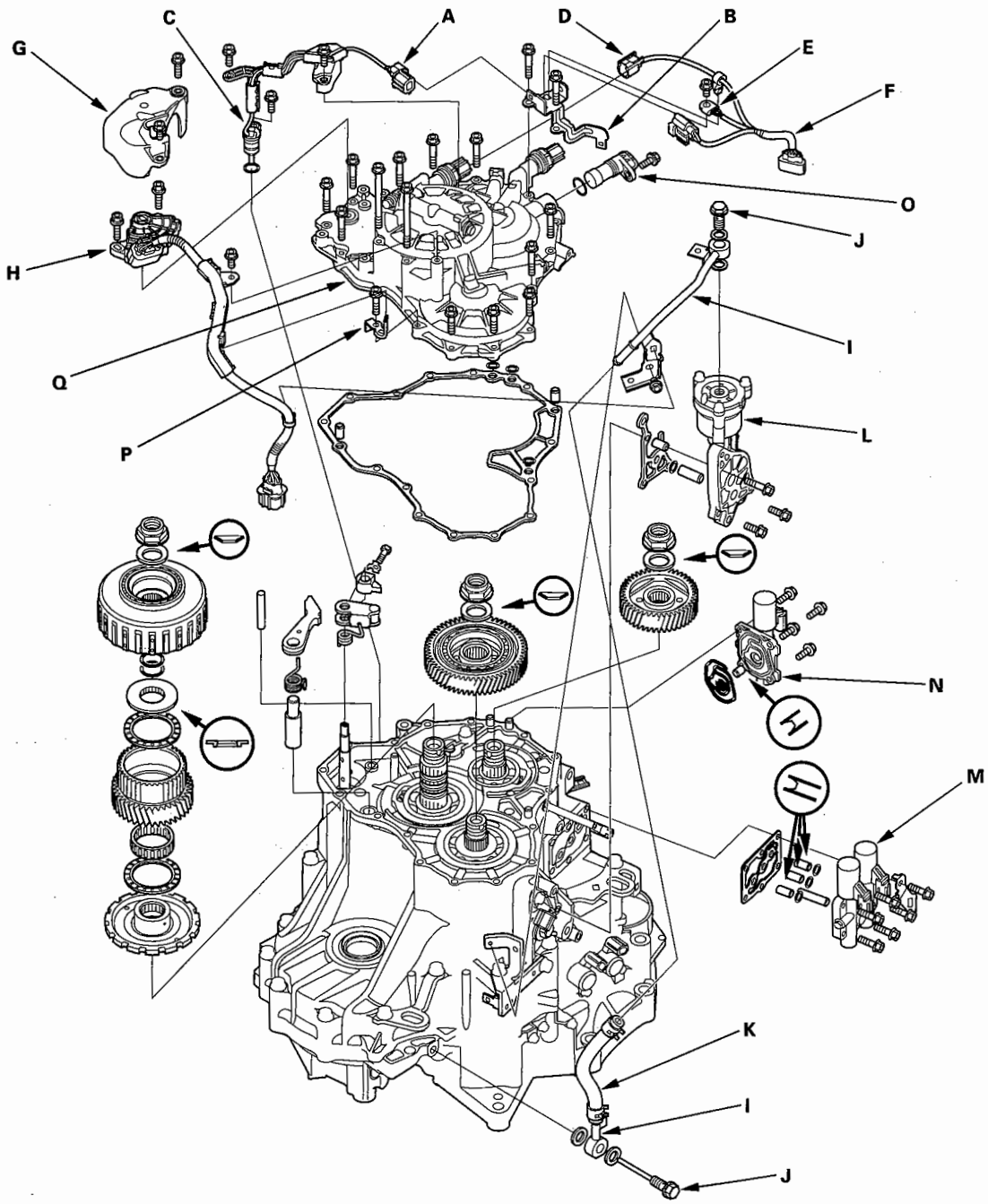
Transmission End Cover

End Cover, 3rd Gear, Idler Gear, and 3rd Clutch Removal

Special Tools Required
- Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A

1. Remove the ATF temperature sensor connector (A) from the connector bracket (B), then disconnect the connector, and remove the ATF temperature sensor (C) (three bolts).



2. Disconnect the 3rd clutch transmission fluid pressure switch (D), remove the ground terminal (E), then remove the sensor subharness (F).

3. Remove the transmission range switch cover (G), then remove the transmission range switch (H) (three bolts).

4. Remove the 6 mm bolt securing the harness clamp bracket on the ATF line (I), and remove the line bolts (J), then remove the ATF line and sealing washers. Remove the ATF hose (K) from the ATF line if necessary.

5. Remove the ATF passage body (L), ATF pipe, O-ring, dowel pin, and gasket (three bolts).

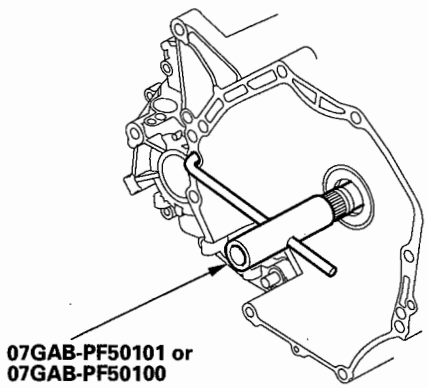
6. Remove the A/T clutch pressure control solenoid valves A and B (M), clamp bracket, ATF pipes, O-rings, and gasket (six bolts).

