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

The VIGOR SRS includes a driver's side airbag, located in the steering wheel hub. In addition, the GS model has a front passenger's airbag located in the dashboard above the glove box. 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 will require special precautions and tools, and should therefore be done by an authorized Acura dealer.

⚠ WARNING

- **To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal collision, all maintenance must be performed by an authorized Acura dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional activation of the airbag (s).**
- **All SRS electrical wiring harnesses are covered with yellow outer insulation. Related components are located in the steering column, center console, dash, and dashboard lower panel, and in the dashboard above the glove box. Do not use electrical test equipment on these circuits.**

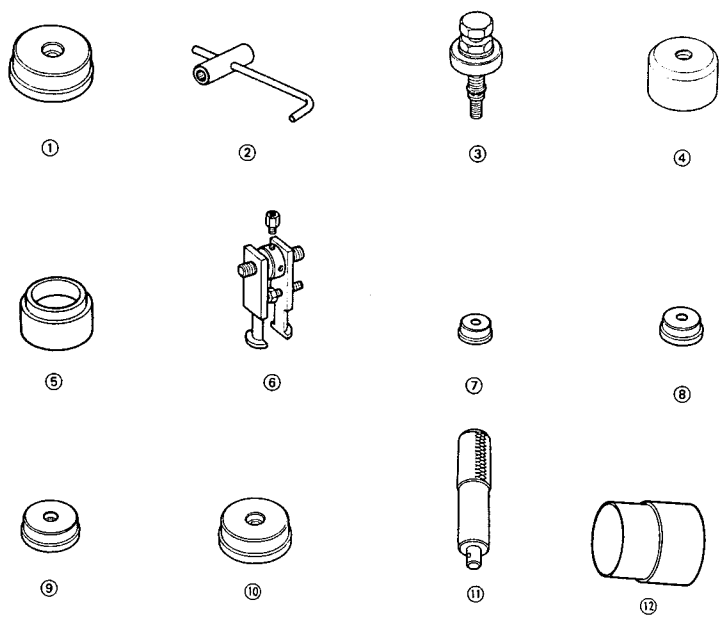
NOTE: The radio may have a coded theft protection circuit. Be sure to get the customer's code number before
— Disconnecting the battery.
— Removing the No. 39 (10 A) fuse in the under-hood fuse/relay box.
— Removing the radio.
After service, reconnect power to the radio and turn it on. When the word "CODE" is displayed, enter the customer's 5-digit code to restore radio operation.

Manual Transmission

Special Tools

Ref. No.	Tool Number	Description	Qty	Page Reference
①	07GAD–SD40101	Attachment, 78 x 90 mm	1	13-41
②	07924–PJ4010A	Mainshaft Holder	1	13-11, 22, 27, 49
③	07LAC–PW50101	Extension Shaft Puller	1	13-5
④	07LAD–PW50500	Pinion Cover Driver Attachment	1	13-43
⑤	07LAD–PW50601	Attachment, 40 x 50 mm	1	13-49, 43
⑥	*07736–A01000A	Adjustable Bearing Puller, 25–40 mm	1	13-29, 30
⑦	07746–0010200	Attachment, 37 x 40 mm	1	13-31
⑧	07746–0010300	Attachment, 42 x 47 mm	1	13-13, 38, 48
⑨	07746–0010400	Attachment, 52 x 55 mm	1	13-29, 30
⑩	07746–0010600	Attachment, 72 x 75 mm	1	13-13, 41, 48
⑪	07749–0010000	Driver	1	13-13, 29, 30, 31, 38, 41, 43, 48
⑫	07965–SD90100	Support Base	1	13-13, 48

*Must be used with commercially avasilable 3/8"-16 Slide Hammer.

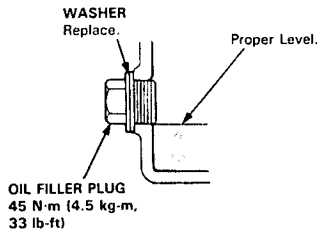


Maintenance

Transmission Oil

NOTE: Check the oil with the engine OFF, and the car on level ground.

1. Remove the oil filler plug, then check the level and condition of the oil.

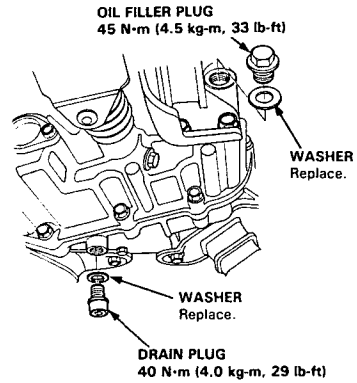


2. The oil level must be up to the fill hole. If it is below the hole, add oil until it runs out, then reinstall the oil filler plug with a new washer.
3. If the transmission oil is dirty, remove the drain plug and drain the oil.
4. Reinstall the drain plug with a new washer, and refill the transmission oil to the proper level.

   NOTE: The drain plug washer should be replaced at every oil change.
5. Reinstall the oil filler plug with a new washer.

Oil Capacity
1.8 ℓ (1.9 Us qt, 1.6 Imp qt) at oil change.
2.0 ℓ (2.1 Us qt, 1.8 Imp qt) at overhaul.

Use only API Service SAE10 W–30 or 10 W–40, SF or SG grade.

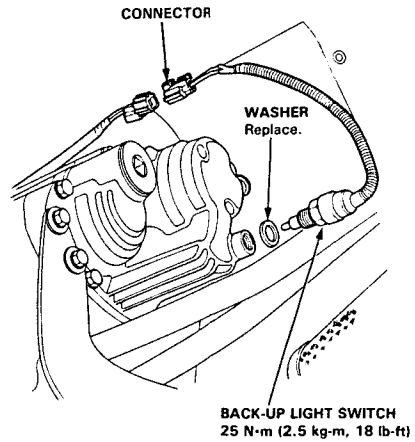


Back-up Light Switch

Replacement

NOTE: To test the back-up light switch, see section 23.

1. Disconnect the connector, then remove the connector from the connector clamp.
2. Remove the back-up light switch.
3. Install a new washer and switch.



Transmission Assembly

Removal

⚠ WARNING

- **Make sure jacks and safety stands are placed properly, and hoist brackets are attached to correct positions on the engine.**
- **Apply parking brake and block rear wheels so car will not roll off stands and fall on you while working under it.**

CAUTION: Use fender covers to avoid damaging painted surfaces.

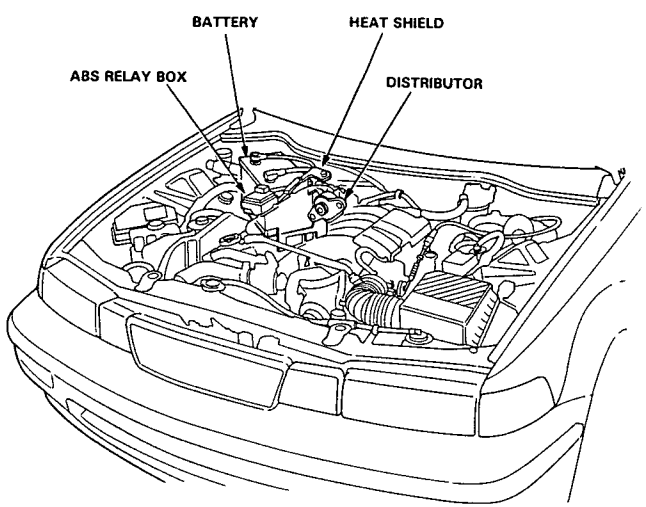
NOTE: The radio may have a coded theft protection circuit. Be sure to get the customer's code number before
– Disconnecting the battery.
– Removing the No. 39 (10 A) fuse in the under-hood fuse/relay box
– Removing the radio.

After service, reconnect power to the radio and turn it on. When the word "CODE" is displayed, enter the customer's 5-digit code to restore radio operation.

1. Disconncect the battery negative (–) and positive (+) cables from the battery.
2. Remove the battery and battery base (see section 5).
3. Remove the ABS relay box (see section 5).

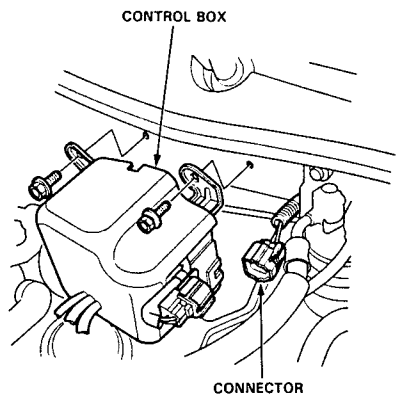
   NOTE: Do not disconnect the connector.
4. Remove the heat shield (see section 5).
5. Remove the distributor (see section 23).

   NOTE: Do not disconnect the connector.



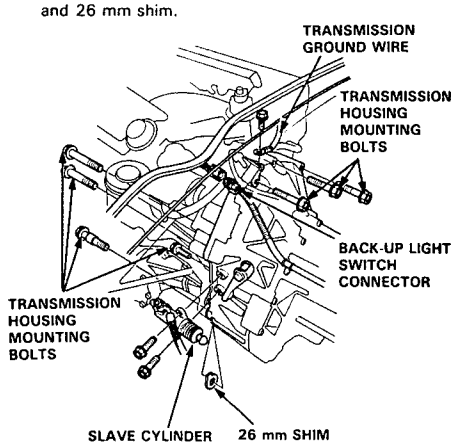
6. Remove the control box.

   NOTE: Do not remove the vacuum tubes from the control box.

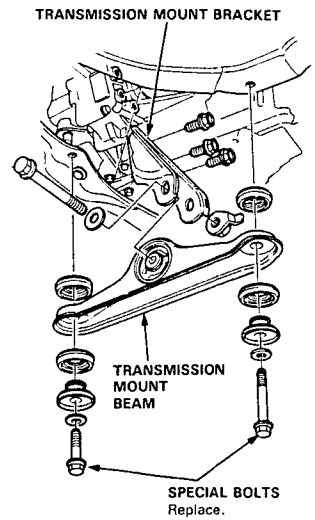


7. Disconnect the transmission ground wire and back-up light switch connector.
8. Remove the slave cylinder.

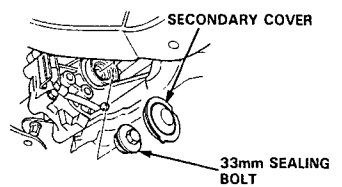
   NOTE: Do not operate the clutch pedal once the slave cylinder has been removed.
9. Remove the transmission housing mounting bolts and 26 mm shim.



10. Remove the transmission mount beam and transmission mount bracket.

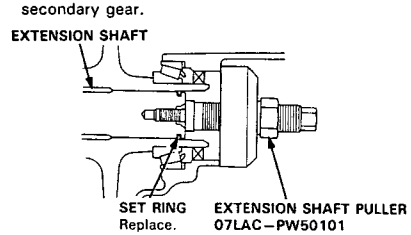


11. Remove the secondary cover and 33 mm sealing bolt.



12. Disconnect the extension shaft from the differential using the special tool as shown.

    NOTE: Shift the lever into low gear to lock the secondary gear.

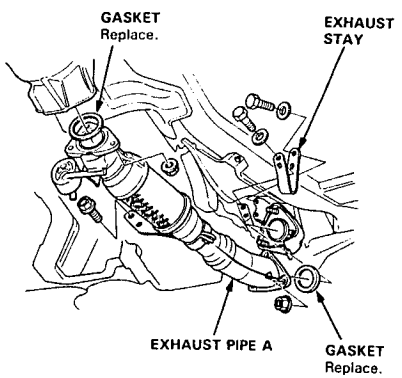


(cont'd)

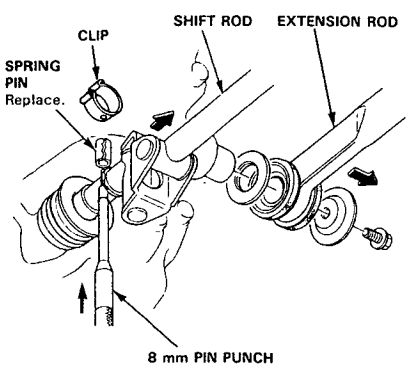
Transmission Assembly

Removal (cont'd)

13. Remove the exhaust pipe A and exhaust stay.



14. Remove the shift rod and extension rod.

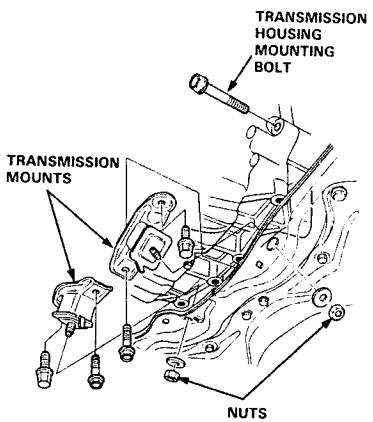


15. Remove the nuts of the transmission mounts.

16. Place a jack under the transmission.

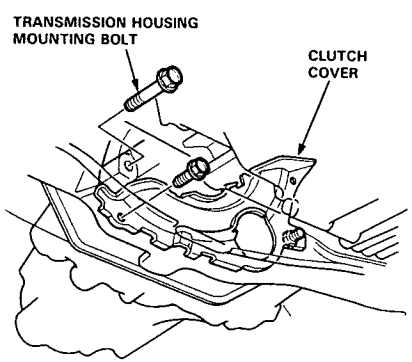
17. Remove the transmission mounts.

