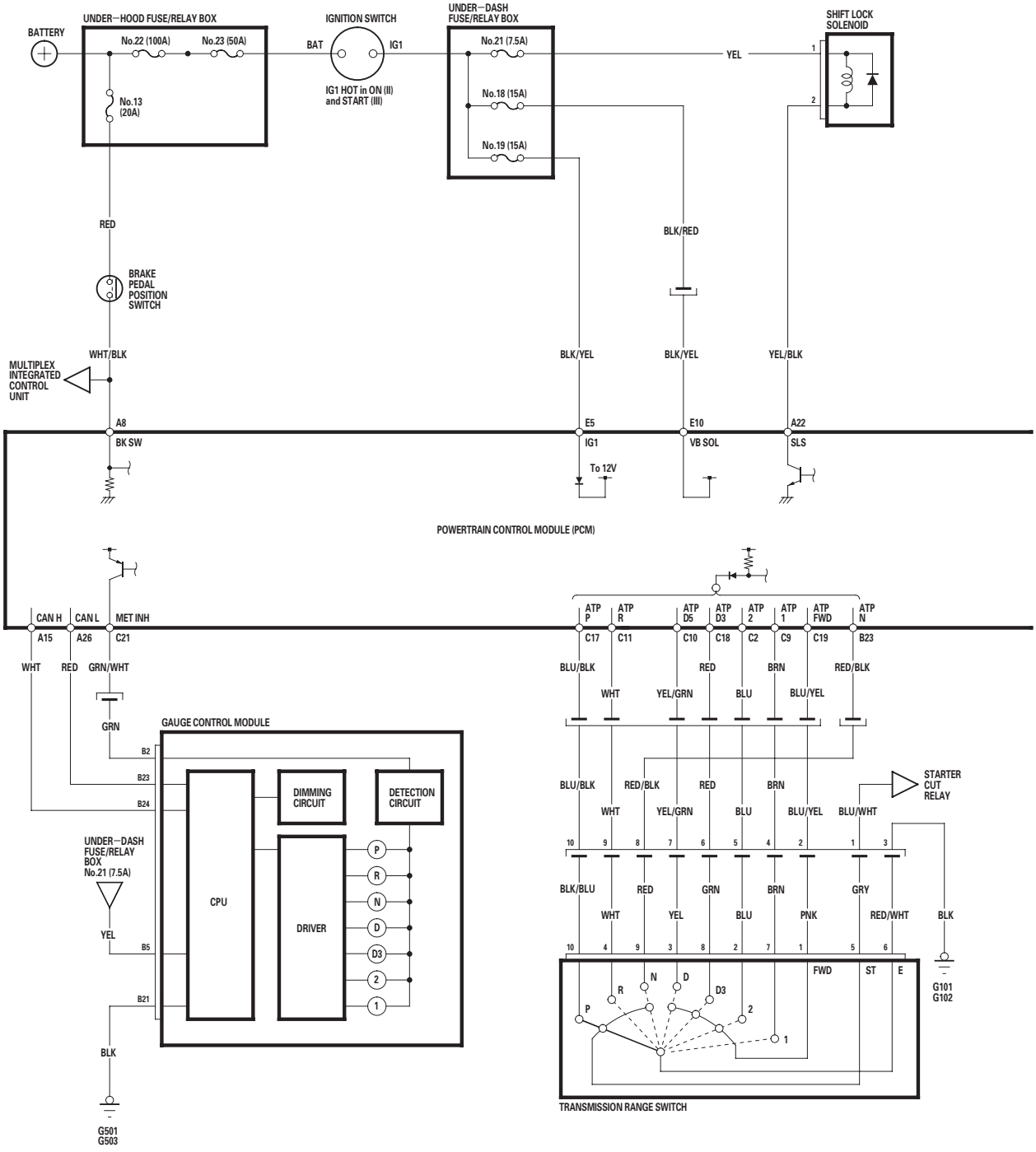
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.

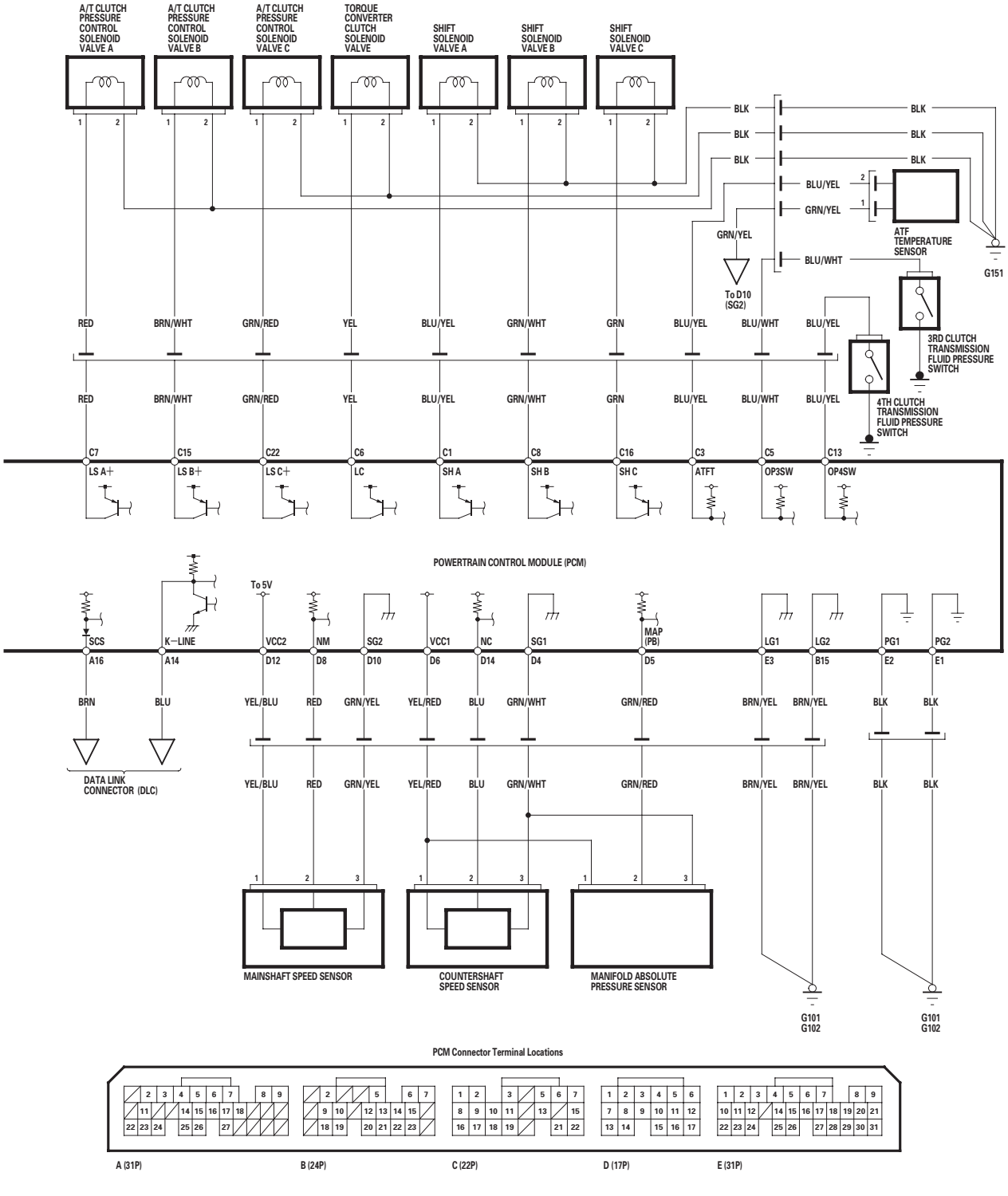


(cont'd)

System Description (cont'd)

Circuit Diagram-PCM A/T Control System




A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A
A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B
A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C
TORQUE CONVERTER CLUTCH SOLENOID VALVE
SHIFT SOLENOID VALVE A
SHIFT SOLENOID VALVE B
SHIFT SOLENOID VALVE C
BLK
BLU/YEL
GRN/YEL
BLU/WHT
ATF TEMPERATURE SENSOR
G151
To D10 (SG2)
3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH
4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH
RED
BRN/WHT
GRN/RED
YEL
BLU/YEL
GRN/WHT
GRN
C7
C15
C22
C6
C1
C8
C16
C3
C5
C13
LS A+
LS B+
LS C+
LC
SH A
SH B
SH C
ATFT
OP3SW
OP4SW
POWERTRAIN CONTROL MODULE (PCM)
To 5V
SCS
K–LINE
VCC2
NM
SG2
VCC1
NC
SG1
MAP (PB)
LG1
LG2
PG1
PG2
A16
A14
D12
D8
D10
D6
D14
D4
D5
E3
B15
E2
E1
BRN
BLU
YEL/BLU
RED
GRN/YEL
YEL/RED
BLU
GRN/WHT
GRN/RED
BRN/YEL
BLK
DATA LINK CONNECTOR (DLC)
MAINSHAFT SPEED SENSOR
COUNTERSHAFT SPEED SENSOR
MANIFOLD ABSOLUTE PRESSURE SENSOR
G101
G102
PCM Connector Terminal Locations
A (31P)
B (24P)
C (22P)
D (17P)
E (31P)

DTC Troubleshooting

DTC P0705: Short in Transmission Range Switch Circuit (Multiple Shift-position Input)

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Move the shift lever to each position slowly, and check the OBD STATUS in DTCs MENU for a pass/fail test of code P0705.

   Did the result fail?

   YES — Go to step 3.

   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 1 and recheck. ■

3. Inspect the transmission range switch (see page 14-500).

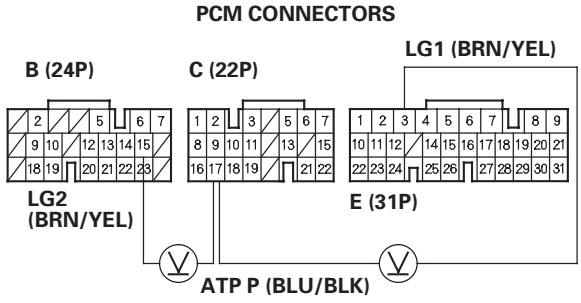
   Is the switch OK?

   YES — Go to step 4.

   NO — Replace the transmission range switch. After replacing the transmission range switch, go to step 20, and check that the repair has been completed.

4. Shift to all positions other than P.

5. Measure the voltage between PCM connector terminals C17 and B15 or E3.



Wire side of female terminals

Is there battery voltage?

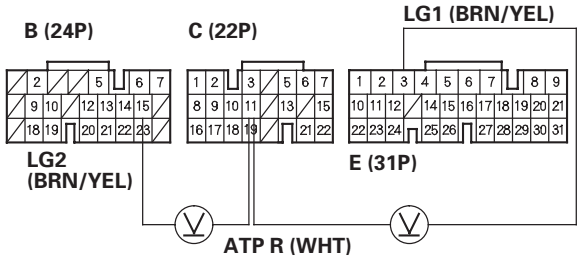
YES — Go to step 6.

NO — Check for a short in the wire between PCM connector terminal D6 and the transmission range switch, and check for an open in the wires between ground G101, G02 and PCM connector terminals B 15 and E3. If the wires are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

6. Shift to all positions other than R.

7. Measure the voltage between PCM connector terminals C11 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

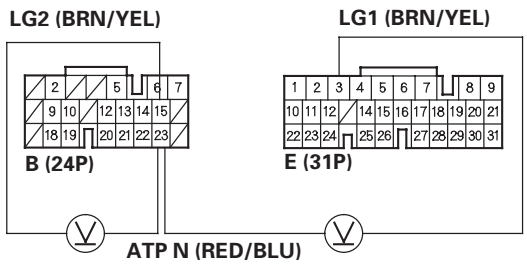
YES — Go to step 8.

NO — Check for a short in the wire between PCM connector terminal C11 and the transmission range switch. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

8. Shift to all positions other than N.

9. Measure the voltage between PCM connector terminals B23 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES — Go to step 10.

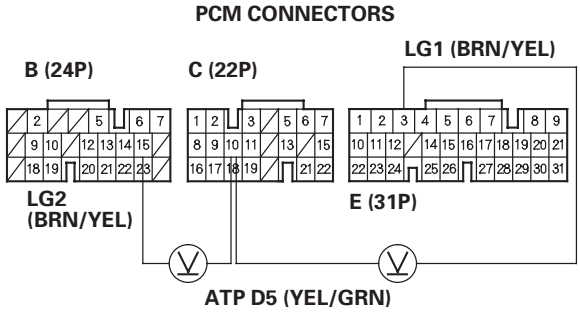
NO — Check for a short in the wire between PCM connector terminal B23 and the transmission range switch. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

DTC Troubleshooting (cont'd)

10. Shift to all positions other than D.

11. Measure the voltage between PCM connector terminals C10 and B15 or E3.



Wire side of female terminals

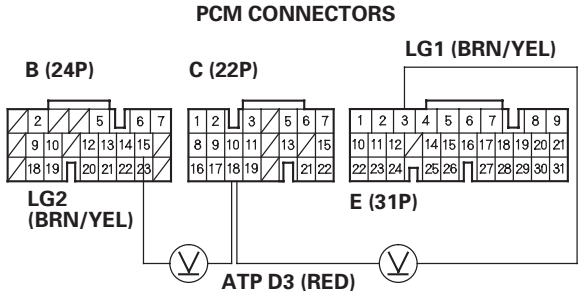
Is there battery voltage?

YES — Go to step 12.

NO — Check for a short in the wire between PCM connector terminal C10 and the transmission range switch. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

12. Shift to all positions other than D_3.

13. Measure the voltage between PCM connector terminals C18 and B15 or E3.



Wire side of female terminals

Is there battery voltage?

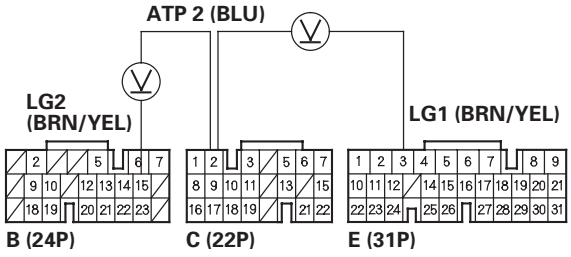
YES — Go to step 14.

NO — Check for a short in the wire between PCM connector terminal C18 and the transmission range switch. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

14. Shift to all positions other than 2.

15. Measure the voltage between PCM connector terminals C2 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

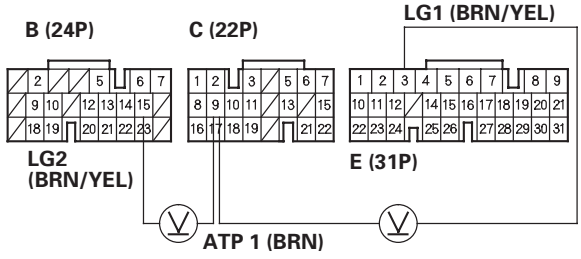
YES — Go to step 16.

NO — Check for a short in the wire between PCM connector terminal C2 and the transmission range switch. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

16. Shift to all positions other than 1.

17. Measure the voltage between PCM connector terminals C9 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES — Go to step 18.

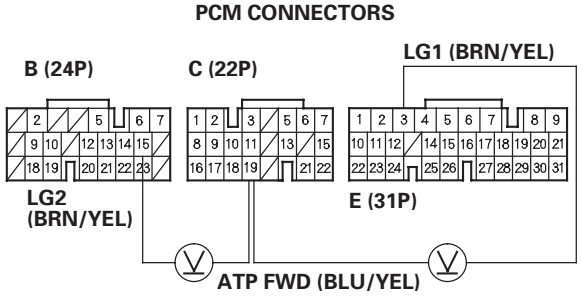
NO — Check for a short in the wire between PCM connector terminal C9 and the transmission range switch. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

DTC Troubleshooting (cont'd)

18. Shift to all positions other than D, D3, and 2.

19. Measure the voltage between PCM connector terminals C19 and B15 or E3.



Wire side of female terminals

Is there battery voltage?

YES—The PCM has failed; replace it. ■

NO—Check for a short in the wire between PCM connector terminal C19 and the transmission range switch. If the wire is OK, the PCM has failed, replace it. ■

20. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

21. Move the shift lever to each position slowly.

22. Check the OBD STSTUS in DTCs MENU for a pass/fail test of code P0705.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

DTC P0706: Open in Transmission Range Switch Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Inspect the transmission range switch (see page 14-500).

   Is the switch OK?

   YES—Inspect the end of the selector control shaft (see step 6 on page 14-501), and go to step 2.

   NO—Replace the transmission range switch. After replacing the transmission range switch, go to step 16, and check that the repair has been completed.

2. Install the transmission range switch correctly, and adjust the shift cable (see page 14-494).

3. Clear the DTC in CLEAR MENU.

4. Shift the shift lever into the D position, and verify the ATP FWD and ATP D inputs with the PGM Tester or HDS in the A/T data list.

   Is ATP FWD and ATP D ON?

   YES—Go to step 5.

   NO—Go to step 11.

5. Shift to the D3 position, and verify the ATP FWD and ATP D inputs with the PGM Tester or HDS in the A/T data list.

   Is ATP FWD and ATP D3 ON?

   YES—Go to step 6.

   NO—Go to step 11.

6. Shift to the 2 position, and verify the ATP FWD and ATP 2 inputs with the PGM Tester or HDS in the A/T data list.

   Is ATP FWD and ATP 2 ON?

   YES—Go to step 7.

   NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

7. Clear the DTC in CLEAR MENU, and turn the ignition switch OFF.

8. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.

9. Start the engine, drive the vehicle in the D position until the vehicle speed reaches 35 mph (56 km/h), then slow down and stop the wheels.

10. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0706.

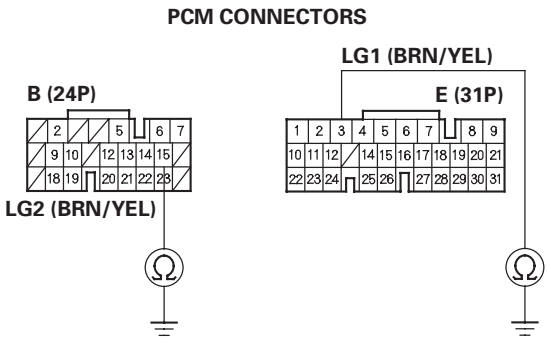
    Did the result fail?

    YES — Go to step 11.

    NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 9 and recheck. ■

11. Turn the ignition switch OFF.

12. Check for continuity between PCM connector terminals B15 and body ground, and between E3 and body ground.



Wire side of female terminals

Is there continuity?

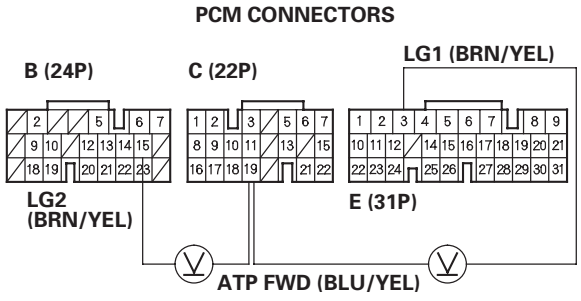
YES — Go to step 13.

NO — Repair open in the wire between PCM connector terminal B15 and ground (G101, G102), and between E3 and ground (G101, G102), and repair poor ground (G101, G102). ■

13. Turn the ignition switch ON (II).

14. Shift the shift lever into the D, D3, or 2 position.

15. Measure the voltage between PCM connector terminals C19 and B15 or E3.



Wire side of female terminals

Is there voltage?

YES—Repair open in the wire between PCM connector terminal C19, C10, C18, C2 and the transmission range switch or between the transmission range switch connector terminal No. 6 and ground (G101, G102). ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

16. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

17. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

18. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0706.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

DTC Troubleshooting (cont'd)

DTC P0711: Problem in ATF Temperature Sensor Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check the ATF temperature with the Honda PGM Tester or HDS in the A/T data list.

   Does the ATF temperature exceed the outside-air temperature?

   YES—Record the ATF temperature. Leave the engine off for more than 30 minutes, and go to step 2.

   NO—Record the ATF temperature. Test the stall speed RPM (see page 14-451) three times. Go to step 2 after stall speed testing.

2. Check the ATF temperature with the Honda PGM Tester or HDS.

   Did the ATF temperature change?

   YES—Leave the engine off for more than 30 minutes, and go to step 3.

   NO—Faulty the ATF temperature sensor, replace it. After replacing the sensor, go to step 5, and check that the repair has been completed.

3. Check the ECT SENSOR with the Honda PGM Tester or HDS.

   Is the ECT SENSOR equal to the outside-air temperature?

   YES—Go to step 4.

   NO—Leave the engine off for more than 30 minutes, and return to step 3 and recheck. ■

4. Check the ATF temperature with the Honda PGM Tester or HDS.

   Is the ATF temperature almost equal to ECT SENSOR?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Faulty ATF temperature sensor, replace it. After replacing the sensor, go to step 5, and check that the repair has been completed.

5. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

6. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0711.

   Did the result pass?

   YES—The problem has been corrected. ■

   NO—Return to step 1 and recheck. ■

DTC P0712: Short in ATF Temperature Sensor Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check ATF temperature sensor voltage with the Honda PGM Tester or HDS in the A/T data list.

   Is ATF temperature sensor voltage 0.16 V or less?

   YES — Go to step 2.

   NO — Intermittent failure, the system is OK at this time. ■

2. Disconnect the ATF temperature sensor connector at the transmission end cover.

3. Check ATF temperature sensor voltage with the Honda PGM Tester or HDS.

   Is ATF temperature sensor voltage 0.16 V or less?

   YES — Go to step 4.

   NO — Faulty ATF temperature sensor, replace it. After replacing the sensor, go to step 8, and check that the repair has been completed.

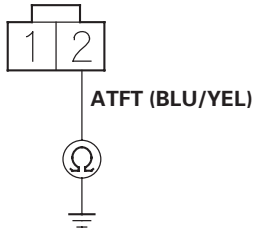
4. Turn the ignition switch OFF.

5. Jump the SCS line with the Honda PGM Tester or HDS.

6. Disconnect PCM connector C (22P).

7. Check for continuity between the No. 2 terminal of the ATF temperature sensor connector and body ground.

   ATF TEMPERATURE SENSOR CONNECTOR



   Wire side of female terminals

   Is there continuity?

   YES — Repair short to ground between PCM connector terminal C3 and the ATF temperature sensor connector No.2 terminal. After repairing the wire, go to step 8, and check that the repair has been completed.

   NO — Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

8. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

9. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

10. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0712.

    Did the result pass?

    YES — The problem has been corrected. ■

    NO — Return to step 1 and recheck. ■

DTC Troubleshooting (cont'd)

DTC P0713: Open in ATF Temperature Sensor Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check ATF temperature sensor voltage with the Honda PGM Tester or HDS in the A/T data list.

   Does ATF temperature sensor voltage exceed 4.84 V?

   YES — Go to step 2.

   NO — Intermittent failure, the system is OK at this time. ■

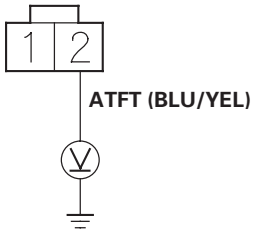
2. Turn the ignition switch OFF.

3. Disconnect the ATF temperature sensor connector at the transmission end cover.

4. Turn the ignition switch ON (II).

5. Measure the voltage between the No. 2 terminal of the ATF temperature sensor connector and body ground.

   ATF TEMPERATURE SENSOR CONNECTOR



   Wire side of female terminals

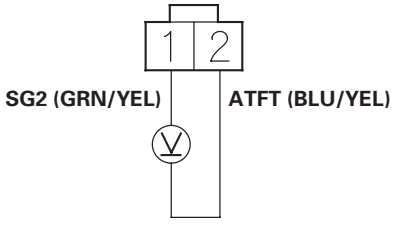
   Is there about 5 V?

   YES — Go to step 6.

   NO — Go to step 10.

6. Measure the voltage between the terminals of the ATF temperature sensor connector.

   ATF TEMPERATURE SENSOR CONNECTOR



   Wire side of female terminals

   Is there about 5 V?

   YES — Replace the ATF temperature sensor. After replacing the sensor, go to step 7, and check that the repair has been completed.

   NO — Repair open in the wire between PCM connector terminal D10 and the ATF temperature sensor connector. ■

7. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

8. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

9. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0713.

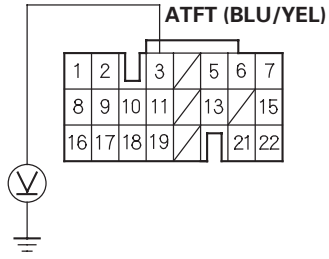
   Did the result pass?

   YES — The problem has been corrected. ■

   NO — Return to step 1 and recheck. ■

10. Measure the voltage between PCM connector terminal C3 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between PCM connector terminal C3 and the ATF temperature sensor connector. ■

NO—Check for loose or poor connections at PCM connector terminal C3. If the connections and OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

DTC Troubleshooting (cont'd)

DTC P0716: Problem in Mainshaft Speed Sensor Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

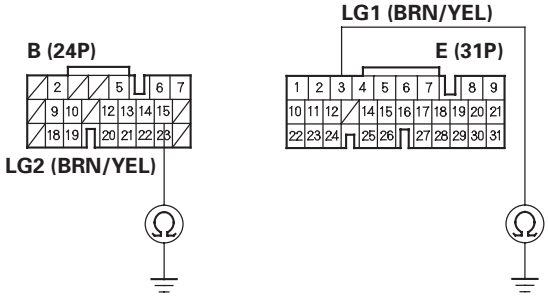
1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
2. Check for proper mainshaft speed sensor installation (see page 14-461).
3. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
4. Start the engine, drive the vehicle in the D position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0716.

   Did the result fail?

   YES — Go to step 6.

   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 4 and recheck. ■
6. Turn the ignition switch OFF.
7. Jump the SCS line with the Honda PGM Tester or HDS.
8. Disconnect PCM connectors B (24P) and E (31P), and mainshaft speed sensor connector.
9. Check for continuity between PCM connector terminals B15 and body ground, and between E3 and body ground.

PCM CONNECTORS



Wire side of female terminals

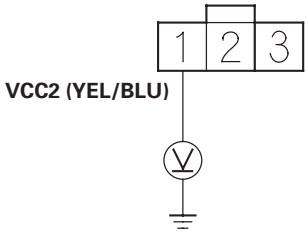
Is there continuity?

YES — Go to step 10.

NO — Repair open in the wires between PCM connector terminals B15 and ground (G101, G102), between E3 and ground (G101, G102), and repair poor ground (G101, G102). ■

10. Connect PCM connectors B (24P) and E (31P).
11. Turn the ignition switch ON (II).
12. Measure the voltage between No. 1 terminal of the mainshaft speed sensor connector and body ground.

MAINSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES — Go to step 13.

NO — Go to step 28.

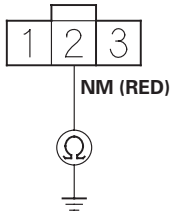
13. Turn the ignition switch OFF.

14. Jump the SCS line with Honda PGM Tester or HDS.

15. Disconnect PCM connector D (17P).

16. Check for continuity between the No. 2 terminal of the mainshaft speed sensor connector and body ground.

MAINSHAFT SPEED SENSOR CONNECTOR



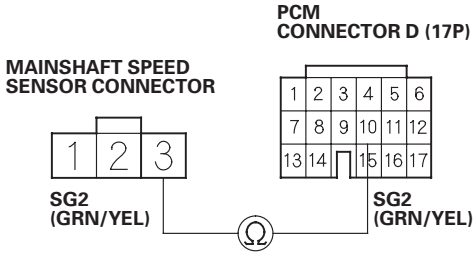
Wire side of female terminals

Is there continuity?

YES — Repair short to ground in the wire between PCM connector terminal D8 and mainshaft speed sensor connector. ■

NO — Go to step 17.

17. Check for continuity between the No. 3 terminal of the mainshaft speed sensor connector and PCM connector terminal D10.



Wire side of female terminals

Is there continuity?

YES — Go to step 18.

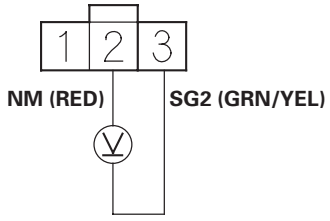
NO — Repair open in the wire between the mainshaft speed sensor connector and PCM connector terminal D10. ■

18. Reconnect PCM connector D (17P).

19. Turn the ignition switch ON (II).

20. Measure the voltage between the No. 2 and No. 3 terminals of the mainshaft speed sensor connector.

MAINSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

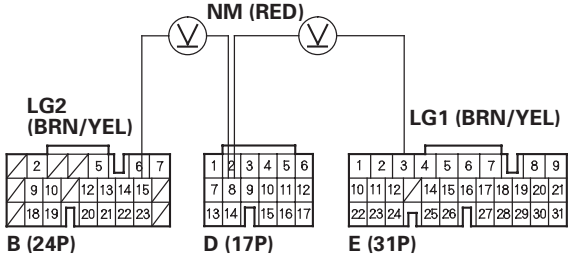
YES — Go to step 21.

NO — Go to step 33.

21. Connect the mainshaft speed sensor connector.

22. Measure the voltage between PCM connector terminals D8 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is the voltage 0 V or about 5 V?

YES — Go to step 23.

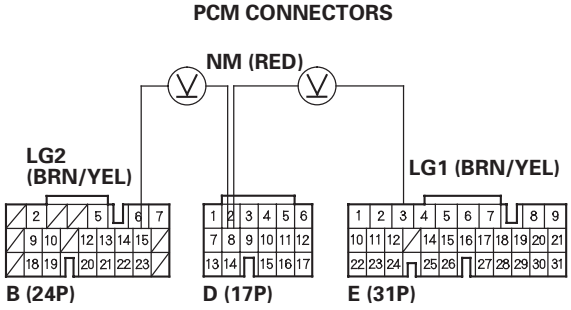
NO — Replace the mainshaft speed sensor. After replacing the sensor, go to step 25, and check that the repair has been completed.

(cont'd)

DTC Troubleshooting (cont'd)

23. Shift to the P position. Start the engine, and let it idle.

24. With the engine idling, measure the voltage between PCM connector terminals D8 and B15 or E3.



Wire side of female terminals

Is there 1.5 V — 3.5 V?

YES — Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO — Replace the mainshaft speed sensor. After replacing the sensor, go to step 25, and check that the repair has been completed.

25. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

26. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

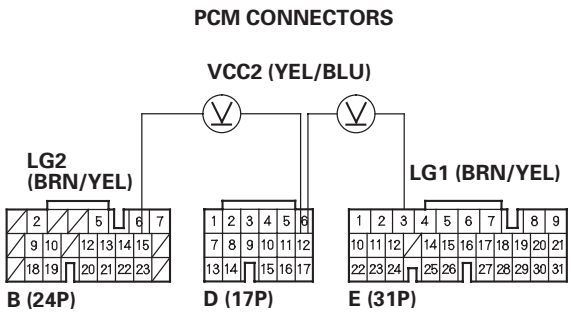
27. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0716.

Did the result pass?

YES — The problem has been corrected. ■

NO — Return to step 1 and recheck. ■

28. Measure the voltage between PCM connector terminals D12 and B15 or E3.



Wire side of female terminals

Is there 4.75 V — 5.25 V?

YES — Repair open in the wire between PCM connector terminal D12 and the mainshaft speed sensor connector. ■

NO — Go to step 29.

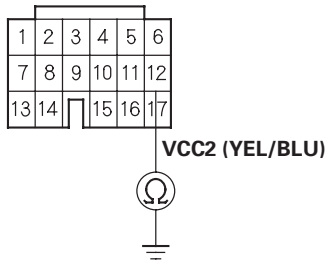
29. Turn the ignition switch OFF.

30. Jump the SCS line with the Honda PGM Tester or HDS.

31. Disconnect PCM connector D (17P).

32. Check for continuity between PCM connector terminal D12 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

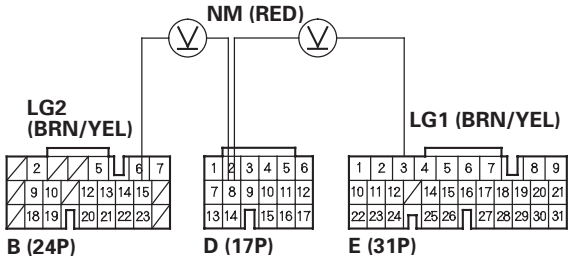
Is there continuity?

YES—Repair short to ground in the wire between PCM connector terminal D12 and the mainshaft speed sensor connector. ■

NO—Check for loose or poor connections at PCM connector terminal D12. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

33. Measure the voltage between PCM connector terminals D8 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between PCM connector terminal D8 and the mainshaft speed sensor connector. ■

NO—Check for loose or poor connections at PCM connector terminal D8. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

DTC Troubleshooting (cont'd)

DTC P0717: Problem in Mainshaft Speed Sensor Circuit (No Signal Input)

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

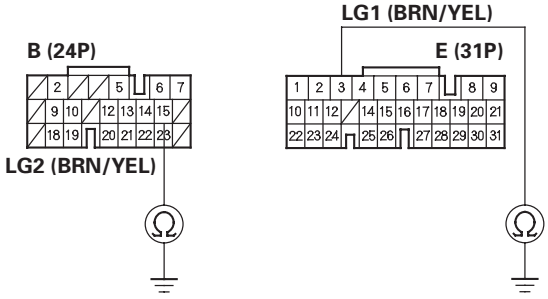
1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
2. Check for proper mainshaft speed sensor installation (see page 14-461).
3. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
4. Start the engine, drive the vehicle in the D position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds. Slow down and stop the wheels.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0717.

   Did the result fail?

   YES – Go to step 6.

   NO – Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 4 and recheck. ■
6. Turn the ignition switch OFF.
7. Jump the SCS line with the Honda PGM Tester or HDS.
8. Disconnect PCM connectors B (24P) and E (31P), and mainshaft speed sensor connector.
9. Check for continuity between PCM connector terminals B15 and body ground, and between E3 and body ground.

PCM CONNECTORS



Wire side of female terminals

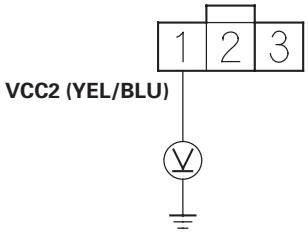
Is there continuity?

YES – Go to step 10.

NO – Repair open in the wires between PCM connector terminals B15 and ground (G101, G102), between E3 and ground (G101, G102), and repair poor ground (G101, G102). ■

10. Connect PCM connectors B (24P) and E (31P).
11. Turn the ignition switch ON (II).
12. Measure the voltage between No. 1 terminal of the mainshaft speed sensor connector and body ground.

MAINSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES – Go to step 13.

NO – Go to step 27.

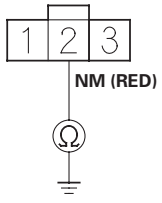
13. Turn the ignition switch OFF.

14. Jump the SCS line with the Honda PGM Tester or HDS.

15. Disconnect PCM connector D (17P).

16. Check for continuity between the No. 2 terminal of the mainshaft speed sensor connector and body ground.

MAINSHAFT SPEED SENSOR CONNECTOR



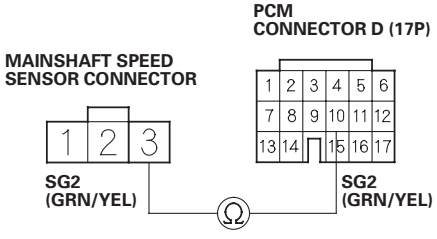
Wire side of female terminals

Is there continuity?

YES — Repair short to ground in the wire between PCM connector terminal D8 and mainshaft speed sensor connector. ■

NO — Go to step 17.

17. Check for continuity between the No. 3 terminal of the mainshaft speed sensor connector and PCM connector terminal D10.



Wire side of female terminals

Is there continuity?

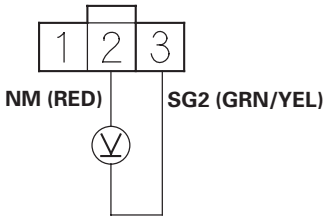
YES — Go to step 18.

NO — Repair open in the wire between the mainshaft speed sensor connector and PCM connector terminal D10. ■

18. Reconnect PCM connector D (17P), then turn the ignition switch ON (II).

19. Measure the voltage between the No. 2 and No. 3 terminals of the mainshaft speed sensor connector.

MAINSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

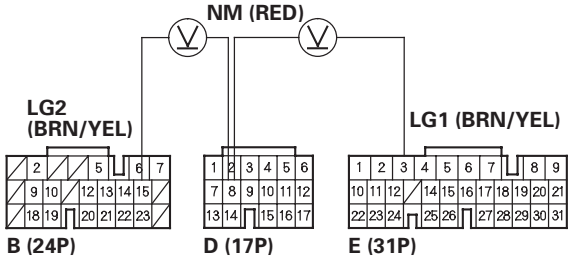
YES — Go to step 20.

NO — Go to step 32.

20. Connect the mainshaft speed sensor connector.

21. Measure the voltage between PCM connector terminals D8 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is the voltage 0 V or about 5 V?

YES — Go to step 22.

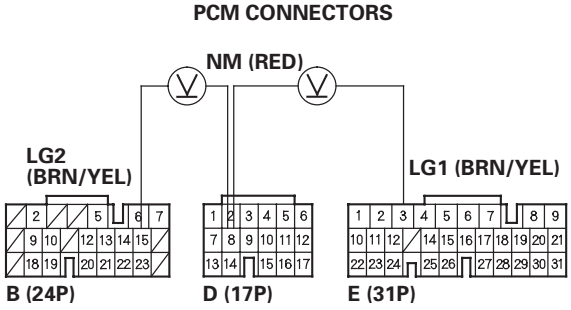
NO — Replace the mainshaft speed sensor. After replacing the sensor, go to step 24, and check that the repair has been completed.

(cont'd)

DTC Troubleshooting (cont'd)

22. Shift to the P position. Start the engine, and let it idle.

23. With the engine idling, measure the voltage between PCM connector terminals D8 and B15 or E3.



Wire side of female terminals

Is there 1.5 V — 3.5 V?

YES — Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO — Replace the mainshaft speed sensor. After replacing the sensor, go to step 24, and check that the repair has been completed.

24. Clear the DTC in CLEAR MENU with Honda PGM Tester or HDS.

25. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

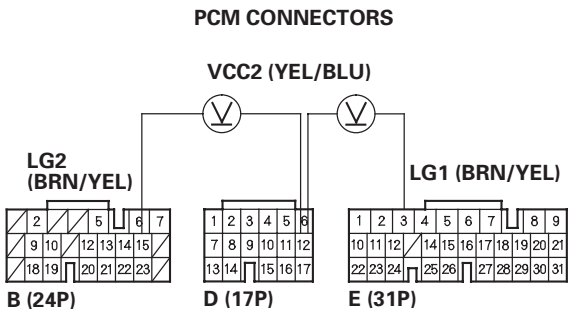
26. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0717.

Did the result pass?

YES — The problem has been corrected. ■

NO — Return to step 1 and recheck. ■

27. Measure the voltage between PCM connector terminals D12 and B15 or E3.



Wire side of female terminals

Is there 4.75 V — 5.25 V?

YES — Repair open in the wire between PCM connector terminal D12 and the mainshaft speed sensor connector. ■

NO — Go to step 28.

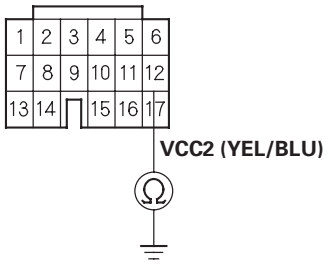
28. Turn the ignition switch OFF.

29. Jump the SCS line with the Honda PGM Tester or HDS.

30. Disconnect PCM connector D (17P).

31. Check for continuity between PCM connector terminal D12 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

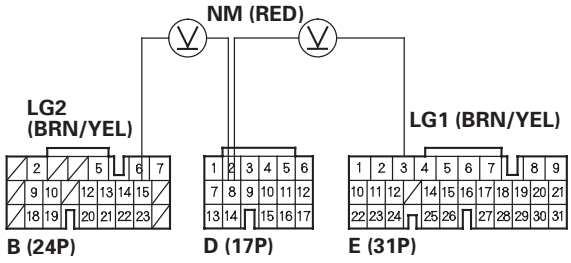
Is there continuity?

YES—Repair short to ground in the wire between PCM connector terminal D12 and the mainshaft speed sensor connector. ■

NO—Check for loose or poor connections at PCM connector terminal D12. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

32. Measure the voltage between PCM connector terminals D8 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between PCM connector terminal D8 and the mainshaft speed sensor connector. ■

NO—Check for loose or poor connections at PCM connector terminal D8. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

DTC Troubleshooting (cont'd)

DTC P0718: Mainshaft Speed Sensor Intermittent Failure

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
2. Test-drive the vehicle for 10 minutes under the same conditions as those indicated by the freeze data, and turn the ignition switch OFF. Turn the switch ON (II), and check the OBD STATUS in DTCs MENU for a pass/fail test of code P0718.

   Did the result fail?

   YES — Go to step 3.

   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 2 and recheck. ■
3. Turn the ignition switch OFF.
4. Disconnect the mainshaft speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

   Are the connector terminals OK?

   YES — Go to step 5.

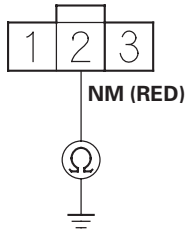
   NO — Repair the connector terminals, then go to step 5.
5. Connect the mainshaft speed sensor connector.
6. Test-drive the vehicle for several minutes, and check the OBD STATUS in DTCs MENU for a pass/fail test of code P0718.

   Did the result fail?

   YES — Go to step 7.

   NO — The problem has been corrected. If the tester tells you NOT COMPLETE, return to step 6 and recheck. ■
7. Turn the ignition switch OFF.
8. Jump the SCS line with the Honda PGM Tester or HDS.
9. Disconnect PCM connector D (17P).
10. Disconnect the mainshaft speed sensor connector.
11. Check for continuity between the No. 2 terminal of the mainshaft speed sensor connector and body ground.

MAINSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES — Repair short to ground in the wire between PCM connector terminal D8 and the mainshaft speed sensor connector. ■

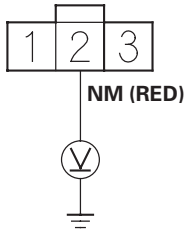
NO — Go to step 12.

12. Reconnect PCM connector D (17P).

13. Turn the ignition switch ON (II).

14. Measure the voltage between the No. 2 terminal of the mainshaft speed sensor connector and body ground.

MAINSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the mainshaft speed sensor. After replacing the sensor, go to step 15, and check that the repair has been completed.

NO—Check for loose or poor connections at PCM connector terminal D8 or an open in the wire between PCM connector terminal D8 and the mainshaft speed sensor connector. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

15. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

16. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

17. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0718.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

DTC Troubleshooting (cont'd)

DTC P0721: Problem in Countershaft Speed Sensor Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

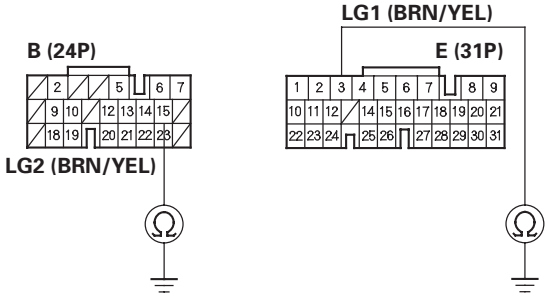
1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
2. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
3. Start the engine, drive the vehicle in the D position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds. Slow down and stop the wheels.
4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0721.

   Did the result fail?

   YES – Go to step 5.

   NO – Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the Honda PGM Tester or HDS.
7. Disconnect PCM connectors B (24P) and E (31P), and countershaft speed sensor connector.
8. Check for continuity between PCM connector terminals B15 and body ground, and between E3 and body ground.

PCM CONNECTORS



Wire side of female terminals

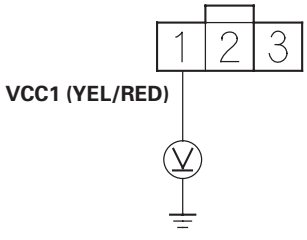
Is there continuity?

YES – Go to step 9.

NO – Repair open in the wires between PCM connector terminals B15 and ground (G101, G102), between E3 and ground (G101, G102), and repair poor ground (G101, G102). ■

9. Connect PCM connectors B (24P) and E (31P).
10. Turn the ignition switch ON (II).
11. Measure the voltage between No. 1 terminal of the countershaft speed sensor connector and body ground.

COUNTERSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES – Go to step 12.

NO – Go to step 27.

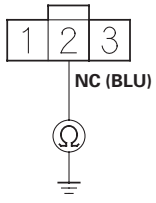
12. Turn the ignition switch OFF.

13. Jump the SCS line with the Honda PGM Tester or HDS.

14. Disconnect PCM connector D (17P).

15. Check for continuity between the No. 2 terminal of the countershaft speed sensor connector and body ground.

COUNTERSHAFT SPEED SENSOR CONNECTOR



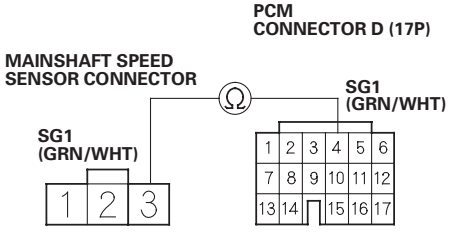
Wire side of female terminals

Is there continuity?

YES — Repair short to ground in the wire between PCM connector terminal D14 and countershaft speed sensor connector. ■

NO — Go to step 16.

16. Check for continuity between the No. 3 terminal of the countershaft speed sensor connector and PCM connector terminal D4.



Wire side of female terminals

Is there continuity?

YES — Go to step 17.

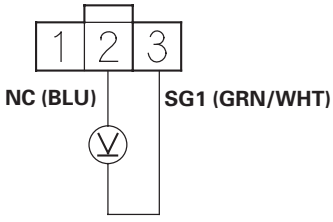
NO — Repair open in the wire between the countershaft speed sensor connector and PCM connector terminal D4. ■

17. Reconnect PCM connector D(17P).

18. Turn the ignition switch ON (II).

19. Measure the voltage between the No. 2 and No. 3 terminals of the countershaft speed sensor connector.

COUNTERSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

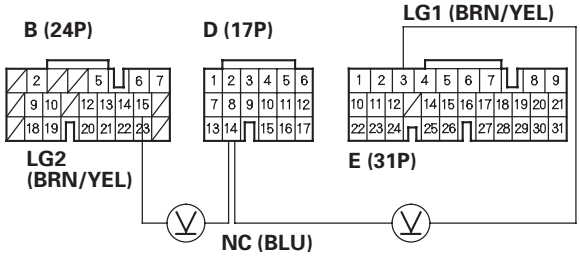
YES — Go to step 20.

NO — Go to step 32.

20. Connect the countershaft speed sensor connector.

21. Measure the voltage between PCM connector terminals D14 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is the voltage 0 V or about 5 V?

YES — Go to step 22.

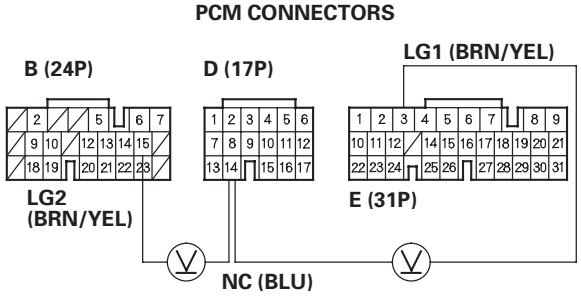
NO — Replace the countershaft speed sensor. After replacing the sensor, go to step 24, and check that the repair has been completed.

(cont'd)

DTC Troubleshooting (cont'd)

22. Shift to the P position. Start the engine, and let it idle.

23. Shift to the D position, and measure the voltage between PCM connector terminals D14 and B15 or E3.



Wire side of female terminals

Is there 1.5 V — 3.5 V?

YES — Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO — Replace the countershaft speed sensor. After replacing the sensor, go to step 24, and check that the repair has been completed.

24. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

25. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

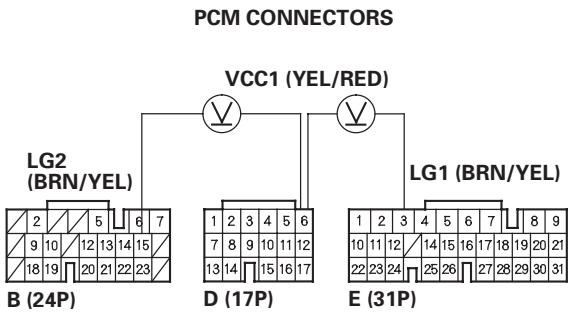
26. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0721.

Did the result pass?

YES — The problem has been corrected. ■

NO — Return to step 1 and recheck. ■

27. Measure the voltage between PCM connector terminals D6 and B15 or E3.



Wire side of female terminals

Is there 4.75 V — 5.25 V?

YES — Repair open in the wire between PCM connector terminal D6 and the countershaft speed sensor connector. ■

NO — Go to step 28.

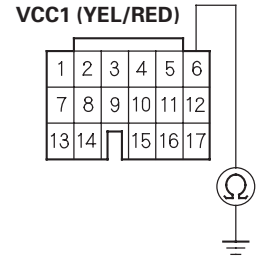
28. Turn the ignition switch OFF.

29. Jump the SCS line with the Honda PGM Tester or HDS.

30. Disconnect PCM connector D (17P).

31. Check for continuity between PCM connector terminal D6 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

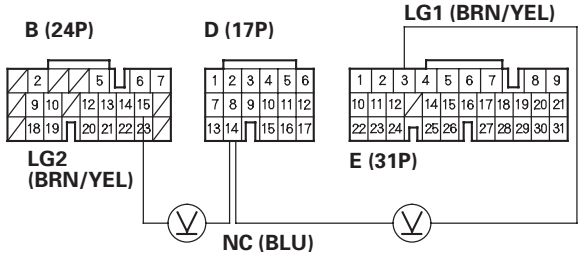
Is there continuity?

YES—Repair short to ground in the wire between PCM connector terminal D6 and the countershaft speed sensor connector. ■

NO—Check for loose or poor connections at PCM connector terminal D6. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

32. Measure the voltage between PCM connector terminals D14 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between PCM connector terminal D14 and the countershaft speed sensor connector. ■

NO—Check for loose or poor connections at PCM connector terminal D14, If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

DTC Troubleshooting (cont'd)

DTC P0722: Problem in Countershaft Speed Sensor Circuit (No signal Input)

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

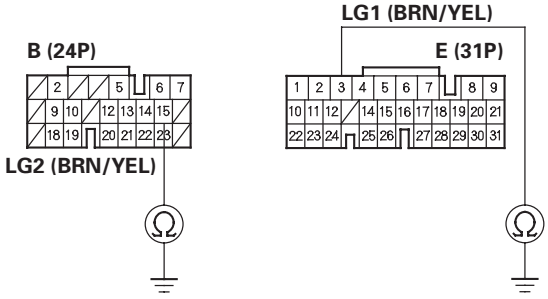
1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
2. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely.
3. Start the engine, drive the vehicle in the D position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds. Slow down and stop the wheels.
4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0721.

   Did the result fail?

   YES — Go to step 5.

   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the Honda PGM Tester or HDS.
7. Disconnect PCM connectors B (24P) and E (31P), and countershaft speed sensor connector.
8. Check for continuity between PCM connector terminals B15 and body ground, and between E3 and body ground.

PCM CONNECTORS



Wire side of female terminals

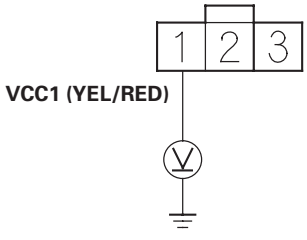
Is there continuity?

YES — Go to step 9.

NO — Repair open in the wires between PCM connector terminals B15 and ground (G101, G102), between E3 and ground (G101, G102), and repair poor ground (G101, G102). ■

9. Connect PCM connectors B (24P) and E (31P).
10. Turn the ignition switch ON (II).
11. Measure the voltage between No. 1 terminal of the countershaft speed sensor connector and body ground.

COUNTERSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES — Go to step 12.

NO — Go to step 27.

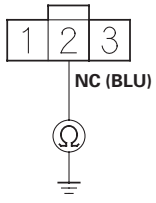
12. Turn the ignition switch OFF.

13. Jump the SCS line with the Honda PGM Tester or HDS.

14. Disconnect PCM connector D (17P).

15. Check for continuity between the No. 2 terminal of the countershaft speed sensor connector and body ground.

COUNTERSHAFT SPEED SENSOR CONNECTOR



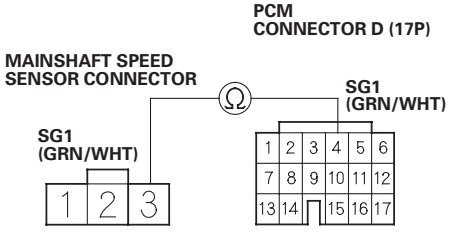
Wire side of female terminals

Is there continuity?

YES — Repair short to ground in the wire between PCM connector terminal D14 and countershaft speed sensor connector. ■

NO — Go to step 16.

16. Check for continuity between the No. 3 terminal of the countershaft speed sensor connector and PCM connector terminal D4.



Wire side of female terminals

Is there continuity?

YES — Go to step 17.

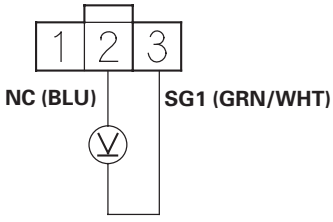
NO — Repair open in the wire between the countershaft speed sensor connector and PCM connector terminal D4. ■

17. Reconnect PCM connector D(17P).

18. Turn the ignition switch ON (II).

19. Measure the voltage between the No. 2 and No. 3 terminals of the countershaft speed sensor connector.

COUNTERSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

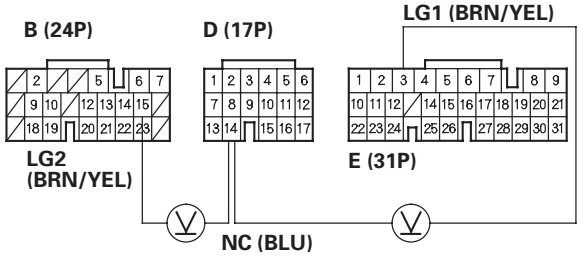
YES — Go to step 20.

NO — Go to step 32.

20. Connect the countershaft speed sensor connector.

21. Measure the voltage between PCM connector terminals D14 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is the voltage 0 V or about 5 V?

YES — Go to step 22.

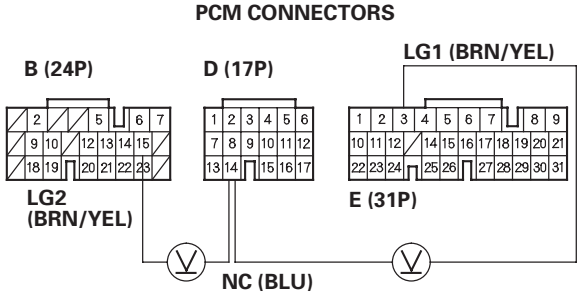
NO — Replace the countershaft speed sensor. After replacing the sensor, go to step 24, and check that the repair has been completed.

(cont'd)

DTC Troubleshooting (cont'd)

22. Shift to the P position. Start the engine, and let it idle.

23. Shift to the D position, and measure the voltage between PCM connector terminals D14 and B15 or E3.



Wire side of female terminals

Is there 1.5 V — 3.5 V?

YES — Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO — Replace the countershaft speed sensor. After replacing the sensor, go to step 24, and check that the repair has been completed.

24. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

25. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

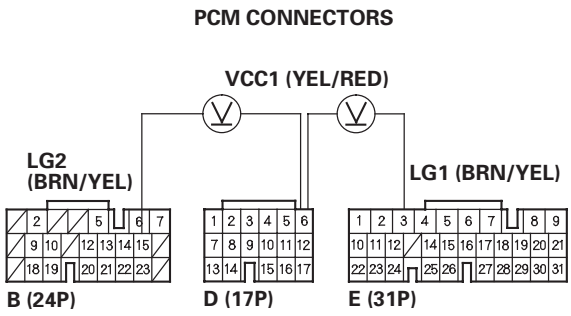
26. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0721.

Did the result pass?

YES — The problem has been corrected. ■

NO — Return to step 1 and recheck. ■

27. Measure the voltage between PCM connector terminals D6 and B15 or E3.



Wire side of female terminals

Is there 4.75 V — 5.25 V?

YES — Repair open in the wire between PCM connector terminal D6 and the countershaft speed sensor connector. ■

NO — Go to step 28.

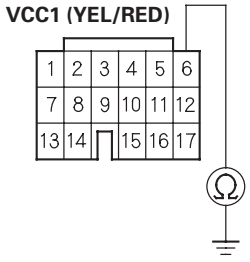
28. Turn the ignition switch OFF.

29. Jump the SCS line with the Honda PGM Tester or HDS.

30. Disconnect PCM connector D (17P).

31. Check for continuity between PCM connector terminal D6 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

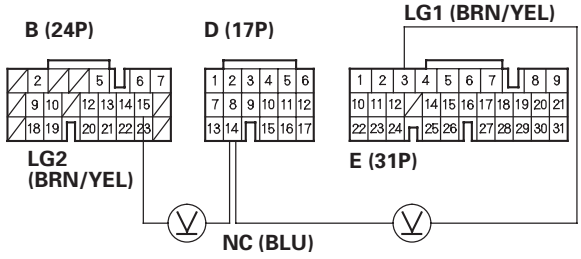
Is there continuity?

YES—Repair short to ground in the wire between PCM connector terminal D6 and the countershaft speed sensor connector. ■

NO—Check for loose or poor connections at PCM connector terminal D6. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

32. Measure the voltage between PCM connector terminals D14 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between PCM connector terminal D14 and the countershaft speed sensor connector. ■

NO—Check for loose or poor connections at PCM connector terminal D14, If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

DTC Troubleshooting (cont'd)

DTC P0723: Countershaft Speed Sensor Intermittent Failure

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
2. Test-drive the vehicle for 10 minutes under the same conditions as those indicated by the freeze data, and turn the ignition switch OFF. Turn the switch ON (II), and check the OBD STATUS in DTCs MENU for a pass/fail test of code P0723.

   Did the result fail?

   YES — Go to step 3.

   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 2 and recheck. ■
3. Turn the ignition switch OFF.
4. Disconnect the countershaft speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

   Are the connector terminals OK?

   YES — Go to step 5.

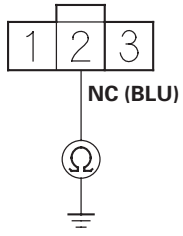
   NO — Repair the connector terminals, then go to step 5.
5. Connect the countershaft speed sensor connector.
6. Test-drive the vehicle for several minutes, and check the OBD STATUS in DTCs MENU for a pass/fail test of code P0723.

   Did the result fail?

   YES — Go to step 7.

   NO — The problem has been corrected. If the tester tells you NOT COMPLETE, return to step 6 and recheck. ■
7. Turn the ignition switch OFF.
8. Jump the SCS line with the Honda PGM Tester or HDS.
9. Disconnect PCM connector D (17P).
10. Disconnect the countershaft speed sensor connector.
11. Check for continuity between the No. 2 terminal of the countershaft speed sensor connector and body ground.

COUNTERSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES — Repair short to ground in the wire between PCM connector terminal D14 and the countershaft speed sensor connector. ■

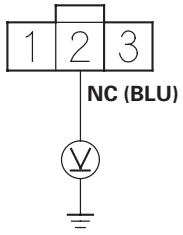
NO — Go to step 12.

12. Connect PCM connector D (17P).

13. Turn the ignition switch ON (II).

14. Measure the voltage between the No. 2 terminal of the countershaft speed sensor connector and body ground.

COUNTERSHAFT SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the countershaft speed sensor. After replacing the sensor, go to step 15, and check that the repair has been completed.

NO—Check for an open in the wire between PCM connector terminal D14 and the countershaft speed sensor connector. If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

15. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

16. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

17. Turn the ignition switch OFF, then turn it on (II) again.

18. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0723.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

DTC Troubleshooting (cont'd)

DTC P0746: A/T Clutch Pressure Control Solenoid Valve A Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Check for deterioration in the quality of ATF.

   Has the ATF deteriorated?

   YES—Replace ATF (see page 14-466), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck.

   NO—Go to step 4.
4. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
5. Select LINEAR SOL TEST in MISC. TEST MENU, then carry out LINEAR SOL A TEST in LINEAR SOL TEST MENU.

   Is the system OK?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Replace A/T clutch pressure control solenoid valve A (see page 14-458). After replacing the solenoid valve, go to step 6, and check that the repair has been completed.
6. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.
8. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0746.

   Did the result pass?

   YES—The problem has been corrected. ■

   NO—Return to step 1 and recheck. ■

DTC P0747: A/T Clutch Pressure Control Solenoid Valve A Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Check for deterioration in the quality of ATF.

   Has the ATF deteriorated?

   YES—Replace ATF (see page 14-466), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck. ■

   NO—Go to step 4.

4. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

5. Select LINEAR SOL TEST in MISC. TEST MENU, then carry out LINEAR SOL A TEST in LINEAR SOL TEST MENU.

   Is the system OK?

   YES—Go to step 6.

   NO—Replace A/T clutch pressure control solenoid valve A (see page 14-458). After replacing the solenoid valve, go to step 8, and check that the repair has been completed.

6. Test-drive the vehicle in all five gears in the D position at speeds over 10 mph (16 km/h) for 20 seconds.

7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0747.

   Did the result fail?

   YES—The A/T clutch pressure control solenoid valve A may be stuck, repair hydraulic system related with A/T clutch pressure control solenoid valve A. ■

   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 6 and recheck. ■

8. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

9. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

10. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0747.

    Did the result pass?

    YES—The problem has been corrected. ■

    NO—Return to step 1 and recheck. ■

DTC Troubleshooting (cont'd)

DTC P0751: Shift Solenoid Valve A Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Check for deterioration in the quality of ATF.

   Has the ATF deteriorated?

   YES—Replace ATF (see page 14-466), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck. ■

   NO—Go to step 4.
4. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
5. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL A test in SHIFT SOL TEST MENU with the Honda PGM Tester or HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

   NO—Faulty shift solenoid valve A, replace it (see page 14-456). After replacing the shift solenoid valve, go to step 8, and check that the repair has been completed.
6. Test-drive the vehicle in the D position in all five gears at speeds over 10 mph (16 km/h) for 20 seconds.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0751.

   Did the result fail?

   YES—Repair shift valves A and E. ■

   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 6 and recheck. ■
8. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
9. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.
10. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0751.

    Did the result pass?

    YES—The problem has been corrected. ■

    NO—Return to step 1 and recheck. ■

DTC P0752: Shift Solenoid Valve A Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Check for deterioration in the quality of ATF.

   Has the ATF deteriorated?

   YES—Replace ATF (see page 14-466), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck. ■

   NO—Go to step 4.

4. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

5. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL A test in SHIFT SOL TEST MENU with the Honda PGM Tester or HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

   NO—Faulty shift solenoid valve A, replace it (see page 14-456). After replacing the shift solenoid valve, go to step 8, and check that the repair has been completed.

6. Test-drive the vehicle in the D position in all five gears at speeds over 10 mph (16 km/h) for 20 seconds.

7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0752.

   Did the result fail?

   YES—Repair shift valves A and E, or replace the transmission. ■

   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 6 and recheck. ■

8. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

9. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

10. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0752.

    Did the result pass?

    YES—The problem has been corrected. ■

    NO—Return to step 1 and recheck. ■

DTC Troubleshooting (cont'd)

DTC P0756: Shift Solenoid Valve B Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Check for deterioration in the quality of ATF.

   Has the ATF deteriorated?

   YES—Replace ATF (see page 14-466), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck. ■

   NO—Go to step 4.
4. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
5. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL B test in SHIFT SOL TEST MENU with the Honda PGM Tester or HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

   NO—Faulty shift solenoid valve B, replace it (see page 14-455). After replacing the shift solenoid valve, go to step 8, and check that the repair has been completed.
6. Test-drive the vehicle in the D position in all five gears at speeds over 10 mph (16 km/h) for 20 seconds.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0756.

   Did the result fail?

   YES—Repair shift valves B and E, or replace the transmission. ■

   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 6 and recheck. ■
8. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
9. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.
10. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0756.

    Did the result pass?

    YES—The problem has been corrected. ■

    NO—Return to step 1 and recheck. ■

DTC P0757: Shift Solenoid Valve B Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Check for deterioration in the quality of ATF.

   Has the ATF deteriorated?

   YES—Replace ATF (see page 14-466), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck. ■

   NO—Go to step 4.

4. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

5. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL B test in SHIFT SOL TEST MENU with the Honda PGM Tester or HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

   NO—Faulty shift solenoid valve B, replace it (see page 14-455). After replacing the shift solenoid valve, go to step 8, and check that the repair has been completed.

6. Test-drive the vehicle in the D position in all five gears at speeds over 10 mph (16 km/h) for 20 seconds.

7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0757.

