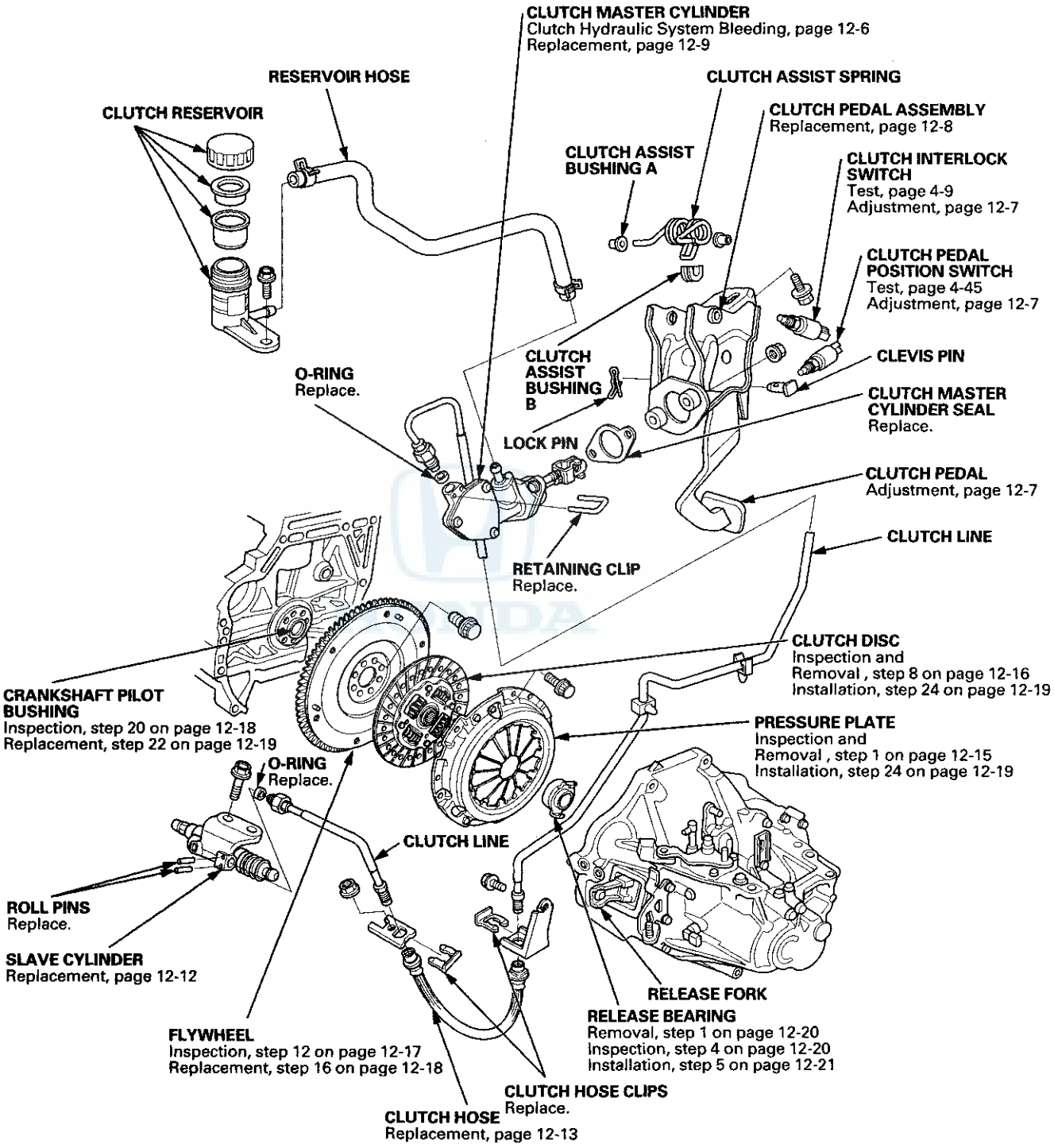
Component Location Index

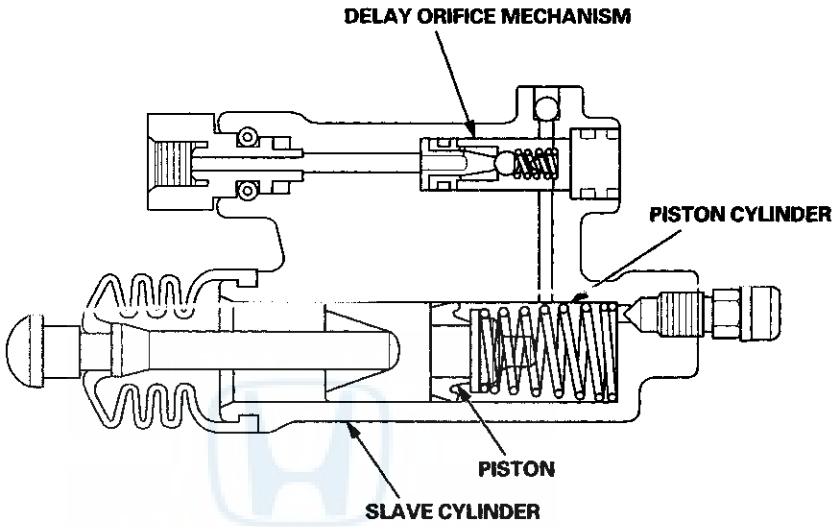


System Description

Delay Orifice Mechanism

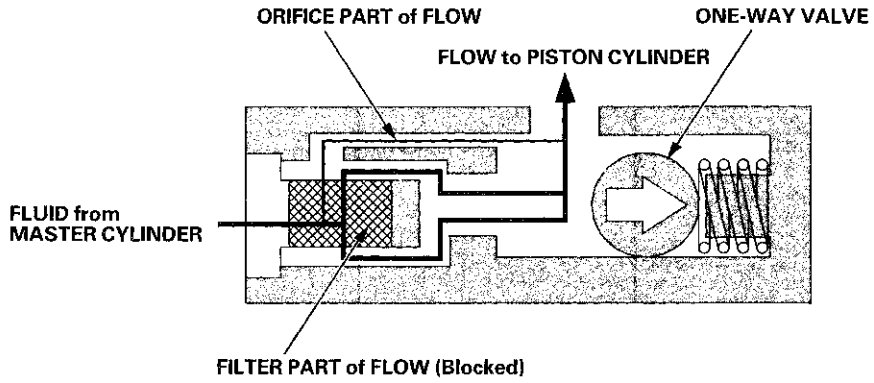
Function

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.

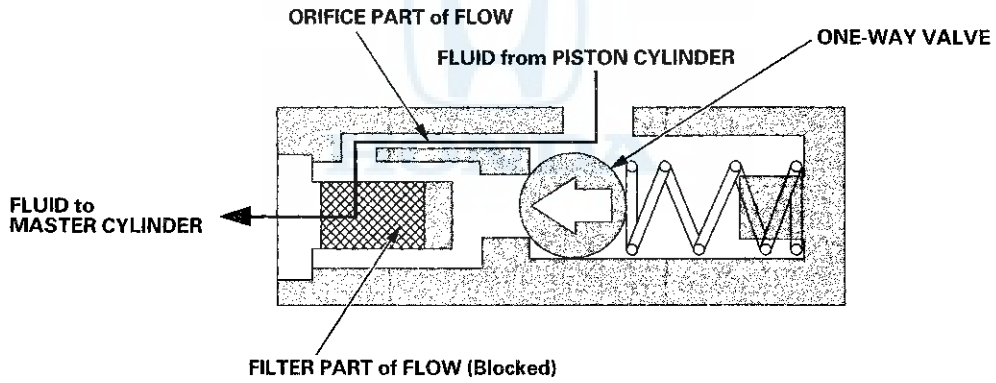


Fluid Flow Operation

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.

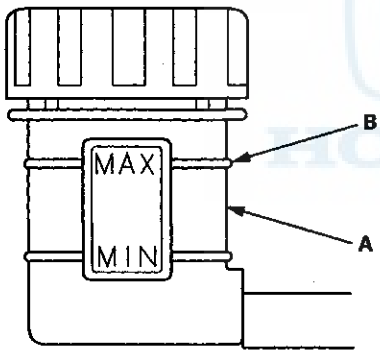


Clutch Hydraulic System Bleeding

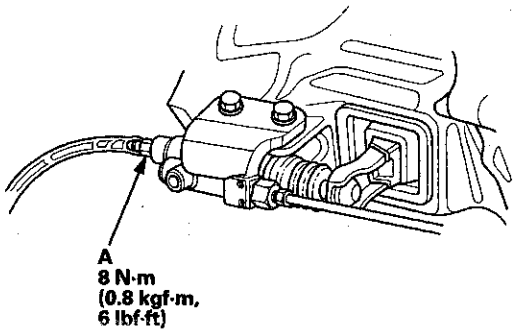
NOTE:

- Do not reuse the drained fluid. Always use Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- 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.
- It 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. Do the battery removal procedure (see page 22-92).
2. Make sure the brake fluid level in the clutch reservoir (A) is at the MAX (upper) level line (B).



3. Attach 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.



4. 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 clutch 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.

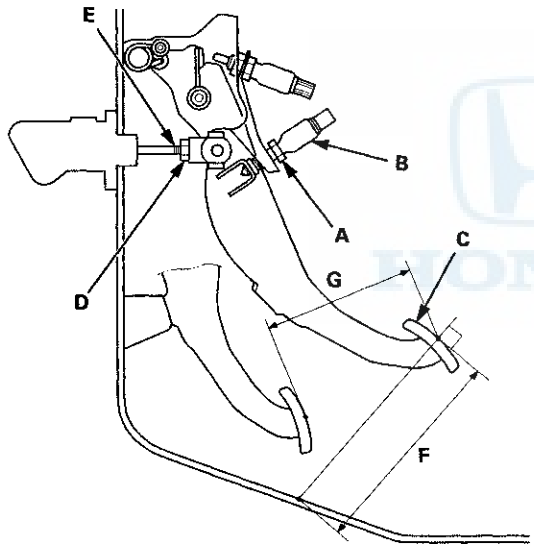
5. Tighten the bleeder screw securely.
6. Refill the brake fluid in the reservoir to the MAX (upper) level line.
7. Do the battery installation procedure (see page 22-92).

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 4-45).
- For a clutch interlock operation problem, check the clutch interlock switch (see page 4-9).
- Remove the driver's floor mat before adjusting the clutch pedal.
- 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. Disconnect the clutch pedal position switch connector and the clutch interlock switch connector.
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).

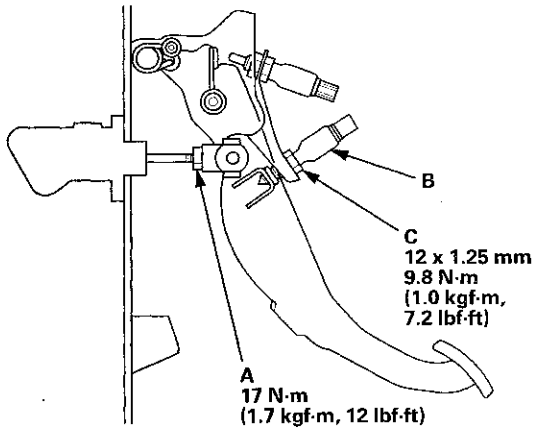


3. Loosen the clutch pushrod locknut (D), and turn the pushrod (E) in or out to get the specified height (F), and the stroke (G) at the clutch pedal. If adjusting the pushrod causes the clutch pedal to contact the clutch pedal position switch, back off the switch further.

F Clutch Pedal Height: 174 mm (6.9 in)

G Clutch Pedal Stroke: 130—140 mm (5.1—5.5 in)

4. Tighten the clutch pushrod locknut (A).

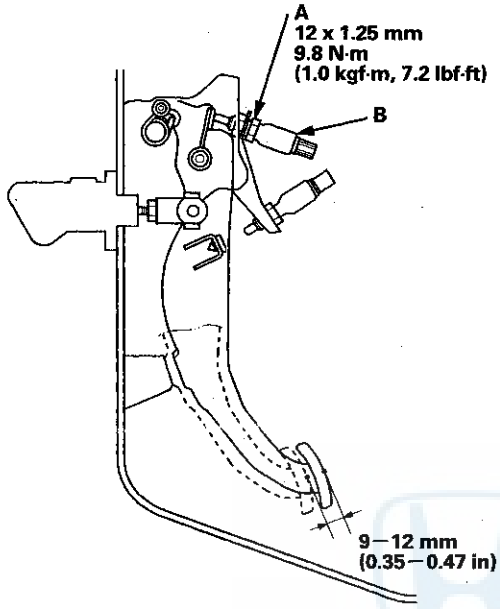


5. With the clutch pedal released, turn in the clutch pedal position switch (B) until it contacts the clutch pedal.
6. Turn in the clutch pedal position switch an additional 3/4 to 1 turn. Make sure the clutch pedal height did not change.
7. While holding the clutch pedal position switch, tighten the locknut (C).

(cont'd)

Clutch Pedal, Clutch Pedal Position Switch, and Clutch Interlock Switch Adjustment (cont'd)

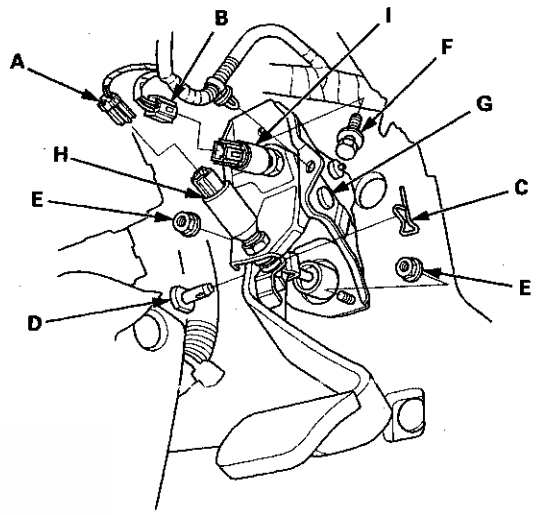
8. Loosen the clutch interlock switch locknut (A).



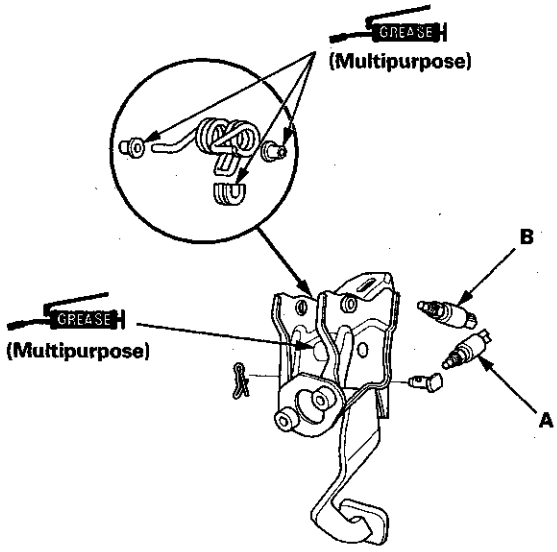
9. Fully press the clutch pedal to the floor, then release the clutch pedal 9—12 mm (0.35—0.47 in) and hold it there.
10. Adjust the position of the clutch interlock switch (B) so the engine starts with the clutch pedal in this position.
11. While holding the clutch interlock switch, tighten the locknut.
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 clutch interlock operation.

Clutch Pedal Assembly Replacement

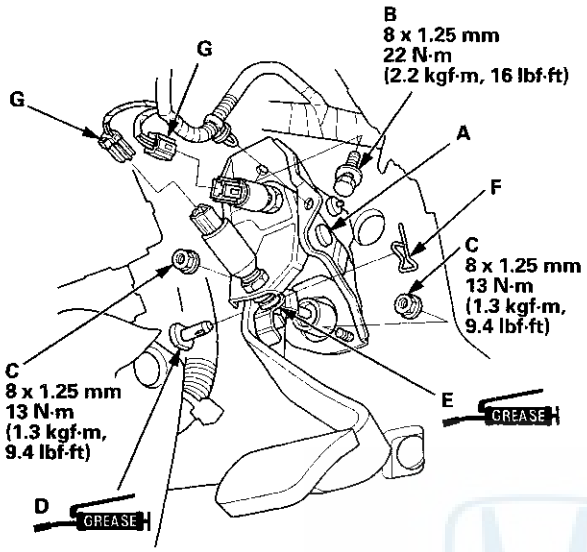
1. Disconnect the clutch pedal position switch connector (A) and the clutch interlock switch connector (B).



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 pedal position switch (H) and the clutch interlock switch (I).
6. Loosely install the clutch pedal position switch (A) and the clutch interlock 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 multipurpose grease to the clevis pin (D), and the mating surfaces (E) of the clevis and the pedal. Slide the clevis pin into the clevis, then install the lock pin (F).
10. Adjust the clutch pedal, the clutch pedal position switch, and the clutch interlock switch (see page 12-7).

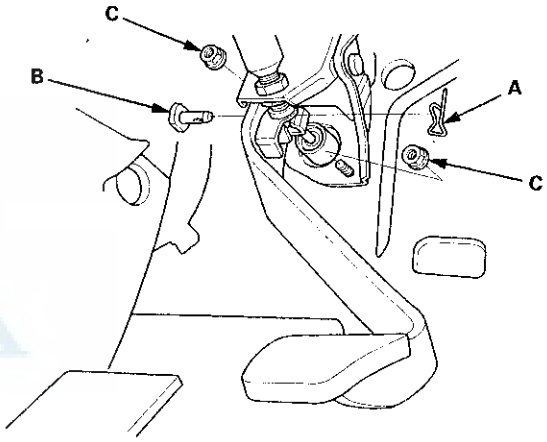
    NOTE: Connect the switch connectors (G) after adjusting them.
11. Check the clutch operation.

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.

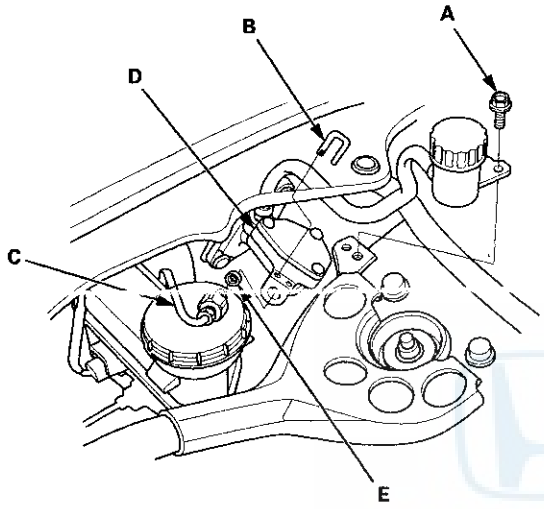
1. Remove and discard the brake fluid from the clutch master cylinder reservoir with a syringe or other suitable device.
2. Pry out the lock pin (A), and pull the clevis pin (B) out of the clevis. Remove the master cylinder mounting nuts (C).



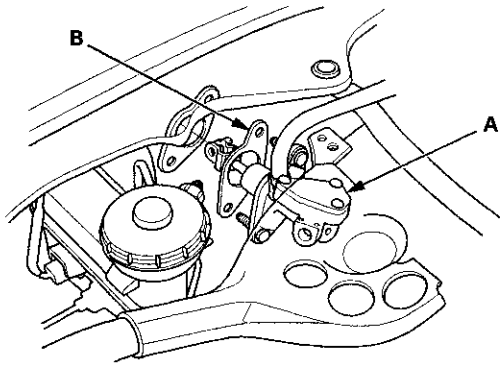
(cont'd)

Clutch Master Cylinder Replacement (cont'd)

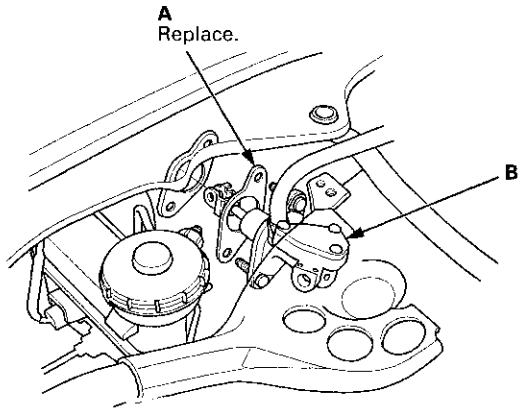
3. Remove the reservoir mounting bolt (A) and the retaining clip (B), then disconnect the clutch line (C) from the clutch master cylinder (D), and remove the O-ring (E). Plug or wrap the end of the clutch line with a clean shop towel to prevent brake fluid from coming out.



4. Remove the master cylinder (A) and the clutch master cylinder seal (B).



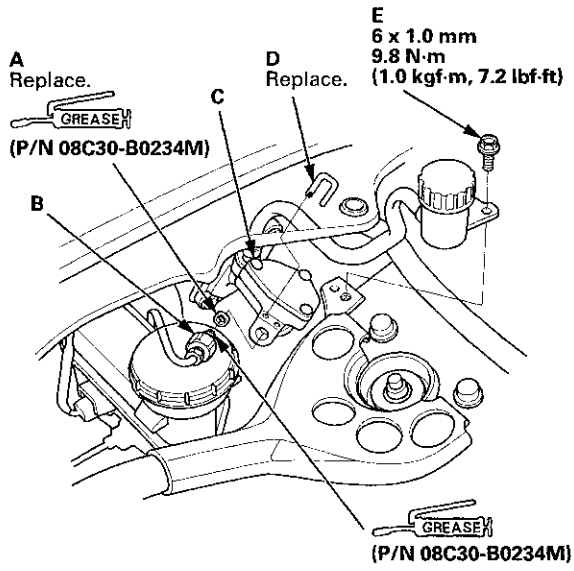
5. Install a new master cylinder seal (A), then install the master cylinder (B).



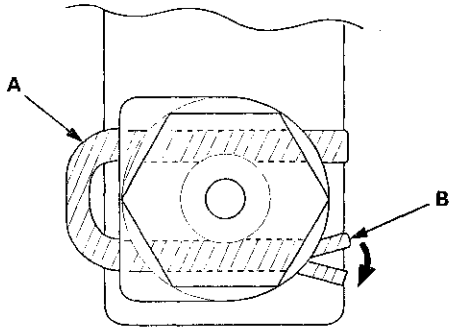
6. Install a new O-ring (A) on the clutch line (B), then install the clutch line in the clutch master cylinder (C) with a new retaining clip (D). Install the master cylinder reservoir mounting bolt (E).

NOTE:

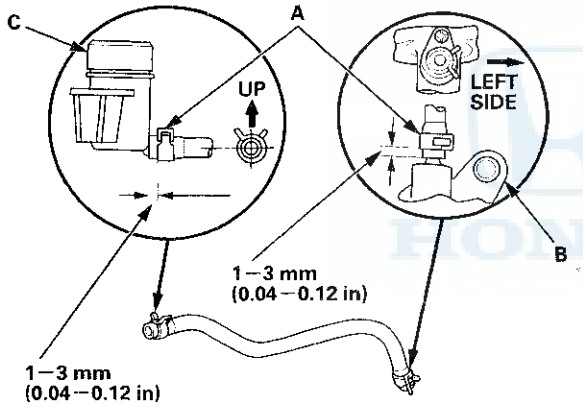
- Apply silicone grease (P/N 08C30- B0234M) to the O-ring and the end of the clutch line.
- Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.



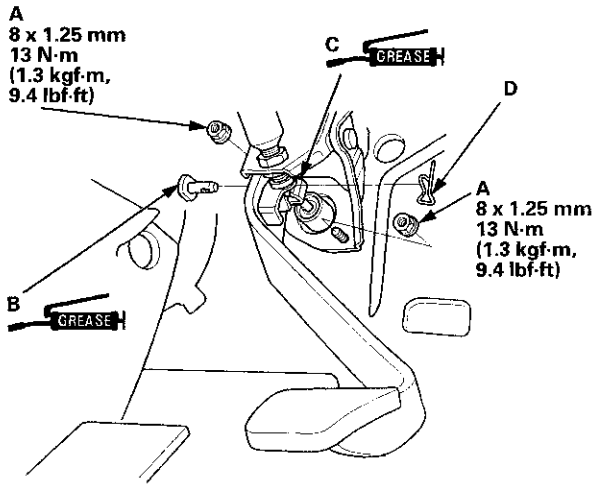
7. To prevent the retaining clip (A) from coming off, pry apart the tip of the clip (B) with a screwdriver.



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



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

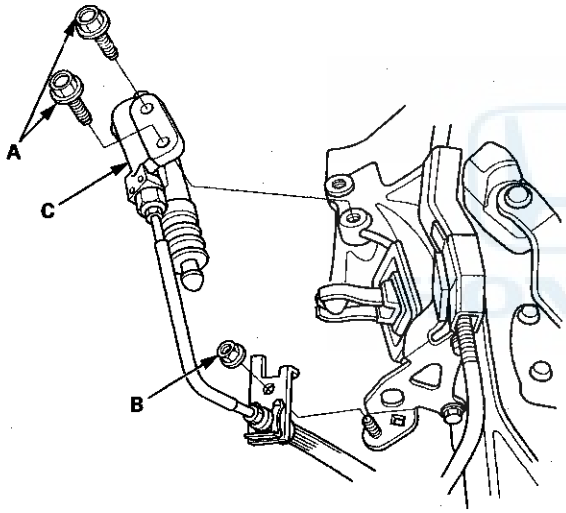


10. Apply multipurpose grease to the clevis pin (B) and the mating surfaces (C) of the clevis and the pedal. Slide the clevis pin into the clevis, then install the lock pin (D).
11. Bleed the clutch hydraulic system (see page 12-6).
12. Adjust the clutch pedal, the clutch pedal position switch, and the clutch interlock switch (see page 12-7).
13. Check the clutch operation, and check for leaks.
14. Test-drive the vehicle.

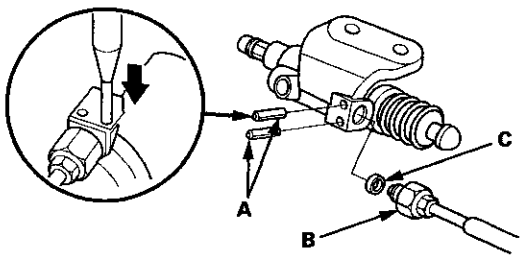
Slave Cylinder Replacement

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.
- 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.

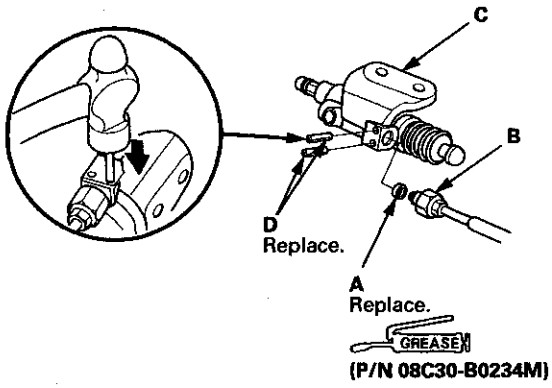
1. Do the battery removal procedure (see page 22-92).
2. Remove the mounting bolts (A), the bracket mounting nut (B), and the slave cylinder (C).



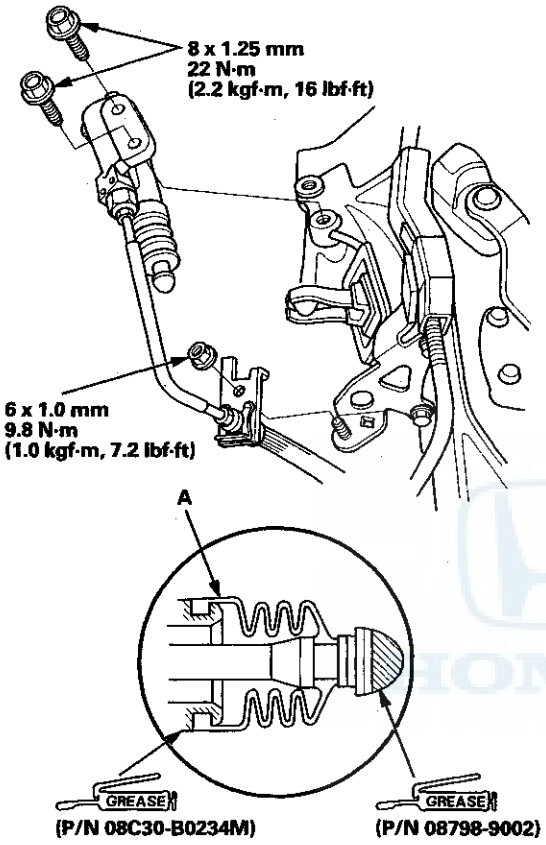
3. Remove the roll pins (A). Disconnect the clutch line (B), and remove the O-ring (C). Plug or wrap the end of the clutch line with a clean shop towel to prevent brake fluid from coming out.



4. Install a new O-ring (A) on the clutch line (B), install the clutch line in the slave cylinder (C), and install new roll pins (D).



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

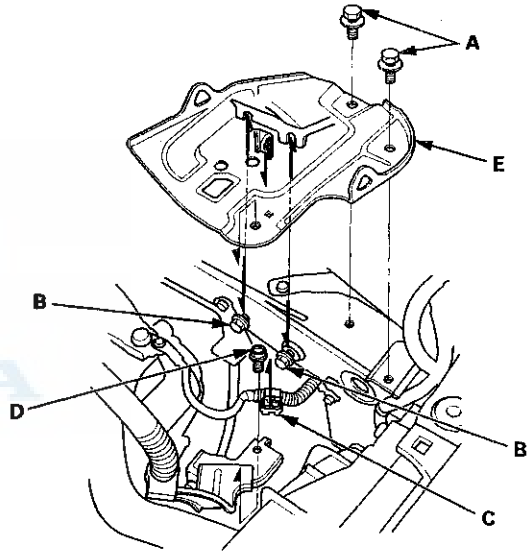


6. Apply a light coat of super high temp urea grease (P/N 08798- 9002) to the end of the slave cylinder pushrod. Install the slave cylinder mounting bolts and the bracket mounting nut.
7. Bleed the clutch hydraulic system (see page 12-6).
8. Check the clutch operation, and check for leaks.
9. Do the battery installation procedure (see page 22-92).
10. Test-drive the vehicle.

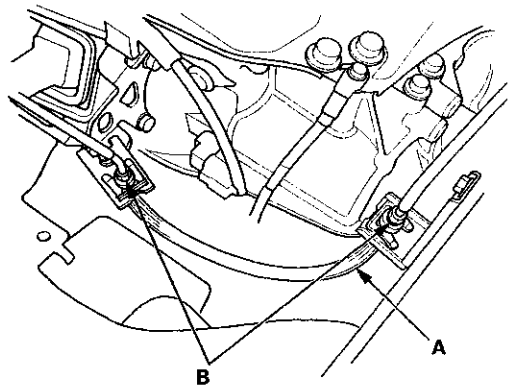
NOTE:

- Replace the clutch hose if it is twisted, cracked, or 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 with water.

1. Do the battery removal procedure (see page 22-92).
2. Remove the battery base bolts (A), loosen the two bolts (B), remove the cable clamp (C), and the harness bracket bolt (D), then remove the battery base (E).



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



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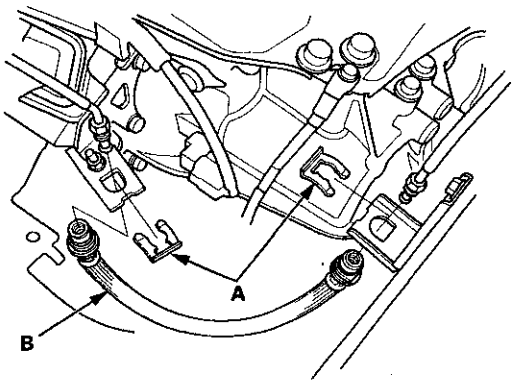
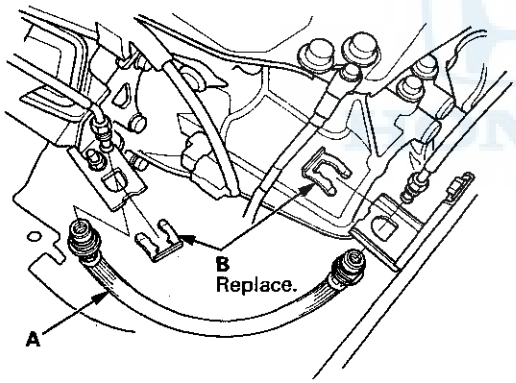
Clutch Hose Replacement (cont'd)

4. Remove and discard the clutch hose clips (A) from the clutch hose (B).

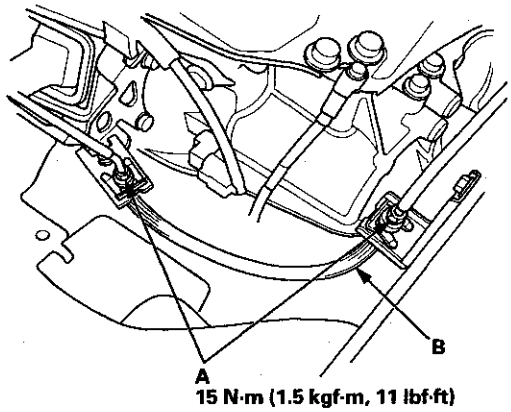


5. Remove the clutch hose from clutch hose brackets.

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



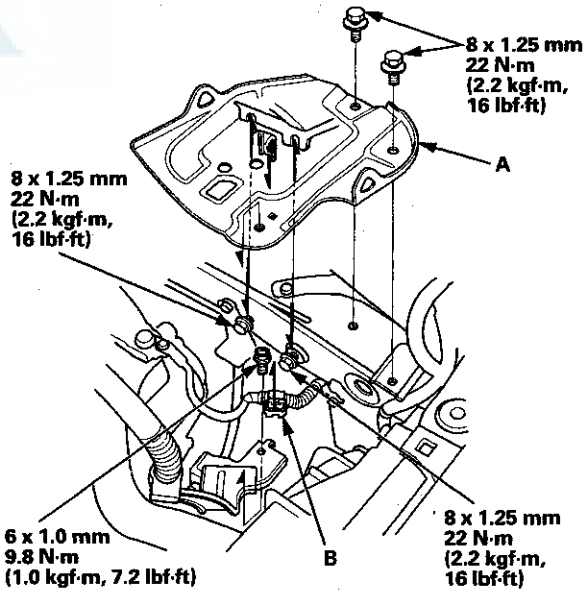
7. Connect the clutch lines (A) to the clutch hose (B).



