

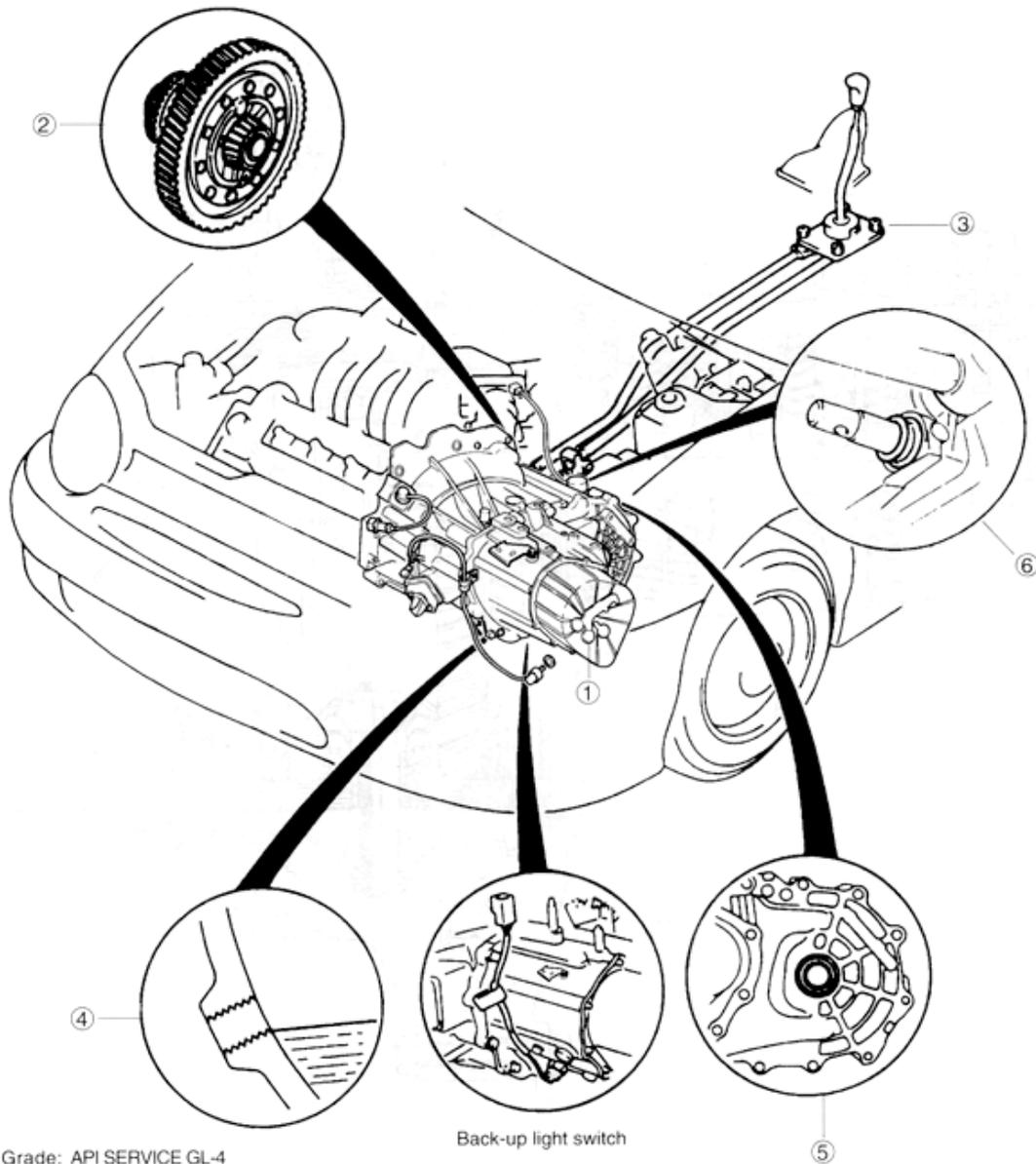


Manual Transaxle System

General Information



Structural view



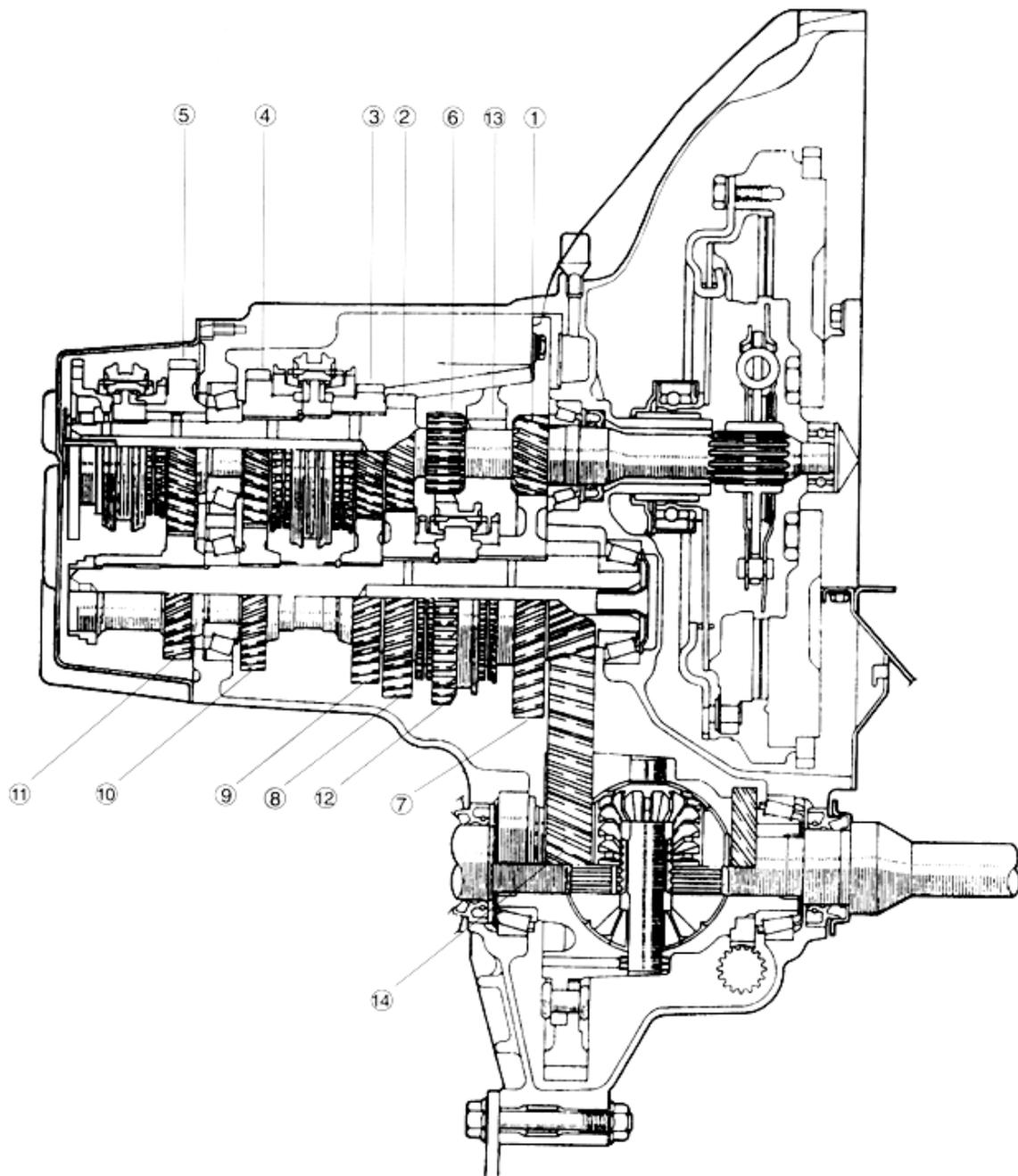
Grade: API SERVICE GL-4
 Viscosity: SAE 75W-90
 Capacity: 2.85 US qt (2.7 liters)

- (1) Transaxle
- (2) Differential
- (3) Shift mechanism

- (4) Transaxle oil
- (5) Oil seal (differential)
- (6) Oil seal (change rod assembly)

Component

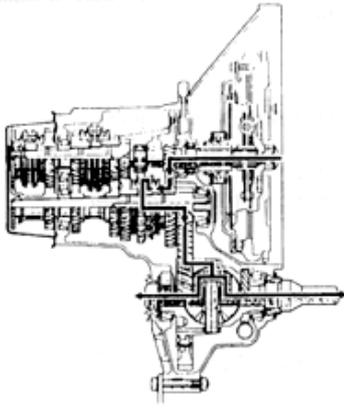
Cross-sectional view



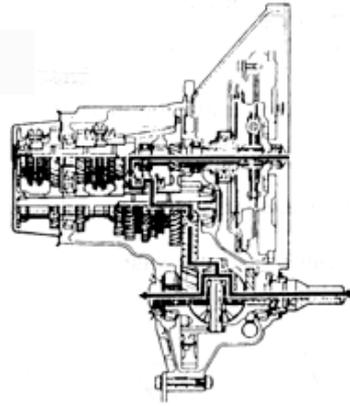
- | | |
|--------------------------|-----------------------------|
| (1) Primary 1st gear | (8) Secondary 2nd gear |
| (2) Primary 2nd gear | (9) Secondary 3rd gear |
| (3) Primary 3rd gear | (10) Secondary 4th gear |
| (4) Primary 4th gear | (11) Secondary 5th gear |
| (5) Primary 5th gear | (12) Secondary reverse gear |
| (6) Primary reverse gear | (13) Reverse idle gear |
| (7) Secondary 1st gear | (14) Differential |

