AUTO TRANS OVERHAUL - CHRYSLER 42LE

AUTOMATIC TRANSMISSIONS Chrysler 42LE Overhaul

APPLICATION

TRANSMISSION APPLICATIONS

Model	Transaxle
1995-96 Concorde (3.3L & 3.5L)	42LE
1995-96 LHS & New Yorker (3.5L)	42LE
1995-96 Intrepid (3.3L & 3.5L)	42LE
1995-96 Vision (3.3L & 3.5L)	42LE

CAUTION: If battery is disconnected or voltage supply to Transaxle Control Module (TCM) is interrupted, TCM will have to relearn shift characteristics. If the TCM, transaxle internal components, solenoid assembly or torque converter are replaced, the TCM will have to relearn its shift characteristics. Perform shift quality quick-learn procedure. Refer to the SHIFT QUALITY QUICK-LEARN PROCEDURE in AUTO TRANS DIAGNOSIS - CHRYSLER 42LE CONTROLS article.

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. Refer to TORQUE CONVERTER CLUTCH BREAK-IN PROCEDURE.

IDENTIFICATION

Transaxle identification code is stamped on identification tag located on side of transaxle. See **Fig. 1**. Transaxle identification code may be required when ordering replacement components.

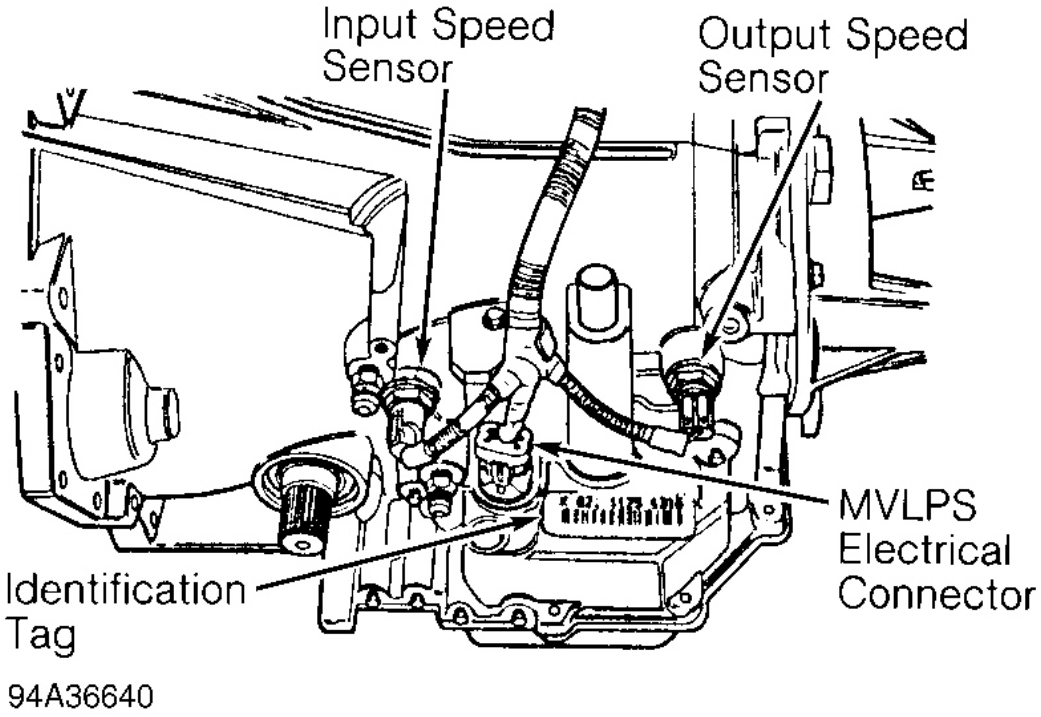


Fig. 1: Locating Transaxle Identification Code
Courtesy of CHRYSLER LLC

DESCRIPTION

The 42LE is a electronically controlled 4-speed transaxle. Transaxle uses hydraulically operated clutches controlled by the Transaxle Control Module (TCM). Transaxle consists of 3 multiple-disc input clutches, 2 multiple-disc holding clutches, 4 hydraulic accumulators and 2 planetary gear sets to provide 4 forward speeds and reverse. See **Fig. 2**.

The TCM receives information from various sensors and in turn controls the solenoid assembly through the 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 smooth operation. The TCM also learns the rate at which applied elements build pressure sufficient for a speed change. Adaptive control can adapt to altitude, temperature, engine output, etc.

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

OPERATION

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.

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. See **AUTOSTICK OVERRIDE SHIFT** SCHEDULE table.

AUTOSTICK OVERRIDE SHIFT SCHEDULE

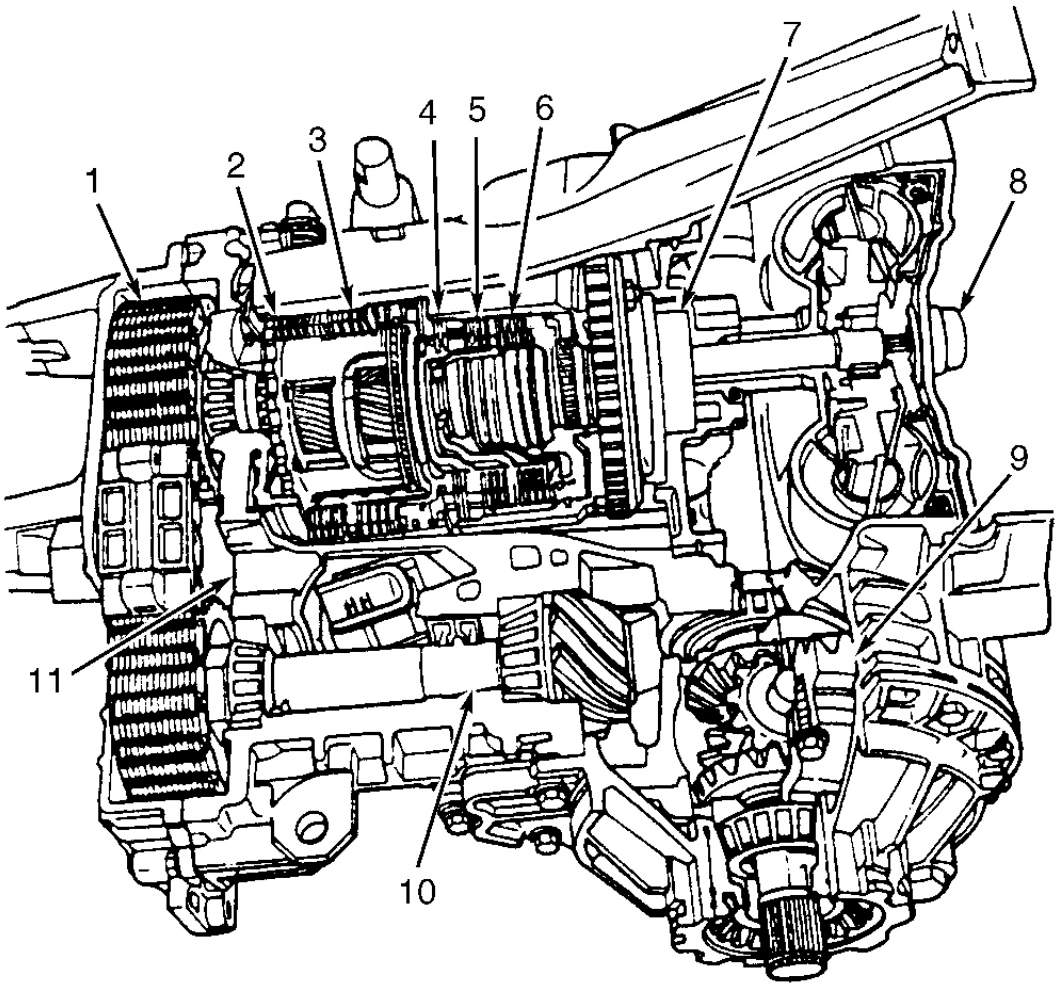
Shift Sequence	Condition
Automatic Shifts	
4-3 Coast Shift	13 MPH
3-2 Coast Shift	9 MPH
2-1 Coast Shift	5 MPH
1-2 Shift	6300 RPM
2-3 Shift	6300 RPM
4-3 Shift (Non-Coasting)	13-31 MPH
Overridden Manual Shifts	
3-4 Shift	15 MPH Or Less
3-2 Downshift	(1)
2-1 Downshift	(2)

(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 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 42LE CONTROLS** article.



1. Transfer Drive Chain
2. Low-Reverse Clutch
3. 2-4 Clutch
4. Reverse Clutch
5. Overdrive Clutch
6. Underdrive Clutch
7. Oil Pump
8. Torque Converter
9. Differential Assembly
10. Transfer Shaft
11. Vent Baffle Plate Location

Fig. 2: Identifying Transaxle Components
Courtesy of CHRYSLER LLC

LUBRICATION & ADJUSTMENTS

Transaxle contains a separate oil sump for transaxle ATF from the oil sump for the differential. Ensure both fluid levels are filled to proper level when servicing or repairing transaxle. See appropriate TRANSMISSION

SERVICING - A/T article in AUTOMATIC TRANS SERVICING.

ON-VEHICLE SERVICE

OIL COOLER FLUSHING

CAUTION: Whenever transaxle failure exists, oil cooler(s) must be flushed and oil cooler by-pass valve in transaxle replaced. 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. Oil cooler by-pass valve is located behind oil pump in transaxle case. See Fig. 17.

1. Disconnect oil cooler lines at transaxle. Using hand-held suction gun filled with mineral spirits, force mineral spirits into oil cooler return line until mineral spirits flows from oil cooler supply line. See **Fig. 3**.
2. Continue flushing oil cooler until mineral spirits is clear and no signs 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 though oil cooler to ensure oil cooler is free of mineral spirits. Replace oil cooler if fluid does not flow freely through oil cooler. Reinstall oil cooler lines. Fill to proper fluid level with Mopar ATF Plus-Type 7176.

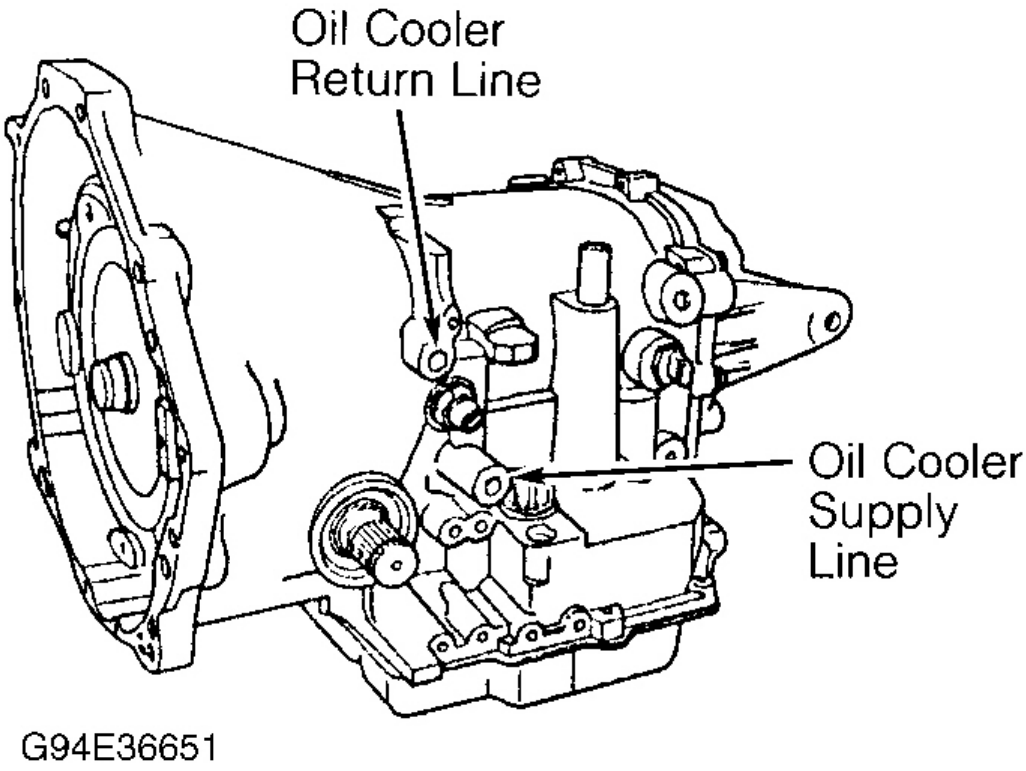


Fig. 3: Identifying Oil Cooler Lines
Courtesy of CHRYSLER LLC

OIL COOLER FLOW CHECK

1. With transaxle filled to proper fluid level, disconnect oil cooler return line at transaxle. See **Fig. 3**. 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. Reinstall oil cooler return line. Fill to proper fluid level with Mopar ATF Plus-Type 7176.

TROUBLE SHOOTING

Transaxle malfunctions may be caused by poor engine performance, improper adjustments, hydraulic

malfunctions, mechanical malfunctions or electronic malfunctions. 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** in this article.

CAUTION: Before attempting any repair on electronic transaxle, ALWAYS check for stored diagnostic trouble codes. Refer to AUTO TRANS DIAGNOSIS - CHRYSLER 42LE CONTROLS article.

SYMPTOM DIAGNOSIS

Buzzing Noise

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

Buzzing Noise During Transaxle Shifts

Check for normal solenoid operation, 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, worn or damaged accumulator seal rings, worn or damaged input shaft seal rings, 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, worn or broken reaction shaft support seal rings, worn or damaged input shaft seal rings, worn or damaged accumulator seal rings, worn or faulty reverse clutch.

Grating, Scraping Or Growling Noise

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

Hard To Fill With Fluid Oil Or Fluid Blows Out Filler Tube

Check for aerated fluid, high fluid level, 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, worn or broken reaction shaft support seal rings, worn or damaged accumulator seal rings, worn or faulty low-reverse clutch, worn or faulty underdrive clutch, worn or faulty 2-4 clutch.

Harsh Engagement From Neutral To Drive

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

Harsh Engagement From Neutral To Reverse

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

Harsh Lock-Up Shift

Check for defective torque converter, sticking lock-up piston.

Harsh Upshift

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

High Shift Efforts

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

No Torque Converter Lock-Up

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

No Upshift Into Overdrive

Check for engine coolant temperature low, 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, 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, valve body malfunction or leakage, worn or broken reaction shaft support seal rings, worn or faulty low-reverse clutch, worn or faulty overdrive clutch, worn or faulty underdrive clutch, worn or faulty 2-4 clutch.

Transaxle Overheats

Check for aerated fluid, defective torque converter, engine idle speed too high, faulty engine cooling system,

faulty oil pump, hydraulic pressure too low, improper fluid level, insufficient clutch plate clearance, incorrect shift linkage or cable adjustment.

Vehicle Drags Or Locks

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

Vehicle Moves In Neutral

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

OPERATION CHARACTERISTICS AT VARIOUS FLUID TEMPERATURES

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

Overview

42LE 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 Manual Valve Lever Position Sensor (MVLPS).

1995 models use 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 signal from BCM.

When engine is started on 1995 models, TCM updates transaxle oil temperature based on torque converter slip speed, vehicle speed, gear, and engine coolant temperature to determine estimated fluid temperature. Calculated fluid temperature may become inaccurate during extreme operation, causing incorrect shift schedule. Highlights of various shift schedules are as follows:

Extreme Cold Fluid: Less Than -16°F (-26°C)

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

Cold Fluid: -12°F To Less Than 36°F (2°C)

- 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 (27°C)

- Normal operation.
- No TCC.

Hot Fluid: 80°F To Less Than 250°F (121°C)

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

Overheated Fluid: 250-260°F (121-127°C)

- 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 (127°C)

- 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.

TESTING

ROAD TEST

1. Ensure shift linkage, fluid level and condition are okay. Add fluid and adjust control cable as needed. Road test vehicle, operating transaxle in each gear position. Check for slipping and any variation in shifting.
2. 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.
3. 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 in proper gear position. See the **TRANSMISSION COMPONENT APPLICATION CHART**.
4. Process of elimination can be used to detect any unit which slips and to confirm proper operation of good units. However, although road test analysis can usually diagnose slipping units, actual malfunction usually cannot be decided. Practically any condition can be caused by leaking hydraulic circuits or sticking valves.

NOTE: Clutch volume may be checked using DRB and manufacturer's instructions to determine if clutch is defective. See AUTO TRANS DIAGNOSIS - CHRYSLER 42LE CONTROLS article.

TRANSMISSION COMPONENT APPLICATION CHART

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

TORQUE CONVERTER STALL SPEED TEST

CAUTION: Manufacturer does not recommend performing torque converter stall speed test on 42LE transaxle.

HYDRAULIC PRESSURE TEST

Pressure Test Preparation

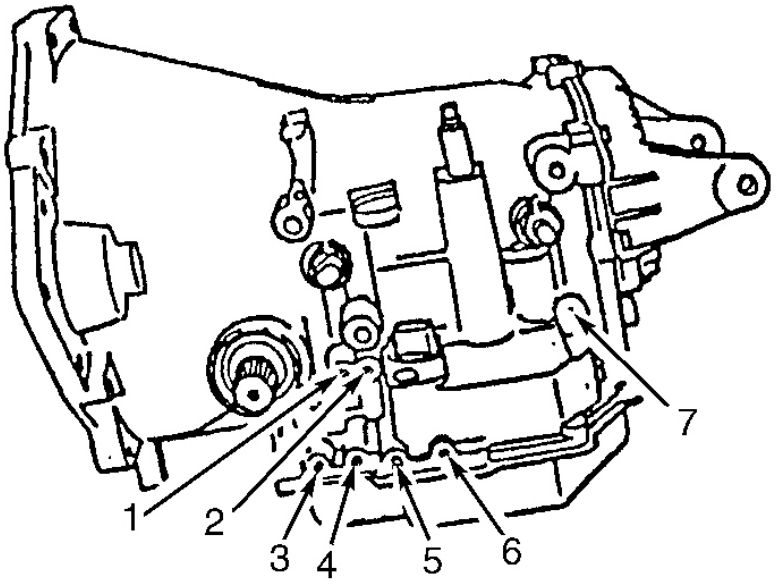
1. Ensure shift linkage or cable, transaxle fluid level and condition are okay. Add fluid and adjust shift control cable or linkage as needed.
2. Ensure transaxle fluid is at normal operating temperature of 150-200°F (66-93°C). Install tachometer.

Raise vehicle on hoist, allowing front wheels to rotate freely.

NOTE: **A 300 psi (21 kg/cm^2) pressure gauge and Adapter (L-4559) are required for checking hydraulic pressures.**

Low-Reverse Clutch Pressure Test

1. Remove pressure tap plug and install pressure gauge in low-reverse clutch pressure tap. See **Fig. 4**.
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**.



1. Torque Converter Clutch Off Pressure Tap
2. Reverse Clutch Pressure Tap
3. Overdrive Clutch Pressure Tap
4. Torque Converter Clutch On Pressure Tap
5. Underdrive Clutch Pressure Tap
6. 2-4 Clutch Pressure Tap
7. Low-Reverse Clutch Pressure Tap

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Fig. 4: Identifying Pressure Taps
Courtesy of CHRYSLER LLC

Underdrive Clutch Pressure Test

1. Remove pressure tap plug and install pressure gauge in underdrive clutch pressure tap.See **Fig. 6**.
2. Place gearshift in "3" 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 pressure tap plug and install pressure gauge in overdrive clutch pressure tap. See **Fig. 4**.
2. Place gearshift in "OD" 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" position and increase vehicle speed to 30 MPH.
4. 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 pressure tap plug and install pressure gauge in 2-4 clutch pressure tap. See **Fig. 4**.
2. Place gearshift in "OD" position. Allowing front wheels to rotate, accelerated 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 Pressure Test

1. Remove pressure tap plug and install pressure gauge in torque converter clutch off pressure tap. See **Fig. 4**.
2. Place gearshift in "OD" position. Allowing front wheels to rotate, accelerate until vehicle speed indicates 50 MPH.

CAUTION: Ensure both front wheels are rotating at the same speed.

3. Torque converter clutch pressure should be less than 5 PSI (.35 kg/cm^2). Remove pressure gauge. Install and tighten pressure tap plug to specification. See **TORQUE SPECIFICATIONS**.
4. Remove pressure tap plug and install pressure gauge in torque converter clutch on pressure tap. See **Fig. 4**. Place gearshift in "OD" position.
5. Allowing front wheels to rotate, accelerate until vehicle speed indicates 50 MPH. Ensure torque converter

clutch is applied.

NOTE: It may be necessary to use DRB scan tool to monitor engine RPM to verify when torque converter clutch is applied. If DRB usage is required, connect DRB to Blue data link connector. Use proper cartridge and DRB manufacturer's instructions for monitoring torque converter clutch operation.

6. Torque converter clutch on pressure should be 60-90 PSI (4.2-6.3 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 pressure tap plug and install pressure gauge in reverse clutch pressure tap. See **Fig. 4**. Place gearshift in Reverse.
2. Apply brakes. Accelerate until engine speed is 1500 RPM. Reverse clutch pressure should be 165-235 psi (11.6-16.5 kg/cm^2). This pressure test checks reverse clutch hydraulic circuit. Remove pressure gauge. Install and tighten pressure tap plug to specification. See **TORQUE SPECIFICATIONS**.

Pressure Test Result Diagnosis

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. 5**.
2. Low hydraulic pressure in all hydraulic pressure tests, 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 pressure exceeds 5 psi (.35 kg.cm^2) in step 4) of OVERDRIVE CLUTCH PRESSURE TEST, a worn reaction shaft seal ring is indicated.

ALL PRESSURE SPECIFICATIONS ARE PSI
(VEHICLE ON HOIST WITH WHEELS FREE TO ROTATE)

Gearshift Position	Actual Gear	PRESSURE TAPS					
		Underdrive Clutch	Overdrive Clutch	Reverse Clutch	Torque Converter Clutch Off	2-4 Clutch	Low-Reverse Clutch
PARK ① 0 mph	PARK	0-2	0-5	0-2	60-110	0-2	115-145
REVERSE ① 0 mph	REVERSE	0-2	0-7	165-235	50-100	0-2	165-235
NEUTRAL ① 0 mph	NEUTRAL	0-2	0-5	0-2	60-110	0-2	115-145
L ② 20 mph	FIRST	110-145	0-5	0-2	60-110	0-2	115-145
3 ② 30 mph	SECOND	110-145	0-5	0-2	60-110	115-145	0-2
3 ② 45 mph	DIRECT	75-95	75-95	0-2	60-90	0-2	0-2
OD ② 30 mph	OVERDRIVE	0-2	75-95	0-2	60-90	75-95	0-2
OD ② 50 mph	OVERDRIVE LOCKUP	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 the same speed.

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Fig. 5: Identifying Clutch Operating Hydraulic Pressures
Courtesy of CHRYSLER LLC

CLUTCH AIR PRESSURE TEST

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. See **VALVE BODY R & I** under REMOVAL & INSTALLATION. Install Adapter Plates (6599-1 and 6599-2) on transaxle case. See **Fig. 6**.

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. 6Ensure overdrive clutch push-pull 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. Ensure reverse clutch push-pull piston moves rearward and returns to original position when air pressure is released.

2-4 Clutch

Apply air pressure to 2-4 clutch retainer hole. See **Fig. 6**. 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 (LR) passage on adapter plate. 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 (L-R) and 2-4 clutch retainer hole. The output shaft should now be locked. Wrap rubber hose around input shaft. Install clamp-on pliers on input shaft and rotate input shaft.
2. Apply air pressure to Underdrive clutch (UD) passage on adapter plate. Input shaft should not rotate with hand torque. Release air pressure and note that input shaft rotates.

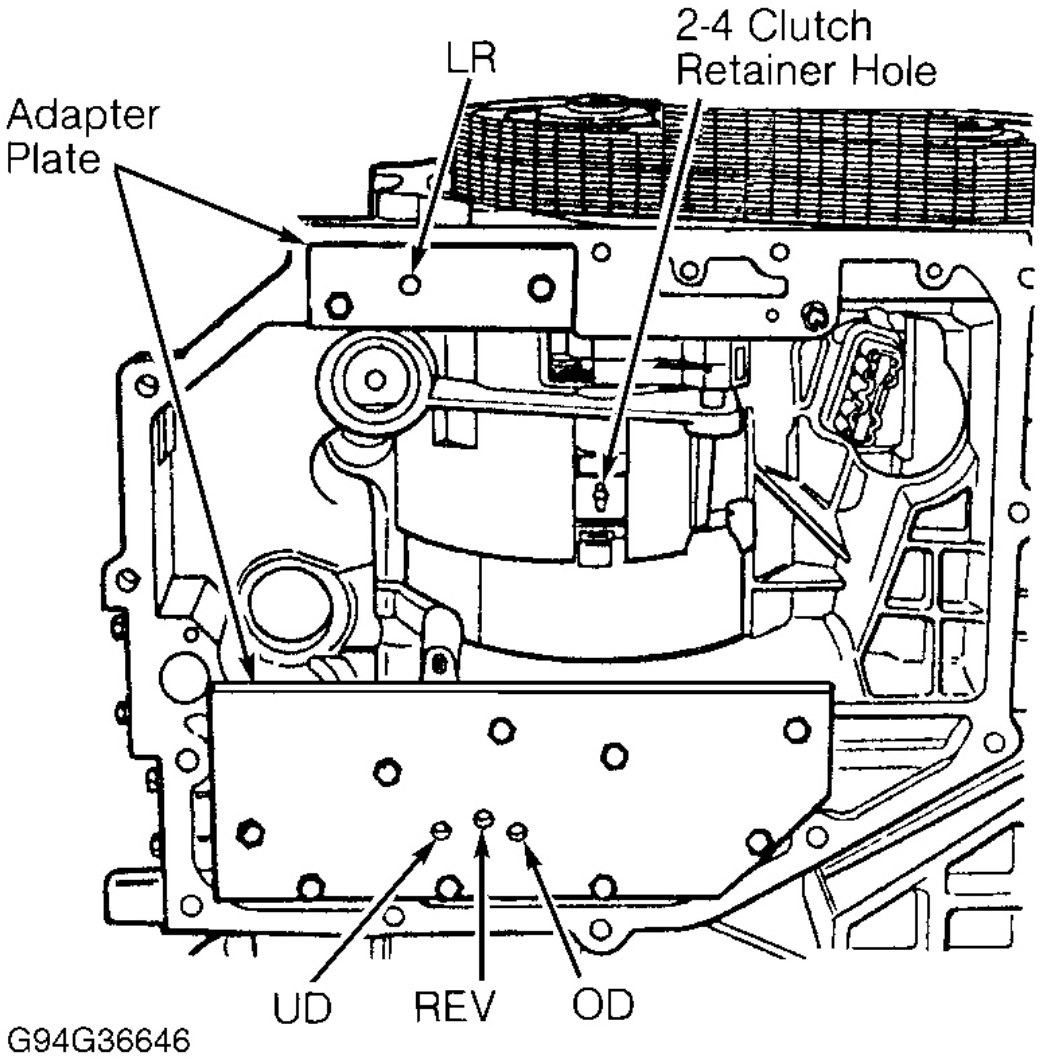


Fig. 6: Applying Air Pressure To Clutch Packs
Courtesy of CHRYSLER LLC

TORQUE CONVERTER LEAK TEST

NOTE: Transaxle contains a separate oil sump for the differential. Transmission uses ATF and differential uses hypoid gear oil. Transaxle contains oil seals for each individual sump. A fluid leakage weep hole is located on side of transaxle case. See Fig. 7. Before performing torque converter fluid leakage test, check for fluid leakage at fluid leakage weep hole. If fluid leakage exists, note if fluid is ATF or differential gear oil. This indicates which oil seal is leaking and must be replaced.

NOTE: Fluid around torque converter may originate from engine oil or the 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 torque converter leaks using following method.

1. Remove torque converter dust shield. Using solvent and compressed air, clean inside area of torque converter housing. Ensure area is clean and dry.
2. Fabricate leakage test probe using 1/32" sheet metal, 6" (152 mm) long and 1 1/2" (38.1 mm) wide. See **Fig. 8**. Start and operate engine until transaxle is at normal operating temperature. Shut engine off.
3. Install leakage test probe using dust shield bolt so leakage test probe is near torque converter. Ensure leakage test probe does not contact torque converter.
4. Start engine. Place gearshift in Neutral. Operate engine at 2500 RPM for 2 minutes. Stop engine. Remove leakage test probe.
5. If upper surface of leakage test probe is dry, torque converter is not leaking. If upper surface of leakage test probe is wet with transaxle ATF fluid, torque converter is leaking. If lower area below leakage test probe is wet with transaxle ATF fluid, fluid is coming from the transaxle.
6. Possible causes of ATF fluid leaks at torque converter areas are:
   - Torque converter hub.
   - Defective seal (check torque converter hub finish).
   - Mispositioned or worn bushing.
   - Oil pump housing oil return hole restricted.
   - Defective oil pump housing or "O" ring.
   - Oil pump-to-transaxle case bolts.
7. If torque converter is leaking, check for defective welds on outside diameter of torque converter and torque converter hub. Torque converter hub weld is welded on the inside and 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. Refer to the TORQUE CONVERTER CLUTCH BREAK-IN PROCEDURE.

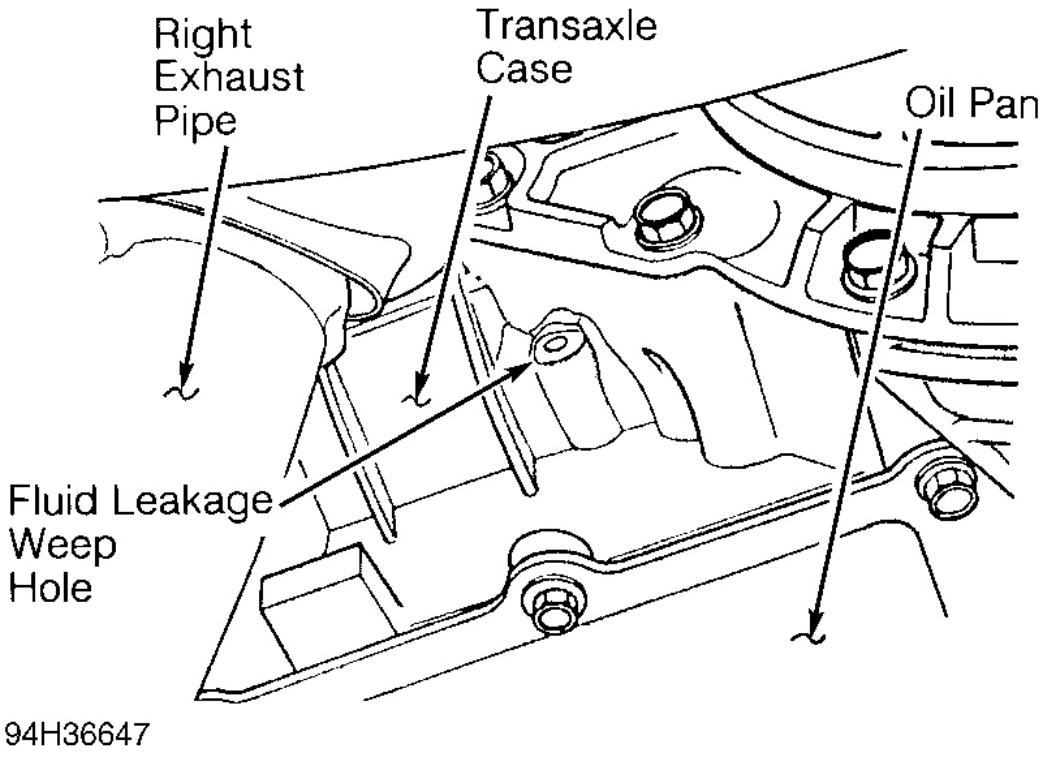


Fig. 7: Identifying Fluid Leakage Weep Hole
Courtesy of CHRYSLER LLC

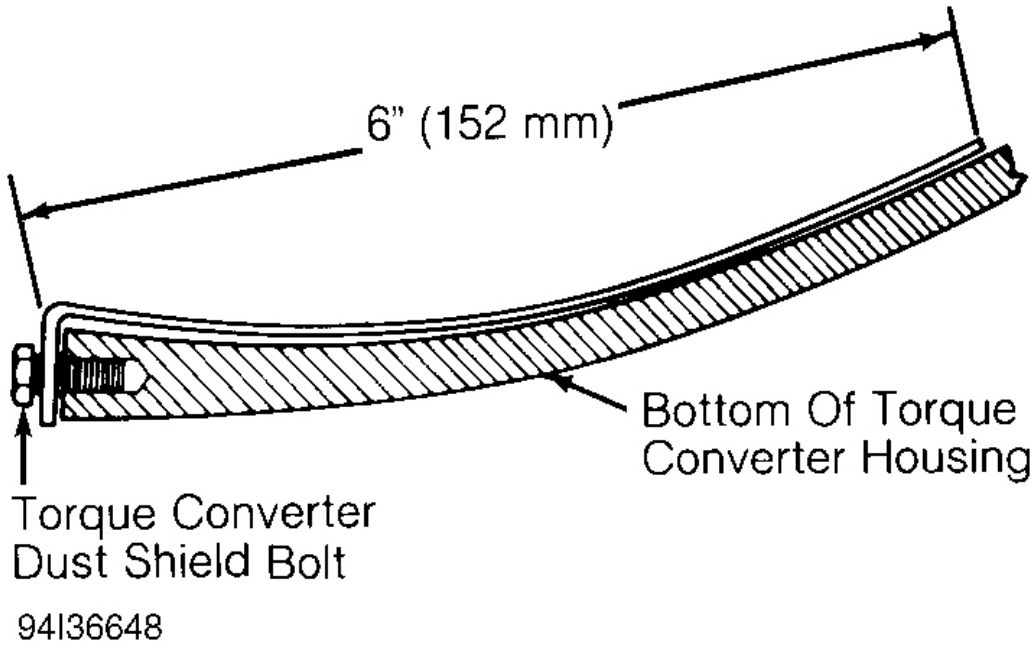


Fig. 8: Fabricating Leakage Test Probe
Courtesy of CHRYSLER LLC

TRANSAXLE CASE PRESSURE TESTS

NOTE: Transaxle must be removed to perform pressure tests. Transaxle must be pressure tested for leaks in transaxle ATF sump and differential oil sump. Transaxle case, gaskets and oil pump housing can be checked for leaks using the transaxle ATF sump pressure test. Transaxle case, gaskets and seals for differential can be checked using differential oil sump pressure test.