8. Bleed the clutch hydraulic system (see page 12-6).

9. Do the following checks:
   - Check the clutch hose and line joint for leaks, and tighten if necessary.
   - Check the clutch hose for interference and twisting.

10. Install the battery base (A) and the cable clamp (B).



11. Do the battery installation procedure (see page 22-92).

12. Test-drive the vehicle.

Clutch Replacement

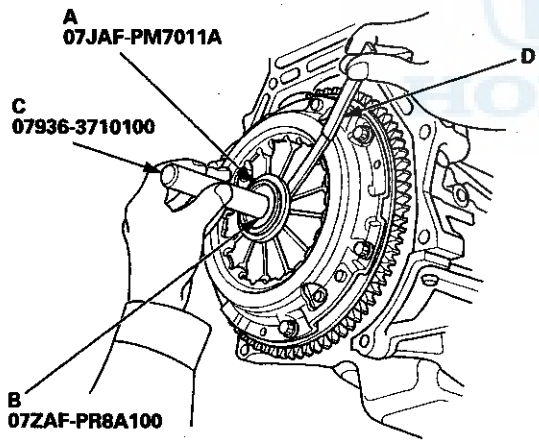
Special Tools Required
- Clutch Alignment Disc 07JAF-PM7011A
- Ring Gear Holder 07LAB-PV00100 or 07924-PD20003
- Clutch Alignment Tool Set 07PAF-0020000
- Clutch Alignment Pilot, 21 mm 07PAF-0020370
- Clutch Alignment Shaft 07ZAF-PR8A100
- Attachment, 22 x 24 mm 07746-0010800
- Driver Handle, 15 x 135L 07749-0010000
- Remover Handle 07936-3710100
- Bearing Remover Shaft Set, 20 mm 07936-3710600
- Slide Hammer 07936-371020A

Engine Side

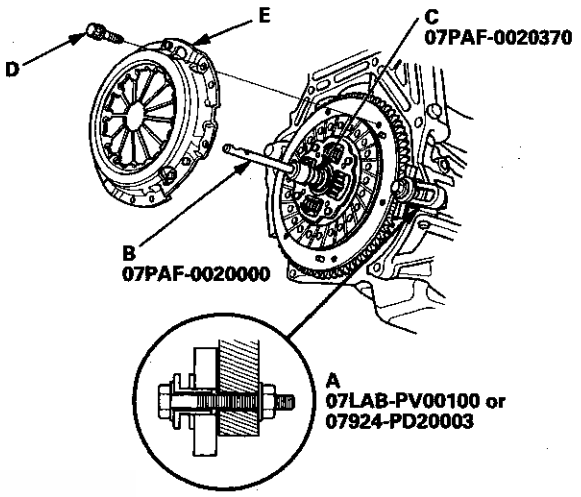
Pressure Plate Inspection and Removal

1. Remove the transmission (see page 13-7).
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 difference is more than the service limit, replace the pressure plate.

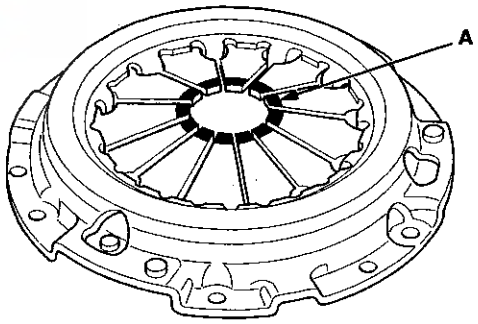
Standard (New): **0.6 mm (0.02 in) max.**
Service Limit: **0.8 mm (0.03 in)**



3. Install the ring gear holder (A), the clutch alignment tool set (B), and the 21 mm clutch alignment pilot (C).



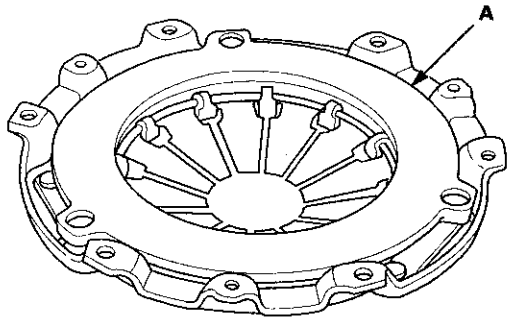
4. To prevent warping, loosen the pressure plate mounting bolts (D) in a crisscross pattern in several steps, then remove the pressure plate (E).
5. Inspect the fingers of the diaphragm spring (A) for wear at the release bearing contact area.



(cont'd)

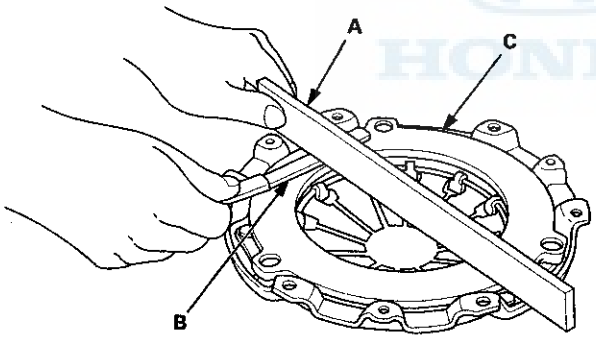
Clutch Replacement (cont'd)

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



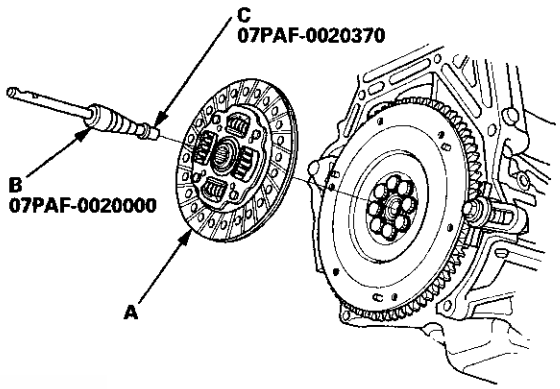
7. Inspect for warpage using a straight edge (A) and a feeler gauge (B). Measure across the pressure plate (C). If the most measurement difference is more than the service limit, replace the pressure plate.

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



Clutch Disc Inspection and Removal

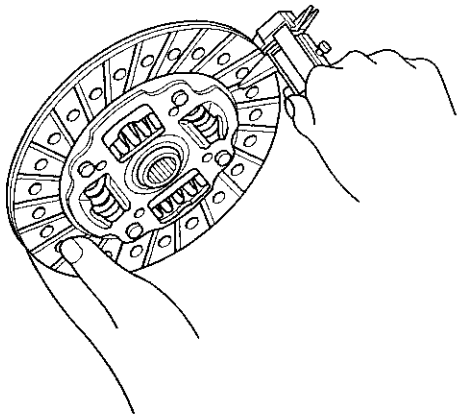
8. Remove the clutch disc (A), the clutch alignment tool set (B), and the 21 mm clutch alignment pilot (C).



9. Inspect the lining of the clutch disc for signs of slippage or oil. If the clutch disc looks burnt or is oil soaked, replace the clutch disc. If the clutch disc is oil soaked, find and repair the source of the oil leak.

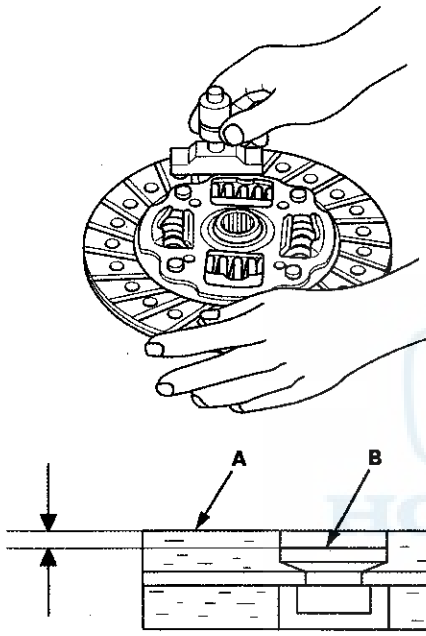
10. Measure the clutch disc thickness. If the measurement is less than the service limit, replace the clutch disc.

Standard (New): **7.30—7.90 mm (0.287—0.311 in)**
Service Limit: **6.0 mm (0.24 in)**



11. Measure the depths 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.

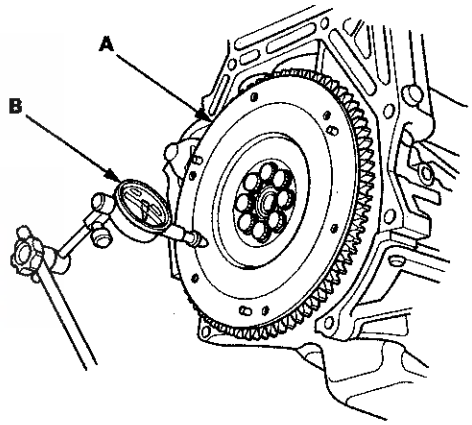
Standard (New): **1.15—1.75 mm (0.045—0.069 in)**
Service Limit: **0.7 mm (0.03 in)**



Flywheel Inspection

12. Remove the ring gear holder.
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; then go to step 16.

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

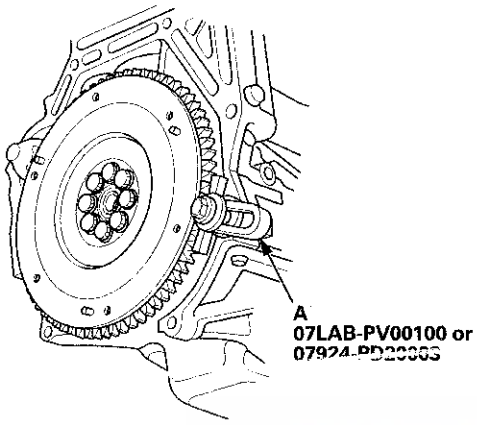


(cont'd)

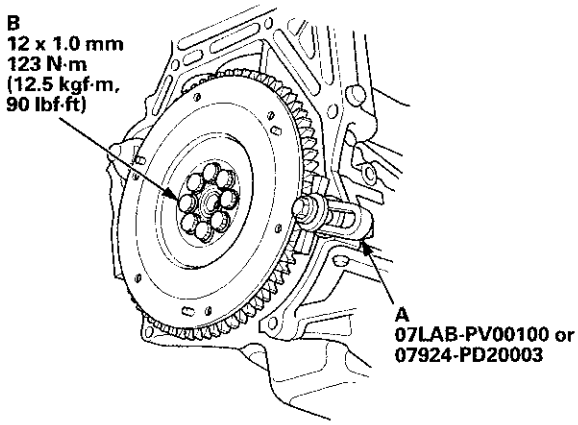
Clutch Replacement (cont'd)

Flywheel Replacement

16. Install the ring gear holder (A).

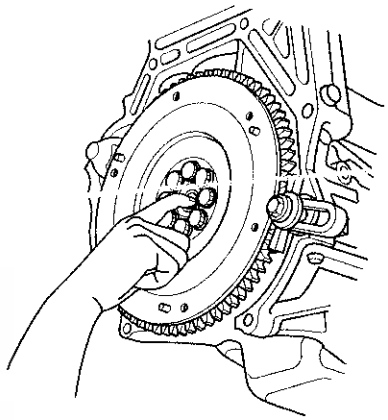


17. Loosen the flywheel mounting bolts in a crisscross pattern in several steps. Remove the bolts, then remove the flywheel and the ring gear holder.
18. Install the flywheel on the crankshaft, and install the mounting bolts finger-tight.
19. Install the ring gear holder (A), then torque the flywheel mounting bolts (B) in a crisscross pattern in several steps.



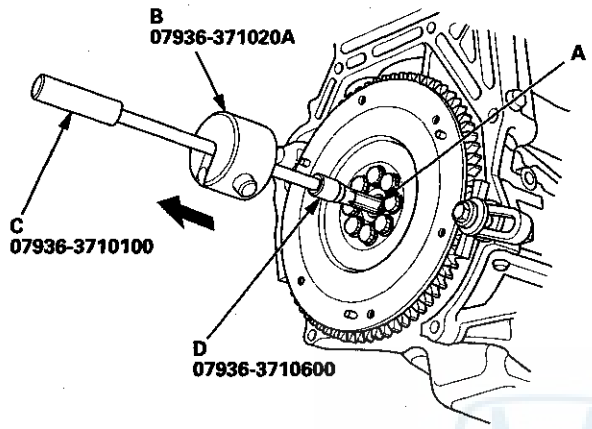
Crankshaft Pilot Bushing Inspection

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.

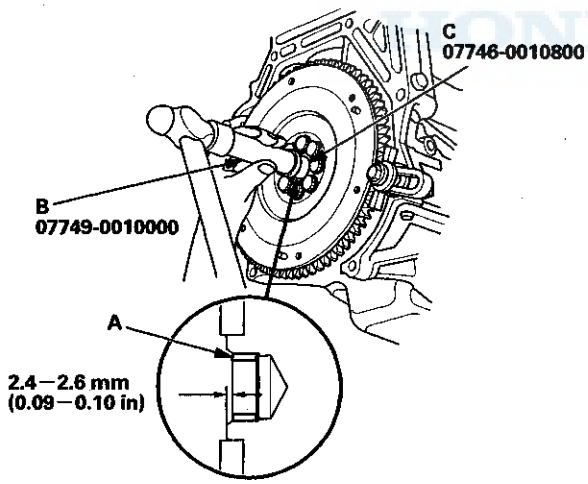


Crankshaft Pilot Bushing Replacement

22. Remove the crankshaft pilot bushing (A) using the slide hammer (B), the remover handle (C), and the 20 mm bearing remover shaft set (D).



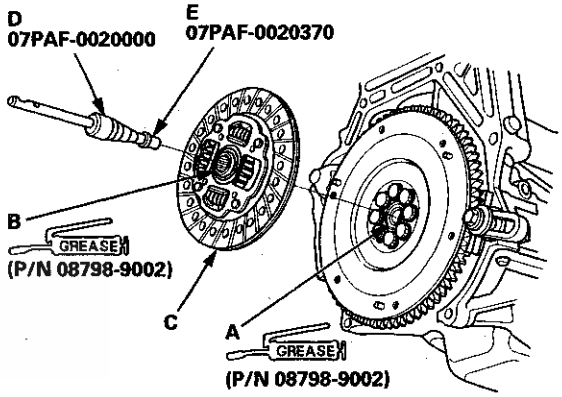
23. Install a new crankshaft pilot bushing (A) into the crankshaft using the 15 x 135L driver handle (B) and the 22 x 24 mm attachment (C).



Clutch Disc and Pressure Plate Installation

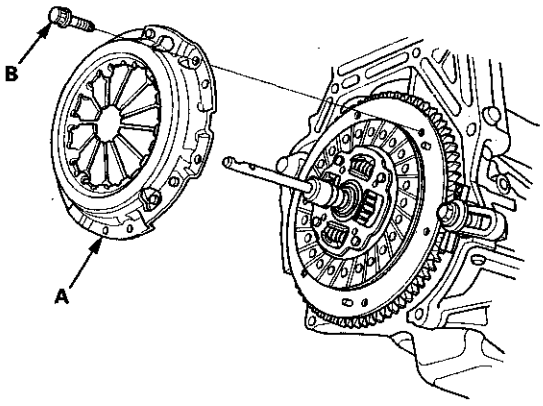
24. Temporarily install the clutch disc onto the splines of the transmission mainshaft. Make sure the clutch disc slides freely on the mainshaft.

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 tool set (D), and the 21 mm clutch alignment pilot (E).

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

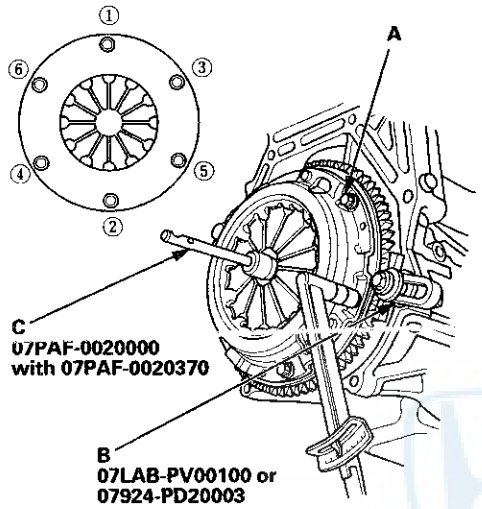


(cont'd)

Clutch Replacement (cont'd)

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)

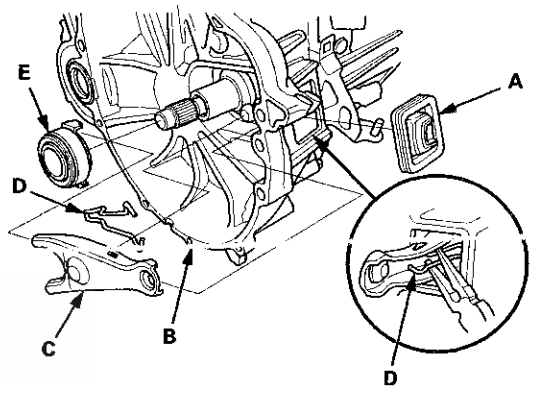


29. Remove the ring gear holder (B), the clutch alignment tool set (C), and the 21 mm clutch alignment pilot.
30. Make sure the diaphragm spring fingers are all the same height.
31. Do the release bearing inspection, and replace it if necessary.
32. Install the transmission (see page 13-15).

Transmission Side

Release Bearing Removal

1. Remove the transmission (see page 13-7).
2. Remove the release fork boot (A) from the clutch housing (B).

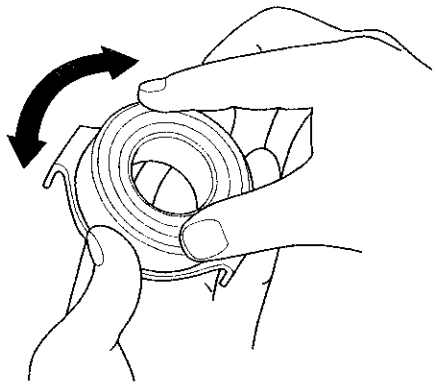


3. Remove the release fork (C) from the clutch housing by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).

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.

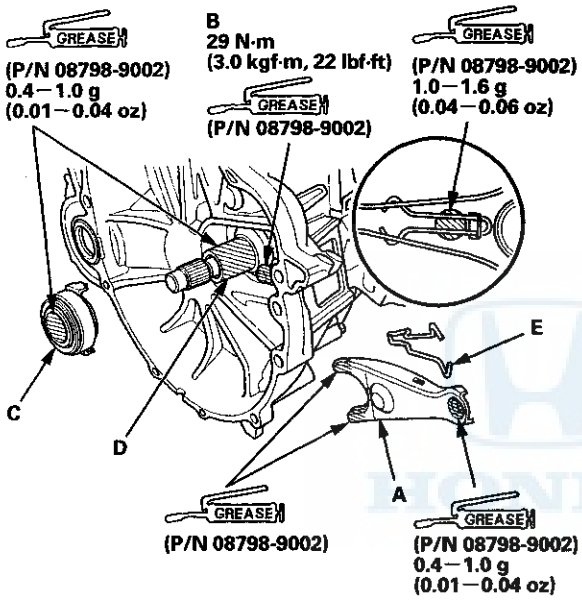
   NOTE: The release bearing is packed with grease. Do not wash it in solvent.



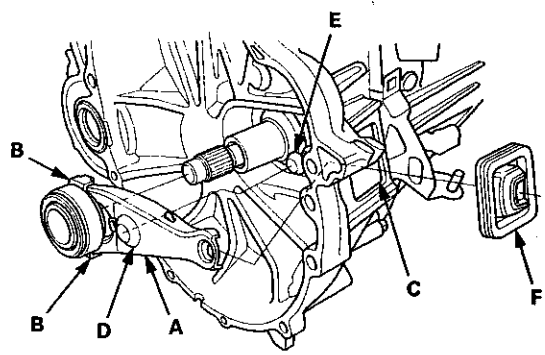
Release Bearing Installation

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).

   NOTE: Replace the release fork bolt if necessary.



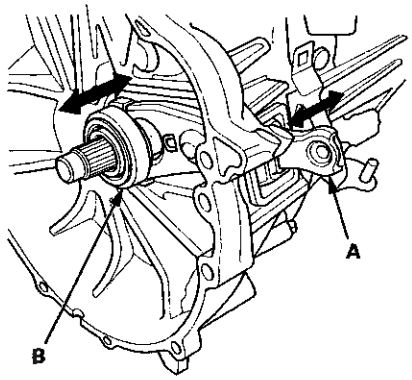
6. With the release fork (A) slid between the release bearing pawls (B), install the release bearing on the mainshaft while inserting the release fork through the hole (C) in the clutch housing.



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 (see page 13-15).

Transaxle

Manual Transmission

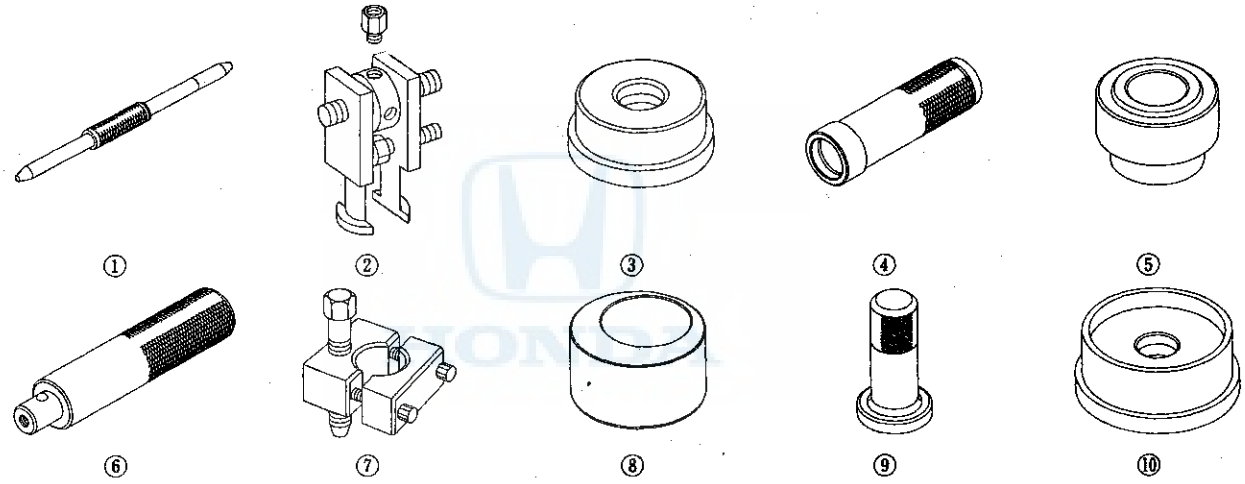
M/T Differential

Special Tools

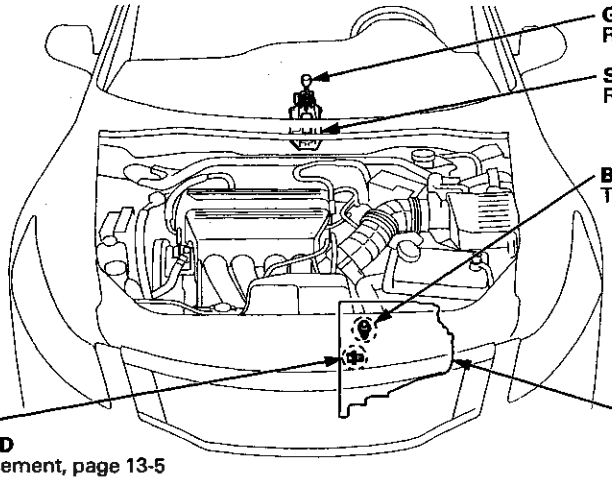
Ref.No.	Tool Number	Description	Qty
①	070AG-SJAA10S	Subframe Alignment Pin	1
**②	07736-A01000B	Adjustable Bearing Puller, 20—40 mm	1
③	07746-0010300	Bearing Driver Attachment, 42 x 47	1
④	07746-0030100	Driver Handle, 40 mm I.D.	1
⑤	07746-0030300	Bearing Driver Attachment, 30 mm	1
⑥	07749-0010000	Driver Handle, 15 x 135L	1
*⑦	07GAJ-PG20110	Mainshaft Holder	1
*⑧	07GAJ-PG20130	Mainshaft Base	1
⑨	07JAD-PL90100	Oil Seal Driver, 65	1
⑩	07NAD-P20A100	Oil Seal Driver Attachment	1

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

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



Component Location Index



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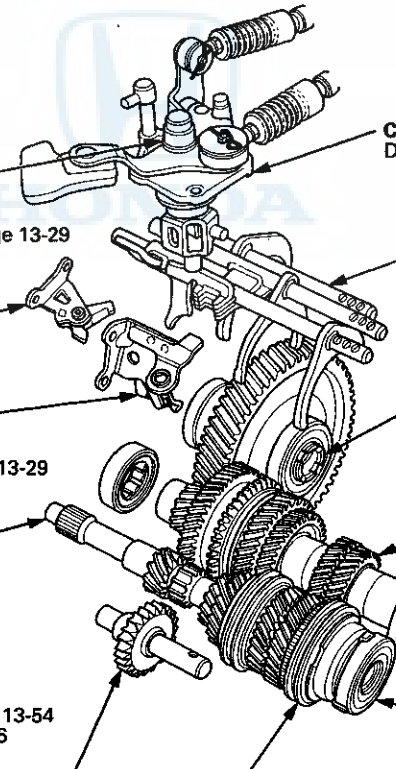

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DIFFERENTIAL

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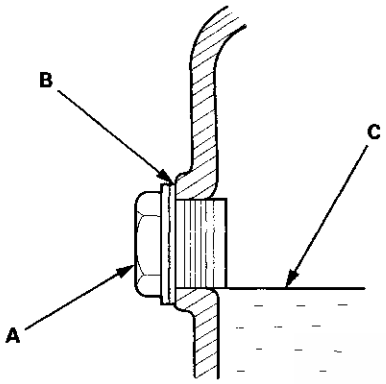
REVERSE IDLER GEAR

Symptom Troubleshooting Index

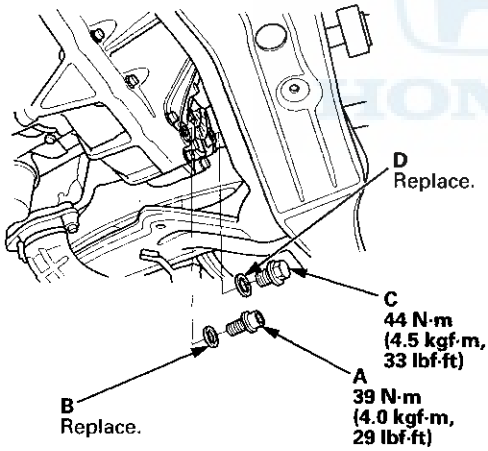
Symptom	Diagnostic procedure
Hard to shift into 1st gear	1. Check and/or replace the MTF (see page 13-5). 2. Check the clutch (see page 12-15). 3. Check the change lever assembly (see page 13-29). 4. Check the 1st synchro ring and 1st gear (see page 13-52). 5. Check the 1st/2nd synchro sleeve and hub (see page 13-51).
Hard to shift into 2nd gear	1. Check and/or replace the MTF (see page 13-5). 2. Check the change lever assembly (see page 13-29). 3. Check the 2nd synchro ring and 2nd gear (see page 13-52). 4. Check the 1st/2nd synchro sleeve and hub (see page 13-51).
Hard to shift into 3rd gear	1. Check and/or replace the MTF (see page 13-5). 2. Check the change lever assembly (see page 13-29). 3. Check the 3rd synchro ring and 3rd gear (see page 13-52). 4. Check the 3rd/4th synchro sleeve and hub (see page 13-51).
Hard to shift into 4th gear	1. Check and/or replace the MTF (see page 13-5). 2. Check the change lever assembly (see page 13-29). 3. Check the 4th synchro ring and 4th gear (see page 13-52). 4. Check the 3rd/4th synchro sleeve and hub (see page 13-51).
Hard to shift into 5th gear	1. Check and/or replace the MTF (see page 13-5). 2. Check the change lever assembly (see page 13-29). 3. Check the 5th synchro ring and 5th gear (see page 13-52). 4. Check the 5th synchro sleeve and hub (see page 13-51).
Hard to shift into reverse	1. Check and/or replace the MTF (see page 13-5). 2. Check the clutch (see page 12-15). 3. Check the change lever assembly (see page 13-29). 4. Check the reverse shift fork and reverse idler gear (see page 13-29). 5. Check reverse gears.
Noise from the transmission	1. Check and/or replace the MTF (see page 13-5). 2. Check the MTF level (unfilled or in surplus the transmission with the MTF). 3. Check the transmission gears. 4. Check the transmission bearings. 5. Check the differential carrier, the final driven gear, and the carrier bearings.
Shift lever does not operate smoothly	1. Check and/or replace the MTF (see page 13-5). 2. Check the shift cables and their joints (see page 13-64). 3. Check the shift lever housing with the shift lever shaft.
Transmission jumps out of gear	1. Check and/or replace the MTF (see page 13-5). 2. Check the detent ball springs (see page 13-24). 3. Check the teeth of the synchro rings and the gears (see page 13-52). 4. 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 front splash shield (see page 20-291).
3. Remove the oil filler plug (A) and the sealing washer (B), check the condition of the MTF, and make sure it is at the proper level (C).



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



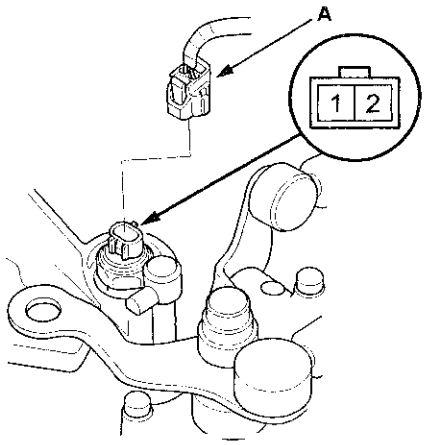
5. Install the drain plug with a new sealing washer, and refill the transmission with MTF to the proper level. Always use Honda Manual Transmission Fluid (MTF).

   Fluid Capacity:
   1.9 L (2.0 US qt) at fluid change
   2.0 L (2.1 US qt) at overhaul

6. Install the filler plug (C) with a new sealing washer (D).
7. Install the front splash shield (see page 20-291).
8. Lower the vehicle on the lift.
9. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
10. Turn the ignition switch to ON (II).
11. 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 11-181).
12. Select GAUGE MENU in the BODY ELECTRICAL with the HDS.
13. Select ADJUSTMENT in the GAUGES MENU with the HDS.
14. Select MAINTENANCE MINDER in the ADJUSTMENT with the HDS.
15. Select RESET in the MAINTENANCE MINDER with the HDS.
16. Select RESETTING THE MTF LIFE with the HDS.

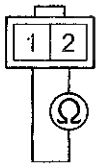
Back-up Light Switch Test

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



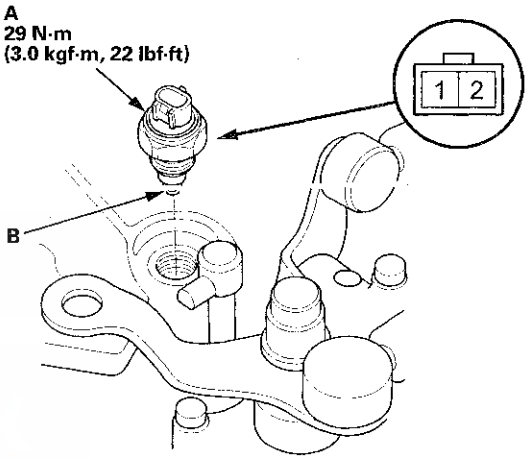
2. Check for continuity between back-up light switch 2P connector terminals No. 1 and No. 2. There should be continuity only when the shift lever is in reverse.
   - If there is continuity, go to step 5.
   - If there is no continuity, go to step 3.

BACK-UP LIGHT SWITCH 2P CONNECTOR

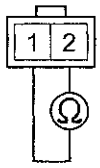


Terminal side of male terminals

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 switch end (B) is pressed, and no continuity when the switch end is released.
   - If there is continuity, check the reverse shift mechanism in the transmission.
   - If there is no continuity, replace the back-up light switch.



BACK-UP LIGHT SWITCH 2P CONNECTOR



Terminal side of male terminals

4. Apply liquid gasket (P/N 08717-0004, 08718-0001, 08718-0012, 08718-0003, or 08718-0009) 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.

