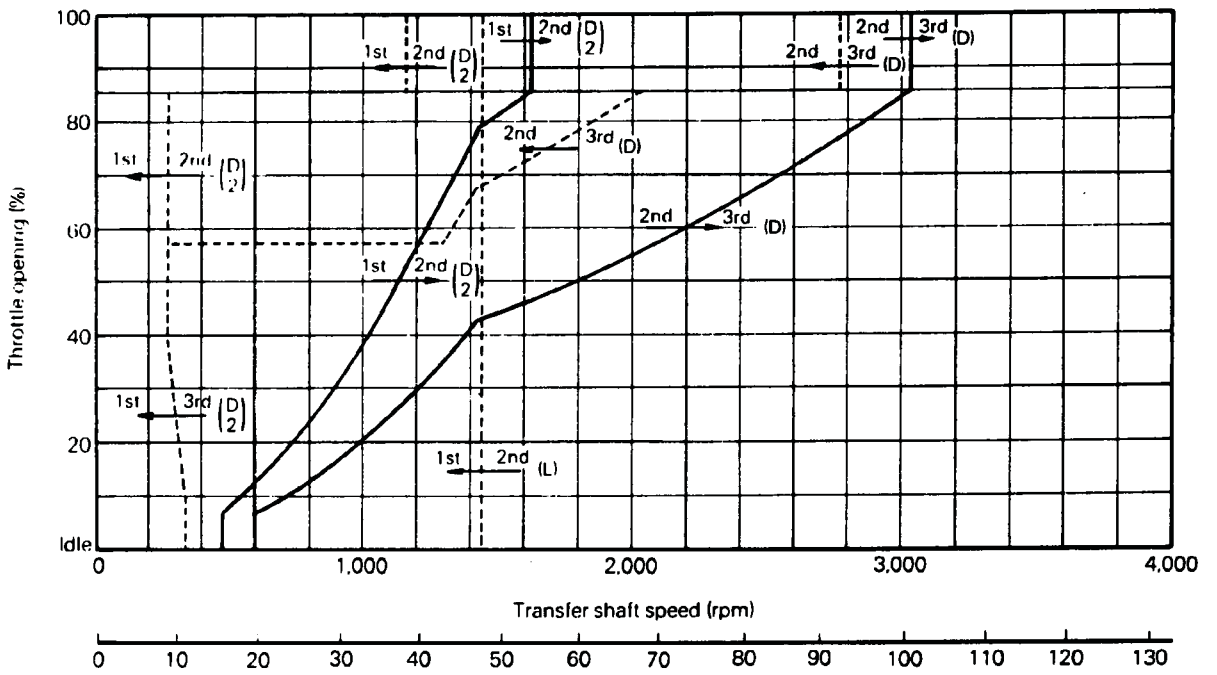
Symptom	Probable cause	Remedy
Engine vibration	Broken gear shift control	Replace
	Worn or pitting due to improper tooth	Replace
Oil leakage	Housing misaligned	Realign
	Worn seals or gaskets	Replace parts as required
Loose transaxle assembly	Broken transaxle mount	Replace
	Mounting bolts loose	Retighten bolts
Does not shift to 5th (M/T)	Malfunctioning actuator	Repair or replace as required
	Broken 5th position sensor	Replace
	Malfunctioning vacuum control	Replace
	Short circuit in vacuum control	Replace
Delayed 4-5 shift (M/T)	Worn 5th position sensor	Replace
Vehicle does not move (A/T)	Low automatic transaxle fluid level	Repair leak and refill with fluid
	Broken planetary gear carrier	Replace
Difficult to put manual lever into P position (A/T)	Worn dog of parking sprag	Replace
Unlocked wheels at P position (A/T)	Malfunctioning parking sprag	Replace
Transaxle slips due to excessive wear of sprag (A/T)	Broken ribbon spring of sprag clutch	Replace

LOCK-UP TORQUE CONVERTER PROBLEMS

No drive at any position due to lock-up torque converter engaged	Abnormal signal slippage in lock-up torque converter system	Replace
	Malfunction sealing in solenoid valve torque converter	Repair or replace as required
Excessive vibration	Decreased signal slippage from C.P.U. (Computer Processing Unit)	Replace
Inoperative lock-up torque converter system	No signal lock-up from C.P.U.	Replace
	Lock-up line pressure low	Restore to proper pressure
	Opened or shorted circuit of solenoid valve	Replace
Increased fuel consumption	Lock-up torque converter does not engage because of a stuck valve	Clean up
Lock-up torque converter does not release	Decreased driving effort in facing of clutch plate	Replace
	Burn out clutch disc	Replace
	Lock-up torque converter system solenoid valve stuck open	Repair or replace as required

