INDEX

FORD

CHRYSLER

ADVERTISERS

"SIMPLE SOLUTIONS FOR '98"

1

INTRODUCTION

In this SIMPLE SOLUTIONS FOR '98 manual we continue to bring you part changes and fixes for both Ford and Chrysler transmissions. They are the latest in factory and original bulletins. Ford's A4LD, CD4E, AX4S and AX4N transmissions completes the Ford section. The Chrysler section will start with a video showing tips on performing solenoid resistance checks on vehicles equipped with the 42LE transaxle. The live portion of the show begins with both part changes, fixes and electrical related concerns so sit back and enjoy!

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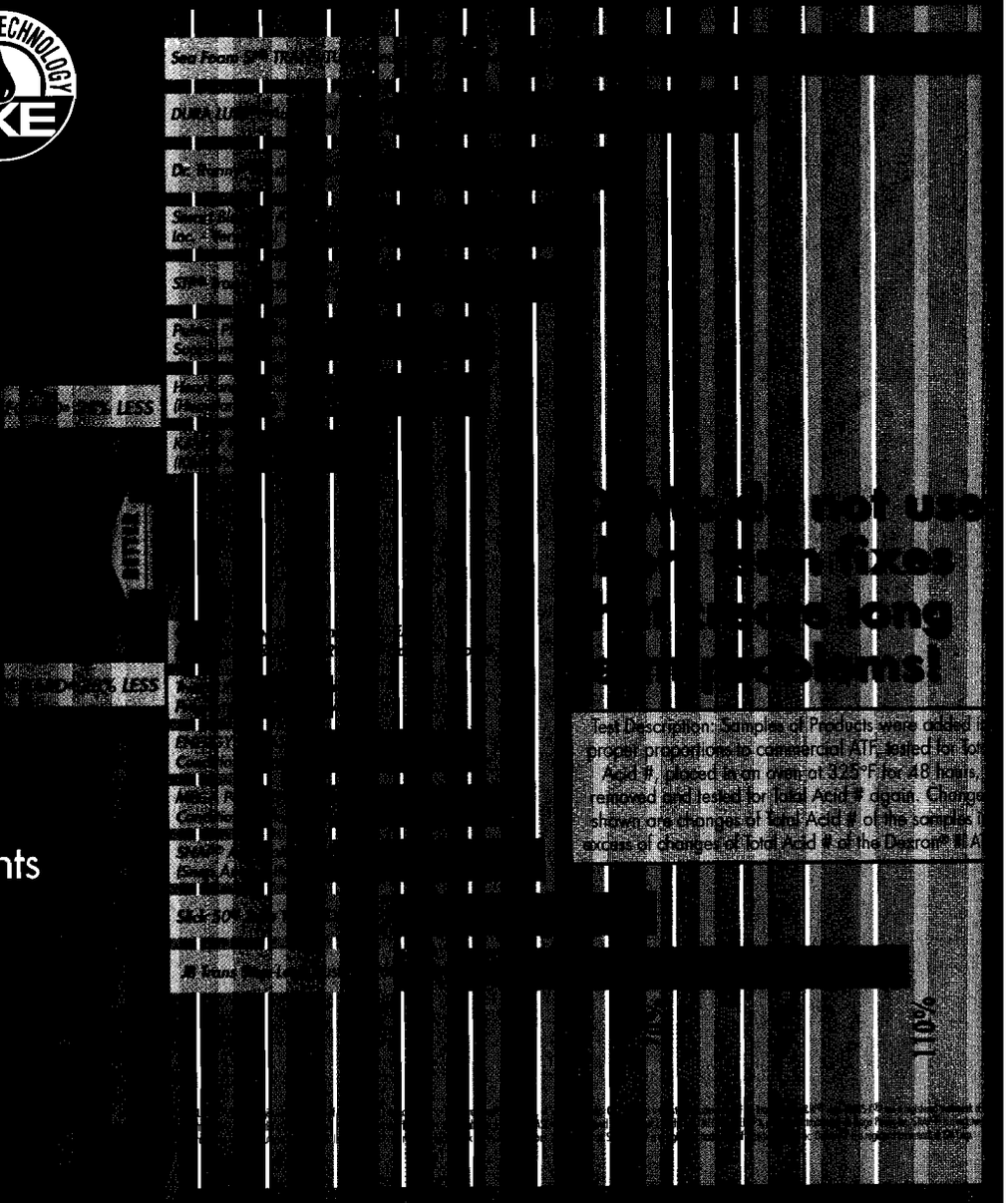

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FORD A4LD
NO UPSHIFT

COMPLAINT: Some 1993-1994 model Ranger pick-ups may exhibit a no upshift condition, on vehicles equipped with the 2.3L engine and the A4LD transmission.