Power flow

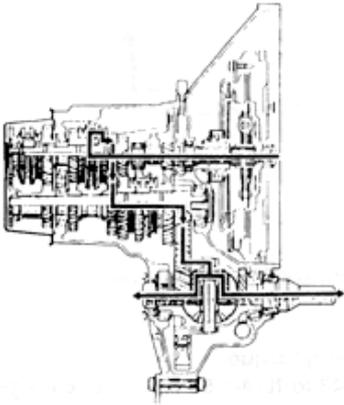
1ST



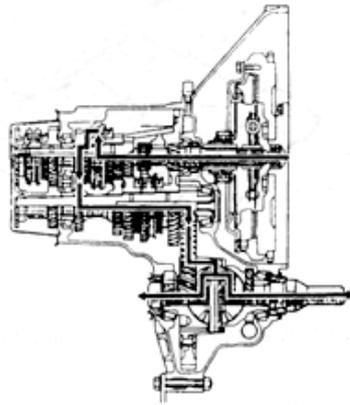
2ND



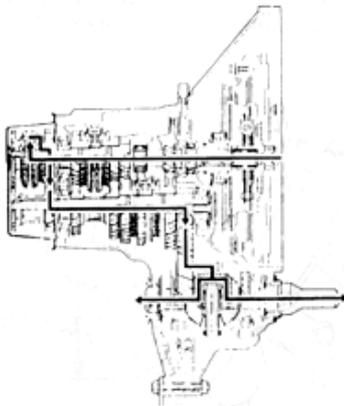
3RD



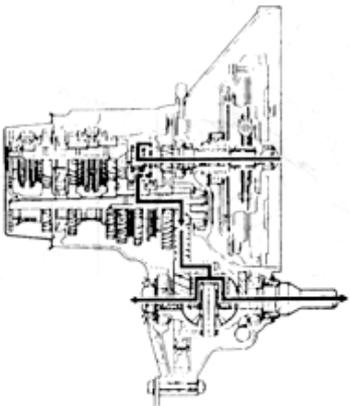
4TH



5TH



Reverse



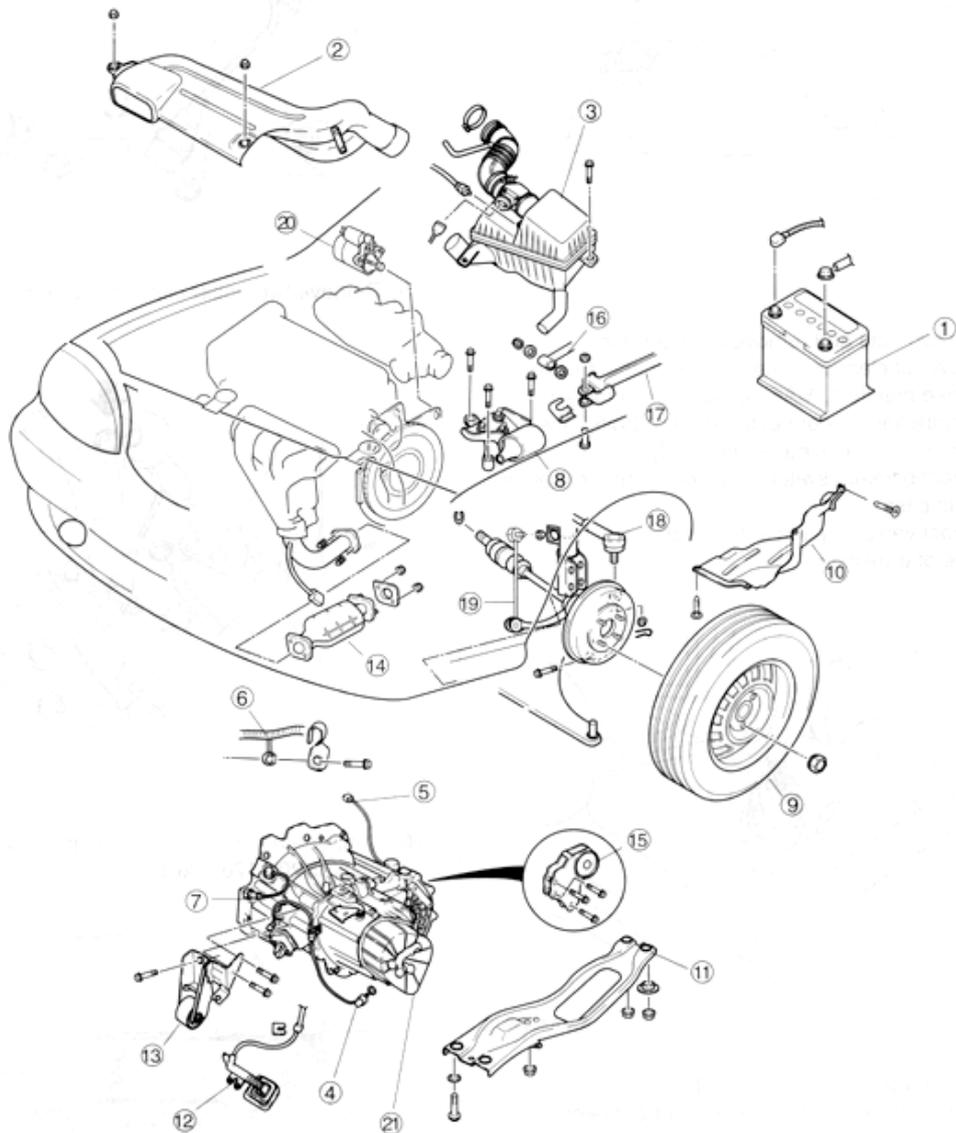


Manual Transaxle System

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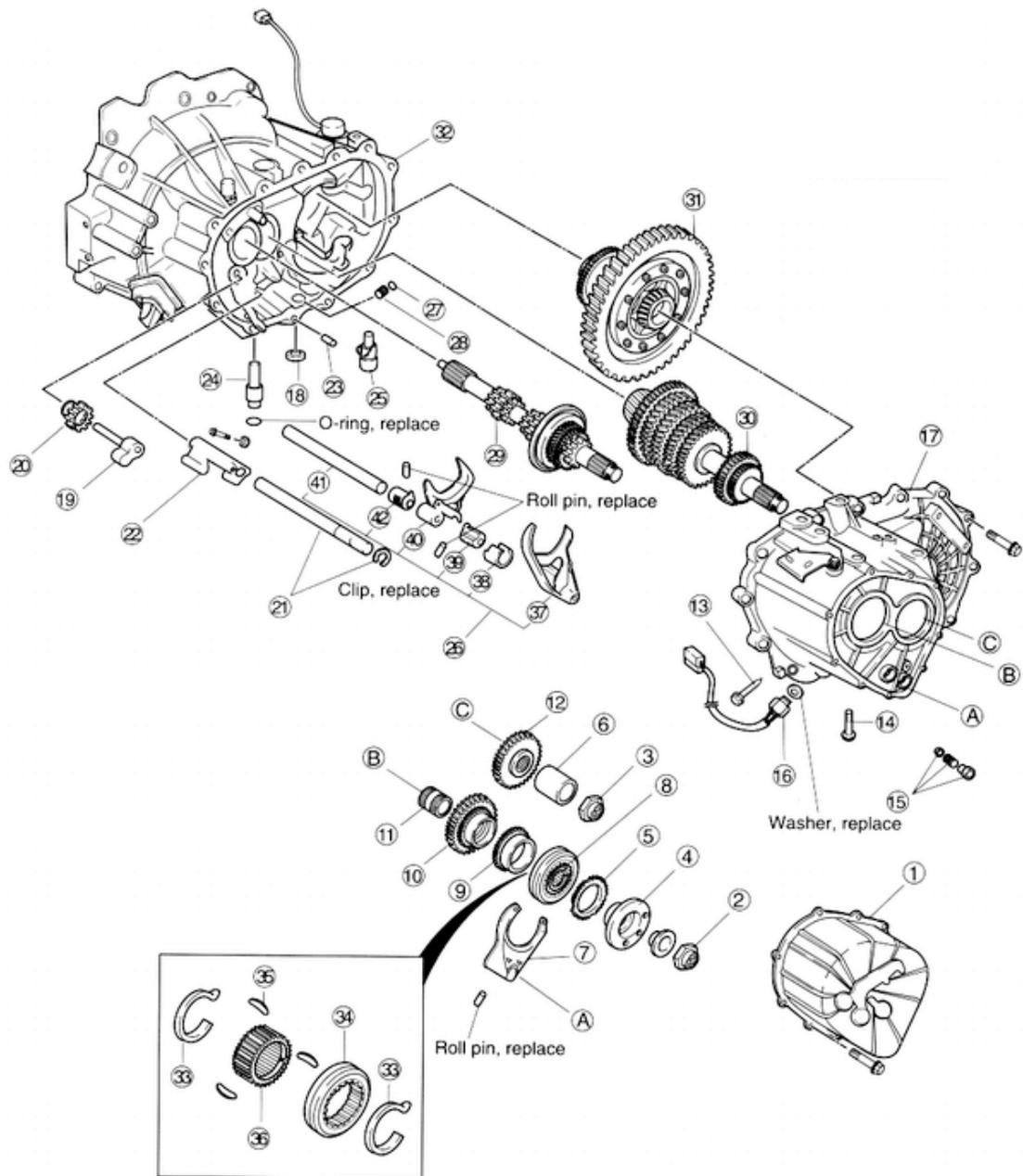


Component



- | | | | |
|------------------------------------|---------------------------------|------------------------------|------------------------------|
| (1) Battery | (6) Ground | (11) Engine mounting member | (16) Extension bar |
| (2) Fresh air duct | (7) Crank shaft position sensor | (12) Clutch release cylinder | (17) Change control rod |
| (3) Air cleaner assembly | (8) Engine mount No. 4 | (13) Engine mount No. 2 | (18) Tie-rod end |
| (4) Back-up switch connector | (9) Front wheel and tire | (14) Catalytic converter | (19) Stabilizer control link |
| (5) Vehicle speed sensor connector | (10) Splash shield | (15) Engine mount No. 1 | (20) Starter |
| | | | (21) Transaxle |

Component



- | | |
|-------------------------------------|--|
| (1) Rear cover | (22) 5th/reverse shift rod end |
| (2) Locknut (primary shaft) | (23) Pin |
| (3) Locknut (secondary shaft) | (24) Crank lever shaft |
| (4) Reverse synchronizer cone | (25) Crank lever assembly |
| (5) Reverse synchronizer ring | (26) Shift fork and shift rod assembly |
| (6) Spacer | (27) Detent ball |
| (7) 5th/reverse shift fork | (28) Spring |
| (8) 5th/reverse clutch hub assembly | (29) Primary shaft assembly |
| (9) 5th synchronizer ring | (30) Secondary shaft assembly |
| (10) Primary 5th gear | (31) Differential assembly |
| (11) 5th gear sleeve | (32) Clutch housing |
| (12) Secondary 5th gear | (33) Synchronizer key spring |
| (13) Lock bolt | (34) Clutch hub sleeve |
| (14) Interlock bolt | (35) Synchronizer key |
| (15) Lock bolt, ball and spring | (36) Clutch hub |
| (16) Back-up light switch | (37) 3rd/4th shift fork |
| (17) Transaxle case | (38) Interlock sleeve |
| (18) Magnet | (39) Control lever |
| (19) Reverse idle shaft | (40) 1st/2nd shift fork |

5th/Reverse gear and housing parts

1. Measure 5th gear thrust clearance, refer to Preinspection.
2. Disassemble in order shown in figure, refer to Disassembly note.
3. Assembly will be performed in reverse order of disassembly.

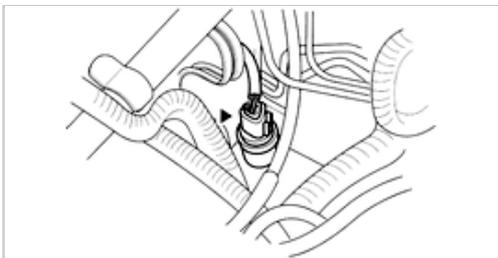


Removal

1. Disconnect negative battery cable(first) and positive battery cable (second).



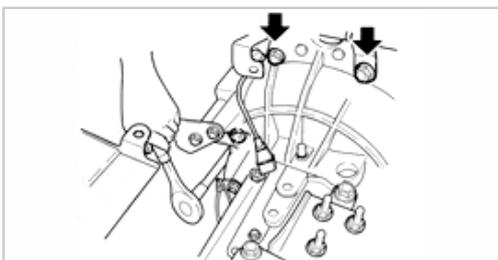
2. Remove two nuts and remove fresh air duct.
3. To remove air cleaner assembly, disconnect hose from intake manifold, MAF sensor connector, air temperature sensor connector and two bolts, one nut and then remove air cleaner assembly.
4. Disconnect back-up switch connector from connector bracket in case.
5. Disconnect vehicle speed sensor connector from right side of transaxle.



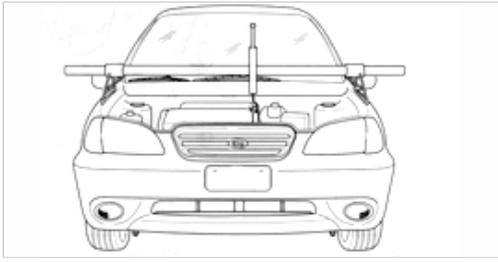
6. Disconnect ground strap (one bolt).
7. Disconnect crankshaft position sensor connector.
8. Remove two upper starter bolts.



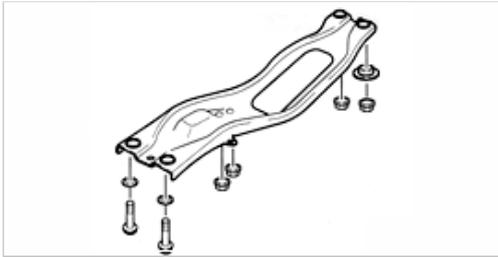
9. Remove two upper clutch housing bolts.



10. Support engine with engine support bar SST(0K201 170 AA0).



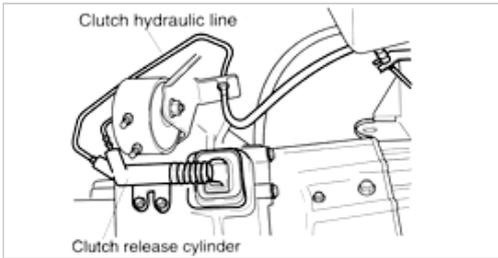
11. Remove No.4 engine mounting bolts (three to transaxle) and remove No.4 engine mount.
12. Loosen four lug nuts from both front wheels (LH, RH).
13. Raise and properly support vehicle.
14. Remove both front wheels.
15. Remove splash shield under the left side of vehicle. (three bolts and three fasteners).
16. Remove engine mounting member (two bolts, four nuts).



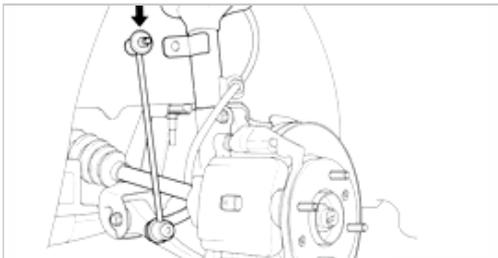
17. Place drain pan under transaxle drain plug.
18. Remove transaxle drain plug and drain transaxle oil.



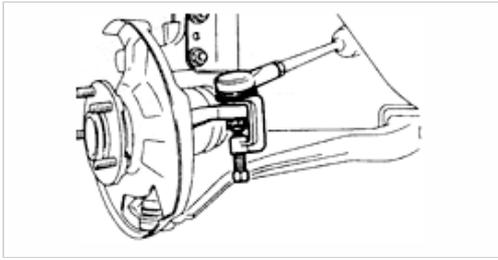
19. Disconnect retainer clip. set aside clutch hydraulic line and remove clutch release cylinder (two bolts).



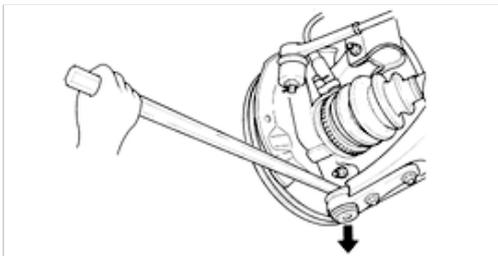
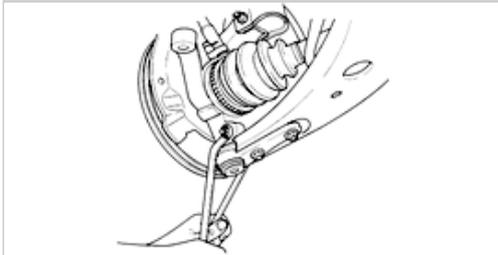
20. Remove the left stabilizer control link from bracket attached to shock absorber after loosening the control link nut.



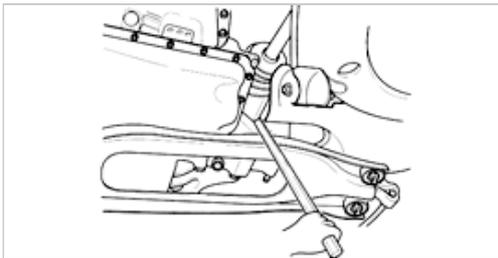
21. Remove left tie rod ends from steering knuckle by removing one cotter pin and one nut with SST(0K130 283 021).



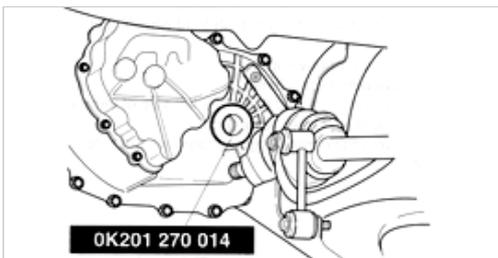
22. Remove pinch bolt and front left ball joints and disconnect ball joints from steering knuckles.



23. Gently pry left driveshaft from transaxle.



24. Slide driveshaft assembly out of transaxle and install SST (0K201 270 014).



25. Remove four No.2 engine mounting bolts and remove No.2 engine mount.

26. Remove four catalytic converter bolts (two front, two rear) and remove catalytic converter.

27. Remove three No.1 engine mount bracket bolts and loosen No.1 engine mount nut.

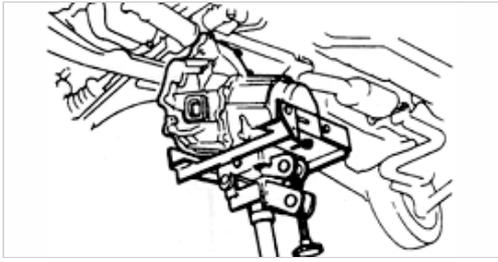
28. Disconnect extension bar (two washers, one nut).

29. Disconnect control rod (one nut, one bolt, one clip).

30. Remove one lower starter bolt and set aside starter.

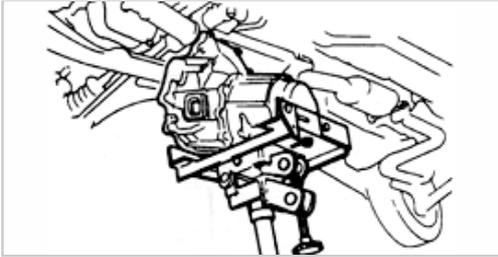
31. Remove four lower clutch housing bolts and support transaxle with jack or suitable floor jack and then remove remaining two bolts.

32. Gently separate transaxle assembly from engine and lower.

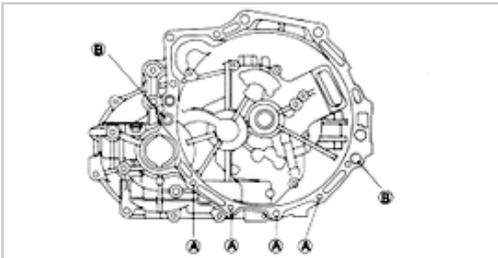


Installation

1. Raise and suitable support vehicle.
2. Set transaxle on jack or floorjack and position transaxle under vehicle.
3. Raise transaxle and align transaxle with engine.