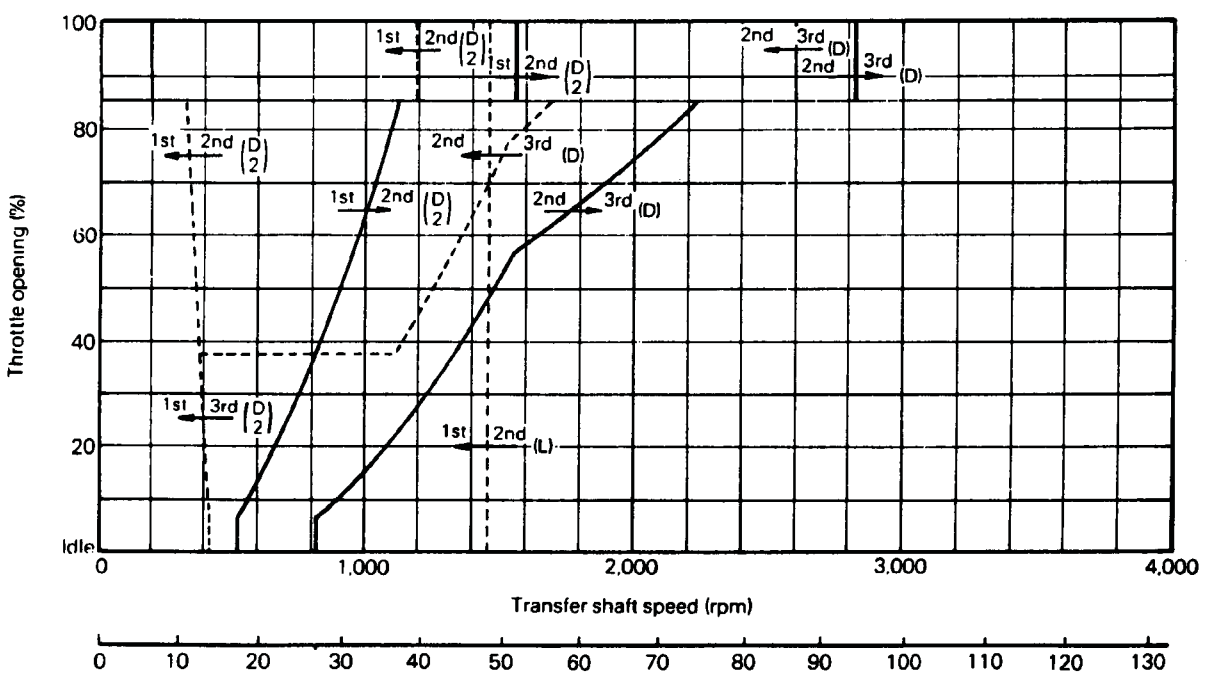
Automatic shift speed pattern

KM171-2-APT



NOTE: 1st gear ratio 1.150
2nd gear ratio 3.160
Tire 155SR13

KM171-1-AP

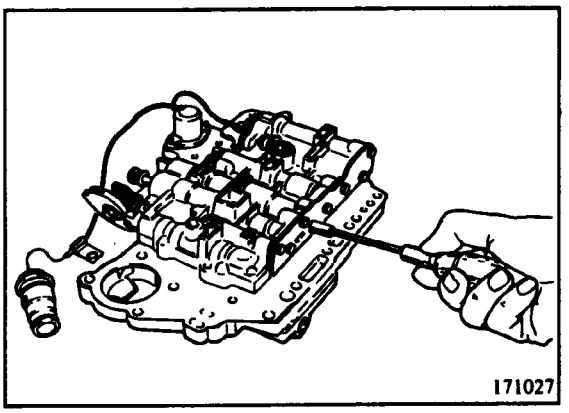


NOTE: 1st gear ratio 1.136
2nd gear ratio 3.166
Tire 155SR13

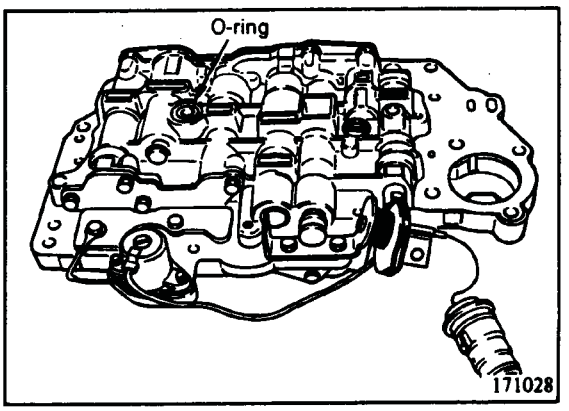
Adjustment

1. Drain ATF.
2. Remove oil pan.
3. Disconnect throttle control cable from throttle cam.
4. Detach the solenoid connector from case.
5. Remove oil filter and filter plate.
6. Remove valve body assembly. Be careful not to drop manual valve.

7. Adjust line pressure by turning adjusting screw at regulator valve. Counterclockwise turn of screw will increase line pressure, and clockwise turn will lower it. Turning adjusting screw one turn changes line pressure by about 25 kPa (3.7 psi). This value is true for wide-open condition of throttle control cable.

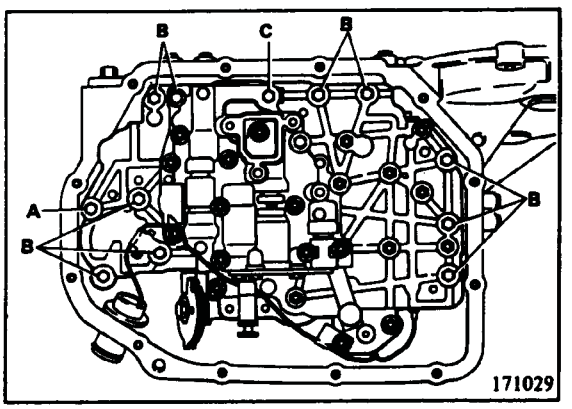


8. Make certain O-ring is installed in position illustrated on top of valve body.
9. Install the accumulator springs.



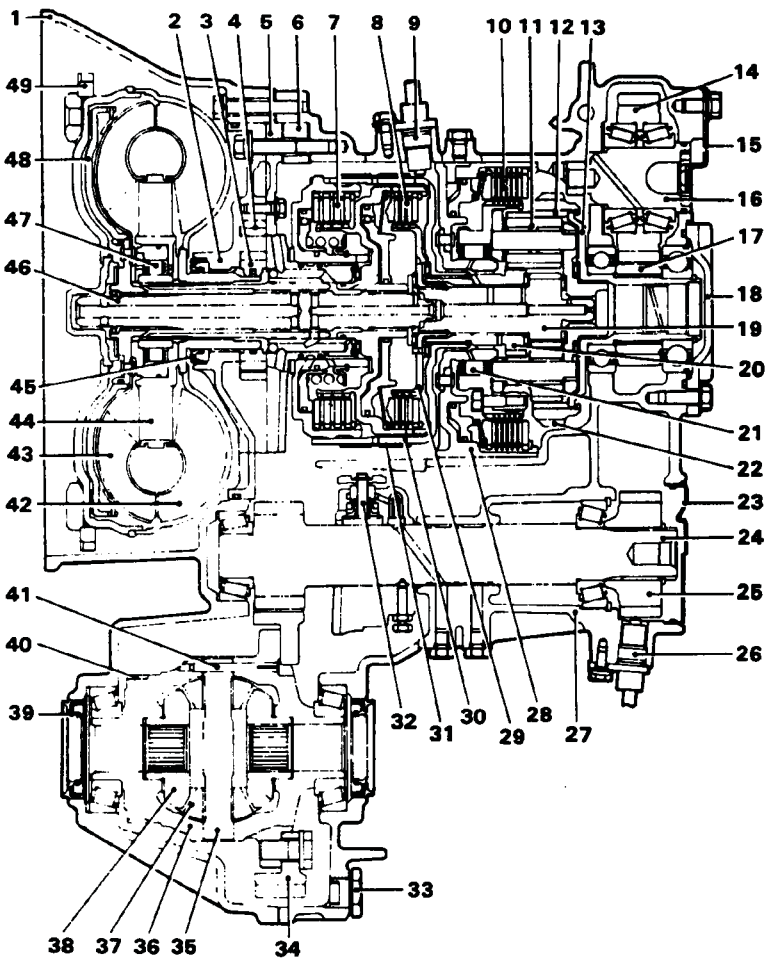
10. Install valve body assembly. At this time, fit groove of manual valve on manual control shaft detent plate pin.
11. Tighten valve body assembly mounting flange bolts (11 pieces) to 10–11.5 Nm (7.5–8.5 ft.lbs.) (171029)

