



1995 SEMINAR INFORMATION
"HOW TO SURVIVE IN 95"

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"HOW TO SURVIVE IN '95"

INTRODUCTION

In this third manual of the "HOW TO SURVIVE IN '95" Seminar We continue with Up Dates on the FORD E4OD, AXODE, A4LD and ATX. Plus the many request we get on check ball location in these FORD units. The FORD section concludes with information on the new computer controlled 4R44E/4R55E transmission which is a fully computerized A4LD rear drive unit. The Chrysler section of the manual covers the Up Dates on the A-604 Transaxle and the 42RE Transmission which is the computer controller version of the A-500 transmission.

The information and part numbers contained in this booklet have been carefully compiled from industry sources known for their reliability, but ATSG does not guarantee its accuracy.

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FORD E4OD

FRONT AND REAR CASE BUSHINGS

UPDATE TO LOW ONE-WAY ROLLER CLUTCH

FRONT AND REAR CASE BUSHINGS REMOVAL AND INSTALLATION

NOTE: Remove and replace only one (1) bushing at a time while using the other bushing in the case to help align the tool and bushing during installation.

1. Remove the rear case bushing only using Seal Remover and impact Slide Hammer as shown in Figure 10.

2. Using Rear Case Bushing Puller place the rear case bushing (**F2TZ-7025-B**) on driver as shown in Figure 11.

3. Place the remaining portion of the Rear Case Bushing Driver and a 5" (127mm) threaded drawbar through the front of the case into the front case bushing as shown in Figure 12.

4. Place the portion of the tool with the rear case bushing into the rear of the case over the Drawbar as shown in Figure 13. Attach washer and nut to Drawbar and hand tighten.

CAUTION: ENSURE THE BUSHING AND TOOL ARE CENTERED IN BORE.

5. Hold the Drawbar with a 1/2" (12.7mm) wrench, while turning the nut with another 1-1/8" (29mm) wrench as shown in Figure 14.

a. Turn the nut until the rear case bushing is fully seated.

b. Unscrew the nut and remove all tools.

6. Remove the front case bushing using Seal Puller and impact slide hammer as shown in Figure 14..

CAUTION: *Front case bushing (F2TZ-7025-A) has oil grooves on the bushing ID, locate an oil groove at 12 0'clock position in the case bore during bushing installation.*

NOTE: Top of case is always 12 0'clock.

8. Set portion of tool with the front case bushing and drawbar into bushing bore from the front as shown in Figure 17. Locate an oil groove in the 12 0'clock position.

9. Place the remaining portion of the Rear Case Bushing Driver into the rear bushing in the case as a guide. Install washer and nut hand tight.

CAUTION: ENSURE THE BUSHING AND TOOL ARE CENTERED IN THE BORE.

10. Hold the drawbar with a 1/2" (12.7mm) wrench, while turning the nut with another 1-1/8" (29mm) wrench as shown in Figure 18.

a. Turn the nut until the front case bushing is fully seated.

b. Unscrew the nut and remove all tools.

LOW ONE-WAY CLUTCH REMOVAL AND INSTALLATION

If the one-way clutch requires replacement, use the following procedures.

REMOVAL

1. Remove upper retaining ring Figure 19 and discard.

2. Remove brass bushing and discard Fig. 19.

3. Remove roller clutch cage and lower retaining ring and discard Figure 19.

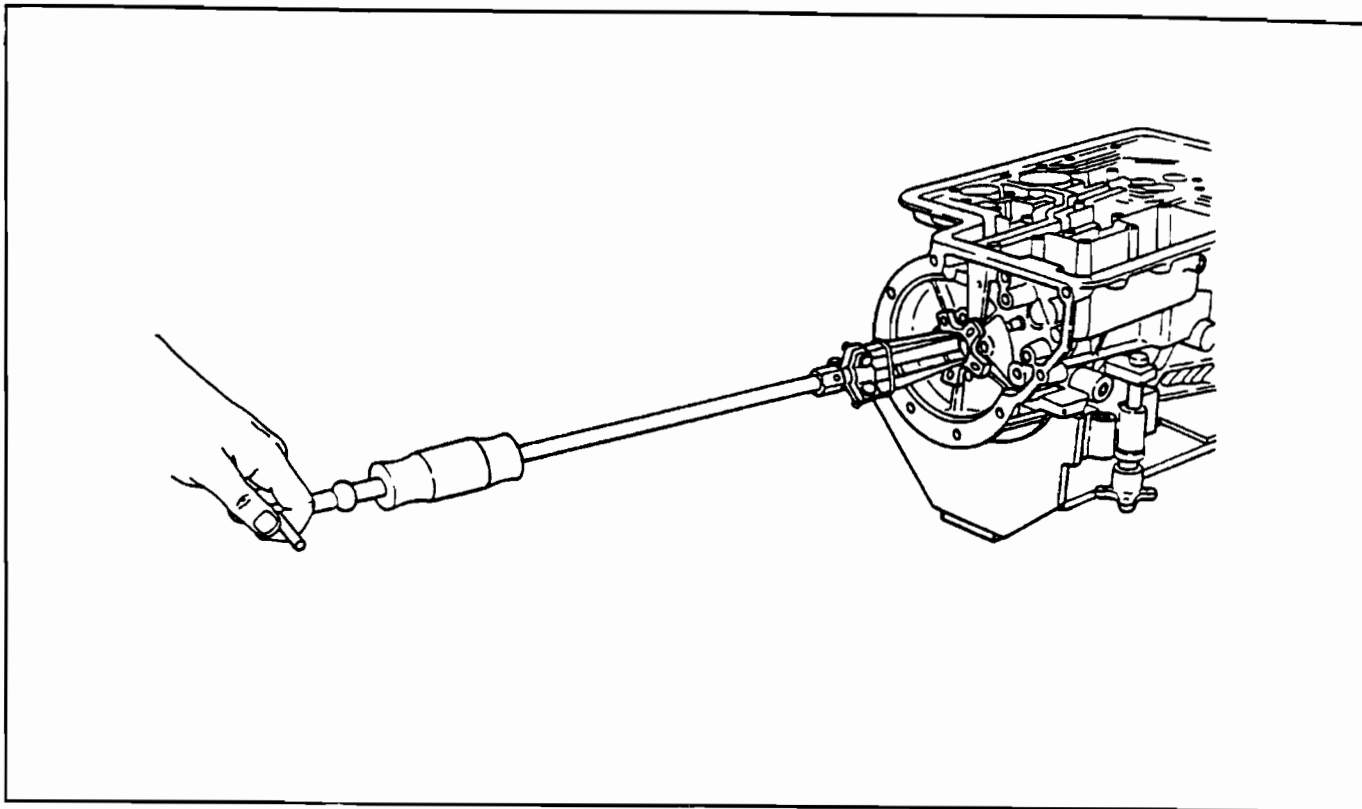


Figure 10

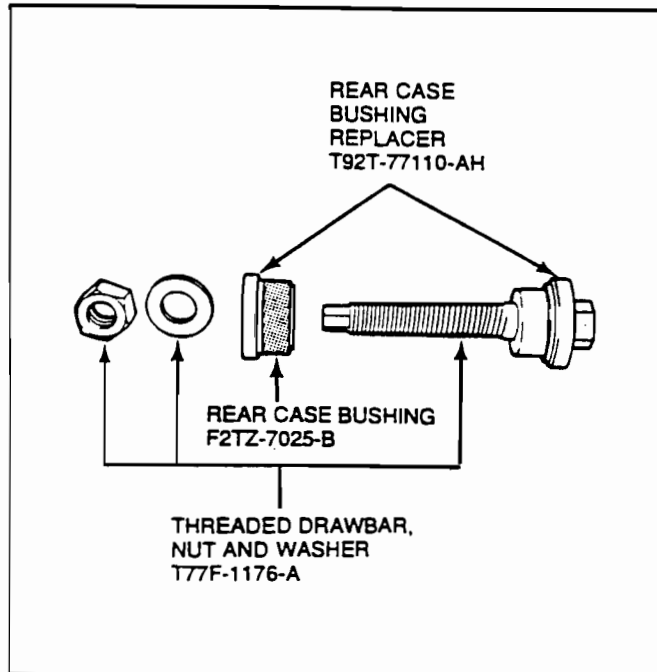


Figure 11

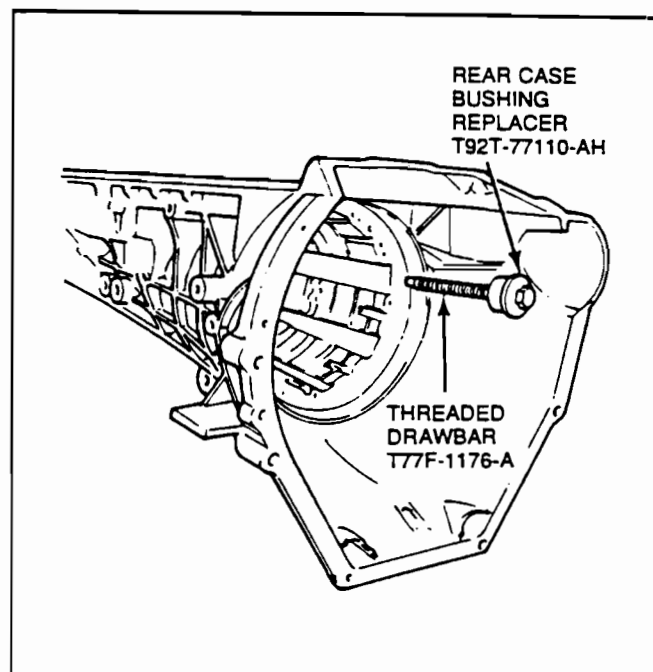


Figure 12

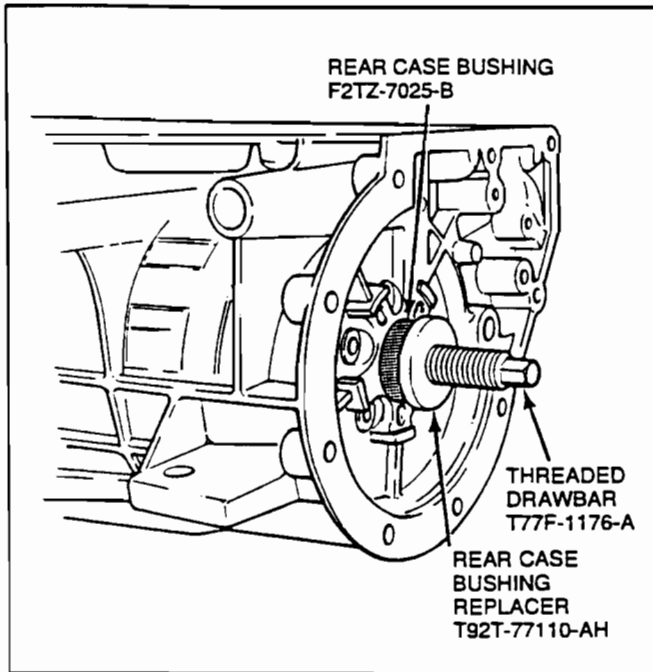


Figure 13

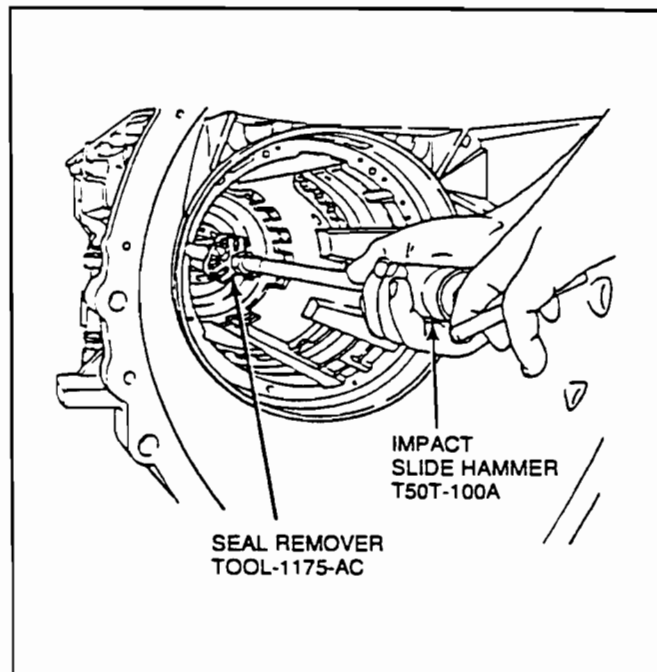


Figure 15

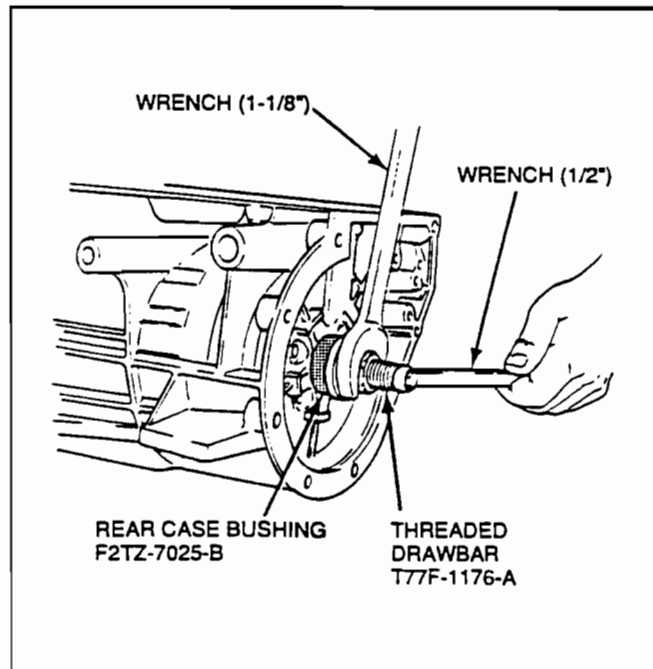


Figure 14

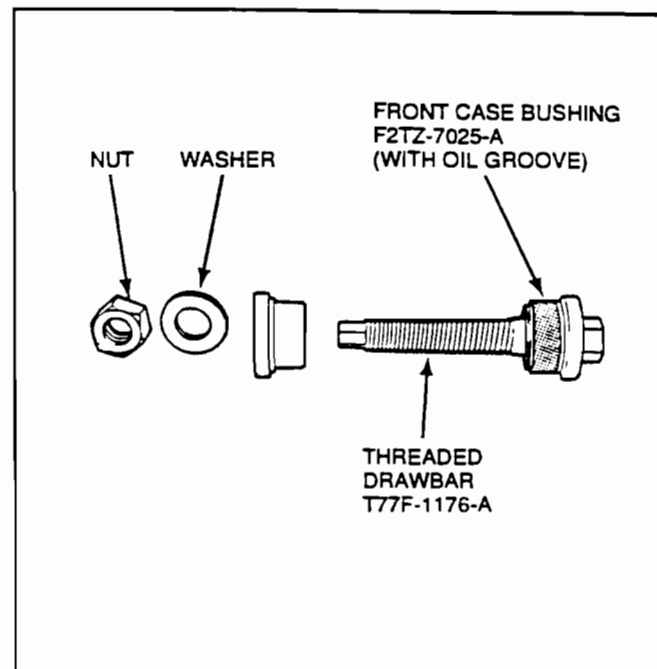


Figure 16

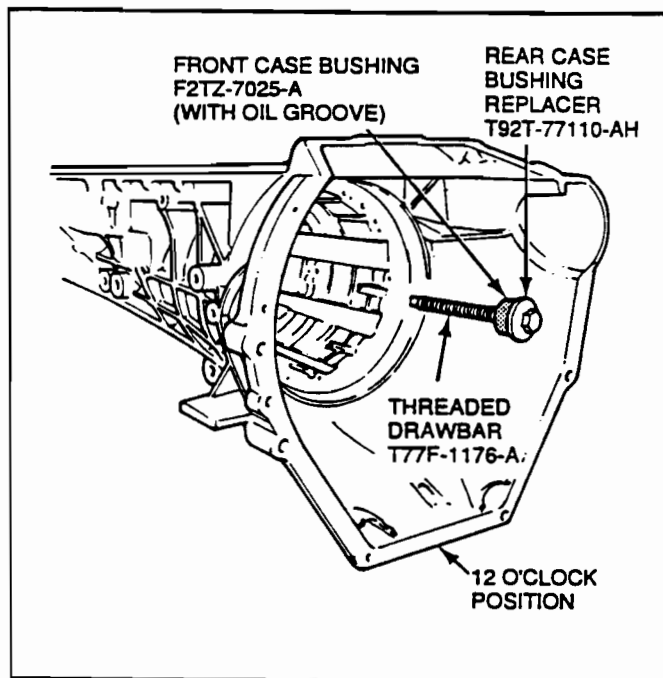


Figure 17

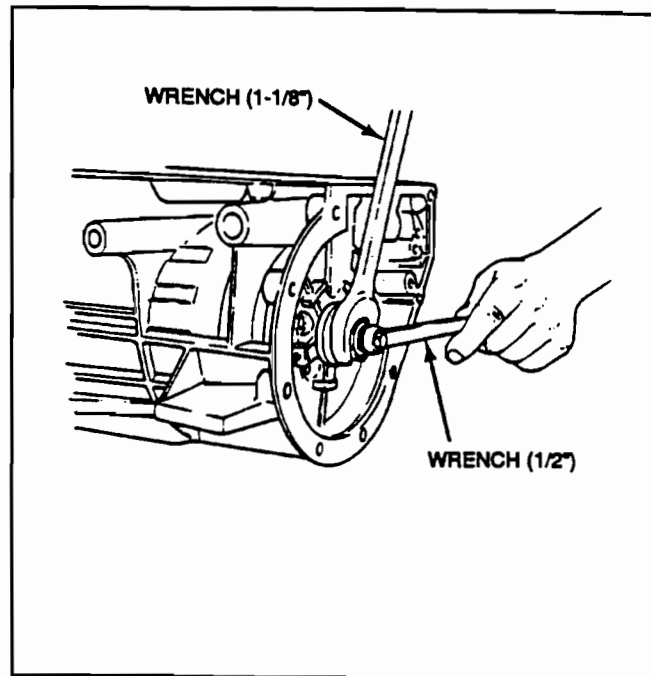


Figure 18

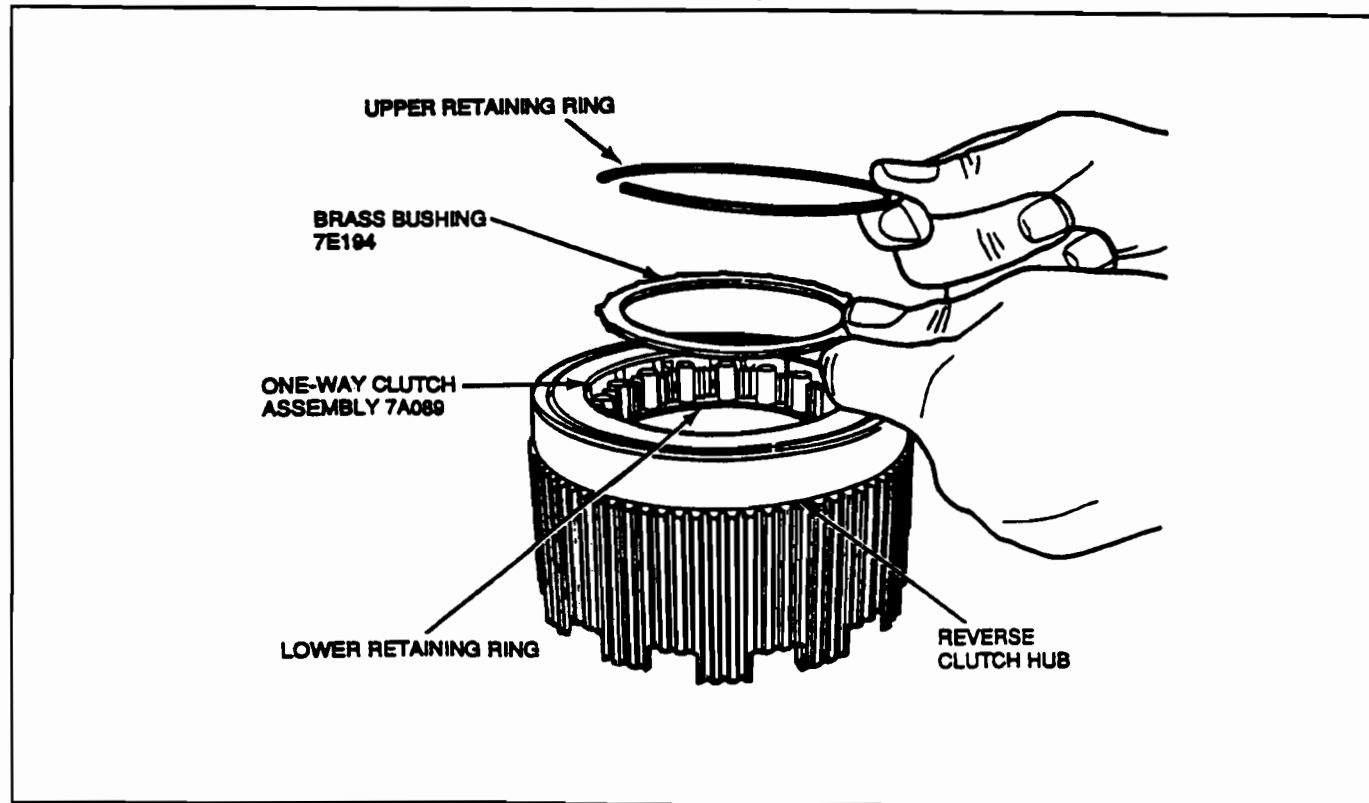


Figure 19

FORD E4OD UPDATE TO LOW ONE-WAY ROLLER CLUTCH

INSTALLATION

1. Install new unitized plastic cage low one-way clutch assembly (F3TZ-7A089-C) into the rear of the reverse hub assembly Figure 20.

2. Rotate the one-way clutch clockwise to lock tabs on plastic cage and fully seat the one-way clutch in place.

NOTE: Do not use brass bushings (7E194) or the upper and lower retaining rings (377135-S). These parts are not used with the new plastic cage low one-way clutch.

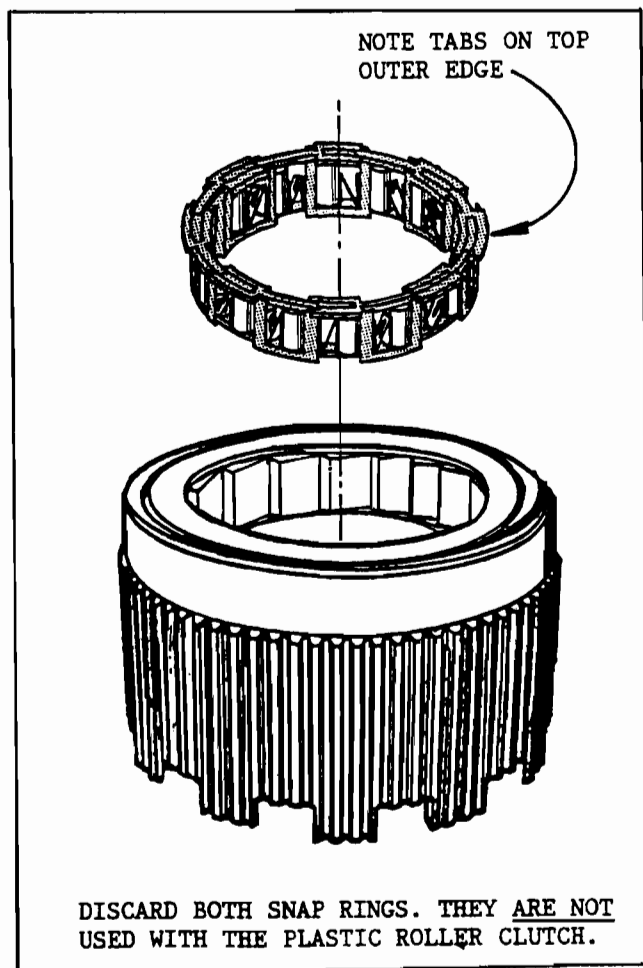


Figure 20

PART NUMBER	PART NAME
F0TZ-7A103-B	Pump Assembly
F3TZ-12A850-ABB	Powertrain Control Module
F3TZ-12A850-ACB	Powertrain Control Module
F3TZ-12A850-YB	Powertrain Control Module
F3TZ-12A850-ZB	Powertrain Control Module
F3TZ-12A850-AAB	Powertrain Control Module
F3TZ-12A850-AEB	Powertrain Control Module
F2TZ-12A850-AHB	Powertrain Control Module
F2TZ-12A850-AJB	Powertrain Control Module
F2TZ-12A850-AKB	Powertrain Control Module
F2TZ-12A850-PB	Powertrain Control Module
F2TZ-12A850-CC	Powertrain Control Module
F2TZ-12A850-MC	Powertrain Control Module
F2TZ-12A850-RC	Powertrain Control Module
F2TZ-12A850-LB	Powertrain Control Module
F2TZ-12A850-BAC	Powertrain Control Module
F2TZ-12A850-BBC	Powertrain Control Module
F2TZ-12A850-DB	Powertrain Control Module
F2TZ-12A850-BSB	Powertrain Control Module
F2PZ-12A850-AWA	Powertrain Control Module
F2PZ-12A850-AXA	Powertrain Control Module
F4TZ-12B585-AA	Powertrain Control Module
F4TZ-12B585-BA	Powertrain Control Module
F4TZ-12B585-CA	Powertrain Control Module
F2PZ-12A850-ANA	Powertrain Control Module
F4TZ-12B585-DA	Powertrain Control Module
F2TZ-9B989-C	Fuel Injection Pump Lever Sensor
E4TZ-7A095-B	Auxiliary Cooler
F2UZ-7A095-A	Auxiliary Cooler
E5UZ-7A095-A	Auxiliary Cooler
N810959-S38	Screw
N810957-S38	Screw
E3TZ-7B142-A	Auxiliary Cooler Bracket
E3UZ-8K743-B	Auxiliary Cooler Bracket
E7UZ-8K743-A	Auxiliary Cooler Bracket
N803284-S100	Clip
D5AZ-7B093-A	Bulk Hose
55981-S2	Screw And Washer Assembly
57030-S2	Screw And Washer Assembly
40927-S8	Screw And Washer Assembly
45263-S101	U-Nut
87944-S8	Fitting

FORD -E4OD

BEARING AND RACE CHANGE

CHANGE: The low roller clutch inner race and bearing required a dimensional change

REASON: Improved thrust durability of the bearing.

PARTS AFFECTED:

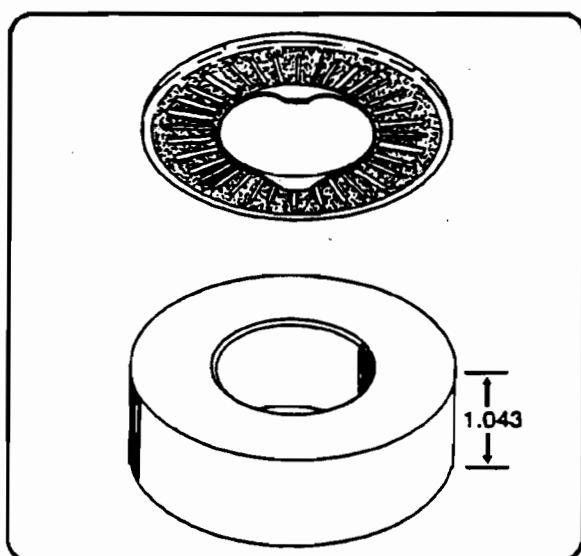
1. Low roller clutch inner race: As of 2/24/89, the low roller clutch inner race height has been reduced by .030" to accomodate a revised hub to race bearing. The previous inner race height was 1.043". The new design inner race height is 1.013" See Figures Below.
2. Hub to race bearing: The original E4OD hub to race bearing was a 2 piece (open face) design, and the new design is a 3 piece closed design bearing. The thickness of the original 2 piece bearing is .110" thick, and the new design 3 piece bearing is .140" thick to be compatible with the new thinner inner race.

INTERCHANGABILITY:

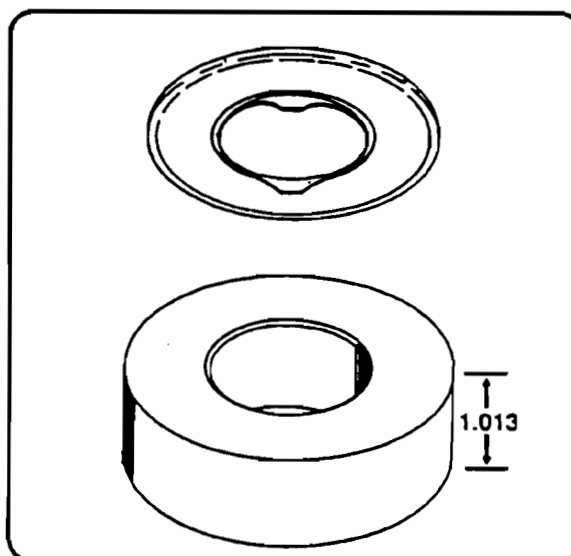
The early and late bearings and races are interchangeable as a set only. The early race must be used with the early bearing, and the late race must be used with the late bearing. The three piece bearing and the late race is the preferred setup.

SERVICE INFORMATION:

2 piece bearing (BEFORE 2/24/89).....	E7DZ-7D422-A
3 piece bearing (AFTER 2/24/89).....	E6DZ-7G178-A
3 piece bearing, race, and hub.....	E9TZ-7D164-B



EARLY STYLE W / 2 PIECE BEARING



LATE STYLE W / 3 PIECE BEARING

FORD E4OD DELAYED ENGAGEMENT

COMPLAINT:

A delayed engagement of 10 to 30 seconds, after setting for and extended period of time.

CAUSE:

The cause may be, converter drainback through the cooler.

CORRECTION:

Install an in-line check valve, OEM part number F0TZ-7D174-A, in the "Cooler Return Line" going to the rear case fitting (See Figure 1).

NOTE: MAKE SURE THAT THE FLOW DIRECTION ARROW STAMPED ON THE CHECK VALVE POINTS TOWARDS THE REAR COOLER FITTING, OR A TRANSMISSION FAILURE

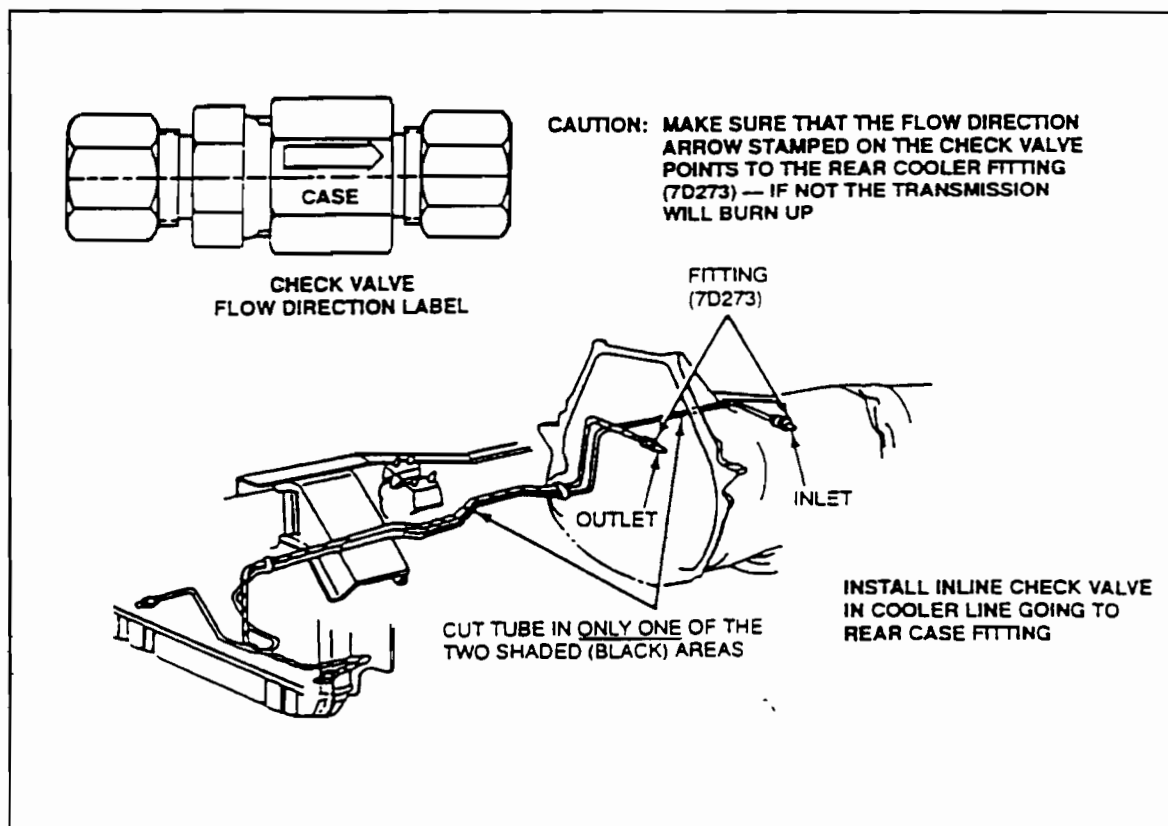


FIGURE 1

JOIN THE

HEAVYWEIGHTS



leave the guesswork to the other guys

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FORD ELECTRONIC CONTROL SYSTEM (MECS)

PROCEDURE TO PREVENT DAMAGE TO SCAN TOOLS

COMPLAINT: Cannot retrieve "Trouble Codes" with scan tools; cannot retrieve trouble codes at "Hold Light" by grounding the STI wire; or damage to scan tool after attempting to connect to the diagnostic connector.

CAUSE: Factory documentation as to the location of the diagnostic connector and STI wire is often confusing and conflicting. Damage to scan tools will result if the scan tool is connected to the single wire tach test connector. The tach test connector is similar to the single wire STI connector found in Ford Probes and some Mercury Capris.

CORRECTION: Use the following information to locate and identify the diagnostic connector, STI connector, and tach test connector.

1989 Probe (GL) 2.2 L. non-turbo

90 - 92 Probe (GT) 2.2 L. turbo.

The 4EAT diagnostic connector and STI connector are located under the instrument panel on the left side of the steering column near the 4EAT module. figure 1)

3.0 L.Probes (LX).

The 4EAT and STI diagnostic connectors are under the instrument panel on the left side of the steering column. This model uses the EEC IV system for engine controls only.

90 - 92 Probe (GL) 2.2 L. non-turbo.

The 4EAT diagnostic connector and STI connector are integrated into the ECA diagnostic connector. It has no separate computer for transmission operation. The connectors are located on the drivers side of the engine compartment near the windshield wiper motor. (Figure 2)

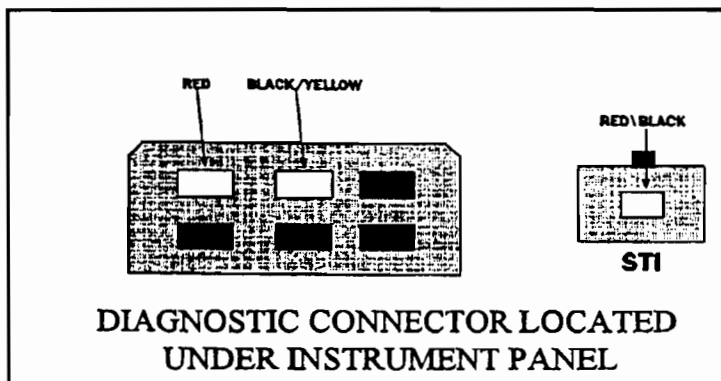


Figure 1

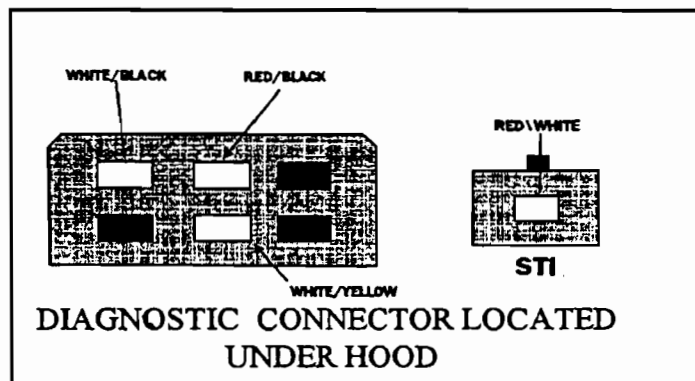


Figure 2

CAUTION: The wire colors for the tach test connector and for the STI connector can be found in the chart on page ?? of this bulletin.

FORD ELECTRONIC CONTROL SYSTEM (MECS) CONTINUED...

90 - 93 Capri 1.6 L.

The 4EAT diagnostic connector and STI connector are integrated into the ECA diagnostic connector. The 4EAT STI and STO connectors are located behind the glove box on the right side of the passenger compartment. (Figure 3)

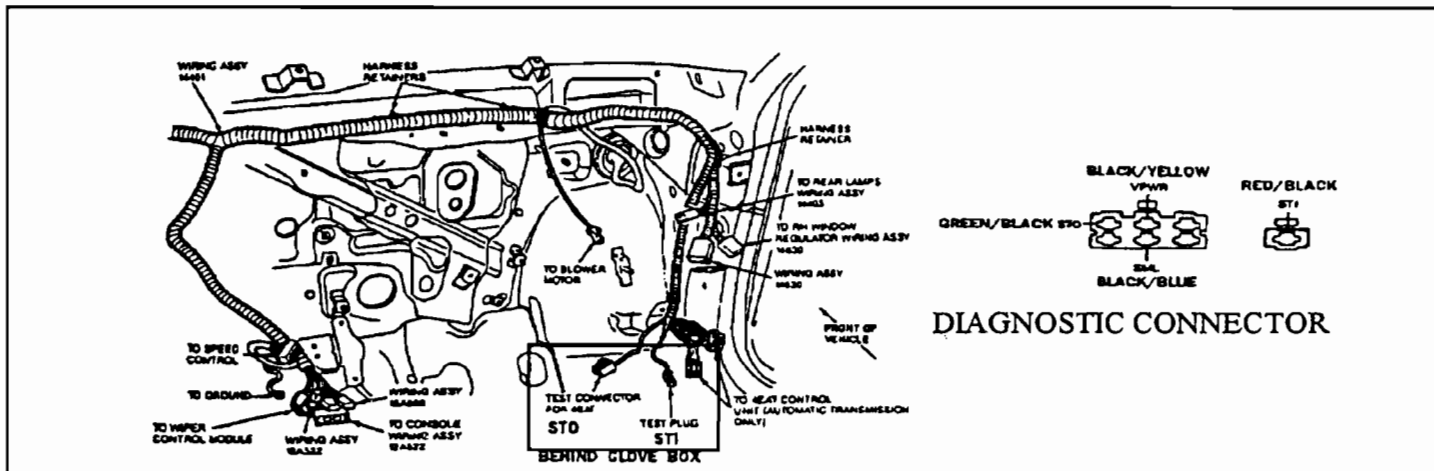


Figure 3

91-92 Escort/ Tracers with 1.8, 2.0, and 2.5 L. engines.

These vehicles use a 17 pin MECS connector that serves both the engine and the transmission computer. The STI and STO pins are integrated in this connector. This connector may be found on the drivers side of the engine compartment. See Figure 4 to identify the the MECS connector.

91-92 Escort/Tracers with 1.9 L. engine.

These vehicles do not have an STI connector. The 4EAT STO is located on the drivers side of the engine compartment. The STI for the 4EAT is always grounded within the PCM. See Figure 4 to identify the 6-pin MECS connector.

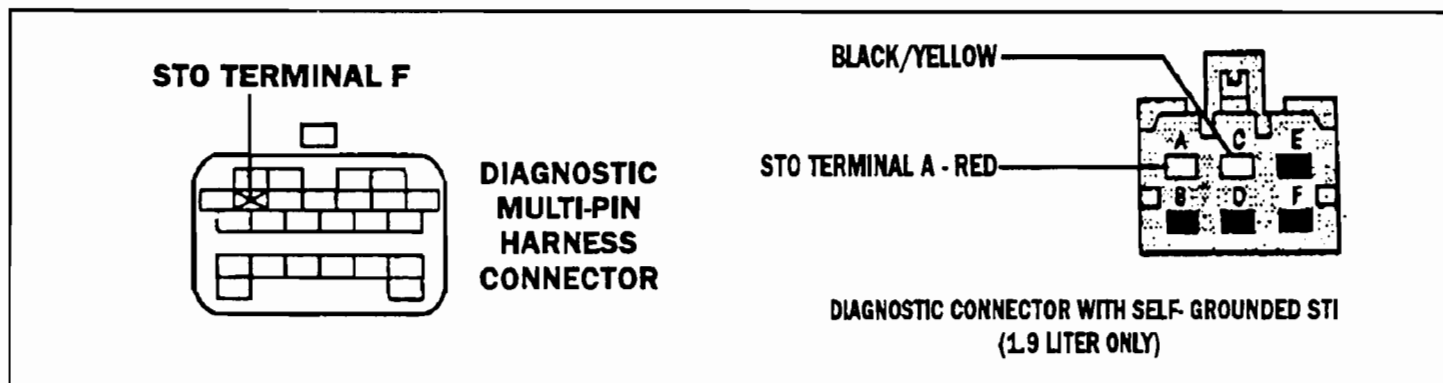


FIGURE 4

FORD ELECTRONIC CONTROL SYSTEM (MECS) CONTINUED...

If you still are not sure which connector is for the STI, check in the following manner:

Ground one end of a 12 volt test lamp and probe the suspected connector with the other end. Then crank the engine. If the test light doesn't flash, you should be connected to the STI. If you see any flashes, check again because you most likely have found the tach test connector.

STI and Tach Test wire identification chart

Vehicle	Year	Engine	Test Connector	Wire Color	Connector Color	Connector Location
PROBE	1989	2.2L TURBO	STI	RED/BLK	BLACK	NEAR STEERING COLUMN
			TACH	YEL/BL	WHITE	
PROBE	1989	2.2L NON-TURBO	STI	RED/WHT	BLACK	LEFT SIDE UNDER HOOD
			TACH	NONE	NONE	
PROBE	1990/1992	2.2L TURBO	STI	RED/BLK	BLACK	NEAR STEERING COLUMN
			TACH	YELLOW	BLACK	
PROBE	1990/1992	2.2L NON-TURBO	STI	RED/WHT	BLACK	LEFT SIDE UNDER HOOD
			TACH	YEL/BL	BLACK	
PROBE	1993	2.0L/2.5 L	MULTI	BLUE	—	NEAR BATTERY - 17 PIN
CAPRI	1991/1993	1.6L	STI	RED/BLK	GREEN	BEHIND GLOVE BOX
			TACH	YEL/BL	WHITE	
ESCORT/ TRACER	1991/1992	1.8L	MULTI	BLUE	—	UNDER HOOD - 17 PIN
ESCORT/ TRACER	1991/1992	1.9L	STO	RED	—	UNDER HOOD - 6 PIN

GLOSSARY OF ABBREVIATIONS USED IN THIS BULLETIN:

MECS = Mazda Electronic Control System

STI = Self Test Input

STO = Self Test Output

EEC-IV = Electronic Engine Control (4th Generation)

4EAT = 4 Speed Electronic Automatic Transmission



FORD AXOD / AXODE NEW DESIGN INPUT PLANETARY CARRIER AND SUN GEAR AND SHELL ASSEMBLY

CHANGE: There has been a new design Input Planetary Carrier with a new caged needle bearing added to the shaft, and a matching Sun Gear and Shell assembly, implemented at the start of production for all 1994 model AXODE transaxles.

REASON: To better stabilize the sun gear and shell assembly and increase the durability for center gearbox concerns.

PARTS AFFECTED:

(1) INPUT PLANETARY CARRIER-A new caged needle bearing has been added to the shaft on the Input Planetary Carrier, as shown in Figure 1.

(2) SUN GEAR AND SHELL ASSEMBLY- Single bushing is now located in front of the lube holes in the sun gear, and the area behind it is now machined to accomodate the new caged needle bearing, as shown in Figure 2.

INTERCHANGEABILITY;

(1) The new design parts listed above will interchange with all previous models, BUT MUST BE USED TOGETHER AS A SET.

(2) THE NEW DESIGN PARTS ARE NOT COMPATABLE WITH THE PREVIOUS DESIGN PARTS.

SERVICE INFORMATION:

When you order an Input Planetary Carrier and/or a Sun Gear and Shell assembly from OEM, they will automatically supercede to the new service package part number F4DZ-7A398-A, which includes both of the new design parts listed above.

NEW DESIGN INPUT PLANETARY CARRIER

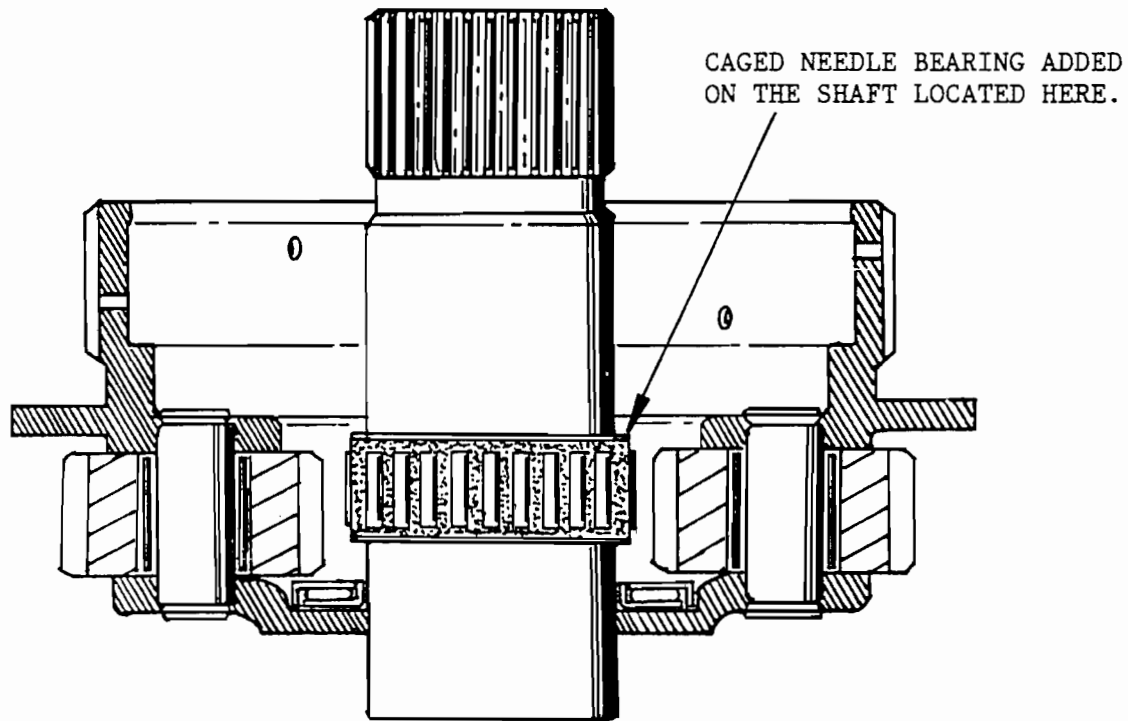
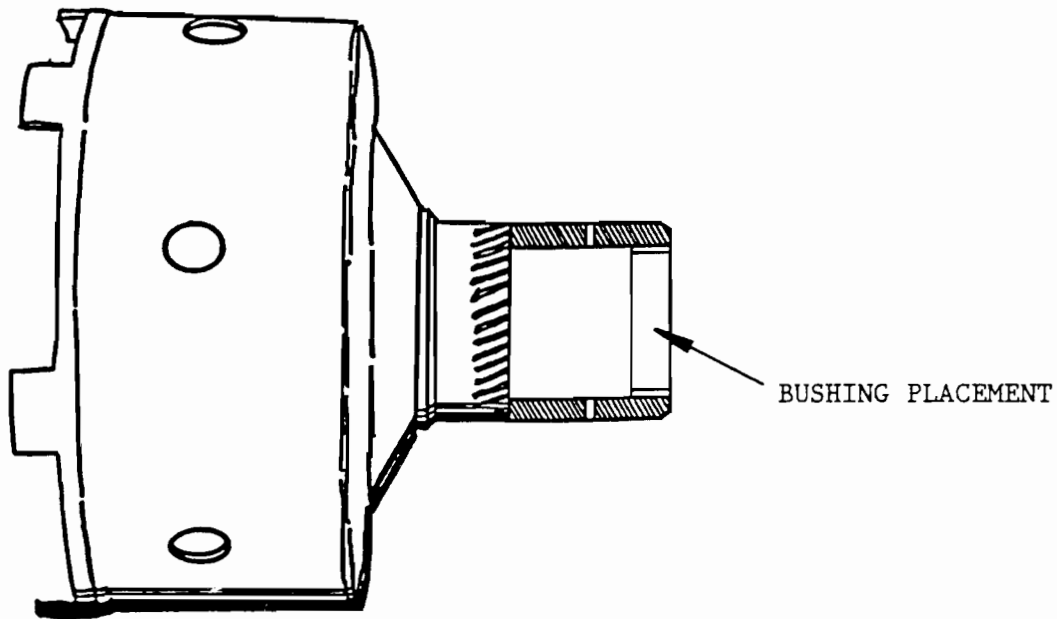


Figure 1

PREVIOUS DESIGN SUN GEAR AND SHELL



NEW DESIGN SUN GEAR AND SHELL

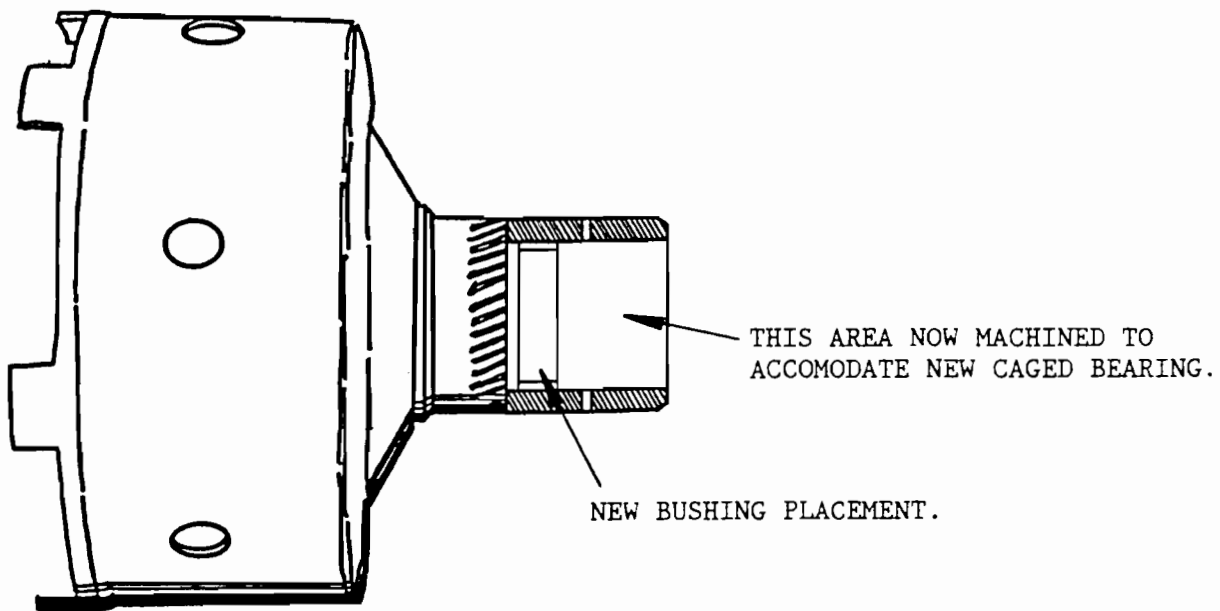


Figure 2



**FORD AXODE
OIL PUMP AND VALVE BODY
SPACER PLATE IDENTIFICATION**

PUMP SPACER:

Early 1991 ONLY: Uses the number 12 checkball. This spacer plate will have two holes over the bath tub at the number 12 checkball location, as shown in Figure 1.

