1995-96 AUTOMATIC TRANSMISSIONS

Chrysler 41TE/AE Overhaul

APPLICATION

NOTE: This article includes coverage for 1995-96 Mitsubishi Eclipse F4AC1. References to Eagle Talon also apply to Mitsubishi Eclipse.

TRANSMISSION APPLICATION

Model	Transaxle
Passenger Cars	
1995 Acclaim	41TE
1995-96 Avenger	41TE
1996 Breeze	41TE
1995-96 Cirrus	41TE
1995-96 Eclipse (2.0L)	F4AC1
1995 LeBaron (3.0L)	41TE
1995-96 Sebring	41TE
1996 Sebring Convertible	41TE
1995 Spirit	41TE
1995-96 Stratus	41TE
1995-96 Talon (Non-Turbo)	41TE
Vans	
1995-96 Caravan 2WD	41TE
1995-96 Caravan AWD	41AE
1995-96 Grand Caravan 2WD	41TE
1995-96 Grand Caravan AWD	41AE
1995-96 Grand Voyager 2WD	41TE
1995-96 Grand Voyager AWD	41AE
1995-96 Town & Country 2WD	41TE
1995-96 Town & Country AWD	41AE
1995-96 Voyager 2WD	41TE
1995-96 Voyager AWD	41AE

CAUTION: If battery is disconnected or voltage supply to Transaxle Control Module (TCM) is interrupted, TCM will have to relearn shift characteristics. If TCM, transaxle internal components, solenoid assembly or torque converter are replaced, TCM will have to relearn shift characteristics. Perform shift quality quick-learn procedure. See SHIFT QUALITY QUICK-LEARN PROCEDURE in AUTO TRANS DIAGNOSIS - CHRYSLER 41TE/AE CONTROLS .

CAUTION: If Transaxle Control Module (TCM) is replaced or changed from one vehicle to another, proper procedure must be followed to calibrate TCM for different equipment combinations to provide speedometer operation and correct readings. Failure to perform this procedure will result in no speedometer operation. See PINION FACTOR PROCEDURE in AUTO TRANS DIAGNOSIS - CHRYSLER 41TE/AE CONTROLS article.

NOTE: Transaxle control module may also be referred to as transmission control module.

IDENTIFICATION

NOTE: The 41AE is used on All-Wheel Drive (AWD) FWD Van models. The 41AE internal components are the same as the 41TE, except 41AE contains power transfer unit (transfer case) attached to transaxle case. Service procedures for 41TE also apply to 41AE unless designated.

Transaxle identification can be verified on tag (body code plate) mounted to driver's door pillar. See **Fig. 1** and **Fig. 2**. Transaxle code for Avenger, Sebring and Talon is F4AC1. Transaxle code for all other models is DGL. Serial number is stamped on transaxle case. See **Fig. 3** and **Fig. 4**. Code and/or serial number may be required when ordering replacement components.

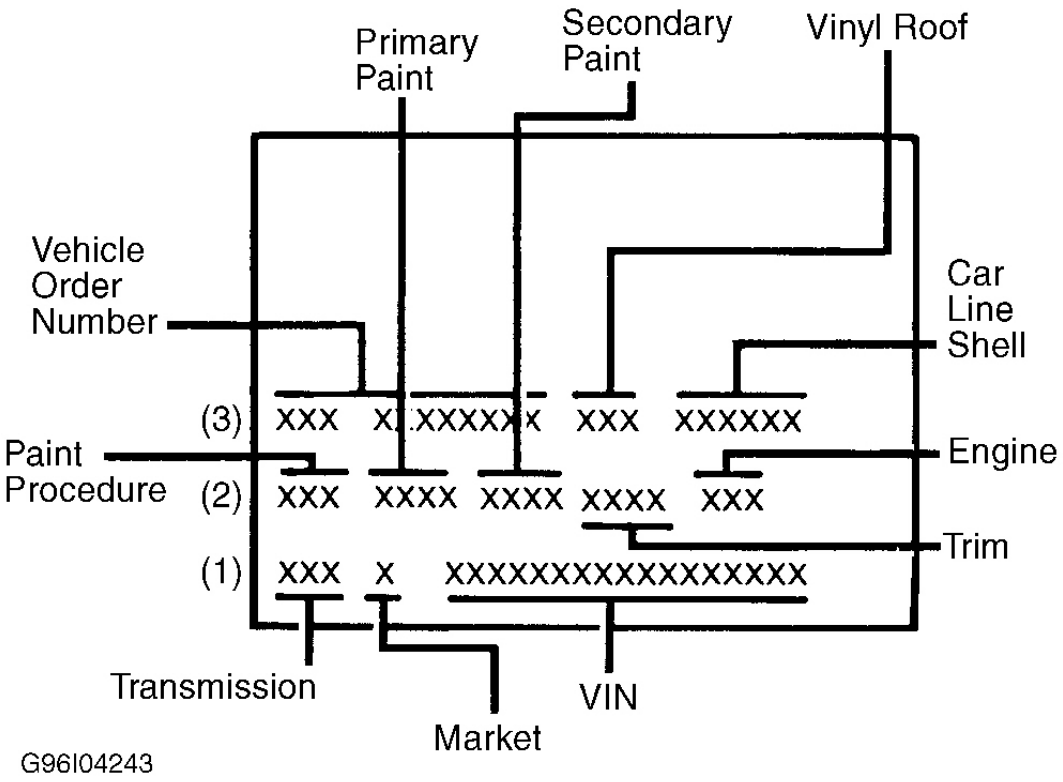

Fig. 1: Identifying Body Code Plate (Except Avenger, Sebring & Talon)
Courtesy of CHRYSLER CORP.

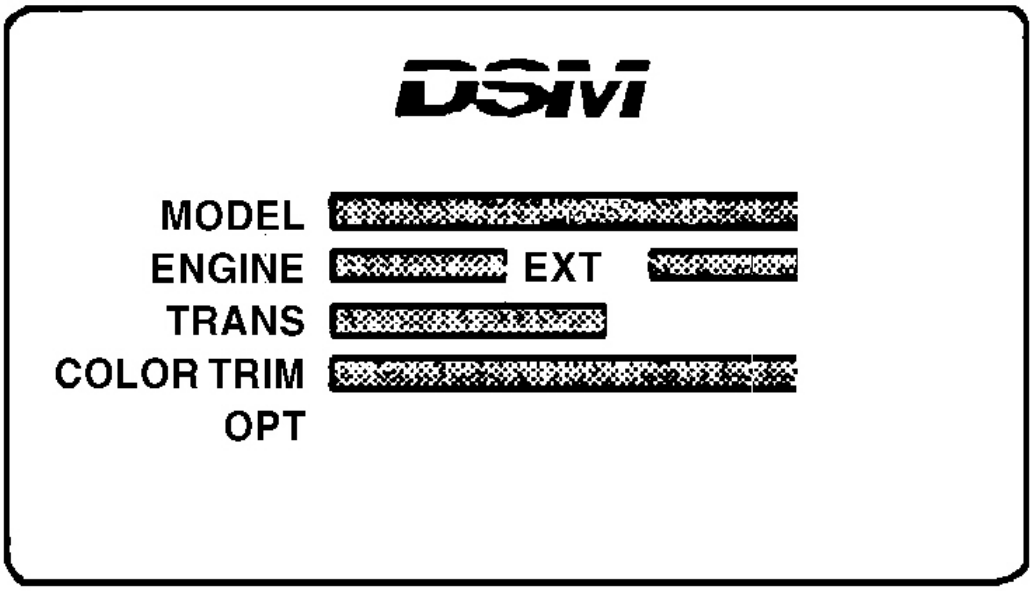

Fig. 2: Identifying Body Code Plate (Avenger, Sebring & Talon)
Courtesy of CHRYSLER CORP.

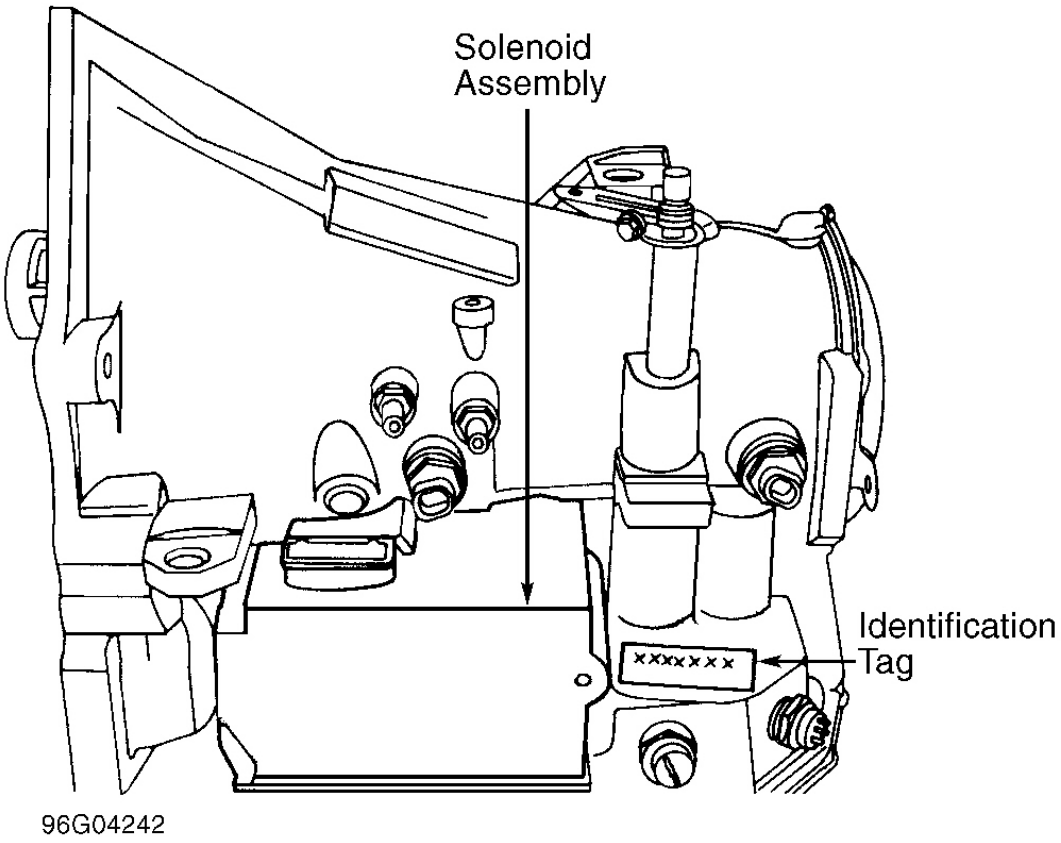

Fig. 3: Locating A/T Serial Number (Except Avenger, Sebring & Talon)
Courtesy of CHRYSLER CORP.

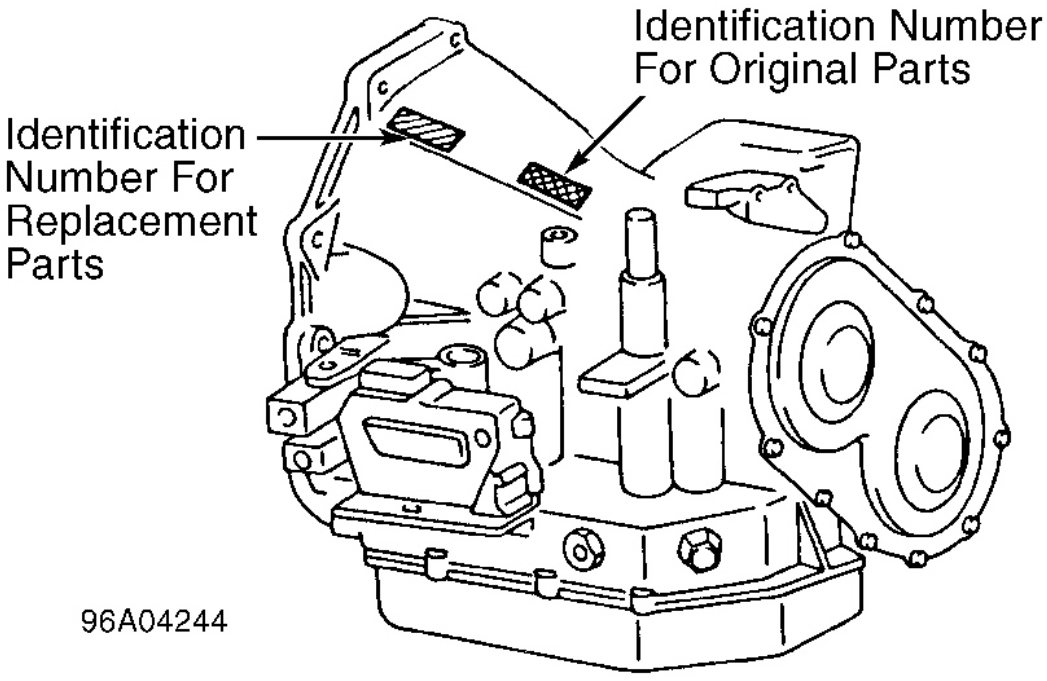

Fig. 4: Locating Transaxle Serial Number (Avenger, Sebring & Talon)
Courtesy of CHRYSLER CORP.

DESCRIPTION

The 41TE/AE is an electronically-controlled 4-speed transaxle. Transaxle uses hydraulically operated clutches controlled by the Transaxle Control Module (TCM).

The TCM is considered a fully adaptive control module. Adaptive controls perform function based on real-time feedback sensor information. Transaxle consists of 3 multiple-disc input clutches, 2 multiple-disc holding clutches, accumulators and 2 planetary gear sets to provide 4 forward speeds and a reverse gear. See **Fig. 5**. Final Drive Ratio (FDR) varies between models and available engines. For FDR identification, see below for **FINAL DRIVE RATIO IDENTIFICATION**.

FINAL DRIVE RATIO IDENTIFICATION (1)

Model	Ratio
Avenger, Sebring & Talon (2.0L & 2.5L)	4.08
Breeze, Cirrus & Stratus	
2.0L	4.08
2.4L & 2.5L	3.91
Caravan, Town & Country, & Voyager	
2.4L	3.91

3.3L	3.62
3.8L	3.45
(1) Manufacturer does not supply information for LeBaron.	

The TCM receives information from various sensors and controls solenoid assembly through transaxle control relay. Solenoid assembly consists of 4 solenoids for controlling hydraulic pressure to 4 of the 5 transaxle clutches.

The TCM contains an adaptive memory which learns application and release rates of transaxle components for maximum shift efficiency. The TCM also learns the rate at which applied elements build pressure sufficient for a speed change.

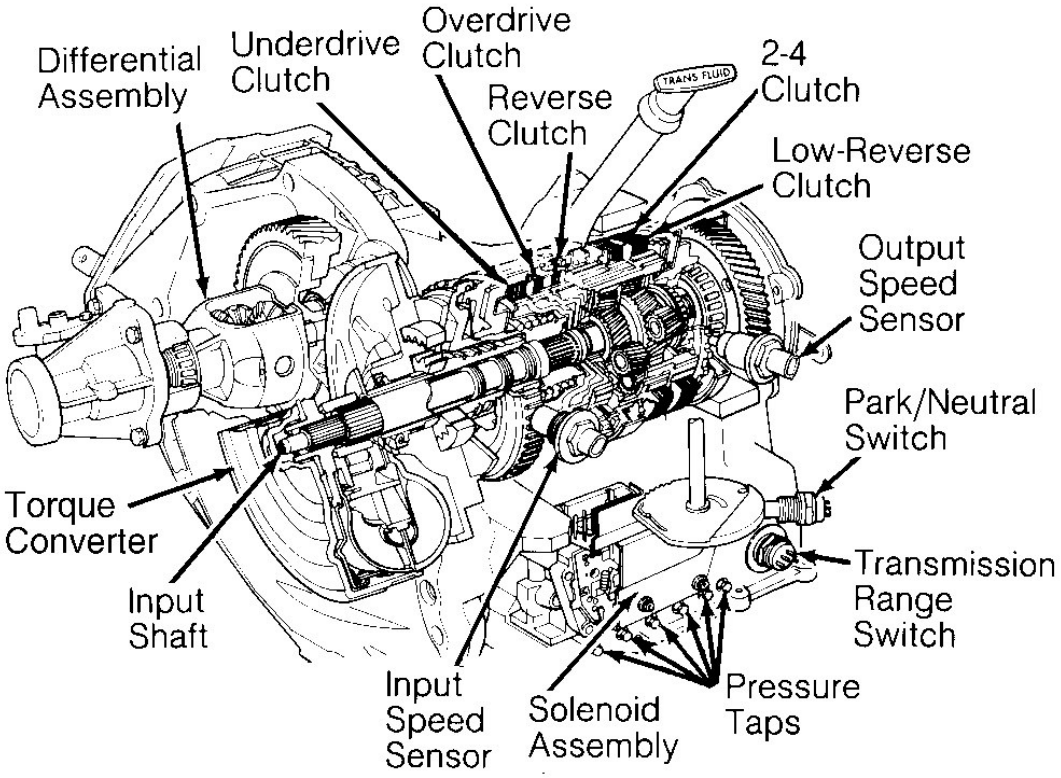

Fig. 5: Identifying Transaxle Components
Courtesy of CHRYSLER CORP.

OPERATION

Avenger, Sebring & Talon

When gearshift is in "D" (Drive) position, transaxle will shift through first 3 speeds with torque converter lock-up in 3rd gear. When overdrive switch on gearshift handle is released (ON position), vehicle will shift into overdrive with torque converter lock-up. When gearshift is in "D" position with overdrive switch depressed, transaxle uses only 1st, 2nd and 3rd gears with 2nd-to-3rd gear shift delayed until vehicle speed is at least 40 MPH. When operating with gearshift in "3" position, torque converter lock-up occurs in 3rd gear for improved transaxle cooling. If engine coolant temperature becomes excessively warm, torque converter lock-up will occur in 2nd gear. When gearshift is in "L" position, engine braking is provided for descending grades.

Models With Autostick

With gearshift in "OD" position, transmission shift schedule is same as non-autostick vehicle. When gearshift is moved into "A/S" (autostick) position, transaxle remains in same gear until gearshift handle is moved to left (downshift) or right (upshift). Vehicle can be driven from complete stop in 1st, 2nd or 3rd gear. Shift into "OD" position cancels autostick mode and transaxle resumes OD shift schedule. For safety, durability and driveability, some shifts are executed automatically or prevented. For more information see the **AUTOSTICK OVERRIDE SHIFT SCHEDULE TABLE**.

AUTOSTICK OVERRIDE SHIFT SCHEDULE

Shift Sequence	Condition
Automatic Shifts	
4-3 Coast Shift	13 MPH
3-2 Coast Shift	9 MPH
2-1 Coast Shift	5 MPH
1-2 Shift	6300 RPM
2-3 Shift	6300 RPM
4-3 Shift (Non-Coasting)	13-31 MPH
Overridden Manual Shifts	
3-4 Shift	15 MPH Or Less
3-2 Downshift	(1)
2-1 Downshift	(2)

(1) 74 MPH or more with closed throttle, or 70 MPH with any other throttle position.

(2) 41 MPH or more with closed throttle, or 38 MPH with any other throttle position.

All Other Models Without Autostick

When gearshift is in "OD" (overdrive) position, transaxle will shift through all 4 speeds with torque converter lock-up in overdrive. When gearshift is in "3" position, transaxle uses only 1st, 2nd and 3rd gears with 2nd-to-3rd gear shift delayed until vehicle speed is at least 40 MPH. When operating with gearshift in "3" position, torque converter lock-up occurs in 3rd gear for improved transaxle cooling. If engine coolant temperature becomes excessively warm, torque converter lock-up will occur in 2nd gear. When gearshift is in "L" position,

engine braking is provided for descending grades.

All Models

Transaxle Control Module (TCM) contains a self-diagnostic system which stores a diagnostic trouble code if a transaxle problem exists. Diagnostic trouble code can be retrieved to determine the transaxle problem area. For information on electronic transaxle components, see AUTO TRANS DIAGNOSIS - CHRYSLER 41TE/AE CONTROLS article.

OPERATION CHARACTERISTICS AT VARIOUS FLUID TEMPERATURES

NOTE: For shift schedule trouble shooting, see TROUBLE SHOOTING.

Overview

41TE transaxle shift schedule depends on temperature of transaxle fluid. The shift schedule is modified to extend life of transaxle while operating under extreme conditions. Most 1996 models measure fluid temperature using thermistor mounted in Transmission Range Sensor (TRS).

1996 models without TRS or 1995 models use a complex calculation of heat transfer to determine fluid temperature. Fluid temperature is initialized using inputs of engine coolant temperature, battery/ambient temperature and engine off time from BCM.

Once engine is started on models without TRS, TCM updates transaxle oil temperature based on torque converter slip speed, vehicle speed, gear, and engine coolant temperature to determine estimated fluid temperature. This calculated fluid temperature becomes inaccurate during extreme operation. Highlights of various shift schedules are as follows:

Extreme Cold Fluid (Less Than -16°F)

- Park, reverse, neutral and 2nd gear only.

Cold Fluid (-12°F To Less Than 36°F)

- Delayed 2-3 upshift (22-31 MPH).
- Delayed 3-4 upshift (45-53 MPH).
- Early 4-3 coast downshift (30 MPH).
- Early 3-2 coast downshift (17 MPH).
- Prevented high speed 4-2, 3-2, 2-1 kickdown shifts.
- No TCC.

Warm Fluid (36°F To Less Than 80°F)

- Normal operation.
- No TCC.

Hot Fluid (80°F To Less Than 250°F)

- Normal Operation
- Full TCC engagement (except closed throttle operation, 70-83 MPH).

Overheated Fluid (250-260°F)

- Delayed 2-3 upshift (25-32 MPH).
- Delayed 3-4 upshift (41-48 MPH).
- 3rd gear full TCC engagement from 30-48 MPH.
- 3rd gear partial TCC engagement from 27-31 MPH.

Super Overheated Fluid (More Than 260°F)

- Delayed 2-3 upshift (25-32 MPH).
- Delayed 3-4 upshift (41-48 MPH).
- 3rd gear full TCC engagement from 30-48 MPH.
- 3rd gear partial TCC engagement from 27-31 MPH.
- 2nd gear partial TCC engagement 22 MPH.
- TCC will not unlock above 22 MPH unless throttle is closed.

LUBRICATION & ADJUSTMENTS

NOTE: See appropriate TRANSMISSION SERVICING - A/T article in TRANSMISSION SERVICING.

ON-VEHICLE SERVICE

OIL COOLER FLUSHING

CAUTION: Whenever transaxle failure exists, oil cooler must be flushed. Oil cooler by-pass valve in transaxle and torque converter must be replaced. Oil cooler by-pass valve is located in transaxle case, behind oil pump. See Fig. 17. If vehicle is equipped with 2 oil coolers (one in radiator tank and one in front of radiator), flush oil coolers separately. DO NOT attempt to flush both oil coolers at one time.

1. Disconnect oil cooler lines at transaxle. Using hand-held suction gun filled with solvent, force solvent into oil cooler return line until solvent flows from oil cooler supply line. See **Fig. 6**.

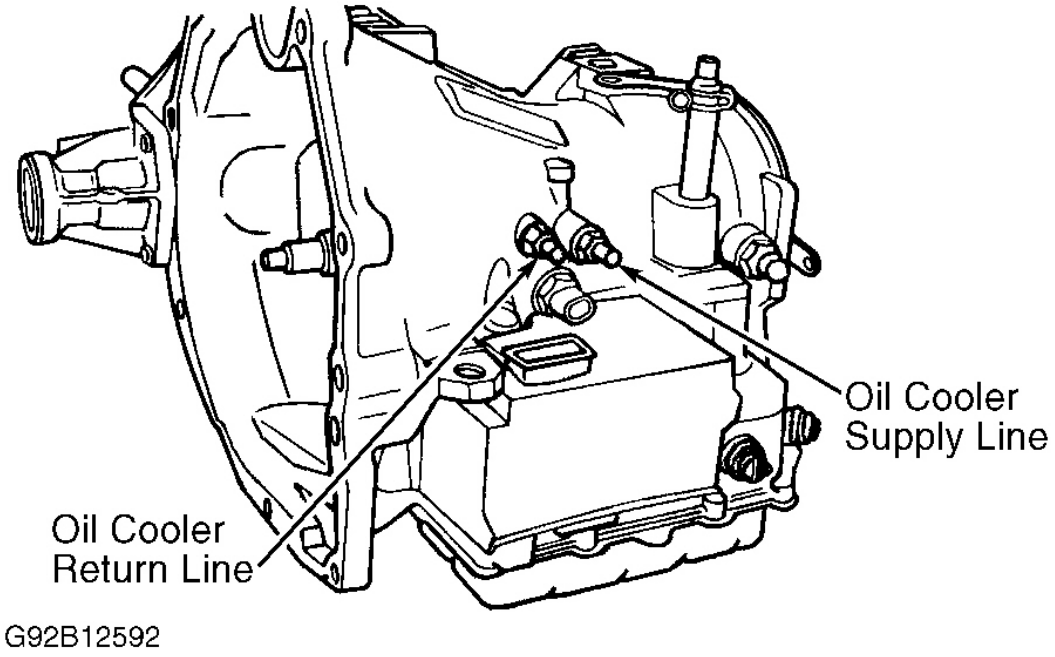

Fig. 6: Identifying Oil Cooler Lines On Transaxle
Courtesy of CHRYSLER CORP.

2. Continue flushing oil cooler until solvent is clear and no sign of contamination exists. Once no contamination exists, apply compressed air on oil cooler return line in light applications until remaining mineral spirits is blown from oil cooler and oil cooler lines.
3. Pump at least one quart of Mopar ATF Plus-Type 7176 through oil cooler to ensure oil cooler is free of solvent. Replace oil cooler if fluid does not flow freely from oil cooler.

OIL COOLER FLOW CHECK

1. With transaxle filled to proper fluid level, disconnect oil cooler return line at transaxle. See **Fig. 6**. Place container under oil cooler return line.

CAUTION: DO NOT obtain more than one quart of fluid or transaxle may be damaged.

2. Apply parking brake. Start engine and allow to idle. Place gearshift in Neutral. Check fluid flow from oil cooler return line.
3. If fluid flow is intermittent or it takes more than 20 seconds to obtain one quart of fluid, replace oil cooler. Reconnect oil cooler return line. Fill to proper fluid level with Mopar ATF Plus-Type 7176.

TROUBLE SHOOTING

Preliminary Checks

Transaxle malfunctions may be caused by poor engine performance, improper adjustments or failure of hydraulic, mechanical or electronic components. Always begin by checking fluid level, fluid condition and shift linkage or cable adjustment. Perform road test to determine if problem has been corrected. If problem still exists, several tests must be performed on transaxle. See **TESTING**.

CAUTION: Before attempting any repair on electronic transaxle, ALWAYS check for Diagnostic Trouble Codes (DTC's). See AUTO TRANS DIAGNOSIS - CHRYSLER 41TE/AE CONTROLS article.

SHIFT SCHEDULE OPERATION

Extreme Cold Or Cold Shift Schedule At Start-Up

Possible causes: Defective engine coolant temperature sensor (w/o TRS), defective battery/ambient temperature sensor (w/o TRS), defective Powertrain Control Module (w/o TRS).

Overheat Or Super Overheat Shift Schedule After Extended

Operation

Possible causes: Vehicle operation in city (stop and go) traffic, engine idle speed too high, aggressive driving in low gear, trailer towing in OD gear position, cooling system failure, engine coolant temperature below 150°F for extended period (no TCC engagement), defective brake switch (no TCC engagement), fluid overfilled (w/ TRS), restricted cooler or cooler lines (w/ TRS).

SYMPTOM DIAGNOSIS

Buzzing Noise

Check for aerated fluid, incorrect fluid level and valve body malfunction or leakage.

Buzzing Noise During Transaxle Shifts

Check for normal solenoid operation and solenoid assembly sound cover loose or missing.

Delayed Engagement From Neutral To Drive

Check for aerated fluid, damaged clutch seals, engine idle speed too low, faulty oil pump, hydraulic pressures too low, incorrect shift linkage or cable adjustment, low fluid level, oil filter restricted, valve body malfunction or leakage, worn or broken reaction shaft support seal rings. Check for worn or damaged accumulator seal rings, input shaft seal rings, and worn or faulty underdrive clutch.

Delayed Engagement From Neutral To Reverse

Check for aerated fluid, damaged clutch seals, engine idle speed too low, faulty oil pump, hydraulic pressures too low, incorrect shift linkage or cable adjustment, low fluid level, oil filter restricted, valve body malfunction

or leakage. Check for worn or broken reaction shaft support seal rings, accumulator seal rings, input shaft seal rings, or reverse clutch.

Grating, Scraping Or Growling Noise

Check for worn or damaged axle shaft bushing or bearings, chipped or damaged gear teeth, and defective planetary gear sets.

Hard To Fill With Fluid Or Fluid Blows Out Filler Tube

Check for aerated fluid, high fluid level and oil filter restricted.