A bolt	20 mm (.787 in.) long
B bolt	28 mm (1.102 in.) long
C bolt	45 mm (1.772 in.) long



12. Install oil filter and tighten flange bolts (4 pieces; head mark "7" to 5–6.5 Nm (4–5 ft.lbs.)
13. Reconnect throttle control cable to throttle cam.
14. Insert the solenoid connector into case.
15. Install new oil pan gasket and oil pan, then tighten washer-assembled bolts (12 pieces; head mark "7") to torque between 10 and 11.5 Nm (7.5 and 8.5 ft.lbs.)
16. Refill transaxle with ATF to proper level.

SECTIONAL VIEW



1 Converter housing
2 Oil pump housing
3 Oil pump drive gear
4 Oil pump driven gear
5 Reaction shaft support
6 Adapter
7 Front clutch
8 Rear clutch
9 Pulse generator A
10 Low-reverse brake
11 Planet gear set
12 Internal gear
13 Output flange
14 Transfer idle gear
15 Lock plate
16 Transfer idle shaft
17 Transfer drive gear
18 Bearing retainer
19 Forward sun gear
20 Reverse sun gear
21 One-way clutch
22 Parking sprag
23 Cover
24 Transfer shaft
25 Transfer driven gear
26 Pulse generator B
27 Transaxle case
28 Center support
29 Clutch hub
30 Kickdown drum
31 Kickdown band
32 Governor
33 Drain plug
34 Differential drive gear (Ring gear)
35 Pinion shaft
36 Differential case
37 Pinion gear (2)
38 Side gear (2)
39 Drive shaft oil seal (2)
40 Speedometer drive gear
41 Pinion shaft lock pin
42 Impeller
43 Turbine
44 Stator
45 Pump oil seal
46 Input shaft
47 One-way clutch
48 Clutch plate
49 Starter ring gear

172003

REASSEMBLY

Caution

Do not reuse gaskets, oil seals and rubber parts. Replace them with new ones at every reassembly. O-ring of oil level dipstick need not be replaced.

Do not use grease other than petrolatum or industrial vaseline.

Apply ATF to friction element, rotating parts, and sliding parts before installation. Use "DEXRON" or "DEXRON II" type ATF.

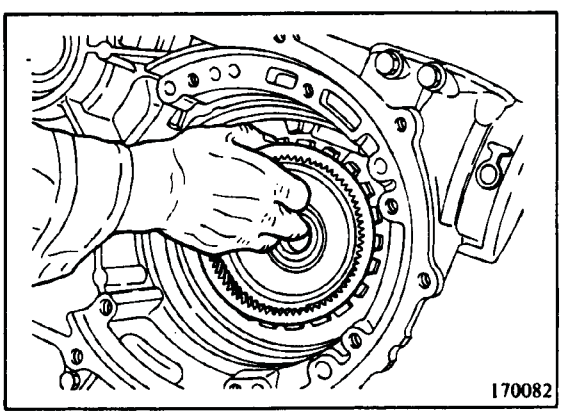
New clutch disc should be immersed in ATF for more than two hours before installation.

Do not apply sealer or adhesive to gaskets.

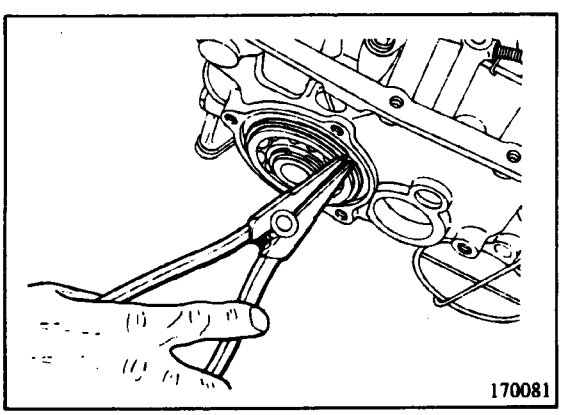
When bushing must be replaced, replace assembly which includes it.

Do not use shop towels during disassembly and reassembly operation.

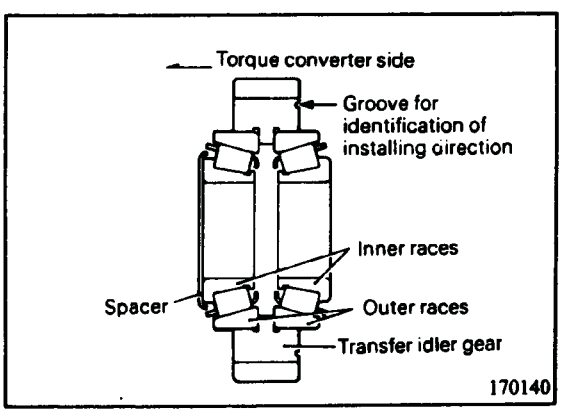
1. Place transaxle case on bench with oil pan mounting surface up.
2. Insert in position internal gear and output flange assembly (with two ball bearings and transfer drive gear attached) from inside of transaxle case. (170082)