   Did the result fail?

   YES—Repair shift valves B and E, servo control valve, or replace the transmission. ■

   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 6 and recheck. ■

8. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

9. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

10. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0757.

    Did the result pass?

    YES—The problem has been corrected. ■

    NO—Return to step 1 and recheck. ■

DTC Troubleshooting (cont'd)

DTC P0761: Shift Solenoid Valve C Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Check for deterioration in the quality of ATF.

   Has the ATF deteriorated?

   YES—Replace ATF (see page 14-466), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck. ■

   NO—Go to step 4.
4. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
5. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL C test in SHIFT SOL TEST MENU with the Honda PGM Tester or HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

   NO—Faulty shift solenoid valve C, replace it (see page 14-456). After replacing the shift solenoid valve, go to step 8, and check that the repair has been completed.
6. Test-drive the vehicle in the D position in all five gears at speeds over 10 mph (16 km/h) for 20 seconds.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0761.

   Did the result fail?

   YES—Repair shift valves C and E, or replace the transmission. ■

   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 6 and recheck. ■
8. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
9. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.
10. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0761.

    Did the result pass?

    YES—The problem has been corrected. ■

    NO—Return to step 1 and recheck. ■

DTC P0762: Shift Solenoid Valve C Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Check for deterioration in the quality of ATF.

   Has the ATF deteriorated?

   YES—Replace ATF (see page 14-466), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck. ■

   NO—Go to step 4.

4. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

5. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL C test in SHIFT SOL TEST MENU with the Honda PGM Tester or HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

   NO—Faulty shift solenoid valve C, replace it (see page 14-456). After replacing the shift solenoid valve, go to step 8, and check that the repair has been completed.

6. Test-drive the vehicle in the D position in all five gears at speeds over 10 mph (16 km/h) for 20 seconds.

7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0762.

   Did the result fail?

   YES—Repair shift valves C and E, or replace the transmission. ■

   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 6 and recheck. ■

8. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

9. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

10. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0762.

    Did the result pass?

    YES—The problem has been corrected. ■

    NO—Return to step 1 and recheck. ■

DTC Troubleshooting (cont'd)

DTC P0776: A/T Clutch Pressure Control Solenoid Valve B Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Check for deterioration in the quality of ATF.

   Has the ATF deteriorated?

   YES—Replace ATF (see page 14-466), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck. ■

   NO—Go to step 4.
4. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
5. Select LINEAR SOL TEST in MISC. TEST MENU, then carry out LINEAR SOL B TEST in LINEAR SOL TEST MENU.

   Is the system OK?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Replace the A/T clutch pressure control solenoid valve B (see page 14-458). After replacing the solenoid valve, go to step 6, and check that the repair has been completed.
6. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.
8. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0776.

   Did the result pass?

   YES—The problem has been corrected. ■

   NO—Return to step 1 and recheck. ■

DTC P0777: A/T Clutch Pressure Control Solenoid Valve B Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Check for deterioration in the quality of ATF.

   Has the ATF deteriorated?

   YES—Replace ATF (see page 14-466), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck. ■

   NO—Go to step 4.

4. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

5. Select LINEAR SOL TEST in MISC. TEST MENU, then carry out LINEAR SOL B TEST in LINEAR SOL TEST MENU.

   Is the system OK?

   YES—Go to step 6.

   NO—Replace the A/T clutch pressure control solenoid valve B (see page 14-458). After replacing the solenoid valve, go to step 7, and check that the repair has been completed.

6. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0777.

   Did the result fail?

   YES—The A/T clutch pressure control solenoid valve B may be stuck, repair hydraulic system related with the A/T clutch pressure control solenoid valve B, or replace the transmission. ■

   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 6 and recheck. ■

7. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

8. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

9. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0777.

   Did the result pass?

   YES—The problem has been corrected. ■

   NO—Return to step 1 and recheck. ■

DTC Troubleshooting (cont'd)

DTC P0780: Problem in Shift Control System

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Check to be sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Check for deterioration in the quality of ATF.

   Has the ATF deteriorated?

   YES — Replace ATF (see page 14-466), and test-drive the vehicle under the same conditions as those indicated by the freeze data, then recheck. ■

   NO — Go to step 4.
4. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
5. Run the engine until the engine coolant temperature reaches 80°C (176°F).
6. Test-drive the vehicle in all five gears in the D position at speeds over 10 mph (16 km/h) for 20 seconds.
7. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0780.

   Did the result fail?

   YES — The shift valve may be stuck, repair hydraulic system related with the shift valve D, or replace the transmission. ■

   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 1 and recheck. ■

DTC P0847: Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Check the 3rd PRES SWITCH signal with the PGM Tester or HDS in the A/T data list when not in 3rd gear.

   Is the 3rd PRES SWITCH OFF?

   YES—Go to step 3.

   NO—Go to step 5.

3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 3rd gear in the D3 position for about 5 seconds, then shift to the D position, and drive in 4th gear for about 5 seconds. Slow down and stop the wheels.

4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0847.

   Did the result fail?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■

5. Turn the ignition switch OFF.

6. Disconnect the 3rd clutch transmission fluid pressure switch connector.

7. Turn the ignition switch ON (II).

8. Check the 3rd PRES SWITCH signal with the PGM Tester or HDS in the A/T data list.

   Is the 3rd PRES SWITCH OFF?

   YES—Replace the 3rd clutch transmission fluid pressure switch. After replacing the switch, go to step 13, and check that the repair has been completed.

   NO—Go to step 9.

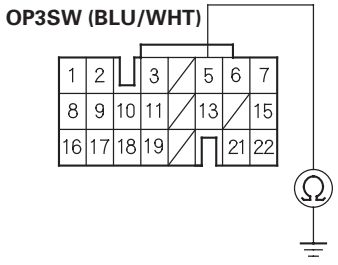
9. Turn the ignition switch OFF.

10. Jump the SCS line with the Honda PGM Tester or HDS.

11. Disconnect PCM connector C (22P).

12. Check for continuity between PCM connector terminal C5 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between PCM connector terminal C5 and the 3rd clutch transmission fluid pressure switch. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

DTC Troubleshooting (cont'd)

13. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

14. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0847.

    Did the result pass?

    YES — The problem has been corrected. ■

    NO — Return to step 1 and recheck. ■

DTC P0848: Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in the 3rd gear in the D3 position, and verify that the SHIFT MAP NUMBER indicates 3 rd with the Honda PGM Tester or HDS in the A/T data list.

3. Check the 3rd PRES SWITCH signal with the Honda PGM Tester or HDS in the A/T data list.

   Is the 3rd PRES SWITCH ON?

   YES — Go to step 4.

   NO — Go to step 6.

4. Drive the vehicle in 3rd gear in the D3 position for about 5 seconds, then shift to D position, and drive in 4th gear for about 5 seconds. Slow down and stop the wheels.

5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0848.

   Is the result failed?

   YES — Go to step 6.

   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 4 and recheck. ■

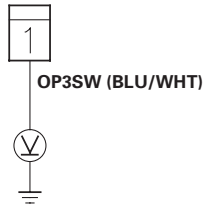
6. Turn the ignition switch OFF.

7. Disconnect the 3rd clutch transmission fluid pressure switch connector.

8. Turn the ignition switch ON (II).

9. Measure the voltage between the 3rd clutch transmission fluid pressure switch connector terminal and body ground.

3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

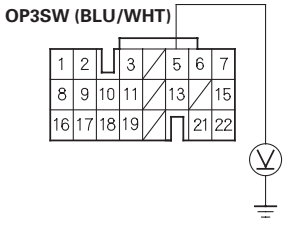
   Is there battery voltage?

   YES — Replace the 3nd clutch transmission fluid pressure switch. After replacing the switch, go to step 11, and check that the repair has been completed.

   NO — Go to step 10.

10. Measure the voltage between PCM connector terminal C5 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

   Is there battery voltage?

   YES — Repair open in the wire between PCM connector terminal C5 and the 3rd clutch transmission fluid pressure switch. ■

   NO — Check for loose or poor connections at PCM connector terminal C5. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

DTC Troubleshooting (cont'd)

11. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

12. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

13. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0848.

    Did the result pass?

    YES — The problem has been corrected. ■

    NO — Return to step 1 and recheck. ■

DTC P0872: Short in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Check the 4th PRES SWITCH signal with the PGM Tester or HDS in the A/T data list when not in 4th gear.

   Is the 4th PRES SWITCH OFF?

   YES—Go to step 3.

   NO—Go to step 5.

3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 4th gear in the D position for about 5 seconds. Slow down and stop the wheels.

4. Check the OBD STATUS in DTCs MENU for a pass/fail test for code P0872.

   Did the result fail?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■

5. Turn the ignition swtich OFF.

6. Disconnect the 4th clutch transmission fluid pressure switch connector.

7. Turn the ignition switch ON (II).

8. Check the 4th PRES SWITCH signal with the PGM Tester of HDS in the A/T data list.

   Is the 4th SWITCH OFF?

   YES—Replace the 4th clutch transmission fluid pressure switch . After replacing the switch, go to step 13, and check that the repair has been completed.

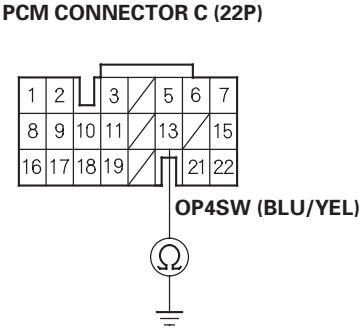
   NO—Go to step 9.

9. Turn the igniton switch OFF.

10. Jump the SCS line with the Honda PGM Tester or HDS.

11. Disconnect PCM connector C (22P).

12. Check for continuity between PCM connector terminal C13 and body ground.



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between PCM connector terminal C13 and the 4th clutch transmission fluid pressure switch. ■

NO—Update the PCM if it does not have the leatest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

DTC Troubleshooting (cont'd)

13. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

14. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0872.

    Did the result pass?

    YES — The problem has been corrected. ■

    NO — Return to step 1 and recheck. ■

DTC P0873: Open in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 4th gear in the D position, and verify that the SHIFT MAP NUMBER indicates 4th with the PGM Tester or HDS in the A/T data list.

3. Check the 4th PRES SWITCH signal with the PGM Tester or HDS in the A/T data list.

   Is the 4th PRES SWITCH ON?

   YES — Go to step 4.

   NO — Go to step 6.

4. Drive the vehicle in 4th gear in the D position for about 5 seconds, then slow down and stop the wheels.

5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0873.

   Did the result fail?

   YES — Go to step 6.

   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 4 and recheck. ■

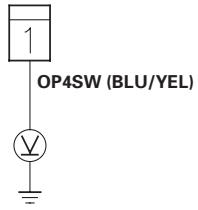
6. Turn the ignition switch OFF.

7. Disconnect the 4th clutch transmission fluid pressure switch connector.

8. Turn the ignition switch ON (II).

9. Measure the voltage between the 4th clutch transmission fluid pressure switch connector terminal and body ground.

4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

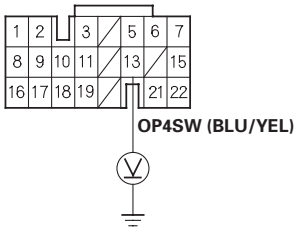
   Is there battery voltage?

   YES — Replace the 4th clutch transmission fluid pressure switch . After replacing the switch, go to step 11, and check that the repair has been completed.

   NO — Go to step 10.

10. Measure the voltage between PCM connector terminal C13 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

   Is there battery voltage?

   YES — Repair open in the wire between PCM connector terminal C13 and the 4th clutch transmission fluid pressure switch. ■

   NO — Check for loose or poor connections at PCM connector terminal C13. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

DTC Troubleshooting (cont'd)

11. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

12. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

13. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0873.

    Did the result pass?

    YES — The problem has been corrected. ■

    NO — Return to step 1 and recheck. ■

DTC P0962: Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Check that DTC P0962 recurs.

   Is DTC P0962 indicated?

   YES — Go to step 6.

   NO — Go to step 3.

3. Select P CTRL SOL CONTROL in MISC. TEST MENU, then select P. CONTROL SOL A in P CTRL SOL CTRL MENU with the Honda PGM Tester or HDS.

4. Drive the A/T clutch pressure control solenoid valve A with 1.0 A in SOL A CONTROL menu.

5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0962.

   Did the result fail?

   YES — Go to step 6.

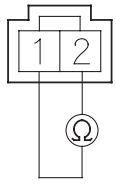
   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■

6. Turn the ignition switch OFF.

7. Disconnect the A/T clutch pressure control solenoid valve A connector.

8. Measure A/T clutch pressure control solenoid valve A resistance at the solenoid connector.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



   Terminal side of male terminals

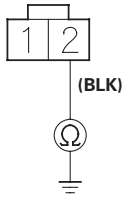
   Is there 3 — 10 Ω ?

   YES — Go to step 9.

   NO — Replace the A/T clutch pressure control solenoid valve A (see page 14-458). After replacing the solenoid valve, go to step 13, and check that the repair has been completed.

9. Check for continuity between the No. 2 terminal of the A/T clutch pressure control solenoid valve A connector and body ground.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



   Wire side of female terminals

   Is there continuity?

   YES — Go to step 10.

   NO — Repair open in the wire between the A/T clutch pressure control solenoid valve A and ground (G151), or repair poor ground (G151). ■

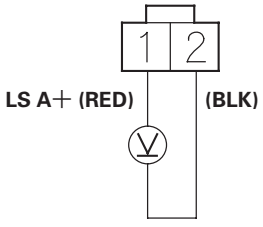
(cont'd)

DTC Troubleshooting (cont'd)

10. Turn the ignition switch ON (II).

11. Measure the voltage between terminals of the A/T clutch pressure control solenoid valve A connector as the ignition is turned ON.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

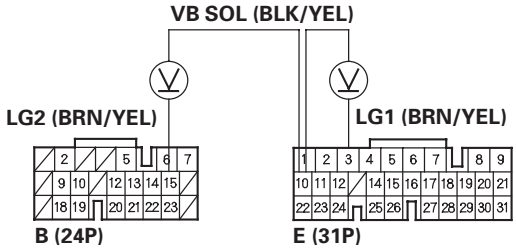
Is there battery voltage?

YES—Go to step 12.

NO—Repair open or short in the wire between PCM connector terminal C7 and A/T clutch pressure control solenoid valve A. ■

12. Measure the voltage between PCM connector terminals E10 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Check for loose or poor connections at PCM connector terminal E10. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO— Check for blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal E10 and the under-dash fuse/relay box. ■

13. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

14. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0962.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

DTC P0963: Short in A/T Clutch Pressure Control Solenoid Valve A

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
2. Check that DTC P0963 recurs.

   Is DTC P0963 indicated?

   YES – Go to step 6.

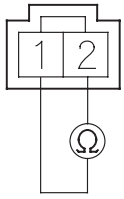
   NO – Go to step 3.
3. Select P CTRL SOL CONTROL in MISC. TEST MENU, then select P. CONTROL SOL A in P CTRL SOL CTRL MENU with the Honda PGM Tester or HDS.
4. Drive the A/T clutch pressure control solenoid valve A with 0.2 A in SOL A CONTROL menu.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0963.

   Did the result fail?

   YES – Go to step 6.

   NO – Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■
6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve A connector.
8. Measure A/T clutch pressure control solenoid valve A resistance at the solenoid connector.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



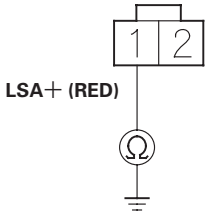
Terminal side of male terminals

   Is there 3 – 10 Ω ?

   YES – Go to step 9.

   NO – Replace the A/T clutch pressure control solenoid valve A (see page 14-458). After replacing the solenoid valve, go to step 10, and check that the repair has been completed.
9. Check for continuity between the No. 1 terminal of the A/T clutch pressure control solenoid valve A connector and body ground.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

   Is there continuity?

   YES – Repair short to ground in the wire between the A/T clutch pressure control solenoid valve A and PCM connector terminal C7. ■

   NO – Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

DTC Troubleshooting (cont'd)

10. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

11. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

12. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0963.

    Did the result pass?

    YES — The problem has been corrected. ■

    NO — Return to step 1 and recheck. ■

DTC P0966: Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
2. Check that DTC P0966 recurs.

   Is DTC P0966 indicated?

   YES — Go to step 6.

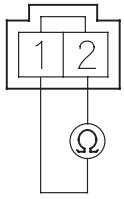
   NO — Go to step 3.
3. Select P CTRL SOL CONTROL in MISC. TEST MENU, then select P. CONTROL SOL B in P CTRL SOL CTRL MENU with the Honda PGM Tester or HDS.
4. Drive the A/T clutch pressure control solenoid valve B with 1.0 A in SOL B CONTROL menu.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0966.

   Did the result fail?

   YES — Go to step 6.

   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■
6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve B connector.
8. Measure A/T clutch pressure control solenoid valve B resistance at the solenoid connector.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



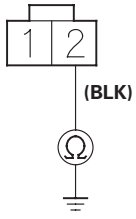
Terminal side of male terminals

   Is there 3— 10 Ω ?

   YES — Go to step 9.

   NO — Replace the A/T clutch pressure control solenoid valve B (see page 14-458). After replacing the solenoid valve, go to step 13, and check that the repair has been completed.
9. Check for continuity between the No. 2 terminal of the A/T clutch pressure control solenoid valve B connector and body ground.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

   Is there continuity?

   YES — Go to step 10.

   NO — Repair open in the wire between the A/T clutch pressure control solenoid valve B and ground (G151), or repair poor ground (G151). ■

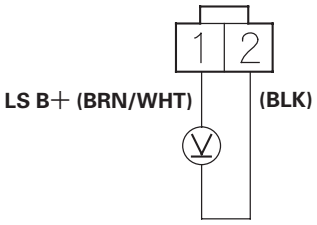
(cont'd)

DTC Troubleshooting (cont'd)

10. Turn the ignition switch ON (II).

11. Measure the voltage between terminals of the A/T clutch pressure control solenoid valve B connector.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

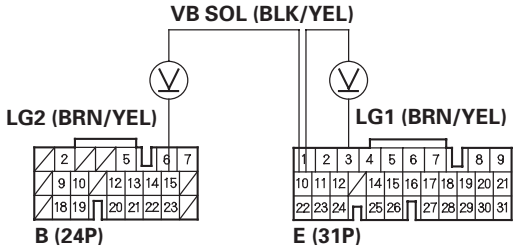
Is there battery voltage?

YES — Go to step 12.

NO — Repair open or short in the wire between PCM connector terminal C15 and A/T clutch pressure control solenoid valve B. ■

12. Measure the voltage between PCM connector terminals E10 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES — Check for loose or poor connections at PCM connector terminal E10. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO — Check for blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal E10 and the under-dash fuse/relay box. ■

13. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

14. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0966.

Did the result pass?

YES — The problem has been corrected. ■

NO — Return to step 1 and recheck. ■

DTC P0967: Short in A/T Clutch Pressure Control Solenoid Valve B

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
2. Check that DTC P0967 recurs.

   Is DTC P0967 indicated?

   YES – Go to step 6.

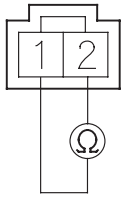
   NO – Go to step 3.
3. Select P CTRL SOL CONTROL in MISC. TEST MENU, then select P. CONTROL SOL B in P CTRL SOL CTRL MENU with the Honda PGM Tester or HDS.
4. Drive the A/T clutch pressure control solenoid valve B with 0.2 A in SOL B CONTROL menu.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0967.

   Did the result fail?

   YES – Go to step 6.

   NO – Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■
6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve B connector.
8. Measure A/T clutch pressure control solenoid valve B resistance at the solenoid connector.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



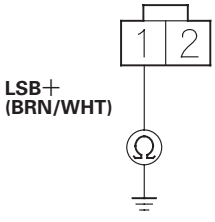
Terminal side of male terminals

   Is there 3– 10 Ω ?

   YES – Go to step 9.

   NO – Replace the A/T clutch pressure control solenoid valve B (see page 14-458). After replacing the solenoid valve, go to step 10, and check that the repair has been completed.
9. Check for continuity between the No. 1 terminal of the A/T clutch pressure control solenoid valve B connector and body ground.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

   Is there continuity?

   YES – Repair short to ground in the wire between the A/T clutch pressure control solenoid valve B and PCM connector terminal C15. ■

   NO – Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

DTC Troubleshooting (cont'd)

10. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

11. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

12. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0967.

    Did the result pass?

    YES — The problem has been corrected. ■

    NO — Return to step 1 and recheck. ■

DTC P0970: Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Check that DTC P0970 recurs.

   Is DTC P0970 indicated?

   YES — Go to step 6.

   NO — Go to step 3.

3. Select P CTRL SOL CONTROL in MISC. TEST MENU, then select P. CONTROL SOL C in P CTRL SOL CTRL MENU with the Honda PGM Tester or HDS.

4. Drive the A/T clutch pressure control solenoid valve C with 1.0 A in SOL C CONTROL menu.

5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0970.

   Did the result fail?

   YES — Go to step 6.

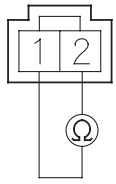
   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■

6. Turn the ignition switch OFF.

7. Disconnect the A/T clutch pressure control solenoid valve C connector.

8. Measure A/T clutch pressure control solenoid valve C resistance at the solenoid connector.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



   Terminal side of male terminals

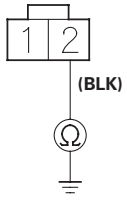
   Is there 3— 10 Ω ?

   YES — Go to step 9.

   NO — Replace the A/T clutch pressure control solenoid valve C (see page 14-460). After replacing the solenoid valve, go to step 13, and check that the repair has been completed.

9. Check for continuity between the No. 2 terminal of the A/T clutch pressure control solenoid valve C connector and body ground.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



   Wire side of female terminals

   Is there continuity?

   YES — Go to step 10.

   NO — Repair open in the wire between the A/T clutch pressure control solenoid valve C and ground (G101), or repair poor ground (G101). ■

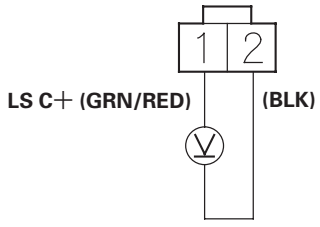
(cont'd)

DTC Troubleshooting (cont'd)

10. Turn the ignition switch ON (II).

11. Measure the voltage between terminals of the A/T clutch pressure control solenoid valve C connector.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

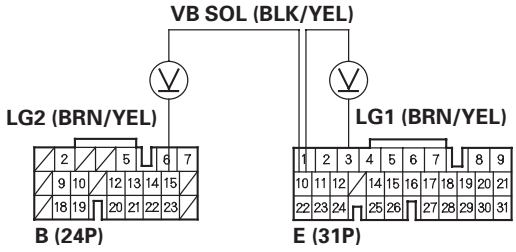
Is there battery voltage?

YES — Go to step 12.

NO — Repair open or short in the wire between PCM connector terminal C22 and A/T clutch pressure control solenoid valve C. ■

12. Measure the voltage between PCM connector terminals E10 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES — Check for loose or poor connections at PCM connector terminal E10. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO — Check for blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal E10 and the under-dash fuse/relay box. ■

13. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

14. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

15. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0970.

Did the result pass?

YES — The problem has been corrected. ■

NO — Return to step 1 and recheck. ■

DTC P0971: Short in A/T Clutch Pressure Control Solenoid Valve C

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.
2. Check that DTC P0971 recurs.

   Is DTC P0971 indicated?

   YES – Go to step 6.

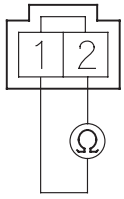
   NO – Go to step 3.
3. Select P CTRL SOL CONTROL in MISC. TEST MENU, then select P. CONTROL SOL C in P CTRL SOL CTRL MENU with the Honda PGM Tester or HDS.
4. Drive the A/T clutch pressure control solenoid valve C with 0.2 A in SOL C CONTROL menu.
5. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0971.

   Did the result fail?

   YES – Go to step 6.

   NO – Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■
6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve C connector.
8. Measure A/T clutch pressure control solenoid valve C resistance at the solenoid connector.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



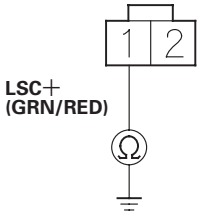
Terminal side of male terminals

   Is there 3 – 10 Ω ?

   YES – Go to step 9.

   NO – Replace the A/T clutch pressure control solenoid valve C (see page 14-460). After replacing the solenoid valve, go to step 10, and check that the repair has been completed.
9. Check for continuity between the No. 1 terminal of the A/T clutch pressure control solenoid valve C connector and body ground.

   A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

   Is there continuity?

   YES – Repair short to ground in the wire between the A/T clutch pressure control solenoid valve C and PCM connector terminal C22. ■

   NO – Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

DTC Troubleshooting (cont'd)

10. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

11. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

12. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0971.

    Did the result pass?

    YES — The problem has been corrected. ■

    NO — Return to step 1 and recheck. ■

DTC P0973: Short in Shift Solenoid Valve A Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Check that DTC P0973 recurs.

   Is DTC P0973 indicated?

   YES — Go to step 5.

   NO — Go to step 3.

3. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL A test in SHIFT SOL TEST MENU with the Honda PGM Tester or HDS.

4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0973.

   Did the result fail?

   YES — Go to step 5.

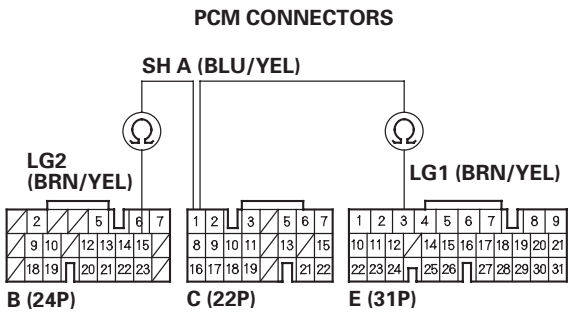
   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■

5. Turn the ignition switch OFF.

6. Jump the SCS line with the Honda PGM Tester or HDS.

7. Disconnect PCM connectors B (24P), C (22P) and E (31P).

8. Measure the resistance between PCM connector terminals C1 and B15 or E3.



Wire side of female terminals

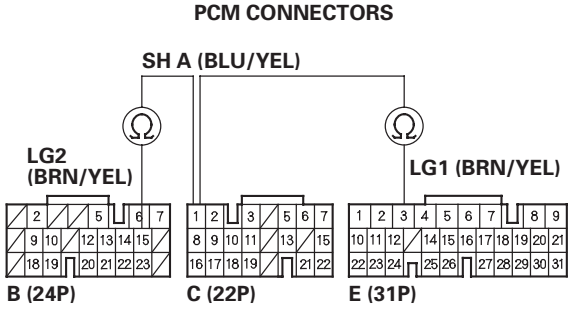
   Is there less then 12 Ω ?

   YES — Go to step 9.

   NO — Update the PCM if it does not have the latest software, or substitute a konwn-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM,replace the original PCM. ■

9. Disconnect the shift solenoid valve A connector.

10. Check for continuity between PCM connector terminals C1 and B15 or E3.



Wire side of female terminals

   Is there continuity?

   YES — Repair short to ground in the wire between PCM connector terminal C1 and shift solenoid valve A. ■

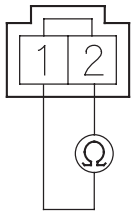
   NO — Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

11. Measure shift solenoid valve A resistance at the solenoid valve connector.

SHIFT SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

Is there 12—15 Ω ?

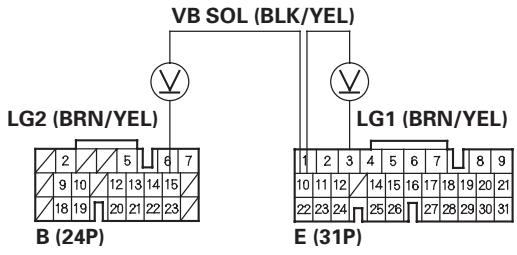
YES—Go to step 12.

NO—Replace shift solenoid valve A. After replacing the solenoid valve, go to step 14, and check that the repair has been completed.

12. Turn the ignition switch ON (II).

13. Measure the voltage between PCM connector terminals E10 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Check for loose or poor connections at PCM connector terminal E10. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Check for blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal E10 and the under-dash fuse/relay box. ■

14. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

15. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0973.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

DTC P0974: Open in Shift Solenoid Valve A Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Check that DTC P0974 recurs.

   Is DTC P0974 indicated?

   YES—Go to step 5.

   NO—Go to step 3.

3. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL A test in SHIFT SOL TEST MENU with the Honda PGM Tester or HDS.

4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0974.

   Did the result fail?

   YES—Go to step 5.

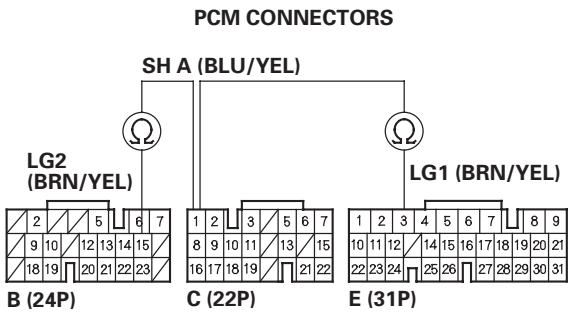
   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■

5. Turn the ignition switch OFF.

6. Jump the SCS line with the Honda PGM Tester or HDS.

7. Disconnect PCM connectors B (24P), C (22P) and E (31P).

8. Measure the resistance between PCM connector terminals C1 and B15 or E3.



Wire side of female terminals

Is there 12—25 Ω ?

YES—Check for loose or poor connections at PCM connector terminal C1. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Go to step 9.

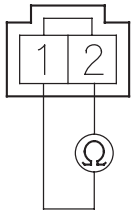
(cont'd)

DTC Troubleshooting (cont'd)

9. Disconnect shift solenoid valve A connector.

10. Measure shift solenoid valve A resistance at the solenoid valve connector.

SHIFT SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

Is there 12—25 Ω ?

YES—Repair open in the wire between PCM connector terminal C1 and shift solenoid valve A or between shift solenoid valve A and ground (G151). ■

NO—Replace shift solenoid valve A. After replacing the solenoid valve, go to step 11, and check that the repair has been completed.

11. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

12. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

13. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0974.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

DTC P0976: Short in Shift Solenoid Valve B Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Check that DTC P0976 recurs.

   Is DTC P0976 indicated?

   YES — Go to step 5.

   NO — Go to step 3.

3. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL B test in SHIFT SOL TEST MENU with the Honda PGM Tester or HDS.

4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0976.

   Did the result fail?

   YES — Go to step 5.

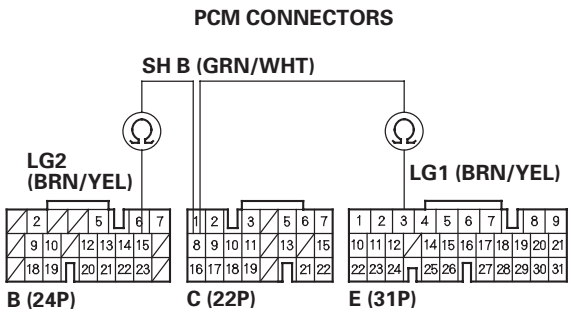
   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■

5. Turn the ignition switch OFF.

6. Jump the SCS line with the Honda PGM Tester or HDS.

7. Disconnect PCM connectors B (24P), (22P), and E (31P).

8. Measure the resistance between PCM connector terminals C8 and B15 or E3.



Wire side of female terminals

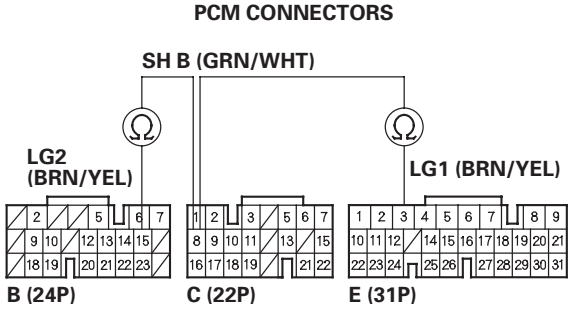
   Is there less than 12 Ω ?

   YES — Go to step 9.

   NO — Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

9. Disconnect the shift solenoid valve B connector.

10. Check for continuity between PCM connector terminals C8 and B15 or E3.



Wire side of female terminals

   Is there continuity?

   YES — Repair short to ground in the wire between PCM connector terminal C8 and the shift solenoid valve B. ■

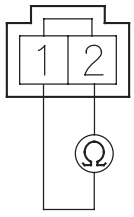
   NO — Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

11. Measure shift solenoid valve B resistance at the solenoid valve connector.

SHIFT SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

Is there 12—15 Ω ?

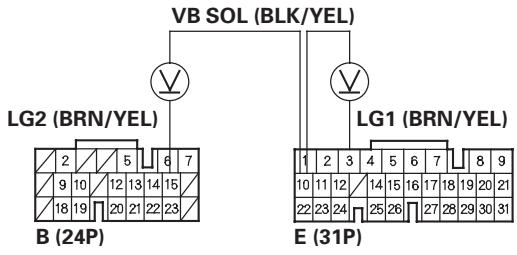
YES—Go to step 12.

NO—Replace the shift solenoid valve B. After replacing the solenoid valve, go to step 14, and check that the repair has been completed.

12. Turn the ignition switch ON (II).

13. Measure the voltage between PCM connector terminals E10 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Check for loose or poor connections at PCM connector terminal E10. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Check for blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal E10 and the under-dash fuse/relay box. ■

14. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

15. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0976.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

DTC P0977: Open in Shift Solenoid Valve B Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Check that DTC P0977 recurs.

   Is DTC P0977 indicated?

   YES—Go to step 5.

   NO—Go to step 3.

3. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL B test in SHIFT SOL TEST MENU with the Honda PGM Tester or HDS.

4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0977.

   Did the result fail?

   YES—Go to step 5.

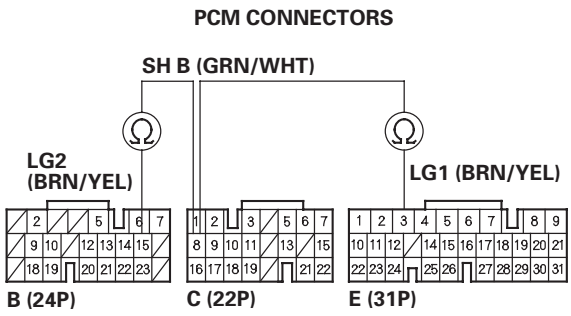
   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■

5. Turn the ignition switch OFF.

6. Jump the SCS line with the Honda PGM Tester or HDS.

7. Disconnect PCM connectors B (24P), C (22P), and E (31P).

8. Measure the resistance between PCM connector terminals C8 and B15 or E3.



Wire side of female terminals

Is there 12—25 Ω ?

YES—Check for loose or poor connections at PCM connector terminal C8. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Go to step 9.

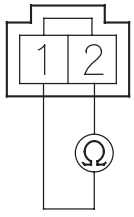
(cont'd)

DTC Troubleshooting (cont'd)

9. Disconnect the shift solenoid valve B connector.

10. Measure shift solenoid valve B resistance at the solenoid valve connector.

SHIFT SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

Is there 12—25 Ω ?

YES—Repair open in the wire between PCM connector terminal C8 and the shift solenoid valve B or between shift solenoid valve B and ground (G151). ■

NO—Replace shift solenoid valve B. After replacing the solenoid valve, go to step 11, and check that the repair has been completed.

11. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

12. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

13. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0977.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

DTC P0979: Short in Shift Solenoid Valve C Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Check that DTC P0979 recurs.

   Is DTC P0979 indicated?

   YES—Go to step 5.

   NO—Go to step 3.

3. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL C test in SHIFT SOL TEST MENU with the Honda PGM Tester or HDS.

4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0979.

   Did the result fail?

   YES—Go to step 5.

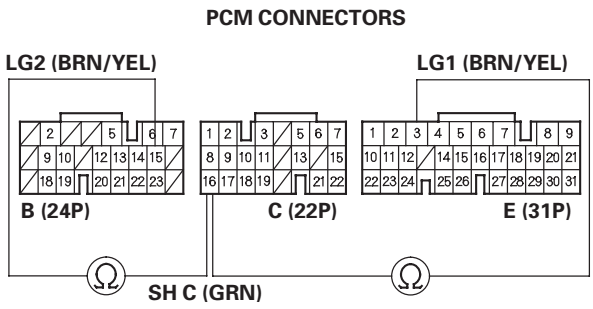
   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■

5. Turn the ignition switch OFF.

6. Jump the SCS line with the Honda PGM Tester or HDS.

7. Disconnect PCM connectors B (24P), C (22P), and E (31P).

8. Measure the resistance between PCM connector terminals C16 and B15 or E3.



Wire side of female terminals

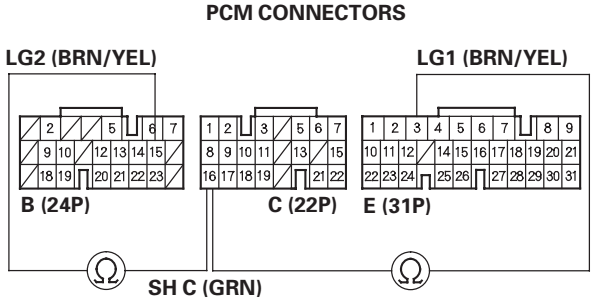
   Is there less than 12 Ω ?

   YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

   NO—Replace the PCM. ■

9. Disconnect the shift solenoid valve C connector.

10. Check for continuity between PCM connector terminals C16 and B15 or E3.



Wire side of female terminals

   Is there continuity?

   YES—Repair short to ground in the wire between PCM connector terminal C16 and the shift solenoid valve C. ■

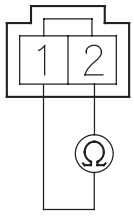
   NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

11. Measure shift solenoid valve C resistance at the solenoid valve connector.

SHIFT SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

Is there 12—25 Ω ?

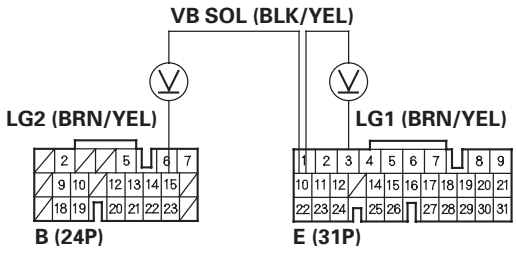
YES—Go to step 12.

NO—Replace shift solenoid valve C. After replacing the solenoid valve, go to step 14, and check that the repair has been completed.

12. Turn the ignition switch ON (II).

13. Measure the voltage between PCM connector terminals E10 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Check for loose or poor connections at PCM connector terminal E10. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Check for blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal E10 and the under-dash fuse/relay box. ■

14. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

15. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0979.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

DTC P0980: Open in Shift Solenoid Valve C Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Check that DTC P0980 recurs.

   Is DTC P0980 indicated?

   YES—Go to step 5.

   NO—Go to step 3.

3. Select SHIFT SOL TEST in MISC. TEST MENU, then carry out A/T SHIFT SOL C test in SHIFT SOL TEST MENU with the Honda PGM Tester or HDS.

4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0980.

   Did the result fail?

   YES—Go to step 5.

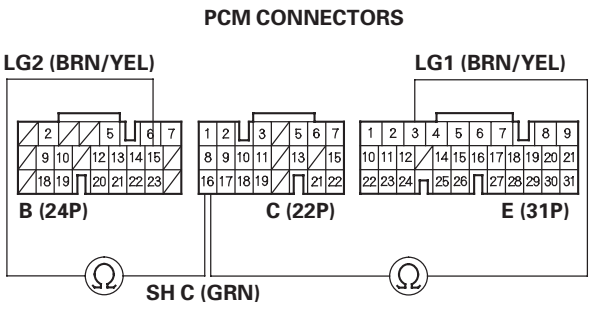
   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■

5. Turn the ignition switch OFF.

6. Jump the SCS line with the Honda PGM Tester or HDS.

7. Disconnect PCM connectors B (24P), C (22P), and E (31P).

8. Measure the resistance between PCM connector terminals C16 and B15 or E3.



Wire side of female terminals

Is there 12—25 Ω ?

YES—Check for loose or poor connections at PCM connector terminal C16. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Go to step 9.

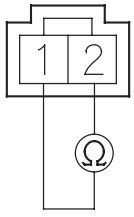
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DTC Troubleshooting (cont'd)

9. Disconnect the shift solenoid valve C connector.

10. Measure shift solenoid valve C resistance at the solenoid valve connector.

SHIFT SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

Is there 12—25 Ω ?

YES—Repair open in the wire between PCM connector terminal C16 and the shift solenoid valve C or between shift solenoid valve C and ground (G151). ■

NO—Replace shift solenoid valve C. After replacing the solenoid valve, go to step 11, and check that the repair has been completed.

11. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

12. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

13. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P0980.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

DTC P2769: Short in Torque Converter Clutch Solenoid Valve Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Check that DTC P2769 recurs.

   Is DTC P2769 indicated?

   YES — Go to step 5.

   NO — Go to step 3.

3. Select LOCKUP SOL TEST in MISC. TEST MENU, then carry out A/T LOCKUP SOL A test in LOCKUP SOL TEST MENU with the Honda PGM Tester or HDS.

4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P2769.

   Did the result fail?

   YES — Go to step 5.

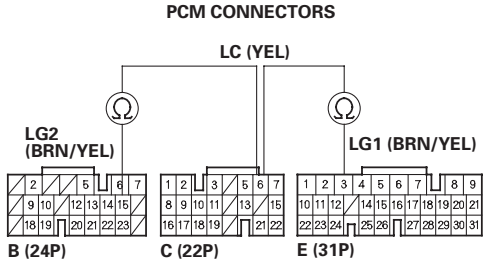
   NO — Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■

5. Turn the ignition switch OFF.

6. Jump the SCS line with the Honda PGM Tester or HDS.

7. Disconnect PCM connectors B (24P), C (22P), and E (31P).

8. Measure the resistance between PCM connector terminals C6 and B15 or E3.



Wire side of female terminals

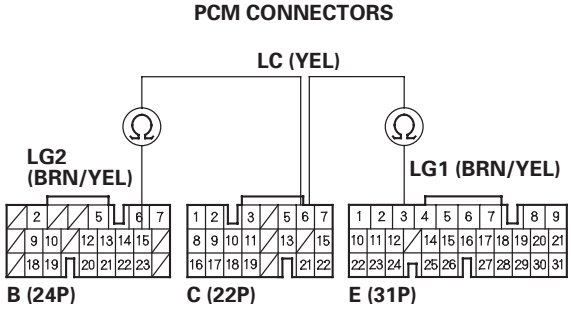
   Is there less than 12 Ω ?

   YES — Go to step 9.

   NO — Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

9. Disconnect the torque converter clutch solenoid valve connector.

10. Check for continuity between PCM connector terminals C6 and B15 or E3.



Wire side of female terminals

   Is there continuity?

   YES — Repair short to ground in the wire between PCM connector terminal C6 and the torque converter clutch solenoid valve. ■

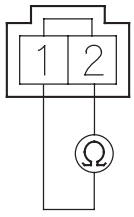
   NO — Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

11. Measure torque converter clutch solenoid valve resistance at the solenoid valve connector.

TORQUE CONVERTER CLUTCH SOLENOID VALVE CONNECTOR



Terminal side of male terminals

Is there 12—25 Ω ?

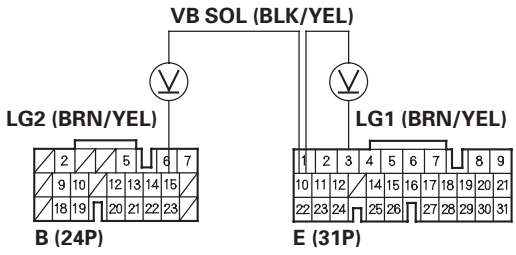
YES—Go to step 12.

NO—Replace the torque converter clutch solenoid valve. After replacing the solenoid valve, go to step 14, and check that the repair has been completed.

12. Turn the ignition switch ON (II).

13. Measure the voltage between PCM connector terminals E10 and B15 or E3.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Check for loose or poor connections at PCM connector terminal E10. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Check for blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal E10 and the under-dash fuse/relay box. ■

14. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

15. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

16. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P2769.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

DTC P2770: Open in Torque Converter Clutch Solenoid Valve Circuit

NOTE:
- Record all freeze data and review General Troubleshooting Information (see page 14-299) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

2. Check that DTC P2770 recurs.

   Is DTC P2770 indicated?

   YES—Go to step 5.

   NO—Go to step 3.

3. Select LOCKUP SOL TEST in MISC. TEST MENU, then carry out A/T LOCKUP SOL A test in LOCKUP SOL TEST MENU with the Honda PGM Tester or HDS.

4. Check the OBD STATUS in DTCs MENU for a pass/fail test of code P2770.

   Did the result fail?

   YES—Go to step 5.

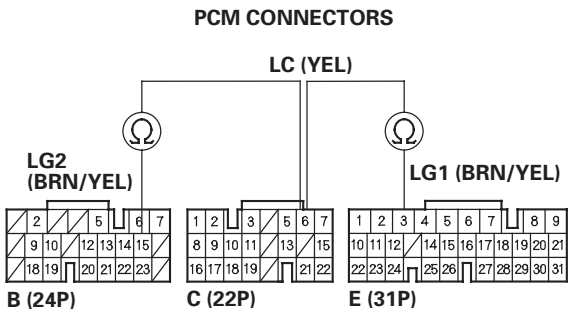
   NO—Intermittent failure, the system is OK at this time. If the tester tells you NOT COMPLETE, return to step 3 and recheck. ■

5. Turn the ignition switch OFF.

6. Jump the SCS line with the Honda PGM Tester or HDS.

7. Disconnect PCM connectors B (24P), C (22P), and E (31P).

8. Measure the resistance between PCM connector terminals C6 and B15 or E3.



Wire side of female terminals

Is there 12—25 Ω ?

YES—Check for loose or poor connections at PCM connector terminal C6. If the connections are OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-302), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Go to step 9.

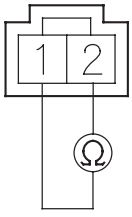
(cont'd)

DTC Troubleshooting (cont'd)

9. Disconnect the torque converter clutch solenoid valve connector.

10. Measure torque converter clutch solenoid valve resistance at the solenoid valve connector.

TORQUE CONVERTER CLUTCH SOLENOID VALVE CONNECTOR



Terminal side of male terminals

Is there 12—25 Ω ?

YES—Repair open in the wire between PCM connector terminal C6 and the torque converter clutch solenoid valve or between torqe converter clutch solenoid valve and ground (G151). ■

NO—Replace torque converter clutch solenoid valve. After replacing the solenoid valve, go to step 11, and check that the repair has been completed.

11. Clear the DTC in CLEAR MENU with the Honda PGM Tester or HDS.

12. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

13. Check the OBD STATUS in DTCs MENU for a pass/ fail test of code P2770.

Did the result pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck. ■

Road Test

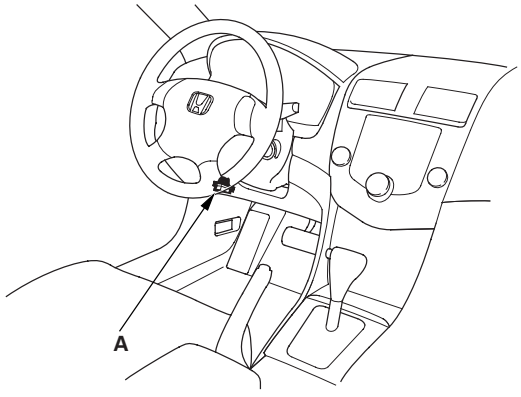
1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Apply the parking brake, and block both rear wheels. Start the engine, then shift to the D position while pressing the brake pedal. Press the accelerator pedal, and release it suddenly. The engine should not stall.

3. Repeat step 2 in the D3 position.

4. Connect the Honda PGM Tester or HDS to the DLC (A), and go to the A/T data list.

   NOTE: The illustration shows LHD model; RHD model is symmetrical.



5. Test-drive the vehicle on a flat road in the D position. Check for abnormal noise and clutch slippage. While driving, check that the shift points occur at the proper speeds by monitoring the accelerator pedal position sensor voltage with the tester and comparing your shift point speeds and voltage to those in the table. (The accelerator pedal position sensor voltage represents the throttle opening.)

Upshift: D position

Accelerator pedal position sensor voltage: 1.02 V	
1st → 2nd	9—12 mph (14—19 km/h)
2nd → 3rd	19—22 mph (30—35 km/h)
3rd → 4th	30—34 mph (48—54 km/h)
4th → 5th	45—50 mph (73—81 km/h)
Lock-up ON	41—48 mph (66—78 km/h)
Accelerator pedal position sensor voltage: 2.58 V	
1st → 2nd	23—27 mph (37—44 km/h)
2nd → 3rd	42—47 mph (67—75 km/h)
3rd → 4th	63—69 mph (101—111 km/h)
4th → 5th	90—100 mph (145—161 km/h)
Lock-up ON	91—101 mph (147—163 km/h)
Fully-opened throttle **Accelerator pedal position sensor voltage: 4.65 V**	
1st → 2nd	35—40 mph (57—65 km/h)
2nd → 3rd	60—68 mph (96—109 km/h)
3rd → 4th	94—105 mph (151—169 km/h)
4th → 5th	———
Lock-up ON	122—134 mph (196—216 km/h)

(cont'd)

Road Test (cont'd)

Downshift: D position

Accelerator pedal position sensor voltage: 1.02 V	
Lock-up OFF	40—47 mph (65—75 km/h)
5th → 4th	29—34 mph (46—54 km/h)
4th → 3rd	17—19 mph (27—31 km/h)
3rd → 1st	6—9 mph (10—15 km/h)
Accelerator pedal position sensor voltage: 2.58 V	
Lock-up OFF	76—86 mph (123—138 km/h)
Fully-opened throttle **Accelerator pedal position sensor voltage: 4.65 V**	
Lock-up OFF	107—117 mph (172—188 km/h)
5th → 4th	134—146 mph (215—235 km/h)
4th → 3rd	83—93 mph (134—150 km/h)
3rd → 2nd	52—58 mph (84—93 km/h)
2nd → 1st	27—30 mph (43—49 km/h)

6. Accelerate to about 35 mph (57 km/h) so the transmission is in 4th or 5th, then shift from the D position to the 2 position. The vehicle should immediately begin slowing down from engine braking.

7. Check for abnormal noise and clutch slippage in the following positions.

   1 (1st Gear) Position
   Accelerate from a stop at full throttle. Check that there is no abnormal noise or clutch slippage. Upshifts should not occur with the shift lever in this position.

   2 (2nd Gear) Position
   Accelerate from a stop at full throttle. Check that there is no abnormal noise or clutch slippage. Upshifts and downshifts should not occur with the shift lever in this position.

   R (Reverse) Position
   Accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage.

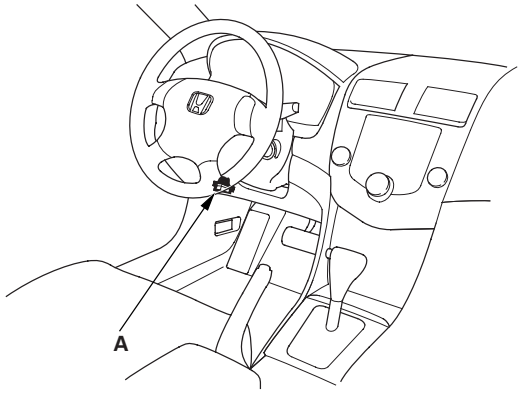
8. Test in P (Park) Position.
   Park the vehicle on a slope (about 16°), apply the brake, and shift into the P position. Release the brake; the vehicle should not move.

Stall Speed Test

1. Engage the parking brake, and block all four wheels.

2. Connect the Honda PGM Tester or HDS to the DLC (A), and go to the A/T data list.

   NOTE: The illustration shows LHD model; RHD model is symmetrical.



3. Make sure the A/C switch is OFF.

4. After the engine has warmed up to normal operating temperature (the radiator fan comes on), shift to the 2 position.

5. Fully press the brake pedal and accelerator pedal for 6 to 8 seconds, and note the engine speed. Do not move the shift lever while raising the engine speed.

6. Allow 2 minutes for cooling, then repeat the test in the D, 1, and R positions.

   NOTE:
   - Do not test stall speed for more than 10 seconds at a time.
   - Stall speed tests should be used for diagnostic purposes only.
   - Stall speed should be the same in D, 2, 1 and R positions.
   - Do not test stall speed with the A/T pressure gauges installed.

   Stall Speed rpm:
   Specification: 2,000 rpm (min^{-1})
   Service Limit: 1,850 − 2,150 rpm (min^{-1})

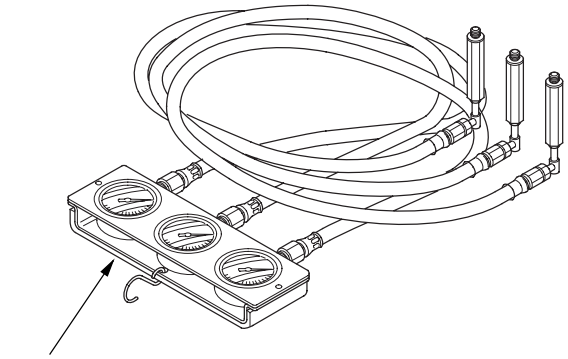
7. If the measurements are out of the service limit, problems and probable causes are listed in the table below:

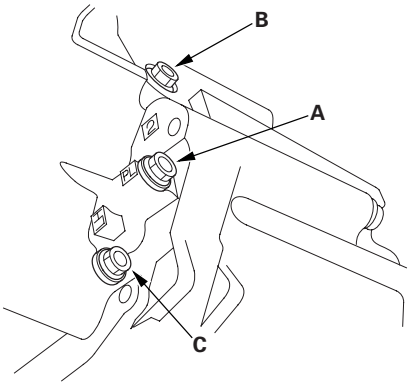
Problem	Probable causes
Stall speed rpm high in the D, 2, 1 and R positions	• Low fluid level • ATF pump output low • Clogged ATF strainer • Regulator valve stuck • Slipping clutch
Stall speed rpm high in the 1 position	Slippage of 1st clutch or 1st gear one-way clutch defective
Stall speed rpm high in the 2 position	Slippage of 2nd clutch
Stall speed rpm high in the R position	Slippage of 5th clutch
Stall speed low in the D, 2, 1 and R positions	• Engine output low • Engine throttle valve closed • Torque converter one-way clutch slipping

Pressure Tests

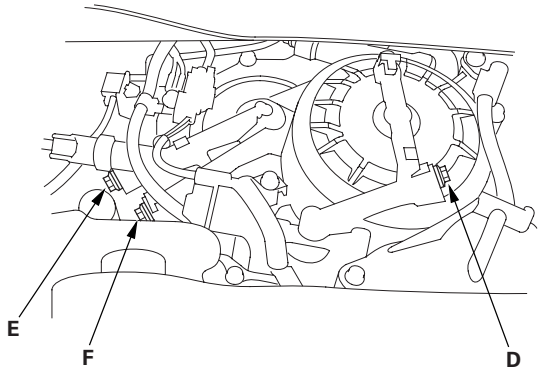
Special Tools Required
A/T oil pressure gauge set 07406-0020004

1. Before testing, be sure the transmission fluid is filled to the proper level.
2. Lift the vehicle up on a lift or apply the parking brake, block rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
3. Allow the front wheels to rotate freely.
4. Warm up the engine (the radiator fan comes on), then stop it and connect the Honda PGM Tester or HDS to the DLC.
5. Connect the oil pressure gauges to the line pressure inspection hole (A), 2nd clutch pressure inspection hole (B), and 1st-hold clutch pressure inspection hole (C). Do not allow dust or other foreign particles to enter the holes while connecting the gauges.

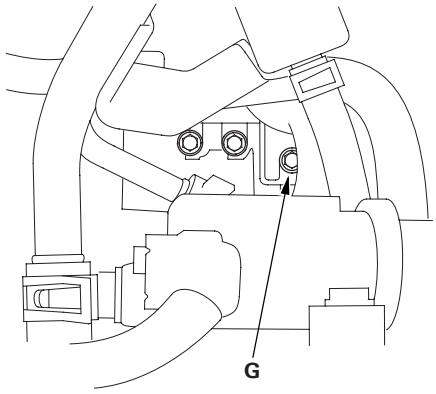




6. Connect the oil pressure gauges to the 3rd clutch pressure inspection hole (D), 4th clutch pressure inspection hole (E), and 5th clutch pressure inspection hole (F).



7. Connect the oil pressure gauge to the 1st clutch pressure inspection hole (G).



8. Start the engine, and run it at 2,000 rpm (min^{-1}) in the [P] or [N] position.

9. Measure line pressure at the line pressure inspection hole (A).

   NOTE: Higher pressure may be indicated if measurements are made in shift lever position other than [N] or [P].

Pressure	Fluid Pressure	
	Standard	Service Limit
Line (A)	900 — 960 kPa (9.2 — 9.8 kgf/cm², 130 — 140 psi)	850 kPa (8.7 kgf/cm², 120 psi)

10. Shift to the [1] position, and measure 1st clutch pressure at the 1st clutch pressure inspection hole (G) and 1st-hold clutch pressure at the 1st-hold clutch pressure inspection hole (C).

11. Shift to the [2] position, and measure 2nd clutch pressure at the 2nd clutch pressure inspection hole (B).

12. Shift to the [P] position, then press the brake pedal and hold it.

13. Shift to the [2] position, and release the brake pedal (the transmission should be in 2nd gear).

14. Press the accelerator very slowly to increase engine speed to 2,000 rpm (min^{-1}) gradually over 10 seconds, then hold it at 2,000 rpm (min^{-1}).

15. Hold in the [2] position at 2,000 rpm (min^{-1}), shift into [N] for 1 second, then shift to the [D3] position (the transmission will shift to 3rd gear), and measure 3rd clutch pressure at the 3rd clutch pressure inspection hole (D).

16. Shift to the [D] position, and measure 4th clutch pressure at the 4th clutch pressure inspection hole (E), then in about 15 seconds, the transmission will shift to 5th gear.

17. Measure 5th clutch pressure at the 5th clutch pressure inspection hole (F).

18. Bring the engine back to an idle, then apply the brake to stop the wheels from rotating.

19. Shift to the [R] position. Raise the engine rpm to 2,000 rpm (min^{-1}), and measure the reverse clutch pressure at the 5th clutch pressure inspection hole (F).

Pressure	Fluid Pressure	
	Standard	Service Limit
1st-hold clutch (C)	760 — 830 kPa (7.7 — 8.5 kgf/cm², 110 — 120 psi)	710 kPa (7.2 kgf/cm², 100 psi)
1st clutch (G)	890 — 970 kPa (9.1 — 9.9 kgf/cm², 130 — 140 psi)	840 kPa (8.6 kgf/cm², 120 psi)
2nd clutch (B)		
3rd clutch (D)		
4th clutch (E)		
5th clutch (F)		

20. If the measurements are out of service limit, problems and probable causes are listed in the table below:

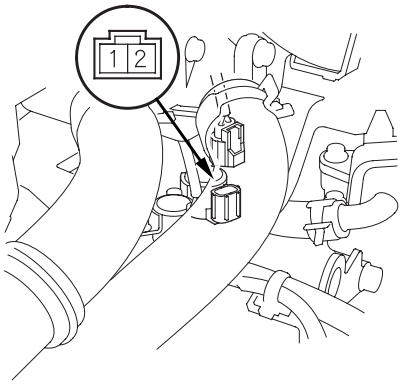
Problem	Probable causes
No or low line pressure	• Torque converter • ATF pump • Regulator valve • Torque converter check valve
No or low 1st clutch pressure	• 1st clutch • O-rings
No or low 2nd clutch pressure	• 2nd clutch • O-rings
No or low 3rd clutch pressure	• 3rd clutch • O-rings
No or low 4th clutch pressure	• 4th clutch • O-rings
No or low 5th clutch pressure	• 5th clutch • O-rings
No or low 5th clutch pressure in the [R] position	• Servo valve • 5th clutch • O-rings

21. Install the sealing bolts with the new sealing washers, and tighten the bolts to the specified torque. Do not reuse old sealing washers.

    Torque: 18 N·m (1.8 kgf·m,13 lbf·ft)

Torque Converter Clutch Solenoid Valve Test

1. Disconnect the connector from the torque converter clutch solenoid valve.



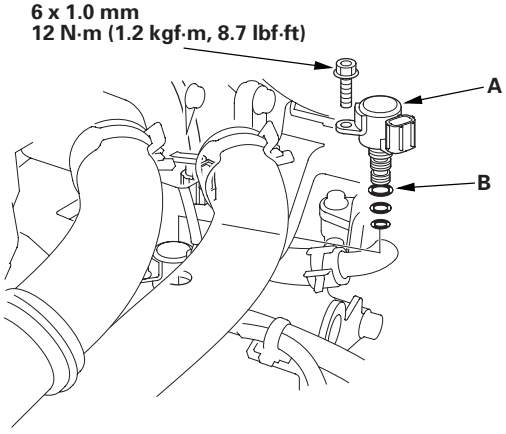
2. Remove the torque converter clutch solenoid valve.
3. Measure torque converter clutch solenoid valve resistance at the solenoid valve connector (black).

   STANDARD: 12 — 25 Ω

4. Replace the torque converter clutch solenoid valve if the resistance is out of standard.
5. If the resistance is within the standard, connect the No. 2 terminal of the torque converter clutch solenoid valve connector to the battery positive terminal, and connect the No. 1 terminal to the battery negative terminal. A clicking sound should be heard. Replace the torque converter clutch solenoid valve if no clicking sound is heard.

Torque Converter Clutch Solenoid Valve Replacement

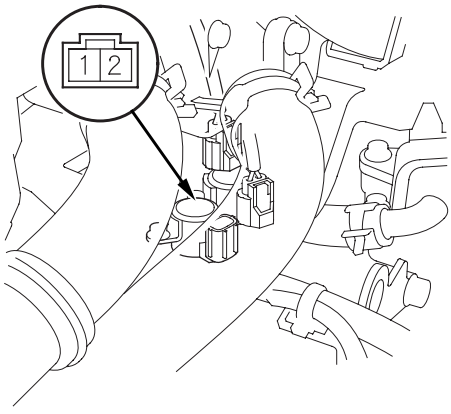
1. Remove the mounting bolt and the torque converter clutch solenoid valve.



2. Install a new torque converter clutch solenoid valve (A) with new O-rings (B). When installing the solenoid valve, do not allow dust or other foreign particles to enter the transmission.
3. Check the connector for rust, dirt, or oil, then reconnect it.

Shift Solenoid Valve B Test

1. Disconnect the connector from shift solenoid valve B.



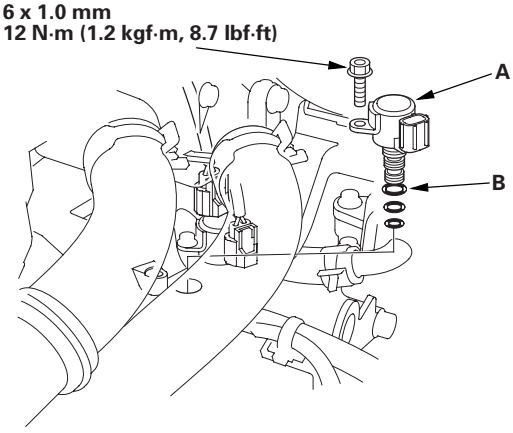
2. Remove shift solenoid valve B.
3. Measure shift solenoid valve B resistance at the solenoid valve connector (brown).

   STANDARD: 12—25 Ω

4. Replace the shift solenoid valve B if the resistance is out of standard.
5. If the resistance is within the standard, connect the No. 2 terminal of the shift solenoid valve B connector to the battery positive terminal, and connect the No. 1 terminal to the battery negative terminal. A clicking sound should be heard. Replace the shift solenoid valve B if no clicking sound is heard.

Shift Solenoid Valve B Replacement

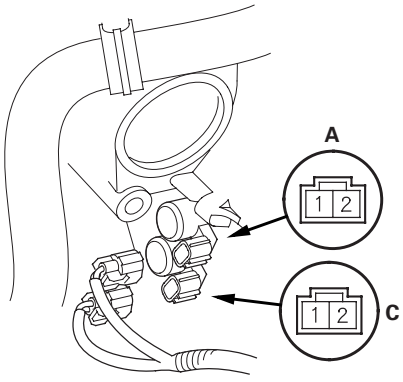
1. Remove the mounting bolt and shift solenoid valve B.



2. Install a new shift solenoid valve B with new O-rings (A). When installing the solenoid valve, do not allow dust or other foreign particles to enter the transmission.
3. Check the connector for rust, dirt, or oil, then reconnect it.

Shift Solenoid Valves A and C Test

1. Remove the starter.
2. Disconnect the shift solenoid valves A (black) and C (brown) connectors.



3. Measure the shift solenoid valves A and C resistance at each solenoid valve connector.

   STANDARD: 12—25 Ω

4. Replace shift solenoid valve A or C if the resistance is out of standard.
5. If the resistance is within the standard, connect the No. 2 terminal of the shift solenoid valve A or C connector to the battery positive terminal, and connect the No. 1 terminal to the battery negative terminal. A clicking sound should be heard. Replace shift solenoid valve A or C if no clicking sound is heard.