Transaxle ATF Sump Pressure Test

1. Fabricate a torque converter hub seal cup using 1.5" (38.1 mm) outside diameter thin wall tubing and a .125" (3.17 mm) steel disc. See **Fig. 9**. Fabricate torque converter hub seal cup retaining strap using a .25" (6.3 mm) thick and 1.25" (31.75 mm) wide material. See **Fig. 10**.
2. Remove torque converter from transaxle. Plug dipstick tube and plug oil cooler line fittings. 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 the oil pump.
3. Install torque converter hub seal cup retaining strap using starter upper hole and opposite bracket hole. Remove vent hose for transaxle ATF sump from transaxle case.
4. Attach air hose to vent hose fitting for transaxle ATF sump on transaxle case. Using pressure regulator, apply 8-10 psi (.5-.7 kg/cm^2) of air pressure to vent hose fitting on transaxle case.

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

5. 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.

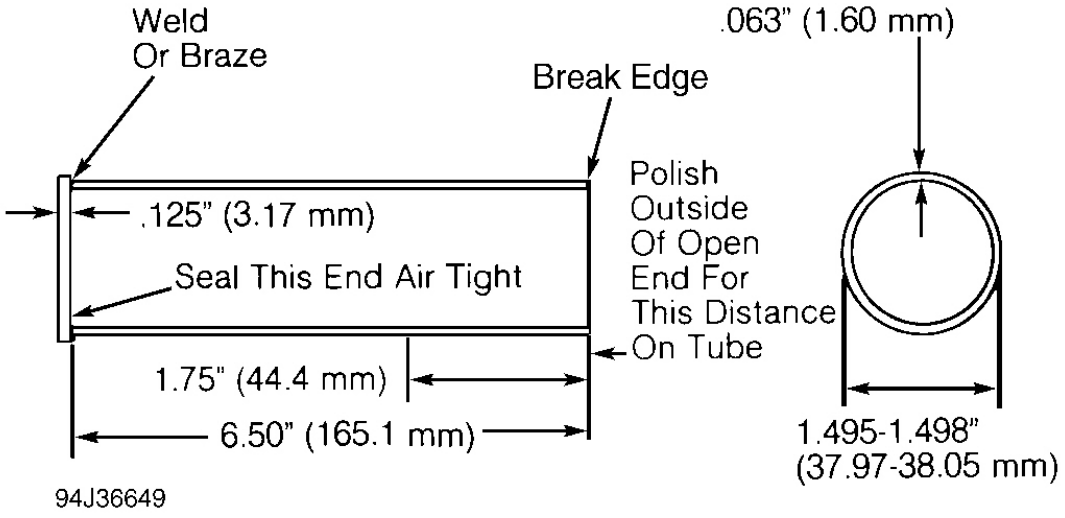


Fig. 9: Fabricating Torque Converter Hub Seal Cup
Courtesy of CHRYSLER LLC

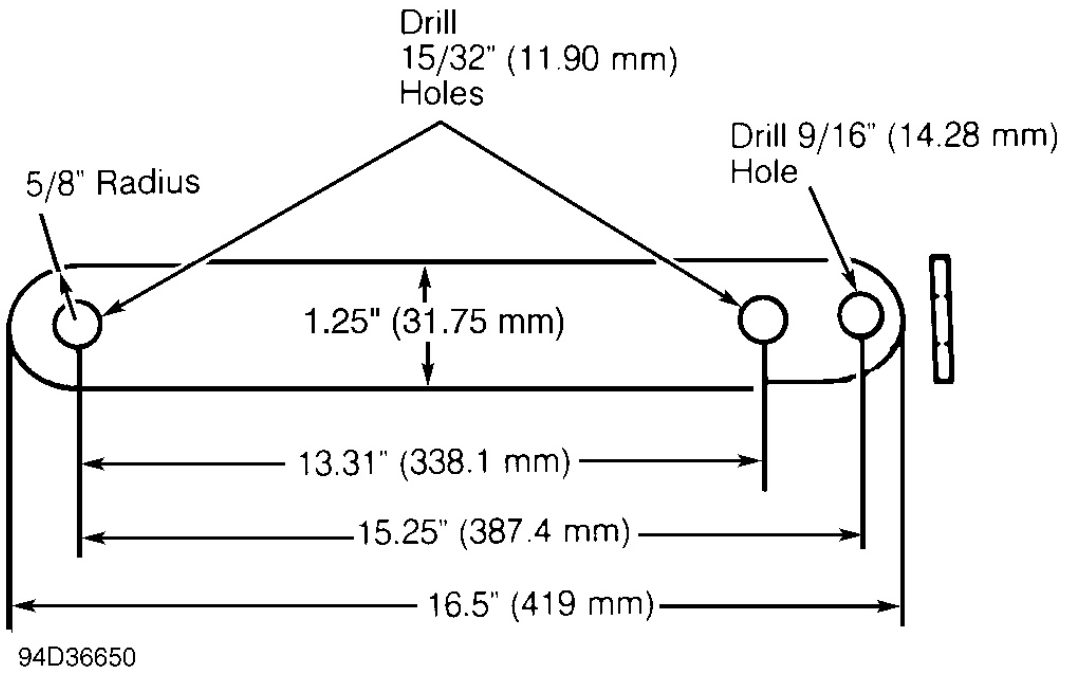


Fig. 10: Fabricating Torque Converter Hub Seal Cup Retaining Strap
Courtesy of CHRYSLER LLC

Differential Oil Sump Pressure Test

1. Ensure short and long stub shafts are installed in transaxle. Remove vent hose for differential oil sump from transaxle case.
2. Attach air hose to vent hose fitting on transaxle case. Using pressure regulator, apply 8-10 psi (.5-.7 kg/cm^2) of air pressure to vent hose fitting on transaxle case.

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

3. Coat differential area 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

CAUTION: If battery is disconnected or voltage supply to Transaxle Control Module (TCM) is lost, TCM will have to relearn shift characteristics. It may be necessary to perform shift quality quick-learn procedure so TCM can relearn shift characteristics. See SHIFT QUALITY QUICK-LEARN

PROCEDURE in AUTO TRANS DIAGNOSIS - CHRYSLER 42LE CONTROLS article.

AXLE SHAFTS R & I

See appropriate AXLE SHAFTS article in the DRIVE AXLES section.

INPUT SPEED SENSOR R & I

Removal

1. Disconnect electrical connector from input speed sensor, located on side of transaxle. See **Fig. 1**. Ensure weather seal for electrical connector remains on the electrical connector. Unscrew input speed sensor from transaxle case.
2. To install, reverse removal procedure using NEW "O" ring on input speed sensor. Tighten input speed sensor to specification. See **TORQUE SPECIFICATIONS**.

LONG STUB SHAFT OIL SEAL R & I

NOTE: Following procedure can be used to change oil seal with transaxle removed and without having to reset ring gear backlash and differential bearing rotating torque. If any components except oil seals are replaced, following procedure cannot be used. Long stub shaft is left stub shaft when viewed from rear of transaxle. Short stub shaft is right stub shaft when viewed from rear of transaxle.

Removal

1. Remove the transaxle. Refer to appropriate TRANSMISSION REMOVAL & INSTALLATION - A/T article in AUTOMATIC TRANS SERVICING section. Remove snap ring retaining long stub shaft in transaxle case. Install Adapter (6669) on end of long stub shaft. Attach slide hammer on adapter. Using slide hammer, pull long stub shaft from transaxle case.
2. Place reference marks on transaxle case and inner bearing adjuster, located near input shaft for reassembly reference. See **Fig. 11**. Place reference marks on differential cover and outer bearing adjuster, located near short stub shaft on right side of transaxle for reassembly reference. See **Fig. 11**.
3. Remove bolt and lock bracket from outer bearing adjuster. Using Socket (6503), rotate outer bearing adjuster counterclockwise one full revolution.

NOTE: Check for corrosion on short stub shaft before removing differential cover. If corrosion exists, clean short stub shaft and use care not to damage oil seal when removing differential cover.

4. Remove bolts and differential cover. See **Fig. 12**. Remove differential assembly.

CAUTION: Note amount of revolutions that inner bearing adjuster is threaded into transaxle case when removing inner bearing adjuster. Inner

bearing adjuster must be set at the exact position when reinstalled.

5. Remove bolt and bearing adjuster lock bracket from inner bearing adjuster. See **Fig. 11**. Using Socket (6502-B), unscrew inner bearing adjuster from transaxle case, noting amount of revolutions for reassembly reference. Press oil seal from inner bearing adjuster.

Installation

1. Press NEW oil seal into inner bearing adjuster. Install NEW "O" ring on inner bearing adjuster. Lubricate threads on inner bearing adjuster and lip of oil seal with gear oil.
2. Screw inner bearing adjuster into transaxle case original number of revolutions and align reference marks. Install bearing adjuster lock bracket. Install and tighten bearing adjuster lock bracket bolt to specification. See **TORQUE SPECIFICATIONS**.
3. Install differential assembly. Install Seal Protector (6591) on short stub shaft. Lubricate seal protector and lip of oil seal in outer bearing adjuster with gear oil.
4. Apply sealant on differential cover-to-transaxle case contact areas. Install differential cover. Install and tighten differential cover bolts to specification.
5. Tighten outer bearing adjuster 3/4 of a revolution. Rotate differential assembly several times in both directions to seat the bearings. Tighten outer bearing adjuster an additional 1/4 revolution until reference marks are aligned.
6. Install lock bracket on outer bearing adjuster. Install and tighten lock bracket bolt to specification. Remove seal protector from short stub shaft.
7. Install NEW "C" clip and "O" ring on outer ends of long and short stub shafts. Install long stub shaft. Install snap ring retaining long stub shaft in transaxle case. Reinstall transaxle. Fill differential with 80W-90 API GL-5 gear oil. **DO NOT** use synthetic gear oil. Fill transaxle with Mopar ATF Plus-Type 7176.

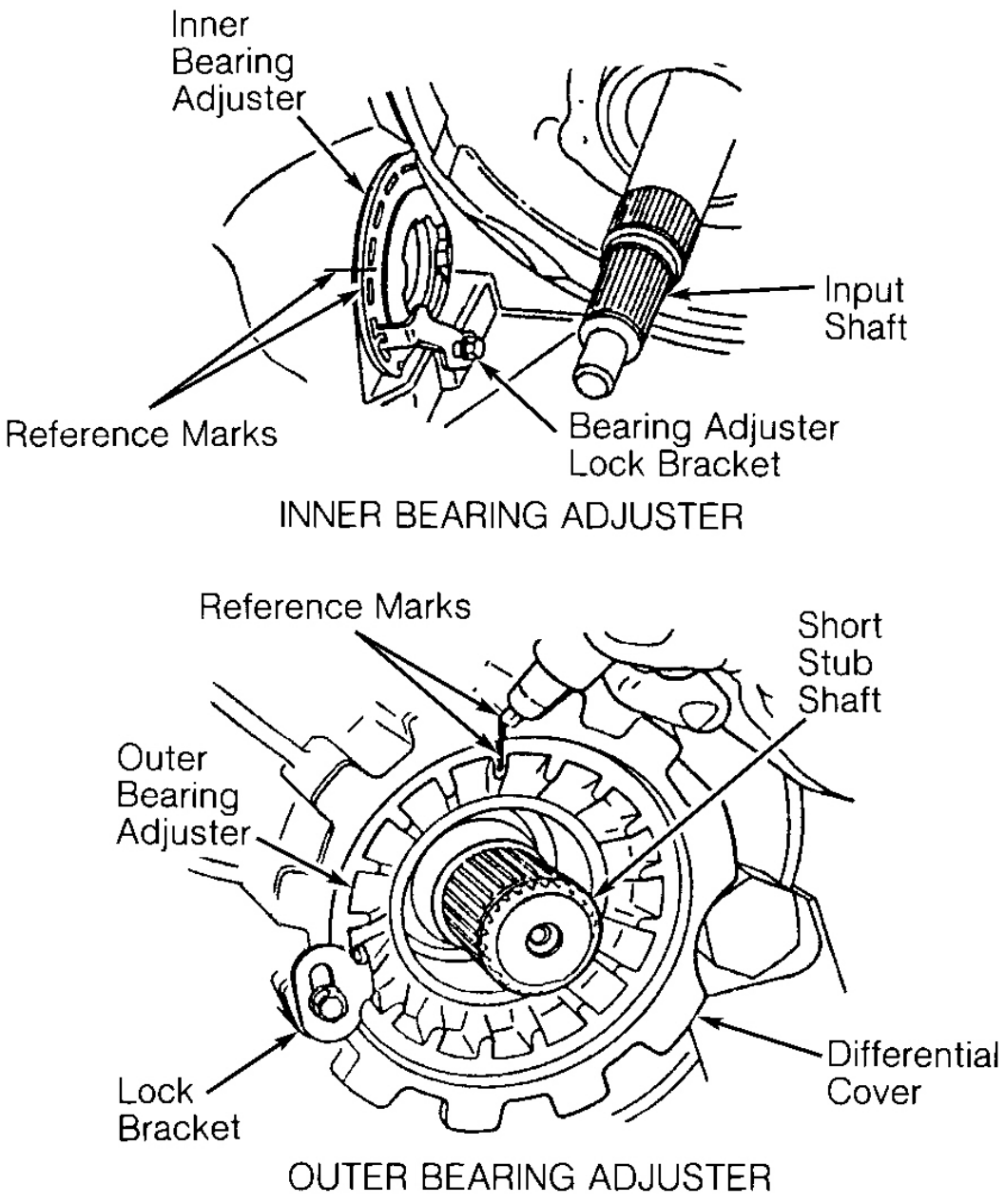


Fig. 11: Placing Reference Marks On Bearing Adjusters
Courtesy of CHRYSLER LLC

SHORT STUB SHAFT OIL SEAL R & I

NOTE: Following procedure can be used to change oil seal without removing transaxle

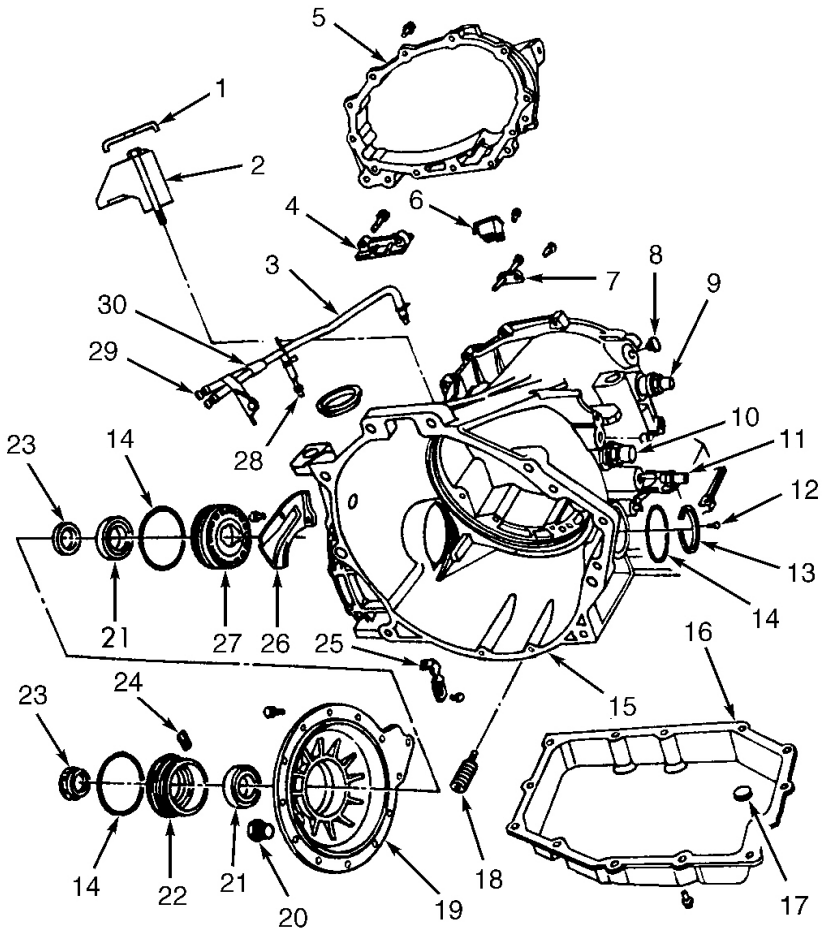
from vehicle or having to reset ring gear backlash and differential bearing rotating torque. If any components except oil seals are replaced, following procedure cannot be used. Short stub shaft is right stub shaft when viewed from rear of transaxle.

Removal

1. Raise and support vehicle. Remove passenger's side axle shaft. See appropriate AXLE SHAFTS - FRONT article in the DRIVE AXLES section.
2. Place reference marks on differential cover and outer bearing adjuster, located near short stub shaft on right side of transaxle for reassembly reference. See **Fig. 11**.
3. Remove bolt and lock bracket from outer bearing adjuster. See **Fig. 11**. Using Socket (6503), rotate outer bearing adjuster slightly counterclockwise.
4. Using torque wrench, measure amount of torque required to rotate outer bearing adjuster clockwise until reference marks are realigned. Note torque reading for reassembly reference.
5. Using socket, remove outer bearing adjuster from differential cover. Press oil seal from outer bearing adjuster.

Installation

1. Press NEW oil seal into inner bearing adjuster. Check for corrosion on short stub shaft. If corrosion exists, wrap short stub shaft with wax paper before installing seal protector.
2. Install Seal Protector (6591) on short stub shaft. Lubricate seal protector and lip of oil seal with gear oil. Install NEW "O" ring on outer bearing adjuster. Lubricate threads on outer bearing adjuster with gear oil.
3. Screw outer bearing adjuster into transaxle case until torque reading is 120 INCH lbs. (13.6 N.m) less than that obtained in step 4) during removal. Rotate differential assembly several times in both directions to seat the bearings.
4. Tighten outer bearing adjuster until reference marks are aligned. Install lock bracket on outer bearing adjuster. Install and tighten lock bracket bolt to specification. Remove seal protector and wax paper (if used) from short stub shaft.
5. Install NEW "C" clip and "O" ring on outer end of short stub shaft. Install axle shaft. Fill differential with 80W-90 API GL-5 gear oil. **DO NOT** use synthetic gear oil.



1. Solenoid Retainer
2. Solenoid Connector Retainer
3. Vent Hose Fitting Clamp
4. Chain Snubber
5. Chain Cover
6. Vent Baffle Plate
7. Chain Oiler Tube
8. Plug
9. Output Speed Sensor
10. Input Speed Sensor
11. Oil Cooler Line Connector
12. Pressure Tap Plug
13. Snap Ring
14. "O" Ring
15. Transaxle Case
16. Oil Pan
17. Magnet
18. Oil Cooler By-Pass Valve
19. Differential Cover
20. Fill Plug
21. Differential Bearing Race
22. Outer Bearing Adjuster
23. Oil Seal
24. Lock Bracket
25. Bearing Adjuster Lock Bracket
26. Differential Vent Baffle Plate
27. Inner Bearing Adjuster
28. Vent Hose Fitting
29. Vent Hose Cap
30. Vent Hose

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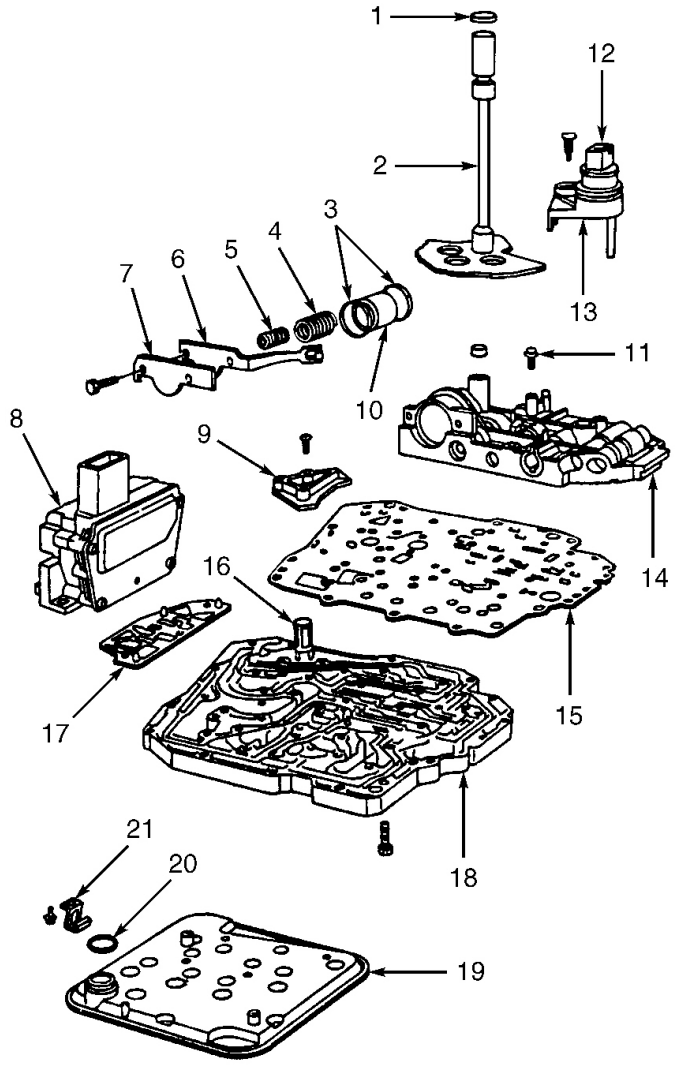
Fig. 12: Exploded View Of Transaxle Case & Components
Courtesy of CHRYSLER LLC

MANUAL VALVE LEVER POSITION SENSOR (MVLPS) R & I

NOTE: Manual valve lever position sensor is also known as Transmission Range Sensor (TRS).

Removal & Installation

1. Remove valve body. See **VALVE BODY R & I** under REMOVAL & INSTALLATION. Remove manual valve lever-to-valve body retaining bolt. Slide MVLPS from manual valve lever. See **Fig. 13**.
2. To install, reverse removal procedure. Tighten manual valve lever-to-valve body retaining bolt to specification. Refer to the **TORQUE SPECIFICATIONS**.



1. Oil Seal
2. Manual Valve Lever
3. Seal Ring
4. 2-4 Accumulator Outer Spring
5. 2-4 Accumulator Inner Spring
6. Detent Assembly
7. Accumulator Spring Retainer
8. Solenoid Assembly
9. Valve Body Plate Support
10. 2-4 Accumulator Piston
11. 2-4 Clutch Seal
12. Manual Valve Lever Position Sensor (MVLPS)
13. Seal
14. Valve Body
15. Separator Plate
16. Regulator Valve Screen
17. Screen
18. Transfer Plate
19. Oil Filter
20. "O" Ring
21. Oil Filter Retainer

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Fig. 13: Exploded View Of Valve Body Assembly & Components
Courtesy of CHRYSLER LLC

OIL PUMP OIL SEAL R & I

Removal & Installation

1. Remove the transaxle assembly. Refer to appropriate TRANSMISSION REMOVAL & INSTALLATION - A/T article in AUTOMATIC TRANS SERVICING. Remove torque converter. Using Oil Seal Remover (C-3981B), remove oil seal from oil pump. See **Fig. 14**.
2. To install, ensure oil seal seating surfaces in oil pump are clean. Using Oil Seal Installer (C-4193-A), install oil seal.
3. Apply light coat of ATF to hub on torque converter and seal lips on oil seal. Install torque converter. Ensure torque converter fully engages in oil pump.

CAUTION: If torque converter is replaced, proper procedure must be used to reset the break-in procedure in TCM for the Electronically Modulated Converter Clutch (EMCC) in the torque converter to prevent shudder during clutch engagement. Perform the EMCC reset procedure. Refer to the TORQUE CONVERTER CLUTCH BREAK-IN PROCEDURE under TORQUE CONVERTER.

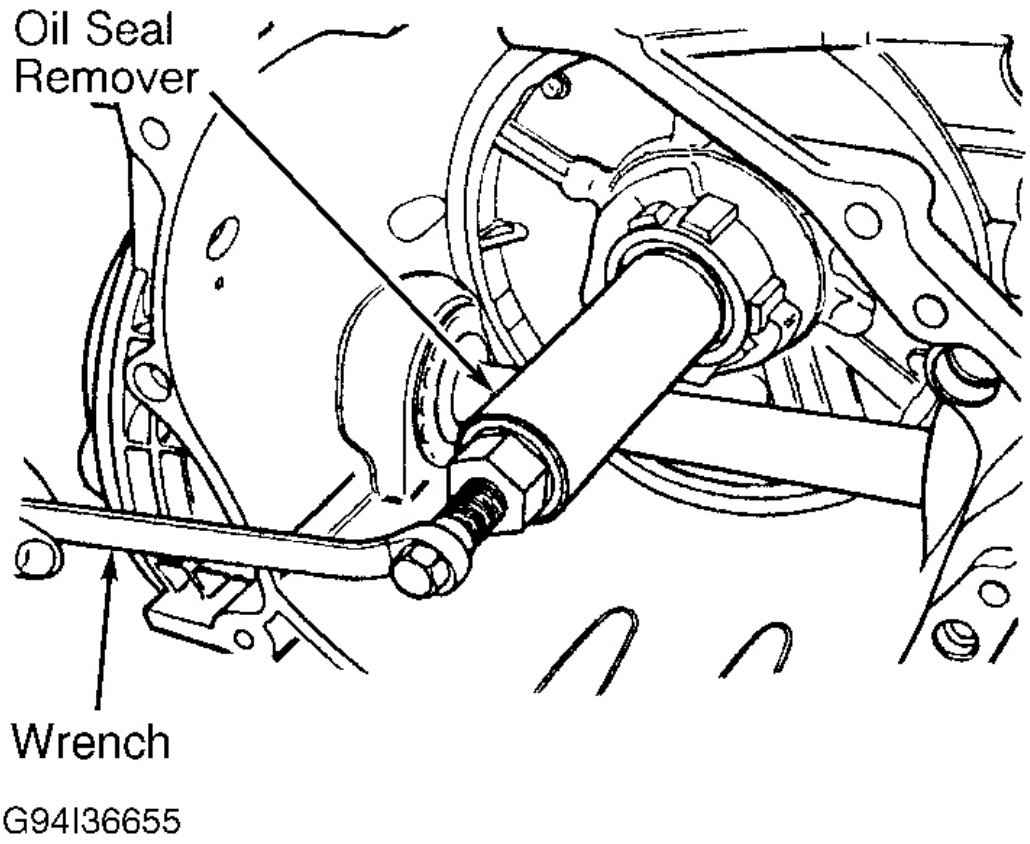


Fig. 14: Removing Oil Pump Oil Seal

Courtesy of CHRYSLER LLC

OUTPUT SPEED SENSOR R & I

Removal & Installation

1. Disconnect electrical connector from output speed sensor, located on side of transaxle. See **Fig. 1**. Ensure weather seal for electrical connector remains on the electrical connector. Unscrew output speed sensor from transaxle case.
2. To install, reverse removal procedure using NEW "O" ring on output speed sensor. Tighten output speed sensor to specification. See **TORQUE SPECIFICATIONS**.

SOLENOID ASSEMBLY R & I

Removal & Installation

1. Remove valve body. See **VALVE BODY R & I** under REMOVAL & INSTALLATION. Remove solenoid assembly-to-transfer plate bolts, olenoid assembly and screen. See **Fig. 13**.
2. To install, reverse removal procedure. Tighten solenoid assembly-to-transfer plate retaining bolts to specification. See **TORQUE SPECIFICATIONS**.

TRANSAXLE ASSEMBLY R & I

See appropriate TRANSMISSION REMOVAL & INSTALLATION - A/T article in AUTOMATIC TRANS SERVICING.

TRANSFER SHAFT OIL SEALS R & I

NOTE: Following procedure can be used to change oil seals with transaxle removed and without having to reset ring gear backlash and differential bearing rotating torque. If any components except oil seals are replaced, following procedure cannot be used, as special procedure must be used to reset the bearings. If components are replaced, see DIFFERENTIAL ASSEMBLY & TRANSFER SHAFT under TRANSAXLE REASSEMBLY.

Removal

1. Remove the transaxle assembly. Refer to appropriate TRANSMISSION REMOVAL & INSTALLATION - A/T article in AUTOMATIC TRANS SERVICING. Remove valve body. See **VALVE BODY R & I** under REMOVAL & INSTALLATION.
2. Remove solenoid connector from transaxle case. Remove snap ring retaining long stub shaft in transaxle case. Long stub shaft is left stub shaft when viewed from rear of transaxle.
3. Install Adapter (6669) on end of long stub shaft. Attach slide hammer on adapter. Using slide hammer, pull long stub shaft from transaxle case.
4. Place reference marks on transaxle case and inner bearing adjuster, located near the input shaft for reassembly reference. See **Fig. 11**. Place reference marks on differential cover and outer bearing adjuster,

located near short stub shaft on right side of transaxle for reassembly reference. See **Fig. 11**.

5. Remove bolt and lock bracket from outer bearing adjuster. Using Socket (6503), rotate outer bearing adjuster counterclockwise one full revolution.

NOTE: Check for corrosion on short stub shaft before removing differential cover. If corrosion exists, clean short stub shaft and use care not to damage oil seal when removing differential cover.

6. Remove bolts and differential cover. See **Fig. 12**. Remove differential assembly.

CAUTION: Note amount of revolutions that inner bearing adjuster is threaded into transaxle case when removing inner bearing adjuster. Inner bearing adjuster must be set at the exact position when reinstalled.

7. Remove bolt and bearing adjuster lock bracket from inner bearing adjuster. See **Fig. 11**. Using Socket (6502-B), unscrew inner bearing adjuster from transaxle case, noting amount of revolutions for reassembly reference.
8. Remove the transfer shaft and oil seals. Refer to **DIFFERENTIAL ASSEMBLY, TRANSFER SHAFT & COMPONENTS** under TRANSAXLE DISASSEMBLY.

Installation

1. Install transfer shaft and NEW oil seals using proper procedure. See **DIFFERENTIAL ASSEMBLY & TRANSFER SHAFT** under TRANSAXLE REASSEMBLY.
2. Install NEW "O" ring on inner bearing adjuster. Lubricate threads on inner bearing adjuster and lip of oil seal with gear oil.
3. Screw inner bearing adjuster into transaxle case original number of revolutions and align reference marks. Install bearing adjuster lock bracket. Install and tighten bearing adjuster lock bracket bolt to specification. See **TORQUE SPECIFICATIONS**.
4. Install differential assembly. Install Seal Protector (6591) on short stub shaft. Lubricate seal protector and lip of oil seal in outer bearing adjuster with gear oil.
5. Apply sealant on differential cover-to-transaxle case contact areas. Install differential cover. Install and tighten differential cover bolts to specification.
6. Tighten outer bearing adjuster 3/4 of a revolution. Rotate differential assembly several times in both directions to seat the bearings. Tighten outer bearing adjuster an additional 1/4 revolution until reference marks are aligned.
7. Install lock bracket on outer bearing adjuster. Install and tighten lock bracket bolt to specification. Remove seal protector from short stub shaft.
8. Install long stub shaft. Install snap ring retaining long stub shaft in transaxle case. Install NEW "C" clip and "O" ring on outer ends of long and short stub shafts.
9. Reinstall solenoid connector, valve body and transaxle. Fill differential with 80W-90 API GL-5 gear oil. **DO NOT** use synthetic gear oil. Fill transaxle with Mopar ATF Plus-Type 7176.

VALVE BODY R & I

NOTE: Manual valve lever position sensor is also known as Transmission Range Sensor (TRS).

Removal

1. Raise and support vehicle. Disconnect Manual Valve Lever Position Sensor (MVLPS) electrical connector. See **Fig. 1**.
2. Disconnect shift cable from shift lever on transaxle. Rotate shift lever on transaxle fully clockwise. Remove shift lever from manual valve lever on transaxle. Remove bolts and oil pan.