7. Remove the A/T clutch pressure control solenoid valve C (N), ATF pipe, and gasket (four bolts).

8. Remove the input shaft (mainshaft) speed sensor (O).

9. Remove the 16 bolts securing the end cover, connector bracket (B), harness cover bracket (P), then remove the end cover (Q), two dowel pins, O-rings, and gasket.

10. Slip the special tool onto the mainshaft.

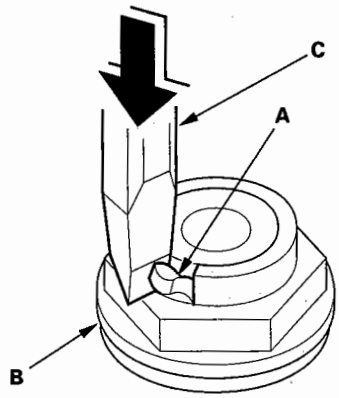


07GAB-PF50101 or 07GAB-PF50100

11. Engage the park pawl with the park gear.

12. Cut the lock tab (A) of each shaft locknut (B) using a chisel (C). Then remove the locknuts and conical spring washers from each shaft.

    NOTE:
    - Countershaft and secondary shaft locknuts have left-hand threads.
    - Keep all of the chiseled particles out of the transmission.
    - Clean the old locknuts; they are used to install the press fit mainshaft 3rd gear, secondary shaft idler gear, and 3rd clutch assembly on the countershaft.

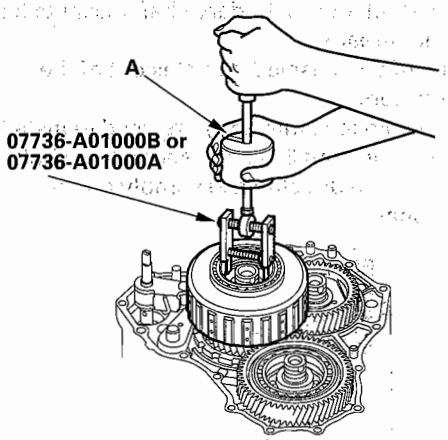


13. Remove the special tool from the mainshaft.

(cont'd)

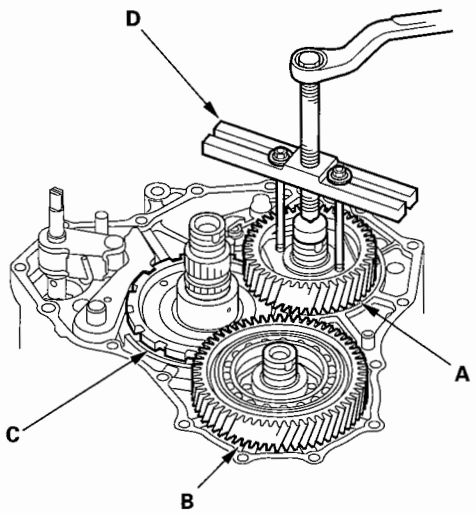
End Cover, 3rd Gear, Idler Gear, and 3rd Clutch Removal (cont'd)

14. Remove the 3rd clutch assembly using the special tool and a commercially available 3/8-16" slide hammer (A).



15. Remove the splined washer, thrust needle bearing, countershaft 3rd gear, needle bearing, and thrust needle bearing from the countershaft.

16. Remove the mainshaft 3rd gear (A), secondary shaft idler gear (B), and park gear (C) with a puller (D).

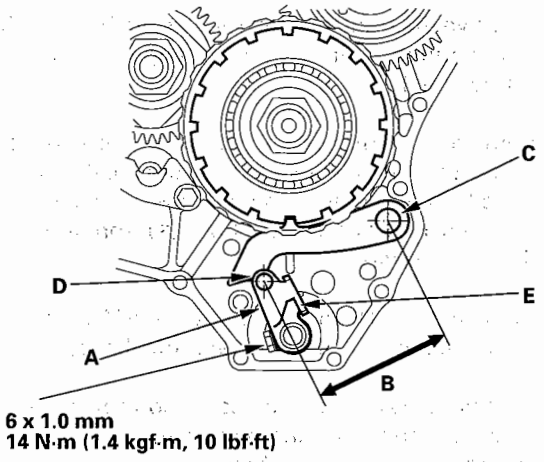


17. Remove the park pawl, park pawl spring, park pawl shaft, and stop shaft.

18. Remove the park lever from the control shaft.

Park Lever Stop Inspection and Adjustment

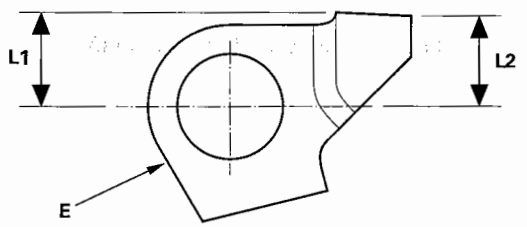
1. Set the park lever (A) in the P position.



2. Measure the distance (B) between the park pawl shaft (C) and the park lever roller pin (D).

   Standard: 84.6–85.6 mm (3.33–3.37 in.)