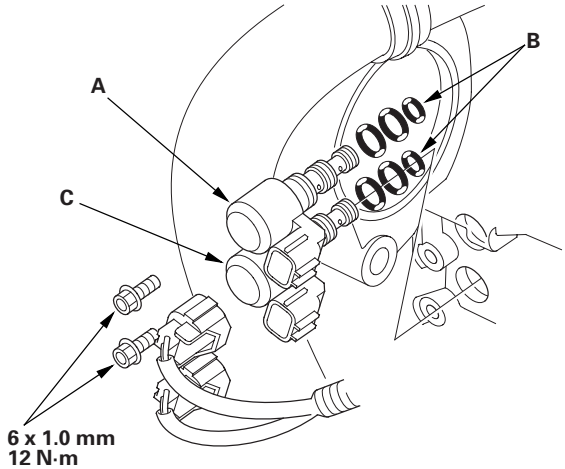
Shift Solenoid Valves A and C Replacement

NOTE: If shift solenoid valves A and C are replaced or removed at the same time, be sure to reinstall them correctly. The connector color of shift solenoid valve A is black, and the connector color of shift solenoid valve C is brown.

1. Remove the starter.

   NOTE: If you are only replacing shift solenoid valve C, starter removal is not needed.

2. Remove the mounting bolt and shift solenoid valve A.



3. Remove the mounting bolt and shift solenoid valve C.
4. Install a new shift solenoid valve A or C with new O-rings (B). While installing the valves, do not allow dust or other foreign particles to enter the transmission.
5. Check the connectors for rust, dirt, or oil, then reconnect them.
6. Install the starter, if removed.

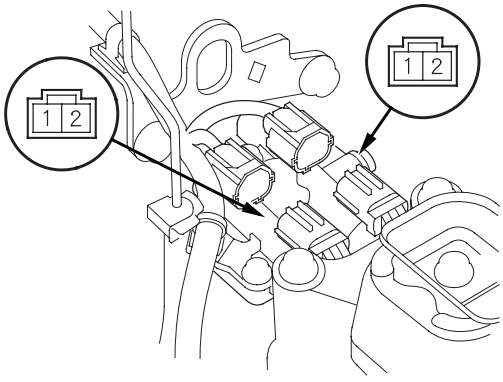
A/T Clutch Pressure Control Solenoid Valves A and B Test

1. Remove the battery hold-down bracket, then remove the battery cover, battery, and battery tray.

2. Remove the intake air duct and air cleaner housing.

3. Loosen the two bolts securing the battery base from under the vehicle, and remove the two bolts securing the battery base in the engine compartment, then remove the battery base.

4. Disconnect the 2P connectors from A/T clutch pressure control solenoid valves A and B.



5. Measure the A/T clutch pressure control solenoid valves A and B resistances at each solenoid valve connector.

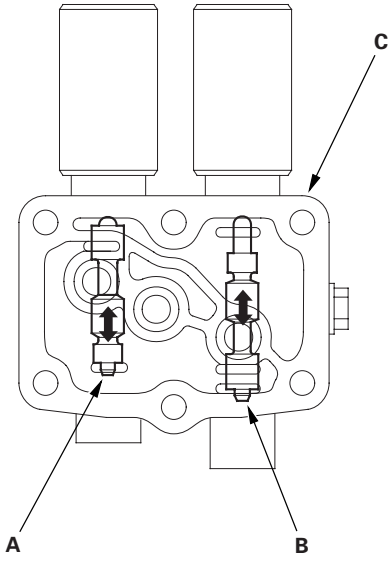
   STANDARD: 3 — 10 Ω

6. If the resistance of either solenoid is out of standard, replace A/T clutch pressure control solenoid valves A and B.

7. Connect the No. 1 terminal of A/T clutch pressure control solenoid valves A and B to the battery positive terminal, and connect the No. 2 terminal to the battery negative terminal. A clicking sound should be heard. Remove A/T clutch pressure control solenoid valves A and B if no sound is heard.

8. Check the fluid passage of the A/T clutch pressure control solenoid valves for dust and dirt, and clean the passage if necessary.

9. Connect the No. 1 terminal of A/T clutch pressure control solenoid valves A and B to the battery positive terminal, and connect the No. 2 terminal to the battery negative terminal. Make sure A/T clutch pressure control solenoid valves A and B move.



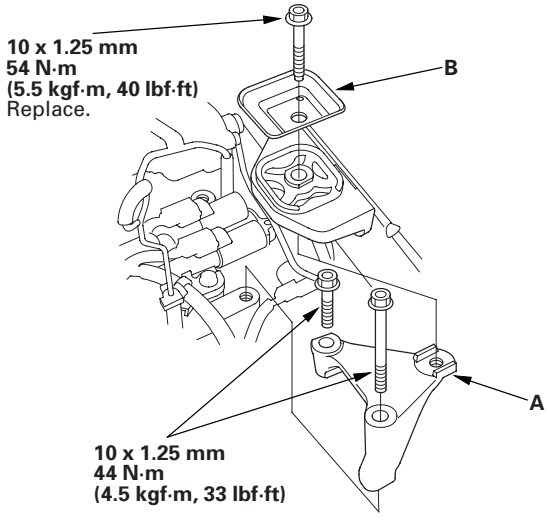
10. Disconnect one of the battery terminals and check valve movement.

    NOTE: You can see valve movement through the fluid passage in the mounting surface of the assembly body (C).

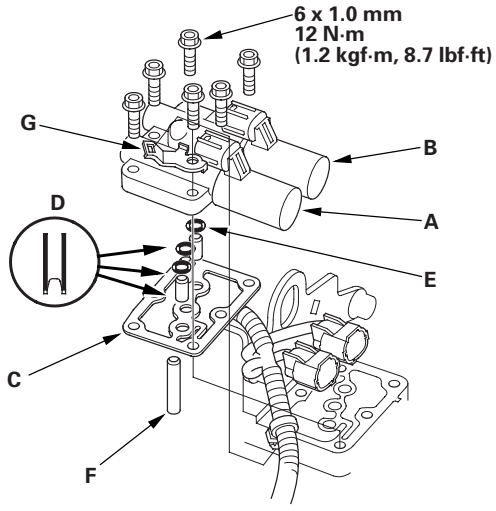
11. If either valve binds or moves sluggishly, or if the solenoid does not operate, replace A/T clutch pressure control solenoid valves A and B.

A/T Clutch Pressure Control Solenoid Valves A and B Replacement

1. Remove the battery hold-down bracket, then remove the battery cover, battery, and battery tray.
2. Remove the intake air duct and air cleaner housing.
3. Loosen the two bolts securing the battery base from under the vehicle, and remove the two bolts securing the battery base in the engine compartment, then remove the battery base.
4. Remove the transmission upper mount bracket (A) and bracket plate (B).



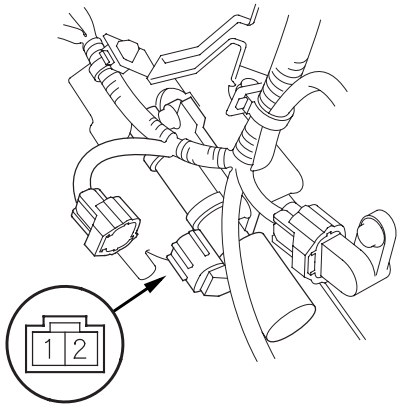
5. Remove the harness clamp from the clamp bracket, and disconnect the connectors from the A/T clutch pressure control solenoid valves A and B.
6. Remove the mounting bolts and A/T clutch pressure control solenoid valve A and B.



7. Clean the mounting surface and fluid passages of the A/T clutch pressure control solenoid valves A and B, and transmission housing.
8. Place a new gasket (C) on the transmission housing, then install the 8 x 18 mm ATF feed pipes (D) with their filter side into the transmission housing.
9. Install new O-rings (E) over the feed pipes, and install the 8 x 40 mm ATF feed pipe (F).
10. Install the new A/T clutch pressure control solenoid valves A and B, and harness clamp (G).
11. Check the A/T clutch pressure control solenoid valves A and B connectors for rust, dirt, or oil, then connect them securely.
12. Install the transmission upper mount bracket and bracket plate.
13. Install the battery base.
14. Install the air cleaner housing and intake air duct.
15. Install the battery, and connect the battery terminals.

A/T Clutch Pressure Control Solenoid Valve C Test

1. Disconnect the connector from A/T clutch pressure control solenoid valve C.



2. Measure A/T clutch pressure control solenoid valve C resistance at the solenoid valve connector.

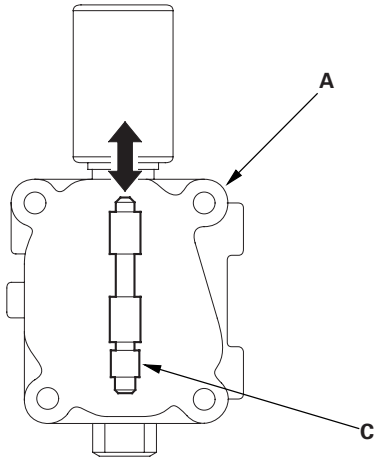
   STANDARD: 3 — 10 Ω

3. If the resistance is out of standard, replace A/T clutch pressure control solenoid valve C.

4. Connect the No. 1 terminal of A/T clutch pressure control solenoid valve C to the battery positive terminal, and connect the No. 2 terminal to the battery negative terminal. A clicking sound should be heard. Remove A/T clutch pressure control solenoid valve C if no sound is heard.

5. Check the fluid passage of A/T clutch pressure control solenoid valve C for dust and dirt.

6. Connect the No. 1 terminal of A/T clutch pressure control solenoid valve C to the battery positive terminal, and connect the No. 2 terminal to the battery negative terminal. Make sure A/T clutch pressure control solenoid valve C moves.



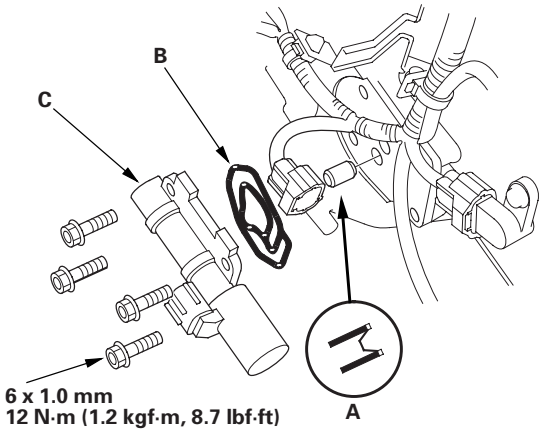
7. Disconnect one of the battery terminals and check valve movement.

   NOTE: You can see valve movement through the fluid passage in the mounting surface of the body (A).

8. If the valve binds or moves sluggishly, or if the solenoid does not operate, replace A/T clutch pressure control solenoid valve C.

A/T Clutch Pressure Control Solenoid Valve C Replacement

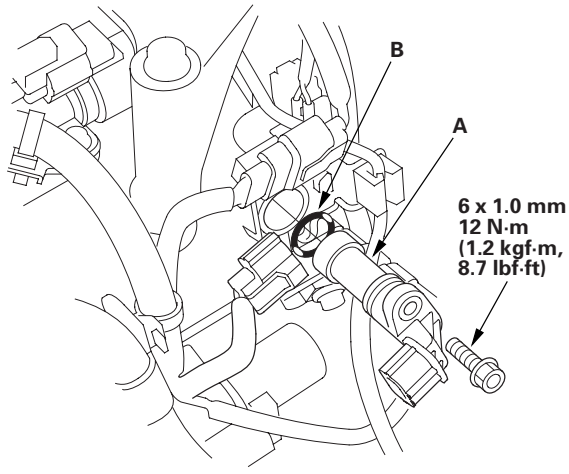
1. Disconnect the connector from A/T clutch pressure control solenoid valve C.
2. Remove A/T clutch pressure control solenoid valve C.



3. Clean the mounting surface and fluid passage of A/T clutch pressure control solenoid valve C and the transmission housing.
4. Install the 8 x 12 mm ATF feed pipe (A) with its filter side into the transmission housing.
5. Install the new gasket (B) in the mounting groove of the A/T clutch pressure control solenoid valve C body properly, then install them on the transmission housing. Do not pinch the gasket.
6. Check the solenoid connector for rust, dirt, or oil, and connect it securely.

Mainshaft Speed Sensor Replacement

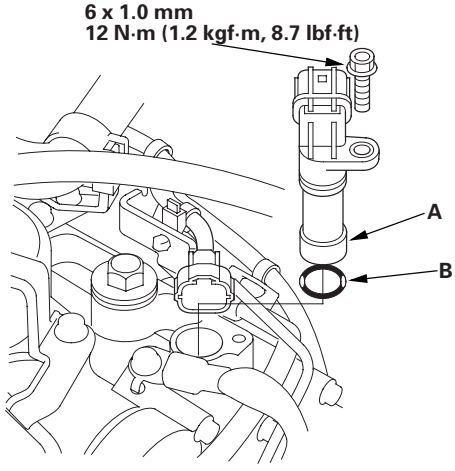
1. Remove the battery hold-down bracket, then remove the battery cover, battery, and battery tray.
2. Loosen the two bolts securing the battery base from under the vehicle, and remove the two bolts securing the battery base in the engine compartment, then remove the battery base.
3. Disconnect mainshaft speed sensor connector.
4. Remove the bolt securing the mainshaft speed sensor, then remove the mainshaft speed sensor (A) from the end cover.



5. Install the new O-ring (B) on the mainshaft speed sensor, then install the mainshaft speed sensor in the end cover. Do not allow dust or foreign particles to enter the transmission.
6. Check the connector for rust, dirt, or oil, then connect the connector securely.
7. Install the battery base and battery, then connect the battery terminals.

Countershaft Speed Sensor Replacement

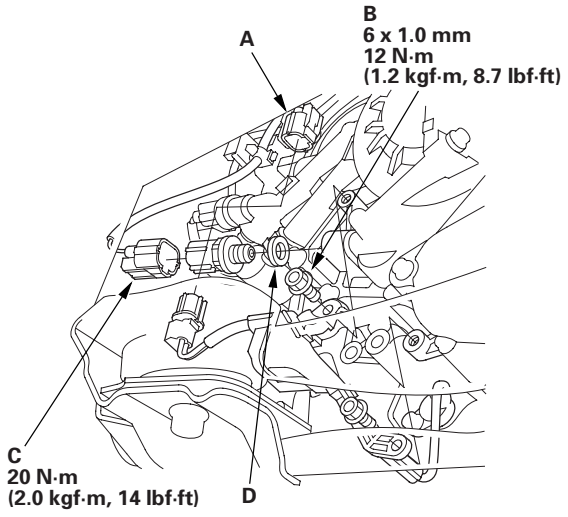
1. Remove the battery hold-down bracket, then remove the battery cover, battery, and battery tray.
2. Loosen the two bolts securing the battery base from under the vehicle, and remove the two bolts securing the battery base in the engine compartment, then remove the battery base.
3. Disconnect countershaft speed sensor connector.
4. Remove the bolt securing the countershaft speed sensor, then remove the countershaft speed sensor (A) from the transmission housing.



5. Install the new O-ring (B) on the countershaft speed sensor, then install the countershaft speed sensor in the transmission housing. Do not allow dust or foreign particles to enter the transmission.
6. Check for rust, dirt, or oil, then connect the connector securely.
7. Install the battery base and battery, then connect the battery terminals.

3rd Clutch Transmission Fluid Pressure Switch Replacement

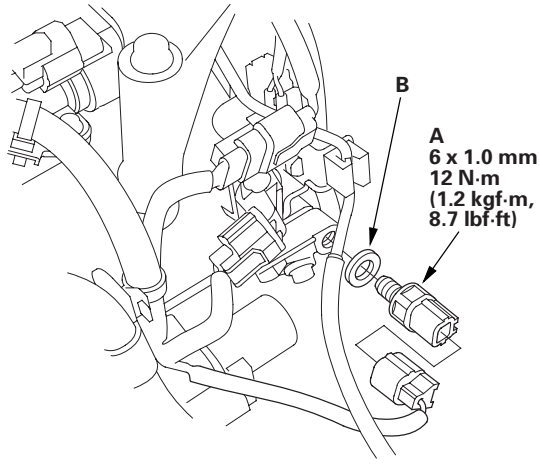
1. Disconnect the ATF temperature sensor connector (A).



2. Remove ATF temperature sensor harness clamp bolt (B).
3. Disconnect the connector from the 3rd clutch transmission fluid pressure switch (C).
4. Replace the switch, then install a new one with a new sealing washer (D). Tighten the switch on the metal part, not the plastic part.
5. Check the connector for water, oil, dust, or other particles inside it, and connect the connector securely.
6. Install ATF temperature sensor harness clamp bolt, and connect the ATF temperature sensor connector.

4th Clutch Transmission Fluid Pressure Switch Replacement

1. Remove the battery hold-down bracket, then remove the battery cover, battery, and battery tray.
2. Loosen the two bolts securing the battery base from under the vehicle, and remove the two bolts securing the battery base in the engine compartment, then remove the battery base.
3. Disconnect the connector from the 4th clutch transmission fluid pressure switch (A).

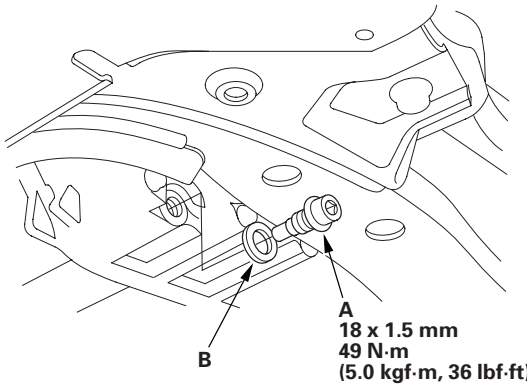


4. Replace the switch, then install a new one with a new sealing washer (B). Tighten the switch on the metal part, not the plastic part.
5. Check the connector for water, oil, dust, or other particles inside it, and connect the connector securely.
6. Install the battery base and battery, then connect the battery terminals.

ATF Temperature Sensor Test and Replacement

1. Remove the splash shield.

2. Remove the drain plug (A), and drain the automatic transmission fluid (ATF). Then reinstall the drain plug with a new sealing washer (B).



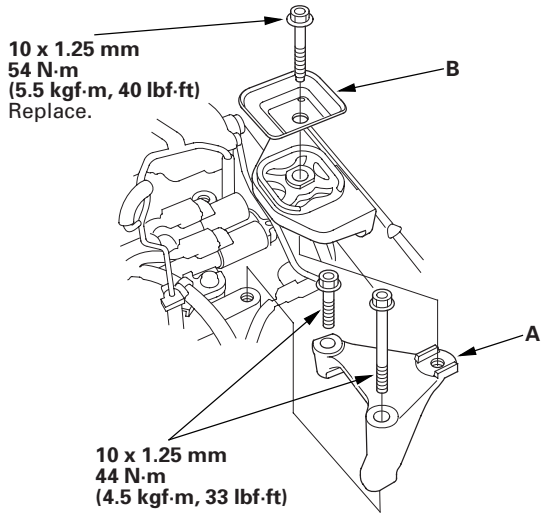
3. Disconnect the battery negative terminal, then disconnect the battery positive terminal.

4. Remove the battery hold-down bracket, then remove the battery cover, battery, and battery tray.

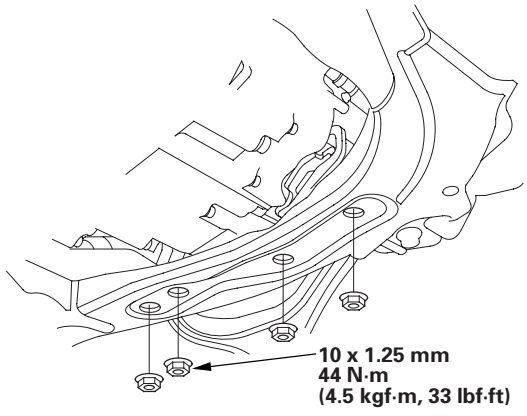
5. Remove the intake air duct and air cleaner housing.

6. Loosen the two bolts securing the battery base from under the vehicle, and remove the two bolts securing the battery base in the engine compartment, then remove the battery base.

7. Remove the transmission upper mount bracket (A) and bracket plate (B).



8. Place the transmission jack under the transmission, and remove the transmission lower mount nuts.

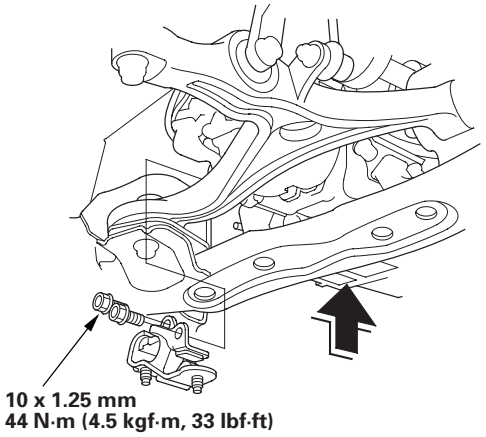


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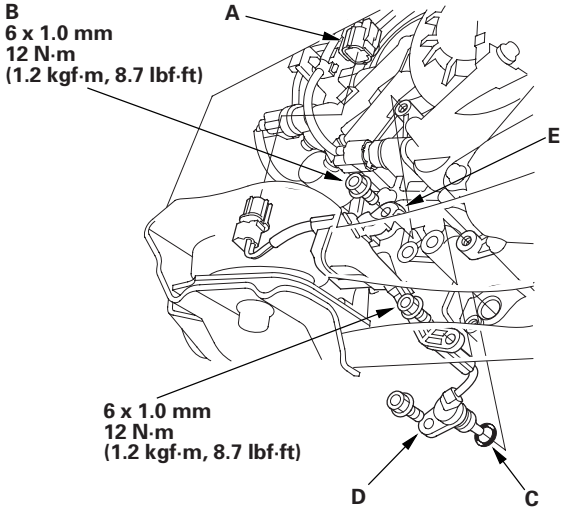
ATF Temperature Sensor Test and Replacement (cont'd)

9. Lift the transmission up to create clearance between the transmission and front subframe with the jack.

10. Remove the transmission lower front mount.



11. Disconnect the ATF temperature sensor connector (A).



12. Remove ATF temperature sensor harness clamp bolt (B), then remove the sensor.

13. Install the new O-ring (C) on the new ATF temperature sensor (D), then install the sensor.

14. Secure the ATF temperature sensor harness clamp (E) with the bolts.

15. Check the connector for rust, dirt, or oil, then connect the connector securely.

16. Install the transmission lower front mount.

17. Install the transmission lower mount nuts.

18. Install the transmission upper mount bracket, bracket plate, and remove the transmission jack.

19. Refill the transmission with ATF (see page 14-466).

20. Install the battery base, then install the air cleaner housing and intake air duct.

21. Install the battery tray, battery, and battery cover, then secure the battery with its hold-down bracket. Connect the battery terminals.

22. Install the splash shield.

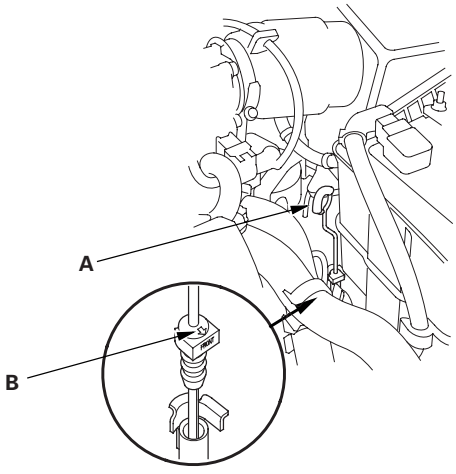
ATF Level Check

NOTE: Keep all foreign particles out of the transmission.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

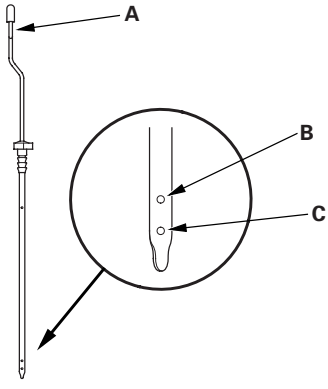
2. Park the vehicle on level ground, and turn the engine off.

3. Remove the dipstick (yellow loop) (A) from the ATF dipstick guide pipe, and wipe it with a clean cloth.



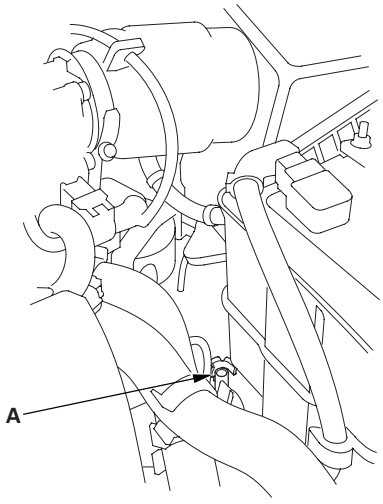
4. Insert the dipstick back with pointing the arrow (B) on the guide to the front of the vehicle.

5. Remove the dipstick (A) and check the fluid level. It should be between upper mark (B) and lower mark (C).



6. If the level is below the lower mark, check for fluid leaks at the transmission, hose and line joints. If the level is an excess, drain the ATF to proper level.

7. Pour the recommended fluid into the opening (A) of the dipstick guide pipe to bring it to upper mark. Always use genuine Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.

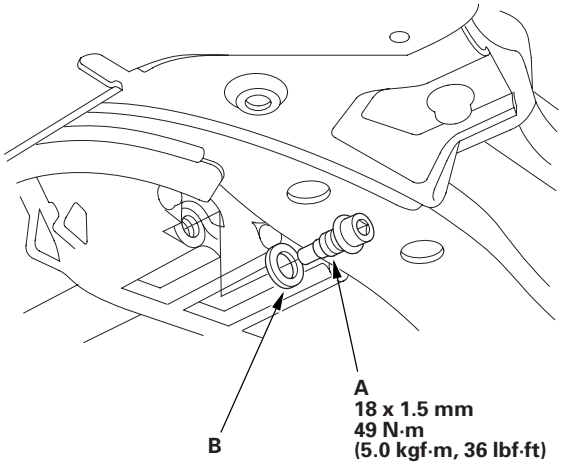


8. Insert the dipstick back into the dipstick guide pipe with pointing the arrow on the guide to the front of the vehicle.

ATF Replacement

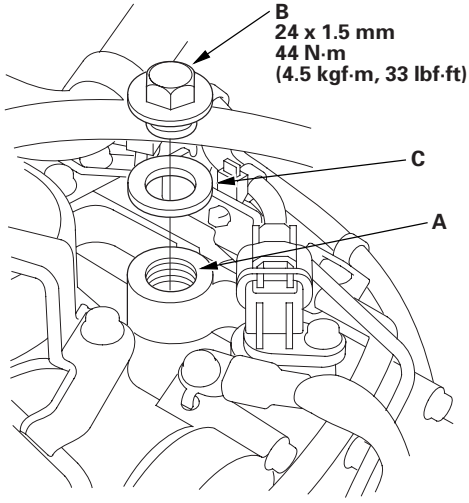
NOTE: Keep all foreign particles out of the transmission.

1. Bring the transmission up to normal operating temperature (the radiator fan comes on).
2. Park the vehicle on level ground, and turn the engine off.
3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



4. Reinstall the drain plug with a new sealing washer (B).
5. Refill transmission with the recommended fluid into the filler hole (A) to the upper mark on the dipstick. Always use genuine Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.

Automatic Transmission Fluid Capacity:
2.9 L (3.1 US qt, 2.6 Imp qt) at change
7.2 L (7.6 US qt, 6.3 Imp qt) at overhaul



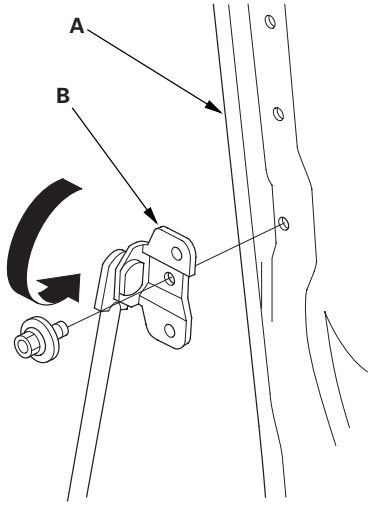
6. Install the ATF filler bolt (B) with a new sealing washer (C).

Transmission Removal

1. Before disconnecting the battery, make sure you have the anti-theft code for the radio (and navigation system), then write down the frequencies for the radio's preset stations.

2. Remove the bolts securing the support strut brackets on both sides of the hood. Secure the hood (A) in a vertical position, then install the right strut bracket (B) by turning it over with its bolt in the lower position.

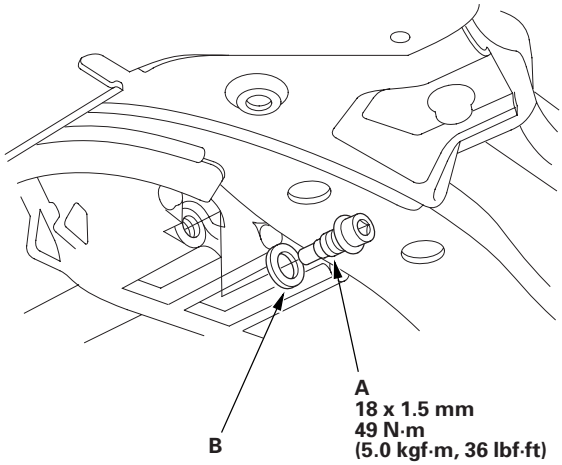
   NOTE: Do not attempt to close the hood with the support strut in the vertical position; it will damage the support strut and hood.



3. Raise the vehicle, and make sure it is supported securely.

4. Remove the splash shield.

5. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



6. Reinstall the drain plug with a new sealing washer (B).

7. Disconnect the battery negative terminal, then disconnect the battery positive terminal.

8. Remove the battery hold-down bracket, then remove the battery cover, battery, and battery tray.

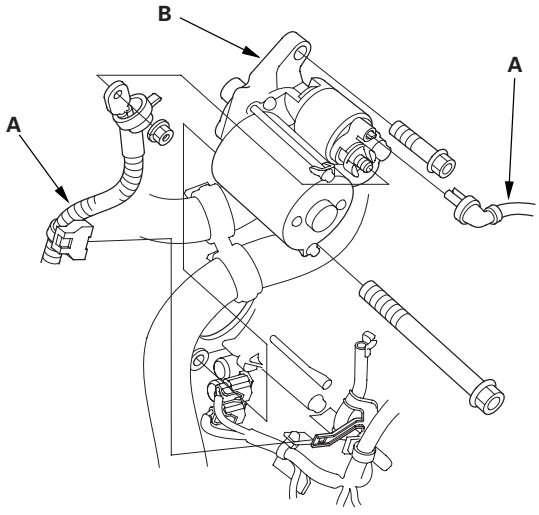
9. Remove the intake air duct and air cleaner housing.

10. Loosen the two bolts securing the battery base from under the vehicle, and remove the two bolts securing the battery base in the engine compartment, then remove the battery base.

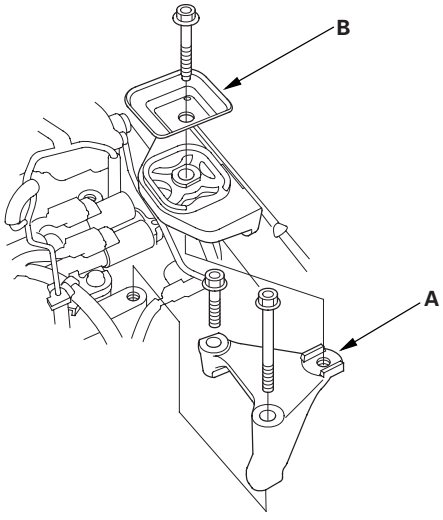
(cont'd)

Transmission Removal (cont'd)

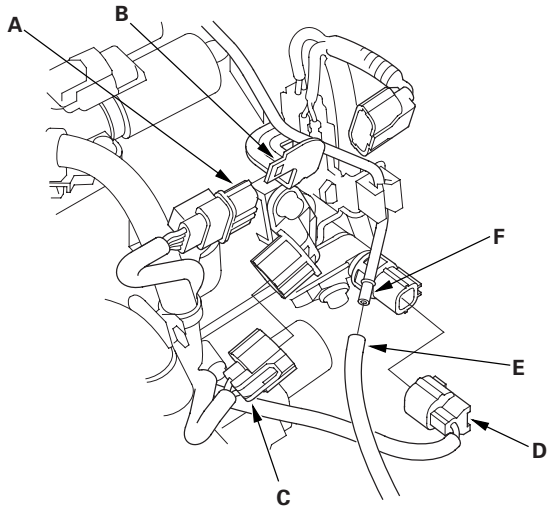
11. Remove the starter cables (A) from the starter (B), then remove the starter.



12. Remove the transmission upper mount bracket (A) and bracket plate (B).

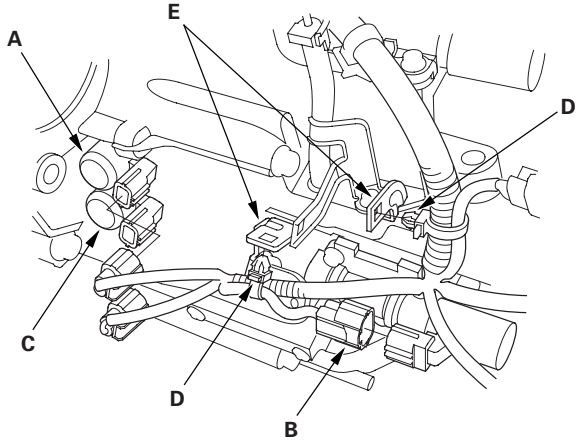


13. Remove the transmission subharness connector (A) from its bracket (B), then disconnect it.

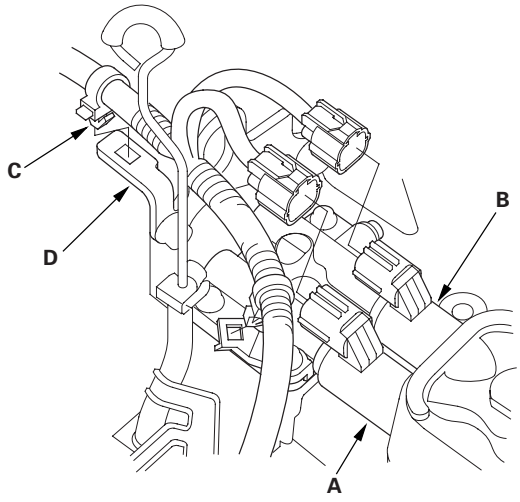


14. Disconnect the mainshaft speed sensor connector (C) and 4th clutch transmission fluid pressure switch connector (D), and disconnect the vacuum hose (E) from the vacuum line (F).

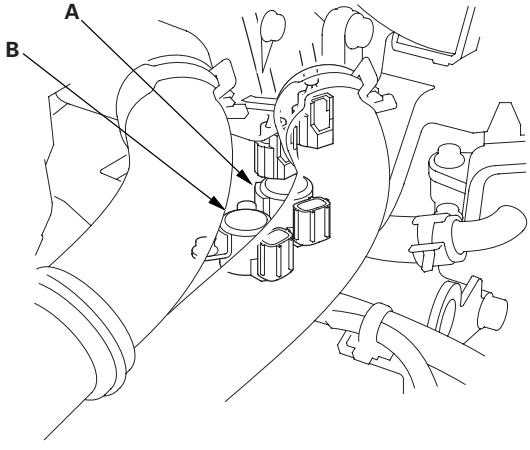
15. Disconnect shift solenoid valve A connector, solenoid valve C connector, and A/T clutch pressure control solenoid valve C connector (B), then remove the harness clamps (D) from the clamp brackets (E).



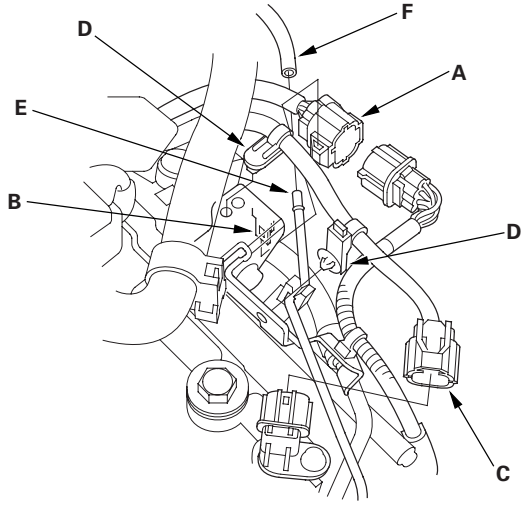
16. Disconnect the A/T clutch pressure control solenoid valve A connector, and solenoid valve B connector, then remove the harness clamp (D) from the clamp bracket (E).



17. Disconnect the connectors from the torque converter clutch solenoid valve (A) and shift solenoid valve B.

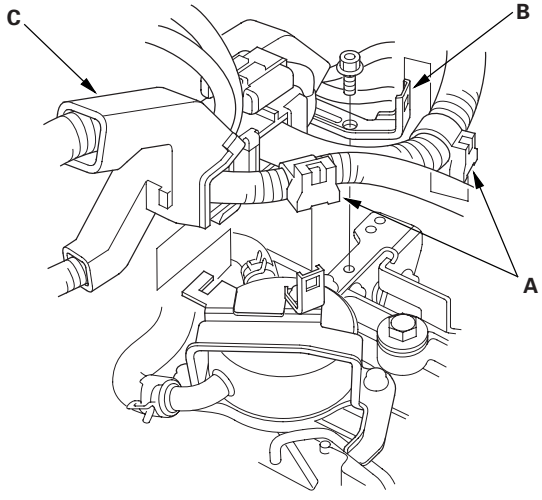


18. Remove the transmission range switch connector (A) from its bracket (B), and disconnect it.



19. Disconnect the countershaft speed sensor connector (C), then remove the harness clamps (D) from the brackets. Disconnect the vacuum hose (E) from the vacuum line (F).

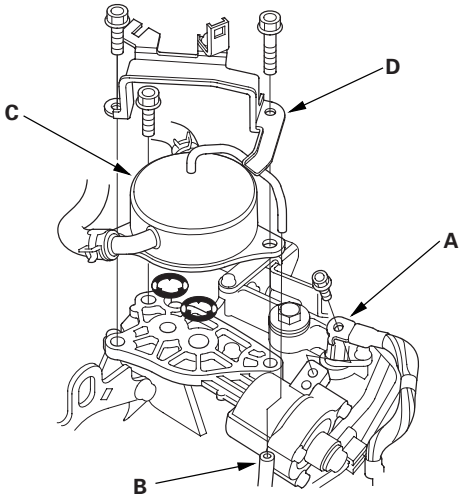
20. Remove the harness clamps (A) from the brackets, and remove the bolt securing the bracket.



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Transmission Removal (cont'd)

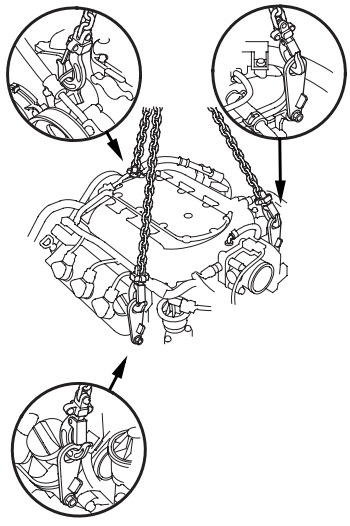
21. Remove the transmission ground cable (A), and disconnect the breather tube (B).



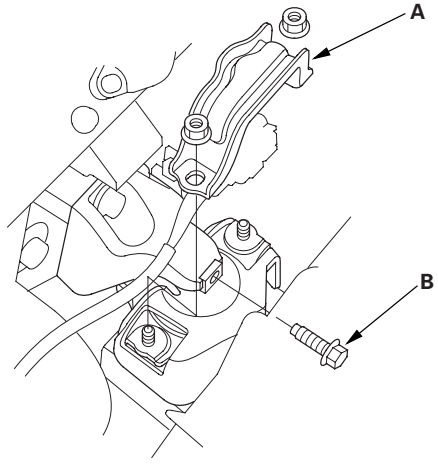
22. Put a shop rags around the ATF warmer (C) to remove the ATF that flows out.

23. Remove the bolts securing the ATF warmer and the bracket (D), then remove the ATF warmer from the transmission housing. Cover the fluid passages on the transmission and ATF warmer with tape. Do not disconnect the hoses.

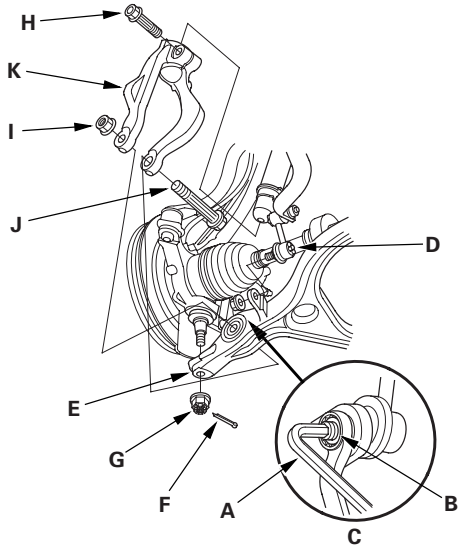
24. Attach hoist brackets to the engine, then lift and support the engine at three places.



25. Remove the front mount stop (A), and remove the front mount bolt (B).

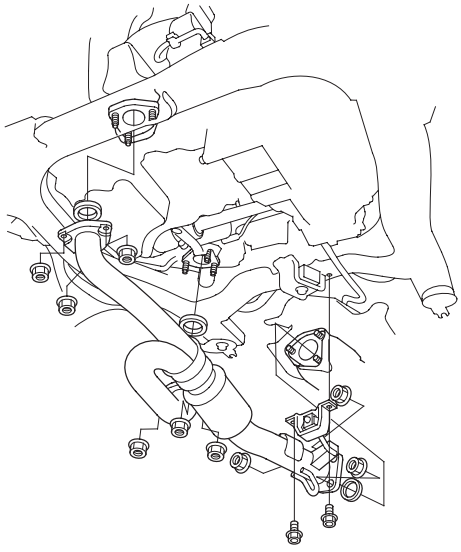


26. Insert a 6 mm Allen wrench (A) in the top of the ball joint pin (B), and remove the nuts (C), then separate the stabilizer link (D) from the lower arms (E).



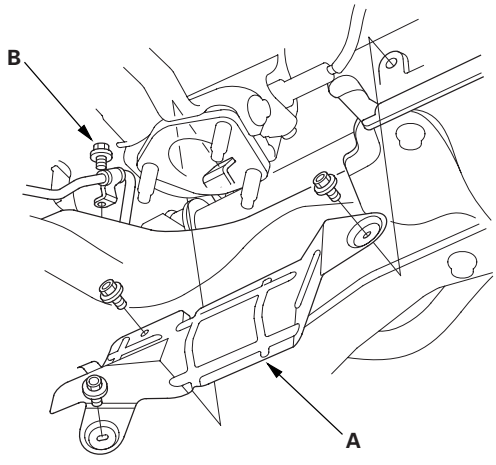
27. Remove the cotter pins (F), castle nuts (G), damper pinch bolt (H), self-locking nut (I), bolt (J), and damper forks (K), then separate the ball joints from the lower arms (see page 18-21).

28. Remove the exhaust pipe A and its mount.

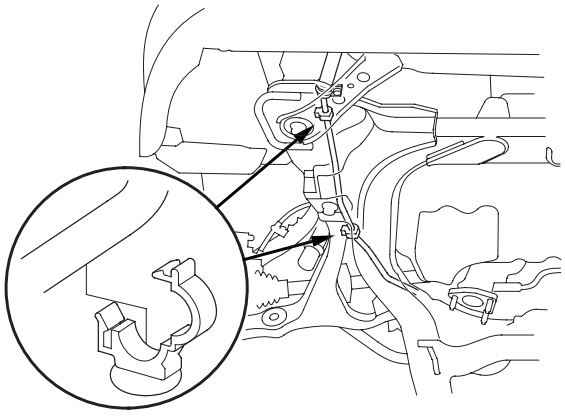


29. Remove the steering gearbox heat shield (A), and remove the bolt (B) securing the power steering fluid line bracket.

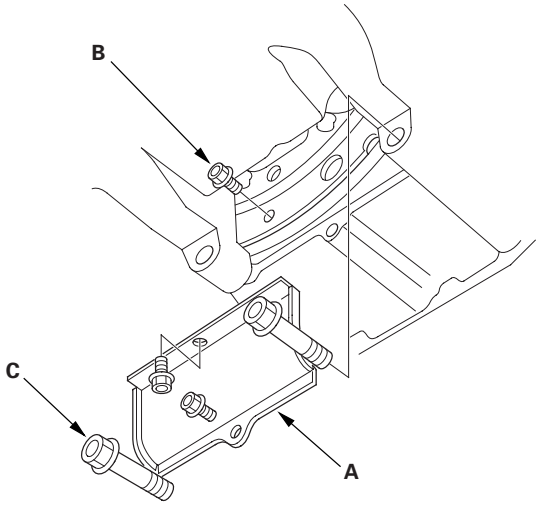
    NOTE: The illustration shows LHD model; RHD model is similar.



30. Remove the power steering fluid line from its clamps on the front subframe.



31. Remove the torque converter cover (A), and remove the drive plate bolts (B) while rotating the crankshaft pulley.



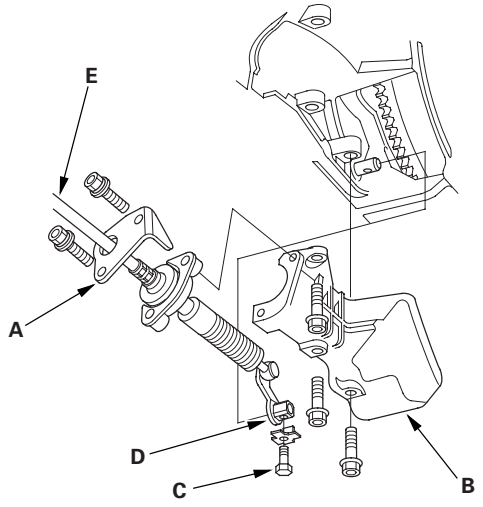
32. Remove the engine-to-torque converter housing mounting bolts (C).

(cont'd)

Transmission Removal (cont'd)

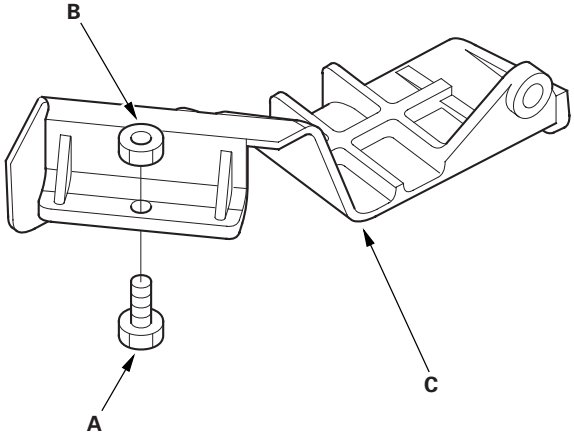
33. Remove the bolts securing shift cable holder (A), then remove shift cable cover (B).

    NOTE: To prevent damage to the control lever joint, remove the bolts securing the holder before removing the bolts securing the cover.



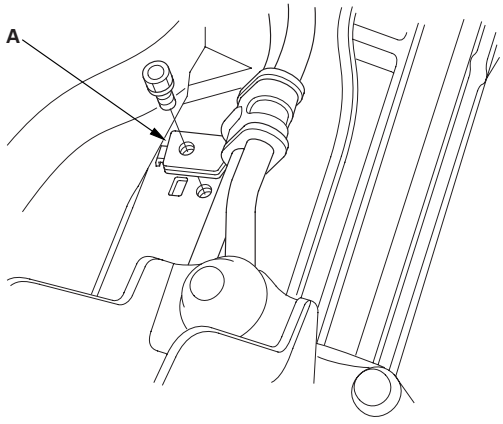
34. Remove the lock bolt (C) securing the control lever (D), then remove the shift cable (E) and the control lever. Do not bend the shift cable excessively.

35. Install a 6 x 1.0—14 mm bolt (A) and nut (B) on the shift cable cover (C), then reinstall the shift cable cover to the torque converter housing. If you don't do this, the bolt head of the cable cover may prevent you from removing the torque converter during transmission removal.



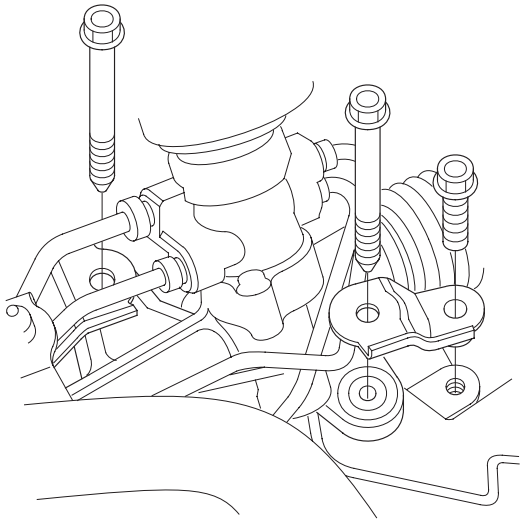
36. Remove the power steering fluid line bracket (A) from the front subframe.

    NOTE: The illustration shows LHD model; RHD model is similar.



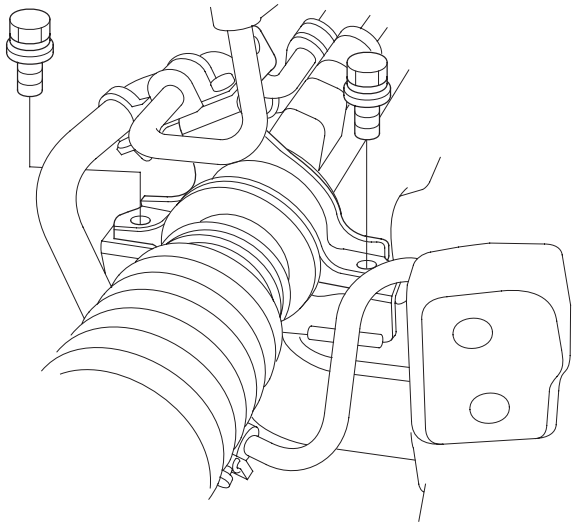
37. Remove the steering gearbox mounting bolts and stiffener.

    NOTE: The illustration shows LHD model; RHD model is similar.

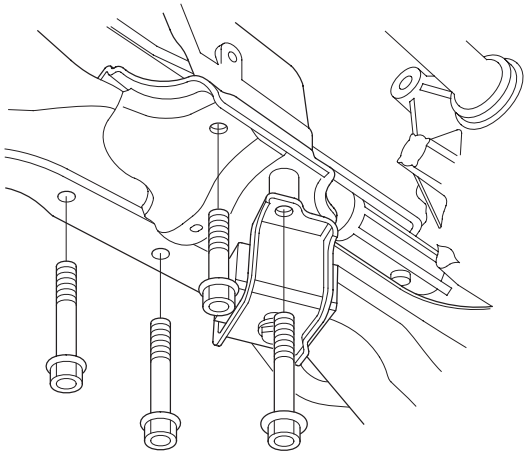


38. Remove the steering gearbox mounting bracket bolts.

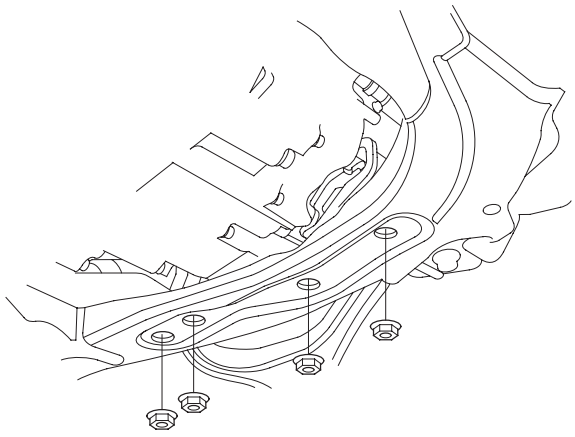
    NOTE: The illustration shows LHD model; RHD model is similar.



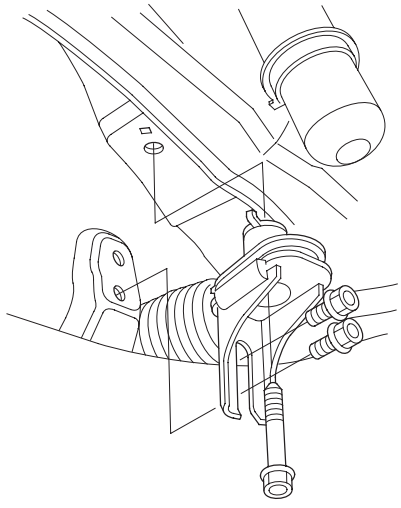
39. Remove the rear mount base bracket bolts.



40. Remove the transmission lower mount nuts.



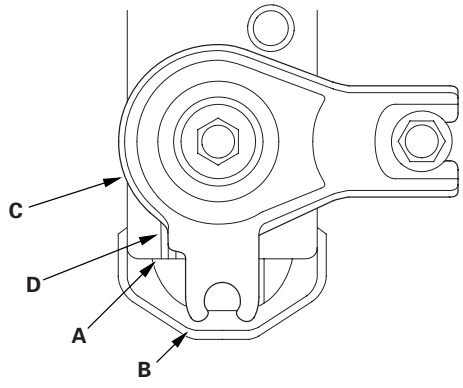
41. Remove both mid-mounts.



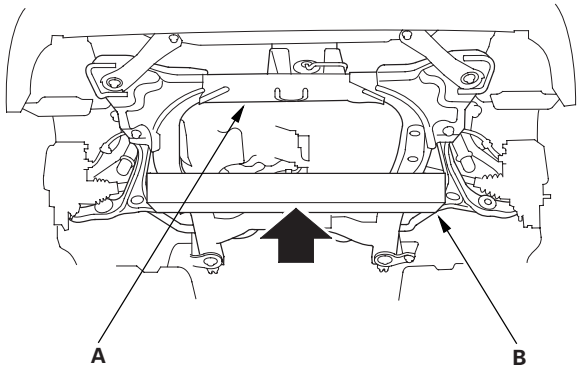
(cont'd)

Transmission Removal (cont'd)

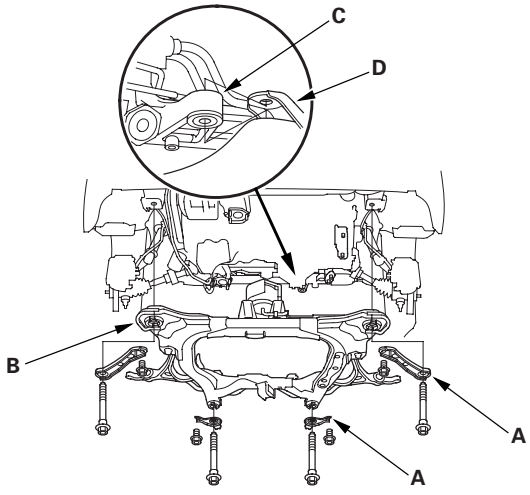
42. Make the appropriate reference lines (A) at both ends of the subframe (B) that line up with the edge (C) of the stiffeners (D).



43. Supprot the subframe (A) with a 4 x 4 40 in. piece of wood (B) and a jack.



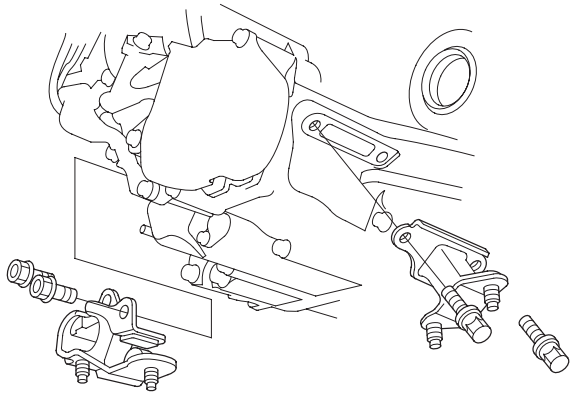
44. Remove the four bolts securing the stiffeners (A), and four bolts securing the front subframe (B).



45. Lower the front subframe by sliding the steering gearbox (C) out to clear the gearbox mounting bracket (D) on the subframe.

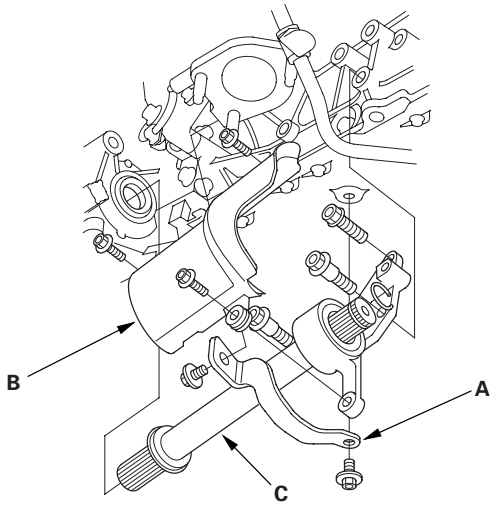
46. Hang the steering gearbox to the body with a rope.

47. Remove the transmission lower mounts.



48. Remove the driveshafts from the differential and intermediate shaft (see page 16-3).

49. Remove the exhaust manifold bracket (A) and heat shield (B).

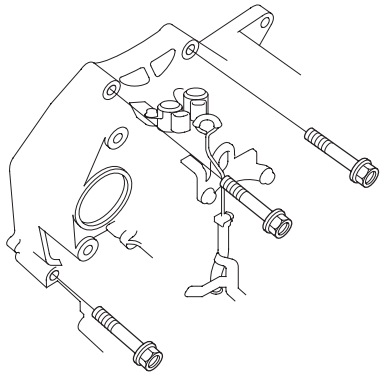


50. Remove the intermediate shaft (C).

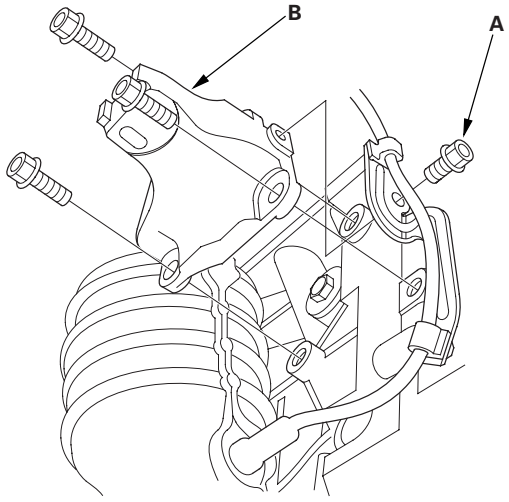
51. Coat all precision finished surfaces with clean engine oil, then tie plastic bags over both ends of the driveshaft and the intermediate shaft.

52. Place a jack under the transmission.

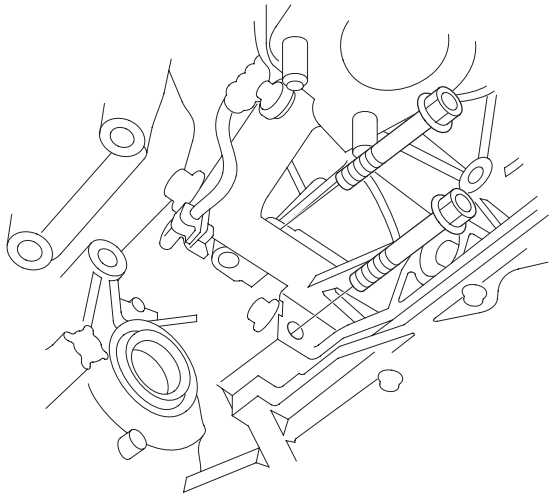
53. Remove the transmission housing mounting bolts.



54. Remove the bolt (A) securing the harness clamp bracket, and remove the front mount bracket (B).



55. Remove the transmission housing mounting bolts.

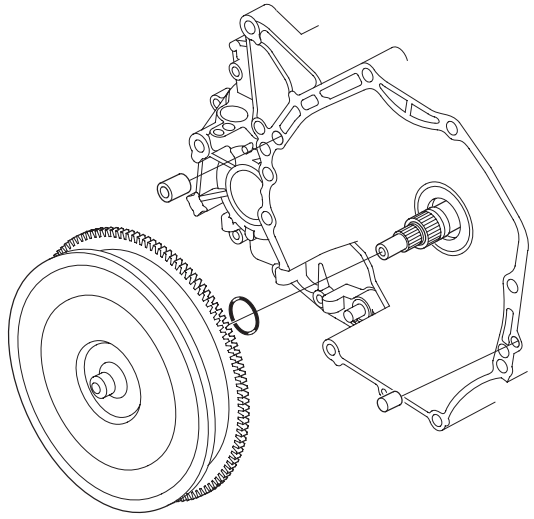


56. Slide the transmission away from the engine to remove it from the vehicle.

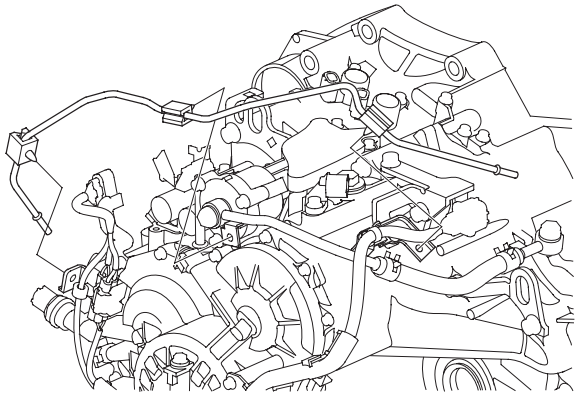
(cont'd)

Transmission Removal (cont'd)

57. Remove the shift cable cover, then remove the torque converter.



58. Remove the vacuum line from the transmission.

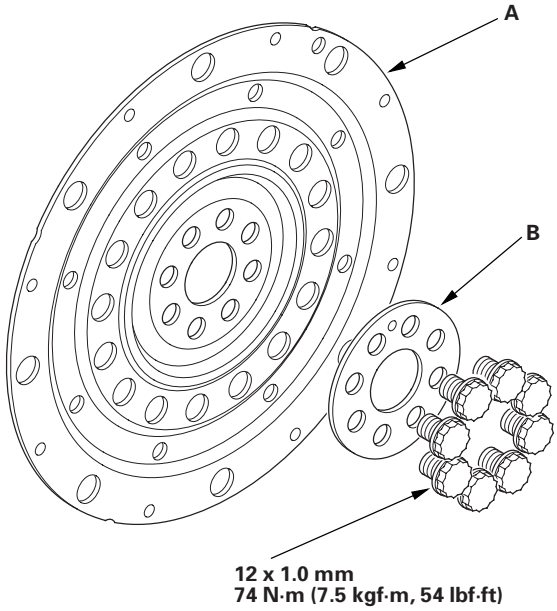


59. Remove the 6 x 1.0—14 mm bolt and nut that you installed on the shift cable cover in step 35.

60. Inspect the drive plate, and replace it if it's damaged.

Drive Plate Removal and Installation

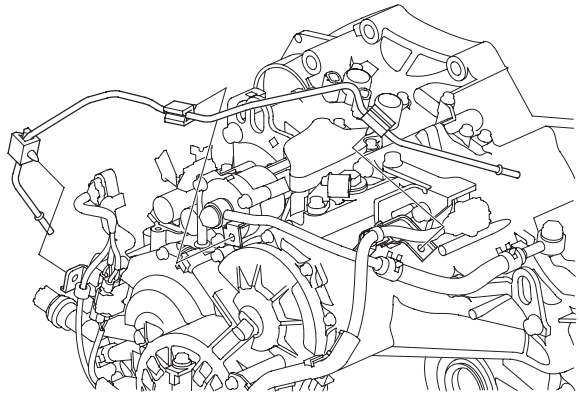
1. Remove the drive plate (A) and washer (B) from the engine crankshaft.



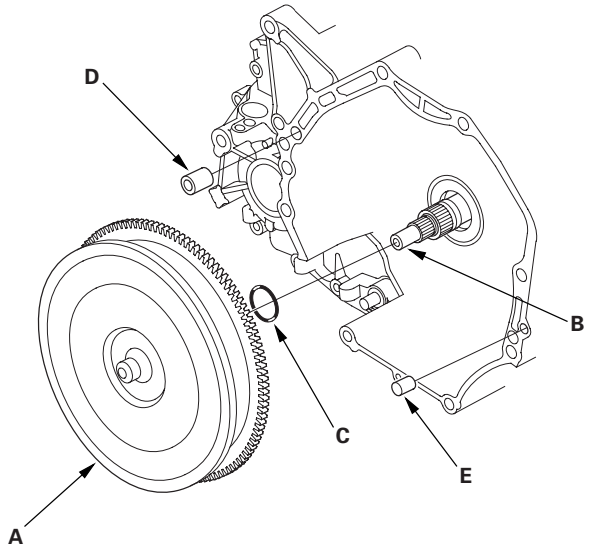
2. Install the drive plate and washer on the engine crankshaft, and tighten the eight bolts in a crisscross pattern in two or more steps.