18. Remove the transmission housing mounting bolt.



19. Remove the attaching bolt and the clutch cover.

20. Remove the transmission housing mounting bolt.

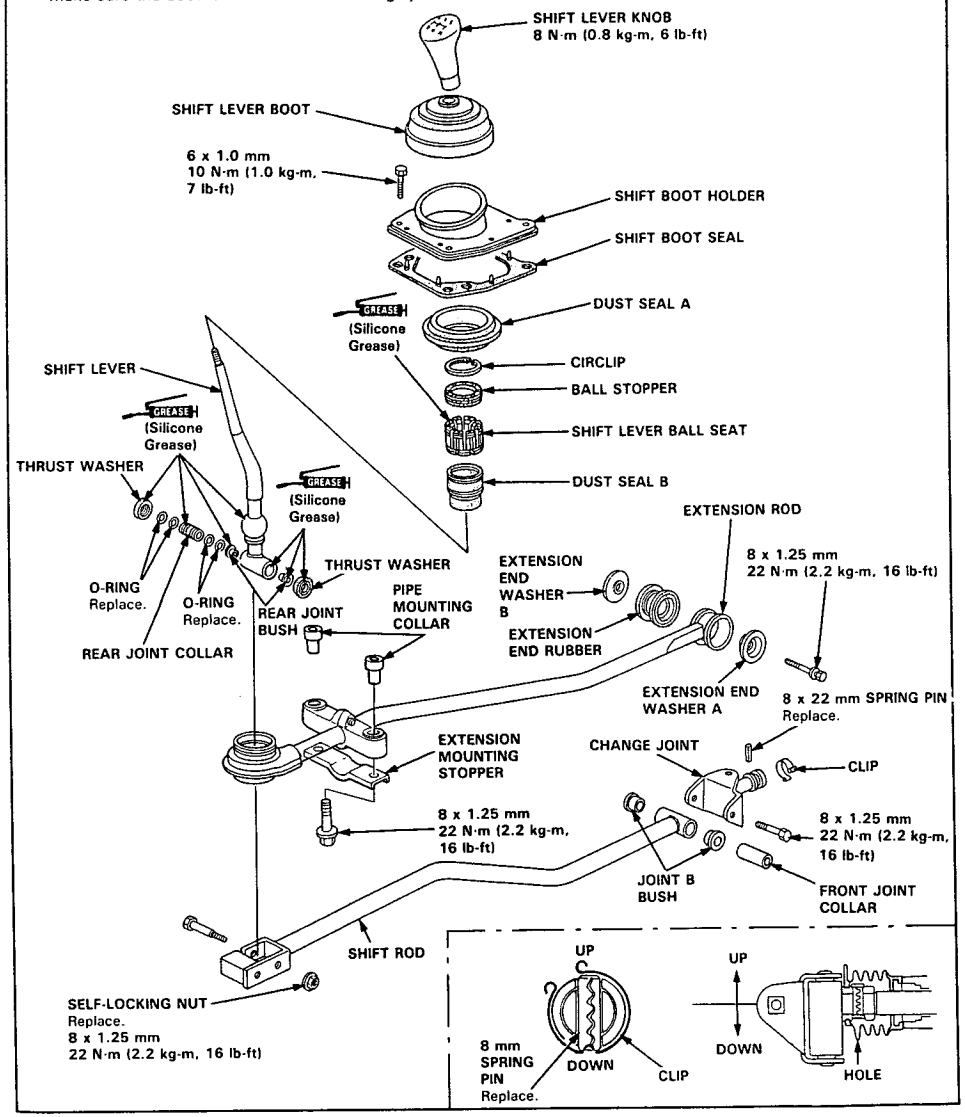


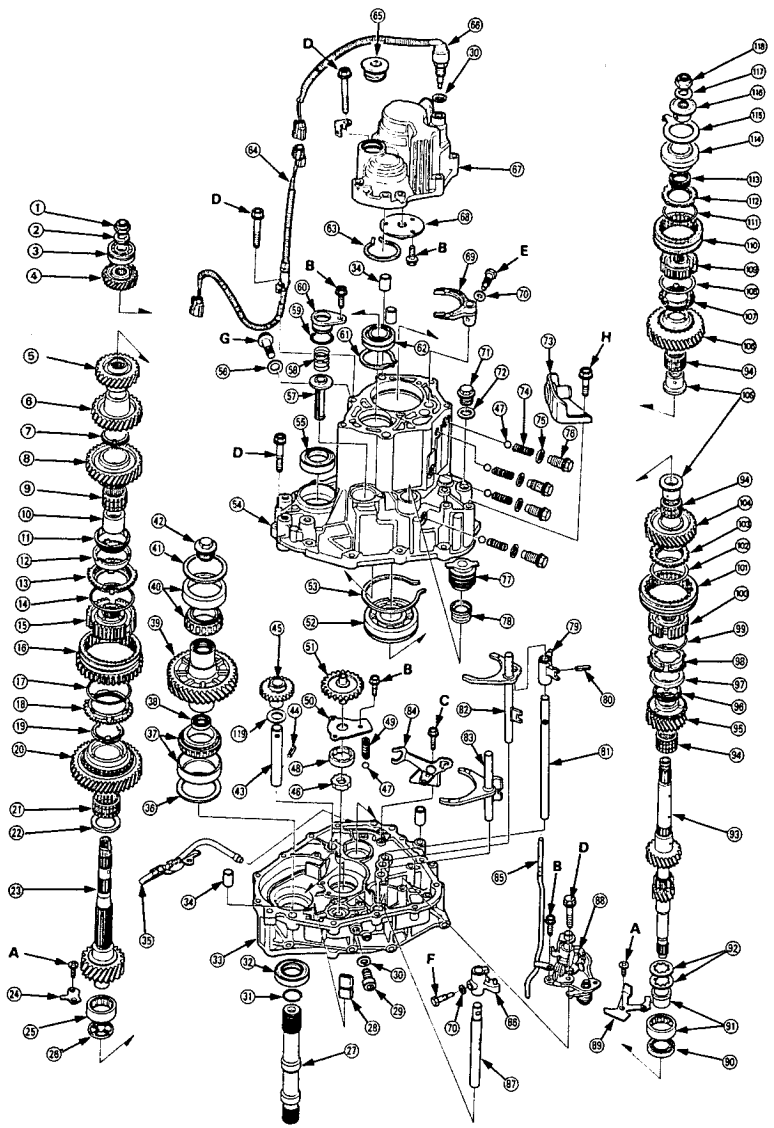
21. Pull the transmission away from the engine until it clears the mainshaft.

Gearshift Mechanism

Overhaul

NOTE:
- Inspect rubber parts for wear and damage when disassembling.
- Install the clip and the spring pin on the change joint as shown.
- Turn the boot so the hole is facing down as shown.
- Make sure the boot is installed on the change joint.





NOTE:
- Always clean the magnet (28) and oil pump strainer (75) whenever the transmission housing is disassembled.
- Inspect the all bearings for wear and operation.

	Torque Value	Bolt Size
A	10 N·m (1.0 kg-m, 7 lb-ft)	6 x1.0 mm
B	12 N·m (1.2 kg-m, 9 lb-ft)	6 x 1.0mm
C	15 N·m (1.5 kg-m, 11 lb-ft)	6 x 1.0mm
D	28 N·m (2.8 kg-m, 21 lb-ft)	8 x 1.25mm
E	30 N·m (3.0 kg-m, 22 lb-ft)	8 x 1.0mm
F	31 N·m (3.1 kg-m, 23 lb-ft)	8 x 1.0mm
G	55 N·m (5.5 kg-m, 40 lb-ft)	10 x 1.25 mm
H	28 N·m (2.8 kg-m, 21 lb-ft)	8 x 1.25 mm

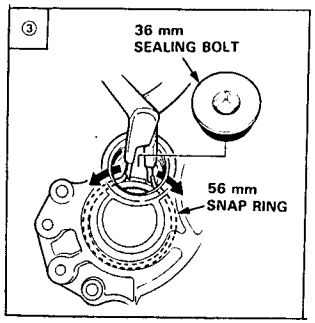
① LOCKNUT Replace.
130 → 0 → 130 N·m
(13 → 0 → 13 kg-m,
94 → 0 → 94 lb-ft)
② SPRING WASHER
③ BALL BEARING
④ 5TH GEAR
⑤ 4TH GEAR
⑥ 3RD GEAR
⑦ FRICTION DAMPER
⑧ 2ND GEAR
⑨ 41 x 46 x 28 mm NEEDLE BEARING
⑩ DISTANCE COLLAR
⑪ INNER SYNCHRO RING
⑫ SYNCHRO CONE
⑬ OUTER SYNCHRO RING
⑭ SYNCHRO SPRING
⑮ 1ST/2ND SYNCHRO HUB
⑯ 1ST/2ND SYNCHRO SLEEVE
⑰ SYNCHRO SPRING
⑱ SYNCHRO RING
⑲ FRICTION DAMPER
⑳ 1ST GEAR
㉑ 44 x 50 x 29 mm NEEDLE BEARING
㉒ THRUST SHIM
Selection, page 13-28
㉓ COUNTERSHAFT
㉔ NEEDLE SET PLATE C
㉕ 33 x 55 x 19 mm NEEDLE BEARING
㉖ OIL GUIDE PLATE
㉗ EXTENSION SHAFT
㉘ MAGNET
㉙ DRAIN PLUG
40 N·m (4.0 kg-m, 29 lb-ft)
㉚ WASHER Replace.
㉛ SET RING Replace.
㉜ 49.7 x 70 x 11 mm OIL SEAL Replace.
㉝ CLUTCH HOUSING
㉞ 14 x 20 mm DOWEL PIN
㉟ BREATHER TUBE ASSEMBLY
㊱ 80 mm THRUST WASHER
㊲ TAPERED ROLLER BEARING
㊳ 32.5 x 42 x 7 mm OIL SEAL Replace.
㊴ SECONDARY GEAR
㊵ TAPERED ROLLER BEARING
㊶ 68 mm THRUST SHIM
Selection, page 13-42
㊷ 33 mm SEALING BOLT
80 N·m (8.0 kg-m, 58 lb-ft)
㊸ REVERSE GEAR SHAFT
㊹ SPRING PIN 4 x 8 mm Replace.
㊺ REVERSE IDLE GEAR
㊻ INNER ROTOR
㊼ STEEL BALL D. 5/16 in
㊽ OUTER ROTOR
㊾ RELIEF VALVE SPRING
L. 19.09 mm (0.75 in)
㊿ OIL PUMP PLATE
(51) OIL PUMP SHAFT
(52) 29 x 89 x 24 mm BALL BEARING
(53) 89 mm SNAP RING
(54) TRANSMISSION HOUSING
(55) 39.8 x 56 x 8 mm OIL SEAL Replace.
(56) WASHER Replace.
(57) OIL PUMP STRAINER
(58) STRAINER SET SPRING
L. 37.2 mm (1.46 in)
(59) 29.7 x 2.4 mm O-RING Replace.
(60) STRAINER COVER
(61) 50 mm SNAP RING
(62) 28 x 50 x 21 mm NEEDLE BEARING
(63) 56 mm SNAP RING
(64) BACK-UP LIGHT SWITCH SUB CORD
(65) 36 mm SEALING BOLT
25 N·m (2.5 kg-m, 18 lb-ft)
(66) BACK-UP LIGHT SWITCH
25 N·m (2.5 kg-m, 18 lb-ft)
(67) TRANSMISSION COVER
(68) OIL COLLECT PLATE
(69) 5TH/REVERSE SHIFT FORK
(70) SPRING WASHER
(71) OIL FILLER PLUG
45 N·m (4.5 kg-m, 33 lb-ft)
(72) WASHER Replace.
(73) EXTENSION STAY
(74) SPRING L. 27.9 mm (1.10 in)
(75) WASHER Replace.
(76) SEALING BOLT
(77) SHIFT ROD BOOT
(78) 16 x 27 x 16 mm OIL SEAL Replace.
(79) 5TH/REVERSE SHIFT PIECE
(80) SPRING PIN 5 x 22 mm Replace.
(81) 5TH/REVERSE SHIFT FORK SHAFT
(82) 3RD/4TH SHIFT FORK
(83) 1ST/2ND SHIFT FORK
(84) REVERSE SHIFT HOLDER
(85) OIL GUIDE PIPE
(86) CHANGE PIECE
(87) SHIFT ROD
(88) CHANGE HOLDER
(89) NEEDLE SET PLATE M
(90) 28 x 41 x 7 mm OIL SEAL Replace.
(91) 28 x 53 x 19 mm NEEDLE BEARING
(92) MAINSHAFT WASHER
(93) MAINSHAFT
(94) 36 x 41 x 27 mm NEEDLE BEARING
(95) 3RD GEAR
(96) INNER SYNCHRO RING
(97) SYNCHRO CONE
(98) OUTER SYNCHRO RING
(99) SYNCHRO SPRING
(100) 3RD/4TH SYNCHRO HUB
(101) 3RD/4TH SYNCHRO SLEEVE
(102) SYNCHRO SPRING
(103) SYNCHRO RING
(104) 4TH GEAR
(105) DISTANCE COLLAR
(106) 5TH GEAR
(107) SYNCHRO RING
(108) SYNCHRO SPRING
(109) 5TH/REVERSE SYNCHRO HUB
(110) 5TH/REVERSE SYNCHRO SLEEVE
(111) SYNCHRO SPRING
(112) SYNCHRO RING
(113) 37 x 42 x 15 mm NEEDLE BEARING
(114) TAPERED CONE RING
(115) RING BRAKE STOPPER
(116) DISTANCE COLLAR
(117) SPRING WASHER
(118) LOCKNUT Replace.
150 → 0 → 150 N·m
(15 → 0 → 15 kg-m,
108 → 0 → 108 lb-ft)
(119) WASHER

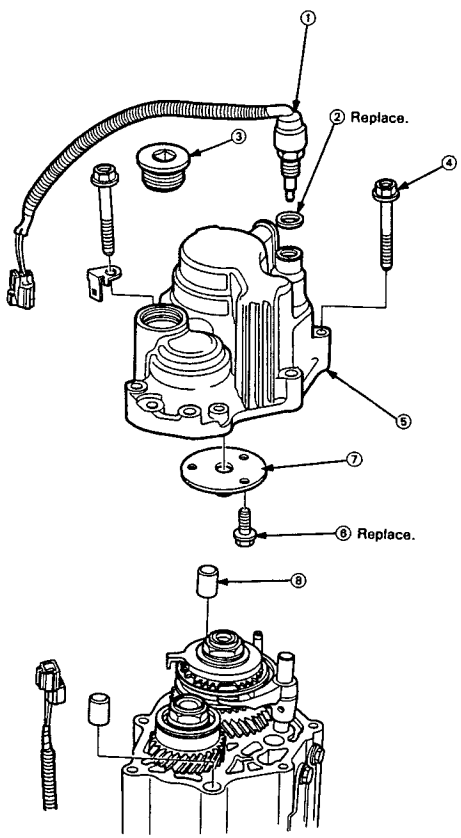
Transmission Cover

Removal

1. Remove the transmission cover follwoing the numbered sequence.

   NOTE: Loosen the bolts ③ in a crisscross pattern in several steps.





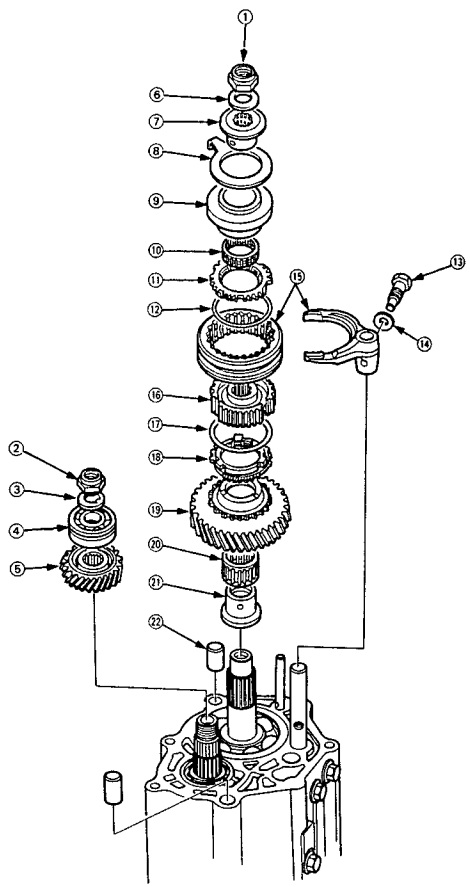
5th Gear

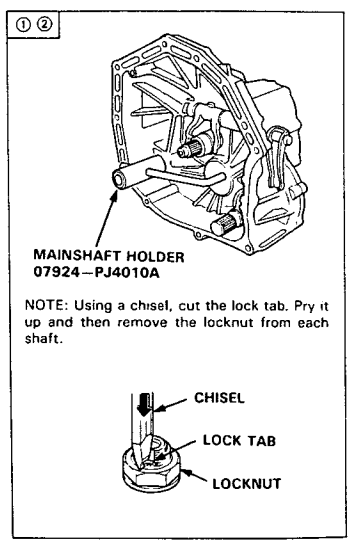
Removal

NOTE:
- Replace all locknuts.
- To check the synchro hub and synchro sleeve, see page 13-35.
- To check the gears, see page 13-36.
- Inspect the bearings for wear and operation.

1. Remove 5th gear following the numbered sequence.

   NOTE: Mainshaft locknut has left-hand threads.





Transmission Housing

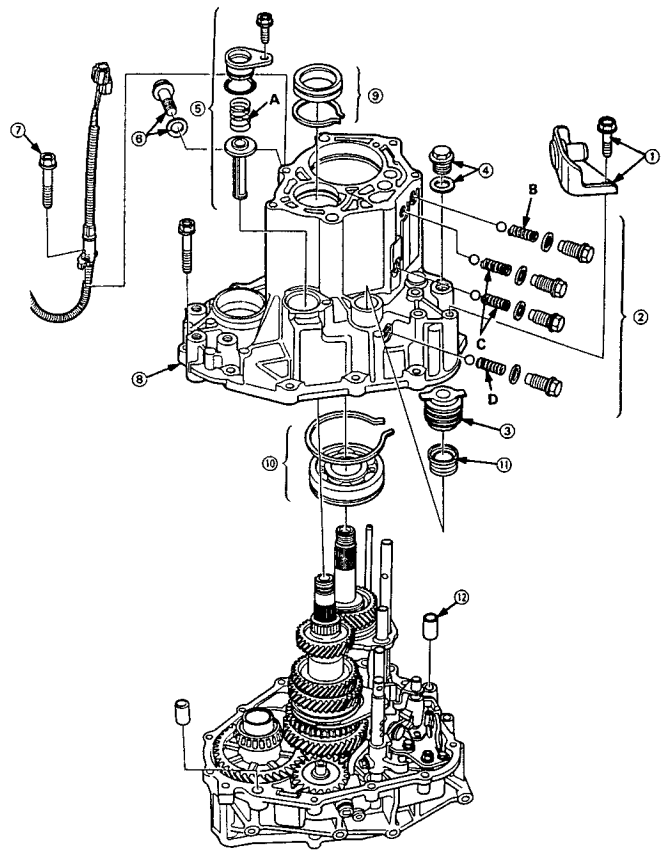
Removal

NOTE:
- Replace all sealing washers, O-rings, and oil seals.
- Inspect the bearings for wear and operation.
- The steel ball are all the same size (5/16 in).