4. Connect transaxle to engine using six mounting bolts through clutch housing.

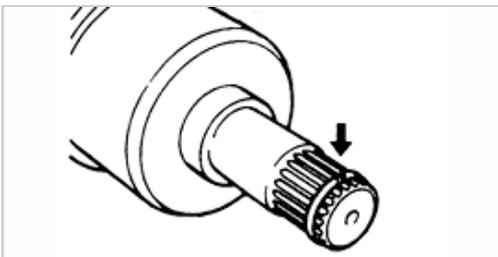


Tightening torque :

Ⓐ : 28~38 lb-ft (37~52 N·m, 3.8~5.3 kg-m)

Ⓑ : 66~86 lb-ft (89~116 N·m, 9.1 ~11.9 kg-m)

5. Remove floorjack from transaxle.
6. Remove SST(OK201 270 014).
7. Install starter using lower starter bolt.
8. Install new clip onto driveshaft.

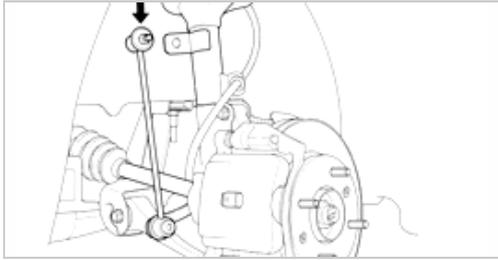


9. push left driveshaft into transaxle with opening of clip pointing upward.
10. install left lower ball joints into steering knuckle then install pinch bolt.

Tightening torque : 32~45 lb-ft (43~61 N·m, 4.4~6.2 kg-m)

11. Install left stabilizer control links to bracket attached to shock absorber.

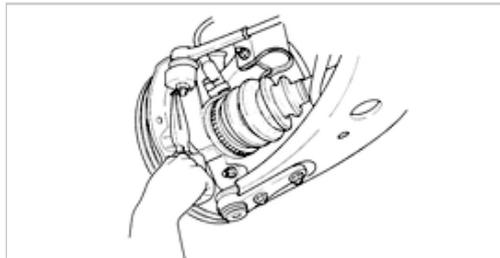
Tightening torque : 32~45 lb-ft (43~61 N·m, 4.4~6.2kg-m)



12. Install left tie rod end to steering knuckle then install tie rod end nuts.
-

Tightening torque : 22~33 lb-ft(30~44 N·m, 3.0~4.5 kg-m)

13. Insert cotter pins.



14. Connect control rod with one nut and two bolts.
15. Connect extension bar with two washers and one nut.
16. Install No.1 engine mount then install three mounting bolts.
-

Tightening torque : 49~69 lb-ft (67~93 N·m, 6.8~9.5kg-m)

17. Install catalytic converter and four bolts (two front, two rear).
-

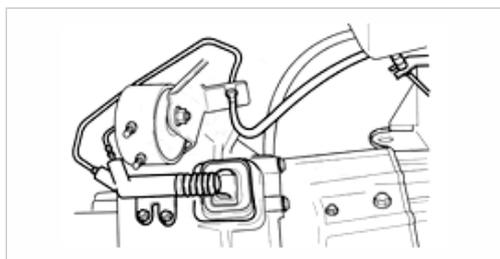
Tightening torque : Front : 27~38 lb-ft (37~52 N·m, 3.8~5.3 kg-m), Rear : 31~45 lb-ft(42~61 N·m, 4.3~6.2 kg-m)

18. Install No.2 engine mount, then install four mounting bolts.
-

Tightening torque : 28~38 lb-ft (38~51 N·m, 3.8~5.3 kg-m)

19. Install clutch release cylinder with two boots and attach hydraulic line to retainer clip.
-

Tightening torque : 13~19 lb-ft (18~26 N·m, 1.9~2.6kg-m)

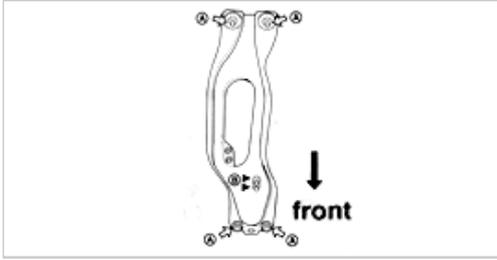


20. Install drain plug.
21. Install engine mounting member-to chassis bolts (two front) and nuts (two rear.)
-

Tightening torque : ⑧ : 48~65 lb-ft (64~89 N·m, 6.5~9.1kg-m)

22. Install two No.2 engine mount-to mounting member nuts.

Tightening torque : ⑤ : 23~38 lb-ft (38~51 N·m, 3.8~5.3kg-m)



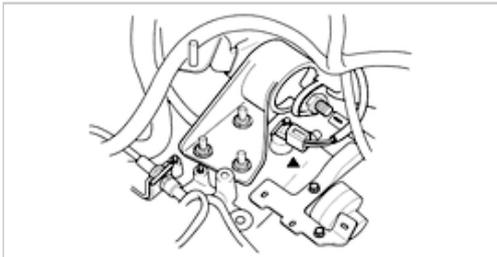
23. Install left splash shield (three bolts and three fasteners)

24. Install both ring and left wheels, then tighten both right and left lug nuts (four lug nuts each).

Tightening torque : 65~87 lb-ft(88~118 N·m, 9~12 kg-m)

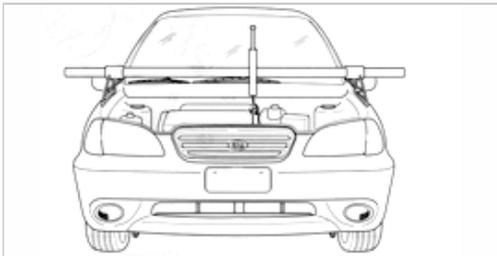
25. Install No.4 engine mount then install mounting nuts (three to transaxle).

Tightening torque : 49~68 lb-ft(68~93 N·m, 6.8~9.5kg-m)

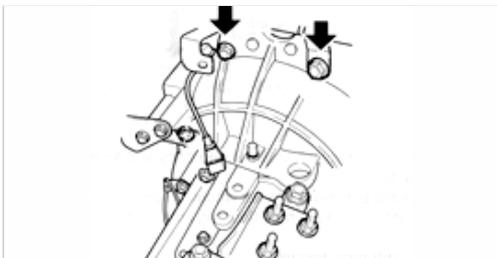


26. Lower vehicle.

27. Remove engine support bar SST(0K201 170 AA0).

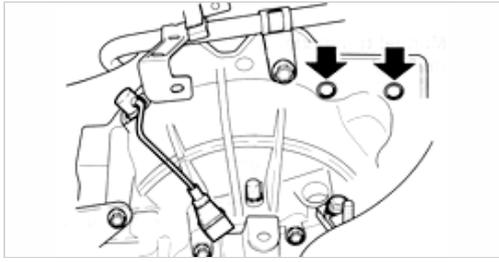


28. Install two upper clutch housing bolts.



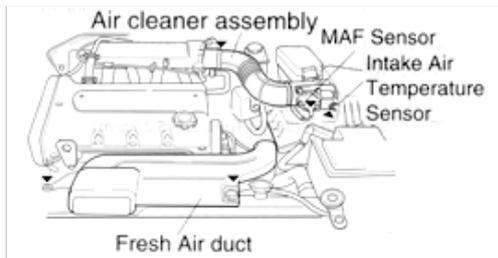
Tightening torque : 66-86 lb-ft(89-116 N·m, 9.1-11.9 kg-m)

29. Install two upper starter bolts.



Tightening torque : 27~38 lb-ft(37~52 N·m, 3.8~5.3kg-m)

30. Reconnect crankshaft position sensor connector.
31. Reconnect ground strap with one bolt.
32. Reconnect vehicle speed sensor connector.
33. Reconnect back-up switch connector.
34. Reinstall air cleaner assembly.
35. Reconnect air temperature sensor connector.
36. Reconnect MAF sensor connector.
37. Reinsert data link connector.
38. Reinstall fresh air duct with two nut.



39. Reconnect position (first) then negative (last) battery cables.
40. Add gear oil, refer to Oil inspection.
41. Test vehicle and check fluid levels.

Disassembly

CAUTION

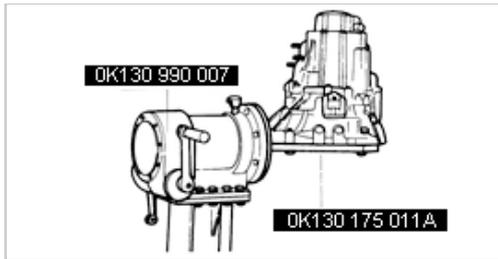
- 1) Clean transaxle exterior thoroughly with steam cleaner or cleaning solvent before disassembly.
- 2) Clean removed parts (except sealed bearings) and all sealing surfaces with cleaning solvent, and dry with compressed air.
- 3) Clean out all holes and passages with compressed air and verify that there are no obstructions.

WARNING

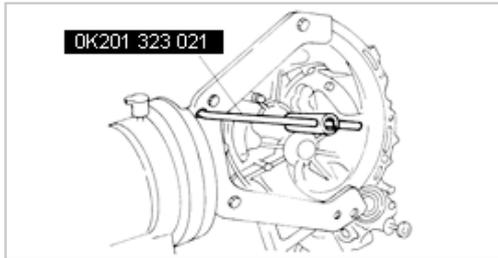
USING COMPRESSED AIR CAN CAUSE DIRT AND OTHER PARTICLES TO FLY OUT, CAUSING INJURY TO EYES. WEAR PROTECTIVE EYE WEAR WHENEVER USING COMPRESSED AIR.

Locknut

1. Mount transaxle on ST(Ok130 990 007).

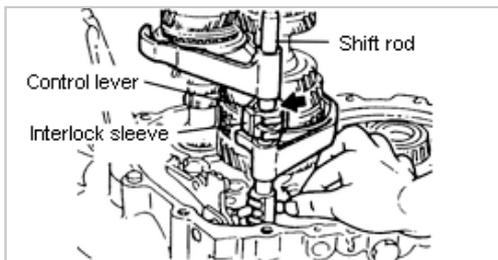


2. Lock primary shaft using SST(OK201 323 021).
3. Shift to 1st gear to lock rotation of secondary shaft.
4. Uncramp tabs of locknuts.
5. Remove locknuts from primary and secondary shafts.

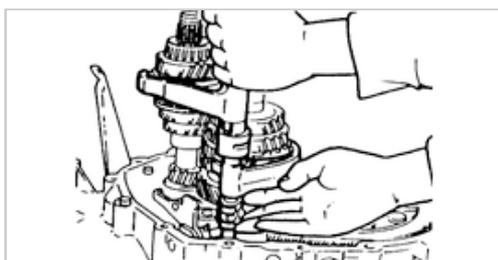


Shift fork and shift rod assembly

1. Align ends of interlock sleeve and control lever (arrow). Turn shift rod counterclockwise.
2. While holding 1st/2nd shift fork with one hand and 3rd/4th shift fork with other, raise them both at the same time and shift both clutch hub sleeves.



3. Lift shift rod end and remove detent ball and, at the same time, remove shift rod from clutch housing.
4. Separate shift rod and shift fork assemblies from both clutch hub sleeves.



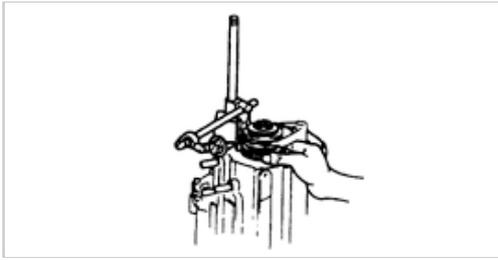
Preinspection

5th gear thrust clearance

1. Measure 5th gear thrust clearance by using dial indicator.

Clearance : 0.004~0.009 in (0.10~0.22 mm)
 Maximum : 0.011 in (0.27 mm)

2. If clearance exceeds maximum, check contact surfaces of 5th gear and clutch hub. Replace worn or damaged parts.



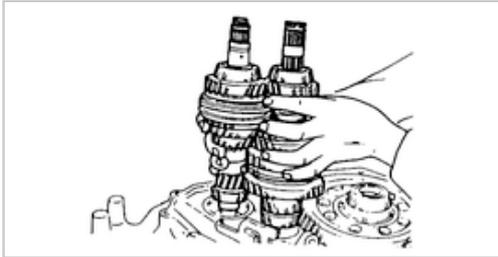
Assembly

5th/Reverse gear and housing parts

Assemble in order shown in figure, refer to Assembly note.

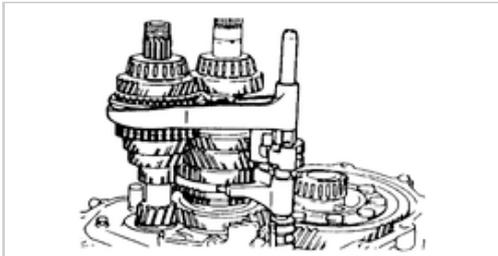
Primary shaft assembly and secondary shaft assembly

1. Install primary shaft assembly and secondary shaft assembly in to clutch housing as a unit.

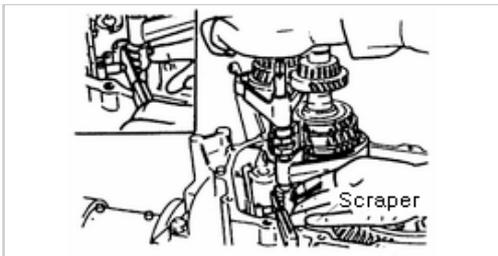


Shift fork and shift rod assembly

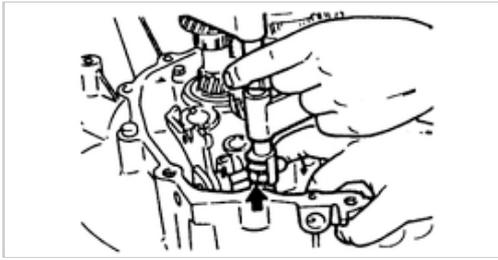
1. Shift to 2nd gear and position shift fork and shift rod assembly as shown.



2. Insert spring seat and spring into reverse lever shaft, install detent ball, and place flat gasket scraper against it.
3. With edge of control end against scraper, push control end in direction of arrow so that detent ball goes into shaft. This will line up rod with shift rod coupling hole in clutch housing.

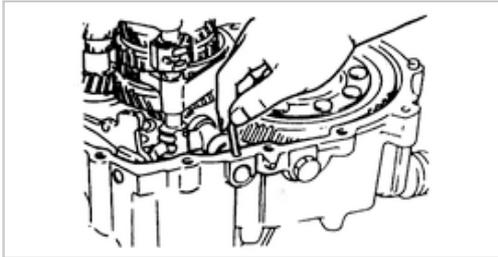


4. Set each clutch nub sleeve to neutral position, and tap shift rod from above so that detent ball goes into center groove (of three grooves in control end).
5. Pull ball part of control end forward so that detent ball goes into recess in center groove.