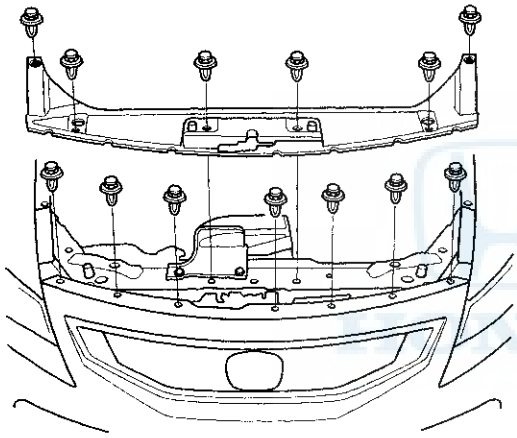
Transmission Removal

Special Tools Required
- Engine Support Hanger, A and Reds AAR-T1256*
- Engine Hanger Adapter VSB02C000015*
- Subframe Adapter VSB02C000016*

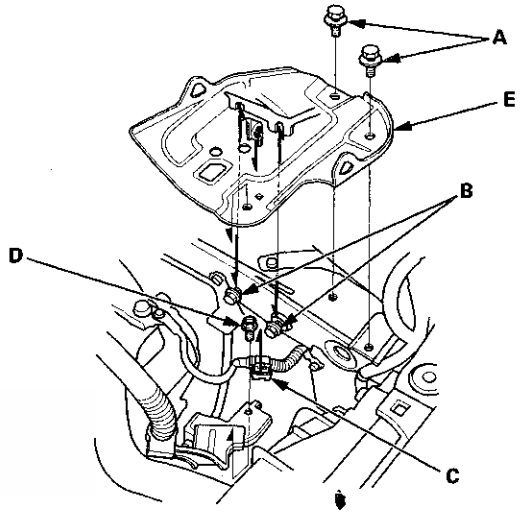
*: Are available through the Honda Tool and Equipment Program 888-424-6857.

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Secure the hood in the wide open position with the support strut.
2. Remove the front grille cover.

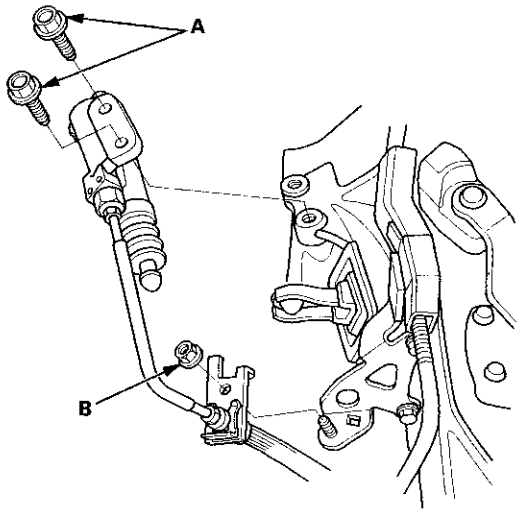


3. Do the battery removal procedure (see page 22-92).
4. Remove the air cleaner assembly (see page 11-332).
5. Remove the battery base bolts (A), loosen the two bolts (B), remove the cable clamp (C) and the harness bracket bolt (D), then remove the battery base (E).



6. Remove the slave cylinder mounting bolts (A) and the bracket mounting nut (B), then carefully move the slave cylinder out of the way to avoid bending the clutch line.

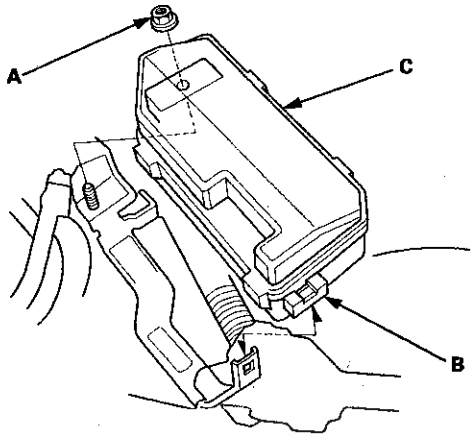
   NOTE: Do not press the clutch pedal after the slave cylinder has been removed.



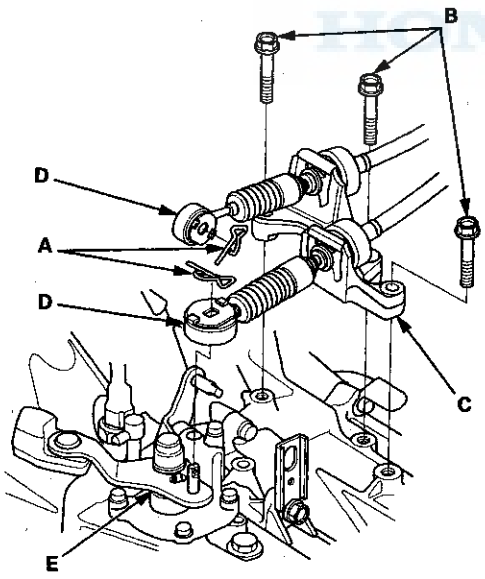
(cont'd)

Transmission Removal (cont'd)

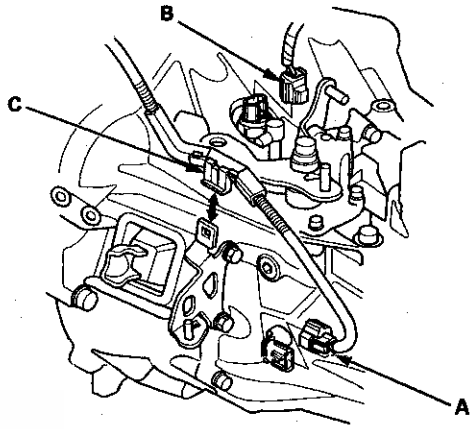
7. Remove the nut (A) and the clamp (B), then move the under-hood fuse/relay box (C) out of the way.



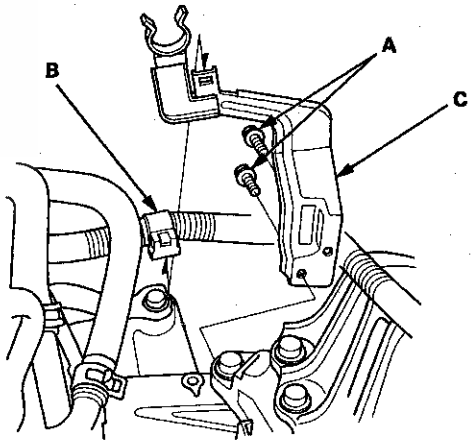
8. Remove the lock pins (A), the shift cable bracket bolts (B), and the shift cable bracket (C), then disconnect the shift cables (D) from the change lever assembly (E). Carefully remove both cables and the bracket together to avoid bending the cables.



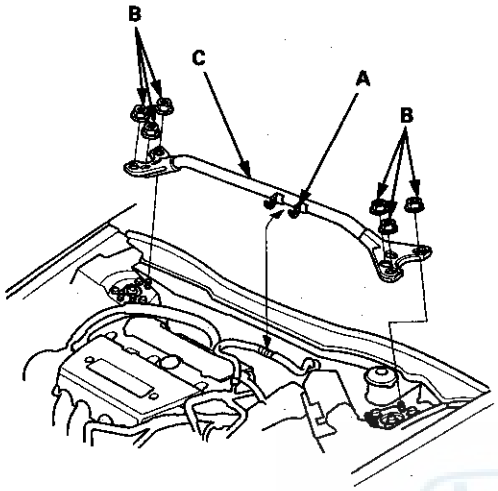
9. Disconnect the output shaft (countershaft) speed sensor connector (A), the back-up light switch connector (B), and the harness clamp (C).



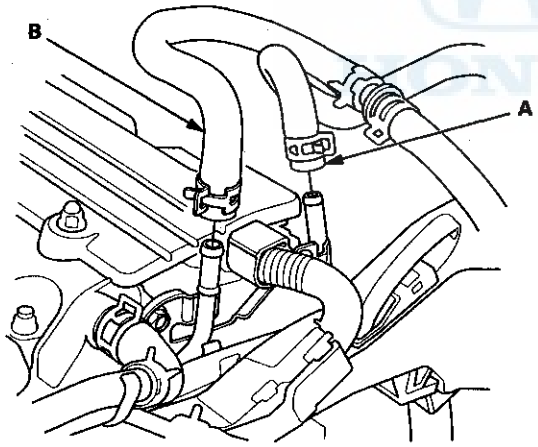
10. Remove the bolts (A), the harness clamp (B), and the bracket (C).



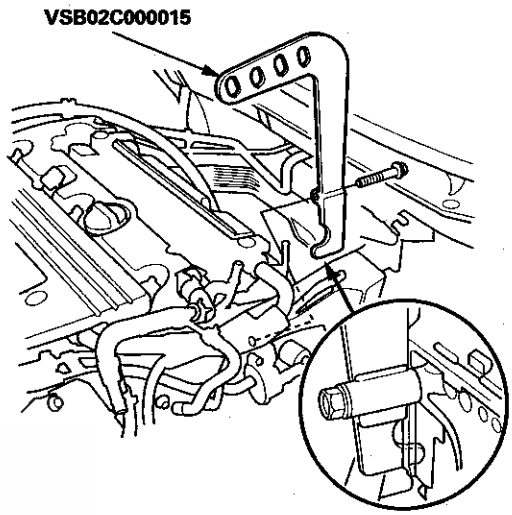
11. Remove the hose from the clamp (A) and the nuts (B), then remove the strut brace (C).



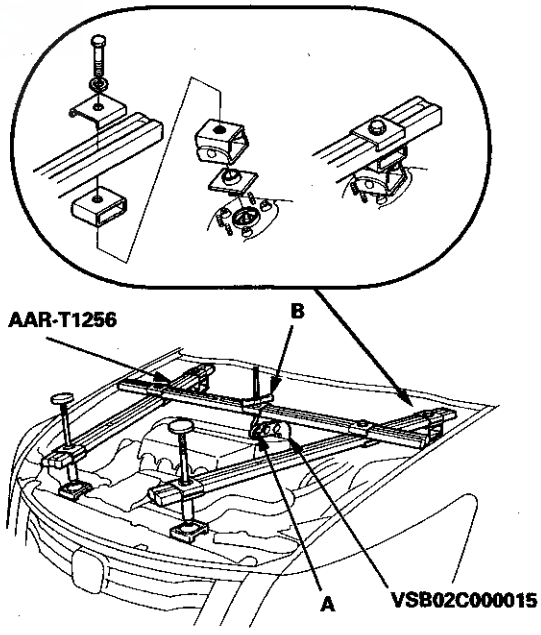
12. Remove the evaporative emission (EVAP) canister hose (A) and the brake booster vacuum hose (B).



13. Attach the engine hanger adapter (VSB02C000015) to the threaded hole in the cylinder head.



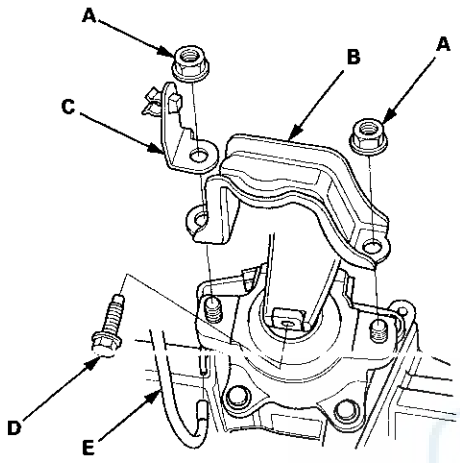
14. Install the engine support hanger (AAR-T1256) to the vehicle, and attach the hook (A) to the engine hanger adapter. Tighten the wing nut (B) by hand, and lift and support the engine/transmission.



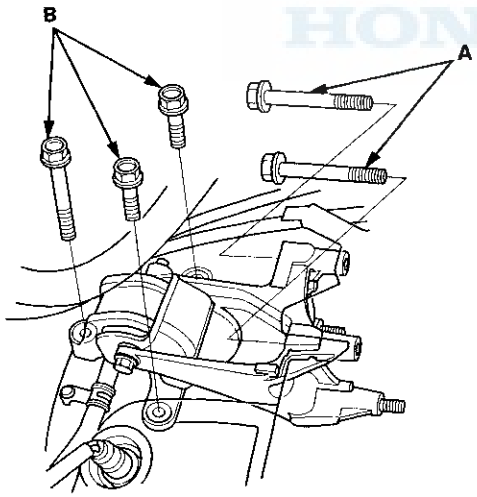
(cont'd)

Transmission Removal (cont'd)

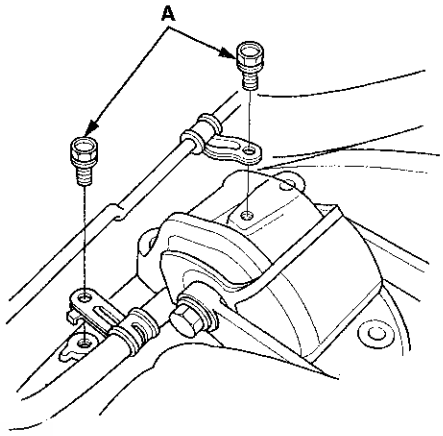
15. Remove the front engine mount stop nuts (A), the front engine mount stop (B), and the vacuum hose bracket (C), then remove the front engine mount bolt (D), and disconnect the vacuum hose (E).



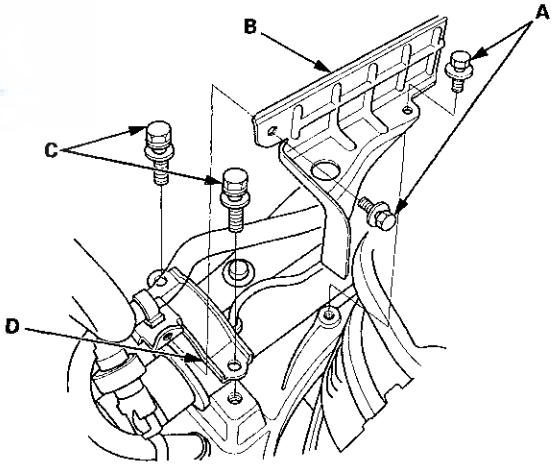
16. Remove the two rear engine mount bracket bolts (A) and three rear engine mount bolts (B).



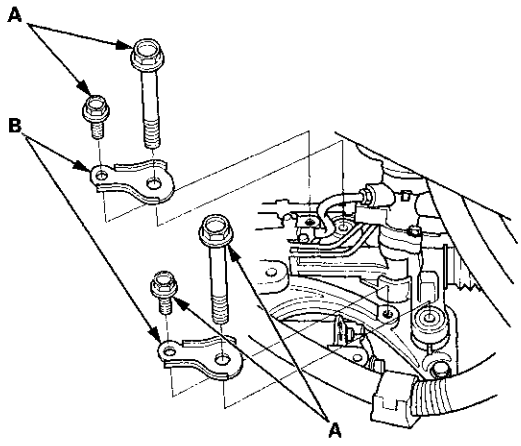
17. Remove the power steering line holder mounting bolts (A).



18. Remove the two heat shield bolts (A), the heat shield (B), and the two power steering gearbox mounting bracket bolts (C), then remove the power steering gearbox mounting bracket (D).

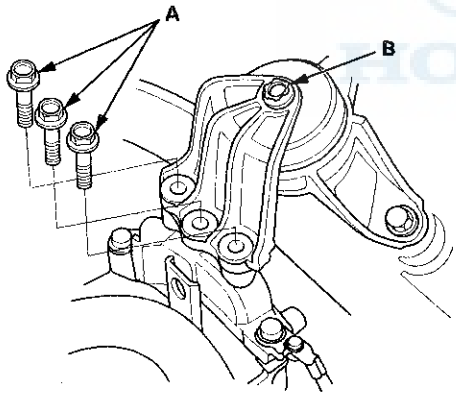


19. Remove the power steering gearbox stiffener bolts (A) and the power steering stiffener plates (B).

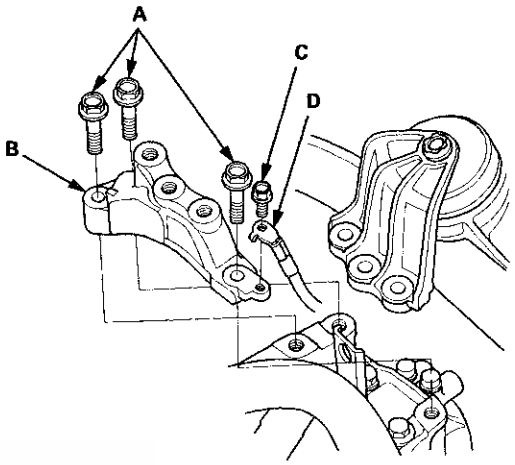


20. Remove the upper transmission mount bracket bolts (A).

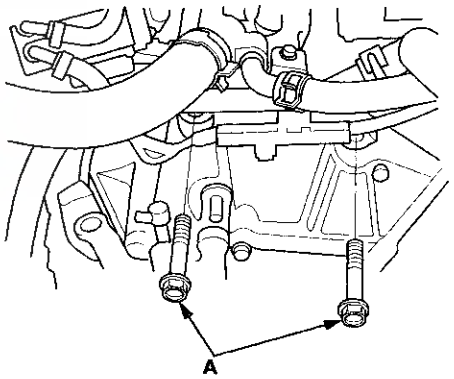
NOTE: Do not remove the TORX bolt (B) from the upper transmission mount. If the TORX bolt is removed, the upper transmission mount must be replaced as an assembly.



21. Remove the three upper transmission mount bracket bolts (A), the upper transmission mount bracket (B), the ground cable mount bolt (C), and the ground cable (D).



22. Remove the upper transmission mount bolts (A).



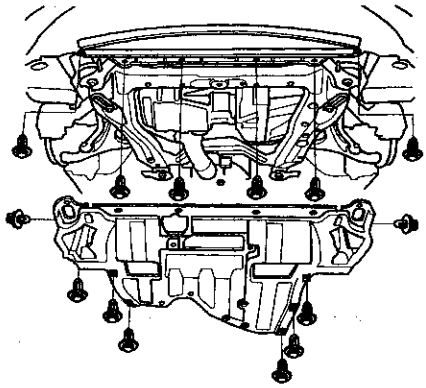
23. Raise the vehicle on a lift, and make sure it is securely supported.

24. Remove the front wheels.

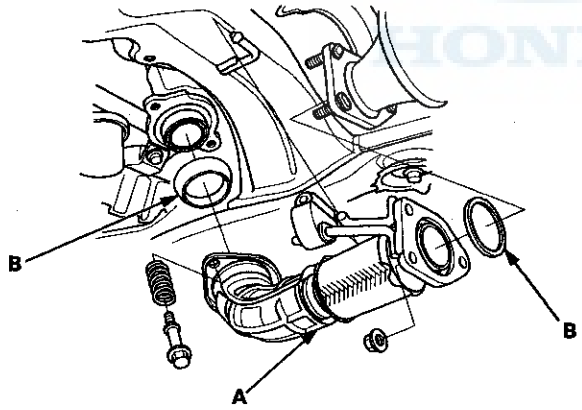
(cont'd)

Transmission Removal (cont'd)

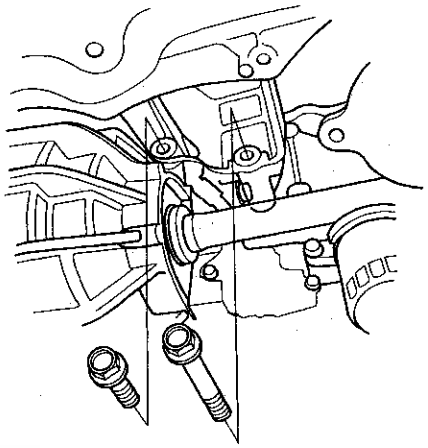
25. Remove the front splash shield.



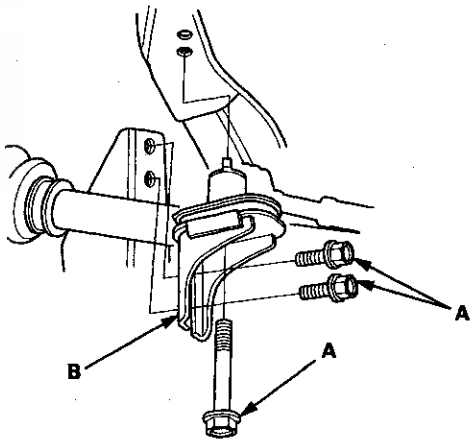
26. Drain the MTF. Reinstall the drain plug using a new sealing washer (see page 13-5).
27. Remove the damper fork (see step 4 on page 18-31).
28. Separate the knuckle ball joint from the lower arm (see page 18-21).
29. Remove exhaust pipe A and the gaskets (B).



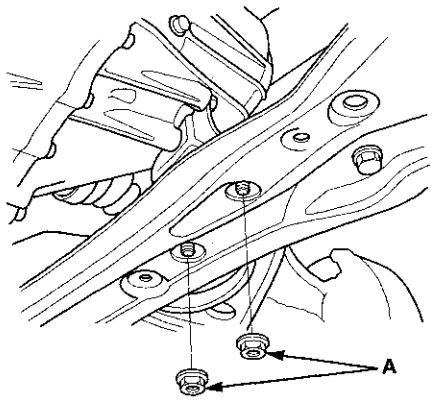
30. Remove the rear engine mount bracket bolts.



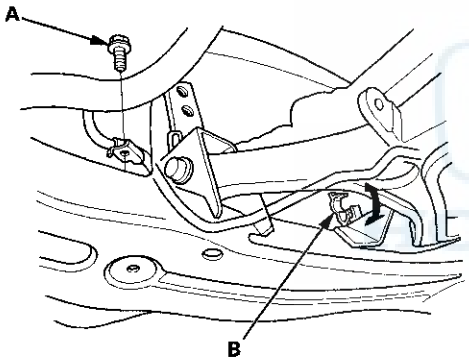
31. Remove the subframe mid mount bolts (A) and the subframe mid mount (B) from both sides.



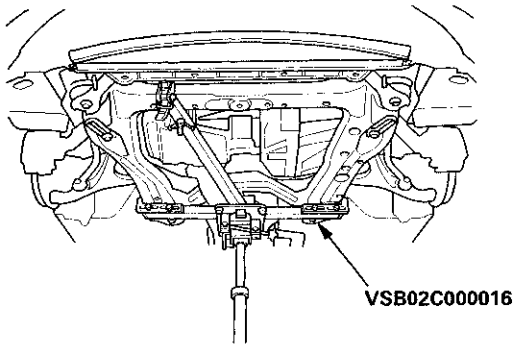
32. Remove the lower transmission mount mounting nuts (A).



33. Remove the power steering line holder bolt (A) and the power steering line from the clamp (B).

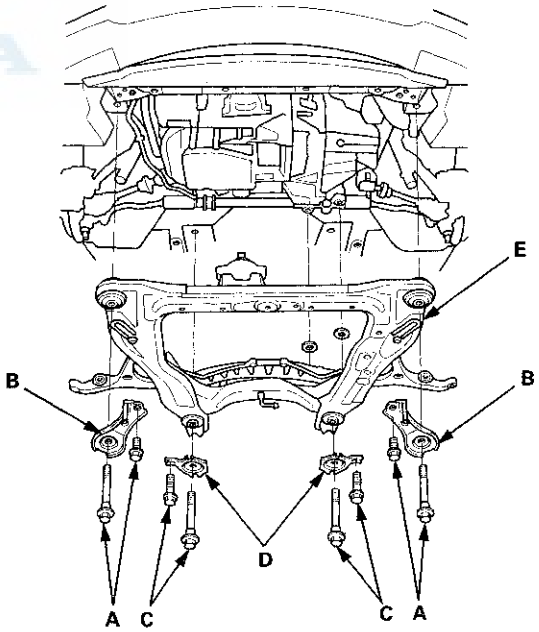


34. Attach the subframe adapter (VSB02C000016) to the front subframe and hang the belt of the subframe adapter over the front of the subframe, then secure the belt with its stop.



35. Raise the jack and line up the slots in the subframe adapter arms with the bolt holes on the jack base, then securely attach them with four bolts.

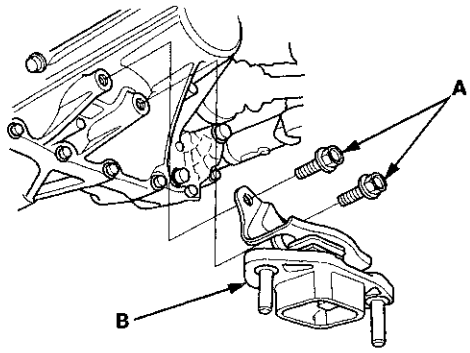
36. Remove the four front stiffener bolts (A), the front stiffeners (B), the four rear stiffener bolts (C), and the rear stiffeners (D), then remove the front subframe (E).



(cont'd)

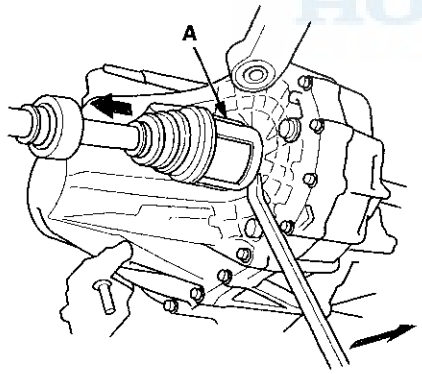
Transmission Removal (cont'd)

37. Remove the lower transmission mount bolts (A) and the lower transmission mount (B).



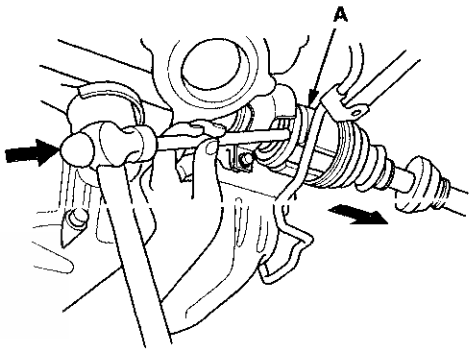
38. Pry the left driveshaft inboard joint (A) from the differential using a prybar.

NOTE:
- Do not pull on the driveshaft, 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 and the end of the inboard joint with the prybar.



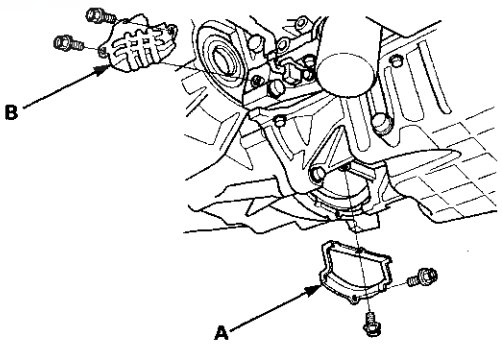
39. Drive the inboard joint (A) of the right driveshaft off of the intermediate shaft using a drift punch and a hammer.

NOTE:
- Do not pull on the driveshaft, or the inboard joint may come apart.
- Be careful not to damage the end of the inboard joint with the drift punch.



40. Remove the intermediate shaft (see page 16-22).

41. Remove the clutch cover (A) and the CKP sensor cover (B).

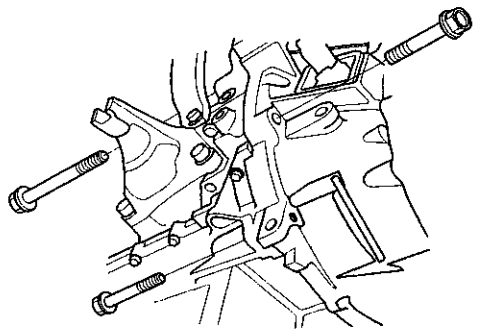


42. Securely support the transmission with a transmission jack.

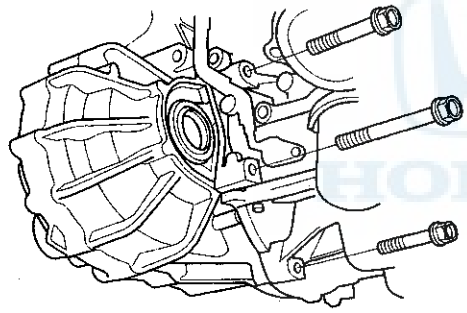
Transmission Installation

43. Remove the lower transmission mounting bolts.

Front side



Rear side



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

45. 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.

Special Tools Required

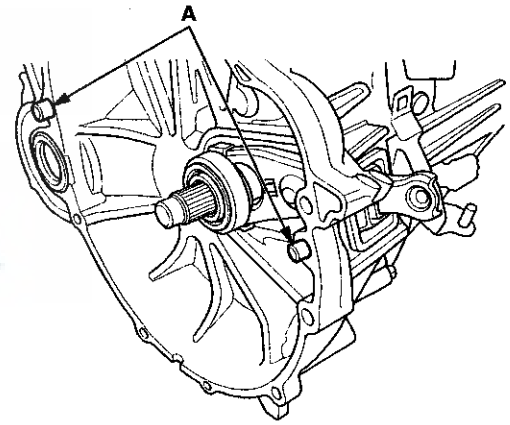
- Engine Support Hanger, A and Reds AAR-T1256*
- Engine Hanger Adapter VSB02C000015*
- Subframe Adapter VSB02C000016*
- Subframe Alignment Pin 070AG-SJAA10S

*: Are available through the Honda Tool and Equipment Program 888-424-6857.

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Check the release bearing, and reinstall the release bearing and the release fork with the appropriate grease (see page 12-20).

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



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

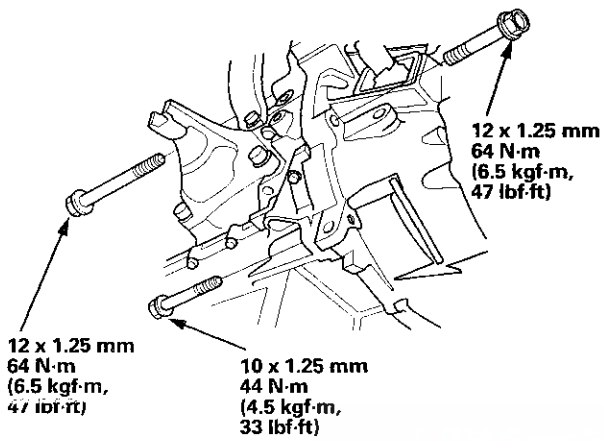
4. Align the transmission mainshaft and the clutch pressure plate, then move the transmission inward until there is no gap between the transmission housing and the engine block.

(cont'd)

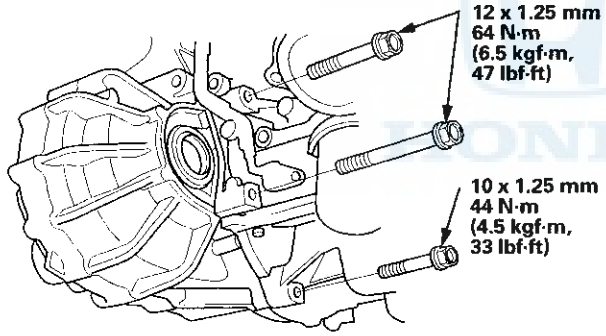
Transmission Installation (cont'd)

5. Install the lower transmission mounting bolts.

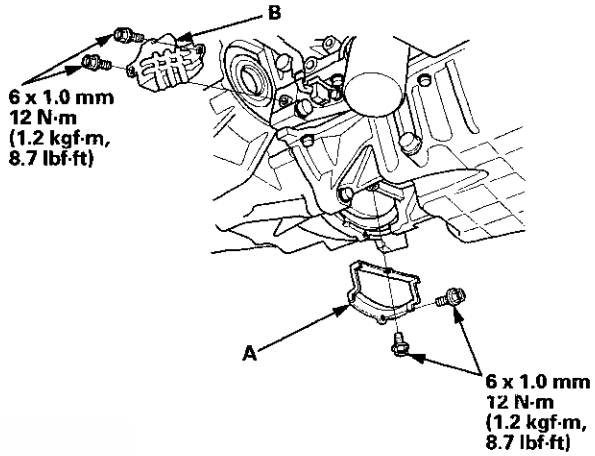
Front side



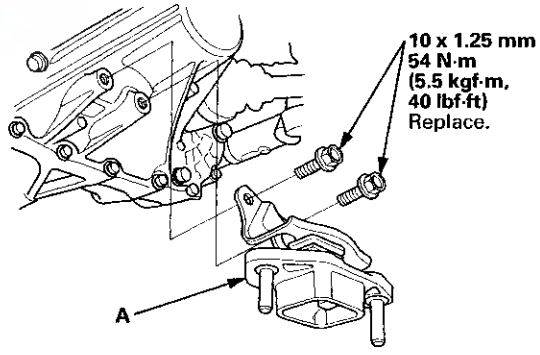
Rear side



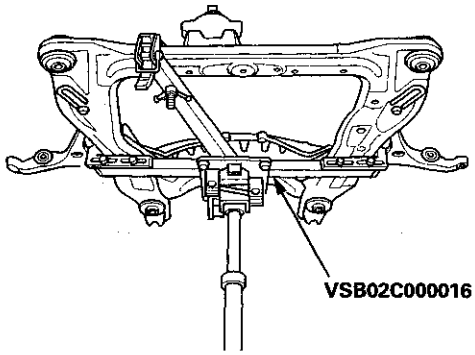
6. Install the clutch cover (A) and the CKP sensor cover (B).