CAUTION: Overdrive and underdrive accumulator pistons and springs may fall from transaxle case when removing valve body. Note location of components for reassembly reference. Components must be installed in original location. See Fig. 16.

3. Remove bolts, oil filter retainers, oil filter and "O" ring. See **Fig. 13**. Remove bolts and valve body with transfer plate from transaxle. If necessary to disassemble valve body assembly, see **VALVE BODY OVERHAUL** under COMPONENT DISASSEMBLY & REASSEMBLY.

Installation

To install, reverse removal procedure using NEW "O" ring and NEW oil filter. Apply silicone sealant on oil pan before installing. Tighten all bolts to specification. See **TORQUE SPECIFICATIONS**. Fill to proper fluid level 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. 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 42LE 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.

TRANSAXLE DISASSEMBLY

VALVE BODY & INTERNAL COMPONENTS

NOTE: Input shaft end play should be measured before transaxle disassembly. Measurement indicates if No. 4 thrust plate may need to be changed. No. 4 thrust plate is located on rear (shaft end) of overdrive clutch hub. See Fig. 29.

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.

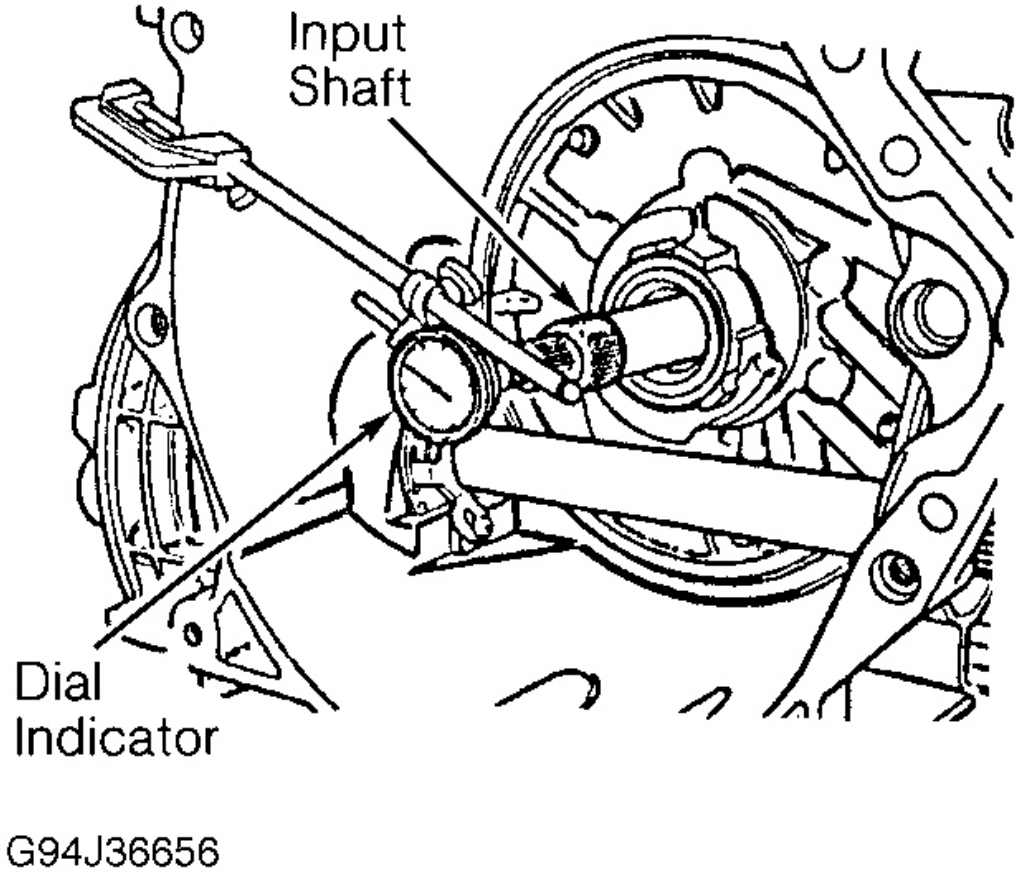


Fig. 15: Measuring Input Shaft End Play
Courtesy of CHRYSLER LLC

3. Disconnect electrical connector from input and output speed sensors, located on side of transaxle. See **Fig. 1**. Ensure weather seal for electrical connector remains on the electrical connector.
4. Unscrew input and output speed sensors from transaxle case. Disconnect Manual Valve Lever Position Sensor (MVLPS) electrical connector. See **Fig. 1**.
5. Rotate shift lever on transaxle fully clockwise. Remove shift lever from manual valve lever on transaxle. Remove bolts and oil pan. Remove bolts, oil filter retainers, oil filter and "O" ring. See **Fig. 13**. Remove bolts and valve body assembly.

CAUTION: Note location of all accumulators and springs for reassembly reference. Components must be installed in correct locations.

6. Remove overdrive and underdrive accumulator pistons and springs from transaxle case. See **Fig. 16**.

Remove snap ring and cover located above low-reverse accumulator piston. Remove low-reverse accumulator piston and springs. Note location of notch on the side of low-reverse accumulator piston in relation to location on transaxle case.

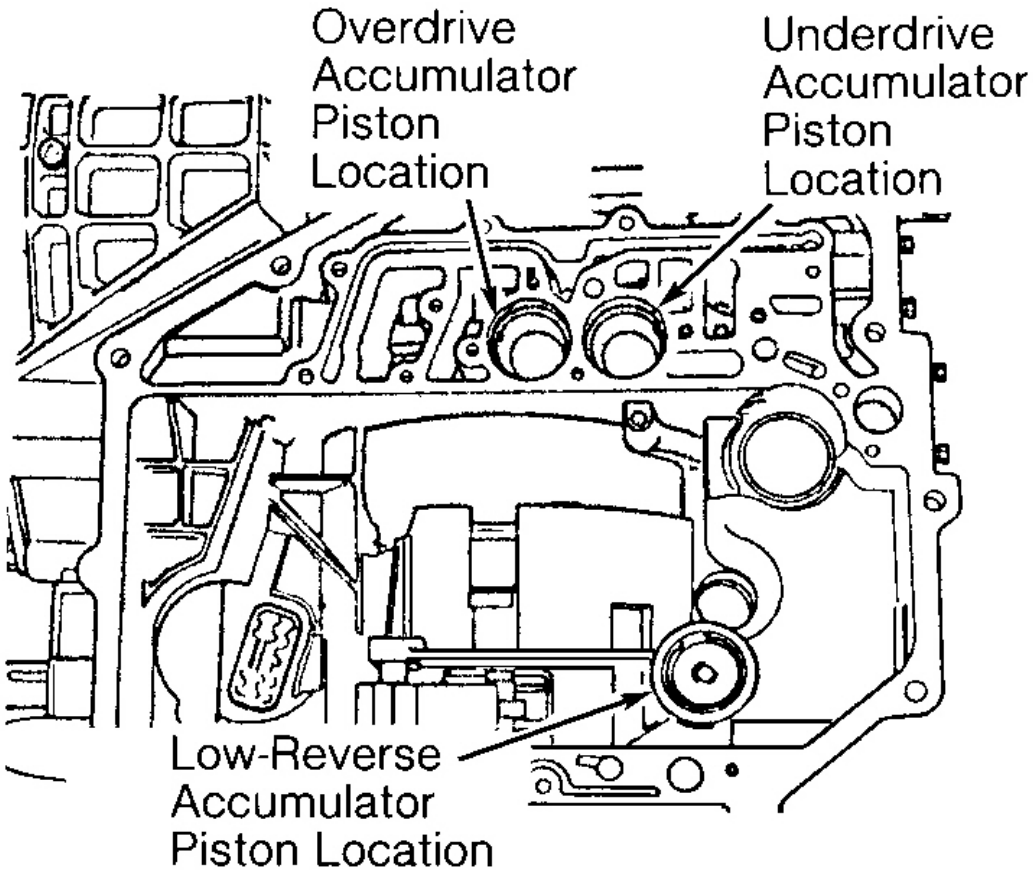


Fig. 16: Identifying Accumulator Locations
Courtesy of CHRYSLER LLC

7. Remove snap ring retaining long stub shaft in transaxle case. Long stub shaft is left stub shaft when viewed from rear of transaxle. Install Adapter (6669) on end of long stub shaft. Attach slide hammer on adapter. Using slide hammer, pull long stub shaft from transaxle case.
8. Remove oil pump bolts. Install 2 slide hammer pullers on opposite sides of oil pump. Push inward on input shaft while using slide hammer pullers to pull oil pump from transaxle case. Remove oil pump and gasket. Remove oil cooler by-pass valve. See **Fig. 17**.
9. Remove thrust bearing from front of input shaft. Remove input clutch assembly. See **Fig. 18**. Remove thrust washer, 2-4 clutch hub, rear annulus gear and thrust bearing. See **Fig. 19**. Remove sun gear and

thrust bearing.

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

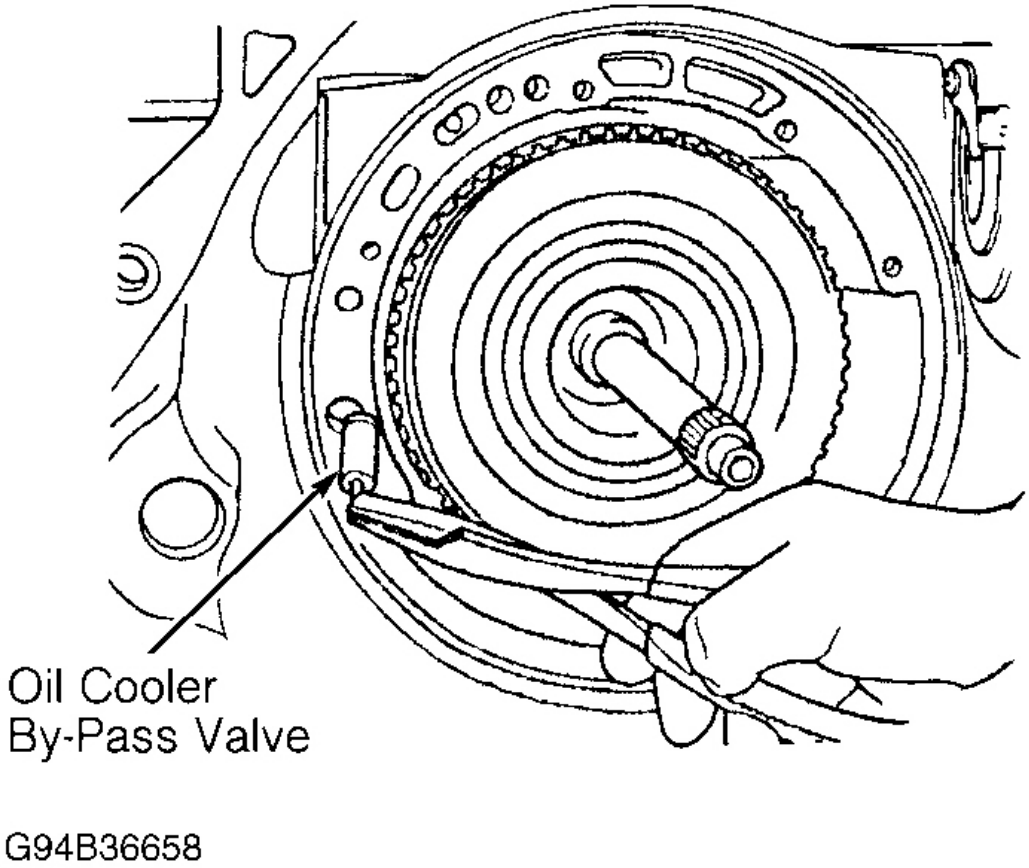


Fig. 17: Removing & Installing Oil Cooler By-Pass Valve
Courtesy of CHRYSLER LLC

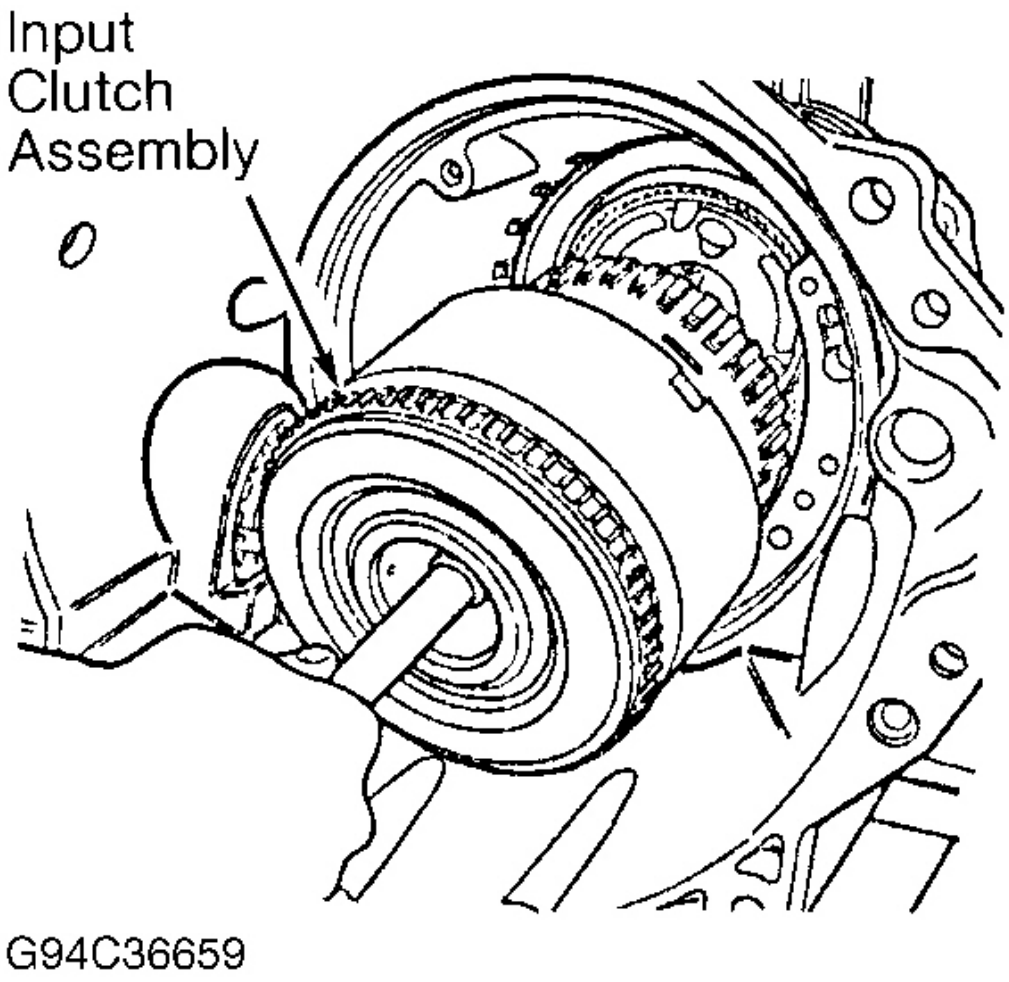


Fig. 18: Removing Input Clutch Assembly
Courtesy of CHRYSLER LLC

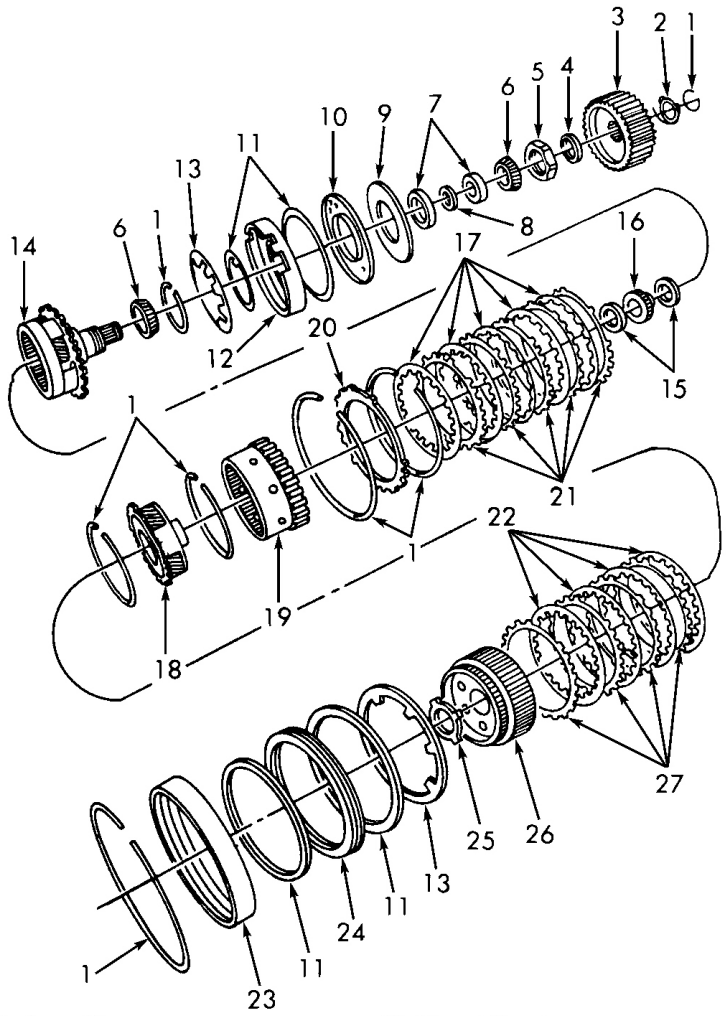


Fig. 19: Exploded View Of Gear Train & Components
Courtesy of CHRYSLER LLC

10. Using 2-4 Clutch Compressor (5058), compress 2-4 clutch piston retainer enough to remove snap ring. See **Fig. 20**. Remove snap ring. Remove 2-4 clutch compressor.

11. Remove 2-4 clutch piston retainer, 2-4 clutch piston and clutch piston return spring. See **Fig. 19**. Remove 2-4 clutch discs and clutch plates. Note direction of 4 clutch plates and 4 clutch discs installation for reassembly reference.
12. Remove snap ring and low-reverse clutch reaction plate. Note direction of snap ring installation. Snap ring is tapered and must be installed with tapered side toward the oil pump area.
13. Remove one low-reverse clutch disc and flat snap ring. Remove low-reverse clutch plates and clutch discs. See **Fig. 19**. Note direction of 5 clutch plates and 5 clutch discs installation for reassembly reference.

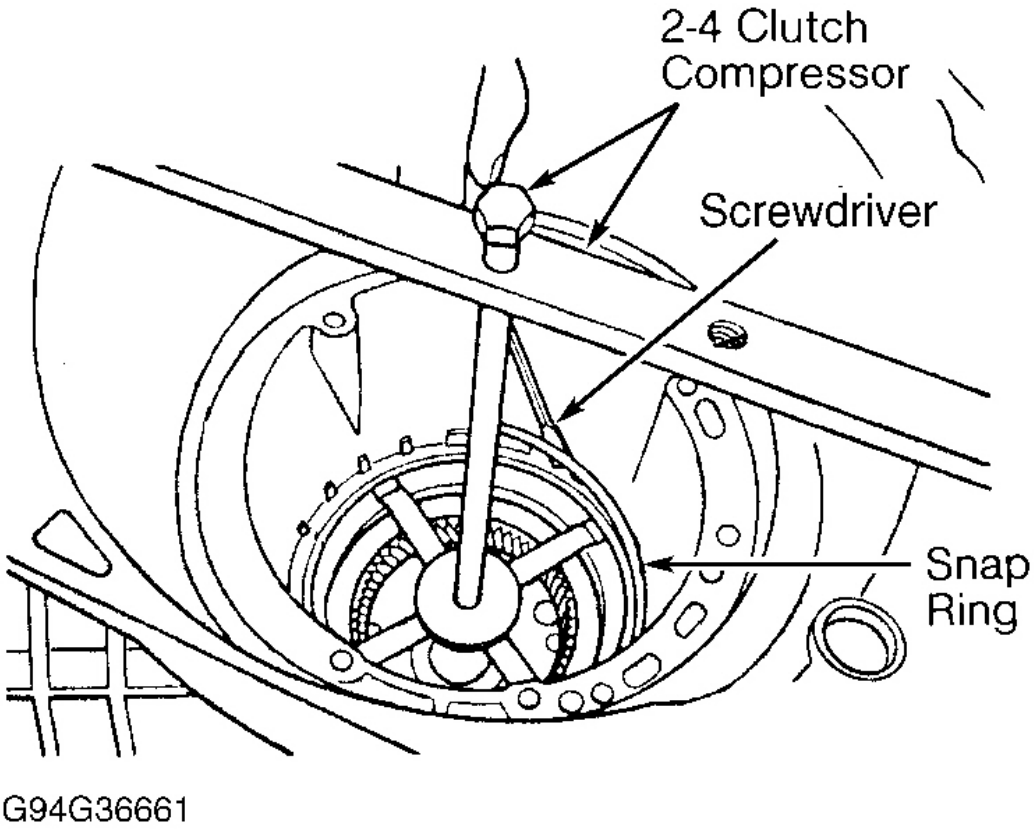


Fig. 20: Compressing 2-4 Clutch Piston Retainer
Courtesy of CHRYSLER LLC

14. Remove transfer drive chain, output shaft sprocket and transfer shaft sprocket. See **DIFFERENTIAL ASSEMBLY, TRANSFER SHAFT & COMPONENTS** under TRANSAXLE DISASSEMBLY.

CAUTION: Failure to release staked areas on output shaft nut before removing output shaft nut will result in thread damage on output shaft.

15. Using die grinder, grind the 2 staked areas on shoulder of output shaft nut so staked area is thinner. Using hammer and chisel, release the 2 staked areas away from output shaft. Use care not to damage output shaft.
16. Install Holder (6497) on output shaft nut. Using breaker bar and Adapter (6498), remove output shaft nut by rotating breaker bar and output shaft clockwise. See **Fig. 21**.
17. Using press, press rear planetary carrier and output shaft from transaxle case. Use care not to lose output shaft shim located on output shaft. See **Fig. 19**. Remove bearing races for output shaft from transaxle case (if necessary).
18. Using Spring Compressor (5059A), compress clutch piston return spring for low-reverse clutch piston. See **Fig. 23**. Remove snap ring. Remove spring compressor. Remove clutch piston return spring for low-reverse clutch piston.
19. Remove parking sprag bolt. Perform step 1. See **Fig. 23**. Using punch, remove anchor shaft for parking sprag assembly. Perform step 2. Remove pivot pin from parking sprag assembly. Perform STEP 3. Remove parking sprag assembly. Perform step 4.
20. Remove low-reverse clutch piston from inside transaxle case. See **Fig. 19**. Remove Torx screws from low-reverse clutch piston retainer. Remove low-reverse clutch piston retainer and gasket. See **Fig. 19**. If removing differential assembly, transfer shaft and componen ts, see **DIFFERENTIAL ASSEMBLY, TRANSFER SHAFT & COMPONENTS** under TRANSAXLE DISASSEMBLY.

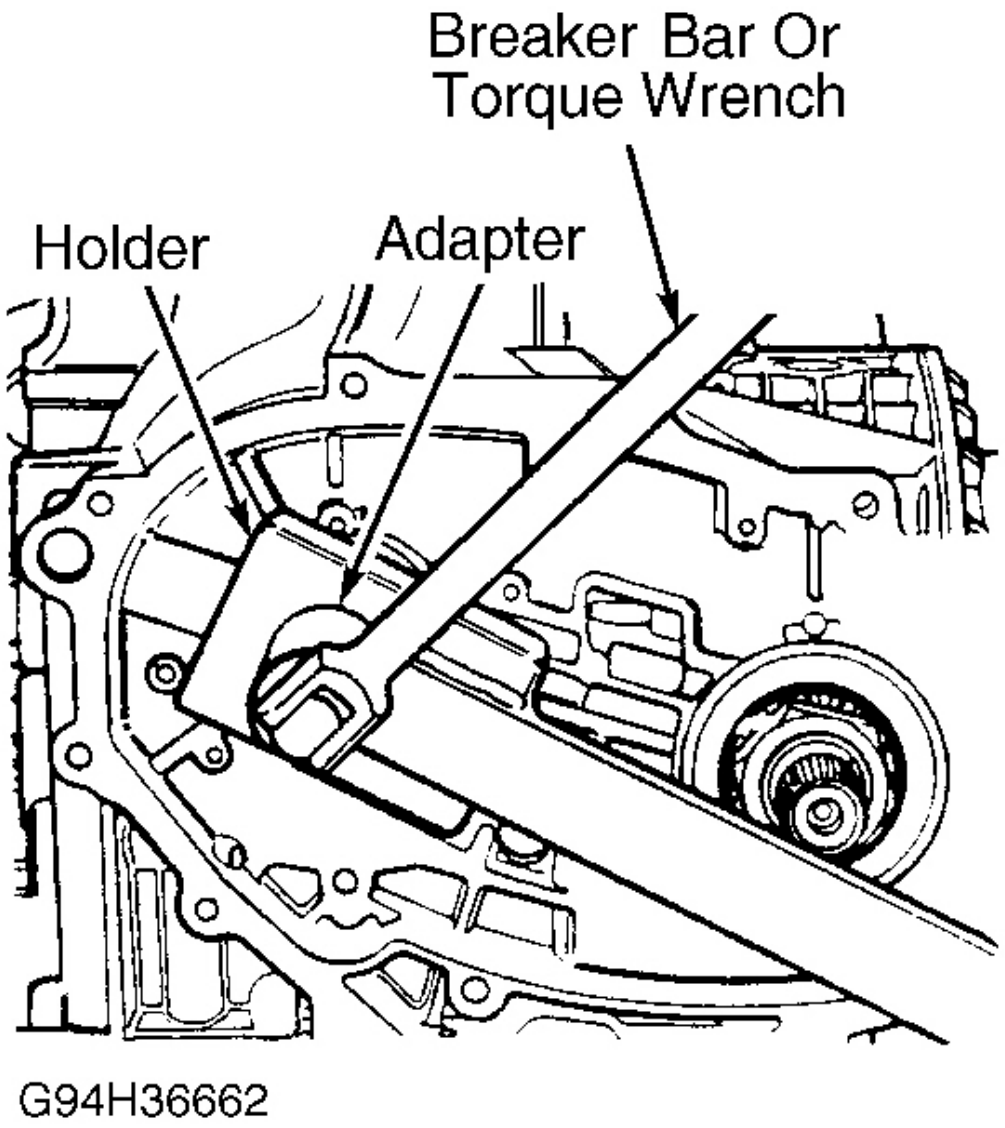


Fig. 21: Output Shaft Nut (Transfer Shaft Nut Is Similar)
Courtesy of CHRYSLER LLC

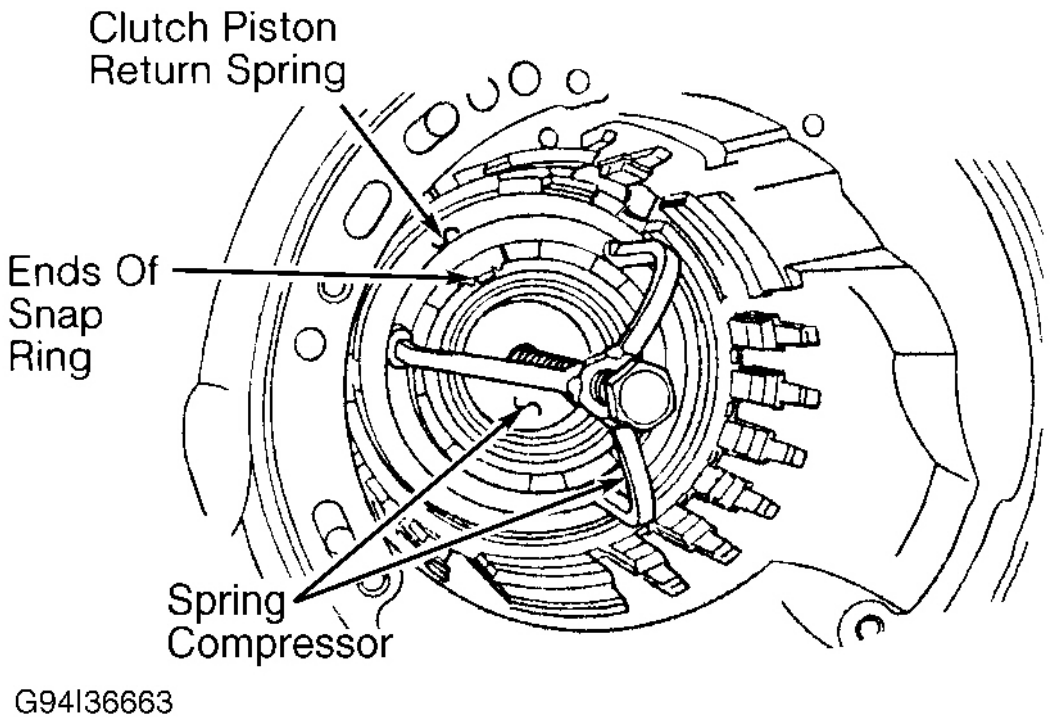


Fig. 22: Compressing Clutch Piston Return Spring
Courtesy of CHRYSLER LLC

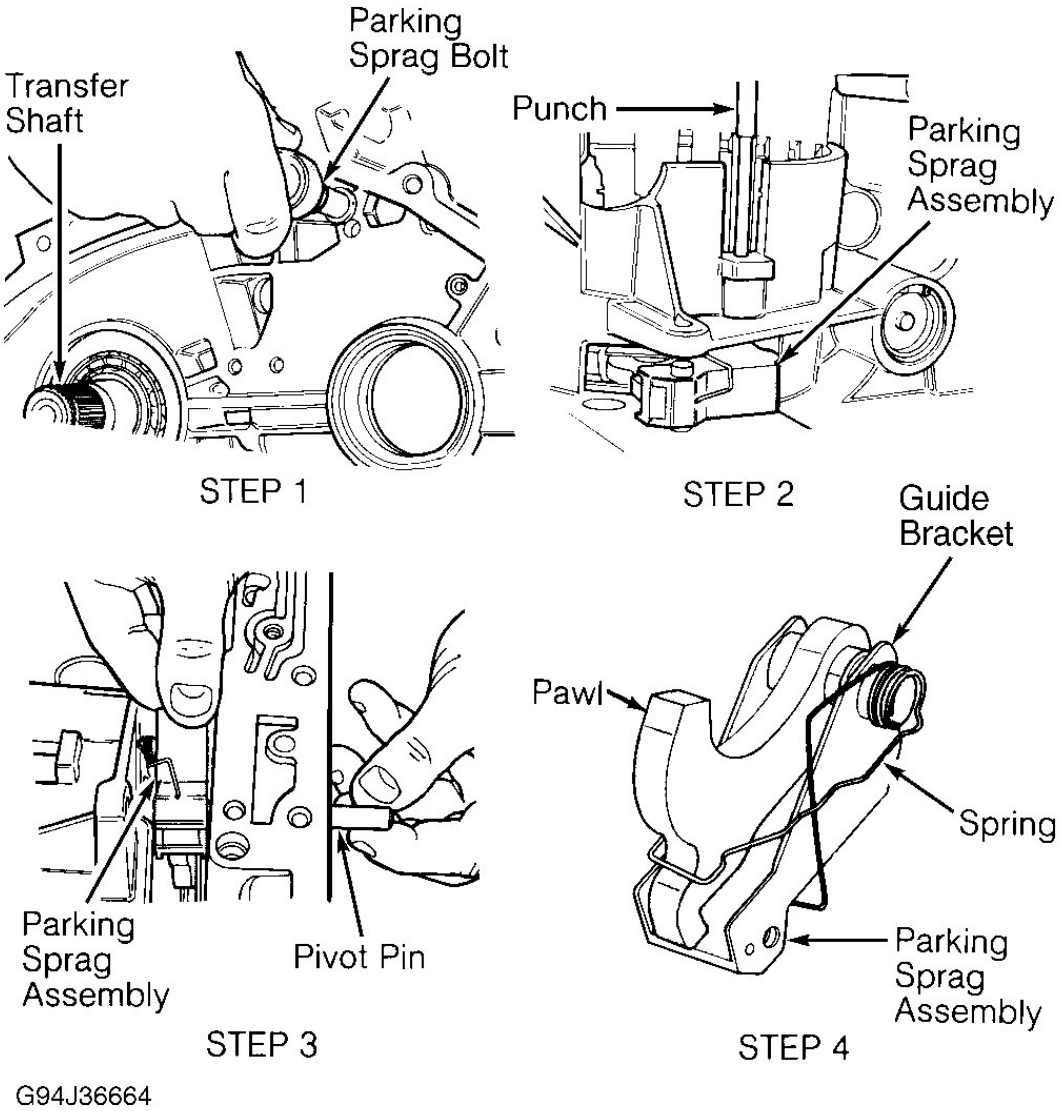


Fig. 23: Removing & Installing Parking Sprag Assembly
Courtesy of CHRYSLER LLC

DIFFERENTIAL ASSEMBLY, TRANSFER SHAFT & COMPONENTS

NOTE: Transfer drive chain length should be checked by performing preliminary inspection to determine if transfer drive chain is stretched and must be replaced.

Preliminary Inspection

1. Remove chain cover from rear of transaxle. See **Fig. 12**. Insert screwdriver in hole above transfer drive

chain. Pry transfer drive chain downward at center of chain. Perform step 1. See **Fig. 24**.