Crank lever assembly and crank lever shaft

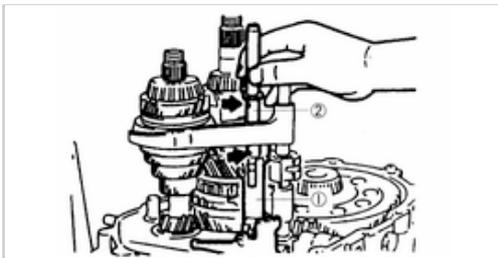
1. Install new O-ring to crank lever shaft.
2. Fit crank lever between change arm and control end, and insert crank lever shaft.
3. Align pin holes of crank lever shaft and clutch housing, and insert pin.



5th/reverse shift rod end and 5th/reverse shift rod

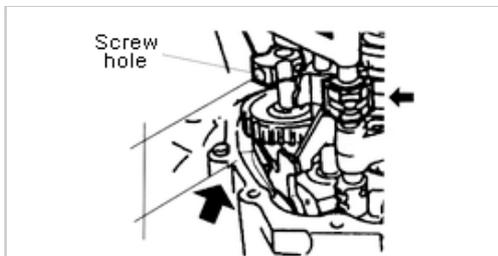
1. Install shift rod end (1) and shift rod (2), and tighten gate mounting bolt.

Tightening torque : 105~121 lb-in(11.8~13.7 N·m, 120~140kg-cm)



Reverse idle and reverse idle shaft

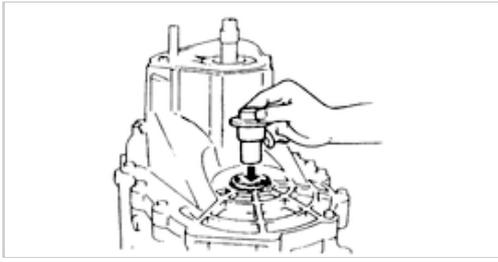
1. Install reverse idle gear and reverse idle shaft.
2. Attach magnet to clutch housing.
3. Align end of interlock sleeve with control lever(arrow), and face reverse idle shaft screw hole in direction shown in figure.



Transaxle case assembly

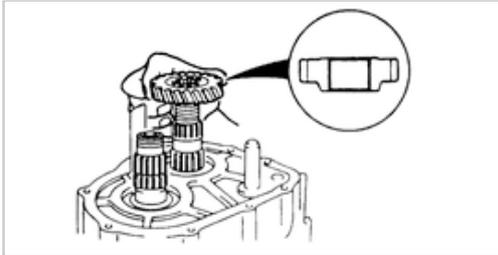
1. Apply thin coat of sealant to contact surfaces of clutch housing and transaxle case, and tighten transaxle case installation bolts to specified torque.

Tightening torque : 28~38 lb-ft (38~51 N·m, 3.8~5.3kg-m)



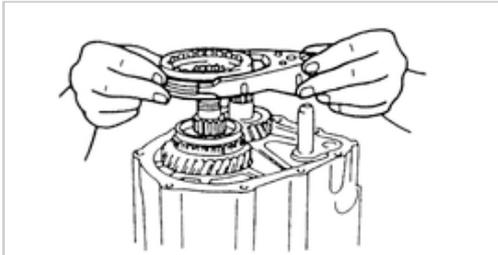
Secondary 5th gear

1. Install secondary 5th gear as shown.



5th/reverse clutch nub assembly and 5th/reverse shift fork

1. Install 5th/reverse clutch nub assembly and 5th/reverse shift fork together.

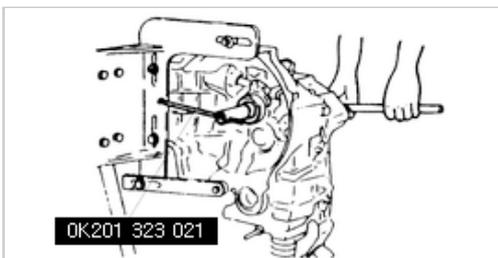


Locknut

1. Shift to 1st gear.
2. Lock primary shaft using SST(0K201 323 021).
3. Tightening new locknuts onto primary and secondary shafts.

Tightening torque : 94~145 lb-ft (128~196 N·m, 13~20 kg-m)

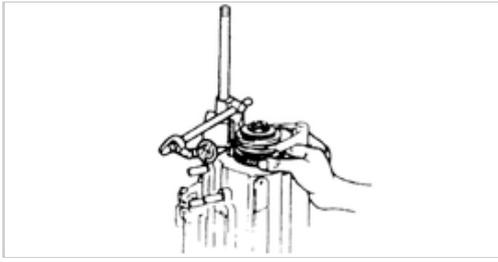
4. Stake locknuts.



5. Measure the 5th gear thrust clearance using a dial indicator.

Clearance : 0.004~0.009 in (0.10~0.22 mm)
Maximum : 0.011 in (0.27 mm)

6. If not as specified, disassemble and reassemble 5th and reverse gear assemblies.

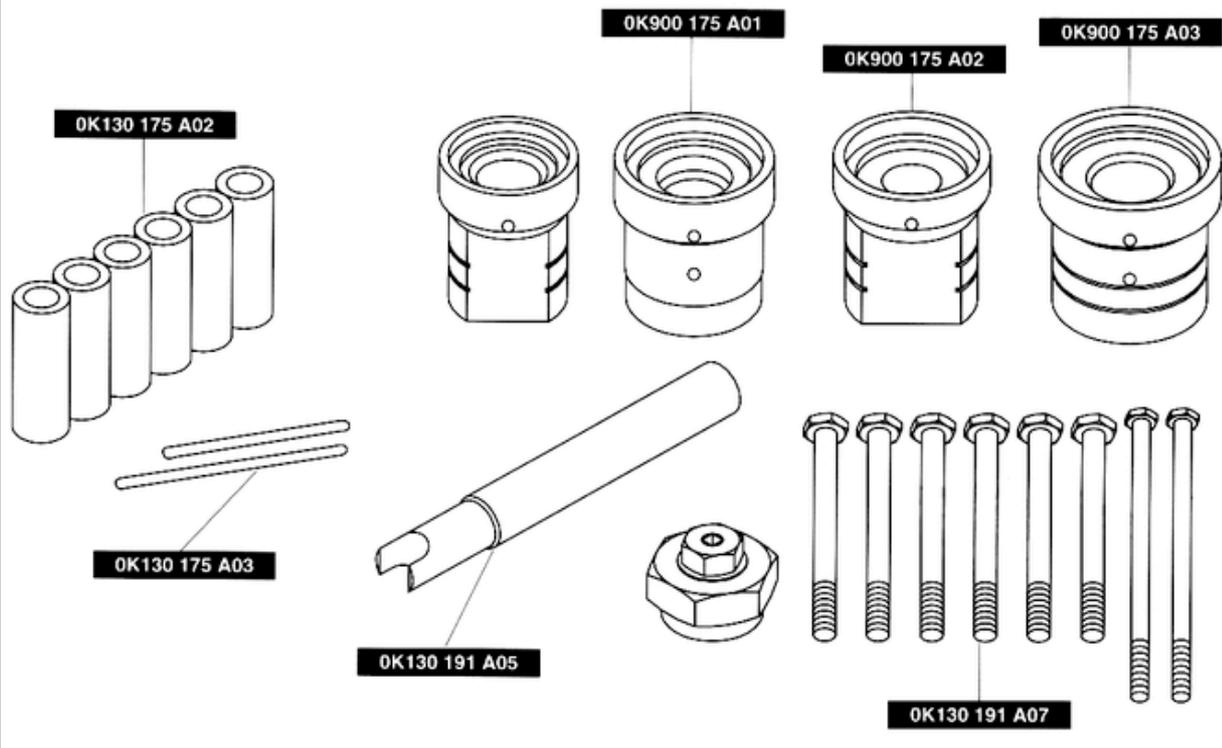


Bearing preload adjustment

When replacing any of parts listed in table below, adjust bearing preload by selection and installing proper adjustment shim(s).

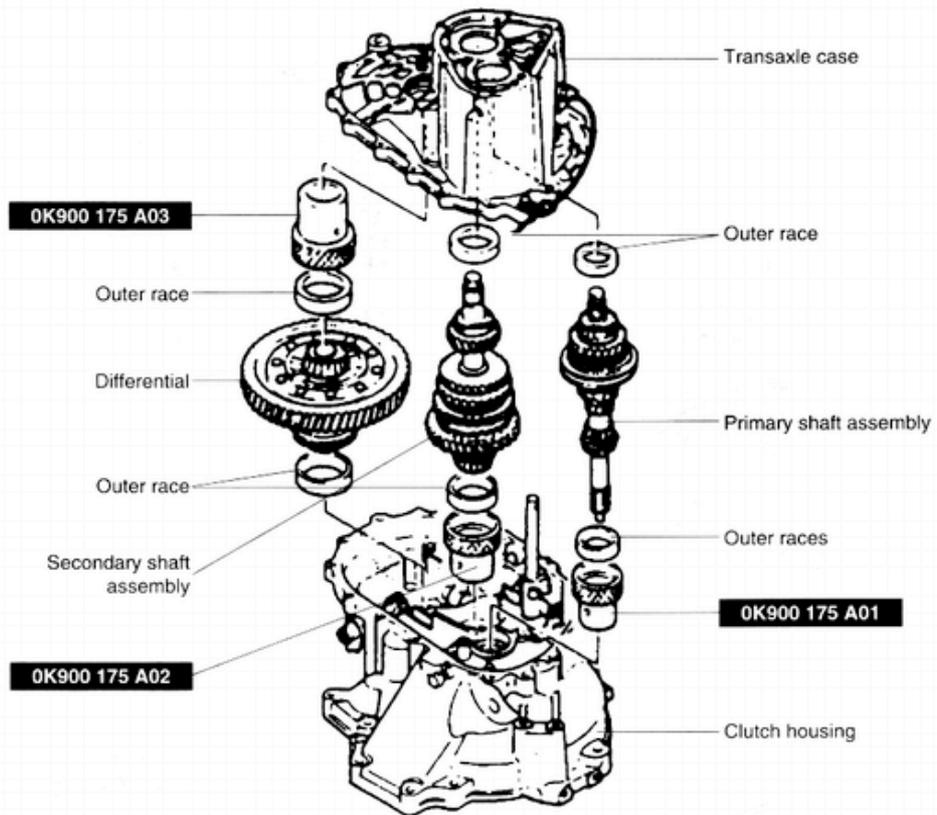
Primary shaft assembly	Secondary shaft assembly	Differential
<ul style="list-style-type: none"> · Transaxle case · Clutch housing · Primary shaft gear bearing · Primary shaft gear 	<ul style="list-style-type: none"> · Transaxle case · Clutch housing · Secondary shaft gear bearing · Secondary shaft gear · Secondary 4th gear 	<ul style="list-style-type: none"> · Transaxle case · Clutch housing · Differential side bearing · Ring gear and gear case assembly

SST (0K900 175 AA0)

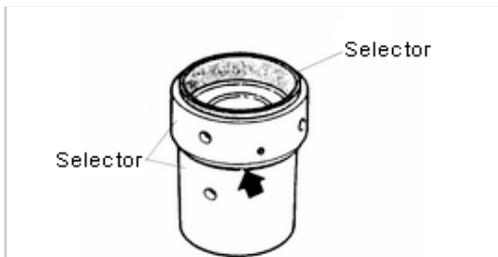


SST usage

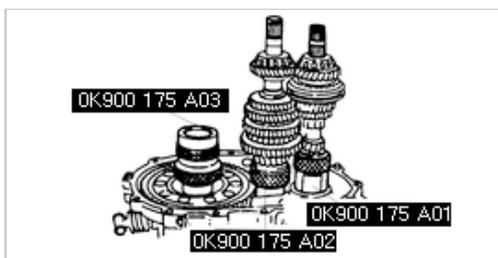
SST Usage



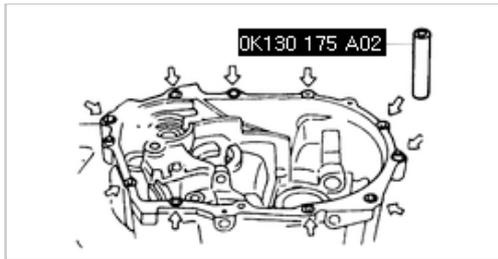
1. Install primary and secondary shaft bearing races into transaxle case (diaphragm springs and shims removed)
2. Mount clutch housing onto transaxle hanger, and set differential bearing race into clutch housing. Position piece of pipe against bearing race and tap it in until it contacts clutch housing.
3. Set bearing races into SST(OK900 175 A01/OK900 175 A02/OK900 175 A03) as shown in figure.
4. Turn selector to eliminate gap indicated by arrow.



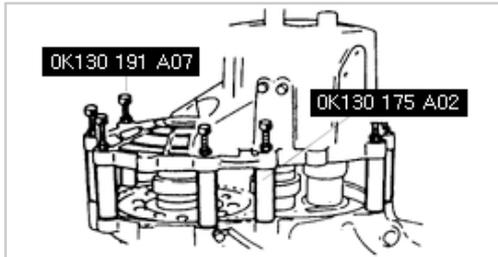
5. Set differential assembly into clutch housing, and set bearing race and SST(OK900 175 A03) on differential. Set assembled selectors for primary and secondary shaft in clutch housing. Mount shaft gear assemblies as shown in figure.



6. Set SST(OK130 175 A02) in positions shown in figure.

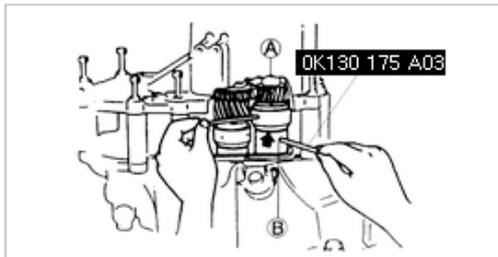


7. Install transaxle case and tighten SST(OK130 191 A07) to specified torque.



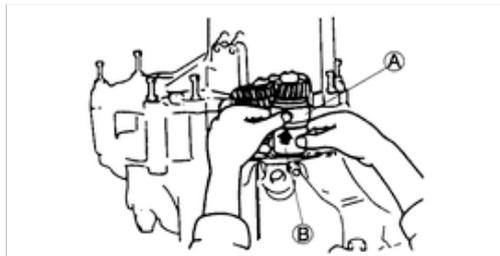
Tightening torque : 28~38 lb-ft(38~51 N·m, 3.8~5.3 kg-m)

8. To seat bearings, mount SST(OK130 175 A03) on parts (A) and (B) of selectors, and turn selectors so gaps are widened. Then turn SST(OK130 175 A03) in reverse direction until gaps are eliminated.



9. Manually expand selector until it no longer turns by hand.

10. Verify that both primary and secondary shafts turn smoothly.



11. Measure clearance between two halves of SST(OK900 175 A01) around circumference by using feeler gauge.

12. Take maximum reading and determine shim to be used. Use no more than two shims.



Primary shaft adjustment shim

- Subtract diaphragm spring thickness (0.026 in {0.65 mm}) from gap determined in STE 11 for primary shaft.
- Make shim selection range by subtracting standard clearance parameters from result in previous step.
- Select thinner shim within range to obtain standard clearance.