3. If the measurement is out of tolerance, select and install the appropriate park lever stop (E) from the table.



PARK LEVER STOP

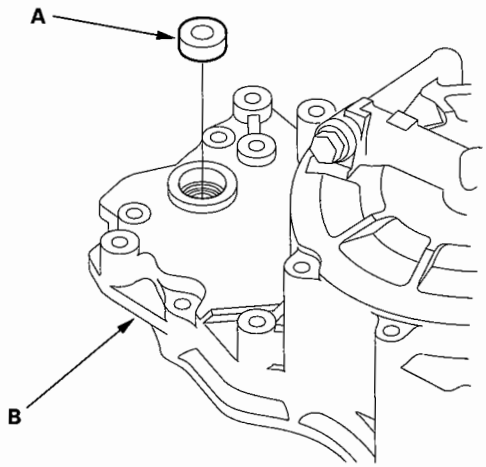
Mark	Part Number	L1	L2
1	24537-PA9-003	11.00 mm (0.433 in.)	11.00 mm (0.433 in.)
2	24538-PA9-003	10.80 mm (0.425 in.)	10.65 mm (0.419 in.)
3	24539-PA9-003	10.60 mm (0.417 in.)	10.30 mm (0.406 in.)

4. After replacing the park lever stop, make sure the distance is within tolerance.

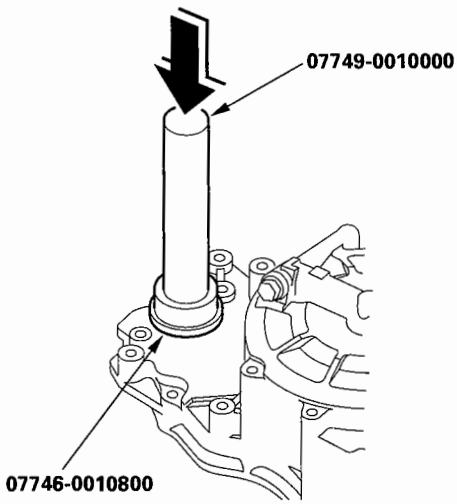
Control Shaft Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal (A) from the end cover (B).



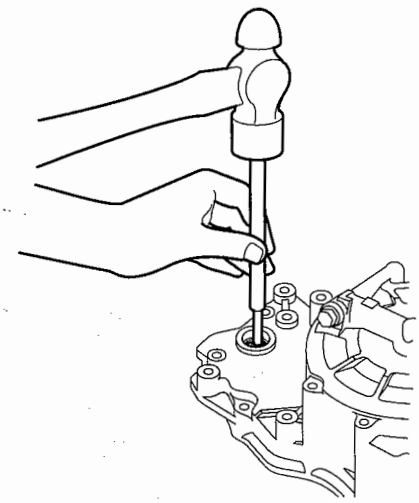
2. Install the new oil seal flush to the end cover with the special tools.



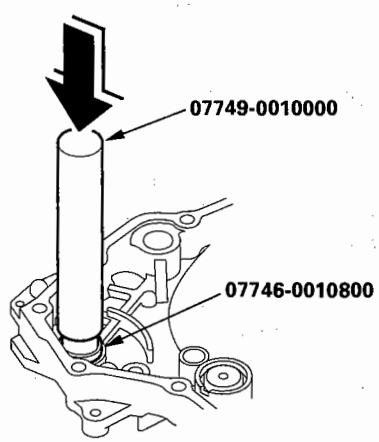
Control Shaft Bearing Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal from the end cover, then remove the bearing.



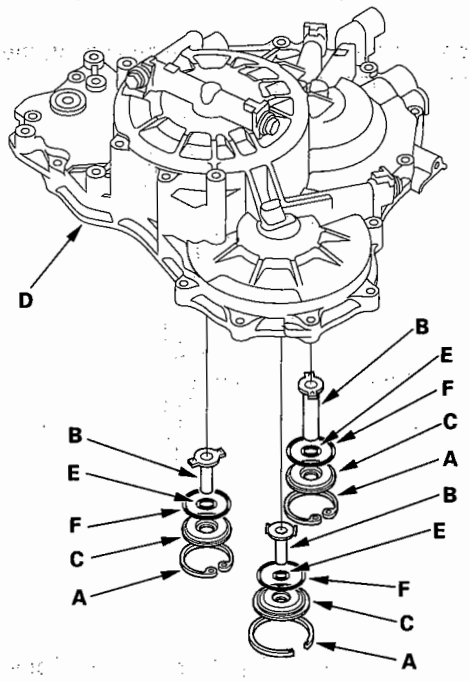
2. Install the new bearing flush to the end cover with the special tools.



3. Install the new oil seal.

ATF Feed Pipe Replacement

1. Remove the snap rings (A), ATF feed pipes (B) and feed pipe flanges (C) from the end cover (D).

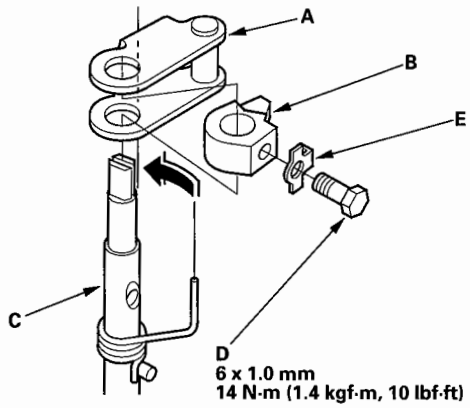


2. Install the new O-ring (E) over the ATF feed pipe.
3. Install the ATF feed pipe in the end cover by aligning the feed pipe tabs with the indentations in the end cover.
4. Install the new O-ring (F) in the end cover, then install the feed pipe flange over the ATF feed pipe and O-rings.
5. Secure the ATF feed pipe and feed pipe flange with the snap ring.