2. Install ruler against bottom of chain snubber. Place mark on ruler at bottom of transfer drive chain while holding chain downward. Perform step 2. See **Fig. 24**. Remove ruler and screwdriver.
3. Insert screwdriver in hole below transfer drive chain. Pry drive chain upward at center of chain. Perform step 3.
4. Install ruler against bottom of chain snubber. Place mark on ruler at bottom of transfer drive chain while holding chain upward. Perform step 4. Remove ruler and screwdriver.
5. Measure distance between marks on ruler. Replace transfer drive chain if distance between marks exceeds 1.00" (25.4 mm).

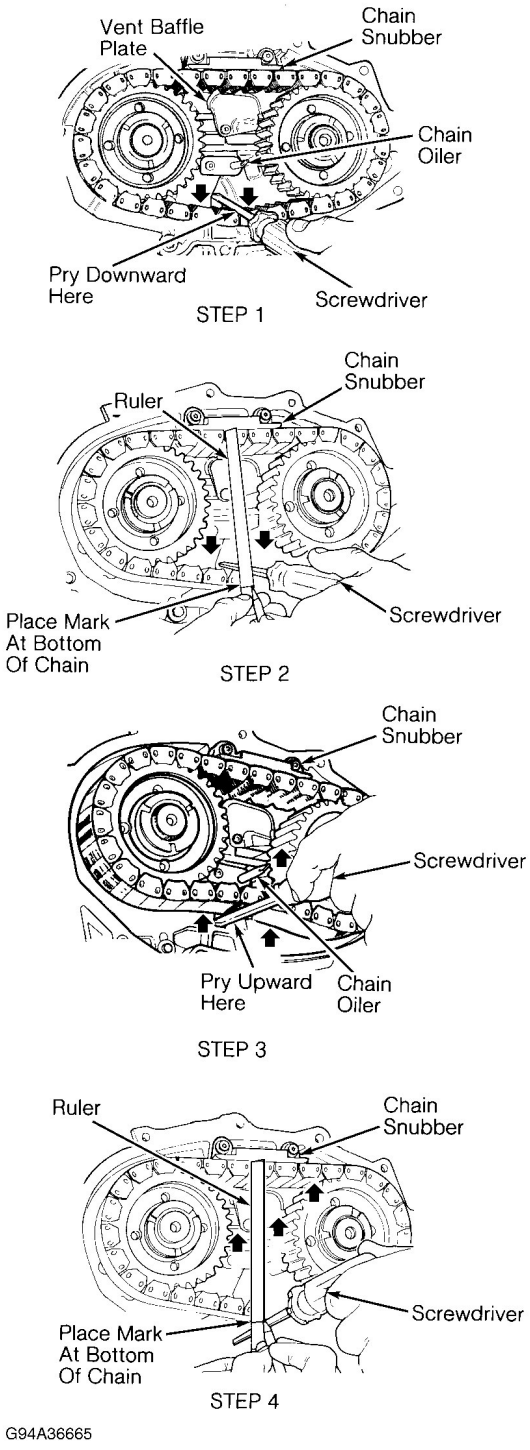


Fig. 24: Locating Chain Oiler, Chain Snubber, Vent Baffle Plate & Checking Transfer Drive Chain Length
Courtesy of CHRYSLER LLC

NOTE: Valve body and solenoid connector must be removed before transfer shaft can be removed. If removing valve body, see VALVE BODY R & I under REMOVAL & INSTALLATION.

Removal

1. Before removing the transfer drive chain, perform preliminary inspection. Refer to the PRELIMINARY INSPECTION procedures heading under **DIFFERENTIAL ASSEMBLY, TRANSFER SHAFT & COMPONENTS** under TRANSAXLE DISASSEMBLY.
2. Remove chain cover from rear of transaxle if not previously removed. See **Fig. 12**. Remove bolts, chain oiler and chain snubber. Remove snap ring and wave washer from end of output and transfer shafts.

CAUTION: Output shaft and transfer shaft sprockets are a slip fit on the shaft. Sprockets must be spread a small amount to release tension from transfer drive chain for removal and installation of sprockets to prevent component damage. DO NOT apply excessive force on sprockets when using chain spreader.

3. Install Chain Spreader (6550) between output shaft and transfer shaft sprockets. See **Fig. 25**. Rotate nuts on chain spreader to apply pressure against sprockets and release tension on sprockets from transfer drive chain.
4. Remove transfer drive chain with output shaft and transfer shaft sprockets as an assembly. Remove output sprocket shim from output shaft. See **Fig. 19**.

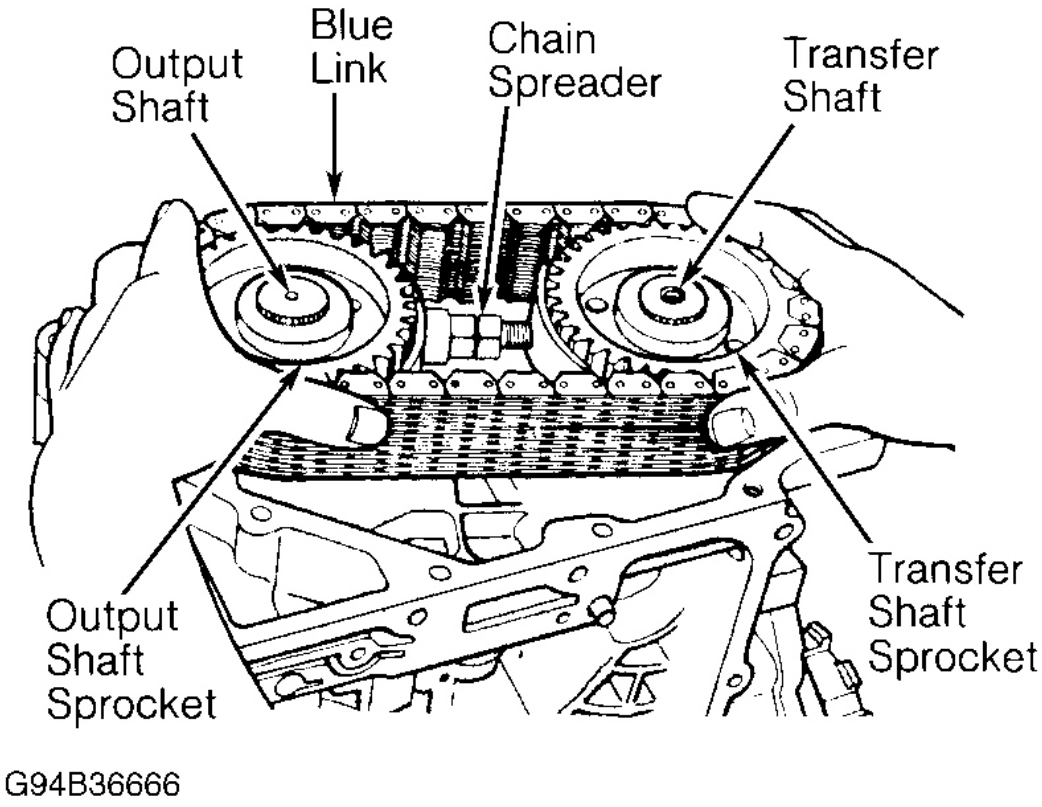


Fig. 25: Removing Transfer Drive Chain & Sprockets
Courtesy of CHRYSLER LLC

5. If long stub shaft is not removed, remove snap ring retaining long stub shaft in transaxle case. Long stub shaft is left stub shaft when viewed from rear of transaxle. Install Adapter (6669) on end of long stub shaft. Attach slide hammer on adapter. Using slide hammer, pull long stub shaft from transaxle case.

CAUTION: Reference marks must be placed on inner and outer bearing adjusters to ensure proper location during reassembly to maintain proper differential bearing torque. These marks will be used when no components are changed and original differential bearings and races are used.

6. Place reference marks on the transaxle case and inner bearing adjuster, located near input shaft for reassembly reference. See **Fig. 11**. Place reference marks on differential cover and outer bearing adjuster, located near short stub shaft on right side of transaxle for reassembly reference.

CAUTION: Note amount of revolutions that inner and outer bearing adjusters are threaded into transaxle case during removal. Bearing adjusters must

be set at the exact position when reinstalled if original components are used.

7. Remove bolt and bearing adjuster lock bracket from inner bearing adjuster. Using Socket (6502-B), unscrew inner bearing adjuster from transaxle case, noting amount of revolutions for reassembly reference.
8. Remove bolt and lock bracket from outer bearing adjuster. See **Fig. 11**. Using Socket (6503), loosen outer bearing adjuster, noting amount of revolutions for reassembly reference.
9. Remove bolts and differential cover. See **Fig. 12**. Remove differential assembly. Remove differential vent baffle plate, located on inside of transaxle case, near bearing race opening for differential assembly. See **Fig. 12**.
10. Remove bolt and vent baffle plate. Vent baffle plate is located on rear of transaxle case, between output shaft and transfer shaft openings. See **Fig. 24**.

CAUTION: Failure to release staked areas on transfer shaft nut before removing nut will result in thread damage on transfer shaft.

11. Using die grinder, grind the 2 staked areas on shoulder of transfer shaft nut so staked area is thinner. Using hammer and chisel, release the 2 staked areas away from transfer shaft. Use care not to damage transfer shaft.
12. Install Holder (6497) on transfer shaft nut. Using breaker bar and Adapter (6498), remove transfer shaft nut by rotating breaker bar and transfer shaft clockwise. See **Fig. 21**.
13. Using press, press transfer shaft downward until rear bearing can be removed. Release press. Transfer shaft cannot be removed from transaxle case until bearing race for rear bearing is removed from transaxle housing.
14. Using Bearing Race Remover (6577), pull bearing race for rear bearing from transaxle case. See **Fig. 26**. Remove baffle plate (if equipped) from transfer shaft. See **Fig. 27**. Remove transfer shaft shim from transfer shaft.
15. Remove transfer shaft from transaxle case. Note direction of front and rear oil seal installation in transaxle case. Remove front and rear oil seals from transaxle case by tapping oil seals toward rear of transaxle case.
16. Remove front bearing race for transfer shaft from transaxle case (if necessary). Press bearing from transfer shaft (if necessary). Remove depth shim from transfer shaft. See **Fig. 27**.

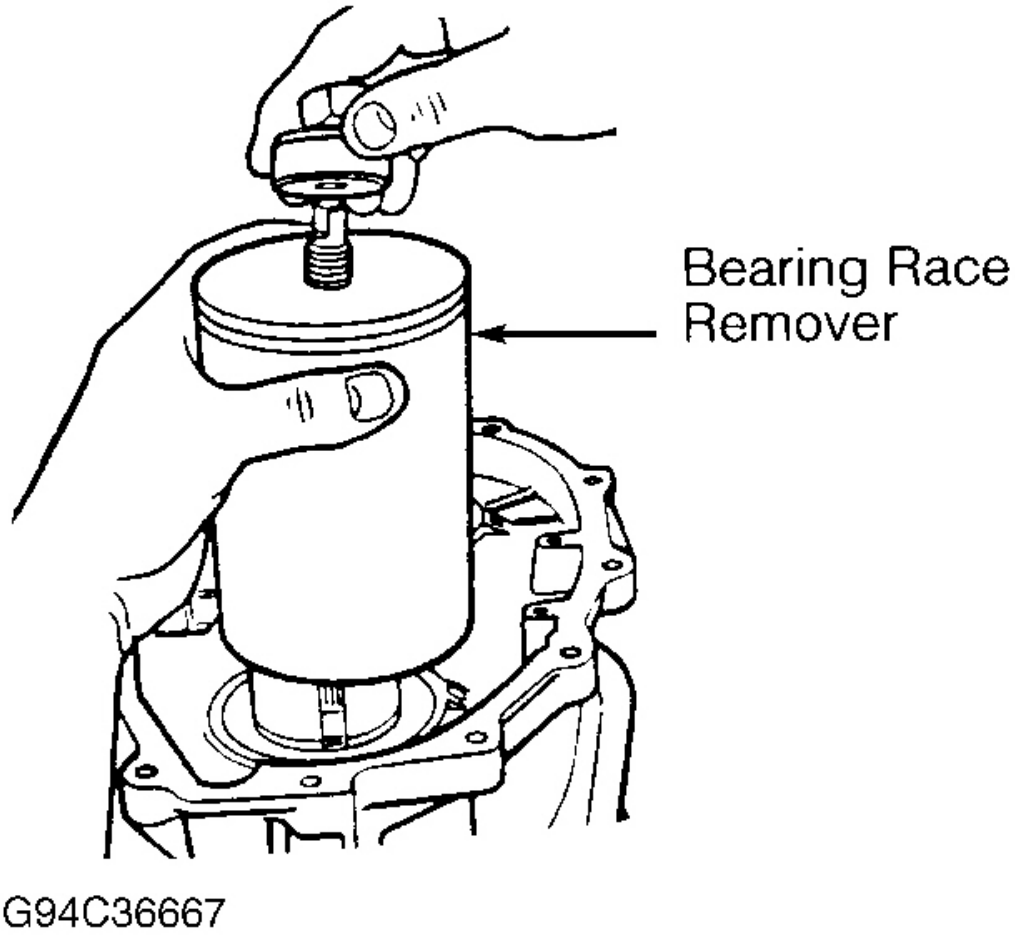
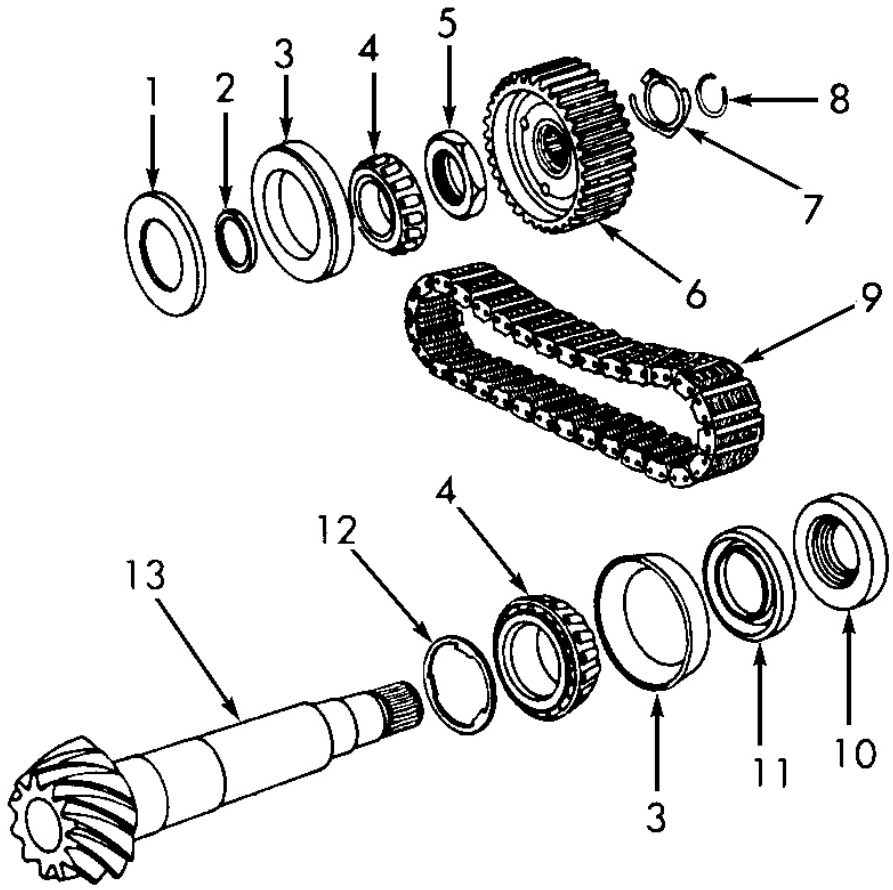


Fig. 26: Removing Rear Bearing Race
Courtesy of CHRYSLER LLC



1. Baffle Plate (If Equipped)
2. Transfer Shaft Shim (Selective)
3. Bearing Race
4. Bearing
5. Transfer Shaft Nut
6. Transfer Shaft Sprocket
7. Wave Washer
8. Snap Ring
9. Transfer Drive Chain
10. Rear Oil Seal
11. Front Oil Seal
12. Depth Shim
13. Transfer Shaft

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Fig. 27: Exploded View Of Transfer Shaft & Components
Courtesy of CHRYSLER LLC

COMPONENT DISASSEMBLY & REASSEMBLY

DIFFERENTIAL ASSEMBLY

Disassembly

1. Remove ring gear bolts. Tap ring gear from differential case. Remove differential bearing support from differential case. See **Fig. 28**. Remove lock clip from end of short stub shaft. Remove short st ub shaft from differential case.
2. Using hammer and punch, tap roll pin from differential case. Remove pinion shaft, side gears, pinion gears and thrust washers from differential case. See **Fig. 28**. Remove differential bearings from differential case and differential bearing support (if necessary).

Reassembly

To reassemble, reverse disassembly procedure using NEW roll pin and NEW ring gear bolts. Coat all components with 80W-90 API GL-5 gear oil before reassembly. Tighten ring gear bolts to specification. See **TORQUE SPECIFICATIONS**.

NOTE: If replacing differential bearings, inner and outer bearing adjusters and bearings for transfer shaft must also be replaced.

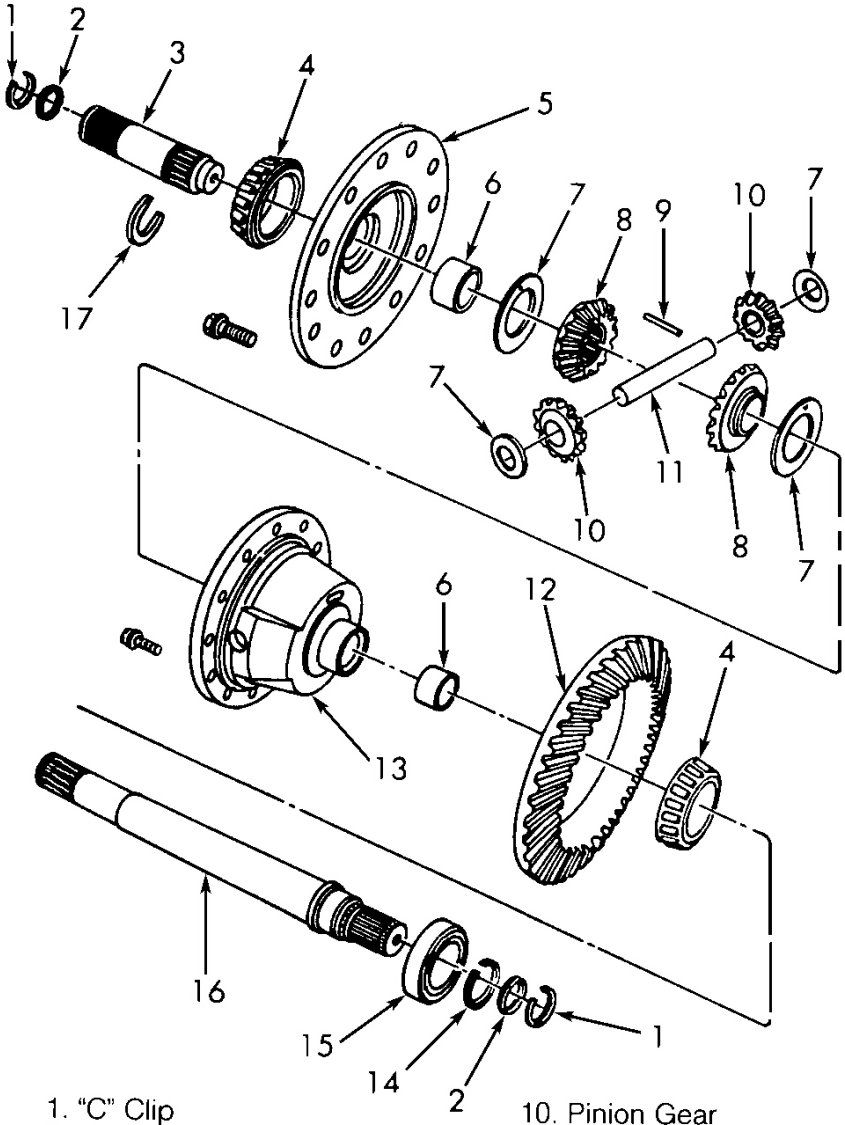


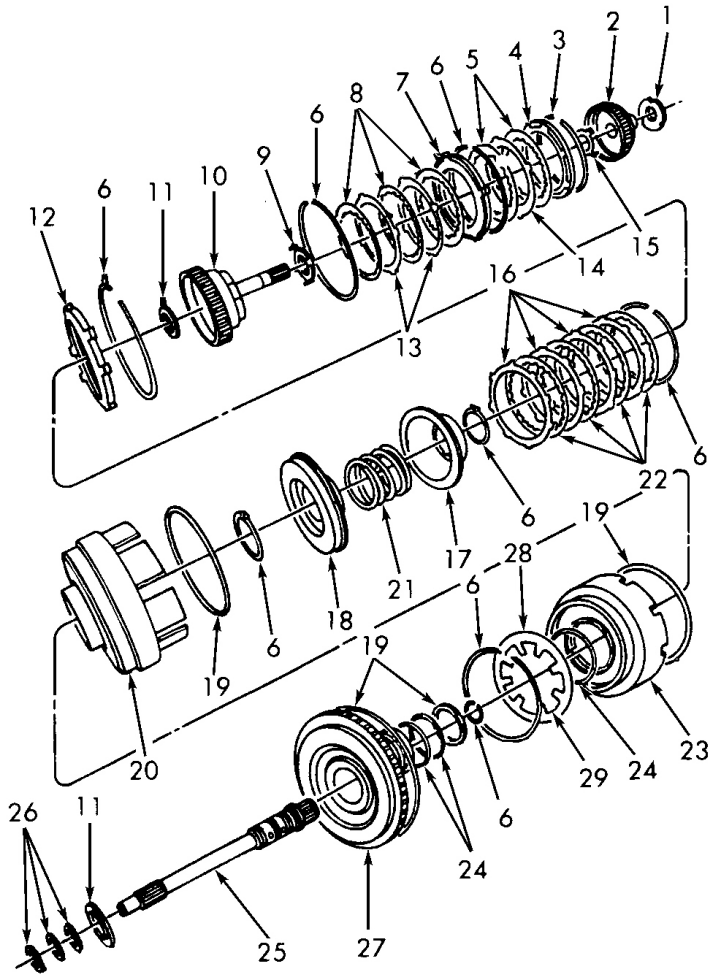
Fig. 28: Exploded View Of Differential Assembly
Courtesy of CHRYSLER LLC

INPUT CLUTCH ASSEMBLY

CAUTION: Input clutch assembly consists of reverse clutch, overdrive clutch and underdrive clutch assemblies. Ensure all clutch components are tagged for location. Note sequence of all clutch plates and discs for reassembly reference. Note snap ring location and direction of installation for reassembly reference, as both flat and waved snap rings are used.

Disassembly

1. Position input clutch assembly with input shaft facing downward. Tap downward on reverse clutch reaction plate.
2. Remove snap ring, located above reverse clutch reaction plate. See **Fig. 29**. Ensure snap ring location is marked, as this is a selective thickness snap ring.
3. Remove reverse clutch reaction plate, reverse clutch discs and plate. Remove snap ring and reverse-overdrive clutch pressure plate.
4. Remove snap ring and overdrive clutch hub with overdrive clutch plates and discs. Ensure snap ring location is marked, as this is a waved snap ring. Separate overdrive clutch plates and discs from overdrive clutch hub.
5. Remove thrust plate from rear (shaft end) of overdrive clutch hub if not previously removed. Remove No. 4 thrust plate from front (opposite shaft end) of overdrive clutch hub.
6. Remove thrust washer, underdrive clutch hub and thrust bearing. Remove snap ring and underdrive clutch reaction plate. Ensure snap ring location is marked, as this is a tapered snap ring.
7. Remove one underdrive clutch disc and flat snap ring. Remove remaining underdrive clutch plates and discs. Using press and spring compressor, compress spring retainer just enough for removal of snap ring, located above spring retainer. Remove snap ring.
8. Remove spring compressor. Remove snap ring, spring retainer, return spring and underdrive clutch piston. Remove tapered snap ring that retains input clutch hub on the input clutch retainer and reverse-overdrive clutch piston. Tapered snap ring is located at center of input clutch retainer.
9. Using soft-faced hammer, tap input clutch hub with input shaft from input clutch retainer and reverse-overdrive clutch piston. Pull input clutch retainer from reverse-overdrive clutch piston.
10. Using press, compress clutch piston return spring on rear of reverse-overdrive clutch piston just for snap ring removal. Remove snap ring.
11. Release press. Note direction of clutch piston return spring installation for reassembly reference. Remove clutch piston return spring. Remove all seal rings and "O" rings.
12. If removing input shaft from input clutch hub, remove snap ring from end of input shaft. Using press and socket, press input shaft from input clutch hub. Remove Teflon seal rings from end of input shaft.



1. No. 4 Thrust Plate (Selective)
2. Overdrive Clutch Hub
3. Snap Ring (Selective)
4. Reverse Clutch Reaction Plate
5. Reverse Clutch Disc
6. Snap Ring
7. Reverse-Overdrive Clutch Pressure Plate
8. Overdrive Clutch Disc
9. Thrust Washer
10. Underdrive Clutch Hub
11. Thrust Bearing
12. Underdrive Clutch Reaction Plate (Selective)
13. Overdrive Clutch Plate
14. Reverse Clutch Plate
15. Thrust Plate
16. Underdrive Clutch Plate
17. Spring Retainer
18. Underdrive Clutch Piston
19. Seal Ring
20. Input Clutch Retainer
21. Return Spring
22. Underdrive Clutch Disc
23. Reverse-Overdrive Clutch Piston
24. "O" Ring
25. Input Shaft
26. Teflon Seal Ring
27. Input Clutch Hub
28. Clutch Piston Return Spring
29. Tang Areas

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Fig. 29: Exploded View Of Input Clutch Assembly
Courtesy of CHRYSLER LLC

Reassembly

1. Press input shaft into input clutch hub (if removed). Install snap ring on end on input shaft.
2. Install NEW seal rings and NEW "O" rings on proper components. Coat all seal rings and "O" rings with petroleum jelly. Install clutch piston return spring on rear of reverse-overdrive clutch piston with tang areas against reverse-overdrive clutch piston. See **Fig. 29**.
3. Using press, compress clutch piston return spring. Install snap ring. Release press. Install input clutch retainer on reverse-overdrive clutch piston.
4. Align splines on input clutch hub on the input clutch retainer. Install input clutch hub on input clutch and reverse-overdrive clutch piston. Install tapered snap ring.
5. Install underdrive clutch piston, return spring and spring retainer in input clutch retainer. Using press, Seal Compressor (5067) and Spring Compressor (5059A), compress spring retainer just enough for installation of snap ring. See **Fig. 30**. Install snap ring. Release press. Remove spring compressor and seal compressor.
6. Install 4 underdrive clutch discs and 4 underdrive clutch plates in proper sequence. See **Fig. 31** and **Fig. 32**. Install flat snap ring in input clutch retainer. Install one underdrive clutch disc.
7. Install underdrive clutch reaction plate with stepped side downward. See **Fig. 31** and **Fig. 32**. Install tapered snap ring above underdrive clutch reaction plate.

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. Check underdrive clutch clearance.

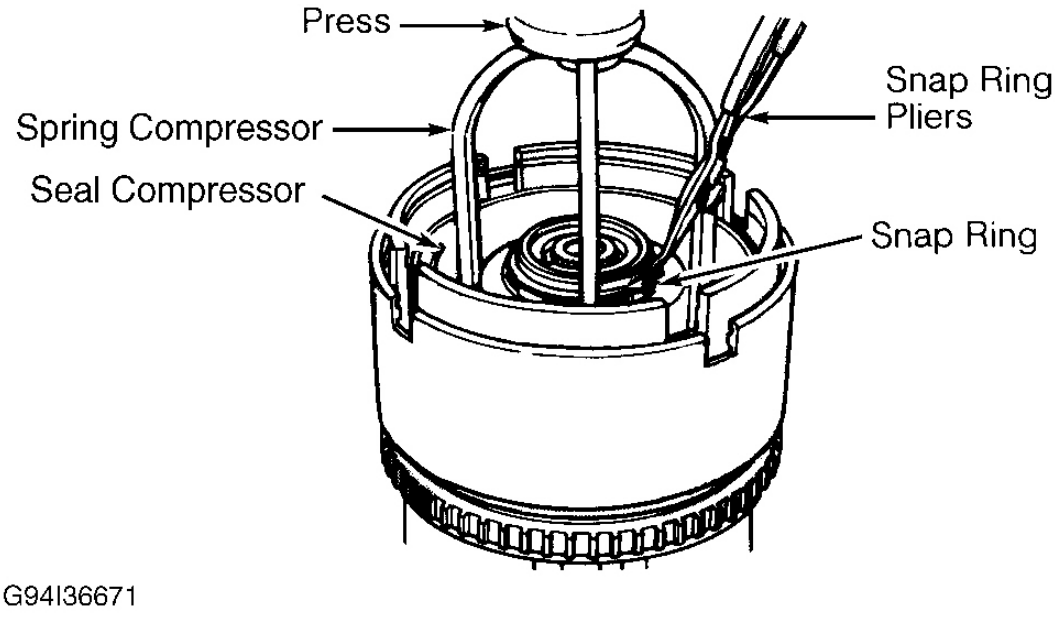


Fig. 30: Installing Underdrive Clutch Piston & Return Spring
Courtesy of CHRYSLER LLC

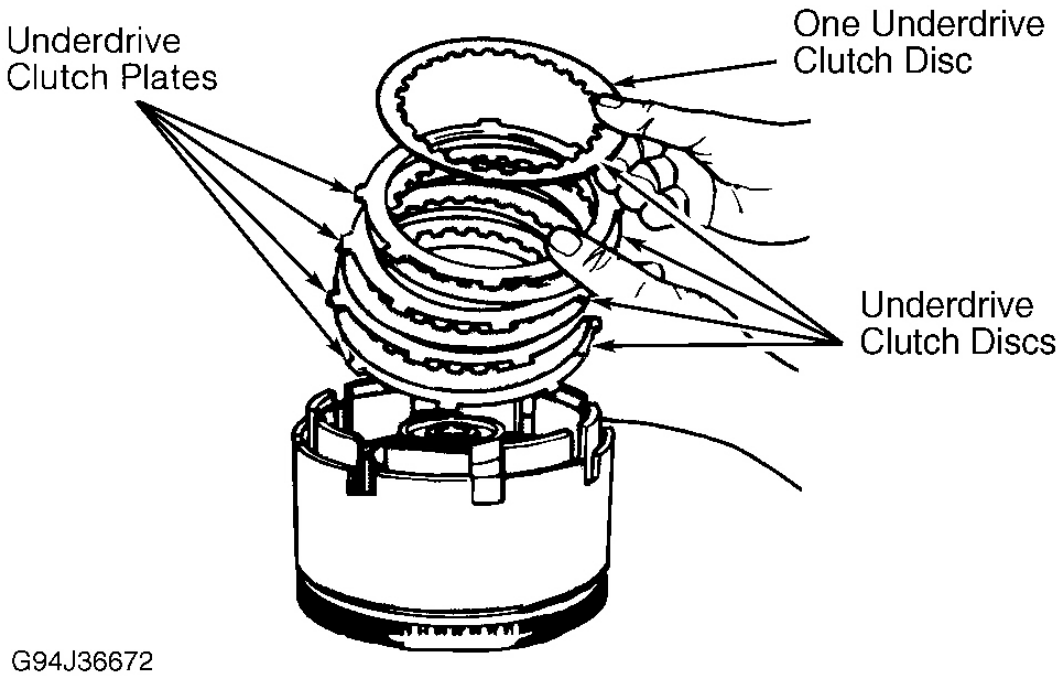


Fig. 31: Installing Underdrive Clutch Plates & Discs
Courtesy of CHRYSLER LLC

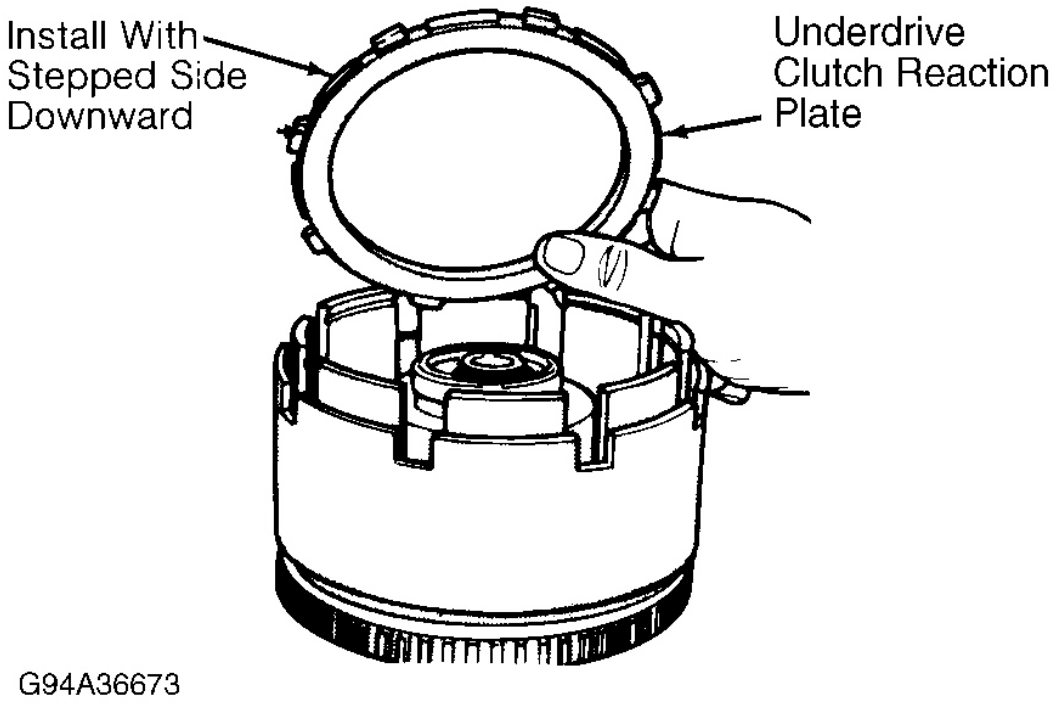


Fig. 32: Installing Underdrive Clutch Reaction Plate
Courtesy of CHRYSLER LLC

Checking Underdrive Clutch Clearance

1. Assemble dial indicator and steel bar with dial indicator stem resting on the top underdrive clutch disc. See **Fig. 33** and **Fig. 34**.
2. Using hook, pull top underdrive clutch disc upward. See **Fig. 33** and **Fig. 34**. Note underdrive clutch clearance reading on dial indicator. Un derdrive 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 so proper clutch clearance is obtained. Underdrive clutch reaction plates are available in the following thicknesses: .217" (5.52 mm), .237" (6.01 mm), .256" (6.50 mm) and .275" (6.99 mm).