Transmission Installation

1. Install the vacuum line on the transmission.



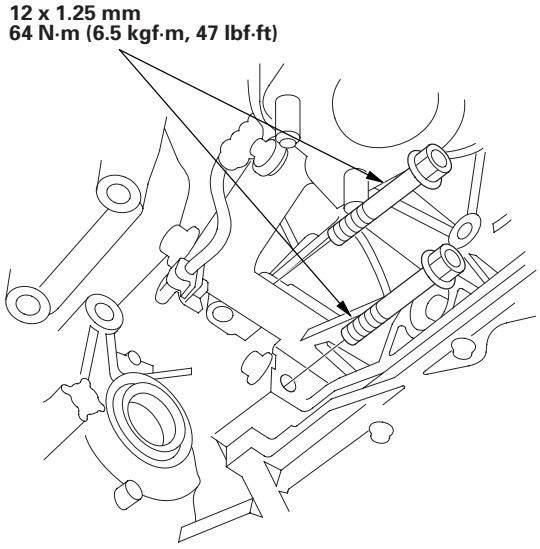
2. Install the torque converter assembly (A) on the mainshaft (B) with the new O-ring (C).



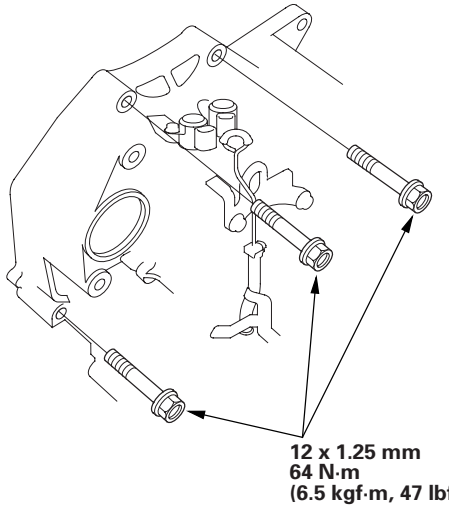
3. Install the 14 x 20 mm dowel pin (D) and 10 x 20 mm dowel pin (E) in the torque converter housing.

4. Place the transmission on the jack, and raise the transmission to the engine level.

5. Attach the transmission to the engine, then install the transmission housing mounting bolts.



6. Install the transmission housing mounting bolts.

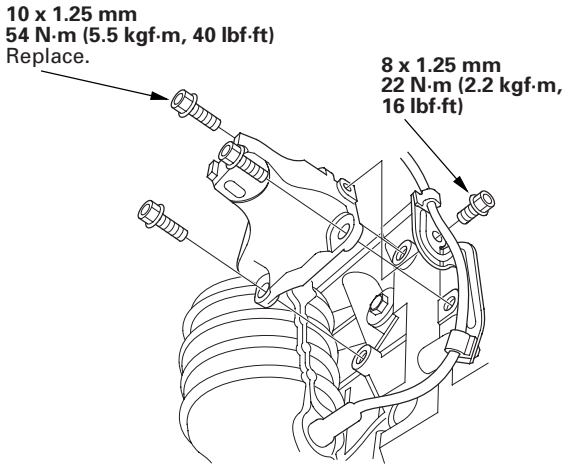


7. Remove the jack from the transmission.

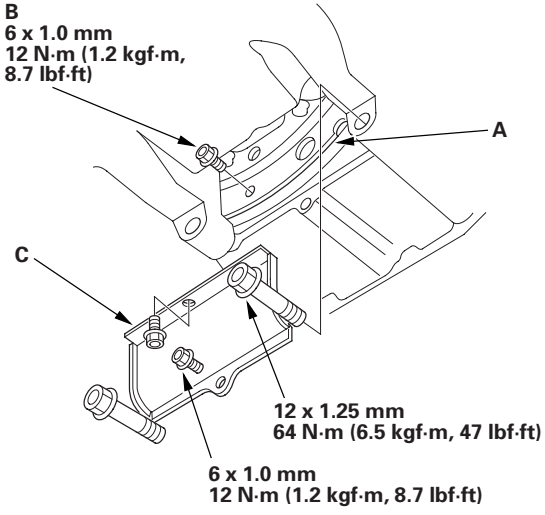
(cont'd)

Transmission Installation (cont'd)

8. Install the front mount bracket with the new bolts, and install the harness clamp on the mount bracket.



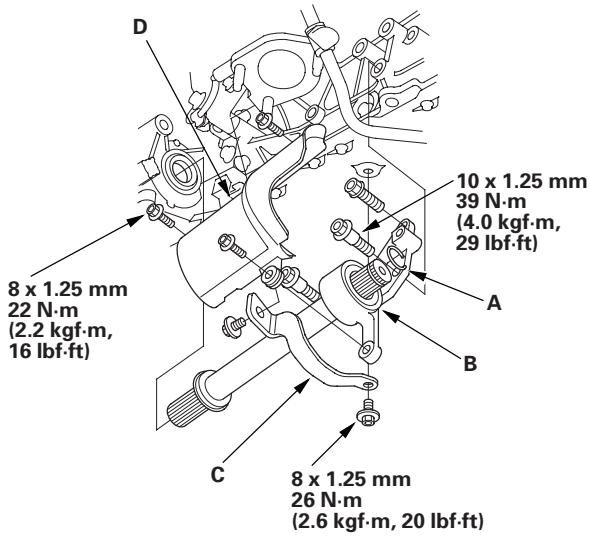
9. Install the engine-to-torque converter housing mounting bolts.



10. Attach the torque converter to the drive plate (A) with eight bolts (B). Rotate the crankshaft pulley as necessary to tighten the bolts to 1/2 of the specified torque, then to the final torque, in a crisscross pattern. After tightening the last bolt, check that the crankshaft rotates freely.

11. Install the torque converter cover (C).

12. Install the new set ring (A) on the intermediate shaft (B).

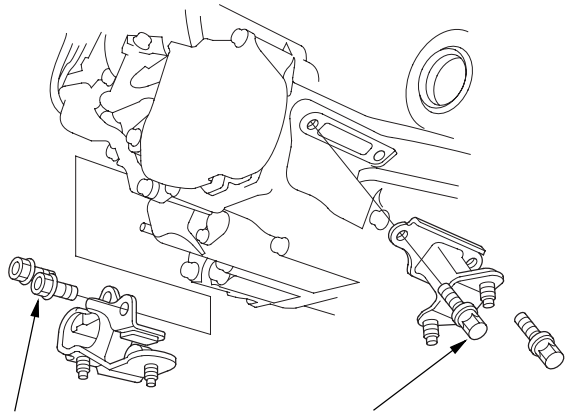


13. Install the exhaust manifold bracket (C) and heat shield (D).

14. Install the new set ring on the left driveshaft, then install the left driveshaft in the differential (see page 16-21). While installing the driveshaft in the differential, be sure not to allow dust or other foreign particles to enter the transmission. Install the left driveshaft over the intermediate shaft.

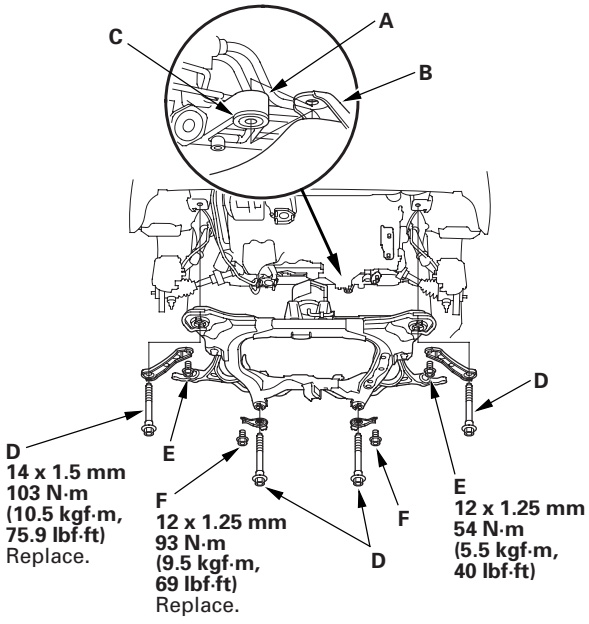
    NOTE:
    - Clean the areas where the driveshaft and intermediate shaft contact the transmission (differential) with solvent or carburetor cleaner, and dry with compressed air.
    - Turn the right and left steering knuckle fully outward, and slide the driveshaft and intermediate shaft into the differential and intermediate shaft until you feel its set ring engage the side gear.

15. Install the transmission lower mounts.



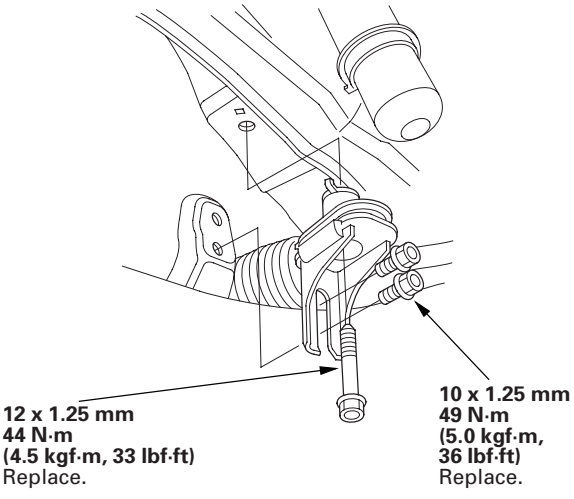
16. Support the front subframe with a wood piece and a jack, and lift it up to body.

17. Slide the steering gearbox (A) in the gearbox mounting bracket (B). Apply a neutral detergent (diluted with water) to the steering grearbox bushing (C) surfaces upper and lower. If you don't apply a neutral detergent to the bushing surfaces, the gearbox bushing will be damaged when installing the subframe.



18. Loosely install the new subframe mounting bolts (D), stiffener mounting bolts (E), and new stiffener mounting bolts (F).

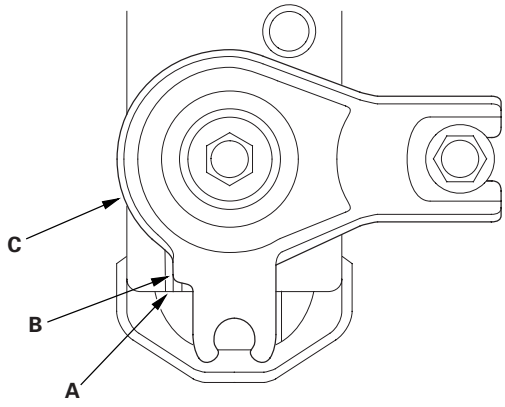
19. Loosely install both of the new mid-mount mounting bolts.



(cont'd)

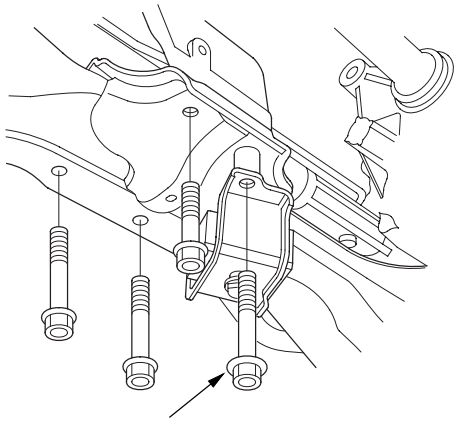
Transmission Installation (cont'd)

20. Align the reference marks (A) with edge (B) of both rear stiffeners (C), and tighten the rear subframe mounting bolts, then front bolts, and tighten the stiffener bolts to the specified torque.

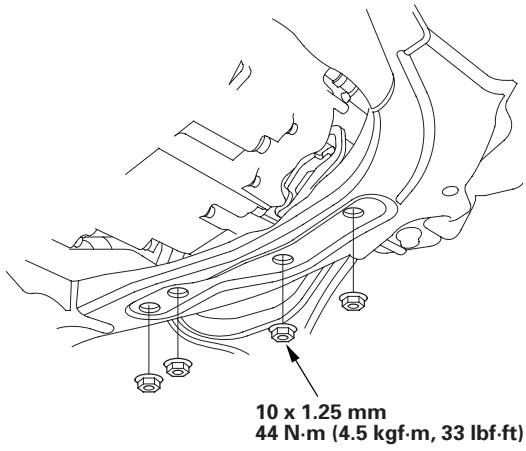


21. Tighten the mid-mount mounting bolts.

22. Install the new rear mount base bracket bolts.

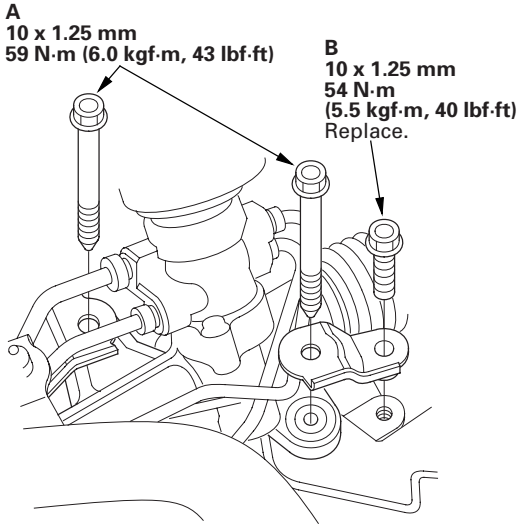


23. Install the transmission lower mount nuts.



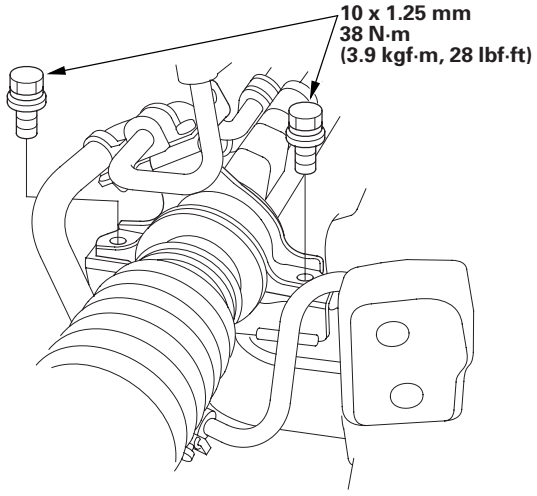
24. Install the steering gearbox mounting bolts (A), and install the new stiffener bolt (B).

    NOTE: The illustration shows LHD model; RHD model is similar.



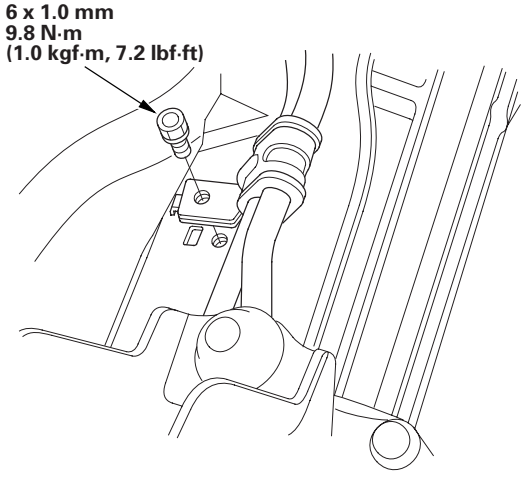
25. Install the steering gearbox mounting bracket bolts.

    NOTE: The illustration shows LHD model; RHD model is similar.

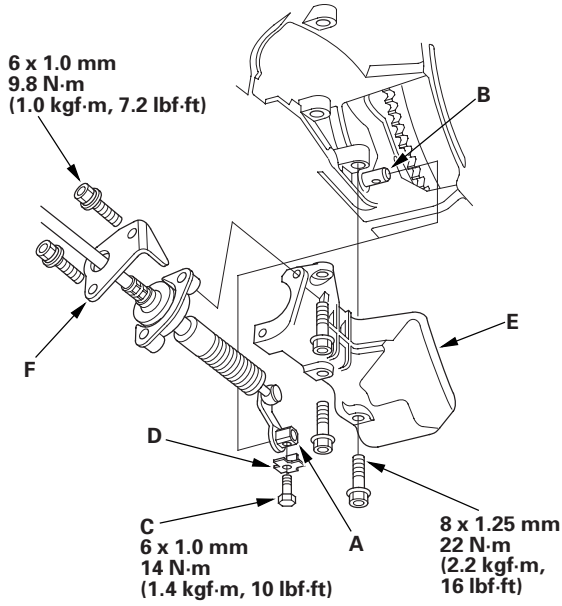


26. Secure the power steering fluid line bracket on the subframe with the bolt.

    NOTE: The illustration shows LHD model; RHD model is similar.



27. Install control lever (A) on the control shaft (B). Do not bend the shift cable excessively.

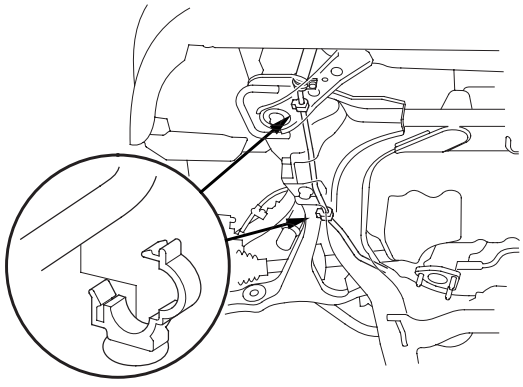


28. Install the lock bolt (C) with a new lock washer (D), then bend the lock washer tab against the bolt head.

29. Install the shift cable cover (E), then secure the shift cable holder (F) on the cover with the bolts.

    NOTE: To prevent damage to the control lever joint, be sure install the shift cable holder after installing the shift cable cover to the torque converter housing.

30. Secure the power steering fluid line with the clamps.

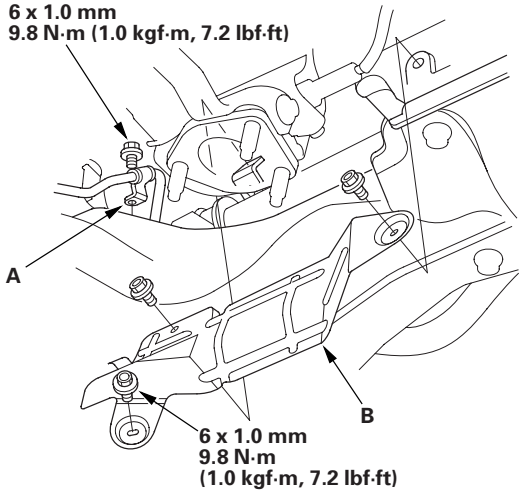


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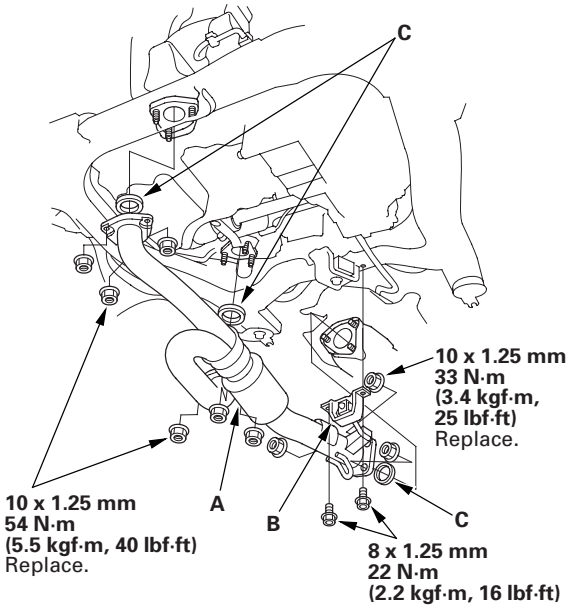
Transmission Installation (cont'd)

31. Secure the power steering fluid line bracket (A) with the bolt, and install the steering gearbox heat shield (B).

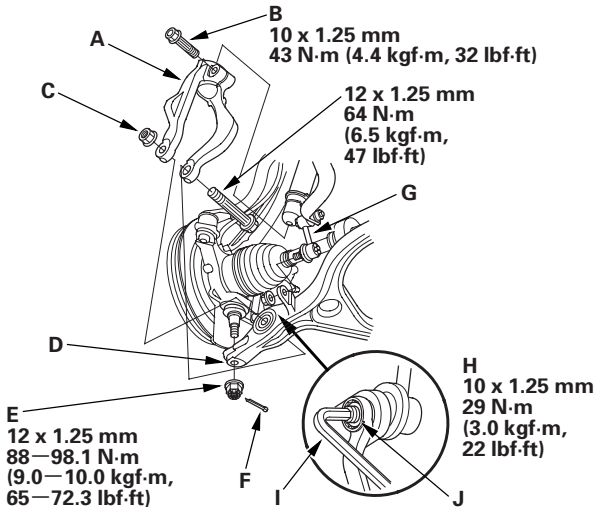
    NOTE: The illustration shows LHD model; RHD model is similar.



32. Install the exhaust pipe A with the new self-locking nuts, its mount (B), and new gaskets (C).

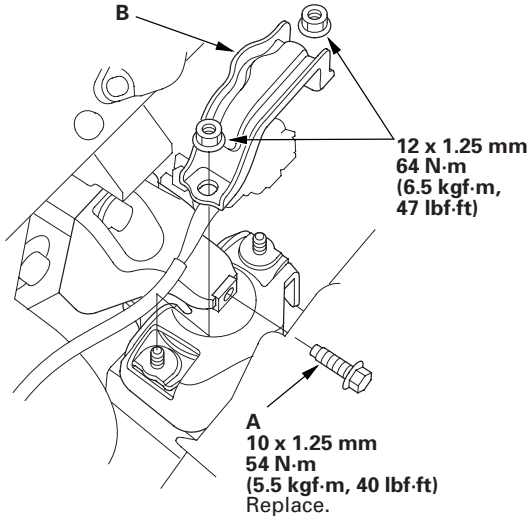


33. Install the damper forks (A) with damper pinch bolts (B) and the new self-locking nuts (C), then install the ball joints on the lower arms (D) with the castle nuts (E) and new cotter pins (F).



34. Install the stabilizer links (G) to the lower arms, and install the nuts (H). Insert a 6 mm Allen wrench (I) in the ball joint pin (J), and tighten the nuts.

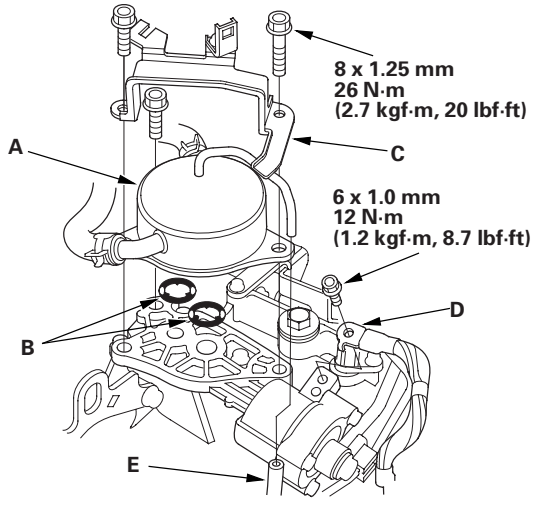
35. Install the new front mount bolt (A).



36. Install the front mount stop (B).

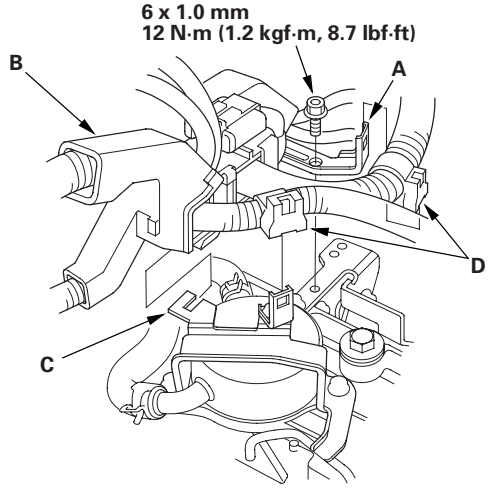
37. Remove the engine hanger.

38. Install the ATF warmer (A) with new O-rings (B) and the bracket (C) on the transmission housing. Do not pinch the O-rings.



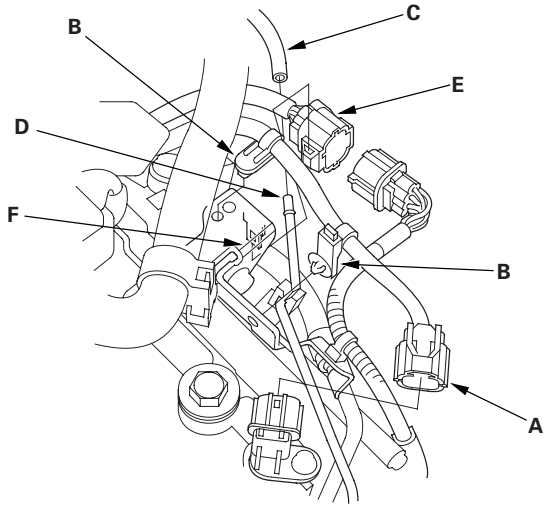
39. Install the transmission ground cable (D), and connect the breather tube (E).

40. Install the harness clamp bracket (A), and install the harness cover (B) on the bracket (C).



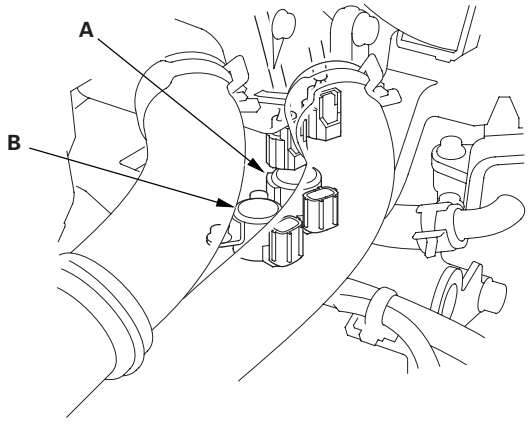
41. Install the harness clamps (D) on the clamp brackets.

42. Connect the countershaft speed sensor connector (A), and install the harness clamps (B) on the brackets. Connect the vacuum hose (C) to the vacuum line (D).



43. Connect the transmission range switch connector (E), then install it on its bracket (F).

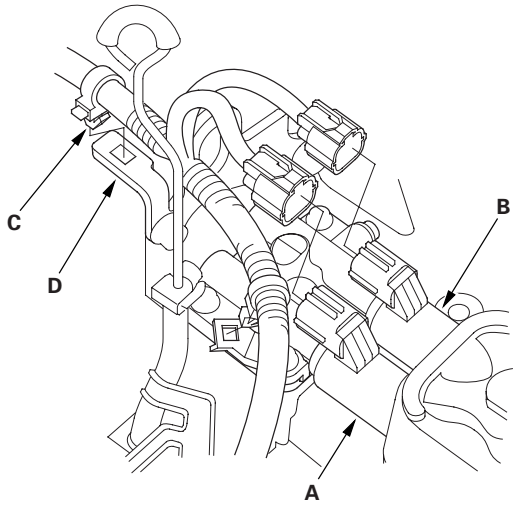
44. Connect the connectors to the torque converter clutch solenoid valve (A) and shift solenoid valve B.



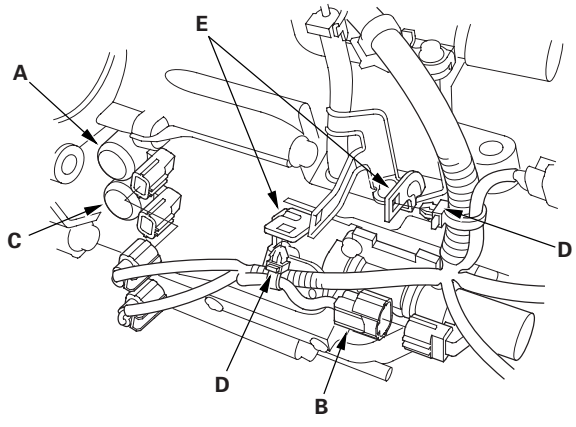
(cont'd)

Transmission Installation (cont'd)

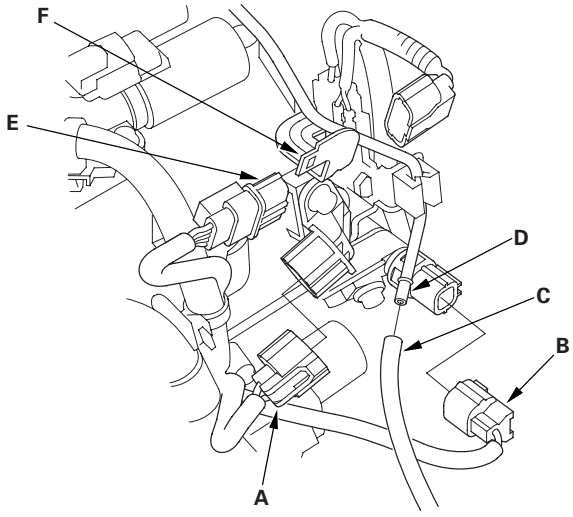
45. Connect the A/T clutch pressure control solenoid valve A connector, and solenoid valve B connector, and install the harness clamp (C) on the clamp bracket (D).



46. Connect shift solenoid valve A connector, solenoid valve C connector, and A/T clutch pressure control solenoid valve C connector (B), and install the harness clamps (D) on the clamp brackets (E).

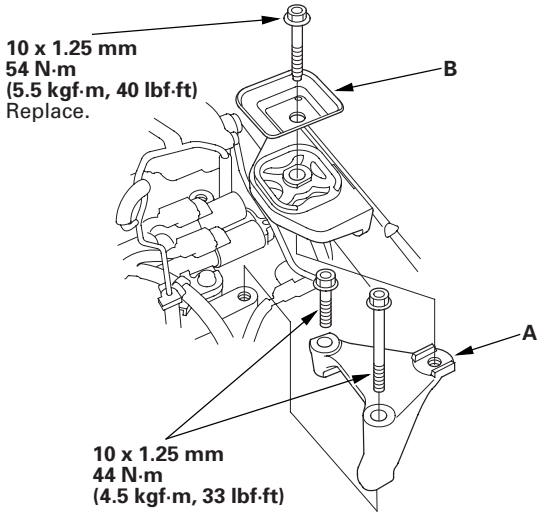


47. Connect the mainshaft speed sensor connector (A) and 4th clutch transmission fluid pressure switch connector (B), and connect the vacuum hose (C) to the vacuum line (D).



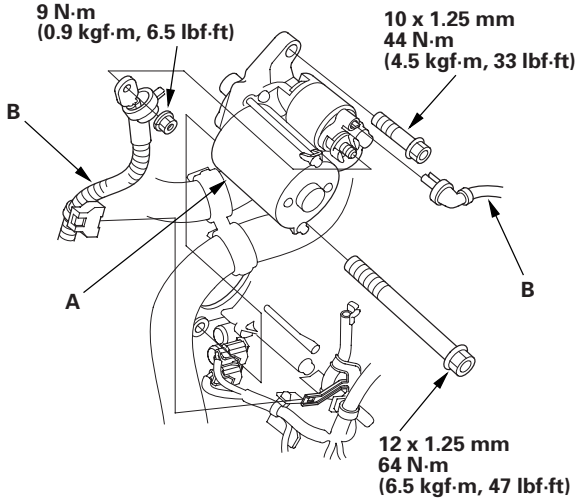
48. Connect the transmission subharness connector (E), then install it on its bracket (F).

49. Install the transmission upper mount bracket (A) on the transmission with two bolts.



50. Install the new upper mount bolt and bracket plate (B).

51. Install the starter (A) on the torque converter housing. Connect the starter cables (B) to the starter, and install the harness clamp on the clamp bracket.



52. Refill the transmission with ATF (see page 14-466).

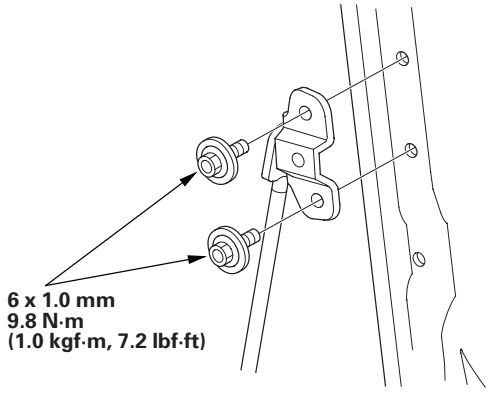
53. Install the battery base.

54. Install the air cleaner housing and intake air duct.

55. Install the battery tray, battery, and battery cover, then secure the battery with its hold-down bracket.

56. Connect the battery terminals.

57. Reinstall the support strut bracket with the bolts to proper locations on both sides of the hood.



58. Set the parking brake. Start the engine, and shift the transmission through all gears three times.

59. Check the shift lever operation, A/T gear position indicator operation, and shift cable adjustment.

60. Check and adjust the front wheel alignment (see page 18-6).

61. Install the splash shield.

62. Start the engine in the P or N position, and warm it up to normal operating temperature (the radiator fan comes on). Do the PCM idle learn procedure (see page 11-193).

63. Turn off the engine, and check the ATF level (see page 14-465).

64. Do the power window control unit reset procedure (see page 22-219).

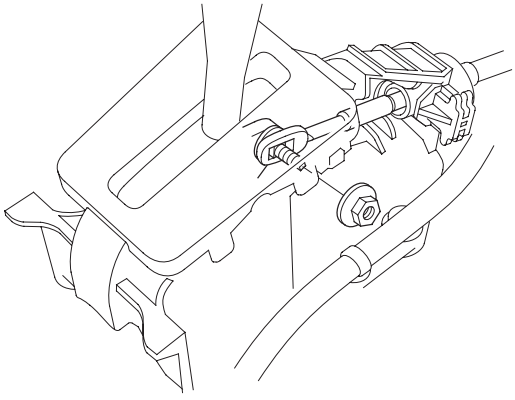
65. Perform the road test (see page 14-449).

66. Enter the anti-theft code for the radio (and navigation system), then enter the radio station presets, and set the clock.

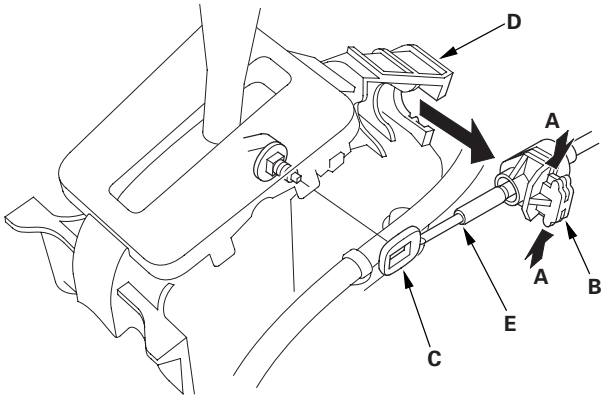
Shift Lever Removal

NOTE: The illustration shows LHD model; RHD model is similar.

1. Remove the center console and rear console (see page 20-85).
2. Shift the transmission into the R position.
3. Remove the nut securing the shift cable end.

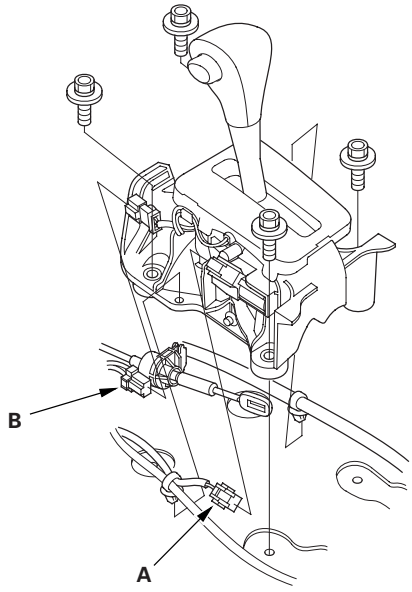


4. Press the holder lock release (A), and pull out the socket holder (B) on the shift cable (C) of the shift lever bracket base (D). Do not remove the shift cable by pulling the shift cable guide (E).



5. Disconnect shift lock solenoid connector (A) and park pin switch connector (B).

   NOTE: The illustration shows a type A shift lever; the type B shift lever is similar.



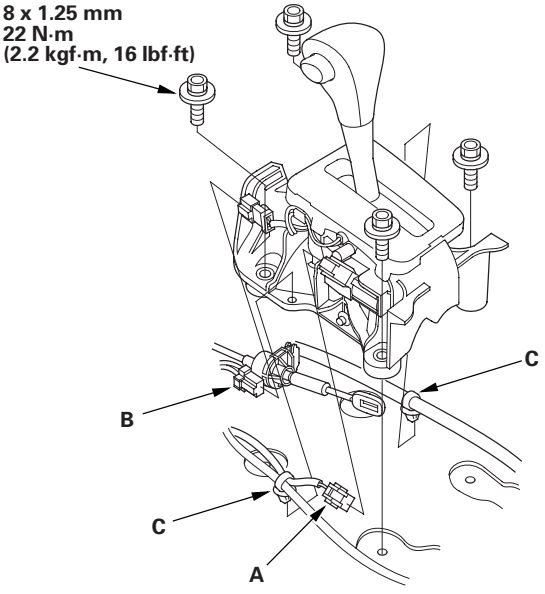
6. Remove the shift lever assembly.

Shift Lever Installation

NOTE: The illustration shows LHD model; RHD model is similar.

1. Install the shift lever assembly.

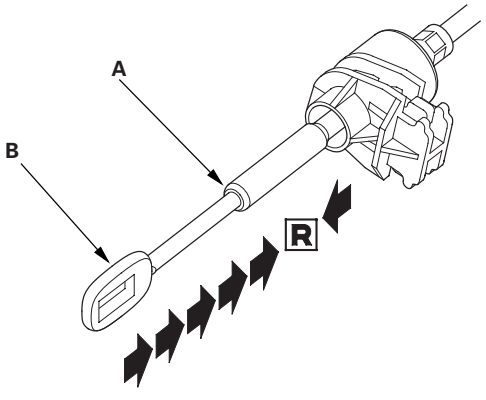
   NOTE: The illustration shows a type A shift lever; the type B shift lever is similar.



2. Connect the shift lock solenoid connector (A) and park pin switch connector (B), and install the harness clamps (C) on the shift lever bracket base.

3. Turn the ignition switch ON (II), and verify that the R position indicator comes on.

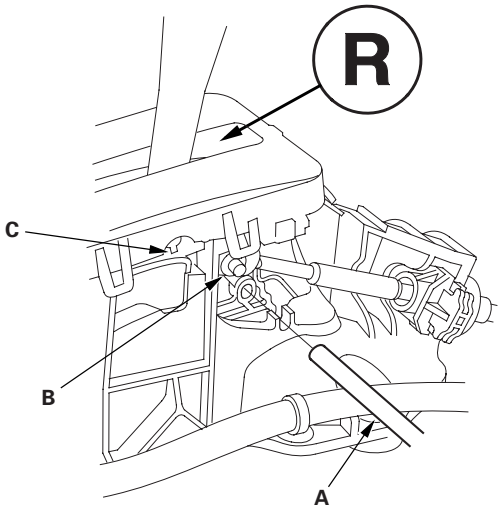
4. If necessary, push the shift cable until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (A) to adjust the shift cable (B).



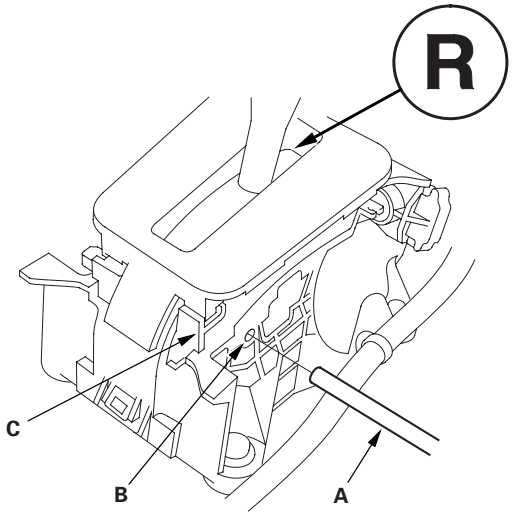
5. Turn the ignition switch OFF.

6. Insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base and into the positioning hole (C) on the shift lever. The shift lever is secured in the R position.

Type A Shift Lever:



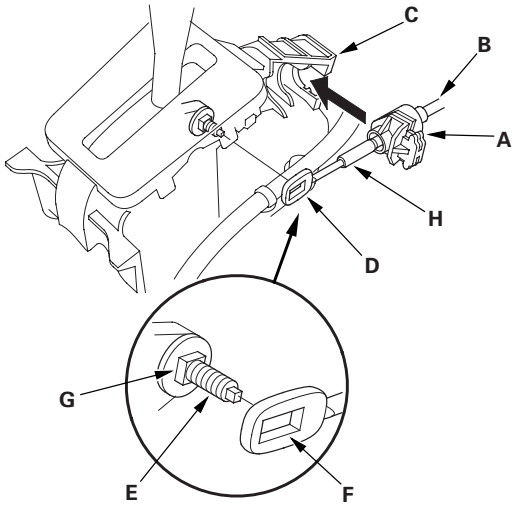
Type B Shift Lever:



(cont'd)

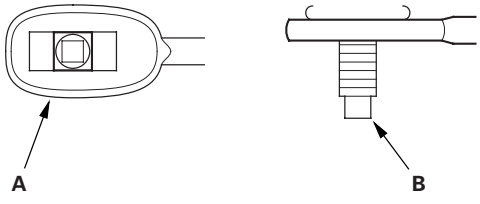
Shift Lever Installation (cont'd)

7. Align the socket holder (A) on the shift cable (B) with the slot in the bracket base (C), then slide the holder into the base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Push the holder until it snaps securely in place. Do not install the shift cable by holding the shift cable guide (H).

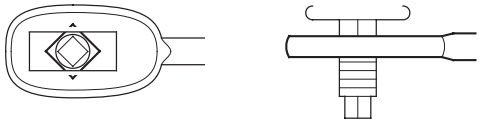


8. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:



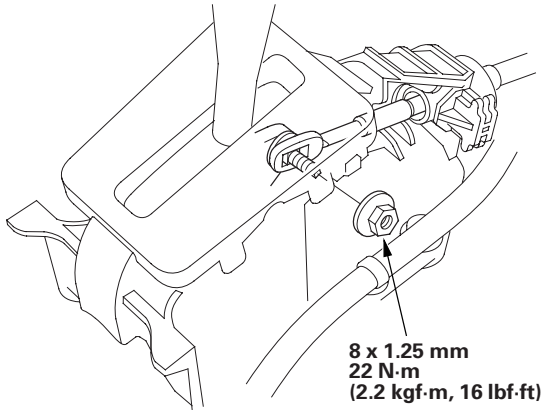
Improperly Installed:



Cable end rides on the bottom of the mounting stud.

9. If improperly installed, remove the shift cable from the bracket base, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the bracket base.

10. Install and tighten the nut.



11. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

12. Move the shift lever to each position, and verify that the A/T gear position indicator follows the transmission range switch.

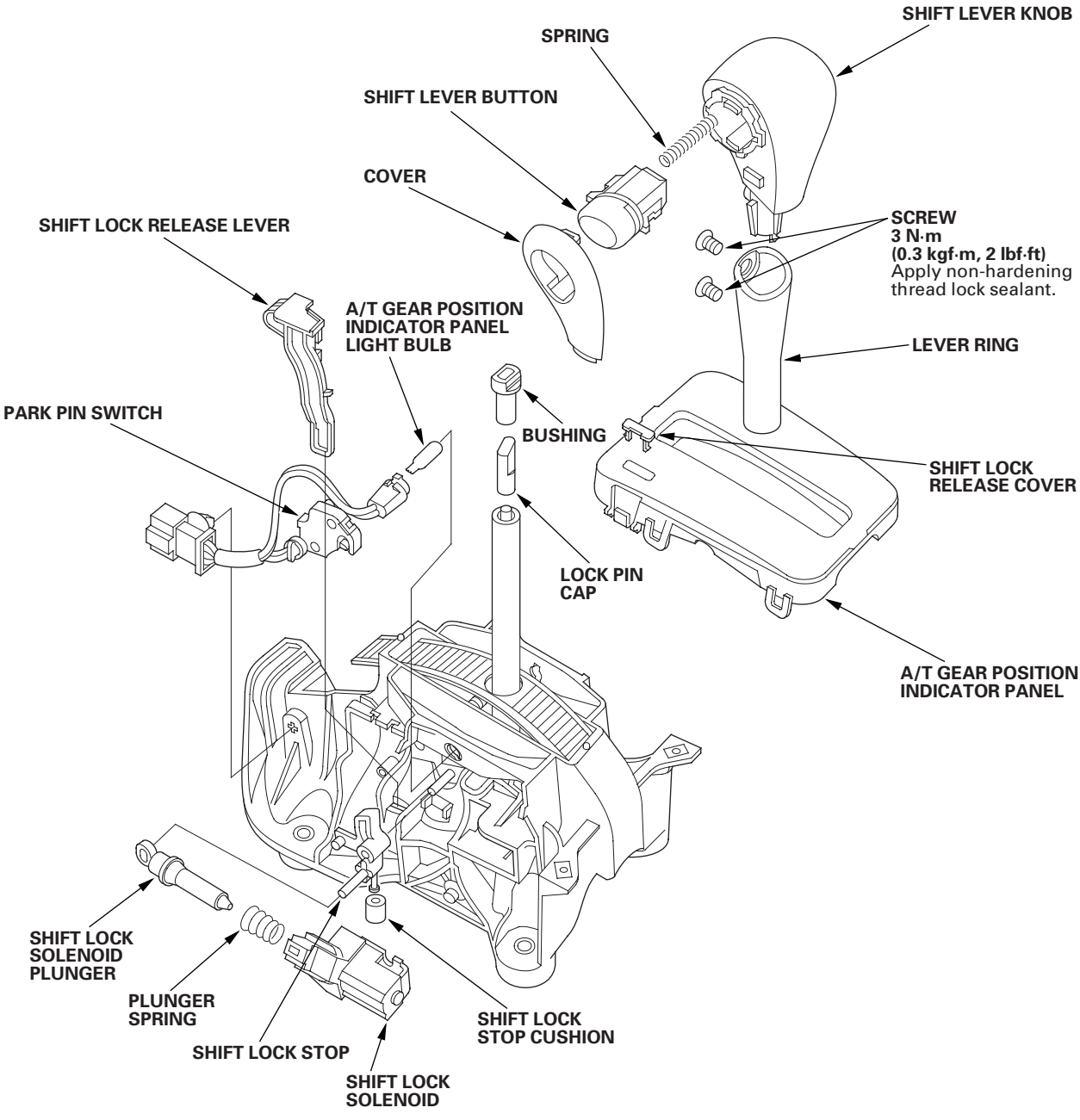
13. Push the shift lock release, and verify that the shift lever releases.

14. Reinstall the center console and rear console (see page 20-85).

Shift Lever Disassembly/Reassembly

Type A Shift Lever:

NOTE: The illustration shows LHD model; RHD model is similar.

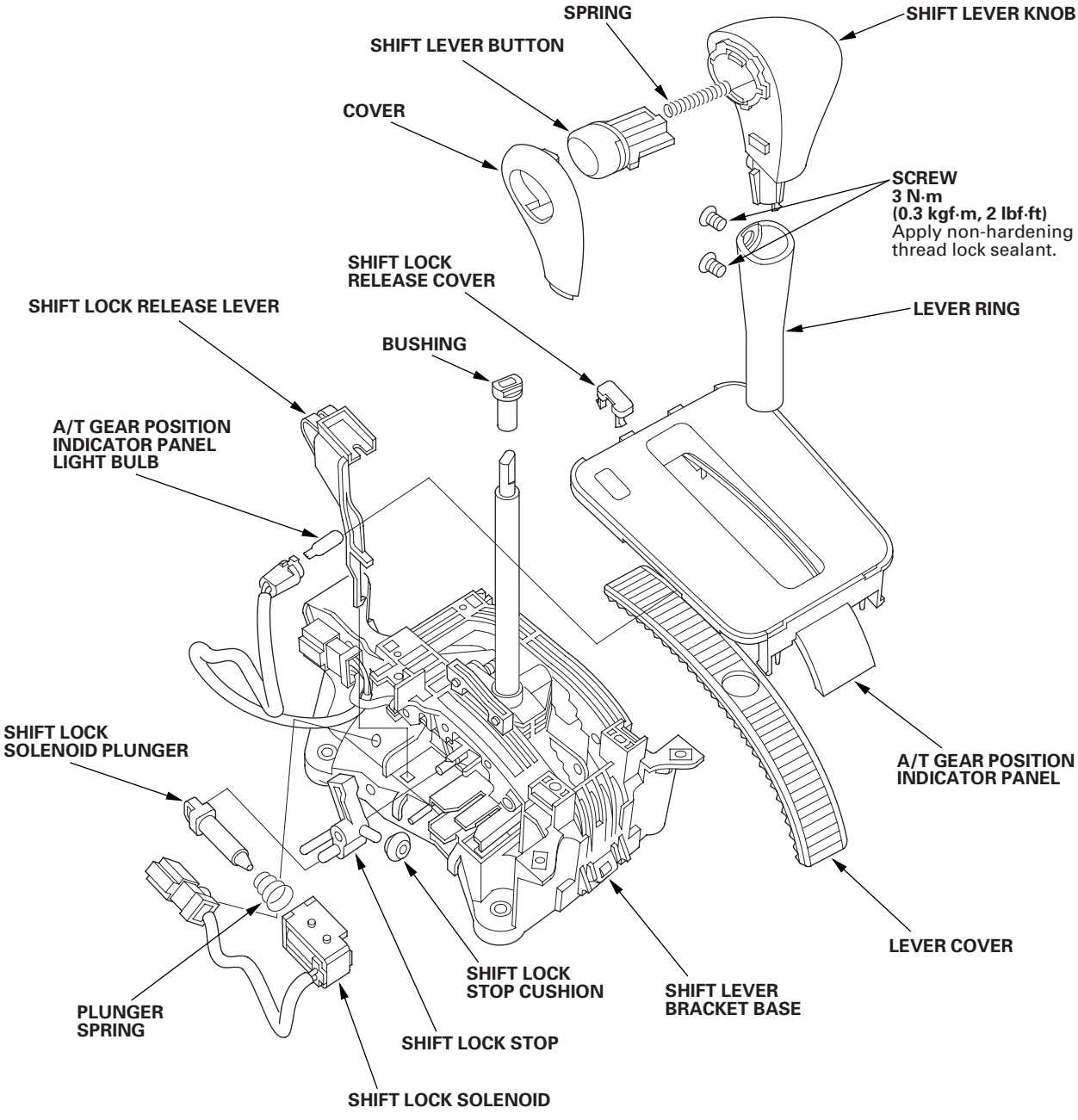


(cont'd)

Shift Lever Disassembly/Reassembly (cont'd)

Type B Shift Lever:

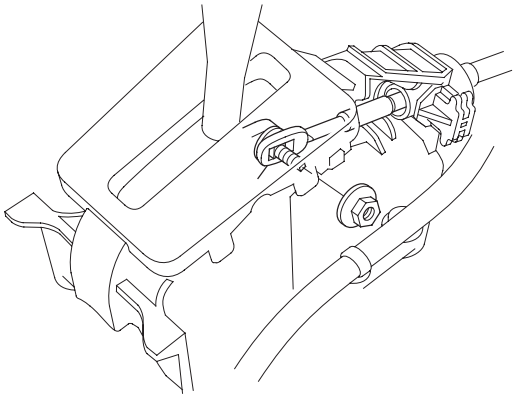
NOTE: The illustration shows LHD model; RHD model is similar.



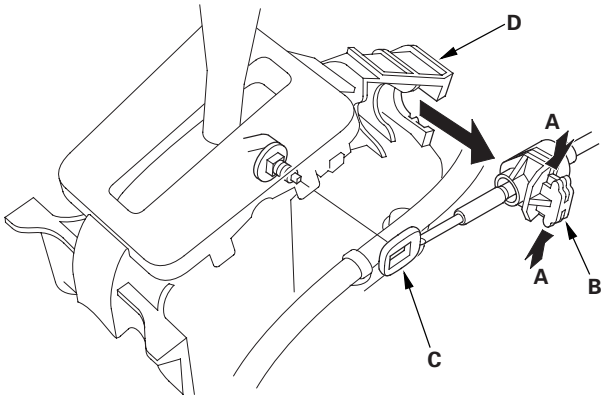
Shift Cable Replacement

NOTE: The illustration shows LHD model; RHD model is similar.

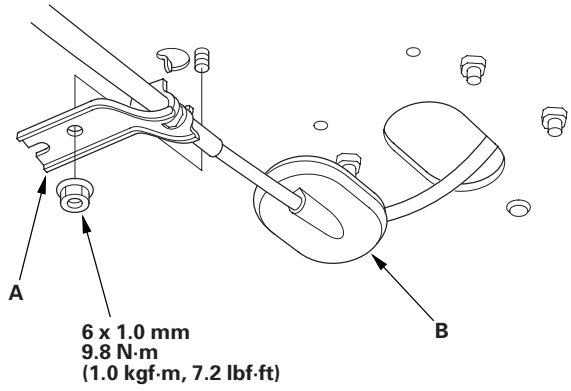
1. Raise the vehicle, and make sure it is securely supported.
2. Remove the center console and rear console (see page 20-85).
3. Shift the transmission into the R position.
4. Remove the nut securing the shift cable end.



5. Press the holder lock release (A), and pull out the socket holder (B) on the shift cable (C) of the shift lever bracket base (D).

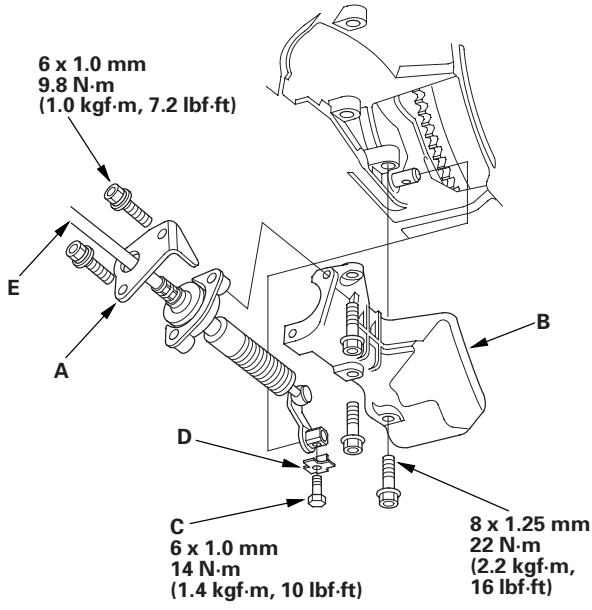


6. Remove the heat shield under the shift cable grommet.
7. Remove the shift cable bracket (A) and grommet (B).



8. Remove the bolts securing the shift cable holder (A), then remove the shift cable cover (B).

   NOTE: To prevent damege to the control lever joint, remove the bolts securing the holder before removing the bolts securing the cover.



9. Remove the lock bolt (C) securing the control lever (D), then remove the shift cable (E) and the control lever. Do not bend the shift cable excessively.

(cont'd)

Shift Cable Replacement (cont'd)

10. Insert the new shift cable through the grommet hole. Do not bend the shift cable excessively.

11. Install the shift cable bracket on the body, then install the grommet.

12. Verify that the transmission is in the R position at the control lever.

13. Install control lever on the control shift. Do not bend the shift cable excessively.

14. Install the lock bolt with a new lock washer, then bend the lock washer tab against the bolt head.

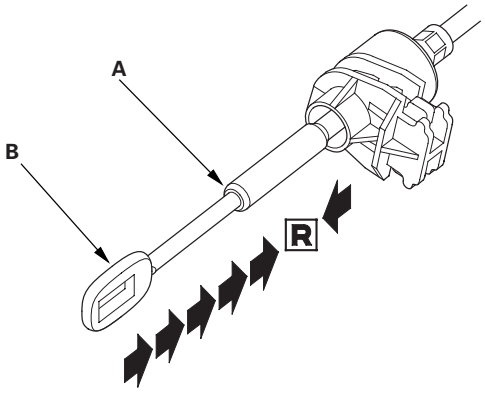
15. Install the shift cable cover, then secure the shift cable holder on the shift cable cover with the bolts.

    NOTE: To prevent damege to the control lever joint, be sure install the shift cable holder after installing the shift cable cover to the the torque converter housing.

16. Install the heat shield.

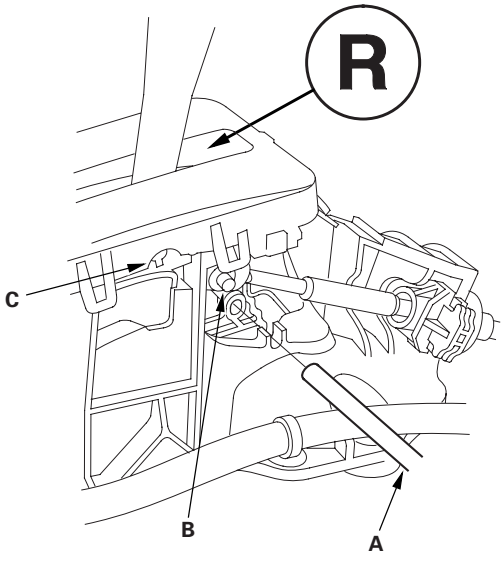
17. Turn the ignition switch ON (II), and verify that the R position indicator comes on.

18. If necessary, push the shift cable until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (A) to adjust the shift cable (B).

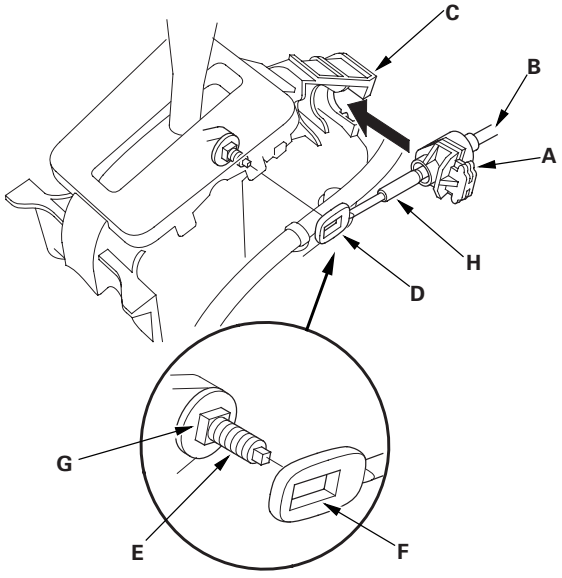


19. Turn the ignition switch OFF.

20. Insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base and into the positioning hole (C) on the shift lever. The shift lever is secured in the R position.

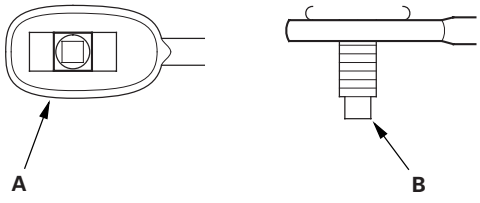


21. Align the socket holder (A) on the shift cable (B) with the slot in the bracket base (C), then slide the holder into base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Push the holder until it snaps securely in place. Do not install the shift cable by holding the shift cable guide (H).

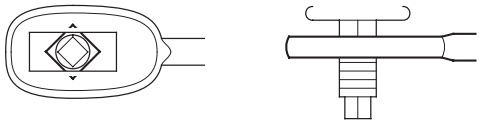


22. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:



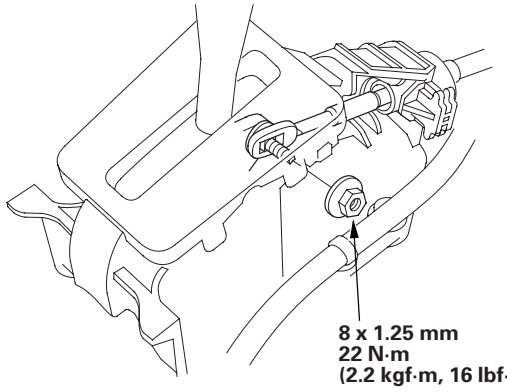
Improperly Installed:



Cable end rides on the bottom of the mounting stud.

23. If improperly installed, remove the shift cable from the bracket base, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the bracket base.

24. Install and tighten the nut.



25. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

26. Move the shift lever to each position, and verify that the A/T gear position indicator follows the transmission range switch.

27. Allow the front wheels to rotate freely.

28. Start the engine, and check the shift lever operation in all gears.

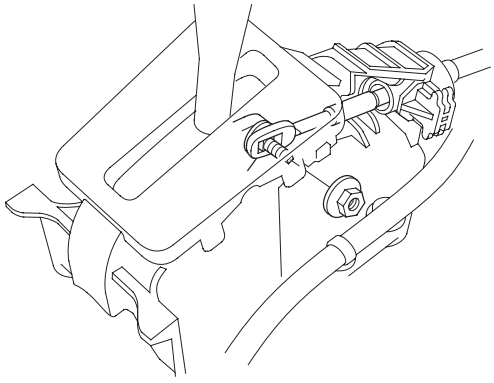
29. Push the shift lock release, and verify that the shift lever releases.

30. Reinstall the center console and rear console (see page 20-85).

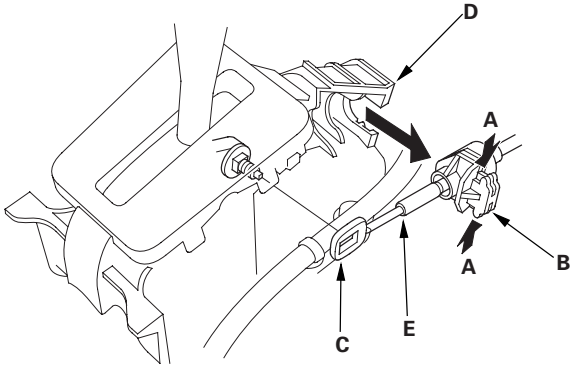
Shift Cable Adjustment

NOTE: The illustration shows LHD model; RHD model is similar.

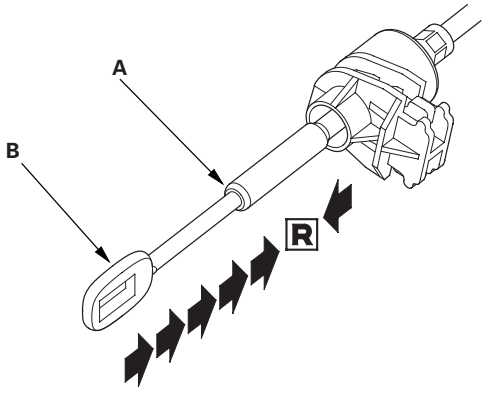
1. Remove the center console and rear console (see page 20-85).
2. Shift the transmission into the R position.
3. Remove the nut securing the shift cable end.



4. Press the holder lock release (A), and pull out the socket holder (B) on the shift cable (C) of the shift lever bracket base (D). Do not remove the shift cable by pulling the shift cable guide (E).



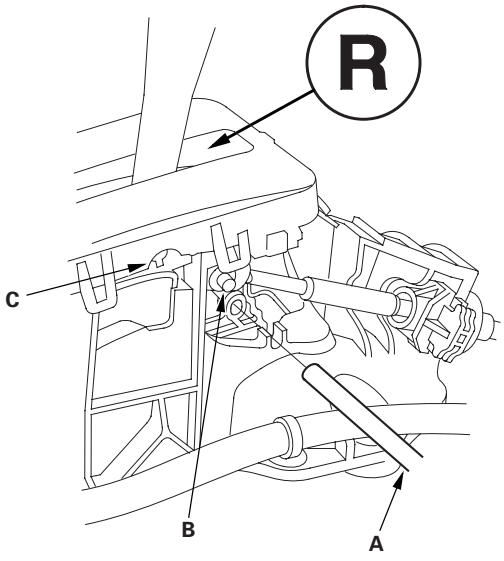
5. Install the heat shield.
6. Push the shift cable until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (A) to adjust the shift cable (B).



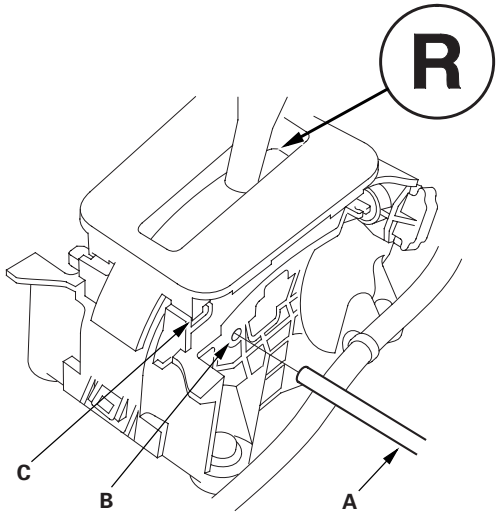
7. Turn the ignition switch ON (II), and verify that the R position indicator comes on.
8. Turn the ignition switch OFF.

9. Insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base and into the positioning hole (C) on the shift lever. The shift lever is secured in the R position.

