



Technical Service Information

CHRYSLER A604 COAST DOWNSHIFT CLUNK

COMPLAINT: Before or after overhaul, vehicle exhibits a harsh coast downshift or a trailer hitching effect when slowing to a stop.

CAUSE: The cause may be:

A. Hydraulic/Mechanical: (See Qualification Section)

1. Leakage at the pump cover sealing rings and or the bushing in the "Input shaft hub assembly," allowing a pressure loss, and allowing the possibility of a harsh re-engagement of the Underdrive clutch when downshifting from Overdrive back to 3rd or 2nd gear.
2. Incorrect usage of the Underdrive Overdrive retainer plate and or "Tapered" snap ring.
3. Incorrect usage of the Underdrive "Outer" piston seal, and or leakage of the inner piston seal.
4. Leakage at the Low / Reverse piston seals, orifice screen, or Low / Reverse piston retainer and gasket, due to warpage at the attaching bolt holes or loose retainer attaching bolts.
5. Leakage at the Low Reverse clutch accumulator rings and / or the O-ring on the accumulator cap, or the cap installed backwards.
6. Underdrive and Overdrive accumulator pistons installed backwards.
7. Excessive Low Reverse clutch clearance.
8. A "Dented" valve body separator plate where it meets the Low Reverse feed pipe in the rear of the case, or incorrectly torqued valve body bolts.
9. A leak at the large check ball staked into the rear of the case, connecting the Low Reverse feed passage to the Low Reverse accumulator, causing a loss of Low / Reverse clutch oil.

B. Electrical: (See Qualification Section)

1. Intermittent current "drop's" from the Turbine or Output speed sensors confusing the transmission controller and causing a downshift command to be timed incorrectly.
2. Throttle position sensor faulty, out of range, or mis-adjusted.
3. Solenoid body malfunction's.
4. Faulty transmission controller.

NOTE: ALL HYDRAULIC CONCERNS MUST BE CHECKED AND REPAIRED FIRST BEFORE ELECTRICAL CONCERNS CAN BE ADDRESSED!



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QUALIFICATION:

1. Scan the transaxle's controller and record trouble codes if any. Clear the memory and leave the scanner attached for the complete road test. If codes 56 "Turbine sensor error" or 57 "Output sensor error" were stored in it's memory fix these codes first. If "Pressure switch" and "Gear ratio error" codes were stored in its memory then continue. **NOTE: "Pressure switch" and "Gear ratio error" codes may be an electrical fault or a hydraulic fault setting a "FALSE" code.**
2. Attach a 0-300 lb. pressure gage to the Low Reverse and the Underdrive pressure ports as shown in Figure 1. Record the pressures at an idle seen in Park, Reverse, Neutral and Drive while the vehicle is standing still.
3. Road test the vehicle with the pressure gage's and scanner still attached. **NOTE: For safety concerns, this road test should be performed with two people.** "Observe" the gage on the Underdrive port, when a 4-3 downshift occurs the pressure gage should rise to between 20-30psi. for a split second and then rise quickly up to 75-95 PSI., this is "Normal" operation. When a downshift to 1st occurs, the gage on the Low Reverse port should rise to between 20-30psi. for a split second, and then rise quickly up to 115-145 PSI. This should all happen right **before** the vehicle is at a complete stop, and is "Normal" operation. If the pressure, on the Underdrive port, builds to 20-30 PSI., stays there, and then jumps up from 20-30 PSI. to 115-145 PSI. when the 4-3 downshift clunk is felt, the problem is most likely hydraulic / mechanical (See Correction A for a list of most common possibilities). If the pressure, on the Low Reverse port, builds to 20-30 PSI., stays there, and then jumps up from 20-30 PSI. to 115-145 PSI. **after** the vehicle is at a complete stop, the problem is most likely hydraulic / mechanical (See Correction A). If pressure stays at "0" but rises up to 20-30 PSI., and then to 115-145 PSI., **long after** a complete stop, the problem is most likely electrical. (See Correction B for a list of most common possibilities).

CORRECTION: A. Hydraulic / Mechanical:

1. Use "Solid Teflon Sealing rings" on the pump cover. Ensure that they are "While or Tan with Red and/or Green Speckles." If your overhaul kit does not furnish these sealing rings for you, use the "Center support sealing rings" from a "4L80-E." **NOTE :** The solid teflon sealing rings can be easily installed and sized with the "Input shaft hub assembly." Inspect the bushing journal at the end of the pump cover for wear or scoring (see Figure 2). Inspect the bushing in the "Input shaft hub assembly" and check for a snug fit on the pump cover. (See Figure 2)
2. Refer to Figure 3 to identify and select the correct Underdrive/Overdrive retainer plate and tapered snap ring.
3. Refer to Figure 3 to identify and select the correct Underdrive "Outer" piston seal. Refer to Figure 2 to Identify the placement of the Underdrive "Inner" piston seal.
4. Inspect the Low Reverse piston and ensure that the updated "D"-rings are used. Inspect the rear of the piston to ensure that the "Orifice Screen" is in place and is not damaged (See Figure 4). Replace piston with part # 4431672 if the transmission was produced prior to 1993. Replace piston retainer with part # 4431648 and replace the gasket under the piston retainer (See Figure 5). Coat the attaching bolts with "Loctite"® and torque them to 40 inch lbs. **NOTE: Be careful not to over-torque as the threads in the case can be easily "Stripped"**



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CORRECTION: 5. Inspect the Low Reverse accumulator scarf cut sealing rings for damage and proper fit. Install the accumulator springs, piston, cap and snap ring as shown in Figure 6
6. Check and adjust Low Reverse clutch clearance to .035"-.045."