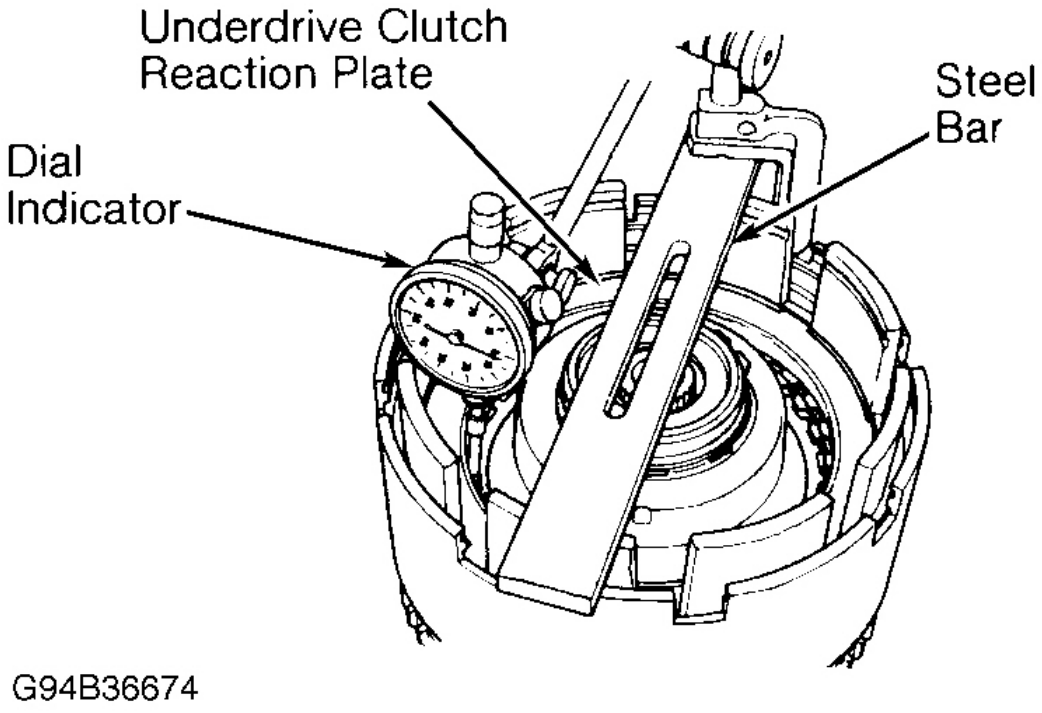


Fig. 33: Assembling Dial Indicator
Courtesy of CHRYSLER LLC

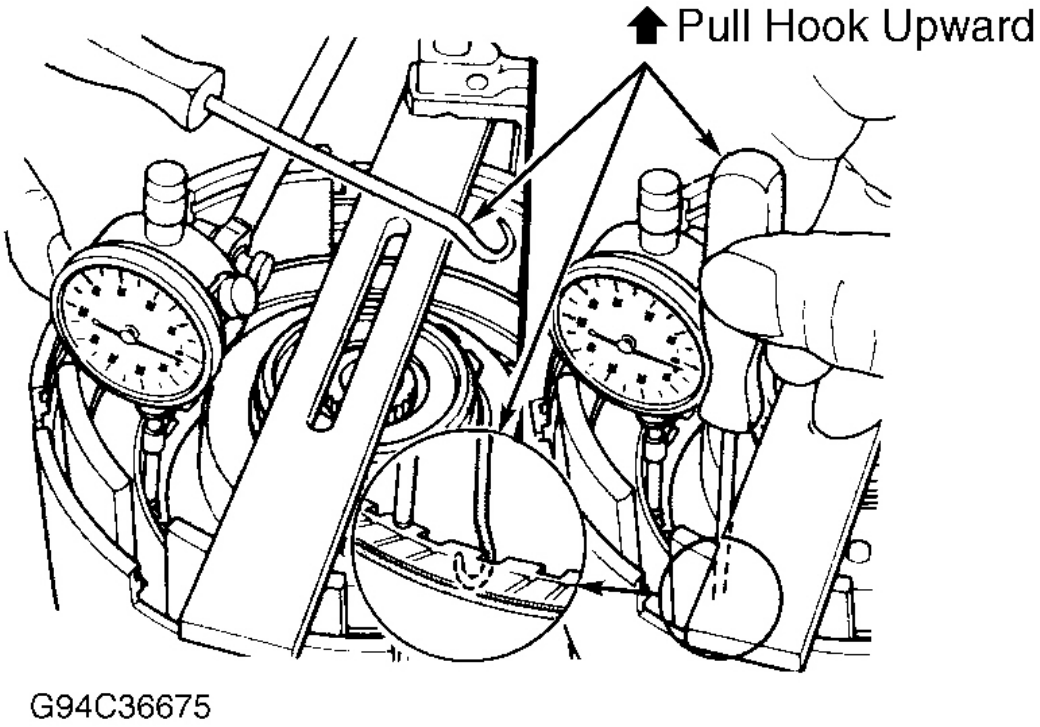


Fig. 34: Checking Underdrive Clutch Clearance
Courtesy of CHRYSLER LLC

Overdrive Clutch

1. Install overdrive clutch plates and overdrive clutch discs. See **Fig. 35** and **Fig. 36**. Install waved snap ring. Install reverse-overdrive clutch pressure plate with stepped side downward.

CAUTION: When compressing overdrive clutch assembly, compress assembly just enough to install flat snap ring.

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

Checking Overdrive Clutch Clearance

1. Assemble dial indicator and steel bar with dial indicator stem resting on overdrive clutch disc. See **Fig. 37**. Compress overdrive clutch pack with fingers and zero dial indicator.
2. Using hook, pull top overdrive clutch disc upward. Note overdrive clutch clearance reading on dial indicator. Overdrive clutch clearance should be .038-.089" (.96-2.26 mm).

3. If overdrive clutch clearance is not within specification, check for improperly assembled clutch components. There is no adjustment for overdrive clutch clearance.

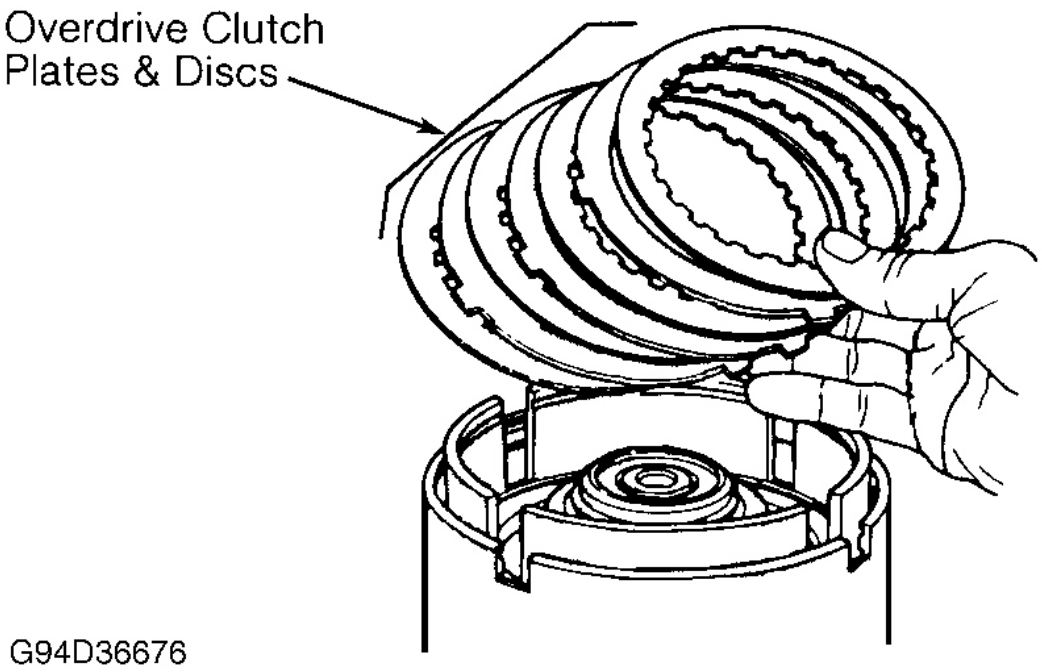


Fig. 35: Installing Overdrive Clutch Plates & Discs
Courtesy of CHRYSLER LLC

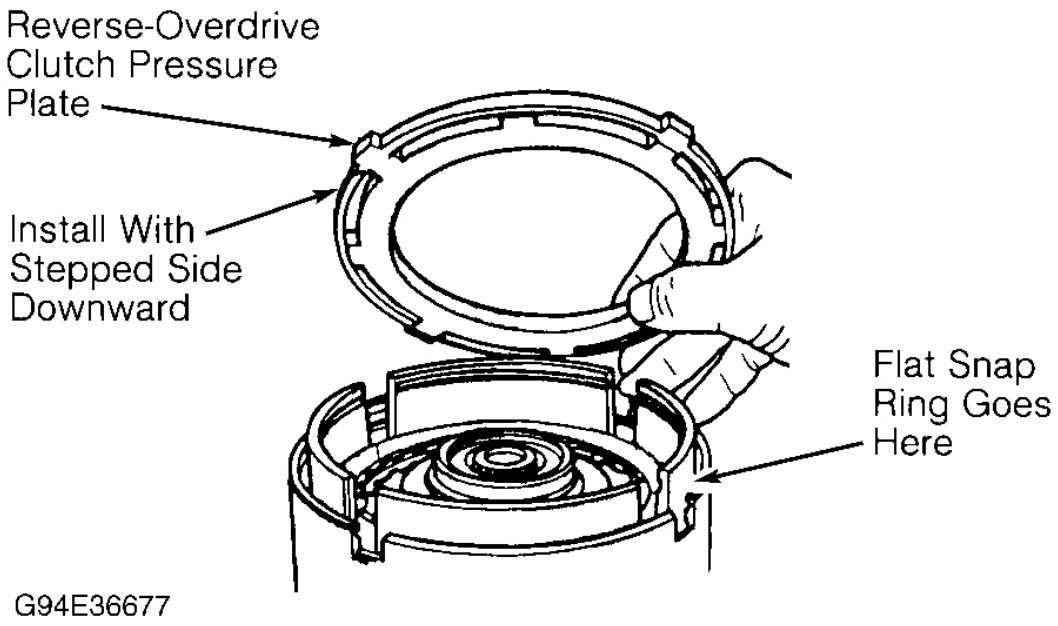


Fig. 36: Installing Reverse-Overdrive Clutch Pressure Plate
Courtesy of CHRYSLER LLC

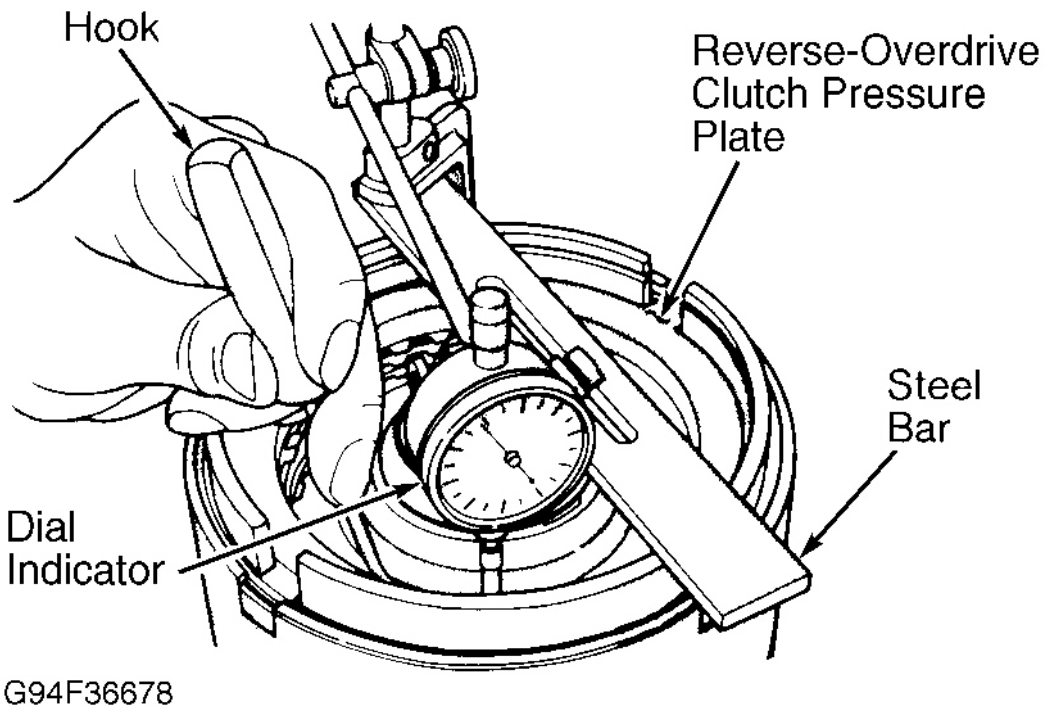


Fig. 37: Checking Overdrive Clutch Clearance
Courtesy of CHRYSLER LLC

Reverse Clutch

1. Install reverse clutch plate and reverse clutch discs. See **Fig. 38** and **Fig. 39**. Install reverse clutch reaction plate with flat side downward.
2. Install snap ring in groove above reverse clutch reaction plate. Using screwdriver on each side of reverse clutch reaction plate, pry reaction 551plate upward to ensure snap ring is fully seated for checking reverse clutch clearance.

Checking Reverse Clutch Clearance

1. Assemble dial indicator and steel bar with dial indicator stem resting on reverse clutch disc. See **Fig. 40**. Compress reverse clutch pack with fingers and zero dial indicator.
2. Using hook, pull reverse clutch disc upward. 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, install different thickness snap ring, located above reverse clutch reaction plate, so proper clutch clearance is obtained. Snap ring is available in following thicknesses: .061" (1.55 mm), .071" (1.80 mm), .081" (2.05 mm) and .090" (2.29 mm).

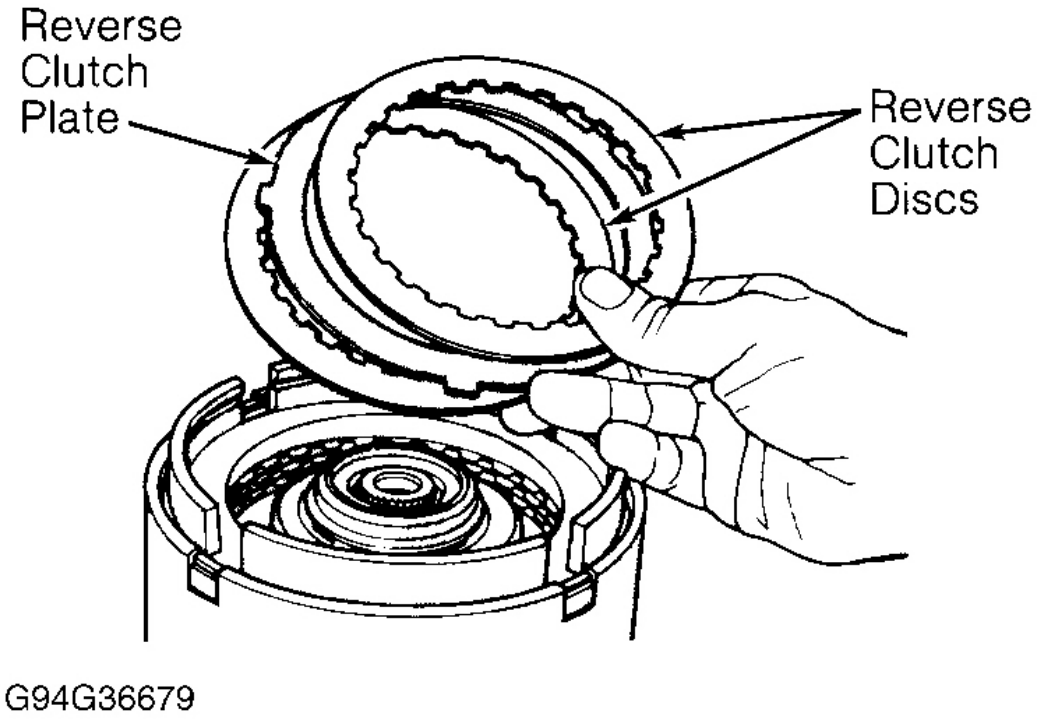


Fig. 38: Installing Reverse Clutch Plate & Discs
Courtesy of CHRYSLER LLC

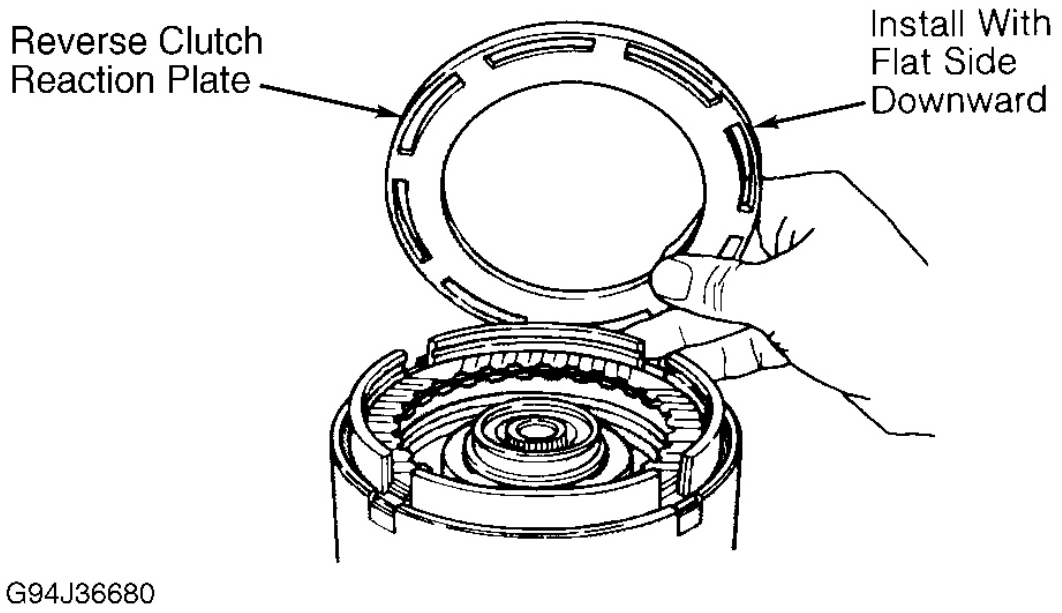


Fig. 39: Installing Reverse Clutch Reaction Plate
Courtesy of CHRYSLER LLC

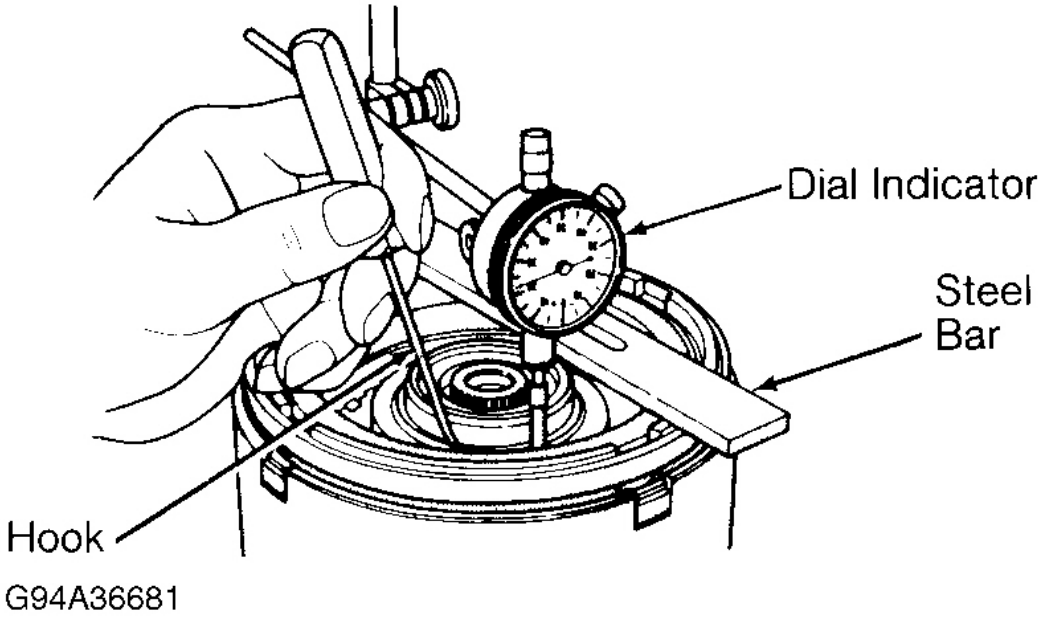


Fig. 40: Checking Reverse Clutch Clearance
Courtesy of CHRYSLER LLC

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

NOTE: It may be necessary to apply petroleum jelly to thrust bearings or thrust plates to hold them in position during reassembly of input clutch assembly.

Final Assembly Of Input Clutch Assembly

1. Remove reverse and overdrive clutch assemblies. Install thrust bearing located below underdrive clutch hub. See **Fig. 29**. Thrust bearing must be installed with 3 small tabs facing upward (away from torque converter end of input shaft).
2. Install underdrive clutch hub. Install 5-tab thrust washer on shaft end of underdrive clutch hub.
3. Install 3-tab thrust plate on front (opposite shaft end) of overdrive clutch hub. Install overdrive clutch hub on input clutch assembly. Ensure tabs on thrust plate 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. Install No. 4 thrust plate on overdrive clutch hub. See **Fig. 29**.

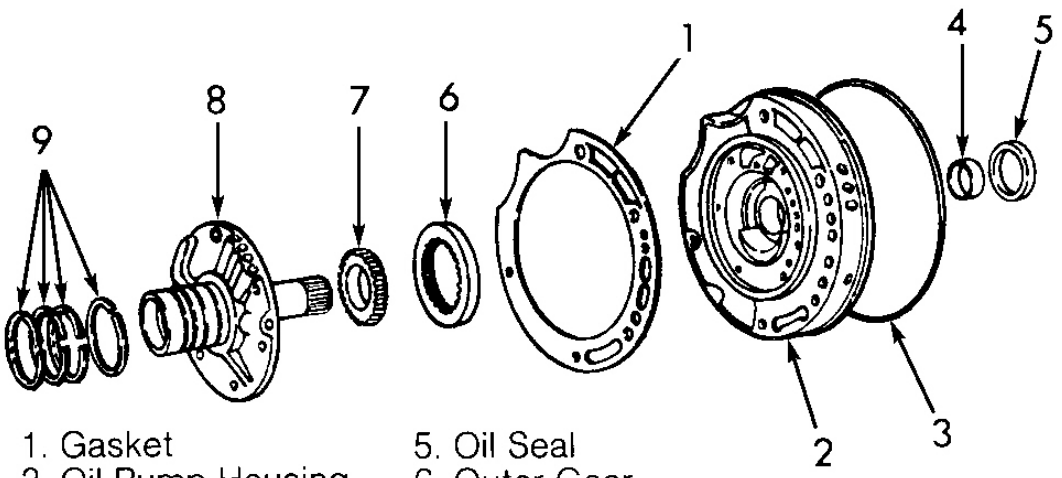
OIL PUMP

Disassembly & Reassembly

1. Disassembly and reassembly information not available from manufacturer. If necessary, disassemble and reassemble oil pump using exploded view. See **Fig. 41**. Ensure component locations are marked for reassembly reference.
2. Ensure oil pump components are within specification. See the **OIL PUMP SPECIFICATIONS**.
3. To reassemble, reverse disassembly procedure. Ensure components are installed in original location. Use NEW oil seal, "O" ring and reaction shaft support seal rings. Tighten reaction shaft support-to-oil pump housing retaining bolts to specification. Refer to the **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)



1. Gasket
2. Oil Pump Housing
3. "O" Ring
4. Bushing
5. Oil Seal
6. Outer Gear
7. Inner Gear
8. Reaction Shaft Support
9. Reaction Shaft Support Seal Rings

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Fig. 41: Exploded View Of Oil Pump
Courtesy of CHRYSLER LLC

VALVE BODY OVERHAUL

NOTE: Manual valve lever position sensor is also known as Transmission Range Sensor (TRS).

Disassembly

1. Remove manual valve lever-to-valve body retaining bolt. Slide MVLPS from manual valve lever. See **Fig. 13**.
2. Remove solenoid assembly-to-transfer plate bolts. Remove solenoid assembly and screen. Remove bolts and valve body plate support.

CAUTION: Use care when separating transfer plate from valve body. DO NOT allow check balls to fall from valve body.

3. Separate transfer plate and separator plate from valve body, noting location of thermal valve and regulator valve screen in transfer plate. See **Fig. 13** and **Fig. 38**.
4. Note location of check balls and retainers in valve body. See **Fig. 42**. Using Retainer Remover/Installer (6301), remove retainer for torque converter control valve and torque converter switch valve. Perform step 1. See **Fig. 43** and **Fig. 44**.

5. Using Retainer Remover/Installer (6302), remove retainer for regulator valve. Perform step 2. See **Fig. 43** and **Fig. 44**. Remove valve body components. See **Fig. 45**.

Reassembly

To reassemble, reverse disassembly procedure. Ensure all components are installed in original location. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**.

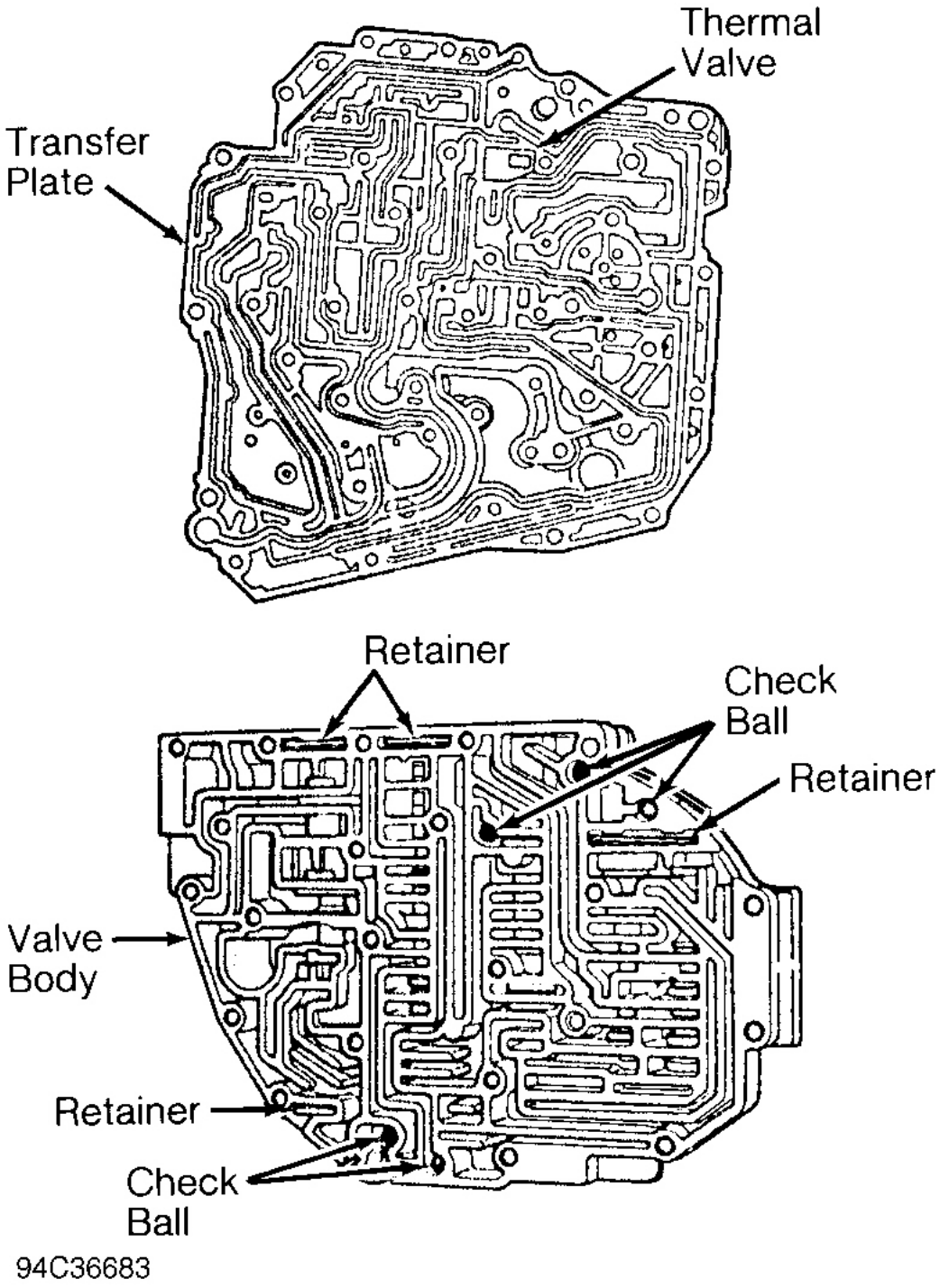


Fig. 42: Thermal Valve, Check Ball & Retainer Locations
Courtesy of CHRYSLER LLC

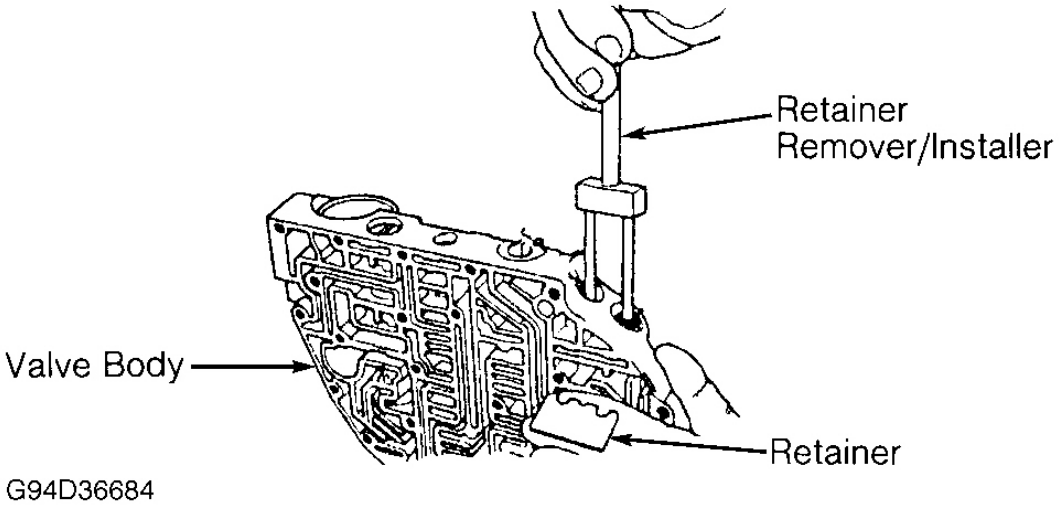


Fig. 43: Removing & Installing Retainers In Valve Body (Step 1)
Courtesy of CHRYSLER LLC