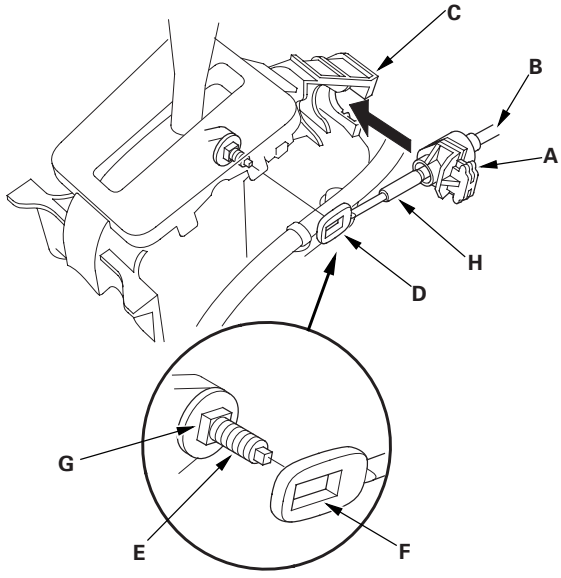
Type A Shift Lever:



Type B Shift Lever:

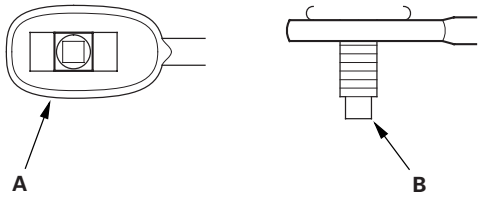


10. Align the socket holder (A) on the shift cable (B) with the slot in the bracket base (C), then slide the holder into base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Push the holder until it snaps securely in place. Do not install the shift cable by holding the shift cable guide (H).

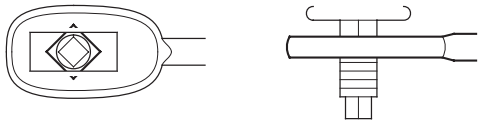


11. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:



Improperly Installed:



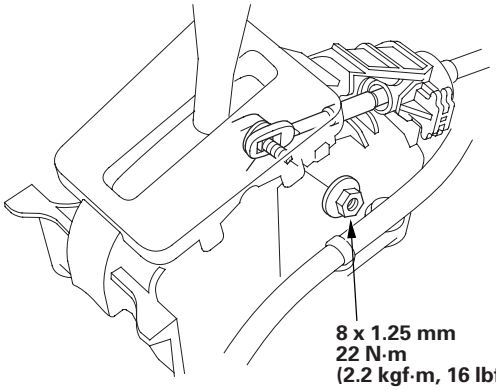
Cable end rides on the bottom of the mounting stud.

(cont'd)

Shift Cable Adjustment (cont'd)

12. If improperly installed, remove the shift cable from the bracket base, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the bracket base.

13. Install and tighten the nut.



14. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

15. Move the shift lever to each position, and verify that the A/T gear position indicator follows the transmission range switch.

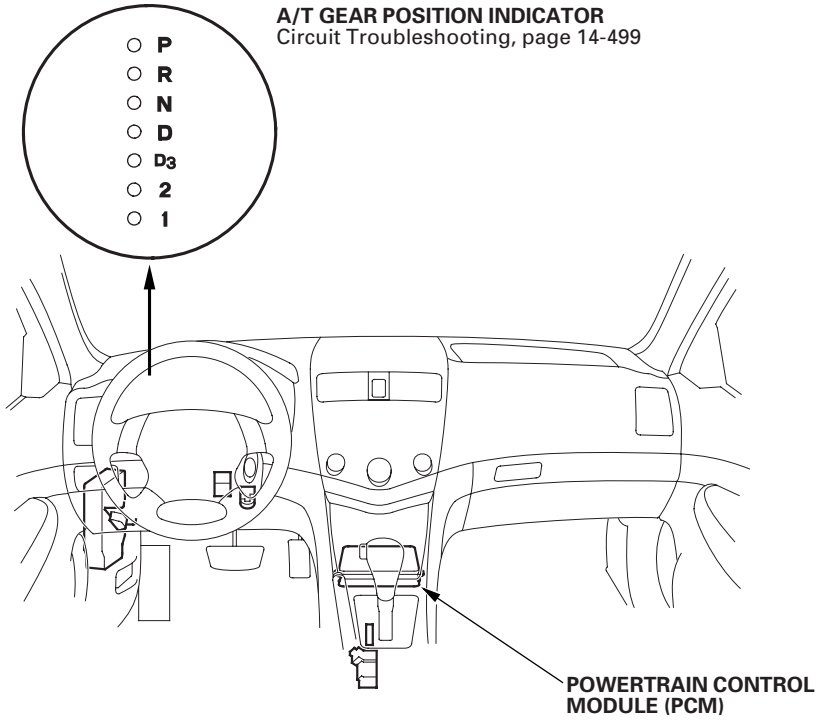
16. Push the shift lock release, and verify that the shift lever releases.

17. Reinstall the center console and rear console (see page 20-85).

Component Location Index

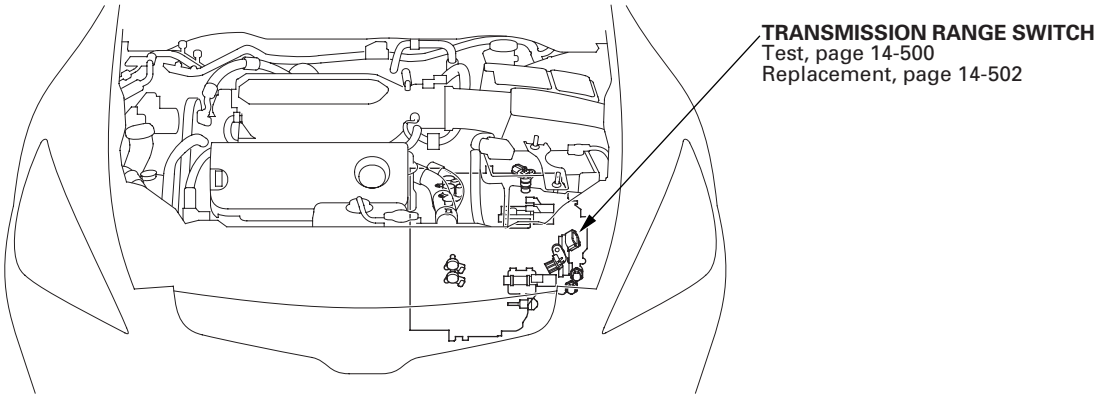
Cabin

NOTE: The illustration shows LHD model; RHD model is symmetrical.



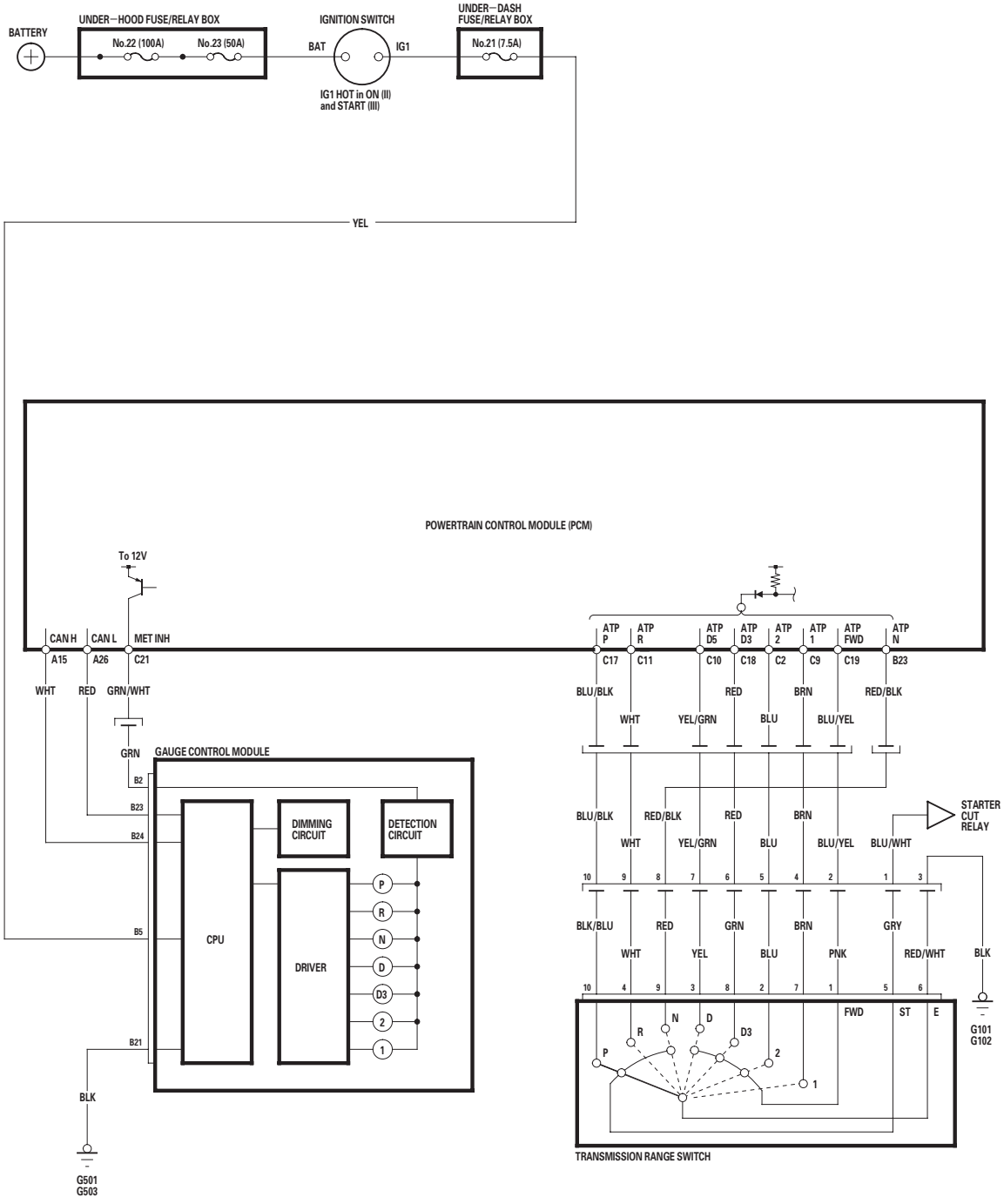
Engine Compartment

NOTE: The illustration shows LHD model; RHD model is similar.



A/T Gear Position Indicator

Circuit Diagram

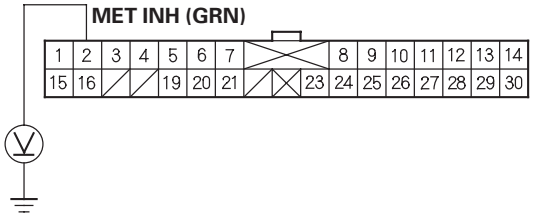


A/T Gear Position Indicator Circuit Troubleshooting

Symptom: A/T gear position indicator does not indicate the shift lever position, the D indicator does not blink, and no transmission range switch, CAN line DTCs are indicated.

1. Remove the gauge control module.
2. Turn the ignition switch ON (II).
3. Measure the voltage between gauge control module connector terminal B2 and body ground. The shift lever can be in any position.

GAUGE CONTROL MODULE CONNECTOR B (30P)



Wire side of female terminals

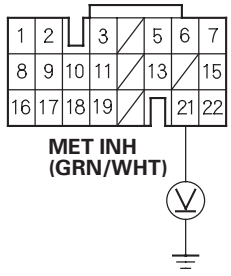
Is there battery voltage?

YES—Faulty A/T gear position indicator in the gauge control module, replace the gauge control module. ■

NO—Go to step 4.

4. Measure the voltage between PCM connector terminal C21 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

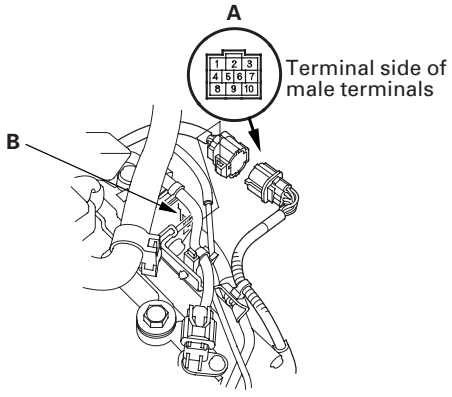
Is there battery voltage?

YES—Repair open or short in the wire between PCM connector terminal C21 and the gauge control module connector terminal B2. ■

NO—Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

Transmission Range Switch Test

1. Remove the transmission range switch harness connector (A) from the connector bracket (B), then disconnect the connector.



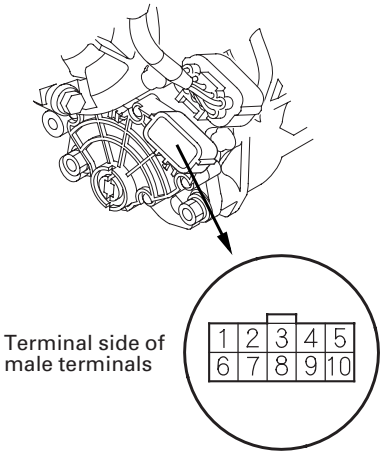
Connector Terminal Specification

Terminal	Signal	Terminal	Signal
1	ATP NP (ST)	6	D3
2	ATP FWD	7	D
3	Ground (E)	8	N
4	1	9	R
5	2	10	P

2. Check for continuity between terminals at the harness connector. There should be continuity between the terminals in the following table for each switch position.

Position	Connector Terminal									
	1	2	3	4	5	6	7	8	9	10
P	○		○							○
R			○						○	
N	○		○					○		
D		○	○				○			
D3		○	○			○				
2		○	○		○					
1			○	○						

3. If there is no continuity between any terminals, remove the transmission range switch cover, and disconnect the connect at the switch.



Connector Terminal Specification

Terminal	Signal	Terminal	Signal
1	ATP FWD	6	Ground (E)
2	2	7	1
3	D	8	D3
4	R	9	N
5	ATP NP (ST)	10	P

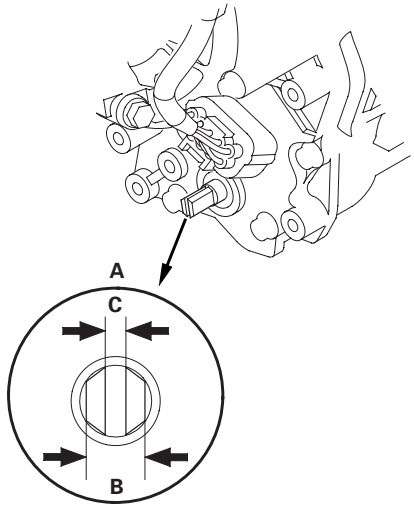
4. Check for continuity between terminals at the switch connector. There should be continuity between the terminals in the following table for each switch position.

Position	Connector Terminal									
	1	2	3	4	5	6	7	8	9	10
P					○	○				○
R				○		○				
N					○	○			○	
D	○		○			○				
D_3	○					○		○		
2	○	○				○				
1						○	○			

5. If the transmission range switch continuity check is OK, replace the faulty transmission range switch harness.

6. If there is no continuity between any terminals, remove the transmission range switch, and check the measurements at the end of the selector control shaft (A).

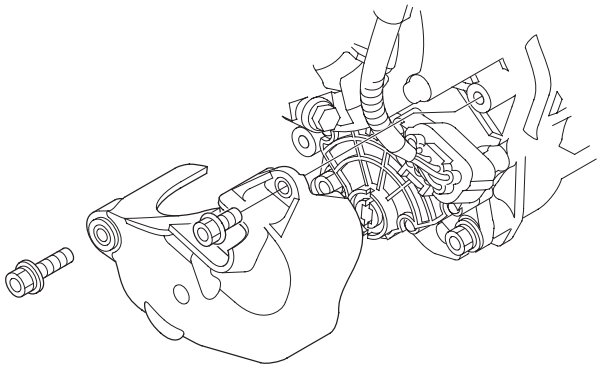
Standard:
Conrol Shaft Width (B):
6.1—6.2 mm (0.240—0.244 in.)
Control Shaft End Gap (C):
1.8—2.0 mm (0.07—0.08 in.)



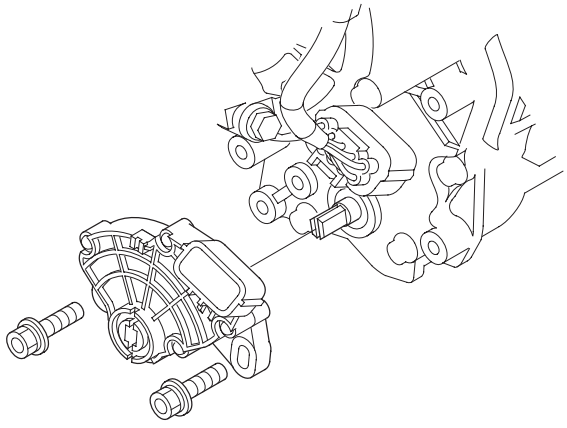
7. If the measurement of the control shaft end is within the standard, replace the transmission range switch. If the measurement is out of the standard, repair the control shaft end, and recheck the transmission range switch continuity.

Transmission Range Switch Replacement

1. Raise the vehicle, and make sure it is securely supported.
2. Shift to the N position.
3. Remove the transmission range switch cover.

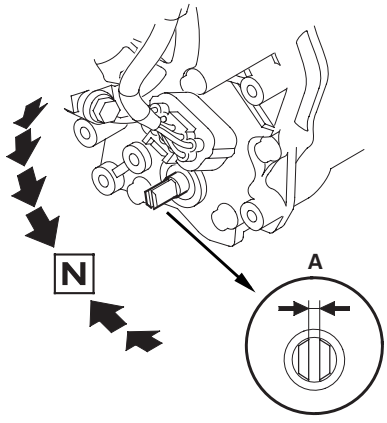


4. Disconnect the transmission range switch connector.



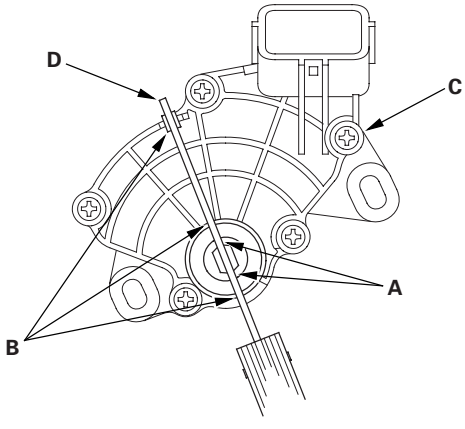
5. Remove the transmission range switch, and replace the new switch.
6. Make sure the control shaft is in the N position. If necessary, move the shift lever to the N position.

   NOTE: Do not use the control shaft to adjust the shift position. If the control shaft tips are squeezed together it will cause a faulty signal or position due to play between the control shaft and the switch. The clearance (A) between control shaft tips is 2.0 mm (0.08 in.)

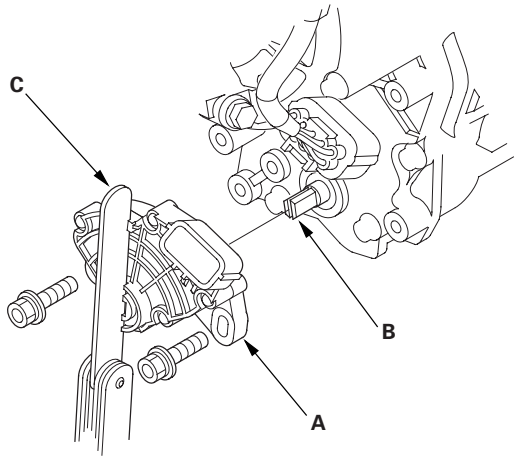


7. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch (C), then put a 2.0 mm (0.08 in.) feeler gauge blade (D) in the cutouts to hold the switch in the N position.

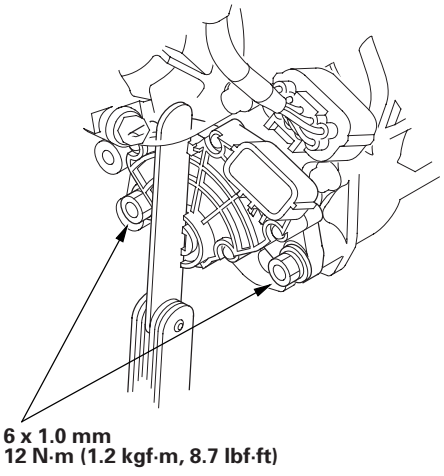
   NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the N position.



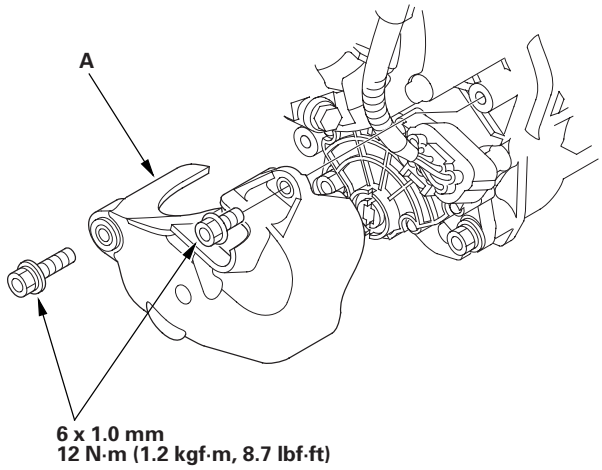
8. Install the transmission range switch (A) gently on the control shaft (B) while holding it in the N position with the 2.0 mm (0.08 in.) blade (C).



9. Tighten the bolts on the transmission range switch while you continue to hold the N position. Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.



10. Connect the connector securely, then install the transmission range switch cover (A).



11. Turn the ignition switch ON (II). Move the shift lever through all positions, and check the transmission range switch synchronization with the A/T gear position indicator.

12. Check that the engine will start in the P and N positions, and will not start in any other shift lever position.

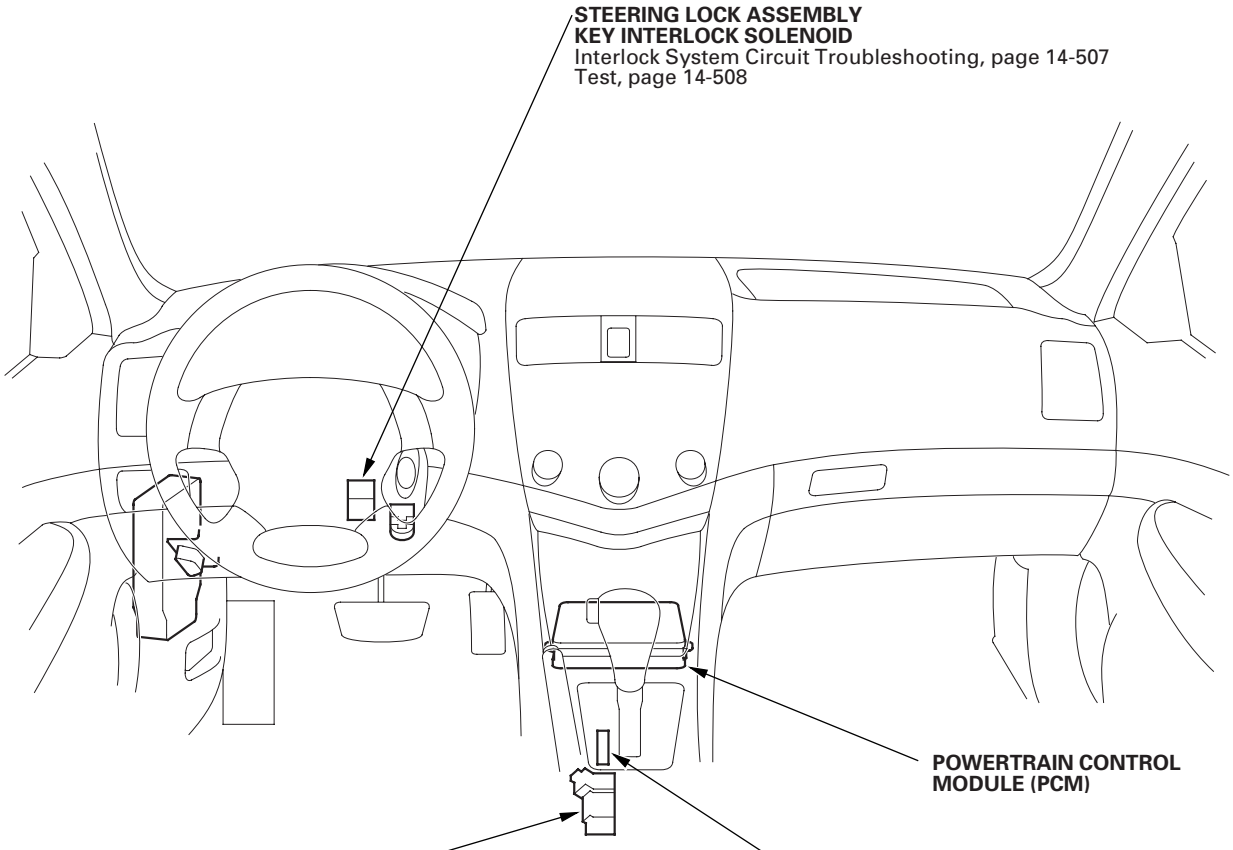
13. Check that the back-up lights come on when the shift lever is in the R position.

14. Allow the front wheels to rotate freely, then start the engine, and check the shift lever operation.

A/T Interlock System

Component Location Index

NOTE: The illustration shows LHD model; RHD model is symmetrical.



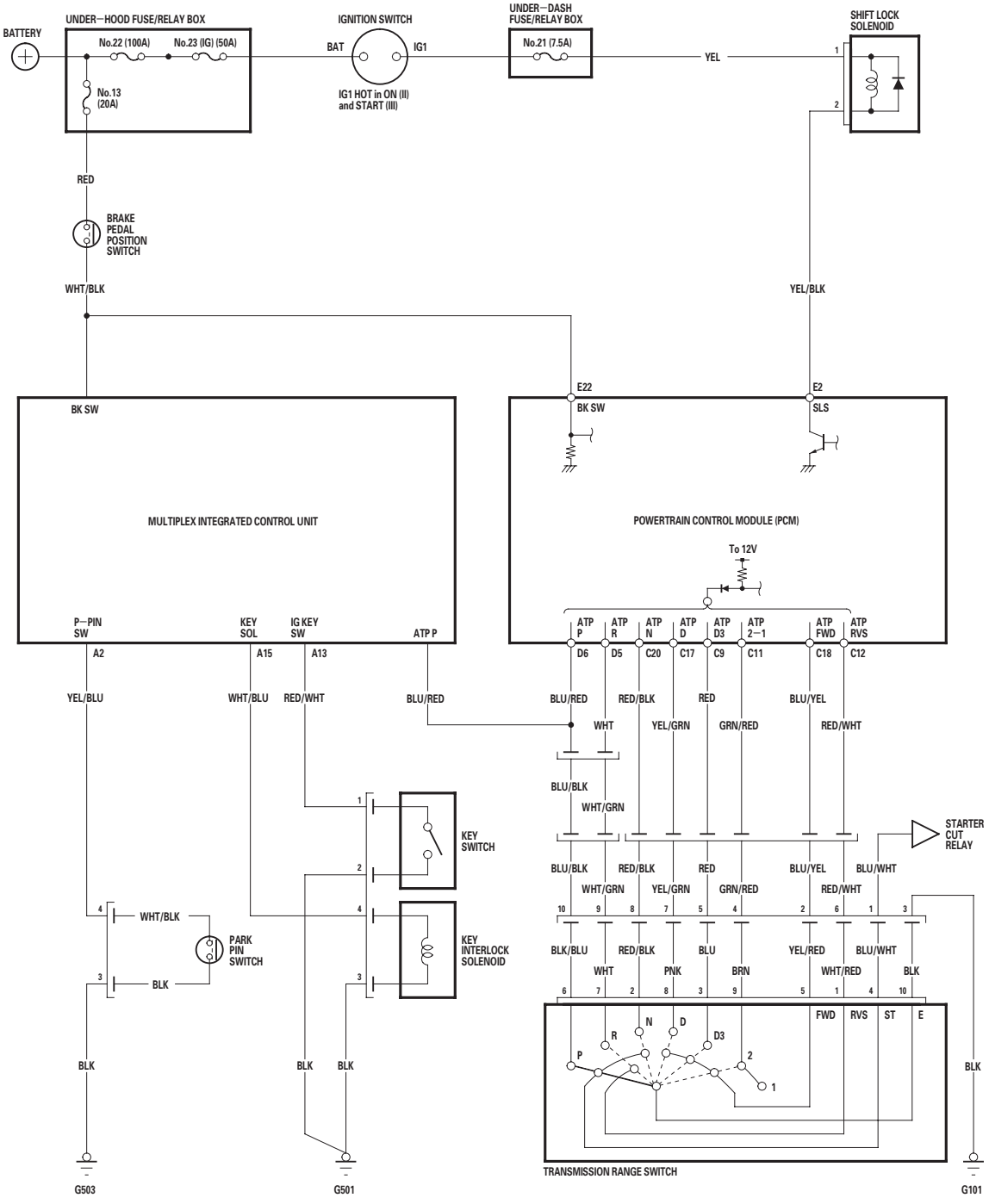
STEERING LOCK ASSEMBLY
KEY INTERLOCK SOLENOID
Interlock System Circuit Troubleshooting, page 14-507
Test, page 14-508

POWERTRAIN CONTROL MODULE (PCM)

PARK PIN SWITCH
Interlock System Circuit Troubleshooting, page 14-507
Test, page 14-511
Replacement, page 14-511

SHIFT LOCK SOLENOID
Shift Lock System Circuit Troubleshooting, page 14-506
Test, page 14-509
Replacement, page 14-510

Circuit Diagram



Shift Lock System Circuit Troubleshooting

1. Press the brake pedal.

   Are the brake lights ON?

   YES — Go to step 2.

   NO — Repair faulty brake light circuit. ■

2. Connect the PGM Tester or the HDS. Check engine speed and throttle position in the A/T data list.

   Is the engine speed at idle, and TPS about 0.5 V?

   YES — Go to step 3.

   NO — Repair engine speed or throttle position input. ■

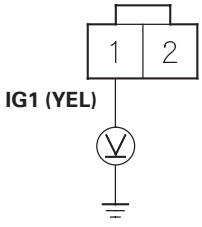
3. Remove the center console and rear console (see page 20-85).

4. Disconnect the shift lock solenoid connector.

5. Turn the ignition switch ON (II).

6. Measure the voltage between No. 1 terminal of the shift lock solenoid connector and body ground.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there battery voltage?

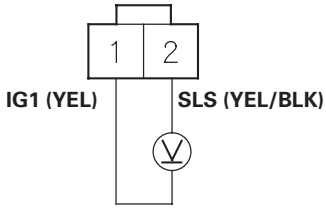
YES — Go to step 6.

NO — Check for blown No. 21 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the shift lock solenoid connector and the under-dash fuse/relay box. ■

7. Shift the shift lever into the P position, and press the brake pedal.

8. Measure the voltage between shift lock solenoid connector terminals while pressing the brake pedal.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES — Check the shift lock mechanism. If the mechanism is OK, replace the shift lock solenoid. ■

NO — Check for an open in the wire between PCM connector terminal E2 and shift lock solenoid connector. If the wire is OK, substitute a known-good PCM and recheck. ■

Key Interlock System Circuit Troubleshooting

SRS components are located in this area. Review the SRS components locations (see page 23-13), precautions and procedures in the SRS section before performing repairs or service (see page 23-14).

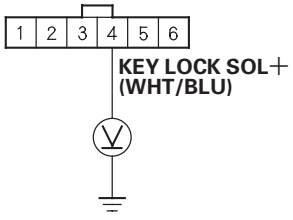
1. Turn the ignition switch to ACC (I). The shift lever must be in the P position.
2. Disconnect the steering lock assembly connector.
3. Check if the ignition key can be moved to LOCK (0) position, and remove the key from the cylinder.

   Is the ignition key able to move to the LOCK (0) position, and then removed?

   YES — Go to step 4.

   NO — Replace the ignition key cylinder/steering lock assembly (see page 17-37). ■
4. Turn the ignition switch to ACC (I) or ON (II), and shift to the N position.
5. Check for the voltage between the No. 4 terminal of the steering lock assembly connector and body ground.

STEERING LOCK ASSEMBLY CONNECTOR



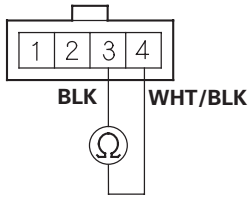
Wire side of female terminals

   Is there battery voltage?

   YES — Go to step 6.

   NO — Check for an open in with WHT/BLU wire between the MICU and the steering lock assembly connector. If the wire is OK, substitute a known-good multiplex integrated control unit and recheck. ■
6. Turn the ignition switch to ACC (I), and shift to the P position.
7. Remove the center console and rear console (see page 20-85).
8. Disconnect the park pin switch connector.
9. Check for continuity between the No. 3 and No. 4 terminals of the park pin switch connector while pushing the button of the shift lever in, and when released.

PARK PIN SWITCH CONNECTOR



Terminal side of male terminals

Is there continuity when pushing the button in, and no continuity when it's released?

YES — Check for an open in the wire between the multiplex integrated control unit and the park pin switch connector. If the wire is OK, replace the multiplex integrated control unit. ■

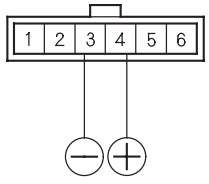
NO — Replace the park pin switch. ■

Key Interlock Solenoid Test

SRS components are located in this area. Review the SRS components locations (see page 23-13), precautions and procedures in the SRS section before performing repairs or service (see page 23-14).

1. Remove the driver's dashboard lower cover and lower steering column cover.
2. Disconnect steering lock assembly connector.
3. Insert the ignition key in the key cylinder, then turn the ignition key to ACC (I).
4. Connect the battery positive terminal to steering lock assembly connector terminal No. 4, and connect the battery negative terminal to No. 3 terminal. Make sure that the ignition key cannot be turned to LOCK (0) position. Release the battery terminals, and make sure that the key can be turned to LOCK (0) position and removed from the cylinder.
5. If the key interlock solenoid works improperly, replace the ignition key cylinder/steering lock assembly (see page 17-37).

STEERING LOCK ASSEMBLY CONNECTOR



Terminal side of male terminals

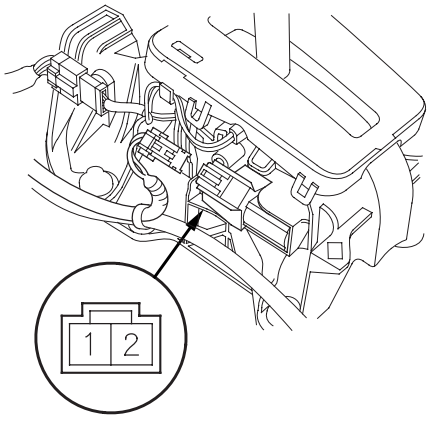
Shift Lock Solenoid Test

NOTE: The illustration shows LHD model; RHD model is similar.

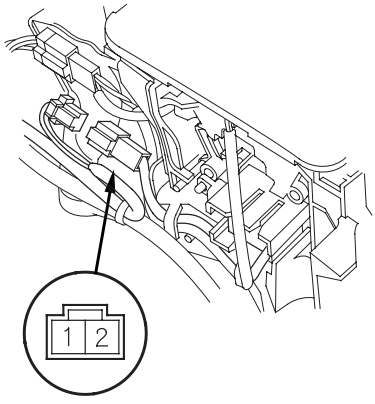
1. Remove the center console and rear console (see page 20-85).

2. Disconnect the shift lock solenoid connector.

   Type A Shift Lever:



   Type B Shift Lever:



   Terminal side of male terminals

3. Connect the battery positive terminal to shift lock solenoid connector terminal No. 1, and connect the battery negative terminal to terminal No. 2.

4. Check that the shift lever can be moved from the P position. Release the battery terminals from the shift lock solenoid connector. Move the shift lever back to the P position, and make sure it locks.

   NOTE: Do not connect power to terminal No. 2 or you will damage the diode inside the solenoid.

5. Check that the shift lock releases when the shift lock release is pushed, and check that it locks when the shift lock release is released.

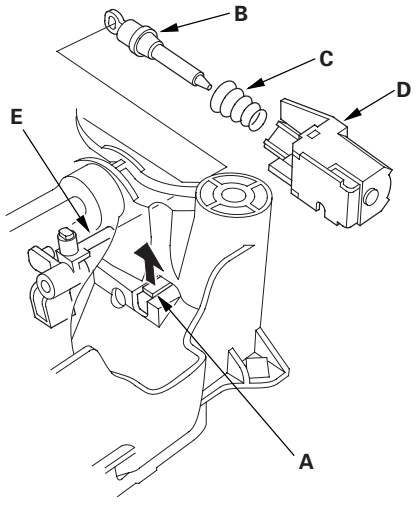
6. If the shift lock solenoid does not work properly, replace it.

Shift Lock Solenoid Replacement

Type A Shift Lever

NOTE: The illustration shows LHD model; RHD model is similar.

1. Remove the shift lever assembly (see page 14-486).
2. Release the lock tab (A) securing the shift lock solenoid at the bottom of the shift lever assembly, and remove the shift lock solenoid.

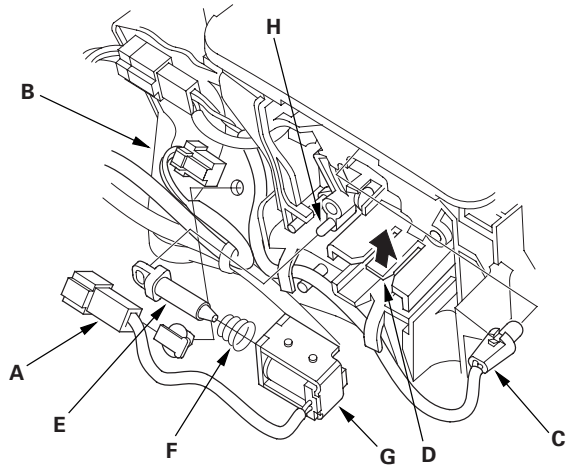


3. Install the shift lock solenoid plunger (B) and plunger spring (C) in the new shift lock solenoid (D).
4. Install the new shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop (E).
5. Install the shift lever assembly (see page 14-487).

Type B Shift Lever

NOTE: The illustration shows LHD model; RHD model is similar.

1. Remove the center console and rear console (see page 20-85).
2. Disconnect the shift lock solenoid connector (A), and remove it from the shift lever bracket base (B).



3. Remove the A/T gear position indicator panel light bulb socket (C).
4. Release the lock tab (D) securing the shift lock solenoid, and remove the shift lock solenoid.
5. Install the shift lock plunger (E) and plunger spring (F) in the new shift lock solenoid (G).
6. Install the new shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop (H).
7. Install the A/T gear position indicator panel light bulb socket.
8. Install the shift lock solenoid connector on the shift lever bracket base, then connect the connector.
9. Install the center console and rear console (see page 20-85).

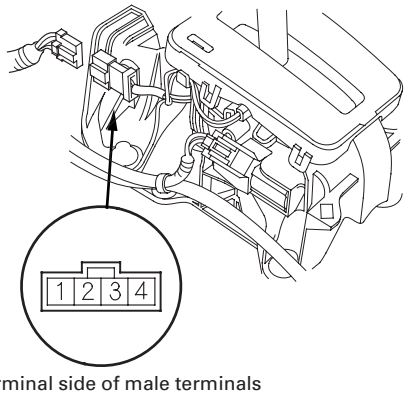
Park Pin Switch Test

NOTE: The illustration shows LHD model; RHD model is similar.

1. Remove the center console and rear console (see page 20-85).

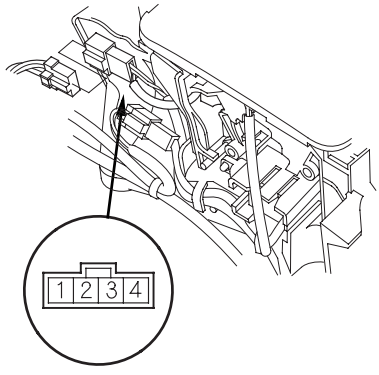
2. Disconnect the park pin switch connector.

Type A Shift Lever:



Terminal side of male terminals

Type B Shift Lever:



Terminal side of male terminals

3. Shift the shift lever into the P position and release the shift lever button, then check for continuity between connector terminals No. 3 and No. 4. There should be no continuity.

4. Shift out of the P position or press the shift lever button while in P position, and check for continuity between terminals No. 3 and No. 4. There should be continuity.

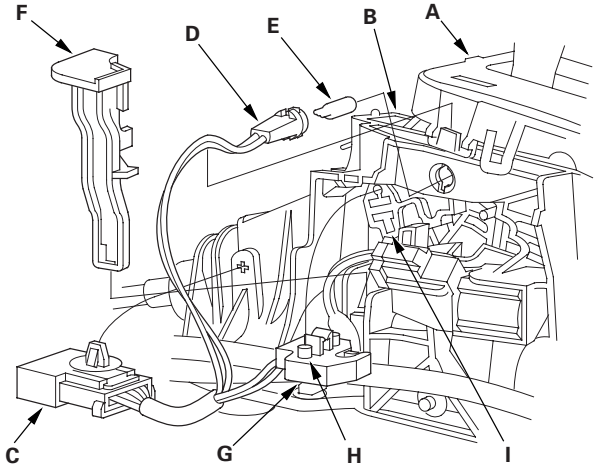
5. If the park pin switch is faulty, replace it (type A shift lever) or replace the shift lever bracket base (type B shift lever). The park pin switch of the type B shift lever is not available separately.

Park Pin Switch Replacement

NOTE:
- The park pin switch replacement is applied for the type A shift lever: the type B shift lever park pin switch is not available separately.
- The illustration shows LHD model; RHD model is similar.

1. Remove the center console and rear console (see page 20-85).

2. Remove the A/T gear position indicator panel (A) from the shift lever bracket base (B).



3. Disconnect the park pin switch connector (C), then remove it from the bracket base.

4. Remove the A/T gear position indicator panel light bulb socket (D), then remove the bulb (E) from the socket.

5. Remove the shift lock release lever (F).

6. Remove the park pin switch, and install the new switch (G) by aligning the tabs (H) with the slots (I).

7. Install the shift lock release lever.

8. Install the bulb in the socket, then install the socket in the bracket base.

9. Install the indicator panel on the bracket base.

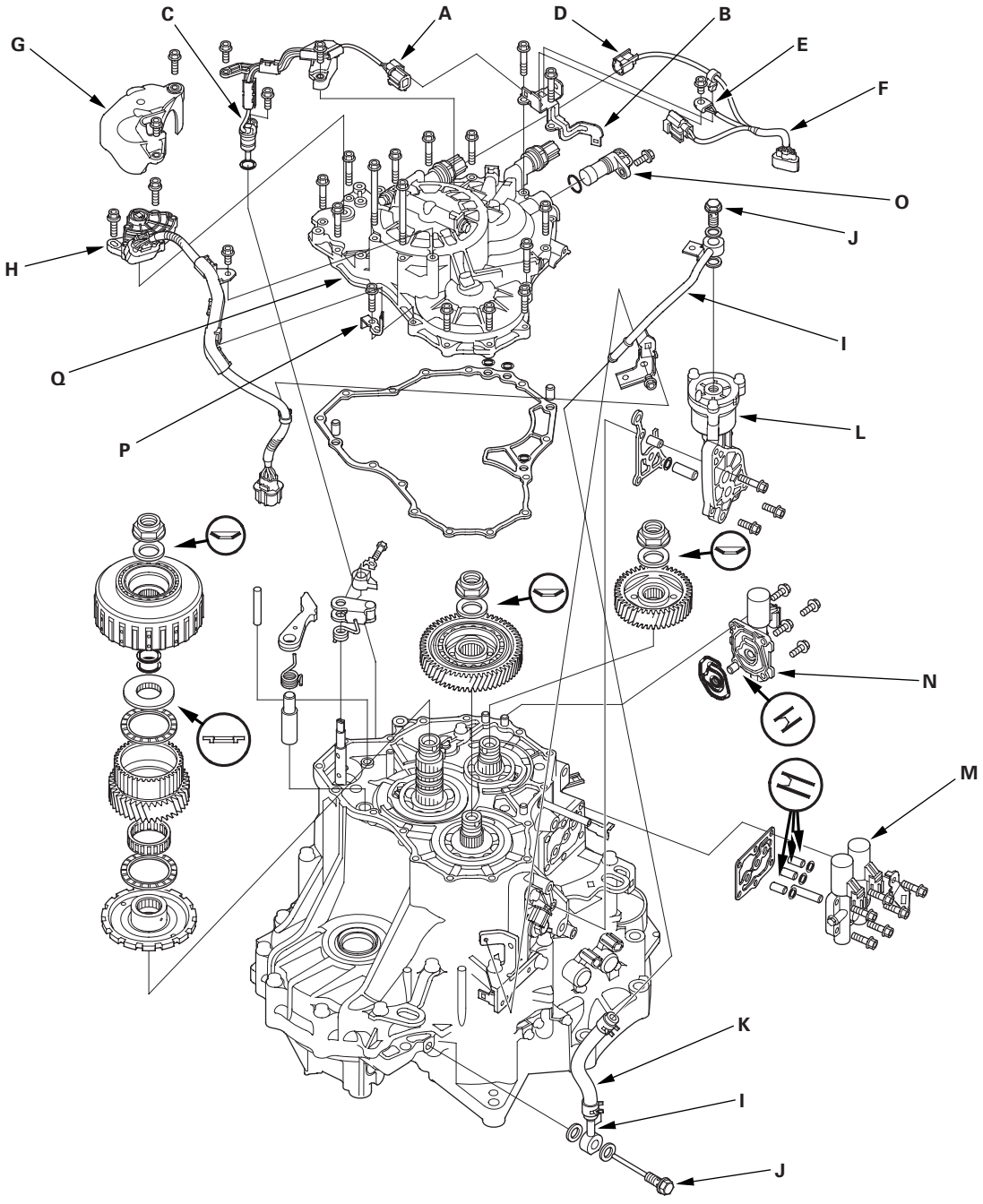
10. Install the park pin switch connector on the bracket base, then connect the connector.

11. Install the center console and rear console (see page 20-85).

End Cover, 3rd Gears, Idler Gear, and 3rd Clutch Removal

Special Tools Required
- Mainshaft holder set 07PAB-0010000
- Adjustable bearing remover set 07JAC-PH80000

1. Remove the ATF temperature sensor connector (A) from the connector bracket (B), then disconnect the connector, and remove the ATF temperature sensor (C) (three bolts).



2. Disconnect the 3rd clutch transmission fluid pressure switch (D), remove the ground terminal (E), then remove the sensor subharness (F).

3. Remove the transmission range switch cover (G), then remove the transmission range switch (H) (three bolts).

4. Remove the 6 mm bolt securing the harness clamp bracket on the ATF line (I), and remove the line bolts (J), then remove the ATF line and sealing washers. Remove the ATF hose (K) from the ATF line if necessary.

5. Remove the ATF passage body (L), ATF pipe, O-ring, dowel pin, and gasket (three bolts).

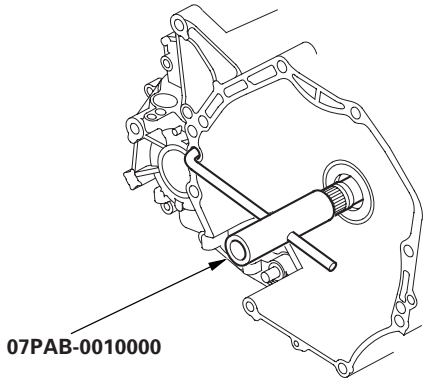
6. Remove the A/T clutch pressure control solenoid valves A and B (M), clamp bracket, ATF pipes, O-rings, and gasket (six bolts).

7. Remove the A/T clutch pressure control solenoid valve C (N), ATF pipe, and gasket (four bolts).

8. Remove the mainshaft speed sensor (O).

9. Remove the 16 bolts securing the end cover, connector bracket (B), harness cover bracket (P), then remove the end cover (Q), two dowel pins, O-rings, and gasket.

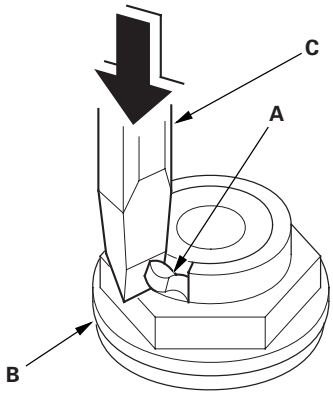
10. Slip the special tool onto the mainshaft.



11. Engage the park pawl with the park gear.

12. Cut the lock tab (A) off each shaft locknut (B) using a chisel (C). Then remove the locknuts and conical spring washers from each shaft.

    NOTE:
    - Countershaft and secondary shaft locknuts have left-hand threads.
    - Keep all of the chiseled particles out of the transmission.
    - Clean the old locknuts; they are used to install the press fit mainshaft 3rd gear, secondary shaft idler gear, and 3rd clutch assembly on the countershaft.

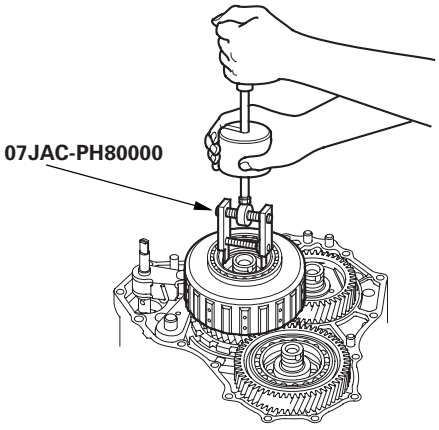


13. Remove the special tool from the mainshaft.

(cont'd)

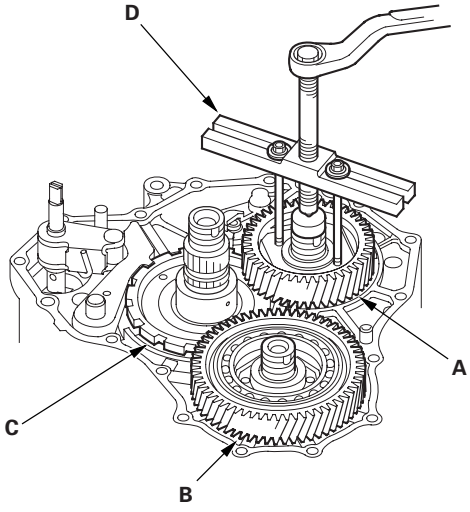
End Cover, 3rd Gears, Idler Gear, and 3rd Clutch Removal (cont'd)

14. Remove the 3rd clutch assembly using the special tool.



15. Remove the splined washer, thrust needle bearing, countershaft 3rd gear, needle bearing, and thrust needle bearing from the countershaft.

16. Remove the mainshaft 3rd gear (A), secondary shaft idler gear (B), and park gear (C) with a puller (D).

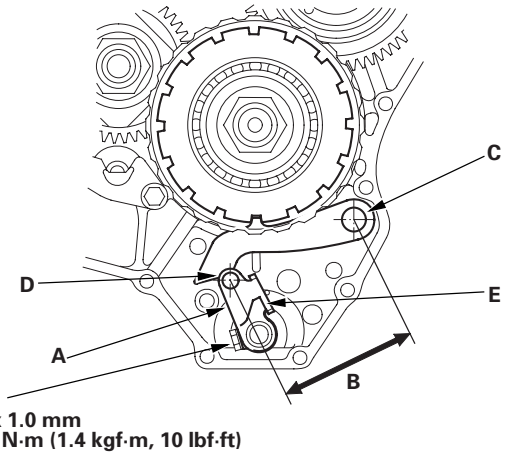


17. Remove the park pawl, park pawl spring, park pawl shaft, and stop shaft.

18. Remove the park lever from the control shaft.

Park Lever Stop Inspection and Adjustment

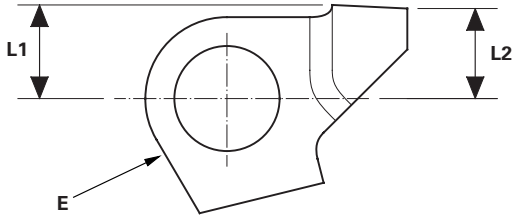
1. Set the park lever (A) in the P position.



2. Measure the distance (B) between the park pawl shaft (C) and the park lever roller pin (D).

   STANDARD: 84.6—85.6 mm (3.33—3.37 in.)

3. If the measurement is out of tolerance, select and install the appropriate park lever stop (E) from the table below.



PARK LEVER STOP

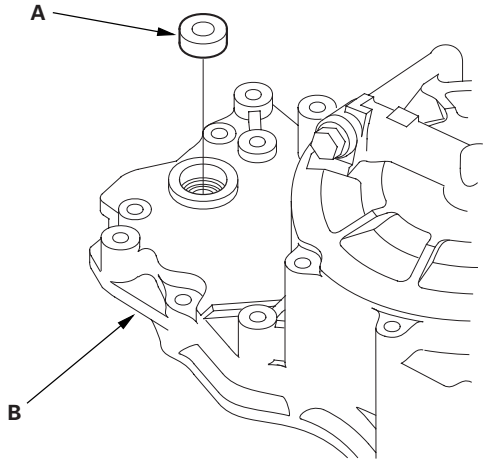
Mark	Part Number	L1	L2
1	24537-PA9-003	11.00 mm (0.433 in.)	11.00 mm (0.433 in.)
2	24538-PA9-003	10.80 mm (0.425 in.)	10.65 mm (0.419 in.)
3	24539-PA9-003	10.60 mm (0.417 in.)	10.30 mm (0.406 in.)

4. After replacing the park lever stop, make sure the distance is within tolerance.

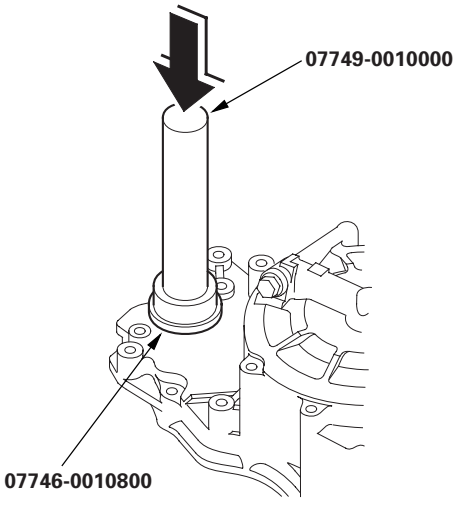
Control Shaft Oil Seal Replacement

Special Tools Required
- Handle driver 07749-0010000
- Driver attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal (A) from the end cover (B).



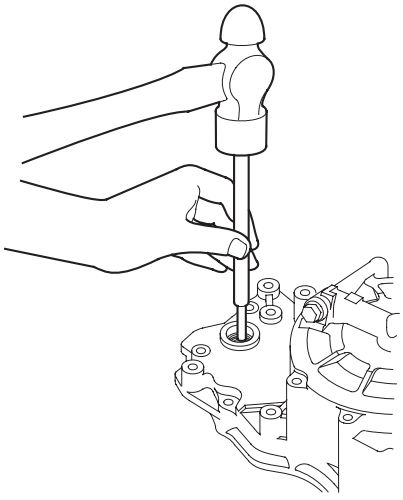
2. Install the new oil seal flush to the end cover with the special tools.



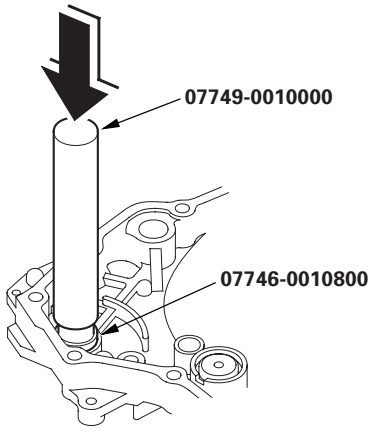
Control Shaft Bearing Replacement

Special Tools Required
- Handle driver 07749-0010000
- Driver attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal from the end cover, then remove the bearing.



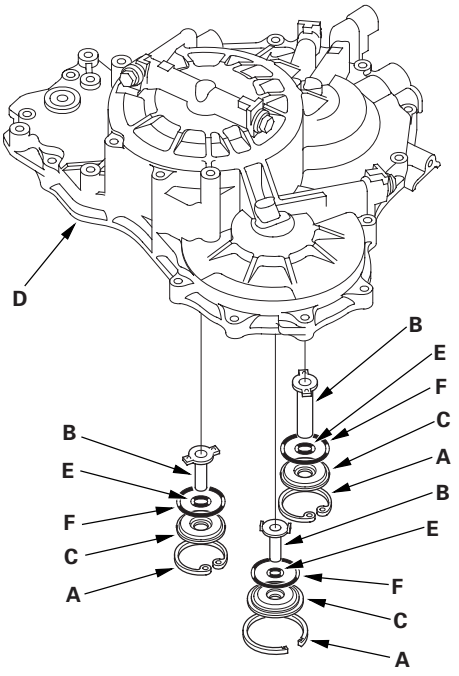
2. Install the new bearing flush to the end cover with the special tools.



3. Install the new oil seal.

ATF Feed Pipes Replacement

1. Remove the snap rings (A), ATF feed pipes (B) and feed pipe flanges (C) from the end cover (D).

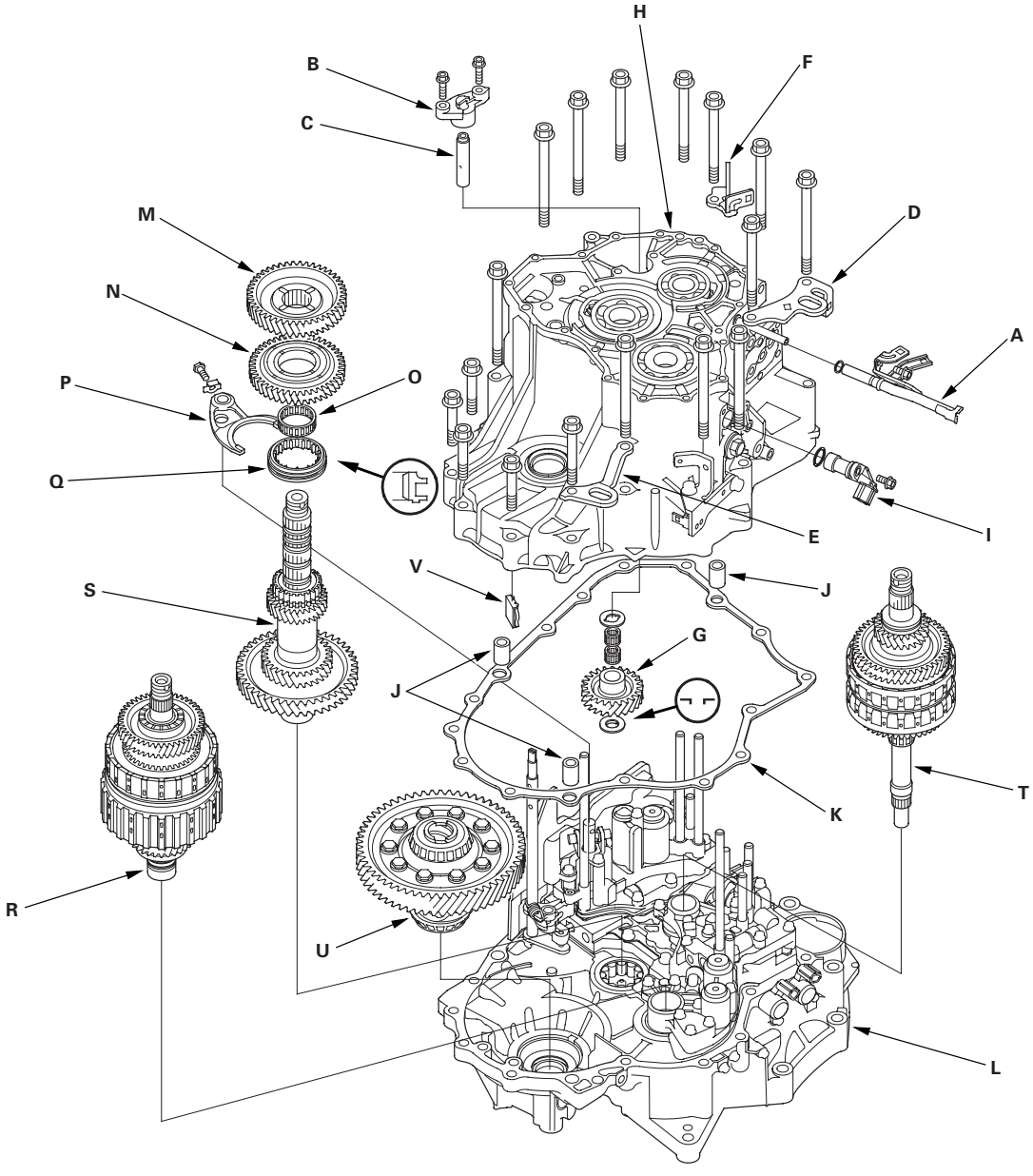


2. Install the new O-ring (E) over the ATF feed pipe.
3. Install the ATF feed pipe in the end cover by aligning the feed pipe tabs with the indentations in the end cover.
4. Install the new O-ring (F) in the end cover, then install the feed pipe flange over the ATF feed pipe and O-rings.
5. Secure the ATF feed pipe and feed pipe flange with the snap ring.

Housing and Shaft Assemblies Removal

Special Tools Required
Housing puller 07HAC-PK40102

1. Remove the ATF dipstick guide pipe (A).



2. Remove the two bolts securing the reverse idler gear shaft holder, then remove the reverse idler gear shaft holder (B) and shaft (C).

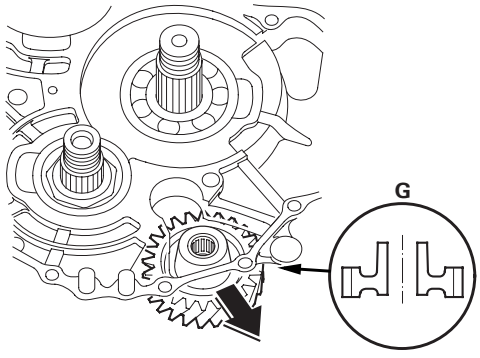
3. Remove the transmission housing mounting bolts (17 bolts), transmission hangers (D) (E), and harness clamp bracket (F).

(cont'd)

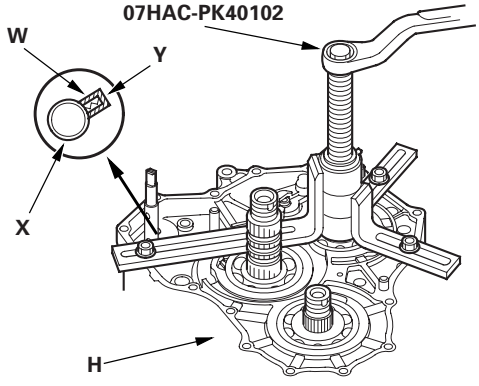
Housing and Shaft Assemblies Removal (cont'd)

4. Move the reverse idler gear (G) to disengage it from the mainshaft and countershaft idler gear.

   NOTE: The transmission housing will not separate from the torque converter housing if the reverse idler gear is not moved.



5. Align the spring pin (W) on the control shaft (X) with the transmission housing groove (Y) by turning the control shaft.



6. Install the special tool over the mainshaft, then remove the transmission housing (H).

   NOTE: If the top arm of your housing puller is too short, replace it with Housing Puller Arm, 205 mm T/N 07SAC-P0Z0101.

7. Remove the reverse idler gear (G), needle bearings, and washers from the transmission housing.

8. Remove the countershaft speed sensor (I).

9. Remove the three dowel pins (J) and gasket (K) from the torque converter housing (L).

10. Remove the countershaft 2nd gear (M), countershaft reverse gear (N), and needle bearing (O).

11. Remove the lock bolt securing the shift fork, then remove the shift fork (P) and reverse selector (Q). If the reverse selector hub is not press-fitted, remove the reverse selector hub, countershaft 5th gear, and needle bearing from the countershaft.

12. Remove the secondary shaft subassembly (R). If the reverse selector hub is press-fitted, remove the secondary shaft subassembly, countershaft subassembly (S) and mainshaft subassembly (T) together.

13. Remove the countershaft subassembly.

14. Remove the mainshaft subassembly.

15. Remove the differential assembly (U).

16. Remove the ATF magnet (V), and clean it. Reinstall the magnet in the transmission housing.

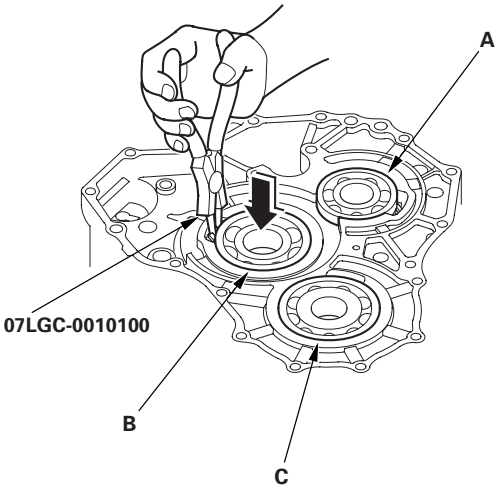
Bearing Removal and Installation

Special Tools Required
- Handle driver 07749-0010000
- Oil seal driver attachment 07GAD-PG40101 or 07GAD-PG40100
- Driver attachment, 62 x 68 mm 07746-0010500
- Driver attachment, 72 x 75 mm 07746-0010600
- Snap ring pliers 07LGC-0010100

NOTE: Coat all parts with ATF before assembly.