3. Install snap ring on output flange rear bearing.

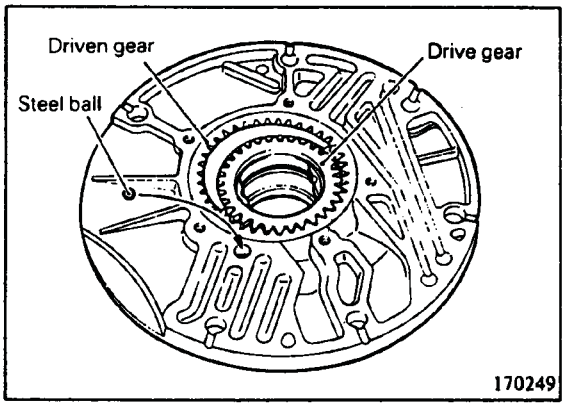


4. Install two taper roller bearings and spacer to transfer idler gear.
   Using petrolatum or vaseline for industrial use, affix spacer to inner race of bearing installed on non-grooved side of transfer idler gear. (170140)
5. Install new O-ring in the groove of transfer idler gear shaft. (170140)



REASSEMBLY

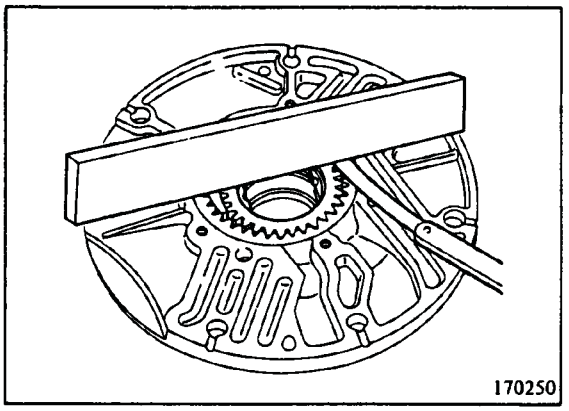
1. After immersing drive and driven gears in ATF, install them to pump housing. When reusing gears, install with mating marks properly aligned.



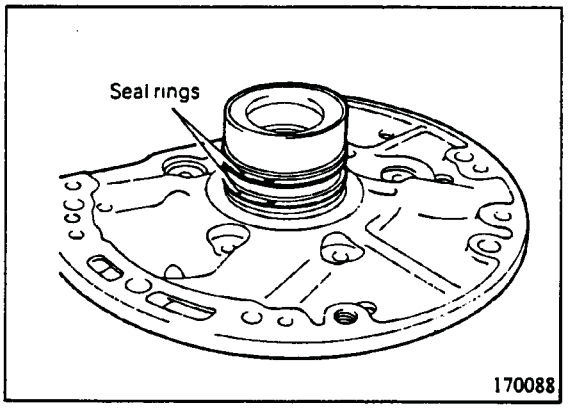
2. Measure gear side clearances.

Drive and driven gear side clearance	0.025—0.05 mm (.001—.002 in.)

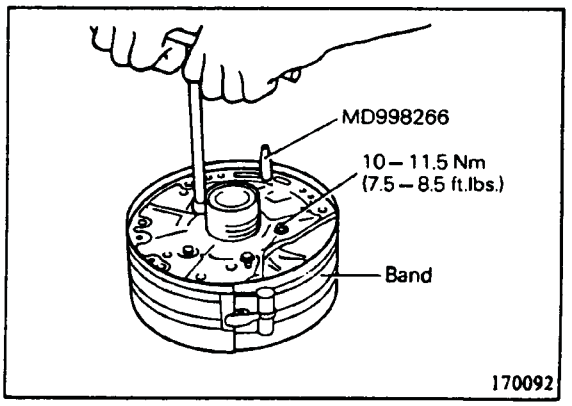
3. Install steel ball in hole as shown in the illustration. (170249)



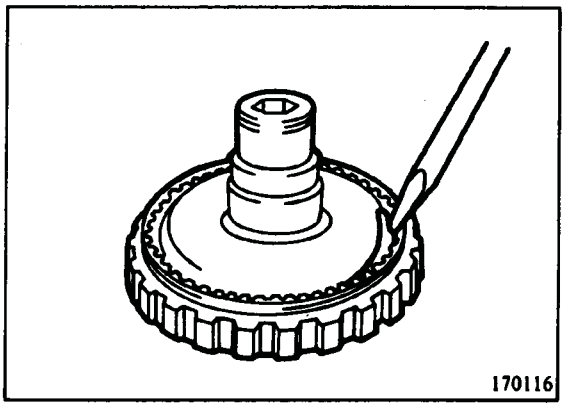
4. Install two seal rings coated with ATF to reaction shaft support.



5. Loosely install reaction shaft support on pump housing. Tighten five bolts fingertight.
6. With reaction shaft support properly positioned on pump housing using Special Tools MD998266 and band, tighten five bolts to 10—11.5 Nm (7.5—8.5 ft.lbs.). (170092)
7. Make sure that oil pump gear turns freely.
8. Install new O-ring in groove provided in circumference of pump housing and apply petrolatum or industrial vaseline to circumference of O-ring.



3. Remove snap ring, and separate internal gear from output flange.

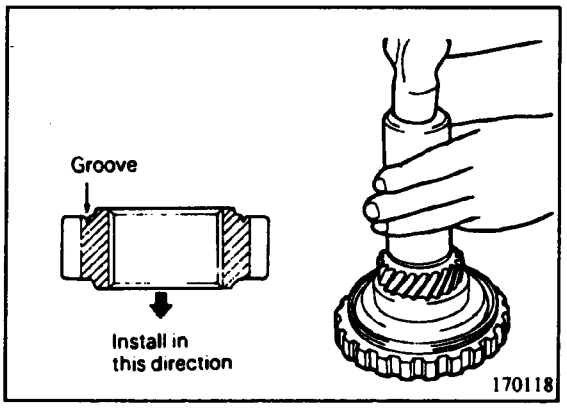


REASSEMBLY

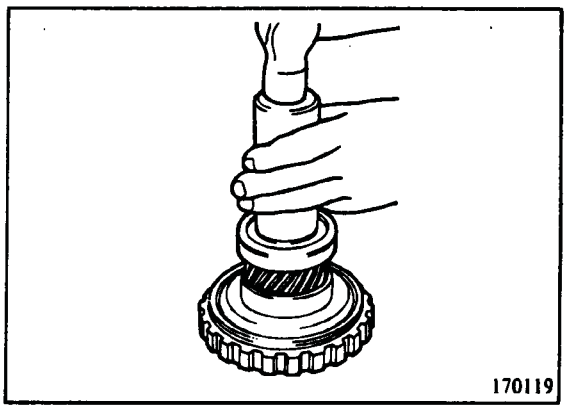
1. Using bearing installer, press ball bearing and transfer drive gear onto output flange.