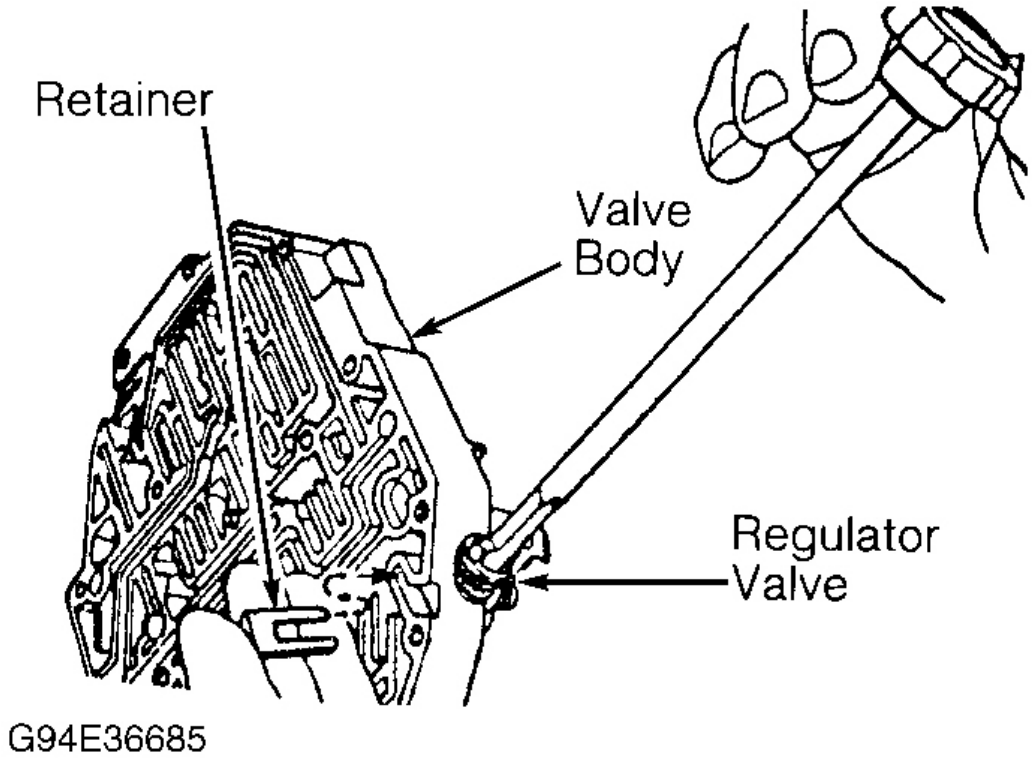
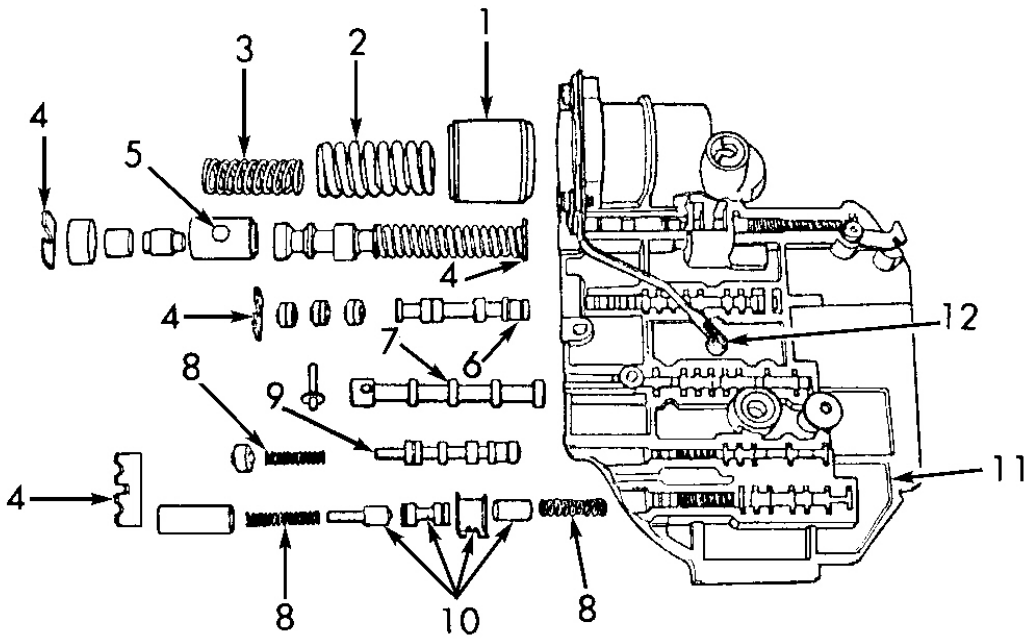


Fig. 44: Removing & Installing Retainers In Valve Body (Step 2)
Courtesy of CHRYSLER LLC



1. 2-4 Accumulator Piston
2. 2-4 Accumulator Outer Spring
3. 2-4 Accumulator Inner Spring
4. Retainer
5. Regulator Valve
6. Solenoid Switch Valve
7. Manual Valve
8. Valve Spring
9. Torque Converter Control Valve
10. Torque Converter Switch Valve
11. Valve Body
12. Detent Assembly

G94F36686

Fig. 45: Exploded View Of Valve Body
Courtesy of CHRYSLER LLC

TRANSAXLE ADJUSTMENTS

DIFFERENTIAL BEARING ROTATING TORQUE

NOTE: Differential bearing rotating torque must be checked when any of the following components are replaced: transaxle case, differential bearings, inner and outer bearing adjusters with bearing races, differential bearing support or differential case. Differential bearing rotating torque should be performed only with NEW differential bearings. Inner and outer bearing adjusters and transfer shaft bearings must be replaced if differential bearings are replaced. DO NOT use this procedure with used differential bearings. Manufacturer does not list differential bearing rotating torque with used differential bearings. Differential bearing torque must be checked with transfer shaft removed from transaxle case.

1. Press oil seal from inner and outer bearing adjusters. Press NEW oil seals into inner and outer bearing adjusters. Install NEW "O" ring on inner and outer bearing adjusters. Lubricate threads on inner and outer bearing adjusters and lip of oil seals with gear oil.
2. Using Socket (6502-B), screw inner bearing adjuster into transaxle case. Inner bearing adjuster should be positioned so it is below the transaxle case surface when viewed from differential side of transaxle case.
3. Install differential assembly and differential cover. Install and tighten differential cover bolts to specification. See **TORQUE SPECIFICATIONS**.
4. Install Seal Protector (6591) on short stub shaft. Lubricate seal protector with gear oil. Install outer bearing adjuster. Screw outer bearing adjuster into differential cover until it is finger tight. Rotate differential back and forth in both directions several times to seat bearings.
5. Install foot-lb. torque wrench and Socket (6503) on outer bearing adjuster. See **Fig. 46**. Install Adapter (6548) into differential assembly.
6. Install 1/4" extension and INCH-lb. torque wrench on adapter. See **Fig. 46**. Using INCH-lb. torque wrench, rotate differential and note amount of torque required to rotate the differential assembly. This is the differential bearing rotating torque. Tighten outer bearing adjuster until differential bearing rotating torque is 19-23 INCH lbs. (2.1-2.6 N.m).
7. Record torque reading required on the outer bearing adjuster to obtain correct differential bearing rotating torque. This reading will be required during transaxle reassembly. Remove socket, adapter, differential cover and differential assembly from transaxle case.

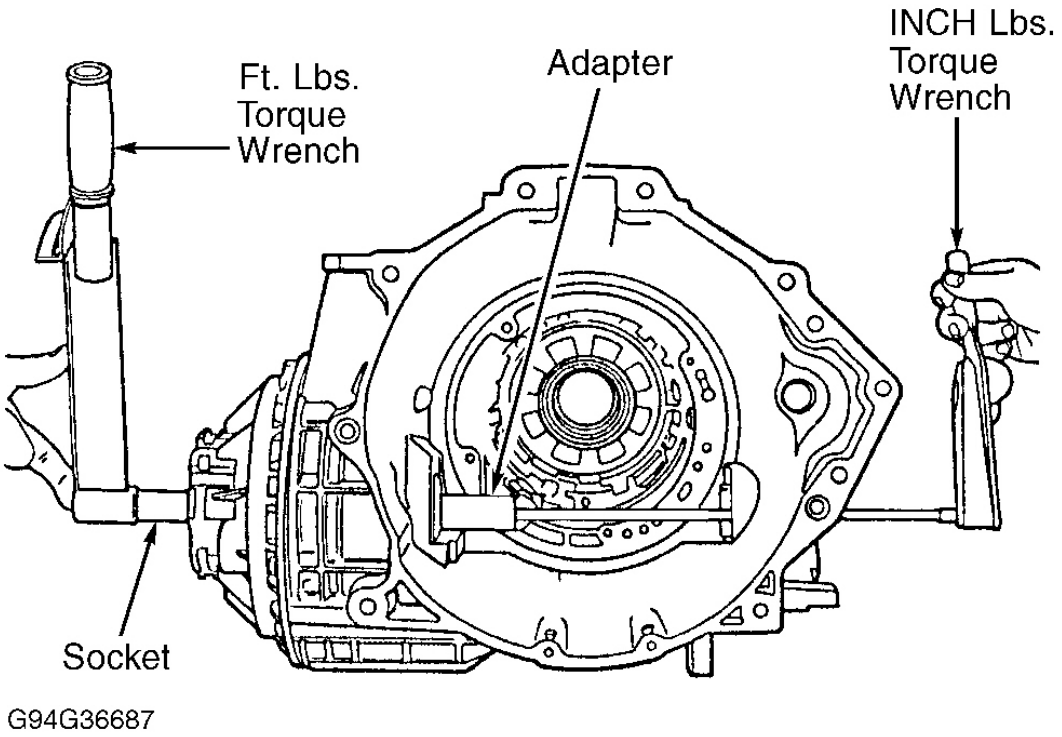


Fig. 46: Checking Differential Bearing Rotating Torque

Courtesy of CHRYSLER LLC

OUTPUT SHAFT BEARING PRELOAD

CAUTION: Output shaft bearing preload must be checked and/or adjusted if any of the following components are replaced: rear planetary carrier and output shaft, output shaft bearings or transaxle case. Output shaft bearing preload is determined by measuring output shaft rotating torque.

1. Install NEW bearing races for output shaft in transaxle case. Press NEW bearing on output shaft. Install NEW rear bearing for output shaft and Plate (6618-A) on rear of transaxle case. See **Fig. 47**. Slightly tighten retaining bolts on plate until bolt heads are below surface of the plate. **DO NOT** fully tighten bolts.
2. Place transaxle case in press so plate is supported. Ensure clearance exists so output shaft can extend through the plate when installed.
3. Original output shaft shim should be used as a starting point for adjusting bearing preload. If original output shaft shim is not available, use output shaft shim with thickness of .238-.239" (6.04-6.07 mm). This is the thickest shim available.
4. Apply small amount of petroleum jelly to original output shaft shim. Install output shaft shim on output shaft, just above the bearing. Install output shaft in transaxle case. Press output shaft into rear bearing and transaxle case.
5. Install NEW output shaft nut on output shaft. **DO NOT** reuse old output shaft nut. Install Holder (6497) on output shaft nut. Using torque wrench and Adapter (6498), tighten output shaft nut by torque wrench and output shaft counterclockwise. See **Fig. 21**. Tighten output shaft nut to specification. See **TORQUE SPECIFICATIONS**.
6. Using INCH-lb. torque wrench, measure output shaft rotating torque required to rotate output shaft to determine output shaft bearing preload. Output shaft rotating torque should be 1-8 INCH lbs. (.1-.9 N.m.).
7. If output shaft rotating torque exceeds specification, install thicker output shaft shim. If output shaft rotating torque is less than specified, install thinner output shaft shim. Output shaft shims are available in 15 thickness ranges of .203-.204" (5.16-5.18 mm) to .238-.239" (6.04-6.07 mm) in approximate .001" (.025 mm) increments.
8. Ensure no end play exists on output shaft. Once correct output shaft rotating torque is obtained, use press and Staking Adapter (6589) to stake output shaft nut against output shaft. Ensure staked area on output shaft nut is fully bottomed in groove area on output shaft. Remove transaxle case from press. Remove plate from rear of transaxle case.

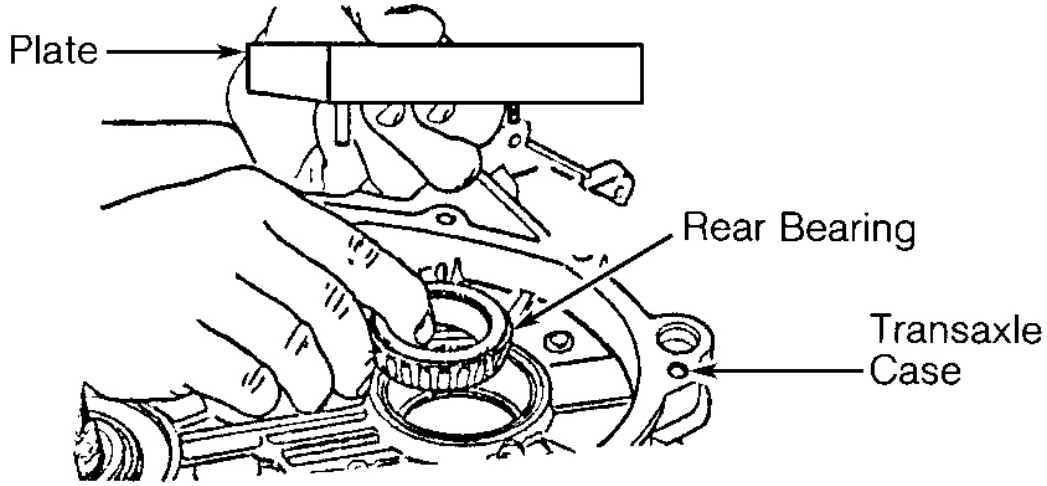


Fig. 47: Installing Rear Bearing & Plate On Transaxle Case
Courtesy of CHRYSLER LLC

TRANSFER SHAFT DEPTH

NOTE: Transfer shaft depth must be checked if transfer shaft, bearings, bearing races, transaxle case or depth shim are replaced. Transfer shaft bearings must be replaced if differential bearings are replaced.

1. Using Bearing Race Installer (6494), install front (differential assembly side) bearing race for transfer shaft in transaxle case. Using feeler gauge, ensure no clearance exists between front bearing race and transaxle case. If clearance exists, fully seat front bearing race in transaxle case.
2. Screw Centering Block (6549-2) into inner bearing adjuster hole of transaxle case until it bottoms by using pegs on centering block. Perform step 1. See **Fig. 48**-**Fig. 54** for steps 1 through 7.
3. Install NEW front bearing and Gauge Disc (6549-3) in transaxle case. Perform step 2. Install Centering Disc (6494-2) and nut on gauge disc. Perform step 3. Hand-tighten nut until no play exists.
4. Install dial indicator in locating block. Screw extension rod into dial indicator. Perform step 4. Zero dial indicator by placing dial indicator assembly on Fixture (6549-6). Place fixture and dial indicator assembly on flat surface. Zero dial indicator. Perform step 5.
5. Slightly compress extension rod and insert dial indicator assembly on pin of centering block. Perform step 6.
6. Pivot dial indicator assembly back and forth on centering block to obtain the shortest distance (highest reading on dial indicator). Perform step 7. Record this reading.
7. Rotate gauge disc 1/3 revolution clockwise. Recheck dial indicator reading. Record this reading.
8. Rotate gauge disc 1/3 revolution clockwise. Recheck dial indicator reading. Record this reading. Take the

average of all 3 readings. This is the transfer shaft measured depth. If reading varies by more than .002" (.05 mm), recheck gauge disc installation to ensure gauge disc is not cocked in transaxle case.

9. To determine thickness of depth shim, note the first digit of adjustment number on transfer shaft. See **Fig. 59**. Using first digit of adjustment, determine amount to be added or subtracted from transfer shaft measured depth obtained in step 7). Refer to the **ADJUSTMENT FACTOR**.
10. For example, if transfer shaft measured depth is .032" (.81 mm) and first digit of adjustment number is -1, the thickness of required depth shim is .033" (.84 mm).
11. If first digit of adjustment number is a minus (-) number, add this amount to transfer shaft measured depth reading obtained in step 8). If first digit of adjustment number DOES NOT not contain a minus (-) number, subtract this amount from transfer shaft measured depth reading obtained in step 8). Pinion head depth shims are available in 17 thicknesses of .0268-.0278" (.681-.707 mm) to .0438-.0448" (1.113-1.139 mm) in approximate .001 (.025 mm) increments.

ADJUSTMENT FACTOR

First Digit Of Adjustment No.	Amount Added/Subtracted: In. (mm)
0	0 (0)
1	-.001 (-.0250)
2	-.002 (-.0510)
3	-.003 (-.0760)
-1	+.001 (+.0250)
-2	+.002 (+.0510)
-3	+.003 (-.0760)

12. Remove dial indicator assembly, gauge disc, centering block and bearing from transaxle case. Install selected depth shim on transfer shaft. Press NEW bearing on transfer shaft.