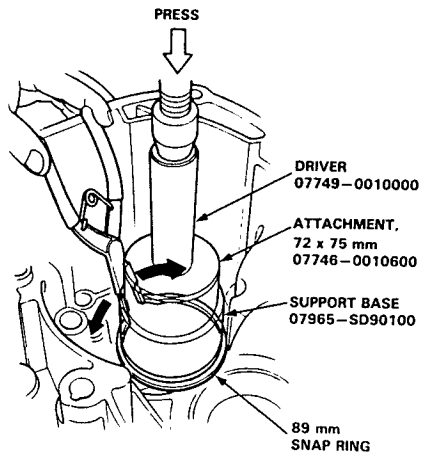
1. Remove the transmission housing following the numbered sequence.

NOTE: Loosen the bolts ⑦ in a crisscross pattern in several steps.

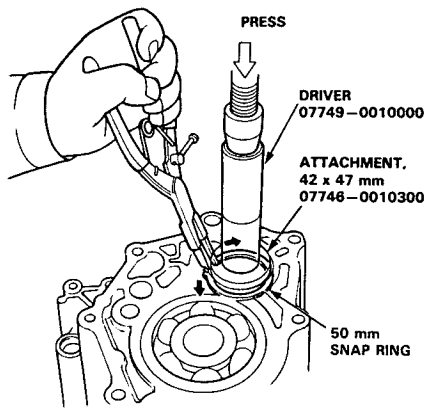
	Free length
A	37.2 mm (1.46 in)
B	27.9 mm (1.10 in)
C	20.4 mm (0.80 in)
D	23.5 mm (0.93 in)



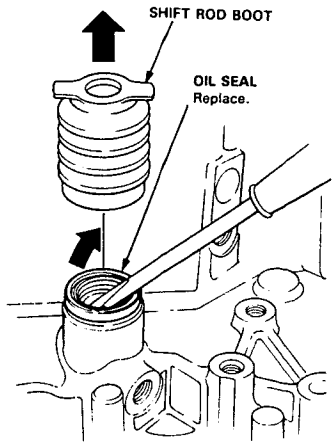
—1. Remove the mainshaft ball bearing using the special tools and a press as shown.



—2. Remove the countershaft needle bearing outer race using the special tools and a press as shown.



—3. Remove the oil seal.



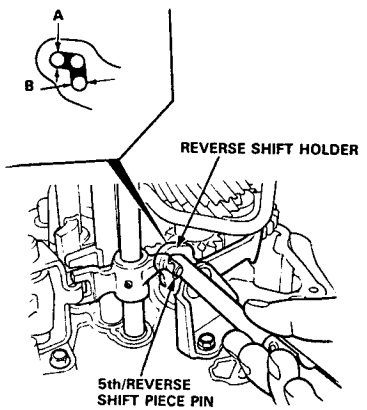
Reverse Shift Holder

Clearance Inspection

1. Measure the clearance between the 5th/reverse shift piece pin and the reverse shift holder.

   Standard: A: 0.05–0.35 mm (0.002–0.014 in)
   B: 0.4–0.8 mm (0.02–0.03 in)

   Service Limit: A: 0.5 mm (0.02 in)
   B: 1.0 mm (0.04 in)



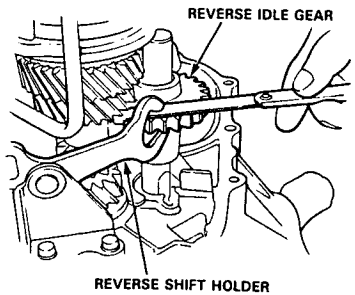
2. If the clearance exceeds the service limit, measure the grooves of the reverse shift holder.

   Standard: A: 7.05–7.25 mm (0.278–0.285 in)
   B: 7.4–7.7 mm (0.29–0.30 in)

   If the grooves exceeds the standard, replace the reverse shift holder.
   If the grooves are within the standard, replace the 5th/reverse shift piece pin.

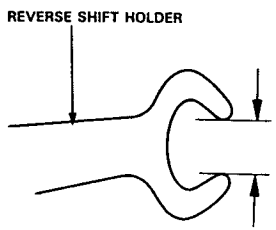
3. Measure the clearance between the reverse idle gear and the reverse shift holder.

   Standard: 0.5–1.1 mm (0.02–0.04 in)
   Service Limit: 1.7 mm (0.07 in)



4. If the clearance exceeds the service limit, measure the groove of the reverse shift holder.

   Standard: 14.0–14.3 mm (0.55–0.56 in)



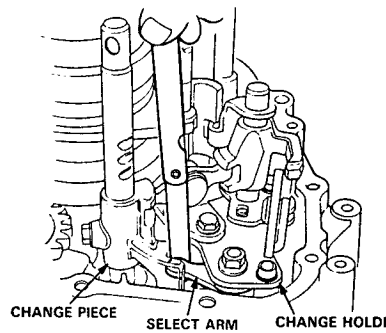
   If the groove exceeds the standard, replcae the reverse shift holder.
   If the groove is within the standard, replcae the reverse idle gear.

Change Holder

Clearance Inspection

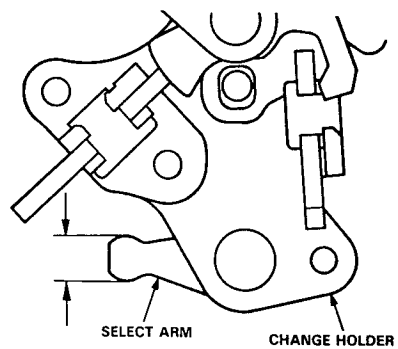
1. Measure the clearance between the change piece and the select arm.

   Standard: 0.05–0.35 mm (0.002–0.014 in)
   Service Limit: 0.5 mm (0.02 in)



2. If the clearance exceeds the service limit, measure the width of the select arm.

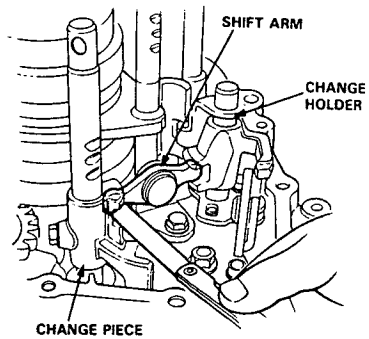
   Standard: 11.8–12.0 mm (0.46–0.47 in)



   If the width is less than the standard, replace the change holder.
   If the width is within the standard, replace the change piece.

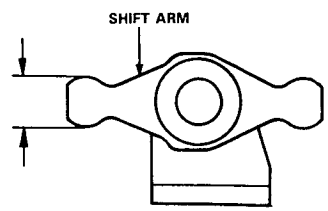
3. Measure the clearance between the change piece and the shift arm.

   Standard: 0.10–0.40 mm (0.004–0.016 in)
   Service Limit: 0.5 mm (0.02 in)



4. If the clearance exceeds the service limit, measure the width of the shift arm.

   Standard: 12.8–13.0 mm (0.50–0.51 in)



   If the width is less than the standard, replace the change holder.
   If the width is within the standard, replcae the change piece.

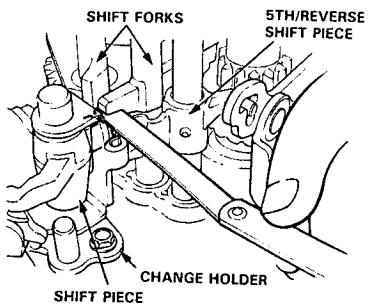
(cont'd)

Change Holder

Clearance Inspection (cont'd)

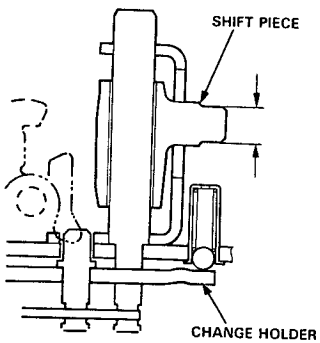
5. Measure the clearance between the shift forks and the shift piece, then measure the clearance between the 5th/reverse shift piece and the shift piece.

   Standard: 0.2–0.5 mm (0.01–0.02 in)
   Service Limit: 0.7 mm (0.03 in)



6. If either clearance exceeds the service limit, measure the width of the shift piece.

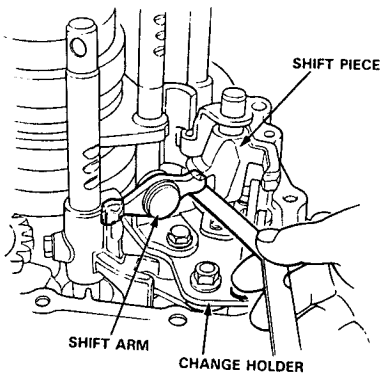
   Standard: 11.9–12.0 mm (0.469–0.472 in)



If the width is less than the standard, replace the change holder.
If the width is within the standard, replace the shift forks or the 5th/reverse shift piece as appropriate.

7. Measure the clearance between the shift piece and the shift arm.

   Standard: 0.10–0.40 (0.004–0.016 in)
   Service Limit: 0.6 mm (0.02 in)



If the clearance exceeds the standard, replace the change holder.

Mainshaft, Countershaft Assemblies

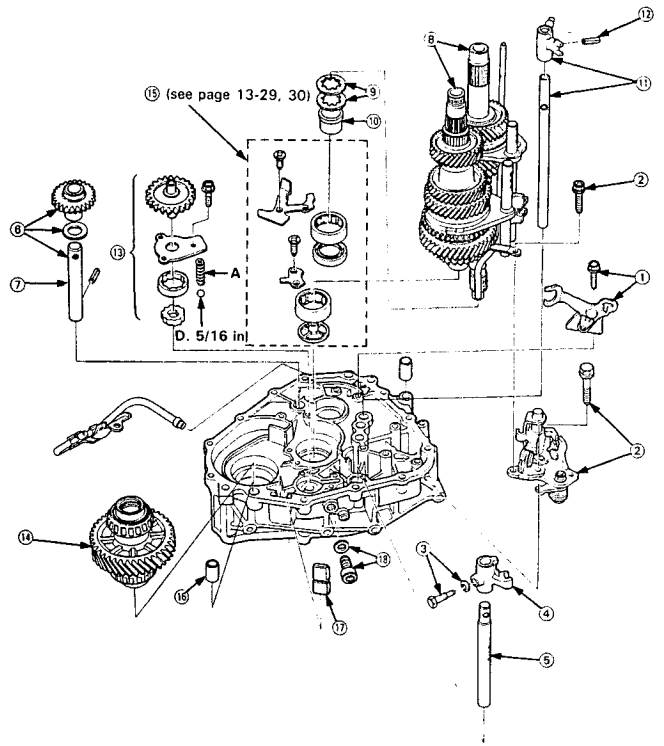
Removal

NOTE:
- Always replace the spring pins when removed.
- Always clean the magnet ⑰.

	Free length
A	19.09 mm (0.75 in)

1. Remove the mainshaft and countershaft assemblies following the numbered sequence.

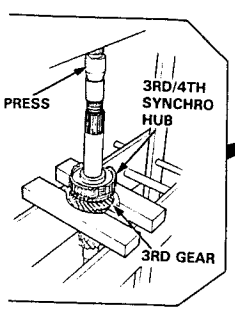
   NOTE: Remove the reverse idle gear and reverse gear shat ⑥, then shift the 3rd/4th shift fork to the 4th gear side.

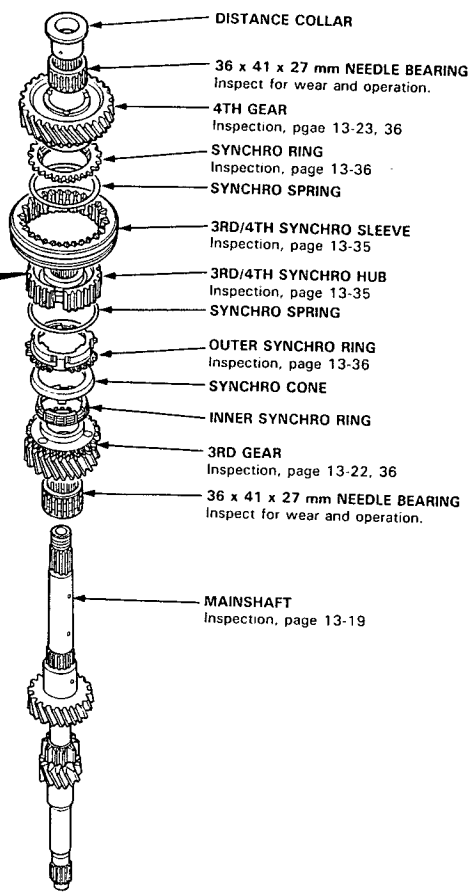


Mainshaft

Disassembly

NOTE: The 3rd/4th synchro hub is installed with a press. Therefore, support 3ed gear on steel blocks and press the mainshaft out of the 3rd/4th synchro hub as shown.

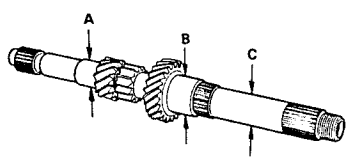




Inspection

1. Inspect the gear and bearing surfaces for wear and damage, then measure the mainshaft at points A, B, and C.

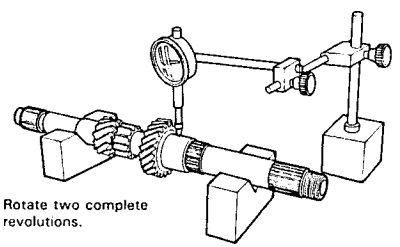
Standard: **A (Needle bearing surface): 27.977–27.990 mm (1.1015–1.1020 in)**
B (Needle bearing surface): 35.984–36.000 mm (1.4167–1.4173 in)
C (Ball bearing surface): 28.987–29.000 mm (1.1412–1.1417 in)
Service Limit: A: 27.930 mm (1.0996 in)
B: 35.930 mm (1.4146 in)
C: 28.940 mm (1.1394 in)



If any part of the mainshaft is less than the service limit, replace it with a new one.

2. Inspect for runout.

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



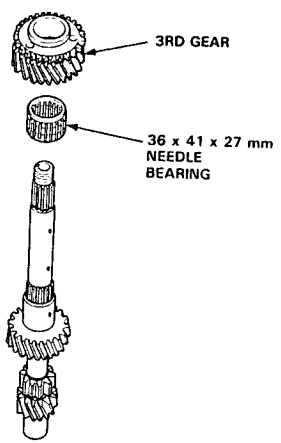
Rotate two complete revolutions.

If the runout exceeds the service limit, replace the mainshaft with a new one.

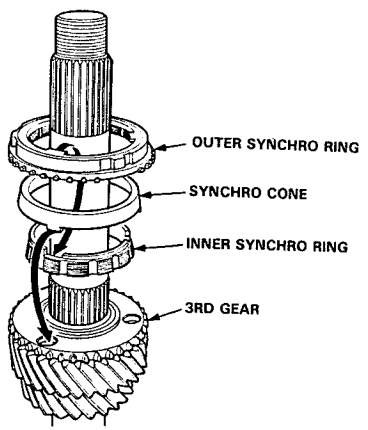
Mainshaft

Reassembly/Clearance Inspection

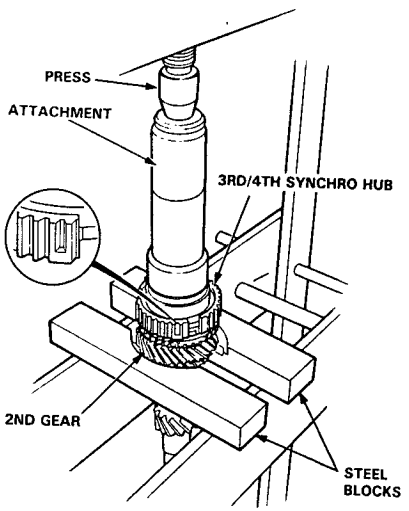
1. Install the needle bearing and 3rd gear.



