Transaxle

Clutch **12-1**

Manual Transmission
- **5-speed Manual Transmission** **13-1**
- **6-speed Manual Transmission** **13-69**

Automatic Transmission **14-1**

Driveline/Axle **16-1**



DYNOMITE -2009-

Clutch

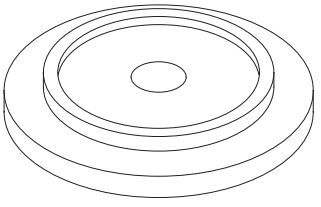
Clutch

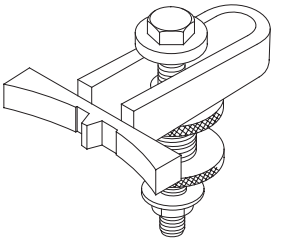
Special Tools 12-2
Component Location Index
(5-speed Manual Transmission) 12-3
(6-speed Manual Transmission) 12-4
System Description
(6-speed Manual Transmission) 12-5
Clutch Hydraulic System Bleeding 12-7
Clutch Pedal, Clutch Pedal Position Switch, and
Clutch Interlock Switch Adjustment 12-8
Clutch Pedal Assembly Replacement 12-10
Clutch Master Cylinder Replacement 12-11
Slave Cylinder Replacement
(5-speed Manual Transmission) 12-14
(6-speed Manual Transmission) 12-15
Clutch Hose Replacement 12-17
Clutch Pedal Cover Replacement 12-18
Clutch Replacement 12-19

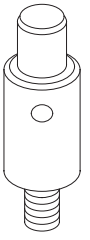
DYNOMITE -2009-

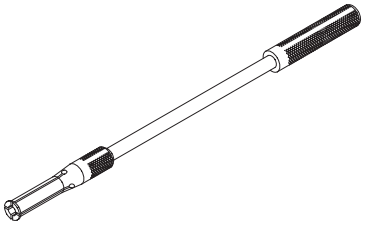
Special Tools

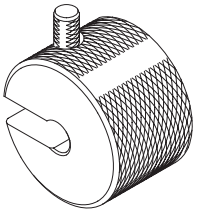
Ref. No.	Tool Number	Description	Qty
①	07JAF-PM7011A	Clutch Alignment Disc	1
②	07LAB-PV00100	Ring Gear Holder	1
③	07ZAF-PR8A100	Clutch Alignment Shaft	1
④	07936-KC10500	Bearing Remover Shaft	1
⑤	07741-0010201	Slide Hammer	1
⑥	07746-0010800	Bearing Driver Attachment, 22 x 24 mm	1
⑦	07749-0010000	Driver Handle, 15 x 135L	1
⑧	07936-3710100	Remover Handle	1

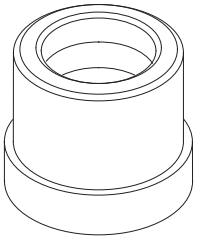

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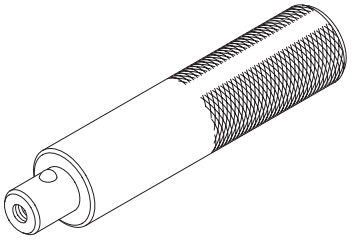

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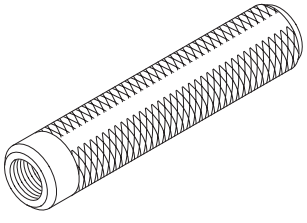

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⑥

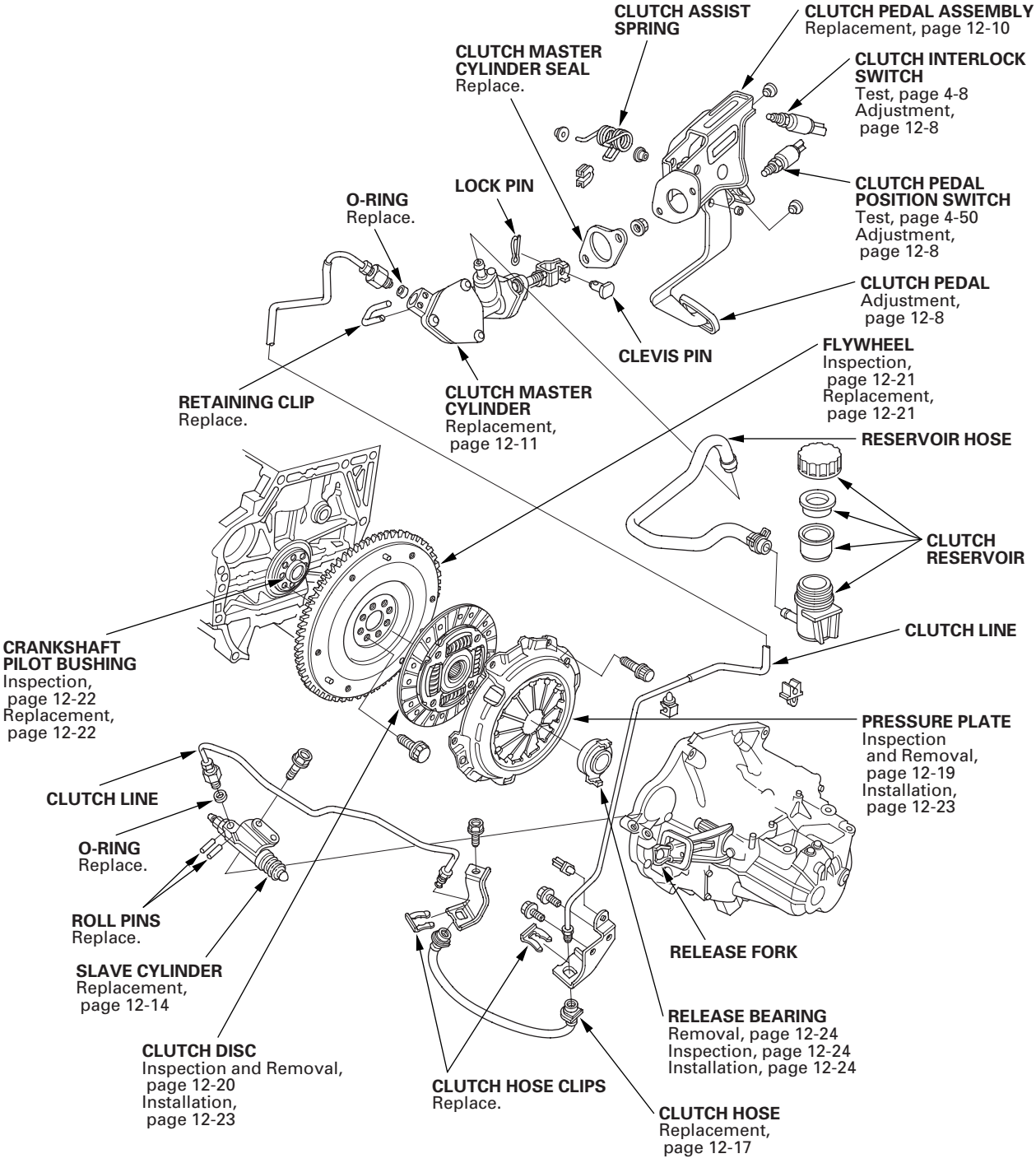

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⑧

DYNOMITE -2009-

Component Location Index

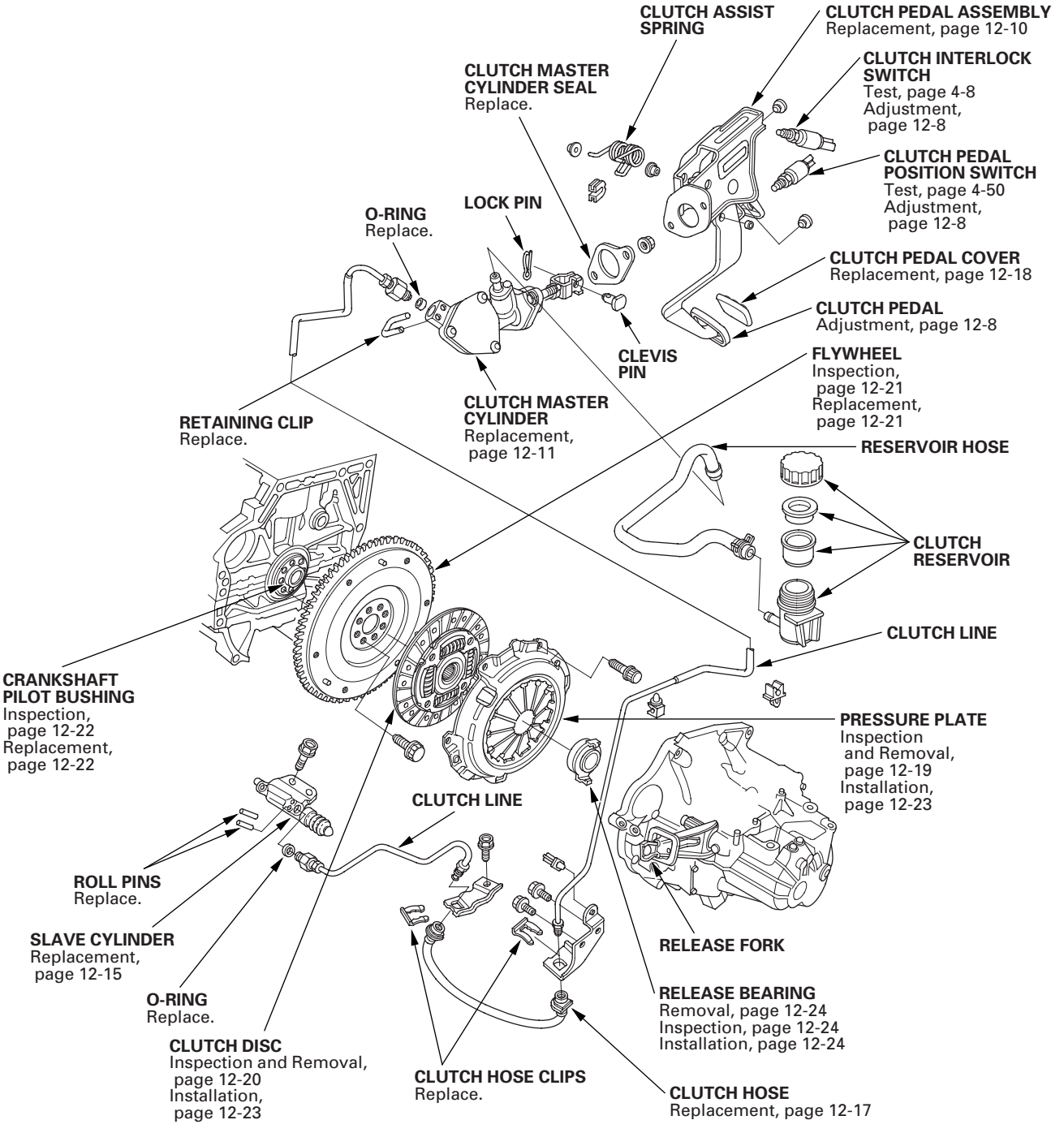
5-speed Manual Transmission



DYNOMITE -2009-

Component Location Index (cont'd)

6-speed Manual Transmission

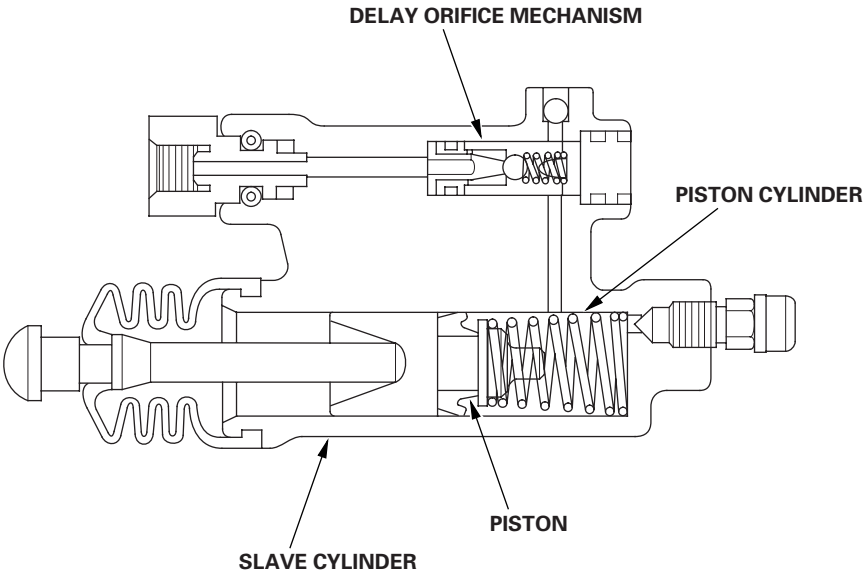


DYNOMITE -2009-

System Description

Delay Orifice Mechanism (6-speed Manual Transmission)

Function
The delay orifice mechanism improves clutch operation by delaying the slave cylinder release speed when the clutch pedal is suddenly released. The delay orifice mechanism is built into the slave cylinder.

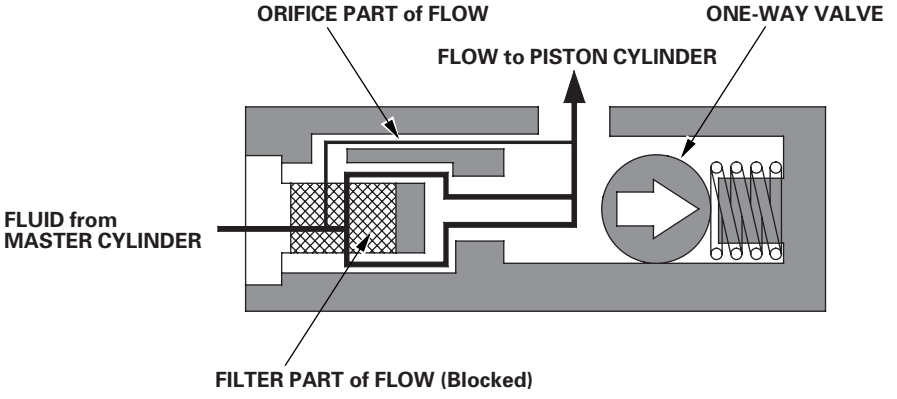


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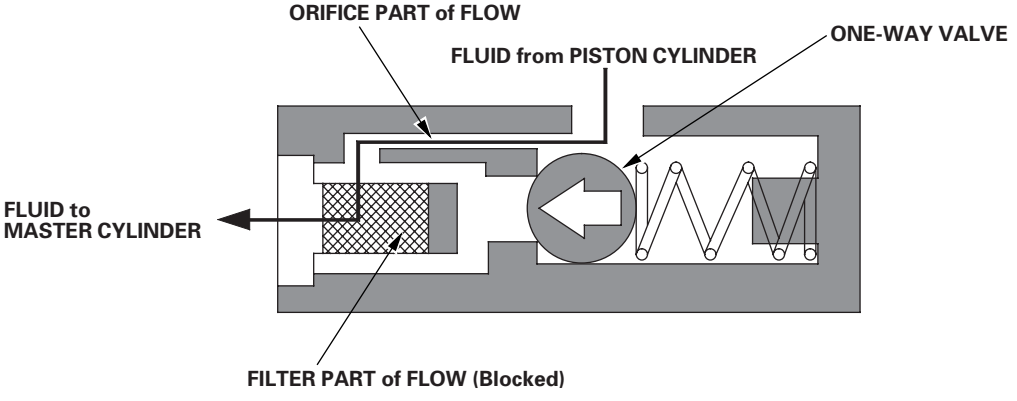
DYNOMITE -2009-

System Description (cont'd)

Fluid Flow Operation
When the clutch pedal is pressed, the fluid pressure from the master cylinder moves the one-way valve in the direction shown in the illustration. The fluid flows through two passages: the orifice part and the filter part. It then flows out to the piston cylinder to release the pressure plate and clutch disc joint.



When the clutch pedal is released, the fluid pressure from the piston cylinder moves the one-way valve in the direction shown in the illustration. The one-way valve blocks the filter-part passage and delays the clutch release speed by returning the fluid to the master cylinder through only the orifice-part passage.

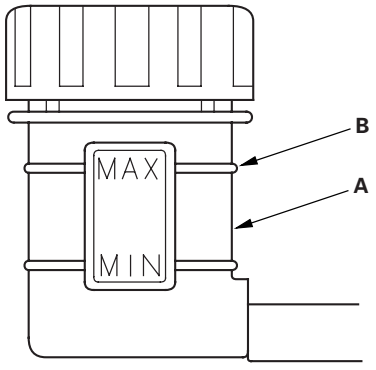


DYNOMITE -2009-

Clutch Hydraulic System Bleeding

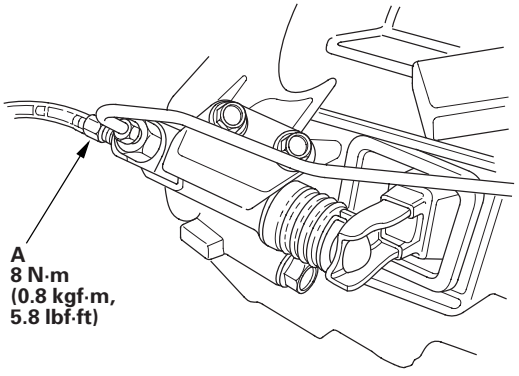
NOTE:
- Do not reuse the drained fluid. Always use Acura DOT 3 Brake Fluid from an unopened container. Using a non-Acura brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid; they may not be compatible.
- Make sure the brake fluid is not contaminated with dirt or other foreign matter.
- Do not spill brake fluid on the vehicle; it may damage the paint or plastic. If brake fluid does contact the paint or plastic, wash it off immediately with water.
- If may be necessary to limit the movement of the release fork with a block of wood to remove all the air from the system.
- Use fender covers to avoid damaging painted surfaces.

1. Make sure the brake fluid level in the clutch reservoir (A) is at the MAX (upper) level line (B).

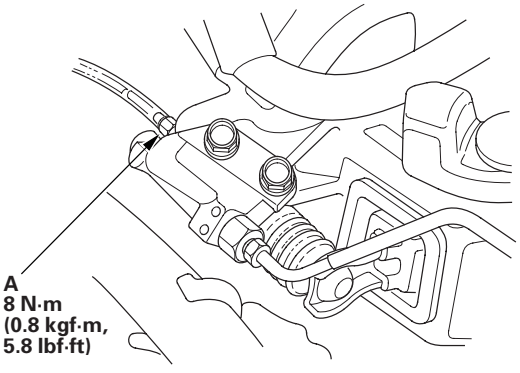


2. Attach the one end of a clear tube to the bleeder screw (A), and put the other end into a container. Loosen the bleeder screw to allow air to escape from the system.

5-speed manual transmission



6-speed manual transmission



3. Make sure there is an adequate supply of fluid in the reservoir, then slowly push the clutch pedal all the way down. Before releasing the pedal, have an assistant temporarily tighten the bleeder screw. Loosen the bleeder screw, and push the pedal down again. Repeat this step until no more bubbles appear at the clear tube.

   NOTE: Make sure the fluid level on the reservoir does not go below MIN.

4. Tighten the bleeder screw securely.

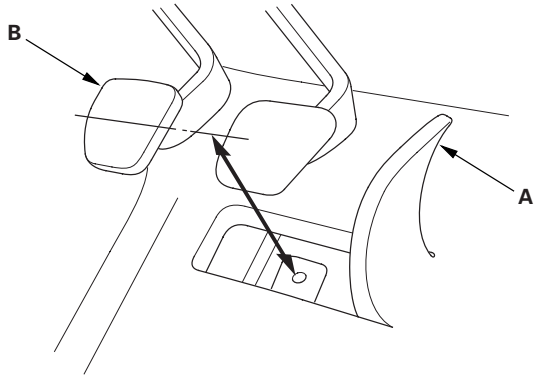
5. Refill the brake fluid in the reservoir to the MAX (upper) level line.

DYNOMITE -2009-

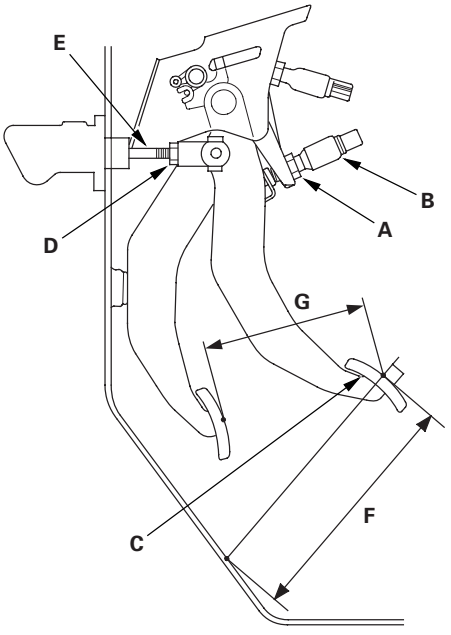
Clutch Pedal, Clutch Pedal Position Switch, and Clutch Interlock Switch Adjustment

NOTE:
- For a cruise control problem, check the clutch pedal position switch (see page 4-50).
- For an engine cranking problem, check the clutch interlock switch (see page 4-8).
- The clutch is self-adjusting to compensate for wear.
- If there is no clearance between the master cylinder piston and the pushrod, the release bearing will be held against the diaphragm spring, which can result in clutch slippage or other clutch problems.

1. Lift up the carpet (A). At the insulator cutout, measure pedal height from the right side of the pedal pad (B).



2. Loosen the clutch pedal position switch locknut (A), and back off the clutch pedal position switch (B) until it no longer touches the clutch pedal (C).

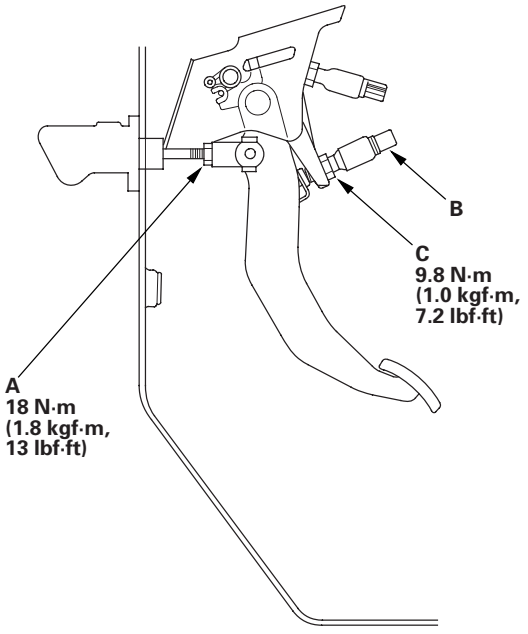


3. Loosen the clutch pushrod locknut (D), and turn the pushrod (E) in or out to get the specified height (F) and stroke (G) at the clutch pedal. If adjusting the pushrod causes the clutch pedal to contact the clutch pedal position switch, back off the switch further.

F Clutch Pedal Height:
Except Type S model: 159.3 mm (6.27 in.)
Type S model: 161.3 mm (6.35 in.)
G Clutch Pedal Stroke:
130—140 mm (5.12—5.51 in.)

DYNOMITE -2009-

4. Tighten the clutch pushrod locknut (A).

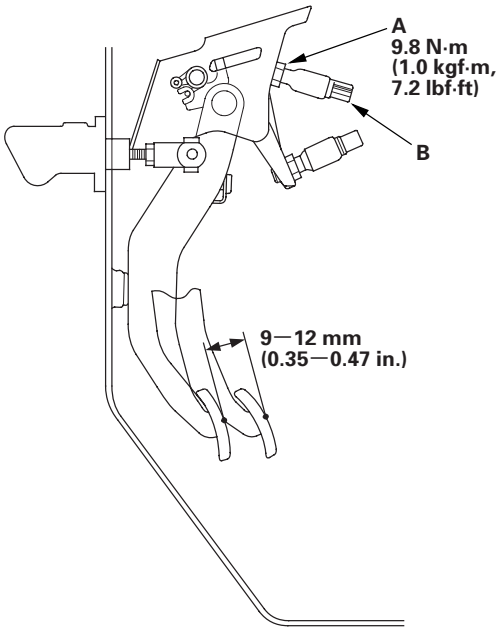


5. With the clutch pedal released, turn in the clutch pedal position switch (B) until it contacts the clutch pedal.

6. Turn in the clutch pedal position switch an additional 3/4 to 1 turn. Make sure the clutch pedal height did not change.

7. While holding the clutch pedal position switch, tighten the locknut (C).

8. Loosen the clutch interlock switch locknut (A).



9. Fully press the clutch pedal to the floor, then release the clutch pedal 9—12 mm (0.35—0.47 in.) and hold it there.

10. Adjust the position of the clutch interlock switch (B), so the engine starts with the clutch pedal in this position.

11. While holding the clutch interlock switch, tighten the locknut.

12. Check the clutch operation.

13. Connect the clutch pedal position switch connector and the clutch interlock switch connector, then check the cruise control and the engine starting.

Clutch Replacement

Special Tools Required
- Clutch alignment disc 07JAF-PM7011A
- Ring gear holder 07LAB-PV00100
- Clutch alignment shaft 07ZAF-PR8A100
- Bearing remover shaft 07936-KC10500
- Slide hammer 07741-0010201
- Bearing driver attachment, 22 x 24 mm 07746-0010800
- Driver handle, 15 x 135L 07749-0010000
- Remover handle 07936-3710100

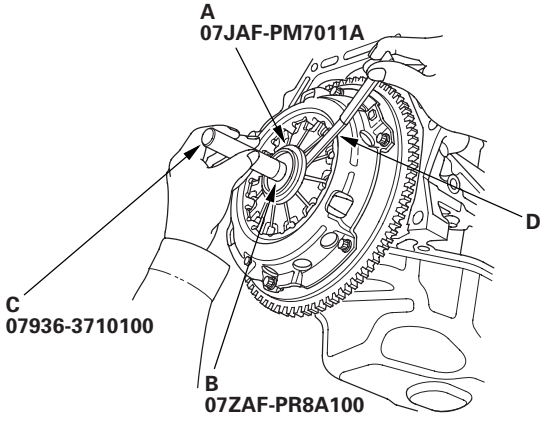
Engine Side

Pressure Plate Inspection and Removal

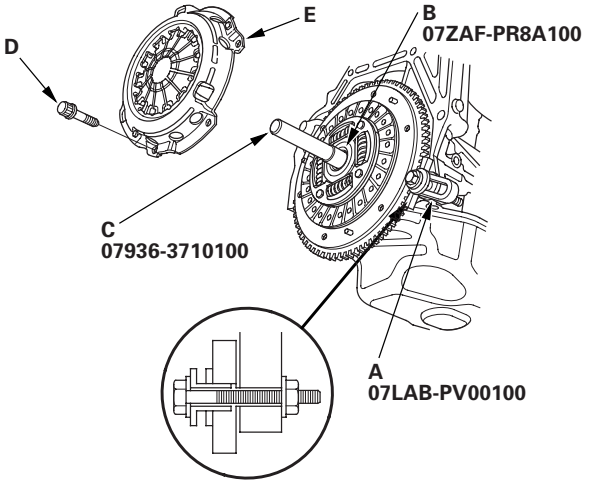
1. Remove the transmission; 5-speed model (see page 13-7), 6-speed model (see page 13-84).

2. Check the evenness of the height of the diaphragm spring fingers using the clutch alignment disc (A), the clutch alignment shaft (B), the remover handle (C), and a feeler gauge (D). If the height is more than the service limit, replace the pressure plate.

   Standard (New): 0.6 mm (0.02 in.) max.
   Service Limit: 0.8 mm (0.03 in.)

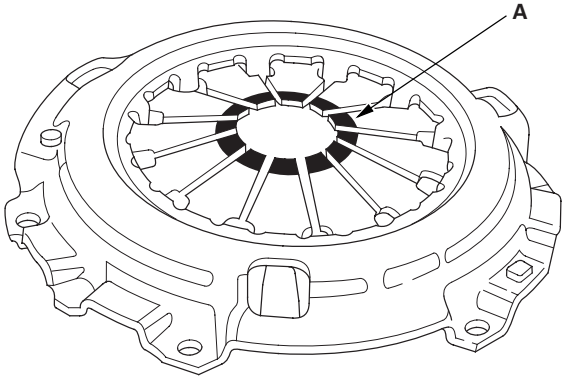


3. Install the ring gear holder (A), the clutch alignment shaft (B), and the remover handle (C).



4. To prevent warping, loosen the pressure plate mounting bolts (D) in a crisscross pattern in several steps, then remove the pressure plate (E).

5. Inspect the fingers of the diaphragm spring (A) for wear at the release bearing contact area.

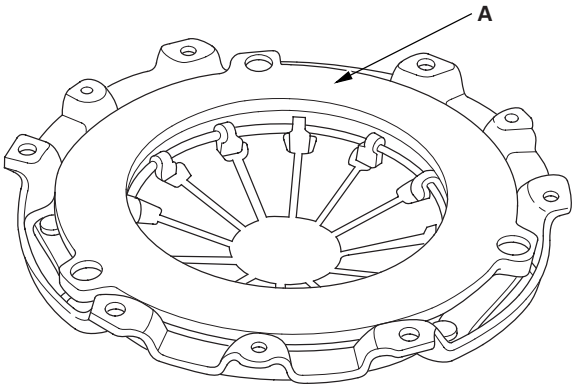


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DYNOMITE -2009-

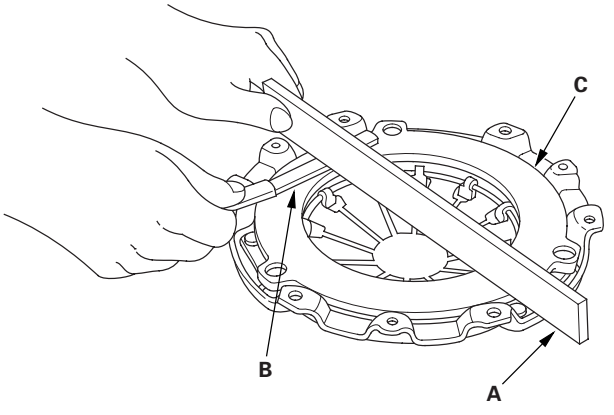
Clutch Replacement (cont'd)

6. Inspect the pressure plate surface (A) for wear, cracks, and burning.



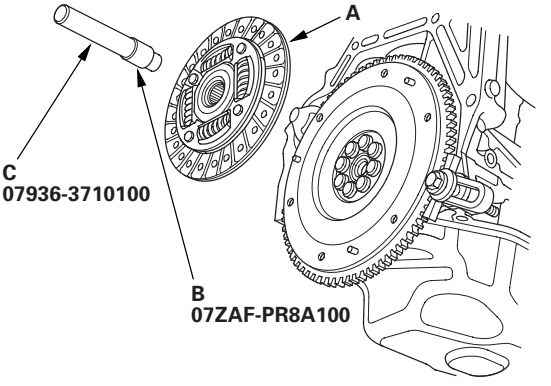
7. Inspect for warpage using a straight edge (A) and a feeler gauge (B). Measure across the pressure plate surface (C). If the most measurement difference is more than the service limit, replace the pressure plate.

Standard (New): 0.03 mm (0.001 in.) max.
Service Limit: 0.15 mm (0.006 in.)



Clutch Disk Inspection and Removal

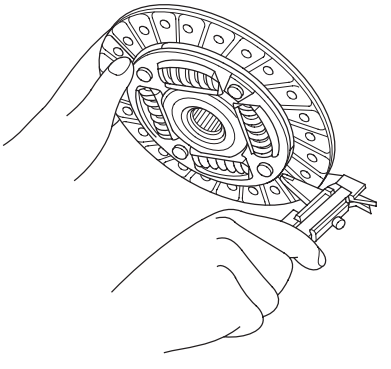
8. Remove the clutch disc (A), the clutch alignment shaft (B), and the remover handle (C).



9. Inspect the lining of the clutch disc for signs of slipping or oil. If the clutch disc looks burnt or is soaked with oil, replace it and the pressure plate as a set. If the clutch disc is oil soaked, find and repair the source of the oil leak.

10. Measure the clutch disc thickness. If the measurement is less than the service limit, replace the clutch disc.

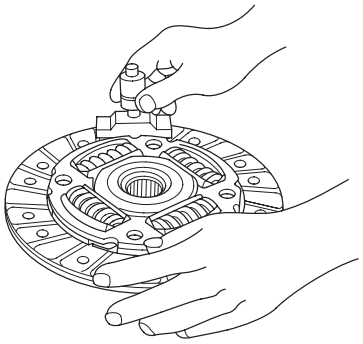
Standard (New): 8.3—8.9 mm (0.33—0.35 in.)
Service Limit: 6.0 mm (0.24 in.)

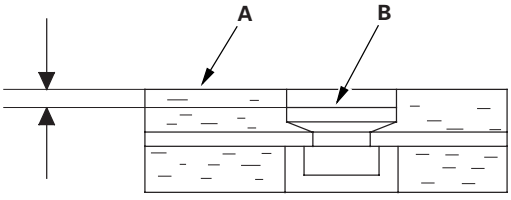


DYNOMITE -2009-

11. Measure the depth of the rivets from the clutch disc lining surface (A) to the rivets (B) on both sides. If the measurement is less than the service limit, replace the clutch disc.

Standard (New): 1.65—2.25 mm (0.065—0.089 in.)
Service Limit: 0.7 mm (0.03 in.)





12. Remove the ring gear holder.

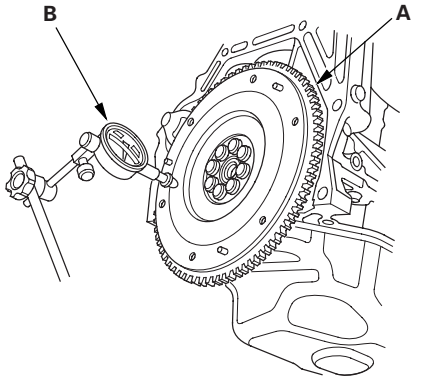
Flywheel Inspection

13. Inspect the ring gear teeth for wear and damage.

14. Inspect the clutch disc mating surface on the flywheel for wear, cracks, and burning.

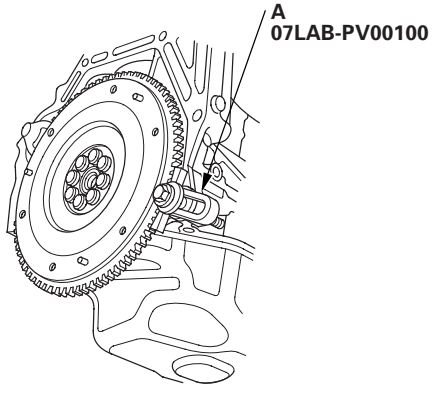
15. Measure the flywheel (A) runout using a dial indicator (B). Through at least two full turns with pushing against the flywheel each time you turn it to take up the crankshaft thrust washer clearance. If the measurement is not within the standard, replace the flywheel, and recheck the runout; go to step 16.

Standard (New): 0.05 mm (0.002 in.) max.
Service Limit: 0.15 mm (0.006 in.)



Flywheel Replacement

16. Install the ring gear holder (A).



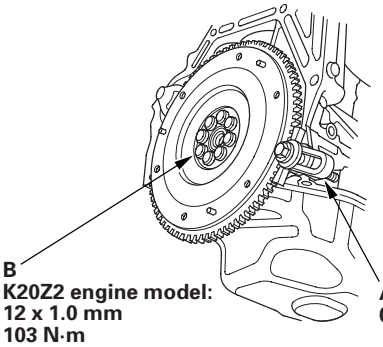
17. Loosen the flywheel mounting bolts in a crisscross pattern in several steps. Remove the bolts, then remove the flywheel and the ring gear holder.

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Clutch Replacement (cont'd)

18. Install the flywheel on the crankshaft, and install the mounting bolts finger-tight.

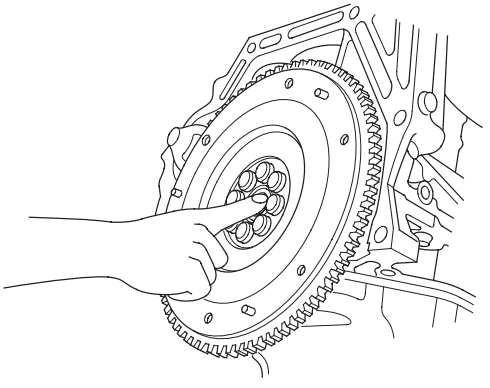
19. Install the ring gear holder (A), then torque the flywheel mounting bolts (B) in a crisscross pattern in several steps.



Crankshaft Pilot Bushing Inspection

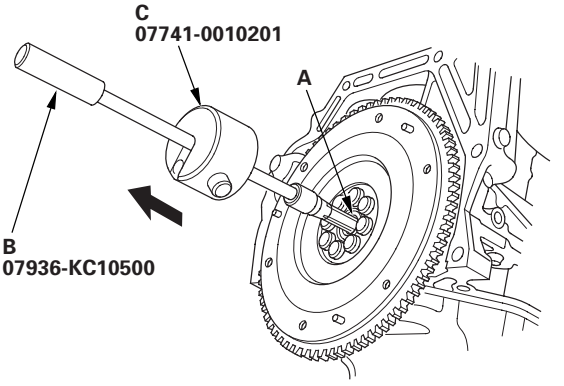
20. Inspect the crankshaft pilot bushing for wear and damage.

21. Inspect the inside surface of the crankshaft pilot bushing with your finger. If the crankshaft pilot bushing is not smooth, replace it; then go to step 22.

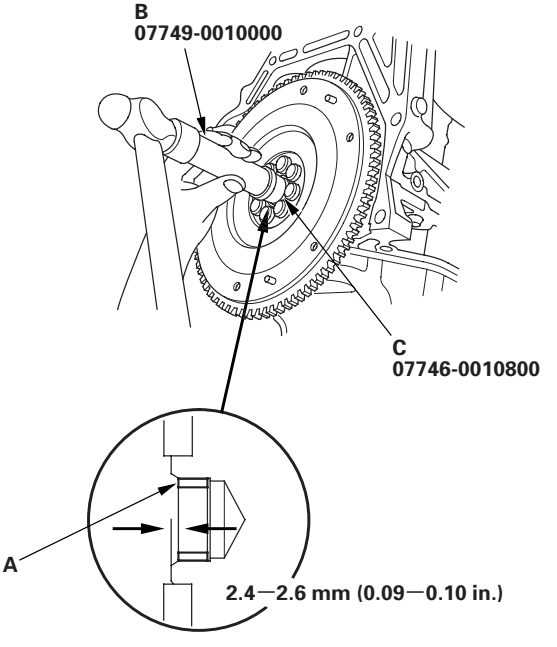


Crankshaft Pilot Bushing Replacement

22. Remove the crankshaft pilot bushing (A) using the bearing remover shaft (B) and the slide hammer (C).



23. Install a new crankshaft pilot bushing (A) into the crankshaft using the 15 x 135L driver handle (B) and the 22 x 24 mm bearing driver attachment (C).

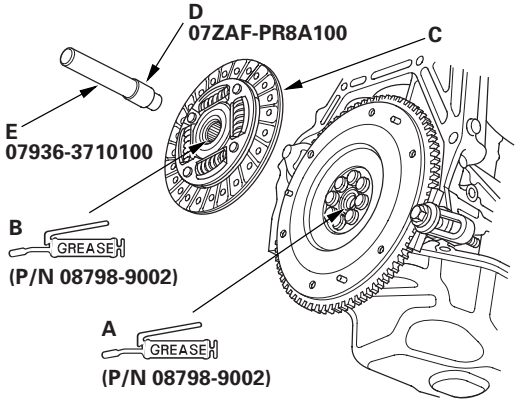


DYNOMITE -2009-

Clutch Disc and Pressure Plate Installation

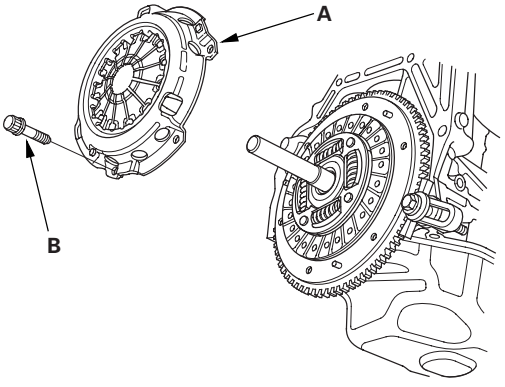
24. Temporarily install the clutch disc onto the splines of the transmission mainshaft. Make sure the clutch disc slides freely on the mainshaft.

25. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the crankshaft pilot bushing (A).



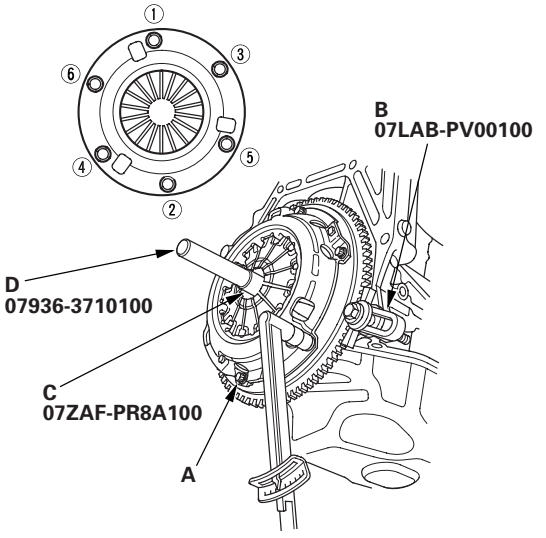
26. Apply super high temp urea grease (P/N 08798-9002) to the splines (B) of the clutch disc (C), then install the clutch disc using the clutch alignment shaft (D) and the remover handle (E).

27. Install the pressure plate (A) and the mounting bolts (B) finger-tight.



28. Torque the mounting bolts (A) in a crisscross pattern. Tighten the bolts in several steps to prevent warping the diaphragm spring.

Specified Torque: 25 N·m (2.6 kgf·m, 19 lbf·ft)



29. Remove the ring gear holder (B), the clutch alignment shaft (C), and the remover handle (D).

30. Make sure the diaphragm spring fingers are all the same height.

31. Do the release bearing inspection, and replace it if necessary.

32. Install the transmission; 5-speed model (see page 13-14), 6-speed model (see page 13-91).

(cont'd)

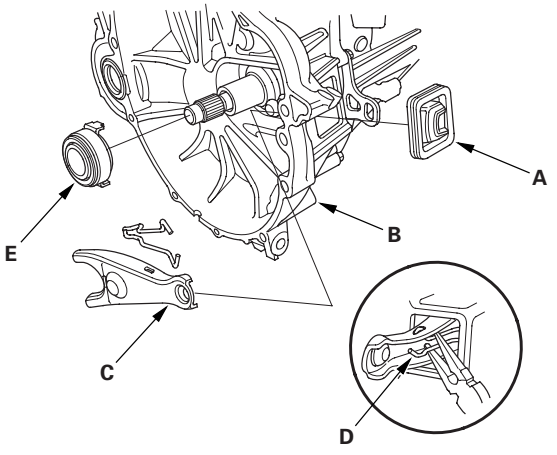
Clutch Replacement (cont'd)

Transmission Side

Release Bearing Removal

1. Remove the transmission; 5-speed model (see page 13-7), 6-speed model (see page 13-84).

2. Remove the release fork boot (A) from the clutch housing (B).

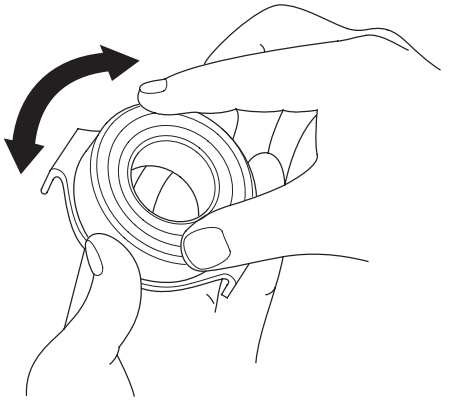


3. Remove the release fork (C) from the clutch housing by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).

Release Bearing Inspection

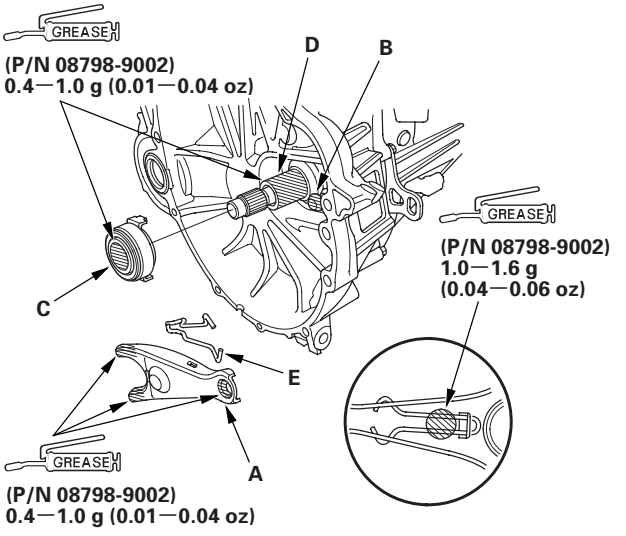
4. Check the play of the release bearing by spinning it by hand. If there is excessive play or noise, replace the release bearing.

   NOTE: The release bearing is packed with grease. Do not wash it in solvent.



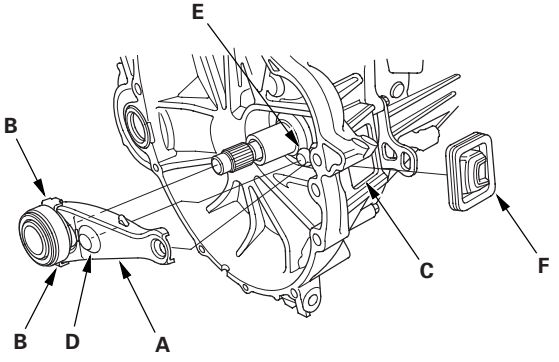
Release Bearing Installation

5. Apply super high temp urea grease (P/N 08798-9002) to the release fork (A), the release fork bolt (B), the release bearing (C), and the release bearing guide (D), in the shaded areas, then set the release fork set spring (E).



DYNOMITE -2009-

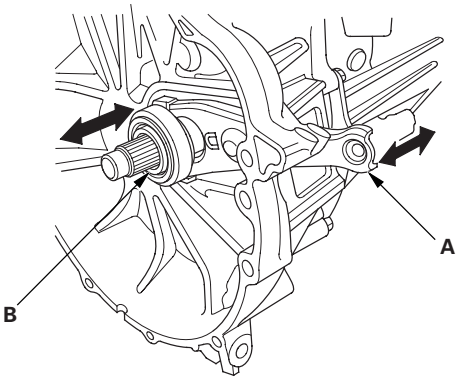
6. With the release fork (A) slid between the release bearing pawls (B), install the release bearing on the mainshaft while inserting the release fork through the hole (C) in the clutch housing.



7. Align the detent (D) of the release fork with the release fork bolt (E), then press the detent of the release fork over the release fork bolt squarely.

8. Install the release fork boot (F). Make sure the boot seals around the release fork and the clutch housing.

9. Move the release fork (A) right and left to make sure that it fits properly against the release bearing (B) and that the release bearing slides smoothly. Wipe off any excess grease.

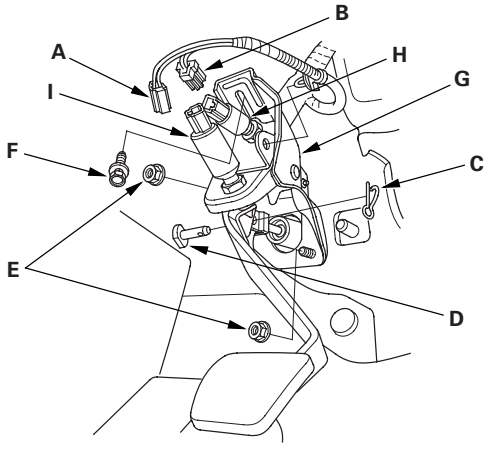


10. Install the transmission; 5-speed model (see page 13-14), 6-speed model (see page 13-91).

DYNOMITE -2009-

Clutch Pedal Assembly Replacement

1. Disconnect the clutch pedal position switch connector (A) and the clutch interlock switch connector (B).



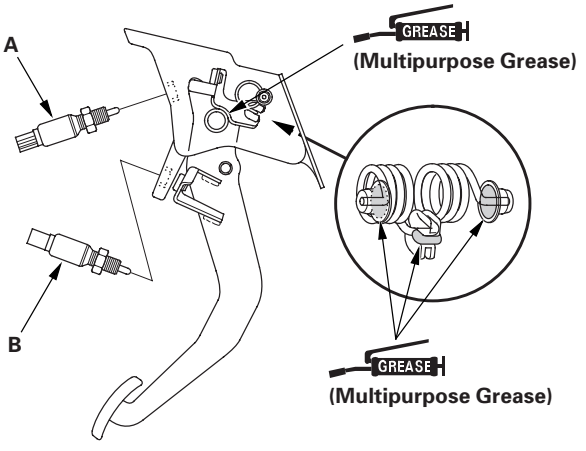
2. Pry out the lock pin (C), and pull the clevis pin (D) out of the clevis.

3. Remove the master cylinder mounting nuts (E) and the clutch pedal mounting bolt (F).

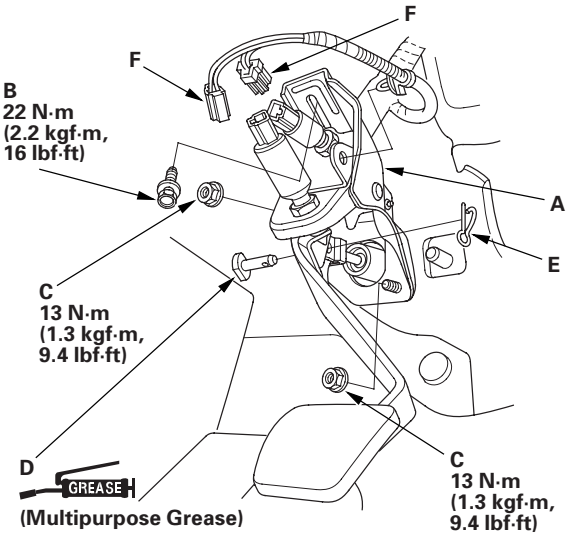
4. Remove the clutch pedal assembly (G).

5. Remove the clutch interlock switch (H), and the clutch pedal position switch (I).

6. Loosely install the clutch interlock switch (A), and the clutch pedal position switch (B).



7. Install the clutch pedal assembly (A).



8. Install the clutch pedal mounting bolt (B) and the master cylinder mounting nuts (C).

9. Apply grease to the clevis pin (D) and the mating surfaces of the clevis and the pedal. Slide the clevis pin into the clevis, then install a lock pin (E).

10. Adjust the clutch pedal, the clutch pedal position switch, and the clutch interlock switch (see page 12-8).

    NOTE: Connect the switch connectors (F) after adjusting them.

11. Check the clutch operation.

DYNOMITE -2009-

Clutch Master Cylinder Replacement

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Do not spill brake fluid on the vehicle; it may damage the paint or plastic. If brake fluid does contact the paint or plastic, wash it off immediately with water.

1. Remove the brake fluid from the clutch master cylinder reservoir with a syringe or other suitable device.

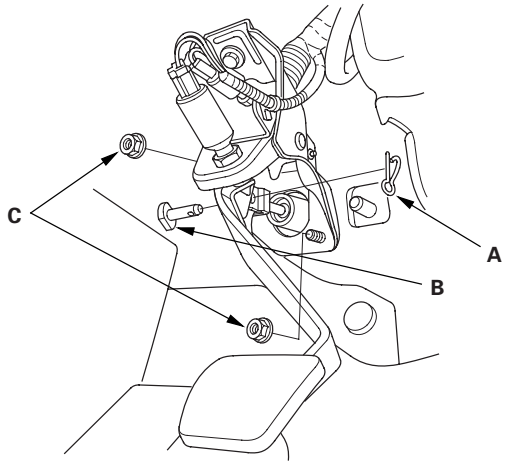
2. Do the battery removal procedure (see page 22-69).

3. Remove the driver's dashboard undercover (see page 20-103).

4. Remove the air cleaner assembly (see page 11-345).

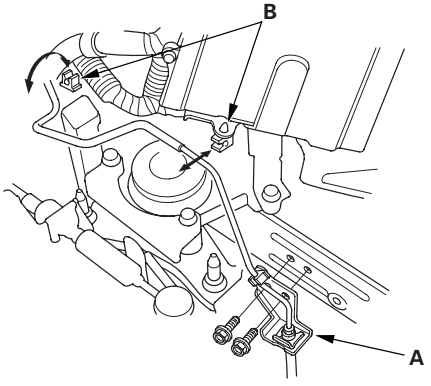
5. Remove the battery base.

6. Pry out the lock pin (A), and pull the clevis pin (B) out of the clevis. Remove the master cylinder mounting nuts (C).



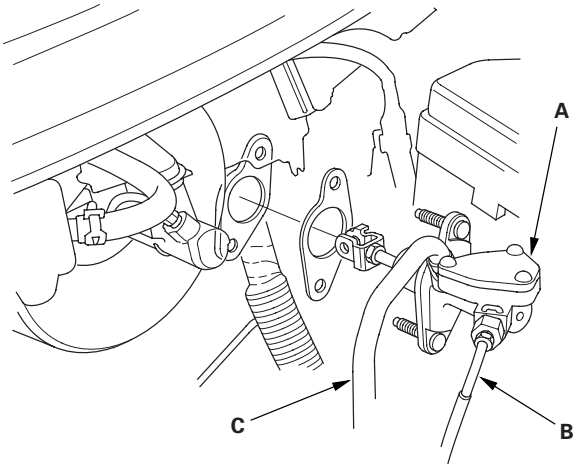
7. Remove the cowl cover and the under-cowl panel (see page 20-163).

8. Remove the clutch line bracket (A).



9. Remove the clutch line from the clamps (B).

10. Remove the clutch master cylinder (A) with the clutch line (B) and the reservoir hose (C).



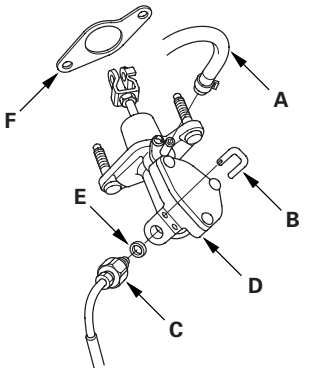
(cont'd)

DYNOMITE -2009-

Clutch Master Cylinder Replacement (cont'd)

11. Remove the reservoir hose (A), then remove the retaining clip (B) for disconnecting the clutch line (C) from the clutch master cylinder (D). Plug or wrap the end of the reservoir hose and the clutch line with a clean shop towel to prevent brake fluid from coming out.

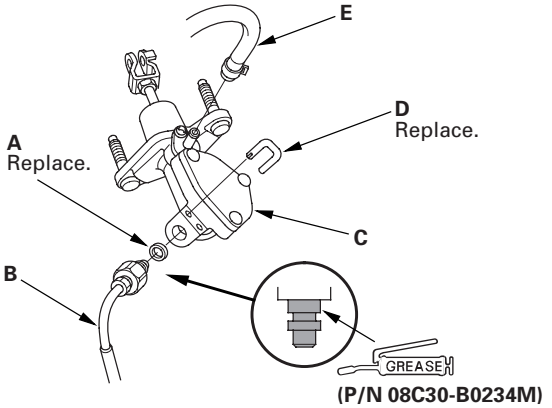
    NOTE: Inspect the hose. If the hose has damage, leaks, interference, or twisting, replace it.



12. Remove the O-ring (E) and the clutch master cylinder seal (F) from the clutch master cylinder.

13. Install a new O-ring (A) on the clutch line (B), then apply silicone grease (P/N 08C30-B0234M) to the end of the clutch line. Install the clutch line in the clutch master cylinder (C) with a new retaining clip (D).

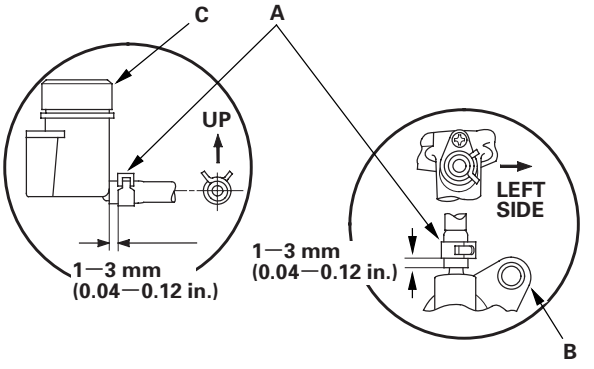
    NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.



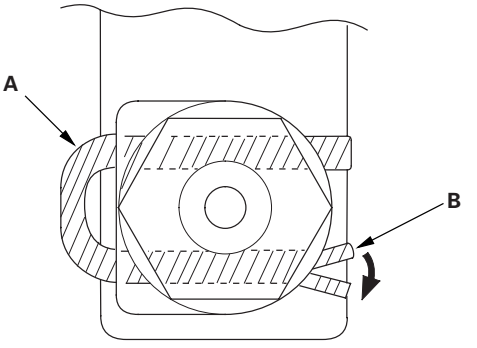
(P/N 08C30-B0234M)

14. Install the reservoir hose (E).

15. Make sure the hose clamps (A) are positioned on the master cylinder (B) and the reservoir (C) as shown.

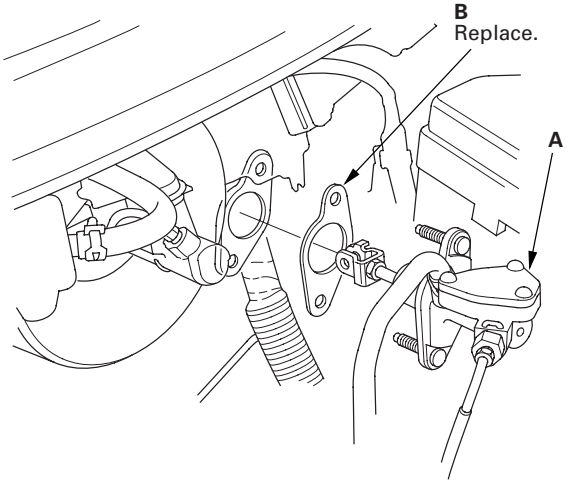


16. To prevent the retaining clip (A) from coming off, pry apart the tip (B) of the clip with a screwdriver.

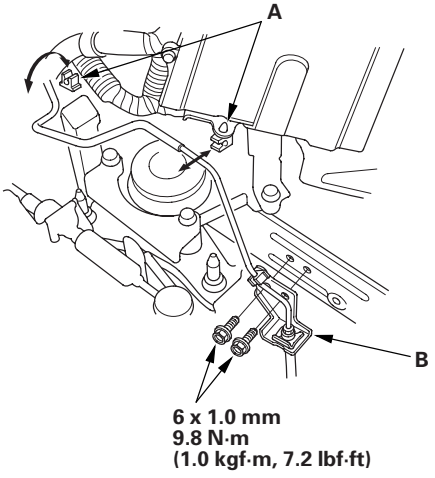


DYNOMITE -2009-

17. Install the clutch master cylinder (A) with a new clutch master cylinder seal (B).



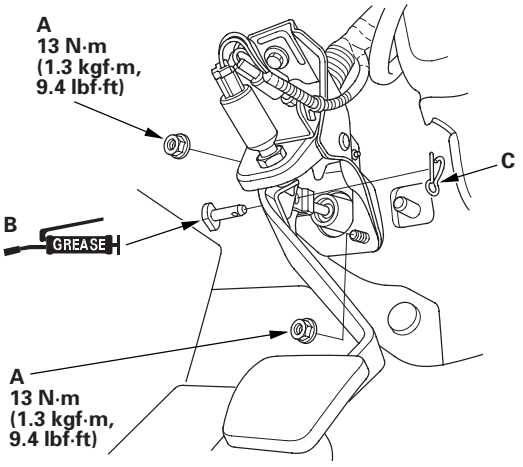
18. Install the clutch line to the clamps (A).



19. Install the clutch line bracket (B).

20. Install the cowl cover and the under-cowl panel (see page 20-163).

21. Install the master cylinder mounting nuts (A).



22. Apply multipurpose grease to the clevis pin (B) and the mating surface of the clevis and the pedal. Slide the clevis pin into the clevis, then install a lock pin (C).

23. Do the clutch hydraulic system bleeding (see page 12-7).

24. Adjust the clutch pedal, the clutch pedal position switch, and the clutch interlock switch (see page 12-8).

25. Install the battery base.

26. Install the air cleaner assembly (see page 11-345).

27. Install the driver's dashboard undercover (see page 20-103).

28. Do the battery installation procedure (see page 22-69).

29. Check the clutch operation, and check for leaks.

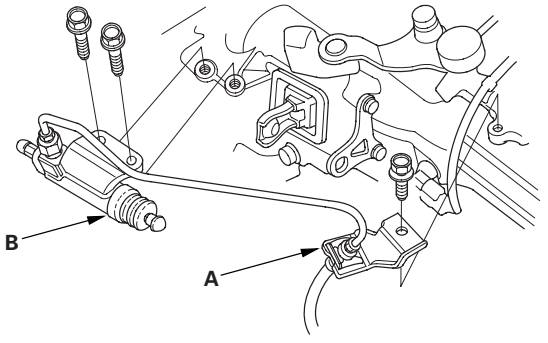
30. Test-drive the vehicle.

Slave Cylinder Replacement

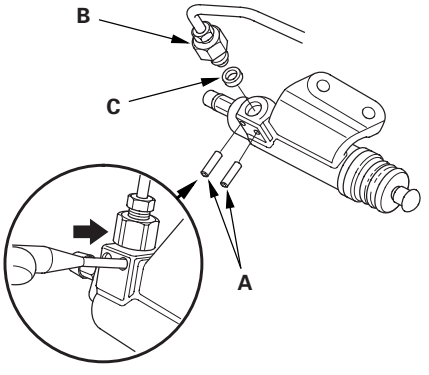
5-speed Manual Transmission

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Do not spill brake fluid on the vehicle; it may damage the paint or plastic. If brake fluid does contact the paint or plastic, wash it off immediately with water.
- Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

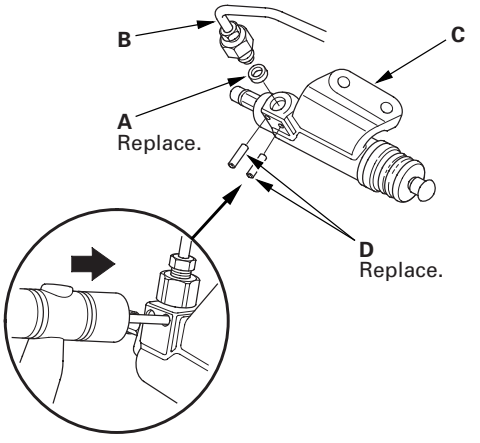
1. Remove the clutch line bracket (A) and the slave cylinder (B).



2. Remove the roll pins (A). Disconnect the clutch line (B), and remove the O-ring (C). Plug or wrap the end of the clutch line with a clean shop towel to prevent brake fluid from coming out.

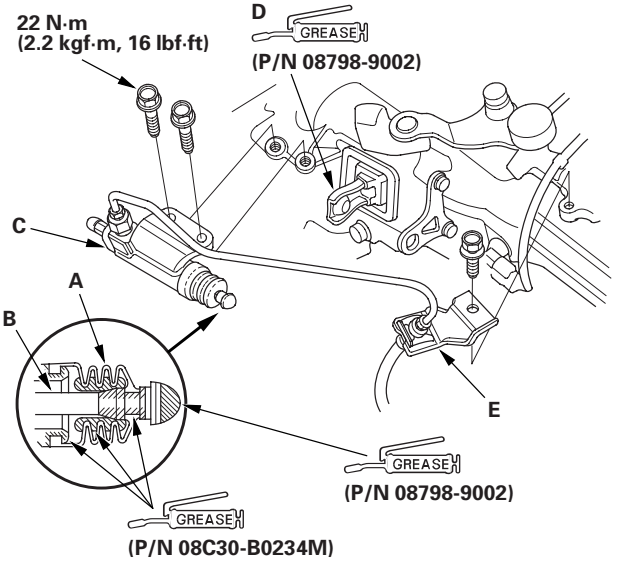


3. Install a new O-ring (A) on the clutch line (B), then connect the clutch line to the slave cylinder (C).



4. Set in new roll pins (D) to the slave cylinder.

5. Pull back the boot (A), and apply silicone grease (P/N 08C30-B0234M) to the boot and the slave cylinder pushrod (B). Reinstall the boot.



6. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the pushrod of the slave cylinder (C) and the release fork (D).

7. Install the slave cylinder and the clutch line bracket (E).

DYNOMITE -2009-

8. Do the clutch hydraulic system bleeding (see page 12-7).

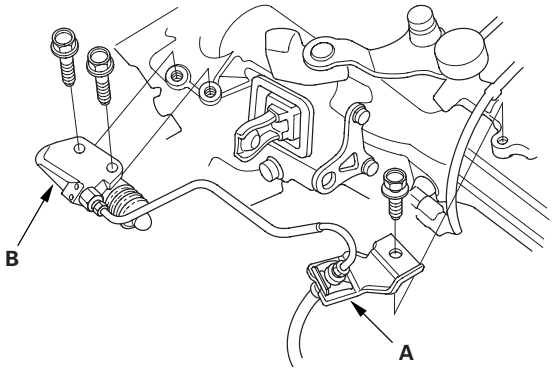
9. Check the clutch operation and check for leaks.

10. Test-drive the vehicle.

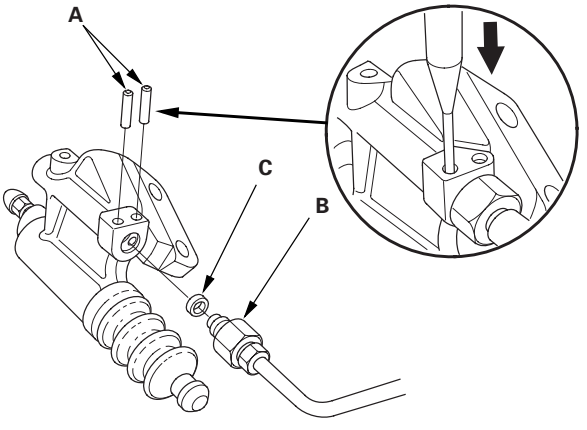
6-speed Manual Transmission

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Do not spill brake fluid on the vehicle; it may damage the paint or plastic. If brake fluid does contact the paint or plastic, wash it off immediately with water.
- Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

1. Remove the clutch line bracket (A) and the slave cylinder (B).



2. Remove the roll pins (A). Disconnect the clutch line (B), and remove the O-ring (C). Plug or wrap the end of the clutch line with a clean shop towel to prevent brake fluid from coming out.



(cont'd)

8. Do the clutch hydraulic system bleeding (see page 12-7).

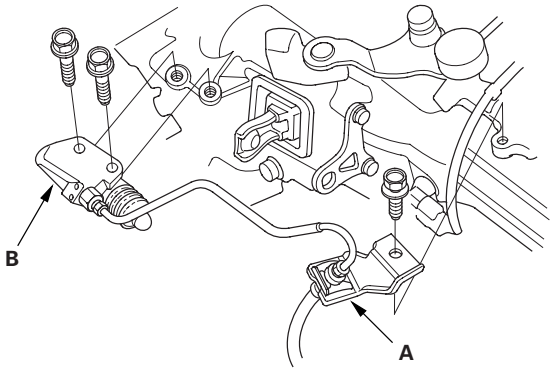
9. Check the clutch operation and check for leaks.

10. Test-drive the vehicle.

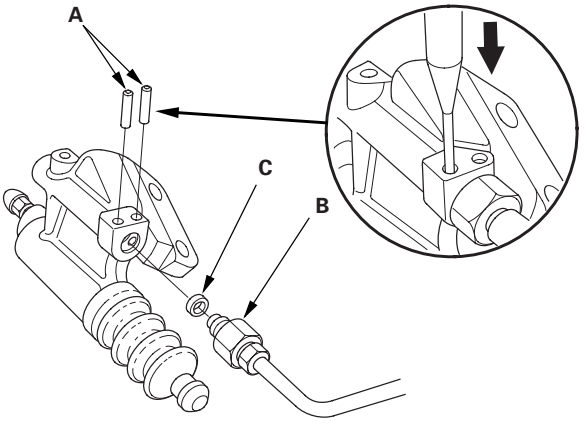
6-speed Manual Transmission

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Do not spill brake fluid on the vehicle; it may damage the paint or plastic. If brake fluid does contact the paint or plastic, wash it off immediately with water.
- Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

1. Remove the clutch line bracket (A) and the slave cylinder (B).



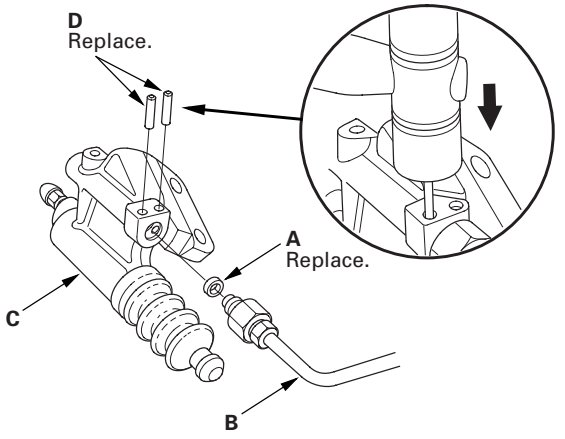
2. Remove the roll pins (A). Disconnect the clutch line (B), and remove the O-ring (C). Plug or wrap the end of the clutch line with a clean shop towel to prevent brake fluid from coming out.



(cont'd)

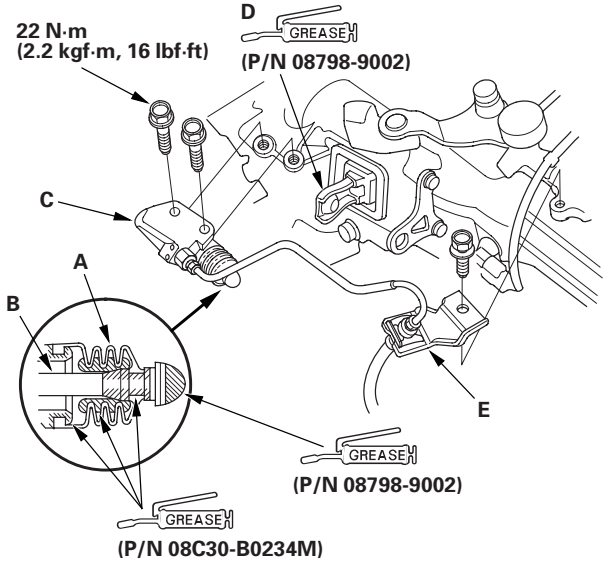
Slave Cylinder Replacement (cont'd)

3. Install a new O-ring (A) on the clutch line (B), then connect the clutch line to the slave cylinder (C).



4. Set in new roll pins (D) to the slave cylinder.

5. Pull back the boot (A), and apply silicone grease (P/N 08C30-B0234M) to the boot and the slave cylinder pushrod (B). Reinstall the boot.



6. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the pushrod of the slave cylinder (C) and the release fork (D).

7. Install the slave cylinder and the clutch line bracket (E).

8. Do the clutch hydraulic system bleeding (see page 12-7).

9. Check the clutch operation, and check for leaks.

10. Test-drive the vehicle.

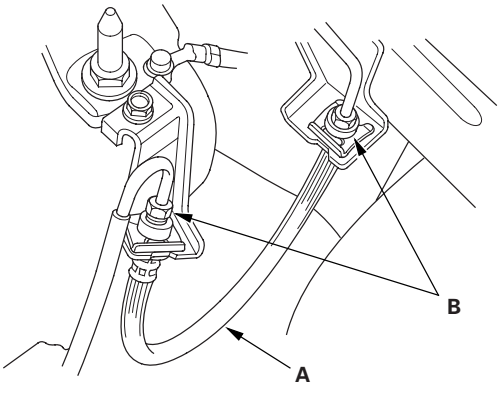
DYNOMITE -2009-

Clutch Hose Replacement

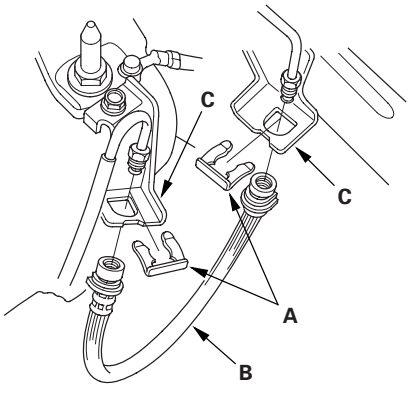
NOTE:
- Replace the clutch hose if it is twisted, cracked, or if it leaks.
- Use fender covers to avoid damaging painted surfaces.
- Do not spill brake fluid on the vehicle. It may damage the paint or plastic. If brake fluid does contact the paint or plastic, wash it off immediately water.

1. Remove the brake fluid from the clutch master cylinder reservoir with a syringe or other suitable device.

2. Disconnect the clutch hose (A) from the clutch lines (B).



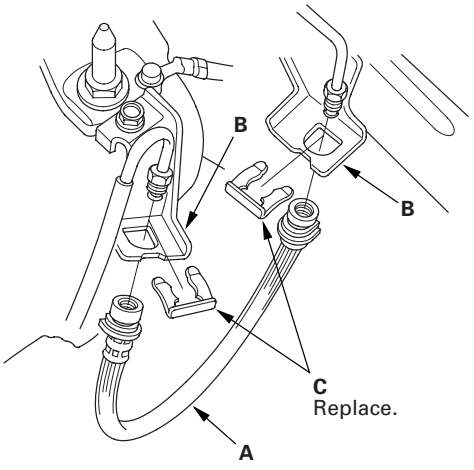
3. Remove the clutch hose clips (A) from the clutch hose (B).



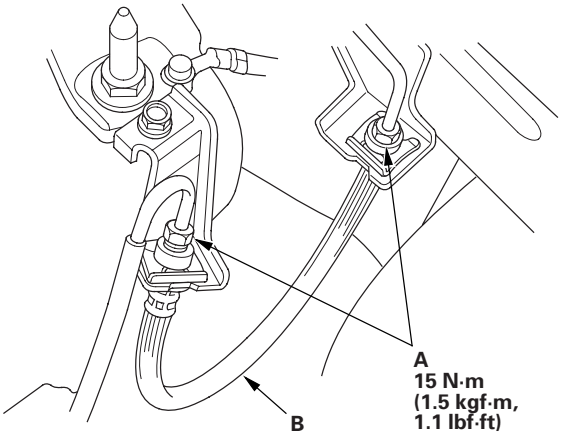
4. Remove the clutch hose from the clutch hose brackets (C).

5. Install the new clutch hose (A) into the clutch hose brackets (B) with new clutch hose clips (C).

   NOTE: Check the clutch hose for interference and twisting.



6. Connect the clutch lines (A) to the clutch hose (B).



7. Do the clutch hydraulic system bleeding (see page 12-7).

8. Check the clutch operation, and check for leaks.

9. Test-drive the vehicle.

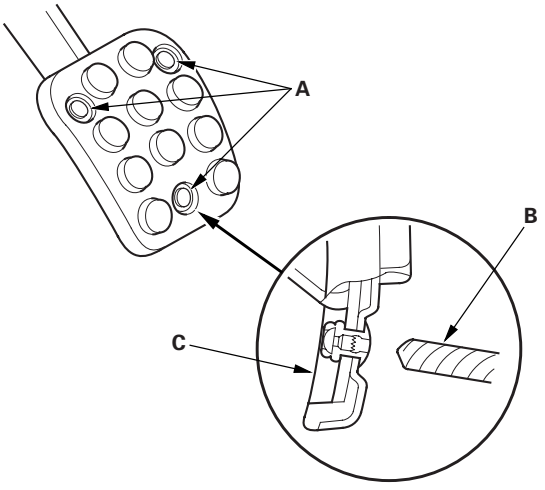
DYNOMITE -2009-

Clutch Pedal Cover Replacement

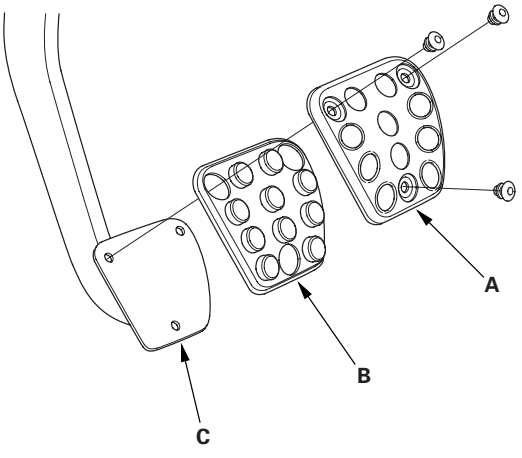
NOTE: This procedure is for models equipped with a metal clutch pedal plate model.

1. Cover the carpet under the clutch pedal to prevent metal shavings from getting on the carpet.
2. Center-punch each of the rivets (A), and drill their heads off with a 3 mm (0.12 in.) drill bit (B).

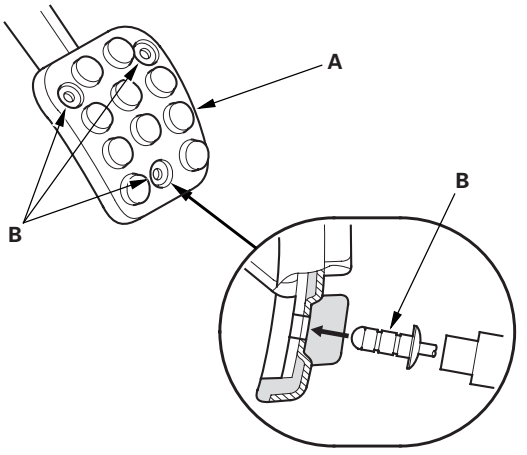
   NOTE: Do not drill the clutch pedal pad (C).



3. Remove the clutch pedal plate (A) and the clutch pedal cover (B) from the clutch pedal pad (C).



4. Set the clutch pedal cover to the clutch pedal plate.
5. Install the clutch pedal plate (A) with the rivets (B) firmly.



6. Using your hand, make sure the clutch pedal cover is firmly fastened to the pedal.
7. Check the clutch pedal height (see page 12-8).

DYNOMITE -2009-

Manual Transmission

5-Speed Manual Transmission 13-1

6-Speed Manual Transmission 13-69



DYNOMITE -2009-

5-Speed Manual Transmission

Manual Transmission

Special Tools 13-2
Component Location Index 13-3
Symptom Troubleshooting Index 13-4
Transmission Fluid Inspection and Replacement 13-5
Back-up Light Switch Test 13-6
Transmission Removal 13-7
Transmission Installation 13-14
Transmission Disassembly 13-22
Reverse Shift Fork Clearance Inspection 13-27
Change Lever Clearance Inspection 13-27
Change Lever Assembly Disassembly/Reassembly ... 13-28
Shift Fork Clearance Inspection 13-29
Shift Fork Disassembly/Reassembly ... 13-30
Mainshaft Assembly Clearance Inspection 13-31
Mainshaft Disassembly 13-33
Mainshaft Inspection 13-34
Mainshaft Reassembly 13-36
Countershaft Assembly Clearance Inspection 13-41
Countershaft Disassembly 13-42
Countershaft Inspection 13-43
Countershaft Reassembly 13-44
Synchro Sleeve and Hub Inspection and Reassembly 13-50
Synchro Ring and Gear Inspection 13-50
Mainshaft Bearing and Oil Seal Replacement 13-52
Countershaft Bearing Replacement 13-53
Mainshaft Thrust Clearance Adjustment 13-54
Transmission Reassembly 13-56
Gearshift Mechanism Replacement 13-61

M/T Differential

Component Location Index 13-62
Backlash Inspection 13-63
Differential Carrier, Final Driven Gear Replacement 13-63
Carrier Bearing Replacement 13-64
Oil Seal Replacement 13-65
Differential Thrust Clearance Adjustment 13-66

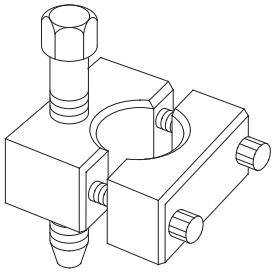
DYNOMITE -2009-

Special Tools

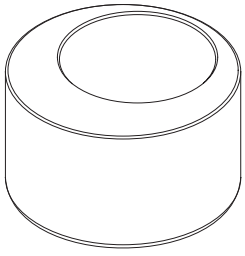
Ref. No.	Tool Number	Description	Qty
*①	07GAJ-PG20110	Catch Adapter	1
*②	07GAJ-PG20130	Base Adapter	1
③	07JAD-PL90100	Oil Seal Driver, 65 mm	1
④	07NAD-P20A100	Oil Seal Driver Attachment	1
**⑤	07736-A01000B	Adjustable Bearing Puller, 20—40 mm	1
⑥	07746-0010300	Bearing Driver Attachment, 42 x 47 mm	1
⑦	07746-0030100	Inner Driver Handle, 40 mm	1
⑧	07746-0030300	Inner Bearing Driver Attachment, 30 mm	1
⑨	07749-0010000	Driver Handle, 15 x 135L	1

*: Part of Mainshaft Inspection Tool Set, 07GAJ-PG20102.

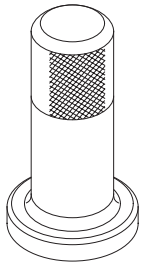
**: Must be used with commercially available 3/8''-16 UNF Slide Hammer.



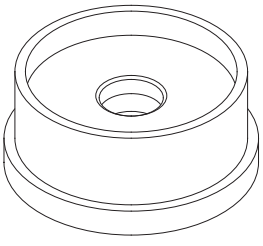
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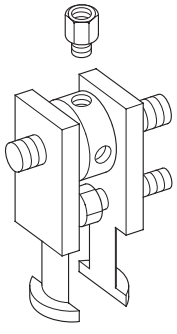
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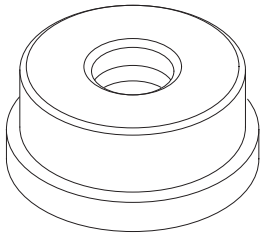
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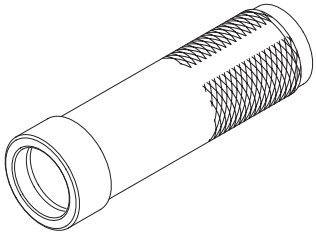
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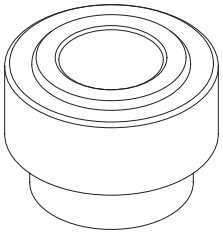
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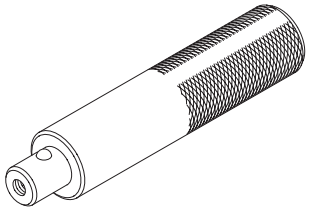
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⑦



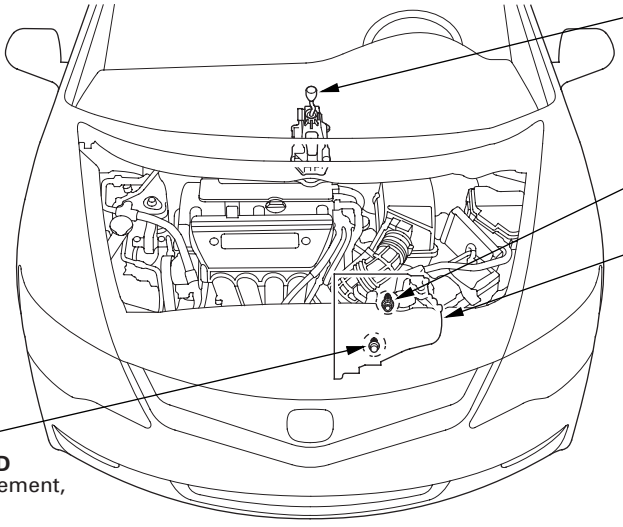
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⑨

DYNOMITE -2009-

Component Location Index

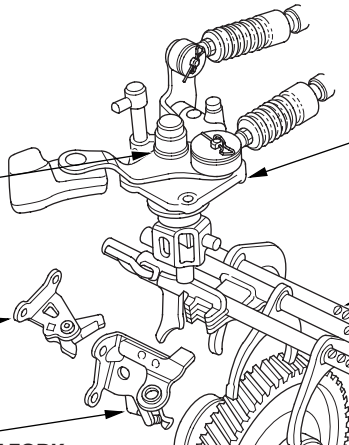


GEARSHIFT MECHANISM
Replacement, page 13-61

BACK-UP LIGHT SWITCH
Test, page 13-6

TRANSMISSION
Removal, page 13-7
Installation, page 13-14
Disassembly, page 13-22
Reassembly, page 13-56

TRANSMISSION FLUID
Inspection and Replacement, page 13-5



CHANGE LEVER ASSEMBLY
Disassembly/Reassembly, page 13-28

CHANGE LEVER
Clearance Inspection, page 13-27

SHIFT FORK
Clearance Inspection, page 13-29
Disassembly/Reassembly, page 13-30

REVERSE LOCK CAM

DIFFERENTIAL

REVERSE SHIFT FORK
Clearance Inspection, page 13-27

COUNTERSHAFT ASSEMBLY
Clearance Inspection, page 13-41

MAINSHAFT
Disassembly, page 13-33
Inspection, page 13-34
Reassembly, page 13-36
Bearing and Oil Seal Replacement, page 13-52
Thrust Clearance Adjustment, page 13-54

COUNTERSHAFT
Disassembly, page 13-42
Inspection, page 13-43
Reassembly, page 13-44
Bearing Replacement, page 13-53

SYNCHRO SLEEVE and HUB
Inspection and Reassembly, page 13-50

MAINSHAFT ASSEMBLY
Clearance Inspection, page 13-31

SYNCHRO RING and GEAR
Inspection, page 13-50

REVERSE IDLER GEAR

Symptom Troubleshooting Index

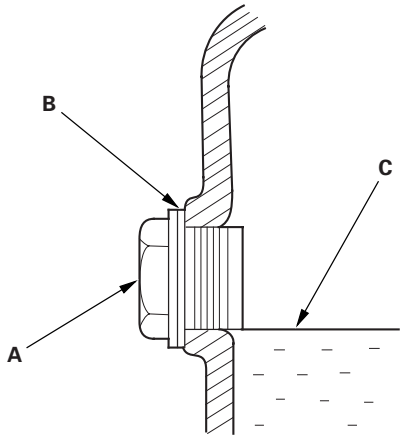
Symptom	Diagnostic procedure
Hard to shift into 1st gear	• Check and/or replace the MTF (see page 13-5). • Check the clutch (see page 12-19). • Check the 1st synchro ring and 1st gear (see page 13-50). • Check the 1st/2nd synchro sleeve and hub (see page 13-50). • Check the change lever assembly (see page 13-28).
Hard to shift into 2nd gear	• Check and/or replace the MTF (see page 13-5). • Check the 2nd synchro ring and 2nd gear (see page 13-50). • Check the 1st/2nd synchro sleeve and hub (see page 13-50). • Check the change lever assembly (see page 13-28).
Hard to shift into 3rd gear	• Check and/or replace the MTF (see page 13-5). • Check the 3rd synchro ring and 3rd gear (see page 13-50). • Check the 3rd/4th synchro sleeve and hub (see page 13-50). • Check the change lever assembly (see page 13-28).
Hard to shift into 4th gear	• Check and/or replace the MTF (see page 13-5). • Check the 4th synchro ring and 4th gear (see page 13-50). • Check the 3rd/4th synchro sleeve and hub (see page 13-50). • Check the change lever assembly (see page 13-28).
Hard to shift into 5th gear	• Check and/or replace the MTF (see page 13-5). • Check the 5th synchro ring and 5th gear (see page 13-50). • Check the 5th synchro sleeve and hub (see page 13-50). • Check the change lever assembly (see page 13-28).
Hard to shift into reverse	• Check and/or replace the MTF (see page 13-5). • Check the clutch (see page 12-19). • Check the reverse shift fork and the reverse idler gear (see page 13-27). • Check reverse gear. • Check the change lever assembly (see page 13-28).
Noise from the transmission	• Check and/or replace the MTF (see page 13-5). • Check the transmission gears. • Check the transmission bearings. • Check the differential carrier, the final driven gear, and the carrier bearings.
Shift lever does not operate smoothly	• Check and/or replace the MTF (see page 13-5). • Check the shift cable and their joints (see page 13-61). • Check the shift lever housing with the shift lever shaft.
Transmission jumps out of gear	• Check and/or replace the MTF (see page 13-5). • Check the detent ball springs. • Check the teeth of the synchro rings and gears (see page 13-50). • Check for bent, deform, or damage of the shift forks.

DYNOMITE -2009-

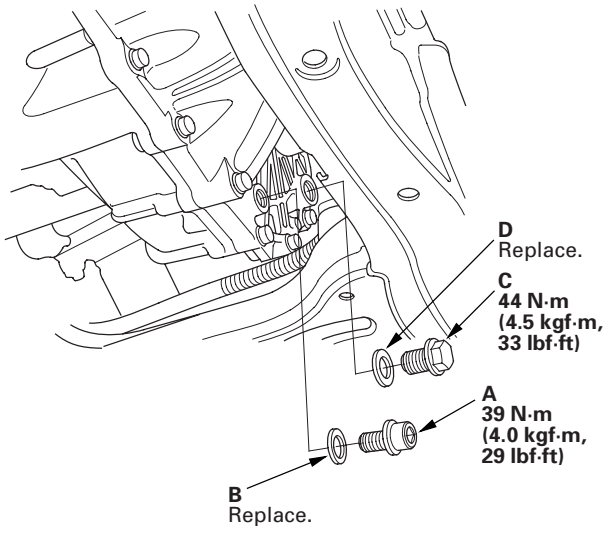
Transmission Fluid Inspection and Replacement

1. Raise the vehicle on a lift.

2. Remove the filler plug (A) and the sealing washer (B). Check the condition of the MTF, and make sure it is at the proper level (C).



3. If the MTF is dirty, remove the drain plug (A) and the sealing washer (B), and drain it.



4. Install the drain plug with a new sealing washer, and refill the transmission with MTF to the proper level. Always use Acura Manual Transmission Fluid (MTF).

   Fluid Capacity
   1.5 L (1.6 US qt) at fluid change
   1.7 L (1.8 US qt) at overhaul

5. Install the filler plug (C) with a new sealing washer (D).

6. If the maintenance minder required to replace the MTF, reset the maintenance minder (see page 3-4). If it did not reset, go to step 7.

7. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

8. Turn the ignition switch to ON (II).

9. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it does not communicate, go to the DLC circuit troubleshooting (see page 11-204).

10. Select BODY ELECTRICAL with the HDS.

11. Select ADJUSTMENT in the GAUGES MENU with the HDS.

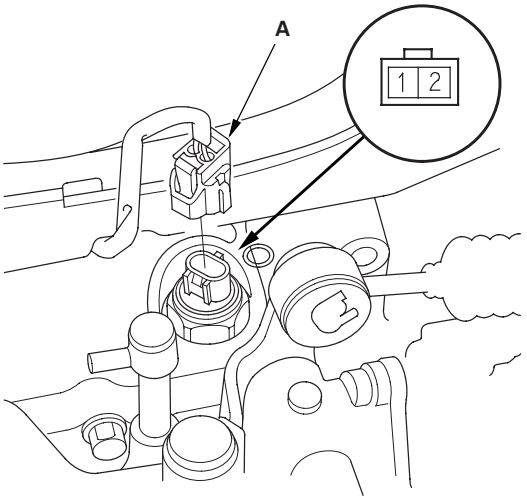
12. Select RESET in the MAINTENANCE MINDER with the HDS.

13. Select MAINTENANCE SUB ITEM 3, and reset the MTF life with the HDS.

DYNOMITE -2009-

Back-up Light Switch Test

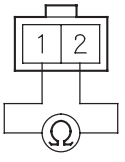
1. Disconnect the back-up light switch 2P connector (A).



2. Check for continuity between back-up light switch 2P connector terminals No. 1 and No. 2. There should be continuity only when the shift lever is in reverse.

   - If the test result is OK, go to step 5.
   - If the test result is faulty, go to step 3.

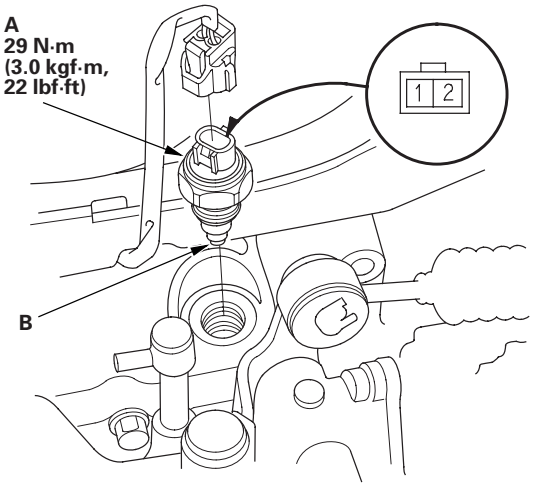
BACK-UP LIGHT SWITCH 2P CONNECTOR



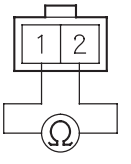
Terminal side of male terminals

3. Remove the back-up light switch (A). Check for continuity between back-up light switch 2P connector terminals No. 1 and No. 2. There should be continuity when the actuator (B) is pressed, and no continuity when the actuator is released.

   - If the test result is OK, check the reverse shift mechanism in the transmission.
   - If the test result is faulty, replace the back-up light switch.



BACK-UP LIGHT SWITCH 2P CONNECTOR



Terminal side of male terminals

4. Apply liquid gasket (08C70-K0230M, 08C70-K0334M, or 08C70-X0331S) to the threads of the back-up light switch, and install it on the transmission housing.

5. Connect the back-up light switch 2P connector.

DYNOMITE -2009-

Transmission Removal

Special Tools Required
- Engine hanger adapter VSB02C000015
- 2006 Civic engine hanger VSB02C000025
- Engine support hanger, A and Reds AAR-T1256
- Front subframe adapter VSB02C000016

These special tools are available through the Acura Canada Technical Tools Department; FAX # 866-398-8665/e-mail: ch_technicaltools@ch.honda.com

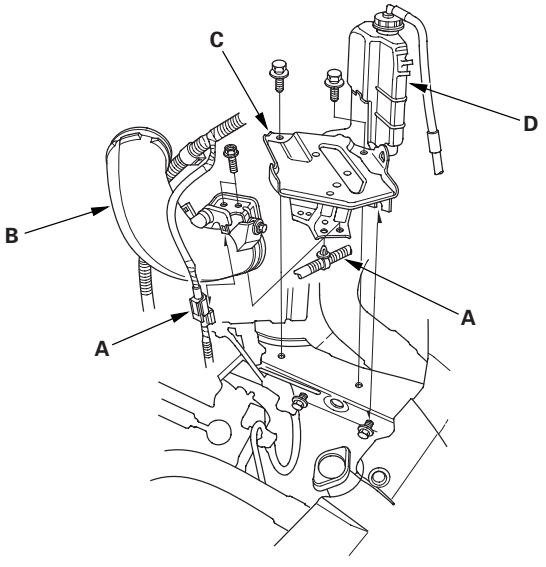
NOTE: Use fender covers to avoid damaging painted surfaces.

1. Do the battery removal procedure (see page 22-69).

2. Remove the cowl cover and the under-cowl panel (see page 20-163).

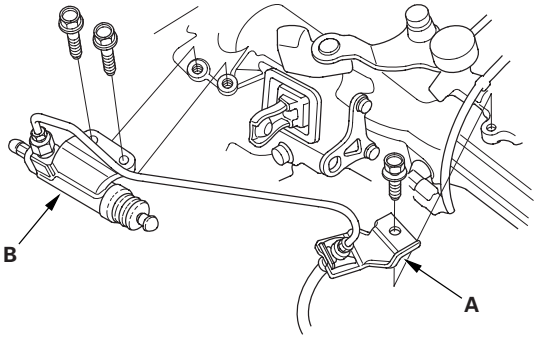
3. Remove the air cleaner assembly (see page 11-345).

4. Remove the harness clips (A) and the intake air duct (B), then remove the battery base (C) with the coolant reservoir (D).

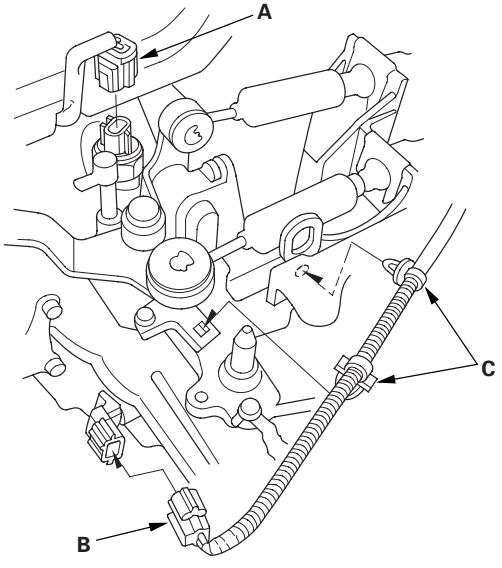


5. Remove the clutch line bracket (A), then carefully move the slave cylinder (B) out of the way to avoid bending the clutch line.

   NOTE: Do not press the clutch pedal after the slave cylinder has been moved.



6. Disconnect the back-up light switch connector (A), the output shaft (countershaft) speed sensor connector (B), and the harness clips (C).



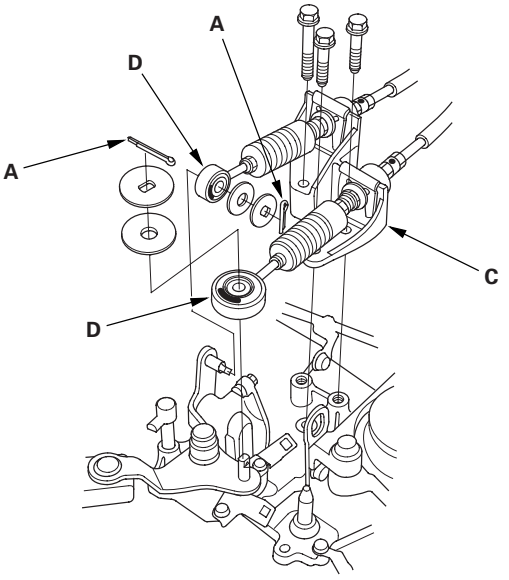
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DYNOMITE -2009-

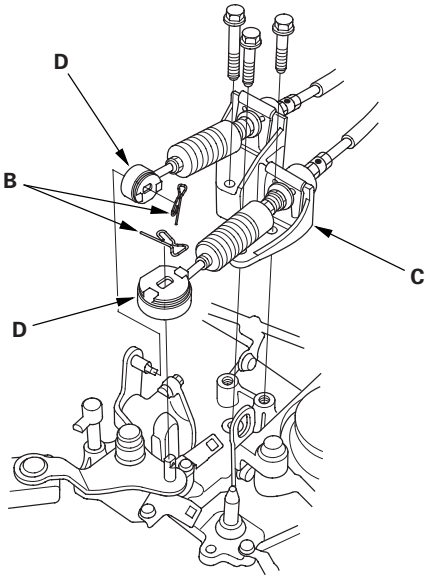
Transmission Removal (cont'd)

7. Remove the cotter pins (A) or the lock pins (B) and the shift cable bracket (C), then disconnect the shift cables (D) from the change lever assembly. Carefully remove both cables and the bracket together to avoid bending the cables.

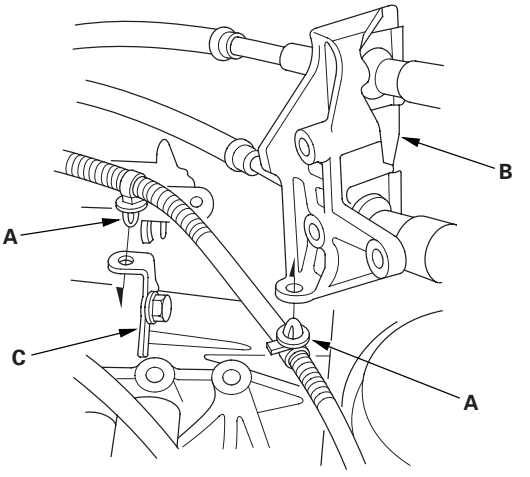
'06 model



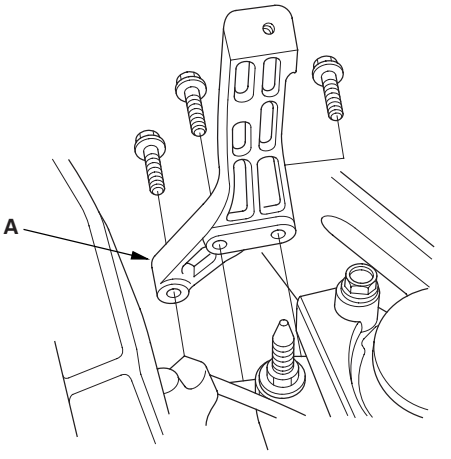
'07-09 models



8. Remove the harness clips (A) from the clutch cable bracket (B) and the harness bracket (C).

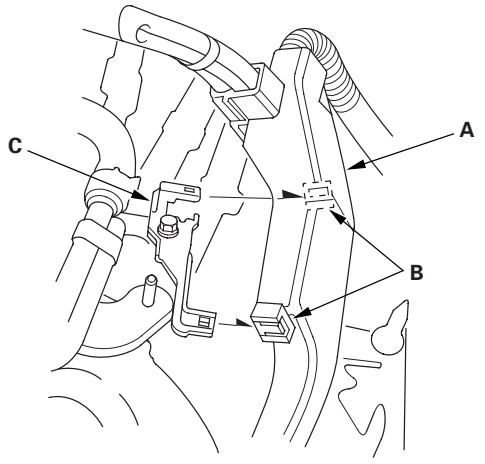


9. Remove the air cleaner housing bracket (A).

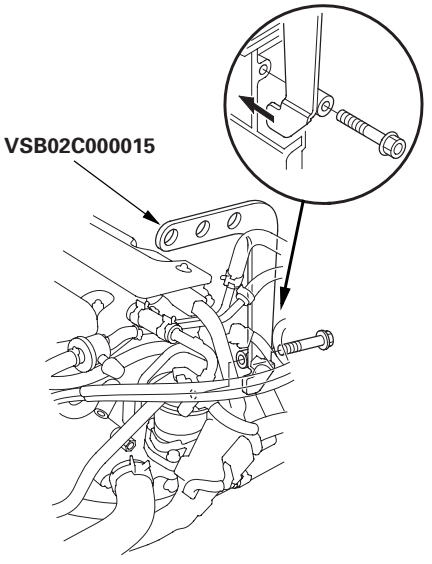


DYNOMITE -2009-

10. Remove the engine wire harness cover (A) by lifting up on the lock tab (B), then slide the harness cover forward off the bracket (C).

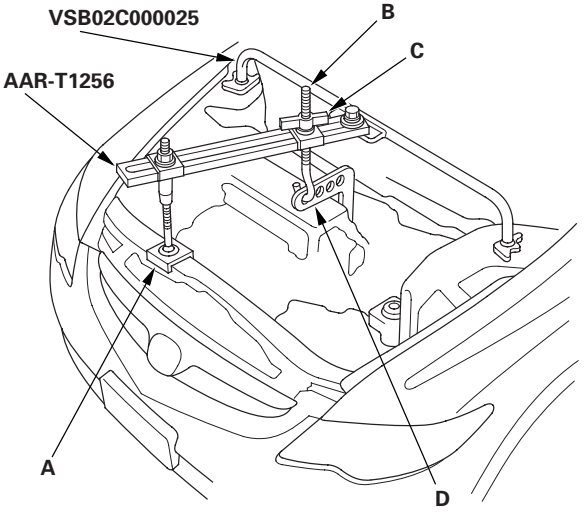


11. Attach the engine hanger adapter (VSB02C000015) to the threaded holes in the cylinder head.

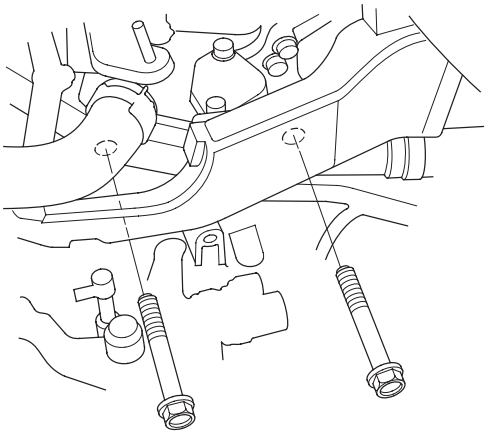


12. Install the front leg assembly (A), the hook (B), and the wingnut (C) from an A and Reds engine support hanger (AAR-T1256) onto the 2006 Civic engine hanger (VSB02C000025). Carefully position the engine hanger on the vehicle, and attach the hook to the forward hole in the engine hanger adapter (D). Tighten the wingnut by hand to lift and support the engine/transmission assembly.

    NOTE: Use care when working around the windshield.



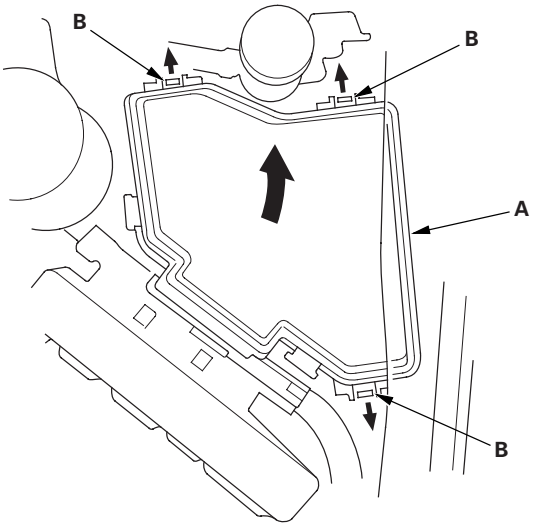
13. Remove the two upper transmission mounting bolts.



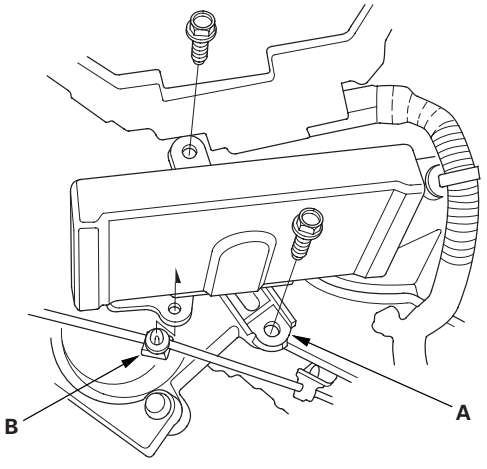
(cont'd)

Transmission Removal (cont'd)

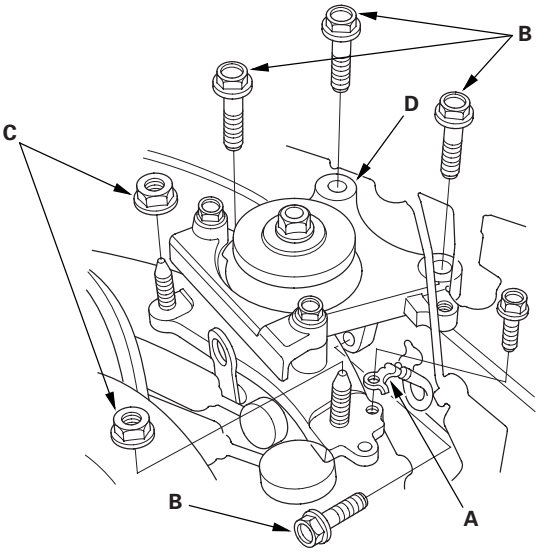
14. Remove the under-hood fuse/relay box (A) by lifting up on the lock tabs (B), then move it aside.



15. Remove the engine control module (ECM) bracket (A), then move it aside. Remove the clutch pipe clamp (B).

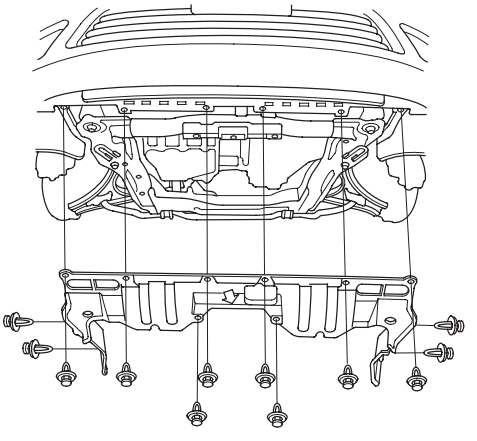


16. Disconnect the ground cable (A), then remove the transmission mount bracket bolts (B) and nuts (C). Remove the transmission mount bracket (D).



17. Raise the vehicle on a lift.

18. Remove the splash shield.

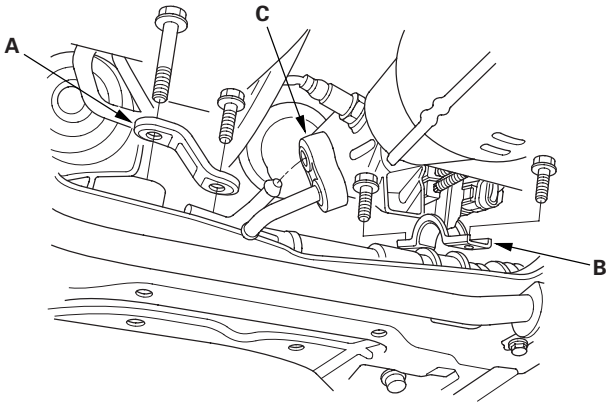


19. Drain the MTF. Reinstall the drain plug with a new sealing washer (see page 13-5).

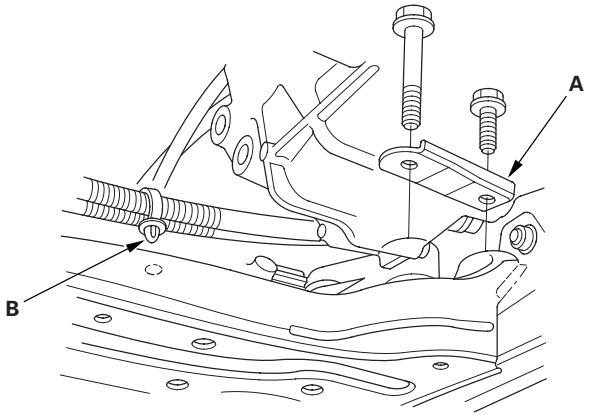
20. Separate the lower arm (see step 5 on page 16-4).

DYNOMITE -2009-

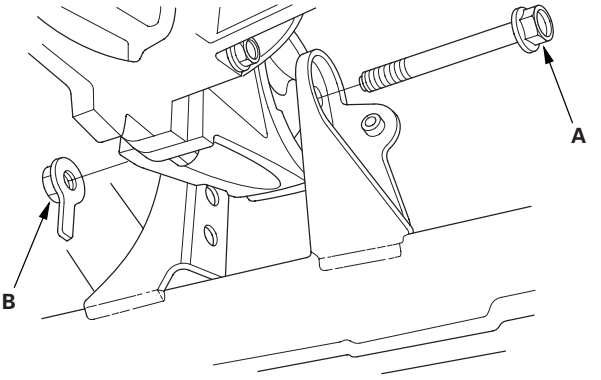
21. Remove the stiffener plate (A) from the left side of the steering gearbox, and the mounting bracket (B) from the right side of the steering gearbox. Disconnect the exhaust mounting rubber (C).



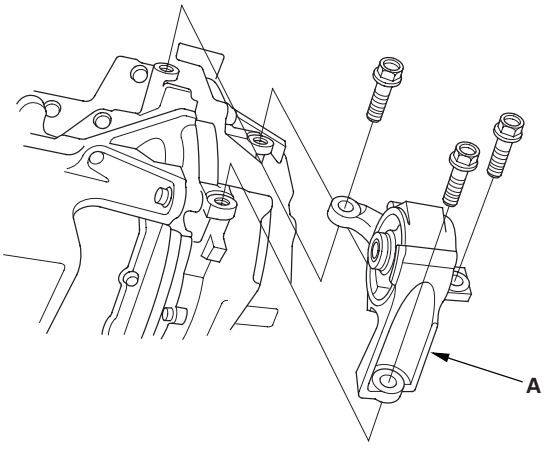
22. Remove the stiffener plate (A) and the harness clip (B).



23. Remove the front engine mount mounting bolt (A) and nut (B), then remove the lower radiator hose from the front engine mount bracket.



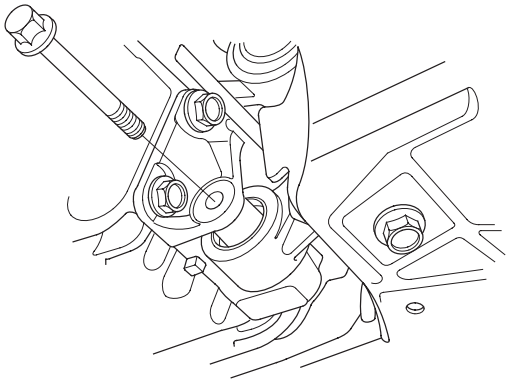
24. Remove the front engine mount (A) from the transmission and the engine.



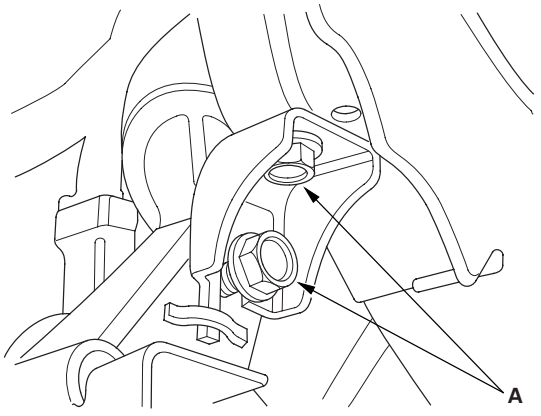
(cont'd)

Transmission Removal (cont'd)

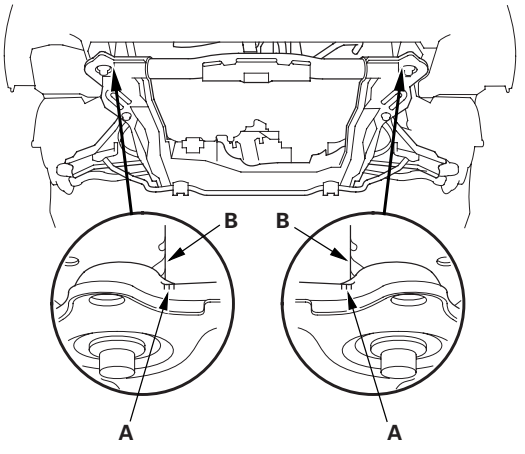
25. Remove the lower torque rod mounting bolt.



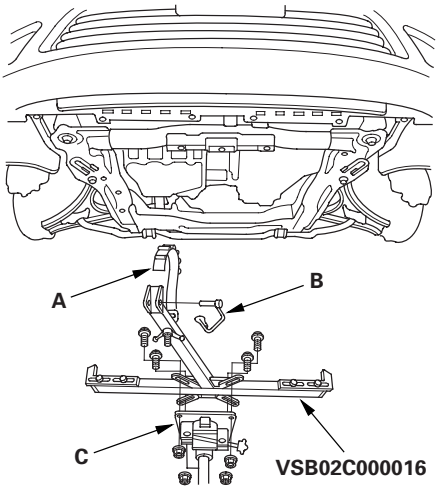
26. Remove the middle subframe mounting bolts (A).



27. Note the reference marks (A) on both sides of the front subframe that lines up with the body (B).



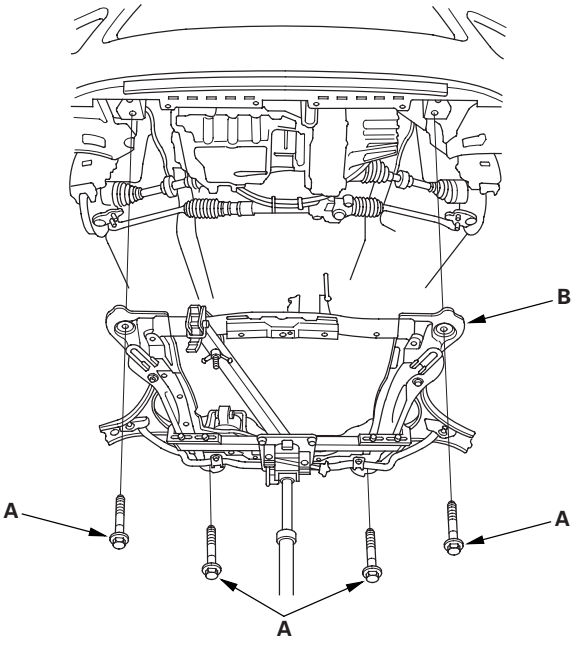
28. Attach the front subframe adapter (VSB02C000016) to the front subframe, and hang the belt (A) of the subframe attachment over the front subframe, then secure the belt with the stop (B).



29. Raise the jack, and line up the slots in the arms with the bolt holes on the corner of the jack base (C), then attach them securely.

30. Remove the front subframe mounting bolts (A) and the front subframe (B).

    NOTE: Suspend the steering gearbox with an appropriate size wire.

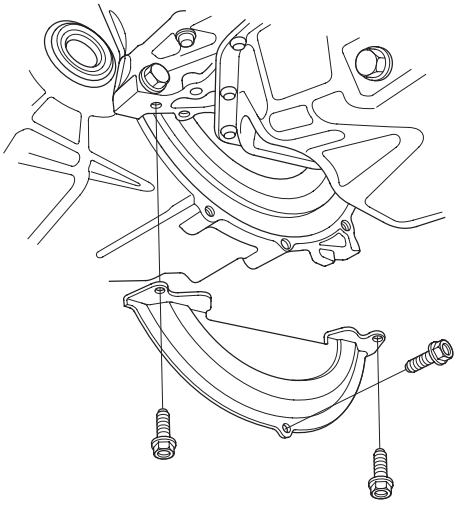


DYNOMITE -2009-

31. Pry out the driveshafts inboard joint (see step 8 on page 16-5).

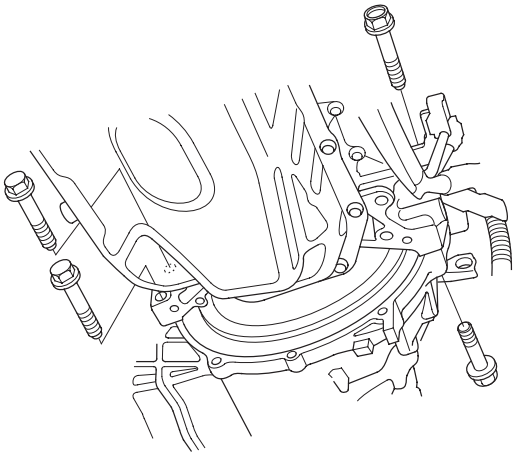
32. Remove the intermediate shaft (see page 16-23).

33. Remove the clutch cover.



34. Support the transmission with a transmission jack.

35. Remove the transmission mounting bolts.



36. Pull the transmission away from the engine until the transmission mainshaft clears the clutch pressure plate.

37. Slowly lower the transmission about 150 mm (6 in.). Check once again that all hoses and harnesses are disconnected and free from the transmission, then lower it completely.

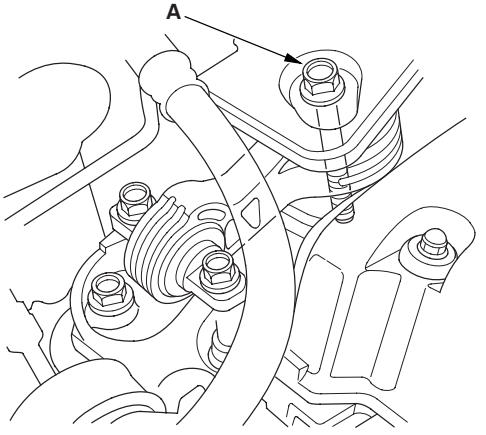
Transmission Installation

Special Tools Required
- Engine hanger adapter VSB02C000015
- 2006 Civic engine hanger VSB02C000025
- Engine support hanger, A and Reds AAR-T1256
- Front subframe adapter VSB02C000016

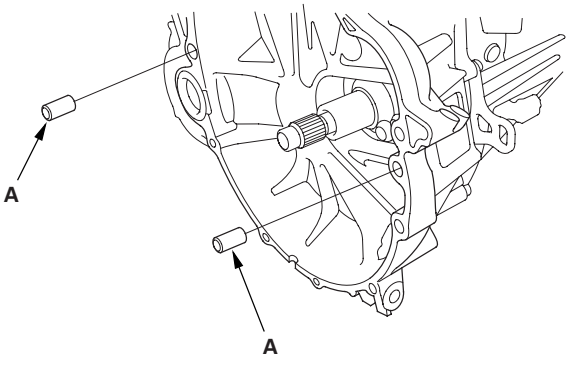
These special tools are available through the Acura Canada Technical Tools Department; FAX # 866-398-8665/e-mail: ch_technicaltools@ch.honda.com

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Loosen the upper torque rod mounting bolt (A).



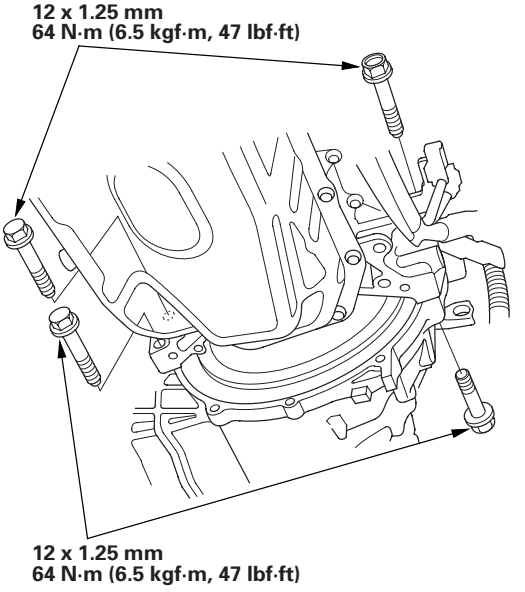
2. Made sure that the two dowel pins (A) are installed in the clutch housing.



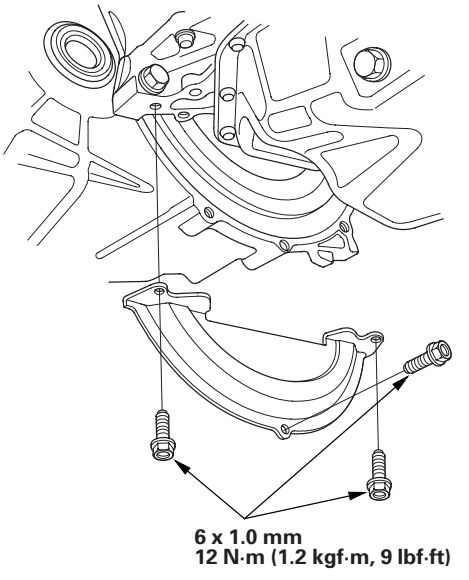
3. Check the release fork and the release bearing, and reinstall them with the appropriate grease (see page 12-24).

4. Place the transmission on the transmission jack, and raise it to the engine level.

5. Install the transmission mounting bolts.



6. Install the clutch cover.

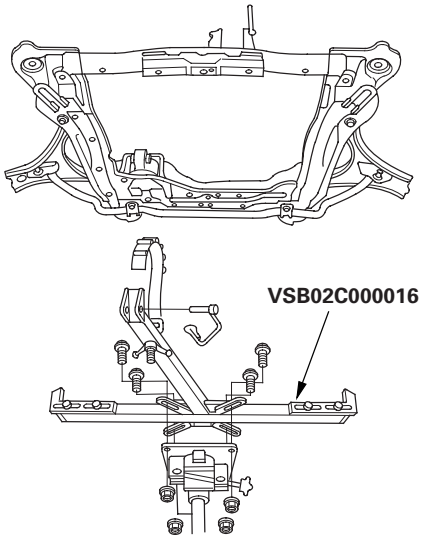


7. Install the intermediate shaft (see page 16-27).

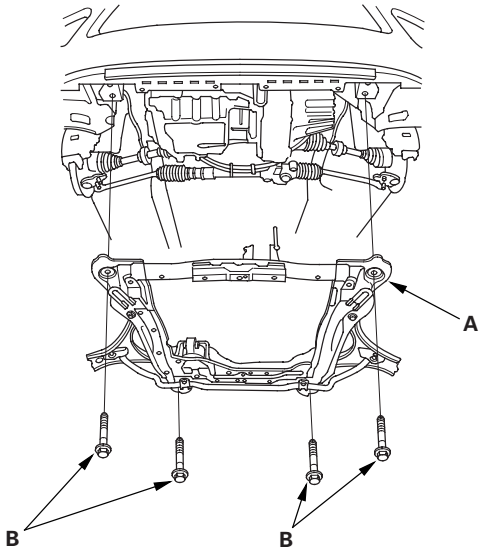
8. Install the driveshafts inboard joint (see step 6 on page 16-21).

DYNOMITE -2009-

9. Support the front subframe with the subframe adapter (VSB02C000016) and a jack.



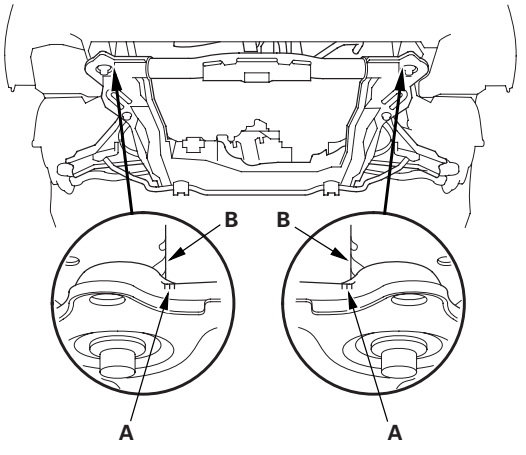
10. Install the front subframe (A). Loosely install new subframe mounting bolts (B).



B
14 x 1.5 mm
103 N·m
(10.5 kgf·m, 76 lbf·ft)
Replace.

B
14 x 1.5 mm
103 N·m
(10.5 kgf·m, 76 lbf·ft)
Replace.

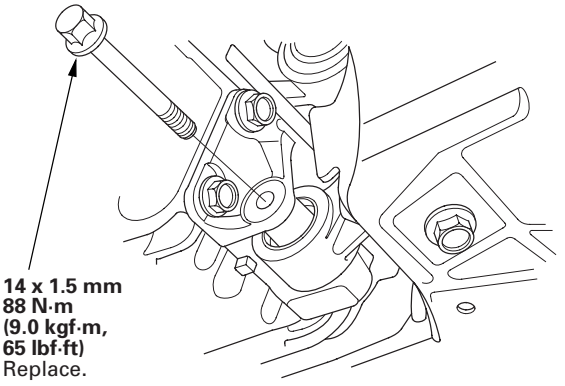
11. Align the front subframe reference marks (A) to the body (B), as noted during removal. Tighten the front subframe mounting bolts to the specified torque.



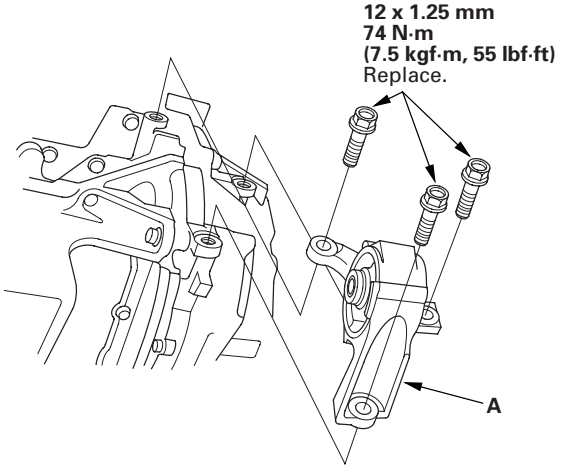
(cont'd)

Transmission Installation (cont'd)

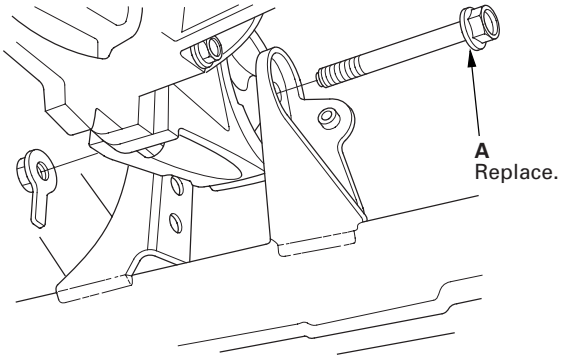
12. Install a new lower torque rod bracket mounting bolt.



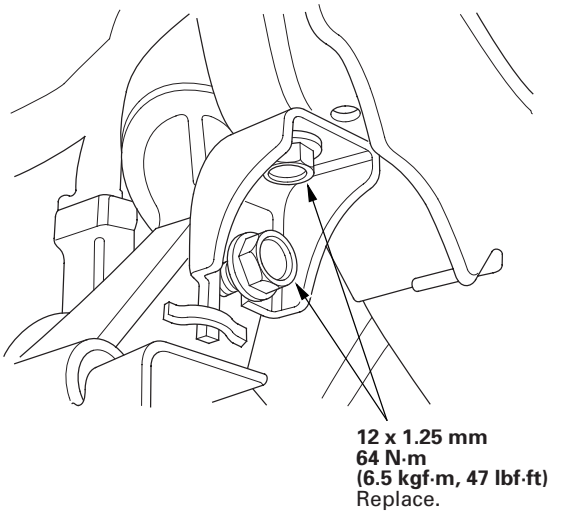
13. Install the front engine mount bracket (A) on the transmission and the engine with new bolts.



14. Loosely tighten a new front engine mount mounting bolt (A), then attach the lower radiator hose to the front engine mount bracket.

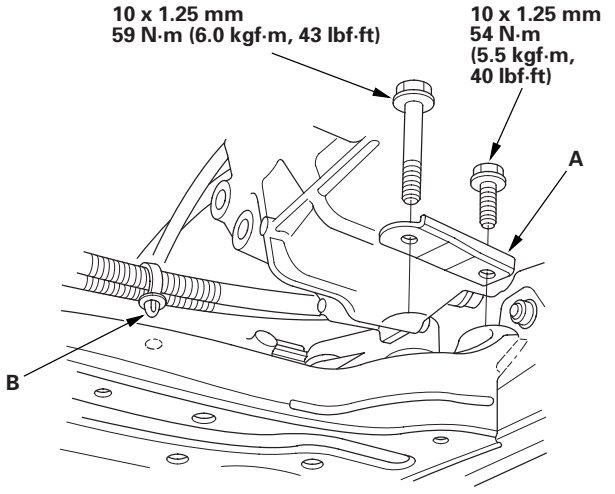


15. Install new middle subframe mounting bolts.

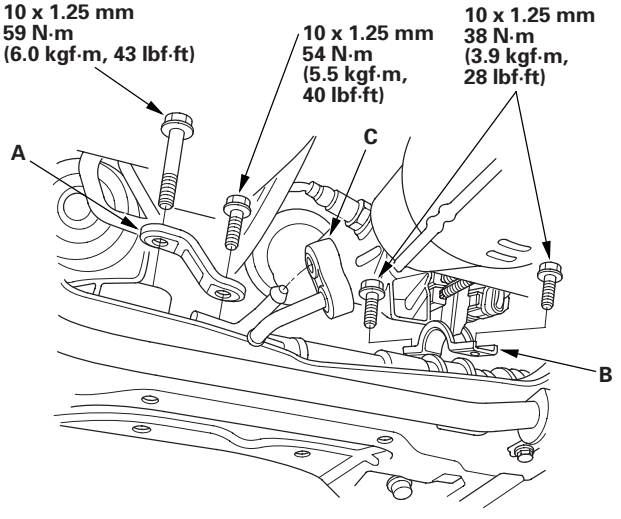


DYNOMITE -2009-

16. Install the steering gearbox stiffener plate (A) and the harness clip (B).



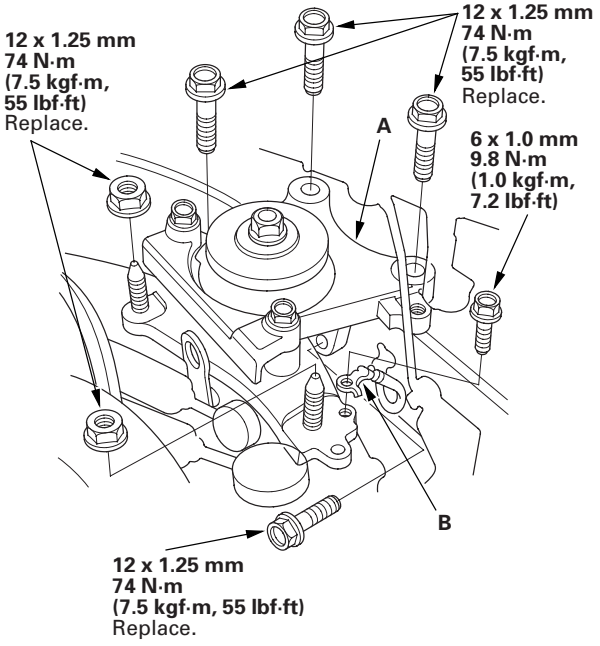
17. Install the stiffener plate (A) and the mounting bracket (B). Connect the exhaust mounting rubber (C).



18. Connect the lower ball joint and the lower arm (see step 8 on page 16-21).

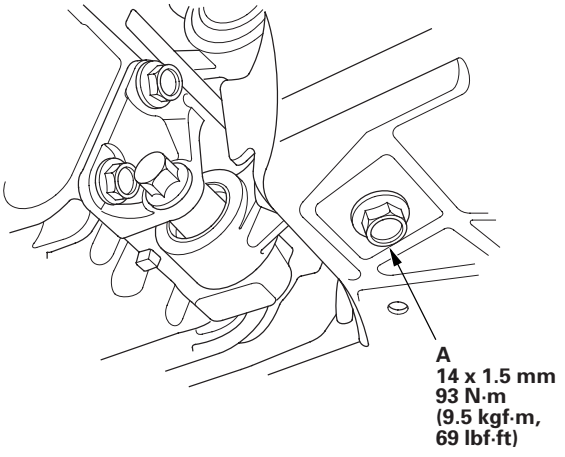
19. Lower the vehicle on the lift.

20. Install the transmission mount bracket (A), and connect the ground cable (B).



21. Raise the vehicle on the lift.

22. Loosen and retighten the lower torque rod mounting bolt (A).



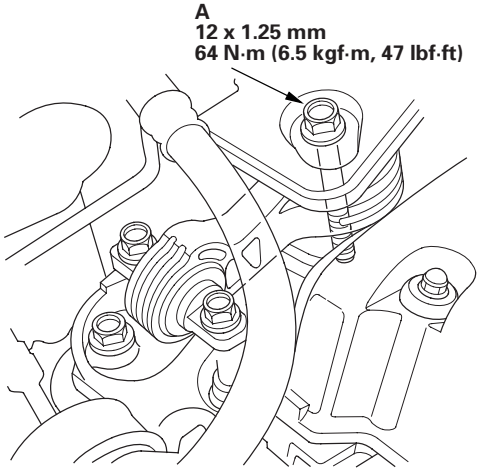
23. Refill the transmission with the recommended transmission fluid (see page 13-5).

24. Lower the vehicle on the lift.

(cont'd)

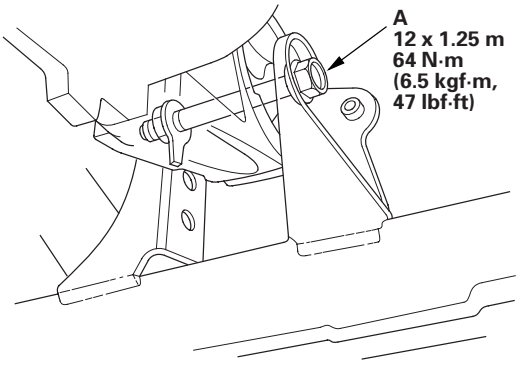
Transmission Installation (cont'd)

25. Tighten the upper torque rod mounting bolt (A).

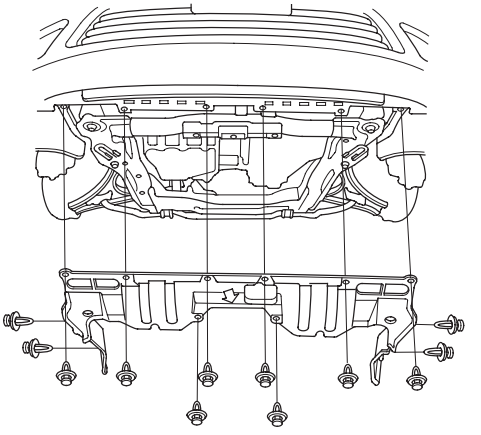


26. Raise the vehicle on the lift.

27. Tighten the front mount mounting bolt (A).



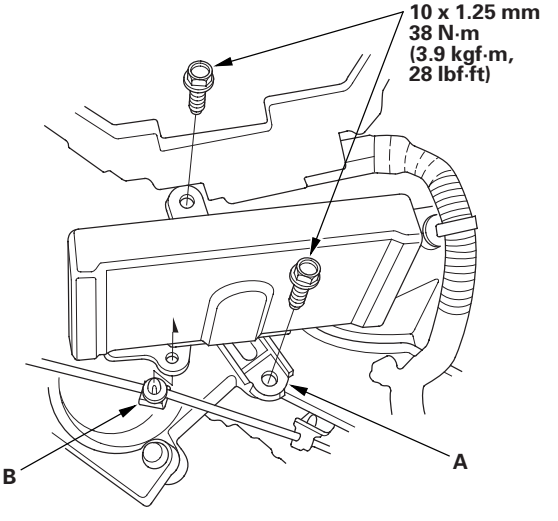
28. Install the splash shield.



29. Lower the vehicle on the lift.

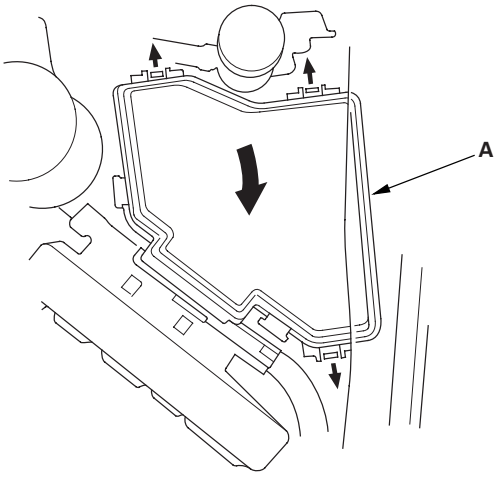
30. Remove the engine support hanger and the engine hanger adapter from the engine.

31. Install the engine control module (ECM) bracket (A), then install the clutch pipe clamp (B).

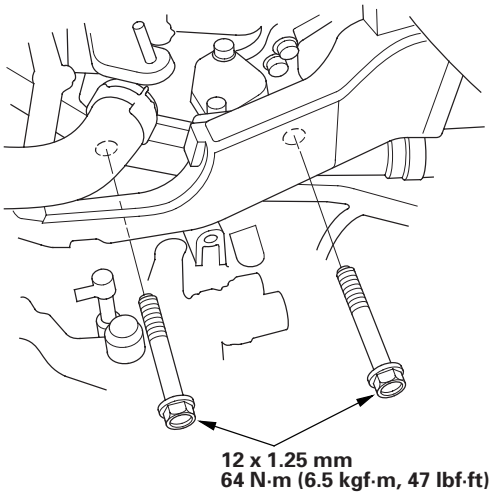


DYNOMITE -2009-

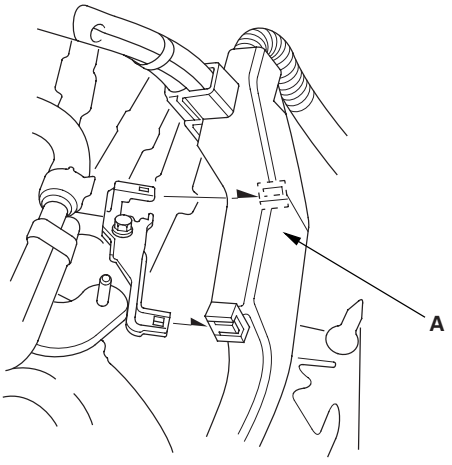
32. Install the under-food fuse/relay box (A) on the under-hood fuse/relay bracket.



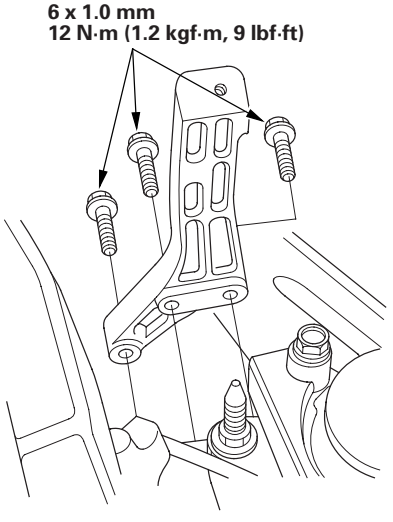
33. Install the two upper transmission mounting bolts.



34. Install the engine harness cover (A).



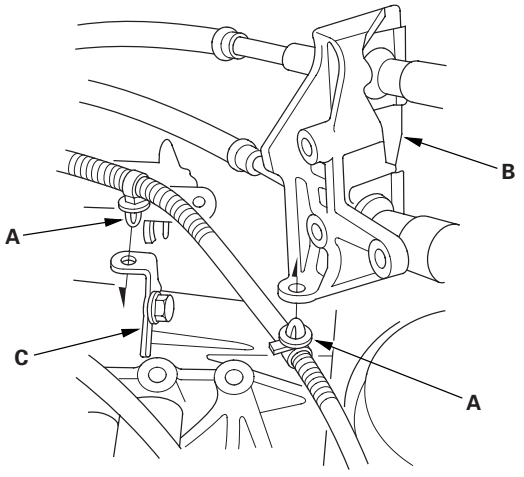
35. Install the air cleaner housing mounting bracket.



(cont'd)

Transmission Installation (cont'd)

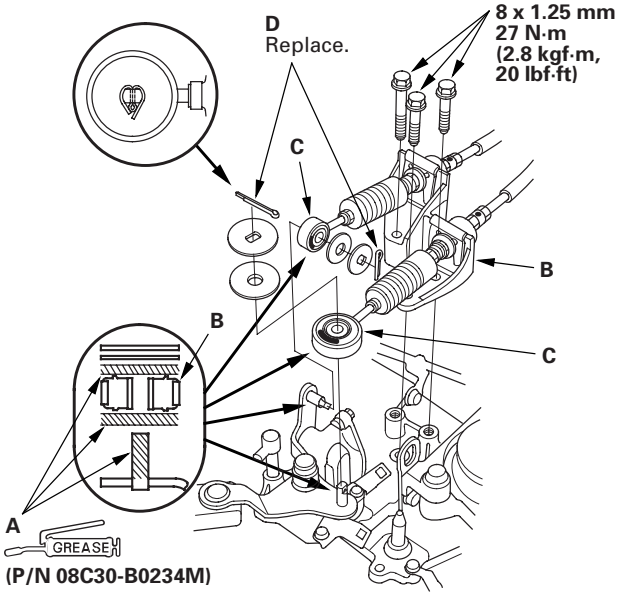
36. Install the harness clips (A) on the shift cable bracket (B) and the harness bracket (C).



37. Apply a light coat of silicone grease (P/N 08C30-B0234M) to the shift cable ends (A).

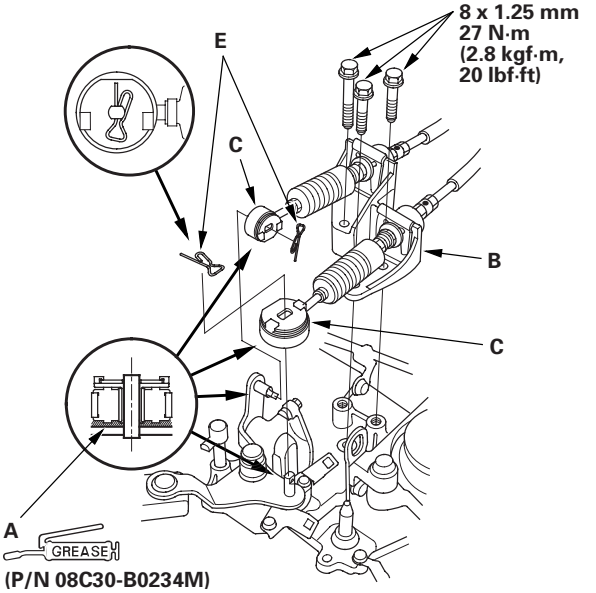
NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

'06 model



(P/N 08C30-B0234M)

'07-09 models

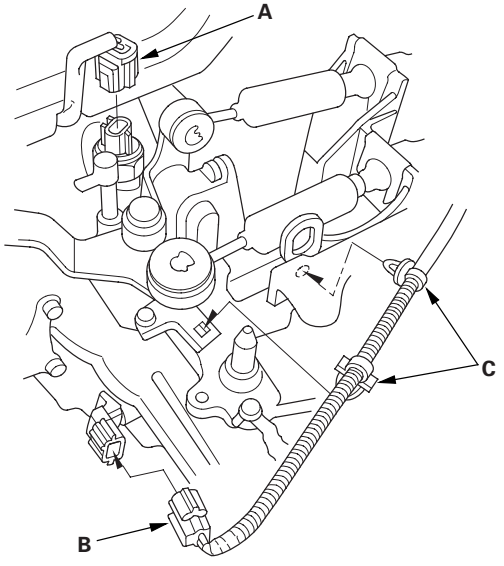


(P/N 08C30-B0234M)

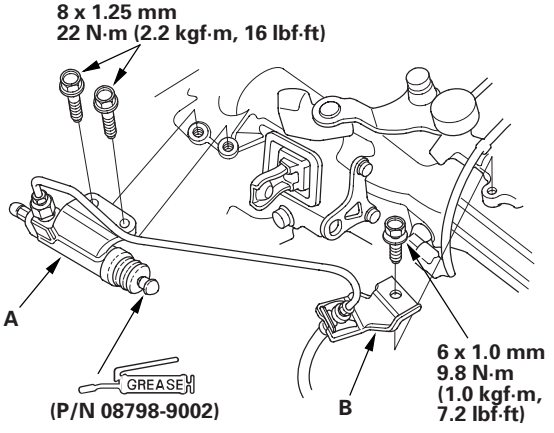
38. Install the shift cable bracket (B) and the shift cables (C), then install new cotter pins (D) or lock pins (E).

DYNOMITE -2009-

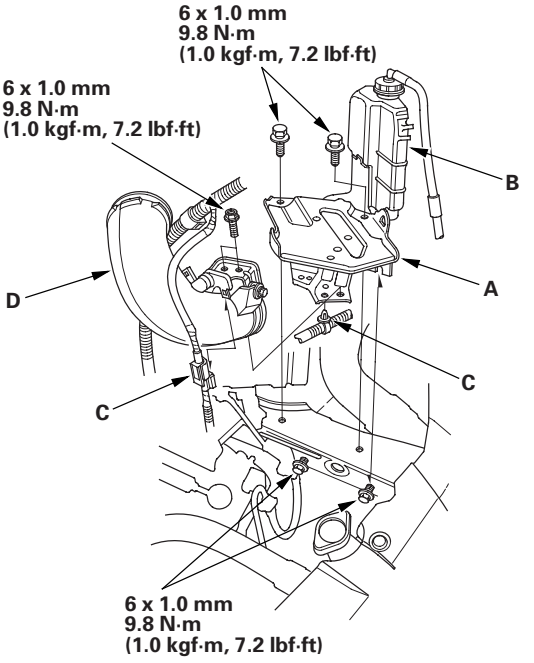
39. Connect the back-up light switch connector (A) and the output shaft (countershaft) speed sensor connector (B). Install the harness clips (C).



40. Apply super high temp urea grease (P/N 08798-9002) to the end of the slave cylinder pushrod. Install the slave cylinder (A), then install the clutch line bracket (B). Be careful not to bend the clutch line.



41. Install the battery base (A) with the coolant reservoir (B).



42. Install the harness clips (C) and the intake air duct (D).

43. Install the air cleaner assembly (see page 11-345).

44. Do the battery installation procedure (see page 22-69).

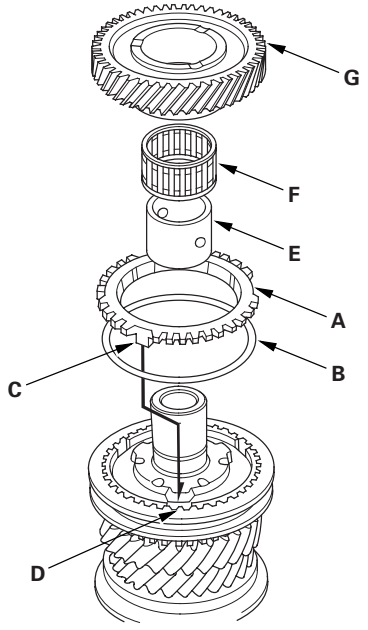
45. Install the under-cowl panel and the cowl cover (see page 20-163).

46. Check the shift lever and the clutch operation.

47. Check the wheel alignment (see page 18-5).

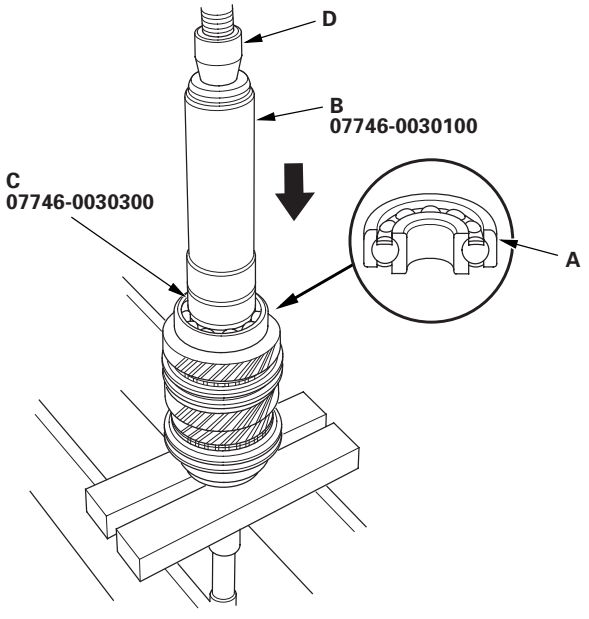
48. Test-drive the vehicle.

14. Install the synchro ring (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 5th/6th synchro hub.



15. Install the 6th gear distance collar (E) with the needle bearing (F), then install 6th gear (G).

16. Press on new angular ball bearing (A) using the 40 mm inner driver handle (B), the 30 mm inner bearing driver attachment (C), and a press (D).

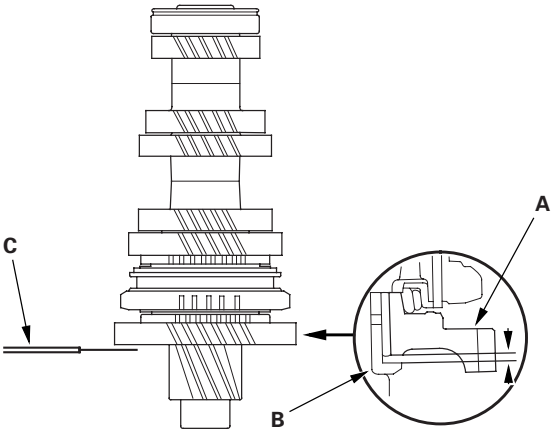


Countershaft Assembly Clearance Inspection

1. Measure the clearance between 1st gear (A) and the 1st gear distance collar (B) with a feeler gauge (C).

   - If the clearance exceeds the service limit, go to step 2.
   - If the clearance is within the service limit, go to step 4.

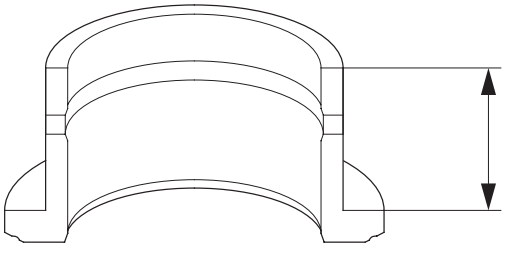
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



2. Measure the length of the 1st gear distance collar as shown.

   - If the length is not within the standard, replace the 1st gear distance collar.
   - If the length is within the standard, go to step 3.

   Standard: 23.03—23.08 mm (0.907—0.909 in.)



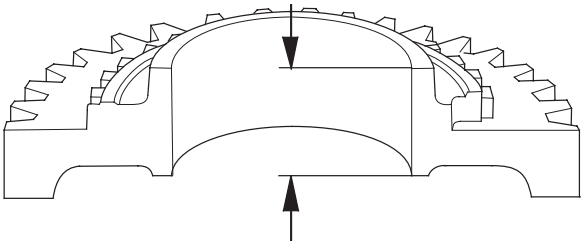
(cont'd)

Countershaft Assembly Clearance Inspection (cont'd)

3. Measure the thickness of 1st gear.

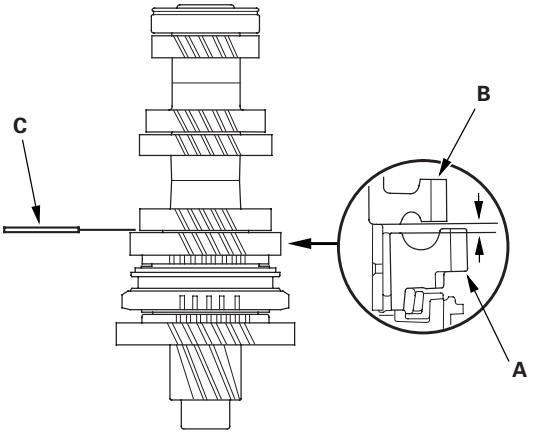
   - If the thickness is less than the service limit, replace 1st gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and the reverse gear as a set.

   Standard: 22.92—22.97 mm (0.902—0.904 in.)
   Service Limit: 22.87 mm (0.900 in.)



4. Measure the clearance between 2nd gear (A) and 3rd gear (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 5.

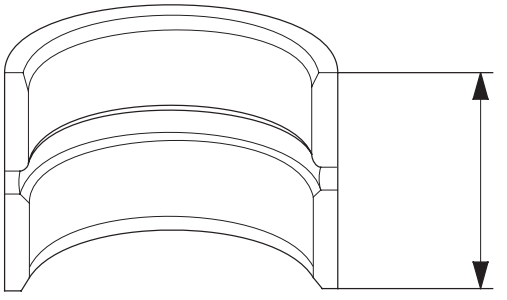
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



5. Measure the length of the 2nd gear distance collar.

   - If the length is not within the standard, replace the 2nd gear distance collar.
   - If the length is within the standard, go to step 6.

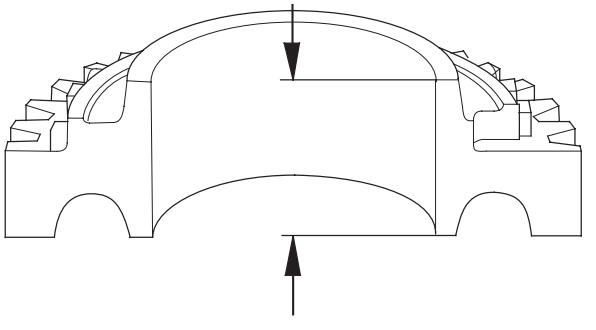
   Standard: 28.03—28.08 mm (1.104—1.106 in.)



6. Measure the thickness of 2nd gear.

   - If the thickness is less than the service limit, replace 2nd gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and the reverse gear as a set.

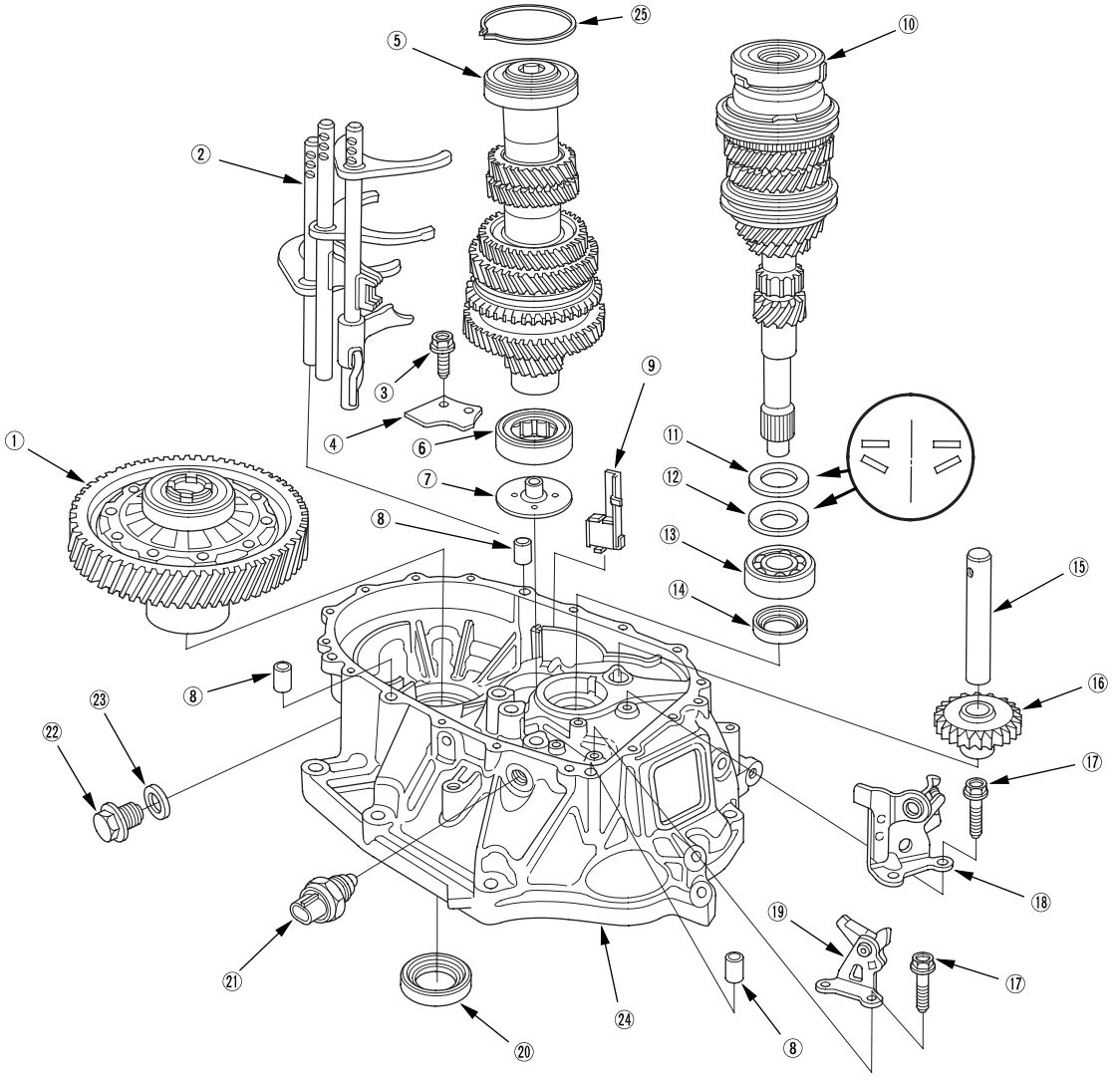
   Standard: 27.92—27.97 mm (1.099—1.101 in.)
   Service Limit: 27.87 mm (1.097 in.)



DYNOMITE -2009-

Transmission Disassembly

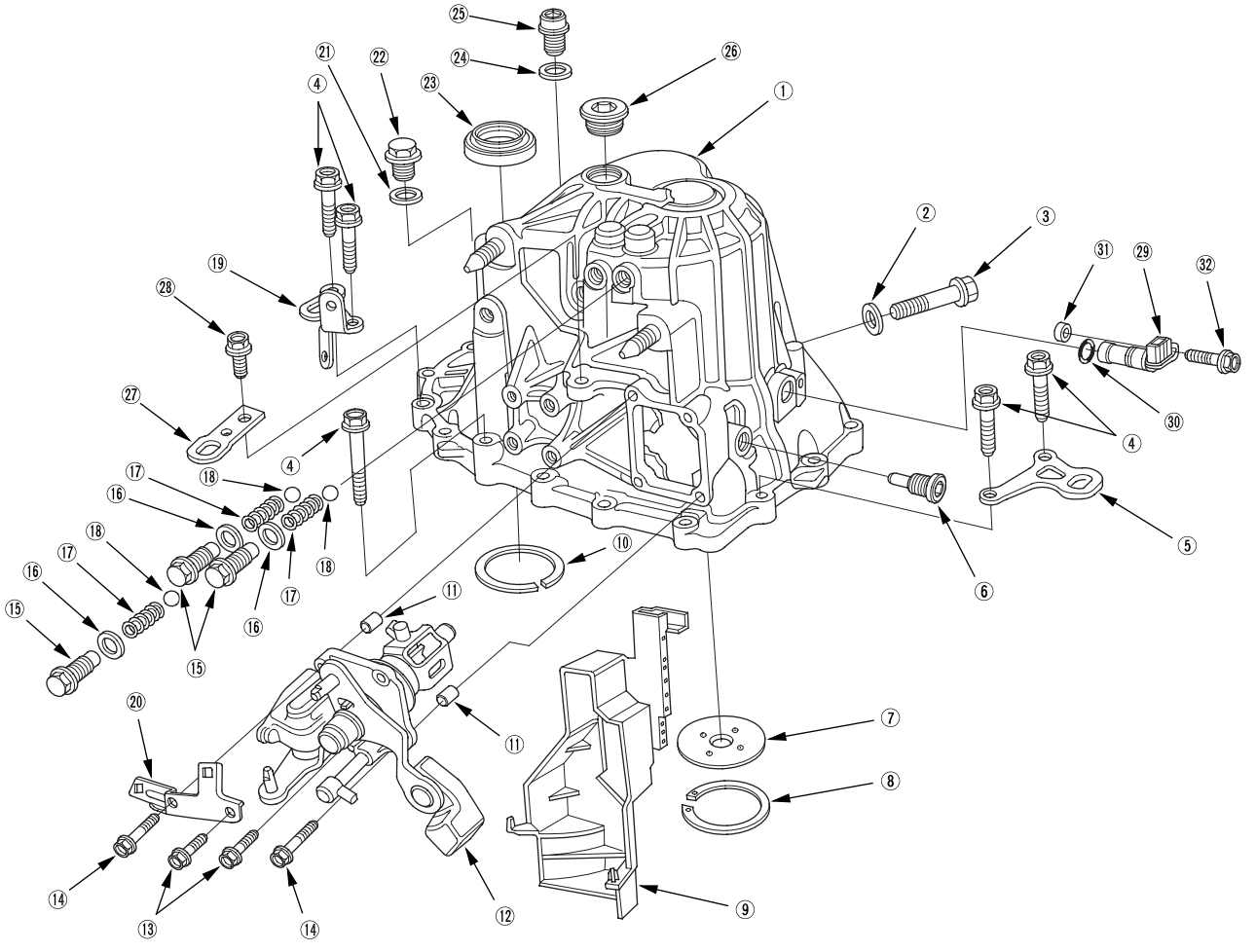
Exploded View - Clutch Housing



① DIFFERENTIAL ASSEMBLY
② SHIFT FORK ASSEMBLY
③ 6 mm FLANGE BOLT
13 N·m (1.3 kgf·m, 9 lbf·ft)
④ BEARING SET PLATE
⑤ COUNTERSHAFT ASSEMBLY
⑥ NEEDLE BEARING
⑦ OIL GUIDE PLATE C
⑧ 14 x 20 mm DOWEL PIN
⑨ MAGNET
⑩ MAINSHAFT ASSEMBLY
⑪ 28 mm WASHER
⑫ 28 mm SPRING WASHER
⑬ BALL BEARING
⑭ 28 x 43 x 7 mm OIL SEAL
Replace.
⑮ REVERSE IDLER GEAR SHAFT
⑯ REVERSE IDLER GEAR
⑰ 6 mm SPECIAL BOLT
15 N·m (1.5 kgf·m, 11 lbf·ft)
⑱ REVERSE SHIFT FORK
⑲ REVERSE LOCK CAM
⑳ 35 x 58 x 8 mm OIL SEAL
Replace.
㉑ BACK-UP LIGHT SWITCH
29 N·m (3.0 kgf·m, 22 lbf·ft)
㉒ 20 mm BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉓ 20 mm WASHER
Replace.
㉔ CLUTCH HOUSING
㉕ 72 mm SNAP RING

DYNOMITE -2009-

Exploded View - Transmission Housing



① TRANSMISSION HOUSING
② 10 mm SEALING WASHER
Replace.
③ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
④ 8 mm FLANGE BOLT
27 N·m (2.8 kgf·m, 20 lbf·ft)
⑤ TRANSMISSION HANGER A
⑥ INTERLOCK BOLT
39 N·m (4.0 kgf·m, 29 lbf·ft)
⑦ OIL GUIDE PLATE M
⑧ 72 mm SHIM
⑨ OIL GUTTER PLATE
⑩ 80 mm SHIM
⑪ 8 x 14 mm DOWEL PIN
⑫ CHANGE LEVER ASSEMBLY
⑬ 6 x 30 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
⑭ 6 x 20 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
⑮ DETENT BOLT
22 N·m (2.2 kgf·m, 16 lbf·ft)
⑯ 12 mm SEALING WASHER
Replace.
⑰ SPRING
⑱ STEEL BALL
⑲ TRANSMISSION HANGER B
⑳ HARNESS BRACKET A
㉑ 20 mm SEALING WASHER
Replace.
㉒ FILLER PLUG
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉓ 40 x 56 x 8 mm OIL SEAL
Replace.
㉔ 14 mm SEALING WASHER
Replace.
㉕ DRAIN PLUG
39 N·m (4.0 kgf·m, 29 lbf·ft)
㉖ 32 mm SEALING CAP
34 N·m (3.5 kgf·m, 25 lbf·ft)
㉗ TRANSMISSION HANGER
㉘ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉙ OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR
㉚ O-RING
Replace.
㉛ PLAIN WASHER
㉜ 6 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)

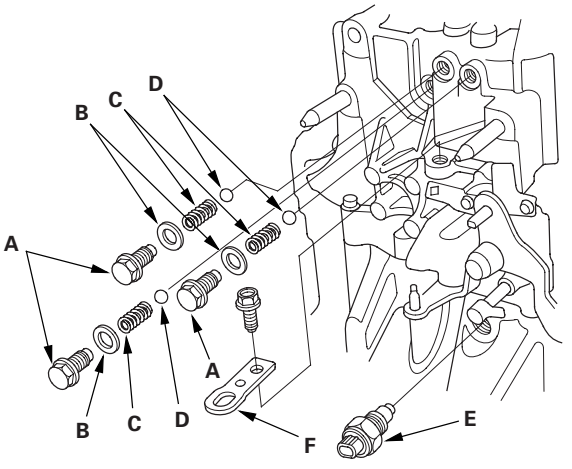
(cont'd)

Transmission Disassembly (cont'd)

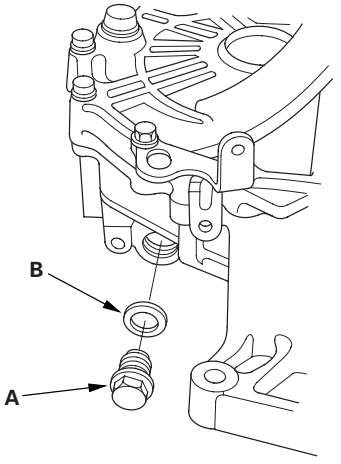
NOTE: Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

1. Remove the release fork and the replace bearing (see page 12-24).

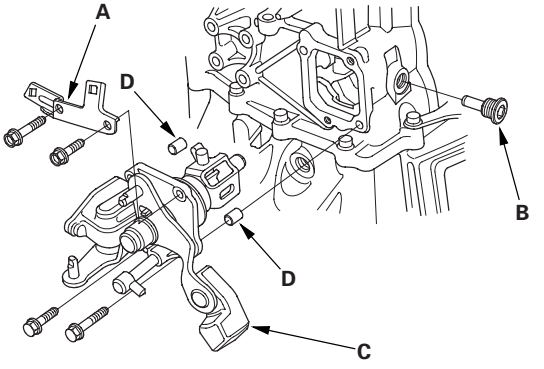
2. Remove the detent bolts (A), the 12 mm sealing washers (B), the springs (C), the steel balls (D), and the back-up light switch (E). Then remove the transmission hanger (F).



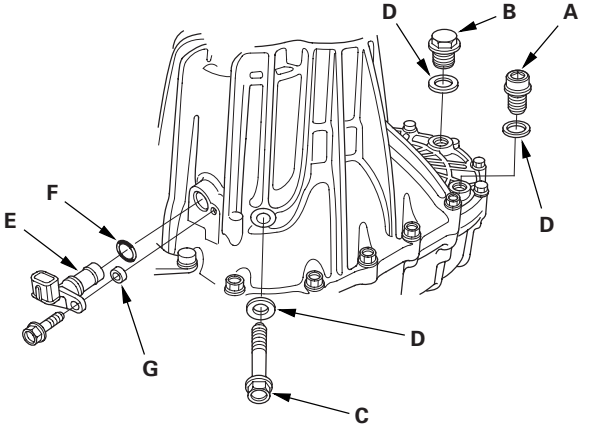
3. Remove the 20 mm bolt (A) and the 20 mm sealing washer (B).



4. Remove the interlock bolt (B), the change lever assembly (C), the 8 x 14 mm dowel pins (D), and harness bracket A.



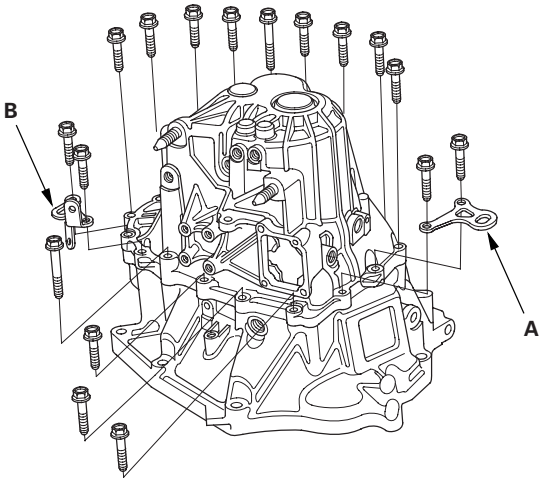
5. Remove the drain plug (A), the filler plug (B), the 10 mm flange bolt (C), and the sealing washers (D).



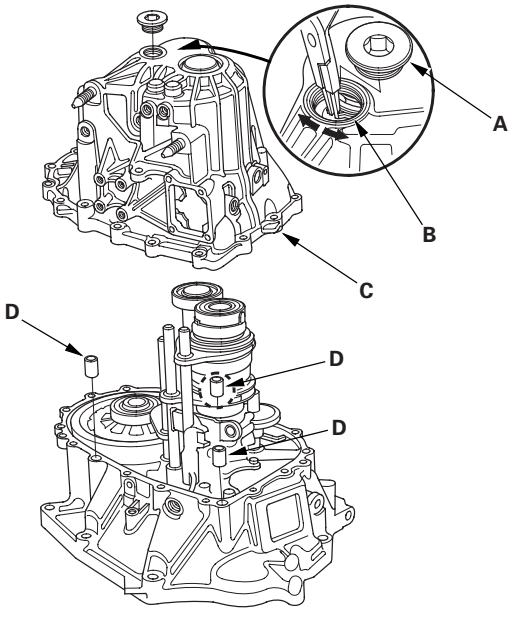
6. Remove the output shaft (countershaft) speed sensor (E) with the O-ring (F) and the plain washer (G).

DYNOMITE -2009-

7. Loosen the 8 mm flange bolts in a crisscross pattern in several steps, then remove them with transmission hanger A and transmission hanger B.

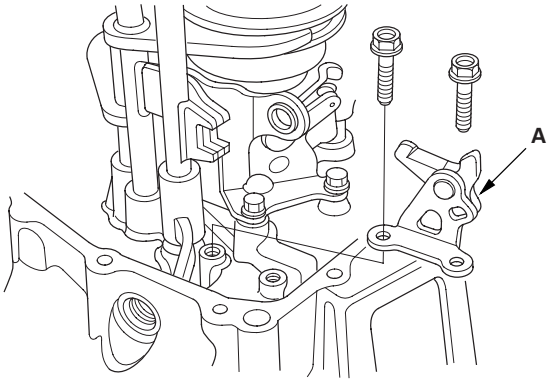


8. Remove the 32 mm sealing cap (A).

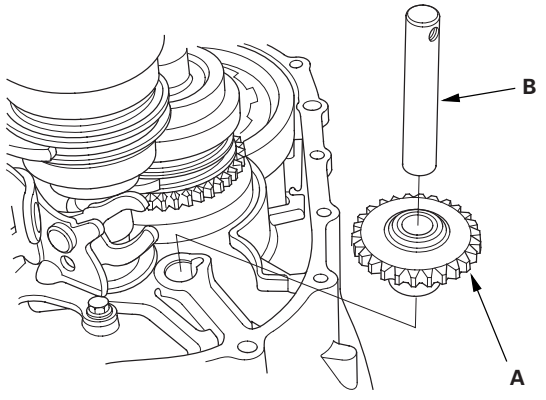


9. While expanding the 72 mm snap ring (B) on the countershaft ball bearing with snap ring pliers, lift the transmission housing (C). Release the snap ring pliers, and remove the transmission housing and the three 14 x 20 mm dowel pins (D).

10. Remove the reverse lock cam (A).



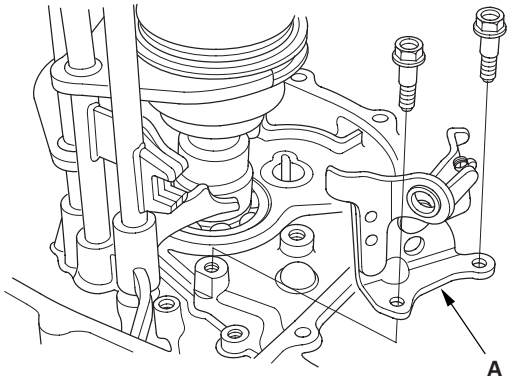
11. Remove the reverse idler gear (A) and the reverse idler gear shaft (B).



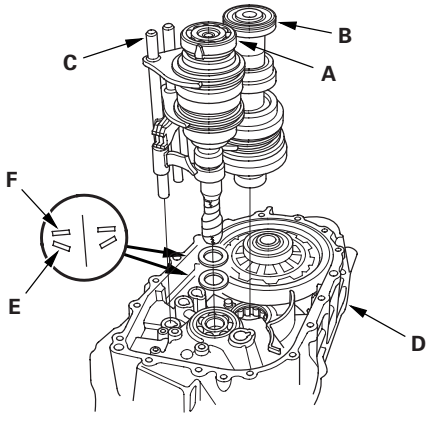
(cont'd)

Transmission Disassembly (cont'd)

12. Remove the reverse shift fork (A).

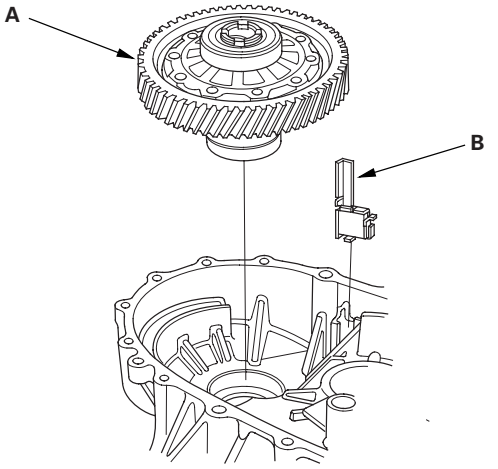


13. Apply tape to the mainshaft splines to protect the seal, then remove the mainshaft assembly (A) and the countershaft assembly (B) with the shift fork assembly (C) from the clutch housing (D).

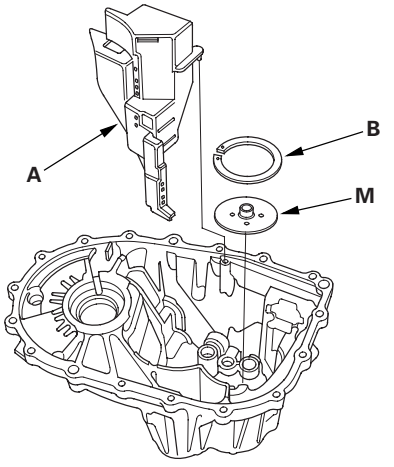


14. Remove the 28 mm spring washer (E) and the 28 mm washer (F).

15. Remove the differential assembly (A) and the magnet (B).



16. Remove the oil gutter plate (A), the 72 mm shim (B), and oil guide plate M.

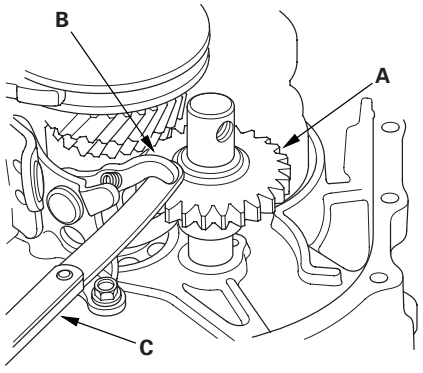


DYNOMITE -2009-

Reverse Shift Fork Clearance Inspection

1. Measure the clearance between the reverse idler gear (A) and the reverse shift fork (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 2.

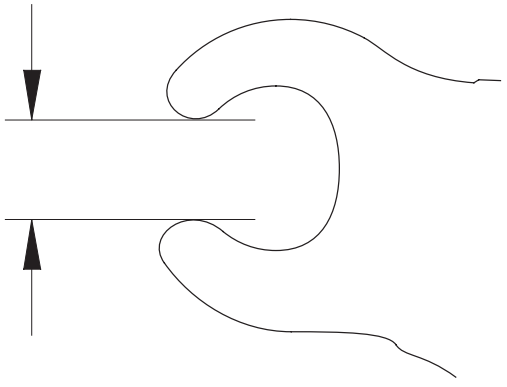
Standard: 0.20—0.59 mm (0.008—0.023 in.)
Service Limit: 1.3 mm (0.051 in.)



2. Measure the width of the reverse shift fork.

- If the width is not within the standard, replace the reverse shift fork.
- If the width is within the standard, replace the reverse idler gear.

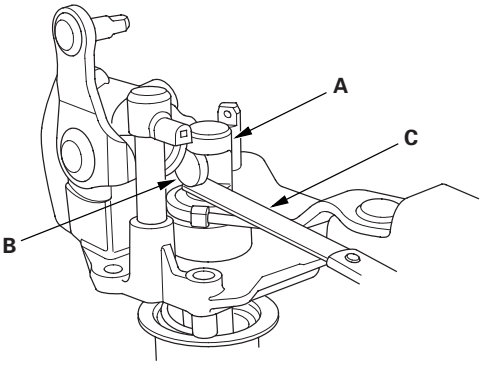
Standard: 13.4—13.7 mm (0.528—0.539 in.)



Change Lever Clearance Inspection

1. Measure the clearance between the change lever (A) and the select lever (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 2.

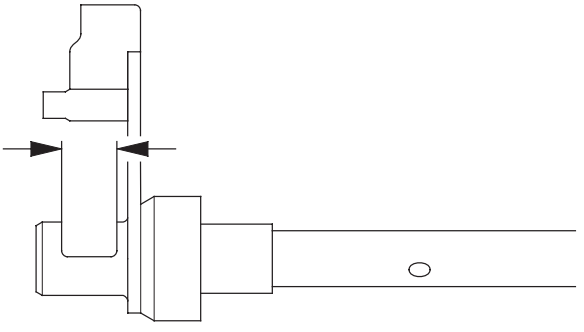
Standard: 0.05—0.25 mm (0.002—0.010 in.)
Service Limit: 0.50 mm (0.020 in.)



2. Measure the groove width of the change lever.

- If the groove width is not within the standard, replace the change lever.
- If the groove width is within the standard, replace the select lever.