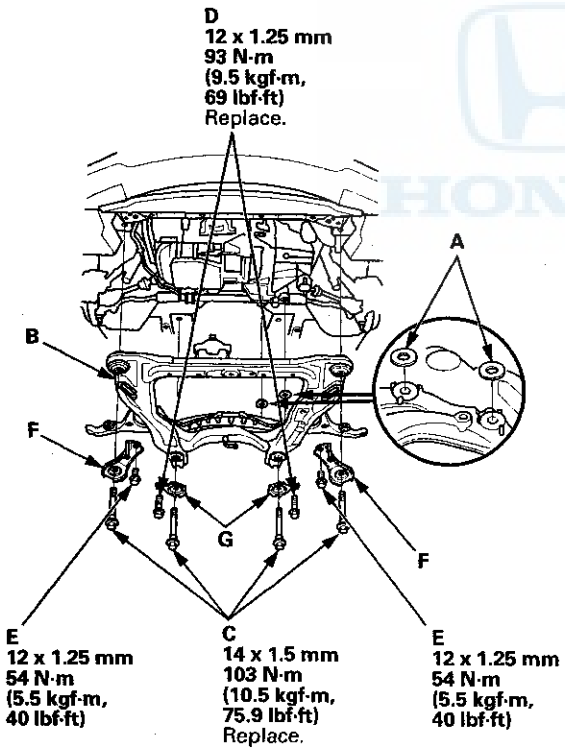
7. Install the intermediate shaft (see page 16-28).
8. Install both driveshafts (see page 16-19).
9. Install the lower transmission mount (A) with new bolts, then remove the transmission jack.



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

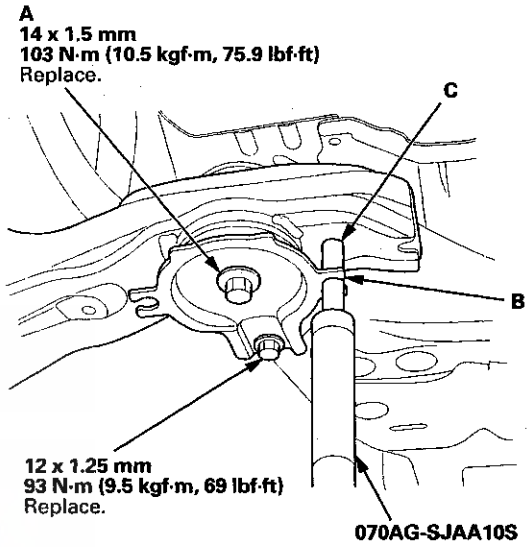


11. Position the steering gearbox washers (A) on the front subframe (B), and lift the subframe up to the body.



12. Loosely install new subframe mounting bolts (C), new rear stiffener mounting bolts (D), the front stiffener mounting bolts (E), the front stiffeners (F), and the rear stiffeners (G).

13. Partially tighten the right rear subframe mounting bolt (A); insert the subframe alignment pin through the positioning slot (B) on the rear stiffener, through the positioning hole (C) on the subframe, and into the positioning hole on the body, then tighten the subframe mounting bolt.

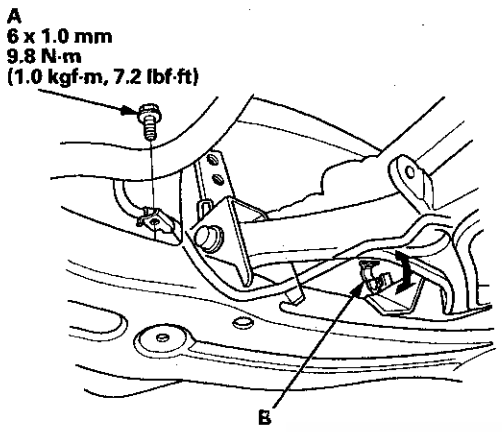


14. Partially tighten the left rear subframe mounting bolt in the same manner as in step 13.
15. Partially tighten the right and left front subframe mounting bolts.
16. Tighten the right rear mounting bolt to the specified torque with the subframe alignment pin in the positioning hole.
17. Tighten the left rear mounting bolt to the specified torque with the subframe alignment pin in the positioning hole.
18. Tighten the right and left front mounting bolt to the specified torque.
19. Check that the positioning holes and slots are aligned using the subframe alignment pin.
20. Tighten the rear and front stiffener mounting bolts to the specified torque.
21. Remove the jack and subframe adapter.

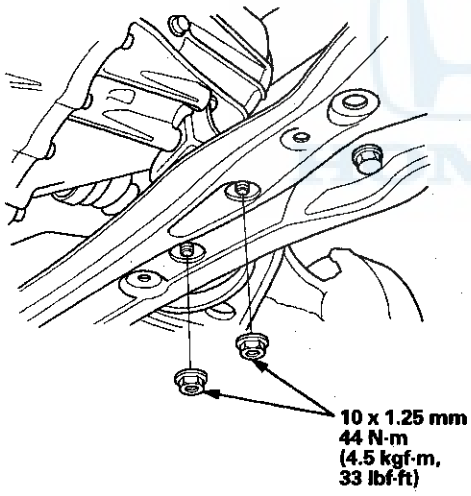
(cont'd)

Transmission Installation (cont'd)

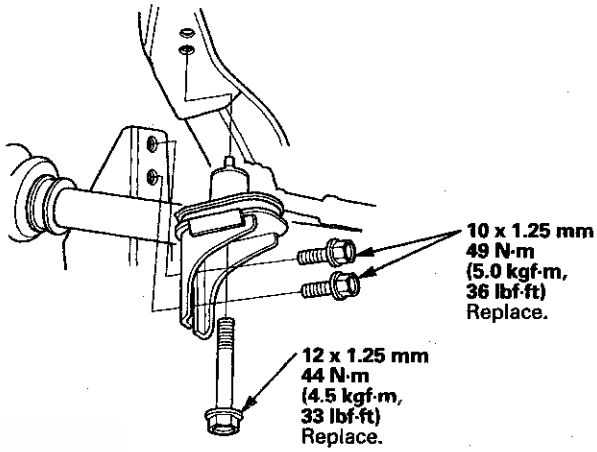
22. Install the power steering line holder bolt (A) and the power steering line to the clamp (B).



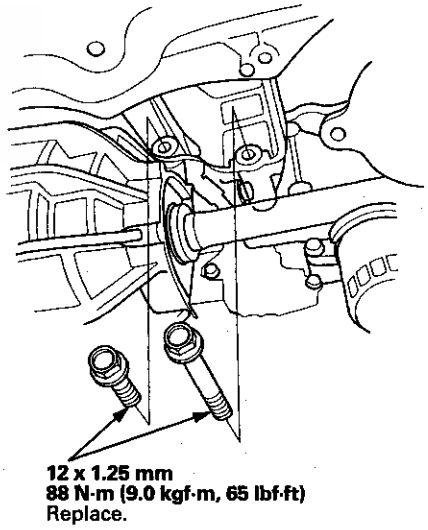
23. Install the lower transmission mount mounting nuts.



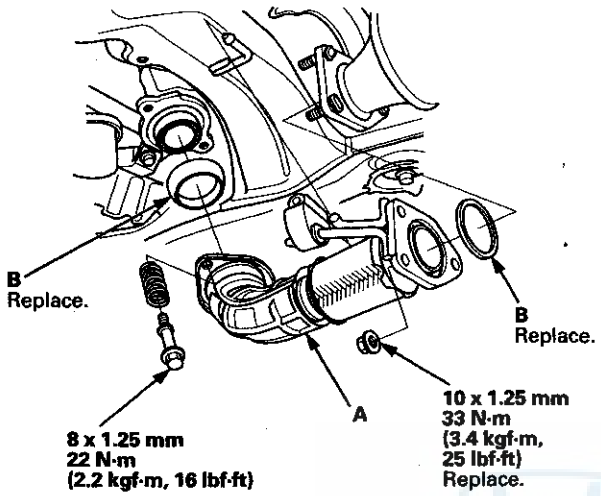
24. Install the subframe mid mount on both sides with new bolts.



25. Install the rear engine mount bracket bolts with new bolts.



26. Install exhaust pipe A with new gaskets (B), the bolts, the springs, and new nuts as shown.

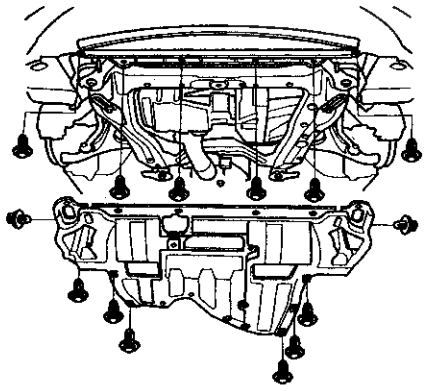


27. Connect the knuckle ball joint onto the lower arm (see page 18-21).

28. Install the damper fork (see step 4 on page 18-33).

29. Refill the transmission fluid to the proper level (see page 13-5).

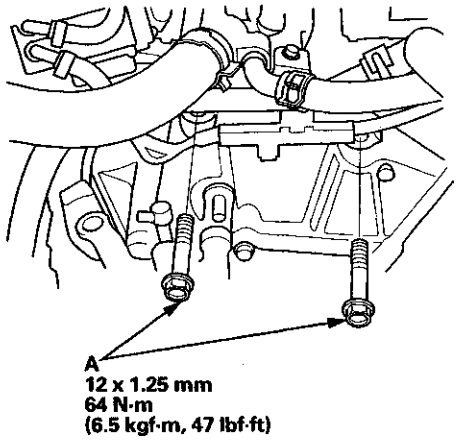
30. Install the front splash shield.



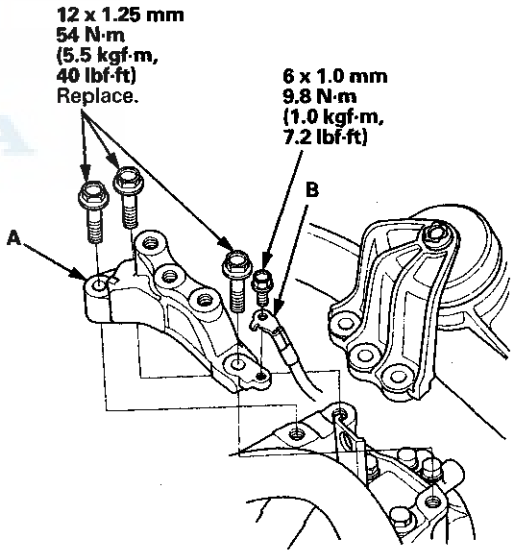
31. Install the front wheels, and set them in the straight-ahead position.

32. Lower the vehicle on the lift.

33. Install the upper transmission mount bolts (A).



34. Install the upper transmission mount bracket (A) with new bolts, and connect the ground cable (B) by installing its mounting bolt.



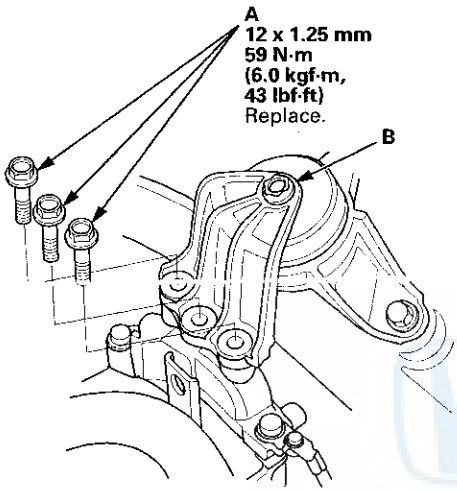
(cont'd)

Transmission Installation (cont'd)

35. Install new upper transmission mount bracket bolts (A).

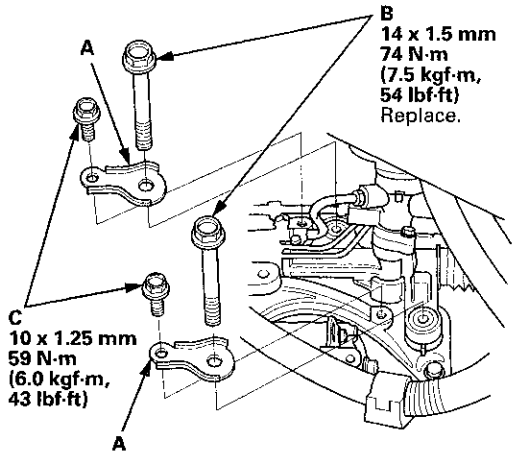
    NOTE:

    - If the TORX bolt (B) was removed by mistake during removal, the upper transmission bracket must be replaced as an assembly.

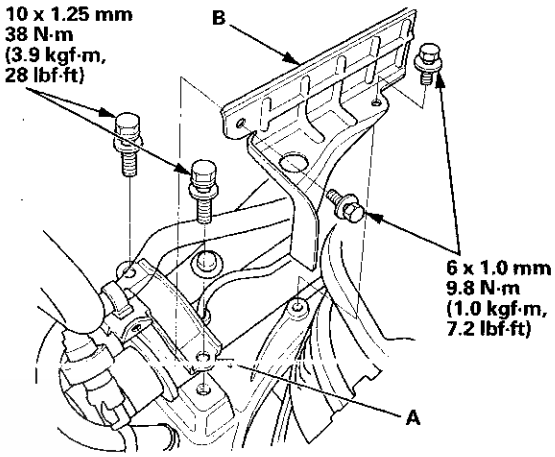


36. Install the steering stiffener plates (A), and loosely tighten new power steering gear box mounting bolts (B) and the stiffener plate bolts (C).

    NOTE: Make sure the lower washers placed in step 11 are correctly positioned before installing the bolts.

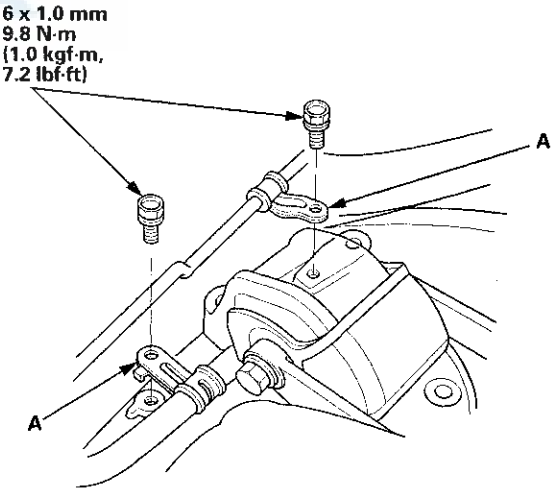


37. Install the power steering gearbox mounting bracket (A), and tighten the bolts to the specified torque, then install the heat shield (B).

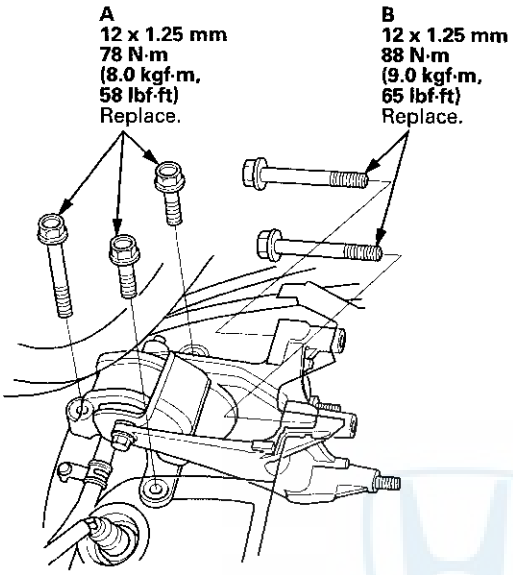


38. Tighten the driver's side of the power steering gear box mounting bolts and the stiffener plate bolts to the specified torque alternately in two steps.

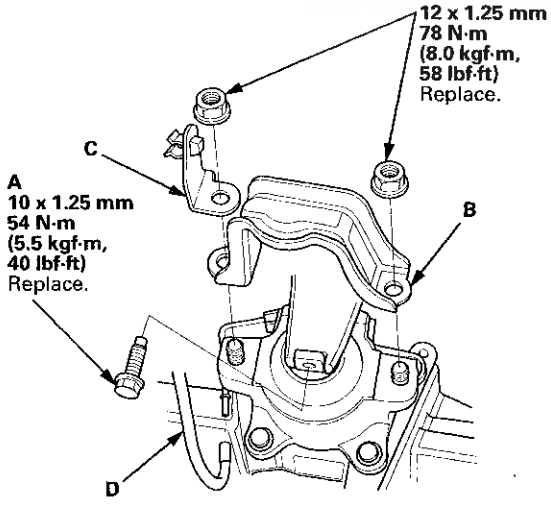
39. Install the rear power steering line holders (A).



40. Install three new rear engine mount bolts (A) and two new rear engine mount bracket bolts (B).

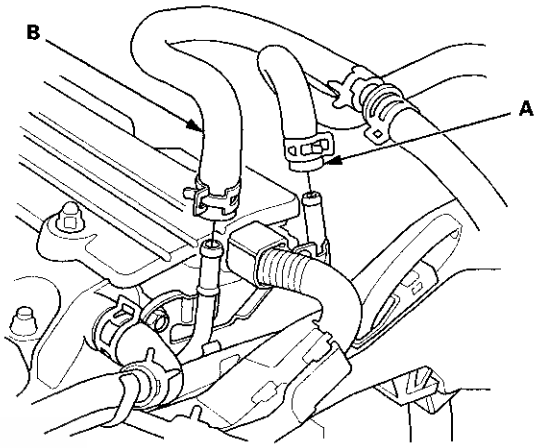


41. Install a new front engine mount bolt (A), the front engine mount stop (B), and the vacuum hose bracket (C) with new nuts, then connect the vacuum hose (D).

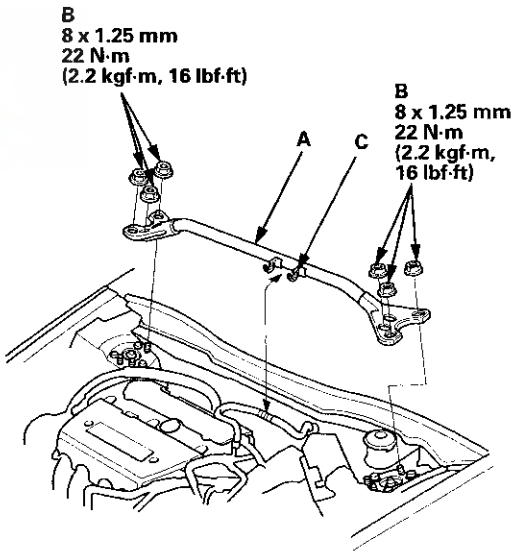


42. Remove the engine support hanger and the engine hanger adapter from the engine.

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



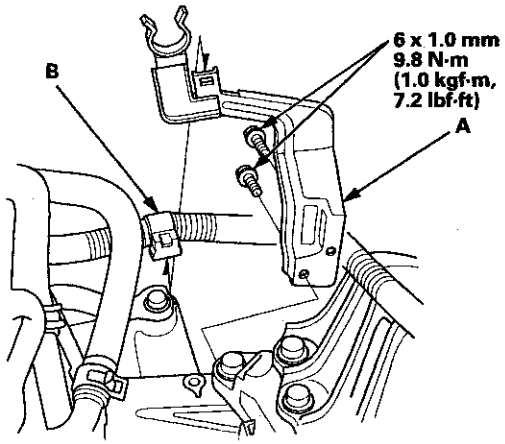
44. Install the strut brace (A) with the nuts (B), then install the hose to the clamp (C).



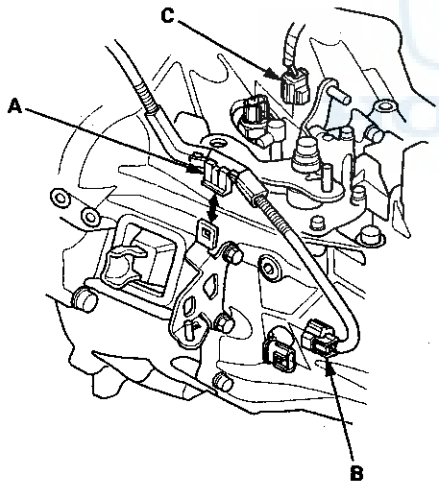
(cont'd)

Transmission Installation (cont'd)

45. Install the bracket (A) and the harness clamp (B).

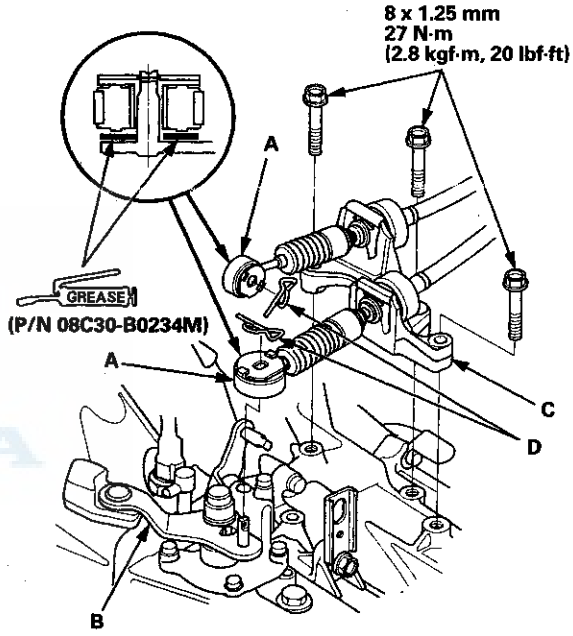


46. Install the harness clamp (A). Connect the output shaft (countershaft) speed sensor connector (B) and the back-up light switch connector (C).

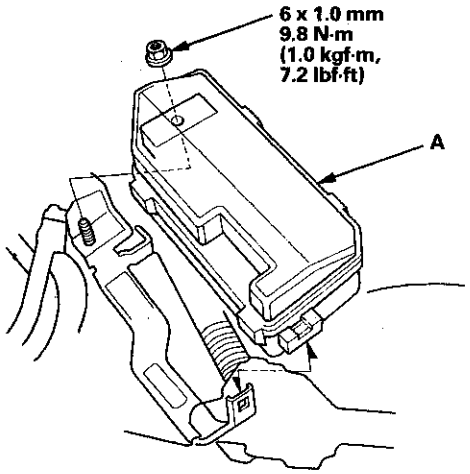


47. Apply a light coat of silicone grease (P/N 08C30-B0234M) to the cable ends (A) and connect the cable end to the change lever assembly (B), then install the shift cable bracket (C) and the lock pins (D). Do not bend or damage the shift cables.

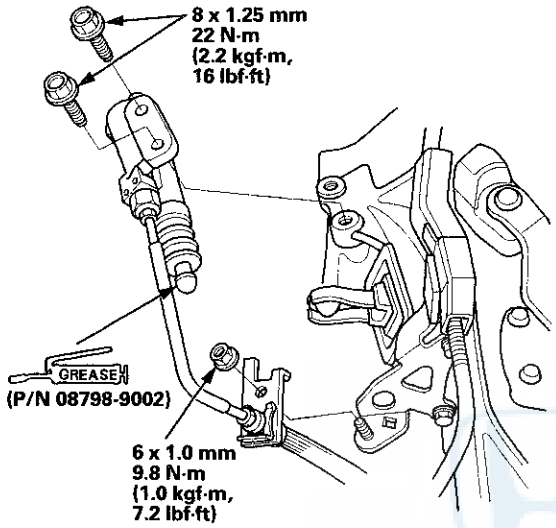
NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.



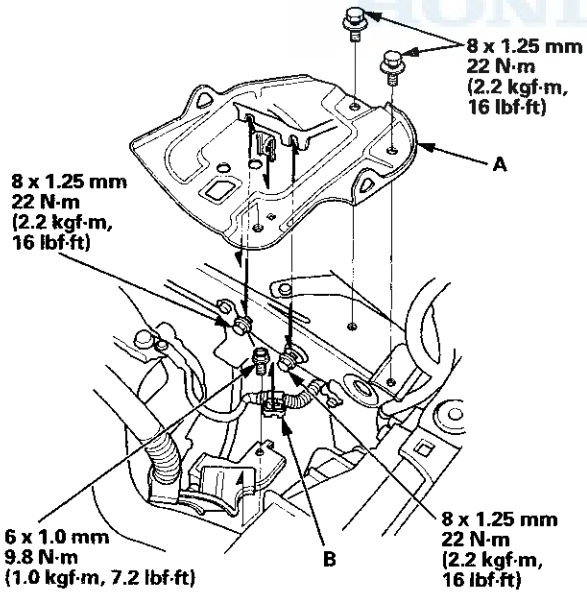
48. Install the under-hood fuse/relay box (A).



49. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the end of the slave cylinder pushrod. Install the slave cylinder and the bracket mounting nut. Be careful not to bend the clutch line.



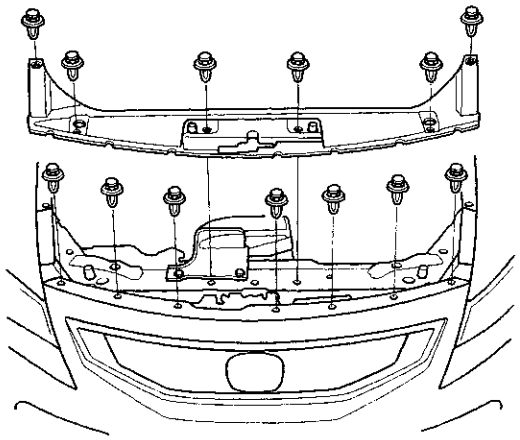
50. Install the battery base (A) and the cable clamp (B).



51. Install the air cleaner assembly (see page 11-332).

52. Do the battery installation procedure (see page 22-92).

53. Install the front grille cover.



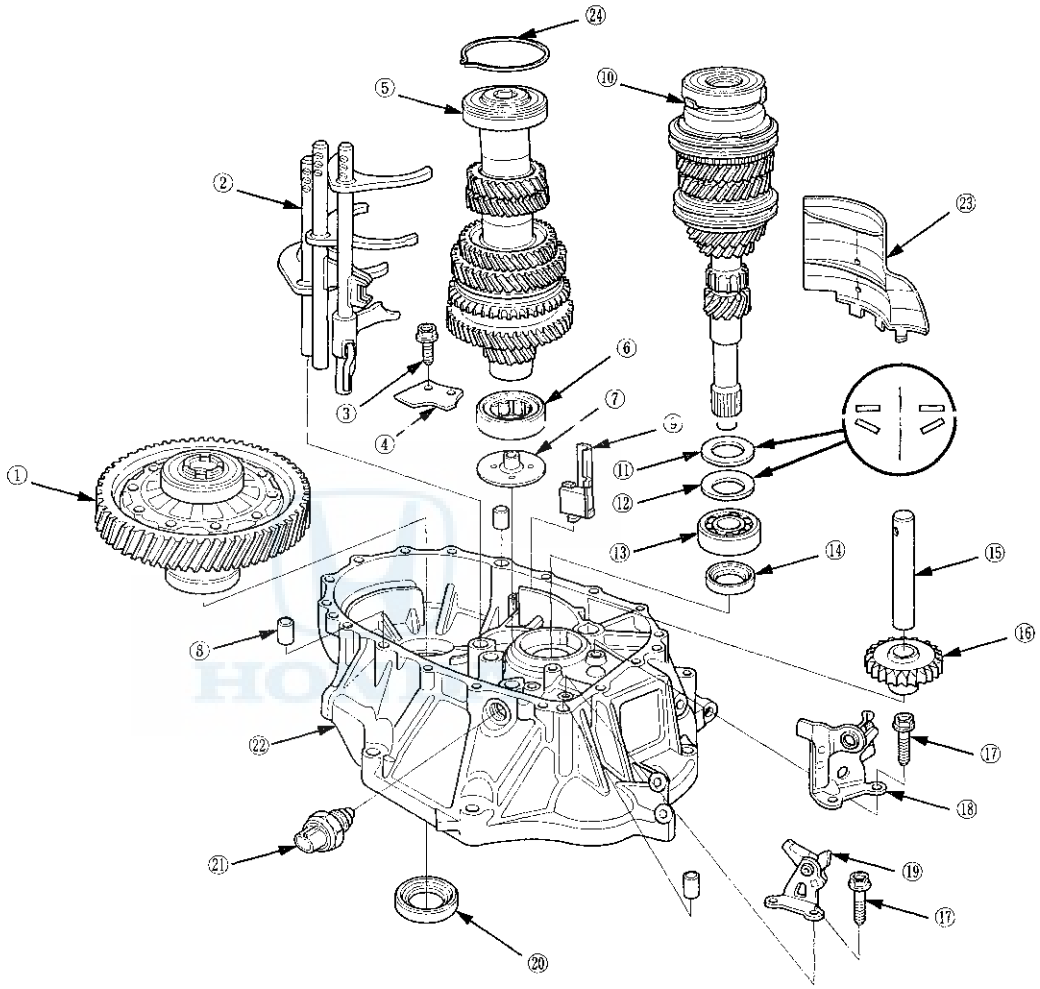
54. Check the wheel alignment (see page 18-5).

55. Check the shift lever and the clutch operation.

56. Test-drive the vehicle.

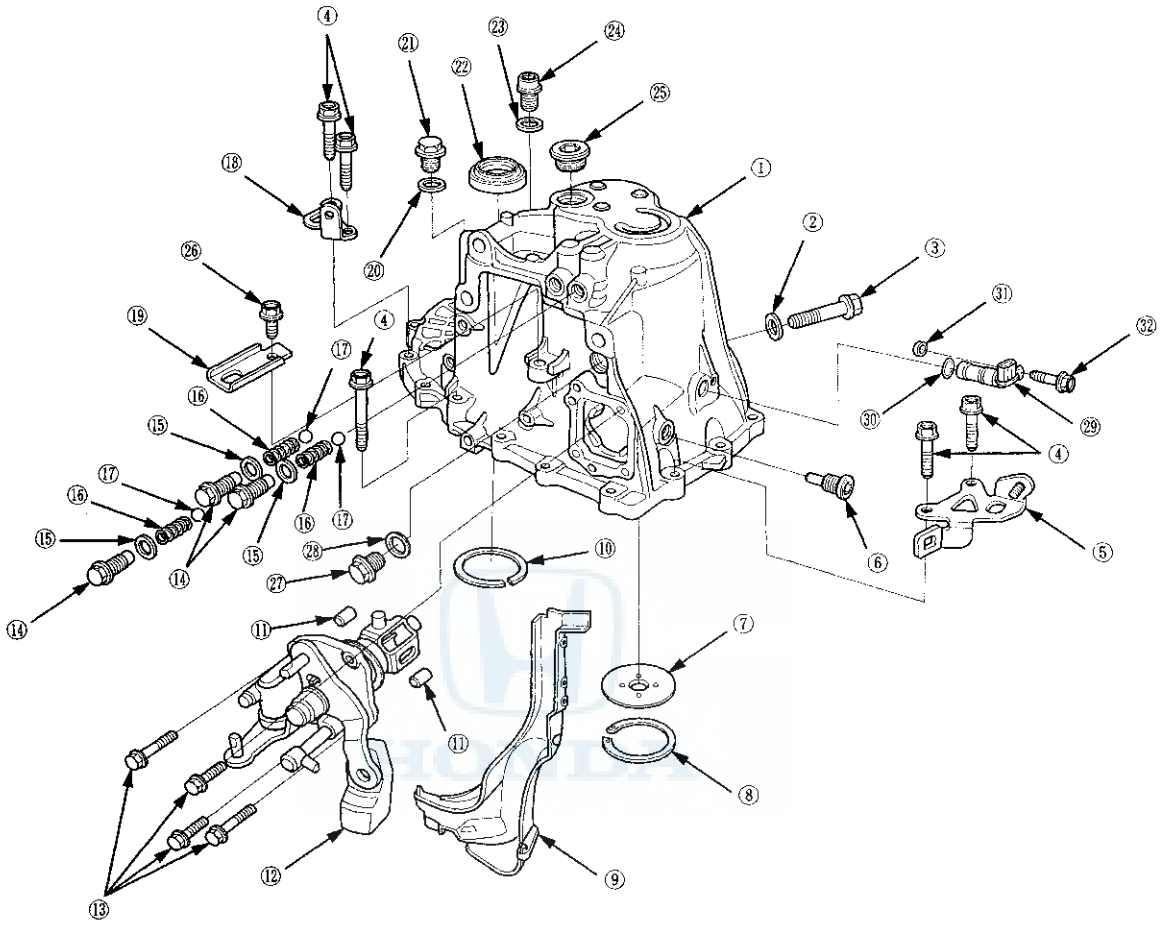
Transmission Disassembly

Exploded View-Clutch Housing



① DIFFERENTIAL ASSEMBLY
② SHIFT FORK ASSEMBLY
③ 6 mm FLANGE BOLT
13 N·m (1.3 kgf·m, 9.4 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 CLUTCH HOUSING
㉓ BAFFLE PLATE
㉔ 72 mm SNAP RING

Exploded View-Transmission Housing



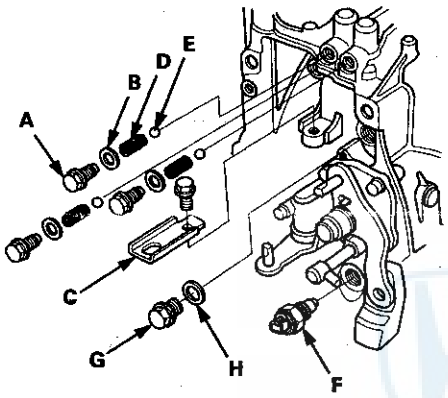
① TRANSMISSION HOUSING
② 10 mm SEALING WASHER
Replace.
③ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
④ 8 mm FLANGE BOLT
27 N·m (2.8 kgf·m, 20 lbf·ft)
⑤ TRANSMISSION HANGER A
⑥ INTERLOCK BOLT
39 N·m (4.0 kgf·m, 29 lbf·ft)
⑦ OIL GUIDE PLATE M
⑧ 72 mm SHIM
⑨ OIL GUTTER PLATE
⑩ 80 mm SHIM
⑪ 8 x 14 mm DOWEL PIN
⑫ CHANGE LEVER ASSEMBLY
⑬ 6 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 8.7 lbf·ft)
⑭ DETENT BOLT
22 N·m (2.2 kgf·m, 16 lbf·ft)
⑮ 12 mm SEALING WASHER
Replace.
⑯ SPRING
⑰ STEEL BALL
⑱ TRANSMISSION HANGER B
⑲ TRANSMISSION HANGER C
⑳ 20 mm SEALING WASHER
Replace.
㉑ FILLER PLUG
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉒ 40 x 56 x 8 mm OIL SEAL
Replace.
㉓ 14 mm SEALING WASHER
Replace.
㉔ DRAIN PLUG
39 N·m (4.0 kgf·m, 29 lbf·ft)
㉕ 32 mm SEALING CAP
34 N·m (3.5 kgf·m, 25 lbf·ft)
㉖ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉗ 20 mm BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉘ 20 mm SEALING WASHER
Replace.
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, 8.7 lbf·ft)

(cont'd)

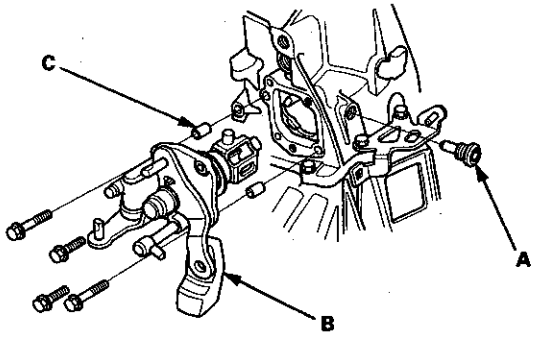
Transmission Disassembly (cont'd)

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

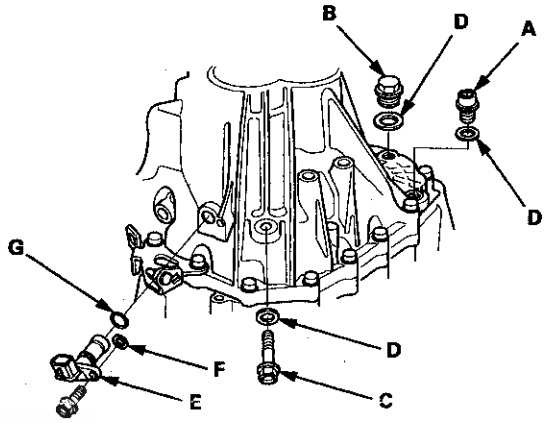
1. Remove the release bearing and the release fork (see page 12-20).
2. Remove the detent bolts (A), the 12 mm sealing washers (B), the springs (D), the steel balls (E), and the back-up light switch (F).