CAUSE: The cause may be, vacuum modulator diaphragm damage created by excessive heat from the 2.3L exhaust system catalyst.

CORRECTION: There is now available under OEM part number F37Z-7F013-BA, a Heat Shield service package that will protect the servos and vacuum diaphragm from the exhaust heat. Use the instruction sheet included in the service package for proper installation.

SERVICE INFORMATION:

Heat Shield Kit F37Z-7F013-BA

FORD 4R44E/4R55E

SLIPPING 1-2 AND/OR 3-4 UPSHIFTS

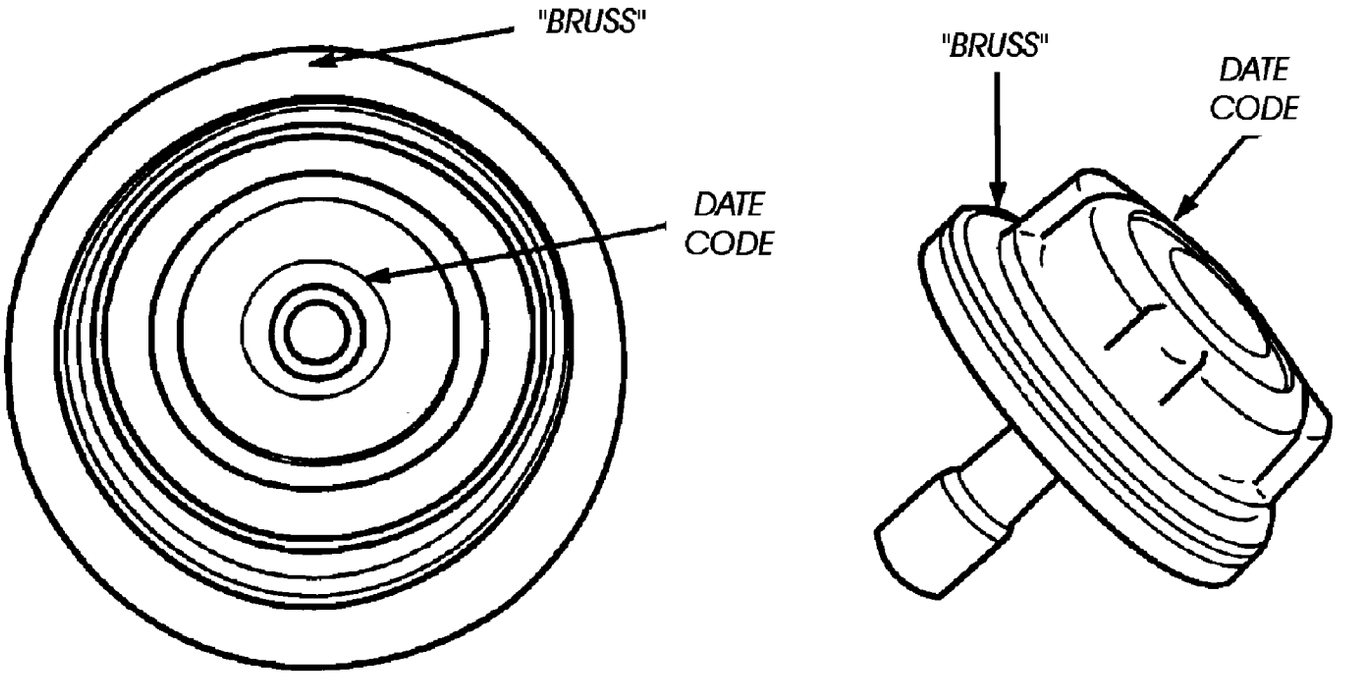
COMPLAINT: Some 1995-1996 Explorer and Ranger vehicles equipped with the 4R44E/4R55E transmissions may exhibit a slipping 1-2 upshift and/or a slipping 3-4 upshift. It is also possible that you may have Diagnostic Trouble Codes stored in memory, along with a flashing "O/D OFF" lamp. Possible DTC's are 645, 646, 647, 648, P0731, P0732, P0733, or P0734.

CAUSE: The cause may be, a damaged intermediate and/or overdrive servo piston seal.

CORRECTION: Install new servo pistons using ***only*** basic part number -7D021- which is the latest design level servo pistons from the manufacturer. They must also have been produced after the 26th week of 1995 and labeled "BRUSS". Refer to Figure 1 for the location of the word "BRUSS" and manufacturing date on the servo piston assembly.
Part numbers are not included as they are vehicle and engine size dependent.