End Cover, 3rd Gear, Idler Gear, and 3rd Clutch Installation

Special Tools Required
- Mainshaft holder
  07GAB-PF50101 or 07GAB-PF50100
- Adjustable bearing puller, 25—40 mm
  07736-A01000B or 07736-A01000A

1. Install the park lever (A) and park lever stop (B), on the control shaft (C), then install the lock bolt (D) with a new lock washer (E). Do not bend the lock tab of the lock washer until step 28.

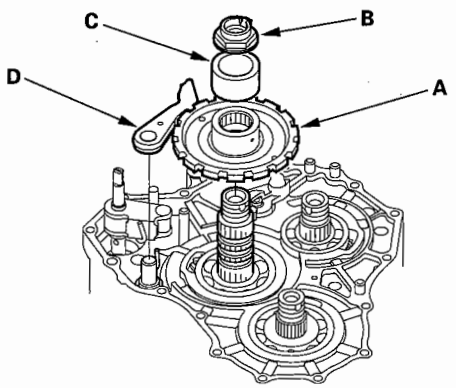


2. Lubricate the following parts with ATF:

   - Splines of the countershaft, the park gear, and the old locknut.
   - Threads of the countershaft and the old locknut.
   - Old conical spring washer.

3. Install the park gear (A) using the old locknut (B) and a collar (C). Hold the park pawl (D) against the park gear, then tighten the old locknut until the shaft splines come out over the park gear splines.

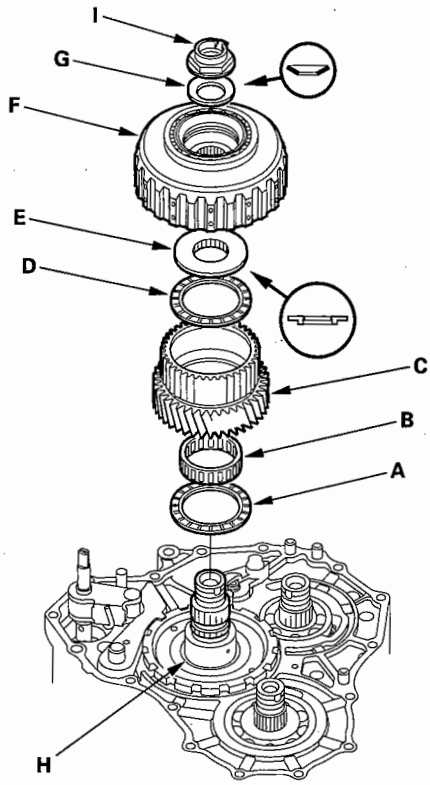
   NOTE:
   - Do not use an impact wrench.
   - Countershaft locknut has left-hand threads.



4. Remove the locknut and collar.

5. Install the thrust needle bearing (A), needle bearing (B), 3rd gear (C), thrust needle bearing (D), 31 x 63.5 mm splined washer (E), 3rd clutch assembly (F), and old conical spring washer (G) on the countershaft (H). Tighten the old locknut (I) to 226 N·m (23.0 kgf·m, 166 lbf·ft).

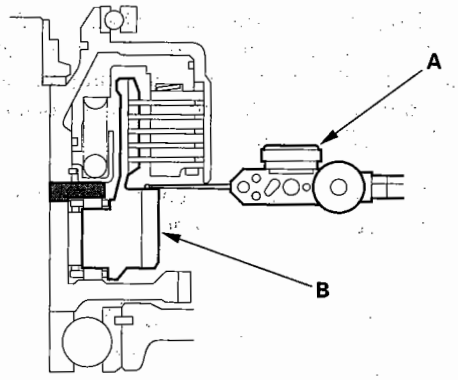
   NOTE: Use a torque wrench to tighten the locknut. Do not use an impact wrench.



(cont'd)

End Cover, 3rd Gear, Idler Gear, and 3rd Clutch Installation (cont'd)

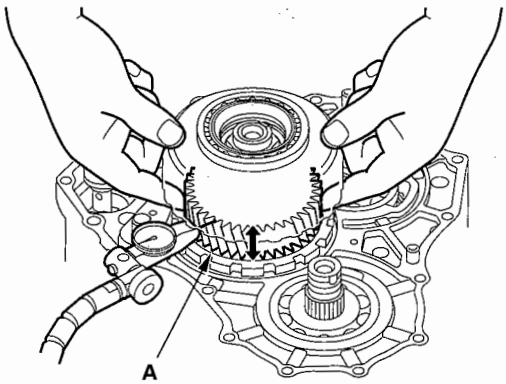
6. Set the dial indicator (A) to the countershaft 3rd gear (B).



7. Measure the countershaft 3rd gear axial clearance in at least three places, while moving the countershaft 3rd gear (A).
   Use the average as the actual clearance.

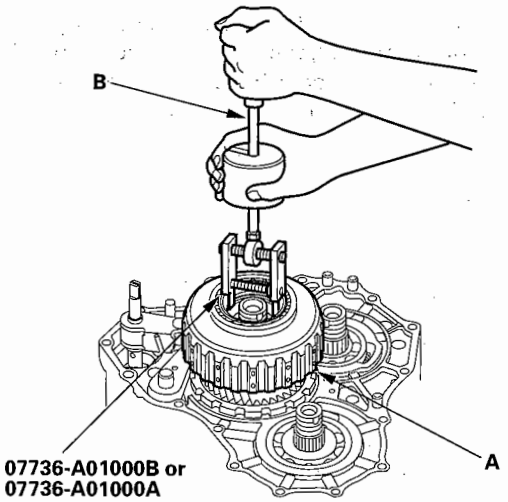
   If the clearance is out of standard, select the appropriate 31 x 63.5 mm splined washer in step 16.