Caution
Replace output flange and transfer drive gear as a set.

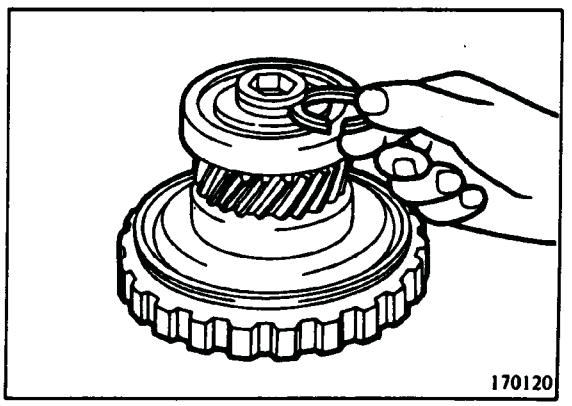
2. Install transfer drive gear in proper direction with attention paid to groove provided in side surface.



3. Install the ball bearing.



4. Select snap ring, which should be the thickest one that can be installed in groove.

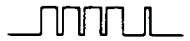
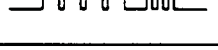


Pressure check plug	8.0–9.5 (6–7)
Bearing retainer bolt	15–21 (11–15)
Oil cooler connector	15–21 (11–15)
Converter housing bolt	19–22 (14–16)
Oil pan bolt	10–11 (7.5–8.5)
Kickdown servo nut	15–21 (11–15)
Center support bolt	20–26 (15–19)
Lock plate bolt	20–26 (15–19)
Differential drive gear bolt	128–138 (94–101)
Governor bolt	8.0–9.5 (6–7)
Governor bolt lock nut	4.0–5.5 (3–4)
Manual control lever nut	17–20 (13–15)
Manual control shaft set screw	8.0–9.5 (6–7)
Inhibitor switch	10–11 (7.5–8.5)
Sprag rod support bolt	20–26 (15–19)
Pump housing-to-reaction shaft support bolt	10–11 (7.5–8.5)
Oil pump assembly mounting bolt	15–21 (11–15)
Valve body bolt	4.0–5.5 (3–4)
Throttle cam bolt	8.0–9.5 (6–7)
Valve body assembly mounting bolt	10–11 (7.5–8.5)
Oil filter bolt	5.0–6.5 (4–5)
Speedometer sleeve locking plate bolt	3.0–4.5 (2.5–3.5)

LUBRICANTS

	Recommended lubricant	Quantity
Manual transaxle		
Manual transmission oil lit. (U.S.qts., Imp.qts.)		
1.5L vehicles without a turbocharger	MOPAR Hypoid gear oil or equivalent, API classification GL-4	2.1 (2.2, 1.8)
1.6L vehicles with a turbocharger	MOPAR Hypoid gear oil or equivalent, API classification GL-4	2.3 (2.4, 2.0)
Shift lever and bushing contacting surface	MOPAR Front Wheel Bearing Grease Part Number 3837794 or equivalent	As required
Dust cover inside surface	MOPAR Front Wheel Bearing Grease Part Number 3837794 or equivalent	As required
Shift lever sliding portion	MOPAR Front Wheel Bearing Grease Part Number 3837794 or equivalent	As required
Automatic transaxle		
Automatic transmission fluid lit. (U.S.qts., Imp.qts.)	ATF DEXRON or DEXRON II Type	5.8 (6.1, 5.1)
Selector lever sliding portion	MOPAR Front Wheel Bearing Grease Part Number 3837794 or equivalent	As required

1989 FAULT CODES (CONT.)

Fault code	Fault code (for voltmeter)	Cause	Remedy
41		Damaged or disconnected wiring of the shift control solenoid valve A system	Check the solenoid valve connector. Check shift control solenoid valve A itself. Check the shift control solenoid valve A drive circuit harness
42		Short circuit of the shift-control solenoid valve A system	
43		Damaged or disconnected wiring of the shift control solenoid valve B system	Check the solenoid valve connector. Check shift control solenoid valve B itself. Check the shift control solenoid valve B drive circuit harness.
44		Short circuit of the shift control solenoid valve B system	
45		Damaged or disconnected wiring of the pressure control solenoid valve system	Check the solenoid valve connector. Check the pressure control solenoid valve itself. Check the pressure control solenoid valve drive circuit harness.
46		Short circuit of the pressure control solenoid valve system	
51		First gear non-synchronous	Check the pulse generator output circuit harness. Check the pulse generator connector. Check pulse generator A and pulse generator B themselves. Kickdown brake slippage.
52		Second gear non-synchronous	Check the pulse generator A output circuit harness. Check the pulse generator A connector. Check pulse generator A itself. Kickdown brake slippage.
53		Third gear non-synchronous	Check the pulse generator A output circuit harness. Check the pulse generator connector. Check pulse generator A and pulse generator B themselves. Front clutch slippage. Rear clutch slippage.
54		Fourth gear non-synchronous	Check the pulse generator A output circuit harness. Check the pulse generator A connector. Check pulse generator A itself. Kickdown brake slippage.