NOTE: A 2-4 steel plate is .030" thicker than a Low Reverse steel plate and can be used as a Low Reverse steel plate substitute to take up excessive clutch clearance if necessary.

1. Inspect the valve body separator plate where it seats around the Low Reverse feed pipe, shown in Figure 7, for "Dent's" that may have been caused by a mis-alignment of the valve body to the case. Torque valve body to case attaching bolts to 105 inch lbs.

8. Refer to Figure 7 to locate the "Large Steel Ball" staked into the rear of the case. Ensure "NO" leakage around the ball when air checking the Low Reverse clutch.

9. Refer to Figure 8 for the correct assembly of the Underdrive and Overdrive accumulator pistons and springs.

B. Electrical

1. Install a scanner to the diagnostic connector and observe the "Turbine" and "Output" speed sensor readings when slowing to a stop and ensure that both readings drop to "0" when the vehicle is completely stopped. If you have a "Snap-on" scanner and have "Scan Graphics" or you have a "Scope" you can more accurately determine whether the speed sensors are working correctly or not, by observing their output signal for erratic patterns. If you do not have the luxury of having these options then "Arm" or "Record" a movie of your road test and pay close attention to the steady drop of the speed sensor rpm's., when slowing to a stop. An erratic rpm. drop or a slow rpm. drop may indicate a speed sensor problem.

NOTE: The scanner is the last "Priority" on the "BUS" system so it may appear to be sluggish at times . This means that the downshift may have already ocured but the scanner did not show that it had happened yet. Do not be confused by this. Before condemning a speed sensor inspect it's environment. A poor connection or a wire harness or spark plug wire laying on or wrapped around speed sensor wires can "Induce" current into the wire harness and can cause some erratic readings and cause many upshift or downshift problems. If the Turbine or Output Speed Sensors have erratic or no output and are found faulty, the part number for the Turbine Speed Sensor is 4412878. The part number for the Output Speed Sensor is 4412879. While the scanner is connected run the vehicle on the lift up to third gear, (If the car is not equipped with ABS.), Turbine and Output Speed Sensor rpm's. should read the same. "Wiggle" the speed sensor connectors and watch the scanner to see if the readings fluctuate. If they do this could indicate the need for replacement harness connectors, Chrysler part No. 4419478 . (See Figure 9)

2. Inspect "Throttle Position Sensor" voltage either with a hand held scanner or a volt meter and ensure that the "Base" or "Closed" throttle voltage reading is between .50-.78V, and the "Full" throttle voltage reading is between 3.8-4.0V. (See Figure 10) If the base throttle stays above 1.0 volt or if excessive or intermittent voltage or signal changes occur, harsher downshifts may result.



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CORRECTION: 3. To test the Solenoid pack install a scanner to the diagnostic connector and select "ATM" or "Actuator" test's. Connect a pressure guage to the corresponding pressure port (see Figure 1) and observe the operation of the solenoid and the reaction on the pressure guage. **NOTE: the vehicle must have the drive wheels in the air and the selector in Overdrive and the Parking Brake engaged before starting this test. Consult your scanner reference manual.** If a solenoid does not respond consistently, this may indicate that the solenoid pack needs replacement. It has been noted that not all TCM's will activate the ATM or Actuator test. If you can not initiate the test, refer to Figures 11 and 12 to test the solenoid pack.

4. After all Hydraulic / Mechanical concerns have been addressed the Transmission Control Module (TCM) may need "Flashed", (Reprogramed), or replaced. The main requirements for a "Flashable" TCM. are:

1. Must **have** "Cooling" Fin's." (See Figure 13)

2. Must **not have** one of the following part numbers: 4686174, 4686175, 4686208, 4686209, 4686223, 4686224, 4686490 or 4686491.

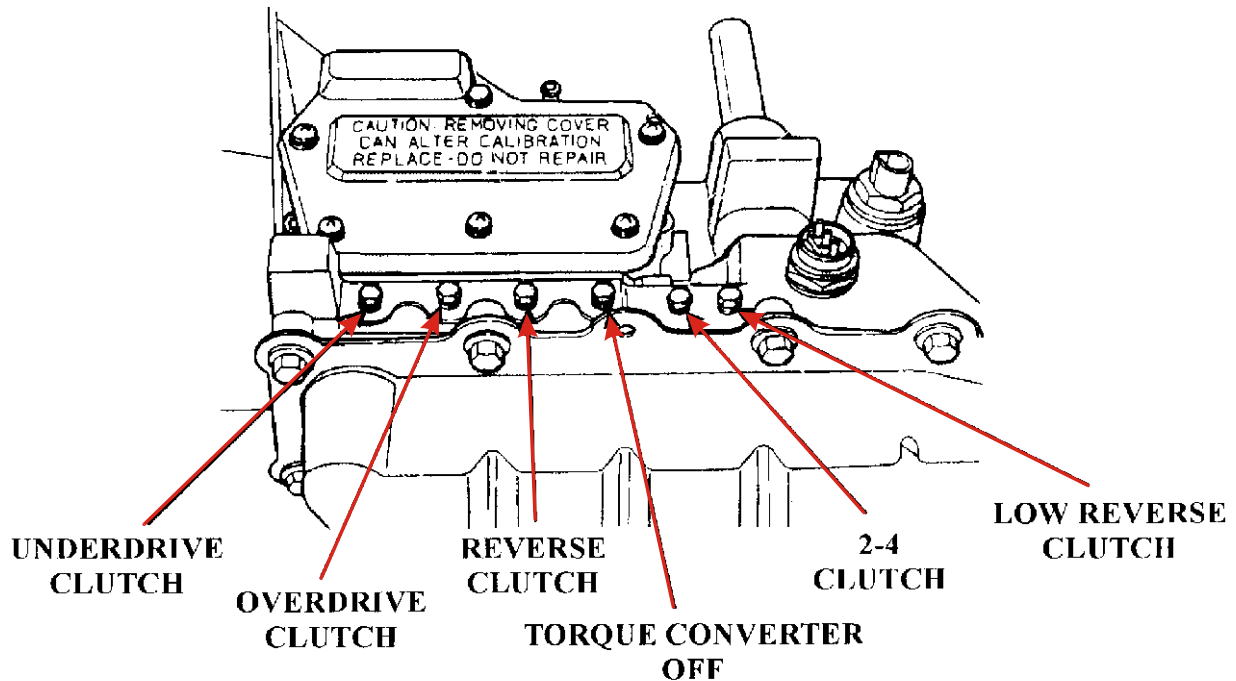
NOTE: The TCM can only be "Flashed" with the use of a "DRB III" or a Chrysler dealer.