Standard clearance : 0~0.002 in (0~0.05 mm)

Example : 0.048 in (1.22 mm) - 0.026 in (0.065 mm) = 0.022 in (0.57 mm)

Shim selection range : (0.022 in (0.57 mm) - 0.002 in (0.05 mm)) ~ (0.022 in (0.57 mm) - 0 mm (0 in)) = 0.020 in (0.52 mm) ~ 0.022 in (0.57 mm)

Shim : 0.022 in (0.55 mm)

Thickness (Shaft gears)	in(mm)
0.008 (0.20)	
0.010 (0.25)	0.020 (0.50)
0.012 (0.30)	0.022 (0.55)
0.014 (0.35)	0.024 (0.60)
0.016 (0.40)	0.026 (0.65)
0.018 (0.45)	0.028 (0.70)

Secondary shaft adjustment shim

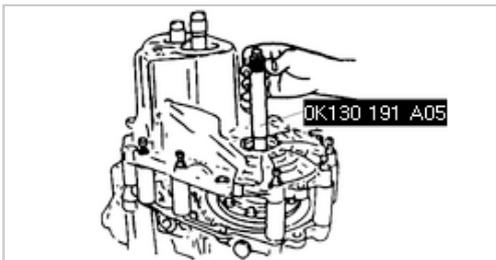
- Make shim selection range by adding standard clearance parameters to result in previous step.
 - Select thinner shim within range to obtain standard clearance.
-

Tightening amount : 0.001~0.003 in (0.03~0.08 mm)

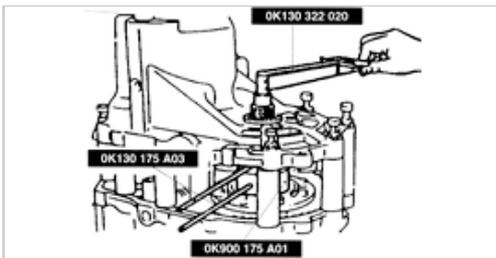
Shim selection range : (0.022 in (0.57 mm) + 0.001 in (0.03 mm)) ~ (0.022 in (0.57 mm) + 0.003 in (0.08 mm)) = 0.024 in (0.60 mm) ~ 0.026 in (0.65mm)

Shim : 0.024 in (0.60 mm)

1. Install SST (OK130 191 A05) to differential.

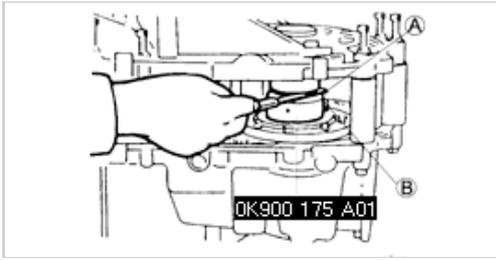


2. Turn SST (OK130 322 020) with torque wrench. Adjust SST (OK130 175 A03) until specified preload is obtained.



Preload : 12.15 ~ 17.36 lb-in (1.37 ~1.96 N·m, 14~20 kg-cm)

3. Measure gap between ㊸ and ㊹ around circumference of SST(OK900 175 A01) by using feeler gauge.
4. Add 0.006 in (0.15 mm) to measured clearance and select combination of two shims closest in value to thatn measurement, use no more than two shims.



Example : 0.013 in (0.32 mm)

0.013 in (0.32 mm) + 0.006 in (0.15 mm) + 0.019 in (0.47 mm).

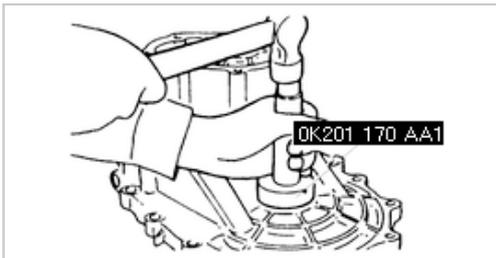
Nearest shim (on thick side) to 0.019 in (0.47 mm) is 0.020 in (0.50 mm).

5. Remove transaxle case and SST(OK900 175 AA0)
6. Remove selectors, primary shaft assembly and the differential.
7. Remove bearing races.

Oil seal (differential)

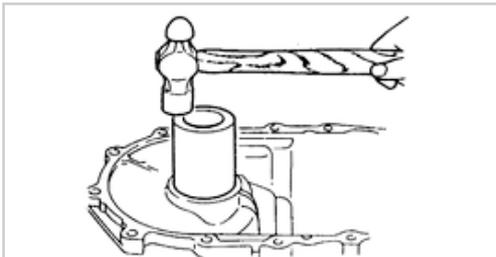
1. Using SST (OK201 170 AA1) and hammer, tap new oil seal in evenly until ST(OK201 170 AA1) contacts transaxle case.
2. Coat lip of oil seal with transaxle oil

Thickness	in(mm)
0.004(0.10)	0.004(0.10)
0.008(0.20)	0.008(0.20)
0.010(0.25)	0.010(0.25)
0.012(0.30)	0.012(0.30)
0.014(0.35)	0.014(0.35)
0.016(0.40)	0.016(0.40)
0.018(0.45)	0.018(0.45)
0.020(0.50)	0.020(0.50)
0.022(0.55)	0.022(0.55)
0.024(0.60)	0.024(0.60)
0.026(0.65)	0.026(0.65)



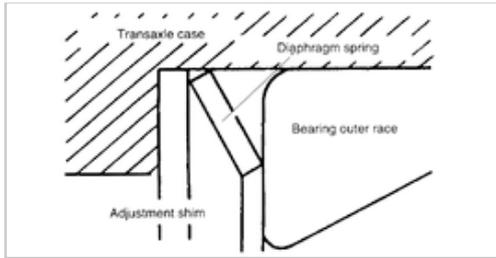
Bearing race (differential)

1. Install adjustment shim(s) to differential case.
2. Apply transaxle oil to bearing race, and install it to differential case by using pipe.



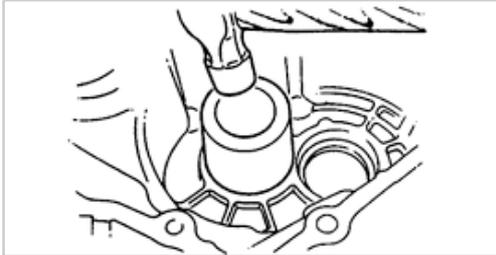
Diaphragm spring on primary shaft

1. Install diaphragm spring as shown in figure.



Bearing race (transaxle case)

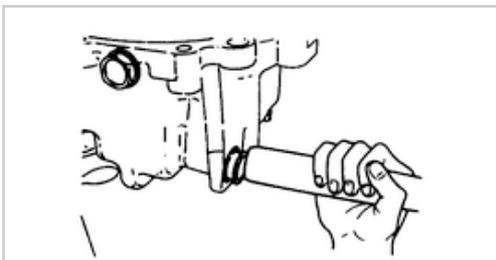
1. Install adjustment shim(s) to primary and secondary shaft bearing seats in transaxle case.
2. Apply transaxle oil to each bearing race, and install them to transaxle case by using pipe.



Oil seal(change rod assembly)

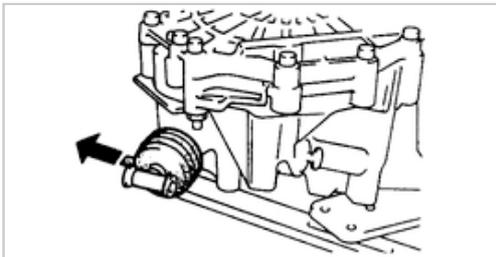
1. Install new oil seal by using pipe.
2. Coat lip of oil seal with transaxle oil.

Outer diameter of pipe : 1.02 in (26.0 mm)



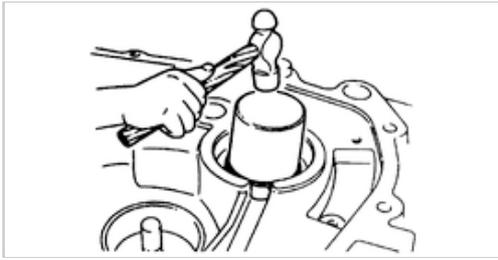
Boot

1. Install boot so that drain hole is facing downward when mounted on vehicle.



Oil seal (primary shaft)

1. Apply transaxle oil to outer circumference of oil seal, and install it to transaxle case by using pipe.



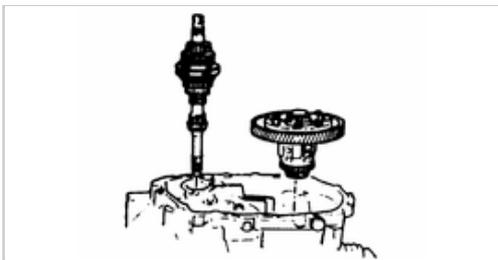
Bearing preload

Verify shaft gears and differential bearing preloads.

Readjust bearing preloads if they are not within specification.

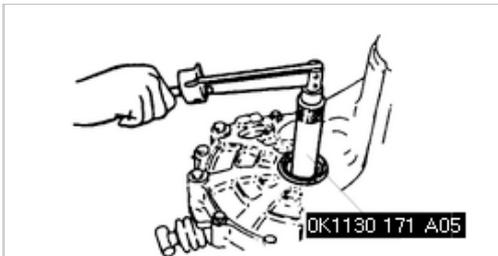
1. Set primary shaft gear assembly and differential into clutch housing.
2. Install transaxle case, and tighten to specified torque.

Tightening torque : 28~38 lb-ft (38~51 N·m, 3.8~5.3 kg-m)



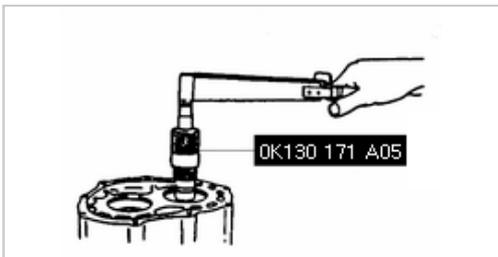
3. Install SST(0K130 171 A05) to differential.
4. Connect torque wrench to SST(0I130 171 A05) and measure preload.

Preload : 13~17 lb-in (1.4~1.9 N·m, 14~20 kg-cm)



5. Remove SST(0K130 171 A05).
6. With transaxle facing in direction shown in figure, install SST(0K130 171 A05) to primary shaft gear assembly.
7. Connect torque wrench to SST(0K130 171 A05) and measure preload.

Preload : 0.9~2.0 lb-in (0.1~0.2 N·m, 1.0~2.5 kg-cm)

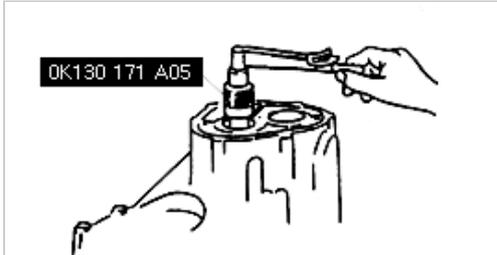


8. Remove SST (0K130 171 A05), transaxle case, primary shaft gear assembly and differential.
 9. Install secondary shaft gear assembly and transaxle case, and tighten to specified torque.
-

Tightening torque : 28~38 lb-ft (38~51 N·m, 3.8~5.3kg-m)

10. Install SST(0K130 171 A05) to secondary shaft gear assembly.
 11. Connect torque wrench to SST(0K130 171 A5) and measure preload.
-

Preload : 1.8~3.4 lb-in (0.2~0.4 N·m, 2.0~4.0 kg-cm)



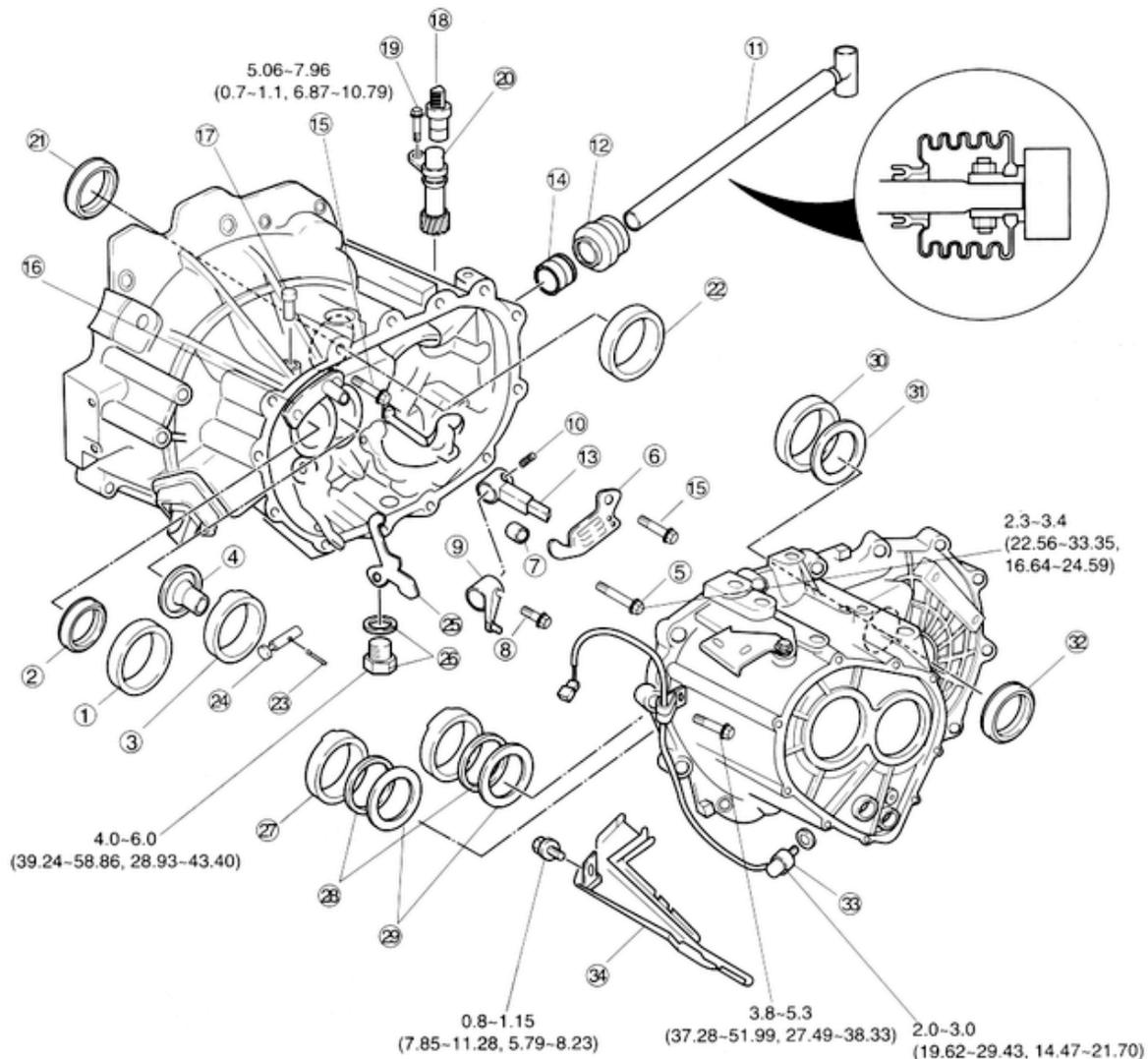


Manual Transaxle System

Manual Transaxle Case



Component



Apply the specified oil to the parts

kg-m(N•m, lb-ft)

- (1) Bearing outer race
- (2) Oil seal
- (3) Bearing outer race
- (4) Funnel
- (5) Bolt
- (6) Guide plate
- (7) Pipe
- (8) Bolt
- (9) Change arm
- (10) Roll pin
- (11) Change rod
- (12) Boot
- (13) Selector
- (14) Oil seal
- (15) Bolt
- (16) Vent cover
- (17) Vent

- (18) Vehicle speed sensor
- (19) Bolt
- (20) Speedometer driven gear
- (21) Oil seal
- (22) Bearing outer race
- (23) Roll pin
- (24) Reverse lever shaft
- (25) Reverse lever
- (26) Drain plug and washer
- (27) Bearing outer race
- (28) Diaphragm spring
- (29) Adjustment shims
- (30) Bearing outer race
- (31) Adjustment shim
- (32) Oil seal
- (33) Back-up light switch
- (34) Oil passage



Disassembly

CLUTCH housing and transaxle case

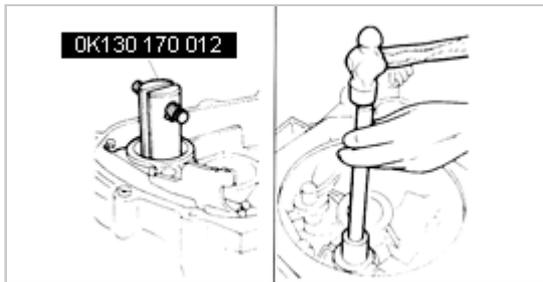
CAUTION

Do not remove an oil seal if not necessary.