1. To remove the mainshaft bearing (A), countershaft bearing (B), and secondary shaft bearing (C) from the transmission housing, expand each snap ring with the snap ring pliers, then push the bearing out.

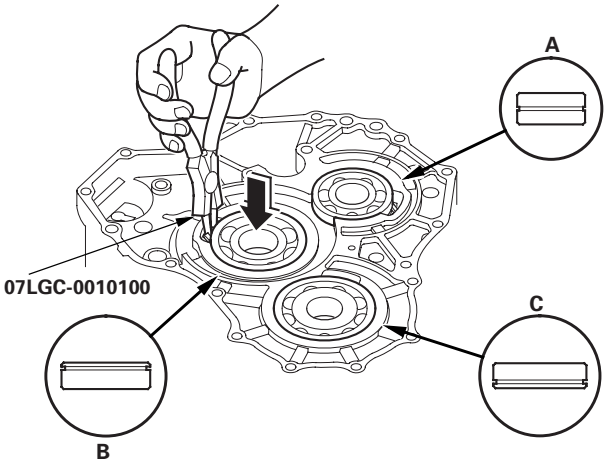
   NOTE: Do not remove the snap rings unless it's necessary to clean the grooves in the housing.



2. Install the bearings in the direction shown.

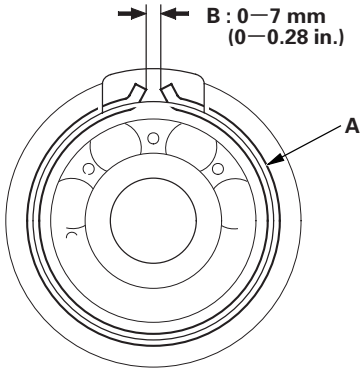
3. Expand each snap ring with the snap ring pliers, and insert the bearing part-way into the housing.

4. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.



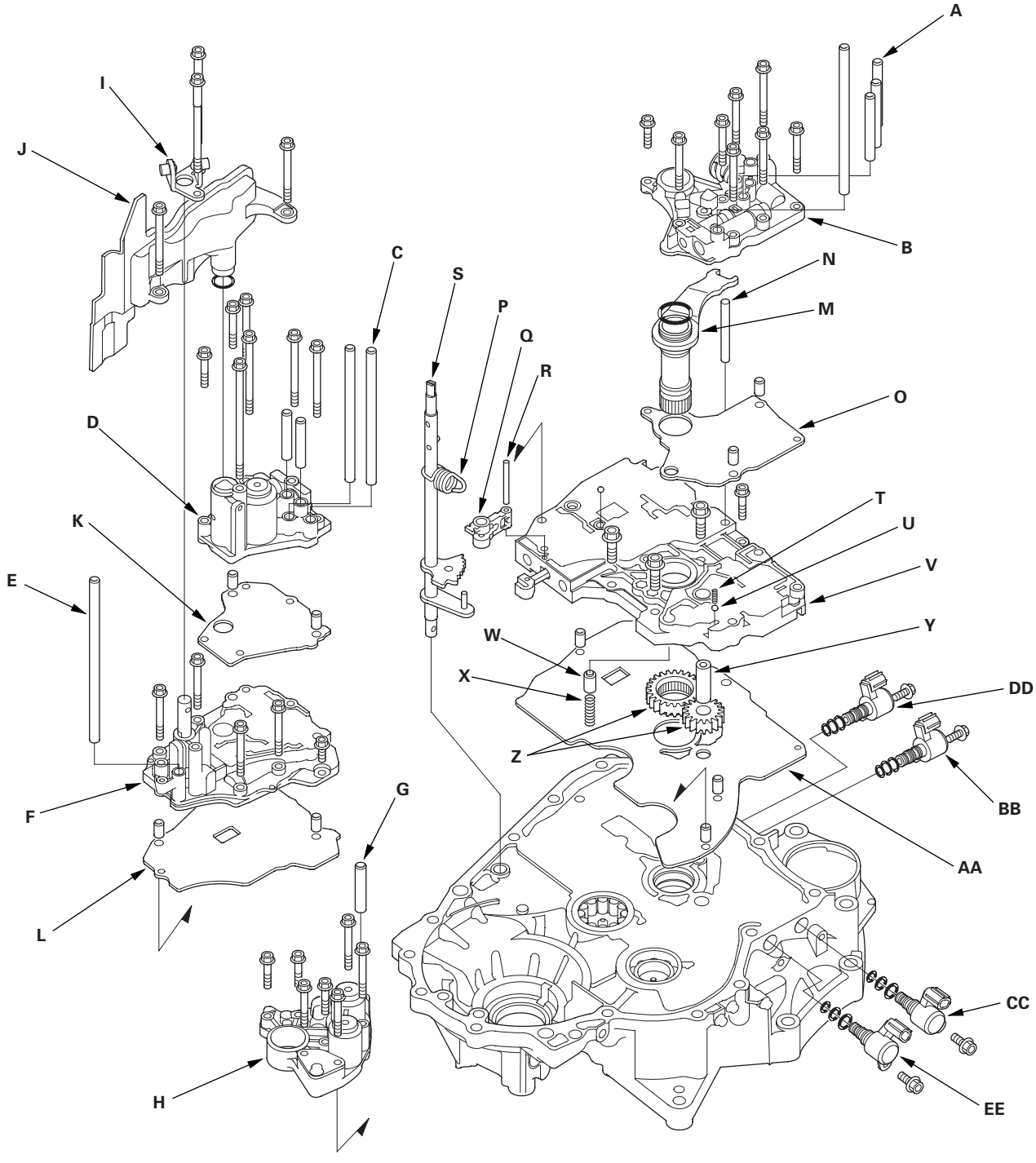
5. After installing the bearings verify the following:

   - The snap rings (A) are seated in the bearing and housing grooves.
   - The ring end gaps (B) are correct.



Valve Bodies and ATF Strainer Removal

1. Remove the three ATF feed pipes (A) from the regulator valve body (B), four pipes (C) from the top accumulator body (D), one pipe (E) from the servo body (F), and one 10 mm pipe (G) from the accumulator body (H).



2. Remove the servo detent base (I) (two bolts).

3. Remove the ATF strainer (J) (two bolts).

4. Remove the top accumulator body (D) (seven bolts), then remove the top accumulator body separator plate (K) and two dowel pins.

5. Remove the servo body (F) (five bolts), then remove servo separator plate (L) and two dowel pins.

6. Remove the regulator valve body (B) (eight bolts).

7. Remove the stator shaft (M) and stator shaft stop (N).

8. Remove the regulator separator plate (O) and two dowel pins.

9. Remove the accumulator body (H) (seven bolts).

10. Unhook the detent spring (P) from the detent arm (Q), then remove the detent arm shaft (R), detent arm, and control shaft (S).

11. Remove the cooler check valve spring (T) and cooler check valve (U).

12. Remove the main valve body (V) (four bolts).

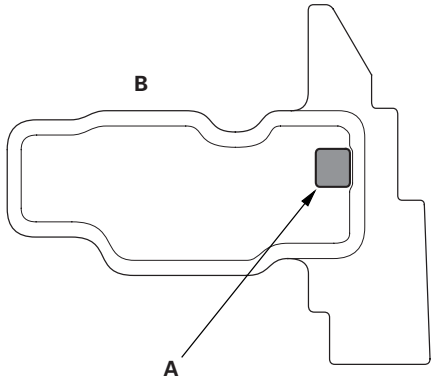
13. Remove the torque converter check valve (W) and valve spring (X).

14. Remove the ATF pump driven gear shaft (Y), then remove the ATF pump gears (Z).

15. Remove the main separator plate (AA) and three dowel pins.

16. Remove shift solenoid valves (BB) (CC) (DD) and torque converter clutch solenoid valve (EE) from the torque converter housing.

17. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is in good condition and that the inlet opening is not clogged.



18. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace it if it is clogged or damaged.

Valve Body Repair

NOTE: This repair is only necessary if one or more of the valves in a valve body do not slide smoothly in their bores. Use this procedure to free the valves.

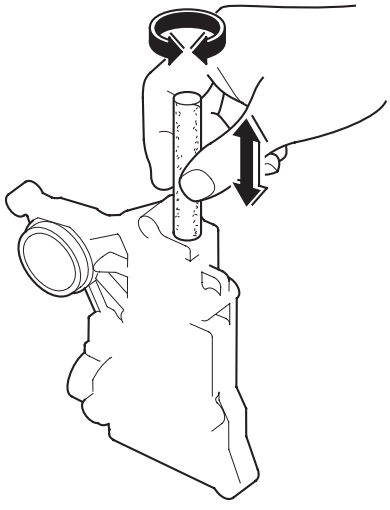
1. Soak a sheet of # 600 abrasive paper in ATF for about 30 minutes.

2. Carefully tap the valve body so the sticking valve drops out of its bore. It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore with the screwdriver.

3. Inspect the valve for any scuff marks. Use the ATF-soaked # 600 paper to polish off any burrs that are on the valve, then wash the valve in solvent and dry it with compressed air.

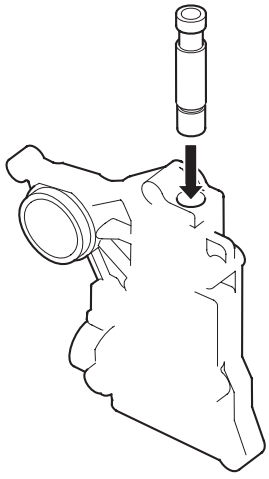
4. Roll up half a sheet of ATF-soaked # 600 paper and insert it in the valve bore of the sticking valve. Twist the paper slightly, so that it unrolls and fits the bore tightly, then polish the bore by twisting the paper as you push it in and out.

   NOTE: The valve body is aluminum and doesn't require much polishing to remove any burrs.



5. Remove the # 600 paper. Thoroughly wash the entire valve body in solvent, then dry it with compressed air.

6. Coat the valve with ATF, then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat steps 4 and 5, then retest. If the valve still sticks, replace the valve body.

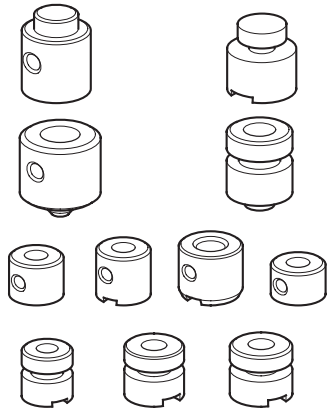


7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

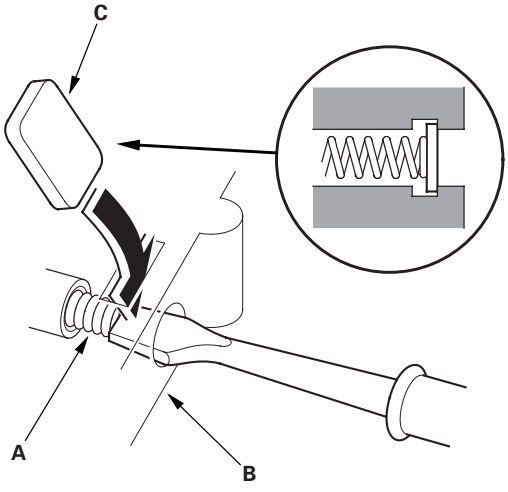
Valve Body Valve Installation

1. Coat all parts with ATF before assembly.

2. Install the valves and springs in the sequence shown for the main valve body (see page 14-524), regulator valve body (see page 14-526), servo body (see page 14-527), and top accumulator body (see page 14-528). Refer to the following valve cap illustrations, and install each valve cap so the end shown facing up will be facing the outside of the valve body.

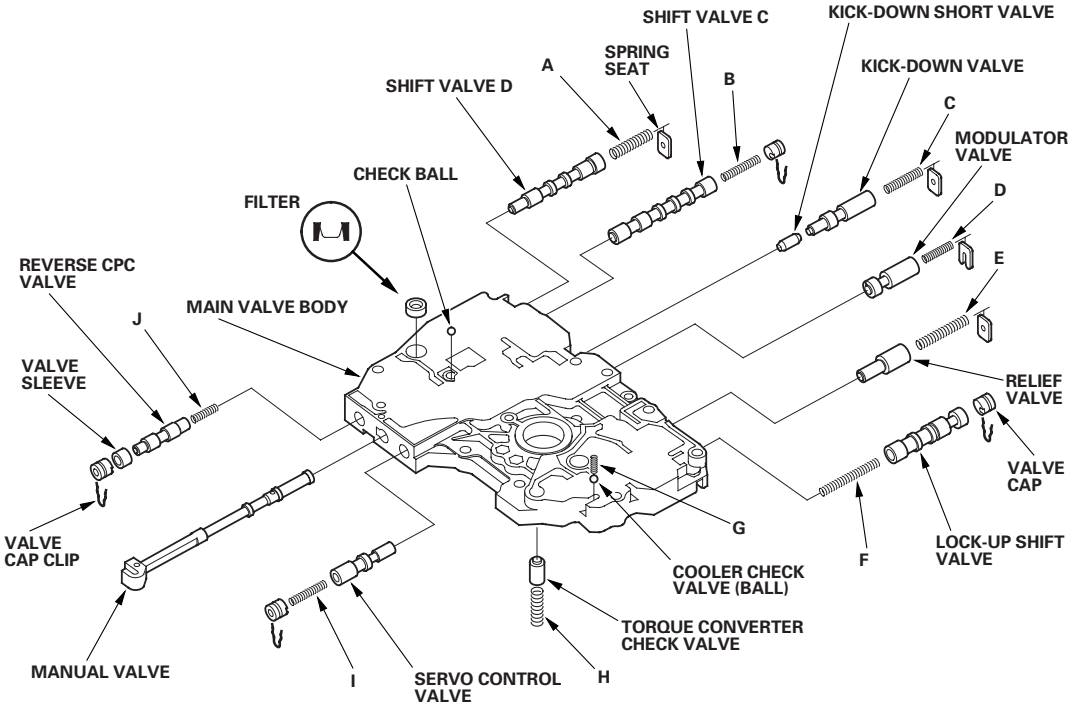


3. Install all the springs and seats. Insert the spring (A) in the valve, then install the valve in the valve body (B). Push the spring in with a screwdriver, then install the spring seat (C).



Main Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the check ball, it may magnetize the ball.
3. Inspect the valve body for scoring and damage. Replace the valve body as an assembly if any parts are worn or damaged.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-522).
5. Coat all parts with ATF during assembly.
6. Install the new filter in the direction shown.

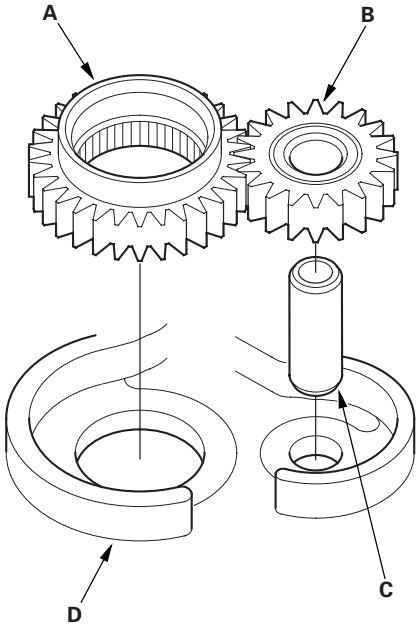


SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
A	Shift valve D spring	0.7 (0.028)	6.6 (0.260)	33.7 (1.327)	11.6
B	Shift valve C spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
C	Kick-down valve spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
D	Modulator valve spring	1.6 (0.063)	10.4 (0.409)	33.5 (1.319)	9.8
E	Relief valve spring	1.2 (0.047)	11.1 (0.437)	39.0 (1.535)	9.9
F	Lock-up shift valve spring	0.9 (0.035)	7.6 (0.299)	63.0 (2.480)	22.4
G	Cooler check valve spring	0.6 (0.024)	5.8 (0.228)	14.5 (0.571)	6.8
H	Torque converter check valve spring	1.2 (0.047)	8.6 (0.339)	35.1 (1.382)	14.3
I	Servo control valve spring	0.9 (0.035)	6.4 (0.252)	32.5 (1.280)	17.5
J	Reverse CPC valve spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9

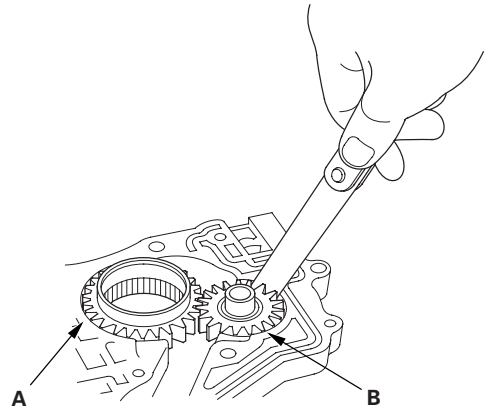
ATF Pump Inspection

1. Install the ATF pump drive gear (A), driven gear (B), and ATF pump driven gear shaft (C) in the main valve body (D). Lubricate all parts with ATF, and install the ATF pump driven gear with its grooved and chamfered side facing up.



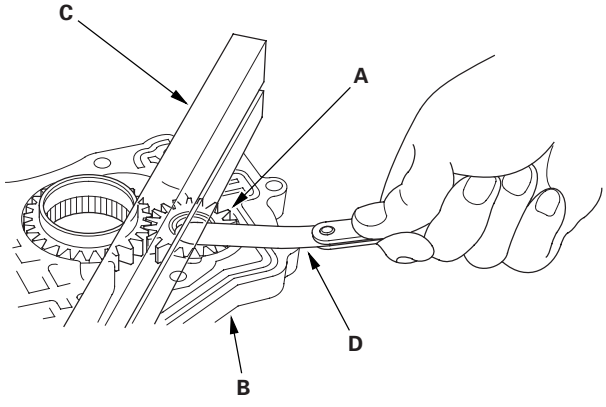
2. Measure the side clearance of the ATF pump drive gear (A) and driven gear (B).

ATF Pump Gears Side (Radial) Clearance:
Standard (New):
ATF Pump Drive Gear
0.210—0.265 mm (0.0083—0.00104 in.)
ATF Pump Driven Gear
0.070—0.125 mm (0.0028—0.0050 in.)



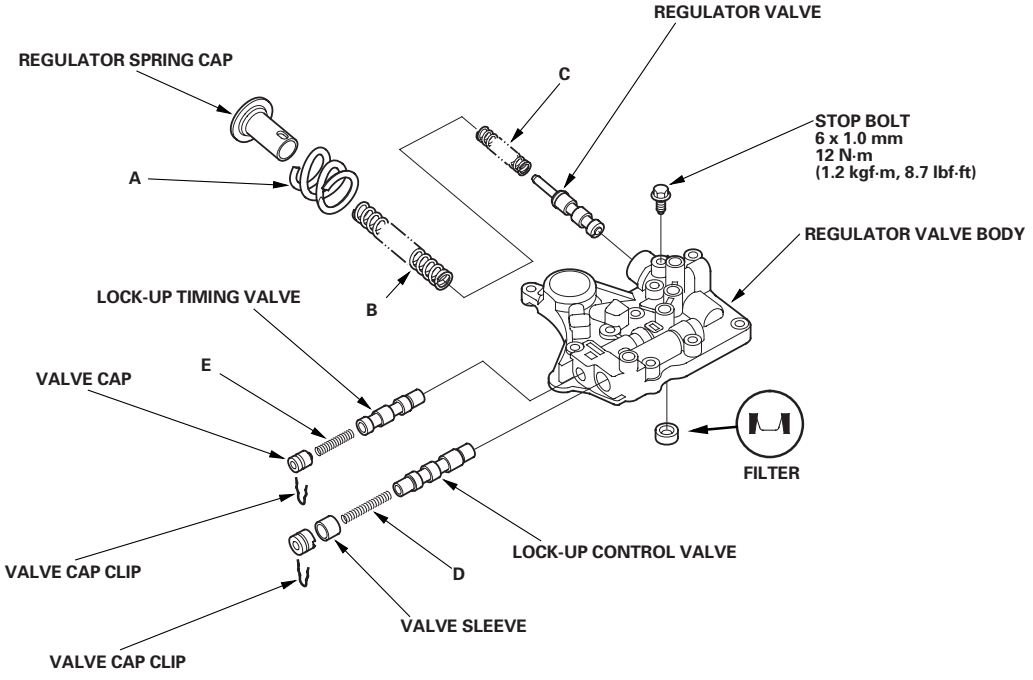
3. Remove the ATF pump driven gear shaft. Measure the thrust clearance between the ATF pump driven gear (A) and the valve body (B) with a straight edge (C) and a feeler gauge (D).

ATF Pump Drive/Driven Gear Thrust (Axial) Clearance:
Standard (New): 0.03—0.06 mm (0.001—0.002 in.)
Service Limit: 0.07 mm (0.003 in.)



Regulator Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Inspect the valve body for scoring and damage.
3. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-522).
4. Replace the valve body as an assembly if any parts are worn or damaged.
5. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded. Once the stop bolt is removed, release the spring cap slowly so it does not pop out.
6. Reassembly is the reverse of disassembly. Install the filter in the direction shown.
7. Coat all parts with ATF during assembly.
8. Align the hole in the regulator spring cap with the hole in the valve body, then press the spring cap into the valve body, and tighten the stop bolt.
9. Install the new filter in the direction shown.

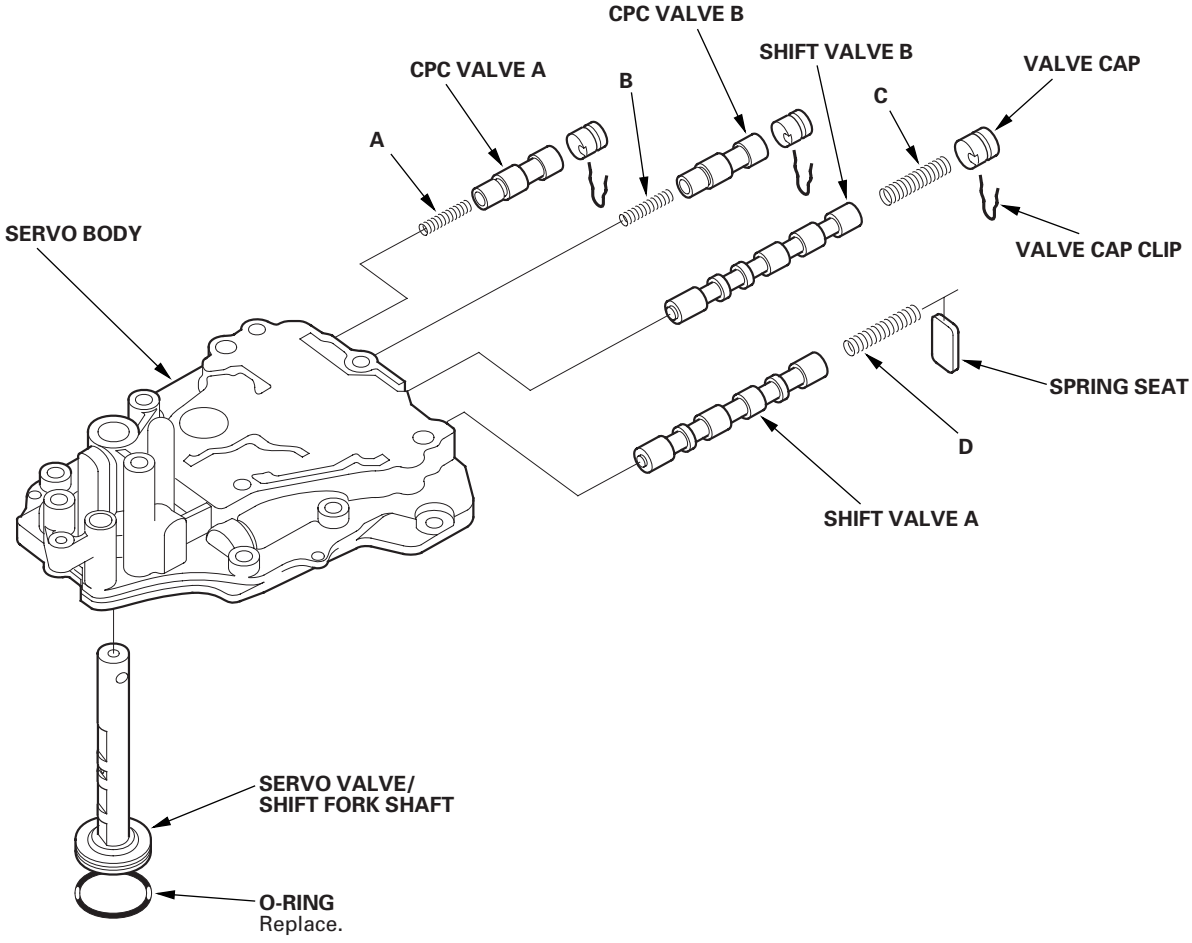


SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
A	Stator reaction spring	5.5 (0.217)	37.4 (1.472)	30.3 (1.193)	2.1
B	Regulator valve spring A	1.9 (0.075)	14.7 (0.579)	80.6 (3.173)	16.1
C	Regulator valve spring B	1.4 (0.055)	8.8 (0.346)	44.0 (1.732)	12.0
D	Lock-up control valve spring	0.7 (0.028)	6.6 (0.260)	42.9 (1.689)	14.2
E	Lock-up timing valve spring	0.65 (0.026)	6.6 (0.260)	34.8 (1.370)	15.6

Servo Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Inspect the servo body for scoring and damage. Replace the valve body as an assembly if any parts are worn or damaged.
3. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-522).
4. Coat all parts with ATF during reassembly.

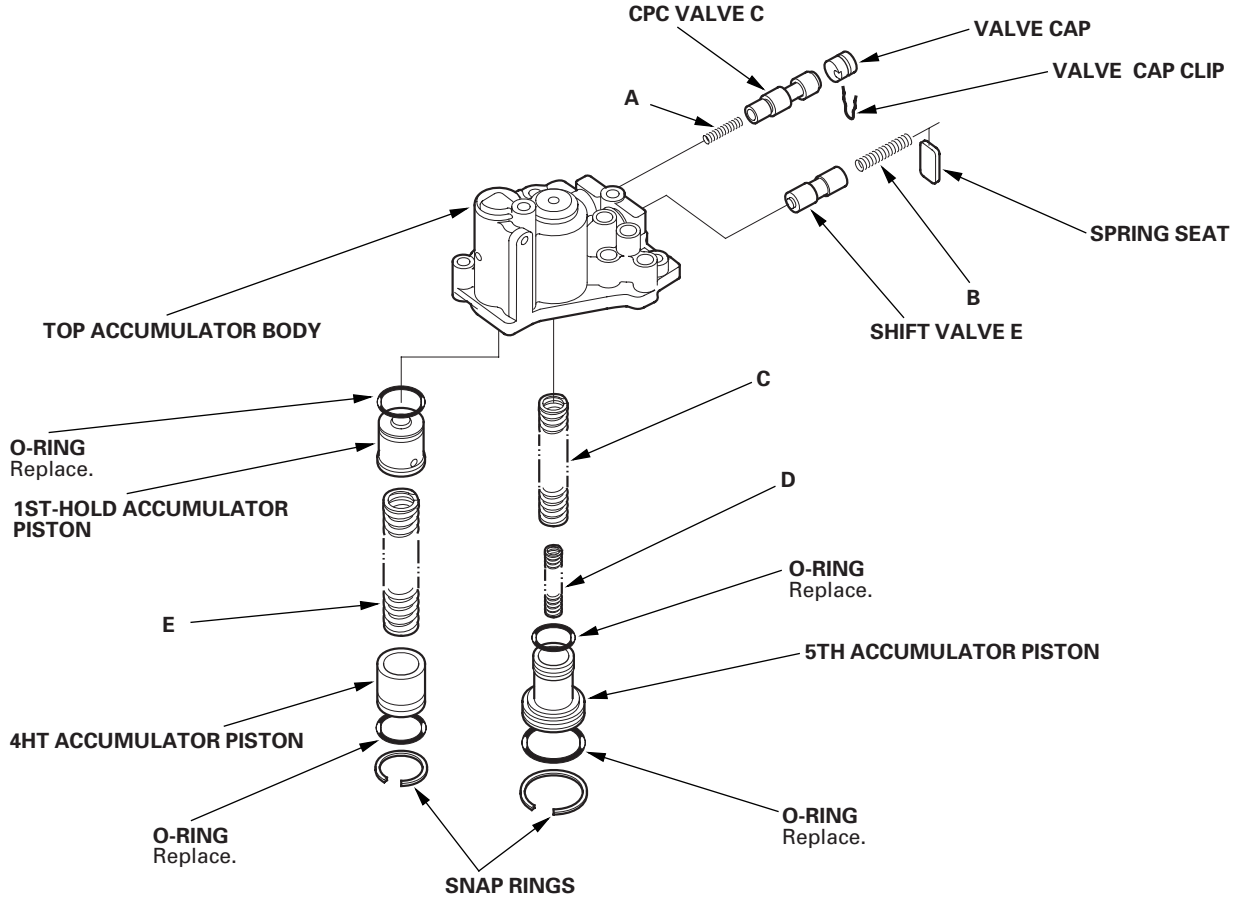


SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
A	CPC valve A spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
B	CPC valve B spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
C	Shift valve B spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
D	Shift valve A spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7

Top Accumulator Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Inspect the top accumulator body for scoring and damage. Replace the valve body as an assembly if any parts are worn or damaged.
3. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-522).
4. Coat all parts with ATF during assembly.

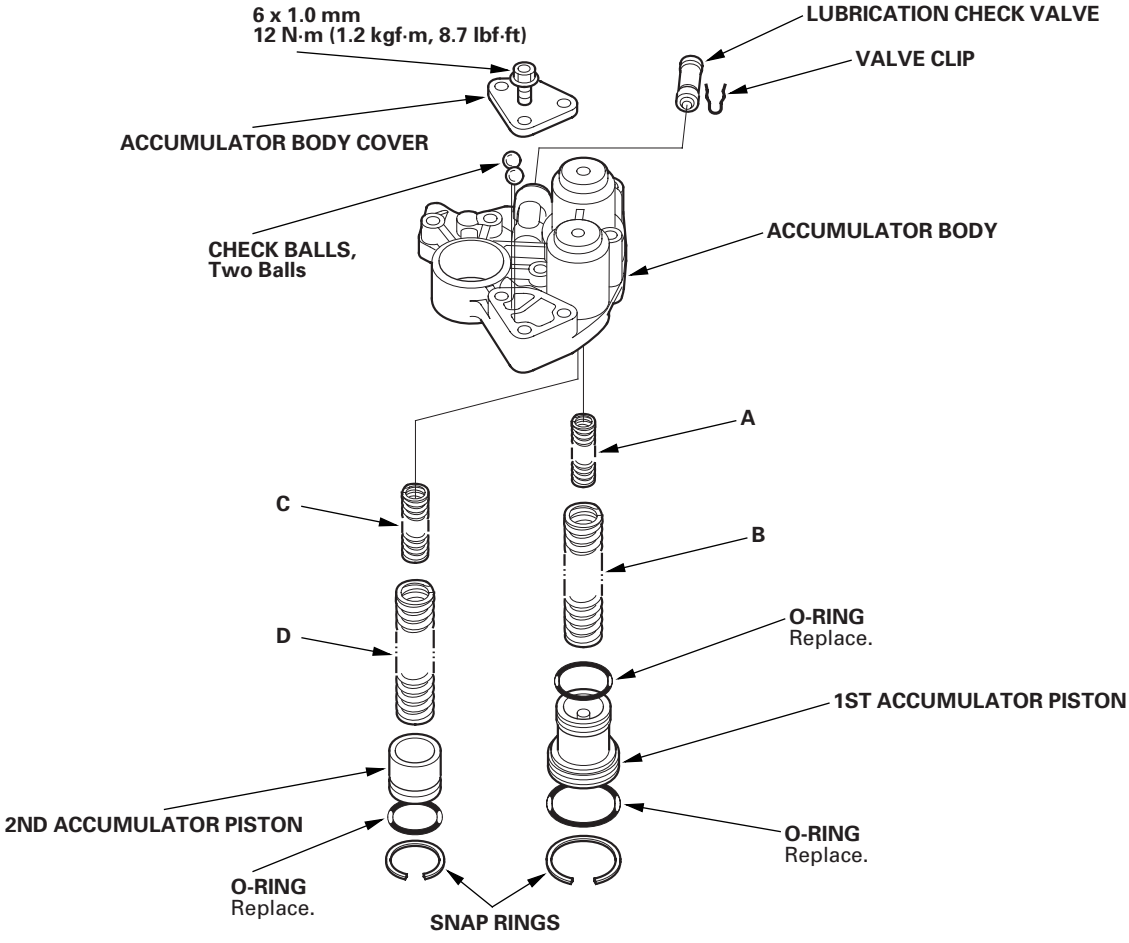


SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
A	CPC valve C spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
B	Shift valve E spring	0.8 (0.031)	7.1 (0.280)	49.0 (1.929)	17.2
C	5th accumulator spring A	2.2 (0.087)	16.4 (0.646)	75.7 (2.980)	14.2
D	5th accumulator spring B	2.0 (0.079)	10.0 (0.394)	45.5 (1.791)	11.6
E	4th/1st-hold accumulator spring	3.4 (0.134)	19.6 (0.772)	57.4 (2.260)	8.4

Accumulator Body Disassembly, Inspection, and Reassembly

1. Do not use a magnet to remove the check balls; it may magnetize the balls.
2. Inspect the accumulator body for scoring and damage.
3. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
4. Coat all parts with ATF during assembly.

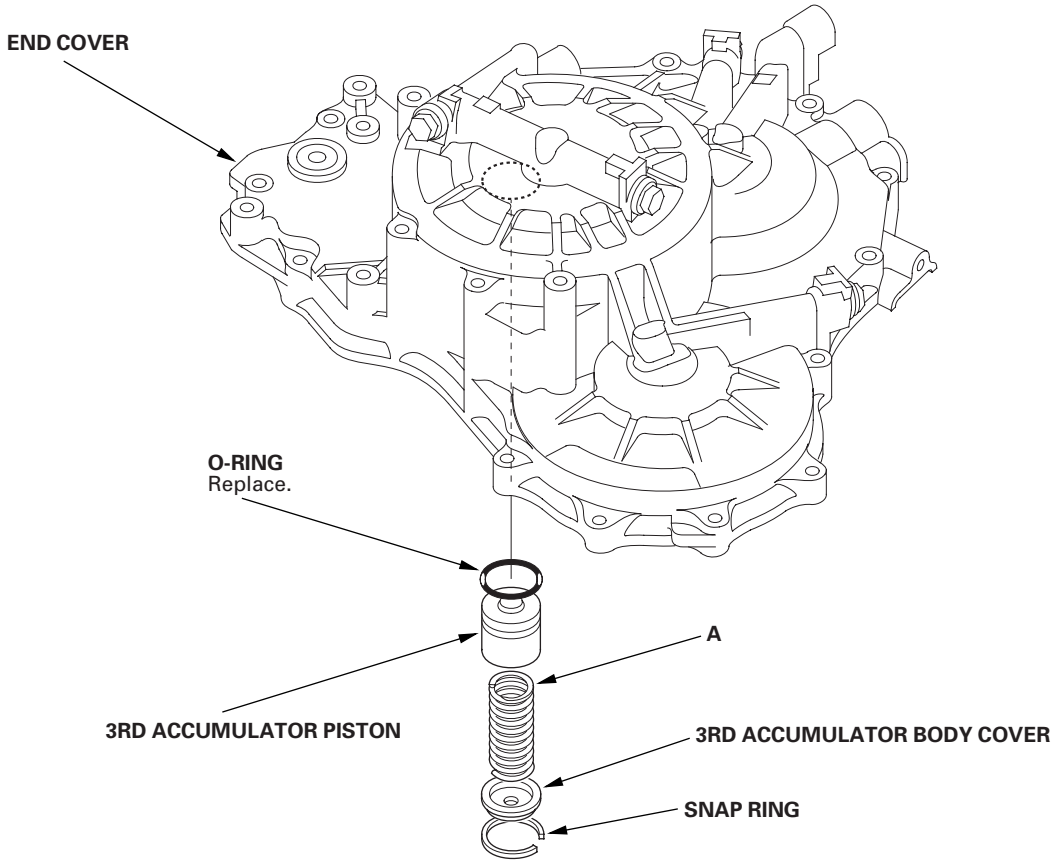


SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
A	1st accumulator spring B	2.3 (0.091)	12.6 (0.496)	42.0 (1.654)	9.9
B	1st accumulator spring A	2.4 (0.094)	19.5 (0.768)	67.7 (2.665)	10.2
C	2nd accumulator spring B	2.6 (0.102)	13.0 (0.512)	44.0 (1.732)	9.0
D	2nd accumulator spring A	2.5 (0.098)	19.6 (0.772)	57.7 (2.272)	9.5

3rd Accumulator/End Cover Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Coat all parts with ATF during assembly.



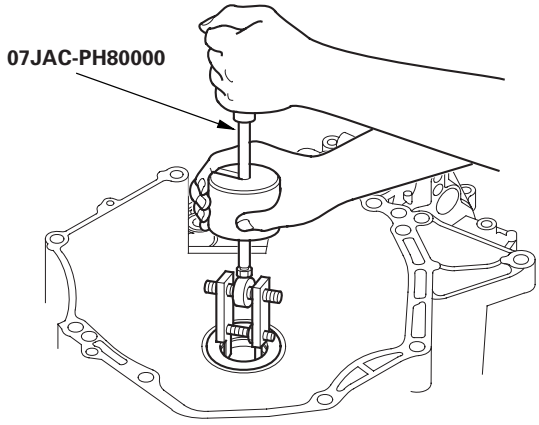
SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
A	3rd accumulator spring	3.1 (0.122)	19.6 (0.772)	39.4 (1.551)	5.5

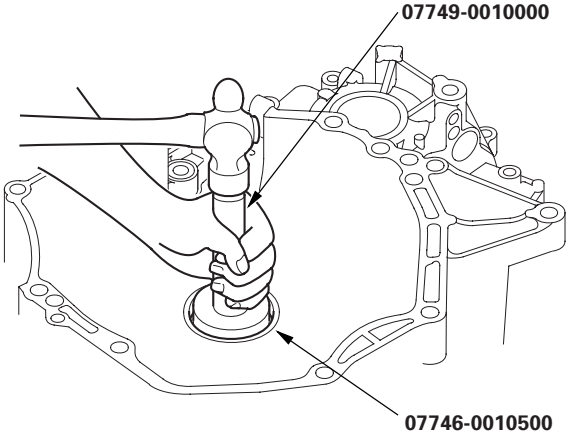
Mainshaft Bearing and Oil Seal Replacement

Special Tools Required
- Adjustable bearing remover set 07JAC-PH80000
- Handle driver 07749-0010000
- Driver attachment, 62 x 68 mm 07746-0010500
- Driver attachment, 72 x 75 mm 07746-0010600

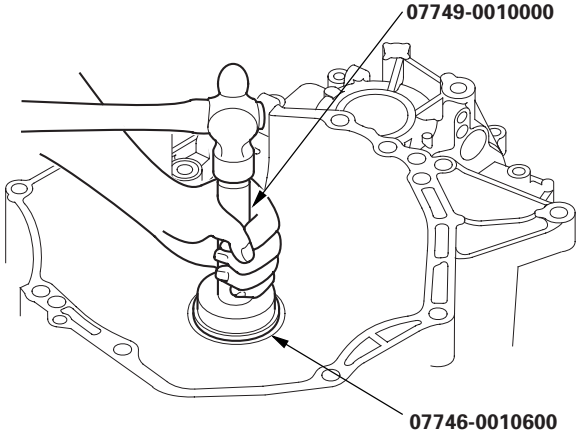
1. Remove the mainshaft bearing and oil seal with the special tool.



2. Install the new mainshaft bearing until it bottoms in the housing with the special tools.



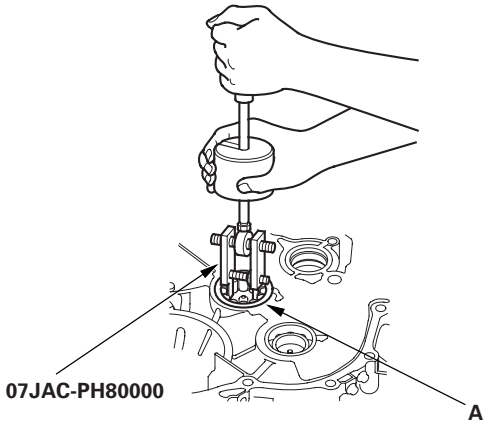
3. Install the new oil seal flush to the housing with the special tools.



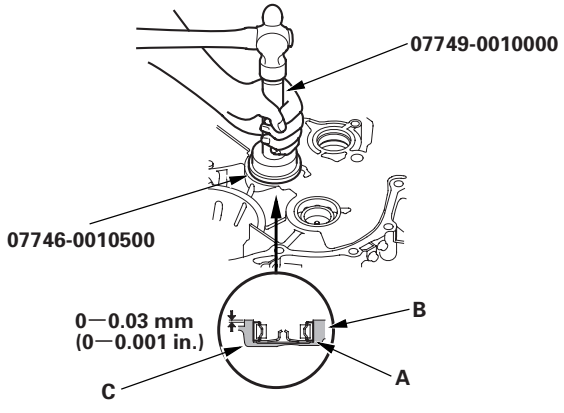
Countershaft Bearing Replacement

Special Tools Required
- Adjustable bearing remover set 07JAC-PH80000
- Handle driver 07749-0010000
- Driver attachment, 62 x 68 mm 07746-0010500

1. Remove the countershaft bearing (A) with the special tool.



2. Install the ATF guide plate (A).

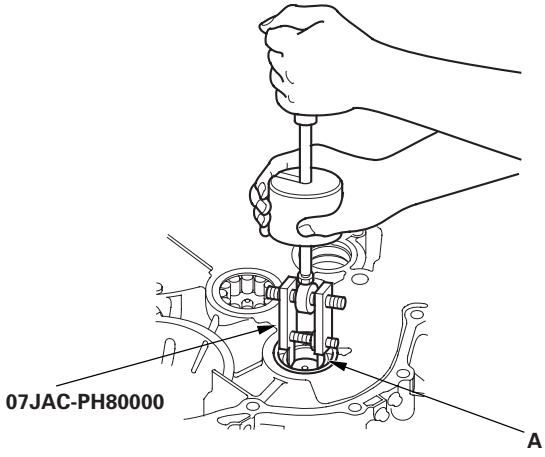


3. Install the new bearing (B) into the housing (C) with the special tools.

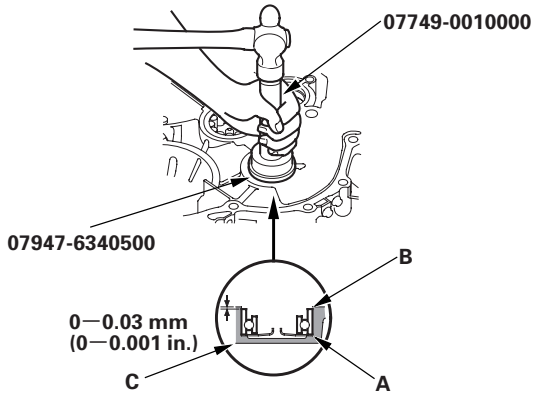
Secondary Shaft Bearing Replacement

Special Tools Required
- Adjustable bearing remover set 07JAC-PH80000
- Handle driver 07749-0010000
- Driver attachment 07947-6340500

1. Remove the secondary shaft bearing (A) with the special tool.



2. Install the ATF guide plate (A).

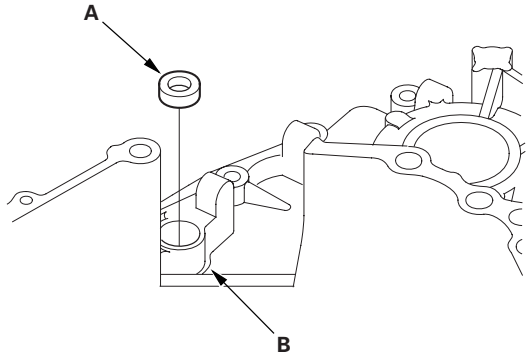


3. Install the new bearing (B) into the housing (C) with the special tools.

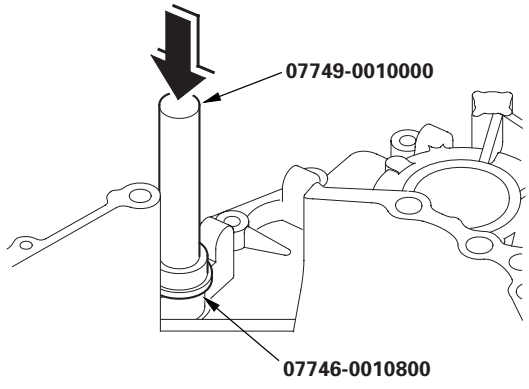
Control Shaft Oil Seal Replacement

Special Tools Required
- Handle driver 07749-0010000
- Driver attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal (A), from the torque converter housing (B).

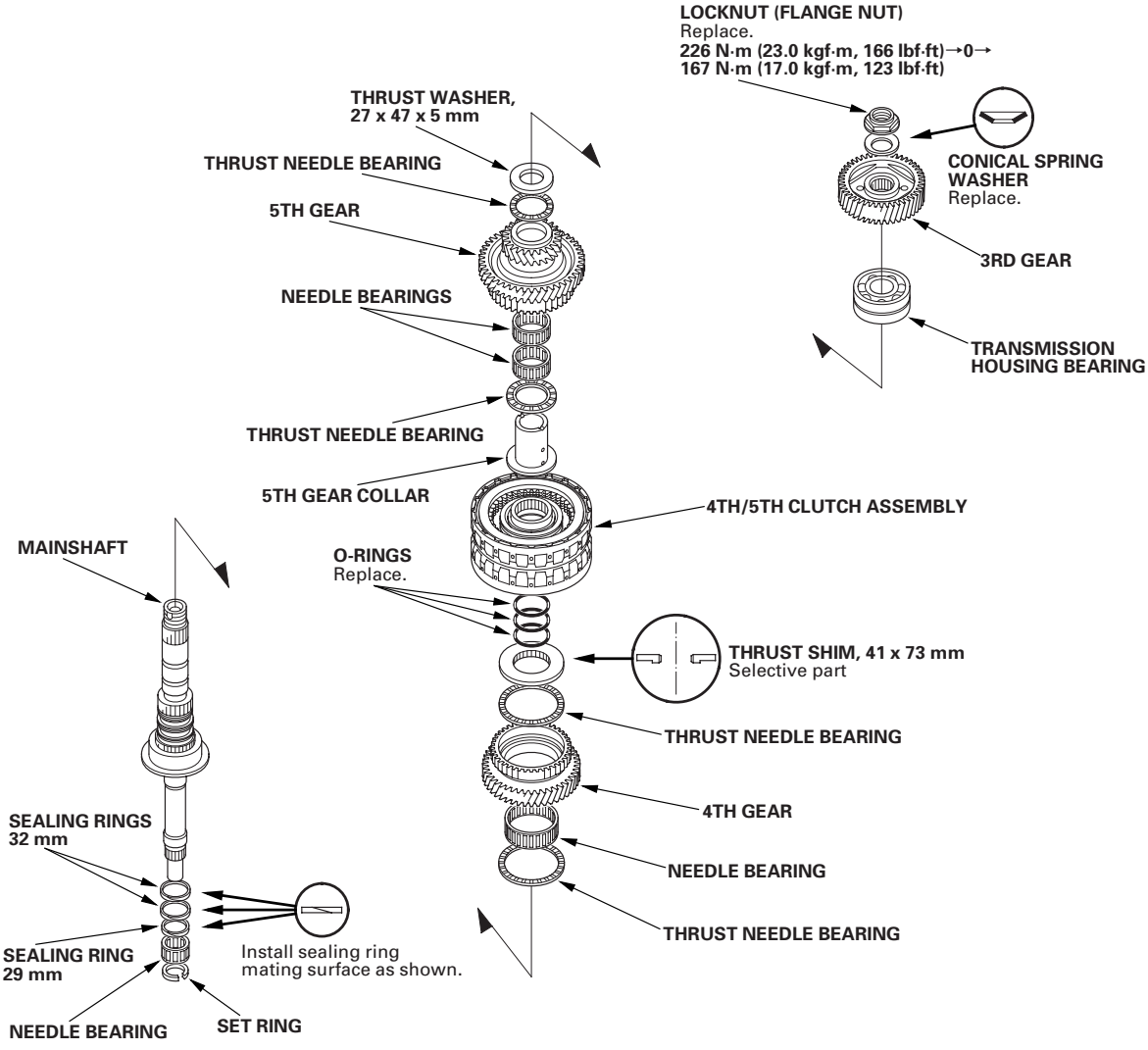


2. Install the new oil seal flush to the torque converter housing with the special tools.



Mainshaft Disassembly, Inspection, and Reassembly

1. Lubricate all parts with ATF during assembly.

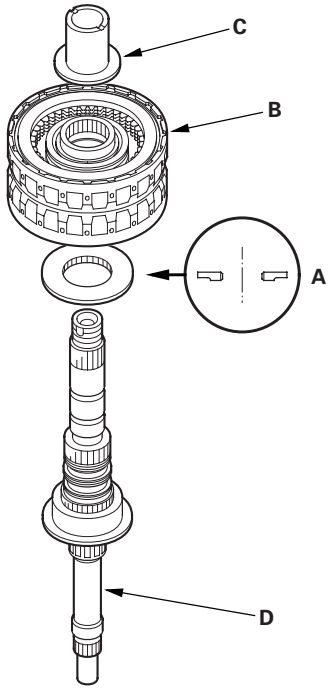


2. Check the clearance of the 4th/5th clutch assembly.
3. Inspect the thrust needle bearing and the needle bearing for scoring and rough movement.
4. Inspect the splines for excessive wear and damage.
5. Check shaft bearing surfaces for scoring and excessive wear.
6. Before installing the O-rings, wrap the shaft splines with tape to prevent O-ring damage.
7. Install the 41 x 73 mm thrust shim and conical spring washer in the direction shown.
8. Inspect the condition of the sealing rings. If the sealing rings are worn, distorted, or damaged, replace them (see page 14-536).

4th/5th Clutch Clearance Inspection

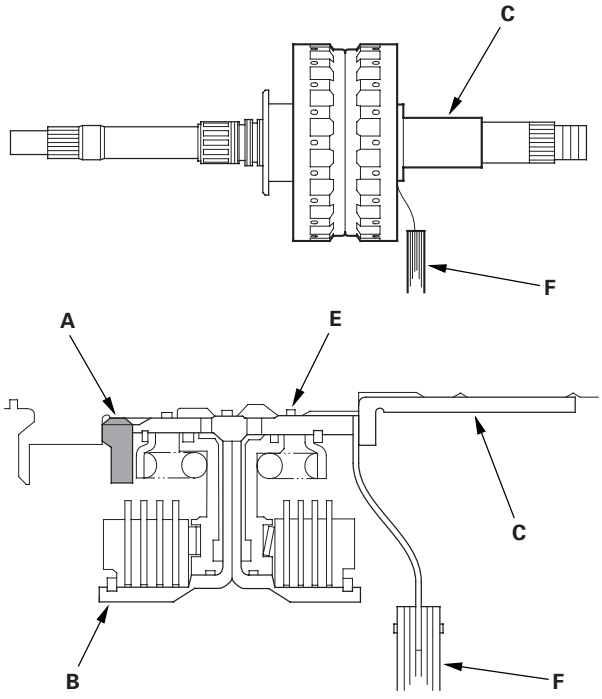
1. Remove the O-rings from the mainshaft.

2. Assemble the 41 x 73 mm thrust shim (A), 4th/5th clutch assembly (B), and 5th gear collar (C) on the mainshaft (D).



3. Hold the 5th gear collar (C) against the clutch assembly (B), then measure the clearance between the clutch guide (E) and the 5th gear collar with a feeler gauge (F) in at least three places. Use the average as the actual clearance.

STANDARD: 0.03—0.11 mm (0.001—0.004 in.)



4. If the clearance is out of standard, remove the thrust shim and measure its thickness.

5. Select and install a new shim, then recheck.

THRUST SHIM, 41 x 73 mm

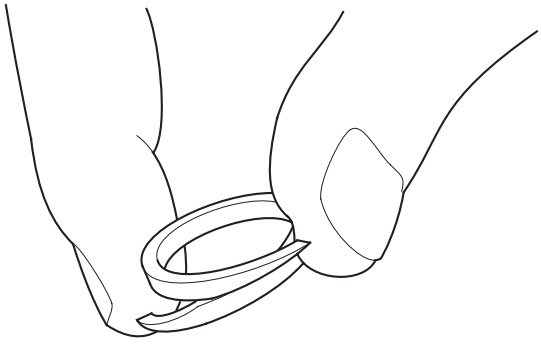
No.	Part Number	Thickness
1	90414-P7W-000	7.85 mm (0.309 in.)
2	90415-P7W-000	7.90 mm (0.311 in.)
3	90416-P7W-000	7.95 mm (0.313 in.)
4	90417-P7W-000	8.00 mm (0.315 in.)
5	90418-P7W-000	8.05 mm (0.317 in.)
6	90419-P7W-000	8.10 mm (0.319 in.)

6. After replacing the thrust shim, make sure the clearance is within standard.

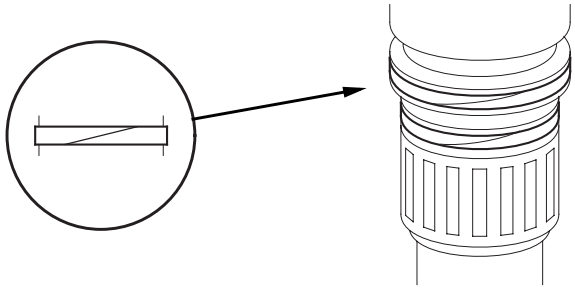
Mainshaft Sealing Rings Replacement

The sealing rings are synthetic resin with chamfered ends. Check the condition of the sealing rings, and replace them only if they are worn, distorted, or damaged.

1. For a better fit, squeeze sealing rings together slightly before installing them.



2. Apply ATF to the new sealing rings then install them on the mainshaft.

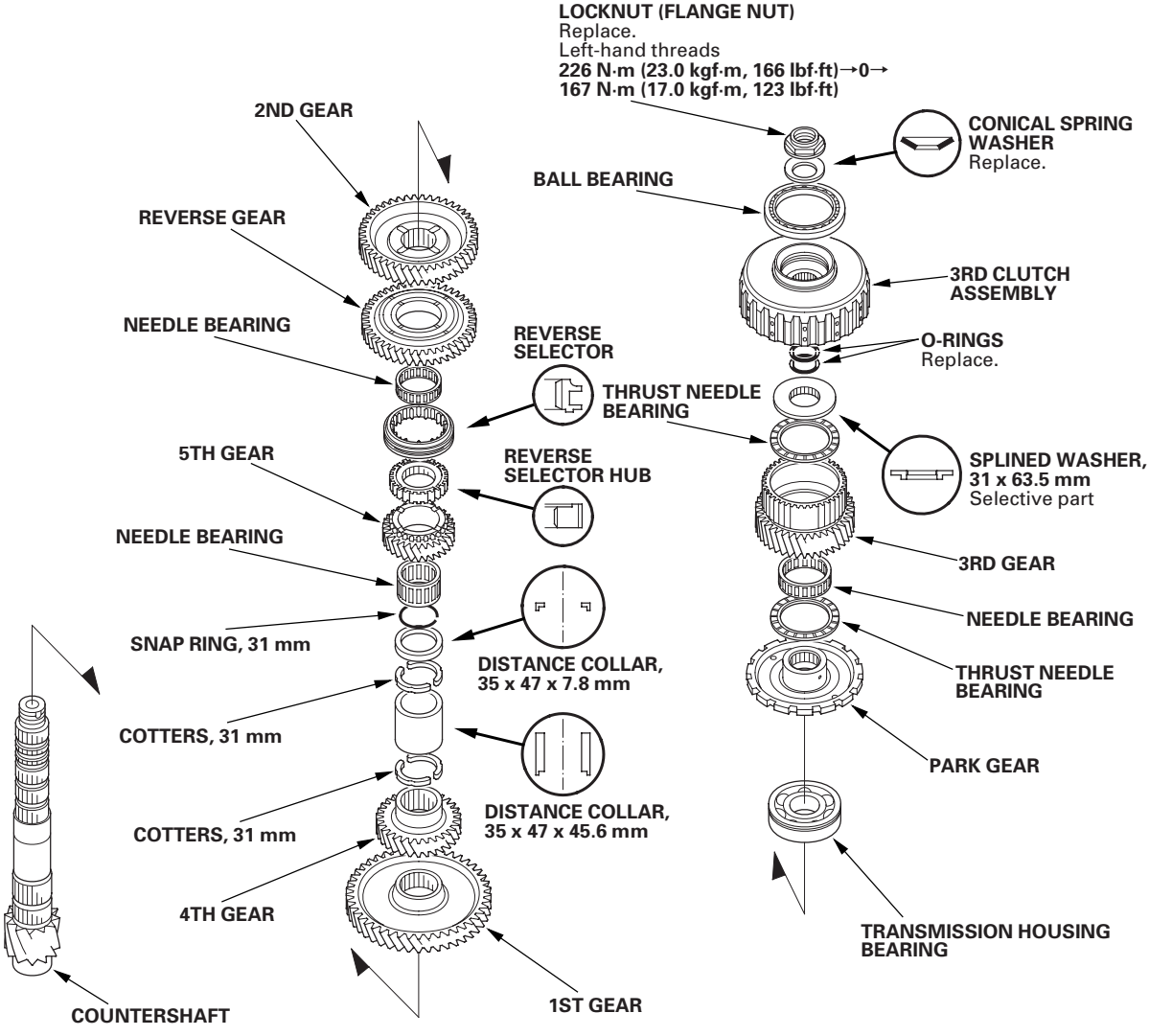


3. After installing the sealing rings, verify the following:

   - The rings are fully seated in the groove.
   - The rings are not twisted.
   - The chamfered ends of the rings are properly joined.

Countershaft Disassembly, Inspection, and Reassembly

1. Remove the locknut, and take off components down to the reverse selector hub.



2. Remove the reverse selector hub, 4th gear, and 1st gear (see page 14-538).

3. Check the bearing on the 3rd clutch for wear and rough movement. If the bearing is worn or damaged, replace it (see page 14-540).

4. Inspect the thrust needle bearing and the needle bearing for scoring and rough movement.

5. Check the splines for excessive wear and damage.

6. Check the shaft bearing surfaces for scoring and excessive wear.

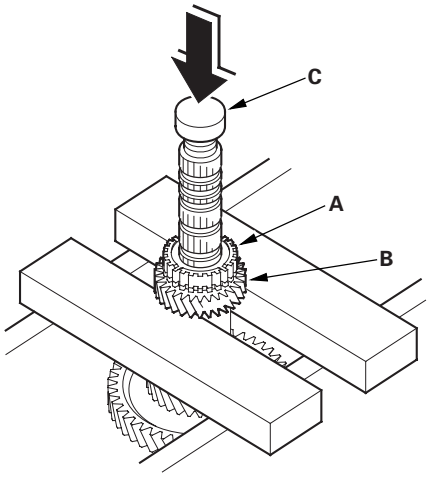
7. Lubricate all parts with ATF, and reassemble the shaft and gears.

8. Install the distance collars, reverse selector hub, reverse selector, splined washer, and conical spring washer in the direction shown.

Countershaft Reverse Selector Hub and 4th Gear Removal

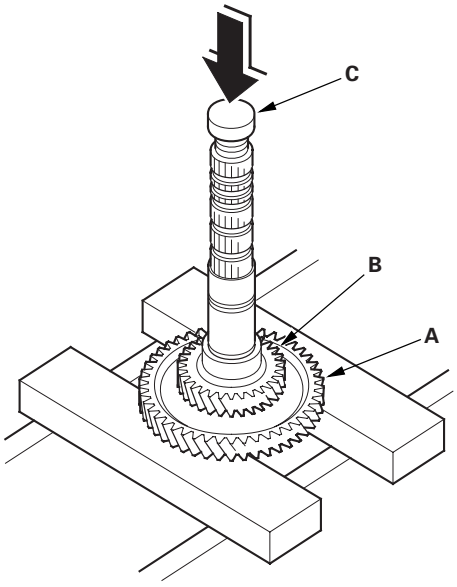
1. Remove the reverse selector hub (A) and the 5th gear (B) from the countershaft with a press. Place a shaft protector (C) between the countershaft and press to prevent damaging the countershaft.

   NOTE: Some reverse selector hubs are not press-fitted, and can be removed without using a press.



2. Remove the needle bearing, snap ring, 35 x 47 x 7.8 mm distance collar, 31 mm cotters, 35 x 47 x 45.6 mm distance collar, and 31 mm cotters from the countershaft.

3. Remove the 1st gear (A) and 4th gear (B) from the countershaft with a press. Place a shaft protector (C) between the countershaft and press to prevent damaging the countershaft.



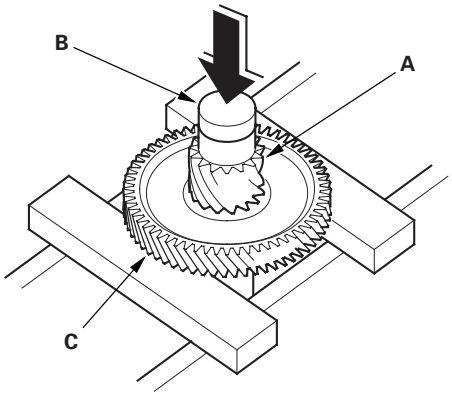
Countershaft 4th Gear and Reverse Selector Hub Installation

Special Tools Required
Driver, 40 mm I.D. 07746-0030100

1. Apply ATF to the parts.

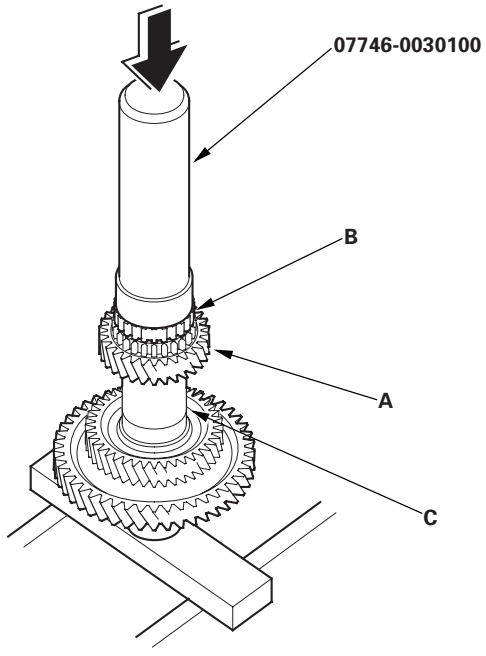
2. Install the 1st gear on the countershaft by hand.

3. Align the shaft splines with those on 4th gear, then press the countershaft (A) into the 4th gear with a press. Place a shaft protector (B) between the countershaft and press to prevent damaging the countershaft.



4. Stop pressing the countershaft when the 4th gear contacts the 1st gear (C).

5. Install the 31 mm cotters, 35 x 47 x 45.6 mm distance collar, 31 mm cotters, 35 x 47 x 7.8 mm distance collar, snap ring, needle bearing, and 5th gear (A) on the countershaft.



6. Slide the reverse selector hub (B) over the countershaft (C), then press it into place with the special tool and a press.

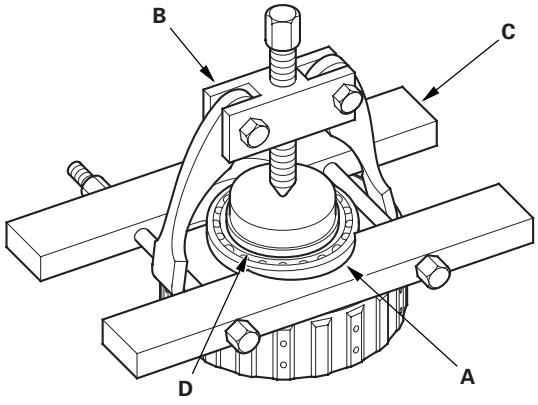
   NOTE: Some reverse selector hubs are not press fitted, and can be installed without using the special tool and a press.

3rd Clutch Ball Bearing Replacement

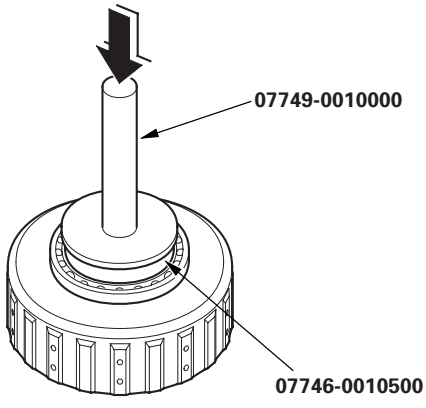
Special Tools Required
- Handle driver 07749-0010000
- Driver attachment, 62 x 68 mm 07746-0010500

NOTE: Check the bearing for wear and rough movement. If the bearing is OK, removal is not necessary.