If the TCM *does not* have "Cooling Fins," or *has* one of the part numbers listed above, contact your Chrysler dealer for a replacement TCM. Chrysler Technical Service Bulletin 18-24-95 refer's to "Flashing" procedures and a full list of updated TCM part numbers and important information concerning "Pin 49" on Spirit and Acclaim models.

SERVICE INFORMATION:

LOW RE VERSE PISTON.....	443 1672
LOW RE VERSE PISTON RETAINER.....	443 1648
LOW REVERSE "D-RING" KIT (INNER AND OUTER).....	4778883
TURBINE SPEED SENSOR.....	4412878
OUTPUT SPEED SENSOR.....	4412879
SPEED SENSOR REPAIR HARNESS.....	4419478

PRESSURE PORT LOCATIONS AND SPECIFICATIONS



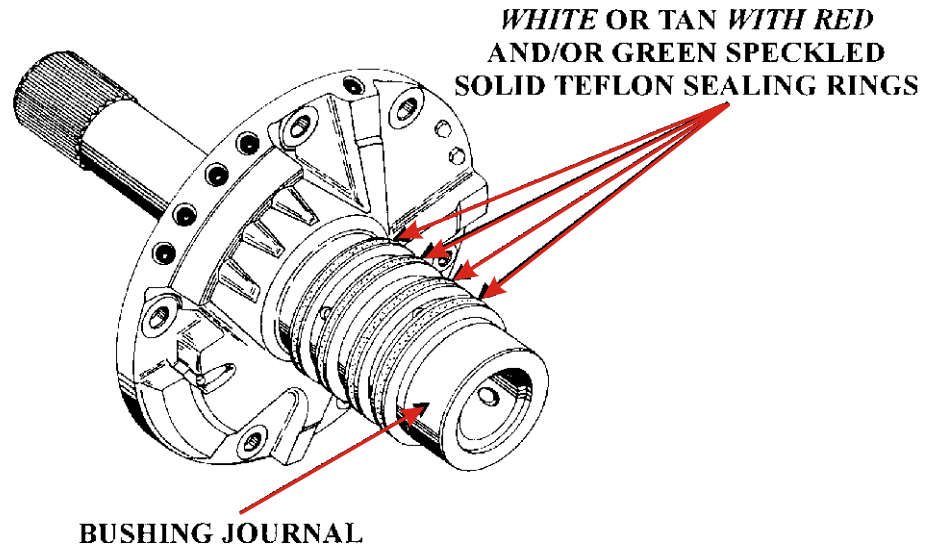
GEAR SELECTOR POSITION	ACTUAL GEAR	UNDER- DRIVE CLUTCH	OVER- DRIVE CLUTCH	REVERSE CLUTCH	LOCKUP OFF	2-4 CLUTCH	LOW REVERSE CLUTCH
PARK ° 0-MPH	PARK	0-2	0-5	0-2	60-110	0-2	115-145
REVERSE ° 0-MPH	REVERSE	0-2	0-7	165-235	50-100	0-2	165-235
NEUTRAL ° 0-MPH	NEUTRAL	0-2	0-5	0-2	60-110	0-2	115-145
L # 20-MPH	FIRST	110-145	0-5	0-2	60-110	0-2	115-145
D # 30-MPH	SECOND	110-145	0-5	0-2	60-110	115-145	0-2
D # 45-MPH	DIRECT	75-95	75-95	0-2	60-90	0-2	0-2
OD # 30-MPH	OVERDRIVE	0-2	75-95	0-2	60-90	75-95	0-2
OD # 50-MPH	OVERDRIVE LOCKUP	0-2	75-95	0-2	0-5	75-95	0-2