1. Disassemble in order on figure, refer to Disassembly note.
2. Assembly will be in reverse order of disassembly.

Bearing outer race(primary shaft side)

1. Remove bearing outer race by using SST(OK130 170 012).



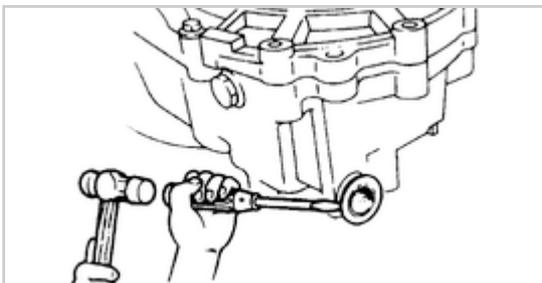
Reverse lever shaft

1. Remove roll pin using pliers.
2. Protect reverse lever shaft with rag and remove shaft with pliers.



Oil seal (Change rod)

1. Remove oil seal with screwdriver.



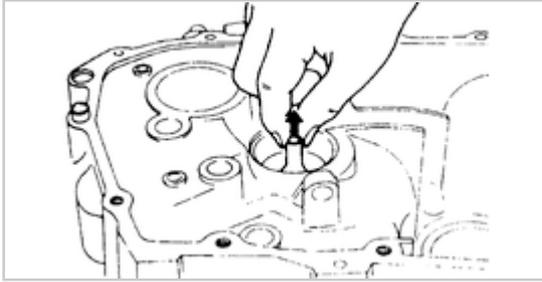
Funnel and bearing outer race(Secondary shaft)

1. Remove bearing outer race by lifting out funnel and race together.

NOTICE

Remove bearing outer race with screwdriver if necessary.

- Insert screwdriver between clutch housing and bearing outer race.
- Pry bearing outer race free.

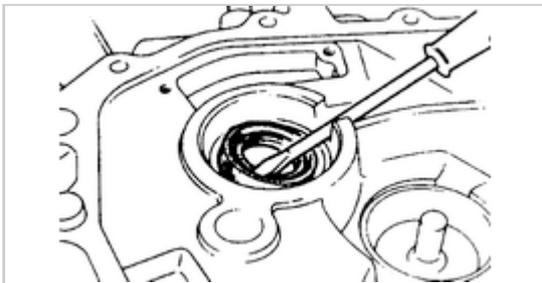


Oil seal(Primary shaft)

CAUTION

Do not damage clutch housing.

1. Remove oil seal with screwdriver.



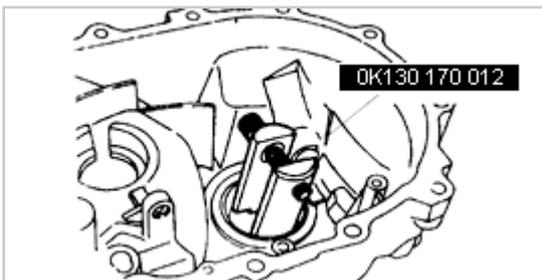
Oil seal (Differential)

1. Remove oil seal with screwdriver.



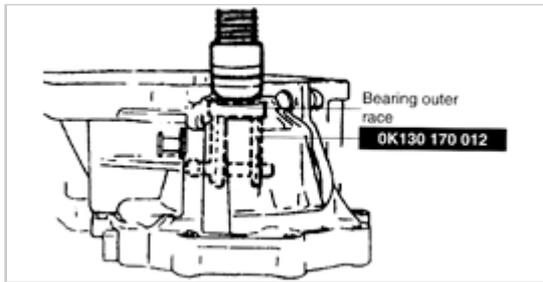
Bearing outer race (Differential)

1. Install SST(OK130 170 012) to bearing outer race.
2. Remove bearing outer race.



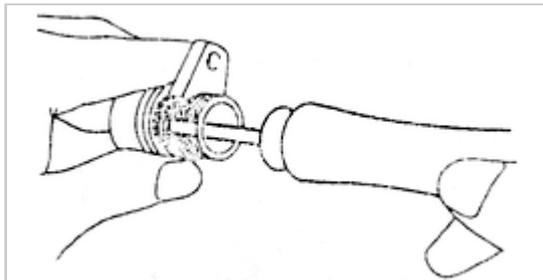
Bearing outer race and adjust shim(Differential)

1. Install SST(0K130 170 012) to bearing outer race.
2. Remove bearing outer race and adjust shim.



Oil seal(Speedometer gear case)

1. Remove oil seal.



Transaxle case oil seal (Differential side)

1. Assemble oil seal using SST (0K201 170 AA1).





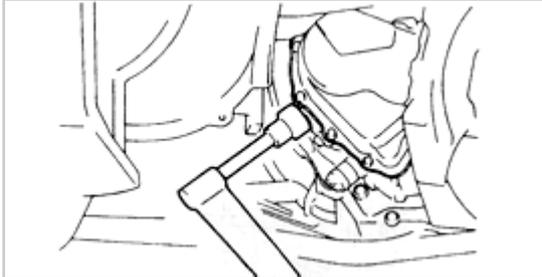
Oil inspection

1. Raise vehicle and support it with safety stands.

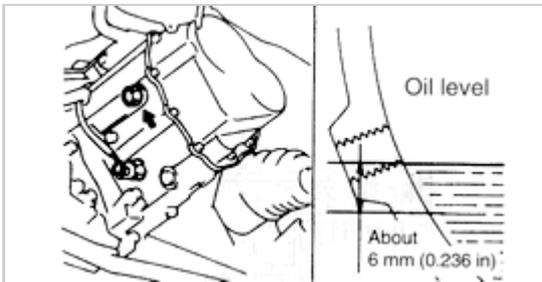
NOTICE

Keep vehicle level when checking oil level.

2. Remove oil level plug and washer.



3. Verify that oil level is near bottom of plug hole.



4. If oil level is low, fill specified amount and type of oil until level reaches bottom of hole.
5. Install new washer on oil level plug and reinstall plug in case.

Tightening torque : 29~43 lb-ft(40~58 N·m, 4.0~6.0 kg-m)

6. Lower vehicle.

Replacement

Oil change

1. Raise vehicle and support it with safety stands.

NOTICE

Keep vehicle level when checking oil level.

2. Remove drain plug at bottom of transaxle case and drain fluid into suitable container.

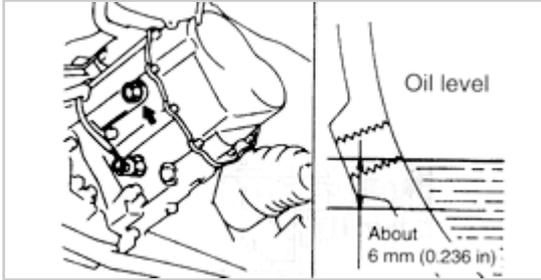


3. Install new washer on drain plug and reinstall plug in case.

Tightening torque : 29~43 lb-ft(40~58 N·m, 4.0~6.0 kg-m)

4. Remove oil level plug from transaxle case.

5. Add specified amount and type of oil into oil level plug hole until level reaches bottom of hole.



Specified oil :

Grade : API Service GL-4

Viscosity : SAE 75W-90

Capacity : 2.9 US qt (2.7 l, 2.4 Imp qt)

6. Install new washer on plug and reinstall plug in case.

Tightening torque : 29~43 lb-ft (40~58 N·m, 4.0~6.0 kg-m)

7. Warm up vehicle until transaxle oil reaches its normal temperature, then check for leakage of transaxle oil.

8. Lower vehicle

Oil seal change

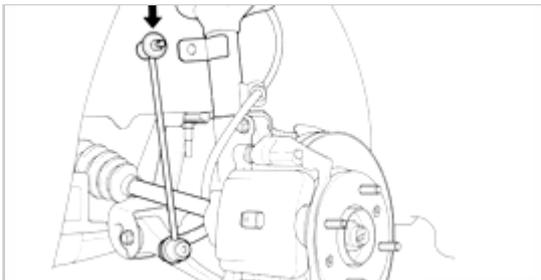
1. Jack up vehicle and support it with safety stands.
2. Remove drain plug at bottom of transaxle case and drain fluid into a container.



3. Remove front wheel.

4. Remove splash shield under the left side of vehicle.

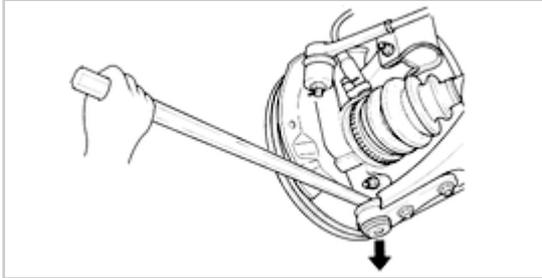
5. Remove the stabilizer control link from bracket attached to shock absorber after loosening the control link nut.



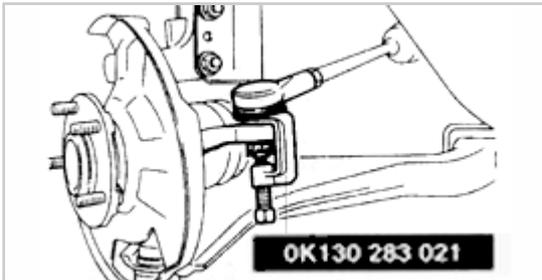
CAUTION

Do not damage dust boots.

6. Remove pinch bolt and pull lower arm downward to separate knuckle from lower control arm ball joint.



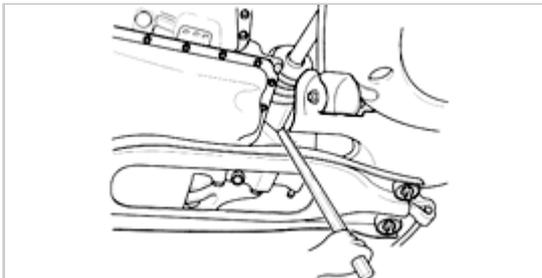
7. Loosen nut and disconnect tie-rod end with SST(OK130 283 021).



CAUTION

Do not subject CV joint to shock when removing driveshaft.

8. Insert pry bar between outer ring and transaxle and pry driveshaft from transaxle.
9. Suspend driveshaft with rope.



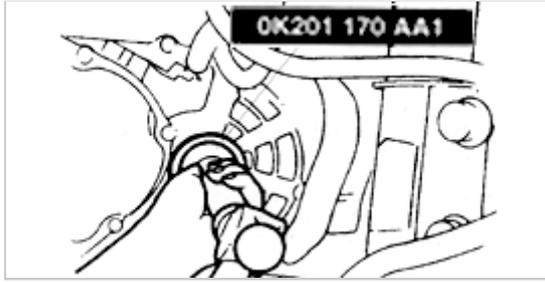
10. Remove oil seal with screwdriver.



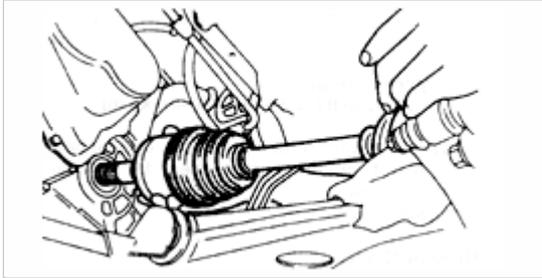
NOTICE

- 1) Tap in until oil seal is flush with case.
- 2) Coat oil seal lip with transaxle oil.