Harsh Downshifts

Check for aerated fluid, damaged clutch seals, engine idle speed too high, hydraulic pressures too high, improper engine performance, low fluid level, valve body malfunction or leakage. Check for worn or broken reaction shaft support seal rings, and accumulator seal rings, or worn or faulty low-reverse clutch, underdrive clutch and 2-4 clutch.

Harsh Engagement From Neutral To Drive

Check for defective torque converter, engine idle too high, hydraulic pressures too high, improper engine performance, valve body malfunction or leakage. Check for worn or damaged accumulator seal rings, worn or faulty low-reverse clutch or underdrive clutch.

Harsh Engagement From Neutral To Reverse

Check for engine idle too high, hydraulic pressures too high, improper engine performance, valve body malfunction or leakage. Check for worn or damaged accumulator seal rings, low-reverse clutch, and reverse clutch.

Harsh Torque Converter Lock-Up

Check for sticking lock-up piston in torque converter.

Harsh Upshift

Check for improper engine performance, incorrect hydraulic pressure. Check for worn or faulty overdrive clutch and worn or faulty 2-4 clutch.

High Shift Efforts

Check for valve body malfunction or leakage, or worn or damaged shift linkage or cable.

No Torque Converter Lock-Up

Check for aerated fluid, defective torque converter, engine coolant temperature low, faulty oil pump, hydraulic pressures too low, low fluid level, valve body malfunction or leakage, and worn or damaged input shaft seal

rings.

No Upshift Into Overdrive

Check for engine coolant temperature low and worn or faulty overdrive clutch.

Poor Shift Quality

Check for aerated fluid, hydraulic pressures too low, low fluid level, oil filter restricted, valve body malfunction or leakage and worn or broken reaction shaft support seal rings.

Shifts Erratically

Check for aerated fluid, faulty oil pump, hydraulic pressures too low, improper engine performance, incorrect shift linkage or cable adjustment, low fluid level, oil filter restricted. Check for worn or broken reaction shaft support seal rings, worn or faulty low-reverse clutch overdrive clutch, underdrive clutch, 2-4 clutch, and valve body malfunction or leakage.

Transaxle Overheats

Check for aerated fluid, defective torque converter, engine idle speed too high, faulty engine cooling system, faulty oil pump, hydraulic pressures too low, incorrect fluid level, incorrect shift linkage or cable adjustment, and insufficient clutch plate clearance.

Vehicle Drags Or Locks

Check for worn or damaged bearings, chipped or damaged gear teeth, defective planetary gear sets. Check for worn or faulty low-reverse clutch, overdrive clutch, reverse clutch, underdrive clutch, and 2-4 clutch.

Vehicle Moves In Neutral

Check for dragging clutch, incorrect shift linkage or cable adjustment, insufficient clutch plate clearance, valve body malfunction or leakage. Check for worn or faulty overdrive clutch, reverse clutch, and underdrive clutch.

TESTING

SHIFT LINKAGE, PARK/NEUTRAL SWITCH & TRANS. RANGE SWITCH

NOTE: Shift linkage or cable adjustment can be verified by determining if vehicle will start with gearshift in Park or Neutral positions. This indicates if Park/Neutral switch, transmission range switch or transmission range sensor are operating properly.

1. Normal operation of Park/Neutral switch, transmission range switch or transmission range sensor provides a quick check to confirm proper adjustment of shift linkage or cable.
2. Apply parking brake. Move gearshift into a forward gear. Move gearshift slowly into Park. Ensure vehicle starts with gearshift in Park.

3. Move gearshift to Neutral. Ensure vehicle starts with gearshift in Neutral. If vehicle does not start in both of these positions, shift linkage or cable must be adjusted. See appropriate TRANSMISSION SERVICING - A/T article in the AUTOMATIC TRANS SERVICE section. See the following list.
    - For 1995 Cars Except Talon, see: TRANSMISSION SERVICING - A/T
    - For 1996 Cars Except Talon, see: TRANSMISSION SERVICING - A/T
    - For 1995 FWD Vans, see: TRANSMISSION SERVICING - A/T
    - For 1996 FWD Vans, see: TRANSMISSION SERVICING - A/T
    - For 1995 Talon, see: **TRANSMISSION SERVICING - A/T**
    - For 1996 Talon, see: **TRANSMISSION SERVICING - A/T**

ROAD TEST

1. Ensure shift linkage or cable is properly adjusted and fluid level and condition are okay. Add fluid and adjust shift linkage or cable as needed.
2. Road test vehicle, operating transaxle in each gear position. Check for slipping or any variation in shifting.
3. If vehicle operates properly at highway speeds but has poor acceleration, torque converter stator clutch may be slipping. If acceleration through all gears is normal, but high throttle opening is required to maintain highway speeds, torque converter stator clutch may be seized. Torque converter must be replaced if stator clutch is defective.
4. In most cases, the clutch that is slipping can be determined by noting transaxle operation in all gear positions and noting which clutches are applied. For more information see **TRANSMISSION COMPONENT APPLICATION TABLE**.
5. Process of elimination can be used to detect any unit which slips and to confirm proper operation of good units. Although road test analysis can usually diagnose slipping units, the actual malfunction usually cannot be decided. Practically any condition can be caused by leaking hydraulic circuits or sticking valves.

CAUTION: If torque converter is replaced or Transaxle Control Module (TCM) is changed from one vehicle to another, proper procedure must be followed to reset Electronically Modulated Converter Clutch (EMCC) in torque converter to prevent shudder during clutch engagement for lock-up. See TORQUE CONVERTER CLUTCH BREAK-IN PROCEDURE.

TRANSMISSION COMPONENT APPLICATION

Selector Lever Position	Elements In Use
"OD" Or "D" (Overdrive ON)	
First Gear	Underdrive Clutch, Low/Reverse Clutch
Second Gear	Underdrive Clutch, 2/4 Clutch
Third Gear	Underdrive Clutch, Overdrive Clutch

Overdrive	Overdrive Clutch, 2/4 Clutch
"3" Or "D" (Drive, OD OFF)	
First Gear	Underdrive Clutch, Low/Reverse Clutch
Second Gear	Underdrive Clutch, 2/4 Clutch
Third Gear	Underdrive Clutch, Overdrive Clutch
"2" (Intermediate)	
First Gear	Underdrive Clutch, Low/Reverse Clutch
Second Gear	Underdrive Clutch, 2/4 Clutch
Third Gear	Underdrive Clutch, Overdrive Clutch
"L" (Low)	
First Gear	Underdrive Clutch, Low/Reverse Clutch
Second Gear	Underdrive Clutch, 2/4 Clutch
Third Gear	Underdrive Clutch, Overdrive Clutch
"R" (Reverse)	Reverse Clutch, Low/Reverse Clutch
"N" (Neutral)	Low/Reverse Clutch
"P" (Park)	Low/Reverse Clutch

STALL SPEED TEST (AVENGER, SEBRING & TALON)

NOTE: Manufacturer does not supply torque converter stall speed testing information for AJ, AS, JA, JX and NS bodies.

1. Torque converter stall test is performed to determine stator overrunning clutch operation and condition. Operation and condition of other clutches can also be tested, when clutch is selected using scan tool.
2. Operate engine and transmission at normal operating temperature. Install tachometer. Apply service and parking brake. Block front wheels. Start engine and place transmission in "D" or "OD". Accelerate engine to full throttle and note maximum RPM obtained. Repeat test in "R". See **STALL TEST RESULTS** heading below.
3. Listen for any abnormal noise while performing stall test. A whining noise due to fluid flow within converter is considered normal. If metallic noises are coming from converter housing area, inspect converter to flywheel mounting. Also inspect flywheel for cracks. Repair as needed. Inspect fluid for contamination.

CAUTION: DO NOT maintain stall RPM for more than 5 seconds. Allow engine to idle for one minute between tests to allow fluid to cool.

Stall Test Results

1. If transaxle operation is okay at freeway speeds, but vehicle has poor acceleration, stator overrunning clutch may be slipping. Stall speed should be 1950-2050. Transaxle over-heating and poor fuel economy may also result.
2. If vehicle acceleration is okay, but additional throttle is needed to maintain freeway speeds (lack or power), stator overrunning clutch may be seized. Transaxle over-heating and poor fuel economy may also result.
3. If stall speed is greater than 2640 RPM, a clutch is slipping. Diagnose clutch circuits by performing hydraulic and air pressure tests. Transaxle clutches may also be checked using scan tool. Input and output sensor speeds can be compared while controlling clutch operation with scan tool. See SCAN TOOL INSTRUCTIONS.

HYDRAULIC PRESSURE TESTS

Pressure Test Preparation

1. Ensure shift linkage or cable is properly adjusted, and that fluid level and condition are okay. Add fluid and adjust shift linkage or control cable as needed.
2. Ensure fluid is at normal operating temperature of 150-200°F (66-93°C). Install tachometer. Raise and support vehicle on hoist, allowing front wheels to rotate freely.

NOTE: A 150 psi (11 kg/cm^2) pressure gauge is used for checking all clutches except reverse clutch. A 300 psi (21 kg/cm^2) pressure gauge is used for checking reverse clutch.

Low-Reverse Clutch Pressure Test

1. Remove plug and install pressure gauge in low-reverse clutch pressure tap. See **Fig. 7**.
2. Place gearshift in "L" position. Allowing front wheels to rotate, accelerate until vehicle speed indicates 20 MPH.
3. Low-reverse clutch pressure should be 115-145 psi (8.0-10.1 kg/cm^2). This pressure test checks oil pump output, pressure regulation and low-reverse clutch hydraulic circuit and shift schedule. Remove pressure gauge. Install and tighten pressure tap plug to specification. See **TORQUE SPECIFICATIONS**.

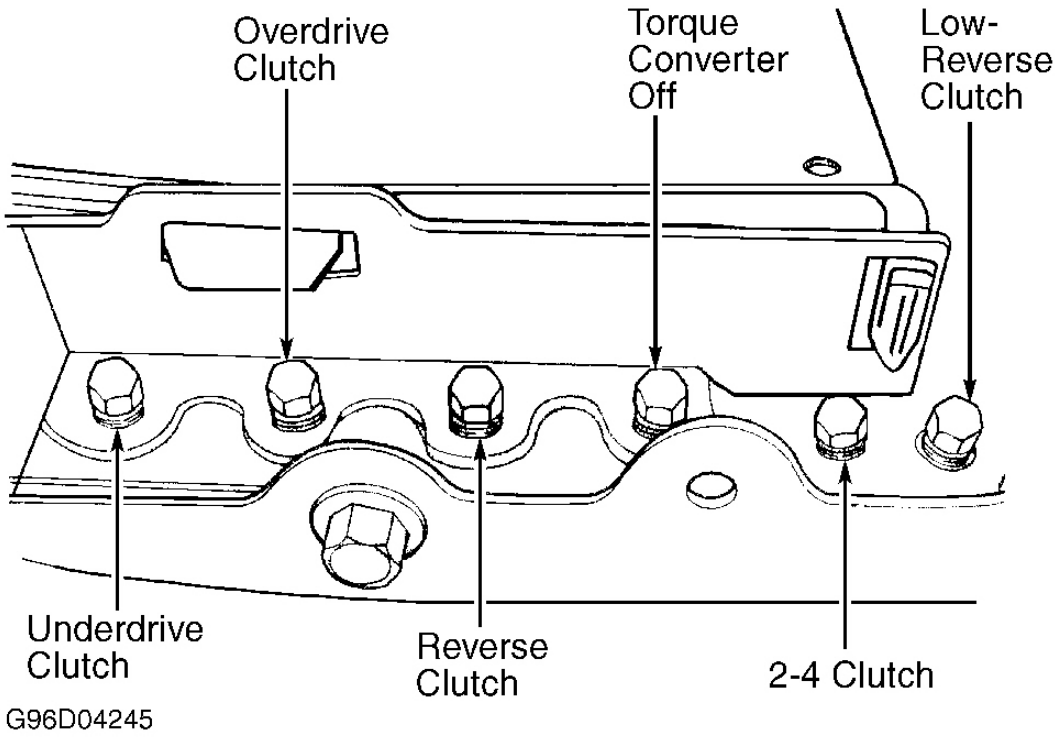

Fig. 7: Identifying Pressure Taps
Courtesy of CHRYSLER CORP.

Underdrive Clutch Pressure Test

1. Remove plug and install pressure gauge in underdrive clutch pressure tap. See **Fig. 7**.
2. Place gearshift in "3" or "2" position. Allowing front wheels to rotate, accelerate until vehicle speed indicates 30 MPH.
3. Underdrive clutch pressure should be 110-145 psi (7.7-10.1 kg/cm^2). This pressure test checks underdrive clutch hydraulic circuit and shift schedule. Remove pressure gauge. Install and tighten pressure tap plug to specification. See **TORQUE SPECIFICATIONS**.

Overdrive Clutch Pressure Test

1. Remove plug and install pressure gauge in overdrive clutch pressure tap. See **Fig. 7**.
2. Place gearshift in "OD" or "D" (Overdrive switch released) position. Allowing front wheels to rotate, accelerate until vehicle speed indicates 20 MPH.
3. Overdrive clutch pressure should be 74-95 psi (5.2-6.7 kg/cm^2). Place gearshift in "3" or "2" position and increase vehicle speed to 30 MPH.
4. Transaxle should be in 2nd gear and overdrive clutch pressure should now be less than 5 psi (.35 kg/cm^2). This pressure test checks overdrive clutch hydraulic circuit and shift schedule. Remove pressure

gauge. Install and tighten pressure tap plug to specification. See **TORQUE SPECIFICATIONS**.

2-4 Clutch Pressure Test

1. Remove plug and install pressure gauge in 2-4 clutch pressure tap. See **Fig. 7**.
2. Place gearshift in "OD" or "D" (Overdrive switch released) position. Allowing front wheels to rotate, accelerate until vehicle speed indicates 30 MPH.
3. The 2-4 clutch pressure should be 75-95 psi (5.3-6.7 kg/cm^2). This pressure test checks 2-4 clutch hydraulic circuit. Remove pressure gauge. Install and tighten pressure tap plug to specification. See **TORQUE SPECIFICATIONS**.

Torque Converter Clutch Off Pressure Test

1. Remove plug and install pressure gauge in torque converter clutch off pressure tap. See **Fig. 7**. Place gearshift in "OD" or "D" (Overdrive switch released) position.
2. Allowing front wheels to rotate, accelerate until vehicle speed indicates 50 MPH.

CAUTION: Ensure both front wheels are rotating at the same speed when performing torque converter clutch off pressure test.

3. Torque converter clutch off pressure should be less than 5 psi (.35 kg/cm^2). This pressure test checks torque converter clutch hydraulic circuit. Remove pressure gauge. Install and tighten pressure tap plug to specification. See **TORQUE SPECIFICATIONS**.

Reverse Clutch Pressure Test

1. Remove plug and install pressure gauge in reverse clutch pressure tap. See **Fig. 7**. Place gearshift in Reverse.
2. Apply brakes. Accelerate until engine speed is 1500 RPM and note reverse clutch pressure. Reverse clutch pressure should be 165-235 psi (11.6-16.5 kg/cm^2). This pressure test checks reverse clutch hydraulic circuit.
3. Remove pressure gauge. Install and tighten pressure tap plug to specification. See **TORQUE SPECIFICATIONS**.

Pressure Test Result Indications

1. If proper hydraulic pressure exists in any one pressure test, oil pump and pressure regulator valve are operating properly. Various clutch operating hydraulic pressures exist depending on gearshift position. See **Fig. 8**.
2. Low hydraulic pressure in any or all positions indicates a defective oil pump, restricted oil filter or stuck pressure regulator valve. If hydraulic pressure is not within specification, clutch hydraulic circuit is leaking.
3. If overdrive clutch hydraulic pressure exceeds 5 psi (.35 kg.cm^2) in step 4) of OVERDRIVE CLUTCH PRESSURE, a worn reaction shaft seal ring is indicated.

Gearshift Position	MPH	Actual Gear	PRESSURE TAPS (All Pressures Below Are PSI)					
			Underdrive Clutch	Overdrive Clutch	Reverse Clutch	Torque Converter Clutch Off	2-4 Clutch	Low-Reverse Clutch
"P" [1]	0	Park	0-2	0-5	0-2	60-110	0-2	115-145
"R" [1]	0	Reverse	0-2	0-7	165-235	50-100	0-2	165-235
"N" [1]	0	Neutral	0-2	0-5	0-2	60-110	0-2	115-145
"L" [2]	20	1st	110-145	0-5	0-2	60-110	0-2	115-145
"2" Or "3" [2]	30	2nd	110-145	0-5	0-2	60-110	115-145	0-2
"2" Or "3" [2]	45	3rd	75-95	75-95	0-2	60-90	0-2	0-2
"D" Or "OD" [2]	30	Overdrive	0-2	75-95	0-2	60-90	75-95	0-2
"D" Or "OD" [2]	50	Overdrive With TCC	0-2	75-95	0-2	0-5	75-95	0-2

[1] - Check with engine speed at 1500 RPM.
[2] - CAUTION: Both front wheels must rotate at same speed.
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Fig. 8: Identifying Clutch Operating Pressures

CLUTCH AIR PRESSURE TESTS

NOTE: Inoperative clutches can be located by applying air pressure to appropriate passages in transaxle case. Clutch assembly is defective if it does not operate correctly.

Test Preparation

Remove valve body. For more information you can see **VALVE BODY** under REMOVAL & INSTALLATION. Install Adapter Plate (6056) on transaxle case. See **Fig. 9**.

CAUTION: Ensure air supply is free of all dirt and moisture. Using air pressure regulator, adjust air pressure to 30 psi (2.1 kg/cm^2).

Overdrive Clutch

Apply air pressure to Overdrive clutch (OD) passage on adapter plate. See **Fig. 9**. Ensure overdrive clutch piston moves forward and returns to original position when air pressure is released.

Reverse Clutch

Apply air pressure to Reverse clutch (REV) passage on adapter plate. See **Fig. 9**. Ensure Reverse clutch piston moves rearward and returns to original position when air pressure is released.

2-4 Clutch

Apply air pressure to feed hole located on 2-4 clutch retainer. Ensure 2-4 clutch piston moves rearward and returns to original position when air is released.

Low-Reverse Clutch

Apply air pressure to low-reverse clutch supply hole, located on rear of transaxle case, between the 2 bolt holes. Ensure low-reverse clutch piston moves forward and returns to original position when air is released.

Underdrive Clutch

1. Apply air pressure to low-reverse and 2-4 clutches. Output shaft should now be locked. Wrap rubber hose around input shaft. Install clamp-on pliers on input shaft. Rotate input shaft.
2. Apply air pressure to underdrive clutch (UD) passage on adapter plate. See **Fig. 9**. Input shaft should not rotate with hand torque. Release air pressure. Ensure input shaft now rotates.

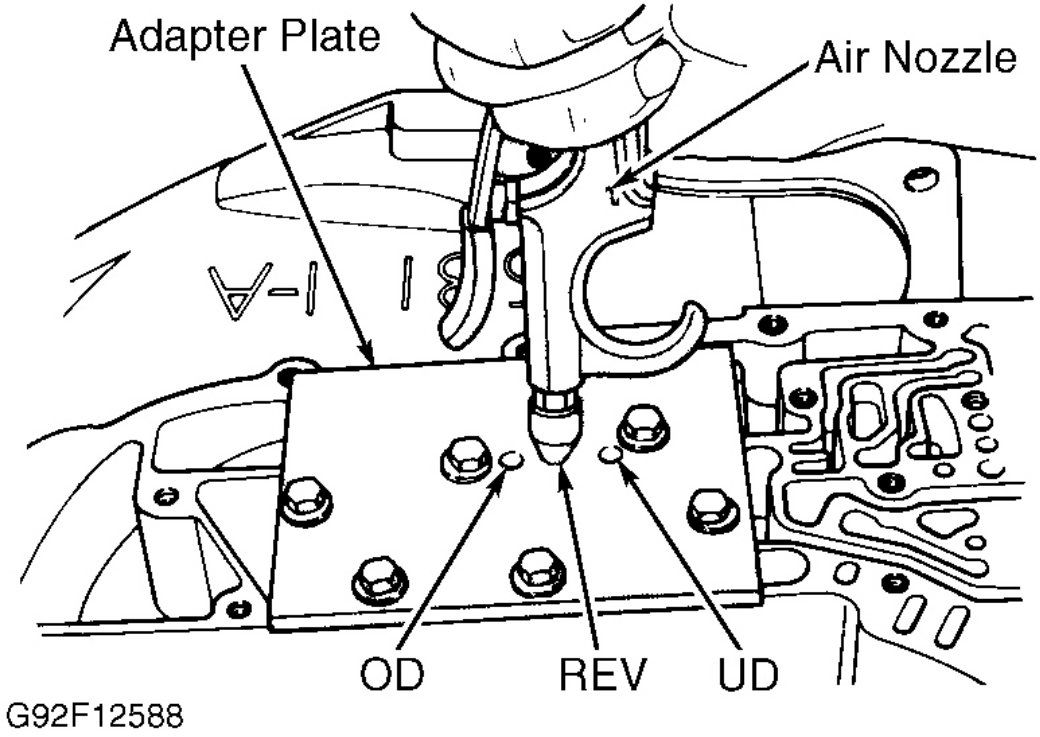


Fig. 9: Applying Air Pressure To Clutch Packs
Courtesy of CHRYSLER CORP.

TORQUE CONVERTER FLUID LEAKAGE TEST

NOTE: Fluid around torque converter may originate from engine oil or transaxle. Ensure transaxle fluid level is correct. Fluid leakage at torque converter may result if fluid level is too high. Transaxle can be checked for leaks using the following method.

1. Remove torque converter housing dust shield. Using solvent, clean inside area of torque converter

housing. Dry with compressed air. Ensure area is clean and dry.

2. Fabricate leakage test probe using 1/32" sheet metal, 5" long and 1 1/2" wide. See **Fig. 10**. Operate engine until transaxle is at normal operating temperature. Install leakage test probe on torque converter dust shield bolt so leakage test probe is near torque converter. Ensure torque converter does not contact leakage test probe.

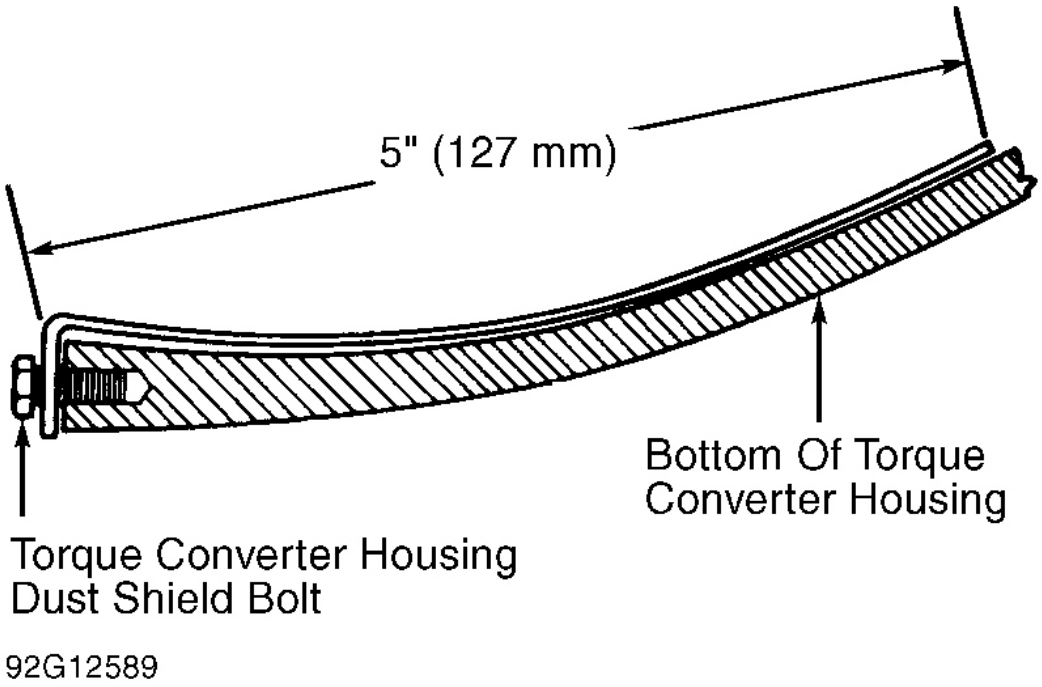


Fig. 10: Fabricating Leakage Test Probe
Courtesy of CHRYSLER CORP

3. Start engine. Place gearshift in Neutral. Operate engine at 2500 RPM for 2 minutes. Stop engine. Remove leakage test probe.
4. If upper surface of leakage test probe is dry, torque converter is not leaking. If upper surface of leakage test probe is wet with ATF, torque converter is leaking. If lower area below leakage test probe is wet with ATF, fluid is coming from around torque converter area.
5. Possible causes of fluid leaks at torque converter areas are:
   - Defective oil pump housing "O" ring or oil pump housing.
   - Defective seal (check torque converter hub finish).
   - Mispositioned or worn bushing.
   - Oil pump-to-transaxle case bolts.
   - Restricted oil pump housing oil return hole.
   - Torque converter hub.

6. If torque converter is leaking, check for defective welds on outside diameter of torque converter and torque converter hub. Torque converter hub is welded on the inside and weld is not visible. Replace torque converter if a leak exists. **DO NOT** attempt to repair torque converter.

CAUTION: If torque converter is replaced or Transaxle Control Module (TCM) is changed from one vehicle to another, proper procedure must be followed to reset Electronically Modulated Converter Clutch (EMCC) in torque converter to prevent shudder during clutch engagement for lock-up. See TORQUE CONVERTER CLUTCH BREAK-IN PROCEDURE.

TRANSAXLE CASE PRESSURE TEST

NOTE: Transaxle case, gaskets and oil pump housing can be checked for leaks using the following method. Transaxle must be removed to perform transaxle case pressure test.

1. Fabricate a torque converter hub seal cup using thin wall tubing and a .125" (3.17 mm) steel disc. See **Fig. 11**. Fabricate torque converter hub seal cup retaining strap using a .25" (6.3 mm) thick and 1.25" (31.7 mm) wide material. See **Fig. 12**.

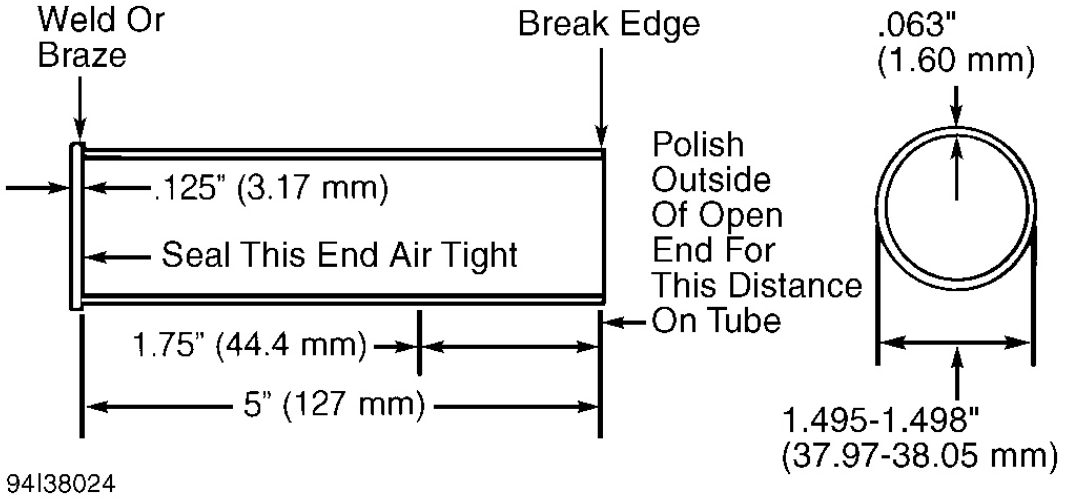


Fig. 11: Fabricating Torque Converter Hub Seal Cup
Courtesy of CHRYSLER CORP.