Late 1991 ONLY: Eliminated No. 12 checkball. This pump spacer plate will have ONE hole over the bath tub at the No. 12 checkball location, as shown in Figure 2.

Another difference in the pump plates is hole marked "A", as shown in Figure 1 and Figure 2. This is the converter clutch solenoid feed hole.

If hole "A" is .030 diameter = for lock-up Solenoid (LUS).

If hole "A" is .215 diameter = for Modulated Lock-Up Solenoid (MLUS).

**TO IDENTIFY WHICH TYPE OF SOLENOID YOU HAVE, REFER TO FIGURE 3
AS THEY ARE NOT INTERCHANGEABLE**

1991 TAURUS/SABLE REQUIRES-LOCK-UP SOLENOID (LUS)

1991 CONTINENTAL REQUIRES-MODULATED LOCK-UP SOLENOID (MLUS)

1992-UP ALL MODELS REQUIRES-MODULATED LOCK-UP SOLENOID (MLUS)

The Lock-Up Solenoid (LUS) **CANNOT** be used on any vehicle wired for the modulated Lock-up (MLUS).

The Modulated Lock-Up Solenoid (MLUS) **CANNOT** be used on any vehicle wired for the Lock-Up (LUS)

THE PUMP SPACER PLATES MUST BE COMPATABLE WITH THE NUMBER 12 CHECK BALL, AND THE TYPE CONVERTER CLUTCH SOLENOID YOU ARE USING.

VALVE BODY SPACER PLATES:

"EARLY" 1991 ONLY: Uses the style backout valve valve in the valve body that is shown in Figure 4, and the spacer plate difference is shown inside the dotted circle. Compare to Figure 5.

"LATE" 1991 ONLY: Uses the style backout valve in the valve body that is shown in Figure 5, and the spacer plate difference is shown inside the dotted circle. Compare Figure 4.

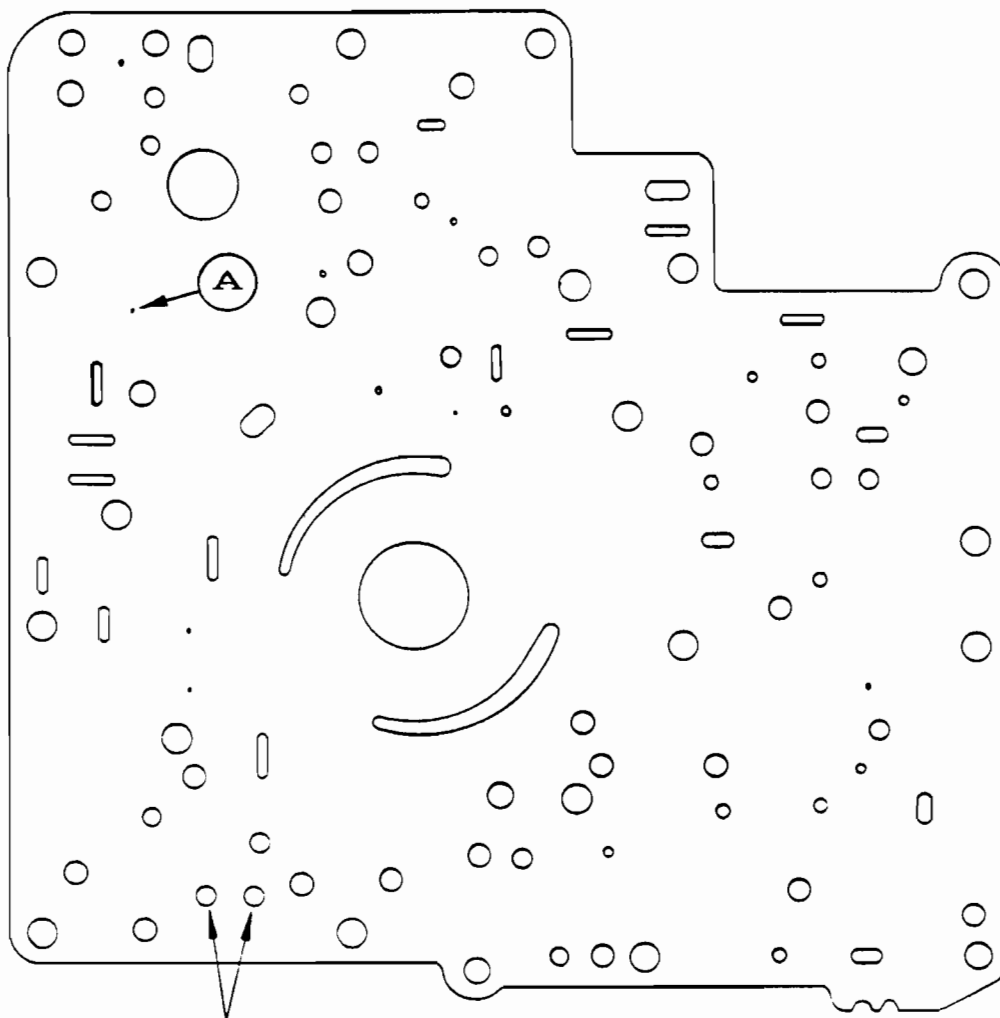
THE VALVE BODY SPACER PLATES MUST BE COMPATABLE WITH THE TYPE OF BACKOUT VALVE YOU ARE USING, AS SHOWN IN FIGURES 4 AND 5.

Update transaxle from early 1991 to late 1991 with service kit:

1991 3.0L TAURUS/SABLE
1991 3.8L TAURUS/SABLE
1991 3.8L TAURUS/SABLE (POLICE)
1991 3.8L CONTINENTAL

F1DZ-7A142-B
F1DZ-7A142-C
F1DZ-7A142-D
F1OY-7A142-B

AXOD-E PUMP SPACER PLATE
"EARLY" 1991 ONLY.

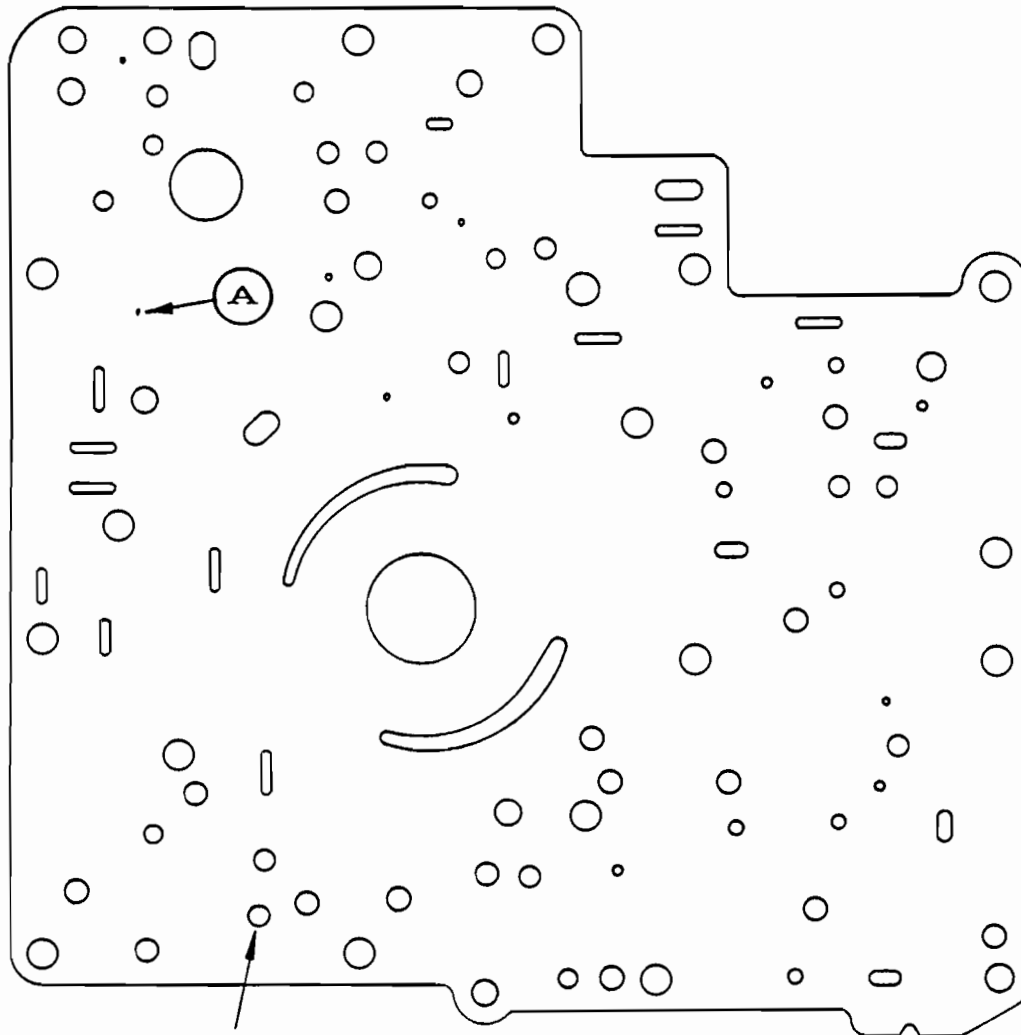


TWO HOLES
USES NUMBER 12 CHECKBALL.

HOLE "A" .030" = LOCK-UP SOLENOID (LUS).
.215" = MODULATED LOCK-UP SOLENOID (MLUS).

Figure 1

AXOD-E PUMP SPACER PLATE
"LATE" 1991 ONLY.

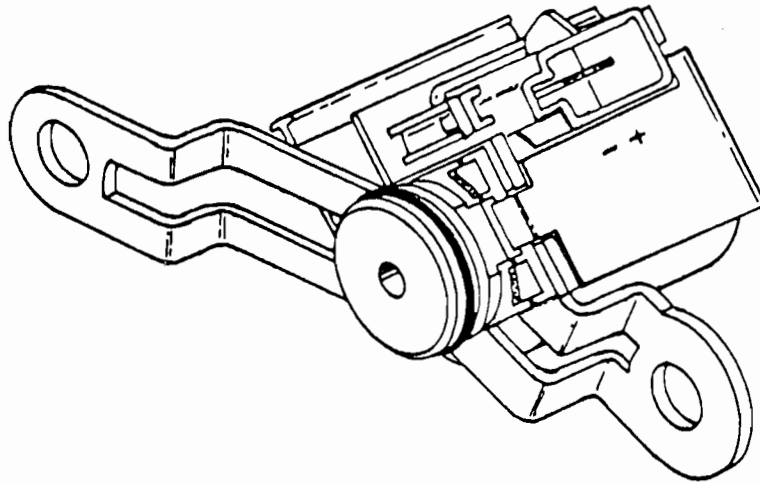


ONE HOLE
DOES NOT USE NUMBER 12 CHECKBALL.

HOLE "A" .030" = LOCK-UP SOLENOID (LUS).
.215" = MODULATED LOCK-UP SOLENOID (MLUS).

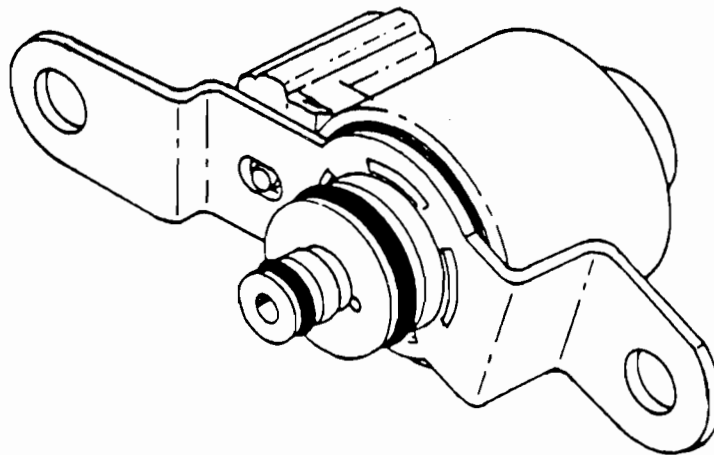
Figure 2

LOCK-UP SOLENOID (LUS)
FOUND IN: 1991 TAURUS/SABLE ONLY.



OEM PART NUMBER: F1DZ-7G136-A

MODULATED LOCK-UP SOLENOID (MLUS)
FOUND IN: 1991 CONTINENTAL ONLY.
FOUND IN: 1992 "ALL MODELS".



OEM PART NUMBER: F10Y-7G136-A

Figure 3

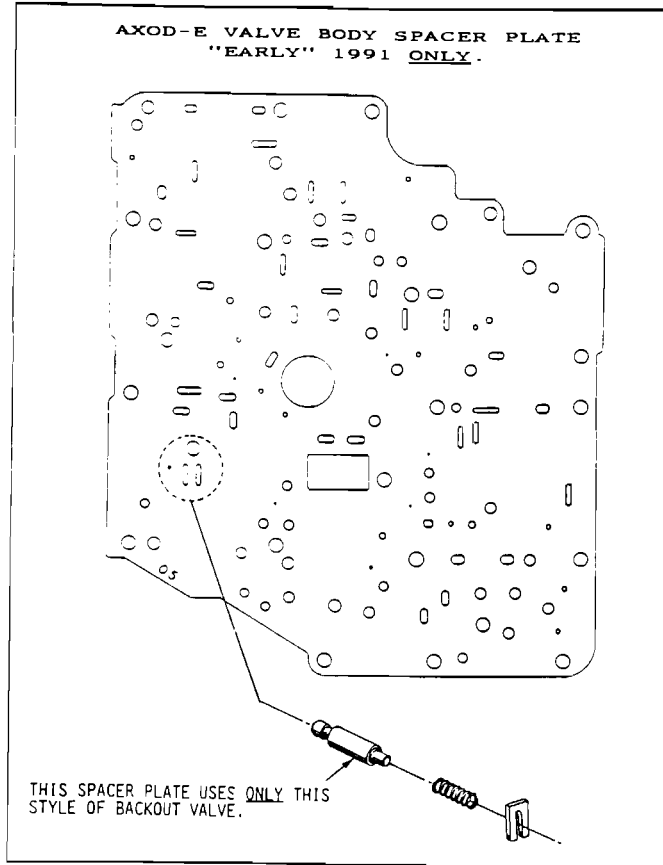


Figure 4

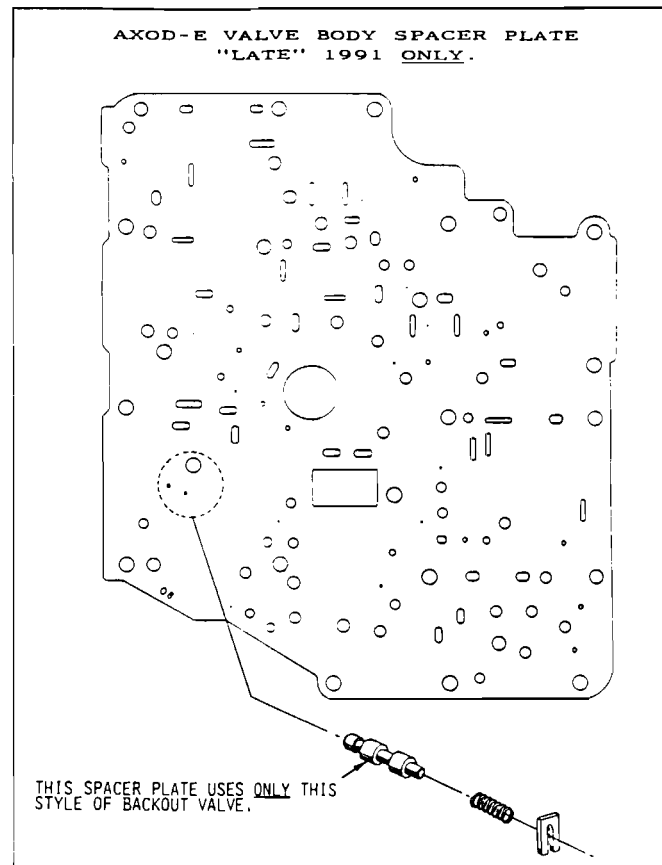


Figure 5

Early 1991 AXODE Transaxle Serial Numbers			
Application	I.D. Tag Color	Trans Assembly #	Trans Serial #
3.0L Taurus/Sable	White	FIDP-BA	Up to #195343
3.8L Taurus/Sable	Yellow	FIDP-CA	Up to #54553
3.8L Taurus Police	Apricot	FIDP-EA	Up to #10936
3.8L Continental	Pink	FIDP-DA	Up to #39653

Service Part No. F1DZ-7A142-B — 3.0L Taurus/Sable Service Part No. F1DZ-7A142-C — 3.8L Taurus/Sable Service Part No. F1DZ-7A142-D — 3.8L Police Service Part No. F1OY-7A142-B — 3.8L Continental		
Kit Contents		
Part Number	Description	Quantity
7A142	Separator Plate (Oil Pump Side of Main Control)	1
7A008	Separator Plate (Valve Body Side of Main Control)	1
E7DZ-7E195-A	Check Ball	11
7G202	Backout Valve	1
F1DZ-7F194-A	Spring Retainer Clip	1
F1DZ-7D100-A F1DZ-7C155-A F1DZ-7A136-A F1DZ-7G331-A	Main Control Gaskets (Note: All Main Control Gaskets Must Be Replaced With New Gaskets)	1

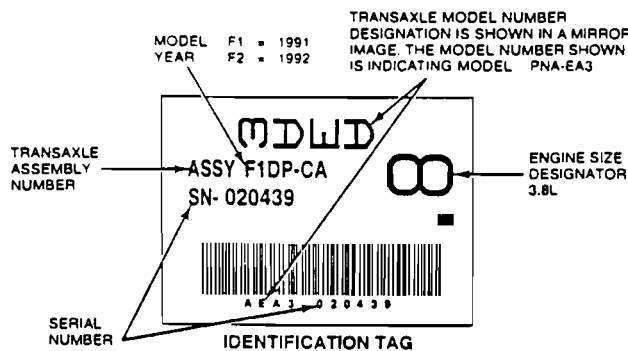


Figure 6



FORD AXODE

No Second Gear, 1-2 Slide or Flare or 3-2 Flare
1991 Taurus, Sable, Continental

- COMPLAINT: The AXODE may have no second gear or a 1-2 slide or flare, a 3-2 slide or flare.
- CAUSE: These conditions may occur because of intermediate clutch failure on some early built 1991 A be caused by a worn (B10) check ball in the pump assembly. Figure 5.
- CORRECTION: If intermediate clutch wear is found in an AXODE with a serial number found in Figure 1 install a main control separator plate repair service kit. Figure 2 lists the part numbers and applications.

Each main control separator kit contains the following items:

- Separator plate for oil pump side of main control
- Separator plate for Valve Body side of main control
- 11 check balls
- Spring retainer clip
- Backout valve
- Main control gasket
- Instruction sheet

NOTE: When the new check balls are installed, there will be one (1) less check ball used in the oil pump side of the main control. The B12 check ball is no longer used. The check ball locations will be the same as the later built 1991 models, Figure 5. Figure 4 shows the early check ball layout.

A 1991 AXODE with a serial number listed in Figure 1 will require checking the ID marking on the oil pump separator plate Figure 3. If the main separator plate has not been installed, it should be installed at this time. Which will update the main control to late 1991. Refer to Figures 3, 6 and 7 for proper separator plate ID.

AXODE TRANSAXLE SERIAL NUMBER CHART			
APPLICATION	I.D. TAG COLOR	TRANS. ASSY. #	SERIAL #
3.0L Taurus/Sable	White	F1DP-BA	Up to 195343
3.8L Taurus/Sable	Yellow	F1DP-CA	Up to 54553
3.8L Taurus Police	Apricot	F1DP-EA	Up to 10936
3.8L Continental	Pink	F1DP-DA	Up to 39653

Figure 1

PART NUMBER	PART NAME
F1DZ-7A142-B	Main Control Separator Plate Service Repair Kit (3.0L Taurus/Sable)
F1DZ-7A142-C	Main Control Separator Plate Service Repair Kit (3.8L Taurus/Sable)
F1DZ-7A142-D	Main Control Separator Plate Service Repair Kit (3.8L Police)
F1OY-7A142-B	Main Control Separator Plate Service Repair Kit (3.8L Continental)

Figure 2

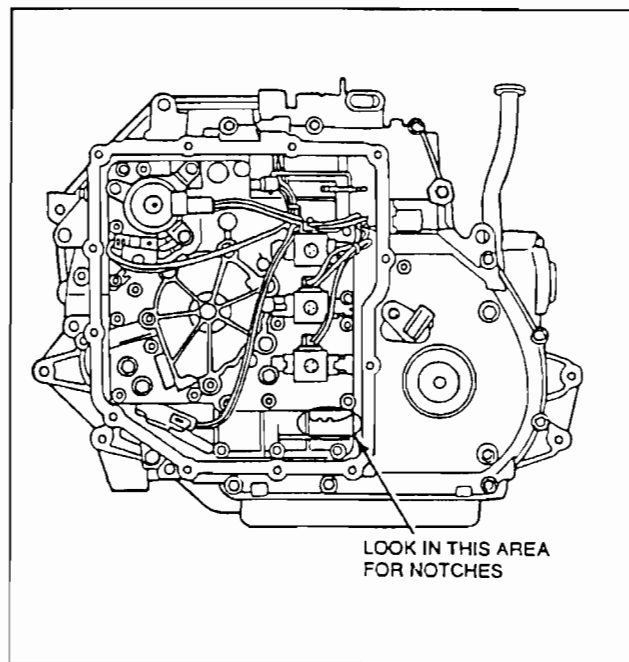


Figure3

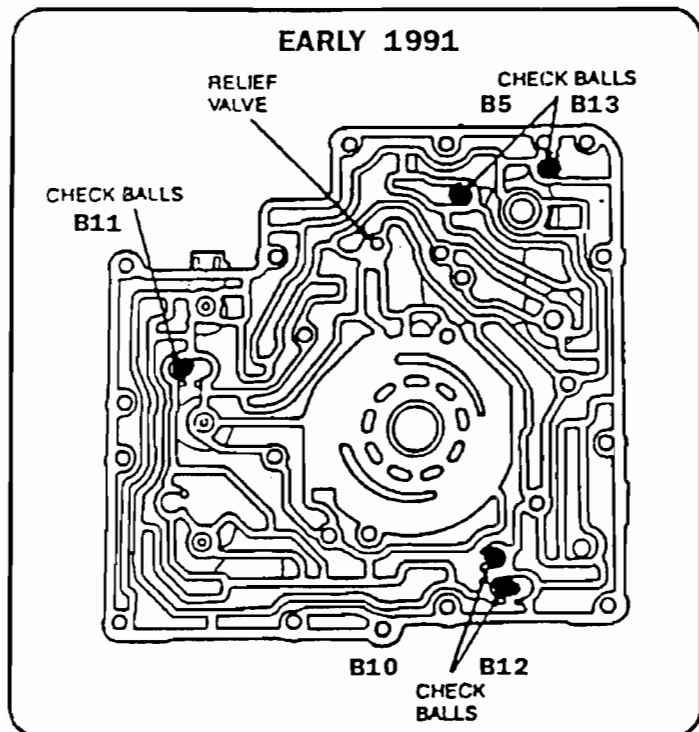


Figure 4

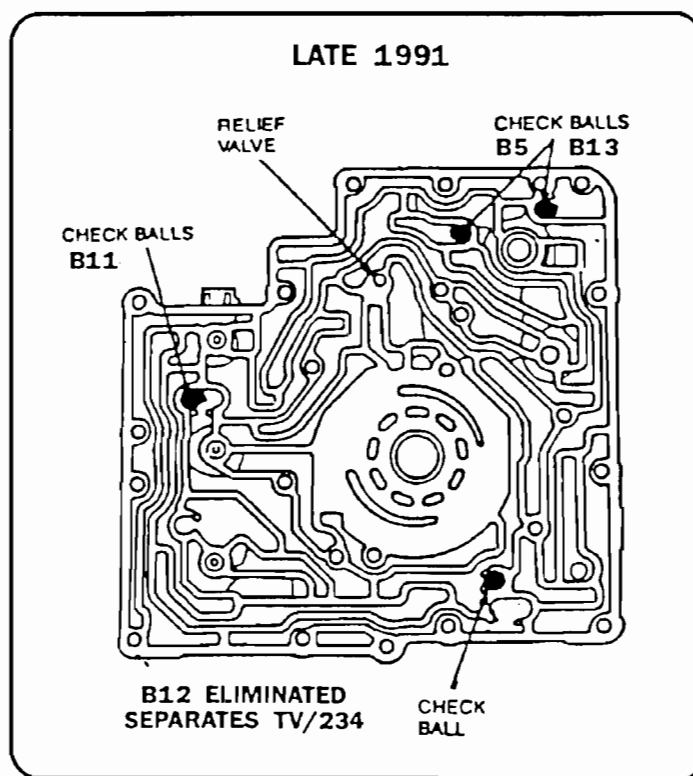


Figure 5

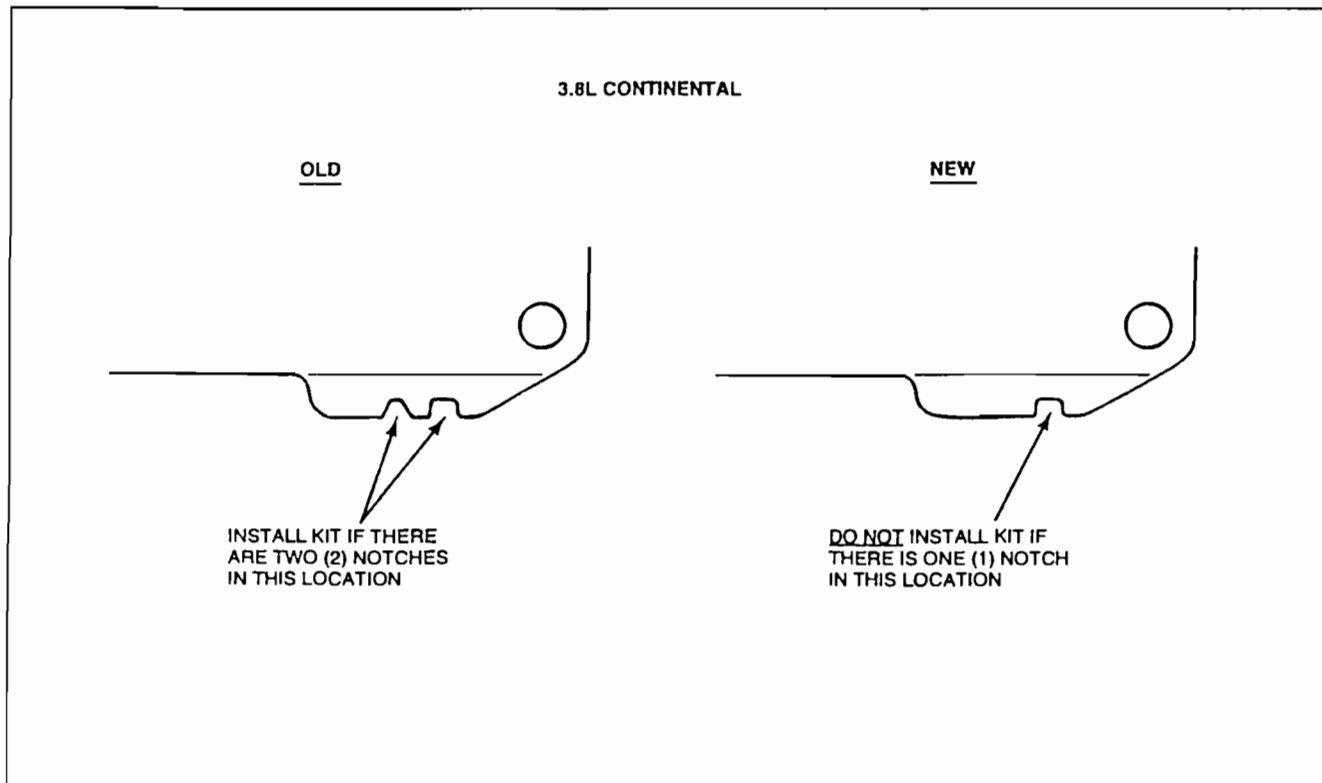


Figure 6

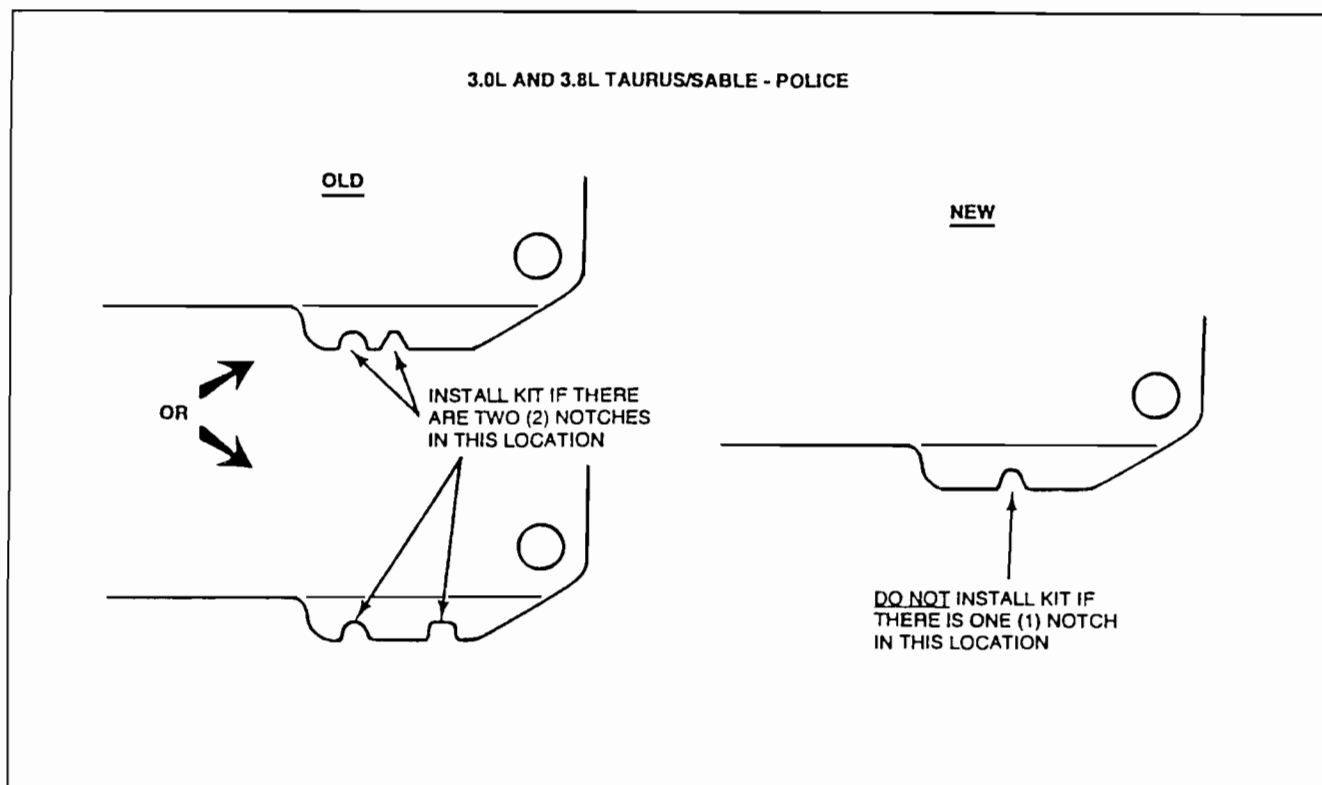
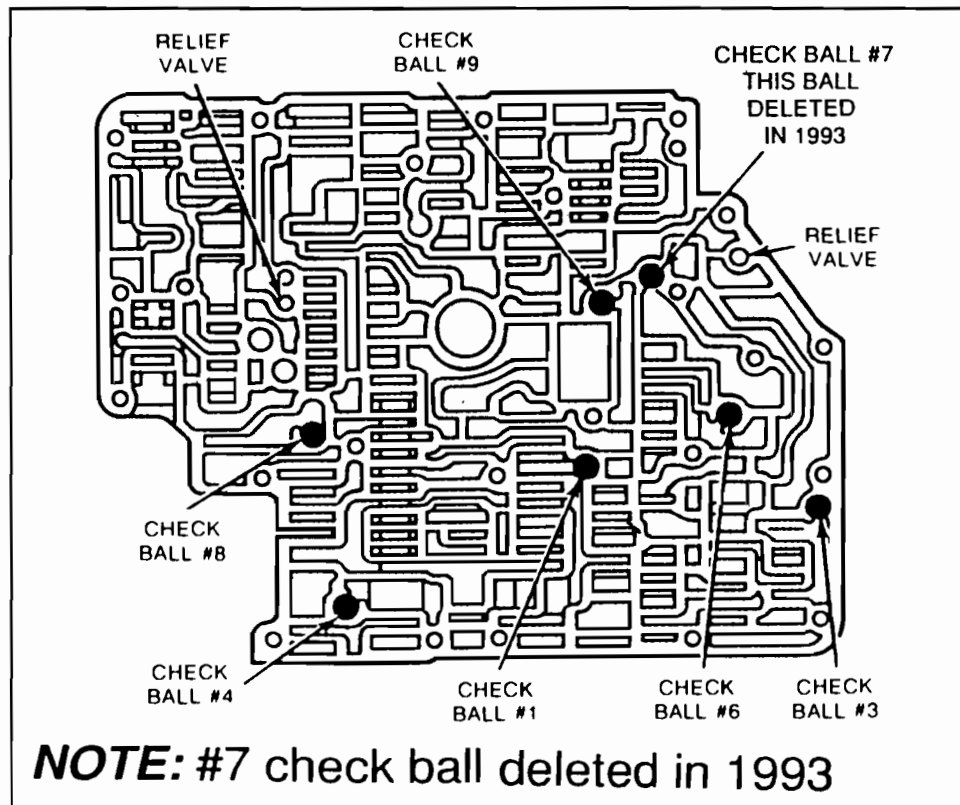
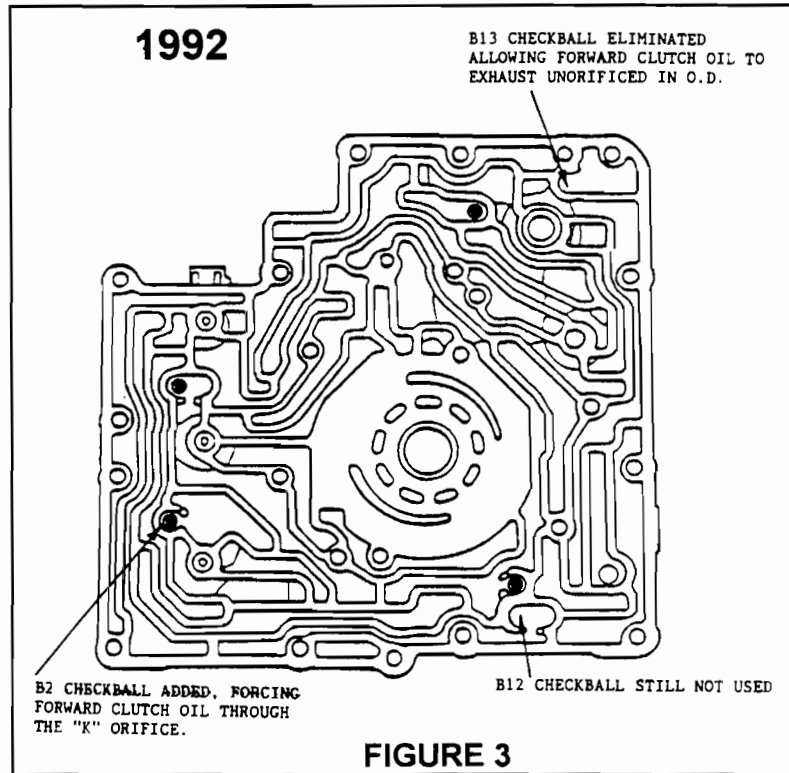


Figure 7

AXODE CHECK BALL LOCATION



**AXOD, AXODE, AX4S
ERRATIC FORWARD REVERSE
ENGAGEMENT**

COMPLAINT:

Delayed forward engagement, or no forward engagement when hot, erratic forward and reverse when hot.

CAUSE:

The forward clutch piston may be cracked on the outside diameter, seal groove or apply wall (bottom of piston). This condition will cause leakage resulting in apply concerns. See Figure 1.

CORRECTION:

Use the following chart to see which application forward clutch piston is needed for replacement.

F4DZ-7A262-A	F4DZ-7A262-B
3.0L Taurus 3.0L Sable 3.8L Taurus 3.8L Sable 3.8L Continental 3.8L Windstar	3.2L Taurus Sho

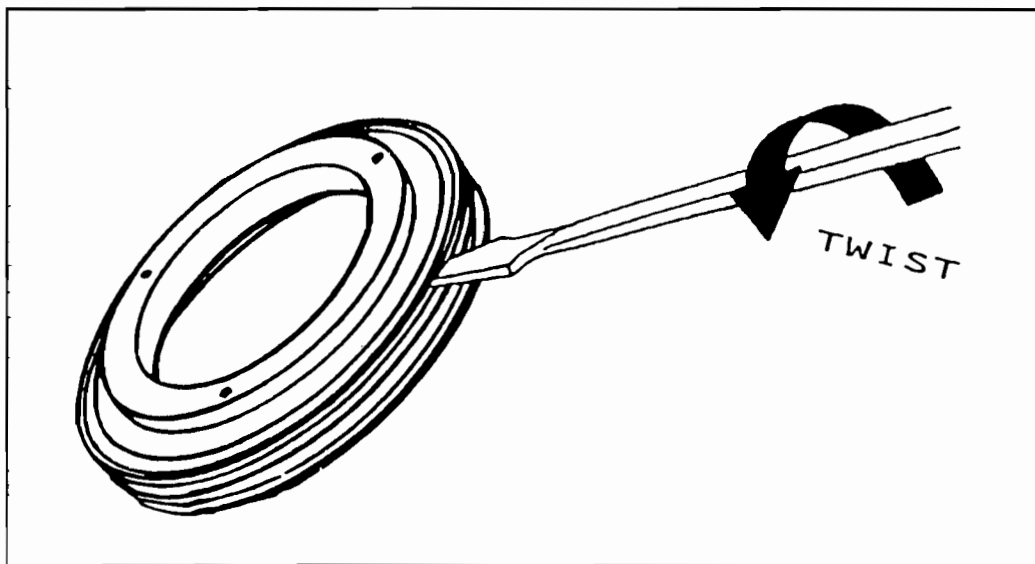


FIGURE 1

FORD AXOD-E 3-NEUTRAL KICKDOWN

COMPLAINT:

A delayed shift may occur during 3-2 forced downshifts, or "Kickdown" and /or the transaxle will shift to neutral during the 3-2 kickdown.

CAUSE:

The cause may be, a broken spring retainer clip between the pull-in control valve spring and the 3-2 control valve spring, as shown in Figure 1.

CORRECTION:

Replace the spring retainer clip with **OEM part number F1DZ-7F194-A**.

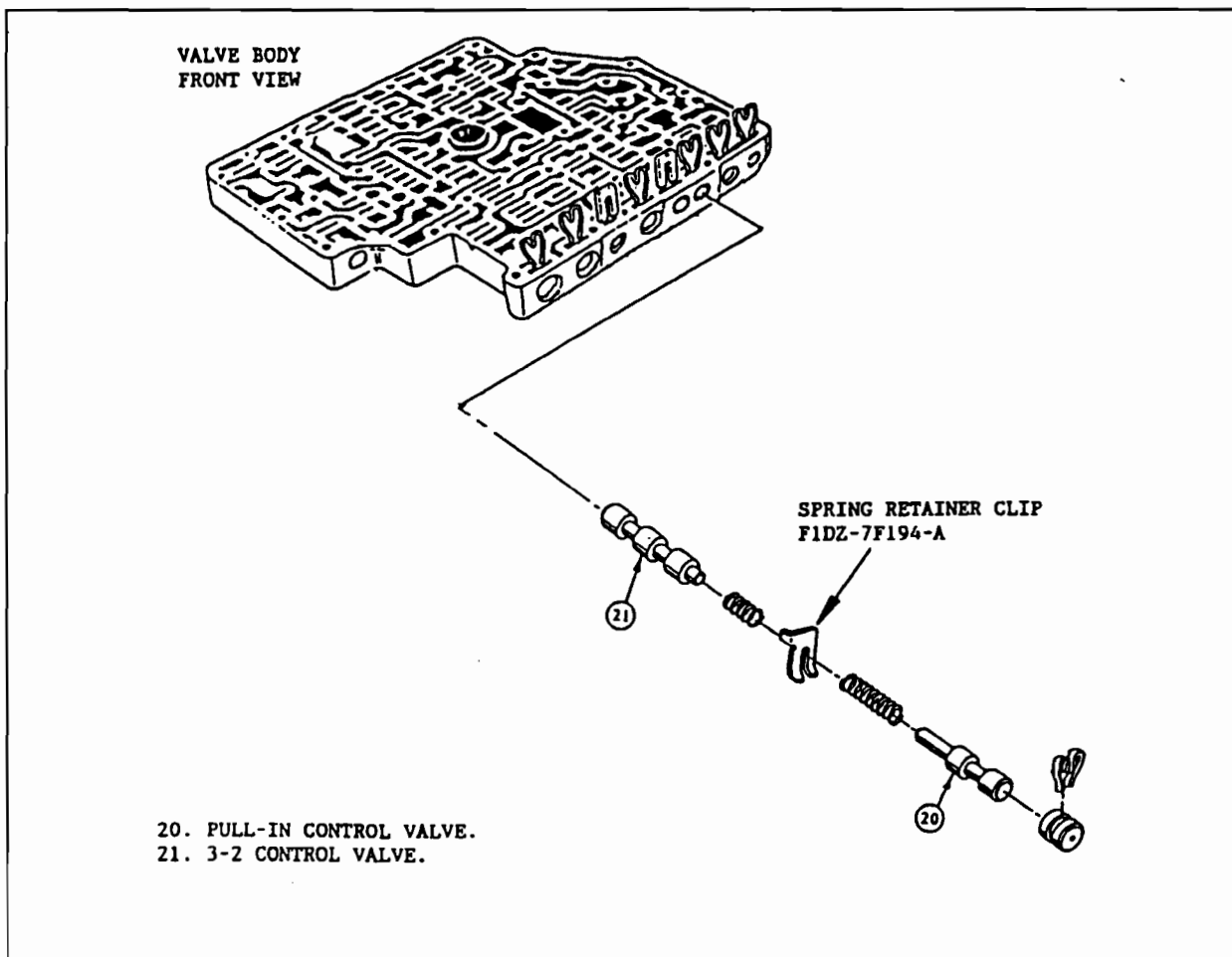


FIGURE 1

ots

OKLAHOMA TRANSMISSION SUPPLY, INC.

**SPECIALIZING IN A FULL LINE OF AUTOMATIC TRANSMISSION PARTS &
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**SEALED POWER
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**LUBE
GARD II**

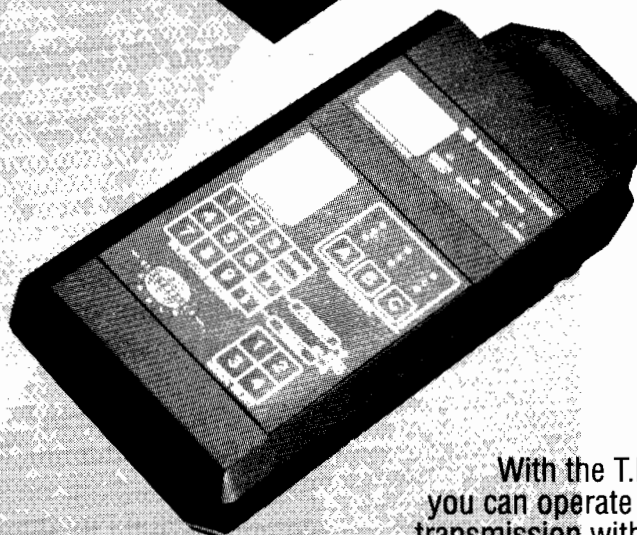
Ford

**CHRYSLER
MOTORS**

AC GM Delco
GENERAL MOTORS CORPORATION

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TRANSMISSION
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With the T.E.C.
you can operate any
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the automobile's computer!
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is the transmission or if it is the
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Roller bearing installed on
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support center support.
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A140, Toyota A40 Series, Toyota AW71LE,
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Tulsa Office: 1(800) 369-7444



FORD AXODE (AX4S) CONVERTER TURBINE SPLINES CHANGE FROM 23 TEETH TO 25 TEETH

CHANGE: Approximately mid-way thru the 1994 production schedule, beginning on December 20, 1993, Ford Motor Co. changed the converter turbine splines and the turbine shaft splines to 25 teeth, from the previous 23 teeth.

REASON: Improved durability for high torque applications.

PARTS AFFECTED:

(1) **TORQUE CONVERTER**-Converter turbine hub splines from 23 teeth to 25 teeth. To identify this change the converter "Stamp Code" was changed. Refer to the Converter Stamp Code Chart in Figure 1.

The 25 tooth converter can also be identified by looking down into the converter hub, as shown in Figure 2, and the converter hub will have two notches outside the spline area, and is very easy to see (See Figure 2).

(2) **TURBINE SHAFT**-Splines changed from 23 teeth to 25 teeth. To identify this change Ford Motor Co. changed the Transaxle Assembly Number, which is on the tag on the bellhousing. Refer to the Transaxle Assembly Number Chart in Figure 1, or count the number of splines on the turbine shaft.

INTERCHANGEABILITY: 94-4-9

If replacement of either the torque converter and/or turbine shaft is required, ensure that equal number of splines exist on the mating part.

CAUTION:

IT IS POSSIBLE TO INSTALL A 25 TOOTH CONVERTER ONTO A 23 TOOTH TURBINE SHAFT. IF THIS OCCURS, THE VEHICLE WILL HAVE NO FORWARD OR REVERSE MOVEMENT.