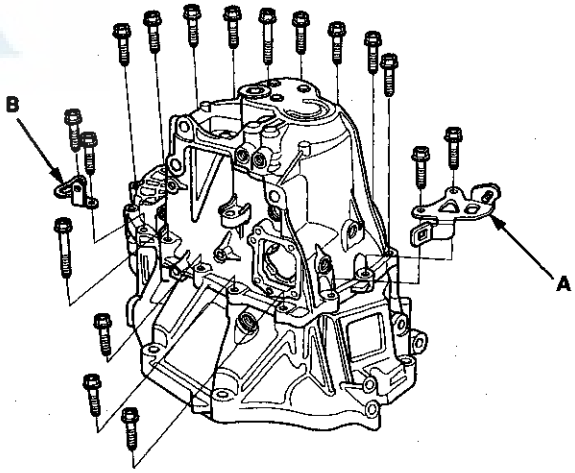
3. Remove transmission hanger C, the 20 mm bolt (G), and the 20 mm sealing washer (H).
4. Remove the interlock bolt (A), the change lever assembly (B), and the 8 x 14 mm dowel pins (C).



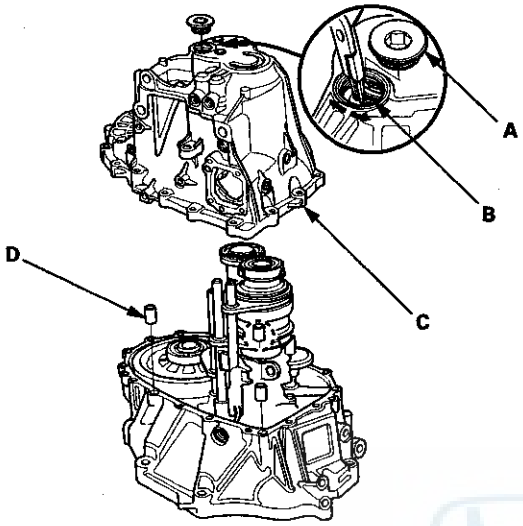
5. Remove the drain plug (A), the filler plug (B), the 10 mm flange bolt (C), and the sealing washers (D).



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

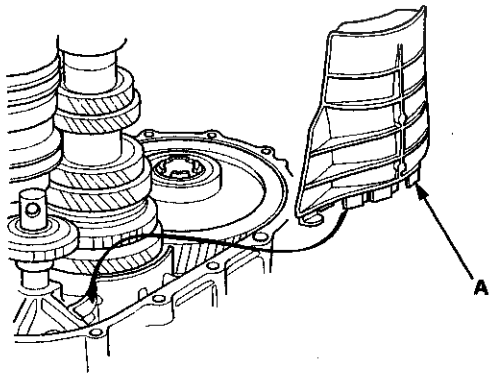


8. Remove the 32 mm sealing cap (A).

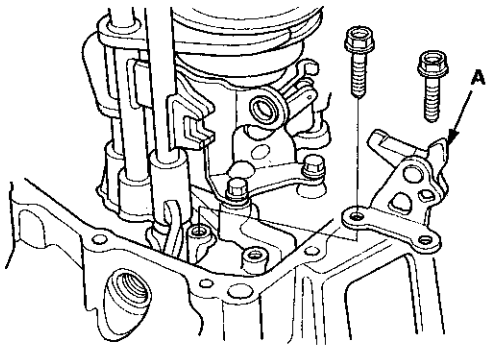


9. While expanding the 72 mm snap ring (B) on the countershaft ball bearing with snap ring pliers, lift the transmission housing (C). Release the snap ring pliers, and remove the transmission housing and the three 14 x 20 mm dowel pins (D).

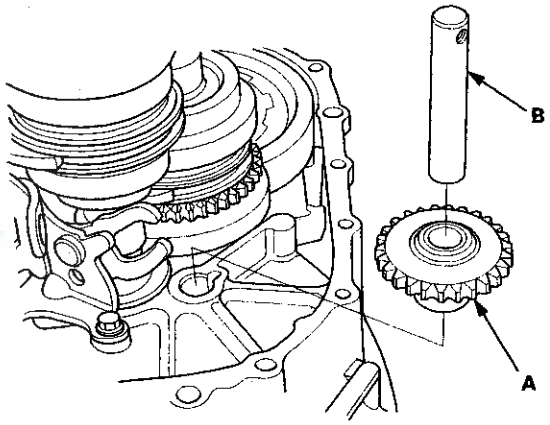
10. Remove the baffle plate (A).



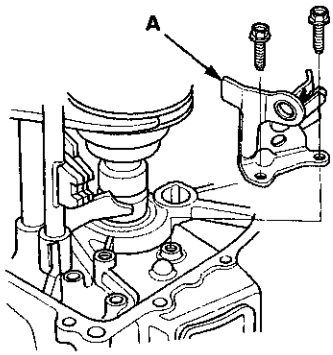
11. Remove the reverse lock cam (A).



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



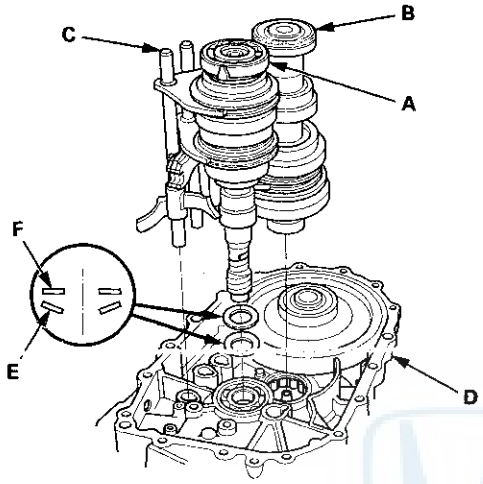
13. Remove the reverse shift fork (A).



(cont'd)

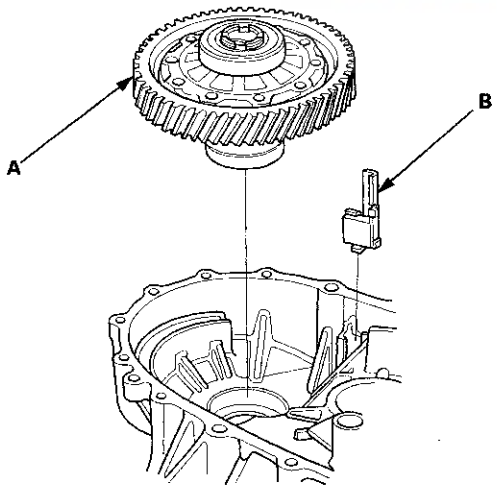
Transmission Disassembly (cont'd)

14. 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).

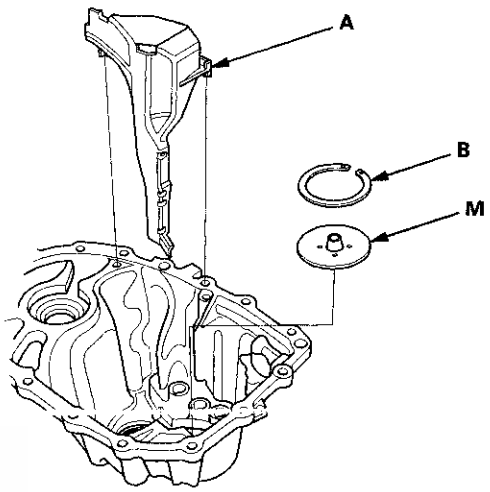


15. Remove the 28 mm spring washer (E) and the 28 mm washer (F).

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



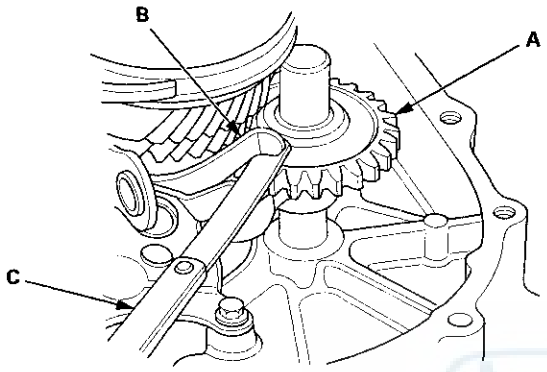
17. Remove the oil gutter plate (A), the 72 mm shim (B), and oil guide plate M.



Reverse Shift Fork Clearance Inspection

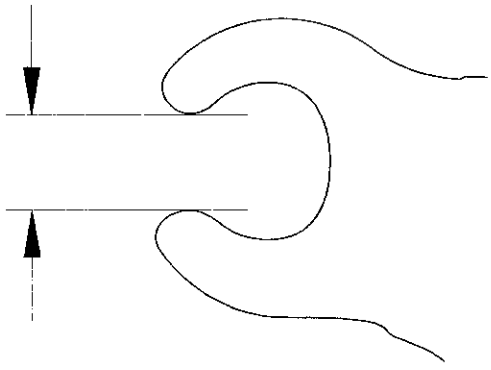
1. Measure the clearance between the reverse idler gear (A) and the reverse shift fork (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 2.

Standard: **0.20—0.59 mm (0.008—0.023 in)**
Service Limit: **1.2 mm (0.05 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.

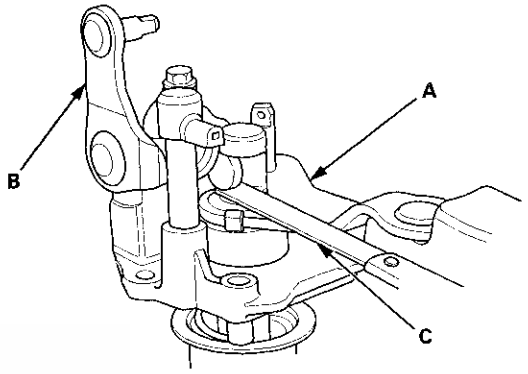
Standard: 13.4—13.7 mm (0.53—0.54 in)



Change Lever Clearance Inspection

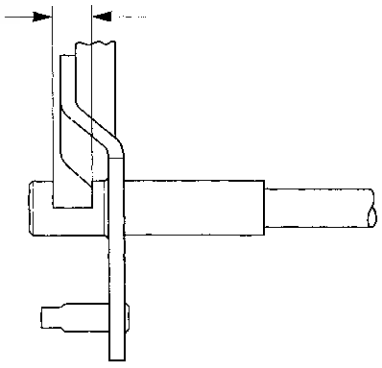
1. Measure the clearance between the change lever (A) and the select lever (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 2.

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



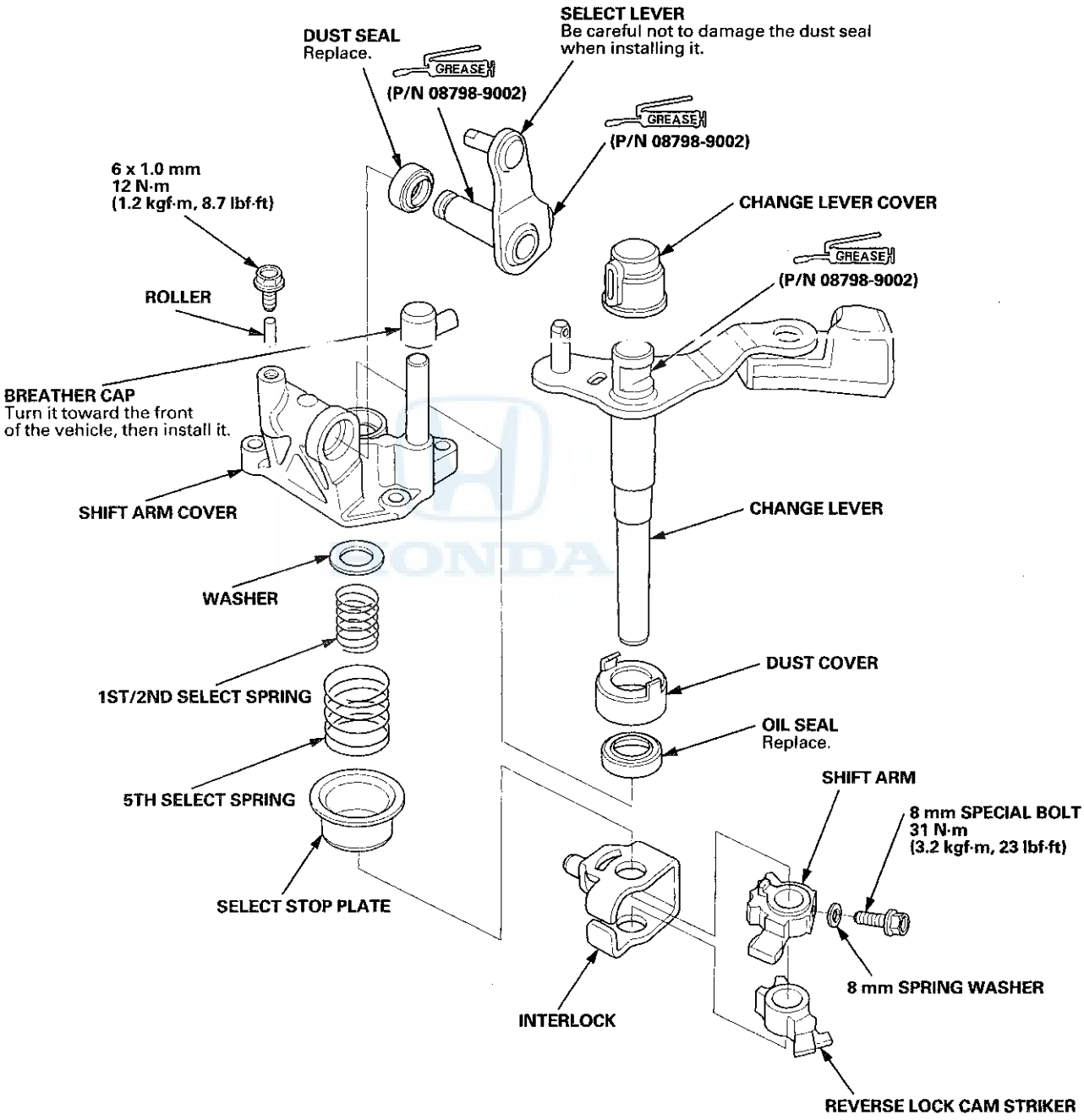
2. Measure the groove width of the change lever.
   - If the groove width is not within the standard, replace the change lever.
   - If the groove width is within the standard, replace the select lever.

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



Change Lever Assembly Disassembly/Reassembly

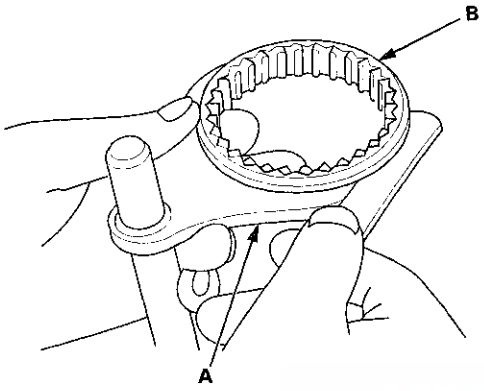
NOTE: Prior to reassembling, clean all the parts in solvent, dry them, and apply grease to contact surfaces as shown. Do not wash the rubber parts with solvent.



Shift Fork Clearance Inspection

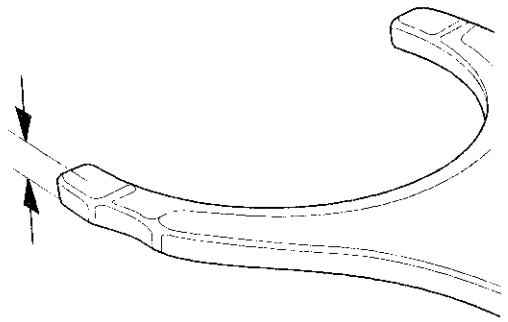
1. Measure the clearance between each shift fork (A) and its matching synchro sleeve (B). If the clearance exceeds the service limit, go to step 2.

   Standard: 0.35—0.65 mm (0.014—0.026 in)
   Service Limit: 1.0 mm (0.04 in)



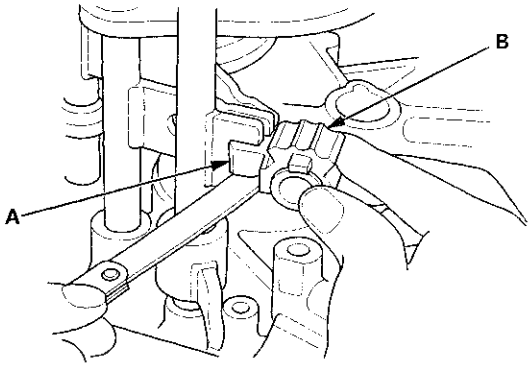
2. Measure the thickness of the shift fork fingers.
   - If the thickness is not within the standard, replace the shift fork.
   - If the thickness is within the standard, replace the synchro sleeve and the synchro hub as a set.
   - If one arm of the shift fork shows more wear than others, the fork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

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



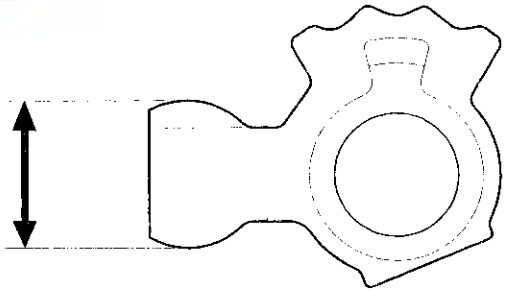
3. Measure the clearance between the shift fork (A) and the shift arm (B). If the clearance exceeds the service limit, go to step 4.

   Standard: 0.2—0.5 mm (0.01—0.02 in)
   Service Limit: 0.6 mm (0.02 in)



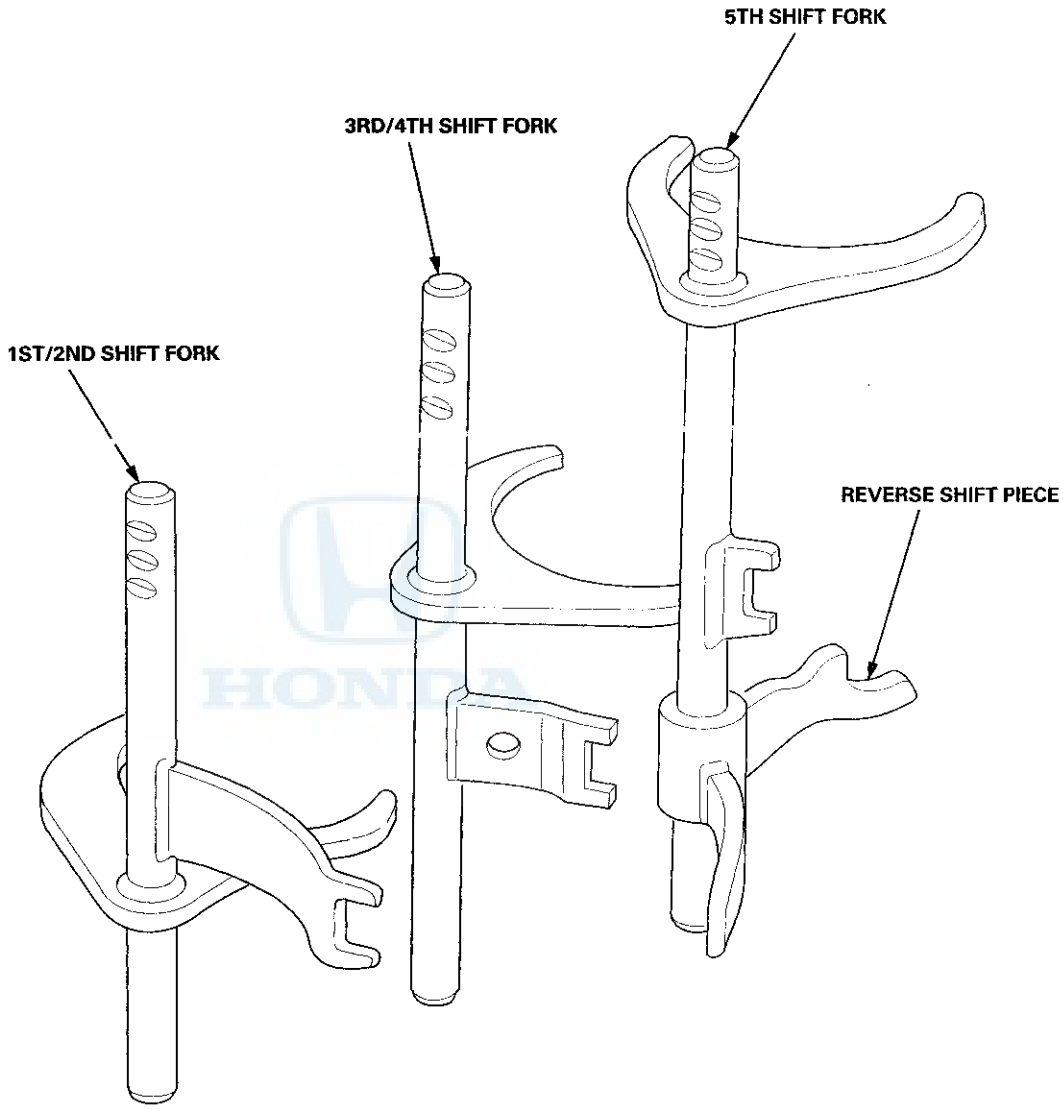
4. Measure the width of the shift arm.
   - If the width is not within the standard, replace the shift arm.
   - If the width is within the standard, replace the shift fork.

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



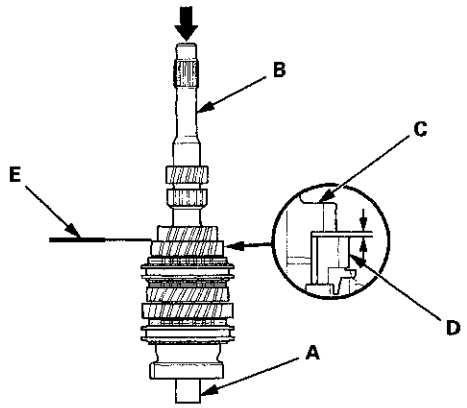
Shift Fork Disassembly/Reassembly

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).

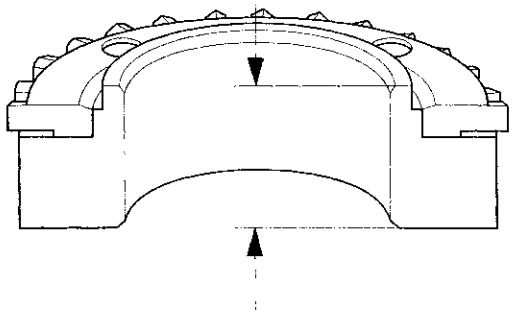


2. Measure the clearance between 2nd gear (C) and 3rd gear (D) with a feeler gauge (E).
   - If the clearance exceeds the service limit, go to step 3.
   - If the clearance is within the service limit, go to step 4.

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

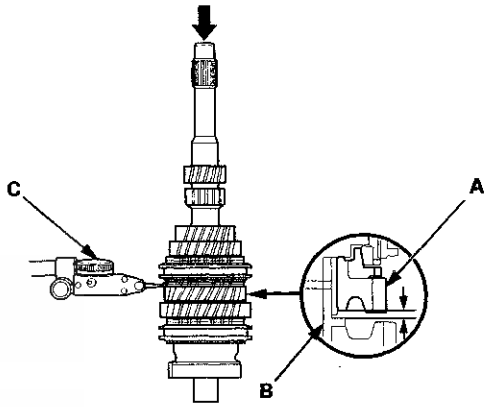
3. Measure the thickness of 3rd gear.
   - If the thickness is less than the service limit, replace 3rd gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and the 3rd/4th synchro sleeve as a set.

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



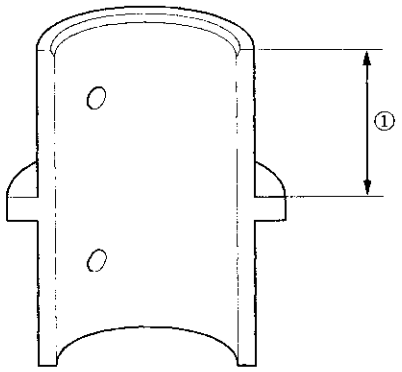
4. Measure the clearance between 4th gear (A) and the 4th/5th gear distance collar (B) with a dial indicator (C).
   - If the clearance exceeds the service limit, go to step 5.
   - If the clearance is within the service limit, go to step 7.

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



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)

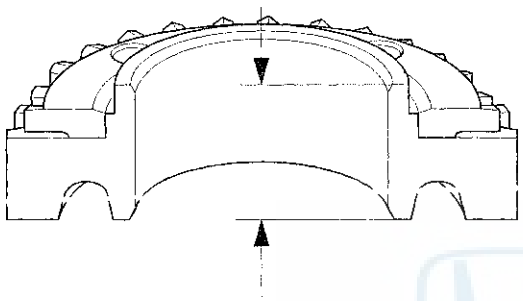


(cont'd)

Mainshaft Assembly Clearance Inspection (cont'd)

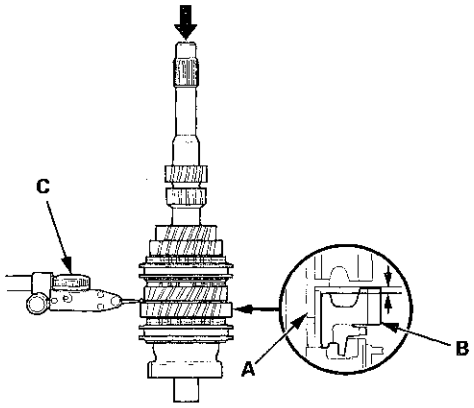
6. Measure the thickness of 4th gear.
   - If the thickness is less than the service limit, replace 4th gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and the 3rd/4th synchro sleeve as a set.

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



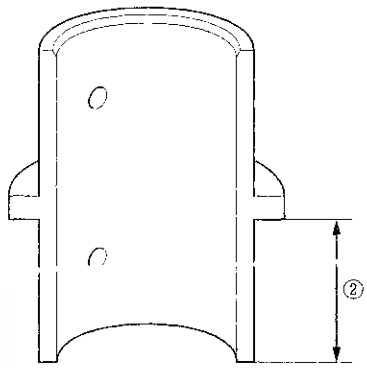
7. Measure the clearance between the 4th/5th gear distance collar (A) and 5th gear (B) with a dial indicator (C).
   - If the clearance exceeds the service limit, go to step 8.
   - If the clearance is within the service limit, go to step 10.

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



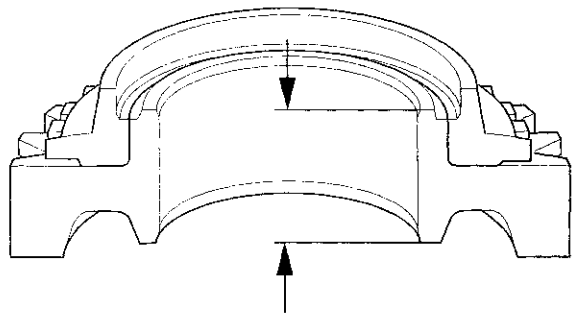
8. Measure the length ② of the 4th/5th gear distance collar as shown.
   - If the length ② is not within the standard, replace the 4th/5th gear distance collar.
   - If the length ② is within the standard, go to step 9.

   Standard: 24.03–24.08 mm (0.946–0.948 in)



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 5th synchro sleeve as a set.

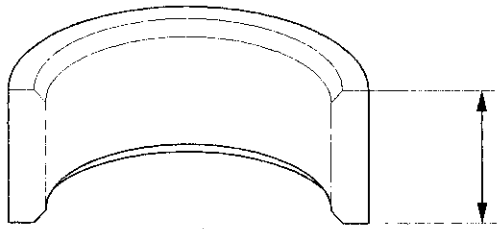
   Standard: 23.92–23.97 mm (0.942–0.944 in)
   Service Limit: 23.80 mm (0.937 in)



Mainshaft Disassembly

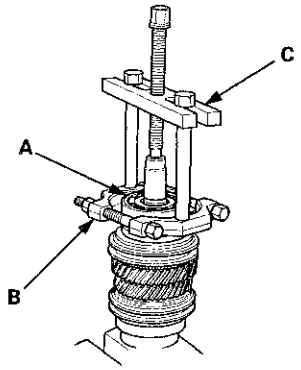
10. Measure the length of the MBS distance collar. If the length is not within standard, replace the MBS distance collar.

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



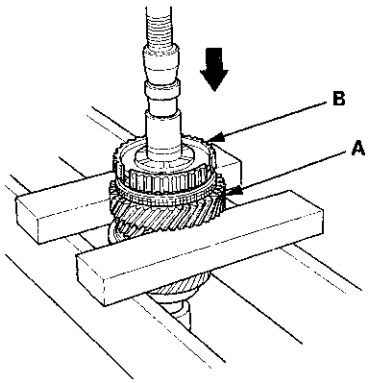
NOTE: Refer to the Exploded View in the Mainshaft Reassembly, as needed, when removing components pressed onto the mainshaft (see page 13-38).

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.

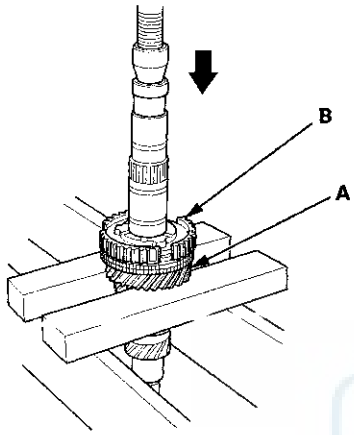


(cont'd)

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.

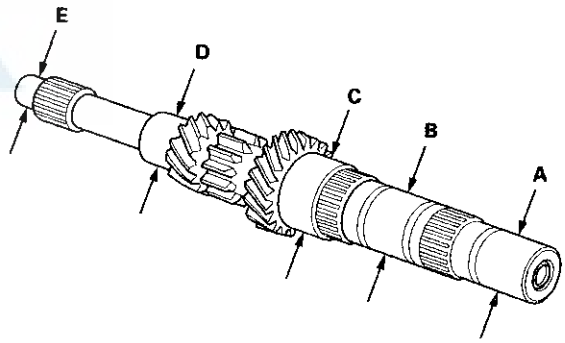


Mainshaft Inspection

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.