11. Tap new oil seal into transaxle case with SST(0K201 170 AA1).



12. Replace driveshaft end clip and install driveshaft into transaxle with end-gap of clip facing upward.



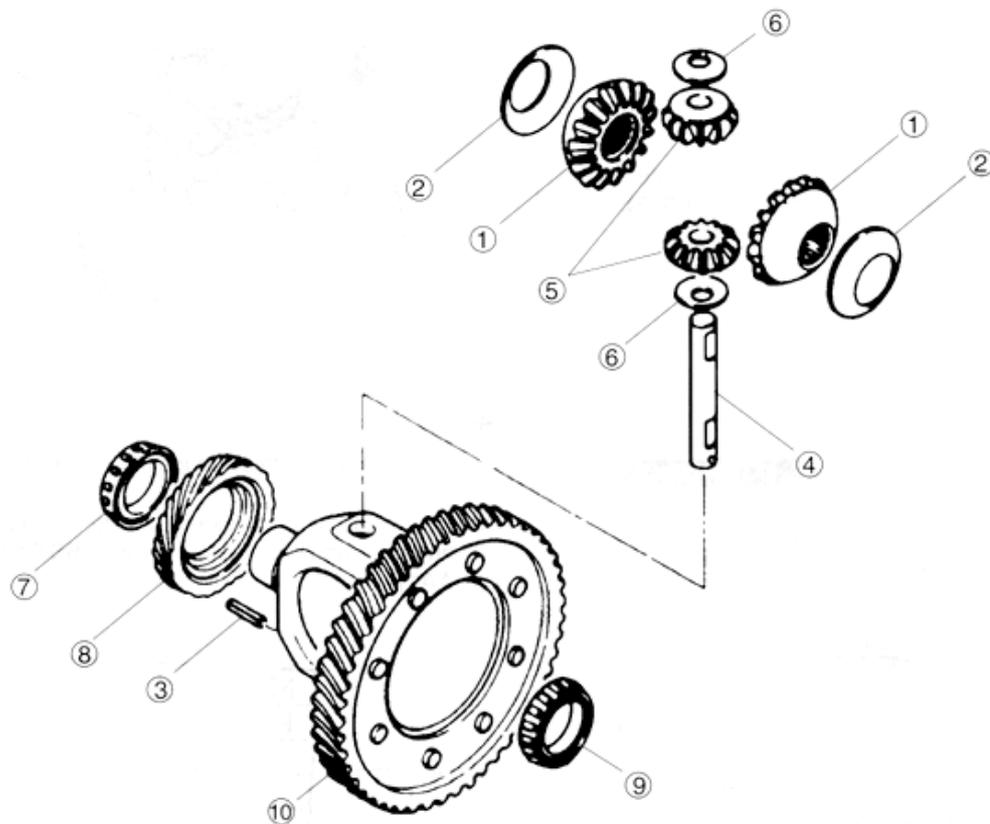


Manual Transaxle System

Manual Transaxle Gear System - Differential

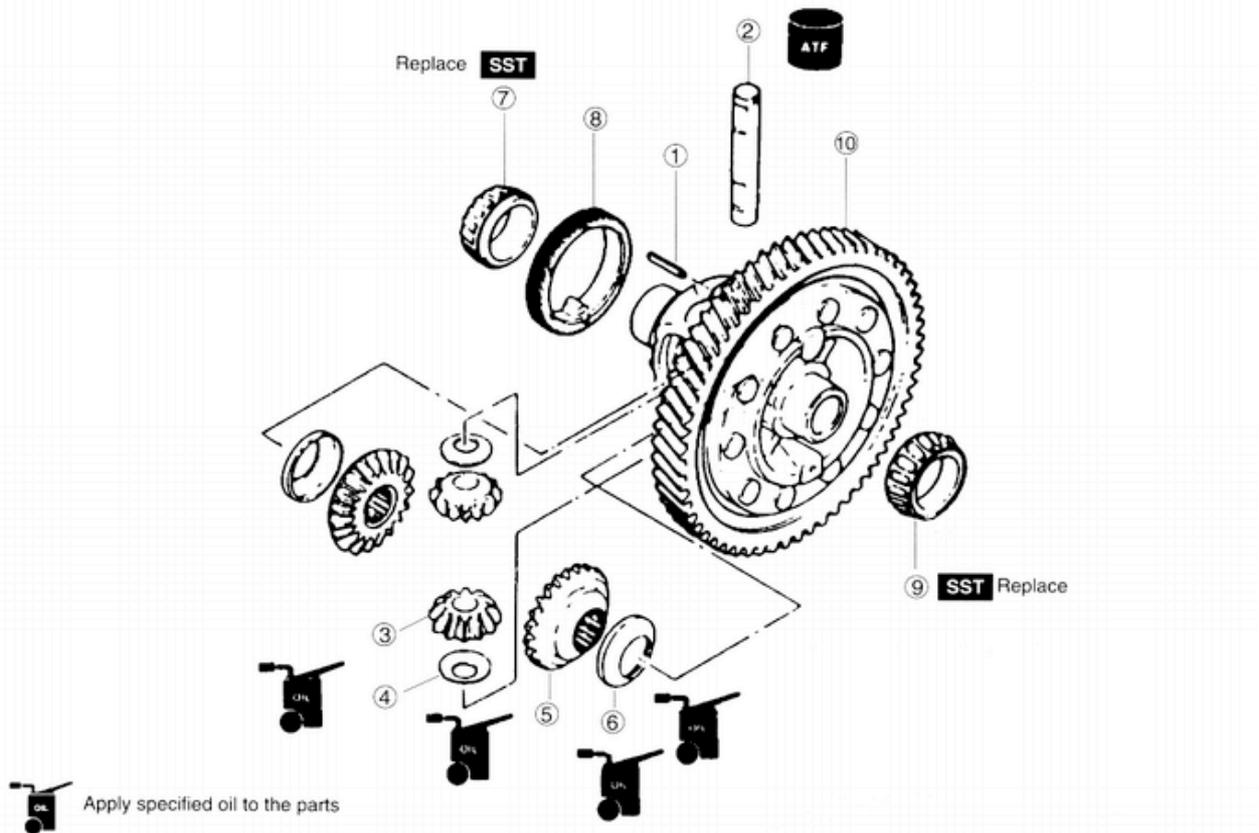


Component



- | | |
|--------------------------|----------------------------|
| (1) Side gears | (6) Thrust washers |
| (2) Thrust washers | (7) Side bearing (Replace) |
| (3) Spring pin (Replace) | (8) Speedometer drive gear |
| (4) Pinion shaft | (9) Side bearing (Replace) |
| (5) Pinion gears | (10) Gear case |

Component



- (1) Roll pin
- (2) Pinion shaft
- (3) Pinion gear
- (4) Thrust washer
- (5) Side gear

- (6) Thrust washer
- (7) Bearing (ring gear opposite side)
- (8) Speedometer drive gear
- (9) Bearing (ring gear side)
- (10) Ring gear and differential case assembly



Disassembly

Pre-inspection

NOTICE

Do not remove side bearings unless necessary.

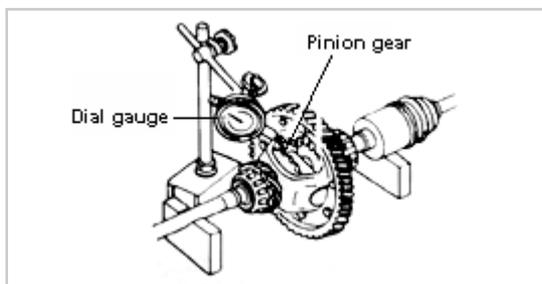
Backlash of side gear and pinion gear

1. Before disassembly, measure backlash of side gears and pinion gears. If not within specification, replace differential assembly.

Backlash

Standard : 0.001~0.004 in (0.025~0.1 mm)

Maximum : 0.020 in (0.5 mm)

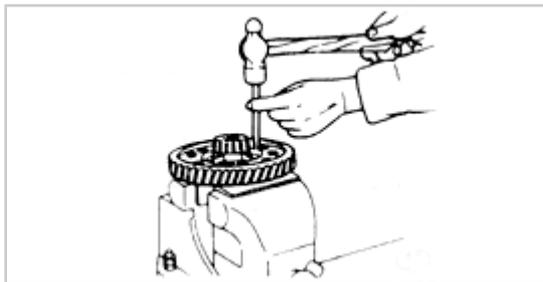


2. Remove two side gears and two thrust washers.

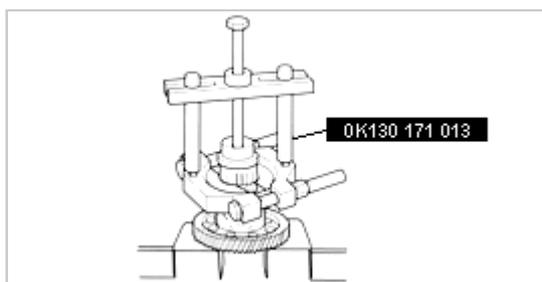
NOTICE

- 1) Use protective plates in vise to prevent damage to differential.
- 2) Insert punch into spring pin hole from ring gear side.

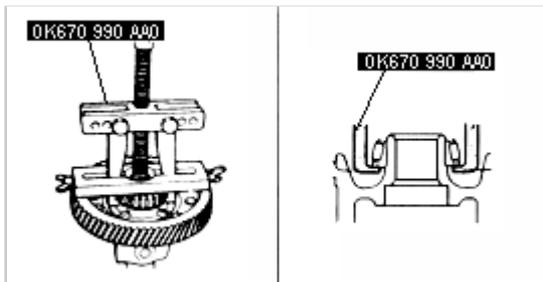
3. Place gear case on a vise and knock pin out with suitable pin punch and hammer. Then remove two thrust washers, two pinion gears and pinion shaft.



4. Remove side bearing inner race (side opposite ring gear) from gear case with SST (0K130 171 013).
5. Remove speedometer drive gear.

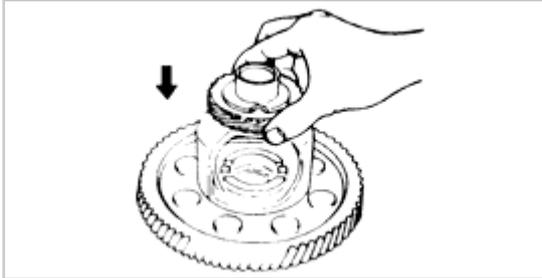


6. Remove side bearing (ring gear side) from gearcase with SST (0K670 990 AA0).



Reassembly

1. Set speedometer drive gear onto ring gear and case assembly.



NOTICE

Do not reuse side bearings if they were removed.

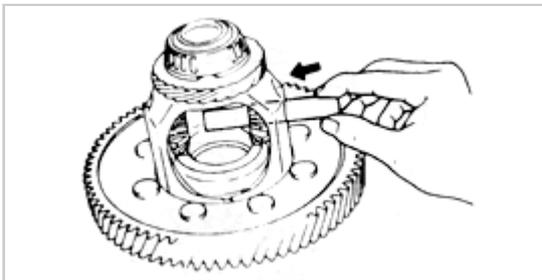
2. Press side bearing (side opposite ring gear) into ring gear and case assembly with SST (0K990 175 AA1).

3. Press on other side bearing (ring gear side) in same manner.

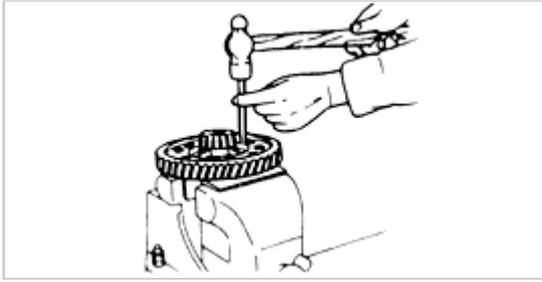


4. Install pinion gears and thrust washers into case.

5. Install pinion shaft.



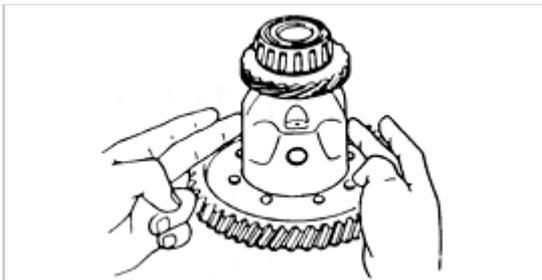
6. Install spring pin, and stake hole to prevent spring pin from coming out of gear case.



7. Install thrust washers and side gears into gear case at same time, then rotate them around pinion gears and align them with driveshaft holes.

NOTICE

Be certain that both side gears are centered in their respective driveshaft holes. If not, remove both side gears and re-install them again.



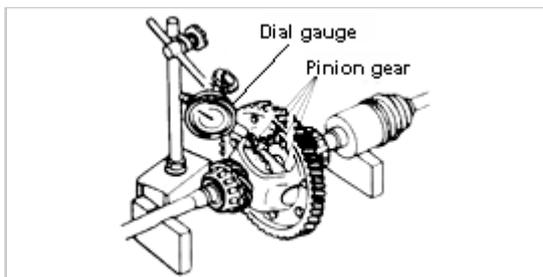
8. Measure backlash of side gears and pinion gears as follows :
 - A. Install left and right driveshafts in differential assembly.
 - B. Support driveshafts on V-blocks.
 - C. Measure backlash of both pinion gears.

Backlash

Standard : 0.001~0.004 in (0.025~0.1 mm)

Maximum : 0.020 in (0.5 mm)

9. If backlash is not within specification, replace differential assembly.

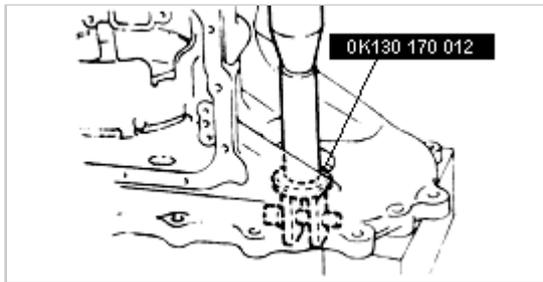


Differential bearing (side bearing) preload

NOTICE

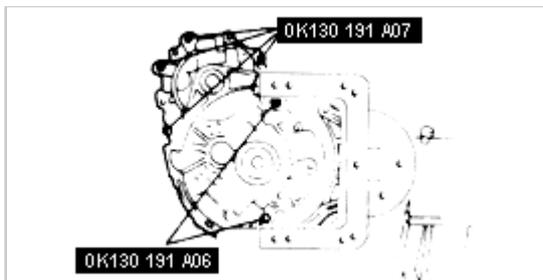
The next eighteen steps measure differential side bearing preload and select proper adjustment shim (s).

1. Remove side bearing outer race and adjustment shims from transaxle case.



2. Set transaxle case on a stand and install SST (OK130 191 A07).
3. Tighten SST (OK130 191 A06) to specified torque.

Tightening torque : 27~38 lb-ft (36~51 N·m, 3.7~5.3 kg-m)



4. Set differential assembly into converter housing.

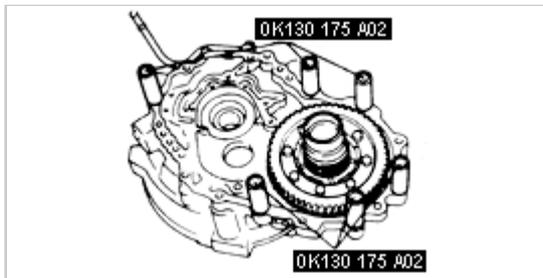
NOTICE

Eliminate gap (arrow) by turning either A or B of selector. Do not overtighten.

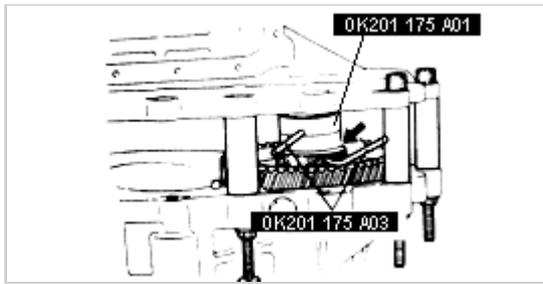
5. Install side bearing outer race removed from transaxle case into SST (OK201 175 A01). Set SST and outer race onto differential assembly.



6. Set SST (OK130 175 A02) on converter housing in positions shown.



7. To seat bearing, turn SST (OK201 175 A01) to increase clearance indicated by arrow with SST (OK130 175 A03) until it no longer turns.
8. Turn selector in opposite direction until gap is reduced.



9. Insert SST through transaxle case and attach it to pinion shaft.
10. Install torque meter.

NOTICE
Read preload when differential is rotating.