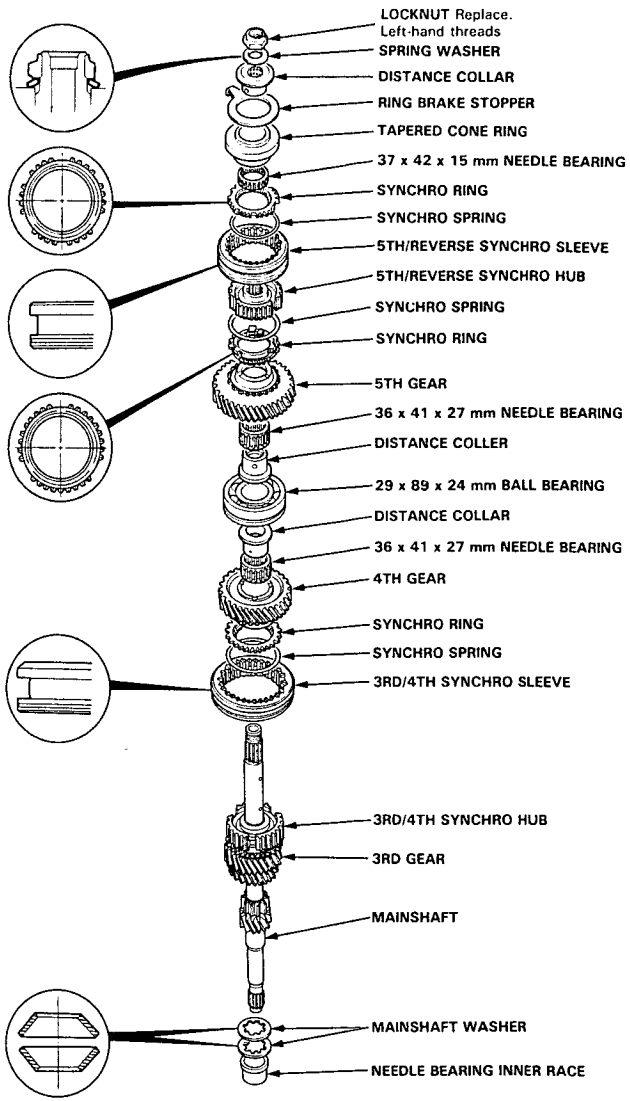
2. Install the inner synchro ring, synchro cone, and outer synchro ring by aligning the grooves with the fingers.



3. Support 2nd gear on steel blocks as shown, then install the 3rd/4th synchro hub using a press as shown.



4. Reassemble the mainshaft as shown.



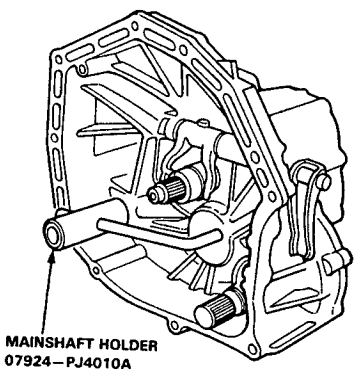
(cont'd)

Mainshaft

Reassembly/Clearance Inspection (cont'd)

5. Install the mainshaft assembly on the clutch housing.

6. Install the special tool, then shift the 1st/2nd synchro sleeve to the 1st gear side.

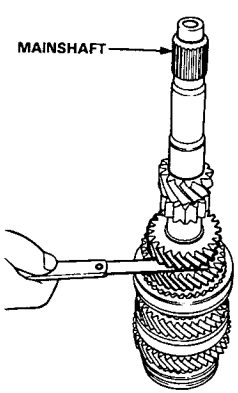


7. Tighten the locknut.

   NOTE: Locknut have left-hand threads.

   LOCKNUT
   150→0→150 N·m
   (15→0→15 kg-m, 108→0→108 lb-ft)

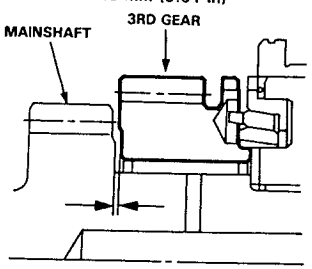
8. Measure the clearance using a feeler gauge as shown.



NOTE: If replacement is required, always replace the synchro sleeve set.

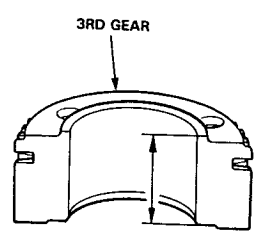
—1. Measure the clearance between the 3rd gear and the mainshaft.

Standard: 0.05—0.20 mm (0.002—0.008 in)
Service Limit: 0.3 mm (0.01 in)



—2. If the clearance exceeds the service limit, measure the thickness of 3rd gear.

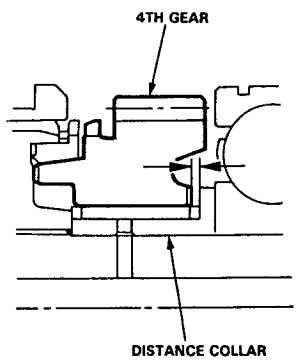
Standard: 27.92—27.97 mm (1.099—1.101 in)
Service Limit: 27.85 mm (1.097 in)



If the thickness is less than the service limit, replace 3rd gear.
If the thickness is more than the service limit, replace the 3rd/4th synchro hub.

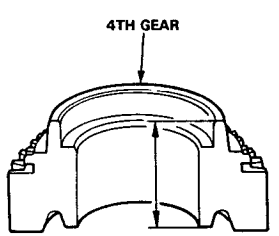
—3. Meausre the clearance between the 4th gear and distance collar.

Standard: 0.05—0.17 mm (0.002—0.007 in)
Service Limit: 0.3 mm (0.01 in)



—4. If the clearance exceeds the service limit, measure the thickness of 4th gear.

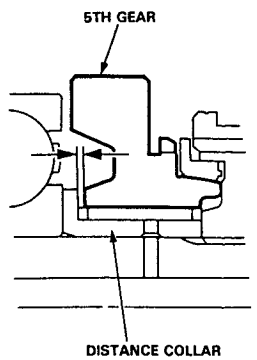
Standard: 34.92—34.97 mm (1.375—1.377 in)
Service Limit: 34.85 mm (1.372 in)



If the thickness is less than the service limit, replace 4th gear.
If the thickness is more than the service limit, replace the 3rd/4th synchro hub.

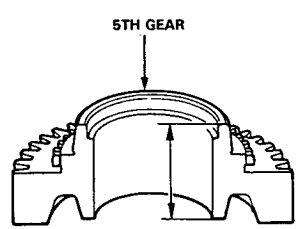
—5. Measure the clearance between the 5th gear and distance collar.

Standard: 0.05—0.17 mm (0.002—0.007 in)
Service Limit: 0.3 mm (0.01 in)



—6. If the clearance exceeds the service limit, measure the thickness of 5th gear.

Standard: 31.42—31.47 mm (1.237—1.239 in)
Service Limit: 31.35 mm (1.234 in)

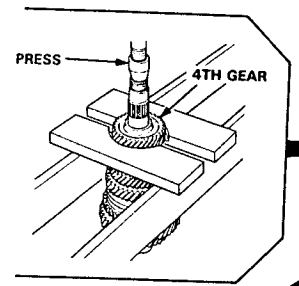


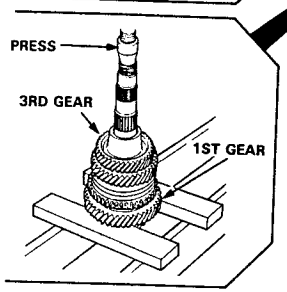
If the thickness is less than the service limit, replace 5th gear.
If the thickness is more than the service limit, replace the 5th/reverse synchro hub.

Countershaft

Disassembly

NOTE: The 4th and 3rd gears are installed with a press. Therefore, remove them as shown.





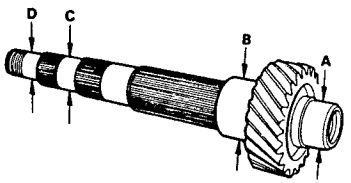
- 28 x 50 x 21 mm NEEDLE BEARING
  Inspect for wear and operation.
- 4TH GEAR
  Inspection, pgae 13-36
- 3RD GEAR
  Inspection, page 13-36
- FRICTION DAMPER
  Inspect for wear and damage.
- 2ND GEAR
  Inspection, page 13-36
- 41 x 46 x 28 mm NEEDLE BEARING
  Inspect for wear and operation.
- DISTANCE COLLAR
- INNER SYNCHRO RING
- SYNCHRO CONE
- OUTER SYNCHRO RING
  Inspection, page 13-36
- SYNCHRO SPRING
- 1ST/2ND SYNCHRO HUB
  Inspection, page 13-35
- 1ST/2ND SYNCHRO SLEEVE
  Inspection, page 13-35
- SYNCHRO SPRING
- SYNCHRO RING
  Inspection, page 13-36
- FRICTION DAMPER
  Inspect for wear and damage.
- 1ST GEAR
  Inspection, page 13-36
- 44 x 50 x 29 mm NEEDLE BEARING
  Inspect for wear and operation.
- THRUST SHIM
  Selection, page 13-28
- COUNTERSHAFT
  Inspection, page 13-25

Inspection

1. Inspect the countershaft surface for wear and damage, then measure the countershaft at pints A, B, C, and D.

Standard:
A (Needle bearing surface): 33.000–33.015 mm (1.2992–1.2998 in)
B (Needle bearing surface): 43.984–44.000 mm (1.7317–1.7323 in)
C (Needle bearing surface): 27.977–27.990 mm (1.1015–1.1020 in)
D (Ball bearing surface): 24.980–24.993 mm (0.9835–0.9840 in)

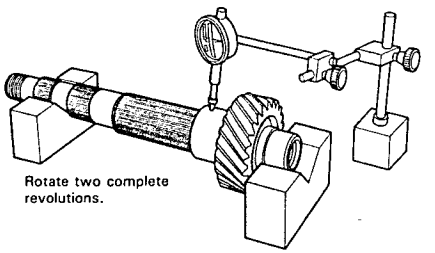
Service Limit: A: 32.950 mm (1.2972 in)
B: 43.930 mm (1.7295 in)
C: 27.930 mm (1.0996 in)
D: 24.930 mm (0.9815 in)



If any part of the countershaft is less than the service limit, replace it with a new one.

2. Inspect for runout.

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



Rotate two complete revolutions.

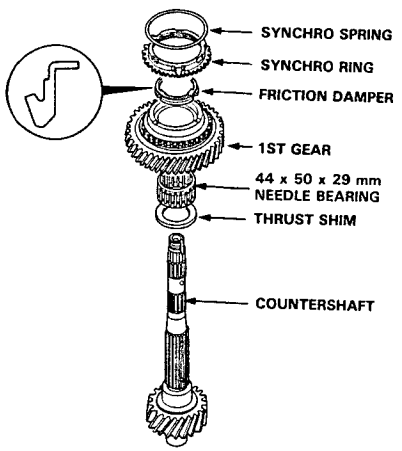
If the runout exceeds the service limit, replace the mainshaft with a new one.

Countershaft

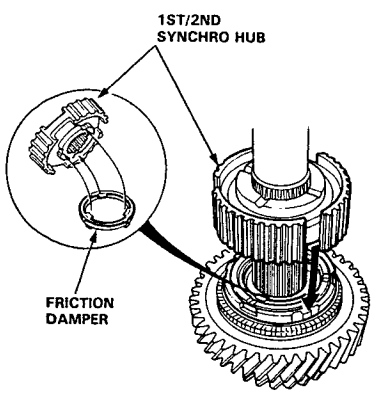
Reassembly/Clearance Inspection

1. Install the thrust shim, needle bearing, 1st gear, friction damper, synchro ring, and synchro spring.

   NOTE: Reassemble the 1st gear and friction damper before installation.



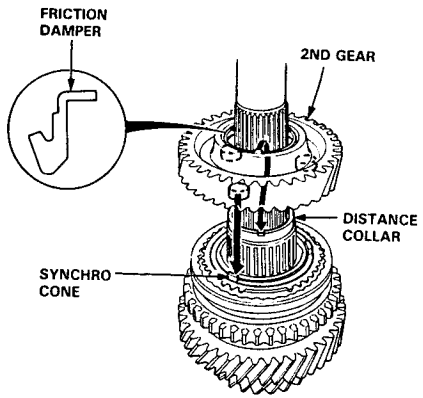
2. Install the 1st/2nd synchro hub by aligning the friction damper fingers with 1st/2nd synchro hub grooves.



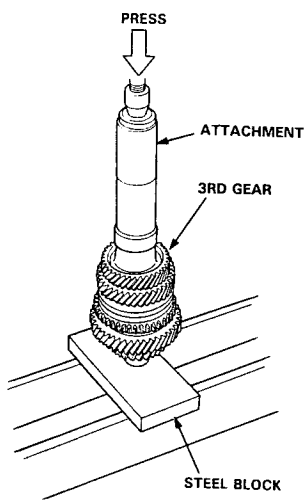
3. Install the 1st/2nd synchro sleeve, synchro spring, outer synchro ring, synchro cone, inner synchro ring, distance collar, and needle bearing.

4. Install the 2nd gear and friction damper.

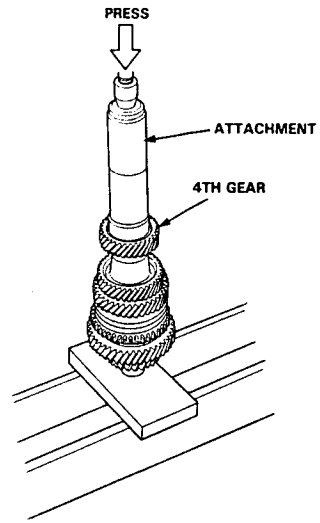
   NOTE: Reassemble the 2nd gear and firction damper before installation.



5. Support the countershaft on a steel block as shown, and install 3rd gear using a press.



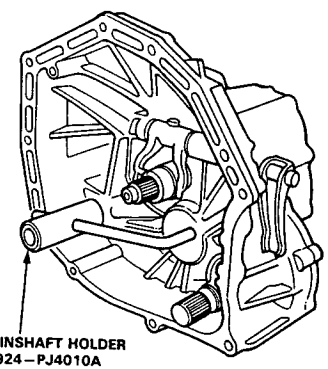
6. Install 4th gear using a press as shown.



7. Install the needle bearing, spring washer, and locknut.

8. Install the mainshaft and cuntershaft assembly on the clutch housing.

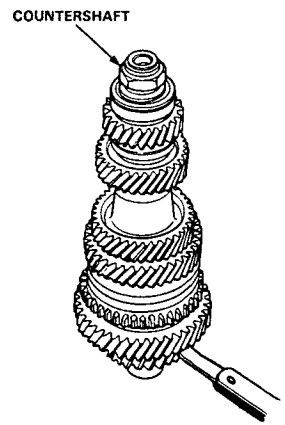
9. Install the special tool, them shift the 1st/2nd cynchro sleeve to the 1st gear side.



10. Tighten the locknut.

    LOCKNUT
    130→0→130 N·m
    (13→0→13 kg-m, 94→0→94 lb-ft)

11. Measure the clearance as shown.



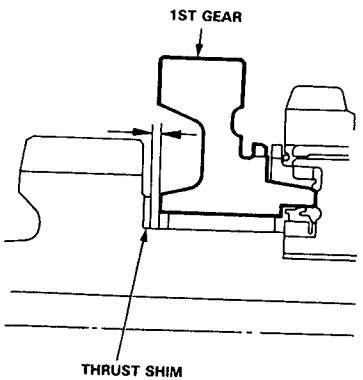
(cont'd)

Countershaft

Reassembly/Clearance Inspection (cont'd)

12. Measure the clearance between the 1st gear and thrust shim.

    Standard: 0.05–0.11 mm (0.002–0.004 in)



13. If the clearance exceeds the standard, select the appropriate thrust shim for the correct clearance from the chart below.