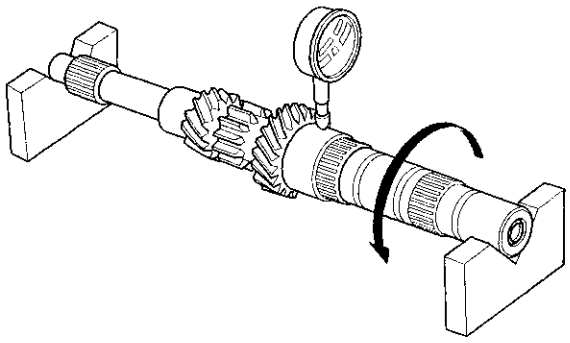
Standard:
A Ball Bearing Contact Area (Transmission Housing Side):
27.987—28.000 mm (1.1018—1.1024 in)
B 4th/5th Gear Distance Collar Contact Area:
31.984—32.000 mm (1.2592—1.2598 in)
C Needle Bearing Contact Area:
38.984—39.000 mm (1.5348—1.5354 in)
D Ball Bearing Contact Area (Clutch Housing Side):
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)



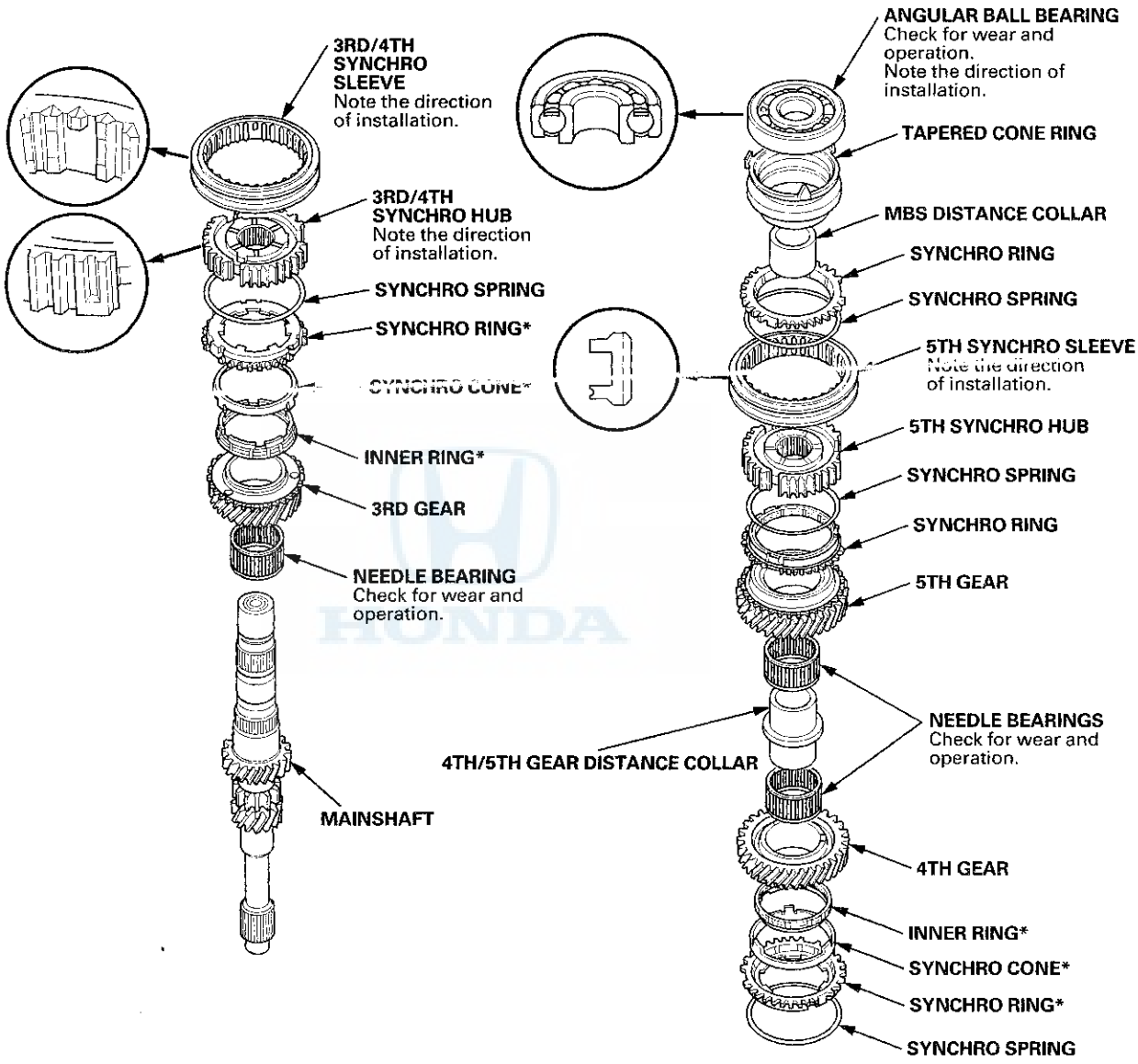
2. Inspect the runout by supporting both ends of the mainshaft. Then rotate the mainshaft two complete turns while measuring with a dial gauge. If the runout exceeds the service limit, replace the mainshaft.

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



Mainshaft Reassembly

Exploded View

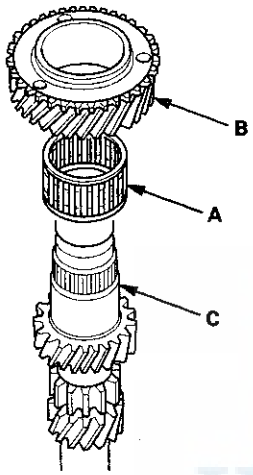


*: The components of the double cone synchro assembly.

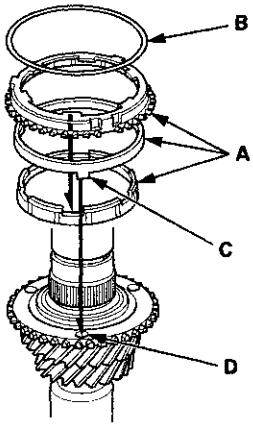
Special Tools Required
- Driver Handle, 40 mm I.D. 07746-0030100
- Bearing Driver Attachment, 30 mm 07746-0030300

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

1. Clean all the parts in solvent, dry them, and apply MTF to all contact surfaces.
2. Install the needle bearing (A) and 3rd gear (B) onto the mainshaft (C).

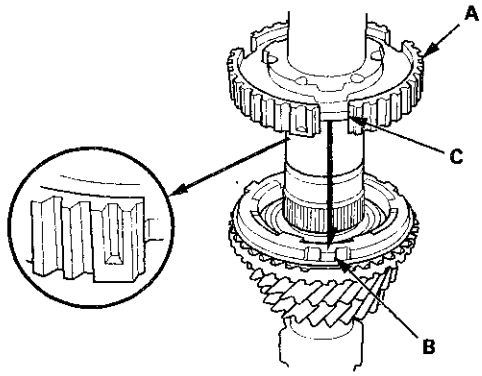


3. Install the double cone synchro assembly (A) with the synchro spring (B) by aligning the synchro cone fingers (C) with the holes (D) in 3rd gear.

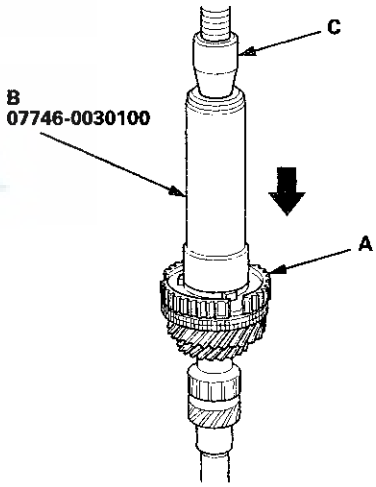


4. Install the 3rd/4th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 3rd/4th synchro hub.

   NOTE: Make sure to install the 3rd/4th synchro hub in the direction shown.



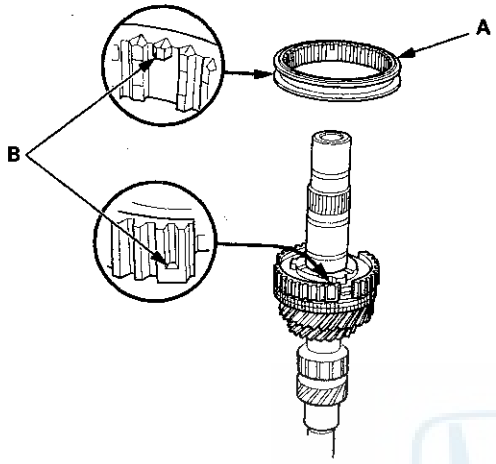
5. Press on the 3rd/4th synchro hub (A) using the 40 mm I.D. driver handle (B) and a press (C).



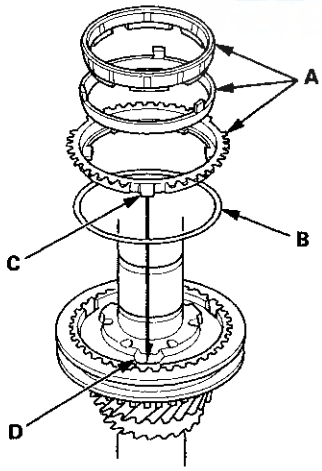
(cont'd)

Mainshaft Reassembly (cont'd)

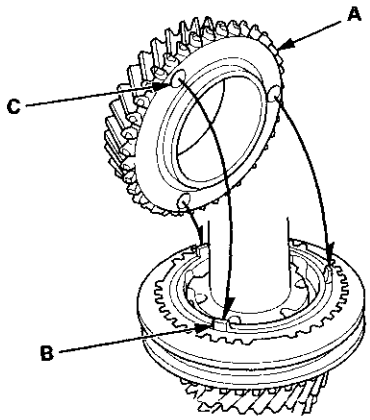
6. Install the 3rd/4th synchro sleeve (A) by aligning the stops (B) of the 3rd/4th synchro sleeve and the 3rd/4th synchro hub. After installing, check the operation of the 3rd/4th synchro hub set.



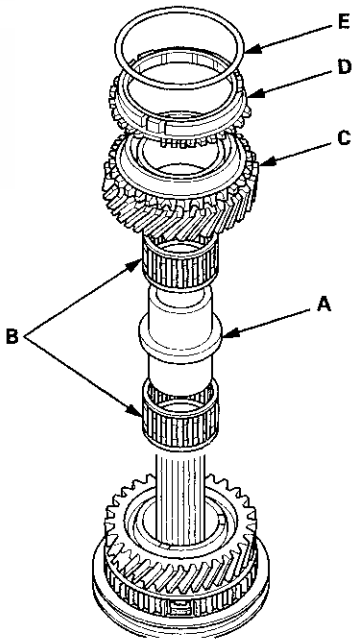
7. Install the double cone synchro assembly (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 3rd/4th synchro hub.



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

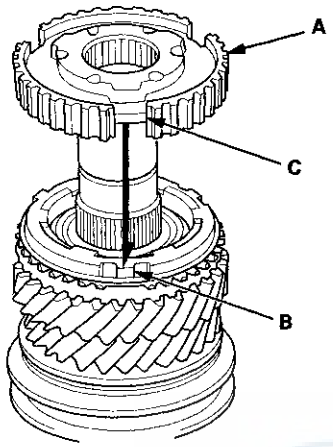


9. Install the 4th/5th gear distance collar (A) with the needle bearings (B) and 5th gear (C).

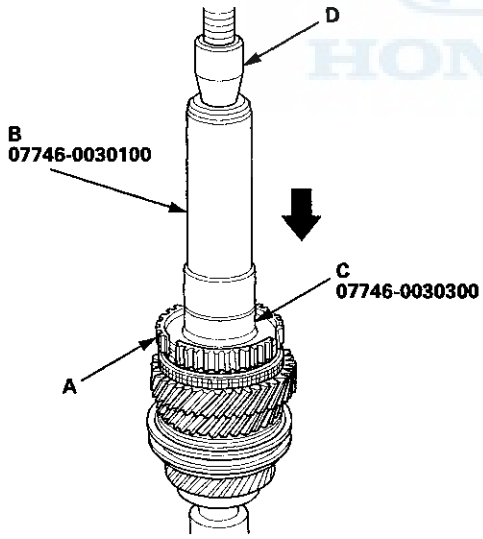


10. Install the synchro ring (D) with the synchro spring (E) onto 5th gear.

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

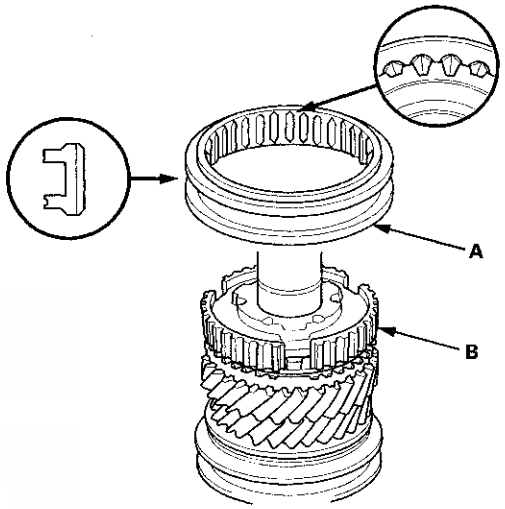


12. Press on the 5th synchro hub (A) using the 40 mm I.D. driver handle (B), the 30 mm bearing driver attachment (C), and a press (D).

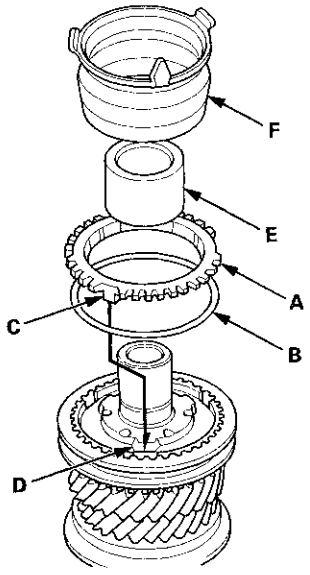


13. Install the 5th synchro sleeve (A) by aligning the slots of the 5th synchro sleeve and the 5th synchro hub (B). After installing, check the operation of the 5th synchro hub set.

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



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.

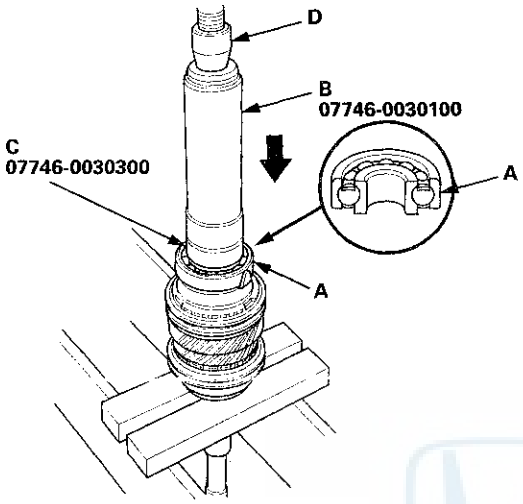


15. Install the MBS distance collar (E) and the tapered cone ring (F).

(cont'd)

Mainshaft Reassembly (cont'd)

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

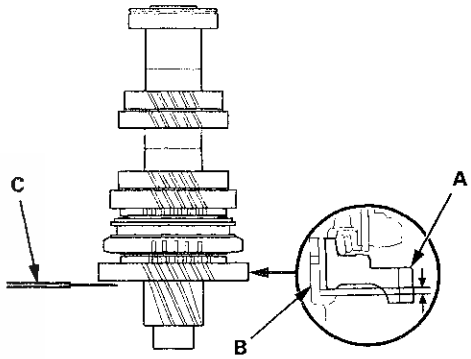


Countershaft Assembly Clearance Inspection

NOTE: Before inspection, make sure the special bolt is tightened to the specified torque (see page 13-46).

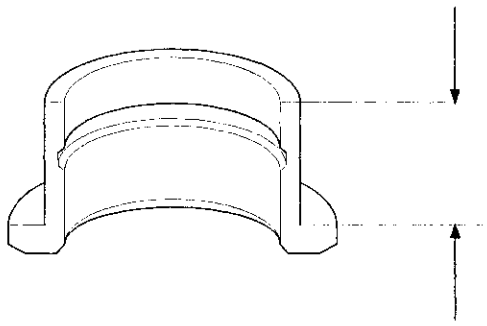
1. Measure the clearance between 1st gear (A) and the 1st gear distance collar (B) with a feeler gauge (C).
   - If the clearance exceeds the service limit, go to step 2.
   - If the clearance is within the service limit, go to step 4.

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



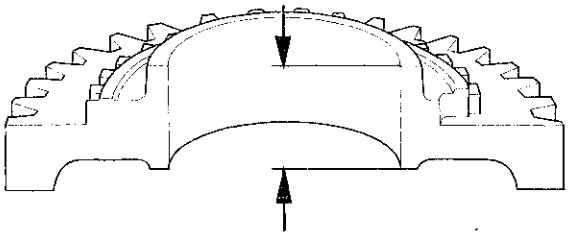
2. Measure the length of the 1st gear distance collar as shown.
   - If the length is not within the standard, replace the 1st gear distance collar.
   - If the length is within the standard, go to step 3.

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



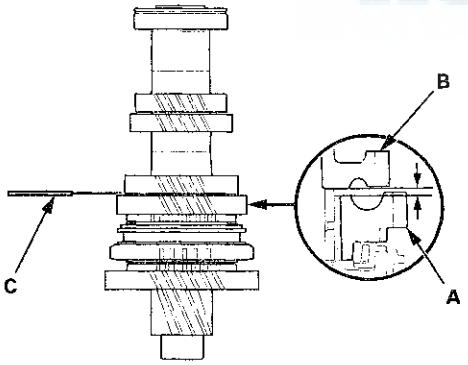
3. Measure the thickness of 1st gear.
   - If the thickness is less than the service limit, replace 1st gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and the reverse gear as a set.

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



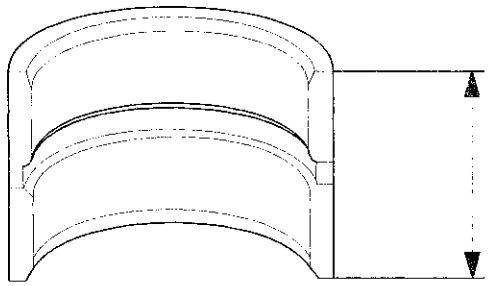
4. Measure the clearance between 2nd gear (A) and 3rd gear (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 5.

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



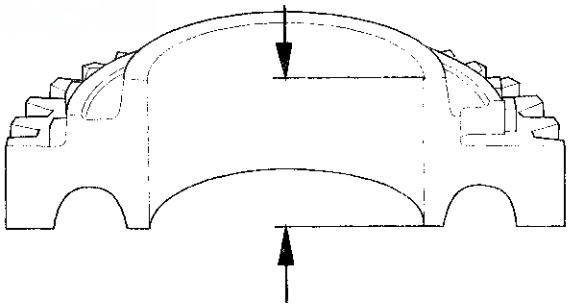
5. Measure the length of the 2nd gear distance collar.
   - If the length is not within the standard, replace the 2nd gear distance collar.
   - If the length is within the standard, go to step 6.

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 reverse gear as a set.

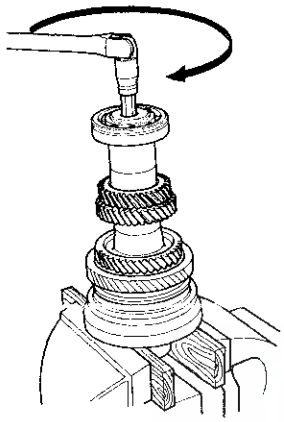
Standard: **27.92—27.97 mm (1.099—1.101 in)**
Service Limit: **27.87 mm (1.097 in)**



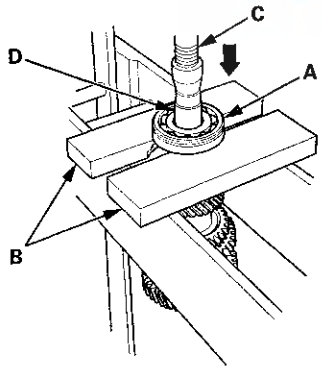
Countershaft Disassembly

NOTE: Refer to the Exploded View in the Countershaft Reassembly, as needed, when removing components pressed onto the countershaft (see page 13-46).

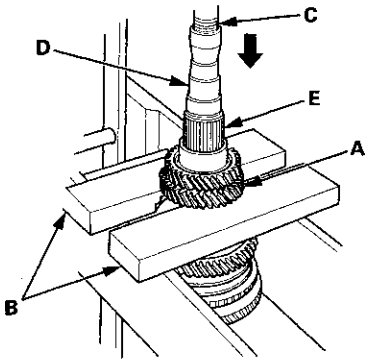
1. Securely clamp the countershaft assembly in a bench vise with wood blocks.



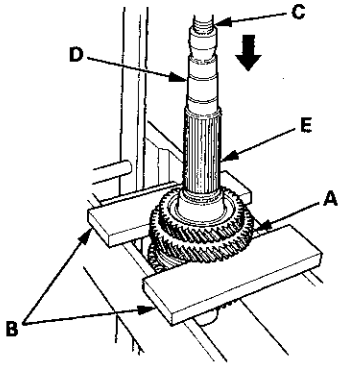
2. Remove the special bolt (left-hand threads).
3. Support the ball bearing (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.



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

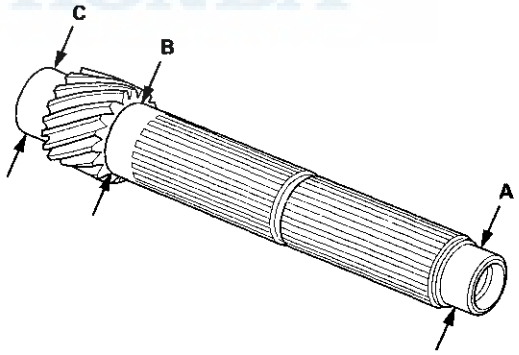


Countershaft Inspection

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.

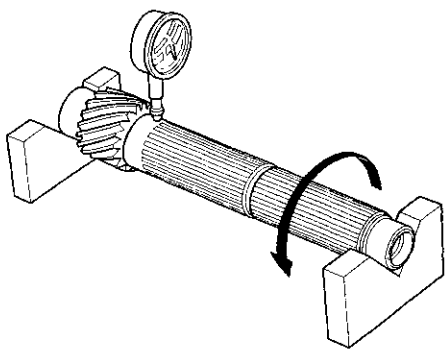
   Standard:
   A Ball Bearing Contact Area (Transmission Housing Side):
   30.020–30.033 mm (1.1819–1.1824 in)
   B 1st Gear Distance Collar Contact Area:
   39.937–39.950 mm (1.5723–1.5728 in)
   C Needle Bearing Contact Area (Clutch Housing Side):
   40.000–40.015 mm (1.5748–1.5754 in)

   Service Limit:
   A: 29.97 mm (1.180 in)
   B: 39.88 mm (1.570 in)
   C: 39.95 mm (1.573 in)



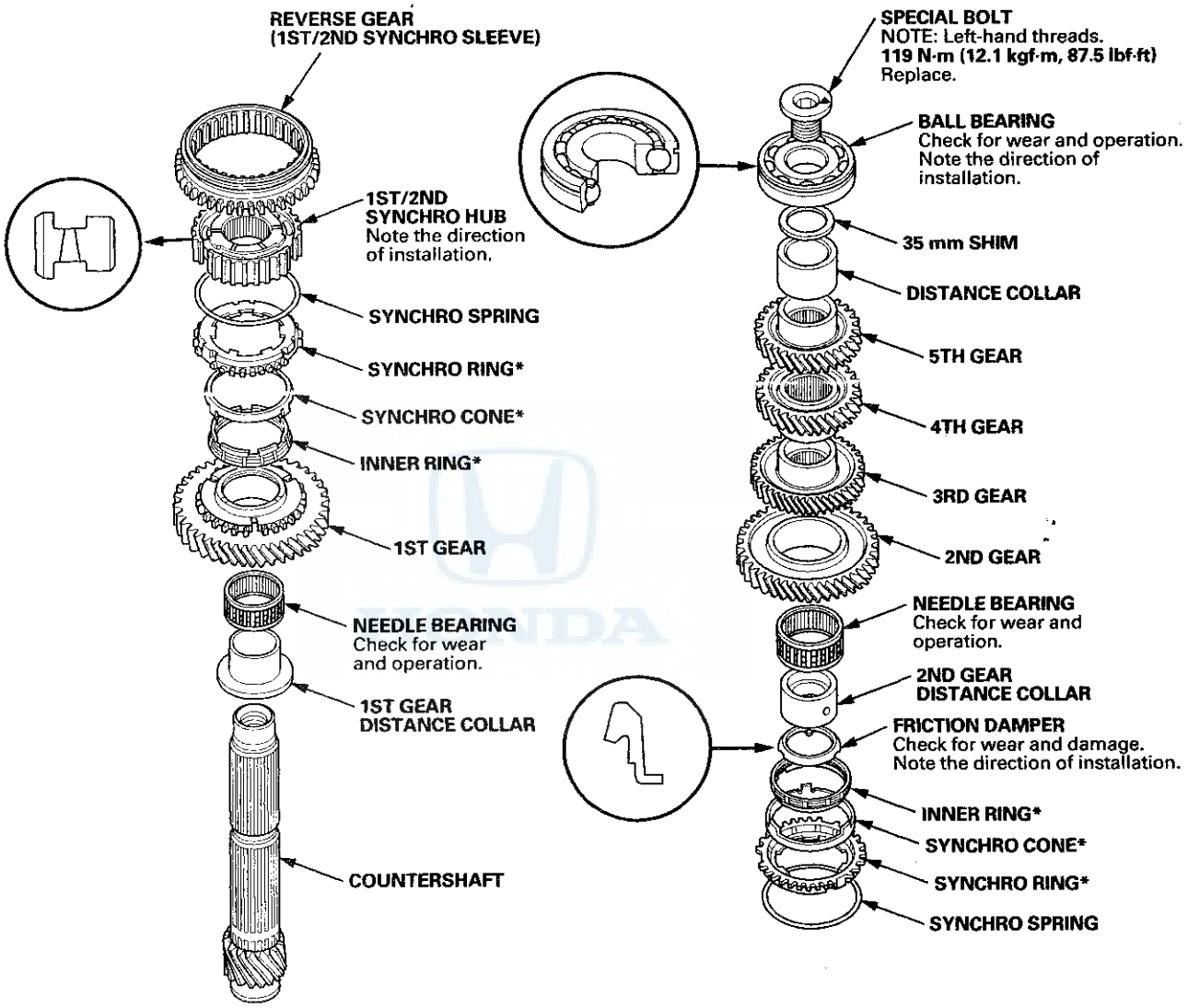
2. Inspect the runout by supporting both ends of the countershaft. Then rotate the countershaft two complete turns while measuring with a dial gauge. If the runout exceeds the service limit, replace the countershaft.

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



Countershaft Reassembly

Exploded View

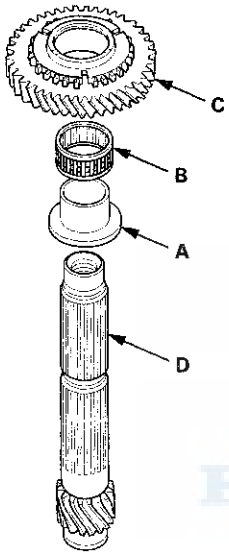


*: The components of the triple cone synchro assembly.

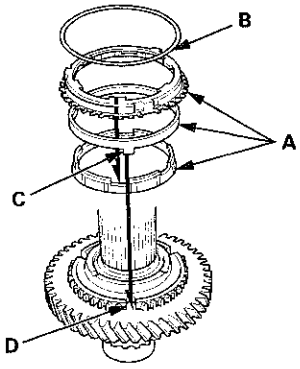
Special Tools Required
- Driver Handle, 40 mm I.D. 07746-0030100
- Bearing Driver Attachment, 30 mm 07746-0030300

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

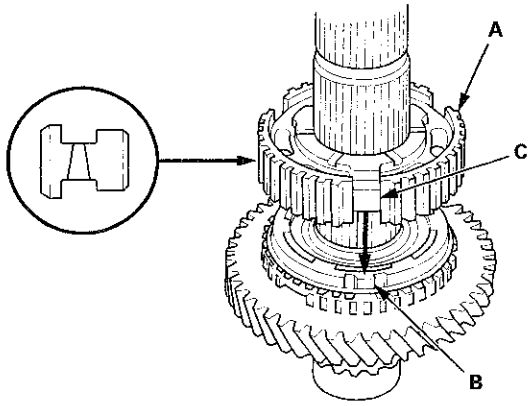
1. Clean all the parts in solvent, dry them, and apply MTF to all contact surfaces.
2. Install the 1st gear distance collar (A) with the needle bearing (B) and 1st gear (C) onto the countershaft (D).



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

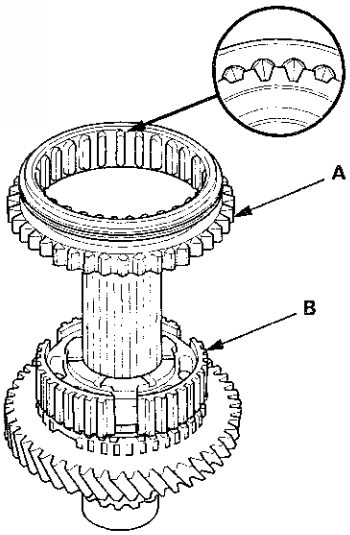


4. Install the 1st/2nd synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 1st/2nd synchro hub.



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

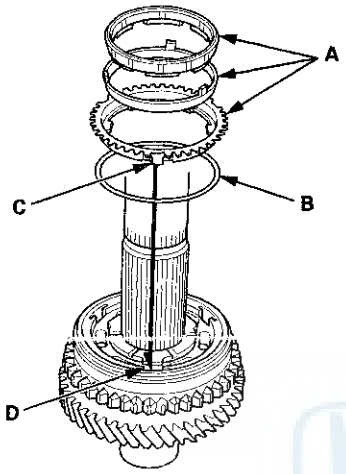
   NOTE: Make sure to align the slots in the 1st/2nd synchro hub as shown.



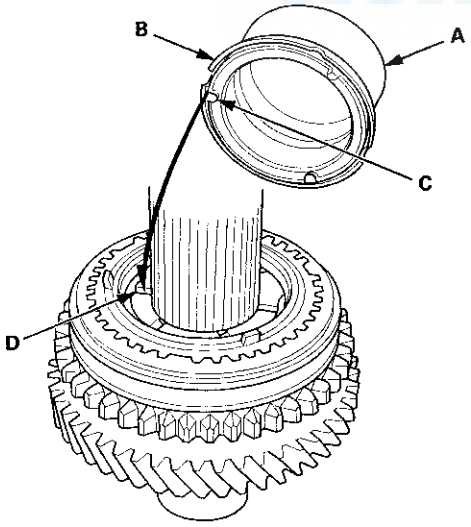
(cont'd)

Countershaft Reassembly (cont'd)

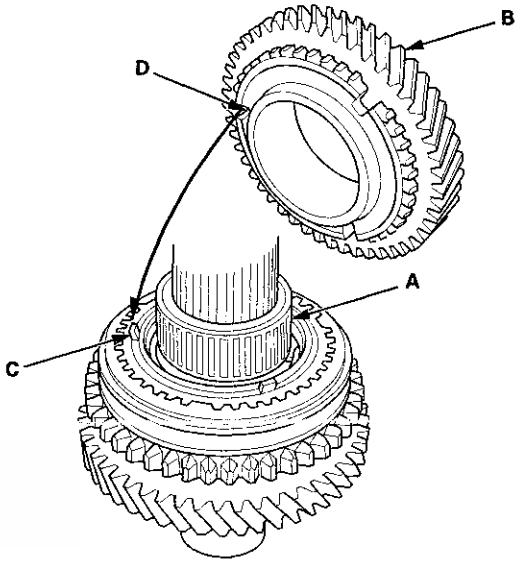
6. Install the triple cone synchro assembly (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 1st/2nd synchro hub.



7. Install the 2nd gear 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.

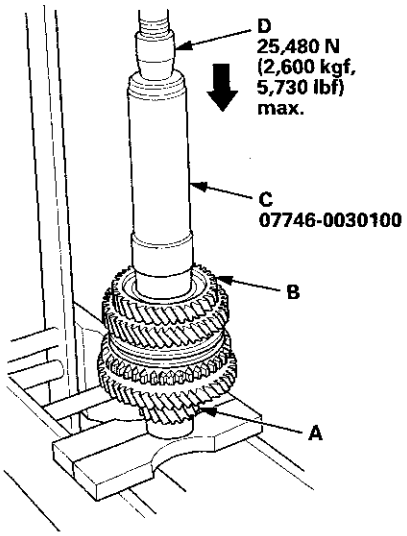


8. Install the needle bearing (A).



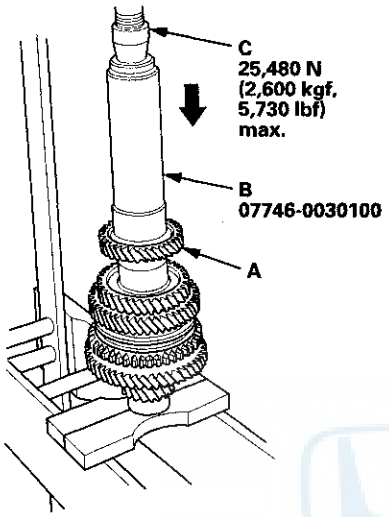
9. Install 2nd gear (B) by aligning the synchro cone fingers (C) with the grooves (D) in 2nd gear.
10. Support the countershaft (A) on steel blocks, then press on 3rd gear (B) using the 40 mm I.D. driver handle (C) and a press (D).

NOTE: Do not exceed the maximum pressure.



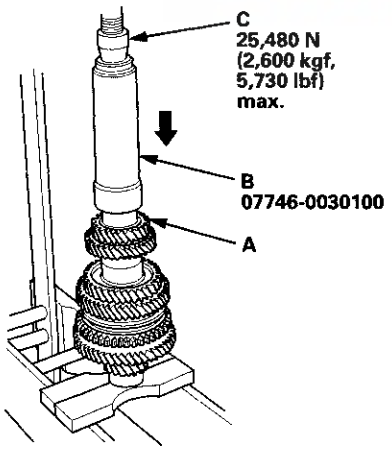
11. Press on 4th gear (A) using the 40 mm I.D. driver handle (B) and a press (C).