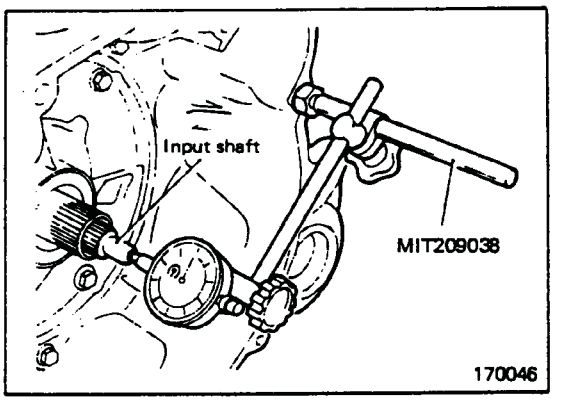
DISASSEMBLY

Caution

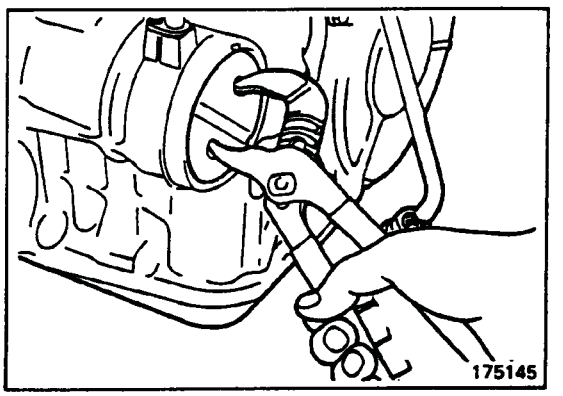
Because the automatic transaxle is composed of component parts of an especially high degree of precision, these parts should be very carefully handled during disassembly and assembly so as not to scar or scratch them.
A rubber mat should be placed on the workbench, and it should always be kept clean.
During disassembly, cloth gloves or rags should not be used. If such items must be used, use articles made of nylon, or use paper towels.
All disassembled parts must be thoroughly cleaned. Metal parts may be cleaned with ordinary detergents, but must be thoroughly air dried.
Clean the clutch disc, resin thrust plate and rubber parts by using ATF (automatic transmission fluid), being very careful that dust, dirt, etc. do not adhere.
If the transaxle main unit is damaged, also disassemble and clean the cooler system.

1. Clean away any sand, mud, etc. adhered around the transaxle.
2. Place the transaxle assembly on the workbench with the oil pan down.
3. Remove the torque converter.

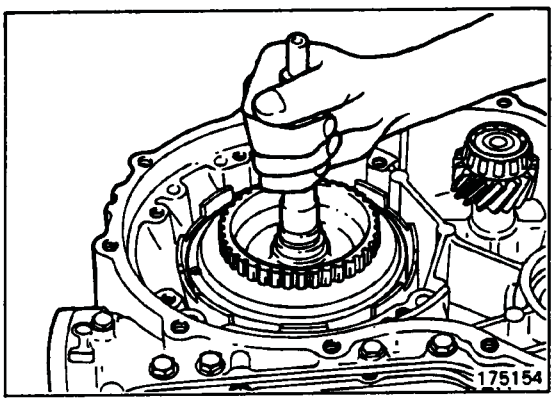
4. Measuring input shaft end play before disassembly will usually indicate when a thrust washer change is required (except when major parts are replaced). Thrust washers are located between reaction shaft support and rear clutch retainer, and between reaction shaft support and front clutch retainer.
   Mount a dial indicator MIT209038 to converter housing with the Dial Indicator Support. Make sure that the indicator plunger is seated against end of input shaft.
   When checking end play, pull out or push in the input shaft with pliers. Be careful not to scratch the input shaft. Record indicator reading for reference when reassembling transaxle.



5. Remove the cover retainer and then remove the cover.

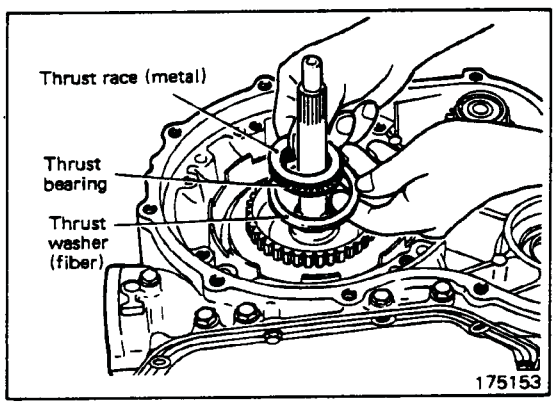


52. Install the rear clutch assembly.



53. Attach thrust washer #2 (resin) (refer to P.21-62.) to the rear clutch retainer by using petrolatum. Then attach thrust bearing #4 to the rear clutch retainer by using petrolatum.

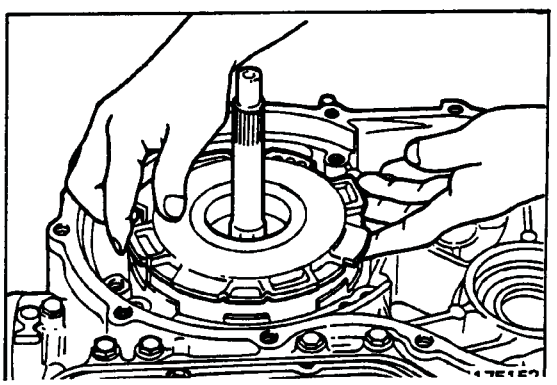
54. Install thrust race #3. If the end play of the input shaft (measured and noted at the time of disassembly) is the standard value, make the selection of thrust race #3 so that the end play will be within the standard value. If thrust race #3 was changed for one of a different thickness, thrust washer #1 (between the oil pump and the front clutch) must be replaced with one which will correspond to the thickness of the thrust race.