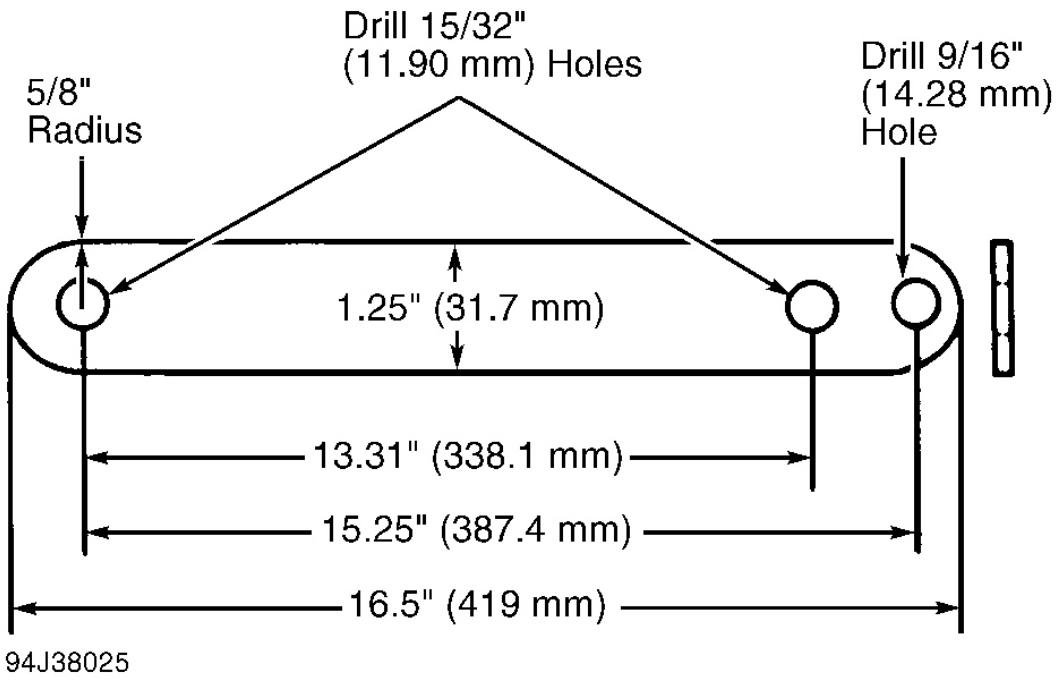


Fig. 12: Fabricating Torque Converter Hub Seal Cup Retaining Strap
Courtesy of CHRYSLER CORP.

2. Remove torque converter from transaxle. Plug dipstick tube and lower oil cooler line fitting. Remove vent from manual shaft and install a 1/8" pipe plug.

CAUTION: DO NOT allow manual shaft to rotate when installing pipe plug.

3. Using rotary motion, install torque converter hub seal cup over input shaft and through torque converter hub seal until cup bottoms against gear lugs of oil pump.
4. Install torque converter hub seal cup retaining strap using starter upper hole and opposite bracket hole. Attach hose from Nozzle (C-4080) to upper oil cooler line fitting on transaxle case.
5. Using pressure regulator, apply 8-10 psi (.5-.7 kg/cm^2) of air pressure to transaxle case.

CAUTION: DO NOT apply more than 10 psi (.7 kg/cm^2) of air pressure to transaxle case.

6. Coat oil pump and front of transaxle case with soapy water solution. Check for bubbles, indicating a leak in seals, "O" rings, gaskets or transaxle case. Release air pressure. Remove test equipment. Replace defective components.

REMOVAL & INSTALLATION

NOTE: If battery is disconnected or voltage supply to Transaxle Control Module (TCM) is interrupted, TCM will have to relearn shift characteristics. Perform shift quality quick-learn procedure. See SHIFT QUALITY QUICK-LEARN PROCEDURE in AUTO TRANS DIAGNOSIS - CHRYSLER 41TE/AE CONTROLS article.

AXLE SHAFTS

See appropriate AXLE SHAFTS article in DRIVE AXLE section.

INPUT SPEED SENSOR

Removal & Installation

1. Disconnect electrical connector from input speed sensor, located on side of transaxle case. See **Fig. 5**. Ensure weather seal remains on electrical connector. Remove input speed sensor from transaxle case.
2. To install, reverse removal procedure. Tighten input speed sensor to specification. See **TORQUE SPECIFICATIONS**. Reconnect electrical connector.

OUTPUT SPEED SENSOR

Removal & Installation

1. Disconnect electrical connector from output speed sensor, located on side of transaxle case. See **Fig. 5**. Ensure weather seal remains on electrical connector. Remove output speed sensor from transaxle case.
2. To install, reverse removal procedure. Tighten output speed sensor to specification. See **TORQUE SPECIFICATIONS**. Reconnect electrical connector.

PARK/NEUTRAL SWITCH

Removal & Installation

1. Disconnect electrical connector from park/neutral switch, located on transaxle case. See **Fig. 5**. Remove park/neutral switch and sealing washer.
2. To install, reverse removal procedure using NEW sealing washer. Ensure sealing washer is fully seated in transaxle case before tightening park/neutral switch to specification. For more information see **TORQUE SPECIFICATIONS**. Reconnect electrical connector.

POWER TRANSFER UNIT (TRANSFER CASE)

All-Wheel Drive Models

See appropriate TRANSFER CASES article in AXLE SHAFTS & TRANSFER CASES.

SOLENOID ASSEMBLY

Removal & Installation

1. Disconnect electrical connector from solenoid assembly. Remove input speed sensor. For more information see **INPUT SPEED SENSOR**. Remove solenoid assembly sound cover. See **Fig. 13**.
2. Remove bolts, solenoid assembly, solenoid assembly gaskets and solenoid plate.
3. To install, reverse removal procedure using NEW solenoid assembly gaskets. Install and tighten bolts to specification. See **TORQUE SPECIFICATIONS**. Reconnect electrical connector.

TRANSAXLE ASSEMBLY

See appropriate TRANSMISSION REMOVAL & INSTALLATION article in TRANSMISSION SERVICING.

TRANSMISSION RANGE SENSOR

NOTE: Transmission Range Sensor (TRS) is mounted to valve body.

Removal & Installation

Remove valve body. See **VALVE BODY**. Place valve body on workbench. Remove TRS retaining screw. Remove manual shaft seal. Slide TRS up manual shaft and remove. To install, reverse removal procedure.

TRANSMISSION RANGE SWITCH

Removal & Installation

1. Disconnect electrical connector from transmission range switch, located on transaxle case. See **Fig. 5**. Remove transmission range switch and sealing washer.
2. To install, reverse removal procedure. Ensure sealing washer is fully seated in transaxle case before tightening transmission range switch to specification. See **TORQUE SPECIFICATIONS**. Reconnect electrical connector.

VALVE BODY

Removal

1. Raise and support vehicle. Disconnect shift linkage or cable from shift lever on manual shaft assembly. Remove shift lever from manual shaft assembly.
2. Remove bolts, oil pan, oil filter and "O" ring. Remove the valve body/transfer plate-to-transaxle case bolts. Note bolt length and location for reassembly reference.
3. Move roller on parking sprag rod from parking sprag guide bracket. See **Fig. 13**. Lift valve body and manual shaft assembly from transaxle case.

Installation

1. To install, reverse removal procedure. Ensure roller on parking sprag rod engages with parking sprag guide bracket. Install valve body/transfer plate-to-transaxle case bolts in original location. Tighten bolts to

specification. See **TORQUE SPECIFICATIONS**.

2. Install NEW oil filter and NEW "O" ring. Apply RTV sealant on oil pan-to-transaxle surface and below head of oil pan bolts before installing. Install and tighten oil pan bolts to specification.
3. Install shift lever on manual shaft assembly. Reconnect shift linkage or cable. Fill with Mopar ATF Plus-Type 7176.

TORQUE CONVERTER

CAUTION: Torque converter is a welded assembly and is not serviceable. If a malfunction occurs or if torque converter becomes contaminated with foreign material, it MUST be replaced. It cannot be flushed or repaired. If torque converter is replaced, special torque converter break-in procedure must be performed to prevent shudder during clutch engagement for lock-up. For more information see TORQUE CONVERTER CLUTCH BREAK-IN PROCEDURE.

TORQUE CONVERTER CLUTCH BREAK-IN PROCEDURE

Overview

Procedure is used to properly condition torque converter clutch to prevent shudder during clutch engagement. Break-in procedure must be used if torque converter is replaced or Transaxle Control Module (TCM) is changed from one vehicle to another. The TCM break-in procedure must be reset to start process. The break-in procedure is performed in 3 stages, START, IN PROGRESS and COMPLETE. In the START stage, full clutch engagement exists. In the IN-PROGRESS stage, partial clutch engagement exists with progressive clutch slippage. In the COMPLETE stage, partial clutch engagement exists with 60 RPM clutch slippage. The TCM break-in procedure will be reset to START to indicate test has been successfully completed.

Break-In Procedure

1. Connect DRB to data link connector, located under driver's side of instrument panel. Using proper cartridge and DRB manufacturer's instructions, move through menu selections to access 41TE/AE menu. Select ADJUSTMENTS function.
2. Select RESET LU CLUTCH function. DRB will now display the break-in status, such as START, IN-PROGRESS or COMPLETE. If START is displayed, no further action is required.
3. If IN-PROGRESS or COMPLETE is displayed, press ENTER key to return break-in procedure to the START stage. Press ENTER key again. The DRB will now display RESET LU CLUTCH ARE YOU SURE. Press ENTER key again. Break-in procedure should now be reset. The DRB should display that LU CLUTCH break-in status has been reset to START. Remove DRB.

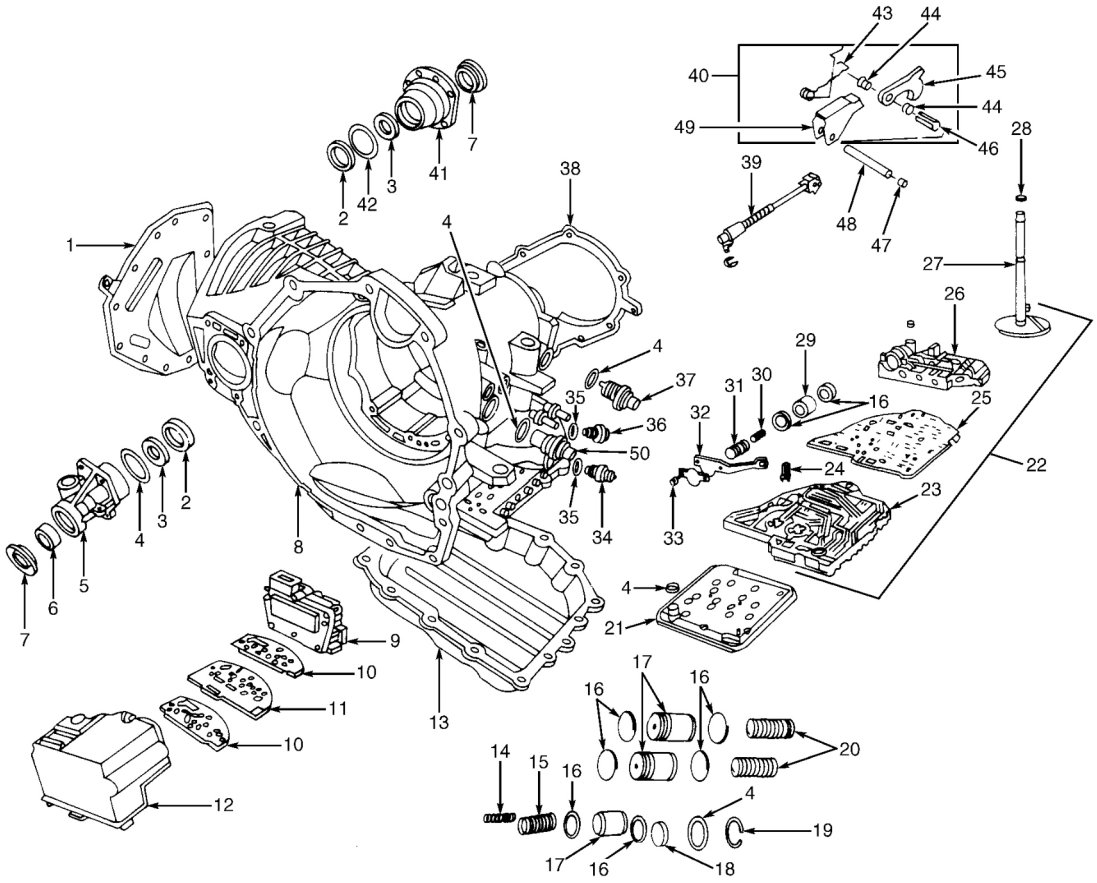
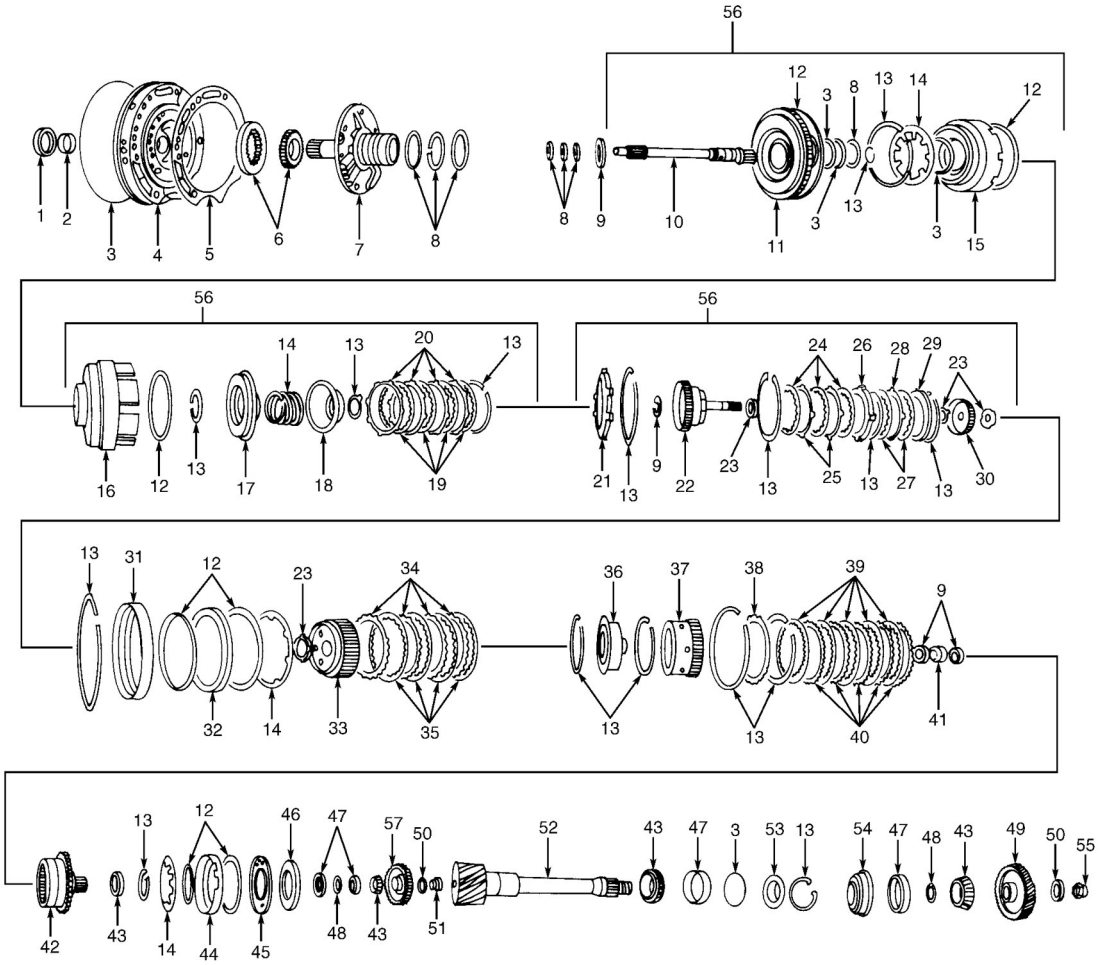


Fig. 13: Exploded View Of Transaxle Case
Courtesy of CHRYSLER CORP.



1. Oil Seal
2. Bushing
3. "O" Ring
4. Oil Pump
5. Gasket
6. Oil Pump Gear
7. Reaction Shaft & Support
8. Seal Ring
9. Thrust Bearing
10. Input Shaft
11. Input Clutch Hub
12. Seal
13. Snap Ring
14. Clutch Piston Return Spring
15. Overdrive-Reverse Clutch Piston
16. Input Clutch Retainer
17. Underdrive Clutch Piston
18. Spring Retainer
19. Underdrive Clutch Disc
20. Underdrive Clutch Plate
21. Underdrive Clutch Reaction Plate
22. Underdrive Shaft Assembly
23. Thrust Washer
24. Overdrive Clutch Disc
25. Overdrive Clutch Plate
26. Overdrive-Reverse Clutch Pressure Plate
27. Reverse Clutch Disc
28. Reverse Clutch Plate
29. Reverse Clutch Reaction Plate
30. Overdrive Clutch Hub
31. 2-4 Clutch Retainer
32. 2-4 Clutch Piston
33. 2-4 Clutch Hub
34. 2-4 Clutch Disc
35. 2-4 Clutch Plate
36. Front Planetary Carrier
37. Rear Annulus Gear
38. Low-Reverse Clutch Reaction Plate
39. Low-Reverse Clutch Disc
40. Low-Reverse Clutch Plate
41. Rear Sun Gear
42. Rear Planetary Carrier
43. Bearing
44. Low-Reverse Clutch Piston
45. Low-Reverse Clutch Piston Retainer
46. Piston Retainer Gasket
47. Bearing Race
48. Selective Spacer Or Shim
49. Transfer Gear
50. Washer
51. Bolt
52. Transfer Shaft
53. Baffle
54. Bearing Race Retainer
55. Nut
56. Components Used In Input Clutch Assembly
57. Output Gear

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Fig. 14: Exploded View Of Internal Transaxle Components
Courtesy of CHRYSLER CORP.

TRANSAXLE DISASSEMBLY

NOTE: Input shaft end play should be measured before transaxle disassembly. Measurement indicates if No. 4 thrust washer (thrust washer with 3 slots) on shaft side of overdrive clutch hub may need replacement.

1. Remove torque converter. Attach dial indicator to transaxle case with dial indicator stem seated against end of input shaft. See **Fig. 15**.
2. Move input shaft inward and zero dial indicator. Pull input shaft outward and note reading. Input shaft end play should be .005-.025" (.13-.64 mm). Record input shaft end play for reassembly reference.

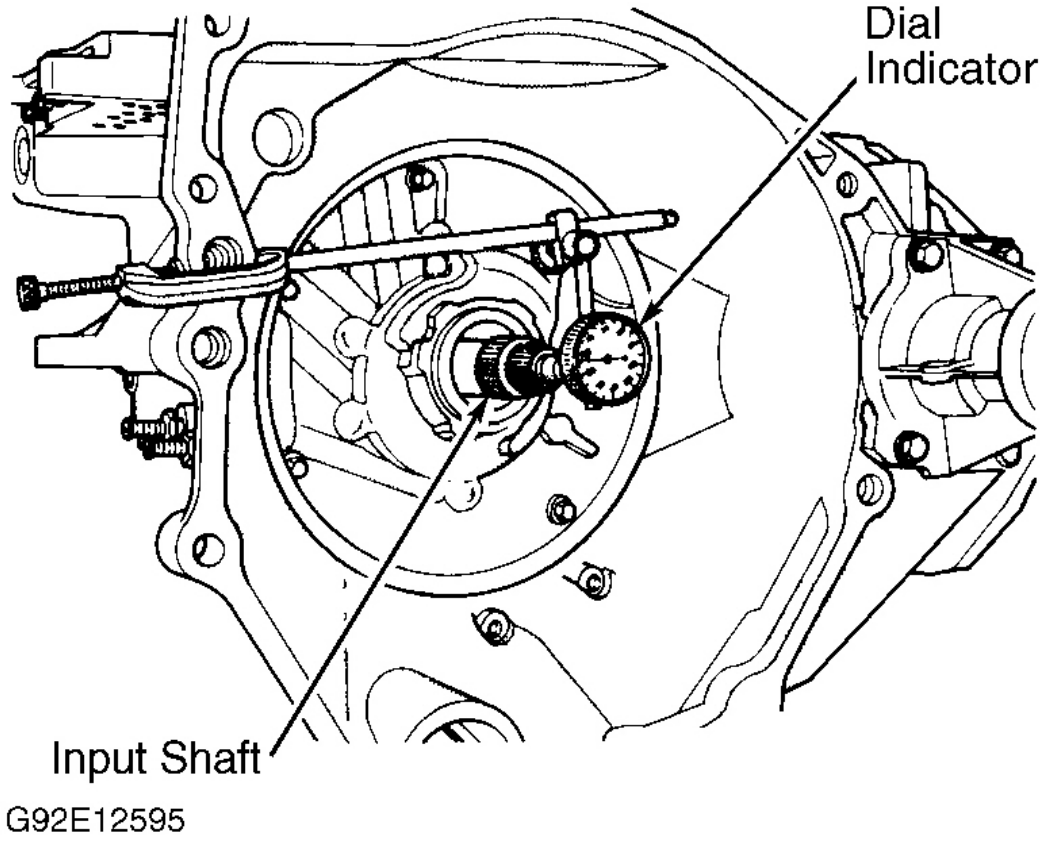


Fig. 15: Measuring Input Shaft End Play
Courtesy of CHRYSLER CORP.

3. Remove park/neutral switch and transmission range switch or transmission range sensor. Remove input speed sensor and output speed sensor from transaxle case. See **Fig. 5**. Remove solenoid assembly sound cover. See **Fig. 13**.
4. Remove shift lever from manual shaft assembly. Remove bolts, oil pan, oil filter and "O" ring. Remove valve body/transfer plate-to-transaxle case bolts. Note bolt length and location for reassembly reference.
5. Move roller on parking sprag rod from parking sprag guide bracket. Lift valve body and manual shaft assembly from transaxle case. Remove accumulator pistons and return springs from transaxle case.

NOTE: Low-reverse accumulator piston is retained by a snap ring and

accumulator cover. With snap ring and accumulator cover removed, it may be necessary to place a small amount of grease on accumulator piston and use round suitable instrument to remove low-reverse accumulator piston. Note location of notch on side of low-reverse accumulator piston.

6. Remove bolts, solenoid assembly, solenoid assembly gaskets and solenoid plate. See **Fig. 13**. Using Oil Seal Remover (C-3981), remove oil seal from oil pump (if necessary). See **Fig. 16**.

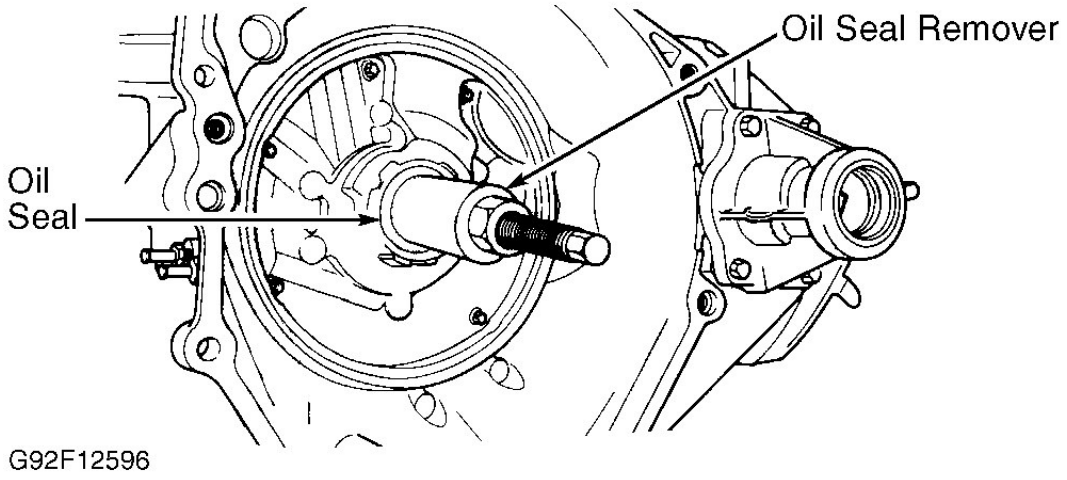


Fig. 16: Removing Oil Seal From Oil Pump
Courtesy of CHRYSLER CORP.

7. Remove oil pump bolts. Install 2 slide hammer pullers on opposite sides of oil pump. Push inward on input shaft while using slide hammers to pull oil pump from transaxle case. Remove oil pump and gasket. Remove oil cooler by-pass valve from transaxle case. See **Fig. 17**.

CAUTION: Oil cooler by-pass valve MUST be replaced if transaxle failure exists. DO NOT attempt to clean oil cooler by-pass valve.

8. Remove thrust bearing, located on front of input shaft, behind oil pump. Note that thrust bearing is installed with tanged side toward oil pump.
9. While pulling on input shaft, slide input clutch assembly from transaxle case. See **Fig. 18**. Remove thrust washer and 2-4 clutch hub.

NOTE: When removing input clutch assembly, input shaft, reverse-overdrive clutch piston and underdrive shaft assembly are removed as an assembly.

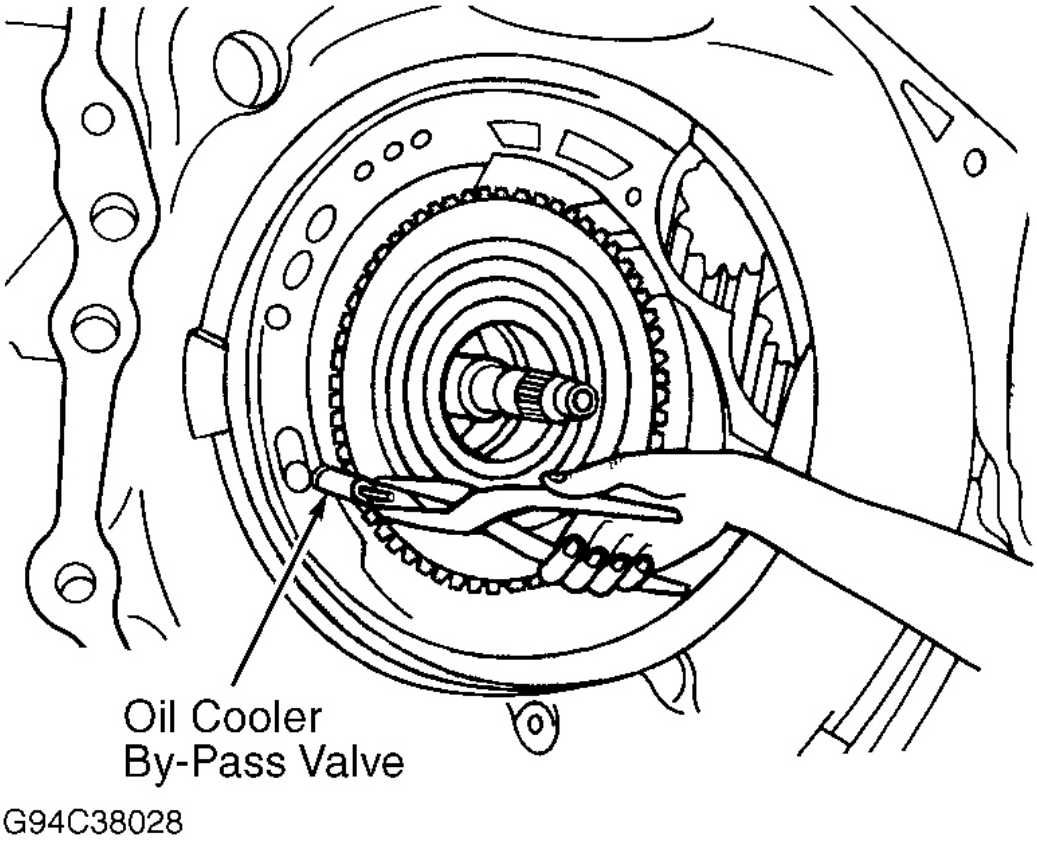


Fig. 17: Removing & Installing Oil Cooler By-Pass Valve
Courtesy of CHRYSLER CORP.

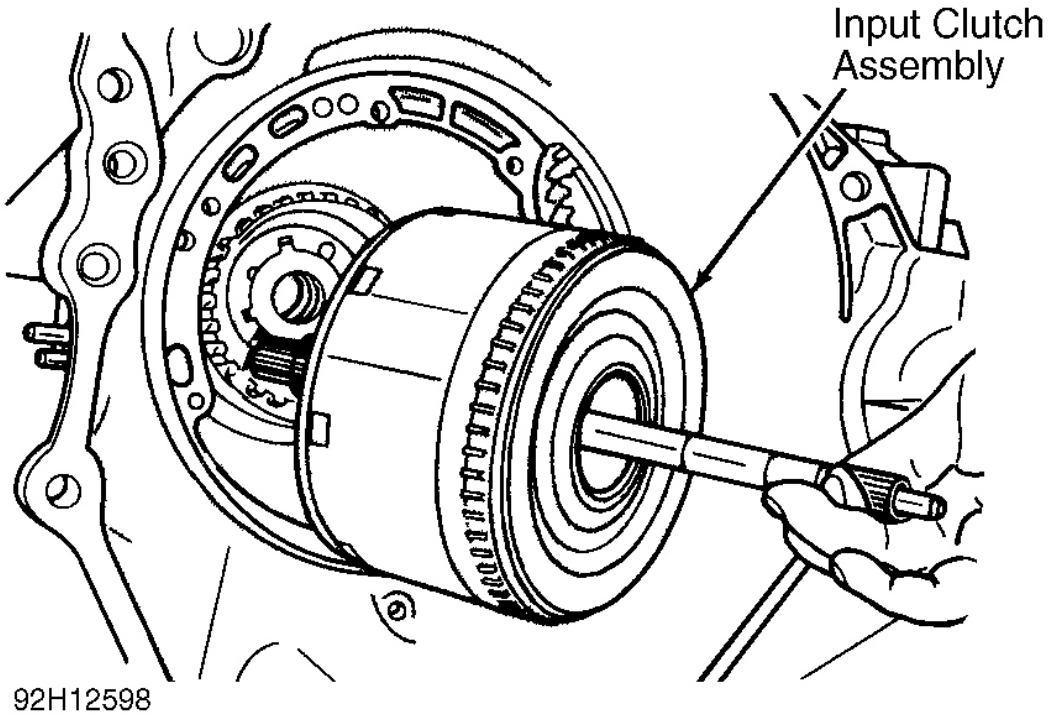


Fig. 18: Removing Input Clutch Assembly
Courtesy of CHRYSLER CORP.