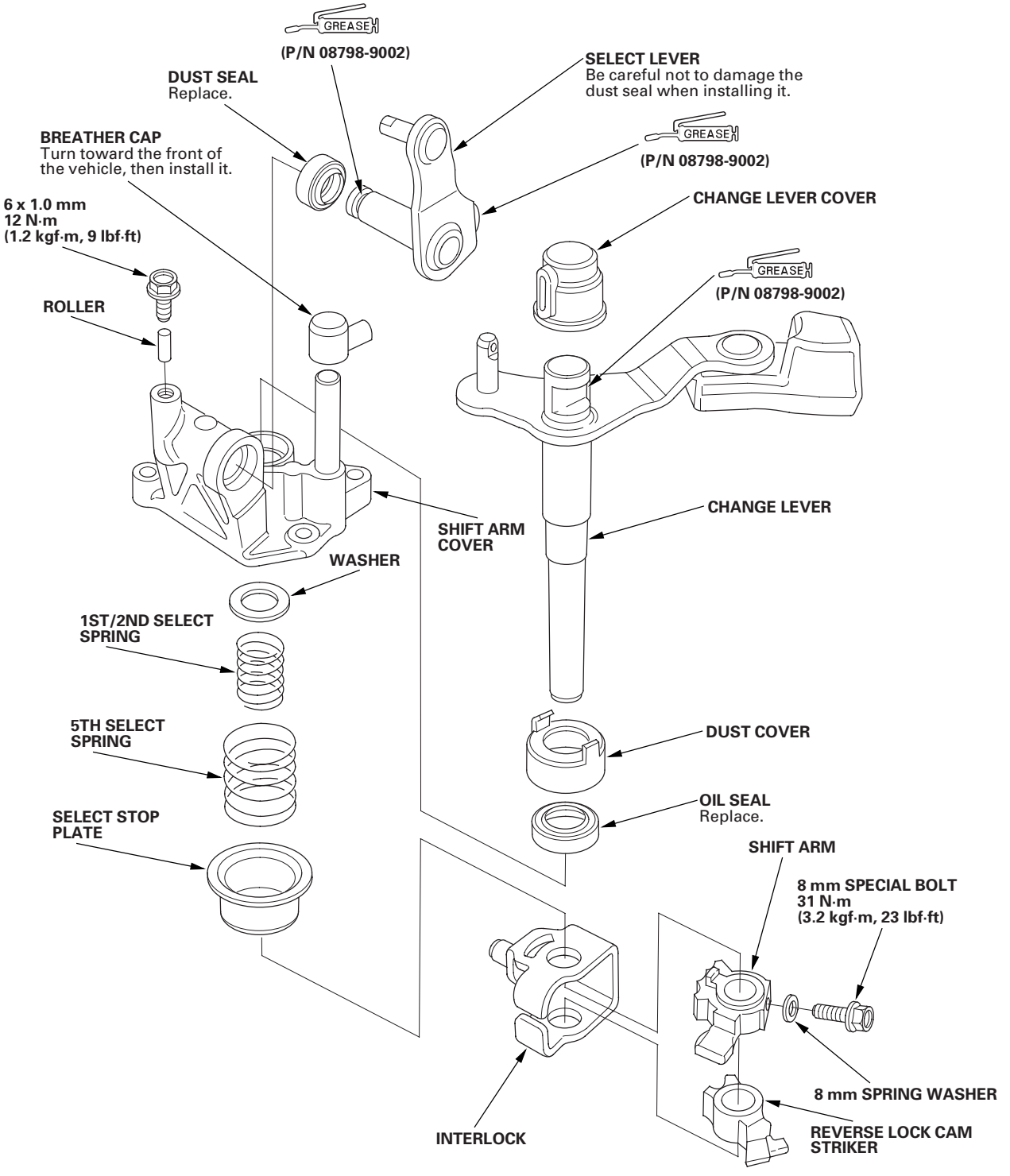
Standard: 15.00—15.10 mm (0.591—0.594 in.)



DYNOMITE -2009-

Change Lever Assembly Disassembly/Reassembly

NOTE: Prior to reassembling, clean all the parts in solvent, dry them, and apply grease to the contact surfaces as shown.

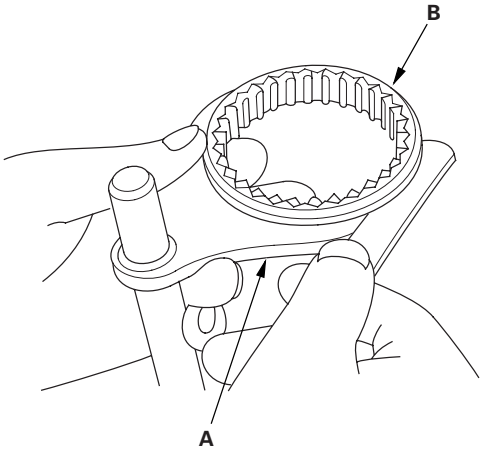


DYNOMITE -2009-

Shift Fork Clearance Inspection

1. Measure the clearance between each shift fork (A) and its matching synchro sleeve (B). If the clearance exceeds the service limit, go to step 2.

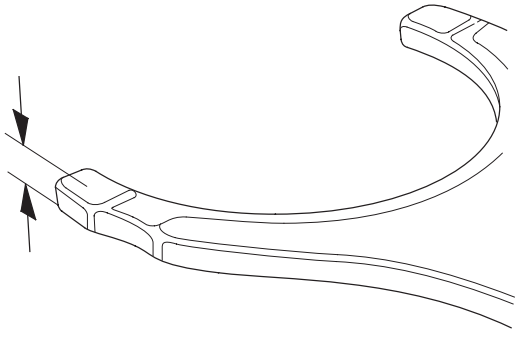
   Standard: 0.35—0.65 mm (0.014—0.026 in.)
   Service Limit: 1.0 mm (0.039 in.)



2. Measure the thickness of the shift fork fingers.

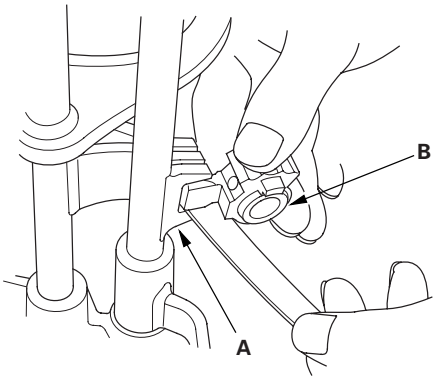
   - If the thickness is not within the standard, replace the shift fork.
   - If the thickness is within the standard, replace the synchro sleeve and the synchro hub as a set.
   - If one arm of the shift fork shows more wear than others, the fork may be bent and needs to be replaced.

   Standard: 7.4—7.6 mm (0.29—0.30 in.)



3. Measure the clearance between the shift fork (A) and the shift arm (B). If the clearance exceeds the service limit, go to step 4.

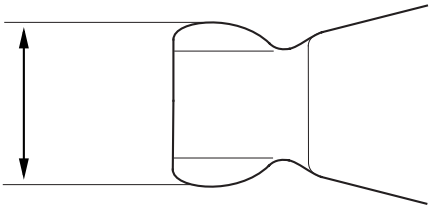
   Standard: 0.2—0.5 mm (0.008—0.020 in.)
   Service Limit: 0.62 mm (0.024 in.)



4. Measure the width of the shift arm.

   - If the width is not within the standard, replace the shift arm.
   - If the width is within the standard, replace the shift fork and the reverse shift piece.

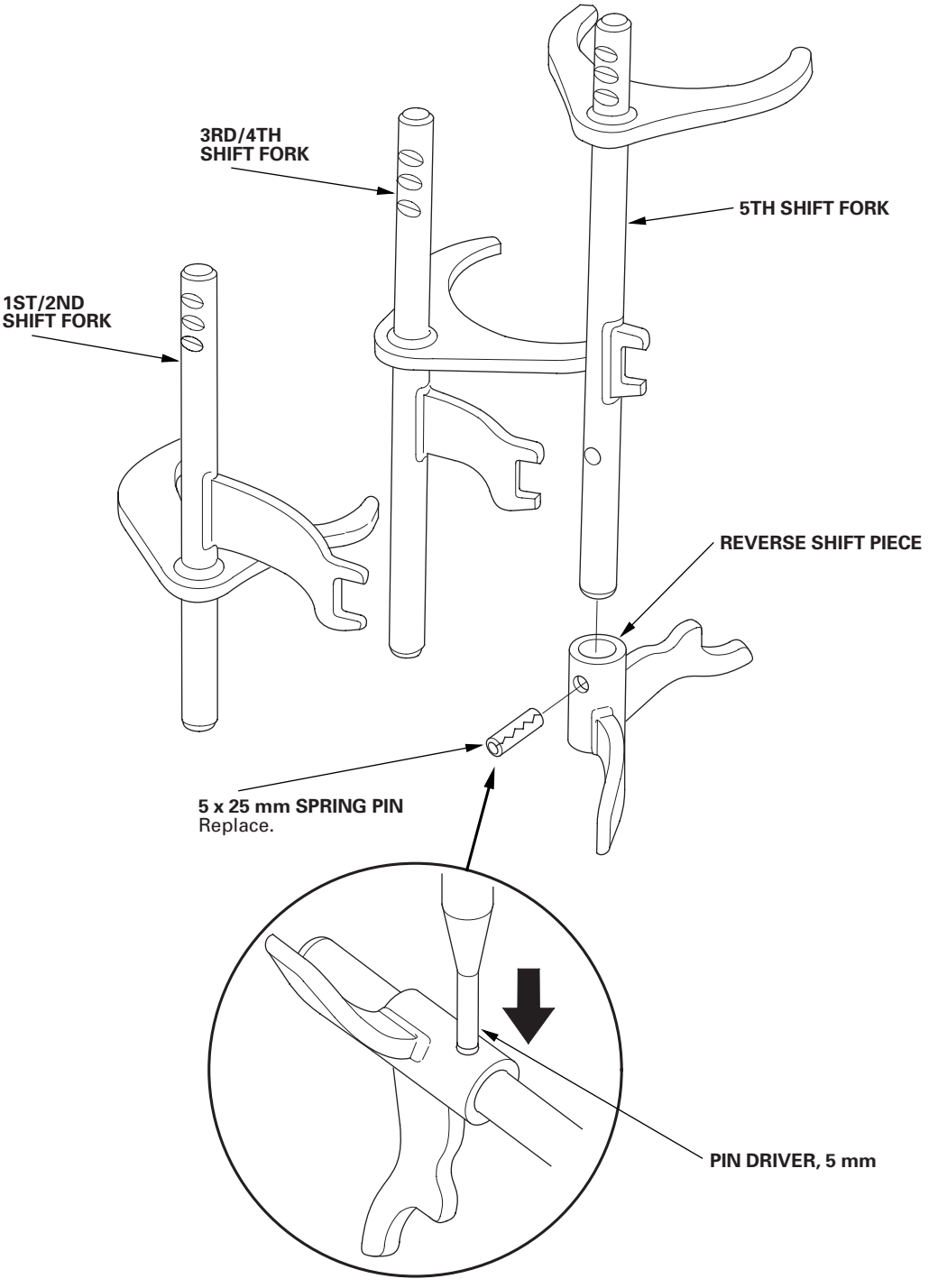
   Standard: 16.9—17.0 mm (0.665—0.669 in.)



DYNOMITE -2009-

Shift Fork Disassembly/Reassembly

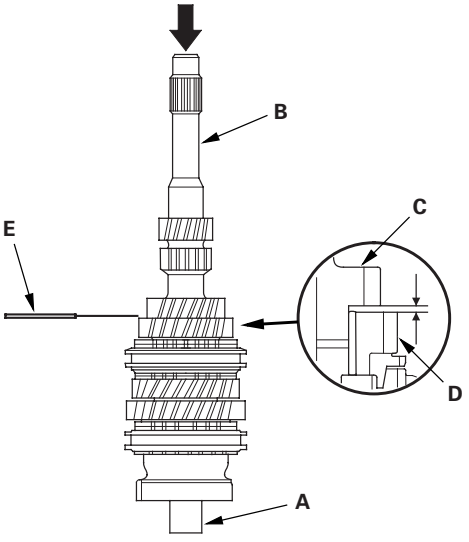
NOTE: Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to all contact surfaces.



DYNOMITE -2009-

Mainshaft Assembly Clearance Inspection

1. Support the bearing inner race with an appropriate sized socket (A), and push down on the mainshaft (B).



2. Measure the clearance between 2nd gear (C) and 3rd gear (D) with a feeler gauge (E).

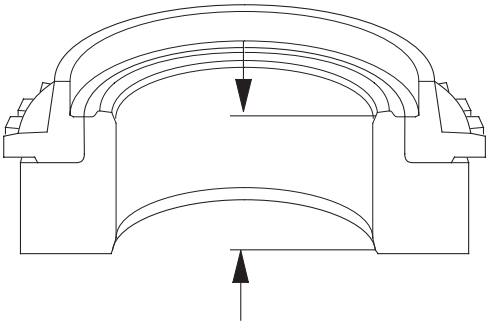
   - If the clearance exceeds the service limit, go to step 3.
   - If the clearance is within the service limit, go to step 4.

Standard: **0.06—0.16 mm (0.002—0.006 in.)**
Service Limit: **0.25 mm (0.010 in.)**

3. Measure the thickness of 3rd gear.

   - If the thickness is less than the service limit, replace 3rd gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and the 3rd/4th synchro sleeve as a set.

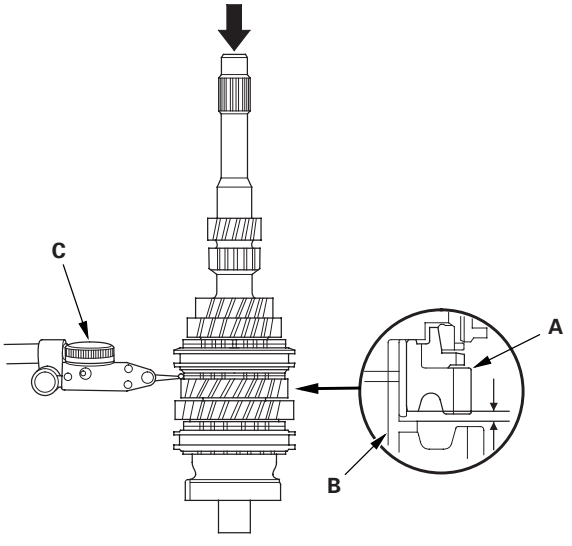
Standard: **23.92—23.97 mm (0.942—0.944 in.)**
Service Limit: **23.80 mm (0.937 in.)**



4. Measure the clearance between 4th gear (A) and the 4th/5th gear distance collar (B) with a dial indicator (C).

   - If the clearance exceeds the service limit, go to step 5.
   - If the clearance is within the service limit, go to step 7.

Standard: **0.06—0.16 mm (0.002—0.006 in.)**
Service Limit: **0.25 mm (0.010 in.)**



(cont'd)

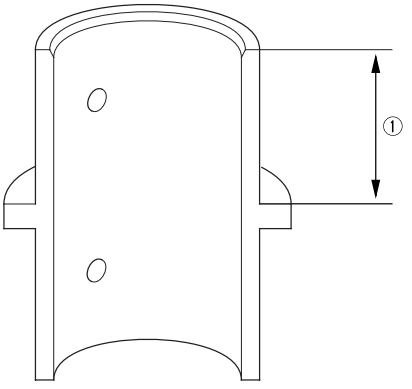
DYNOMITE -2009-

Mainshaft Assembly Clearance Inspection (cont'd)

5. Measure the length ① of the 4th/5th gear distance collar as shown.

   - If the length ① is not within the standard, replace the 4th/5th gear distance collar.
   - If the length ① is within the standard, go to step 6.

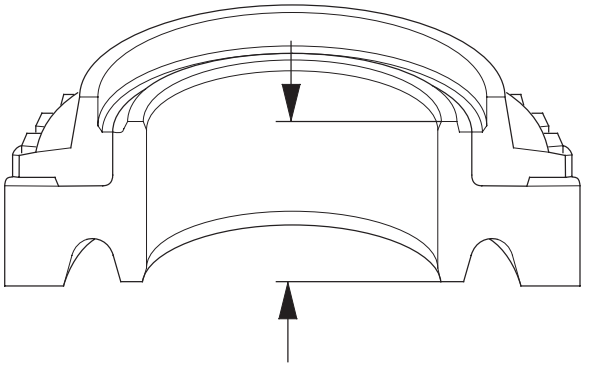
   Standard: 24.03—24.08 mm (0.946—0.948 in.)



6. Measure the thickness of 4th gear.

   - If the thickness is less than the service limit, replace 4th gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and the 3rd/4th synchro sleeve as a set.

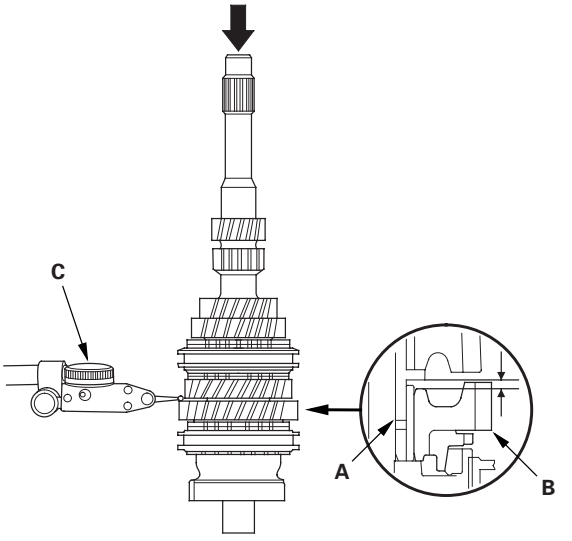
   Standard: 23.92—23.97 mm (0.942—0.944 in.)
   Service Limit: 23.80 mm (0.937 in.)



7. Measure the clearance between the 4th/5th gear distance collar (A) and 5th gear (B) with a dial indicator (C).

   - If the clearance exceeds the service limit, go to step 8.
   - If the clearance is within the service limit, go to step 10.

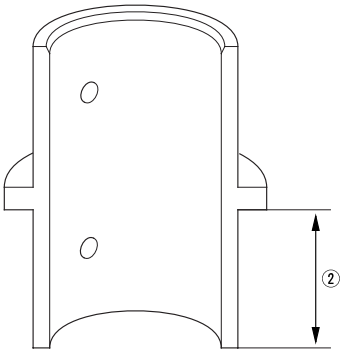
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



8. Measure the length ② of the 4th/5th gear distance collar as shown.

   - If the length ② is not within the standard, replace the 4th/5th gear distance collar.
   - If the length ② is within the standard, go to step 9.

   Standard: 24.03—24.08 mm (0.946—0.948 in.)

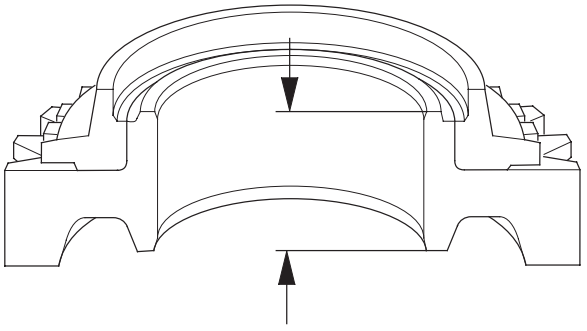


DYNOMITE -2009-

9. Measure the thickness of 5th gear.

   - If the thickness is less than the service limit, replace 5th gear.
   - If the thickness is within the service limit, replace the 5th synchro hub and the 5th/6th synchro sleeve as a set.

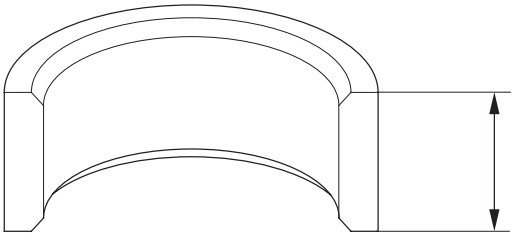
   Standard: 23.92—23.97 mm (0.942—0.944 in.)
   Service Limit: 23.80 mm (0.937 in.)



10. Measure the length of the MBS distance collar.

    If the length is not within standard, replace the MBS distance collar.

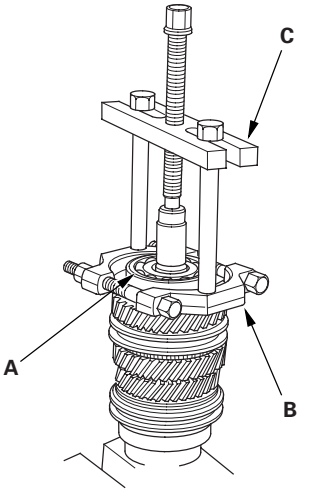
    Standard: 23.95—24.05 mm (0.943—0.947 in.)



Mainshaft Disassembly

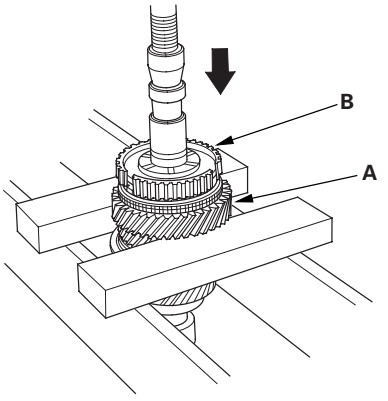
NOTE: Refer to the Exploded View in the Mainshaft Reassembly, as needed, when removing components pressed on to the mainshaft (see page 13-36).

1. Remove the angular ball bearing (A) and the tapered cone ring using a commercially available bearing separator (B) and a commercially available bearing puller (C). Make sure the bearing separator is under the tapered cone ring.



2. Support 5th gear (A) on steel blocks, and press the mainshaft out of the 5th synchro hub (B) and 5th gear.

   NOTE: Do not use a jaw-type puller; it can damage the gear teeth.



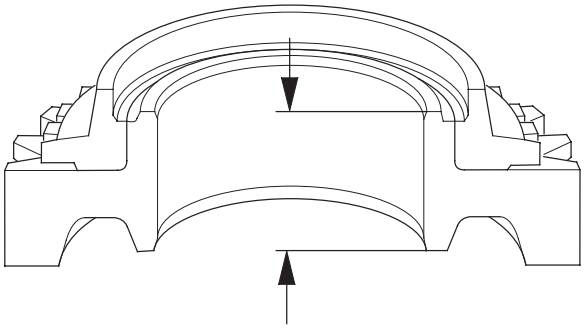
(cont'd)

DYNOMITE -2009-

9. Measure the thickness of 5th gear.

   - If the thickness is less than the service limit, replace 5th gear.
   - If the thickness is within the service limit, replace the 5th synchro hub and the 5th/6th synchro sleeve as a set.

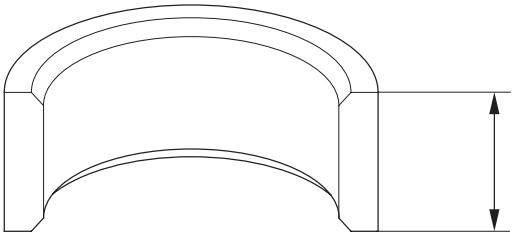
   Standard: 23.92—23.97 mm (0.942—0.944 in.)
   Service Limit: 23.80 mm (0.937 in.)



10. Measure the length of the MBS distance collar.

    If the length is not within standard, replace the MBS distance collar.

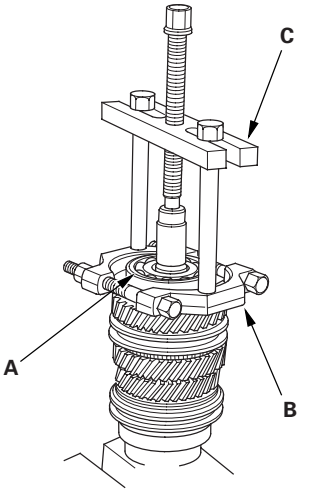
    Standard: 23.95—24.05 mm (0.943—0.947 in.)



Mainshaft Disassembly

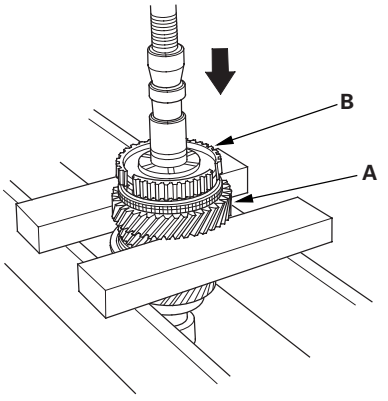
NOTE: Refer to the Exploded View in the Mainshaft Reassembly, as needed, when removing components pressed on to the mainshaft (see page 13-36).

1. Remove the angular ball bearing (A) and the tapered cone ring using a commercially available bearing separator (B) and a commercially available bearing puller (C). Make sure the bearing separator is under the tapered cone ring.



2. Support 5th gear (A) on steel blocks, and press the mainshaft out of the 5th synchro hub (B) and 5th gear.

   NOTE: Do not use a jaw-type puller; it can damage the gear teeth.



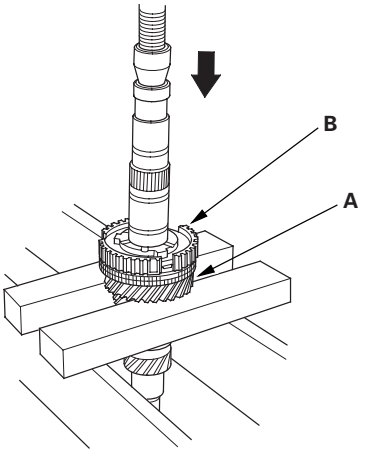
(cont'd)

DYNOMITE -2009-

Mainshaft Disassembly (cont'd)

3. Support 3rd gear (A) on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub (B) and 3rd gear.

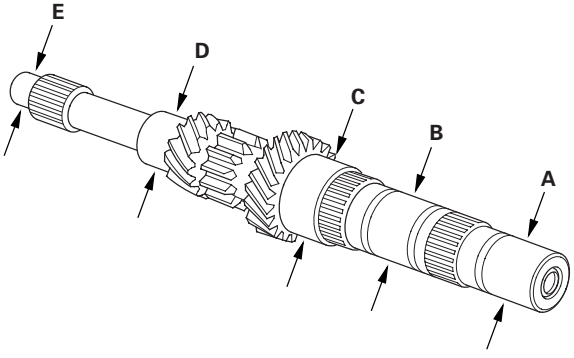
   NOTE: Do not use a jaw-type puller; it can damage the gear teeth.



Mainshaft Inspection

1. Inspect the gear and bearing contact areas for wear and damage, then measure the mainshaft at points A, B, C, D, and E. If any part of the mainshaft is less than the service limit, replace it.

   Standard:
   A Ball Bearing Contact Area (transmission housing side):
   27.987—28.000 mm (1.1018—1.1024 in.)
   B 4th/5th Gear Distance Collar Contact Area:
   31.984—32.000 mm (1.2592—1.2598 in.)
   C Needle Bearing Contact Area:
   38.984—39.000 mm (1.5348—1.5354 in.)
   D Ball Bearing Contact Area (clutch housing side):
   27.977—27.990 mm (1.1015—1.1020 in.)
   E Bushing Contact Area:
   20.80—20.85 mm (0.819—0.821 in.)
   Service Limit:
   A: 27.93 mm (1.100 in.)
   B: 31.93 mm (1.257 in.)
   C: 38.93 mm (1.533 in.)
   D: 27.92 mm (1.099 in.)
   E: 20.75 mm (0.817 in.)

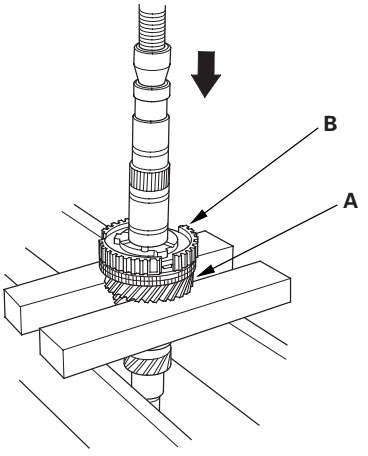


DYNOMITE -2009-

Mainshaft Disassembly (cont'd)

3. Support 3rd gear (A) on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub (B) and 3rd gear.

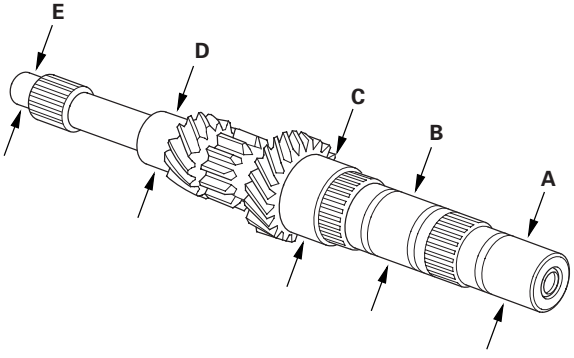
   NOTE: Do not use a jaw-type puller; it can damage the gear teeth.



Mainshaft Inspection

1. Inspect the gear and bearing contact areas for wear and damage, then measure the mainshaft at points A, B, C, D, and E. If any part of the mainshaft is less than the service limit, replace it.

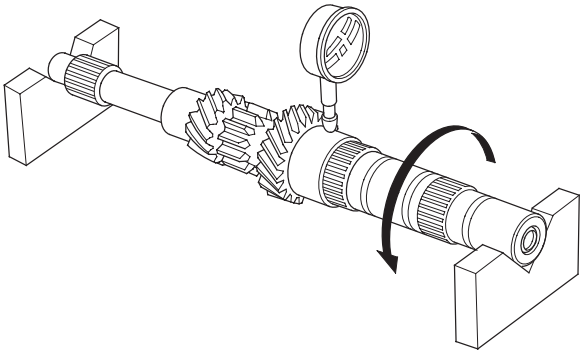
   Standard:
   A Ball Bearing Contact Area (transmission housing side):
   27.987—28.000 mm (1.1018—1.1024 in.)
   B 4th/5th Gear Distance Collar Contact Area:
   31.984—32.000 mm (1.2592—1.2598 in.)
   C Needle Bearing Contact Area:
   38.984—39.000 mm (1.5348—1.5354 in.)
   D Ball Bearing Contact Area (clutch housing side):
   27.977—27.990 mm (1.1015—1.1020 in.)
   E Bushing Contact Area:
   20.80—20.85 mm (0.819—0.821 in.)
   Service Limit:
   A: 27.93 mm (1.100 in.)
   B: 31.93 mm (1.257 in.)
   C: 38.93 mm (1.533 in.)
   D: 27.92 mm (1.099 in.)
   E: 20.75 mm (0.817 in.)



DYNOMITE -2009-

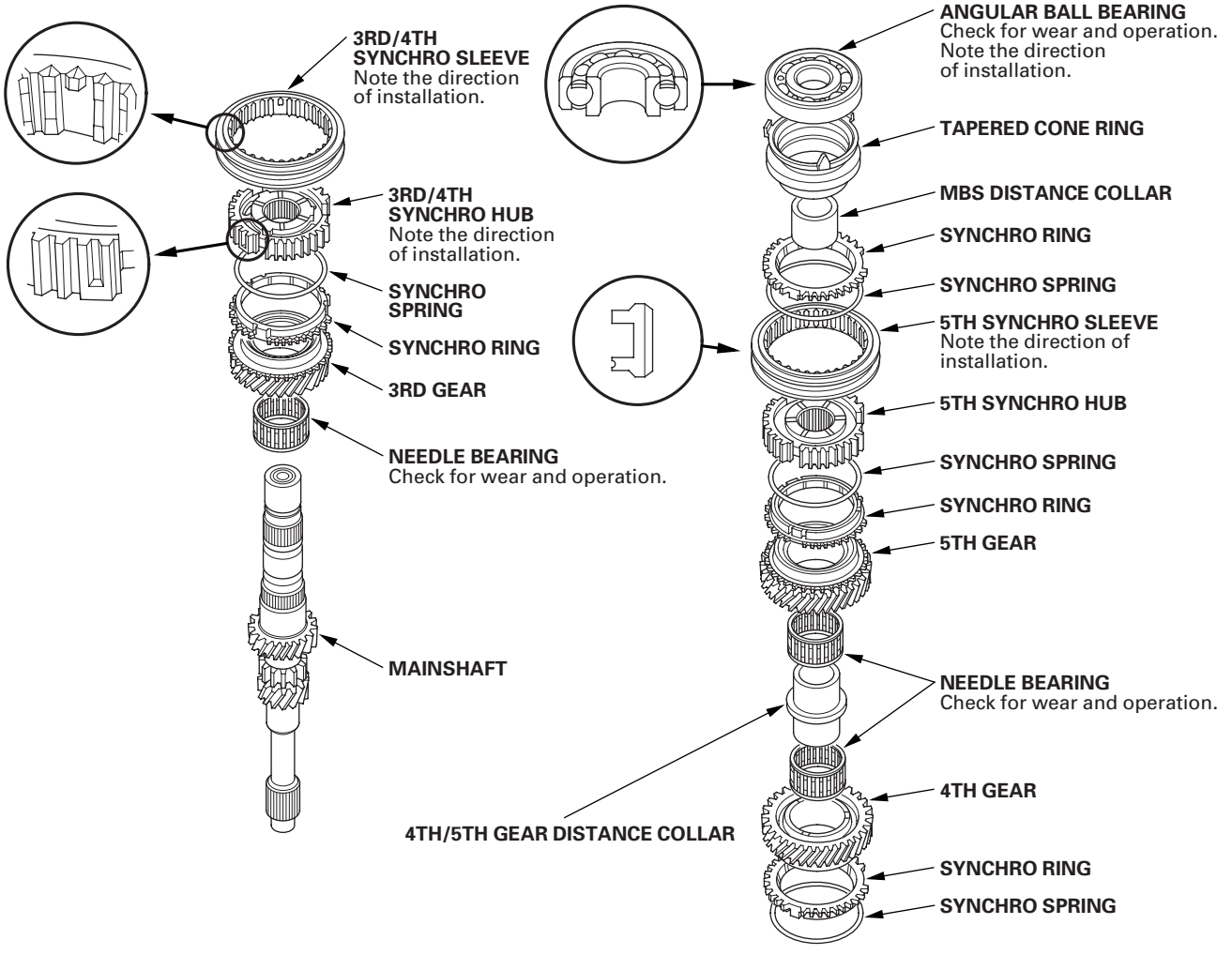
2. Inspect the runout by supporting both ends of the mainshaft. Then rotate the mainshaft two complete turns while measuring with a dial gauge. If the runout exceeds the service limit, replace the mainshaft.

Standard: **0.02 mm (0.001 in.) max.**
Service Limit: **0.05 mm (0.002 in.)**



Mainshaft Reassembly

Exploded View



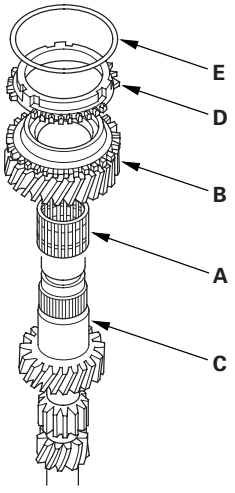
DYNOMITE -2009-

Special Tools Required
- Inner driver handle, 40 mm 07746-0030100
- Inner bearing driver attachment, 30 mm 07746-0030300

NOTE: Refer to the Exploded View, as needed, during this procedure.

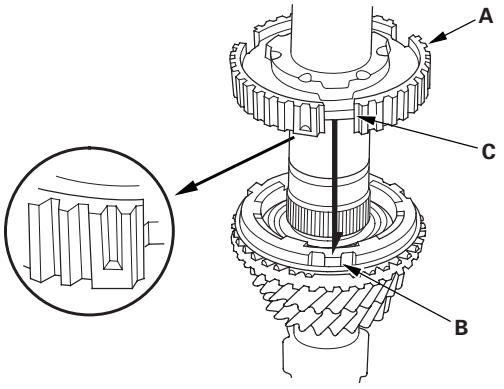
1. Clean all parts in solvent, dry them, and apply MTF to all contact surfaces.

2. Install the needle bearing (A) and 3rd gear (B) on the mainshaft (C).

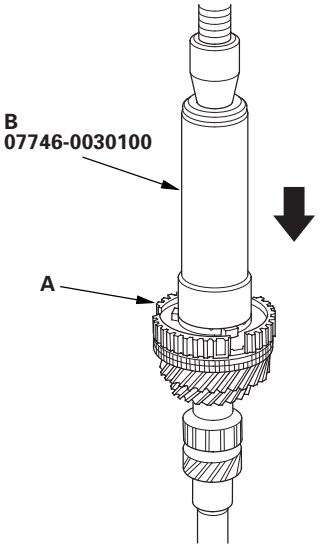


3. Install the synchro ring (D) and the synchro spring (E).

4. Install the 3rd/4th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 3rd/4th synchro hub.



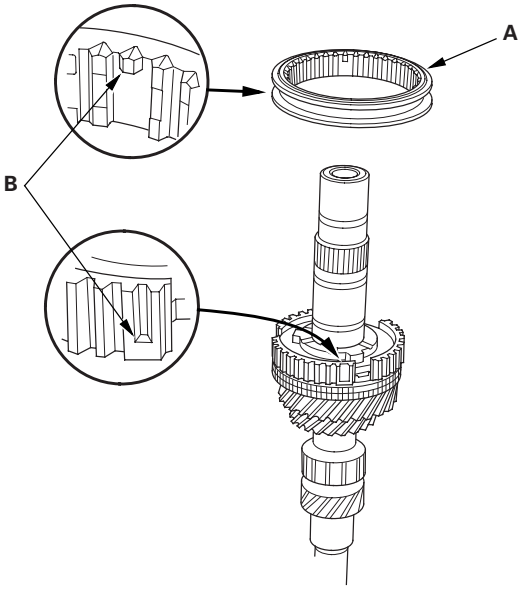
5. Press on the 3rd/4th synchro hub (A) using the 40 mm inner driver handle (B) and a press.



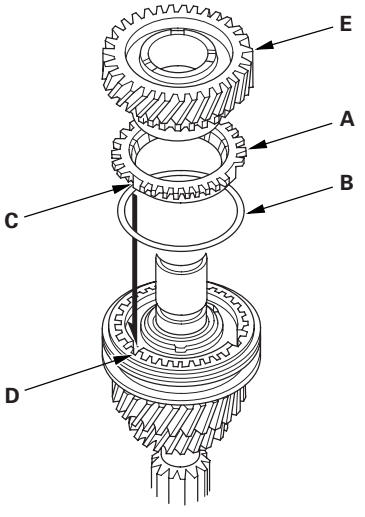
(cont'd)

Mainshaft Reassembly (cont'd)

6. Install the 3rd/4th synchro sleeve (A) by aligning the stops (B) of the 3rd/4th synchro sleeve and the 3rd/4th synchro hub. After installing, check the operation of the 3rd/4th synchro hub set.

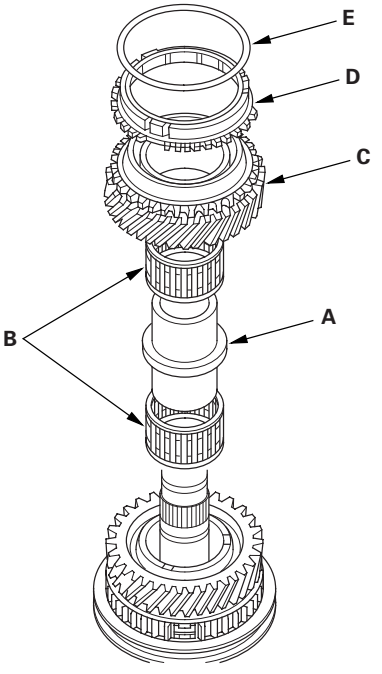


7. Install the synchro ring (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 3rd/4th synchro hub.



8. Install 4th gear (E) on to the synchro ring.

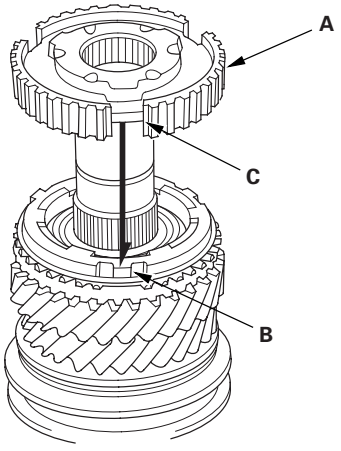
9. Install the 4th/5th gear distance collar (A) with the needle bearings (B), then install 5th gear (C).



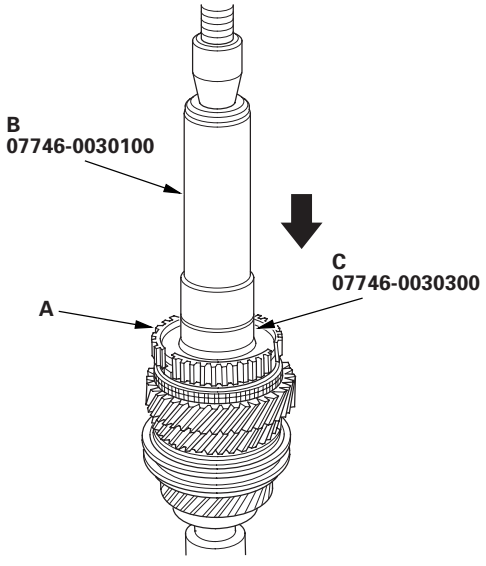
10. Install the synchro ring (D) with the synchro spring (E) onto 5th gear.

DYNOMITE -2009-

11. Install the 5th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 5th synchro hub.

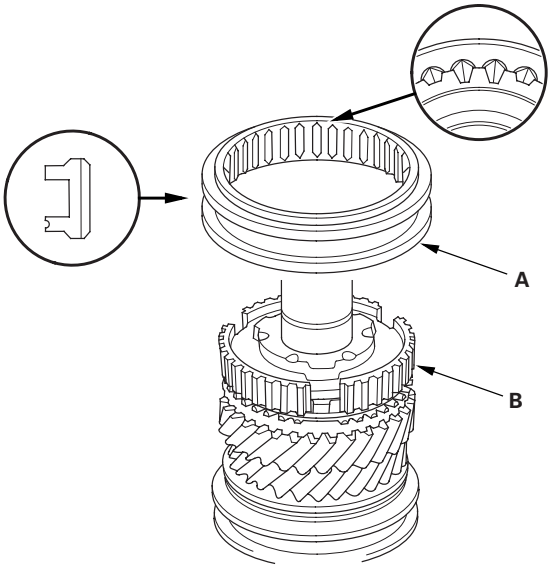


12. Press on the 5th synchro hub (A) using the 40 mm inner driver handle (B), the 30 mm inner bearing driver attachment (C), and a press.



13. Install the 5th synchro sleeve (A) by aligning the slots of the 5th synchro sleeve and the 5th synchro hub (B). After installing, check the operation of the 5th synchro hub set.

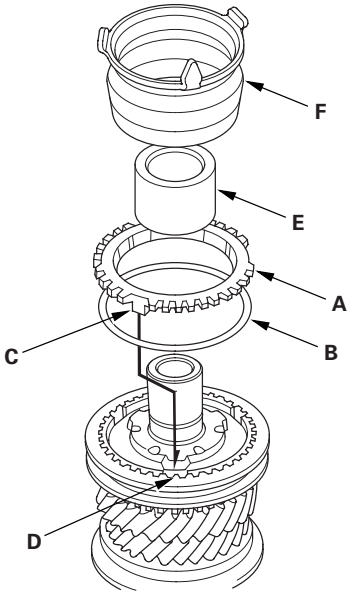
NOTE: Make sure to align the slots in the 5th synchro hub as shown.



(cont'd)

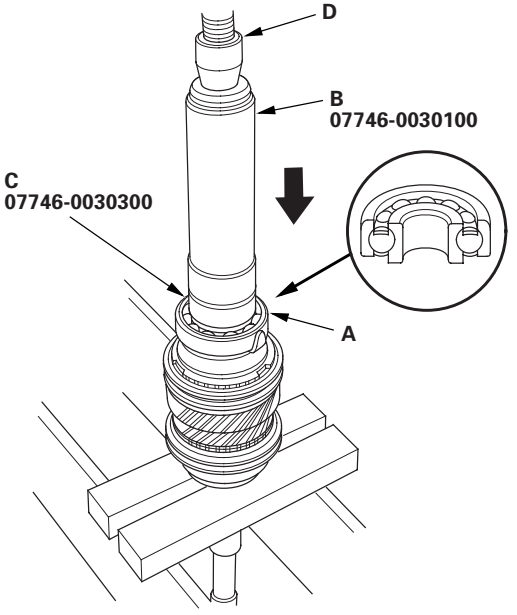
Mainshaft Reassembly (cont'd)

14. Install the synchro ring (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 5th synchro hub.



15. Install the MBS distance collar (E) and the tapered cone ring (F).

16. Press on new angular ball bearing (A) using the 40 mm inner driver handle (B), 30 mm inner bearing driver attachment (C), and a press (D).



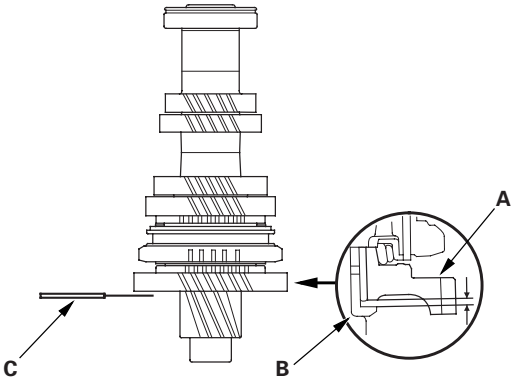
DYNOMITE -2009-

Countershaft Assembly Clearance Inspection

1. Measure the clearance between 1st gear (A) and the 1st gear distance collar (B) with a feeler gauge (C).

   - If the clearance exceeds the service limit, go to step 2.
   - If the clearance is within the service limit, go to step 4.

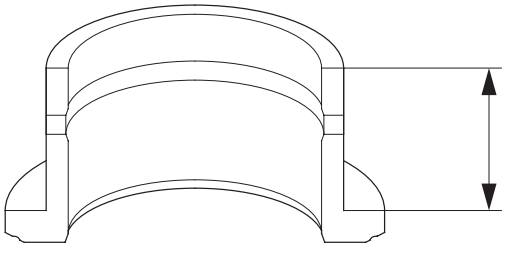
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



2. Measure the length of the 1st gear distance collar as shown.

   - If the length is not within the standard, replace the 1st gear distance collar.
   - If the length is within the standard, go to step 3.

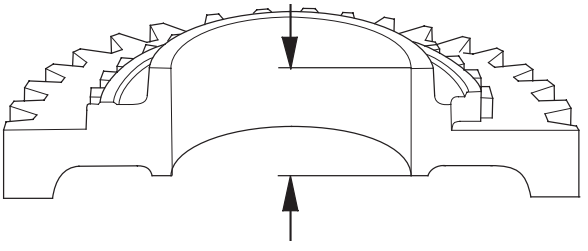
   Standard: 23.03—23.08 mm (0.907—0.909 in.)



3. Measure the thickness of 1st gear.

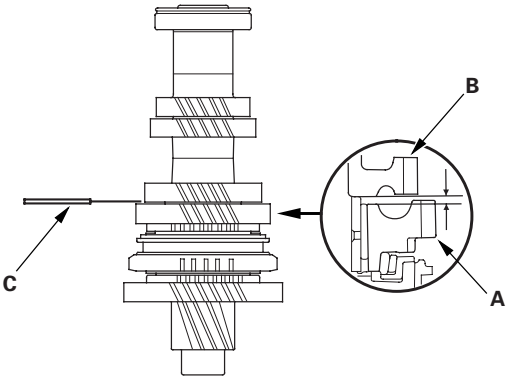
   - If the thickness is less than the service limit, replace 1st gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and the reverse gear as a set.

   Standard: 22.92—22.97 mm (0.902—0.904 in.)
   Service Limit: 22.87 mm (0.900 in.)



4. Measure the clearance between 2nd gear (A) and 3rd gear (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 5.

   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



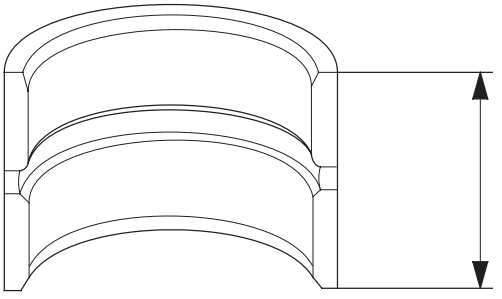
(cont'd)

Countershaft Assembly Clearance Inspection (cont'd)

5. Measure the length of the 2nd gear distance collar.

   - If the length is not within the standard, replace the 2nd gear distance collar.
   - If the length is within the standard, go to step 6.

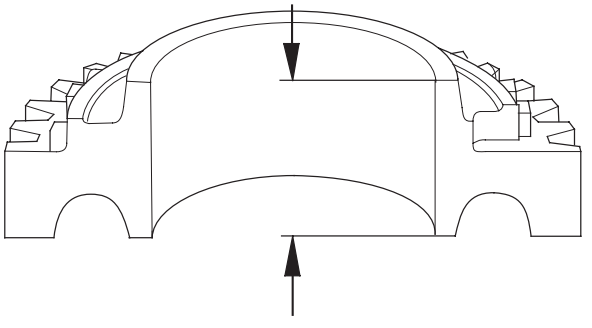
   Standard: 28.03—28.08 mm (1.104—1.106 in.)



6. Measure the thickness of 2nd gear.

   - If the thickness is less than the service limit, replace 2nd gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and the reverse gear as a set.

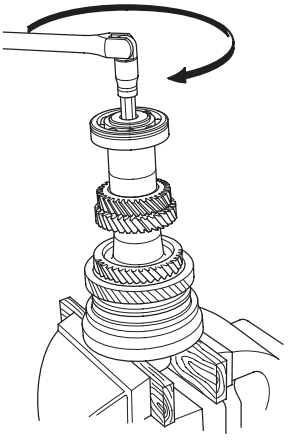
   Standard: 27.92—27.97 mm (1.099—1.101 in.)
   Service Limit: 27.87 mm (1.097 in.)



Countershaft Disassembly

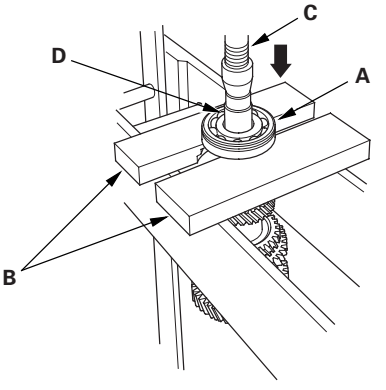
NOTE: Refer to the Exploded View in the Countershaft Reassembly, as needed, when removing components pressed on to the countershaft (see page 13-44).

1. Securely clamp the countershaft assembly in a bench vise with wood blocks.



2. Remove the special bolt (left-hand threads).

3. Support the ball bearing (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.



4. Remove the 35 mm shim and the distance collar.

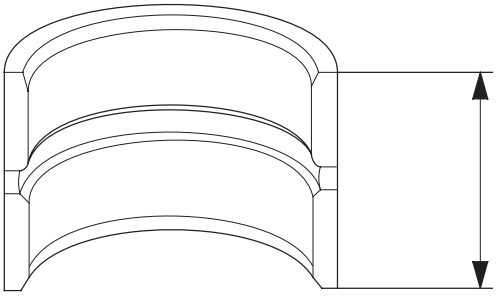
DYNOMITE -2009-

Countershaft Assembly Clearance Inspection (cont'd)

5. Measure the length of the 2nd gear distance collar.

   - If the length is not within the standard, replace the 2nd gear distance collar.
   - If the length is within the standard, go to step 6.

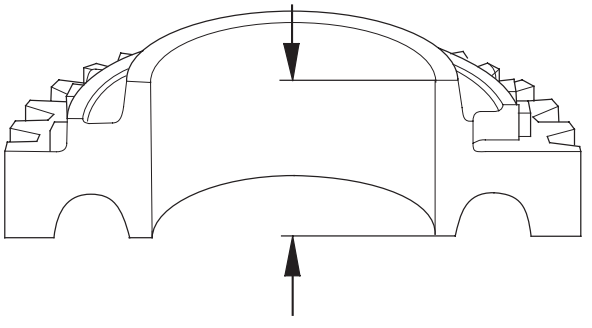
   Standard: 28.03—28.08 mm (1.104—1.106 in.)



6. Measure the thickness of 2nd gear.

   - If the thickness is less than the service limit, replace 2nd gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and the reverse gear as a set.

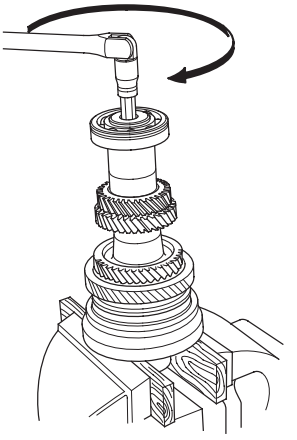
   Standard: 27.92—27.97 mm (1.099—1.101 in.)
   Service Limit: 27.87 mm (1.097 in.)



Countershaft Disassembly

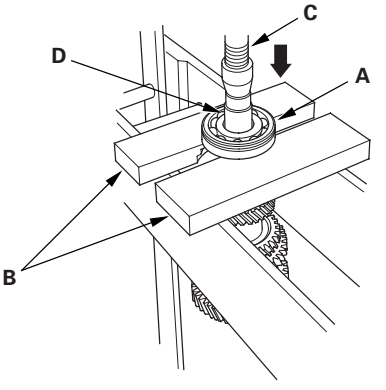
NOTE: Refer to the Exploded View in the Countershaft Reassembly, as needed, when removing components pressed on to the countershaft (see page 13-44).

1. Securely clamp the countershaft assembly in a bench vise with wood blocks.



2. Remove the special bolt (left-hand threads).

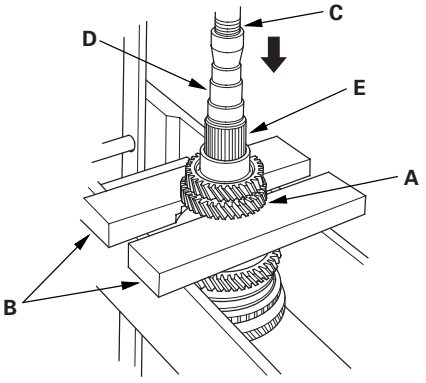
3. Support the ball bearing (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.



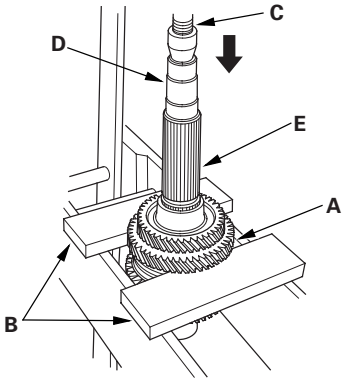
4. Remove the 35 mm shim and the distance collar.

DYNOMITE -2009-

5. Support 4th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 4th gear and 5th gear.



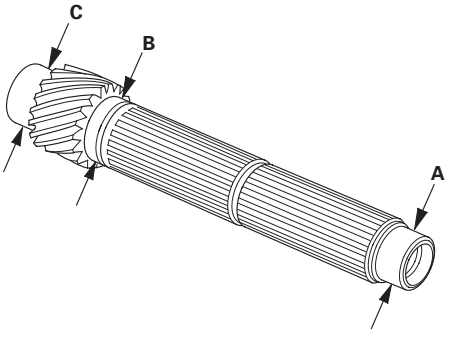
6. Support 2nd gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 2nd gear and 3rd gear.



Countershaft Inspection

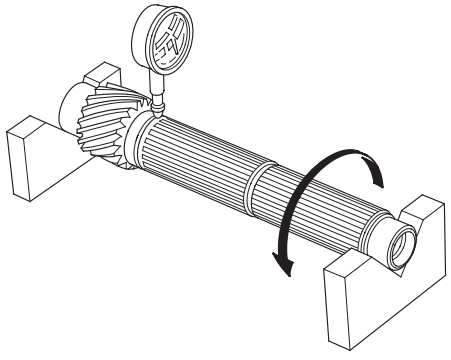
1. Inspect the gear and bearing contact areas for wear and damage, then measure the countershaft at points A, B, and C. If any part of the countershaft is less than the service limit, replace it.

Standard:
A Ball Bearing Contact Area (transmission housing side):
30.020—30.033 mm (1.1819—1.1824 in.)
B 1st Gear Distance Collar Contact Area:
39.937—39.950 mm (1.5723—1.5728 in.)
C Needle Bearing Contact Area (clutch housing side):
40.000—40.015 mm (1.5748—1.5754 in.)
Service Limit:
A: 29.97 mm (1.180 in.)
B: 39.88 mm (1.570 in.)
C: 39.95 mm (1.573 in.)



2. Inspect the runout by supporting both ends of the countershaft. Then rotate the countershaft two complete turns while measuring with a dial gauge. If the runout exceeds the service limit, replace the countershaft.

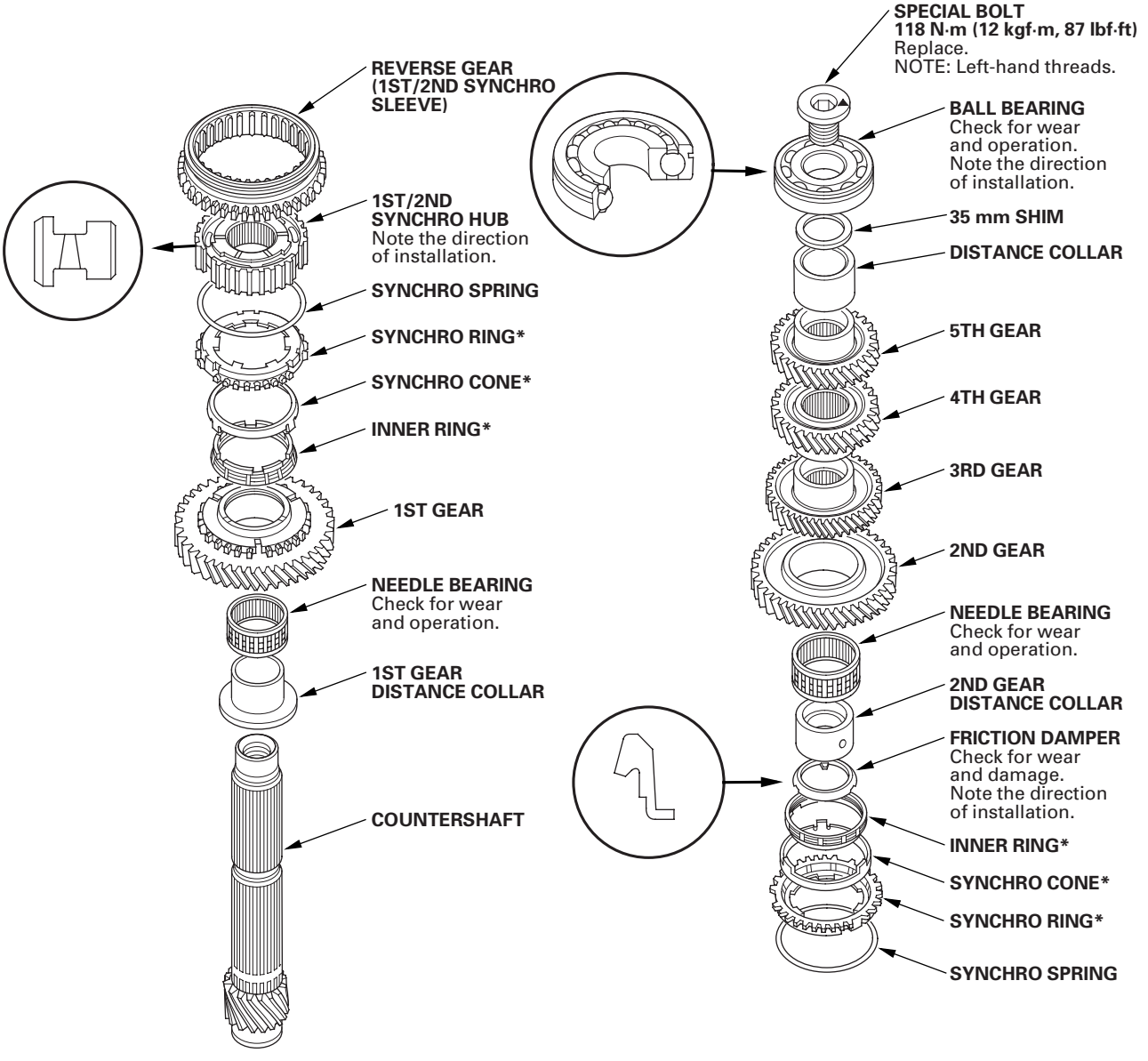
Standard: 0.02 mm (0.001 in.) max.
Service Limit: 0.05 mm (0.002 in.)



DYNOMITE -2009-

Countershaft Reassembly

Exploded View



*: The components of the triple cone synchro assembly.

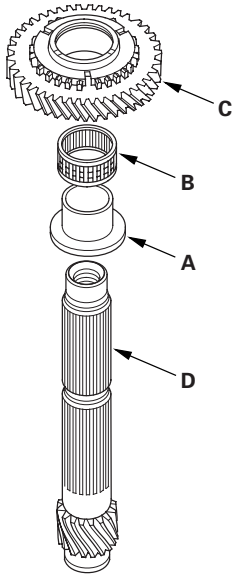
DYNOMITE -2009-

Special Tools Required
- Inner driver handle, 40 mm 07746-0030100
- Inner bearing driver attachment, 30 mm 07746-0030300

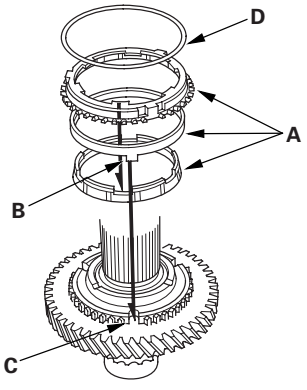
NOTE: Refer to the Exploded View, as needed, during this procedure.

1. Clean all parts in solvent, dry them, and apply MTF to all contact surfaces.

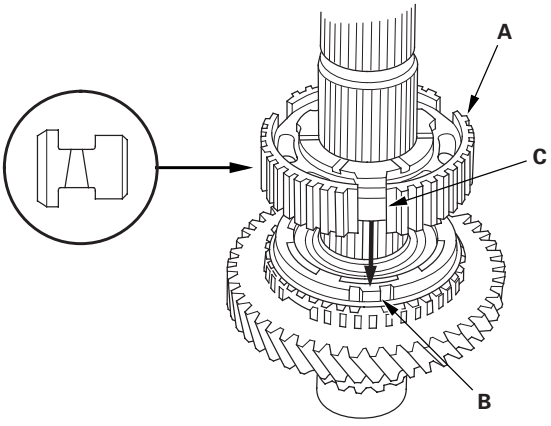
2. Install the 1st gear distance collar (A), the needle bearing (B), and 1st gear (C) onto the countershaft (D).



3. Install the triple cone synchro assembly (A) by aligning the synchro cone fingers (B) with the grooves (C) in 1st gear, then install the synchro spring (D).

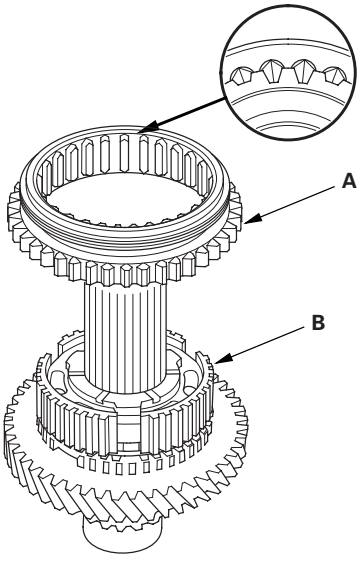


4. Install the 1st/2nd synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 1st/2nd synchro hub.



5. Install the reverse gear (A) by aligning the slots of reverse gear and the 1st/2nd synchro hub (B). After installing, check the operation of the 1st/2nd synchro hub set.

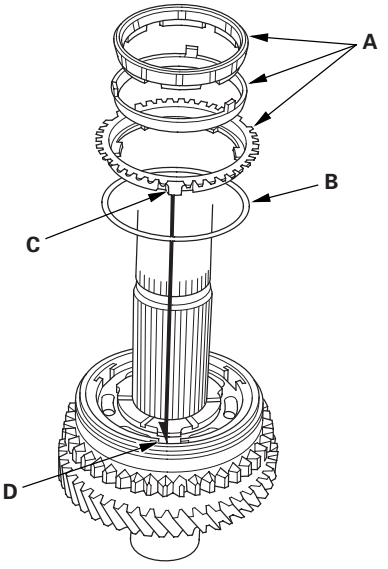
   NOTE: Make sure to align the slots in the 1st/2nd synchro hub as shown.



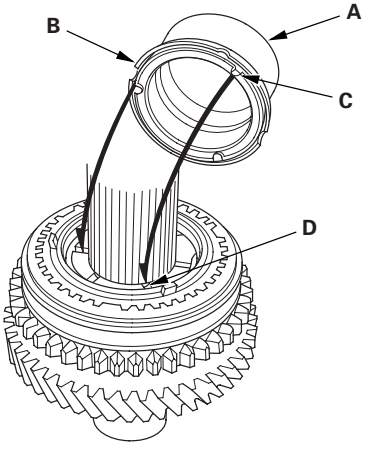
(cont'd)

Countershaft Reassembly (cont'd)

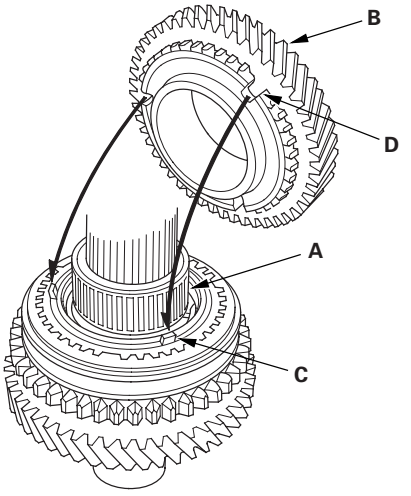
6. Install the triple cone synchro assembly (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 1st/2nd synchro hub.



7. Install the distance collar (A) and the friction damper (B) by aligning the friction damper fingers (C) with the grooves (D) in the 1st/2nd synchro hub.



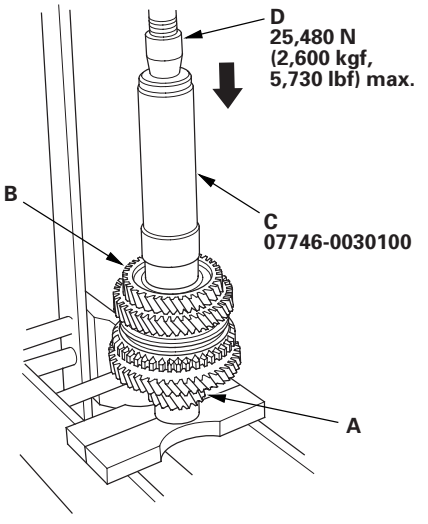
8. Install the needle bearing (A).



9. Install 2nd gear (B) by aligning the synchro cone fingers (C) with the grooves (D) in 2nd gear.

10. Support the countershaft (A) on steel blocks, then press on 3rd gear (B) using the 40 mm inner driver handle (C) and a press (D).

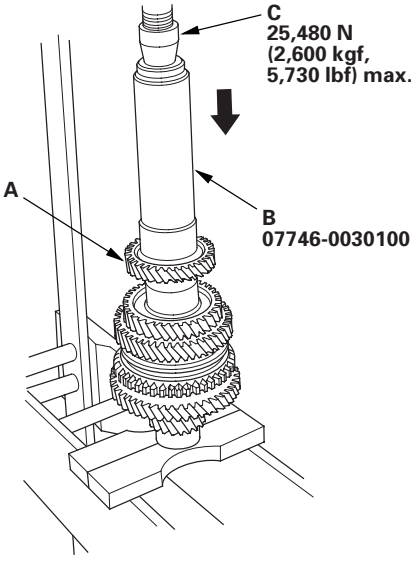
    NOTE: Do not exceed the maximum pressure.



DYNOMITE -2009-

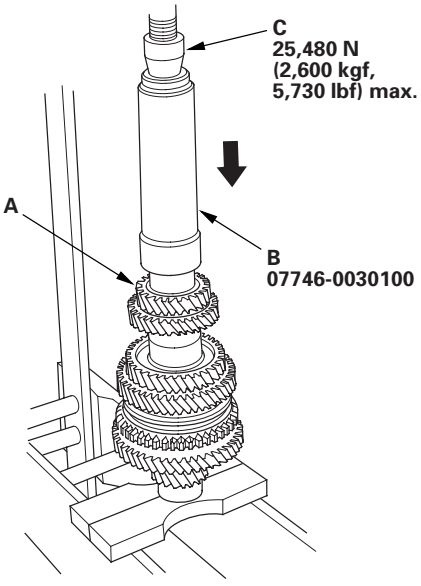
11. Press on 4th gear (A) using the 40 mm inner driver handle (B) and a press (C).

    NOTE: Do not exceed the maximum pressure.



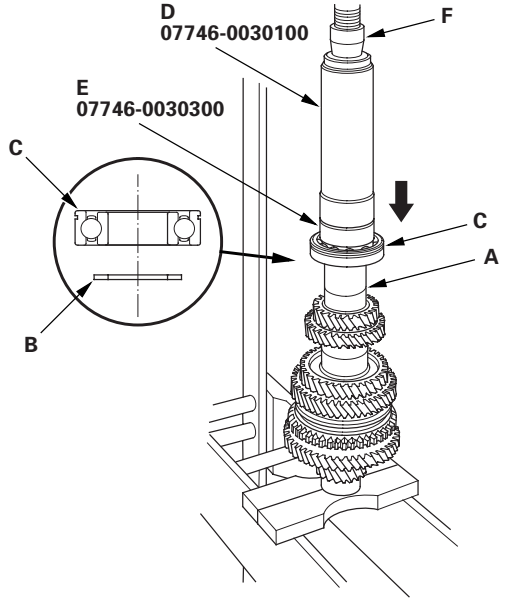
12. Press on 5th gear (A) using the 40 mm inner driver handle (B) and a press (C).

    NOTE: Do not exceed the maximum pressure.



13. Install the distance collar (A) and the 35 mm shim (B), and temporarily press on the used old ball bearing (C) using the 40 mm inner driver handle (D), the 30 mm inner bearing driver attachment (E), and a press (F).

    NOTE:
    - Use any size of 35 mm shim, and note size you used. Measurements taken in the following steps will determine the correct shim to use for final assembly.
    - Make sure to install the ball bearing as shown.

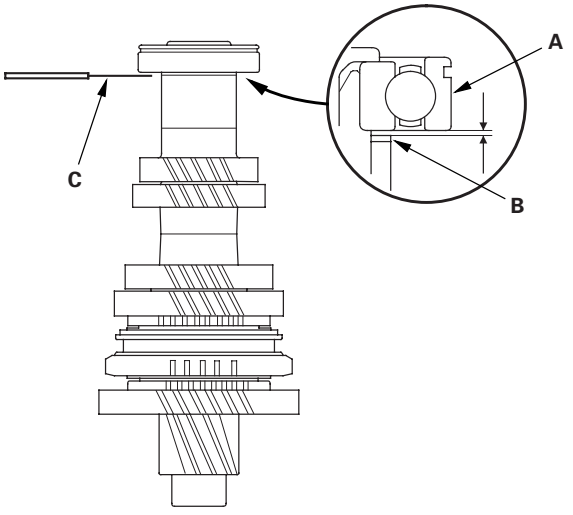


(cont'd)

Countershaft Reassembly (cont'd)

14. Measure the clearance between the bearing (A) and the 35 mm shim (B) with a feeler gauge (C).

Standard: 0.04—0.10 mm (0.0016—0.0039 in.)



15. If the measured clearance in step 14 is not within the standard, select another suitable 35 mm shim from the table, then go to next step to replace the 35 mm shim and the ball bearing with new one. If the measured clearance in step 14 is within the standard, go to next step to replace only the ball bearing with new one.

35 mm Shim

Type	Part Number	Thickness
A	23981-PPP-000	0.87 mm (0.034 in.)
AA	23981-PPP-900	0.91 mm (0.036 in.)
B	23982-PPP-000	0.95 mm (0.037 in.)
AB	23982-PPP-900	0.99 mm (0.039 in.)
C	23983-PPP-000	1.03 mm (0.041 in.)
AC	23983-PPP-900	1.07 mm (0.042 in.)
D	23984-PPP-000	1.11 mm (0.044 in.)
AD	23984-PPP-900	1.15 mm (0.045 in.)
E	23985-PPP-000	1.19 mm (0.047 in.)
AE	23985-PPP-900	1.23 mm (0.048 in.)
F	23986-PPP-000	1.27 mm (0.050 in.)
AF	23986-PPP-900	1.31 mm (0.052 in.)
G	23987-PPP-000	1.35 mm (0.053 in.)
AG	23987-PPP-900	1.39 mm (0.055 in.)
H	23988-PPP-000	1.43 mm (0.056 in.)
AH	23988-PPP-900	1.47 mm (0.058 in.)
J	23989-PPP-000	1.51 mm (0.060 in.)
AJ	23989-PPP-900	1.55 mm (0.061 in.)
K	23990-PPP-000	1.59 mm (0.063 in.)
AK	23990-PPP-900	1.63 mm (0.064 in.)
L	23991-PPP-000	1.67 mm (0.066 in.)
AL	23991-PPP-900	1.71 mm (0.067 in.)
M	23992-PPP-000	1.75 mm (0.069 in.)
AM	23992-PPP-900	1.79 mm (0.070 in.)
N	23993-PPP-000	1.83 mm (0.072 in.)
AN	23993-PPP-900	1.87 mm (0.074 in.)
P	23994-PPP-000	1.91 mm (0.075 in.)
AP	23994-PPP-900	1.95 mm (0.077 in.)
Q	23995-PPP-000	1.99 mm (0.078 in.)

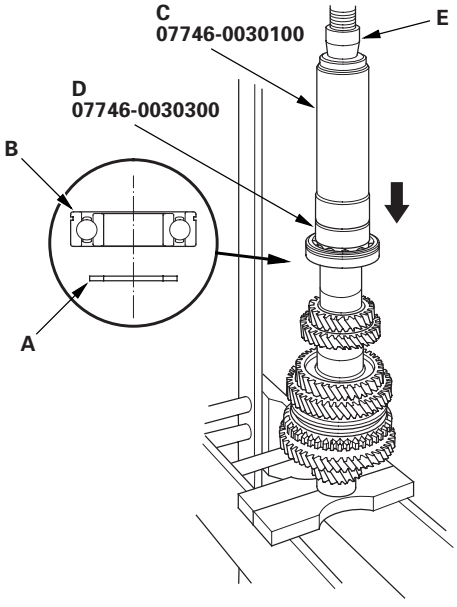
DYNOMITE -2009-

16. Remove the ball bearing (see step 3 on page 13-42).

17. Remove the 35 mm shim.

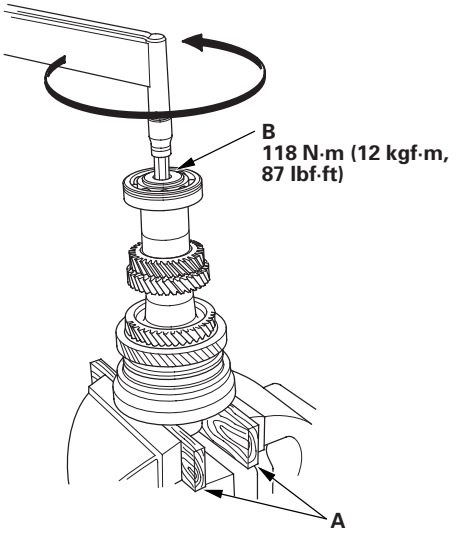
18. Install the correct 35 mm shim (A), then press on new ball bearing (B) using the 40 mm inner driver handle (C), the 30 mm inner bearing driver attachment (D), and a press (E).

    NOTE:
    - If necessary, replace the 35 mm shim with the correct one selected in step 15.
    - Make sure to install the ball bearing as shown.



19. Check the clearance between the bearing and the 35 mm shim with a feeler gauge.

20. Securely clamp the countershaft assembly in a bench vise with wood blocks (A).



21. Tighten new special bolt (B) (left-hand threads).

    NOTE: Apply MTF to the bolt threads and flange.

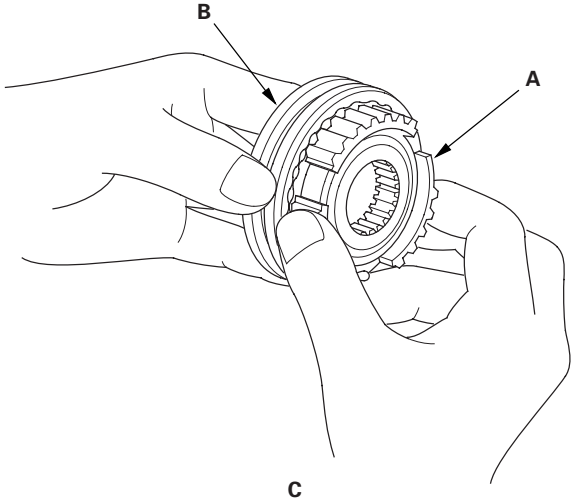
DYNOMITE -2009-

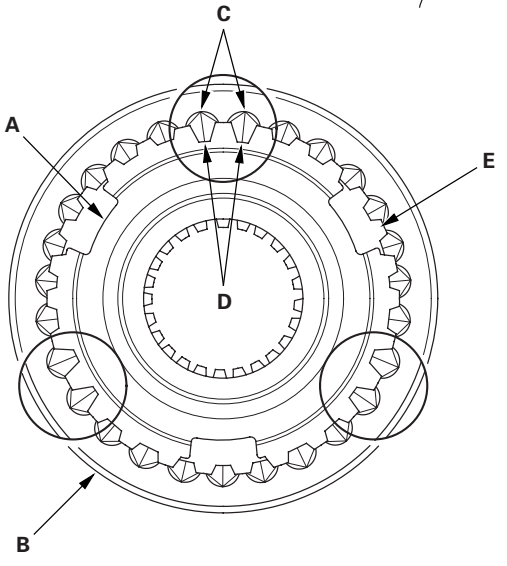
Synchro Sleeve and Hub Inspection and Reassembly

1. Inspect the gear teeth on all synchro hubs and synchro sleeves for wear (rounded off corners).

2. Install each synchro hub (A) in its mating synchro sleeve (B), and check for free movement. Make sure to match the three sets of longer teeth (C) (120 degrees apart) on the synchro sleeve with the three sets of deeper grooves (D) in the synchro hub.

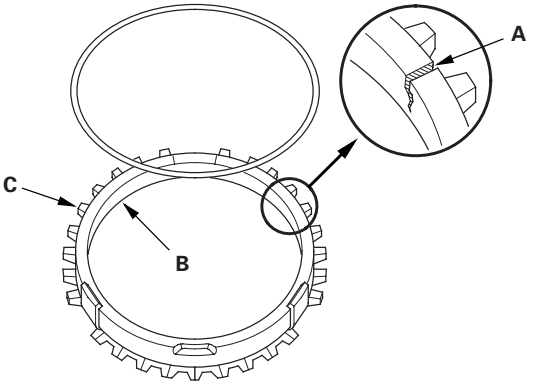
   NOTE:
   - Do not install the synchro sleeve with its longer teeth in the 1st/2nd and 5th synchro hub slots (E) because it will damage the spring ring.
   - If replacement is required, always replace the synchro sleeve and the synchro hub as a set.



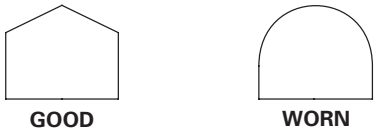


Synchro Ring and Gear Inspection

1. Inspect the synchro rings for scoring, cracks, and damage (A).

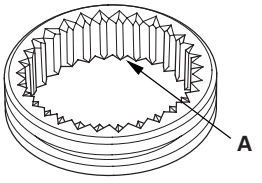


Example of synchro ring teeth

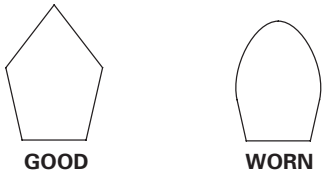


2. Inspect the inside of each synchro ring (B) for wear. Inspect the teeth (C) on each synchro ring for wear (rounded off).

3. Inspect the teeth (A) on each synchro sleeve and matching teeth on each gear for wear (rounded off).

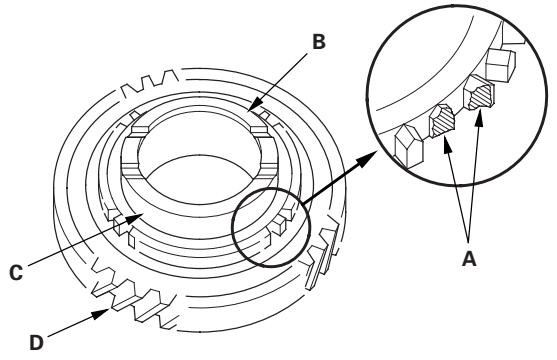


Example of synchro sleeve teeth and gear teeth



DYNOMITE -2009-

4. Inspect the synchro teeth on gear for scoring, cracks, and damage (A).



5. Inspect the thrust surface (B) on each gear hub for wear.

6. Inspect the cone surface (C) on each gear hub for wear and roughness.

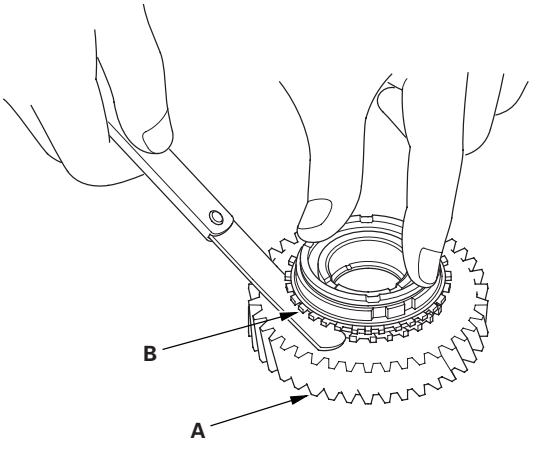
7. Inspect the teeth on all gears (D) for uneven wear, scoring, and cracks.

8. Coat the cone surface of each gear with MTF, and place its synchro ring on it. Rotate the synchro ring, making sure that it does not slip.

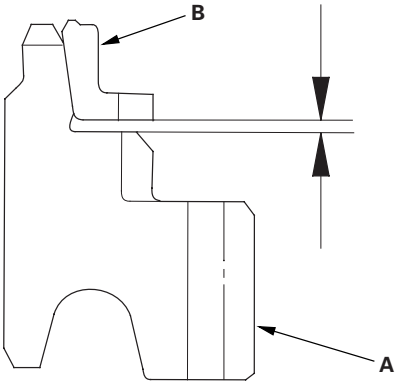
9. Measure the clearance between each gear (A) and its synchro ring (B) all around the gear. Hold the synchro ring against the gear evenly while measuring the clearance. If the clearance is less than the service limit, replace the synchro ring and gear.

Synchro Ring-to-Gear Clearance
Standard: 0.70—1.49 mm (0.028—0.059 in.)
Service Limit: 0.4 mm (0.016 in.)

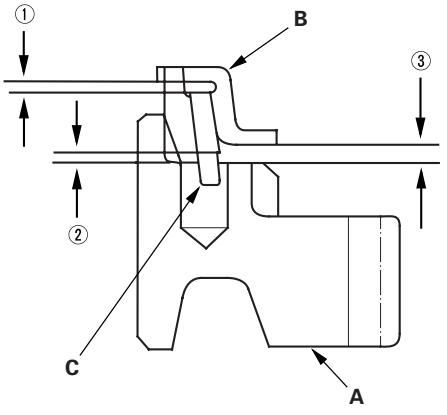
Double Cone Synchro and Triple Cone Synchro-to-Gear Clearance
Standard:
①: Outer Synchro Ring (B) to Synchro Cone (C) 0.70—1.19 mm (0.028—0.047 in.)
②: Synchro Cone (C) to Gear (A) 0.50—1.04 mm (0.020—0.041 in.)
③: Outer Synchro Ring (B) to Gear (A) 0.95—1.68 mm (0.037—0.066 in.)
Service Limit:
①: 0.3 mm (0.012 in.)
②: 0.3 mm (0.012 in.)
③: 0.6 mm (0.024 in.)



Synchro ring-to-gear



Double cone synchro and triple cone synchro-to-gear

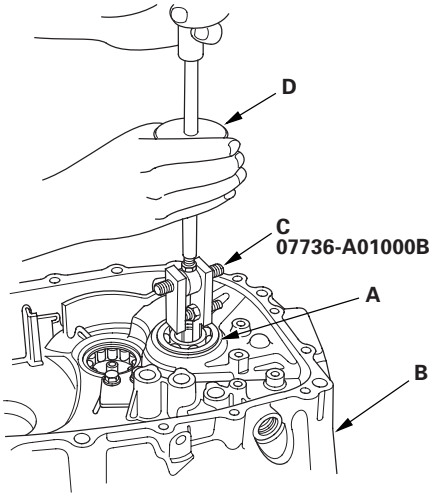


DYNOMITE -2009-

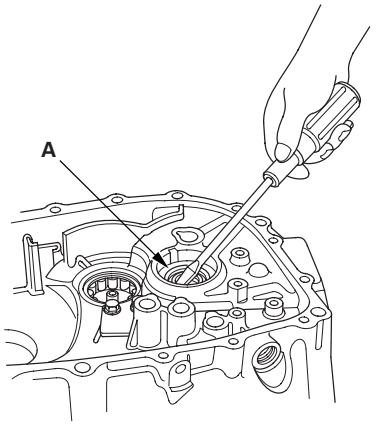
Mainshaft Bearing and Oil Seal Replacement

Special Tools Required
- Oil seal driver, 65 mm 07JAD-PL90100
- Adjustable bearing puller, 20—40 mm 07736-A01000B
- Bearing driver attachment, 42 x 47 mm 07746-0010300
- Driver handle, 15 x 135L 07749-0010000
- Slide hammer, 3/8''-16 UNF commercially available

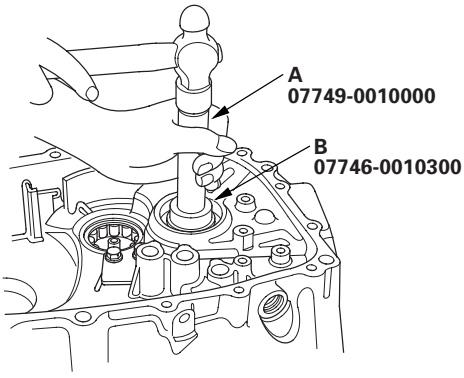
1. Remove the ball bearing (A) from the clutch housing (B) using the 20—40 mm adjustable bearing puller (C) and a commercially available 3/8'' - 16 UNF slide hammer (D).



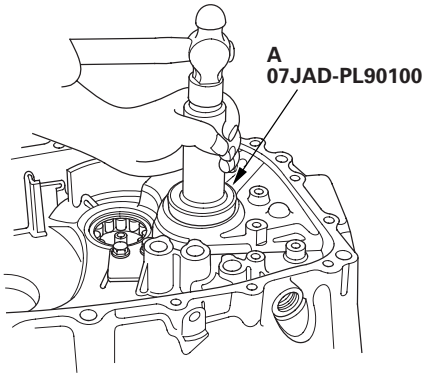
2. Remove the oil seal (A) from the clutch housing. Be careful when removing the oil seal so the clutch housing is not damaged.



3. Drive in new oil seal from the transmission side using the 15 x 135L driver handle (A) and the 42 x 47 mm bearing driver attachment (B).



4. Drive in new ball bearing from the transmission side using the 65 mm oil seal driver (A).

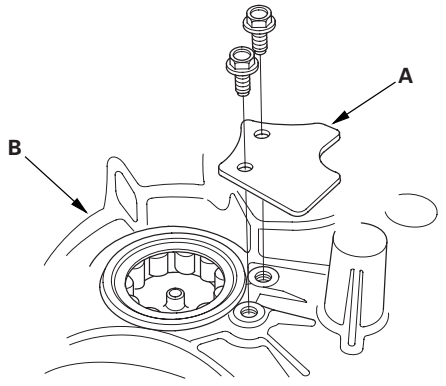


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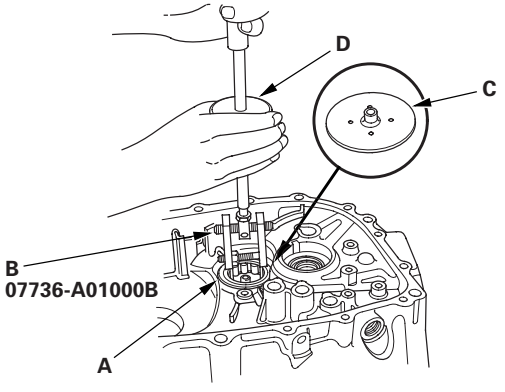
Countershaft Bearing Replacement

Special Tools Required
- Oil seal driver, 65 mm 07JAD-PL90100
- Adjustable bearing puller, 20—40 mm 07736-A01000B
- Slide hammer, 3/8''-16 UNF commercially available

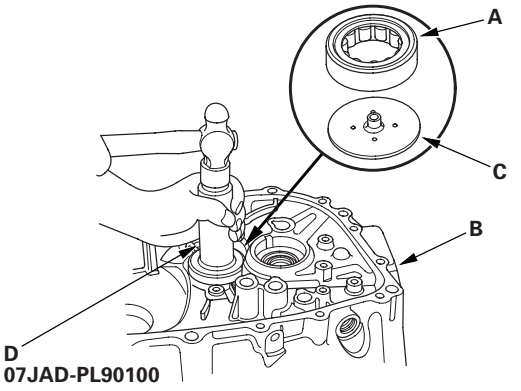
1. Remove the bearing set plate (A) from the clutch housing (B).



2. Remove the needle bearing (A) using the 20—40 mm adjustable bearing puller (B) and a commercially available 3/8''-16 UNF slide hammer (D), then remove oil guide plate C.

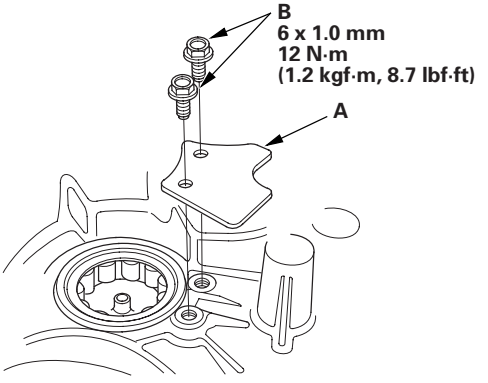


3. Position oil guide plate C and new needle bearing (A) in the bore of the clutch housing (B).



4. Install the needle bearing using the 65 mm oil seal driver (D).

5. Install the bearing set plate (A) with the bolts (B).



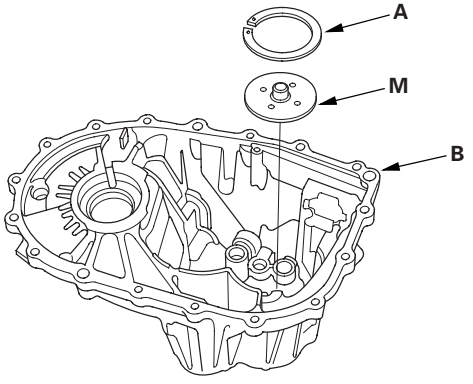
DYNOMITE -2009-

Mainshaft Thrust Clearance Adjustment

Special Tools Required
- Catch adapter 07GAJ-PG20110
- Base adapter 07GAJ-PG20130

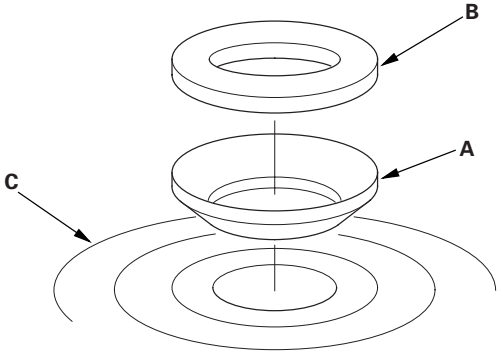
NOTE:
- Take measurement at normal room temperature.
- Clean all the parts thoroughly before installation.

1. Remove the 72 mm shim (A) and oil guide plate M from the transmission housing (B).



2. Thoroughly clean the 28 mm spring washer (A) and the 28 mm washer (B) before installing them on the clutch housings side ball bearing (C).

   NOTE: Install the spring washer in the direction shown.



3. Assemble all of the mainshaft components.

   NOTE: Refer to the Exploded View, as needed, during the assembly (see page 13-36).

4. Install the mainshaft assembly into the clutch housing.

5. Place the transmission housing over the mainshaft and onto the clutch housing.

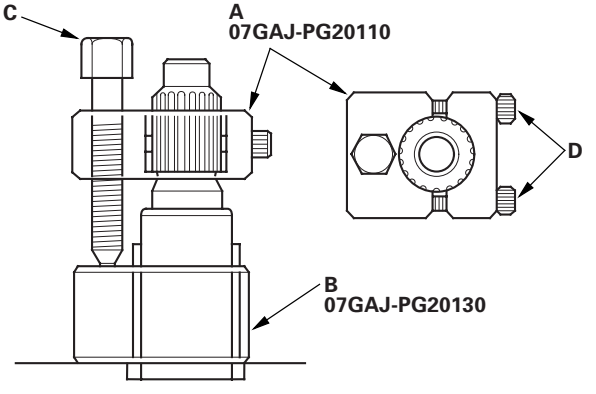
6. Tighten the clutch and transmission housings with several 8 mm bolts.

   NOTE: It is not necessary to use sealing agent between the housing for this procedure.

7. Lightly tap on the mainshaft with a plastic hammer.

8. Attach the catch adapter (A) and the base adapter (B) to the mainshaft as follows:

   - Back out the catch adapter bolt (C), and loosen the two hex bolts (D).
   - Fit the catch adapter over the mainshaft so its lip is towards the transmission.
   - Align the catch adapter lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.

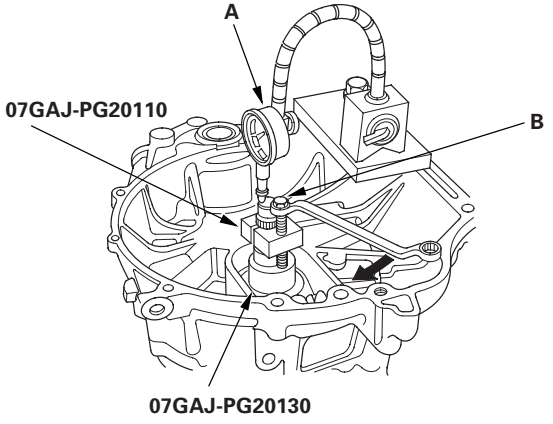


9. Fully seat the mainshaft by tapping its end with a plastic hammer.

10. Thread the catch adapter bolt in until it just contacts the wide surface of the base adapter.

DYNOMITE -2009-

11. Zero a dial gauge (A) on the end of the mainshaft.



12. Turn the catch adapter bolt (B) clockwise; stop turning when the dial gauge has reached its maximum movement. The reading on the dial gauge is the amount of mainshaft thrust clearance.

    NOTE: Do not turn the catch adapter bolt exceeds 60 degrees after the needle of the dial gauge stops moving. Applying more pressure with the catch adapter bolt could damage the transmission.

13. If the reading is within the standard, the clearance is correct. If the reading is not within the standards, select the appropriate shim needed from the table, and recheck the thrust clearance.

    Standard: 0.11—0.17 mm (0.004—0.007 in.)

    (Example)
    Measure reading: 1.93 mm (0.076 in.)

    Subtract the total clearance measurement from the middle of the clearance standard 0.14 mm (0.0056 in.)

    1.93 — 0.14 mm = 1.79 mm (0.070 in.)

    Select the shim closet to the amount calculated, for example the 1.80 mm (0.071 in.) shim.

14. With guide plate M and the appropriate size shim installed in the transmission housing, check the thrust clearance again to verify the clearance is within the standard.

72 mm Shim

Type	Part Number	Thickness
A	23931-P21-000	0.60 mm (0.024 in.)
B	23932-P21-000	0.63 mm (0.025 in.)
C	23933-P21-000	0.66 mm (0.026 in.)
D	23934-P21-000	0.69 mm (0.027 in.)
E	23935-P21-000	0.72 mm (0.028 in.)
F	23936-P21-000	0.75 mm (0.030 in.)
G	23937-P21-000	0.78 mm (0.031 in.)
H	23938-P21-000	0.81 mm (0.032 in.)
I	23939-P21-000	0.84 mm (0.033 in.)
J	23940-P21-000	0.87 mm (0.034 in.)
K	23941-P21-000	0.90 mm (0.035 in.)
L	23942-P21-000	0.93 mm (0.037 in.)
M	23943-P21-000	0.96 mm (0.038 in.)
N	23944-P21-000	0.99 mm (0.039 in.)
O	23945-P21-000	1.02 mm (0.040 in.)
P	23946-P21-000	1.05 mm (0.041 in.)
Q	23947-P21-000	1.08 mm (0.043 in.)
R	23948-P21-000	1.11 mm (0.044 in.)
S	23949-P21-000	1.14 mm (0.045 in.)
T	23950-P21-000	1.17 mm (0.046 in.)
U	23951-P21-000	1.20 mm (0.047 in.)
V	23952-P21-000	1.23 mm (0.048 in.)
W	23953-P21-000	1.26 mm (0.050 in.)
X	23954-P21-000	1.29 mm (0.051 in.)
Y	23955-P21-000	1.32 mm (0.052 in.)
Z	23956-P21-000	1.35 mm (0.053 in.)
AA	23957-P21-000	1.38 mm (0.054 in.)
AB	23958-P21-000	1.41 mm (0.056 in.)
AC	23959-P21-000	1.44 mm (0.057 in.)
AD	23960-P21-000	1.47 mm (0.058 in.)
AE	23961-P21-000	1.50 mm (0.059 in.)
AF	23962-P21-000	1.53 mm (0.060 in.)
AG	23963-P21-000	1.56 mm (0.061 in.)
AH	23964-P21-000	1.59 mm (0.063 in.)
AI	23965-P21-000	1.62 mm (0.064 in.)
AJ	23966-P21-000	1.65 mm (0.065 in.)
AK	23967-P21-000	1.68 mm (0.066 in.)
AL	23968-P21-000	1.71 mm (0.067 in.)
AM	23969-P21-000	1.74 mm (0.069 in.)
AN	23970-P21-000	1.77 mm (0.070 in.)
AO	23971-P21-000	1.80 mm (0.071 in.)

(cont'd)

(cont'd)

Mainshaft Thrust Clearance Adjustment (cont'd)

72 mm Shim (cont'd)

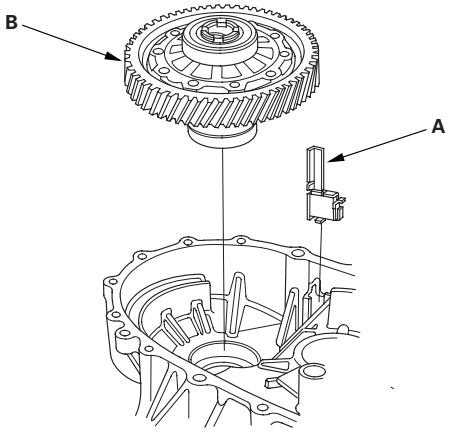
Type	Part Number	Thickness
AP	23972-PPP-J00	1.83 mm (0.072 in.)
AQ	23973-PPP-J00	1.86 mm (0.073 in.)
AR	23974-PPP-J00	1.89 mm (0.074 in.)
AS	23975-PPP-J00	1.92 mm (0.076 in.)
AT	23976-PPP-J00	1.95 mm (0.077 in.)
AV	23977-PPP-J00	1.98 mm (0.078 in.)
AW	23978-PPP-J00	2.01 mm (0.079 in.)
AX	23979-PPP-J00	2.04 mm (0.080 in.)
AY	23980-PPP-J00	2.07 mm (0.081 in.)
AZ	23981-PPP-J00	2.10 mm (0.083 in.)
BA	23982-PPP-J00	2.13 mm (0.084 in.)
BB	23983-PPP-J00	2.16 mm (0.085 in.)
BC	23984-PPP-J00	2.19 mm (0.086 in.)
BD	23985-PPP-J00	2.22 mm (0.087 in.)
BE	23986-PPP-J00	2.25 mm (0.089 in.)

Transmission Reassembly

NOTE:
- Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to any contact surfaces.
- Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the work bench.

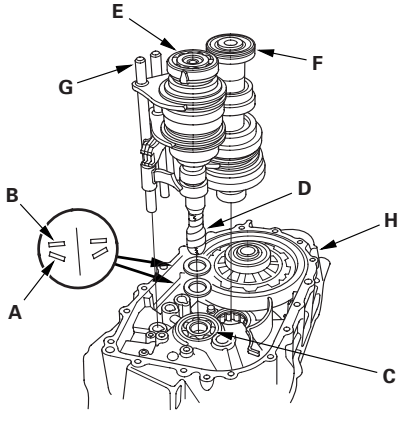
1. Install the magnet (A) and the differential assembly (B).

   NOTE: Clean the magnet anytime the transmission is disassembled.



2. Install the 28 mm spring washer (A) and the 28 mm washer (B) over the ball bearing (C).

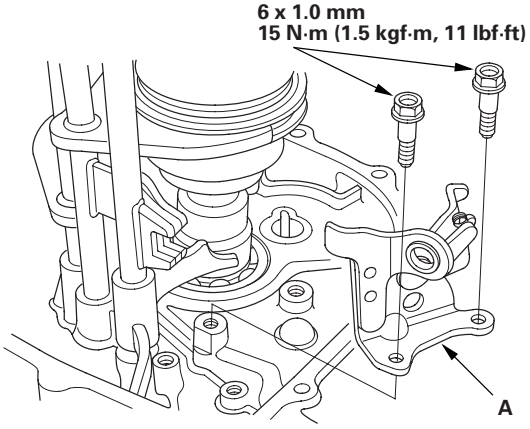
   NOTE: Install the spring washer in the direction shown.



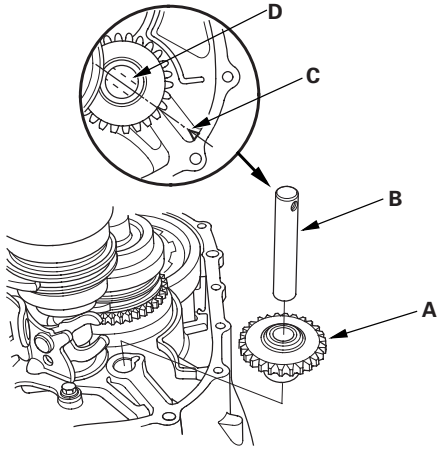
3. Apply tape to the mainshaft splines (D) to protect the seal. Install the mainshaft assembly (E), the countershaft assembly (F), and the shift fork assembly (G) into the clutch housing (H), as an assembly.

DYNOMITE -2009-

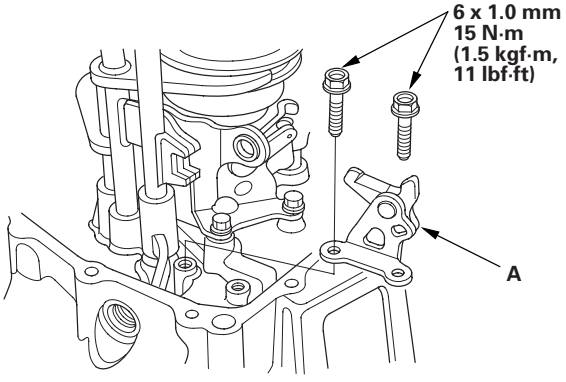
4. Install the reverse shift fork (A).



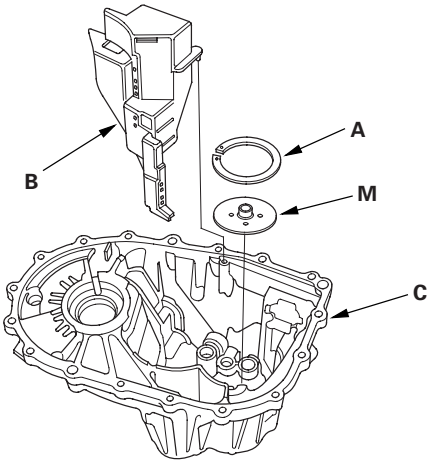
5. Install the reverse idler gear (A) and the reverse idler gear shaft (B) by aligning the mark (C) on the clutch housing with the reverse idler gear shaft hole (D).



6. Install the reverse lock cam (A).

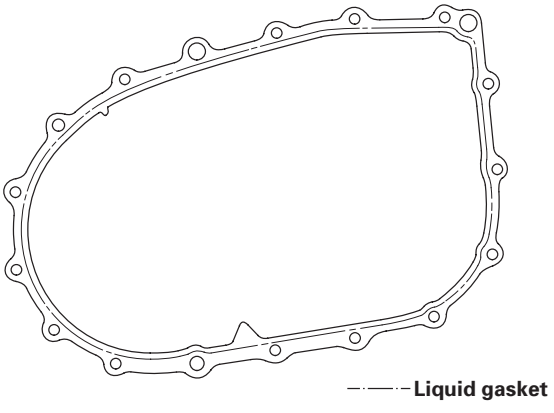


7. Select the proper size 72 mm shim (A) according to the measurements made during the Mainshaft Thrust Clearance Adjustment (see page 13-54). Install the oil gutter plate (B), oil guide plate M, and the 72 mm shim into the transmission housing (C).



8. Clean any dirt or oil from the mating surface of the transmission housing and the clutch housing. Apply liquid gasket, P/N 08718-0001 evenly to the mating surface of the transmission housing and the clutch housing. Install the component within 5 minutes of applying the liquid gasket.

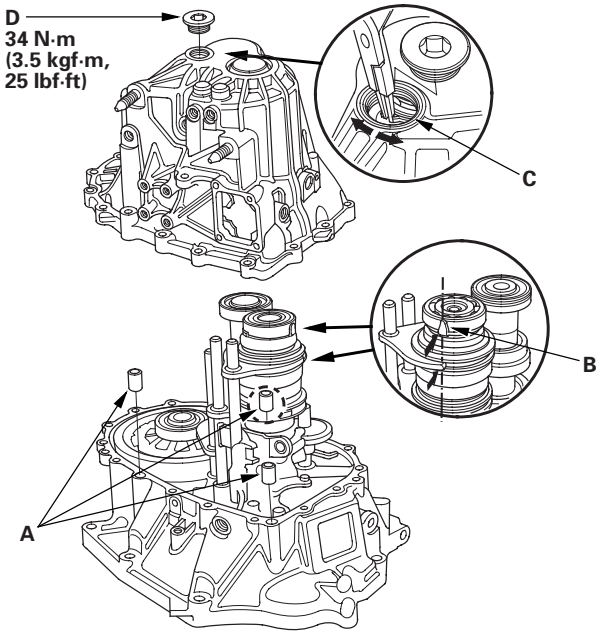
NOTE:
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



(cont'd)

Transmission Reassembly (cont'd)

9. Install the three 14 x 20 mm dowel pins (A).



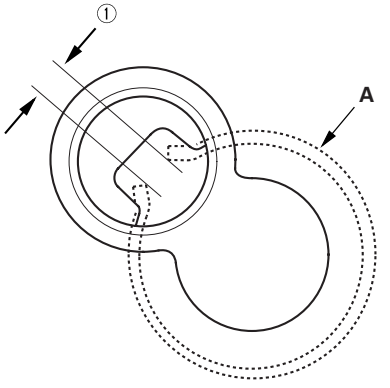
10. Set the tapered cone ring (B) as shown. Place the transmission housing on the clutch housing, making sure to line up the shafts.

11. While expanding the 72 mm snap ring (C) on the countershaft ball bearing using snap ring pliers, push the transmission housing down to start the countershaft ball bearing through the snap ring. Release the pliers, and push down the housing until it bottoms and the snap ring snaps in place in the countershaft ball bearing snap ring groove.

    NOTE: Install the 32 mm sealing cap (D) after setting in the 72 mm snap ring.

12. Make sure the 72 mm snap ring (A) is securely seated in the groove of the countershaft bearing.

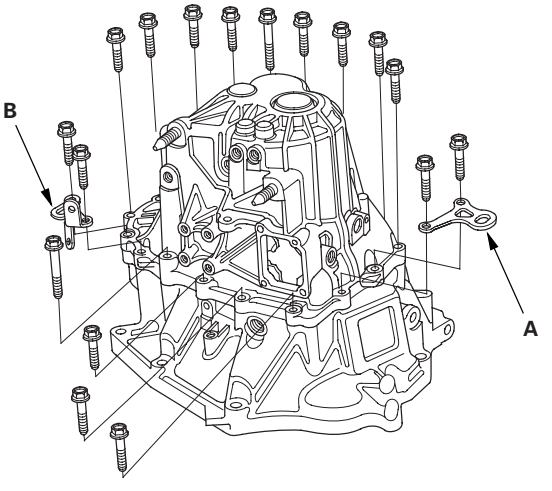
    Dimension ① as installed: 3.3—6.0 mm (0.13—0.24 in.)



13. Apply liquid gasket, P/N 08718-0001, evenly to the threads of the 32 mm searing cap, and install it on the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

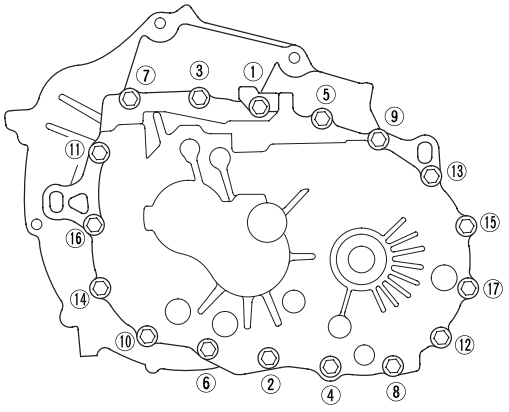
14. Install the 8 mm flange bolts finger-tight with transmission hangers A, and transmission hanger B.



DYNOMITE -2009-

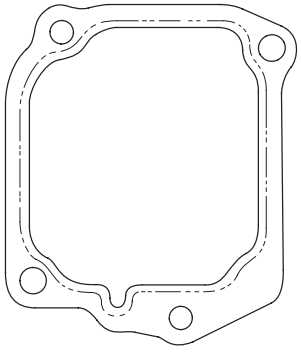
15. Tighten the 8 mm flange bolts in a crisscross pattern in several steps.

Specified Torque:
8 x 1.25 mm
27 N·m (2.8 kgf·m, 20 lbf·ft)



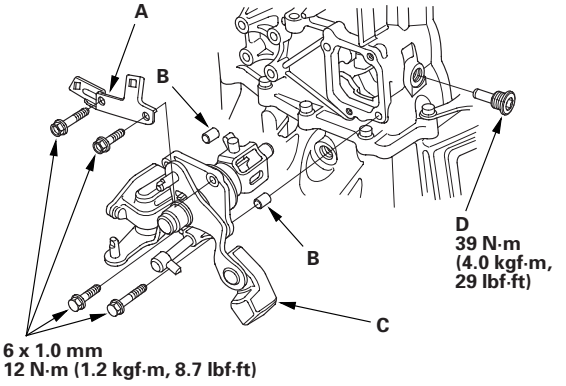
16. Clean any dirt or oil from the mating surface of the change lever assembly and the transmission housing. Apply liquid gasket, P/N 08718-0001 evenly to the mating surface of the change lever assembly and the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



Liquid gasket

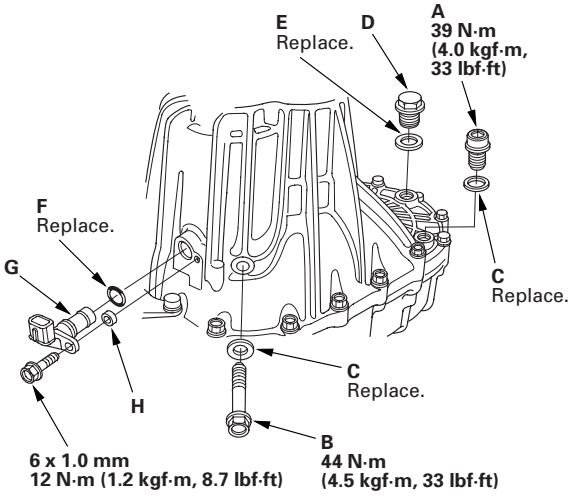
17. Install the 8 x 14 mm dowel pins (B) and the change lever assembly (C) with harness bracket A.



18. Apply liquid gasket, P/N 08718-0001, evenly to the threads of the inter lock bolt (D). Install the component within 5 minutes of applying the liquid gasket.

NOTE:
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

19. Install the drain plug (A) and the 10 mm flange bolt (B) with new washers (C). Install the filler plug (D) finger-tight with new sealing washer (E).

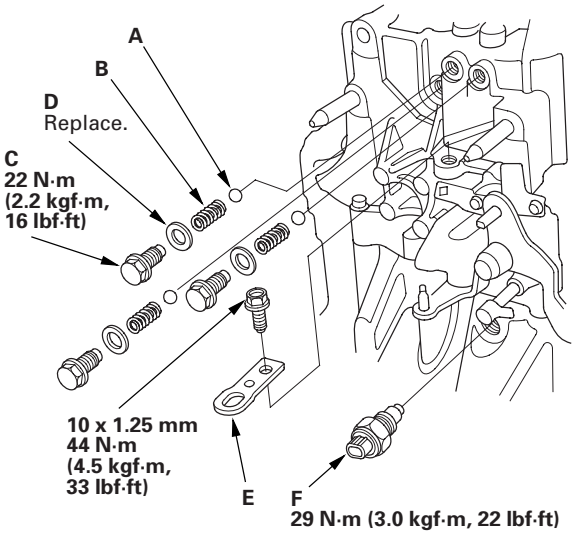


20. Apply MTF to a new O-ring (F). Then install the output shaft (countershaft) speed sensor (G) with the O-ring and the plain washer (H).

(cont'd)

Transmission Reassembly (cont'd)

21. Install the steel balls (A), the springs (B), and the detent bolts (C) with new sealing washers (D).

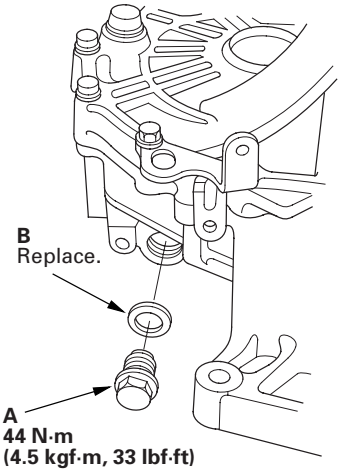


22. Install the transmission hanger (E).

23. Apply liquid gasket, P/N 08718-0001 evenly to the threads of the back-up light switch (F), and install it on the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

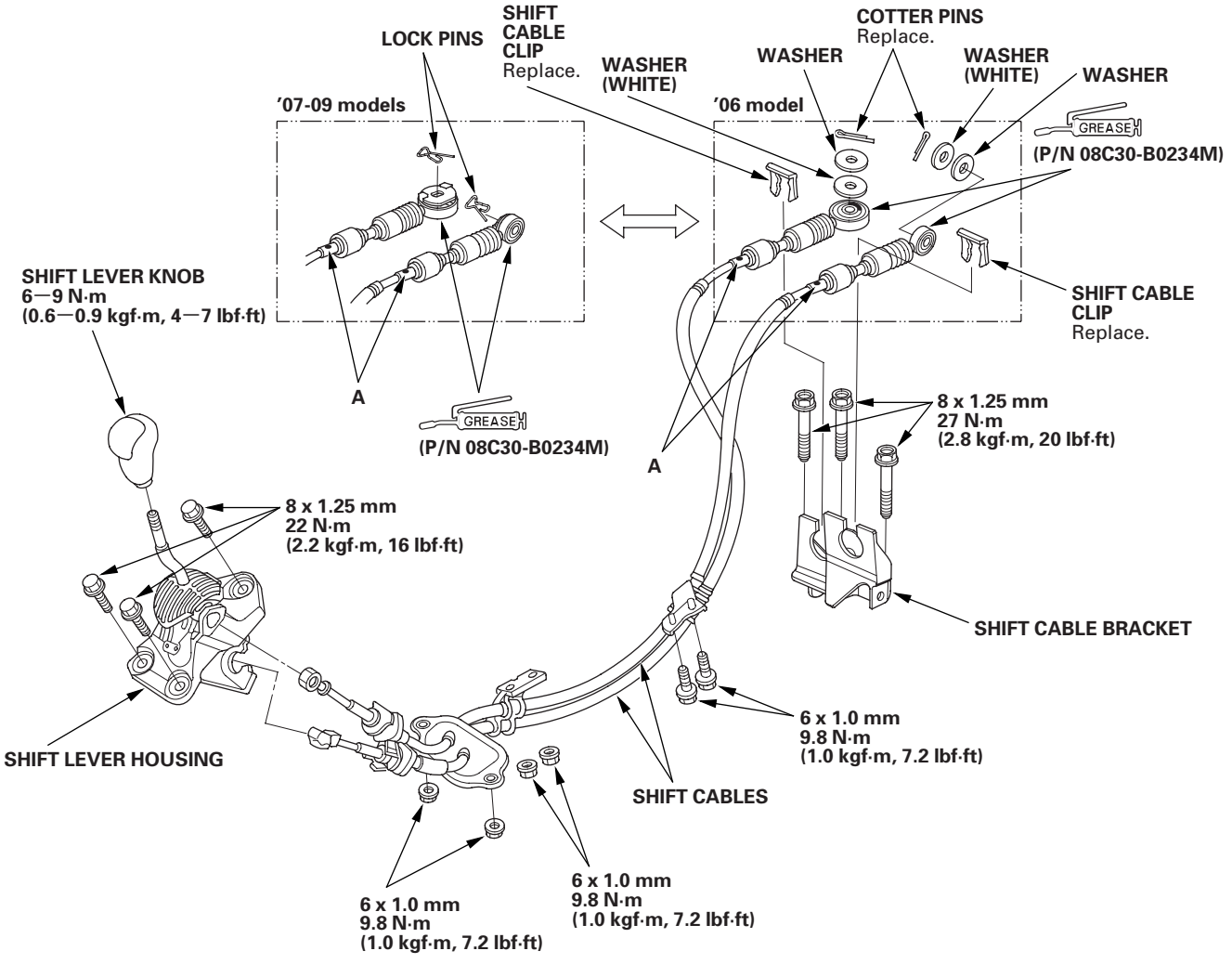
24. Install the 20 mm bolt (A) with new 20 mm sealing washer (B).



DYNOMITE -2009-

Gearshift Mechanism Replacement

NOTE:
- Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.
- When installing the shift cables (transmission side), position the paint mark (A) facing the upward.



6-Speed Manual Transmission

Reverse Lockout System

General Troubleshooting Information 13-71
Component Location Index 13-72
System Description 13-73
Circuit Diagram 13-74
Symptom Troubleshooting 13-74
Reverse Lockout Solenoid Test 13-77
Reverse Lockout Solenoid Disassembly/Reassembly ... 13-77

Manual Transmission

Special Tools 13-70
Component Location Index 13-79
Symptom Troubleshooting Index 13-80
Transmission Fluid Inspection and Replacement 13-82
Back-up Light Switch Test 13-83
Transmission Removal 13-84
Transmission Installation 13-91
Transmission Disassembly 13-99
Reverse Shift Fork Clearance Inspection 13-104
Change Lever Clearance Inspection 13-104
Change Lever Assembly Disassembly/Reassembly ... 13-105
Shift Fork Clearance Inspection 13-106
Shift Fork Disassembly/Reassembly ... 13-107
Mainshaft Assembly Clearance Inspection 13-108
Mainshaft Disassembly 13-111
Mainshaft Inspection 13-112
Mainshaft Reassembly 13-113
Countershaft Assembly Clearance Inspection 13-117
Countershaft Disassembly 13-119
Countershaft Inspection 13-120
Countershaft Reassembly 13-121
Synchro Sleeve and Hub Inspection and Reassembly 13-127
Synchro Ring and Gear Inspection 13-127
Mainshaft Bearing and Oil Seal Replacement 13-129
Countershaft Bearing Replacement 13-130
Mainshaft Thrust Clearance Adjustment 13-131
Transmission Reassembly 13-133
Gearshift Mechanism Replacement 13-138

M/T Differential

Component Location Index 13-139
Differential Carrier, Final Driven Gear Replacement 13-140
Carrier Bearing Replacement 13-140
Oil Seal Replacement 13-141
Differential Thrust Clearance Adjustment 13-142

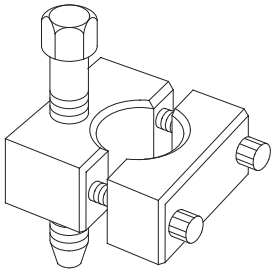
DYNOMITE -2009-

Special Tools

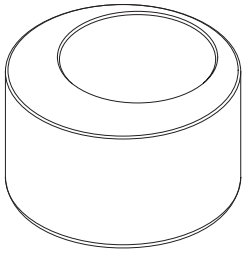
Ref. No.	Tool Number	Description	Qty
*①	07GAJ-PG20110	Catch Adapter	1
*②	07GAJ-PG20130	Base Adapter	1
③	07JAD-PL90100	Oil Seal Driver, 65 mm	1
④	07NAD-P20A100	Oil Seal Driver Attachment	1
**⑤	07736-A01000B	Adjustable Bearing Puller, 20—40 mm	1
⑥	07746-0010300	Bearing Driver Attachment, 42 x 47 mm	1
⑦	07746-0030100	Inner Driver Handle, 40 mm	1
⑧	07746-0030300	Inner Bearing Driver Attachment, 30 mm	1
⑨	07749-0010000	Driver Handle, 15 x 135L	1

*: Part of Mainshaft Inspection Tool Set, 07GAJ-PG20102.

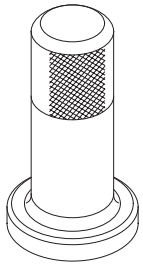
**: Must be used with commercially available 3/8''-16 UNF Slide Hammer.



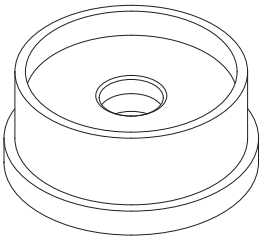
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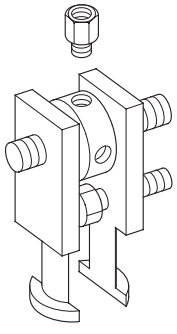
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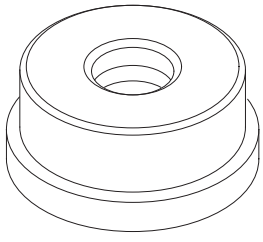
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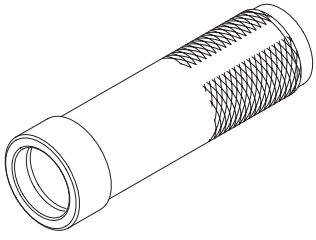
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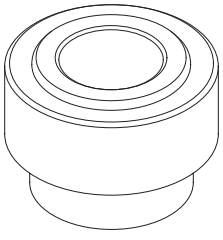
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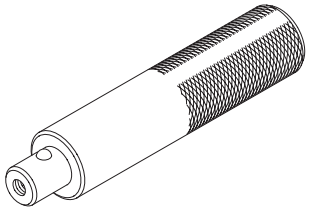
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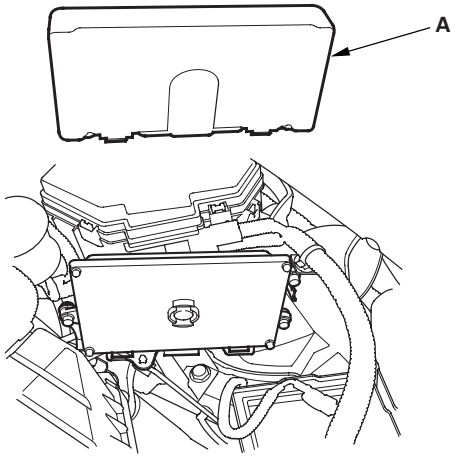
DYNOMITE -2009-

General Troubleshooting Information

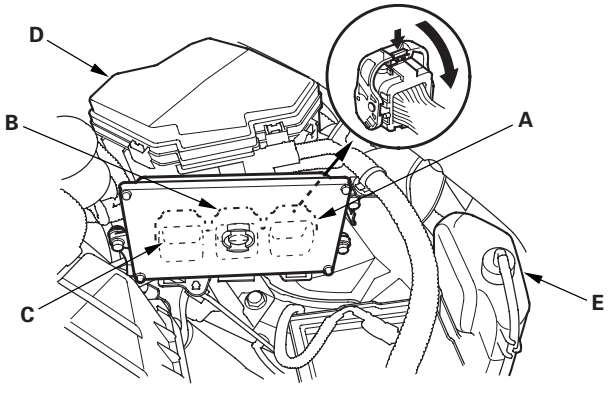
How to Troubleshoot Circuits at the ECM Connectors

NOTE: The ECM overwrites data and monitors the EVAP system for up to 30 minutes after the ignition switch is turned to LOCK (0). Jumping the SCS line after turning the ignition switch to LOCK (0) cancels this function. Disconnecting the ECM during this function, without jumping the SCS line first, can damage the ECM.

1. Jump the SCS line with the HDS.
2. Remove the cover (A).



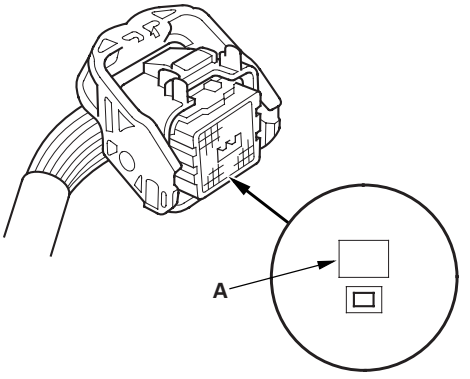
3. Lift up the under-hood fuse/relay box (D).



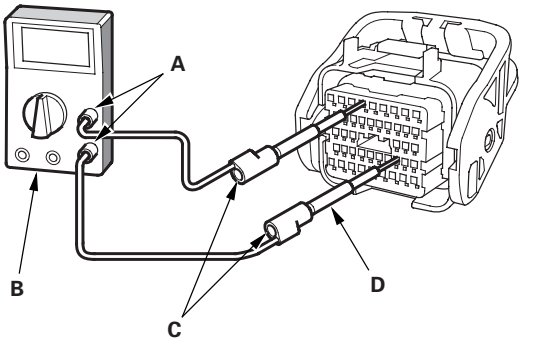
4. Remove the coolant reservoir (E). Disconnect ECM connectors A, B, and C.

   NOTE: ECM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

5. When troubleshooting is done at the ECM connector, use the terminal test port (A) above the terminal you need to check.



6. Connect one side of the patch cord's terminals (A) to a commercially available digital multimeter (B), and connect the other side cord's terminals (C) to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (D).



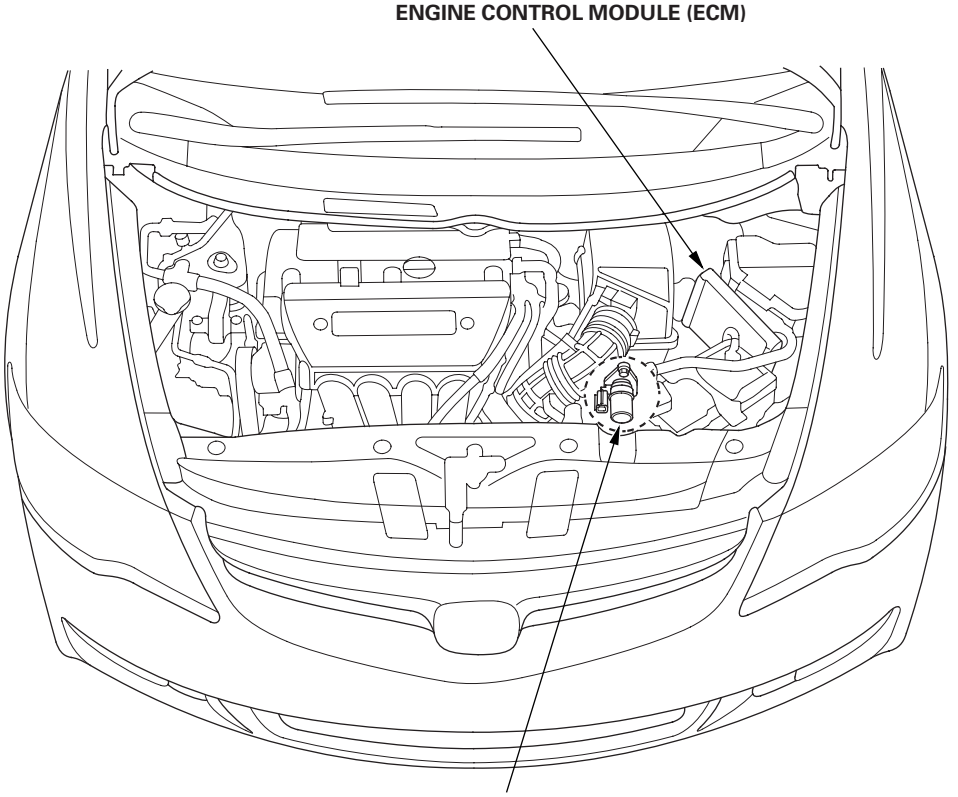
7. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTICE

- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.

DYNOMITE -2009-

Component Location Index

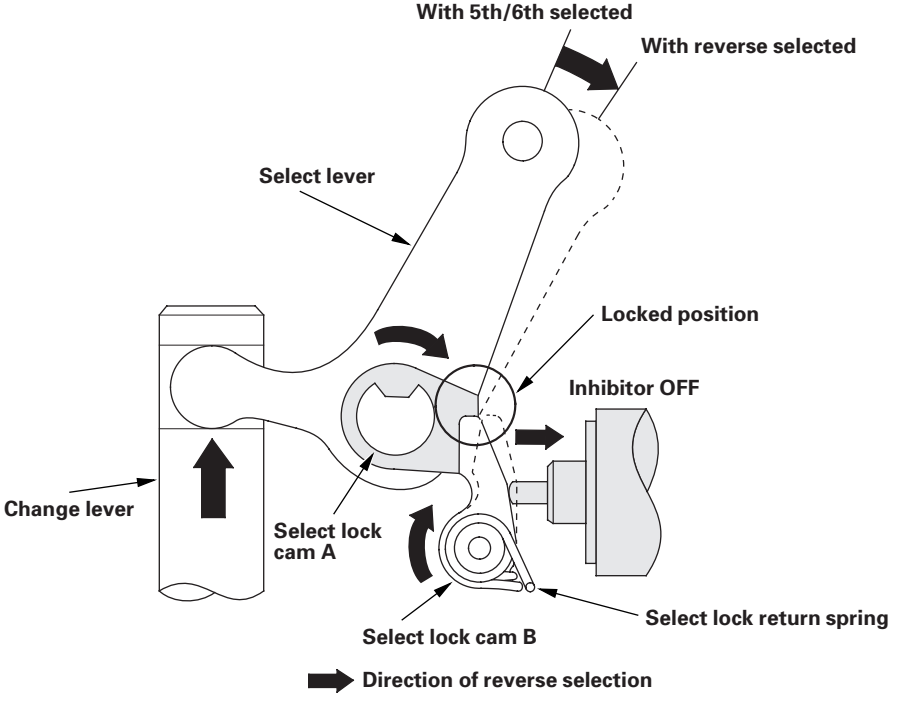


DYNOMITE -2009-

System Description

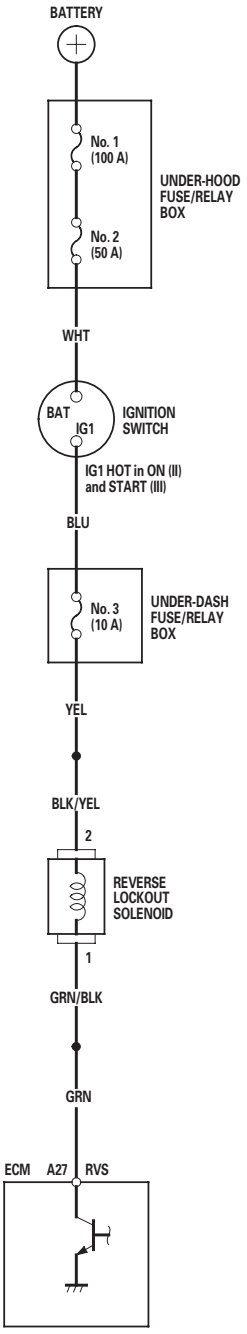
At vehicle speeds of 20 km/h (12 mph) or more, the ECM, which monitors the signals from the output shaft (countershaft) speed sensor, activates the reverse lockout solenoid, which pushes select lock cam B into the locked position. As a result, the select lever cannot rotate to the reverse select position, making it impossible to engage reverse gear. As the vehicle speed drops to 15 km/h (9 mph) or less, the ECM turns off the reverse lockout solenoid. The select lock return spring pulls back select lock cam B, enabling the select lever to move freely so reverse gear can be selected.

Vehicle speed	Inhibitor	Reverse selection
Above 20 km/h (12 mph)	ON	Not allowed
Below 15 km/h (9 mph)	OFF	Allowed
Ignition switch LOCK (0)	OFF	Allowed



Reverse Lockout System

Circuit Diagram



Symptom Troubleshooting

Driver can select reverse gear when vehicle speed is 20 km/h (12 mph) or more

NOTE:
- When checking if the transmission will shift to reverse while the wheels are being driven forward, raise the vehicle on a lift, make sure it is securely supported, and allow the front wheels to rotate freely.
- Do not release the clutch pedal if you can select reverse gear while the wheels are driven forward.
- When the vehicle is on a lift, and you make the wheels rotate, turn off the VSA system by the VSA OFF switch.

1. Turn the ignition switch to LOCK (0).
2. Check the No. 3 (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Reinstall the fuse, then go to step 3.

   NO—Install a new No. 3 (10 A) fuse, and recheck. If the fuse continues to blow, check for short to body ground in the wire between the No. 3 (10 A) fuse in the under-dash fuse/relay box and the reverse lockout solenoid. ■
3. Test-drive the vehicle.
4. Check for fuel and emissions system's DTC with the HDS.

   Are there any DTCs stored in the fuel and emissions?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 5.

DYNOMITE -2009-

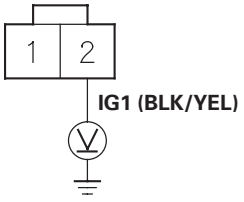
5. Turn the ignition switch to LOCK (0).

6. Disconnect the reverse lockout solenoid 2P connector.

7. Turn the ignition switch to ON (II).

8. Measure the voltage between reverse lockout solenoid 2P connector terminal No. 2 and body ground.

REVERSE LOCKOUT SOLENOID 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between No. 3 (10 A) fuse in the under-dash fuse/relay box and the reverse lockout solenoid. ■

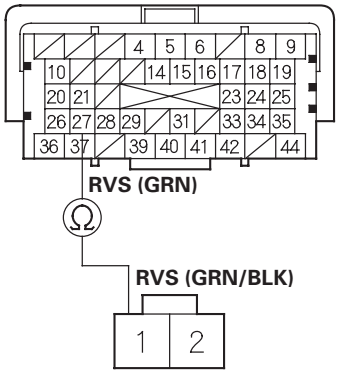
9. Turn the ignition switch to LOCK (0).

10. Jump the SCS line with the HDS.

11. Disconnect ECM connector A (44P).

12. Check for continuity between reverse lockout solenoid 2P connector terminal No. 1 and ECM connector A (44P) terminal No. 27.

ECM CONNECTOR A (44P)
Terminal side of female terminals



REVERSE LOCKOUT SOLENOID 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the reverse lockout solenoid and the ECM. ■

13. Do the reverse lockout solenoid test (see page 13-77).

Is the reverse lockout solenoid OK?

YES—Check for loose terminals or poor connections at the ECM. If necessary, update the ECM if it does not have the latest software (see page 11-227), or substitute a known-good ECM (see page 11-7), then recheck. If the symptom goes away with a known-good ECM, replace the original ECM (see page 11-228). ■

NO—Repair or replace the reverse lockout solenoid (see page 13-77). ■

DYNOMITE -2009-

Symptom Troubleshooting (cont'd)

Driver cannot select reverse gear when vehicle speed is 15 km/h (9 mph) or less

NOTE:
- When checking if the transmission will shift to reverse while the wheels are being driven forward, raise the vehicle on a lift, make sure it is securely supported, and allow the front wheels to rotate freely.
- Do not release the clutch pedal if you can select reverse gear while the wheels are driven forward.
- When the vehicle is on a lift, and you make the wheels rotate, turn off the VSA system by the VSA OFF switch.

1. Turn the ignition switch to LOCK (0).
2. Try to shift the transmission into reverse.

   Can you shift the transmission into the reverse?

   YES—Go to step 4.

   NO—Go to step 3.
3. Do the reverse lockout solenoid test (see page 13-77).

   Is the reverse lockout solenoid OK?

   YES—Check the change lever assembly (see page 13-105), if necessary inspect the internal transmission. ■

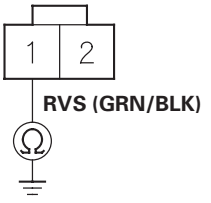
   NO—Repair or replace the reverse lockout solenoid (see page 13-77). ■
4. Start the engine, and try to shift the transmission into reverse.

   Can you shift the transmission into the reverse?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Jump the SCS line with the HDS.
7. Disconnect ECM connector A (44P).
8. Disconnect the reverse lockout solenoid 2P connector.
9. Check for continuity between the reverse lockout solenoid 2P connector terminal No. 1 and body ground.

REVERSE LOCKOUT SOLENOID 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the reverse lockout solenoid and the ECM. ■

NO—Check for loose terminals or poor connections at the ECM. If necessary, update the ECM if it does not have the latest software (see page 11-227), or substitute a known-good ECM (see page 11-7), then recheck. If the symptom goes away with a known-good ECM, replace the original ECM (see page 11-228). ■

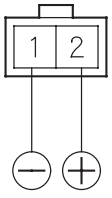
DYNOMITE -2009-

Reverse Lockout Solenoid Test

1. Remove the reverse lockout solenoid (see page 13-77).

2. Connect battery positive terminal to the reverse lockout solenoid 2P connector No. 2 terminal, and connect the battery negative terminal to the No. 1 terminal.

REVERSE LOCKOUT SOLENOID 2P CONNECTOR



Terminal side of male terminals

3. Make sure the reverse lockout solenoid works. If the reverse lockout solenoid does not work, replace it.

Reverse Lockout Solenoid Disassembly/Reassembly

1. Do the battery removal procedure (see page 22-69).

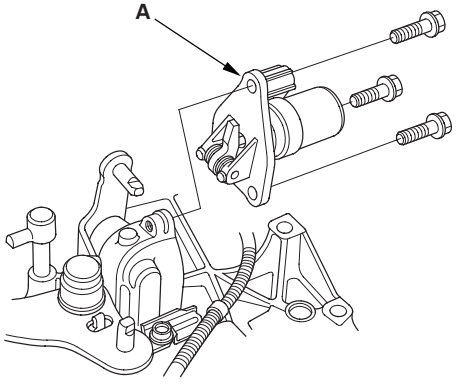
2. Remove the air cleaner assembly (see page 11-345).

3. Remove the battery base (see step 4 on page 13-84).

4. Disconnect the output shaft (countershaft) speed sensor connector, the back-up light switch connector, and the reverse lockout solenoid connector (see step 6 on page 13-84).

5. Carefully remove the shift cables and the cable bracket together to avoid bending the cables (see step 7 on page 13-85).

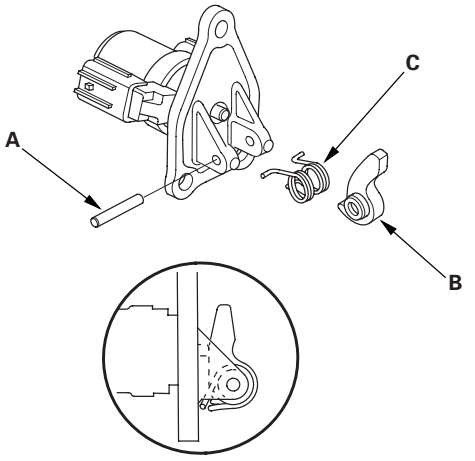
6. Remove the reverse lockout solenoid (A).



(cont'd)

Reverse Lockout Solenoid Disassembly/Reassembly (cont'd)

7. Remove the roller (A), the select lock return spring (C), and select lock cam B.



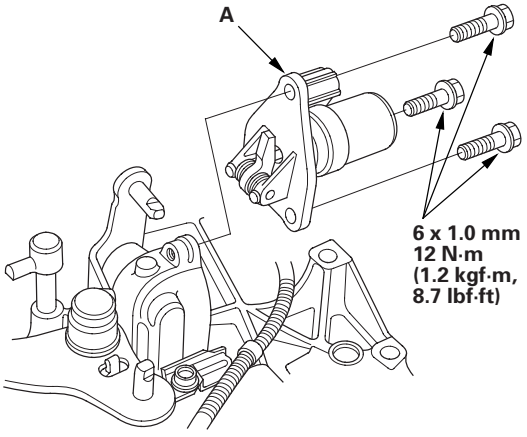
8. Install the components of the reverse lockout solenoid in the reverse order of removal.

9. Clean any dirt and oil from the mating surface of the reverse lockout solenoid and the change lever assembly.

10. Apply liquid gasket, P/N 08718-0001 evenly to the change lever assembly mating surface of the reverse lockout solenoid. Install the component within 5 minutes of applying the liquid gasket.

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

11. Install the reverse lockout solenoid (A).



12. Install the cable bracket and the shift cables (see step 37 on page 13-97).

13. Connect the reverse lockout solenoid connector, the back-up light switch connector, and the output shaft (countershaft) speed sensor connector (see step 39 on page 13-97).

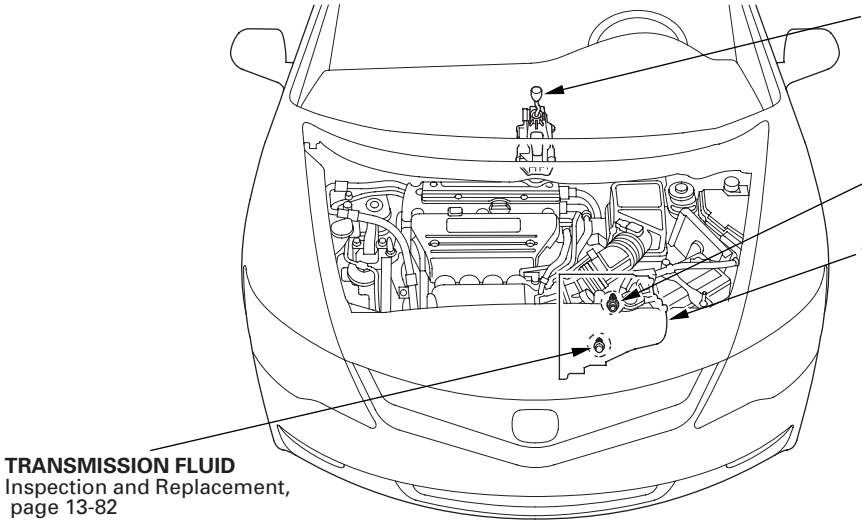
14. Install the battery base (see step 41 on page 13-98).

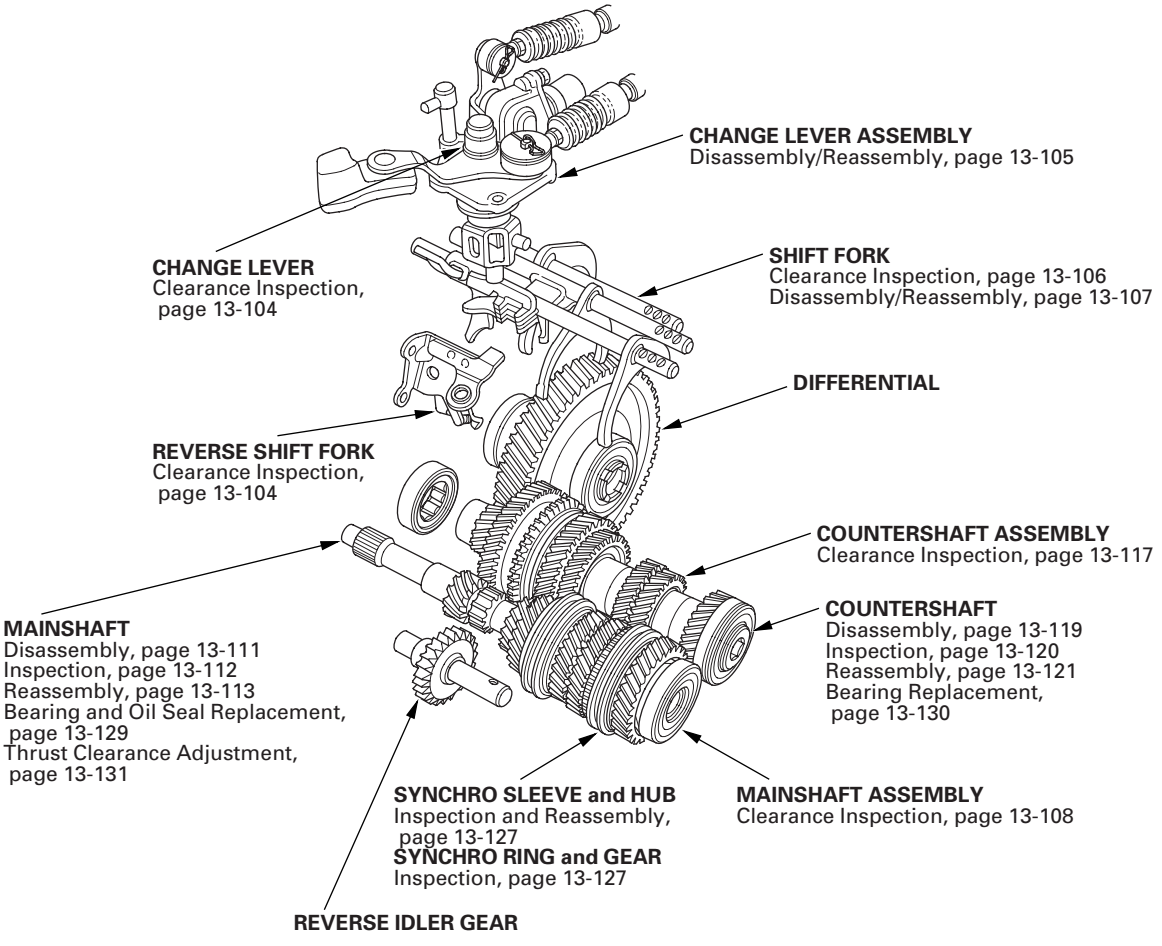
15. Install the air cleaner assembly (see page 11-345).

16. Do the battery installation procedure (see page 22-69).

DYNOMITE -2009-

Component Location Index





DYNOMITE -2009-

Symptom Troubleshooting Index

Symptom	Diagnostic procedure
Hard to shift into 1st gear	• Check and/or replace the MTF (see page 13-82). • Check the clutch (see page 12-19). • Check the 1st synchro ring and 1st gear (see page 13-127). • Check the 1st/2nd synchro sleeve and hub (see page 13-127). • Check the change lever assembly (see page 13-105).
Hard to shift into 2nd gear	• Check and/or replace the MTF (see page 13-82). • Check the 2nd synchro ring and 2nd gear (see page 13-127). • Check the 1st/2nd synchro sleeve and hub (see page 13-127). • Check the change lever assembly (see page 13-105).
Hard to shift into 3rd gear	• Check and/or replace the MTF (see page 13-82). • Check the 3rd synchro ring and 3rd gear (see page 13-127). • Check the 3rd/4th synchro sleeve and hub (see page 13-127). • Check the change lever assembly (see page 13-105).
Hard to shift into 4th gear	• Check and/or replace the MTF (see page 13-82). • Check the 4th synchro ring and 4th gear (see page 13-127). • Check the 3rd/4th synchro sleeve and hub (see page 13-127). • Check the change lever assembly (see page 13-105).
Hard to shift into 5th gear	• Check and/or replace the MTF (see page 13-82). • Check the 5th synchro ring and 5th gear (see page 13-127). • Check the 5th synchro sleeve and hub (see page 13-127). • Check the change lever assembly (see page 13-105).
Hard to shift into 6th gear	• Check and/or replace the MTF (see page 13-82). • Check the 6th synchro ring and 6th gear (see page 13-127). • Check the 6th synchro sleeve and hub (see page 13-127). • Check the change lever assembly (see page 13-105).

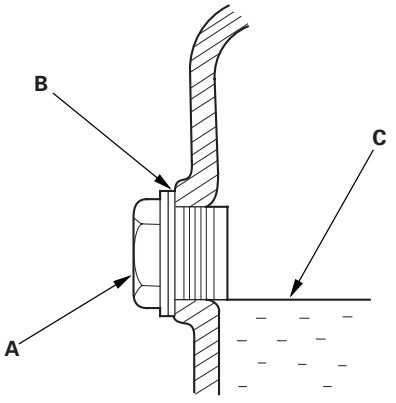
DYNOMITE -2009-

Symptom	Diagnostic procedure
Hard to shift into reverse	• Check and/or replace the MTF (see page 13-82). • Check the clutch (see page 12-19). • Check the reverse shift fork and the reverse idler gear (see page 13-104). • Check reverse gear. • Check the change lever assembly (see page 13-105).
HDS does not communicate with the ECM or the vehicle	Troubleshoot the DLC circuit (see page 11-204).
Driver can select reverse gear when vehicle speed is 20 km/h (12 mph) or more	Do the symptom troubleshooting (see page 13-74).
Driver cannot select reverse gear when vehicle speed is 15 km/h (9 mph) or less	Do the symptom troubleshooting (see page 13-76).
Noise from the transmission	• Check and/or replace the MTF (see page 13-82). • Check the transmission gears. • Check the transmission bearings. • Check the differential carrier, the final driven gear, and the carrier bearings.
Shift lever does not operate smoothly	• Check and/or replace the MTF (see page 13-82). • Check the shift cable and their joints (see page 13-138). • Check the shift lever housing with the shift lever shaft.
Transmission jumps out of gear	• Check and/or replace the MTF (see page 13-82). • Check the detent ball springs. • Check the teeth of the synchro rings and gears (see page 13-127). • Check for bent, deform, or damage of the shift forks.

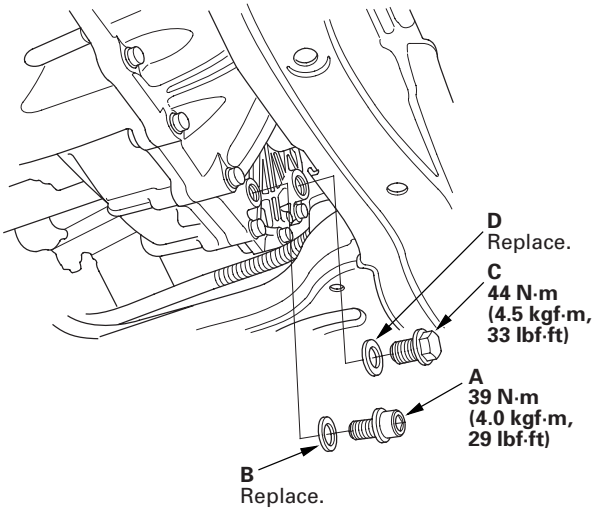
Transmission Fluid Inspection and Replacement

1. Raise the vehicle on a lift, and make sure it is securely supported.

2. Remove the filler plug (A) and the sealing washer (B), check the condition of the MTF, and make sure it is at the proper level (C).



3. If the MTF is dirty, remove the drain plug (A) and the sealing washer (B), and drain it.



4. Install the drain plug with a new sealing washer, and refill the transmission with MTF to the proper level. Always use Acura Manual Transmission Fluid (MTF).

   Fluid Capacity
   1.5 L (1.6 US qt) at fluid change
   1.7 L (1.8 US qt) at overhaul

5. Install the filler plug (C) with a new sealing washer (D).

6. If the maintenance minder required to replace the MTF, reset the maintenance minder (see page 3-4). If it did not reset, go to step 7.

7. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

8. Turn the ignition switch to ON (II).

9. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it does not communicate, go to the DLC circuit troubleshooting (see page 11-204).

10. Select BODY ELECTRICAL with the HDS.

11. Select ADJUSTMENT in the GAUGES MENU with the HDS.

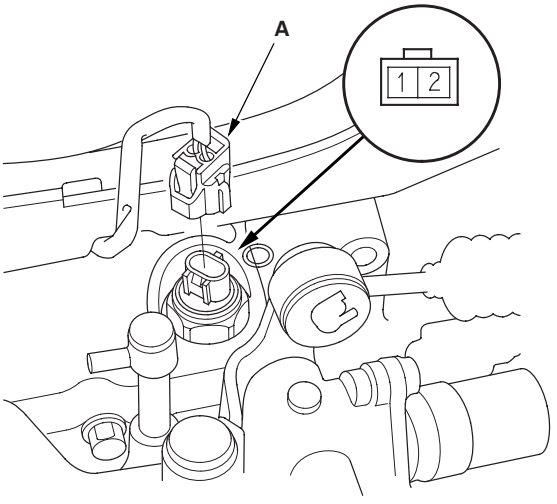
12. Select RESET in the MAINTENANCE MINDER with the HDS.

13. Select MAINTENANCE SUB ITEM 3, and reset the MTF life with the HDS.

DYNOMITE -2009-

Back-up Light Switch Test

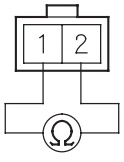
1. Disconnect the back-up light switch 2P connector (A).



2. Check for continuity between back-up light switch 2P connector terminals No. 1 and No. 2. There should be continuity only when the shift lever is in reverse.

   - If the test result is OK, go to step 5.
   - If the test result is faulty, go to step 3.

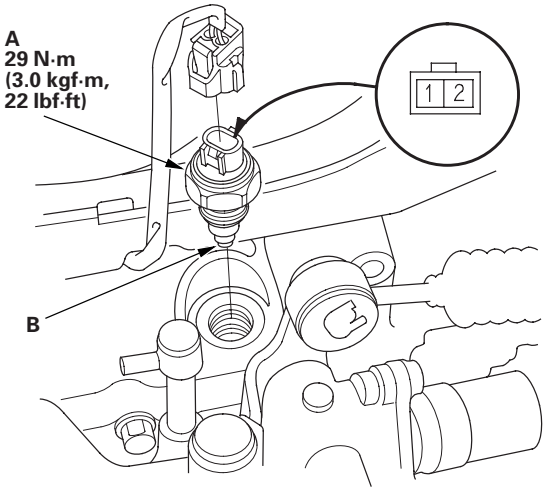
BACK-UP LIGHT SWITCH 2P CONNECTOR



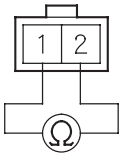
Terminal side of male terminals

3. Remove the back-up light switch (A). Check for continuity between back-up light switch 2P connector terminals No. 1 and No. 2. There should be continuity when the actuator (B) is pressed, and no continuity when the actuator is released.

   - If the test result is OK, check the reverse shift mechanism in the transmission.
   - If the test result is faulty, replace the back-up light switch.



BACK-UP LIGHT SWITCH 2P CONNECTOR



Terminal side of male terminals

4. Apply liquid gasket (08C70-K0230M, 08C70-K0334M, or 08C70-X0331S) to the threads of the back-up light switch, and install it on the transmission housing.

5. Connect the back-up light switch 2P connector.

DYNOMITE -2009-

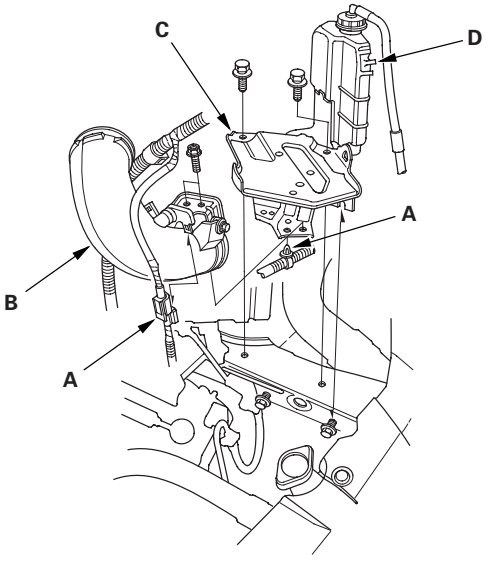
Transmission Removal

Special Tools Required
- Engine hanger adapter VSB02C000015
- 2006 Civic engine hanger VSB02C000025
- Engine support hanger, A and Reds AAR-T1256
- Front subframe adapter VSB02C000016

These special tools are available through the Acura Canada Technical Tools Department; FAX # 866-398-8665/e-mail: ch_technicaltools@ch.honda.com

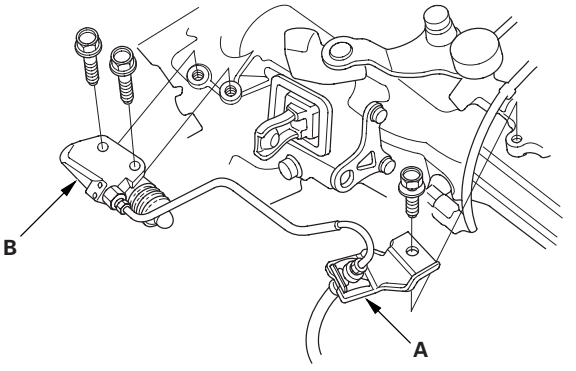
NOTE: Use fender covers to avoid damaging painted surfaces.

1. Do the battery removal procedure (see page 22-69).
2. Remove the cowl cover and the under-cowl panel (see page 20-163).
3. Remove the air cleaner assembly (see page 11-345).
4. Remove the harness clips (A) and the intake air duct (B), then remove the battery base (C) with the coolant reservoir (D).

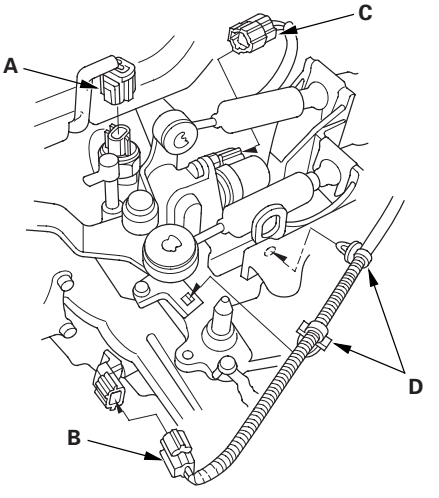


5. Remove the clutch line bracket (A), then carefully move the slave cylinder (B) out of the way to avoid bending the clutch line.

   NOTE: Do not press the clutch pedal after the slave cylinder has been moved.



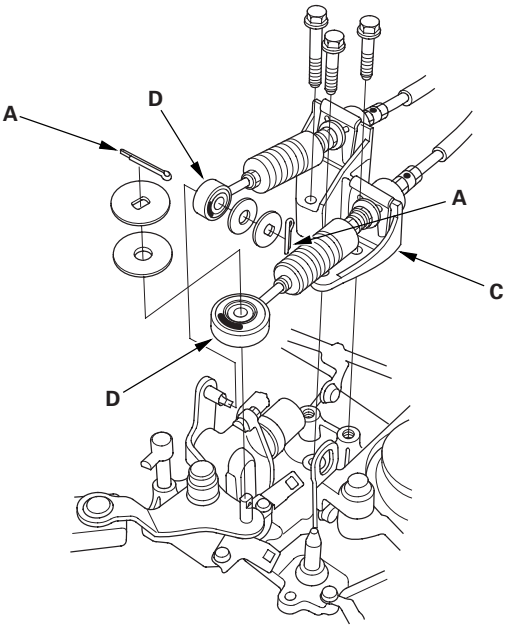
6. Disconnect the back-up light switch connector (A), the output shaft (countershaft) speed sensor connector (B), the reverse lockout solenoid connector (C), and the harness clips (D).



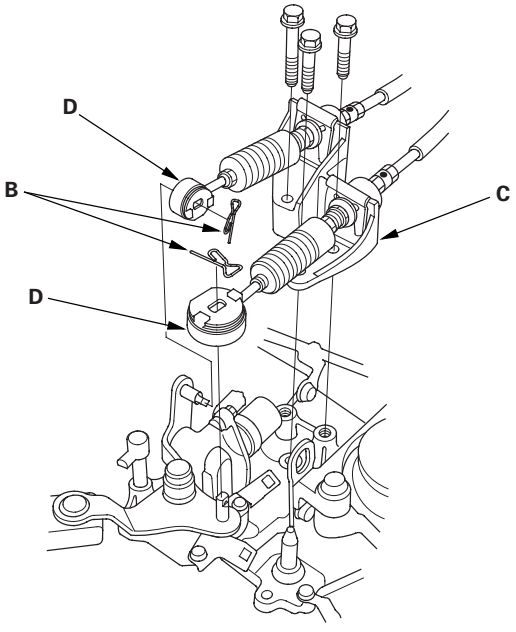
DYNOMITE -2009-

7. Remove the cotter pins (A) or the lock pins (B), and the shift cable bracket (C), then disconnect the shift cables (D) from the top of the change lever assembly. Carefully remove both cables and the bracket together to avoid bending the cables.

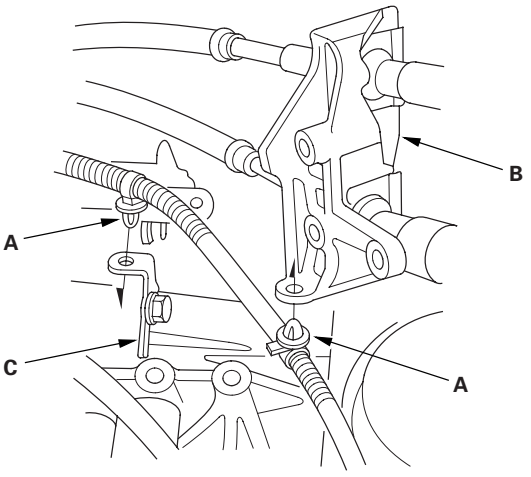
'06 model



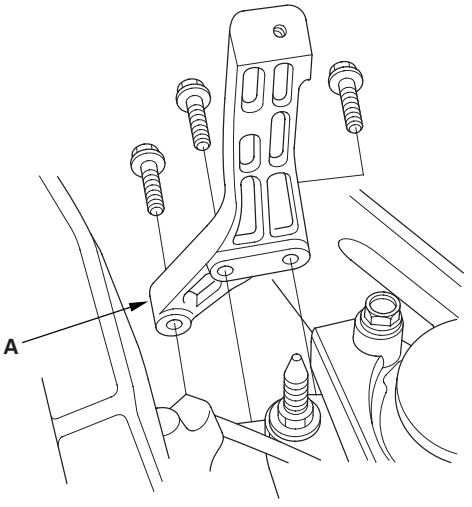
'07-09 models



8. Remove the harness clips (A) from the clutch cable bracket (B) and the harness bracket (C).



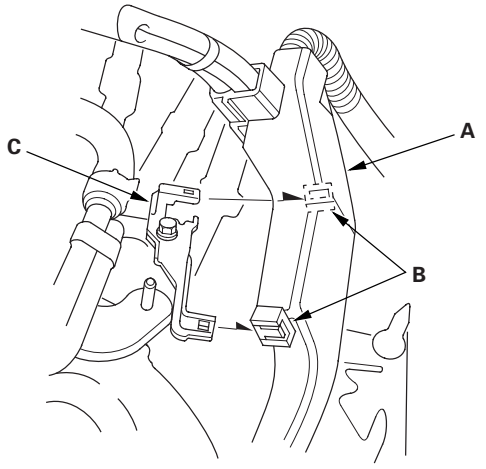
9. Remove the air cleaner housing bracket (A).



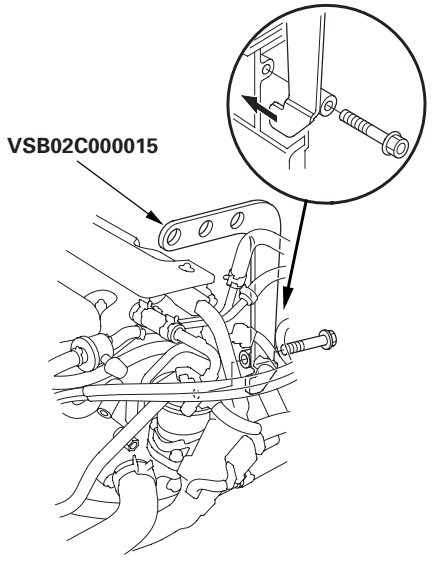
(cont'd)

Transmission Removal (cont'd)

10. Remove the engine wire harness cover (A) by lifting up on the lock tab (B), then slide the harness cover forward off the bracket (C).

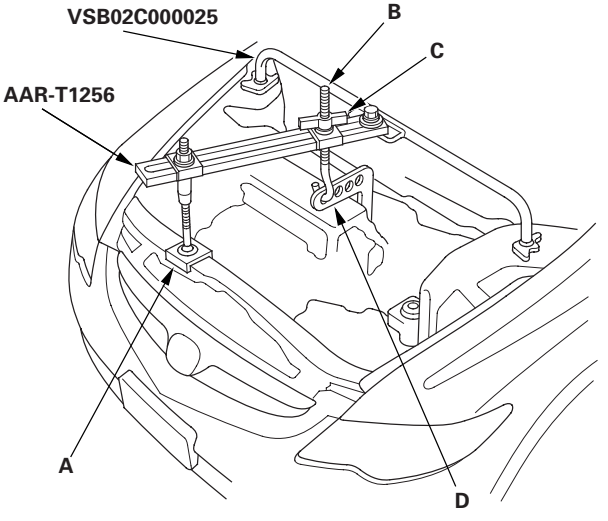


11. Attach the engine hanger adapter (VSB02C000015) to the threaded holes in the cylinder head.

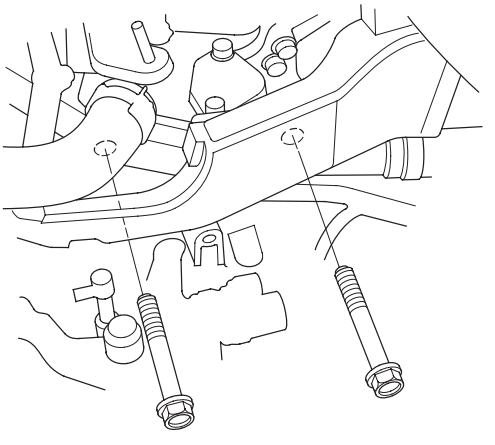


12. Install the front leg assembly (A), the hook (B), and the wingnut (C) from an A and Reds engine support hanger (AAR-T1256) onto the 2006 Civic engine hanger (VSB02C000025). Carefully position the engine hanger on the vehicle, and attach the hook to the forward hole in the engine hanger adapter (D). Tighten the wingnut by hand to lift and support the engine/transmission assembly.

    NOTE: Use care when working around the windshield.

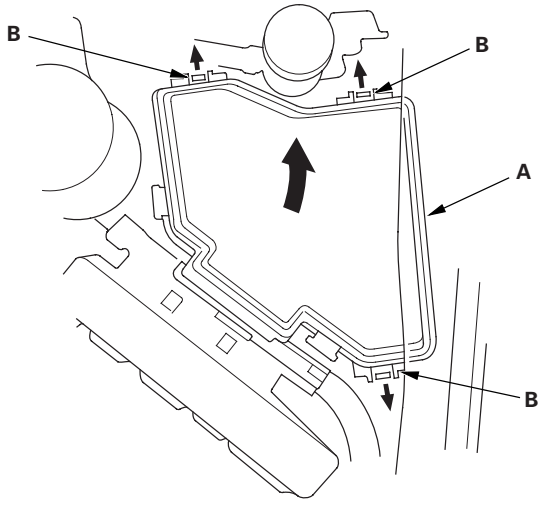


13. Remove the two upper transmission mounting bolts.

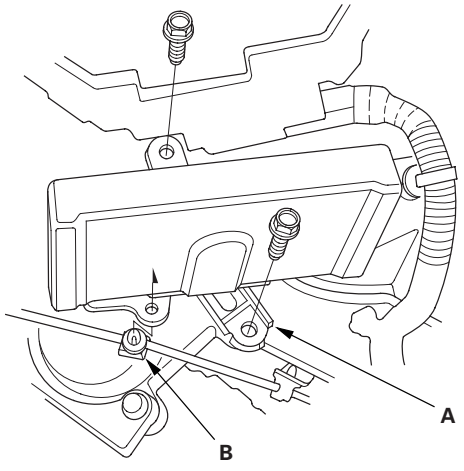


DYNOMITE -2009-

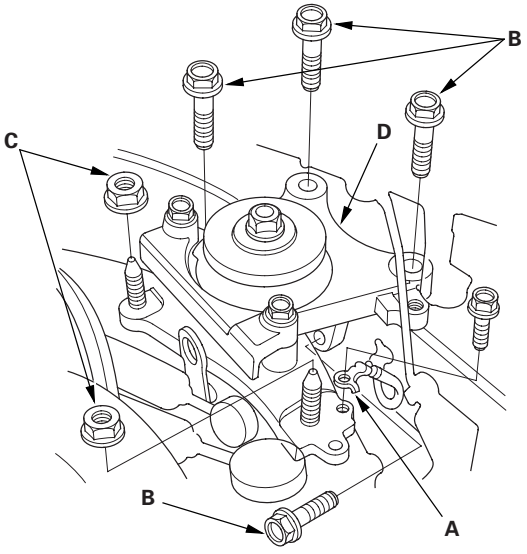
14. Remove the under-hood fuse/relay box (A) by lifting up on the lock tabs (B), then move it aside.



15. Remove the engine control module (ECM) bracket (A), then move it aside. Remove the clutch line clamp (B).

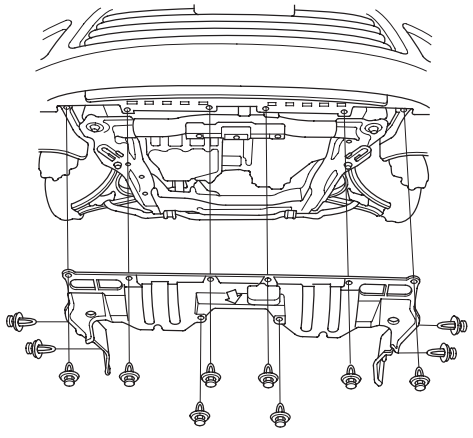


16. Disconnect the ground cable (A), then remove the transmission mount bracket bolts (B) and nuts (C). Remove the transmission mount bracket (D).



17. Raise the vehicle on a lift.

18. Remove the splash shield.



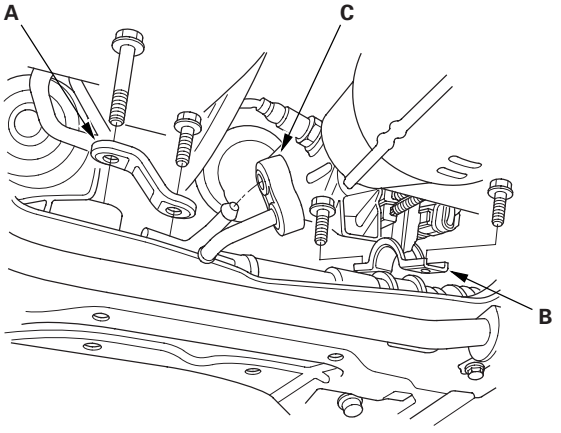
19. Drain the MTF. Reinstall the drain plug with a new sealing washer (see page 13-82).

20. Separate the lower arm (see step 5 on page 16-4).

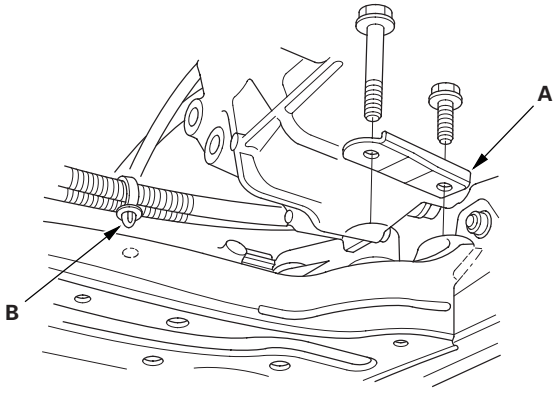
(cont'd)

Transmission Removal (cont'd)

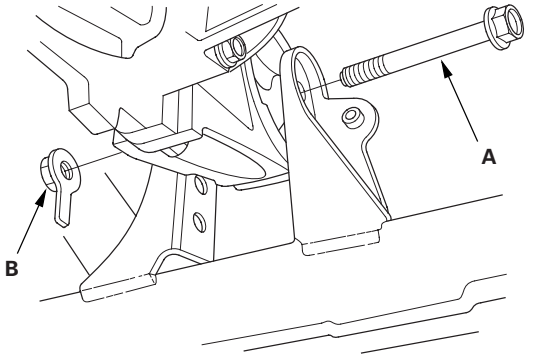
21. Remove the stiffener plate (A) from the left side of the steering gearbox, and the mounting bracket (B) from the right side of the steering gearbox. Disconnect the exhaust mounting rubber (C).



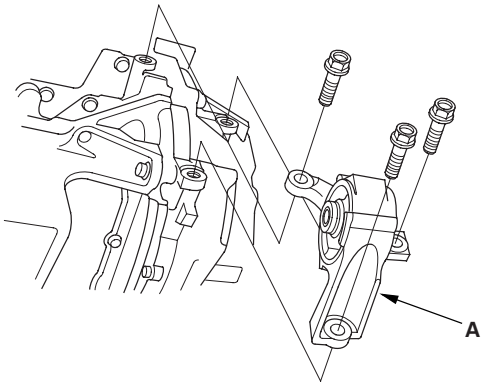
22. Remove the stiffener plate (A) and the harness clip (B).



23. Remove the front engine mount mounting bolt (A) and nut (B), then remove the lower radiator hose from the front engine mount bracket.

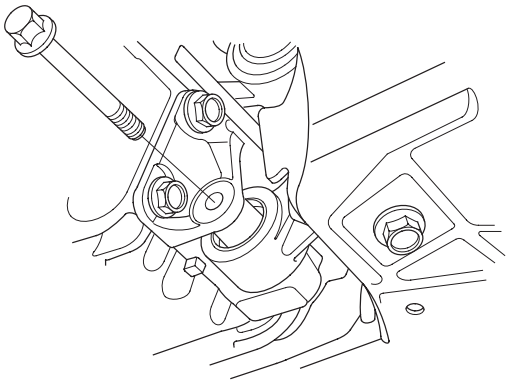


24. Remove the front engine mount (A) from the transmission and the engine.

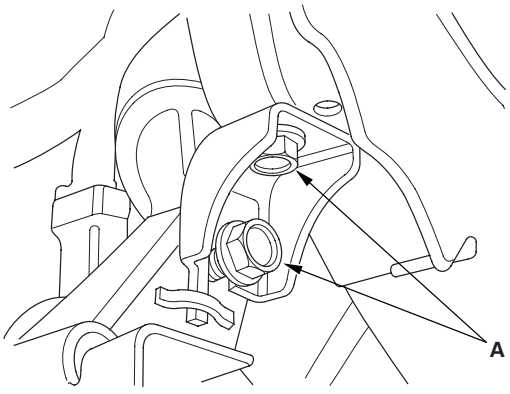


DYNOMITE -2009-

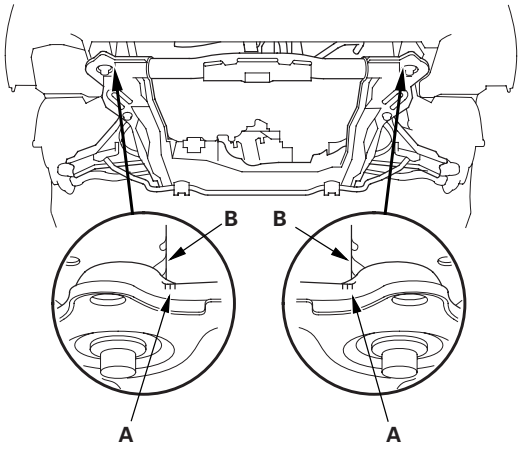
25. Remove the lower torque rod mounting bolt.



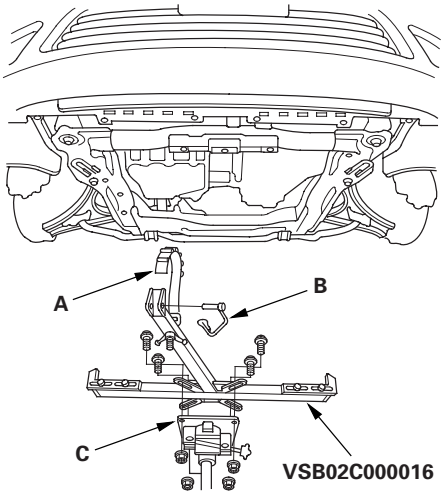
26. Remove the middle subframe mounting bolts (A).



27. Note the reference marks (A) on both sides of the front subframe that lines up with the body (B).



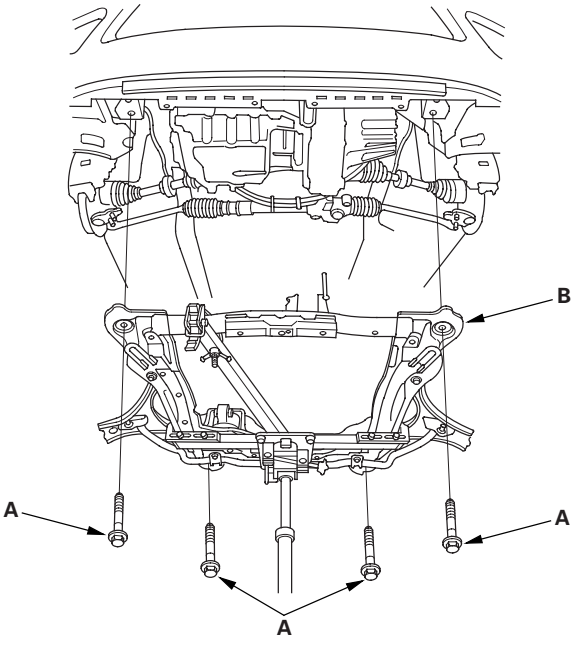
28. Attach the front subframe adapter (VSB02C000016) to the front subframe, and hang the belt (A) of the subframe attachment over the front subframe, then secure the belt with the stop (B).



29. Raise the jack, and line up the slots in the arms with the bolt holes on the corner of the jack base (C), then attach them securely.

30. Remove the front subframe mounting bolts (A) and the front subframe (B).

NOTE: Suspend the steering gearbox with an appropriate size wire.



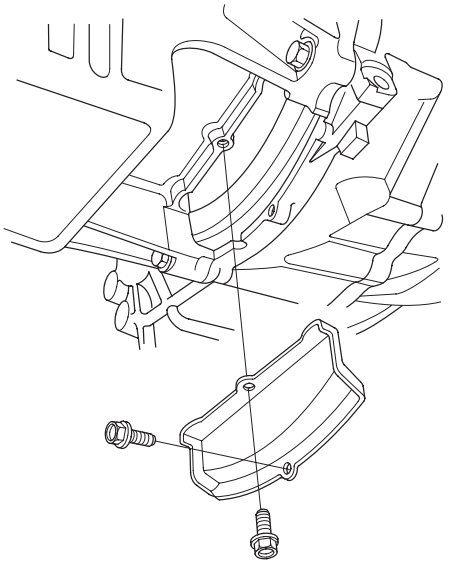
(cont'd)

Transmission Removal (cont'd)

31. Pry out the driveshafts inboard joint (see step 8 on page 16-5).

32. Remove the intermediate shaft (see page 16-23).

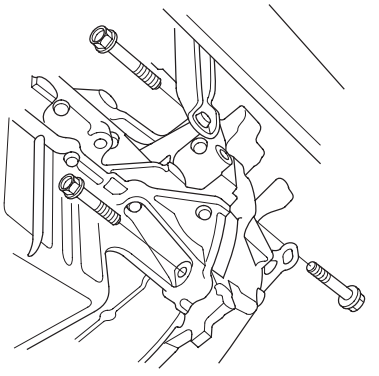
33. Remove the clutch cover.



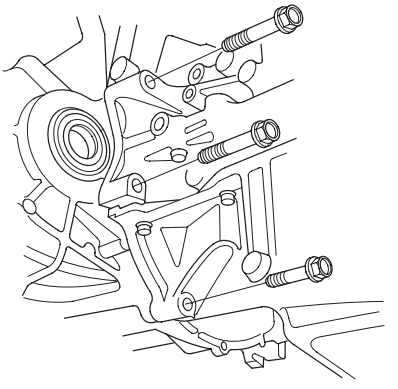
34. Support the transmission with a transmission jack.

35. Remove the transmission mounting bolts.

Front side



Rear side



36. Pull the transmission away from the engine until the transmission mainshaft clears the clutch pressure plate.

37. Slowly lower the transmission about 150 mm (6 in.). Check once again that all hoses and harnesses are disconnected and free from the transmission, then lower it completely.

DYNOMITE -2009-

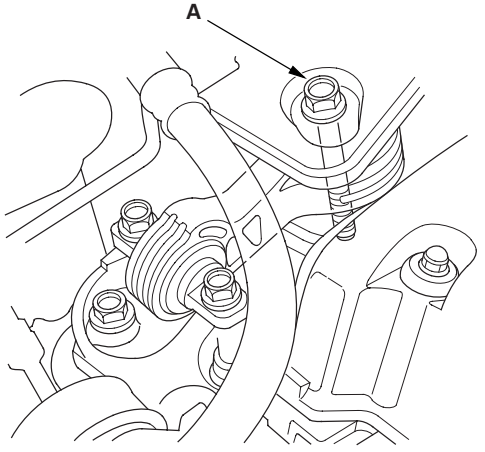
Transmission Installation

Special Tools Required
- Engine hanger adapter VSB02C000015
- 2006 Civic engine hanger VSB02C000025
- Engine support hanger, A and Reds AAR-T1256
- Front subframe adapter VSB02C000016

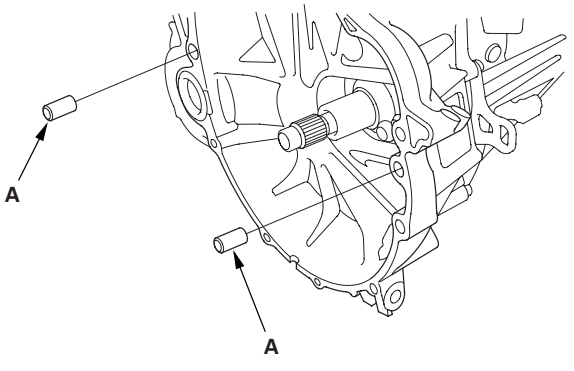
These special tools are available through the Acura Canada Technical Tools Department; FAX # 866-398-8665/e-mail: ch_technicaltools@ch.honda.com

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Loosen the upper torque rod mounting bolt (A).