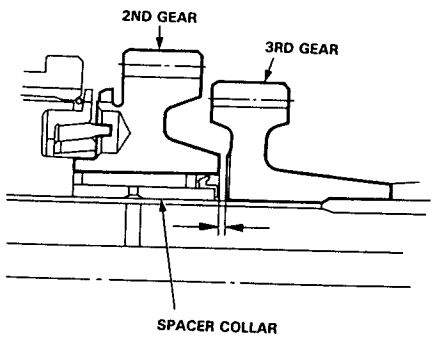
THRUST SHIM

	Part Number	Thickness
A	23921–PW5–000	1.95–1.97 mm (0.0768–0.0776 in)
B	23922–PW5–000	1.98–2.00 mm (0.0780–0.0787 in)
C	23923–PW5–000	2.01–2.03 mm (0.0791–0.0799 in)
D	23924–PW5–000	2.04–2.06 mm (0.0803–0.0811 in)
E	23925–PW5–000	2.07–2.09 mm (0.0815–0.0823 in)
F	23926–PW5–000	2.10–2.12 mm (0.0827–0.0835 in)

If the clearance exceeds the standard when using the thickest shim, replace the 1st gear.

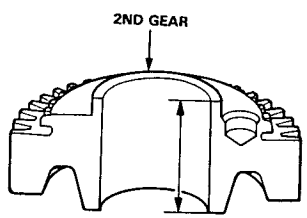
14. Measure the clearance between 2nd gear and 3rd gear.

    Standard: 0.06–0.135 mm (0.002–0.005 in)
    Service Limit: 0.3 mm (0.01 in)



15. If the clearance exceeds the service limit, measure the thickness of 2nd gear.

    Standard: 33.92–33.97 mm (1.335–1.337 in)
    Service Limit: 33.85 mm (1.333 in)



If the thickness is less than the service limit, replace 2nd gear.
If the thickness is more than the service limit, replace the 1st/2nd synchro hub.

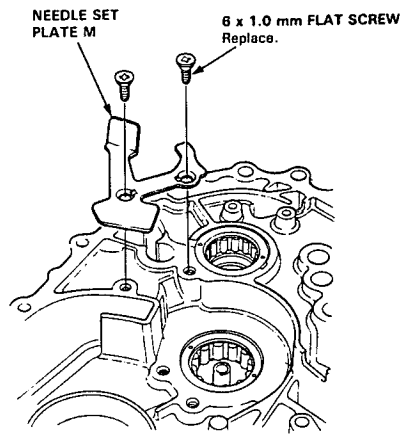
NOTE: If replacement is required, always replace the synchro sleeve set.

Mainshaft Bearing (Clutch Housing)

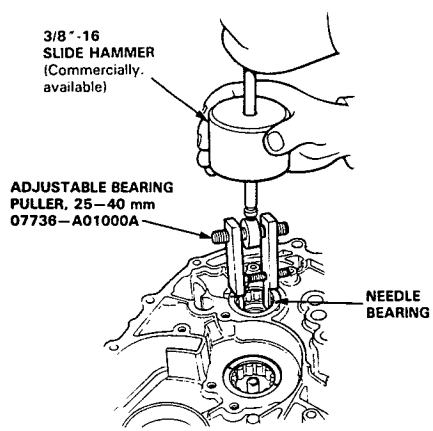
Replacement

NOTE: If replacement is required, always replece the bearing and inner race as an assembly.

1. Remove the needle set plate M.



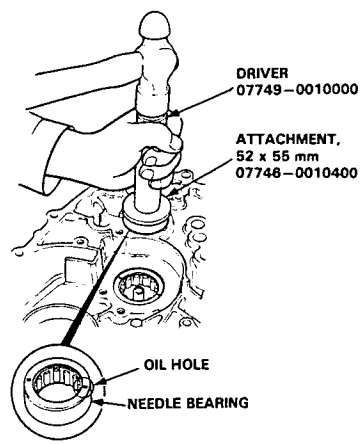
2. Remove the needle bearing using the special tool.



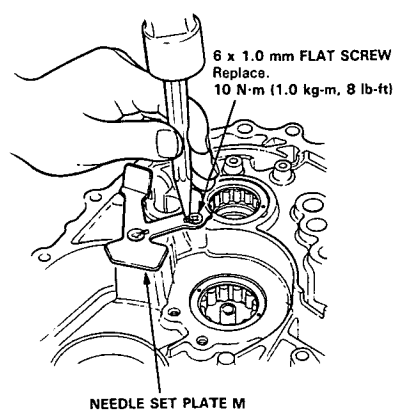
3. Position the new needle bearing in the bore of the clutch housing.

   NOTE: Position the needle bearing with the oil hole facing up.

4. Drive the needle bearing using the special tools as shown.



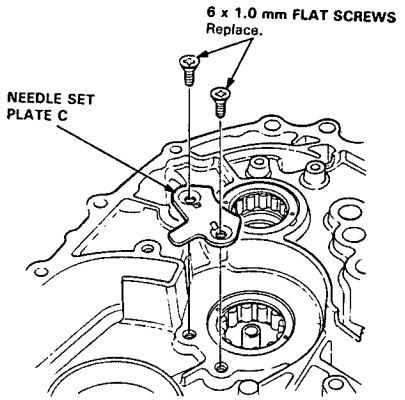
5. Install the needle set plate M, and stake the screw heads in the groove in the needle set plate M.



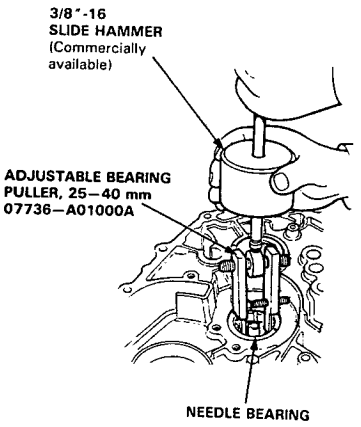
Countershaft Bearing (Clutch Housing)

Replacement

1. Remove the needle set plate C.



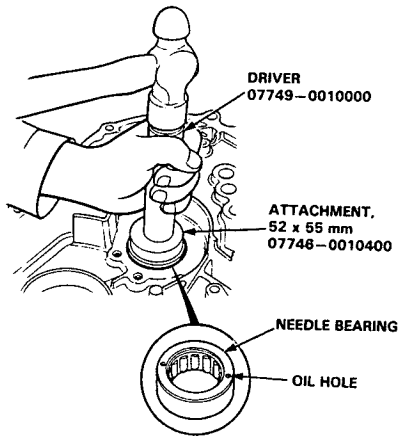
2. Remove the needle bearing using the special tool.



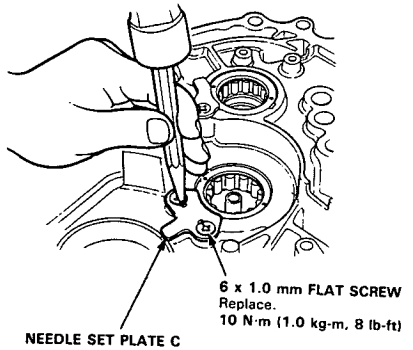
3. Position the new needel bearing in the bore of the clutch housing.

   NOTE: Position the needle bearing with the oil hole facing up.

4. Drive the needle bearing using the special tools as shown.



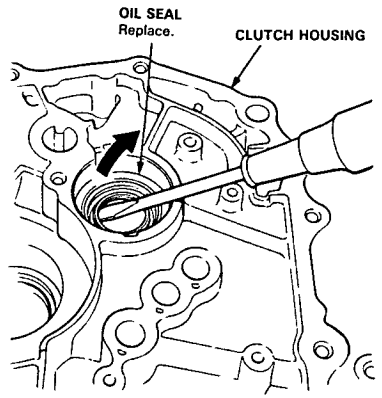
5. Install the needle set plate C, and stake the screw heads in the groove in the needle set plate C.



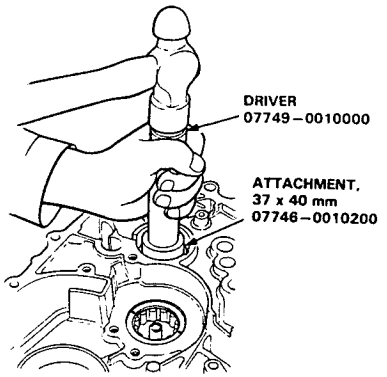
Mainshaft Oil Seal (Clutch Housing)

Replacement

1. Remove the oil seal.



2. Drive a new oil seal using the special tools as shown.



Oil Pump

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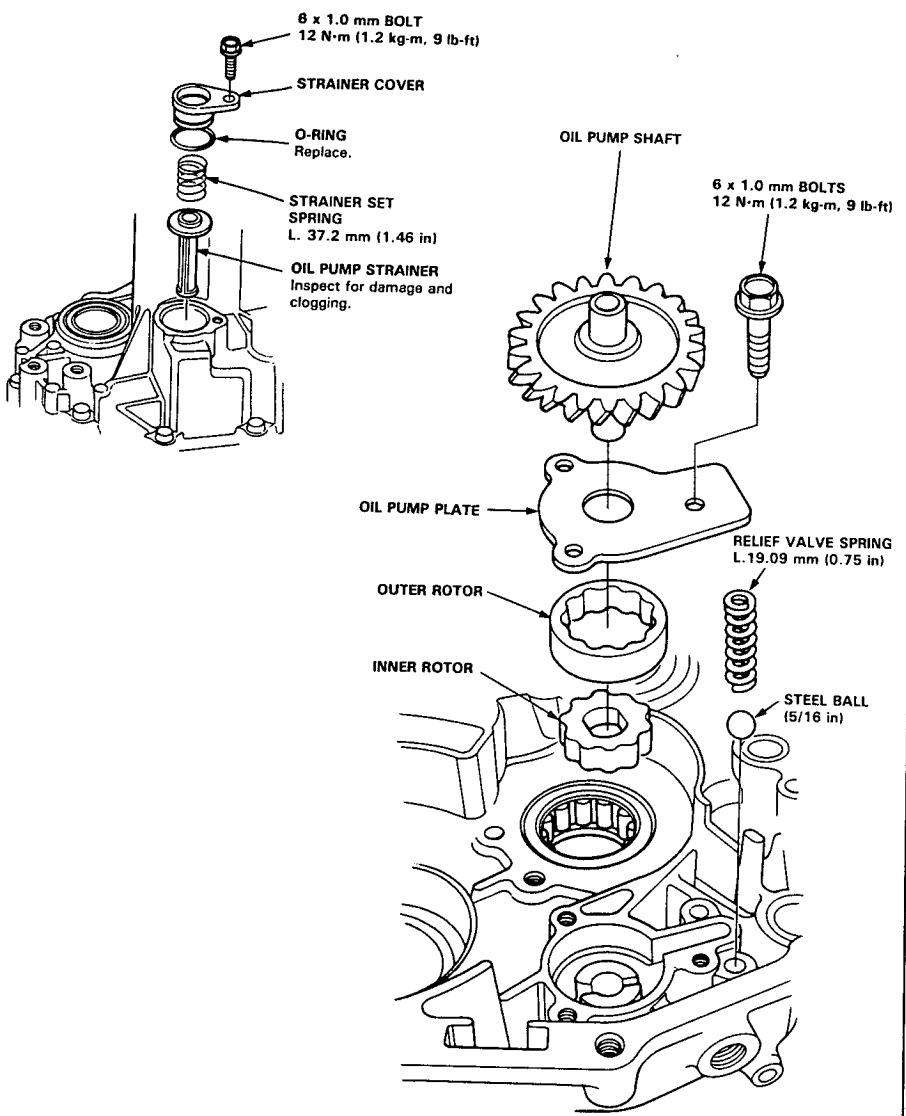
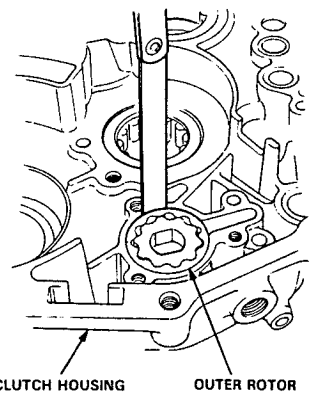
Prior to reassembling, clean all the parts in solvent, dry them and apply lubricant to any contact surfaces.



Clearance Inspection

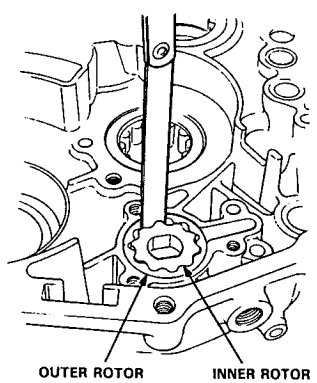
1. Check the clearance on the oil pump rotor as shown.

   Clutch Housing-to-Outer Rotor Clearance
   Standard: 0.1–0.2 mm (0.004–0.008 in)
   Service Limit: 0.22 mm (0.009 in)



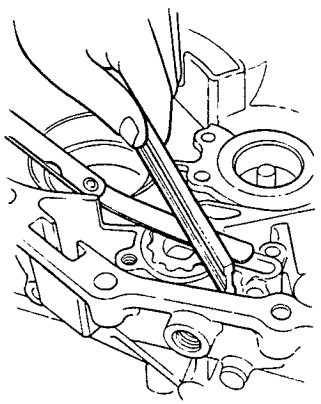
2. Check the clearance on the oil pump rotor as shown.

   Inner Rotor-to-Outer Rotor Tip Clearance
   Standard: 0.14 mm (0.006 in) max.
   Service Limit: 0.20 mm (0.008 in)



3. Check the clearance between the clutch housing and the oil pump rotor as shown.

   Clutch Housing-to-Rotor Axial Clearance
   Standard: 0.03–0.15 mm (0.001–0.006 in)
   Service Limit: 0.20 mm (0.008 in)



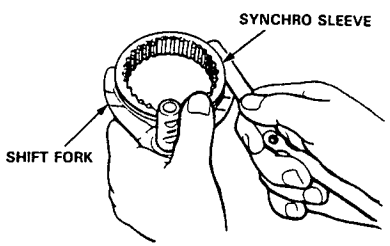
Shift Fork

Clearance Inspection

NOTE: If replacement is required, replace the synchro sleeve set.

1. Check the clearance between each shift fork and its matching synchro sleeve.

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



2. If the clearance exceeds the service limit, measure the thickness of the shift fork fingers.

   Standard:
   1st/2nd and 3rd/4th Shift Forks: 7.4–7.6 mm (0.29–0.30 in)

   5th/reverse Shift Fork: 7.4–7.5 mm (0.29–0.30 in)

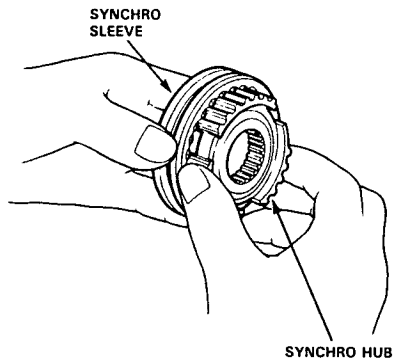
If the thickness is less than the standard, replace the shift fork.
If the thickness is within the standard, replace the synchro sleeve set.

Synchro Sleeve, Synchro Hub

Inspection

1. Inspect gear teeth on all synchro hubs and synchro sleeves for rounded off corners, which indicates wear.
2. Install each synchro hub in its mating synchro sleeve and check for freedom of movement.

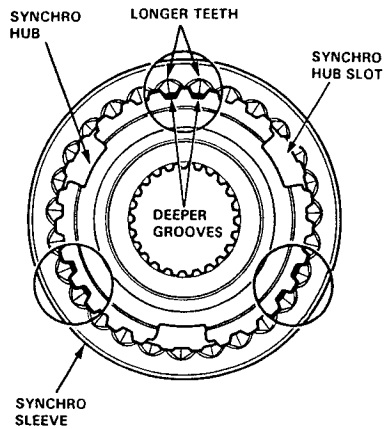
   NOTE: If replacement is required, always replace the synchro sleeve set.



Installation

When assembling the synchro sleeve and synchro hub, be sure to match the three sets of longer teeth (120 degrees apart) on the synchro sleeve with the three sets of deeper grooves in the synchro hub.

CAUTION: Do not install the synchro sleeve with its longer teeth in the 1st/2nd synchro hub slots, because it will damage the spring ring.



Synchro Ring, Gear

Inspection

1. Inspect the synchro ring and gear.

   A : Inspect the inside of the synchro ring for wear.