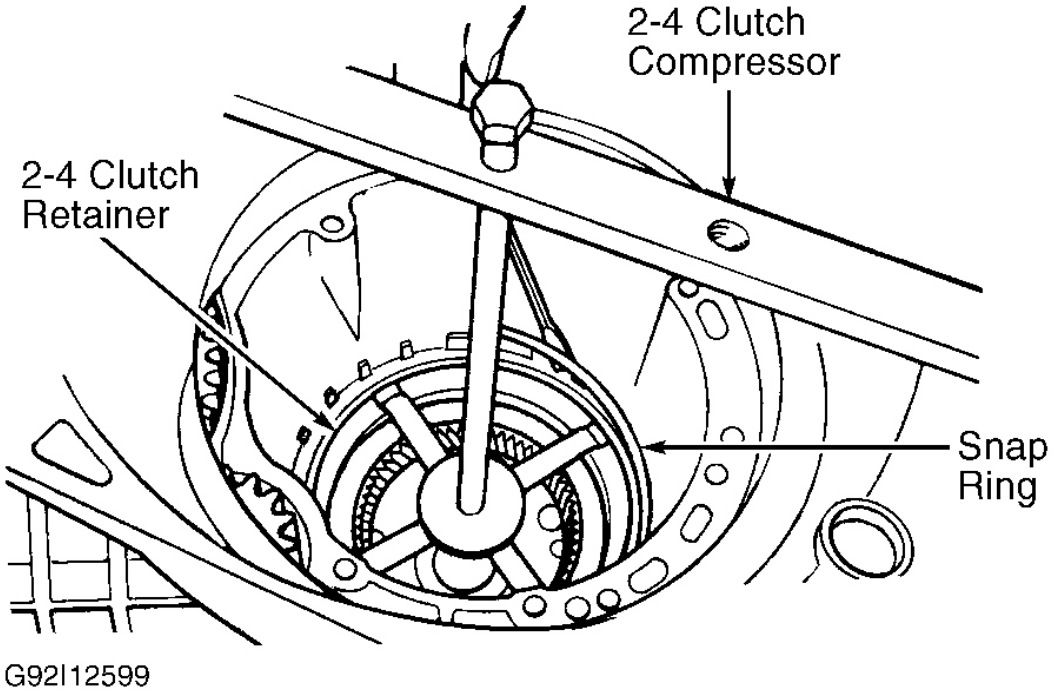


Fig. 19: Compressing 2-4 Clutch Retainer
Courtesy of CHRYSLER CORP.

10. Remove front planetary carrier and rear annulus gear by slightly rotating assembly. Remove rear sun gear and thrust bearing. See **Fig. 14**.
11. Install 2-4 Clutch Compressor (5058) on transaxle case. See **Fig. 19**. Compress 2-4 clutch retainer enough to remove snap ring from transaxle case. Note location of the ends of snap ring. Remove snap ring. Remove 2-4 clutch compressor.

CAUTION: Ensure 2-4 clutch components are tagged for location. Note sequence of 2-4 clutch plates and clutch discs for reassembly reference.

12. Remove 2-4 clutch retainer and clutch piston return spring. Remove and tag 2-4 clutch discs and clutch plates for reassembly reference. See **Fig. 6**.
13. Remove tapered snap ring and discard. Snap ring is located above low-reverse clutch reaction plate in transaxle case. Note location of the ends of snap ring and that tapered side of snap ring is toward oil pump side of transaxle case.

CAUTION: Ensure low-reverse clutch components are tagged for location. Note sequence of low-reverse clutch plates and clutch discs for reassembly reference.

14. Remove low-reverse clutch reaction plate and one low-reverse clutch disc. Remove flat snap ring. Remove remaining low-reverse clutch discs and clutch plates. See **Fig. 14**.
15. Remove bolts and end cover. See **Fig. 13**. Using Gear Holder (6259), hold transfer gear. Remove nut and washer from end of transfer shaft. See **Fig. 14**. Using puller, remove transfer gear and selective spacer or shim from transfer shaft. Note that notch in top of bearing race retainer is aligned with notch in transaxle case. See **Fig. 20**. Remove the bearing race retainer from the transaxle case. See **Fig. 14**.
16. Remove transfer shaft bearing retaining snap ring from transaxle case. Using Transfer Shaft Remover/Installer (5049-A), remove transfer shaft. See **Fig. 20**. Remove bearing race, "O" ring and baffle from transfer shaft. See **Fig. 14**.

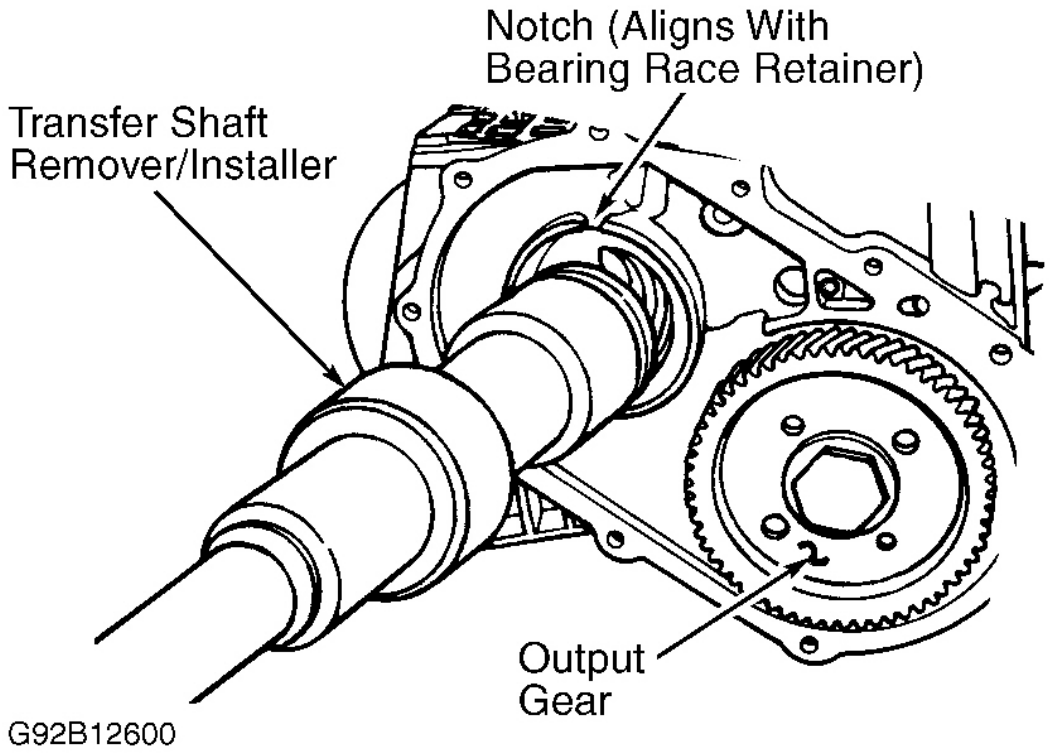


Fig. 20: Removing & Installing Transfer Shaft
Courtesy of CHRYSLER CORP.

17. Remove stirrup and retaining strap from output gear (if applicable). Using transfer gear holder, hold output gear. Remove bolt and washer from transfer gear. Note direction of coned area of washer for reassembly reference. Using puller, remove transfer gear and selective spacer or shim.
18. Remove rear planetary carrier from inside of transaxle case. See **Fig. 14**. Using Clutch Compressor (5059), Adapter (6057) and Rod (5058-3), slightly compress low-reverse clutch piston return spring. See **Fig. 21**.

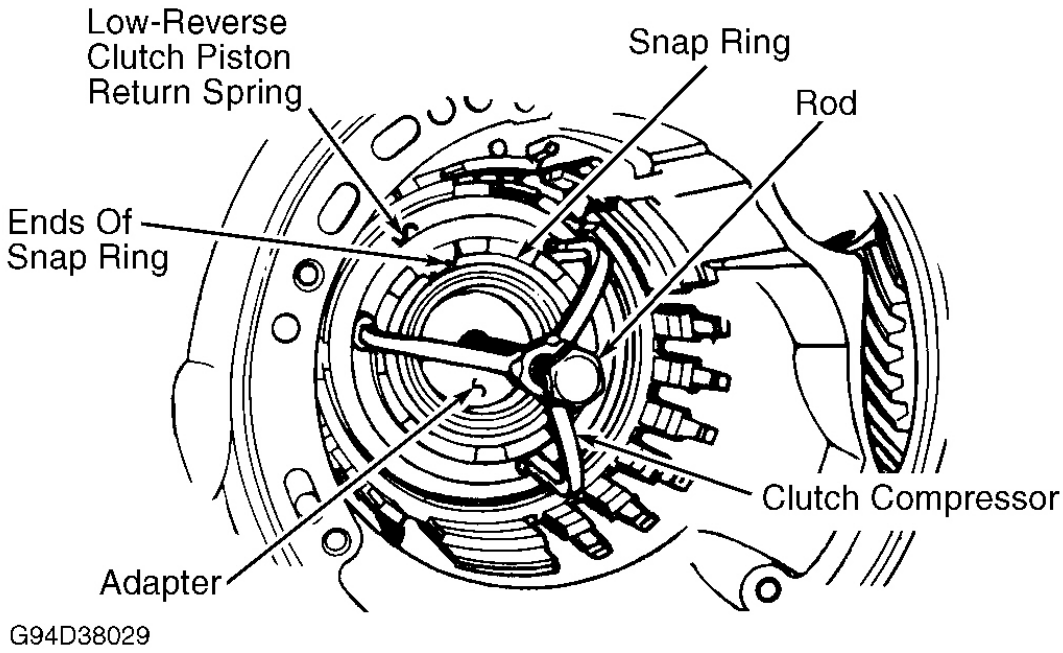
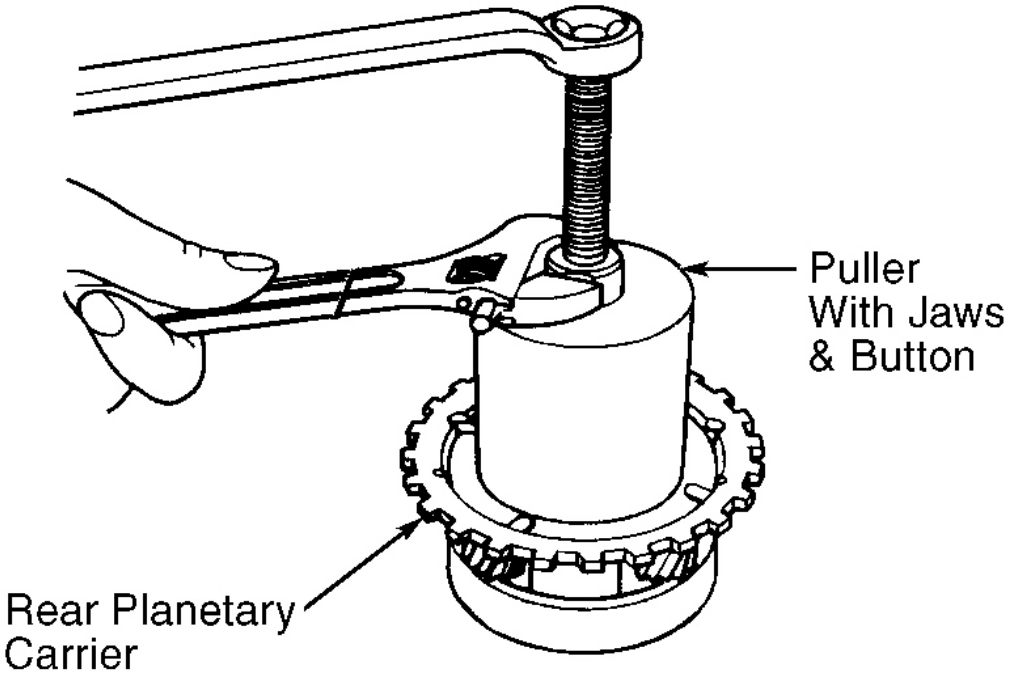
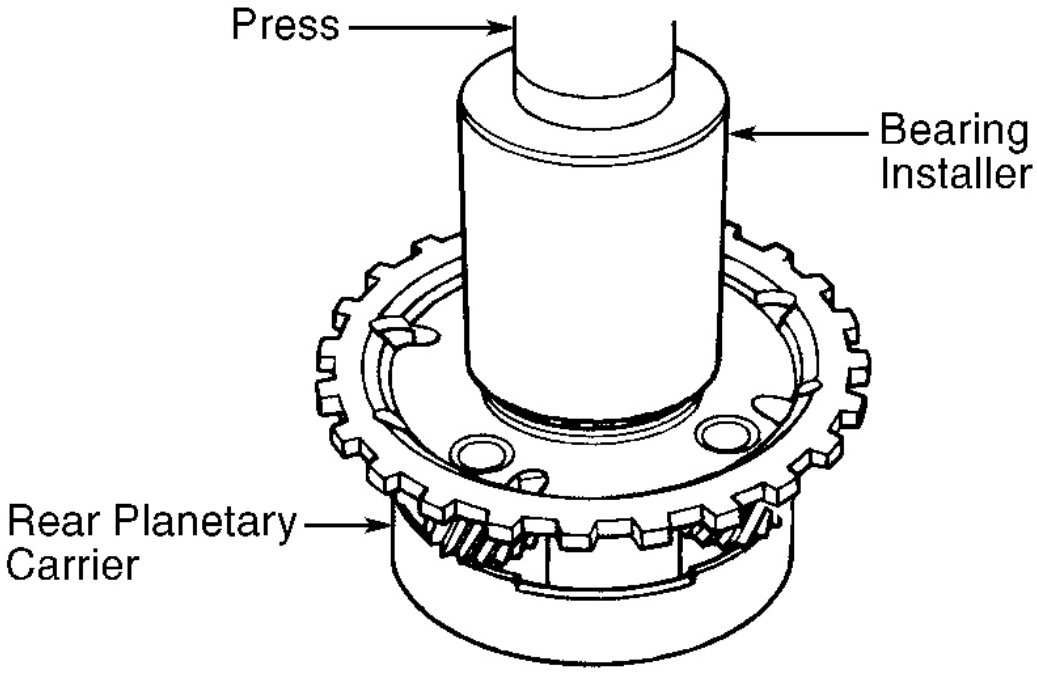


Fig. 21: Compressing Low-Reverse Clutch Piston Return Spring
Courtesy of CHRYSLER CORP.

19. Remove snap ring. Remove clutch compressor and components. Remove low-reverse clutch piston return spring. Remove parking sprag components from transaxle case.
20. Remove low-reverse clutch piston from transaxle case. Remove 3 screws, low-reverse clutch piston retainer and piston retainer gasket. See **Fig. 14**.
21. Tap bearing race for rear planetary carrier from transaxle case (if necessary). Using Bearing Race Remover (6062), pull transfer gear bearing race from transaxle case.
22. If removing bearing from rear planetary carrier, use Puller (5048), Jaws (5048-3) and Button (6055). See **Fig. 21**. If removing bearing from transfer gear, use Puller (5048), Jaws (5048-5) and Button (L-4539-2). See **Fig. 23**.
23. Using press, press bearing from transfer shaft (if necessary). If removing bearing race from bearing race retainer for transfer shaft, use Puller (6062) to remove bearing race. See **Fig. 24**.



REMOVAL



INSTALLATION

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Fig. 22: Removing & Installing Rear Planetary Carrier Bearing
Courtesy of CHRYSLER CORP.

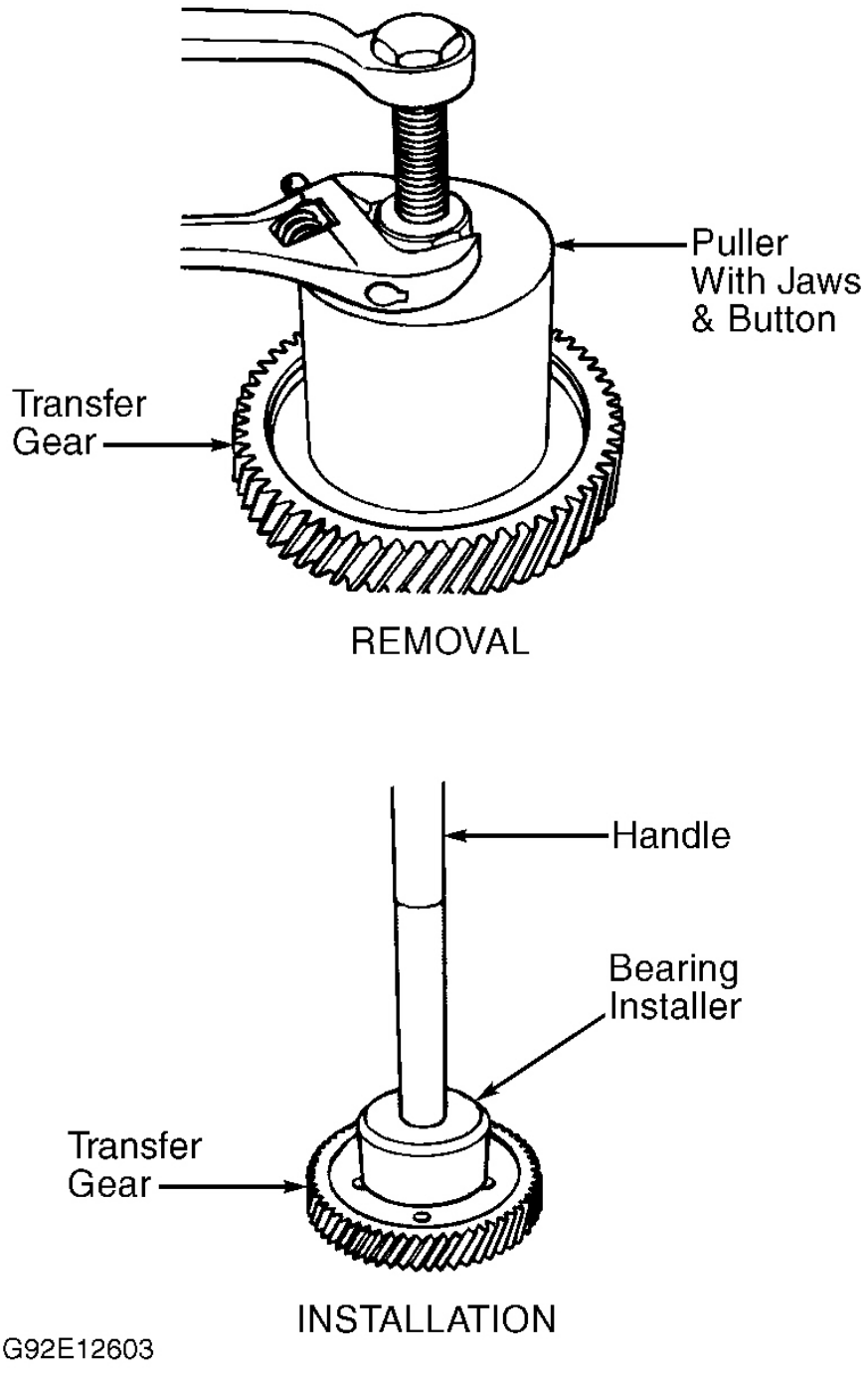


Fig. 23: Removing & Installing Transfer Gear Bearing
Courtesy of CHRYSLER CORP.

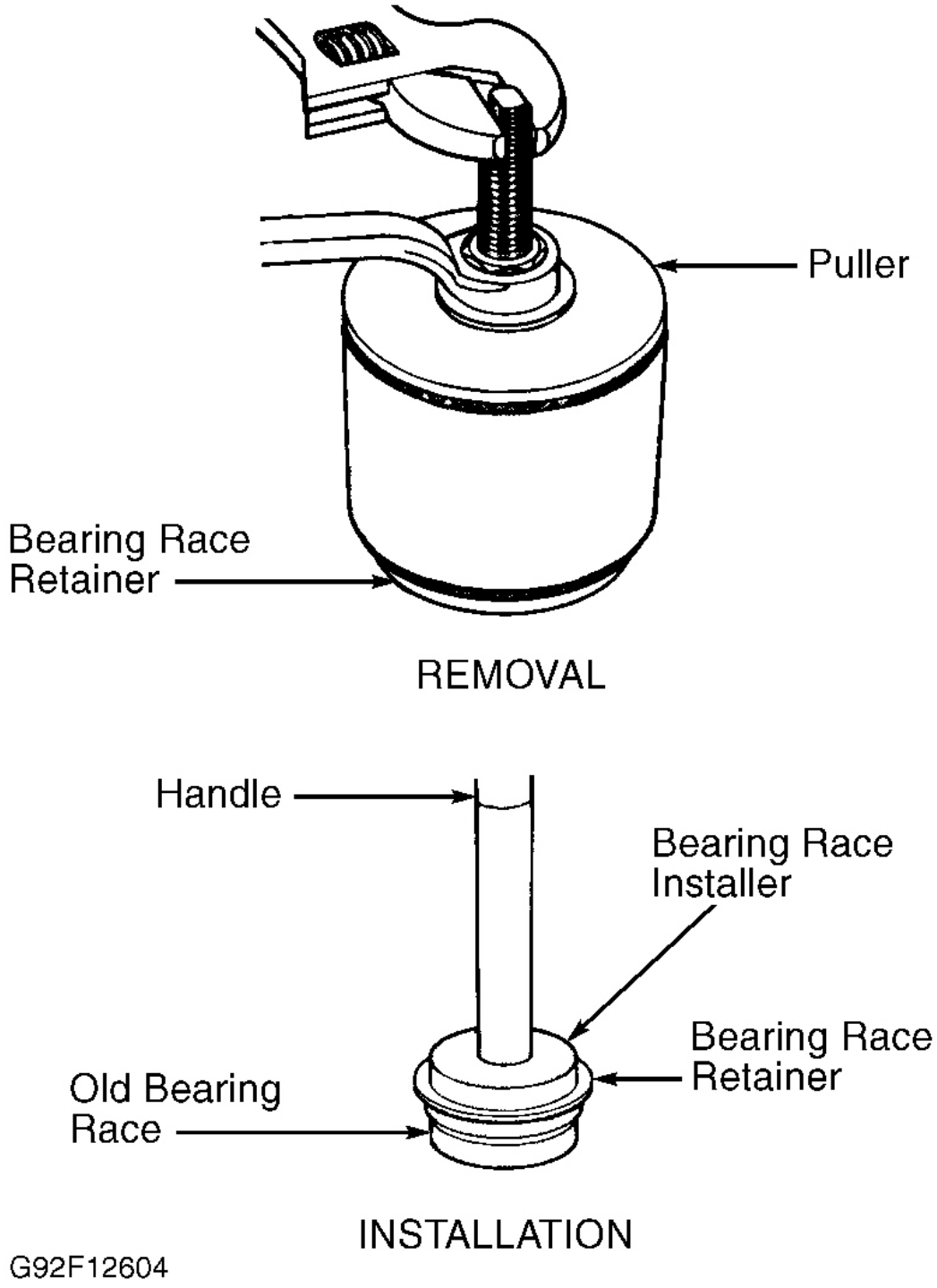


Fig. 24: Removing & Installing Bearing Race In Bearing Race Retainer
Courtesy of CHRYSLER CORP.

24. To remove differential assembly, remove bolts and differential cover. Remove bolts from differential bearing retainer. See **Fig. 13**. Using spanner wrench, rotate differential bearing retainer and remove from transaxle case.

NOTE: On All-Wheel Drive (AWD)models, extension housing is replaced with a transfer retainer plate.

25. Remove extension housing bolts. Support differential assembly. Using spanner wrench, rotate extension housing and remove from transaxle case. Remove differential assembly.
26. Remove oil seal from extension housing. Remove bearing race from extension housing if replacement is required.
27. Remove oil seal from differential bearing retainer. If removing bearing race from differential bearing retainer, use Bearing Race Remover (L-4518). See **Fig. 25**.

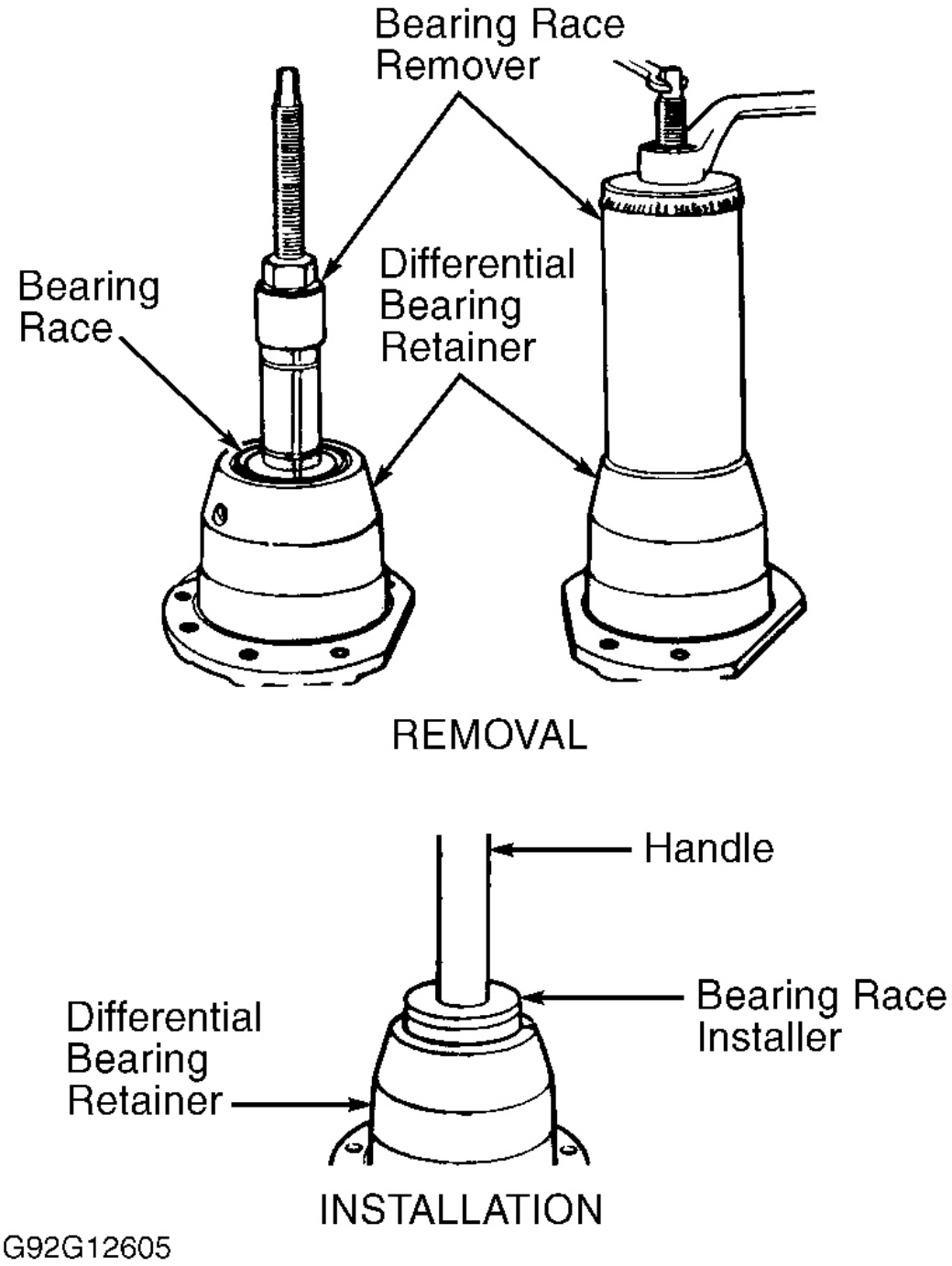


Fig. 25: Removing & Installing Bearing Race In Differential Bearing Retainer
Courtesy of CHRYSLER CORP.

COMPONENT DISASSEMBLY & REASSEMBLY

DIFFERENTIAL ASSEMBLY

Disassembly

1. Side gear end play should be checked before disassembling side gears to determine if different thickness thrust washer is required.
2. Install Shaft (C-4996) in side gear. Install dial indicator. See **Fig. 26**. Move side gear upward and zero dial indicator. Move side gear downward and note side gear end play.
3. Side gear end play should be .001-.013" (.03-.33 mm). Repeat procedure on remaining side gear. If side gear end play is not within specification, install different thickness side gear thrust washer. Side gear thrust washer are available in following thicknesses: .032" (.81 mm), .037" (.94 mm), .042" (1.06 mm) and .047" (1.19 mm).
4. Remove side bearings from carrier (if necessary). Remove bolts and ring gear. Using hammer and punch, remove roll pin from carrier. See **Fig. 27**.
5. Remove pinion gear shaft. Rotate pinion gears and remove pinion gears and thrust washers. Remove side gears and thrust washers.