2. Make sure the two dowel pins (A) are installed in the clutch housing.

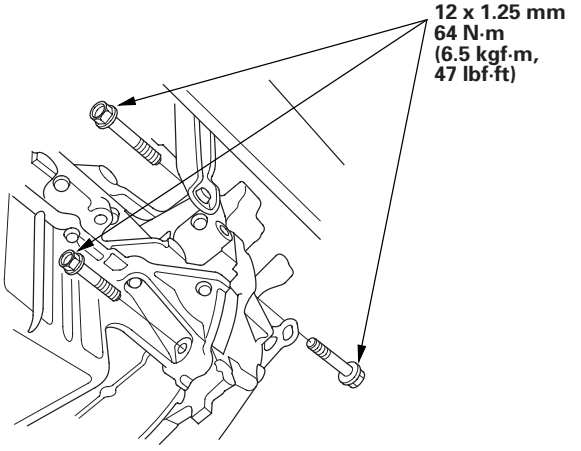


3. Check the release fork and the release bearing, and reinstall them with appropriate grease (see page 12-24).

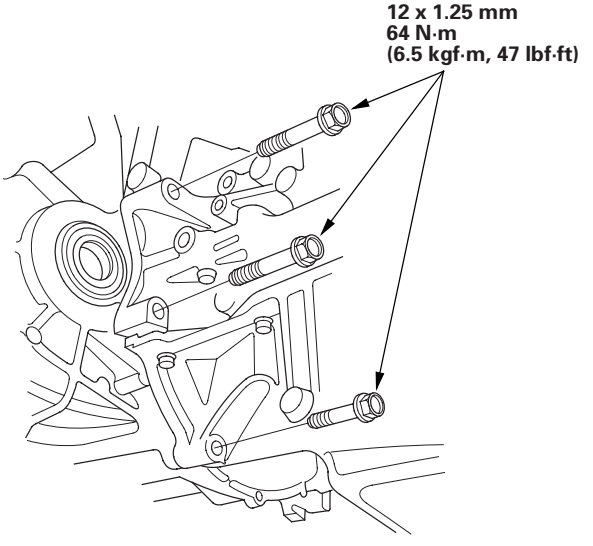
4. Place the transmission on the transmission jack, and raise it to engine level.

5. Install the transmission mounting bolts.

Front side



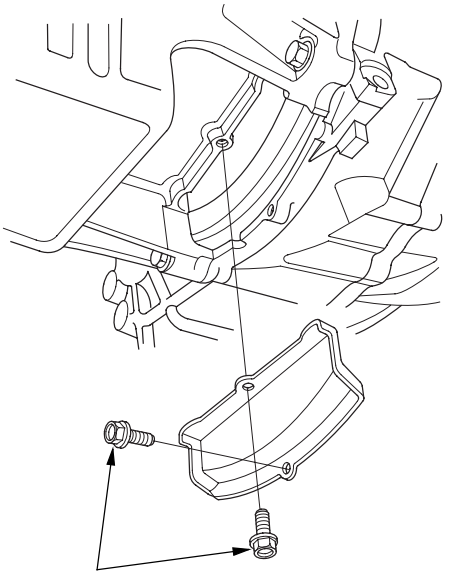
Rear side



(cont'd)

Transmission Installation (cont'd)

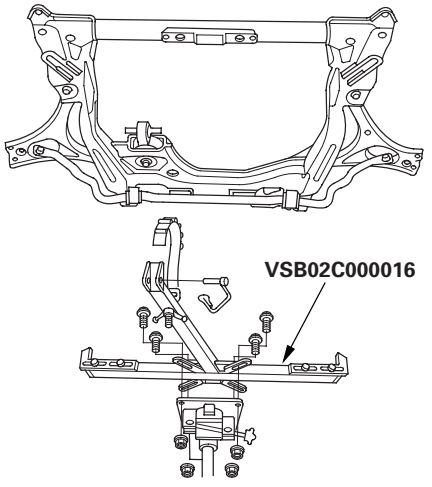
6. Install the clutch cover.



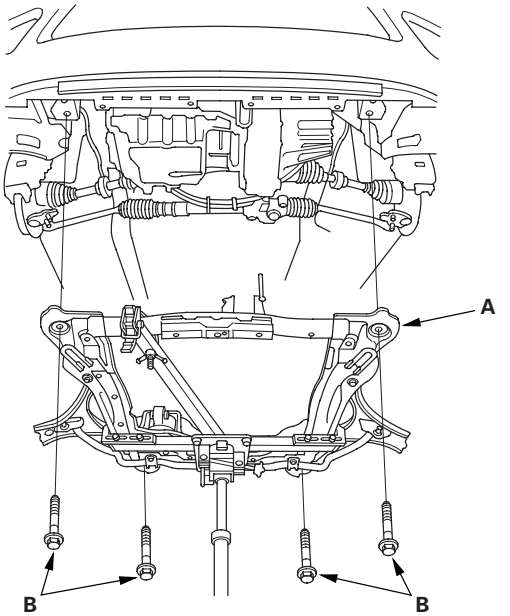
7. Install the intermediate shaft (see page 16-27).

8. Install the driveshafts inboard joint (see step 6 on page 16-21).

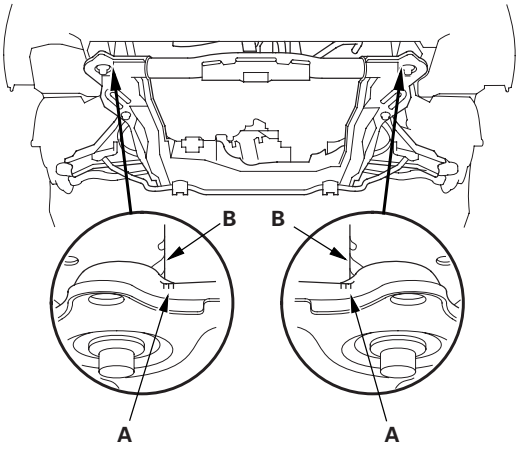
9. Support the front subframe with the subframe adapter (VSB02C000016) and a jack.



10. Install the front subframe (A). Loosely install new subframe mounting bolts (B).

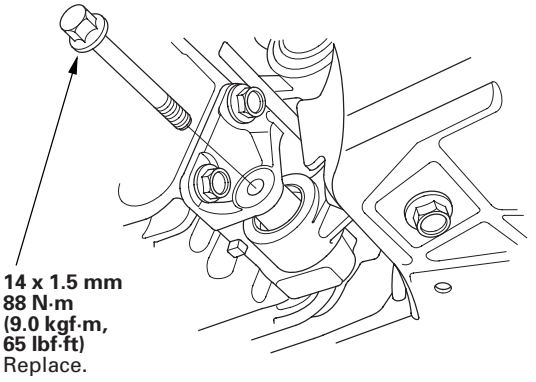


11. Align the front subframe reference marks (A) to the body (B), as noted during removal. Tighten the front subframe mounting bolts to the specified torque.

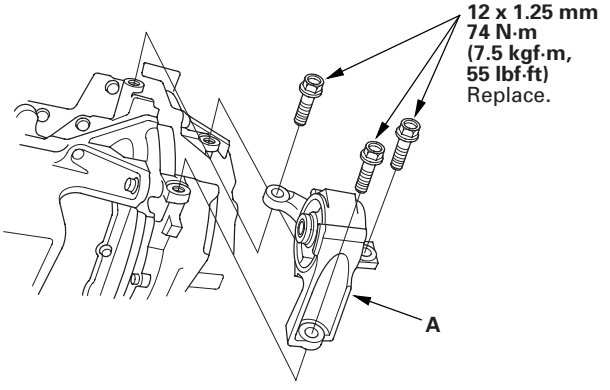


DYNOMITE -2009-

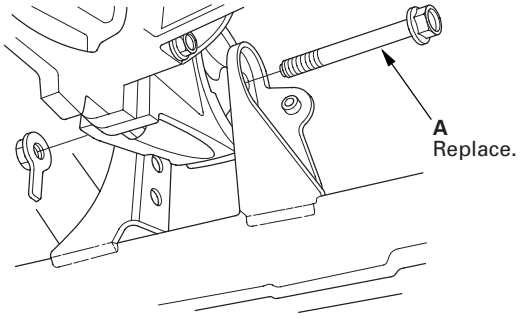
12. Install a new lower torque rod bracket mounting bolt.



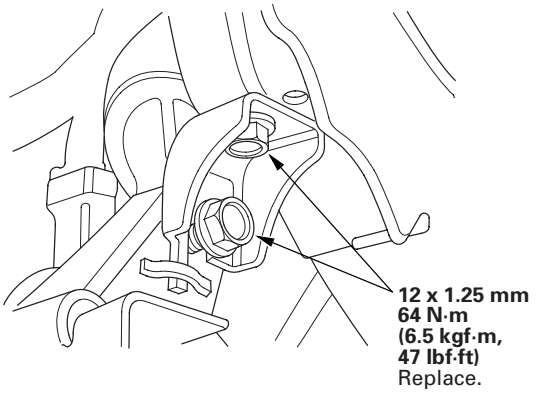
13. Install the front engine mount bracket (A) on the transmission and the engine with new bolts.



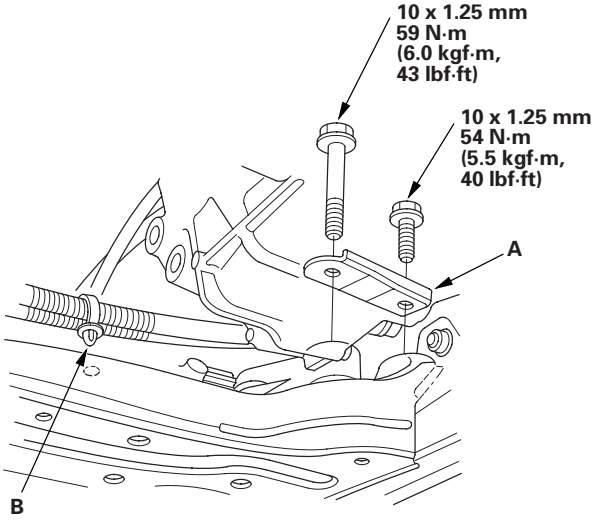
14. Loosely tighten a new front engine mount bracket mounting bolt (A), then attach the lower radiator hose to the front engine mount bracket.



15. Install new middle subframe mounting bolts.



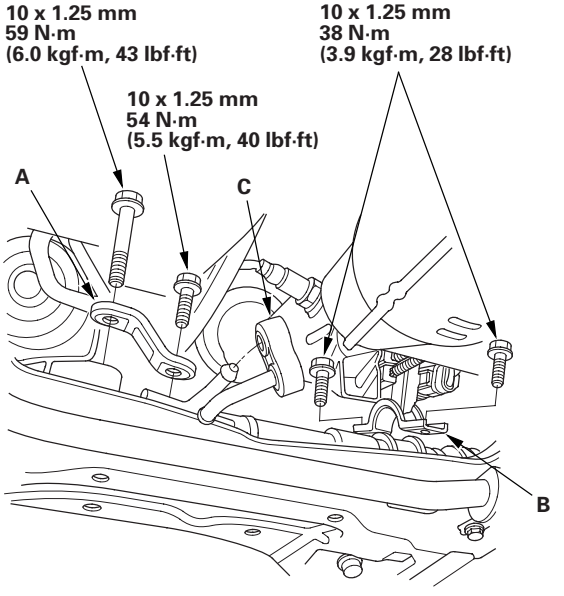
16. Install the steering gearbox stiffener plate (A) and the harness clip (B).



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Transmission Installation (cont'd)

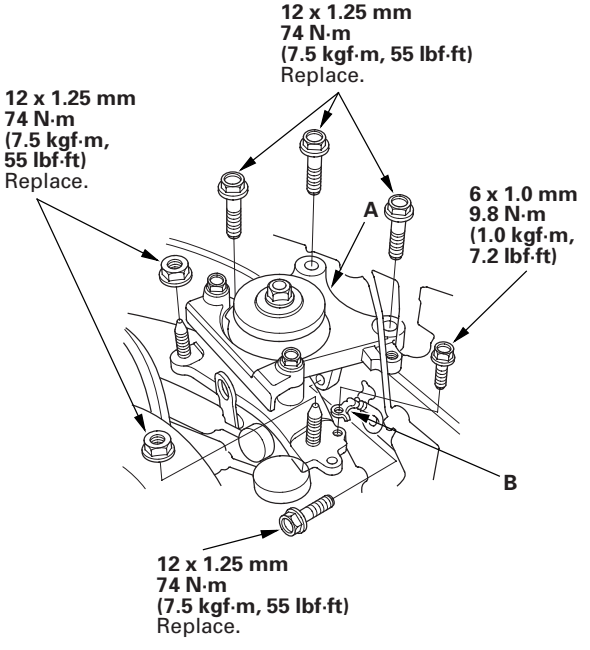
17. Install the stiffener plate (A) and the mounting bracket (B). Connect the exhaust mounting rubber (C).



18. Connect the lower ball joint and the lower arm (see step 8 on page 16-21).

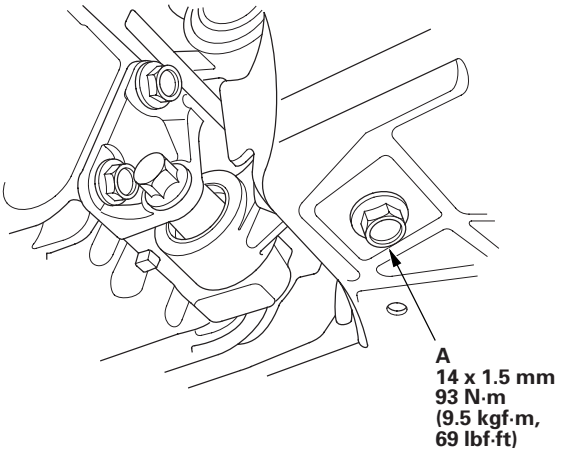
19. Lower the vehicle on the lift.

20. Install the transmission mount bracket (A), and connect the ground cable (B).



21. Raise the vehicle on the lift.

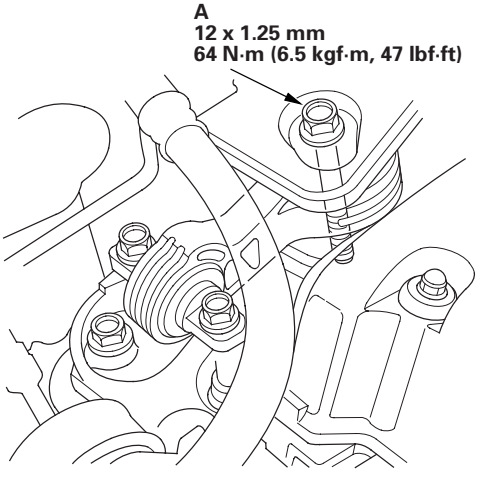
22. Loosen and retighten the lower torque rod mounting bolt (A).



23. Refill the transmission with the recommended transmission fluid (see page 13-82).

24. Lower the vehicle on the lift.

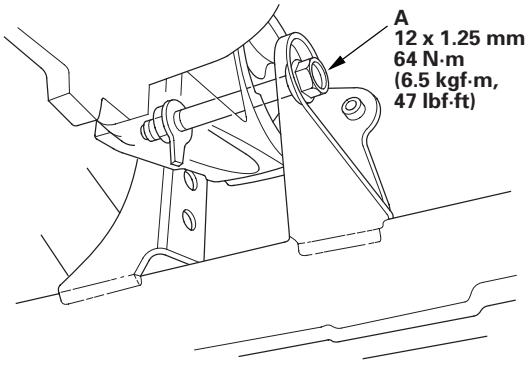
25. Tighten the upper torque rod mounting bolt (A).



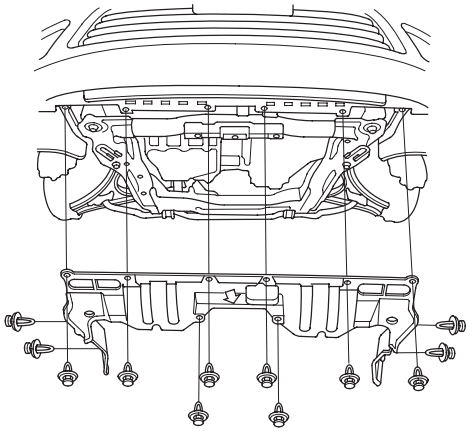
26. Raise the vehicle on the lift.

DYNOMITE -2009-

27. Tighten the front mount mounting bolt (A).



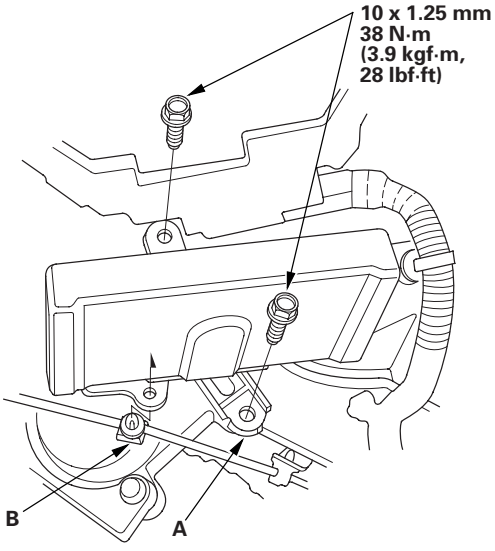
28. Install the splash shield.



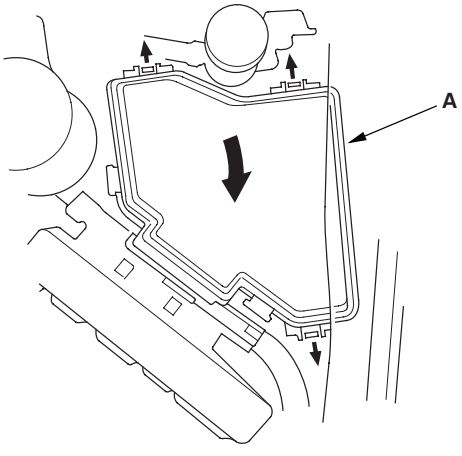
29. Lower the vehicle on the lift

30. Remove the engine support hanger and the engine hanger adapter from the engine.

31. Install the engine control module (ECM) bracket (A), then install the clutch pipe clamp (B).



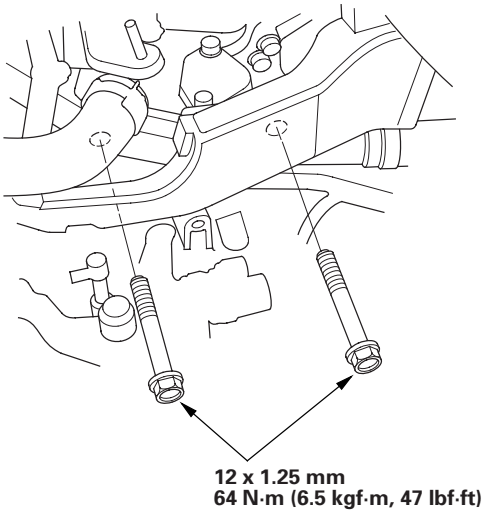
32. Install the under-food fuse/relay box (A) on the under-hood fuse/relay bracket.



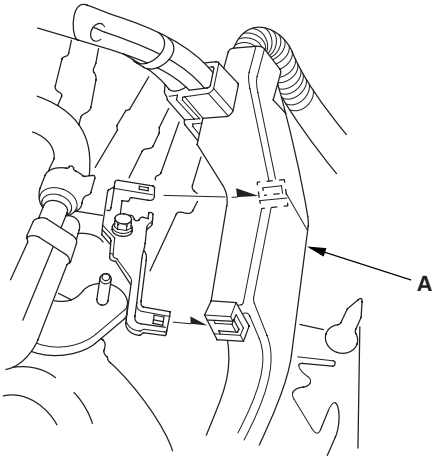
(cont'd)

Transmission Installation (cont'd)

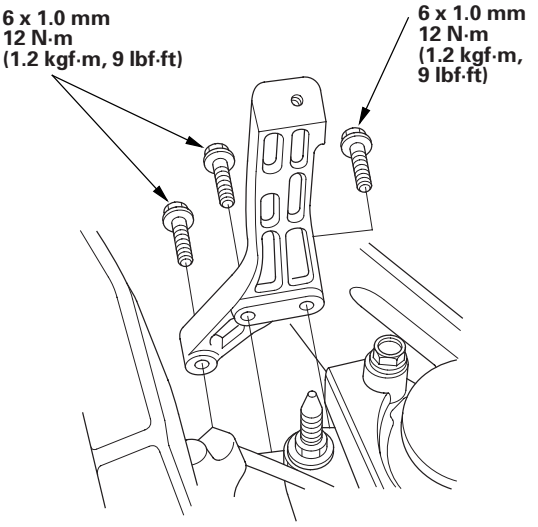
33. Install the two upper transmission mounting bolts.



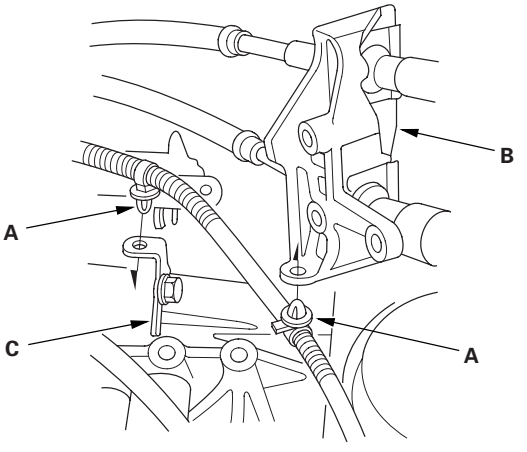
34. Install the engine harness cover (A).



35. Install the air cleaner housing mounting bracket.



36. Install the harness clips (A) on the shift cable bracket (B) and the harness bracket (C).

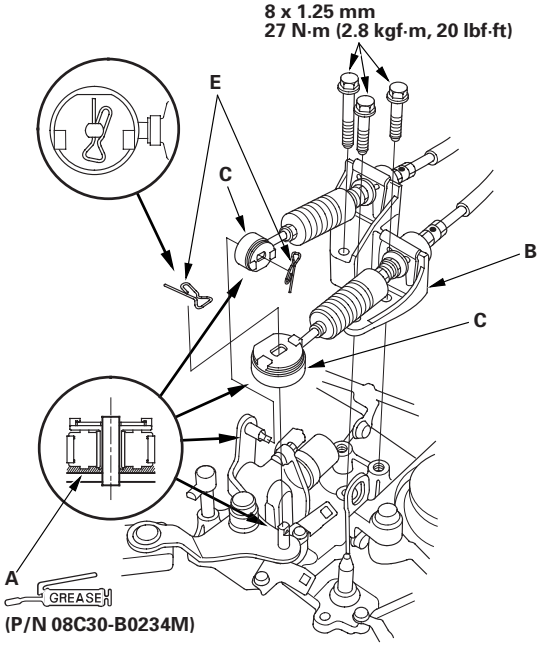


DYNOMITE -2009-

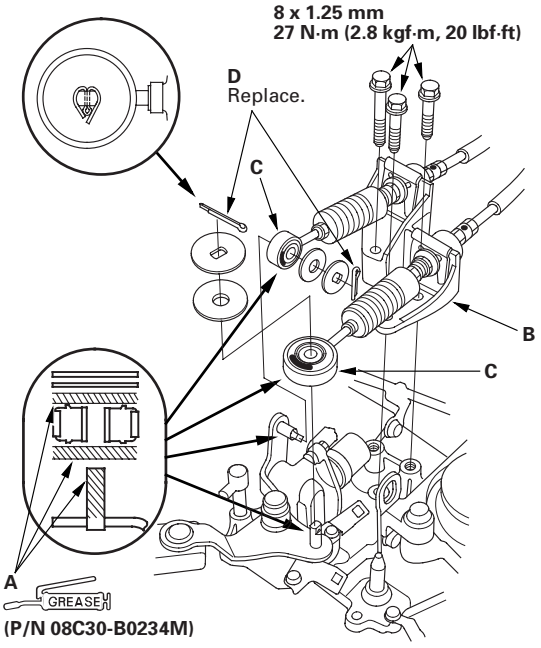
37. Apply a light coat of silicone grease (P/N 08C30-B0234M) to the shift cable ends (A).

NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves

'06 model

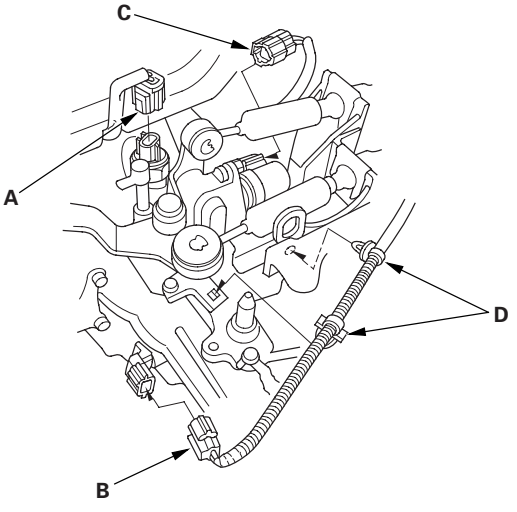


'07-09 models



38. Install the shift cable bracket (B) and the shift cables (C), then install new cotter pins (D) or lock pins (E).

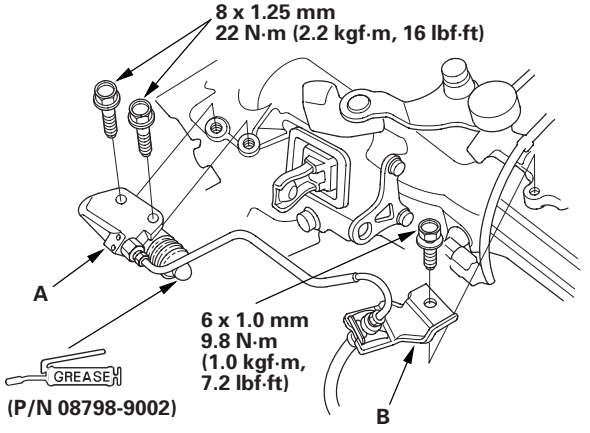
39. Connect the back-up light switch connector (A), the output shaft (countershaft) speed sensor connector (B), and the reverse lockout solenoid connector (C). Install the harness clips (D).



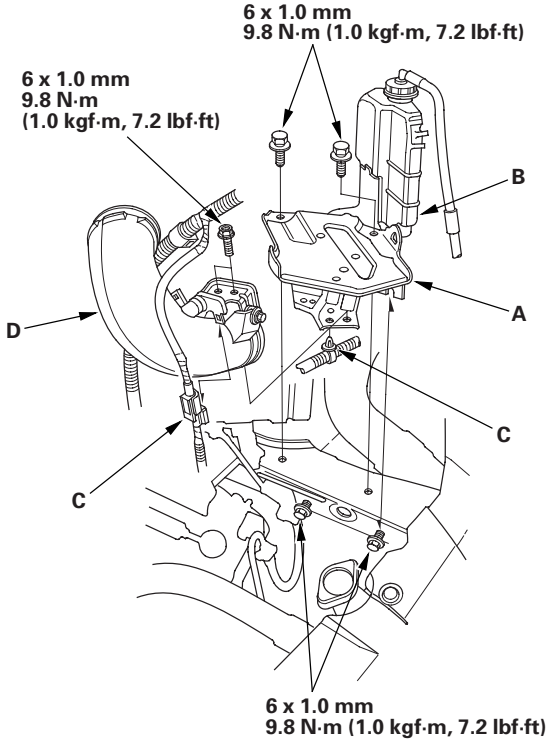
(cont'd)

Transmission Installation (cont'd)

40. Apply super high temp urea grease (P/N 08798-9002) to the end of the slave cylinder pushrod. Install the slave cylinder (A), then install the clutch line bracket (B). Be careful not to bend the clutch line.



41. Install the battery base (A) with the coolant reservoir (B).



42. Install the harness clips (C) and the intake air duct (D).

43. Install the air cleaner assembly (see page 11-345).

44. Do the battery installation procedure (see page 22-69).

45. Install the under-cowl panel and the cowl cover (see page 20-163).

46. Check the shift lever and the clutch operation.

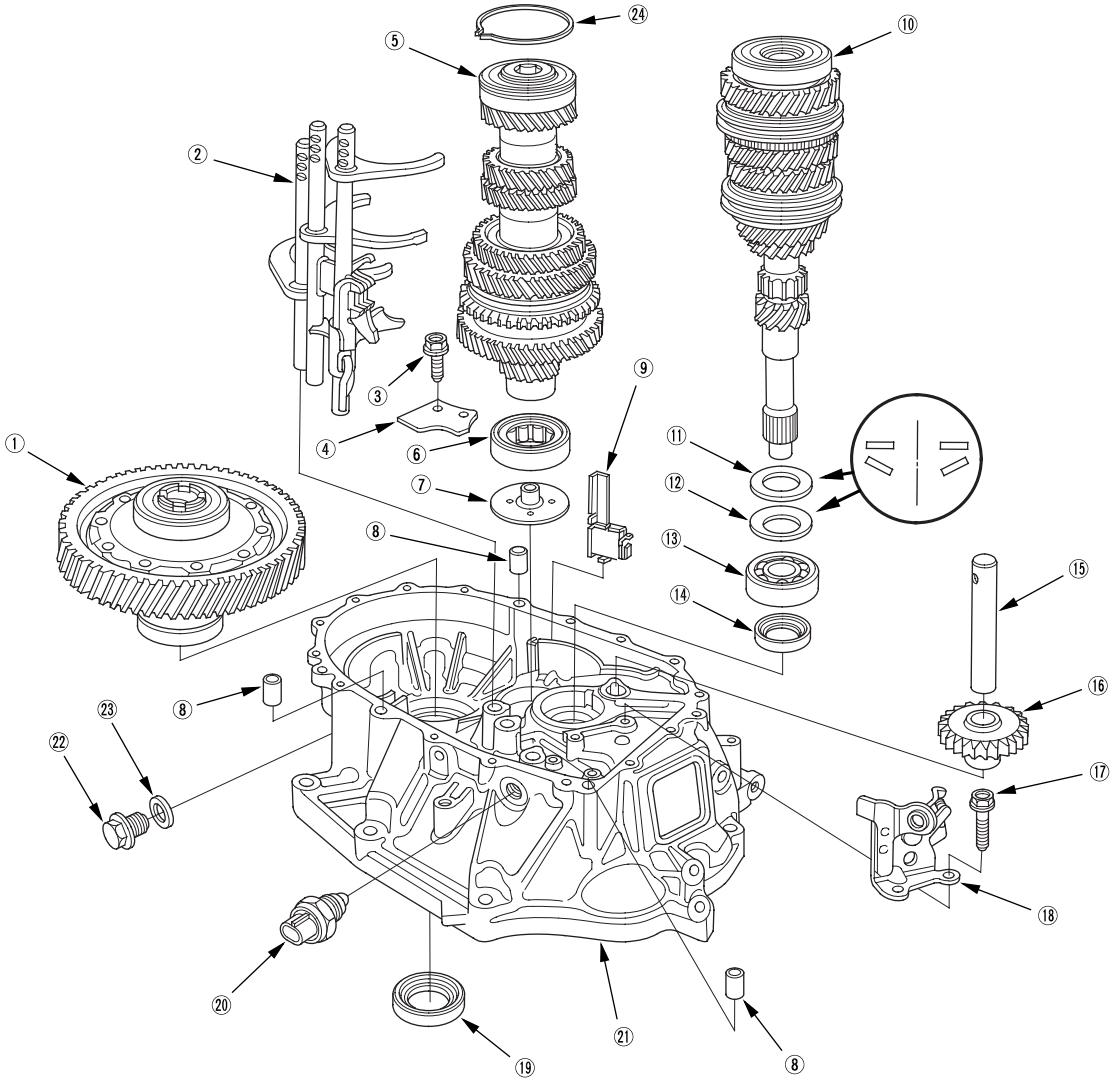
47. Check the wheel alignment (see page 18-5).

48. Test-drive the vehicle.

DYNOMITE -2009-

Transmission Disassembly

Exploded View - Clutch Housing

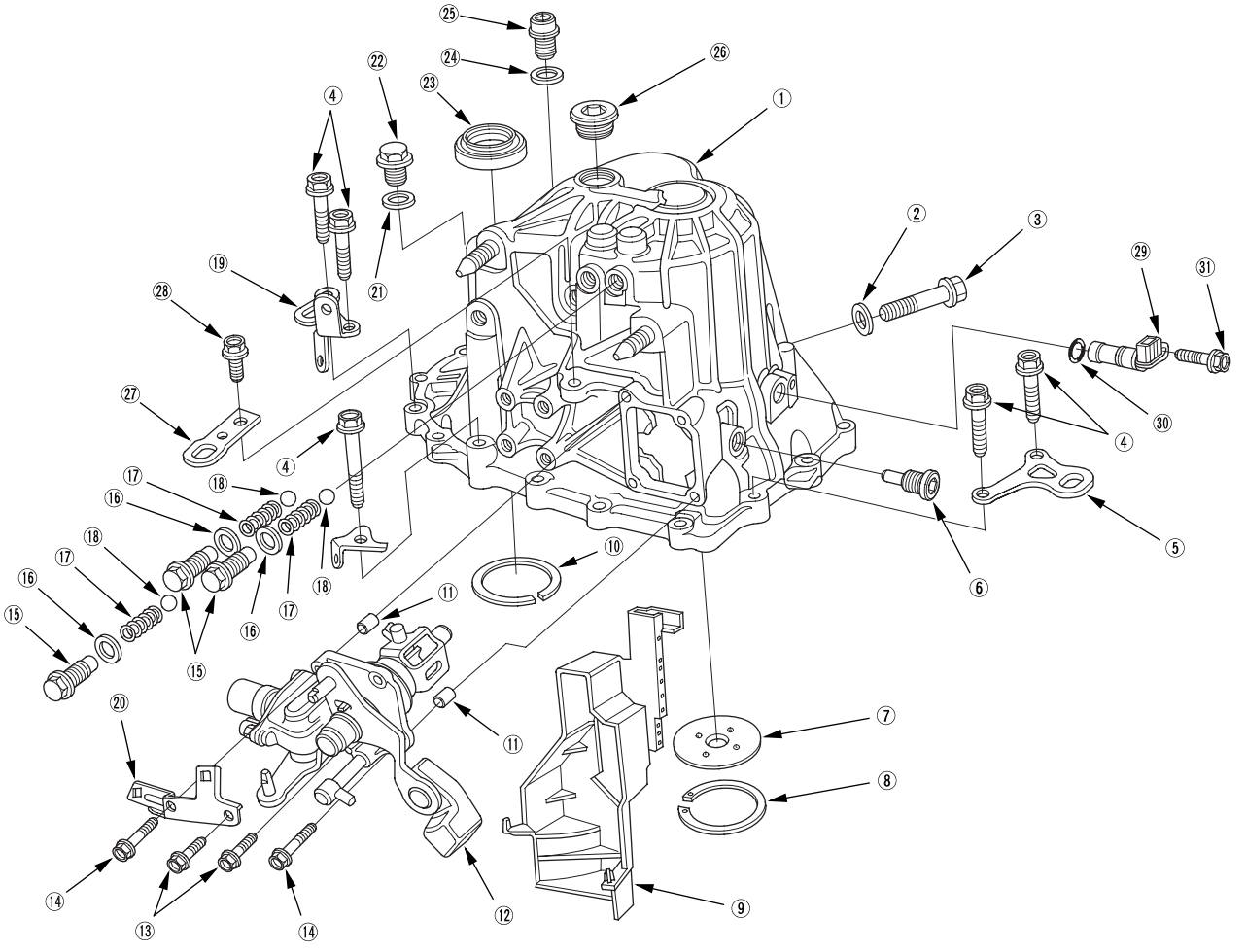


① DIFFERENTIAL ASSEMBLY
② SHIFT FORK ASSEMBLY
③ 6 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
④ BEARING SET PLATE
⑤ COUNTERSHAFT ASSEMBLY
⑥ NEEDLE BEARING
⑦ OIL GUIDE PLATE C
⑧ 14 x 20 mm DOWEL PIN
⑨ MAGNET
⑩ MAINSHAFT ASSEMBLY
⑪ 28 mm WASHER
⑫ 28 mm SPRING WASHER
⑬ BALL BEARING
⑭ 28 x 43 x 7 mm OIL SEAL
Replace.
⑮ REVERSE IDLER GEAR SHAFT
⑯ REVERSE IDLER GEAR
⑰ 6 mm SPECIAL BOLT
15 N·m (1.5 kgf·m, 11 lbf·ft)
⑱ REVERSE SHIFT FORK
⑲ 35 x 58 x 8 mm OIL SEAL
Replace.
⑳ BACK-UP LIGHT SWITCH
29 N·m (3.0 kgf·m, 22 lbf·ft)
㉑ CLUTCH HOUSING
㉒ 20 mm BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉓ 20 mm WASHER
Replace.
㉔ 72 mm SNAP RING

(cont'd)

Transmission Disassembly (cont'd)

Exploded View - Transmission Housing



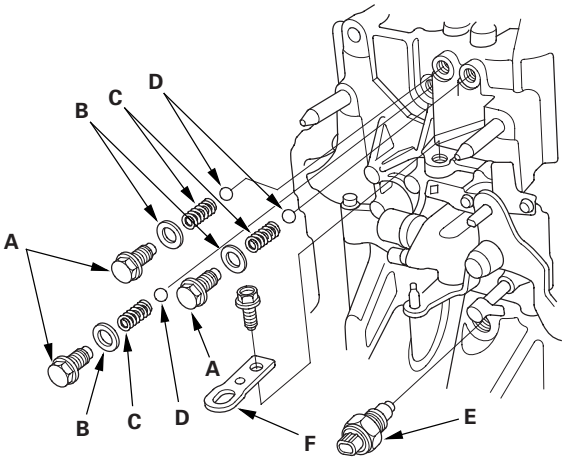
① TRANSMISSION HOUSING
② 10 mm SEALING WASHER
Replace.
③ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
④ 8 mm FLANGE BOLT
27 N·m (2.8 kgf·m, 20 lbf·ft)
⑤ TRANSMISSION HANGER A
⑥ INTERLOCK BOLT
39 N·m (4.0 kgf·m, 29 lbf·ft)
⑦ OIL GUIDE PLATE M
⑧ 72 mm SHIM
⑨ OIL GUTTER PLATE
⑩ 80 mm SHIM
⑪ 8 x 14 mm DOWEL PIN
⑫ CHANGE LEVER ASSEMBLY
⑬ 6 x 30 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
⑭ 6 x 20 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
⑮ DETENT BOLT
22 N·m (2.2 kgf·m, 16 lbf·ft)
⑯ 12 mm SEALING WASHER
Replace.
⑰ SPRING
⑱ STEEL BALL
⑲ TRANSMISSION HANGER B
⑳ HARNESS BRACKET A
㉑ 20 mm SEALING WASHER
Replace.
㉒ FILLER PLUG
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉓ 40 x 56 x 8 mm OIL SEAL
Replace.
㉔ 14 mm SEALING WASHER
Replace.
㉕ DRAIN PLUG
39 N·m (4.0 kgf·m, 29 lbf·ft)
㉖ 32 mm SEALING CAP
34 N·m (3.5 kgf·m, 25 lbf·ft)
㉗ TRANSMISSION HANGER
㉘ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉙ OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR
㉚ O-RING
Replace.
㉛ 6 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)

DYNOMITE -2009-

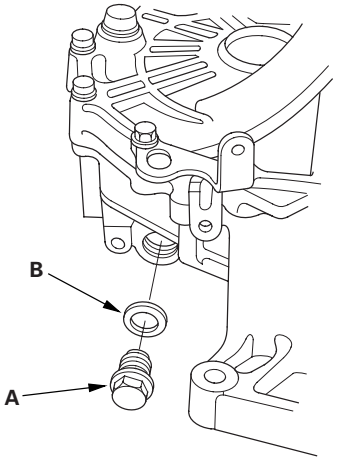
NOTE: Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

1. Remove the release fork and the release bearing (see page 12-24).

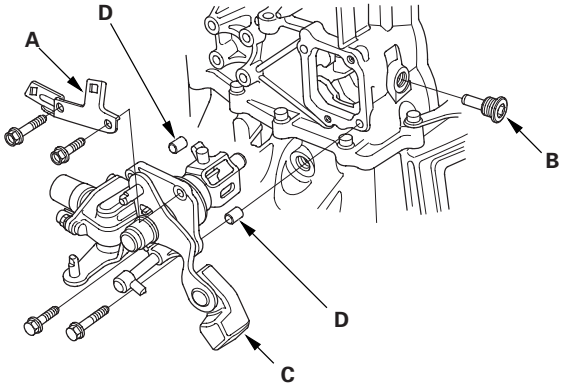
2. Remove the detent bolts (A), the 12 mm sealing washers (B) the springs (C), the steel balls (D), and the back-up light switch (E). Then remove the transmission hanger (F).



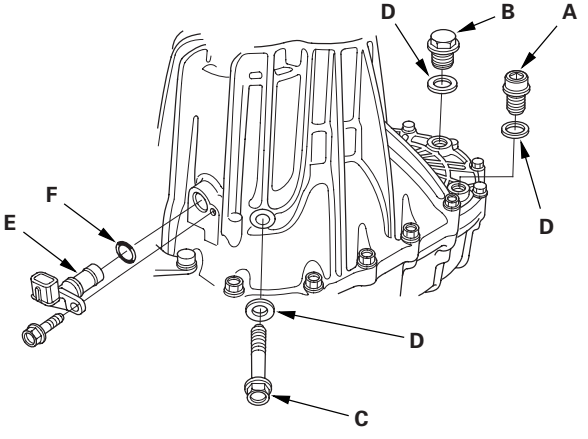
3. Remove the 20 mm bolt (A) and the 20 mm sealing washer (B).



4. Remove the interlock bolt (B), the change lever assembly (C), the 8 x 14 mm dowel pins (D), and harness bracket A.



5. Remove the drain plug (A), the filler plug (B), the 10 mm flange bolt (C), and the sealing washers (D).

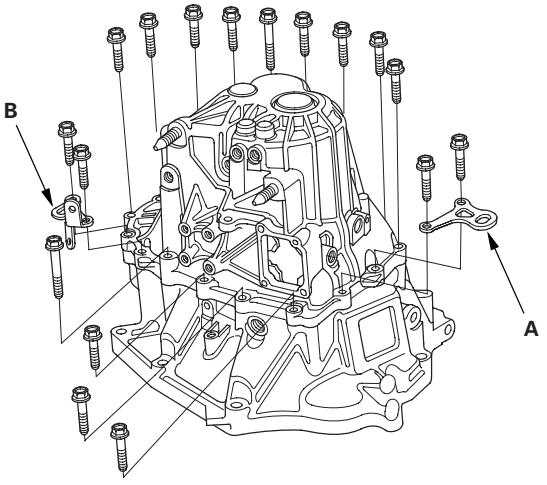


6. Remove the output shaft (countershaft) speed sensor (E) with the O-ring (F).

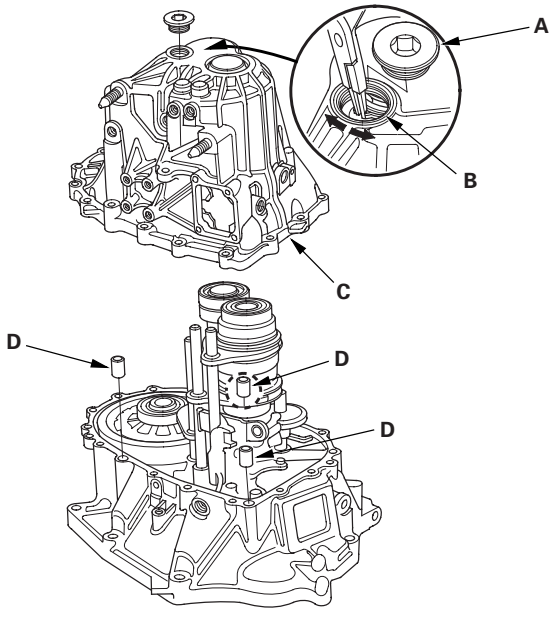
(cont'd)

Transmission Disassembly (cont'd)

7. Loosen the 8 mm flange bolts in a crisscross pattern in several steps, then remove them with transmission hanger A and transmission hanger B.

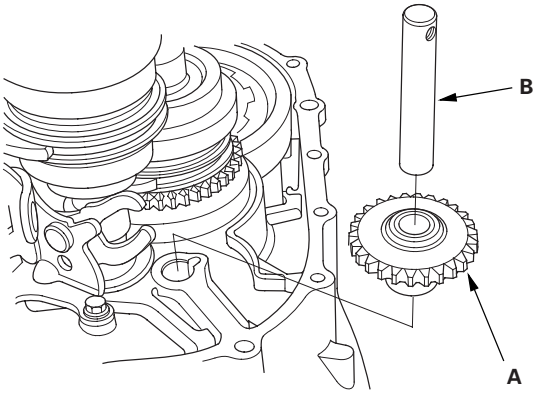


8. Remove the 32 mm sealing cap (A).

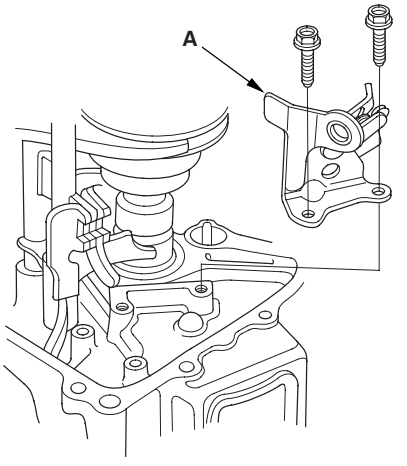


9. While expanding the 72 mm snap ring (B) on the countershaft ball bearing with snap ring pliers, lift the transmission housing (C). Release the snap ring pliers, and remove the transmission housing and the three 14 x 20 mm dowel pins (D).

10. Remove the reverse idler gear (A) and the reverse idler gear shaft (B).

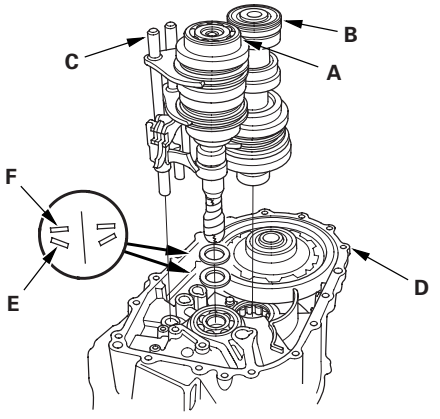


11. Remove the reverse shift fork (A).



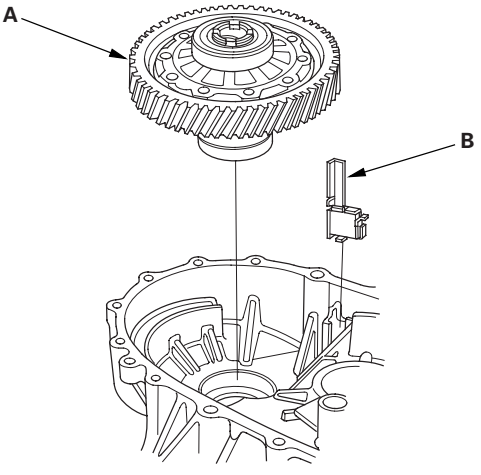
DYNOMITE -2009-

12. Apply tape to the mainshaft splines to protect the seal, then remove the mainshaft assembly (A) and the countershaft assembly (B) with the shift fork assembly (C) from the clutch housing (D).

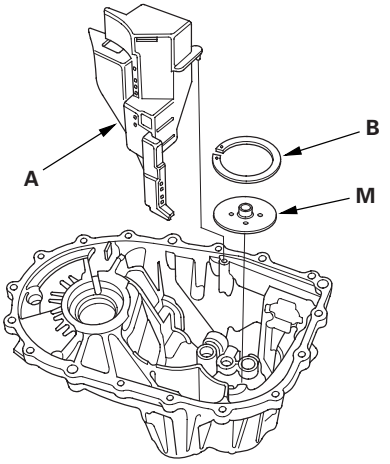


13. Remove the 28 mm spring washer (E) and the 28 mm washer (F).

14. Remove the differential assembly (A) and the magnet (B).



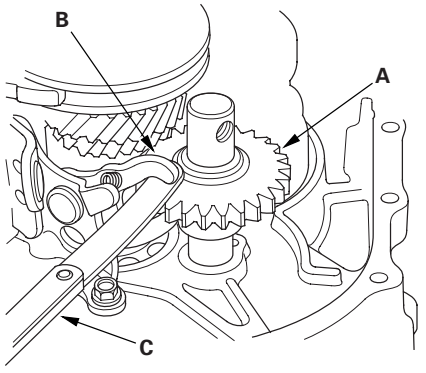
15. Remove the oil gutter plate (A), the 72 mm shim (B), and oil guide plate M.



Reverse Shift Fork Clearance Inspection

1. Measure the clearance between the reverse idler gear (A) and the reverse shift fork (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 2.

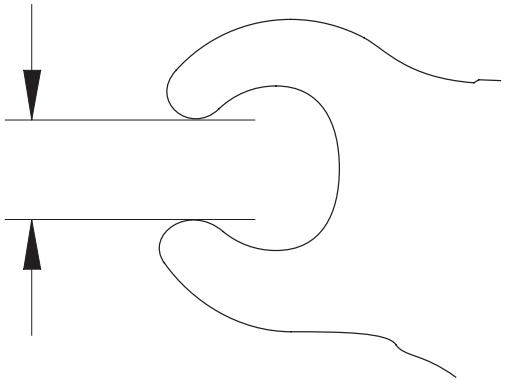
   Standard: 0.20—0.59 mm (0.008—0.023 in.)
   Service Limit: 1.3 mm (0.051 in.)



2. Measure the width of the reverse shift fork.

   - If the width is not within the standard, replace the reverse shift fork.
   - If the width is within the standard, replace the reverse idler gear.

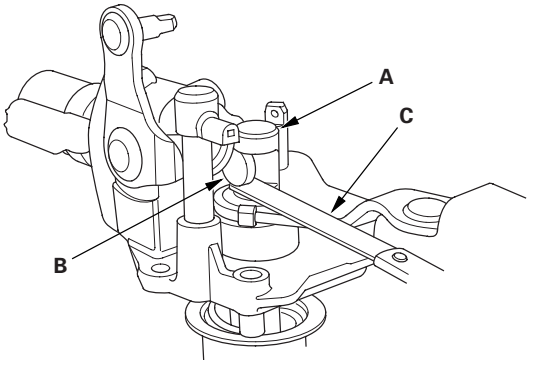
   Standard: 13.4—13.7 mm (0.528—0.539 in.)



Change Lever Clearance Inspection

1. Measure the clearance between the change lever (A) and the select lever (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 2.

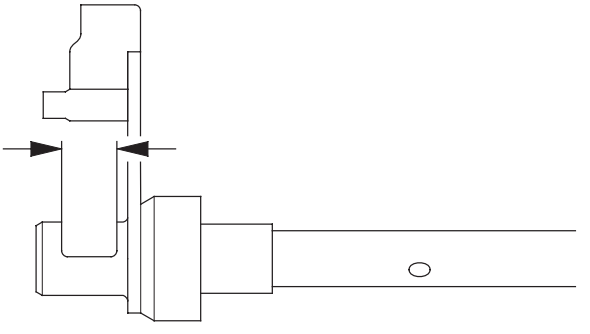
   Standard: 0.05—0.25 mm (0.002—0.010 in.)
   Service Limit: 0.50 mm (0.020 in.)



2. Measure the groove width of the change lever.

   - If the groove width is not within the standard, replace the change lever.
   - If the groove width is within the standard, replace the select lever.

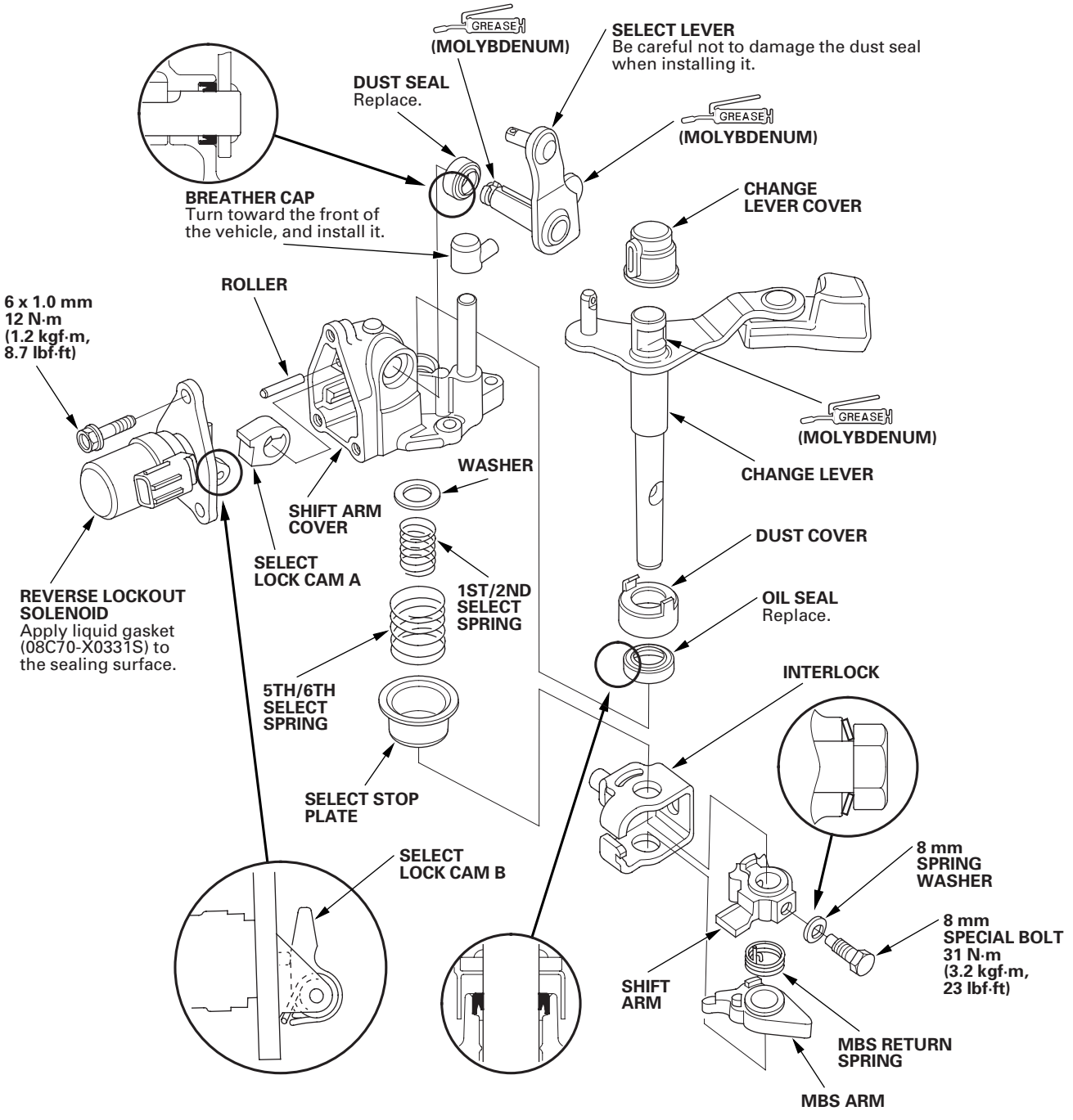
   Standard: 15.00—15.10 mm (0.591—0.594 in.)



DYNOMITE -2009-

Change Lever Assembly Disassembly/Reassembly

NOTE:
- Do not install components if too much time has passed after applying liquid gasket. Instead, remove the old residue, and reapply liquid gasket.
- Prior to reassembling, clean all parts in solvent, dry them, and apply grease to the contact surfaces as shown.

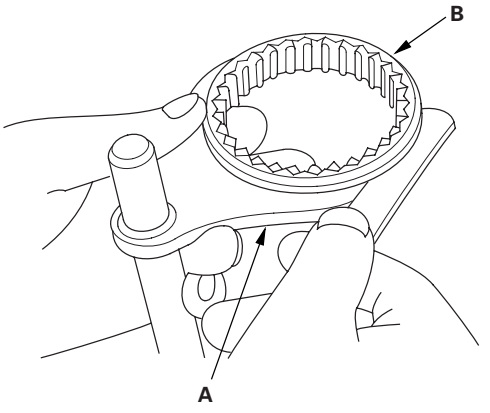


DYNOMITE -2009-

Shift Fork Clearance Inspection

1. Measure the clearance between each shift fork (A) and its matching synchro sleeve (B). If the clearance exceeds the service limit, go to step 2.

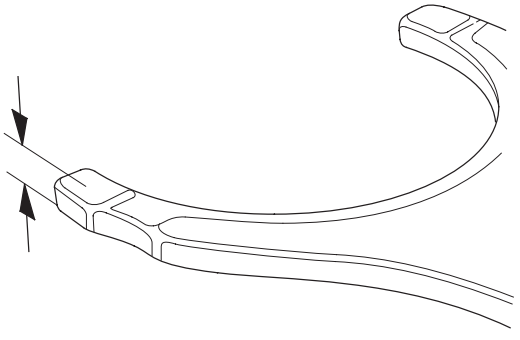
   Standard: 0.35—0.65 mm (0.014—0.026 in.)
   Service Limit: 1.0 mm (0.039 in.)



2. Measure the thickness of the shift fork fingers.

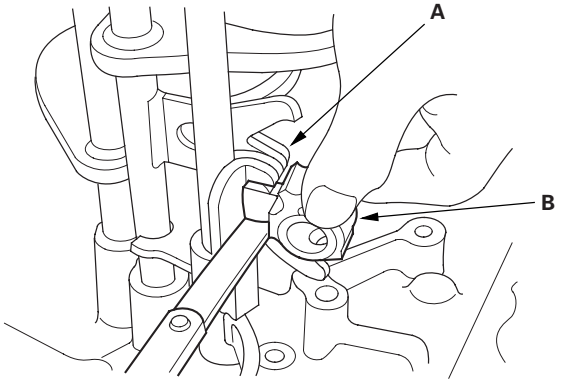
   - If the thickness is not within the standard, replace the shift fork.
   - If the thickness is within the standard, replace the synchro sleeve and the synchro hub as a set.
   - If one arm of the shift fork shows more wear than others, the fork may be bent and needs to be replaced.

   Standard: 7.4—7.6 mm (0.29—0.30 in.)



3. Measure the clearance between the shift fork (A) and the shift arm (B). If the clearance exceeds the service limit, go to step 4.

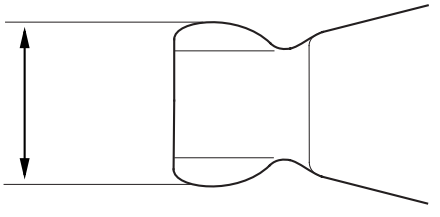
   Standard: 0.2—0.5 mm (0.008—0.020 in.)
   Service Limit: 0.62 mm (0.024 in.)



4. Measure the width of the shift arm.

   - If the width is not within the standard, replace the shift arm.
   - If the width is within the standard, replace the shift fork or the reverse shift piece.

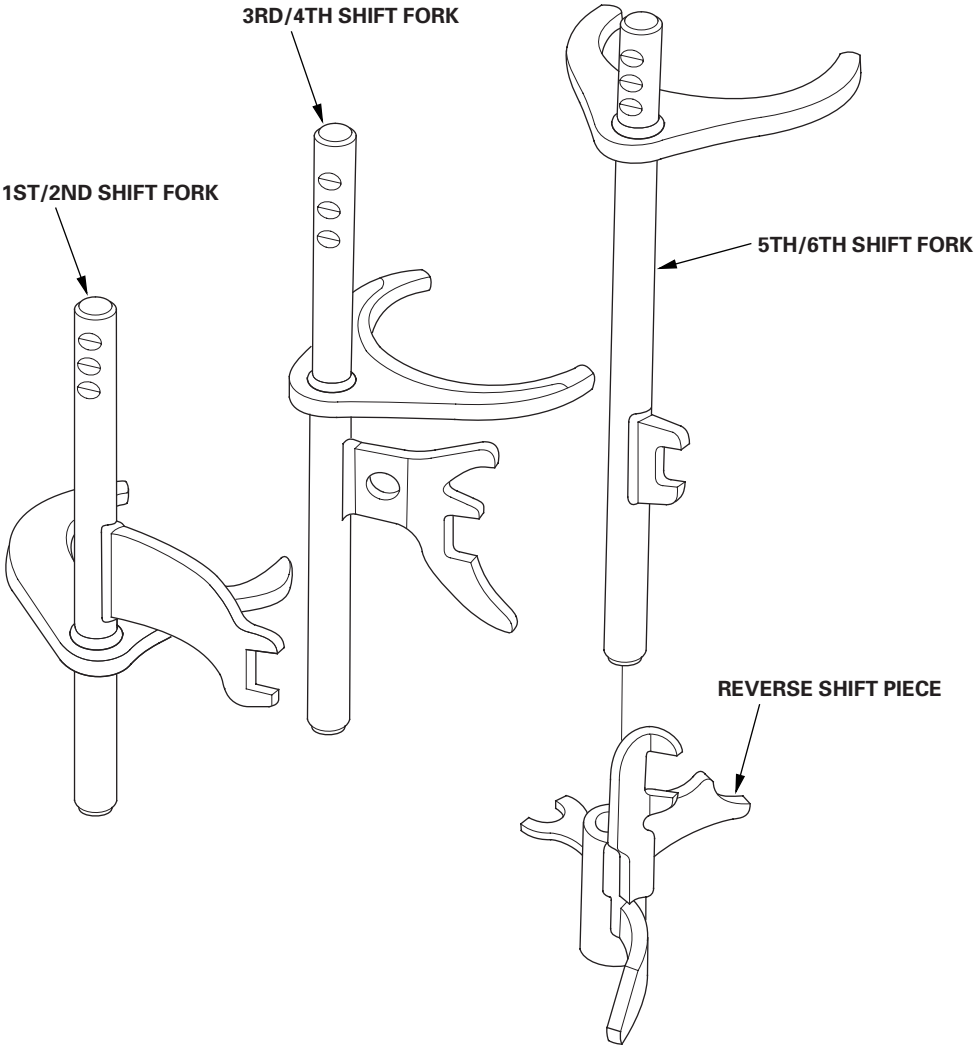
   Standard: 16.9—17.0 mm (0.665—0.669 in.)



DYNOMITE -2009-

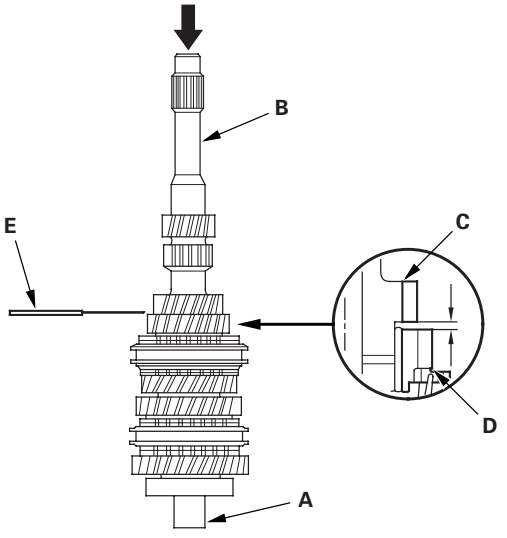
Shift Fork Disassembly/Reassembly

NOTE: Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to all contact surfaces.



Mainshaft Assembly Clearance Inspection

1. Support the bearing inner race with an appropriate sized socket (A), and push down on the mainshaft (B).



2. Measure the clearance between 2nd gear (C) and 3rd gear (D) with a feeler gauge (E).

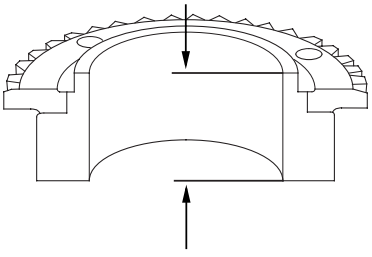
   - If the clearance exceeds the service limit, go to step 3.
   - If the clearance is within the service limit, go to step 4.

   Standard: **0.06—0.16 mm (0.002—0.006 in.)**
   Service Limit: **0.25 mm (0.010 in.)**

3. Measure the thickness of 3rd gear.

   - If the thickness is less than the service limit, replace 3rd gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and the 3rd/4th synchro sleeve as a set.

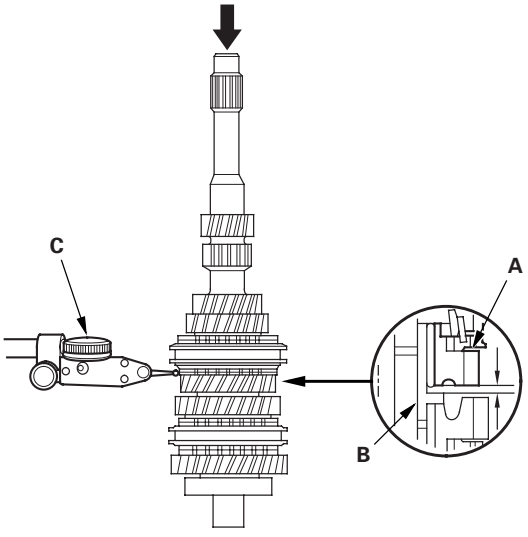
   Standard: **23.92—23.97 mm (0.942—0.944 in.)**
   Service Limit: **23.80 mm (0.937 in.)**



4. Measure the clearance between 4th gear (A) and the 4th/5th gear distance collar (B) with a dial indicator (C).

   - If the clearance exceeds the service limit, go to step 5.
   - If the clearance is within the service limit, go to step 7.

   Standard: **0.06—0.16 mm (0.002—0.006 in.)**
   Service Limit: **0.25 mm (0.010 in.)**

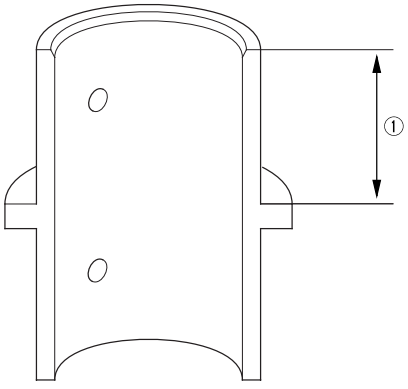


DYNOMITE -2009-

5. Measure the length ① of the 4th/5th gear distance collar as shown.

   - If the length ① is not within the standard, replace the 4th/5th gear distance collar.
   - If the length ① is within the standard, go to step 6.

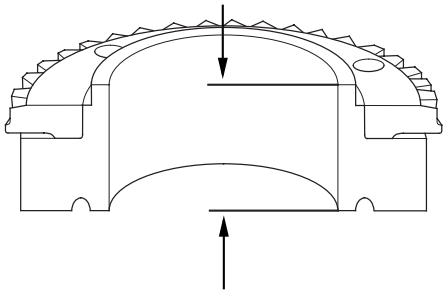
   Standard: 24.03—24.08 mm (0.946—0.948 in.)



6. Measure the thickness of 4th gear.

   - If the thickness is less than the service limit, replace 4th gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and the 3rd/4th synchro sleeve as a set.

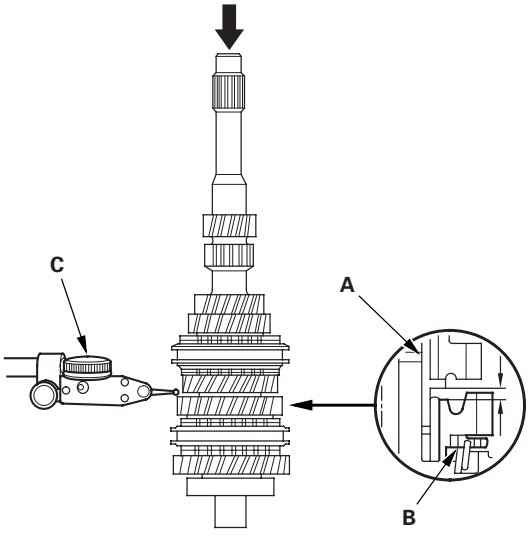
   Standard: 23.92—23.97 mm (0.942—0.944 in.)
   Service Limit: 23.80 mm (0.937 in.)



7. Measure the clearance between the 4th/5th gear distance collar (A) and 5th gear (B) with a dial indicator (C).

   - If the clearance exceeds the service limit, go to step 8.
   - If the clearance is within the service limit, go to step 10.

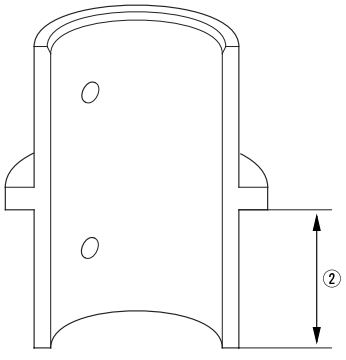
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



8. Measure the length ② of the 4th/5th gear distance collar as shown.

   - If the length ② is not within the standard, replace the 4th/5th gear distance collar.
   - If the length ② is within the standard, go to step 9.

   Standard: 24.03—24.08 mm (0.946—0.948 in.)



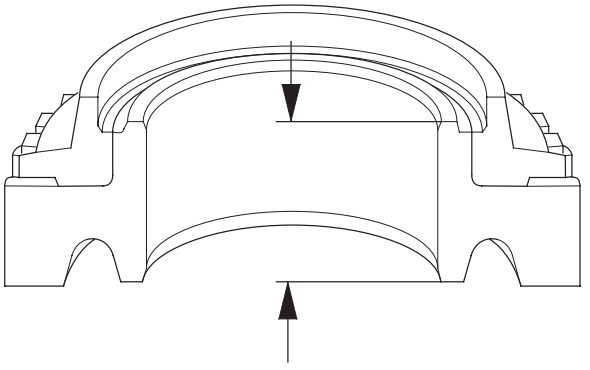
(cont'd)

Mainshaft Assembly Clearance Inspection (cont'd)

9. Measure the thickness of 5th gear.

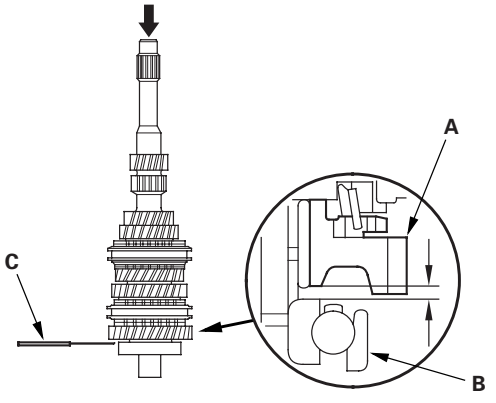
   - If the thickness is less than the service limit, replace 5th gear.
   - If the thickness is within the service limit, replace the 5th/6th synchro hub and the 5th/6th synchro sleeve as a set.

   Standard: 23.92—23.97 mm (0.942—0.944 in.)
   Service Limit: 23.80 mm (0.937 in.)



10. Measure the clearance between 6th gear (A) and the angular ball bearing (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 11.

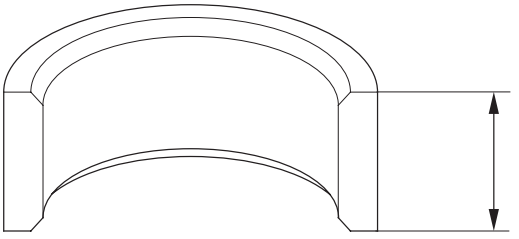
    Standard: 0.06—0.16 mm (0.002—0.006 in.)
    Service Limit: 0.25 mm (0.010 in.)



11. Measure the length of the 6th gear distance collar.

    - If the length is not within the standard, replace the 6th gear distance collar.
    - If the length is within the standard, go to step 12.

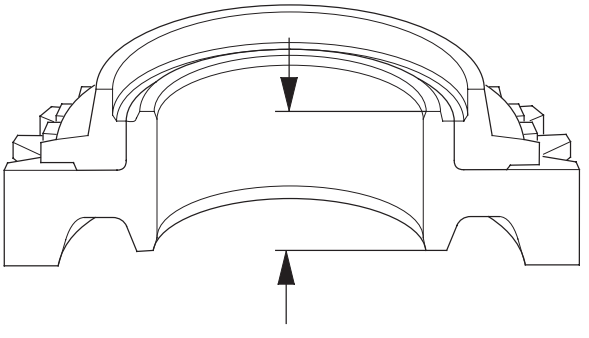
    Standard: 24.03—24.08 mm (0.946—0.948 in.)



12. Measure the thickness of 6th gear.

    - If the thickness is less than the service limit, replace 6th gear.
    - If the thickness is within the service limit, replace the 5th/6th synchro hub and the 5th/6th synchro sleeve as a set.

    Standard: 23.92—23.97 mm (0.942—0.944 in.)
    Service Limit: 23.80 mm (0.937 in.)

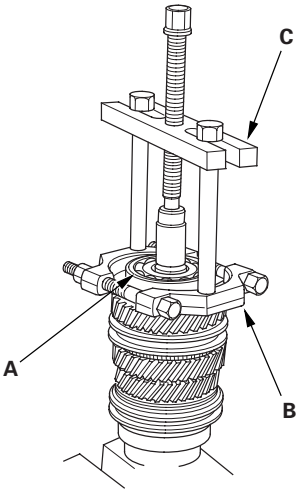


DYNOMITE -2009-

Mainshaft Disassembly

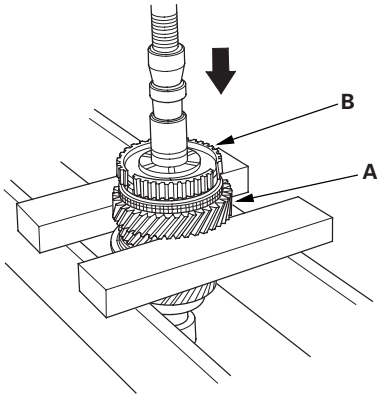
NOTE: Refer to the Exploded view in the Mainshaft Reassembly, as needed, when removing components pressed on to the mainshaft (see page 13-113).

1. Remove the angular ball bearing (A) using a commercially available bearing separator (B) and a commercially available bearing puller (C).



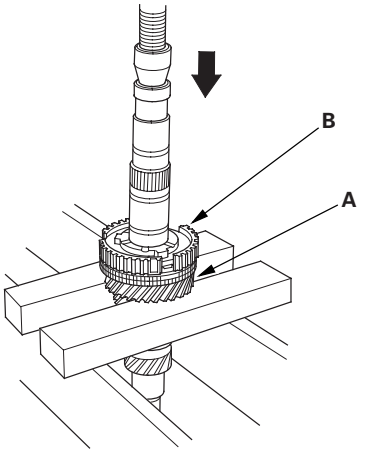
2. Support 5th gear (A) on steel blocks, and press the mainshaft out of the 5th/6th synchro hub (B) and 5th gear.

   NOTE: Do not use a jaw-type puller; it can damage the gear teeth.



3. Support 3rd gear (A) on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub (B) and 3rd gear.

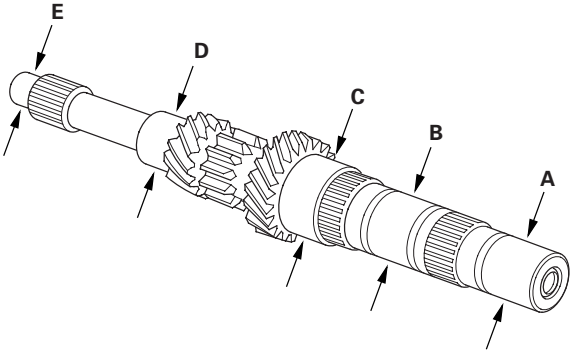
   NOTE: Do not use a jaw-type puller; it can damage the gear teeth.



Mainshaft Inspection

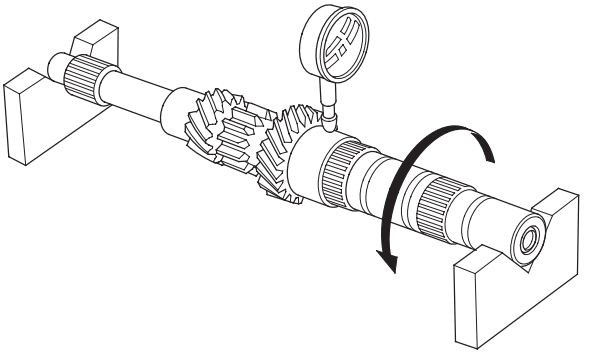
1. Inspect the gear and bearing contact areas for wear and damage, then measure the mainshaft at points A, B, C, D, and E. If any part of the mainshaft is less than the service limit, replace it.

Standard:
A Ball Bearing Contact Area (Transmission Housing Side):
27.987—28.000 mm (1.1018—1.1024 in.)
B 4th/5th Gear Distance Collar Contact Area:
31.984—32.000 mm (1.2592—1.2598 in.)
C Needle Bearing Contact Area:
38.984—39.000 mm (1.5348—1.5354 in.)
D Ball Bearing Contact Area (Clutch Housing Side):
27.977—27.990 mm (1.1015—1.1020 in.)
E Bushing Contact Area:
20.80—20.85 mm (0.819—0.821 in.)
Service Limit:
A: 27.93 mm (1.100 in.)
B: 31.93 mm (1.257 in.)
C: 38.93 mm (1.533 in.)
D: 27.92 mm (1.099 in.)
E: 20.75 mm (0.817 in.)



2. Inspect the runout by supporting both ends of the mainshaft. Then rotate the mainshaft two complete turns while measuring with a dial gauge. If the runout exceeds the service limit, replace the mainshaft.

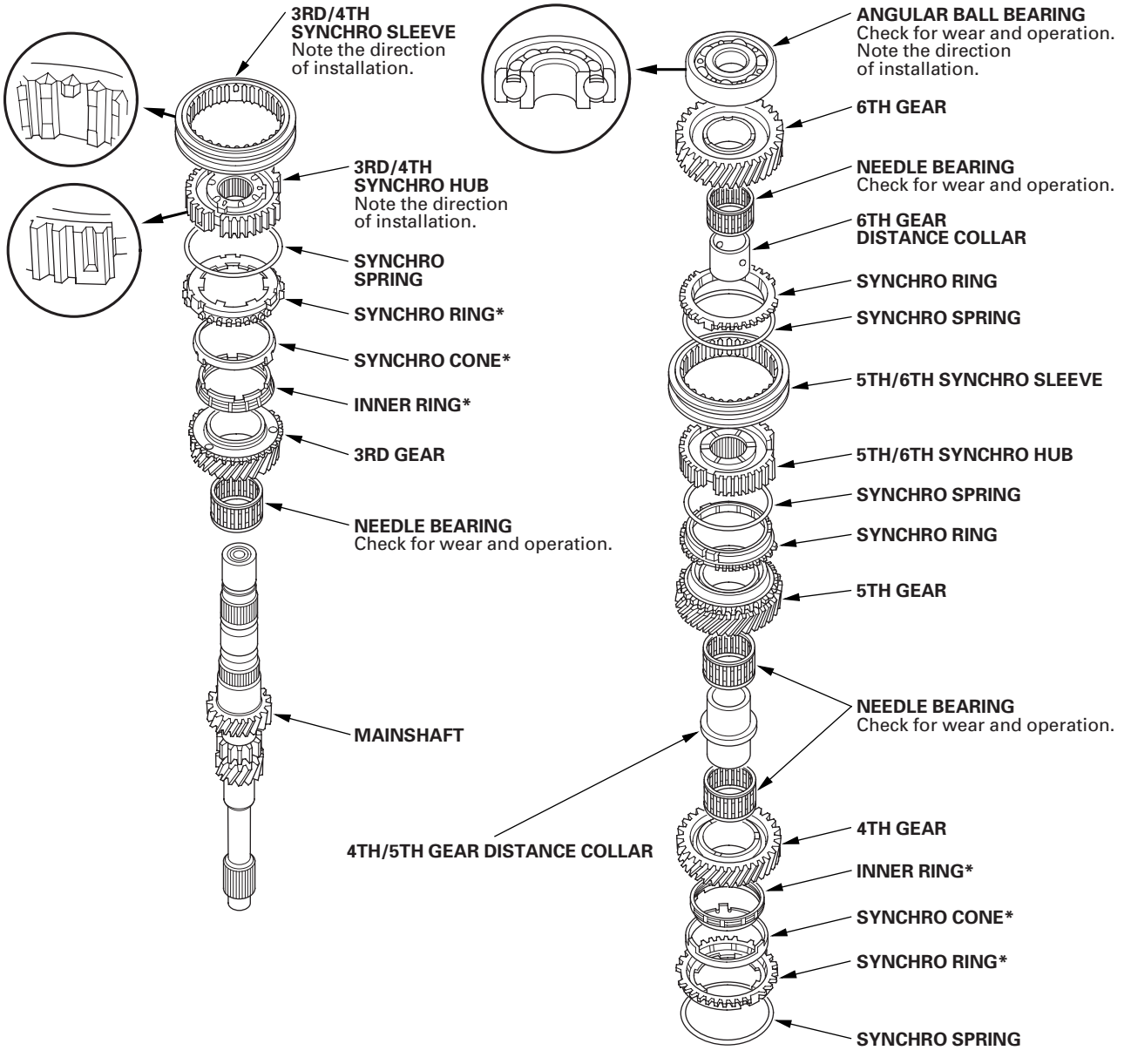
Standard: 0.02 mm (0.001 in.) max.
Service Limit: 0.05 mm (0.002 in.)



DYNOMITE -2009-

Mainshaft Reassembly

Exploded View



*: The components of the double cone synchro assembly.

(cont'd)

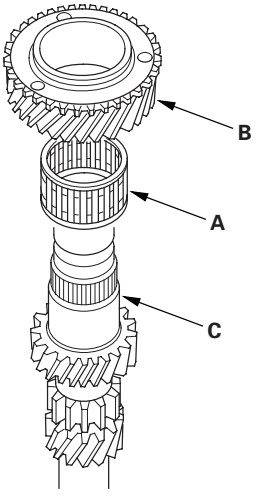
Mainshaft Reassembly (cont'd)

Special Tools Required
- Inner driver handle, 40 mm 07746-0030100
- Inner bearing driver attachment, 30 mm 07746-0030300

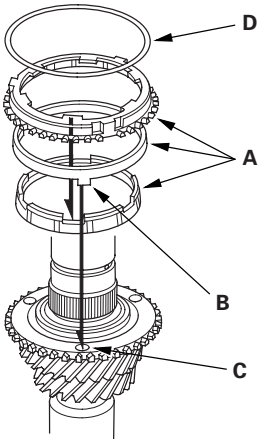
NOTE: Refer to the Exploded View, as needed, during this procedure.

1. Clean all parts in solvent, dry them, and apply MTF to all contact surfaces.

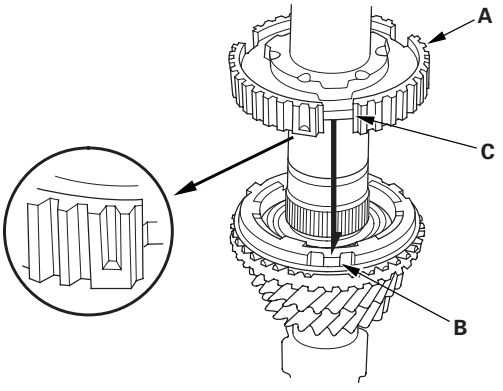
2. Install the needle bearing (A) and 3rd gear (B) on the mainshaft (C).



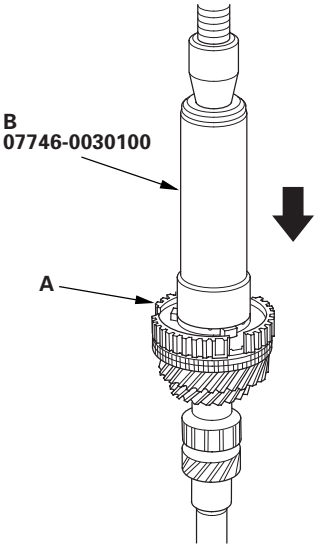
3. Install the double cone synchro assembly (A) by aligning the synchro cone fingers (B) with the holes (C) in 3rd gear, then install the synchro spring (D).



4. Install the 3rd/4th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 3rd/4th synchro hub.

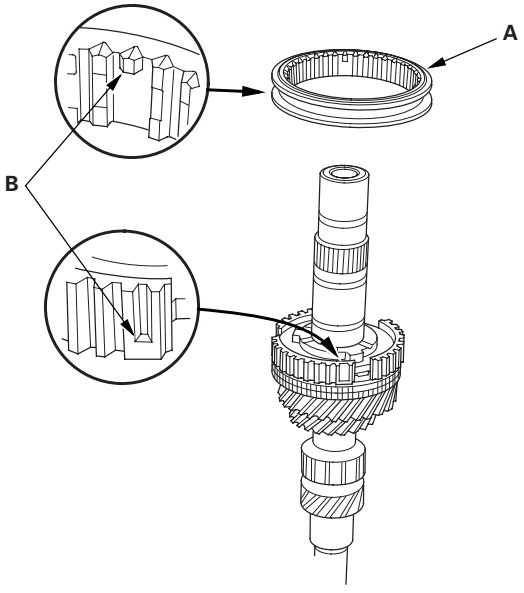


5. Press on the 3rd/4th synchro hub (A) using the 40 mm inner driver handle (B) and a press.

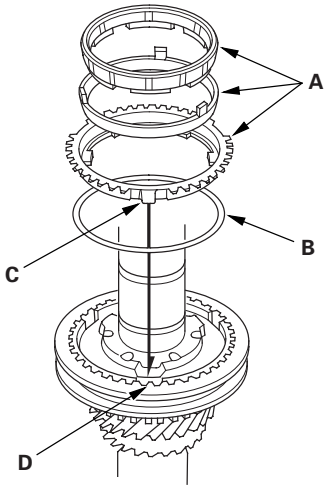


DYNOMITE -2009-

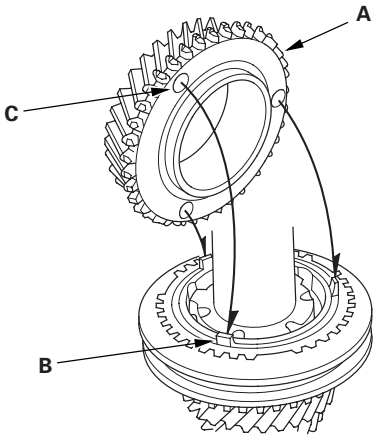
6. Install the 3rd/4th synchro sleeve (A) by aligning the stops (B) of the 3rd/4th synchro sleeve and the 3rd/4th synchro hub. After installing, check the operation of the 3rd/4th synchro hub set.



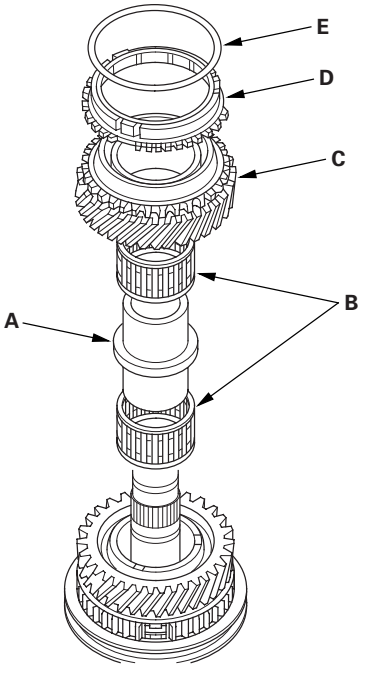
7. Install the double cone synchro assembly (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 3rd/4th synchro hub.



8. Install 4th gear (A) by aligning the synchro cone fingers (B) with the holes (C) in 4th gear.



9. Install the 4th/5th gear distance collar (A) with the needle bearings (B), then install 5th gear (C).

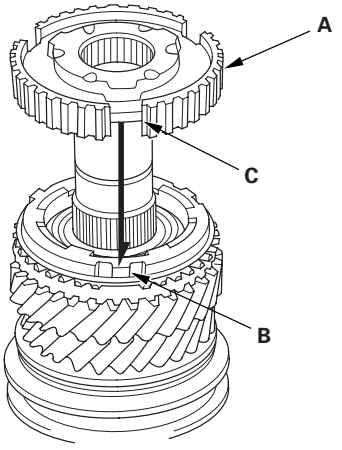


10. Install the synchro ring (D) with the synchro spring (E) onto 5th gear.

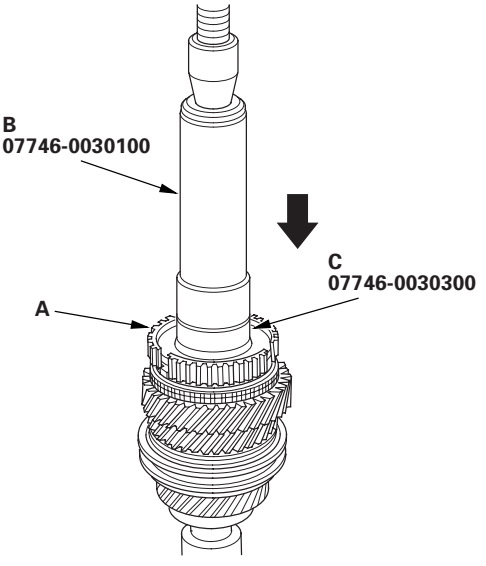
(cont'd)

Mainshaft Reassembly (cont'd)

11. Install the 5th/6th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 5th/6th synchro hub.

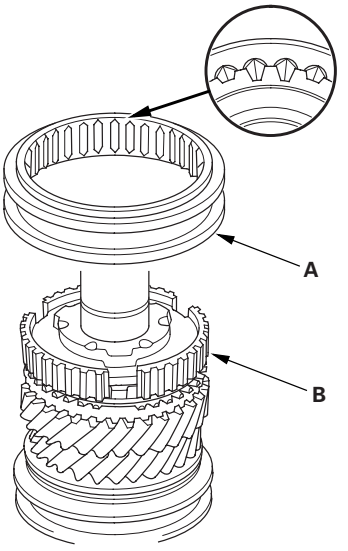


12. Press on the 5th/6th synchro hub (A) using the 40 mm inner driver handle (B) and the 30 mm inner bearing driver attachment (C).



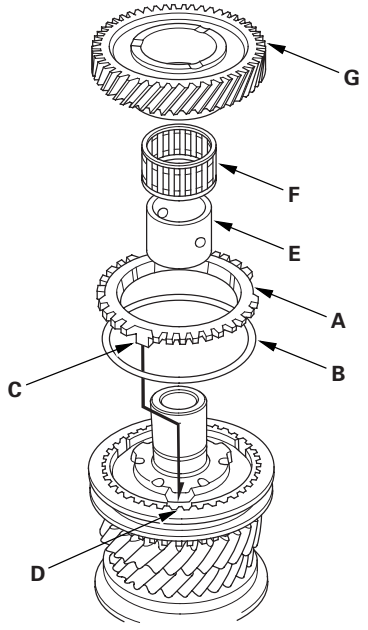
13. Install the 5th/6th synchro sleeve (A) by aligning the slots of the 5th/6th synchro sleeve and the 5th/6th synchro hub (B). After installing, check the operation of the 5th/6th synchro hub set.

NOTE: Make sure to align the slots in the 5th/6th synchro hub as shown.



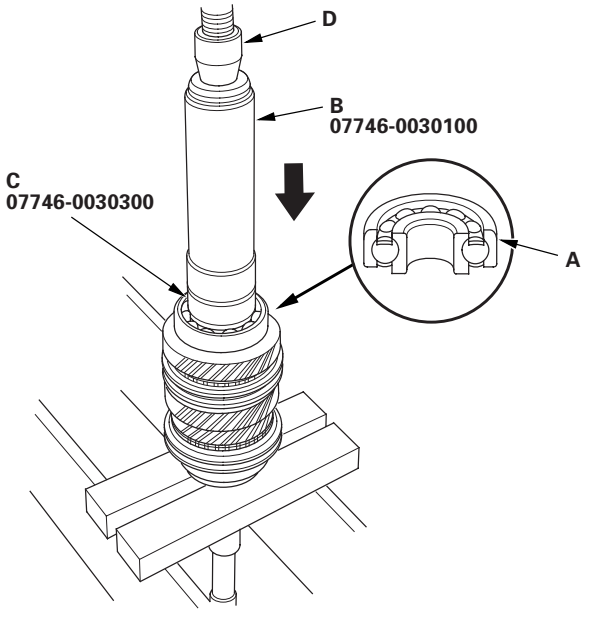
DYNOMITE -2009-

14. Install the synchro ring (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 5th/6th synchro hub.



15. Install the 6th gear distance collar (E) with the needle bearing (F), then install 6th gear (G).

16. Press on new angular ball bearing (A) using the 40 mm inner driver handle (B), the 30 mm inner bearing driver attachment (C), and a press (D).

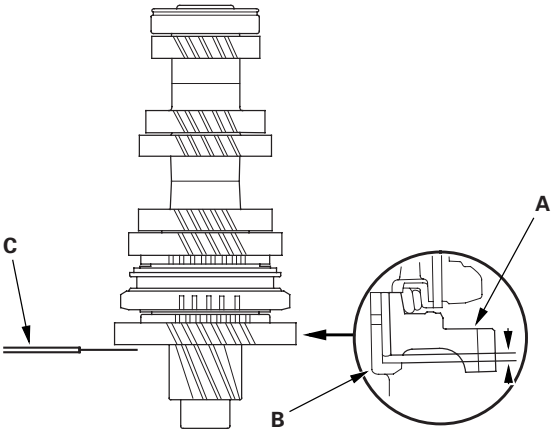


Countershaft Assembly Clearance Inspection

1. Measure the clearance between 1st gear (A) and the 1st gear distance collar (B) with a feeler gauge (C).

   - If the clearance exceeds the service limit, go to step 2.
   - If the clearance is within the service limit, go to step 4.

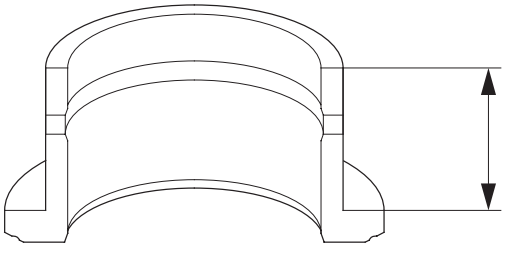
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



2. Measure the length of the 1st gear distance collar as shown.

   - If the length is not within the standard, replace the 1st gear distance collar.
   - If the length is within the standard, go to step 3.

   Standard: 23.03—23.08 mm (0.907—0.909 in.)

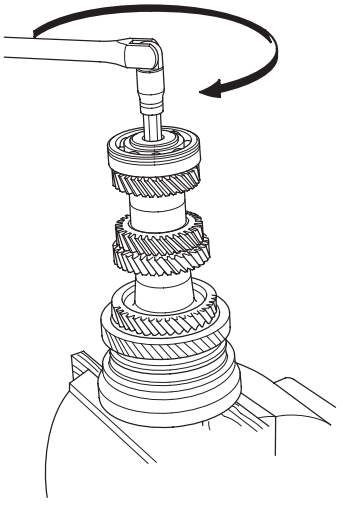


(cont'd)

Countershaft Disassembly

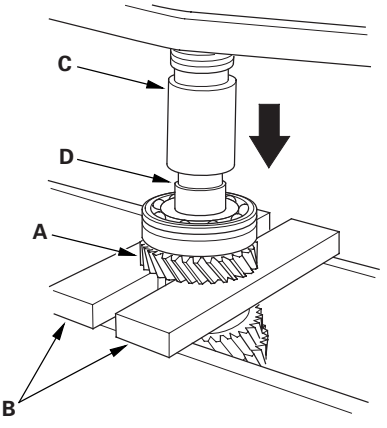
NOTE: Refer to the Exploded View in the Countershaft Reassembly, as needed, when removing components pressed on to the countershaft (see page 13-121).

1. Securely clamp the countershaft assembly in a bench vise with wood blocks.



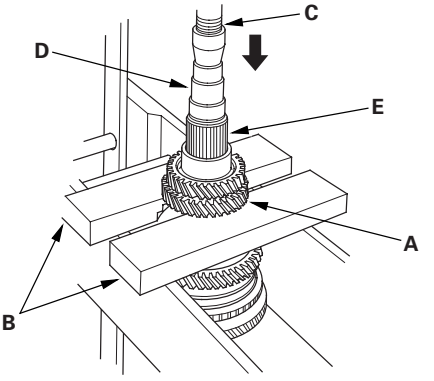
2. Remove the special bolt (left-hand threads).

3. Support 6th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing and 6th gear.

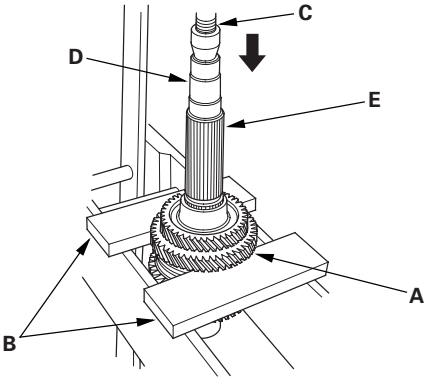


4. Remove the 35 mm shim.

5. Support 4th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 4th gear and 5th gear.



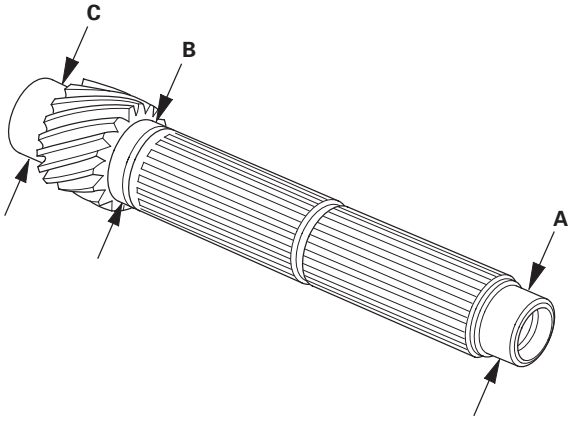
6. Support 2nd gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 2nd gear and 3rd gear.



Countershaft Inspection

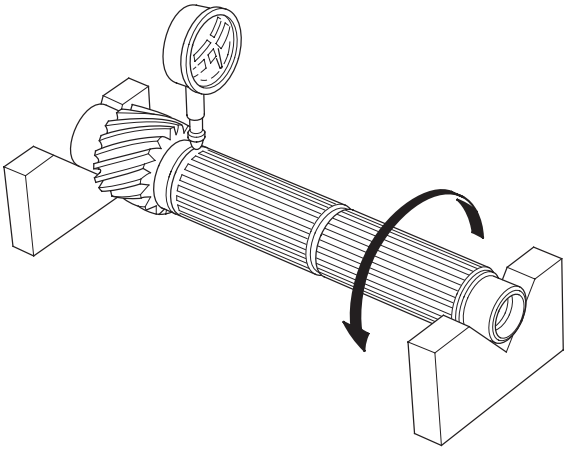
1. Inspect the gear and bearing contact areas for wear and damage, then measure the countershaft at points A, B, and C. If any part of the countershaft is less than the service limit, replace it.

   Standard:
   A Ball Bearing Contact Area (Transmission Housing Side):
   30.020—30.033 mm (1.1819—1.1824 in.)
   B 1st Gear Distance Collar Contact Area:
   39.937—39.950 mm (1.5723—1.5728 in.)
   C Needle Bearing Contact Area (Clutch Housing Side):
   35.000—35.015 mm (1.3780—1.3785 in.)
   Service Limit:
   A: 29.97 mm (1.180 in.)
   B: 39.883 mm (1.5702 in.)
   C: 34.95 mm (1.376 in.)



2. Inspect the runout by supporting both ends of the countershaft. Then rotate the countershaft two complete turns while measuring with a dial gauge. If the runout exceeds the service limit, replace the countershaft.

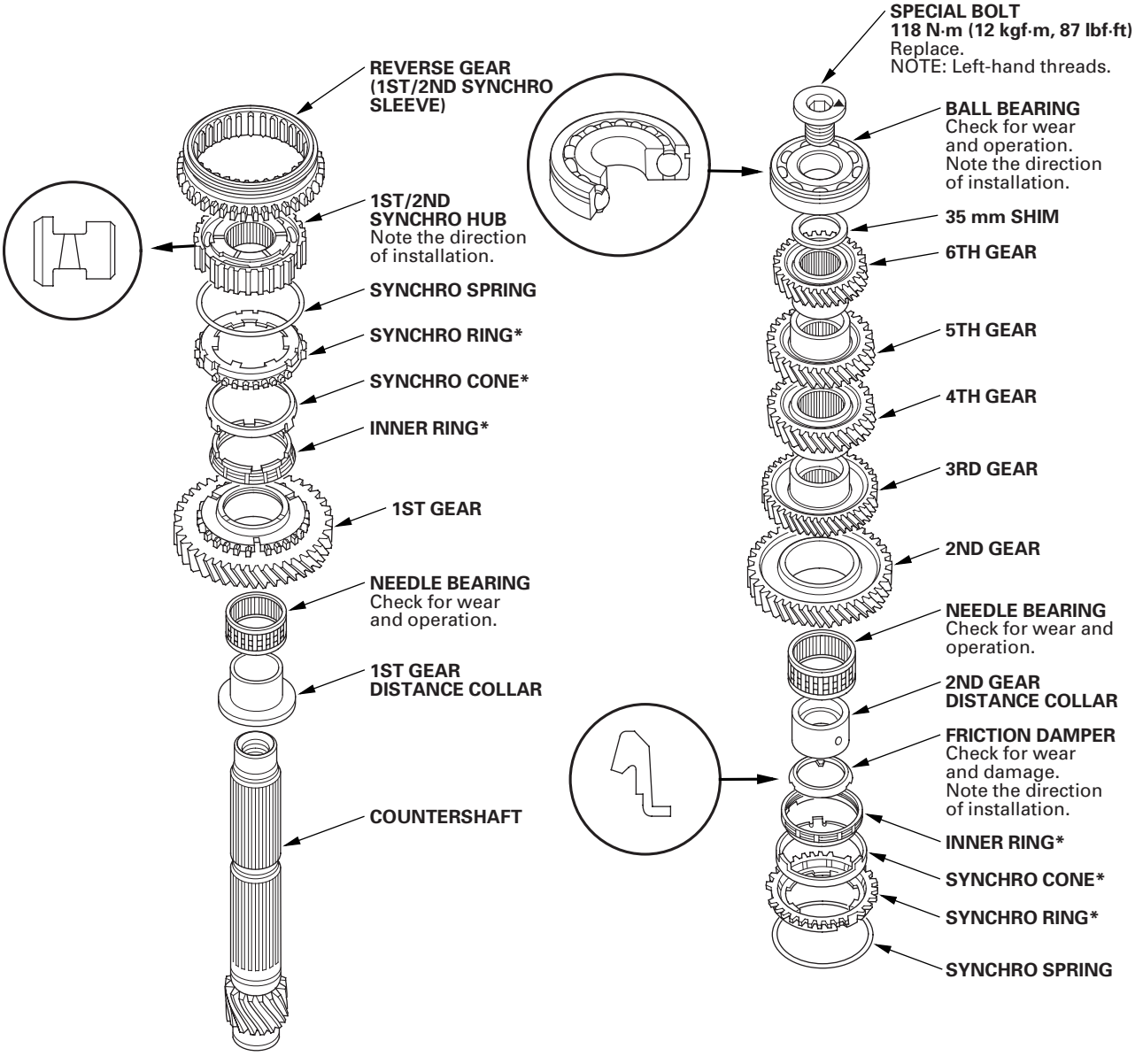
   Standard: 0.02 mm (0.001 in.) max.
   Service Limit: 0.05 mm (0.002 in.)



DYNOMITE -2009-

Countershaft Reassembly

Exploded View



*: The components of the triple cone synchro assembly.

(cont'd)

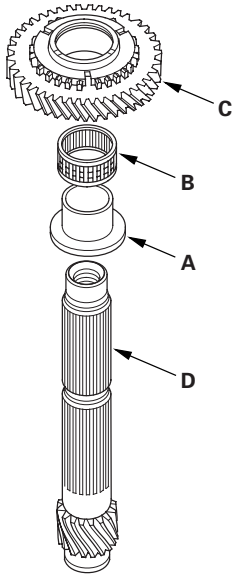
Countershaft Reassembly (cont'd)

Special Tools Required
- Inner driver handle, 40 mm 07746-0030100
- Inner bearing driver attachment, 30 mm 07746-0030300

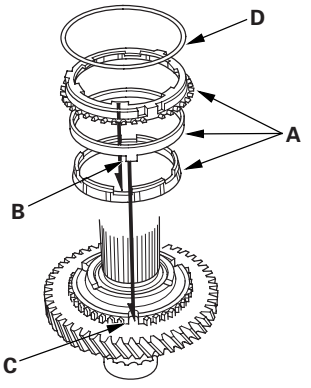
NOTE: Refer to the Exploded View, as needed, during this procedure.

1. Clean all parts in solvent, dry them, and apply MTF to all contact surfaces.

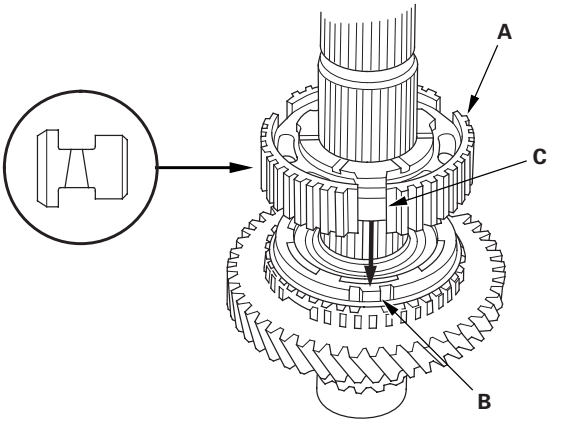
2. Install the 1st gear distance collar (A), the needle bearing (B), and 1st gear (C) onto the countershaft (D).



3. Install the triple cone synchro assembly (A) by aligning the synchro ring fingers (B) with the grooves (C) in 1st gear, then install the synchro spring (D).

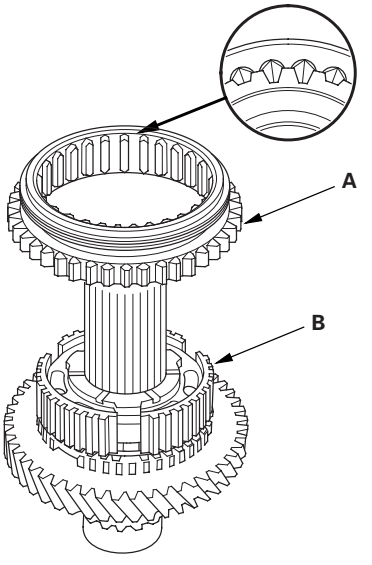


4. Install the 1st/2nd synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 1st/2nd synchro hub.



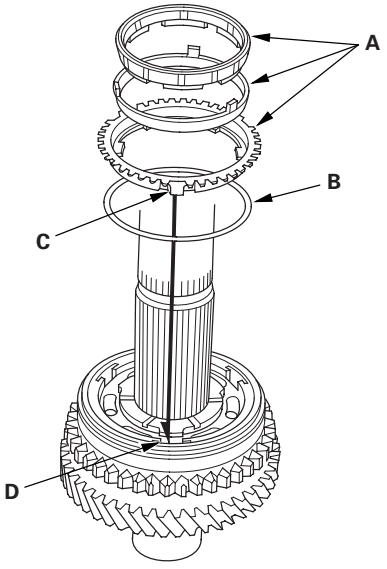
5. Install the reverse gear (A) by aligning the slots of reverse gear and the 1st/2nd synchro hub (B). After installing, check the operation of the 1st/2nd synchro hub set.

   NOTE: Make sure to align the slots in the 1st/2nd synchro hub as shown.

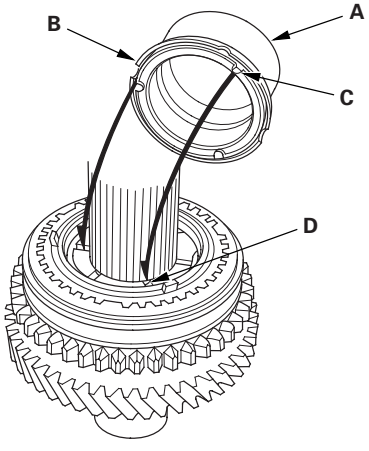


DYNOMITE -2009-

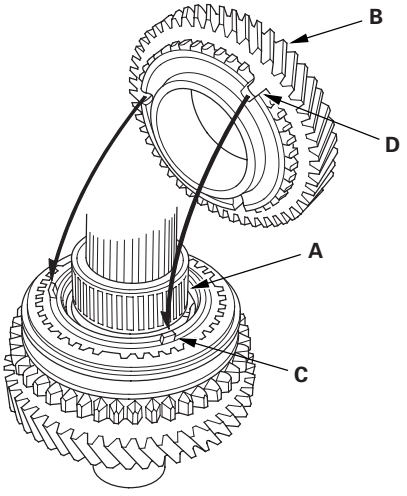
6. Install the triple cone synchro assembly (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 1st/2nd synchro hub.



7. Install the distance collar (A) and the friction damper (B) by aligning the friction damper fingers (C) with the grooves (D) in the 1st/2nd synchro hub.



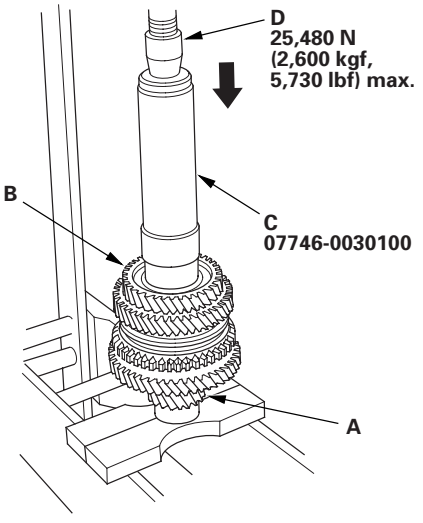
8. Install the needle bearing (A).



9. Install 2nd gear (B) by aligning the synchro cone fingers (C) with the grooves (D) in 2nd gear.

10. Support the countershaft (A) on steel blocks, then press on 3rd gear (B) using the 40 mm inner driver handle (C) and a press (D).

    NOTE: Do not exceed the maximum pressure.

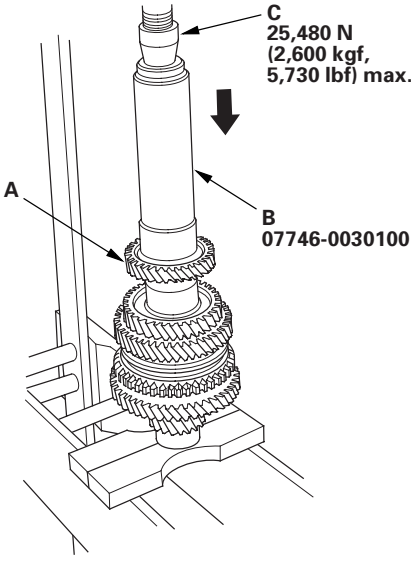


(cont'd)

Countershaft Reassembly (cont'd)

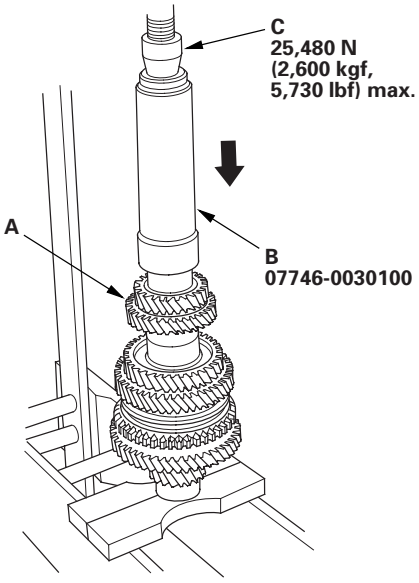
11. Press on 4th gear (A) using the 40 mm inner driver handle (B) and a press (C).

    NOTE: Do not exceed the maximum pressure.



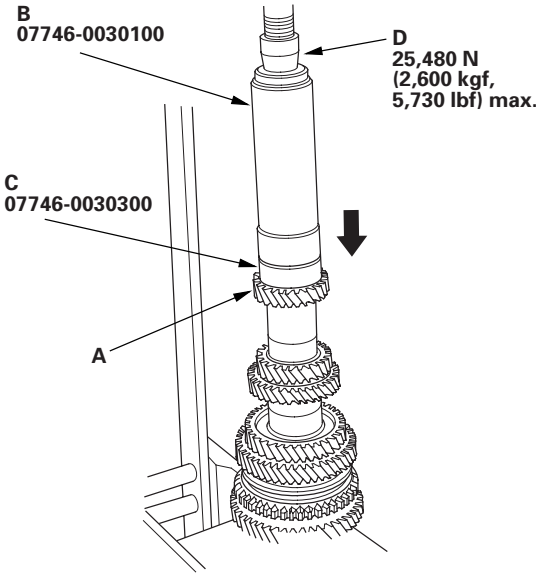
12. Press on 5th gear (A) using the 40 mm inner driver handle (B) and a press (C).

    NOTE: Do not exceed the maximum pressure.



13. Press on 6th gear (A) using the 40 mm inner driver handle (B), the 30 mm inner bearing driver attachment (C), and a press (D).

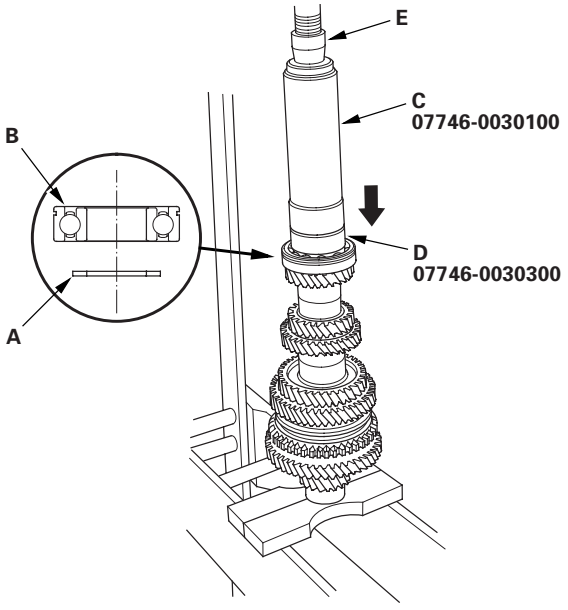
    NOTE: Do not exceed the maximum pressure.



DYNOMITE -2009-

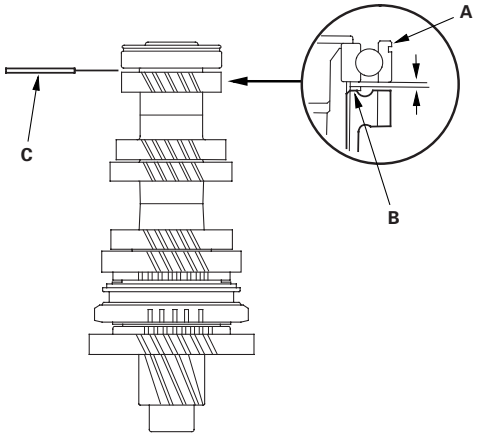
14. Install the 35 mm shim (A), and temporary press on the old ball bearing (B) using the 40 mm inner driver handle (C), the 30 mm inner bearing driver attachment (D), and a press (E).

    NOTE:
    - Use any size of 35 mm shim, and note size you used. Measurements taken in the following steps will determine the correct shim to use for final assembly.
    - Make sure to install the ball bearing as shown.



15. Measure the clearance between the old bearing (A) and the 35 mm shim (B) with a feeler gauge (C).

    Standard: 0.04—0.10 mm (0.0016—0.0039 in.)



16. If the measured clearance in step 15 is not within the standard, select another suitable 35 mm shim from the table, then go to next step to replace the 35 mm shim and the ball bearing. If the measured clearance in step 15 is within the standard, go to next step to replace only the ball bearing.

35 mm Shim

Type	Part Number	Thickness
A	23981-PPP-000	0.87 mm (0.034 in.)
AA	23981-PPP-900	0.91 mm (0.036 in.)
B	23982-PPP-000	0.95 mm (0.037 in.)
AB	23982-PPP-900	0.99 mm (0.039 in.)
C	23983-PPP-000	1.03 mm (0.041 in.)
AC	23983-PPP-900	1.07 mm (0.042 in.)
D	23984-PPP-000	1.11 mm (0.044 in.)
AD	23984-PPP-900	1.15 mm (0.045 in.)
E	23985-PPP-000	1.19 mm (0.047 in.)
AE	23985-PPP-900	1.23 mm (0.048 in.)
F	23986-PPP-000	1.27 mm (0.050 in.)
AF	23986-PPP-900	1.31 mm (0.052 in.)
G	23987-PPP-000	1.35 mm (0.053 in.)
AG	23987-PPP-900	1.39 mm (0.055 in.)
H	23988-PPP-000	1.43 mm (0.056 in.)
AH	23988-PPP-900	1.47 mm (0.058 in.)
J	23989-PPP-000	1.51 mm (0.060 in.)
AJ	23989-PPP-900	1.55 mm (0.061 in.)
K	23990-PPP-000	1.59 mm (0.063 in.)
AK	23990-PPP-900	1.63 mm (0.064 in.)
L	23991-PPP-000	1.67 mm (0.066 in.)
AL	23991-PPP-900	1.71 mm (0.067 in.)
M	23992-PPP-000	1.75 mm (0.069 in.)
AM	23992-PPP-900	1.79 mm (0.070 in.)
N	23993-PPP-000	1.83 mm (0.072 in.)
AN	23993-PPP-900	1.87 mm (0.074 in.)
P	23994-PPP-000	1.91 mm (0.075 in.)
AP	23994-PPP-900	1.95 mm (0.077 in.)
Q	23995-PPP-000	1.99 mm (0.078 in.)

(cont'd)

Countershaft Reassembly (cont'd)

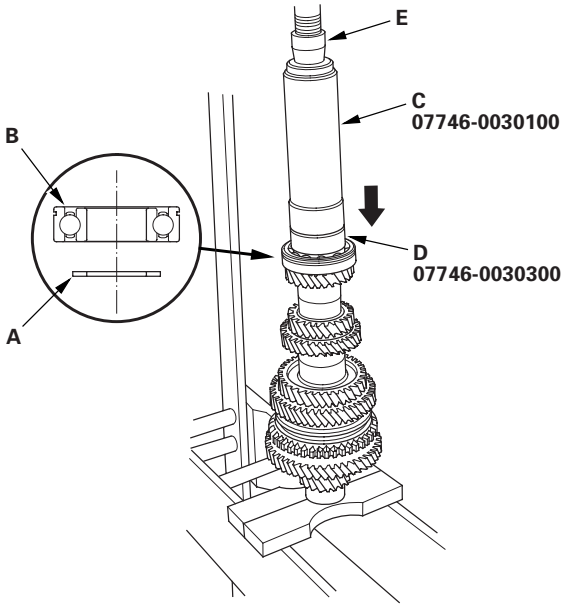
17. Remove 6th gear and the ball bearing (see step 3 on page 13-119).

18. Remove the 35 mm shim.

19. Repeat step 13 to install 6th gear.

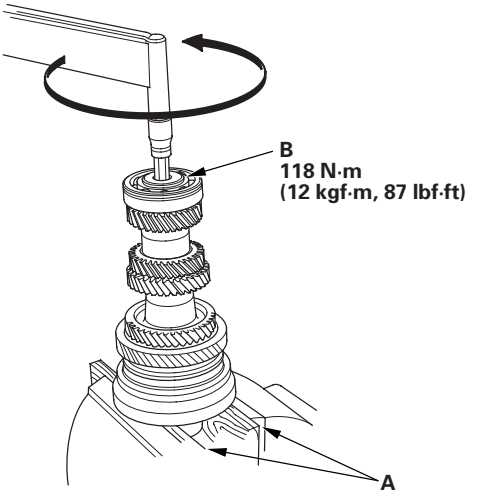
20. Install the correct 35 mm shim (A), then press on new ball bearing (B) using the 40 mm inner driver handle (C), the 30 mm inner bearing driver attachment (D), and a press (E), then recheck the clearance.

    NOTE:
    - If necessary, replace the 35 mm shim with the correct one selected in step 16.
    - Make sure to install the ball bearing as shown.



21. Check the clearance between the bearing and the 35 mm shim with a feeler gauge.

22. Securely clamp the countershaft assembly in a bench vise with wood blocks (A).



23. Tighten new special bolt (B) (left-hand threads).

    NOTE: Apply MTF to the bolt threads and flange.

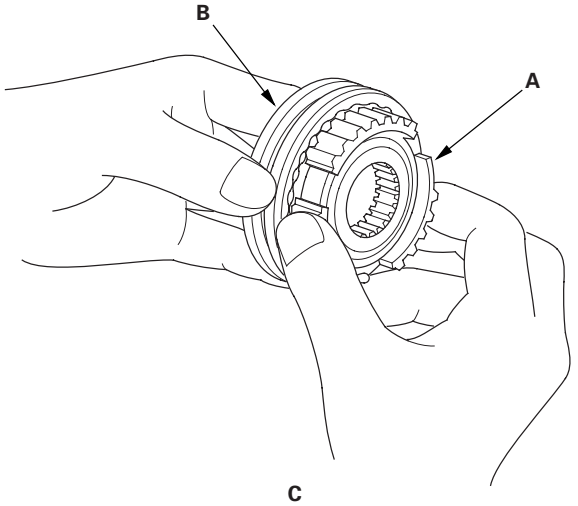
DYNOMITE -2009-

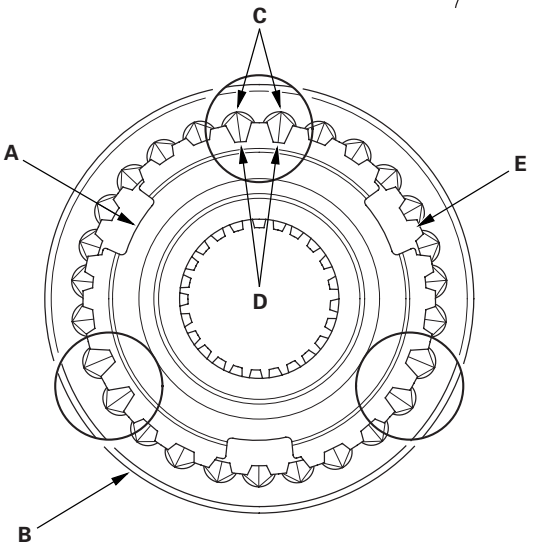
Synchro Sleeve and Hub Inspection and Reassembly

1. Inspect the gear teeth on all synchro hubs and synchro sleeves for rounded off corners, which indicate wear.

2. Install each synchro hub (A) in its mating synchro sleeve (B), and check for free movement. Make sure to match the three sets of longer teeth (C) (120 degrees apart) on the synchro sleeve with the three sets of deeper grooves (D) in the synchro hub.

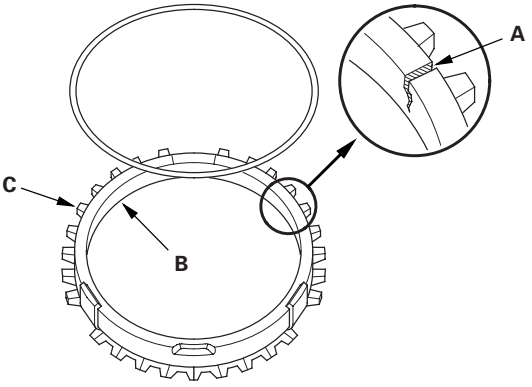
   NOTE:
   - Do not install the synchro sleeve with its longer teeth in the 1st/2nd and 5th/6th synchro hub slots (E) because it will damage the spring ring.
   - If replacement is required, always replace the synchro sleeve and the synchro hub as a set.





Synchro Ring and Gear Inspection

1. Inspect the synchro ring for scoring, cracks, and damage (A).

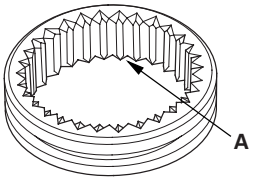


Example of synchro ring teeth

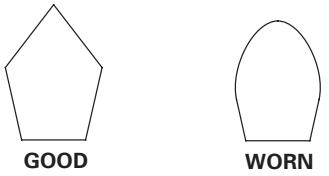


2. Inspect the inside of each synchro ring (B) for wear. Inspect the teeth (C) on each synchro ring for wear (rounded off).

3. Inspect the teeth (A) on each synchro sleeve and matching teeth on each gear for wear (rounded off).



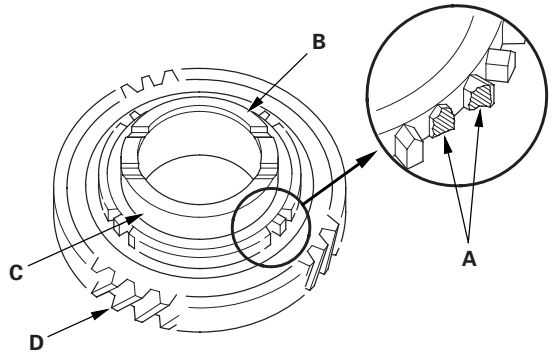
Example of synchro sleeve teeth and gear teeth



(cont'd)

Synchro Ring and Gear Inspection (cont'd)

4. Inspect the synchro teeth on gear for scoring, cracks, and damage (A).



5. Inspect the thrust surface (B) on each gear hub for wear.

6. Inspect the cone surface (C) on each gear hub for wear and roughness.

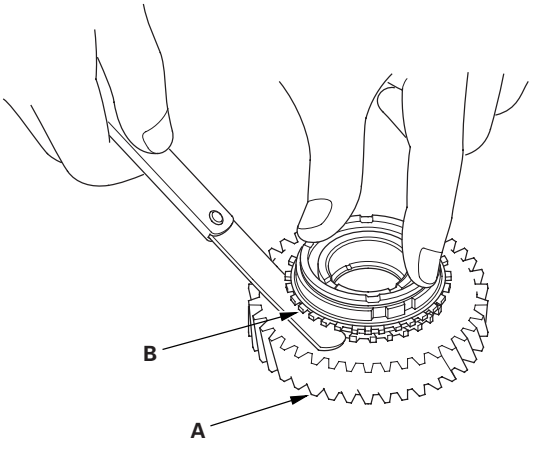
7. Inspect the teeth on all gears (D) for uneven wear, scoring, and cracks.

8. Coat the cone surface of each gear with MTF, and place its synchro ring on it. Rotate the synchro ring, making sure that it does not slip.

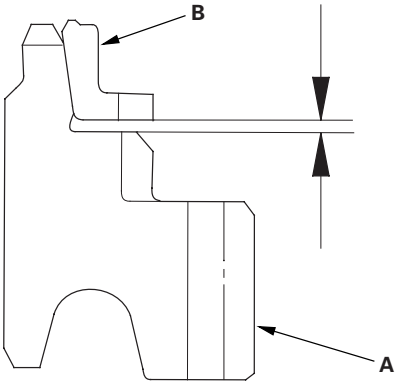
9. Measure the clearance between each gear (A) and its synchro ring (B) all around the gear. Hold the synchro ring against the gear evenly while measuring the clearance. If the clearance is less than the service limit, replace the synchro ring and gear.

Synchro Ring-to-Gear Clearance
Standard: 0.70—1.49 mm (0.028—0.059 in.)
Service Limit: 0.4 mm (0.016 in.)

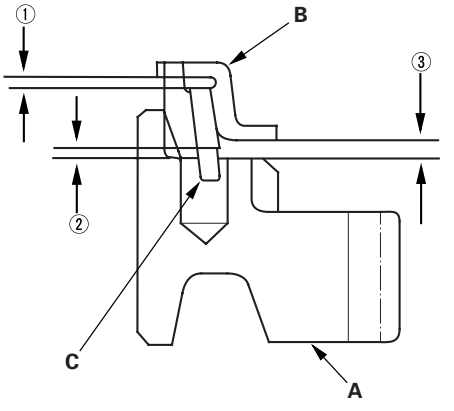
Double Cone Synchro and Triple Cone Synchro-to-Gear Clearance
Standard:
①: Outer Synchro Ring (B) to Synchro Cone (C) 0.70—1.19 mm (0.028—0.047 in.)
②: Synchro Cone (C) to Gear (A) 0.50—1.04 mm (0.020—0.041 in.)
③: Outer Synchro Ring (B) to Gear (A) 0.95—1.68 mm (0.037—0.066 in.)
Service Limit:
①: 0.3 mm (0.012 in.)
②: 0.3 mm (0.012 in.)
③: 0.6 mm (0.024 in.)



Synchro ring-to-gear



Double cone synchro and triple cone synchro-to-gear

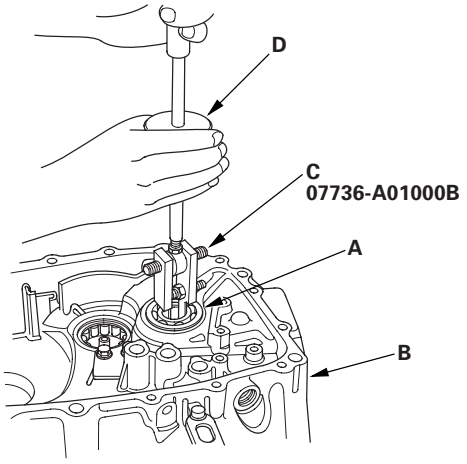


DYNOMITE -2009-

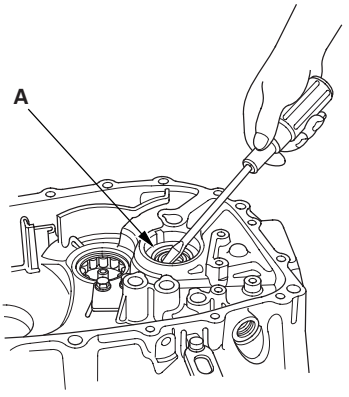
Mainshaft Bearing and Oil Seal Replacement

Special Tools Required
- Oil seal driver, 65 mm 07JAD-PL90100
- Adjustable bearing puller, 20—40 mm 07736-A01000B
- Bearing driver attachment, 42 x 47 mm 07746-0010300
- Driver handle, 15 x 135L 07749-0010000
- Slide hammer, 3/8''-16 UNF commercially available

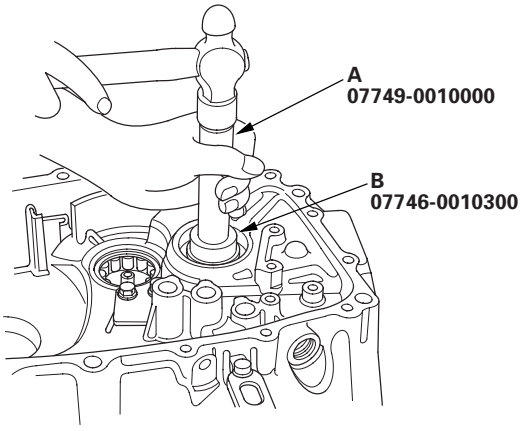
1. Remove the ball bearing (A) from the clutch housing (B) using the 20—40 mm adjustable bearing puller (C) and a commercially available 3/8''-16 UNF slide hammer (D).



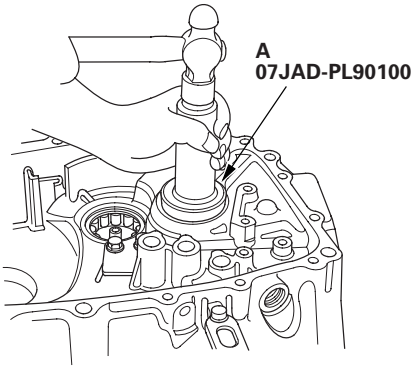
2. Remove the oil seal (A) from the clutch housing. Be careful when removing the oil seal so the clutch housing is not damaged.



3. Drive in new oil seal from the transmission side using the 15 x 135L driver handle (A) and the 42 x 47 mm bearing driver attachment (B).



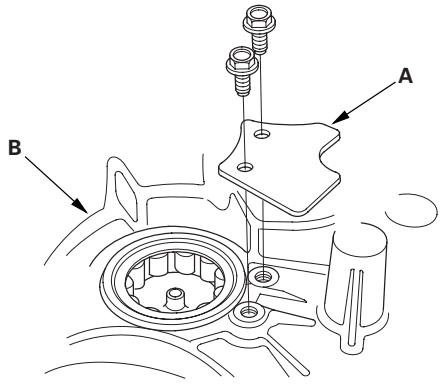
4. Drive in new ball bearing from the transmission side using the 65 mm oil seal driver (A).



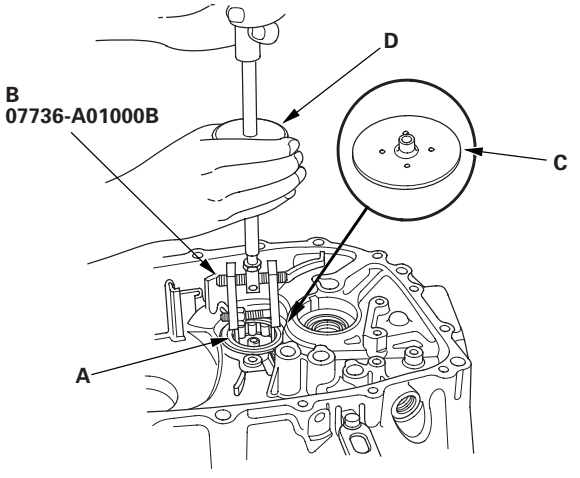
Countershaft Bearing Replacement

Special Tools Required
- Oil seal driver, 65 mm 07JAD-PL90100
- Adjustable bearing puller, 20—40 mm 07736-A01000B
- Slide hammer, 3/8''-16 UNF commercially available

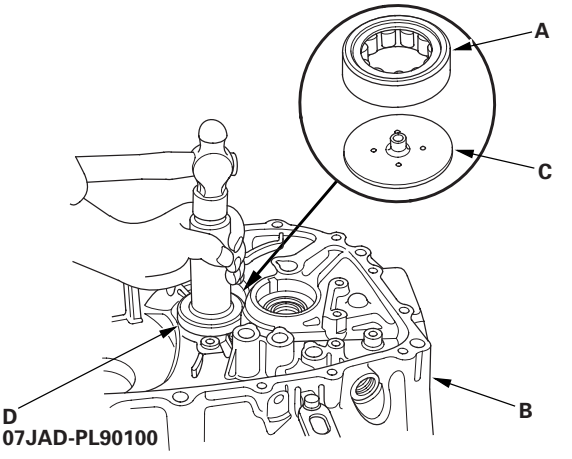
1. Remove the bearing set plate (A) from the clutch housing (B).



2. Remove the needle bearing (A) using the 20—40 mm adjustable bearing puller (B) and a commercially available 3/8''-16 UNF slide hammer (D), then remove oil guide plate C.

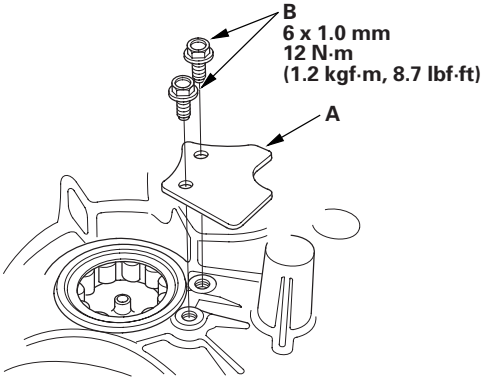


3. Position oil guide plate C and new needle bearing (A) in the bore of the clutch housing (B).



4. Install the needle bearing using the 65 mm oil seal driver (D).

5. Install the bearing set plate (A) with the bolts (B).



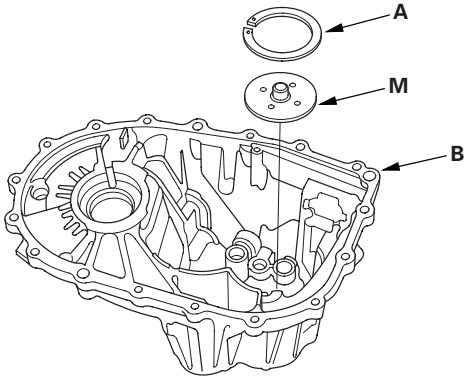
DYNOMITE -2009-

Mainshaft Thrust Clearance Adjustment

Special Tools Required
- Catch adapter 07GAJ-PG20110
- Base adapter 07GAJ-PG20130

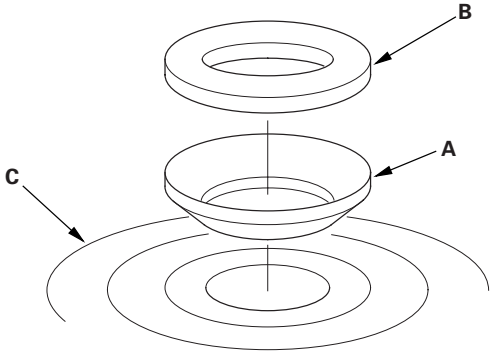
NOTE:
- Take measurement at normal room temperature.
- Clean all the parts thoroughly before installation.

1. Remove the 72 mm shim (A) and oil guide plate M from the transmission housing (B).



2. Thoroughly clean the 28 mm spring washer (A) and the 28 mm washer (B) before installing them on the clutch housing side ball bearing (C).

   NOTE: Install the spring washer in the direction shown.



3. Assemble all of the mainshaft components.

   NOTE: Refer to the Exploded View, as needed during the assembly (see page 13-113).

4. Install the mainshaft assembly into the clutch housing.

5. Place the transmission housing over the mainshaft and onto the clutch housing.

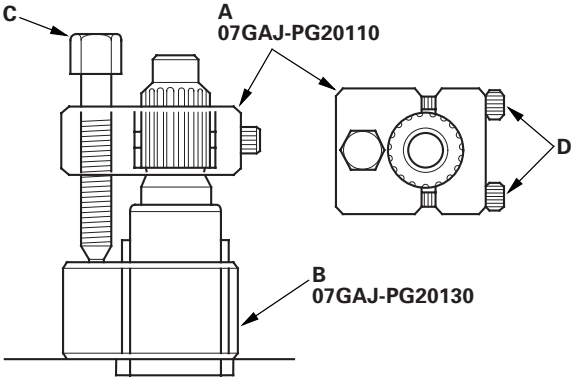
6. Tighten the clutch and transmission housings with several 8 mm bolts.

   NOTE: It is not necessary to use sealing agent between the housing for this procedure.

7. Lightly tap on the mainshaft with a plastic hammer.

8. Attach the catch adapter (A) and the base adapter (B) to the mainshaft as follows:

   - Back out the catch adapter bolt (C), and loosen the two hex bolts (D).
   - Fit the catch adapter over the mainshaft so its lip is towards the transmission.
   - Align the catch adapter lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.



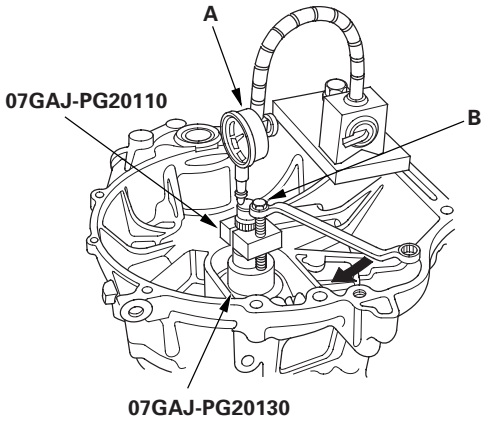
9. Fully seat the mainshaft by tapping its end with a plastic hammer.

10. Thread the catch adapter bolt in until it just contacts the wide surface of the base adapter.

(cont'd)

Mainshaft Thrust Clearance Adjustment (cont'd)

11. Zero a dial gauge (A) on the end of the mainshaft.



12. Turn the catch adapter bolt (B) clockwise; stop turning when the dial gauge has reached its maximum movement. The reading on the dial gauge is the amount of mainshaft thrust clearance.

    NOTE: Do not turn the catch adapter bolt exceeds 60 degrees after the needle of the dial gauge stops moving. Applying more pressure with the catch adapter bolt could damage the transmission.

13. If the reading is within the standard, the clearance is correct. If the reading is not within the standard, select the appropriate shim needed from the table, and recheck the thrust clearance.

    Standard: 0.11—0.17 mm (0.004—0.007 in.)

    (Example)
    Measure reading: 1.93 mm (0.076 in.)

    Subtract the total clearance measurement from the middle of the clearance standard 0.14 mm (0.0056 in.)

    1.93 — 0.14 = 1.79 mm (0.070 in.)

    Select the shim closest to the amount calculated. For this example, the 1.80 mm (0.071 in.) shim is best.

14. With oil guide plate M and the appropriate size shim installed in the transmission housing, check the thrust clearance again to make sure the clearance is within the standard.

72 mm Shim

Type	Part Number	Thickness
A	23931-P21-000	0.60 mm (0.024 in.)
B	23932-P21-000	0.63 mm (0.025 in.)
C	23933-P21-000	0.66 mm (0.026 in.)
D	23934-P21-000	0.69 mm (0.027 in.)
E	23935-P21-000	0.72 mm (0.028 in.)
F	23936-P21-000	0.75 mm (0.030 in.)
G	23937-P21-000	0.78 mm (0.031 in.)
H	23938-P21-000	0.81 mm (0.032 in.)
I	23939-P21-000	0.84 mm (0.033 in.)
J	23940-P21-000	0.87 mm (0.034 in.)
K	23941-P21-000	0.90 mm (0.035 in.)
L	23942-P21-000	0.93 mm (0.037 in.)
M	23943-P21-000	0.96 mm (0.038 in.)
N	23944-P21-000	0.99 mm (0.039 in.)
O	23945-P21-000	1.02 mm (0.040 in.)
P	23946-P21-000	1.05 mm (0.041 in.)
Q	23947-P21-000	1.08 mm (0.043 in.)
R	23948-P21-000	1.11 mm (0.044 in.)
S	23949-P21-000	1.14 mm (0.045 in.)
T	23950-P21-000	1.17 mm (0.046 in.)
U	23951-P21-000	1.20 mm (0.047 in.)
V	23952-P21-000	1.23 mm (0.048 in.)
W	23953-P21-000	1.26 mm (0.050 in.)
X	23954-P21-000	1.29 mm (0.051 in.)
Y	23955-P21-000	1.32 mm (0.052 in.)
Z	23956-P21-000	1.35 mm (0.053 in.)
AA	23957-P21-000	1.38 mm (0.054 in.)
AB	23958-P21-000	1.41 mm (0.056 in.)
AC	23959-P21-000	1.44 mm (0.057 in.)
AD	23960-P21-000	1.47 mm (0.058 in.)
AE	23961-P21-000	1.50 mm (0.059 in.)
AF	23962-P21-000	1.53 mm (0.060 in.)
AG	23963-P21-000	1.56 mm (0.061 in.)
AH	23964-P21-000	1.59 mm (0.063 in.)
AI	23965-P21-000	1.62 mm (0.064 in.)
AJ	23966-P21-000	1.65 mm (0.065 in.)
AK	23967-P21-000	1.68 mm (0.066 in.)
AL	23968-P21-000	1.71 mm (0.067 in.)
AM	23969-P21-000	1.74 mm (0.069 in.)
AN	23970-P21-000	1.77 mm (0.070 in.)
AO	23971-P21-000	1.80 mm (0.071 in.)

(cont'd)

DYNOMITE -2009-

Transmission Reassembly

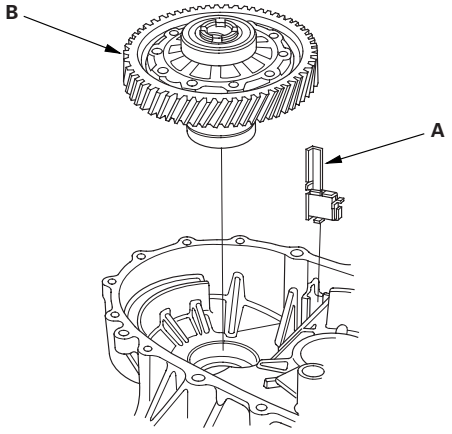
72 mm Shim (cont'd)

Type	Part Number	Thickness
AP	23972-PPP-J00	1.83 mm (0.072 in.)
AQ	23973-PPP-J00	1.86 mm (0.073 in.)
AR	23974-PPP-J00	1.89 mm (0.074 in.)
AS	23975-PPP-J00	1.92 mm (0.076 in.)
AT	23976-PPP-J00	1.95 mm (0.077 in.)
AV	23977-PPP-J00	1.98 mm (0.078 in.)
AW	23978-PPP-J00	2.01 mm (0.079 in.)
AX	23979-PPP-J00	2.04 mm (0.080 in.)
AY	23980-PPP-J00	2.07 mm (0.081 in.)
AZ	23981-PPP-J00	2.10 mm (0.083 in.)
BA	23982-PPP-J00	2.13 mm (0.084 in.)
BB	23983-PPP-J00	2.16 mm (0.085 in.)
BC	23984-PPP-J00	2.19 mm (0.086 in.)
BD	23985-PPP-J00	2.22 mm (0.087 in.)
BE	23986-PPP-J00	2.25 mm (0.089 in.)

NOTE:
- Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to any contact surfaces.
- Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

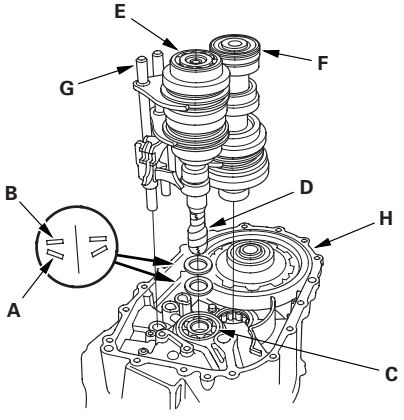
1. Install the magnet (A) and the differential assembly (B).

   NOTE: Clean the magnet anytime the transmission is disassembled.



2. Install the 28 mm spring washer (A) and the 28 mm washer (B) over the ball bearing (C).

   NOTE: Install the spring washer in the direction shown.



3. Apply tape to the mainshaft splines (D) to protect the seal. Install the mainshaft assembly (E), the countershaft assembly (F), and the shift fork assembly (G) into the clutch housing (H), as an assembly.

(cont'd)

DYNOMITE -2009-

Transmission Reassembly

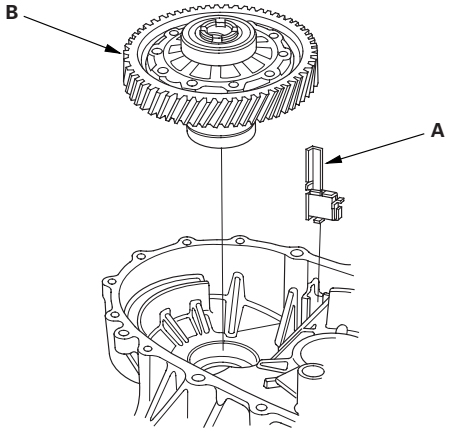
72 mm Shim (cont'd)

Type	Part Number	Thickness
AP	23972-PPP-J00	1.83 mm (0.072 in.)
AQ	23973-PPP-J00	1.86 mm (0.073 in.)
AR	23974-PPP-J00	1.89 mm (0.074 in.)
AS	23975-PPP-J00	1.92 mm (0.076 in.)
AT	23976-PPP-J00	1.95 mm (0.077 in.)
AV	23977-PPP-J00	1.98 mm (0.078 in.)
AW	23978-PPP-J00	2.01 mm (0.079 in.)
AX	23979-PPP-J00	2.04 mm (0.080 in.)
AY	23980-PPP-J00	2.07 mm (0.081 in.)
AZ	23981-PPP-J00	2.10 mm (0.083 in.)
BA	23982-PPP-J00	2.13 mm (0.084 in.)
BB	23983-PPP-J00	2.16 mm (0.085 in.)
BC	23984-PPP-J00	2.19 mm (0.086 in.)
BD	23985-PPP-J00	2.22 mm (0.087 in.)
BE	23986-PPP-J00	2.25 mm (0.089 in.)

NOTE:
- Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to any contact surfaces.
- Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

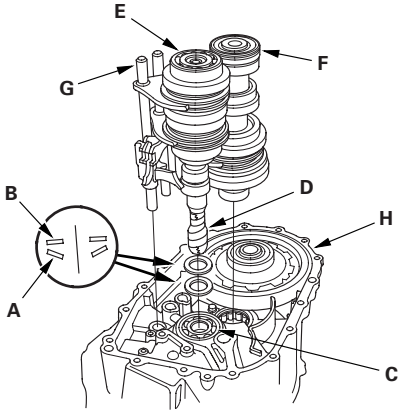
1. Install the magnet (A) and the differential assembly (B).

   NOTE: Clean the magnet anytime the transmission is disassembled.



2. Install the 28 mm spring washer (A) and the 28 mm washer (B) over the ball bearing (C).

   NOTE: Install the spring washer in the direction shown.



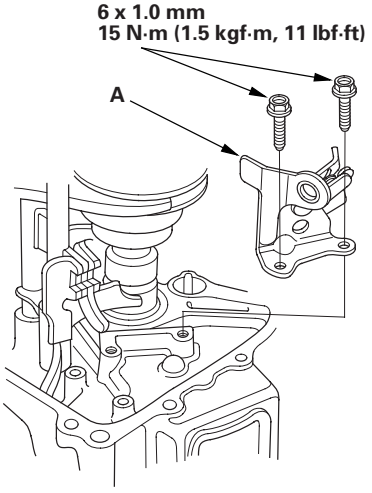
3. Apply tape to the mainshaft splines (D) to protect the seal. Install the mainshaft assembly (E), the countershaft assembly (F), and the shift fork assembly (G) into the clutch housing (H), as an assembly.

(cont'd)

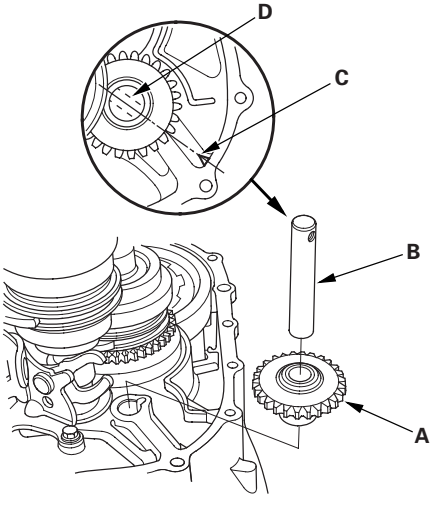
DYNOMITE -2009-

Transmission Reassembly (cont'd)

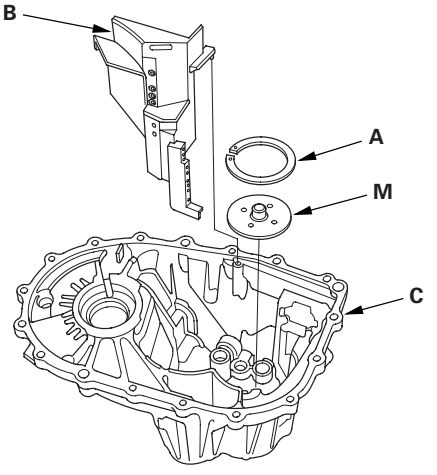
4. Install the reverse shift fork (A).



5. Install the reverse idler gear (A) and the reverse idler gear shaft (B) by aligning the mark (C) on the clutch housing with the reverse idler gear shaft hole (D).

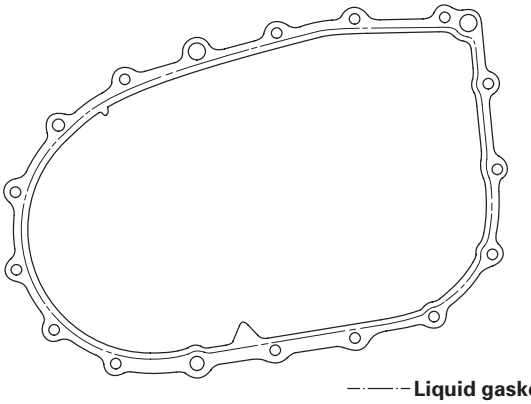


6. Select the proper size 72 mm shim (A) according to the measurements made during the Mainshaft Thrust Clearance Adjustment (see page 13-131). Install the oil gutter plate (B), oil guide plate M, and the 72 mm shim into the transmission housing (C).



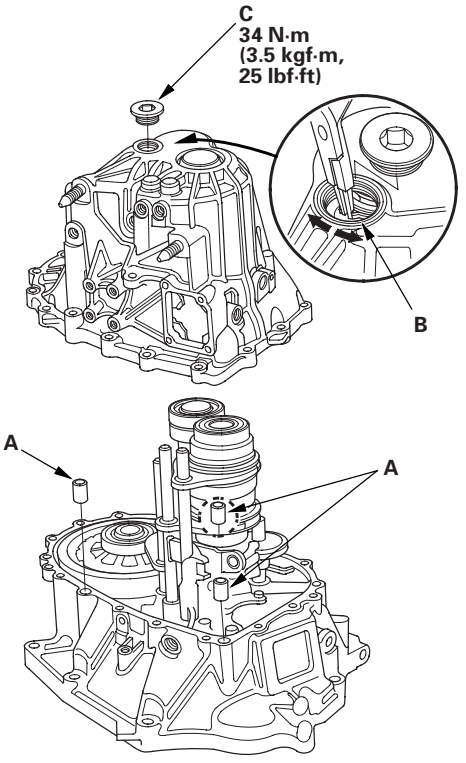
7. Clean any dirt or oil from the mating surface of the transmission housing and the clutch housing. Apply liquid gasket, P/N 08718-0001 evenly to the mating surface of the transmission housing and the clutch housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



DYNOMITE -2009-

8. Install the three 14 x 20 mm dowel pins (A).



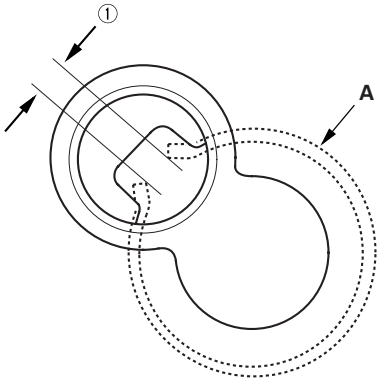
9. Place the transmission housing on the clutch housing, making sure to line up the shafts.

10. While expanding the 72 mm snap ring (B) on the countershaft ball bearing using snap ring pliers, push the transmission housing down to start the countershaft ball bearing through the snap ring. Release the pliers, and push down the housing until it bottoms and the snap ring snaps in place in the countershaft ball bearing snap ring groove.

    NOTE: Install the 32 mm sealing cap (C) after setting in the 72 mm snap ring.

11. Make sure the 72 mm snap ring (A) is securely seated in the groove of the countershaft bearing.

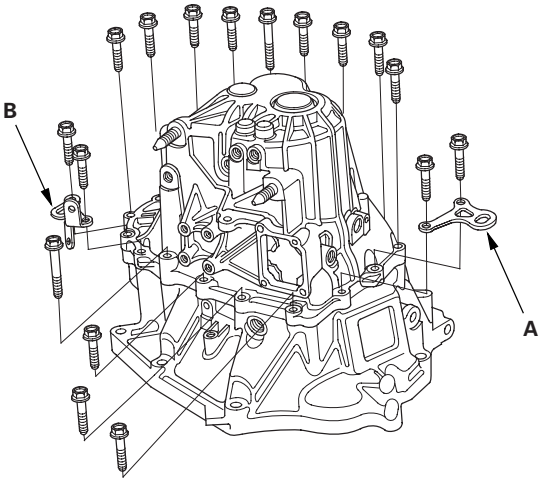
    Dimension ① as installed: 3.3—6.0 mm (0.13—0.24 in.)



12. Apply liquid gasket, P/N 08718-0001, evenly to the threads of the 32 mm searing cap, and install it on the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

13. Install the 8 mm flange bolts finger-tight with transmission hanger A, and transmission hanger B.

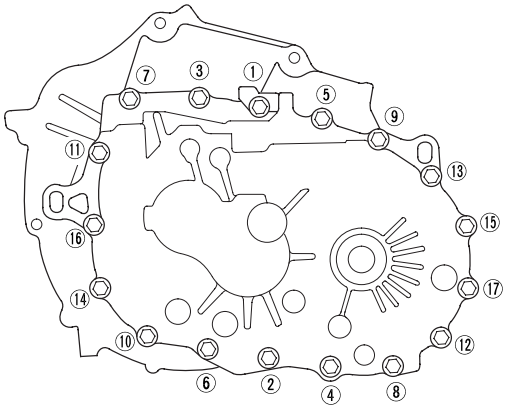


(cont'd)

Transmission Reassembly (cont'd)

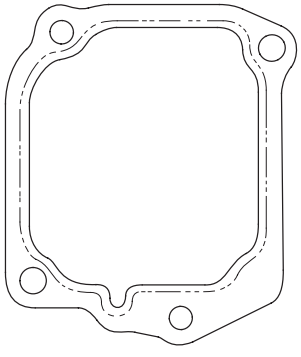
14. Tighten the 8 mm flange bolts in a crisscross pattern in several steps.

    Specified Torque:
    8 x 1.25 mm
    27 N·m (2.8 kgf·m, 20 lbf·ft)



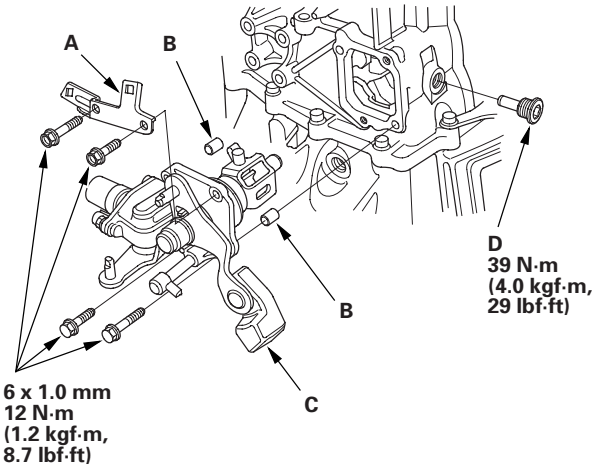
15. Clean any dirt or oil from the mating surface of the change lever assembly and the transmission housing. Apply liquid gasket, P/N 08718-0001, evenly to the mating surface of the change lever assembly and the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



Liquid gasket

16. Install the 8 x 14 mm dowel pins (B) and the change lever assembly (C) with harness bracket A.

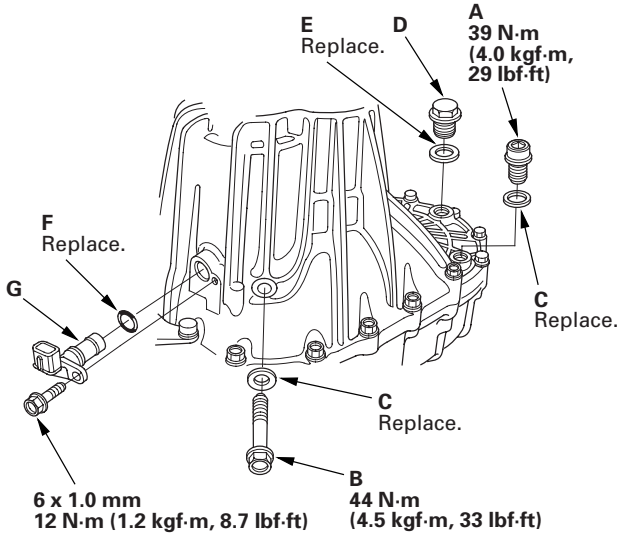


17. Apply liquid gasket, P/N 08718-0001, evenly to the threads of the inter lock bolt (D). Install the component within 5 minutes of applying the liquid gasket.

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

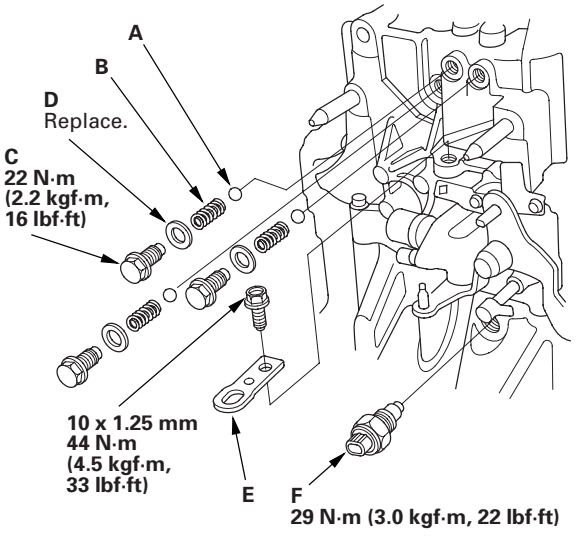
DYNOMITE -2009-

18. Install the drain plug (A) and the 10 mm flange bolt (B) with new washers (C). Install the filler plug (D) finger-tight with new sealing washer (E).



19. Apply MTF to a new O-ring (F). Then install the output shaft (countershaft) speed sensor (G) with the O-ring.

20. Install the steel balls (A), the springs (B), and the detent bolts (C) with new washers (D).

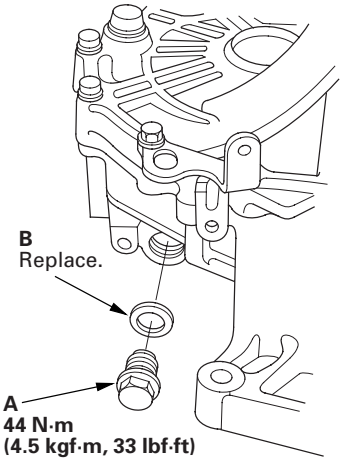


21. Install the transmission hanger (E).

22. Apply liquid gasket, P/N 08718-0001 evenly to the threads of the back-up light switch (F), and install it on the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

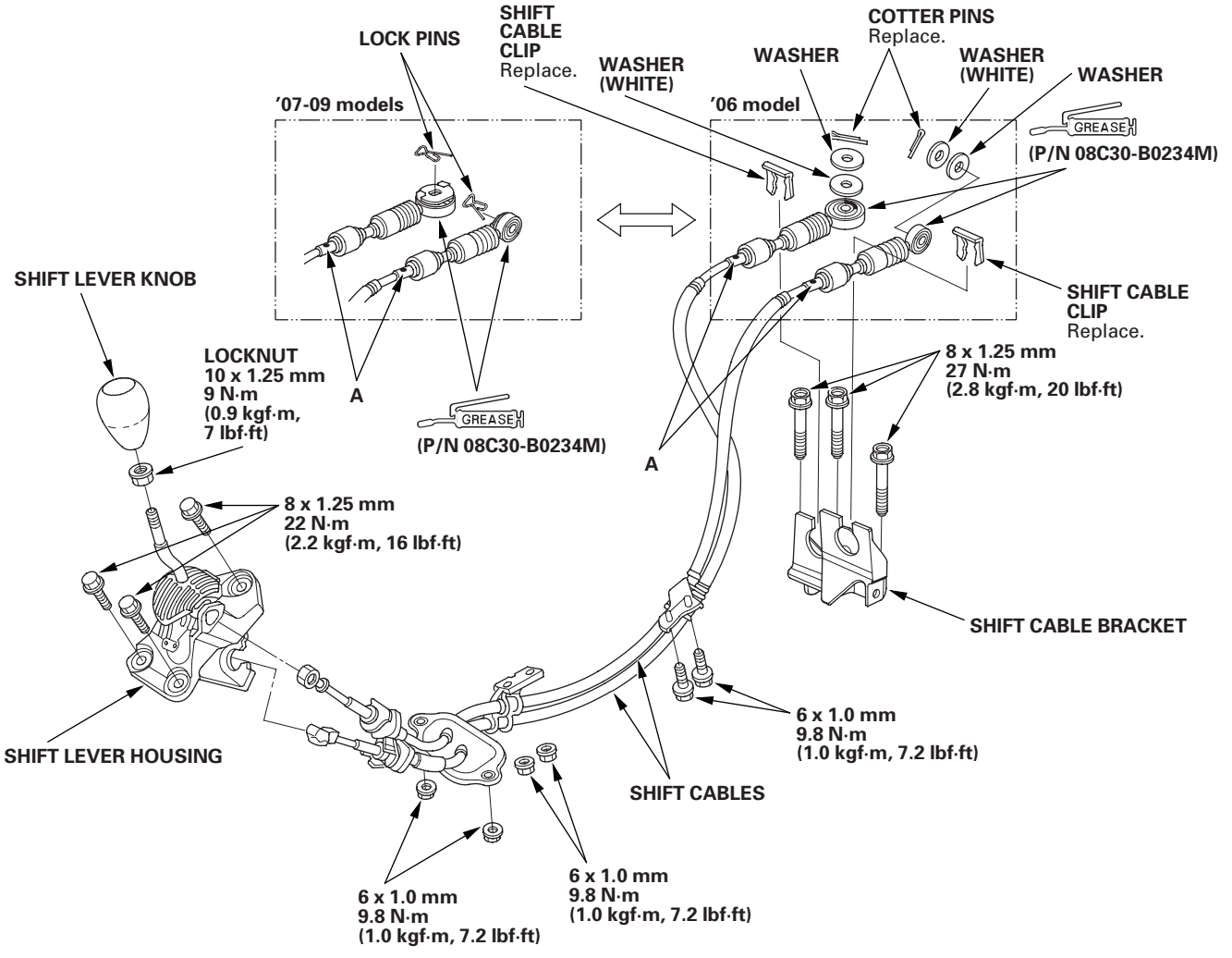
NOTE:
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

23. Install the 20 mm bolt (A) with new 20 mm sealing washer (B).



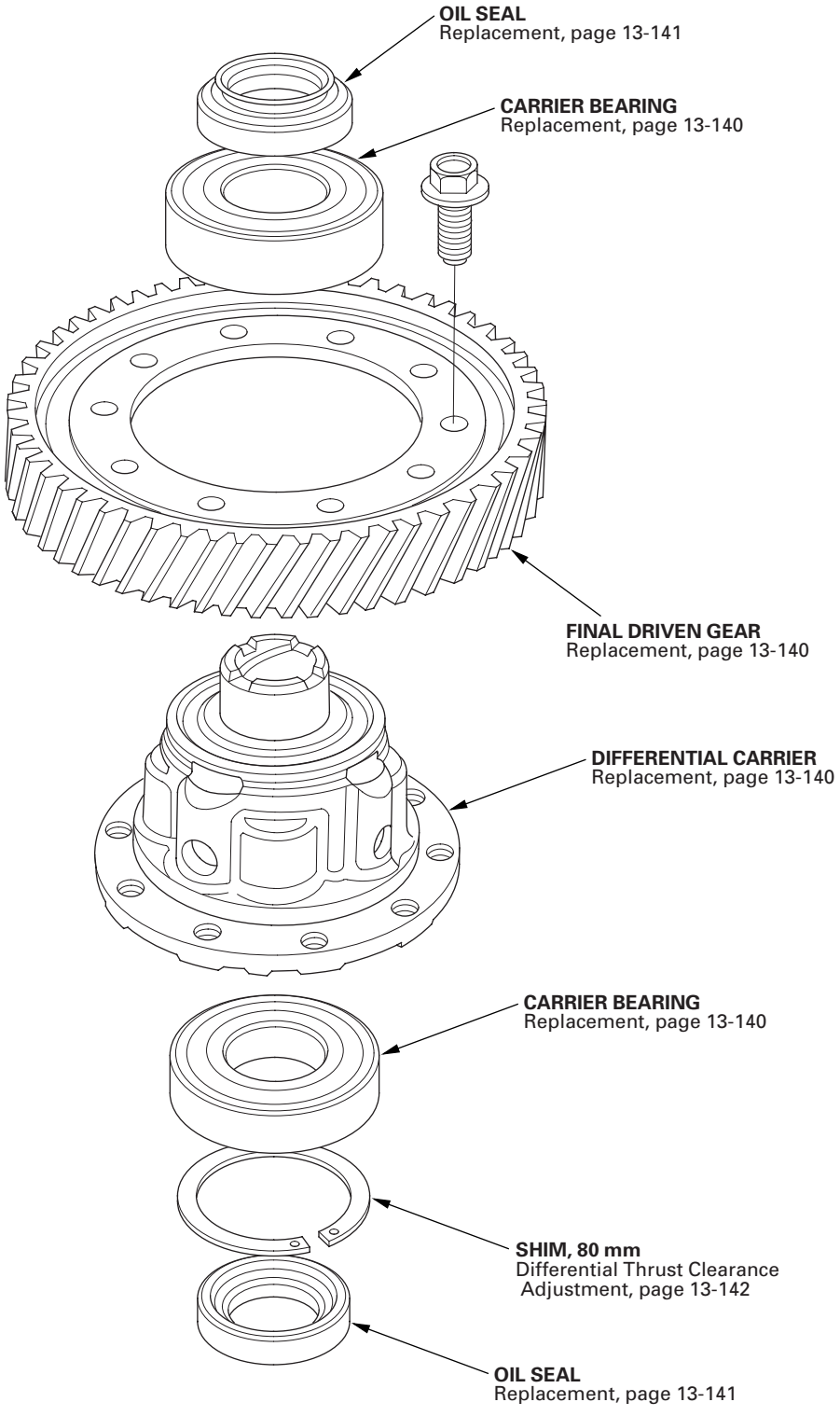
Gearshift Mechanism Replacement

NOTE:
- Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.
- When installing the shift cables (transmission side), position the paint mark (A) facing the upward.



DYNOMITE -2009-

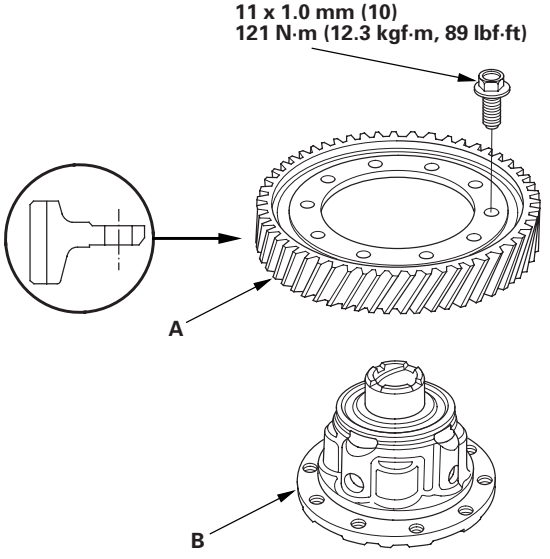
Component Location Index



DYNOMITE -2009-

Differential Carrier, Final Driven Gear Replacement

1. Loosen the bolts in a crisscross pattern in several steps, then remove the bolts and the final driven gear (A) from the differential carrier (B).



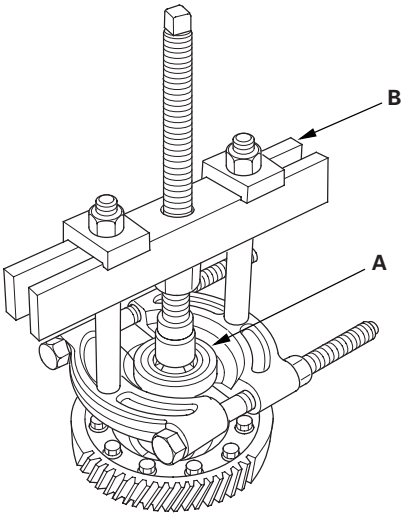
2. Install the final driven gear with the chamfer on the inside diameter facing the carrier. Tighten the bolts in a crisscross pattern in several steps.

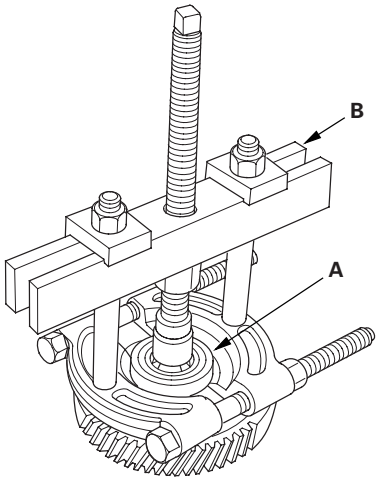
Carrier Bearing Replacement

Special Tools Required
Inner driver handle, 40 mm 07746-0030100

1. Check the carrier bearings for wear and rough rotation. If they rotate smoothly and their rollers show no signs of wear, the bearings are OK.

2. Remove the carrier bearings (A) with a commercially available bearing puller (B).

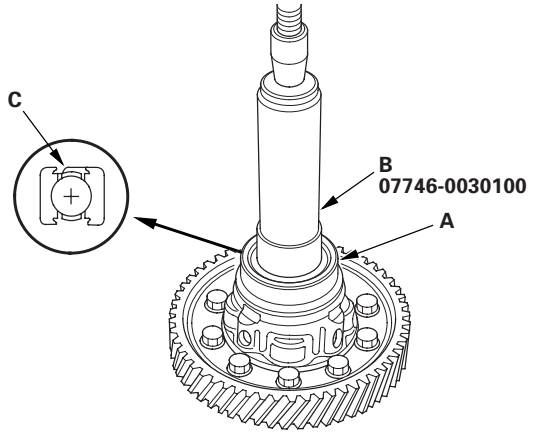


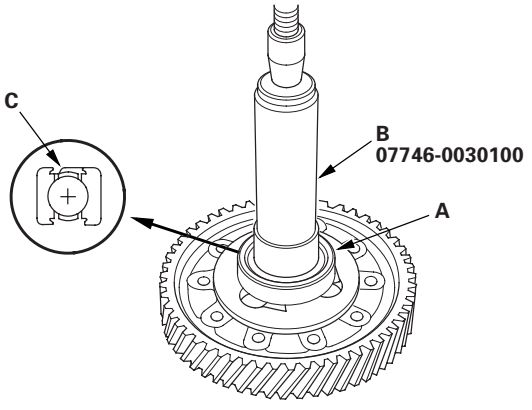


DYNOMITE -2009-

3. Install new bearings (A) on with the 40 mm inner driver handle (B) and a press. Press on each bearing until it bottoms. There should be no clearance between the bearings and the carrier.

   NOTE: Place the seal (C) part of the bearing towards the outside of the differential, and install it.

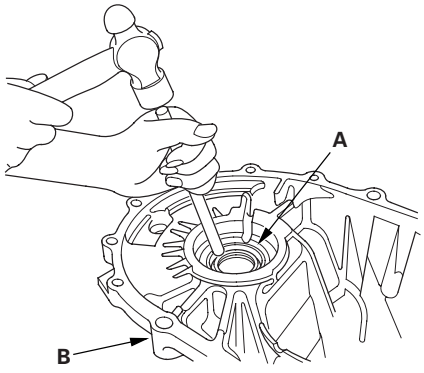




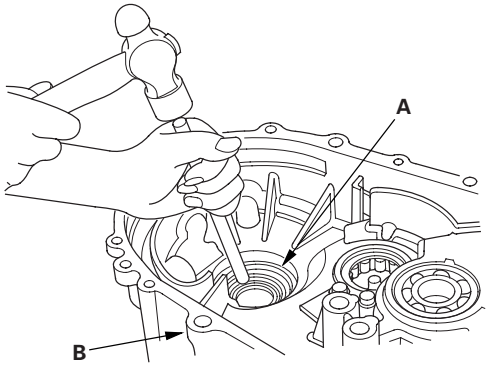
Oil Seal Replacement

Special Tools Required
- Oil seal driver attachment 07NAD-P20A100
- Driver handle, 15 x 135L 07749-0010000

1. Remove the oil seal (A) from the transmission housing (B).



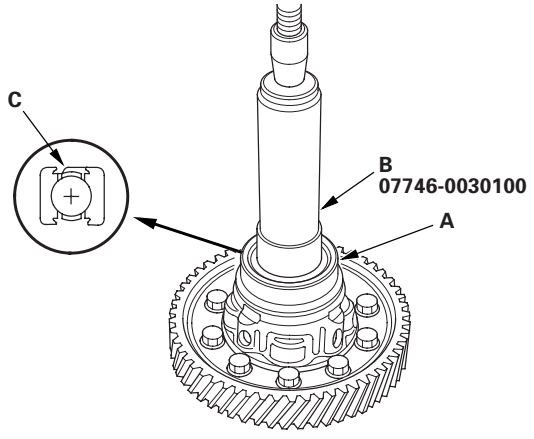
2. Remove the oil seal (A) from the clutch housing (B).

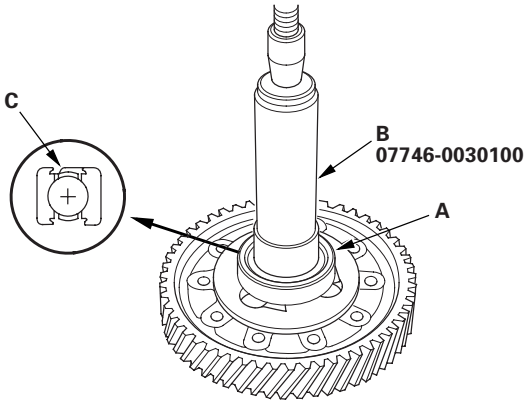


(cont'd)

3. Install new bearings (A) on with the 40 mm inner driver handle (B) and a press. Press on each bearing until it bottoms. There should be no clearance between the bearings and the carrier.

   NOTE: Place the seal (C) part of the bearing towards the outside of the differential, and install it.

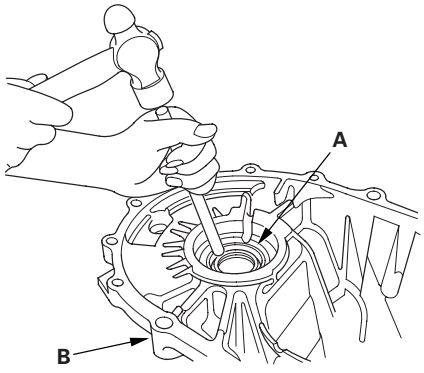




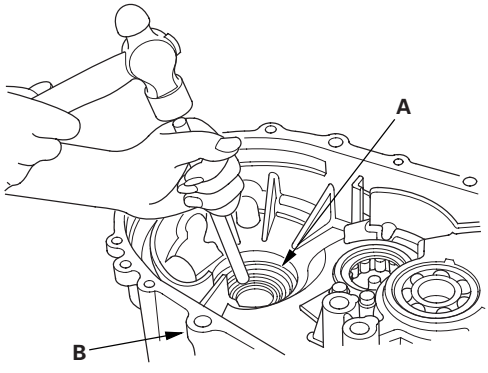
Oil Seal Replacement

Special Tools Required
- Oil seal driver attachment 07NAD-P20A100
- Driver handle, 15 x 135L 07749-0010000

1. Remove the oil seal (A) from the transmission housing (B).



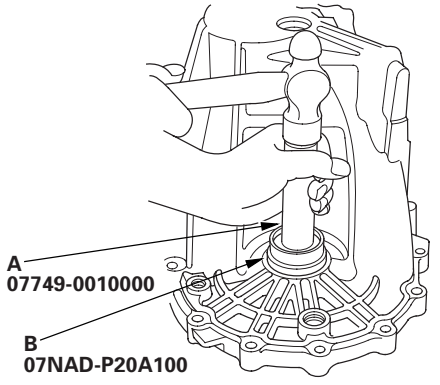
2. Remove the oil seal (A) from the clutch housing (B).



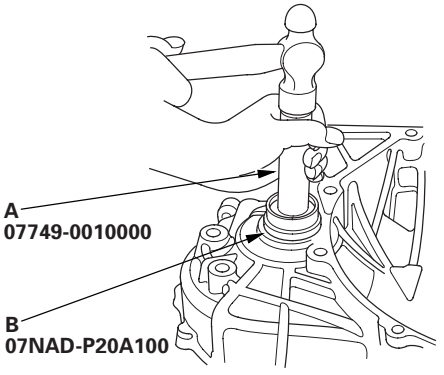
(cont'd)

Oil Seal Replacement (cont'd)

3. Install a new oil seal flush with the transmission housing with the 15 x 135L driver handle (A) and the oil seal driver attachment (B).



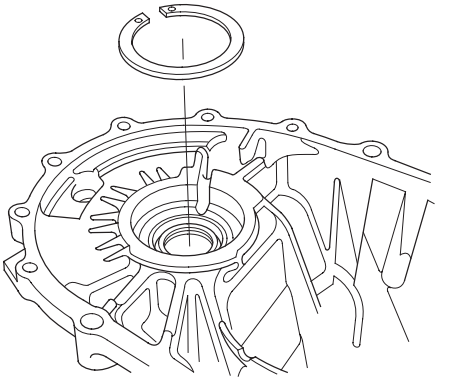
4. Install a new oil seal flush with the clutch housing with the 15 x 135L driver handle (A) and the oil seal driver attachment (B).



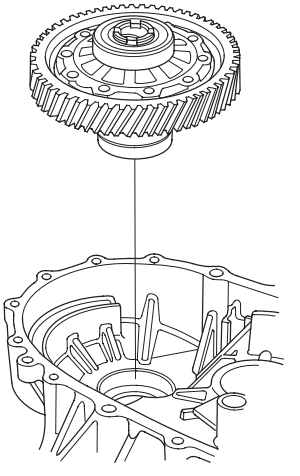
Differential Thrust Clearance Adjustment

Special Tools Required
Inner driver handle, 40 mm 07746-0030100

1. If you removed the 80 mm shim from the transmission housing reinstall is the same sized shim.



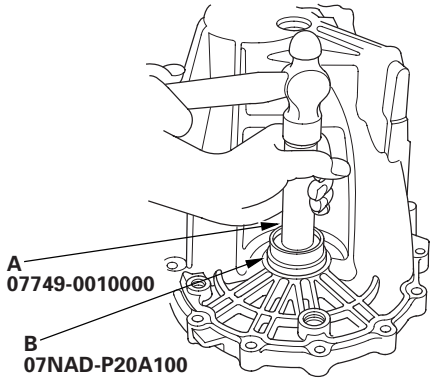
2. Install the differential assembly into the clutch housing.