11. Adjust clearance between A and B to obtain specified preload reading.

Preload : 4.3 lb-in (0.5 N·m, 0.05 kg)

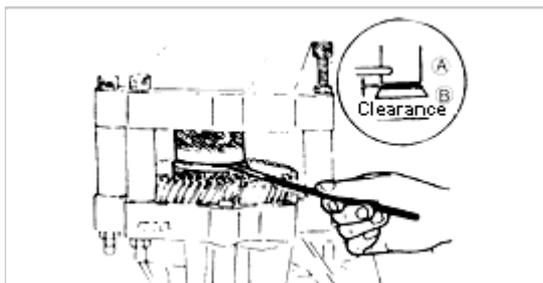


12. Measure clearance between A and B.
13. Add 0.0118 in (0.3 mm) to measured clearance and select shim(s) closest in value to measurement.

NOTICE

- 1) Measure clearance around entire circumference and select shims based on maximum clearance.
- 2) The maximum allowable number of shims is 3.

Thickness of shim in (mm)			
0.020 (0.50)	0.022 (0.55)	0.024 (0.60)	0.026 (0.65)
0.028 (0.70)	0.030 (0.75)	0.031 (0.80)	0.034 (0.85)
0.035 (0.90)	0.037 (0.95)	0.039 (1.00)	0.041 (1.05)
0.043 (1.10)	0.045 (1.15)	0.047 (1.20)	0.049 (1.25)
0.051 (1.30)	0.053 (1.35)	0.055 (1.40)	0.057 (1.45)



14. Remove transaxle case.
15. Install required shim(s) and tap bearing race into transaxle case.

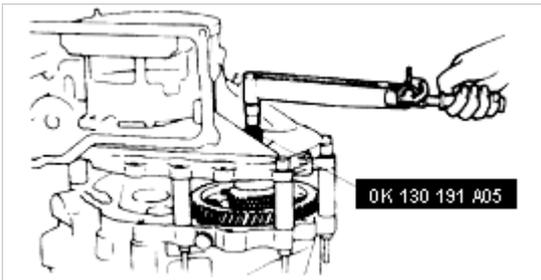


16. Install transaxle case.

Tightening torque : 28~38 lb-ft (38~51 N·m, 3.8~5.1 kg-m)

17. Using SST (0K130 191 A05) and a torque meter, verify that preload is within specification. If not within specification, return to Step 1.

Preload : 27.6~33.6 lb-in (3.0~3.9 N·m, 30~40 kg-cm)



18. Remove transaxle case.

Disassembly

1. Before disassembly, inspect backlash of side gears and pinion gears, refer to Preinspection.
2. Disassemble in order shown in figure, refer to Disassembly note.
3. Inspect all parts and repair or replace as necessary.
4. Assemble in reverse order of disassembly, refer to Assembly note.
5. Measure backlash after assembly, refer to Backlash of side gear and pinion gear.

Preinspection

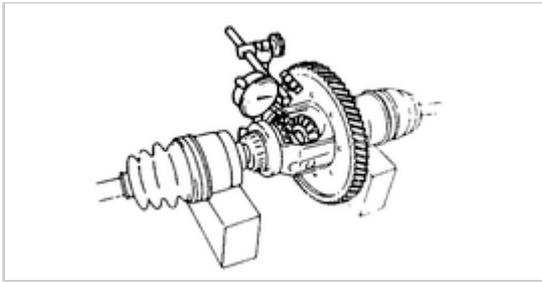
Backlash of side gear and pinion gear

Measure backlash by following procedure :

1. Install left driveshaft and right joint shaft in differential assembly.
2. Support shafts on V-blocks as shown in figure.
3. Measure backlash of both pinion gears.

Backlash : 0.002 ~ 0.006 in (0.05~0.15 mm)

4. If not as specified, replace worn and damaged parts.



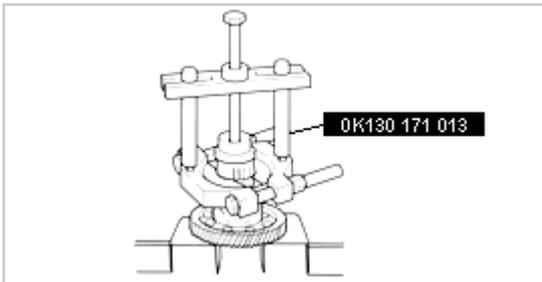
Disassembly note

Bearing (ring gear opposite side)

NOTICE

Do not remove the bearing unless you are replacing it.

1. Remove bearing by using SST(0K130 171 013).



Side bearing inner race

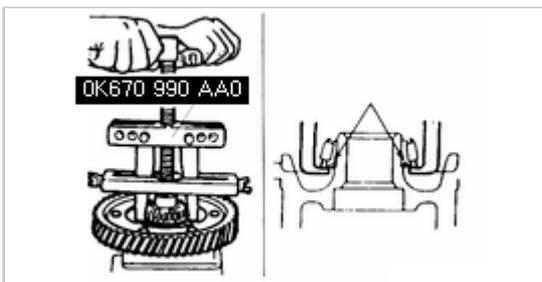
CAUTION

Be careful not to drop differential case.

1. Using SST (0K670 990 AA0), remove side bearing inner race (opposite side of ring gear).

Bearing (ring gear side)

1. Remove bearing by using SST(0K670 990 AA0).

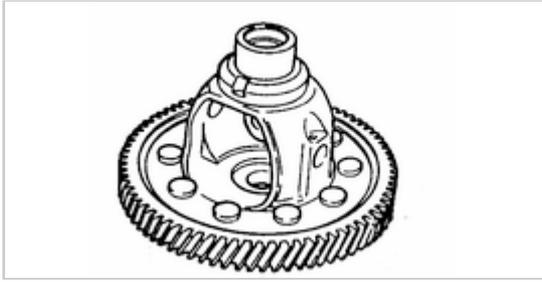


Inspection

1. Inspect all parts and repair or replace as necessary.

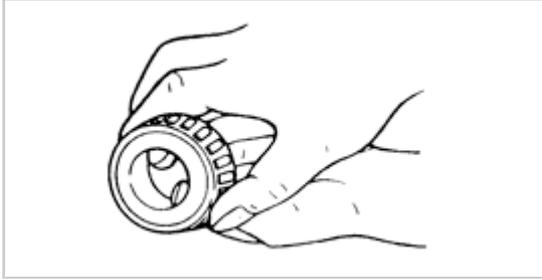
Ring gear and gear case assembly

1. Inspect ring gear for wear and cracks. If gear case is replaced, adjust bearing preload.



Bearing

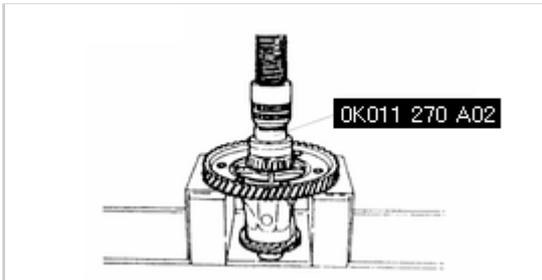
1. Inspect for wear and rough rotation. If bearing is removed then replace it and bearing race together, and adjust bearing preload.



Assembly note

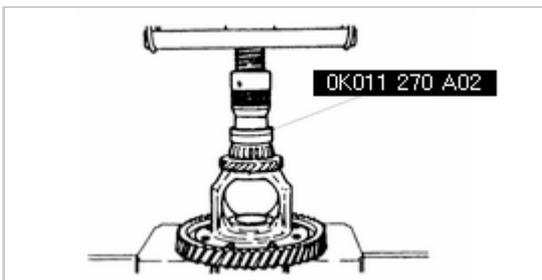
Bearing (ring gear side)

1. Install new bearing by using SST(OK011 270 A02).



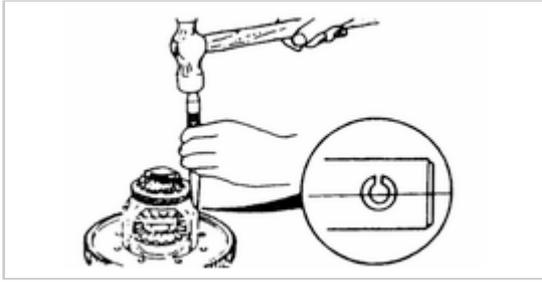
Bearing (ring gear opposite side)

1. Install speedometer drive gear.
2. Install new bearing by using SST(OK011 270 A02).



Roll pin

1. Install new roll pin as shown in figure to hold pinion shaft.



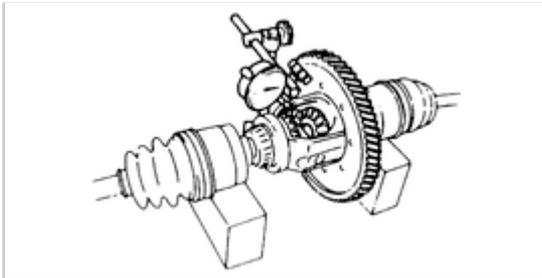
Backlash of side gear and pinion gear

Measure backlash by following procedure :

1. Install left driveshaft and right joint shaft in differential assembly.
2. Support shafts on V-blocks as shown in figure.
3. Measure backlash of both pinion gears.

Backlash : 0.002 ~ 0.006 in (0.05~0.15 mm)

4. If not as specified, replace worn and damaged parts.



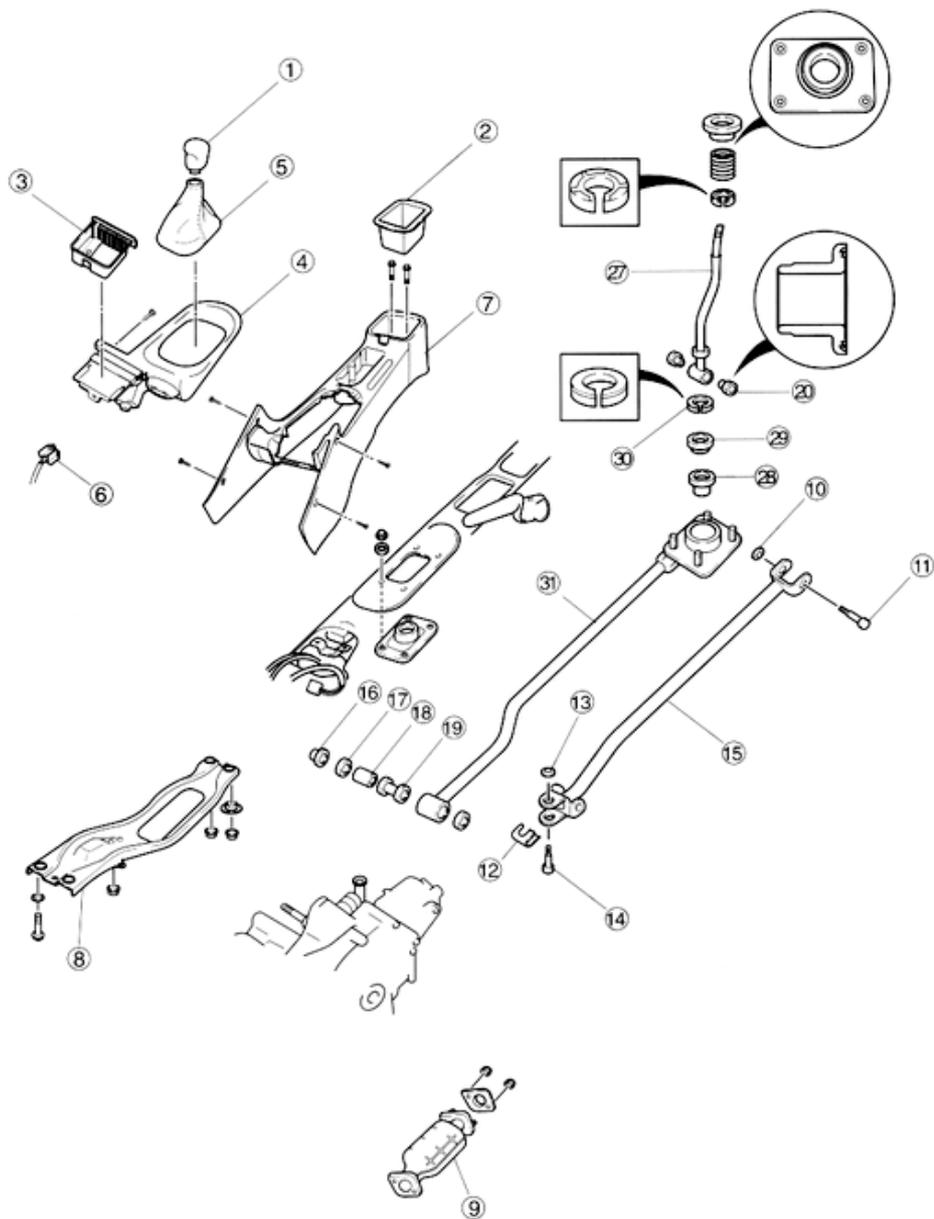


Manual Transaxle System

Manual Transaxle Shift Control



Component



- | | |
|---------------------------------|------------------------|
| (1) Shift lever knob | (17) Washer |
| (2) Storage box | (18) Pipe |
| (3) Ashtray | (19) Bushing |
| (4) Center panel console | (20) Bushing |
| (5) Shift lever boot | (21) Nut |
| (6) Cigarette lighter connector | (22) Washers |
| (7) Console | (23) Insulator |
| (8) Engine mounting member | (24) Mounting boot |
| (9) Catalytic converter | (25) Spring |
| (10) Nut | (26) Ball seat (upper) |
| (11) Bolt | (27) Shift lever |
| (12) Clip | (28) Boot |
| (13) Nut | (29) Holder |
| (14) Bolt | (30) Ball seat (lower) |
| (15) Shift control rod | (31) Extension bar |
| (16) Nut | |



Overhaul

1. Disassemble in the order shown in the figure.
2. Inspect all parts and repair or replace as necessary.
3. Assemble in the reverse order of disassembly, refer to Assembly note.

Assembly note

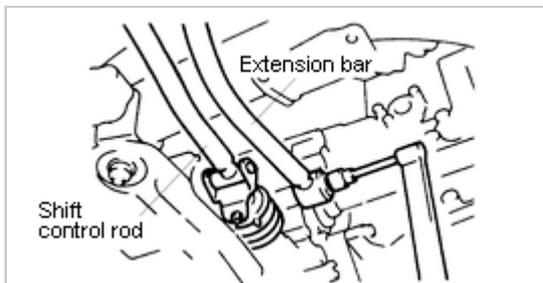
Extension bar

1. Install the extension bar to the floor, and then onto the transaxle. Tighten the extension bar nut at the transaxle,

Tightening torque : 23~34 lb-ft (31~46 N·m, 3.2~4.7kg-cm)

2. Tighten the shifter bracket nuts to the specified torque.

Tightening torque : 86.9~130.2 lb-in (9.8~14.7N·m, 100~150 kg-cm)



Spring

Make sure that the hooked part of the spring is properly seated in the bracket groove, as shown in the figure.