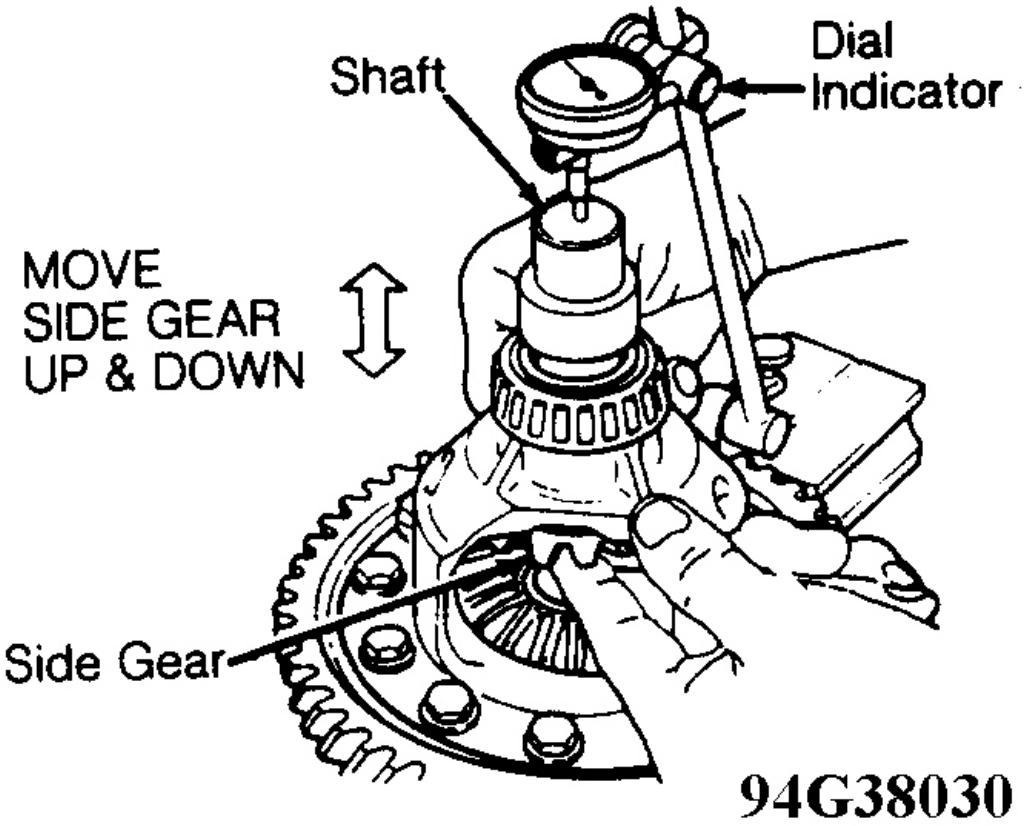
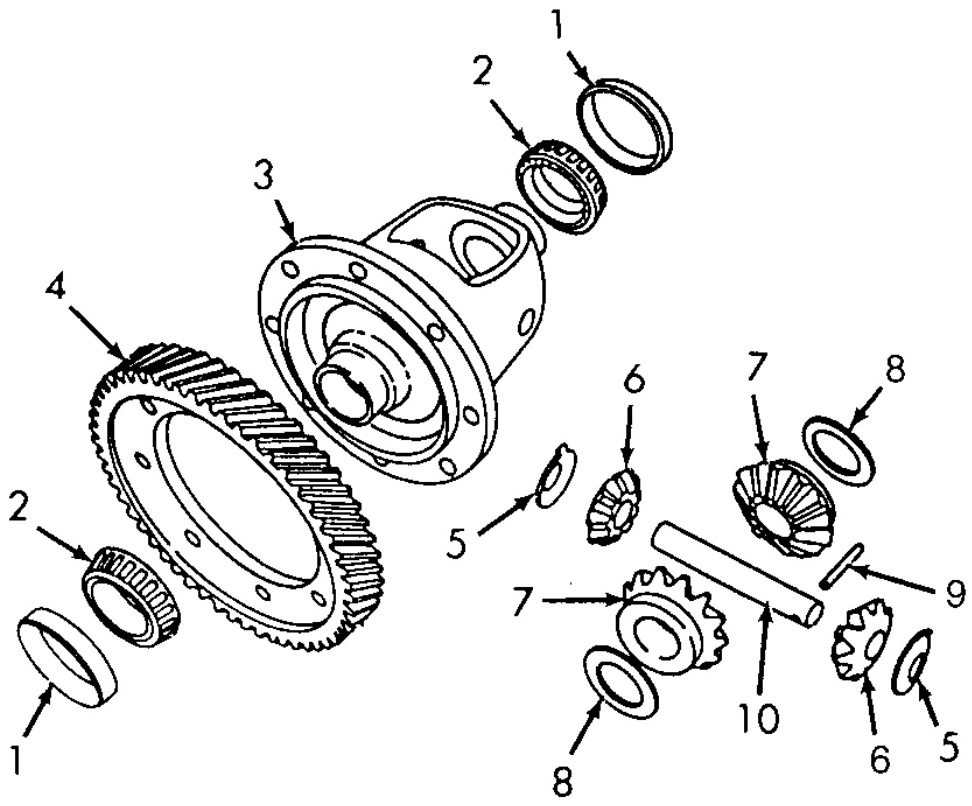


Fig. 26: Checking Side Gear End Play
Courtesy of CHRYSLER CORP.



1. Bearing Race
2. Side Bearing
3. Carrier
4. Ring Gear
5. Pinion Gear Thrust Washer
6. Pinion Gear
7. Side Gear
8. Side Gear Thrust Washer
9. Roll Pin
10. Pinion Gear Shaft

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Fig. 27: Exploded View Of Differential Assembly
Courtesy of CHRYSLER CORP.

Reassembly

1. To reassemble, reverse disassembly procedure. Recheck side gear end play once side gears and pinion gears are installed.
2. Install NEW ring gear bolts. **DO NOT** reuse ring gear bolts. Tighten ring gear bolts to specification. See **TORQUE SPECIFICATIONS**. Install NEW side bearings (if necessary).

INPUT CLUTCH ASSEMBLY

CAUTION: Ensure all clutch components are tagged for location. Note sequence of all clutch plates and clutch discs for reassembly reference. Note snap ring location and direction of installation for reassembly reference, as both flat and wave snap rings are used.

Disassembly

1. Support input clutch assembly with input shaft pointing downward. Tap downward on reverse clutch reaction plate. See **Fig. 14**.
2. Remove snap ring located above reverse clutch reaction plate. Remove reverse clutch reaction plate, reverse clutch plates and clutch discs. Note sequence of reverse clutch plate and clutch discs for reassembly reference.
3. Remove snap ring located above overdrive-reverse clutch pressure plate. This is the flat snap ring located in the outside groove. Remove overdrive-reverse clutch pressure plate.
4. Remove overdrive clutch wave snap ring from outside groove. Remove overdrive hub with overdrive clutch plates and clutch discs. Remove thrust washers located on both sides of overdrive hub. See **Fig. 14**. Note sequence of overdrive clutch plates and clutch discs for reassembly reference.
5. Remove thrust washer (5 tabs) and underdrive shaft assembly. Remove thrust bearing, located below underdrive shaft assembly.
6. Remove tapered snap ring and underdrive clutch reaction plate. See **Fig. 14**. Remove one underdrive clutch disc. Remove flat snap ring and remaining underdrive clutch plates and clutch discs. Note sequence of underdrive clutch plates and clutch discs for reassembly reference.
7. Using press and spring compressor, compress clutch piston return spring located above underdrive clutch piston.

CAUTION: Compress clutch piston return spring just enough to remove snap ring located above spring retainer for underdrive clutch piston. See Fig. 14.

8. Remove snap ring. Remove spring compressor. Remove spring retainer, clutch piston return spring and underdrive clutch piston. Remove input clutch hub-to-input clutch retainer snap ring. Snap ring is a tapered snap ring located inside input clutch retainer in groove of input clutch hub. See **Fig. 28**. Note direction of snap ring installation.

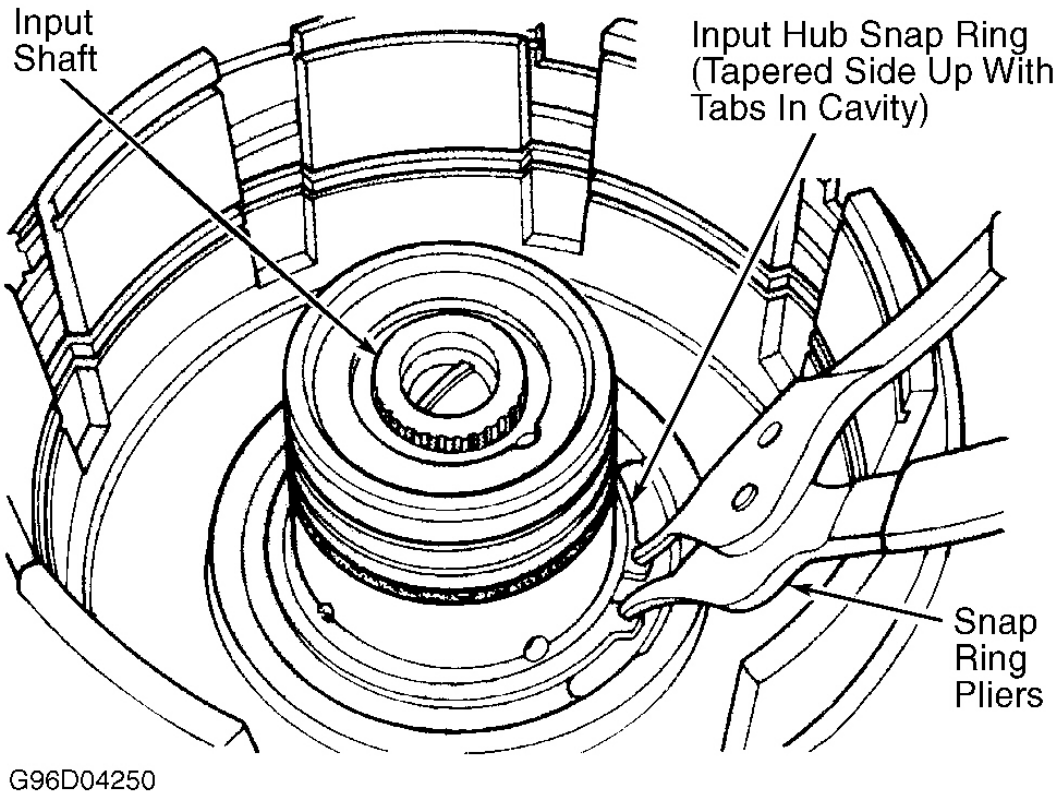

Fig. 28: Removing Input Hub Tapered Snap Ring
Courtesy of CHRYSLER CORP.

9. Using soft-faced hammer, tap input clutch hub from input clutch retainer. Separate input clutch retainer from overdrive-reverse clutch piston. See **Fig. 14**.
10. Using press and spring compressor, slightly compress clutch piston return spring on rear of overdrive-reverse clutch piston. Remove snap ring from rear of overdrive-reverse clutch piston.
11. Release press. Remove spring compressor and clutch piston return spring. Note direction of clutch piston return spring for reassembly reference.
12. Remove snap ring from end of input shaft. Using press and correctly sized socket, support input clutch hub and press input shaft from input clutch hub.

NOTE: Coat all NEW lip seals and "O" rings with petroleum jelly before installing. It may be necessary to use petroleum jelly to hold thrust washers and thrust bearings in place. Underdrive, overdrive and reverse clutch clearances must be checked before final assembly of input clutch assembly.

Reassembly

1. Using press and suitable sized socket, support input clutch hub and press input shaft into input clutch hub.

Install snap ring on input shaft. Install NEW lip seals and NEW "O" ring on input clutch hub.

2. Install clutch piston return spring on rear of overdrive-reverse clutch piston. Using press and spring compressor, slightly compress clutch piston return spring and install snap ring. Remove spring compressor.
3. Install overdrive-reverse clutch piston over input clutch retainer. Push downward on overdrive-reverse clutch piston until it fully seats on input clutch retainer.
4. Align splines and install input clutch hub and input shaft assembly on overdrive-reverse clutch piston. Push downward on input clutch hub until fully seated. Install input clutch hub retaining snap ring on inside of overdrive-reverse clutch piston. See **Fig. 28**.

CAUTION: Ensure input clutch hub retaining snap ring is installed with tapered side upward (away from torque converter end of input shaft).

5. Install underdrive clutch piston and Seal Compressor (5067). Install clutch piston return spring and spring retainer. Using press and Spring Compressor (5059A), compress clutch piston return spring. See **Fig. 29**. Install snap ring.

CAUTION: Compress clutch piston return spring just enough to install snap ring.

6. Release press. Remove spring compressor and seal compressor. Install underdrive clutch plates and clutch discs, starting with a clutch plate and alternating with a clutch disc. **DO NOT** install No. 1 underdrive clutch disc at this time. See **Fig. 30**.

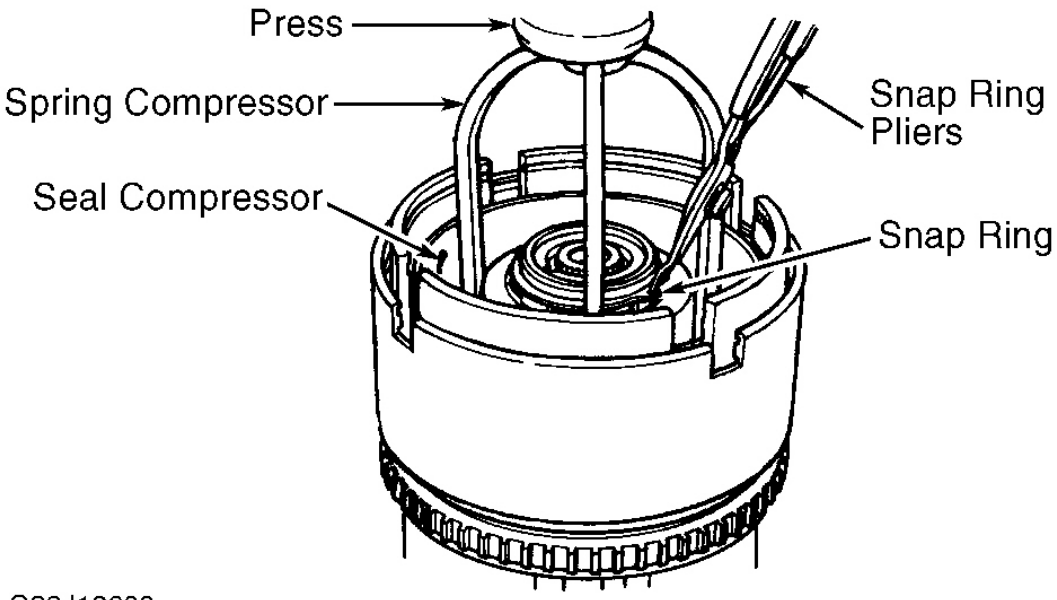

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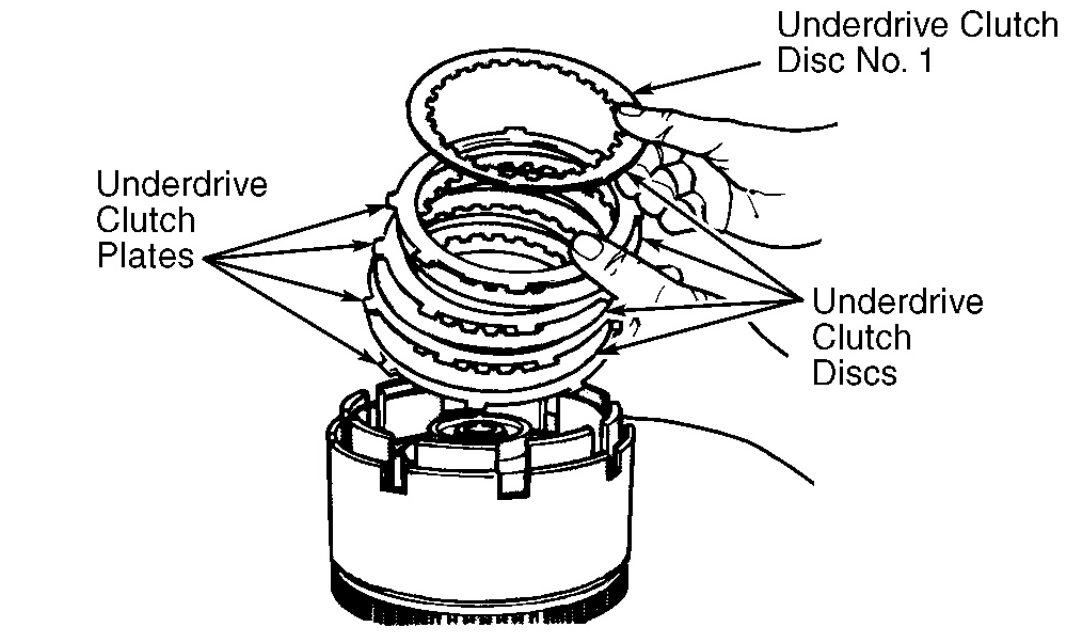
Fig. 29: Installing Underdrive Clutch Piston & Clutch Piston Return Spring
Courtesy of CHRYSLER CORP.



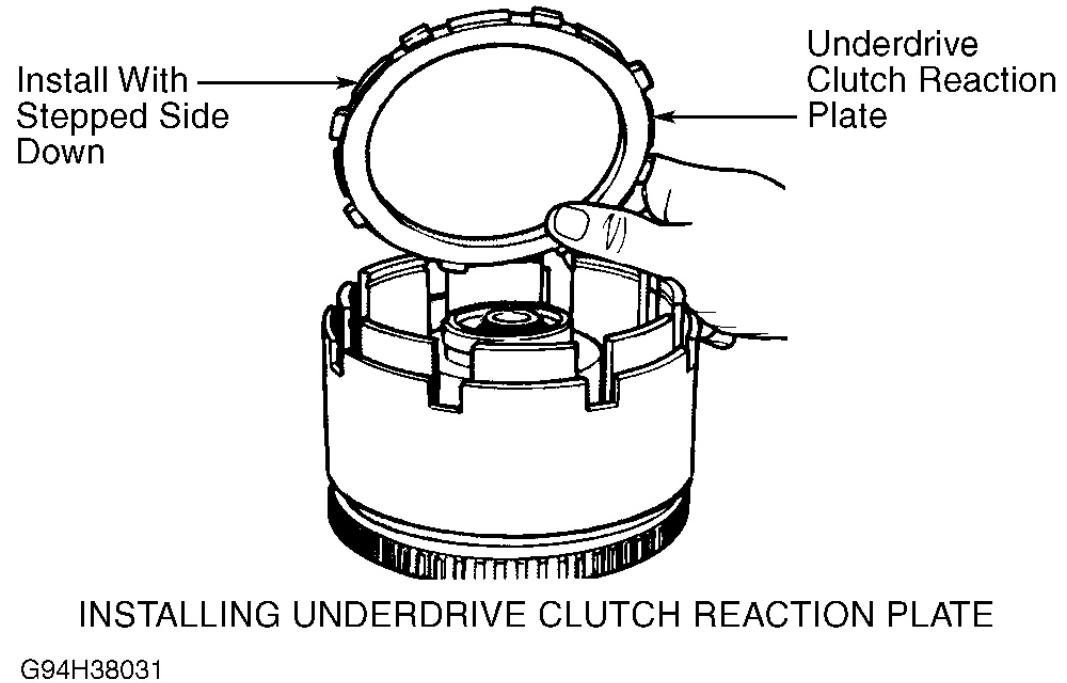


Fig. 30: Installing Underdrive Clutch Plates, Clutch Discs & Underdrive Clutch Reaction Plate

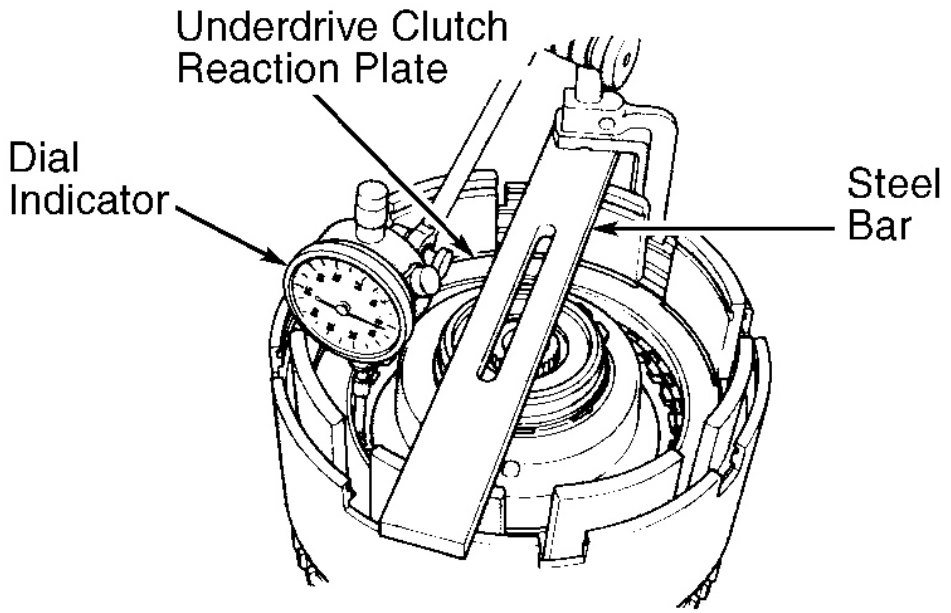
Courtesy of CHRYSLER CORP.

7. Install underdrive clutch reaction plate flat snap ring in groove above underdrive clutch plates and clutch discs. Install No. 1 underdrive clutch disc. Install underdrive clutch reaction plate with stepped side down. See **Fig. 30**.
8. Install NEW tapered snap ring in groove to retain underdrive clutch reaction plate. **DO NOT** reuse old tapered snap ring. Check underdrive clutch clearance.

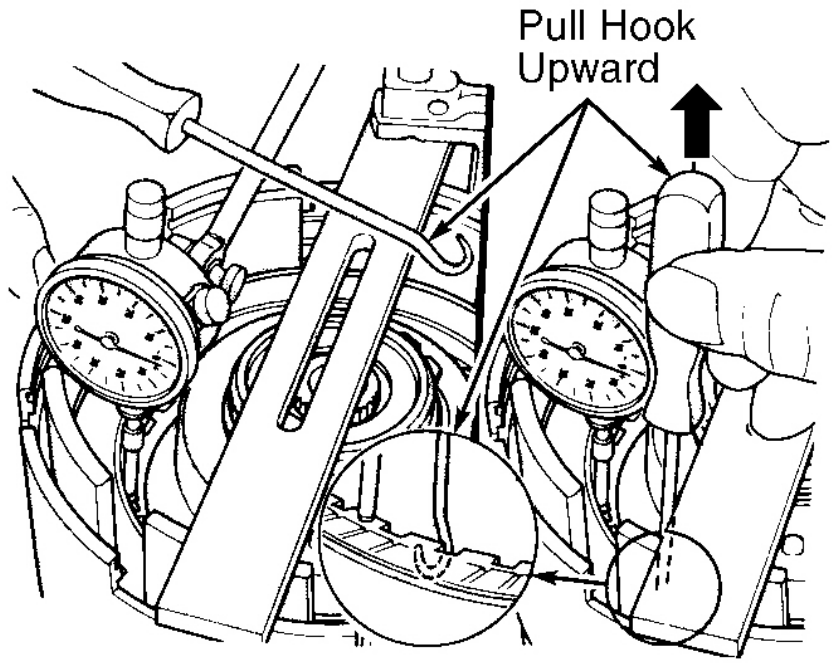
CAUTION: Use care when installing tapered snap ring to not scratch underdrive clutch reaction plate surface. Ensure snap ring is fully seated with ends of snap ring against solid area of input clutch retainer.

Checking Underdrive Clutch Clearance

1. Assemble dial indicator and steel bar with dial indicator stem resting on underdrive clutch disc. See **Fig. 31**. Compress underdrive clutch pack with finger and zero dial indicator.
2. Using hook, pull No. 1 underdrive clutch disc upward. See **Fig. 28**. Note underdrive clutch clearance reading on dial indictor. Underdrive clutch clearance should be .036-.058" (.91-1.47 mm).
3. If underdrive clutch clearance is not within specification, install different thickness underdrive clutch reaction plate. Underdrive clutch reaction plate are available in the following thicknesses: .217" (5.51 mm), .237" (6.02 mm), .256" (6.50 mm) and .275" (6.99 mm).



ASSEMBLING DIAL INDICATOR



CHECKING UNDERDRIVE CLUTCH CLEARANCE

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Fig. 31: Checking Underdrive Clutch Clearance

Courtesy of CHRYSLER CORP.

Overdrive Clutch

1. Install the overdrive clutch plates and clutch discs. See **Fig. 32**. Install overdrive clutch wave snap ring in the outside groove. Install overdrive-reverse clutch pressure plate with stepped side down. See **Fig. 32**.

CAUTION: Compress overdrive-reverse clutch assembly just enough to install flat snap ring.

2. Using press and spring compressor, press overdrive-reverse clutch pressure plate downward until flat snap ring can be installed in outer groove. Install flat snap ring. Release press. Remove spring compressor. Check overdrive clutch clearance.

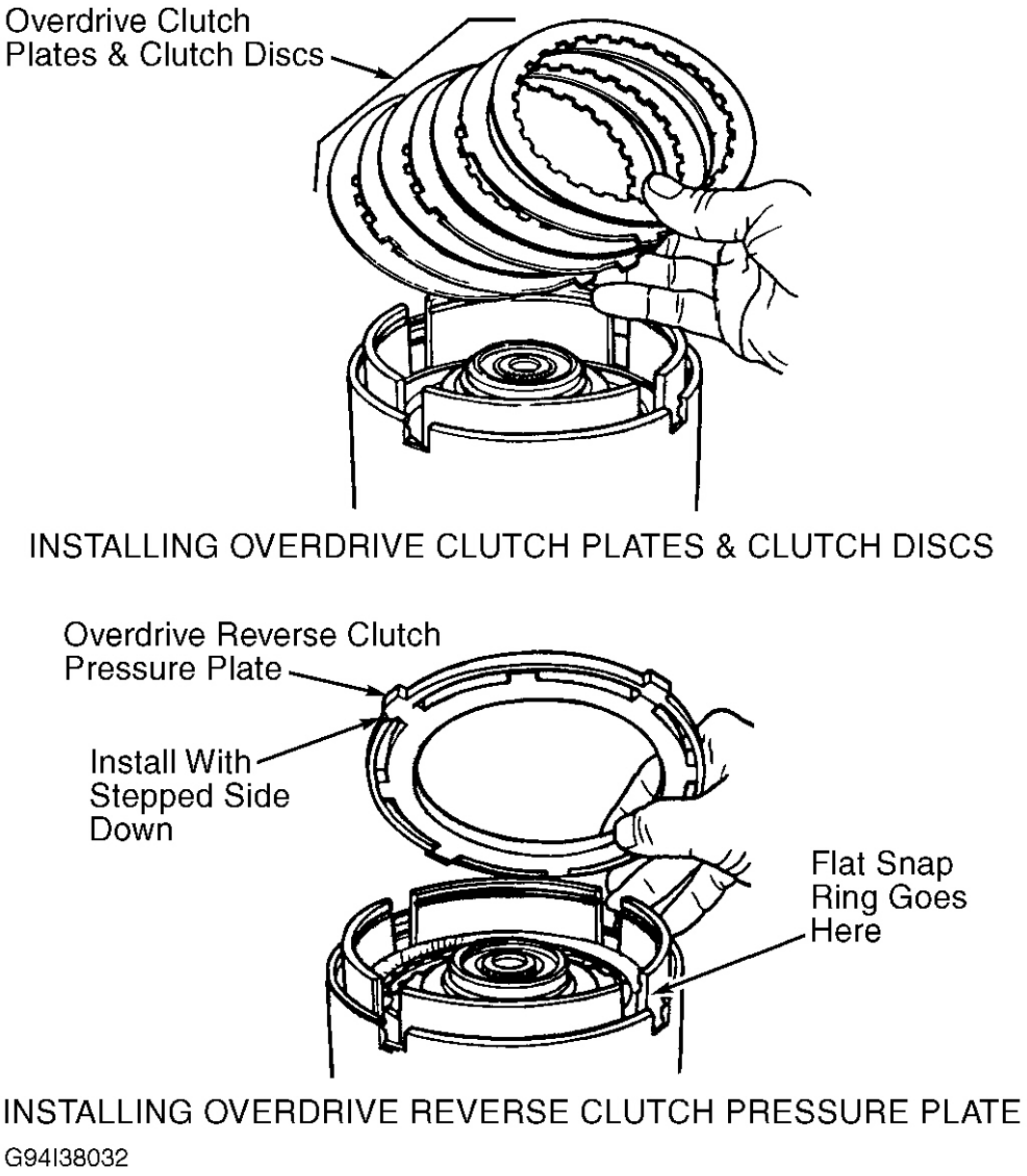

Fig. 32: Installing Overdrive Clutch Plates, Clutch Discs & Overdrive-Reverse Clutch Pressure Plate
Courtesy of CHRYSLER CORP.