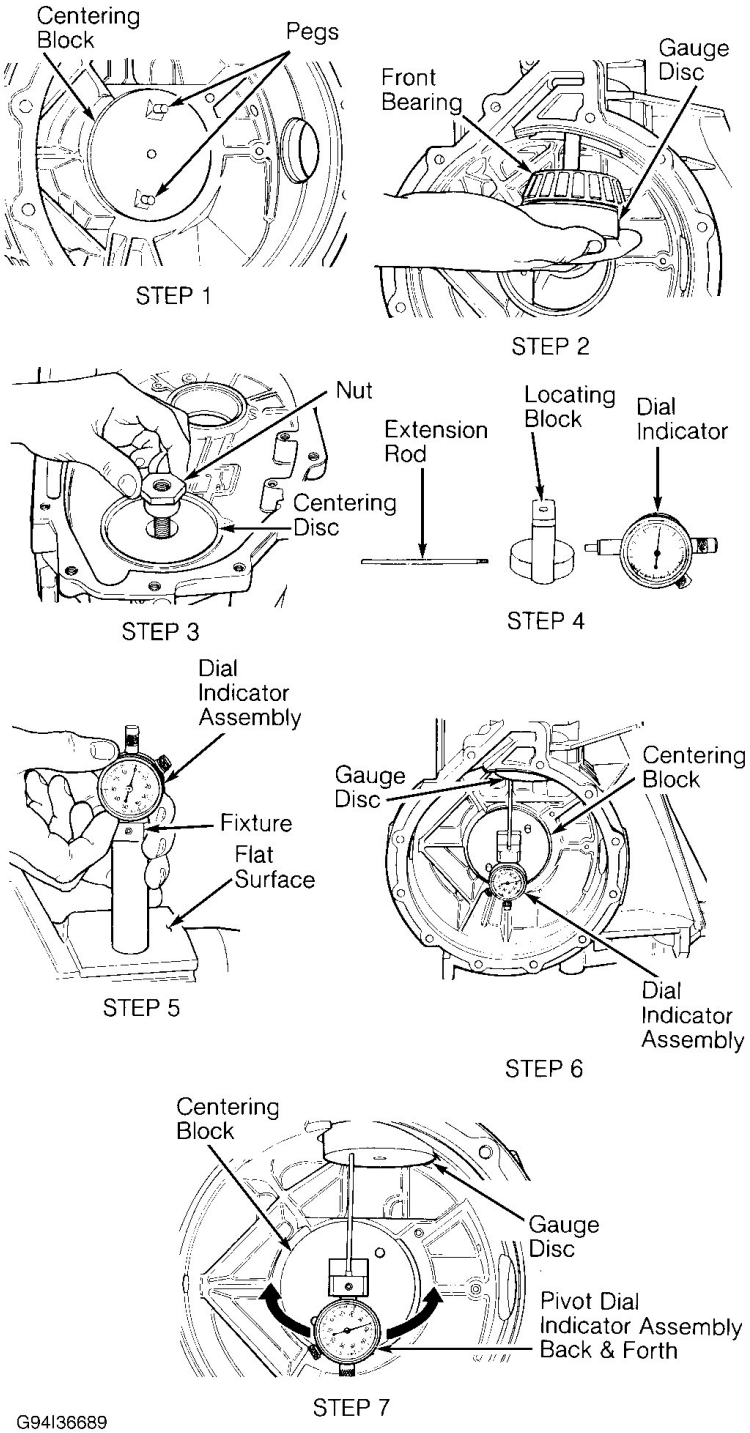


Fig. 48: Checking Transfer Shaft Depth (Step 1)
Courtesy of CHRYSLER LLC

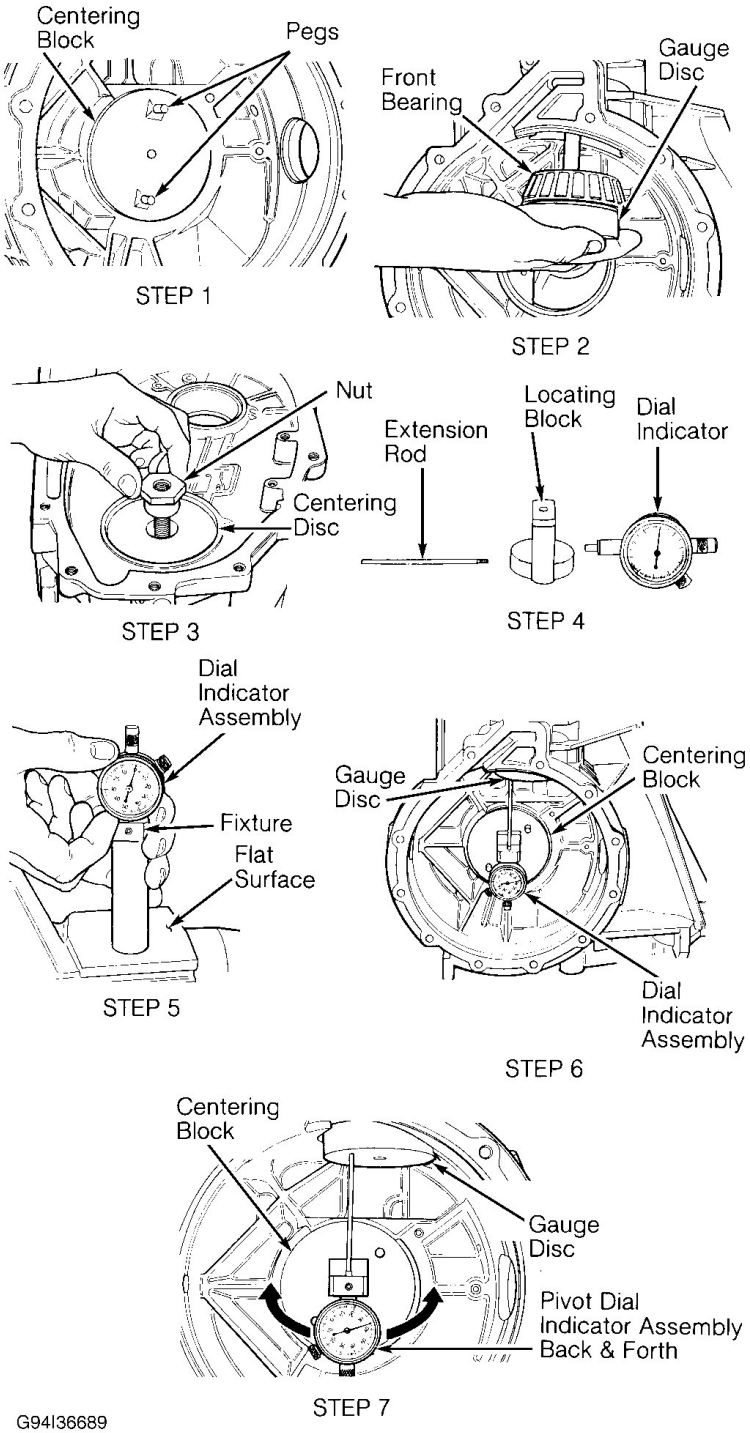


Fig. 49: Checking Transfer Shaft Depth (Step 2)
Courtesy of CHRYSLER LLC

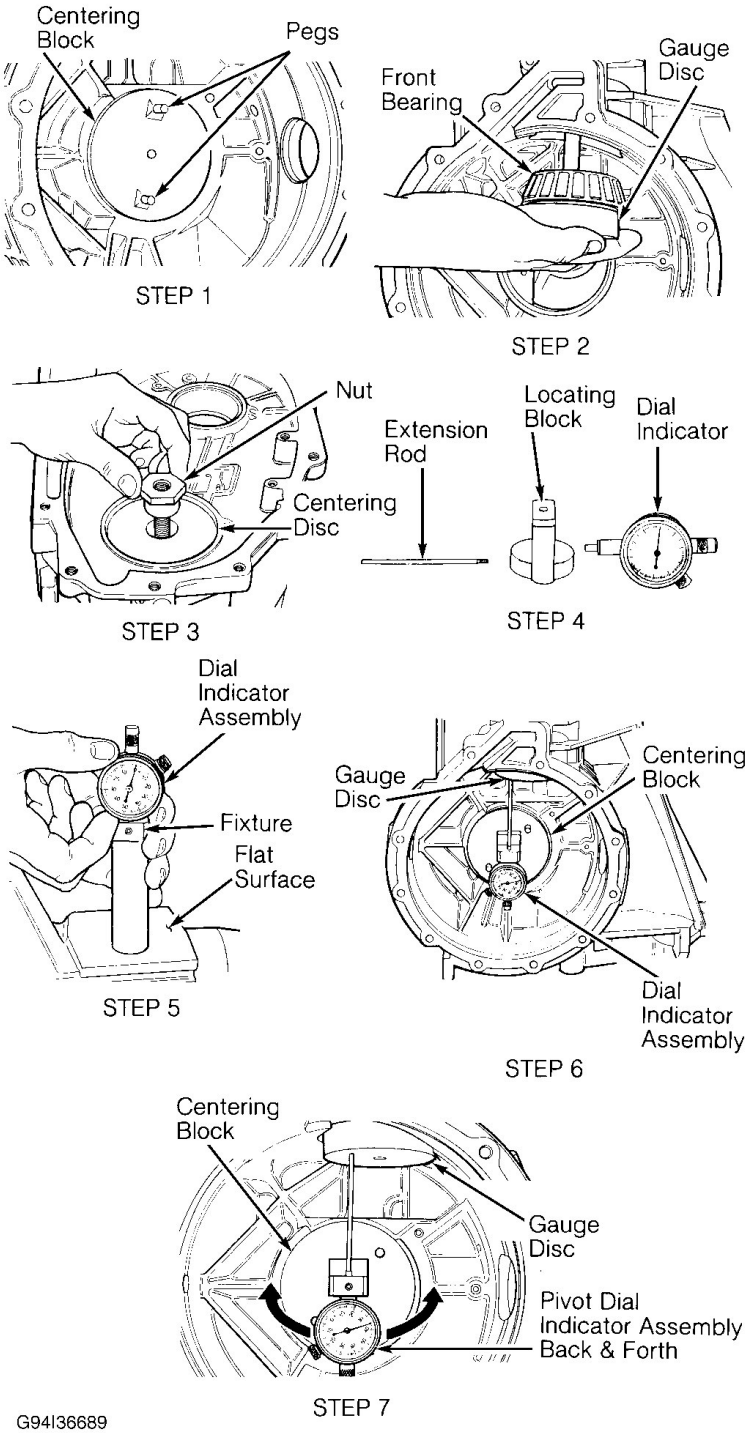


Fig. 50: Checking Transfer Shaft Depth (Step 3)
Courtesy of CHRYSLER LLC

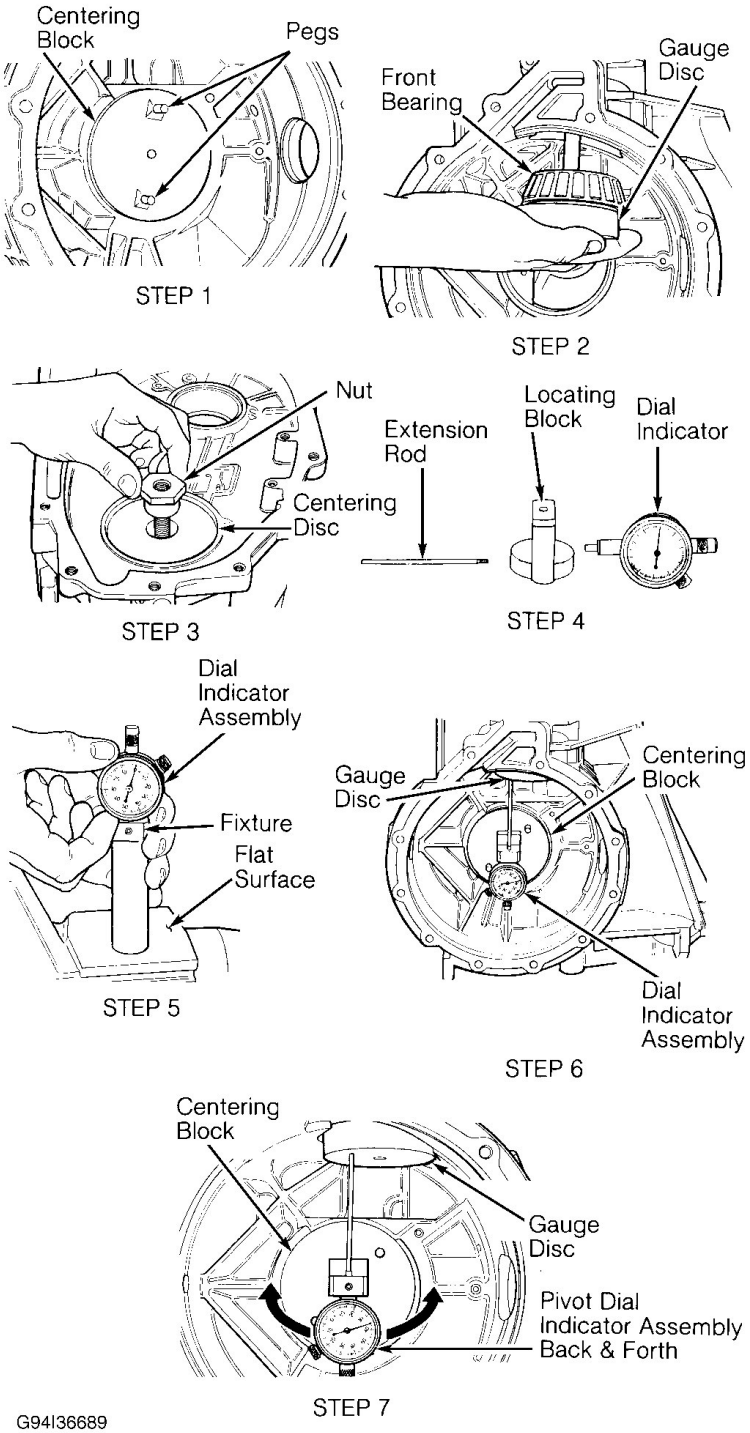


Fig. 51: Checking Transfer Shaft Depth (Step 4)
Courtesy of CHRYSLER LLC

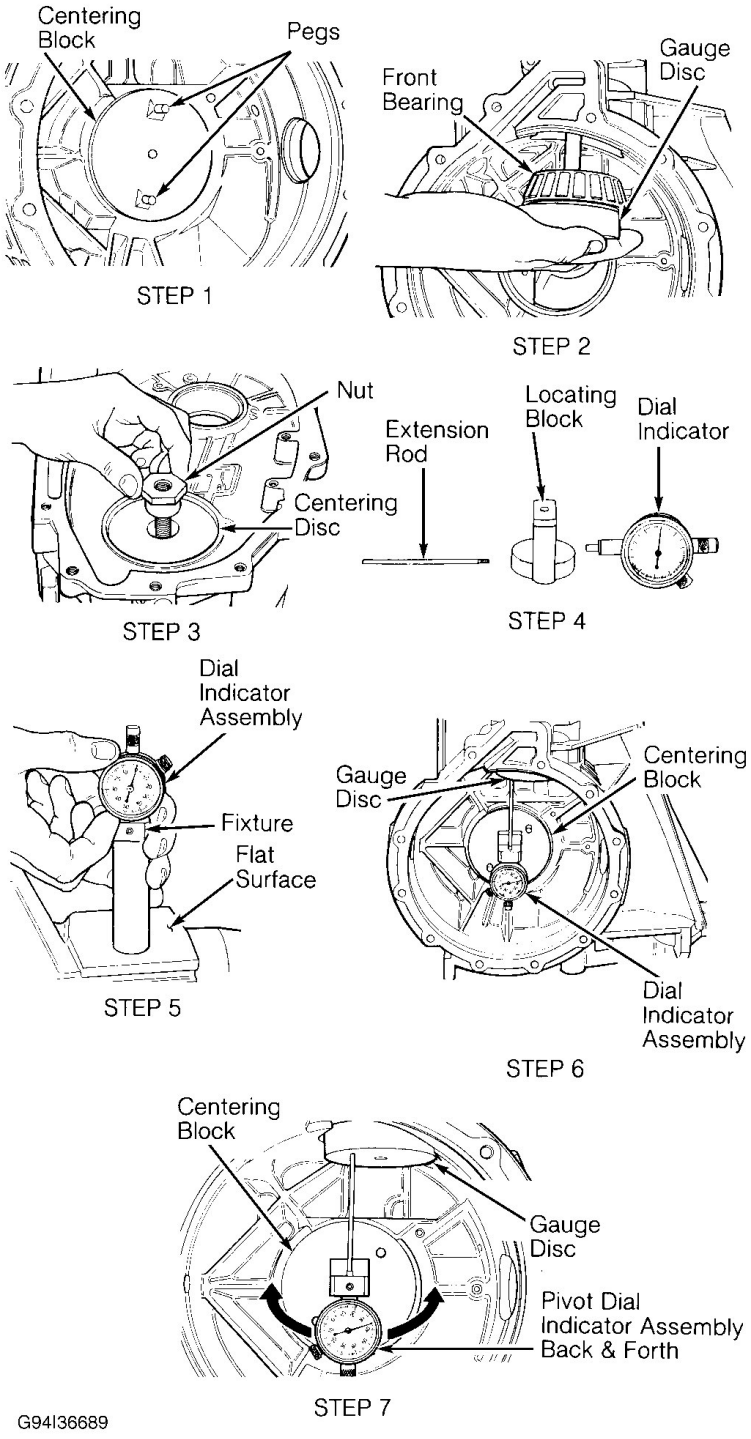


Fig. 52: Checking Transfer Shaft Depth (Step 5)
Courtesy of CHRYSLER LLC

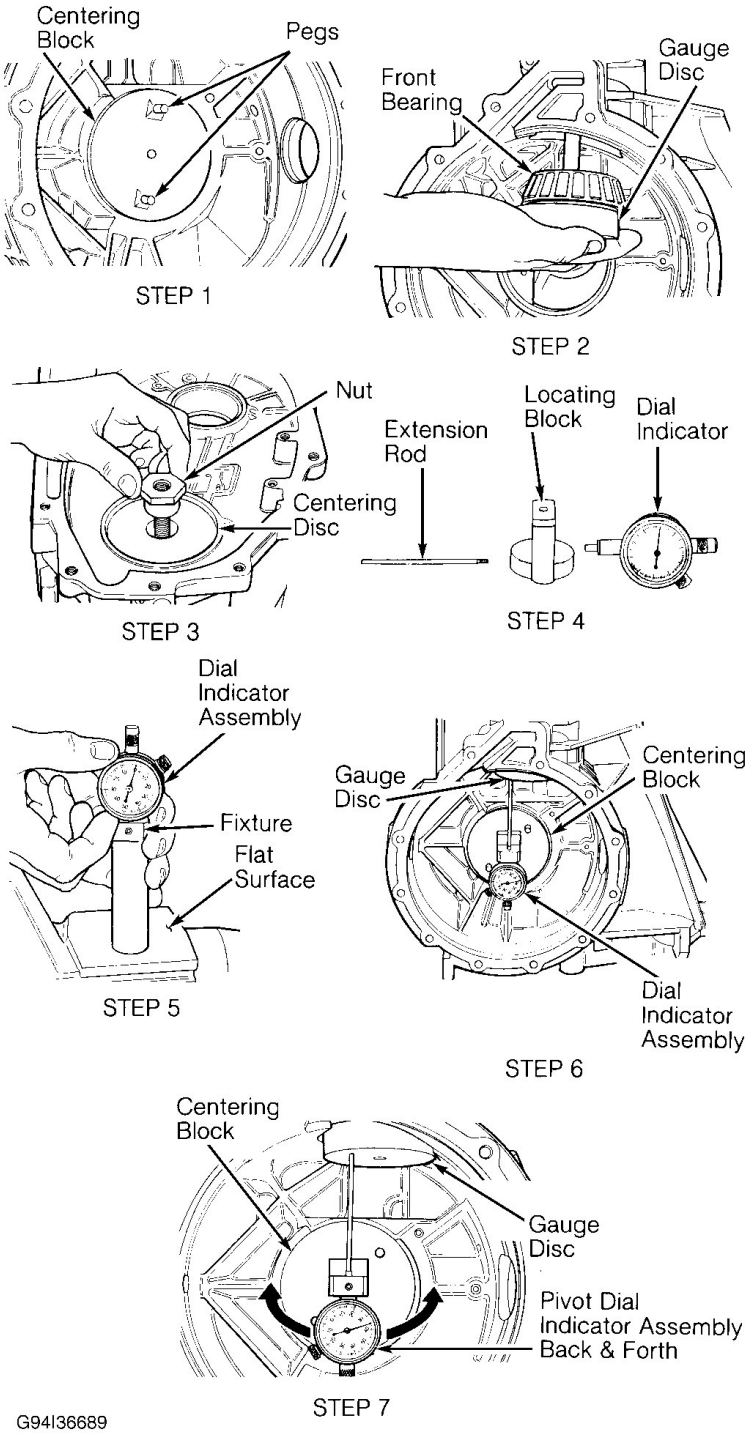


Fig. 53: Checking Transfer Shaft Depth (Step 6)
Courtesy of CHRYSLER LLC

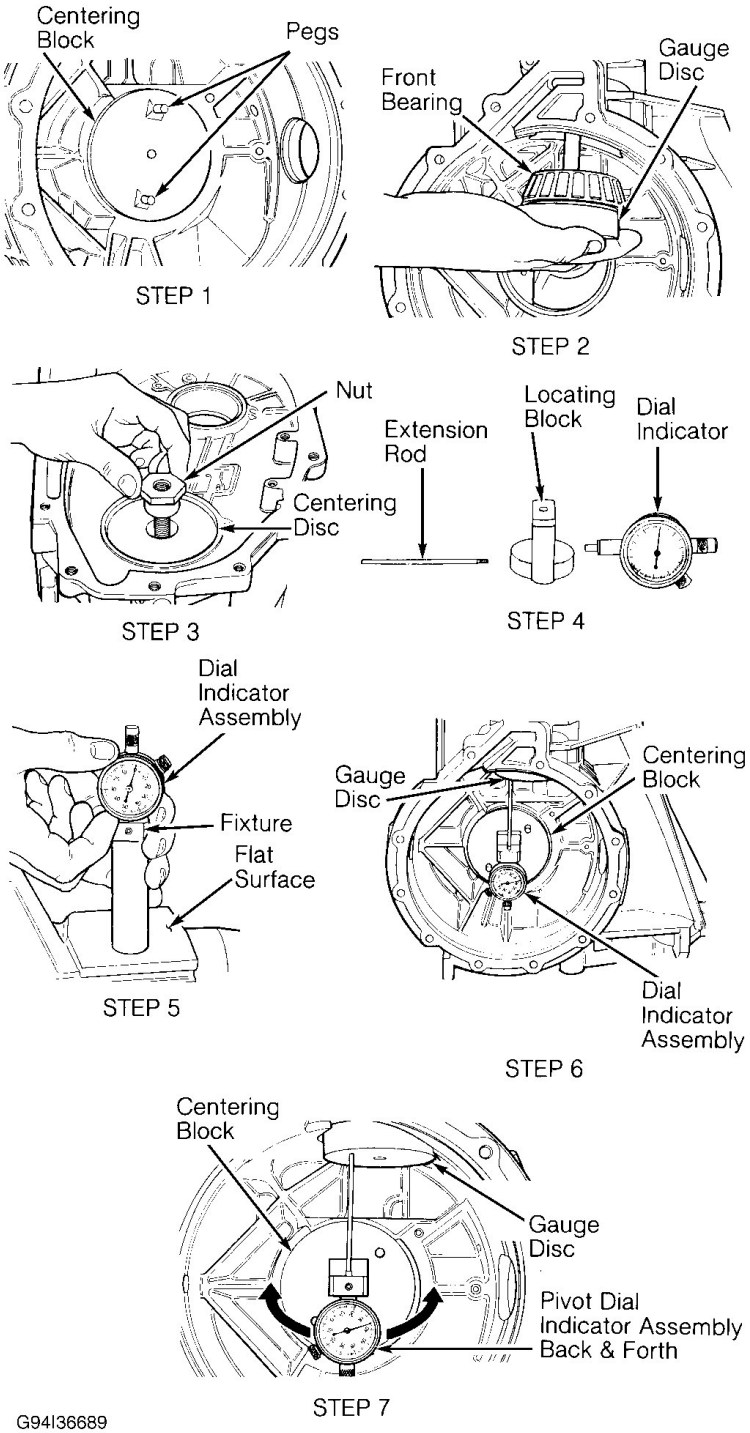


Fig. 54: Checking Transfer Shaft Depth (Step 7)
Courtesy of CHRYSLER LLC

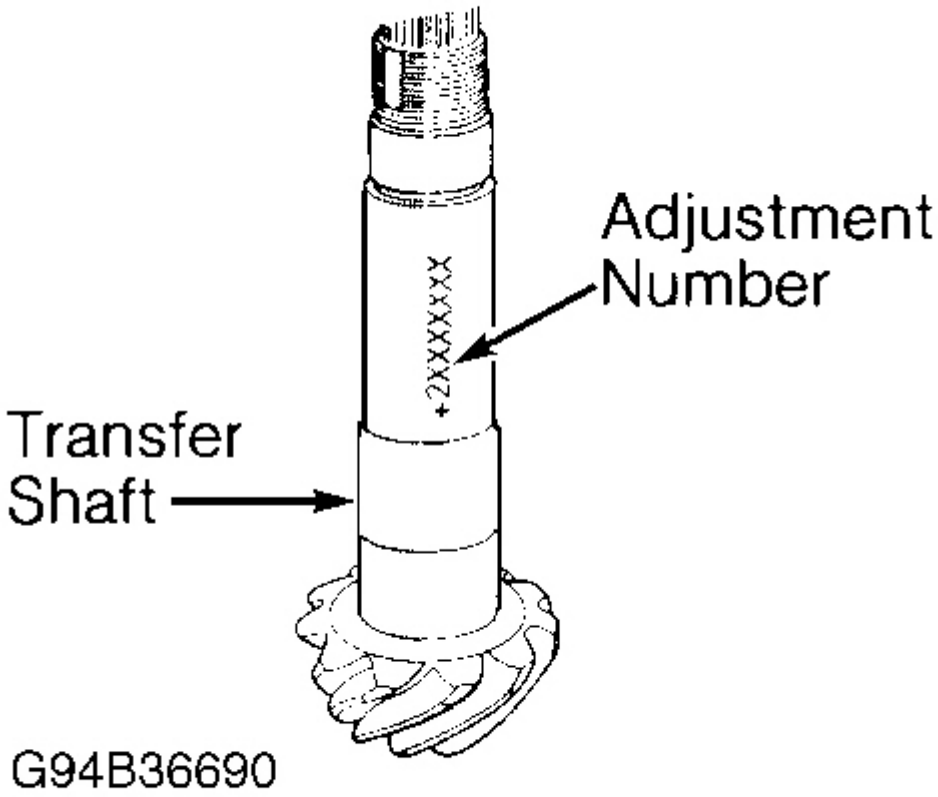


Fig. 55: Identifying Adjustment Number Location On Transfer Shaft
Courtesy of CHRYSLER LLC

TRANSAXLE REASSEMBLY

DIFFERENTIAL ASSEMBLY & TRANSFER SHAFT

CAUTION: Differential bearing rotating torque must be checked before installing transfer shaft when any of the following components are replaced: transaxle case, differential bearings, inner and outer bearing adjusters with bearing races, differential bearing support or differential case. See DIFFERENTIAL BEARING ROTATING TORQUE under TRANSAXLE ADJUSTMENTS.

CAUTION: Transfer shaft depth must be checked before assembly of transaxle if transfer shaft, bearings, bearing races, transaxle case or depth shim are

replaced. Transfer shaft bearings must be replaced if differential bearings are replaced. See TRANSFER SHAFT DEPTH under TRANSAXLE ADJUSTMENTS.

Transfer Shaft

1. Install transfer shaft in transaxle case. Install transaxle case and transfer shaft on Holding Fixture (6595) so transfer shaft is properly supported. See **Fig. 56**. Ensure bottom of holding fixture is even with surface of torque converter housing surface on transaxle case to ensure proper installation of bearing race for rear bearing.
2. Install Seal Protector (6592) over end of transfer shaft. Lubricate seal protector and seal lip of front and rear oil seals for transfer shaft with gear oil.

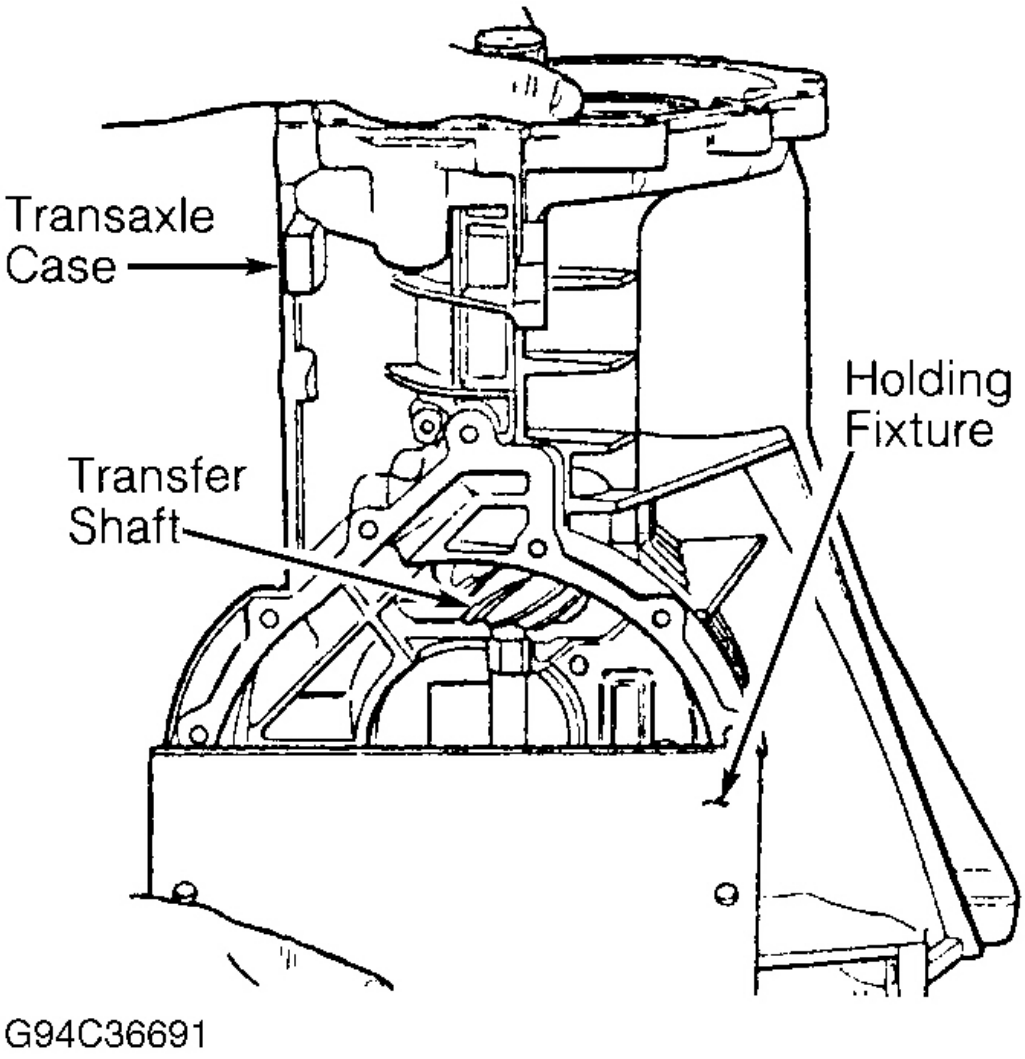


Fig. 56: Transaxle Case & Transfer Shaft On Holding Fixture
Courtesy of CHRYSLER LLC

3. Install front oil seal over seal protector. Ensure serrated side of oil seal is facing upward, toward splined end of transfer shaft. See **Fig. 57** and **Fig. 58**.
4. Using press and Oil Seal Installer (6567-A), install front oil seal. Oil seal installer will position oil seal at specified depth. **DO NOT** use hammer to install oil seal or oil seal may be damaged.
5. Install rear oil seal on seal protector. Ensure spring side of rear oil seal is facing upward, toward splined end of transfer shaft. See **Fig. 57** and **Fig. 58**.
6. Using press and Oil Seal Installer (6567-A), install rear oil seal. Oil seal installer will position oil seal at specified depth. **DO NOT** use hammer to install oil seal or oil seal may be damaged.

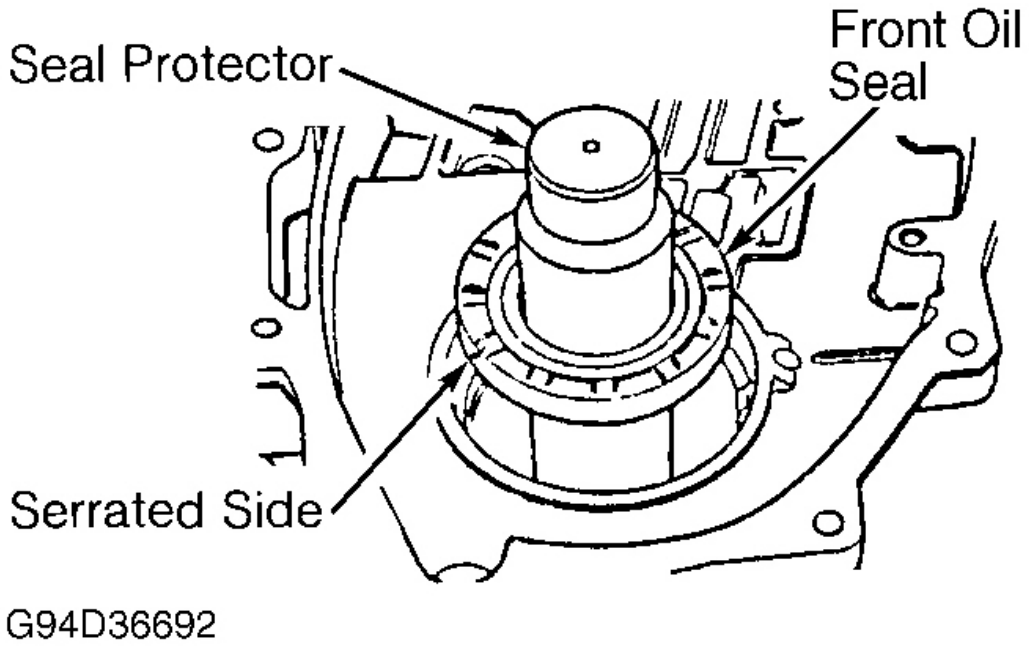


Fig. 57: Installing Front Oil Seal
Courtesy of CHRYSLER LLC

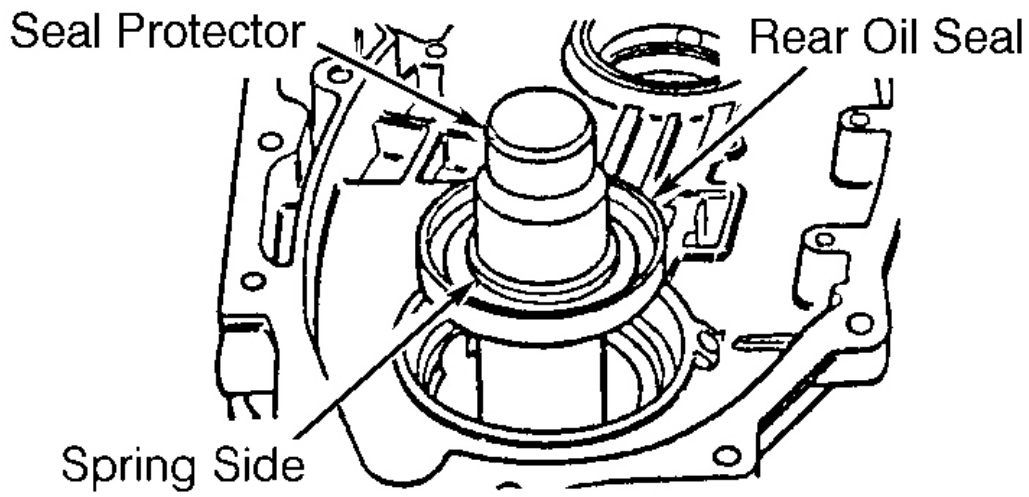


Fig. 58: Installing Rear Oil Seal
Courtesy of CHRYSLER LLC

7. Using press and Bearing Race Installer (6560), install bearing race for rear bearing in transaxle case. Ensure bearing race is fully seated in transaxle case.
8. Using hammer and Baffle Plate Installer (6560), lightly tap NEW baffle plate (if equipped) into transaxle case. See **Fig. 27**.
9. Original transfer shaft shim should be used as a starting point for adjusting transfer shaft bearing preload. If original transfer shaft shim is not available, use transfer shaft shim with thickness of .184-.185" (4.67-4.69 mm). This is the thickest shim available.
10. Install transfer shim on transfer shaft. Press NEW rear bearing on transfer shaft. Remove transaxle case from holding fixture. Install NEW transfer shaft nut on transfer shaft. **DO NOT** reuse old transfer shaft nut.
11. Install Holder (6497) on transfer shaft nut. Using torque wrench and Adapter (6498), tighten transfer shaft nut by rotating torque wrench and transfer shaft counterclockwise. See **Fig. 21**. Tighten transfer shaft retaining nut to specification. Refer to **TORQUE SPECIFICATIONS**.
12. Using INCH-lb. torque wrench, measure transfer shaft rotating torque required to rotate the transfer shaft to determine transfer shaft bearing preload. Transfer shaft rotating torque should be 5-12 INCH lbs. (.6-1.4 N.m.).
13. If transfer shaft rotating torque exceeds specification, install thicker transfer shaft shim. If transfer shaft rotating torque is less than specified, install thinner transfer shaft shim. Transfer shaft rear shims are available in 39 thicknesses of .138-.140" (3.53-3.55 mm) to .184-.185" (4.67-4.69 mm) in approximate .001" (.025 mm) increments.
14. Ensure no end play exists on transfer shaft. Once correct transfer shaft rotating torque is obtained, use

press and Staking Adapter (6589) to stake transfer shaft nut against output shaft.

CAUTION: DO NOT use hammer and staking adapter to stake the nut. If hammer is used, transfer shaft seals or bearings may be damaged.

15. Ensure staked area on transfer shaft nut is fully bottomed in groove area on transfer shaft. Apply sealant on back of vent baffle plate as indicated. See **Fig. 59** and **Fig. 60**.
16. Install vent baffle plate on rear of transaxle case, near transfer shaft. See **Fig. 59** and **Fig. 60**. Install and tighten vent baffle plate bolt to specification. See **TORQUE SPECIFICATIONS**.

NOTE: Transfer drive chain and sprockets cannot be installed at this time, as output shaft must first be installed.

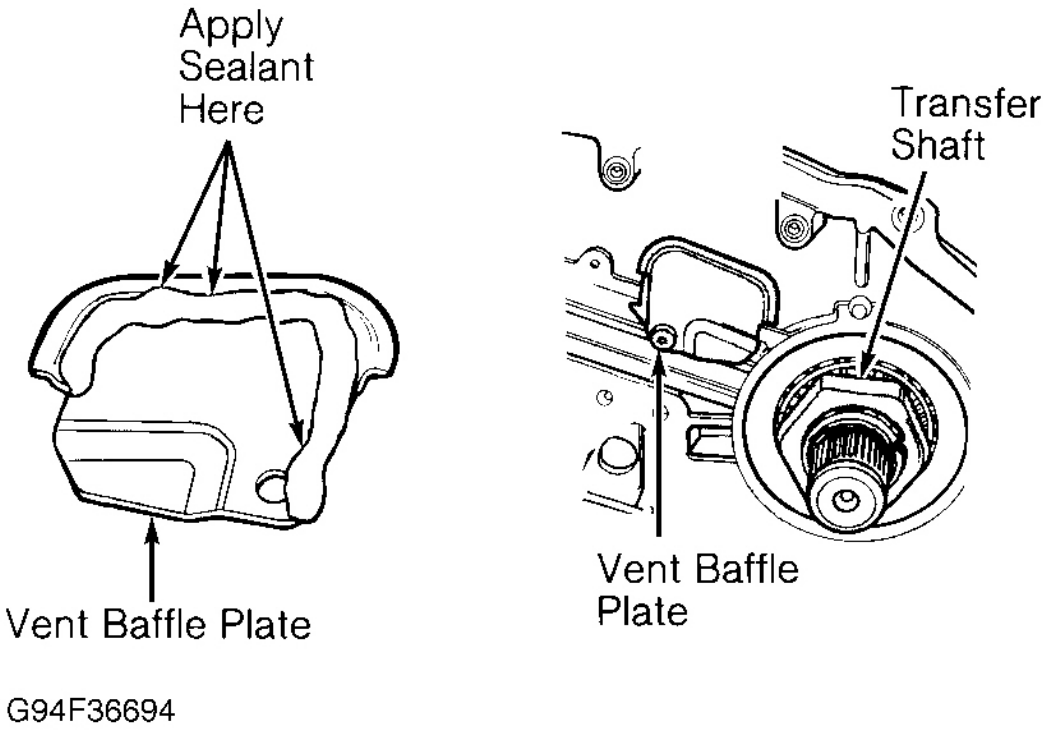


Fig. 59: Installing Vent Baffle Plate
Courtesy of CHRYSLER LLC

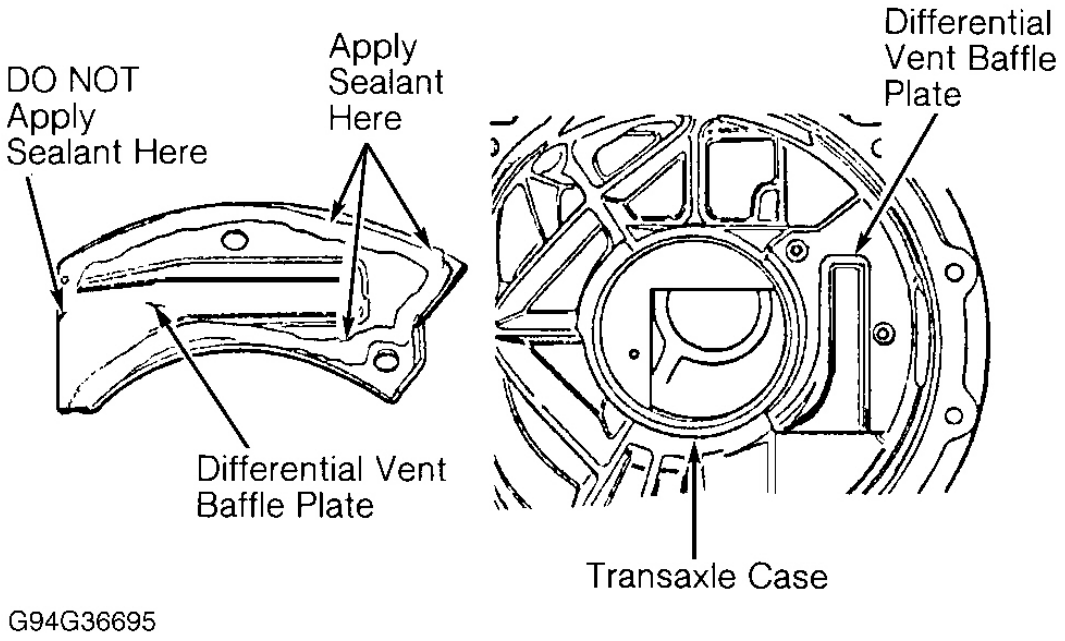


Fig. 60: Installing Differential Vent Baffle Plate
Courtesy of CHRYSLER LLC

NOTE: When installing differential assembly with NEW components and NEW bearings, it will be necessary to use torque reading obtained in step 7) under DIFFERENTIAL BEARING ROTATING TORQUE under TRANSAXLE ADJUSTMENTS. Inner and outer bearing adjusters must be replaced if differential bearings are replaced.

Differential Assembly With NEW Bearings & Components

1. Apply sealant on back of differential vent baffle plate as indicated. See **Fig. 59** and **Fig. 60**.
2. Install differential vent baffle plate on transaxle case. Install and tighten differential vent baffle plate bolts to specification. See **TORQUE SPECIFICATIONS**.

CAUTION: Inner and outer bearing adjusters must be replaced if differential bearings are replaced.

3. Install NEW "O" ring on inner bearing adjuster. Lubricate threads on inner bearing adjuster and lip of oil seal with gear oil.
4. Using Socket (6502-B), screw inner bearing adjuster into transaxle case original until surface of inner bearing adjuster is even with surface of differential side of transaxle case. Inner bearing adjuster must be at same position as when differential bearing rotating torque was checked.
5. Install differential assembly in transaxle case. Ensure ring gear backlash exists between ring gear and

transfer shaft. Apply sealant on differential cover-to-transaxle case contact areas. Install differential cover. Install and tighten differential cover bolts to specification. See **TORQUE SPECIFICATIONS**.

6. Install Seal Protector (6591) on short stub shaft. Lubricate seal protector with gear oil. Install NEW "O" ring on outer bearing adjuster. Lubricate threads on outer bearing adjuster and lip of oil seal with gear oil.
7. Using Socket (6503), screw outer bearing adjuster into differential cover. Using torque wrench and socket, tighten outer bearing adjuster until the torque reading obtained in step 7) under **DIFFERENTIAL BEARING ROTATING TORQUE** under TRANSAXLE ADJUSTMENTS is obtained.
8. Rotate differential assembly back and forth several times to ensure bearings are seated. Retighten outer bearing adjuster until proper torque reading is obtained. Repeat this procedure until correct torque reading is maintained on outer bearing adjuster.

NOTE: When checking ring gear backlash it will be necessary to use the torque reading obtained in step 7) described in DIFFERENTIAL BEARING ROTATING TORQUE under TRANSAXLE ADJUSTMENTS using NEW bearings and races.

9. Remove inspection plug from inspection hole on top of transaxle case. Install dial indicator with stem of dial indicator against one tooth on ring gear. See **Fig. 61**.
10. Hold transfer shaft. Rotate differential assembly back and forth. Note ring gear backlash on dial indicator. Ring gear backlash should be .006-.009" (.15-.23 mm).
11. If excessive ring gear backlash exists, using Socket (6503), loosen outer bearing adjuster. Using Socket (6502-B), slightly rotate inner bearing adjuster so it moves away from ring gear.
12. Using a torque wrench and socket, tighten the outer bearing adjuster until torque reading obtained in step 7) under **DIFFERENTIAL BEARING ROTATING TORQUE** under TRANSAXLE ADJUSTMENTS is obtained. Recheck ring gear backlash.
13. If ring gear backlash is less than specified, using Socket (6503), slightly loosen outer bearing adjuster. Slightly rotate inner bearing adjuster so it moves toward the ring gear.
14. Using torque wrench and socket, tighten outer bearing adjuster until torque reading obtained in step 7) as described under **DIFFERENTIAL BEARING ROTATING TORQUE** under TRANSAXLE ADJUSTMENTS is obtained. Recheck ring gear backlash.
15. Once correct ring gear backlash is obtained, check ring gear backlash at 4 different areas on ring gear at 90 degrees apart. Ring gear backlash should be consistent and within specification.
16. Install bearing adjuster lock bracket on inner bearing adjuster. Install and tighten bearing adjuster lock bracket bolt to specification. See **TORQUE SPECIFICATIONS**.
17. Install lock bracket on outer bearing adjuster. Install and tighten lock bracket bolt to specification. Use wooden block to tap NEW inspection plug into inspection hole on top of transaxle case.

NOTE: When installing differential assembly with all original components, inner and outer bearing adjusters must initially be placed at original location as during disassembly to proper bearing preload.