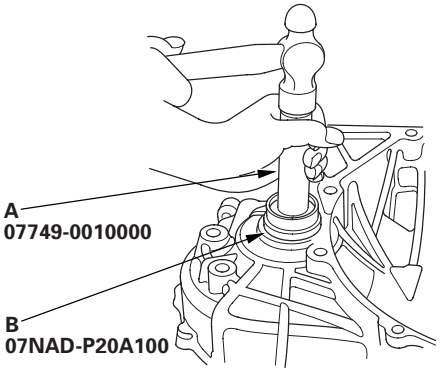
DYNOMITE -2009-

Oil Seal Replacement (cont'd)

3. Install a new oil seal flush with the transmission housing with the 15 x 135L driver handle (A) and the oil seal driver attachment (B).



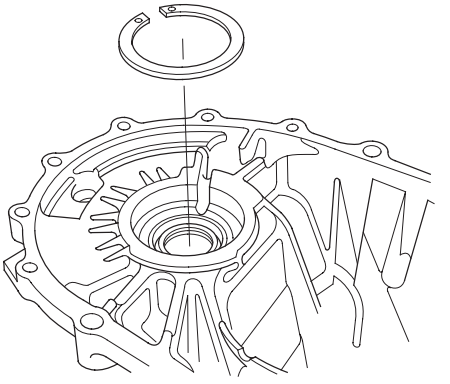
4. Install a new oil seal flush with the clutch housing with the 15 x 135L driver handle (A) and the oil seal driver attachment (B).



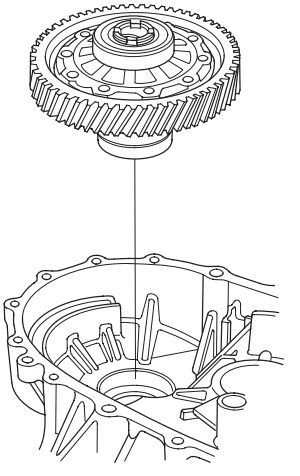
Differential Thrust Clearance Adjustment

Special Tools Required
Inner driver handle, 40 mm 07746-0030100

1. If you removed the 80 mm shim from the transmission housing reinstall is the same sized shim.



2. Install the differential assembly into the clutch housing.

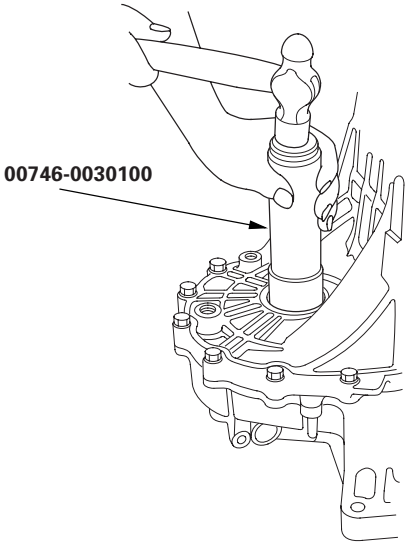


DYNOMITE -2009-

3. Install the transmission housing onto the clutch housing, then tighten the 8 mm flange bolts in a crisscross pattern in several steps (see step 14 on page 13-136).

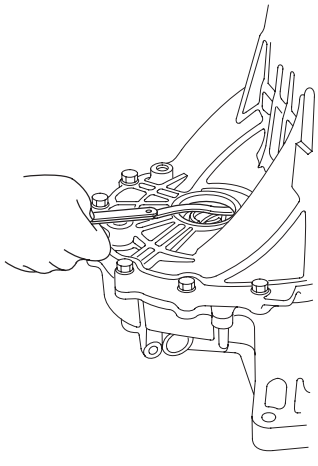
   Specified Torque:
   8 x 1.25 mm
   27 N·m (2.8 kgf·m, 20 lbf·ft)

4. Use the 40 mm inner driver handle to bottom the differential assembly in the clutch housing.



5. Measure the clearance between the 80 mm shim and the bearing outer race in transmission housing.

   Standard: 0—0.10 mm (0—0.039 in.)



6. If the clearance exceeds the standard, select a new 80 mm shim from the following table. If the clearance measured in step 5 is within the standard, go to step 9.

   80 mm Shim

Type	Part Number	Thickness
A	41441-PL3-B00	1.00 mm (0.0394 in.)
B	41442-PL3-B00	1.10 mm (0.0433 in.)
C	41443-PL3-B00	1.20 mm (0.0472 in.)
D	41444-PL3-B00	1.30 mm (0.0512 in.)
E	41445-PL3-B00	1.40 mm (0.0551 in.)
F	41446-PL3-B00	1.50 mm (0.0591 in.)
G	41447-PL3-B00	1.60 mm (0.0630 in.)
H	41448-PL3-B00	1.70 mm (0.0669 in.)
J	41449-PL3-B00	1.80 mm (0.0709 in.)
K	41450-PL3-B00	1.05 mm (0.0413 in.)
L	41451-PL3-B00	1.15 mm (0.0453 in.)
M	41452-PL3-B00	1.25 mm (0.0492 in.)
N	41453-PL3-B00	1.35 mm (0.0531 in.)
P	41454-PL3-B00	1.45 mm (0.0571 in.)
Q	41455-PL3-B00	1.55 mm (0.0610 in.)
R	41456-PL3-B00	1.65 mm (0.0650 in.)
S	41457-PL3-B00	1.75 mm (0.0689 in.)

7. Remove the bolts and transmission housing.

8. Replace the thrust shim selected in step 6, then recheck the clearance.

9. Reinstall the transmission housing.

DYNOMITE -2009-

Automatic Transmission

Automatic Transmission

Special Tools 14-2
General Troubleshooting Information 14-3
DTC Troubleshooting Index 14-9
Symptom Troubleshooting Index 14-13
Component Location Index 14-25
System Description 14-26
DTC Troubleshooting 14-80
Road Test 14-208
Stall Speed Test 14-210
Pressure Test 14-211
Shift Solenoid Valve
  Test 14-215
  Replacement 14-217
Shift Solenoid Wire Harness
  Replacement 14-217
A/T Clutch Pressure Control Solenoid
  Valve A
  Test 14-219
  Replacement 14-221
A/T Clutch Pressure Control Solenoid
  Valve B
  Test 14-222
  Replacement 14-226
A/T Clutch Pressure Control Solenoid
  Valve C
  Test 14-224
  Replacement 14-226
Input Shaft (Mainshaft) Speed Sensor
  Replacement 14-227
Output Shaft (Countershaft) Speed Sensor
  Replacement 14-227
2nd Clutch Transmission Fluid Pressure
  Switch Replacement 14-228
3rd Clutch Transmission Fluid Pressure
  Switch Replacement 14-228
ATF Temperature Sensor
  Test/Replacement 14-229
ATF Level Check 14-231
ATF Replacement 14-232
Transmission Removal 14-233
Drive Plate Removal and Installation 14-242
Transmission Installation 14-242
ATF Cooler Hose Replacement 14-253
Shift Lever Removal 14-254
Shift Lever Installation 14-255
Shift Lever Disassembly/Reassembly 14-256
Shift Cable Replacement 14-257
Shift Cable Adjustment 14-259

A/T Gear Position Indicator

Component Location Index 14-263
Circuit Diagram 14-264
Transmission Range Switch Test 14-265
Transmission Range Switch
  Replacement 14-267
A/T Gear Position Indicator Panel
  Light Harness Replacement 14-269
* Paddle Shifter + (Upshift Switch)
  Circuit Troubleshooting 14-270
  Replacement 14-276
* Paddle Shifter − (Downshift Switch)
  Circuit Troubleshooting 14-273
  Replacement 14-277

A/T Interlock System

Component Location Index 14-278
Circuit Diagram 14-279
Shift Lock System Circuit
  Troubleshooting 14-280
* Key Interlock System Circuit
  Troubleshooting 14-285
Shift Lock Solenoid Test 14-287
Shift Lock Solenoid Replacement 14-287
Shift Lock Stop Replacement 14-288
Shift Lock Stop Cushion Replacement 14-288
Park Pin Switch Test 14-289
Park Pin Switch Replacement 14-269

DYNOMITE -2009-

Transmission End Cover

End Cover Removal 14-290
Park Lever Stop
Inspection and Adjustment 14-292
Idler Gear Shaft Bearing Replacement 14-292
Selector Control Shaft Oil Seal
Replacement 14-293
Selector Control Shaft Bearing
Replacement 14-293
ATF Feed Pipe Replacement 14-294
End Cover Installation 14-349

Transmission Housing

Housing and Shaft Assembly Removal 14-295
Bearing Removal 14-297
Bearing Installation 14-298
Reverse Idler Gear
Removal and Installation 14-299
Shaft Assembly and Housing
Installation 14-344

Valve Body

Valve Body and ATF Strainer Removal 14-300
Valve Body Repair 14-301
Valve Body Valve Installation 14-302
Main Valve Body Disassembly,
Inspection, and Reassembly 14-303
ATF Pump Inspection 14-304
Regulator Valve Body Disassembly,
Inspection, and Reassembly 14-305
Servo Body Disassembly,
Inspection, and Reassembly 14-306
Shift Solenoid Valve
Removal and Installation 14-307
Valve Body and ATF Strainer
Installation 14-342

Torque Converter Housing

Mainshaft Bearing and Oil Seal
Replacement 14-308
Countershaft Bearing Replacement 14-309
Secondary Shaft Bearing Replacement ... 14-310
Selector Control Shaft Oil Seal
Replacement 14-311

Shafts and Clutches

Mainshaft Disassembly,
Inspection, and Reassembly 14-312
Mainshaft 5th Gear Axial Clearance
Inspection 14-313
Countershaft Disassembly,
Inspection, and Reassembly 14-316
Countershaft Reverse Selector Hub and
3rd Gear
Removal 14-317
Installation 14-318
Secondary Shaft Disassembly,
Inspection, and Reassembly 14-319
Secondary Shaft Ball Bearing, Idler Gear
Removal and Installation 14-320
Secondary Shaft 2nd Gear Axial
Clearance Inspection 14-321
Secondary Shaft 1st Gear Axial
Clearance Inspection 14-322
Idler Gear Shaft
Removal and Installation 14-324
Idler Gear/Idler Gear Shaft
Replacement 14-325
Clutch Disassembly 14-326
Clutch Inspection 14-330
Clutch Wave-plate Phase Difference
Inspection 14-331
Clutch Clearance Inspection 14-332
1st, 2nd, and 3rd Clutch Reassembly 14-335
4th and 5th Clutch Reassembly 14-338

A/T Differential

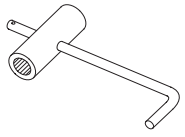
Component Location Index 14-355
Backlash Inspection 14-356
Differential Carrier and Final Driven Gear
Replacement 14-356
Carrier Bearing Replacement 14-357
Oil Seal Replacement 14-358
Carrier Bearing Outer Race
Replacement 14-359
Carrier Bearing Preload Inspection 14-362

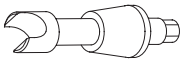
DYNOMITE -2009-

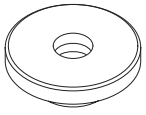
Special Tools

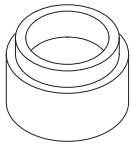
Ref. No.	Tool Number	Description	Qty
①	07GAB-PF50101	Mainshaft Holder	1
②	07HAJ-PK40201	Preload Inspection Tool	1
③	07JAD-PH80101	Oil Seal Driver Attachment	1
④	07LAD-PW50601	Attachment, 40 mm	1
⑤	07LAE-PX40000	Clutch Spring Compressor Set	1
⑥	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	3
⑦	07MAJ-PY40120	A/T Pressure Hose Adapter	3
⑧	07NAD-PX40100	Attachment, 78 x 80 mm	1
⑨	07QAD-P0A0100	Attachment, 42 mm I.D.	1
⑩	07ZAE-PRP0100	Clutch Compressor Attachment	1
⑪	07406-0020401	A/T Oil Pressure Gauge Set	1
⑫	07736-A01000B or 07736-A01000A	Adjustable Bearing Puller, 25—40 mm	1
⑬	07746-0010100	Attachment, 32 x 35 mm	1
⑭	07746-0010300	Attachment, 42 x 47 mm	1
⑮	07746-0010400	Attachment, 52 x 55 mm	1
⑯	07746-0010500	Attachment, 62 x 68 mm	1
⑰	07746-0010600	Attachment, 72 x 75 mm	1
⑱	07746-001A800	Attachment, 22 x 24 mm	1
⑲	07746-0030100	Driver Handle, 40 mm I.D.	1
⑳	07749-0010000	Driver	1
㉑	07947-SD90101	Oil Seal Driver Attachment	1
㉒	07947-ZV00100	Oil Seal Driver Attachment	1

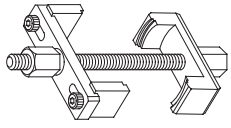
⑫: Must be used with commercially available 3/8 ″-16 slide hammer.


①

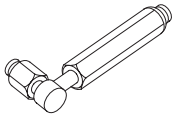

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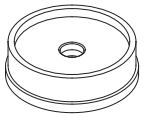

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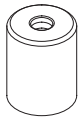

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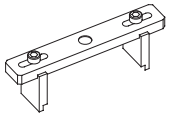

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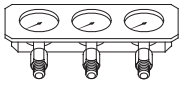

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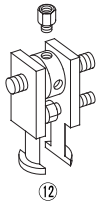

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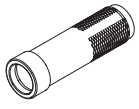

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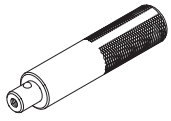

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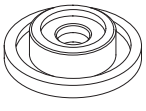

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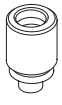

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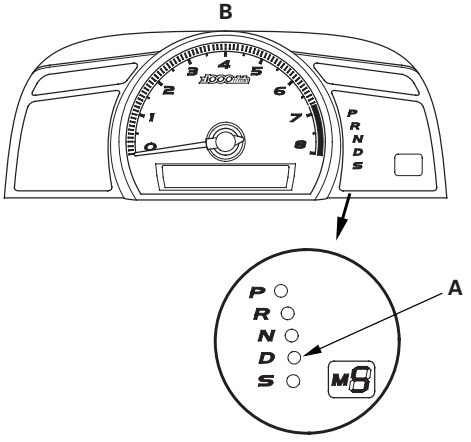

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DYNOMITE -2009-

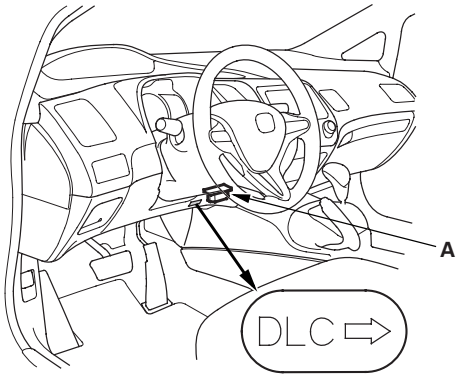
General Troubleshooting Information

How to Check for DTCs with the Honda Diagnostic System (HDS)

When the powertrain control module (PCM) senses an abnormality in the input or output system, the D indicator (A) in the gauge control module (tach) (B) will usually blink.



When the Honda diagnostic system (HDS) is connected to the data link connector (DLC) (A) located under the driver's side of the dashboard and the SCS mode is selected, it will indicate the diagnostic trouble code (DTC) when the ignition switch is turned to ON (II) and the appropriate menu is selected.



If the D indicator or the malfunction indicator lamp (MIL) has been reported on, or if a driveability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).
3. Select A/T system, and observe the DTC in the DTCs MENU on the HDS screen.
4. Record the freeze data and the on-board snapshots for all fuel and emissions DTCs and A/T DTCs.
5. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC.
6. Clear the DTC and data.
7. 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 indicated DTC's troubleshooting. 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.

Symptom Troubleshooting Versus DTC Troubleshooting

Some symptoms will not trigger DTCs or cause the D indicator to blink. If the MIL was reported ON or the D indicator has been blinking, check for DTCs. If the vehicle has an abnormal symptom, and there are no DTCs stored, do the symptom troubleshooting. Check the list of probable cause(s) for the symptom, in the sequence listed, until you find the problem.

(cont'd)

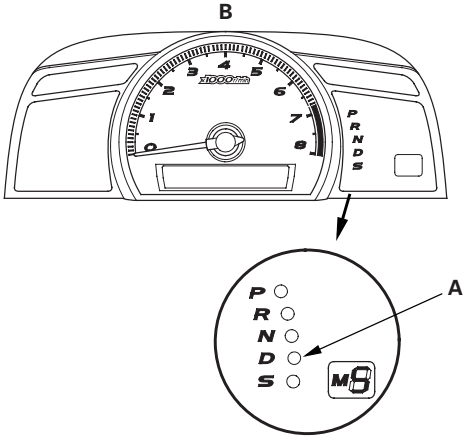
DYNOMITE -2009-

General Troubleshooting Information (cont'd)

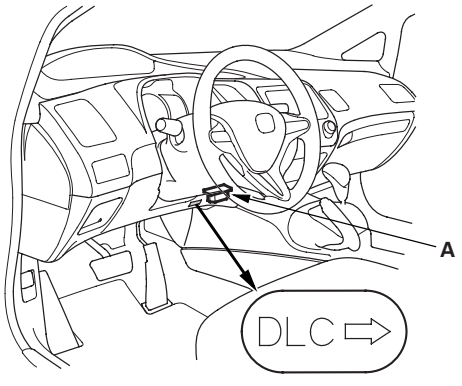
How to Check for DTCs with the SCS Mode (retrieving the flash codes)

NOTE: The preferred method is to use the HDS to retrieve the DTCs.

When the PCM senses an abnormality in the input or output system, the D indicator (A) in the gauge control module (tach) (B) will usually blink.



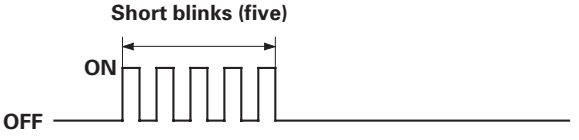
When the D indicator has been reported on, connect the HDS to the DLC (A) located under the driver's side of the dashboard. Turn the ignition switch to ON (II), select SCS mode, then the D indicator will indicate (flash) the DTC.



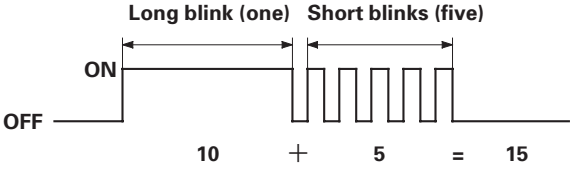
If the D indicator and the MIL come on at the same time, or if a driveability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).
3. Select SCS mode, then observe the D indicator in the gauge control module (tach). Codes 1 through 9 are indicated by individual short blinks. Codes 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 P0705 (5)



Example: DTC P0717 (15)



4. Record all fuel and emissions DTCs and A/T DTCs.
5. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC.
6. Clear the DTC and the data.
7. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for DTCs. If the A/T DTC returns, go to the indicated DTC's troubleshooting. 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.

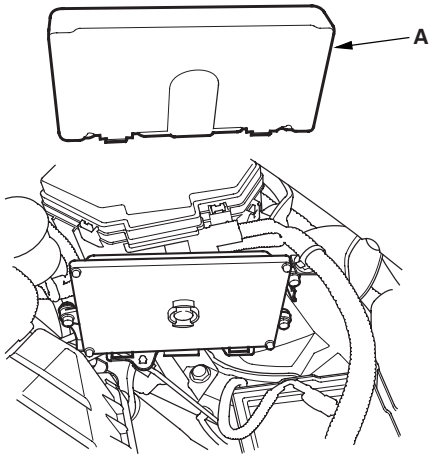
DYNOMITE -2009-

How to Troubleshoot Circuits at the PCM Connectors

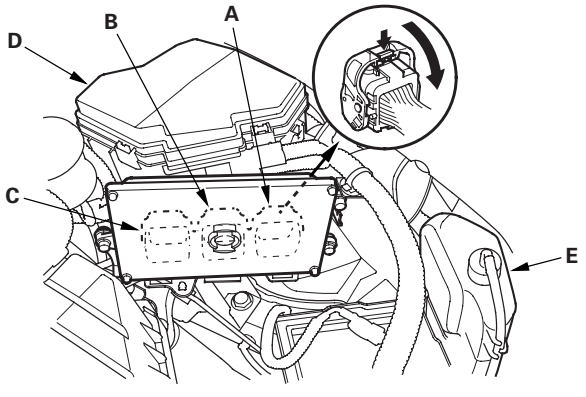
NOTE: The PCM overwrites data and monitors the EVAP system for about 30 minutes after the ignition switch is turned to LOCK (0) or ACC (I). Jumping the SCS line after turning the ignition switch to LOCK (0) or ACC (I) cancels this function. Disconnecting the PCM during this function, without jumping the SCS line first, can damage the PCM.

1. Make sure the ignition switch is turned to LOCK (0), then jump the SCS line with the HDS.

2. Remove the cover (A).



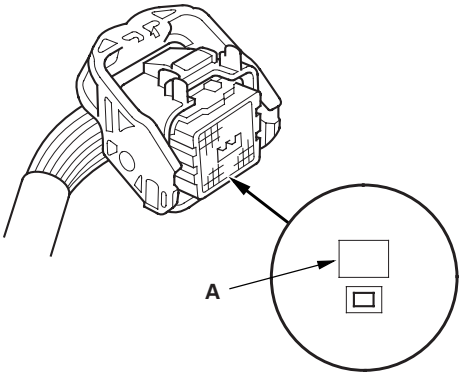
3. Lift up the under-hood fuse/relay box (D).



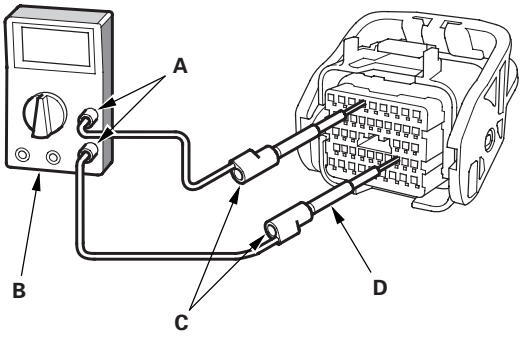
4. Remove the coolant reservoir (E). Disconnect PCM connectors A, B, and C, and probe the terminals from the terminal side of the connectors.

   NOTE: PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

5. When diagnosis/troubleshooting is done at the PCM connector, use the terminal test port (A) above the terminal you need to check.



6. Connect one side of the patch cord's terminals (A) to a commercially available digital multimeter (B), and connect the other side cord's terminals (C) to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (D).



7. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTICE

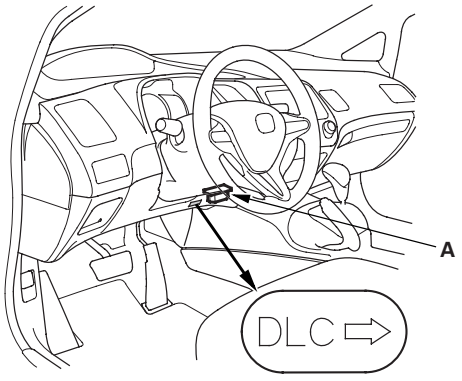
- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.

(cont'd)

General Troubleshooting Information (cont'd)

Clear A/T DTCs Procedure

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).
4. Clear the DTC(s) on the HDS screen.

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 completed. The results of diagnostic tests for the DTC are displayed as:

- PASSED: The on-board diagnosis is successfully completed.
- FAILED: The on-board diagnosis has finished but failed.
- NOT COMPLETED: The on-board diagnosis was running but is out of the enable conditions of the DTC.

How to End a Troubleshooting Session (required after any troubleshooting)

NOTE: Reset the PCM with the HDS while the engine is stopped.

1. Turn the ignition switch to LOCK (0).
2. Turn the ignition switch to ON (II), and wait for 30 seconds.
3. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.
4. Do the PCM idle learn procedure (see page 11-310).
5. Start the engine with the shift lever in P or N, and warm it up to normal operating temperature (the radiator fan comes on).
6. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 50 km/h (31 mph) or under the same conditions as those indicated by the freeze data.

Failure Reproduction Technique

Make sure to follow these points while the vehicle is raised on a lift for the test-drive.

- Disable the VSA by pressing the VSA OFF switch.
- VSA DTC's may come on when test-driving on a lift. If the VSA DTC(s) come on, clear the DTC(s) with the HDS.

DYNOMITE -2009-

DTC Troubleshooting Index

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-3).

DTC *(1)	Two Drive Cycle Detection	D Indicator	MIL	Detection Item	Page
P0107 (12) *(3)	———	Blinks	ON or OFF	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	(see page 14-80)
P0108 (12) *(3)	———	Blinks	ON or OFF	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	(see page 14-80)
P0335 (88) *(3)	———	Blinks	ON or OFF	Crankshaft Position (CKP) Sensor No Signal	(see page 14-81)
P0339 (88) *(3)	———	Blinks	ON or OFF	Crankshaft Position (CKP) Sensor Intermittent Interruption	(see page 14-81)
P0365 (89) *(3)	———	Blinks	ON or OFF	Camshaft Position (CMP) Sensor B No Signal	(see page 14-82)
P0369 (89) *(3)	———	Blinks	ON or OFF	Camshaft Position (CMP) Sensor B Intermittent Interruption	(see page 14-82)
P0705 (5) *(2)	———	Blinks	ON	Short in Transmission Range Switch Circuit (Multiple Shift-position Input)	(see page 14-83)
P0706 (6) *(2)	○	OFF	ON	Open in Transmission Range Switch Circuit	(see page 14-92)
P0711 (28) *(2)	———	Blinks	OFF	Problem in ATF Temperature Sensor Circuit	(see page 14-96)
P0712 (28) *(2)	———	Blinks	OFF	Short in ATF Temperature Sensor Circuit	(see page 14-98)
P0713 (28) *(2)	———	Blinks	OFF	Open in ATF Temperature Sensor Circuit	(see page 14-100)
P0716 (15) *(2)	———	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit	(see page 14-103)
P0717 (15) *(2)	———	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)	(see page 14-103)
P0718 (15) *(2)	○	Blinks	ON	Input Shaft (Mainshaft) Speed Sensor Intermittent Failure	(see page 14-107)
P0721 (9) *(2)	———	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit	(see page 14-111)
P0722 (9) *(2)	———	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)	(see page 14-111)
P0723 (9) *(2)	○	Blinks	ON	Output Shaft (Countershaft) Speed Sensor Intermittent Failure	(see page 14-116)

NOTE:

* (1): The DTC in parentheses is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.
* (3): The MIL comes on when the PGM-FI system detects the same failure.

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting Index (cont'd)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-3).

DTC * (1)	Two Drive Cycle Detection	D Indicator	MIL	Detection Item	Page
P0731 (64)	○	Blinks	OFF	Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st Gear Incorrect Ratio)	(see page 14-120)
P0732 (64)	○	Blinks	OFF	Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd Gear Incorrect Ratio)	(see page 14-122)
P0733 (64)	○	Blinks	OFF	Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd Gear Incorrect Ratio)	(see page 14-123)
P0734 (64)	○	Blinks	OFF	Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th Gear Incorrect Ratio)	(see page 14-125)
P0735 (64)	○	Blinks	OFF	Problem in 5th Clutch and 5th Clutch Hydraulic Circuit (5th Gear Incorrect Ratio)	(see page 14-126)
P0741 (40)	○	Blinks	OFF	Torque Converter Clutch Hydraulic Circuit Stuck OFF	(see page 14-128)
P0747 (76)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve A Stuck ON	(see page 14-129)
P0752 (70)	○	Blinks	ON	Shift Solenoid Valve A Stuck ON	(see page 14-130)
P0756 (71)	○	Blinks	ON	Shift Solenoid Valve B Stuck OFF	(see page 14-132)
P0757 (71)	○	Blinks	ON	Shift Solenoid Valve B Stuck ON	(see page 14-132)
P0761 (72)	○	Blinks	ON	Shift Solenoid Valve C Stuck OFF	(see page 14-133)
P0771 (74)	○	Blinks	ON	Shift Solenoid Valve E Stuck OFF	(see page 14-135)
P0776 (77)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck OFF	(see page 14-136)
P0777 (77)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck ON	(see page 14-136)
P0780 (45)	○	Blinks	ON	Shift Control System	(see page 14-138)
P0796 (78)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve C Stuck OFF	(see page 14-139)
P0797 (78)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve C Stuck ON	(see page 14-139)

DYNOMITE -2009-

DTC *(1)	Two Drive Cycle Detection	D Indicator	MIL	Detection Item	Page
P0842 (25) *(2)	○	Blinks	ON	Short in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck ON	(see page 14-140)
P0843 (25) *(2)	○	Blinks	ON	Open in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck OFF	(see page 14-142)
P0847 (26) *(2)	———	Blinks	OFF	Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON	(see page 14-145)
P0848 (26) *(2)	———	Blinks	OFF	Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF	(see page 14-147)
P0962 (16) *(2)	———	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit	(see page 14-150)
P0963 (16) *(2)	———	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A	(see page 14-153)
P0966 (23) *(2)	———	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit	(see page 14-155)
P0967 (23) *(2)	———	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B	(see page 14-158)
P0970 (29) *(2)	———	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit	(see page 14-160)
P0971 (29) *(2)	———	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C	(see page 14-163)
P0973 (7) *(2)	———	Blinks	ON	Short in Shift Solenoid Valve A Circuit	(see page 14-165)
P0974 (7) *(2)	———	Blinks	ON	Open in Shift Solenoid Valve A Circuit	(see page 14-167)
P0976 (8) *(2)	———	Blinks	ON	Short in Shift Solenoid Valve B Circuit	(see page 14-170)
P0977 (8) *(2)	———	Blinks	ON	Open in Shift Solenoid Valve B Circuit	(see page 14-172)
P0979 (22) *(2)	———	Blinks	ON	Short in Shift Solenoid Valve C Circuit	(see page 14-175)
P0980 (22) *(2)	———	Blinks	ON	Open in Shift Solenoid Valve C Circuit	(see page 14-177)
P0982 (60) *(2)	———	Blinks	ON	Short in Shift Solenoid Valve D Circuit	(see page 14-180)
P0983 (60) *(2)	———	Blinks	ON	Open in Shift Solenoid Valve D Circuit	(see page 14-182)
P0985 (61) *(2), *(4)	———	Blinks	ON	Short in Shift Solenoid Valve E Circuit	(see page 14-185)
P0985 (61) *(2), *(5)	———	Blinks	ON	Short in Shift Solenoid Valve E Circuit	(see page 14-187)
P0986 (61) *(2)	———	Blinks	ON	Open in Shift Solenoid Valve E Circuit	(see page 14-189)

NOTE:

* (1): The DTC in parentheses is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.
* (4): '06 model
* (5): '07-09 models

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting Index (cont'd)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-3).

DTC * (1)	Two Drive Cycle Detection	D Indicator	MIL	Detection Item	Page
P16C0 (99)	———	OFF	ON	PCM A/T Control System Incomplete Update	(see page 14-192)
P1717 (62) * (2)	○	Blinks	OFF	Open in Transmission Range Switch ATPRVS Switch Circuit	(see page 14-192)
P1730 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valves A or D Stuck OFF • Shift Solenoid Valve B Stuck ON • Shift Valves A, B, or D Stuck	(see page 14-195)
P1731 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valve E Stuck ON • Shift Valve E Stuck • A/T Clutch Pressure Control Solenoid Valve A Stuck OFF	(see page 14-197)
P1732 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valves B or C Stuck ON • Shift Valves B or C Stuck	(see page 14-198)
P1733 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valve D Stuck ON • Shift Valve D Stuck • A/T Clutch Pressure Control Solenoid Valve C Stuck OFF	(see page 14-200)
P1734 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valves B or C Stuck OFF • Shift Valves B or C Stuck	(see page 14-201)
P2122 (20)	———	Blinks	ON	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit Low Voltage Input	(see page 14-203)
P2123 (20)	———	Blinks	ON	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit High Voltage Input	(see page 14-204)
U0028 (107) * (3)	———	Blinks	ON or OFF	F-CAN Malfunction (BUS-OFF (PCM))	(see page 14-205)
U0122 (107)	———	Blinks	OFF	F-CAN Malfunction (PCM-VSA Modulator-Control Unit)	(see page 14-206)
U0155 (107) * (3)	———	Blinks	ON or OFF	F-CAN Malfunction (PCM-Gauge Control Module)	(see page 14-207)

NOTE:

* (1): The DTC in parentheses is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.
* (3): The MIL comes on when the PGM-FI system detects the same failure.

DYNOMITE -2009-

Symptom Troubleshooting Index

Symptom	Probable cause(s)	Notes
When you turn the ignition switch to ON (II), the D indicator comes on and stays on in all shift lever positions, or it never comes on at all	• F-CAN communication line error • Gauge control module (tach) defective • PCM defective	• Check the F-CAN communication line for a DTC (see page 22-265). • Check the A/T gear position indicator drive circuit in the gauge control module (tach) by using the gauge control module self-diagnostic function (see page 22-242).
A/T gear position indicator does not come on while the shift lever is in that position	• F-CAN communication line error • Gauge control module (tach) defective • PCM defective • Transmission range switch defective • Shift cable broken or out of adjustment • Connection between the shift cable and transmission or body is worn	• Check the F-CAN communication line for a DTC (see page 22-265). • Check the A/T gear position indicator drive circuit in the gauge control module (tach) by using the gauge control module self-diagnostic function (see page 22-242). • Inspect the transmission range switch (see page 14-265). • Check for a loose shift cable at the shift lever and the selector control lever.
Shift indicator does not work	• F-CAN communication line error • Gauge control module (tach) defective • PCM defective • Transmission range switch defective • Shift cable broken or out of adjustment • Connection between the shift cable and transmission or body is worn	• Check the F-CAN communication line for a DTC (see page 22-265). • Check the F-CAN communication line by using the gauge control module self-diagnostic function (see page 22-243). • Check the A/T gear position indicator drive circuit in the gauge control module (tach) by using the gauge control module self-diagnostic function (see page 22-242). • Inspect the transmission range switch (see page 14-265). • Check for a loose shift cable at the shift lever and the selector control lever.
When you press the paddle shifter + (upshift switch) in S, the transmission does not upshift gears	A problem in the paddle shifter + (upshift switch) circuit	Check the paddle shifter + (upshift switch) circuit (see page 14-270).
When you press the paddle shifter − (downshift switch) in S, the transmission does not downshift gears	A problem in the paddle shifter − (downshift switch) circuit	Check the paddle shifter − (downshift switch) circuit (see page 14-273).

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DYNOMITE -2009-

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Shift lever cannot be moved from P while pressing on the brake pedal	• Accelerator pedal position sensor circuit • Accelerator pedal position sensor defective • Brake pedal position switch circuit • Brake pedal position switch defective • Shift lock solenoid defective • Shift lock solenoid control circuit • Shift lock mechanism defective • Throttle body defective • Transmission range switch ATPP switch stuck OFF • Transmission range switch ATPP switch line opened	• Inspect the APP Sensor signal (see page 11-268). • Troubleshoot the shift lock system circuit (see page 14-280). • Test the shift lock solenoid (see page 14-287). • Inspect the transmission range switch (see page 14-265).
Ignition switch cannot be moved from ACCESSORY (I) to LOCK (0) (key is pushed in, the shift lever in P)	• Interlock control system circuit • Key interlock solenoid stuck ON • Park pin switch stuck OFF • Transmission range switch	• Troubleshoot the key interlock system circuit (see page 14-285). • Inspect the transmission range switch (see page 14-265).
HDS does not communicate with the PCM or the vehicle	DLC circuit error	Troubleshoot the DLC circuit (see page 11-204).

DYNOMITE -2009-

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. Connection between the shift cable and transmission or body is 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 cooler lines for leaks and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the selector control lever. • 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. • 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. • Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter. • 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 clean the torque converter, cooler, and lines.
Vehicle moves in R, but not in D, S, or 1st in S	1. 1st accumulator defective 2. 1st gears worn or damaged 3. 1st clutch defective	• Check the 1st clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged. • Check the 1st accumulator piston, the O-ring, and the springs in the regulator valve body for wear and damage.

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle moves in D and R, but not in 2nd in S	1. 2nd accumulator defective 2. 2nd gears worn or damaged 3. 2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Check the 2nd accumulator piston, the O-ring, and the springs in the servo valve body for wear and damage.
Vehicle moves in D and S, but not in R	1. Shift solenoid valve E defective 2. Shift fork shaft stuck 3. Shift valve E defective 4. 4th/reverse accumulator defective 5. 4th clutch defective 6. Reverse gears worn or damaged	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Check for a missing shift fork bolt on the shift fork shaft. • Check shift valve E in the main valve body for free movement, and check the shift valve E spring for wear and damage. • Check the 4th clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the reverse selector teeth chamfers, and inspect the engagement teeth chamfers of the countershaft 4th gear and the reverse gear. Replace the reverse gears and the reverse selector if they are worn or damaged. If the transmission makes a clicking, grinding, or whirring noise, also replace the mainshaft 4th gear, the reverse idler gear, and the countershaft 4th gear.

DYNOMITE -2009-

Symptom	Probable cause(s)	Notes
Poor acceleration; flares when starting off in D, S, and R; stall speed high in D and S in 1st and 2nd	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 cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the selector control lever. • 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 ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter.
Poor acceleration; flares when starting off in D, S, and R; stall speed high when starting off in 2nd in S	2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear, damage, and peeling. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; flares when starting off in D, S, and R; stall speed high in R	1. Shift cable broken or out of adjustment 2. 4th clutch defective	• Check for a loose shift cable at the shift lever and the selector control lever. • Check the 4th clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate.

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Poor acceleration; flares when starting off in D, S, and R; stall speed low in D and S in 1st and 2nd	1. Shift solenoid valve E defective 2. Torque converter one-way clutch defective 3. Engine output low 4. Torque converter clutch piston defective 5. Lock-up shift valve defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Replace the torque converter. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.
Poor acceleration; flares when starting off in D, S, and R; stall speed low in R	1. Torque converter one-way clutch defective 2. Engine output low 3. Torque converter clutch piston defective 4. Lock-up shift valve defective	• Replace the torque converter. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.
Engine idle vibration	1. Low ATF level 2. Shift solenoid valve E defective 3. Drive plate defective or transmission misassembled 4. Engine output low 5. Torque converter clutch piston defective 6. ATF pump worn or binding 7. Lock-up shift valve defective	• Check the ATF level, and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • 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 ATF strainer for clogging with particles of steel or aluminum. If the ATF strainer is clogged, replace it, and clean the torque converter, cooler, and lines. • Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Check for a misinstalled/damaged drive plate. • Check that the idle rpm in gear is the specified idle speed. If the idle speed is correct, adjust the engine and the transmission mounts. • Replace the torque converter. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.

DYNOMITE -2009-

Symptom	Probable cause(s)	Notes
Vehicle moves in N	1. Excessive ATF 2. Foreign material in separator plate orifice 3. Relief valve defective 4. 1st clutch defective 5. 2nd clutch defective 6. 3rd clutch defective 7. 4th clutch defective 8. 5th clutch defective 9. Clearance between clutch end-plate and top disc incorrect 10. Needle bearing seized, worn, or damaged 11. Thrust washer seized, worn, or damaged	• Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the ATF level, and drain the ATF if it is over-filled. • Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter. • Check the 1st, 2nd, 3rd, 4th, and 5th clutch pressures. • Check the relief valve in the main valve body for free movement, and check the relief valve spring for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal (for 1st, 2nd, and 3rd clutch only) for wear, damage, and peeling. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide. • Replace the secondary shaft if the bushing for the 1st or the 3rd clutch feed pipe is loose or damaged. • Inspect the 5th clutch feed pipe. If the 5th clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide. • Replace the mainshaft if the bushing for the 5th clutch feed pipe is loose or damaged.

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Late shift after shifting from N to D and S, or excessive shock when shifted into D and S	1. Shift solenoid valve E 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. Connection between the shift cable and transmission or body is worn 7. Input shaft (mainshaft) speed sensor defective 8. Output shaft (countershaft) speed sensor defective 9. ATF temperature sensor defective 10. Foreign material in separator plate orifice 11. Servo control valve defective 12. 1st accumulator defective 13. 1st check ball stuck 14. Lock-up shift valve defective 15. 1st clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Check for a loose shift cable at the shift lever and the selector control lever. • Check the 1st clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear, damage, and peeling. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the servo control valve in the main valve body for free movement, and check the servo control valve spring for wear and damage. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged. • Check the 1st accumulator piston, the O-ring, and the springs in the regulator valve body for wear and damage. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.

DYNOMITE -2009-

Symptom	Probable cause(s)	Notes
Late shift after shifting from N to R, or excessive shock when shifted into R	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Shift cable broken or out of adjustment 4. Connection between the shift cable and transmission or body is worn 5. Input shaft (mainshaft) speed sensor defective 6. Output shaft (countershaft) speed sensor defective 7. ATF temperature sensor defective 8. Shift fork shaft stuck 9. Foreign material in separator plate orifice 10. Shift valve E defective 11. 4th/reverse accumulator defective 12. Lock-up shift valve defective 13. 4th clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Check for a loose shift cable at the shift lever and the selector control lever. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Check for a missing shift fork bolt on the shift fork shaft. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the 4th clutch pressure. • Inspect the servo valve and the O-ring for wear and damage. • Check shift valve E in the main valve body for free movement, and check the shift valve E spring for wear and damage. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.
Transmission does not shift	1. Input shaft (mainshaft) speed sensor defective 2. Output shaft (countershaft) speed sensor defective	• Check for a stored DTC, and check for loose connectors. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation.

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DYNOMITE -2009-

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive shock or flares on all upshifts and downshifts	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Input shaft (mainshaft) speed sensor defective 4. Output shaft (countershaft) speed sensor defective 5. ATF temperature sensor defective 6. Foreign material in separator plate orifice	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice.
Excessive shock or flares on 1-2 upshift or 2-1 downshift	1. Shift solenoid valve E 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. 2nd clutch transmission fluid pressure switch defective 6. Foreign material in separator plate orifice 7. 1st accumulator defective 8. 2nd accumulator defective 9. 1st check ball stuck 10. 2nd check ball stuck 11. Lock-up shift valve defective 12. 1st clutch defective 13. 2nd clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the 1st and the 2nd clutch pressures. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear, damage, and peeling. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged. • Check the 1st accumulator piston, the O-ring, and the springs in the regulator valve body for wear and damage. • Check the 2nd accumulator piston, the O-ring, and the springs in the servo valve body for wear and damage.

DYNOMITE -2009-

Symptom	Probable cause(s)	Notes
Excessive shock or flares on 2-3 upshift or 3-2 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. 3rd clutch transmission fluid pressure switch defective 4. Foreign material in separator plate orifice 5. 2nd accumulator defective 6. 3rd accumulator defective 7. 2nd check ball stuck 8. 2nd clutch defective 9. 3rd clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the 2nd and the 3rd clutch pressures. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear, damage, and peeling. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide. • Replace the secondary shaft if the bushing for the 3rd clutch feed pipe is loose or damaged. • Check the 2nd accumulator piston, the O-ring, and the springs in the servo body for wear and damage. • Check the 3rd accumulator piston, the O-ring, and the springs in the regulator valve body for wear and damage.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive shock or flares on 3-4 upshift or 4-3 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Foreign material in separator plate orifice 4. 3rd accumulator defective 5. 4th/reverse accumulator defective 6. 3rd clutch defective 7. 4th clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the 3rd and the 4th clutch pressures. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal (for 3rd clutch only) for wear, damage, and peeling. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide. • Replace the secondary shaft if the bushing for the 3rd clutch feed pipe is loose or damaged. • Check the 3rd accumulator piston, the O-ring, and the springs in the regulator valve body for wear and damage.

DYNOMITE -2009-

Symptom	Probable cause(s)	Notes
Excessive shock or flares on 4-5 upshift or 5-4 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Foreign material in separator plate orifice 4. 4th/reverse accumulator defective 5. 5th accumulator defective 6. 4th clutch defective 7. 5th clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the 4th and the 5th clutch pressures. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 5th clutch feed pipe. If the 5th clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide. • Replace the mainshaft if the bushing for the 5th clutch feed pipe is loose or damaged. • Check the 4th and the 5th accumulator pistons, the O-rings, and the springs in the servo body for wear and damage.
Noise from transmission in all shift lever positions	1. ATF pump worn or binding 2. Mainshaft bearing, countershaft bearing, or secondary shaft bearing defective	• 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. • 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. • Inspect the ATF strainer is clogged with particles of steel or aluminum. If the ATF strainer is clogged, replace it, and clean the torque converter, cooler, and lines. • Inspect the mainshaft, the countershaft, and the secondary shaft for wear or damage.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle does not accelerate above 50 km/h (31 mph)	Torque converter one-way clutch defective	Replace the torque converter.
Vibration in all shift lever positions	Drive plate defective or transmission misassembled	• Check for a misinstalled/damaged drive plate. • Check that the idle rpm in gear is the specified idle speed. If the idle speed is correct, adjust the engine and the transmission mounts.
Shift lever does not operate smoothly	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Connection between the shift cable and transmission or body is worn	• Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch for operation. • Check for a loose shift cable at the shift lever and the selector control lever.
Transmission does not shift into P	1. Shift cable broken or out of adjustment 2. Connection between the shift cable and transmission or body is worn 3. Park mechanism defective	• Check for a loose shift cable at the shift lever and the selector control lever. • 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, select and install the appropriate park lever stop.
Torque converter clutch does not disengage	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Torque converter clutch piston defective 4. Lock-up shift valve defective 5. Lock-up control valve defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Replace the torque converter. • Check the lock-up control valve in the main valve body for free movement, and check the lock-up control valve spring for wear and damage. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.

DYNOMITE -2009-

Symptom	Probable cause(s)	Notes
Torque converter clutch does not operate smoothly	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Torque converter clutch piston defective 4. Torque converter check valve defective 5. Lock-up shift valve defective 6. Lock-up control valve defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Replace the torque converter. • Check the lock-up control valve in the main valve body for free movement, and check the lock-up control valve spring for wear and damage. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.
Torque converter clutch does not engage	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Input shaft (mainshaft) speed sensor defective 4. Output shaft (countershaft) speed sensor defective 5. Torque converter clutch piston defective 6. Torque converter check valve defective 7. Lock-up shift valve defective 8. Lock-up control valve defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Replace the torque converter. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Check the lock-up control valve in the main valve body for free movement, and check the lock-up control valve spring for wear and damage. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.
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. Connection between the shift cable and transmission or body is worn	• Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch operation. • Check for a loose shift cable at the shift lever and the selector control lever.

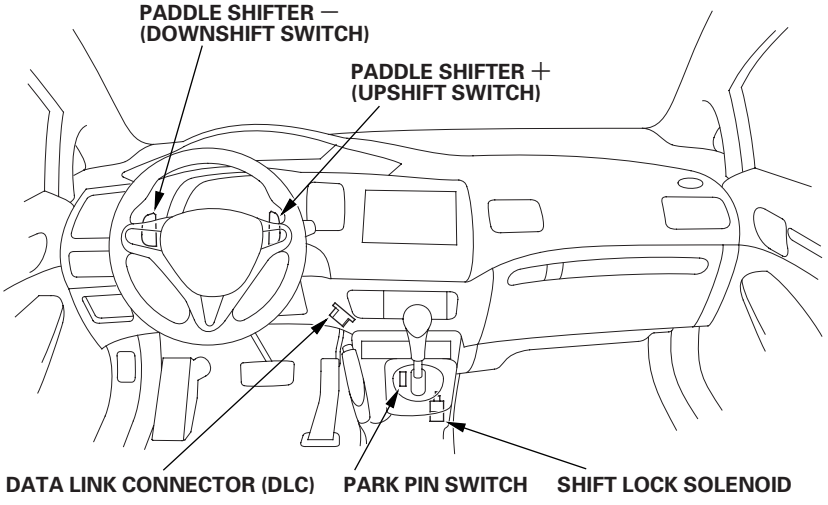
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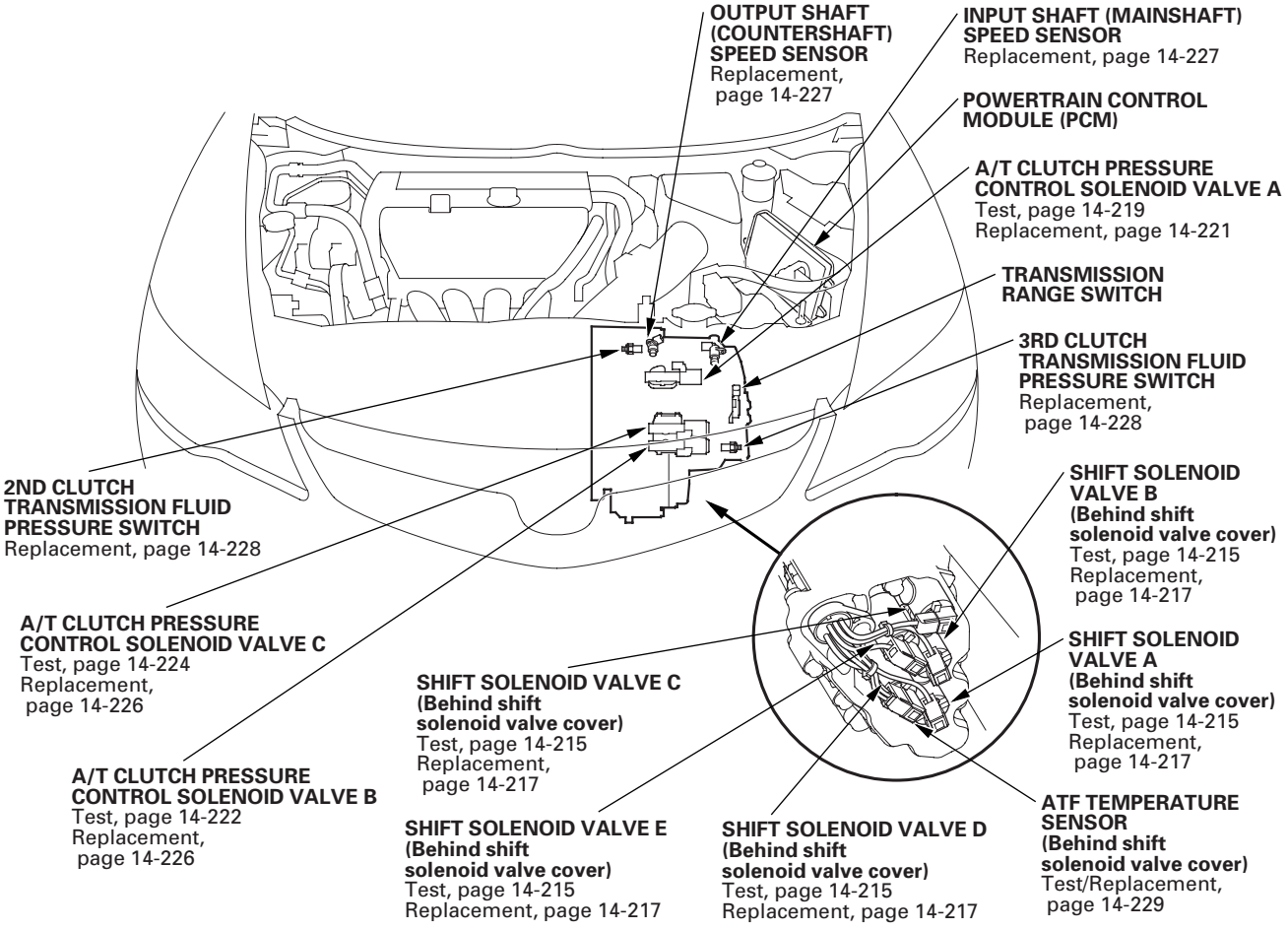
Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Speedometer and odometer do not work	Output shaft (countershaft) speed sensor defective	• Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch operation. • Check the output shaft (countershaft) speed sensor installation.
Engine does not rev to high rpm, and the transmission upshifts at low rpm (engine at normal operating temperature)	VTEC rocker arms defective	Check the engine rocker arms.

DYNOMITE -2009-

Component Location Index





System Description

General Operation

The automatic transmission is a combination of a three-element torque converter and triple-shaft electronically controlled unit which provides five speeds forward and one in 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 drive gear when the engine is being started. The entire torque converter assembly serves as a flywheel while 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, and includes the 4th and 5th clutches, and gears for 5th, 4th, reverse, and idler. The mainshaft reverse gear is integral with the mainshaft 4th gear. The countershaft includes the gears for 1st, 2nd, 3rd, 4th, 5th, reverse, park, and the final drive. The final drive gear is integral with the countershaft. The countershaft 4th gear and the countershaft reverse gear can be locked to the countershaft providing 4th or reverse gear, depending on which way the selector is moved. The secondary shaft includes the 1st, 2nd, and 3rd clutches, and gears for 1st, 2nd, 3rd, and idler. The idler gear shaft is located between the mainshaft and the secondary shaft, and the idler gear transmits power between the mainshaft and the secondary shaft. 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 to the countershaft, or through the mainshaft to the countershaft to provide drive.

Electronic Control
The electronic control system consists of the powertrain control module (PCM), sensors, and shift solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions. The PCM is located in the engine compartment.

Hydraulic Control
The valve bodies include the main valve body, the regulator valve body, and the servo body. They are bolted to the torque converter housing. The main valve body contains the manual valve, shift valves A, B, C, and E, the relief valve, the lock-up control valve, the cooler check valve, the servo control valve, and the ATF pump gears. The regulator valve body contains the regulator valve, the torque converter check valve, the lock-up shift valve, and the 1st and 3rd accumulators. The servo body contains the servo valve, shift valve D, the accumulators for 2nd, 4th, and 5th, and shift solenoid valves A, B, C, D, and E. Fluid from the regulator passes through the manual valve to the various control valves. The 1st, 3rd, and 5th clutches receive fluid from their respective feed pipes, and the 2nd and 4th clutches receive fluid from the internal hydraulic circuit.

Shift Control Mechanism
To shift gears, the PCM controls shift solenoid valves A, B, C, D, and E, and A/T clutch pressure control solenoid valves A, B, and C, 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. A/T clutch pressure control solenoid valves A, B, and C regulate their respective pressure, and pressurize the clutches to engage them and their corresponding gears. The pressure of the A/T clutch pressure control solenoid valves also applies to the shift valves to switch the port.

Lock-up Mechanism
The lock-up mechanism operates in D (2nd, 3rd, 4th, and 5th gears). 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 shift solenoid valve E is turned on by the PCM, shift solenoid valve E pressure switches the lock-up shift valve on and off. A/T clutch pressure control solenoid valve A and the lock-up control valve control the degree of lock-up.

DYNOMITE -2009-

Gear Selection
The shift lever has five positions; P: PARK, R: REVERSE, N: NEUTRAL, D: DRIVE 1st through 5th gear ranges with D-position automatic shift mode and D-paddle shift mode, S: DRIVE 1st through 5th gear ranges with S-position automatic shift mode and sequential sportshift mode.

Position		Description
P: PARK		Front wheels locked; the park pawl engaged with the park gear on the countershaft. All clutches are released.
R: REVERSE		Reverse; the reverse selector engaged with the countershaft reverse gear and the 5th clutch engaged.
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 gear, depending on the 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 gears.
S: DRIVE (1st through 5th)	S-position automatic shift mode	For rapid acceleration at highway speeds and general driving; starts off in 1st, shifts automatically to 2nd, 3rd, 4th, then 5th gear, depending on vehicle speed and throttle position. Downshifts through 4th, 3rd, 2nd, and 1st gear on deceleration to stop. The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gears.
	Sequential sportshift mode	Manual gear shift driving; vehicle can starts off in 1st and 2nd gears, and does not upshift automatically.

NOTE: D-paddle shift mode has been added for '08-09 models.

Starting the engine is possible only in P and N because of a slide-type neutral-safety switch.

Automatic Transmission Gear Position Indicator
The A/T gear position indicator in the gauge control module (tach) shows which shift lever position has been selected without having to look down at the console.

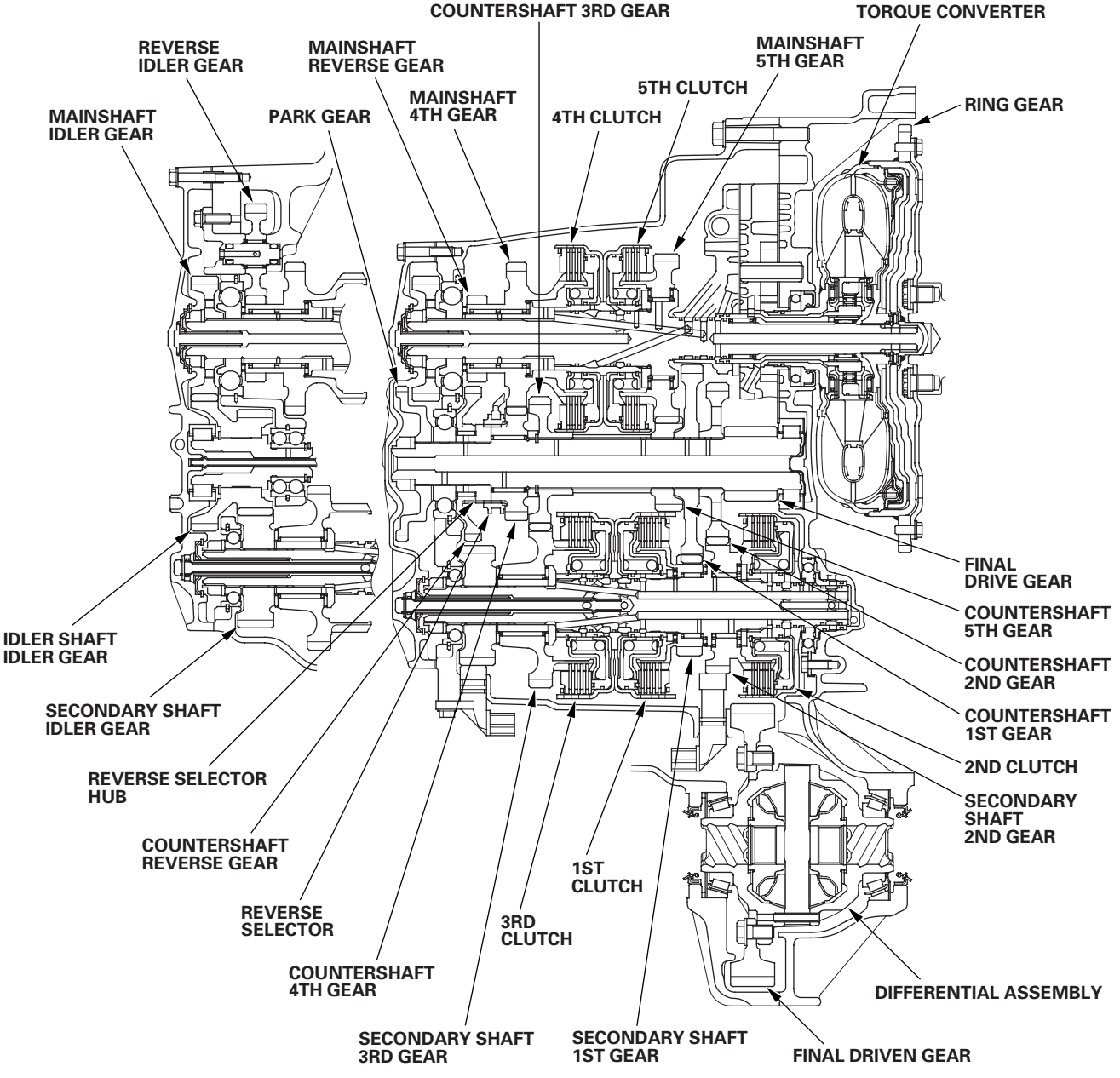
Shift Indicator and M Indicator
When the transmission is switched into the sequential sportshift mode, the shift indicator in the gauge control module (tach) displays the gear selected, and the M indicator next to the shift indicator comes on. The shift indicator also displays the gear selected in the D-paddle shift mode, but the M indicator does not come on.

NOTE: D-paddle shift mode has been added for '08-09 models.

System Description (cont'd)

Clutches and Gears

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 the steel plates together, locking them so they do not 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 the steel plates, and they are free to slide past each other. This allows the gear to spin independently on its shaft, transmitting no power.



DYNOMITE -2009-

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 3rd clutch. The 1st clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

2nd Clutch
The 2nd clutch engages/disengages 2nd gear, and is located at the end of the secondary shaft, opposite the end cover. The 2nd clutch is supplied hydraulic pressure by a circuit connected to the internal hydraulic circuit.

3rd Clutch
The 3rd clutch engages/disengages 3rd gear, and is located at the middle of the secondary shaft. The 3rd clutch is joined back-to-back to the 1st clutch. The 3rd clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

4th Clutch
The 4th clutch engages/disengages 4th gear, as well as reverse 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, 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.

Gear operation
Gears on the mainshaft:
- 4th gear engages/disengages with the mainshaft by the 4th clutch.
- 5th gear engages/disengages with the mainshaft by the 5th clutch.
- Reverse gear engages/disengages with the mainshaft by the 4th clutch.
- Idler gear is splined with the mainshaft, and rotates with the mainshaft.

Gears on the countershaft:
- Final drive gear is integral with the countershaft.
- 1st, 2nd, 3rd, 5th, and park gears are splined with the countershaft, and rotate with the countershaft.
- 4th gear and reverse gear rotate freely from the countershaft. The reverse selector engages 4th gear and reverse gear with the reverse selector hub. The reverse selector hub is splined to the countershaft so that 4th gear and the reverse gear engage with the countershaft.

Gears on the secondary shaft:
- 1st gear engages/disengages with the secondary shaft by the 1st clutch.
- 2nd gear engages/disengages with the secondary shaft by the 2nd clutch.
- 3rd gear engages/disengages with the secondary shaft by the 3rd clutch.
- Idler gear is splined with the secondary shaft, and rotates with the secondary shaft.

The idler gear on the idler shaft transmits power between the mainshaft and the secondary shaft.
The reverse idler gear transmits power from the mainshaft reverse gear to the countershaft reverse gear, and changes rotational direction of the countershaft to reverse.

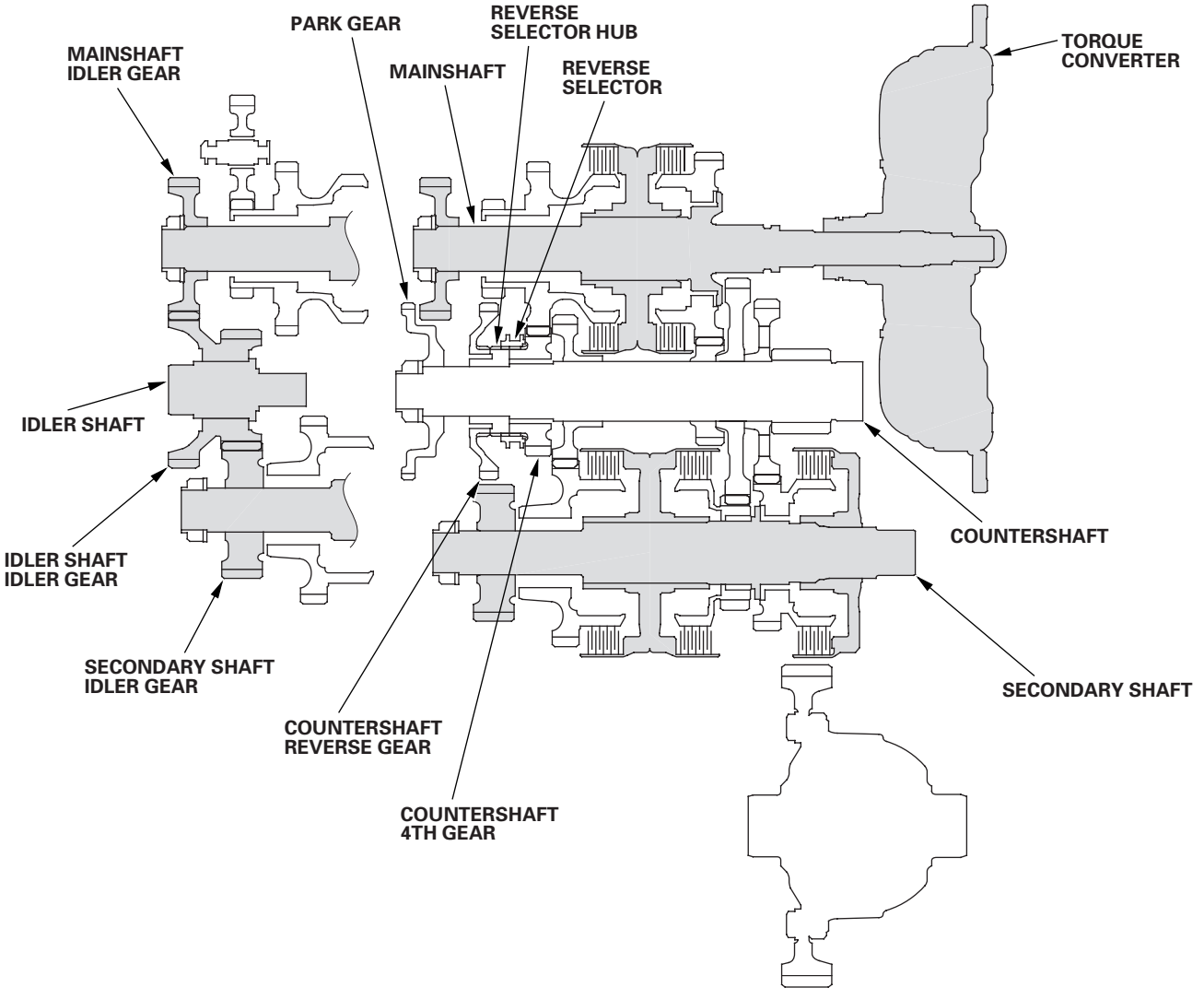
System Description (cont'd)

Power Flow

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 torque converter drives the mainshaft idler gear, the idler shaft idler 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 D or R:

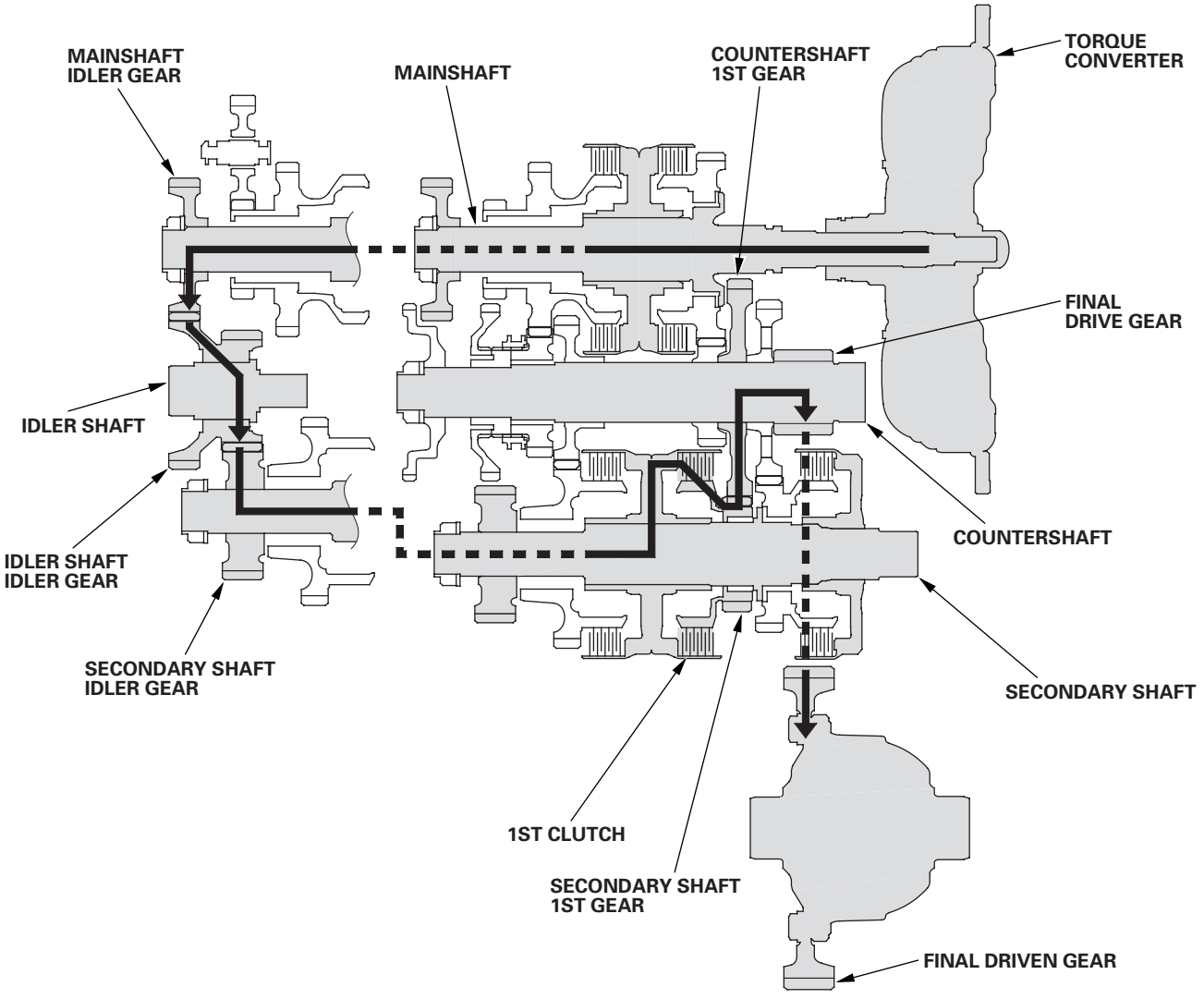
- When shifted from D, the reverse selector engages with the countershaft 4th gear and the reverse selector hub, and 4th gear engages with the countershaft.
- When shifted from R, the reverse selector engages with the countershaft reverse gear and the reverse selector hub, and reverse gear engages with the countershaft.



DYNOMITE -2009-

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.
- The mainshaft idler gear drives the secondary shaft via the idler shaft idler 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.



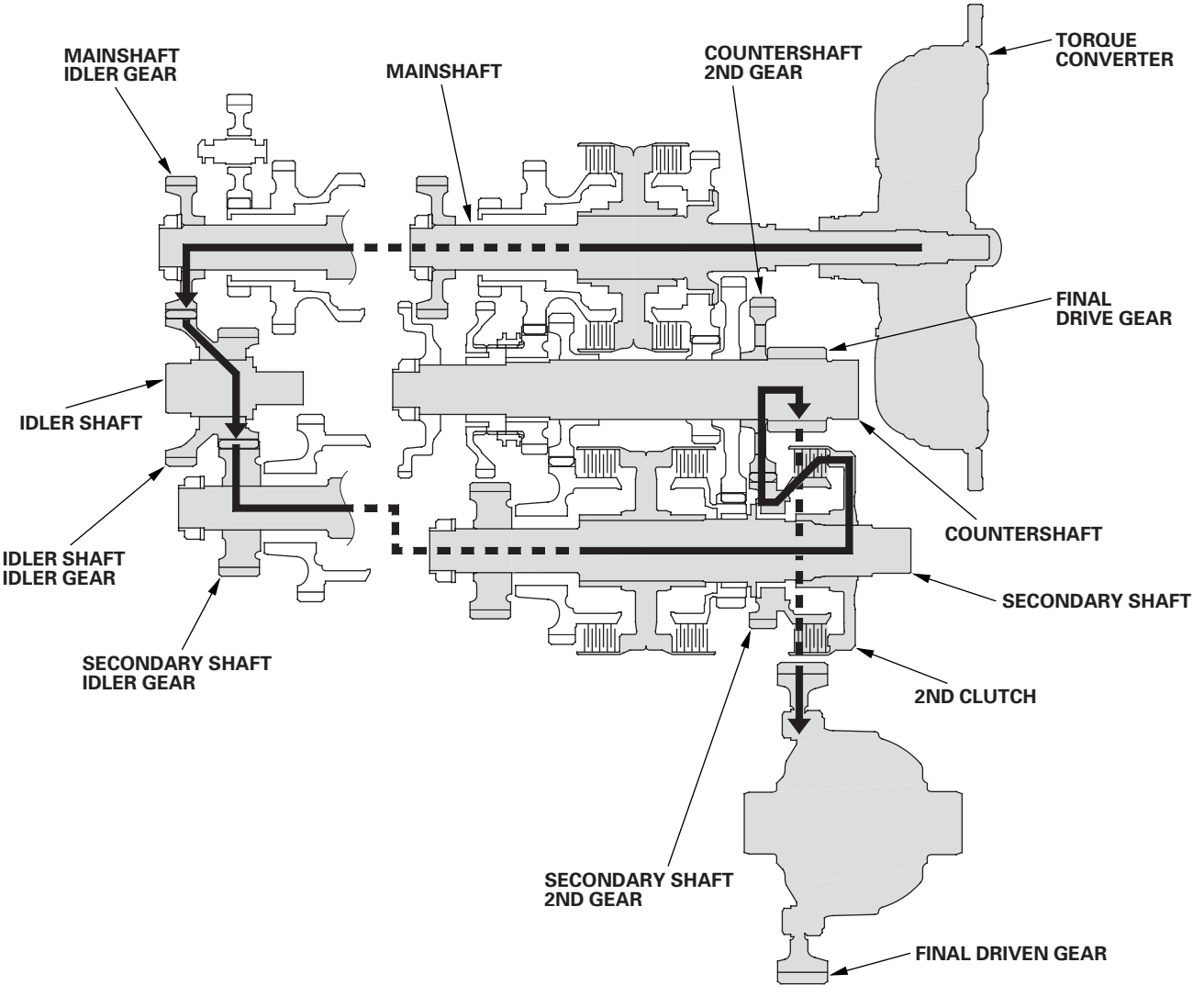
(cont'd)

System Description (cont'd)

Power Flow (cont'd)

In 2nd Gear

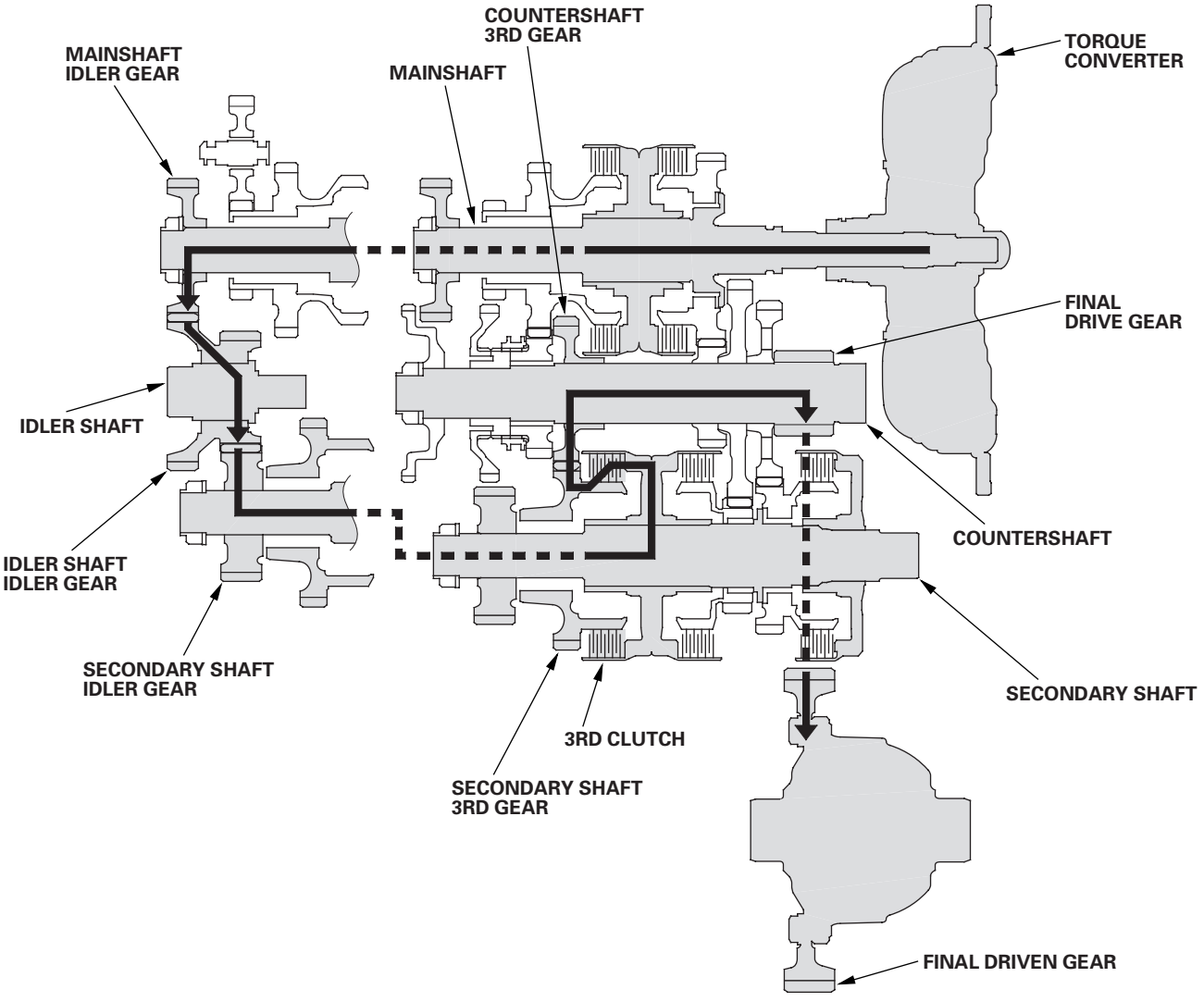
- Hydraulic pressure is applied to the 2nd clutch, then the 2nd clutch engages the secondary shaft 2nd gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and the secondary shaft idler gear.
- The secondary shaft 2nd gear drives the countershaft 2nd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



DYNOMITE -2009-

In 3rd Gear

- Hydraulic pressure is applied to the 3rd clutch, then the 3rd clutch engages the secondary shaft 3rd gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and the secondary shaft idler gear.
- The secondary shaft 3rd gear drives the countershaft 3rd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



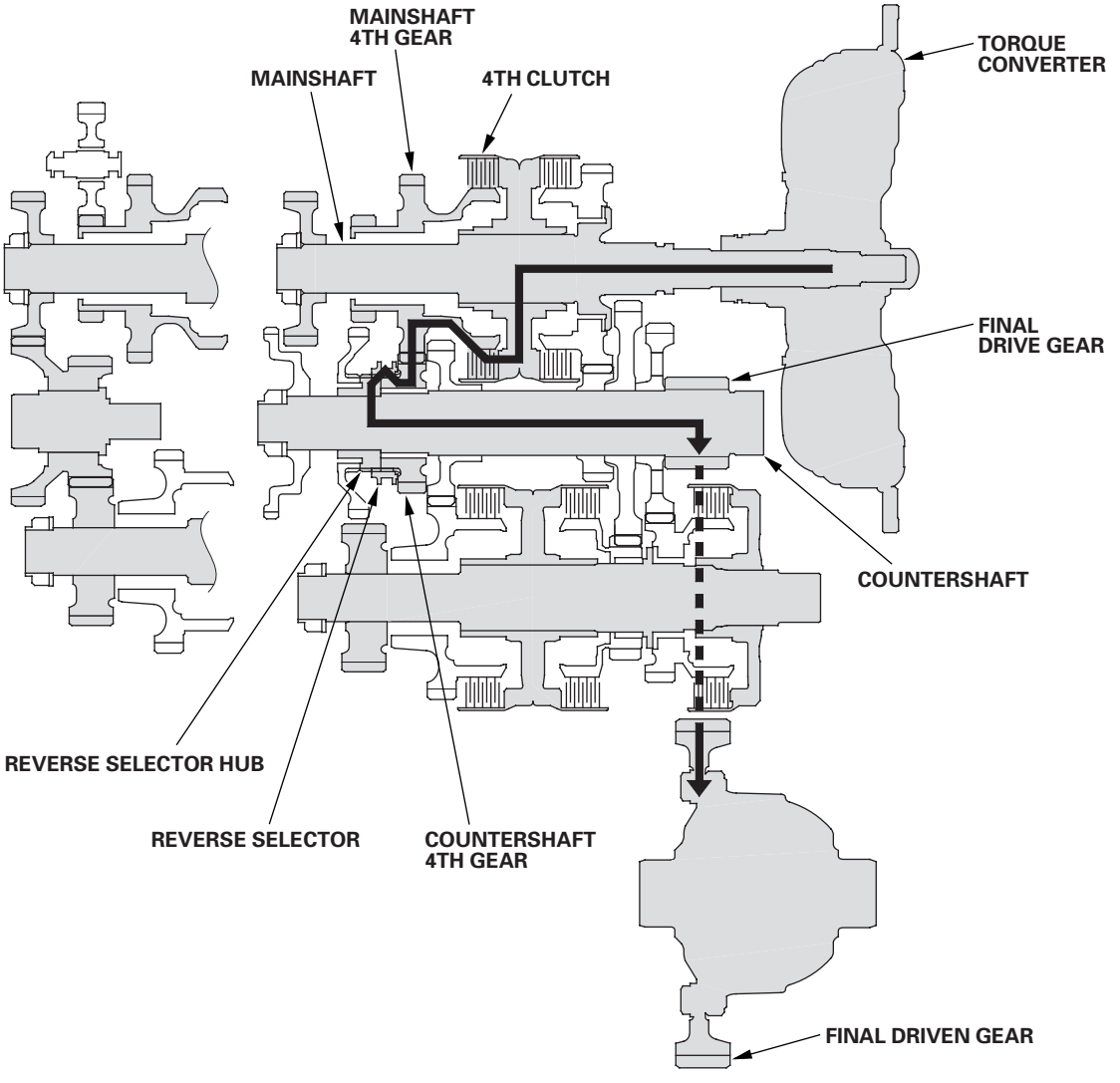
(cont'd)

System Description (cont'd)

Power Flow (cont'd)

In 4th Gear

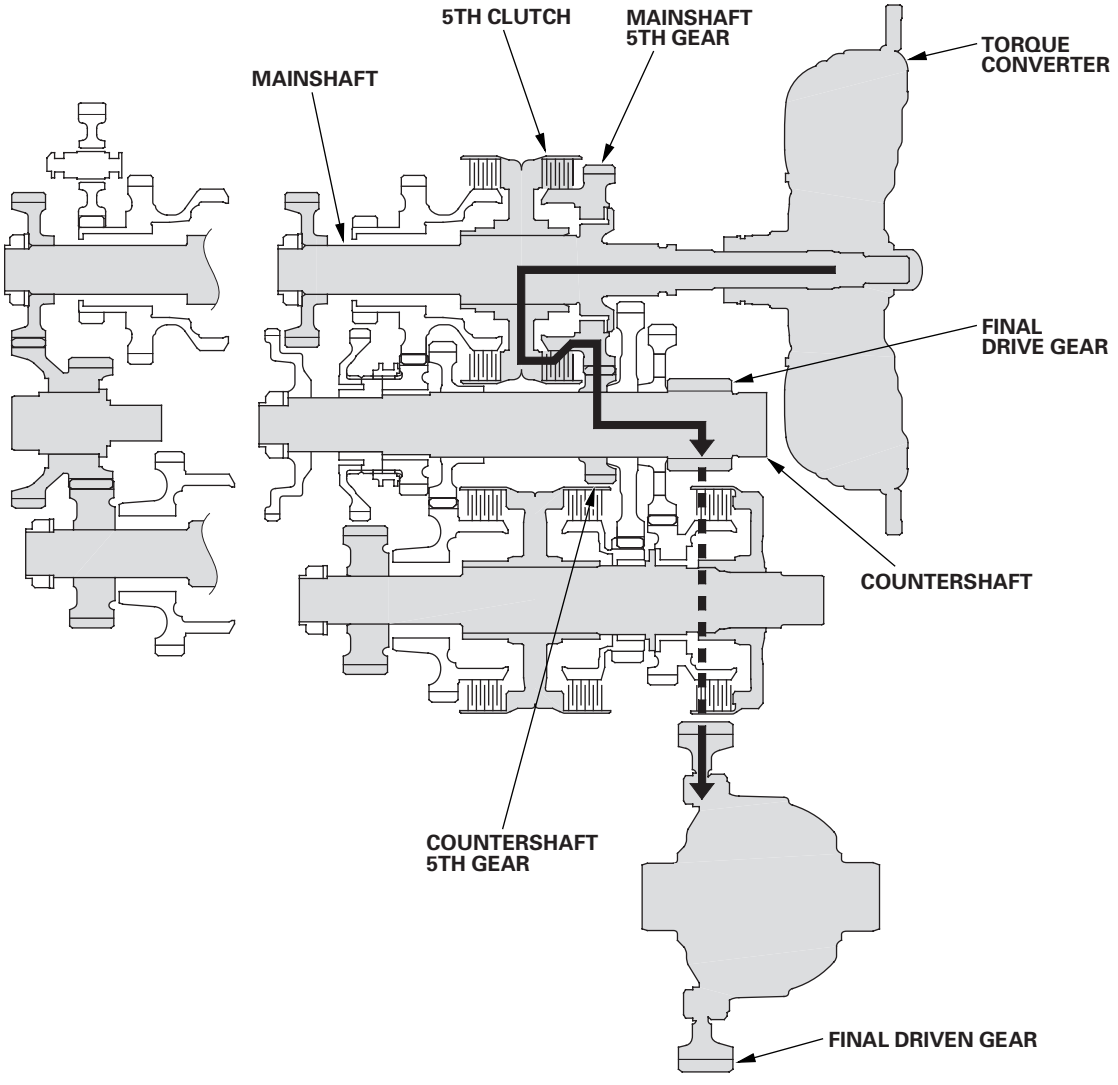
- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 4th gear and the reverse selector hub while the shift lever is in forward range (D and S).
- Hydraulic pressure is also applied to the 4th clutch, then the 4th clutch engages the mainshaft 4th gear 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.



DYNOMITE -2009-

In 5th Gear

- Hydraulic pressure is 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 and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



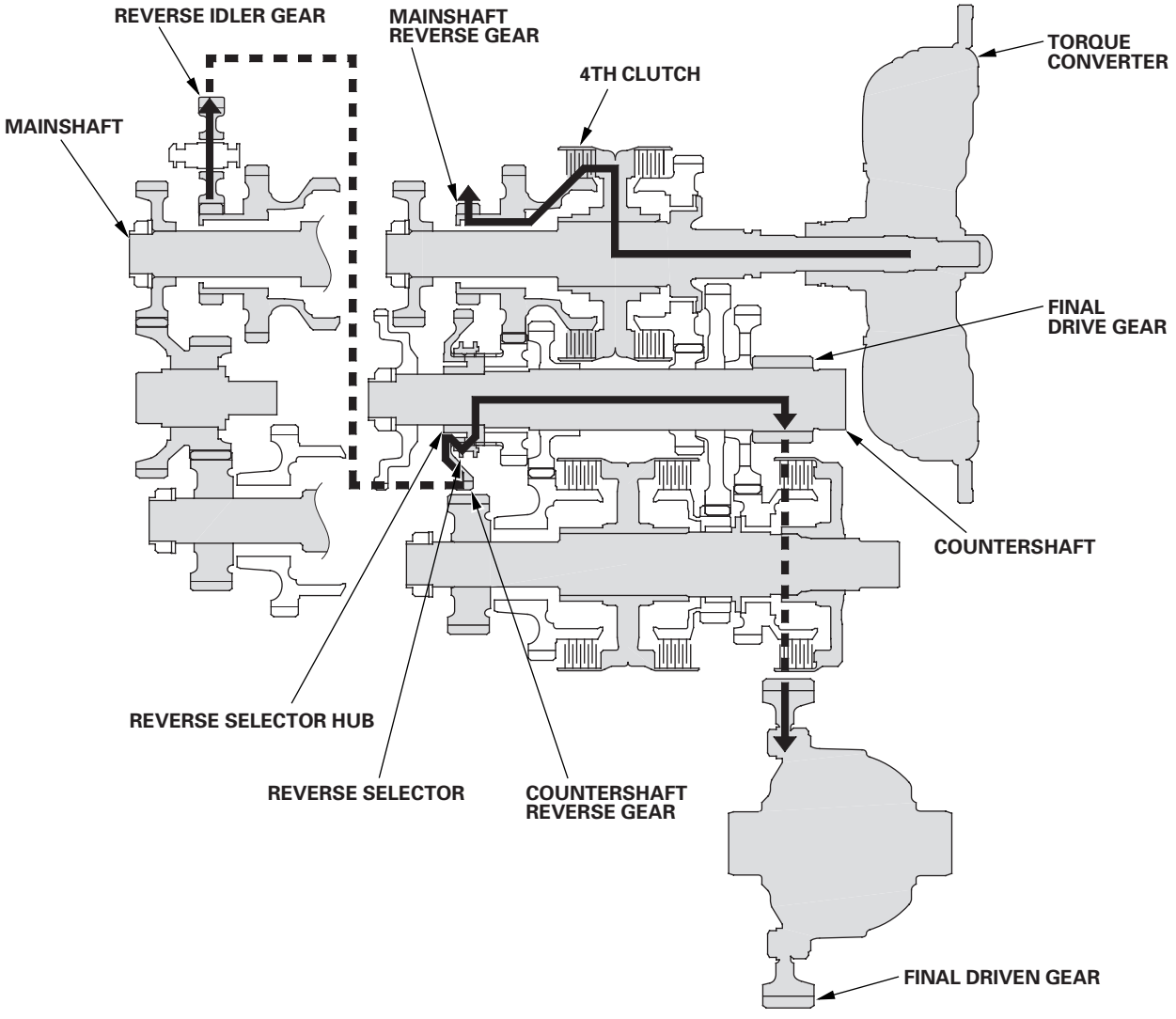
(cont'd)

System Description (cont'd)

Power Flow (cont'd)

R Position

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft reverse gear and the reverse selector hub while the shift lever is in R.
- Hydraulic pressure is also applied to the 4th clutch, then the 4th clutch engages the mainshaft reverse gear with the mainshaft.
- The mainshaft reverse gear drives the countershaft reverse gear via the reverse idler gear.
- The rotational direction of the countershaft reverse gear is changed by 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.



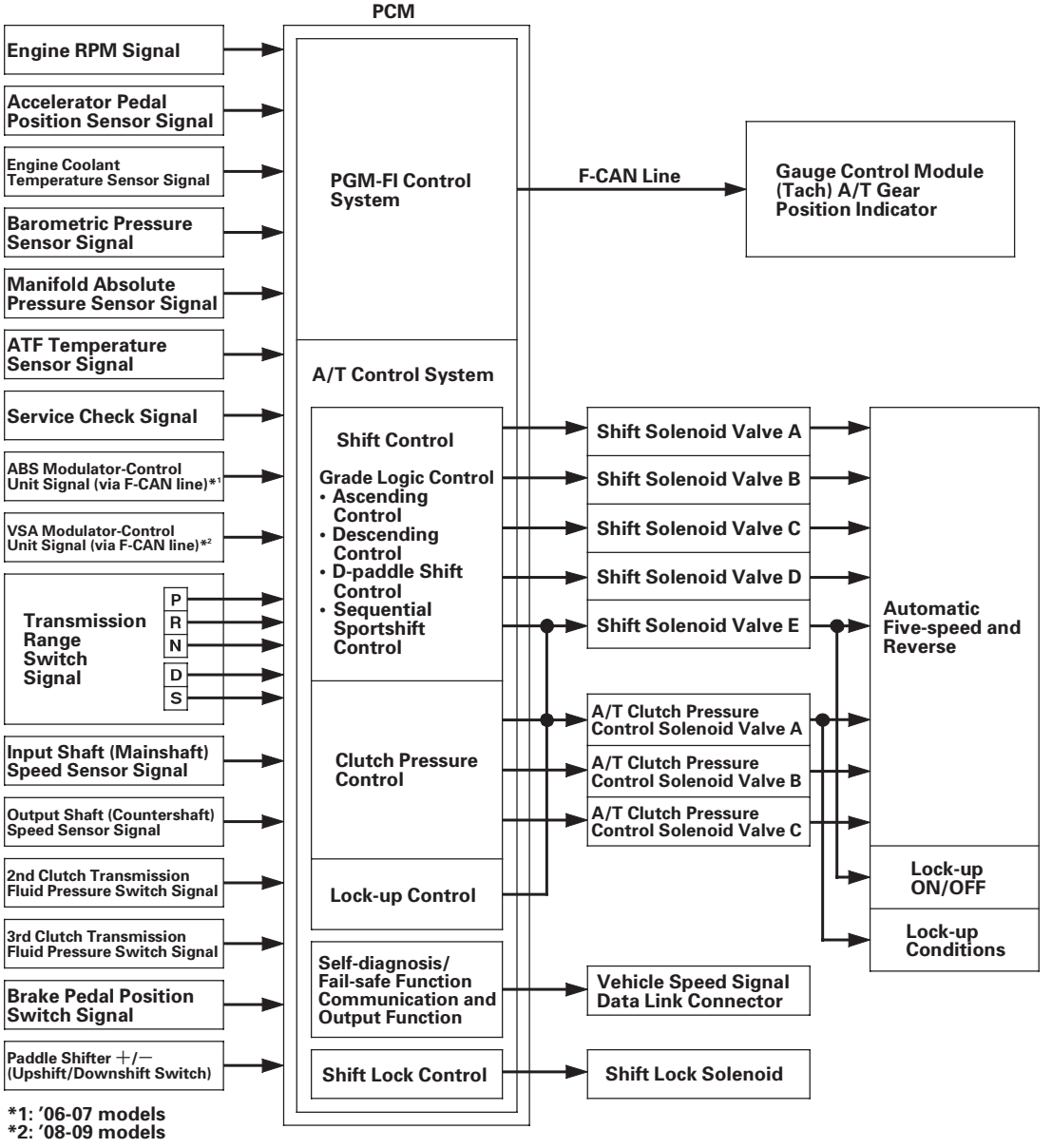
DYNOMITE -2009-

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 receives input signals from sensors, switches, and other control units, processes data, and outputs signals for the engine control system and the A/T control system. The A/T control system includes shift control, grade logic control, clutch pressure control, and lock-up control.
The PCM switches the shift solenoid valves and the A/T clutch pressure control solenoid valves ON and OFF to control gear selection and torque converter clutch lock-up.



(cont'd)

DYNOMITE -2009-

System Description (cont'd)

Electronic Control System (cont'd)

Shift Control
The PCM instantly determines which gear should be selected by various signals sent from sensors and switches, and it actuates shift solenoid valves A, B, C, D, and E to control gear selection.

Shift solenoid valves are a normally closed type. Shift solenoid valve opens the port of shift solenoid valve pressure leading to shift valves while shift solenoid valve is turned ON by the PCM, and closes the port when shift solenoid valve is OFF.

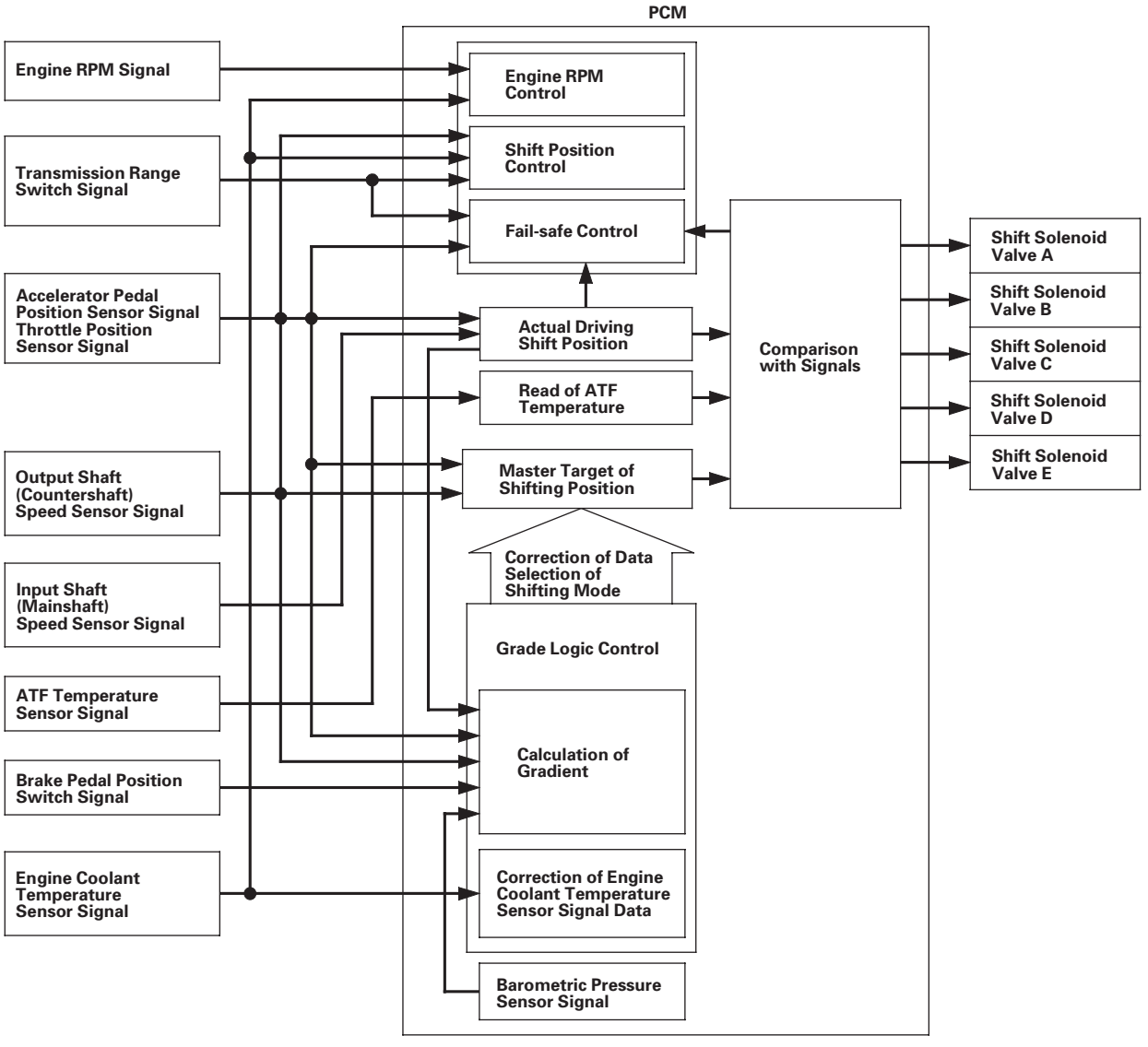
The combination of driving signals to shift solenoid valves A, B, C, D, and E are shown in the table.

Position	Gear Position	Shift Solenoid Valve				
		A	B	C	D	E
D and S	Shifting from N	OFF	ON	ON	OFF	OFF
	Stays in 1st	ON	ON	ON	OFF	OFF
	Shifting gears between 1st and 2nd	OFF	ON	ON	OFF	OFF
	Stays in 2nd	OFF	ON	OFF	ON	OFF or ON
	Shifting gears between 2nd and 3rd	OFF	ON	ON	ON	OFF or ON
	Stays in 3rd	OFF	OFF	ON	OFF	OFF or ON
	Shifting gears between 3rd and 4th	OFF	OFF	OFF	OFF	OFF or ON
	Stays in 4th	ON	OFF	OFF	OFF	OFF or ON
	Shifting gears between 4th and 5th	ON	OFF	OFF	ON	OFF or ON
	Stays in 5th	ON	OFF	ON	ON	OFF or ON
N	Neutral	OFF	ON	ON	OFF	OFF
R	Shifting from P and N	OFF	ON	OFF	OFF	ON
	Stays in reverse	ON	ON	OFF	OFF	ON
	Reverse inhibit control	OFF	OFF	ON	OFF	OFF
P	Park	OFF	ON	OFF	OFF	ON

DYNOMITE -2009-

Shift Control - Grade Logic Control

A grade logic control system has been adopted to control shifting in D, and in S with automatic shift mode. The PCM compares actual driving conditions with programmed driving conditions, based on the input from the accelerator pedal position sensor, the throttle position sensor, the engine coolant temperature sensor, the barometric pressure sensor, the brake pedal position switch signal, the output shaft (countershaft) speed sensor signal, and the shift lever position signal, to control shifting while the vehicle is ascending or descending a slope.



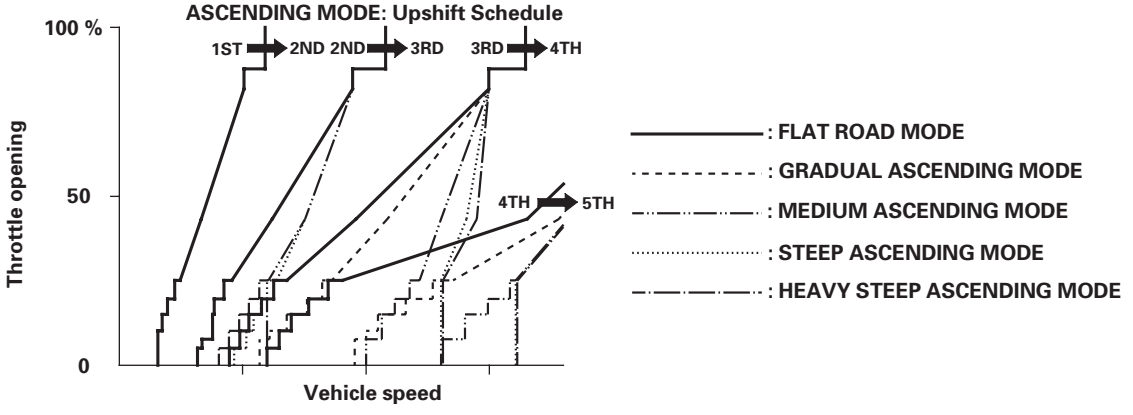
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System Description (cont'd)

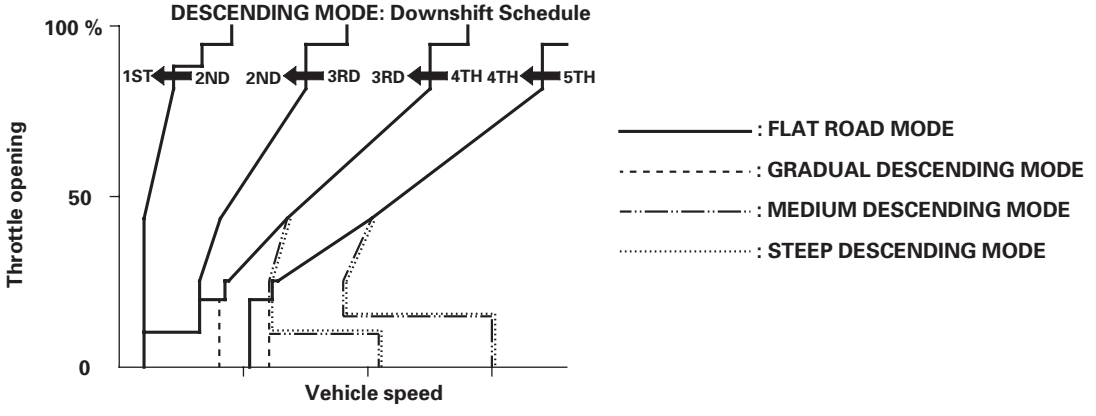
Electronic Control System (cont'd)

Grade Logic Control: Ascending Control
When the PCM determines that the vehicle is climbing a hill in D, and S with automatic shift mode, the system extends the engagement area of 2nd, 3rd, and 4th gears to prevent the transmission from frequently shifting between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears. Then PCM does this so the vehicle can run smoothly and have more power when needed.

NOTE: Shift commands stored in the PCM between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, enable it to automatically select the most suitable gear according to the magnitude of a gradient.



Grade Logic Control: Descending Control
When the PCM determines that the vehicle is going down a hill in D, and S with automatic shift mode, the upshift speed from 4th to 5th gear, from the 3rd to 4th gear, and from 2nd to 3rd gear (when the throttle is closed) becomes higher than the set speed for flat road driving to extend 4th gear, 3rd gear, and 2nd gear driving area. 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 gear or 4th gear, and you are decelerating when you are applying the brakes on a steep hill, the transmission will downshift to lower gear. When you accelerate, the transmission will then return to a higher gear.

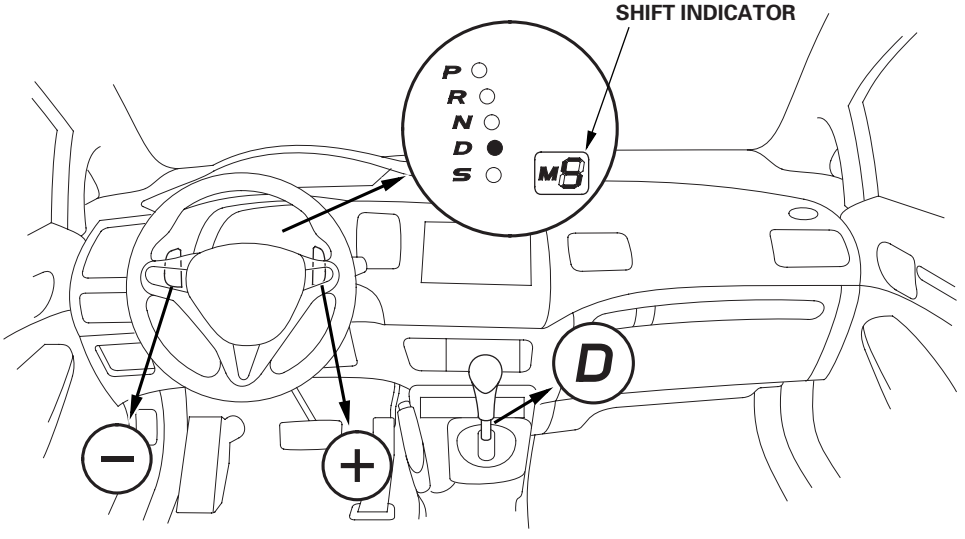


DYNOMITE -2009-

Shift Control - Manual Shift Mode
The transmission is provided with a D-paddle shift mode in D, and with a sequential sportshift mode in S. Both modes are entered by pressing the paddle shifter + (upshift switch) or the paddle shifter — (downshift switch) while driving.

D-Paddle Shift Mode
When the transmission is switched into the D-paddle shift mode by pressing the paddle shifters while driving in D, the transmission can shift into a lower gear by pressing the paddle shifter — (downshift switch), and it can shift into a higher gear by pressing the paddle shifter + (upshift switch). When the transmission shifts into a lower gear or a higher gear by pressing the paddle shifters, the shift indicator in the gauge control module (tach) displays the number of current gear selected. This number of the gear goes off when the transmission downshifts automatically, or when the transmission upshifts automatically while coasting.
The transmission stays in 5th gear if the paddle shifter + (upshift switch) is pressed when driving in 5th gear, and the shift indicator displays ''5'' for 2 seconds, then goes off. The transmission stays in 1st gear if the paddle shifter — is pressed when driving in 1st gear, and the shift indicator displays ''1'' for 2 seconds, then goes off.
The transmission stays in the current gear and does not upshift to the next higher gear if the paddle shifter + is pressed while driving below the minimum allowable speed, and the shift indicator blinks the number of the next higher gear several times, then returns to the number of the current gear.

NOTE: D-paddle shift mode has been added for '08-09 models.



(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

S Position Automatic Shift Mode and Sequential Sportshift Mode

The S position has two shifting modes; the automatic shift mode and the sequential sportshift mode. In the S position automatic shift mode, the transmission upshifts and downshifts automatically from 1st through 4th gear, and the paddle shifters are ready to be activated to switch to the sequential sportshift mode. In the automatic shift mode, the shift indicator and the M indicator in the gauge control module (tach) do not come on.

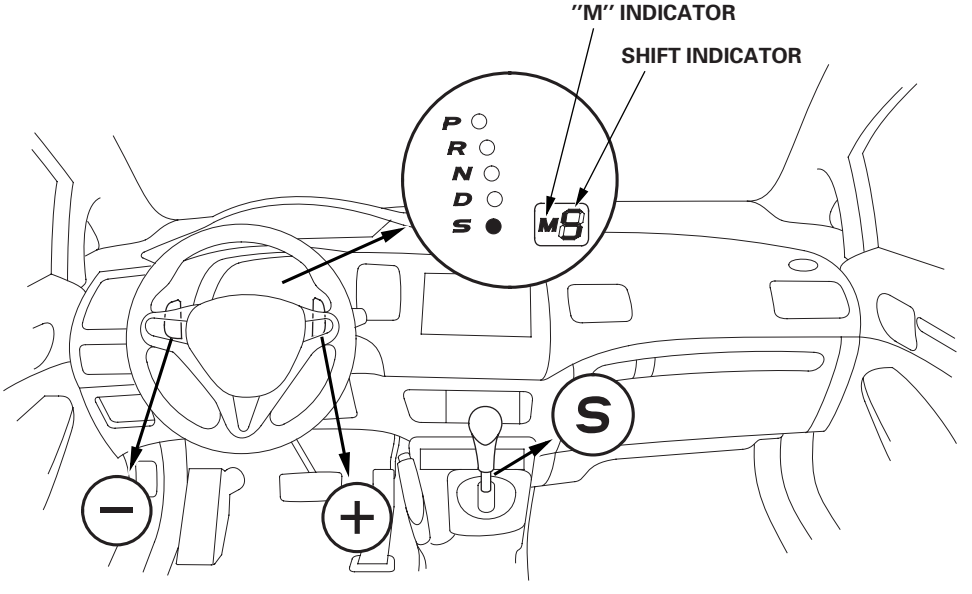
When the paddle shifter + (upshift switch) or the paddle shifter − (downshift switch) is pressed, the automatic shift mode is canceled and the sequential sportshift mode comes into operation. The shift indicator displays the number of the selected gear, and the M indicator comes on. In the sequential sportshift mode, the driver can shift up and down manually from 1st through 5th gear by using the paddle shifters, much like a manual transmission. The paddle shifters are installed on the back of the steering wheel, and the driver can shift gears by pressing the paddle shifters without taking either hand off the steering wheel.

In the sequential sportshift mode, the transmission must be shifted up and down by pressing the paddle shifters. However, the transmission cannot downshift and stays in the current gear if the paddle shifter − is pressed while the vehicle is coasting at a speed that would cause the engine to over-rev by downshifting the transmission, and the shift indicator blinks the number of the selected gear several times, then returns to the number of the current gear. If the vehicle speed reaches an appropriate speed while the shift indicator is blinking the number of the selected gear, the transmission downshifts and the shift indicator displays the selected gear. The transmission also cannot upshift and stays in the current gear if the paddle shifter + is pressed while driving below an appropriate upshifting speed, the shift indicator blinks the number of the selected gear several times, then returns to the number of the current gear. If the vehicle speed reaches an appropriate upshift speed while the shift indicator is blinking the number of the selected gear, the transmission upshifts and the shift indicator displays the selected gear.

This mode has automatic downshifting areas so the vehicle can run smoothly with more power to cope with upcoming acceleration. When coasting in 5th gear or 4th gear, the transmission downshifts to the next lower gear if the vehicle slows down to the programmed speed, or by pressing the brake pedal.

When the transmission decelerates to a stop, the transmission shifts to 1st gear automatically. The transmission can be shifted to 2nd gear by pressing the paddle shifter + while the vehicle is stopped, and the vehicle can start off in 2nd gear.

The sequential sportshift mode is canceled when moving the shift lever to any position other than S.

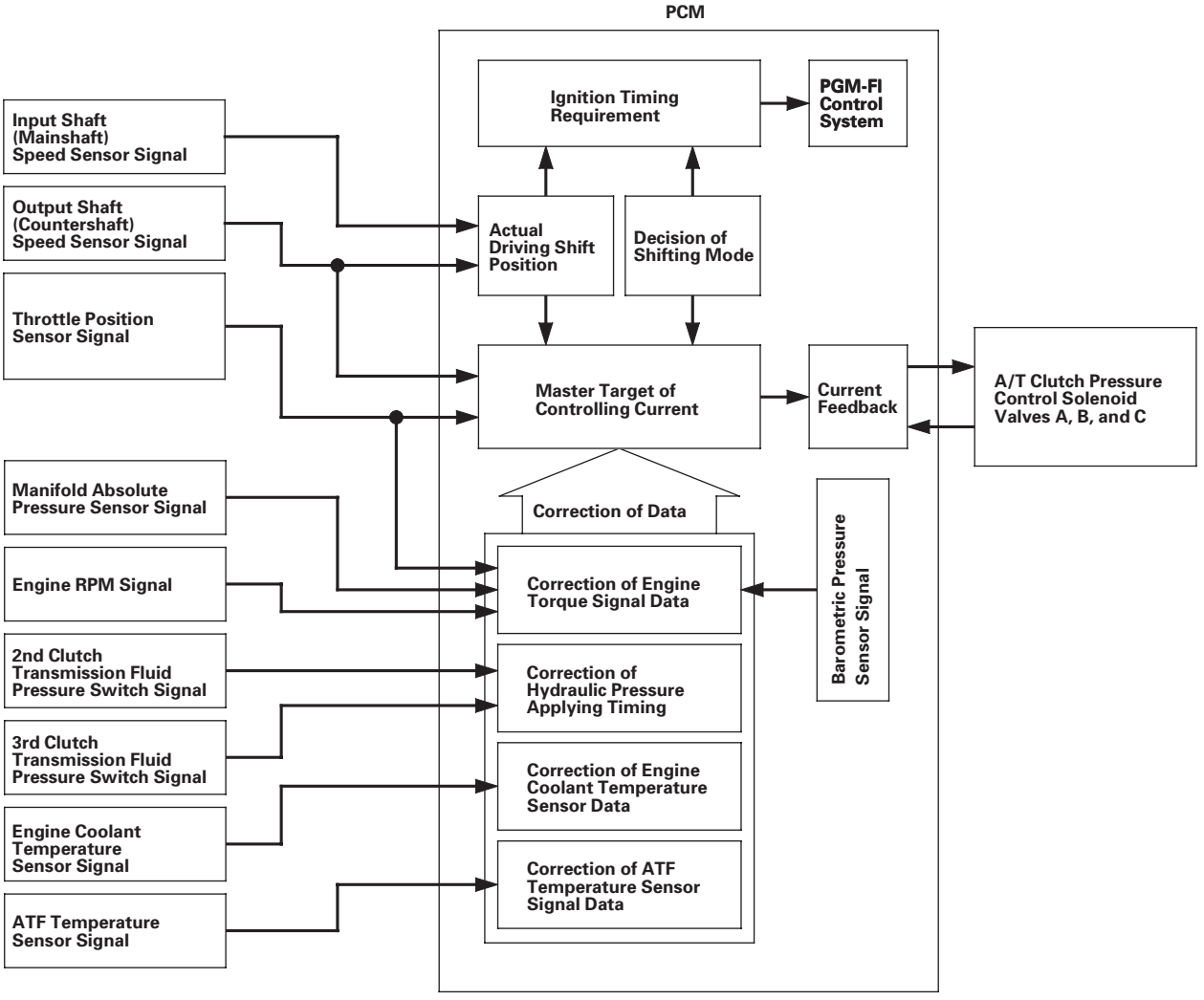


DYNOMITE -2009-

Clutch Pressure Control

The PCM actuates 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 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 the switches, processes data, and outputs current to A/T clutch pressure control solenoid valves A, B, and C.



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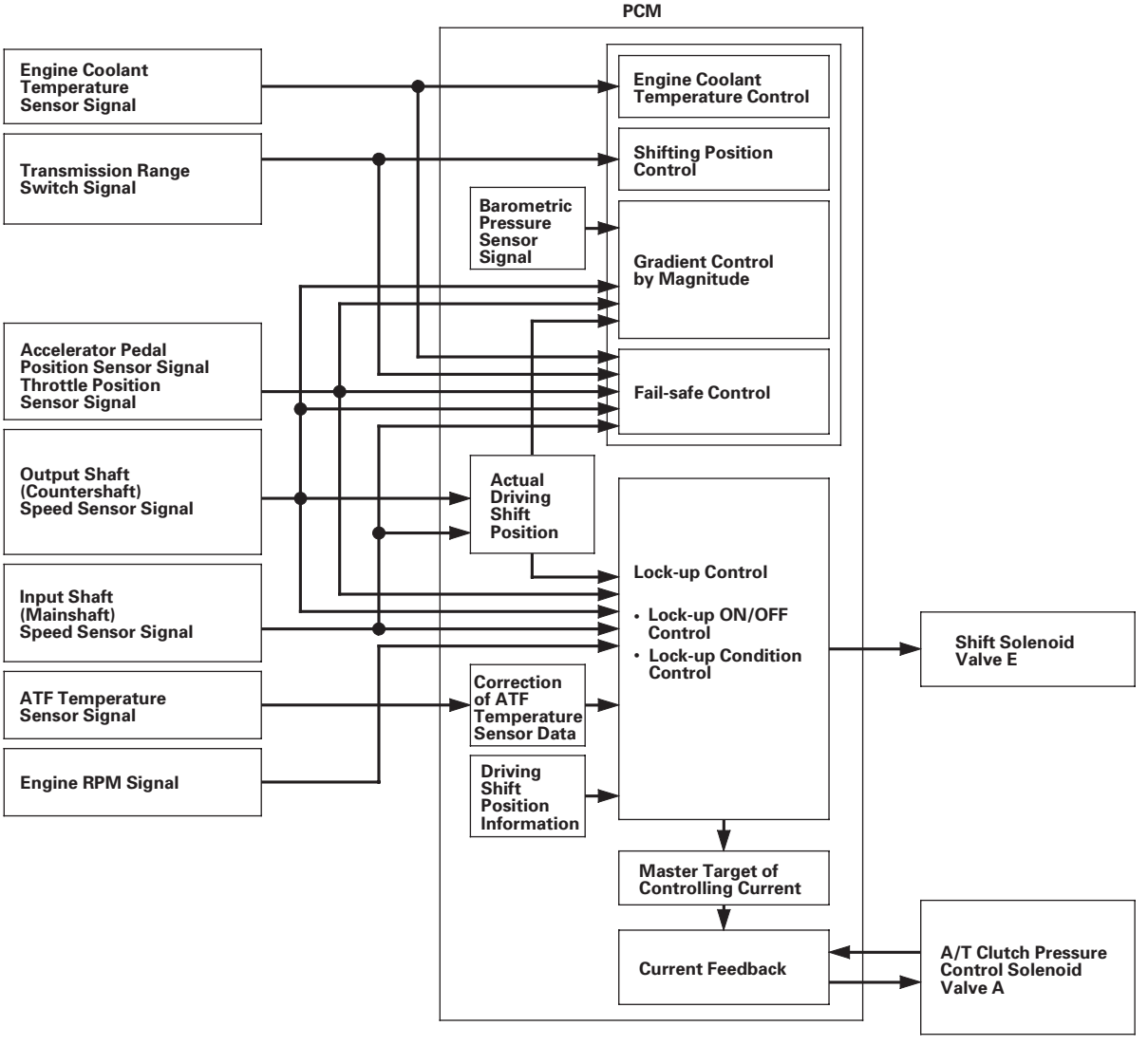
DYNOMITE -2009-

System Description (cont'd)

Electronic Control System (cont'd)

Lock-up Control

Shift solenoid valve E controls the hydraulic pressure to switch the lock-up shift valve and lock-up ON and OFF. When the PCM actuates shift solenoid valve E and A/T clutch pressure control solenoid valve A to start lock-up. A/T clutch pressure control solenoid valve A regulates and applies hydraulic pressure to the lock-up control valve to control the amount of lock-up. The lock-up mechanism operates in D and S (2nd, 3rd, 4th, and 5th gears).



DYNOMITE -2009-

Self-diagnosis
If the PCM detects the failure of a signal from a sensor, a switch, a solenoid valve, or from another control unit it stores a Temporary DTC or a DTC. Depending on the failure, a DTC is stored in either the first or the second drive cycle. When a DTC is stored, the PCM blinks the D indicator and/or turns on the malfunction indicator lamp (MIL) by a signal sent to the gauge control module via F-CAN.

- **One Drive Cycle Detection Method:**
  When an abnormality occurs in the signal from a sensor, a switch, a solenoid valve, or from another control unit, the PCM stores a DTC for the failure and blinks the D indicator and/or turns on the MIL immediately.

- **Two Drive Cycle Detection Method:**
  When an abnormality occurs in the signal from a sensor, a switch, a solenoid valve, or from another control unit in the first drive cycle, the PCM stores a Temporary DTC. The D indicator and the MIL do not turns on at this time. If the failure continues in the second drive cycle, the PCM stores a DTC and blinks the D indicator and/or turns on the MIL.

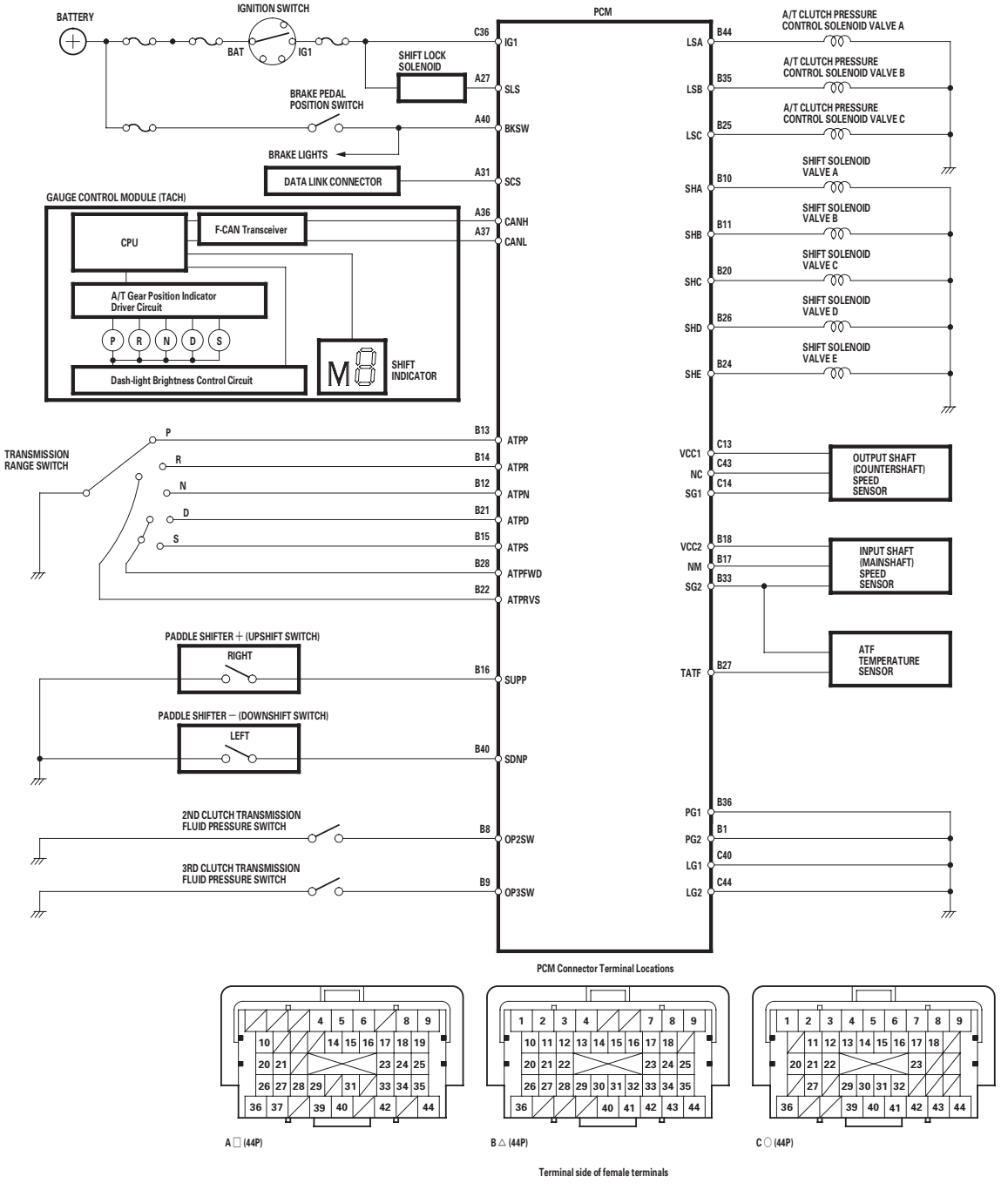
Fail-safe Function
When an abnormality occurs in the signal from a sensor, a switch, a solenoid valve, or from another control unit, the PCM ignores that signal and substitutes a pre-programmed value for them that allow the automatic transmission to continue driving. This causes a DTC to be stored and the D indicator to blink and/or the MIL to come on.

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System Description (cont'd)

Electronic Control System (cont'd)

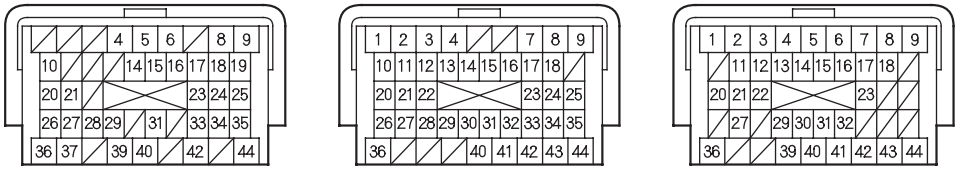
PCM A/T Control System Electrical Connections



DYNOMITE -2009-

PCM A/T Control System Inputs and Outputs

PCM Connector Terminal Locations



A □ (44P) **B △ (44P)** **C ○ (44P)**

Terminal side of female terminals

PCM CONNECTOR A □ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
A27	PNK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in P, brake pedal pressed, and accelerator released: about battery voltage
A31	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With service check signal shorted using HDS: about 0 V With service check signal opened: about 5.0 V
A36	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends and receives communication signal	With ignition switch ON (II): about 2.5 V (pulses)
A37	RED	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends and receives communication signal	With ignition switch ON (II): about 2.5 V (pulses)
A40	LT GRN	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal pressed: about battery voltage With Brake pedal released: about 0 V

NOTE: Standard battery voltage is about 12 V.

PCM CONNECTOR B △ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
B1	BLK/RED*1 BLK*2	PG2 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
B8	BLU/RED	OP2SW (2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 2nd clutch transmission fluid pressure switch signal	With ignition switch ON (II): • Without 2nd clutch pressure: about 5.0 V • With 2nd clutch pressure: about 0 V

NOTE: Standard battery voltage is about 12 V.
*1: '06 model
*2: '07-09 models

(cont'd)

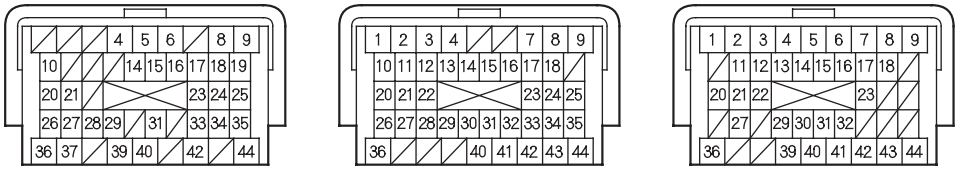
DYNOMITE -2009-

System Description (cont'd)

Electronic Control System (cont'd)

PCM A/T Control System Inputs and Outputs (cont'd)

PCM Connector Terminal Locations



A □ (44P) **B △ (44P)** **C ○ (44P)**

Terminal side of female terminals

PCM CONNECTOR B △ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
B9	BLU/WHT	OP3SW (3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 3rd clutch transmission fluid pressure switch signal	With ignition switch ON (II): • Without 3rd clutch pressure: about 5.0 V • With 3rd clutch pressure: about 0 V
B10	BLU/BLK	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in R, D and S (in 1st, 4th, and 5th gears): about battery voltage With engine running in P, N, D and S (in 2nd and 3rd gears): about 0 V
B11	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in P, R, N, D and S (in 1st and 2nd gears): about battery voltage With engine running in D and S (in 3rd, 4th, and 5th gears): about 0 V
B12	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH NEUTRAL)	Detects transmission range switch N position signal	In N: about 0 V In any position other than N: more than 5.0 V
B13	BLU/BLK	ATPP (TRANSMISSION RANGE SWITCH PARK)	Detects transmission range switch P position signal	In P: about 0 V In any position other than P: more than 5.0 V
B14	WHT	ATPR (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal	In R: about 0 V In any position other than R: more than 5.0 V
B15	RED	ATPS (TRANSMISSION RANGE SWITCH S)	Detects transmission range switch S position signal	In S: about 0 V In any position other than S: about battery voltage
B16	BLU/YEL	SUPP (PADDLE SHIFTER + (UPSHIFT SWITCH))	Detects paddle shifter + (upshift switch) signal	In S: • With paddle shifter + (upshift switch) pressed: about 0 V • With paddle shifter + (upshift switch) released: about battery voltage
B17	WHT/RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signal	With ignition switch ON (II): about 0 V With engine idling in N: about 2.5 V
B18	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
B20	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in N, D and S (in 1st, 3rd, and 5th gears): about battery voltage With engine running in P, R, D and S (in 2nd and 4th gears): about 0 V

NOTE: Standard battery voltage is about 12 V.

DYNOMITE -2009-

PCM CONNECTOR B △ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
B21	YEL/GRN	ATPD (TRANSMISSION RANGE SWITCH D)	Detects transmission range switch D position signal	In D: about 0 V In any position other than D: about battery voltage
B22	RED/WHT	ATPRVS (TRANSMISSION RANGE SWITCH RVS)	Detects transmission range switch R position signal	In R: about 0 V In any position other than R: about battery voltage
B24	YEL	SHE (SHIFT SOLENOID VALVE E)	Drives shift solenoid valve E	With engine running in P and R: about battery voltage With engine running in N, D and S (in 1st gear): about 0 V
B25	BLU/YEL	LSC (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II): current controlled
B26	GRN/RED	SHD (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	With engine running in D and S (in 2nd and 5th gears): about battery voltage With engine running in P, R, N, D and S (in 1st, 3rd, and 4th gears): about 0 V
B27	RED/YEL	ATFT (ATF TEMPERATURE SENSOR)	Detects ATF temperature sensor signal	With igniting switch ON (II): about 0.2—4.8 V depending on ATF temperature (about 1.8 V at operating temperature)
B28	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH FWD)	Detects transmission range switch D and S positions signal	In D and S: about 0 V In any position other than D and S: about battery voltage
B33	GRN/BLK	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times

NOTE: Standard battery voltage is about 12 V.

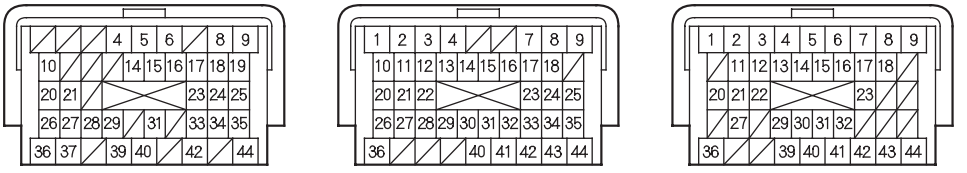
(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

PCM A/T Control System Inputs and Outputs (cont'd)

PCM Connector Terminal Locations



A □ (44P) **B △ (44P)** **C ○ (44P)**

Terminal side of female terminals

PCM CONNECTOR B △ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
B35	BRN	LSB (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): current controlled
B36	BLK	PG1 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
B40	BRN	SDNP (PADDLE SHIFTER — (DOWNSHIFT SWITCH))	Detects paddle shifter — (downshift switch) signal	In S: • With paddle shifter — (downshift switch) pressed: about 0 V • With paddle shifter — (downshift switch) released: about 5.0 V
B44	RED/BLK	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II): current controlled

NOTE: Standard battery voltage is about 12 V.

PCM CONNECTOR C ○ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
C13	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
C14	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
C36	BLK/GRN	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): about battery voltage
C40	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
C43	BLK/WHT	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signal	With ignition switch ON (II): pulses With vehicle moving: about 5.0 V (pulses)
C44	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times

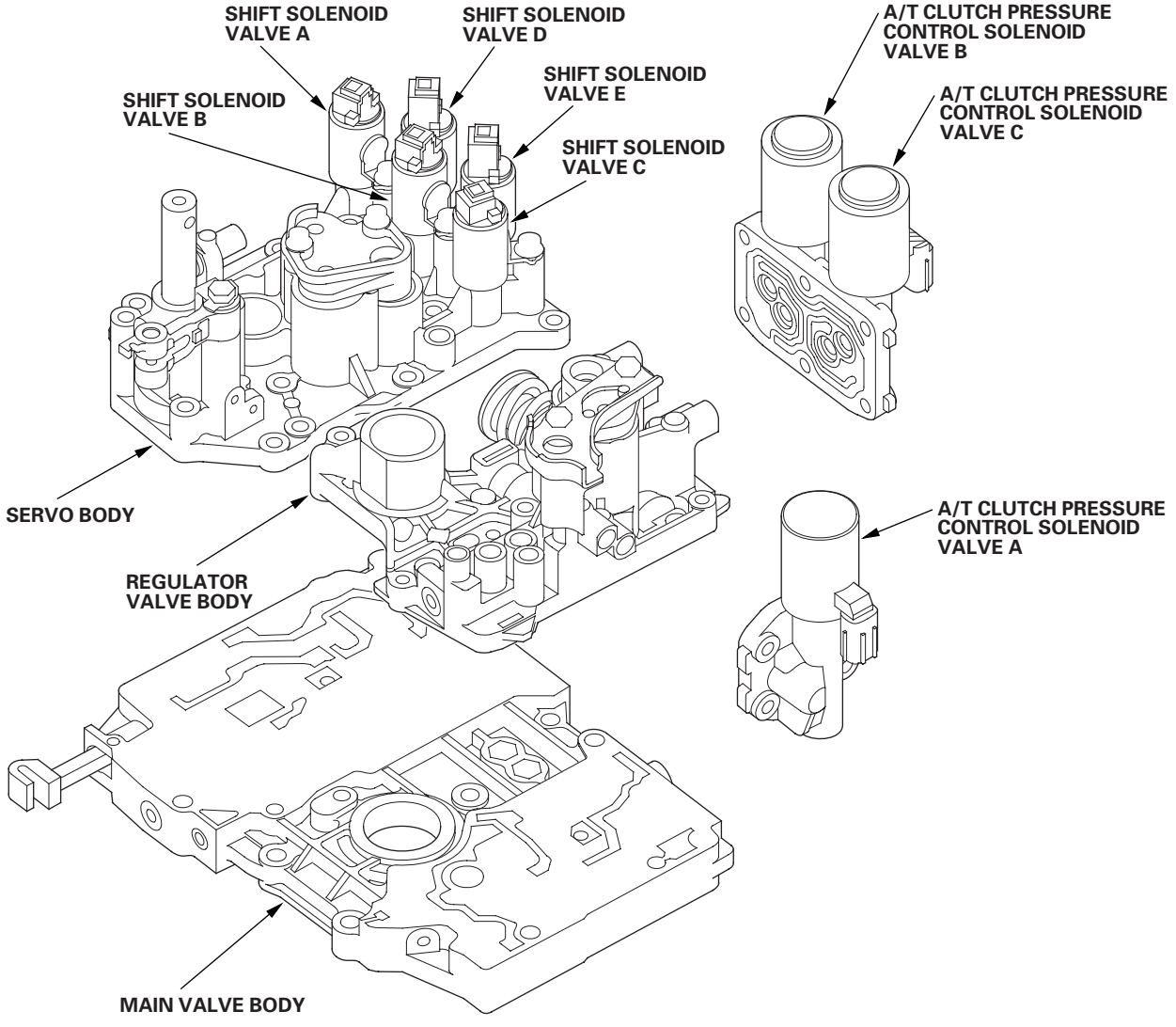
NOTE: Standard battery voltage is about 12 V.

DYNOMITE -2009-

Hydraulic Controls

Valve Bodies

The valve body includes the main valve body, the regulator valve body, and the servo body. The ATF pump is driven by splines on the 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 the shift valves and to each of the clutches via the shift solenoid valves. Shift solenoid valves A, B, C, D, and E are bolted on the servo body. A/T clutch pressure control solenoid valves A, B, and C are mounted on the outside of the transmission housing.

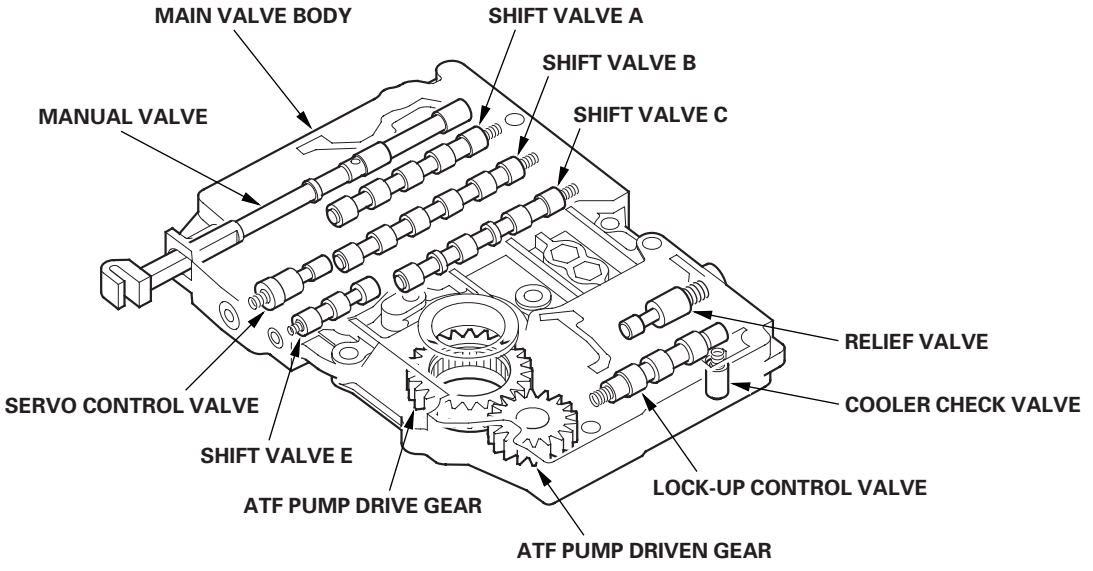


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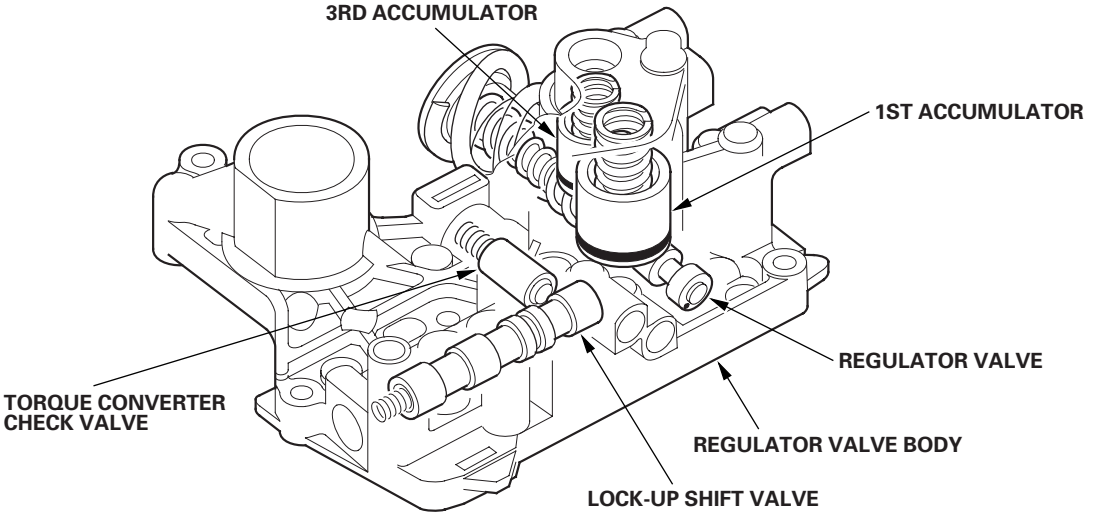
System Description (cont'd)

Hydraulic Controls (cont'd)

Main Valve Body
The main valve body contains the manual valve, shift valves A, B, C, and E, the relief valve, the lock-up control valve, the cooler check valve, the servo control valve, the ATF pump drive gear, and the ATF pump driven gear. 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.



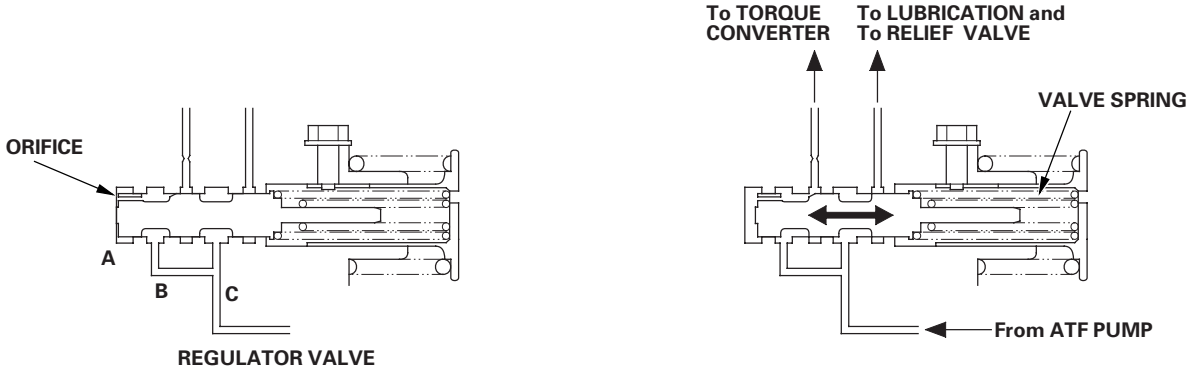
Regulator Valve Body
The regulator valve body contains the regulator valve, the torque converter check valve, the lock-up shift valve, and the 1st and 3rd accumulators.



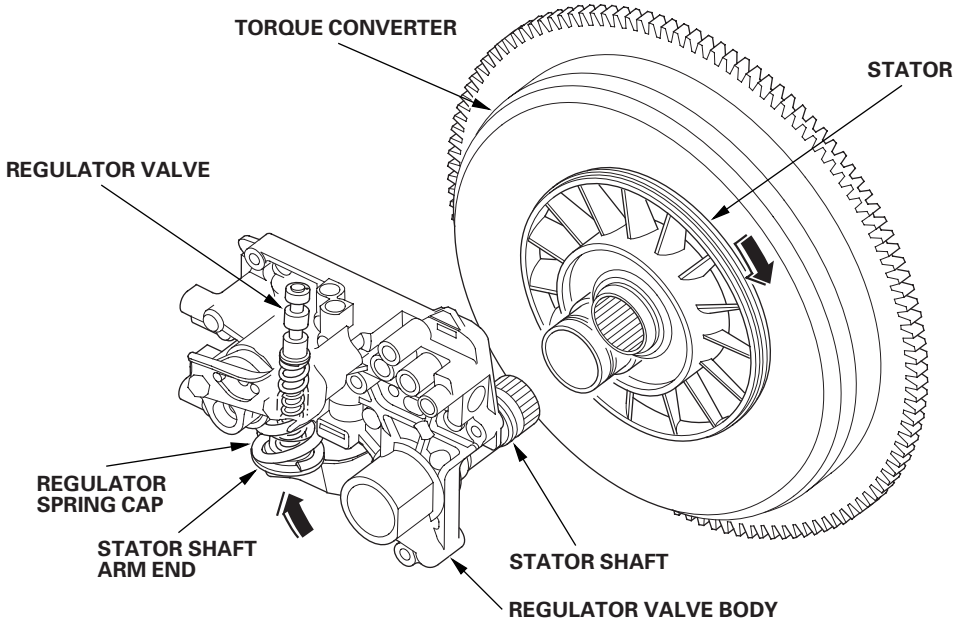
DYNOMITE -2009-

Regulator Valve

The regulator valve maintains constant hydraulic pressure from the ATF pump to the hydraulic control system, while also providing fluid to the lubrication system and the torque converter. The fluid from the ATF pump flows through B and C. Fluid entering from B flows through the valve orifice to the A cavity. This pressure in the A cavity pushes the regulator valve toward the valve spring 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 returns under spring force. According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from C through torque converter also changes. This operation is continuous, maintaining the line pressure.



Increases in hydraulic pressure according to torque are regulated by the regulator valve using stator torque reaction. The stator shaft is splined with the stator in the torque converter, and the stator shaft 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 shaft arm end 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.



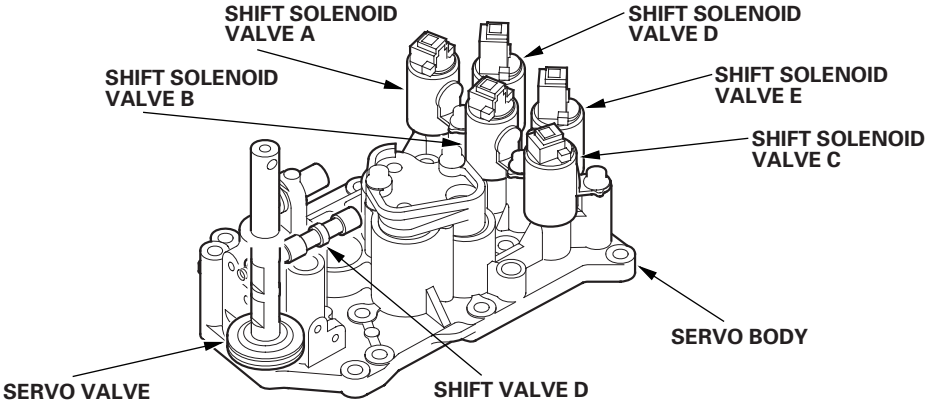
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System Description (cont'd)

Hydraulic Controls (cont'd)

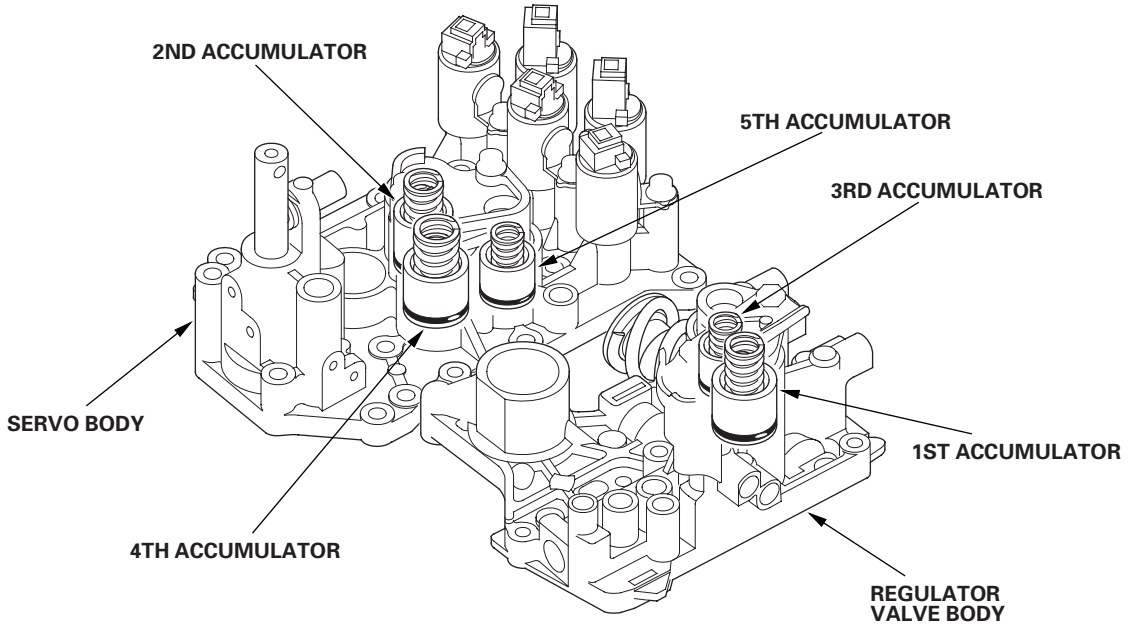
Servo Body

The servo body contains the servo valve, shift valve D, the accumulators for 2nd, 4th, and 5th, and shift solenoid valves A, B, C, D, and E.



Accumulator

The accumulators are located in the regulator valve body and the servo body. The regulator valve body contains the 1st and 3rd accumulators, and the servo body contains the 2nd, 4th, and 5th accumulators.



DYNOMITE -2009-

Hydraulic Flow

Distribution of Hydraulic Pressure

As the engine turns, 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 is 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 switches shift solenoid valves ON and OFF. The shift solenoid valve intercepts line pressure from the ATF pump via the manual valve when the shift solenoid valve is OFF. When the shift solenoid valve is turned ON by the PCM, line pressure changes to shift solenoid valve pressure at the shift solenoid valve, then the shift solenoid valve pressure flows to the shift valve. Applying shift solenoid pressure to the shift valves moves the position of the shift valve, and switches the port of the hydraulic circuit. The PCM also controls A/T clutch pressure control solenoid valves A, B, and C. The A/T clutch pressure control solenoid valves regulate hydraulic pressure, and applies pressure to the clutches to engage smoothly. The clutches receive optimum clutch pressure which is regulated by the A/T clutch pressure control solenoid valves for comfortable driving and shifting under all conditions.

Hydraulic Pressure at the Port for use in the hydraulic circuit

Port No.	Hydraulic Pressure	Port No.	Hydraulic Pressure
1	Line	SB	Shift solenoid valve B
3	Line	SC	Shift solenoid valve C
3′	Line	SD	Shift solenoid valve D
4	Line	SE	Shift solenoid valve E
4′	Line	10	1st clutch
4′′	Line	20	2nd clutch
7	Line	30	3rd clutch
1A	Line or A/T clutch pressure control solenoid valve A	40	4th clutch
1B	Line or A/T clutch pressure control solenoid valve A	50	5th clutch
3A	Line or A/T clutch pressure control solenoid valve A	55	A/T clutch pressure control solenoid valve A
3B	Line or A/T clutch pressure control solenoid valve A	55′	A/T clutch pressure control solenoid valve A
3C	Line or A/T clutch pressure control solenoid valve A	56	A/T clutch pressure control solenoid valve B
5A	Line or A/T clutch pressure control solenoid valve A	57	A/T clutch pressure control solenoid valve C
5B	Line or A/T clutch pressure control solenoid valve A	90	Torque converter
5C	Line or A/T clutch pressure control solenoid valve A	91	Torque converter
5D	Line or A/T clutch pressure control solenoid valve A	92	Torque converter
5E	Line or A/T clutch pressure control solenoid valve B	93	ATF cooler
5F	Line or A/T clutch pressure control solenoid valve A or B	94	Torque converter
5G	A/T clutch pressure control solenoid valve B	95	Lubrication
5H	A/T clutch pressure control solenoid valve C	96	Torque converter
5J	A/T clutch pressure control solenoid valve C	97	Torque converter
5K	A/T clutch pressure control solenoid valve C	99	Suction
5L	A/T clutch pressure control solenoid valve C	X	Drain
5N	A/T clutch pressure control solenoid valve C	HX	High position drain
SA	Shift solenoid valve A	AX	Air drain

(cont'd)

DYNOMITE -2009-

System Description (cont'd)

Hydraulic Flow (cont'd)

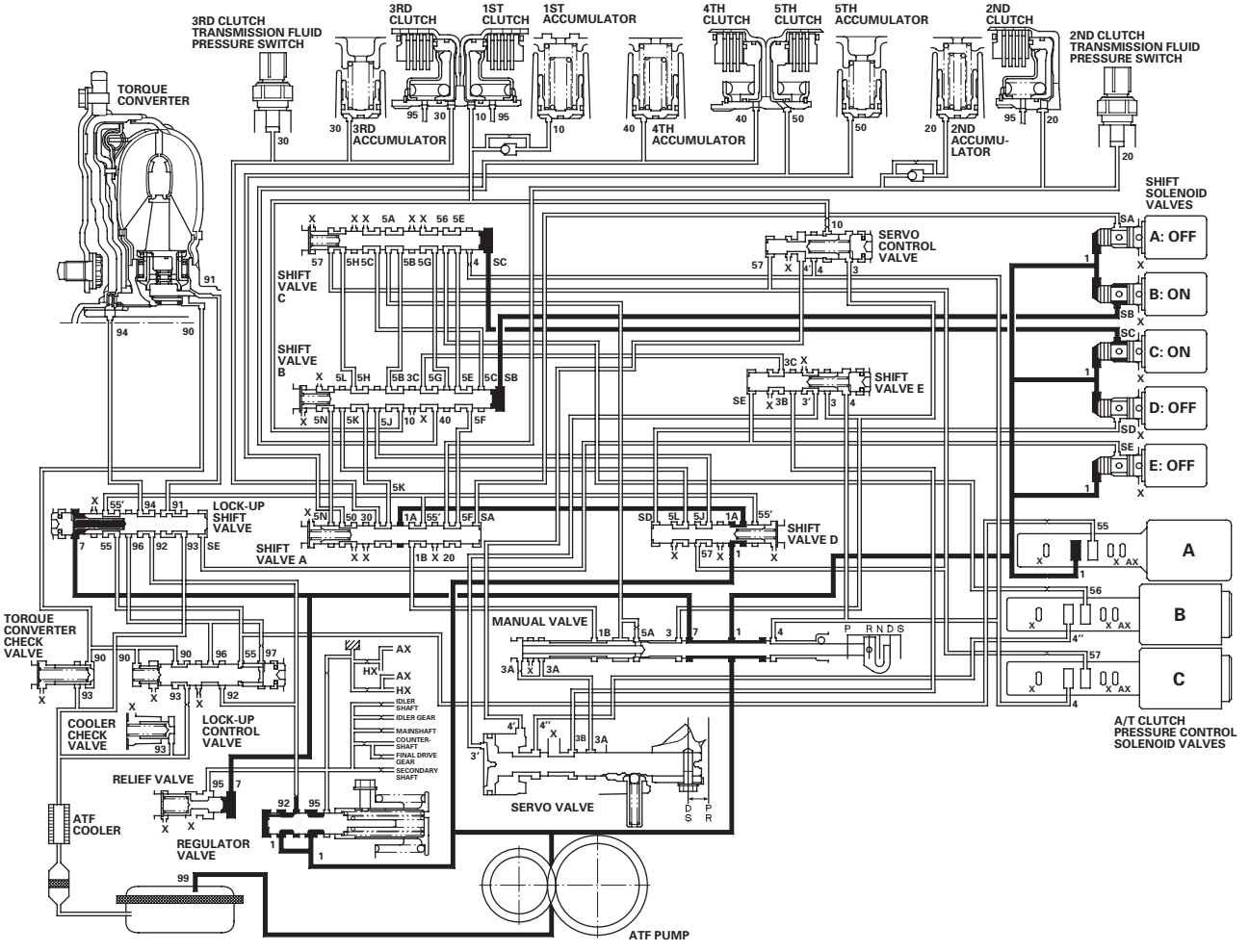
N Position

The PCM controls the shift solenoid valves. The conditions of the shift solenoid valves and positions of the shift valves are as follows:

- Shift solenoid valve A: OFF, and shift valve A remains on the right side
- Shift solenoid valve B: ON, and shift valve B moves to the left side
- Shift solenoid valve C: ON, and shift valve C moves to the left side
- Shift solenoid valve D: OFF, and shift valve D remains on the left side
- Shift solenoid valve E: OFF, and shift valve E remains on the left side

Line pressure (1) flows to the shift solenoid valves and A/T clutch pressure control solenoid valve A. Under this condition, hydraulic pressure is not applied to the clutches.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.

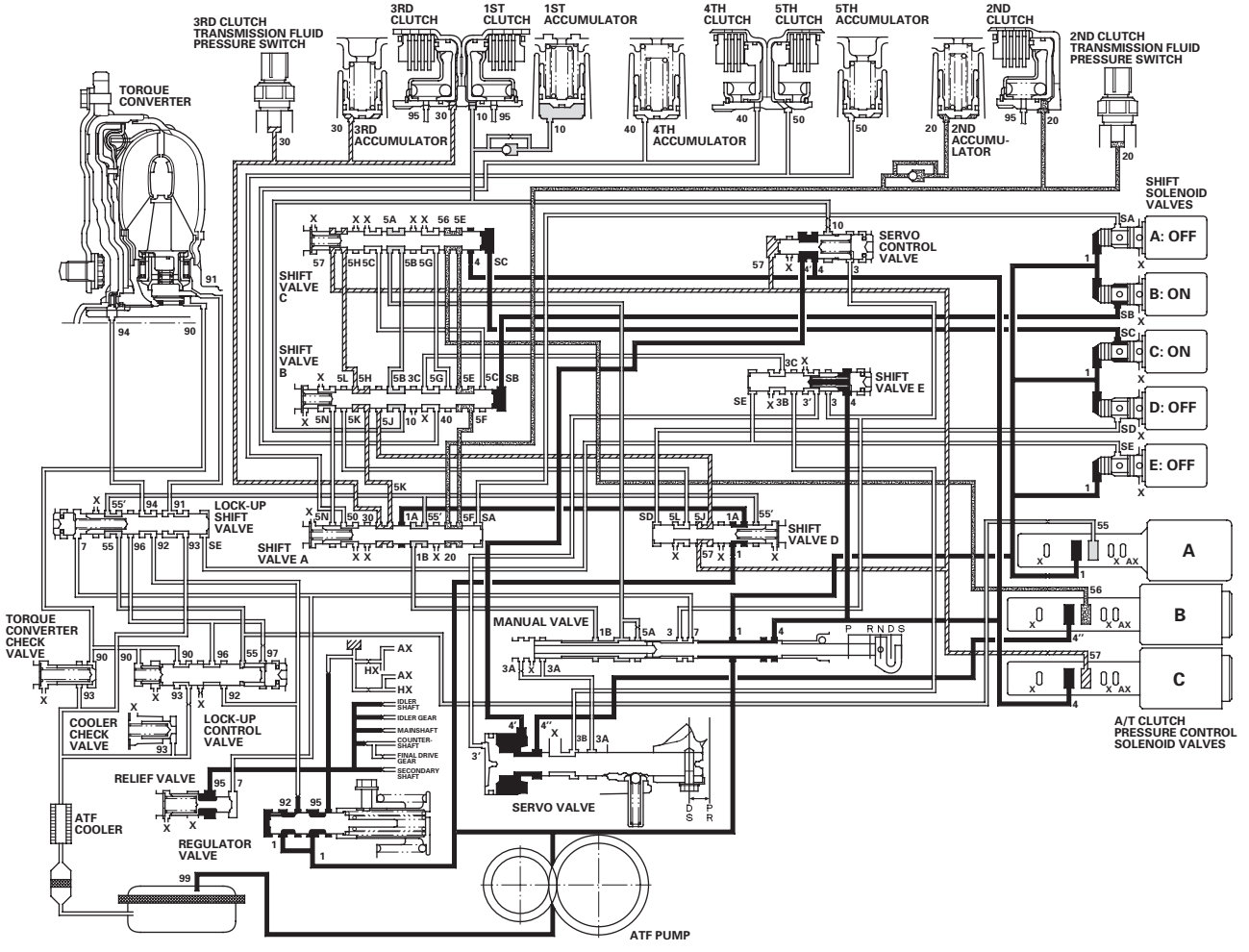


DYNOMITE -2009-

1st gear shifting from N position

The shift solenoid valves remain the same as in N when shifting to D from N. The manual valve is moved to the D position, and uncovers line pressure port (4) leading to A/T clutch pressure control solenoid valve C. Hydraulic pressure to the 1st clutch from A/T clutch pressure control solenoid valve A is created as shift solenoid valve A OFF, and B and C remain ON. A/T clutch pressure control solenoid valve A pressure (55) changes to 1st clutch pressure (10) at shift valve B, and flows to the 1st clutch. The 1st clutch is engaged gently when shifting to D from N.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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DYNOMITE -2009-

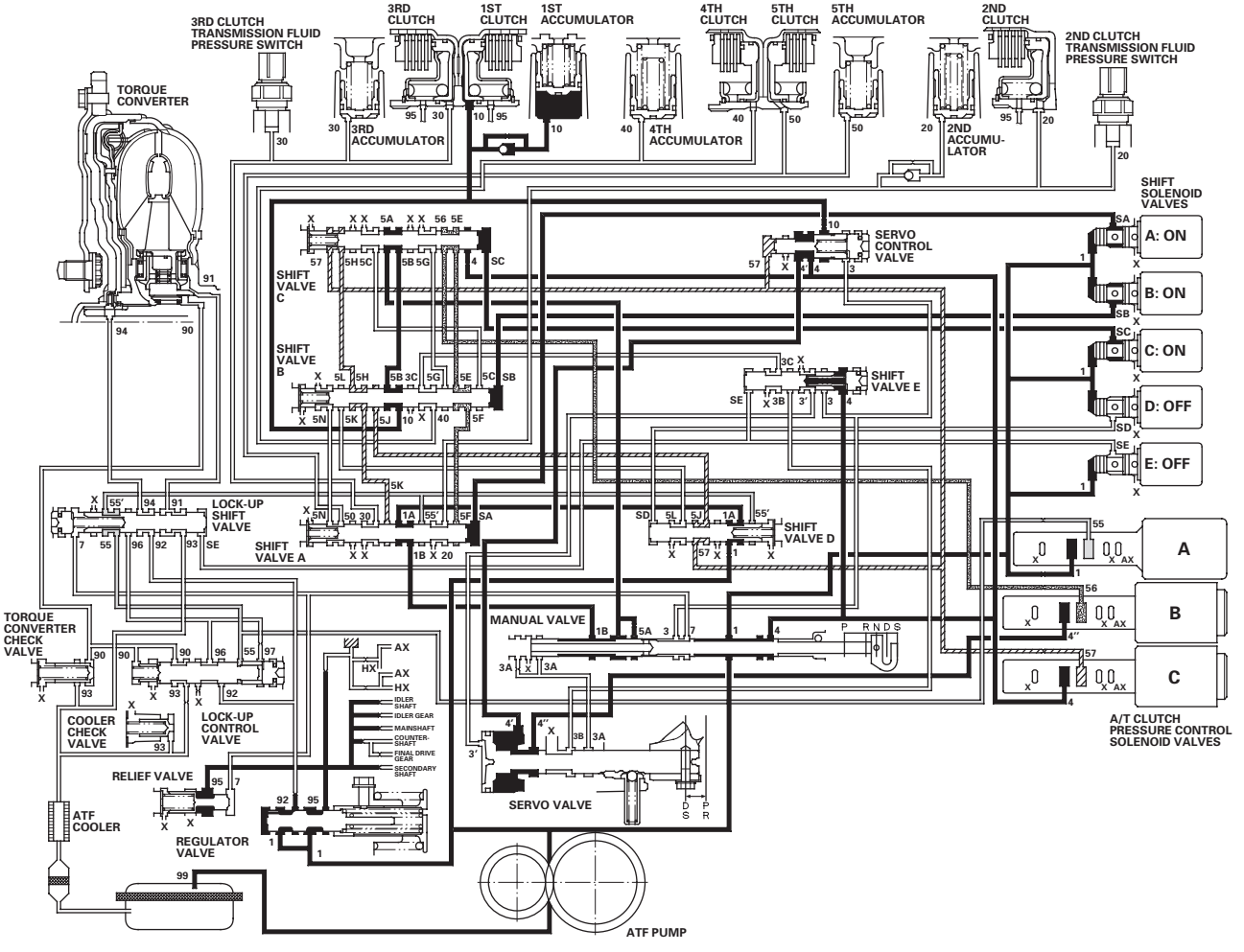
System Description (cont'd)

Hydraulic Flow (cont'd)

Driving in 1st gear in D and S with automatic shift mode
The PCM turns shift solenoid valve A ON, B and C remain ON, and D and E remain OFF. Shift solenoid valve A pressure (SA) is applied to the right side of shift valve A. Shift valve A is moved to the left side to uncover the line pressure port leading to the 1st clutch, and to cover the A/T clutch pressure control solenoid valve pressure port.

Fluid flows to the 1st clutch by way of:
Line pressure (1) → Shift valve D—Line pressure (1A) → Shift valve A—Line pressure (1B) → Manual valve—Line pressure (5A) → Shift valve C—Line pressure (5B) → Shift valve B—1st clutch pressure (10) → 1st clutch
The 1st clutch pressure (10) is applied to the 1st clutch, and the 1st clutch is engaged securely.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.

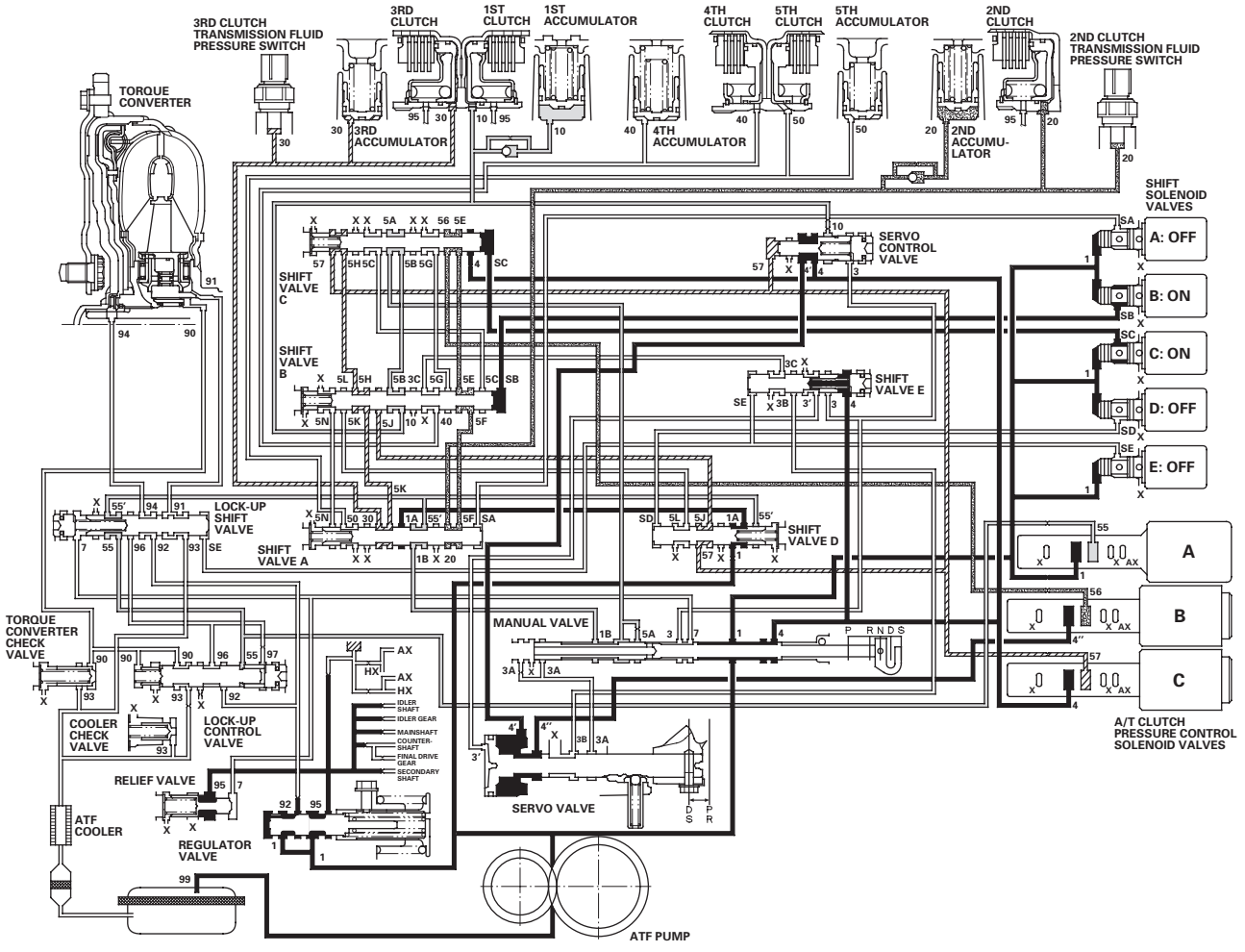


DYNOMITE -2009-

Shifting between 1st gear and 2nd gear in D and S with automatic shift mode

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A OFF, B and C remain ON, and D and E remain OFF. Shift solenoid valve A pressure (SA) in the right side of shift valve A is released. Shift valve A is moved to the right side uncovering the A/T clutch pressure control solenoid valve A and B pressure port leading to the 1st and 2nd clutches. The PCM actuates the A/T clutch pressure control solenoid valve to regulate hydraulic pressure. A/T clutch pressure control solenoid valve A pressure (55) changes to 1st clutch pressure (10) at shift valve B. A/T clutch pressure control solenoid valve B pressure (56) changes to (5E) at shift valve C and to (5F) at shift valve B, and becomes 2nd clutch pressure (20) at shift valve A. The 1st and 2nd clutches are engaged gently.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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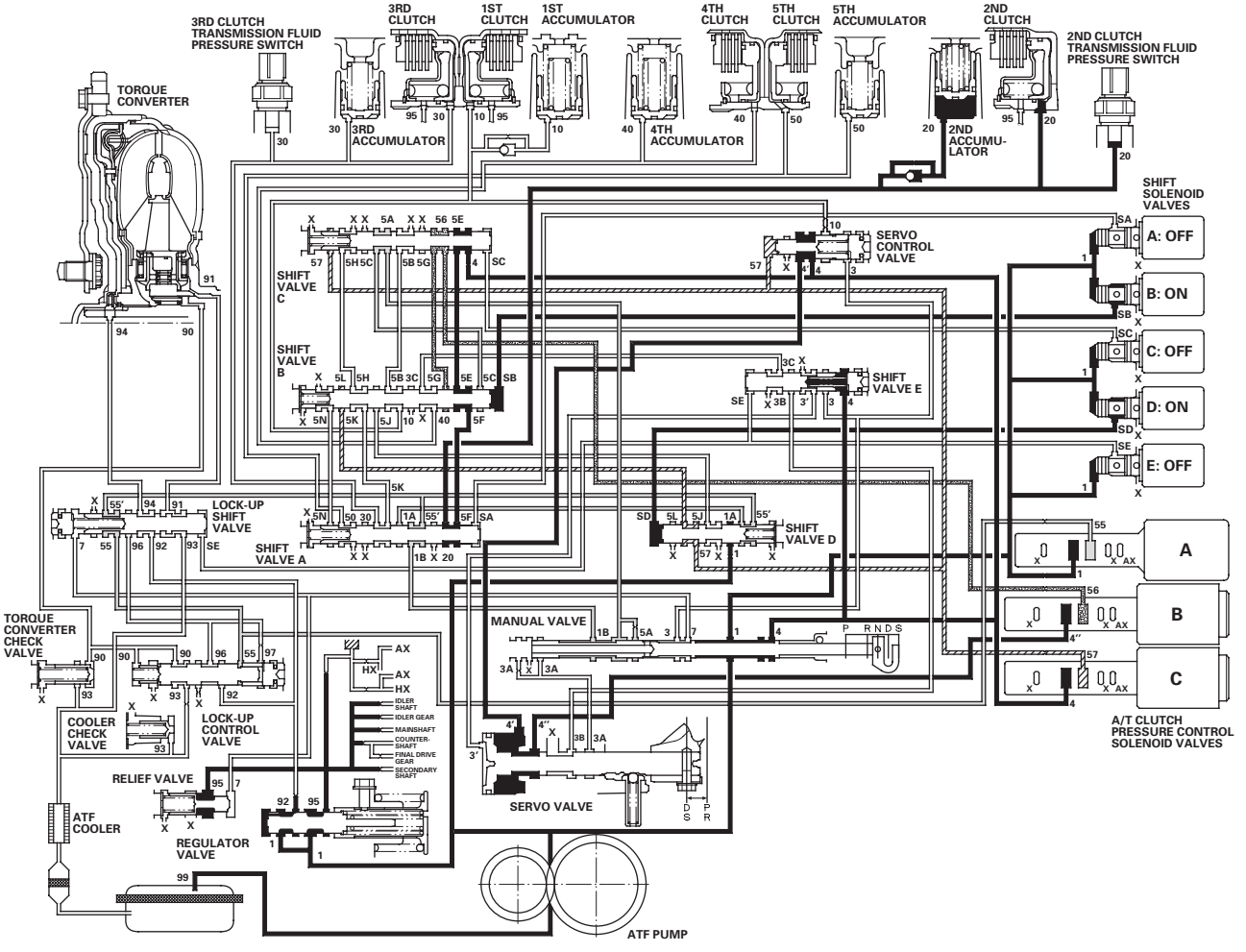
System Description (cont'd)

Hydraulic Flow (cont'd)

Driving in 2nd gear in D and S with automatic shift mode
The PCM turns shift solenoid valve C OFF, D ON, A and E remain OFF, and B remains ON. Shift solenoid valve C pressure (SC) in the right side of shift valve C is released. Shift valve C moves to the right side to switch the ports. This movement covers the ports to block A/T clutch pressure control solenoid valve pressure at shift valves C and A, and uncover the line pressure port leading to the 2nd clutch.

Fluid flows to 2nd clutch by way of:
Line pressure (1) → Manual valve—Line pressure (4) → Shift valve C—Line pressure (5E) → Shift valve B—Line pressure (5F) → Shift valve A—2nd clutch pressure (20) → 2nd clutch
The 2nd clutch pressure (20) is applied to the 2nd clutch, and the 2nd clutch is engaged securely.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.

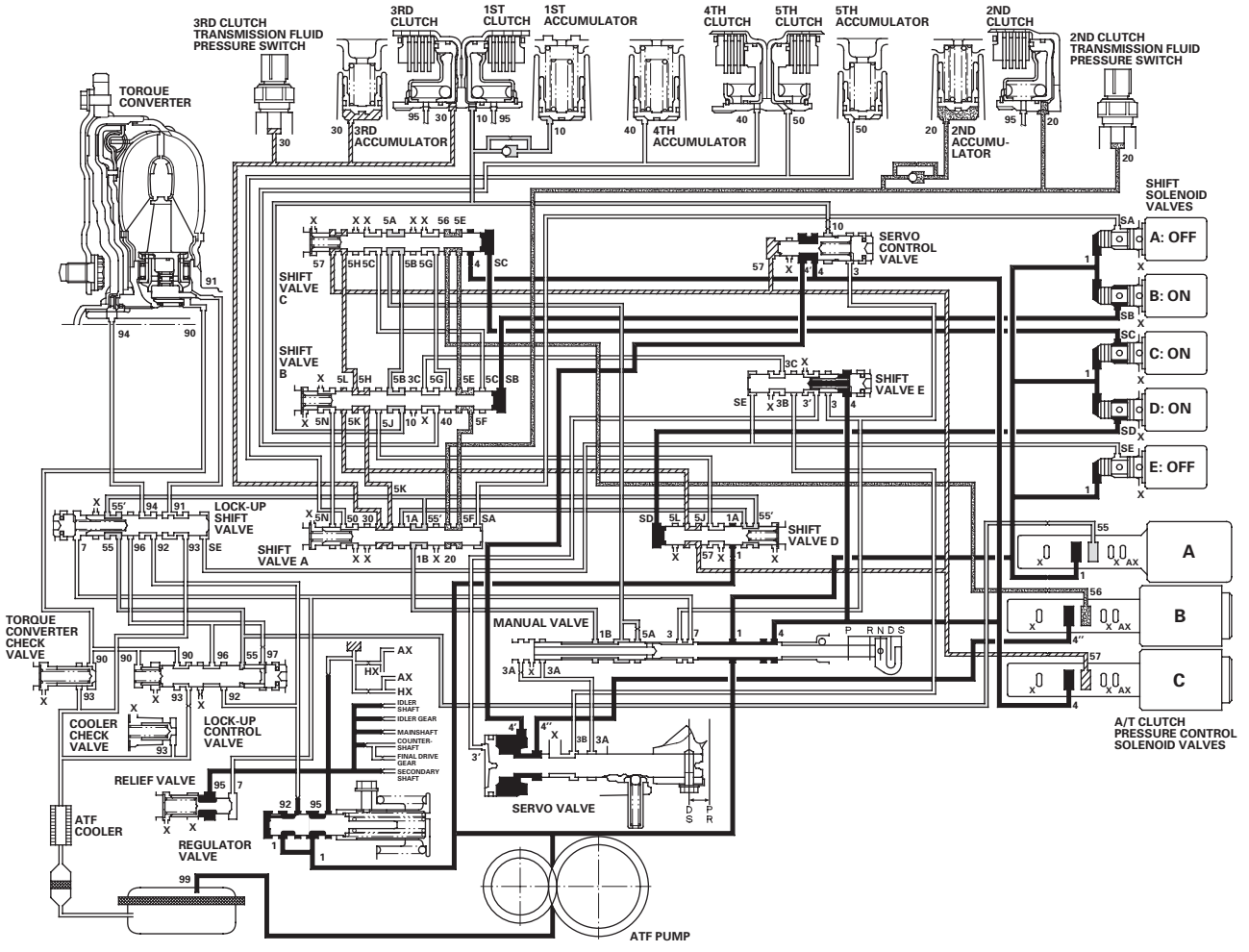


DYNOMITE -2009-

Shifting between 2nd gear and 3rd gear in D and S with automatic shift mode

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve C ON, A and E remain OFF, and B and D remain ON. Shift solenoid valve C pressure (SC) is applied to the right side of shift valve C. Shift valve C is moved to the left side uncovering the A/T clutch pressure control solenoid valve B and C pressure ports leading to the 2nd and 3rd clutches. The PCM actuates the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve B pressure (56) changes to 2nd clutch pressure (20) at shift valve A. A/T clutch pressure control solenoid valve C pressure (57) changes to (5H) at shift valve C and to (5K) at shift valve B, and becomes 3rd clutch pressure (30) at shift valve A. The 2nd and 3rd clutches are engaged gently.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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DYNOMITE -2009-

System Description (cont'd)

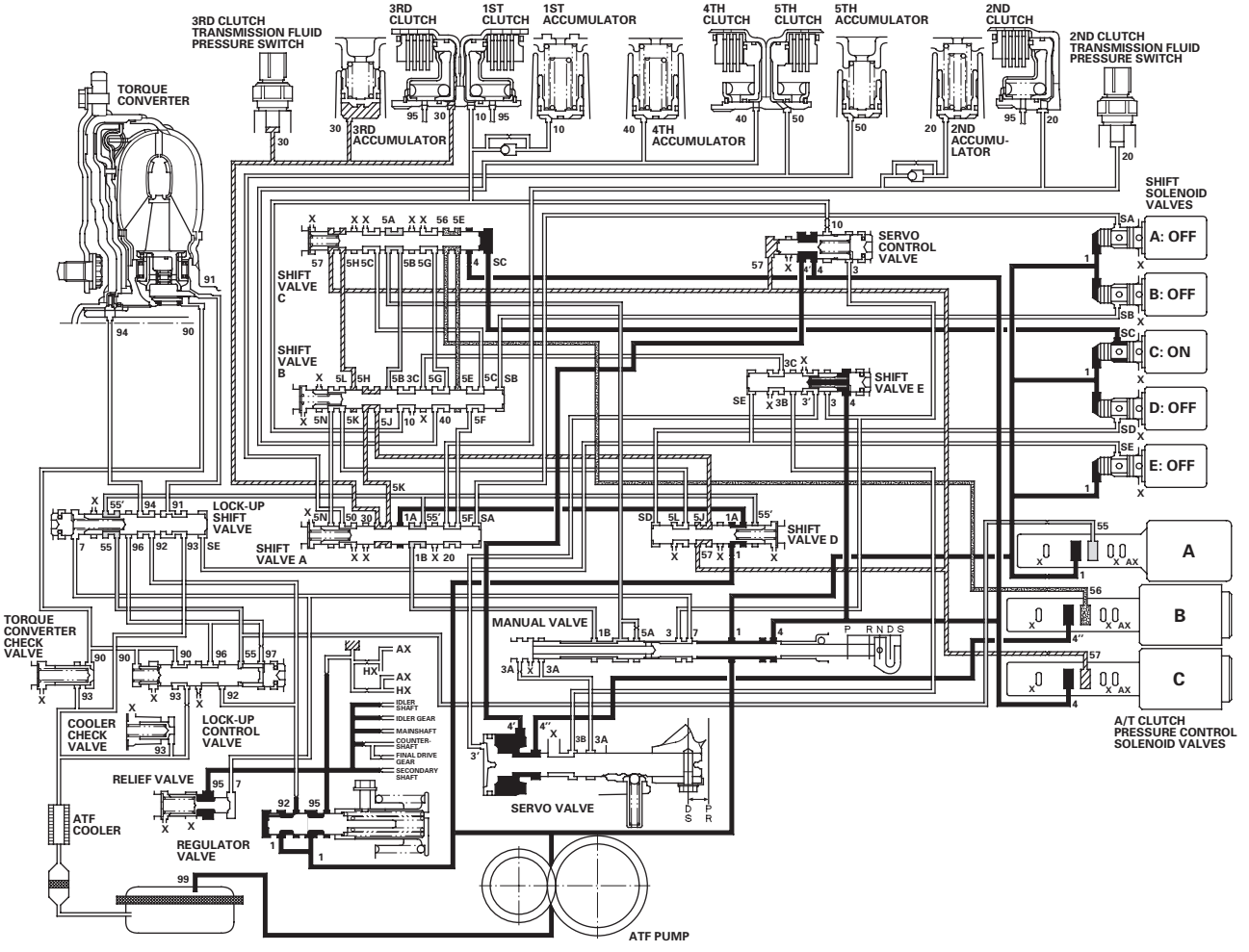
Hydraulic Flow (cont'd)

Driving in 3rd gear in D and S with automatic shift mode

The PCM turns shift solenoid valves B and D OFF, A and E remain OFF, and C remains ON. Shift solenoid valve B pressure (SB) in the right side of shift valve B is released, and shift valve B is moved to the right side. Shift solenoid valve D pressure (SD) in the left side of shift valve D is released, and shift valve D is moved to the left side. This valve movement causes A/T clutch pressure control solenoid valve C pressure port leading to the 3rd clutch.

A/T clutch pressure control solenoid valve C pressure (57) changes to (5J) to be directed to shift solenoid valve D and to (5K) at shift valve B, and becomes 3rd clutch pressure (30) at shift valve A. 3rd clutch pressure (30) is applied to the 3rd clutch, and the 3rd clutch is engaged securely.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.