SERVO PISTONS MANUFACTURED BY "BRUSS"

MANUFACTURING DATE -- 25/95 = (25th week of 1995)



FORD A4LD

DELAYED ENGAGEMENT IN REVERSE

COMPLAINT: Before and/or after rebuild, the vehicle exhibits a delay to reverse, or possibly a no reverse at all condition, on later model vehicles equipped with the reverse engagement valve in the valve body.

CAUSE: The cause may be, a stuck or damaged reverse engagement valve.

CORRECTION: The reverse engagement valve can be bypassed entirely using the following procedure:

(1) Remove the "L" shaped retainer, bore plug, reverse engagement control valve and reverse engagement control valve spring (See Figure 1).
(2) Discard the reverse engagement control valve spring (See Figure 1).
(3) Ensure that the "Flat" retainer and bore plug are installed in their proper positions, as shown in the inset in Figure 1.
(4) Install 1/4" steel checkball against the bore plug (See Figure 2).
(5) Reinstall the reverse engagement control valve ***backwards*** as shown in Figure 2, against the steel checkball.
(6) Install AXOD checkball against the reverse engagement control valve, as shown in Figure 2.
(7) Reinstall the bore plug and "L" shaped retainer (See Figure 2).
(8) Grind the tip of the reverse engagement control valve as necessary to get the bore plug and the "L" shaped retainer installed correctly (See Figure 3).