TRANSAXLE ASSEMBLY NUMBER AND TORQUE CONVERTER STAMP CODE CHART				
VEHICLE AND ENGINE	TRANSAXLE ASSY. ENGR. PART NUMBER (23 TEETH)	TRANSAXLE ASSY. ENGR. PART NUMBER (25 TEETH)	TORQUE CONVERTER STAMP CODE (23 TEETH)	TORQUE CONVERTER STAMP CODE (25 TEETH)
Taurus/Sable 3.0L	F4DP-BA	F4DP-BB	# 24	# 19
Taurus/Sable 3.8L	F4DP-CA	F4DP-CB	# 25	# 29
Taurus SHO 3.2L	F4DP-DA	F4DP-DB	# 18	# 28
Taurus Police 3.8L	F4DP-EA	F4DP-EB	# 27	# 31
Continental 3.8L	F4OP-BA	F4OP-BB	# 26	# 30

Figure 1

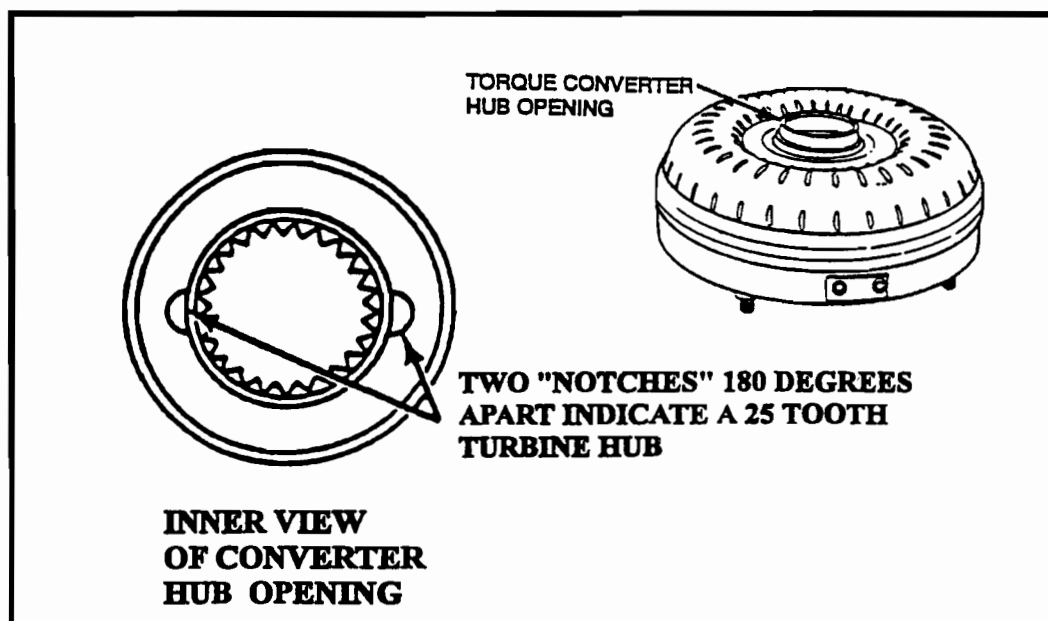


Figure 2



FORD AXOD AND AXODE NEW DESIGN SEALING RINGS FOR THE DRIVEN SPROCKET SUPPORT

1ST DESIGN:

When the AXOD was first introduced in 1985 in 1986 model year vehicles. The five (5) driven sprocket support Teflon sealing rings were .065" axial thickness, and were "Plain Orange" in color (See Figure 1).

2ND DESIGN:

In 1989, Ford redesigned these sealing rings, increasing the axial thickness by approximately .015", and added "Green Speckles" for identification. These sealing rings were used for all AXOD and AXODE production from 1989 thru 1993, and all existing 1st Design (.065" thick) rings were purged from the system and are no longer produced (See Figure 1).

3RD DESIGN:

In late 1993, Ford revised the tolerance on the scarf-cut angle from 7-12 degrees, trying to improve the sealing ability of the rings, and removed the "Green Speckles" to aid in identifying these parts on the production line. The result was another "Plain Orange" seal ring that is a different dimension (.080" thick), than the original "Plain Orange" seal ring (.065" thick), and has created confusion for suppliers and technicians (See Figure 1).

MEASURE THE AXIAL THICKNESS AS SHOWN IN FIGURE 1.

APPROXIMATELY .080" THICK = OK TO USE.

APPROXIMATELY .065" THICK = DO NOT USE.

4TH DESIGN:

In July 1994, Ford again changed the sealing rings for the driven sprocket support. Although dimensionally the same as the 3rd design level, the 4th design is produced using different manufacturing process that greatly reduces shrinkage, which improves durability and leak resistance. The 4th design level seal rings are identified by their "Red Speckles" (See Figure 1).

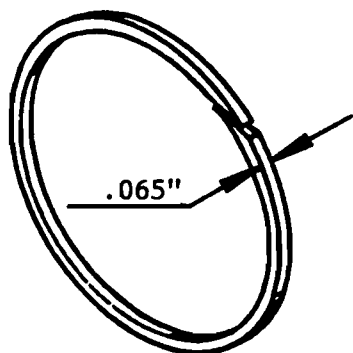
SUMMARY:

The 2nd design "Green Speckled", 3rd design "Plain Orange", and 4th design with the "Red Speckles", are identical dimensionally and may be used interchangeably in AXOD and AXODE driven sprocket support applications (See Figure 1).

Once the remaining stock of the 3rd design "Plain Orange" seal rings are purged out of the system, the 4th design with the "Red Speckles" will be the only sealing rings available. The original part number **E6DZ-7D019-A** has not changed.

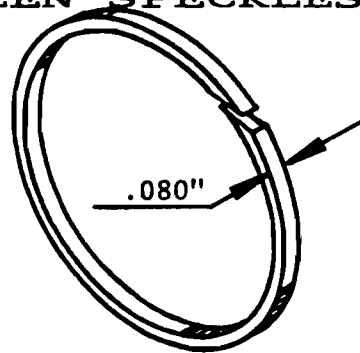
FORD AXOD AND AXOD-E
DRIVEN SPROCKET SUPPORT SEAL RINGS

1ST DESIGN
PLAIN ORANGE



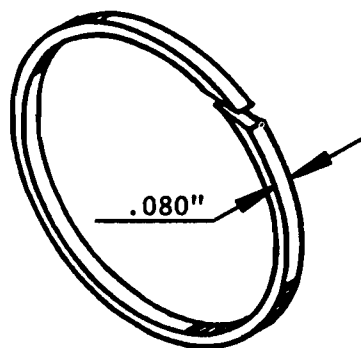
DO NOT USE!

2ND DESIGN
ORANGE WITH
GREEN SPECKLES



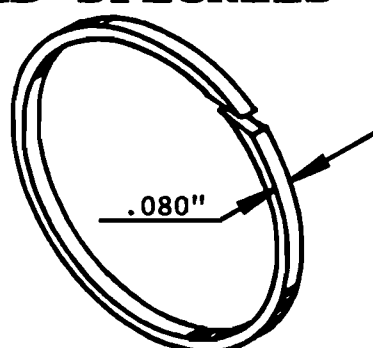
OK TO USE.

3RD DESIGN
PLAIN ORANGE



OK TO USE.

4TH DESIGN
ORANGE WITH
RED SPECKLES



OK TO USE.

Figure 1



FORD AXOD-E ELECTRICAL DIAGNOSIS

EPC SOLENOID

1. Volt/Ohmmeter set to Ohms, with leads terminal to terminal on EPC Solenoid, Ohmmeter should read 2.5-6.5 ohms resistance.
2. 0-100 PSI gauge installed in TV port:
EPC energized = 10-20 PSI
EPC de-energized = 75-85 PSI
3. Could store codes 624, 625, 649, 651.

MODULATED LOCK-UP SOLENOID (MLUS)

1. Volt Ohmmeter set to Ohms, with leads terminal to terminal on MLUS
Ohmmeter should read 0.75-2.0 ohms resistance.

LOCK-UP SOLENOID (LUS)

1. Volt/Ohmmeter set to Ohms, with leads terminal to terminal on LUS,
Ohmmeter should read 16-40 ohms resistance.
2. Either Lock-up Solenoid could store codes 628, 629, 652.

SHIFT SOLENOID 1

1. Volt/Ohmmeter set to Ohms with leads terminal to terminal on SS1,
Ohmmeter should read 12-30 ohms resistance.
2. Could store code 621.

SHIFT SOLENOID 2

1. Volt/Ohmmeter set to ohms, with leads terminal to terminal on SS2,
Ohmmeter should read 12-30 ohms resistance.
2. Could store code 622.

SHIFT SOLENOID 3

1. Volt/Ohmmeter set to Ohms, with leads terminal to terminal on SS3
Ohmmeter should read 12-30 ohms resistance.
2. Could store a code 641.

TURBINE SPEED SENSOR

1. Volt/Ohmmeter set to Ohms, with leads terminal to terminal on Turbine Speed Sensor, Ohmmeter should read 80-220 ohms resistance.
2. Depth of exciter wheel tooth from outer edge of chain cover should not Exceed 20.62mm (.810).
3. Could store code 639.

VEHICLE SPEED SENSOR

1. Volt/Ohmmeter set to Ohms, with leads terminal to terminal on VSS,
Ohmmeter should read 190-240 ohms resistance.
2. Could store code 452.



FORD AXOD-E ELECTRICAL DIAGNOSIS CONTINUED

TRANSMISSION OIL TEMPERATURE SENSOR (TOT)

1. Volt/Ohmmeter set to Ohms, leads terminal to terminal on TOT Sensor
Ohmmeter should read resistance approximately as shown in chart below.

FLUID TEMPERATURE DEGREES °C	FLUID TEMPERATURE DEGREES °F	OHMS RESISTANCE
0-20	32-58	33.5K-107K
21-40	59-104	14.5K-33.5K
41-70	105-158	5.0K-14.5K
71-90	159-194	2.5K-5.0K
91-110	195-230	1.5K-2.5K
111-130	231-266	0.8K-1.5K

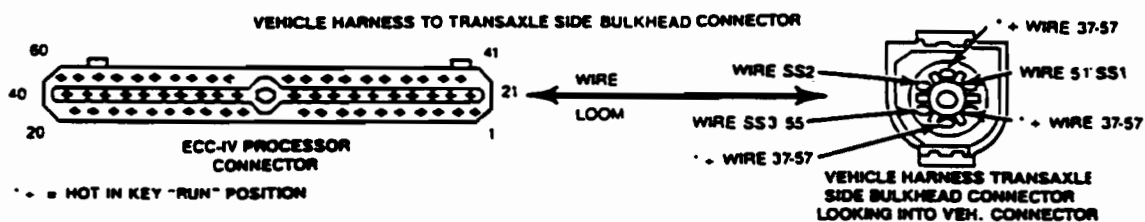
2. Resistance should decrease if transaxle is heated, and should increase if transaxle is allowed to cool. Oil pan warm to the touch is about 105 F-158F.

MANUAL LEVER POSITION SWITCH (MLPS)

1. MLPS Tester is available from Ford Part Number D89T-10010-A, and has the resistance values for each position on the side of the MLPS Tester.

SOLENOID PATTERN

GEAR	ENGINE BRAKING	SS1	SS2	SS3
OD/1ST	NO	OFF	ON	OFF
OD/2ND	YES	ON	ON	OFF
OD/3RD	NO	OFF	OFF	ON
OD/4TH	YES	ON	OFF	ON
D3/1ST	NO	OFF	ON	OFF
D3/2ND	YES	ON	ON	OFF
D3/3RD	YES	OFF	OFF	OFF
LO/1ST	YES	OFF	ON	OFF
LO/2ND	YES	OFF	OFF	OFF
REVERSE	NO	OFF	ON	OFF
PARK/NEUT	NO	OFF	ON	OFF





FORD AXODE REDESIGNED REAR LUBE TUBE REAR LUBE TUBE SEAL AND REAR PLANETARY SUPPORT

The Rear Lube Cross-Over Tube, Lube Tube Seal, and the Rear Planetary Support have been redesigned beginning in mid-year 1993 and introduced as a running change in model year 1993. The reason for this change was to improve lube flow to the planetary gearsets.

PARTS AFFECTED:

- (1) REAR LUBE CROSS-OVER TUBE—Has a longer, smaller diameter end to pass completely through the case and INTO the revised lube seal, which is now pressed into the rear planetary support see Figure 1.
- (2) REAR LUBE TUBE SEAL—Now pressed into the new rear planetary support to accommodate the new rear cross-over tube see Figure 2.
- (3) REAR PLANETARY SUPPORT—Now bored to accept the new rear lube tube seal see Figure 3.

INTERCHANGEABILITY:

- (1) The redesigned parts listed above ARE NOT interchangeable with the previous design level parts.
- (2) The redesigned parts listed above may be used on any 1991 or 1992 AXODE transaxle, however ALL THREE PIECES MUST BE USED TOGETHER.
- (3) The redesigned parts listed above CANNOT be used on 1986-1990 AXOD transaxles, because of the governor circuit.

SERVICE INFORMATION:

Note: The new design lube tube should be installed INTO THE NEW REAR LUBE SEAL FIRST, and then press the other end into case, to prevent seal damage.
If the seal is damaged, a delay to drive will be the result, as this is in the drive oil circuit.

Rear Lube Cross-Over Tube (New Design)	F3DZ-7G084-A
Rear Planetary Support (New Design and Includes Seal)	F3DZ-7A130-A
Rear Lube Tube Seal (New Design- 3 per package)	F3DZ-7G085-A
Differential/Speedo Lube Tube (Existing Design)	F2DZ-7G086-A

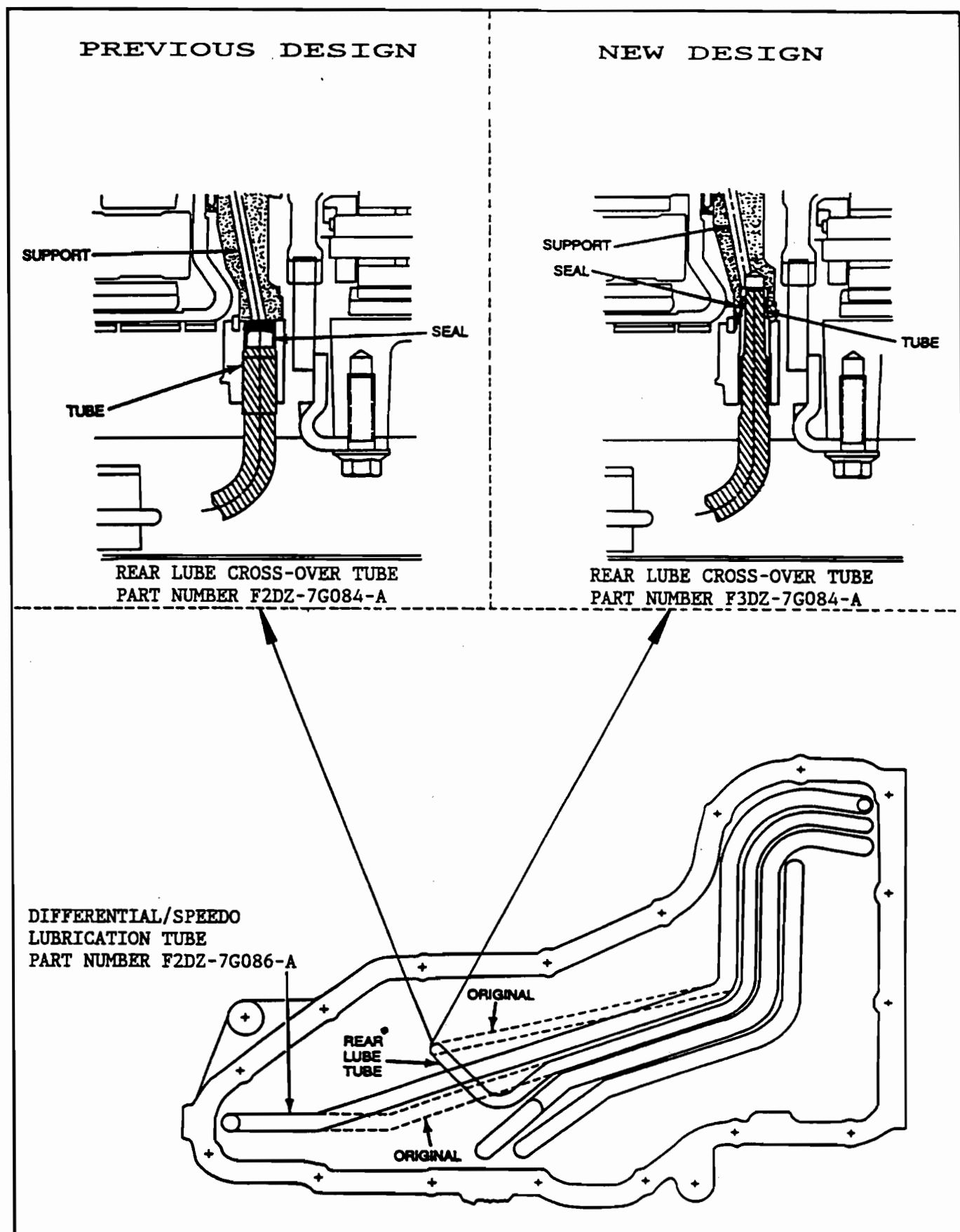


Figure 1

NEW DESIGN REAR PLANETARY SUPPORT
AND REAR LUBE SEAL

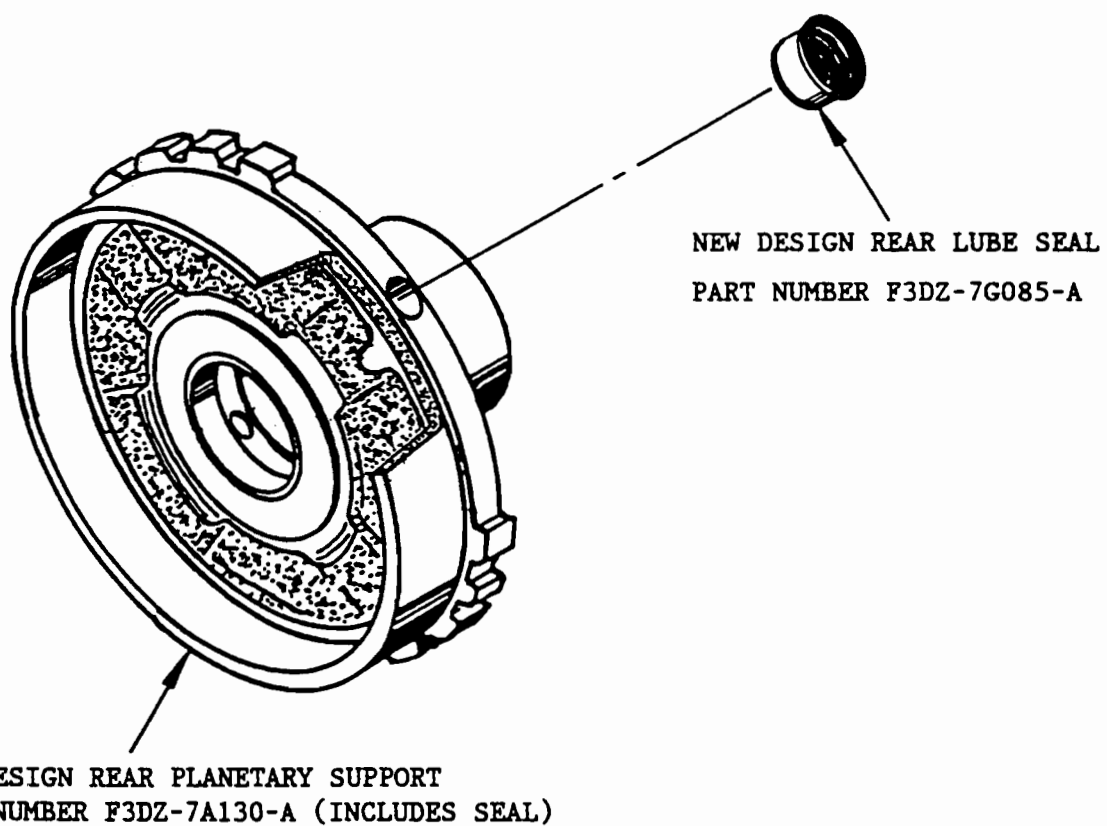
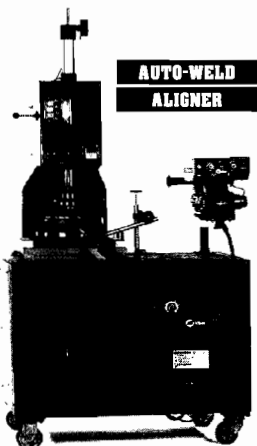


Figure 2

BIG 3 CHOOSES TCRS-CHRYSLER, FORD & GM



**AUTO-WELD
ALIGNER**

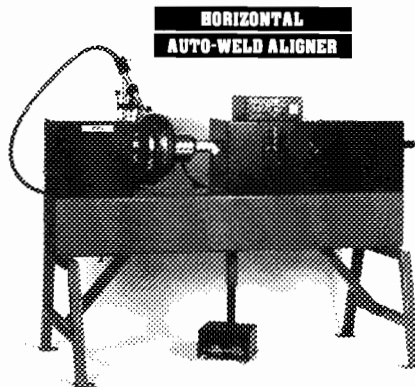
The TCRS robotic 2001 "Auto Tack System™"

automatically indexes and fully tacks the converter in seconds. Upon completion of the last tack it makes a complete 360 weld and automatically shuts off.

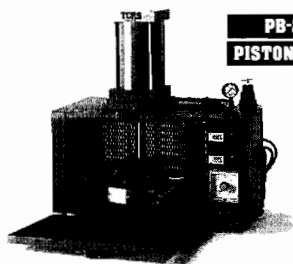
THE PLUS FACTOR, THATS WHAT YOU RECEIVE WITH TCRS EQUIPMENT

- + Qualified trained personnel
- + Back-up when you need it
- + More machine for your money
- + Guaranteed to do more than any other machine on the market
- + Auto tack system
- + Air hold down-no bolting necessary
- + Air collet system-no chuck keys
- + All pilots and hub bushings included
- + Complete hubbing system to install new finished hubs on any impeller
- + Bowl build-up saves critical cores
- + Welds on ring gears
- + Delta weld 300
- + Tweeco Tam Gun
- + Concentricity, perpendicularity, and parallelism

PATENT PENDING

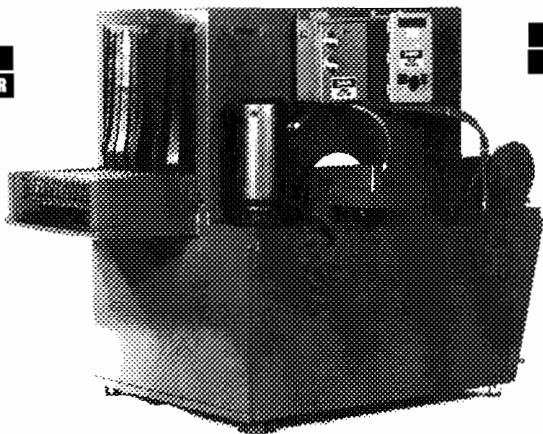


**HORIZONTAL
AUTO-WELD ALIGNER**



**PB-2002
PISTON BONDER**

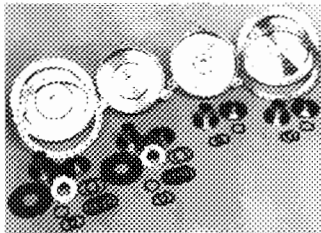
- Easy as 1-2-3
- Bonds a piston every 2 min.
- Adjustable heat & timer controls
- Aluminum bonder dies provide even heat distribution
- Compact & efficient • No wait-no freight
- Comes with 20 die sets Am. & Foreign
- Pat. # 5.141.586



MULTI-PURPOSE PASS THROUGH CONVEYOR WASHER PW-100

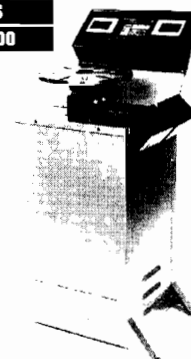
The TCRS MULTI-PURPOSE Pass Through Conveyor Washer is designed to clean efficiently any kind of part, whether it's a TRANSMISSION CASE, HARD PART, or TORQUE CONVERTER. The powerful 7 1/2 h.p. motor, and 8 bars, 48 stainless steel nossels, 70 p.s.i., and galvanized conveyor belt, cleans virtually all oil and grime from parts. The conveyor Washer is fully insulated and built of heavy gage steel. The built in skimmer is efficiently designed to reduce oil from the surface. The TCRS MULTI-PURPOSE Pass Through comes with a one year limited warranty.

RACE KITS



8" High Performance, 10" Street, 8" Bolt Together, & 10" Bolt Together.

These kits are precision machined on TCRS CNC Equipment. You can retrofit the 10" Street Kit to a 245mm converter in 30 min. or less. The TCRS kits are the highest quality and durable performance kits on the market today.



**TCRS
FB-4000**

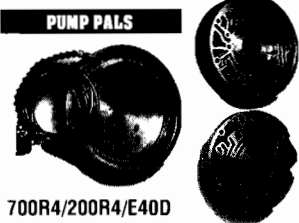
- Easy operator service
- Only ten sec. to balance
- Rugged motor drive system
- 110/220/50/60 HZ
- Push button calibration auto true zero
- Fast, accurate, easy to use
- No bolting necessary
- Fluid or dry balance
- Add life to your shelf converters-no rust build-up
- Two balancing modes-1 to 5 gram
- Computer touch key pad for entering torque converter diam.

TCRS's Universal Alignment "Collet System" for Precision Torque Converter Balancing

- TCRS "Collet System" works on all hubs, oversized or undersized
- A twist of the wrist locks the "Collet System" securely on the hub. No messy O-rings, no scratched hubs
- 5 hub bushings cover virtually all converters
- Quick change splined alignment pins are included with the "Collet System"
- The TCRS "Collet System" indexes the internal parts accurately



PATENT PENDING



PUMP PALS

700R4/200R4/E40D

- Quick set-up
- Pump pal takes the eccentrics out of the pump rotor pockets
- Works on any 3 jaw chuck or backing plate
- Easy to do
- Cost effective - can pay for itself in 1 day
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FORD A4LD VALVE BODY CHECK BALL LOCATIONS VALVE BODY UPDATES

There are four different check-ball locations in the A4LD valve bodies and three different design levels of the reverse engagement valve. Be sure to install the checkballs in their proper location. The condition of complaint can vary if the checkballs are placed in the wrong position.

1st Design- This valve body has ONE Solenoid for the converter clutch apply and release. These valve bodies require six (6) checkballs placed in locations shown in Figure 1. **DO NOT install check balls in locations marked with an "X".** Figure 1

2nd Design- This valve body has TWO Solenoids, 1 for the converter clutch and 1 for the 3-4 shift, and DOES NOT use a reverse engagement valve. These valve bodies require five (5) checkballs placed in the locations shown in Figure 2. **DO NOT install checkball in the locations marked with an "X"** Figure 2.

3rd Design- This valve body has TWO Solenoids, 1 for converter clutch and 1 for the 3-4 shift, and DOES use a reverse engagement valve. These valve bodies require four (4) checkballs placed in the locations shown in Figure 3. **DO NOT install check balls in the locations marked with an "X".** Figure-3

Early Design- Valve body without the reverse engagement valve train and note check ball position for this design valve body. Figure 4.

SCORPIO- This valve body has 7 check ball location and 1 solenoid and found in the 1988-89 model Scorpio vehicles. Figure 5

Merkur- This valve body has 6 check ball location and 2 solenoids and found in Merkur vehicles. Figure 6.

Three Design Levels- of Reverse engagement valve trains. Placement of retainers is critical. Figure 7 shows the location of these retainers.

LATE 1988-90 ELECTRONIC 3-4 SHIFT CHECK BALL LOCATION TWO SOLENOID

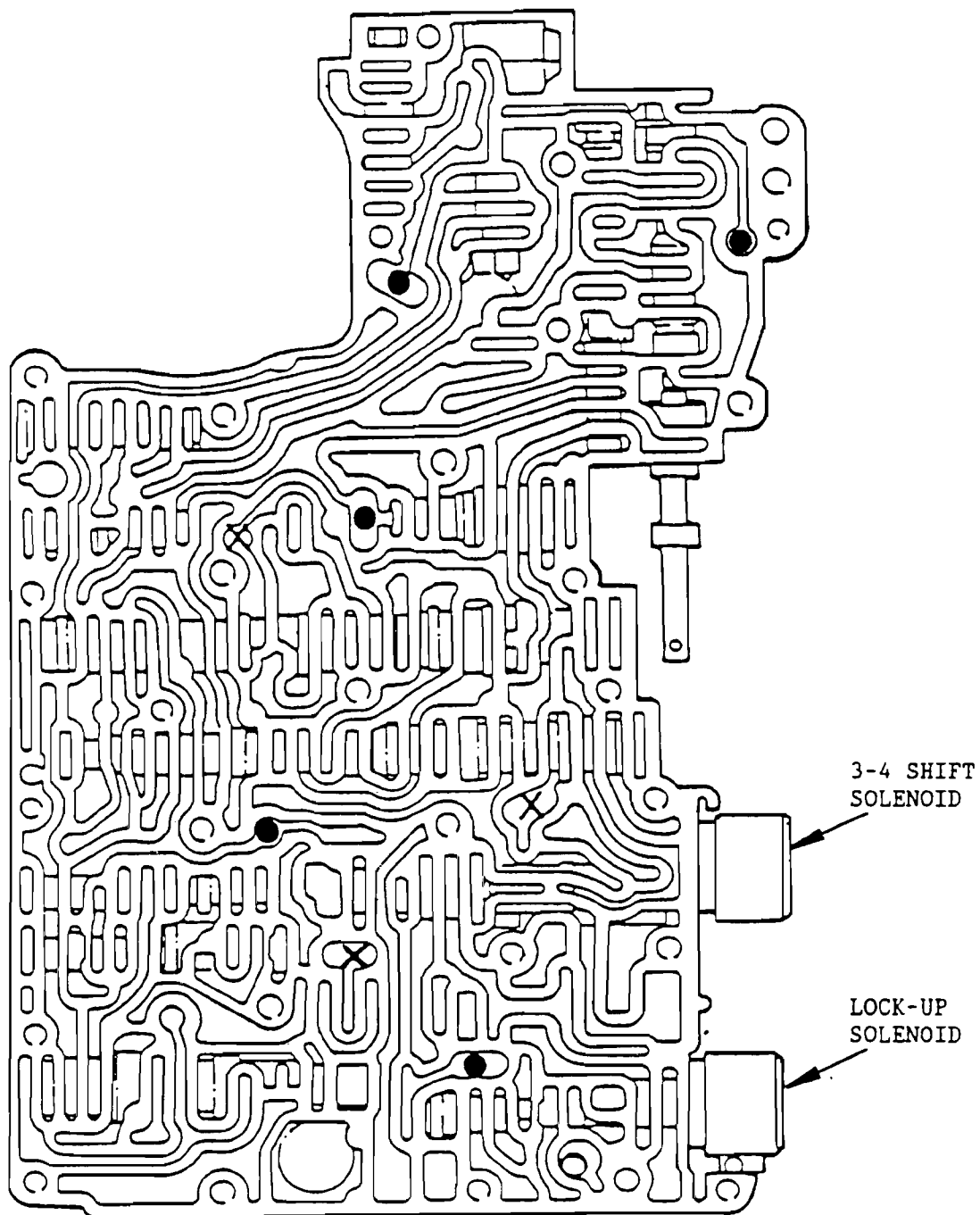


Figure 2

EARLY 1985-1987 HYDRAULIC 3-4 SHIFT CHECKBALL LOCATION ONE SOLENOID

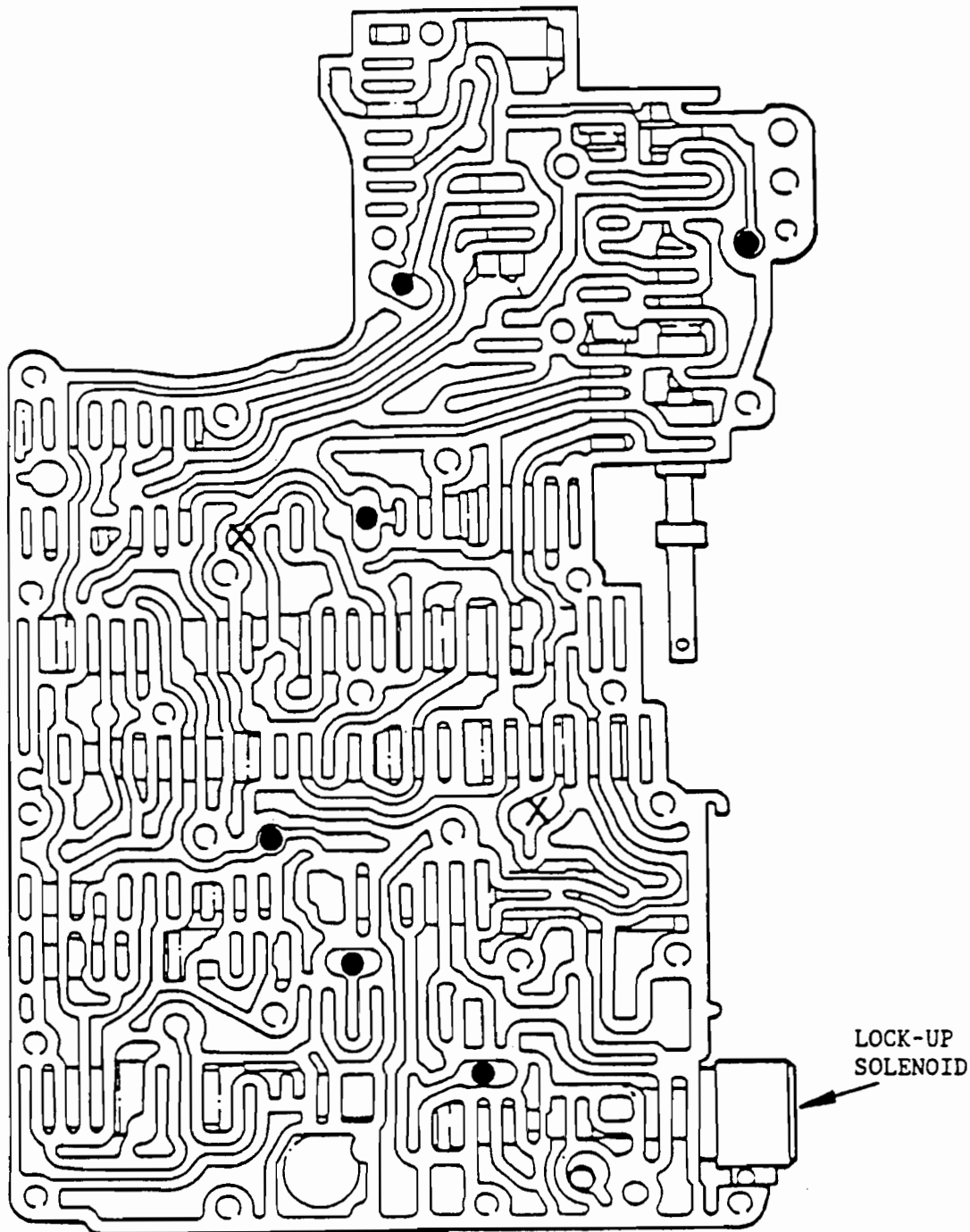


Figure 1

SCORPIO 1988-89 SEVEN (7) CHECK BALL LOCATION

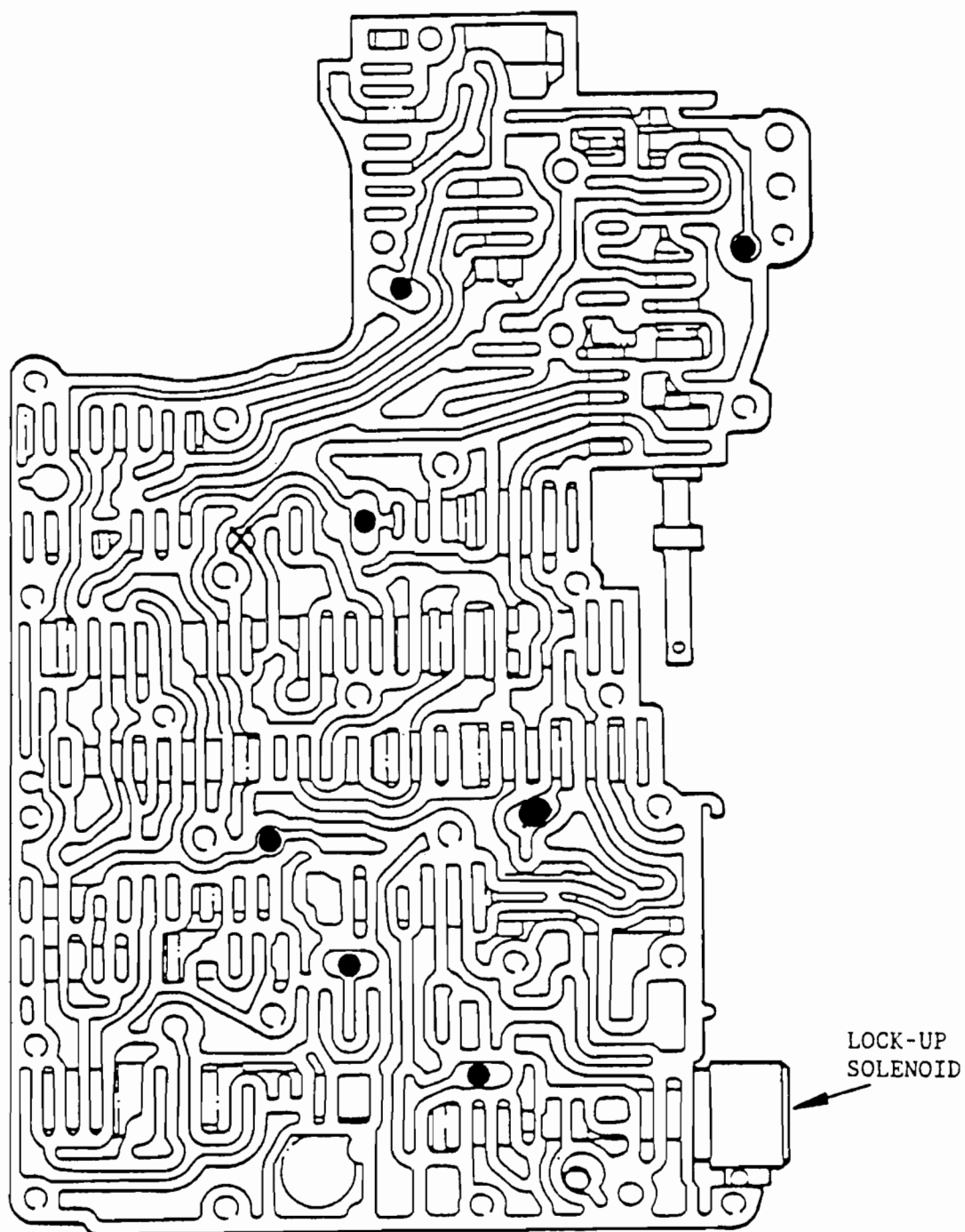


Figure 1

MERKUR SIX (6) CHECK BALL LOCATION

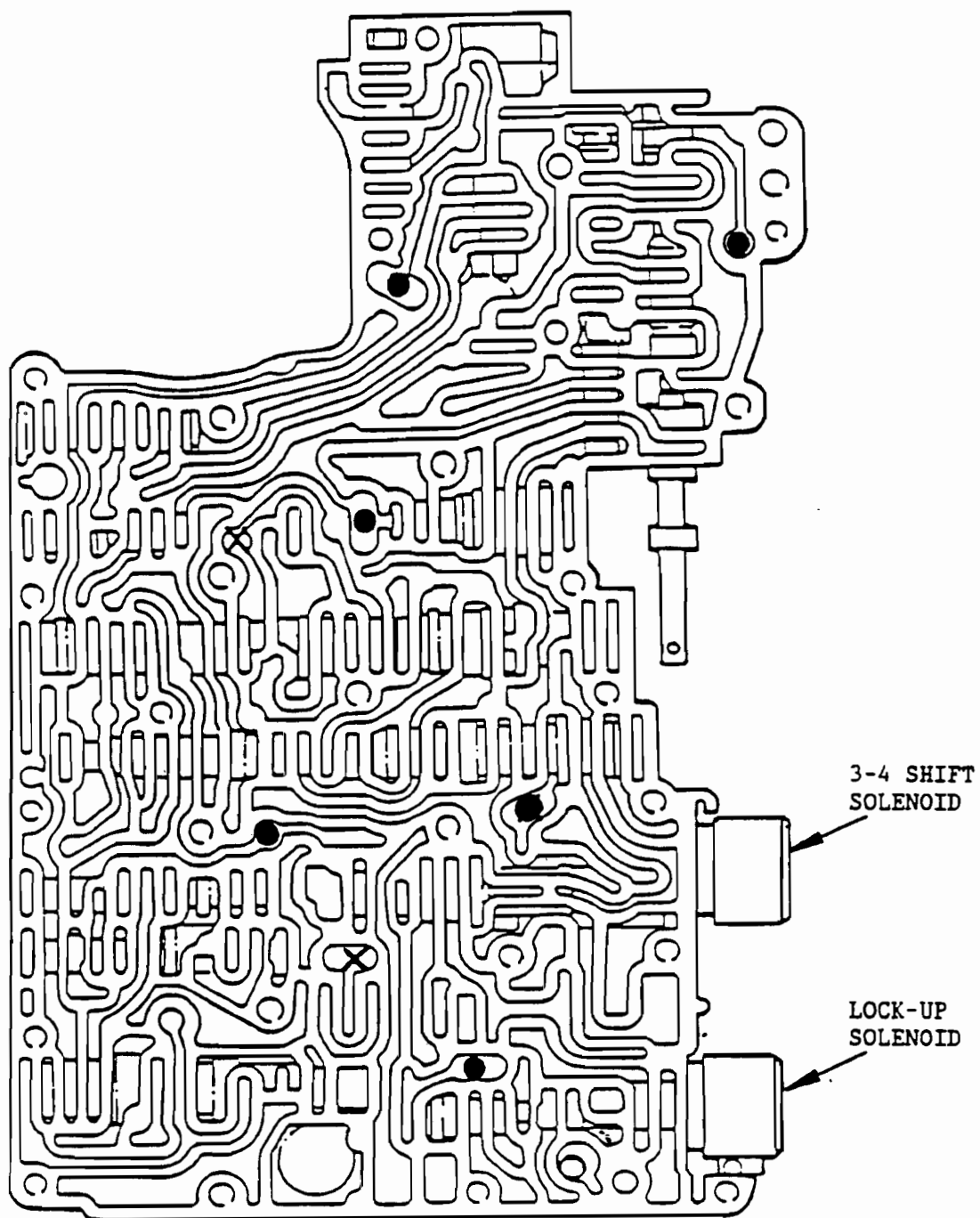


Figure 2

EARLY DESIGN WITHOUT REVERSE ENGAGEMENT CONTROL VALVE CHECK BALL LOCATION

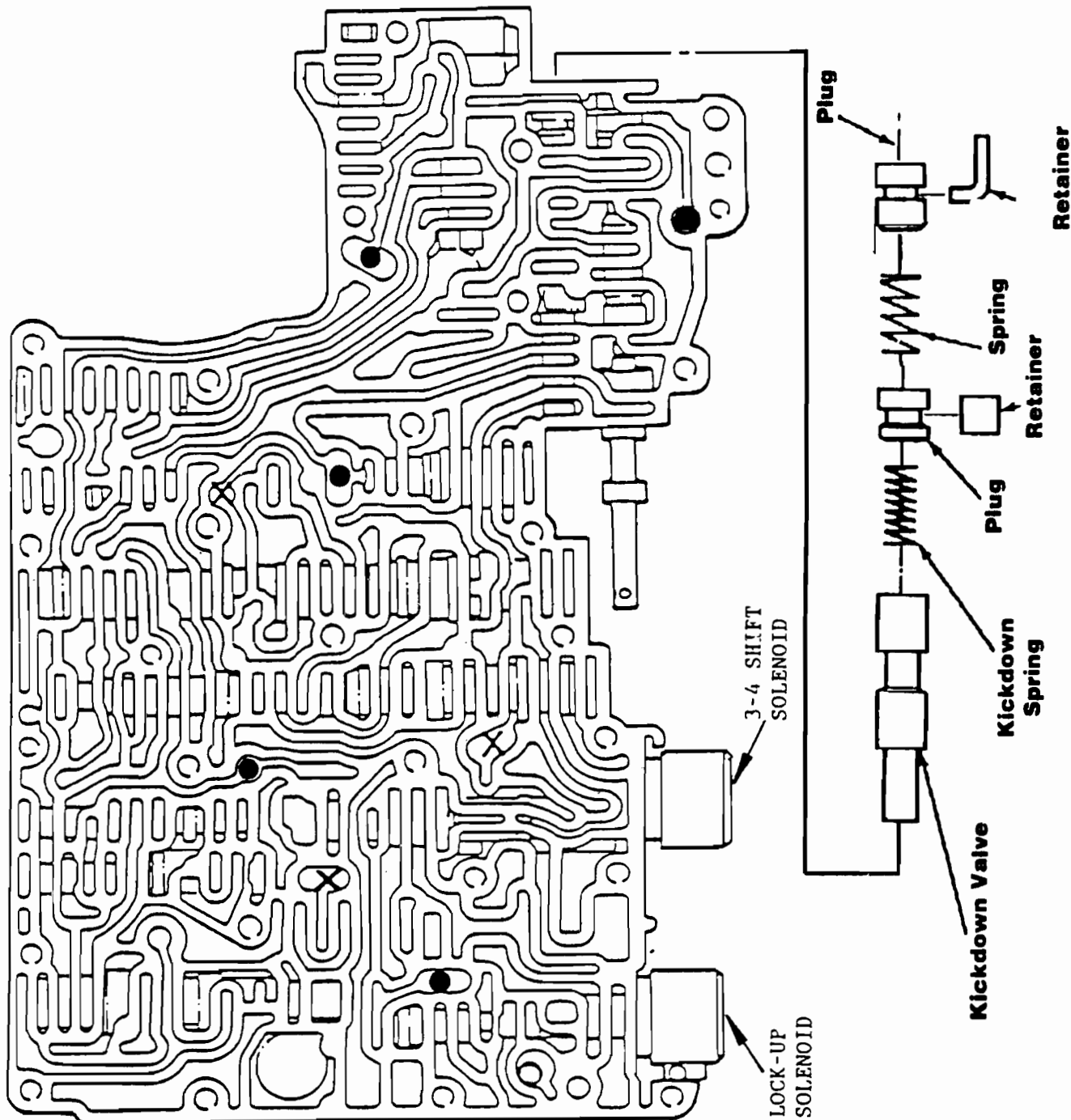


Figure 3

VALVE BODY WITH REVERSE ENGAGEMENT CONTROL VALVE CHECK BALL LOCATION

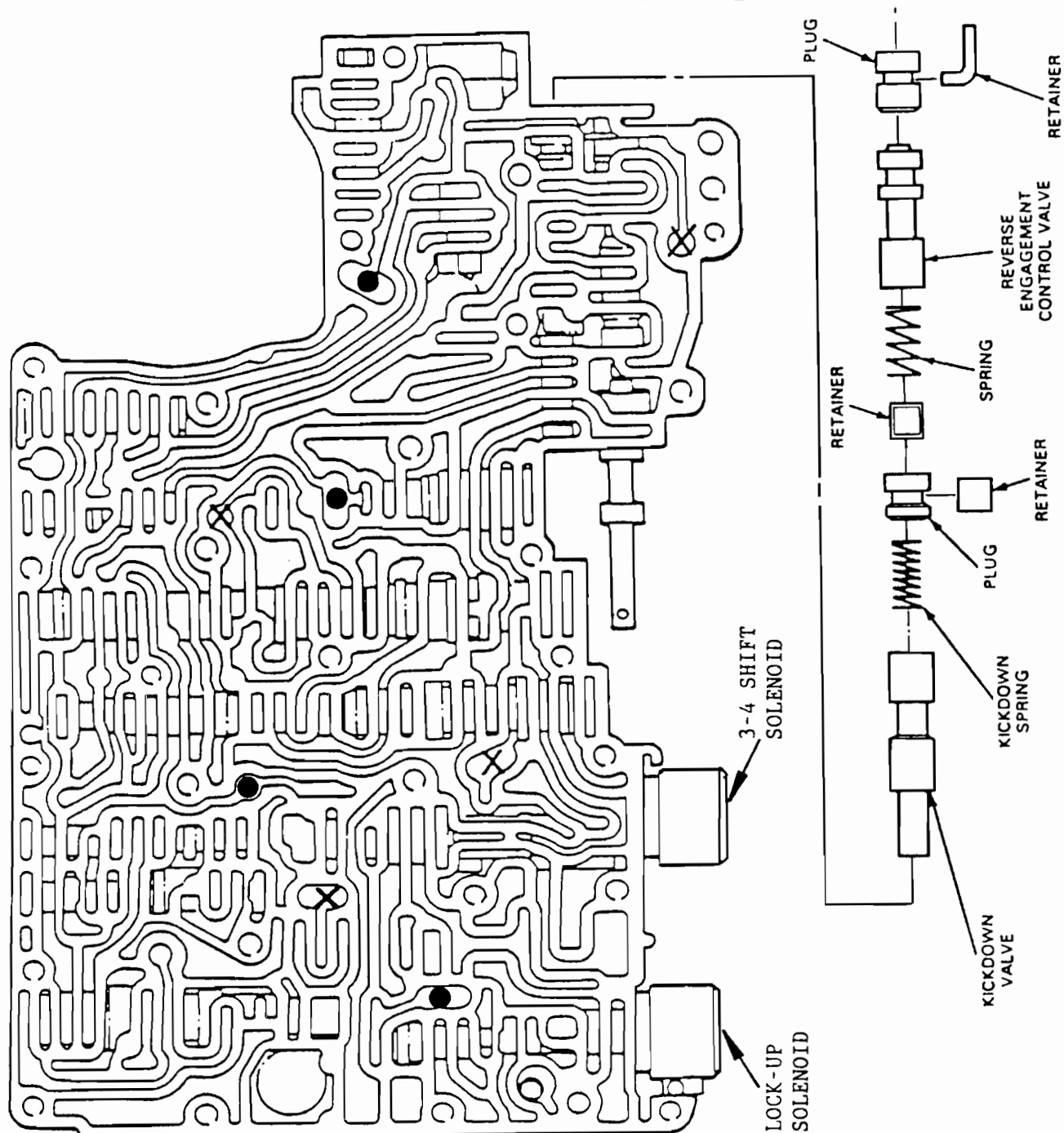
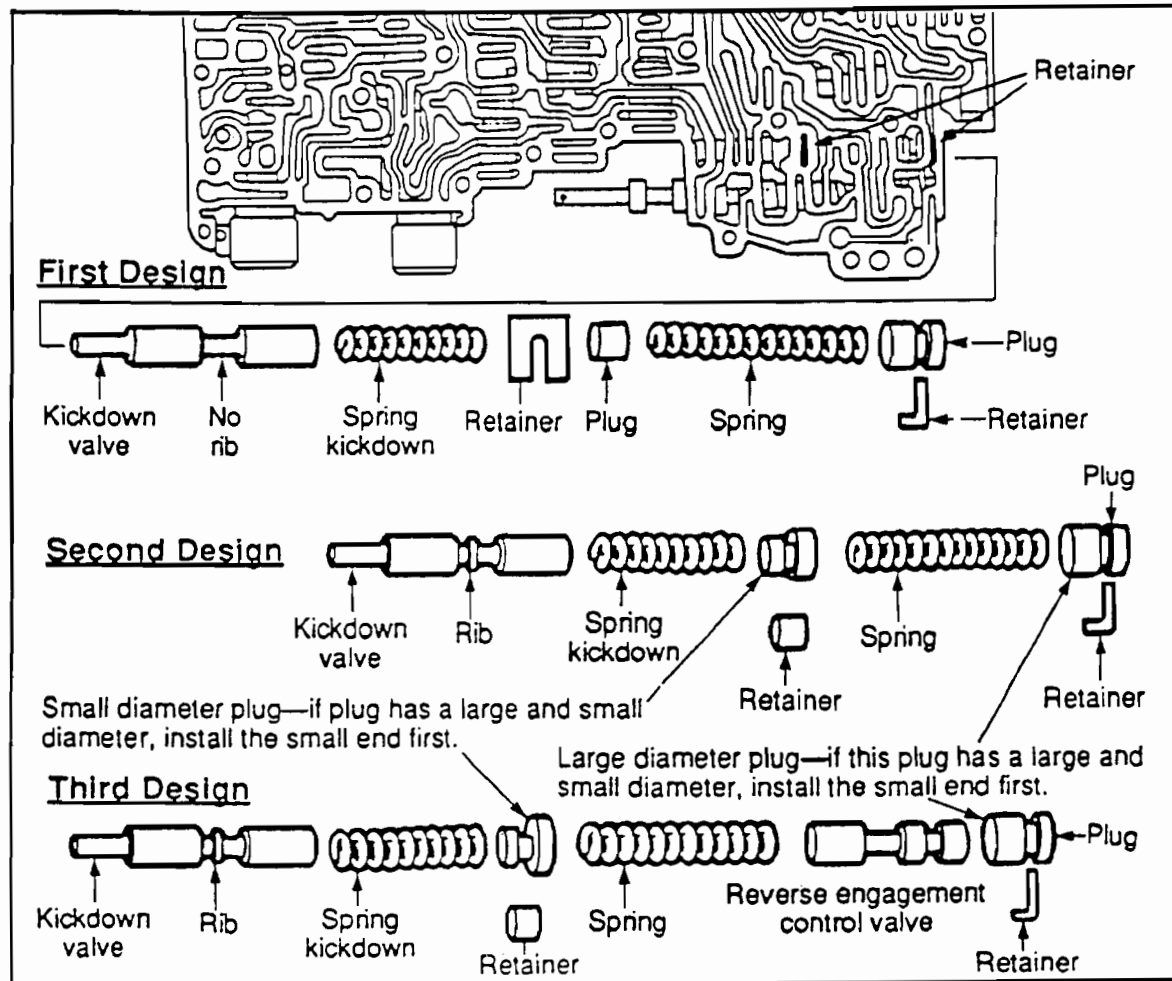


Figure 3

THREE DESIGN LEVEL REVERSE ENGAGEMENT VALVE TRAINS



A4LD UPDATES BELL HOUSING CHANGES

UPDATE: 1

Bell Housing: Figures 1 thru 4 illustrates the different bell housing applications to engine size. A .105" machined lip was added at the front seal bore to allow the front seal to be staked in place. This update to the front seal bore was to help front seal blowout.