NOTE: Do not exceed the maximum pressure.



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

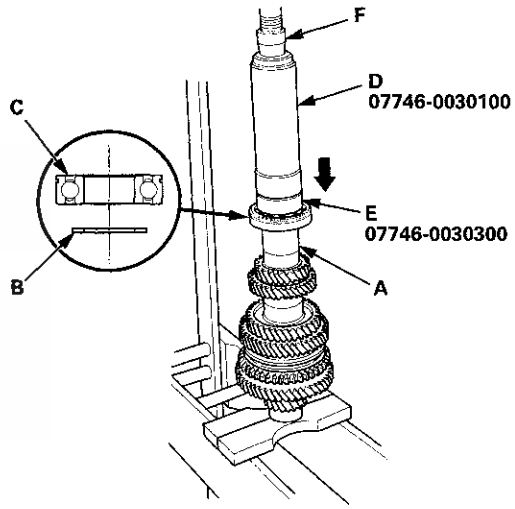
NOTE: Do not exceed the maximum pressure.



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

NOTE:

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

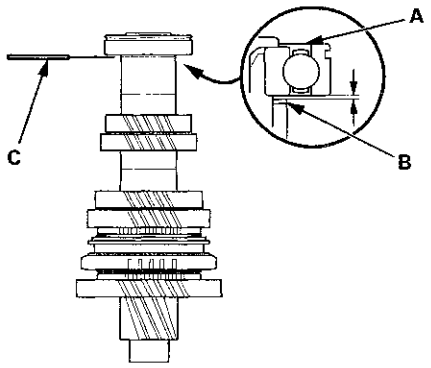


(cont'd)

Countershaft Reassembly (cont'd)

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

Standard: 0.04—0.10 mm (0.002—0.004 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 ones. If the measured clearance in step 14 is within the standard, go to the next step to replace only the ball bearing with a new one.

35 mm Shim

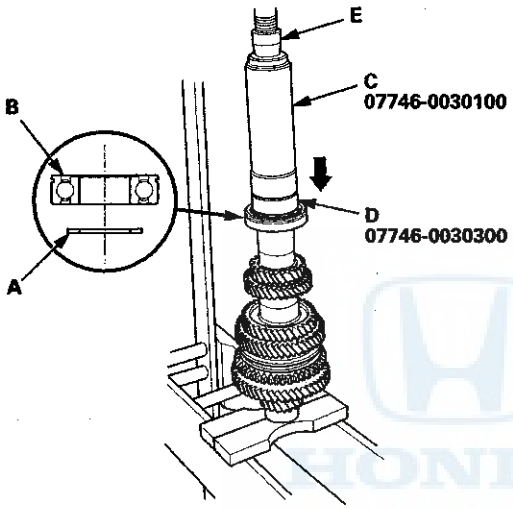
Type	Thickness
A	0.87 mm (0.034 in)
AA	0.91 mm (0.036 in)
B	0.95 mm (0.037 in)
AB	0.99 mm (0.039 in)
C	1.03 mm (0.041 in)
AC	1.07 mm (0.042 in)
D	1.11 mm (0.044 in)
AD	1.15 mm (0.045 in)
E	1.19 mm (0.047 in)
AE	1.23 mm (0.048 in)
F	1.27 mm (0.050 in)
AF	1.31 mm (0.052 in)
G	1.35 mm (0.053 in)
AG	1.39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

16. Remove the ball bearing and the 35 mm shim using a press (see step 3 on page 13-44).

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

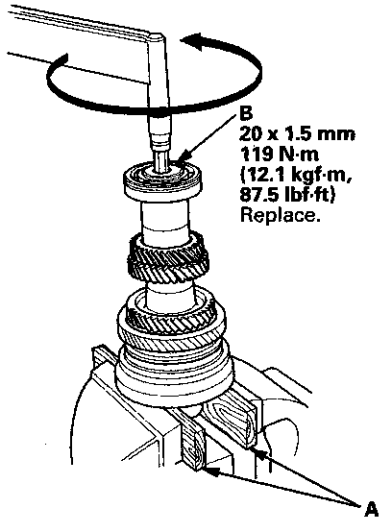
NOTE:

- If necessary, replace the 35 mm shim with the correct one selected in step 15.
- Make sure the ball bearing is installed in the correct direction.



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

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



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

NOTE: Apply new MTF to the bolt threads and flange.

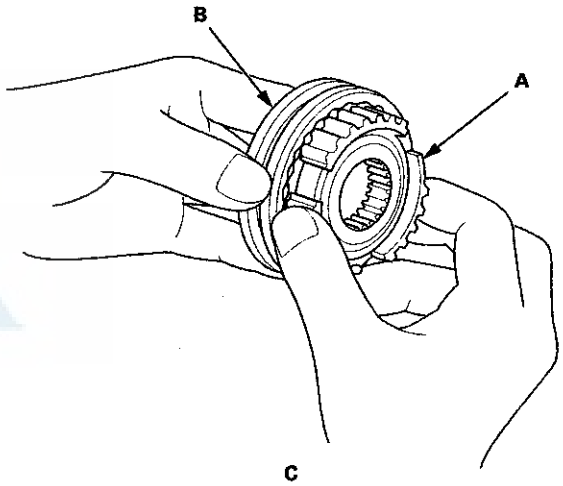
Synchro Sleeve and Hub Inspection and Reassembly

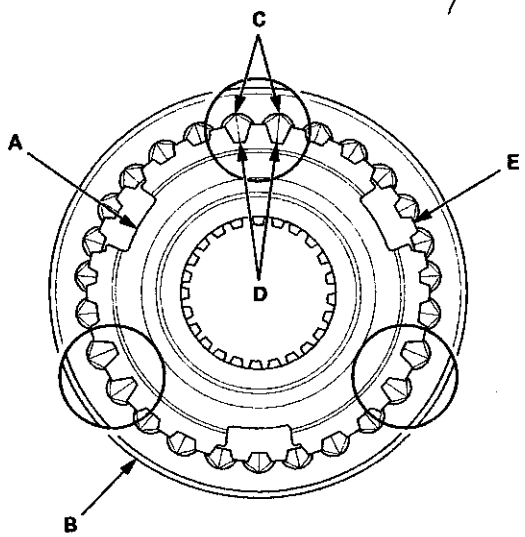
1. Inspect the gear teeth on all synchro hubs and synchro sleeves for wear (rounded off corners).

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:

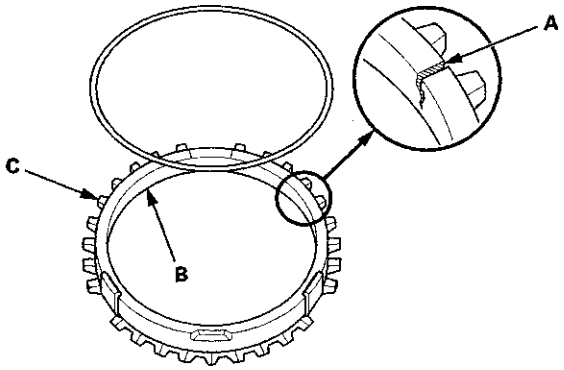
- Do not install the synchro sleeve with its longer teeth in the 1st/2nd and 5th synchro hub slots (E) because it will damage the spring ring.
- If replacement is required, always replace the synchro sleeve and the synchro hub as a set.





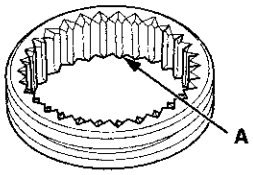
Synchro Ring and Gear Inspection

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

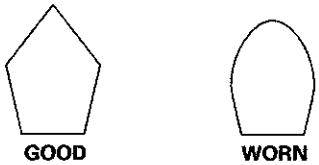


Example of synchro ring teeth

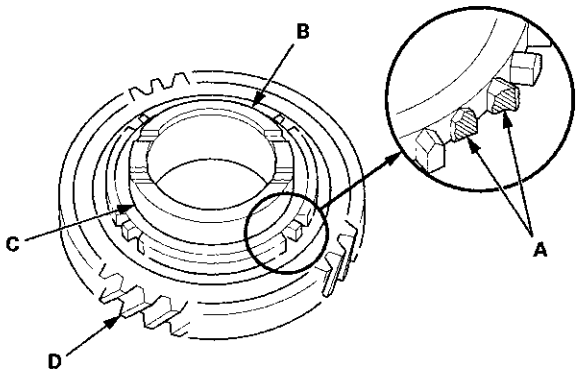
2. Inspect the inside of each synchro ring (B) for wear. Inspect the teeth (C) on each synchro ring for wear (rounded off).
3. Inspect the teeth (A) on each synchro sleeve and matching teeth on each gear for wear (rounded off).



Example of synchro sleeve teeth and gear teeth



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

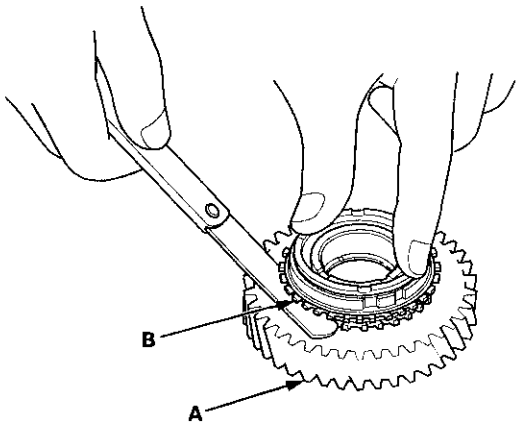


5. Inspect the thrust surface (B) on each gear hub for wear.
6. Inspect the cone surface (C) on each gear hub for wear and roughness.
7. Inspect the teeth on all gears (D) for uneven wear, scoring, and cracks.
8. Coat the cone surface of each gear with MTF, and place its synchro ring on it. Rotate the synchro ring, making sure that it does not slip.

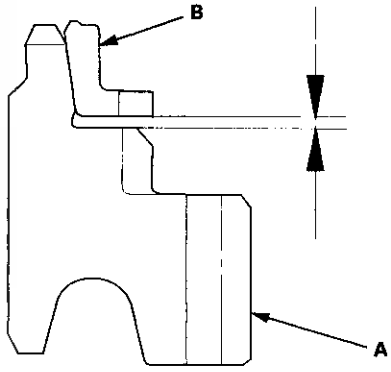
9. Measure the clearance between each gear (A) and its synchro ring (B) all around the gear. Hold the synchro ring against the gear evenly while measuring the clearance. If the clearance is less than the service limit, replace the synchro ring and gear.

Synchro Ring-to-Gear Clearance
Standard: 0.70—1.49 mm (0.028—0.059 in)
Service Limit: 0.4 mm (0.02 in)

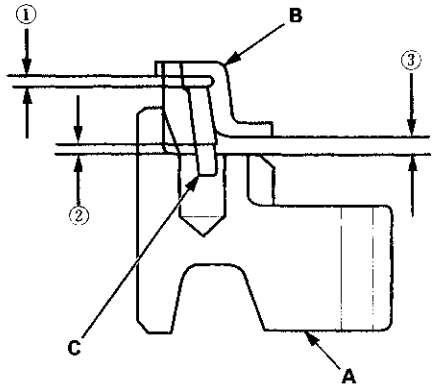
Double Cone Synchro and Triple Cone Synchro-to-Gear Clearance
Standard:
①: Outer Synchro Ring (B) to Synchro Cone (C)
Double Cone Synchro (3rd gear)
0.46—0.97 mm (0.018—0.038 in)
Double Cone Synchro (4th gear)
0.70—1.19 mm (0.028—0.047 in)
Triple Cone Synchro
0.70—1.19 mm (0.028—0.047 in)
②: Synchro Cone (C) to Gear (A)
Double Cone Synchro (3rd gear)
0.51—1.07 mm (0.020—0.042 in)
Double Cone Synchro (4th gear)
0.50—1.04 mm (0.020—0.041 in)
Triple Cone Synchro
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 (0.01 in)
②: 0.3 mm (0.01 in)
③: 0.6 mm (0.02 in)



Synchro ring-to-gear



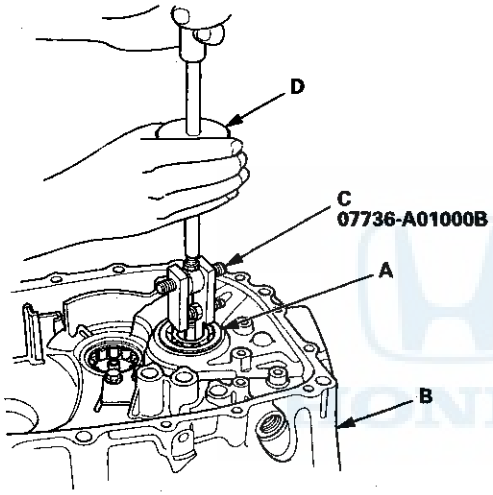
Double cone synchro and triple cone synchro-to-gear



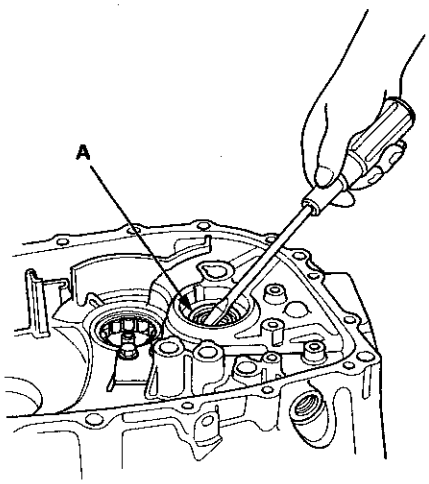
Mainshaft Bearing and Oil Seal Replacement

Special Tools Required
- Oil Seal Driver, 65 07JAD-PL90100
- Adjustable Bearing Puller, 20—40 mm 07736-A01000B
- Bearing Driver Attachment, 42 x 47 07746-0010300
- Driver Handle, 15 x 135L 07749-0010000
- Slide Hammer 3/8"-16 UNF, commercially available

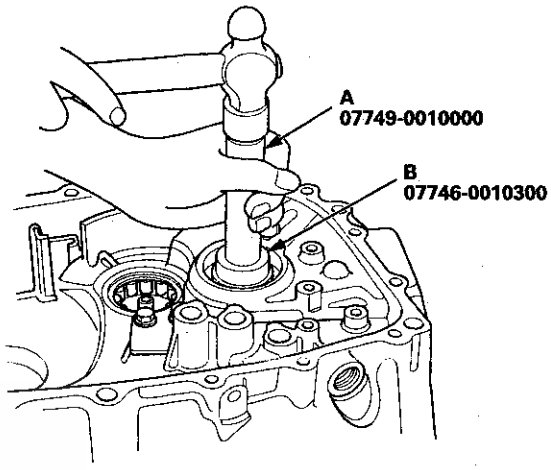
1. Remove the ball bearing (A) from the clutch housing (B) using the 20—40 mm adjustable bearing puller (C) and a commercially available 3/8"-16 UNF slide hammer (D).



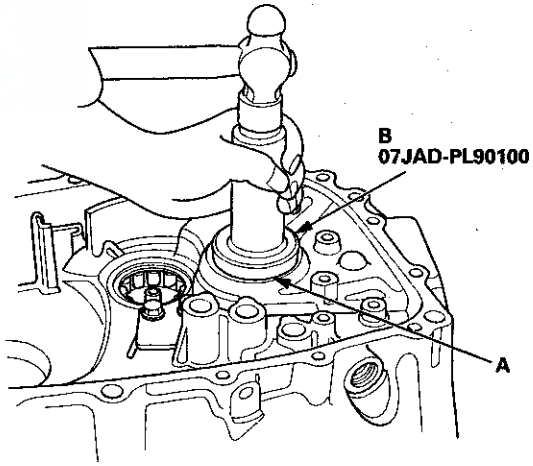
2. Remove the oil seal (A) from the clutch housing. Be careful not to damage the clutch housing when removing the oil seal.



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



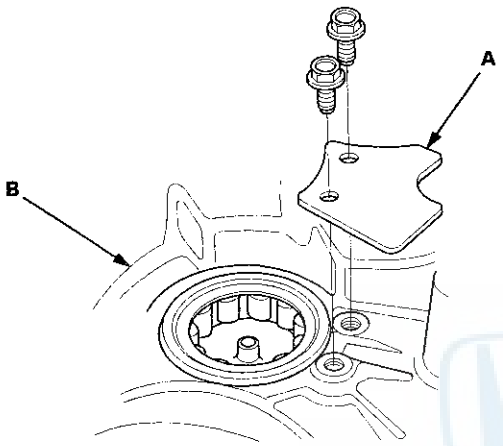
4. Drive in a new ball bearing (A) from the transmission side using the 65 oil seal driver (B).



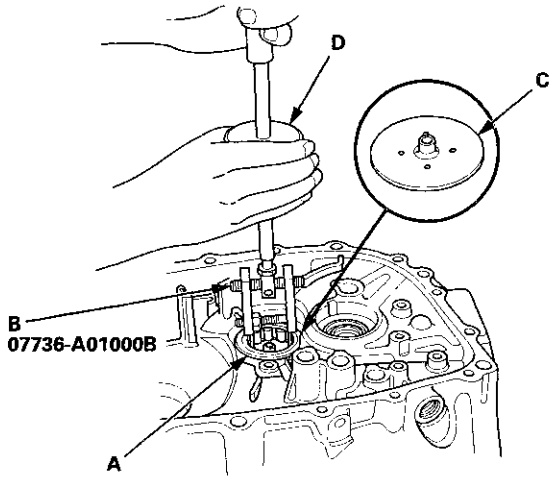
Countershaft Bearing Replacement

Special Tools Required
- Oil Seal Driver, 65 07JAD-PL90100
- Adjustable Bearing Puller, 20—40 mm 07736-A01000B
- Slide Hammer 3/8"-16 UNF, commercially available

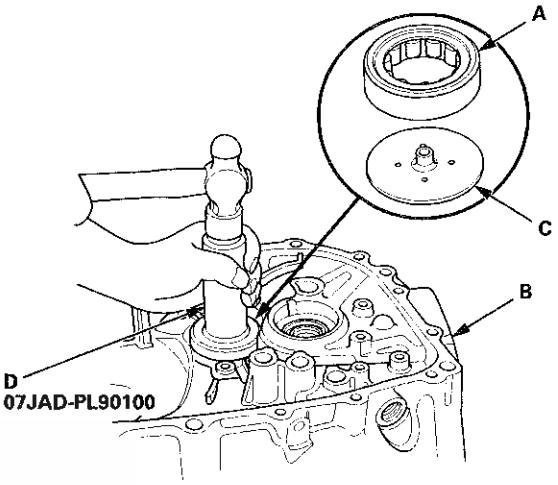
1. Remove the bearing set plate (A) from the clutch housing (B).



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.

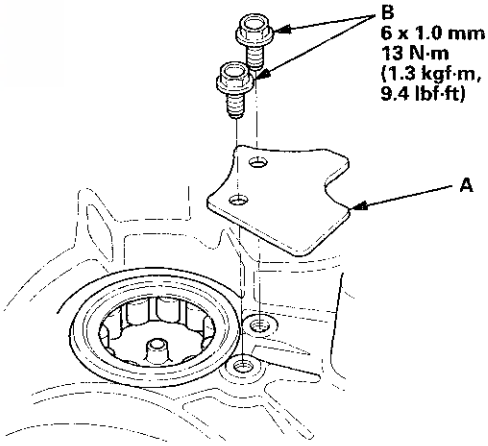


3. Position oil guide plate C and a new needle bearing (A) in the bore of the clutch housing (B).



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

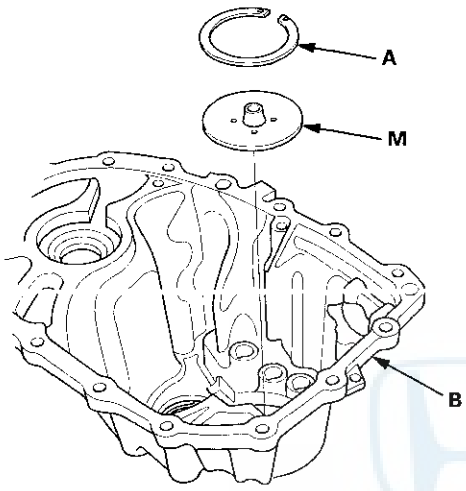
5. Install the bearing set plate (A) with bolts (B).



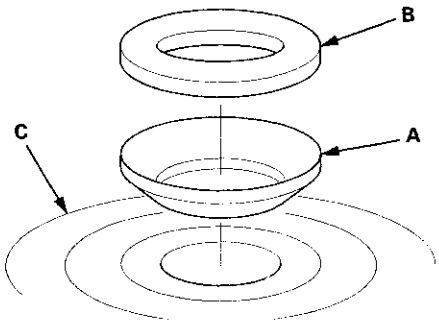
Mainshaft Thrust Clearance Adjustment

Special Tools Required
- Mainshaft Holder 07GAJ-PG20110
- Mainshaft Base 07GAJ-PG20130

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 the installation direction of the spring washer.



3. Assemble all of the mainshaft components.

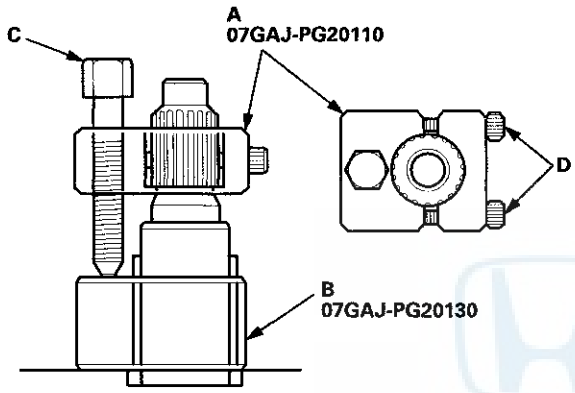
   NOTE: Refer to the Exploded View, as needed, during the assembly (see page 13-38).

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.

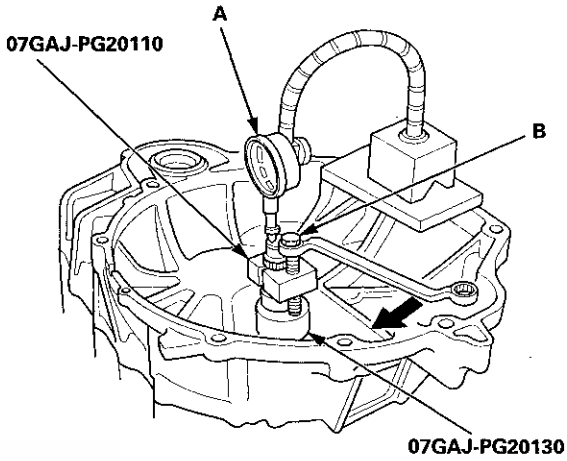
   NOTE: It is not necessary to use sealing agent between the housings for this procedure.

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

8. Attach the mainshaft holder (A) and the mainshaft base (B) to the mainshaft as follows:
   - Back out the mainshaft holder bolt (C), and loosen the two hex bolts (D).
   - Fit the holder over the mainshaft so its lip is towards the transmission.
   - Align the mainshaft holder 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 using a plastic hammer.
10. Thread the mainshaft holder bolt in until it just contacts the wide surface of the mainshaft base.
11. Zero a dial gauge (A) on the end of the mainshaft.



12. Turn the mainshaft holder 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 mainshaft holder bolt more than 60 degrees after the needle of the dial gauge stops moving. Applying more pressure with the mainshaft holder bolt could damage the transmission.

(cont'd)

Mainshaft Thrust Clearance Adjustment (cont'd)

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 (0.076—0.006) = 1.79 mm (0.070 in)

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

14. With oil 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	Thickness
A	0.60 mm (0.024 in)
B	0.63 mm (0.025 in)
C	0.66 mm (0.026 in)
D	0.69 mm (0.027 in)
E	0.72 mm (0.028 in)
F	0.75 mm (0.030 in)
G	0.78 mm (0.031 in)
H	0.81 mm (0.032 in)
I	0.84 mm (0.033 in)
J	0.87 mm (0.034 in)
K	0.90 mm (0.035 in)
L	0.93 mm (0.037 in)
M	0.96 mm (0.038 in)
N	0.99 mm (0.039 in)
O	1.02 mm (0.040 in)
P	1.05 mm (0.041 in)
Q	1.08 mm (0.043 in)
R	1.11 mm (0.044 in)
S	1.14 mm (0.045 in)
T	1.17 mm (0.046 in)
U	1.20 mm (0.047 in)
V	1.23 mm (0.048 in)
W	1.26 mm (0.050 in)
X	1.29 mm (0.051 in)
Y	1.32 mm (0.052 in)
Z	1.35 mm (0.053 in)

(cont'd)

72 mm Shim (cont'd)

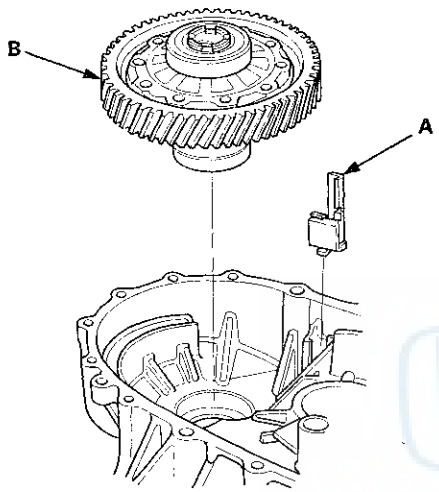
Type	Thickness
AA	1.38 mm (0.054 in)
AB	1.41 mm (0.056 in)
AC	1.44 mm (0.057 in)
AD	1.47 mm (0.058 in)
AE	1.50 mm (0.059 in)
AF	1.53 mm (0.060 in)
AG	1.56 mm (0.061 in)
AH	1.59 mm (0.063 in)
AI	1.62 mm (0.064 in)
AJ	1.65 mm (0.065 in)
AK	1.68 mm (0.066 in)
AL	1.71 mm (0.067 in)
AM	1.74 mm (0.069 in)
AN	1.77 mm (0.070 in)
AO	1.80 mm (0.071 in)
AP	1.83 mm (0.072 in)
AQ	1.86 mm (0.073 in)
AR	1.89 mm (0.074 in)
AS	1.92 mm (0.076 in)
AT	1.95 mm (0.077 in)
AV	1.98 mm (0.078 in)
AW	2.01 mm (0.079 in)
AX	2.04 mm (0.080 in)
AY	2.07 mm (0.081 in)
AZ	2.10 mm (0.083 in)
BA	2.13 mm (0.084 in)
BB	2.16 mm (0.085 in)
BC	2.19 mm (0.086 in)
BD	2.22 mm (0.087 in)
BE	2.25 mm (0.089 in)

Transmission Reassembly

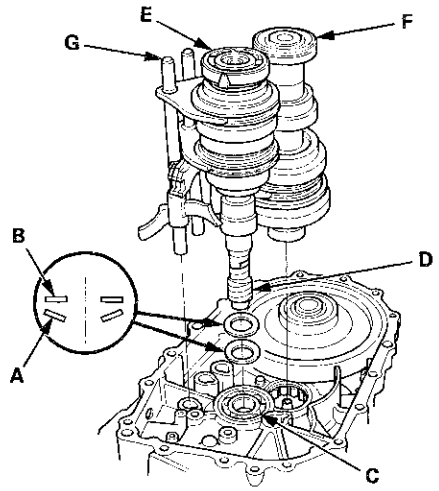
NOTE: Prior to reassembly, clean all the parts in solvent, dry them, and apply MTF to any contact surfaces.

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

   NOTE: Clean the magnet anytime the transmission is disassembled.

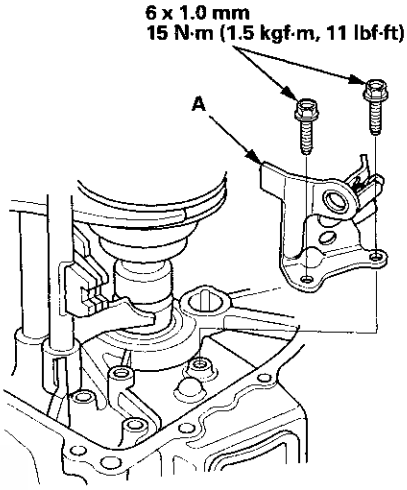


2. Install the 28 mm spring washer (A) and the 28 mm washer (B) over the ball bearing (C). Note the installation direction of the spring washer.

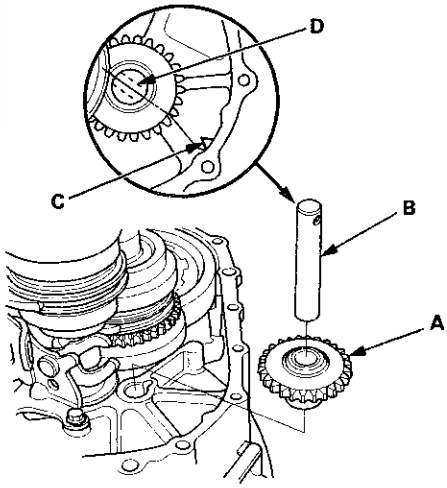


3. Apply vinyl tape to the mainshaft splines (D) to protect the seal. Install the mainshaft assembly (E) and the countershaft assembly (F) with the shift fork assembly (G), as an assembly.

4. Install the reverse shift fork (A).



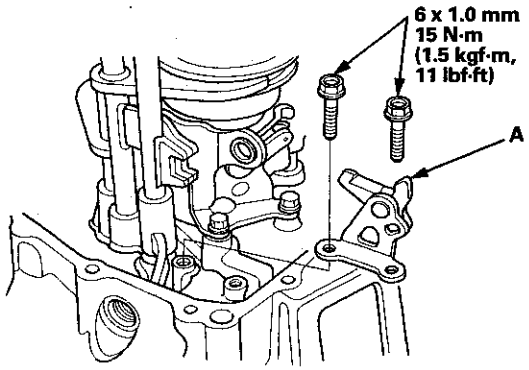
5. Install the reverse idler gear (A) and the reverse idler gear shaft (B) by aligning the mark (C) on the clutch housing with the reverse idler gear shaft hole (D).



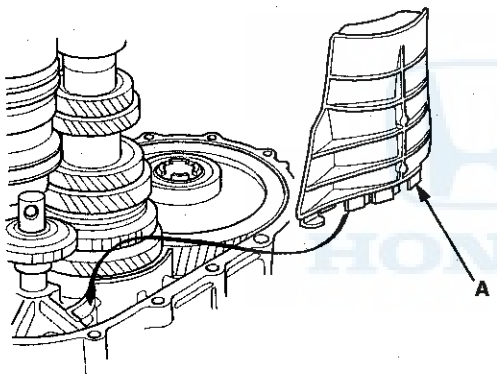
(cont'd)

Transmission Reassembly (cont'd)

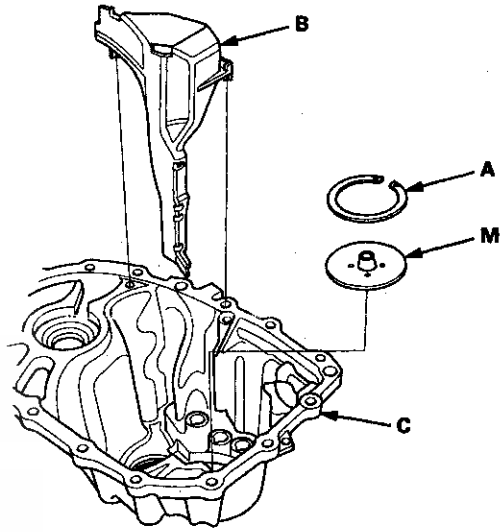
6. Install the reverse lock cam (A).



7. Install the baffle plate (A).



8. Select the proper size 72 mm shim (A) according to the measurements made during the Mainshaft Thrust Clearance Adjustment (see page 13-56). Install the oil gutter plate (B), oil guide plate M, and the 72 mm shim into the transmission housing (C).

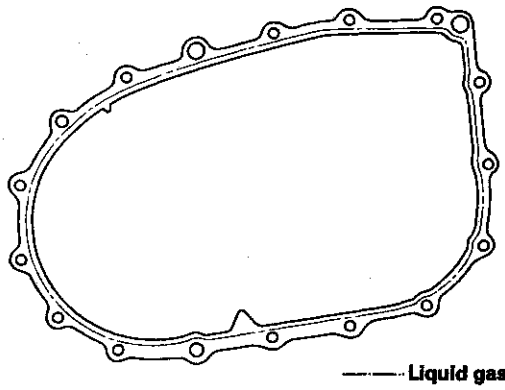


9. Clean any dirt or oil from the transmission housing sealing surface.

10. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009 evenly to the clutch housing mating surface of the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

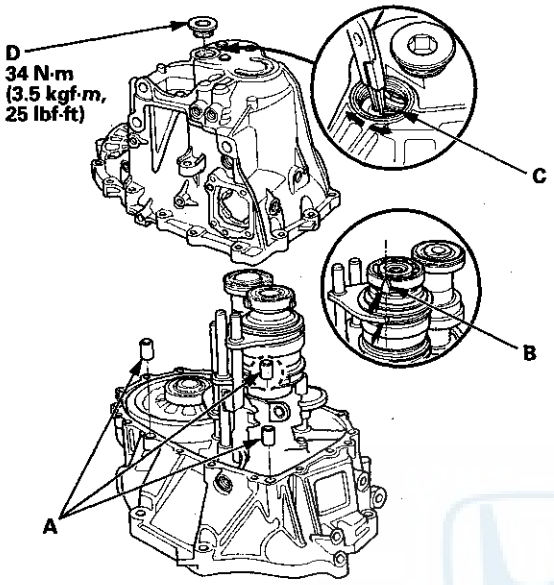
NOTE:

- If 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

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



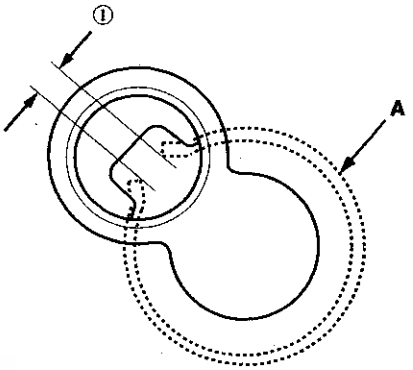
12. Set the tapered cone ring (B) as shown. Place the transmission housing on the clutch housing, making sure to line up the shafts.