   B : Inspect the synchro sleeve teeth and matching teeth on the synchro ring for wear (rounded off).

   GOOD WORN

   C : Inspect the synchro sleeve teeth and matching teeth on the gear for wear (rounded off).

   GOOD WORN

   D : Inspect the gear hub thrust surface for wear.

   E : Inspect the cone surface for wear or roughness.

   F : Inspect the teeth on all gears for uneven wear, scoring, galling cracks.

2. Coat the cone surface of the gear with oil and place the synchro ring on the matching gear. Rotate the synchro ring, making sure that it does not slip.

   Measure the clearance between the synchro ring and gear all the way around.

   NOTE: Hold the synchro ring against the gear evenly while measuring the clearance.

   Synchro Ring-to-Gear Clearance
   Standard: 0.85—1.10 mm (0.034—0.043 in)
   Service Limit: 0.4 mm (0.02 in)

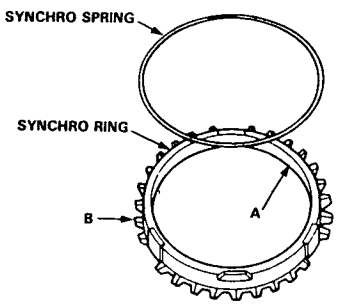
   Double Cone Synchro-to-Gear Clearance
   Standard:
   Ⓐ: (Outer Synchro Ring to Synchro Cone) 0.5—1.0 mm (0.02—0.04 in)
   Ⓑ: (Synchro Cone to Gear) 0.5—1.0 mm (0.02—0.04 in)
   Ⓒ: (Outer Synchro Ring to Gear) 0.95—1.68 mm (0.037—0.066 in)

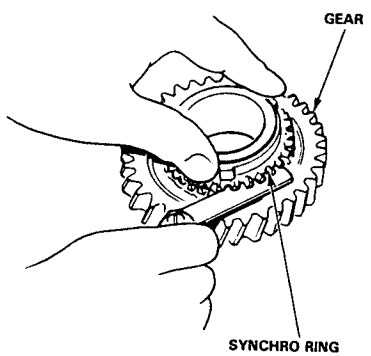
   Service Limit:
   Ⓐ: 0.3 mm (0.01 in)
   Ⓑ: 0.3 mm (0.01 in)
   Ⓒ: 0.6 mm (0.02 in)

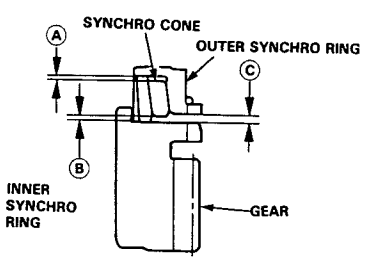
   If the clearance is less than the service limit, replace the synchro ring and synchro cone.

3. Separate the synchro ring and gear, then coat them with oil.

4. Install the synchro spring on the syncrho ring, then set it aside for later reassembly.







Secondary Gear Assembly

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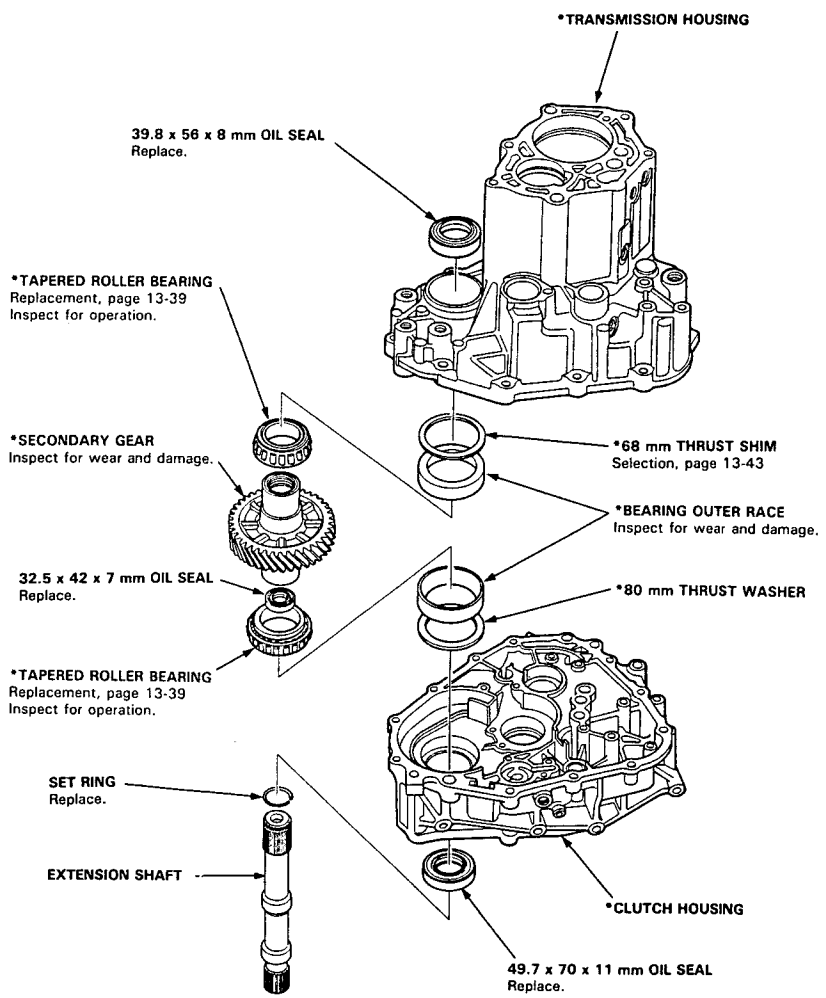
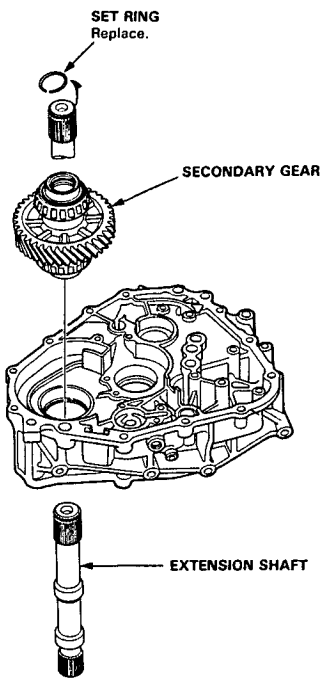
NOTE: If the parts marked * are replaced, the bearing preload must be adjusted (see page 13-42).



Extension Shaft

Removal

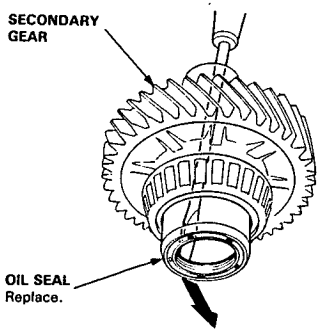
1. Remove the set ring, then remove the extension shaft from the secondary gear.



Oil Seal (Secondary Gear)

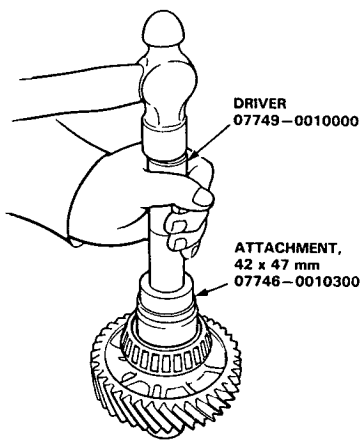
Replacement

1. Remove the oil seal.



2. Install the oil seal in the secondary gear using the special tools as shown.

   NOTE: Drive the oil seal until the secondary gear surface end.

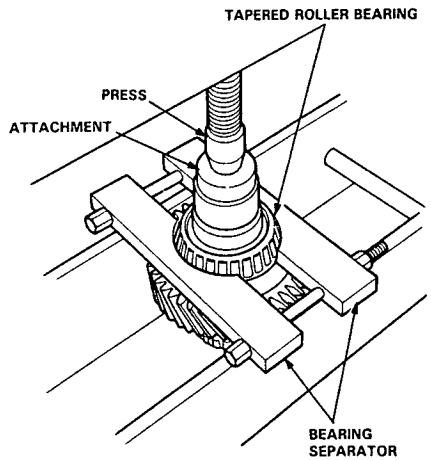


Tapered Roller Bearing

Replacement

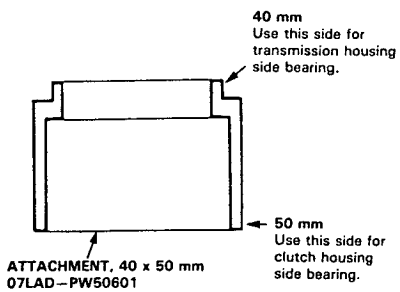
NOTE:
- The tapered roller bearing and bearing outer race should be replaced as a set.
- Inspect and adjust the tapered roller bearing preload whenever the tapered roller bearing is replaced (see page 13-42).

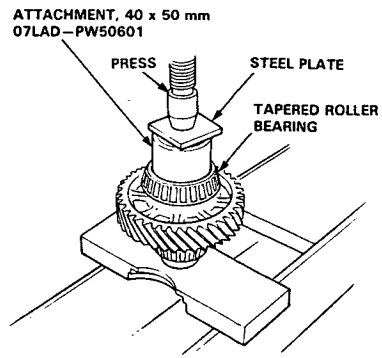
1. Remove the tapered roller bearing using a press and bearing separator as shown.



2. Install the tapered roller bearings using the special tool and a press as shown.

   NOTE: Press the tapered roller bearings squarely until they bottom against the case.





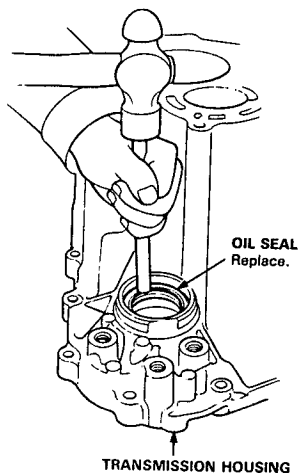
Oil Seal

Removal

Transmission Housing Side:

1. Remove the oil seal from the transmission housing.

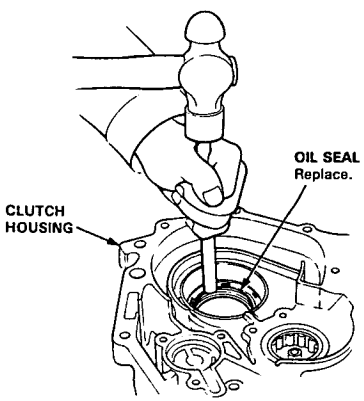
   NOTE: For oil seal installation, see page 13-43.



Clutch Housing Side:

1. Remove the oil seal from the clutch housing.

   NOTE: For oil seal installation, see page 13-43.



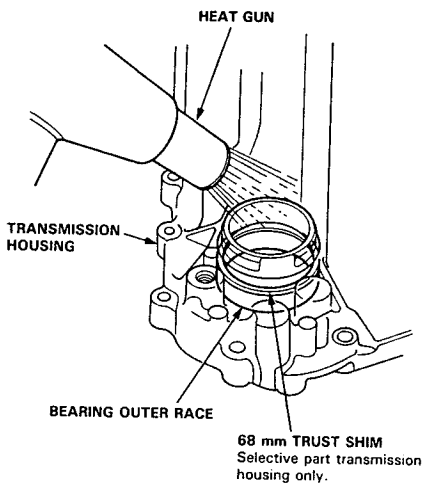
Bearing Outer Race

Replacement

NOTE:
- The tapered roller bearing and bearing outer race should be replaced as a set.
- If the tapered roller bearings, 68 mm thrust shim and/or 80 mm thrust washer are replaced, inspect and adjust the tapered roller bearing preload (see page 13-42).

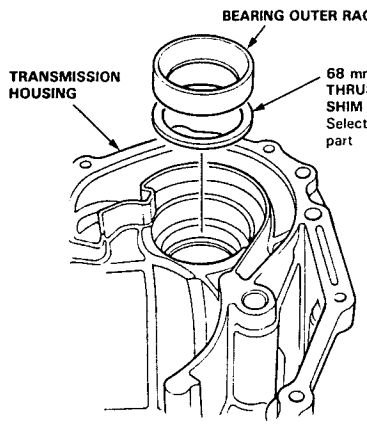
1. Remove the bearing outer race by heating the housings to 212°F (100°C) with a heat gun, then tap the housing until the bearing outer race falls out.

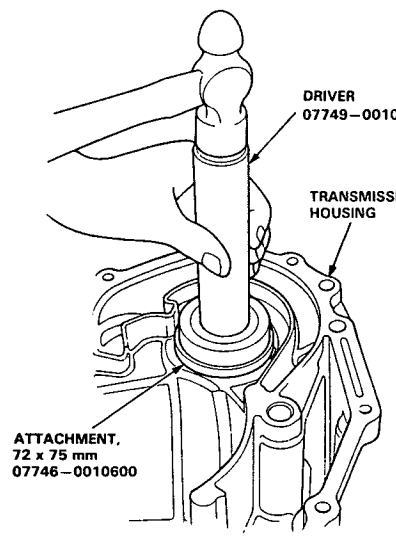
   CAUTION: Do not heat the housings in excess of 212°F (100°C).



2. Install the 68 mm thrust shim and bearing outer race.

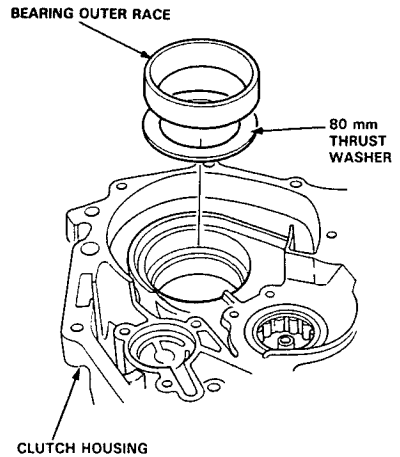
3. Drive the bearing outer race into the transmission housing using the special tools as shown.

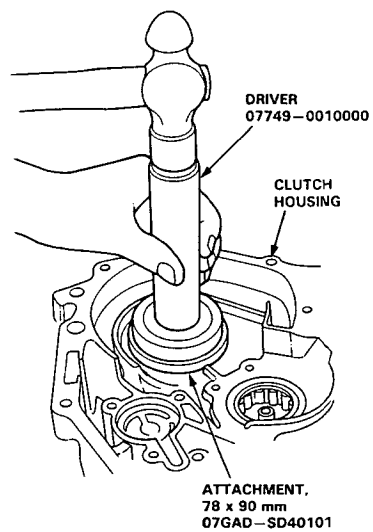




4. Install the 80 mm thrust washer and bearing outer race.

5. Drive the bearing outer race into the clutch housing using the special tools as shown.





Tapered Roller Bearing Preload

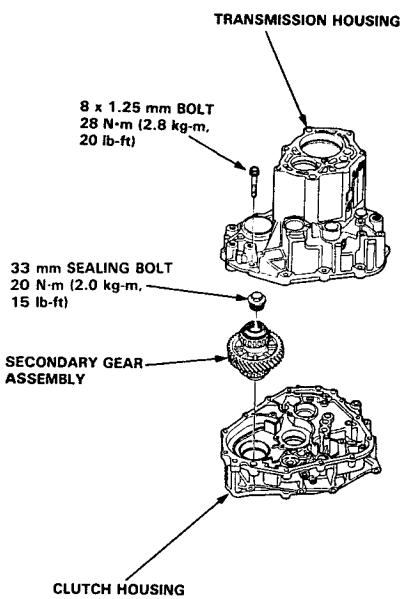
Adjustment

NOTE: If any of the items listed below are replaced, the tapered roller bearing preload must be adjusted.
- TRANSMISSION HOUSING
- CLUTCH HOUSING
- SECONDARY GEAR
- TAPERED ROLLER BEARING and BEARING OUTER RACE
- 68 mm THRUST SHIM
- 80 mm THRUST WASHER

1. Install the secondary gear assembly in the clutch housing, then install the transmission housing.

   NOTE:
   - Do not install the mainshaft, countershaft and reverse idle gear shaft assembly.
   - Tighten the bolts in a crisscross pattern in several steps.