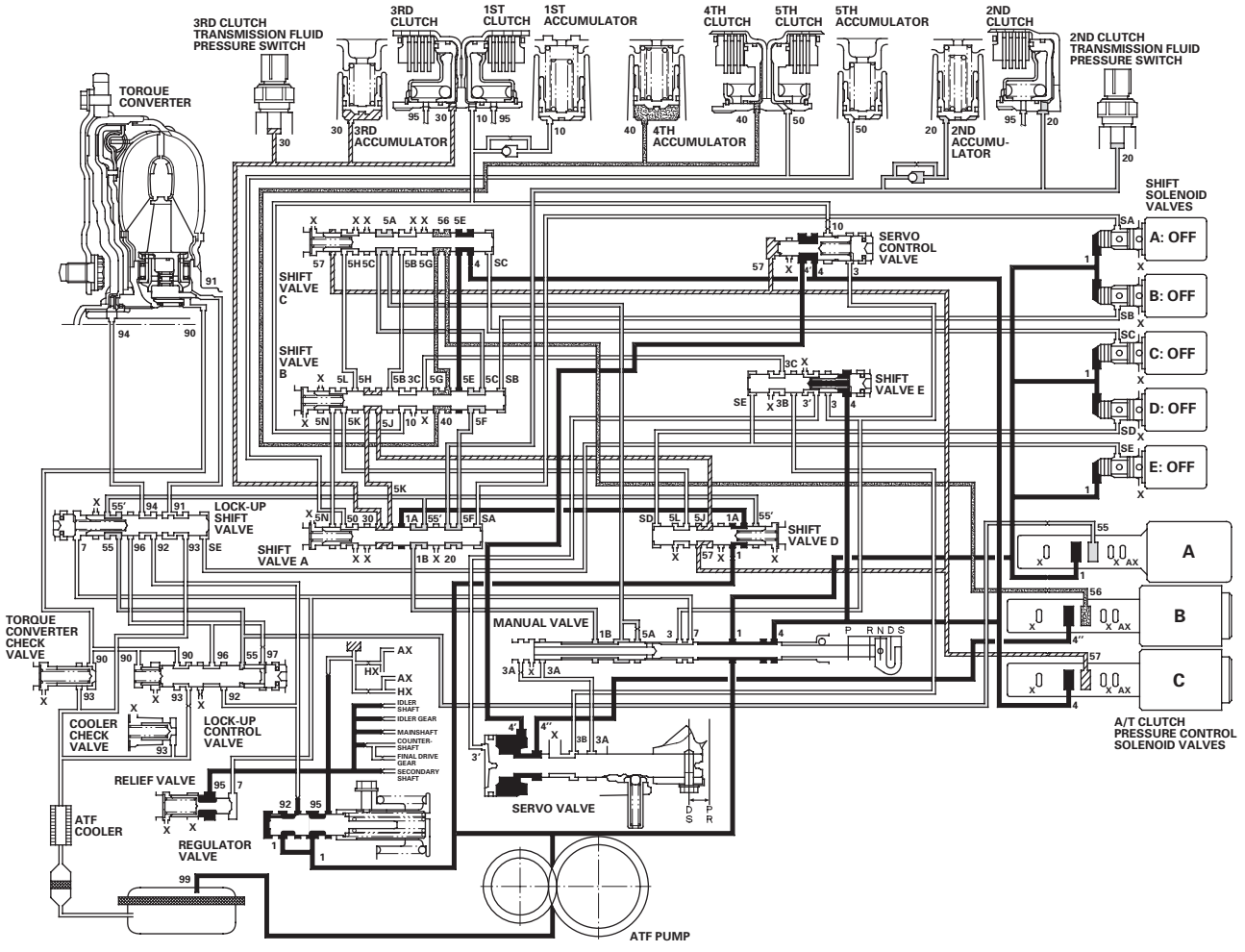


DYNOMITE -2009-

Shifting between 3rd gear and 4th gear in D and S with automatic shift mode

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve C OFF, and A, B, D, and E remain OFF. Shift solenoid valve C pressure (SC) in the right side of shift valve C is released. Shift valve C is moved to the right side uncovering the A/T clutch pressure control solenoid valve B and C pressure ports leading to the 3rd and 4th clutches. The PCM actuates the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve C pressure (57) changes to 3rd clutch pressure (30) at shift valve A. A/T clutch pressure control solenoid valve B pressure (56) changes to (5G) at shift valve C, and becomes 4th clutch pressure (40) at shift valve B. The 3rd and 4th clutches are engaged gently.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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DYNOMITE -2009-

System Description (cont'd)

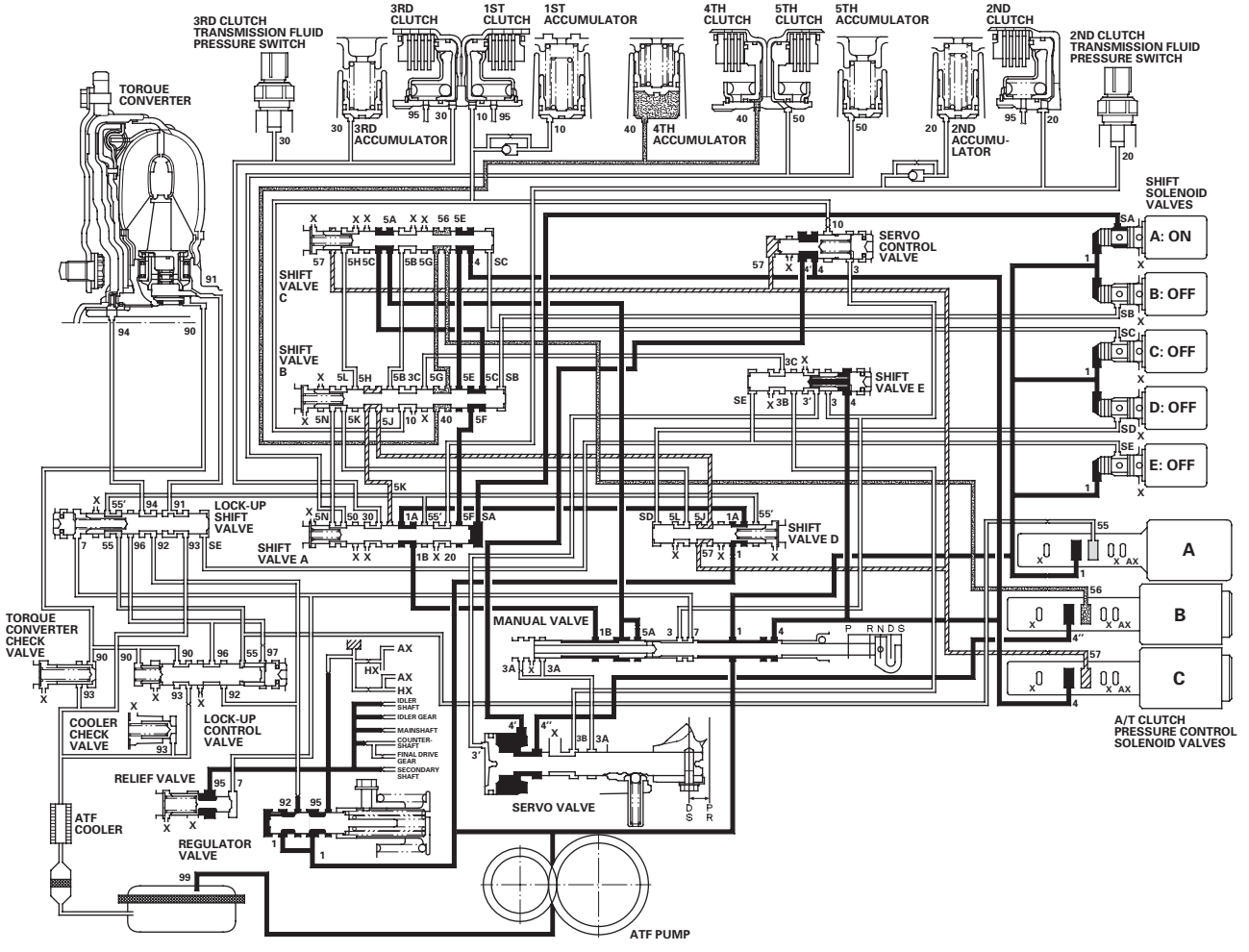
Hydraulic Flow (cont'd)

Driving in 4th gear in D and S with automatic shift mode

The PCM turns shift solenoid valve A ON, and B, C, D, and E remain OFF. Shift solenoid valve A pressure (SA) is applied to the right side of shift valve A. Shift valve A is moved to the left side to cover the A/T clutch pressure control solenoid valve A and C pressure ports leading to the 2nd and 3rd clutches.

A/T clutch pressure control solenoid valve B pressure (56) changes to (5G) at shift valve C, and becomes 4th clutch pressure (40) at shift valve B. 4th clutch pressure (40) is held high by A/T clutch pressure control solenoid valve B, and the 4th clutch is engaged securely.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.

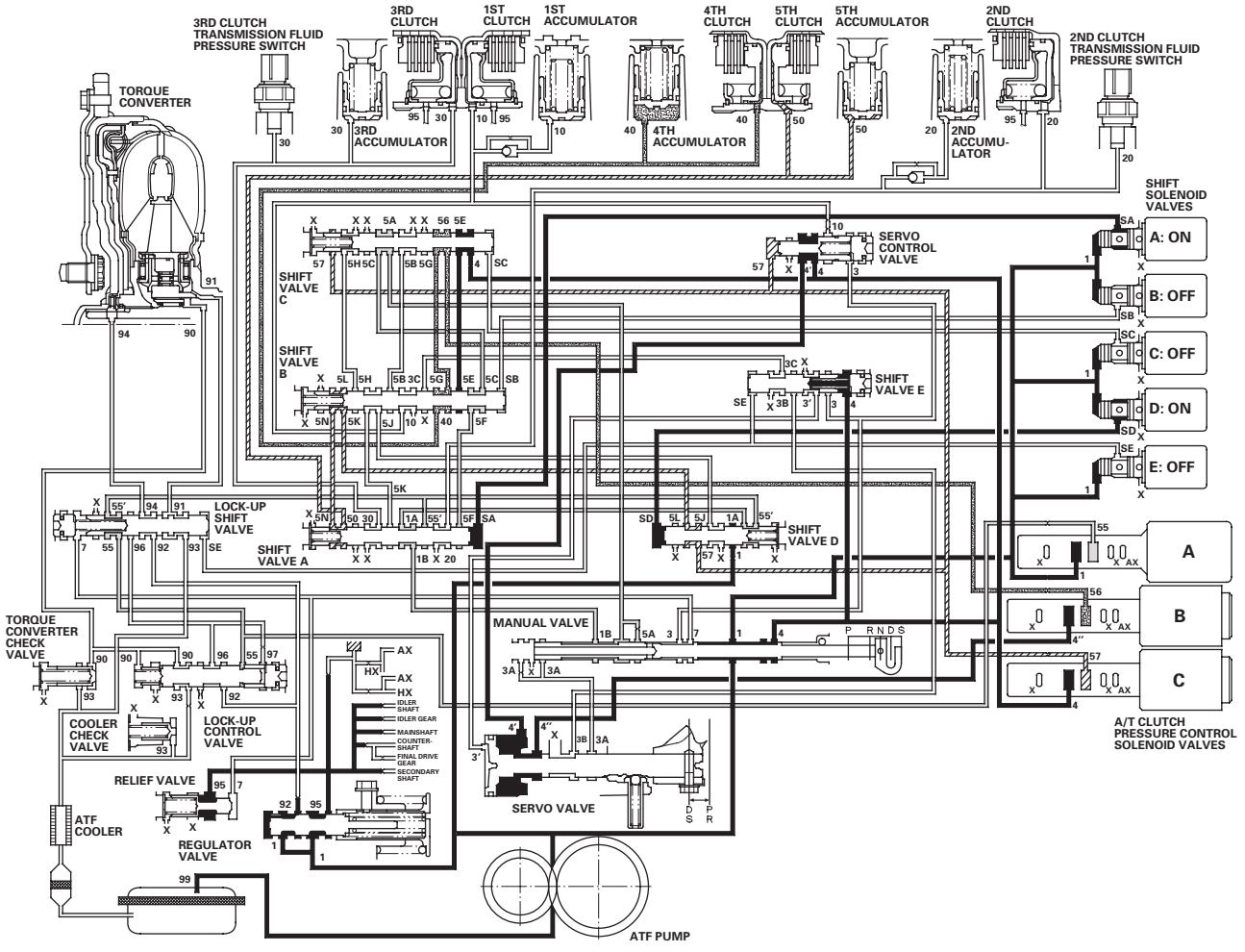


DYNOMITE -2009-

Shifting between 4th gear and 5th gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve D ON, A remains ON, and B, C, and E remain OFF. Shift solenoid valve D pressure (SD) is applied to the left side of shift valve D. Shift valve D is moved to the right side uncovering the A/T clutch pressure control solenoid valve C pressure port leading to the 5th clutch. The PCM controls the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve B pressure (56) changes to 4th clutch pressure (40) at shift valve B. A/T clutch pressure control solenoid valve C pressure (57) changes to (5L) at shift valve D and to (5N) at shift valve B, and becomes 5th clutch pressure (50) at shift valve A. The 4th and 5th clutches are engaged gently.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

DYNOMITE -2009-

System Description (cont'd)

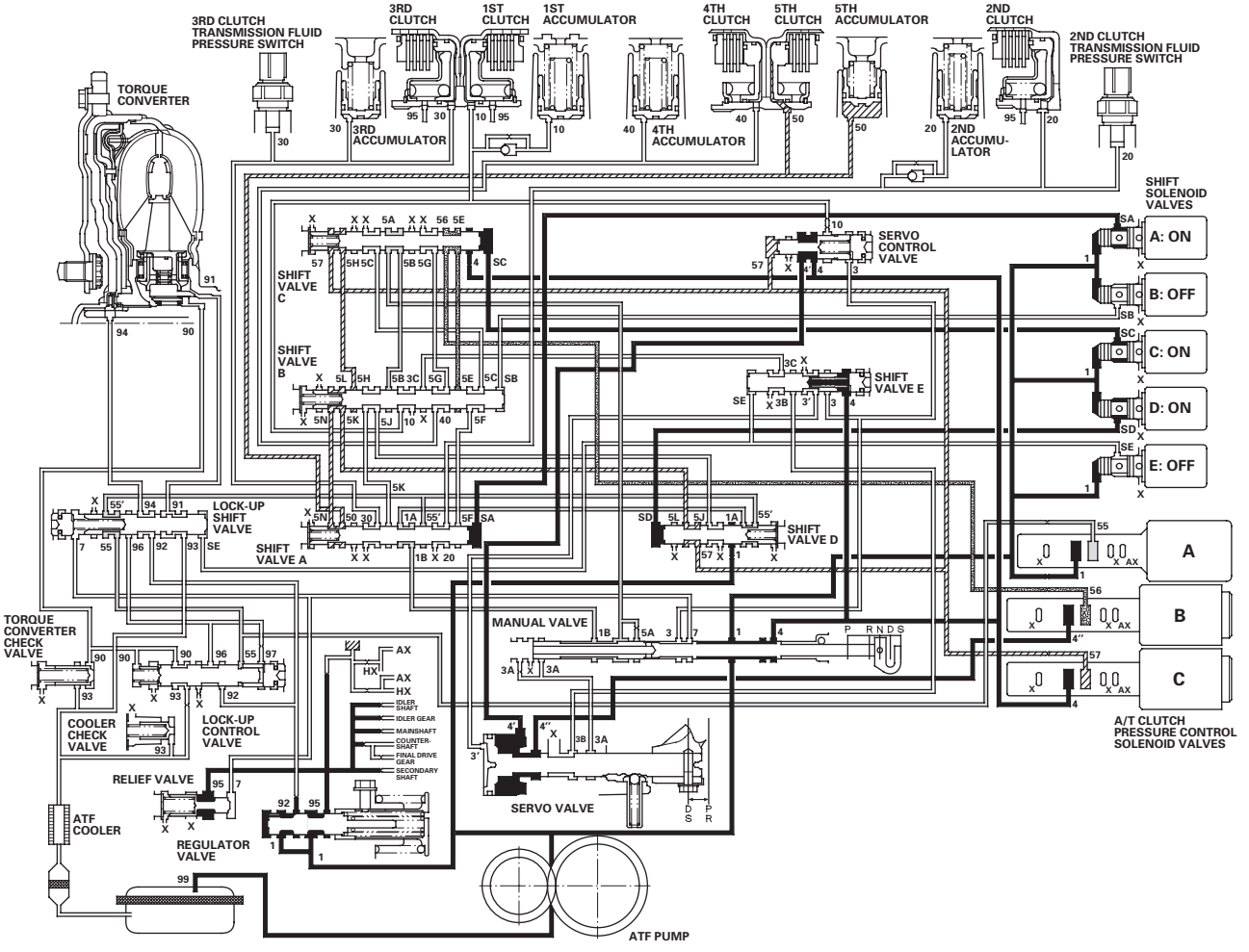
Hydraulic Flow (cont'd)

Driving in 5th gear

The PCM turns shift solenoid valve C ON, and A and D remain ON, and B and E remain OFF. Shift solenoid valve C pressure (SC) is applied to the right side of shift valve C. Shift valve C is moved to the left side. The directs A/T clutch pressure control solenoid valve B pressure to shift valve B where it is blocked. The pressure in the 4th clutch is released through shift valve C.

A/T clutch pressure control solenoid valve C pressure (57) changes to (5L) at shift valve D and to (5N) at shift valve B. 5th clutch pressure (50) is held high by A/T clutch pressure control solenoid valve C, and the 5th clutch is engaged securely.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.

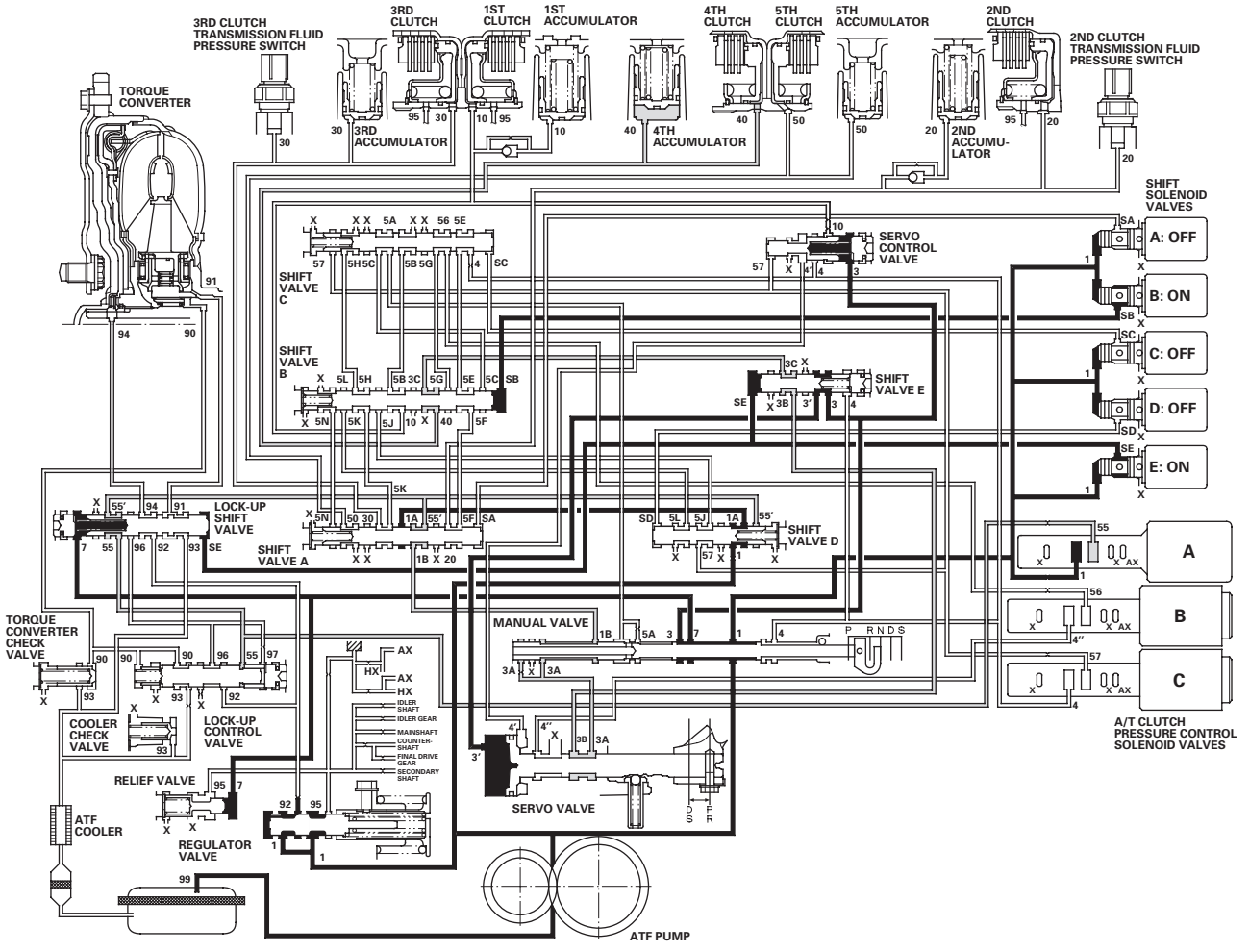


DYNOMITE -2009-

R Position: Shifting to R position from P or N position

When shifting to R, the PCM turns shift solenoid valves B and E ON, and A, C, and D are turned OFF. Shift solenoid valve B pressure (SB) is applied to the right side of shift valve B, and shift valve B is moved to the left side. Shift solenoid valve E pressure (SE) is applied to the left side of shift valve E, and shift valve E is moved to the right side. Line pressure (1) changes to (3) at the manual valve, and flows to the servo valve via shift valve E. The servo valve is moved to the reverse range position. Movement of shift valves B and E, and the servo valve creates 4th clutch pressure line between the 4th clutch and A/T clutch pressure control solenoid valve A. 4th clutch pressure (40) is applied to the 4th clutch, and the 4th clutch is engaged gently.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

DYNOMITE -2009-

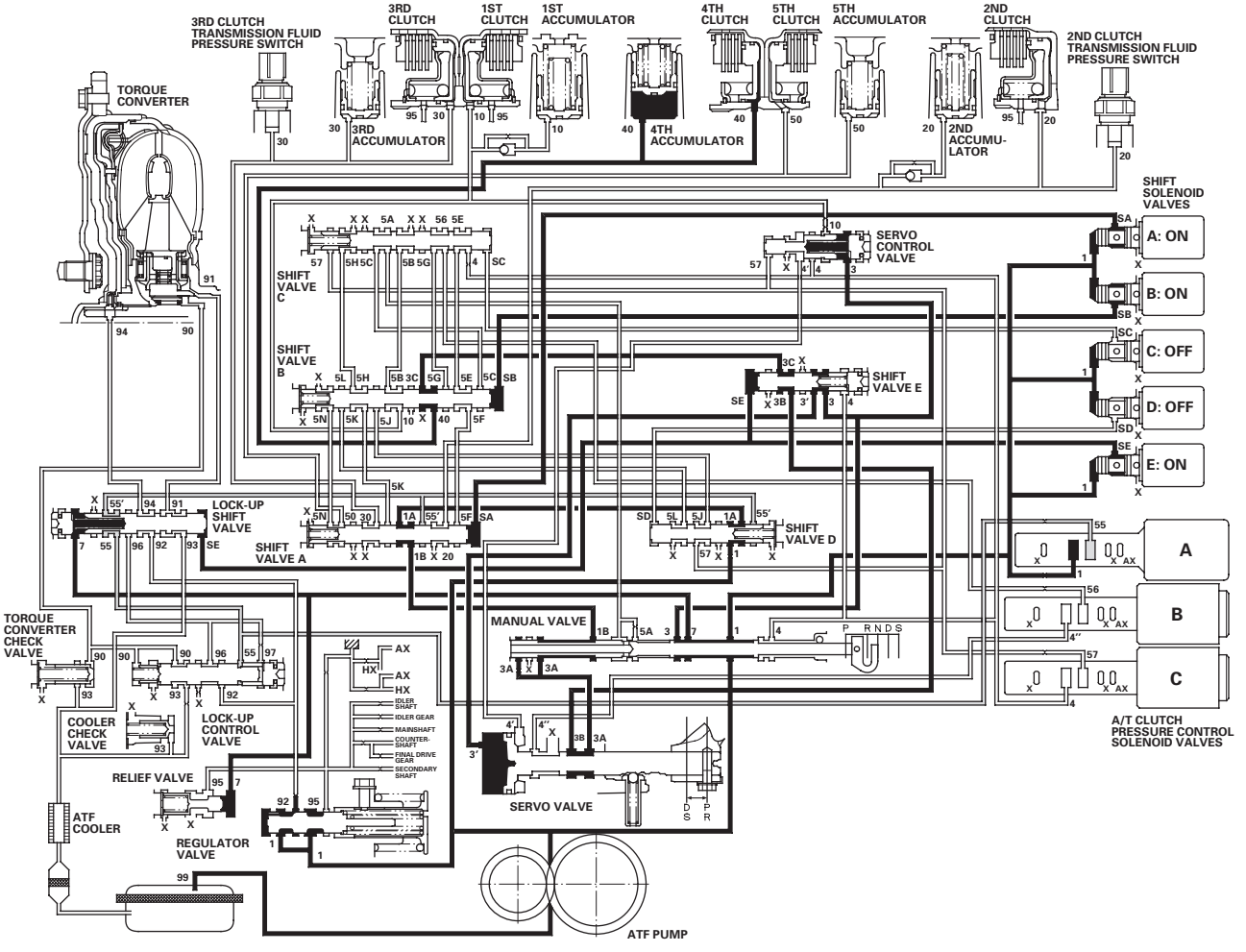
System Description (cont'd)

Hydraulic Flow (cont'd)

R Position: Driving in reverse gear
After starting off in reverse gear, the PCM turns shift solenoid valve A ON, B and E remain ON, and C and D remain OFF. Shift solenoid valve A pressure (SA) is applied to the right side of shift valve A to cover the A/T clutch pressure control solenoid valve A pressure port, and to uncover the line pressure port leading to the 4th clutch creating full line pressure. The 4th clutch is engaged securely with line pressure.

Reverse Inhibitor Control
When R is selected while the vehicle is moving forward, the PCM commands shift solenoid valve A to turn OFF, and E to remain OFF. Shift solenoid valve A pressure (SA) is not applied to shift valve A so that line pressure (3A) is not applied to the servo valve. Also shift solenoid valve E pressure (SE) is not applied to shift valve E so that line pressure (3') is not applied to the servo valve. The servo valve cannot be shifted to the reverse position, and hydraulic pressure is not applied to the 4th clutch from the servo valve for reverse; as a result, power is not transmitted to the reverse direction.

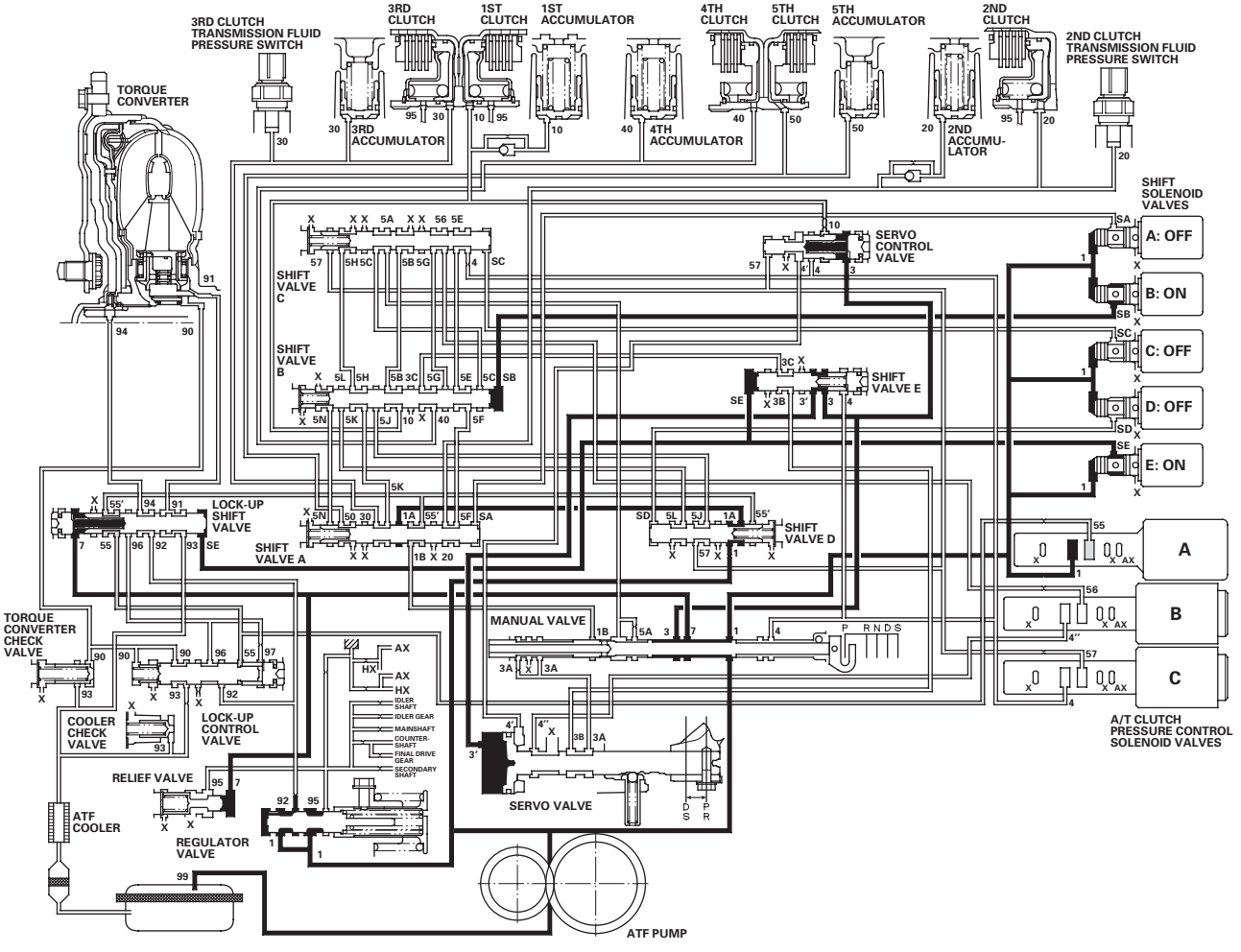
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



DYNOMITE -2009-

P Position

The PCM turns shift solenoid valves B and E ON, and A, C, and D OFF. Line pressure (1) flows to the shift solenoid valves and A/T clutch pressure control solenoid valve A. Line pressure (3) changes to (3') at shift valve E, and flows to the servo valve. The servo valve is moved to the reverse/park position. Hydraulic pressure is not applied to the clutches.



System Description (cont'd)

Lock-up System

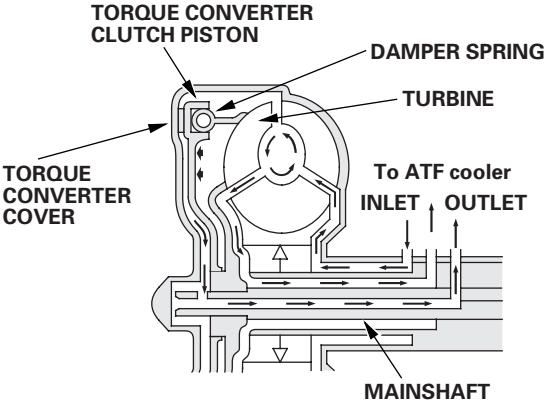
The lock-up mechanism of the torque converter clutch operates in D and S (2nd, 3rd, 4th, and 5th gears). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine. Together with the hydraulic control, the PCM optimizes the timing and volume of the lock-up mechanism. When shift solenoid valve E is turned on by the PCM, shift solenoid valve E pressure switches the lock-up shift valve on. A/T clutch pressure control solenoid valve A and the lock-up control valve control the degree of lock-up.

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 entering from the chamber between the pump and the 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

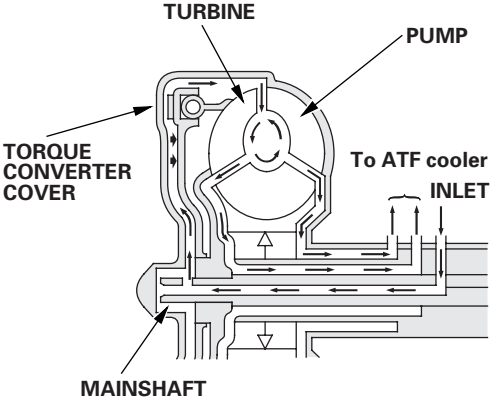


Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch)
Fluid entered from the chamber between the torque converter cover and the torque converter clutch piston passes through the torque converter and goes out through the chambers between the turbine and the stator, and between the pump and the stator. As a result, the torque converter clutch piston moves away from the torque converter cover, and the torque converter lock-up clutch is released; the torque converter clutch lock-up is OFF.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Pump
↓
Turbine
↓
Mainshaft

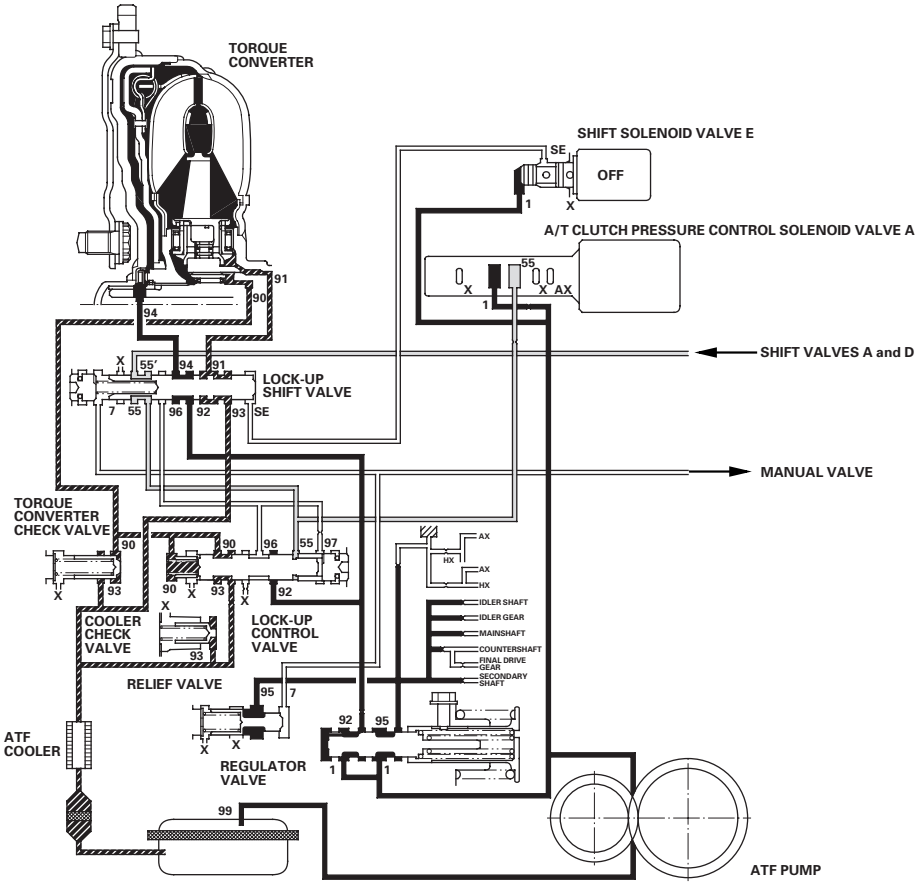


DYNOMITE -2009-

No Lock-up

The PCM turns shift solenoid valve E OFF, and shift solenoid valve E pressure (SE) is not applied to the lock-up shift valve. The lock-up shift valve remains to the right uncover the torque converter pressure ports leading to the left side of the torque converter and releasing pressure from the right side of the torque converter. Torque converter pressure (92) changes to (94) at the lock-up shift valve, and enters into the left side of the torque converter to disengage the torque converter clutch. This keeps the torque converter clutch piston keeps away from the torque converter cover and the torque converter clutch lock-up is OFF.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

DYNOMITE -2009-

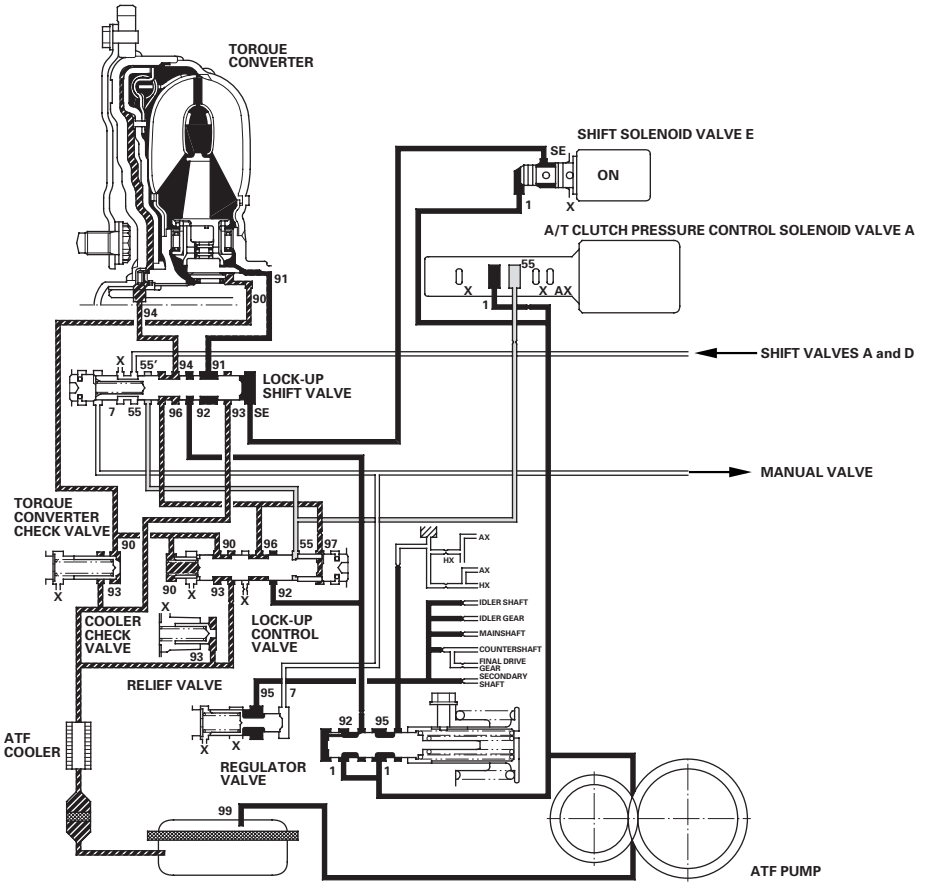
System Description (cont'd)

Lock-up System (cont'd)

Partial Lock-up

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve E ON, and shift solenoid valve E pressure (SE) is applied to the right side of the lock-up shift valve. The lock-up shift valve is moved to the left side to switch the torque converter pressure port (91), which goes to the right side of the torque converter, and torque converter pressure port (94) is released from the left side of the torque converter. Torque converter pressure (91) flows 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 A to regulate A/T clutch pressure control solenoid valve A pressure. A/T clutch pressure solenoid valve A (55) is applied to the lock-up shift valve and the lock-up control valve. The position of the lock-up control valve depends on A/T clutch pressure control solenoid valve A pressure (55) and torque converter pressure released from the torque converter. The lock-up control valve controls the amount of torque converter clutch lock-up until fluid between the clutch piston and the torque converter cover is fully released; the torque converter clutch is in partial lock-up.

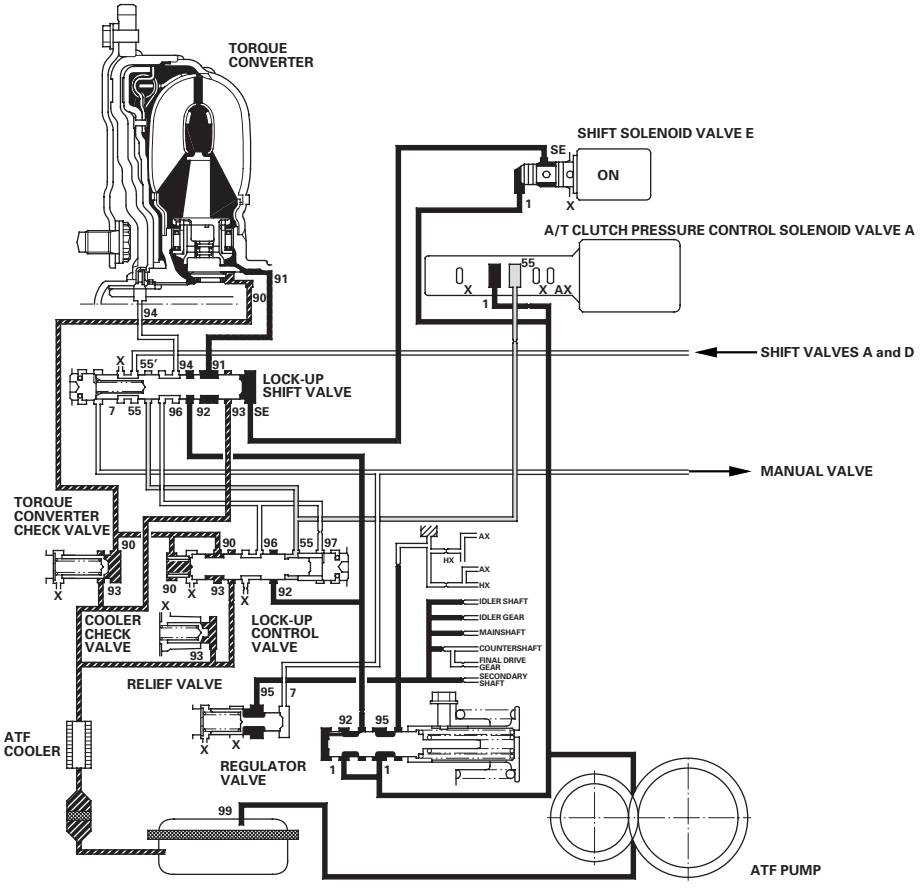
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



DYNOMITE -2009-

Full Lock-up
When the vehicle speed increases, the PCM sends a signal to A/T clutch pressure control solenoid valve A to increase A/T clutch pressure control solenoid valve A pressure (55), and the lock-up control valve is moved to the left by the increased pressure. Then torque converter pressure (94) from the left side of the torque converter is completely released at the lock-up control valve, and torque converter pressure (91) engages the torque converter clutch securely; the torque converter clutch is in full lock-up.

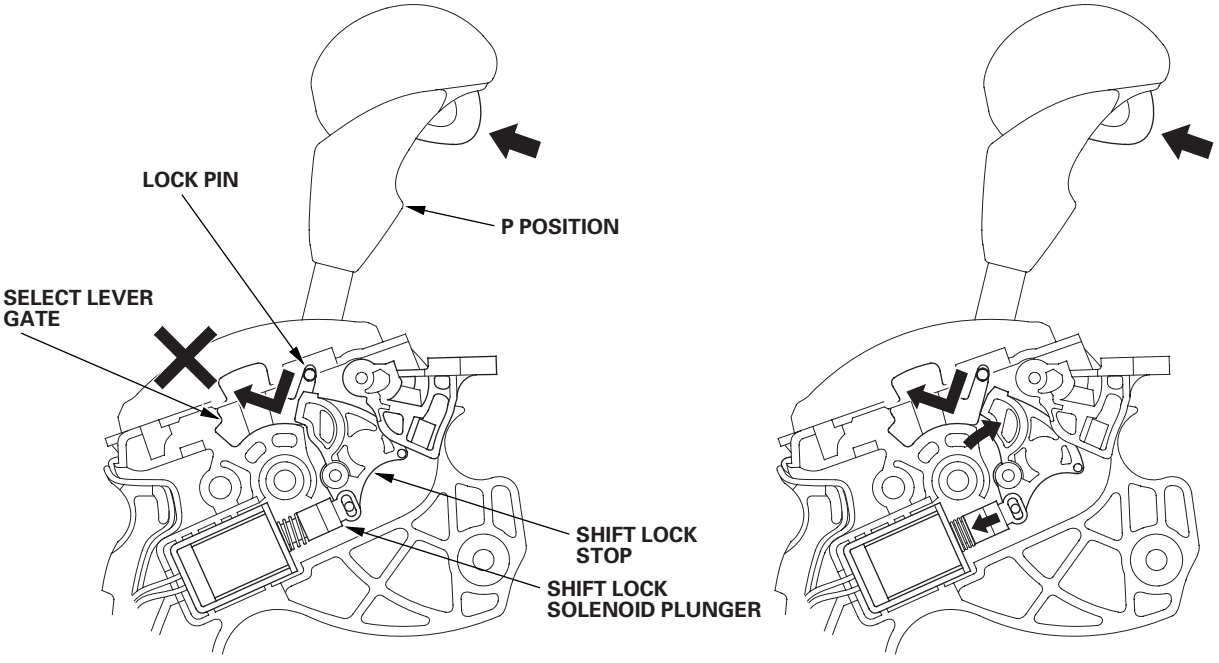
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



System Description (cont'd)

Shift Lock System

The shift lock system prevents the shift lever from mis-shifting. The shift lock solenoid is usually OFF. After starting the engine in P, the shift lever cannot move to any other position from P because the shift lock stop stops the lock pin unless the brake pedal is pressed. When the brake pedal is pressed and the accelerator pedal is not pressed, the shift lock solenoid is ON; the shift lock solenoid plunger in the shift lock solenoid pulls the shift lock stop to release the lock pin. Pressing the shift lever button, allows the shift lever to move to any other position. When the brake pedal and the accelerator pedal are pressed at the same time, the shift lock system is not unlocked.

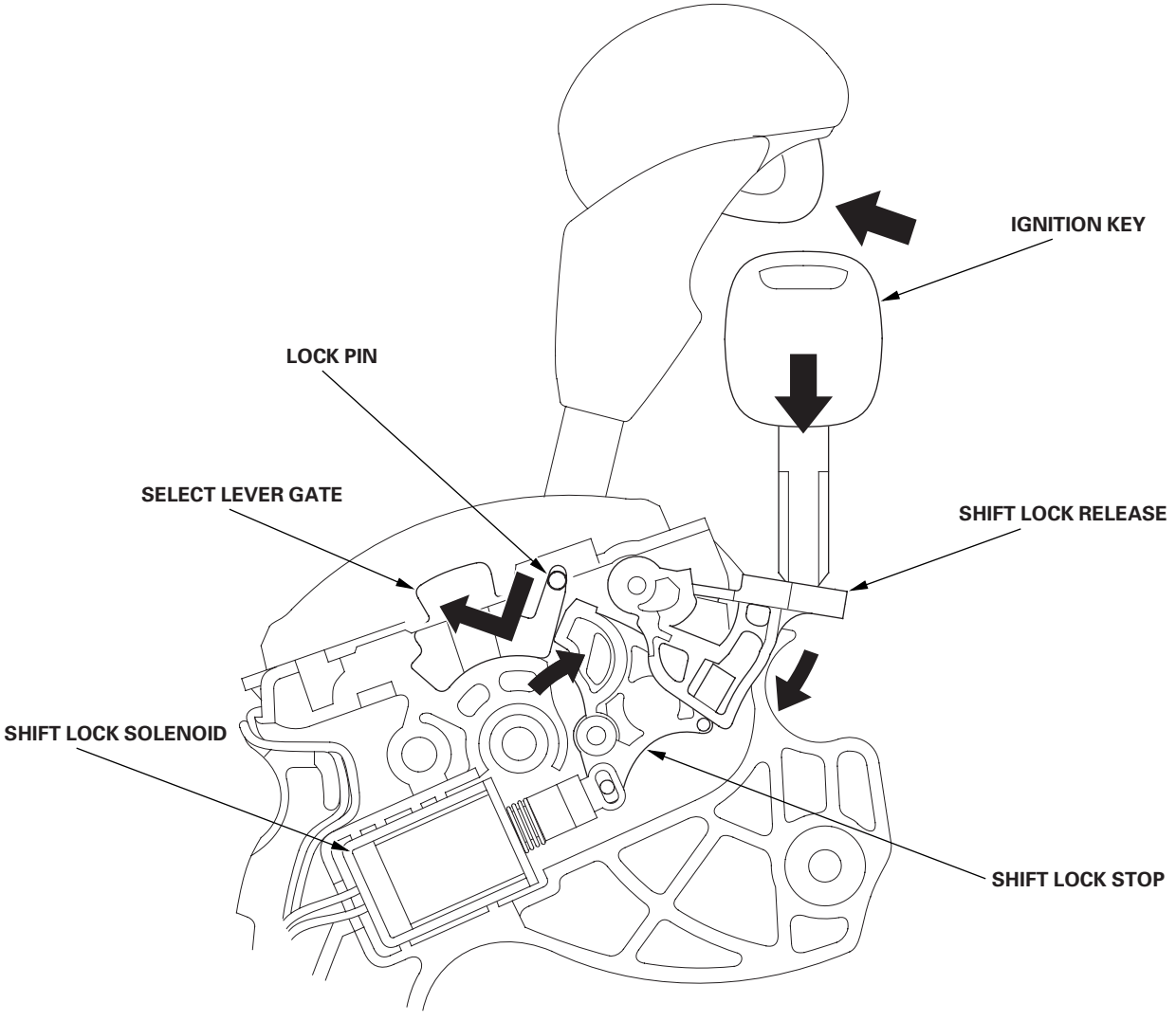


SHIFT LOCK SOLENOID: OFF

SHIFT LOCK SOLENOID: ON

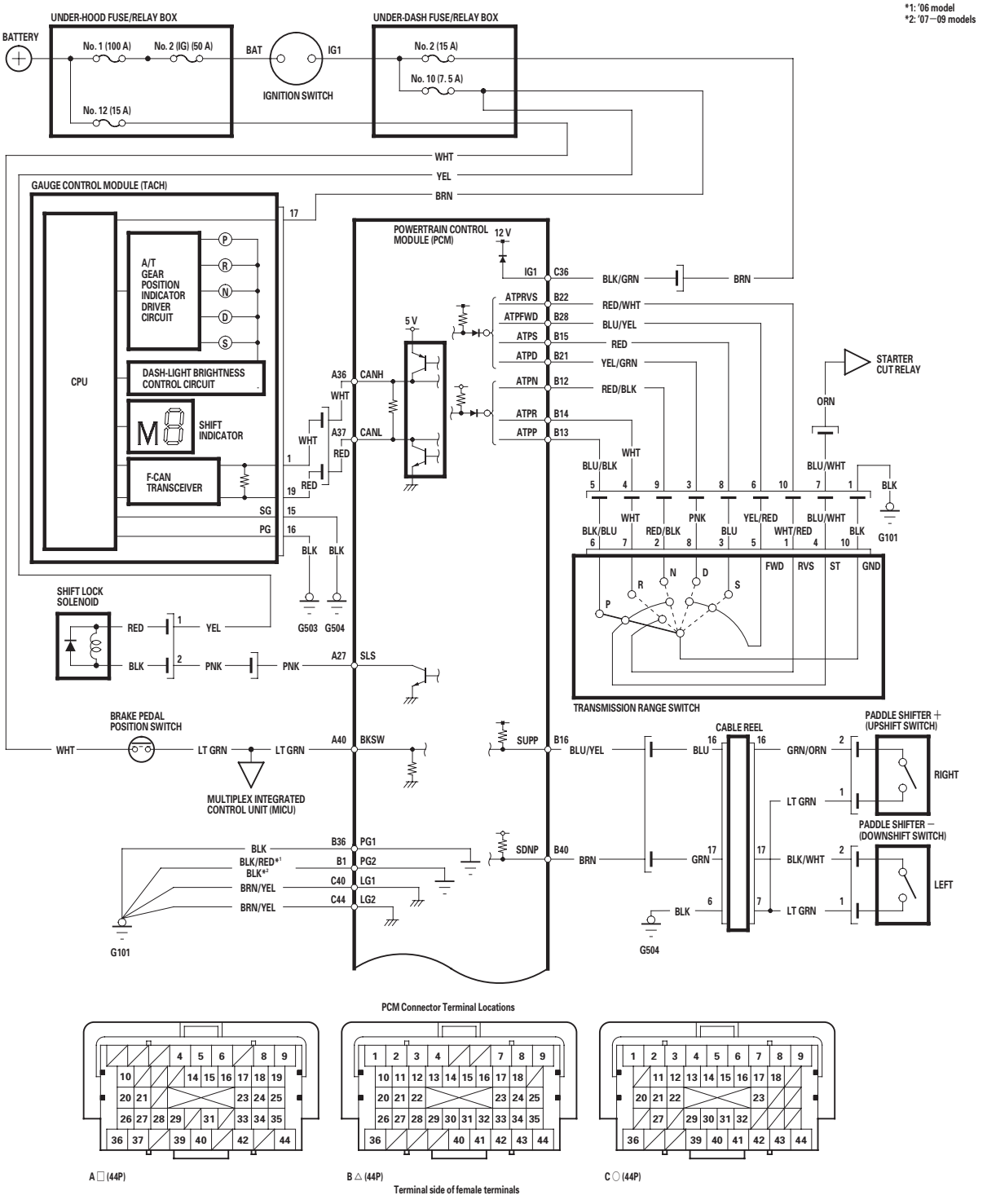
DYNOMITE -2009-

When the shift lock system does not operate due to a mechanical or electrical trouble, you can unlock the shift lock temporarily by inserting the ignition key into the shift lock release hole and pressing the shift lock release. When the shift lock release is pressed, the shift lock stop releases the lock pin, and the shift lever can move to any other position.

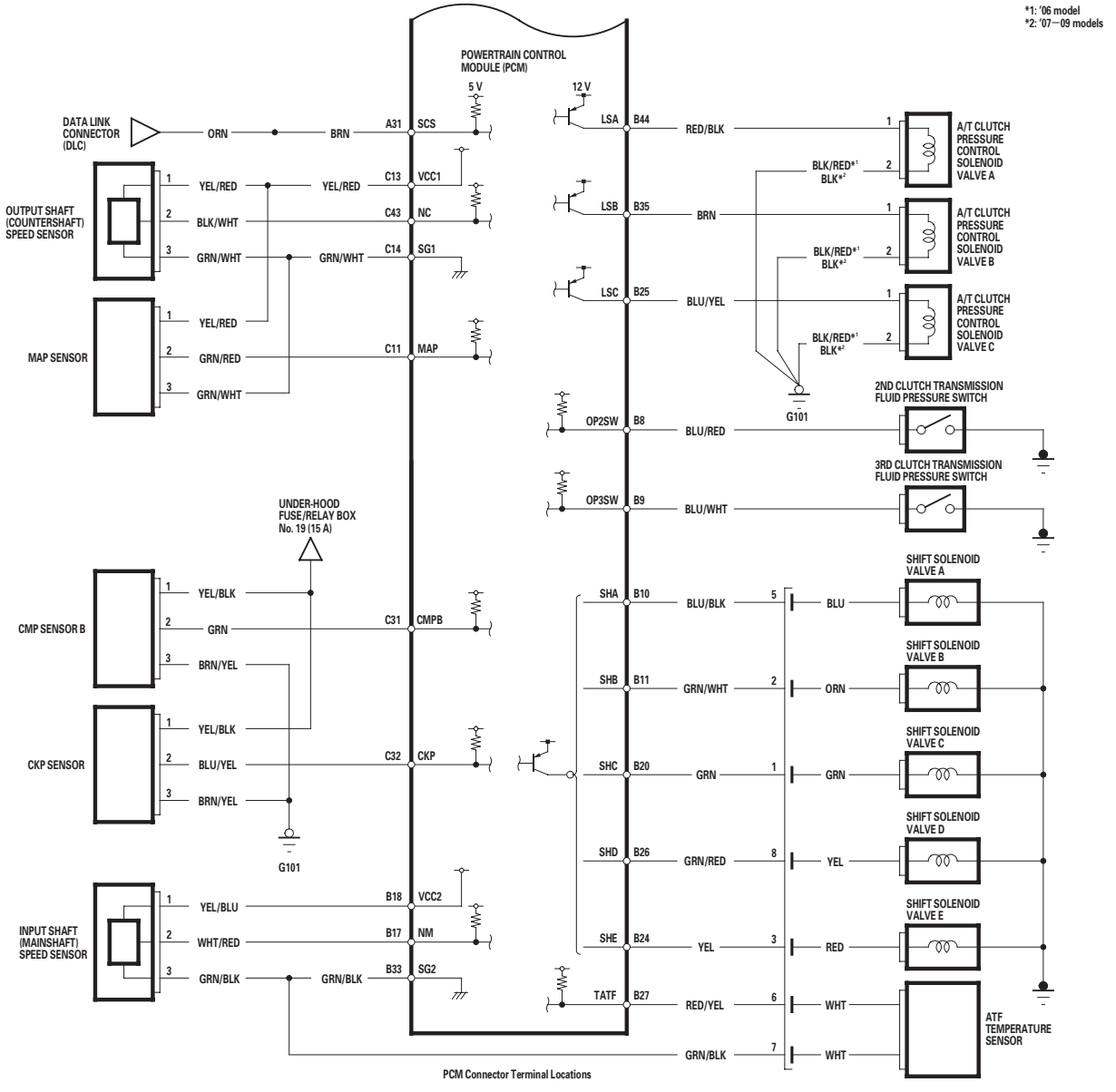


System Description (cont'd)

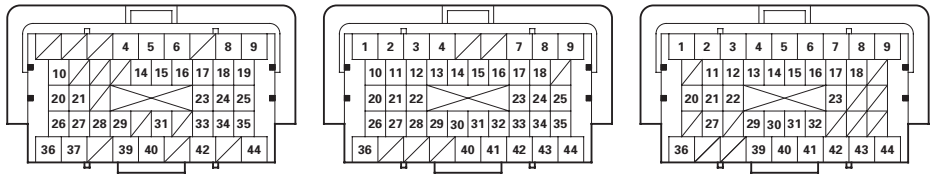
Circuit Diagram - PCM A/T Control System



DYNOMITE -2009-



PCM Connector Terminal Locations



A □ (44P)

B △ (44P)

C ○ (44P)

Terminal side of female terminals

DYNOMITE -2009-

DTC Troubleshooting

DTC P0107: Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage Input

DTC P0108: Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0107 or P0108 indicated in the PGM-FI SYSTEM?

   YES—Go to the indicated DTC's troubleshooting in the PGM-FI system. ■

   - P0107 (see page 11-80)
   - P0108 (see page 11-82)

   NO—Go to step 5.
5. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0107 or P0108 indicated in the A/T SYSTEM?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■
6. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
7. Start the engine, and wait for at least 2 minutes.
8. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0107 or P0108 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 7. If the PCM was substituted, go to step 1.

   NO—Go to step 9.
9. Monitor the OBD STATUS for P0107 or P0108 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 8, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 7. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 7.

DYNOMITE -2009-

DTC P0335: Crankshaft Position (CKP) Sensor No Signal

DTC P0339: Crankshaft Position (CKP) Sensor Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0335 or P0339 indicated in the PGM-FI SYSTEM?

   YES—Go to the indicated DTC's troubleshooting in the PGM-FI system. ■

   - P0335 (see page 11-128)
   - P0339 (see page 11-131)

   NO—Go to step 5.
5. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0335 or P0339 indicated in the A/T SYSTEM?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■
6. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
7. Start the engine, and wait for at least 2 minutes.
8. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0335 or P0339 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 7. If the PCM was substituted, go to step 1.

   NO—Go to step 9.
9. Monitor the OBD STATUS for P0335 or P0339 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 8, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 7. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 7.

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

DTC P0365: Camshaft Position (CMP) Sensor B No Signal

DTC P0369: Camshaft Position (CMP) Sensor B Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0365 or P0369 indicated in the PGM-FI SYSTEM?

   YES—Go to the indicated DTC's troubleshooting in the PGM-FI system. ■

   - P0365 (see page 11-132)
   - P0369 (see page 11-134)

   NO—Go to step 5.
5. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0365 or P0369 indicated in the A/T SYSTEM?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■
6. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
7. Start the engine, and wait for at least 2 minutes.
8. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0365 or P0369 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 7. If the PCM was substituted, go to step 1.

   NO—Go to step 9.
9. Monitor the OBD STATUS for P0365 or P0369 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 8, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 7. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 7.

DYNOMITE -2009-

DTC P0705: Short in Transmission Range Switch Circuit (Multiple Shift-position Input)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.
5. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 6.

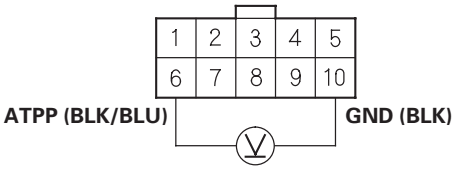
   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wires between the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 3.
6. Turn the ignition switch to LOCK (0).
7. Inspect the transmission range switch (see page 14-265).

   Is the switch OK?

   YES—With the switch connector disconnected, go to step 8.

   NO—Replace the transmission range switch (see page 14-267), then go to step 45.
8. Turn the ignition switch to ON (II).
9. Measure the voltage between transmission range switch connector terminals No. 6 and No. 10.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there more than 5 V?

YES—Go to step 15.

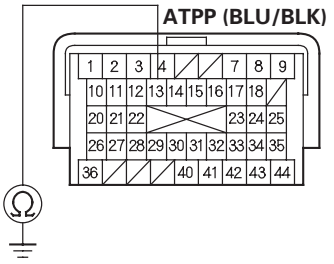
NO—Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (44P).
13. Check for continuity between PCM connector terminal B13 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

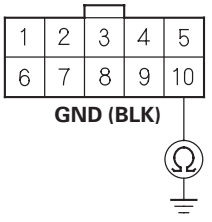
Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B13 and the transmission range switch, then go to step 45.

NO—Go to step 14.

14. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there continuity?

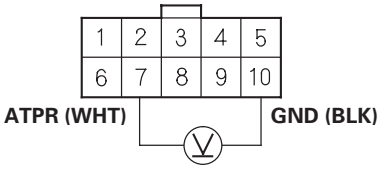
YES—Go to step 52.

NO—Repair open in the wire between transmission range switch connector terminal No. 10 and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 45.

DYNOMITE -2009-

15. Measure the voltage between transmission range switch connector terminals No. 7 and No. 10.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there more than 5 V?

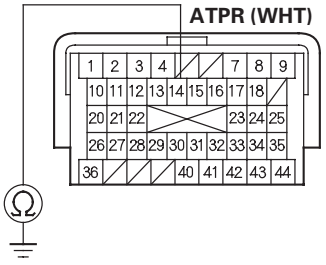
YES—Go to step 20.

NO—Go to step 16.

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector B (44P).

19. Check for continuity between PCM connector terminal B14 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

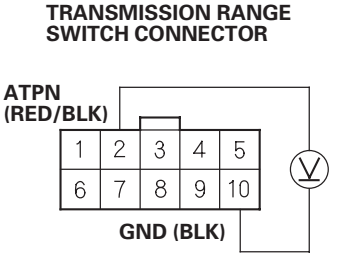
YES—Repair short to body ground in the wire between PCM connector terminal B14 and the transmission range switch, then go to step 45.

NO—Go to step 52.

(cont'd)

DTC Troubleshooting (cont'd)

20. Measure the voltage between transmission range switch connector terminals No. 2 and No. 10.



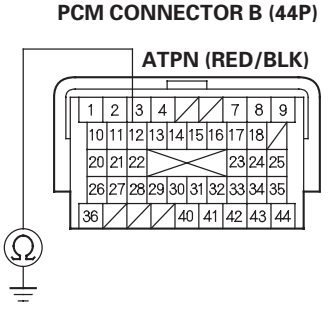
Wire side of female terminals

Is there more than 5 V?

YES—Go to step 25.

NO—Go to step 21.

21. Turn the ignition switch to LOCK (0).
22. Jump the SCS line with the HDS.
23. Disconnect PCM connector B (44P).
24. Check for continuity between PCM connector terminal B12 and body ground.



Terminal side of female terminals

Is there continuity?

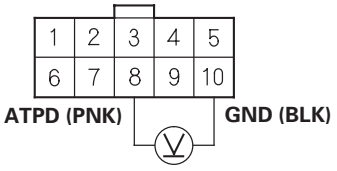
YES—Repair short to body ground in the wire between PCM connector terminal B12 and the transmission range switch, then go to step 45.

NO—Go to step 52.

DYNOMITE -2009-

25. Measure the voltage between transmission range switch connector terminals No. 8 and No. 10.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there about battery voltage?

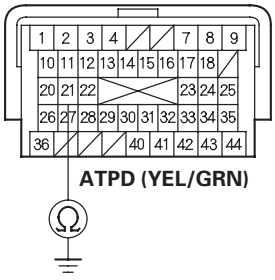
YES—Go to step 30.

NO—Go to step 26.

26. Turn the ignition switch to LOCK (0).
27. Jump the SCS line with the HDS.
28. Disconnect PCM connector B (44P).

29. Check for continuity between PCM connector terminal B21 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B21 and the transmission range switch, then go to step 45.

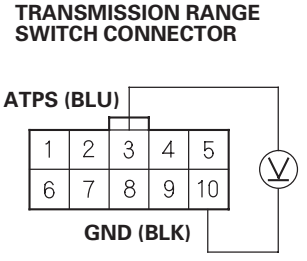
NO—Go to step 52.

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

30. Measure the voltage between transmission range switch connector terminals No. 3 and No. 10.



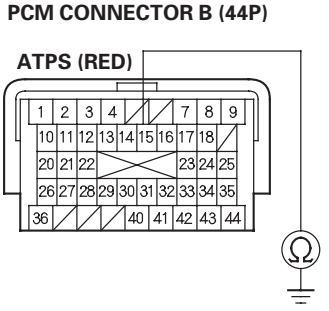
Wire side of female terminals

Is there about battery voltage?

YES—Go to step 35.

NO—Go to step 31.

31. Turn the ignition switch to LOCK (0).
32. Jump the SCS line with the HDS.
33. Disconnect PCM connector B (44P).
34. Check for continuity between PCM connector terminal B15 and body ground.



Terminal side of female terminals

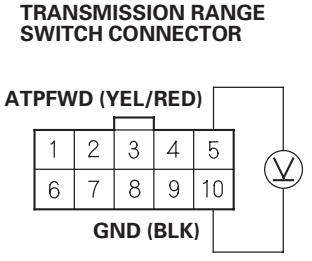
Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B15 and the transmission range switch, then go to step 45.

NO—Go to step 52.

DYNOMITE -2009-

35. Measure the voltage between transmission range switch connector terminals No. 5 and No. 10.



Wire side of female terminals

Is there about battery voltage?

YES—Go to step 40.

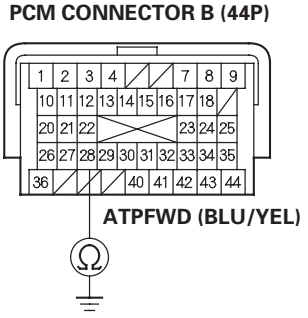
NO—Go to step 36.

36. Turn the ignition switch to LOCK (0).

37. Jump the SCS line with the HDS.

38. Disconnect PCM connector B (44P).

39. Check for continuity between PCM connector terminal B28 and body ground.



Terminal side of female terminals

Is there continuity?

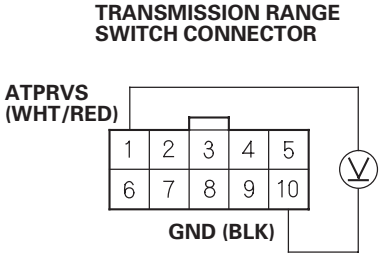
YES—Repair short to body ground in the wire between PCM connector terminal B28 and the transmission range switch, then go to step 45.

NO—Go to step 52.

(cont'd)

DTC Troubleshooting (cont'd)

40. Measure the voltage between transmission range switch connector terminals No. 1 and No. 10.



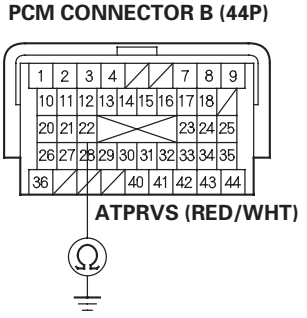
Wire side of female terminals

Is there about battery voltage?

YES—Go to step 52.

NO—Go to step 41.

41. Turn the ignition switch to LOCK (0).
42. Jump the SCS line with the HDS.
43. Disconnect PCM connector B (44P).
44. Check for continuity between PCM connector terminal B22 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B22 and the transmission range switch, then go to step 45.

NO—Go to step 52.

DYNOMITE -2009-

45. Reconnect all connectors.

46. Turn the ignition switch to ON (II).

47. Clear the DTC with the HDS.

48. Start the engine.

49. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.

50. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0705 indicated?

    YES—Check for intermittent short to body ground in the wires between the transmission range switch and the PCM, then go to step 1.

    NO—Go to step 51.

51. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 50, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wires between the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 48.

52. Reconnect all connectors.

53. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

54. Start the engine.

55. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.

56. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0705 indicated?

    YES—Check for intermittent short to body ground in the wires between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 54. If the PCM was substituted, go to step 1.

    NO—Go to step 57.

57. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 56, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wires between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 54. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 54.

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

DTC P0706: Open in Transmission Range Switch Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Block the rear wheels and raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely, or raise the vehicle on a lift.
4. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D until the vehicle speed reaches 40 km/h (25 mph), then slow down and stop the wheels.
5. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 6.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 4.
6. Turn the ignition switch to LOCK (0).
7. Inspect the transmission range switch (see page 14-265).

   Is the switch OK?

   YES—Go to step 8.

   NO—Replace the transmission range switch (see page 14-267), then go to step 25.
8. Adjust the shift cable (see page 14-259).
9. Turn the ignition switch to ON (II).
10. Clear the DTC with the HDS.
11. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D until the vehicle speed reaches 40 km/h (25 mph), then slow down and stop the wheels.
12. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Go to step 13.

    NO—If the HDS indicates PASSED, troubleshooting is complete. If the HDS indicates NOT COMPLETED, go to step 11.
13. Shift to D, and check the Forward Switch (ATPFWD) and A/T D Switch in the DATA LIST with the HDS.

    Are Forward Switch (ATPFWD) and A/T D Switch ON?

    YES—Go to step 14.

    NO—Go to step 18.
14. Shift to S, and check the Forward Switch (ATPFWD) and A/T S Switch in the DATA LIST with the HDS.

    Are Forward Switch (ATPFWD) and A/T S Switch ON?

    YES—Go to step 15.

    NO—Go to step 18.

DYNOMITE -2009-

15. Clear the DTC with the HDS.

16. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D until the vehicle speed reaches 40 km/h (25 mph), then slow down and stop the wheels.

17. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Go to step 18.

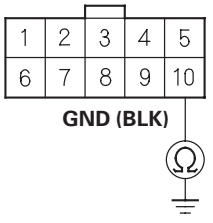
    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 16.

18. Turn the ignition switch to LOCK (0).

19. Disconnect the transmission range switch connector.

20. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the transmission range switch and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 25.

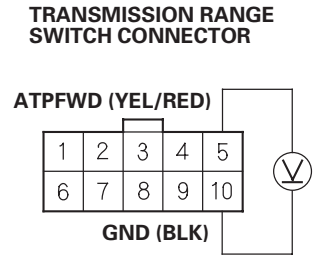
21. Turn the ignition switch to ON (II).

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

22. Measure the voltage between transmission range switch connector terminals No. 5 and No. 10.



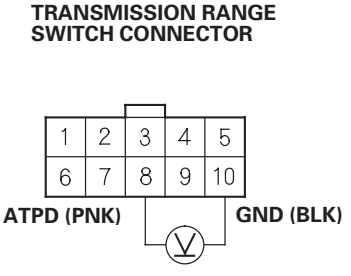
Wire side of female terminals

Is there about battery voltage?

YES—Go to step 23.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal B28, then go to step 25.

23. Measure the voltage between transmission range switch connector terminals No. 8 and No. 10.



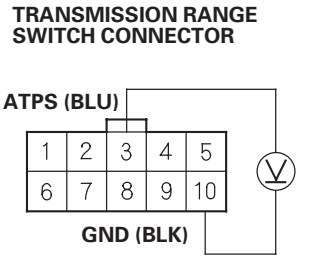
Wire side of female terminals

Is there about battery voltage?

YES—Go to step 24.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal B21, then go to step 25.

24. Measure the voltage between transmission range switch connector terminals No. 3 and No. 10.



Wire side of female terminals

Is there about battery voltage?

YES—Go to step 31.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal B15, then go to step 25.

25. Reconnect all connectors.

26. Turn the ignition switch to ON (II).

27. Clear the DTC with the HDS.

28. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D until the vehicle speed reaches 48 km/h (30 mph), then slow down and stop the wheels.

DYNOMITE -2009-

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0706 indicated?

    YES—Check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1.

    NO—Go to step 30.

30. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 28.

31. Reconnect all connectors.

32. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

33. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D until the vehicle speed reaches 48 km/h (30 mph), then slow down and stop the wheels.

34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0706 indicated?

    YES—Check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 33. If the PCM was substituted, go to step 1.

    NO—Go to step 35.

35. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 33. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 33.

DTC Troubleshooting (cont'd)

DTC P0711: Problem in ATF Temperature Sensor Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Check the ATF Temp Sensor in the Data List with the HDS.

   Does the ATF temperature exceed the outside air temperature?

   YES—Record the ATF temperature. Leave the engine off for at least 30 minutes, then go to step 3.

   NO—Record the ATF temperature. Test the stall speed RPM (see page 14-210) three times, then go to step 3.
3. Check the ATF Temp Sensor in the Data List with the HDS.

   Did the ATF temperature change?

   YES—Leave the engine off for at least 30 minutes, then go to step 4.

   NO—Replace the ATF temperature sensor (see page 14-229), then go to step 6.
4. Check the ECT Sensor in the Data List with the HDS.

   Does the ECT Sensor read about the same as the outside air temperature?

   YES—Go to step 5.

   NO—Leave the engine off until ECT Sensor reads the same as the outside air temperature, then go to step 5.
5. Check the ATF Temp Sensor in the Data List with the HDS.

   Does the ATF temperature read about the same as ECT Sensor?

   YES—Go to step 13.

   NO—Replace the ATF temperature sensor (see page 14-229), then go to step 6.
6. Turn the ignition switch to ON (II).
7. Clear the DTC with the HDS.
8. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
9. Allow the engine coolant temperature to cool to the outside air temperature.
10. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on), and wait for at least 20 seconds, then drive the vehicle at speeds over 31 km/h (19 mph) for at least 5 minutes.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0711 indicated?

    YES—Check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1.

    NO—Go to step 12.

DYNOMITE -2009-

12. Monitor the OBD STATUS for P0711 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 8.

13. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

14. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

15. Allow the engine coolant temperature to cool to the outside air temperature.

16. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on), and wait for at least 20 seconds, then drive the vehicle at speeds over 31 km/h (19 mph) for at least 5 minutes.

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0711 indicated?

    YES—Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 14. If the PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for P0711 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 14. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 14.

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

DTC P0712: Short in ATF Temperature Sensor Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Check the ATF Temp Sensor voltage in the Data List with the HDS.

   Is the ATF Temp Sensor voltage 0.07 V or less?

   YES—Go to step 3.

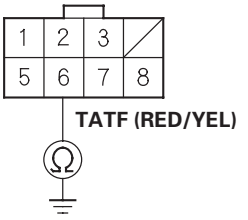
   NO—Intermittent failure, the system is OK at this time. Check for an intermittent short to body ground in the TATF wire between the ATF temperature sensor and the PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the shift solenoid wire harness connector.
5. Turn the ignition switch to ON (II).
6. Check the ATF Temp Sensor voltage in the Data List with the HDS.

   Is the ATF Temp Sensor voltage 0.07 V or less?

   YES—Go to step 7.

   NO—Replace the ATF temperature sensor (see page 14-229), then go to step 14.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector B (44P).
10. Check for continuity between shift solenoid wire harness connector terminal No. 6 and body ground.

SHIFT SOLENOID WIRE HARNESS CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B27 and shift solenoid wire harness connector terminal No. 6, then go to step 11.

NO—Go to step 17.

DYNOMITE -2009-

11. Reconnect all connectors.

12. Turn the ignition switch to ON (II).

13. Clear the DTC with the HDS.

14. Start the engine with the shift lever in P, and wait for at least 20 seconds.

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0712 indicated?

    YES—Check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM, then go to step 1.

    NO—Go to step 16.

16. Monitor the OBD STATUS for P0712 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 14.

17. Reconnect all connectors.

18. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

19. Start the engine with the shift lever in P, and wait for at least 20 seconds.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0712 indicated?

    YES—Check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 19. If the PCM was substituted, go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0712 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 19. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

DTC Troubleshooting (cont'd)

DTC P0713: Open in ATF Temperature Sensor Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

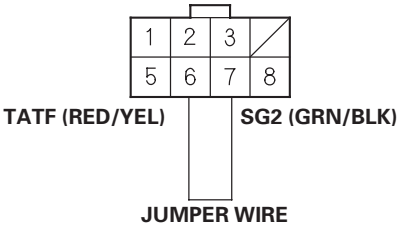
1. Turn the ignition switch to ON (II).
2. Check the ATF Temp Sensor voltage in the Data List with the HDS.

   Does the ATF Temp Sensor voltage exceed 4.93 V?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the shift solenoid wire harness connector.
5. Connect shift solenoid wire harness connector terminals No. 6 and No. 7 with a jumper wire.

SHIFT SOLENOID WIRE HARNESS CONNECTOR



Wire side of female terminals

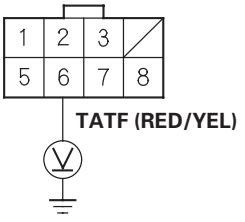
6. Turn the ignition switch to ON (II).
7. Check the ATF Temp Sensor voltage in the Data List with the HDS.

   Does the ATF Temp Sensor voltage exceed 4.93 V?

   YES—Go to step 8.

   NO—Replace the ATF temperature sensor (see page 14-229), then go to step 21.
8. Turn the ignition switch to LOCK (0).
9. Remove the jumper wire from the shift solenoid wire harness connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between shift solenoid wire harness connector terminal No. 6 and body ground.

SHIFT SOLENOID WIRE HARNESS CONNECTOR



Wire side of female terminals

Is there about 5 V?

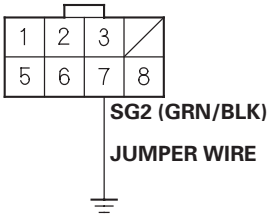
YES—Go to step 12.

NO—Go to step 17.

DYNOMITE -2009-

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (44P).
15. Connect shift solenoid wire harness connector terminal No. 7 and body ground with a jumper wire.

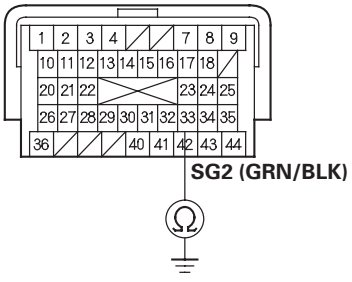
SHIFT SOLENOID WIRE HARNESS CONNECTOR



Wire side of female terminals

16. Check for continuity between PCM connector terminal B33 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

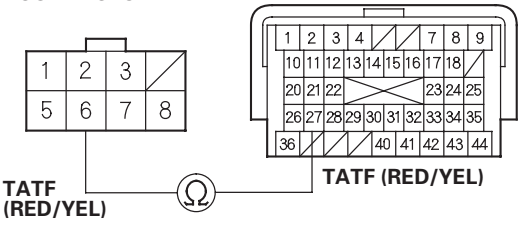
YES—Go to step 27.

NO—Repair open in the wire between PCM connector terminal B33 and the ATF temperature sensor, then go to step 21.

17. Turn the ignition switch to LOCK (0).
18. Jump the SCS line with the HDS.
19. Disconnect PCM connector B (44P).
20. Check for continuity between PCM connector terminal B27 and shift solenoid wire harness connector terminal No. 6.

SHIFT SOLENOID WIRE HARNESS CONNECTOR

PCM CONNECTOR B (44P)



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between PCM connector terminal B27 and the ATF temperature sensor, then go to step 21.

21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Clear the DTC with the HDS.
24. Start the engine with the shift lever in P, and wait for at least 20 seconds.
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0713 indicated?

YES—Check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1.

NO—Go to step 26.

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

26. Monitor the OBD STATUS for P0713 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

27. Reconnect all connectors.

28. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

29. Start the engine with the shift lever in P, and wait for at least 20 seconds.

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0713 indicated?

    YES—Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for P0713 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 29.

DYNOMITE -2009-

DTC P0716: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit

DTC P0717: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check for proper input shaft (mainshaft) speed sensor installation (see page 14-227).

2. Turn the ignition switch to ON (II).

3. Clear the DTC with the HDS.

4. Block the rear wheels and raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely, or raise the vehicle on a lift.

5. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D at speeds over 20 km/h (12 mph) for at least 10 seconds. Slow down and stop the wheels.

6. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 7.

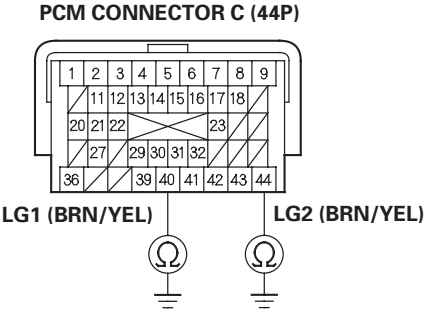
   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

7. Turn the ignition switch to LOCK (0).

8. Jump the SCS line with the HDS.

9. Disconnect PCM connector C (44P).

10. Check for continuity between PCM connector terminal C40 and body ground, and between PCM connector terminal C44 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 11.

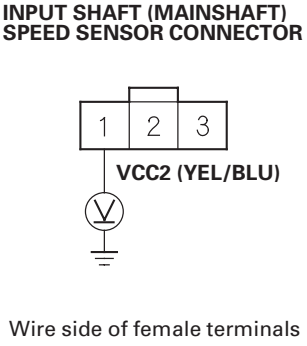
NO—Repair open in the wires between PCM connector terminals C40, C44, and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 26.

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

11. Connect PCM connector C (44P).
12. Disconnect the input shaft (mainshaft) speed sensor connector.
13. Turn the ignition switch to ON (II).
14. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

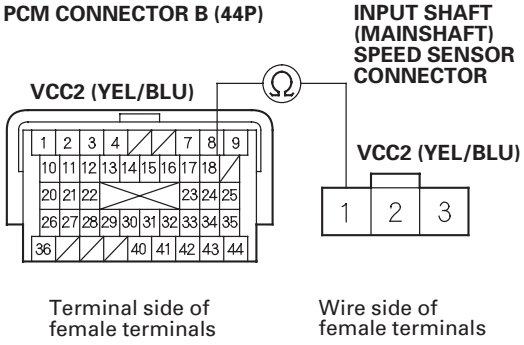


Is there about 5 V?

YES—Go to step 19.

NO—Go to step 15.

15. Turn the ignition switch to LOCK (0).
16. Jump the SCS line with the HDS.
17. Disconnect PCM connector B (44P).
18. Check for continuity between PCM connector terminal B18 and input shaft (mainshaft) speed sensor connector terminal No. 1.



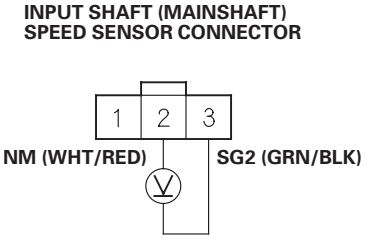
Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between PCM connector terminal B18 and the input shaft (mainshaft) speed sensor, then go to step 26.

DYNOMITE -2009-

19. Measure the voltage between input shaft (mainshaft) speed sensor connector terminals No. 2 and No. 3.



Wire side of female terminals

Is there about 5 V?

YES—Replace the input shaft (mainshaft) speed sensor (see page 14-227), then go to step 26.

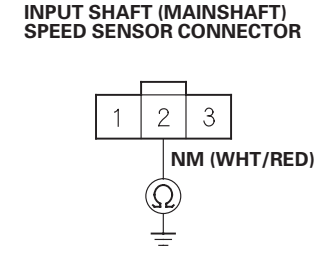
NO—Go to step 20.

20. Turn the ignition switch to LOCK (0).

21. Jump the SCS line with the HDS.

22. Disconnect PCM connector B (44P).

23. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.



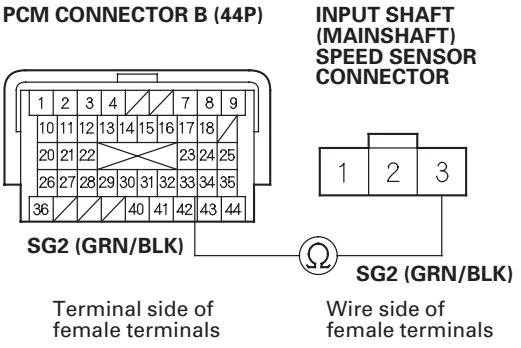
Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B17 and the input shaft (mainshaft) speed sensor, then go to step 26.

NO—Go to step 24.

24. Check for continuity between PCM connector terminal B33 and input shaft (mainshaft) speed sensor connector terminal No. 3.



Terminal side of female terminals

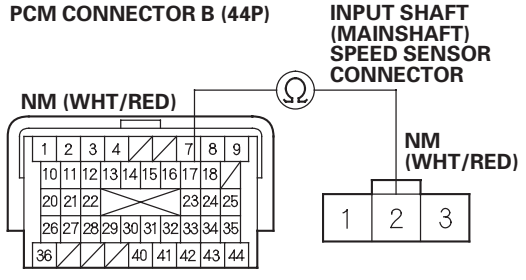
Wire side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between PCM connector terminal B33 and the input shaft (mainshaft) speed sensor, then go to step 26.

25. Check for continuity between PCM connector terminal B17 and input shaft (mainshaft) speed sensor connector terminal No. 2.



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between PCM connector terminal B17 and the input shaft (mainshaft) speed sensor, then go to step 26.

(cont'd)

DTC Troubleshooting (cont'd)

26. Reconnect all connectors.

27. Turn the ignition switch to ON (II).

28. Clear the DTC with the HDS.

29. Start the engine, run the vehicle with the shift lever in D, and keep the vehicle at speeds over 20 km/h (12 mph) for at least 10 seconds. Slow down and stop the wheels.

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0716 or P0717 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 29.

32. Reconnect all connectors.

33. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

34. Start the engine, run the vehicle with the shift lever in D, and keep the vehicle at speeds over 20 km/h (12 mph) for at least 10 seconds. Slow down and stop the wheels.

35. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0716 or P0717 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 34. If the PCM was substituted, go to step 1.

    NO—Go to step 36.

36. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 35, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 34. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 34.

DYNOMITE -2009-

DTC P0718: Input Shaft (Mainshaft) Speed Sensor Intermittent Failure

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Test-drive the vehicle with the shift lever in D at speeds over 20 km/h (12 mph), and let the transmission shift through all five gears.

4. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 5.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, go to step 3.

5. Turn the ignition switch to LOCK (0).

6. Disconnect the input shaft (mainshaft) speed sensor connector, and inspect the connector and the connector terminals to be sure they are making good contact.

   Are the connector terminals OK?

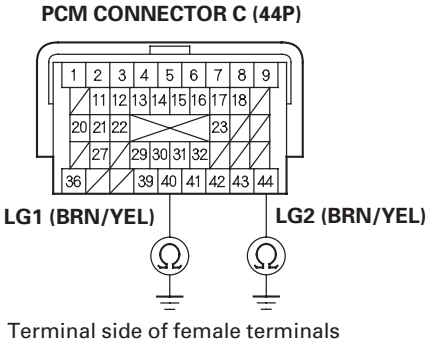
   YES—Go to step 7.

   NO—Repair the connector terminals, then go to step 23.

7. Jump the SCS line with the HDS.

8. Disconnect PCM connector C (44P).

9. Check for continuity between PCM connector terminal C40 and body ground, and between PCM connector terminal C44 and body ground.



Terminal side of female terminals

   Is there continuity?

   YES—Go to step 10.

   NO—Repair open in the wires between PCM connector terminals C40, C44, and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 23.

10. Connect PCM connector C (44P).

11. Turn the ignition switch to ON (II).

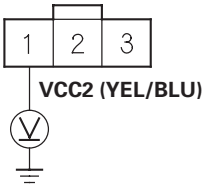
(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

12. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

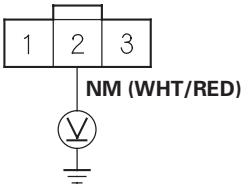
Is there about 5 V?

YES—Go to step 13.

NO—Go to step 19.

13. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the input shaft (mainshaft) speed sensor (see page 14-227), then go to step 23.

NO—Go to step 14.

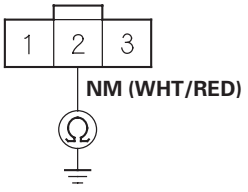
14. Turn the ignition switch to LOCK (0).

15. Jump the SCS line with the HDS.

16. Disconnect PCM connector B (44P).

17. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

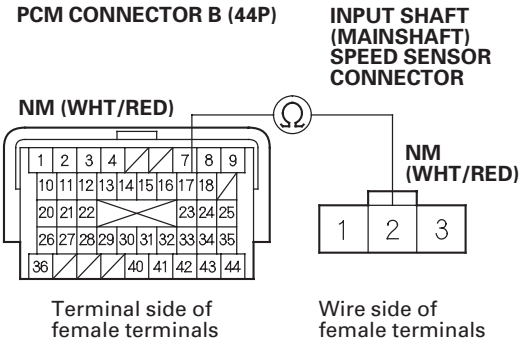
Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B17 and the input shaft (mainshaft) speed sensor, then go to step 23.

NO—Go to step 18.

DYNOMITE -2009-

18. Check for continuity between PCM connector terminal B17 and input shaft (mainshaft) speed sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 29.

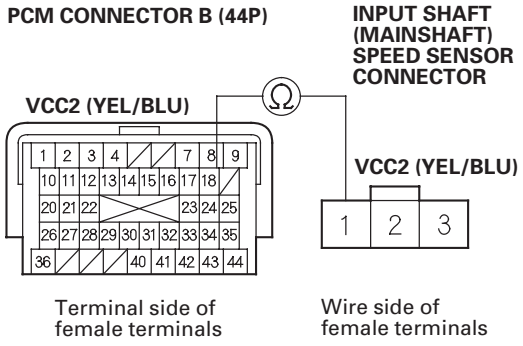
NO—Repair open in the wire between PCM connector terminal B17 and the input shaft (mainshaft) speed sensor, then go to step 23.

19. Turn the ignition switch to LOCK (0).

20. Jump the SCS line with the HDS.

21. Disconnect PCM connector B (44P).

22. Check for continuity between PCM connector terminal B18 and input shaft (mainshaft) speed sensor connector terminal No. 1.



Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between PCM connector terminal B18 and the input shaft (mainshaft) speed sensor, then go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

23. Reconnect all connectors.

24. Turn the ignition switch to ON (II).

25. Clear the DTC with the HDS.

26. Test-drive the vehicle with the shift lever in D at speeds over 20 km/h (12 mph), and let the transmission shift through all five gears.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0718 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 26.

29. Reconnect all connectors.

30. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

31. Test-drive the vehicle with the shift lever in D at speeds over 20 km/h (12 mph), and let the transmission shift through all five gears.

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0718 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 31. If the PCM was substituted, go to step 1.

    NO—Go to step 33.

33. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 31. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 31.

DYNOMITE -2009-

DTC P0721: Problem in Output Shaft (Countershaft) Speed Sensor Circuit

DTC P0722: Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check for proper output shaft (countershaft) speed sensor installation (see page 14-227).

2. Turn the ignition switch to ON (II).

3. Clear the DTC with the HDS.

4. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely, or raise the vehicle on a lift.

5. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D and the engine speed 2,000 rpm or higher, for at least 10 seconds. Slow down and stop the wheels.

6. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 7.

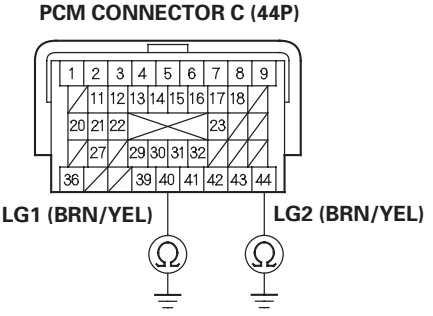
   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

7. Turn the ignition switch to LOCK (0).

8. Jump the SCS line with the HDS.

9. Disconnect PCM connector C (44P).

10. Check for continuity between PCM connector terminal C40 and body ground, and between PCM connector terminal C44 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 11.

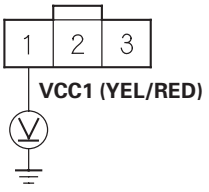
NO—Repair open in the wires between PCM connector terminals C40, C44, and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 26.

(cont'd)

DTC Troubleshooting (cont'd)

11. Connect PCM connector C (44P).
12. Disconnect the output shaft (countershaft) speed sensor connector.
13. Turn the ignition switch to ON (II).
14. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

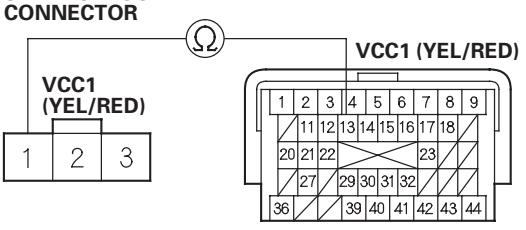
YES—Go to step 19.

NO—Go to step 15.

15. Turn the ignition switch to LOCK (0).
16. Jump the SCS line with the HDS.
17. Disconnect PCM connector C (44P).
18. Check for continuity between PCM connector terminal C13 and output shaft (countershaft) speed sensor connector terminal No. 1.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR

PCM CONNECTOR C (44P)



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

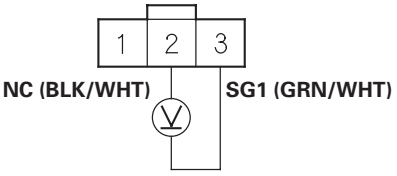
YES—Go to step 32.

NO—Repair open in the wire between PCM connector terminal C13 and the output shaft (countershaft) speed sensor, then go to step 26.

DYNOMITE -2009-

19. Measure the voltage between output shaft (countershaft) speed sensor connector terminals No. 2 and No. 3.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the output shaft (countershaft) speed sensor (see page 14-227), then go to step 26.

NO—Go to step 20.

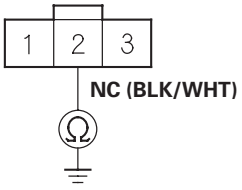
20. Turn the ignition switch to LOCK (0).

21. Jump the SCS line with the HDS.

22. Disconnect PCM connector C (44P).

23. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

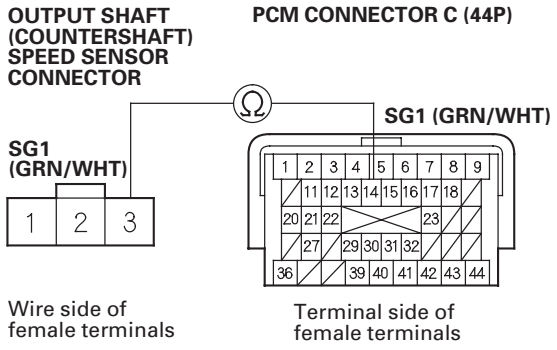
YES—Repair short to body ground in the wire between PCM connector terminal C43 and the output shaft (countershaft) speed sensor, then go to step 26.

NO—Go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

24. Check for continuity between PCM connector terminal C14 and output shaft (countershaft) speed sensor connector terminal No. 3.

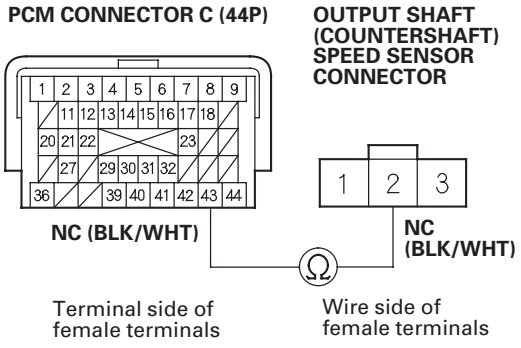


Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the output shaft (countershaft) speed sensor connector and PCM connector terminal C14, then go to step 26.

25. Check for continuity between PCM connector terminal C43 and output shaft (countershaft) speed sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between PCM connector terminal C43 and the output shaft (countershaft) speed sensor, then go to step 26.

DYNOMITE -2009-

26. Reconnect all connectors.

27. Turn the ignition switch to ON (II).

28. Clear the DTC with the HDS.

29. Start the engine, run the vehicle with the shift lever in D at speeds over 20 km/h (12 mph) for at least 10 seconds. Slow down and stop the wheels.

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0721 or P0722 indicated?

    YES—Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 29.

32. Reconnect all connectors.

33. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

34. Start the engine, run the vehicle with the shift lever in D at speeds over 20 km/h (12 mph) for at least 10 seconds. Slow down and stop the wheels.

35. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0721 or P0722 indicated?

    YES—Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 34. If the PCM was substituted, go to step 1.

    NO—Go to step 36.

36. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 35, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 34. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 34.

DTC Troubleshooting (cont'd)

DTC P0723: Output Shaft (Countershaft) Speed Sensor Intermittent Failure

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears with the engine speed at 2,000 rpm or higher.
4. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

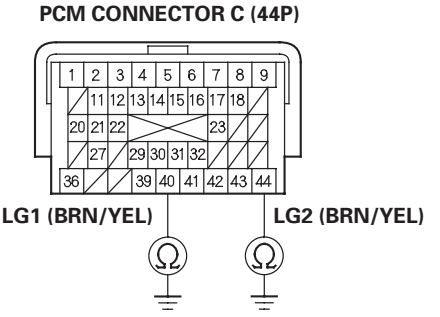
   YES—Go to step 5.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, go to step 3.
5. Turn the ignition switch to LOCK (0).
6. Disconnect the output shaft (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 7.

   NO—Repair the connector terminals, then go to step 23.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector C (44P).
9. Check for continuity between PCM connector terminal C40 and body ground, and between PCM connector terminal C44 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair open in the wires between PCM connector terminals C40, C44, and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 23.

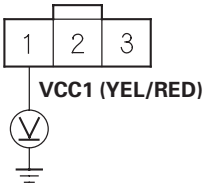
DYNOMITE -2009-

10. Connect PCM connector C (44P).

11. Turn the ignition switch to ON (II).

12. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

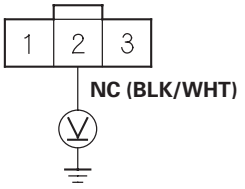
Is there about 5 V?

YES—Go to step 13.

NO—Go to step 19.

13. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

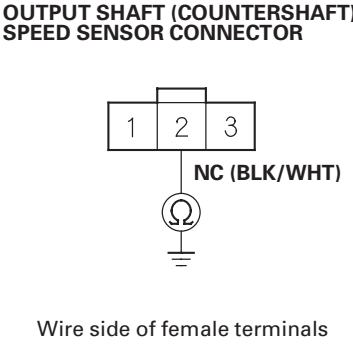
YES—Replace the output shaft (countershaft) speed sensor (see page 14-227), then go to step 23.

NO—Go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

14. Turn the ignition switch to LOCK (0).
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector C (44P).
17. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

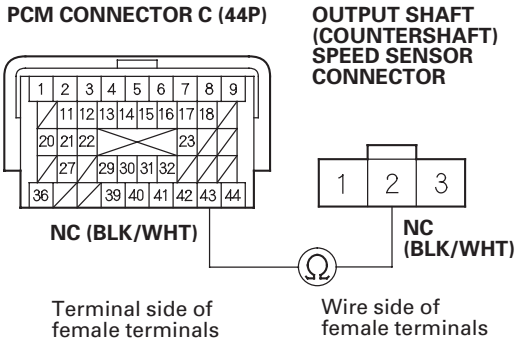


Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C43 and the output shaft (countershaft) speed sensor, then go to step 23.

NO—Go to step 18.

18. Check for continuity between PCM connector terminal C43 and output shaft (countershaft) speed sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between PCM connector terminal C43 and the output shaft (countershaft) speed sensor, then go to step 23.

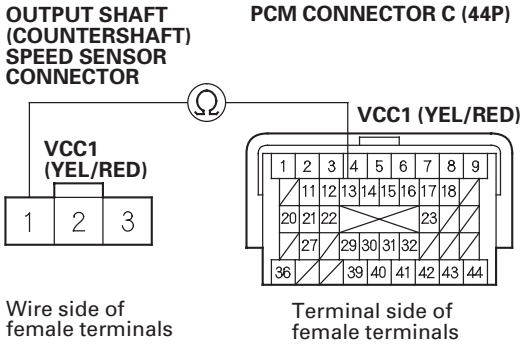
DYNOMITE -2009-

19. Turn the ignition switch to LOCK (0).

20. Jump the SCS line with the HDS.

21. Disconnect PCM connector C (44P).

22. Check for continuity between PCM connector terminal C13 and output shaft (countershaft) speed sensor connector terminal No. 1.



Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between PCM connector terminal C13 and the output shaft (countershaft) speed sensor, then go to step 23.

23. Reconnect all connectors.

24. Turn the ignition switch to ON (II).

25. Clear the DTC with the HDS.

26. Test-drive the vehicle with the shift lever in D at speeds over 20 km/h (12 mph), and let the transmission shift through all five gears.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0723 indicated?

    YES—Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 26.

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

29. Reconnect all connectors.

30. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

31. Test-drive the vehicle with the shift lever in D at speeds over 20 km/h (12 mph), and let the transmission shift through all five gears.

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0723 indicated?

    YES—Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 31. If the PCM was substituted, go to step 1.

    NO—Go to step 33.

33. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 31. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 31.

DTC P0731: Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 12.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Test stall speed in D (see page 14-210).

   Is the stall speed within the service limits?

   YES—Go to step 5.

   NO—Shift valves A and D are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 12.

5. Measure the line pressure (see page 14-211).

   Is the line pressure within service limit?

   YES—Go to step 6.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 12.

DYNOMITE -2009-

6. Measure the 1st clutch pressure (see page 14-211).

   Is the 1st clutch pressure within the service limits?

   YES—Go to step 7.

   NO—Shift valves B and C are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 12.

7. Turn the ignition switch to ON (II).

8. Clear the DTC with the HDS.

9. Test-drive the vehicle in 1st gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0731 indicated?

    YES—Repair the 1st clutch, or replace the transmission, then go to step 12.

    NO—Go to step 11.

11. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, repair the 1st clutch, or replace the transmission, then go to step 12. If the HDS indicates NOT COMPLETED, go to step 9.

12. Test-drive the vehicle in 1st gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0731 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 12.

DTC Troubleshooting (cont'd)

DTC P0732: Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 12.

   NO—Replace the ATF (see page 14-232), then go to step 4.
4. Test stall speed in D (see page 14-210).

   Is the stall speed within the service limits?

   YES—Go to step 5.

   NO—Shift valve C is stuck. Repair shift valve C and the hydraulic circuit, or replace the transmission, then go to step 12.
5. Measure the line pressure (see page 14-211).

   Is the line pressure within service limit?

   YES—Go to step 6.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 12.
6. Measure the 2nd clutch pressure (see page 14-211).

   Is the 2nd clutch pressure within the service limits?

   YES—Go to step 7.

   NO—Shift valves A and B are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 12.
7. Turn the ignition switch to ON (II).
8. Clear the DTC with the HDS.
9. Test-drive the vehicle in 2nd gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0732 indicated?

    YES—Repair the 2nd clutch, or replace the transmission, then go to step 12.

    NO—Go to step 11.
11. Monitor the OBD STATUS for P0732 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, repair the 2nd clutch, or replace the transmission, then go to step 12. If the HDS indicates NOT COMPLETED, go to step 9.

DYNOMITE -2009-

12. Test-drive the vehicle in 2nd gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0732 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0732 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0733: Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Measure the line pressure (see page 14-211).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.

5. Measure the 3rd clutch pressure (see page 14-211).

   Is the 3rd clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves A and D are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

6. Turn the ignition switch to ON (II).

7. Clear the DTC with the HDS.

8. Test-drive the vehicle in 3rd gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

9. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0733 indicated?

   YES—Repair the 3rd clutch, or replace the transmission, then go to step 11.

   NO—Go to step 10.

10. Monitor the OBD STATUS for P0733 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 9, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, repair the 3rd clutch, or replace the transmission, then go to step 11. If the HDS indicates NOT COMPLETED, go to step 8.

11. Test-drive the vehicle in 3rd gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0733 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO—Go to step 13.

13. Monitor the OBD STATUS for P0733 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 11.

DYNOMITE -2009-

DTC P0734: Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see page 14-232), then go to step 4.
4. Measure the line pressure (see page 14-211).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.
5. Measure the 4th clutch pressure (see page 14-211).

   Is the 4th clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves B and C, and the servo control valve are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 11.
6. Turn the ignition switch to ON (II).
7. Clear the DTC with the HDS.
8. Test-drive the vehicle in 4th gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.
9. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0734 indicated?

   YES—Repair the 4th clutch, or replace the transmission, then go to step 11.

   NO—Go to step 10.
10. Monitor the OBD STATUS for P0734 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 9, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, repair the 4th clutch, or replace the transmission, then go to step 11. If the HDS indicates NOT COMPLETED, go to step 8.

(cont'd)

DTC Troubleshooting (cont'd)

11. Test-drive the vehicle in 4th gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0734 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO—Go to step 13.

13. Monitor the OBD STATUS for P0734 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 11.

DTC P0735: Problem in 5th Clutch and 5th Clutch Hydraulic Circuit (5th Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Measure the line pressure (see page 14-211).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.

5. Measure the 5th clutch pressure (see page 14-211).

   Is the 5th clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves A, B, and/or D are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 11.

DYNOMITE -2009-

6. Turn the ignition switch to ON (II).

7. Clear the DTC with the HDS.

8. Test-drive the vehicle in 5th gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

9. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0735 indicated?

   YES—Repair the 5th clutch, or replace the transmission, then go to step 11.

   NO—Go to step 10.

10. Monitor the OBD STATUS for P0735 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 9, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, repair the 5th clutch, or replace the transmission, then go to step 11. If the HDS indicates NOT COMPLETED, go to step 8.

11. Test-drive the vehicle in 5th gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0735 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO—Go to step 13.

13. Monitor the OBD STATUS for P0735 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 11.

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

DTC P0741: Torque Converter Clutch Hydraulic Circuit Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.
   NO—Replace the ATF (see page 14-232), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and check that shift solenoid valve E operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 7.
   NO—Replace shift solenoid valve E (see page 14-217), then go to step 11.
7. Run the engine until the ECT Sensor temperature reaches 80 ℃ (176 ℉).
8. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 9.
   NO—Follow the instructions indicated on the HDS according to the test result. Go to step 11 if any part was replaced.
9. Test-drive the vehicle on a level road with a steady speed at 96 km/h (60 mph) for at least 20 seconds.
10. Monitor the OBD STATUS for P0741 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair the faulty torque converter clutch mechanism, the torque converter clutch hydraulic circuit, the lock-up shift valve, or the lock-up control valve, or replace the transmission, then go to step 13.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 9.
11. Turn the ignition switch to ON (II).
12. Clear the DTC with the HDS.
13. Test-drive the vehicle on a level road with a steady speed at 96 km/h (60 mph) for at least 20 seconds, or test-drive the vehicle for several minutes under the same condition as those indicated by the freeze data.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0741 indicated?

    YES—Go to step 5.

    NO—Go to step 15.
15. Monitor the OBD STATUS for P0741 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 5. If the HDS indicates NOT COMPLETED, go to step 13.

DYNOMITE -2009-

DTC P0747: A/T Clutch Pressure Control Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 14.

   NO—Replace the ATF (see page 14-232), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P0747 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.
9. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Follow the instructions indicated on the HDS according to the test result, if the HDS has not determined the cause of the failure, go to step 10. If any part is replaced, go to step 11.
10. Inspect A/T clutch pressure control solenoid valve A (see page 14-219).

    Does A/T clutch pressure control solenoid valve A operate properly?

    YES—Repair the hydraulic system related with shift valves B and E, or replace the transmission, then go to step 13.

    NO—Replace A/T clutch pressure control solenoid valve A (see page 14-221), then go to step 11.
11. Turn the ignition switch to ON (II).
12. Clear the DTC with the HDS.
13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0747 indicated?

    YES—Go to step 8.

    NO—Go to step 15.

15. Monitor the OBD STATUS for P0747 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DTC P0752: Shift Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 12.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P0752 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

DYNOMITE -2009-

9. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and check that shift solenoid valve A operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve A (see page 14-217), then go to step 12.

10. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

11. Monitor the OBD STATUS for P0752 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair shift valve A, or replace the transmission, then go to step 12.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 10.

12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0752 indicated?

    YES—Go to step 8.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0752 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 12.

DTC Troubleshooting (cont'd)

DTC P0756: Shift Solenoid Valve B Stuck OFF

DTC P0757: Shift Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 12.

   NO—Replace the ATF (see page 14-232), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.
9. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and check that shift solenoid valve B operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve B (see page 14-217), then go to step 12.
10. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
11. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair shift valve B, or replace the transmission, then go to step 12.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 10.
12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

DYNOMITE -2009-

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0756 or P0757 indicated?

    YES—Go to step 8.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0761: Shift Solenoid Valve C Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 12.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P0761 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

9. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and check that shift solenoid valve C operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve C (see page 14-217), then go to step 12.

10. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

11. Monitor the OBD STATUS for P0761 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair shift valve C, or replace the transmission, then go to step 12.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 10.

12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0761 indicated?

    YES—Go to step 8.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0761 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 12.

DYNOMITE -2009-

DTC P0771: Shift Solenoid Valve E Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 12.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P0771 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and check that shift solenoid valve E operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve E (see page 14-217), then go to step 12.

10. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

11. Monitor the OBD STATUS for P0771 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair shift valve E, or replace the transmission, then go to step 12.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 10.

12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle at speeds over 19 mph (30 km/h) for at least 20 seconds.

(cont'd)

DTC Troubleshooting (cont'd)

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0771 indicated?

    YES—Go to step 8.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0771 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0776: A/T Clutch Pressure Control Solenoid Valve B Stuck OFF

DTC P0777: A/T Clutch Pressure Control Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P0776 or P0777 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

DYNOMITE -2009-

9. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Does the HDS indicate NORMAL?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Follow the instructions indicated on the HDS according to the test result, if the HDS has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11.

10. Inspect A/T clutch pressure control solenoid valve B (see page 14-222).

    Does A/T clutch pressure control solenoid valve B work properly?

    YES—Repair the hydraulic system related to shift valve B, or replace the transmission, then go to step 13.

    NO—Replace A/T clutch pressure control solenoid valve B (see page 14-226), then go to step 11.

11. Turn the ignition switch to ON (II).

12. Clear the DTC with the HDS.

13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0776 or P0777 indicated?

    YES—Go to step 8.

    NO—Go to step 15.

15. Monitor the OBD STATUS for P0776 or P0777 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

DTC P0780: Shift Control System

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is stored whenever DTCs P1730, P1731, P1732, P1733, or P1734 are detected.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

4. Check for other DTCs indicated along with DTC P0780.

   NOTE: DTC P0780 means there is one or more A/T DTCs regarding the shift control system.

   Are there other DTCs?

   YES—Go to the indicated DTC's troubleshooting. ■

   - P1730 (see page 14-195)
   - P1731 (see page 14-197)
   - P1732 (see page 14-198)
   - P1733 (see page 14-200)
   - P1734 (see page 14-201)

   NO—Go to step 5.

5. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0780 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-7). If the PCM was substituted, go to step 1.

   NO—Go to step 8.

8. Monitor the OBD STATUS for P0780 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the PCM was updated and HDS indicates FAILED, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DYNOMITE -2009-

DTC P0796: A/T Clutch Pressure Control Solenoid Valve C Stuck OFF

DTC P0797: A/T Clutch Pressure Control Solenoid Valve C Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P0796 or P0797 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Does the HDS indicate NORMAL?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Follow the instructions indicated on the HDS according to the test result, if the HDS has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11.

10. Inspect A/T clutch pressure control solenoid valve C (see page 14-224).

    Does A/T clutch pressure control solenoid valve C work properly?

    YES—Repair the hydraulic system related to shift valves B and C, or replace the transmission, then go to step 13.

    NO—Replace A/T clutch pressure control solenoid valve C (see page 14-226), then go to step 11.

11. Turn the ignition switch to ON (II).

12. Clear the DTC with the HDS.

13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0796 or P0797 indicated?

    YES—Go to step 8.

    NO—Go to step 15.

15. Monitor the OBD STATUS for P0796 or P0797 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DTC P0842: Short in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Check the 2nd Pressure Switch in the Data List with the HDS when not in 2nd gear.

   Is the 2nd Pressure Switch OFF?

   YES—Go to step 4.

   NO—Go to step 7.

4. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

5. Test-drive the vehicle in 4th gear with the shift lever in D for at least 2 seconds.

6. Monitor the OBD STATUS for P0842 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 7.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 3.

7. Turn the ignition switch to LOCK (0).

8. Disconnect the 2nd clutch transmission fluid pressure switch connector.

9. Turn the ignition switch to ON (II).

DYNOMITE -2009-

10. Check the 2nd Pressure Switch in the Data List with the HDS.

    Is the 2nd Pressure Switch OFF?

    YES—Replace the 2nd clutch transmission fluid pressure switch (see page 14-228), then go to step 15.

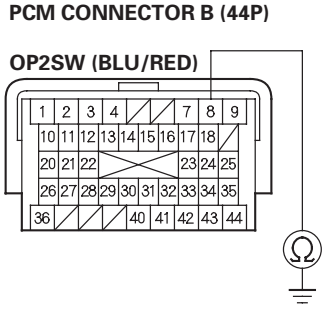
    NO—Go to step 11.

11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect PCM connector B (44P).

14. Check for continuity between PCM connector terminal B8 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B8 and the 2nd clutch transmission fluid pressure switch, then go to step 15.

NO—Go to step 22.

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Clear the DTC with the HDS.

18. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

19. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0842 indicated?

    YES—Check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0842 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

25. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.

(cont'd)

DTC Troubleshooting (cont'd)

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0842 indicated?

    YES—Check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 27.

27. Monitor the OBD STATUS for P0842 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 26, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0843: Open in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

4. Shift to S, then select 2nd gear by pressing the paddle shifter + (upshift switch) while pressing the brake pedal, and check if the Shift Control indicates 2nd in the Data List with the HDS.

5. Check the 2nd Pressure Switch in the Data List with the HDS .

    Is the 2nd Pressure Switch ON?

    YES—Go to step 6.

    NO—Go to step 8.

6. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds.

7. Monitor the OBD STATUS for P0843 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Go to step 8.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 6.

DYNOMITE -2009-

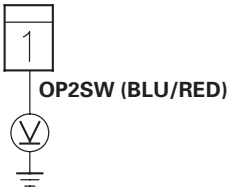
8. Turn the ignition switch to LOCK (0).

9. Disconnect the 2nd clutch transmission fluid pressure switch connector.

10. Turn the ignition switch to ON (II).

11. Measure the voltage between the 2nd clutch transmission fluid pressure switch connector terminal and body ground.

2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the 2nd clutch transmission fluid pressure switch (see page 14-228), then go to step 16.

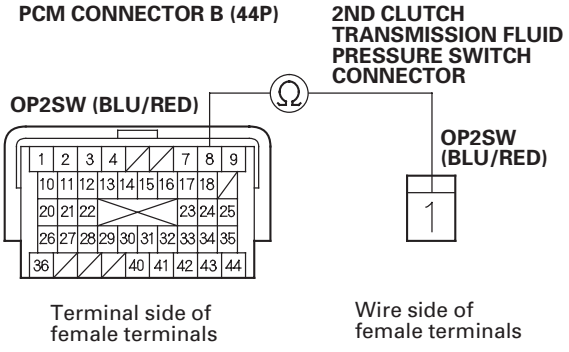
NO—Go to step 12.

12. Turn the ignition switch to LOCK (0).

13. Jump the SCS line with the HDS.

14. Disconnect PCM connector B (44P).

15. Check for continuity between PCM connector terminal B8 and the 2nd clutch transmission fluid pressure switch connector terminal.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between PCM connector terminal B8 and the 2nd clutch transmission fluid pressure switch, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

20. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0843 indicated?

    YES—Check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0843 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

23. Reconnect all connectors.

24. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

25. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

26. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0843 indicated?

    YES—Check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 25. If the PCM was substituted, go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for P0843 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 25. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 25.

DYNOMITE -2009-

DTC P0847: Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check the 3rd Pressure Switch in the Data List with the HDS when the transmission is not in 3rd gear.

   Is the 3rd Pressure Switch OFF?

   YES—Go to step 4.

   NO—Go to step 7.
4. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
5. Test-drive the vehicle in 4th gear with the shift lever in D for at least 2 seconds.
6. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

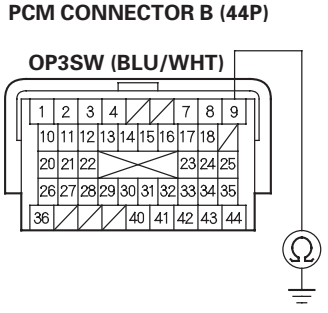
   YES—Go to step 7.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 4.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the 3rd clutch transmission fluid pressure switch connector.
9. Turn the ignition switch to ON (II).
10. Check the 3rd Pressure Switch in the Data List with the HDS.

    Is the 3rd Pressure Switch OFF?

    YES—Replace the 3rd clutch transmission fluid pressure switch (see page 14-228), then go to step 15.

    NO—Go to step 11.
11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Check for continuity between PCM connector terminal B9 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B9 and the 3rd clutch transmission fluid pressure switch, then go to step 15.

NO—Go to step 22.

(cont'd)

DTC Troubleshooting (cont'd)

15. Reconnect all connectors.
16. Turn the ignition switch to ON (II).
17. Clear the DTC with the HDS.
18. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
19. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0847 indicated?

    YES—Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 21.
21. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.
22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
25. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0847 indicated?

    YES—Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 27.
27. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 26, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DYNOMITE -2009-

DTC P0848: Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Test-drive the vehicle in 3rd gear in S, and check if the Shift Control indicates 3rd in the Data List with the HDS.
5. Check the 3rd Pressure Switch in the Data List with the HDS.

   Is the 3rd Pressure Switch ON?

   YES—Go to step 6.

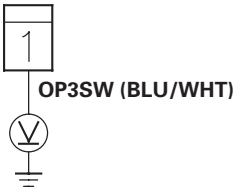
   NO—Go to step 8.
6. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds.
7. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 6.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the 3rd clutch transmission fluid pressure switch connector.
10. Turn the ignition switch to ON (II).
11. 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 about 5 V?

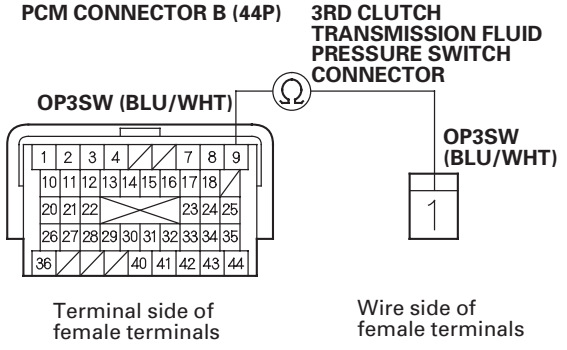
YES—Replace the 3rd clutch transmission fluid pressure switch (see page 14-228), then go to step 16.

NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (44P).
15. Check for continuity between PCM connector terminal B9 and the 3rd clutch transmission fluid pressure switch connector terminal.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between PCM connector terminal B9 and the 3rd clutch transmission fluid pressure switch, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
20. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0848 indicated?

    YES—Check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

DYNOMITE -2009-

23. Reconnect all connectors.

24. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

25. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

26. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0848 indicated?

    YES—Check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 25. If the PCM was substituted, go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 25. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 25.

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

DTC P0962: Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0962 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 6.

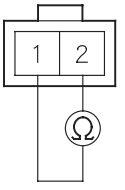
   NO—Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control Menu, select A/T clutch pressure control solenoid valve A at 1.0 A.
7. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve A connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

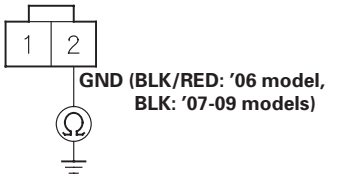
Is there 3— 10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve A (see page 14-221), then go to step 16.

11. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve A and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 16.

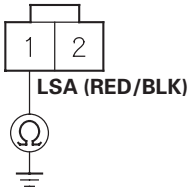
DYNOMITE -2009-

12. Jump the SCS line with the HDS.

13. Disconnect PCM connector B (44P).

14. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 1 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

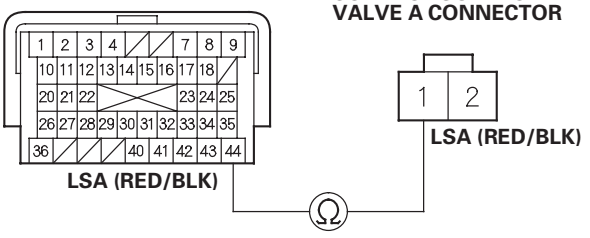
YES—Repair short to body ground in the wire between A/T clutch pressure control solenoid valve A connector terminal No. 1 and body ground, then go to step 16.

NO—Go to step 15.

15. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 1 and PCM connector terminal B44.

PCM CONNECTOR B (44P)

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve A connector terminal No. 1 and PCM connector terminal B44, then go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and wait for at least 1 second.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0962 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
24. Start the engine, and wait for at least 1 second.
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0962 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DYNOMITE -2009-

DTC P0963: Problem in A/T Clutch Pressure Control Solenoid Valve A

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0963 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 6.

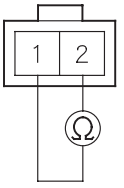
   NO—Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control Menu, select A/T clutch pressure control solenoid valve A at 0.2 A.
7. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve A connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

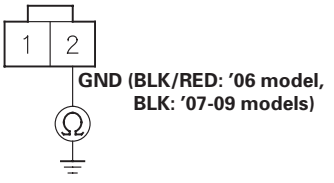
Is there 3— 10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve A (see page 14-221), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve A and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Start the engine, and wait for at least 1 second.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0963 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

    NO—Go to step 17.

17. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
20. Start the engine, and wait for at least 1 second.
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0963 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 20.

DYNOMITE -2009-

DTC P0966: Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0966 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 6.

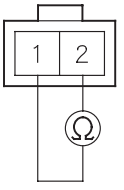
   NO—Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control Menu, select A/T clutch pressure control solenoid valve B at 1.0 A.
7. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve B connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

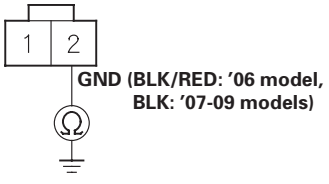
Is there 3— 10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve B (see page 14-226), then go to step 16.

11. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

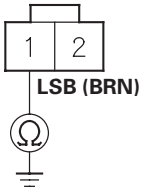
NO—Repair open in the wire between A/T clutch pressure control solenoid valve B and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 1 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

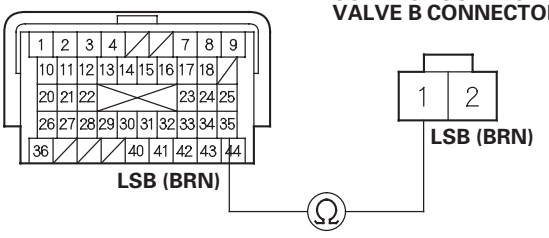
YES—Repair short to body ground in the wire between A/T clutch pressure control solenoid valve B connector terminal No. 1 and body ground, then go to step 16.

NO—Go to step 15.

15. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 1 and PCM connector terminal B35.

PCM CONNECTOR B (44P)

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve B connector terminal No. 1 and PCM connector terminal B35, then go to step 16.

DYNOMITE -2009-

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine, and wait for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0966 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine, and wait for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0966 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0967: Problem in A/T Clutch Pressure Control Solenoid Valve B

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0967 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 6.

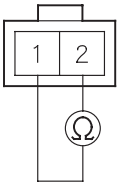
   NO—Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control Menu, select A/T clutch pressure control solenoid valve B at 0.2 A.
7. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve B connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

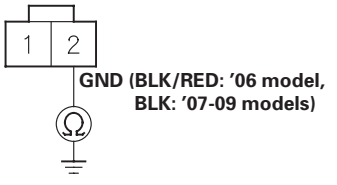
Is there 3— 10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve B (see page 14-226), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve B and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 12.

DYNOMITE -2009-

12. Reconnect all connectors.

13. Turn the ignition switch to ON (II).

14. Clear the DTC with the HDS.

15. Start the engine, and wait for at least 1 second.

16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0967 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

    NO—Go to step 17.

17. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

20. Start the engine, and wait for at least 1 second.

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0967 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 20.

DTC Troubleshooting (cont'd)

DTC P0970: Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0970 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 6.

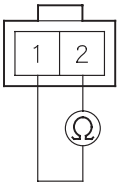
   NO—Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control Menu, select A/T clutch pressure control solenoid valve C at 1.0 A.
7. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve C connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

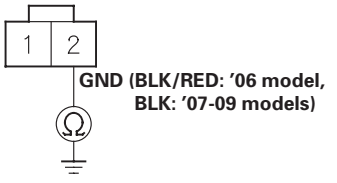
Is there 3— 10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve C (see page 14-226), then go to step 16.

11. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve C and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 16.

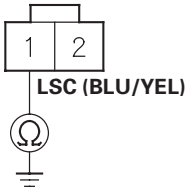
DYNOMITE -2009-

12. Jump the SCS line with the HDS.

13. Disconnect PCM connector B (44P).

14. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 1 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

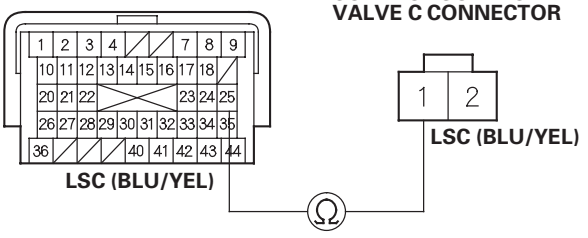
YES—Repair short to body ground in the wire between A/T clutch pressure control solenoid valve C connector terminal No. 1 and body ground, then go to step 16.

NO—Go to step 15.

15. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 1 and PCM connector terminal B25.

PCM CONNECTOR B (44P)

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve C connector terminal No. 1 and PCM connector terminal B25, then go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and wait for at least 1 second.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0970 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
24. Start the engine, and wait for at least 1 second.
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0970 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DYNOMITE -2009-

DTC P0971: Problem in A/T Clutch Pressure Control Solenoid Valve C

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0971 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 6.

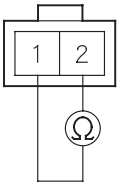
   NO—Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control Menu, select A/T clutch pressure control solenoid valve C at 0.2 A.
7. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve C connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

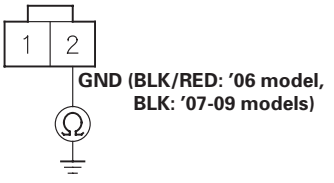
Is there 3— 10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve C (see page 14-226), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve C and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 12.

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Start the engine, and wait for at least 1 second.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0971 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

    NO—Go to step 17.

17. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
20. Start the engine, and wait for at least 1 second.
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0971 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 20.

DYNOMITE -2009-

DTC P0973: Short in Shift Solenoid Valve A Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0973 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.

   Is a clicking sound heard?

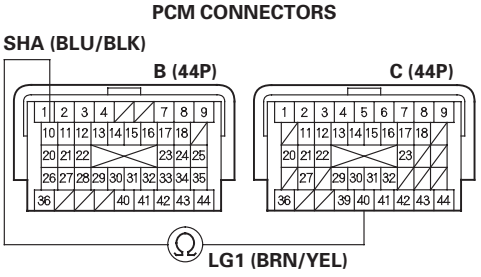
   YES—Go to step 6.

   NO—Go to step 8.
6. Test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
7. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B10 and C40.

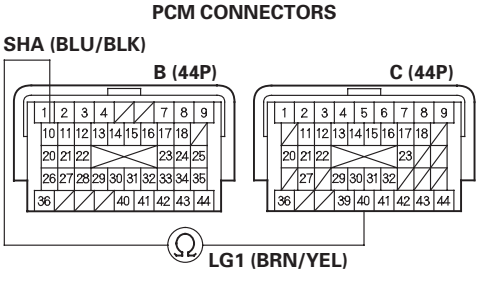


Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 12.

NO—Go to step 22.
12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminals B10 and C40.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B10 and the shift solenoid wire harness connector, then go to step 16.

NO—Go to step 14.

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

14. Inspect shift solenoid valve A and the shift solenoid wire harness (see page 14-215).

15. Replace either shift solenoid valve A or the shift solenoid wire harness (see page 14-217), whichever failed the test, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0973 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0973 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DYNOMITE -2009-

DTC P0974: Open in Shift Solenoid Valve A Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0974 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.

   Is a clicking sound heard?

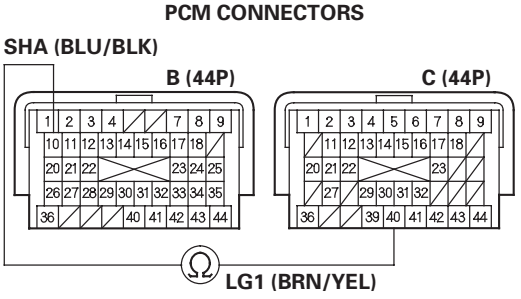
   YES—Go to step 6.

   NO—Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B10 and C40.



Terminal side of female terminals

Is there 12—25 Ω ?

YES—Go to step 22.

NO—Go to step 12.

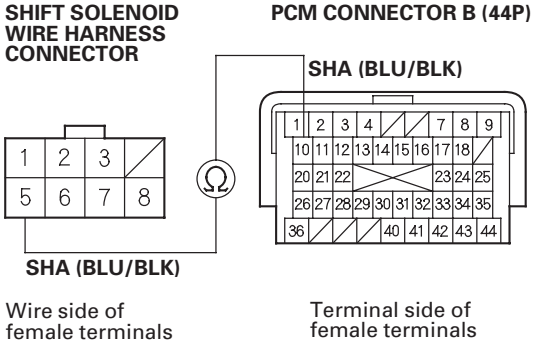
(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

12. Disconnect the shift solenoid wire harness connector.

13. Check for continuity between PCM connector terminal B10 and shift solenoid wire harness connector terminal No. 5.



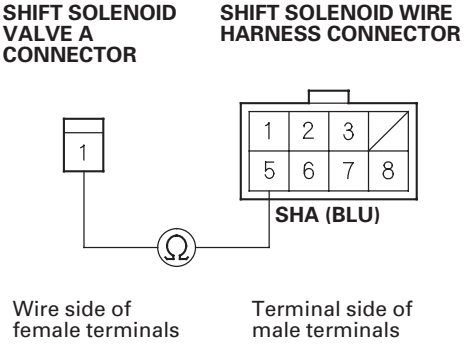
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between PCM connector terminal B10 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-217).

15. Check for continuity between shift solenoid wire harness connector terminal No. 5 and the shift solenoid valve A connector terminal.



Is there continuity?

YES—Replace shift solenoid valve A (see page 14-217), then go to step 19.

NO—Replace the shift solenoid wire harness (see page 14-217), then go to step 19.

DYNOMITE -2009-

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0974 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve A and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0974 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0976: Short in Shift Solenoid Valve B Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0976 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.

   Is a clicking sound heard?

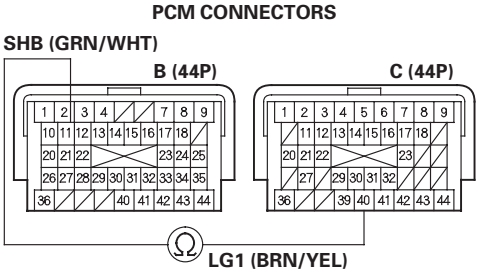
   YES—Go to step 6.

   NO—Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B11 and C40.

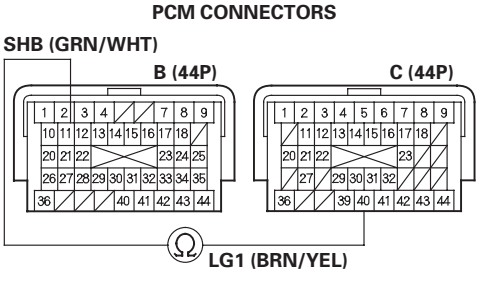


Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 12.

NO—Go to step 22.
12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminals B11 and C40.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B11 and the shift solenoid wire harness connector, then go to step 16.

NO—Go to step 14.

DYNOMITE -2009-

14. Inspect shift solenoid valve B and the shift solenoid wire harness (see page 14-215).

15. Replace either shift solenoid valve B or the shift solenoid wire harness (see page 14-217), whichever failed the test, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Test-drive the vehicle in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle in 3rd gear for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0976 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Test-drive the vehicle in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle in 3rd gear for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0976 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0977: Open in Shift Solenoid Valve B Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle with the shift lever in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle in 3rd gear for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0977 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.

   Is a clicking sound heard?

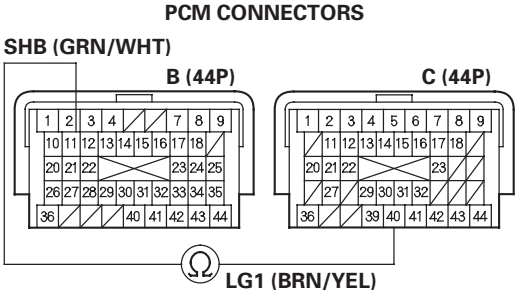
   YES—Go to step 6.

   NO—Go to step 8.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle in 3rd gear for at least 1 second.
7. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B11 and C40.



Terminal side of female terminals

Is there 12—25 Ω ?

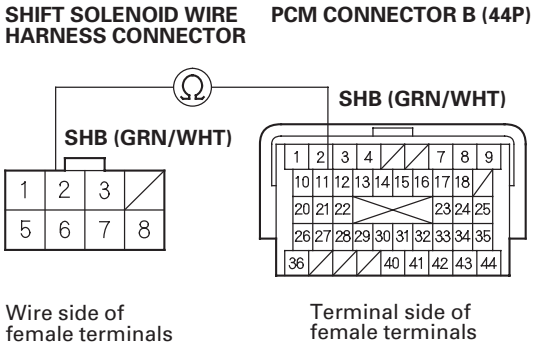
YES—Go to step 22.

NO—Go to step 12.

DYNOMITE -2009-

12. Disconnect the shift solenoid wire harness connector.

13. Check for continuity between PCM connector terminal B11 and shift solenoid wire harness connector terminal No. 2.



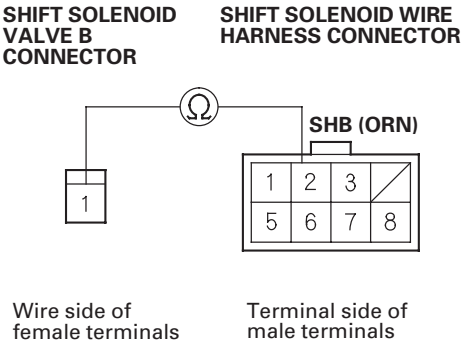
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between PCM connector terminal B11 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-217).

15. Check for continuity between shift solenoid wire harness connector terminal No. 2 and the shift solenoid valve B connector terminal.



Is there continuity?

YES—Replace shift solenoid valve B (see page 14-217), then go to step 19.

NO—Replace the shift solenoid wire harness (see page 14-217), then go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Test-drive the vehicle in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle in 3rd gear for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0977 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve B and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Test-drive the vehicle in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle in 3rd gear for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0977 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DYNOMITE -2009-

DTC P0979: Short in Shift Solenoid Valve C Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0979 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.

   Is a clicking sound heard?

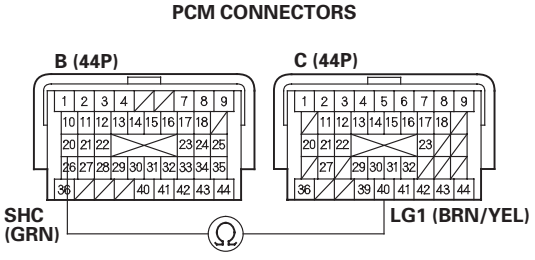
   YES—Go to step 6.

   NO—Go to step 8.
6. Test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
7. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B20 and C40.

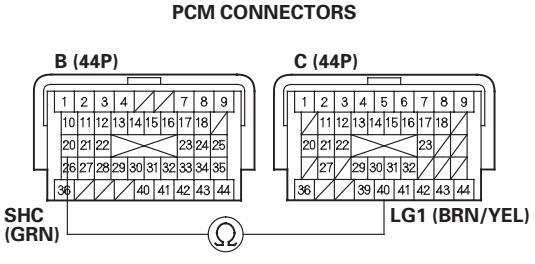


Terminal side of female terminals

   Is there less than 12 Ω ?

   YES—Go to step 12.

   NO—Go to step 22.
12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminals B20 and C40.



Terminal side of female terminals

   Is there continuity?

   YES—Repair short to body ground in the wire between PCM connector terminal B20 and the shift solenoid wire harness connector, then go to step 16.

   NO—Go to step 14.

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

14. Inspect shift solenoid valve C and the shift solenoid wire harness (see page 14-215).

15. Replace either shift solenoid valve C or the shift solenoid wire harness (see page 14-217), whichever failed the test, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0979 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0979 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DYNOMITE -2009-

DTC P0980: Open in Shift Solenoid Valve C Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0980 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

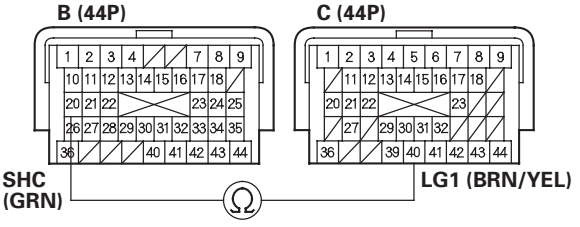
   NO—Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B20 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there 12—25 Ω ?

YES—Go to step 22.

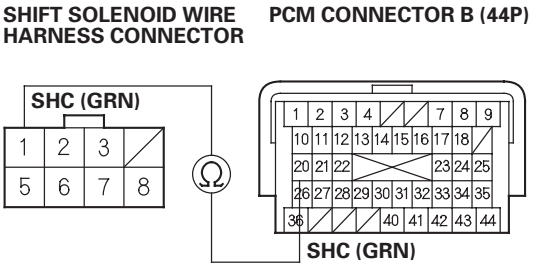
NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Disconnect the shift solenoid wire harness connector.

13. Check for continuity between PCM connector terminal B20 and shift solenoid wire harness connector terminal No. 1.



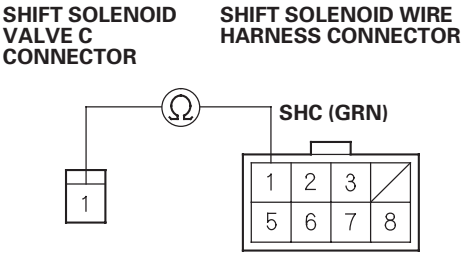
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between PCM connector terminal B20 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-217).

15. Check for continuity between shift solenoid wire harness connector terminal No. 1 and the shift solenoid valve C connector terminal.



Is there continuity?

YES—Replace shift solenoid valve C (see page 14-217), then go to step 19.

NO—Replace the shift solenoid wire harness (see page 14-217), then go to step 19.

DYNOMITE -2009-

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0980 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve C and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0980 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0982: Short in Shift Solenoid Valve D Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0982 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and test shift solenoid valve D with the HDS.

   Is a clicking sound heard?

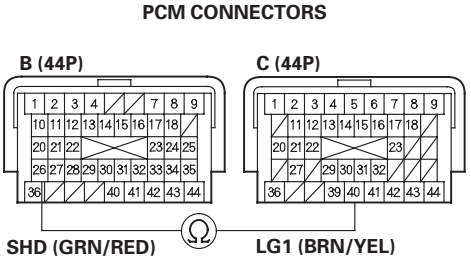
   YES—Go to step 6.

   NO—Go to step 8.
6. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 1 second.
7. Monitor the OBD STATUS for P0982 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B26 and C40.



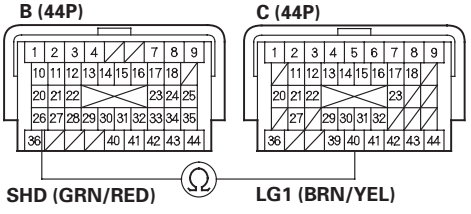
Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 12.

NO—Go to step 22.

12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminals B26 and C40.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B26 and the shift solenoid wire harness connector, then go to step 16.

NO—Go to step 14.

DYNOMITE -2009-

14. Inspect shift solenoid valve D and the shift solenoid wire harness (see page 14-215).

15. Replace either shift solenoid valve D or the shift solenoid wire harness (see page 14-217), whichever failed the test, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 2nd gear in D for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0982 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0982 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 2nd gear in D for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0982 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0982 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0983: Open in Shift Solenoid Valve D Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0983 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and test shift solenoid valve D with the HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

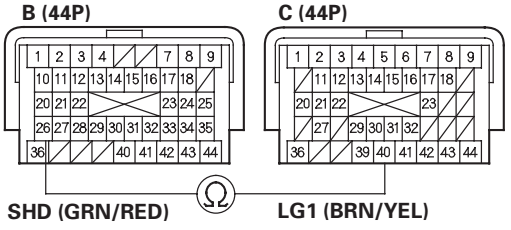
   NO—Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0983 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve D and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B26 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there 12—25 Ω ?

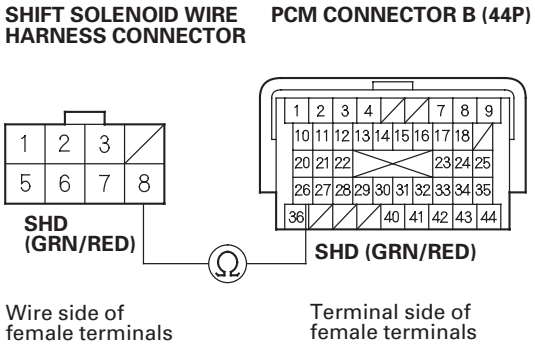
YES—Go to step 22.

NO—Go to step 12.

DYNOMITE -2009-

12. Disconnect the shift solenoid wire harness connector.

13. Check for continuity between PCM connector terminal B26 and shift solenoid wire harness connector terminal No. 8.



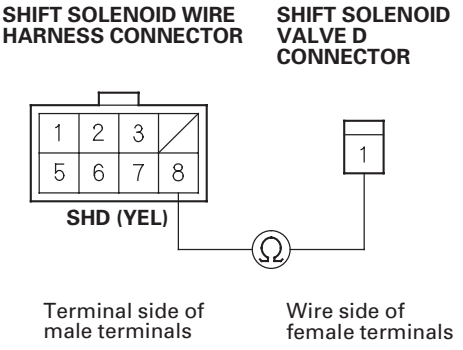
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between PCM connector terminal B26 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-217).

15. Check for continuity between shift solenoid wire harness connector terminal No. 8 and the shift solenoid valve D connector terminal.



Is there continuity?

YES—Replace shift solenoid valve D (see page 14-217), then go to step 19.

NO—Replace the shift solenoid wire harness (see page 14-217), then go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 2nd gear in D for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0983 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve D and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0983 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve D and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 2nd gear in D for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0983 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0983 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DYNOMITE -2009-

DTC P0985: Short in Shift Solenoid Valve E Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

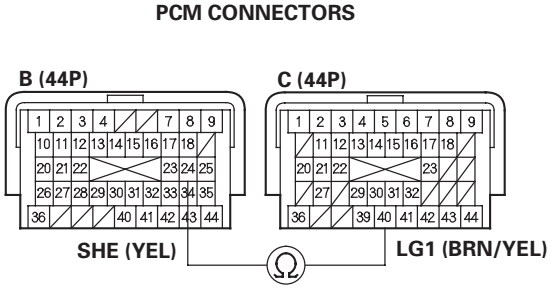
'06 Model

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0985 indicated?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Jump the SCS line with the HDS.
7. Disconnect PCM connectors B (44P) and C (44P).
8. Measure the resistance between PCM connector terminals B24 and C40.



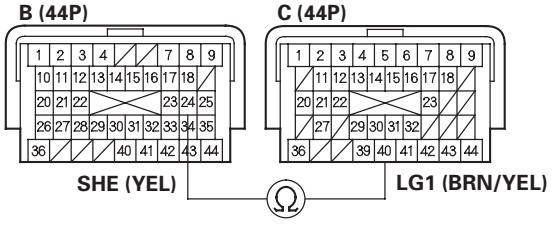
Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 9.

NO—Go to step 18.

9. Disconnect the shift solenoid wire harness connector.
10. Check for continuity between PCM connector terminals B24 and C40.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B24 and the shift solenoid wire harness connector, then go to step 13.

NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

11. Inspect shift solenoid valve E and the shift solenoid harness (see page 14-215).

12. Replace either shift solenoid valve E or the shift solenoid wire harness (see page 14-217), whichever failed the test, then go to step 13.

13. Reconnect all connectors.

14. Turn the ignition switch to ON (II).

15. Clear the DTC with the HDS.

16. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0985 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

20. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0985 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■

DYNOMITE -2009-

DTC P0985: Short in Shift Solenoid Valve E Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

'07-09 Models

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0985 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and test shift solenoid valve E with the HDS.

   Is a clicking sound heard?

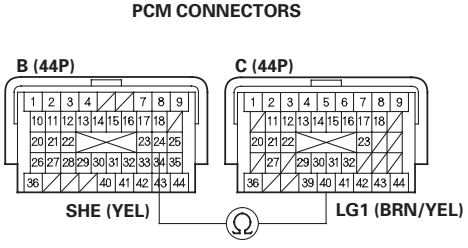
   YES—Go to step 6.

   NO—Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0985 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

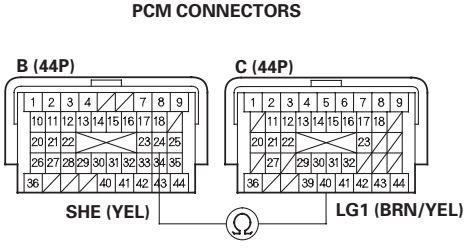
   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B24 and C40.



   Is there less than 12 Ω ?

   YES—Go to step 12.

   NO—Go to step 22.
12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminals B24 and C40.



   Is there continuity?

   YES—Repair short to body ground in the wire between PCM connector terminal B24 and the shift solenoid wire harness connector, then go to step 16.

   NO—Go to step 14.

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

14. Inspect shift solenoid valve E and the shift solenoid wire harness (see page 14-215).

15. Replace either shift solenoid valve E or the shift solenoid wire harness (see page 14-217), whichever failed the test, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0985 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0985 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0985 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0985 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DYNOMITE -2009-

DTC P0986: Open in Shift Solenoid Valve E Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in N, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0986 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and test shift solenoid valve E with the HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

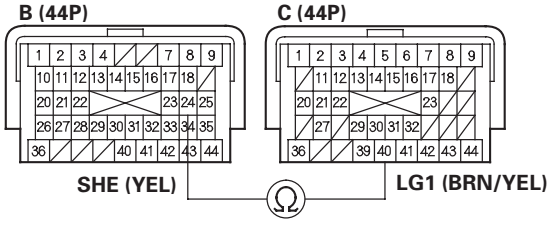
   NO—Go to step 8.
6. Start the engine with the shift lever in N, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0986 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve E and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B24 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there 12—25 Ω ?

YES—Go to step 22.

NO—Go to step 12.

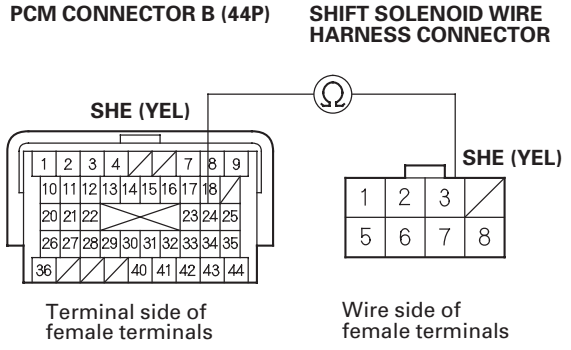
(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

12. Disconnect the shift solenoid wire harness connector.

13. Check for continuity between PCM connector terminal B24 and shift solenoid wire harness connector terminal No. 3.



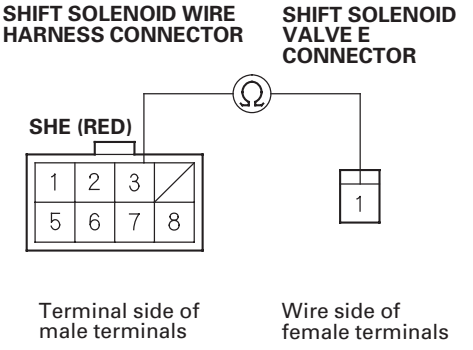
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between PCM connector terminal B24 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-217).

15. Check for continuity between shift solenoid wire harness connector terminal No. 3 and the shift solenoid valve E connector terminal.



Is there continuity?

YES—Replace shift solenoid valve E (see page 14-217), then go to step 19.

NO—Replace the shift solenoid wire harness (see page 14-217), then go to step 19.

DYNOMITE -2009-

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0986 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve E and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0986 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve E and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0986 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0986 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P16C0: PCM A/T Control System Incomplete Update

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is indicated when PCM updating is incomplete.
- Do not turn the ignition switch to LOCK (0) or ACCESSORY (I) while updating the PCM. If you turn the ignition switch to LOCK (0) or ACCESSORY (I) before completion, the PCM can be damage.

1. Update the PCM (see page 11-227).
2. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P16C0 indicated?

   YES—Replace the PCM (see page 11-228). ■

   NO—PCM updating is complete. ■

DTC P1717: Open in Transmission Range Switch ATPRVS Switch Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Shift to R, and check the A/T R Switch in the Data List with the HDS.

   Is the A/T R SWITCH ON?

   YES—Go to step 3.

   NO—Check for proper transmission range switch installation (see page 14-267), adjust the shift cable (see page 14-259), then recheck. If transmission range switch and shift cable are OK, go to step 4.
3. Check the Reverse Switch (ATPRVS) in the Data List with the HDS.

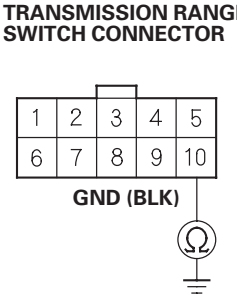
   Is the Reverse Switch (ATPRVS) ON?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Go to step 4.
4. Turn the ignition switch to LOCK (0).
5. Disconnect the transmission range switch connector.

DYNOMITE -2009-

6. Check for continuity between transmission range switch connector terminal No. 10 and body ground.



Wire side of female terminals

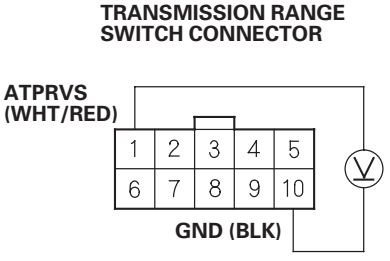
Is there continuity?

YES—Go to step 7.

NO—Repair open in the wire between transmission range switch connector terminal No. 10 and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 10.

7. Turn the ignition switch to ON (II).

8. Measure the voltage between transmission range switch connector terminals No. 1 and No. 10.



Wire side of female terminals

Is there about battery voltage?

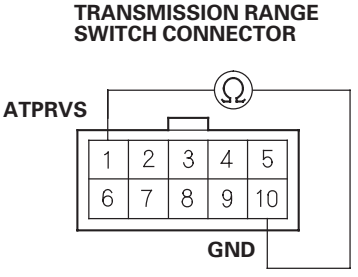
YES—Go to step 9.

NO—Repair open in the wire between PCM connector terminal B22 and the transmission range switch, then go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between transmission range switch connector terminals No. 1 and No. 10 while the shift lever is in R, and when the shift lever is shifted to any position other than R.



Terminal side of male terminals

Is there continuity while the shift lever is in R, and no continuity when the shift lever is shifted to any position other than R?

YES—Go to step 16.

NO—Replace the transmission range switch (see page 14-267), then go to step 10.

10. Reconnect all connectors.

11. Turn the ignition switch to ON (II).

12. Clear the DTC with the HDS.

13. Start the engine with the shift lever in P. Shift to N, then shift to R while pressing the brake pedal, and wait for at least 2 seconds.

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1717 indicated?

    YES—Check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1.

    NO—Go to step 15.

15. Monitor the OBD STATUS for P1717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 13.

DYNOMITE -2009-

16. Reconnect all connectors.

17. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

18. Start the engine with the shift lever in P. Shift to N, then shift to R while pressing the brake pedal, and wait for at least 2 seconds.

19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1717 indicated?

    YES—Check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 18. If the PCM was substituted, go to step 1.

    NO—Go to step 20.

20. Monitor the OBD STATUS for P1717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 18. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.

DTC P1730: Problem in Shift Control System:

- Shift Solenoid Valves A or D Stuck OFF
- Shift Solenoid Valve B Stuck ON
- Shift Valves A, B, or D Stuck

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review the General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 14.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P1730 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

(cont'd)

DYNOMITE -2009-

DTC Troubleshooting (cont'd)

9. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve A (see page 14-217), then go to step 14.

10. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and check it operates with the HDS.

    Is a clicking sound heard?

    YES—Go to step 11.

    NO—Replace shift solenoid valve B (see page 14-217), then go to step 14.

11. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and check it operates with the HDS.

    Is a clicking sound heard?

    YES—Go to step 12.

    NO—Replace shift solenoid valve D (see page 14-217), then go to step 14.

12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

13. Monitor the OBD STATUS for P1730 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair the hydraulic system related with shift valves A, B, and D, or replace the transmission, then go to step 14.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 12.

14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1730 indicated?

    YES—Go to step 8.

    NO—Go to step 16.

16. Monitor the OBD STATUS for P1730 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 14.

DYNOMITE -2009-

DTC P1731: Problem in Shift Control System:

- Shift Solenoid Valve E Stuck ON
- Shift Valve E Stuck
- A/T Clutch Pressure Control Solenoid Valve A Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 14.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve E (see page 14-217), then go to step 14.

10. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

    Does the HDS indicate NORMAL?

    YES—Intermittent failure, the system is OK at this time. ■

    NO—Follow the instructions indicated on the HDS by the test result, but if the HDS has not determined the cause of the failure, go to step 11. If any part was replaced, go to step 12.

11. Inspect A/T clutch pressure control solenoid valve A (see page 14-219).

    Does A/T clutch pressure control solenoid valve A operate properly?

    YES—Repair the hydraulic system related with shift valve E, or replace the transmission, then go to step 14.

    NO—Replace A/T clutch pressure control solenoid valve A (see page 14-221), then go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1731 indicated?

    YES—Go to step 8.

    NO—Go to step 16.
16. Monitor the OBD STATUS for P1731 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P1732: Problem in Shift Control System:

- Shift Solenoid Valves B or C Stuck ON
- Shift Valves B or C Stuck

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see page 14-232), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P1732 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.

DYNOMITE -2009-

9. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve B (see page 14-217), then go to step 13.

10. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and check it operates with the HDS.

    Is a clicking sound heard?

    YES—Go to step 11.

    NO—Replace shift solenoid valve C (see page 14-217), then go to step 13.

11. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

12. Monitor the OBD STATUS for P1732 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair the hydraulic system related with shift valves B and C, or replace the transmission, then go to step 13.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 11.

13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1732 indicated?

    YES—Go to step 8.

    NO—Go to step 15.

15. Monitor the OBD STATUS for P1732 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DTC Troubleshooting (cont'd)

DTC P1733: Problem in Shift Control System:

- Shift Solenoid Valve D Stuck ON
- Shift Valve D Stuck
- A/T Clutch Pressure Control Solenoid Valve C Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 14.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P1733 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve D (see page 14-217), then go to step 14.

10. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

    Does the HDS indicate NORMAL?

    YES—Intermittent failure, the system is OK at this time. ■

    NO—Follow the instructions indicated on the HDS according to the test result, but if the HDS has not determined the cause of the failure, go to step 11. If any part was replaced, go to step 12.

11. Inspect A/T clutch pressure control solenoid valve C (see page 14-224).

    Does A/T clutch pressure control solenoid valve C operate properly?

    YES—Repair the hydraulic system related with shift valve D, or replace the transmission, then go to step 14.

    NO—Replace A/T clutch pressure control solenoid valve C (see page 14-226), then go to step 12.

DYNOMITE -2009-

12. Turn the ignition switch to ON (II).

13. Clear the DTC with the HDS.

14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1733 indicated?

    YES—Go to step 8.

    NO—Go to step 16.

16. Monitor the OBD STATUS for P1733 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P1734: Problem in Shift Control System:

- Shift Solenoid Valves B or C Stuck OFF
- Shift Valves B or C Stuck

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P1734 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

9. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve B (see page 14-217), then go to step 13.

10. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and check it operates with the HDS.

    Is a clicking sound heard?

    YES—Go to step 11.

    NO—Replace shift solenoid valve C (see page 14-217), then go to step 13.

11. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

12. Monitor the OBD STATUS for P1734 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair the hydraulic system related with shift valves B and C, or replace the transmission, then go to step 13.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 11.

13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1734 indicated?

    YES—Go to step 8.

    NO—Go to step 15.

15. Monitor the OBD STATUS for P1734 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DYNOMITE -2009-

DTC P2122: Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit Low Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P2122 indicated in the PGM-FI SYSTEM?

   YES—Go to the DTC P2122 troubleshooting in the electronic throttle control system (ETCS) (see page 11-253). ■

   NO—Go to step 4.
4. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P2122 indicated in the A/T SYSTEM?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■
5. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
6. Start the engine, and wait for at least 2 minutes.
7. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P2122 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P2122 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC Troubleshooting (cont'd)

DTC P2123: Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit High Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P2123 indicated in the PGM-FI SYSTEM?

   YES—Go to the DTC P2123 troubleshooting in the electronic throttle control system (ETCS) (see page 11-256). ■

   NO—Go to step 4.
4. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P2123 indicated in the A/T SYSTEM?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■
5. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
6. Start the engine, and wait for at least 2 minutes.
7. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P2123 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P2123 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DYNOMITE -2009-

DTC U0028: F-CAN Malfunction (BUS-OFF (PCM))

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC U0028 indicated in the PGM-FI SYSTEM?

   YES—Go to the DTC U0028 troubleshooting in the PGM-FI SYSTEM (see page 11-183). ■

   NO—Go to step 4.

4. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0028 indicated in the A/T SYSTEM?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■

5. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

6. Start the engine, and wait for at least 2 minutes.

7. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0028 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO—Go to step 8.

8. Monitor the OBD STATUS for U0028 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC Troubleshooting (cont'd)

DTC U0122: F-CAN Malfunction (PCM-VSA Modulator-Control Unit)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC U0122 indicated in the PGM-FI SYSTEM?

   YES—Go to the DTC U0122 troubleshooting in the PGM-FI SYSTEM (see page 11-184). ■

   NO—Go to step 4.
4. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0122 indicated in the A/T SYSTEM?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■
5. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
6. Start the engine, and wait for at least 2 minutes.
7. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0122 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals between the VSA modulator-control unit and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for U0122 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the VSA modulator-control unit and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DYNOMITE -2009-

DTC U0155: F-CAN Malfunction (PCM-Gauge Control Module)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC U0155 indicated in the PGM-FI SYSTEM?

   YES—Go to the DTC U0155 troubleshooting in the PGM-FI SYSTEM (see page 11-188). ■

   NO—Go to step 4.

4. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0155 indicated in the A/T SYSTEM?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■

5. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

6. Start the engine, and wait for at least 2 minutes.

7. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0155 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals between the gauge control module and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO—Go to step 8.

8. Monitor the OBD STATUS for U0155 in the DTCs MENU with the HDS.

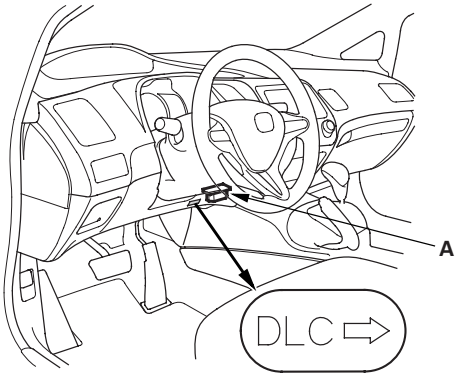
   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the gauge control module and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

Road Test

1. Apply the parking brake, and block both rear wheels.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
3. Shift to D while pressing the brake pedal. Press the accelerator pedal, and release it suddenly. The engine should not stall.
4. Repeat step 3 in all shift lever positions.
5. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



6. Turn the ignition switch to ON (II), and go to the A/T Data List. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).
7. Prepare the HDS to take a HIGH SPEED SNAPSHOT (refer to the HDS user guide for more details if needed):
   - Select High Speed icon.
   - Select these parameters:
     – Vehicle Speed
     – Output Shaft (Countershaft) Speed (rpm)
     – Input Shaft (Mainshaft) Speed (rpm)
     – Engine Speed
     – APP Sensor A (V)
     – ATF Temp Sensor (V)
     – Battery Voltage
     – Shift Control
     – Brake Switch
   - Set the Trigger Type to Parameter.
   - Adjust the Parameter setting to APP Sensor A above 1.2 V.
   - Set the recording time to 60 seconds.
   - Set the Trigger point to —30 seconds.
8. Find a suitable level road. When you are ready to do the test, press OK on the HDS.
9. Monitor the HDS and accelerate quickly until the APP Sensor A reads 1.3 V. Maintain a steady throttle until the transmission shifts to 5th gear, then slow the vehicle and come to a stop.
10. Save the snapshot if the entire event was recorded or increase the recording time setting as necessary and repeat step 9.
11. Adjust the Parameter setting to 2.4 V. Retest-drive the vehicle. While monitoring the HDS, accelerate quickly until the APP Sensor A reads 2.5 V. Maintain a steady throttle until the transmission shifts to 5th gear (or reasonable speed), then slow the vehicle and come to a stop.
12. Save the snapshot if the entire event was recorded or increase the recording time setting as necessary and repeat step 11.
13. Accelerate quickly until the accelerator pedal is to the floor. Maintain a steady pedal until the transmission shifts to 3rd gear, then slow to a stop, and save the snapshot.

DYNOMITE -2009-

14. Review each snapshot individually, and compare the Shift Control, the APP Sensor A Voltage, and the Vehicle Speed to the following table.

Upshift: D Position

APP sensor A voltage: 1.3 V	
1st→2nd	14—18 km/h (9—11 mph)
2nd→3rd	29—35 km/h (18—22 mph)
3rd→4th	41—49 km/h (25—30 mph)
4th→5th	62—72 km/h (39—45 mph)
Lock-up ON	48—56 km/h (30—35 mph)
APP sensor A voltage: 2.5 V	
1st→2nd	24—30 km/h (15—19 mph)
2nd→3rd	49—59 km/h (30—37 mph)
3rd→4th	81—93 km/h (50—58 mph)
4th→5th	155—171 km/h (96—106 mph)
Lock-up ON	177—193 km/h (110—120 mph)
Fully-opened throttle APP sensor A voltage: 4.4 V	
1st→2nd	54—64 km/h (34—40 mph)
2nd→3rd	100—112 km/h (62—70 mph)
3rd→4th	148—162 km/h (92—101 mph)

Downshift: D Position

APP sensor A voltage: 1.3 V	
Lock-up OFF	46—54 km/h (29—34 mph)
5th→4th	47—57 km/h (29—35 mph)
4th→3rd	29—35 km/h (18—22 mph)
3rd→1st	7—13 km/h (4—8 mph)
APP sensor A voltage: 2.5 V	
Lock-up OFF	106—118 km/h (66—73 mph)
Fully-opened throttle APP sensor A voltage: 4.4 V	
Lock-up OFF	173—189 km/h (108—117 mph)
5th→4th	182—198 km/h (113—123 mph)
4th→3rd	123—137 km/h (76—85 mph)
3rd→2nd	84—96 km/h (52—60 mph)
2nd→1st	42—52 km/h (26—32 mph)

15. Drive the vehicle in 4th or 5th gear with the shift lever in S with the sequential sportshift mode, then decelerate and downshift to 2nd gear by pressing the paddle shifter — (downshift switch). The vehicle should immediately begin to slow down from the engine braking, then slow to a stop.

16. Shift to R, accelerate from a stop at full throttle momentarily, and check for abnormal noise and clutch slippage.

17. Park the vehicle on a slope (about 16-degrees), apply the brake, and shift into P. Release the brake; the vehicle should not move.

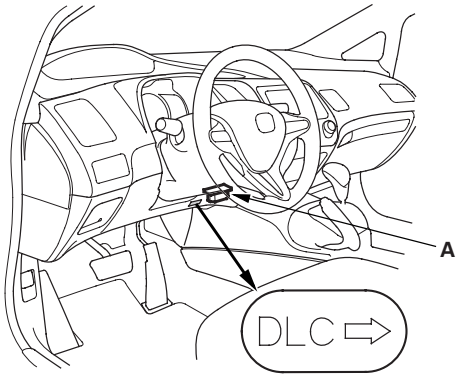
    NOTE: Always use the brake to hold the vehicle, when stopped on an incline in gear. Depending on the grade of the incline, the vehicle could roll backwards if the brake is released.

Stall Speed Test

1. Make sure the transmission fluid is filled to the proper level (see page 14-231).

2. Apply the parking brake, and block all four wheels.

3. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



4. Turn the ignition switch to ON (II), and go to the A/T Data List. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

5. Make sure the A/C switch is OFF.

6. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

7. Shift to D while pressing the brake pedal firmly, then fully press the accelerator pedal for 6 to 8 seconds, and note the engine speed. Do not move the shift lever or remove your foot off the brake pedal while raising the engine speed.

8. Allow 2 minutes for cooling, then repeat the test in S and R.

   NOTE:
   - Do not test the stall speed for more than 10 seconds at a time.
   - The stall speed tests should be used for diagnostic purposes only.
   - Stall speed test results should be the same with the shift lever in D, S, and R.
   - Do not test the stall speed with the A/T oil pressure gauges installed.

   Stall Speed rpm:
   Specification: 2,150 rpm
   Service Limit: 2,000—2,300 rpm

9. If the stall speeds are out of the service limit, the problems and probable causes are listed in the table.

Problem	Probable causes
Stall speed rpm high in D, S, and R	• ATF pump output low • Clogged ATF strainer • Regulator valve stuck • Slipping clutch
Stall speed rpm high in R	Slippage of 4th clutch
Stall speed rpm low in D, S, and R	• Engine output low • Engine throttle valve closed • Torque converter one-way clutch slipping

DYNOMITE -2009-

Pressure Test

Special Tools Required
- A/T oil pressure gauge set 07406-0020401
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure hose adapter 07MAJ-PY40120

NOTE:
- Disable the VSA by pressing the VSA OFF switch (if equipped).
- VSA DTC(s) may come on during the pressure test. If the VSA(s) come on, clear the DTC(s) with the HDS.

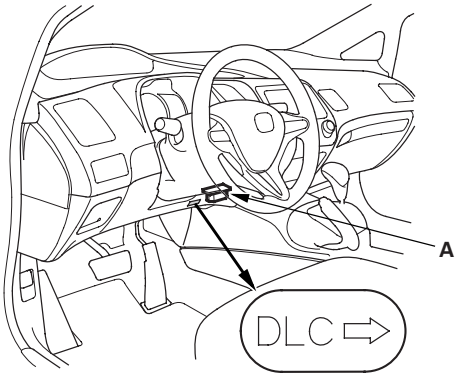
1. Make sure the transmission fluid is filled to the proper level (see page 14-231).

2. Raise the vehicle 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. Remove the splash shield.

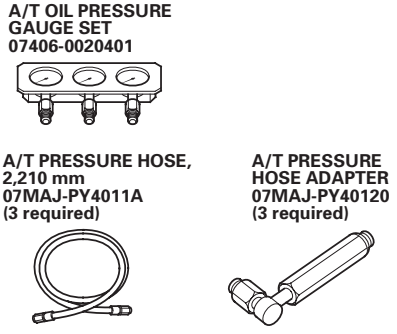
4. Allow the front wheels to rotate freely.

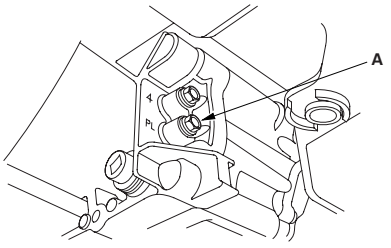
5. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



6. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

7. Connect the A/T oil pressure gauge to the line pressure inspection port (A). Do not allow dust or other foreign particles to enter the ports while connecting the gauges.





8. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

9. Measure the line pressure at the line pressure inspection port with the shift lever in P or N while holding the engine speed at 2,000 rpm.

   NOTE: Higher pressure may be indicated if measurements are made in shift lever position other than P or N.

Pressure	Fluid Pressure	
	Standard	Service Limit
Line	900—960 kPa (9.2—9.8 kgf/cm^2, 130—140 psi)	850 kPa (8.7 kgf/cm^2, 120 psi)

10. Turn the engine off, then disconnect the A/T oil pressure gauge from the line pressure inspection port.

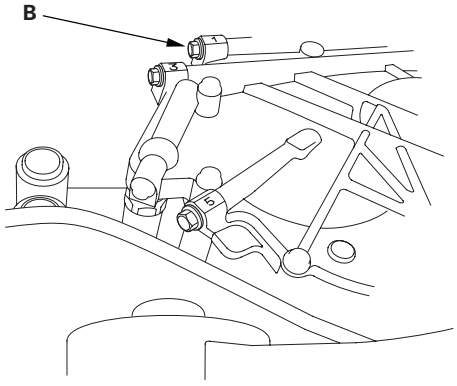
11. Install the sealing bolt to the line pressure inspection port with a new sealing washer, and tighten the bolt to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washer.

(cont'd)

DYNOMITE -2009-

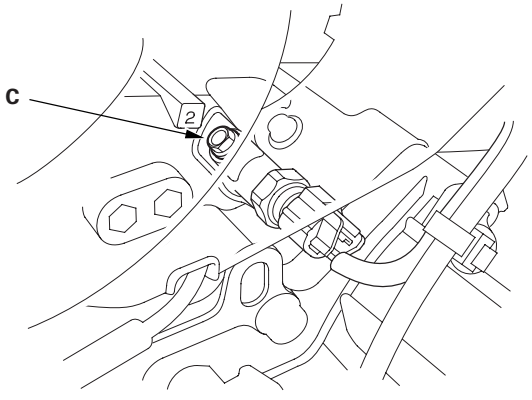
Pressure Test (cont'd)

12. Connect the A/T oil pressure gauge to the 1st clutch pressure inspection port (B).



13. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

14. Remove the harness cover from its bracket, and connect the A/T oil pressure gauge to the 2nd clutch pressure inspection port (C). Then temporarily install the air cleaner assembly and the intake air duct.



15. Start the engine, and shift to S.

16. Shift to 1st gear by pressing the paddle shifter (downshift switch) if needed, and measure the 1st clutch pressure at the 1st clutch pressure inspection port (B) while holding the engine speed at 2,000 rpm.

17. Upshift to 2nd gear by pressing the paddle shifter + (upshift switch), and measure the 2nd clutch pressure at the 2nd clutch pressure inspection port (C) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
1st clutch (B) 2nd clutch (C)	890—970 kPa (9.1—9.9 kgf/cm^2, 130—140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)

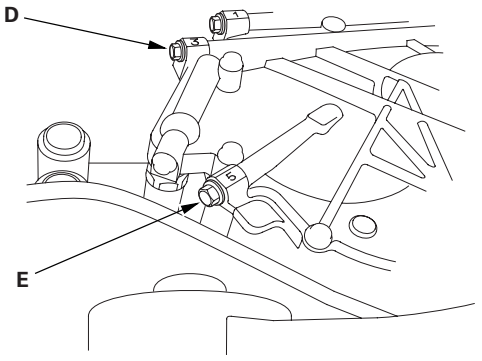
18. Turn the engine off, remove the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348), then disconnect the A/T oil pressure gauge from the 1st and 2nd clutch pressure inspection ports.

19. Install the sealing bolts to the 1st and 2nd clutch pressure inspection ports with new sealing washers, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washers.

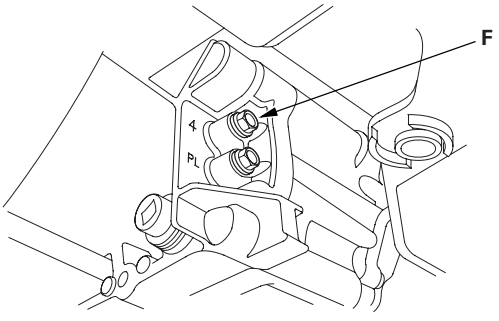
20. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

DYNOMITE -2009-

21. Connect the A/T oil pressure gauge to the 3rd clutch pressure inspection port (D) and the 5th clutch pressure inspection port (E).



22. Connect the A/T oil pressure gauge to the 4th clutch pressure inspection port (F).



23. Start the engine, and shift to S.

24. Upshift to 3rd gear by pressing the paddle shifter + (upshift switch), and measure the 3rd clutch pressure at the 3rd clutch pressure inspection port (D) while holding the engine speed at 2,000 rpm.

25. Upshift to 4th gear, and measure the 4th clutch pressure at the 4th clutch pressure inspection port (F) while holding the engine speed at 2,000 rpm.

26. Upshift to 5th gear, and measure the 5th clutch pressure at the 5th clutch pressure inspection port (E) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
3rd clutch (D) 4th clutch (F) 5th clutch (E)	890—970 kPa (9.1—9.9 kgf/cm^2, 130—140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)

(cont'd)

Pressure Test (cont'd)

27. Bring the engine back to an idle, then apply the brake pedal to stop the wheels from rotating.

28. Shift to R, then release the brake pedal. Measure the 4th clutch pressure at the 4th clutch pressure inspection port (F) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
4th clutch (F) in R	890—970 kPa (9.1—9.9 kgf/cm^2, 130—140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)

29. Turn the engine off, then disconnect the A/T oil pressure gauge from the 3rd, 4th, and 5th clutch pressure inspection ports.

30. Install the sealing bolts in the 3rd, 4th, and 5th clutch pressure inspection ports with new sealing washers, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washers.

31. If the pressures are out of the service limit, the problems and probable causes are listed in the table.

Problem	Probable causes
No or low line pressure	• Torque converter • ATF pump • Regulator valve • Torque converter check valve • Clogged ATF strainer
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 4th clutch pressure in R	• Servo valve • 4th clutch • O-rings

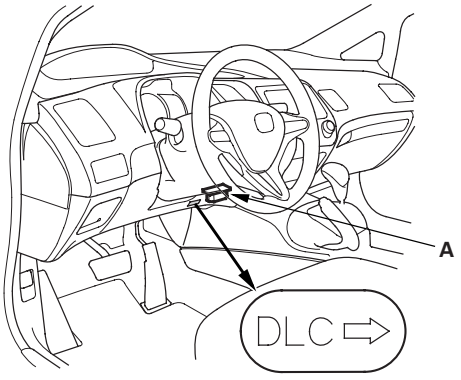
32. Install the splash shield.

33. Check the ATF level (see page 14-231).

DYNOMITE -2009-

Shift Solenoid Valve Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

3. Select Shift Solenoid Valves A, B, C, D, and E Test in the Miscellaneous Test Menu with the HDS.

4. Check that shift solenoid valves A, B, C, D, and E operate with the HDS. A clicking sound should be heard.

   - If a clicking sound is heard, the valves are OK. The test is complete, disconnect the HDS.
   - If no clicking sound is heard, go to step 5, and test the solenoid valve.

5. Do the battery removal procedure (see page 22-69).

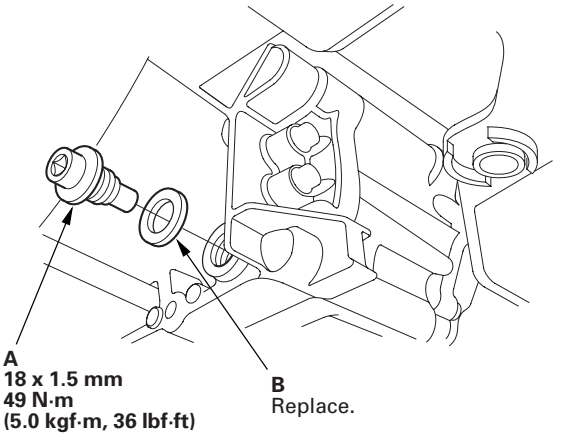
6. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

7. Remove the battery tray, the battery base, and the resonator.

8. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

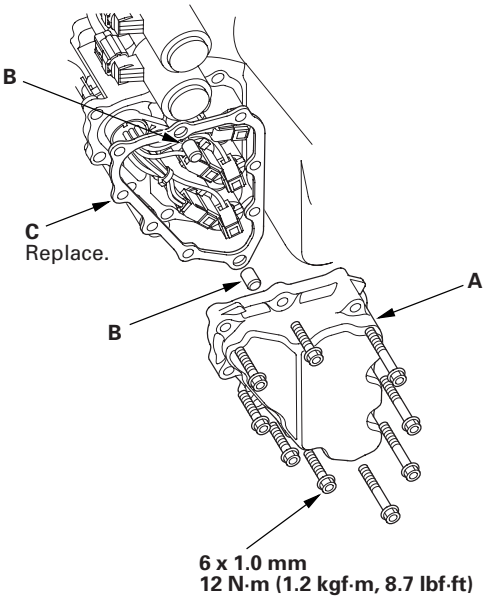
9. Remove the splash shield.

10. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



11. Reinstall the drain plug with a new sealing washer (B).

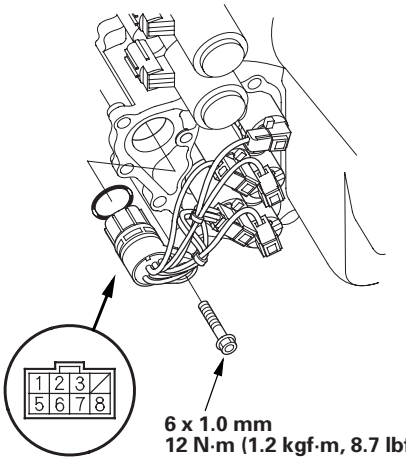
12. Remove the shift solenoid valve cover (A), the dowel pins (B), and the gasket (C).



(cont'd)

Shift Solenoid Valve Test (cont'd)

13. Disconnect the shift solenoid wire harness connector, and remove it from the transmission housing.



14. Measure the shift solenoid valve resistance between the following shift solenoid wire harness connector terminals and body ground:

    - No. 1 (GRN): Shift solenoid valve C
    - No. 2 (ORN): Shift solenoid valve B
    - No. 3 (RED): Shift solenoid valve E
    - No. 5 (BLU): Shift solenoid valve A
    - No. 8 (YEL): Shift solenoid valve D

    Standard: 12—25 Ω

15. If the resistance is within the standard, go to step 17 and check the solenoid valve for a clicking sound. If the resistance is out of standard, go to step 16.

16. Disconnect the shift solenoid valve connector, and measure the resistance at the solenoid valve connector. Replace the shift solenoid valve if the resistance is out of standard, then go to step 20.

17. Connect a jumper wire from the battery positive terminal to the shift solenoid wire harness connector terminals, and connect another jumper wire from the battery negative terminal to body ground individually. A clicking sound should be heard.

    - If a clicking sound is heard, the valves are OK, and the test is complete, connect the connector.
    - If no clicking sound is heard, replace the shift solenoid valve (see page 14-217).

18. Replace the shift solenoid harness if the test results are OK.

19. Install a new O-ring on the shift solenoid wire harness connector, and install the connector in the transmission housing.

20. Install a new gasket, the dowel pins, and the shift solenoid valve cover.

21. Check the shift solenoid wire harness connector for rust, dirt, or oil, then connect the connector securely.

22. Refill the transmission with ATF (see step 5 on page 14-232).

23. Install the battery tray, the battery base, and the resonator.

24. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

25. Do the battery installation procedure (see page 22-69).

26. Install the splash shield.

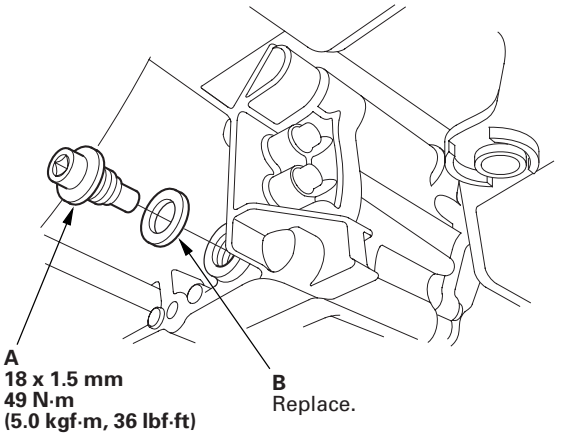
DYNOMITE -2009-

Shift Solenoid Valve and Shift Solenoid Wire Harness Replacement

1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

2. Remove the splash shield.

3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



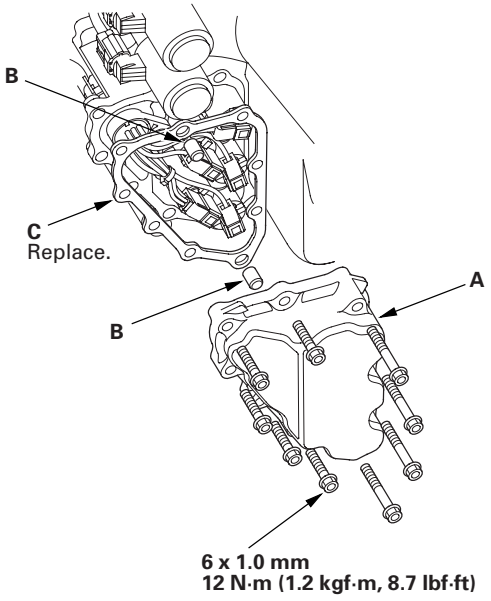
4. Reinstall the drain plug with a new sealing washer (B).