1. Remove the ball bearing (A) from the 3rd clutch with a commercially available bearing puller (B), bearing separator (C), and stepper adapter (D).

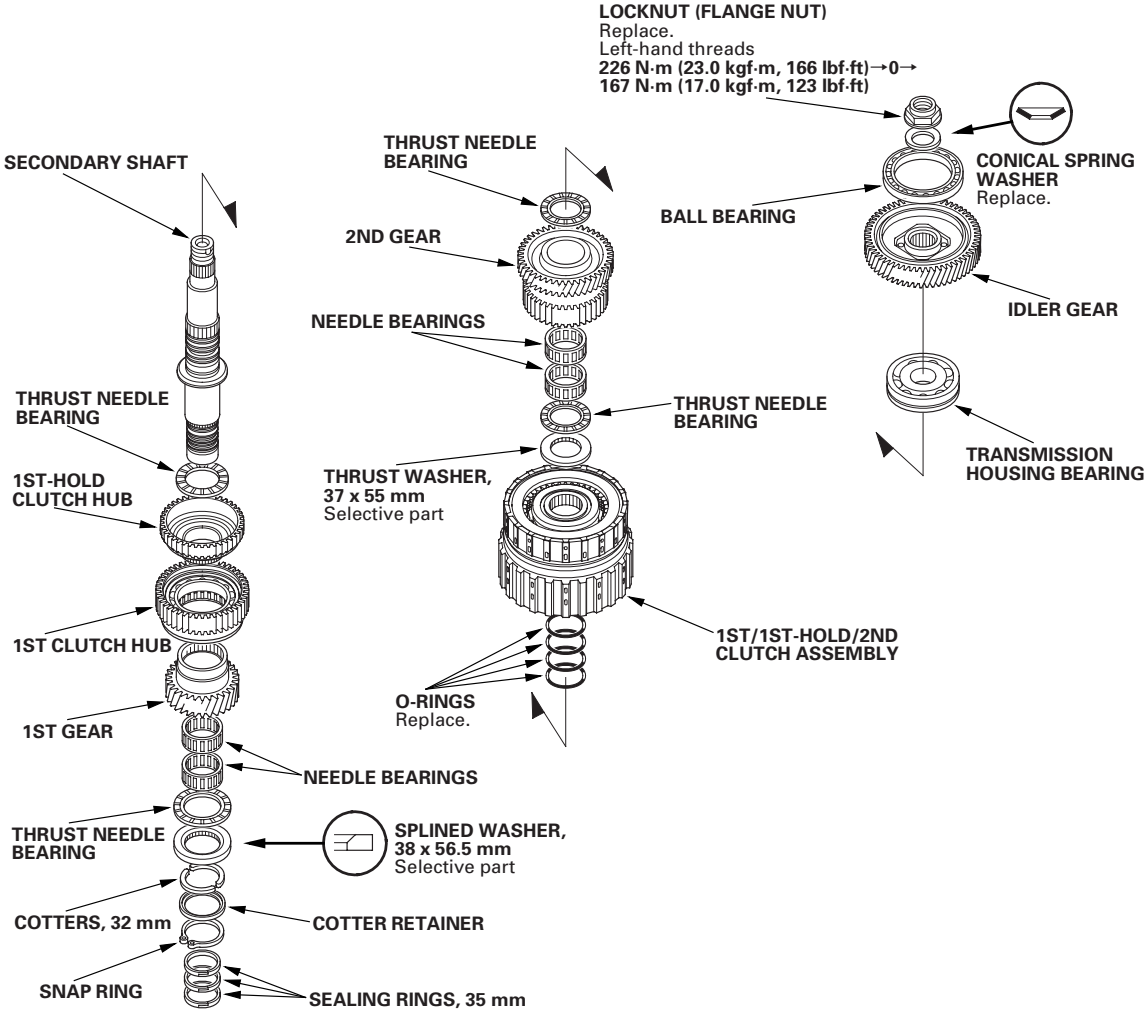


2. Install the new bearing on the 3rd clutch with the special tools and a press.



Secondary Shaft Disassembly, Inspection, and Reassembly

1. Remove the locknut, and disassemble the shaft and gears.



2. Inspect the thrust needle bearing and needle bearing for scoring and rough movement.

3. Check the clearance of the secondary shaft assembly.

4. Check the splines for excessive wear and damage.

5. Check the shaft bearing surfaces for scoring and excessive wear.

6. Check the idler gear bearing for wear and rough movement. If the bearing is worn or damaged, replace it (see page 14-544).

7. Before installing the O-rings, wrap the shaft splines with tape to prevent damage to the O-rings.

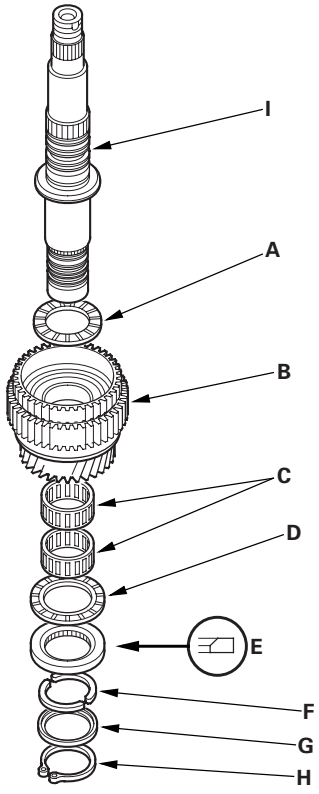
8. Lubricate all parts with ATF during reassembly.

9. Install the conical spring washer and splined washer in the direction shown.

Secondary Shaft Clearance Inspection

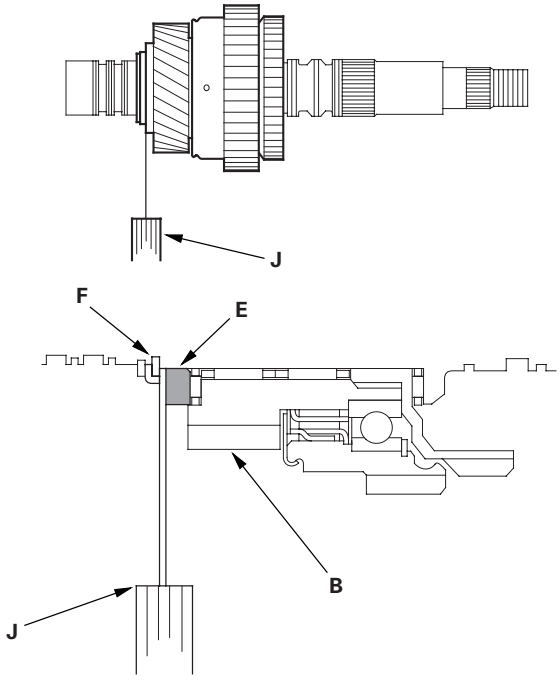
1. Remove the O-rings from the secondary shaft.

2. Assemble the thrust needle bearing (A), 1st gear assembly (B), needle bearings (C), thrust needle bearing (D), 38 x 56.5 mm splined washer (E), 32 mm cotters (F), cotter retainer (G), and snap ring (H) on the secondary shaft (I).



3. Measure the clearance between the 38 x 56.5 mm splined washer (E) and cotters (F) with a feeler gauge (J) in at least three places. Use the average as the actual clearance.

STANDARD: 0.07 – 0.15 mm (0.003 – 0.006 in.)



4. If the measurement is out of standard, remove the splined washer, and measure its thickness.

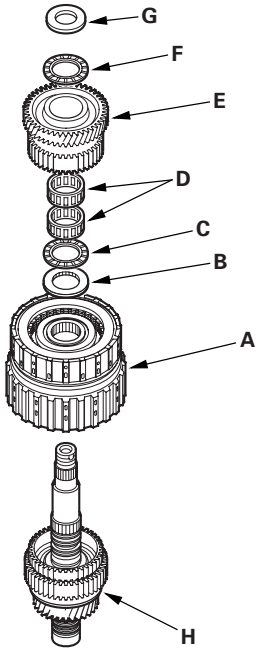
5. Select and install a new splined washer, then recheck the clearance.

SPLINED WASHER, 38 x 56.5 mm

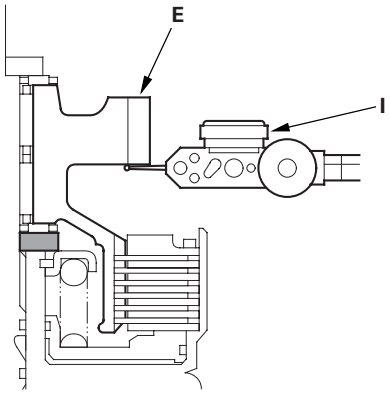
No.	Part Number	Thickness
1	90502-P0Z-000	6.85 mm (0.270 in.)
2	90503-P0Z-000	6.90 mm (0.272 in.)
3	90504-P0Z-000	6.95 mm (0.274 in.)
4	90505-P0Z-000	7.00 mm (0.276 in.)
5	90506-P0Z-000	7.05 mm (0.278 in.)
6	90507-P0Z-000	7.10 mm (0.280 in.)

6. Remove the 27 x 47 x 5 mm thrust washer from the mainshaft.

7. Assemble the 1st/1st-hold/2nd clutch assembly (A), 37 x 55 mm thrust washer (B), thrust needle bearing (C), needle bearings (D), 2nd gear (E), thrust needle bearing (F), and 27 x 47 x 5 mm thrust washer (removed from mainshaft) (G) on the secondary shaft sub-assembly (H).

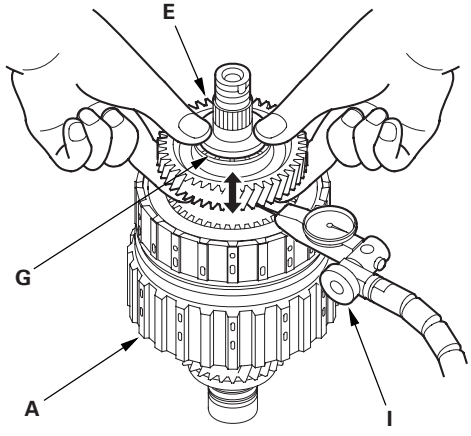


8. Set the dial indicator (I) on the 2nd gear (E).



9. Hold the 27 x 47 x 5 mm thrust washer (G) against the clutch assembly (A), and measure the 2nd gear axial clearance in at least three places while moving the 2nd gear (E). Use the average as the actual clearance.

STANDARD: 0.04 – 0.12 mm (0.002 – 0.005 in.)



10. If the measurement is out of standard, remove the 37 x 55 mm thrust washer and measure its thickness.

11. Select and install a new thrust washer, then recheck the clearance.

THRUST SHIM, 37 x 55 mm

No.	Part Number	Thickness
1	90406-P0Z-000	4.90 mm (0.193 in.)
2	90407-P0Z-000	4.95 mm (0.195 in.)
3	90408-P0Z-000	5.00 mm (0.197 in.)
4	90409-P0Z-000	5.05 mm (0.199 in.)
5	90410-P0Z-000	5.10 mm (0.201 in.)
6	90411-P0Z-000	5.15 mm (0.203 in.)
7	90412-P0Z-000	5.20 mm (0.205 in.)

12. Disassemble the shaft and gears.

13. Reinstall the 27 x 47 x 5 mm thrust washer on the mainshaft.

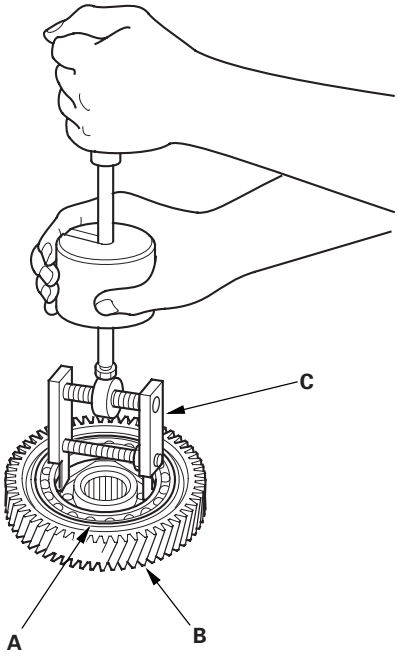
Secondary Shaft Idler Gear Bearing Replacement

Special Tools Required
- Handle driver 07749-0010000
- Driver attachment, 78 x 90 mm 07GAD-SD40101

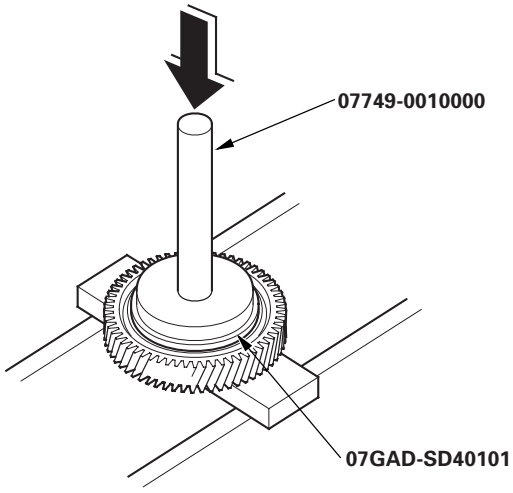
1. Check the bearing for wear, damage, and rough movement. If the bearing is worn or damaged, go to step 2.

2. Place the secondary shaft idler gear in a vise with soft jaws.

3. Remove the bearing (A) from the secondary shaft idler gear (B) with a commercially available bearing puller (C).

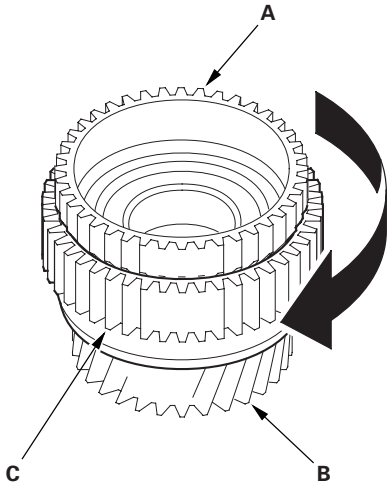


4. Install the bearing on the secondary shaft idler gear with the special tools and a press.



1st Gear One-way Clutch Inspection

1. Hold the 1st-hold clutch hub (A), and turn the 1st gear (B) in the direction shown to be sure it turns freely. Also make sure the 1st gear does not turn in the opposite direction.

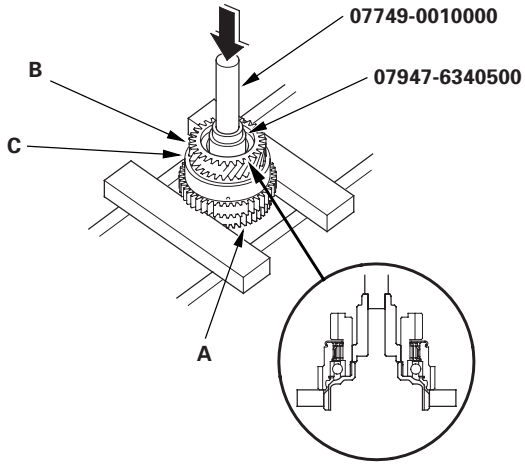


2. If any problem occurs on the 1st gear one-way clutch, replace the 1st clutch hub (C). The 1st gear one-way clutch is not available separately from the 1st clutch hub.

1st Clutch Hub Replacement

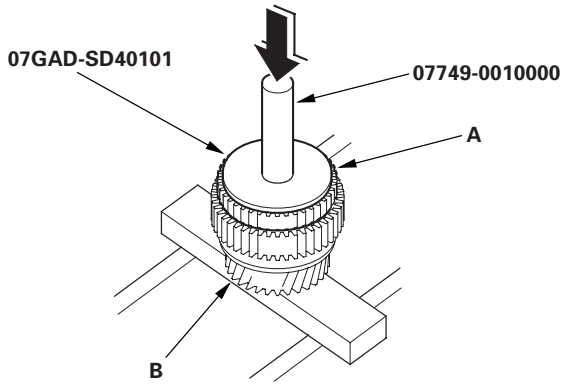
Special Tools Required
- Handle driver 07749-0010000
- Driver attachment 07947-6340500
- Driver attachment, 78 x 90 mm 07GAD-SD40101

1. Remove the 1st-hold clutch hub (A) from the 1st gear (B) with the special tools and a press.



2. Remove the 1st clutch hub (C) from the 1st gear, then install the new 1st clutch hub in the 1st gear.

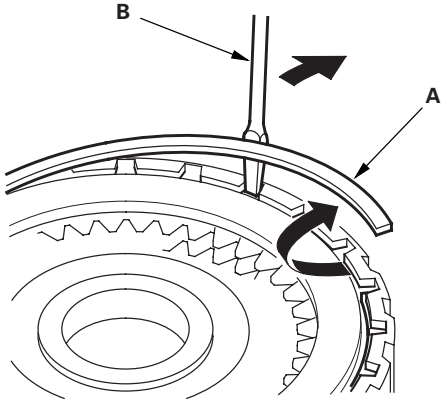
3. Install the 1st-hold clutch hub (A) in the 1st gear (B) with the special tools and a press.



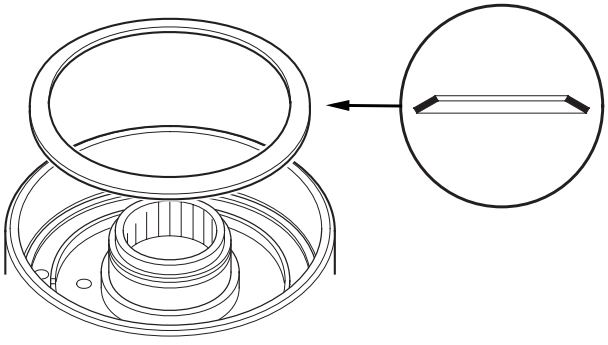
Clutch Disassembly

Special Tools Required
- Clutch spring compressor set 07LAE-PX40000
- Clutch spring compressor attachment 07LAE-PX40100
- Clutch spring compressor attachment 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200
- Snap ring pliers 07LGC-0010100

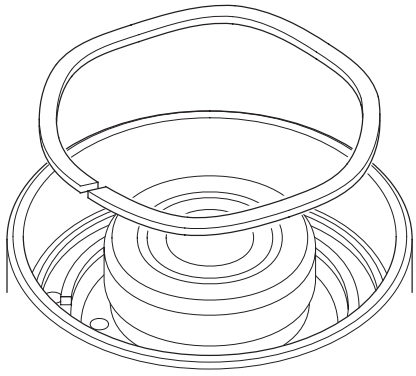
1. Remove the snap ring (A), then remove the clutch end plate, the clutch discs, and the plates with a screwdriver (B).



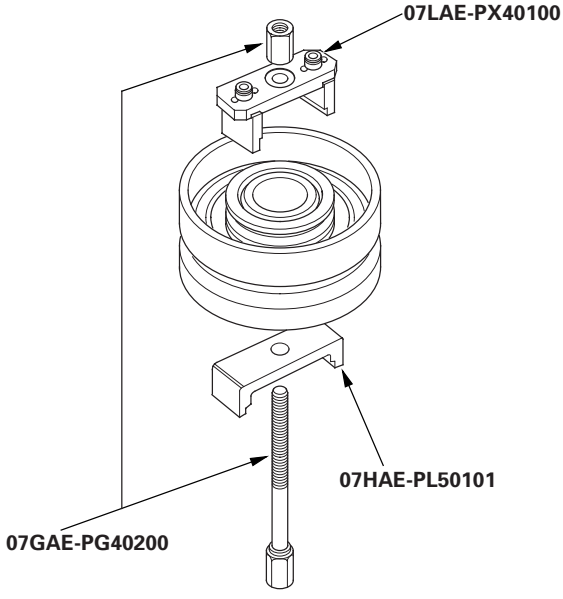
2. Remove the disc spring from the 1st and 5th clutches.



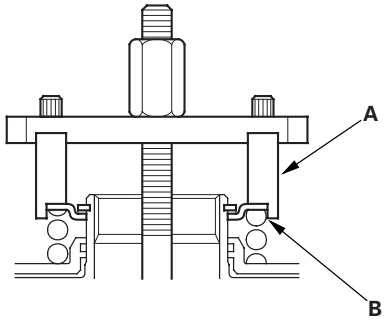
3. Remove the waved spring from the 3rd and 4th clutches.



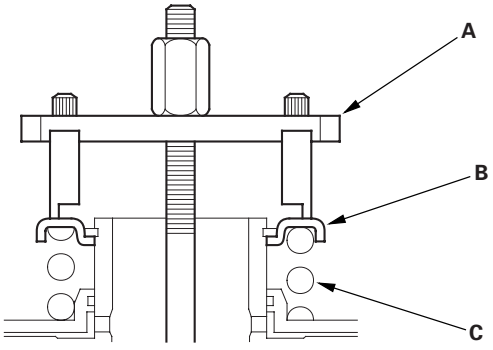
4. Install the special tools on the 3rd/4th clutch assembly.



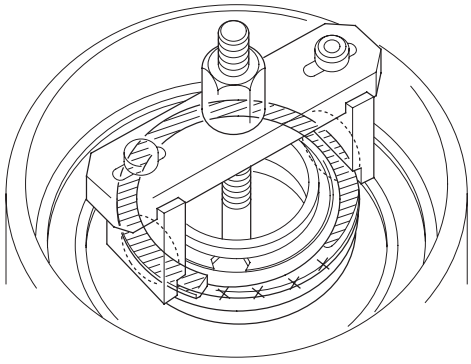
5. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the 1st, 4th and 5th clutches.



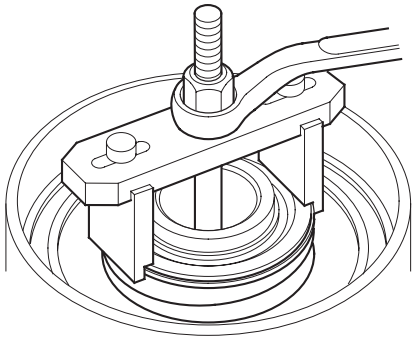
6. Set the special tool (A) on the spring retainer (B) of the 3rd clutch in such a way that the special tool works on the clutch return spring (C).



7. If either end of the special tool is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.



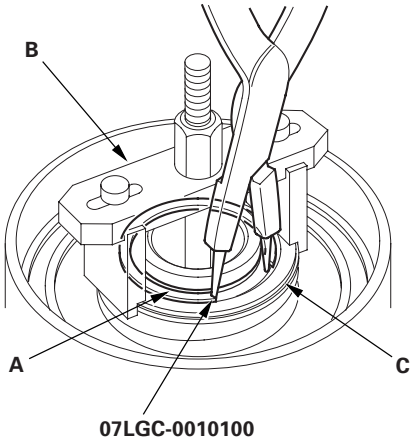
8. Compress the spring until the snap ring can be removed.



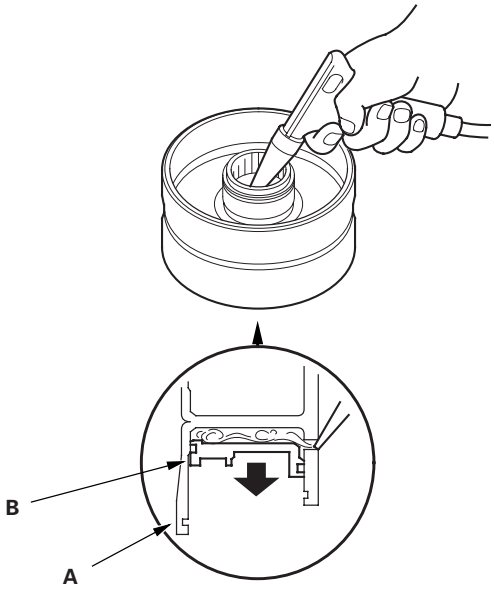
(cont'd)

Clutch Disassembly (cont'd)

9. Remove the snap ring (A). Then remove the special tools (B), spring retainer (C), return spring.



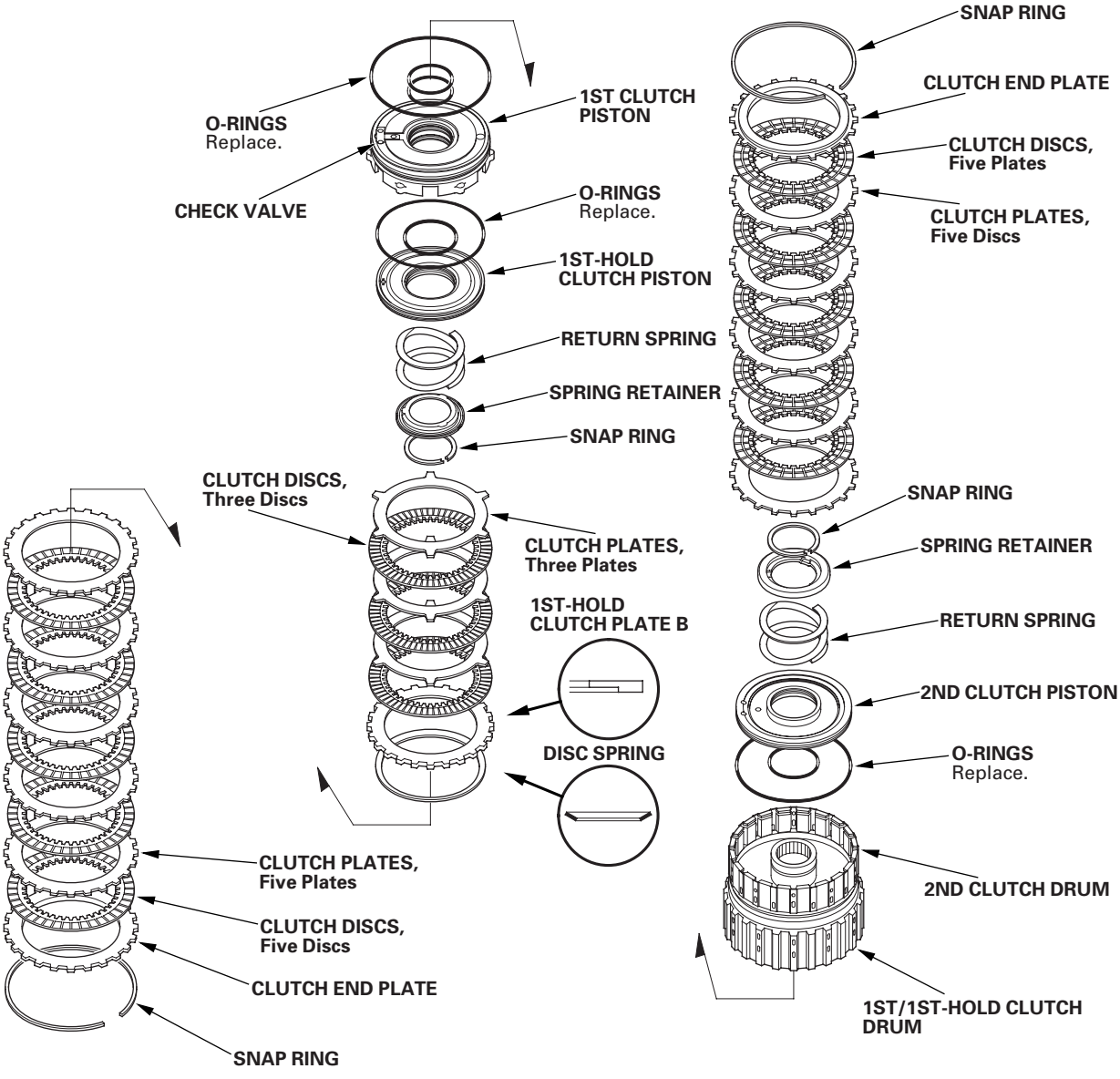
10. Wrap a shop rag around the clutch drum (A), and apply air pressure to the fluid passage to remove the piston (B). Place a finger tip on the other end while applying air pressure.



Clutch Inspection

1st/1st-hold/2nd Clutch

- Clutch disc standard thickness: 1.94 mm (0.076 in.)
- Clutch plate standard thickness:
  - 1st clutch: 1.6 mm (0.063 in.)
  - 2nd clutch: 1.6 mm (0.063 in.)
  - 1st-hold clutch: 1.8 mm (0.071 in.)

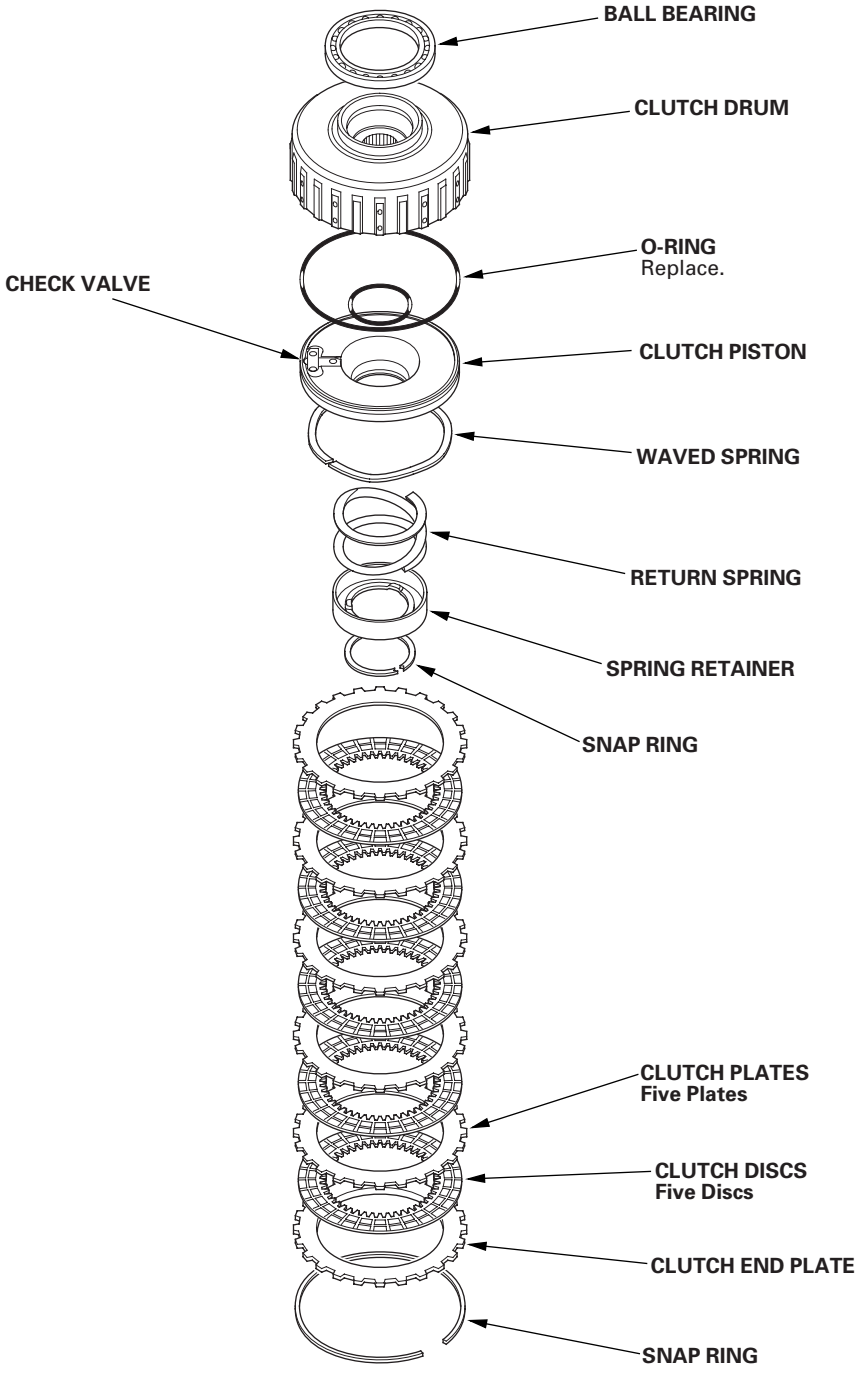


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Clutch Inspection (cont'd)

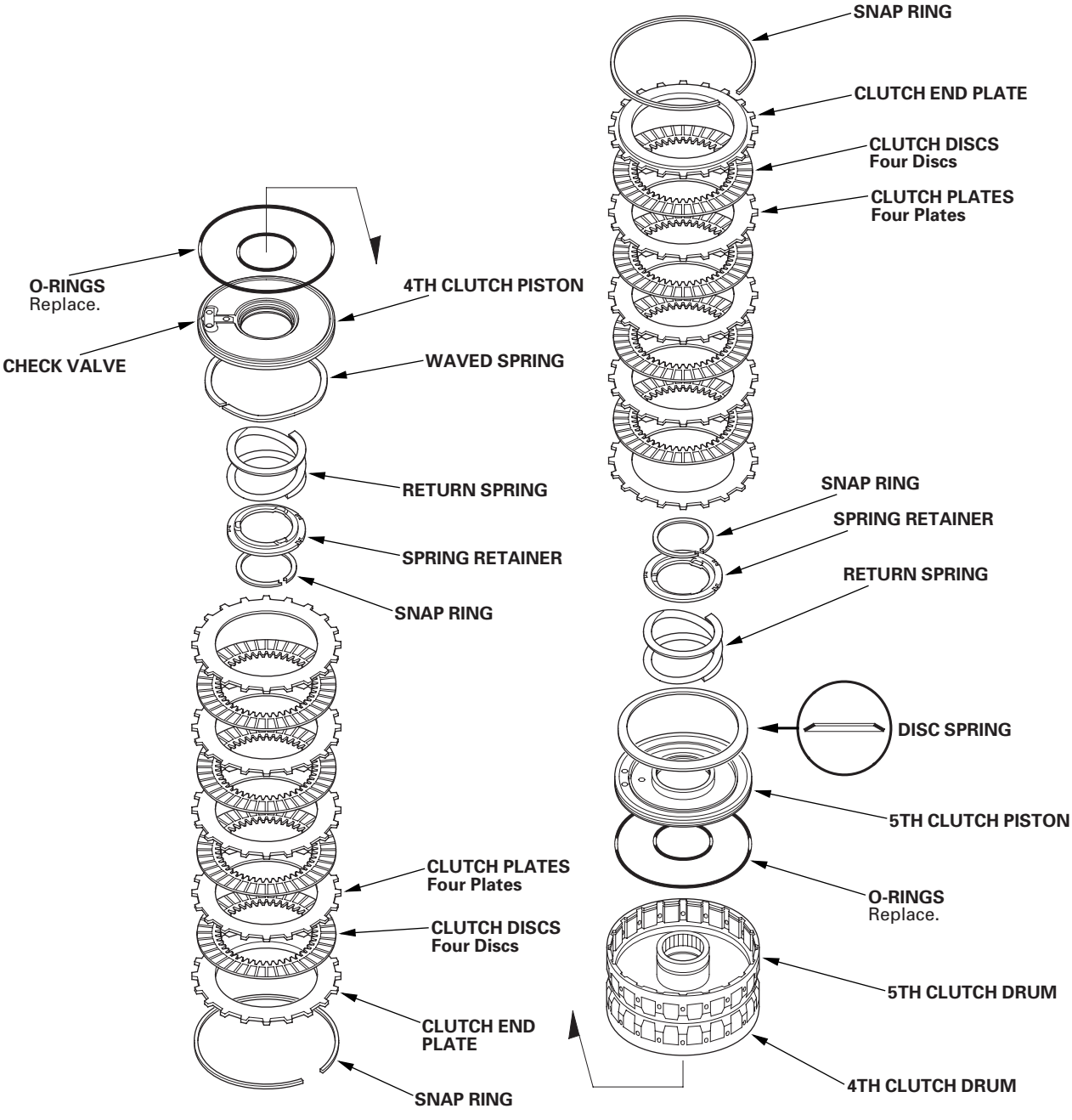
3rd Clutch

- Clutch disc standard thickness: 1.94 mm (0.076 in.)
- Clutch plate standard thickness: 2.3 mm (0.091 in.)



4th/5th Clutch

- Clutch disc standard thickness: 1.94 mm (0.076 in.)
- Clutch plate standard thickness:
  - 4th clutch: 2.3 mm (0.091 in.)
  - 5th clutch: 2.0 mm (0.079 in.)



Clutch Reassembly

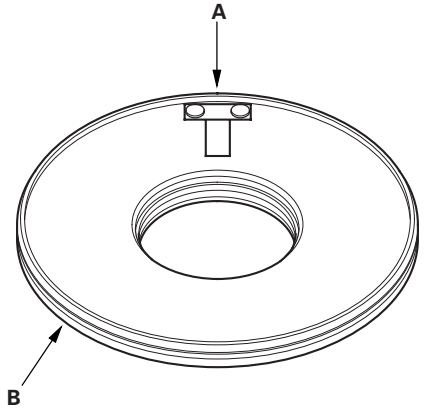
Special Tools Required
- Clutch spring compressor set 07LAE-PX40000
- Clutch spring compressor attachment 07LAE-PX40100
- Clutch spring compressor attachment 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200
- Snap ring pliers 07LGC-0010100
- Clutch compressor attachment 07ZAE-PRP0100

Note these items during reassembly:

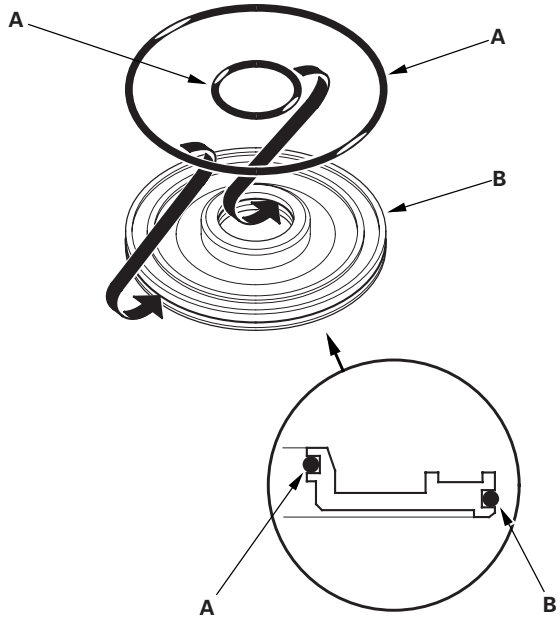
- Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air.
- Blow out all passages.
- Apply ATF to all parts before assembly.

1. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes.

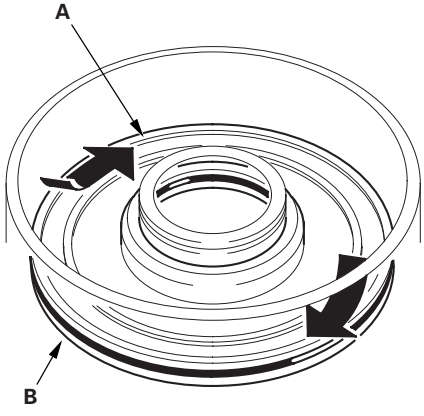
2. Inspect the check valve (A) on the clutch pistons (B). If the check valve is loose or stuck, replace the piston.



3. Install new O-rings (A) on the piston (B).



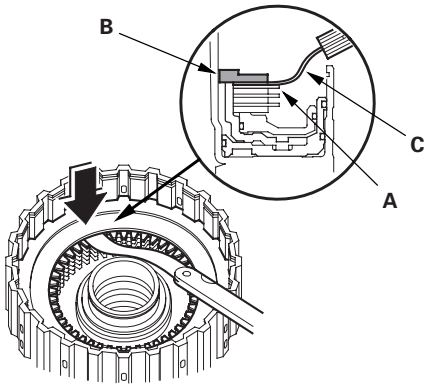
4. Install the piston (A) in the clutch drum (B). Apply pressure and rotate to ensure proper seating. Lubricate the piston O-ring with ATF before installing. Do not pinch the O-ring by installing the piston with too much force.



5. Check the 1st-hold clutch end-plate-to-top-disc clearance; starting with a clutch plate, alternately install the clutch plate and discs in the 1st-hold clutch drum, then install the 1st-hold clutch plate B.

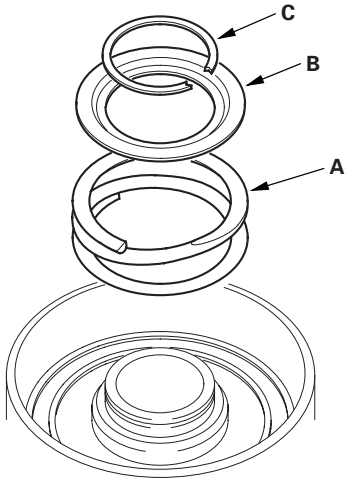
6. Measure the 1st-hold clutch clearance between the 1st-hold clutch plate B and the top disc (A) with a feeler gauge (C) while pressing the 1st-hold clutch plate B down. Take measurements in at least three places, and use the average as the actual clearance.

   1st-hold Clutch End-Plate (B) to-Top-disc Clearance
   Service Limit: 0.5—0.9 mm (0.020—0.035 in.)

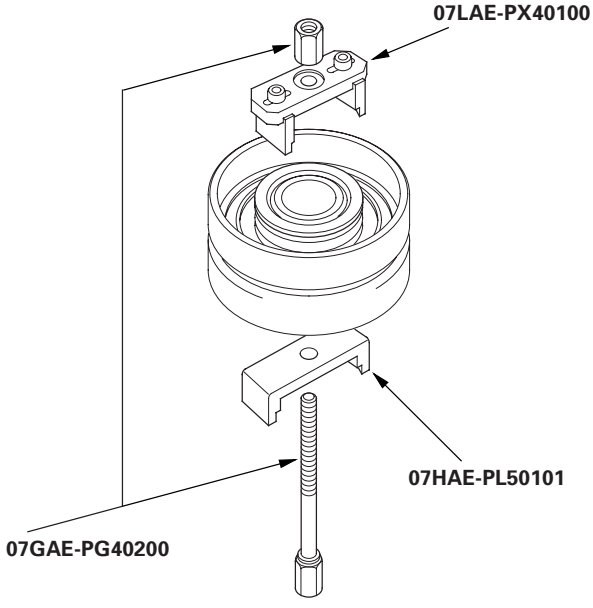


7. If the clearance is out of standard, replace the 1st-hold clutch plates and discs as a set, and recheck.

8. Install the return spring (A) and spring retainer (B), and position the snap ring (C) on the retainer.



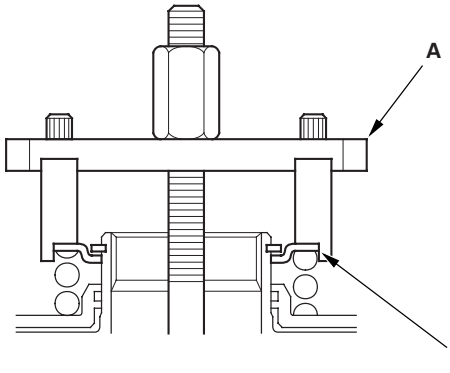
9. Install the special tools on the clutch assembly.



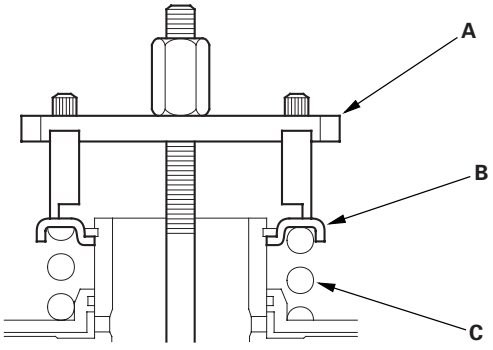
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Clutch Reassembly (cont'd)

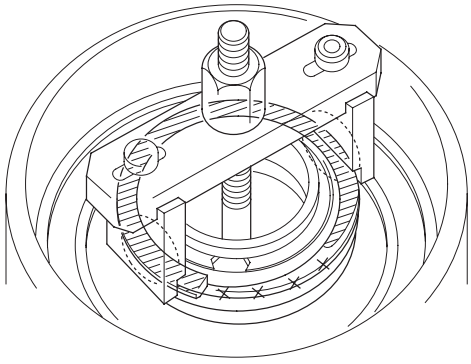
10. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the 1st, 4th, and 5th clutches.



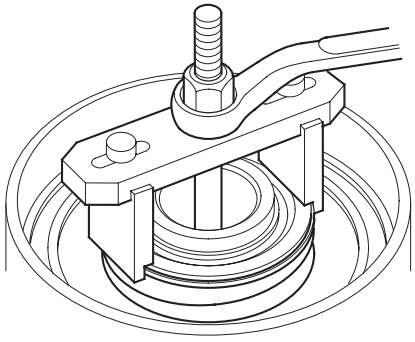
11. Set the special tool (A) on the spring retainer (B) of the 3rd clutch so the tool works on the clutch return spring (C).



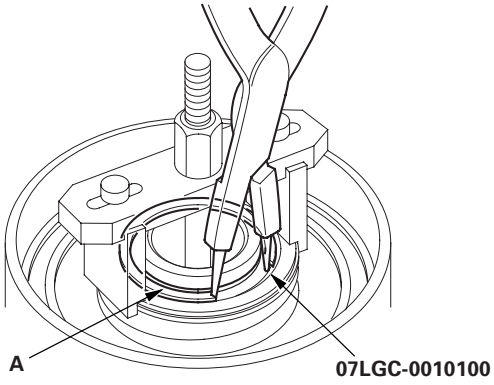
12. If either end of the special tool is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.



13. Compress the return spring.

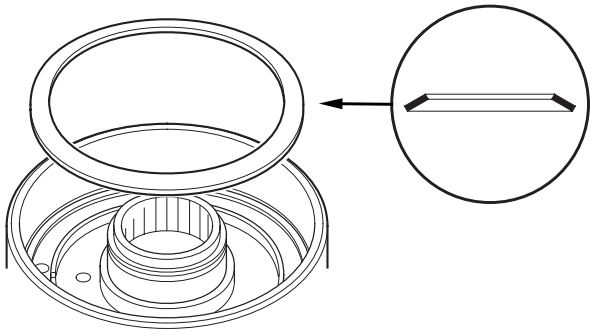


14. Install the snap ring (A).

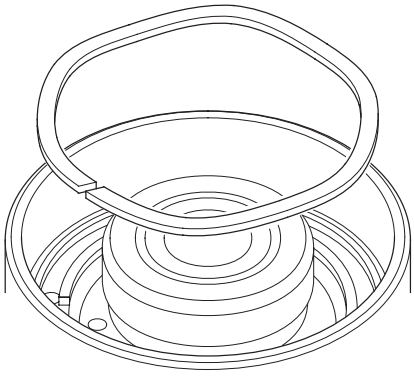


15. Remove the special tools.

16. Install the disc spring in the 1st and 5th clutches in the direction shown.

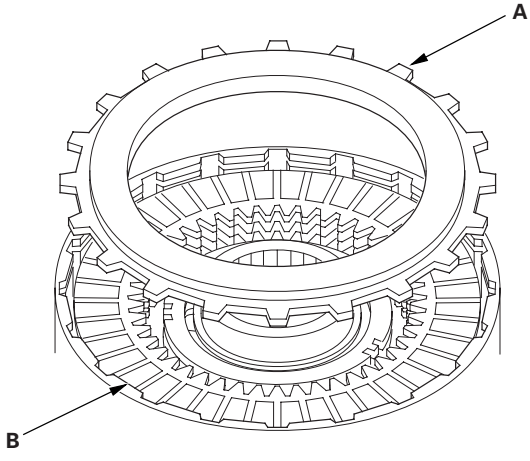


17. Install the waved spling in the 3rd and 4th clutches.



18. Make sure the inside of the clutch drum is free of dirt and other foreign particles.

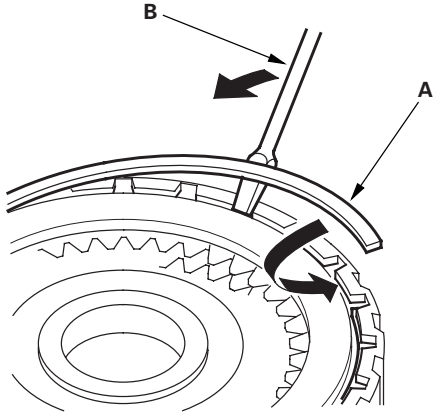
19. Starting with a clutch plate, alternately install the clutch plates and discs. Install the clutch end plate (A) with the flat side toward the disc (B).



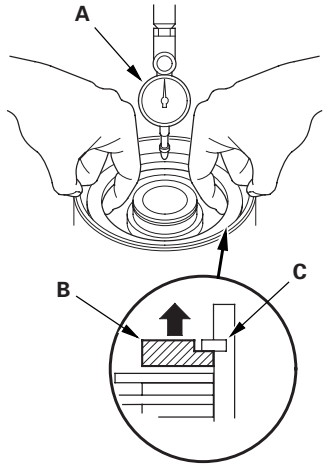
(cont'd)

Clutch Reassembly (cont'd)

20. Install the snap ring (A) with a screwdriver (B).

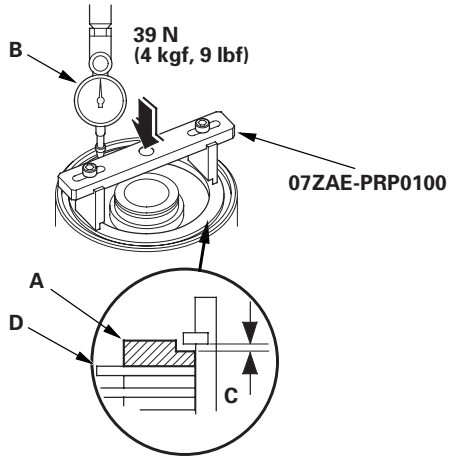


21. Set a dial indicator (A) on the clutch end plate (B).



22. Zero the indicator with the clutch end plate lifted up to the snap ring (C).

23. Release the clutch end plate to lower it, then put the special tool on the end plate (A)

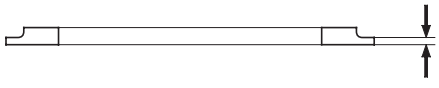


24. Press the special tool down with 39 N (4 kgf, 9 lbf) using a force gauge, and use a the dial indicator (B) to read the clearance between the clutch end plate and top disc (C). Take measurements in at least three places, and use the average as the actual clearance.

Clutch End-Plate-to-Top-Disc Clearance
Service Limit
- **1st Clutch: 1.1 −1.3 mm (0.043 −0.051 in.)**
- **2nd Clutch: 0.85 −1.05 mm (0.033 −0.041 in.)**
- **3rd Clutch: 0.7 −0.9 mm (0.028 −0.035 in.)**
- **4th Clutch: 0.55 −0.75 mm (0.022 −0.030 in.)**
- **5th Clutch: 0.55 −0.75 mm (0.022 −0.030 in.)**

25. If the clearance is out of service limit, select a new clutch end plate from the following table. Install the new clutch end plate, then recheck the clearance.

NOTE: If the thickest clutch end plate is installed, but the clearance is still over the service limit, replace the clutch discs and plates.



1ST CLUTCH END PLATES

Mark	Part Number	Thickness
1	22551-P7W-003	3.1 mm (0.122 in.)
2	22552-P7W-003	3.2 mm (0.126 in.)
3	22553-P7W-003	3.3 mm (0.130 in.)
4	22554-P7W-003	3.4 mm (0.134 in.)
5	22555-P7W-003	3.5 mm (0.138 in.)
6	22556-P7W-003	3.6 mm (0.142 in.)
7	22557-P7W-003	3.7 mm (0.146 in.)
8	22558-P7W-003	3.8 mm (0.150 in.)
9	22559-P7W-003	3.9 mm (0.154 in.)

2ND CLUTCH END PLATES

Mark	Part Number	Thickness
1	22551-PY4-003	2.1 mm (0.083 in.)
2	22552-PY4-003	2.2 mm (0.087 in.)
3	22553-PY4-003	2.3 mm (0.091 in.)
4	22554-PY4-003	2.4 mm (0.094 in.)
5	22555-PY4-003	2.5 mm (0.098 in.)
6	22556-PY4-003	2.6 mm (0.102 in.)
7	22557-PY4-003	2.7 mm (0.106 in.)
8	22558-PY4-003	2.8 mm (0.110 in.)
9	22559-PY4-003	2.9 mm (0.114 in.)

3RD CLUTCH END PLATES

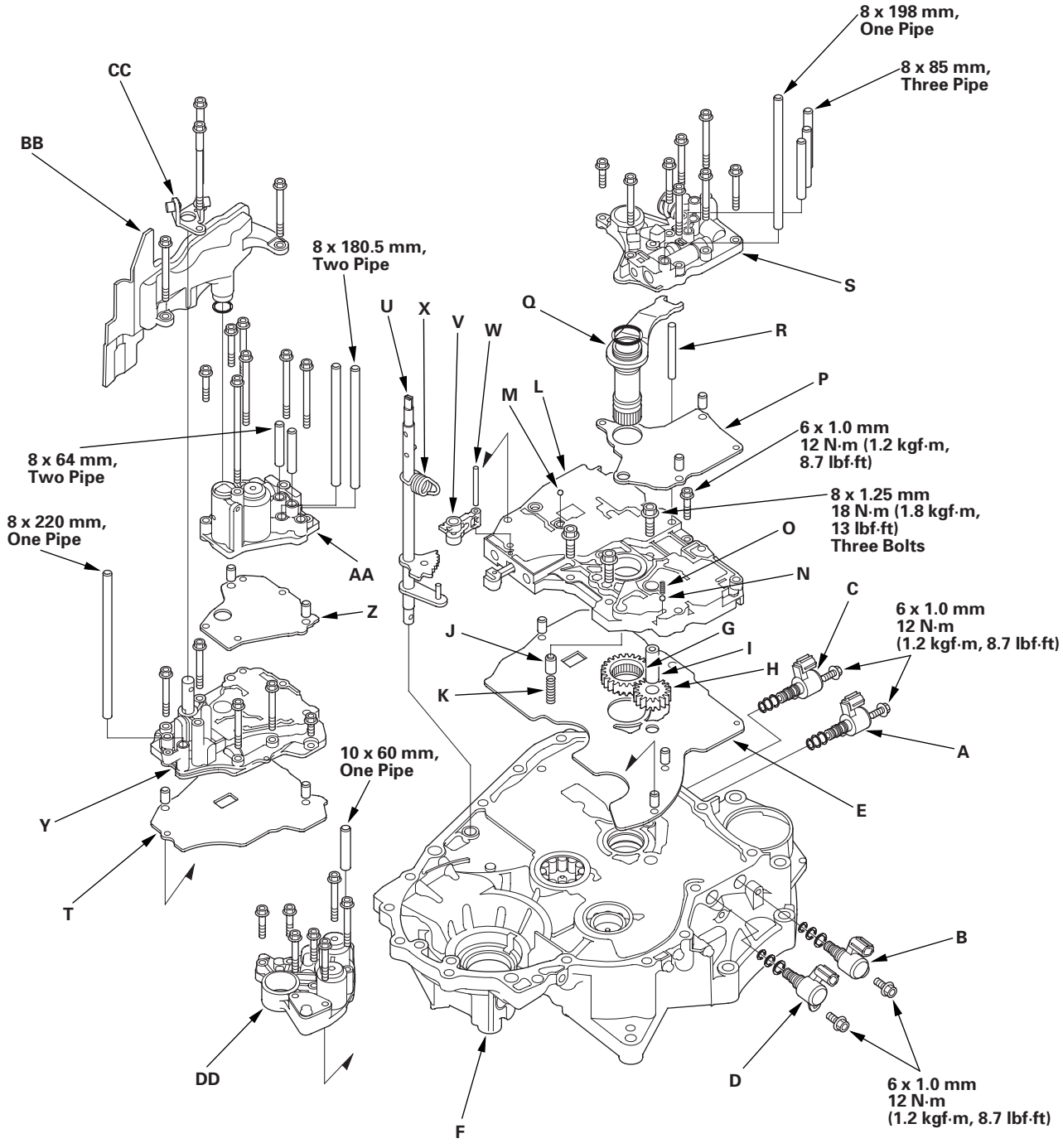
Mark	Part Number	Thickness
1	22556-P7T-003	3.1 mm (0.122 in.)
2	22557-P7T-003	3.2 mm (0.126 in.)
3	22558-P7T-003	3.3 mm (0.130 in.)
4	22559-P7T-003	3.4 mm (0.134 in.)
6	22551-P7T-003	2.6 mm (0.102 in.)
7	22552-P7T-003	2.7 mm (0.106 in.)
8	22553-P7T-003	2.8 mm (0.110 in.)
9	22554-P7T-003	2.9 mm (0.114 in.)
0	22555-P7T-003	3.0 mm (0.118 in.)

4TH and 5TH CLUTCH END PLATES

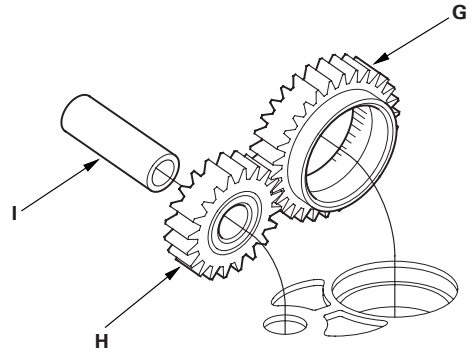
Mark	Part Number	Thickness
1	22561-P7T-003	2.1 mm (0.083 in.)
2	22562-P7T-003	2.2 mm (0.087 in.)
3	22563-P7T-003	2.3 mm (0.091 in.)
4	22564-P7T-003	2.4 mm (0.094 in.)
5	22565-P7T-003	2.5 mm (0.098 in.)
6	22566-P7T-003	2.6 mm (0.102 in.)
7	22567-P7T-003	2.7 mm (0.106 in.)
8	22568-P7T-003	2.8 mm (0.110 in.)
9	22569-P7T-003	2.9 mm (0.114 in.)

Valve Bodies and ATF Strainer Installation

1. Install the main separator plate (E) and three dowel pins on the torque converter housing (F).

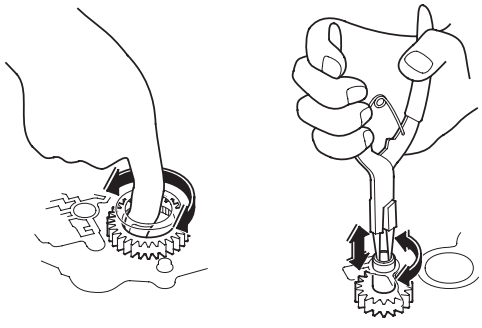


2. Install the ATF pump drive gear (G), driven gear (H), and ATF pump driven gear shaft (I). Install the ATF pump driven gear with it grooved and chamfered side facing down.



3. Install the torque converter check valve (J) and spring (K) in the main valve body (L), then install the main valve body.

4. Make sure the ATF pump drive gear (G) rotates smoothly in the normal operating direction, and the ATF pump driven gear shaft (I) moves smoothly in the axial and normal operating direction.



5. If the ATF pump drive gear and ATF pump driven gear shaft do not move smoothly, loosen the main valve body bolts. Realign the ATF pump driven gear shaft, and retighten the bolts to the specified torque, then recheck. Failure to align the ATF pump driven gear shaft correctly will result in a seized ATF pump drive gear or ATF pump driven gear shaft.

6. Make sure that the one check ball (M) and the cooler check valve (N) are in the main valve body, then install the cooler check valve spring (O) on the cooler check valve.

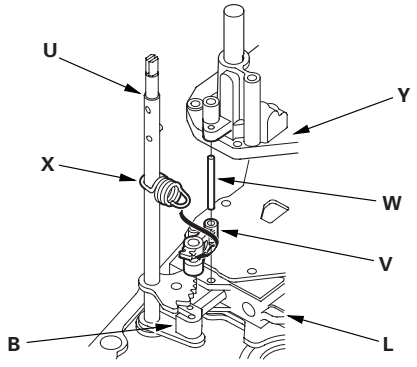
7. Install the regulator separator plate (P) and two dowel pins.

8. Install the new O-ring on the stator shaft (Q), and install it and stator shaft stop (R).

9. Install the regulator valve body (S) (eight bolts).

10. Install the servo separator plate (T) and two dowel pins.

11. Install the control shaft (U) in the torque converter housing along with the manual valve.



12. Install the detent arm (V) and arm shaft (W) in the main valve body (L), then hook the detent arm spring (X) to the detent arm.

13. Install the servo body (Y) (five bolts).

14. Install the top accumulator separator plate (Z) and two dowel pins, then install the top accumulator body (AA) (seven bolts).

15. Install the new O-ring on the ATF strainer (BB), and install it in the top accumulator body (two bolts).

16. Install the servo detent base (CC) (two bolts).

17. Install the accumulator body (DD) (seven bolts).

18. Install the 8 x 198 mm pipe, and three 8 x 85 mm pipes in the regulator valve body.

19. Install two 8 x 180.5 mm pipes, and two 8 x 62 mm pipes in the top accumulator body.

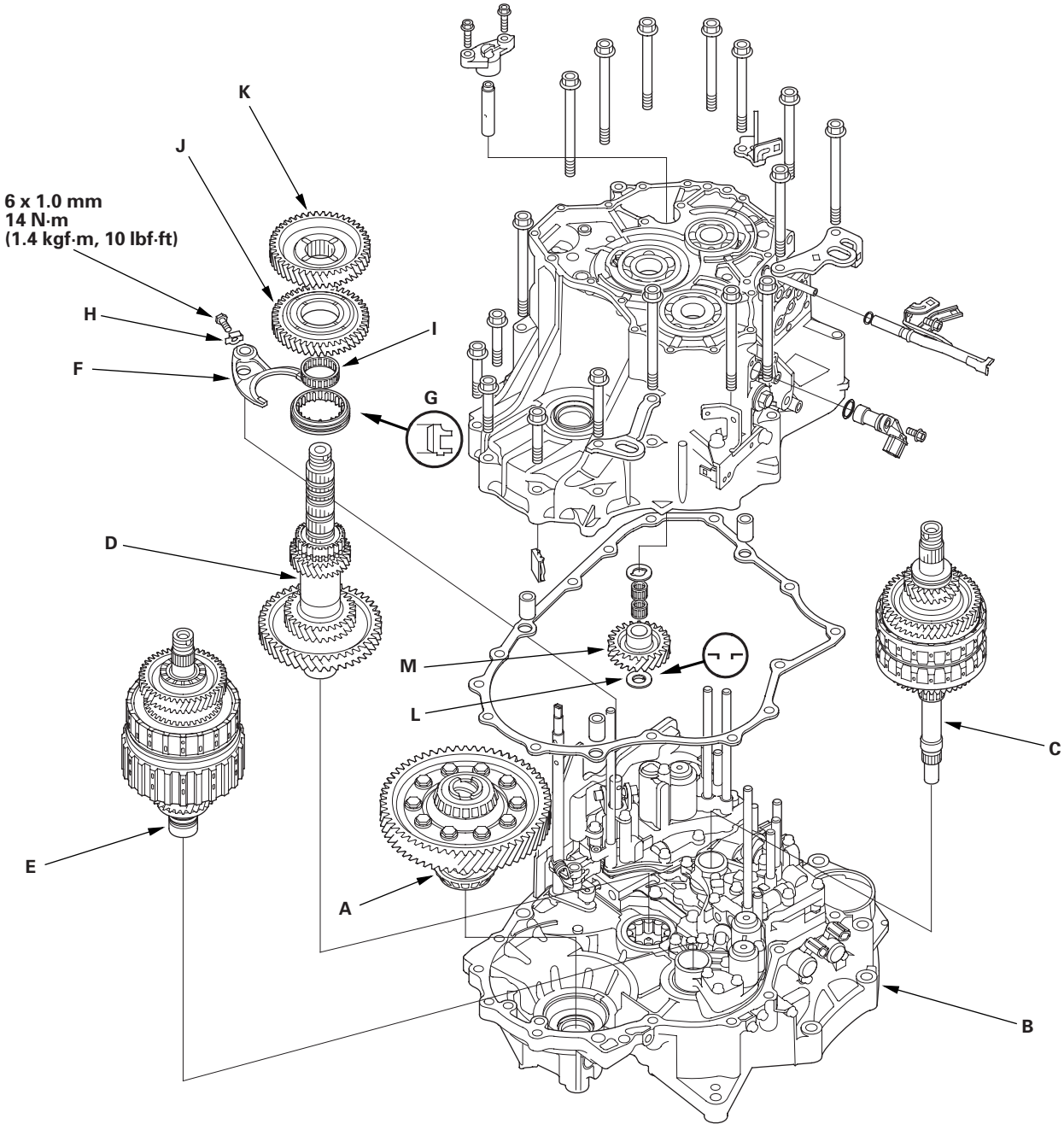
20. Install the 8 x 220 mm pipe in the servo body.