2. Install the 33 mm sealing bolt on the secondary gear assembly.

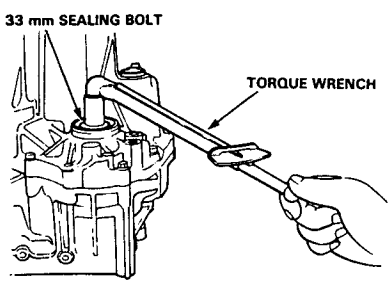


3. Rotate the secondary gear assembly in both directions to seat the bearings.

4. Measure the starting torque of the secondary gear assembly using a torque wrench.

   NOTE: Measure the tapered roller bearing preload at normal room temperature in both directions.

   Standard: 1.8–3.0 N·m (18–30 kg-cm, 16–26 lb-in)



5. If the tapered roller bearing preload is not within the standard, select the 68 mm thrust shim from the following table that will give you the correct preload and recheck.

   NOTE: Changing one of the 68 mm thrust shims to the next size will increase or decrease preload about 0.4–0.5 N·m (4–5 kg-cm, 3.47–4.34 lb-in).

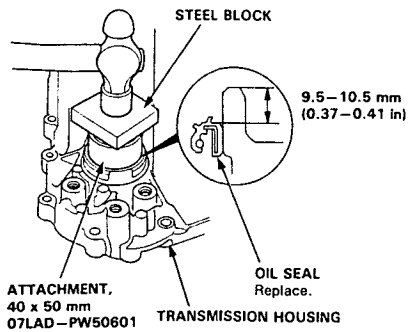
68 mm THRUST SHIM

	Part Number	Thickness
A	23941–PW5–000	1.56 mm (0.0614 in)
B	23942–PW5–000	1.59 mm (0.0626 in)
C	23943–PW5–000	1.62 mm (0.0638 in)
D	23944–PW5–000	1.65 mm (0.0650 in)
E	23945–PW5–000	1.68 mm (0.0661 in)
F	23946–PW5–000	1.71 mm (0.0673 in)
G	23947–PW5–000	1.74 mm (0.0685 in)
H	23948–PW5–000	1.77 mm (0.0697 in)
I	23949–PW5–000	1.80 mm (0.0709 in)
J	23950–PW5–000	1.83 mm (0.0720 in)
K	23951–PW5–000	1.86 mm (0.0732 in)
L	23952–PW5–000	1.89 mm (0.0744 in)
M	23953–PW5–000	1.92 mm (0.0756 in)
N	23954–PW5–000	1.95 mm (0.0768 in)
O	23955–PW5–000	1.98 mm (0.0780 in)
P	23956–PW5–000	2.01 mm (0.0791 in)
Q	23957–PW5–000	2.04 mm (0.0803 in)
R	23958–PW5–000	2.07 mm (0.0815 in)
S	23959–PW5–000	2.10 mm (0.0827 in)
T	23960–PW5–000	2.13 mm (0.0839 in)
U	23961–PW5–000	2.16 mm (0.0850 in)
V	23962–PW5–000	2.19 mm (0.0862 in)
W	23963–PW5–000	2.22 mm (0.0874 in)
X	23964–PW5–000	2.25 mm (0.0886 in)
Y	23965–PW5–000	2.28 mm (0.0898 in)
Z	23966–PW5–000	2.31 mm (0.0909 in)
AA	23967–PW5–000	2.34 mm (0.0921 in)
AB	23968–PW5–000	2.37 mm (0.0933 in)
AC	23969–PW5–000	2.40 mm (0.0945 in)
AD	23970–PW5–000	2.43 mm (0.0957 in)
AZ	23941–PW8–000	2.46 mm (0.0968 in)
BZ	23942–PW8–000	2.49 mm (0.0980 in)
CZ	23943–PW8–000	2.52 mm (0.0992 in)
DZ	23944–PW8–000	2.55 mm (0.1004 in)
EZ	23945–PW8–000	2.58 mm (0.1016 in)

Oil Seal

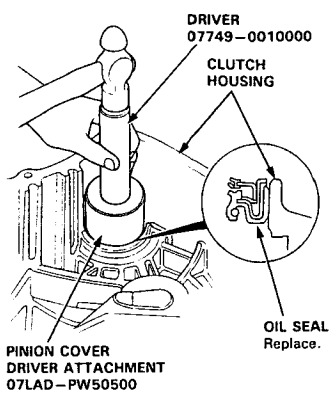
Installation

1. Install the oil seal in the transmission housing using the special tools as shown.



2. Install the oil seal in the clutch housing using the special tools as shown.

   NOTE: Drive the oil seal in until it is flush with the clutch housing as shown.



Mainshaft, Countershaft Assemblies

Reassembly

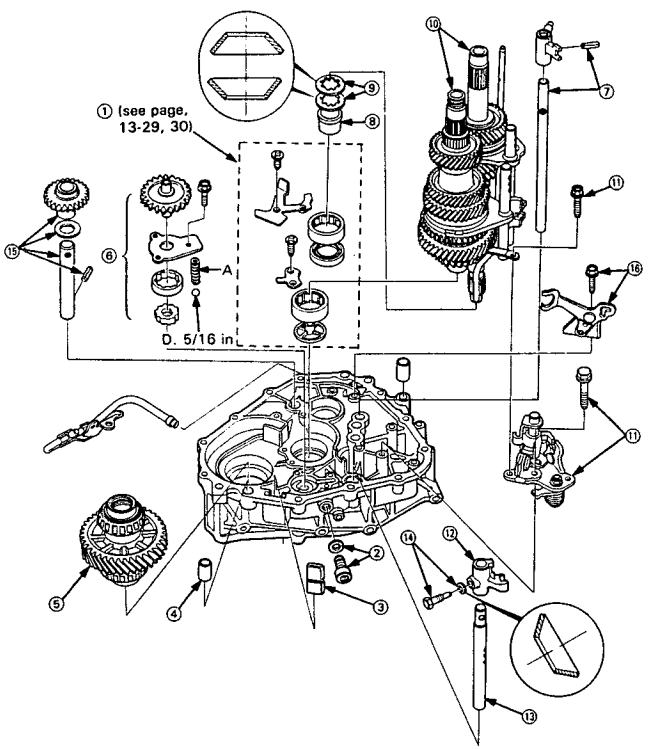
NOTE: Replace all spring pins.

1. Reassemble the parts following the numbered sequence.

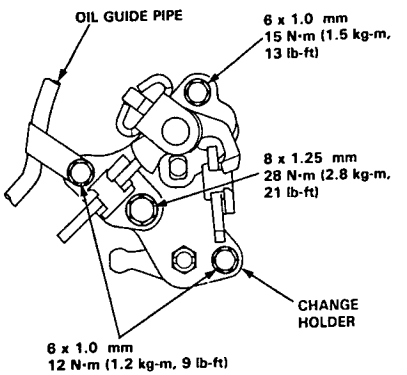
   NOTE: Install the reverse idle gear and reverse gear shaft ⑮, then shift the 3rd/4th shift fork to the 4th gear side.

Bolt Size	Torque Value	
6 x 1.0 mm	10 N·m (1.0 kg-m, 7 lb-ft)	①
Drain Plug	40 N·m (4.0 kg-m, 29 lb-ft)	②
6 x 1.0 mm	12 N·m (1.2 kg-m, 9 lb-ft)	⑥
8 x 1.0 mm	31 N·m (3.1 kg-m, 23 lb-ft)	⑭
6 x 1.0 mm	15 N·m (1.5 kg-m, 11lb-ft)	⑯

	Free length
A	19.09 mm (0.75 in)

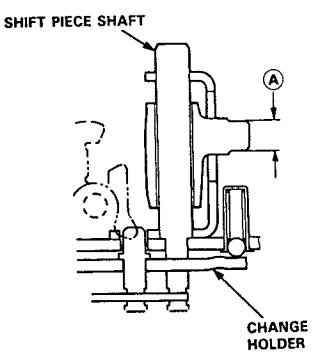


—1. Install the change holder.

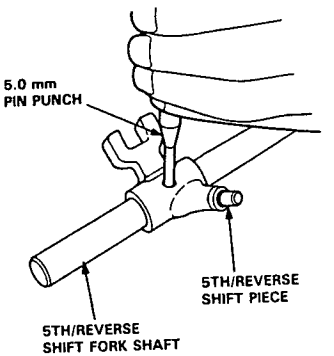


—2. Apply light hand pressure to the shift piece shaft, and measure distance Ⓐ.
If the distance is not correct, check installation.

Distance Ⓐ: 11.3—11.7 mm (0.44—0.46 in)



—3. Reassemble the 5th/reverse shift fork shaft and 5th/reverse shift piece.



Transmission Housing

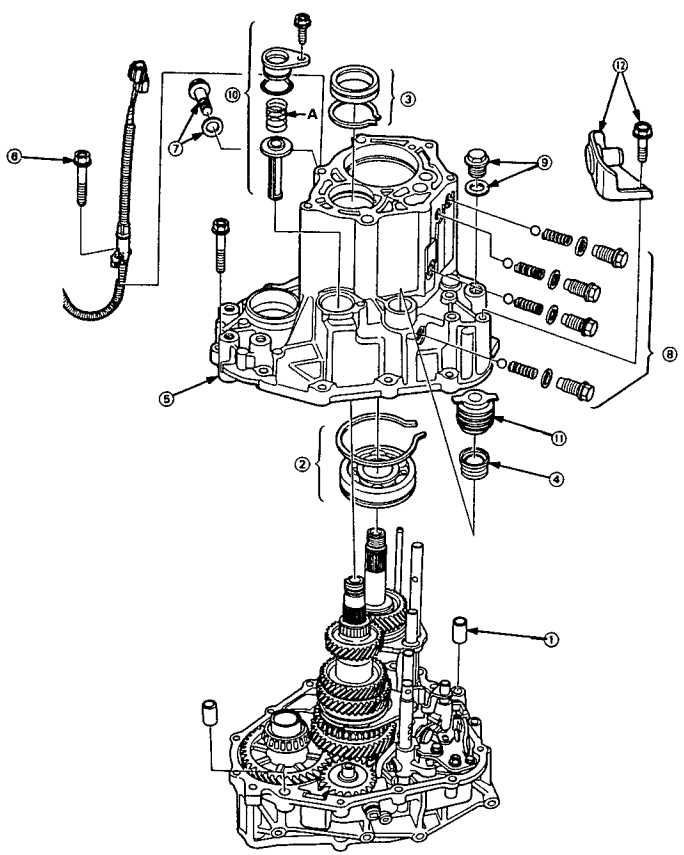
Reassembly

NOTE: Replace all sealing washers, oil seal, and O-ring.

1. Reassemble the parts following the numbered sequence.

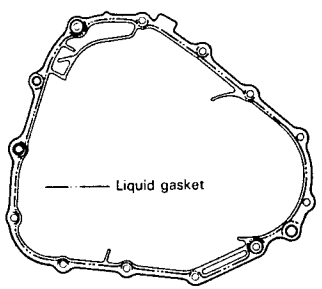
	Free length
A	37.2 mm (1.46 in)

Bolt Size	Torque Value	
8 x 1.25 mm	28 N·m (2.8 kg-m, 21 lb-ft)	⑥
10 x 1.25 mm	55 N·m (5.5 kg-m, 40 lb-ft)	⑦
SEALING BOLT	22 N·m (2.2 kg-m, 16 lb-ft)	⑧
DRAIN PLUG	45 N·m (4.5 kg-m, 33 lb-ft)	⑨
6 x 1.0 mm	12 N·m (1.2 kg-m, 9 lb-ft)	⑩
8 x 1.25 mm	28 N·m (2.8 kg-m, 21lb-ft)	⑫



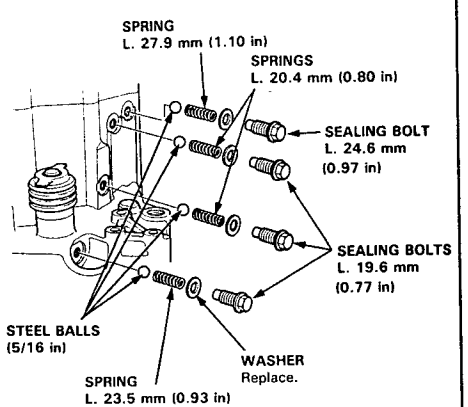
– 1. Apply liquid gasket to the transmission housing mating surface as shown.

NOTE:
- Use liquid gasket (P/N 08718–0001).
- Remove the dirt and oil from the sealing surface.
- If 20 minutes have passed after applying liquid gasket, reapply it and assemble the housings, and allow it to cure at least 30 minutes after assembly before filling the transmission with oil.



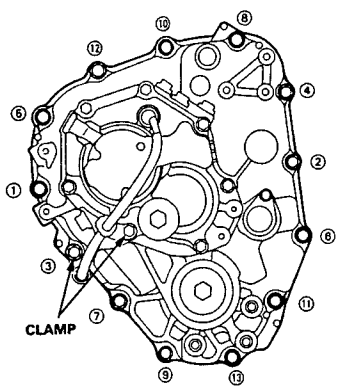
– 2. Install the steel balls, springs, washers, and sealing bolts.

Sealing Bolt Torque: 22 N·m (2.2 kg-m, 16 lb-ft)



– 3. Tighten the transmission housing attaching bolts in a crisscross pattern in several steps, as shown below.

Torque: 28 N·m (2.8 kg-m, 21lb-ft)

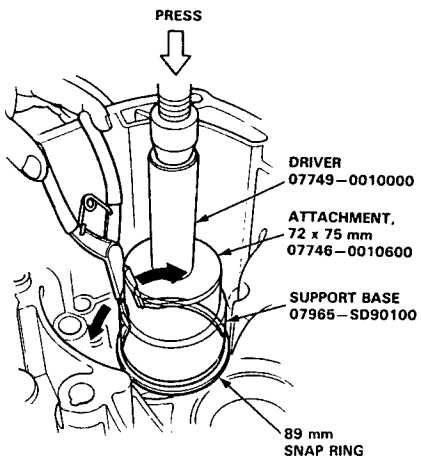


Transmission Housing

Bearing Installation

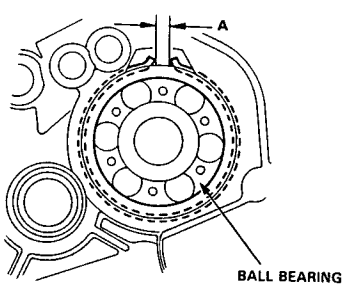
Mainshaft Side:

1. Expand the 89 mm snap ring, then press the ball bearing using the special tools and a press as shown.



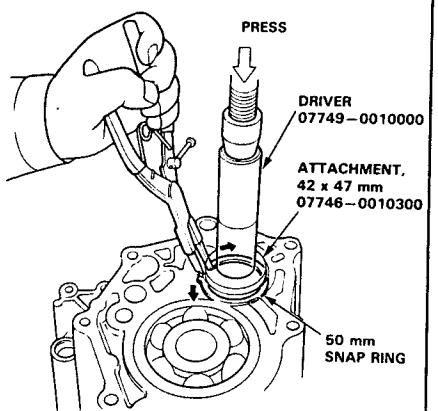
2. Check that the snap ring is securely seated in the groove of the ball bearing.

Dimension A as installed: 3.0–8.0 mm (0.12–0.32 in)



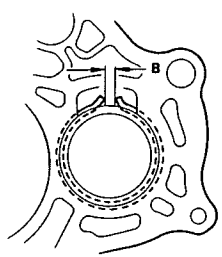
Countershaft Side:

1. Expand the 50 mm snap ring, then press the needle bearing outer race using the special tools and a press as shown.



2. Check that the snap ring is securely seated in the groove of the needle bearing outer race.

Dimension B as installed: 3.0–8.0 mm (0.12–0.32 in)



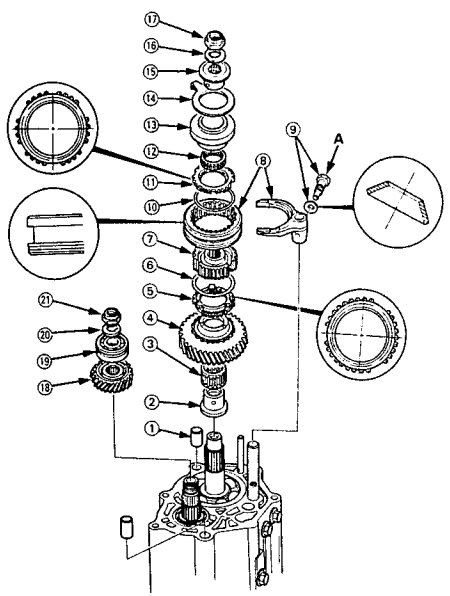
5th Gear

Installation

NOTE: Replace all locknuts.