5. Do the battery removal procedure (see page 22-69).

6. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

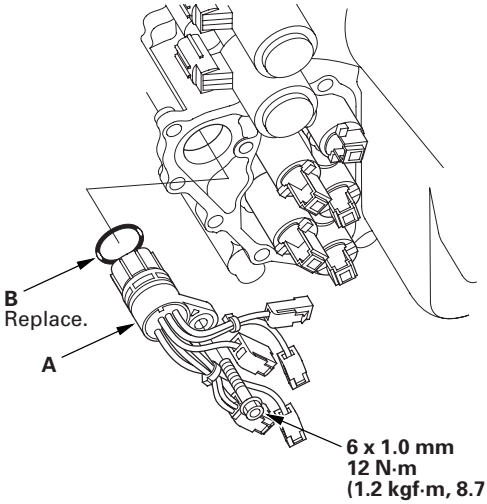
7. Remove the battery tray, the battery base, and the resonator.

8. Remove the shift solenoid valve cover (A), the dowel pins (B), and the gasket (C).



9. Disconnect the shift solenoid valve connectors.

   - If replacing the shift solenoid valve(s), go to step 10.
   - If replacing the shift solenoid wire harness, remove the shift solenoid wire harness connector (A), and replace it. Install a new O-ring (B) on a new shift solenoid wire harness connector, and install it in the transmission housing, then go to step 15.

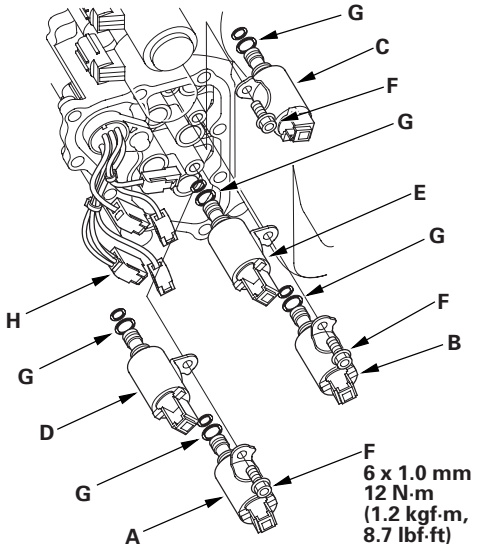


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DYNOMITE -2009-

Shift Solenoid Valve and Shift Solenoid Wire Harness Replacement (cont'd)

10. Remove the mounting bolts (F), then hold the shift solenoid valve body and remove the shift solenoid valves. Do not hold the connector to remove the shift solenoid valve.



11. Install new O-rings (two O-rings per solenoid valve) (G) on the reused solenoid valve.

    NOTE: A new solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided with it.

12. Install shift solenoid valves C (brown connector), D (black connector), and E (black connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the servo body.

    NOTE: Do not hold the shift solenoid valve connector to install the shift solenoid valve. Be sure to hold the shift solenoid valve body.

13. Install shift solenoid valve B (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the bracket of shift solenoid valve E.

14. Install shift solenoid valve A (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the bracket of shift solenoid valve D.

    NOTE: Do not install shift solenoid valves A and B before installing shift solenoid valve D and E. If shift solenoid valve A or B is installed before installing shift solenoid valve D or E, it may damage to hydraulic control system.

15. Connect YEL, WHT, and WHT harnesses terminal (H) to shift solenoid valve D. The ATF temperature sensor is installed in the connector.

16. Connect the shift solenoid valve connectors:

    - BLU wire to shift solenoid valve A
    - ORN wire to shift solenoid valve B
    - GRN wire to shift solenoid valve C
    - RED wire to shift solenoid valve E

17. Install a new gasket, the dowel pins, and the shift solenoid valve cover.

18. Check the connector for rust, dirt, or oil, then connect the connector securely.

19. Refill the transmission with ATF (see step 5 on page 14-232).

20. Install the battery base, the battery tray, and the resonator.

21. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

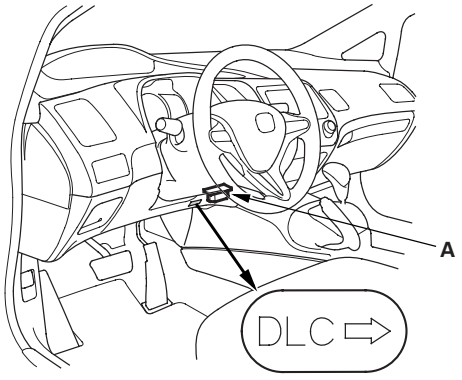
22. Do the battery installation procedure (see page 22-69).

23. Install the splash shield.

DYNOMITE -2009-

A/T Clutch Pressure Control Solenoid Valve A Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

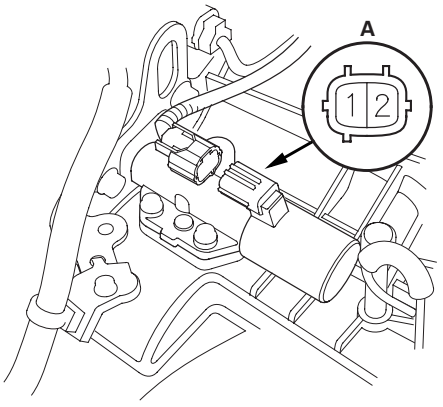
3. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu with the HDS.

4. Test A/T clutch pressure control solenoid valve A with the HDS.

   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 5.

5. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

6. Disconnect the A/T clutch pressure control solenoid valve A connector (A).



7. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

   Standard: 3—10 Ω

   - If the resistance is within the standard, go to step 8.
   - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve A (see page 14-221).

8. Connect a jumper wire from the negative battery terminal to solenoid valve A connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1.

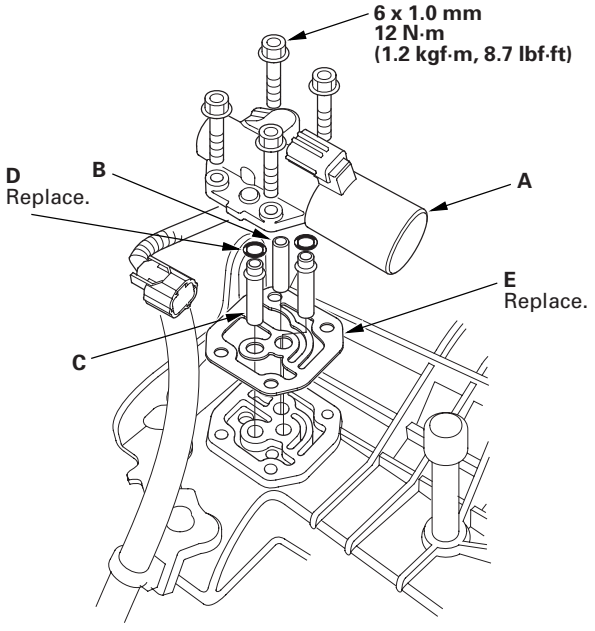
   - If a clicking sound is heard, the valve is OK, and the test is complete, go to step 18.
   - If no clicking sound is heard, go to step 9.

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DYNOMITE -2009-

A/T Clutch Pressure Control Solenoid Valve A Test (cont'd)

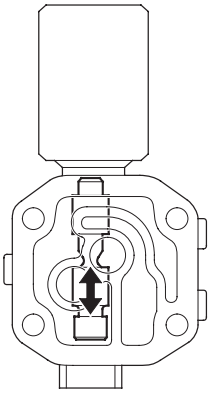
9. Remove the mounting bolts and A/T clutch pressure control solenoid valve A.



10. Remove the ATF pipe (B), the ATF joint pipes (C), the O-rings (D), and the gasket (E).

11. Check the fluid passage of the solenoid valve for contamination.

12. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve A connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve A moves.



13. Disconnect one of the jumper wires, and check valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valve A.

14. Clean the mounting surfaces and the fluid passages of the A/T clutch pressure control solenoid valve body and the transmission housing.

15. Install a new gasket on the transmission housing, and install the ATF pipe and the ATF joint pipes.

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

16. Install new O-rings over the ATF joint pipes.

17. Install A/T clutch pressure control solenoid valve A.

18. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.

19. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

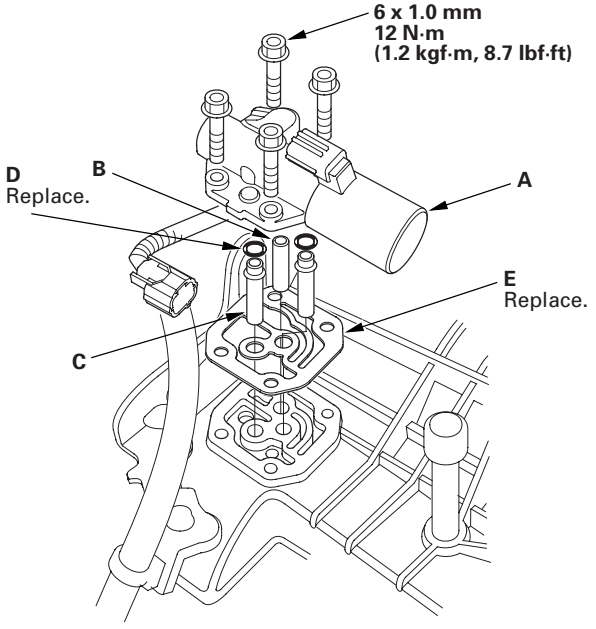
DYNOMITE -2009-

A/T Clutch Pressure Control Solenoid Valve A Replacement

1. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

2. Disconnect the A/T clutch pressure control solenoid valve A connector.

3. Remove the mounting bolts and A/T clutch pressure control solenoid valve A.



4. Remove the ATF pipe (B), the ATF joint pipes (C), the O-rings (D), and the gasket (E).

5. Clean the mounting surface and the fluid passage of the transmission housing.

6. Install a new gasket on the transmission housing, and install the ATF pipe and the ATF joint pipes.

   NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

7. Install new O-rings over the ATF joint pipes.

8. Install a new A/T clutch pressure control solenoid valve A.

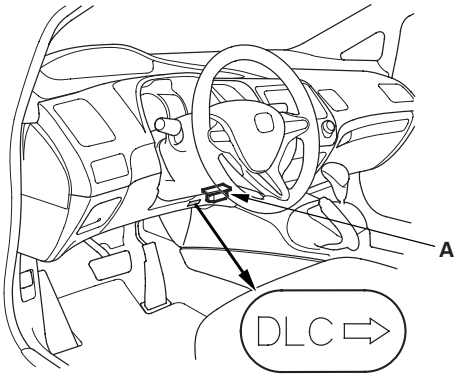
9. Check the connector for rust, dirt, or oil, and clean or repair if necessary, then connect it securely.

10. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

DYNOMITE -2009-

A/T Clutch Pressure Control Solenoid Valve B Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

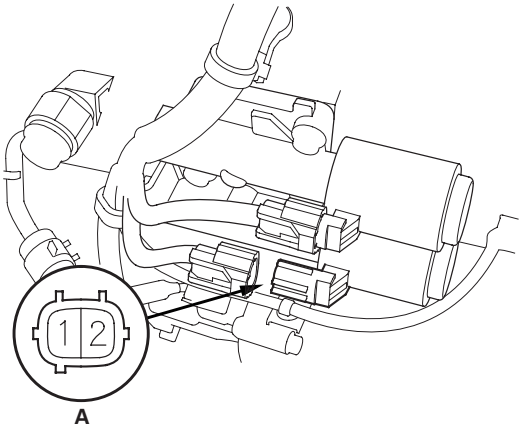
3. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu with the HDS.

4. Test A/T clutch pressure control solenoid valve B with the HDS.

   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 5.

5. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

6. Disconnect the A/T clutch pressure control solenoid valve B connector (A).



7. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

   Standard: 3—10 Ω

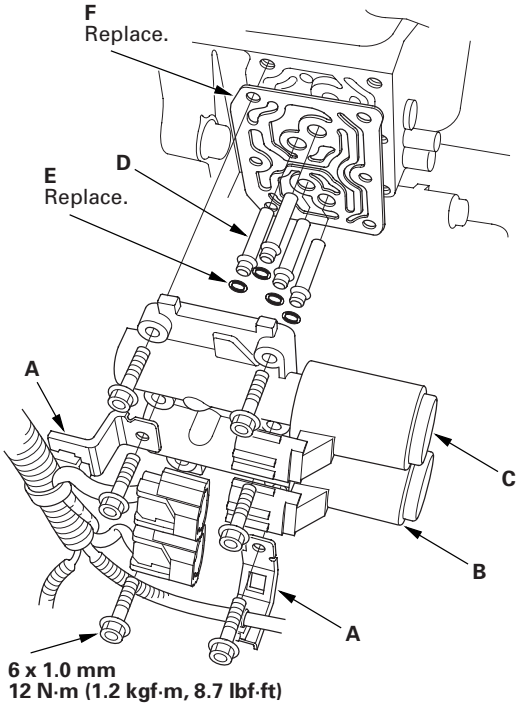
   - If the resistance is within the standard, go to step 8.
   - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve B (see page 14-226).

8. Connect a jumper wire from the negative battery terminal to solenoid valve B connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1.

   - If a clicking sound is heard, the valve is OK, and the test is complete, go to step 18.
   - If no clicking sound is heard, go to step 9.

DYNOMITE -2009-

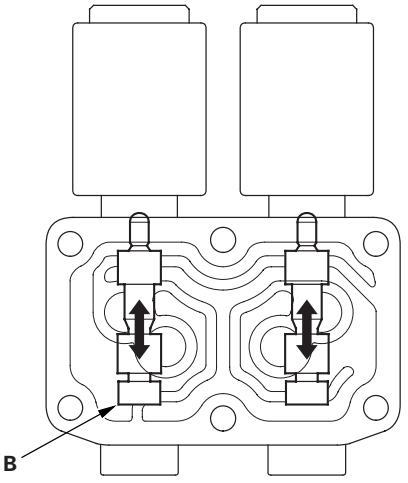
9. Remove the mounting bolts, the harness clamp brackets (A), and A/T clutch pressure control solenoid valves B and C.



10. Remove the ATF joint pipes (D), the O-rings (E), and the gasket (F).

11. Check the fluid passage of the solenoid valves for contamination.

12. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve B connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve B moves.



13. Disconnect one of the jumper wires, and check valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valves B and C.

14. Clean the mounting surfaces and the fluid passages of the A/T clutch pressure control solenoid valve body and the transmission housing.

15. Install a new gasket on the transmission housing.

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

16. Install the ATF joint pipes, and install new O-rings over the ATF joint pipes.

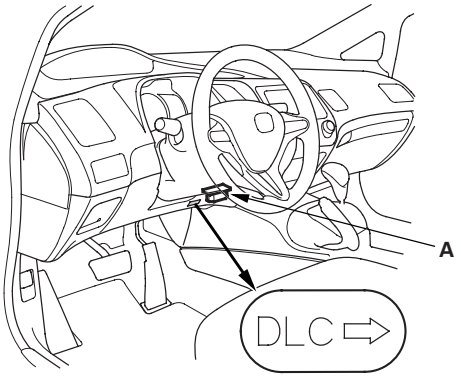
17. Install A/T clutch pressure control solenoid valves B and C.

18. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.

19. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

A/T Clutch Pressure Control Solenoid Valve C Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

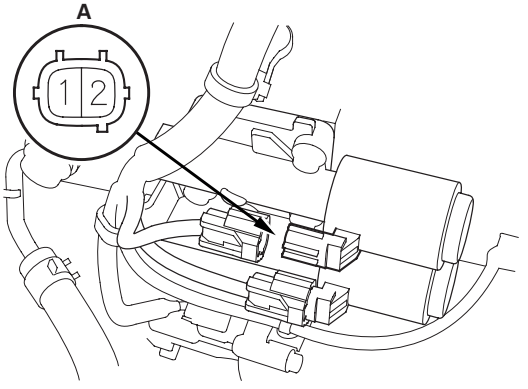
3. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu with the HDS.

4. Test A/T clutch pressure control solenoid valve C with the HDS.

   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 5.

5. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

6. Disconnect the A/T clutch pressure control solenoid valve C connector (A).



7. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

   Standard: 3—10 Ω

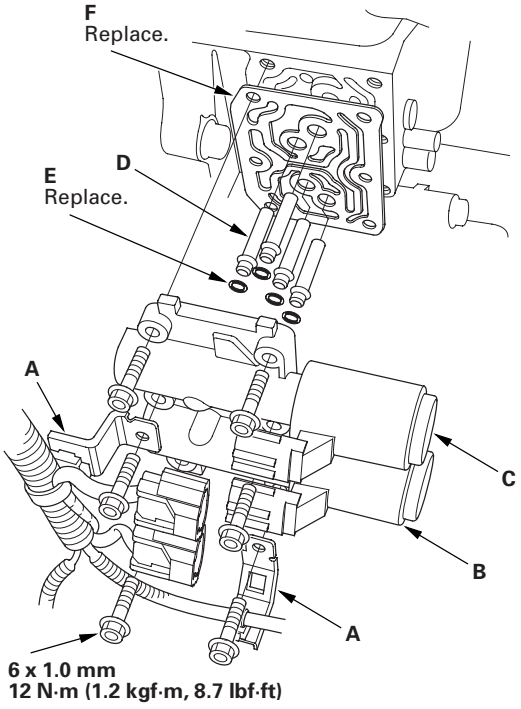
   - If the resistance is within the standard, go to step 8.
   - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve C (see page 14-226).

8. Connect a jumper wire from the negative battery terminal to solenoid valve C connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1.

   - If a clicking sound is heard, the valve is OK, and the test is complete, go to step 18.
   - If no clicking sound is heard, go to step 9.

DYNOMITE -2009-

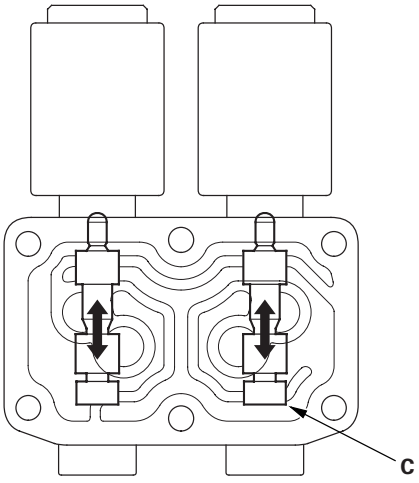
9. Remove the mounting bolts, the harness clamp brackets (A), and A/T clutch pressure control solenoid valves B and C.



10. Remove the ATF joint pipes (D), the O-rings (E), and the gasket (F).

11. Check the fluid passage of the solenoid valves for contamination.

12. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve C connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve C moves.



13. Disconnect one of the jumper wires, and check valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valves B and C.

14. Clean the mounting surfaces and the fluid passages of the A/T clutch pressure control solenoid valve body and the transmission housing.

15. Install a new gasket on the transmission housing.

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

16. Install the ATF joint pipes, and install new O-rings over the ATF joint pipes.

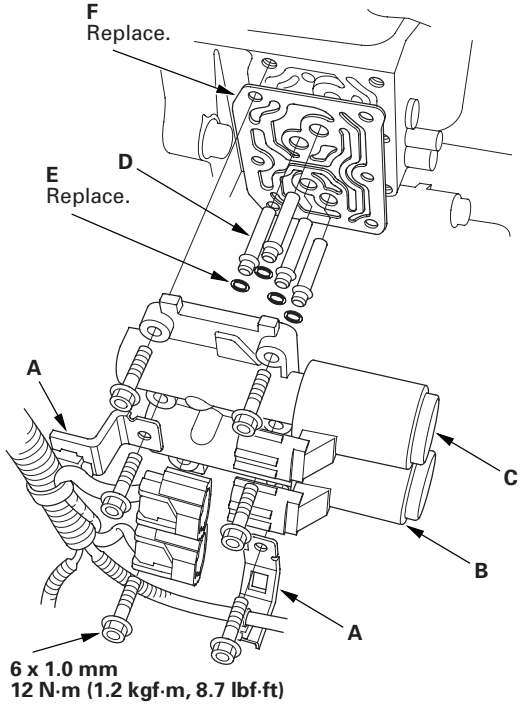
17. Install A/T clutch pressure control solenoid valves B and C.

18. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.

19. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

A/T Clutch Pressure Control Solenoid Valve B and C Replacement

1. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).
2. Disconnect the A/T clutch pressure control solenoid valves B and C connectors.
3. Remove the mounting bolts, the harness clamp brackets (A), and A/T clutch pressure control solenoid valves B and C.



4. Remove the ATF joint pipes (D), the O-rings (E), and the gasket (F).
5. Clean the mounting surface and the fluid passage of the transmission housing.
6. Install a new gasket on the transmission housing, and install the ATF joint pipes.

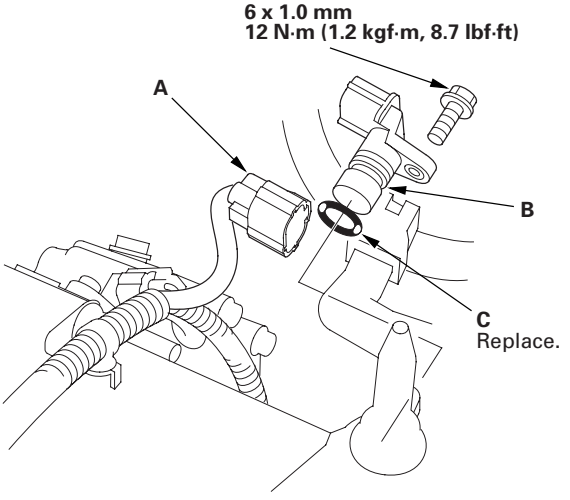
   NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.
7. Install new O-rings over the ATF joint pipes.
8. Install new A/T clutch pressure control solenoid valves B and C, and harness clamp brackets.
9. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect it securely.
10. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

DYNOMITE -2009-

Input Shaft (Mainshaft) Speed Sensor Replacement

1. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

2. Disconnect the input shaft (mainshaft) speed sensor connector (A), and remove the input shaft (mainshaft) speed sensor (B) with the O-ring (C).



3. Install a new O-ring on a new input shaft (mainshaft) speed sensor, then install the input shaft (mainshaft) speed sensor in the transmission housing.

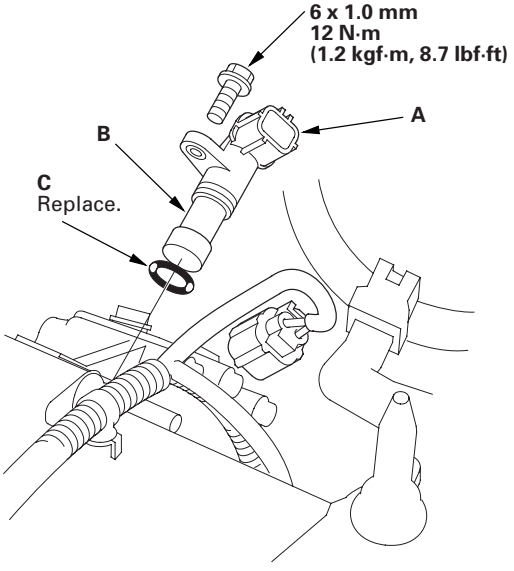
4. Check the connector for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.

5. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

Output Shaft (Countershaft) Speed Sensor Replacement

1. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

2. Disconnect the output shaft (countershaft) speed sensor connector (A), and remove the output shaft (countershaft) speed sensor (B).



3. Install a new O-ring on a new output shaft (countershaft) speed sensor, then install the output shaft (countershaft) speed sensor in the transmission housing.

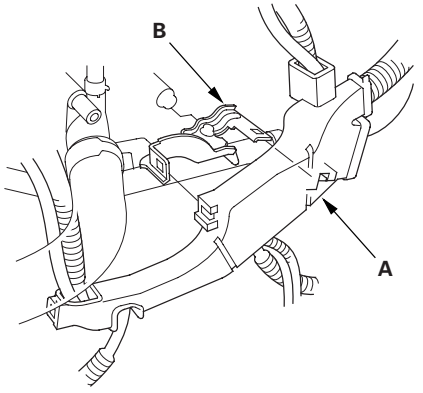
4. Check the connector for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.

5. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

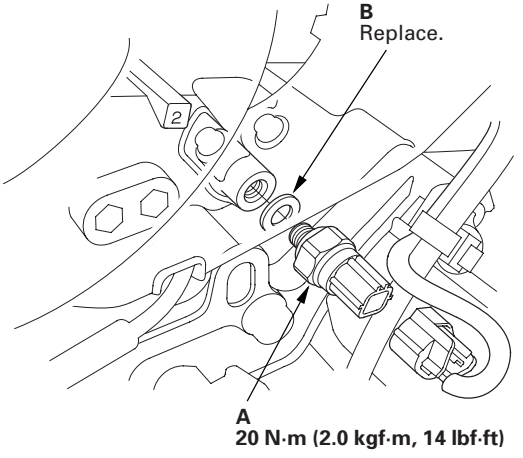
DYNOMITE -2009-

2nd Clutch Transmission Fluid Pressure Switch Replacement

1. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).
2. Remove the harness cover (A) from its bracket (B).



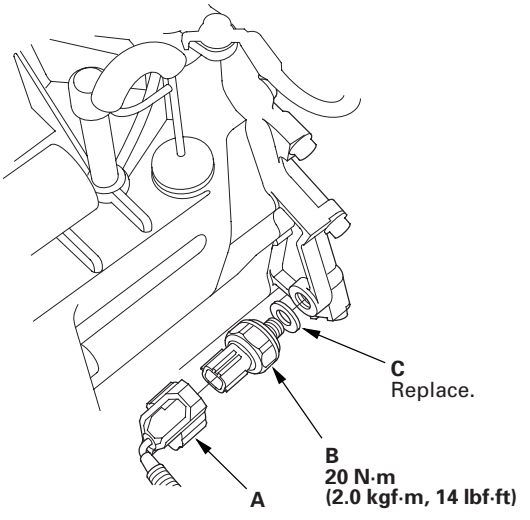
3. Disconnect the 2nd clutch transmission fluid pressure switch connector, and remove the 2nd clutch transmission fluid pressure switch (A).



4. Install a new 2nd clutch transmission fluid pressure switch with a new sealing washer (B), and tighten the metal part of the switch, not the plastic part.
5. Check the connector for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.
6. Install the harness cover on its bracket.
7. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

3rd Clutch Transmission Fluid Pressure Switch Replacement

1. Do the battery removal procedure (see page 22-69).
2. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).
3. Remove the battery tray, the battery base, and the resonator.
4. Disconnect the 3rd clutch transmission fluid pressure switch connector (A), then remove the 3rd clutch transmission fluid pressure switch (B) with the sealing washer (C).



5. Install a new 3rd clutch transmission fluid pressure switch with a new sealing washer, and tighten the metal part of the switch, not the plastic part.
6. Check the connector for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.
7. Install the battery tray, the battery base, and the resonator.
8. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).
9. Do the battery installation procedure (see page 22-69).

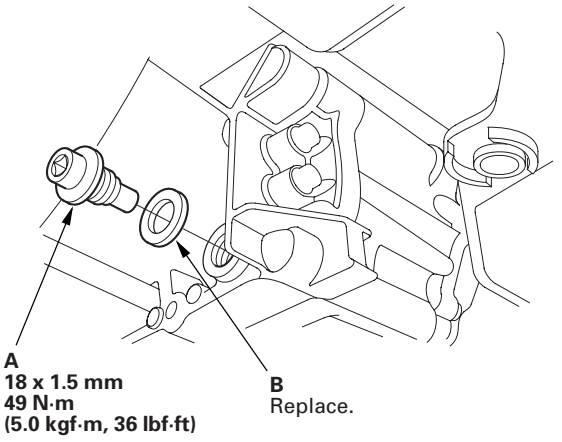
DYNOMITE -2009-

ATF Temperature Sensor Test/Replacement

1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

2. Remove the splash shield.

3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



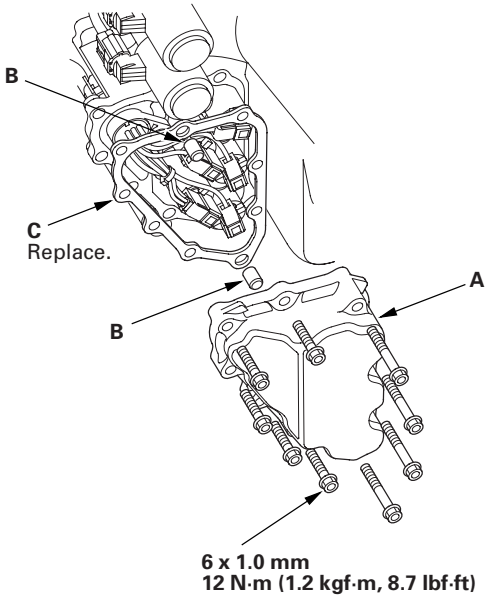
4. Reinstall the drain plug with a new sealing washer (B).

5. Do the battery removal procedure (see page 22-69).

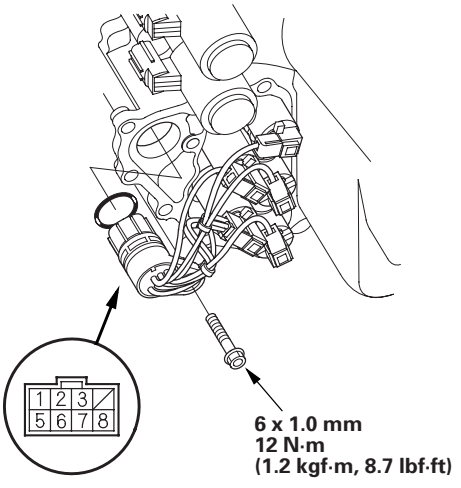
6. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

7. Remove the battery tray, the battery base, and the resonator.

8. Remove the shift solenoid valve cover (A), the dowel pins (B), and the gasket (C).



9. Disconnect the shift solenoid wire harness connector, and remove it from the transmission housing.



(cont'd)

DYNOMITE -2009-

ATF Temperature Sensor Test/Replacement (cont'd)

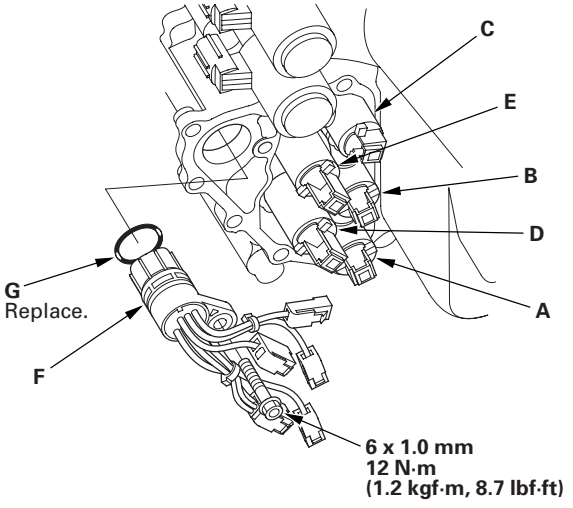
10. Measure the ATF temperature sensor resistance between shift solenoid wire harness connector terminals No. 6 and No. 7.

    Standard: 50 Ω —25 kΩ

    - If the resistance is within the standard, install the shift solenoid wire harness and a new O-ring in the transmission, then go to step 13.
    - If the resistance is out of standard, go to step 11.

11. Disconnect the connectors from the shift solenoid valves, and replace the ATF temperature sensor/ shift solenoid harness assembly (F) and the O-ring (G) with new ones.

    NOTE: The ATF temperature sensor is not available separately from the shift solenoid wire harness.



12. Connect the shift solenoid valve connectors:

    - BLU wire to shift solenoid valve A.
    - ORN wire to shift solenoid valve B.
    - GRN wire to shift solenoid valve C.
    - YEL, WHT, and WHT wire connector to shift solenoid valve D.
    - RED wire to shift solenoid valve E.

13. Install a new gasket, the dowel pins, and the shift solenoid valve cover.

14. Check the connector for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.

15. Refill the transmission with ATF (see step 5 on page 14-232).

16. Install the battery tray, the battery base, and the resonator.

17. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

18. Do the battery installation procedure (see page 22-69).

19. Install the splash shield.

DYNOMITE -2009-

ATF Level Check

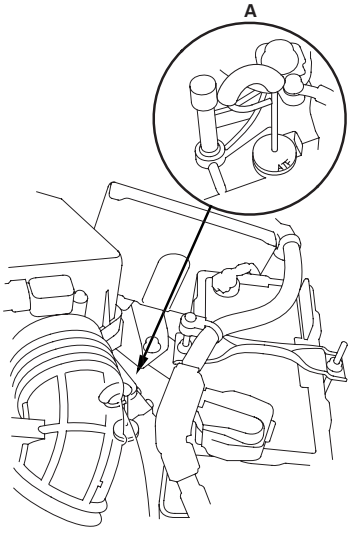
NOTE: Keep all foreign particles out of the transmission.

1. Park the vehicle on the level ground.

2. Warm up the engine to normal operating temperature (the radiator fan comes on), and turn the engine off. Do not allow the engine to warm up more than two cycles of the cooling fan.

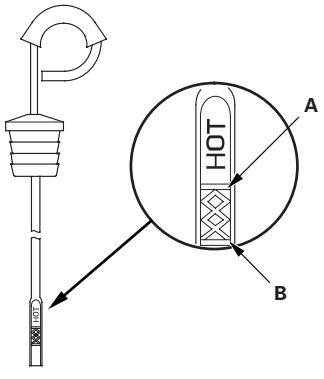
   NOTE: Check the ATF level within 60—90 seconds after turning the engine off. Higher ATF level may be indicated if the radiator fan comes on twice or more.

3. Remove the ATF dipstick (yellow loop) (A), and wipe it with a clean cloth.



4. Insert the dipstick into the transmission.

5. Remove the dipstick and check the ATF level. It should be between the upper mark (A) and the lower mark (B).



6. If the ATF level is below the lower mark, check for fluid leaks at the transmission, the hoses, and the line joints. If a problem is found, fix it before filling the transmission with ATF.

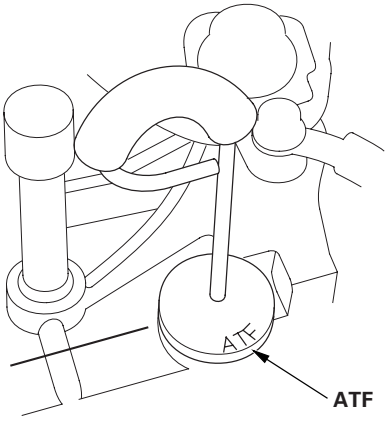
   NOTE: If the vehicle is driven when the ATF level is below the lower mark, one or more of these symptoms may occur:
   - The transmission damage.
   - The vehicle may not move in any gear.
   - The vehicle may accelerates poorly, and flares when starting off in D, S, and R.
   - Vibration when the engine is idling.

7. If the ATF level is above the upper mark, drain the ATF to proper level (see step 3 on page 14-232).

   NOTE: If the vehicle is driven when the ATF level is above the upper mark, the vehicle may creep forward while in N, or have problems shifting.

8. If necessary, fill the transmission with ATF through the dipstick hole to bring the fluid level to midway between the upper mark and the lower mark of the dipstick. Do not fill the fluid above the upper mark. Always use genuine Acura ATF-Z1 automatic transmission fluid (ATF). Using a non-Acura ATF can affect shift quality.

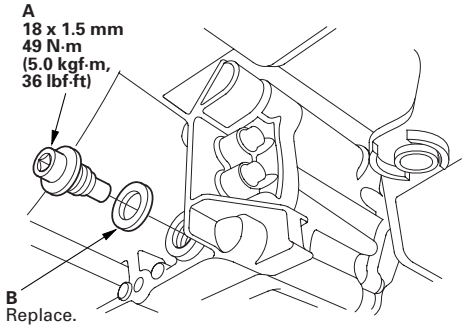
9. Insert the dipstick back into the transmission with the letters ''ATF'' pointing toward the front of the vehicle.



ATF Replacement

NOTE: Keep all foreign particles out of the transmission.

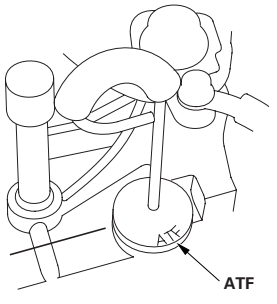
1. Park the vehicle on the level ground.
2. Warm up the engine to normal operating temperature (the radiator fan comes on), and turn the engine off.
3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



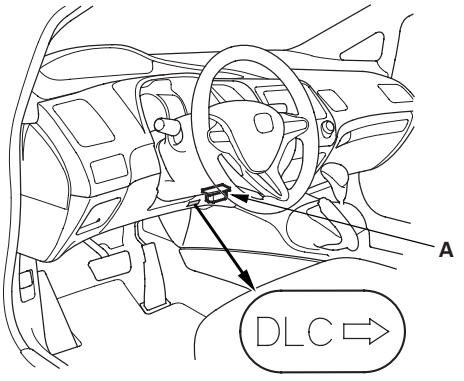
4. Reinstall the drain plug with a new sealing washer (B).
5. Refill the transmission with ATF into the dipstick hole to bring the fluid level between the upper mark and the lower mark of the dipstick. Always use Acura ATF-Z1 automatic transmission fluid (ATF). Using a non-Acura ATF can affect shift quality.

   Automatic Transmission Fluid Capacity:
   2.9 L (3.1 US qt) at change
   6.5 L (6.9 US qt) at overhaul

6. Check that the ATF level is between the upper mark and the lower mark of the dipstick.
7. Insert the dipstick back into the transmission with the letters ''ATF'' pointing toward the front of the vehicle.



8. If the maintenance minder required to replace the ATF, reset the maintenance minder (see page 3-4), and this procedure is complete. If the maintenance minder did not require you to replace the ATF, go to step 9.
9. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



10. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).
11. Select BODY ELECTRICAL with the HDS.
12. Select ADJUSTMENT in the GAUGES MENU with the HDS.
13. Select RESET in the MAINTENANCE MINDER MENU with the HDS.
14. Select RESETTING THE ATF with the HDS.

    NOTE: If you changed the engine oil at the same time with the ATF, select RESETTING THE ENGINE OIL LIFE AND ATF with the HDS instead.

DYNOMITE -2009-

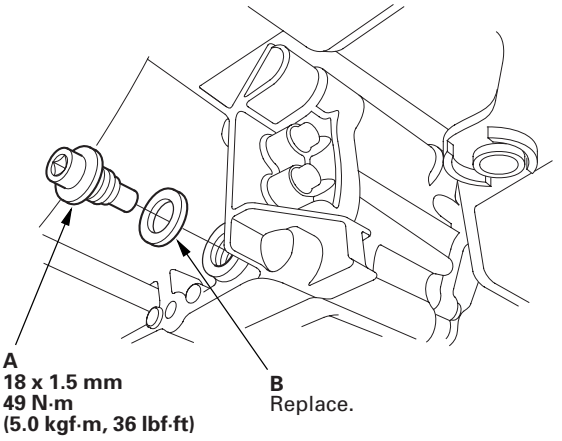
Transmission Removal

Special Tools Required
- Engine hanger plate 07AAK-SNAA120
- Engine support hanger, A and Reds AAR-T1256 *
- 2006 Civic engine hanger VSB02C000025 *
- Front subframe adapter VSB02C000016 *

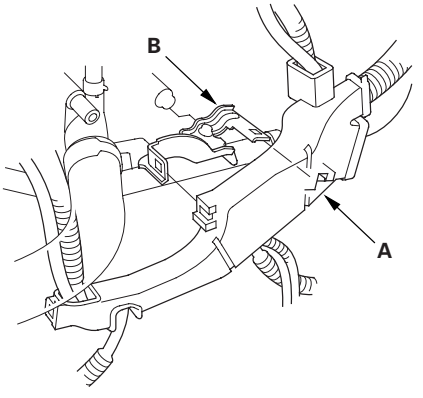
* Available through Acura Canada Technical Tools Department; Fax #866-398-8665/ e-mail: ch_technicaltools@ch.honda.com

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Special tool engine support hanger must be used with the side engine mount installed.

1. Remove the cowl cover (see page 20-163) and the under-cowl panel.
2. Remove the front grille cover (see page 20-163).
3. Do the battery removal procedure (see page 22-69).
4. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).
5. Remove the battery tray, the battery base, and the resonator.
6. Raise the vehicle on a lift, and make sure it is securely supported and remove the front wheels.
7. Remove the splash shield.
8. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



9. Reinstall the drain plug with a new sealing washer (B).
10. Secure the hood in the vertical position.
11. Remove the harness cover (A) from its bracket (B).

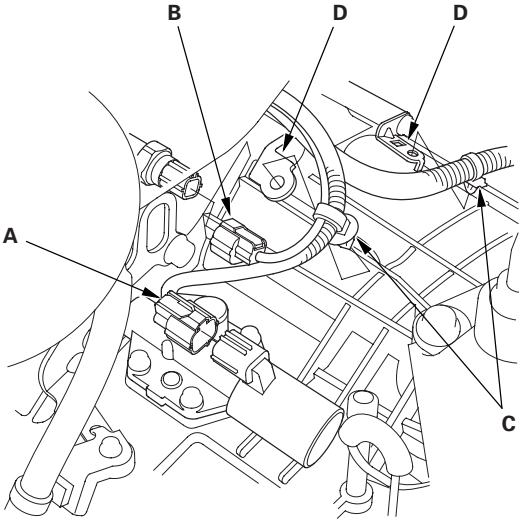


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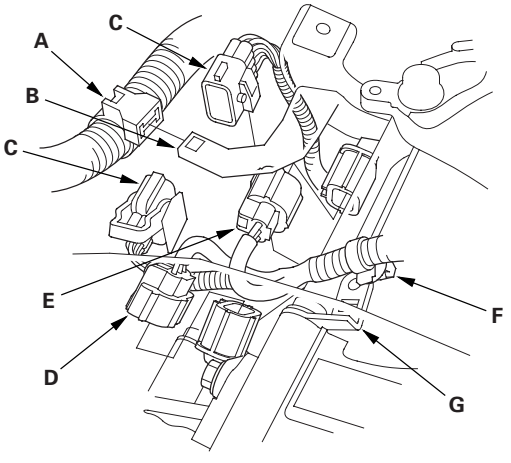
DYNOMITE -2009-

Transmission Removal (cont'd)

12. Disconnect the A/T clutch pressure control solenoid valve A connector (A) and the 2nd clutch transmission fluid pressure switch connector (B), and remove the harness clamps (C) from the clamp brackets (D).

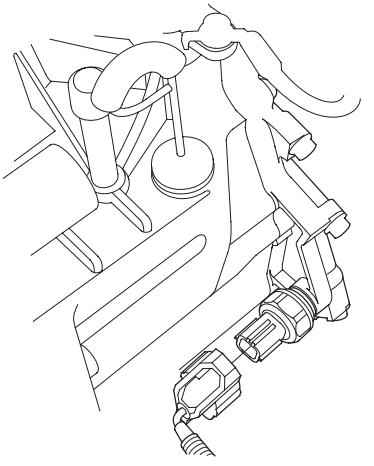


13. Remove the harness clamp (A) from the clamp bracket (B). Disconnect the transmission range switch connector (C), and remove the connector from its bracket.

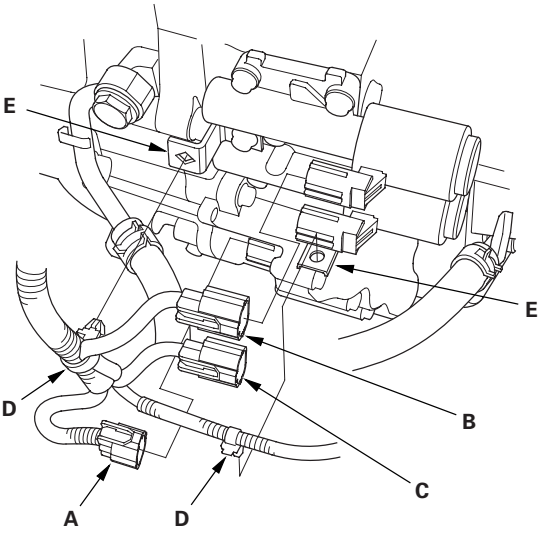


14. Disconnect the output shaft (countershaft) speed sensor connector (D) and the input shaft (mainshaft) speed sensor connector (E), and remove the harness clamp (F) from the clamp bracket (G).

15. Disconnect the 3rd clutch transmission fluid pressure switch connector.

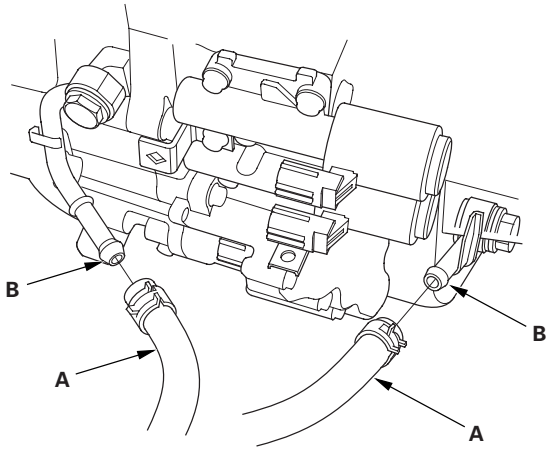


16. Disconnect the shift solenoid wire harness connector (A), the A/T clutch pressure control solenoid valve B connector (B), and the A/T clutch pressure control solenoid valve C connector (C), then remove the harness clamps (D) from the clamp brackets (E).

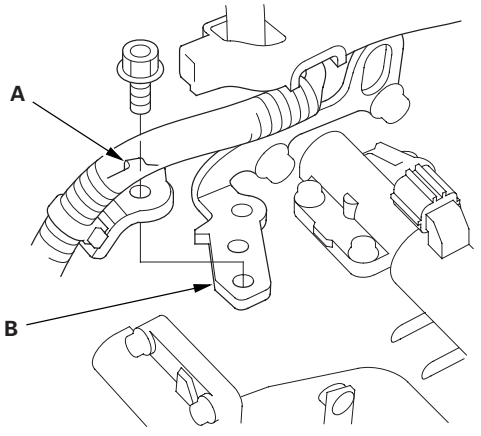


DYNOMITE -2009-

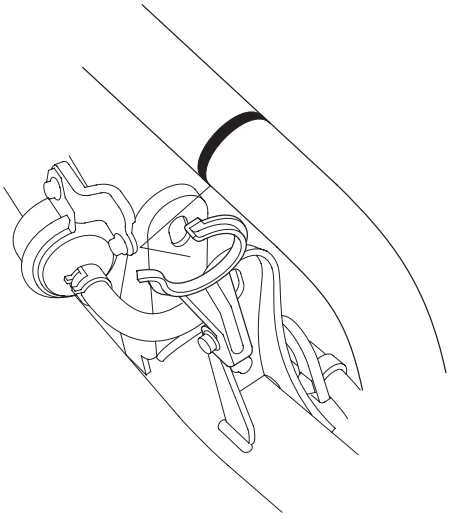
17. Disconnect the ATF cooler hoses (A) from the ATF lines (B). Turn the end of the ATF cooler hoses up to prevent ATF from flowing out, then plug the hoses and lines.



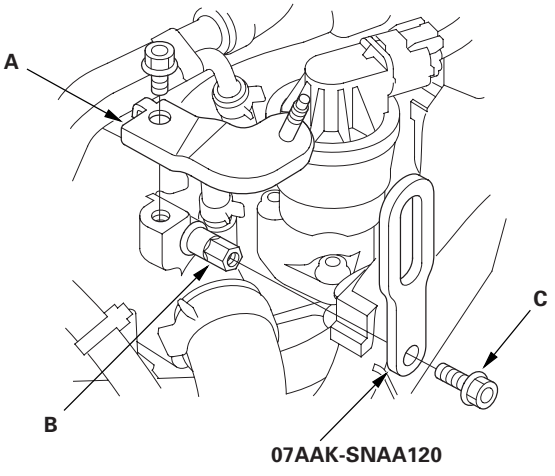
18. Remove the bolt securing the harness clamp bracket (A) from the transmission hanger (B).



19. Remove the water hose from its clamp.



20. Remove the air cleaner housing mounting bracket (A).

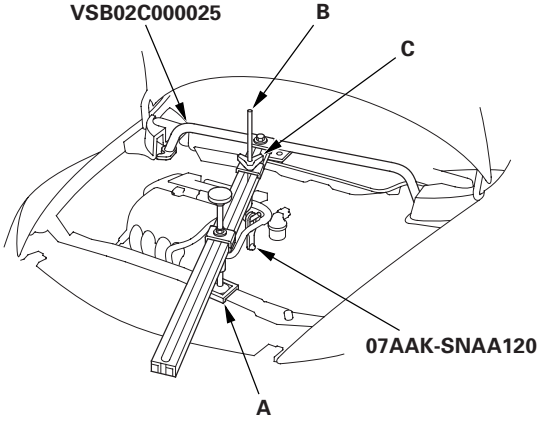


21. Install the engine hanger plate (07AAK-SNAA120) on the stud nut (B) with a 8 x 1.25 - 16 mm bolt (C). Use only the 8 x 1.25 mm and 16 mm in length of the threaded bolt. If you use other than 16 mm threaded-length bolt, it may damage the engine cylinder head.

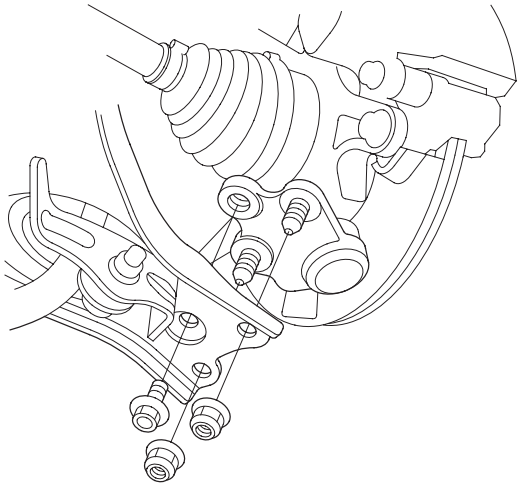
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Transmission Removal (cont'd)

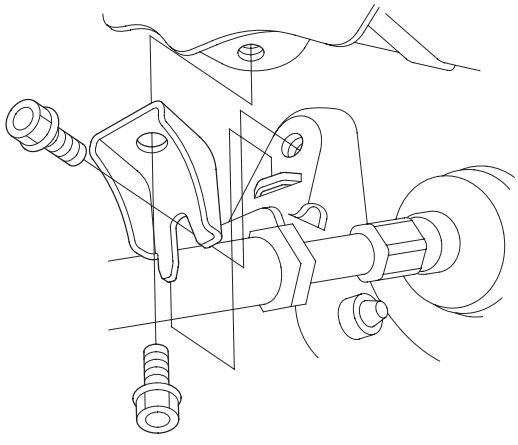
22. Install the front leg assembly (A), the hook (B), and the wing nut (C) from the A and Reds engine support hanger (AAR-T1256) onto the 2006 civic engine hanger (VSB02C000025). Carefully position the engine hanger on the vehicle, and attach the hook to the slotted hole in the engine hanger plate (07AAK-SNAA120). Tighten the wing nut by hand to lift and support the engine. Use care when working around the windshield.



23. Remove the nuts and the bolt securing the lower arms and the ball joints, and separate the lower arms from the ball joints.

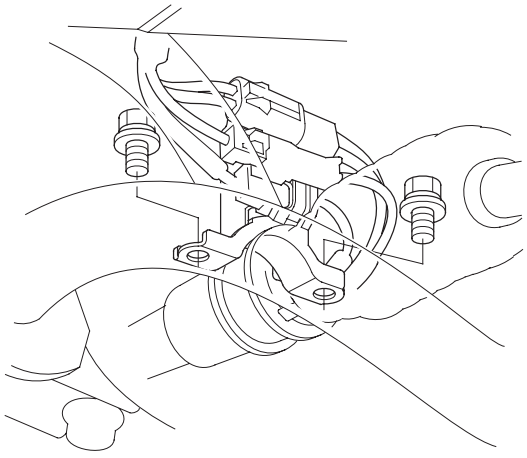


24. Remove both front subframe body mount brackets.

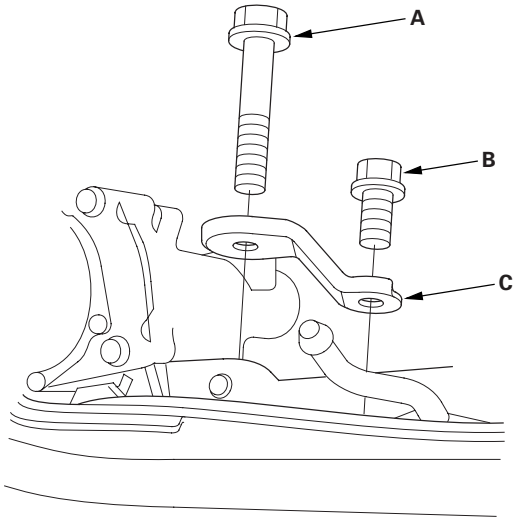


DYNOMITE -2009-

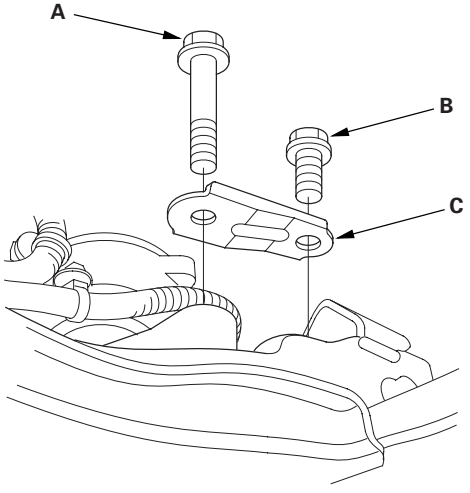
25. Remove the steering gearbox bracket mounting bolts.



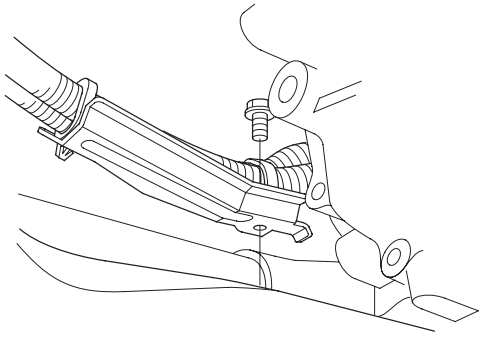
26. Remove the steering gearbox mounting bolt (A), the stiffener mounting bolt (B), and the stiffener (C).



27. Remove the steering gearbox mounting bolt (A), the stiffener mounting bolt (B), and the stiffener (C).



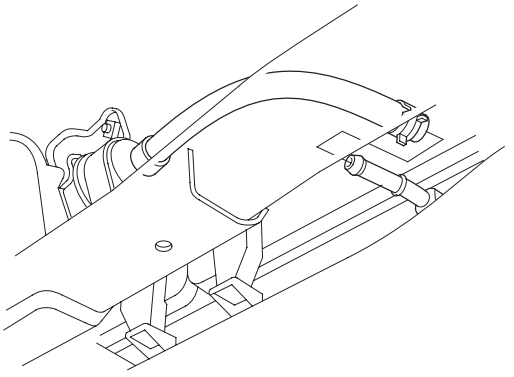
28. Remove the bolt securing the harness clamp bracket.



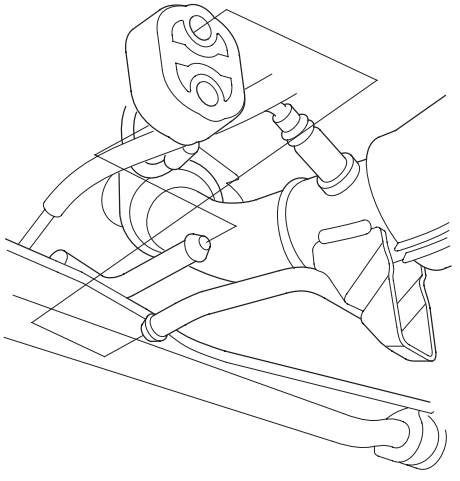
(cont'd)

Transmission Removal (cont'd)

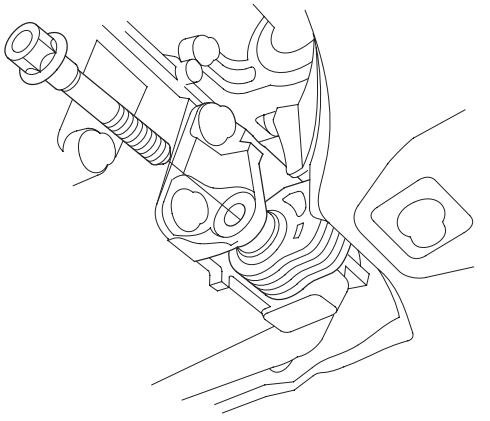
29. Remove the ATF cooler hose from the ATF cooler.



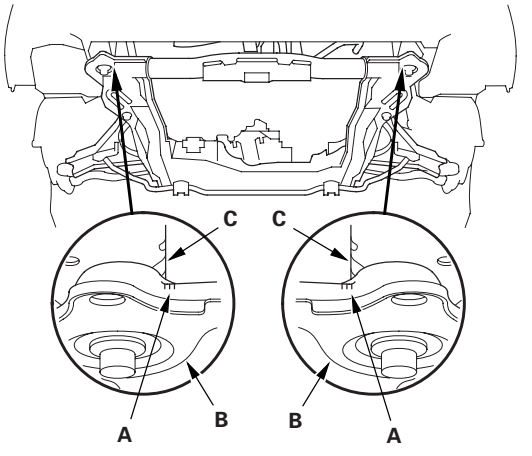
30. Remove the exhaust pipe rubber mount.



31. Remove the lower torque rod bolt.

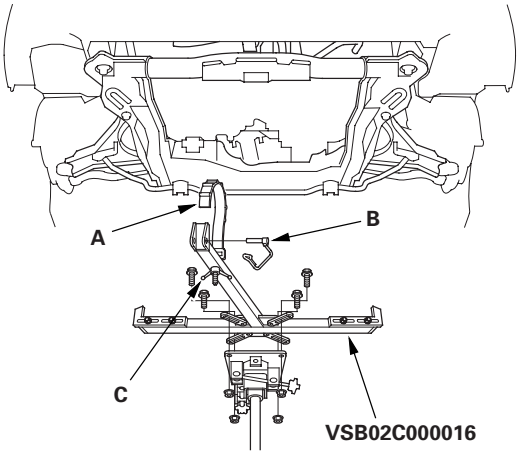


32. Make appropriate lines (A) on the front subframe (B) that line up with the edge (C) of the body.



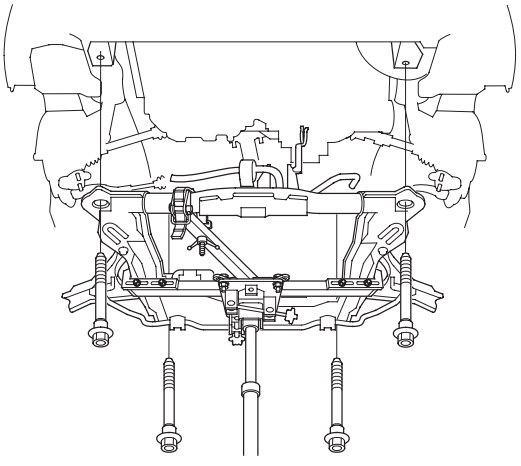
DYNOMITE -2009-

33. Attach the front subframe adapter (VSB02C000016) to the front subframe by looping the strap (A) over the front of the front subframe, then secure the strap with the stop (B), then tighten the wing nut (C).



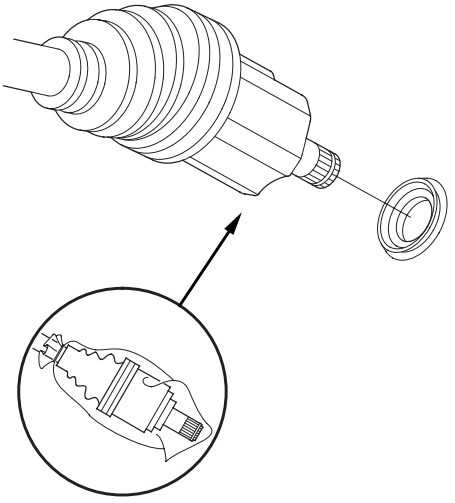
34. Raise a jack and line up the slots in the arms with the bolt holes on the corner of the jack base, then tighten the bolts.

35. Remove the four bolts securing the front subframe, and lower the front subframe.

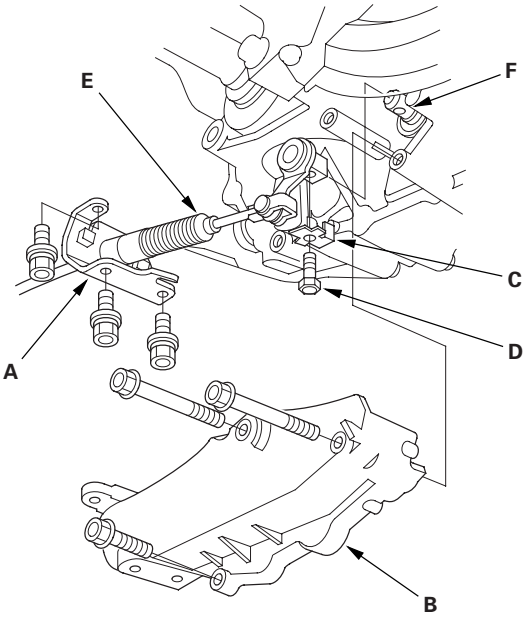


36. Secure the steering gearbox to the body with a rope.

37. Remove the driveshafts from the differential and the intermediate shaft. Coat all precision machined surfaces with clean engine oil, then put plastic bags over the driveshaft ends.



38. Remove the three bolts securing the shift cable holder (A), then remove the shift cable cover (B).

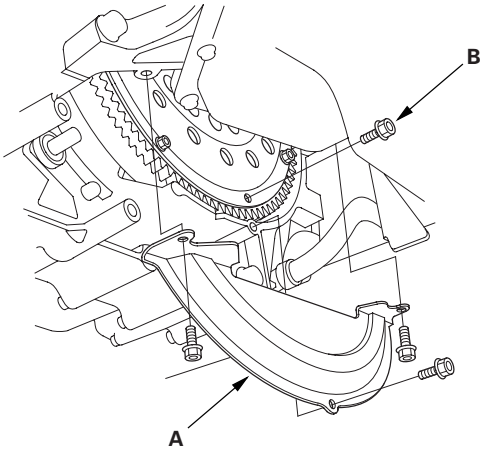


39. Pry up the lock tab of the lock washer (C), and remove the lock bolt (D) and the lock washer, then separate the shift cable (E) from the selector control shaft (F). Do not bend the shift cable excessively.

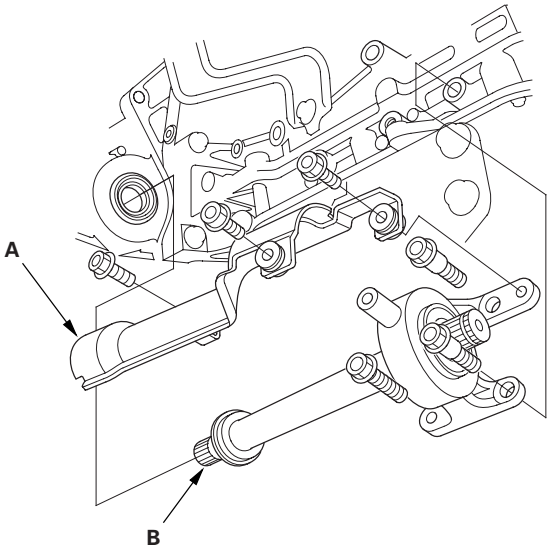
(cont'd)

Transmission Removal (cont'd)

40. Remove the torque converter cover (A), and remove the drive plate bolts (B) (8) while rotating the crankshaft pulley.

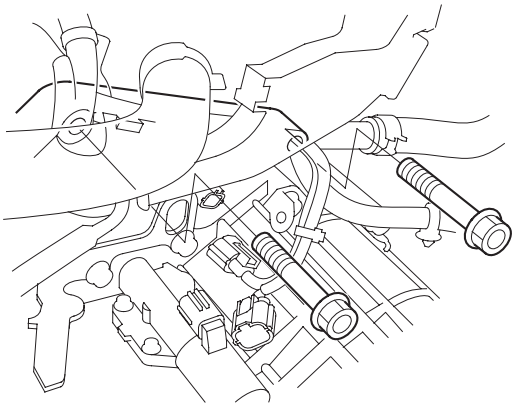


41. Remove the intermediate shaft cover (A).

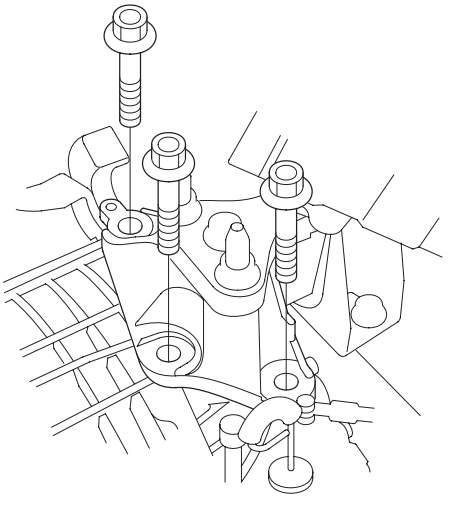


42. Remove the intermediate shaft (B). Coat all precision finished surfaces with clean engine oil, then tie the plastic bags over the intermediate shaft ends.

43. Remove the upper transmission housing mounting bolts.

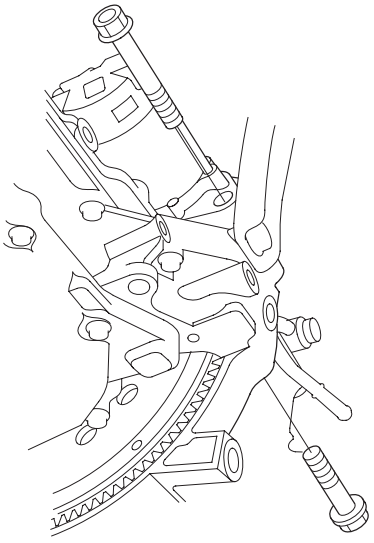


44. Remove the transmission mount bracket bolts.

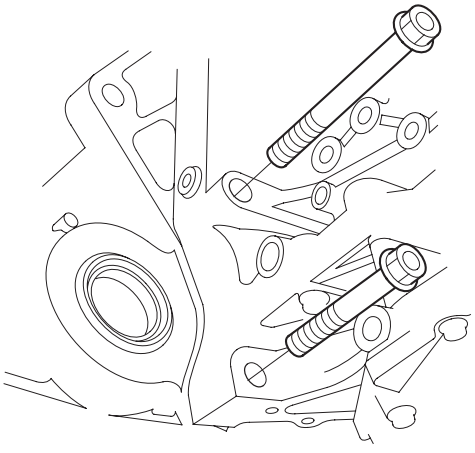


DYNOMITE -2009-

45. Remove the front transmission housing mounting bolts.



46. Remove the rear transmission housing mounting bolts.

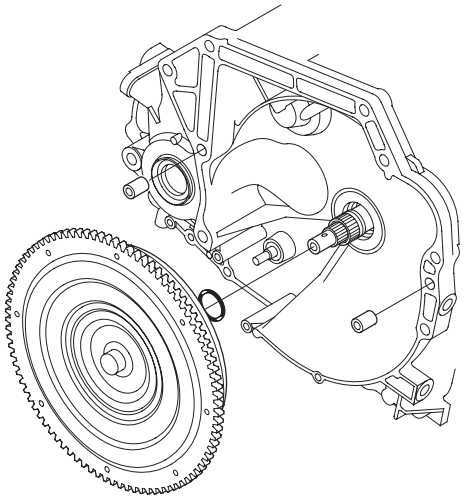


47. Lower the transmission by loosening the wing nut of the engine support hanger, and tilt the engine just enough for the transmission to clear the side frame.

48. Place a jack under the transmission.

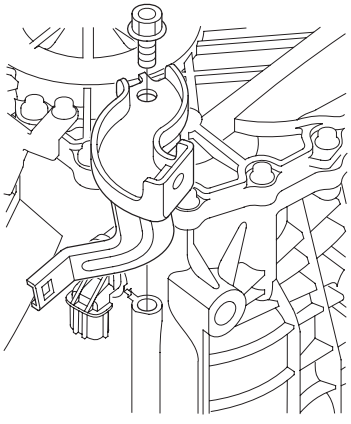
49. Slide the transmission away from the engine to remove it from the vehicle.

50. Remove the torque converter, the O-ring, and the dowel pins.



51. Inspect the drive plate, and replace it if it is damaged.

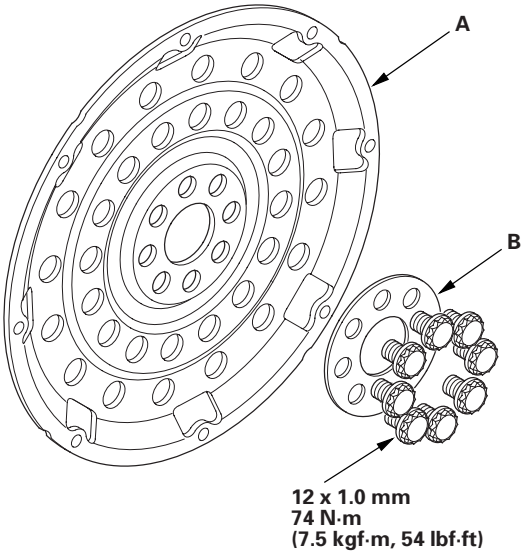
52. Remove the air cleaner housing mounting bracket.



Drive Plate Removal and Installation

1. Remove the transmission assembly (see page 14-233).

2. Remove the drive plate (A) and the washer (B) from the engine crankshaft.



3. Install the drive plate and the washer on the engine crankshaft, and tighten the eight bolts in a crisscross pattern in at least two steps.

4. Install the transmission assembly (see page 14-242).

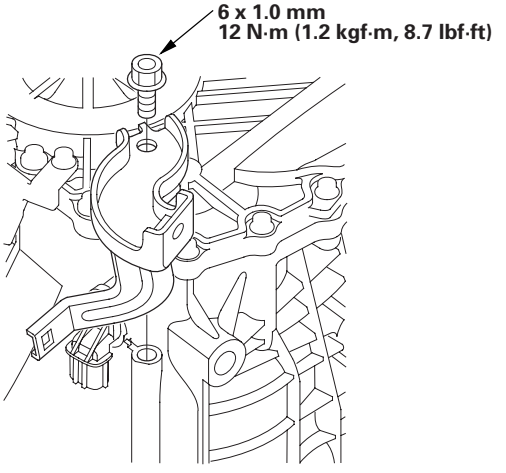
Transmission Installation

Special Tools Required
- Engine hanger plate 07AAK-SNAA120
- Engine support hanger, A and Reds AAR-T1256 *
- 2006 Civic engine hanger VSB02C000025 *
- Front subframe adapter VSB02C000016 *

* Available through Acura Canada Technical Tools Department; Fax # 866-398-8665/ e-mail: ch_technicaltools@ch.honda.com

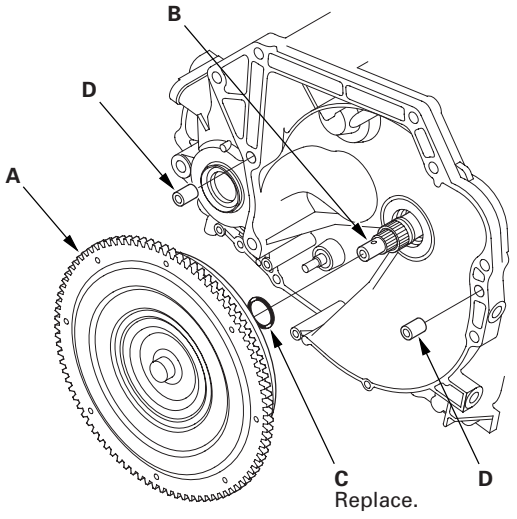
NOTE: Use fender covers to avoid damaging painted surfaces.

1. Install the air cleaner housing mounting bracket.



DYNOMITE -2009-

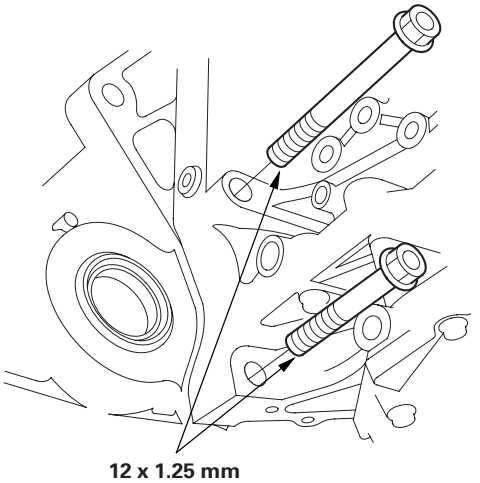
2. Install the torque converter (A) on the mainshaft (B) with a new O-ring (C).



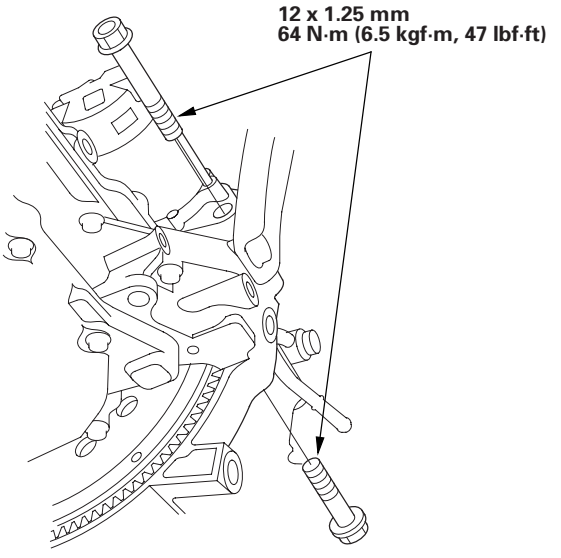
3. Install the 14 x 20 mm dowel pins (D) in the torque converter housing.

4. Place the transmission on a jack, and raise the transmission to the engine level.

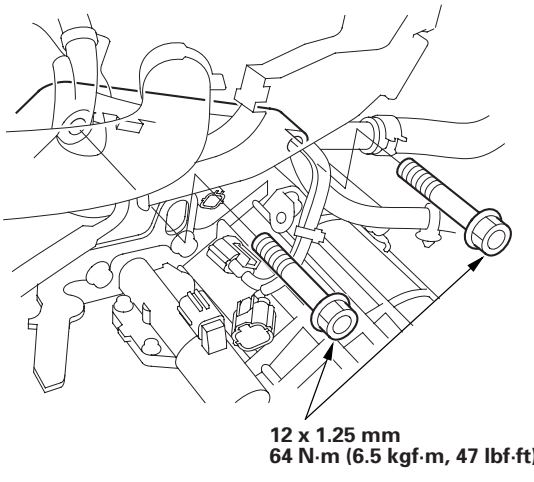
5. Install the rear transmission housing mounting bolts.



6. Install the front transmission housing mounting bolts.



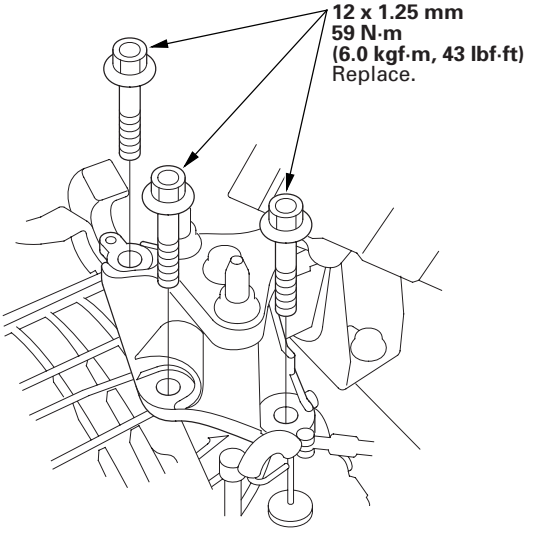
7. Install the upper transmission housing mounting bolts.



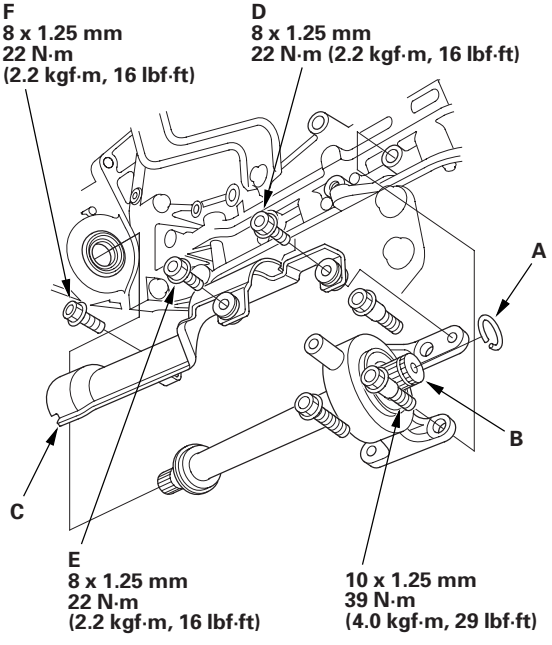
(cont'd)

Transmission Installation (cont'd)

8. Secure the transmission mount bracket on the transmission housing with new mounting bolts.



9. Install a new set ring (A) on the intermediate shaft (B).

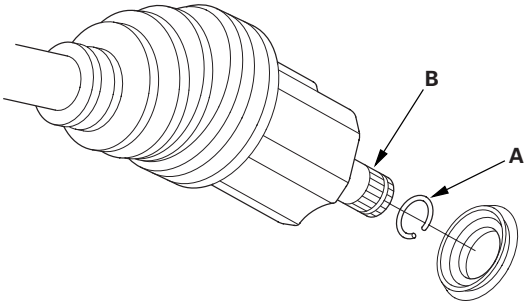


10. Clean the areas where the intermediate shaft contacts the transmission (differential) with solvent, and dry with compressed air. Apply intermediate shaft splines with ATF, then install the intermediate shaft, be sure not to allow dust or other foreign particles to enter the transmission.

11. Install the intermediate shaft cover (C) with installing the mounting bolts loosely.

12. First tighten the right upper bolt (D) on the cover, then the right lower bolt (E), and lastly the left bolt (F).

13. Install a new set ring (A) on the left driveshaft (B).



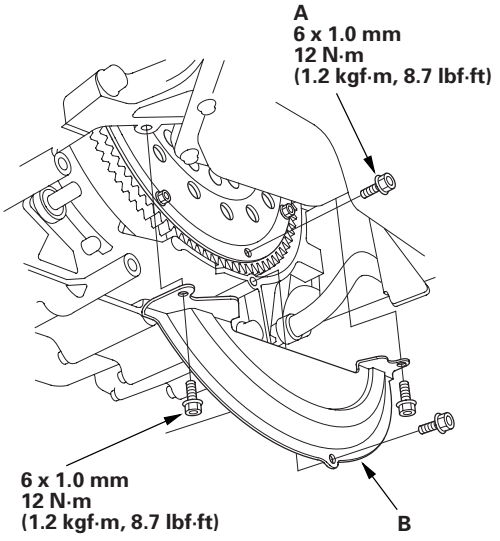
14. Clean the areas where the left driveshaft contacts the transmission (differential) with solvent, and dry with compressed air. Then install the left driveshaft, be sure not to allow dust or other foreign particles to enter the transmission. Turn the steering knuckle fully outward, and slide the driveshaft into the differential until you feel its set ring fully engage the side gear.

15. Apply right driveshaft inboard-joint splines with the recommended grease (P/N 08734-0001).

16. Slide the right driveshaft over the intermediate shaft splines until you feel the driveshaft fully engage the intermediate shaft set ring.

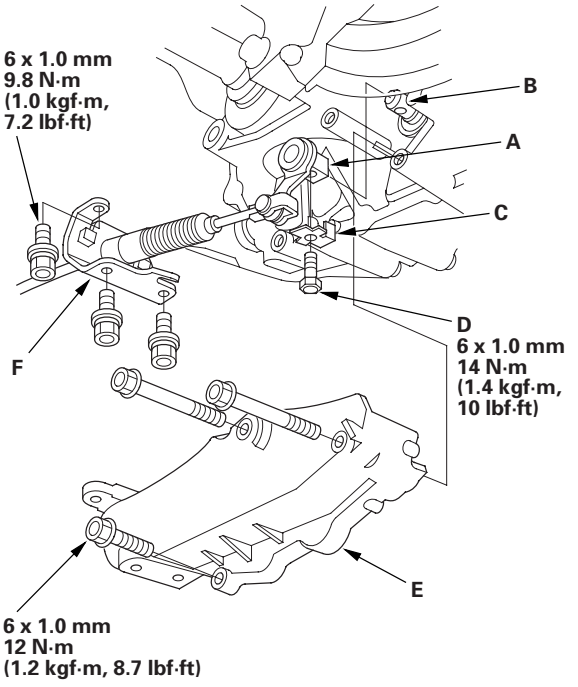
DYNOMITE -2009-

17. Attach the torque converter to the drive plate with the eight bolts (A). 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 rotate freely.



18. Install the torque converter cover (B).

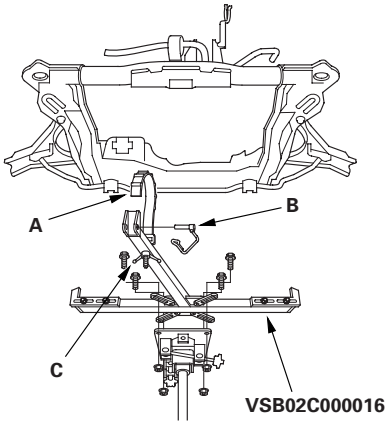
19. Install the control lever (A) over the selector control shaft (B).



20. Secure the control lever with a new lock washer (C) and the lock bolt (D), then bend the lock tab of the lock washer against the bolt head.

21. Install the shift cable cover (E), and install the shift cable holder (F) on the shift cable cover.

22. Set the front subframe adapter (VSB02C000016) to the front subframe by looping the strap (A) over the front of the front subframe, then secure the strap with the stop (B), then tighten the wing nut (C).

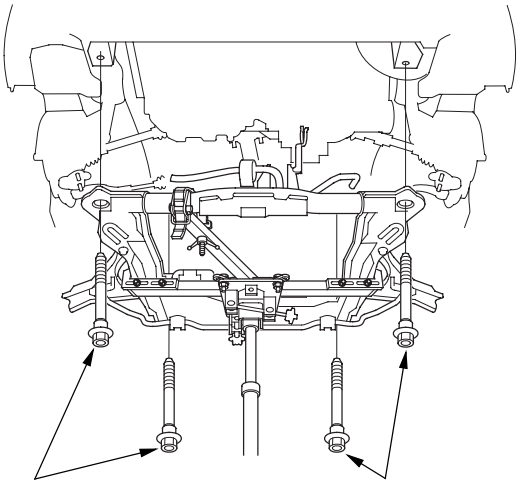


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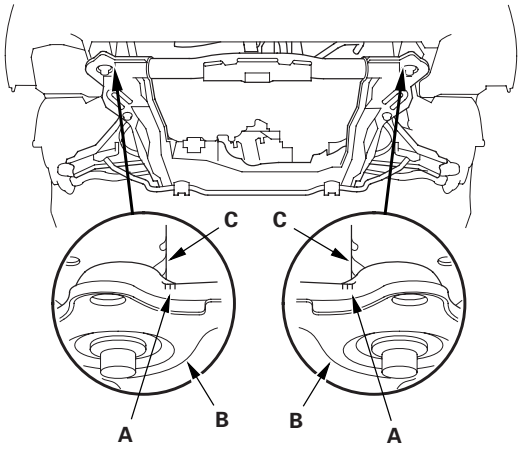
DYNOMITE -2009-

Transmission Installation (cont'd)

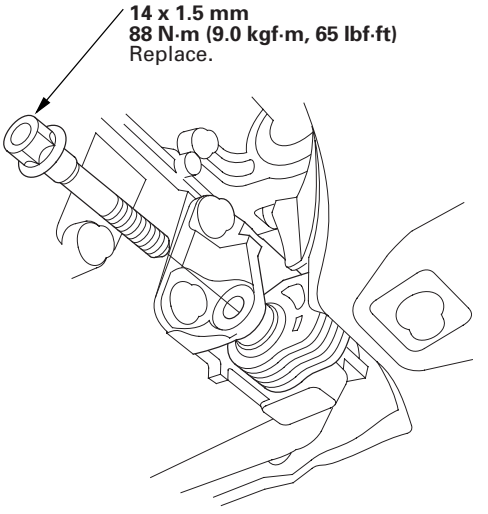
23. Loosely install new front subframe mounting bolts.



24. Align the reference marks (A) on the front subframe (B) with the edge (C) of the body, and tighten the mounting bolts to the specified torque.

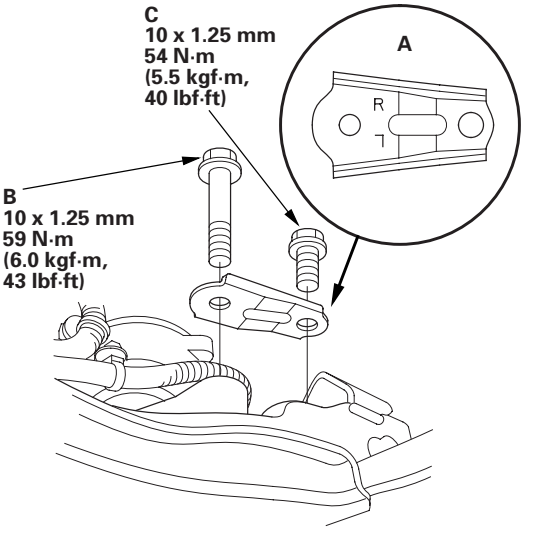


25. Secure the lower torque rod with a new bolt.



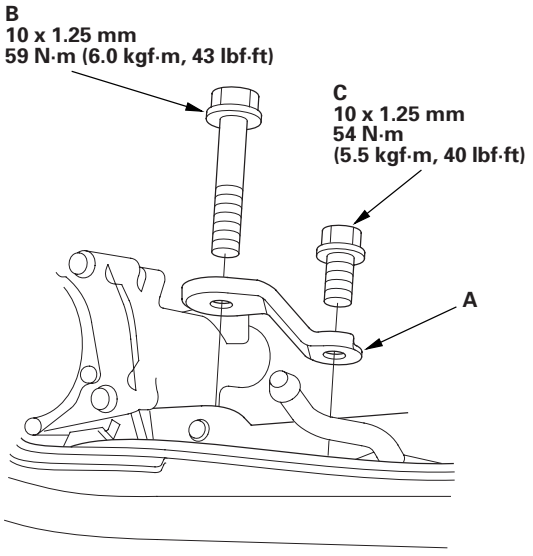
26. Position the steering gearbox on the gearbox mounting bracket of the front subframe.

27. Install the gearbox stiffener (A) in the direction shown. Install the steering gearbox mounting bolt (B) and the stiffener mounting bolt (C), and tighten the bolts loosely.

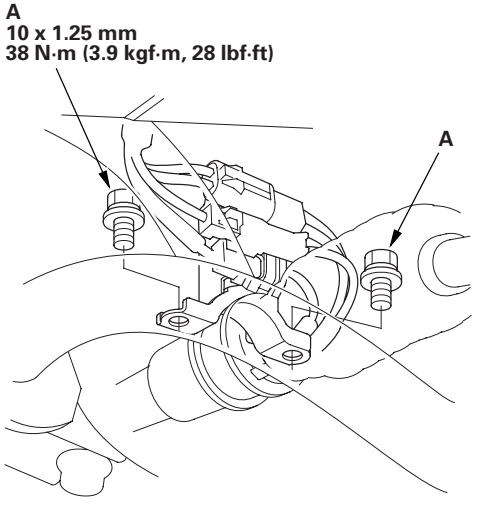


DYNOMITE -2009-

28. Install the stiffener (A), the steering gearbox mounting bolt (B), and the stiffener mounting bolt (C), and tighten the bolts loosely.

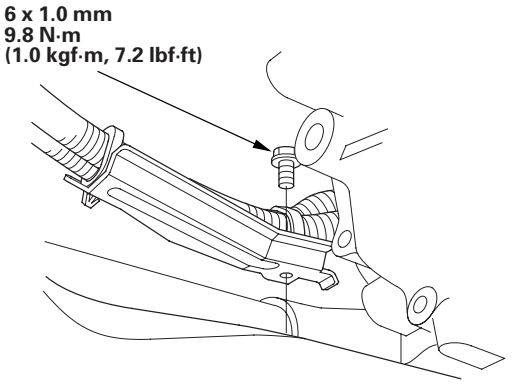


29. Install the steering gearbox bracket mounting bolts (A).

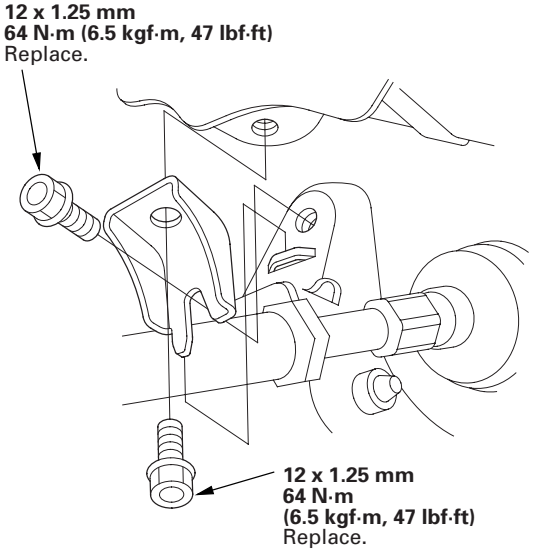


30. Tighten the steering gearbox mounting bolts and the stiffener mounting bolts to the specified torque.

31. Install the bolt securing the harness clamp bracket.



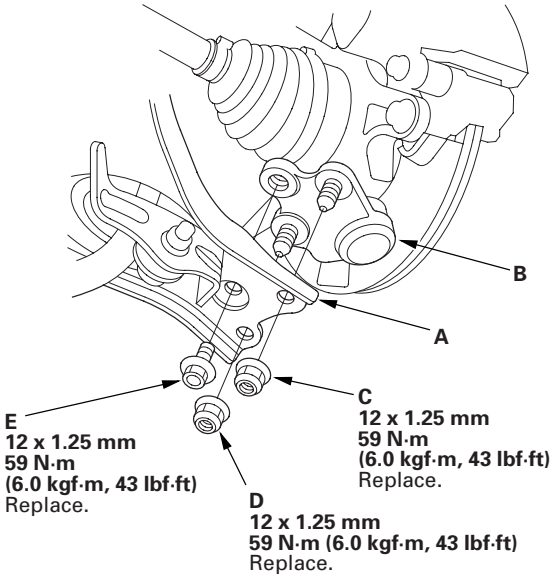
32. Install both front subframe body mount brackets with new bolts.



(cont'd)

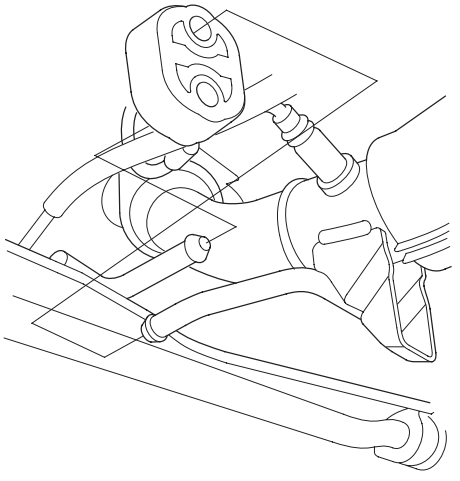
Transmission Installation (cont'd)

33. Install both of the lower arms (A) to the ball joints (B), and loosely install new mounting nuts and bolts.

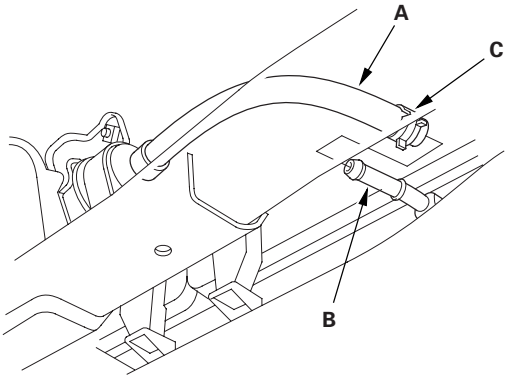


34. Tighten the nuts and bolts to 59 N·m (6.0 kgf·m, 43 lbf·ft) in the following order; (C), then (D), then (E).

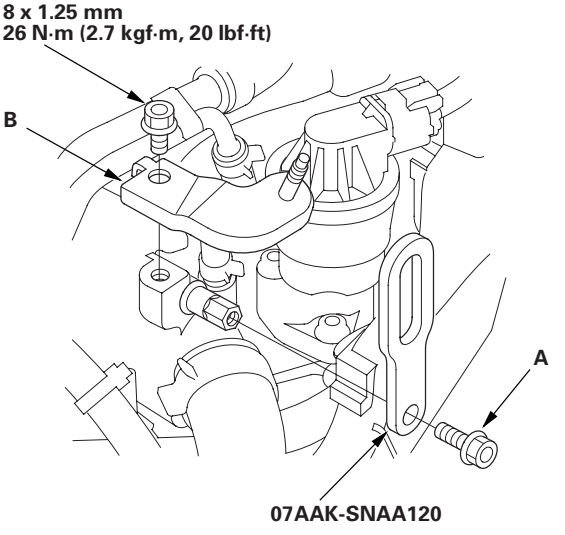
35. Install the exhaust pipe rubber mount.



36. Connect the ATF cooler hose (A) to the ATF cooler (B), and secure the hose with the clip (C) (see page 14-253).



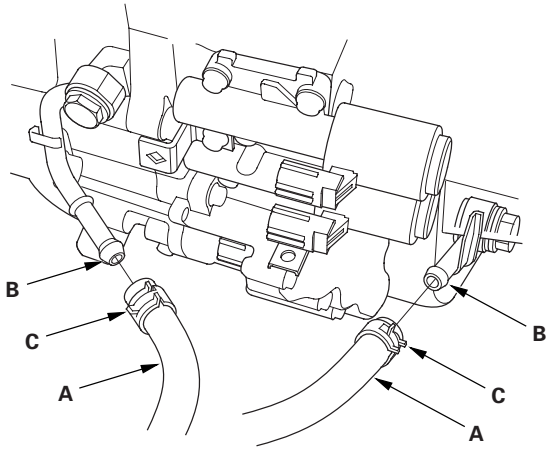
37. Remove the engine hanger plate (07AAK-SNAA120) and the bolt (A), and install the air cleaner housing mounting bracket (B) on the engine.



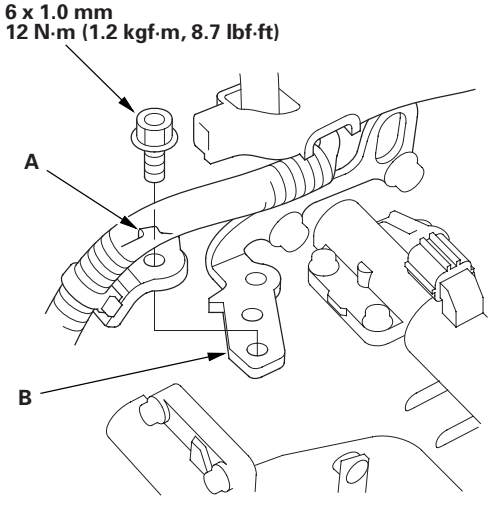
38. Remove the engine hanger.

DYNOMITE -2009-

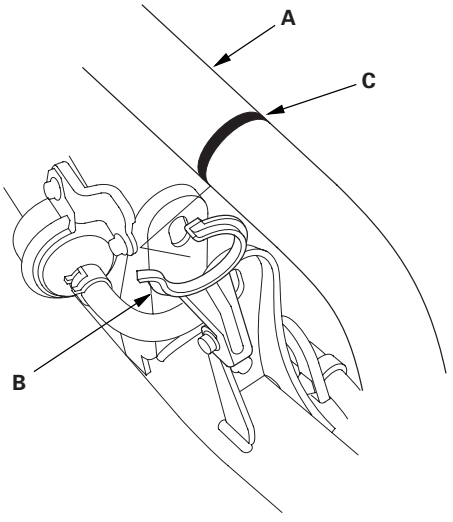
39. Connect the ATF cooler hoses (A) to the ATF cooler lines (B), and secure the hoses with the clips (C) (see page 14-253).



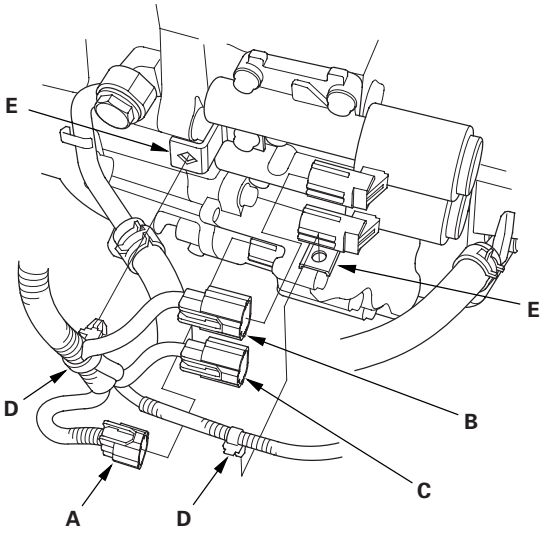
40. Secure the harness clamp bracket (A) on the transmission hanger (B) with the bolt.



41. Install the water hose (A) to its clamp (B) at the mark (C).



42. Connect the shift solenoid wire harness connector (A), the A/T clutch pressure control solenoid valve B connector (B), and the A/T clutch pressure control solenoid valve C connector (C), and install the harness clamps (D) on the clamp brackets (E).

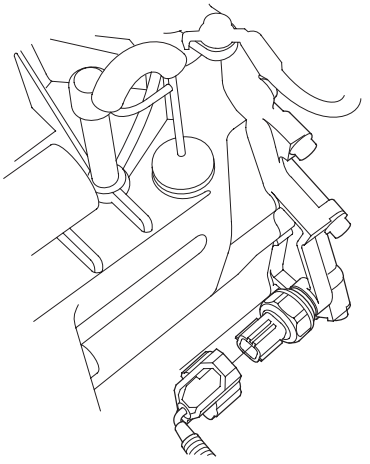


(cont'd)

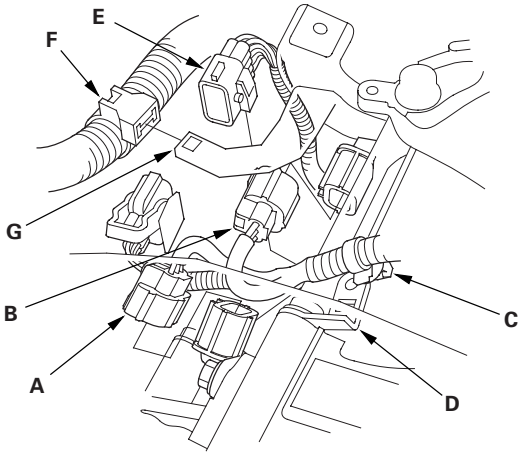
DYNOMITE -2009-

Transmission Installation (cont'd)

43. Connect the 3rd clutch transmission fluid pressure switch connector.

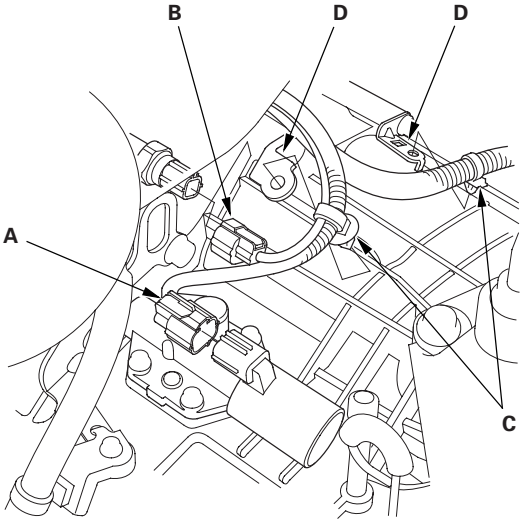


44. Connect the output shaft (countershaft) speed sensor connector (A) and the input shaft (mainshaft) speed sensor connector (B), and install the harness clamp (C) on its clamp bracket (D).

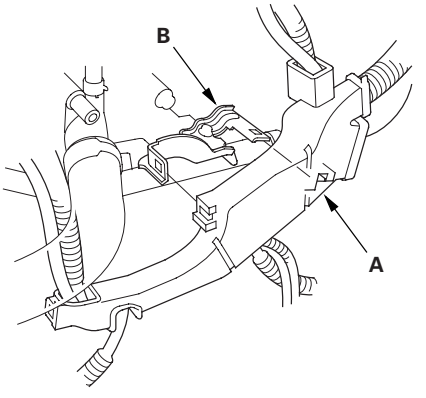


45. Install the transmission range switch connector (E) on the connector bracket, and connect the connector. Install the harness clamp (F) to the clamp bracket (G).

46. Connect the A/T clutch pressure control solenoid valve A connector (A) and the 2nd clutch transmission fluid pressure switch connector (B), and install the harness clamps (C) on the clamp brackets (D).

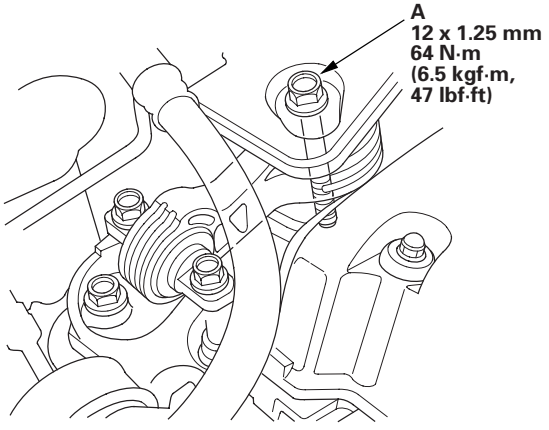


47. Install the harness cover (A) on its bracket (B).

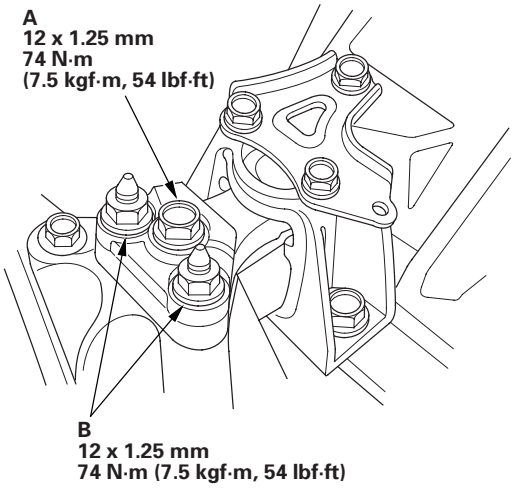


DYNOMITE -2009-

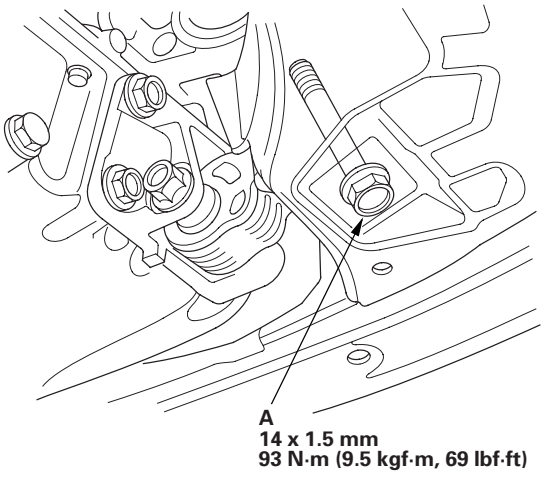
48. Loosen the upper torque rod mounting bolt (A).



49. Loosen the transmission bolt (A) and the nuts (B).



50. Loosen the lower torque rod mounting bolt (A).



51. Tighten the lower torque rod mounting bolt.

52. Tighten the transmission mounting bolt and the nuts.

53. Tighten the upper torque rod mounting bolt.

(cont'd)

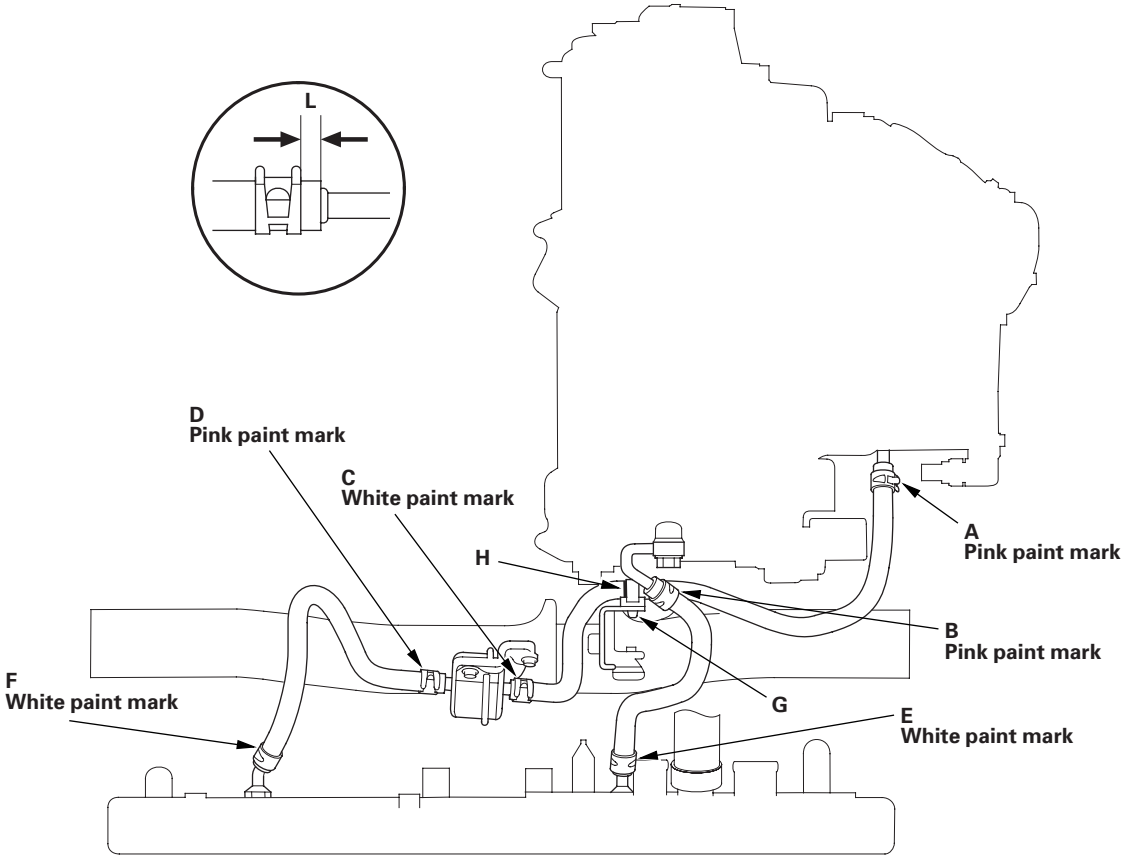
Transmission Installation (cont'd)

54. Refill the transmission with ATF (see step 5 on page 14-232).
55. Install the battery tray, the battery base, and the resonator.
56. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).
57. Install the front grille cover (see page 20-163).
58. Install the under-cowl lower panel and the cowl cover (see page 20-163).
59. Do the battery installation procedure (see page 22-69).
60. Install the front wheels.
61. Set the parking brake. Start the engine, and shift the transmission through all positions three times.
62. Check the shift lever operation, the A/T gear position indicator operation, and the shift cable adjustment.
63. Check and adjust the front wheel alignment (see page 18-5).
64. Install the splash shield.
65. Start the engine with the shift lever in P or N, and warm it up to normal operating temperature (the radiator fan comes on). Turn off the engine, and check the ATF level (see page 14-231).
66. Road-test the vehicle (see page 14-208).

DYNOMITE -2009-

ATF Cooler Hose Replacement

Exploded View



NOTE: When installing the hose clamps, make sure not to interfere to the surrounding parts.

1. Install the ATF cooler hoses over the ATF cooler lines with the clips at appropriate points in reference to the following list.

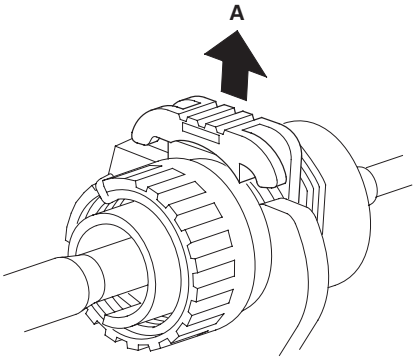
Point	Distance from Hose End to Clip (L)	Hose End Contact Point
A	6—8 mm (0.24—0.31 in.)	Bulge
B		
C	5—7 mm (0.20—0.28 in.)	ATF filter from 10—12 mm (0.40—0.47 in.)
D		
E	2—4 mm (0.08—0.16 in.)	White paint line
F	2—4 mm (0.08—0.16 in.)	Bulge

2. Secure the ATF cooler hose with the clamp (G) at the white paint line (H).

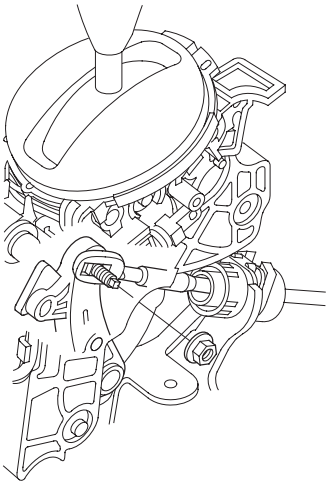
3. Refill the transmission with ATF to the proper level (see page 14-232).

Shift Lever Removal

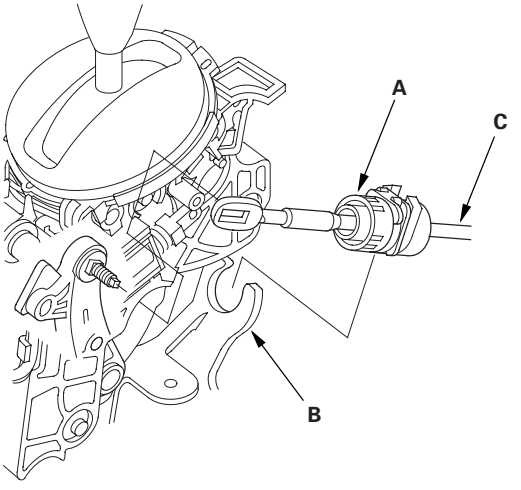
1. Remove the center console (see page 20-92).
2. Move the shift lever to R.
3. Pry the socket holder lock (A) up using a screwdriver.



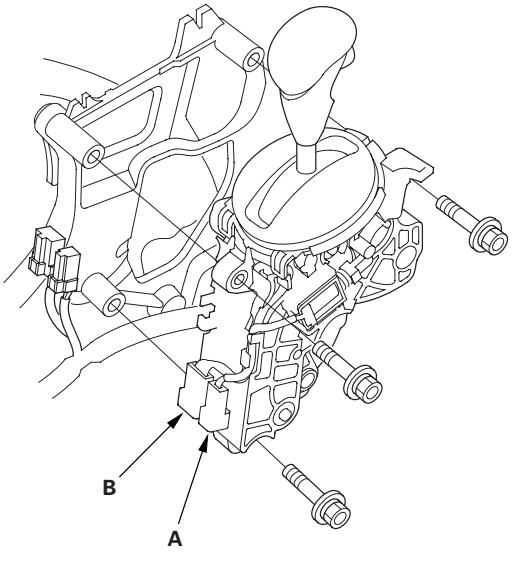
4. Remove the nut securing the shift cable end.



5. Rotate the socket holder retainer (A) counterclockwise, push it against the socket holder bracket (B), then slide the socket holder to remove the shift cable (C) from the socket holder bracket.



6. Disconnect the shift lock solenoid connector (A) and the park pin switch/A/T gear position indicator panel light connector (B).

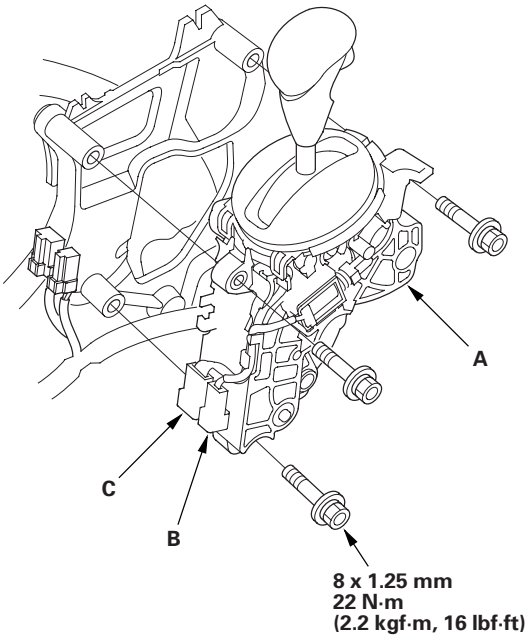


7. Remove the shift lever assembly.

DYNOMITE -2009-

Shift Lever Installation

1. Install the shift lever assembly (A).



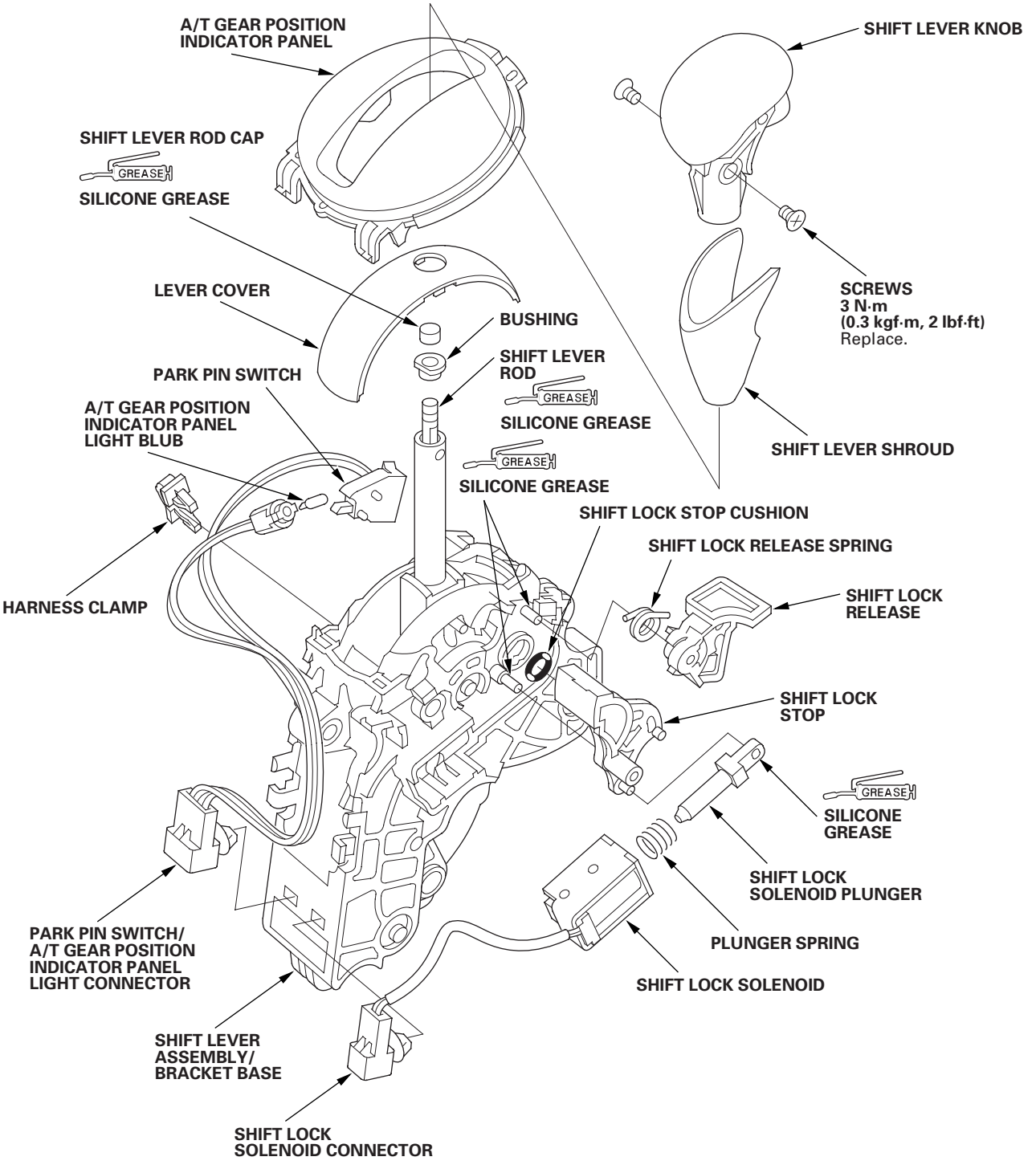
2. Connect the shift lock solenoid connector (B) and the park pin switch/A/T gear position indicator panel light connector (C).

3. Install the shift cable on the shift lever, and adjust the cable (see step 5 on page 14-259).

DYNOMITE -2009-

Shift Lever Disassembly/Reassembly

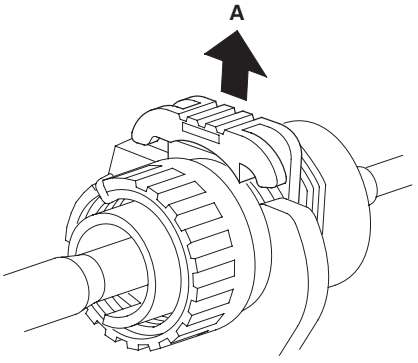
NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.



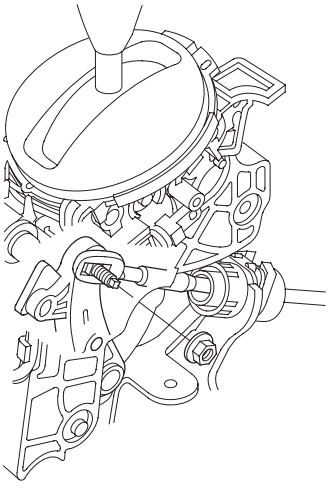
DYNOMITE -2009-

Shift Cable Replacement

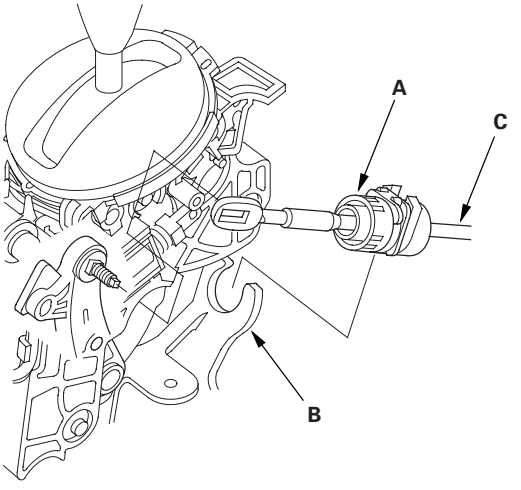
1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Move the shift lever to R.
3. Remove the center console (see page 20-92).
4. Pry the socket holder lock (A) up using a screwdriver.



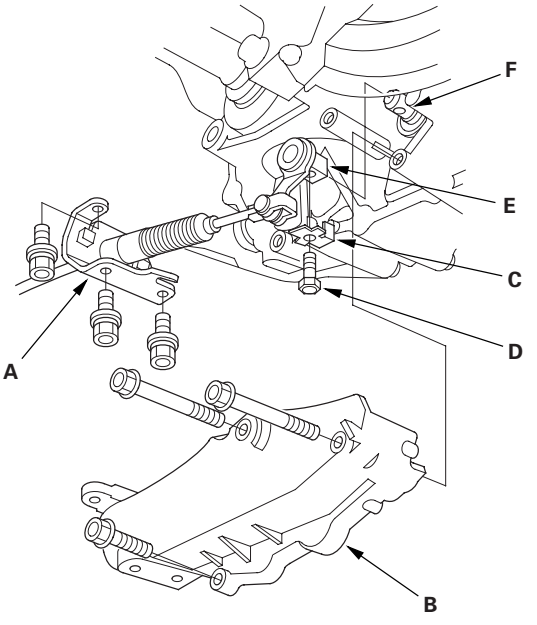
5. Remove the nut securing the shift cable end.



6. Rotate the socket holder retainer (A) counterclockwise, push it against the socket holder bracket (B), then slide the socket holder to remove the shift cable (C) from the socket holder bracket.



7. Remove the three bolts securing the shift cable holder (A), then remove the shift cable cover (B).



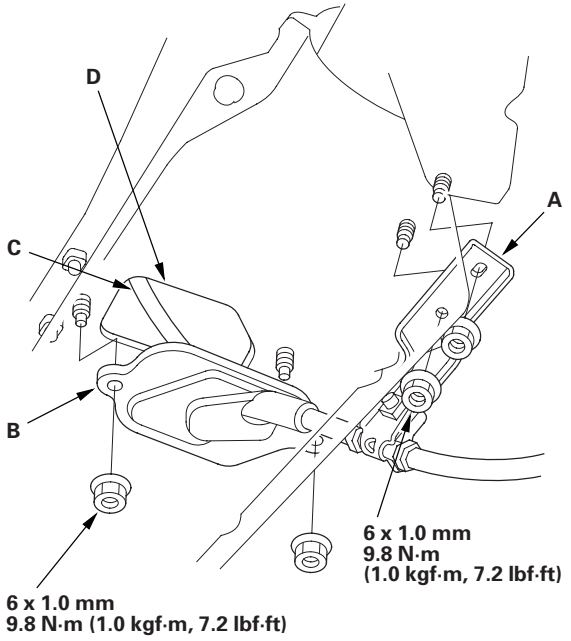
8. Pry up the lock tab of the lock washer (C), and remove the lock bolt (D) and the lock washer, then separate the control lever (E) from the selector control shaft (F). Do not bend the shift cable excessively.

(cont'd)

DYNOMITE -2009-

Shift Cable Replacement (cont'd)

9. Remove the nuts securing the shift cable bracket (A) and the grommet (B).



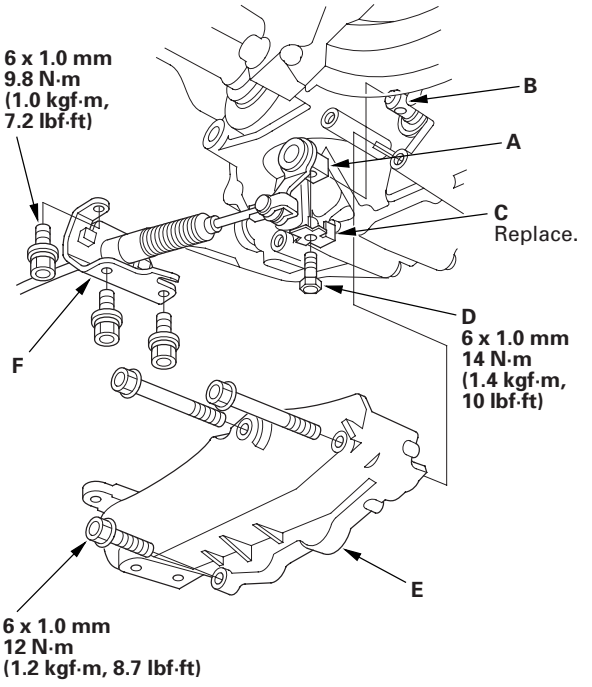
10. Remove the shift cable grommet, and pull out the shift cable (C).

11. Insert a new shift cable through the grommet hole (D), and install the grommet in its hole. Do not bend the shift cable excessively.

12. Secure the shift cable bracket and the grommet with the nuts.

13. Make sure that the transmission is in the R position at the selector control shaft.

14. Install the control lever (A) over the selector control shaft (B).



15. Secure the control lever with a new lock washer (C) and the lock bolt (D), then bend the lock tab of the lock washer against the bolt head.

16. Install the shift cable cover (E), and install the shift cable holder (F) on the cover.

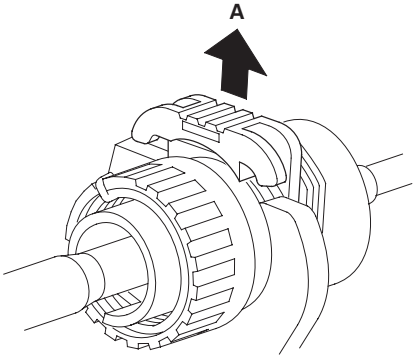
17. Install the shift cable on the shift lever, and adjust the cable (see step 5 on page 14-259).

DYNOMITE -2009-

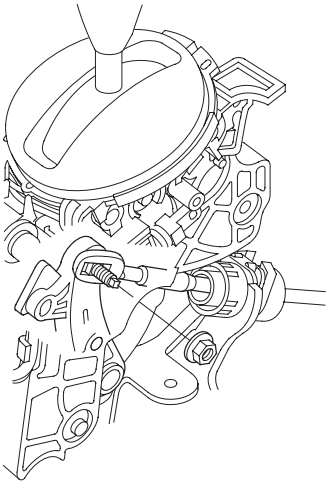
Shift Cable Adjustment

1. Remove the center console (see page 20-92).

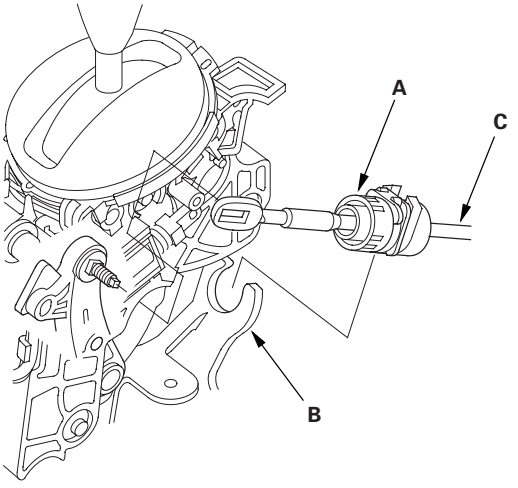
2. Pry the socket holder lock (A) up using a screwdriver.



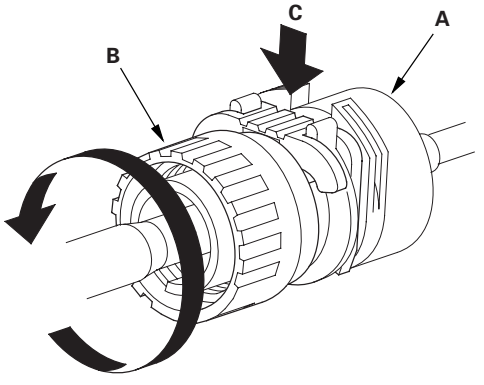
3. Remove the nut securing the shift cable end.



4. Rotate the socket holder retainer (A) counterclockwise, push it against the socket holder bracket (B), then slide the socket holder to remove the shift cable (C) from the socket holder bracket.



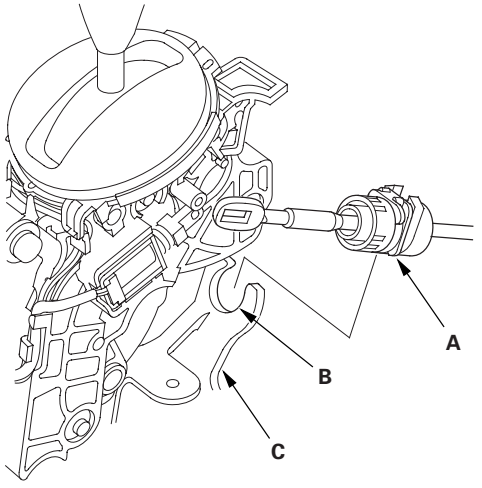
5. While holding the socket holder (A), rotate the socket holder retainer (B) fully counterclockwise, and press in the socket holder lock (C) between the socket holder and the socket holder retainer enough.



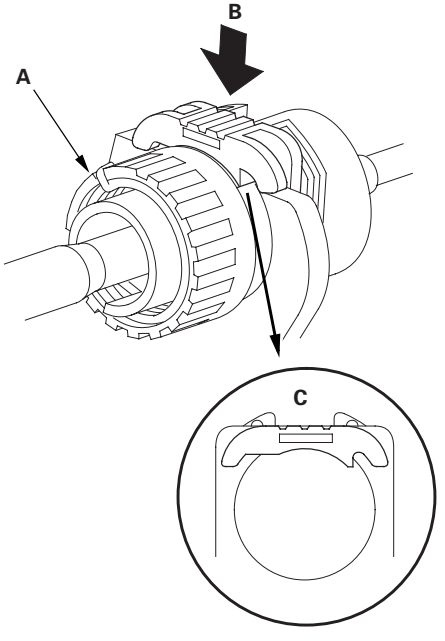
(cont'd)

Shift Cable Adjustment (cont'd)

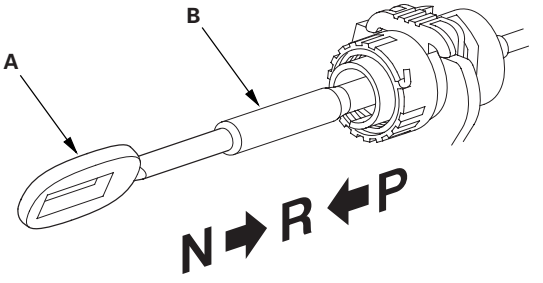
6. Align the socket holder (A) with the slot (B) in the socket holder bracket (C), then slide the socket holder into the socket holder bracket.



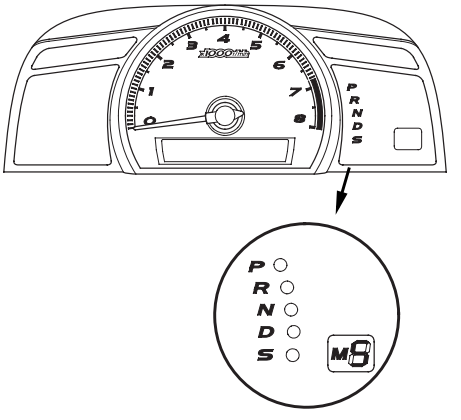
7. Rotate the socket holder retainer (A) clockwise, and push the socket holder lock (B). Rotate the holder retainer counterclockwise until the retainer stops at the stop (C) of the socket holder lock to secure the shift cable.



8. Push the shift cable (A) 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 (B) to adjust the shift cable.



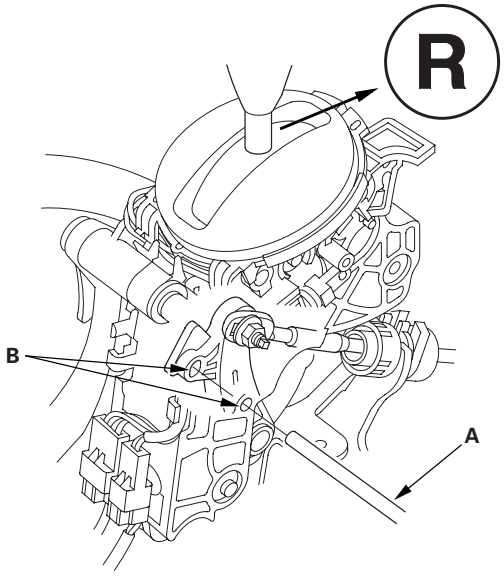
9. Turn the ignition switch to ON (II), and check that the R position indicator comes on.



10. Turn the ignition switch to LOCK (0).

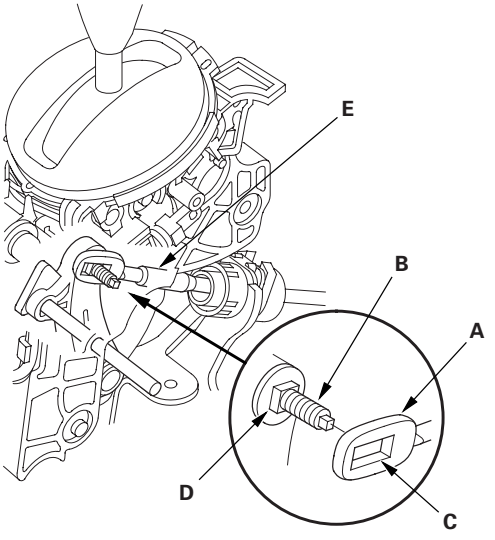
DYNOMITE -2009-

11. Place the shift lever in R, then insert a 6.0 mm (0.24 in.) pin (A) into the positioning holes (B) on the shift lever bracket, through the positioning hole on the shift lever, and into the positioning hole on the bracket. Use only a 6.0 mm pin that is free of burrs.



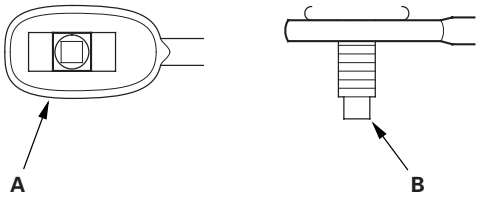
12. Check that the shift lever is secured in R.

13. Install the shift cable end (A) over the mounting stud (B) by aligning its square hole (C) with the square fitting (D) at the bottom of the stud. Do not install the shift cable by holding the shift cable guide (E).

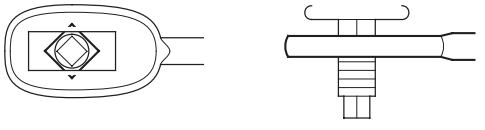


14. Check that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:



Improperly Installed:



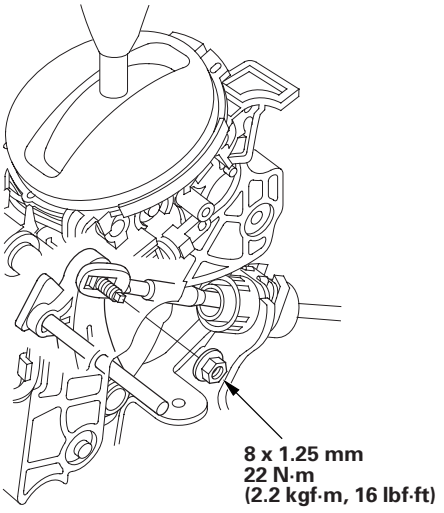
Cable end rides on the bottom of the mounting stud.

15. If improperly installed, align the square fitting with the square hole by rotating the mounting stud.

(cont'd)

Shift Cable Adjustment (cont'd)

16. Install and tighten the nut.



17. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

18. Turn the ignition switch to ON (II). Move the shift lever to each position, and check that the A/T gear position indicator follows the transmission range switch.

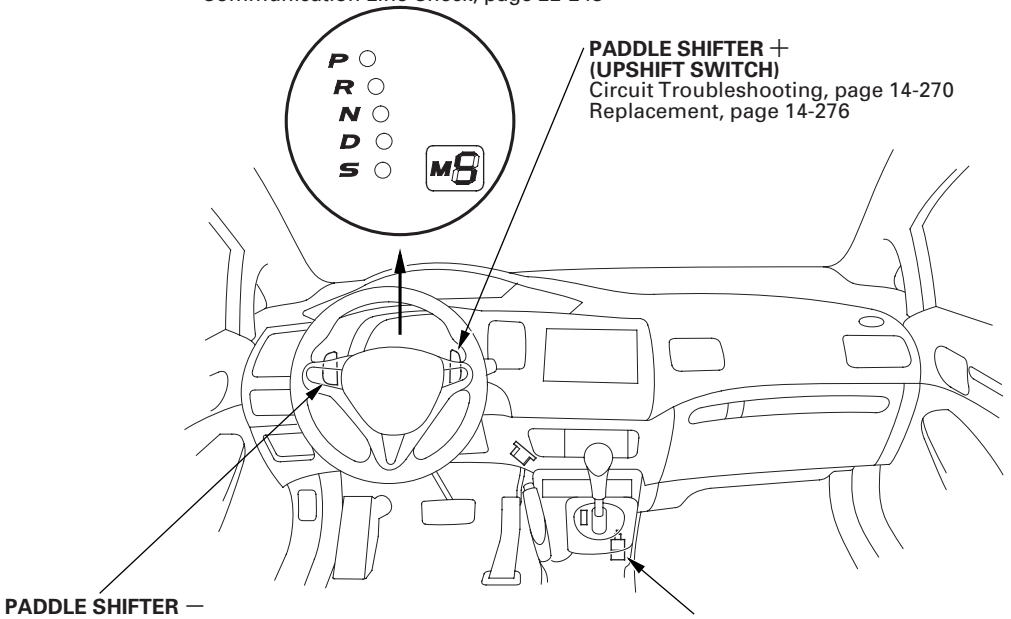
19. Shift to P, and check that the shift lock works properly. Push the shift lock release, and check that the shift lever releases.

20. Install the center console (see page 20-92).

DYNOMITE -2009-

Component Location Index

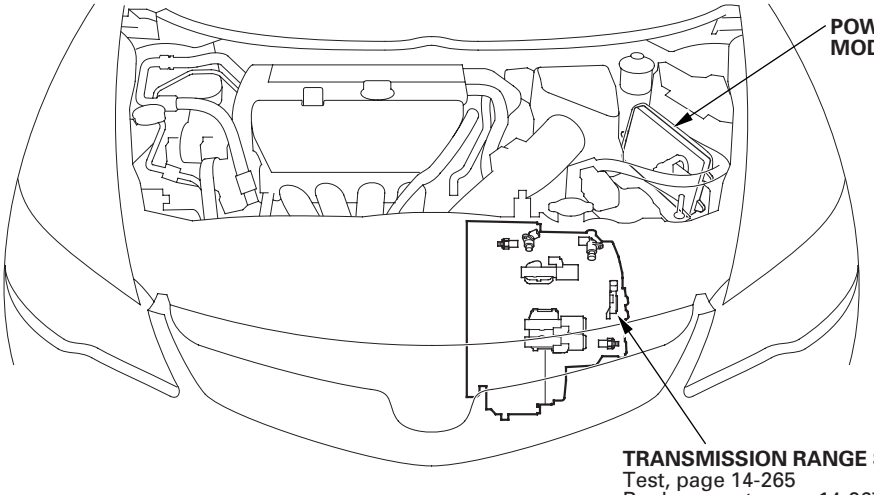
A/T GEAR POSITION INDICATOR
SHIFT INDICATOR, M INDICATOR
F-CAN Communication Circuit
Troubleshooting, page 22-265
Gauge Control Module Self-diagnostic Function
Indicator Drive Circuit Check, page 22-242
Communication Line Check, page 22-243



PADDLE SHIFTER +
(UPSHIFT SWITCH)
Circuit Troubleshooting, page 14-270
Replacement, page 14-276

PADDLE SHIFTER −
(DOWNSHIFT SWITCH)
Circuit Troubleshooting, page 14-273
Replacement, page 14-277

A/T GEAR POSITION INDICATOR
PANEL LIGHT HARNESS
Replacement, page 14-269



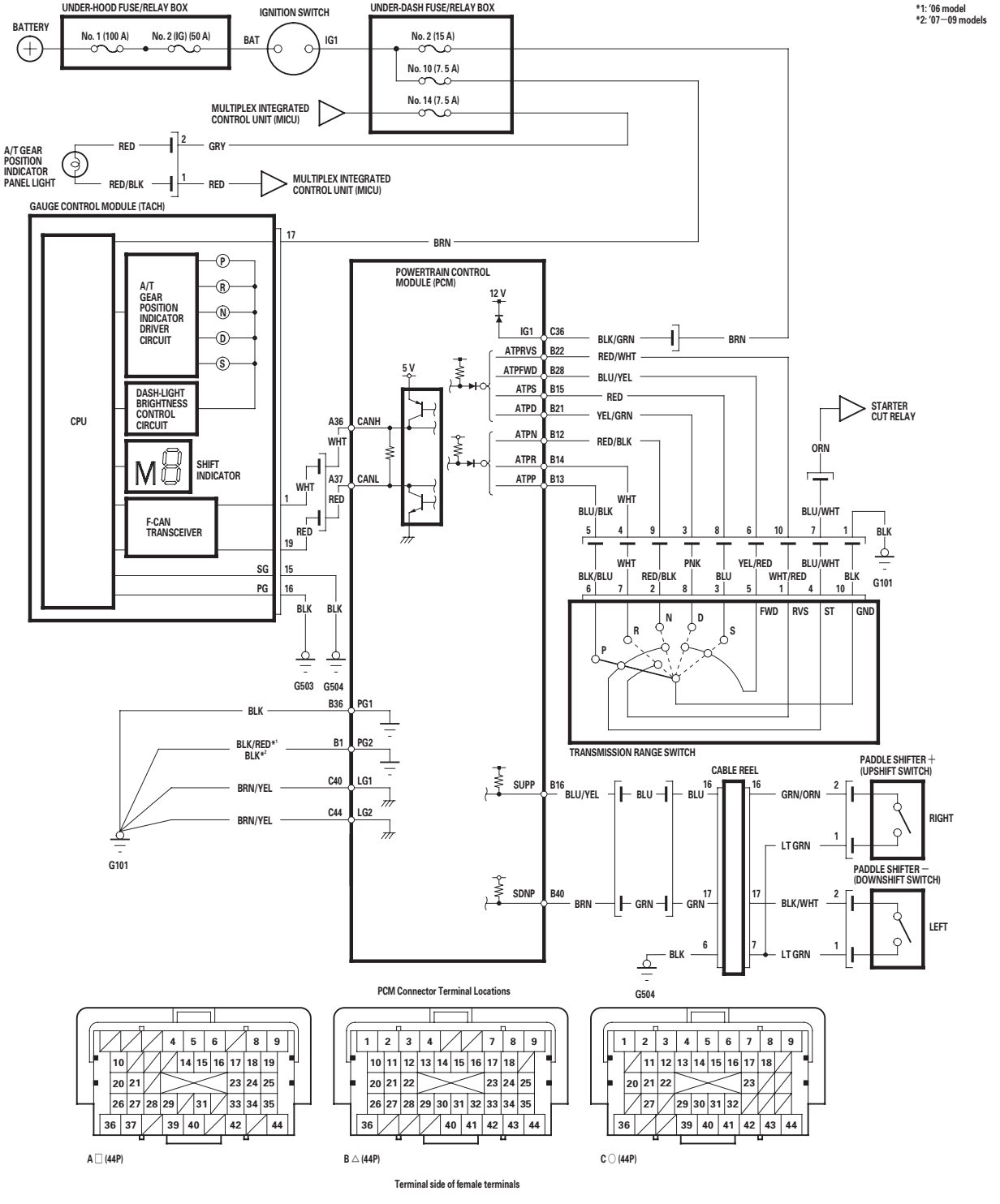
POWERTRAIN CONTROL
MODULE (PCM)

TRANSMISSION RANGE SWITCH
Test, page 14-265
Replacement, page 14-267

DYNOMITE -2009-

A/T Gear Position Indicator

Circuit Diagram

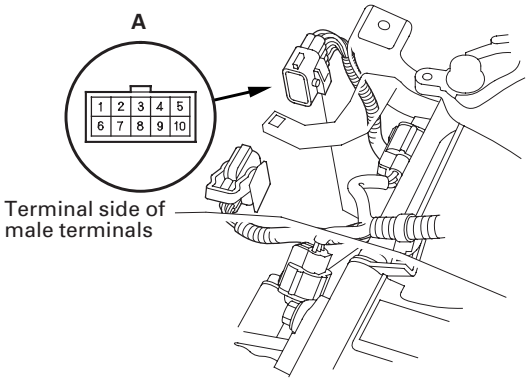


DYNOMITE -2009-

Transmission Range Switch Test

1. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

2. Disconnect the transmission range switch subharness connector (A).



3. Check for continuity between the terminals at the harness connector. There should be continuity between the terminals in the following table for each switch position.

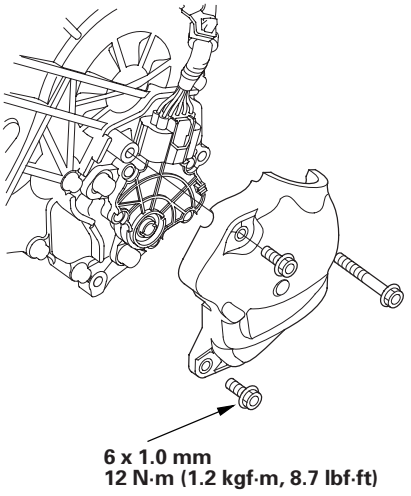
Transmission Range Switch Subharness Connector

Position	Connector Terminal/Signal									
	1	2	3	4	5	6	7	8	9	10
	GND	—	ATP D	ATP R	ATP P	ATP FWD	ATP NP	ATP S	ATP N	ATP RVS
P	○				○		○			
R	○			○						○
N	○						○		○	
D	○		○			○				
S	○					○		○		

4. Transmission range switch test has completed if the test results are OK, go to step 12. If there is no continuity between any terminals, go to step 5.

5. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

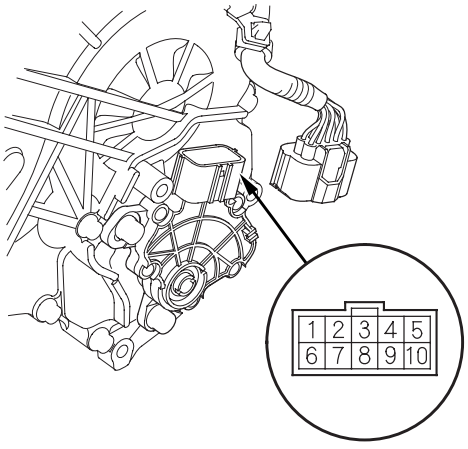
6. Remove the transmission range switch cover.



(cont'd)

Transmission Range Switch Test (cont'd)

7. Disconnect the transmission range switch connector.



8. Check for continuity between the terminals at the switch connector. There should be continuity between the terminals in the following table for each switch position.

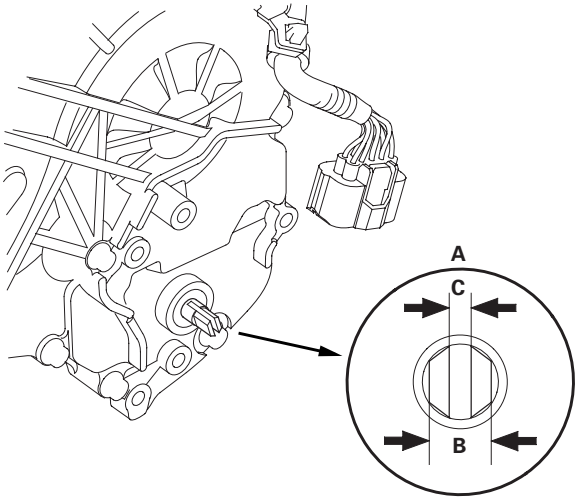
Transmission Range Switch Connector

Position	Connector Terminal/Signal									
	1	2	3	4	5	6	7	8	9	10
	ATP RVS	ATP N	ATP S	ATP NP	ATP FWD	ATP P	ATP R	ATP D	—	GND
P				○		○				○
R	○						○			○
N		○		○						○
D					○			○		○
S			○		○					○

9. If the transmission range switch test is OK, replace the faulty transmission range switch harness, then go to step 12. If there is no continuity between any terminals, go to step 10.

10. Remove the transmission range switch, and check the end of the selector control shaft (A).

Selector Control Shaft:
Width (B): 6.1—6.2 mm (0.240—0.244 in.)
End Gap (C): 1.8—2.0 mm (0.07—0.08 in.)



11. If the measurement at the end of the selector control shaft is within the standard, replace the transmission range switch. If the measurement is out of the standard, repair the selector control shaft end, and recheck the transmission range switch continuity.

12. Check the connector for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.

13. Install the removed parts in the reverse order of removal.

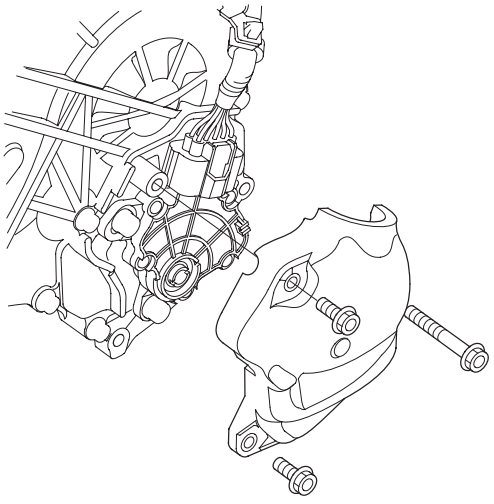
DYNOMITE -2009-

Transmission Range Switch Replacement

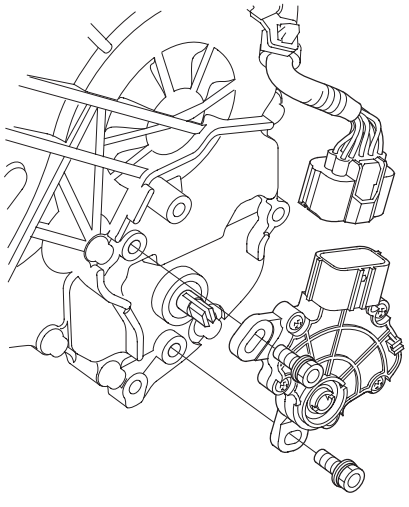
1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

2. Move the shift lever to N.

3. Remove the transmission range switch cover.

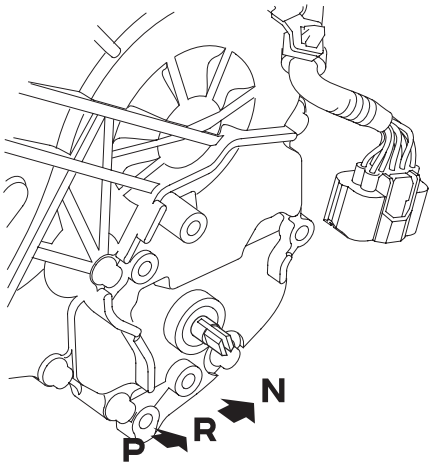


4. Remove the transmission range switch.



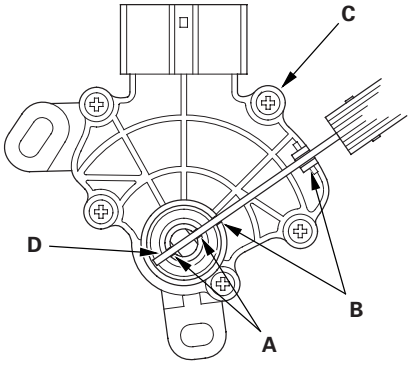
5. Make sure the control shaft is in the N position. If necessary, move the shift lever to N from P.

   NOTE: Do not use the selector 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 selector control shaft and the transmission range switch.



6. 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.

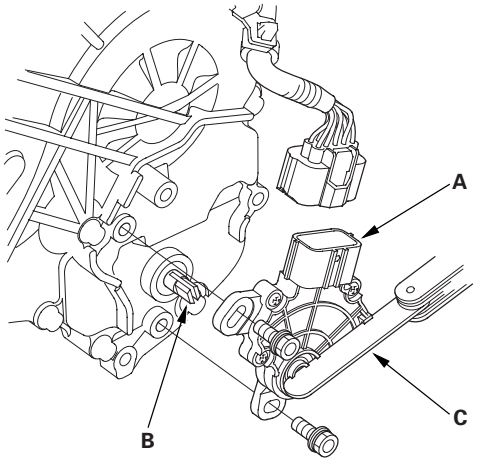


(cont'd)

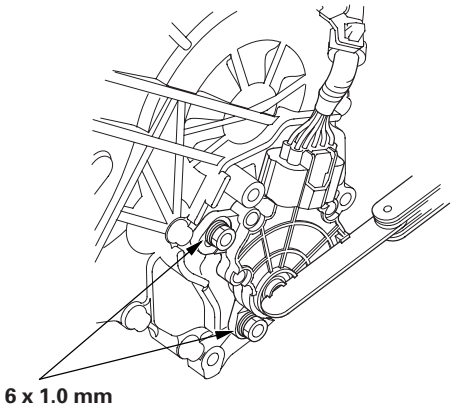
DYNOMITE -2009-

Transmission Range Switch Replacement (cont'd)

7. Install the transmission range switch (A) gently on the selector control shaft (B) while holding it in the N position with the 2.0 mm (0.08 in.) blade (C).



8. Tighten the bolts on the transmission range switch while you continue to holding the N position. Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.



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

9. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.

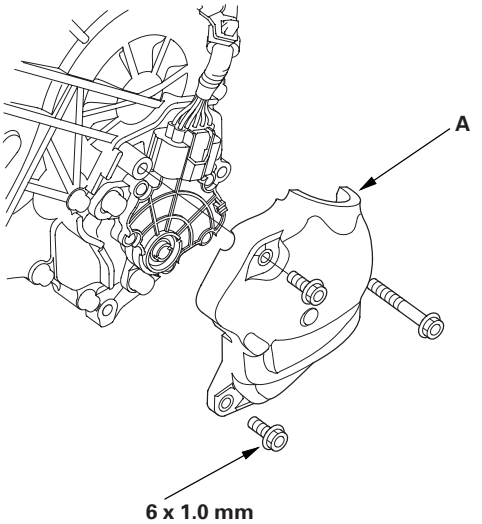
10. Turn the ignition switch to ON (II). Move the shift lever through all positions, and check the transmission range switch synchronization with the A/T gear position indicator.

11. Check that the engine will start with the shift lever in P and N, and will not start in any other shift lever position.

12. Check that the back-up lights come on when the shift lever is in R.

13. Allow the front wheels to rotate freely, then start the engine, and check the shift lever operation.

14. Install the transmission range switch cover (A).



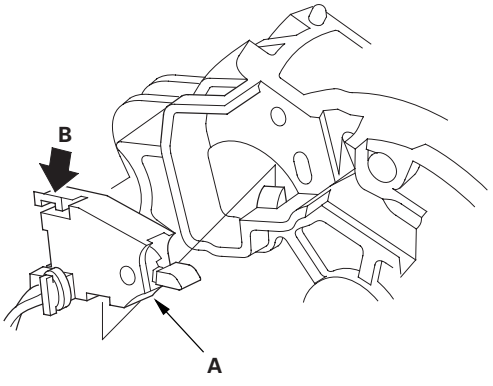
6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

DYNOMITE -2009-

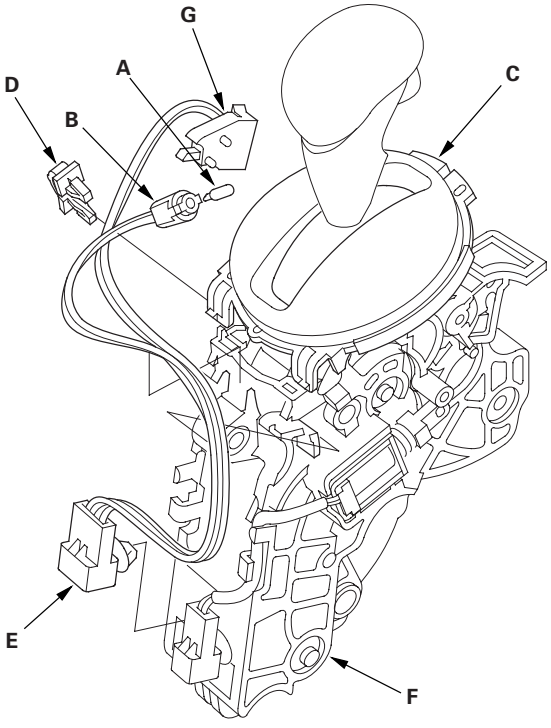
A/T Gear Position Indicator Panel Light Harness/Park Pin Switch Replacement

NOTE: The A/T gear position indicator light and the park pin switch are not available separately. Replace the A/T gear position indicator light and the park pin switch as a set.

1. Remove the shift lever assembly (see page 14-254).
2. Loosen the A/T gear position indicator panel (see page 14-256).
3. Remove the park pin switch (A) while pressing the park pin switch lock (B).



4. Remove the A/T gear position indicator panel light bulb (A) and the socket (B) from the indicator panel (C), and remove the light bulb from the socket.



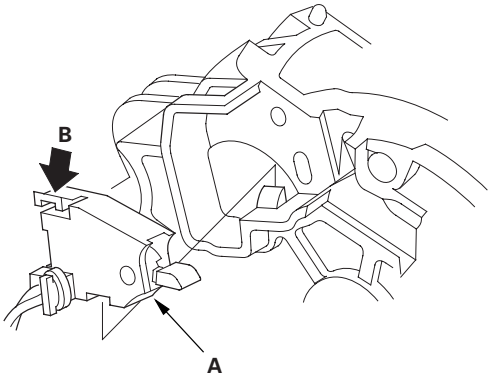
5. Remove the harness clamp (D), and remove the park pin switch/A/T gear position indicator panel light connector (E) from the shift lever assembly/ bracket base (F).
6. Install a new park pin switch (G) on the shift lever.
7. Install the A/T gear position indicator panel light bulb in a new socket, and install it in the indicator panel.
8. Clamp the harnesses together with the harness clamp, then install the harness clamp on the shift lever bracket base.
9. Route the harnesses along the harness guides, and install a new connector in the bracket base.
10. Install the A/T gear position indicator panel (see page 14-256).
11. Install the shift lever assembly (see page 14-255).
12. Install the center console (see page 20-92).

DYNOMITE -2009-

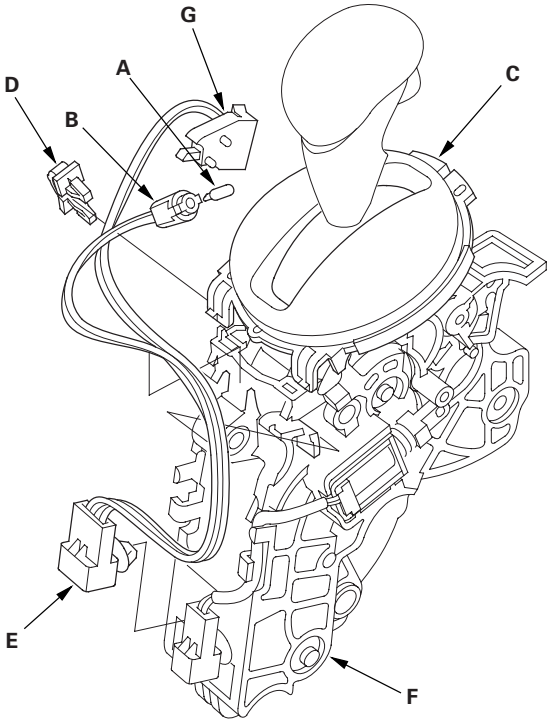
A/T Gear Position Indicator Panel Light Harness/Park Pin Switch Replacement

NOTE: The A/T gear position indicator light and the park pin switch are not available separately. Replace the A/T gear position indicator light and the park pin switch as a set.

1. Remove the shift lever assembly (see page 14-254).
2. Loosen the A/T gear position indicator panel (see page 14-256).
3. Remove the park pin switch (A) while pressing the park pin switch lock (B).



4. Remove the A/T gear position indicator panel light bulb (A) and the socket (B) from the indicator panel (C), and remove the light bulb from the socket.



5. Remove the harness clamp (D), and remove the park pin switch/A/T gear position indicator panel light connector (E) from the shift lever assembly/ bracket base (F).
6. Install a new park pin switch (G) on the shift lever.
7. Install the A/T gear position indicator panel light bulb in a new socket, and install it in the indicator panel.
8. Clamp the harnesses together with the harness clamp, then install the harness clamp on the shift lever bracket base.
9. Route the harnesses along the harness guides, and install a new connector in the bracket base.
10. Install the A/T gear position indicator panel (see page 14-256).
11. Install the shift lever assembly (see page 14-255).
12. Install the center console (see page 20-92).

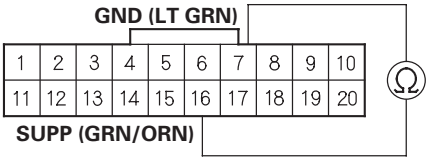
DYNOMITE -2009-

Paddle Shifter + (Upshift Switch) Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repair or service.

1. Remove the steering wheel (see page 17-6).
2. Check for continuity between cable reel subharness 20P connector terminals No. 7 and No. 16 when pressing the paddle shifter + (upshift switch) and when the switch is released.

CABLE REEL SUBHARNESS 20P CONNECTOR



Wire side of female terminals

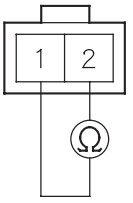
Is there continuity when pressing the paddle shifter + (upshift switch) and no continuity when the switch released?

YES—Go to step 5.

NO—Go to step 3.

3. Disconnect the paddle shifter + (upshift switch) connector.
4. Check for continuity between the paddle shifter + (upshift switch) connector terminals when pressing the switch and when the switch is released.

PADDLE SHIFTER +
(UPSHIFT SWITCH) CONNECTOR



Terminal side of male terminals

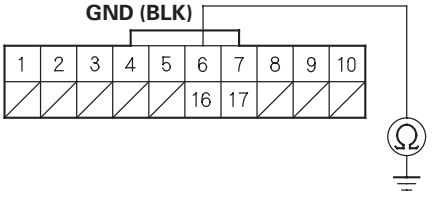
Is there continuity when pressing the switch and no continuity when the switch released?

YES—Replace the steering switch harness (see page 17-7). ■

NO—Replace the paddle shifter + (upshift switch) (see page 14-276). ■

5. Remove the cable reel (see page 24-200).
6. Check for continuity between cable reel 20P connector terminal No. 6 and body ground.

CABLE REEL 20P CONNECTOR



Wire side of female terminals

Is there continuity?

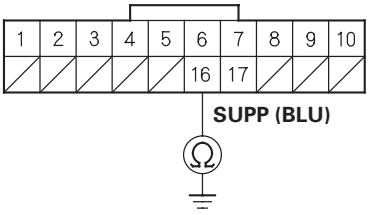
YES—Go to step 7.

NO—Repair open in the wire between cable reel 20P connector terminal No. 6 and body ground (G504), or repair poor body ground (G504). ■

DYNOMITE -2009-

7. Check for continuity between cable reel 20P connector terminal No. 16 and body ground.

CABLE REEL 20P CONNECTOR



Wire side of female terminals

Is there continuity?

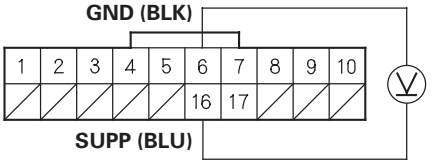
YES—Repair short to body ground in the wire between cable reel 20P connector terminal No. 16 and PCM connector terminal B16. ■

NO—Go to step 8.

8. Turn the ignition switch to ON (II), and shift to S.

9. Measure the voltage between cable reel 20P connector terminals No. 6 and No. 16.

CABLE REEL 20P CONNECTOR



Wire side of female terminals

Is there about battery voltage in neutral position and no voltage when pressing the paddle shifter + (upshift switch)?

YES—Replace the cable reel (see page 24-200). ■

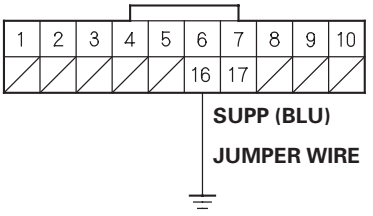
NO—Go to step 10.

(cont'd)

Paddle Shifter + (Upshift Switch) Circuit Troubleshooting (cont'd)

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (44P).
13. Connect cable reel 20P connector terminal No. 16 and body ground with a jumper wire.

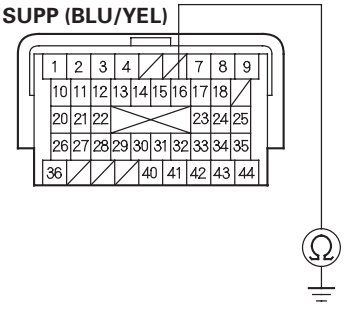
CABLE REEL 20P CONNECTOR



Wire side of female terminals

14. Check for continuity between PCM connector terminal B16 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Check for poor connections or loose terminals between cable reel 20P connector terminal No. 16 and PCM connector terminal B16. If the connection is OK, update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228). ■

NO—Repair open in the wire between PCM connector terminal B16 and the cable reel 20P connector. ■

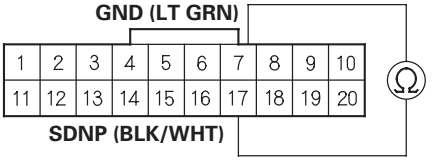
DYNOMITE -2009-

Paddle Shifter - (Downshift Switch) Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repair or service.

1. Remove the steering wheel (see page 17-6).
2. Check for continuity between cable reel subharness 20P connector terminals No. 7 and No. 17 when pressing the paddle shifter — (downshift switch) and when the switch is released.

CABLE REEL SUBHARNESS 20P CONNECTOR



Wire side of female terminals

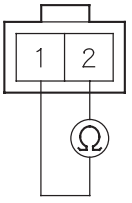
Is there continuity when pressing the paddle shifter — (downshift switch) and no continuity when the switch released?

YES—Go to step 5.

NO—Go to step 3.

3. Disconnect the paddle shifter — (downshift switch) connector.
4. Check for continuity between the paddle shifter — (downshift switch) connector terminals when pressing the switch and when the switch is released.

PADDLE SHIFTER — (DOWNSHIFT SWITCH) CONNECTOR



Terminal side of male terminals

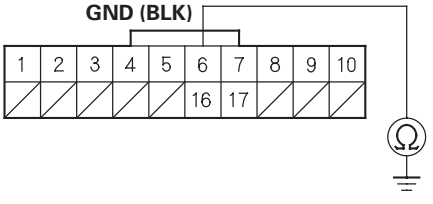
Is there continuity when pressing the switch and no continuity when the switch released?

YES—Replace the steering switch harness (see page 17-7). ■

NO—Replace the paddle shifter — (downshift switch) (see page 14-277). ■

5. Remove the cable reel (see page 24-200).
6. Check for continuity between cable reel 20P connector terminal No. 6 and body ground.

CABLE REEL 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 7.

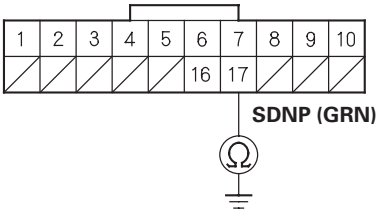
NO—Repair open in the wire between cable reel 20P connector terminal No. 6 and body ground (G504), or repair poor body ground (G504). ■

(cont'd)

Paddle Shifter - (Downshift Switch) Circuit Troubleshooting (cont'd)

7. Check for continuity between cable reel 20P connector terminal No. 17 and body ground.

CABLE REEL 20P CONNECTOR



Wire side of female terminals

Is there continuity?

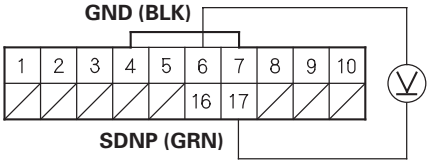
YES—Repair short to body ground in the wire between cable reel 20P connector terminal No. 17 and PCM connector terminal D15. ■

NO—Go to step 8.

8. Turn the ignition switch to ON (II), and shift to S.

9. Measure the voltage between cable reel 20P connector terminals No. 6 and No. 17.

CABLE REEL 20P CONNECTOR



Wire side of female terminals

Is there about 5 V in neutral position and no voltage when pressing the paddle shifter — (downshift switch)?

YES—Replace the cable reel (see page 24-200). ■

NO—Go to step 10.

DYNOMITE -2009-

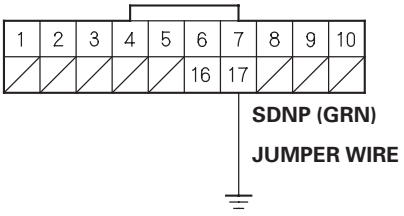
10. Turn the ignition switch to LOCK (0).

11. Jump the SCS line with the HDS.

12. Disconnect PCM connector B (44P).

13. Connect cable reel 20P connector terminal No. 17 and body ground with a jumper wire.

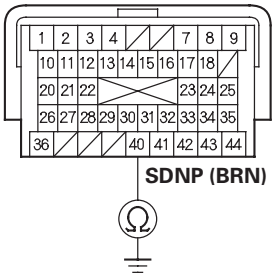
CABLE REEL 20P CONNECTOR



Wire side of female terminals

14. Check for continuity between PCM connector terminal B40 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

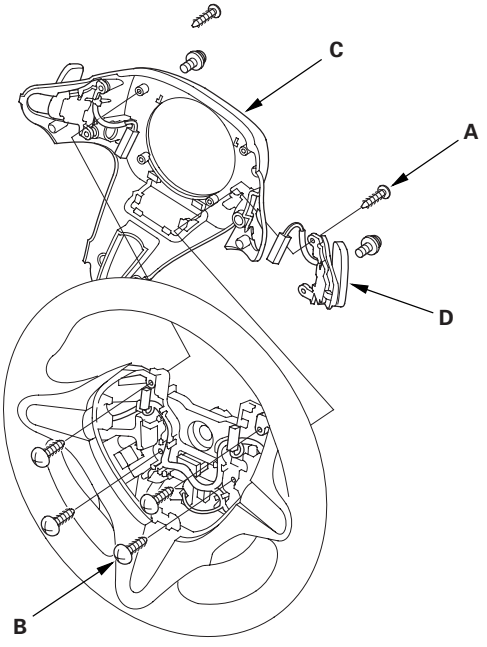
YES—Check for poor connections or loose terminals between cable reel 20P connector terminal No. 17 and PCM connector terminal B40. If the connection is OK, update the PCM if it does not have the latest software (see page 11-227), or subsitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228). ■

NO—Repair open in the wire between PCM connector terminal B40 and the cable reel 20P connector. ■

Paddle Shifter + (Upshift Switch) Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repair or service.

1. Remove the steering wheel (see page 17-6).
2. Remove the paddle shifter + (upshift switch) and the paddle shifter − (downshift switch) connectors from the connector holder, and disconnect the connectors.
3. Remove the screws (A) securing the paddle shifter + (upshift switch) and the paddle shifter − (downshift switch).



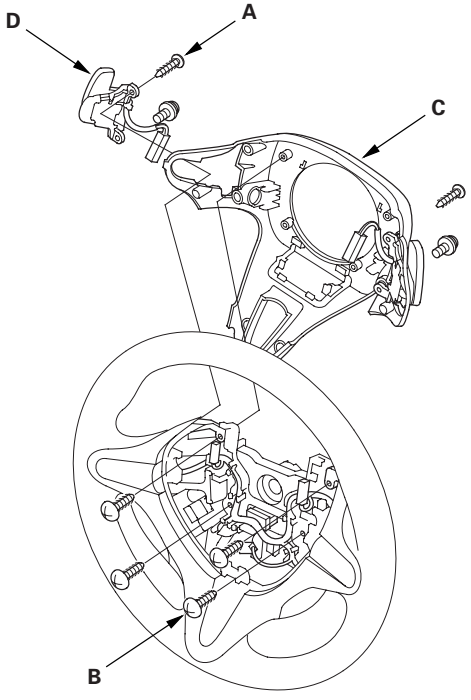
4. Remove the screws (B) securing the steering wheel rear cover (C), then remove the steering wheel rear cover.
5. Remove the paddle shifter + (upshift switch) (D) from the rear cover.
6. Install a new paddle shifter + (upshift switch) in the steering wheel rear cover.
7. Install the steering wheel rear cover, and secure the rear cover with the screws.
8. Secure the paddle shifter + (upshift switch) and the paddle shifter − (downshift switch) with the screws.
9. Connect the paddle shifter + (upshift switch) and the paddle shifter − (downshift switch) connector, and install the connectors in the connector holder.
10. Install the steering wheel (see page 17-8).

DYNOMITE -2009-

Paddle Shifter - (Downshift Switch) Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repair or service.

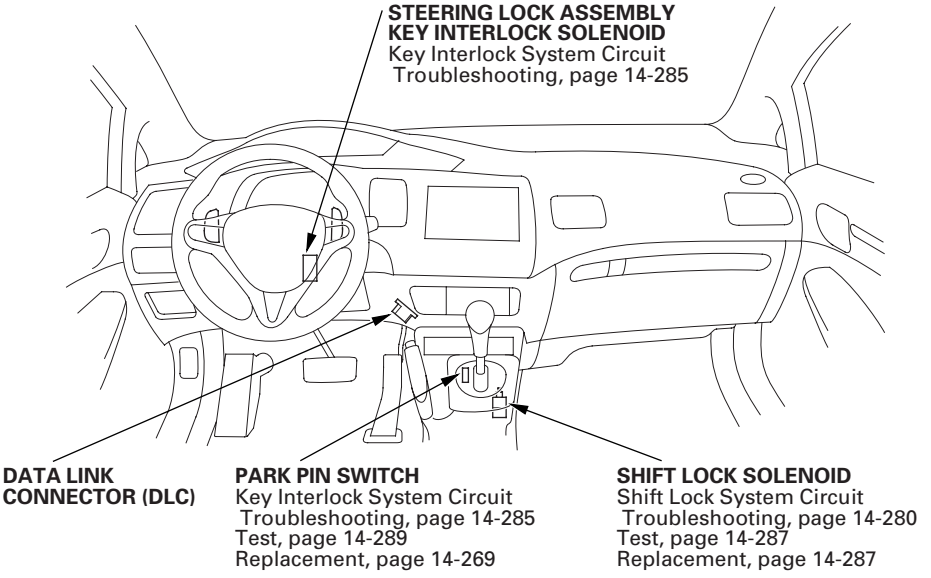
1. Remove the steering wheel (see page 17-6).
2. Remove the paddle shifter + (upshift switch) and the paddle shifter — (downshift switch) connectors from the connector holder, and disconnect the connectors.
3. Remove the screws (A) securing the paddle shifter + (upshift switch) and the paddle shifter — (downshift switch).

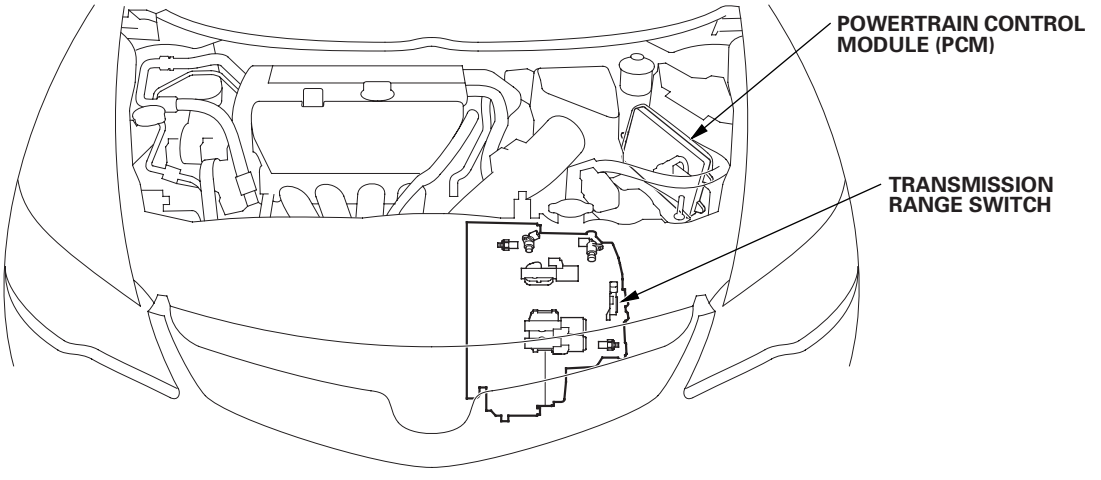


4. Remove the screws (B) securing the steering wheel rear cover (C), then remove the steering wheel rear cover.
5. Remove the paddle shifter — (downshift switch) (D) from the rear cover.
6. Install a new paddle shifter — (downshift switch) in the steering wheel rear cover.
7. Install the steering wheel rear cover, and secure the rear cover with the screws.
8. Secure the paddle shifter + (upshift switch) and the paddle shifter — (downshift switch) with the screws.
9. Connect the paddle shifter + (upshift switch) and the paddle shifter — (downshift switch) connector, and install the connectors in the connector holder.
10. Install the steering wheel (see page 17-8).

DYNOMITE -2009-

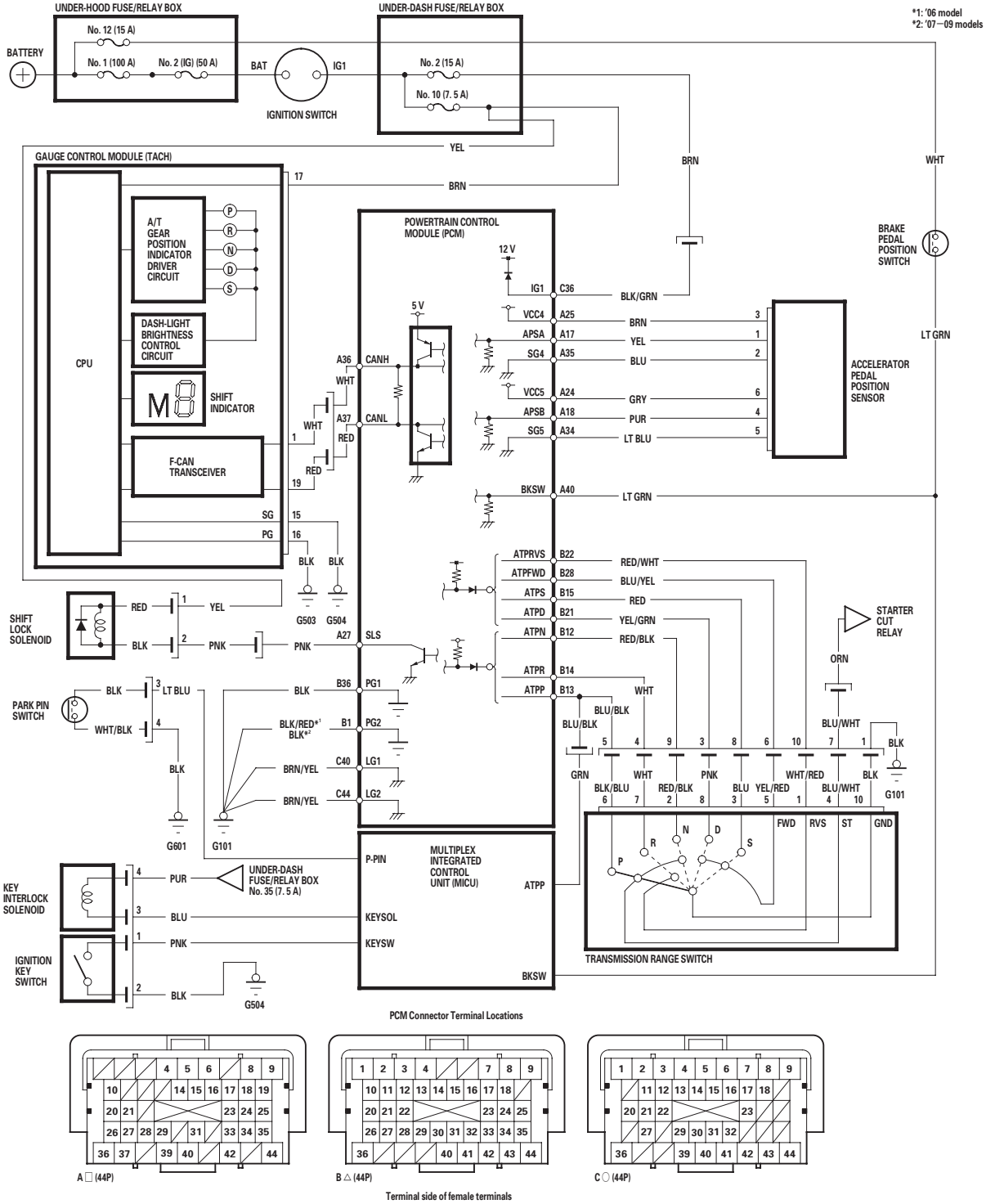
Component Location Index





DYNOMITE -2009-

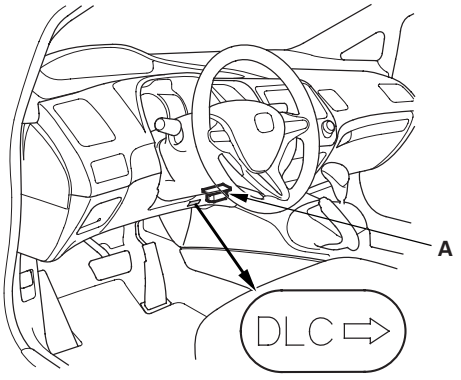
Circuit Diagram



DYNOMITE -2009-

Shift Lock System Circuit Troubleshooting

1. Connect the HDS to the DLC located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

3. Select Shift Lock Solenoid Test in the Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.

   Does the shift lock solenoid work properly?

   YES—Go to step 16.

   NO—Go to step 5.

4. Turn the ignition switch to LOCK (0).

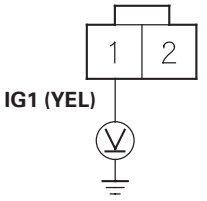
5. Remove the center console (see page 20-92).

6. Disconnect the shift lock solenoid connector.

7. Turn the ignition switch to ON (II).

8. Measure the voltage between shift lock solenoid connector terminal No. 1 and body ground.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

   Is there about battery voltage?

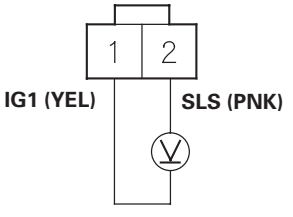
   YES—Go to step 9.