   Standard: 0.015–0.045 mm (0.0006–0.0018 in.)



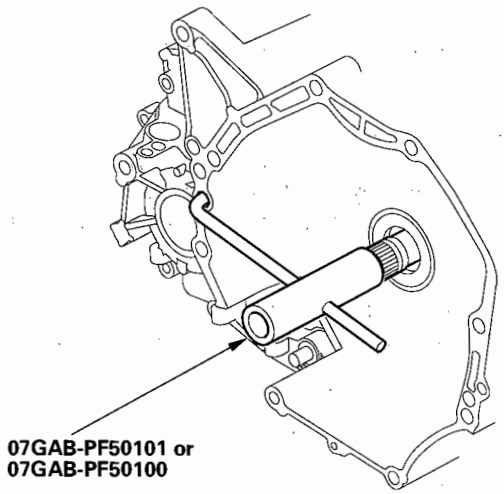
8. Remove the locknut and conical spring washer.

9. Remove the 3rd clutch assembly (A) with the special tool and a commercially available 3/8-16" slide hammer (B).



10. Remove the parts that were installed in step 5.

11. Install the special tool onto the mainshaft.

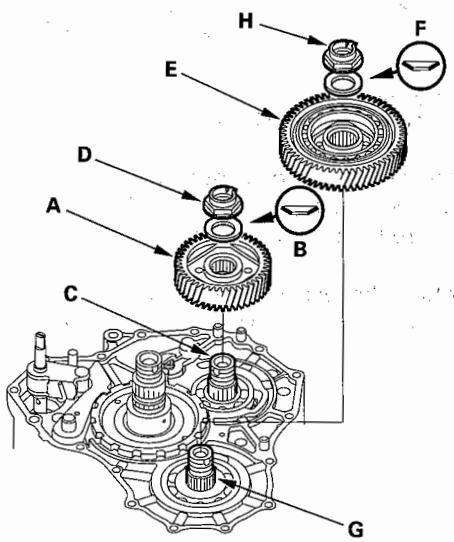


12. Lubricate the following parts with ATF:

    - Splines of the mainshaft 3rd gear and secondary shaft idler gear.
    - Threads of the mainshaft and secondary shaft.
    - Threads of the old mainshaft and secondary shaft locknuts.
    - Old conical spring washer.

13. Install the mainshaft 3rd gear (A) and the old conical spring washer (B) on the mainshaft (C). Tighten the old locknut (D) to seat the 3rd gear to 226 N·m (23.0 kgf·m, 166 lbf·ft).

    NOTE: Use a torque wrench to tighten the locknut. Do not use an impact wrench.



14. Install the secondary shaft idler gear (E) and the old conical spring washer (F) on the secondary shaft (G). Tighten the old locknut (H) to seat the secondary shaft idler gear to 226 N·m (23.0 kgf·m, 166 lbf·ft).

    NOTE:
    - Use a torque wrench to tighten the locknut. Do not use an impact wrench.
    - Secondary shaft locknut has left-hand threads.

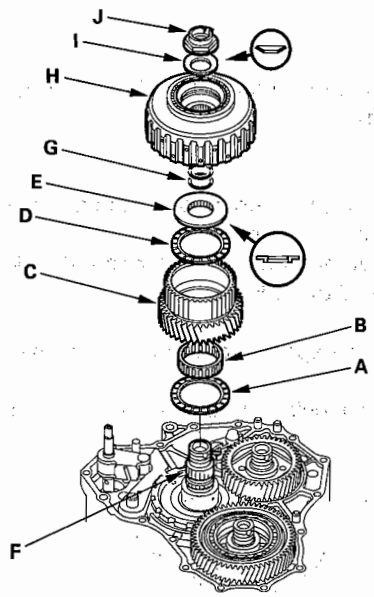
15. Remove the old locknuts and old conical spring washers from the mainshaft and secondary shaft.

16. If the 3rd gear axial clearance is out of standard (measured in step 7), measure the difference of the 31 x 63.5 mm splined washer, and select the appropriate splined washer from the table.

SPLINED WASHER, 31 x 63.5 mm

Mark	Part Number	Difference
A	90520-P7W-010	3.503 mm (0.1379 in.)
B	90521-P7W-010	3.490 mm (0.1374 in.)
C	90522-P7W-010	3.477 mm (0.1369 in.)
D	90523-P7W-010	3.464 mm (0.1364 in.)

17. Install the thrust needle bearing (A), needle bearing (B), 3rd gear (C), thrust needle bearing (D), and 31 x 63.5 mm splined washer (E) on the countershaft (F).



18. Wrap the shaft splines with tape to prevent O-ring damage, then install new O-rings (G).

19. Remove the tape, then install the 3rd clutch assembly (H), and old conical spring washer (I). Tighten the old locknut (J) to 226 N·m (23.0 kgf·m, 166 lbf·ft).

    NOTE: Use a torque wrench to tighten the locknut. Do not use an impact wrench.