° ENGINE SPEED AT 1500 RPM

CAUTION: BOTH FRONT WHEELS MUST BE TURNING AT SAME SPEED

Figure 1

PUMP COVER



INPUT DRUM

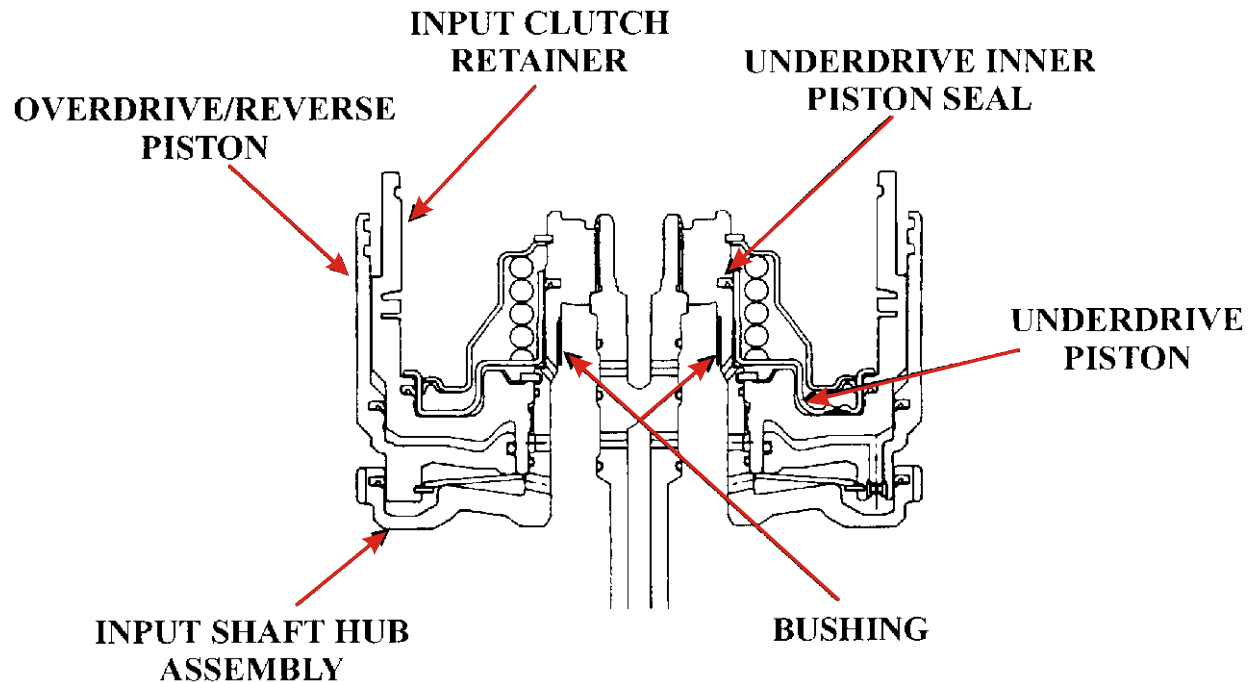
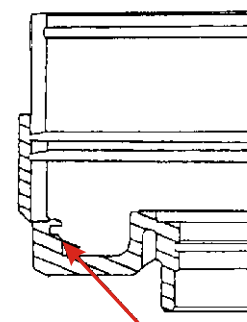
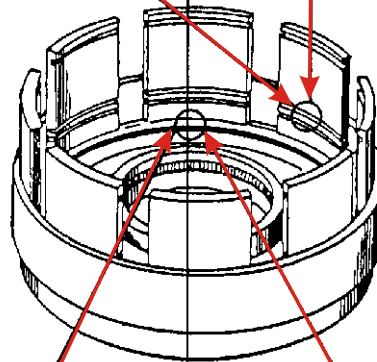
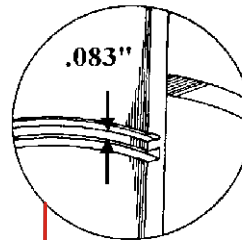
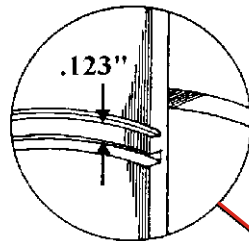


Figure2

INPUT CLUTCH RETAINER

1989

1990 & UP

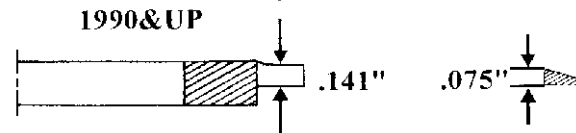
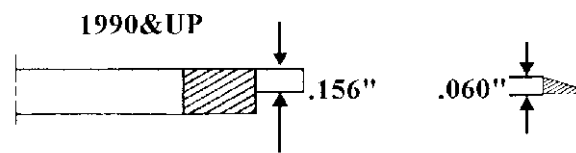
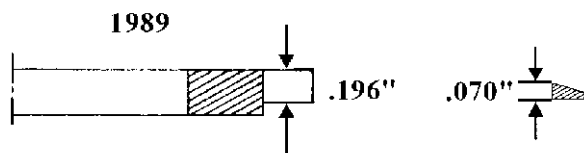