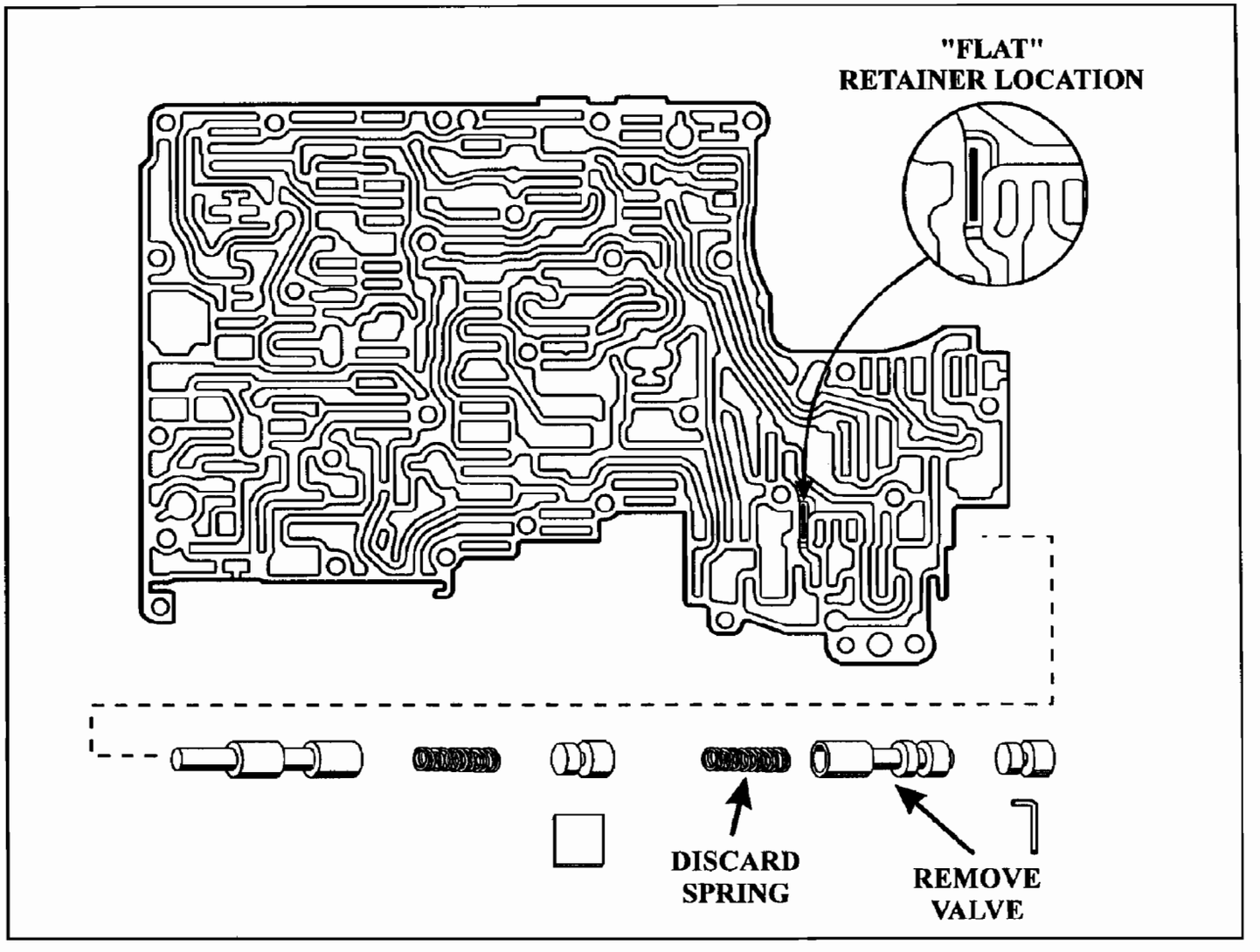


Figure 1

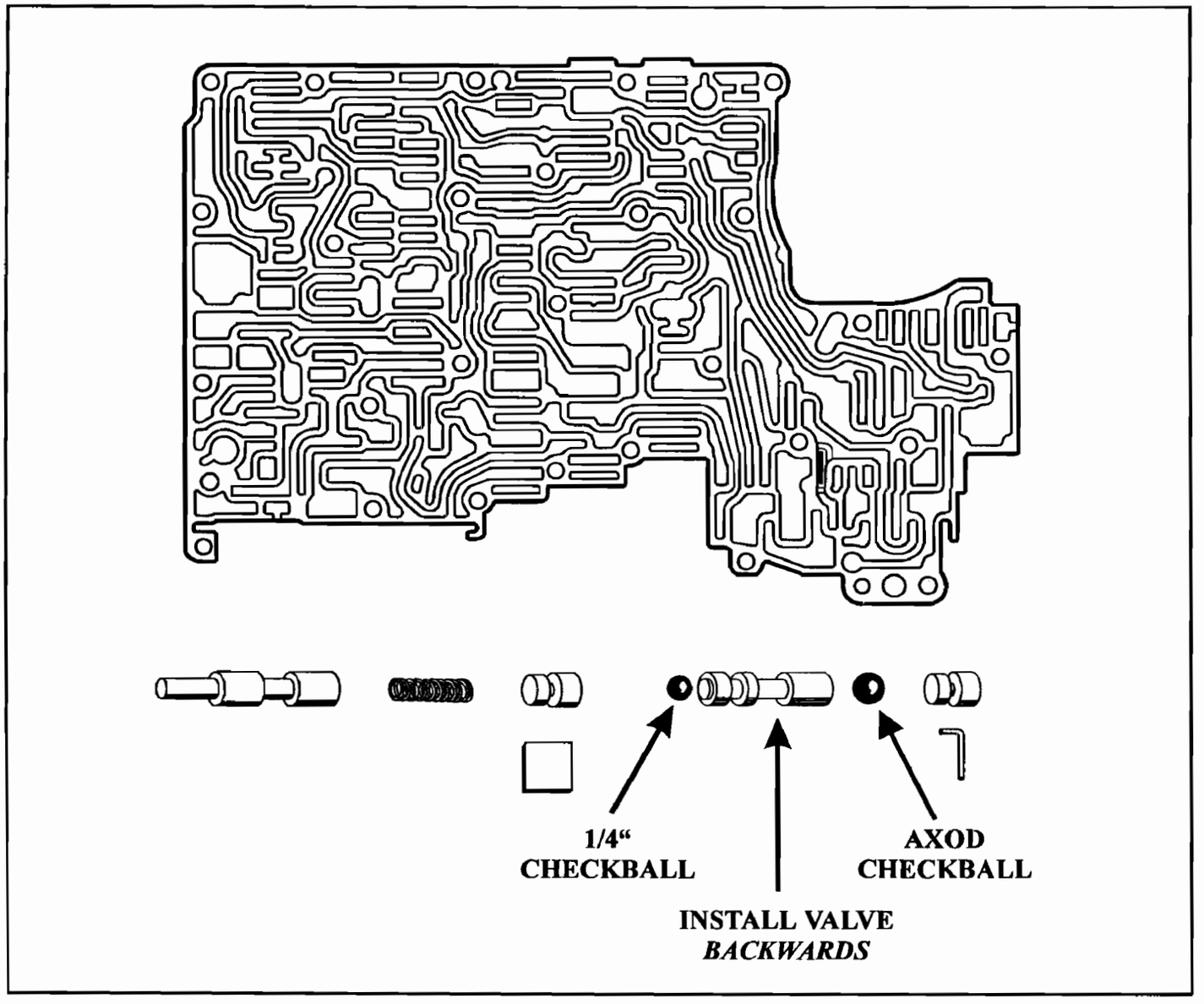


Figure 2

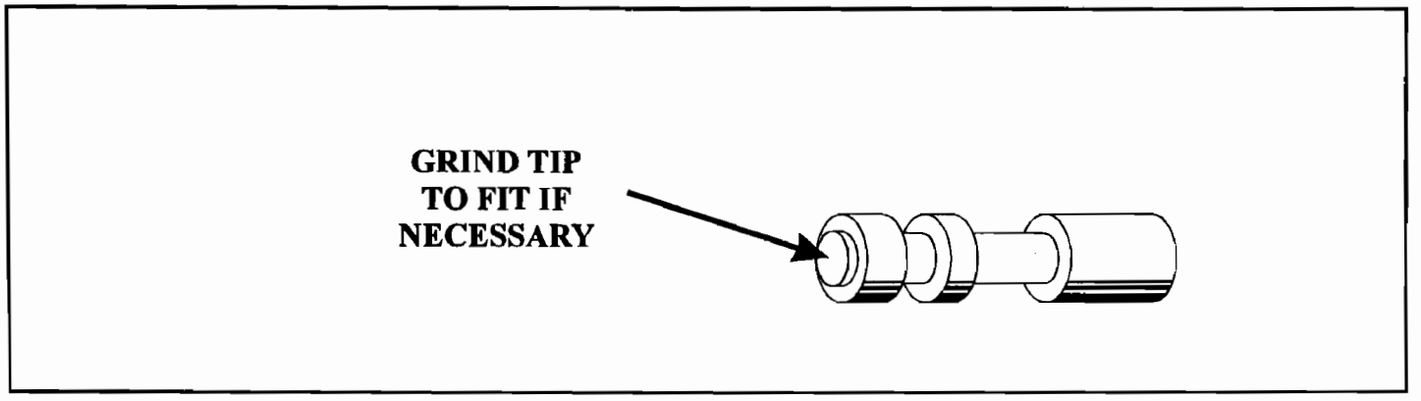


Figure 3

FORD A4LD FORD 4R44E/4R55E
PREMATURE LUBRICATION FAILURE AND FRONT OIL PUMP DIFFERENCES

COMPLAINT: Premature transmission failure due to lack of lubrication and/or no cooler flow until the converter clutch is applied.

CAUSE: The cause may be, a mis-match of A4LD and 4R44E/4R55E bellhousing/oil pump components. The 4R44E/4R55E transmission no longer lubricates the converter hub bushing through the inner pump gear. The 4R44E/4R55E bellhousing, oil pump, oil pump plate, inner pump gear, and pump to case gasket were redesigned to improve converter hub bushing and rear case lubrication. Listed below are the parts that changed on the 4R44E/4R55E components, and how to identify them.

(1) PUMP GASKET - An elongated hole was added to the 4R44E/4R55E pump gasket to accommodate changes in the related parts, for increased rear case lubrication. Refer to Figure 1.

(2) PUMP BODY - Added channel in the 4R44E/4R55E pump body for improved converter hub bushing lubrication, and a new bolt hole to accommodate an added bolt for increased clamping. Refer to Figure 2.

(3) PUMP PLATE - The 4R44E/4R55E pump plate has two additional holes to accommodate the added channel in the pump body, an added bolt hole for the added bolt, an elongated lube hole, and the TCC feed passage was relocated. Refer to Figure 3.

(4) BELLHOUSING - The 4R44E/4R55E bellhousing has an added passage to accommodate the pump body changes for increased lubrication to the converter hub bushing, as shown in Figure 4.

(5) INNER PUMP GEAR - The 4R44E/4R55E inner pump gear has an easily missed change to the inside diameter and an "O" ring added in a new groove on the inside diameter to accommodate the re-routing of converter hub bushing lubrication, as shown in Figure 5.

CORRECTION: During rebuild, if any oil pump/bellhousing components are damaged and require replacement, you must verify that the proper components are being used.
Special Note: The 4R44E/4R55E pump and bell housing components can be used on the A4LD transmission, ***when all parts listed above are used as a package.*** It is not recommended to install A4LD parts onto a 4R44E/4R55E transmission. Refer to Figures 1 through 5.