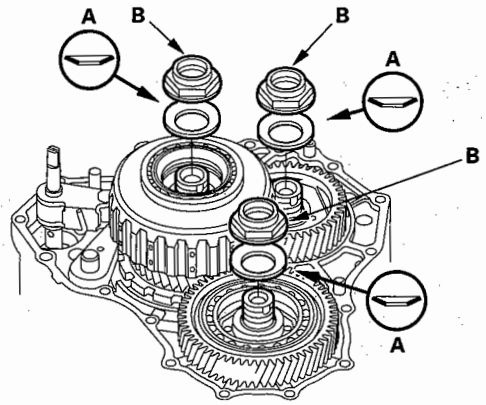
(cont'd)

End Cover, 3rd Gear, Idler Gear, and 3rd Clutch Installation (cont'd)

20. Remove the old locknut and old conical spring washer from the countershaft.

21. Lubricate the threads of each shaft, the new locknuts, and new conical spring washers with ATF.

22. Install the new conical spring washers (A) in the direction shown, and install the new locknuts (B).

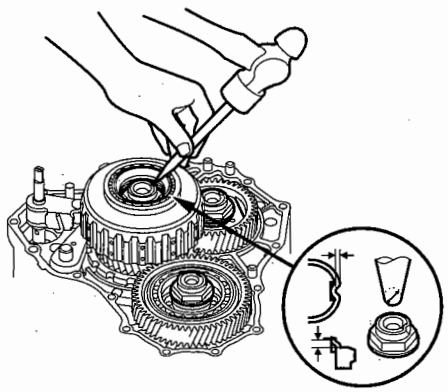


23. Tighten the locknuts to 167 N·m (17.0 kgf·m, 123 lbf·ft).

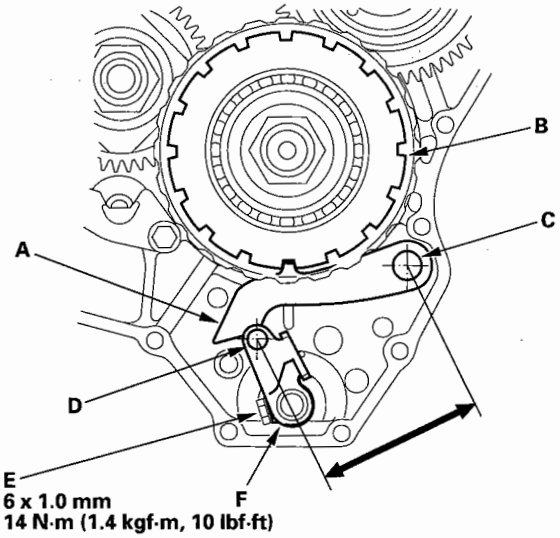
    NOTE:
    - Use a torque wrench to tighten the locknuts. Do not use an impact wrench.
    - Countershaft and secondary shaft locknuts have left-hand threads.

24. Remove the special tool from the mainshaft.

25. Stake each locknut into its shaft using 3.5 mm punch.



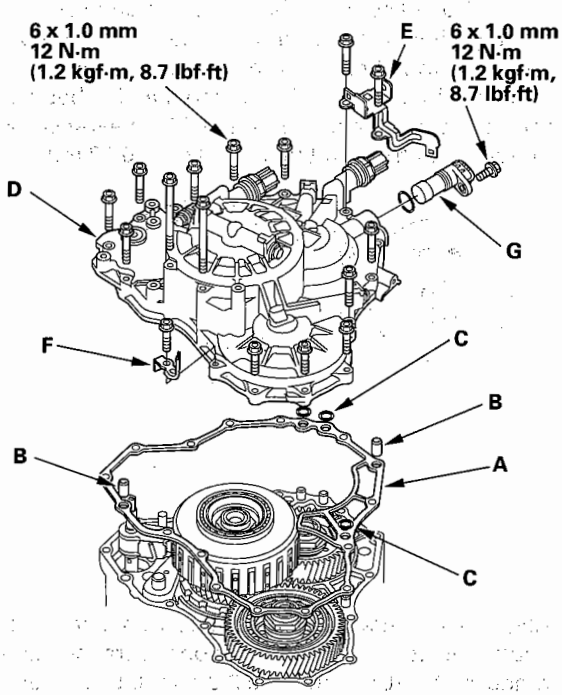
26. Set the park lever in P position, then verify that the park pawl (A) engages the park gear (B).



27. If the park pawl does not engage fully, check the distance between the pawl shaft (C) and the park lever roller pin (D) (see page 14-254).

28. Tighten the lock bolt (E), and bend the lock tab of the lock washer (F) against the lock bolt head.

29. Install the new gasket (A) on the transmission housing, and install the two dowel pins (B) and new O-rings (C) over the top of the ATF feed pipes.