Checking Overdrive Clutch Clearance

1. Assemble dial indicator and steel bar with dial indicator stem resting on overdrive clutch disc. See **Fig. 33**. Compress overdrive clutch pack with finger and zero dial indicator.
2. Using hook, raise overdrive clutch disc. Note overdrive clutch clearance reading on dial indicator. Overdrive clutch clearance should be .042-.096" (1.07-2.44 mm). If overdrive clutch clearance is not within specification, check for improperly assembled overdrive clutch components. There is no

adjustment for OD clutch clearance.

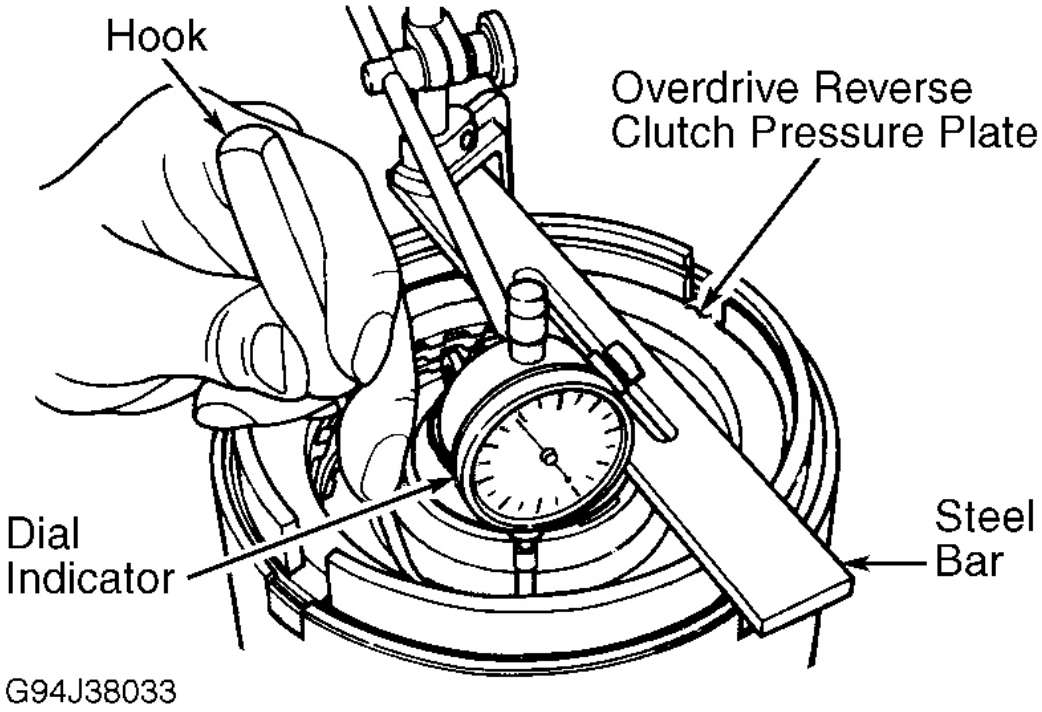

Fig. 33: Checking Overdrive Clutch Clearance
Courtesy of CHRYSLER CORP.

Reverse Clutch

1. Install reverse clutch plate and clutch discs. Install reverse clutch reaction plate with stepped side down. See **Fig. 34**.
2. Install snap ring in groove above reverse clutch reaction plate. Using screwdriver on each side of reverse clutch reaction plate, pry reaction plate upward to ensure snap ring is fully seated. Check reverse clutch clearance.

Checking Reverse Clutch Clearance

1. Assemble dial indicator and steel bar with indicator stem resting on reverse clutch disc. See **Fig. 34**. Compress reverse clutch pack with finger and zero dial indicator.
2. Using hook, raise reverse clutch disc. See **Fig. 35**. Note reverse clutch clearance reading on dial indicator. Reverse clutch clearance should be .030-.049" (.76-1.24 mm).
3. If reverse clutch clearance is not within specification, snap ring can be changed to obtain correct clearance. Snap rings are available in the following thicknesses: .061" (1.55 mm), .071" (1.80 mm), .081" (2.06 mm) and .090" (2.29 mm).

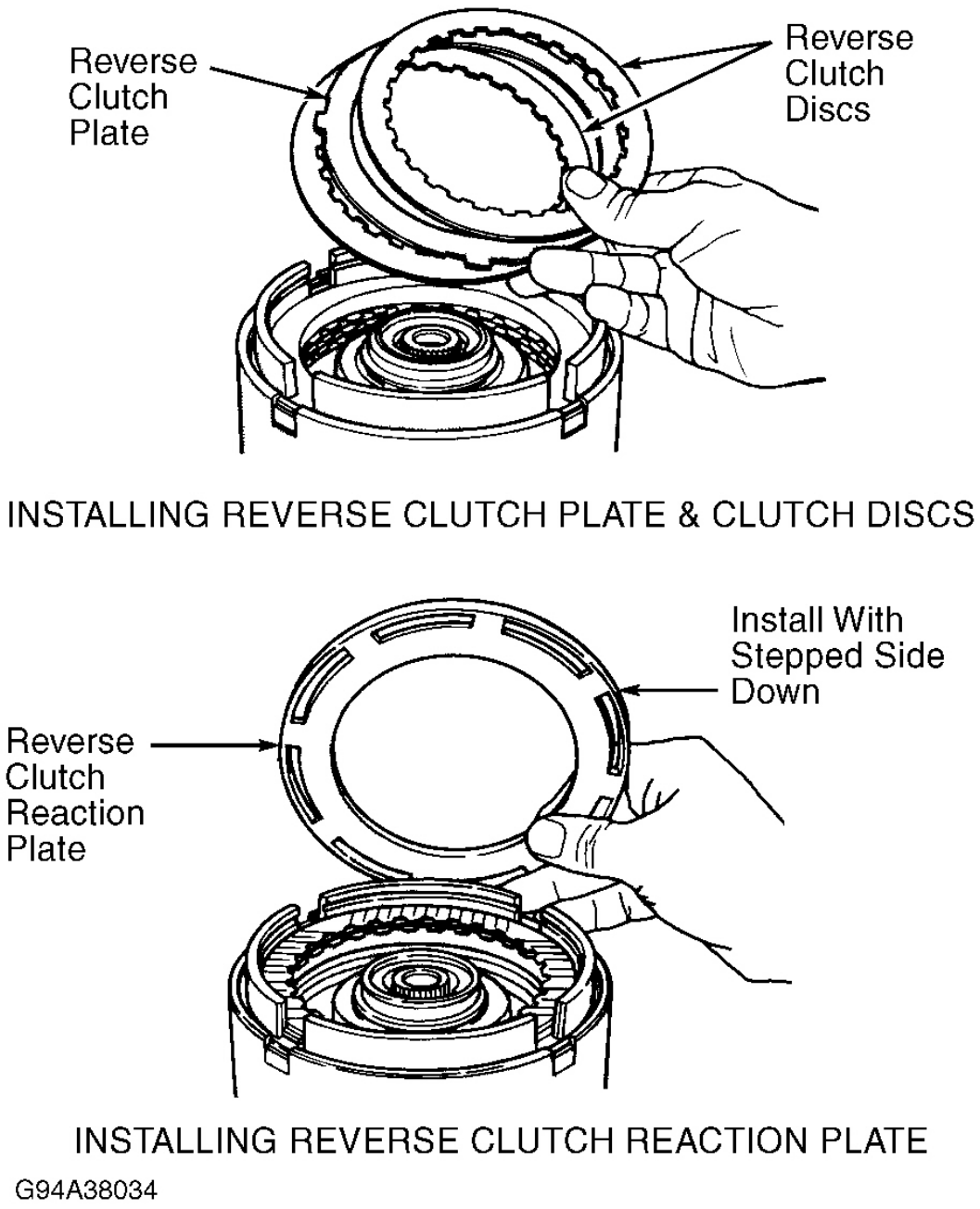

Fig. 34: Installing Reverse Clutch Discs, Clutch Plate & Reverse Clutch Reaction Plate
Courtesy of CHRYSLER CORP.

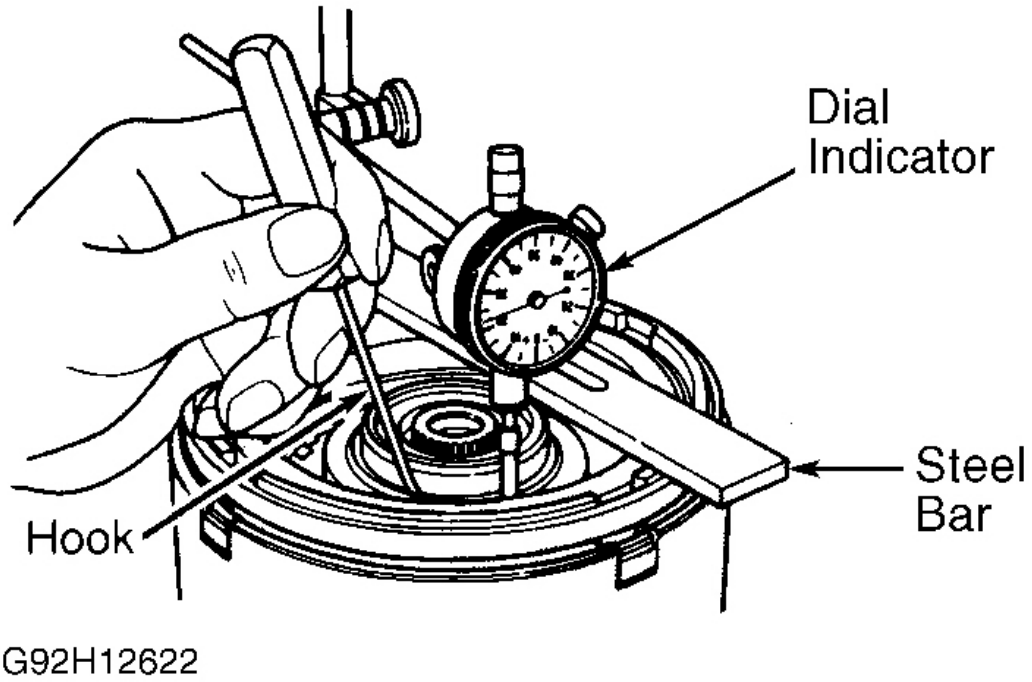

Fig. 35: Checking Reverse Clutch Clearance
Courtesy of CHRYSLER CORP.

CAUTION: During final reassembly of input clutch assembly, reverse and overdrive clutch assemblies must be removed. Ensure clutch components are kept in order for reassembly reference.

Final Assembly Of Input Clutch Assembly

1. Remove reverse and overdrive clutch assemblies. Install thrust bearing located below underdrive shaft assembly. See **Fig. 14**. Thrust bearing must be installed with 3 small tabs pointing upward (away from torque converter end of input shaft).

NOTE: It may be necessary to apply petroleum jelly to thrust bearing to hold it in position during reassembly of input clutch assembly.

2. Install underdrive shaft assembly. Install 5-tab thrust washer on shaft side of underdrive shaft assembly. See **Fig. 14**.
3. Install 3-tab thrust washer on back side (opposite shaft side) of overdrive clutch hub. Install overdrive clutch hub. Ensure tabs on all thrust washers remain fully engaged.
4. To complete final assembly, reinstall overdrive and reverse clutch components. Ensure all clutch components are installed in original location as when clutch clearances were checked.

OIL PUMP

Disassembly & Reassembly

1. Disassembly and reassembly information not available from manufacturer. If necessary, disassemble and reassemble oil pump using exploded view. See **Fig. 14**. Ensure component locations are marked for reassembly reference.
2. Ensure oil pump components are within specification. See **OIL PUMP SPECIFICATIONS TABLE**.
3. To reassemble, reverse disassembly procedure. Ensure components are installed in original location. Tighten the reaction shaft and support-to-oil pump bolts to specification. For more information see **TORQUE SPECIFICATIONS**.

OIL PUMP SPECIFICATIONS

Application	In. (mm)
Inner & Outer Gear Side Clearance	.0008-.0018 (.020-.046)
Outer Gear-To-Pocket Clearance	.0018-.0056 (.046-.142)

VALVE BODY

NOTE: 1996 "NS" body vehicles have 2 additional valves (low-reverse switching valve and torque converter limit valve) in valve body. Illustration of changes is not available.

Disassembly

1. Remove retaining screw and manual shaft from valve body. Remove bolts, detent spring along with 2-4 accumulator retaining plate. See **Fig. 39**.
2. Remove valve body-to-transfer plate bolts. Remove separator plate and transfer plate from valve body.

CAUTION: Use care when removing separator plate and transfer plate from valve body. DO NOT allow check balls to fall from valve body. Use care when removing separator plate from transfer plate, as overdrive clutch check ball is located in transfer plate. See Fig. 36.

3. Remove separator plate from transfer plate, noting location of overdrive clutch check ball, oil screen and thermal valve. See **Fig. 36**. Remove oil screen and thermal valve from transfer plate.
4. Note location of check balls and retainers in valve body. See **Fig. 37**. Using Retainer Remover/Installer (6301), remove retainer for torque converter clutch valve and torque converter control valve. See **Fig. 38**.
5. Using Retainer Remover/Installer (6302), remove retainer for regulator valve. See **Fig. 38**. Remove valve body components. See **Fig. 39**.

Reassembly

To reassemble, reverse removal procedure. Ensure all components are installed in original location. Tighten valve body-to-transfer plate bolts to specification. See **TORQUE SPECIFICATIONS**.

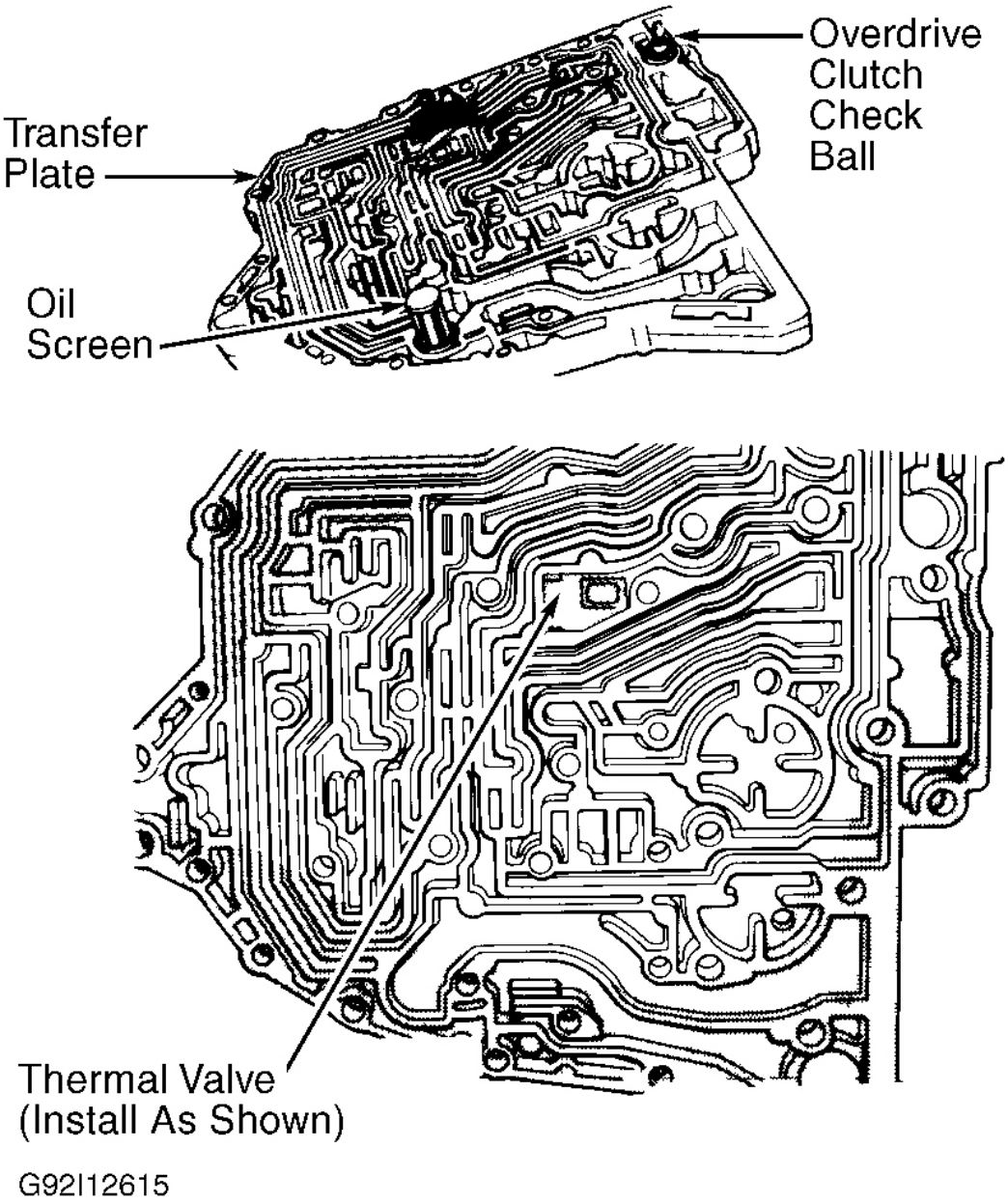

Fig. 36: Identifying Transfer Plate Components Refer to the following legend. Courtesy of Chrysler Corp.

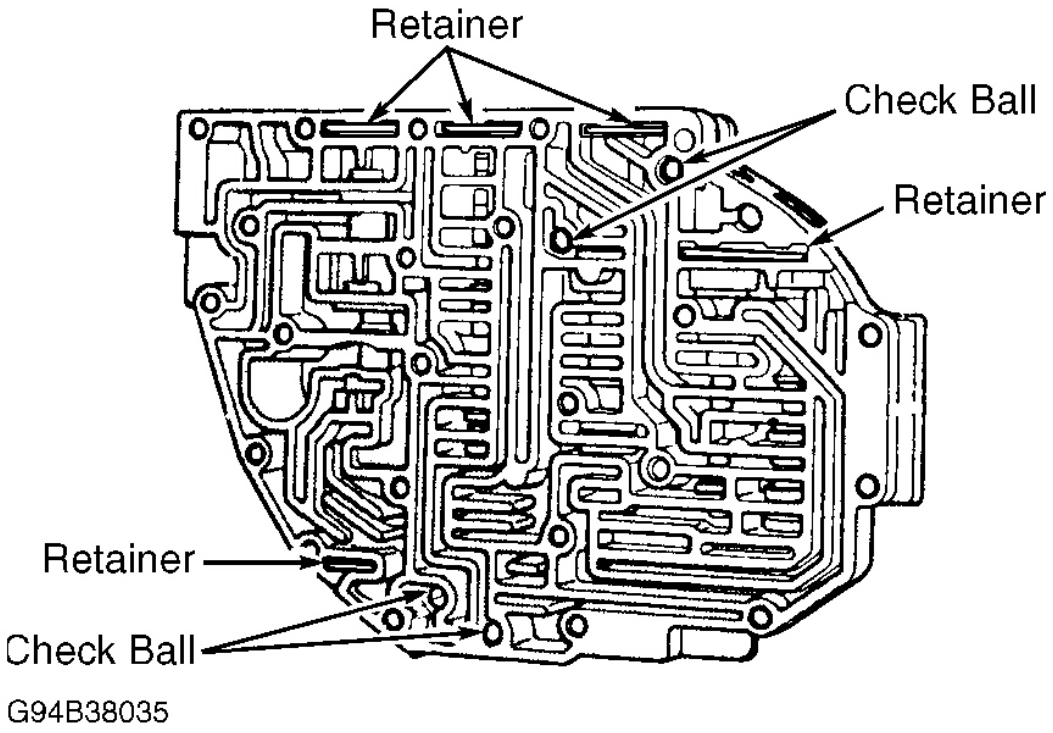

Fig. 37: Identifying Valve Body Retainer & Check Ball Locations
Courtesy of CHRYSLER CORP.

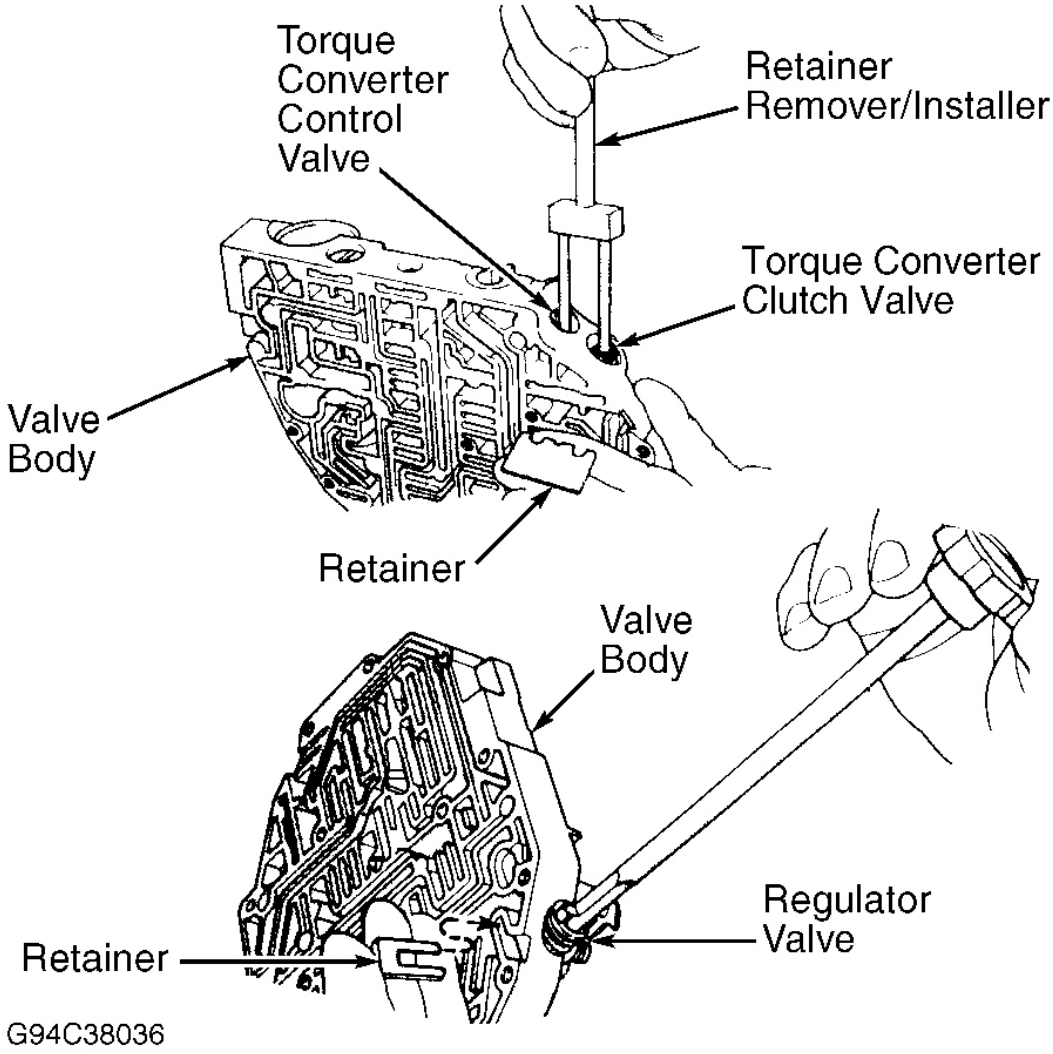

Fig. 38: Removing & Installing Retainers In Valve Body
Courtesy of CHRYSLER CORP.

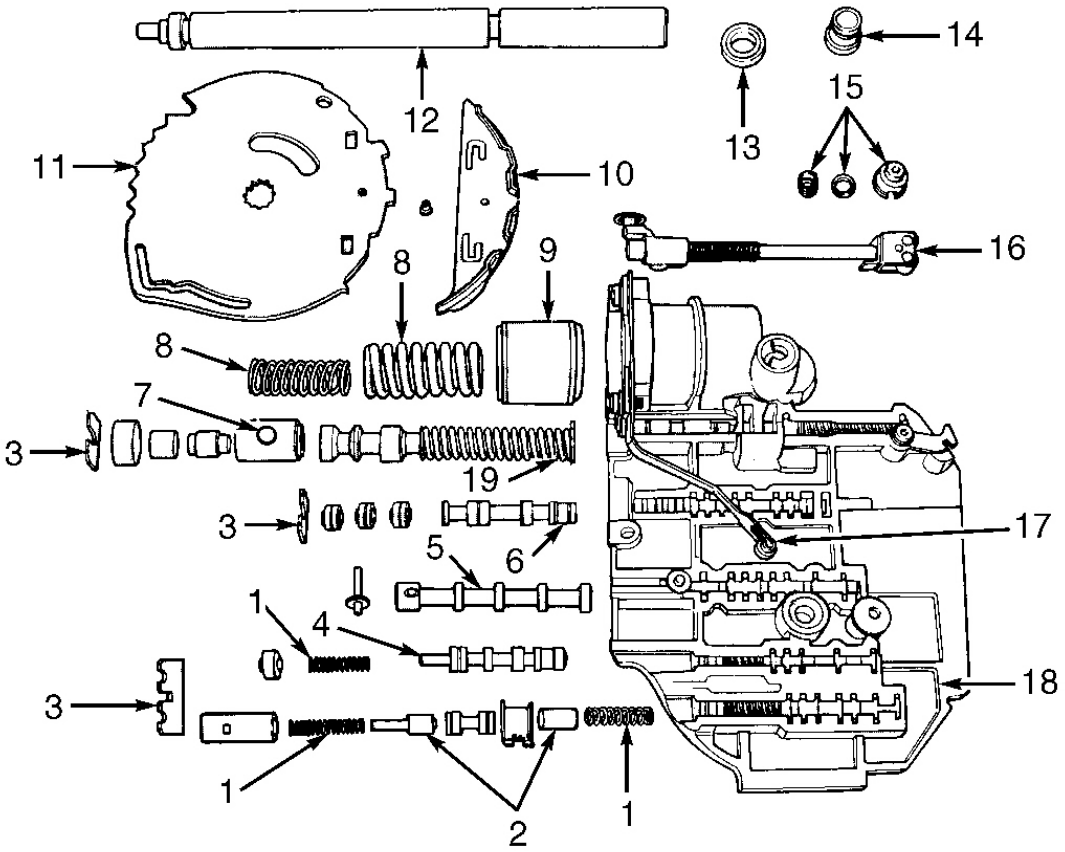

Fig. 39: Exploded View Of Valve Body
Courtesy of CHRYSLER CORP.

BEARING ADJUSTMENTS

NOTE: **Various gauging shims and selective spacers or shim applications are used for performing bearing preload adjustments. For application and available thickness, see Fig. 47.**

CAUTION: All bearing adjustments must be made with no other component interference or gear intermesh, except transfer gear bearing.

DIFFERENTIAL BEARING PRELOAD

CAUTION: Differential bearing preload MUST be adjusted if any of the following components have been replaced: transaxle case, carrier, differential retainer, extension housing or side bearings and races. Differential bearing preload must be checked with transfer shaft removed.

1. Install NEW side bearings on carrier (if removed). Using Bearing Race Remover (L-4518), remove bearing race from differential bearing retainer. See **Fig. 25**. Remove selective spacer or shim from differential bearing retainer. If side bearings have been replaced, also replace bearing race in extension housing.
2. Install .020" (.50 mm) thick gauging shim in differential bearing retainer. **DO NOT** install oil baffle between gauging shim and differential bearing retainer at this time.
3. Using press, Handle (C-4171) and Bearing Race Installer (L-4520), install bearing race in differential bearing retainer. See **Fig. 25**.
4. Install differential assembly in transaxle case. Install NEW "O" ring on extension housing. Apply 1/8" bead of RTV sealant on extension housing-to-transaxle case sealing surface. Install extension housing on transaxle case.

NOTE: On All-Wheel Drive (AWD) models, retainer plate is used in place of extension housing.

5. Using spanner wrench, rotate extension housing and align bolt holes. Install and tighten bolts to specification. For more information see **TORQUE SPECIFICATIONS**. Install differential bearing retainer and tighten bolts to 21 ft. lbs. (29 N.m).
6. Position transaxle assembly vertically in Support Stand (L-4557). See **Fig. 40**. Rotate differential at least one full revolution to ensure side bearings are fully seated. Install Adapter (L-4436) into extension housing.