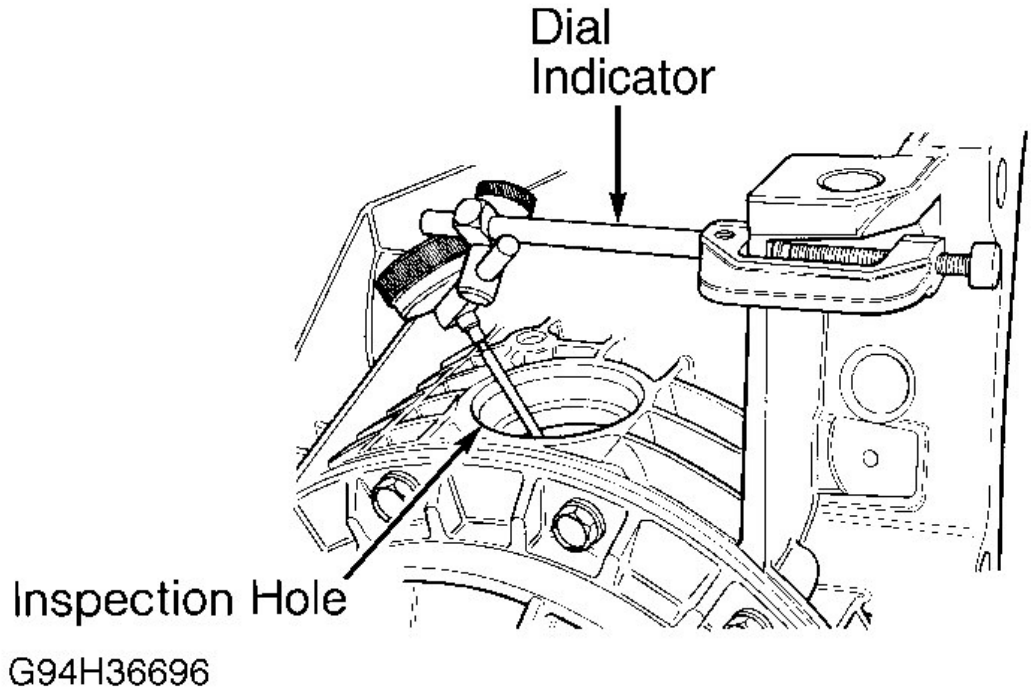


Fig. 61: Checking Ring Gear Backlash
Courtesy of CHRYSLER LLC

Differential Assembly With Original Bearings & Components

1. Apply sealant on back of differential vent baffle plate as indicated. See **Fig. 59** and **Fig. 60**.
2. Install differential vent baffle plate on transaxle case. Install and tighten differential vent baffle plate bolts to specification. See **TORQUE SPECIFICATIONS**.
3. Install NEW "O" ring on inner bearing adjuster. Lubricate threads on inner bearing adjuster and lip of oil seal with gear oil. Using Socket (6502-B), screw inner bearing adjuster into transaxle case original number of revolutions and align reference marks that were made during disassembly.
4. Install differential assembly in transaxle case. Ensure ring gear backlash exists between ring gear and transfer shaft. Apply sealant on differential cover-to-transaxle case contact areas. Install differential cover. Install and tighten differential cover bolts to specification.
5. Install Seal Protector (6591) on short stub shaft. Lubricate seal protector with gear oil. Install NEW "O" ring on outer bearing adjuster. Lubricate threads on outer bearing adjuster and lip of oil seal with gear oil.
6. Using Socket (6503), screw outer bearing adjuster into differential cover original number of revolutions and align reference marks that were made during disassembly.
7. To check ring gear backlash, remove inspection plug from inspection hole on top of transaxle. Install dial indicator with stem of dial indicator against one tooth on ring gear. See **Fig. 61**.
8. Hold transfer shaft. Rotate differential assembly back and forth. Note ring gear backlash reading on dial

indicator. Ring gear backlash should be .006-.009" (.15-.23 mm).

9. If excessive ring gear backlash exists, using Socket (6502-B), slightly rotate inner bearing adjuster so it moves away from ring gear. Note distance that inner bearing adjuster is moved, as outer bearing adjuster must be tightened the same amount to maintain proper preload on differential bearings.
10. Using Socket (6503), tighten outer bearing adjuster the same amount that inner bearing adjuster was moved. Recheck ring gear backlash.
11. If ring gear backlash is less than specified, using Socket (6503), slightly loosen outer bearing adjuster so it moves away from ring gear. Note distance that outer bearing adjuster is loosened, as inner bearing adjuster must be moved toward the ring gear the same amount to maintain proper preload on differential bearings.
12. Using Socket (6502-B), rotate inner bearing adjuster toward the ring gear the same amount that outer bearing adjuster was loosened. Recheck ring gear backlash.
13. Once correct ring gear backlash is obtained, check ring gear backlash at 4 different areas on ring gear at 90 degrees apart. Ring gear backlash should be consistent and within specification.
14. Install bearing adjuster lock bracket on inner bearing adjuster. Install and tighten bearing adjuster lock bracket bolt to specification. See **TORQUE SPECIFICATIONS**.
15. Install lock bracket on outer bearing adjuster. Install and tighten lock bracket bolt to specification. Use wooden block to tap NEW inspection plug into inspection hole on top of transaxle case.

VALVE BODY & INTERNAL COMPONENTS

1. Using NEW gasket, install low-reverse clutch piston retainer in transaxle case. See **Fig. 19**. Ensure the 3 holes on gasket are aligned with 3 holes in transaxle case.
2. Install and tighten low-reverse clutch piston retainer Torx screws to specification. See **TORQUE SPECIFICATIONS**. Install low-reverse clutch piston inside transaxle case.
3. Ensure components and spring on parking sprag assembly are properly installed. Perform step 4. See **Fig. 23**. Install parking sprag assembly in transaxle case. Ensure guide bracket and sleeve on parking sprag assembly contacts rear of transaxle case.
4. Install pivot pin and anchor shaft. Install and tighten parking sprag bolt to specification.
5. Install clutch piston return spring for low-reverse clutch in transaxle case. Using spring compressor, compress clutch piston return spring for low-reverse clutch. See **Fig. 22**. Install snap ring so ends of snap ring are properly positioned.

CAUTION: Output shaft bearing preload must be checked and/or adjusted if any of the following components are replaced: rear planetary carrier and output shaft, output shaft bearings or transaxle case. See OUTPUT SHAFT BEARING PRELOAD under TRANSAXLE ADJUSTMENTS.

6. Install rear bearing for output shaft and Plate (6618-A) on rear of transaxle case. See **Fig. 21**. Slightly tighten retaining bolts on plate until bolt heads are below surface of the plate. **DO NOT** fully tighten bolts.
7. Place transaxle case in press so plate is supported. Ensure clearance exists so output shaft can extend through the plate when installed.
8. Apply small amount of petroleum jelly to output shaft shim. Install output shaft shim on output shaft, just

above the bearing. Install output shaft in transaxle case. Press output shaft into rear bearing and transaxle case.

9. Install NEW output shaft nut on output shaft. **DO NOT** reuse old output shaft nut. Install Holder (6497) on output shaft nut. Using torque wrench and Adapter (6498), tighten output shaft nut by torque wrench and output shaft counterclockwise. See **Fig. 21**. Tighten output shaft nut to specification. See **TORQUE SPECIFICATIONS**.
10. Ensure no end play exists on output shaft. Use press and Staking Adapter (6589) to stake output shaft nut against output shaft. Ensure staked area on output shaft nut is fully bottomed in groove area on output shaft. Remove transaxle case from press. Remove plate from rear of transaxle case.
11. Install transfer drive chain and sprockets. Refer to **TRANSFER DRIVE CHAIN & SPROCKETS** under TRANSAXLE REASSEMBLY. Install 5 low-reverse clutch plates and 5 clutch discs, starting with a clutch plate and alternating with a clutch disc. See **Fig. 19**. Ensure components are in correct sequence.
12. Install flat snap ring and one low-reverse clutch plate. Ensure ends of snap ring are positioned in proper area. See **Fig. 62**.

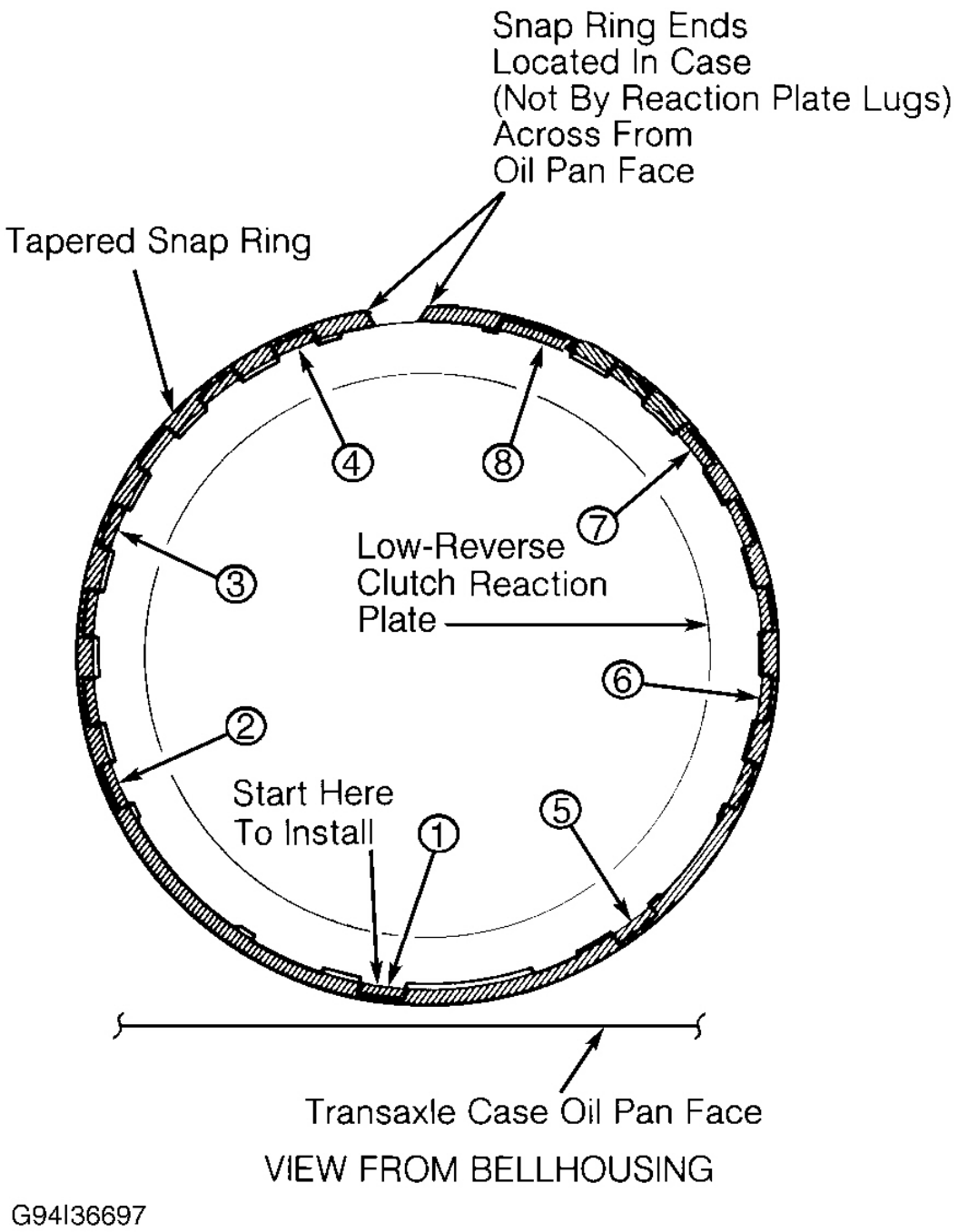


Fig. 62: Installing Snap Rings
Courtesy of CHRYSLER LLC

13. Install low-reverse clutch reaction plate. See **Fig. 19**. Ensure flat side of low-reverse clutch reaction plate is facing upward (toward oil pump opening). Install tapered snap ring above lower clutch reaction plate.

Ensure ends of tapered snap ring are in proper area. See **Fig. 62**.

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

14. To check low-reverse clutch clearance, assemble a dial indicator and Dial Indicator Tip (6268) on the transaxle case. See **Fig. 63** and **Fig. 64**. Press low-reverse clutch pack downward and zero dial indicator. Using hook, pull one low-reverse clutch disc upward and note low-reverse clutch clearance on dial indicator. Remove dial indicator.
15. Low-reverse clutch clearance should be .042-.065" (1.06-1.65 mm). If clearance is not within specification, different thickness low-reverse clutch reaction plate can be installed. Low-reverse clutch reaction plates are available in the following thickness:
    - .211" (5.36 mm)
    - .221" (5.61 mm)
    - .232" (5.89 mm)
    - .242" (6.15 mm)
    - .252" (6.40 mm)
    - .262" (6.65 mm)
    - .273" (6.93 mm)

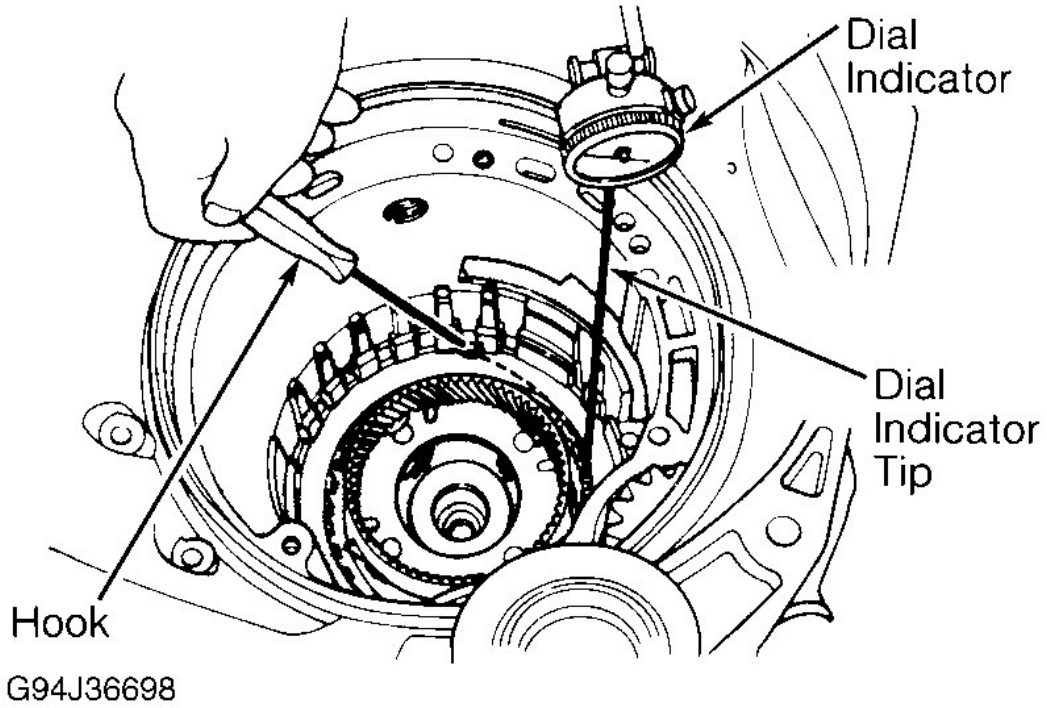


Fig. 63: Checking Low-Reverse Clutch Clearance
Courtesy of CHRYSLER LLC

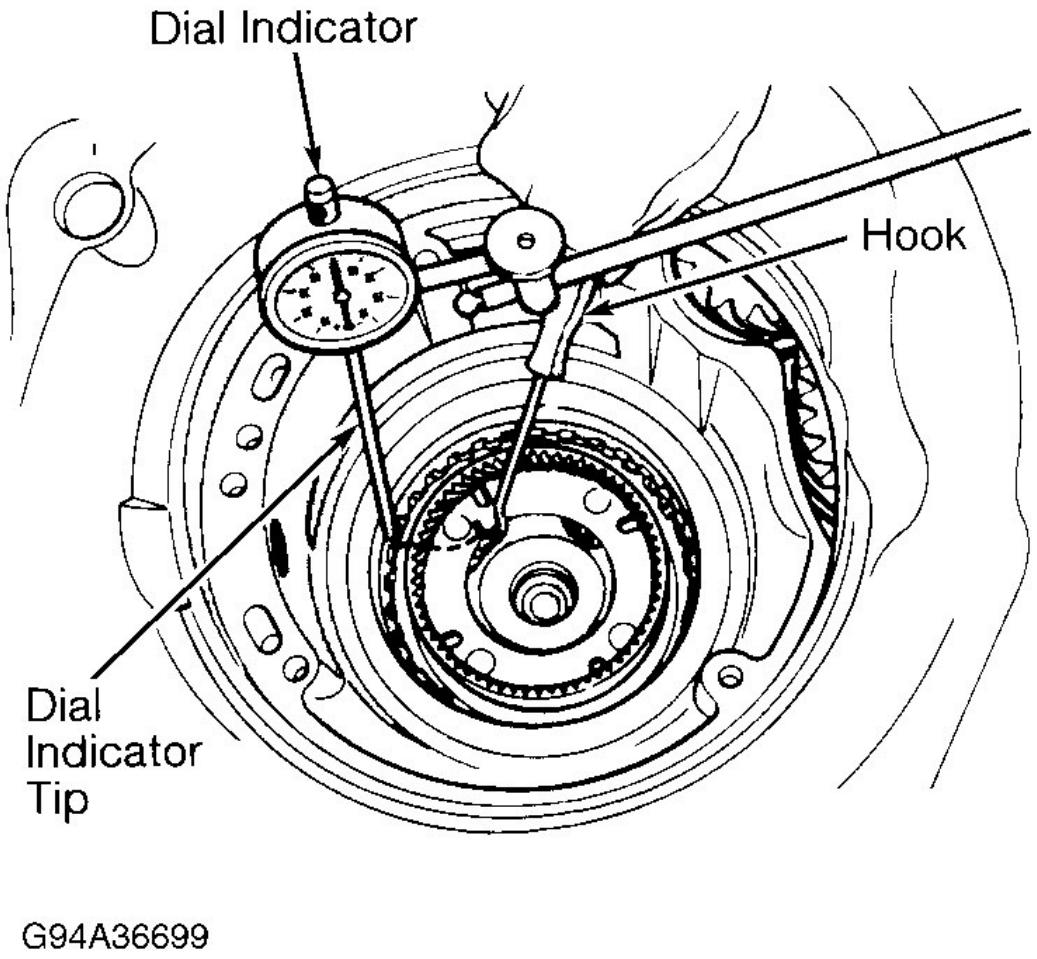


Fig. 64: Checking 2-4 Clutch Clearance
Courtesy of CHRYSLER LLC

16. Install 2-4 clutch discs and clutch plates, starting with a clutch disc and alternating with a clutch plate. See **Fig. 19**. There should be 4 clutch discs and plates. Ensure components are in correct sequence.
17. Install clutch piston return spring, 2-4 clutch piston and 2-4 clutch piston retainer. See **Fig. 19**. Using 2-4 Clutch Compressor (5058), compress 2-4 clutch piston retainer. See **Fig. 20**. Install snap ring. Ensure ends of snap ring are positioned in proper area. See **Fig. 62**. Release 2-4 clutch compressor.

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

18. To check 2-4 clutch clearance, assemble dial indicator and Dial Indicator Tip (6268) on transaxle case. See **Fig. 63** and **Fig. 64**. 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.
19. 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. Remove dial indicator.
20. Apply small amount of petroleum jelly on thrust bearing and install on shaft side of sun gear. Ensure thrust bearing is flat against sun gear.
21. Install sun gear in rear planetary. Install thrust bearing on front of sun gear. Install rear annulus gear. See **Fig. 19**. It may be necessary to rotate rear annulus gear during installation. Install 2-4 clutch hub. Install thrust washer on front of 2-4 clutch hub.

CAUTION: Correct thickness No. 4 thrust plate located on rear (shaft end) of overdrive clutch hub must be determined to maintain proper input shaft end play. See Fig. 29.

22. Apply petroleum jelly on overdrive clutch hub in 3 places. Install a .037-.039" (.93-1.00 mm) thick No. 4 thrust plate on overdrive clutch hub. See **Fig. 29**.
23. Install input clutch assembly. See **Fig. 18**. 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 hub will be fully visible. See **Fig. 65**. If input clutch assembly is not fully seated, remove and check for improper installation.

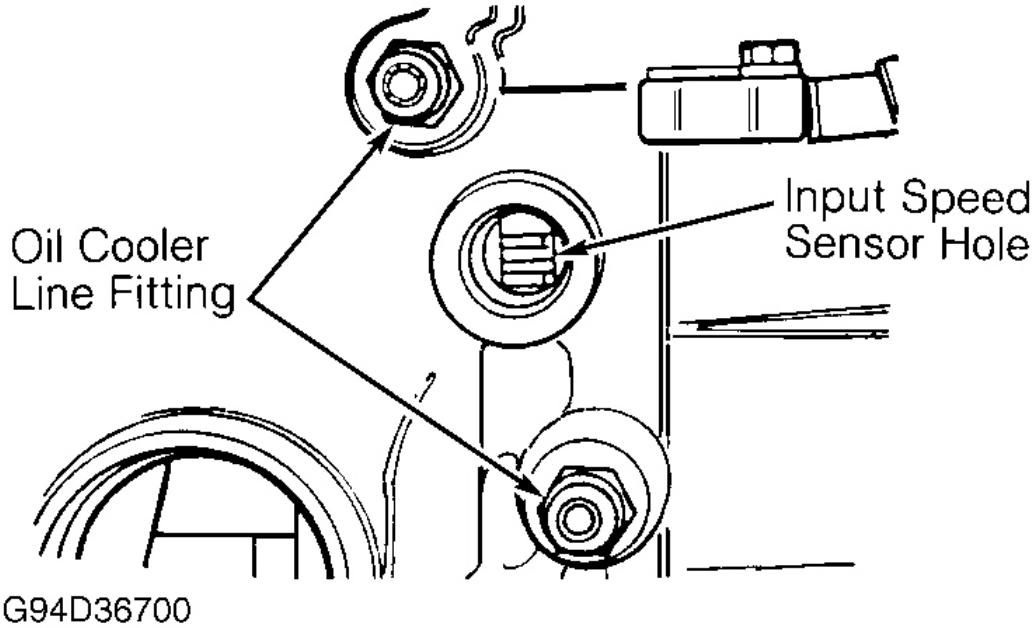


Fig. 65: Checking Input Clutch Assembly Installation
Courtesy of CHRYSLER LLC

24. 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**.
25. 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 plate thickness to obtain correct input shaft end play.
26. For example, if input shaft end play is .055" (1.40 mm) with No. 4 thrust plate installed, select a No. 4 thrust plate with thickness of .071-.074" (1.80-1.88 mm). Install selected No. 4 thrust plate. This should change input shaft end play to .020" (.51 mm). The No. 4 thrust plate is available in thickness ranging from .037-.039" (.93-1.00 mm) to .132-.135" (3.35-3.42 mm).
27. 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 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.

28. Install gasket and oil pump. Tighten oil pump-to-transaxle case bolts to specification. See **TORQUE SPECIFICATIONS**. Ensure input shaft rotates smoothly.
29. Using NEW seal rings, install overdrive and underdrive accumulator pistons and springs in transaxle case. See **Fig. 16**. Using NEW seal rings, install low-reverse accumulator piston and springs.
30. Install cover and snap ring above low-reverse accumulator piston. Install valve body. See **VALVE BODY R & I** under REMOVAL & INSTALLATION.

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

TRANSFER DRIVE CHAIN & SPROCKETS

1. Sprocket height must be checked to ensure output shaft sprocket and transfer shaft sprockets are at the same height. Sprocket height must be within .015" (.38 mm) of each other.
2. Original output sprocket shim should be used as a starting point for checking output shaft sprocket height. If original output sprocket shim is not available, use output sprocket shim with thickness of .162-.170" (4.11-4.31 mm). This is the thickest shim available.
3. Install output sprocket shim on output shaft. Install output shaft sprocket on output shaft. Output shaft sprocket contains 32 teeth and transfer shaft sprocket contains 33 teeth.
4. Install transfer shaft sprocket on transfer shaft. Place straightedge on top of the highest sprocket so straightedge is positioned above the other sprocket. See **Fig. 66**. Using feeler gauge, measure height difference between the sprockets.

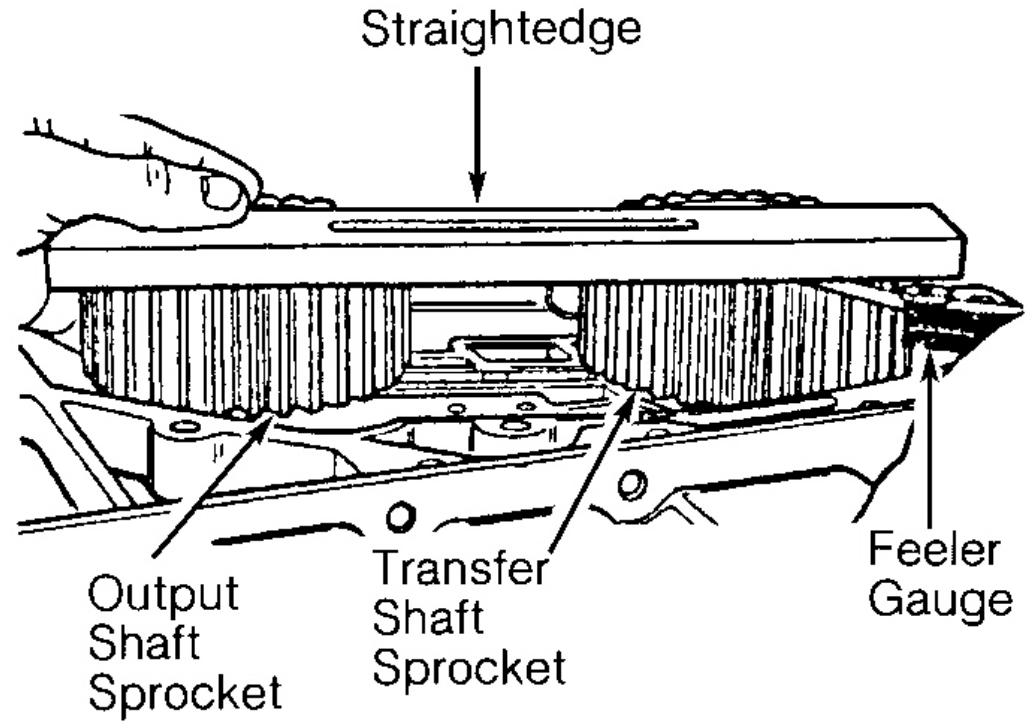


Fig. 66: Checking Sprocket Height
Courtesy of CHRYSLER LLC

5. If output shaft sprocket is lower than transfer shaft sprocket, add this amount to thickness of output sprocket shim. If output shaft sprocket is higher than transfer shaft sprocket, subtract this amount from thickness of output sprocket shim. Output sprocket shims are available in 4 thicknesses of .104-.112" (2.64-2.84 mm) to .162-.170" (4.11-4.31 mm) in approximate .020" (.05 mm) increments.
6. Remove straightedge, output shaft sprocket and output sprocket shim. Install replacement output sprocket shim. Recheck sprocket height. Once correct sprocket height is obtained, remove output shaft and transfer shaft sprockets.
7. Install transfer drive chain on output shaft and transfer shaft sprockets with Blue link facing outward. See **Fig. 25**.
8. Install Chain Spreader (6550) between output shaft and transfer shaft sprockets. See **Fig. 25**. Rotate nuts on chain spreader to apply pressure against sprockets and drive chain.
9. Install transfer drive chain along with output shaft and transfer shaft sprockets on output shaft and transfer shaft. Ensure enough pressure exists on transfer drive chain, as not to damage splines on shafts when installing sprockets.
10. Remove chain spreader. Install wave washers and snap rings to retain sprockets on shafts. Remove chain

spreader. Install original chain snubber. Tighten bolts to specification. Refer to the **TORQUE SPECIFICATIONS** table.

CAUTION: Chain snubber clearance between chain snubber and transfer drive chain must be checked. Ensure clearance is checked.

11. To check chain snubber clearance, insert screwdriver in hole below transfer drive chain. Pry transfer drive chain upward to release slack in transfer drive chain. See **Fig. 67**.
12. Using feeler gauge, measure clearance between chain snubber and top of transfer drive chain. Clearance should be 0-.030" (0-.76 mm). If clearance is not within specification, different chain snubber must be installed.
13. Chain snubber are available in 3 different colors: Black, Green and Tan. Black colored chain snubber is the thinnest and provides the most clearance. Green colored chain snubber is the thickest and provides the least amount of clearance. Tan colored chain snubber is the standard chain snubber.
14. Install proper chain snubber to obtain correct clearance. Tighten bolts to specification. See **TORQUE SPECIFICATIONS**. Install chain oiler (if removed). See **Fig. 24**. Apply sealant to chain cover. Install chain cover. Install and tighten chain cover bolts to specification.

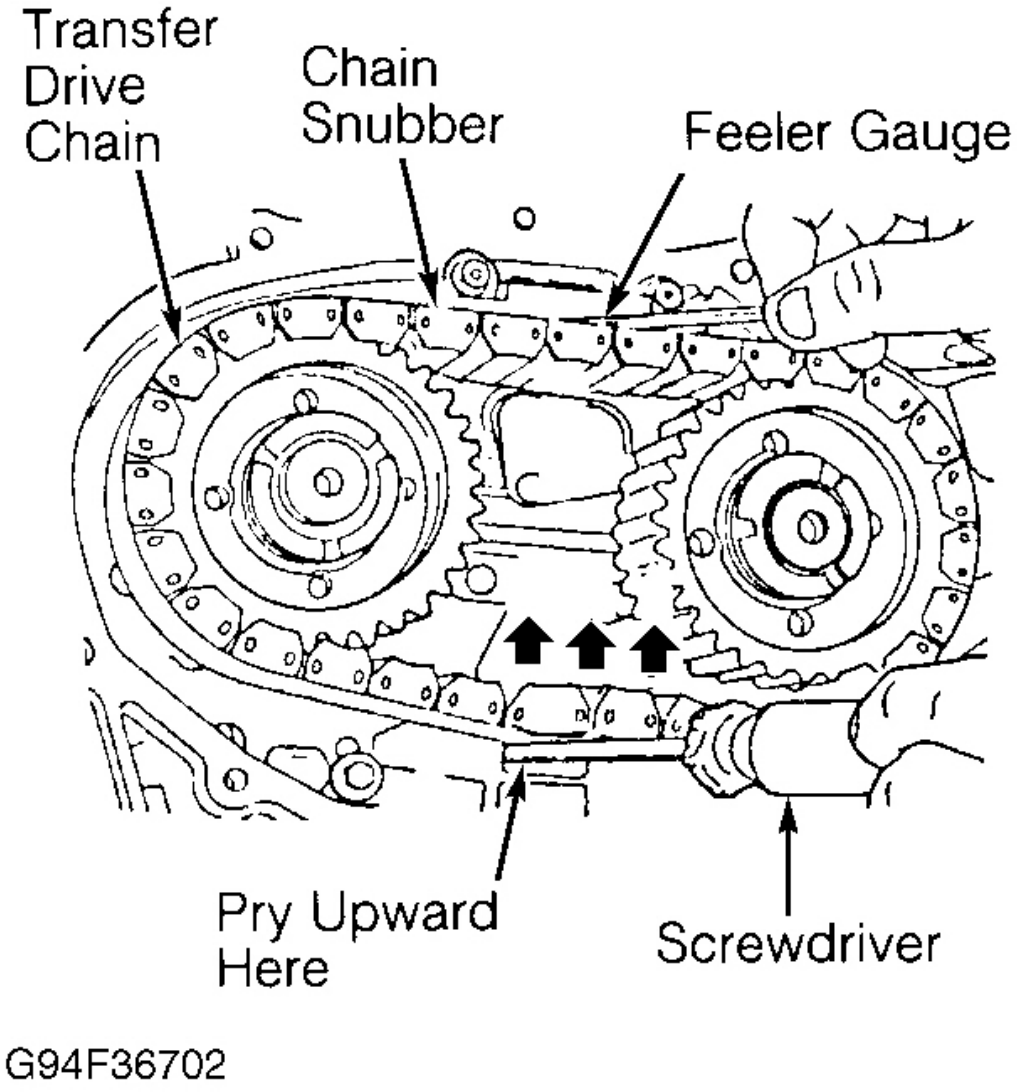


Fig. 67: Checking Chain Snubber Clearance
Courtesy of CHRYSLER LLC

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Chain Cover Bolt	21 (29)
Differential Cover Bolt	21 (29)
Input Speed Sensor	20 (27)

Oil Pan Bolt	14 (19)
Oil Pump-To-Transaxle Case Bolt	22 (30)
Output Shaft Nut	200 (271)
Output Speed Sensor	20 (27)
Reaction Shaft Support-To-Oil Pump Housing Bolt	21 (29)
Ring Gear Bolt (1)	70 (95)
Transfer Shaft Nut	200 (271)
	INCH Lbs. (N.m)
Bearing Adjuster Lock Bracket Bolt	40 (4.5)
Chain Snubber Bolt	40 (4.5)
Differential Vent Baffle Plate Bolt	40 (4.5)
Lock Bracket Bolt	40 (4.5)
Low Reverse Clutch Piston Retainer Torx Screw	40 (4.5)
Manual Valve Lever-To-Valve Body Bolt	40 (4.5)
Oil Filter Retainer Bolt	40 (4.5)
Parking Sprag Bolt	40 (4.5)
Pressure Tap Plug	45 (5.1)
Solenoid Assembly-To-Transfer Plate Bolt	50 (5.6)
Valve Body Plate Support Bolt	40 (4.5)
Valve Body-To-Transfer Plate Bolt	40 (4.5)
Valve Body/Transfer Plate-To-Transaxle Case Bolt	105 (11.9)
Vent Baffle Plate Bolt	40 (4.5)
(1) Always use NEW bolts.	

TRANSAXLE SPECIFICATIONS

TRANSAXLE SPECIFICATIONS

Application	Specification
Clutch Clearances	
Low-Reverse Clutch	.042-.065" (1.06-1.65 mm)
Overdrive Clutch	.038-.089" (.96-2.26 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	
(NEW Bearings ONLY)	19-23 INCH lbs. (2.1-2.6 N.m)
Input Shaft End Play	.005-.025" (.13-.64 mm)
Oil Pump Clearances	
Inner & Outer Gear Side Clearance	.0008-.0018 (.020-.046)
Outer Gear-To-Pocket Clearance	.0018-.0056 (.046-.142)
Output Shaft Rotating Torque For Bearing Preload	1-8 INCH lbs. (.1-.9 N.m)

Ring Gear Backlash	.006-.009" (.15-.23 mm)
Transfer Shaft Rotating Torque For Bearing Preload	5-12 INCH lbs. (.6-1.4 N.m)