UNDERDRIVE OUTER PISTON SEALS

LIP SEAL GROOVE
.040" SHALLOWER TO
ACCOMMODATE
NEW OUTER LIP
SEAL

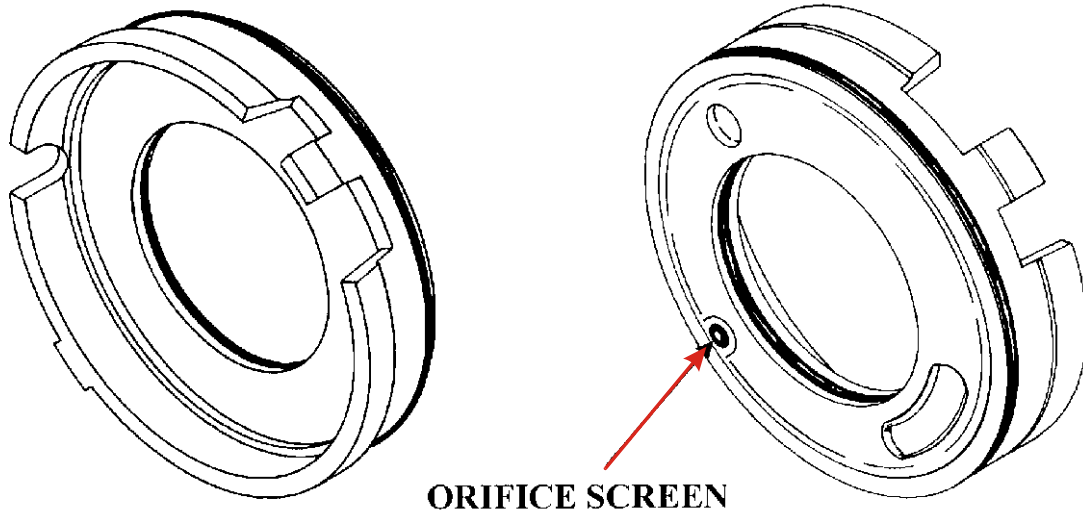


UNDERDRIVE / OVERDRIVE REACTION PLATE
LUG THICKNESS TO TAPERED SNAP RING USAGE

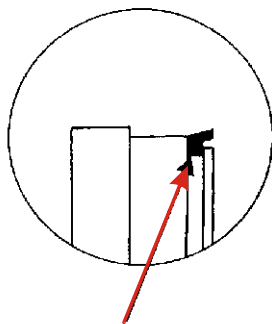
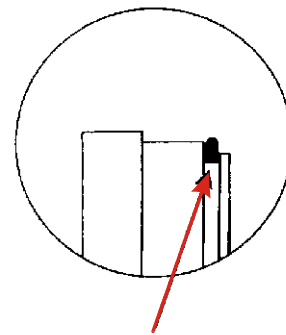


FOR FURTHER INFORMATION OF UNDERDRIVE / OVERDRIVE REACTION PLATE
SELECTIVES SEE ATSG BULLETIN NO. 93-07

Figure 3

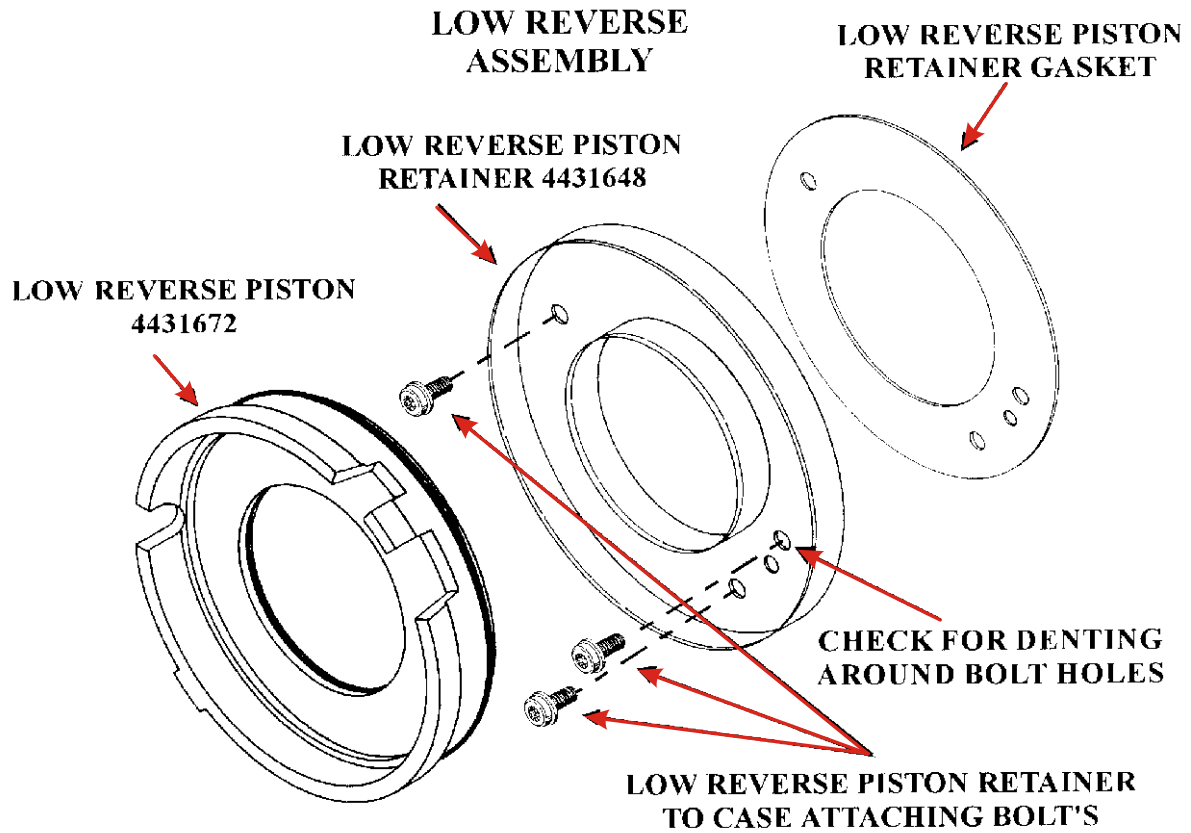
LOW REVERSE PISTON**PART NO. 4431672-93& UP**

NOTE: USE PART NUMBER 4431672 1993 & UP LOW REVERSE PISTON. IT IS .002" SMALLER IN DIAMETER ABOVE THE OUTER PISTON SEAL. THIS WAS DONE TO PREVENT THERMAL BINDING IN THE PISTON RETAINER.

**LOW REVERSE INNER AND
OUTER PISTON SEAL CHANGE****PREVIOUS DESIGN "LIP SEAL"****NEW DESIGN "D-RING"**

**NEW DESIGN "D-RING" KIT PART NO. 4778883
(Contains both Inner and Outer seals)**

Figure 4



NOTE: APPLY "LOCTITE"® TO BOLT THREADS AND TORQUE LOW REVERSE PISTON RETAINER TO CASE ATTACHING BOLTS TO 40 INCH.LBS. WARNING: CASE THREADS ARE EASILY STRIPPED DO NOT OVERTORQUE!