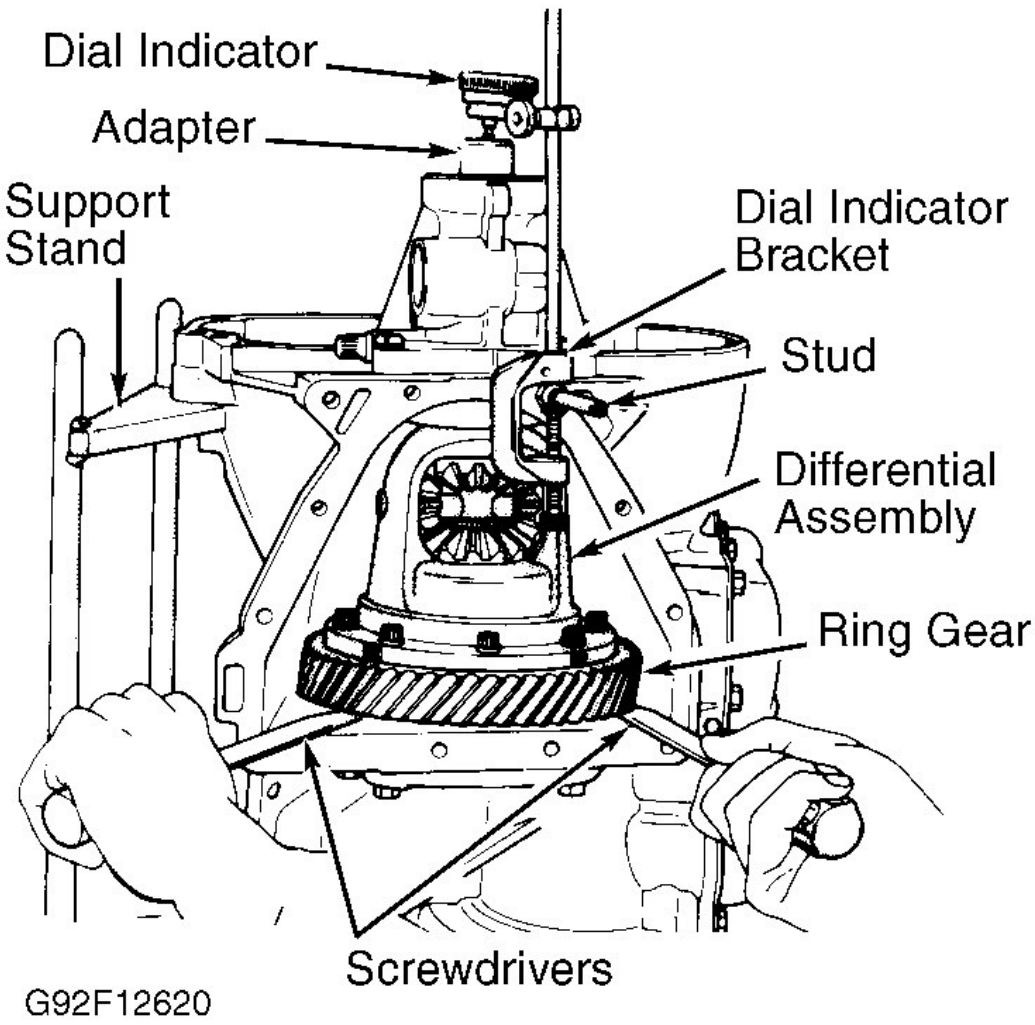

Fig. 40: Checking Differential End Play
Courtesy of CHRYSLER CORP.

7. Install dial indicator with indicator stem resting on adapter and zero dial indicator. Using screwdrivers on each side of ring gear, pry ring gear upward and note differential end play reading on dial indicator. See **Fig. 40**.

CAUTION: DO NOT damage transaxle case or differential cover sealing surface when prying ring gear upward.

8. Using differential end play reading, determine selective spacer or shim thickness required. See **Fig. 41**. Once proper selective spacer or shim is determined, remove bolts and differential bearing retainer.

End Play (with .50 mm gauging shim installed)		Required Shim Combination	Total Thickness	
mm	inch	mm	mm	inch
.0	.0	.50	.50	.020
.05	.002	.75	.75	.030
.10	.004	.80	.80	.032
.15	.006	.85	.85	.034
.20	.008	.90	.90	.035
.25	.010	.95	.95	.037
.30	.012	1.00	1.00	.039
.35	.014	1.05	1.05	.041
.40	.016	.50 + .60	1.10	.043
.45	.018	.50 + .65	1.15	.045
.50	.020	.50 + .70	1.20	.047
.55	.022	.50 + .75	1.25	.049
.60	.024	.50 + .80	1.30	.051
.65	.026	.50 + .85	1.35	.053
.70	.027	.50 + .90	1.40	.055
.75	.029	.50 + .95	1.45	.057
.80	.031	.50 + 1.00	1.50	.059
.85	.033	.50 + 1.05	1.55	.061
.90	.035	1.00 + .60	1.60	.063
.95	.037	1.00 + .65	1.65	.065
1.00	.039	1.00 + .70	1.70	.067
1.05	.041	1.00 + .75	1.75	.069
1.10	.043	1.00 + .80	1.80	.071
1.15	.045	1.00 + .85	1.85	.073
1.20	.047	1.00 + .90	1.90	.075
1.25	.049	1.00 + .95	1.95	.077
1.30	.051	1.00 + 1.00	2.00	.079
1.35	.053	1.00 + 1.05	2.05	.081
1.40	.055	1.05 + 1.05	2.10	.083

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Fig. 41: Determining Differential End Play Selective Spacer Or Shim
Courtesy of CHRYSLER CORP.

9. Remove bearing race from differential bearing retainer. Remove .020" (.50 mm) gauging shim. Install oil baffle and proper selective spacer or shim.
10. Using press, install bearing race in differential bearing retainer. Apply 1/8" bead of RTV sealant on differential bearing retainer-to-transaxle case sealing surface. Install differential bearing retainer on transaxle case.
11. Using spanner wrench, rotate differential bearing retainer and align bolt holes. Install and tighten bolts to 21 ft. lbs. (29 N.m).
12. Coat side bearings with oil. Using Adapter (L-4436-A) and INCH-lb. torque wrench, check differential rotating torque required to rotate differential assembly. See **Fig. 42**. Differential rotating torque should be 5-18 INCH lbs (.6-2.0 N.m).
13. If differential rotating torque exceeds specification, install a .002" (.05 mm) thinner selective spacer or shim in differential bearing retainer. If differential rotating torque is less than specified, install a .002" (.05 mm) thicker selective spacer or shim in differential bearing retainer.
14. Recheck differential rotating torque. If oil seal was removed from extension housing, install NEW oil seal in extension housing.

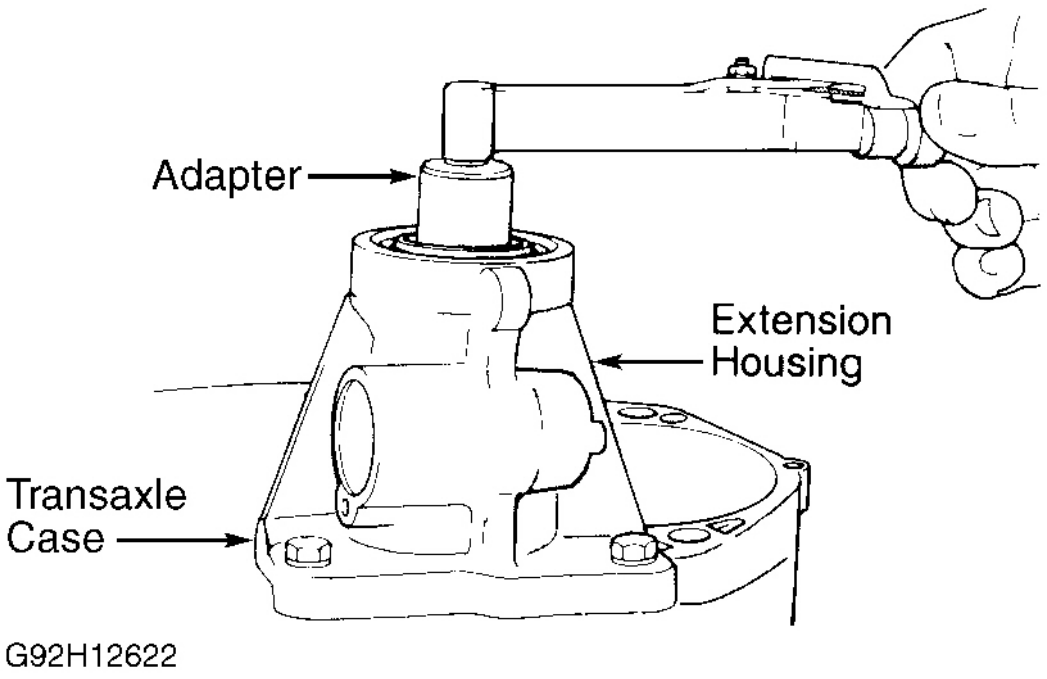
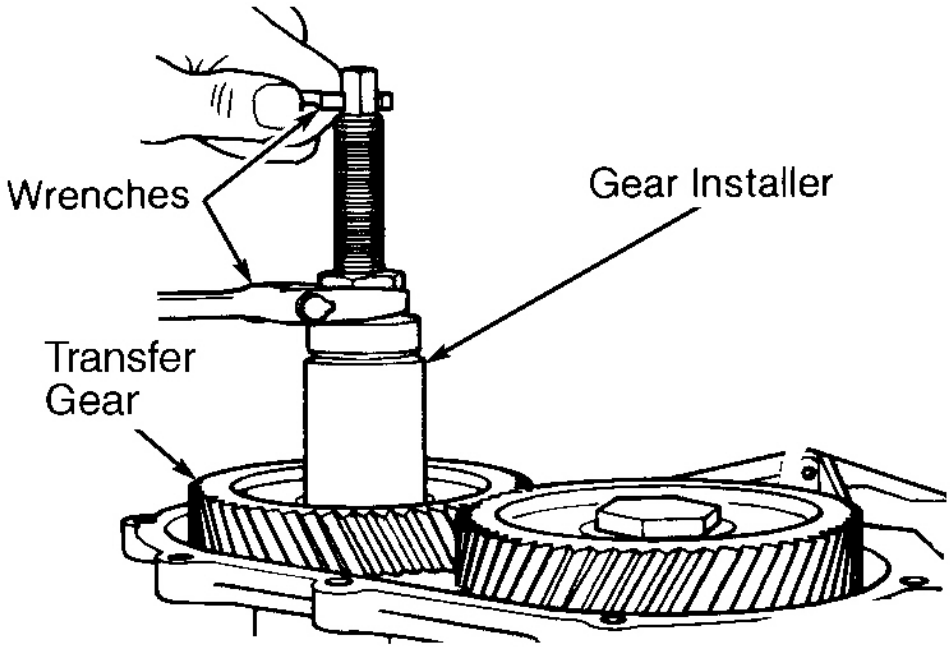


Fig. 42: Checking Differential Rotating Torque
Courtesy of CHRYSLER CORP.

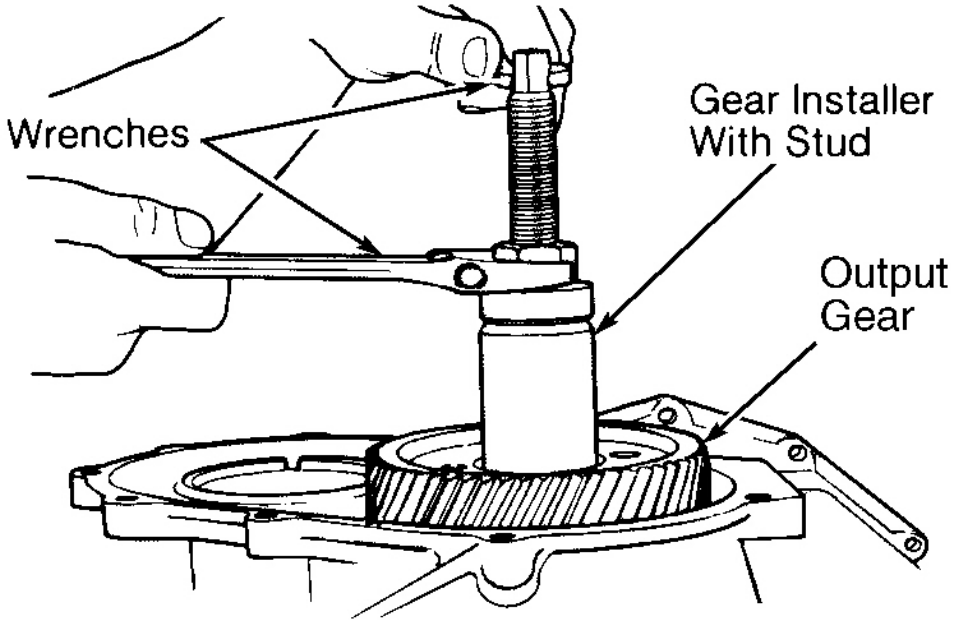
OUTPUT GEAR BEARING PRELOAD

CAUTION: Output gear is transfer gear located on rear planetary carrier in transaxle case. Output gear bearing preload must be checked when bearings, bearing races, output gear, rear planetary carrier or transaxle case are replaced. Output gear bearing preload must be checked with transfer gear removed from transfer shaft.

1. With output gear and selective spacer or shim removed, install a .177" (4.50 mm) thick gauging shim on rear planetary carrier. Use grease to hold gauging shim in place. Install output gear on rear planetary carrier using Gear Installer (6261) with stud. See **Fig. 43**.
2. Install bolt and washer. Using Gear Holder (6259), hold output gear. Tighten bolt to 200 ft. lbs. (271 N.m). **DO NOT** install stirrup and retaining strap (if applicable). Install Lever (L-4432) on output gear using Bolts (6260). See **Fig. 44**.
3. Move output gear inward and outward while rotating to ensure bearings are seated. Install dial indicator with indicator stem against output gear. See **Fig. 44**.
4. Move output gear inward and zero dial indicator. Pull output gear outward and note output gear end play reading on dial indicator. Using output gear end play, determine proper selective spacer or shim. See **Fig. 45**.



INSTALLING GEAR ON TRANSFER SHAFT



INSTALLING GEAR ON REAR PLANETARY CARRIER

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Fig. 43: Installing Transfer Gear Or Output Gear
Courtesy of CHRYSLER CORP.

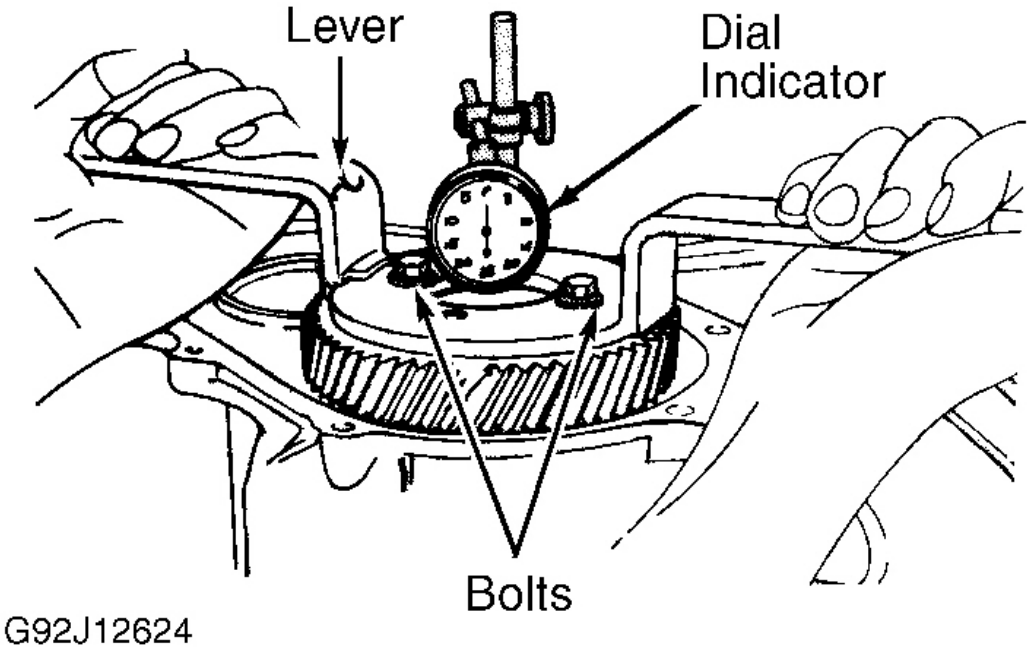

Fig. 44: Checking Transfer Or Output Gear & Transfer Shaft End Play
Courtesy of CHRYSLER CORP.

End Play (with 4.50 mm gauging shim installed)		Required Shim	End Play (with 4.50 mm gauging shim installed)		Required Shim
mm	inch	mm	mm	inch	mm
.05	.002	4.42	.53	.021	3.94
.08	.003	4.38	.56	.022	3.90
.10	.004	4.38	.58	.023	3.90
.13	.005	4.34	.61	.024	3.86
.15	.006	4.30	.64	.025	3.82
.18	.007	4.30	.66	.026	3.82
.20	.008	4.26	.69	.027	3.78
.23	.009	4.22	.71	.028	3.74
.25	.010	4.22	.74	.029	3.74
.28	.011	4.18	.76	.030	3.70
.30	.012	4.14	.79	.031	3.66
.33	.013	4.14	.81	.032	3.66
.36	.014	4.10	.84	.033	3.62
.38	.015	4.10	.86	.034	3.62
.41	.016	4.06	.89	.035	3.58
.43	.017	4.02	.91	.036	3.54
.46	0.18	4.02	.94	.037	3.54
.48	.019	3.98	.97	.038	3.50
.51	.020	3.94			

Average Conversion .04 mm = .0016"

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Fig. 45: Determining Transfer Or Output Gear Selective Spacer Or Shim
Courtesy of CHRYSLER CORP.

5. Using gear holder, hold output gear. Remove bolt and washer. Using puller, remove output gear and gauging shim. Install proper selective spacer or shim using grease to hold in place.
6. Using gear installer and stud, install output gear. Install retaining bolt and washer. Using gear holder, hold output gear and tighten retaining bolt to 200 ft. lbs. (271 N.m).
7. Using INCH lb. torque wrench, check rotating torque required to rotate output gear. Output gear rotating torque should be 3-8 INCH lbs. (.3-.9 N.m).

8. If output gear rotating torque exceeds specification, install a .0016" (.041 mm) thicker selective spacer or shim. If output gear rotating torque is less than specified, install a .0016" (.041 mm) thinner selective spacer or shim. Recheck output gear rotating torque. Install stirrup and retaining strap (if applicable).

TRANSFER SHAFT BEARING PRELOAD

CAUTION: Transfer shaft bearing preload must be checked when bearings, bearing races, transfer gear, transfer shaft or transaxle case are replaced.

1. Hold transfer gear and remove nut and washer from end of transfer shaft. Using puller, remove transfer gear and selective spacer or shim from transfer shaft.
2. Install a .184" (4.66 mm) thick gauging shim on transfer shaft. Using Gear Installer (6261), install transfer gear on transfer shaft. See **Fig. 43**. Install old nut and washer. Hold transfer gear and tighten nut to 200 ft. lbs. (271 N.m).
3. Install Lever (L-4432) on transfer gear using Bolts (6260). See **Fig. 44**. Move transfer gear inward and outward while rotating to ensure bearings are seated.
4. Install grease-coated steel ball in end of transfer shaft. Install dial indicator on transaxle case with stem resting on steel ball so transfer shaft end play can be checked.
5. Move transfer gear inward and zero dial indicator. Pull transfer gear outward and note transfer shaft end play reading on dial indicator.
6. Using transfer shaft end play, determine correct selective spacer or shim thickness. See **Fig. 46**.

End Play (with 4.66 mm gauging shim installed)		Required Shim	End Play (with 4.66 mm gauging shim installed)		Required Shim
mm	inch	mm	mm	inch	mm
.05	.002	4.66	.79	.031	3.90
.08	.003	4.62	.81	.032	3.90
.10	.004	4.58	.84	.033	3.86
.13	.005	4.58	.86	.034	3.82
.15	.006	4.54	.89	.035	3.82
.18	.007	4.50	.91	.036	3.78
.20	.008	4.50	.94	.037	3.74
.23	.009	4.46	.97	.038	3.74
.25	.010	4.46	.99	.039	3.70
.28	.011	4.42	1.02	.040	3.66
.30	.012	4.38	1.04	.041	3.66
.33	.013	4.38	1.07	.042	3.62
.36	.014	4.34	1.08	.043	3.62
.38	.015	4.30	1.12	.044	3.58
.41	.016	4.30	1.14	.045	3.54
.43	.017	4.26	1.17	.046	3.54
.46	.018	4.22	1.19	.047	3.50
.48	.019	4.22	1.22	.048	3.46
.50	.020	4.18	1.24	.049	3.46
.53	.021	4.18	1.27	.050	3.42
.56	.022	4.14	1.30	.051	3.38
.58	.023	4.10	1.32	.052	3.38
.61	.024	4.10	1.35	.053	3.34
.64	.025	4.06	1.37	.054	3.34
.66	.026	4.02	1.40	.055	3.30
.69	.027	4.02	1.42	.056	3.26
.71	.028	3.98	1.45	.057	3.26
.74	.029	3.94	1.47	.058	3.22
.76	.030	3.94			

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Fig. 46: Determining Transfer Shaft Selective Spacer Or Shim
Courtesy of CHRYSLER CORP.

7. Hold transfer gear. Remove nut and washer from end of transfer shaft. Using puller, remove transfer gear and gauging shim from transfer shaft.
8. Install correct selective spacer or shim on transfer shaft. Using gear installer, install transfer gear on transfer shaft. Install nut and washer. Using gear holder, hold transfer gear and tighten nut to 200 ft. lbs. (271 N.m).
9. Ensure bearings are fully seated. Using dial indicator, check transfer shaft end play. Transfer shaft end play should be .002-.004" (.05-.10 mm).
10. If transfer shaft end play exceeds specification, install a .0016" (.041 mm) thinner selective spacer or shim. If transfer shaft end play is less than specified, install a .0016" (.041 mm) thicker selective spacer or shim. Recheck transfer shaft end play.

Shim Thickness		Bearing Usage		
mm	inch	Output Gear	Transfer Shaft	Differential
3.22	.127	X	X	—
3.26	.128	X	X	—
3.30	.130	X	X	—
3.34	.132	X	X	—
3.38	.133	X	X	—
3.42	.135	X	X	—
3.46	.136	X	X	—
3.50	.138	X	X	—
3.54	.139	X	X	—
3.58	.141	X	X	—
3.62	.143	X	X	—
3.66	.144	X	X	—
3.70	.146	X	X	—
3.74	.147	X	X	—
3.78	.149	X	X	—
3.82	.150	X	X	—
3.86	.152	X	X	—
3.90	.154	X	X	—
3.94	.155	X	X	—
3.98	.157	X	X	—
4.02	.158	X	X	—
4.06	.160	X	X	—
4.10	.161	X	X	—
4.14	.163	X	X	—
4.18	.165	X	X	—
4.22	.166	X	X	—
4.26	.168	X	X	—
4.30	.169	X	X	—
4.34	.171	X	X	—
4.38	.172	X	X	—
4.42	.174	X	X	—
4.46	.175	X	X	—
4.50	.177	X*	X	—
4.54	.178	X	X	—
4.58	.180	X	X	—
4.62	.182	X	X	—
4.66	.183	X	X*	—
0.50	.020	—	—	X*
0.55	.022	—	—	X
0.60	.024	—	—	X
0.65	.026	—	—	X
0.70	.027	—	—	X
0.75	.029	—	—	X
0.80	.031	—	—	X
0.85	.033	—	—	X
0.90	.035	—	—	X
0.95	.037	—	—	X
1.00	.039	—	—	X
1.05	.041	—	—	X

* – Also used as gauging shims.

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Fig. 47: Identifying Selective Spacer Or Shim Application
Courtesy of CHRYSLER CORP.

TRANSAXLE REASSEMBLY

DIFFERENTIAL ASSEMBLY

CAUTION: Differential bearing preload MUST be adjusted if any of the following components have been replaced: transaxle case, carrier, differential retainer, extension housing or side bearings and races. See DIFFERENTIAL BEARING PRELOAD under BEARING ADJUSTMENTS. If no components are replaced, use original selective spacer or shim located behind bearing race in differential bearing retainer.

1. Install differential assembly in transaxle case. Install NEW "O" ring on extension housing. Apply 1/8" bead of RTV sealant on extension housing-to-transaxle case sealing surface. Install extension housing on transaxle case.
2. Using spanner wrench, rotate extension housing and align retaining bolt holes. Install and tighten bolts to specification. See **TORQUE SPECIFICATIONS**.
3. Apply 1/8" bead of RTV sealant on differential bearing retainer-to-transaxle case sealing surface. Install differential bearing retainer on transaxle case.
4. Using spanner wrench, rotate differential bearing retainer and align retaining bolt holes. Install and tighten bolts to specification.
5. Apply 1/8" bead of RTV sealant on differential cover-to-transaxle case sealing surface. Install differential cover. Install and tighten bolts to specification. Install NEW oil seal in extension housing (if removed).

TRANSFER SHAFT & TRANSFER GEAR

CAUTION: If transfer shaft, transfer gear, transaxle case or bearings are replaced, transfer shaft bearing preload must be checked. See TRANSFER SHAFT BEARING PRELOAD under BEARING ADJUSTMENTS.

1. Using transfer shaft remover/installer, install transfer shaft. Install bearing race, NEW "O" ring and baffle. Install transfer shaft bearing retaining snap ring in transaxle case.
2. Install bearing race retainer. Ensure notch in outer edge of bearing race retainer is aligned with notch in transaxle case. See **Fig. 20**. Install selective spacer or shim.
3. Using Gear Installer (6261), install transfer gear on transfer shaft. See **Fig. 43**. Install NEW nut and washer. Using gear holder, hold transfer gear and tighten nut to specification. See **TORQUE SPECIFICATIONS**.

VALVE BODY & INTERNAL COMPONENTS

CAUTION: If output gear, rear planetary carrier, transaxle case or bearings are replaced, output gear bearing preload must be checked. See OUTPUT GEAR BEARING PRELOAD under BEARING ADJUSTMENTS.

1. If installing NEW bearing on output gear, use press, Handle (C-4171) and Bearing Installer (5052) to install bearing. See **Fig. 23**. If installing NEW bearing on rear planetary carrier, use press and Bearing Installer (6053).
2. If installing NEW bearing races in transaxle case for rear planetary carrier and output gear, use Bearing

Race Installer (5050) to install bearing races.

3. Install piston retainer gasket in transaxle case. Ensure holes in piston retainer gasket align with holes in transaxle case. Install low-reverse clutch piston retainer.
4. Install and tighten low-reverse clutch piston retainer screws to specification. See **TORQUE SPECIFICATIONS**. Install low-reverse clutch piston.
5. Ensure return spring is properly installed on parking sprag assembly. See **Fig. 48**. Install parking sprag assembly, pivot shaft, shaft and cup in transaxle.

CAUTION: Ensure sleeve at center of parking sprag assembly and parking sprag guide bracket contact rear of transaxle case.

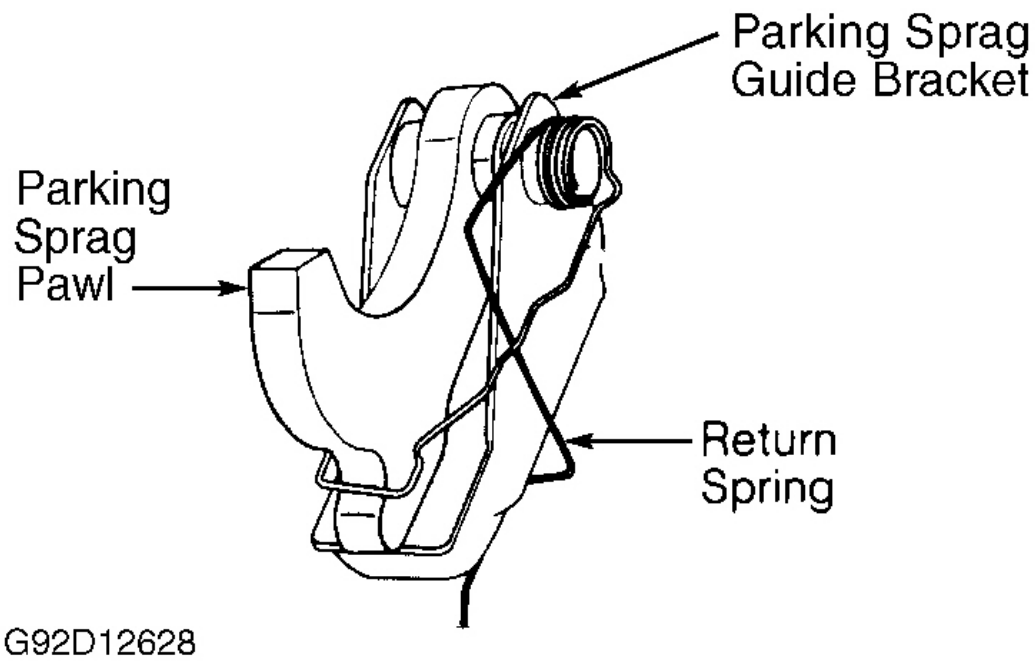


Fig. 48: Assembling Parking Sprag
Courtesy of CHRYSLER CORP.