The machined lip was added at the front seal bore to allow the front seal to be staked in place (Refer to Figures 5 & 6).

INTERCHANGEABILITY:

As long as the engine bolt pattern is the same Refer to Figure 1 thru 4, bell housings will interchange. However, using an early style bell housing is not recommended.

4.0 LITER

2 SOLENOIDS MODEL

1992-UP AEROSTAR

1990-UP 2WD/4WD RANGER

1990-UP 2WD/4WD EXPLORER

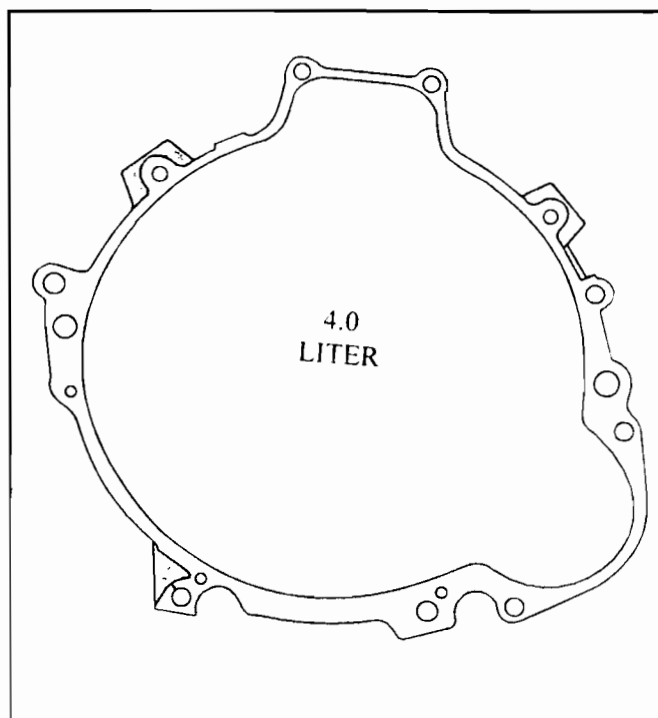


FIGURE 1

BELL HOUSING CHANGES (CONT'D)

3.0 LITER

1 SOLENOID 2 SOLENOIDS

1987 ONLY 1988-UP AEROSTAR
N/A 1991-UP 2 WD RANGER

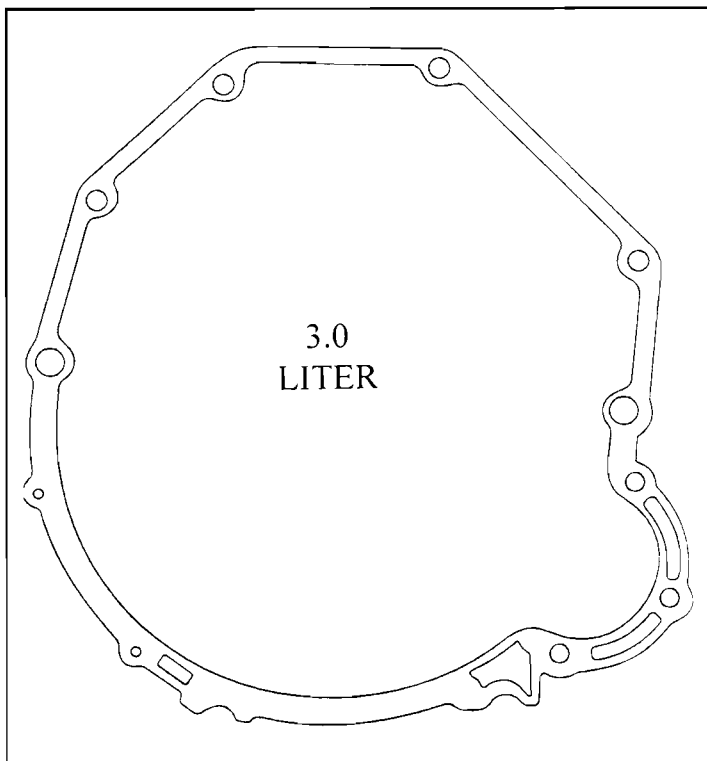


FIGURE 2

2.8 LITER

1 SOLENOID 2 SOLENOIDS

1985-87 N/A 2WD/4WD RANGER
1985-87 N/A BRONCO II
1985-87 N/A AEROSTAR

2.9 LITER

1 SOLENOID 2 SOLENOIDS

N/A 1988-UP 2WD/4WD RANGER
N/A 1988-90 2WD/4WD BRONCO II
1987 ONLY 1988-90 MERKUR/SCORPIO

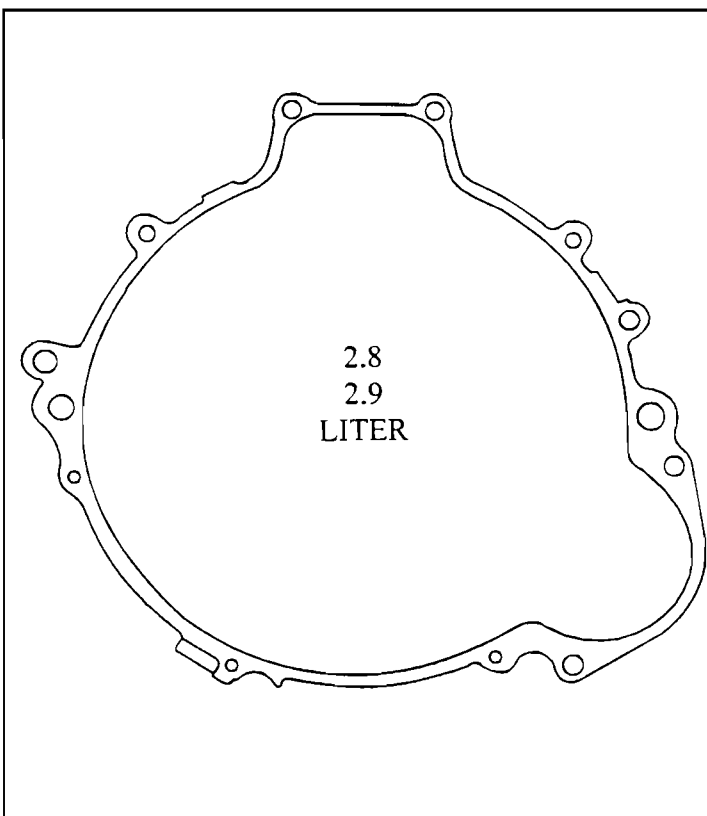


FIGURE 3

BELL HOUSING CHANGES (CONT'D)

2.3 LITER

1 SOLENOID 2 SOLENOID

1985-87 1988-UP MUSTANG
 1985-87 1988-UP 2WD RANGER
 1986-87 N/A AEROSTAR
 1987 ONLY 1988-89 THUNDERBIRD

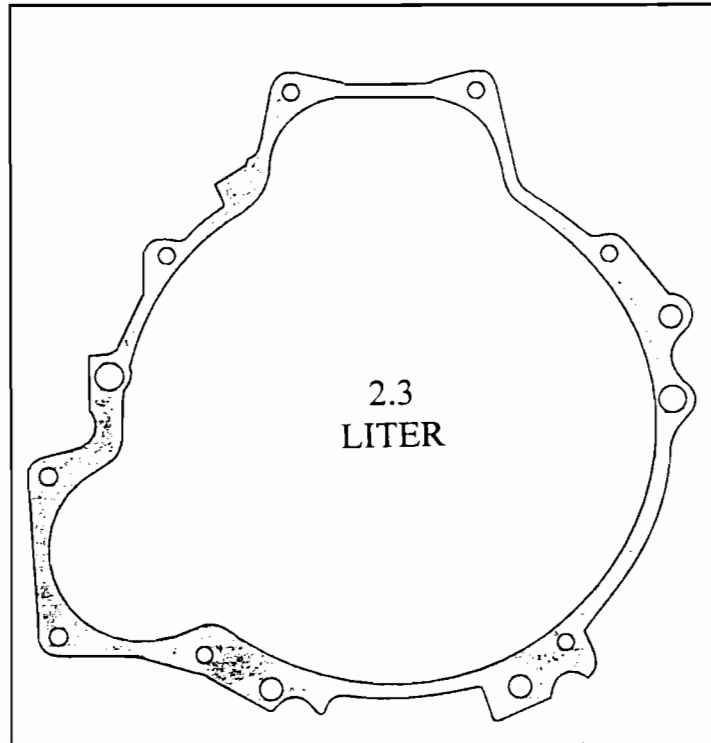


FIGURE 4

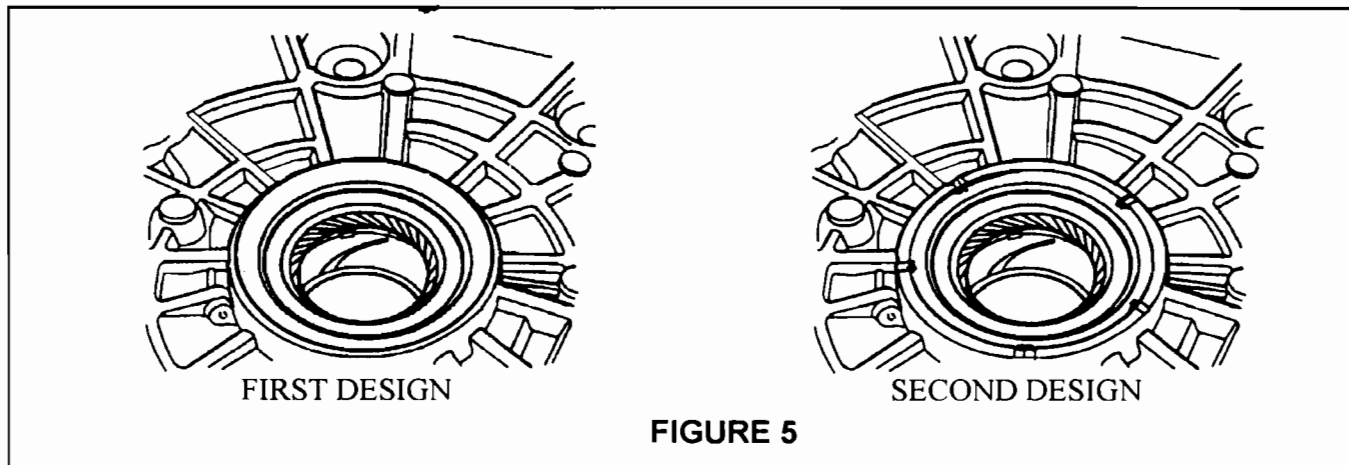


FIGURE 5

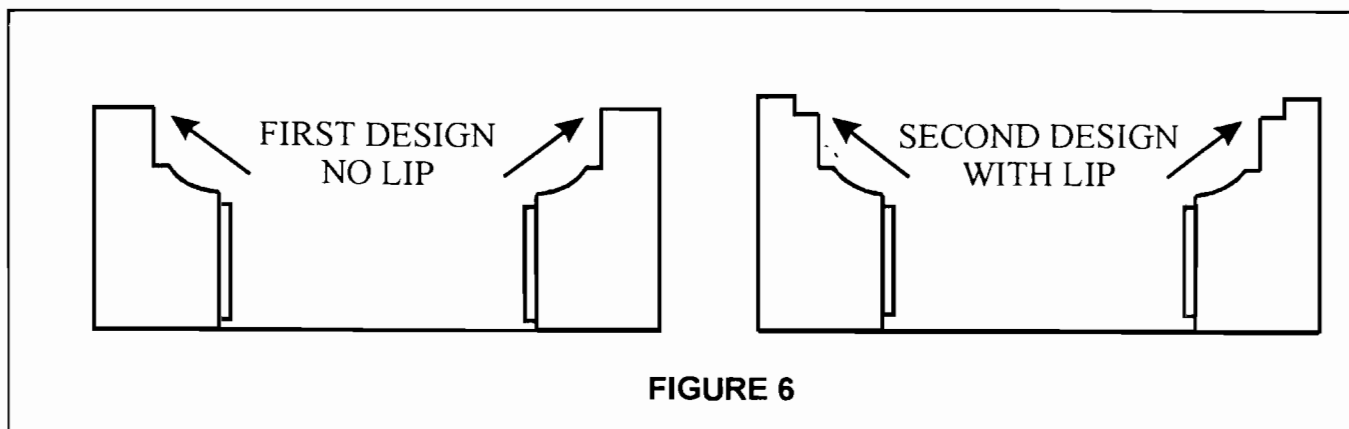


FIGURE 6

A4LD UPDATES CONTINUED BELL HOUSING CHANGES

UPDATE: 2

Enlarged area in the converter drain back passage.

To help prevent front seal blow out.

(1) **BELL HOUSING** -Converter drain back passage area was enlarged for better flow to the drain back hole in the pump body. Refer to Figure 7. It is not necessary to replace the bell housing to cure this complaint. Using a rotary file, or die grinder, remove material to allow full flow drain back hole, Refer to Figure 7. Also enlarge the existing drain back hole in both the bell housing and the pump body to 1/4" Refer to Figure 8.

INTERCHANGEABILITY:

As long as the engine bolt pattern is the same, See Figures 1 thru 4, all late model bell housings will retrofit to early models. Early model bell housings will interchange but the drain back modifications must be made.

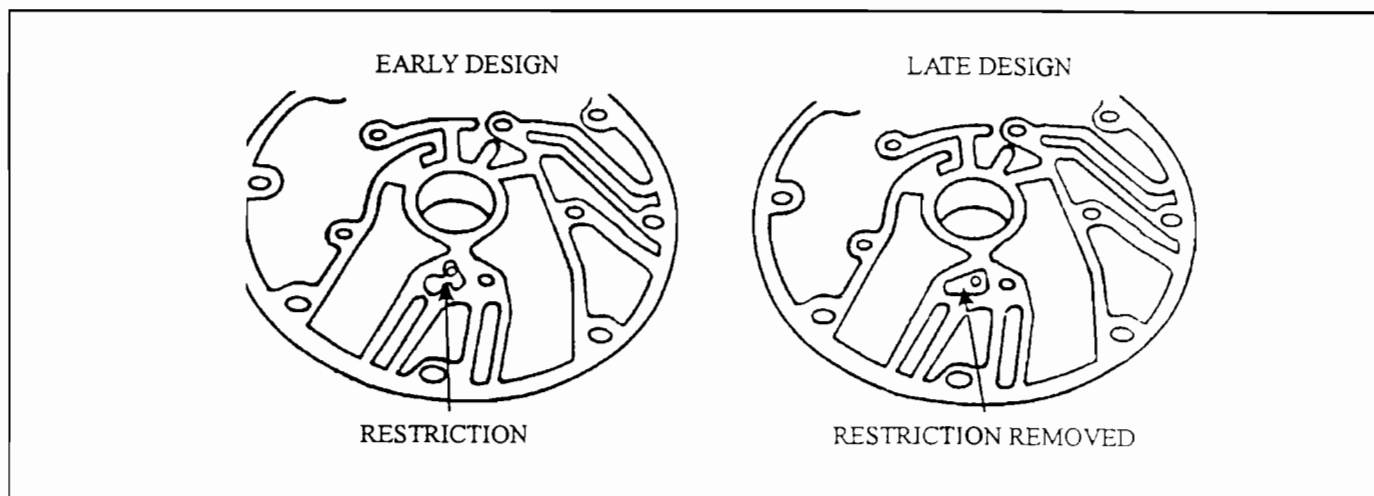


FIGURE 7

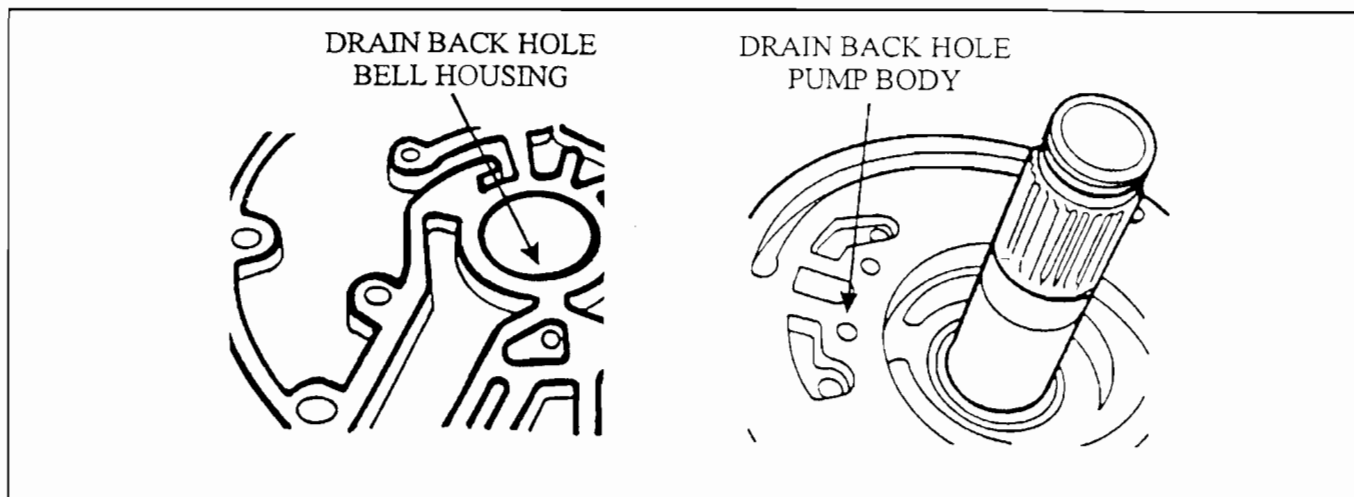


FIGURE 8

A4LD UPDATES CONTINUED BELL HOUSING CHANGES

UPDATE: 3

Pump bolt size and bolt head configuration. Improved structural stability.

PARTS AFFECTED:

- (1) PUMP BOLTS- Were enlarged from 6mm to 8mm and bolt heads were changed from hex heads to allen heads.
- (2) BELL HOUSING-Thread size was enlarged to accomodate the larger, 8mm bolts.
- (3) PUMP BODY-Bolt hole size was enlarged from 6mm to 8mm to accomodate the larger bolts.
- (4) WEAR PLATE-Bolt hole size was enlarged to accomodate the larger 8mm bolts.

INTERCHANGEABILITY:

Bell housings, plates and pumps are interchangeable as a matched set. A C-3 pump plate can be used with an A4LD pump if the three (3) holes in Figure 9 are drilled. An A4LD pump plate must be used to locate the holes.

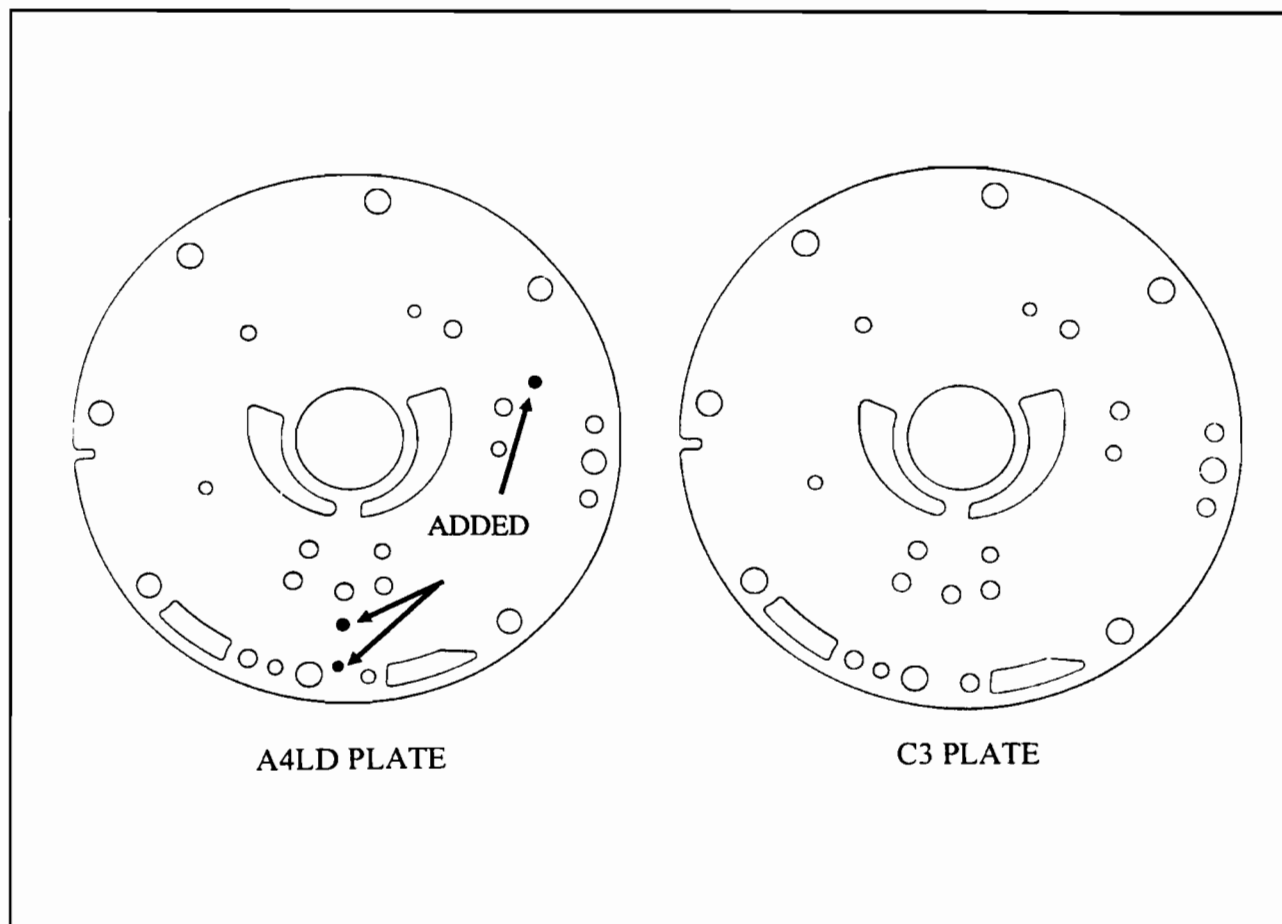


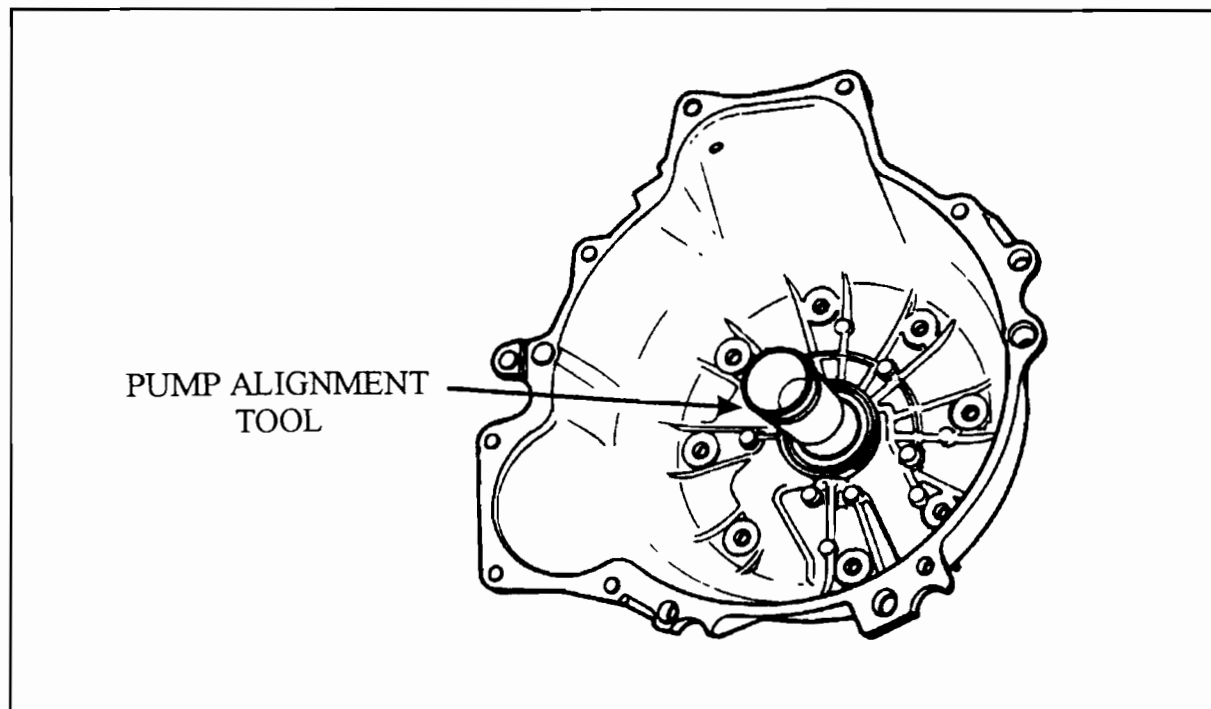
FIGURE 9

A4LD BELL HOUSING-PUMP ALIGNMENT

When assembling the pump body to the bell housing, pump alignment tool must be used (Refer to Figure 10). Using the torque converter, will not produce proper pump alignment. If an alignment tool is not used, several problems may occur, such as:

- (1) PUMP GEARS BREAKING
- (2) PUMP WHINE
- (3) IRREGULAR BUSHING WEAR
- (4) IRREGULAR CONVERTER HUB WEAR
- (5) FRONT SEAL LEAK OR BLOW OUT

Another concern that may be attributed to the above listed problems, is replacement of the front pump bushing in the bell housing. At the factory, Ford puts an oversize bushing in the bell housing and then bores the bushing to proper size. If the bushing is off center, due to the casting of the bell housing, the bushing is bored for perfect alignment. When a new bushing is installed, pump alignment may not be possible. Ford recommends a new bell housing if bushing replacement is necessary. After market exchange bell housings with line bored bushings are also available.

**FIGURE 10**

A4LD STATOR SUPPORT CHANGES

UPDATE: 4

The rear input shaft bushing location was moved closed to the top of the stator support. This was done to improve the support of the turbine shaft.

PARTS AFFECTED:

(1) **STATOR SUPPORT**- The stator support wall was made thicker to accommodate the change in the bushing location (See Figure 11).

INTERCHANGEABILITY:

The early and late design pumps are interchangeable. However, all late design pumps will have larger bolt holes.

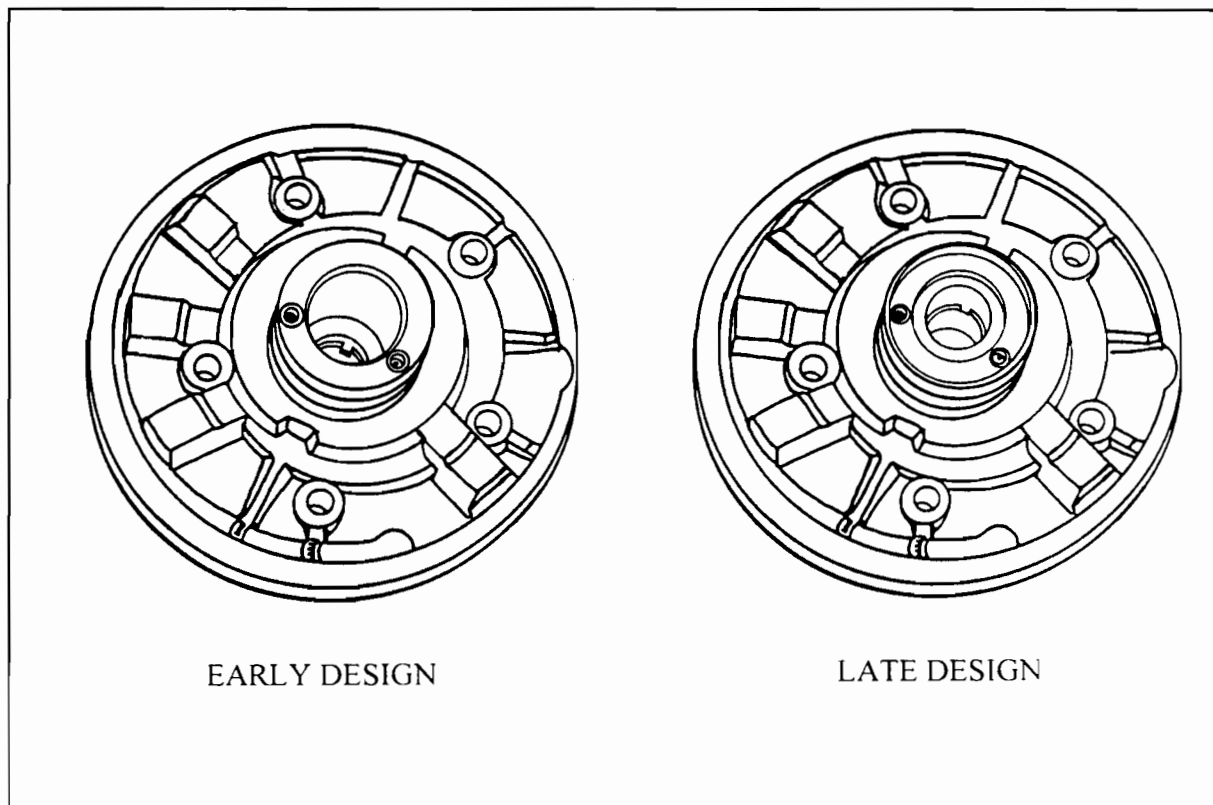


FIGURE 11

A4LD CENTER SUPPORT CHANGES

UPDATE: 5

Sealing ring grooves were enlarged from .104" to .120". This was done to improve direct clutch durability

PARTS AFFECTED:

- (1) CENTER SUPPORT- The sealing ring grooves were enlarged from .104" to .102" (See Figure 1).
- (2) SEALING RINGS- The sealing rings were enlarged to fit the larger ring grooves.

INTERCHANGEABILITY:

The center supports are interchangeable, however, you must use the correct size rings for the center support you are using.

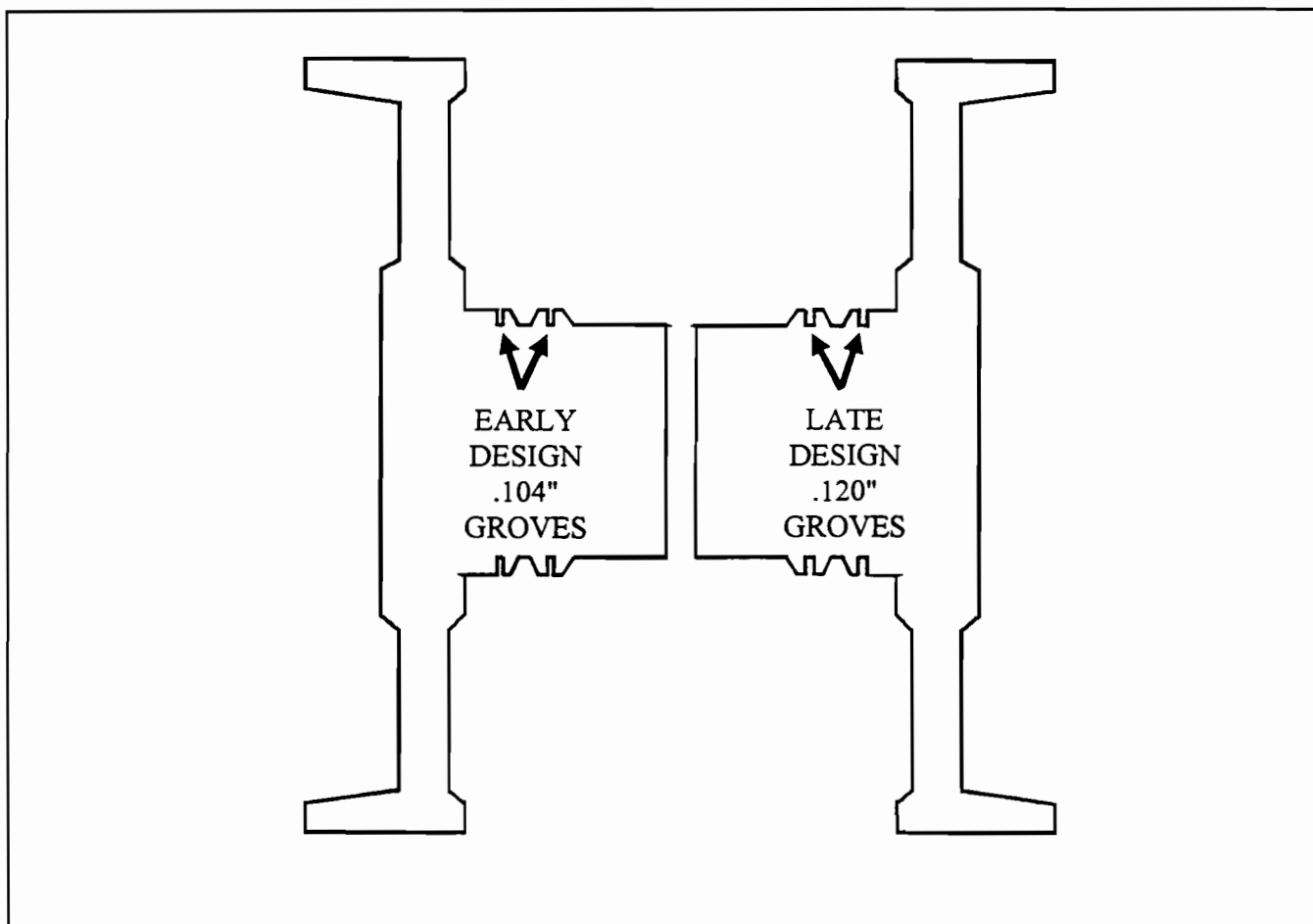


Figure 1

A4LD NO FOURTH GEAR

COMPLAINT:
No Fourth Gear.

CAUSE:

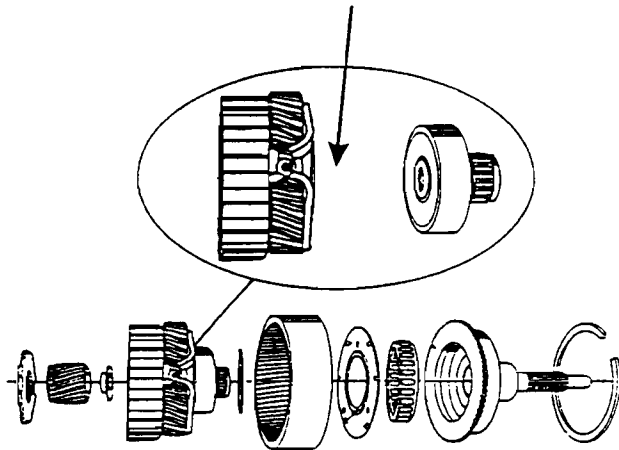
The cause may be the splined portion of the overdrive carrier and sprag inner race broken (See Figure 1). The splined portion and inner race may remain in one piece, and usually turn in the carrier. The problem is not always detectable because the bearing inside the carrier hides the broken area of the carrier. The sprag inner race and splined area for the input shaft **"MUST NOT"** turn. Use a little force if necessary to check the inner race.

CORRECTION:

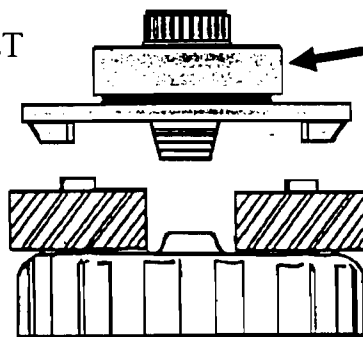
Replace the overdrive carrier. Remanufactured **"HEAVY DUTY"** planetary carries are available from the after market suppliers (See Figure 2).

OVERDRIVE CARRIER BREAKS IN THIS AREA

Figure 1



AFTER MARKET
CARRIER



THIS REAR SECTION OF
THE PLANETARY IS PRECI-
SION MACHINED, ONE
PIECE, CASE HARDENED
ASSEMBLY

Figure 2

**A4LD CENTER SUPPORT THRUST WASHER
FAILURE****COMPLAINT:**

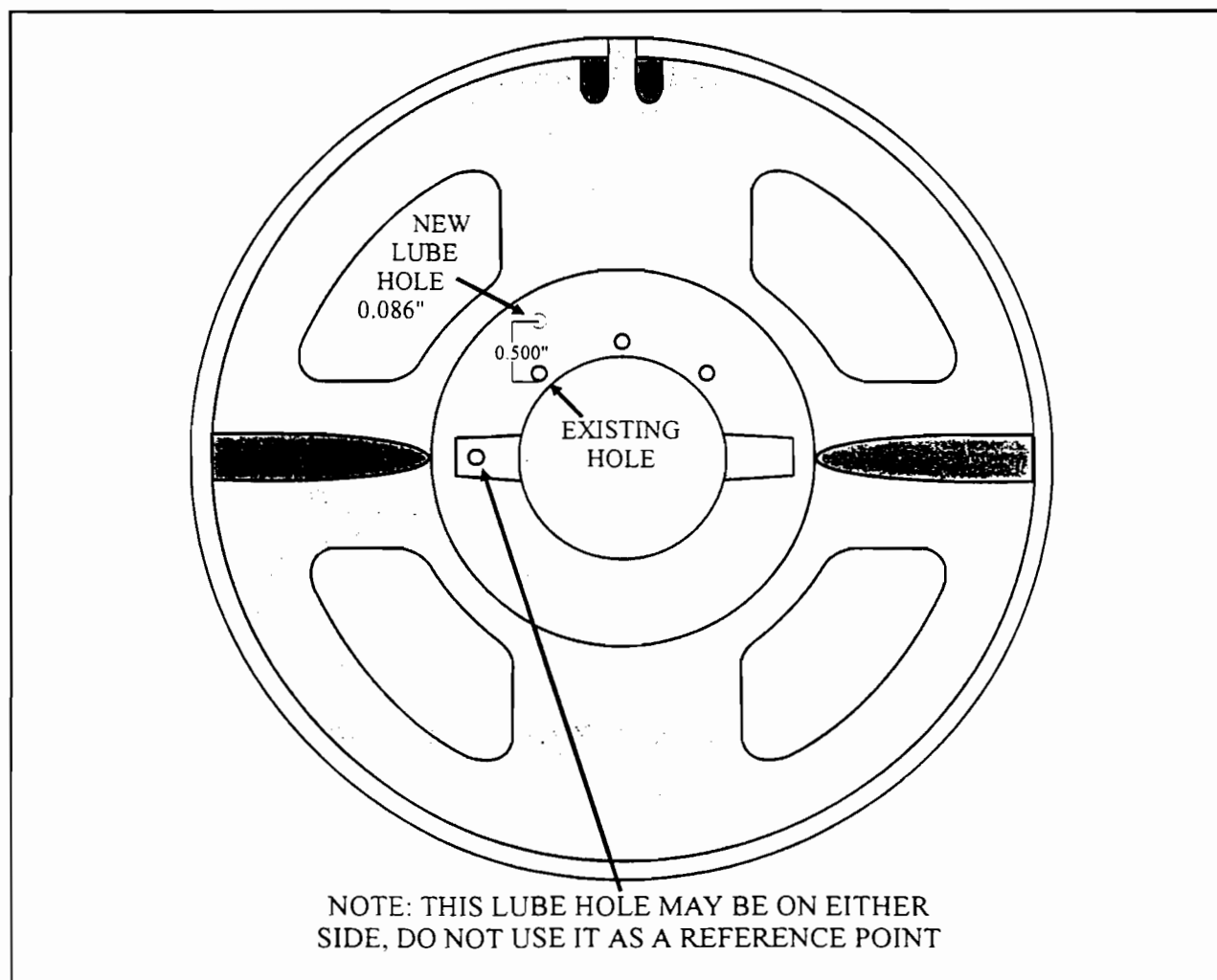
Failure of the selective thrust washer between the center support and the direct drum.

CAUSE:

The cause may be lack of lubrication to the center support thrust washer.

CORRECTION:

Drill a new lube hole in the center support. Measure 0.500" up from the bottom of the existing hole, drill a 0.086" hole all the way through the center support (See Figure 1).

**FIGURE 1**

A4LD NO MOVEMENT IN OD RANGE

COMPLAINT:

Vehicle will not move in the OD range, but will move in D3, 2 and 1. Another common complaint is a flair-up on a 4-3 kick down, and is also caused by the overdrive sprag not holding properly.

CAUSE:

The cause may be the overdrive sprag is in backwards or not holding (See Figure 1).

CORRECTION:

Replace the overdrive sprag, and inspect the inner and outer sprag races for wear or damage.

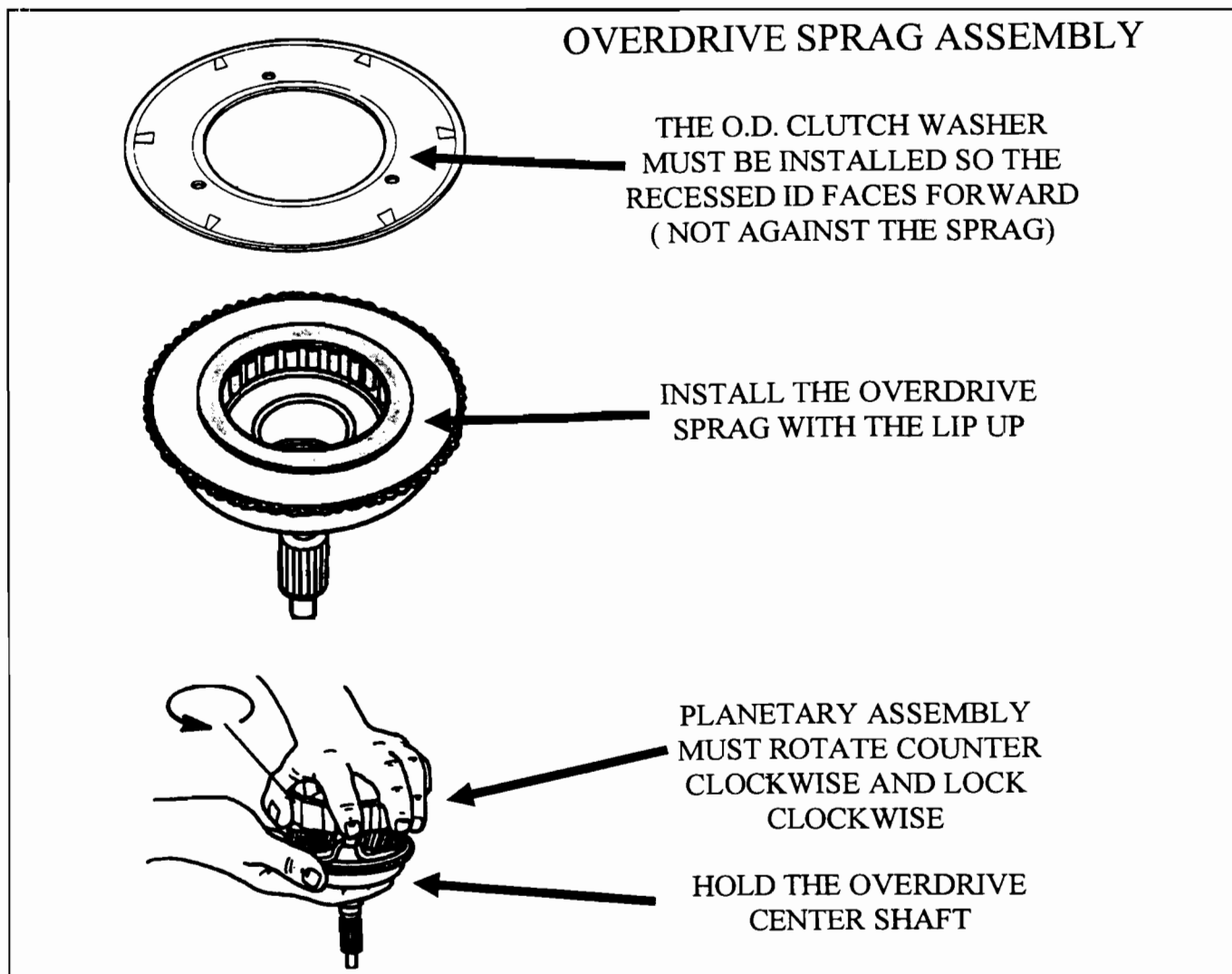


FIGURE 1

FORD A4LD CENTER SHAFT CHANGE

CHANGE: Beginning in model year 1990, on 4.0L models, the O.D. center shaft pilot was machined .048" smaller in diameter.