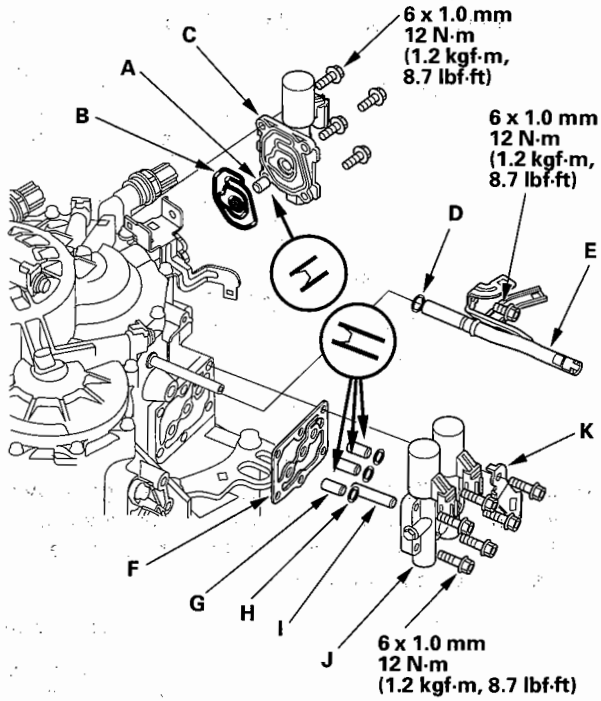


30. Install the end cover (D), and install the 16 bolts, connector bracket (E) and harness holder bracket (F).

31. Tighten the bolts in two or more steps in a crisscross pattern.

32. Install the new O-ring on the input shaft (mainshaft) speed sensor (G), then install it in the end cover.

33. Install the 8 x 12 mm ATF feed pipe (A) with its filter side into the transmission housing.



34. Install the new gasket (B) in the mounting groove of the A/T clutch pressure control solenoid valve C body (C) properly, then install them on the transmission housing. Do not pinch the gasket.

35. Install the new O-ring (D) on the ATF dipstick guide pipe (E), then install in the transmission housing.

36. Place the new gasket (F) on the transmission housing, then install the 8 x 18 mm ATF feed pipes (G) with their filter side into the transmission housing.

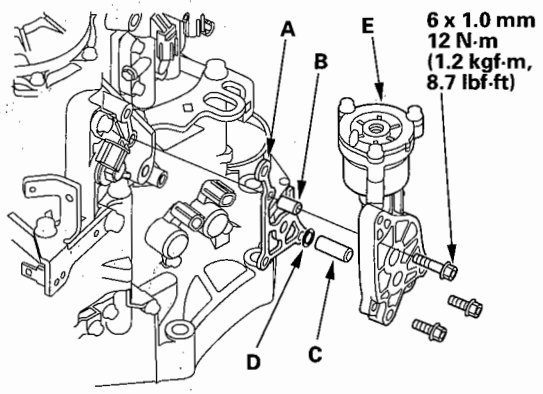
37. Install the new O-rings (H) over the feed pipes, and install the 8 x 40 mm ATF feed pipe (I).

38. Install the A/T clutch pressure control solenoid valves A and B (J) and the harness clamp bracket (K).

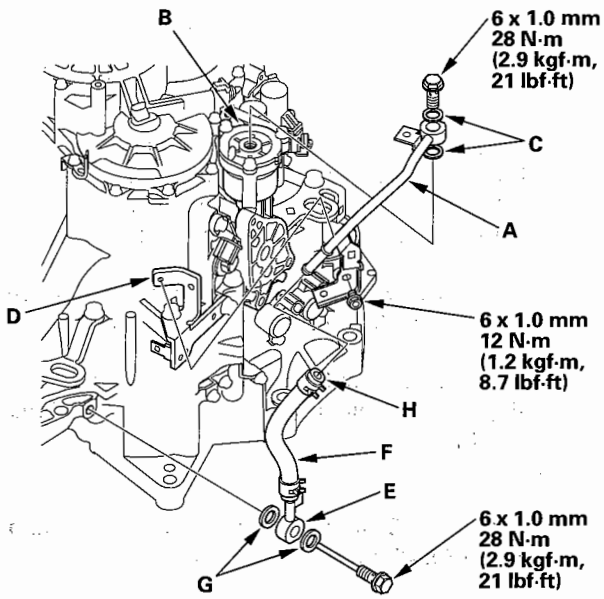
(cont'd)

End Cover, 3rd Gear, Idler Gear, and 3rd Clutch Installation (cont'd)

39. Install the new gasket (A) on the transmission housing, then install the 8 x 14 mm dowel pin (B), 10 x 25.5 mm ATF feed pipe (C), and new O-ring (D) over the feed pipe. Install the ATF passage body (E).



40. Install the ATF line (A) on the ATF passage body (B) with the line bolt and new sealing washers (C). Secure the ATF line with the 6 mm bolt on the harness clamp bracket (D).

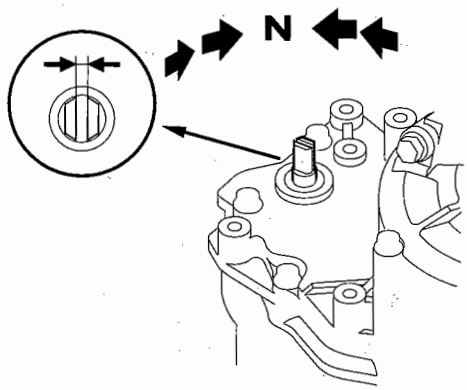


41. Install the ATF line (E) and hose (F) on the torque converter housing with the line bolt and new sealing washers (G).

42. Connect the ATF hose to the line, and secure the hose with hose clamp (H).

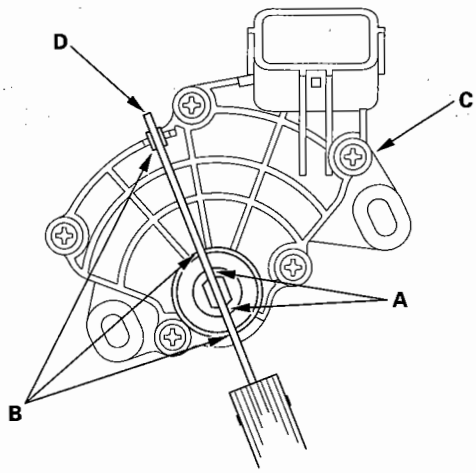
43. Set the control shaft to the N position by turning the control shaft.