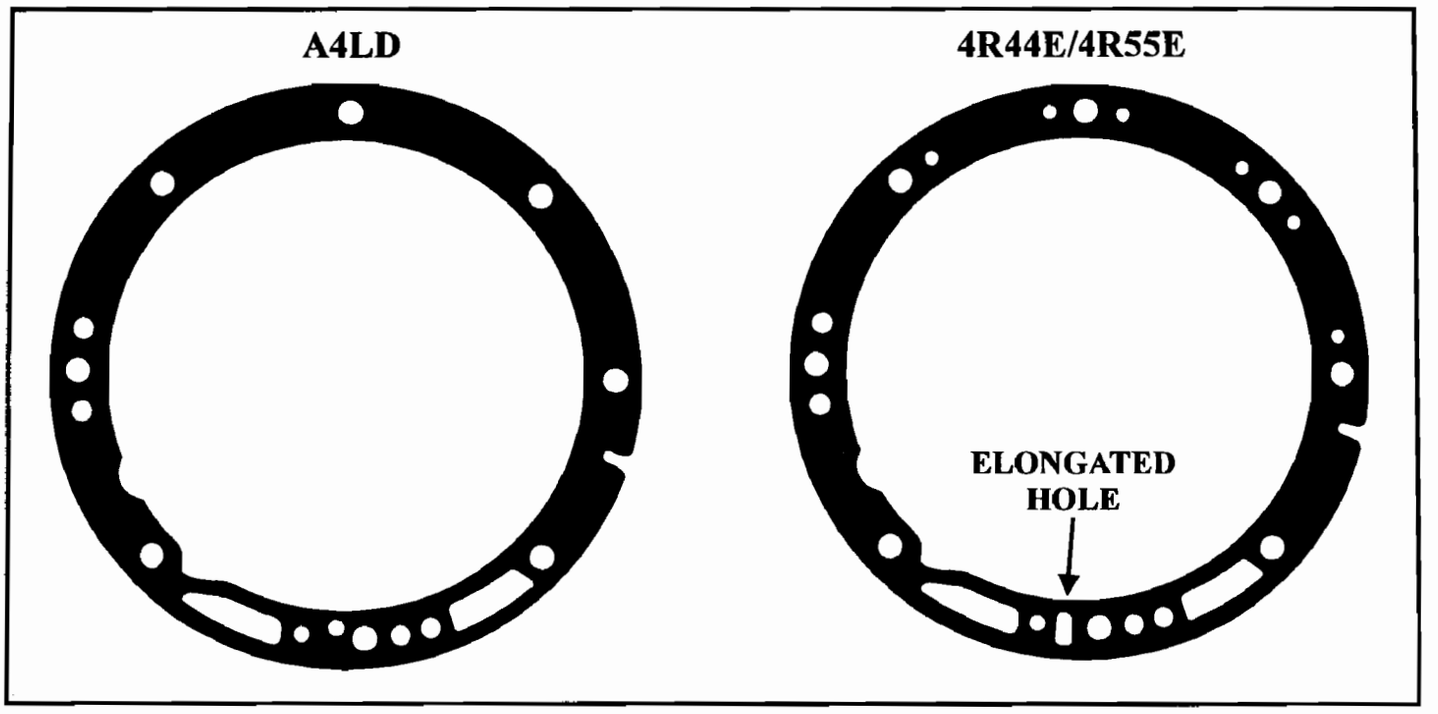


Figure 1