REASON: To accommodate a new caged needle bearing assembly in the output shaft for improved stability and durability.

PARTS AFFECTED:

- (1) O.D. CENTER SHAFT - The diameter of the pilot on the shaft was machined .048" smaller than the previous design, to accommodate the bearing added to the output shaft. The new design pilot diameter is .395", and the previous design pilot diameter is .443". (See Figure 1)
- (2) OUTPUT SHAFT - Previous design bushing was replaced by a caged needle bearing. (See Figure 2)

INTERCHANGEABILITY:

The O.D. Center Shaft will not retro fit backwards, as it requires the caged needle bearing for proper assembly. The caged needle bearing is not serviced separately from the output shaft.

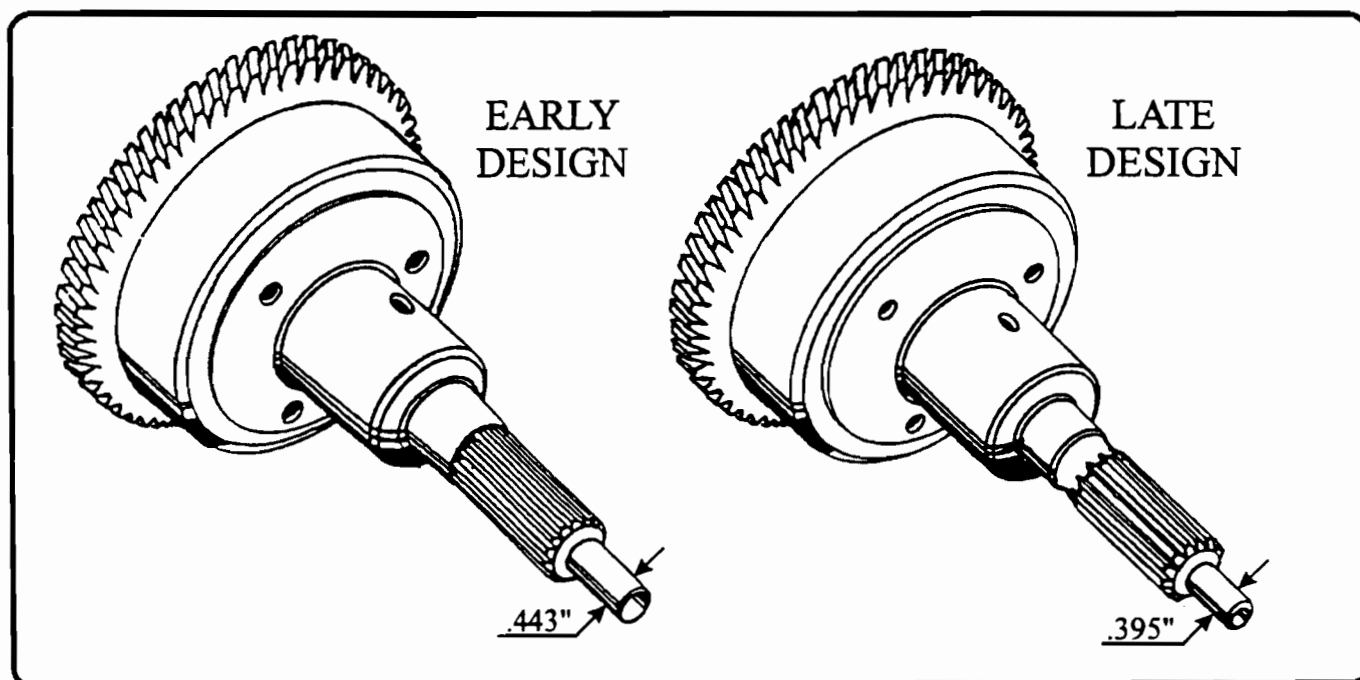
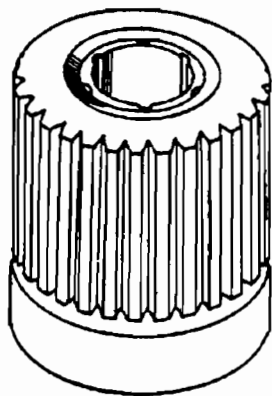


Figure 1

EARLY DESIGN
WITH BUSHING



LATE DESIGN
WITH BEARING

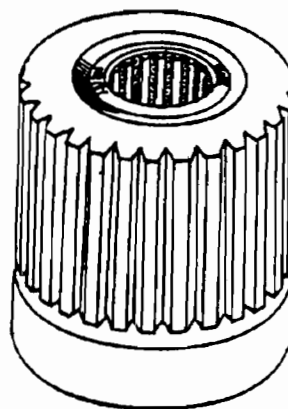


Figure 2

I've got my tools. My know-how. And Transtar.

You supply the skill. We supply the rest. From courteous service to OEM-quality transmission and clutch parts delivered fast. Together we'll keep your customers satisfied. You can depend on that. Transtar's 96% order fill means your parts are in-stock, so customer cars can be ready when promised. And, since a Transtar Distributor Center is located near you, it's almost like we're in the "neighborhood." Think of us as your personal parts department.



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New Orleans, LA 800/525-2512	Sacramento, CA 800/446-2600	Sarasota, FL 800/899-9623	St. Louis, MO 800/446-7171	Van Nuys, CA 800/231-9000	Yauco, Puerto Rico 800/981-3332

FORD ATX (FLC)

INTERMITTENT OR NO 1-2 UPSHIFT OR A DELAYED 1-2 UPSHIFT

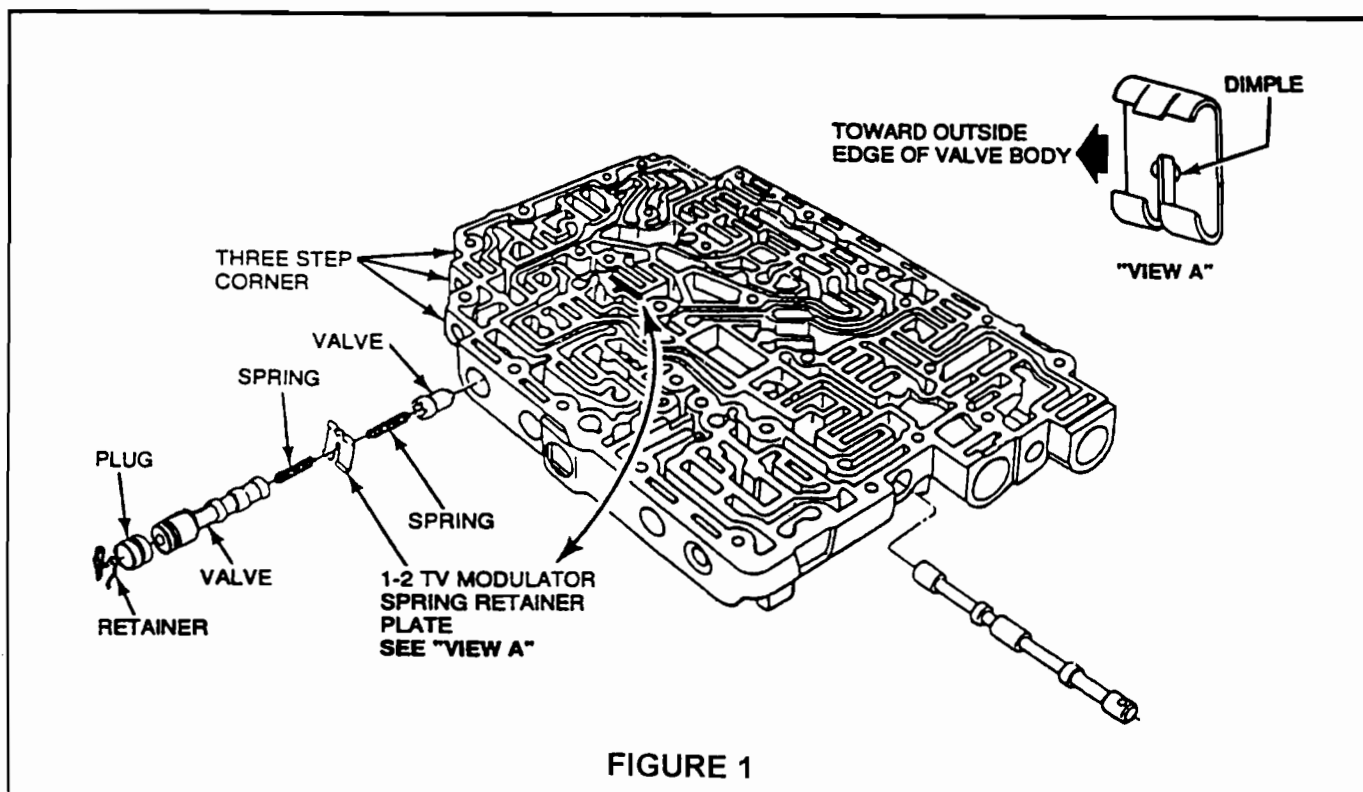
COMPLAINT: Some 1987-1990 Escort, Taurus and some 1987-1993 Temo vehicles may exhibit an intermittent or no 1-2 upshift, or a delayed (Higher than Normal) 1-2 upshift. This condition usually occurs during the initial drive away after extended or overnight parking, and may correct itself and perform normally after warming up.

CAUSE: The cause may be the TV modulator spring turning around in the 1-2 shift bore in the valve body.

CORRECTION: Install a new design TV modulator spring retainer plate, oEM number **F23Z-7F194-A**, which has a "Dimple" on the retainer to prevent the spring from turning around in the bore. The dimple goes toward the outside edge of the valve body, and the proper location are both shown in Figure 1. The dimple will now keep the spring centered in the valve body bore. If the valve body bore is damaged beyond repair, you will have to replace the entire valve body with a new one. Refer to the Usage Chart in Figure 2, to select the proper part number for the model that you are working on.

SERVICE INFORMATION: 94-7-11

Retainer Plate, 1-2 TV Modulator Spring.....F23Z-7F194-A





VALVE BODY USAGE CHART	
VALVE BODY I.D.	PART NUMBER
E73-AA	E73Z-7A100-A
E73-CA	E73Z-7A100-B
E73-EA	E73Z-7A100-C
E6D-AA	E7DZ-7A100-B
E6D-AB	E7DZ-7A100-B
E7D-DA	E7DZ-7A100-B
E7E-BA	E7FZ-7A100-A
E7E-A6A	E7FZ-7A100-B
E7E-CA	E7FZ-7A100-B
E8D-CA	E8DZ-7A100-C
E8E-AA	E8FZ-7A100-A
E83-BA	E93Z-7A100-A
E93-BA	E93Z-7A100-A
E93P-CA	E93Z-7A100-B
E9D-CA	E9DZ-7A100-C
E9E-AA	E9FZ-7A100-A
F03-AA	F03Z-7A100-A
F13-CA	F13Z-7A100-A
F13-DA	F13Z-7A100-B
F23-AB	F23Z-7A100-A
F23-AC	F23Z-7A100-A
F23-AD	F23Z-7A100-A
F23-BB	F23Z-7A100-B
F23-BC	F23Z-7A100-B
F23-BD	F23Z-7A100-B

Figure 2

ATX NO REVERSE IN EXTREME COLD

**Ford Tempo 1987-94 TEMPO
Mercury 1987-94 TOPAZ**

COMPLAINT:

Some vehicles may exhibit the lack of reverse in extreme cold conditions

CAUSE:

This can be caused by the inner and outer reverse clutch piston seals adhering to the adjacent surfaces and separating when the piston moves.

CORRECTION:

Replace the inner and outer reverse clutch piston seals. **The inner Reverse Clutch Piston Seal F43Z-7D403-A and the Outer Reverse Clutch Piston Seal F43Z-7D404-A**

See Figure 1

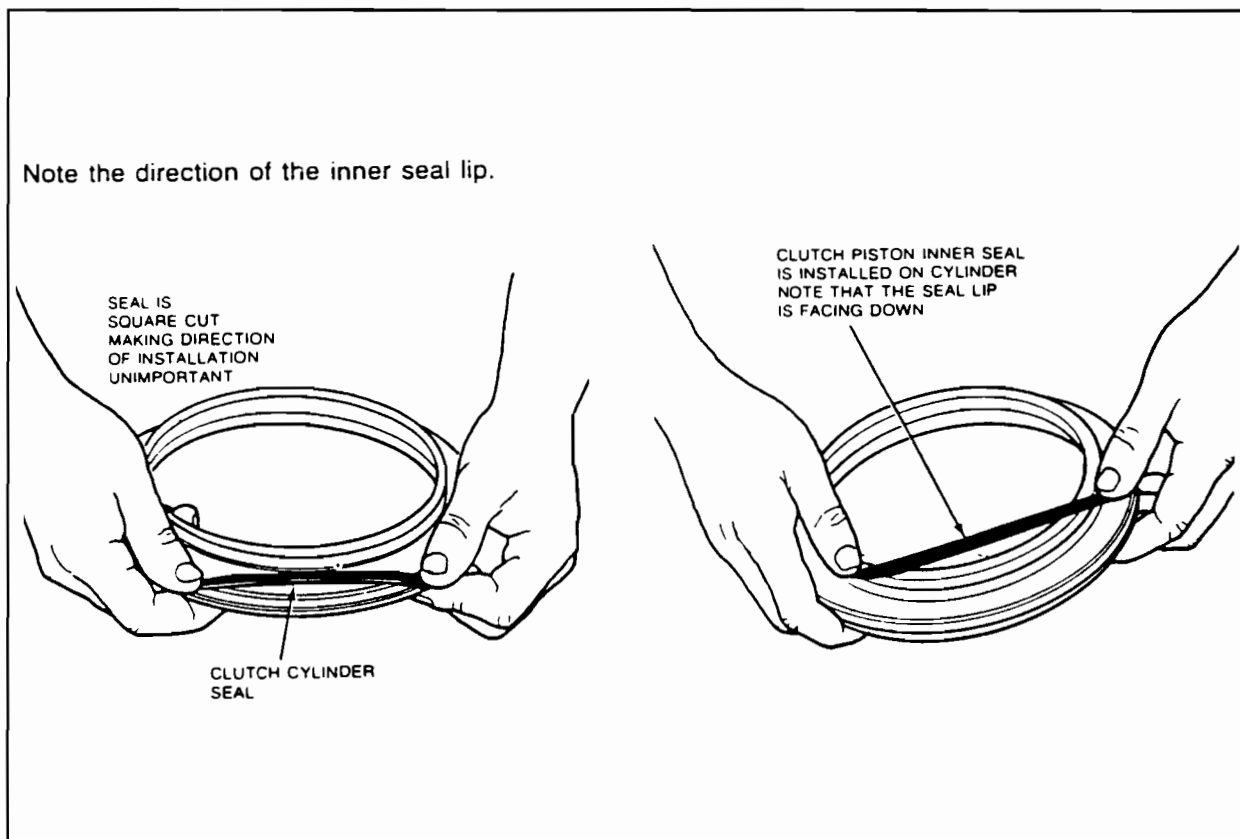


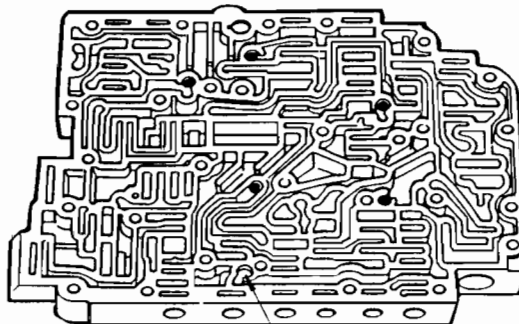
Figure 1

ATX CHECK BALL LOCATIONS

There are three different valve bodies used on the Ford ATX Transaxles and they have three different check ball locations. Depending on the vehicle model and the "Type" of Torque converter used. All three design levels are shown below

GEAR TYPE
Escort/Lynx
1981-1990
Tempo/Topaz
1984-1986

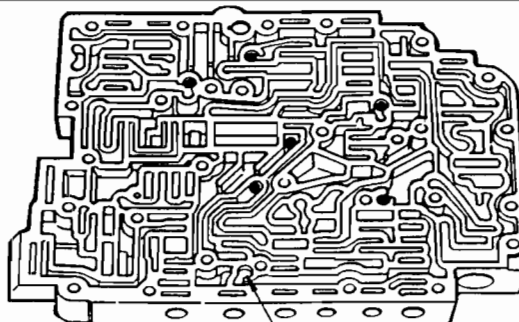
5 Checkballs



NO CHECKBALL HERE.

Centrifugal
Locking Type
(CLC)
Taurus/Sable
1986-1987

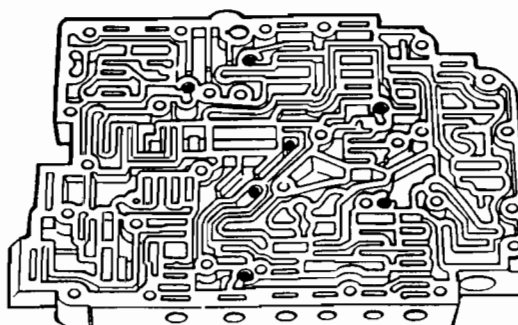
6 Checkballs
See Note 1



NO CHECKBALL HERE.

Note: 1. You can service the 1987 ATX/CLC with a 1988 Main Control Valve Body **ONLY**

Fluid Locking
Type
(FLC)
Tempo/Topaz
1987-1992
Taurus /Sable
7 Checkballs
1988-1990
See Note 2



Note: 2. You **CANNOT** use a 1987 Tempo/Topaz main control in a 1987 Taurus/Sable with the **CLC Transaxle**.

FORD 4R44E/4R55E FULLY COMPUTERIZED A4LD GENERAL DESCRIPTION

The 4R44E/4R55E automatic (rear wheel drive) transmissions are four-speed units with electronic shift controls.

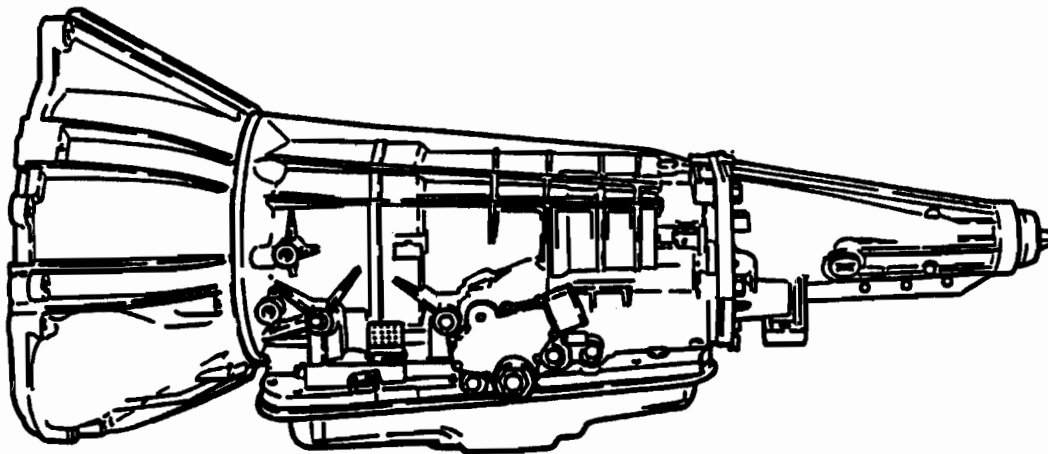
The 4R44E transmission is used with 2.3L and 3.0L engine applications. The 4R55E transmission is used with 4.0L engine applications.

These transmissions feature a four-element torque converter including TCC (Torque Converter Clutch). The geartrain includes:

- Three compound planetary gearsets
- Three bands
- Three multi-plate clutches
- Two one-way clutches

The hydraulic functions are directed by electronic solenoids to control:

- Engagement feel
- Shift feel
- Shift scheduling
- Modulated TCC applications
- Timing of the 3-2 T.D. and K.D. shifts
- Engine braking (with O/D cancelled) utilizing the Coast Clutch
- Manual 1st timing
- Thermostat bypass and cooler limit



FORD 4R44E/4R55E
TRANSMISSION RANGE SELECTOR AND SHIFT PATTERNS

The 4R44E/4R55E transmission range selector lever has six positions: P, R, N, **D**, 2, 1. The driver selects the required gear position by moving the selector lever to the various positions. Interlocking cables and linkages connect the selector lever to the transmission. This allows the selector lever to move internal linkages and the manual control valve, which signals the driver demand.

Park

No powerflow is transferred through the transmission in PARK. The manual lever shaft, which is connected to a park rod, presses the parking pawl into the park gear on the output shaft. This locks the output shaft and prevents the vehicle from rolling. However, for safety reasons, the parking brake should be applied whenever the vehicle is parked.

While the engine can be started in either P or N position, the ignition key can only be removed in PARK.

Reverse

Reverse gear allows the vehicle to be operated in a rearward direction, at a reduced gear ratio. When overdrive has been cancelled, engine braking is provided in R with the coast clutch applied.

Neutral

As in PARK, there is no power transferred through the transmission. However, the final drive is not locked by the parking pawl, so the wheels are free to rotate. The vehicle may be started in the N position, but the ignition key cannot be removed.

Overdrive

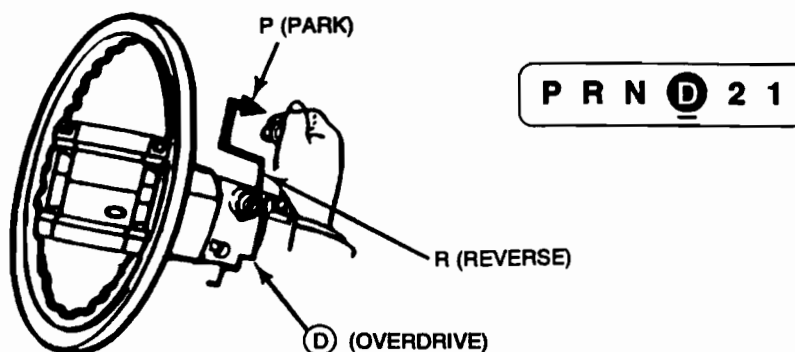
In the **D** position, the transmission will upshift or downshift 1-2-3-4 automatically. When overdrive has been cancelled by depressing the transmission control switch (TCS) and activating (TCIL), the transmission will not upshift to 4th gear. Engine braking is provided in 1st, 2nd, 3rd and reverse gears with the coast clutch applied.

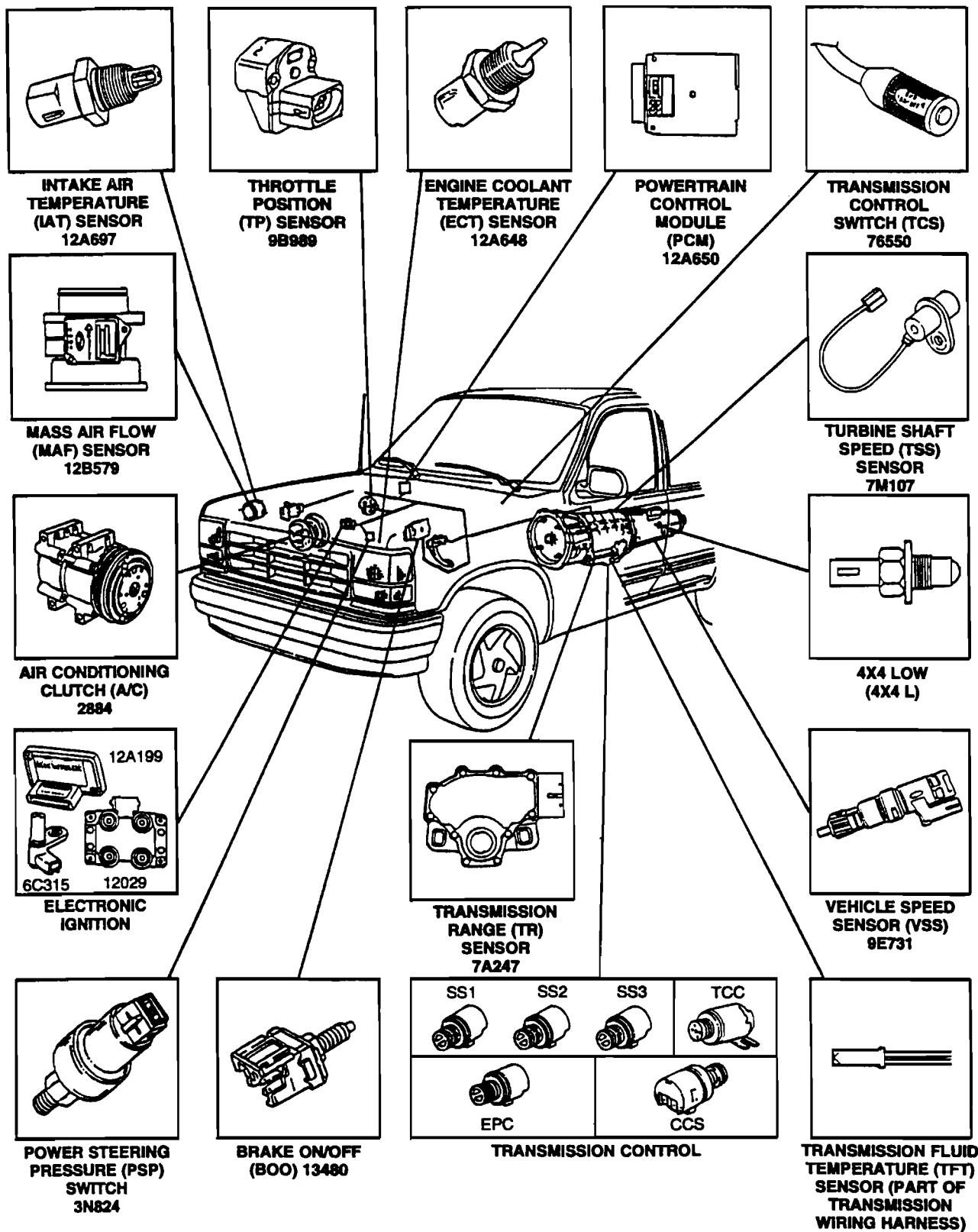
Manual 2nd

Selection of the 2 position provides a 2nd gear hold position from a manual upshift or downshift. When the 2 position is selected from a stop, the transmission will start in second gear. This allows for maximum traction on slippery surfaces. Engine braking is provided in the 2 position when the Transmission Control Switch (TCS) is on or off.

Manual 1st

The 1 position provides a 1st gear hold after an automatic or manual downshift. The transmission is prevented from downshifting above a specific speed (approximately 48 km/h [30 mph]) to protect the powertrain from overspeeding. Engine braking is provided in the manual 1 position when the Transmission Control Switch (TCS) or (TCIL) is on or off.



FORD 4R44E/4R55E
CONTROL SYSTEM COMPONENT LOCATOR


**FORD 4R44E/4R55E****GEARTRAIN**

Power is transmitted from the torque converter to the (simple) planetary gearsets through the input shaft.

By holding and driving certain members of the gearsets, four forward ratios and one reverse ratio are obtained and transmitted to the output shaft and differential.

The ratios from the (simple) planetary gearsets are:

- 2.474:1 in 1st (Low)
- 1.474:1 in 2nd (Intermediate)
- 1.000:1 in 3rd (Drive)
- 0.75:1 in 4th (Overdrive)
- 2.1:1 in Reverse

APPLY COMPONENTS

These are the following apply components in the 4R44E/4R55E:

- Overdrive band
- Intermediate band
- Reverse band
- Direct clutch
- Forward clutch
- Overdrive one-way clutch
- Low one-way clutch
- Coast clutch

BAND/CLUTCH APPLICATION CHART

	OVERDRIVE BAND	INTERMEDIATE BAND	LOW/REVERSE BAND	FORWARD CLUTCH	DIRECT CLUTCH	COAST CLUTCH	DRIVE ONE-WAY CLUTCH	REAR ONE-WAY CLUTCH	SHIFT SOLENOID 1 (RST)	SHIFT SOLENOID 2 (R2)	SHIFT SOLENOID 3 (R3)	COAST CLUTCH SOLENOID CCS	ENGINE BRAKING	TCE
PARK									ON	OFF	OFF	OFF	NE	NE
REVERSE		A		A			H	OR	ON	OFF	OFF	OFF	NO	OFF
REVERSE*		A		A	A		H	H	ON	OFF	OFF	ON	YES	ON
NEUTRAL									ON	OFF	OFF	OFF	NE	NE
1ST			A				H	OR	ON	OFF	OFF	OFF	NO	OFF
1ST*			A			A	H	H	ON	OFF	OFF	ON	YES	ON
2ND	A		A				H	OR	ON	ON	OFF	OFF	NO	OFF
2ND*	A		A			A	H	H	ON	ON	OFF	ON	YES	ON
3RD				A	A		H	OR	OFF	OFF	OFF	OFF	NO	OFF
3RD*				A	A	A	H	H	OFF	OFF	OFF	ON	YES	ON
4TH	A			A	A		OR	OR	OFF	OFF	ON	OFF	NO	OFF
MAN. 1ST		A	A			A	H	H	ON	OFF	OFF	ON	YES	NE
MAN. 2ND		A	A			A	H	H	ON	OFF	ON	ON	YES	NE

A = APPLIED H = HOLD OR = OVERRUNNING * = OVERDRIVE CANCELLED NE = NO EFFECT

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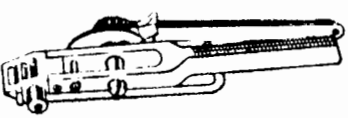


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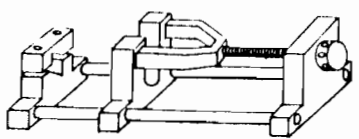
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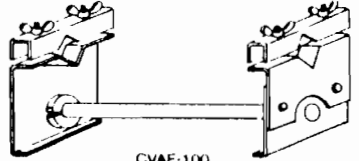
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C.V. JOINT PULLER



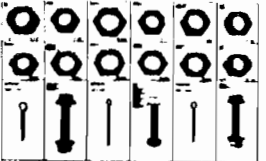
CVJP-200

C.V. ASSEMBLY FIXTURE



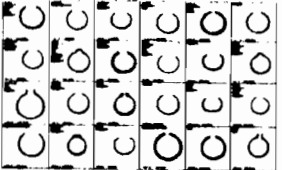
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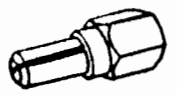
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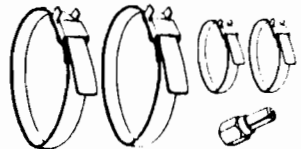
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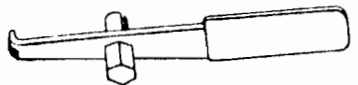
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CHRYSLER A604 FOUR DISC OVERDRIVE CLUTCH ASSEMBLY

CHANGE: A running change for 1990 model A604 transaxles was the introduction of a four (4) disc Overdrive Clutch Assembly, to replace the previous three (3) disc clutch assembly (See Figure 1).

REASON: Higher horsepower (3.3L V-6) engines introduced in New Yorker, Dynasty, Imperial, Caravan, and Voyager models.

PARTS AFFECTED:

- (1) **OVERDRIVE LINED PLATES** - Now uses 4 lined plates instead of the previous 3 lined plates, and the lined plates for 1990 models are .014" thinner than the 1989 lined plates (See Figure 1), to help accommodate the extra lined plate. The 1989 lined plates measure .083"-.088" thick, and the new lined plates will measure .069"-.074" thick (See Figure 1).
- (2) **OVERDRIVE STEEL PLATES** - Now uses 3 steel plates instead of the previous 2 steel plates. The new steel plates are .030" thinner, and measure .068"-.072" thick. The previous steel plates measure .098"-.102" thick (See Figure 1).
- (3) **INPUT CLUTCH RETAINER** - The underdrive/overdrive reaction plate tapered snap ring groove was moved "Down" by .040" (Can be detected visually) to make room for the added lined and steel plates (See Figure 2). This also necessitated a change to be made to the underdrive/overdrive reaction plate as explained below. Another change that occurred at the same time is the underdrive clutch outer lip seal groove depth is .040" "Shallower" to accommodate a new underdrive clutch outer lip seal (See Figure 3).
- (4) **UNDERDRIVE CLUTCH OUTER LIP SEAL** - The lip seal cross section has been reduced by .040" (Smaller in Overall Diameter) to accommodate the change in the depth of the groove in the input clutch retainer (See Figure 3). The OEM part number is printed on the seals for identification. The 1989 (Large) is 4377173, and the 1990 (Small) is 4531408. This will confirm that you have the proper seal for this location (See Figure 3).
- (5) **UNDERDRIVE/OVERDRIVE REACTION PLATES** - The underdrive/overdrive Reaction Plates have always been available in 4 different thicknesses to adjust the Underdrive Clutch to proper specifications. For 1990, each plate was reduced in thickness by .040" to accommodate the new tapered snap ring location. Refer to the chart in Figure 4 for both 1990 and up selective reaction plate sizes with part numbers. The actual dimension change that took place can be seen by measuring just the lug thickness of the reaction plate. The 1989 reaction plate had a lug thickness of .196". When the tapered snap ring groove was moved down .040" in the Input Clutch Retainer to accommodate the extra lined and steel plate in the Overdrive Clutch pack, the lug on the reaction plate was also be reduced by .040" making the lug thickness .156" (See Figure 5). Then in 1993, the reaction plate had a redesign where a relief cut was placed across the top of the lug making the lug thickness .141". This was done to accommodate a change made to the tapered snap ring. Refer to the tapered snap ring changes on the following page and Figure 5. The selective drive/overdrive reaction plate chart in figure 4 for 1990 and up, provide part numbers for this new style reaction plate to be used only in 4 overdrive clutch drums. An updated tapered snap ring is included with each selective plate.

Continued on next page



1995 SEMINAR INFORMATION

VIDEO

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- (6) UNDERDRIVE/OVERDRIVE TAPERED SNAP RING - The thickness of this snap ring was originally .070" in thickness and could be easily recognizable as the snap ring would be Blue in color (See Figure 5). When the extra lined and steel plate was added to the overdrive clutch pack, the thickness of this snap ring was reduced by .010" because the friction that laid along side of this snap ring was also reduced in thickness as explained on the previous page. The 1990 snap ring for the 4 overdrive clutch pack became .060" in thickness and could be easily identified with either Green or White paint. In 1993, this tapered snap ring went from .060" in thickness to .075" to prevent excessive snap ring breakage. The color black was originally used to identify this .075" tapered snap ring but was soon changed to white due to a material change in the snap ring. This snap ring has also been known to be either Green or Blue in color. Caution should be used when selecting an underdrive/overdrive tapered snap ring as color identification may be confusing and none of these tapered snap rings can be interchanged. The .070" tapered snap ring is only used in the 3 overdrive clutch drum with a reaction plate that has a lug thickness of .196". The .060" tapered snap ring was used in 4 overdrive clutch drums with a reaction plate that has a lug thickness of .156". The .075" thick tapered snap ring is an update to the 4 overdrive clutch drums ONLY and should ONLY be used with reaction plates that have a lug thickness of .141" (See Figure 5).

INTERCHANGEABILITY:

None of the parts listed above will interchange with one another between 1989 and 1990 and up model years. It is imperative that you "Positively" I.D. each part to insure that you are assembling with compatible parts.

SERVICE INFORMATION:

1989 MODEL YEAR:

Overdrive Lined Plates	4377167
Overdrive Steel Plates	4377190
Underdrive/Overdrive Reaction Plates (Selective)	
.254"-.258" Thick	4377185
.274"-.277" Thick	4377186
.293"-.297" Thick	4377187
.312"-.316" Thick	4377188
Input Clutch Retainer	4431609
Underdrive/Overdrive Tapered Snap Ring	(.070") 4377189
Underdrive Clutch Outer Lip Seal	4377173

1990 AND UP:

Overdrive Lined Plates	4505629
Overdrive Steel Plates	4377183
*Underdrive/Overdrive Reaction Plates (Selective)	
.215"-.219" Thick	4723684
.234"-.238" Thick	4723683
.253"-.257" Thick	4723682
.273"-.277" Thick	4723681
* Each selective plate comes with the updated tapered snap ring	
Input Clutch Retainer	4505623
Underdrive Clutch Outer Lip Seal	4531408

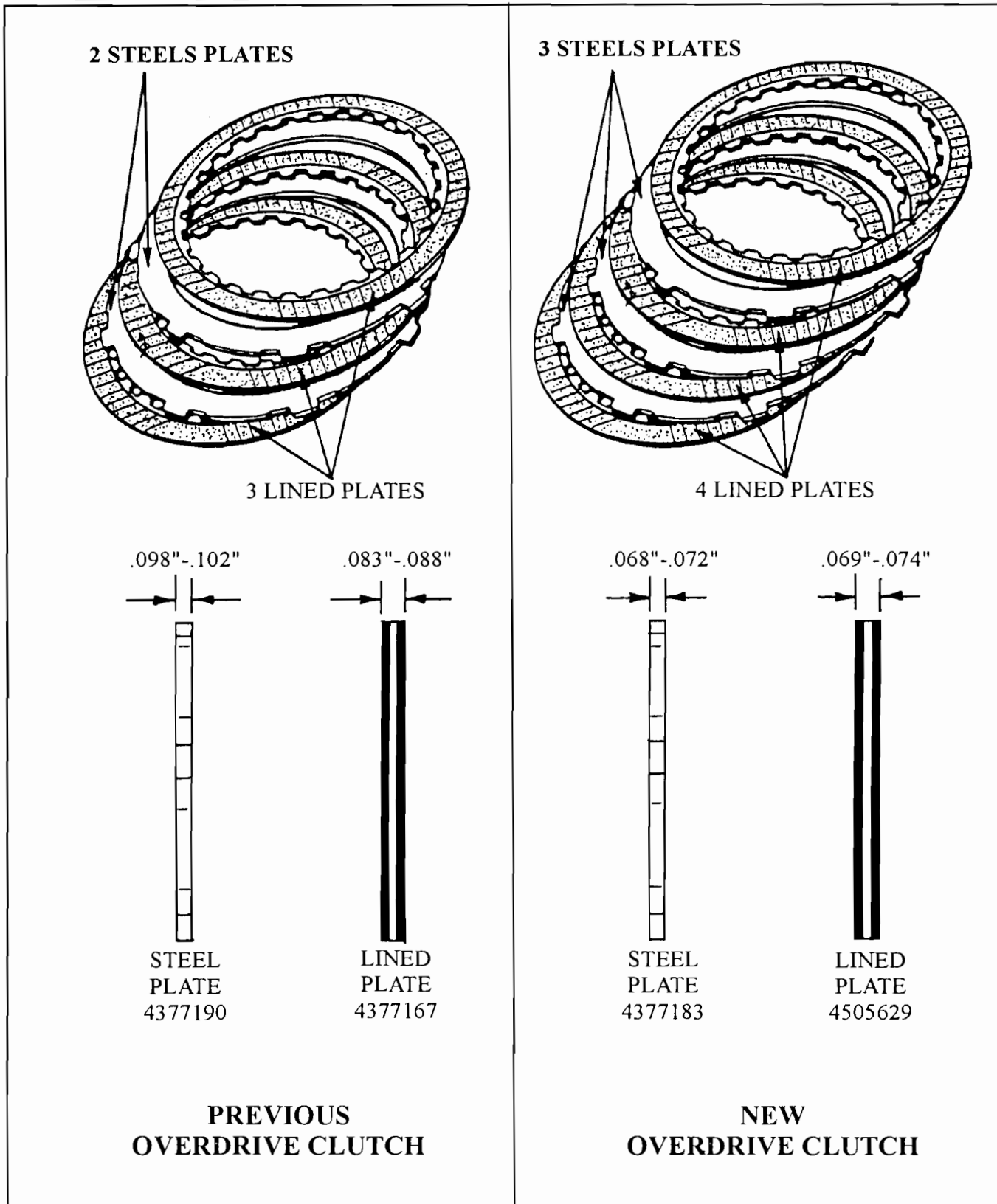
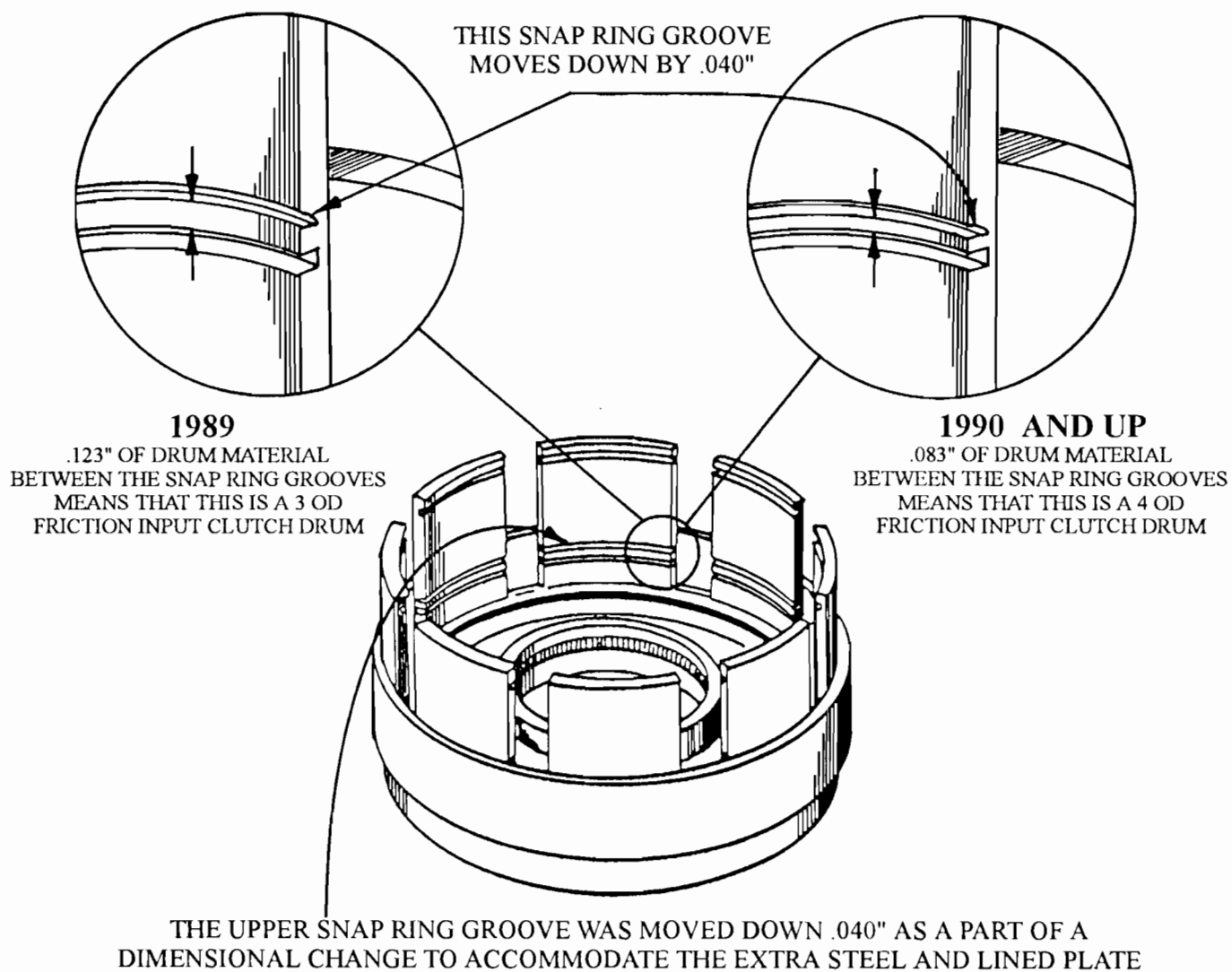


Figure 1

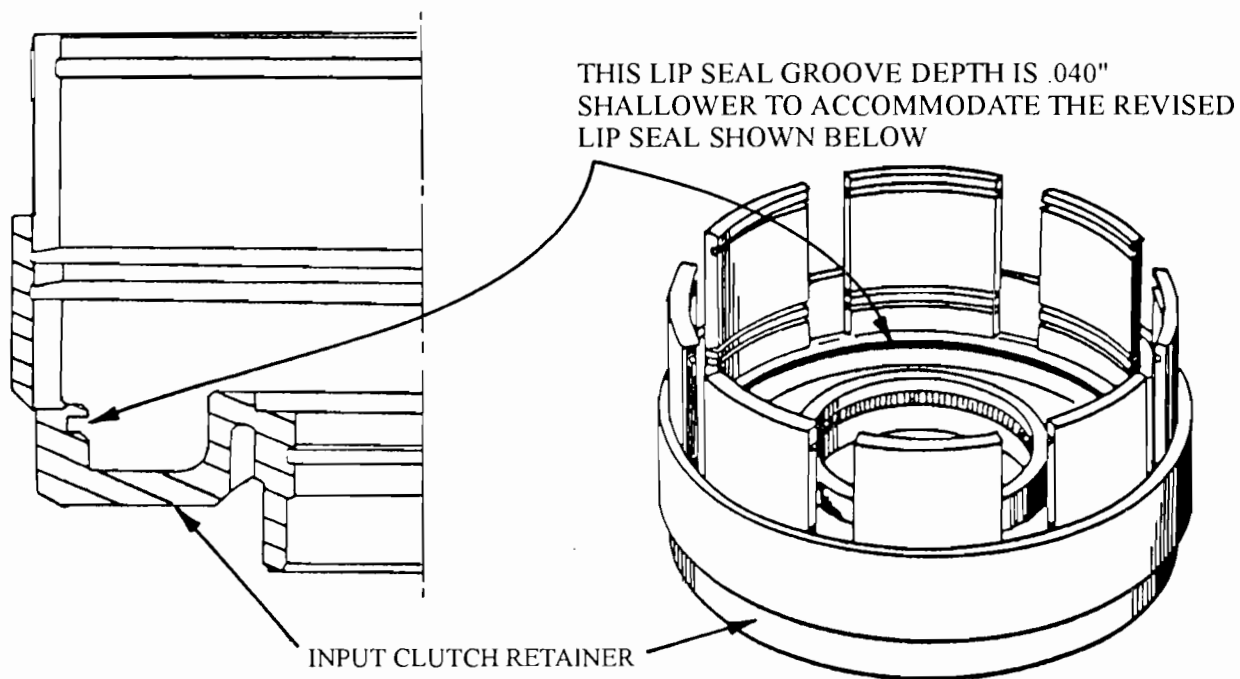
INPUT CLUTCH RETAINER



1989 INPUT CLUTCH RETAINER.....	4431609
1990 INPUT CLUTCH RETAINER.....	4505623

Figure 2

INPUT CLUTCH RETAINER



UNDERDRIVE CLUTCH OUTER LIP SEAL

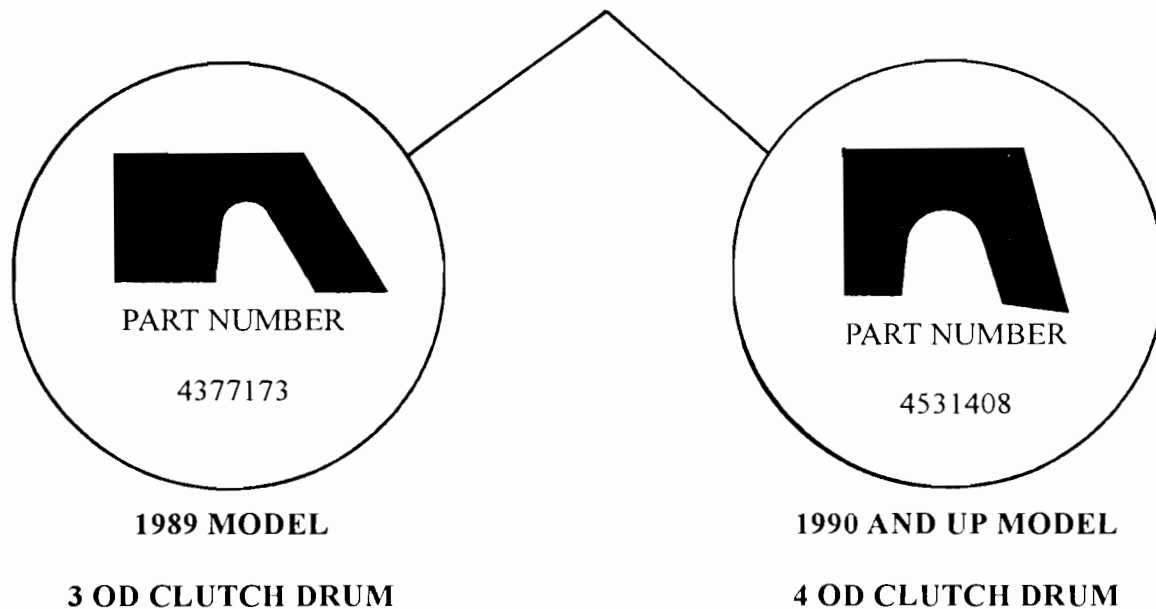
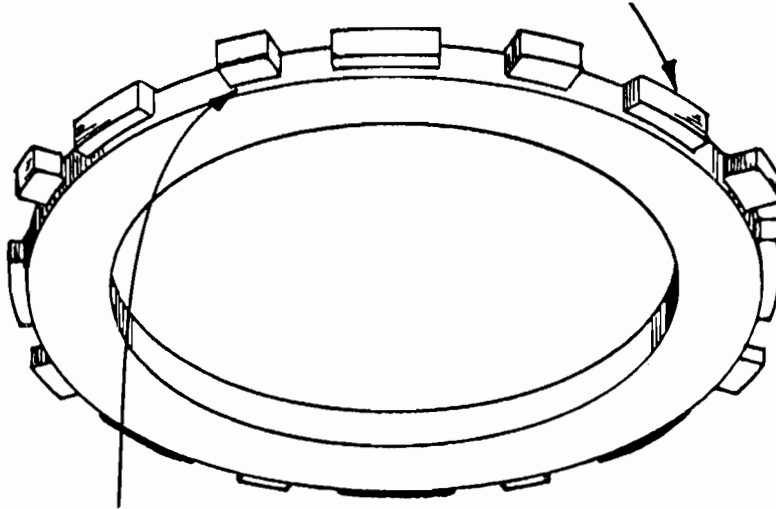


Figure 3

UNDERDRIVE/OVERDRIVE REACTION PLATE

RELIEF CUT ON UPDATED REACTION
PLATE FACES UP TOWARD TAPERED SNAP RING



SQUARE CUT FACES DOWN
TOWARD FLAT SNAP RING

REACTION PLATE FOR 3 OD INPUT CLUTCH RETAINER

.254"-.258" Total thickness.....	4377185
.274"-.277" Total thickness.....	4377186
.293"-.297" Total thickness.....	4377187
.312"-.316" Total thickness.....	4377188
.070 Tapered snap ring.....	4377189

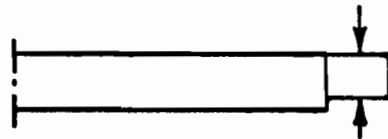
UPDATED REACTION PLATE AND TAPERED SNAP RING FOR 4 OD INPUT CLUTCH RETAINER

.215"-.219" Total thickness.....	4531570
.234"-.238" Total thickness.....	4531569
.253"-.257" Total thickness.....	4531568
.273"-.277" Total thickness.....	4531567
*.075 Tapered snap ring.....	4567602

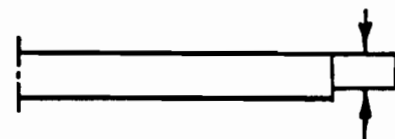
*THE UPDATED SNAP RING COMES WITH THE REACTION PLATE

Figure 4

UNDERDRIVE/OVERDRIVE REACTION PLATE LUG THICKNESS

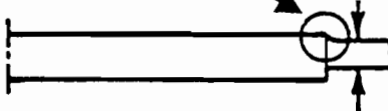


.196" THICK LUG REACTION PLATE GOES TO AN INPUT CLUTCH RETAINER WITH 3 OVERDRIVE CLUTCH PLATES ONLY WITH A .070" TAPERED SNAP RING.