Thrust race #3 (metal)	Thrust washer #1 (fiber)	Parts No. of thrust washer set
Thickness mm (in.)	Thickness mm (in.)	
0.8 (.031)	1.8 (.071)	MD707901
1.2 (.047)	2.2 (.087)	MD707902
1.6 (.063)	2.6 (.102)	MD707903
2.0 (.079)	3.0 (.118)	MD707904

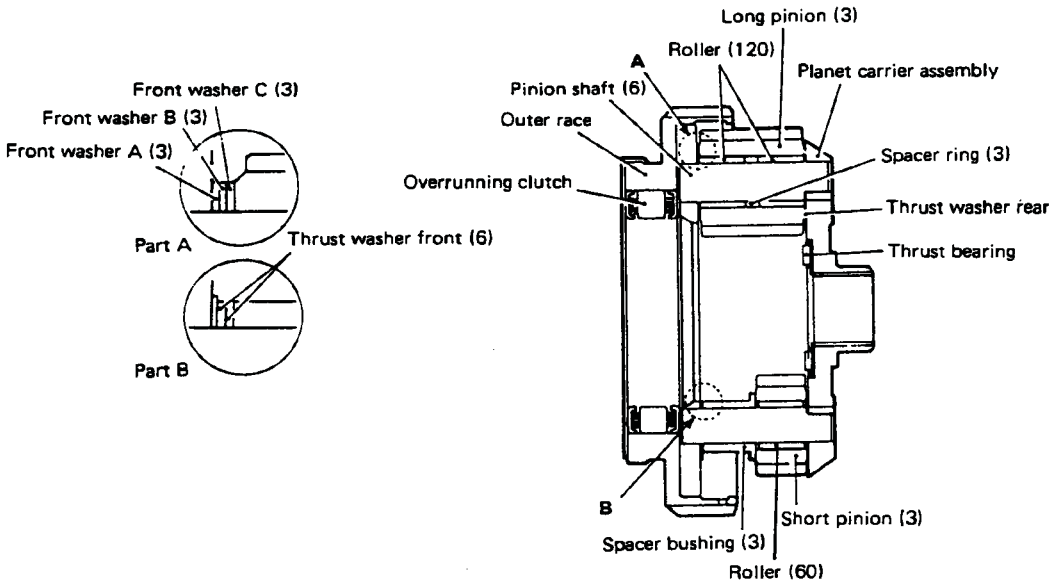
Example
When 1.6 mm (.063 in.)-thick thrust race #3 is selected, 2.6 mm (.102 in.) thrust washer #1 is one to be paired with it.

55. Install the front clutch assembly.



COMPONENTS

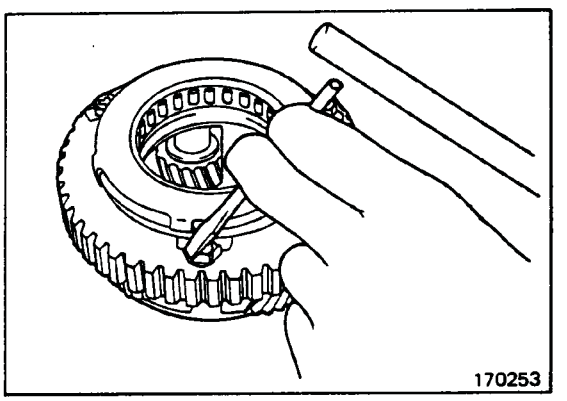
COMPONENT SERVICE-PLANET CARRIER ASSEMBLY



175066

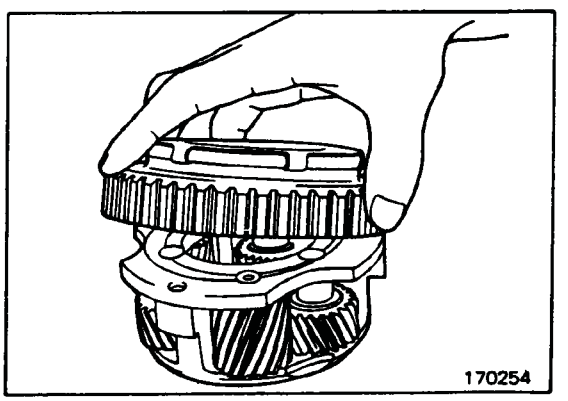
DISASSEMBLY

1. Unbend three lock plates and then remove three bolts.



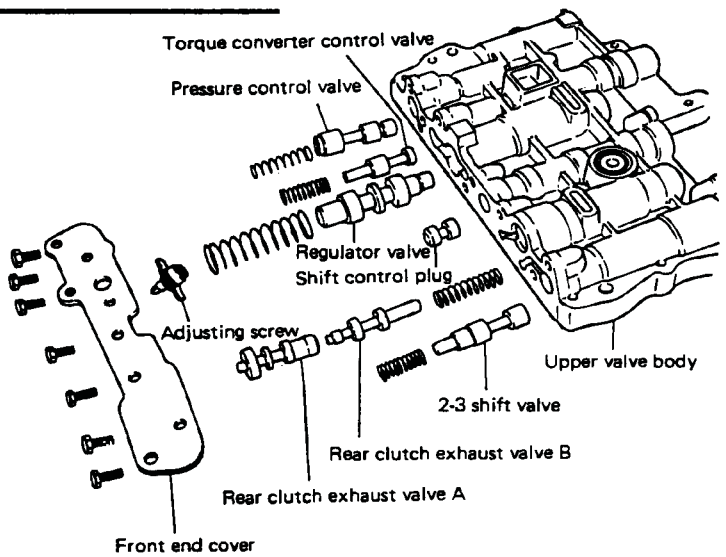
170253

2. Remove overrunning clutch outer race assembly. Remove overrunning clutch end plate.



170254

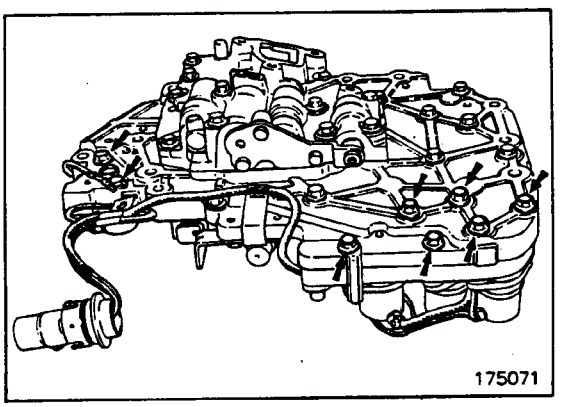
COMPONENT SERVICE-VALVE BODY (AUTOMATIC TRANSAXLE)