Figure 5

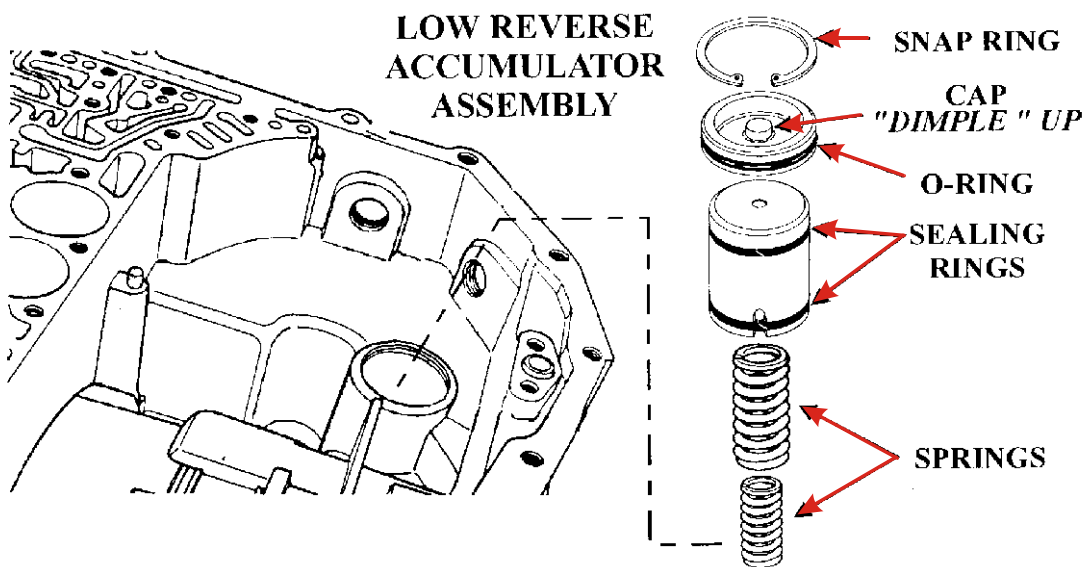
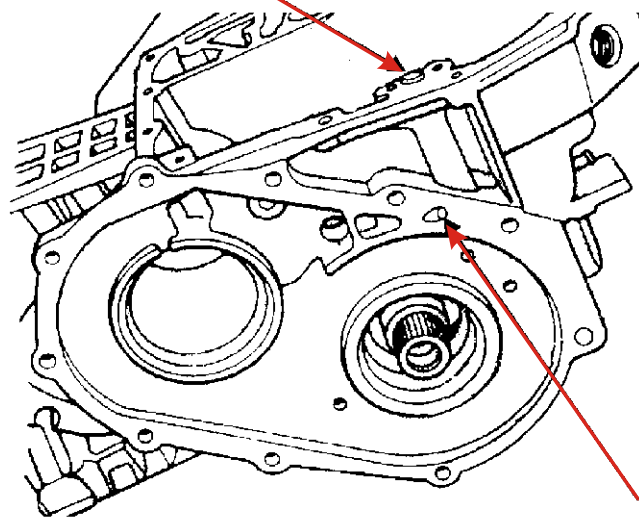


Figure 6

LOW REVERSE "AIR CHECK"

APPLY AIR PRESSURE IN
LOW REVERSE FEED PIPE



"NO" LEAKAGE ALLOWED FROM
STEEL BALL STAKED IN CASE

NOTE: THE LOW REVERSE ACCUMULATOR, ALL CLUTCH AND STEEL PLATES MUST BE ASSEMBLED BEFORE AIR CHECKING. THE ORIFICE SCREEN IN THE LOW REVERSE PISTON WILL LEAK A SMALL AMOUNT OF AIR, THIS IS NORMAL