NOTE: Do not squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty shift position signal or position due to the play between the control shaft and the switch. The clearance (A) between control shaft tips is 2.0 mm (0.08 in.)

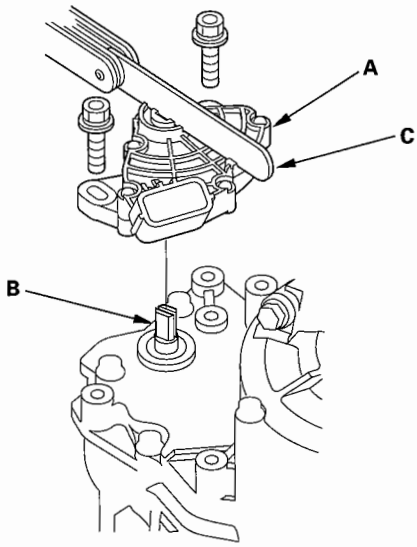


44. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch (C), then put a 2.0 mm (0.08 in.) feeler gauge blade (D) in the cutouts to hold the switch in the N position.

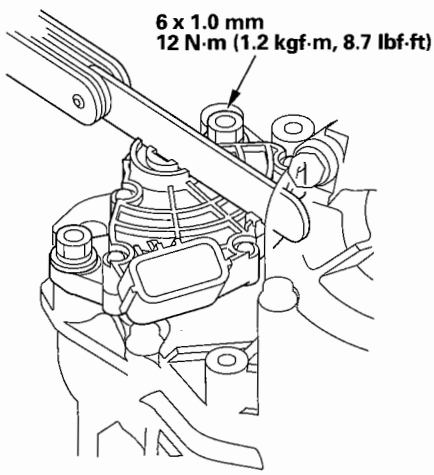
NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the N position.



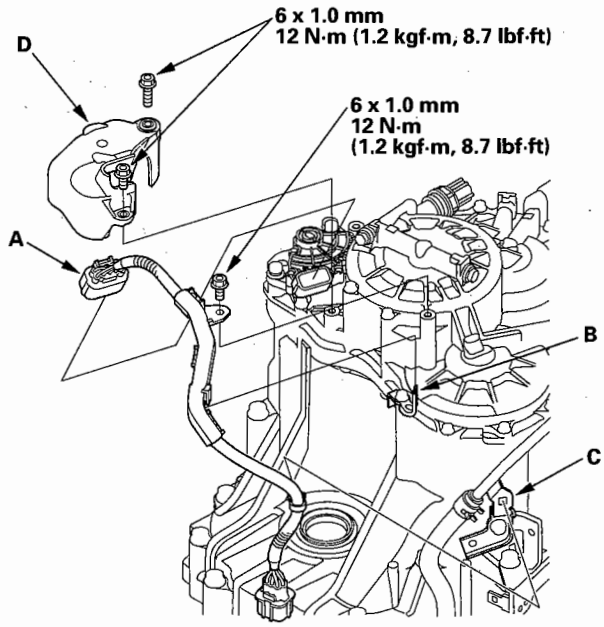
45. Install the transmission range switch (A) gently on the control shaft (B) with holding it in the N position with the 2.0 mm (0.08 in.) blade (C).



46. Tighten the bolts on the transmission range switch while you continue to hold it in the N position. Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.



47. Connect the transmission range switch connector (A) securely, then secure the switch harness on the end cover, harness cover bracket (B), and the clamp bracket (C).

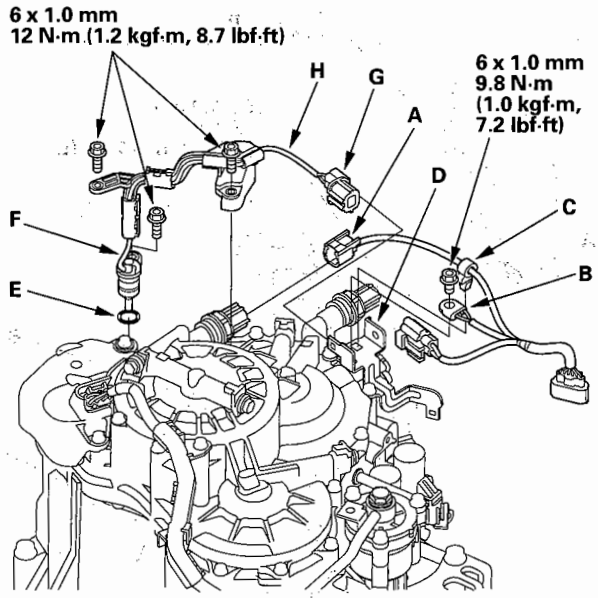


48. Install the transmission range switch cover (D).

(cont'd)

End Cover, 3rd Gear, Idler Gear, and 3rd Clutch Installation (cont'd)

49. Connect the 3rd clutch transmission fluid pressure switch connector (A), and install the ground terminal (B) and harness clamp (C) on the connector bracket (D).



50. Install the new O-ring (E) on the ATF temperature sensor (F), then install the sensor in the end cover.

51. Connect the sensor connector (G), and install it on the connector bracket. Secure the sensor harness (H) on the end cover.

52. Install the dipstick in the dipstick guide pipe.