6. Install clutch piston return spring for low-reverse clutch piston in transaxle case. Using spring compressor and adapter, compress clutch assembly. Install snap ring. Ensure ends of snap ring are properly positioned. See Fig. 22.
7. Install rear planetary carrier in transaxle case. Install selective spacer or shim on rear planetary carrier. Install output gear using Gear Installer (6261) with stud. See **Fig. 43**. Output gear may also be referred to as transfer gear.

CAUTION: If output gear, rear planetary carrier, transaxle case or bearings are replaced, output gear bearing preload must be checked. See OUTPUT GEAR BEARING PRELOAD under BEARING ADJUSTMENTS.

8. Install NEW retaining bolt and washer. Using gear holder, hold output gear. Tighten retaining bolt to specification. Place bolt retaining stirrup with seration side out on output gear (if applicable). Install retaining strap and tighten bolts finger tight. Rotate stirrup clockwise against the flats of the output gear bolt. See **Fig. 49**. Tighten bolts to specification.
9. Apply 1/8" bead of RTV sealant on end cover and install. Install and tighten end cover bolts to specification. Install low-reverse clutch plates and clutch discs. See **Fig. 50**.
10. Install flat snap ring above top low-reverse clutch plate. Ensure ends of flat snap ring are positioned in proper area. See **Fig. 51**. Use care not to scratch clutch plate when installing flat snap ring.

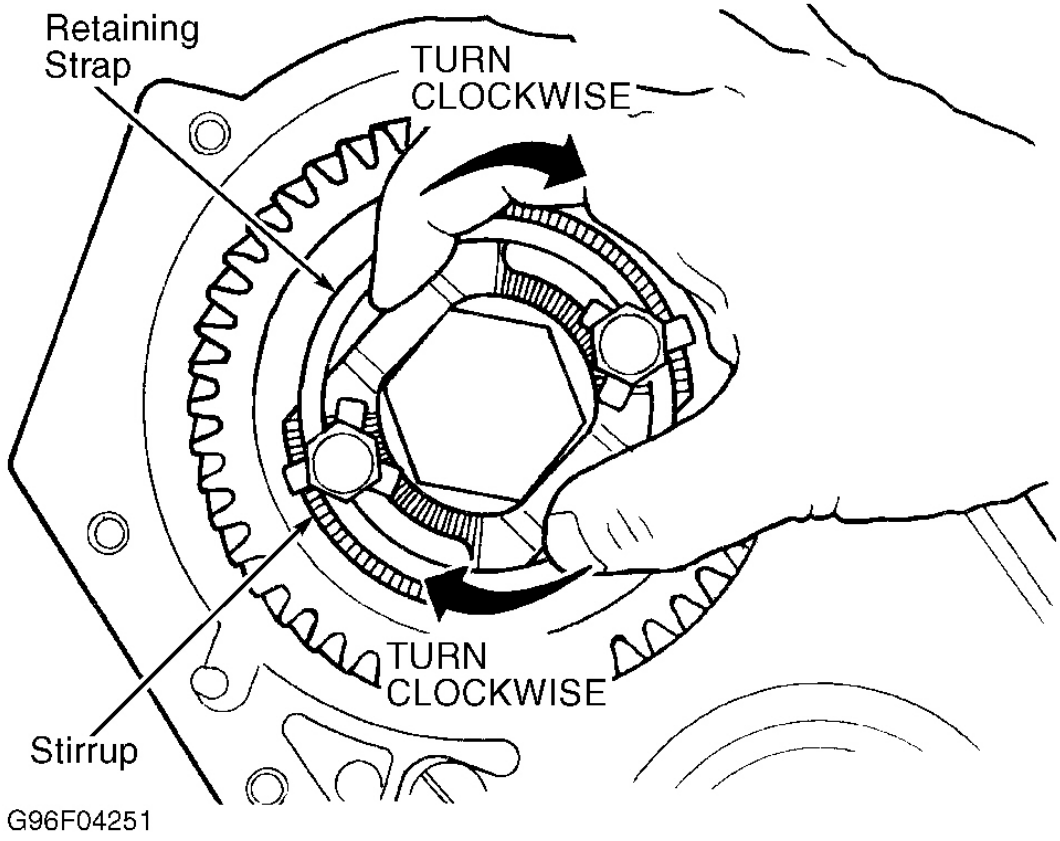


Fig. 49: Rotating Stirrup Against Output Gear Bolt
Courtesy of CHRYSLER CORP.

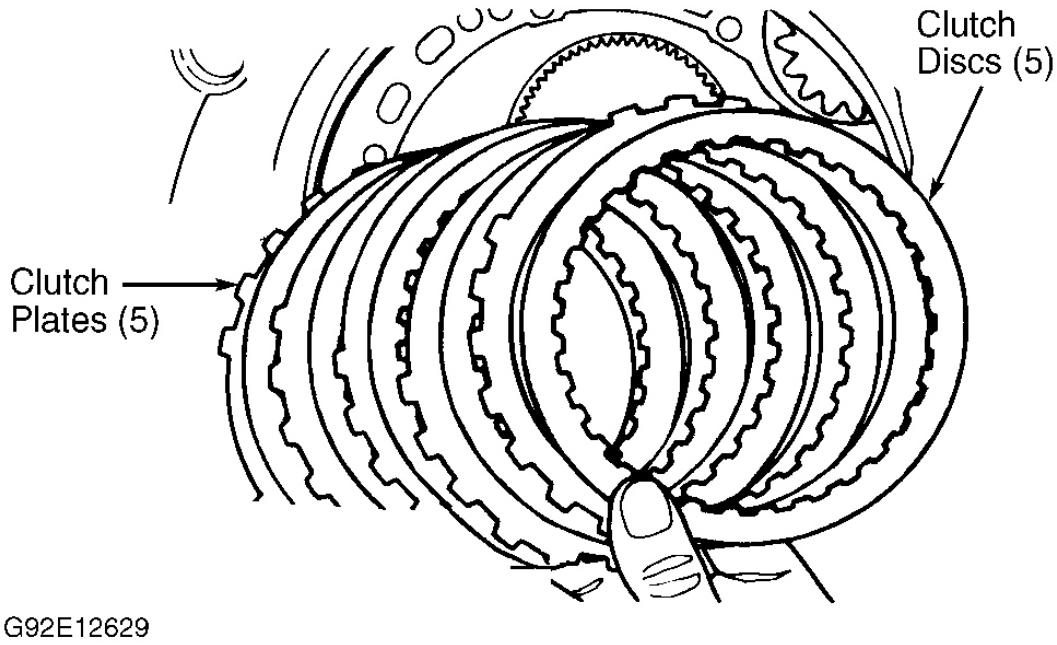


Fig. 50: Installing Low-Reverse Clutch Plates & Clutch Discs
Courtesy of CHRYSLER CORP.

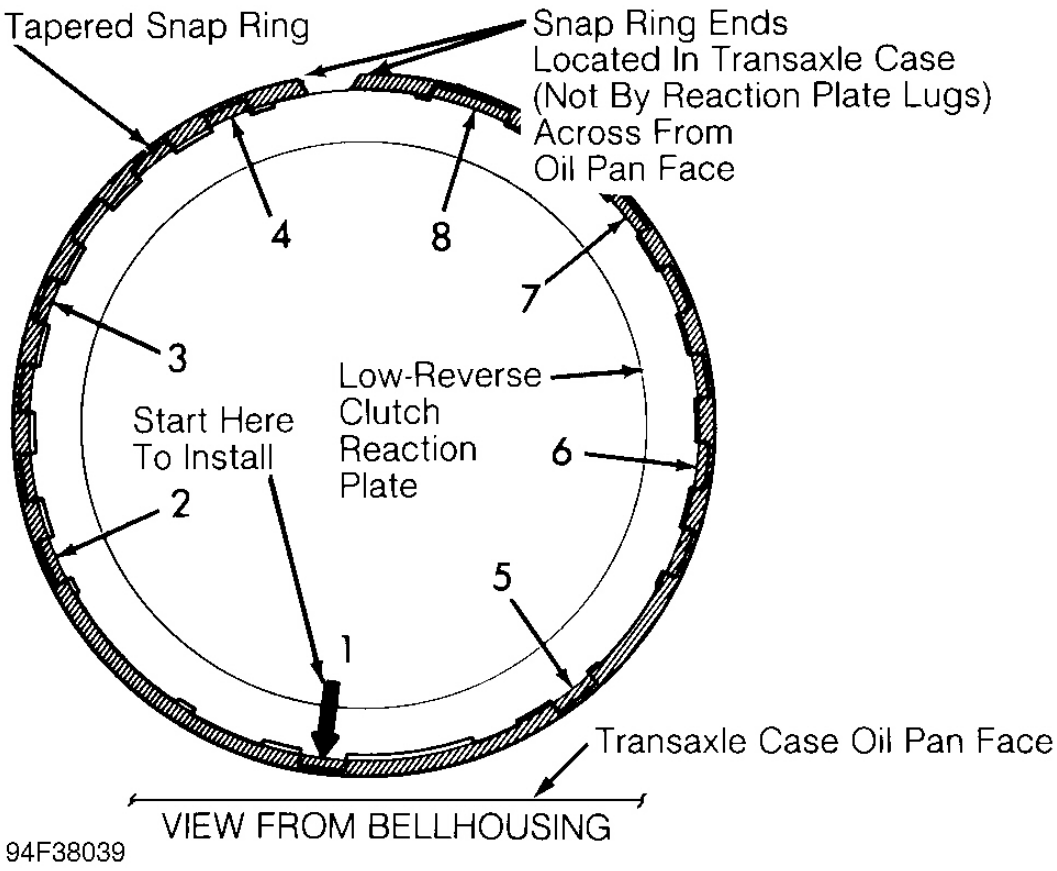


Fig. 51: Installing Snap Ring
Courtesy of CHRYSLER CORP.

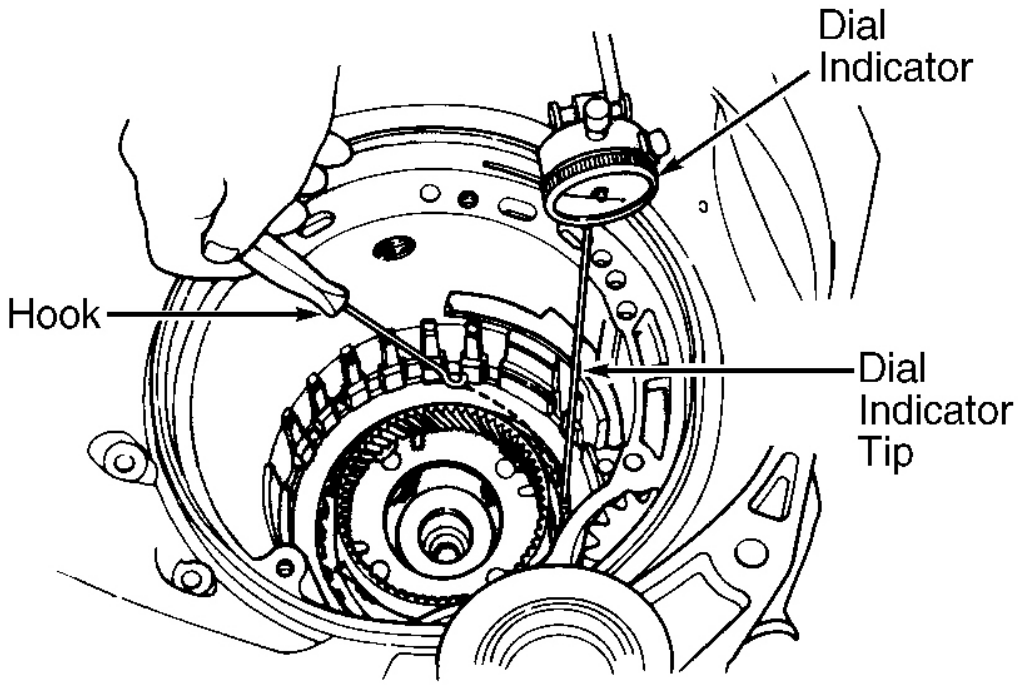
11. Install No. 1 low-reverse clutch disc. Install low-reverse clutch reaction plate. Install tapered snap ring above low-reverse clutch reaction plate with tapered side facing upward, toward oil pump. Ensure ends of tapered snap ring are positioned in proper area. See **Fig. 51**.

CAUTION: Low-reverse clutch clearance must be checked after installing clutch assembly.

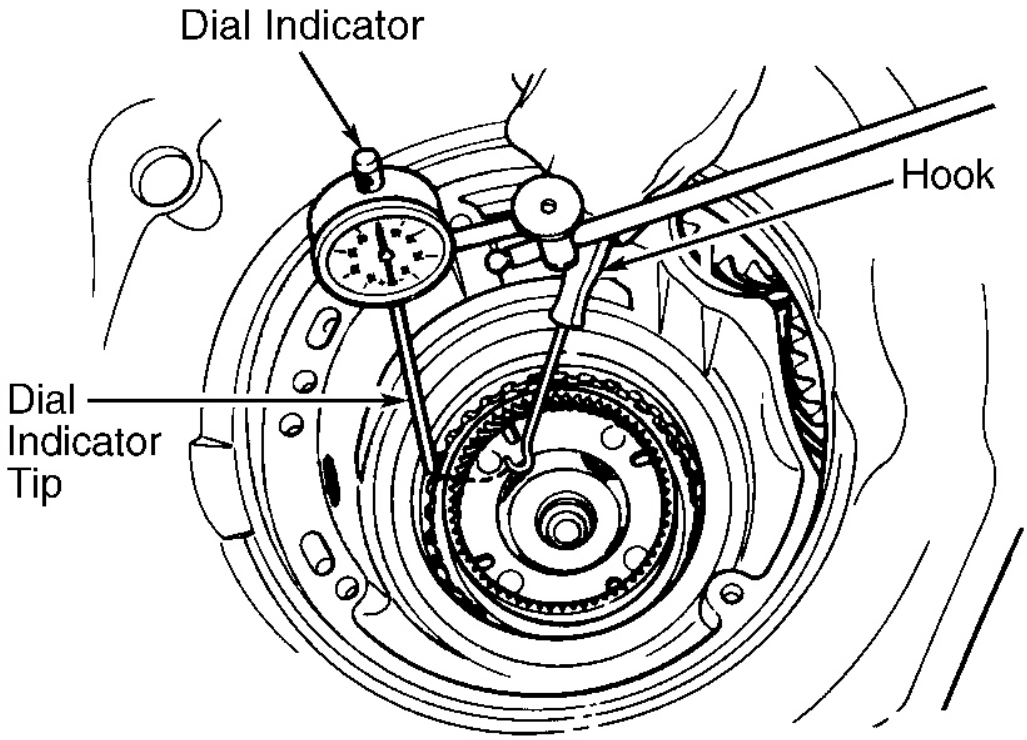
12. To check low-reverse clutch clearance, assemble dial indicator and Dial Indicator Tip (6268) on the transaxle case. See **Fig. 52**. Press low-reverse clutch pack downward and zero dial indicator. Using hook, pull No. 1 low-reverse clutch disc upward and note low-reverse clutch clearance on dial indicator.
13. Low-reverse clutch clearance should be .042-.065" (1.06-1.65 mm). If clearance is not within specification, install different thickness low-reverse clutch reaction plate. Low-reverse clutch reaction plate is available in the following thicknesses: .211" (5.36 mm), .221" (5.61 mm), .232" (5.89 mm), .242" (6.15 mm), .252" (6.40 mm), .262" (6.65 mm) and .273" (6.93 mm).
14. Install 2-4 clutch plates and clutch discs. See **Fig. 53**. Install 2-4 clutch piston return spring and 2-4 clutch

retainer. Using spring compressor, compress 2-4 clutch assembly and install snap ring. See **Fig. 19**. Ensure ends of snap ring are positioned in proper area. See **Fig. 51**.

CAUTION: The 2-4 clutch clearance must be checked after installing clutch assembly.



CHECKING LOW-REVERSE CLUTCH CLEARANCE



CHECKING 2-4 CLUTCH CLEARANCE

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Fig. 52: Checking Low-Reverse & 2-4 Clutch Clearances
Courtesy of CHRYSLER CORP.

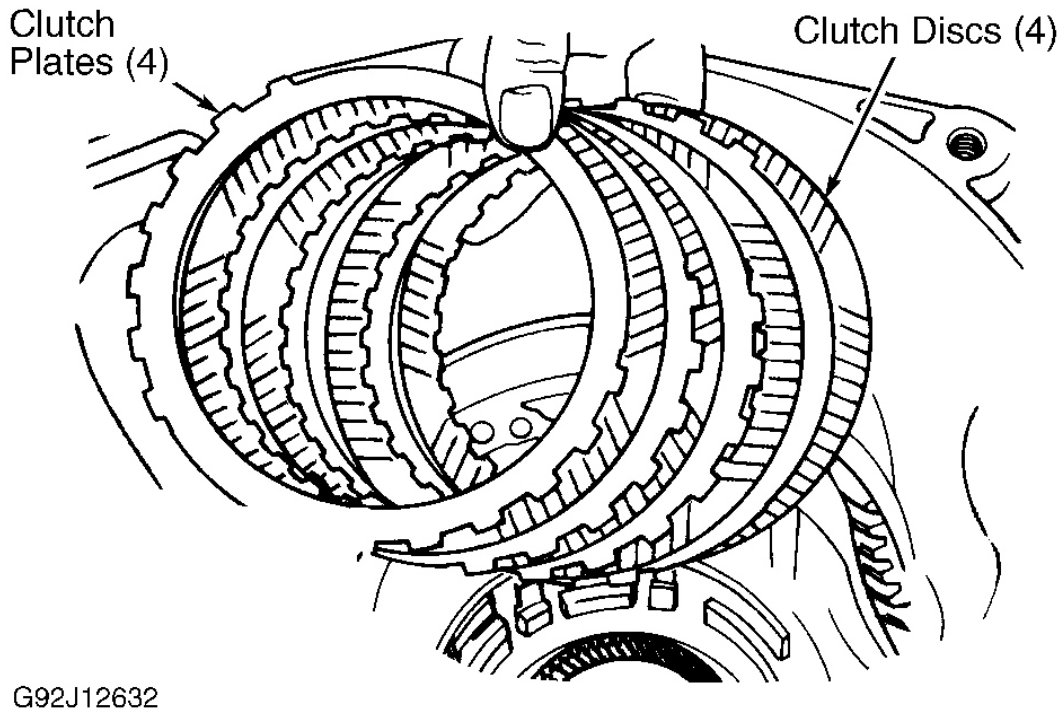

Fig. 53: Installing 2-4 Clutch Plates & Clutch Discs
Courtesy of CHRYSLER CORP.

15. To check 2-4 clutch clearance, assemble dial indicator and Dial Indicator Tip (6268) on transaxle case. See **Fig. 52**. Press 2-4 clutch pack downward and zero dial indicator. Using hook, pull one 2/4 clutch disc upward and note 2-4 clutch clearance on dial indicator.
16. The 2-4 clutch clearance should be .030-.104" (.76-2.64 mm). If clearance is not within specification, check for improper installation of clutch components. There is no adjustment for 2-4 clutch clearance.
17. Install thrust bearing and rear sun gear. Install thrust bearing, rear annulus gear and front planetary carrier. See **Fig. 14**. Install 2-4 clutch hub and thrust washer. Thrust washer goes on oil pump end of transaxle case.

CAUTION: Correct thickness No. 4 thrust washer located on shaft end of overdrive clutch hub must be determined to maintain proper input shaft end play. See Fig. 54.

18. Apply petroleum jelly on overdrive clutch hub in 3 places. Install a .032-.040" (.81-1.02 mm) thick No. 4 thrust washer on overdrive clutch hub. See **Fig. 54**.
19. Install input clutch assembly. Ensure input clutch assembly is fully seated by looking through input speed

sensor hole in transaxle case. If input clutch assembly is fully seated, input clutch retainer will be fully visible. See **Fig. 55**. If input clutch assembly is not fully seated, remove and check for improper installation.

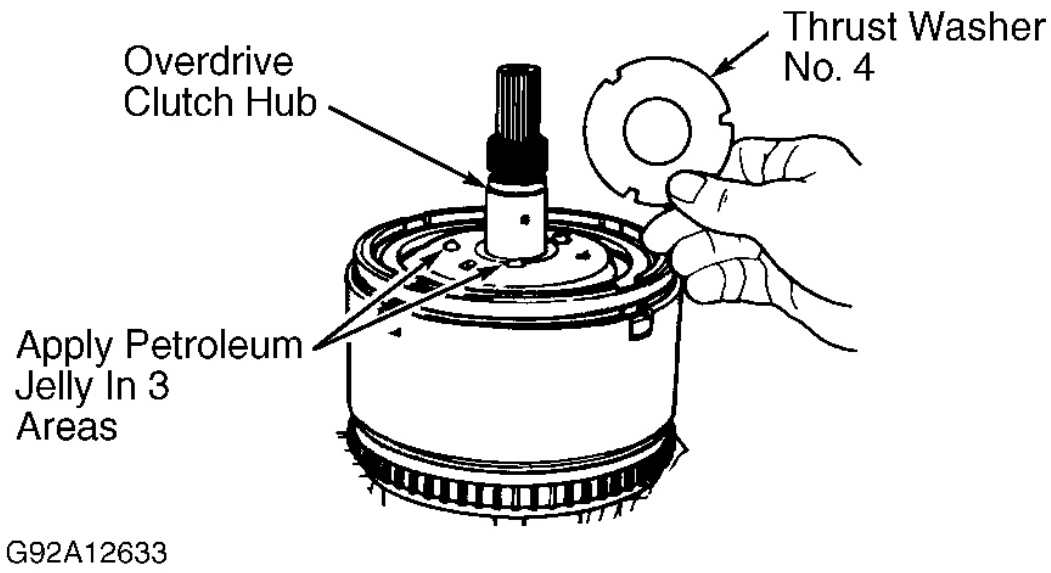

Fig. 54: Installing No. 4 Thrust Washer
Courtesy of CHRYSLER CORP.

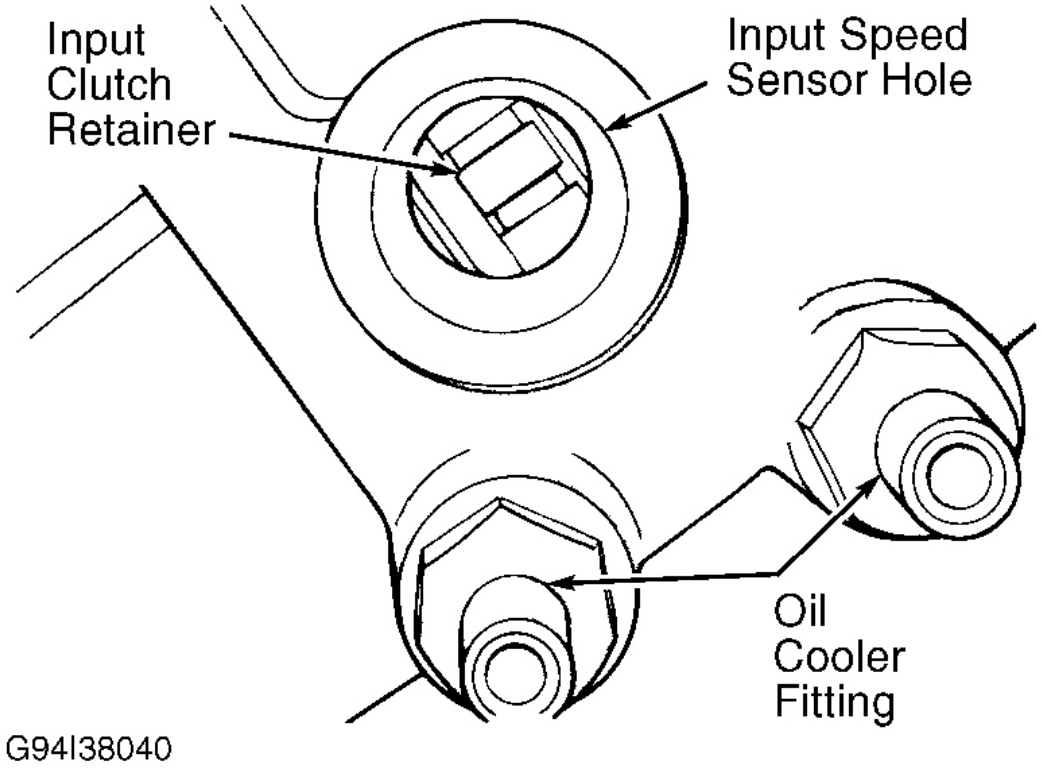

Fig. 55: Checking Input Clutch Assembly Installation
Courtesy of CHRYSLER CORP.

20. Install gasket and oil pump. **DO NOT** install "O" ring on oil pump at this time. Install and tighten oil pump-to-transaxle case bolts to specification. See **TORQUE SPECIFICATIONS**.
21. Using dial indicator, check input shaft end play. Input shaft end play should be .005-.025" (.13-.64 mm). If input shaft end play is not within specification, change No. 4 thrust washer thickness to obtain correct input shaft end play.
22. For example, if input shaft end play is .055" (1.40 mm) with No. 4 thrust washer installed in step 18), select a thrust washer with thickness of .071-.074" (1.80-1.88 mm). Replace No. 4 washer with replacement thrust washer selection. This should change input shaft end play to .020" (.51 mm). The No. 4 thrust washer is available in thicknesses ranging from .032" (.81 mm) to .136" (3.45 mm). Contact manufacturers' parts department for available thrust washers.
23. Once proper input shaft end play is obtained, remove oil pump and gasket. Install NEW "O" ring on oil pump. Install oil cooler by-pass valve in transaxle case with "O" ring end toward rear (transfer gear end) of transaxle case. See **Fig. 17**.

CAUTION: If transaxle failure existed, DO NOT attempt to clean or reuse oil cooler by-pass valve. Replace oil cooler by-pass valve.

24. Install NEW gasket and oil pump. Tighten oil pump-to-transaxle case bolts to specification. See **TORQUE SPECIFICATIONS**. Ensure input shaft rotates smoothly.
25. Install accumulator pistons and springs using NEW seal rings. Install valve body. See **VALVE BODY** under REMOVAL & INSTALLATION.
26. Using NEW "O" rings, install and tighten input and output speed sensors to specification.
27. Using NEW sealing washer, install park/neutral switch and transmission range switch or transmission range sensor. Ensure sealing washer is fully seated in transaxle case before tightening switch to specification.
28. Using NEW solenoid assembly gaskets, install solenoid assembly. Install and tighten bolts to specification.

CAUTION: If transaxle failure existed, flush oil cooler and check oil cooler flow. See OIL COOLER FLUSHING and OIL COOLER FLOW CHECK under ON-VEHICLE SERVICE.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Differential Bearing Retainer-To-Transaxle Case Bolt	21 (29)
Differential Cover Bolt	14 (19)
End Cover Bolt	14 (19)
Extension Housing-To-Transaxle Case Bolt	21 (29)
Input Speed Sensor	20 (27)
Oil Pan Bolt	14 (19)
Oil Pump-To-Transaxle Case Bolt	23 (31)
Output Speed Sensor	20 (27)
Park/Neutral Switch	25 (34)
Ring Gear Bolt (1)	70 (95)
Reaction Shaft & Support-To-Oil Pump Bolt	23 (31)
Stirrup Strap Bolt	17 (23)
Transfer/Output Gear Bolt/Nut	200 (271)
Transmission Range Switch	25 (34)
	INCH lbs. (N.m)
Low-Reverse Clutch Piston Retainer Screw	40 (4.5)
Oil Cooler Line Fitting	110 (12.4)
Pressure Tap Plug	45 (5.1)
Solenoid Assembly Bolt	105 (11.9)
Valve Body-To-Transfer Plate Bolt	40 (4.5)
Valve Body/Transfer Plate-To-Transaxle Case Bolt	105 (11.9)
(1) Always use NEW bolts. **DO NOT** reuse old bolts.	

TRANSAXLE SPECIFICATIONS

TRANSAXLE SPECIFICATIONS

Application	Specification
Clutch Clearances	
Low-Reverse Clutch	.042-.065" (1.07-1.65 mm)
Overdrive Clutch	.042-.096" (1.07-2.44 mm)
Reverse Clutch	.030-.049" (.76-1.24 mm)
Underdrive Clutch	.036-.058" (.91-1.47 mm)
2-4 Clutch	.030-.104" (.76-2.64 mm)
Differential Rotating Torque	5-18 INCH lbs. (.6-2.0 N.m)
Differential Side Gear End Play	.001-.013" (.03-.33 mm)
Input Shaft End Play	.005-.025" (.13-.64 mm)
Oil Pump Clearances	
Inner & Outer Gear Side Clearance	.0008-.0018" (.020-.046 mm)
Outer Gear-To-Pocket Clearance	.0018-.0056" (.046-.142 mm)
Output Gear Rotating Torque	3-8 INCH lbs. (.3-.9 N.m)
Transfer Shaft End Play	.002-.004" (.05-.10 mm)