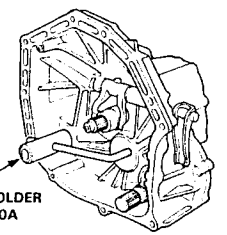
1. Reassemble the parts following the numbered sequence.

	Bolt Size	Torque Value	
A	8 x 1.0 mm	30 N·m (3.0 kg-m, 22lb-ft)	⑨



⑰ ㉑

–1. Install the special tool.

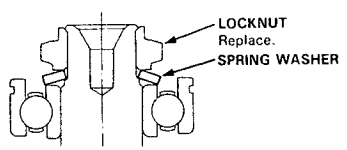


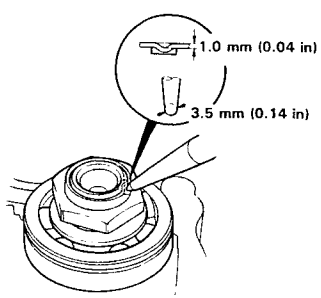
–2. Tighten the locknut, then stake the locknut tab into the groove.

NOTE: Mainshaft locknut has left-hand threads.

MAINSHAFT LOCKNUT
150 → 0 → 150 N·m
(15 → 0 → 15 kg-m, 108 → 0 → 108 lb-ft)

COUNTERSHAFT LOCKNUT
130 → 0 →130 N·m
(13 → 0 → 13 kg-m, 94 → 0 → 94 lb-ft)



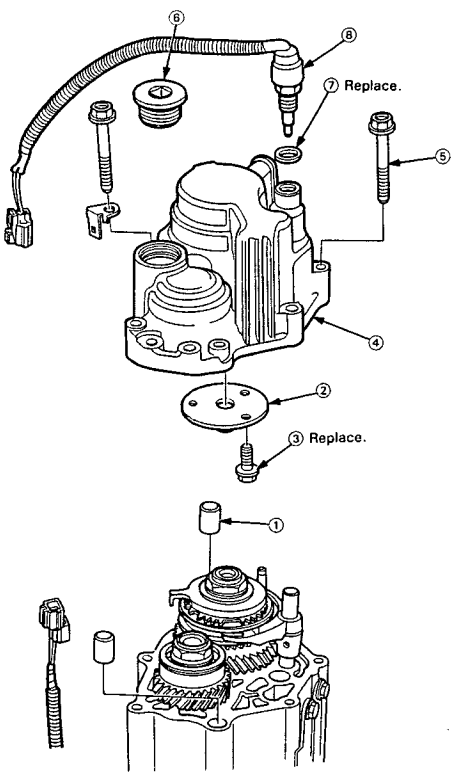


Transmission Cover

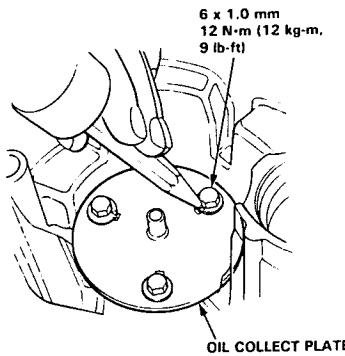
Installation

1. Reassemble the parts following the numbered sequence.

Bolt Size	Torque Value	
6 x 1.0 mm	12 N·m (1.2 kg-m, 9 lb-ft)	③
36 mm SEALING BOLT	25 N·m (2.5 kgm, 18 lb-ft)	⑥
8 x 1.25 mm	28 N·m (2.8 kg-m, 21 lb-ft)	⑤
BACK-UP LIGHT SWITCH	25 N·m (2.5 kg-m, 18 lb-ft)	⑧

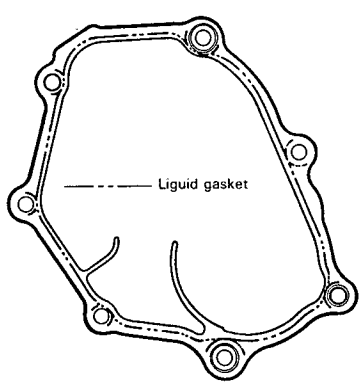


—1. Install the oil collect plate, then stake the bolt tab into the groove.

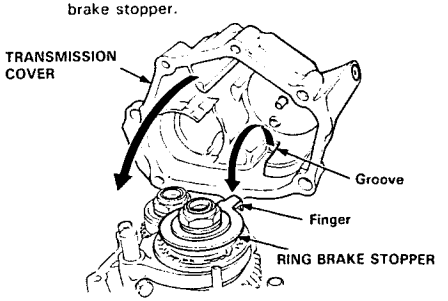


—2. Apply liquid gasket to the transmission cover mating surface as shown.

NOTE:
- Use liquid gasket (P/N 08718—0001).
- Remove the dirt and oil from the sealing surface.
- If 20 minutes have passed after applying liquid gasket, reapply it and assemble the housings, and allow it to cure at least 30 minutes after assembly before filling the transmission with oil.



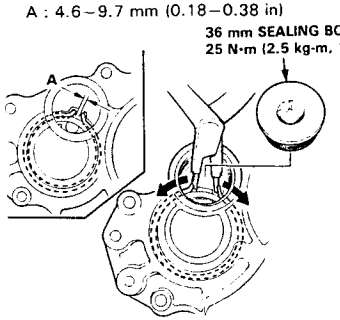
—3. Install the transmission cover by aligning the groove in the transmission cover with the fingre on the ring brake stopper.



—4. Lower the transmission housing with the snap ring pliers, and set the snap ring in the groove in the countershaft bearing.

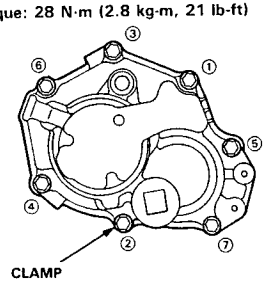
NOTE: Apply liquid gasket (P/N 08718—0001) to the threads of the 36 mm sealing bolt.

A : 4.6—9.7 mm (0.18—0.38 in)



—5. Tighten the transmission cover attaching bolts in a crisscross pattern in several steps, as shown below.

Torque: 28 N·m (2.8 kg-m, 21 lb-ft)



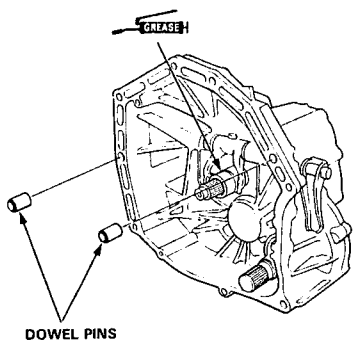
Transmission Assembly

Installation

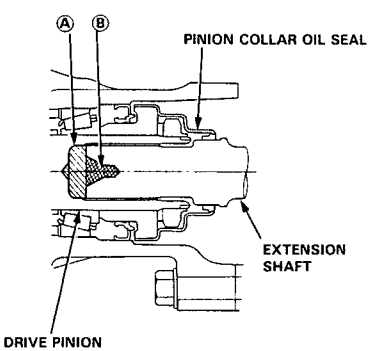
1. Fill the clutch release bearing, release fork, and release guide with Super High Temp Urea Grease (P/N 08798 – 9002) (see page 12-10, 11).

2. Fill the extension shaft with Super High Temp Urea Grease (P/N 08798 – 9002).

   NOTE:
   - Check that the two dowel pins are installed in the clutch housing.
   - If the clutch housing is replace, the 26 mm shim must be adjusted (see page 15-27).



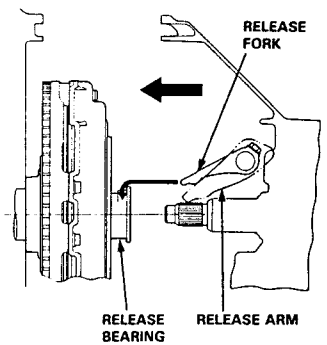
3. Fill the drive pinion with grease.
   If Pinion collar oil seal is replaced:
   A :19 – 20 g (0.67 – 0.71 oz)
   If pinion collar oil seal is not replaced:
   A : 3.5 – 4.5 g (0.12 – 0.16 oz)



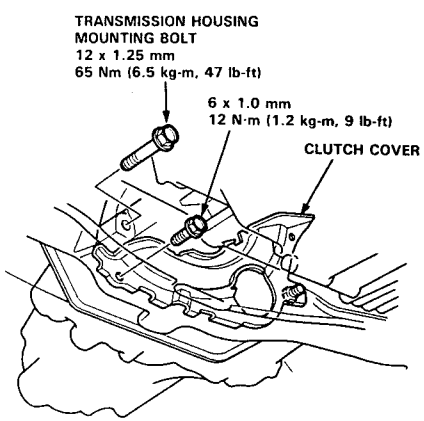
4. Place the transmission on the transmission jack, and raise it to the engine level.

5. Turn the release fork up, then, as you install the transmission, place the release fork in the groove of the release bearing by turing the release arm down.

   NOTE: Make sure the release fork engages the release bearing properly.

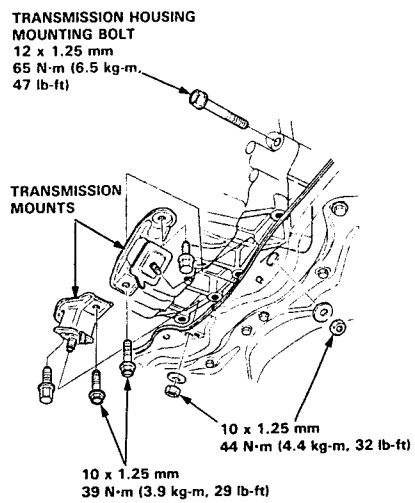


6. Install the transmission housing mounting bolt and the clutch cover.



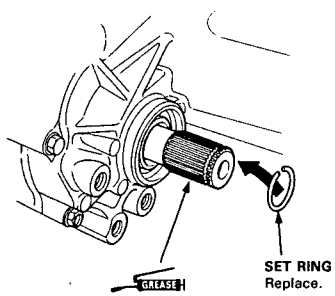
7. Install the transmission mounts.

8. Install the transmission housing mounting bolt.



9. Install the set ring, then install the extension shaft.

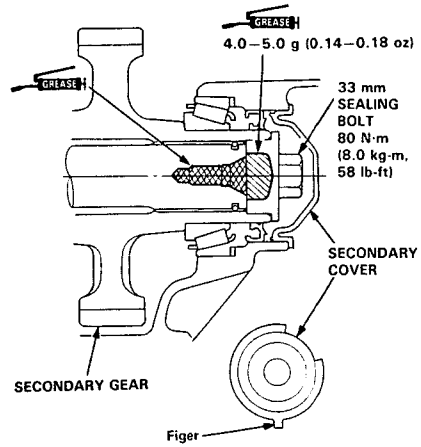
   NOTE: Apply Super High Temp Urea Grease (P/N 08798 – 9002) to the extension shaft spline.



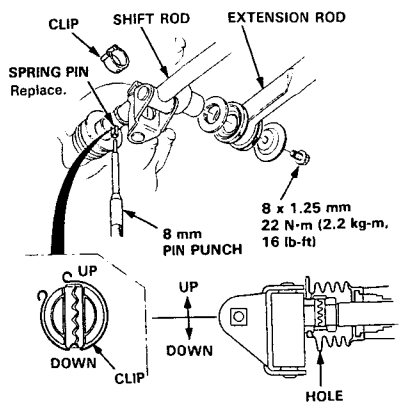
10. Fill the secondary gear and extension shaft with Super High Temp Urea Grease (P/N 08798 – 9002).

11. Install the 33 mm sealing bolt and secondary cover.

    NOTE:
    - Shift to low gear to lock the secondary gear.
    - Apply liquid gasket (P/N 08718 – 0001) to the threads.
    - Turn the secondary cover so the finger is facing down.



12. Install the shift rod and the extension rod.

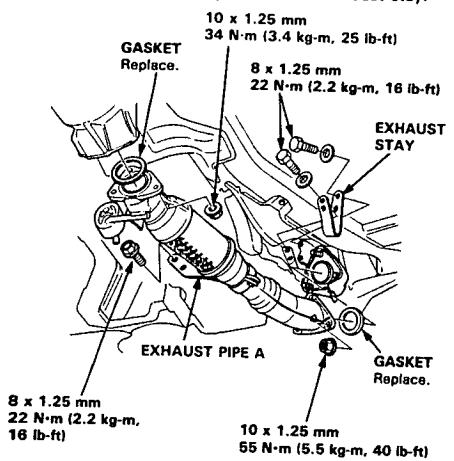


(cont'd)

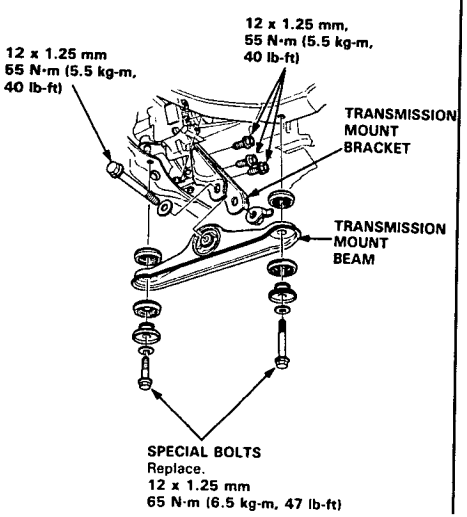
Transmission Assembly

Installation (cont'd)

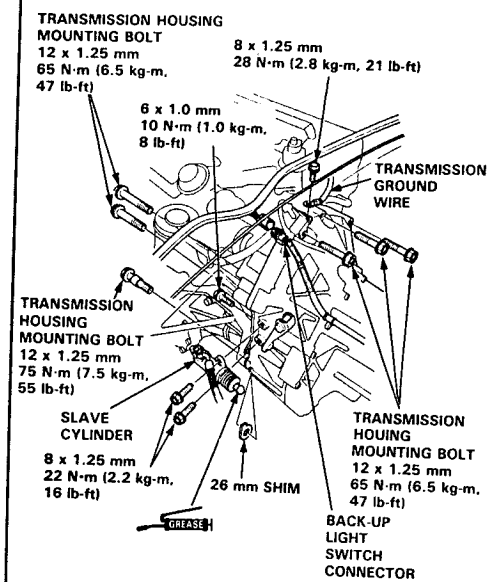
13. Install the exhaust pipe A and the exhaust stay.



14. Install the transmission mount bracket and the transmission mount beam.



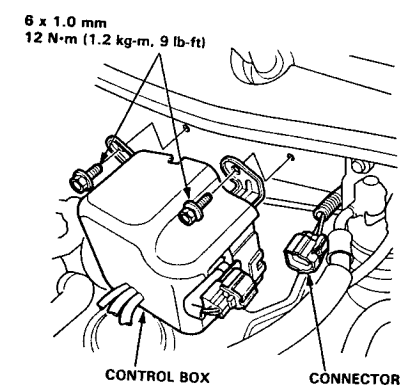
15. Install the 26 mm shim and the transmission housing munting bolts.



16. Install the slave cylinder.

17. Connect the back-up light switch connector and the transmission ground wire.

18. Install the control box.



19. Install the distributor (see section 23).

20. Install the heat shield (see section 5).

21. Install the ABS relay box (see section 5).

22. Install the battery base and battery (see section 5).

23. Refill the transmission with oil (see page 13-3).

24. Connect the battery positive (+) and negative (−) cables to the battery.

25. Check the clutch operation.

26. Shift the transmission and check for smooth operation.

27. Check the ignition timing (see section 23).

    Ignition Timing
    - All models: 15 ± 2° BTDC (RED) at 700 ± 50 rpm
      in neutral (M/T)
      in [N] or [P] (A/T)

28. After service, reconnect power to the radio and turn it on.
    When the word "CODE" is displayed, enter the customer's 5-digit code to restore radio operation.