Figure 7

UNDERDRIVE AND OVERDRIVE ACCUMULATOR ASSEMBLY'S

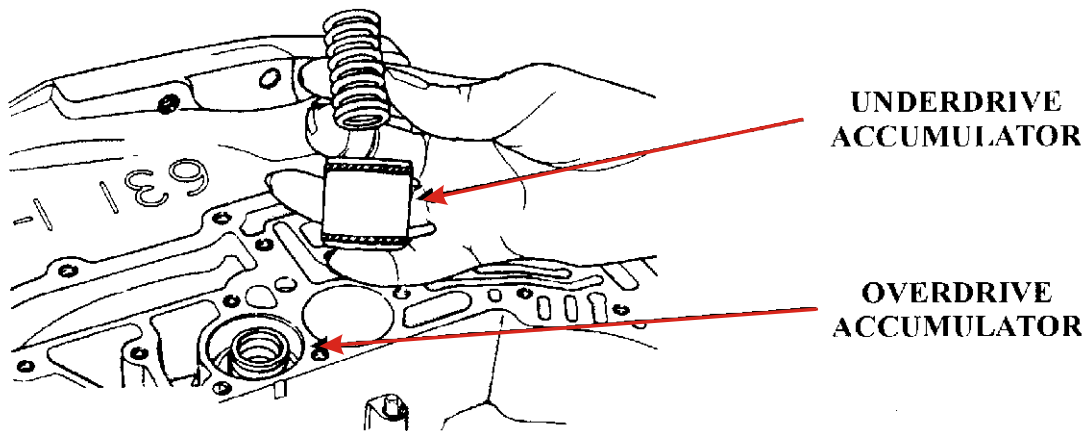


Figure 8

SPEED SENSOR LOCATION

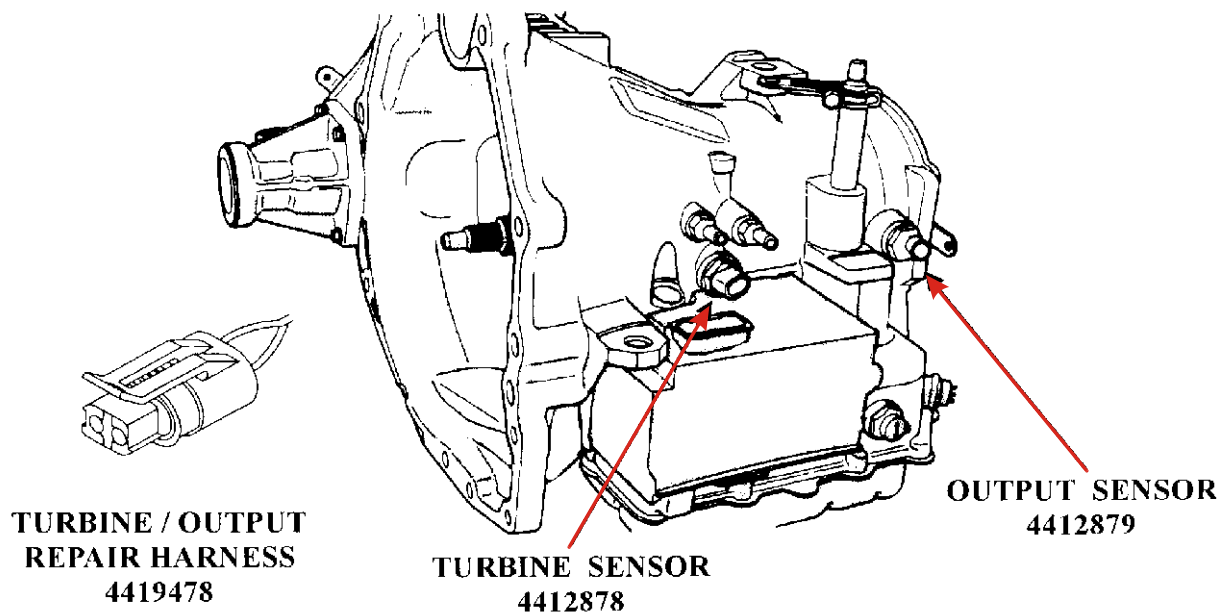


Figure 9

THROTTLE POSITION SENSOR LOCATION AND CHECK

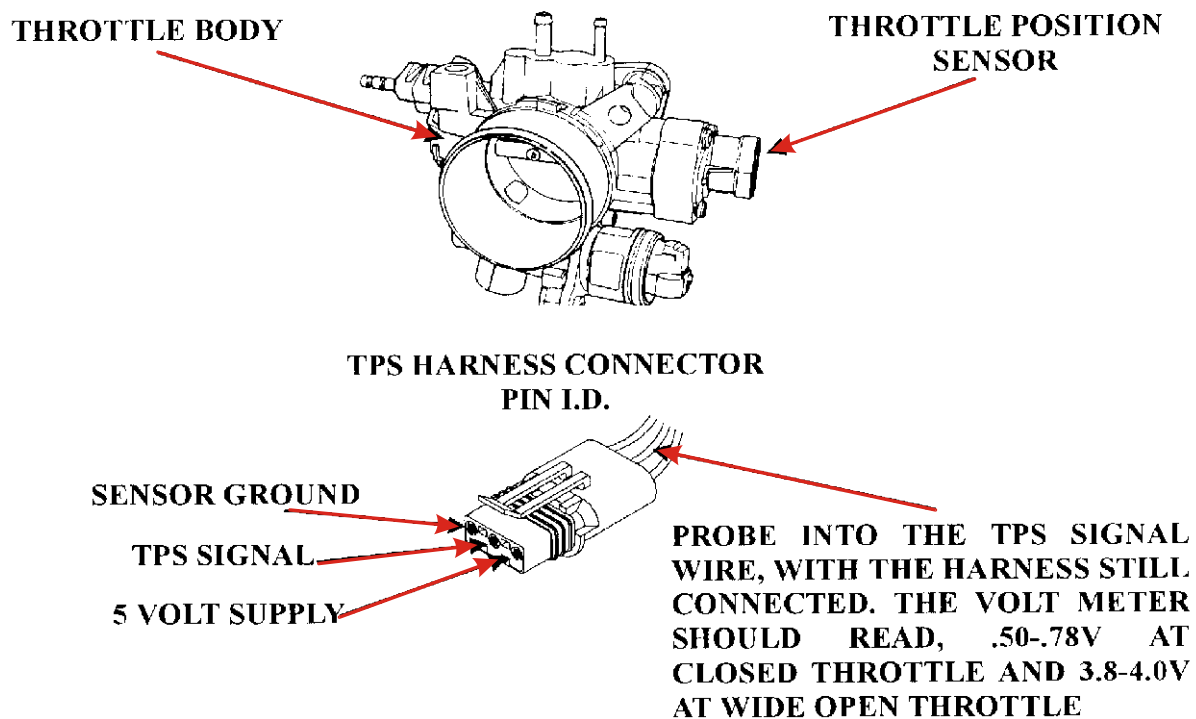
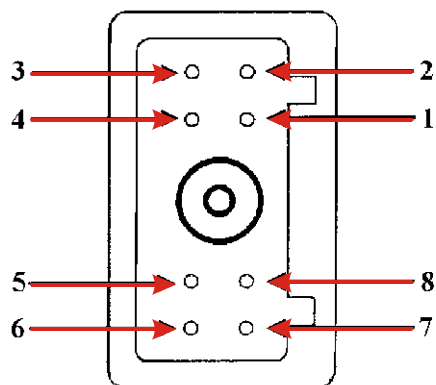