175078

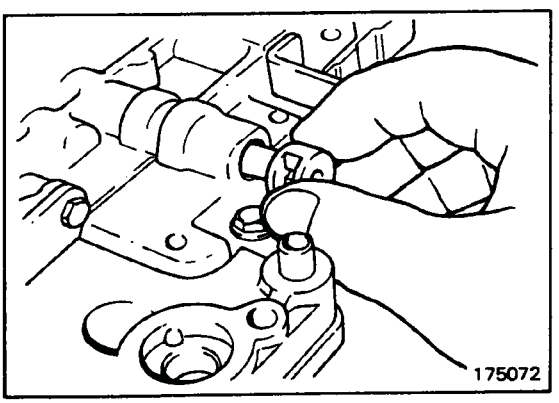
DISASSEMBLY

1. Remove the 4 solenoid valves.



175071

2. Remove the manual valve.



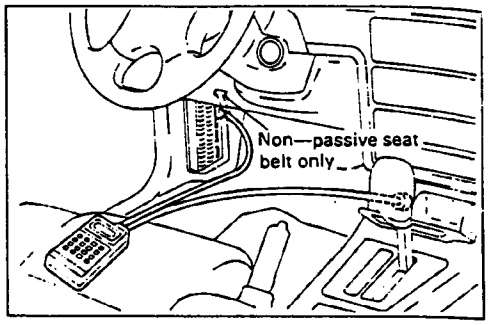
175072

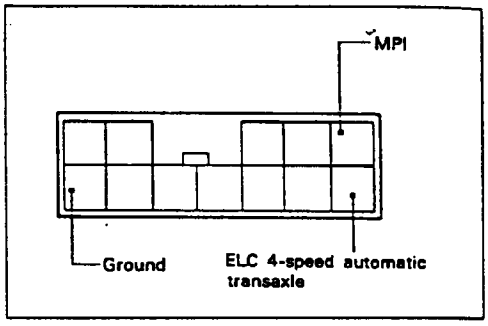
Hyundai

OBTAINING FAULT CODES

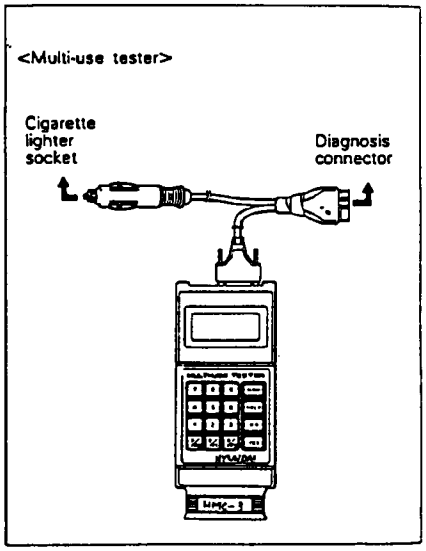
1. Connect the voltmeter or multi-use tester to the connector for diagnosis.
2. Read the output fault codes.
   Then follow the remedy procedures according to the "FAULT CODE DESCRIPTION" on the following page.

   NOTE
   - **As many as ten fault codes, in the sequence of occurrence, can be stored in the Random Access Memory (RAM) incorporated within the control unit.**
   - **The same fault code can be stored as many as three times.**
   - **If the number of stored fault codes or fault patterns exceeds ten, already stored fault codes will be erased, in sequence beginning with the oldest.**
   - **Do not disconnect the battery until all fault codes or fault patterns have been read out, because all stored fault codes or fault patterns will be canceled when the battery is disconnected.**





3. If the fail-safe system is activated and the transaxle is locked in 3rd gear, the fault code in the Fail-Safe Code Description will be stored in the RAM.
   Three of these fault codes can be stored.
4. The cancelation will occur if, with the transaxle locked in 3rd gear, the ignition key is turned to the OFF position, but the fault code is stored in the RAM.



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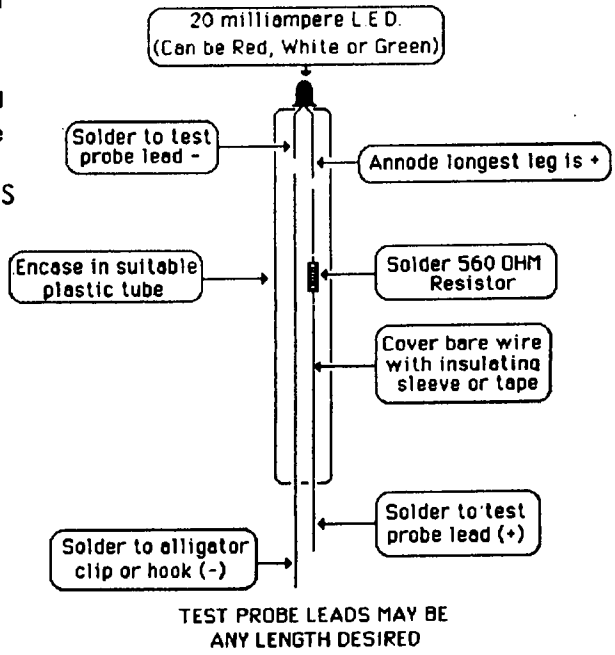
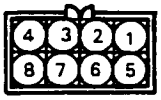


TEST PROBE LEADS MAY BE ANY LENGTH DESIRED

10. Kickdown (K/D) servo switch

Harness side connector terminal(E06)



Check for continuity between the kickdown servo switch terminal 7 and the transaxle case.

- No continuity → Poor contact, or damaged or disconnected wiring → Replace the K/D servo switch.
- Continuity → Start the engine, set to the "L" range, and let the engine idle; check for continuity between the kickdown servo switch terminal and the transaxle case.
  NOTE: Be sure the brakes are applied during this check.
  - Continuity exists → Poor contact (sticking) → Replace the K/D servo switch.
  - No continuity → Normal

11. Transaxle control unit (TCU)

Disconnect the harness (both A and B connectors) from the vehicles TCU. Then connect, a new TCU to this harness and make a road test.

- The problem does not occur → Malfunction of the original TCU → Install a new TCU.
- Consider the original TCU to be normal, and again check the sensors, wiring, etc.