.156" THICK LUG REACTION PLATE GOES TO AN INPUT CLUTCH RETAINER WITH 4 OVERDRIVE CLUTCH PLATES ONLY WITH A .060" TAPERED SNAP RING.

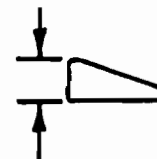
RELIEF CUT ACROSS THE TOP OF THE LUG MAKES ROOM FOR A THICKER TAPERED SNAP RING



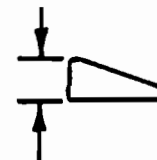
.141" THICK LUG REACTION PLATE GOES TO AN INPUT CLUTCH RETAINER WITH 4 OVERDRIVE CLUTCH PLATES ONLY WITH A .075" TAPERED SNAP RING.

UNDERDRIVE/OVERDRIVE TAPERED SNAP RING

.070" TAPERED SNAP GOES INTO AN INPUT CLUTCH RETAINER THAT IS DESIGNED TO ACCOMMODATE 3 OVERDRIVE CLUTCH PLATES AND A REACTION PLATE WITH A LUG THICKNESS OF .196" ..



.060" TAPERED SNAP GOES INTO AN INPUT CLUTCH RETAINER THAT IS DESIGNED TO ACCOMMODATE 4 OVERDRIVE CLUTCH PLATES AND A REACTION PLATE WITH A LUG THICKNESS OF .156" ..



.075" TAPERED SNAP GOES INTO AN INPUT CLUTCH RETAINER THAT IS DESIGNED TO ACCOMMODATE 4 OVERDRIVE CLUTCH PLATES AND A REACTION PLATE WITH A LUG THICKNESS OF .141" ..

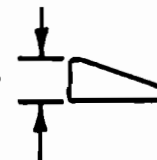


Figure 5



**CHRYSLER A604
REVISED SOLENOID SOUND COVER AND SPACER PLATE**

CHANGE : A running change for 1994 and all 1995 and up model years was made to the solenoid sound cover and spacer plate (See Figure 6).

REASON : For improved sound shield attachment in order to reduce the sound level of solenoid operation.

PARTS AFFECTED:

- (1): **SOLENOID SOUND COVER** - An additional locking tab was added to the sound cover for a more secure fit to the solenoid spacer plate.
- (2): **SOLENOID SPACER PLATE** - The solenoid spacer plate received an added slot to accommodate the additional locking tab made to the solenoid sound cover. There were also subtle changes made to the venting holes and slots found in the spacer plate (See Figure 6).

INTERCHANGEABILITY:

- (1): **SOLENOID SOUND COVER** - The solenoid sound cover will retrofit back to all models.
- (2): **SOLENOID SPACER PLATE** - The solenoid spacer plate will retrofit back to all models **ONLY** if the new design sound cover is used with the plate.

SERVICE INFORMATION:

SOLENOID SOUND COVER..... 4505589
SOLENOID SPACER PLATE.....4659043

**CHRYSLER A604
REVISED SOLENOID PLATE**

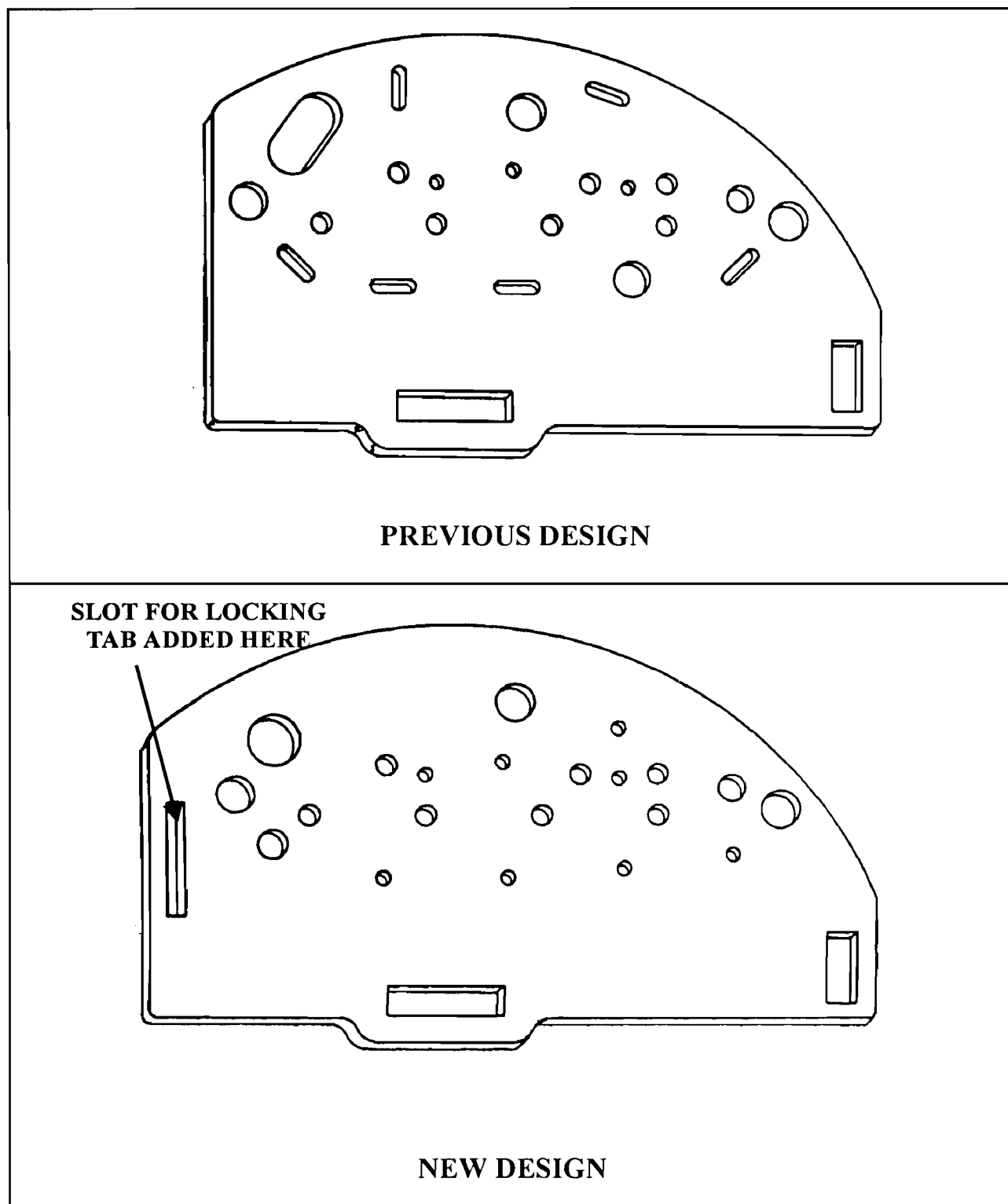


Figure 6



1995 SEMINAR INFORMATION
SLIDE

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**CHRYSLER A604 AND A606
REVISED 2-4 CLUTCH PISTON RETAINER**

CHANGE: Beginning at the start of production for the 1995 model year, all Chrysler A604 (41TE) and A606 (42LE) transaxles were produced using a revised 2-4 Clutch Piston Retainer with an added lanced bleed orifice (See Figure 7).

REASON: Improved shift quality.

PARTS AFFECTED:

- (1) 2-4 CLUTCH PISTON RETAINER - Lanced bleed orifice added to the retainer in the location shown in Figure 7.

INTERCHANGEABILITY:

The revised 2-4 Clutch Piston Retainer with the added lanced bleed orifice will back service ALL previous models of Chrysler A606 (41TE) and A606 (42LE) transaxles. There was not a part number change, so the revised retainer is available under OEM part number 4431650.

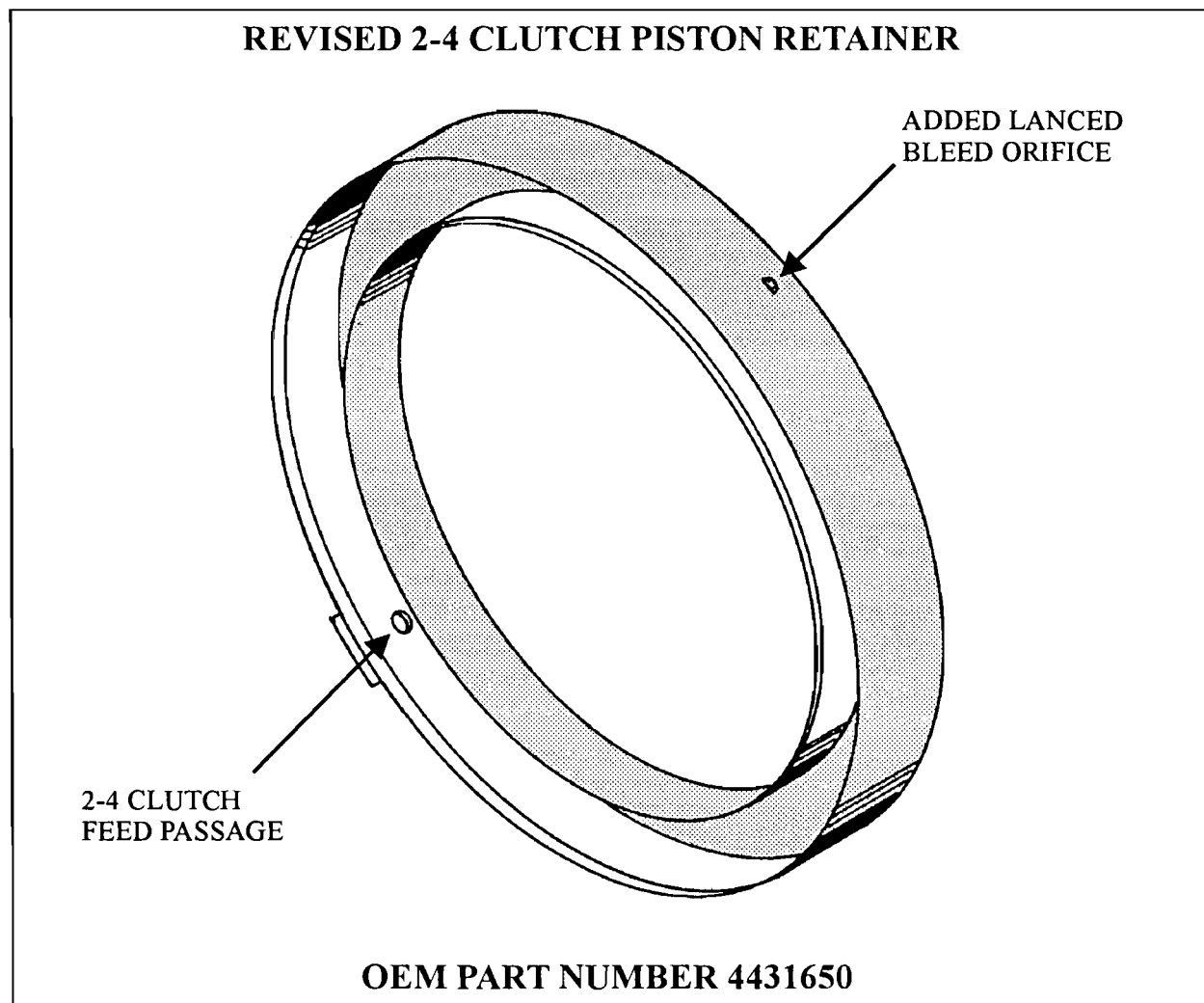


Figure 7



SLIDE
CHRYSLER A604 AND A606

REVISED LOW/REVERSE PISTON SEALS

CHANGE: Beginning at the start of production for 1995 model year, all Chrysler A604 (41TE) and A606 (42LE) transaxles were produced using revised seals for the Low/Reverse piston. The previous "Lip" type seals have been replaced by a "D" Ring type seal for both inner and outer seals, as shown in Figure 8.

REASON: Improved durability and coast downshift quality.

PARTS AFFECTED:

- (1) **LOW/REVERSE PISTON SEALS** - Both the inner and outer lip seals have been replaced by a "D" Ring type seal, as shown in Figure 8. There were no dimensional changes necessary to the Low/Reverse piston to accommodate the new "D" Ring seals. The seals are available under OEM part number 4659185 for the outer seal, and 4659184 for the inner seal.

INTERCHANGEABILITY:

The new "D" Ring type seals will back service ALL previous models of the Chrysler A604 (41TE) and A606 (42LE) transaxles, without any additional modifications or changes.

SERVICE INFORMATION: (95MY)

Low/Reverse Piston Outer Seal ("D" Ring)	4659185
Low/Reverse Piston Inner Seal ("D" Ring)	4659184

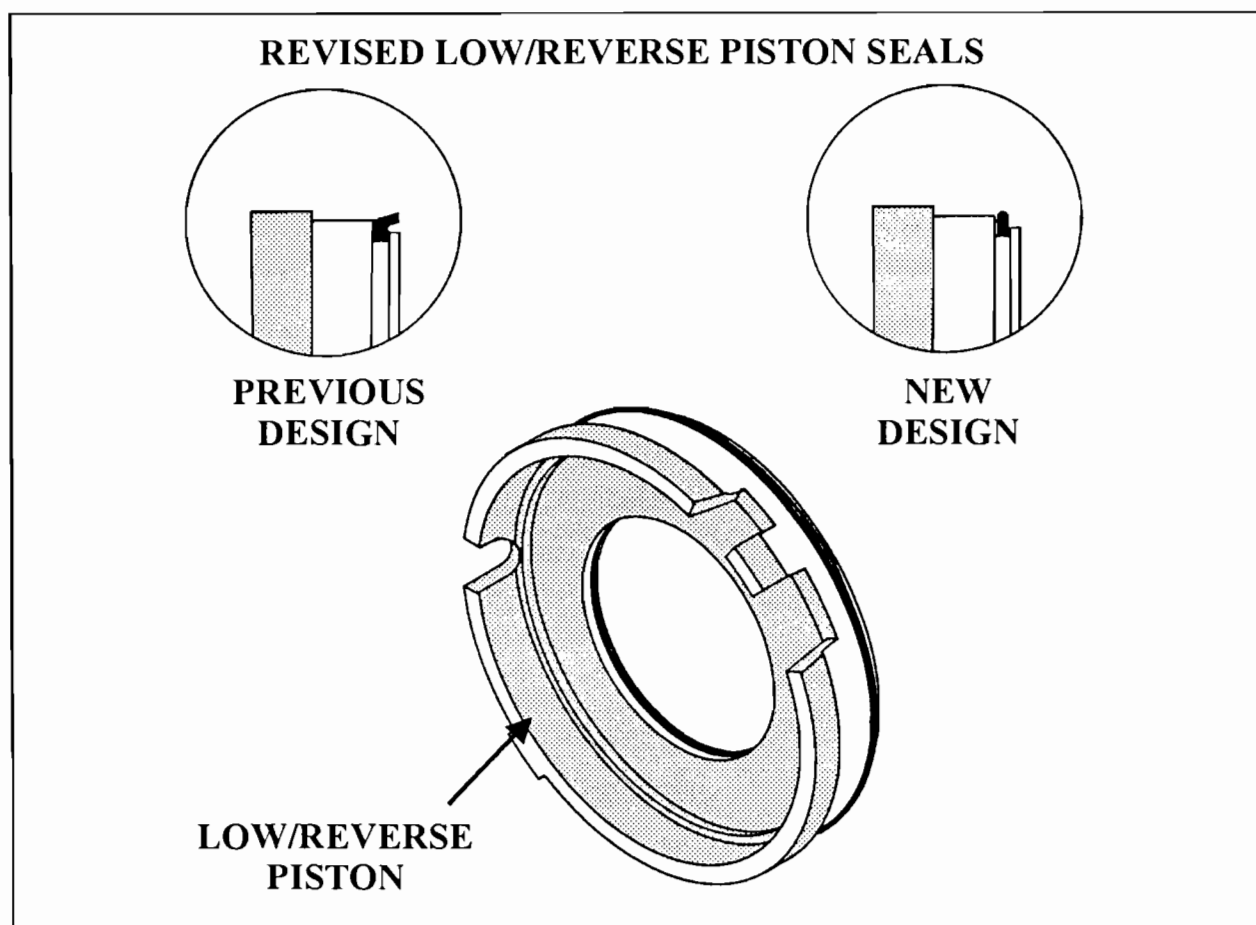


Figure 8



CHRYSLER A604
NEW PRESSURE REGULATOR VALVE AND SPACER PLATE
"Valve Body Whistle"

CHANGE : A running change in 1994 was made to the spacer plate (See Figure 9) and to the Pressure Regulator Valve (See Figure 10).

REASON : To eliminate a field complaint of a "Valve Body Whistle".

PARTS AFFECTED :

- (1) : **SPACER PLATE:** The "X1 Orifice" in the spacer plate has been eliminated as shown in figure 11. The plate can be easily identified by the number "82" that is punched through the plate (See Figure 11).
- (2) : **PRESSURE REGULATOR VALVE:** A ground step has been machined to the inner land on the Pressure Regulator Valve causing two different diameters to exist on one land (See Figure 12). There are no obvious or visible signs or identification marks to indicate the updated Pressure Regulator Valve. Careful measurement of the valve land is needed to properly identify the valve (See Figure 12). The spring side of the land measures approximately .6255". The opposite end of the same land will measure approximately .6245" (See Figure 12).

INTERCHANGEABILITY :

The new "82" spacer plate replaces the previous "96" spacer plate and can retrofit back to all valve bodies and Transfer Plates that use the # 96 spacer plate **provided that the new pressure regulator valve is used together with the # 82 spacer plate.** Valve bodies that use a 96 spacer plate has a casting number of 4511644. Transfer Plates that use the # 96 spacer plate has a casting number of 4511645.
(Refer to ATSG Technical Bulletin 93-26 or the Red 1994 Seminar Manual pages 86-96.)
The # 82 Spacer Plate and new Pressure Regulator Valve cannot be used separately and can only retrofit back to the above casting numbers for both the Valve Body and Transfer Plate.

SERVICE INFORMATION :

- | | |
|-----------------------------------|---------|
| (1) "82" SPACER PLATE..... | 4659082 |
| (2) PRESSURE REGULATOR VALVE..... | 4659081 |

NEW A604 SPACER PLATE

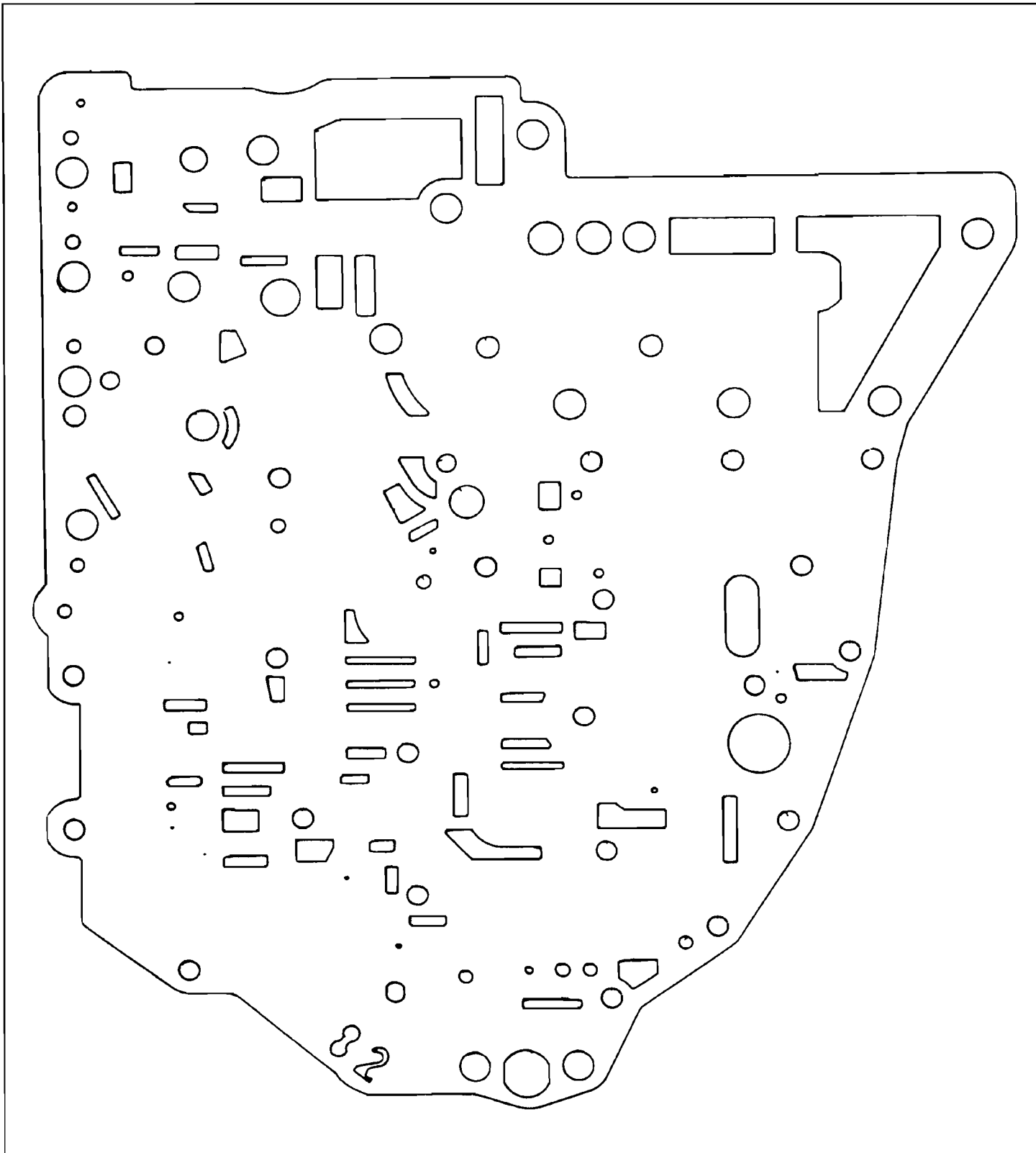


Figure 9

PRESSURE REGULATOR VALVE

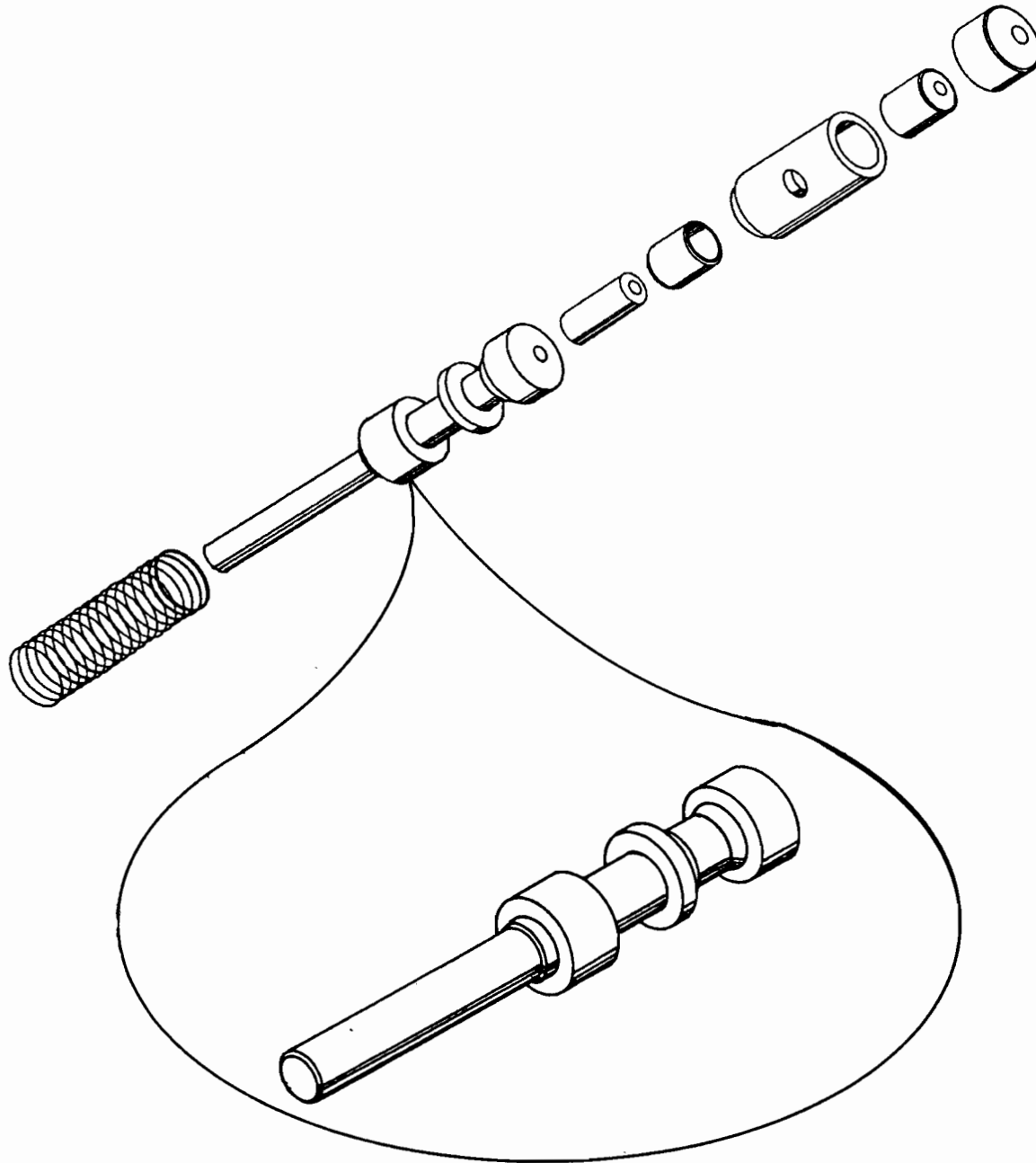
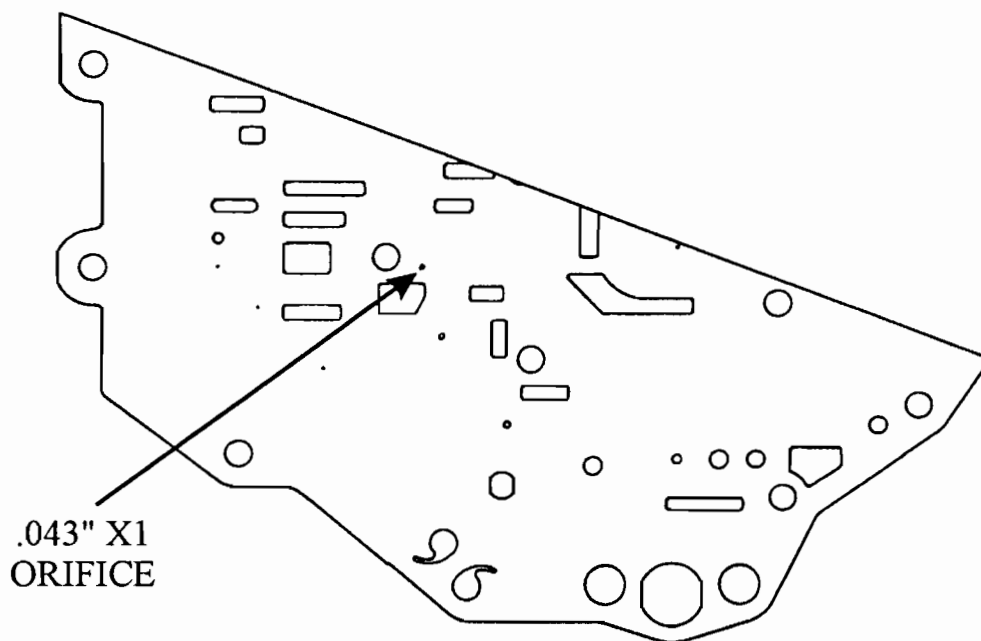
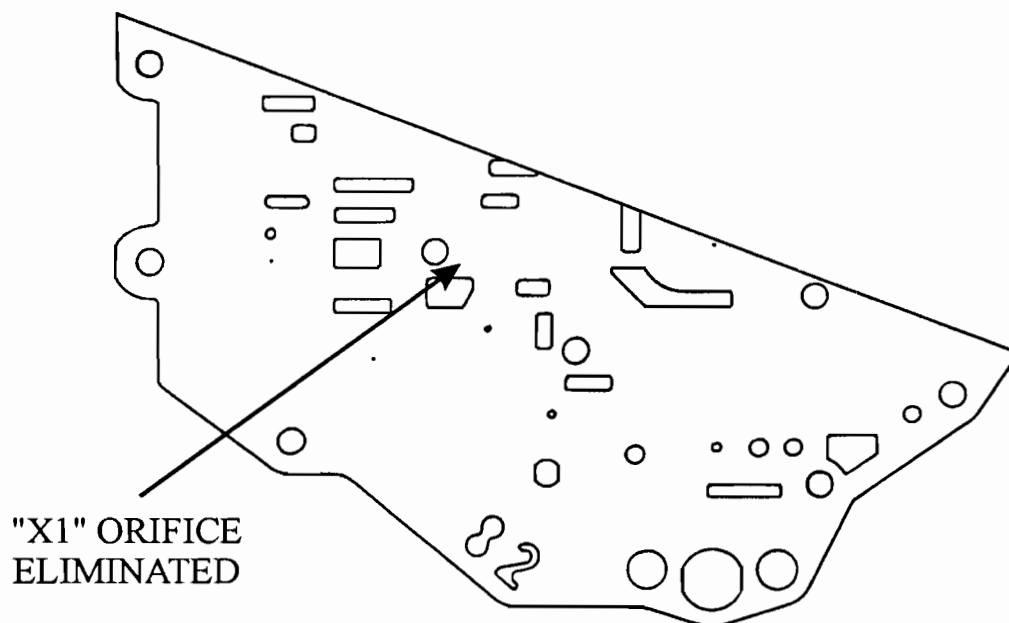


Figure 10



PREVIOUS # 96 SPACER PLATE WITH THE "X1" (.043") ORIFICE

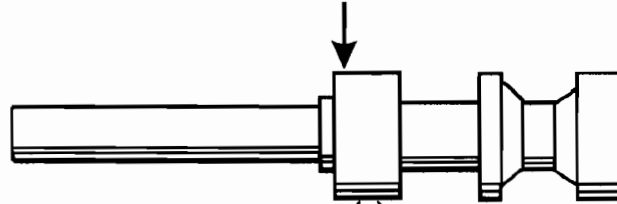


NEW # 82 SPACER PLATE WITH THE "X1" ORIFICE ELIMINATED

Figure 11

PRESSURE REGULATOR VALVE

THIS LAND RECEIVED A GROUND
STEP CAUSING TWO DIFFERENT
DIAMETERS TO EXIST
ON ONE LAND



THE SPRING SIDE OF THE
LAND MEASURES .6255"
IN DIAMETER.

THE OPPOSITE SIDE OF THE
LAND MEASURES .62455"
IN DIAMETER.

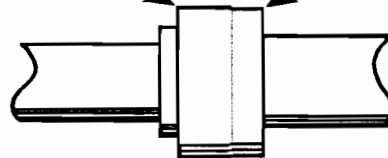


Figure 12



SLIDE

**CHRYSLER A604
CONTROLLER UPDATES**

CHANGE : Running changes made to the transaxle controllers.

REASON : 1989 to 1991 transaxle controllers received several software upgrades through the years which improved on driveability concerns such as sequential closed throttle downshifts, highway anticycling logic, earlier kickdown shifts for improved acceleration, high altitude compensation to improve loss of engine power at upper elevations, and other refinements in the computer strategy to improve driveability.

1992 controllers changed to accommodate alterations made to the Chrysler Collision Detection Bus system (CCD) for improved communications between controllers that are on the Bus system. In other words, the language the controllers use to communicate to each was changed to improve data transfer.

1993 to present controllers received a logic change to use the output shaft speed sensor as the source for vehicle speed. Refer to figure 15 which shows the elimination of the speedometer from the extension housing in 1993.

PARTS AFFECTED :

- (1) **TRANSAXLE CONTROLLER** - Controllers can be identified by the OEM part number that is printed on a sticker. This sticker can be located on the bottom of the transaxle controller as shown in figure 13. If the sticker is missing, scanners will also provide controller identification by providing the OEM part number of the controller that is in the vehicle. Refer to the chart on the following page for a brief overview of past controllers. The locations of the controllers will vary depending on the model of the vehicle. Refer to figure 13 for the different locations. Figures 13 and 14 also shows the locations of the EATX relay, as their location will vary depending on the model of the vehicle.
- (2) **TRANSAXLE EXTENSION HOUSING** - 1993 extension housings no longer have a speedometer bore. The speedometer assembly is no longer needed since the transaxle controller will now look at the output shaft speed sensor for this information (See Figure 15).

SERVICE INFORMATION :

(1) 1989 TO 1991 TRANSAXLE CONTROLLERS :

- | | |
|----------------|---------|
| (A) 3.0 L..... | 4761846 |
| (B) 3.3 L..... | 4761847 |

(2) 1992 TRANSAXLE CONTROLLERS :

- | | |
|-------------------------------|---------|
| (A) Fits all 1992 models..... | 4672216 |
|-------------------------------|---------|

(3) 1993 TO PRESENT TRANSAXLE CONTROLLERS :

- | | |
|---|---------|
| (A) Fits all 1993 and present models..... | 4686478 |
|---|---------|

NOTE : All 1993 to present transaxle controllers that are replaced will be required to have a pinion factor programmed into the controller before the speedometer and transaxle will function properly. At the time of printing, only Chrysler DRB II or III scanners will provide this service.

SPECIAL NOTE: All of the above transaxle controller part numbers are the most recent part numbers at the time of printing. These part numbers change frequently due to continued transaxle controller updates. Be sure to check with your dealer for any updates.



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INTERCHANGEABILITY :

- (1) 1989 to 1991 transaxle controllers have been updated to either a 3.0 liter or 3.3 liter applications and will not interchange one with another. Nor will these controllers work on 1992 and newer vehicles.
- (2) 1992 transaxle controllers are designed for all 1992 model vehicles only. This controller will not interchange on earlier or later model vehicles.
- (3) 1993 to present controllers will not interchange with any earlier model year.

PAST 1989 TO 1991 CONTROLLERS :

PART NUMBER: 5234623, 5234649, 5234678.

These are all early 1989 controllers, used on all models, and would allow only a 3-1 closed throttle downshift.

PART NUMBER: 4557120.

This controller was introduced as a running change during 1989 model year. It featured sequential downshifts (3-2-1) instead of 3-1 downshifts as the previous controllers. Another improvement incorporated is less 3-4 shift business under load at highway speeds, or with the cruise control engaged. This controller will replace all previous controllers.

PART NUMBER: 4557585.

This controller was introduced as a running change during 1990 model year. It has further refinements of the logic to eliminate the 3-4 shift business under load at highway speeds, or with the cruise control engaged. It also allowed the converter clutch to release in 4th gear for more available engine torque when it was required. This controller will replace all previous model controllers.

PART NUMBER: 4672104.

This controller was introduced for the 1991 model year with further refinement of the logic. This controller will replace all previous controllers.

PART NUMBER: 4672002.

This controller was introduced as a running change during 1991 model year. This controller will replace all previous model controllers.

PART NUMBER: 4672105.

This controller was introduced as another running change during 1991 model year. This controller will replace all previous model controllers.

PART NUMBER: 4728600.

This controller replaces all previous 1989-1991 controllers on vehicles equipped with 3.0L engines.

PART NUMBER: 4728598.

This controller replaces all previous 1989-1991 controllers on vehicles equipped with 3.3L engines.

PAST 1992 CONTROLLERS

PART NUMBER: 4672203.

This controller fits all 1992 models EXCEPT, New Yorker, 5th Avenue, and Imperial. This controller WILL NOT replace ANY previous models. It fits 1992 models ONLY.

PART NUMBER: 4672216.

This controller fits all 1992 New Yorker, 5th Avenue, and Imperial. This controller WILL NOT replace ANY previous models. It fits 1992 models ONLY.

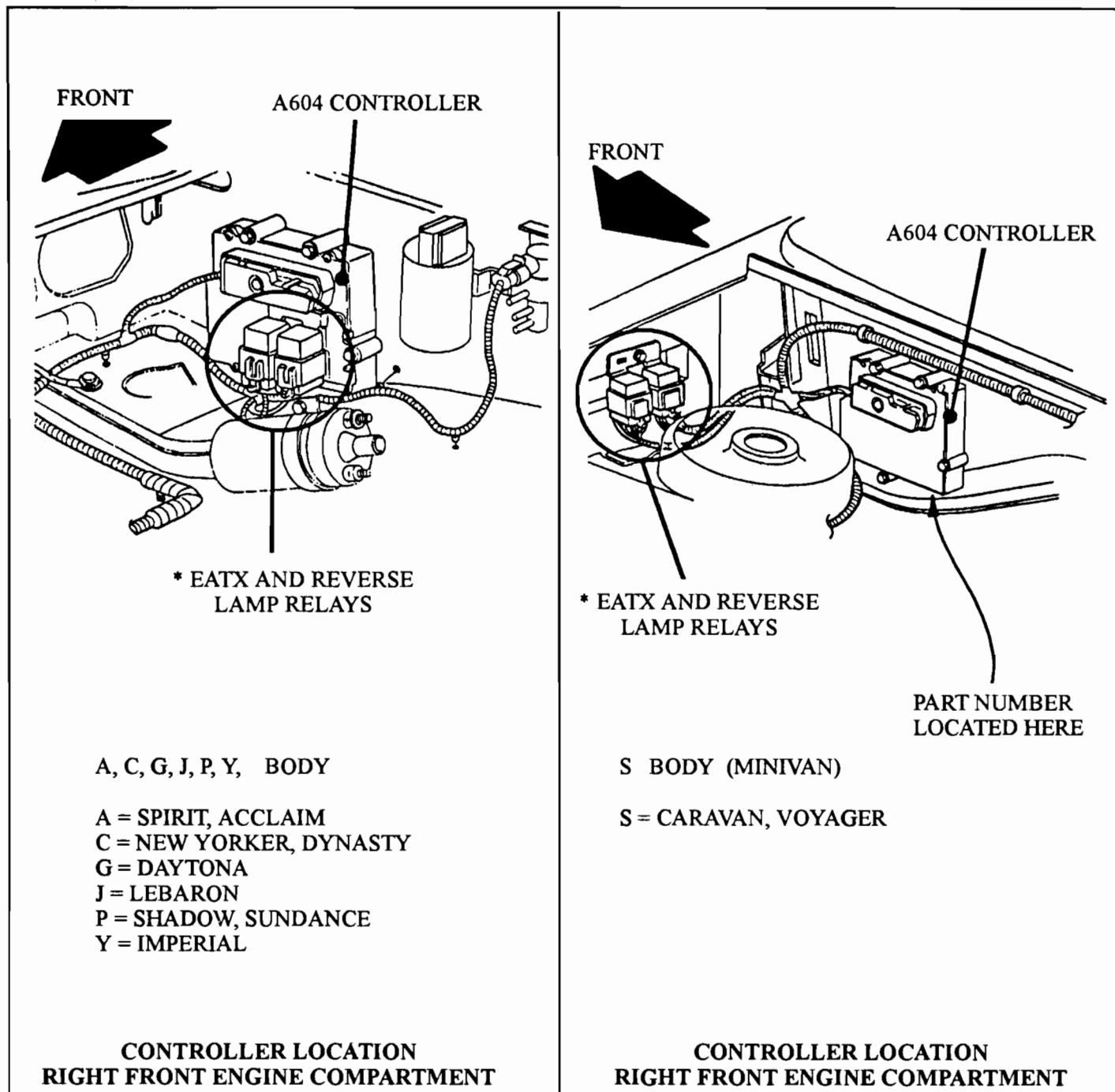


Figure 13

* NOTE: Since the EATX and the Reverse Lamp Relay connectors could be installed in either position, you must use the wire colors in the connectors to identify the correct relay.

- (1) The EATX relay has a Red and a Light Green wire in its connector.
- (2) The Reverse Lamp Relay has a White and a Violet wire in its connector.