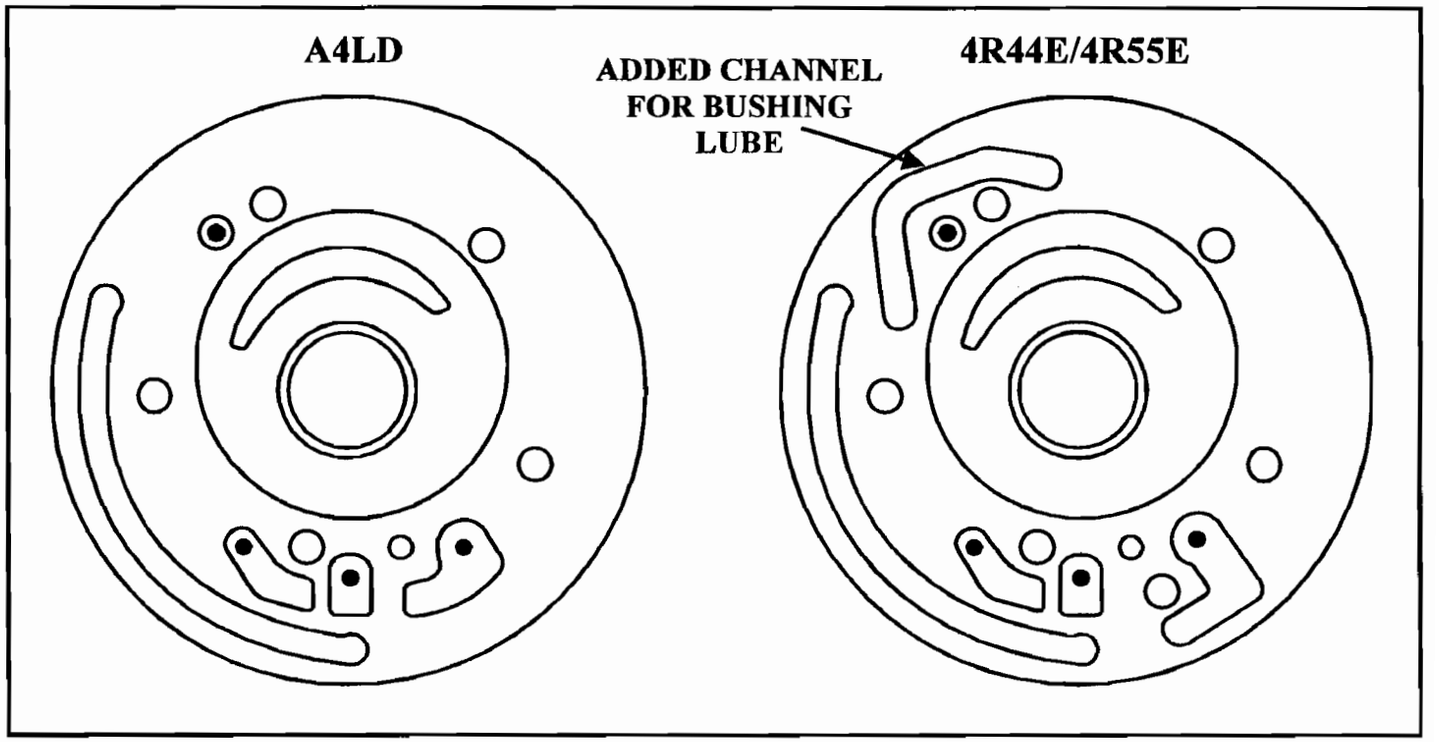


Figure 2

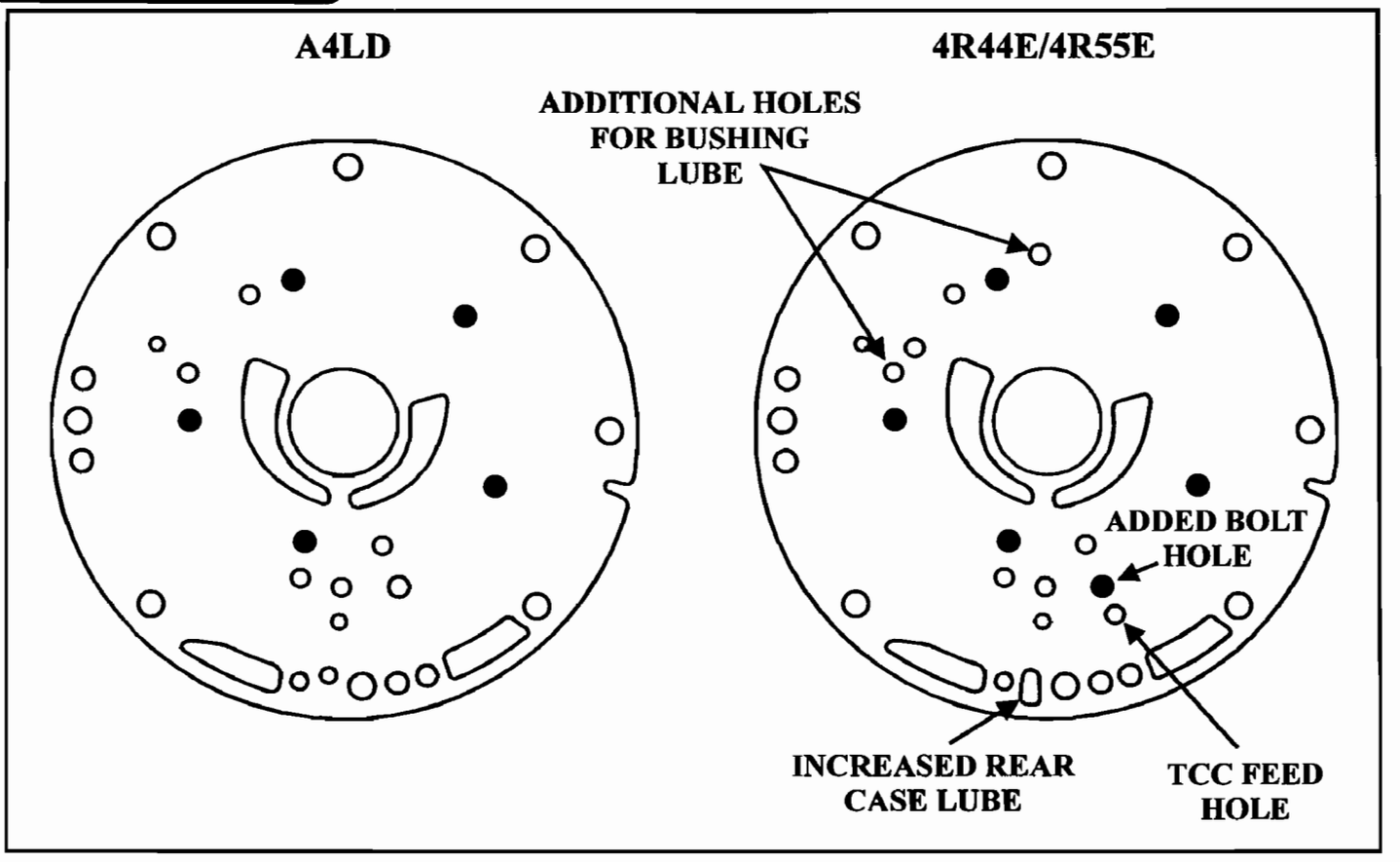