   NO—Check for a blown No. 10 (7.5 A) 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. ■

9. Shift the shift lever to P, and press the brake pedal. Do not press the accelerator.

10. Measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2 while pressing the brake pedal.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

   Is there battery voltage?

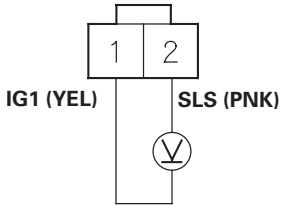
   YES—Go to step 11.

   NO—Go to step 12.

DYNOMITE -2009-

11. Release the brake pedal, and measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2. The shift lever must be in P.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there about battery voltage?

YES—Repair short to body ground in the wire between PCM connector terminal A27 and the shift lock solenoid. ■

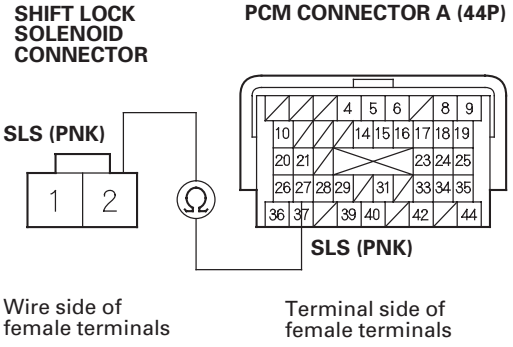
NO—Check the shift lock mechanism. If the mechanism is OK, replace the shift lock solenoid (see page 14-287). ■

12. Turn the ignition switch to LOCK (0).

13. Jump the SCS line with the HDS.

14. Disconnect PCM connector A (44P).

15. Check for continuity between PCM connector terminal A27 and shift lock solenoid connector terminal No. 2.



Is there continuity?

YES—Check for poor connections or loose terminals between shift lock solenoid connector terminal No. 2 and PCM connector terminal A27. If the connection is OK, update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228). ■

NO—Repair open in the wire between PCM connector terminal A27 and the shift lock solenoid connector. ■

(cont'd)

Shift Lock System Circuit Troubleshooting (cont'd)

16. Monitor the Brake Switch in the Data List with the HDS, and press the brake pedal.

    Is the Brake Switch ON?

    YES—Go to step 21.

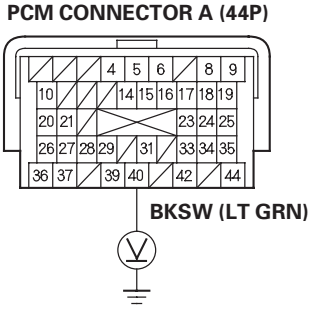
    NO—If the brake lights come on, go to step 17. If the brake lights do not work, repair the faulty brake light circuit.

17. Turn the ignition switch to LOCK (0).

18. Jump the SCS line with the HDS.

19. Disconnect PCM connector A (44P).

20. Measure the voltage between PCM connector terminal A40 and body ground when pressing the brake pedal and when the brake pedal is released.



Terminal side of female terminals

    Is there about battery voltage when pressing the brake pedal, and no voltage when the pedal is released?

    YES—Reconnect all connectors, then update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228).■

    NO—Repair open in the wire between PCM connector terminal A40 and the brake pedal position switch.■

21. Monitor the A/T P Switch in the Data List with the HDS with the shift lever in P.

    Is the A/T P Switch ON?

    YES—Go to step 33.

    NO—Go to step 22.

DYNOMITE -2009-

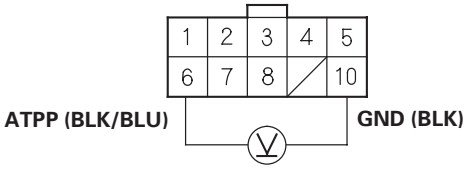
22. Turn the ignition switch to LOCK (0).

23. Disconnect the transmission range switch connector.

24. Turn the ignition switch to ON (II).

25. Measure the voltage between transmission range switch connector terminals No. 6 and No. 10.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there more than 5 V?

YES—Go to step 26.

NO—Go to step 27.

26. Inspect the transmission range switch (see page 14-265).

Is the switch OK?

YES—Check for poor connections or loose terminals at the transmission range switch connector.

NO—Replace the transmission range switch (see page 14-267). ■

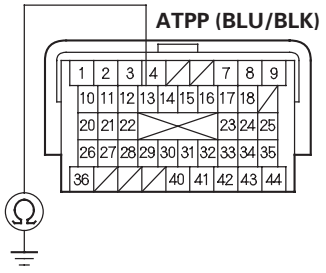
27. Turn the ignition switch to LOCK (0).

28. Jump the SCS line with the HDS.

29. Disconnect PCM connector B (44P).

30. Check for continuity between PCM connector terminal B13 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

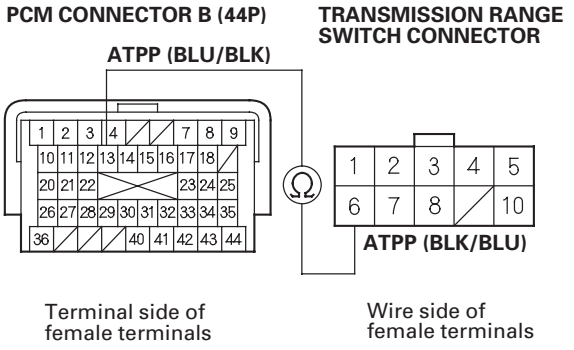
YES—Repair short to body ground in the wire between PCM connector terminal B13 and the transmission range switch connector. ■

NO—Go to step 31.

(cont'd)

Shift Lock System Circuit Troubleshooting (cont'd)

31. Check for continuity between PCM connector terminal B13 and transmission range switch connector terminal No. 6.

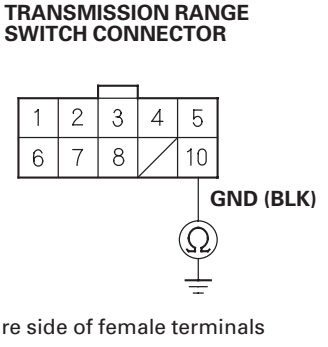


Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between PCM connector terminal B13 and the transmission range switch connector. ■

32. Check for continuity between transmission range switch connector terminal No. 10 and body ground.



Is there continuity?

YES—Reconnect all connectors, then update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228). ■

NO—Repair open in the wire between transmission range switch connector terminal No. 10 and body ground (G101), or repair poor body ground (G101). ■

DYNOMITE -2009-

33. Check the APP SENSOR in the Data List with the HDS. Do not press the accelerator.

Is the accelerator pedal position sensor opening 11 % or above, or the sensor voltage 0.90 V or above?

YES—Check the APP sensor (see page 11-268). ■

NO—Reconnect all connectors, then update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228). ■

Key Interlock System Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repair or service.

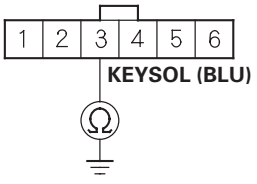
1. Turn the ignition switch to ACCESSORY (I). The shift lever must be in P.
2. Disconnect the steering lock assembly connector.
3. Check if the ignition switch can be turned to the LOCK (0) position.

   Can the ignition switch be turned to LOCK (0)?

   YES—Go to step 4.

   NO—Replace the ignition key cylinder/steering lock assembly (see page 17-14). ■
4. Turn the ignition switch to LOCK (0).
5. Move the shift lever out of P.
6. Check for continuity between steering lock assembly connector terminal No. 3 and body ground.

STEERING LOCK ASSEMBLY CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the key interlock solenoid and the MICU. ■

NO—Go to step 7.

7. Remove the shift lever assembly (see page 14-254).

(cont'd)

DYNOMITE -2009-

33. Check the APP SENSOR in the Data List with the HDS. Do not press the accelerator.

Is the accelerator pedal position sensor opening 11 % or above, or the sensor voltage 0.90 V or above?

YES—Check the APP sensor (see page 11-268). ■

NO—Reconnect all connectors, then update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228). ■

Key Interlock System Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repair or service.

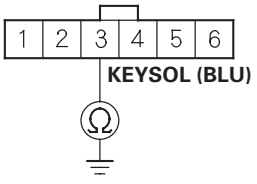
1. Turn the ignition switch to ACCESSORY (I). The shift lever must be in P.
2. Disconnect the steering lock assembly connector.
3. Check if the ignition switch can be turned to the LOCK (0) position.

   Can the ignition switch be turned to LOCK (0)?

   YES—Go to step 4.

   NO—Replace the ignition key cylinder/steering lock assembly (see page 17-14). ■
4. Turn the ignition switch to LOCK (0).
5. Move the shift lever out of P.
6. Check for continuity between steering lock assembly connector terminal No. 3 and body ground.

STEERING LOCK ASSEMBLY CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the key interlock solenoid and the MICU. ■

NO—Go to step 7.

7. Remove the shift lever assembly (see page 14-254).

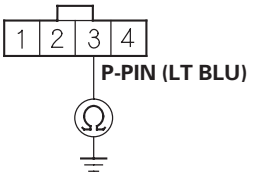
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DYNOMITE -2009-

Key Interlock System Circuit Troubleshooting (cont'd)

8. Check for continuity between park pin switch/A/T gear position indicator panel light connector terminal No. 3 and body ground.

**PARK PIN SWITCH/
A/T GEAR POSITION INDICATOR
PANEL LIGHT CONNECTOR**



Wire side of female terminals

Is there continuity?

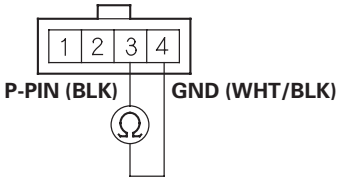
YES—Repair short to body ground in the wire between park pin switch/A/T gear position indicator panel light connector terminal No. 3 and the MICU. ■

NO—Go to step 9.

9. Shift the shift lever to P.

10. Check for continuity between park pin switch/A/T gear position indicator panel light connector terminals No. 3 and No. 4. Do not push the shift lever button.

**PARK PIN SWITCH/
A/T GEAR POSITION INDICATOR
PANEL LIGHT CONNECTOR**



Terminal side of male terminals

Is there continuity?

YES—Faulty park pin switch, replace the park pin switch (see page 14-269). ■

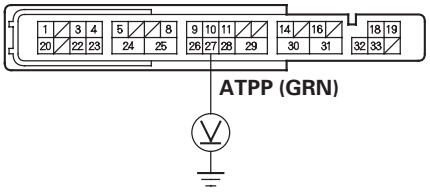
NO—Go to step 11.

11. Disconnect under-dash fuse/relay box connector F (34P).

12. Turn the ignition switch to ON (II).

13. Measure the voltage between the No. 27 terminal of under-dash fuse/relay box connector F (34P) and body ground.

**UNDER-DASH FUSE/RELAY BOX
CONNECTOR F (34P)**



Wire side of female terminals

Is there no voltage when the shift lever is in P, and is there voltage when the shift lever shifts out of P?

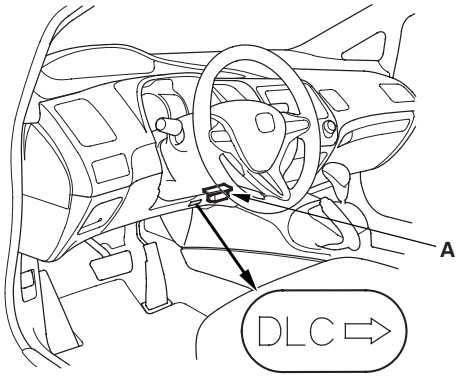
YES—Substitute a known-good MICU, and recheck. ■

NO—Repair or short in the wire between PCM connector terminal B13, transmission range switch, and MICU. ■

DYNOMITE -2009-

Shift Lock Solenoid Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

3. Select Shift Lock Solenoid Test in the Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.

4. Check that the shift lever can be moved out of P when Shift Lock Solenoid is ON. Move the shift lever back in P, and check it locks when Shift Lock Solenoid is OFF.

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, go to the shift lock system troubleshooting (see page 14-280).

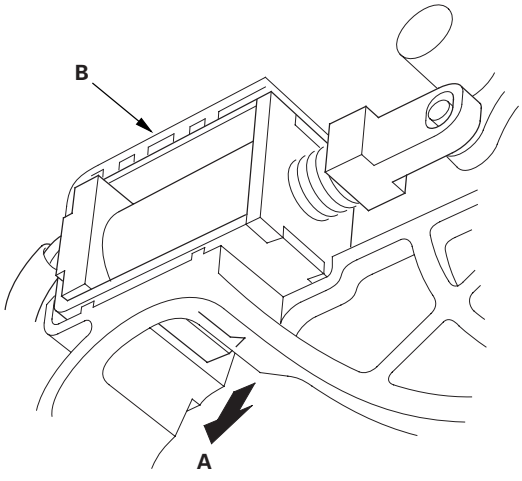
Shift Lock Solenoid Replacement

NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

1. Remove the shift lever assembly (see page 14-254).

2. Remove the shift lock solenoid connector.

3. Release the shift lock solenoid lock (A), then remove the shift lock solenoid (B).

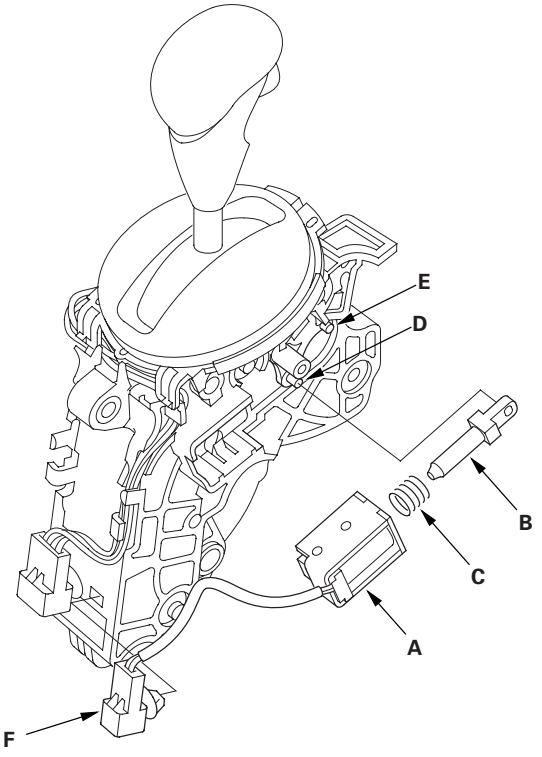


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DYNOMITE -2009-

Shift Lock Solenoid Replacement (cont'd)

4. Replace the shift lock solenoid (A), the solenoid plunger (B), and the plunger spring (C) assembly.



5. Apply silicone grease to the tip (D) of the shift lock stop (E), and install a new shift lock solenoid assembly by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop.

6. Route the shift lock solenoid harness in the guide, and install the connector (F) on the bracket base.

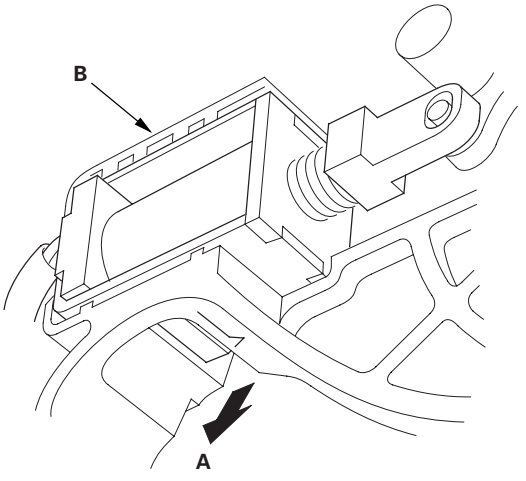
7. Install the shift lever assembly (see page 14-255).

Shift Lock Stop, Shift Lock Stop Cushion Replacement

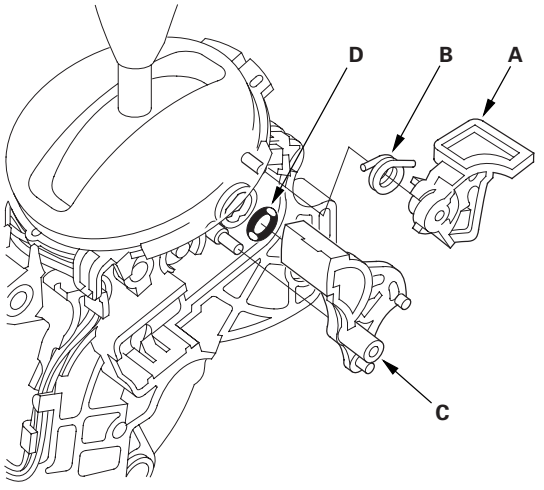
NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

1. Remove the shift lever assembly (see page 14-254).

2. Release the shift lock solenoid lock (A), then remove the shift lock solenoid (B).



3. Remove the shift lock release (A) and the release spring (B).



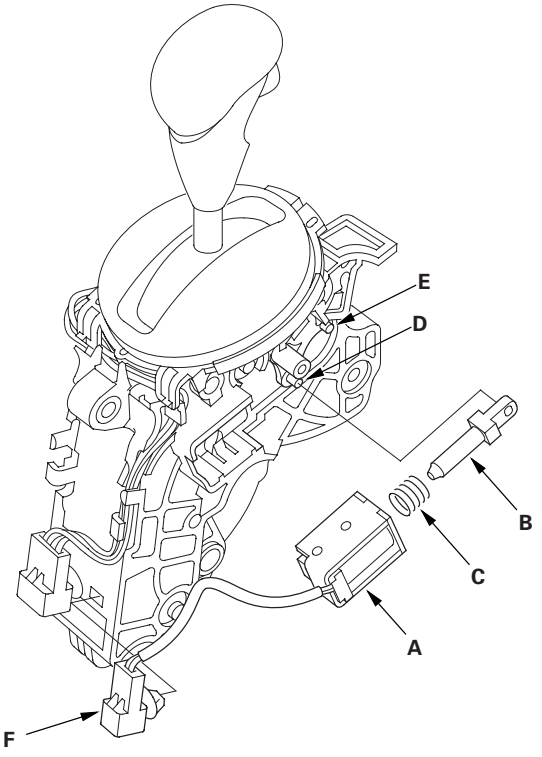
4. Remove the shift lock stop (C) and the stop cushion (D), and replace the shift lock stop or the stop cushion.

5. Install the shift lock stop cushion on the shift lock stop.

DYNOMITE -2009-

Shift Lock Solenoid Replacement (cont'd)

4. Replace the shift lock solenoid (A), the solenoid plunger (B), and the plunger spring (C) assembly.



5. Apply silicone grease to the tip (D) of the shift lock stop (E), and install a new shift lock solenoid assembly by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop.

6. Route the shift lock solenoid harness in the guide, and install the connector (F) on the bracket base.

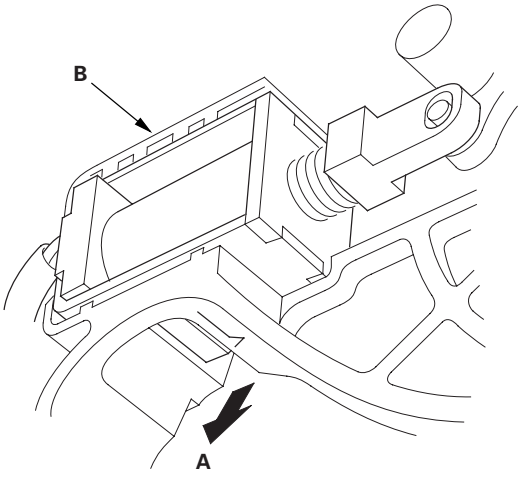
7. Install the shift lever assembly (see page 14-255).

Shift Lock Stop, Shift Lock Stop Cushion Replacement

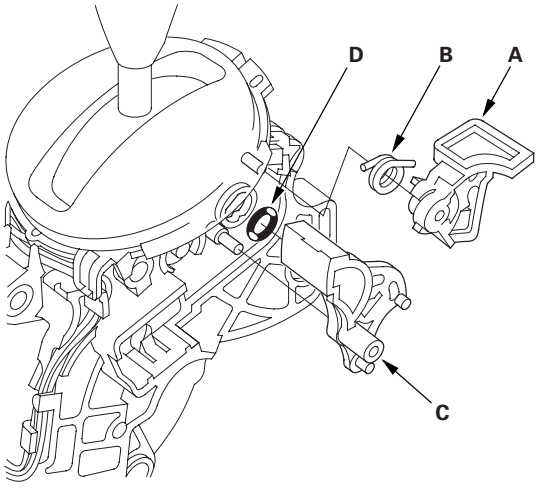
NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

1. Remove the shift lever assembly (see page 14-254).

2. Release the shift lock solenoid lock (A), then remove the shift lock solenoid (B).



3. Remove the shift lock release (A) and the release spring (B).



4. Remove the shift lock stop (C) and the stop cushion (D), and replace the shift lock stop or the stop cushion.

5. Install the shift lock stop cushion on the shift lock stop.

DYNOMITE -2009-

6. Apply silicone grease to the pin on the shift lever bracket base, and install the shift lock stop over the pin.

7. Install the shift lock release spring and the shift lock release, apply silicone grease to shift lock release mounting tip if necessary.

8. Apply silicone grease to the tip of the shift lock stop, and install the shift lock solenoid assembly by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop.

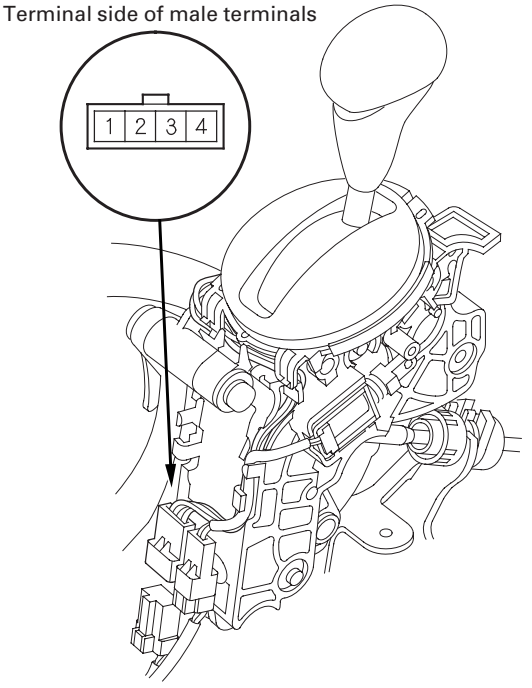
9. Route the shift lock solenoid harness in the guide.

10. Install the shift lever assembly (see page 14-255).

Park Pin Switch Test

1. Remove the center console (see page 20-92).

2. Move the shift lever to P, and check for continuity between park pin switch/A/T gear position indicator panel light connector terminals No. 3 and No. 4. There should be no continuity.



3. Shift out of P, and check for continuity between connector terminals No. 3 and No. 4. There should be continuity.

4. If the park pin switch tests OK, install the center console (see page 20-92).
If the park pin switch fails the test, replace the park pin switch (see page 14-269).

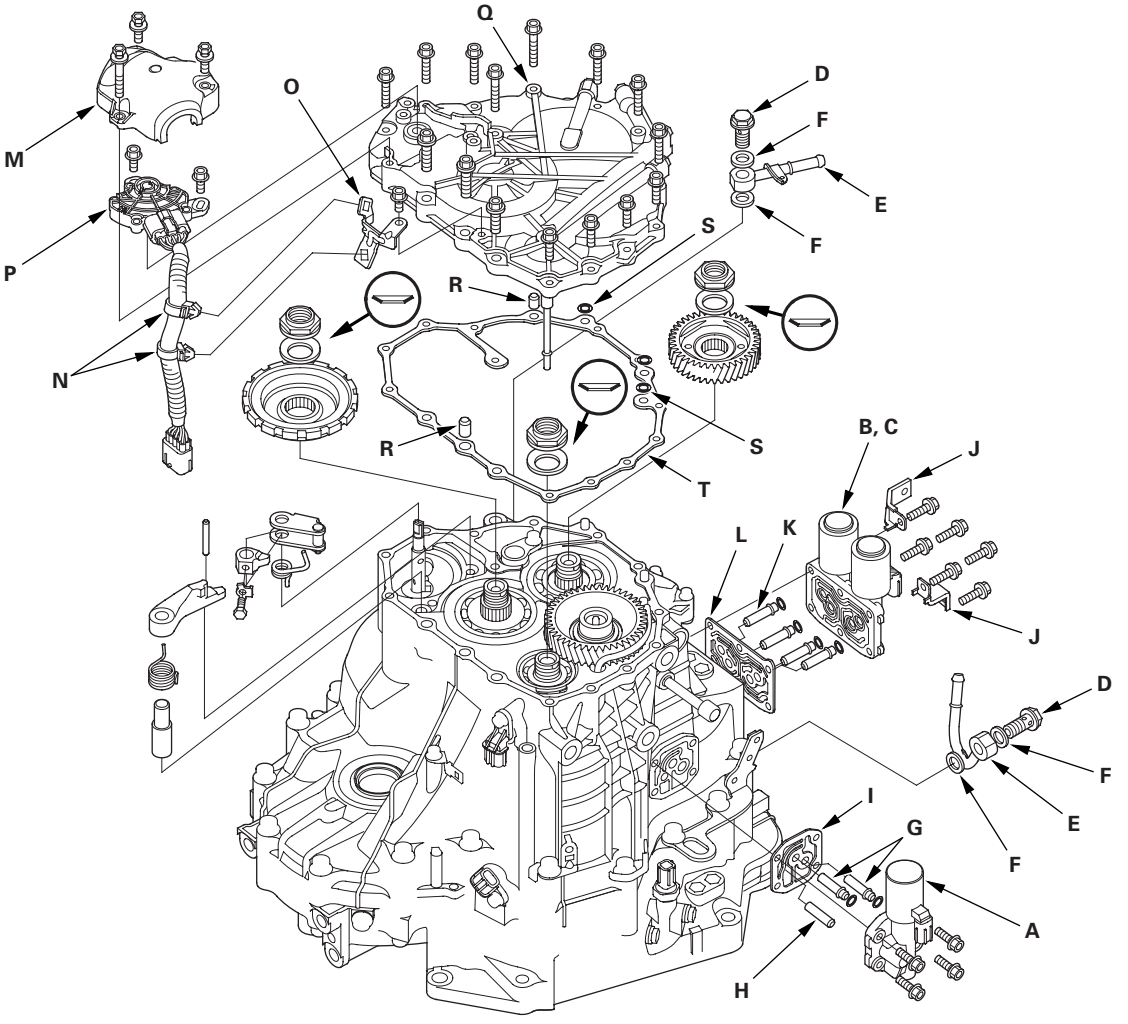
DYNOMITE -2009-

Transmission End Cover

End Cover Removal

Special Tools Required
Mainshaft holder 07GAB-PF50101

1. Remove the banjo bolts (D), the ATF cooler lines (E), and the sealing washers (F).



2. Remove A/T clutch pressure control solenoid valve A, the ATF joint pipes (G), the ATF pipe (H), and the gasket (I).

3. Remove A/T clutch pressure control solenoid valves B and C, the harness clamp brackets (J), the ATF joint pipes (K), and the gasket (L).

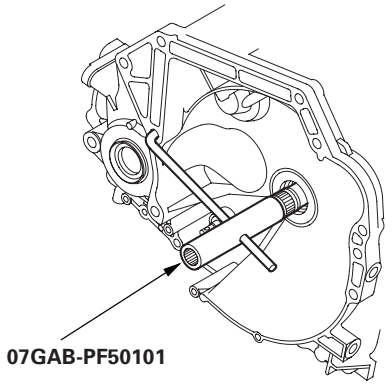
4. Remove the transmission range switch cover (M).

5. Remove the transmission range switch harness clamps (N) from the clamp bracket (O), then remove the transmission range switch (P).

6. Remove the end cover (Q), the dowel pins (R), the O-rings (S), and the end cover gasket (T).

DYNOMITE -2009-

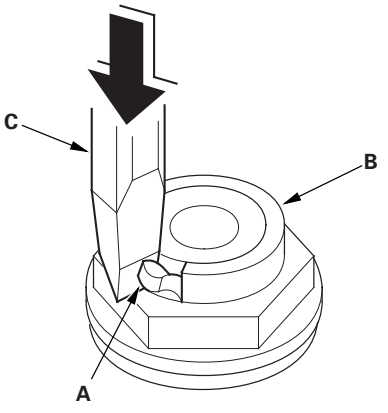
7. Install the mainshaft holder onto the mainshaft.



8. Engage the park pawl with the park gear.

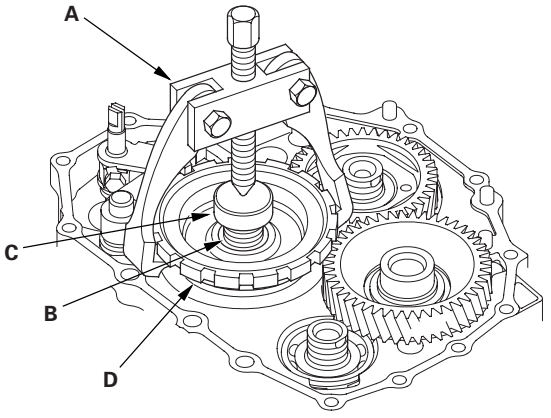
9. Cut the lock tab (A) of the each shaft locknut (B) using a chisel (C). Then remove the locknuts and the conical spring washers from each shaft.

   NOTE:
   - Countershaft and secondary shaft locknuts have left-hand threads.
   - Keep all of the chiseled particles out of the transmission.
   - Clean the old mainshaft and countershaft locknuts; they are used to install the press fit idler gear on the mainshaft, and the park gear on the countershaft.

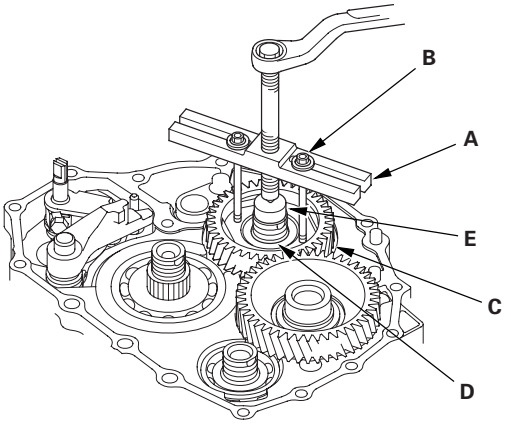


10. Remove the mainshaft holder from the mainshaft.

11. Set a two-jaw (or three-jaw) puller (A) on the countershaft (B) with a spacer (C) between the puller and the countershaft, then remove the park gear (D).



12. Install a puller (A) with two 6 x 1.0 mm bolts (B) on the mainshaft idler gear (C). Set a spacer (D) between the puller and the mainshaft, then remove the mainshaft idler gear.



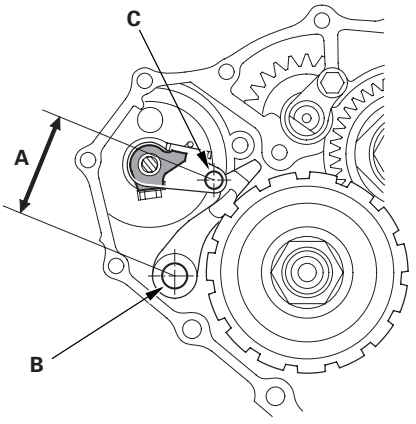
13. Remove the park pawl, the park pawl spring, the park pawl shaft, and the stop shaft.

14. Remove the park lever from the selector control shaft.

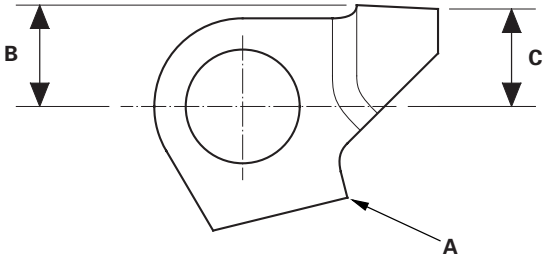
Park Lever Stop Inspection and Adjustment

1. Set the park lever in the P position.
2. Measure the distance (A) between the park pawl shaft (B) and the park lever roller pin (C).

   Standard: 57.7—58.7 mm (2.27—2.31 in.)



3. If the distance is out of standard, select and install the appropriate park lever stop (A) from the table.



PARK LEVER STOP

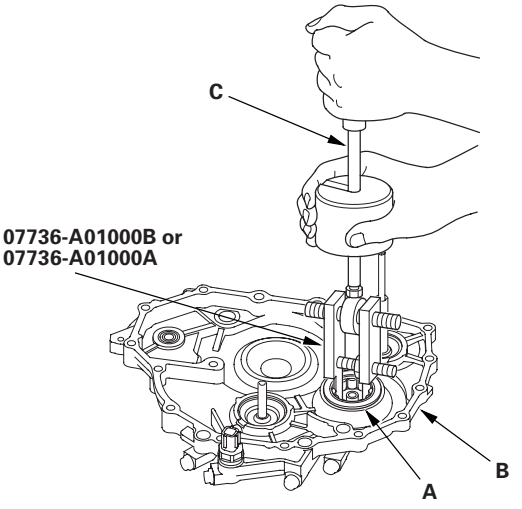
Mark	Part Number	B	C
1	24537-PA9-003	11.00 mm (0.433 in.)	11.00 mm (0.433 in.)
2	24538-PA9-003	10.80 mm (0.425 in.)	10.65 mm (0.419 in.)
3	24539-PA9-003	10.60 mm (0.417 in.)	10.30 mm (0.406 in.)

4. After replacing the park lever stop, make sure the distance is within tolerance.

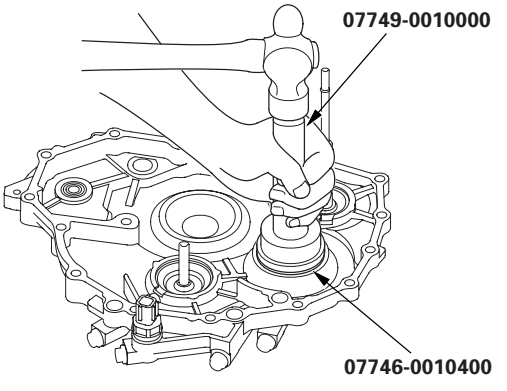
Idler Gear Shaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

1. Remove the idler gear shaft bearing (A) from the end cover (B) using the adjustable bearing puller and a commercially available 3/8 ''-16 slide hammer (C).



2. Install a new bearing in the end cover using the driver and the 52 x 55 mm attachment.

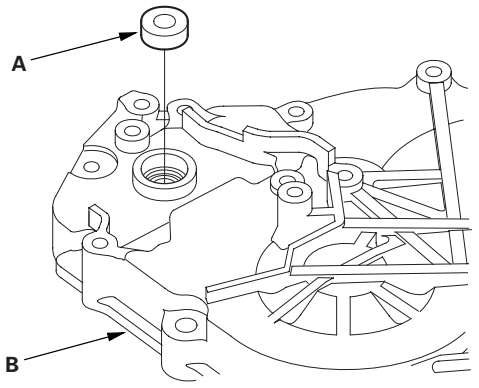


DYNOMITE -2009-

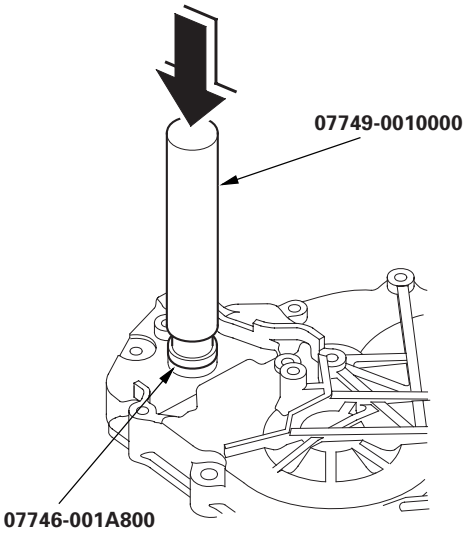
Selector Control Shaft Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-001A800

1. Remove the oil seal (A) from the end cover (B).



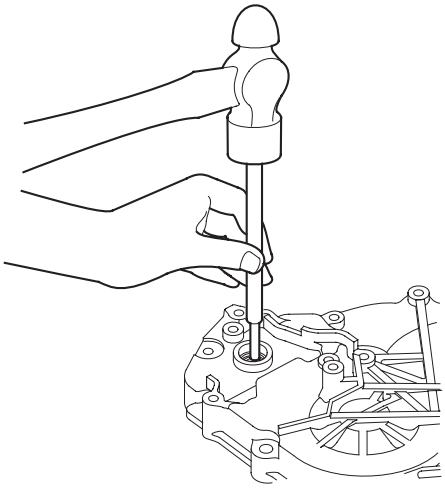
2. Install a new oil seal flush to the end cover using the driver and the 22 x 24 mm attachment.



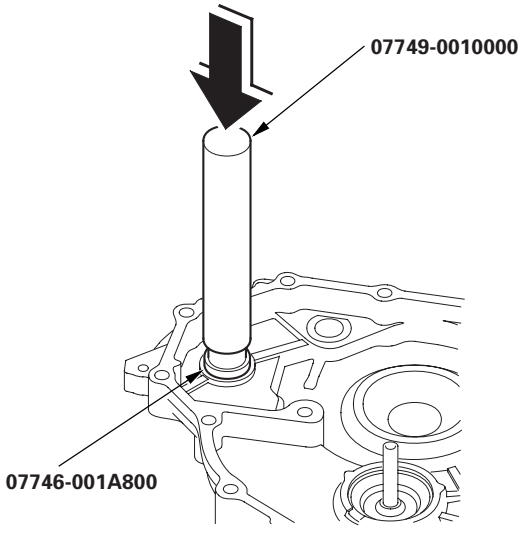
Selector Control Shaft Bearing Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-001A800

1. Remove the oil seal from the end cover, then remove the bearing.



2. Install a new bearing flush to the end cover using the driver and the 22 x 24 mm attachment.

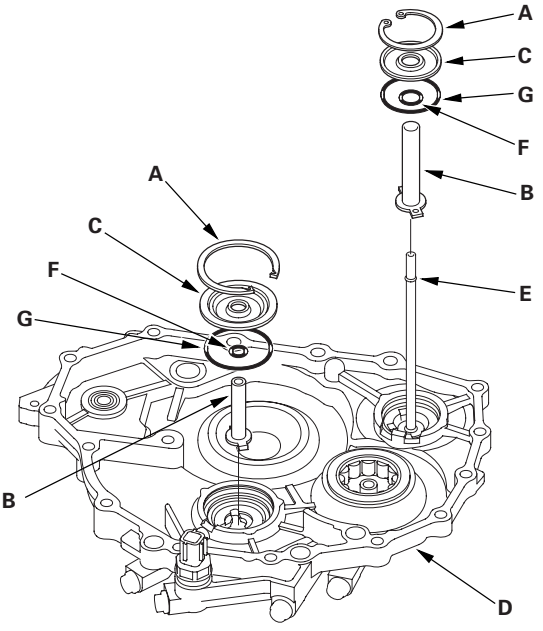


3. Install a new oil seal.

ATF Feed Pipe Replacement

1. Remove the snap rings (A), the ATF feed pipes (B), and the feed pipe flanges (C) from the end cover (D).

   NOTE: Replace the end cover, if the 1st clutch ATF feed pipe (E) replacement is required.

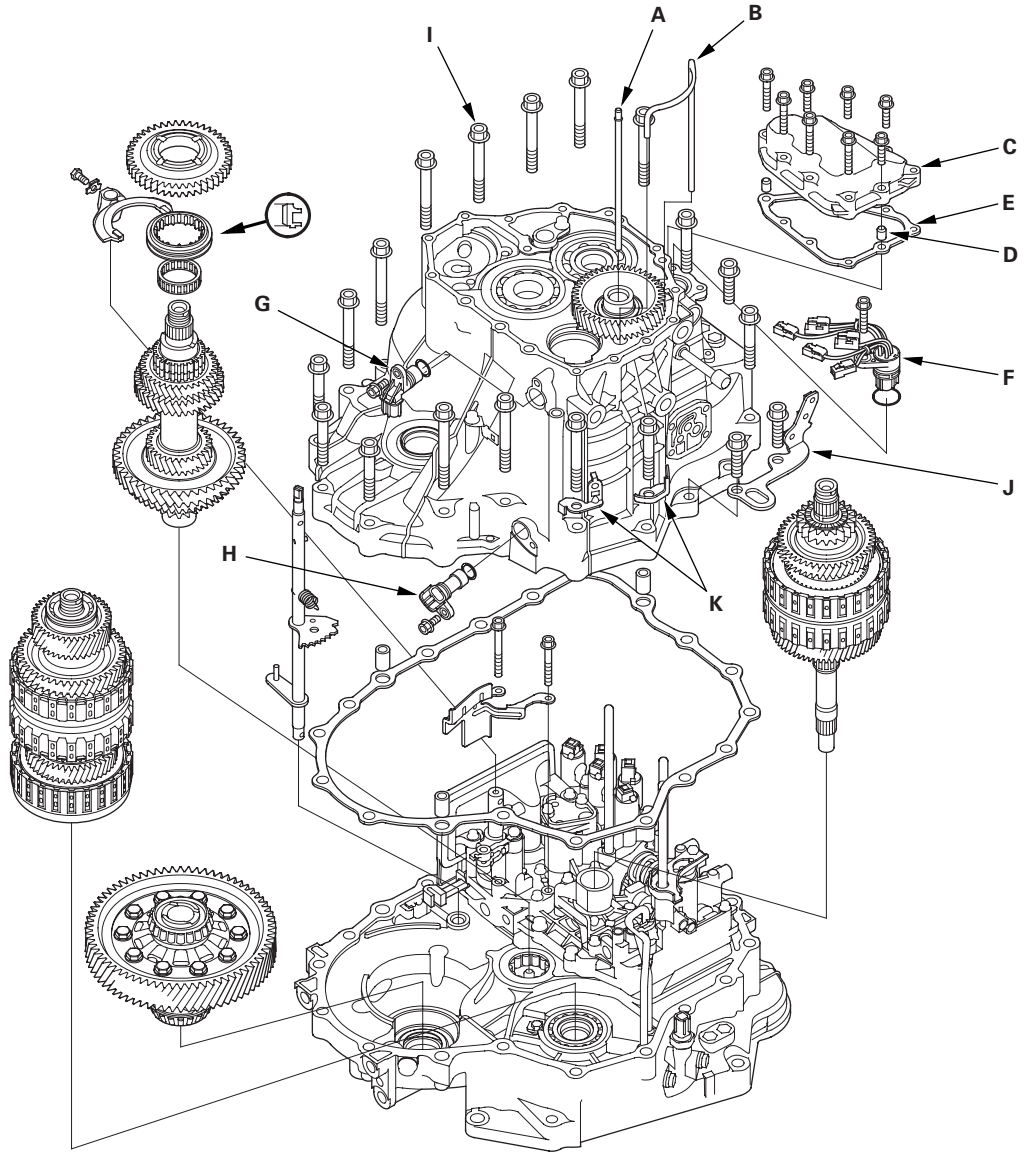


2. Install new O-rings (F) over the ATF feed pipes.
3. Install the ATF feed pipes in the end cover by aligning the feed pipe tabs with the indentations in the end cover.
4. Install new O-rings (G) in the end cover, then install the feed pipe flanges over the ATF feed pipes.
5. Secure the ATF feed pipes and the feed pipe flanges with the snap rings.

DYNOMITE -2009-

Housing and Shaft Assembly Removal

1. Remove the ATF feed pipe (A) from the idler gear shaft, and remove the ATF lubrication pipe (B) from the transmission housing.



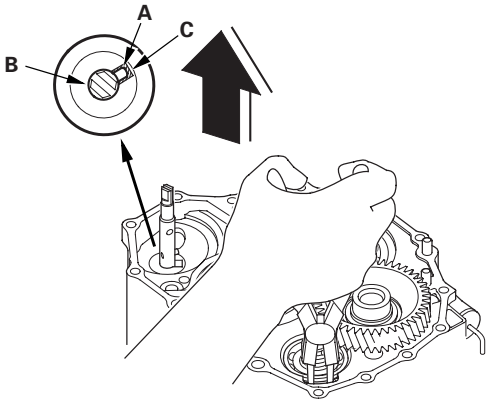
2. Remove the shift solenoid valve cover (C), the dowel pins (D), and the gasket (E).
3. Disconnect the connectors from the shift solenoid valves, and remove the shift solenoid wire harness (F).
4. Remove the input shaft (mainshaft) speed sensor (G) and the output shaft (countershaft) speed sensor (H).
5. Remove the transmission housing mounting bolts (19 bolts) (I), the transmission hanger (J) and the harness clamp brackets (K).

(cont'd)

Housing and Shaft Assembly Removal (cont'd)

6. Align the spring pin (A) on the selector control shaft (B) with the transmission housing groove (C) by turning the selector control shaft with the control lever.

   NOTE: Do not squeeze the end of the selector control shaft tips together when turning the shaft.



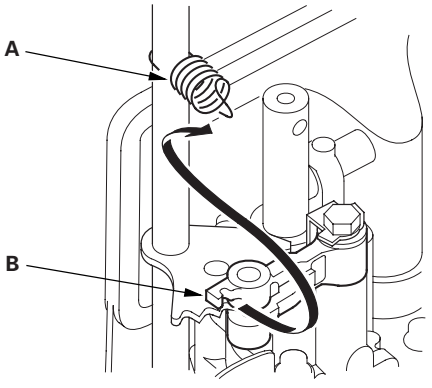
7. Use snap ring pliers to expand the snap ring of the secondary shaft bearing. Then lift the transmission housing. Release the snap ring pliers and remove the transmission housing.

8. Remove the countershaft reverse gear and the needle bearing.

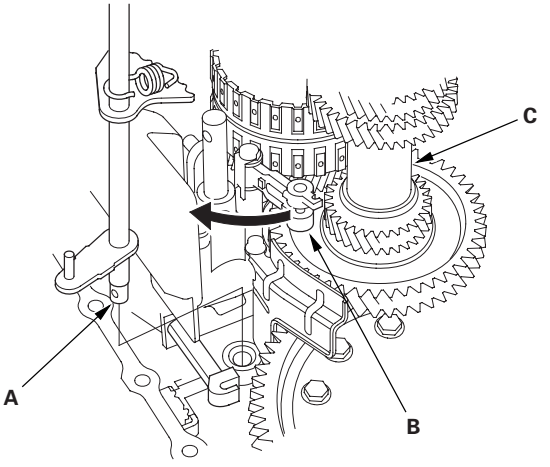
9. Remove the lock bolt securing the shift fork, then remove the shift fork with the reverse selector together.

10. Remove the control lever from the selector control shaft.

11. Unlock the detent spring (A) from the detent arm (B).

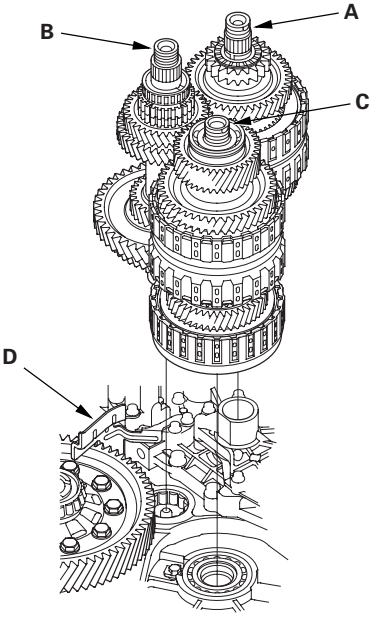


12. Remove the selector control shaft (A) from the torque converter housing.



13. Turn the detent arm (B) away from the countershaft (C).

14. Remove the mainshaft subassembly (A), the countershaft subassembly (B) and the secondary shaft subassembly (C) together. Do not bump the countershaft on the baffle plate (D).



15. Remove the baffle plate.

16. Remove the differential assembly.

DYNOMITE -2009-

Bearing Removal

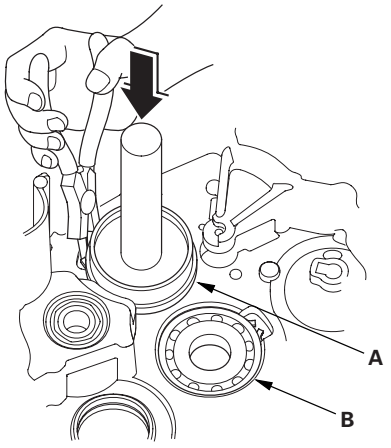
Special Tools Required
- Attachment, 78 x 80 mm 07NAD-PX40100
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

1. Remove the idler gear shaft when removing the mainshaft bearing and the idler gear shaft bearing.

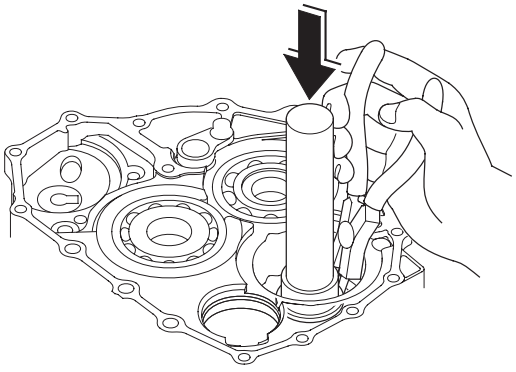
   NOTE: If you are only removing the countershaft bearing, the idler gear shaft removal is not needed.

2. To remove the mainshaft bearing (A) and the countershaft bearing (B) from the transmission housing, expand each snap ring using snap ring pliers, then push the bearing out using the driver and the 78 x 80 mm attachment.

   NOTE: Do not remove the snap ring unless it's necessary to clean the grooves in the housing.



3. Expand the snap ring of the idler gear shaft bearing using the snap ring pliers, then push the bearing out using the driver and the 42 x 47 mm attachment.

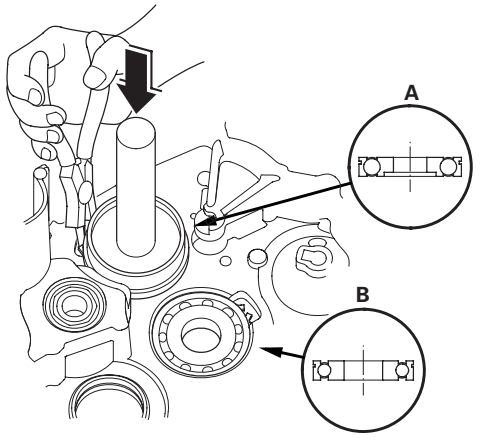


Bearing Installation

Special Tools Required
- Attachment, 78 x 80 mm 07NAD-PX40100
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

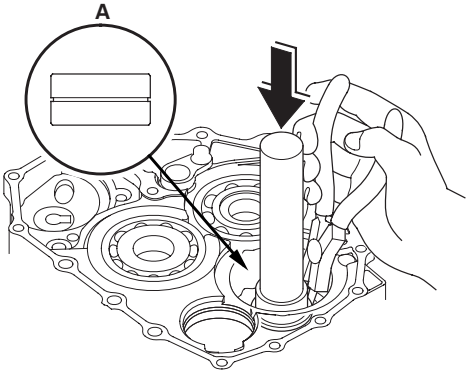
1. Install the bearings in the direction shown.

2. Expand each snap ring using snap ring pliers, and install the mainshaft bearing (A) and the countershaft bearing (B) part-way into the housing using the driver and the 78 x 80 mm attachment.



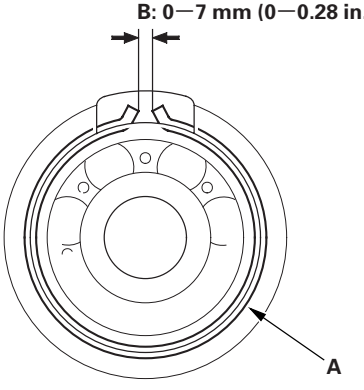
3. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.

4. Expand the snap ring of the idler gear shaft (A) using the snap ring pliers, and install the bearing part-way into the housing using the driver and the 42 x 47 mm attachment.



5. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.

6. After installing the bearings check that the snap rings (A) are seated in the bearing and the housing grooves, and that the ring end gaps (B) are correct.



7. Install the idler shaft (see page 14-324).

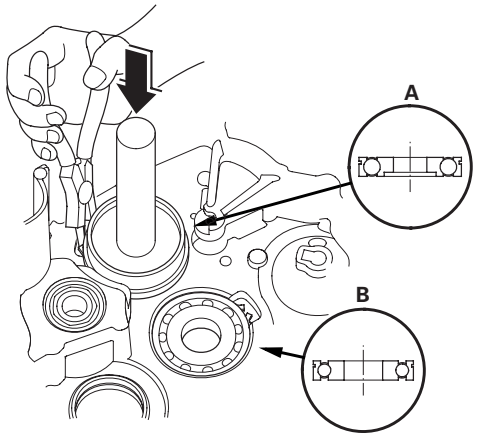
DYNOMITE -2009-

Bearing Installation

Special Tools Required
- Attachment, 78 x 80 mm 07NAD-PX40100
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

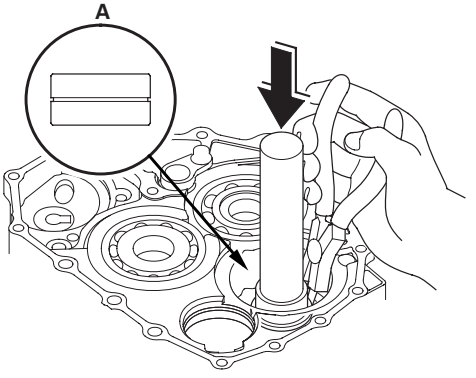
1. Install the bearings in the direction shown.

2. Expand each snap ring using snap ring pliers, and install the mainshaft bearing (A) and the countershaft bearing (B) part-way into the housing using the driver and the 78 x 80 mm attachment.



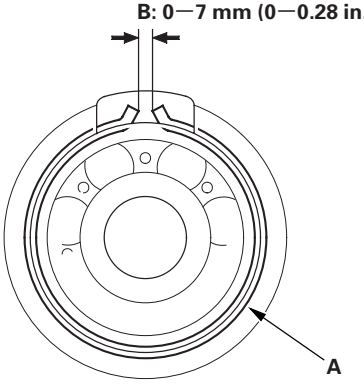
3. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.

4. Expand the snap ring of the idler gear shaft (A) using the snap ring pliers, and install the bearing part-way into the housing using the driver and the 42 x 47 mm attachment.



5. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.

6. After installing the bearings check that the snap rings (A) are seated in the bearing and the housing grooves, and that the ring end gaps (B) are correct.



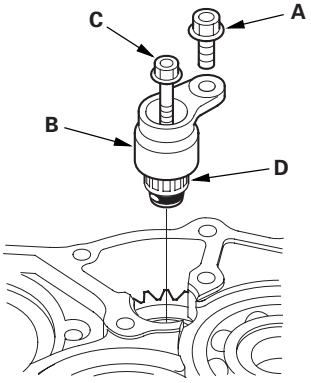
7. Install the idler shaft (see page 14-324).

DYNOMITE -2009-

Reverse Idler Gear Removal and Installation

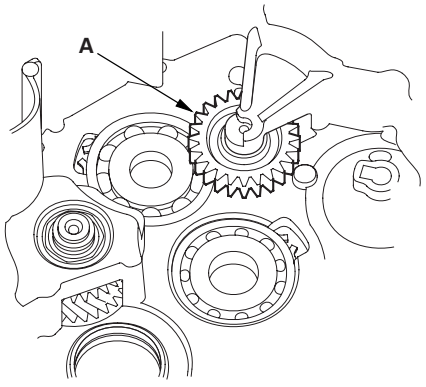
Removal

1. Remove the bolt (A) securing the reverse idler gear shaft holder (B).



2. Install a 5 x 0.8 mm bolt (C) in the reverse idler gear shaft (D), and pull it to remove the reverse idler gear shaft and the gear shaft holder together.

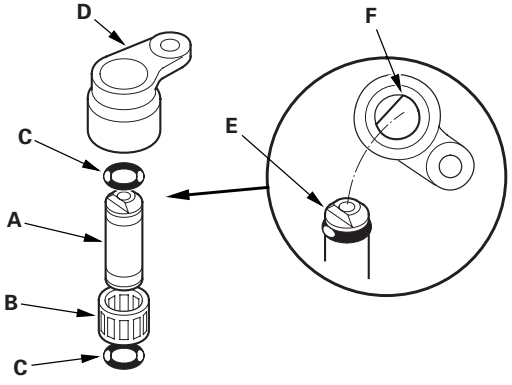
3. Remove the reverse idler gear (A).



Installation

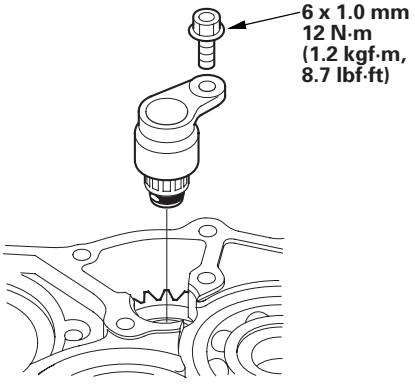
1. Install the reverse idler gear in the transmission housing.

2. Lightly coat the reverse idler gear shaft (A), the needle bearing (B), and new O-rings (C) with lithium grease.



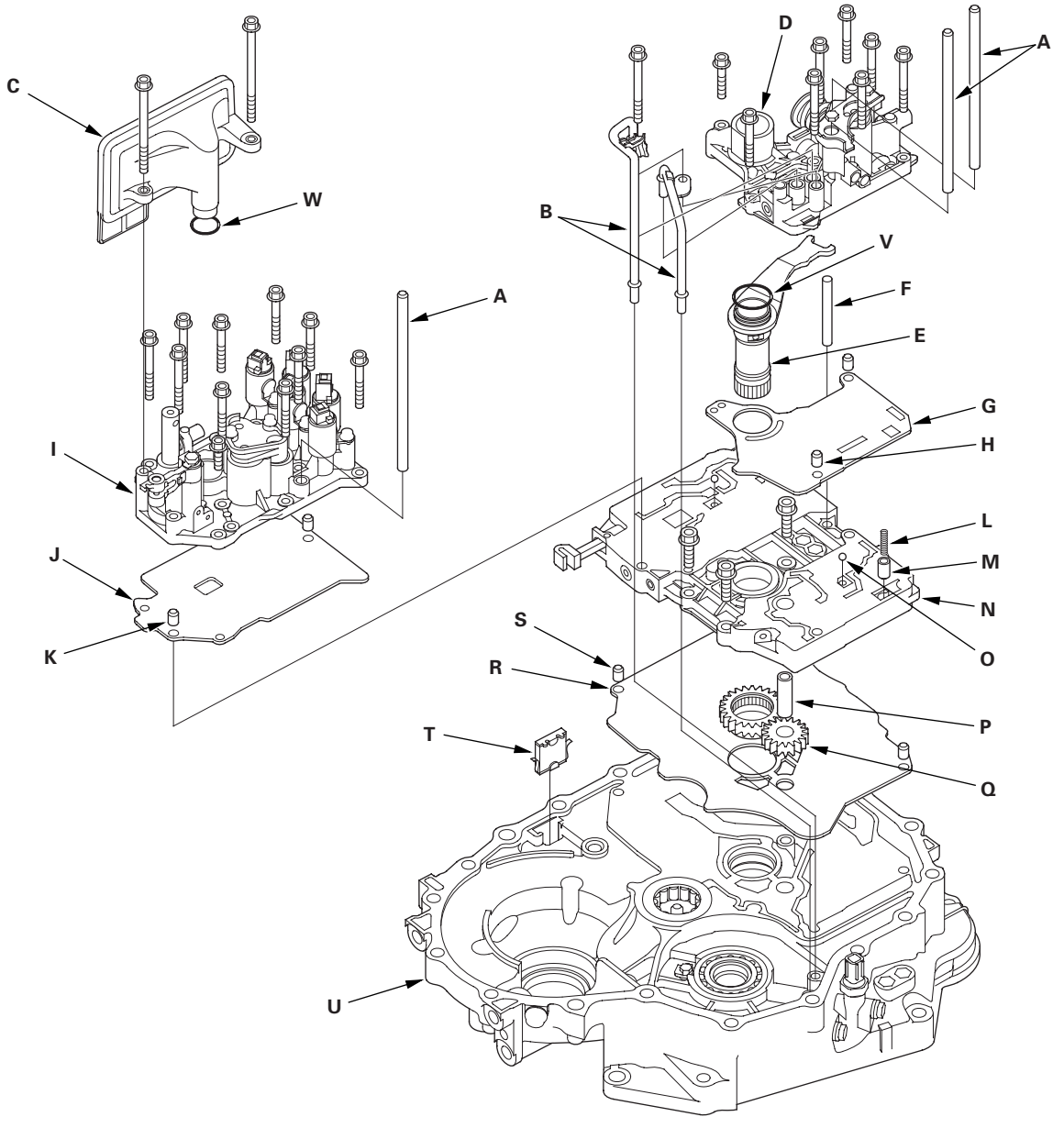
3. Assemble the O-rings and the needle bearing on the reverse idler gear shaft, then install the reverse idler gear shaft in the reverse idler gear shaft holder (D). Align the D-shaped cut out (E) of the shaft with the D-shaped area (F) of the holder.

4. Install the reverse idler gear shaft/holder assembly on the transmission housing.



Valve Body and ATF Strainer Removal

1. Remove the ATF feed pipes (A) and the ATF joint pipes (B).



2. Remove the ATF strainer (C).
3. Remove the regulator valve body (D) (eight bolts).
4. Remove the stator shaft (E) and the stator shaft stop (F), then remove the regulator separator plate (G) and the two dowel pins (H).
5. Remove the servo body (I) (11 bolts), then remove the servo separator plate (J) and the two dowel pins (K).

DYNOMITE -2009-

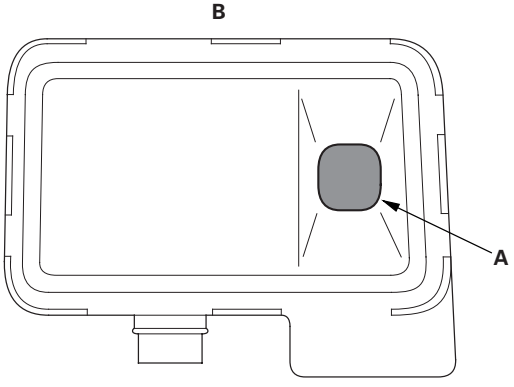
6. Remove the cooler check valve spring (L) and the cooler check valve (M), then remove the main valve body (N) (three bolts). Do not let the check balls (O) fall out.

7. Remove the ATF pump driven gear shaft (P), then remove the ATF pump gears (Q).

8. Remove the main separator plate (R) and the two dowel pins (S).

9. Remove the ATF magnet (T), clean and reinstall it in the torque converter housing (U).

10. 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.



11. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace it if it is clogged or damaged.

12. Remove the O-rings (V) (W) from the stator shaft and the ATF strainer. Install the new ones when installing the valve bodies.

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.

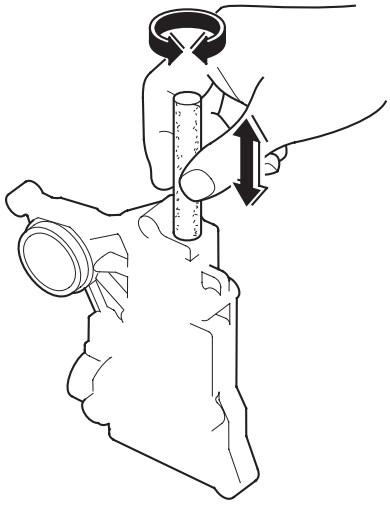
1. Soak a sheet of #600 abrasive paper in ATF for about 30 minutes.

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 does not require much polishing to remove any burrs.



(cont'd)

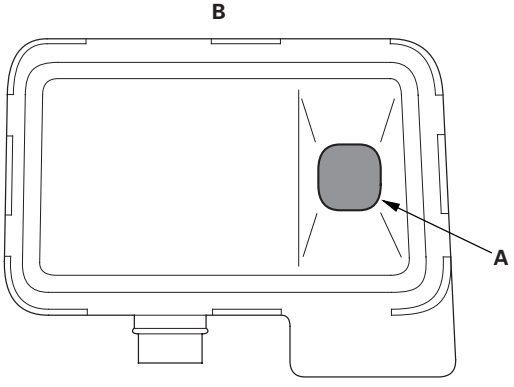
6. Remove the cooler check valve spring (L) and the cooler check valve (M), then remove the main valve body (N) (three bolts). Do not let the check balls (O) fall out.

7. Remove the ATF pump driven gear shaft (P), then remove the ATF pump gears (Q).

8. Remove the main separator plate (R) and the two dowel pins (S).

9. Remove the ATF magnet (T), clean and reinstall it in the torque converter housing (U).

10. 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.



11. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace it if it is clogged or damaged.

12. Remove the O-rings (V) (W) from the stator shaft and the ATF strainer. Install the new ones when installing the valve bodies.

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.

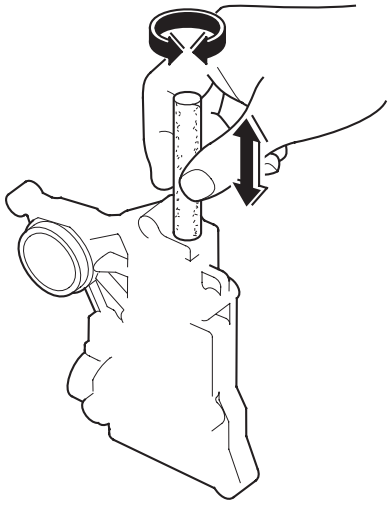
1. Soak a sheet of #600 abrasive paper in ATF for about 30 minutes.

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 does not require much polishing to remove any burrs.

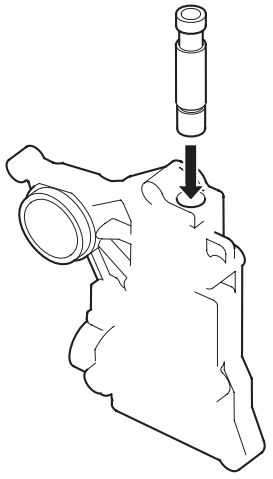


(cont'd)

Valve Body Repair (cont'd)

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 step 4, then retest. If the valve still sticks, replace the valve body.

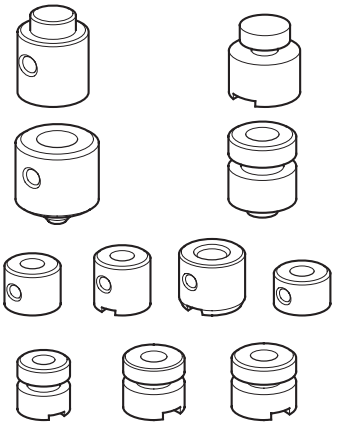


7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

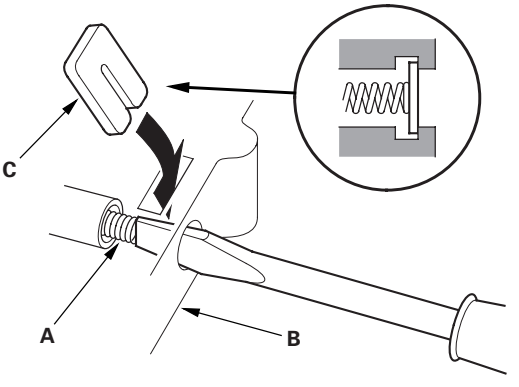
Valve Body Valve Installation

1. Coat all parts with ATF before assembly.

2. Install the valves and the springs in the sequence shown for the main valve body (see page 14-303), the regulator valve body (see page 14-305), and the servo body (see page 14-306). 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 the 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).

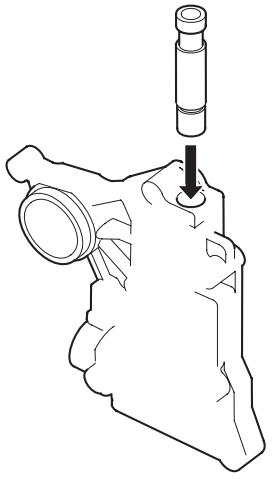


DYNOMITE -2009-

Valve Body Repair (cont'd)

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 step 4, then retest. If the valve still sticks, replace the valve body.

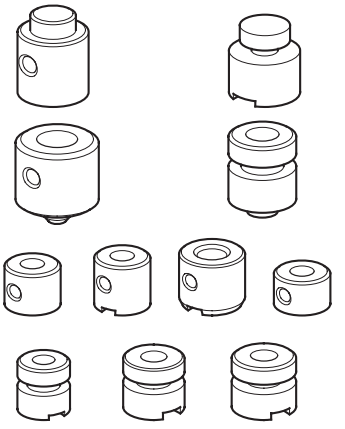


7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

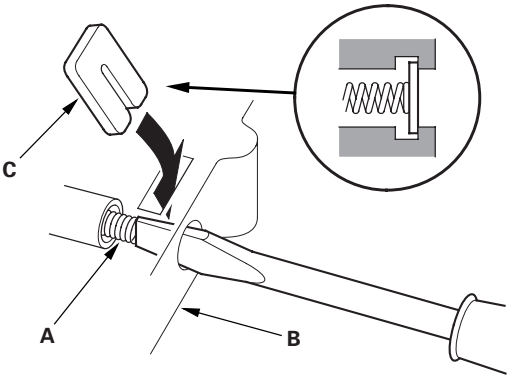
Valve Body Valve Installation

1. Coat all parts with ATF before assembly.

2. Install the valves and the springs in the sequence shown for the main valve body (see page 14-303), the regulator valve body (see page 14-305), and the servo body (see page 14-306). 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.



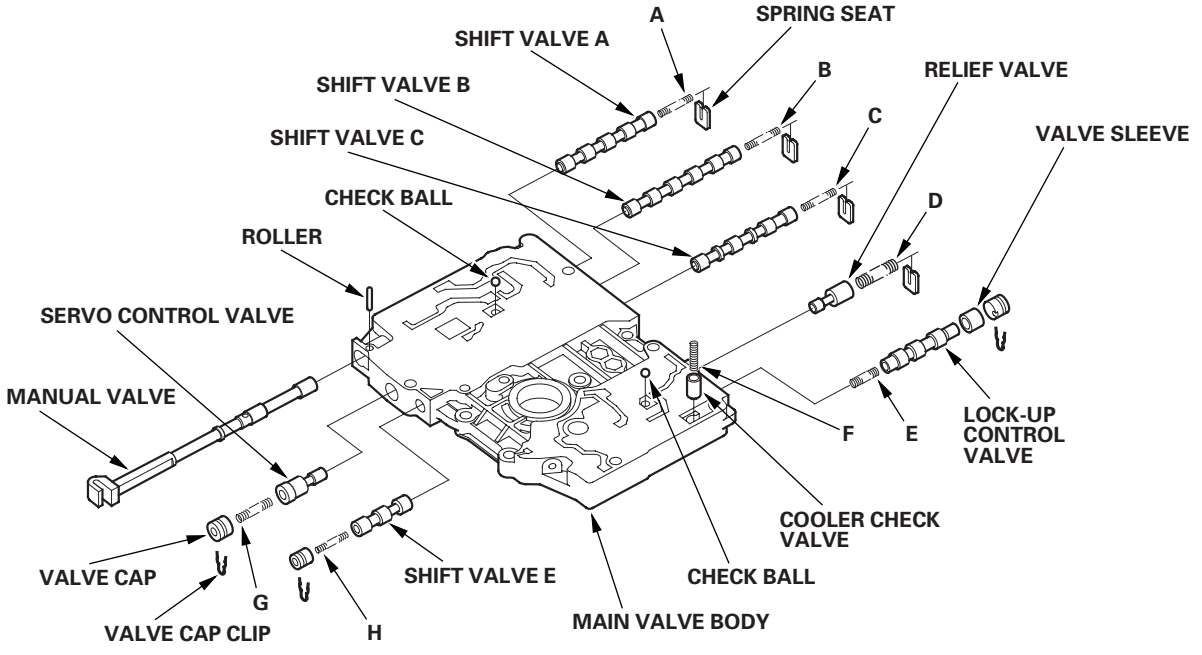
3. Install all the springs and the seats. Insert the spring (A) in the valve, then install the valve in the valve body (B). Push the spring in with a screwdriver, then install the spring seat (C).



DYNOMITE -2009-

Main Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the check balls, it may magnetize the balls.
3. Inspect the valve body for scoring and damage.
4. Check all valves for free movement. If any fail to slide freely, do the valve body repair procedure (see page 14-301).
5. Coat all parts with ATF during assembly.



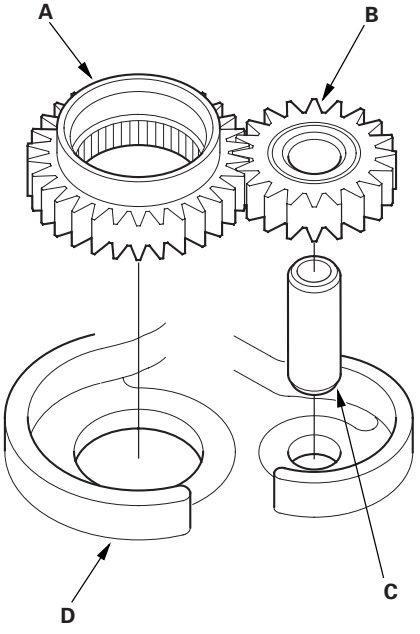
SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Shift valve A spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
B	Shift valve B spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
C	Shift valve C spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
D	Relief valve spring	1.0 (0.039)	9.6 (0.378)	34.1 (1.343)	10.2
E	Lock-up control valve spring	0.65 (0.026)	7.1 (0.280)	23.1 (0.909)	12.7
F	Cooler check valve spring	0.85 (0.033)	6.6 (0.260)	27.0 (1.063)	11.3
G	Servo control valve spring	0.7 (0.028)	6.6 (0.260)	35.7 (1.406)	17.2
H	Shift valve E spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9

DYNOMITE -2009-

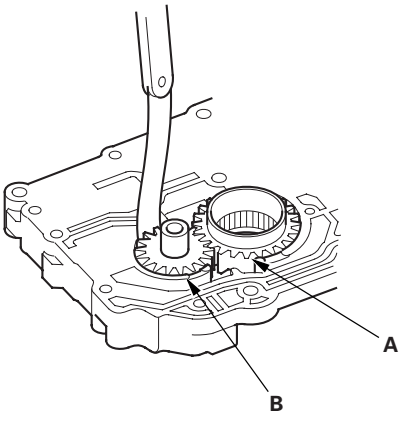
ATF Pump Inspection

1. Install the ATF pump drive gear (A), the driven gear (B), and the 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.



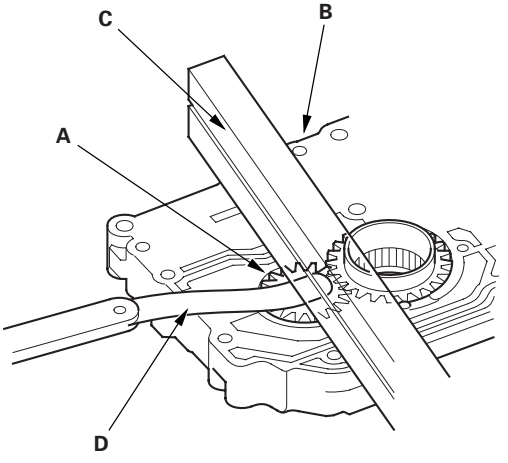
2. Measure the side clearance of the ATF pump drive gear (A) and the driven gear (B).

ATF Pump Gears Side (Radial) Clearance:
Standard (New):
ATF Pump Drive Gear:
0.210—0.265 mm (0.0083—0.0104 in.)
ATF Pump Driven Gear:
0.070—0.125 mm (0.0028—0.0049 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) using a straight edge (C) and a feeler gauge (D).

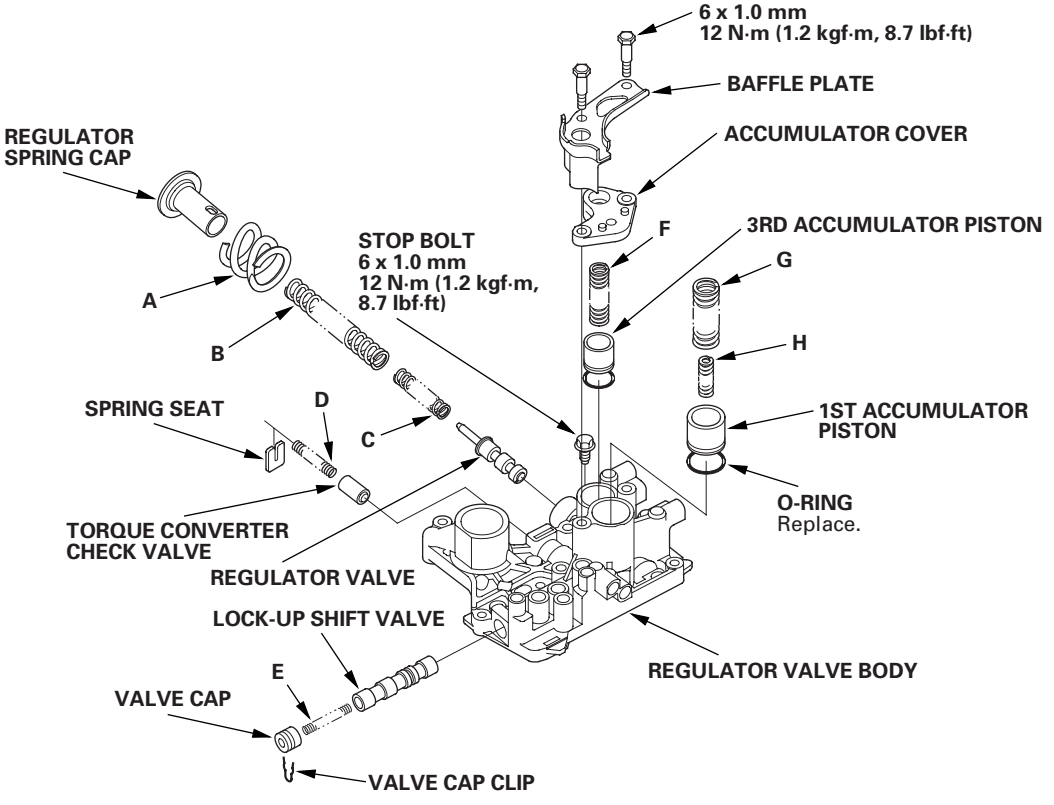
ATF Pump Drive/Driven Gear Thrust (Axial) Clearance:
Standard (New): 0.03—0.06 mm (0.001—0.002 in.)
Service Limit: 0.07 mm (0.003 in.)



DYNOMITE -2009-

Regulator Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, 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, do the valve body repair procedure (see page 14-301).
4. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded.
5. Coat all parts with ATF during assembly.
6. Replace the O-rings with new ones.
7. When reassembling the valve body, 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.



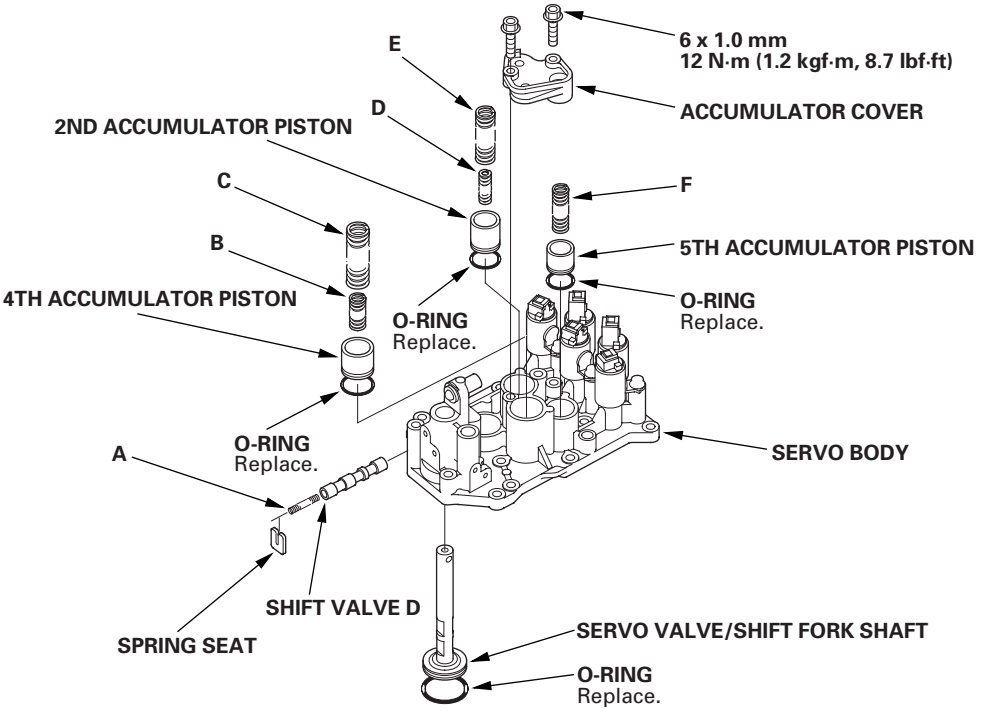
SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Stator reaction spring	4.5 (0.177)	35.4 (1.394)	30.3 (1.193)	1.92
B	Regulator valve spring A	1.9 (0.075)	14.7 (0.579)	80.6 (3.173)	16.1
C	Regulator valve spring B	1.6 (0.063)	9.2 (0.362)	44.0 (1.732)	12.5
D	Torque converter check valve spring	1.2 (0.047)	8.6 (0.339)	33.8 (1.331)	12.2
E	Lock-up shift valve spring	1.0 (0.039)	6.6 (0.260)	35.5 (1.398)	18.2
F	3rd accumulator spring	2.5 (0.098)	14.6 (0.575)	29.9 (1.177)	4.9
G	1st accumulator spring A	2.4 (0.094)	18.6 (0.732)	49.0 (1.929)	7.1
H	1st accumulator spring B	2.3 (0.091)	12.2 (0.480)	31.5 (1.240)	6.6

DYNOMITE -2009-

Servo Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Inspect the valve body for scoring and damage.
3. Check shift valve D for free movement. If any fail to slide freely, do the valve body repair procedure (see page 14-301).
4. When removing and installing the shift solenoid valves, refer to the shift solenoid valves removal and installation (see page 14-307).
5. Coat all parts with ATF during assembly.
6. Replace the O-rings with new ones.



SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Shift valve D spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
B	4th accumulator spring B	2.3 (0.091)	12.2 (0.480)	31.5 (1.240)	6.6
C	4th accumulator spring A	2.4 (0.094)	18.6 (0.732)	49.0 (1.929)	7.1
D	2nd accumulator spring B	2.0 (0.079)	10.6 (0.417)	34.0 (1.339)	8.0
E	2nd accumulator spring A	2.2 (0.087)	16.6 (0.654)	48.2 (1.898)	8.5
F	5th accumulator spring	2.5 (0.098)	14.6 (0.575)	29.9 (1.177)	4.9

DYNOMITE -2009-

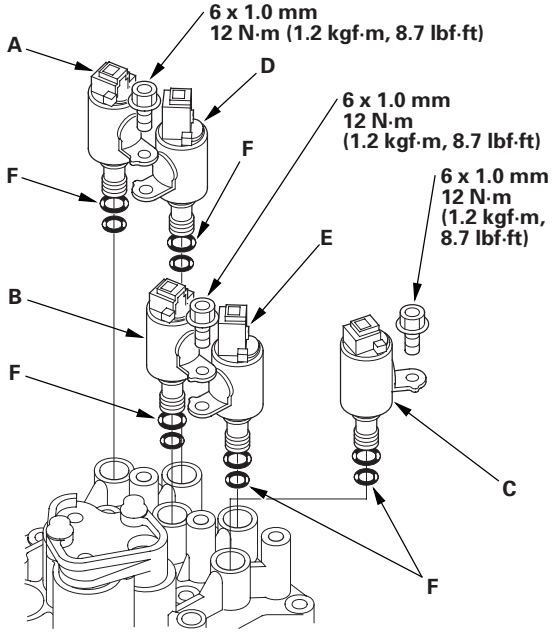
Shift Solenoid Valve Removal and Installation

NOTE:
- Do not hold the shift solenoid valve connector to remove and to install the shift solenoid valves. Hold the shift solenoid valve body.
- Do not install shift solenoid valve A before installing shift solenoid valve D, and do not install shift solenoid valve B before solenoid valve E. If solenoid valves A and B are installed before solenoid valves D and E, it may damage the hydraulic control system.

1. Remove the shift solenoid valves by holding the solenoid valve body.

2. Install new O-rings (two O-ring per shift solenoid valve) (F) on the shift solenoid valves.

   NOTE: A new solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided with it.



3. Install shift solenoid valve D by holding the shift solenoid valve body; be sure to install mounting bracket contacts the servo body.

4. Install shift solenoid valve A by holding the shift solenoid valve body; be sure to install mounting bracket contacts the bracket on shift solenoid valve D.

5. Install shift solenoid valve E by holding the shift solenoid valve body; be sure to install mounting bracket contacts the servo body.

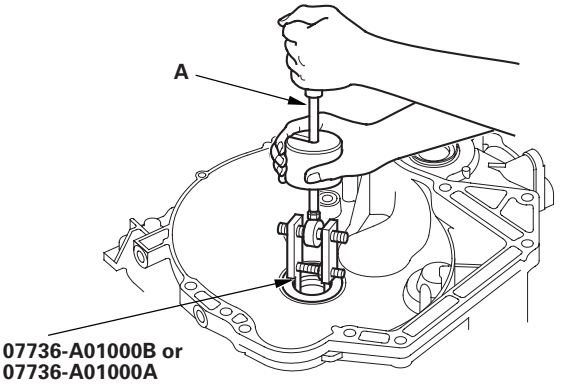
6. Install shift solenoid valve B by holding the shift solenoid valve body; be sure to install mounting bracket contacts the bracket on shift solenoid valve E.

7. Install shift solenoid valve C by holding the shift solenoid valve body; be sure to install mounting bracket contacts the servo body.

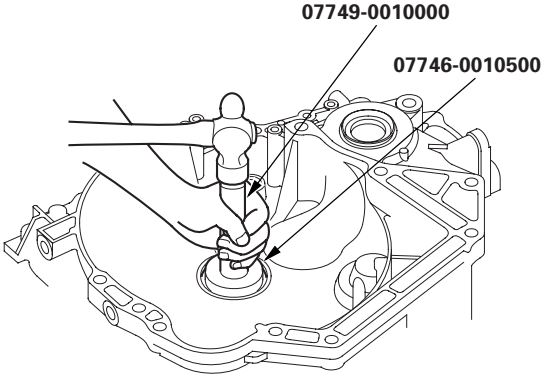
Mainshaft Bearing and Oil Seal Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 72 x 75 mm 07746-0010600

1. Remove the mainshaft bearing and the oil seal using the adjustable bearing puller and a commercially available 3/8 ''-16 slide hammer (A).

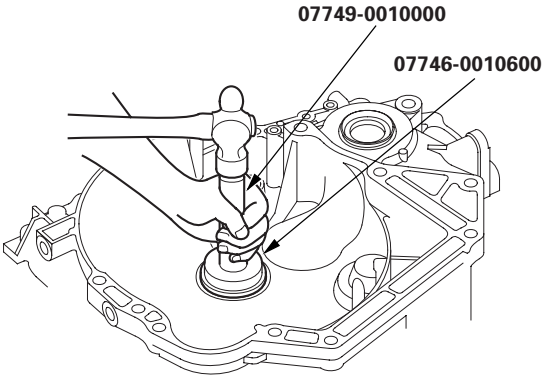


2. Install a new mainshaft bearing until it bottoms in the housing using the driver and the 62 x 68 mm attachment.



3. Install a new oil seal flush using the housing using the driver and the 72 x 75 mm attachment.

   NOTE: Do not drive the seal into the torque converter housing until it bottoms out; it will block the fluid return passage and cause transmission damage.

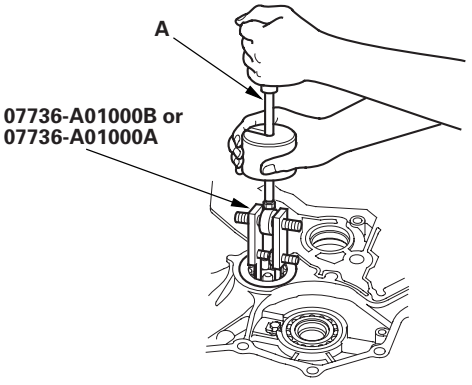


DYNOMITE -2009-

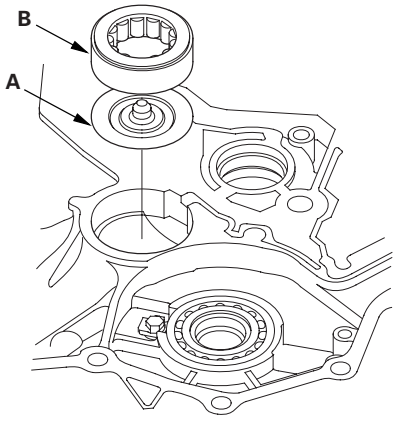
Countershaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500

1. Remove the countershaft bearing using the adjustable bearing puller and a commercially available 3/8 ''-16 slide hammer (A).

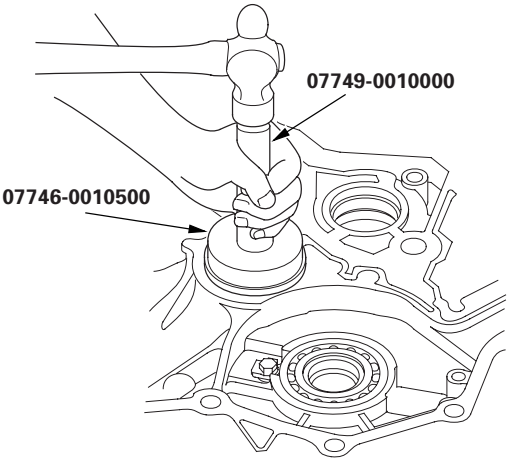


2. Remove the ATF guide plate (A), and check it for wear and damage. If the guide plate is worn or damaged, replace it.

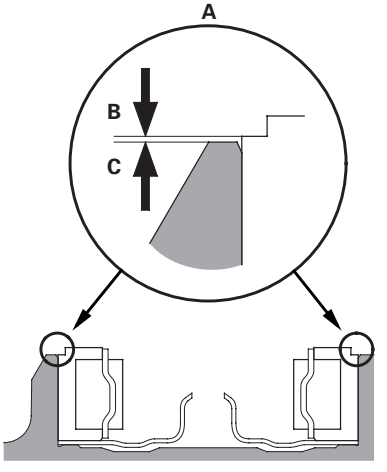


3. Install the ATF guide plate in the housing, and set a new countershaft bearing (B).

4. Install the bearing securely in the housing using the driver and the 62 x 68 mm attachment.



5. Make sure that the bearing outer race notch-cut (A) is installed at a height of 0—0.05 mm (0—0.002 in.) (B) above the housing surface (C). Do not install the bearing higher than 0.05 mm (0.002 in.) above the housing surface.

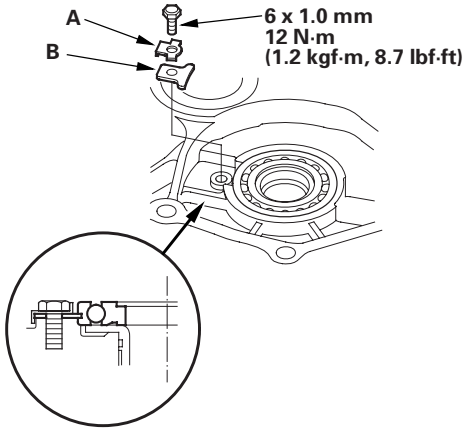


DYNOMITE -2009-

Secondary Shaft Bearing Replacement

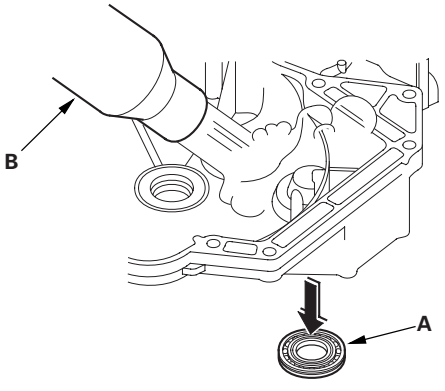
Special Tools Required
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500

1. Remove the set plate bolt, then remove the lock washer (A) and the bearing set plate (B).

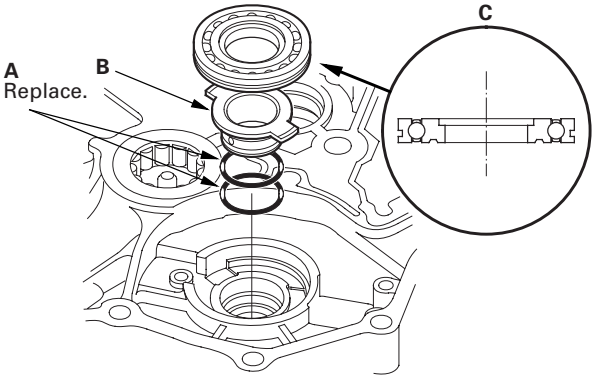


2. Remove the secondary shaft bearing (A) by heating the housing to about 100 ℃ (212 ℉) using a heat gun (B). Do not heat the housing more than 100 ℃ (212 ℉).

   NOTE: Let the housing cool to normal temperature before installing the bearing.

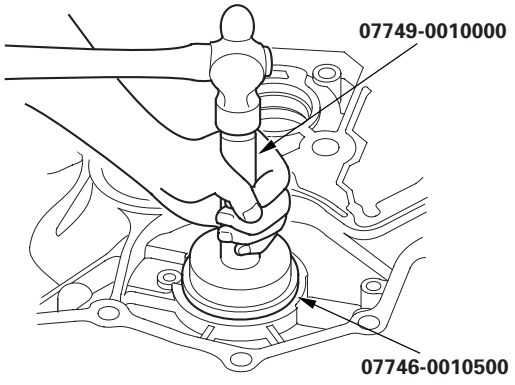


3. Install new O-rings (A) on the ATF guide collar (B), then install the ATF guide collar in the housing.



4. Install new secondary shaft bearing (C) in the direction shown.

5. Install the secondary shaft bearing using the driver and the 62 x 68 mm attachment, and install it securely in the housing.



6. Check that the bearing groove aligns with the housing surface, then install the bearing set plate while aligning the bearing groove.

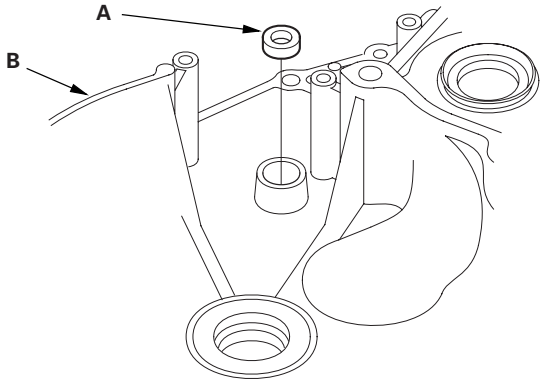
7. Install a new lock washer and the set plate bolt, then bend the lock tab of the lock washer against the bolt head.

DYNOMITE -2009-

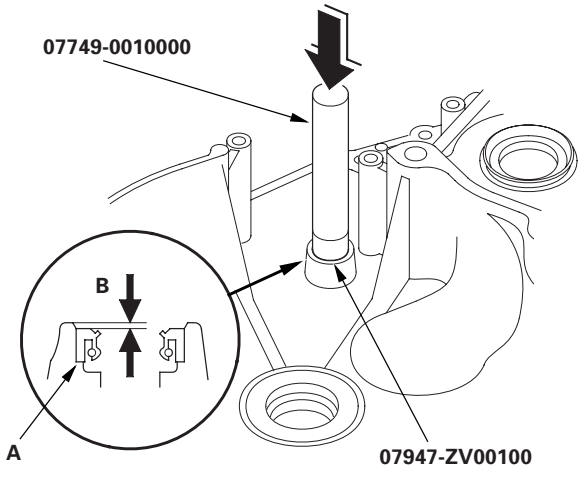
Selector Control Shaft Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Oil seal driver attachment 07947-ZV00100

1. Remove the oil seal (A) from the torque converter housing (B).



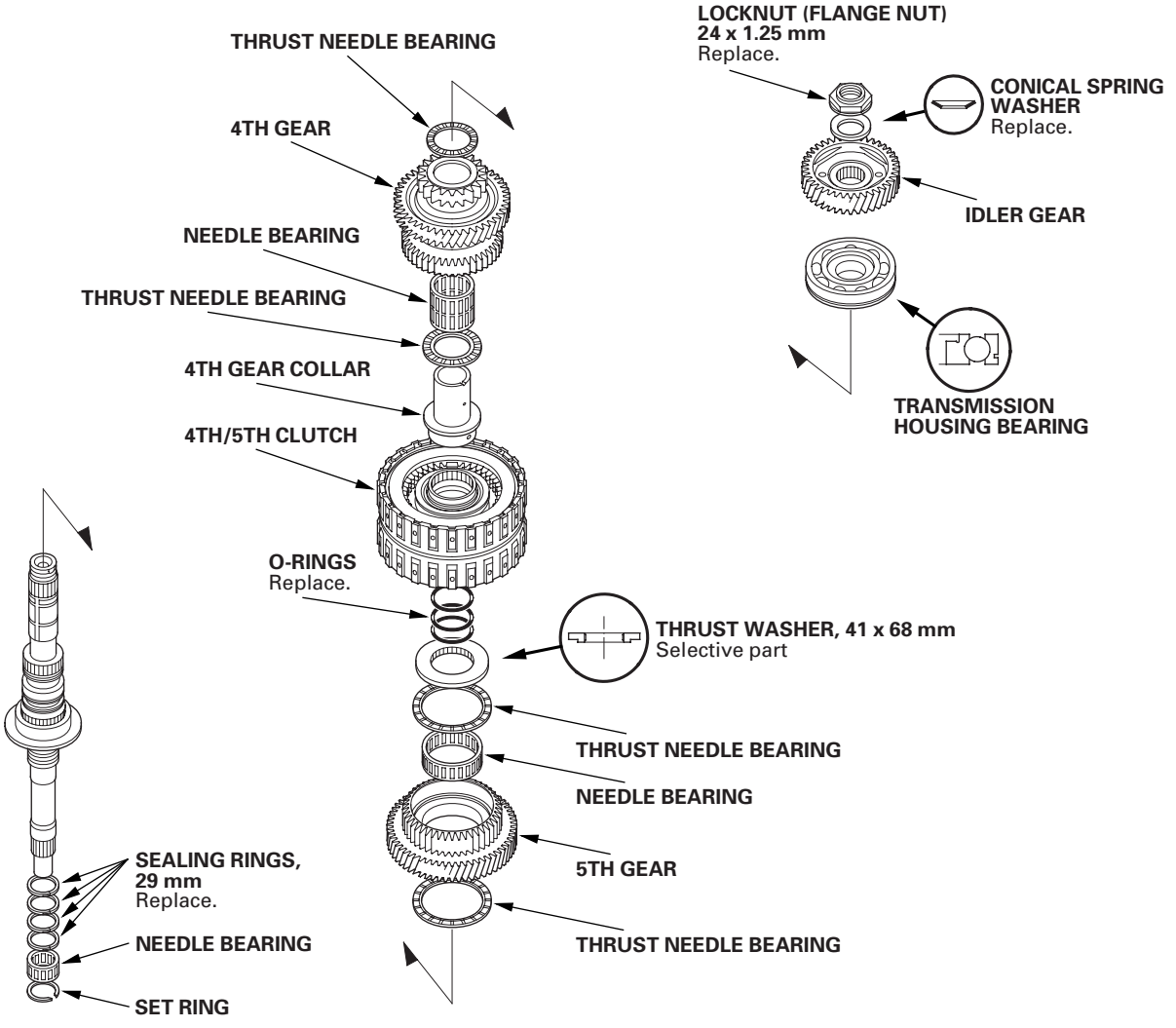
2. Install a new oil seal (A) in the torque converter housing to a depth (B) of 0.5—1.5 mm (0.02—0.06 in.) below the housing surface using the driver and the oil seal driver attachment.



DYNOMITE -2009-

Mainshaft Disassembly, Inspection, and Reassembly

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.



2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surface for scoring and excessive wear.
4. Before installing new O-rings, wrap the shaft splines with tape to prevent the O-ring damage.
5. Lubricate all parts with ATF during assembly.
6. Install the conical spring washer and the 41 x 68 mm thrust washer in the direction shown.
7. Replace the locknut and the conical spring washer with new ones when assembling the transmission.
8. Check the clearance of 5th gear (see page 14-313).

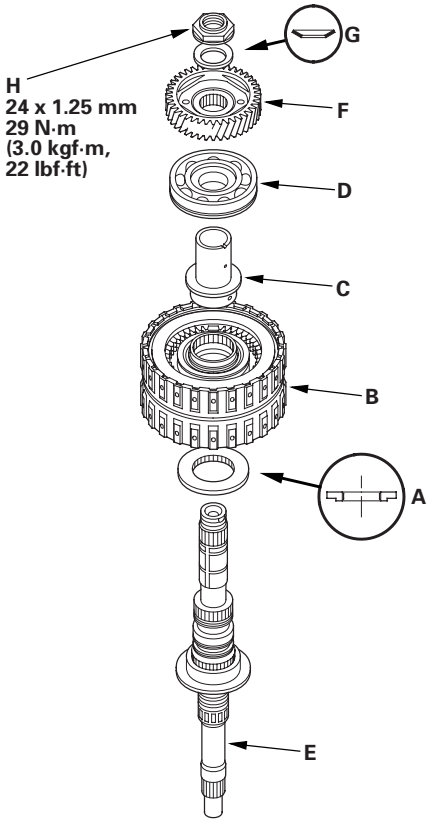
DYNOMITE -2009-

Mainshaft 5th Gear Axial Clearance Inspection

'06-07 Models

1. Remove the mainshaft transmission housing bearing (see page 14-297).

2. Assemble the 41 x 68 mm thrust washer (A), the 4th/5th clutch (B), the 4th gear collar (C), and the transmission housing bearing (D) on the mainshaft (E). Do not install the O-rings during inspection.

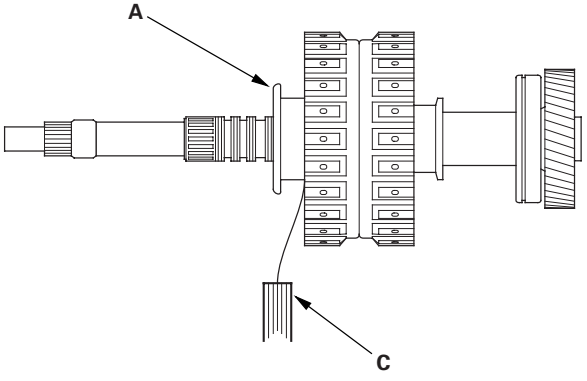


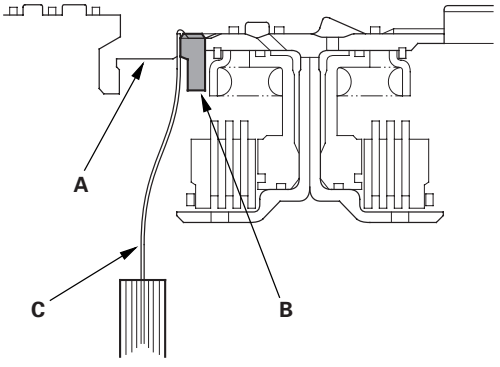
3. Install the idler gear (F) on the mainshaft by a press, then install the conical spring washer (G) and the locknut (H).

4. Tighten the locknut to 29 N·m (3.0 kgf·m, 22 lbf·ft).

5. Measure the clearance between the mainshaft flange (A) and the 41 x 68 mm thrust washer (B) using a feeler gauge (C), in at least three places. Use the average as the actual clearance.

Standard: 0.03—0.11 mm (0.001—0.004 in.)

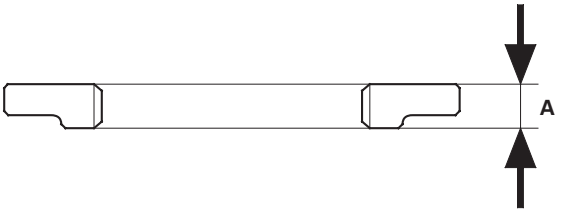




(cont'd)

Mainshaft 5th Gear Axial Clearance Inspection (cont'd)

6. If the clearance is out of standard, remove the 41 x 68 mm thrust washer and measure its thickness (A).



7. Select and install a new thrust washer, then recheck.

THRUST WASHER, 41 x 68 mm

No.	Part Number	Thickness
1	90414-PRP-000	6.35 mm (0.250 in.)
2	90415-PRP-000	6.40 mm (0.252 in.)
3	90416-PRP-000	6.45 mm (0.254 in.)
4	90417-PRP-000	6.50 mm (0.256 in.)
5	90418-PRP-000	6.55 mm (0.258 in.)
6	90419-PRP-000	6.60 mm (0.260 in.)

8. After replacing the thrust washer, make sure the clearance is within standard.

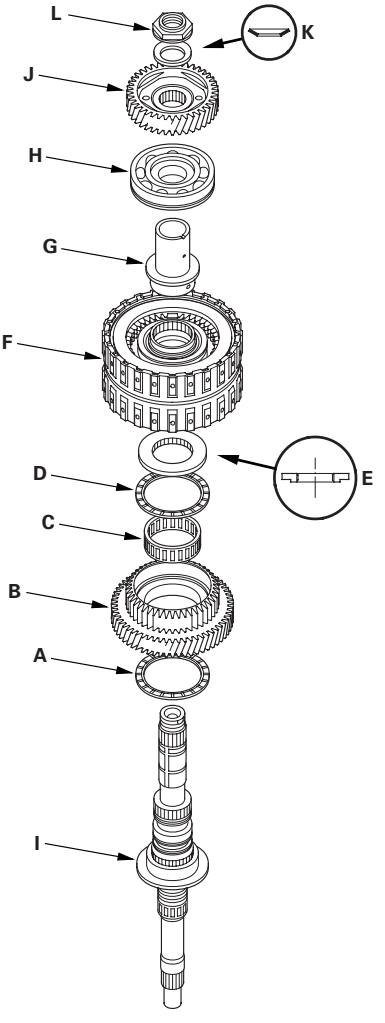
9. Disassemble the shaft and gears.

10. Reinstall the bearing in the transmission housing (see page 14-298).

'08-09 Models

1. Remove the mainshaft transmission housing bearing (see page 14-297).

2. Install the thrust needle bearing (A), 5th gear (B), the needle bearing (C), the thrust needle bearing (D), the 41 x 68 mm thrust washer (E), the 4th/5th clutch (F), the 4th gear collar (G), and the transmission housing bearing (H) on the mainshaft (I). Do not install the O-rings during inspection.

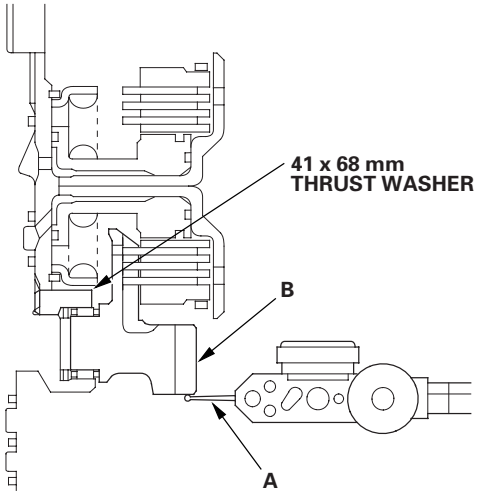


3. Install the idler gear (J) on the mainshaft by a press, then install the conical spring washer (K) and the locknut (L).

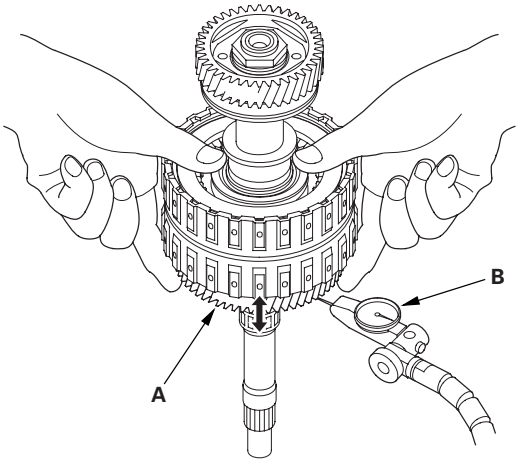
4. Tighten the locknut to 29 N·m (3.0 kgf·m, 22 lbf·ft).

DYNOMITE -2009-

5. Set the dial indicator (A) on 5th gear (B).



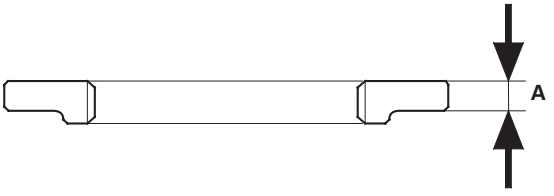
6. Lift 5th gear (A) up while holding the mainshaft, and use the dial indicator (B) to read the 5th gear axial clearance.



7. Measure the 5th gear axial clearance in at least three places while moving 5th gear. Use the average as the actual clearance.

   Standard: 0.04—0.10 mm (0.002—0.004 in.)

8. If the clearance is out of standard, remove the 41 x 68 mm thrust washer and measure its thickness (A).



9. Select and install a new thrust washer, then recheck.

THRUST WASHER, 41 x 68 mm

No.	Part Number	Thickness
1	90414-RCT-000	4.450 mm (0.1752 in.)
2	90415-RCT-000	4.475 mm (0.1762 in.)
3	90416-RCT-000	4.500 mm (0.1772 in.)
4	90417-RCT-000	4.525 mm (0.1781 in.)
5	90418-RCT-000	4.550 mm (0.1791 in.)
6	90419-RCT-000	4.575 mm (0.1801 in.)
7	90420-RCT-000	4.600 mm (0.1811 in.)
8	90421-RCT-000	4.625 mm (0.1821 in.)
9	90422-RCT-000	4.650 mm (0.1831 in.)
10	90423-RCT-000	4.675 mm (0.1841 in.)
11	90424-RCT-000	4.700 mm (0.1850 in.)
12	90425-RCT-000	4.725 mm (0.1860 in.)
13	90426-RCT-000	4.750 mm (0.1870 in.)
14	90427-RCT-000	4.775 mm (0.1880 in.)
15	90428-RCT-000	4.800 mm (0.1890 in.)

10. After replacing the thrust washer, make sure the clearance is within the standard.

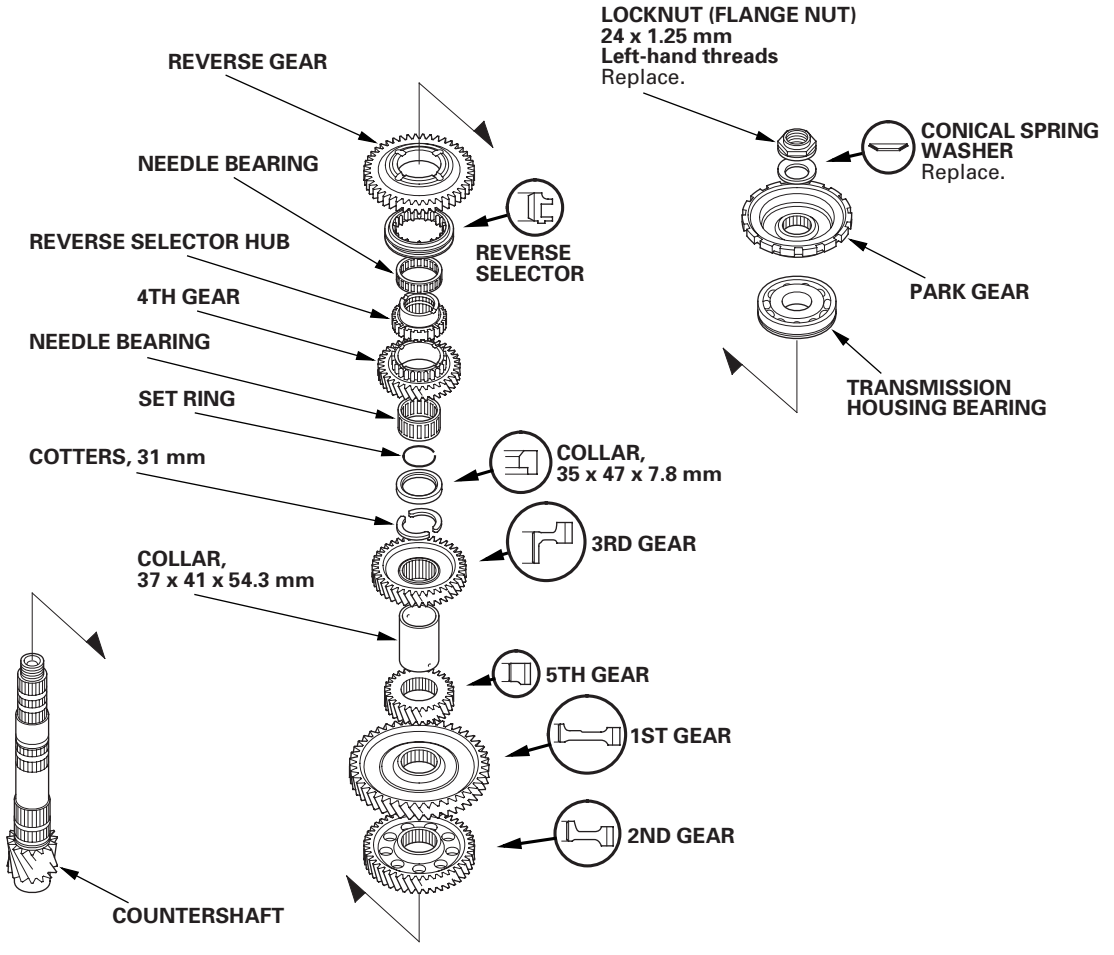
11. Disassemble the installed parts from the mainshaft.

12. Reinstall the bearing in the transmission housing (see page 14-298).

DYNOMITE -2009-

Countershaft Disassembly, Inspection, and Reassembly

1. Inspect the needle bearing for galling and rough movement.



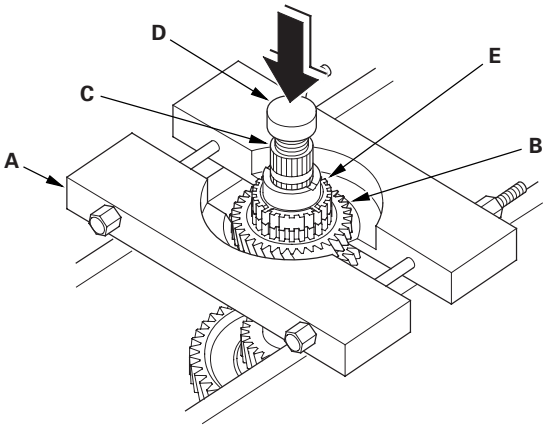
2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surface for scoring and excessive wear.
4. Lubricate all parts with ATF during assembly.
5. Install the conical spring washer, the reverse selector, 35 x 47 x 7.8 mm collar, and all gears in the direction shown.
6. Replace the locknut and the conical spring washer with new ones when assembling the transmission. The countershaft locknut has left-hand threads.
7. Some reverse selector hubs and 3rd gear are press-fitted to the countershaft; special tools are needed to remove them (see page 14-317) and to install them (see page 14-318).

DYNOMITE -2009-

Countershaft Reverse Selector Hub and 3rd Gear Removal

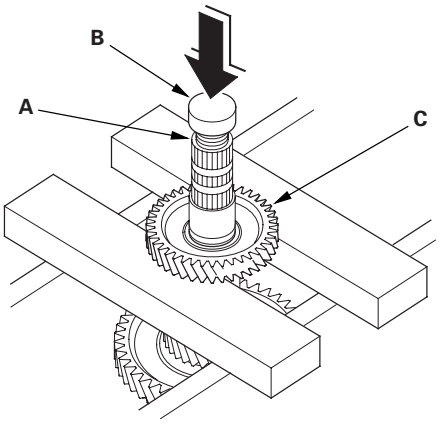
1. Install a commercially available bearing separator (A) on 4th gear (B). Set the countershaft (C) on a press with a spacer (D) between the press and the countershaft, and remove the reverse selector hub (E).

   NOTE: Some reverse selector hubs are not press-fitted, and can be removed without using the bearing separator and a press.



2. Remove the needle bearing, the set ring, the 35 x 47 x 7.8 mm collar, and the cotters.

3. Set the countershaft (A) on a press with a spacer (B) between the press and the countershaft, and remove 3rd gear (C).



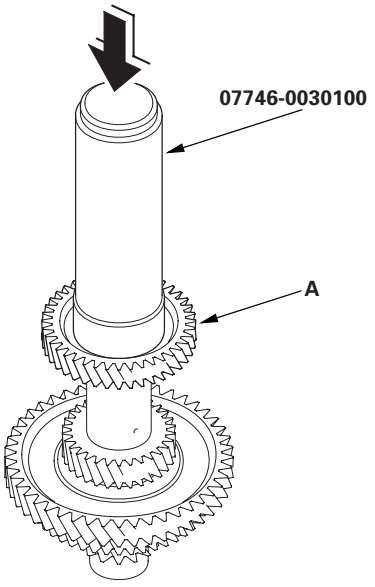
4. Remove the 37 x 41 x 54.3 mm collar, 5th gear, 1st gear, and 2nd gear.

Countershaft 3rd Gear and Reverse Selector Hub Installation

Special Tools Required
Driver handle, 40 mm I.D. 07746-0030100

1. Install 2nd gear, 1st gear, 5th gear, and the 37 x 41 x 54.3 mm collar on the countershaft.

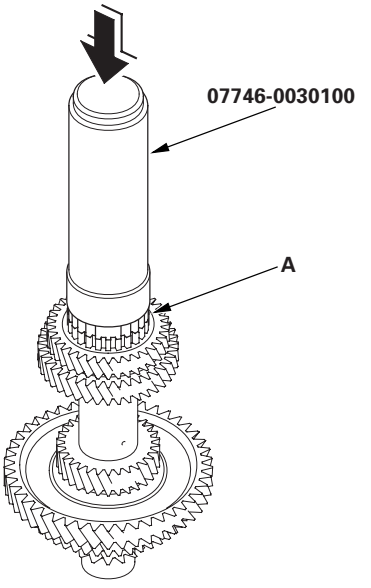
2. Slide 3rd gear (A) over the countershaft, and press it in place using the 40 mm I.D. driver handle and a press.



3. Install the cotters, the 35 x 47 x 7.8 mm collar, the set ring, the needle bearing, and 4th gear.

4. Slide the reverse selector hub (A) over the countershaft, then press it in place using the 40 mm I.D. driver handle and a press.

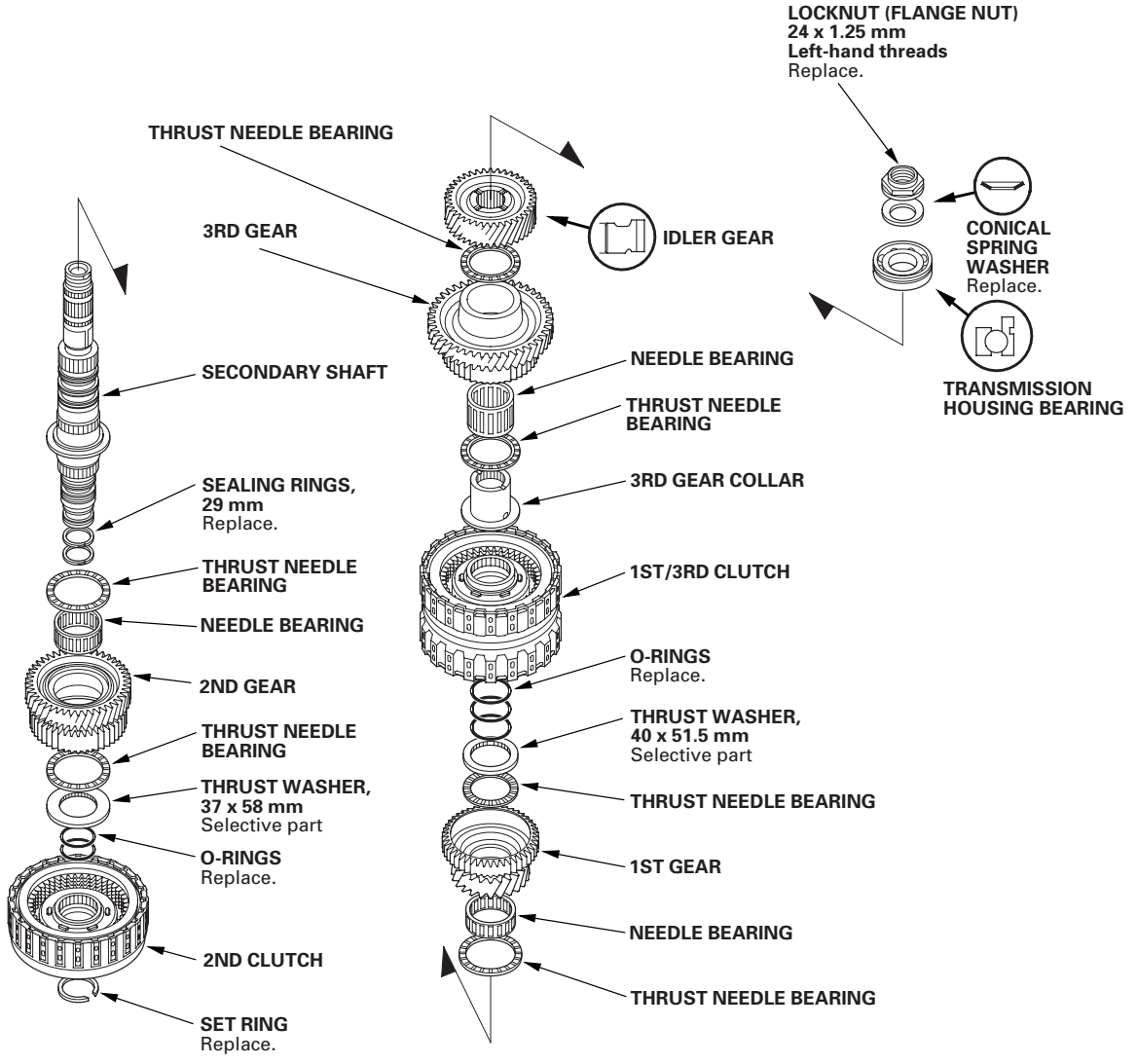
   NOTE: Some reverse selector hubs are not press-fitted and can be installed without using the 40 mm I.D. driver handle and a press.



DYNOMITE -2009-

Secondary Shaft Disassembly, Inspection, and Reassembly

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.



2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surface for scoring and excessive wear.
4. Before installing new O-rings, wrap the shaft splines with tape to prevent O-ring damage.
5. Lubricate all parts with ATF during assembly.
6. Install the conical spring washer and the idler gear in the direction shown.
7. Replace the locknut and the conical spring washer with new ones when assembling the transmission. The locknut has left-hand threads.
8. Check the clearance of 2nd gear (see page 14-321) and 1st gear (see page 14-322).

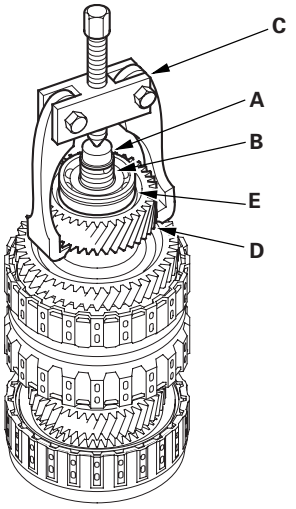
DYNOMITE -2009-

Secondary Shaft Ball Bearing, Idler Gear Removal and Installation

Special Tools Required
Attachment, 42 mm I.D. 07QAD-P0A0100

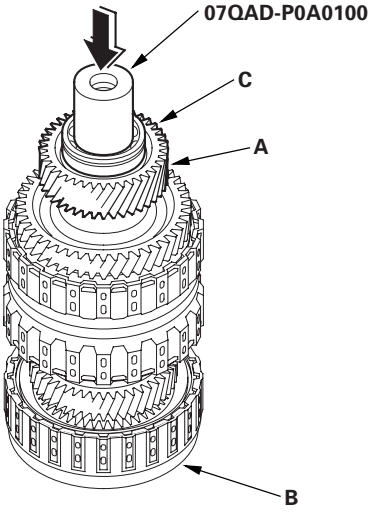
Removal

Place a spacer (A) on the secondary shaft (B), and set the puller (C) under the idler gear (D), then remove the idler gear and the ball bearing (E).



Installation

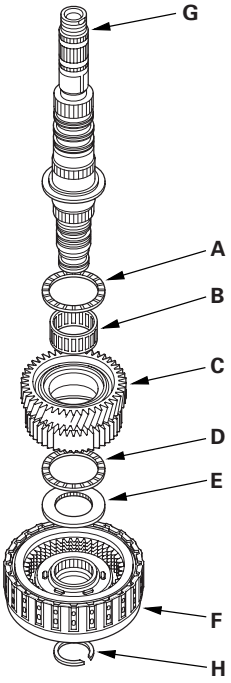
Install the idler gear (A) on the secondary shaft (B), and install the ball bearing (C) over the idler gear using the 42 mm I.D. attachment and a press.



DYNOMITE -2009-

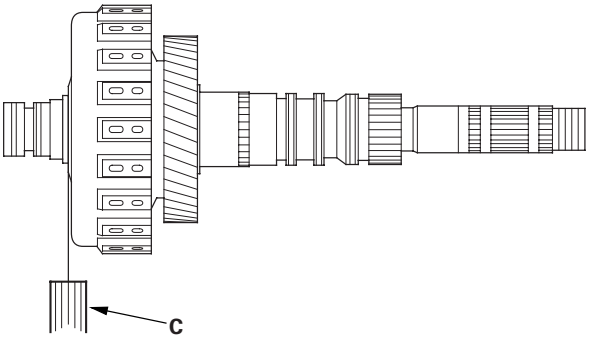
Secondary Shaft 2nd Gear Axial Clearance Inspection

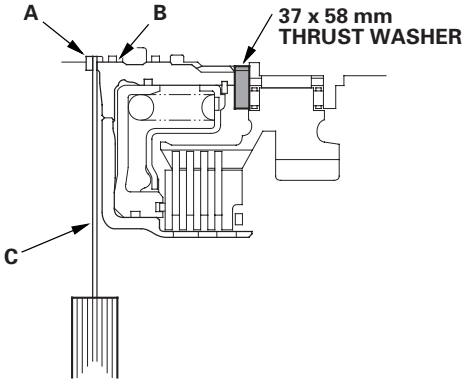
1. Install the thrust needle bearing (A), the needle bearing (B), 2nd gear (C), the thrust needle bearing (D), the 37 x 58 mm thrust washer (E), and the 2nd clutch (F) on the secondary shaft (G), then secure them with the set ring (H).



2. Measure the clearance between the snap ring (A) and the 2nd clutch guide (B) using a feeler gauge (C), in at least three places. Use the average as the actual clearance.

Standard: 0.04—0.12 mm (0.002—0.005 in.)





(cont'd)

Secondary Shaft 2nd Gear Axial Clearance Inspection (cont'd)

3. If the clearance is out of standard, remove the 37 x 58 mm thrust washer and measure its thickness.

4. Select and install a new thrust washer, then recheck.

THRUST WASHER, 37 x 58 mm

No.	Part Number	Thickness
1	90511-PRP-010	3.900 mm (0.154 in.)
2	90512-PRP-010	3.925 mm (0.155 in.)
3	90513-PRP-010	3.950 mm (0.156 in.)
4	90514-PRP-010	3.975 mm (0.156 in.)
5	90515-PRP-010	4.000 mm (0.157 in.)
6	90516-PRP-010	4.025 mm (0.158 in.)
7	90517-PRP-010	4.050 mm (0.159 in.)
8	90518-PRP-010	4.075 mm (0.160 in.)
9	90519-PRP-010	4.100 mm (0.161 in.)
10	90520-PRP-010	4.125 mm (0.162 in.)
11	90521-PRP-010	4.150 mm (0.163 in.)
12	90522-PRP-010	4.175 mm (0.164 in.)
13	90523-PRP-000	4.200 mm (0.165 in.)
14	90524-PRP-000	4.225 mm (0.166 in.)
15	90525-PRP-000	4.250 mm (0.167 in.)
16	90526-PRP-000	4.275 mm (0.168 in.)
17	90527-PRP-000	4.300 mm (0.169 in.)
18	90528-PRP-000	4.325 mm (0.170 in.)
19	90529-PRP-000	4.350 mm (0.171 in.)
20	90530-PRP-000	4.375 mm (0.172 in.)

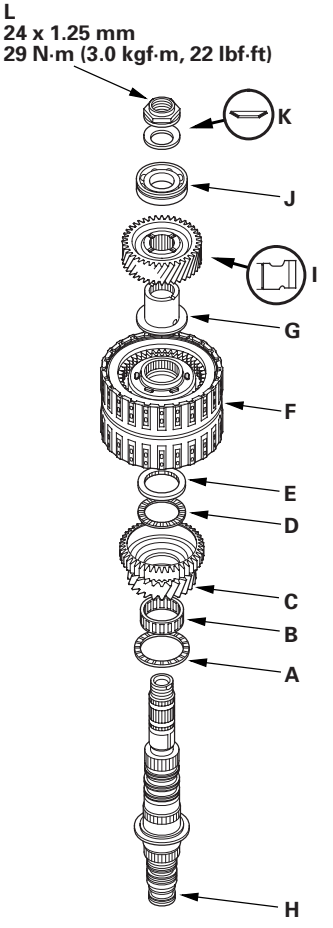
5. After replacing the thrust washer, make sure the clearance is within standard.

6. Disassemble the installed parts from the secondary shaft.

Secondary Shaft 1st Gear Axial Clearance Inspection

Special Tools Required
Attachment, 42 mm I.D. 07QAD-P0A0100

1. Install the thrust needle bearing (A), the needle bearing (B), 1st gear (C), the thrust needle bearing (D), the 40 x 51.5 mm thrust washer (E), the 1st/3rd clutch (F), and the 3rd gear collar (G) on the secondary shaft (H). Do not install the O-rings during inspection.



DYNOMITE -2009-

Secondary Shaft 2nd Gear Axial Clearance Inspection (cont'd)

3. If the clearance is out of standard, remove the 37 x 58 mm thrust washer and measure its thickness.

4. Select and install a new thrust washer, then recheck.

THRUST WASHER, 37 x 58 mm

No.	Part Number	Thickness
1	90511-PRP-010	3.900 mm (0.154 in.)
2	90512-PRP-010	3.925 mm (0.155 in.)
3	90513-PRP-010	3.950 mm (0.156 in.)
4	90514-PRP-010	3.975 mm (0.156 in.)
5	90515-PRP-010	4.000 mm (0.157 in.)
6	90516-PRP-010	4.025 mm (0.158 in.)
7	90517-PRP-010	4.050 mm (0.159 in.)
8	90518-PRP-010	4.075 mm (0.160 in.)
9	90519-PRP-010	4.100 mm (0.161 in.)
10	90520-PRP-010	4.125 mm (0.162 in.)
11	90521-PRP-010	4.150 mm (0.163 in.)
12	90522-PRP-010	4.175 mm (0.164 in.)
13	90523-PRP-000	4.200 mm (0.165 in.)
14	90524-PRP-000	4.225 mm (0.166 in.)
15	90525-PRP-000	4.250 mm (0.167 in.)
16	90526-PRP-000	4.275 mm (0.168 in.)
17	90527-PRP-000	4.300 mm (0.169 in.)
18	90528-PRP-000	4.325 mm (0.170 in.)
19	90529-PRP-000	4.350 mm (0.171 in.)
20	90530-PRP-000	4.375 mm (0.172 in.)

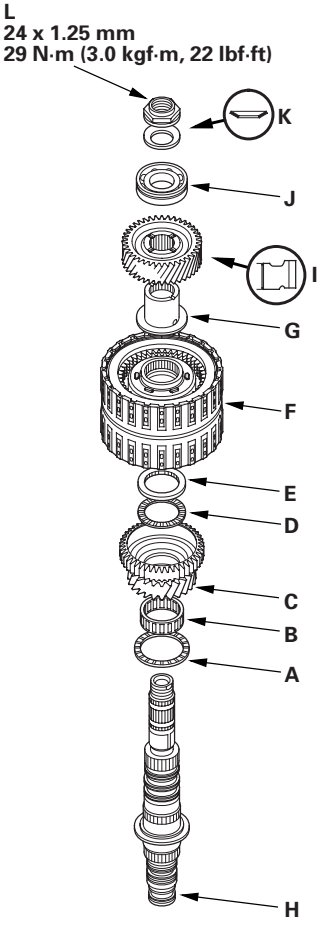
5. After replacing the thrust washer, make sure the clearance is within standard.

6. Disassemble the installed parts from the secondary shaft.

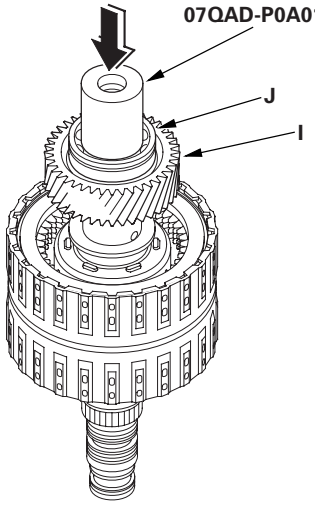
Secondary Shaft 1st Gear Axial Clearance Inspection

Special Tools Required
Attachment, 42 mm I.D. 07QAD-P0A0100

1. Install the thrust needle bearing (A), the needle bearing (B), 1st gear (C), the thrust needle bearing (D), the 40 x 51.5 mm thrust washer (E), the 1st/3rd clutch (F), and the 3rd gear collar (G) on the secondary shaft (H). Do not install the O-rings during inspection.



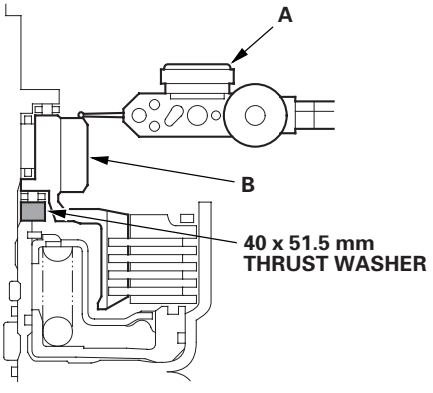
DYNOMITE -2009-



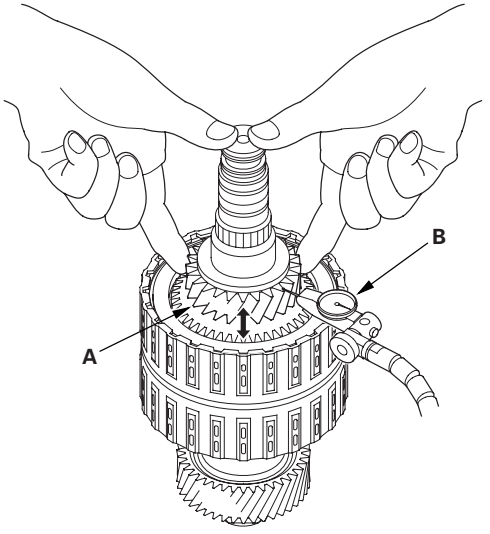
2. Install the idler gear (I), then install the ball bearing (J) on the idler gear using the 42 mm I.D. attachment and a press.

3. Install the conical spring washer (K) and the locknut (L), then tighten the locknut to 29 N·m (3.0 kgf·m, 22 lbf·ft).

4. Turn the secondary shaft assembly upside down, and set the dial indicator (A) on 1st gear (B).



5. Lift 1st gear (A) up while holding the secondary shaft, and use the dial indicator (B) to read the 1st gear axial clearance.



6. Measure the 1st gear axial clearance in at least three places while moving 1st gear. Use the average as the actual clearance.

Standard: 0.04—0.12 mm (0.002—0.005 in.)

(cont'd)

Secondary Shaft 1st Gear Axial Clearance Inspection (cont'd)

7. If the clearance is out of standard, remove the 40 x 51.5 mm thrust washer and measure its thickness.

8. Select and install a new thrust washer, then recheck.

THRUST WASHER, 40 x 51.5 mm ('06 Model)

No.	Part Number	Thickness
1	90503-PRP-000	4.80 mm (0.189 in.)
2	90504-PRP-000	4.85 mm (0.191 in.)
3	90505-PRP-000	4.90 mm (0.193 in.)
4	90506-PRP-000	4.95 mm (0.195 in.)
5	90507-PRP-000	5.00 mm (0.197 in.)
6	90508-PRP-000	5.05 mm (0.199 in.)

THRUST WASHER, 40 x 51.5 mm ('07-09 Models)

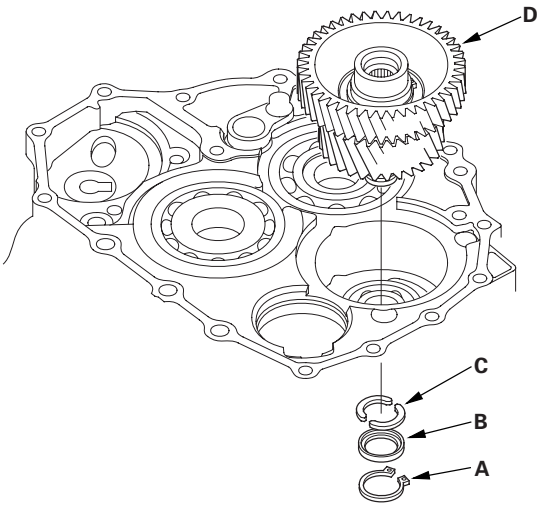
No.	Part Number	Thickness
1	90503-RCT-000	4.80 mm (0.189 in.)
2	90504-RCT-000	4.85 mm (0.191 in.)
3	90505-RCT-000	4.90 mm (0.193 in.)
4	90506-RCT-000	4.95 mm (0.195 in.)
5	90507-RCT-000	5.00 mm (0.197 in.)
6	90508-RCT-000	5.05 mm (0.199 in.)

9. After replacing the thrust washer, make sure the clearance is within standard.

10. Disassemble the installed parts from the secondary shaft.

Idler Gear Shaft Removal and Installation

1. Remove the snap ring (A), the cotter retainer (B), and the cotters (C). Do not distort the snap ring.



2. Remove the idler gear shaft/idler gear assembly (D) from the transmission housing.

3. Check the snap ring and the cotter retainer for wear and damage. Replace them if they are worn, distorted, or damaged.

4. Install the idler gear and the idler gear shaft in the reverse order of removal.

DYNOMITE -2009-

Secondary Shaft 1st Gear Axial Clearance Inspection (cont'd)

7. If the clearance is out of standard, remove the 40 x 51.5 mm thrust washer and measure its thickness.

8. Select and install a new thrust washer, then recheck.

THRUST WASHER, 40 x 51.5 mm ('06 Model)

No.	Part Number	Thickness
1	90503-PRP-000	4.80 mm (0.189 in.)
2	90504-PRP-000	4.85 mm (0.191 in.)
3	90505-PRP-000	4.90 mm (0.193 in.)
4	90506-PRP-000	4.95 mm (0.195 in.)
5	90507-PRP-000	5.00 mm (0.197 in.)
6	90508-PRP-000	5.05 mm (0.199 in.)

THRUST WASHER, 40 x 51.5 mm ('07-09 Models)

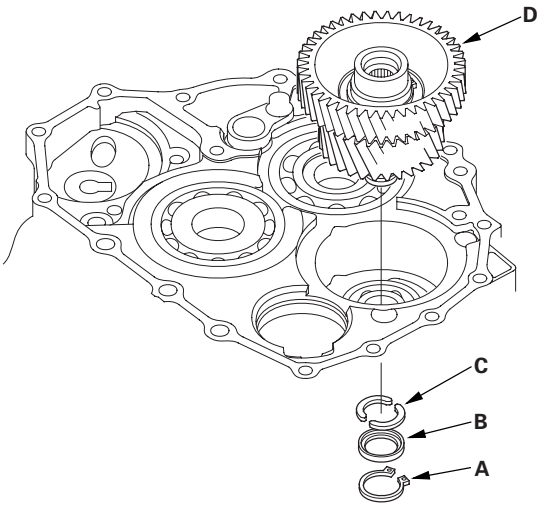
No.	Part Number	Thickness
1	90503-RCT-000	4.80 mm (0.189 in.)
2	90504-RCT-000	4.85 mm (0.191 in.)
3	90505-RCT-000	4.90 mm (0.193 in.)
4	90506-RCT-000	4.95 mm (0.195 in.)
5	90507-RCT-000	5.00 mm (0.197 in.)
6	90508-RCT-000	5.05 mm (0.199 in.)

9. After replacing the thrust washer, make sure the clearance is within standard.

10. Disassemble the installed parts from the secondary shaft.

Idler Gear Shaft Removal and Installation

1. Remove the snap ring (A), the cotter retainer (B), and the cotters (C). Do not distort the snap ring.



2. Remove the idler gear shaft/idler gear assembly (D) from the transmission housing.

3. Check the snap ring and the cotter retainer for wear and damage. Replace them if they are worn, distorted, or damaged.

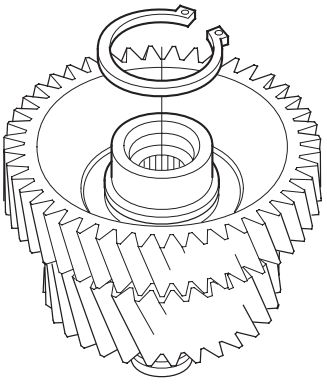
4. Install the idler gear and the idler gear shaft in the reverse order of removal.

DYNOMITE -2009-

Idler Gear/Idler Gear Shaft Replacement

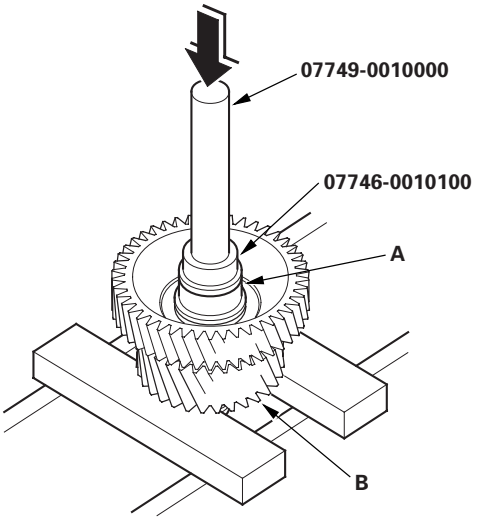
Special Tools Required
- Driver 07749-0010000
- Attachment, 32 x 35 mm 07746-0010100

1. Remove the snap ring from the idler gear/idler shaft assembly. Do not distort the snap ring.

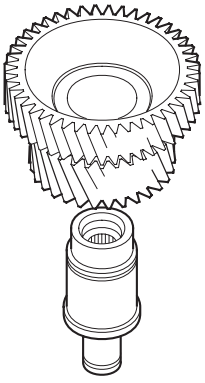


2. Check the snap ring for wear and damage. Replace it if it is worn, distorted, or damaged.

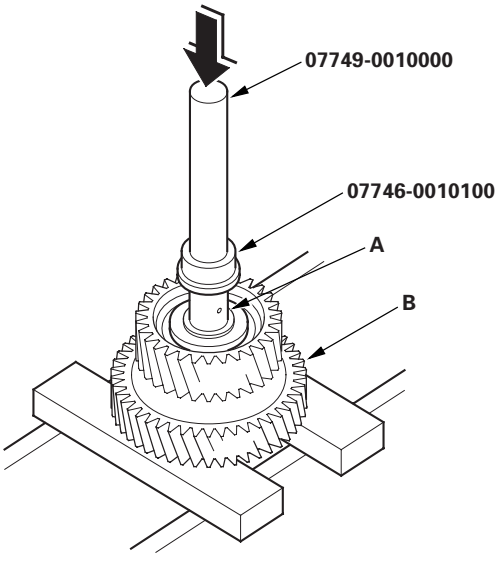
3. Remove the idler gear shaft (A) from the idler gear (B) using the driver, the 32 x 35 mm attachment, and a press.



4. Replace the idler gear and/or the idler gear shaft, and attach the idler gear shaft to the idler gear.



5. Install the idler gear shaft (A) in the idler gear (B) using the driver, the 32 x 35 mm attachment, and a press.

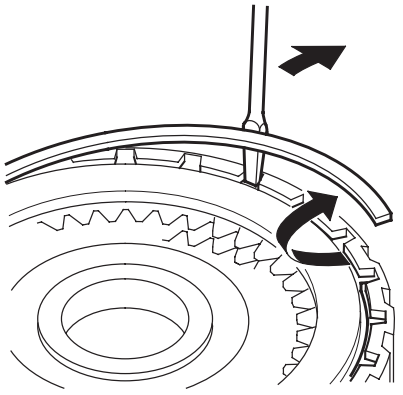


6. Install the snap ring.

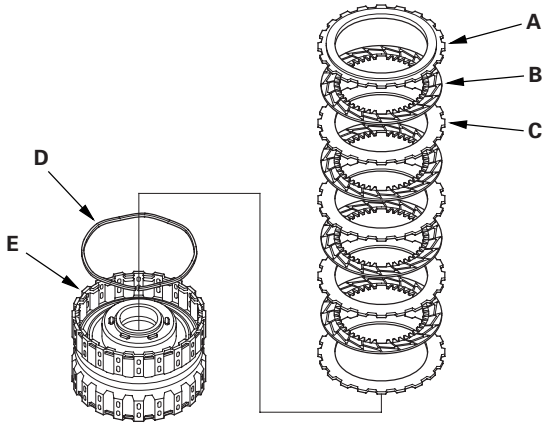
Clutch Disassembly

Special Tools Required
Clutch spring compressor set 07LAE-PX40000

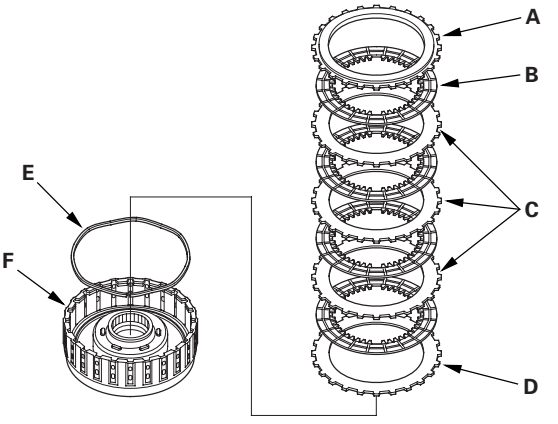
1. Remove the snap ring using a screwdriver.



2. Remove the clutch end-plate (A), the clutch discs (B) (4), the clutch wave-plates (C) (4), and the waved spring (D) from the 1st clutch drum (E).

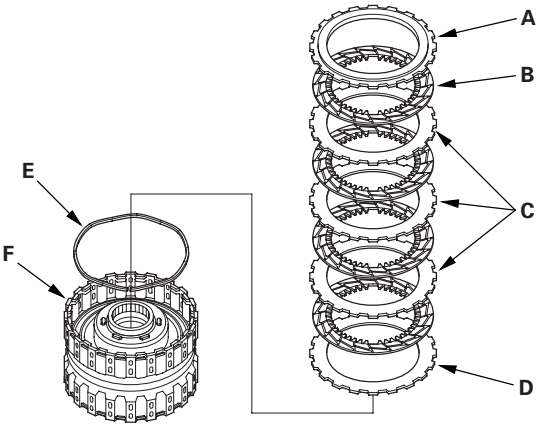


3. Remove the clutch end-plate (A), the clutch discs (B) (4), the clutch wave-plates (C) (3), the clutch flat-plate (D), and the waved spring (E) from the 2nd clutch drum (F).



4. Make a reference mark on the clutch flat-plate.

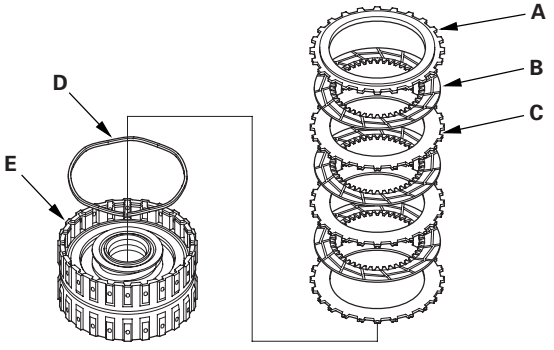
5. Remove the clutch end-plate (A), the clutch discs (B) (4), the clutch wave-plates (C) (3), the clutch flat-plate (D), and the waved spring (E) from the 3rd clutch drum (F).



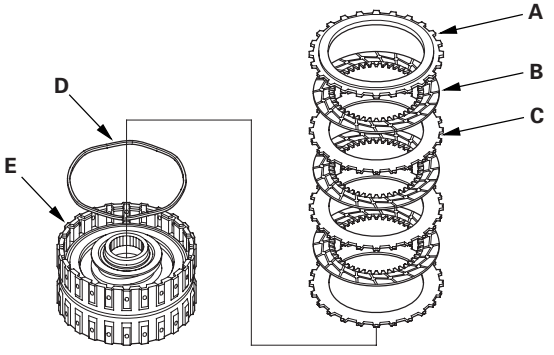
6. Make a reference mark on the clutch flat-plate.

DYNOMITE -2009-

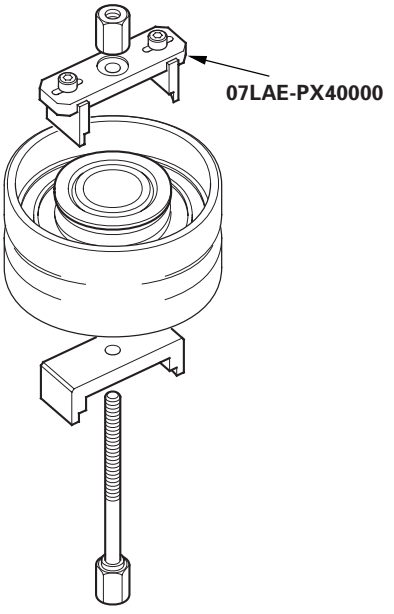
7. Remove the clutch end-plate (A), the clutch discs (B) (3), the clutch wave-plates (C) (3), and the waved spring (D) from the 4th clutch drum (E).



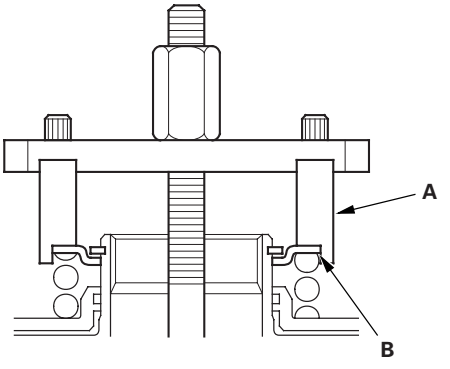
8. Remove the clutch end-plate (A), the clutch discs (B) (3), the clutch wave-plates (C) (3), and the waved spring (D) from the 5th clutch drum (E).



9. Install the clutch spring compressor set.



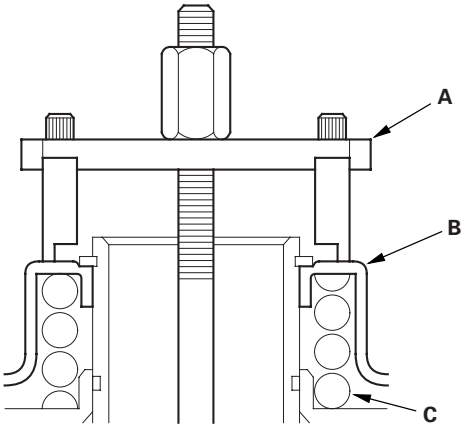
10. Be sure the clutch spring compressor set (A) is adjusted to have full contact with the spring retainer (B) on the 4th and 5th clutches.



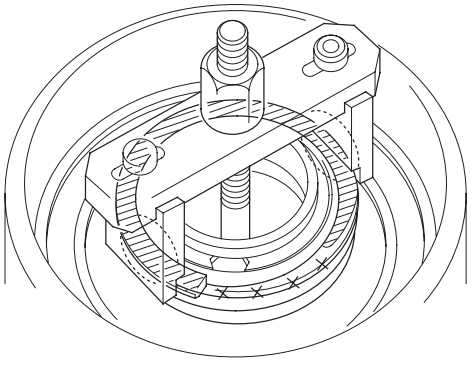
(cont'd)

Clutch Disassembly (cont'd)

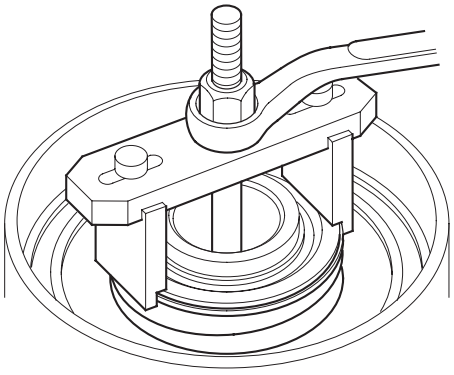
11. Set the clutch spring compressor set (A) on the spring retainer (B) of the 1st, 2nd, and 3rd clutches so that it pushes on the clutch return spring (C).



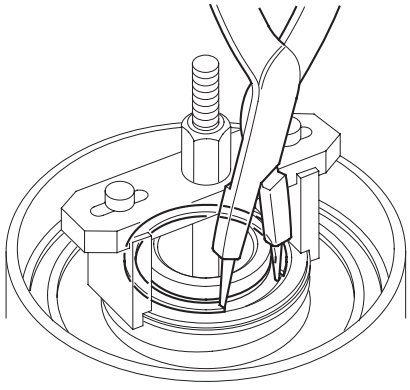
12. Check the placement of the clutch spring compressor set. If either end of the clutch spring compressor set is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.



13. Compress the return spring until the snap ring can be removed.



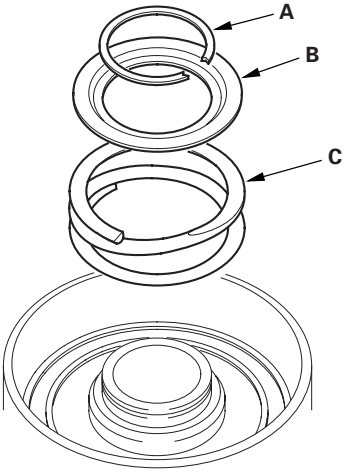
14. Remove the snap ring using snap ring pliers.



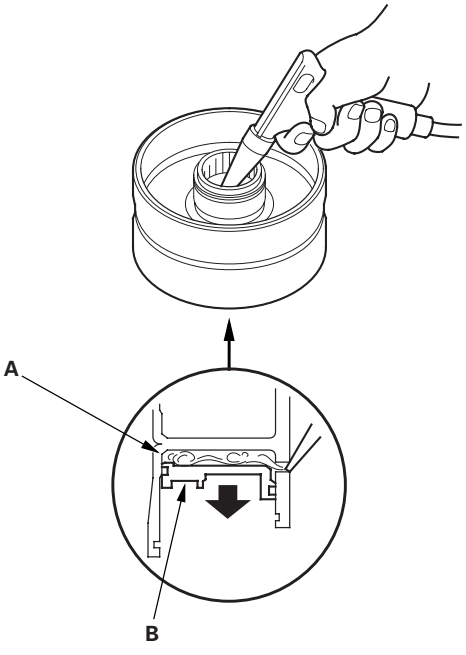
15. Remove the clutch spring compressor set.

DYNOMITE -2009-

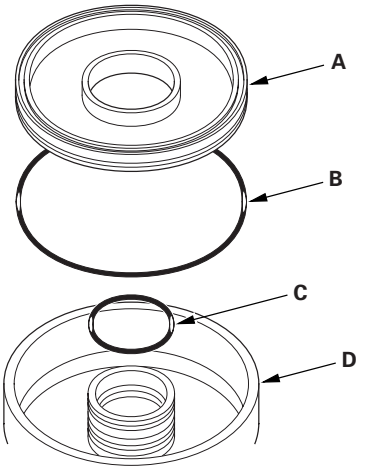
16. Remove the snap ring (A), the spring retainer (B), and the return spring (C).



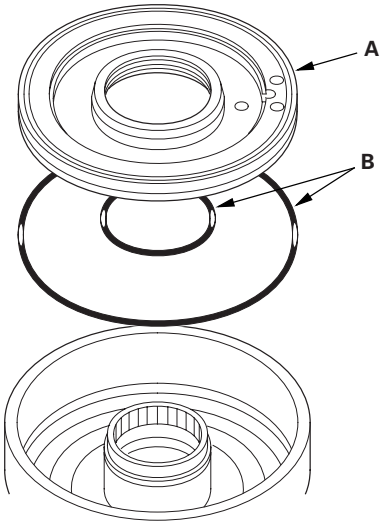
17. Wrap a shop rag around the clutch drum (A), and apply air pressure to the fluid passage to remove the piston (B). Place a finger tip on the other passage while applying air pressure.



18. 1st, 2nd, and 3rd clutches: Remove the piston (A), then remove the O-ring (B) from the clutch piston, and remove the O-ring (C) from each clutch drum (D).

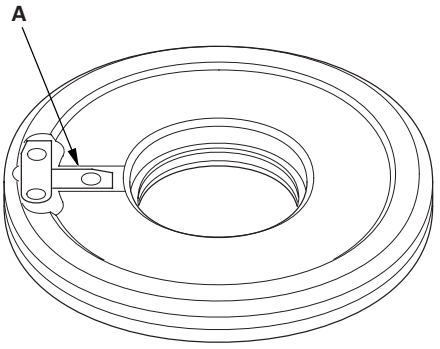


19. 4th and 5th clutches: Remove the piston (A), then remove the O-rings (B) from the clutch piston.



Clutch Inspection

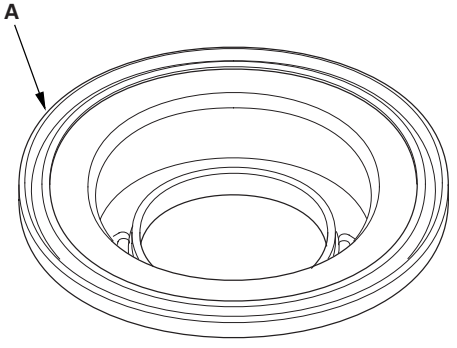
1. Inspect the 4th and 5th clutch pistons and the clutch piston check valves (A).



2. If the clutch piston check valve is loose or damaged, replace the clutch piston.

3. Check the spring retainer for wear and damage.

4. Check the oil seal (A) on the spring retainer of the 1st, 2nd, and 3rd clutches for wear, damage, and peeling.



5. If the oil seal is worn, damaged, or peeling, replace the spring retainer.

6. Inspect the clutch discs, the clutch plates, and the clutch end-plate for wear, damage, and discoloration.

Standard Thickness
Clutch Discs: 1.94 mm (0.076 in.)

Clutch Plates Standard Thickness:

1st Clutch	**(wave-plates):**	**2.0 mm (0.079 in.)**
2nd Clutch	**Wave-plates:**	**2.0 mm (0.079 in.)**
	Flat-plate:	**2.0 mm (0.079 in.)**
3rd Clutch	**Wave-plates:**	**2.0 mm (0.079 in.)**
	Flat-plates:	**2.0 mm (0.079 in.)**
4th Clutch	**(wave-plates):**	**2.3 mm (0.091 in.)**
5th Clutch	**(wave-plates):**	**2.3 mm (0.091 in.)**

7. If the clutch discs are worn or damaged, replace them as a set. If the clutch discs are replaced, inspect the clearance between the clutch end-plate and the top disc.

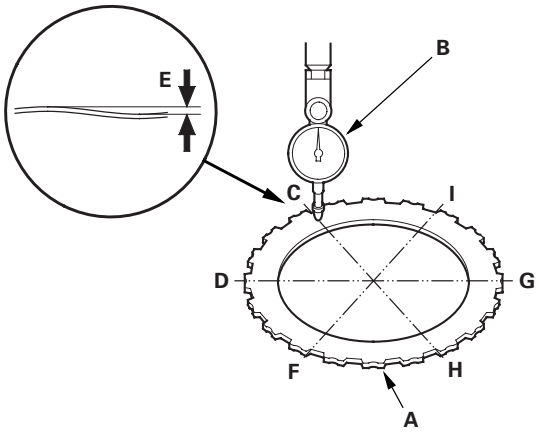
8. If any plate is worn, damaged, or discolored, replace the damaged plate with a new plate, and inspect the other wave-plates for a phase difference. If the clutch plate is replaced, inspect the clearance between the clutch end-plate and the top disc.

9. If the clutch end-plate is worn, damaged, or discolored, inspect the clearance between the clutch end-plate and the top disc, then replace the clutch end-plate.

DYNOMITE -2009-

Clutch Wave-plate Phase Difference Inspection

1. Place the clutch wave-plate (A) on a surface plate, and set a dial indicator (B) on the wave-plate.



2. Find the bottom (C) of a phase difference of the wave-plate, zero the dial indicator and make a reference mark on the bottom of the wave-plate.

3. Rotate the 2nd, 4th, and 5th clutch wave-plate about 60-degrees by holding it by its circumference, and rotate the 1st and 3rd clutch wave-plate about 72-degrees or 54-degrees apart from the bottom. The dial indicator should be at a top (D) of a phase difference. Do not rotate the wave-plate by holding its surface, always rotate it holding its edges.

4. Read the dial indicator. The dial indicator reads the phase difference (E) of the wave-plate between the bottom and the top.

   Standard: 0.07—0.20 mm (0.003—0.008 in.)

5. Rotate the 2nd, 4th, and 5th clutch wave-plate about 60-degrees from the top position, and rotate the 1st and 3rd clutch wave-plate 54-degrees or 72-degrees apart from the top. The dial indicator should be at the bottom of a phase difference (F and G). Zero the dial indicator.

6. Measure the phase difference at the other two tops (H and I) of the wave-plate by following steps 3 thru 5.

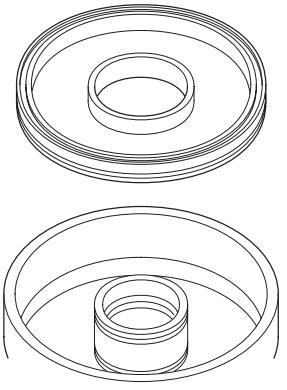
7. If two of the three measurements are within the standard, the wave-plate is OK. If two of the three measurements are out of the standard, replace the wave-plate.

Clutch Clearance Inspection

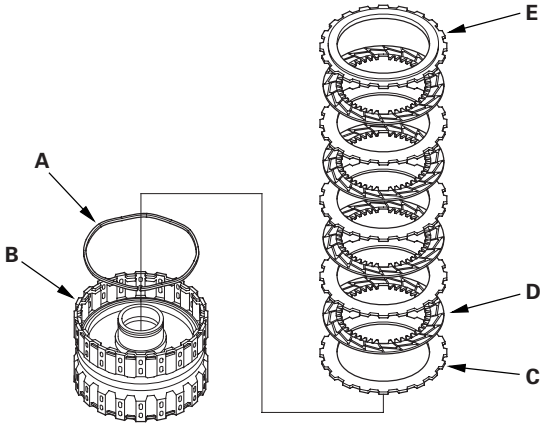
Special Tools Required
Clutch compressor attachment 07ZAE-PRP0100

1. Inspect the clutch piston, the discs, the plates, and the end-plate for wear and damage (see page 14-330), and inspect the clutch wave-plate phase difference (see page 14-331), if necessary.

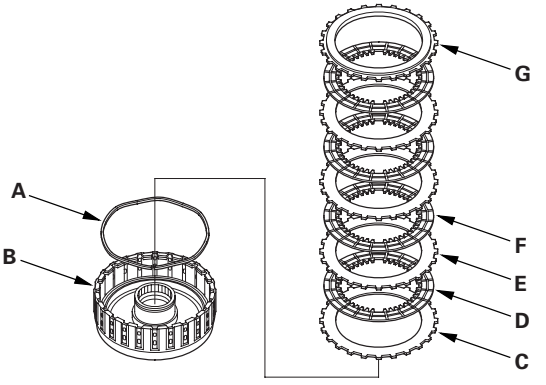
2. Install the clutch piston in the clutch drum. Do not install the O-rings during inspection.



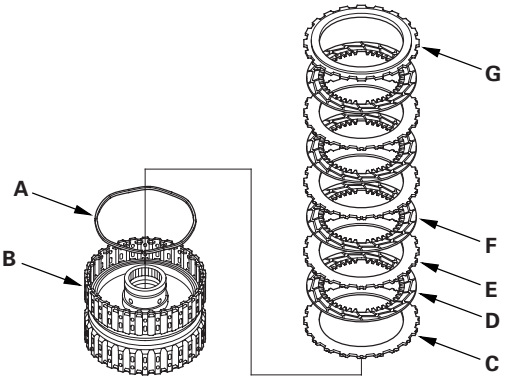
3. Install the waved spring (A) in the 1st clutch drum (B). Starting with the clutch wave-plate, alternately install the clutch wave-plates (C) (4), and the discs (D) (4), and install the clutch end-plate (E) with the flat side down on the top disc.



4. Install the waved spring (A) in the 2nd clutch drum (B). Install the clutch flat-plate (C), and the clutch disc (D). Starting with the clutch wave-plate, alternately install the clutch wave-plates (E) (3), and the discs (F) (3), and install the clutch end-plate (G) with the flat side down on the disc.

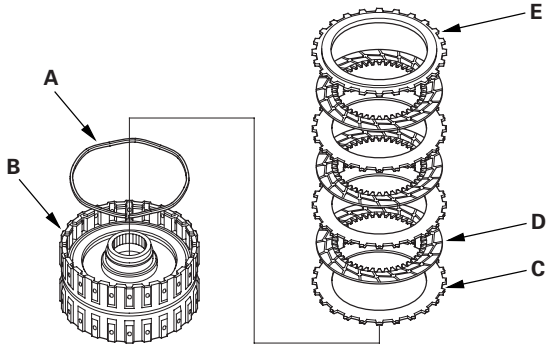


5. Install the waved spring (A) in the 3rd clutch drum (B). Install the clutch flat-plate (C), and the clutch disc (D). Starting with the clutch wave-plate, alternately install the clutch wave-plates (E) (3), and the discs (F) (3), and install the clutch end-plate (G) with the flat side down on the disc.

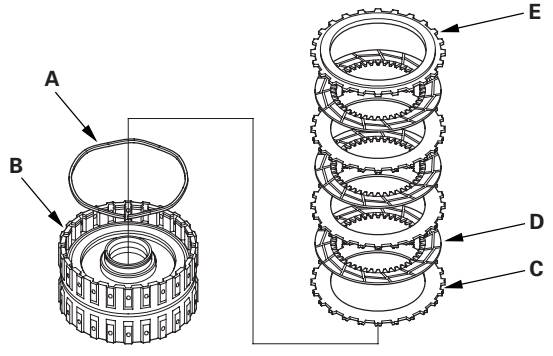


DYNOMITE -2009-

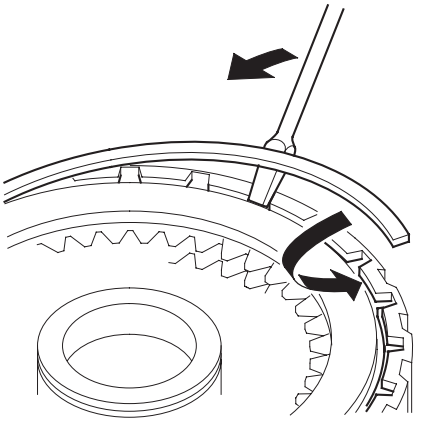
6. Install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch wave-plate, alternately install the clutch wave-plates (C) (3), and the discs (D) (3), and install the clutch end-plate (E) with the flat side down on the top disc.



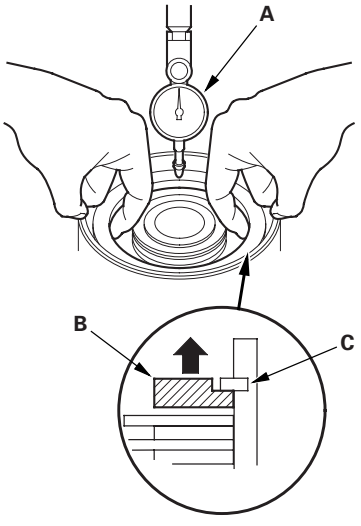
7. Install the waved spring (A) in the 5th clutch drum (B). Starting with the clutch wave-plate, alternately install the clutch wave-plates (C) (3), and the discs (D) (3), and install the clutch end-plate (E) with the flat side down on the top disc.



8. Install the snap ring using a screwdriver.



9. Set a dial indicator (A) on the clutch end-plate (B).

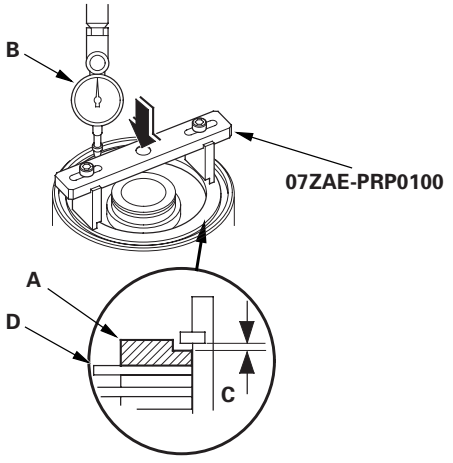


10. Zero the dial indicator with the clutch end-plate lifted up to the snap ring (C).

(cont'd)

Clutch Clearance Inspection (cont'd)

11. Release the clutch end-plate to lower the clutch end-plate, then put the clutch compressor attachment on the end-plate (A).

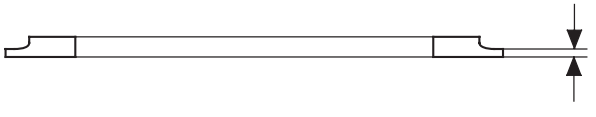


12. Press the clutch compressor attachment down with 150—160 N (15—16 kgf, 33—35 lbf) using a force gauge, and read the dial indicator (B).

13. The dial indicator reads the clearance (C) between the clutch end-plate and top disc (D). Take measurements in at least three places, and use average as the actual clearance.

Clearance between Clutch End-Plate and Top Disc
Service Limit:
1st Clutch: 1.23—1.43 mm (0.048—0.056 in.)
2nd Clutch: 0.75—0.95 mm (0.030—0.037 in.)
3rd Clutch: 0.83—1.03 mm (0.033—0.041 in.)
4th Clutch: 0.73—0.93 mm (0.029—0.037 in.)
5th Clutch: 0.73—0.93 mm (0.029—0.037 in.)

14. If the clearance is out of the service limit, select a new clutch end-plate from the following table.



1ST and 3RD CLUTCH END-PLATES

Mark	Part Number	Thickness
1	22551-PRP-003	2.3 mm (0.091 in.)
2	22552-PRP-003	2.4 mm (0.094 in.)
3	22553-PRP-003	2.5 mm (0.098 in.)
4	22554-PRP-003	2.6 mm (0.102 in.)
5	22555-PRP-003	2.7 mm (0.106 in.)
6	22556-PRP-003	2.8 mm (0.110 in.)
7	22557-PRP-003	2.9 mm (0.114 in.)
8	22558-PRP-003	3.0 mm (0.118 in.)
9	22559-PRP-003	3.1 mm (0.122 in.)
10	22560-PRP-003	3.2 mm (0.126 in.)
11	22561-PRP-003	3.3 mm (0.130 in.)
12	22562-PRP-003	3.4 mm (0.134 in.)

2ND CLUTCH END-PLATES

Mark	Part Number	Thickness
1	22571-PRP-003	2.6 mm (0.102 in.)
2	22572-PRP-003	2.7 mm (0.106 in.)
3	22573-PRP-003	2.8 mm (0.110 in.)
4	22574-PRP-003	2.9 mm (0.114 in.)
5	22575-PRP-003	3.0 mm (0.118 in.)
6	22576-PRP-003	3.1 mm (0.122 in.)
7	22577-PRP-003	3.2 mm (0.126 in.)
8	22578-PRP-003	3.3 mm (0.130 in.)
9	22579-PRP-003	3.4 mm (0.134 in.)

4TH and 5TH CLUTCH END-PLATES

Mark	Part Number	Thickness
1	22581-R91-003 or 22581-R93-003	2.1 mm (0.083 in.)
2	22582-R91-003 or 22582-R93-003	2.2 mm (0.087 in.)
3	22583-R91-003 or 22583-R93-003	2.3 mm (0.091 in.)
4	22584-R91-003 or 22584-R93-003	2.4 mm (0.094 in.)
5	22585-R91-003 or 22585-R93-003	2.5 mm (0.098 in.)
6	22586-R91-003 or 22586-R93-003	2.6 mm (0.102 in.)
7	22587-R91-003 or 22587-R93-003	2.7 mm (0.106 in.)
8	22588-R91-003 or 22588-R93-003	2.8 mm (0.110 in.)
9	22589-R91-003 or 22589-R93-003	2.9 mm (0.114 in.)

15. Install a new clutch end-plate, then recheck the clearance.

16. If the thickest clutch end-plate is installed, but the clearance is still over the service limit, replace the clutch discs and the plates.

DYNOMITE -2009-

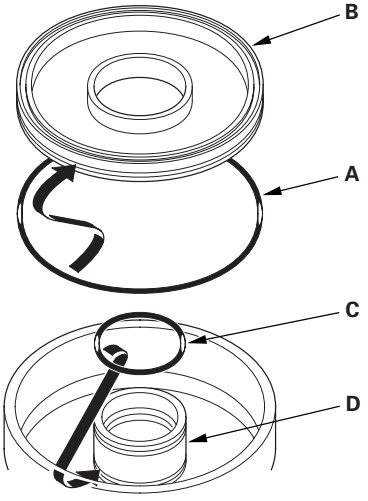
1st, 2nd, and 3rd Clutch Reassembly

Special Tools Required
Clutch spring compressor set 07LAE-PX40000

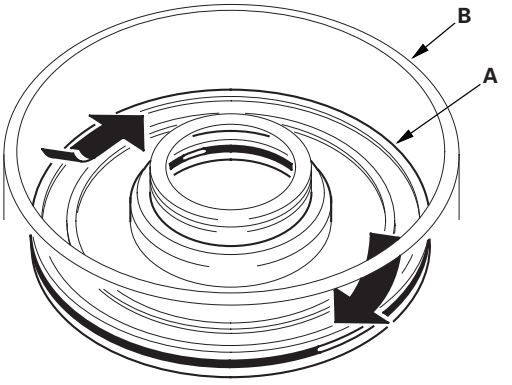
NOTE: Hold the spring compressor set in a vise with soft jaws. Be careful not to damage the clutch drum.

1. Soak the clutch discs thoroughly in ATF for at least 30 minutes.

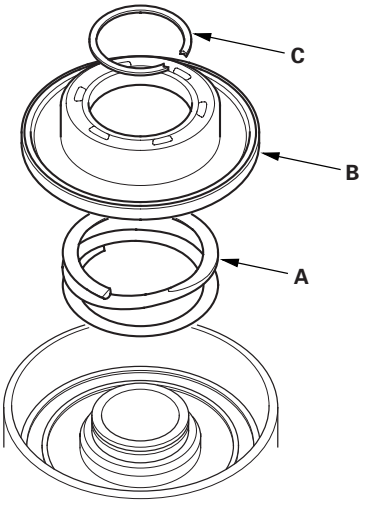
2. Install a new O-ring (A) in the 1st, 2nd, and 3rd clutch pistons (B), and install a new O-ring (C) on the clutch drums (D).



3. Install the clutch piston (A) in the clutch drum (B) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.



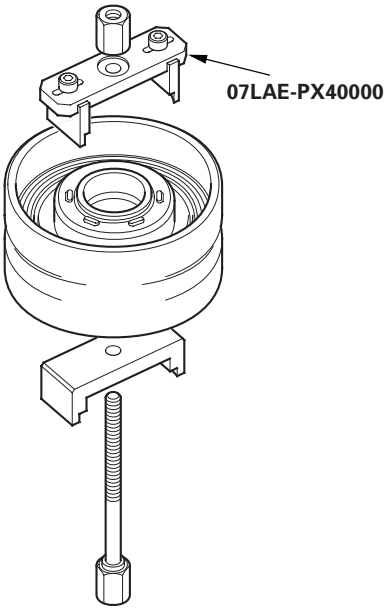
4. Set the return spring (A) and the spring retainer (B) on the clutch piston, and position the snap ring (C) on the spring retainer.



(cont'd)

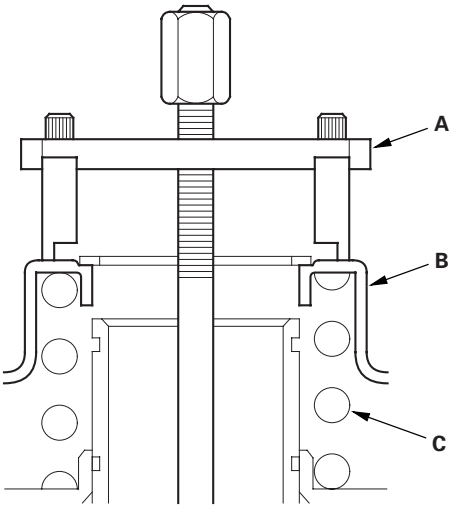
1st, 2nd, and 3rd Clutch Reassembly (cont'd)

5. Install the clutch spring compressor set.



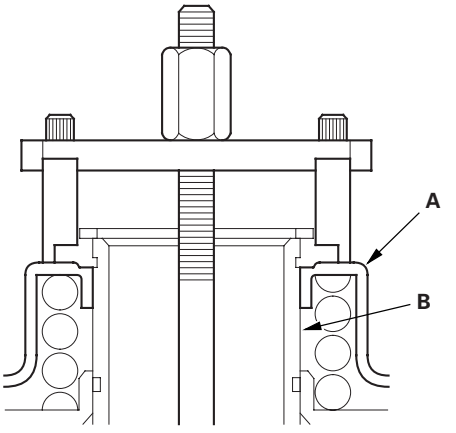
6. Set the clutch spring compressor set (A) on the spring retainer (B) so that it compresses the clutch return spring (C).

   NOTE: Coat the circumference of the spring retainer and the areas where the spring retainer contacts the clutch piston with ATF before installation.

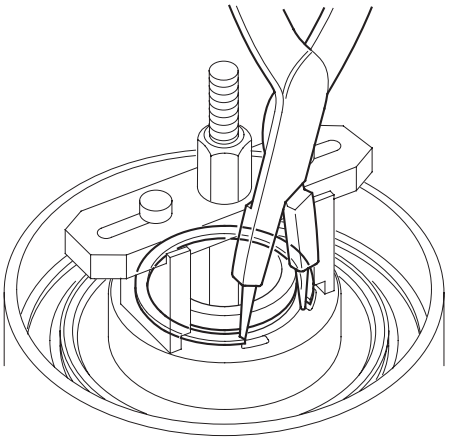


7. Compress the return spring carefully until the snap ring can be installed. Check that the spring retainer (A) is properly installed on the clutch hub (B). If improperly installed, change the position of the spring compressor set and the spring retainer.

   NOTE: Insert the spring retainer so it can be adjusted (center of tolerance) to prevent damaging the spring retainer oil seal.



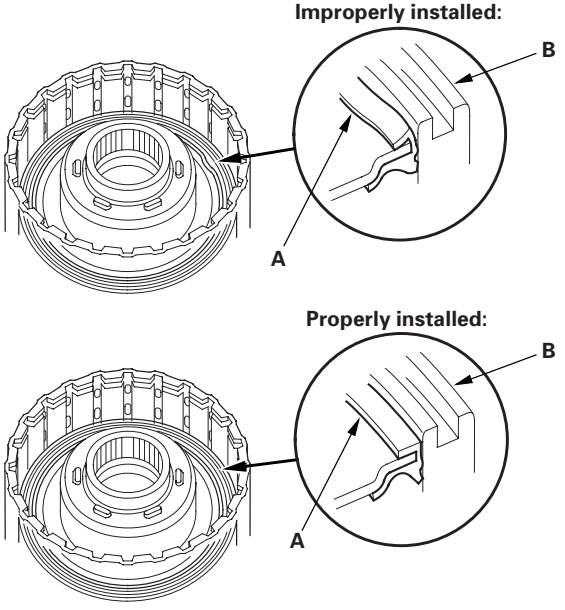
8. Install the snap ring using snap ring pliers.



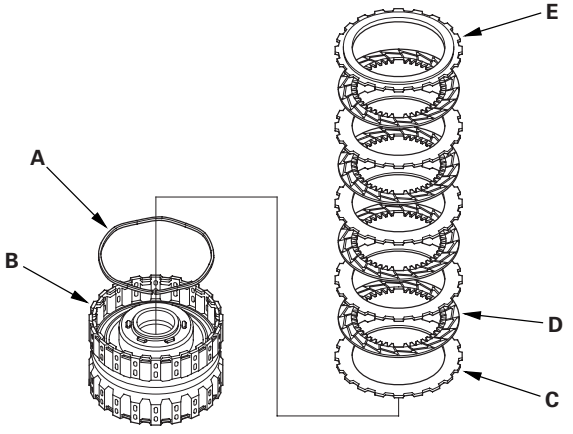
9. Remove the clutch spring compressor set.