**EATX/REVERSE LAMP RELAY
NEW YORKER, DYNASTY, IMPERIAL**

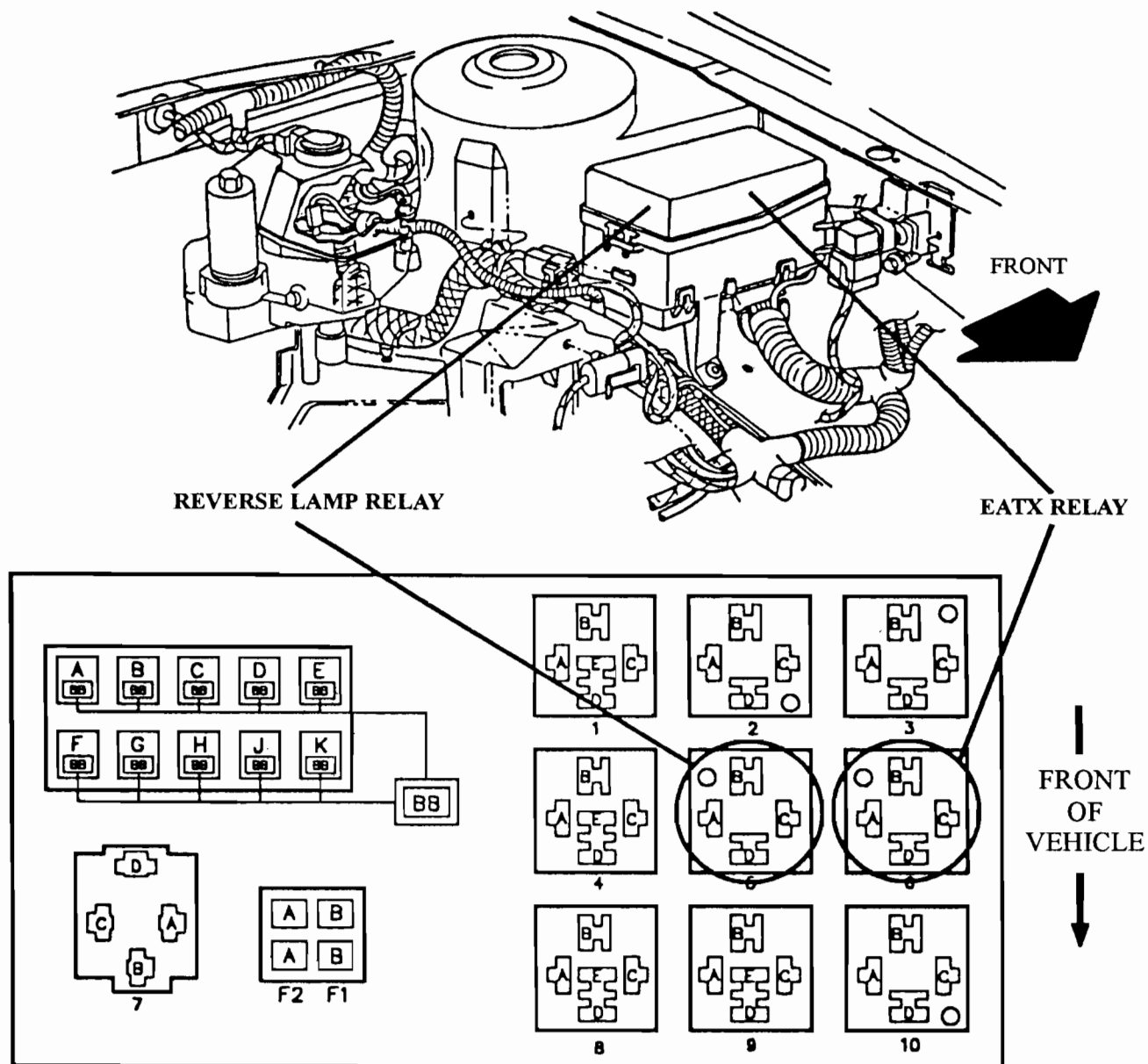
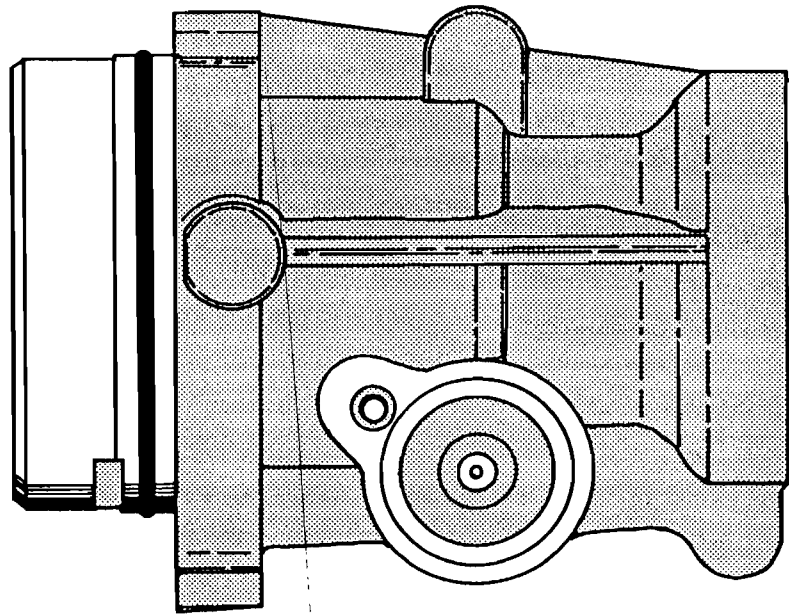
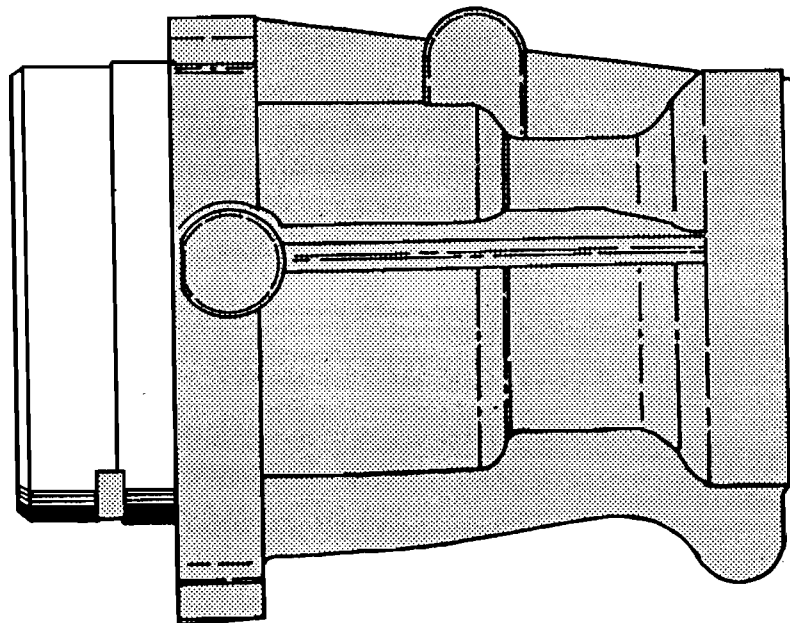


Figure 14



**1989 TO 1992 A604 EXTENSION HOUSING
WITH SPEEDOMETER BORE**



**1993 AND UP A604 EXTENSION HOUSING
WITHOUT SPEEDOMETER BORE**

Figure 15

CHRYSLER A604
INPUT CLUTCH RETAINER SNAP RING
LOCATION AND IDENTIFICATION

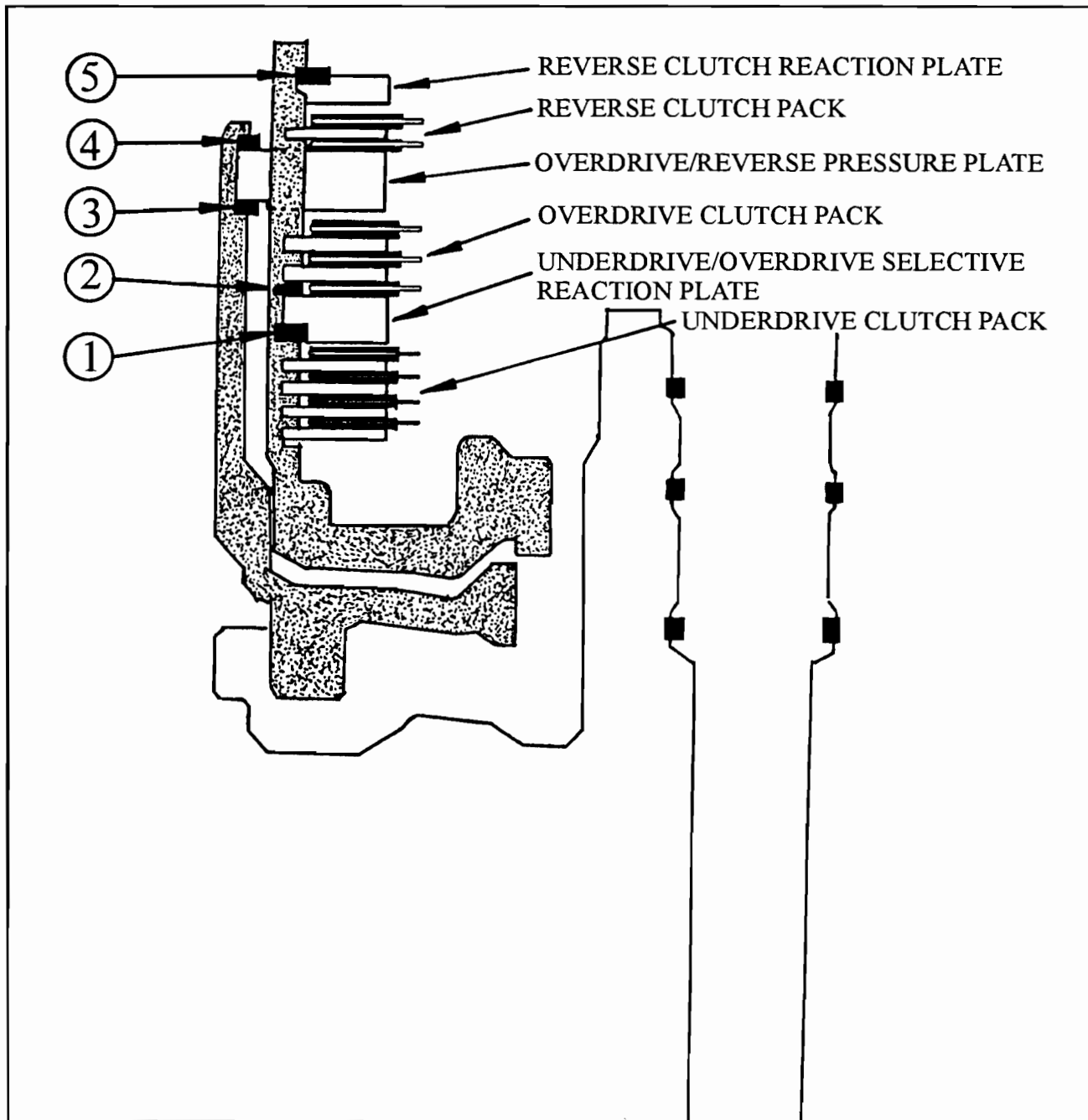
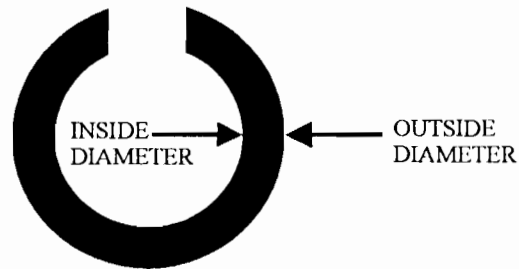


Figure 16

SNAP RING NO. 1:

This is a FLAT "Non-Selective" snap ring used on the bottom side of Underdrive/ Overdrive Selective Reaction Plate, and is approximately .060" thick. This snap ring is often confused with the Reverse Clutch Reaction Plate "Selective" Snap Ring (Snap Ring No. 5). Refer to the selective chart under snap ring No. 5, and notice that the the snap ring could be .061" thick, so both snap rings could be installed in the wrong locations. TO IDENTIFY THE PROPER SNAP RING - Measure the width of the snap ring from the inside diameter to the outside diameter (See Illustration Below).



Ring No. 1, Underdrive/Overdrive Non-Selective Snap Ring is approximately .173"
Ring No. 5, Reverse Clutch Selective Snap Ring is approximately..... .153"

SNAP RING NO. 2:

This is a color coded "Tapered" snap ring that goes on top of the Underdrive/ Overdrive Selective Reaction Plate. There are currently 3 different design levels of this snap ring, because of "Updates" that have occurred since the start of production in 1989, and also affects the design level of the Underdrive/Overdrive Selective Reaction Plate.

REFER TO FIGURE 17 TO IDENTIFY WHICH DESIGN LEVEL THAT YOU HAVE!

We recommend the 3RD DESIGN LEVEL for all models, which REQUIRES a four friction overdrive clutch pack, the .075" snap ring, and the "Undercut" Underdrive/Overdrive Selective Reaction Plate, as shown in Figure 17. Service Package part numbers listed below include the latest design level of the Underdrive/Overdrive Selective Reaction Plate, and the latest design level of the Tapered Snap Ring (.075").

.215"-.219" Thickness.....	4723684
.234"-.238" Thickness.....	4723683
.253"-.257" Thickness.....	4723682
.273"-.277" Thickness.....	4723681

SNAP RING NO. 3:

This is a "Waved" snap ring used on the bottom side of the Overdrive/Reverse Selective Pressure Plate and IS USED even when you have one "Wide" groove in the Overdrive/Reverse Housing, instead of the previous two grooves (See Figure 18).

SNAP RING NO. 4:

This is a "Flat" snap ring used on the top of the Overdrive/Reverse Selective Pressure Plate and IS USED even when you have one "Wide" groove in the Overdrive/Reverse Housing, instead of the previous two grooves (See Figure 18).

Continued on next Page.



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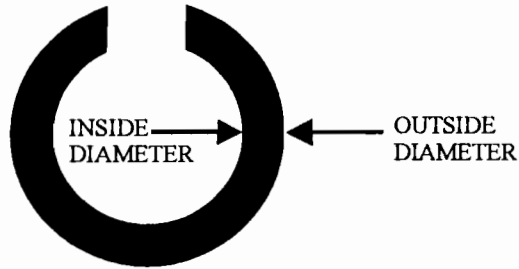
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SNAP RING NO. 5:

This is a FLAT "Selective" snap ring used on top of the Reverse Clutch Reaction Plate. There are 4 different selective thickness snap rings to set the reverse clutch pack clearance, and are listed in the chart below along with their part numbers. This flat snap ring is often confused with the flat snap ring used on the bottom side of the Underdrive/Overdrive Reaction Plate (Snap Ring No. 1), which is approximately .060" thick. Refer to the chart below, and notice that the reverse clutch selective snap ring could be .061" thick, so both snap rings could be installed in the wrong locations.

TO IDENTIFY THE PROPER SNAP RING - Measure the width of the snap ring from the inside diameter to the outside diameter (See Illustration Below).



PART NUMBES	THICKNESS
4377195	.061"
4412871	.071"
4412872	.081"
4412873	.090"

Ring No. 5, Reverse Clutch Selective Snap Ring is approximately..... .153"

Ring No. 1, Underdrive/Overdrive Non-Selective Snap Ring is approximately .173"

CLUTCH PACK CLEARANCES

Underdrive Clutch Pack036" - .058"

Overdrive Clutch Pack042" - .096"

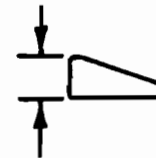
Reverse Clutch Pack030" - .039"

UNDERDRIVE/OVERDRIVE TAPERED SNAP RING IDENTIFICATION

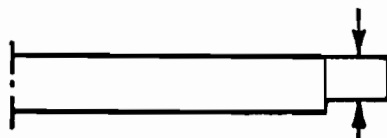
THICKNESS	COLOR CODE	APPLICATION	PART NO.
.070"	BLUE *	3 O.D. PLATE ONLY	4377189
.060"	GREEN/WHITE *	4 O.D. PLATE ONLY	4531411
.075"	GREEN *	4 O.D. PLATE ONLY	4567602

* = ALWAYS MEASURE THE SNAP RING AS COLOR
CODES HAVE BEEN KNOWN TO CHANGE.

MEASURE SNAP RING ACROSS THE THICKEST
DIMENSION AS SHOWN AT RIGHT

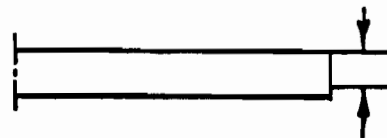


UNDERDRIVE/OVERDRIVE REACTION PLATE MEASURE THICKNESS OF LONGEST TANGS FOR IDENTIFICATION



.196" THICK LUG = 3 O.D. OVERDRIVE PLATE ONLY

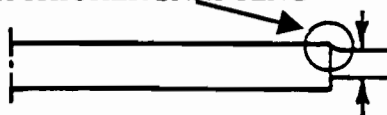
THIS PLATE REQUIRES .070" BLUE TAPERED SNAP RING,
AND IS INSTALLED WITH STEP FACING DOWN.



.156" THICK LUG = 4 O.D. OVERDRIVE PLATE ONLY

THIS PLATE REQUIRES .060" GREEN/WHITE TAPERED SNAP RING,
AND IS INSTALLED WITH STEP FACING DOWN.

RADIUS RELIEF CUT TO MAKE
ROOM FOR THICKER SNAP RING



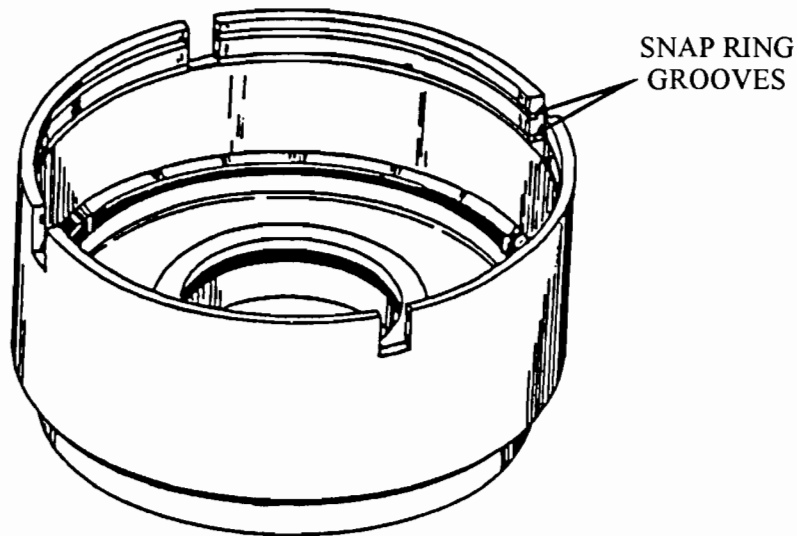
.141" THICK LUG = 4 O.D. OVERDRIVE PLATE ONLY

THIS PLATE REQUIRES .075" GREEN TAPERED SNAP RING,
AND IS INSTALLED WITH STEP FACING DOWN.

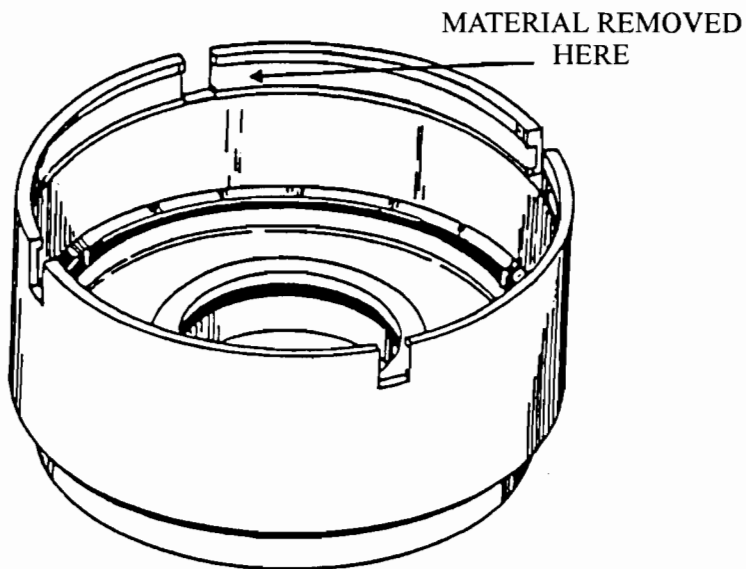
THE "UPDATED" GREEN SNAP RING AND THE "UPDATED" RELIEF CUT
REACTION PLATE WILL RETROFIT BACK ON 4 O.D. PLATE ONLY.

Figure 17

OVERDRIVE/REVERSE PISTON



PREVIOUS 4 LUG OVERDRIVE/REVERSE PISTON



NEW 4 LUG OVERDRIVE/REVERSE PISTON

Figure 18

BOTH SNAP RINGS (RING NO. 3 & RING NO. 4) ARE USED IN THIS HOUSING. REGARDLESS OF DESIGN LEVEL, IN THE LOCATIONS THAT ARE SHOWN IN FIGURE 16.



Thought for the Day

One night at sea, the ship's captain saw what appeared to be the lights of another ship out in front of him. He had his signalman blink to the other ship: **"CHANGE YOUR COURSE 10° NORTH."** The reply came back: **"CHANGE YOUR COURSE 10° SOUTH."** The ship's captain answered: **"I'M THE CAPTAIN, CHANGE YOU COURSE 10° NORTH."** To which the reply was: **"WELL, I'M A SEAMAN FIRST CLASS, CHANGE YOUR COURSE 10° SOUTH."** This infuriated the ship's captain, so he signaled back: **"LISTEN YOU FOOL, I SAID CHANGE YOUR COURSE 10° NORTH. THIS IS A BATTLESHIP!"** To which the reply came back: **"AND I SAID CHANGE YOUR COURSE SOUTH, THIS IS A LIGHTHOUSE."**

The last word on a subject should not always be from the person with the most authority, but rather from the person with the best grasp of the situation.

Author Unknown - reprinted from a reprint





CHRYSLER A604
ASSEMBLY OF 2/4 AND L/R CLUTCH PACKS

Extra attention is needed when assembling the Low/Reverse clutch pack and the Two/Four clutch pack into the case, as both of the clutch packs are very similar, but are not compatible with one another.

THINGS TO WATCH FOR:

- (1) Both clutch packs, on the steel plates, have the same tooth profile, but the thicknesses are different (See Figure 19).

A. 2/4 STEEL PLATE THICKNESS IS .100" (4 Required).

B. L/R STEEL PLATE THICKNESS IS .070" (5 Required).

- (2) Both clutch packs, on the lined plates, have the same tooth count and the same lining, but the thicknesses are different (See Figure 19).

A. 2/4 LINED PLATE THICKNESS IS .085" (4 Required).

B. L/R LINED PLATE THICKNESS IS .070" (5 Required).

There are 5 lined plates and 5 steel plates in the Low/Reverse clutch pack.

There are 4 lined plates and 4 steel plates in the Two/Four clutch pack.

There is also a common pressure plate used between the clutch packs.

We have provide the correct clutch plate arrangement to assist you with the proper assembly of the 2/4 and L/R clutch packs (See Figure 20).

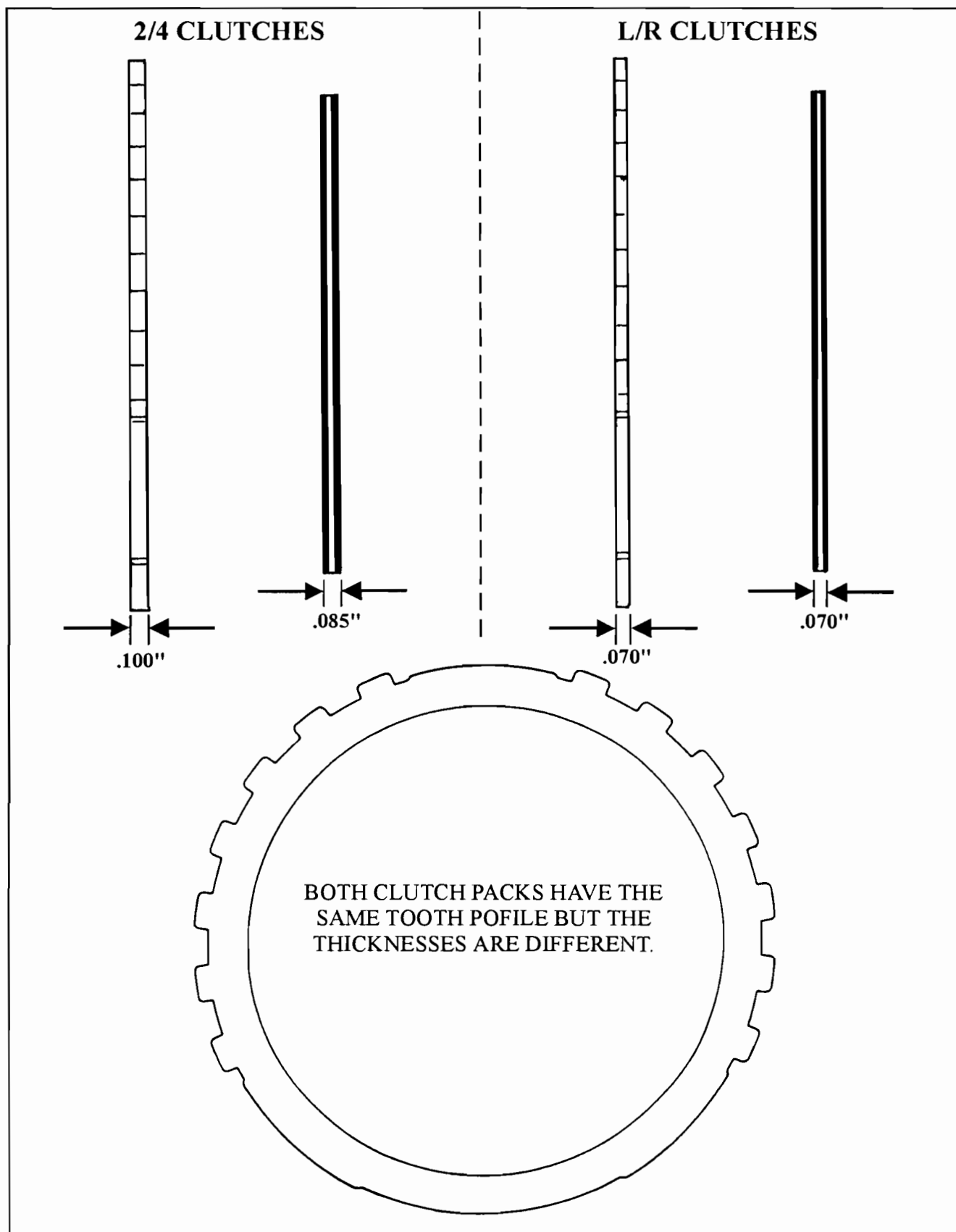
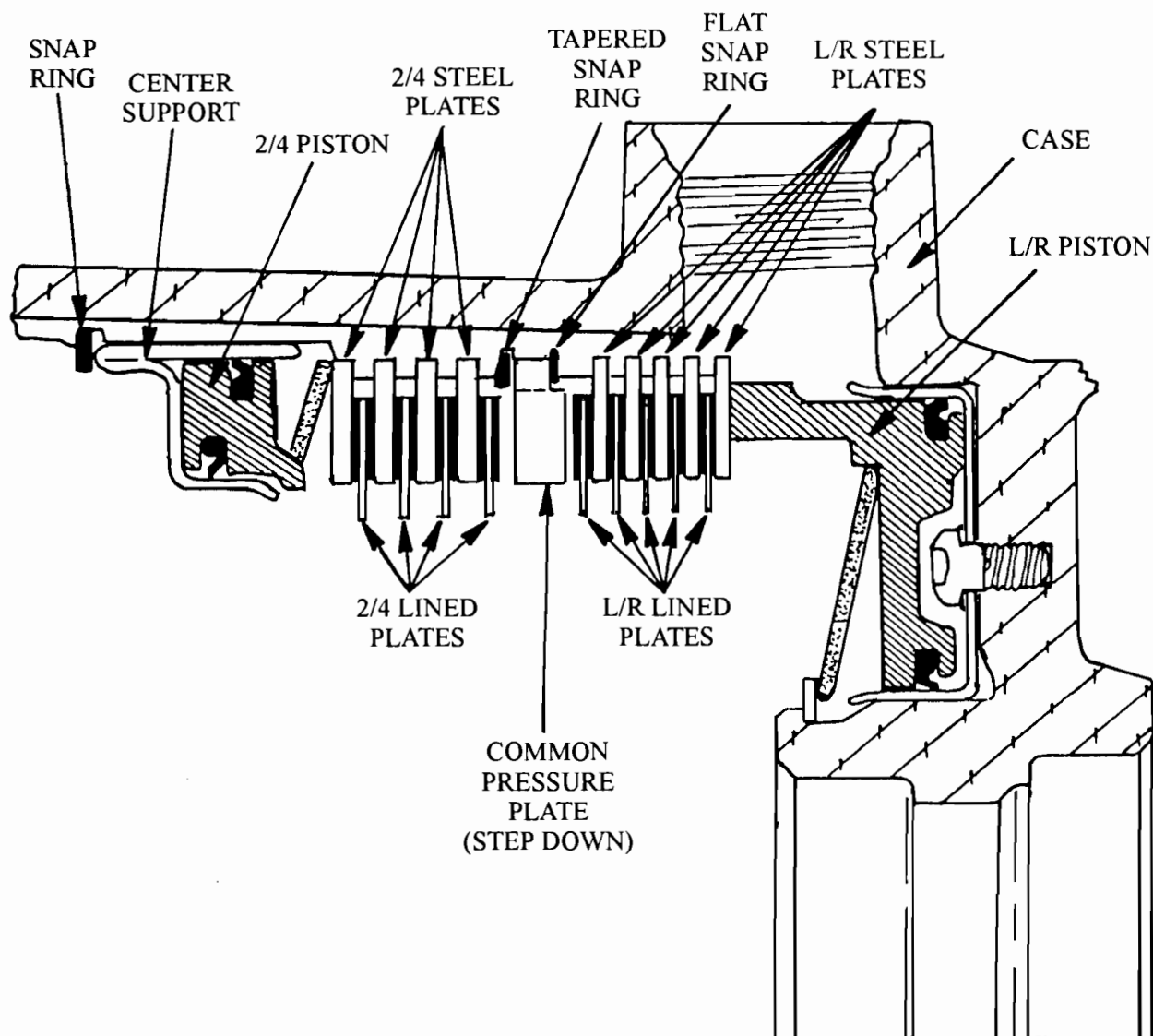


Figure 19

TWO/FOUR AND LOW/REVERSE CLUTCH PLATES



LOW/REVERSE CLUTCH PACK TAKES 5 STEEL PLATES (.070") AND 5 LINED PLATES (.070")

TWO/FOUR CLUTCH PACK TAKES 4 STEEL PLATES (.100") AND 4 LINED PLATES (.085")

LOW/REVERSE CLUTCH PACK CLEARANCE IS .042" TO .065" AND IS SET WITH THE COMMON SELECTIVE PRESSURE PLATE AVAILABLE IN SEVEN THICKNESSES.

TWO/FOUR CLUTCH PACK CLEARANCE IS .030" TO .104" AND IF NOT WITHIN SPEC, THE CLUTCH IS NOT ASSEMBLED PROPERLY.

THERE IS NO ADJUSTMENT FOR THE TWO /FOUR CLUTCH CLEARANCE.

Figure 20

**CHRYSLER A604****SOLENOID CIRCUIT CHECK USING SCANNERS**

Checks can be made on each individual solenoid circuit with the use of scanners. Both the DRBII and aftermarket scanners have an Actuator Test Mode which allows the technician to cycle each individual solenoid on and off. The best method for conducting this test is to use a pressure gauge in conjunction with the scanner. For example, if the underdrive solenoid circuit is in question, attach a pressure gauge to the underdrive clutch tap, start up the vehicle, and cycle the underdrive solenoid on and off using the scanner. The pressure gauge should go up and down in pressure as the scanner turns the solenoid on and off. This test checks the electrical circuit from the controller down to the solenoid, as well as the integrity of the hydraulic circuit. What can be confusing to the technician when conducting this test, is that two of the four solenoids are normally vented while the remaining two solenoids are normally applied. Normally vented means that when the solenoid is off, it exhausts pressure. When it becomes energized, it holds pressure. The normally applied solenoids work opposite, when they are off there is pressure in the circuit. When they are energized, they exhaust pressure. So when the technician uses a scanner and a pressure gauge to cycle the solenoids on and off, two of the solenoids are going to show 0 psi when the solenoid is off and pressure when the solenoid is turned on. The other two will show pressure when the solenoid is off and 0 psi when the solenoid is turned on.

Another point that needs to be brought to the technicians attention is what type of pressure should be observed when performing this test. In first and second gear, the predetermined pressure is going to run between 120 to 145 psi. In third and fourth gear, the predetermined pressure will be between 75 to 95 psi. This pressure drop occurs when the overdrive solenoid is energized to turn on the overdrive clutches for third and fourth. What happens is that the same pressure that is allowed to pass through the solenoid to turn on the overdrive clutches is the same pressure that is allowed to be sent to the pressure regulator valve to reduce main line pressure for third and fourth gears. This means that when a technician cycles each of the solenoids on and off with the use of a scanner in conjunction with a pressure gauge, 120 to 145 psi of pressure will be observed in the Underdrive, Low/Reverse and 2/4 solenoid circuit. But in the Overdrive solenoid circuit, 75 to 95 psi will be observed. Refer to the chart below whenever an Actuator Test of each solenoid is being performed to assist you in what is to be observed when all is correct.

NV	LR _L /LU	ON 120 - 145 PSI
		OFF 0 PSI
NA	2-4/LR _R	ON 0 PSI
		OFF 120 - 145 PSI
NA	UD	ON 0 PSI
		OFF 120 - 145 PSI
NV	OD	ON 75 - 95 PSI
		OFF 0 PSI

NV = Normally Vented**NA = Normally Applied**

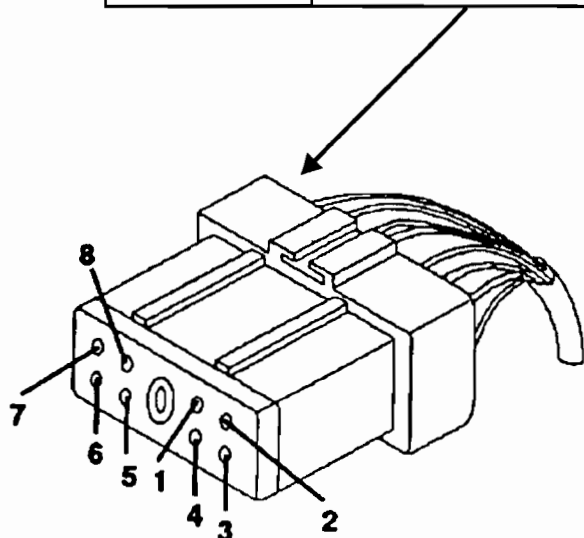
CHRYSLER A604

SOLENOID AND PRESSURE SWITCH ELECTRICAL CIRCUIT CHECK

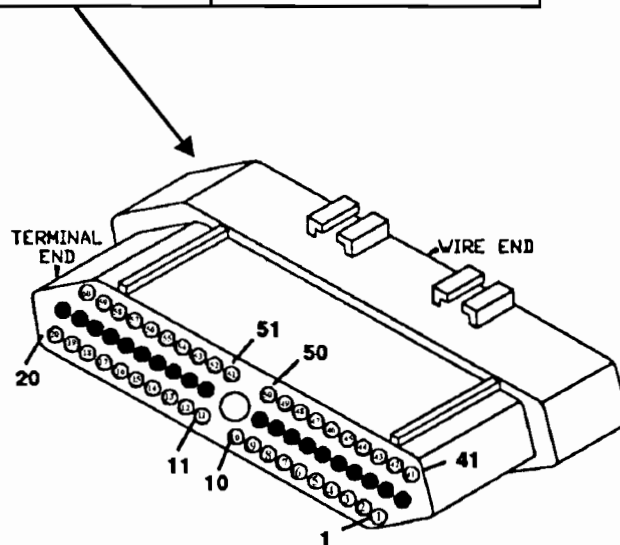
If codes come up for any of the solenoids or pressure switches, and the solenoid body and pressure circuits are good, then an electrical circuit check will have to be performed. This will require the use of an ohmmeter in order to check for continuity across each individual wire going from the solenoid body to the controller. Use the chart and illustrations below for checking the circuit or circuits that needs to be investigated. It has been ATSG's experience that the majority of open circuits have been traced down to bad connectors. There have been times when brackets, pulleys and belts have worn through the harness and cut wires. Front end collisions have also caused numerous electrical circuit problems. Both the eight way connector for the solenoid body and the sixty way connector for the controller can be serviced separately. Chrysler has connector repair kits under the following part numbers:

Solenoid Body Eight Way Connector Repair Kit.....4419476
Controller Sixty Way Connector Repair Kit.....4419479

CIRCUIT NAME	SOLENOID BODY TERMINAL #	CONTROLLER TERMINAL #	POSSIBLE CODES
2/4 P.S.	1	47	22, 23, 26, 27, 32
L/R P.S.	2	50	24, 25, 26, 27
OD P.S.	3	9	21, 23, 25, 27, 31, 33
UD SOL	5	59	44
OD SOL	6	60	43
L/R SOL	7	20	41
2/4 SOL	8	19	42



SOLENOID BODY
CONNECTOR



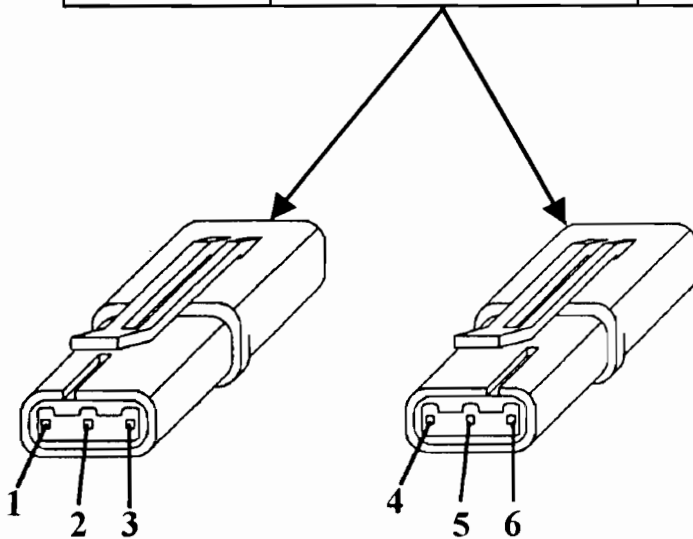
CONTROLLER
CONNECTOR

CHRYSLER A604 PRNODL AND NEUTRAL SWITCH CIRCUIT CHECKS

If a code 28 comes up due to a bad shift lever position signal and both the PRNODL and Neutral switch are known to be good, then a circuit check will have to be performed. This will require the use of an ohmmeter in order to check for continuity across each individual wire going from the switch to the controller. Use the chart and illustrations below to assist you in making the check. It has been ATSG's experience that the majority of open circuits have been traced down to bad connectors. Chrysler has a connector repair kit available for the PRNODL and Neutral Switches under the following part number:

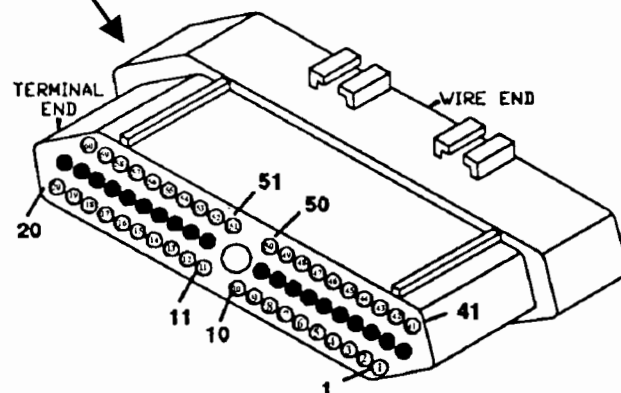
PRNODL and Neutral Switch Three Way Connector Repair Kit.....4638996

CIRCUIT NAME	PRNODL SWITCH	CONTROLLER TERMINAL #	POSSIBLE CODES
RL2/T01	1	1	28
NS1/T42	2	42	28
RL2/Z13	3	GROUND	28
CIRCUIT NAME	NEUTRAL SWITCH	CONTROLLER TERMINAL #	POSSIBLE CODES
RL1/A21	4	IGNITION FEED	28
NS1/T41	5	41	28
RL1/T03	6	3	28



**PRNODL SWITCH
CONNECTOR**

**NEUTRAL SWITCH
CONNECTOR**



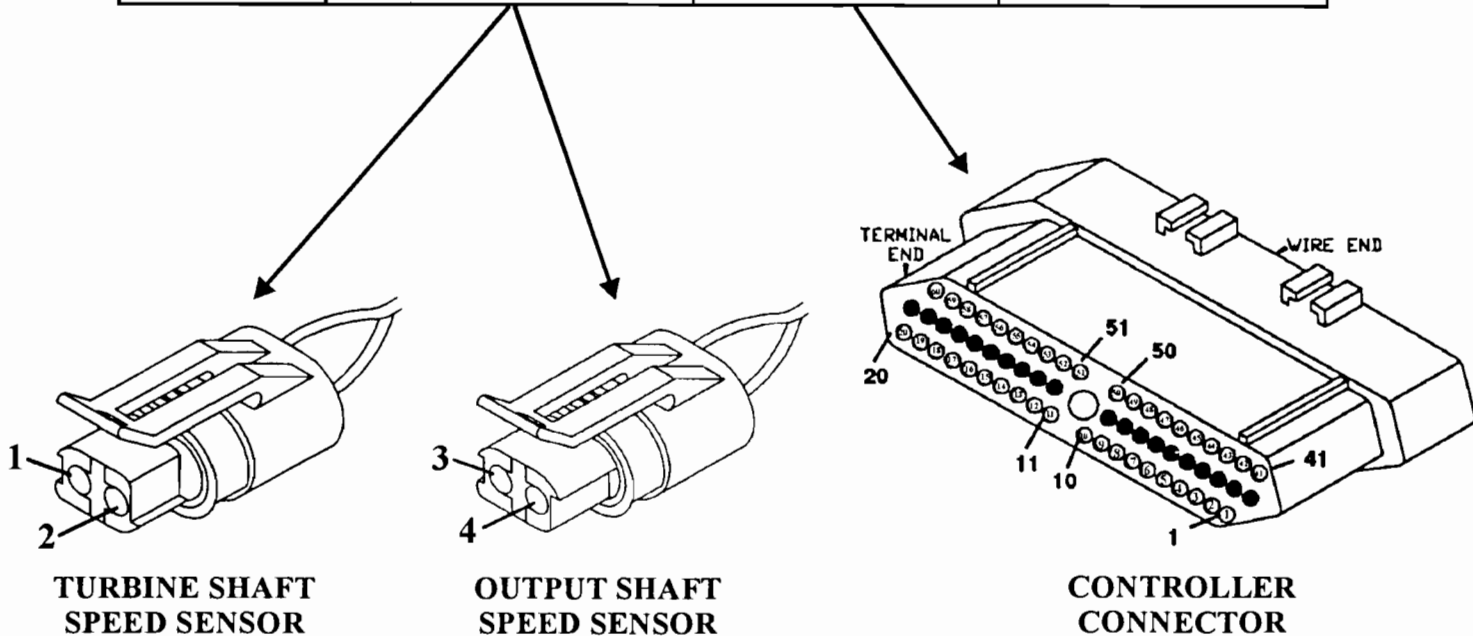
**CONTROLLER
CONNECTOR**

CHRYSLER A604 SPEED SENSOR CIRCUIT CHECKS

If codes come up for the Turbine Shaft Speed Sensor or the Output Shaft Speed Sensor and the speed sensor has been replaced with a new one, a circuit check will have to be performed. This will require the use of an ohmmeter in order to check for continuity across each individual wire going from the speed sensors to the controller. Use the chart and illustrations below to assist you in making the check. It has been ATSG's experience that the majority of open circuits have been traced down to bad connectors. Chrysler has a connector repair kit available for the speed sensors under the following part number:

Speed Sensor Two Way Connector Repair Kit.....4419478

CIRCUIT NAME	TURBINE SHAFT SPEED SENSOR TERMINAL #	CONTROLLER TERMINAL #	POSSIBLE CODES
ST1/T52	1	59	56
SG5/T13	2	13	58
CIRCUIT NAME	OUTPUT SHAFT SPEED SENSOR TERMINAL #	CONTROLLER TERMINAL #	POSSIBLE CODES
SO1/T14	3	14	57
SG5/T13	4	13	58



CHRYSLER 42RE - PRELIMINARY INFORMATION

ELECTRONIC GOVERNOR COMPONENT LOCATION

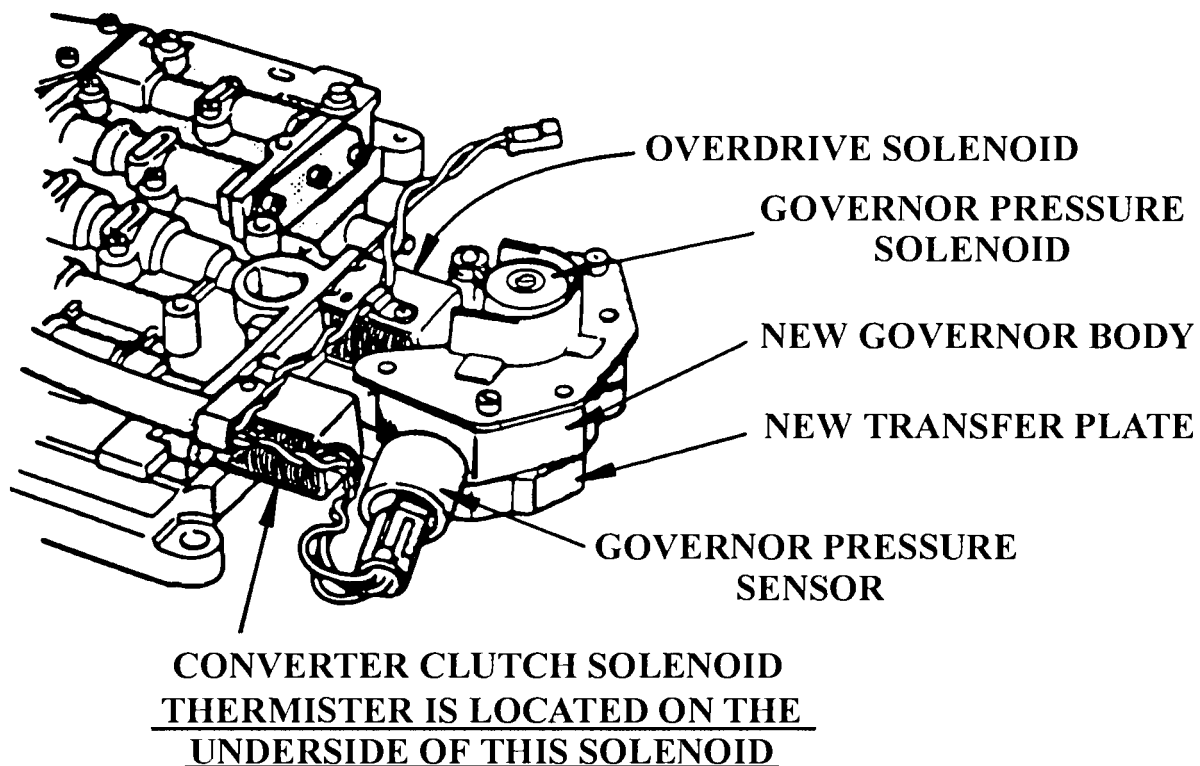


Figure 21

ELECTRONIC GOVERNOR COMPONENTS

Governor pressure is developed and controlled electronically in the 42RE. Refer to figure 21 for component locations. The components used for the development and control of governor pressure include:

1. GOVERNOR BODY
2. VALVE BODY TRANSFER PLATE
3. GOVERNOR PRESSURE SOLENOID
4. FLUID TEMPERATURE THERMISTER
5. TRANSMISSION SPEED SENSOR
6. THROTTLE POSITION SENSOR
7. TRANSMISSION CONTROL MODULE

GOVERNOR BODY AND NEW TRANSFER PLATE

A new Transfer Plate is used with the 42RE valve body. The transfer plate is designed to supply line pressure to the governor pressure solenoid, and to return the regulated governor pressure from the solenoid back to the valve body.

The governor pressure solenoid is mounted in the governor body, and the body is bolted to the lower side of the new transfer plate.

TRANSMISSION SPEED SENSOR

The transmission Speed Sensor is located in the overdrive case as seen in figure 22. The sensor is positioned over the park gear and monitors transmission output shaft rotating speed. The sensor used with the 42RE transmission is the same as is used in the 41TE (A604) and the 42LE (A606).

Speed sensor signals are triggered by the park gear lugs as they rotate past the sensor pick up face. Input signals are sent to the Transmission Control Module (TCM) for processing.

The vehicle speed sensor also serves as a backup for the Transmission Speed Sensor. Signals from this sensor are shared with the Powertrain Control Module (PCM).

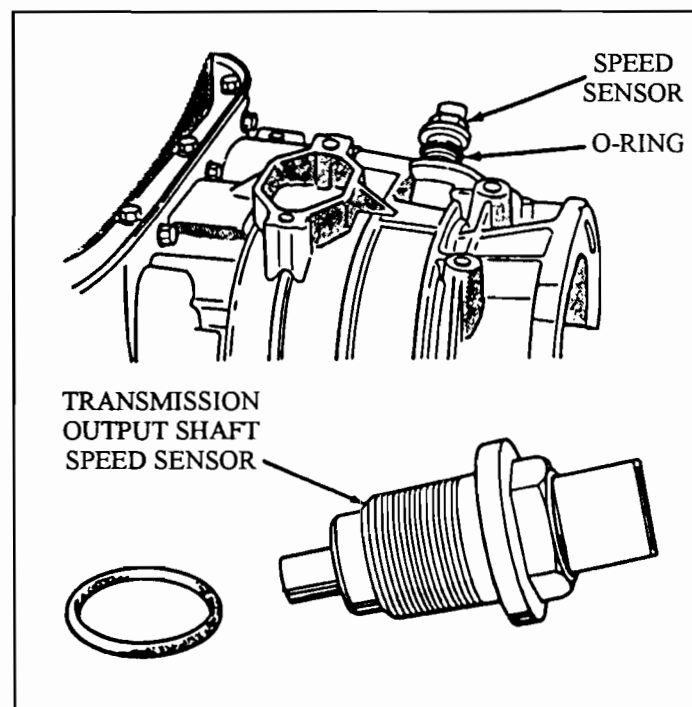


Figure 22

THROTTLE POSITION SENSOR

The TPS provides throttle position signals to both the TCM and PCM. This input signal is used to determine the 3-4 shift and TCC shift schedule, and to select the proper governor curve provided by the TCM.

GOVERNOR PRESSURE CURVES

There are four governor pressure curves programmed into the TCM. The four different governor curves allow the TCM to adjust governor pressure for varying driving conditions.

CURVE 1 is used for transmission operation when fluid conditions is at or below 30° F.

CURVE 2 is used for transmission operation when fluid conditions is at or above 31° F.

CURVE 3 is used for transmission operation during wide open throttle conditions.

CURVE 4 is used for transmission operation when driving with the transfer case in the 4WD Low Range.

GOVERNOR PRESSURE SOLENOID

The governor pressure solenoid generates the governor pressure needed for upshifts and downshifts. It is a Pulse-Width Modulated solenoid and is located in the governor body on the valve body transfer plate as shown in Figure 21.

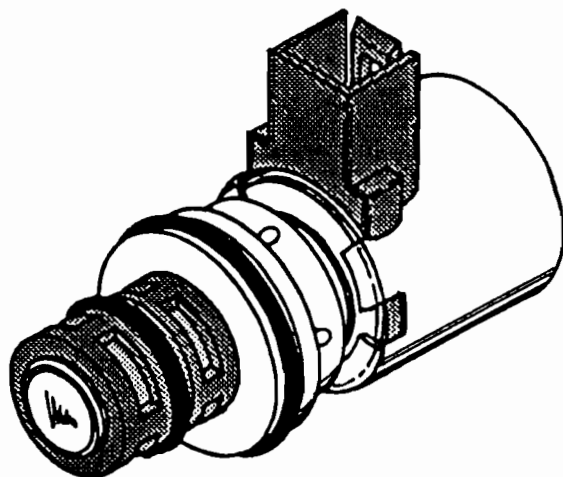
The inlet side of the solenoid is fed with line pressure. The solenoid then regulates this line pressure to produce governor pressure. This regulated governor pressure exits the solenoid outlet side and enters into the valve body governor circuit.

Just like any other Pulse-Width Modulated Solenoid, pressure increases as the electrical signal decreases. When this governor pressure solenoid is fed with approximately 1 amp of current, the solenoid will produce 0 psi of governor pressure. Zero amps to the solenoid would then provide maximum governor pressure.

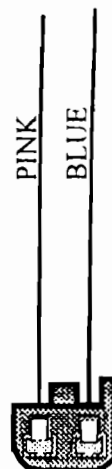
The Transmission Control Module provides a common 12 volts (DC) supply to the governor pressure solenoid as well as the TCC and 3-4 shift solenoid. The TCM also provides each solenoid with its own ground circuit.