21. Install the 10 x 60 mm pipe in the accumulator body.

22. Install shift solenoid valves A, B, C, and torque converter clutch solenoid valve (D) with the new O-rings.

Shaft Assemblies and Housing Installation

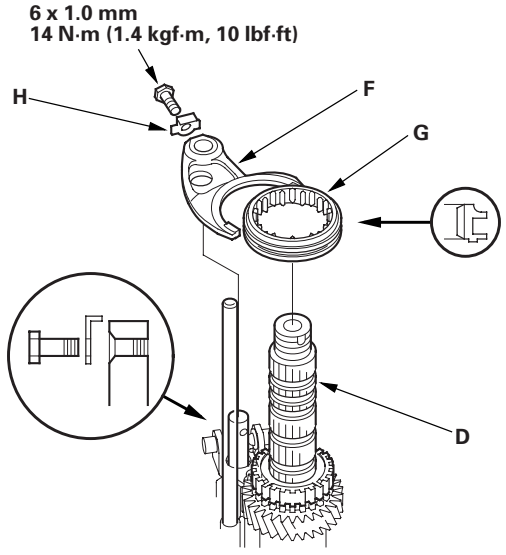
1. Install the differential assembly (A) in the torque converter housing (B).



2. If the reverse selector hub is press-fitted type, join the mainshaft (C), countershaft (D), and secondary shaft (E) together, then install them in the torque converter housing.

3. If the reverse selector hub in not press-fitted type, install the countershaft, mainshaft, and secondary shaft in the torque converter housing, then install the countershaft 5th gear and reverse selector hub on the countershaft.

4. Turn the shift fork shaft so the large chamfered hole is facing the fork bolt hole.

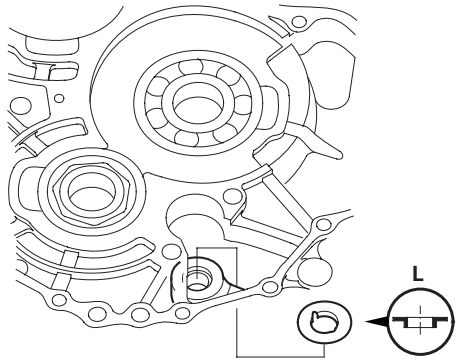


5. Install the shift fork (F) and reverse selector (G) together on the shift fork shaft and countershaft (D). Install the reverse selector in the direction shown.

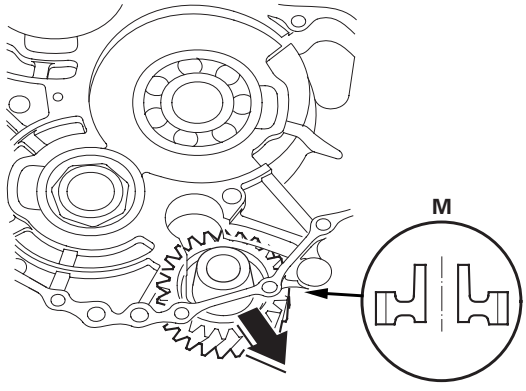
6. Secure the shift fork to the shift fork shaft with the lock bolt and a new lock washer (H), then bend the lock washer against the lock bolt head.

7. Install the needle bearing (I), countershaft reverse gear (J), and countershaft 2nd gear (K) on the countershaft.

8. Place the thrust washer (L) in the transmission housing.



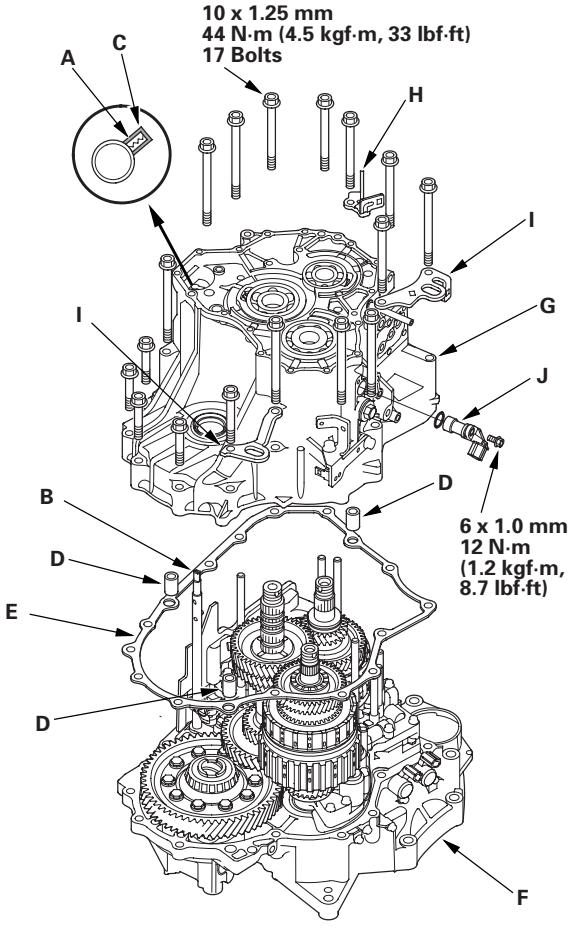
9. Place the reverse idler gear (M) in the transmission housing, and slide it in the direction shown.



(cont'd)

Shaft Assemblies and Housing Installation (cont'd)

10. Align the spring pin (A) on the control shaft (B) with the transmission housing groove (C) by turning the control shaft.



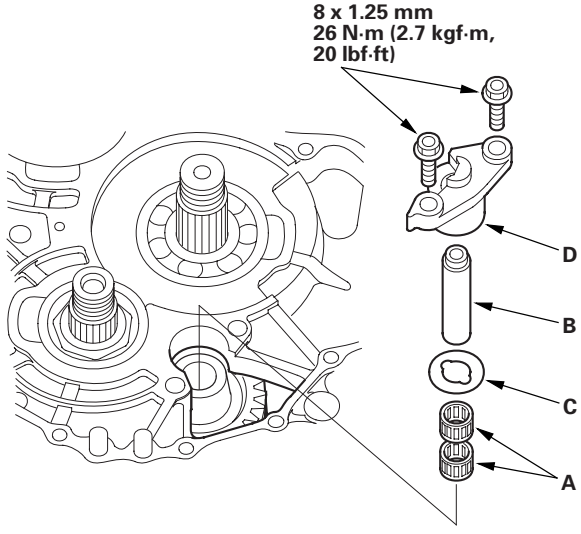
11. Install three dowel pins (D) and a new gasket (E) on the torque converter housing (F).

12. Place the transmission housing (G) on the torque converter housing, then install the transmission housing mounting bolts along with the harness clamp bracket (H) and transmission hangers (I).

13. Tighten the mounting bolts in two or more steps in a crisscross pattern.

14. Install the new O-ring on the countershaft speed sensor (J), then install it in the transmission housing.

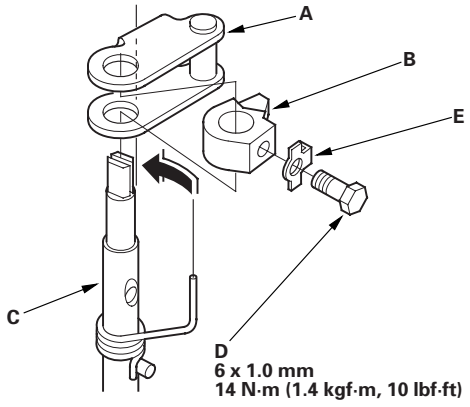
15. Engage the reverse idler gear with the countershaft reverse gear and mainshaft reverse gear. Then install the needle bearings (A), reverse idler gear shaft (B), and thrust washer (C) in the reverse idler gear, and install the reverse idler gear shaft holder (D) on the transmission housing.



End Cover, 3rd Gears, Idler Gear, and 3rd Clutch Installation

Special Tools Required
- Mainshaft holder set 07PAB-0010000
- Adjustable bearing remover set 07JAC-PH80000

1. Install the park lever (A) and park lever stop (B), on the control shaft (C), then install the lock bolt (D) with a new lock washer (E). Do not bend the lock tab of the lock washer until step 28.

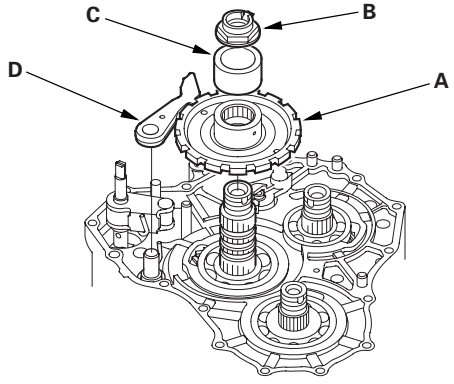


2. Lubricate the following parts with ATF:

   - Splines of the countershaft, the park gear, and the old locknut.
   - Threads of the countershaft and the old locknut.
   - Old conical spring washer.

3. Install the park gear (A) using the old locknut (B) and a collar (C). Hold the park pawl (D) against the park gear, then tighten the old locknut until the shaft splines come out over the park gear splines.

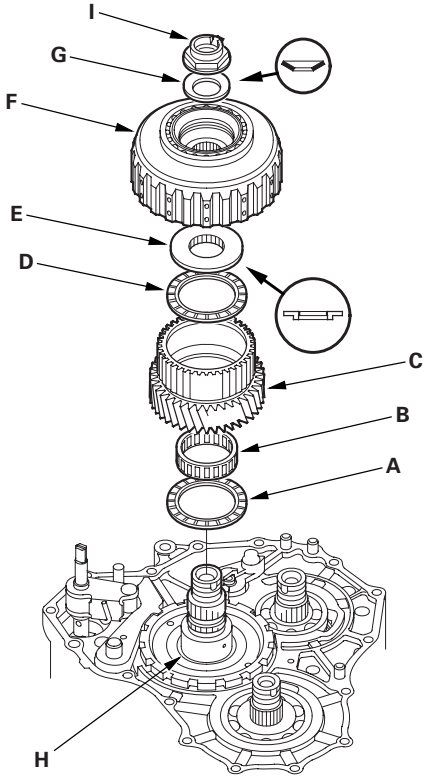
   NOTE:
   - Do not use an impact wrench.
   - Countershaft locknut has left-hand threads.



4. Remove the locknut and collar.

5. Install the thrust needle bearing (A), needle bearing (B), 3rd gear (C), thrust needle bearing (D), 31 x 63.5 mm splined washer (E), 3rd clutch assembly (F), and old conical spring washer (G) on the countershaft (H). Tighten the old locknut (I) to 226 N·m (23.0 kgf·m, 166 lbf·ft).

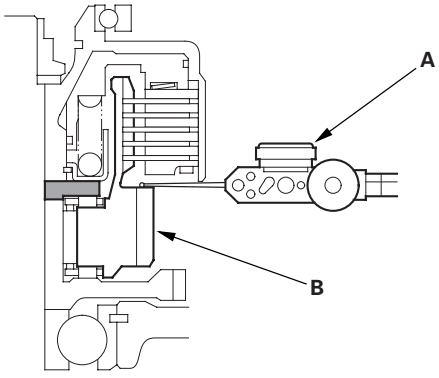
   NOTE: Use a torque wrench to tighten the locknut. Do not use an impact wrench.



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End Cover, 3rd Gears, Idler Gear, and 3rd Clutch Installation (cont'd)

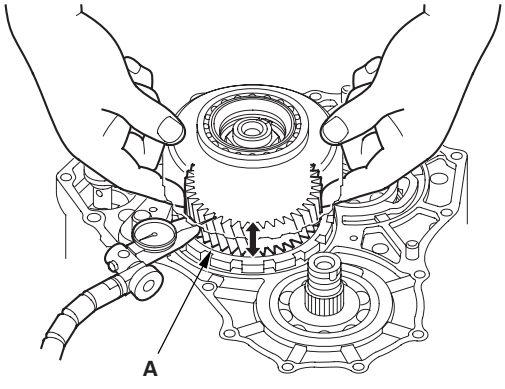
6. Set the dial indicator (A) to the countershaft 3rd gear (B).



7. Measure the countershaft 3rd gear axial clearance in at least three places, while moving the countershaft 3rd gear (A).
   Use the average as the actual clearance.

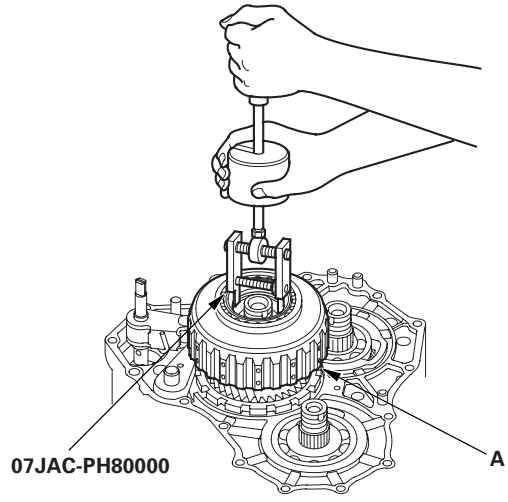
   If the clearance is out of standard, select the appropriate 31 x 63.5 mm splined washer in step 16.

   STANDARD: 0.015—0.045 mm (0.0006—0.0018 in.)



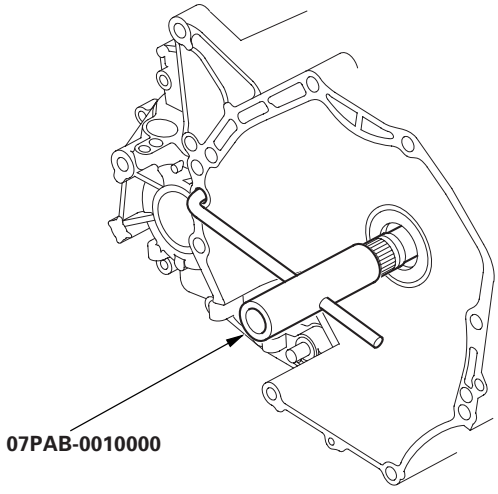
8. Remove the locknut and conical spring washer.

9. Remove the 3rd clutch assembly (A) with the special tool.



10. Remove the parts that were installed in step 5.

11. Install the special tool onto the mainshaft.

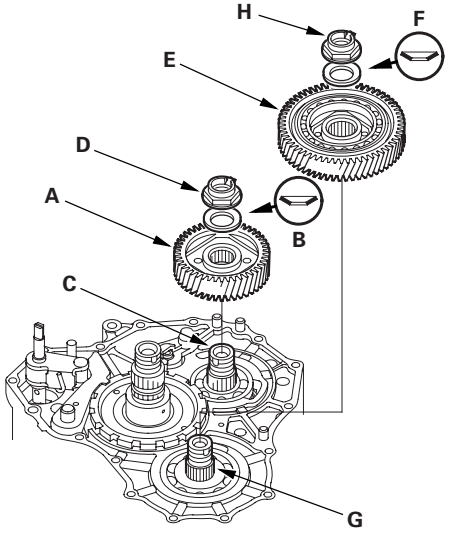


12. Lubricate the following parts with ATF:

    - Splines of the mainshaft 3rd gear and secondary shaft idler gear.
    - Threads of the mainshaft and secondary shaft.
    - Threads of the old mainshaft and secondary shaft locknuts.
    - Old conical spring washer.

13. Install the mainshaft 3rd gear (A) and the old conical spring washer (B) on the mainshaft (C). Tighten the old locknut (D) to seat the 3rd gear to 226 N·m (23.0 kgf·m, 166 lbf·ft).

    NOTE: Use a torque wrench to tighten the locknut. Do not use an impact wrench.

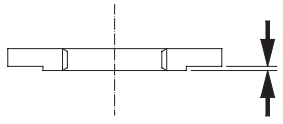


14. Install the secondary shaft idler gear (E) and the old conical spring washer (F) on the secondary shaft (G). Tighten the old locknut (H) to seat the secondary shaft idler gear to 226 N·m (23.0 kgf·m, 166 lbf·ft).

    NOTE:
    - Use a torque wrench to tighten the locknut. Do not use an impact wrench.
    - Secondary shaft locknut has left-hand threads.

15. Remove the old locknuts and old conical spring washers from the mainshaft and secondary shaft.

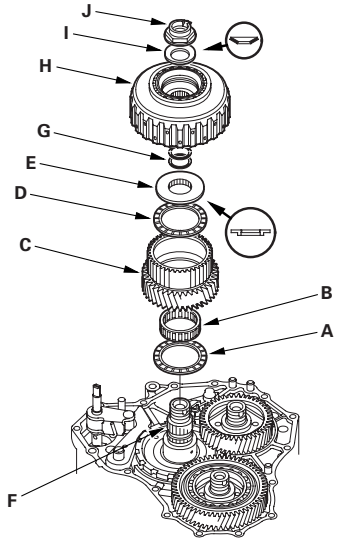
16. If the 3rd gear axial clearance is out of standard (measured in step 7), measure the difference of the 31 x 63.5 mm splined washer, and select the appropriate splined washer from the table below.



SPLINED WASHER, 31 x 63.5 mm

Mark	Part Number	Difference
A	90520-P7W-000	3.503 mm (0.1379 in.)
B	90521-P7W-000	3.490 mm (0.1374 in.)
C	90522-P7W-000	3.477 mm (0.1369 in.)
D	90523-P7W-000	3.464 mm (0.1364 in.)

17. Install the thrust needle bearing (A), needle bearing (B), 3rd gear (C), thrust needle bearing (D), and 31 x 63.5 mm splined washer (E) on the countershaft (F).



18. Wrap the shaft splines with tape to prevent O-ring damage, then install new O-rings (G).

19. Remove the tape, then install the 3rd clutch assembly (H), and old conical spring washer (I). Tighten the old locknut (J) to 226 N·m (23.0 kgf·m, 166 lbf·ft).

    NOTE: Use a torque wrench to tighten the locknut. Do not use an impact wrench.

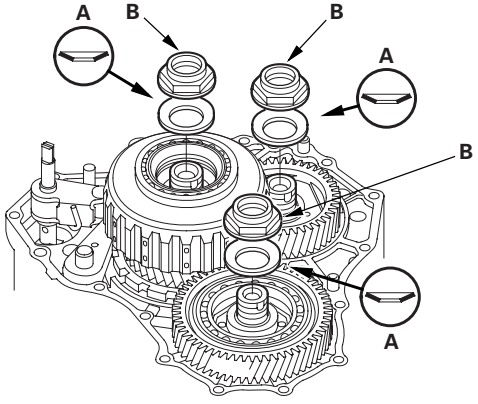
(cont'd)

End Cover, 3rd Gears, Idler Gear, and 3rd Clutch Installation (cont'd)

20. Remove the old locknut and old conical spring washer from the countershaft.

21. Lubricate the threads of each shaft, the new locknuts, and new conical spring washers with ATF.

22. Install the new conical spring washers (A) in the direction shown, and install the new locknuts (B).

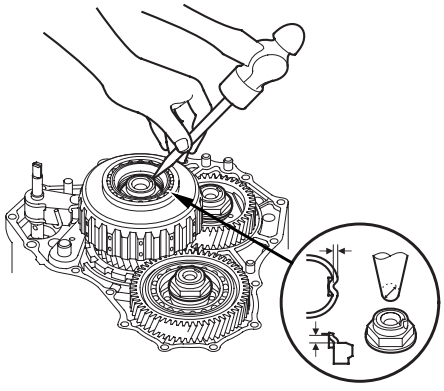


23. Tighten the locknuts to 167 N·m (17.0 kgf·m, 123 lbf·ft).

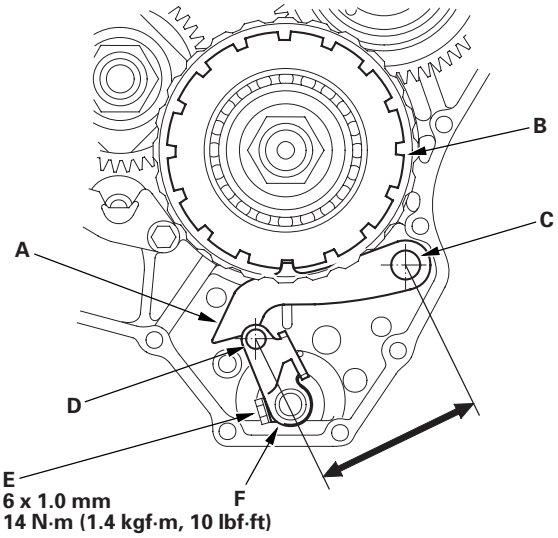
    NOTE:
    - Use a torque wrench to tighten the locknuts. Do not use an impact wrench.
    - Countershaft and secondary shaft locknuts have left-hand threads.

24. Remove the special tool from the mainshaft.

25. Stake each locknut into its shaft using 3.5 mm punch.



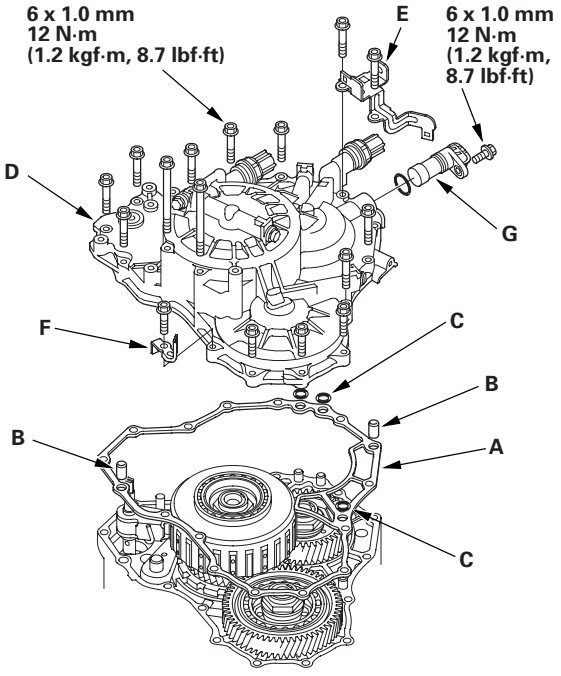
26. Set the park lever in [P] position, then verify that the park pawl (A) engages the park gear (B).



27. If the park pawl does not engage fully, check the distance between the pawl shaft (C) and the park lever roller pin (D) (see page 14-514).

28. Tighten the lock bolt (E), and bend the lock tab of the lock washer (F) against the lock bolt head.

29. Install the new gasket (A) on the transmission housing, and install the two dowel pins (B) and new O-rings (C) over the top of the ATF feed pipes.

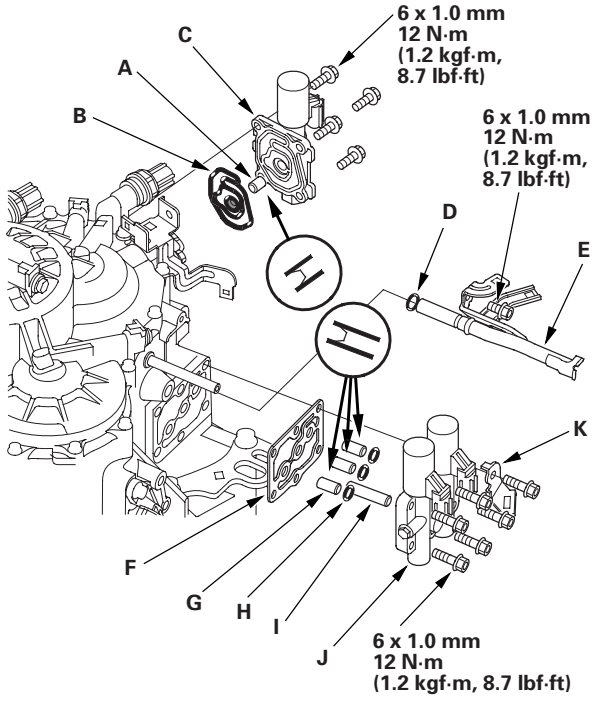


30. Install the end cover (D), and install the 16 bolts, connector bracket (E) and harness holder bracket (F).

31. Tighten the bolts in two or more steps in a crisscross pattern.

32. Install the new O-ring on the mainshaft speed sensor (G), then install it in the end cover.

33. Install the 8 x 12 mm ATF feed pipe (A) with its filter side into the transmission housing.



34. Instal the new gasket (B) in the mounting groove of the A/T clutch pressure control solenoid valve C body (C) properly, then install them on the transmission housing. Do not pinch the gasket.

35. Install the new O-ring (D) on the ATF dipstick guide pipe (E), then install in the transmission housing.

36. Place the new gasket (F) on the transmission housing, then install the 8 x 18 mm ATF feed pipes (G) with their filter side into the transmission housing.

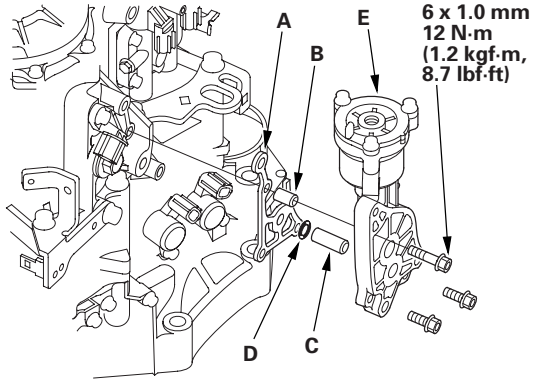
37. Install the new O-rings (H) over the feed pipes, and install the 8 x 40 mm ATF feed pipe (I).

38. Install the A/T clutch pressure control solenoid valves A and B (J) and the harness clamp bracket (K).

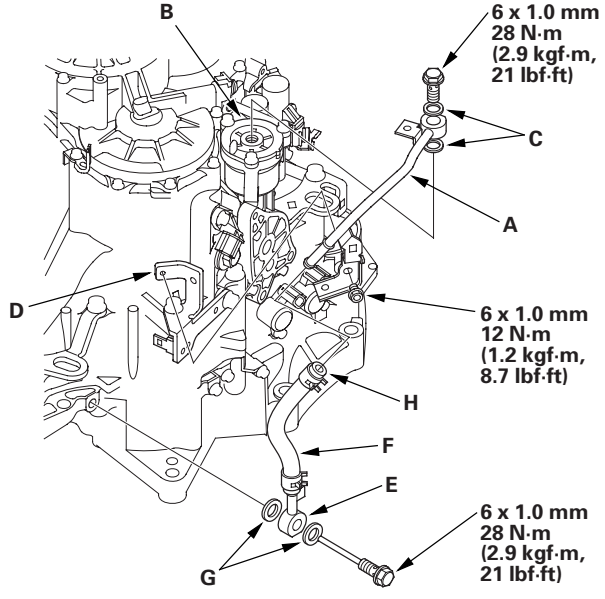
(cont'd)

End Cover, 3rd Gears, Idler Gear, and 3rd Clutch Installation (cont'd)

39. Install the new gasket (A) on the transmission housing, then install the 8 x 14 mm dowel pin (B), 10 x 25.5 mm ATF feed pipe (C), and new O-ring (D) over the feed pipe. Install the ATF passage body (E).



40. Install the ATF line (A) on the ATF passage body (B) with the line bolt and new sealing washers (C). Secure the ATF line with the 6 mm bolt on the harness clamp bracket (D).

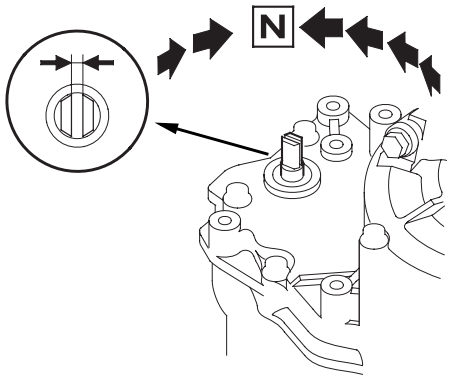


41. Install the ATF line (E) and hose (F) on the torque converter housing with the line bolt and new sealing washers (G).

42. Connect the ATF hose to the line, and secure the hose with hose clamp (H).

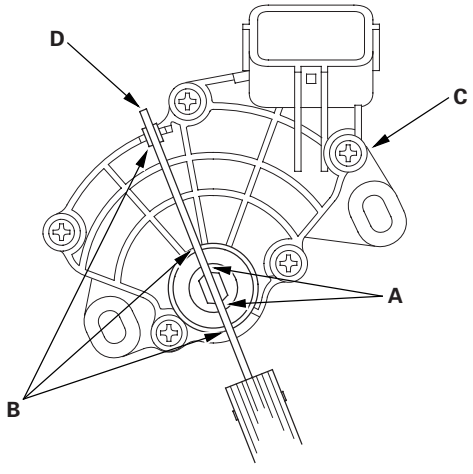
43. Set the control shaft to the N position by turning the control shaft.

    NOTE: Do not squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty shift position signal or position due to the play between the control shaft and the switch. The clearance (A) between control shaft tips is 2.0 mm (0.08 in.)

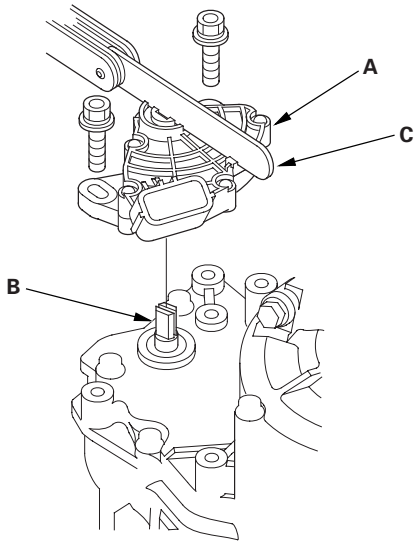


44. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch (C), then put a 2.0 mm (0.08 in.) feeler gauge blade (D) in the cutouts to hold the switch in the N position.

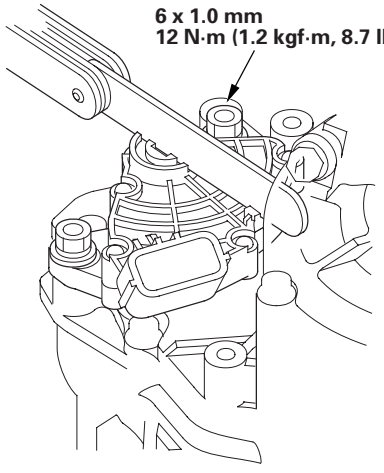
    NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the N position.



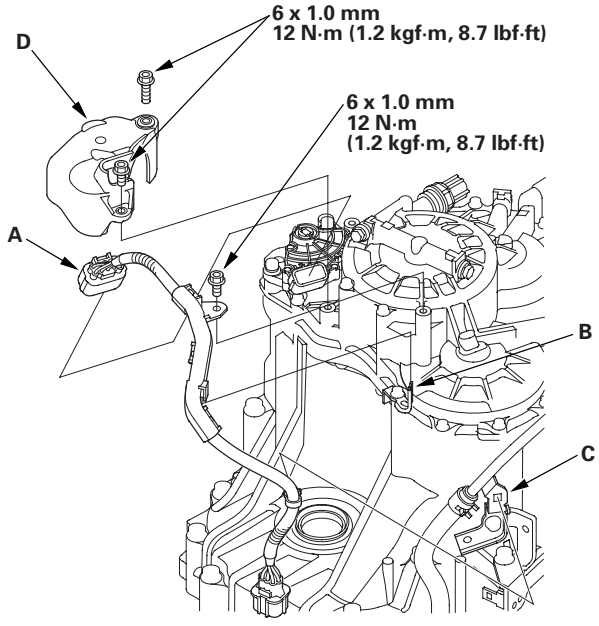
45. Install the transmission range switch (A) gently on the control shaft (B) with holding it in the N position with the 2.0 mm (0.08 in.) blade (C).



46. Tighten the bolts on the transmission range switch while you continue to hold it in the N position. Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.



47. Connect the transmission range switch connector (A) securely, then sucure the switch harness on the end cover, harness cover bracket (B), and the clamp bracket (C).

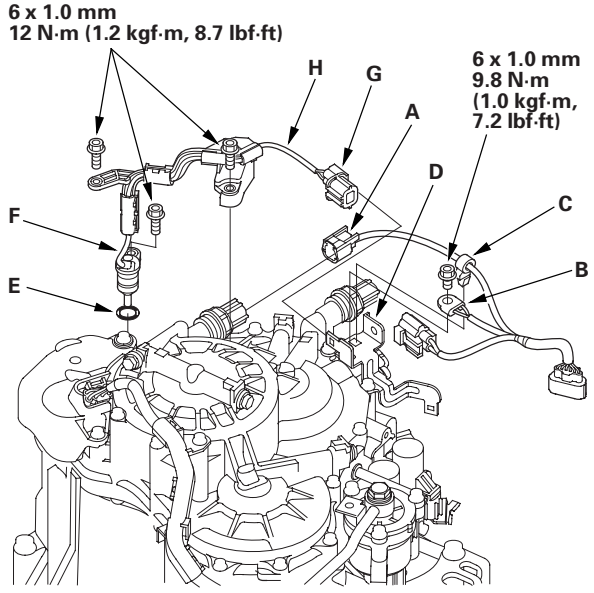


48. Install the transmission range switch cover (D).

(cont'd)

End Cover, 3rd Gears, Idler Gear, and 3rd Clutch Installation (cont'd)

49. Connect the 3rd clutch transmission fluid pressure swtich connector (A), and install the ground terminal (B) and harness clamp (C) on the connector bracket (D).

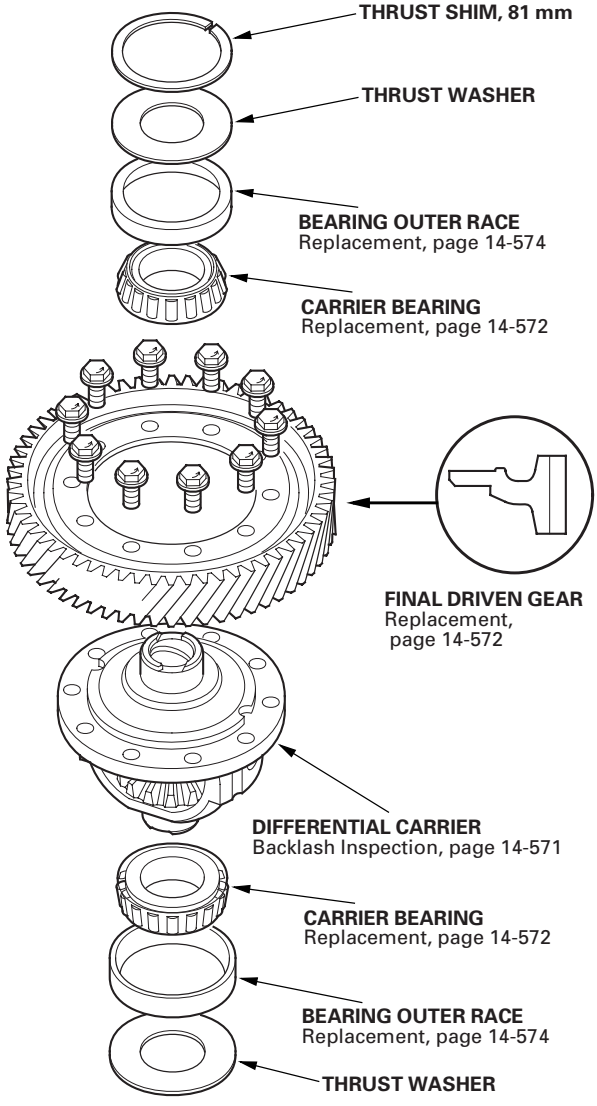


50. Install the new O-ring (E) on the ATF temperature sensor (F), then install the sensor in the end cover.

51. Connect the sensor connector (G), and install it on the connector bracket. Secure the sensor harness (H) on the end cover.

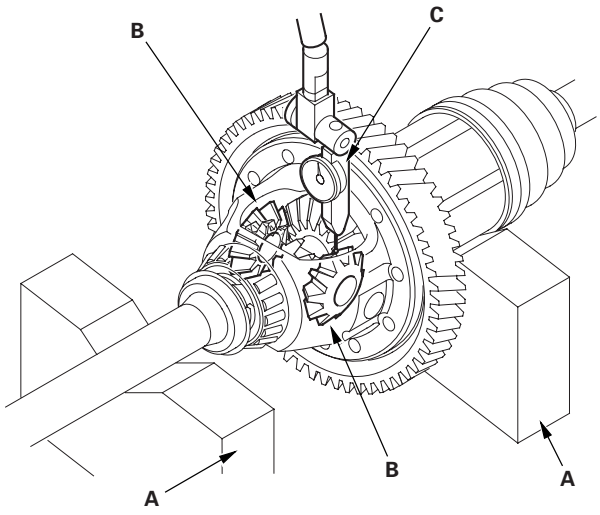
52. Install the dipstick in the dipstick guide pipe.

Component Location Index



Backlash Inspection

1. Install both axles, and place the differential assembly on V-blocks (A).



2. Check the backlash of the pinion gears (B) with a dial indicator (C).

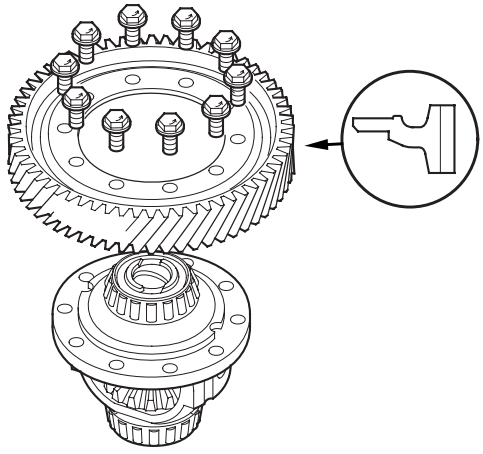
   STANDARD: 0.05—0.15 mm (0.002—0.006 in.)

3. If the backlash is out of standard, replace the differential carrier.

Differential Carrier/Final Driven Gear Replacement

1. Remove the final driven gear from the differential carrier.

   NOTE: The final driven gear bolts have left-hand threads.



2. Install the final driven gear with the chamfered side on the inner bore facing the differential carrier.

3. Tighten the bolts to the specified torque in a crisscross pattern.

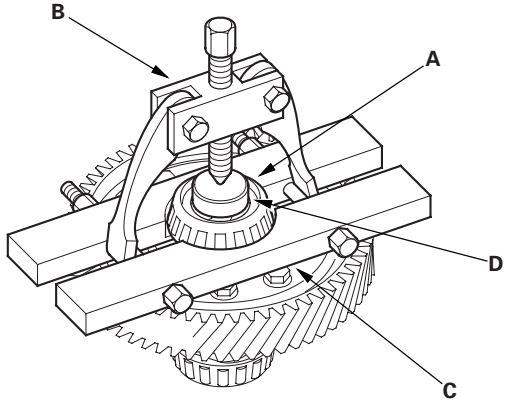
   TORQUE: 101 N·m (10.3 kgf·m, 74.5 lbf·ft)

Carrier Bearing Replacement

Special Tools Required
Attachment, 40 x 50 mm 07LAD-PW50601

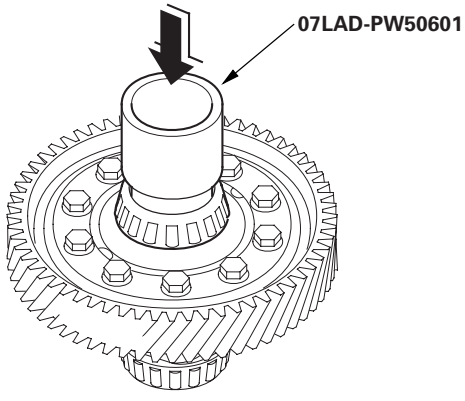
NOTE:
- The bearing and outer race should be replaced as a set.
- Inspect and adjust the bearing preload whenever bearing is replaced.
- Check the bearing for wear and rough rotation. If the bearing is OK, removal is not necessary.

1. Remove the carrier bearing (A) with a commercially available bearing puller (B), bearing separator (C), and stepped adapter (D).



2. Install the new carrier bearings with the special tool and a press.

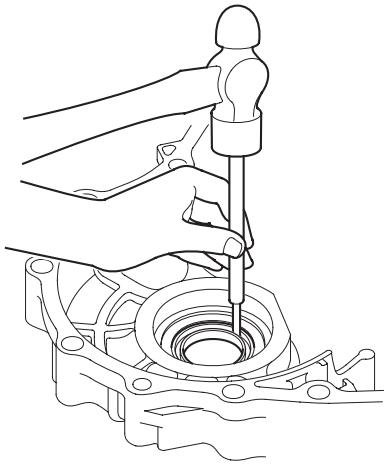
   NOTE:
   - Press the bearing on until it bottoms out.
   - Use the small end of the special tool to install the bearing.
   - Press the bearing on securely so there is no clearance between the bearing and the differential carrier.



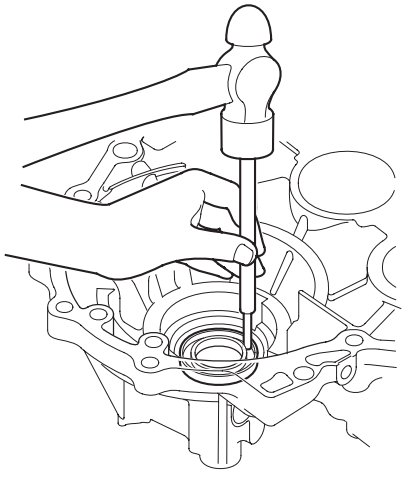
Oil Seal Replacement

Special Tools Required
- Handle driver 07749-0010000
- Oil seal driver attachment 07GAD-PG40101 or 07GAD-PG40100
- Oil seal driver attachment 07JAD-PH80101

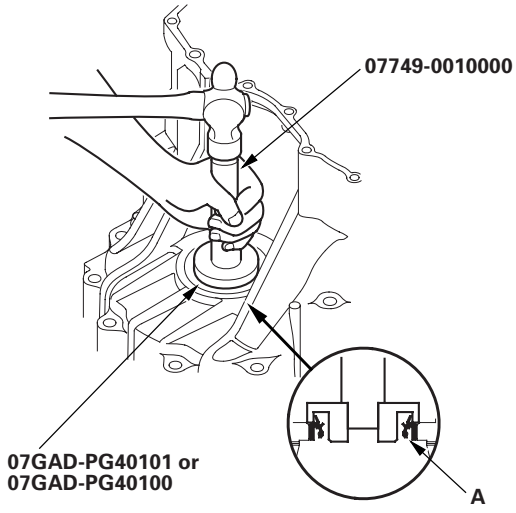
1. Remove the oil seal from the transmission housing.



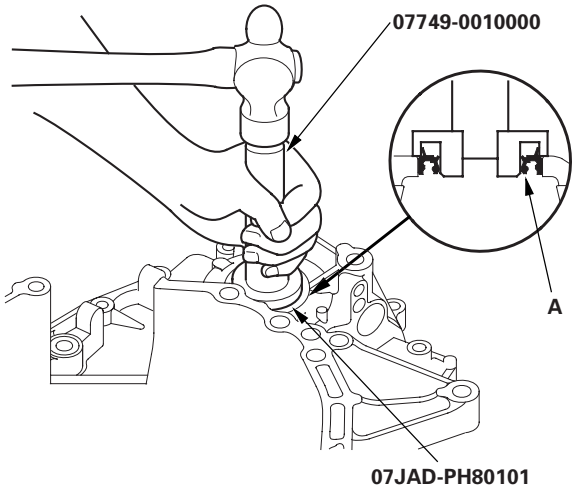
2. Remove the oil seal from the torque converter housing.



3. Install the new oil seal (A) in the transmission housing with the special tools.



4. Install the oil seal (A) in the torque converter housing with the special tools.



Carrier Bearing Outer Race Replacement

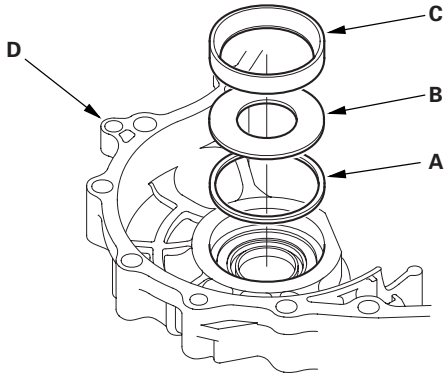
Special Tools Required
- Handle driver 07749-0010000
- Driver attachment, 78 x 80 mm 07NAD-PX40100

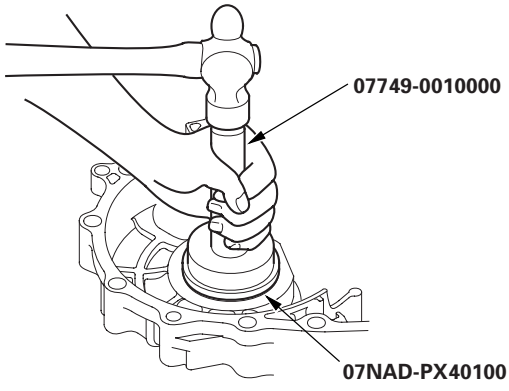
NOTE:
- Replace the bearing with a new one whenever the outer race is replaced.
- Do not use shim(s) on the torque converter housing side.
- Adjust preload after replacing the bearing and outer race.
- Coat all parts with ATF during installation.

1. Remove the bearing outer race from the transmission housing by heating the housing to about 100℃ (212℉) with a heat gun. Do not heat the housing to more than 100℃ (212℉).

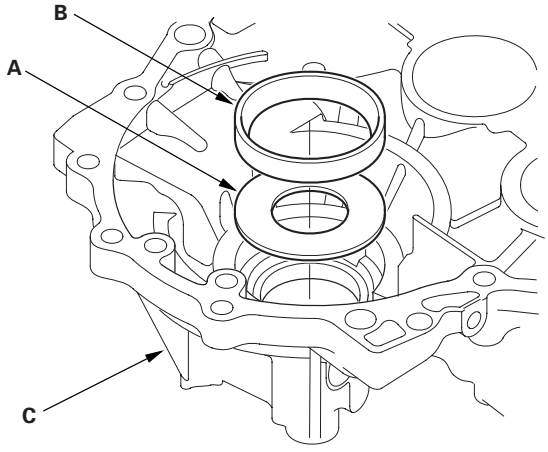
2. Remove the bearing outer race from the torque converter housing.

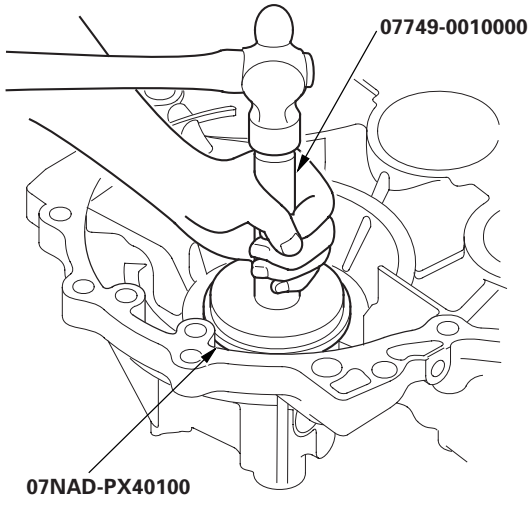
3. Install the thrust shim (A), thrust washer (B), and outer race (C) in the transmission housing (D) with the special tools.





4. Install the thrust washer (A) and outer race (B) in the torque converter housing (C), and use the special tools to make sure the outer race bottoms out in the housing.





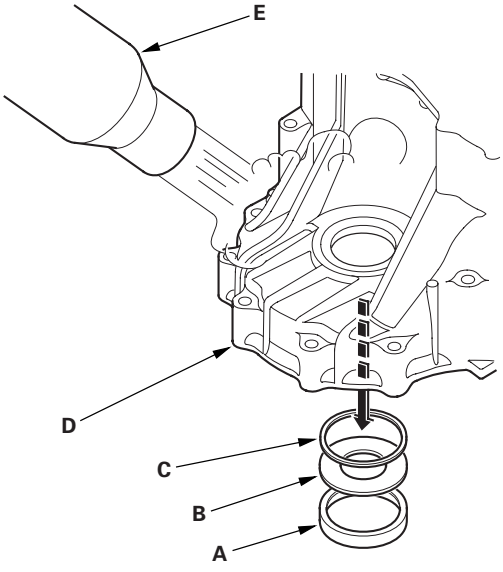
Carrier Bearing Preload Inspection

Special Tools Required
- Handle driver 07749-0010000
- Driver attachment, 78 x 80 mm 07NAD-PX40100
- Preload inspection tool 07HAJ-PK40201

NOTE: If the transmission housing, torque converter housing, differential carrier, tapered roller bearing, outer race, or thrust shim were replaced, the bearing preload must be adjusted.

1. Remove the bearing outer race (A), thrust washer (B), and thrust shim (C) from the transmission housing (D) by heating the housing to about 100°C (212°F) with a heat gun (E). Do not heat the housing to more than of 100°C (212°F).

   NOTE: Let the transmission housing cool to room temperature before adjusting the bearing preload.



2. Replace the tapered roller bearing when the outer race is to be replaced.

3. Do not use a shim on the torque converter housing side.

4. Select the 2.60 mm (0.102 in.) thrust shim from the table below.

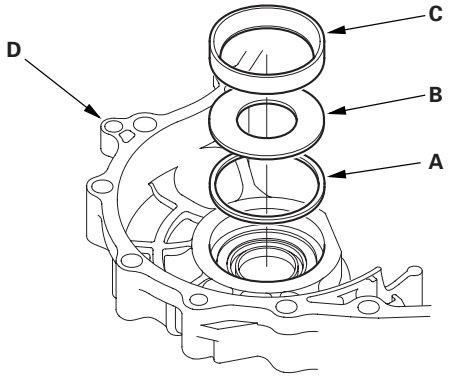
THRUST SHIM, 81 mm

No.	Part Number	Thickness
A	41438-P7T-700	2.05 mm (0.081 in.)
AA	41438-PGH-000	2.075 mm (0.082 in.)
B	41439-P7T-700	2.10 mm (0.083 in.)
BB	41439-PGH-000	2.125 mm (0.084 in.)
C	41440-P7T-700	2.15 mm (0.085 in.)
CC	41440-PGH-000	2.175 mm (0.086 in.)
D	41441-P7T-000	2.20 mm (0.087 in.)
DD	41441-PGH-000	2.225 mm (0.088 in.)
E	41442-P7T-000	2.25 mm (0.089 in.)
EE	41442-PGH-000	2.275 mm (0.090 in.)
F	41443-P7T-000	2.30 mm (0.091 in.)
FF	41443-PGH-000	2.325 mm (0.092 in.)
G	41444-P7T-000	2.35 mm (0.093 in.)
GG	41444-PGH-000	2.375 mm (0.094 in.)
H	41445-P7T-000	2.40 mm (0.094 in.)
HH	41445-PGH-000	2.425 mm (0.095 in.)
I	41446-P7T-000	2.45 mm (0.096 in.)
II	41446-PGH-000	2.475 mm (0.097 in.)
J	41447-P7T-000	2.50 mm (0.098 in.)
JJ	41447-PGH-000	2.525 mm (0.099 in.)
K	41448-P7T-000	2.55 mm (0.100 in.)
KK	41448-PGH-000	2.575 mm (0.101 in.)
L	41449-P7T-000	2.60 mm (0.102 in.)
LL	41449-PGH-000	2.625 mm (0.103 in.)
M	41450-P7T-000	2.65 mm (0.104 in.)
MM	41450-PGH-000	2.675 mm (0.105 in.)
N	41451-P7T-000	2.70 mm (0.106 in.)
NN	41451-PGH-000	2.725 mm (0.107 in.)
O	41452-P7T-000	2.75 mm (0.108 in.)
OO	41452-PGH-000	2.775 mm (0.109 in.)
P	41453-P7T-000	2.80 mm (0.110 in.)
PP	41453-PGH-000	2.825 mm (0.111 in.)
Q	41454-P7T-000	2.85 mm (0.112 in.)
QQ	41454-PGH-000	2.875 mm (0.113 in.)
R	41455-P7T-000	2.90 mm (0.114 in.)
RR	41455-PGH-000	2.925 mm (0.115 in.)
S	41456-P7T-000	2.95 mm (0.116 in.)
SS	41456-PGH-000	2.975 mm (0.117 in.)
T	41457-P7T-000	3.00 mm (0.118 in.)
TT	41457-PGH-000	3.025 mm (0.119 in.)
U	41458-P7T-000	3.05 mm (0.120 in.)

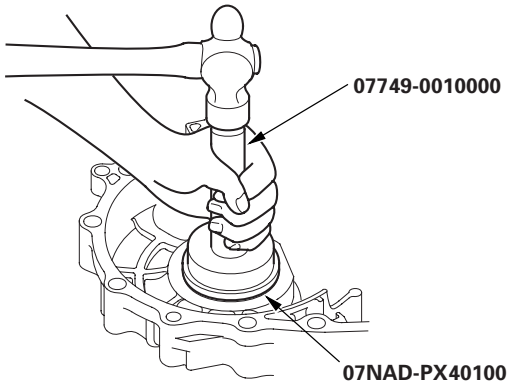
(cont'd)

Carrier Bearing Preload Inspection (cont'd)

5. Install the thrust shim (A), thrust washer (B), and bearing outer race (C) in the transmission housing (D).

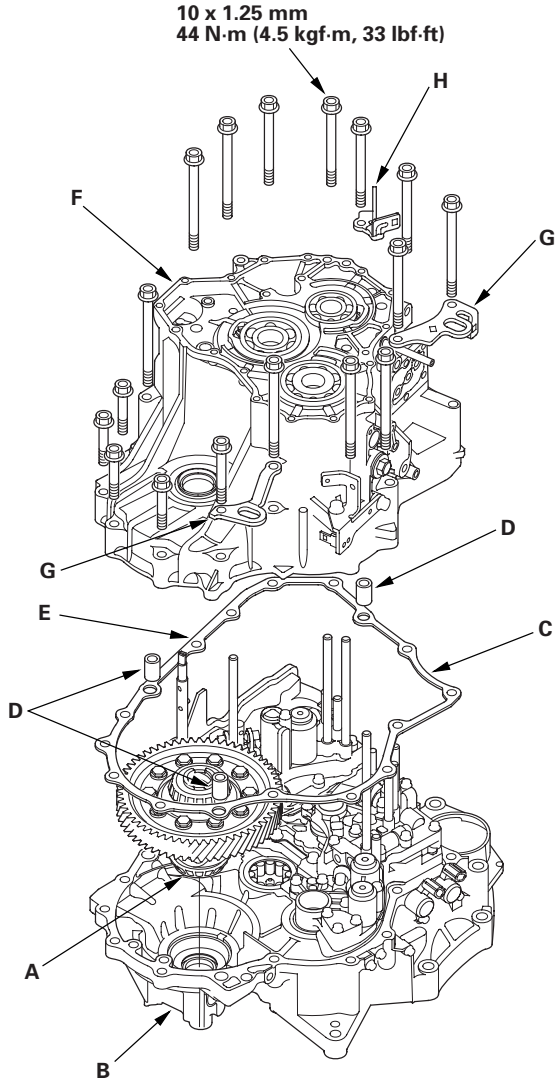


6. Drive in the outer race with the special tools.



7. Check that there is no clearance between the thrust washer, outer race, shim, and transmission housing.

8. Install the differential assembly (A) in the torque converter housing (B), and install the gasket (C) and dowel pins (D) on the housing.



9. Align the spring pin on the control shaft (E) with the transmission housing groove.

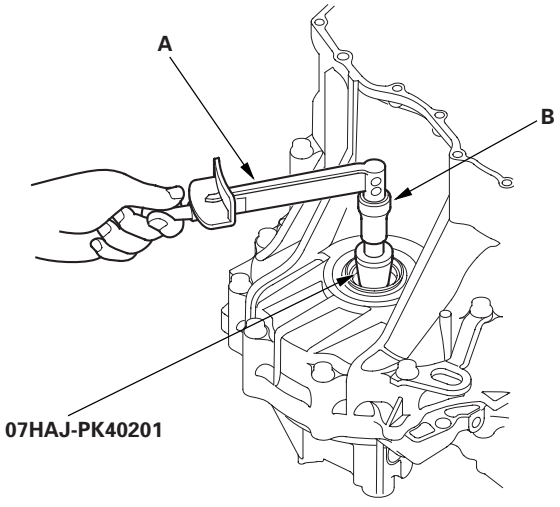
10. Install the transmission housing (F), transmission hangers (G), and harness clamp bracket (H) then tighten the bolts.

11. Rotate the differential assembly in both directions to seat the bearing.

12. Measure the starting torque of the differential assembly with the special tool, a torque wrench (A) and socket (B) at normal room tempereture in both directions.

STANDARD

New bearing	**2.7 — 3.9 N·m (28 — 40 kgf·cm, 24 — 35 lbf·in)**
Reused bearings	**2.5 — 3.6 N·m (25 — 37 kgf·cm, 22 — 32 lbf·in)**



13. To increase the starting torque, increase the thickness of the shim. To decrease the starting torque, decrease the thickness of the shim. Changing the shim to the next size will increase or decrease starting torque about 0.3 — 0.4 N·m (3 — 4 kgf·cm, 3 — 3 lbf·in).

Body Electrical

Lights-on, Key-in, Parking Brake, Seat Belt Reminder and Key Light Timer Systems

Circuit Diagram 22-2
Control Unit Input Test 22-3

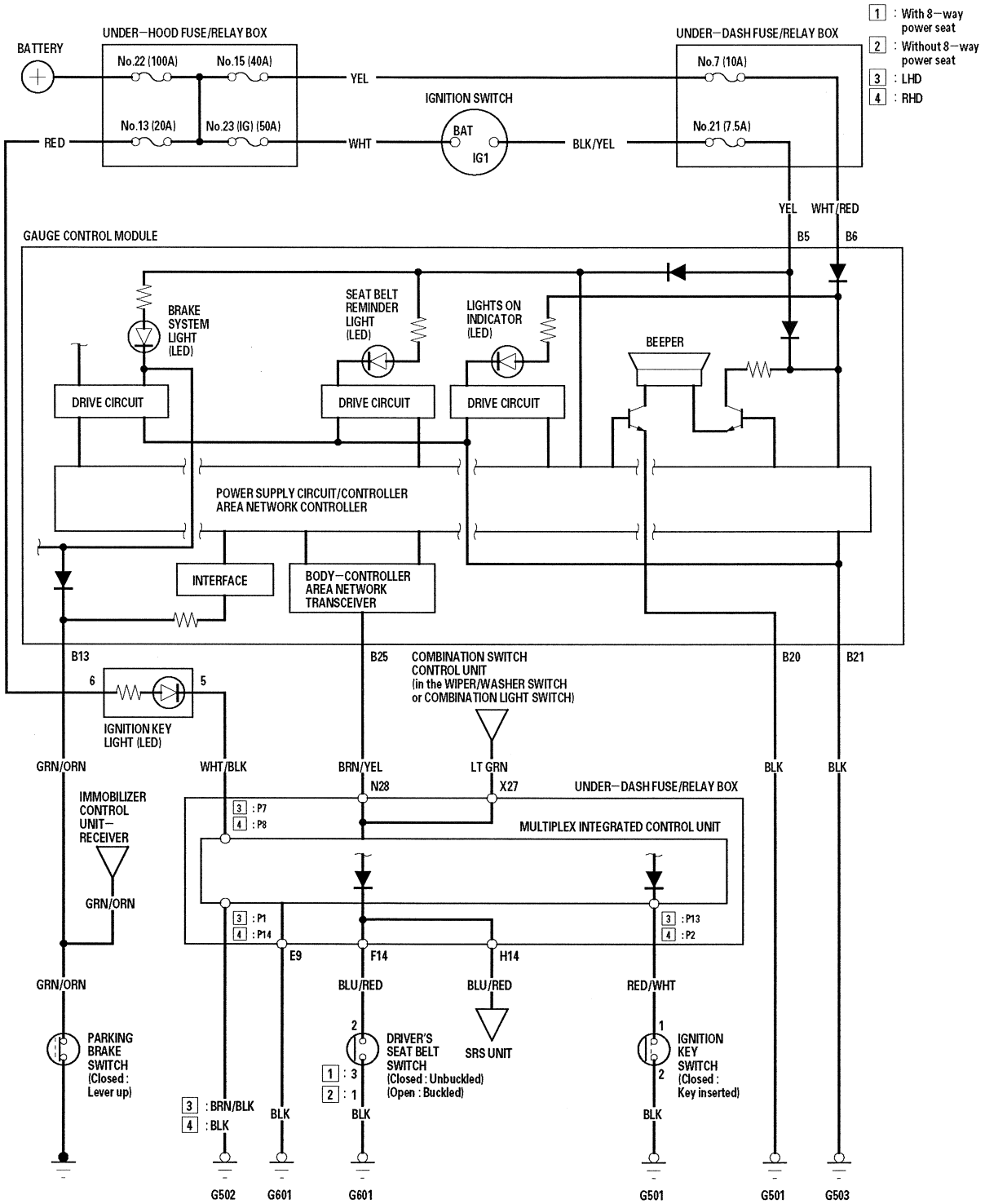


Outline of Model Changes

Parking brake reminder has been added; the related information was entered.

Lights-on, Key-in, Parking Brake, Seat Belt Reminder and Key Light Timer Systems

Circuit Diagram



Control Unit Input Test

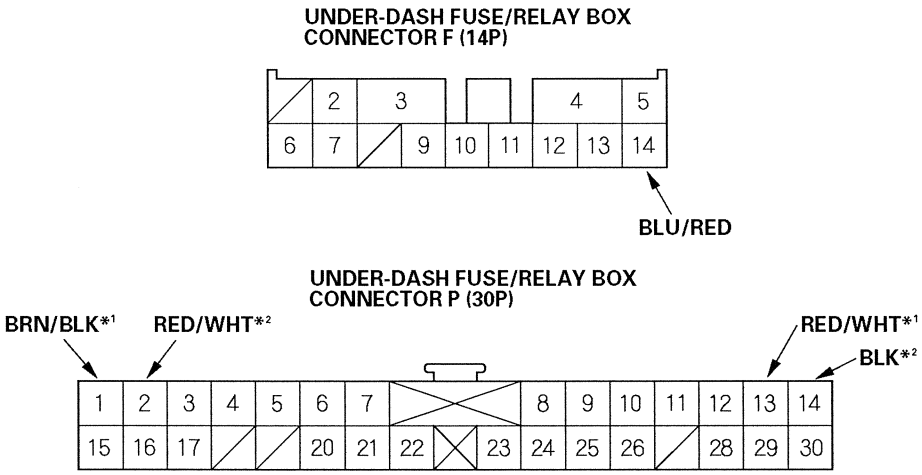
1. Before testing, troubleshoot the multiplex integrated control system test mode A, refer to the Shop Manual, P/N 62SDA00 (see page 22-98).

Multiplex Integrated Control Unit

2. Remove the left kick panel, refer to the Shop Manual, P/N 62SDA00 (see page 20-72).

3. Disconnect the under-dash fuse/relay box connectors F, H and P.

   NOTE: All connectors are wire side of female terminals.



*1: LHD type
*2: RHD type

4. Inspect the connector and socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals are OK, go to step 5.

(cont'd)

Control Unit Input Test (cont'd)

5. Reconnect the connectors, and make these input tests at the connector.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

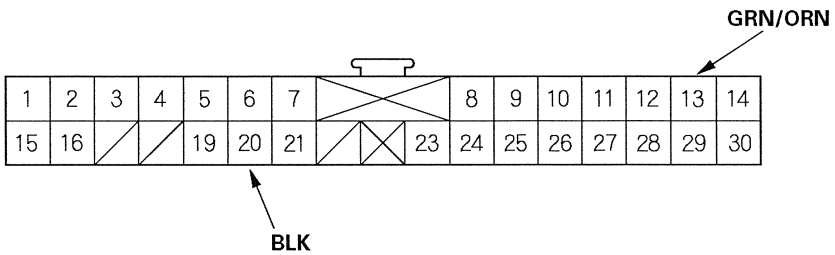
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E14 . H14	BLU/RED	Ignition switch ON (II), driver's seat belt is unbuckled.	Check for voltage to ground: There should be 1V or less.	• Faulty driver's seat belt switch • Poor ground (G601) • An open in the wire
		Ignition switch ON (II), driver's seat belt is buckled.	Check for voltage to ground: There should be 5V or more.	• Faulty driver's seat belt switch • Short to ground
P13*1 P2*2	RED/WHT	Ignition key in the ignition switch.	Check for voltage to ground: There should be 1V or less.	• Faulty ignition switch • Poor ground (G501) • An open in the wire
		Ignition key out of the ignition switch.	Check for voltage to ground: There should be 5V or more.	• Faulty ignition switch Short to ground

* 1: LHD type
* 2: RHD type

6. Remove the gauge control module, refer to the Shop Manual, P/N 62SDA00 (see page 22-257).

7. Disconnect the gauge control module 30P connector.

GAUGE CONTROL MODULE CONNECTOR B (30P)



Wire side of female terminals

8. Inspect the connector and socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals are OK, go to step 9.

9. With the connectors still disconnected, make these input tests at the connector.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If the input tests prove OK, go to step 10.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
Q8	GRN/ORN	Parking brake lever pulled	Check for voltage to ground: There should be 1 V or less.	• Faulty parking brake switch • An open in the wire
		Parking brake lever released	Check for voltage to ground: There should be about 5 V or more.	• Faulty parking brake switch • Short to ground
B20	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	• Poor ground (G501) • An open in the wire

10. Perform the gauge self test procedure.

    - If the beeper sounds and the seat belt light flashes, go to step 11.
    - If the beeper does not sounds, or the seat belt light does not flash, replace the gauge control module.

11. Substitute a known-good under-dash fuse/relay box and recheck the system.

    - It the symptom is gone, the MICU is faulty; replace the under-dash fuse/relay box.
    - It the symptom is still present, the gauge control module is faulty; replace the gauge control module.