DYNOMITE -2009-

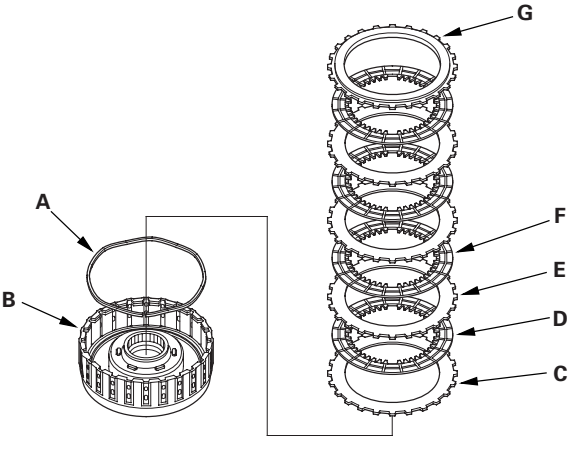
10. Make sure the oil seal of the spring retainer (A) is properly installed on the clutch piston (B). If the oil seal was damaged or cracked, replace the spring retainer.



11. Install the waved spring (A) in the 1st clutch drum (B). Starting with the clutch wave-plate, alternately install the clutch wave-plates (C) (4), and the discs (D) (4), and install the clutch end-plate (E) with the flat side down on the top disc.



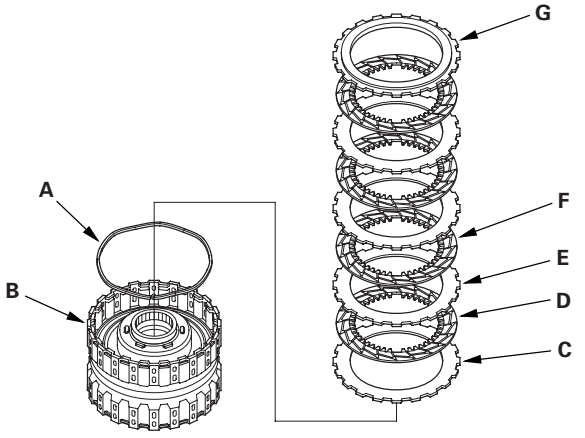
12. Install the waved spring (A) in the 2nd clutch drum (B). Install the clutch flat-plate (C), and the clutch disc (D). Starting with the clutch wave-plate, alternately install the clutch wave-plates (E) (3), and the discs (F) (3), and install the clutch end-plate (G) with the flat side down on the top disc.



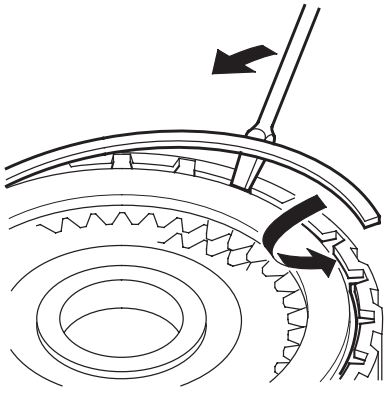
(cont'd)

1st, 2nd, and 3rd Clutch Reassembly (cont'd)

13. Install the waved spring (A) in the 3rd clutch drum (B). Install the clutch flat-plate (C), and the clutch disc (D). Starting with the clutch wave-plate, alternately install the clutch wave-plates (E) (3), and the discs (F) (3), and install the clutch end-plate (G) with the flat side down on the top disc.



14. Install the snap ring using a screwdriver to secure the clutch end-plate.



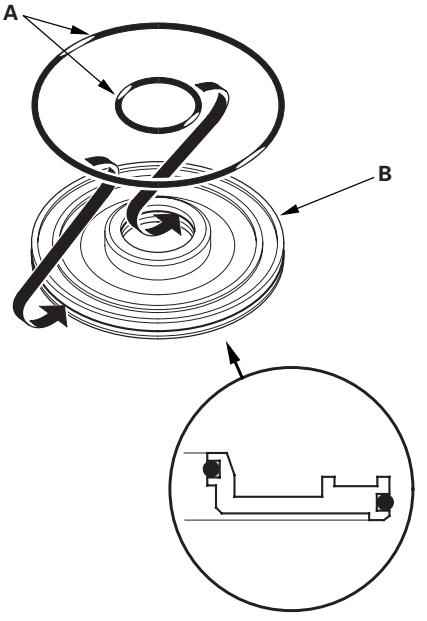
15. Check that the clutch piston moves by applying air pressure into fluid passage.

4th and 5th Clutch Reassembly

Special Tools Required
Clutch spring compressor set 07LAE-PX40000

1. Soak the clutch discs thoroughly in ATF for at least 30 minutes.

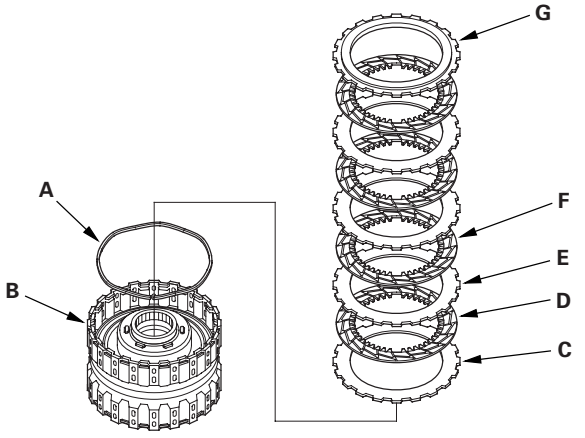
2. Install new O-rings (A) on the clutch piston (B).



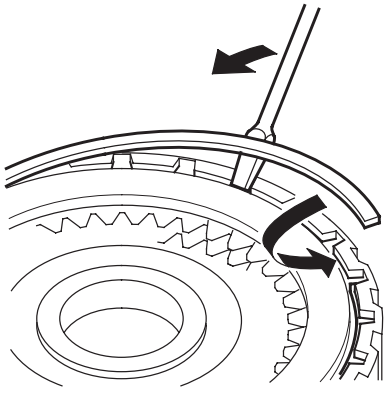
DYNOMITE -2009-

1st, 2nd, and 3rd Clutch Reassembly (cont'd)

13. Install the waved spring (A) in the 3rd clutch drum (B). Install the clutch flat-plate (C), and the clutch disc (D). Starting with the clutch wave-plate, alternately install the clutch wave-plates (E) (3), and the discs (F) (3), and install the clutch end-plate (G) with the flat side down on the top disc.



14. Install the snap ring using a screwdriver to secure the clutch end-plate.



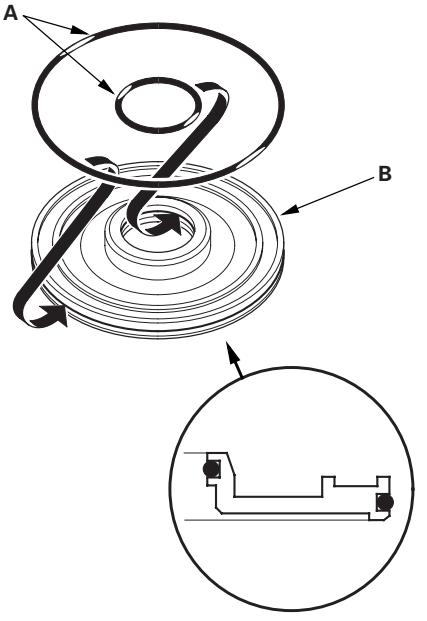
15. Check that the clutch piston moves by applying air pressure into fluid passage.

4th and 5th Clutch Reassembly

Special Tools Required
Clutch spring compressor set 07LAE-PX40000

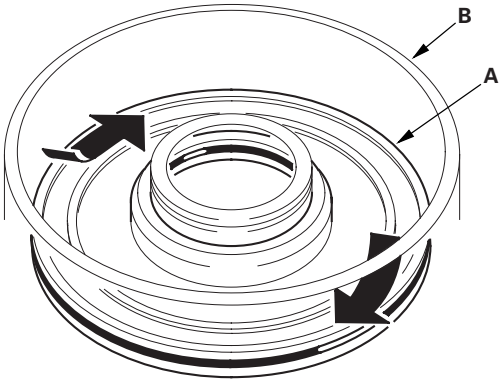
1. Soak the clutch discs thoroughly in ATF for at least 30 minutes.

2. Install new O-rings (A) on the clutch piston (B).

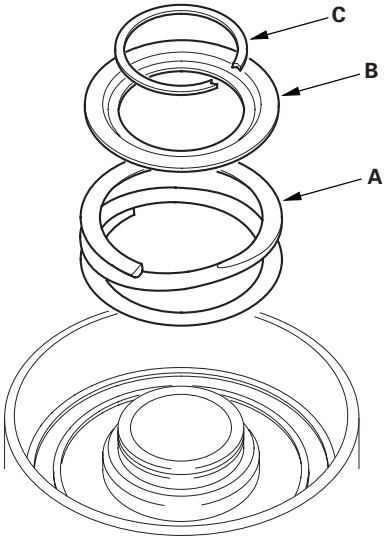


DYNOMITE -2009-

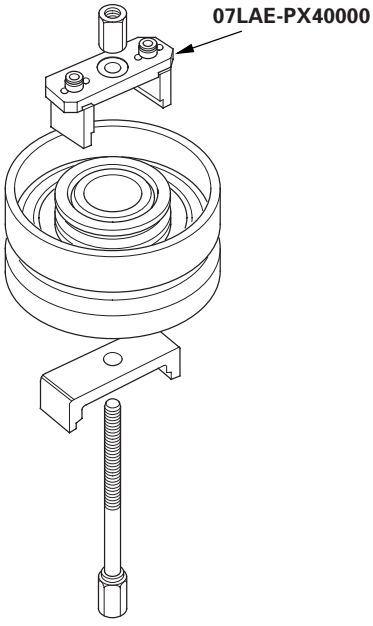
3. Install the clutch piston (A) in the clutch drum (B) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.



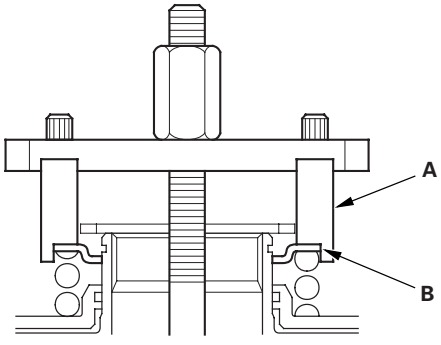
4. Set the return spring (A) and the spring retainer (B) on the clutch piston, and position the snap ring (C) on the spring retainer.



5. Install the clutch spring compressor set.



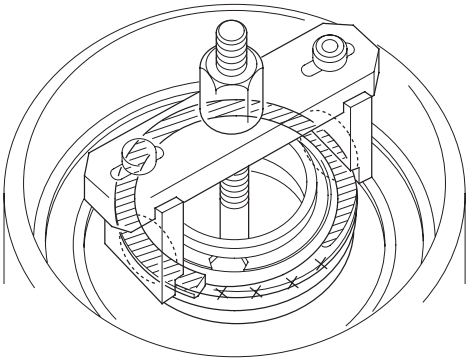
6. Be sure the clutch spring compressor set (A) is adjusted to have full contact with the spring retainer (B).



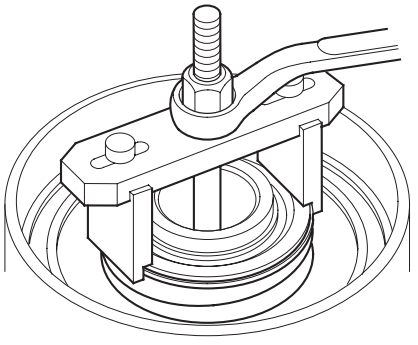
(cont'd)

4th and 5th Clutch Reassembly (cont'd)

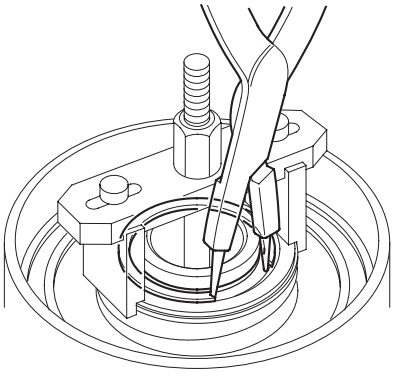
7. Check the placement of the clutch spring compressor set. If either end of the clutch spring compressor set is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.



8. Compress the return spring until the snap ring can be installed.

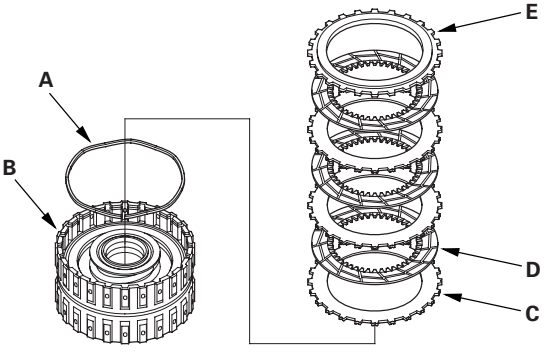


9. Install the snap ring using snap ring pliers.



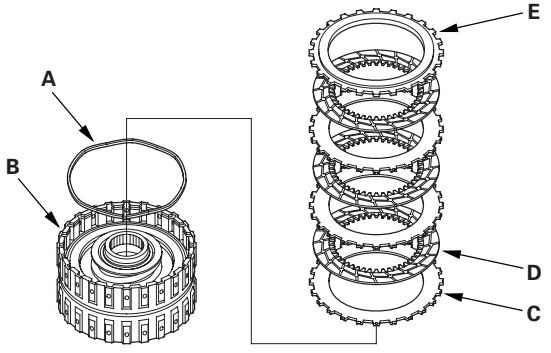
10. Remove the clutch spring compressor set.

11. Install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch wave-plate, alternately install the wave-plates (C) (3) and the discs (D) (3). Install the clutch end-plate (E) with the flat side down on the top disc.

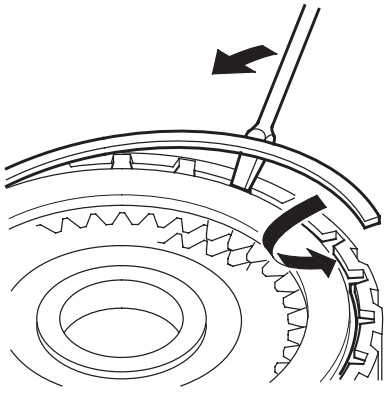


DYNOMITE -2009-

12. Install the waved spring (A) in the 5th clutch drum (B). Starting with the clutch wave-plate, alternately install the wave-plates (C) (3) and the discs (D) (3). Install the clutch end-plate (E) with the flat side down on the top disc.



13. Install the snap ring using a screwdriver to secure the clutch end-plate.

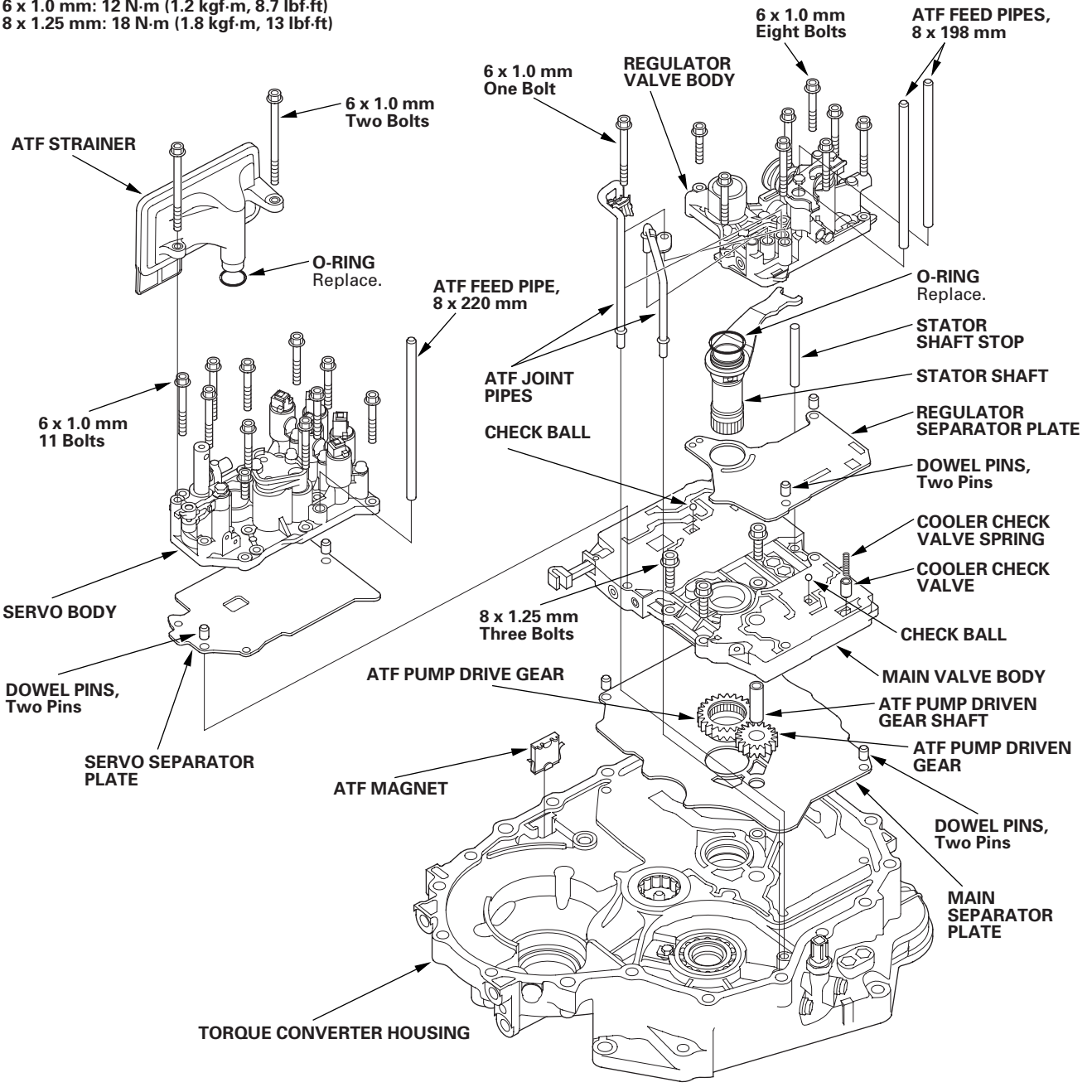


14. Check that the clutch piston moves by applying air pressure into fluid passage.

Valve Body and ATF Strainer Installation

Exploded View

Torque Specifications:
6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)
8 x 1.25 mm: 18 N·m (1.8 kgf·m, 13 lbf·ft)

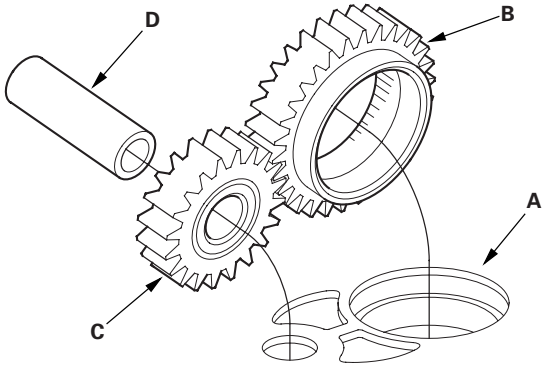


DYNOMITE -2009-

NOTE: Refer to the exploded view as needed during the following procedures.

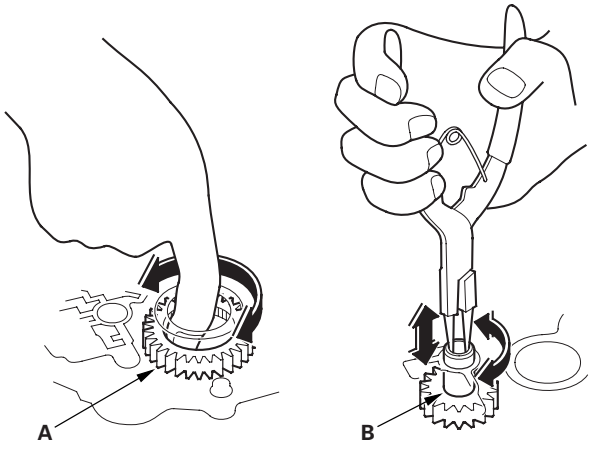
1. Make sure that the ATF magnet is clean and installed in the torque converter housing.

2. Install the main separator plate (A) and the two dowel pins on the torque converter housing. Then install the ATF pump drive gear (B), the driven gear (C), and the ATF pump driven gear shaft (D). Install the ATF pump driven gear with its grooved and chamfered side facing down.



3. Install the main valve body (three bolts).

4. Make sure the ATF pump drive gear (A) rotates smoothly in the normal operating direction, and the ATF pump driven gear shaft (B) moves smoothly in the axial and the normal operating direction.



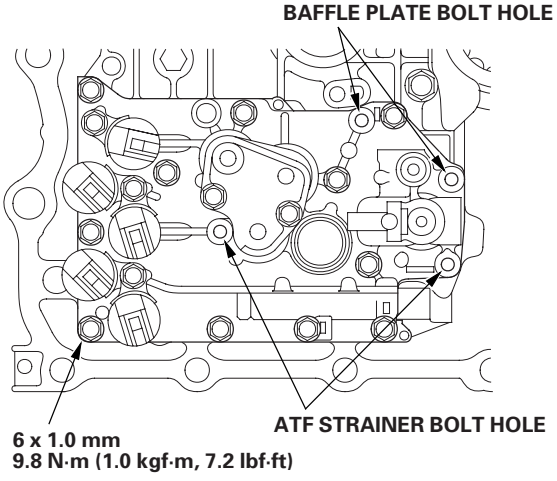
5. If the ATF pump drive gear and the ATF pump driven gear shaft do not move smoothly, loosen the main valve body bolts. Realign the ATF pump driven gear shaft, and retighten the bolts to the specified torque, then recheck. Failure to align the ATF pump driven gear shaft correctly will result in a seized ATF pump drive gear or ATF pump driven gear shaft.

6. Make sure that the two check balls and the cooler check valve are in the main valve body, then install the cooler check valve spring in the cooler check valve.

7. Install the servo separator plate and the two dowel pins on the main valve body.

8. Install the servo body (11 bolts).

9. Install a new O-ring on the ATF strainer, and install the ATF strainer (two bolts).



10. Install the regulator separator plate and the two dowel pins on the main valve body.

11. Install a new O-ring on the stator shaft, and install the stator shaft and the stator shaft stop.

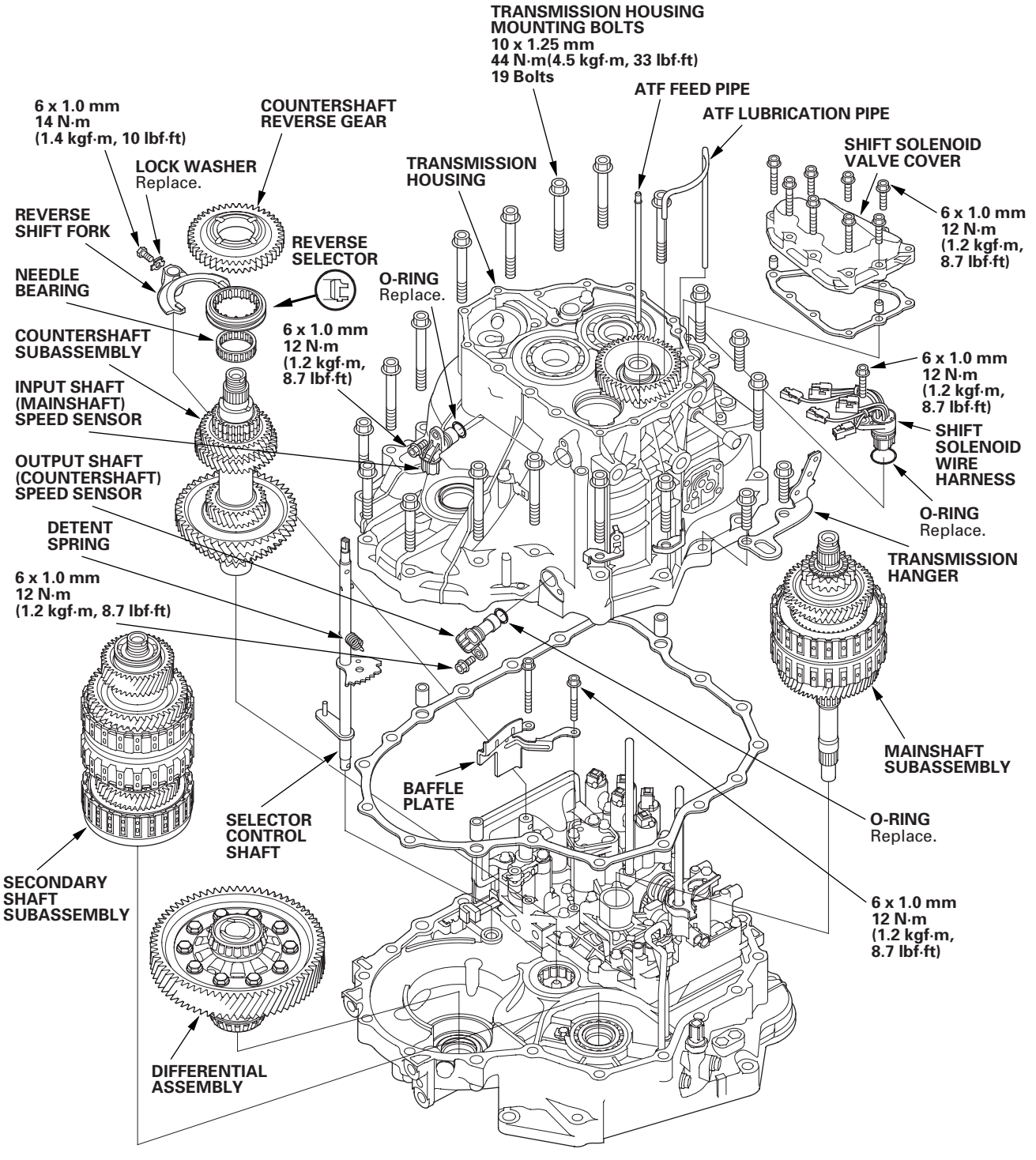
12. Install a regulator valve body (eight bolts).

13. Install the ATF joint pipes (one bolt).

14. Install the ATF feed pipes in the regulator valve body and the servo body.

Shaft Assembly and Housing Installation

Exploded View



DYNOMITE -2009-

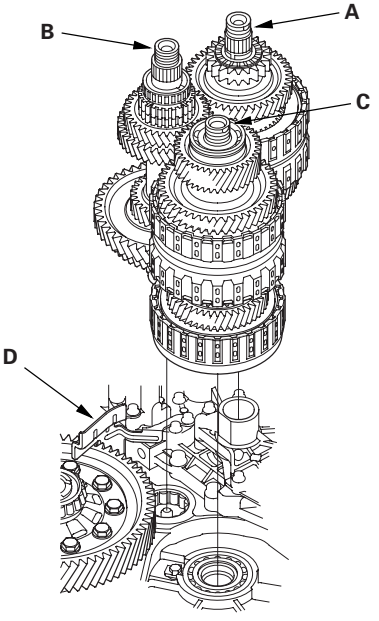
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Install the differential assembly in the torque converter housing.

2. Install the baffle plate on the servo body (see step 9 on page 14-343).

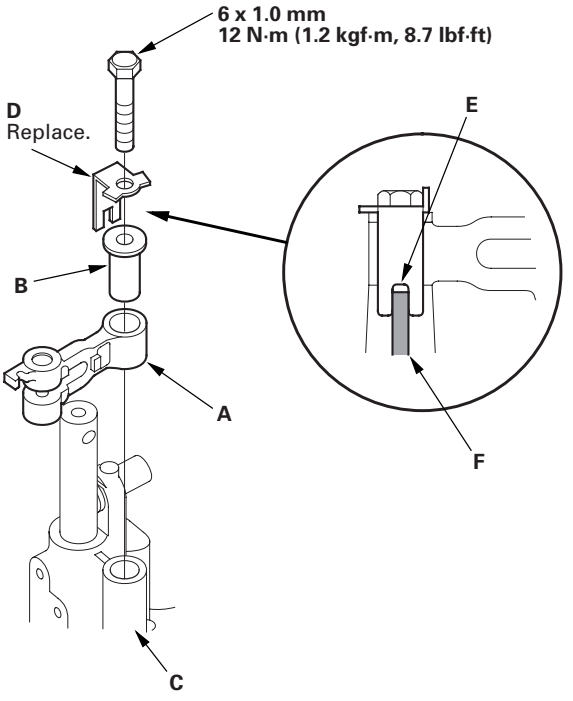
3. Assemble the mainshaft, the countershaft, and the secondary shaft.

4. Join the mainshaft subassembly (A), the countershaft subassembly (B), and the secondary shaft subassembly (C) together. Then install them in the torque converter housing. Do not bump the countershaft on the baffle plate (D).



5. Make sure if the countershaft and the differential are clear of the baffle plate.

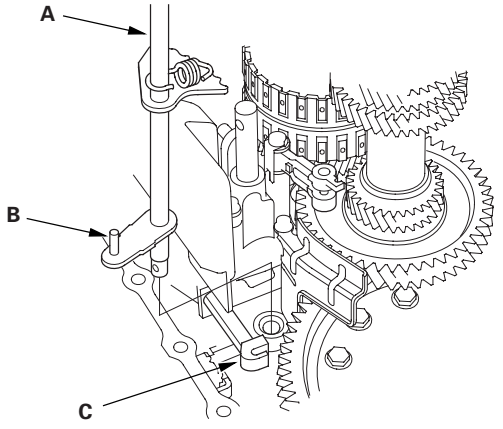
6. If the detent arm was removed, install the detent arm (A) with the arm collar (B) on the servo body (C), and install a new lock washer (D) by aligning its cutout (E) with the projection (F) of the servo body. Install and tighten the bolt, then bend the lock tab of the lock washer against the bolt head.



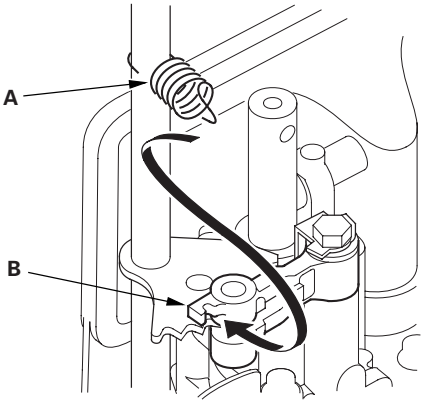
(cont'd)

Shaft Assembly and Housing Installation (cont'd)

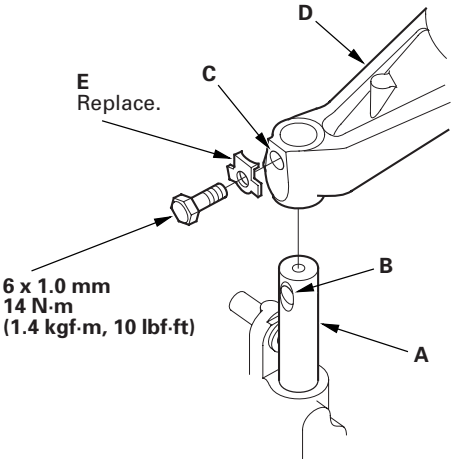
7. Install the selector control shaft (A) in the torque converter housing aligning the manual valve lever pin (B) on the selector control shaft with the guide of the manual valve (C). Pull the manual valve gently when aligning the manual valve with the selector control shaft.



8. Hook the detent spring (A) to the detent arm (B).



9. Turn the shift fork shaft (A) so the large chamfered hole (B) is facing the fork bolt hole (C) of the reverse shift fork (D).



10. Install the reverse shift fork and the reverse selector together on the shift fork shaft and the countershaft. Secure the reverse shift fork to the shift fork shaft with the lock bolt and a new lock washer (E), then bend the lock tab of the lock washer against the bolt head.

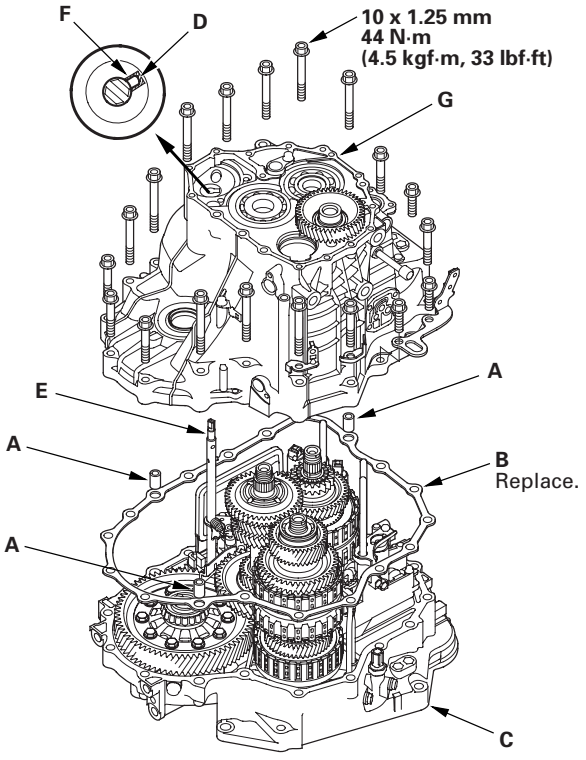
11. Install the needle bearing and the countershaft reverse gear on the countershaft.

12. Install the reverse idler gear in the transmission housing (see page 14-299), if it was removed.

13. Install the idler gear shaft (see page 14-324), if it was removed.

DYNOMITE -2009-

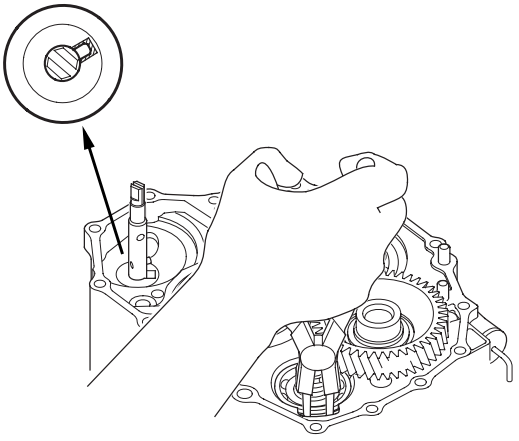
14. Install the three dowel pins (A) and a new gasket (B) on the torque converter housing (C).



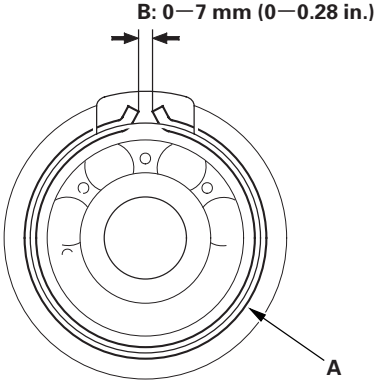
15. Align the spring pin (D) of the selector control shaft (E) with the transmission housing groove (F) by turning the control shaft. Do not squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together, it will cause a faulty shift position signal or position due to the play between the control shaft and the transmission range switch.

16. Place the transmission housing (G) on the torque converter housing. Do not install the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor before installing the transmission housing on the torque converter housing.

17. Use snap ring pliers to expand the snap ring of the secondary shaft bearing. Then push the transmission housing down to start the secondary shaft bearing through the snap ring. Then release the pliers. While rotating the reverse idler gear with a screwdriver, push down the housing until it bottoms and snap ring snaps in place in the secondary shaft bearing snap ring groove.



18. Check that the secondary shaft bearing snap ring (A) is seated in the bearing and the housing groove, and that the ring end gap (B) is correct.



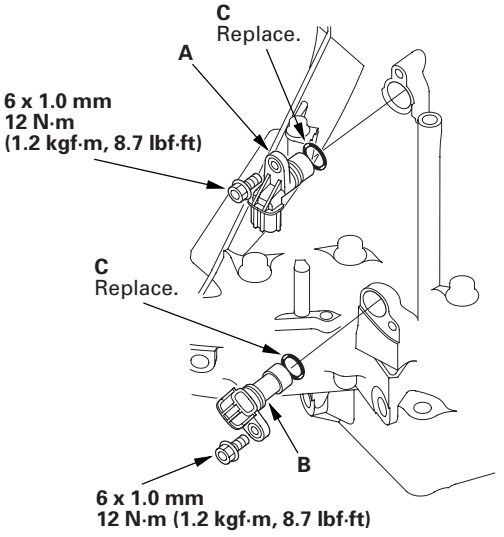
19. Install the transmission housing mounting bolts along with the transmission hanger and the harness clamp brackets, and tighten the 19 bolts in at least two steps in a crisscross pattern.

(cont'd)

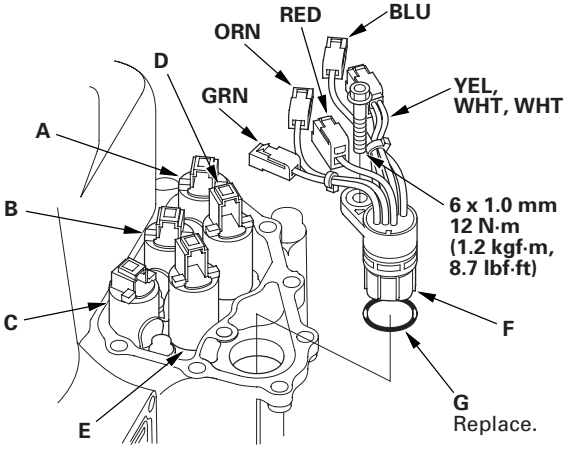
DYNOMITE -2009-

Shaft Assembly and Housing Installation (cont'd)

20. Install the input shaft (mainshaft) speed sensor (A) and the output shaft (countershaft) speed sensor (B) with new O-rings (C).



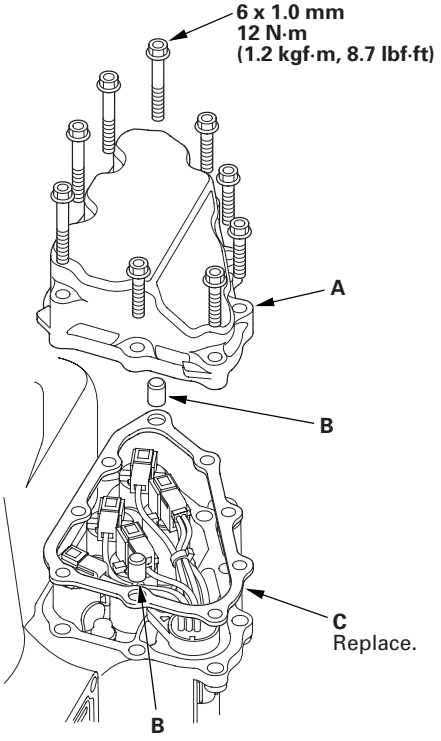
21. Install the shift solenoid wire harness (F) in the transmission housing with a new O-ring (G).



22. Connect the connectors to the respective valves:

- BLU wire to shift solenoid valve A.
- ORN wire to shift solenoid valve B.
- GRN wire to shift solenoid valve C.
- YEL, WHT, and WHT wire to shift solenoid valve D.
- RED wire to shift solenoid valve E.

23. Install the shift solenoid valve cover (A) with the two dowel pins (B) and a new gasket (C).

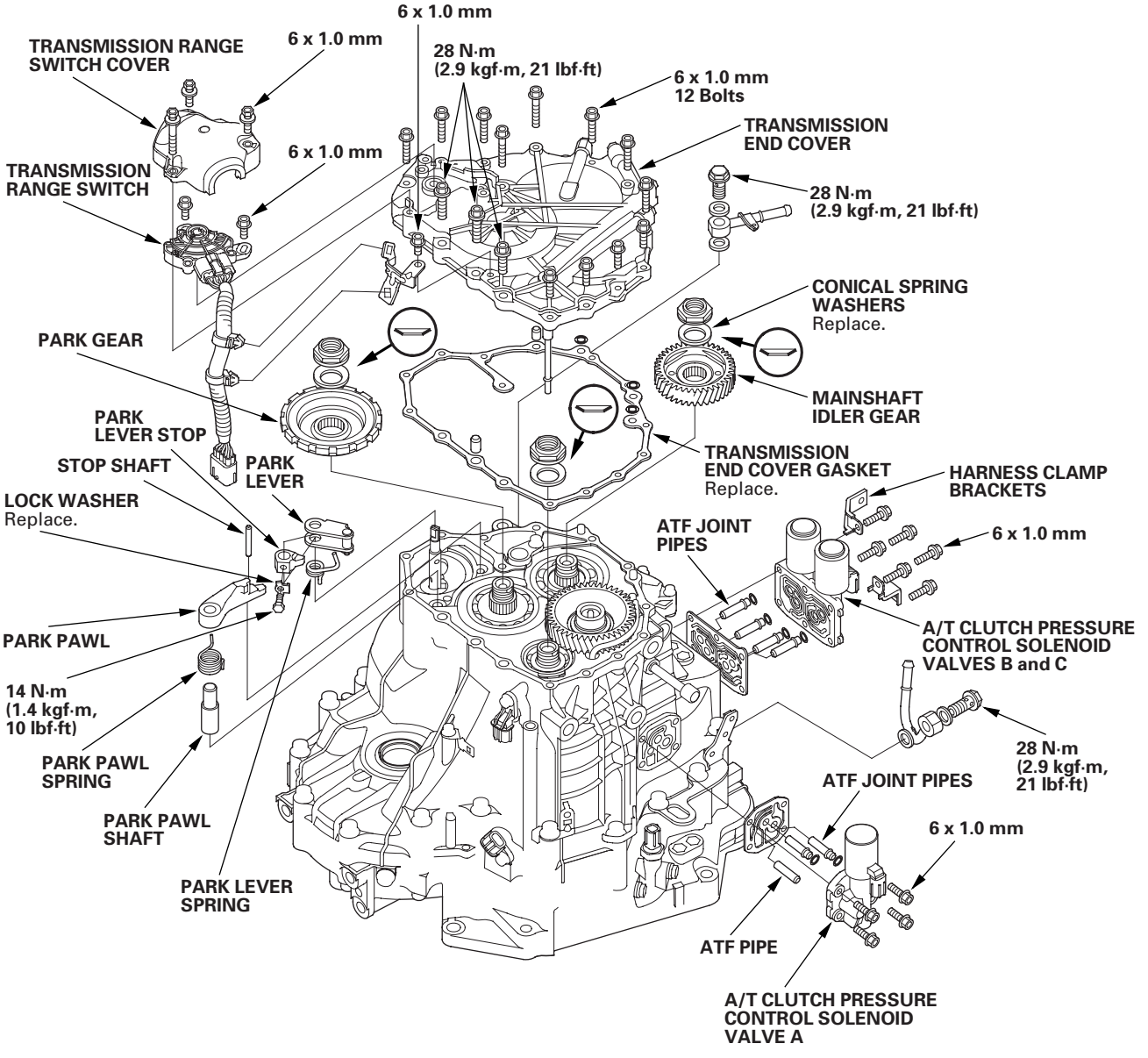


DYNOMITE -2009-

End Cover Installation

Exploded View

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

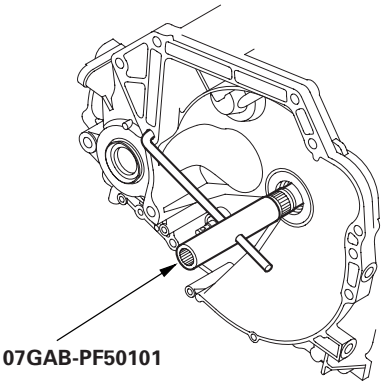


(cont'd)

End Cover Installation (cont'd)

Special Tools Required
Mainshaft holder 07GAB-PF50101

1. Install the mainshaft holder onto the mainshaft.

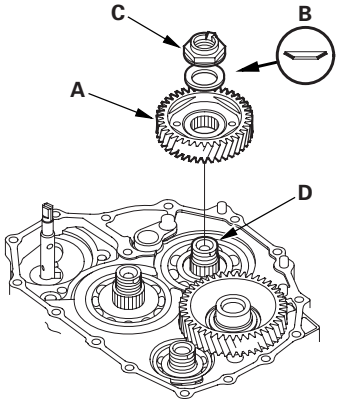


2. Lubricate the following parts with ATF:

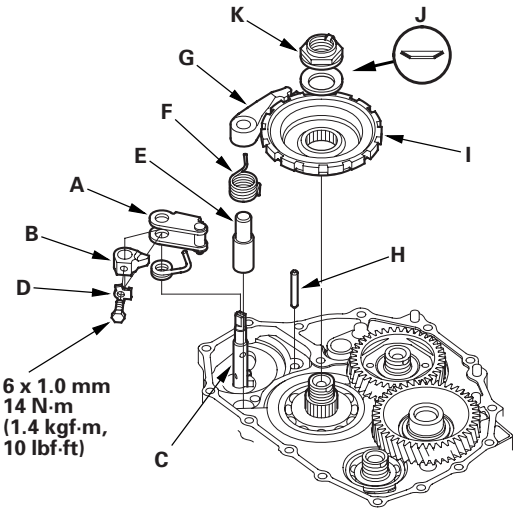
   - Splines and threads of the mainshaft.
   - Splines of the mainshaft idler gear.
   - Old conical spring washer and old locknut.

3. Install the mainshaft idler gear (A), the old conical spring washer (B), and the old locknut (C) on the mainshaft (D), and tighten the locknut to 226 N·m (23.0 kgf·m, 166 lbf·ft).

   NOTE:
   - Do not tap the idler gear to install.
   - Use a torque wrench to tighten the locknut. Do not use an impact wrench.



4. Install the park lever (A) and the park lever stop (B) on the selector control shaft (C), then install the lock bolt with a new lock washer (D). Do not bend the lock tab of the lock washer until step 18.



5. Install the park pawl shaft (E), the park pawl spring (F), the park pawl (G), and the stop shaft (H) on the transmission housing.

6. Lubricate the following parts with ATF:

   - Threads and splines of the countershaft.
   - Old conical spring washer and old locknut.
   - Areas where the park gear contacts the conical spring washer.

7. Install the park gear (I), the old conical spring washer (J), and the old locknut (K) on the countershaft.

8. Lift the park pawl up, and engage it with the park gear, then tighten the locknut to 226 N·m (23.0 kgf·m, 166 lbf·ft).

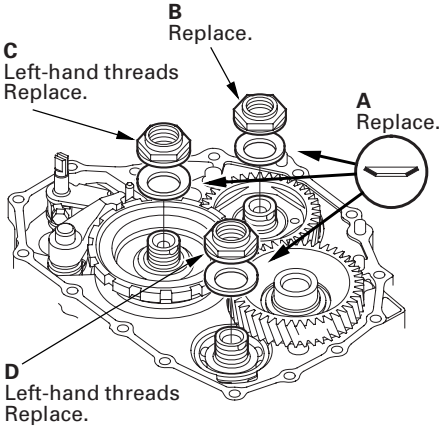
   NOTE:
   - Do not tap the park gear to install.
   - Use a torque wrench to tighten the locknut. Do not use an impact wrench.
   - Countershaft locknut has left-hand threads.

9. Remove the locknuts and the conical spring washers from the mainshaft and the countershaft.

DYNOMITE -2009-

10. Lubricate the threads of the shafts, new locknuts and new conical spring washers with ATF.

11. Install new conical spring washers (A) with facing stamped mark side up in the direction shown, and install a new mainshaft locknut (B), a new countershaft locknut (C), and a new secondary shaft locknut (D).

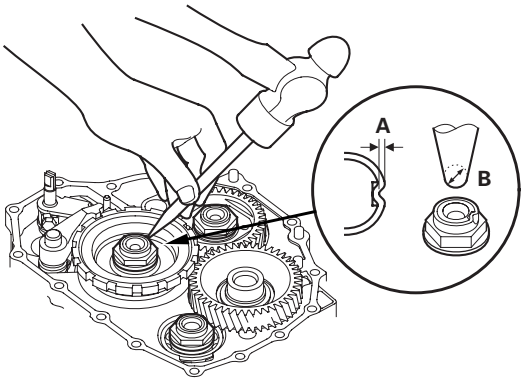


12. Tighten the locknuts to 167 N·m (17.0 kgf·m, 123 lbf·ft).

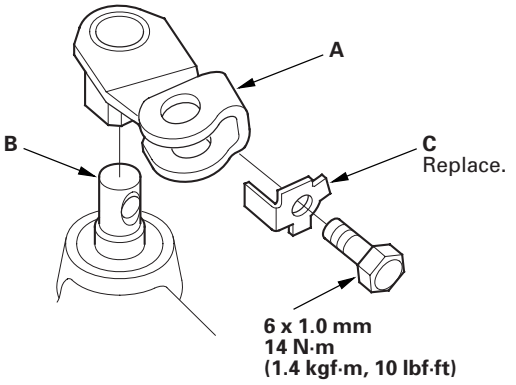
NOTE:
- Be sure to install the conical spring washers in the direction shown.
- Use a torque wrench to tighten the locknut. Do not use an impact wrench.
- Countershaft and secondary shaft locknuts have left-hand threads.

13. Remove the mainshaft holder from the mainshaft.

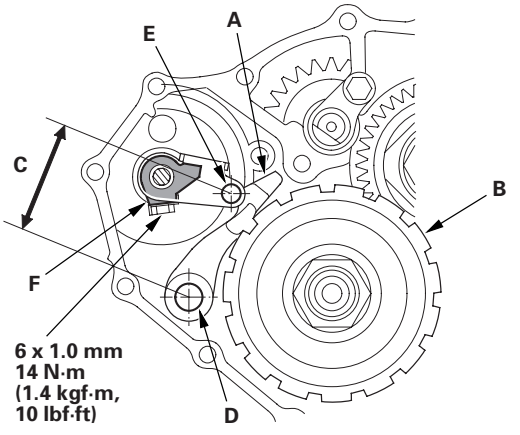
14. Stake the locknuts into the shafts to a depth (A) of 0.7—1.3 mm (0.03—0.05 in.) using a 3.5 mm punch (B).



15. Install the control lever (A) on the selector control shaft (B), and install the bolt with a new lock washer (C), then bend the lock tab of the lock washer against the bolt head.



16. Set the park lever in the P position, then check that the park pawl (A) engages the park gear (B).



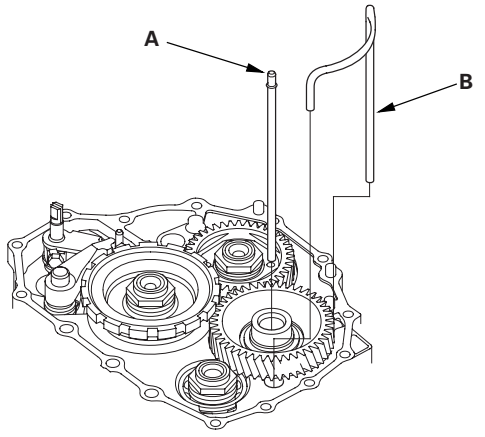
17. If the park pawl does not engage fully, check the distance (C) between the pawl shaft (D) and the park lever roller pin (E) (see page 14-292).

18. Tighten the lock bolt, and bend the lock tab of the lock washer (F) against the bolt head.

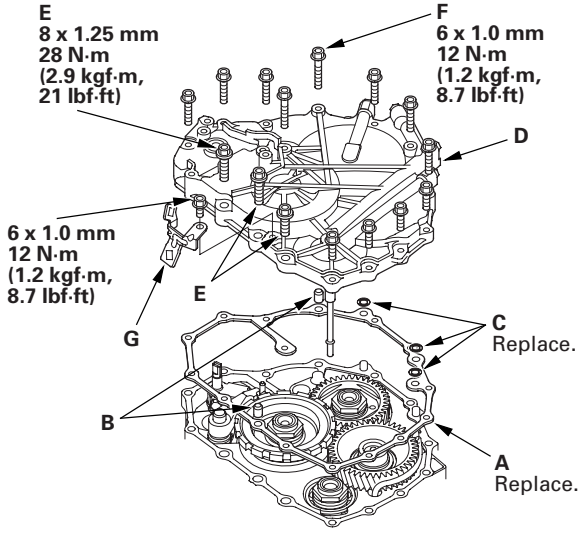
(cont'd)

End Cover Installation (cont'd)

19. Install the ATF feed pipe (A) into the idler gear shaft, and install the ATF lubrication pipe (B) into the transmission housing.



20. Install a 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.

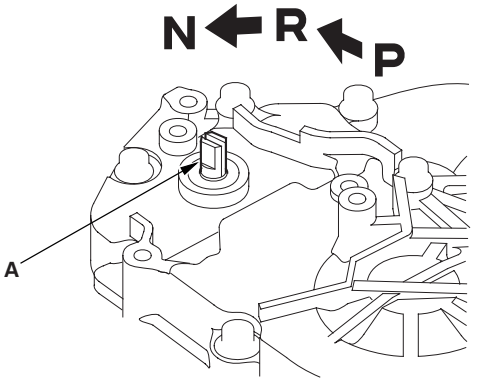


21. Install the end cover (D), and tighten the three special bolts (E) and the 6 x 1.0 mm bolts (F) (12 bolts).

22. Install the harness clamp bracket (G) on the end cover.

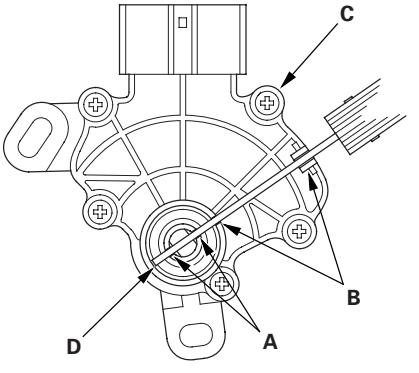
23. Set the selector control shaft (A) to the N position by turning the control lever on the torque converter side.

    NOTE: Do not squeeze the end of the selector control shaft tips together when turning the selector control shaft. If the tips are squeezed together it will cause a faulty shift position signal or position due to the play between the selector control shaft and the transmission range switch.



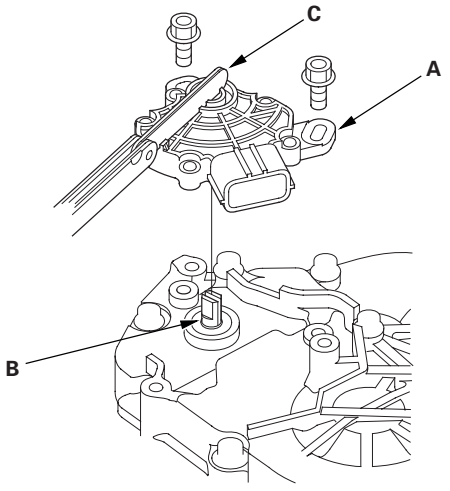
24. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch (C), then put a 2.0 mm (0.08 in.) feeler gauge blade (D) in the cutouts to hold in the N position.

    NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the transmission range switch in the N position.

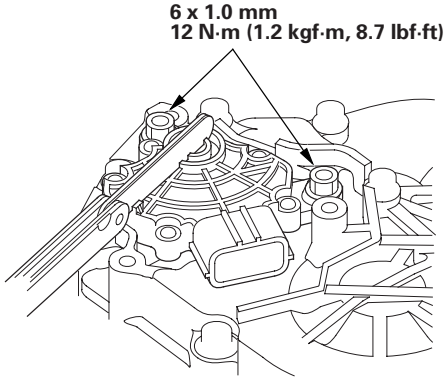


DYNOMITE -2009-

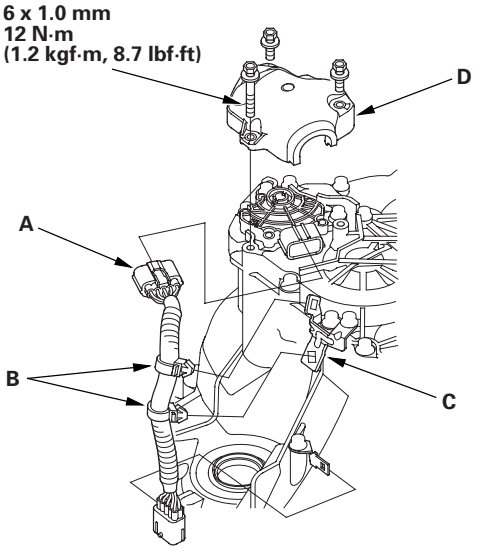
25. Install the transmission range switch (A) gently on the selector control shaft (B) while holding it in the N position using the 2.0 mm (0.08 in.) blade (C).



26. 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.



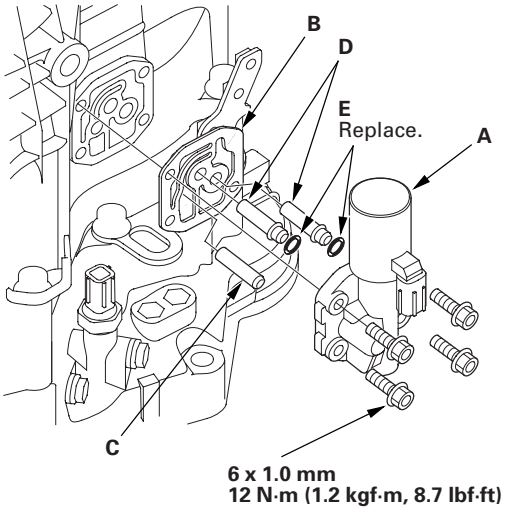
27. Connect the transmission range switch connector (A) securely, then install the harness clamps (B) on the clamp bracket (C).



28. Install the transmission range switch cover (D).

29. Install a new gasket (B) on the transmission housing, and install the ATF pipe (C) and the ATF joint pipes (D).

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.



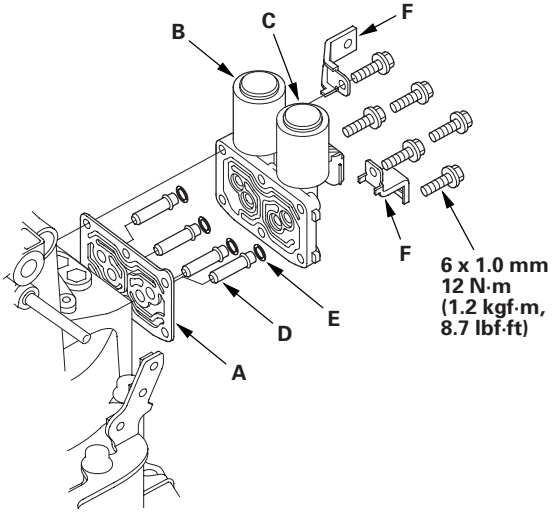
30. Install new O-rings (E) over the ATF joint pipes, and install A/T clutch pressure control solenoid valve A.

(cont'd)

End Cover Installation (cont'd)

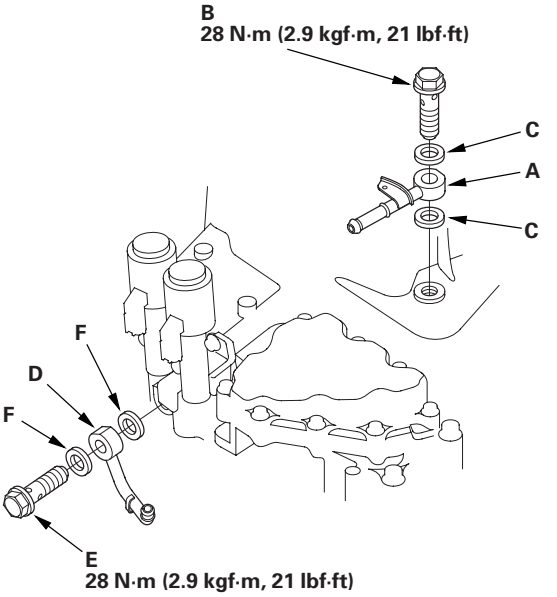
31. Install a new gasket (A) and the ATF joint pipes (D) on the transmission housing, and install new O-rings (E) over the ATF joint pipes.

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.



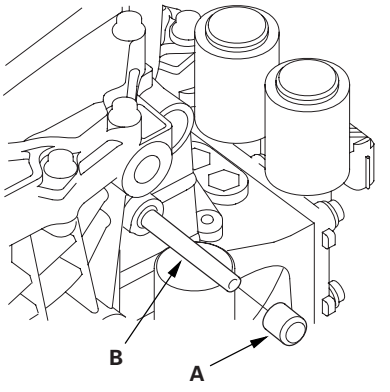
32. Install A/T clutch pressure control solenoid valves B and C, and the harness clamp brackets (F).

33. Install the ATF cooler inlet line (A) with the banjo bolt (B) and new sealing washers (C).



34. Install the ATF cooler outlet line (D) with the banjo bolt (E) and new sealing washers (F).

35. Install the breather cap (A) on the breather pipe (B).

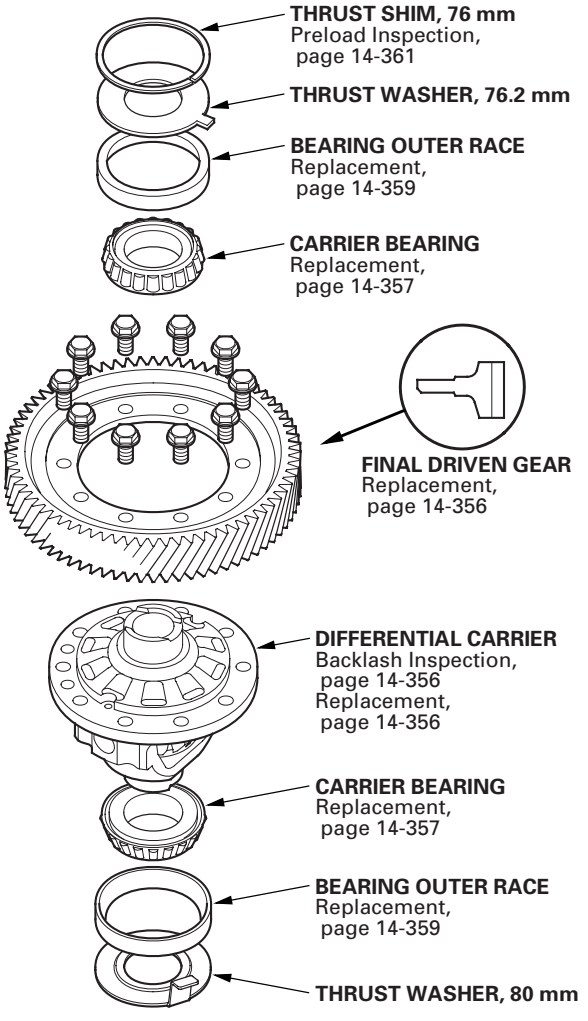


36. Install the ATF dipstick.

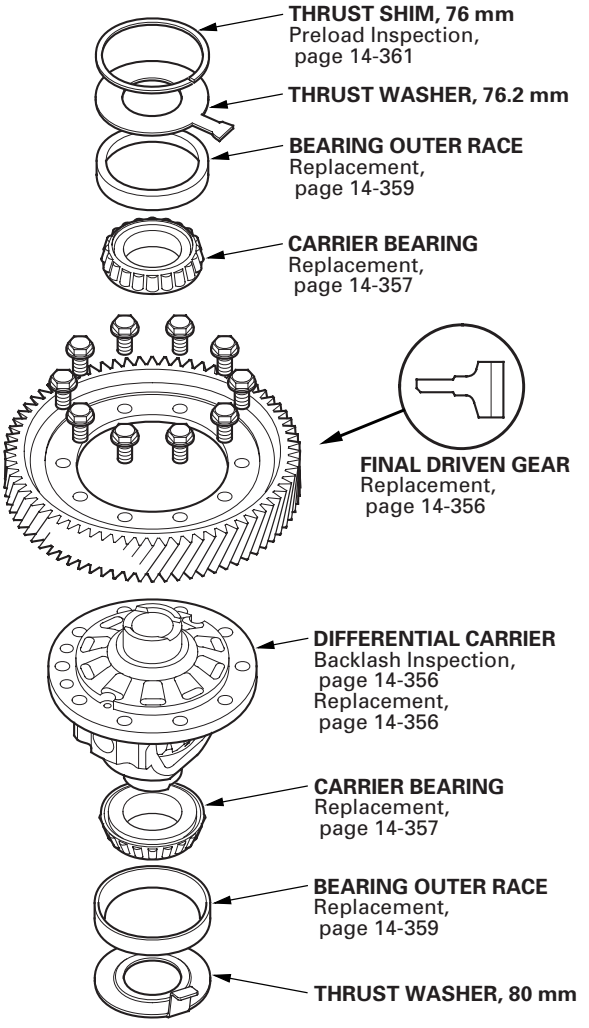
DYNOMITE -2009-

Component Location Index

'06 Model



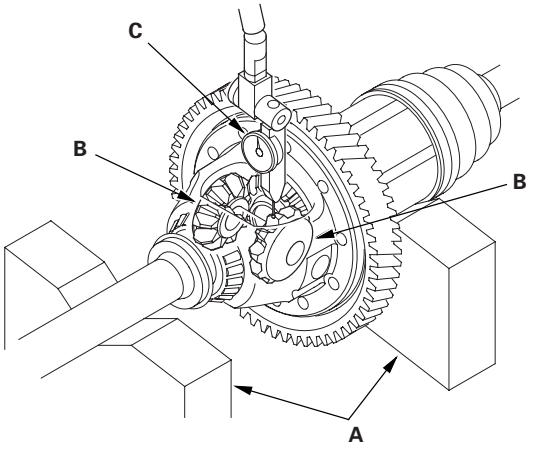
'07-09 Models



DYNOMITE -2009-

Backlash Inspection

1. Install both axles into the differential, and place the axles on V-blocks (A).



2. Measure the backlash of the pinion gears (B) using a dial indicator (C).

   Standard: 0.05—0.15 mm (0.002—0.006 in.)

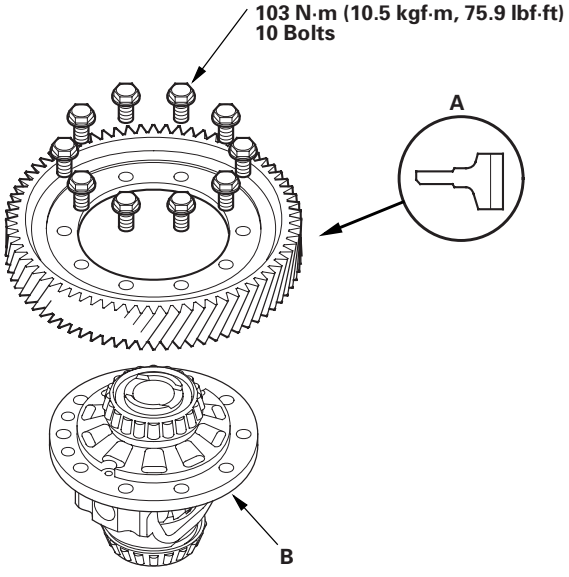
3. If the backlash is out of standard, replace the differential carrier.

Differential Carrier and Final Driven Gear Replacement

NOTE: Inspect and adjust the carrier bearing preload (see page 14-361) whenever the differential carrier is replaced.

1. Remove the final driven gear (A) from the differential carrier (B).

   NOTE: The final driven gear bolts have left-hand threads.



2. Install the final driven gear on the differential carrier in the direction shown. Tighten the bolts to 103 N·m (10.5 kgf·m, 75.9 lbf·ft) in a crisscross pattern in at least two steps.

DYNOMITE -2009-

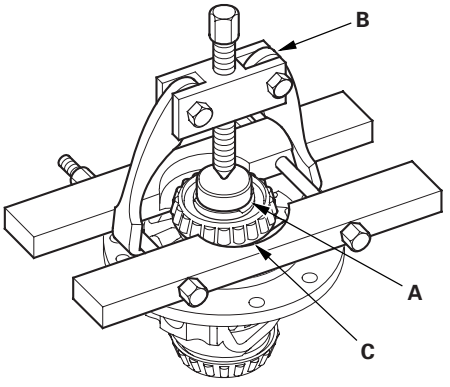
Carrier Bearing Replacement

Special Tools Required
Attachment, 40 mm 07LAD-PW50601

NOTE:
- The bearing and the outer race should be replaced as a set.
- Inspect and adjust the bearing preload (see page 14-361) whenever the bearing is replaced.
- Check the bearing for wear and rough rotation. If the bearing is OK, removal is not necessary.

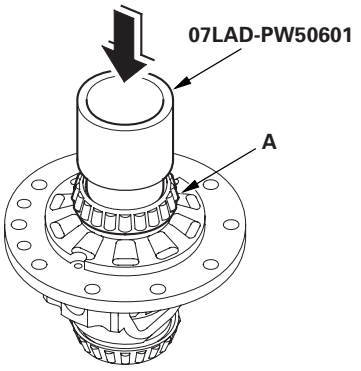
1. Remove the final driven gear from the differential carrier (see page 14-356).

2. Install the bearing separator under the carrier bearing. Place a spacer (A) on the differential carrier, and install the commercially available bearing puller (B).



3. Remove the carrier bearing (C).

4. Install a new carrier bearing (A) using the 40 mm attachment with the small end and a press until it bottoms. Press the bearing on securely so there is no clearance between the bearing and the differential carrier.



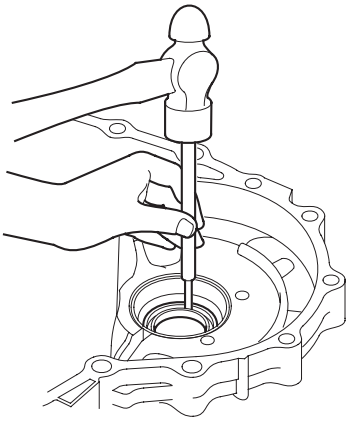
5. Install the final driven gear on the differential carrier (see page 14-356).

DYNOMITE -2009-

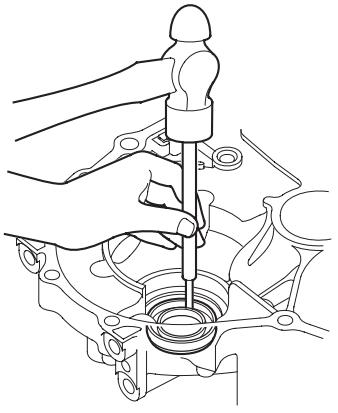
Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Oil seal driver attachment 07947-SD90101
- Oil seal driver attachment 07JAD-PH80101

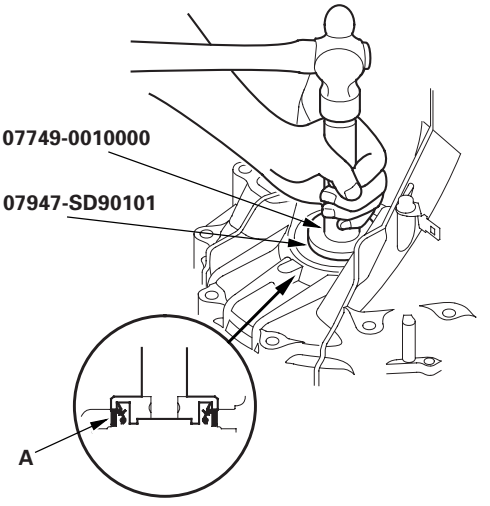
1. Remove the oil seal from the transmission housing.



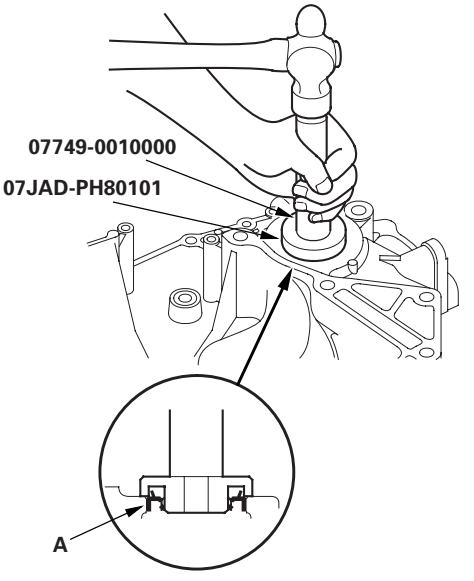
2. Remove the oil seal from the torque converter housing.



3. Install a new oil seal (A) flush with the transmission housing using the driver and the oil seal driver attachment.



4. Install a new oil seal (A) flush with the torque converter housing using the driver and the oil seal driver attachment.



DYNOMITE -2009-

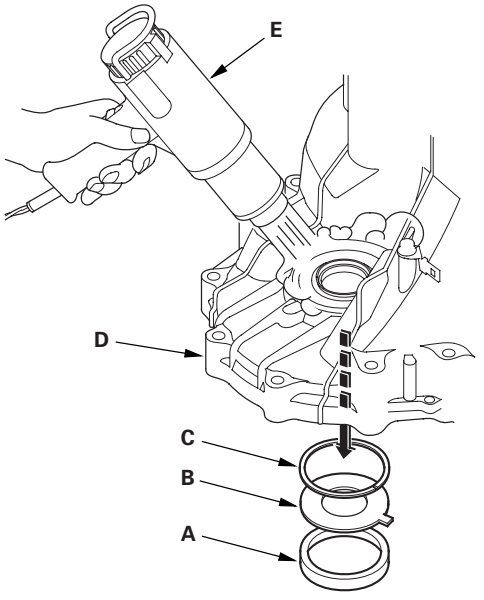
Carrier Bearing Outer Race Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100
- Attachment, 72 x 75 mm 07746-0010600

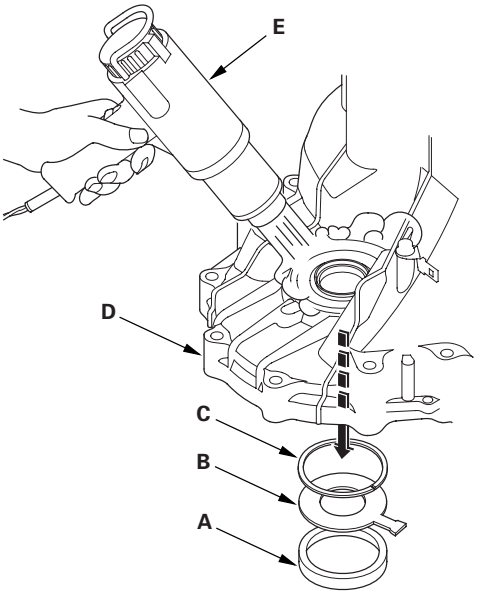
NOTE:
- Replace the bearing with a new one whenever the outer race is replaced. The bearing and the bearing outer race should be replaced as a set.
- Do not use the thrust shim on the torque converter housing.
- Adjust the bearing preload (see page 14-361) after replacing the carrier bearing and the carrier bearing outer race.
- Coat all parts with ATF during installation.

1. Remove the bearing outer race (A), the 76.2 mm thrust washer (B), and the 76 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 100 ℃ (212 ℉) with a heat gun (E). Do not heat the housing more than 100 ℃ (212 ℉).

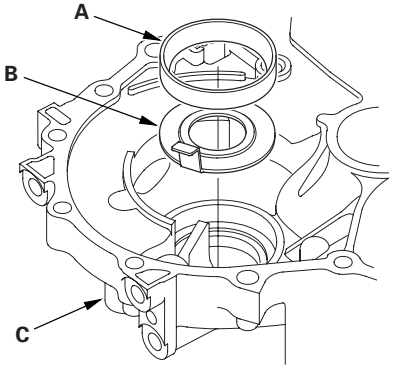
'06 Model



'07-09 Models



2. Remove the bearing outer race (A) and the 80 mm thrust washer (B) from the torque converter housing (C) by hand.



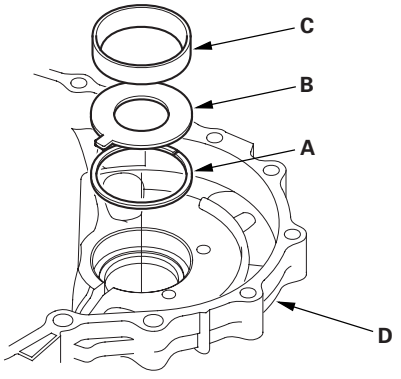
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Carrier Bearing Outer Race Replacement (cont'd)

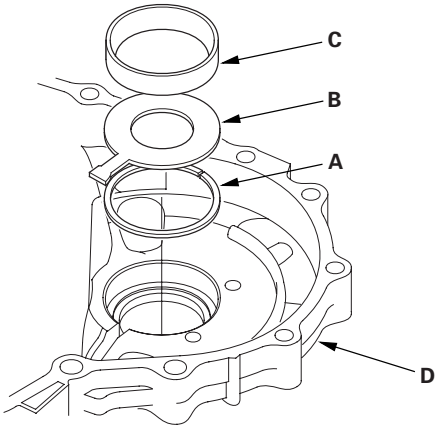
3. Install the 76 mm thrust shim (A), the 76.2 mm thrust washer (B), and the carrier bearing outer race (C) in the transmission housing (D).

   NOTE:
   For '07-09 models: Be sure to install the 76.2 mm thrust washer with the ''41382 RKY'' mark facing downward.

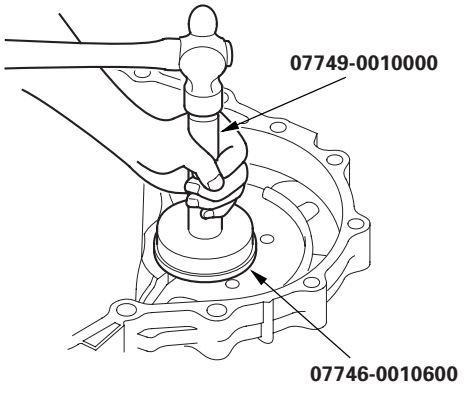
'06 Model



'07-09 Models

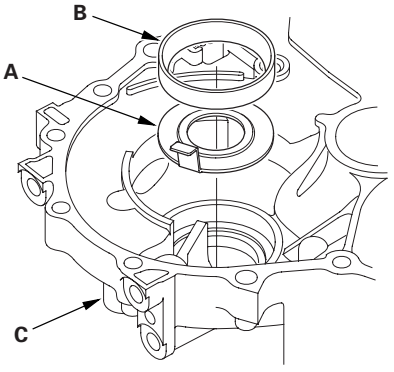


4. Install the outer race securely in the housing so there is no clearance between the outer race, the thrust washer, the thrust shim, and the transmission housing using the driver and the 72 x 75 mm attachment.

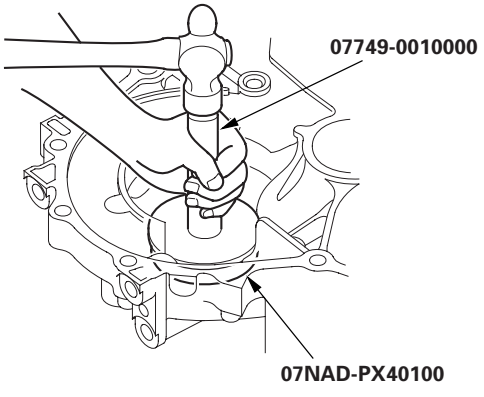


DYNOMITE -2009-

5. Install the 80 mm thrust washer (A) and the carrier bearing outer race (B) in the torque converter housing (C).



6. Install the carrier bearing outer race securely in the torque converter housing so there is no clearance between the carrier bearing outer race, the 80 mm thrust washer, and the torque converter housing using the driver and the 78 x 80 mm attachment.

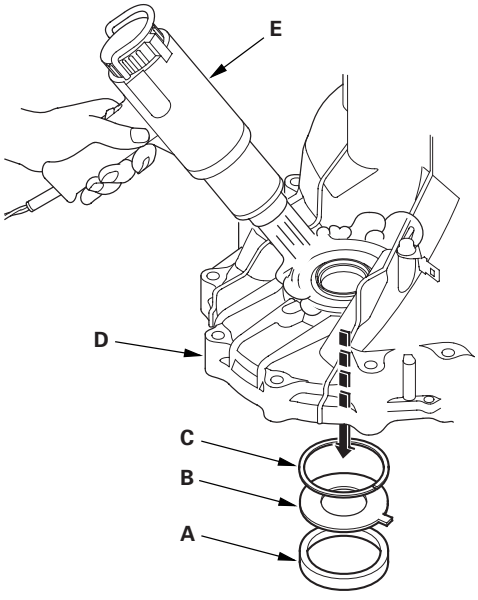


Special Tools Required
- Driver 07749-0010000
- Attachment, 72 x 75 mm 07746-0010600
- Preload inspection tool 07HAJ-PK40201

NOTE:
- Replace the carrier bearing with a new one whenever the carrier bearing outer race is replaced. The carrier bearing and the carrier bearing outer race should be replaced as a set.
- Do not use the 76 mm thrust shim on the torque converter housing.
- Adjust the carrier bearing preload, when replacing the transmission housing, the torque converter housing, the differential carrier, the carrier bearing, the carrier bearing outer race, or the 76 mm thrust shim.

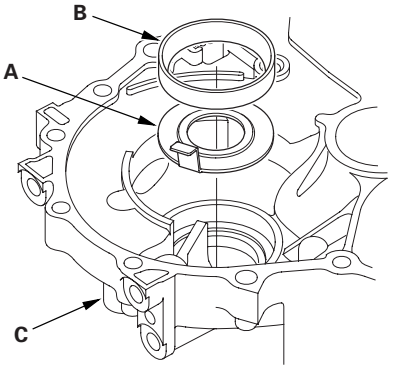
1. Remove the carrier bearing outer race (A), the 76.2 mm thrust washer (B), and the 76 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 100 ℃ (212 ℉) with a heat gun (E). Do not heat the housing more than 100 ℃ (212 ℉).

'06 Model

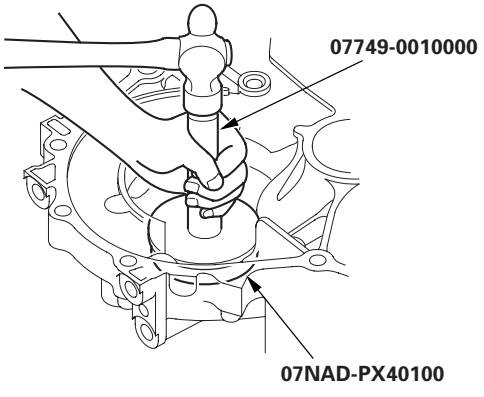


(cont'd)

5. Install the 80 mm thrust washer (A) and the carrier bearing outer race (B) in the torque converter housing (C).



6. Install the carrier bearing outer race securely in the torque converter housing so there is no clearance between the carrier bearing outer race, the 80 mm thrust washer, and the torque converter housing using the driver and the 78 x 80 mm attachment.

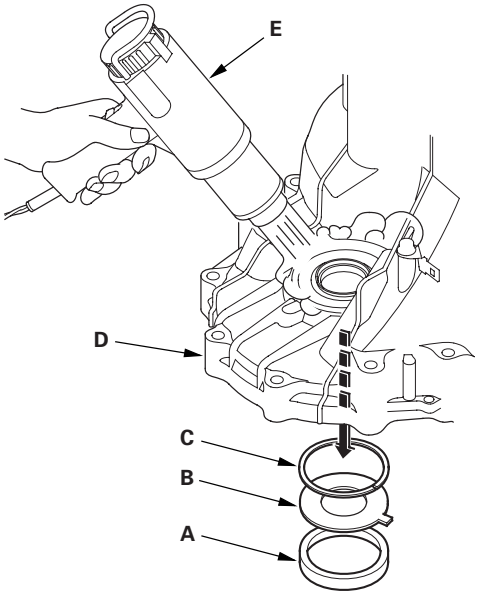


Special Tools Required
- Driver 07749-0010000
- Attachment, 72 x 75 mm 07746-0010600
- Preload inspection tool 07HAJ-PK40201

NOTE:
- Replace the carrier bearing with a new one whenever the carrier bearing outer race is replaced. The carrier bearing and the carrier bearing outer race should be replaced as a set.
- Do not use the 76 mm thrust shim on the torque converter housing.
- Adjust the carrier bearing preload, when replacing the transmission housing, the torque converter housing, the differential carrier, the carrier bearing, the carrier bearing outer race, or the 76 mm thrust shim.

1. Remove the carrier bearing outer race (A), the 76.2 mm thrust washer (B), and the 76 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 100 ℃ (212 ℉) with a heat gun (E). Do not heat the housing more than 100 ℃ (212 ℉).

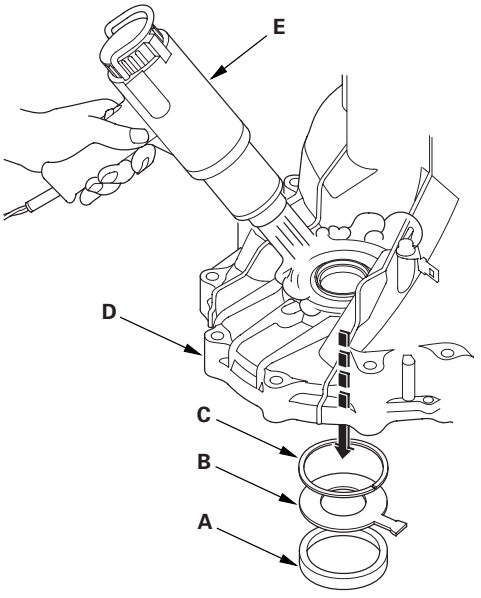
'06 Model



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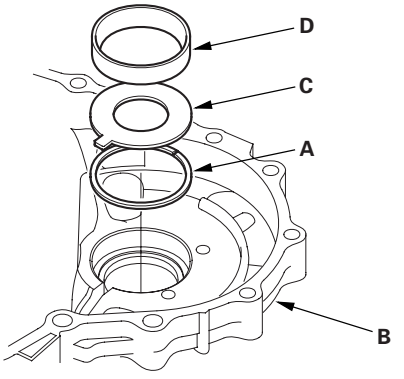
Carrier Bearing Preload Inspection (cont'd)

'07-09 Models

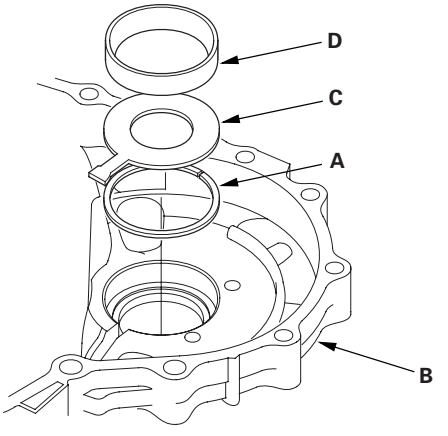


2. Install the 76 mm thrust shim (A) in the transmission housing (B).
   If you replace the 76 mm thrust shim with a new one, use the same thickness shim as the old one.

'06 Model



'07-09 Models

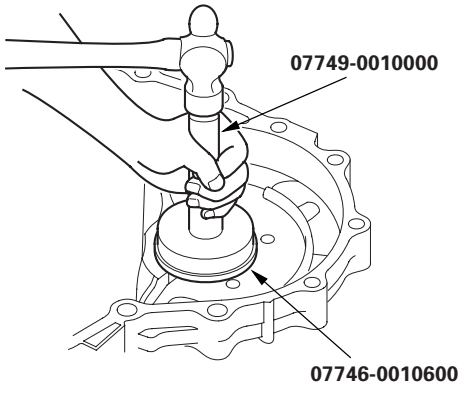


3. Install the 76.2 mm thrust washer (C), and the carrier bearing outer race (D) in the transmission housing.

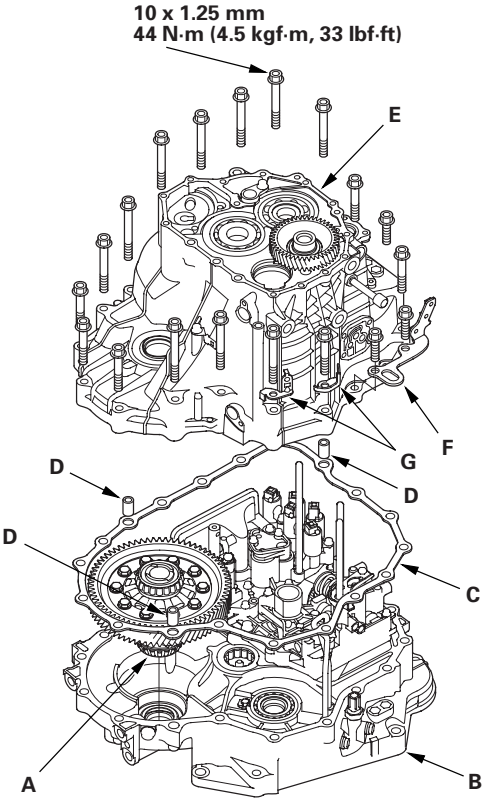
   NOTE:
   For '07-09 models: Be sure to install the 76.2 mm thrust washer with the ''41382 RKY'' mark facing downward.

DYNOMITE -2009-

4. Install the outer race securely in the transmission housing so there is no clearance between the outer race, the thrust washer, the thrust shim, and the transmission housing with the driver and the 72 x 75 mm attachment.



5. Install the differential assembly (A) in the torque converter housing (B), and install the gasket (C) and the dowel pins (D) on the torque converter housing.



(cont'd)

DYNOMITE -2009-

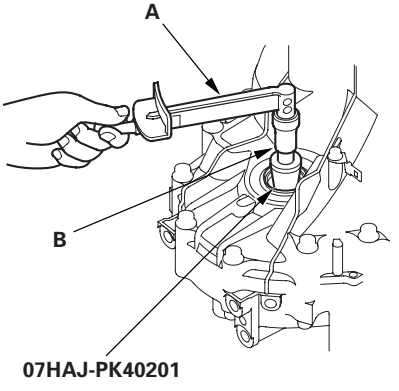
Carrier Bearing Preload Inspection (cont'd)

6. Install the transmission housing (E), and install the mounting bolts (19 bolts) with the transmission hanger (F) and the harness clamp brackets (G), then tighten the bolts.

7. Rotate the differential assembly in both directions to seat the bearings.

8. Measure the starting torque of the differential assembly using the preload inspection tool, a torque wrench (A), and a socket (B). Measure the starting torque at normal room temperature in both directions.

   Standard:
   New Bearings:
   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.)



07HAJ-PK40201

9. If the starting torque is out of standard, remove the 76 mm thrust shim, and select the thrust shim from the following table. Install a new thrust shim and recheck. To increase the starting torque, increase the thickness of the 76 mm thrust shim. To decrease the starting torque, decrease the thickness of the 76 mm thrust shim. Changing the thrust shim to the next size will increase or decrease starting torque about 0.3—0.4 N·m (3—4 kgf·cm, 2—3 lbf·in.).

THRUST SHIM, 76 mm

No.	Part Number	Thickness
S	41438-PX4-700	2.05 mm (0.081 in.)
T	41439-PX4-700	2.10 mm (0.083 in.)
U	41440-PX4-700	2.15 mm (0.085 in.)
A	41441-PK4-000	2.20 mm (0.087 in.)
B	41442-PK4-000	2.25 mm (0.089 in.)
C	41443-PK4-000	2.30 mm (0.091 in.)
D	41444-PK4-000	2.35 mm (0.093 in.)
E	41445-PK4-000	2.40 mm (0.094 in.)
F	41446-PK4-000	2.45 mm (0.096 in.)
G	41447-PK4-000	2.50 mm (0.098 in.)
H	41448-PK4-000	2.55 mm (0.100 in.)
I	41449-PK4-000	2.60 mm (0.101 in.)
J	41450-PK4-000	2.65 mm (0.103 in.)
K	41451-PK4-000	2.70 mm (0.105 in.)
L	41452-PK4-000	2.75 mm (0.107 in.)
M	41453-PK4-000	2.80 mm (0.110 in.)
N	41454-PK4-000	2.85 mm (0.112 in.)
O	41455-PK4-000	2.90 mm (0.114 in.)
P	41456-PK4-000	2.95 mm (0.116 in.)
Q	41457-PK4-000	3.00 mm (0.118 in.)
R	41458-PK4-000	3.05 mm (0.120 in.)
0A	41428-PRP-000	1.55 mm (0.061 in.)
0B	41429-PRP-000	1.60 mm (0.063 in.)
0C	41430-PRP-000	1.65 mm (0.065 in.)
0D	41431-PRP-000	1.70 mm (0.067 in.)
0E	41432-PRP-000	1.75 mm (0.069 in.)
0F	41433-PRP-000	1.80 mm (0.071 in.)
0G	41434-PRP-000	1.85 mm (0.073 in.)
0H	41435-PRP-000	1.90 mm (0.075 in.)
0I	41436-PRP-000	1.95 mm (0.077 in.)
0J	41437-PRP-000	2.00 mm (0.079 in.)

(cont'd)

DYNOMITE -2009-

THRUST SHIM, 76 mm (cont'd)

No.	Part Number	Thickness
A	41428-PAX-000	1.575 mm (0.062 in.)
B	41429-PAX-000	1.625 mm (0.064 in.)
C	41430-PAX-000	1.675 mm (0.066 in.)
D	41431-PAX-000	1.725 mm (0.068 in.)
E	41432-PAX-000	1.775 mm (0.070 in.)
F	41433-PAX-000	1.825 mm (0.072 in.)
G	41434-PAX-000	1.875 mm (0.074 in.)
H	41435-PAX-000	1.925 mm (0.076 in.)
I	41436-PAX-000	1.975 mm (0.078 in.)
J	41437-PAX-000	2.025 mm (0.080 in.)
K	41438-PAX-000	2.075 mm (0.082 in.)
L	41439-PAX-000	2.125 mm (0.084 in.)
M	41440-PAX-000	2.175 mm (0.086 in.)
N	41441-PAX-000	2.225 mm (0.088 in.)
O	41442-PAX-000	2.275 mm (0.090 in.)
P	41443-PAX-000	2.325 mm (0.092 in.)
Q	41444-PAX-000	2.375 mm (0.094 in.)
R	41445-PAX-000	2.425 mm (0.095 in.)
S	41446-PAX-000	2.475 mm (0.097 in.)
T	41447-PAX-000	2.525 mm (0.099 in.)
U	41448-PAX-000	2.575 mm (0.101 in.)
V	41449-PAX-000	2.625 mm (0.103 in.)
W	41450-PAX-000	2.675 mm (0.105 in.)
X	41451-PAX-000	2.725 mm (0.107 in.)
Y	41452-PAX-000	2.775 mm (0.109 in.)
Z	41453-PAX-000	2.825 mm (0.111 in.)
0A	41454-PAX-000	2.875 mm (0.113 in.)
0B	41455-PAX-000	2.925 mm (0.115 in.)
0C	41456-PAX-000	2.975 mm (0.117 in.)
0D	41457-PAX-000	3.025 mm (0.119 in.)

DYNOMITE -2009-

Driveline/Axle

Driveline/Axle

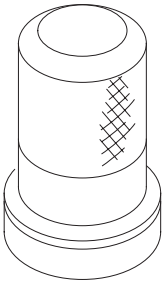
Special Tools 16-2
Component Location Index 16-3
Driveshaft Inspection 16-4
Driveshaft Removal 16-4
Driveshaft Disassembly 16-6
Dynamic Damper Replacement 16-10
Driveshaft Reassembly 16-11
Driveshaft Installation 16-20
Intermediate Shaft Removal 16-23
Intermediate Shaft Disassembly 16-24
Intermediate Shaft Reassembly 16-25
Intermediate Shaft Installation 16-27



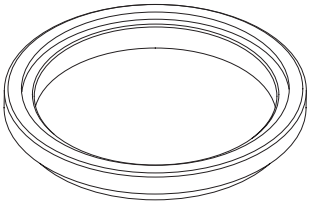
DYNOMITE -2009-

Special Tools

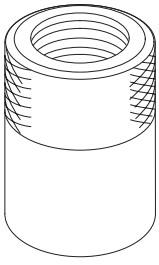
Ref. No.	Tool Number	Description	Qty
①	07GAD-PH70201	Oil Seal Driver, 64 mm	1
②	07JAF-SH20400	Support Base Attachment	1
③	07XAC-001010A	Threaded Adapter, 22 x 1.5 mm	1
④	07XAC-001020A	Threaded Adapter, 24 x 1.5 mm	1
⑤	07746-0010400	Bearing Driver Attachment, 52 x 55 mm	1
⑥	07746-0030400	Inner Bearing Driver Attachment, 35 mm	1
⑦	07749-0010000	Driver Handle, 15 x 135L	1
⑧	07947-SB00100	Oil Seal Driver, 44.5 mm	1
⑨	07965-SD90100	Support Base	1



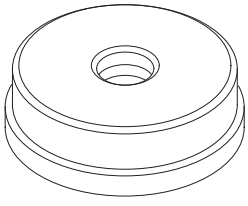
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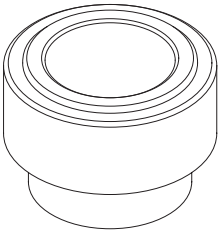
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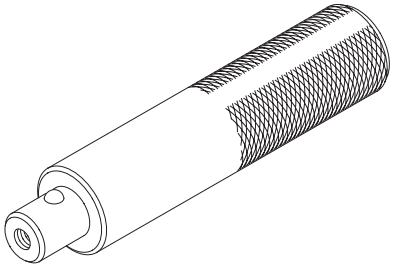
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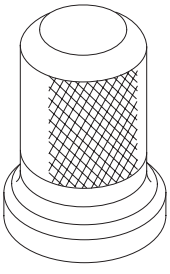
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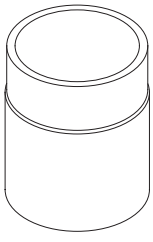
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⑦



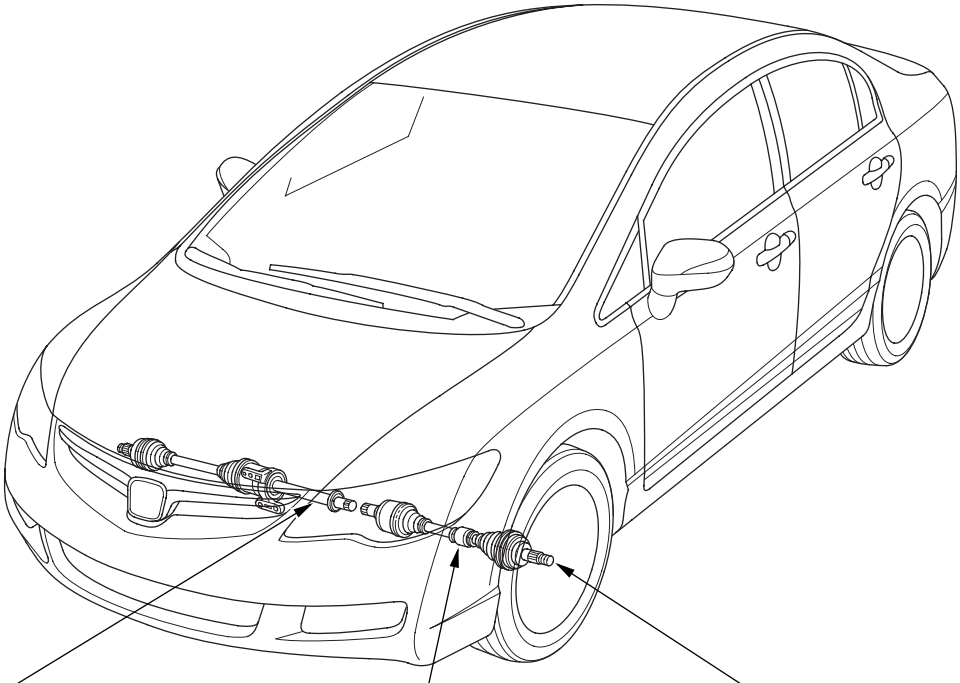
⑧



⑨

DYNOMITE -2009-

Component Location Index



INTERMEDIATE SHAFT
Removal, page 16-23
Disassembly, page 16-24
Reassembly, page 16-25
Installation, page 16-27

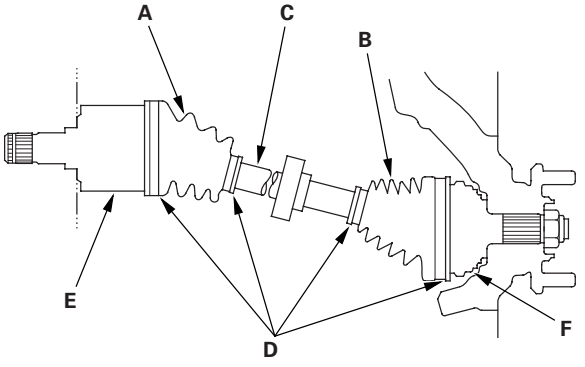
DYNAMIC DAMPER
Replacement, page 16-10

DRIVESHAFT
Inspection, page 16-4
Removal, page 16-4
Disassembly, page 16-6
Reassembly, page 16-11
Installation, page 16-20

DYNOMITE -2009-

Driveshaft Inspection

1. Check the inboard boot (A) and the outboard boot (B) on the driveshaft (C) for cracks, damage, leaking grease, and loose boot bands (D). If any damage is found, replace the boot and the boot bands.



2. Check the driveshaft for cracks and damage. If any damage is found, replace the driveshaft.

3. Check the inboard joint (E) and the outboard joint (F) for cracks and damage. If any damage is found, replace the inboard joint or the outboard joint as an assembly.

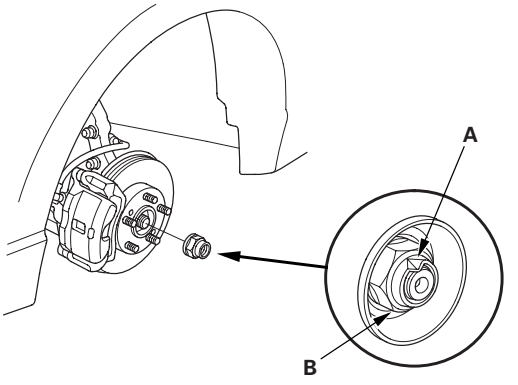
4. Hold the inboard joint and turn the front wheel by hand, then make sure the joint is not excessively loose. If necessary, replace the inboard joint or the outboard joint as an assembly.

Driveshaft Removal

1. Raise the vehicle on a lift.

2. Remove the front wheels.

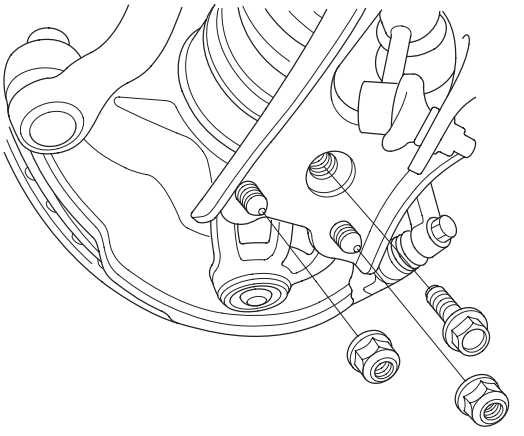
3. Pry up the locking tab (A) on the spindle nut (B), then remove the nut.



4. Drain the transmission fluid, then reinstall the drain plug with a new sealing washer:

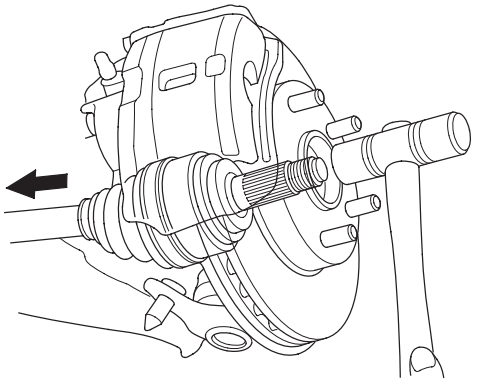
   - 5-speed manual transmission (see page 13-5)
   - 6-speed manual transmission (see page 13-82)
   - Automatic transmission (see page 14-232)

5. Remove the nuts and the bolt, then separate the lower arm using a prybar.

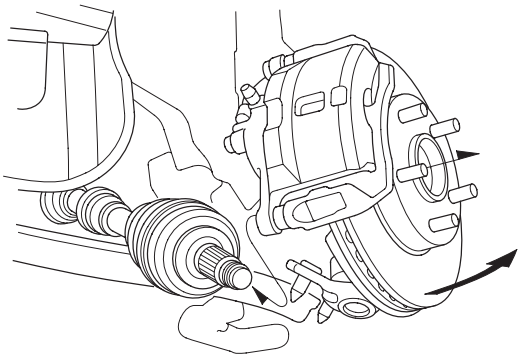


DYNOMITE -2009-

6. Separate the driveshaft outboard joint from the front hub using a plastic hammer.

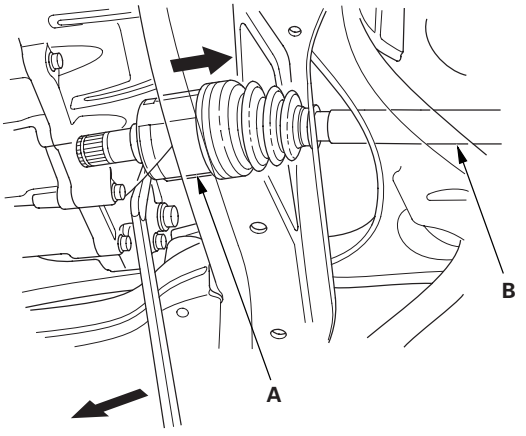


7. Pull the knuckle outward, and separate the driveshaft outboard joint from the front hub.



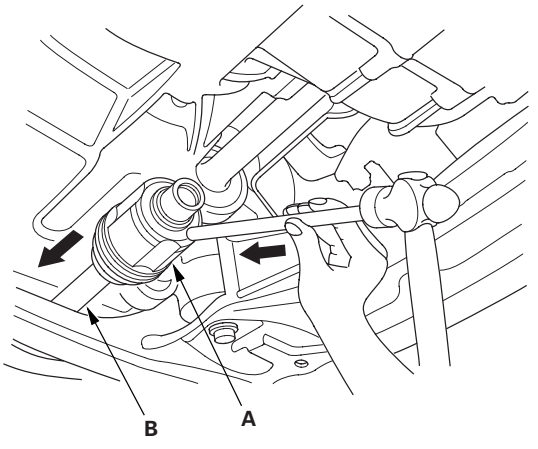
8. Left driveshaft: Pry the inboard joint (A) from the differential using a prybar. Remove the driveshaft as an assembly.

   NOTE:
   - Do not pull on the driveshaft (B), or the inboard joint may come apart. Pull the inboard joint straight out to avoid damaging the oil seal.
   - Be careful not to damage the oil seal using the prybar.



9. Right driveshaft: Drive the inboard joint (A) off of the intermediate shaft using a drift and a hammer. Remove the driveshaft as an assembly.

   NOTE: Do not pull on the driveshaft (B), or the inboard joint may come apart.

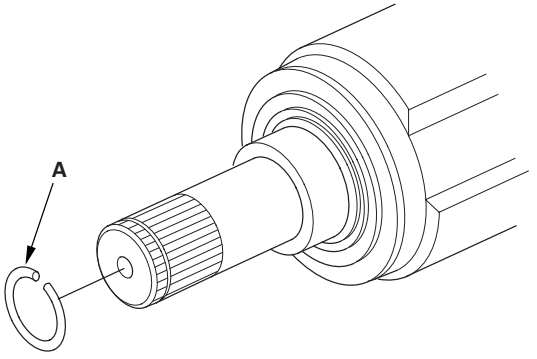


(cont'd)

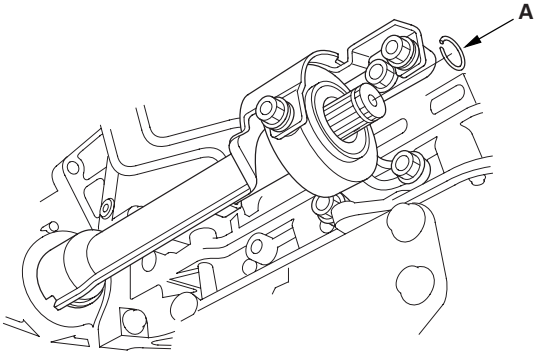
DYNOMITE -2009-

Driveshaft Removal (cont'd)

10. Remove the set ring (A) from the left driveshaft inboard joint.



11. Remove the set ring (A) from the intermediate shaft.



Driveshaft Disassembly

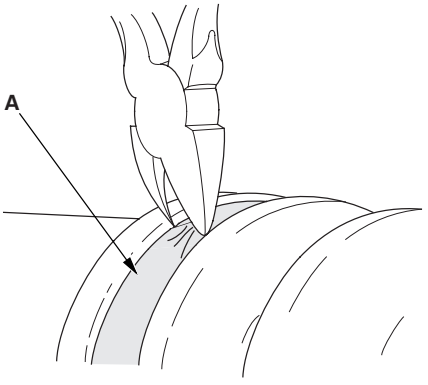
Special Tools Required
- Threaded adapter, 22 x 1.5 mm 07XAC-001010A
- Threaded adapter, 24 x 1.5 mm 07XAC-001020A
- Slide hammer, 5/8''-18 UNF, commercially available
- Boot band pliers, commercially available
- Puller, commercially available

Inboard Joint Side

1. Remove the boot bands. Be careful not to damage the boot.

   - If the boot band is a welded type (A), cut the boot band.
   - If the boot band is a double loop type (B), lift up the band end (C), and push it into the clip (D).
   - If the boot band is a low profile type (E), pinch the boot band using commercially available boot band pliers (F).

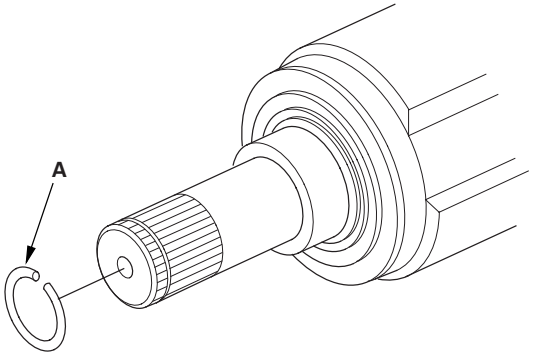
Welded type



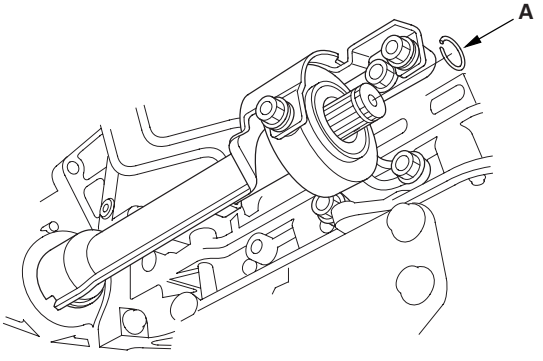
DYNOMITE -2009-

Driveshaft Removal (cont'd)

10. Remove the set ring (A) from the left driveshaft inboard joint.



11. Remove the set ring (A) from the intermediate shaft.



Driveshaft Disassembly

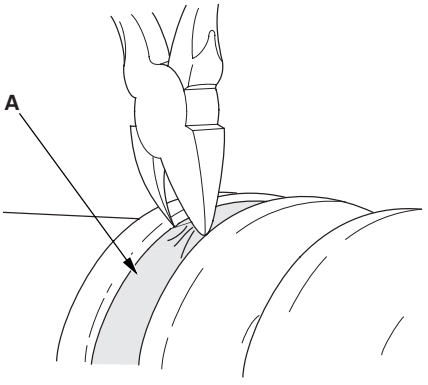
Special Tools Required
- Threaded adapter, 22 x 1.5 mm 07XAC-001010A
- Threaded adapter, 24 x 1.5 mm 07XAC-001020A
- Slide hammer, 5/8''-18 UNF, commercially available
- Boot band pliers, commercially available
- Puller, commercially available

Inboard Joint Side

1. Remove the boot bands. Be careful not to damage the boot.

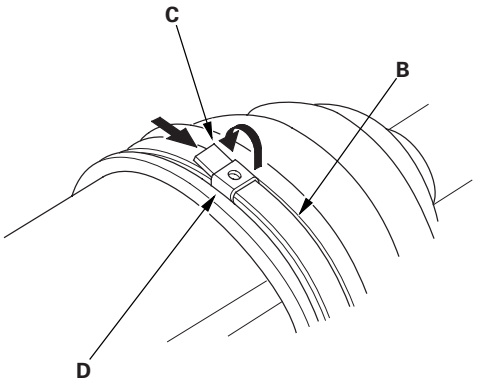
   - If the boot band is a welded type (A), cut the boot band.
   - If the boot band is a double loop type (B), lift up the band end (C), and push it into the clip (D).
   - If the boot band is a low profile type (E), pinch the boot band using commercially available boot band pliers (F).

Welded type

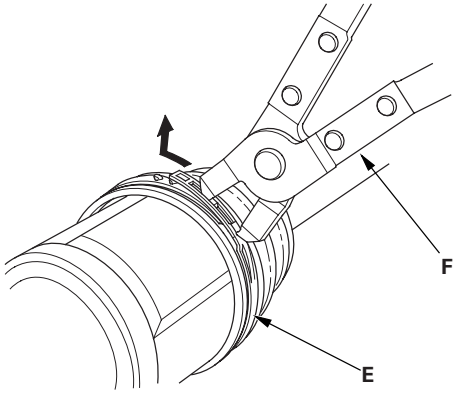


DYNOMITE -2009-

Double loop type

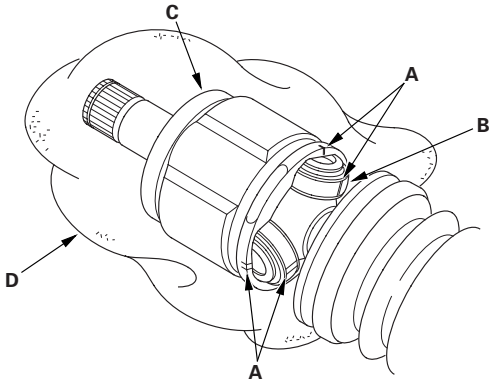


Low profile type



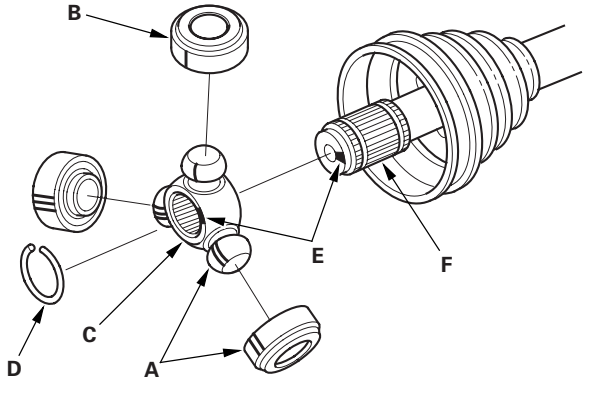
2. Make marks (A) on each roller (B) and the inboard joint (C) to identify the locations of the rollers to the grooves in the inboard joint. Then remove the inboard joint on a clean shop towel (D). Be careful not to drop the rollers when separating them from the inboard joint.

   NOTE: Do not engrave or scribe any marks on the rolling surface.



3. Make marks (A) on the rollers (B) and the spider (C) to identify the locations of the rollers on the spider, then remove the rollers.

   NOTE: Do not engrave or scribe any marks on the rolling surfaces.



4. Remove the circlip (D).

5. Make marks (E) on the spider and the driveshaft (F) to identify the position of the spider on the shaft.

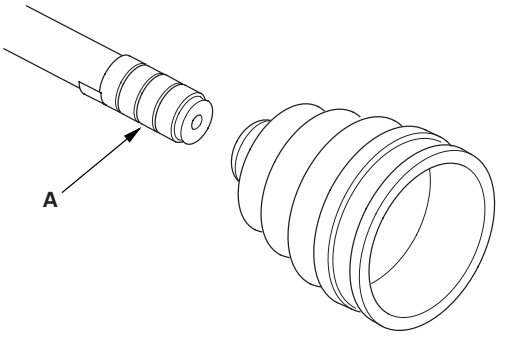
6. Remove the spider.

   NOTE: If necessary, use a commercially available puller.

(cont'd)

Driveshaft Disassembly (cont'd)

7. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damaging the boot.

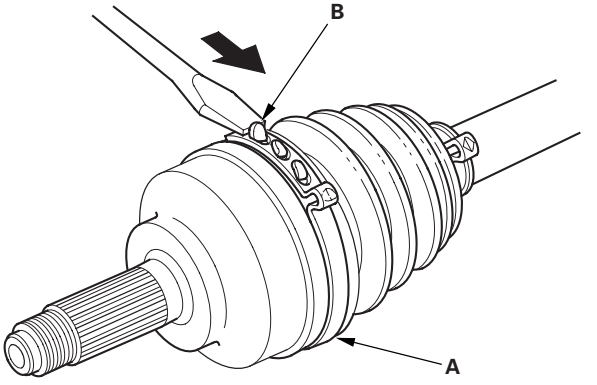


8. Remove the inboard boot. Be careful not to damage the boot.

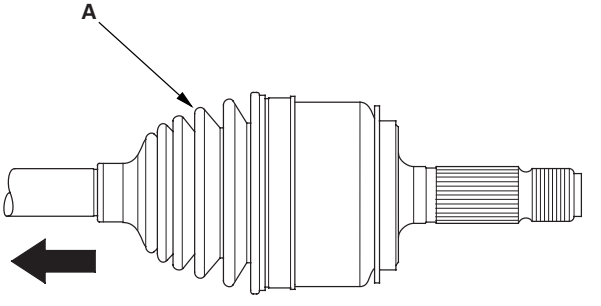
9. Remove the vinyl tape.

Outboard Joint Side

1. Remove the boot bands (A). Lift up the three tabs (B) using a screwdriver, then release the band. Be careful not to damage the boot.



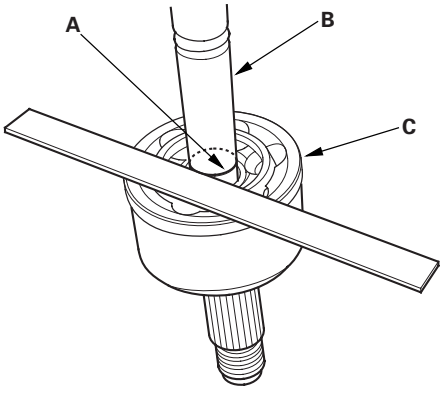
2. Slide the outboard boot (A) partially to the inboard joint side. Be careful not to damage the boot.



DYNOMITE -2009-

3. Wipe off the grease to expose the driveshaft and the outboard joint inner race.

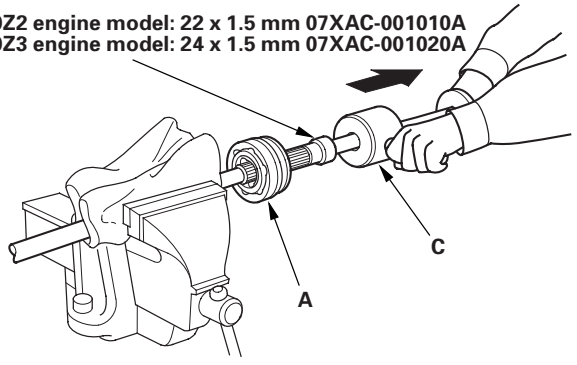
4. Make a mark (A) on the driveshaft (B) at the same level as the outboard joint rim (C).



5. Securely clamp the driveshaft in a bench vise with a shop towel.

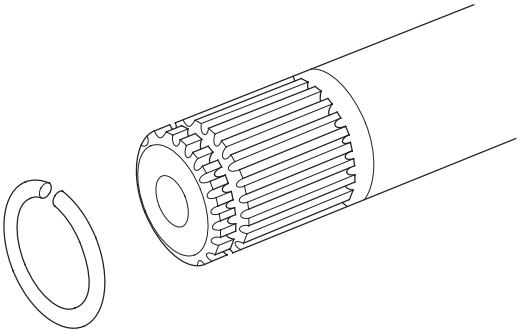
6. Remove the outboard joint (A) using the threaded adapter (B) and a commercially available 5/8''-18 UNF slide hammer (C).

B
K20Z2 engine model: 22 x 1.5 mm 07XAC-001010A
K20Z3 engine model: 24 x 1.5 mm 07XAC-001020A

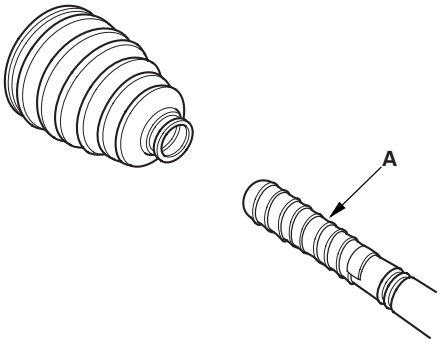


7. Remove the driveshaft from the bench vise.

8. Remove the stop ring from the driveshaft.



9. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damaging the boot.



10. Remove the outboard boot. Be careful not to damage the boot.

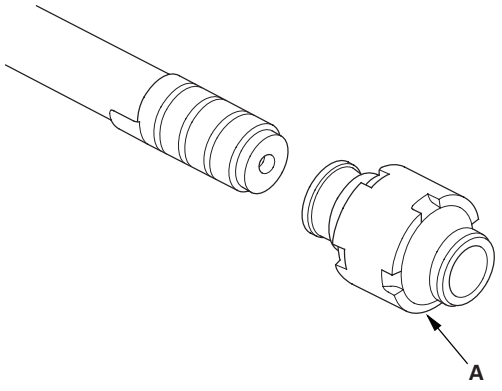
11. Remove the vinyl tape.

DYNOMITE -2009-

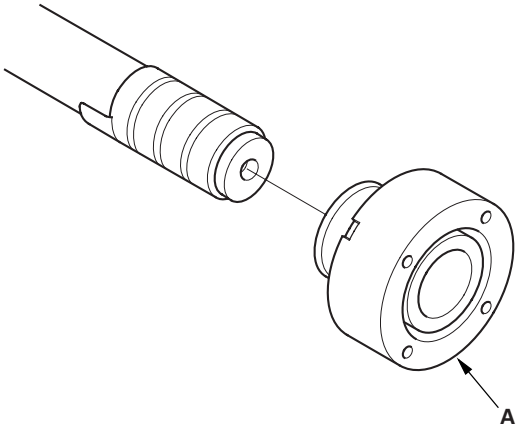
Dynamic Damper Replacement

1. Remove the inboard joint (see page 16-6).
2. Remove the dynamic damper band (see step 1 on page 16-6).
3. Remove the dynamic damper (A).

K20Z2 engine model (left driveshaft only)



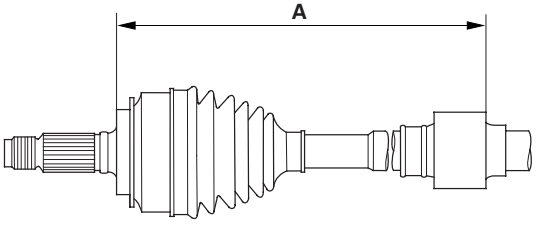
K20Z3 engine model



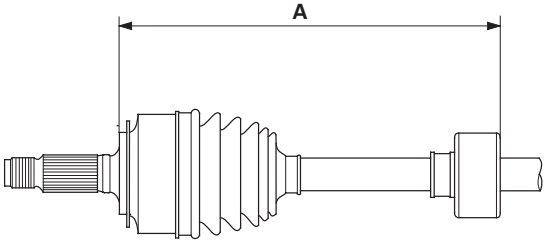
4. Install the new dynamic damper and adjust the position of the new dynamic damper to these measurements.

   NOTE: Be careful not to swap the dynamic dampers. The right and left dynamic dampers are different (K20Z3 engine model).

K20Z2 engine model



K20Z3 engine model



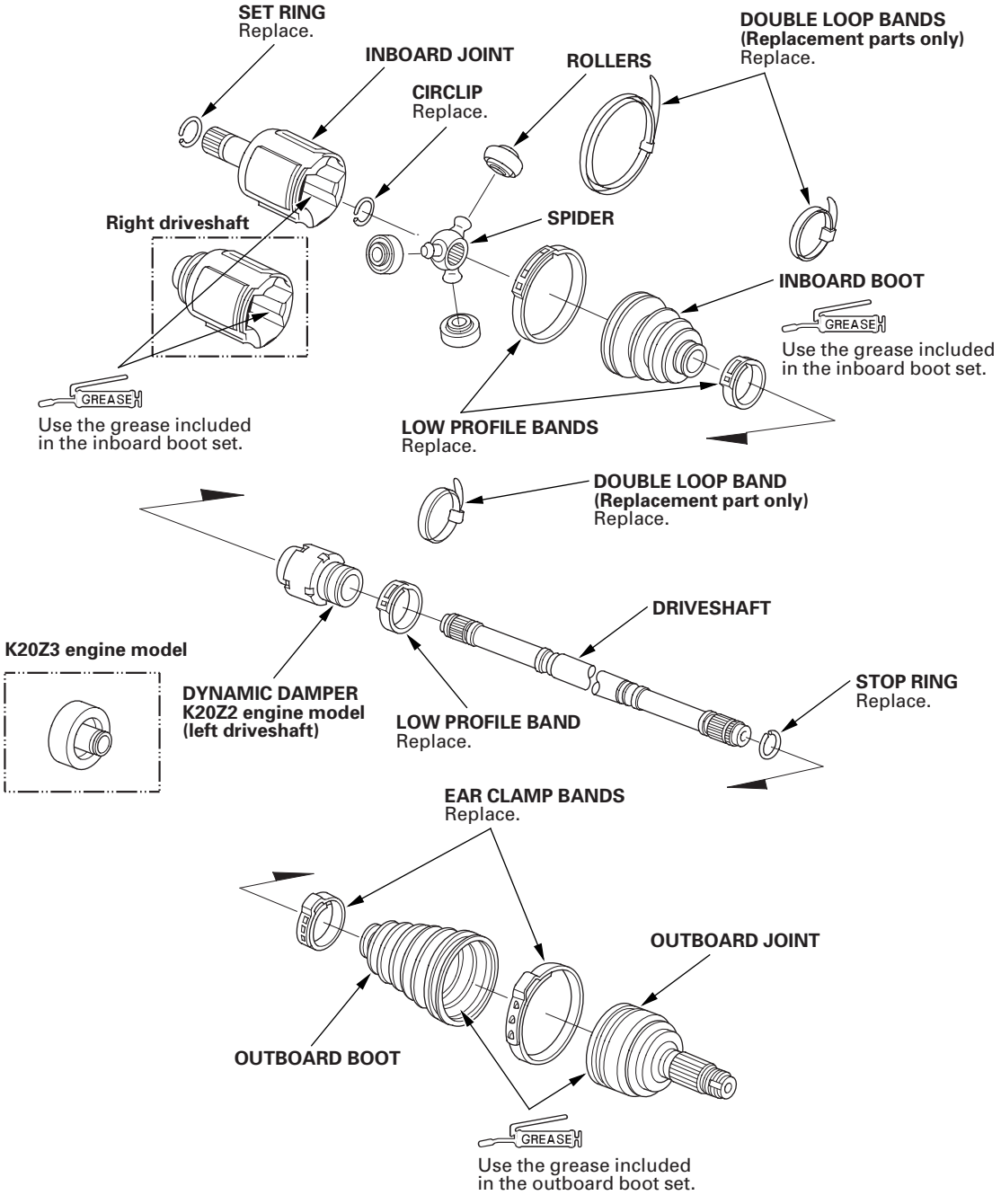
Model	Left/Right Driveshaft	Specified Length (A)
K20Z2 engine model	Left	293.0—297.0 mm (11.54—11.69 in.)
K20Z3 engine model	Left/Right	284.0—288.0 mm (11.18—11.34 in.)

5. Install the dynamic damper band (see step 10 on page 16-14).
6. Install the inboard joint (see page 16-12).

DYNOMITE -2009-

Driveshaft Reassembly

Exploded View



(cont'd)

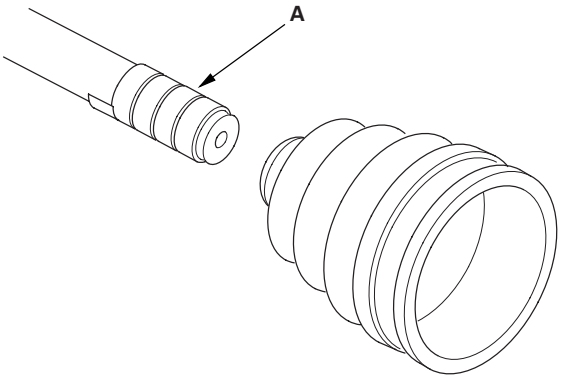
Driveshaft Reassembly (cont'd)

Special Tools Required
- Boot band tool, KD-3191 or equivalent commercially available
- Boot band pliers, Kent-Moore J-35910 or equivalent, commercially available

NOTE: Refer to the Exploded View, as needed, during this procedure.

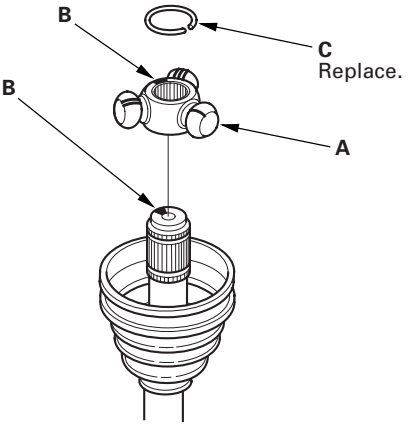
Inboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damaging the inboard boot.



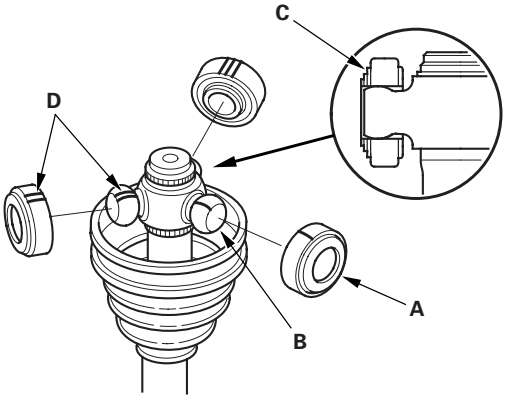
2. Install the inboard boot onto the driveshaft, then remove the vinyl tape. Be careful not to damage the inboard boot.

3. Install the spider (A) onto the driveshaft by aligning the marks (B) you made on the spider and the end of the driveshaft.



4. Install a new circlip (C) into the driveshaft groove. Always rotate the circlip in its groove to make sure it is fully seated.

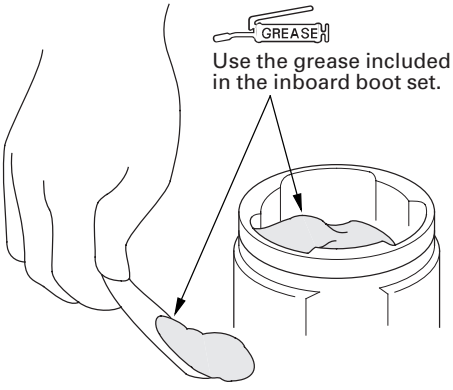
5. Fit the rollers (A) onto the spider (B) with their high shoulders (C) facing outward, and note these items:
   - Reinstall the rollers in their original positions on the spider by aligning the marks (D) you made.
   - Hold the driveshaft pointed up to prevent the rollers from falling off.



DYNOMITE -2009-

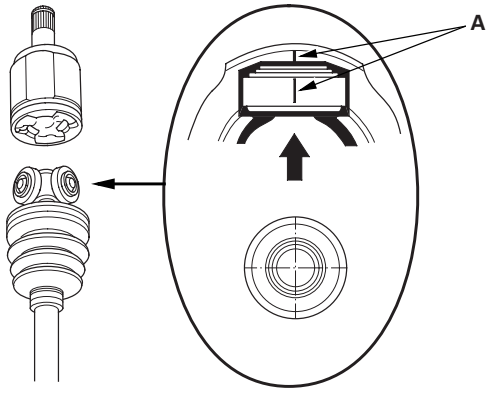
6. Pack the inboard joint with the joint grease included in the new inboard boot set.

Grease quantity
Inboard joint:
K20Z2 engine model: 112—132 g (4.0—4.7 oz)
K20Z3 engine model: 180—200 g (6.3—7.0 oz)

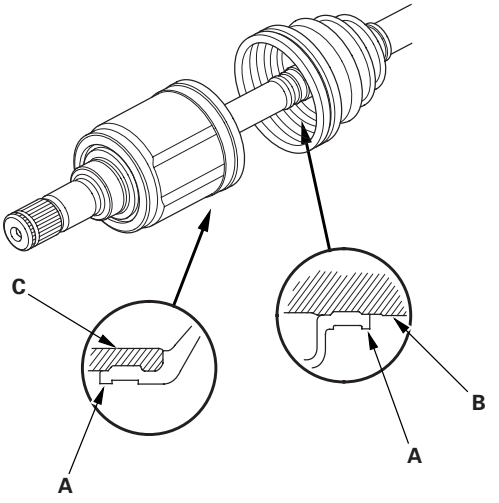


7. Fit the inboard joint onto the driveshaft and note these items:

- Reinstall the inboard joint onto the driveshaft by aligning the marks (A) you made on the inboard joint and the rollers.
- Hold the driveshaft so the inboard joint is pointing up to prevent it from falling off.



8. Fit the boot ends (A) onto the driveshaft (B) and the inboard joint (C).

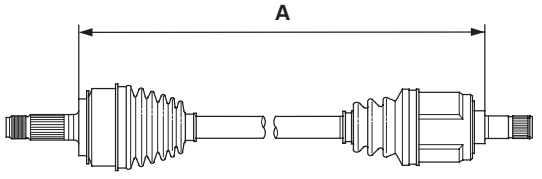


(cont'd)

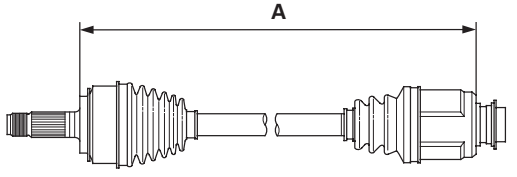
Driveshaft Reassembly (cont'd)

9. Adjust the length (A) of the driveshaft to the figure as shown, then adjust the boots to halfway between full compression and full extension. Bleed excess air from the boots by inserting a flat-tipped screwdriver between the boot and the joint.

Left driveshaft



Right driveshaft



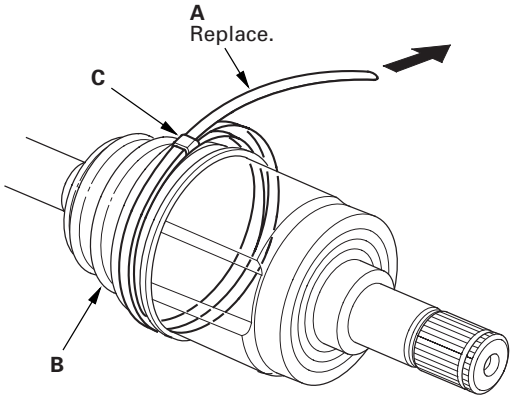
Model	Left/Right Driveshaft	Specified Length (A)
K20Z2 engine model	Left	505.5—510.0 mm (19.88—20.08 in.)
	Right	493.0—498.0 mm (19.41—19.61 in.)
K20Z3 engine model	Left	511.0—516.0 mm (20.12—20.31 in.)
	Right	486.8—491.8 mm (19.17—19.36 in.)

10. Install new boot bands.

- For the double loop type, go to step 11.
- For the low profile type, go to step 20.

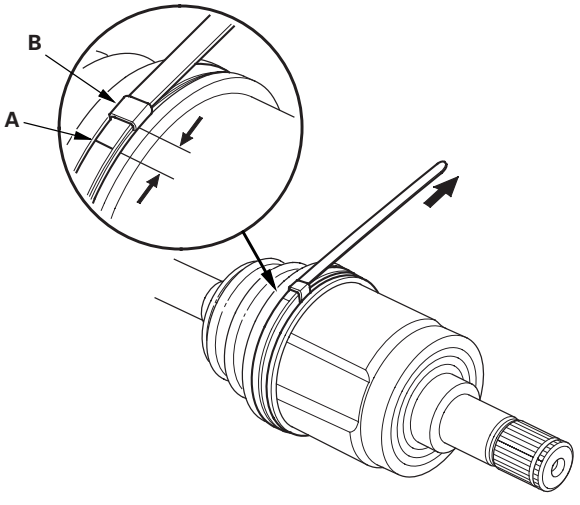
11. Fit the boot ends onto the driveshaft and the inboard joint, then install a new double loop band (A) onto the boot (B).

NOTE: Pass the end of the new double loop band through the clip (C) twice in the direction of the forward rotation of the driveshaft.



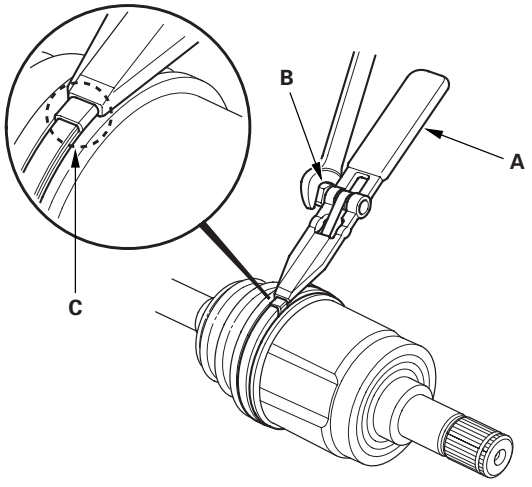
12. Pull up the slack in the band by hand.

13. Mark a position (A) on the band 10—14 mm (0.4—0.6 in.) from the clip (B).



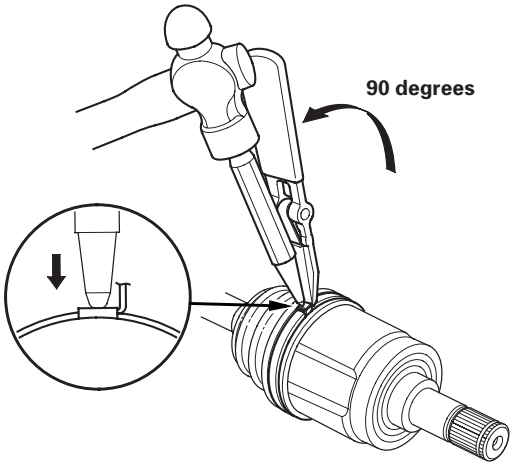
DYNOMITE -2009-

14. Thread the free end of the band through the nose section of the commercially available boot band tool KD-3191 or equivalent (A), and into the slot on the winding mandrel (B).

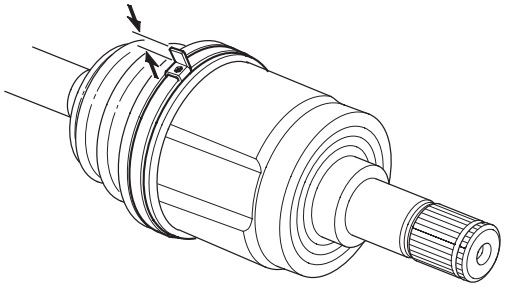


15. Using a wrench on the winding mandrel of the boot band tool, tighten the band until the marked spot (C) on the band meets the edge of the clip.

16. Lift up the boot band tool to bend the free end of the band 90 degrees to the clip. Center-punch the clip, then fold over the remaining tail onto the clip.

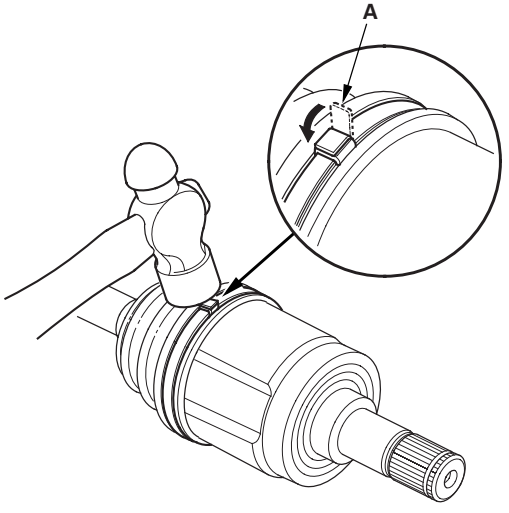


17. Unwind the boot band tool, and cut off the excess free end of the band to leave a 5—10 mm (0.2—0.4 in.) tail protruding from the clip.



18. Bend the band end (A) by tapping it down using a hammer.

    NOTE:
    - Make sure the band and the clip do not interfere with anything on the vehicle and the band does not move.
    - Clean any grease remaining on the surrounding surfaces.

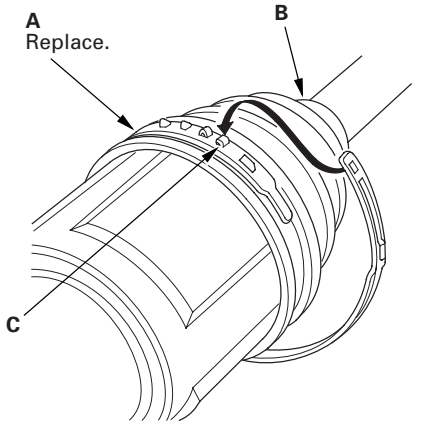


19. Repeat steps 11 through 18 for the band on the other end of the boot.

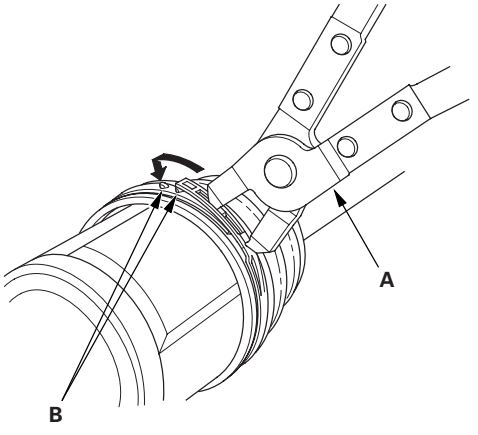
(cont'd)

Driveshaft Reassembly (cont'd)

20. Install a new low profile band (A) onto the boot (B), then hook the tab (C) of the band.



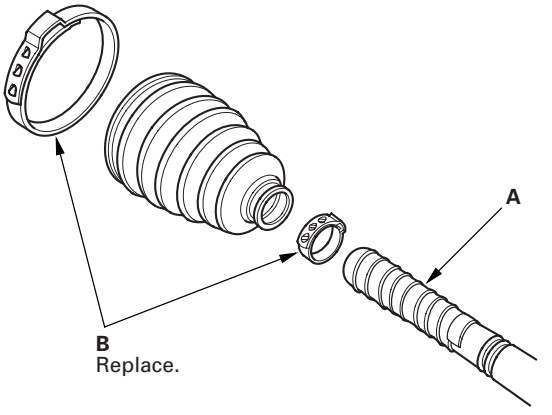
21. Close the hook portion of the band using commercially available boot band pincers (A), then hook the tabs (B) of the band.



22. Install the boot band on the other end of the boot, and repeat steps 20 through 21.

Outboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damaging the outboard boot.

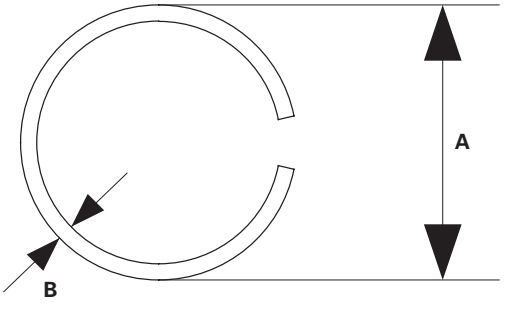


2. Install new ear clamp bands (B) and the outboard boot, then remove the vinyl tape. Be careful not to damage the outboard boot.

3. Make sure to check the size of a new stop ring.

NOTICE

To avoid driveshaft and vehicle damage, make sure you install a new stop ring.

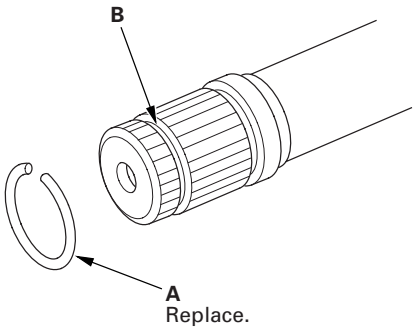


Stop ring specifications

Model	Overall Diameter (A)	Wire Diameter (B)
6-speed M/T model	30.5 mm (1.20 in.)	1.8 mm (0.07 in.)
Except 6-speed M/T model	24.3 mm (0.96 in.)	1.6 mm (0.06 in.)

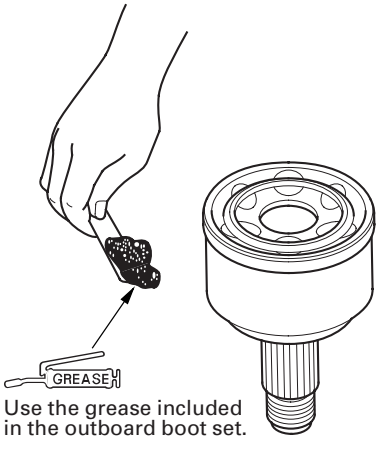
DYNOMITE -2009-

4. Install the stop ring (A) into the driveshaft groove (B).

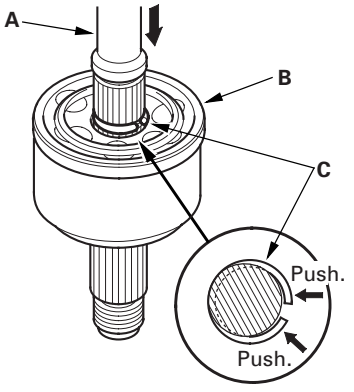


5. Pack about 35 g (1.2 oz) grease included in the new outboard boot set into the driveshaft hole in the outboard joint.

   NOTE: If you are installing a new outboard joint, the grease is already installed.



6. Insert the driveshaft (A) into the outboard joint (B) until the stop ring (C) is close to the joint.

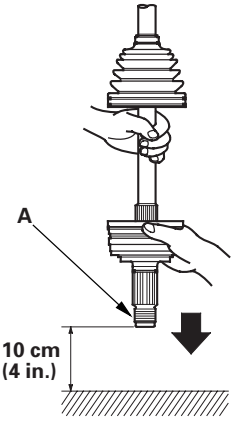


(cont'd)

Driveshaft Reassembly (cont'd)

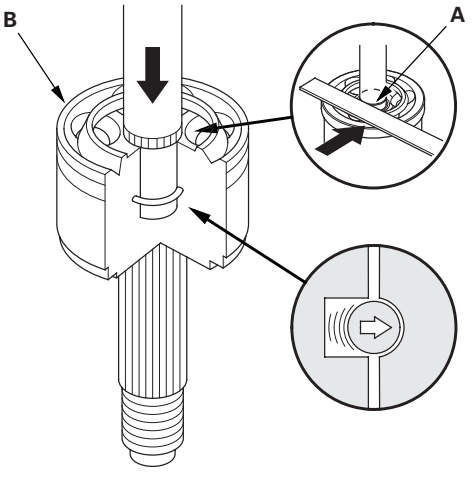
7. To completely seat the outboard joint, pick up the driveshaft and joint, and tap or hit the assembly onto a hard surface from a height of about 10 cm (4 in.).

   NOTE: Do not use a hammer as excessive force may damage the driveshaft. Be careful not to damage the threaded section (A) of the outboard joint.



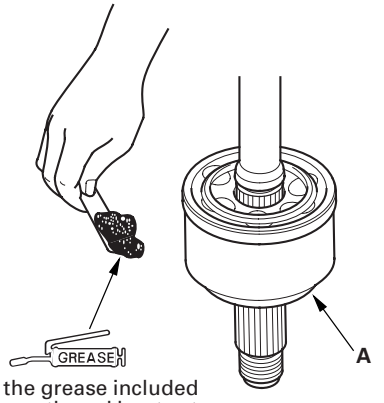
8. Check the alignment of the paint mark (A) you made with the outboard joint end (B).

   NOTICE
   To avoid driveshaft and vehicle damage, the shaft must be all the way into the outboard joint to ensure the stop ring is properly seated.



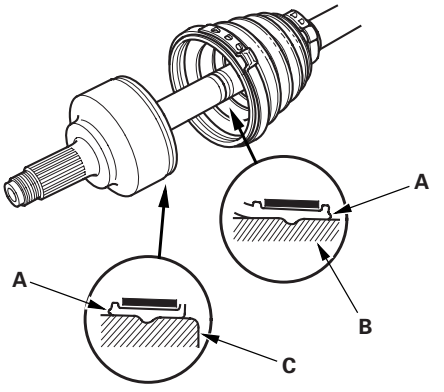
9. Pack the outboard joint (A) with the remaining grease included in the new outboard boot set.

   Total grease quantity
   Outboard joint:
   K20Z2 engine model: 120—140 g (4.2—4.9 oz)
   K20Z3 engine model: 110—130 g (3.8—4.5 oz)



Use the grease included in the outboard boot set.

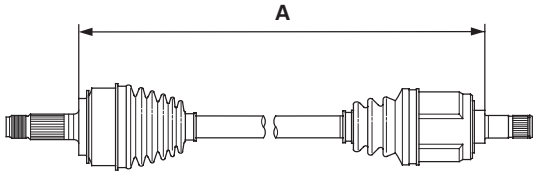
10. Fit the boot ends (A) onto the driveshaft (B) and outboard joint (C). Bleed any excess air from the boot by inserting a flat-tipped screwdriver between the boot and the joint.



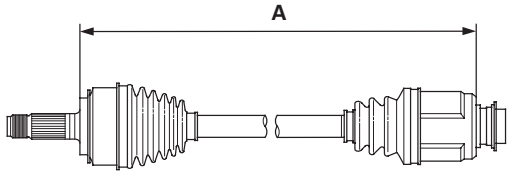
DYNOMITE -2009-

11. Inspect the length (A) of the driveshaft to the figure as shown, then adjust the boots to halfway between full compression and full extension.

Left driveshaft

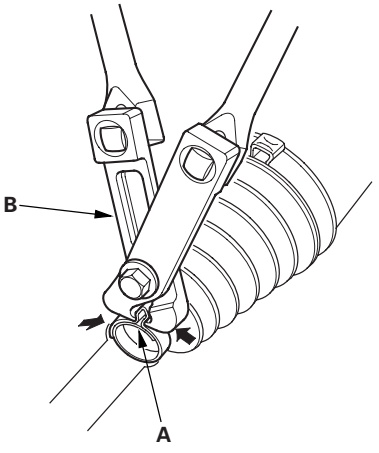


Right Driveshaft

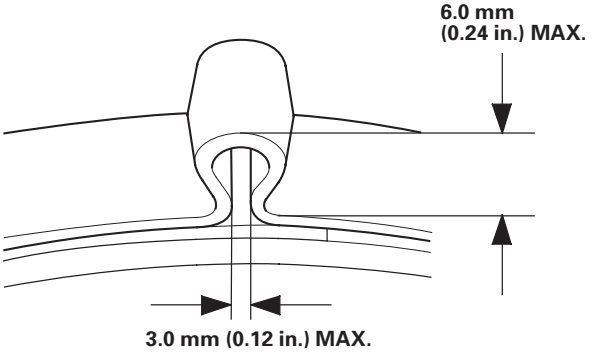


Model	Left/Right Driveshaft	Specified Length (A)
K20Z2 engine model	Left	505.5—510.0 mm (19.88—20.08 in.)
	Right	493.0—498.0 mm (19.41—19.61 in.)
K20Z3 engine model	Left	511.0—516.0 mm (20.12—20.31 in.)
	Right	486.8—491.8 mm (19.17—19.36 in.)

12. Close the ear portion (A) of the band using commercially available boot band pliers (Kent-Moore J-35910 or equivalent) (B).



13. Check the clearance between the closed ear portion of the band. If the clearance is not within the standard, close the ear portion of the band tighter.



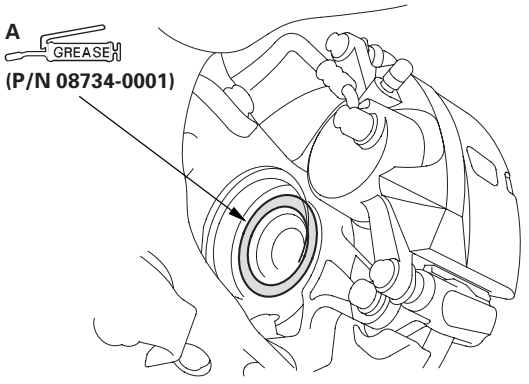
14. Repeat steps 12 and 13 for the band on the other end of the boot.

Driveshaft Installation

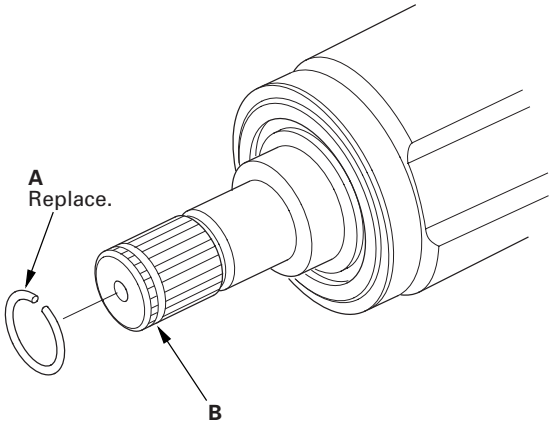
NOTE: Before starting installation, make sure the mating surfaces of the joint and the splined section are clean.

1. Apply about 5 g (0.18 oz) moly 60 paste (P/N 08734-0001) to the contact area (A) of the outboard joint and the front wheel bearing.

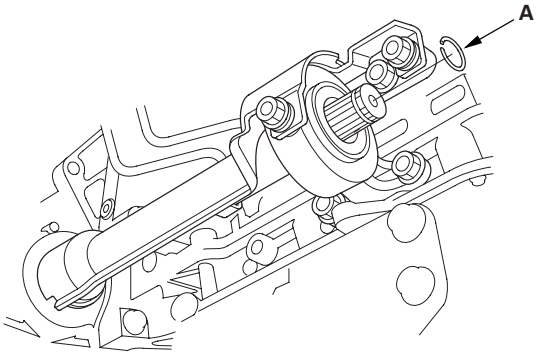
   NOTE: The paste helps to prevent noise and vibration.



2. Install a new set ring (A) onto the set ring groove (B) of the driveshaft (left driveshaft).

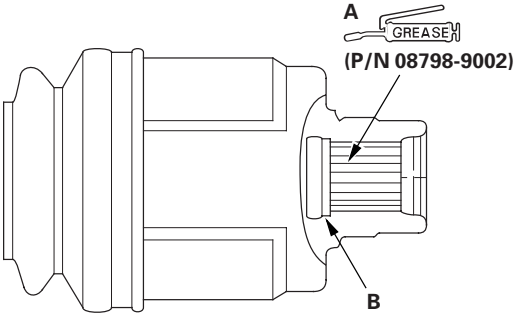


3. Install a new set ring (A) onto the set ring groove (B) of the intermediate shaft.



4. Apply super high temp urea grease (P/N 08798-9002) to the whole splined surface (A) of the right driveshaft. After applying grease, remove the grease from the splined grooves at intervals of 2—3 splines and from the set ring groove (B) so that air can bleed from the intermediate shaft.

   Grease quantity
   K20Z2 engine model: 0.5—1.0 g (0.02—0.04 oz)
   K20Z3 engine model: 2.0—3.0 g (0.08—0.12 oz)



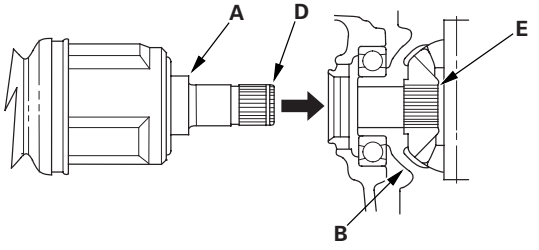
DYNOMITE -2009-

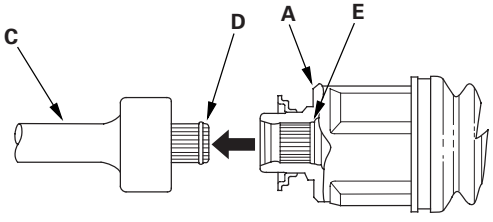
5. Clean the areas where the driveshaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air.

   NOTE: Do not wash the rubber parts with solvent.

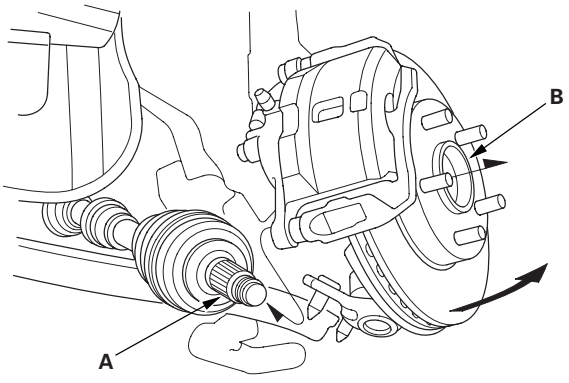
6. Insert the inboard end (A) of the driveshaft into the differential (B) or the intermediate shaft (C) until the set ring (D) locks in the groove (E).

   NOTE: Insert the driveshaft horizontally to prevent damaging the oil seal.

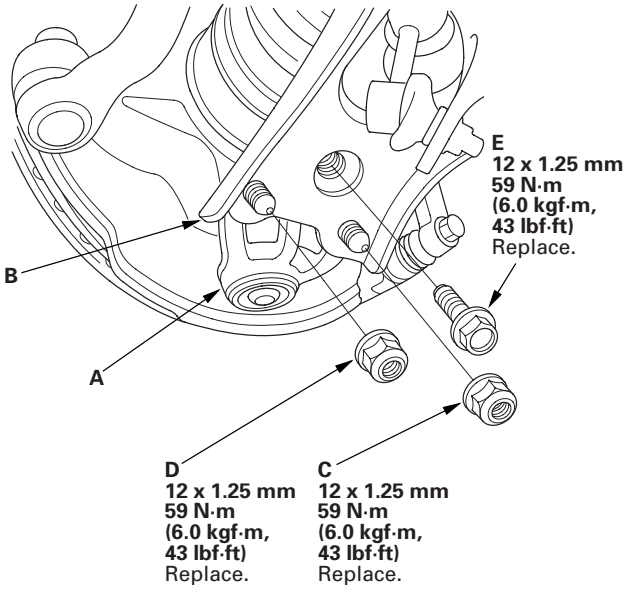




7. Install the outboard joint (A) into the front hub (B).



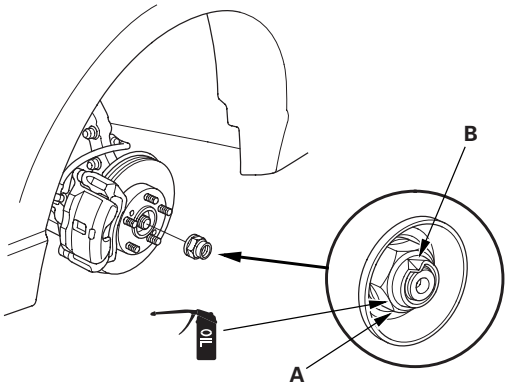
8. Connect the knuckle (A) onto the lower arm (B). During installation, install a new flange bolt and new self-locking nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order: the nut on the front (C), the nut on the rear (D), then the bolt (E).



(cont'd)

Driveshaft Installation (cont'd)

9. Apply small amount of engine oil to the seating surface of new spindle nut (A).



A
K20Z2 engine model:
22 x 1.5 mm
181 N·m
(18.5 kgf·m, 134 lbf·ft)
Replace.
K20Z3 engine model:
24 x 1.5 mm
245 N·m
(25.0 kgf·m, 180 lbf·ft)
Replace.

10. Install the spindle nut, then tighten it. After tightening, use a drift to stake the spindle nut shoulder (B) against the driveshaft.

11. Clean the mating surfaces of the brake disc and the wheel, then install the front wheels.

12. Turn the front wheel by hand, and make sure there is no interference between the driveshaft and surrounding parts.

13. Refill the transmission with the recommended transmission fluid:

    - 5-speed manual transmission (see page 13-5)
    - 6-speed manual transmission (see page 13-82)
    - Automatic transmission (see page 14-232)

14. Lower the vehicle on the lift.

15. Check the wheel alignment, and adjust it if necessary (see page 18-5).

16. Test-drive the vehicle.

DYNOMITE -2009-

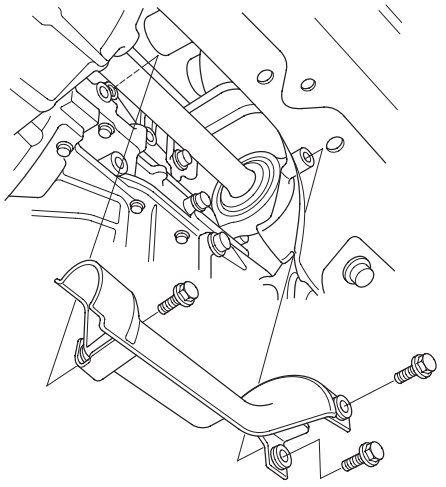
Intermediate Shaft Removal

1. Drain the transmission fluid. Reinstall the drain plug with a new sealing washer:

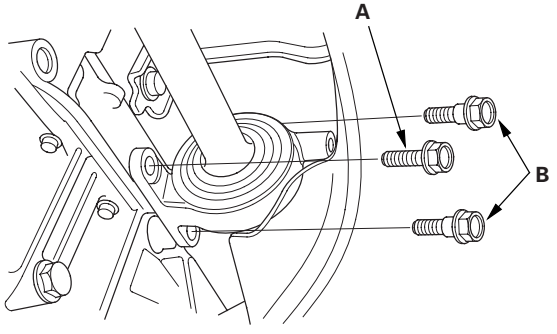
   - 5-speed manual transmission (see page 13-5)
   - 6-speed manual transmission (see page 13-82)
   - Automatic transmission (see page 14-232)

2. Remove the right driveshaft (see page 16-4).

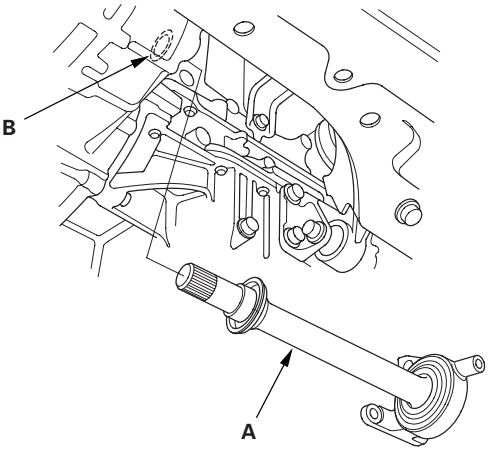
3. Remove the three flange bolts, then remove the heat shield.



4. Remove the flange bolt (A) and the two shoulder bolts (B).



5. Remove the intermediate shaft (A) from the differential. Hold the intermediate shaft horizontally until it is clear of the differential to prevent damaging the oil seal (B).

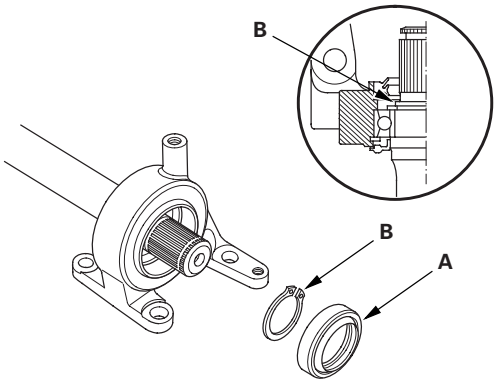


DYNOMITE -2009-

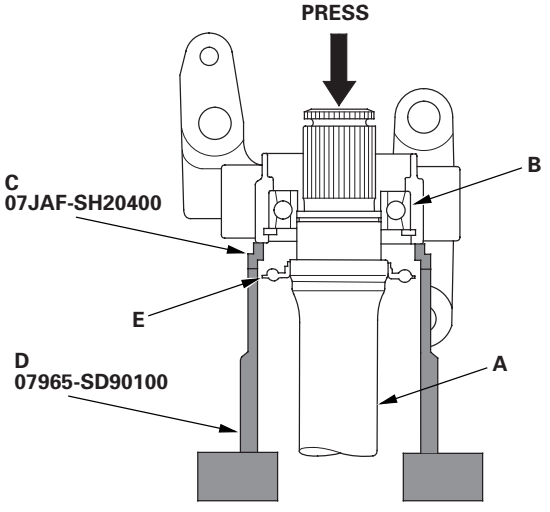
Intermediate Shaft Disassembly

Special Tools Required
- Support base attachment 07JAF-SH20400
- Oil seal driver, 44.5 mm 07947-SB00100
- Support base 07965-SD90100

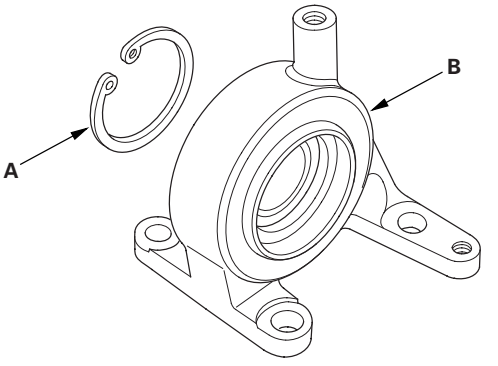
1. Remove the outer seal (A) and the external snap ring (B).



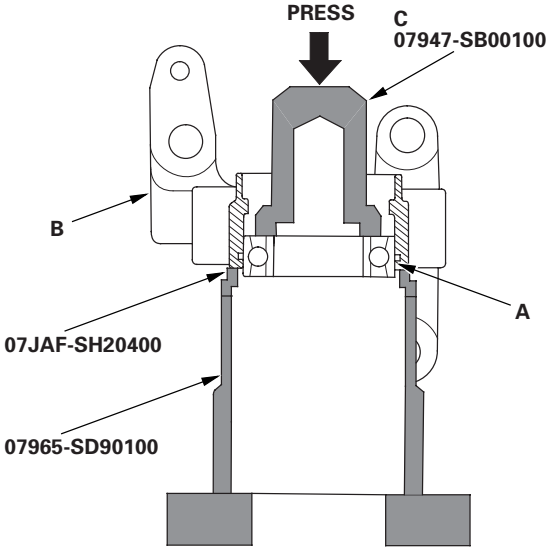
2. Press the intermediate shaft (A) out of the intermediate shaft bearing (B) using the support base attachment (C), the support base (D), and a press. Be careful not to damage the bearing support rings (E) on the intermediate shaft during disassembly.



3. Remove the internal snap ring (A) from the bearing support (B).



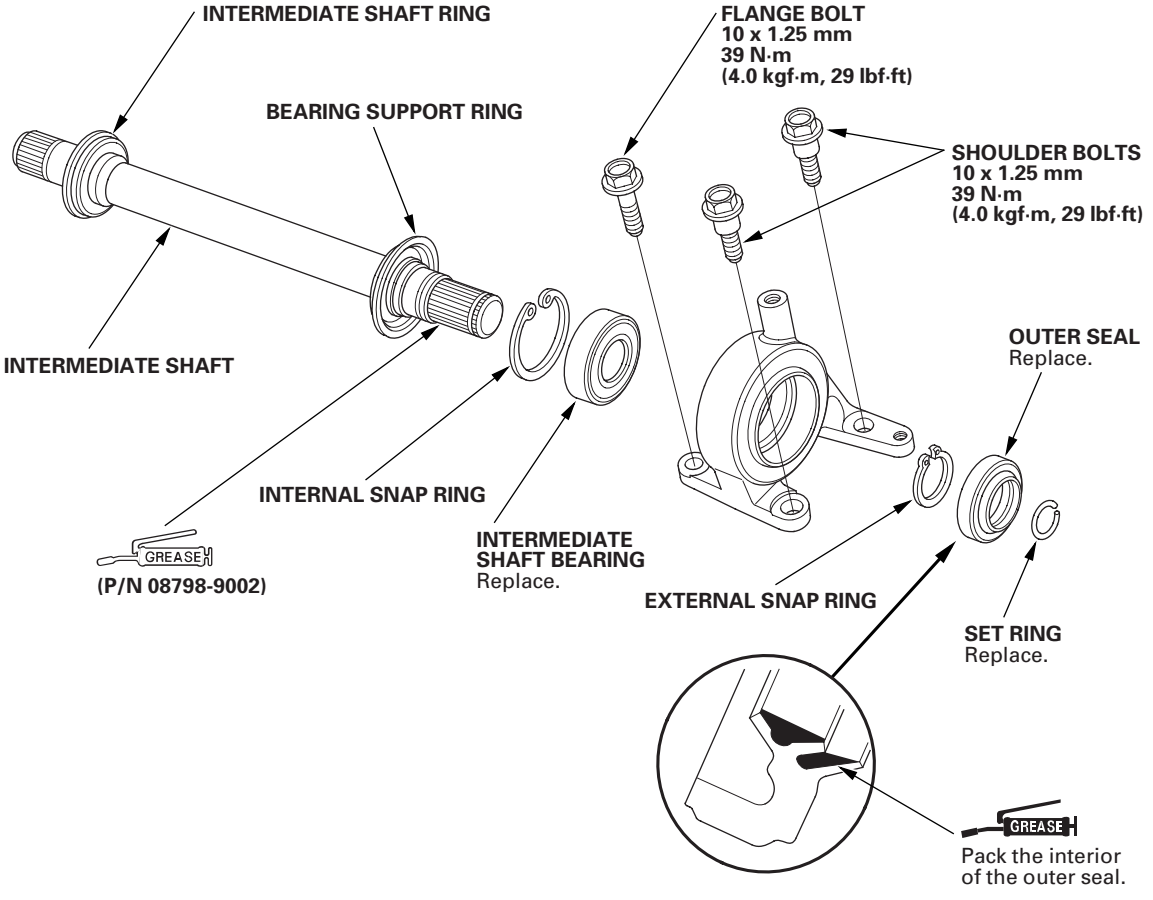
4. Press the intermediate shaft bearing (A) out of the bearing support (B) using the half shaft base, the support base attachment, the 44.5 mm oil seal driver (C), and a press.



DYNOMITE -2009-

Intermediate Shaft Reassembly

Exploded View



(cont'd)

Intermediate Shaft Reassembly (cont'd)

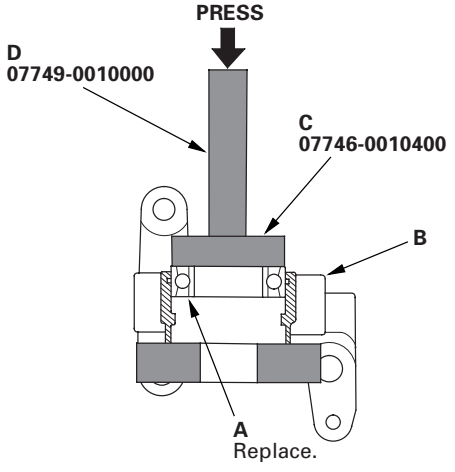
Special Tools Required
- Support base attachment 07JAF-SH20400
- Driver handle, 15 x 135L 07749-0010000
- Bearing driver attachment, 52 x 55 mm 07746-0010400
- Inner bearing driver attachment, 35 mm 07746-0030400
- Oil seal driver, 64 mm 07GAD-PH70201
- Support base 07965-SD90100

NOTE: Refer to the Exploded View, as needed, during this procedure.

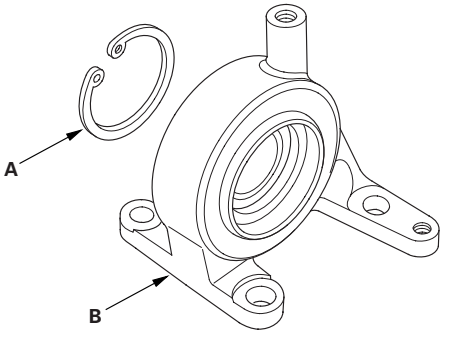
1. Clean the disassembled parts with solvent, and dry them with compressed air.

   NOTE: Do not wash the rubber parts with solvent.

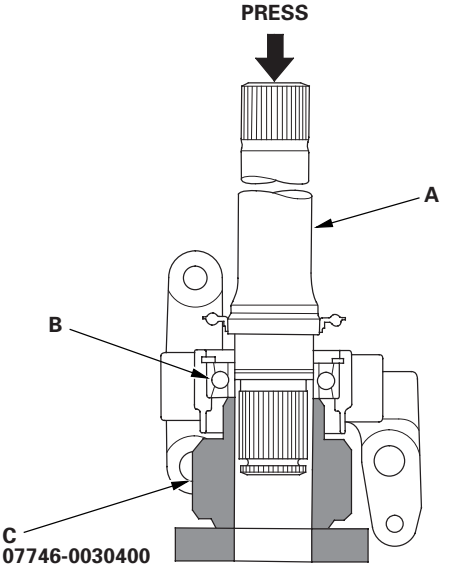
2. Press a new intermediate shaft bearing (A) into the bearing support (B) using the 52 x 55 mm bearing driver attachment (C), the 15 x 135L driver handle (D), and a press.



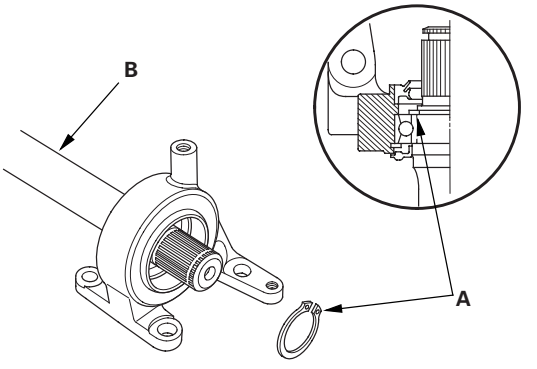
3. Install the internal snap ring (A) into the groove of the bearing support (B).



4. Press the intermediate shaft (A) into the shaft bearing (B) using the 35 mm inner bearing driver attachment (C) and a press.

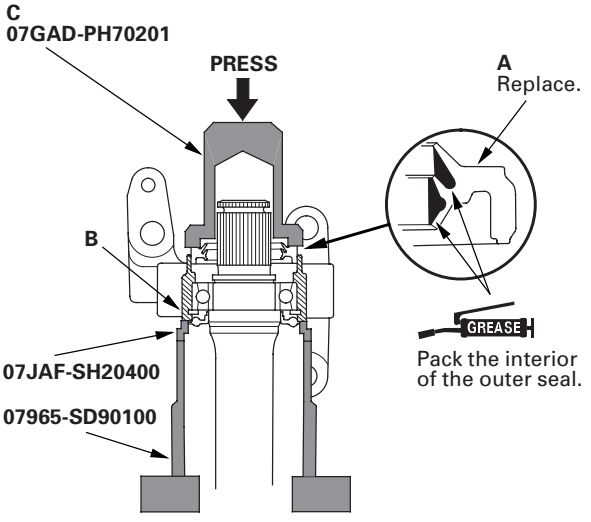


5. Install the external snap ring (A) into the groove of the intermediate shaft (B).



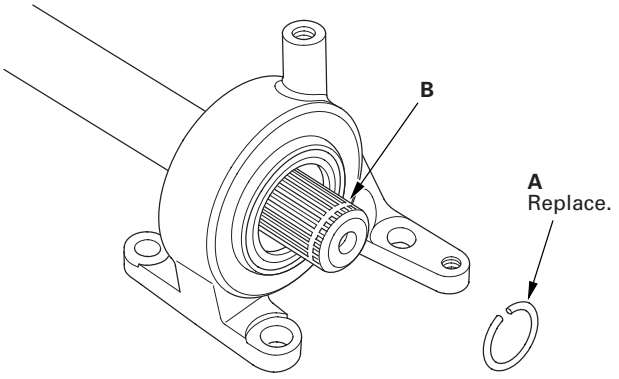
DYNOMITE -2009-

6. Install a new outer seal (A) flush with the bearing support (B) using the support base attachment, the support base, the 64 mm oil seal driver (C), and a press.



Intermediate Shaft Installation

1. Install a new set ring (A) onto the set ring groove (B) of the intermediate shaft.

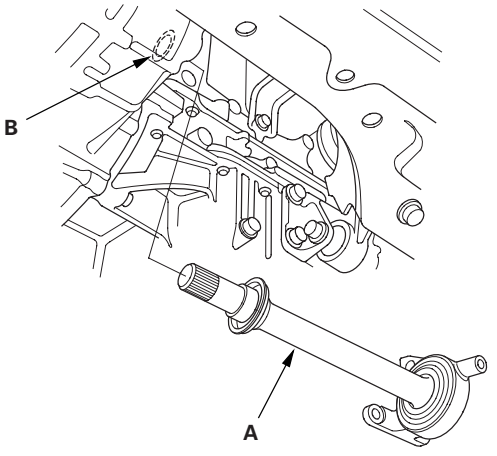


2. Clean the areas where the intermediate shaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air.

   NOTE: Do not wash the rubber parts with solvent.

3. Insert the intermediate shaft (A) into the differential until the set ring locks in the groove.

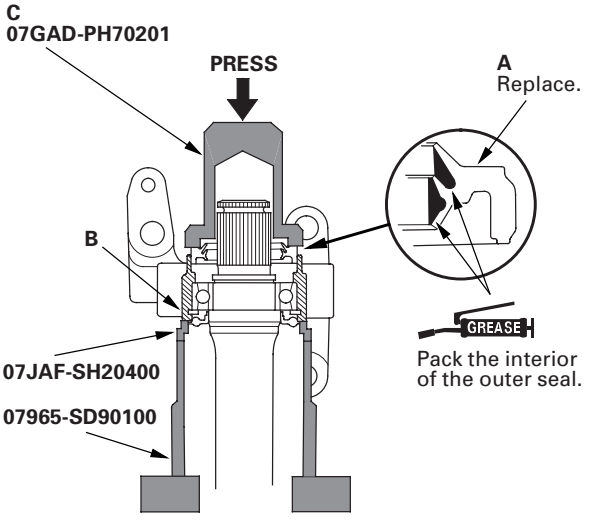
   NOTE: Insert the intermediate shaft carefully to prevent damaging the oil seal (B).



(cont'd)

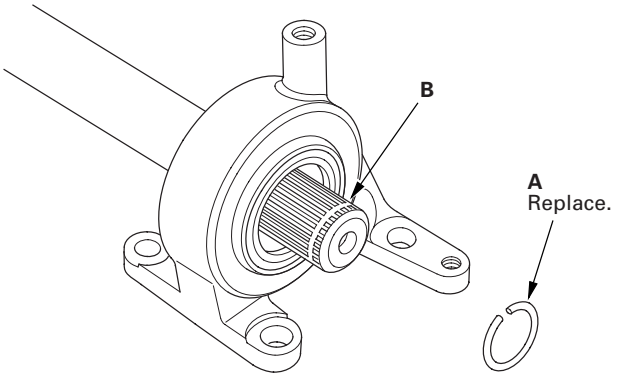
DYNOMITE -2009-

6. Install a new outer seal (A) flush with the bearing support (B) using the support base attachment, the support base, the 64 mm oil seal driver (C), and a press.



Intermediate Shaft Installation

1. Install a new set ring (A) onto the set ring groove (B) of the intermediate shaft.

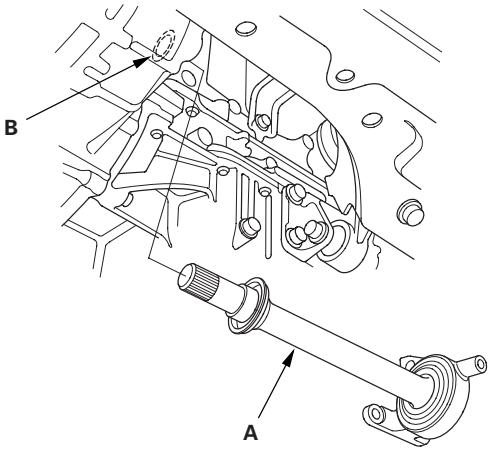


2. Clean the areas where the intermediate shaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air.

   NOTE: Do not wash the rubber parts with solvent.

3. Insert the intermediate shaft (A) into the differential until the set ring locks in the groove.

   NOTE: Insert the intermediate shaft carefully to prevent damaging the oil seal (B).

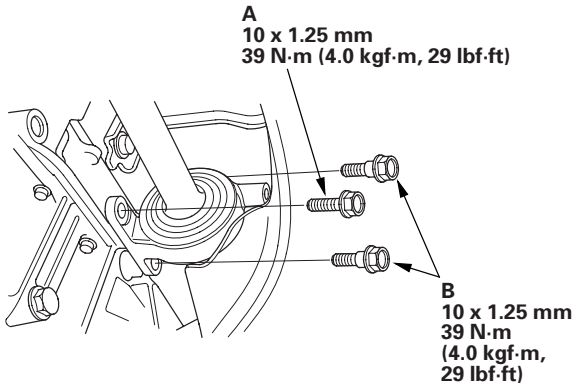


(cont'd)

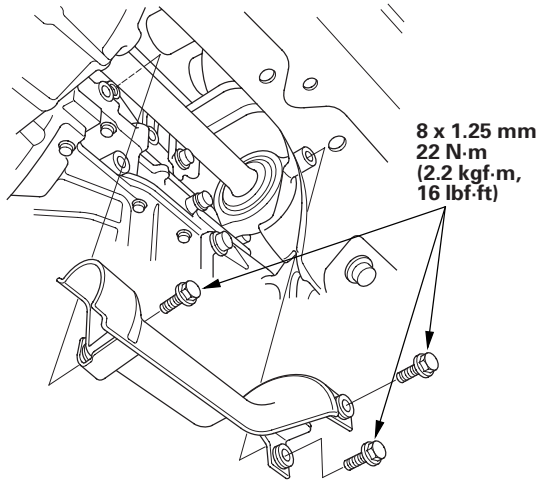
DYNOMITE -2009-

Intermediate Shaft Installation (cont'd)

4. Install the flange bolt (A) and two shoulder bolts (B).



5. Install the heat shield, and tighten and three bolts.



6. Install the right driveshaft (see page 16-20).

7. Refill the transmission with the recommended transmission fluid:

   - 5-speed manual transmission (see page 13-5)
   - 6-speed manual transmission (see page 13-82)
   - Automatic transmission (see page 14-232)

8. Check the wheel alignment, and adjust it if necessary (see page 18-5).

9. Test-drive the vehicle.

DYNOMITE -2009-

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