The governor pressure solenoid is polarity sensitive and the current draw is based upon the ground being pulsed on and off by the TCM. Refer to figure 23 for the solenoid and its connector. Refer to figure 25 for the complete transmission component related wire diagram.

GOVERNOR PRESSURE SOLENOID



VIEW LOOKING INTO THE
GOVERNOR PRESSURE
SOLENOID CONNECTOR



VIEW LOOKING INTO THE
GOVERNOR PRESSURE
SOLENOID HARNESS

Figure 23

GOVERNOR PRESSURE SENSOR

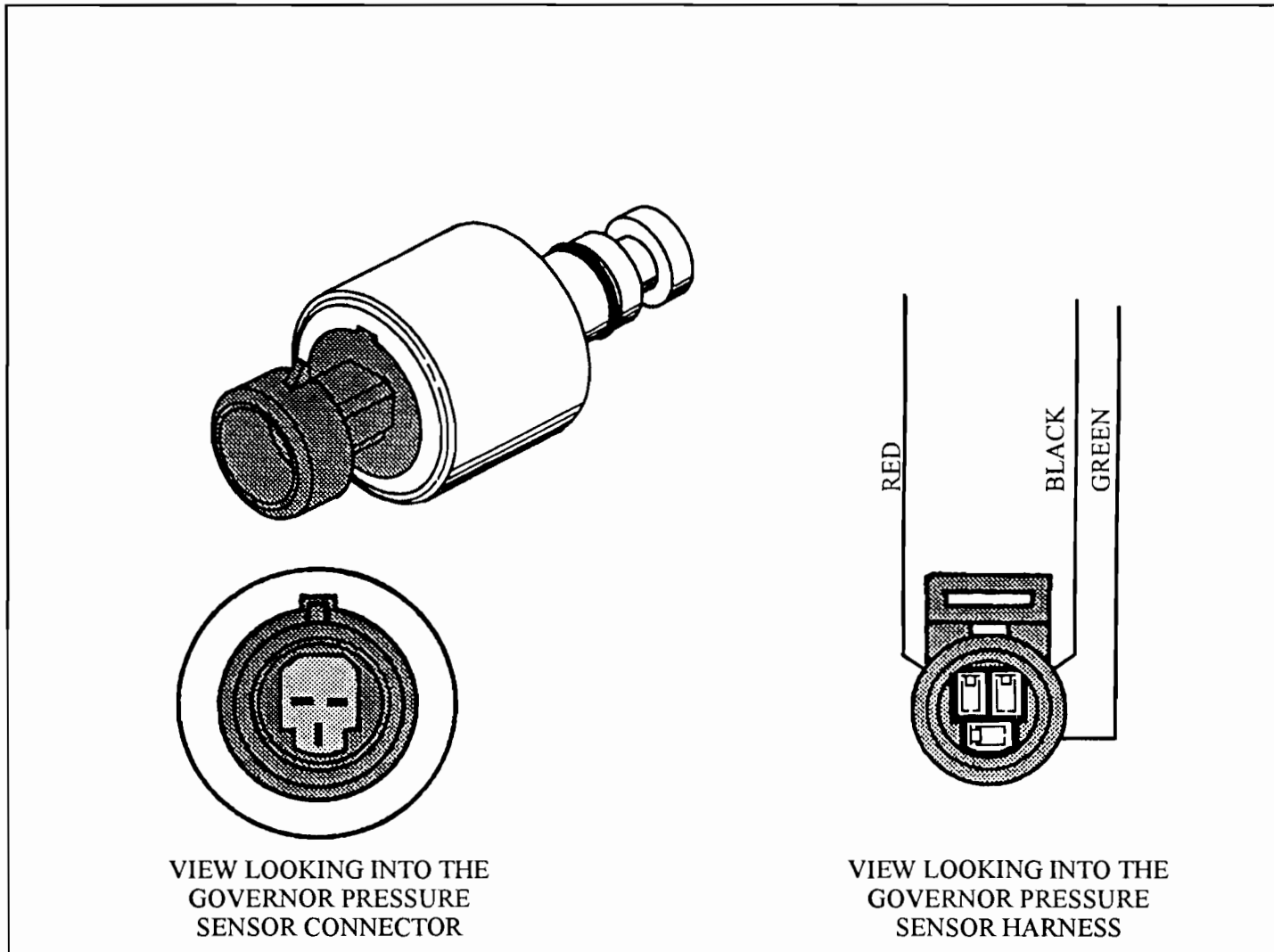


Figure 24

GOVERNOR PRESSURE SENSOR - The Governor Pressure Sensor output signal provides the necessary feedback to the TCM. This feedback information is needed by the TCM to adequately control governor pressure for varying conditions.

CHRYSLER 42RE WIRING SCHEMATIC

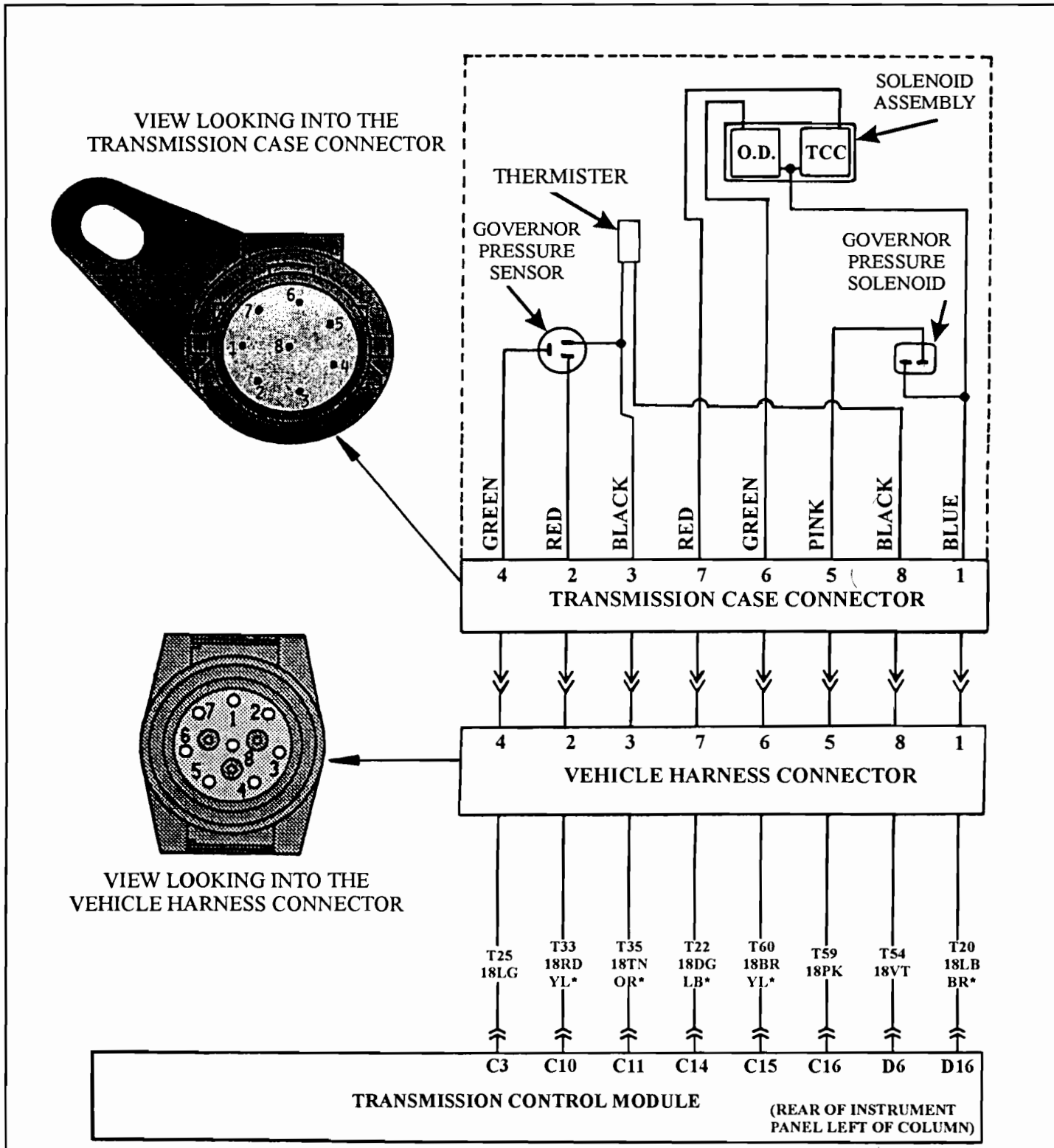


Figure 25



CASE CONNECTOR TERMINAL #	FUNCTION
1	12V POWER IN FOR TCC, O.D., & GOVERNOR PRESSURE SOLENOID.
2	5V FEED TO GOVERNOR PRESSURE SENSOR.
3	GROUND FOR GOVERNOR PRESSURE SENSOR AND THERMISTOR.
4	GOVERNOR PRESSURE SENSOR SIGNAL TO THE TCM
5	GROUND (VARIABLE FORCE) TO GOVERNOR PRESSURE SOLENOID.
6	GROUND FROM TCM TO OVERDRIVE SOLENOID
7	GROUND FROM TCM TO CONVERTER CLUTCH SOLENOID
8	TEMP SENSOR (THERMISTER) SIGNAL TO THE ECM.

FLUID TEMPERATURE THERMISTER

Transmission fluid temperature readings are supplied to the TCM by the thermister (See Figure 25). The temperature readings are used to control the 3-4 shift, the converter clutch, and governor pressure. The normal resistance value for the thermister at room temperature is approximately 1000 ohms.

The TCM prevents a 3-4 shift and prevents engagement of the converter clutch, when the fluid temperature is below approximately 30° F.

If the fluid temperature exceeds 260° F, the TCM will cause a 4-3 downshift and engage the converter clutch. Engagement is now according to the third gear converter clutch engagement schedule.

The overdrive OFF lamp on the instrument panel will also illuminate when the shift back to third occurs. The TCM will not allow 4th gear operation until fluid temperature decreases to approximately 230° F.

The thermister is mounted on the underside of the converter clutch solenoid as shown in figure 21 and is immersed in fluid at all times.

OHMS READING CHART

THERMISTER.....	APPROX. 1000Ω at 70° F.
OVERDRIVE SOLENOID.....	25 - 40Ω at 70° F.
CONVERTER CLUTCH SOLENOID.....	25 - 40Ω at 70° F.
GOVERNOR PRESSURE SOLENOID.....	25 - 40Ω at 70° F.

3-5

CHRYSLER 42RE VALVE BODY CHECK BALL LOCATION & IDENTIFICATION

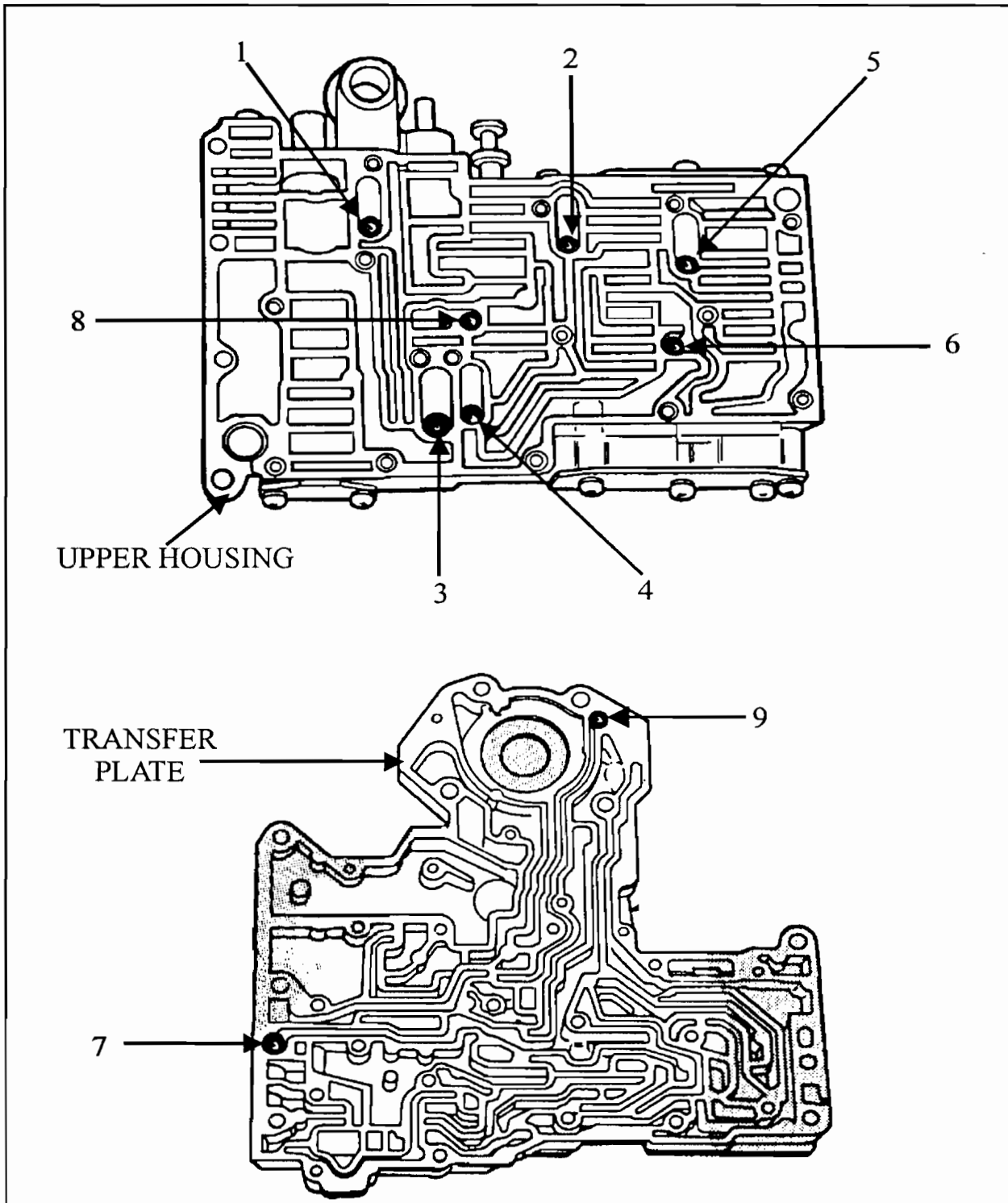
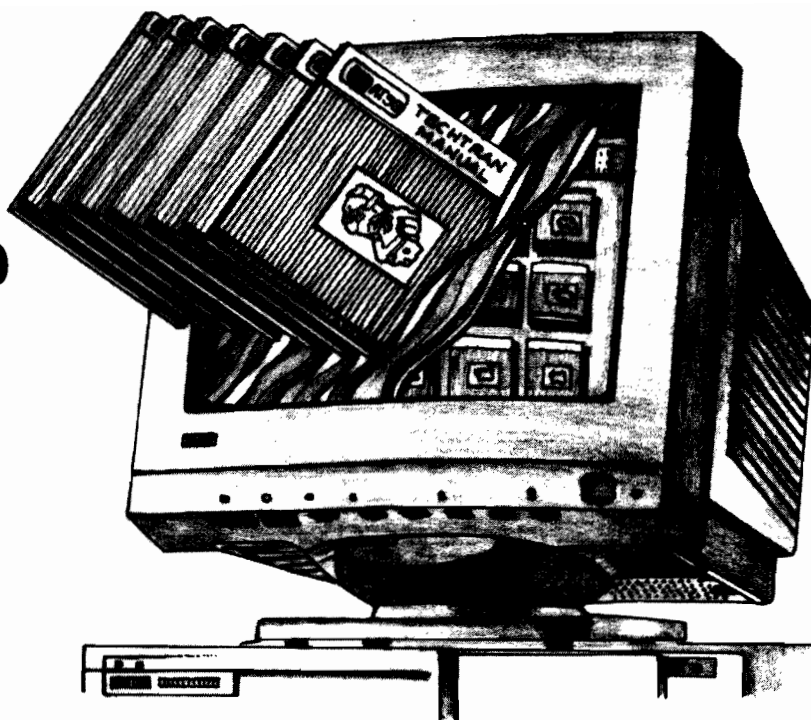


Figure 26

Another First ...



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DOMESTIC TRANSMISSIONS

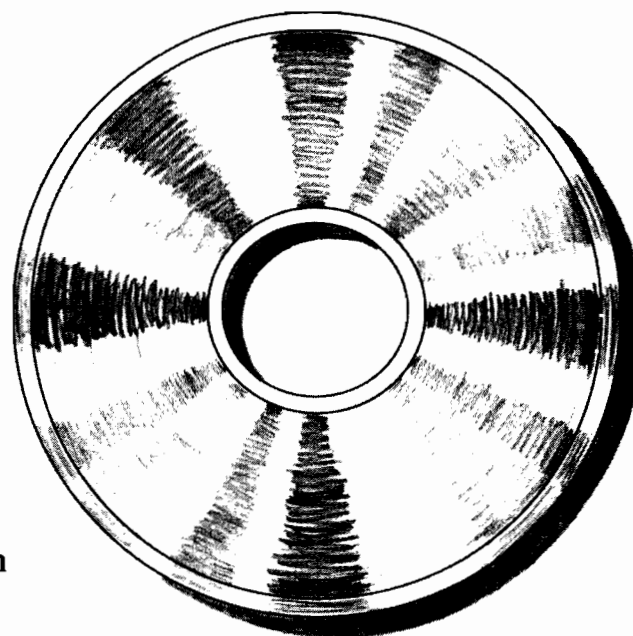
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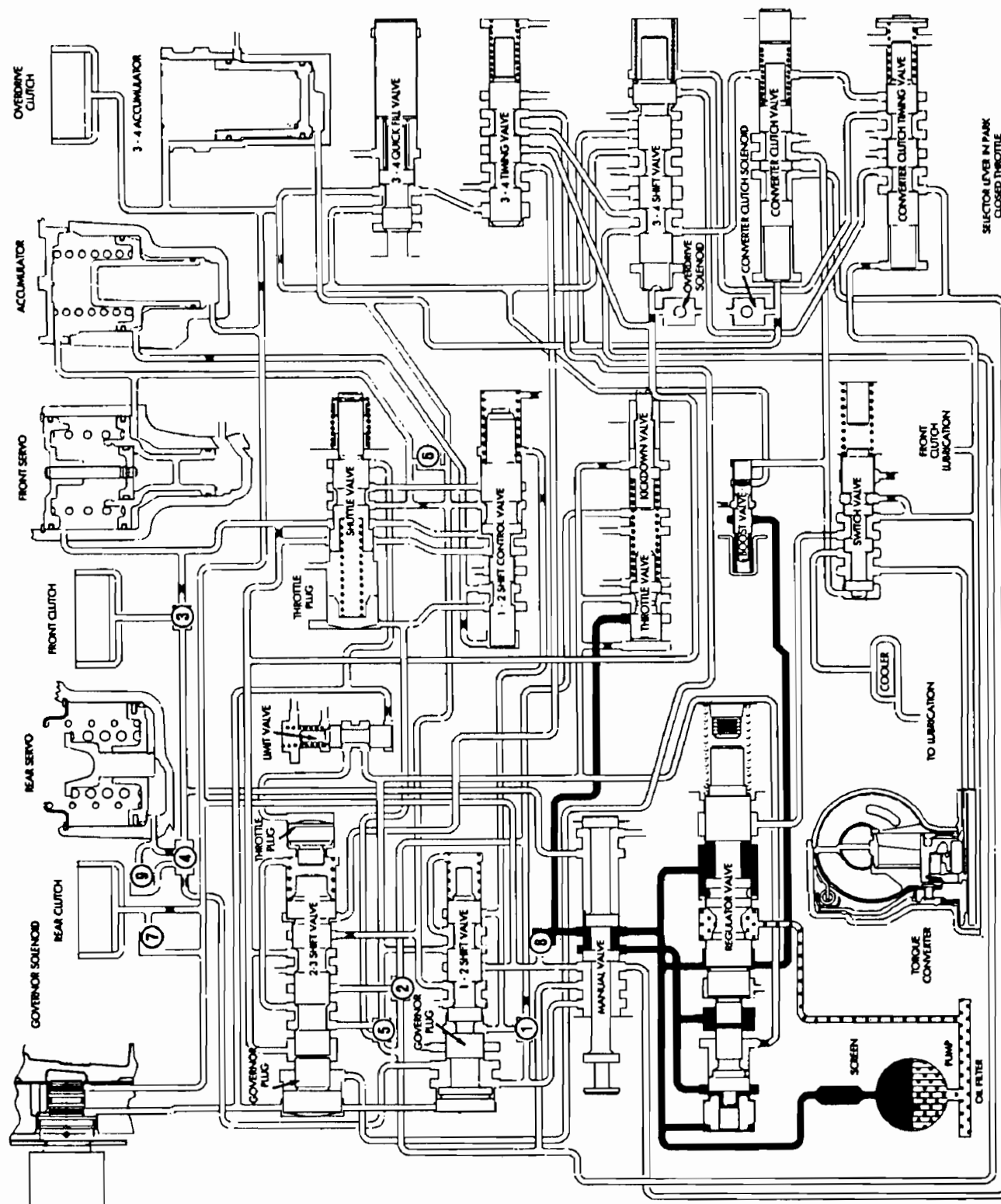
CHRYSLER 42RE

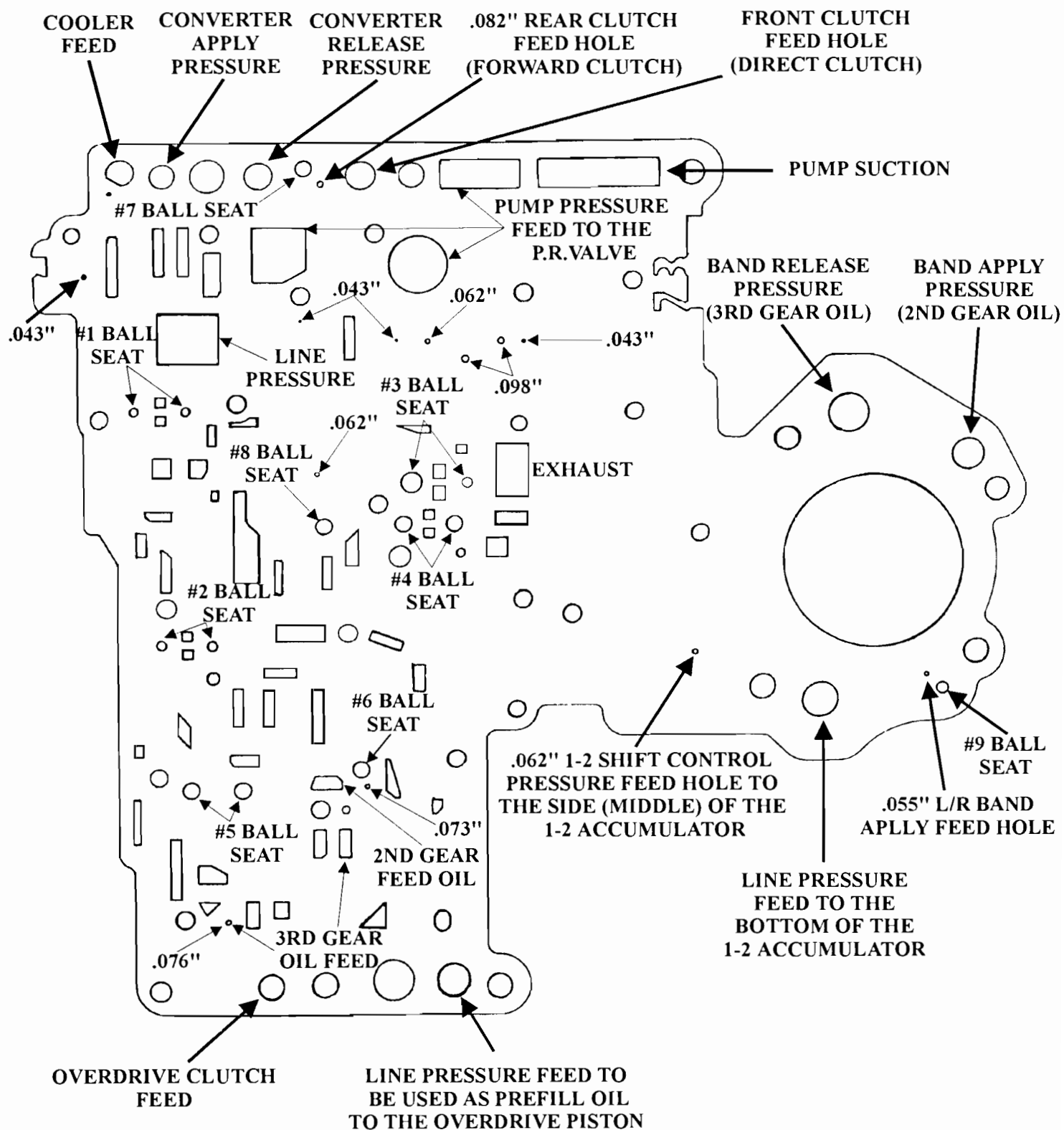
VALVE BODY CHECK BALL LOCATION & IDENTIFICATION CONTINUED

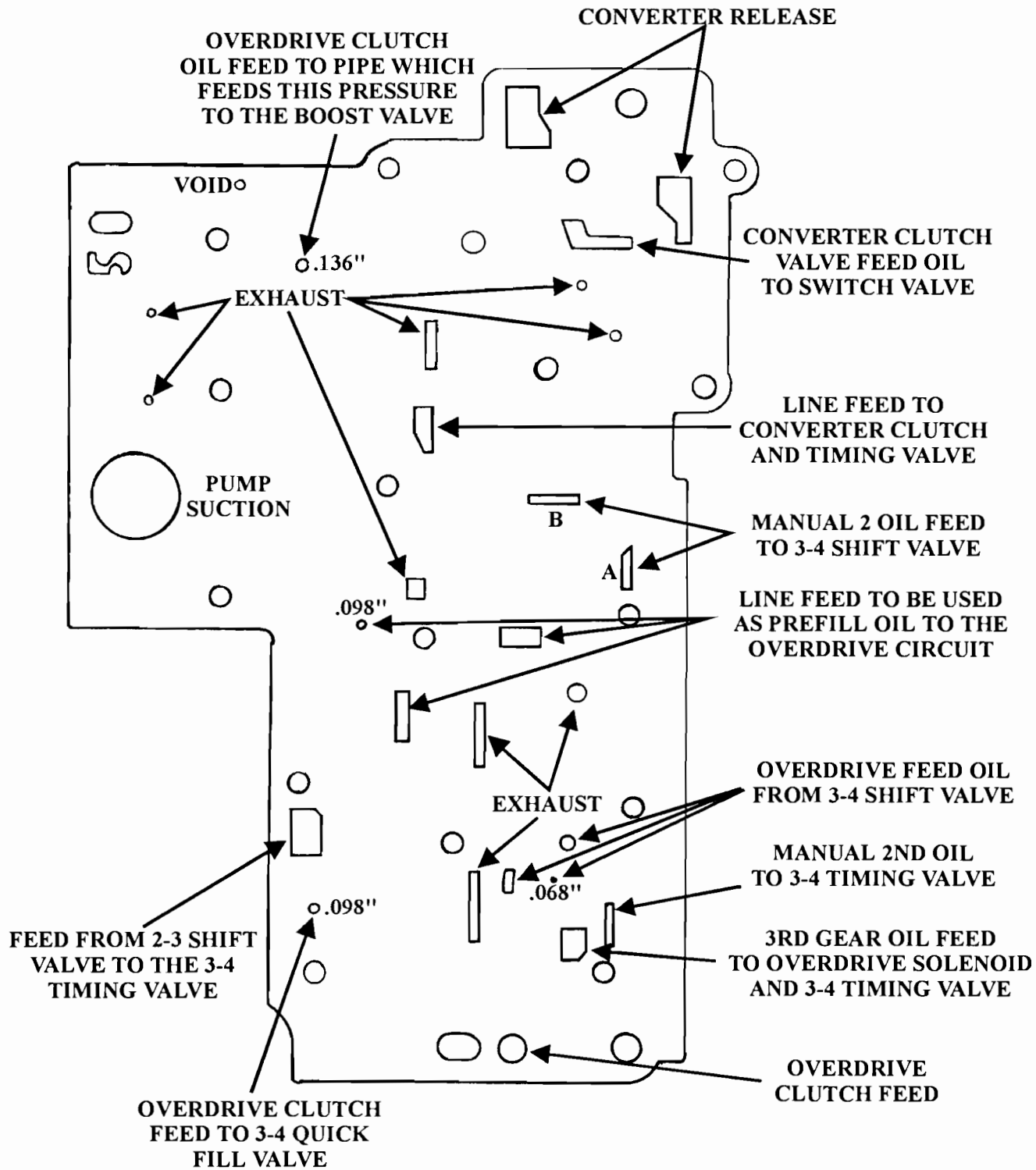
BALL	SIZE	FUNCTION
1	1/4"	A) Check ball # 1 forces line pressure behind the 1-2 shift control valve and both the 1-2 and 2-3 governor plugs to prevent an upshift into 2nd and/or 3rd gear when the selector lever is placed into manual low. B) Check Ball # 1 directs throttle pressure behind the 1-2 shift control valve and blocks the passage to the 1-2 governor plug in order to inhibit a 3-1 downshift during a forced 3-2 downshift when the vehicle is above the calibrated speed.
2	1/4"	A) Check ball # 2 forces line pressure behind the 2-3 shift valve to prevent a 2-3 upshift when the selector lever is placed in manual second. B) Check ball # 2 blocks the manual 2nd circuit and directs throttle pressure to the 2-3 shift valve during a 3-2 forced downshift.
3	11/32"	A) Check ball # 3 blocks front (Direct) clutch oil (after a 2-3 upshift) from entering the reverse band circuit and allows front (Direct) clutch oil to enter the intermediate band release circuit. B) When the selector lever is placed into reverse, check ball # 3 blocks the intermediate band release circuit and allows reverse oil to apply the front (Direct) clutch.
4	1/4"	A) Check ball # 4 blocks rear band apply pressure from entering the front (Direct) clutch circuit when the selector lever is placed into manual low. B) Check ball # 4 blocks the manual low circuit and directs line pressure to the rear band when the selector lever is placed into reverse.
5	1/4"	A) Check ball # 5 blocks the manual 2nd circuit and directs throttle pressure to the back side of both shift valves and the shuttle valve when the selector lever is placed in either drive or reverse. B) Check ball # 5 blocks the throttle pressure circuit and directs line pressure to the back side of the 2-3 shift valve, to prevent a 2-3 upshift, when the selector lever is placed in manual second.
6	1/4"	A) Check ball # 6 forces intermediate band apply oil through an orifice to apply the intermediate band and stroke the 1-2 accumulator on a 1-2 upshift.
7	1/4"	A) Check ball # 7 forces rear (Forward) clutch apply oil through an orifice for a smooth garage shift into any forward range.
8	1/4"	A) Check ball # 8 blocks line pressure from entering the rear (Forward) clutch circuit when the selector is placed in either Park, Reverse or Neutral.
9	1/4"	A) Check ball # 9 forces rear band apply oil through an orifice for a smooth rear band engagement when the selector is placed in either manual low or reverse

CHRYSLER 42RE
VALVE BODY CHECK BALL LOCATION & IDENTIFICATION CONTINUED

HYDRAULIC FLOW IN PARK







42RE
NO 3-4 SHIFT

COMPLAINT : The transmission exhibits a no 3-4 shift condition after overhaul.

CAUSE : One cause may be due to the 3-4 Quick Valve being installed backwards. Most all publications illustrate this valve installation incorrectly. When this valve is installed spring first followed by the valve (stem first) as most illustrations show, all prefill and 4th clutch oil is exhausted out the back of the valve preventing a 3-4 shift to take place.

CORRECTION : Install the 3-4 Quick Fill valve as shown below in figure 27.

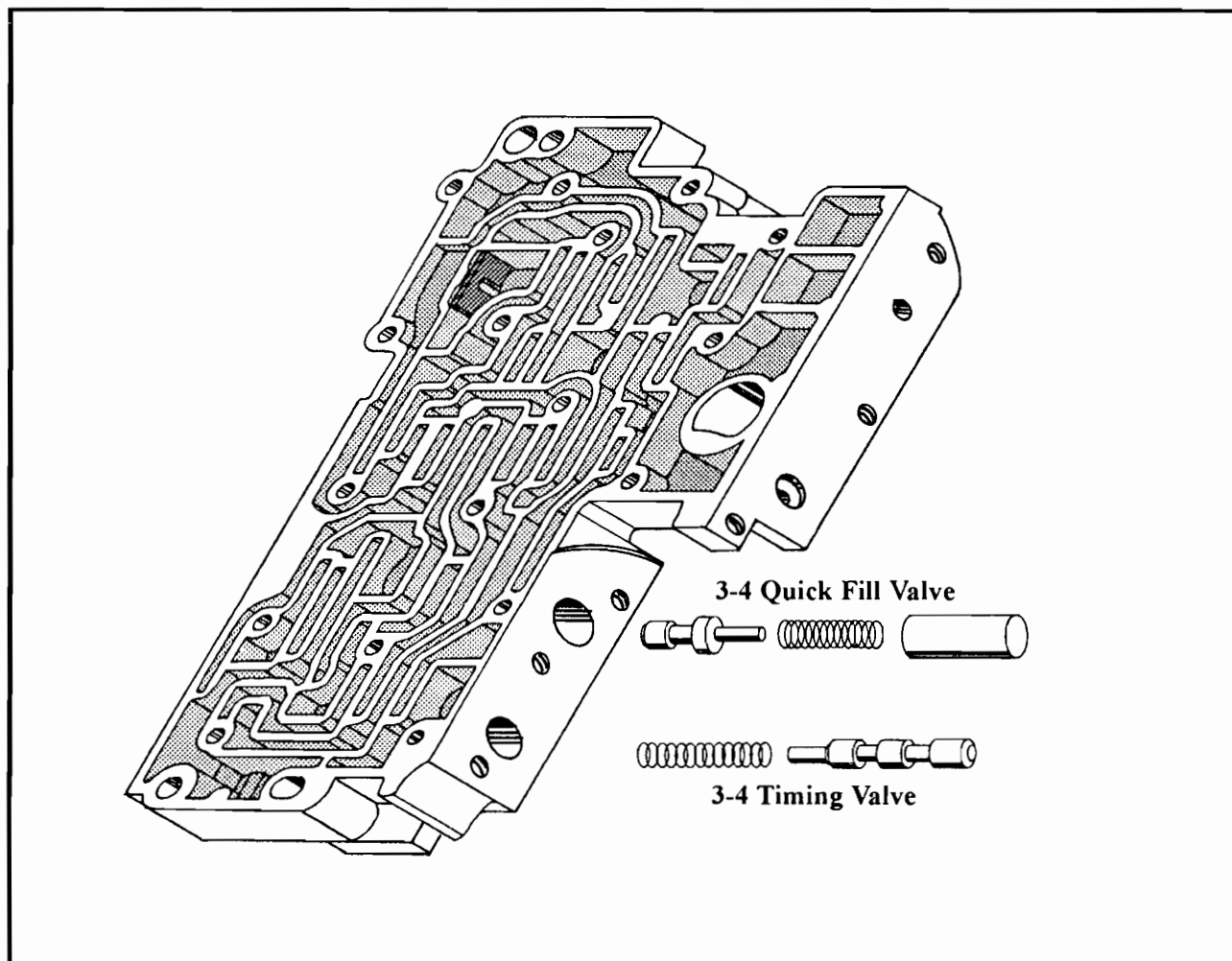


Figure 27

42RE PRESSURE TAPS

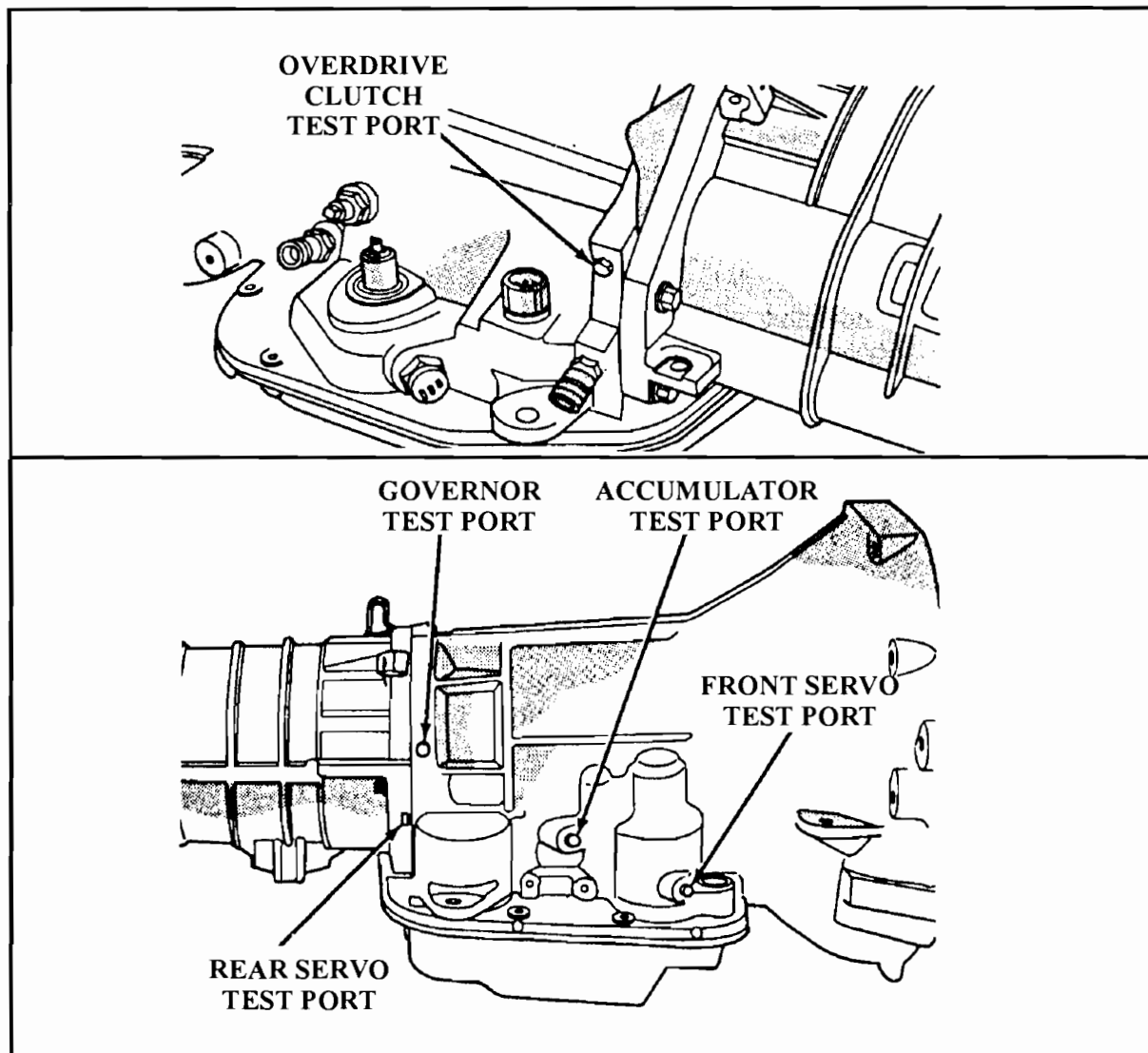


Figure 28

HYDRAULIC PRESSURE TEST

Hydraulic test pressures range from a low of one psi (6.895 kPa) governor pressure, to 300 psi (2068 kPa) at the rear servo pressure port in reverse. Use 100 psi Gauge to check pressure at the accumulator, front servo and governor. The 300 pound pressure gauge will be used to check pressure at the rear servo and overdrive clutch tap.

PRESSURE TEST PORT LOCATION

There are pressure test ports at the accumulator, front servo, and rear servo. Governor and overdrive clutch pressure test ports are located at the left and right rear side of the case (See Figure 28).

Line pressure is checked at the accumulator port on the right side of the case. The front servo pressure port is at the right side of the case just behind the filler tube opening.

The rear servo and governor pressure ports are at the right rear of the transmission case. The overdrive clutch pressure port is at the left rear of the case (See Figure 28).

An accurate tachometer and two test gauges are required for the pressure test. A 100 pound pressure gauge is to be used when checking the accumulator, governor, and front servo pressure ports.



A 300 pound pressure gauge will be used at the rear servo port where pressures range from 250 to 290 psi. This gauge will also be used on the overdrive pressure port. In cases where two test gauges are required, the 300 psi gauge can be used at any of the other test ports.

HYDRAULIC PRESSURE TEST PROCEDURE

Connect a tachometer to the engine. Position the tachometer so it can be observed from under the vehicle. Raise the vehicle on hoist that will allow the wheels to rotate freely.

Test One - Transmission in Manual Low

This test checks pump output, pressure regulation, and condition of the rear clutch and servo circuit.

- (1) Connect 100 psi Gauge to accumulator port.
- (2) Connect 300 psi Gauge to rear servo port (See Figure 28).
- (3) Disconnect throttle and manual linkage levers from the transmission.
- (4) Start and run engine at 1000 rpm.
- (5) Move shift lever (on manual lever shaft) all the way forward into 1 range.
- (6) Move transmission throttle lever from full forward to full rearward position and note pressures on both gauges.
- (7) Line pressure at accumulator port should be 54-60 psi (372-414 kPa) with throttle lever forward and gradually increase to 90-96 psi (621-662 kPa) as lever is moved rearward.
- (8) Rear servo pressure should be same as line pressure within 3 psi (20.68 kPa).

Test Two- Transmission In Manual 2

This test checks pump output, line pressure and pressure regulation. Use the 100 pound gauge for the following test.

- (1) Connect test gauge to accumulator pressure port (See Figure 28).
- (2) Start and run engine at 1000 rpm.
- (3) Place the selector lever into the manual 2 range.
- (4) Move transmission throttle lever from full forward to full rearward position and read pressure.
- (5) Line pressure should be 54-60 psi (372-414 kPa) with throttle lever forward and gradually increase to 90-96 psi (621-662 kPa) as lever is moved rearward.

Test Three -Transmission In D Range

This test checks pressure regulation and condition of the clutch circuits. Use both pressure gauges for this test.

- (1) Connect test gauges to accumulator and front servo ports (See Figure 28). Use either test gauge at the two ports.
- (2) Start and run engine at 1600 rpm for this test.
- (3) Move the selector lever into the Drive position.
- (4) Read pressures on both gauges as transmission throttle lever is moved from full forward to full rearward position.
- (5) Line pressure should be 54-60 psi (372-414 kPa) with throttle lever forward and gradually increase as lever is moved rearward.
- (6) Front servo is pressurized only in D range and should be same as line pressure within 3 psi (21 kPa) up to downshift point.

Test Four—Transmission In Reverse

This test checks pump output, pressure regulation and the front clutch and rear servo circuits. Use a 300 pound pressure gauge at this location or you will be taking a bath.

- (1) Connect 300 psi gauge to rear servo port (See Figure 28).
- (2) Start and run engine at 1600 rpm for test.
- (3) Move the selector lever into the reverse position.
- (4) Move throttle lever all way forward then all way rearward and note gauge readings.
- (5) Pressure should be 145 - 175 psi (1000-1207 kPa) with lever forward and increase to 230 - 280 psi (1586-1931 kPa) as lever is moved rearward.

Test Five—Governor Press

This test checks governor operation by measuring governor pressure response to changes in vehicle speed. It is usually not necessary to check governor operation unless shift speeds are incorrect or if the transmission will not downshift. The test should be performed on a hoist that will allow the rear wheels to rotate freely.

- (1) Connect 100 pressure gauge to the governor pressure port (See Figure 28).
- (2) Move the selector lever into the Drive range.
- (3) Start and run engine at curb idle speed and note pressure. At idle and with vehicle stopped, pressure should be zero to 1-1/2 psi maximum. If pressure exceeds this figure, a fault exists in the governor pressure control system.
- (4) Slowly increase engine speed and observe the speedometer and pressure test gauge. Governor pressure should increase in proportion to vehicle speed.

SLIDE

- (5) Pressure rise should be smooth and drop back to 0 to 1-1/2 psi when wheels stop rotating.

Test Six—Transmission In Overdrive Fourth Gear

This test checks line pressure at the overdrive clutch tap in fourth gear range. Use 300 pound pressure gauge for this test.

- (1) Raise vehicle and connect test gauge to overdrive clutch pressure port (See Figure 28).
- (2) Lower vehicle to enough to allow entry into drivers seat. Leave vehicle wheels approximately one foot off shop floor.
- (3) Secure test gauge where it can be viewed from drivers seat.

- (4) Verify that overdrive control switch is in ON position.
- (5) Start engine and shift into D range.
- (6) Increase engine rpm gradually until 3-4 shift occurs and note gauge pressure.
- (7) Pressure should be 469-496 kPa (68-72 psi) with closed throttle and increase to 620-827 kPa (90- 120 psi) at 1/2 to 3/4 throttle.

AIR PRESSURE TEST PASSAGES

If any of the pressure tests that were performed had failed, a quick check on the integrity of that specific circuit can be checked with the use of air. Use figure 29 below for the specific passage that needs to be tested.

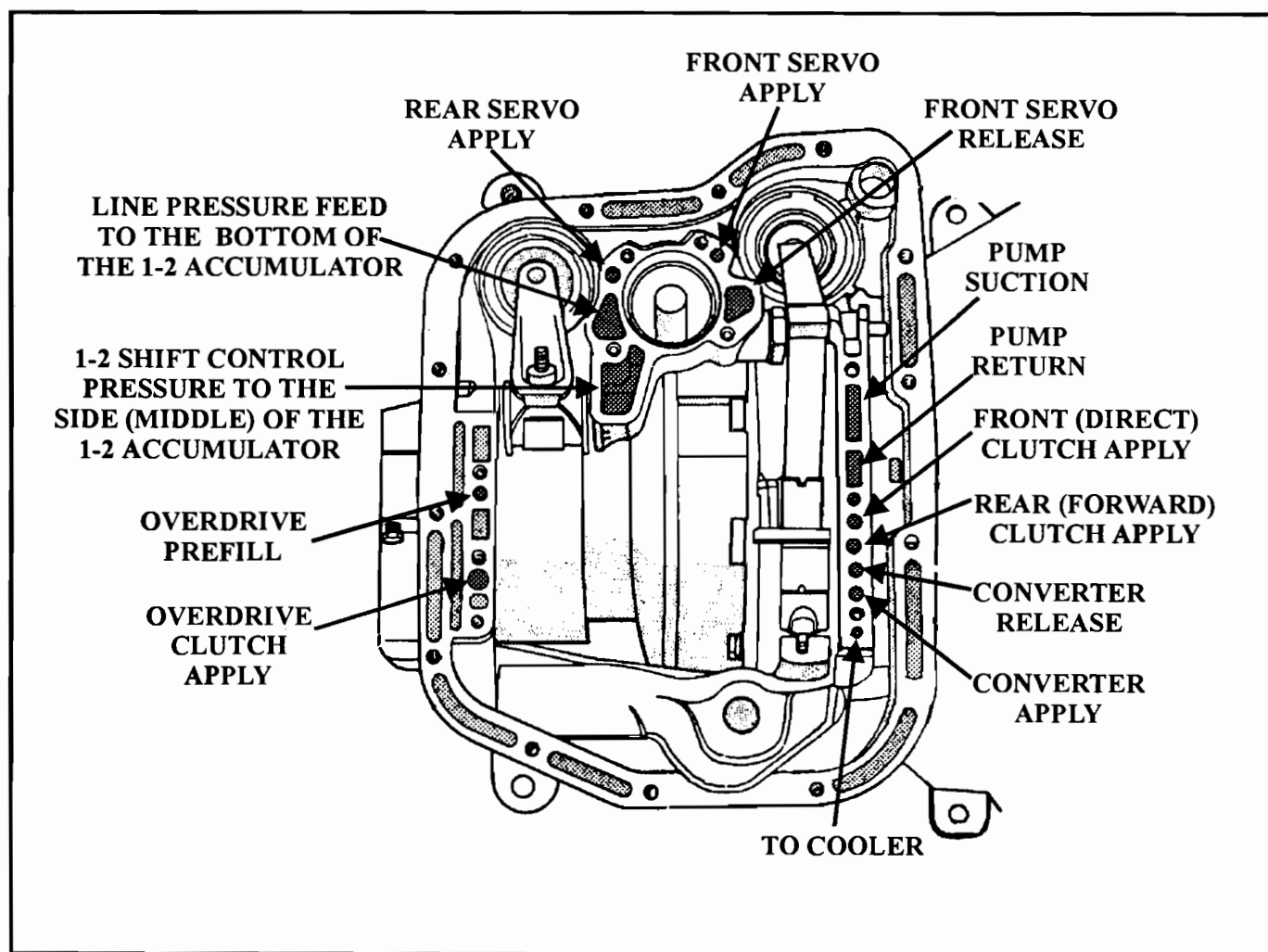


Figure 29