Figure 10

SOLENOID PACK CHECK

SOLENOID PACK CONECTOR



SOLENOID PACK PIN IDENTIFICATION

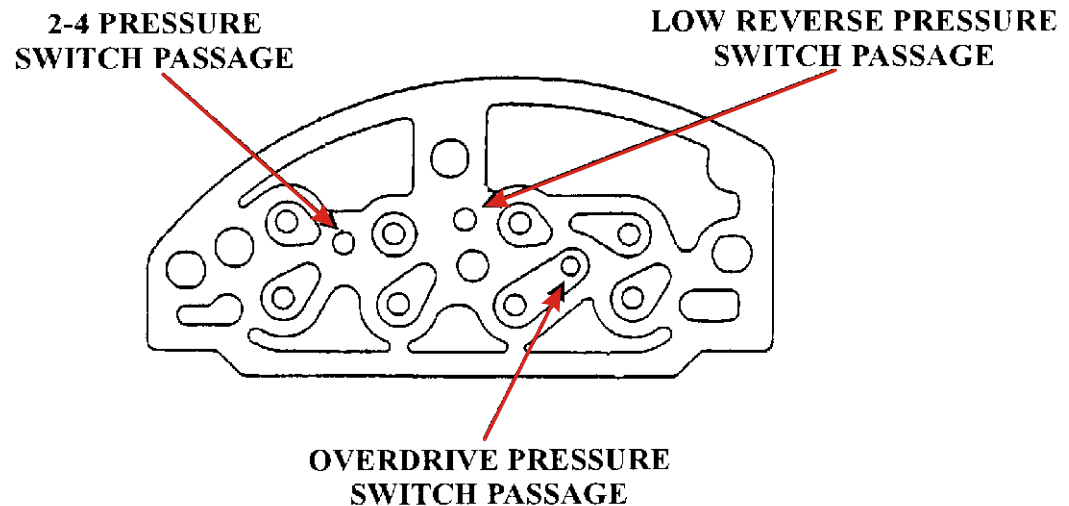
PIN NO.	PIN IDENTIFICATION
1	2-4 PRESSURE SWITCH SIGNAL TO CONTROLLER
2	LOW REVERSE PRESSURE SWITCH TO CONTROLLER
3	OVERDRIVE PRESSURE SWITCH SIGNAL TO CONTROLLER
4	12 VOLT INPUT FROM THE CONTROLLER
5	GROUND FROM CONTROLLER TO UNDERDRIVE SOLENOID
6	GROUND FROM CONTROLLER TO OVERDRIVE SOLENOID
7	GROUND FROM CONTROLLER TO LOW REVERSE / LOCKUP SOLENOID
8	GROUND FROM CONTROLLER TO 2-4 / REVERSE SOLENOID

SOLENOID CHECK: ALL FOUR SOLENOIDS SHOULD HAVE 1.5 OHM'S RESISTANCE
 SOLENOID 1- CONNECT OHMMETER TO PINS 4 AND 5
 SOLENOID 2- CONNECT OHMMETER TO PINS 4 AND 6
 SOLENOID 3- CONNECT OHMMETER TO PINS 4 AND 7
 SOLENOID 4- CONNECT OHMMETER TO PINS 4 AND 8

RESISTOR CHECK: ALL THREE RESISTORS SHOULD HAVE 270-330 OHMS RESISTANCE
 O.D. RESISTOR- CONNECT OHMMETER TO PINS 4 AND 3
 L/R RESISTOR- CONNECT OHMMETER TO PINS 4 AND 2
 2-4 RESISTOR- CONNECT OHMMETER TO PINS 4 AND 1

Figure 11

SOLENOID PACK PRESSURE SWITCH TEST AND I.D.



PRESSURE SWITCH TEST: ALL THREE PRESSURE SWITCHES ARE TESTED WITH 50PSI. OF AIR PRESSURE APPLIED TO THE PASSAGES SHOWN ABOVE AND AN OHMMETER. WITH NO AIR APPLIED TO THE SWITCH THE OHMMETER SHOULD READ NO CONTINUITY. WITH AIR APPLIED TO THE SWITCH THE OHMMETER SHOULD READ 0 OHM'S.

O.D. SWITCH- CONNECT OHMMETER TO PIN 3 AND GROUND

L/R SWITCH- CONNECT OHMMETER TO PIN 2 AND GROUND

2-4 SWITCH- CONNECT OHMMETER TO PIN 1 AND GROUND

Figure 12

TRANSMISSION CONTROL MODULE

TRANSMISSION CONTROLLER
WITH "COOLING FIN'S"

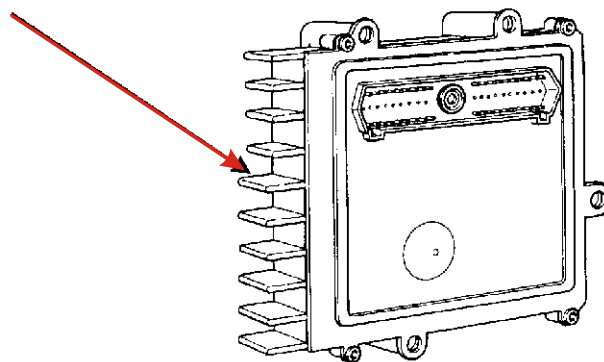


Figure 13