13. 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.

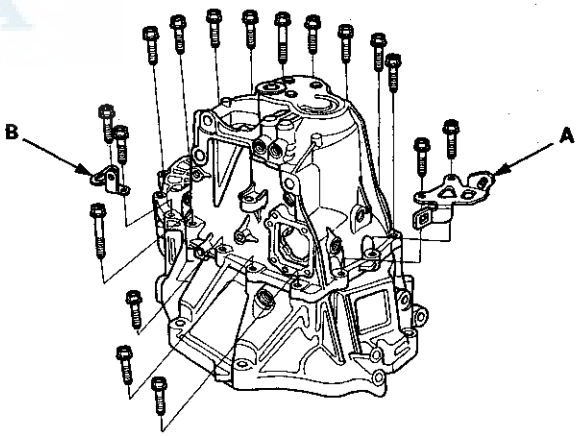
14. Make sure the 72 mm snap ring (A) is securely seated in the groove of the countershaft bearing.

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



15. Apply liquid gasket (P/N 08717-0004, 08718-0001, 08718-0012, 08718-0003, or 08718-0009) to the threads of the 32 mm sealing cap, and install it on the transmission housing.

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

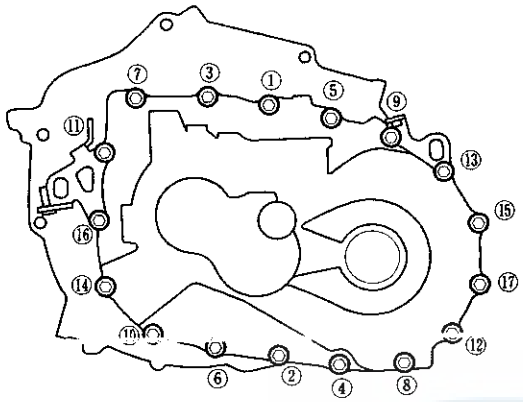


(cont'd)

Transmission Reassembly (cont'd)

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

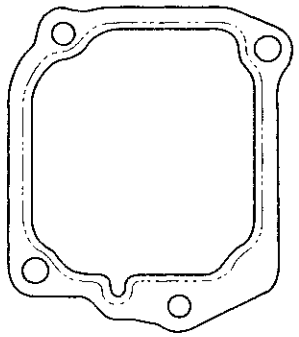
Specified Torque: 8 x 1.25 mm
27 N·m (2.8 kgf·m, 20 lbf·ft)



18. Clean any dirt or oil from the change lever assembly sealing surface.

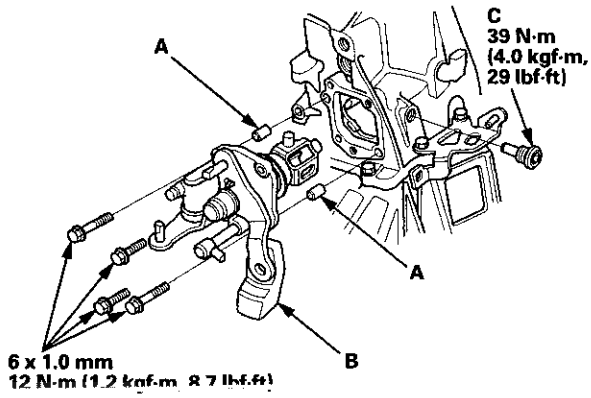
19. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009 evenly to the transmission housing mating surface of the change lever assembly. Install the component within 5 minutes of applying the liquid gasket.

NOTE:
- If 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.



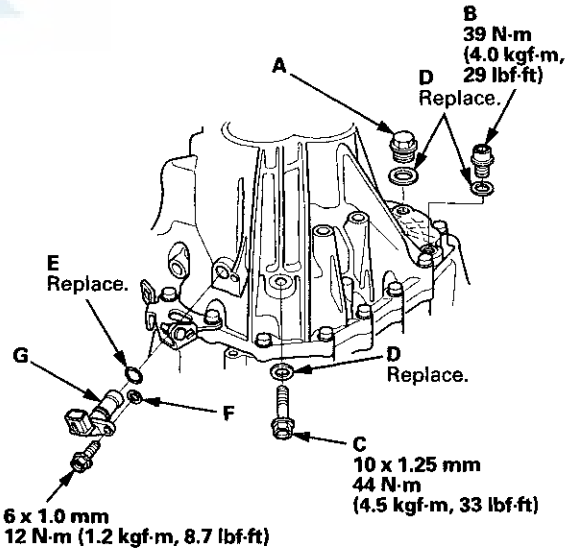
Liquid gasket

20. Install the 8 x 14 mm dowel pins (A) and the change lever assembly (B).



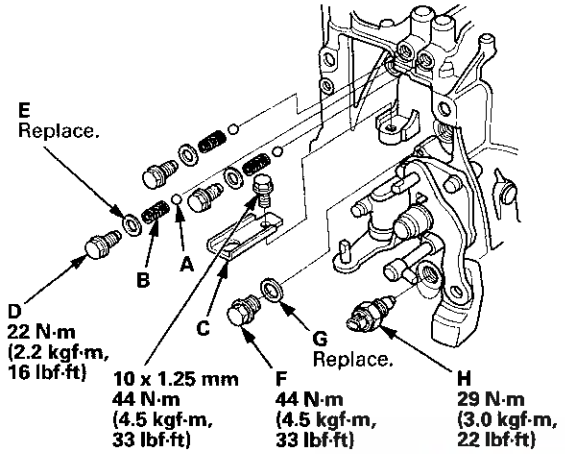
21. Apply liquid gasket (P/N 08717-0004, 08718-0001, 08718-0012, 08718-0003, or 08718-0009) to the threads of the interlock bolt (C), and install it on the transmission housing.

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



23. Apply MTF to a new O-ring (E), then install the O-ring, the plain washer (F), and the output shaft (countershaft) speed sensor (G).

24. Install the steel balls (A), the springs (B), the detent bolts (D) with new 12 mm sealing washers (E).

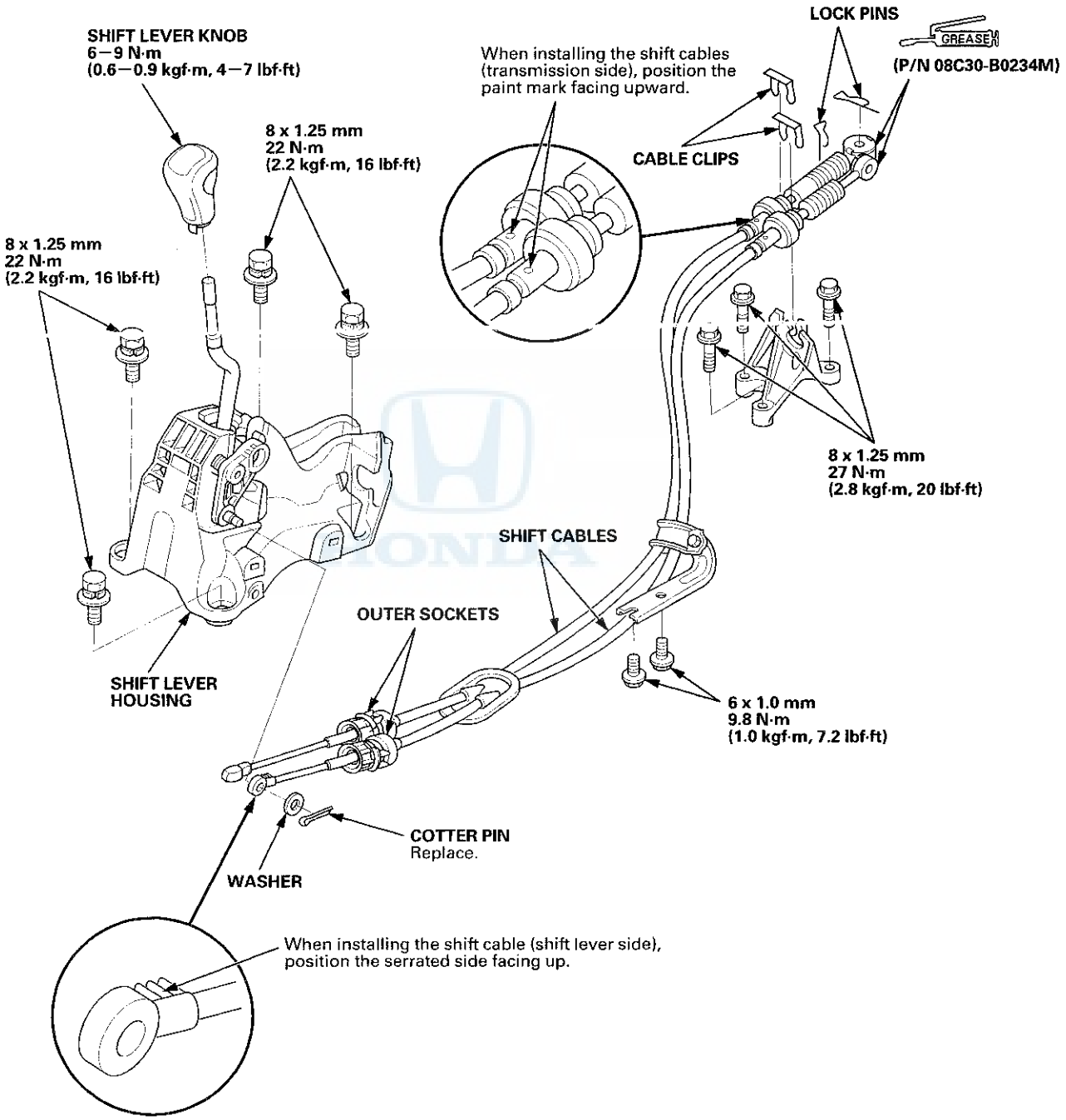


25. Install the 20 mm bolt (F) with a new 20 mm sealing washer (G), and transmission hanger C.

26. Apply liquid gasket (P/N 08717-0004, 08718-0001, 08718-0012, 08718-0003, or 08718-0009) to the threads of the back-up light switch (H), and install it in the transmission housing.

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.

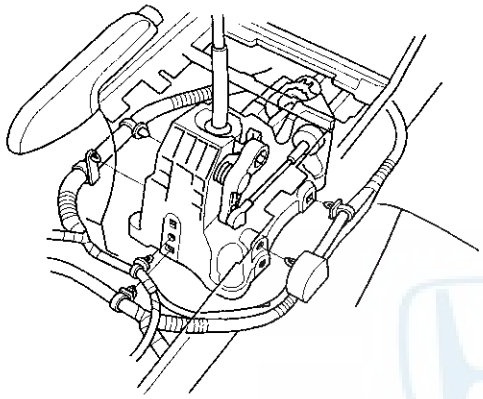


Shift Lever Housing Replacement

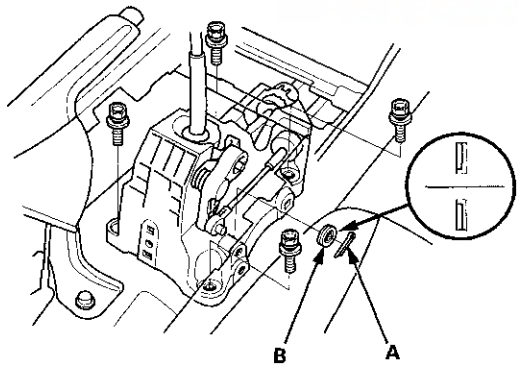
NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to scratch the center console, dashboard, and related parts.

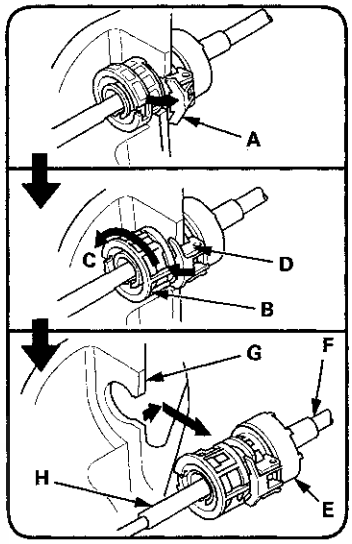
1. Remove the center console panel (see page 20-157).
2. Remove the harness clamps.



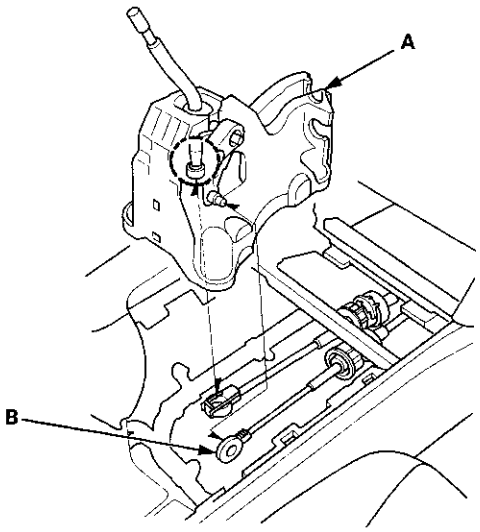
3. Remove the cotter pin (A), the washer (B), and the bolts.



4. Unlock the retainer lock (A).



5. Rotate the socket holder retainer (B) counterclockwise (C) until it stops, and push the retainer lock (D) into the socket holder retainer to lock the retainer.
6. Slide the socket holder (E) and the shift cable (F) out of the shift cable bracket (G). Do not remove the shift cable by pulling the shift cable guide (H).
7. Remove the shift lever assembly (A) from the shift cables (B).

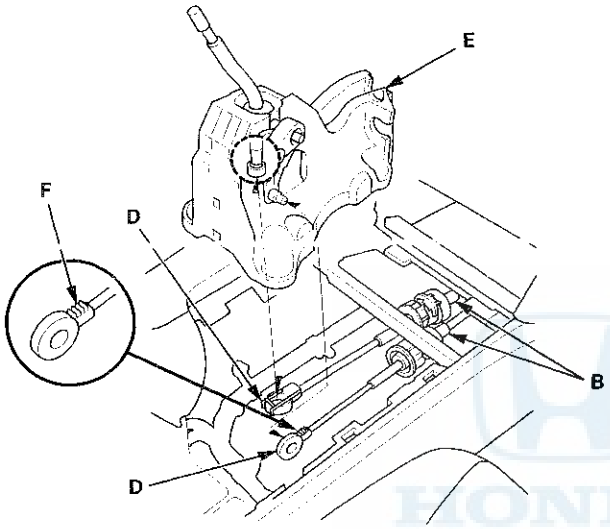


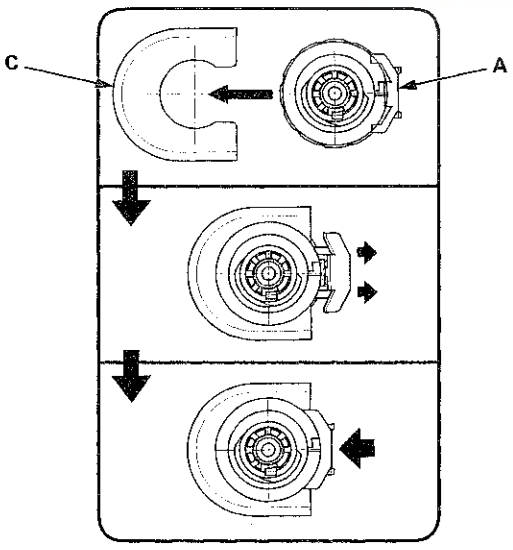
(cont'd)

Shift Lever Housing Replacement (cont'd)

8. Align the socket holder (A) on the shift cables (B) with the slot in the bracket base (C), then slide the holder into the base. Install the shift cable ends (D) to the shift lever assembly (E) then install the shift lever assembly.

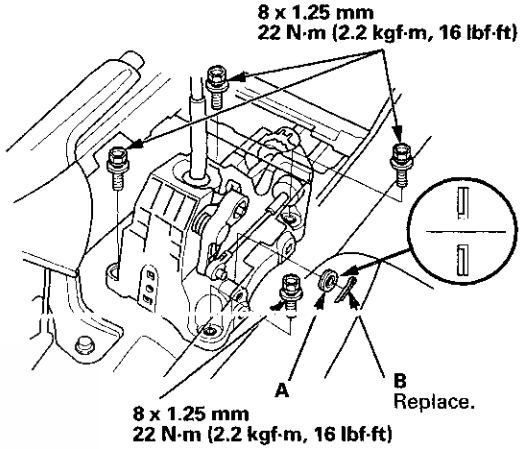
   NOTE: When installing the shift cable (shift lever side), position the serrated side (F) facing up.



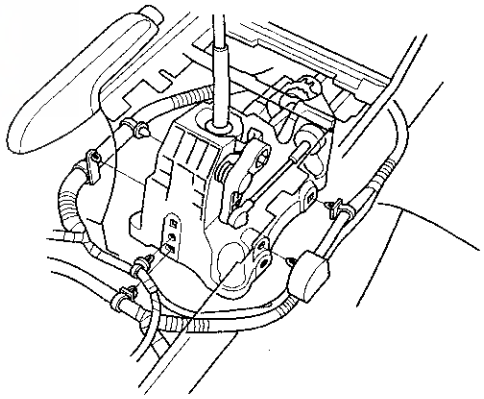


9. Install the bolts, the washer (A), and the cotter pin (B), then bend the cotter pin ends.

   NOTE: You can install a new cotter pin from either direction.

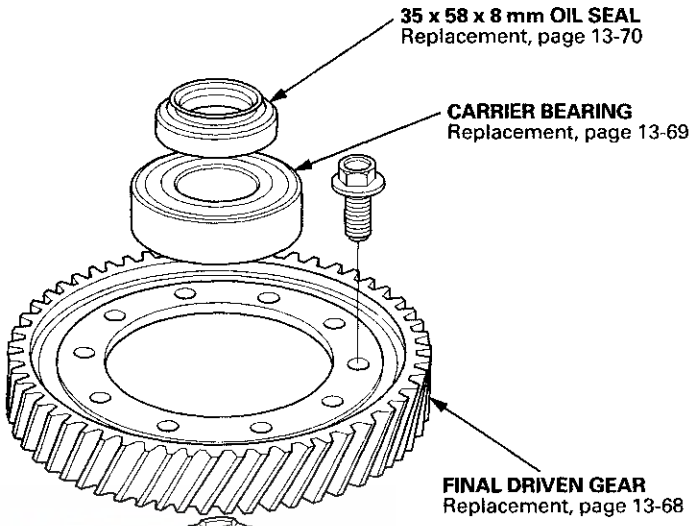


10. Install the harness clamps.



11. Install the center console panel (see page 20-157).

Component Location Index



35 x 58 x 8 mm OIL SEAL
Replacement, page 13-70

CARRIER BEARING
Replacement, page 13-69

FINAL DRIVEN GEAR
Replacement, page 13-68

DIFFERENTIAL CARRIER
Backlash Inspection, page 13-68
Replacement, page 13-68

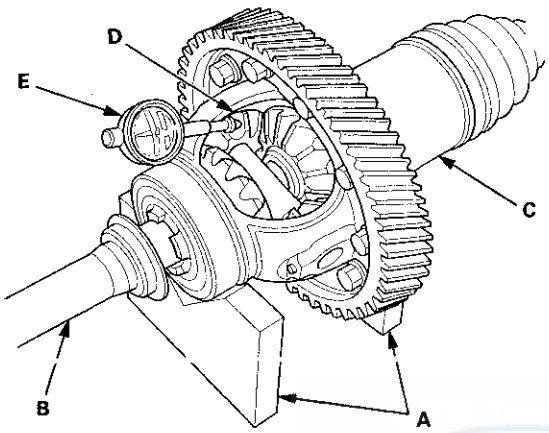
CARRIER BEARING
Replacement, page 13-69

80 mm SHIM
Differential
Thrust Clearance
Adjustment, page 13-71

40 x 56 x 8 mm OIL SEAL
Replacement, page 13-70

Backlash Inspection

1. Place the differential assembly on V-blocks (A), and install the intermediate shaft (B) and the left driveshaft (C).

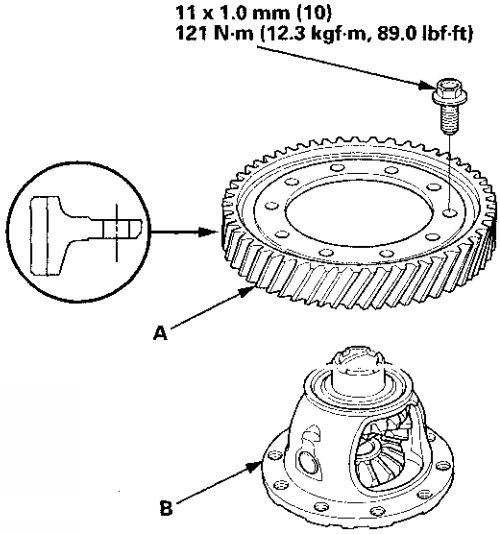


2. Measure the backlash of both pinion gears (D) with a dial indicator (E). If the backlash is not within the standard, check the differential carrier condition, and replace it if necessary.

Standard (New): 0.05—0.15 mm (0.002—0.006 in)

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).



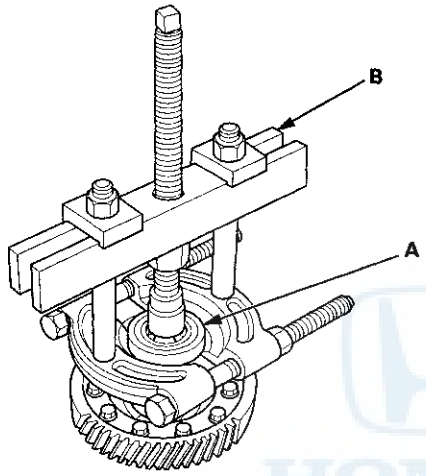
2. Install the final driven gear with the chamfer on the inside diameter facing the carrier. Tighten the bolts in a crisscross pattern in several steps.

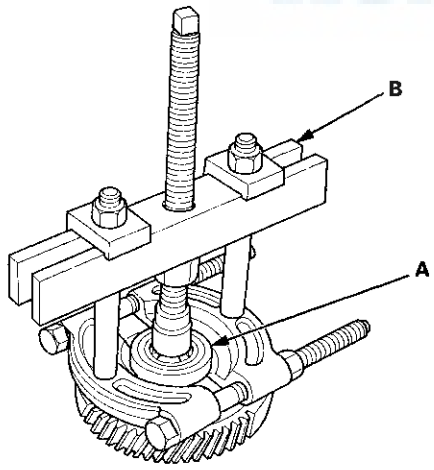
Carrier Bearing Replacement

Special Tools Required

Driver Handle, 40 mm I.D. 07746-0030100

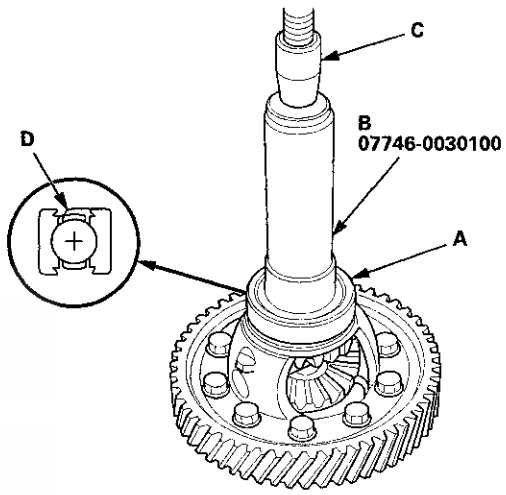
1. Check the carrier bearings for wear and rough rotation. If they rotate smoothly and their rollers show no signs of wear, the bearings are OK.
2. Remove the carrier bearings (A) with a commercially available bearing puller (B).

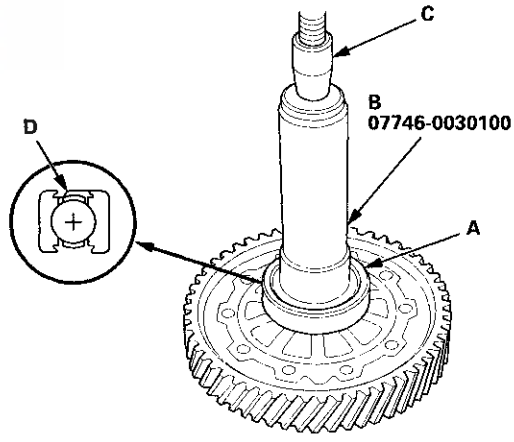




3. Install new bearings (A) using the 40 mm I.D. driver handle (B) and a press (C). Press on each bearing until it bottoms. There should be no clearance between the bearings and the differential carrier.

   NOTE: Place the seal part (D) of the bearing towards the outside of the differential, then install it.



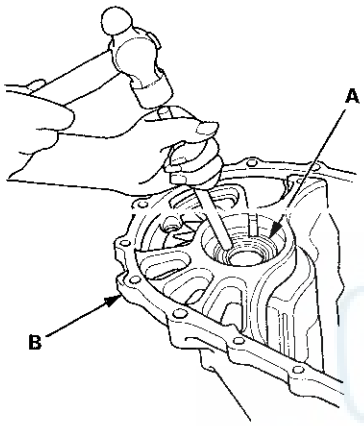


Oil Seal Replacement

Special Tools Required
- Driver Handle, 15 x 135L 07749-0010000
- Oil Seal Driver Attachment 07NAD-P20A100

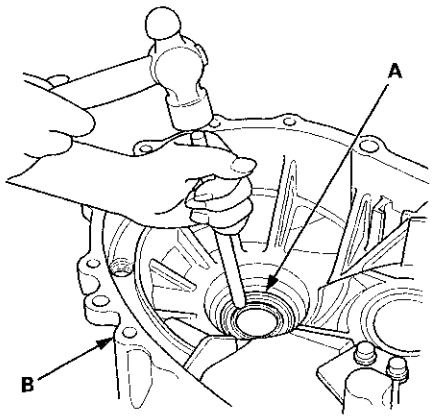
1. Remove the oil seal (A) from the transmission housing (B).

   NOTE: Be careful not to damage the transmission housing while removing the oil seal.

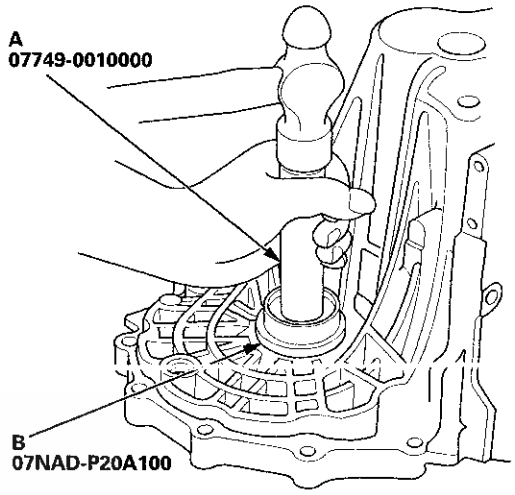


2. Remove the oil seal (A) from the clutch housing (B).

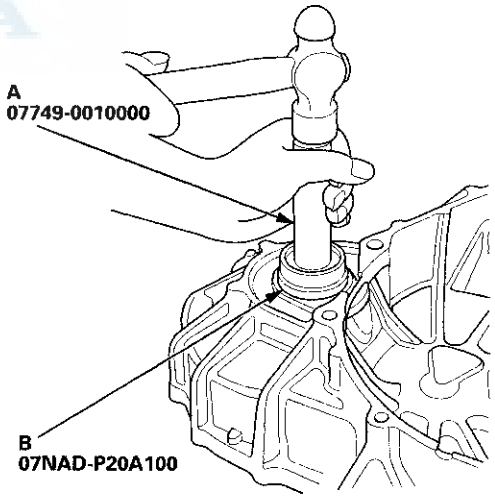
   NOTE: Be careful not to damage the clutch housing while removing the oil seal.



3. Install a new oil seal flush with the transmission housing using the 15 x 135L driver handle (A) and the oil seal driver attachment (B).



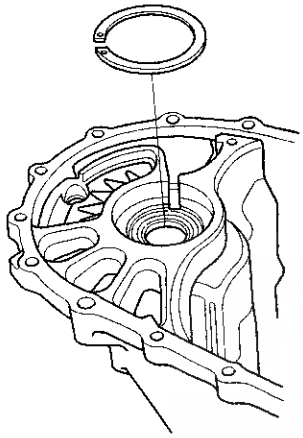
4. Install a new oil seal flush with clutch housing using the 15 x 135L driver handle (A) and the oil seal driver attachment (B).



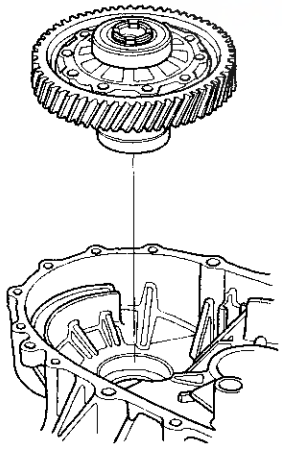
Differential Thrust Clearance Adjustment

Special Tools Required
Driver Handle, 40 mm I.D. 07746-0030100

1. Remove the left driveshaft side oil seal from the transmission housing (see page 13-70).
2. If you removed the 80 mm shim from the transmission housing, reinstall the same sized shim.



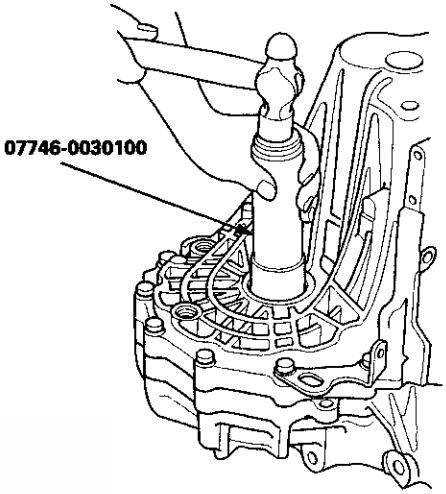
3. Install the differential assembly into the clutch housing.



4. Install the transmission housing onto the clutch housing, then tighten the 8 mm flange bolts in a crisscross pattern in several steps (see step 17 on page 13-62).

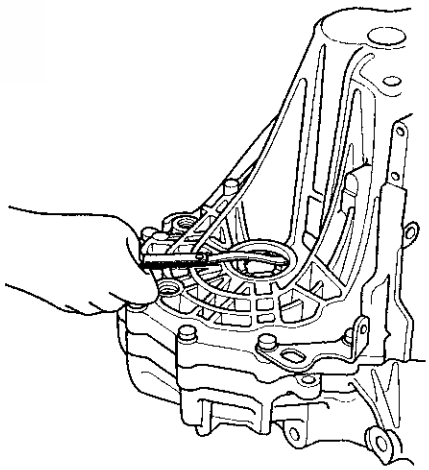
Specified Torque: 8 x 1.25 mm
27 N·m (2.8 kgf·m, 20 lbf·ft)

5. Use the 40 mm I.D. driver handle to bottom the differential assembly in the clutch housing.



6. Measure the clearance between 80 mm shim and the bearing outer race in the transmission housing.

Standard: 0—0.10 mm (0.0—0.004 in)



(cont'd)

Differential Thrust Clearance Adjustment (cont'd)

7. If the clearance exceeds the standard, select a new 80 mm shim from the following table. If the clearance measured in step 6 is within the standard, go to step 10.

80 mm Shim

Type	Thickness
A	1.00 mm (0.039 in)
B	1.10 mm (0.043 in)
C	1.20 mm (0.047 in)
D	1.30 mm (0.051 in)
E	1.40 mm (0.055 in)
F	1.50 mm (0.059 in)
G	1.60 mm (0.063 in)
H	1.70 mm (0.067 in)
J	1.80 mm (0.071 in)
K	1.05 mm (0.041 in)
L	1.15 mm (0.045 in)
M	1.25 mm (0.049 in)
N	1.35 mm (0.053 in)
P	1.45 mm (0.057 in)
Q	1.55 mm (0.061 in)
R	1.65 mm (0.065 in)
S	1.75 mm (0.069 in)

8. Remove the bolts and the transmission housing.
9. Replace the thrust shim selected in step 7, then recheck the clearance.
10. Install a new left driveshaft side oil seal to the transmission housing (see page 13-70).
11. Reinstall the transmission housing.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If automatic transmission maintenance is required)

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

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work should be done by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags, side airbags, and/or side curtain airbags.
- Do not bump or impact the SRS unit, front impact sensors, side impact sensors, or rear safing sensor, especially when the ignition switch is in ON (II), or for at least 3 minutes after the ignition switch is turned to LOCK (0); otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, center console, dashboard, dashboard lower cover, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.