Figure 3

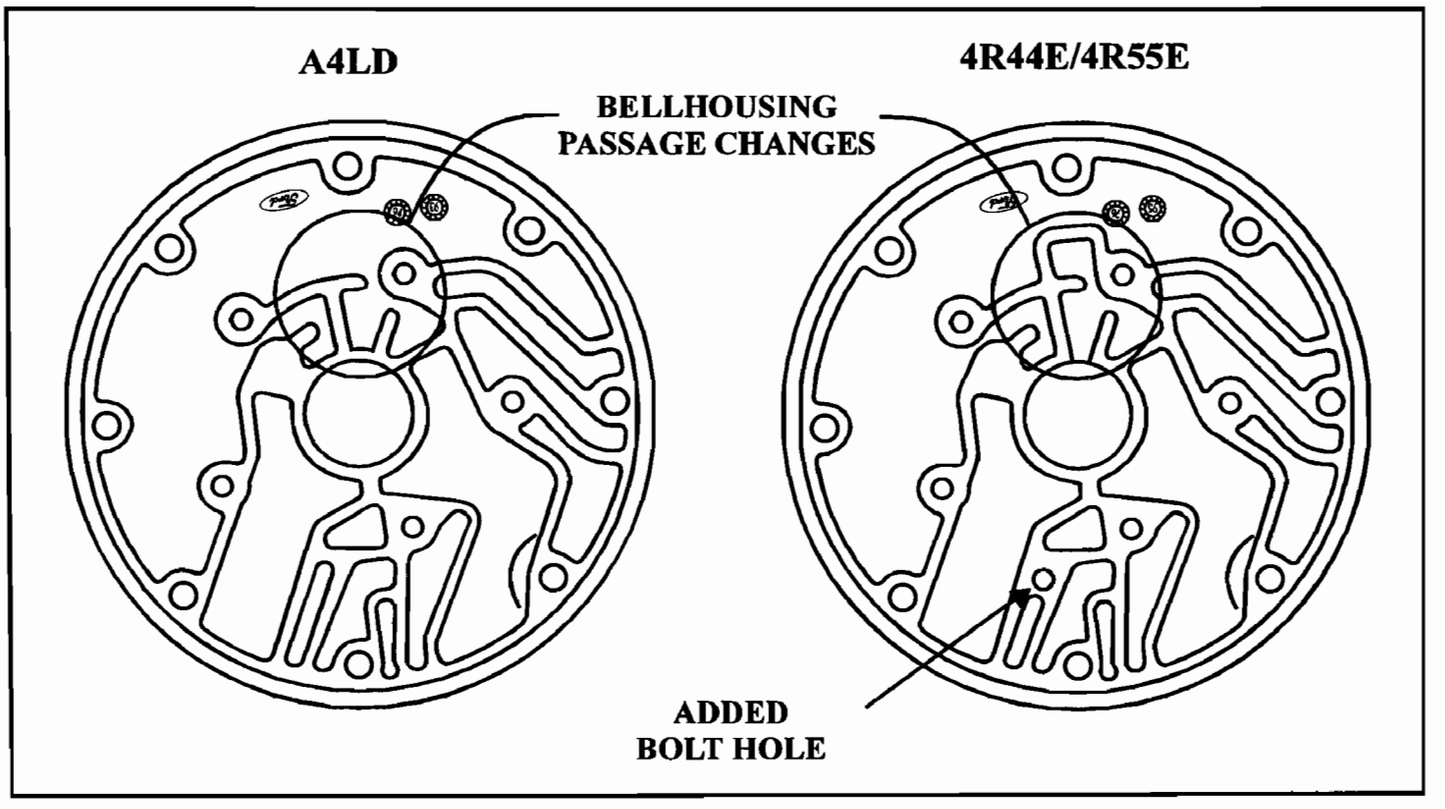


Figure 4

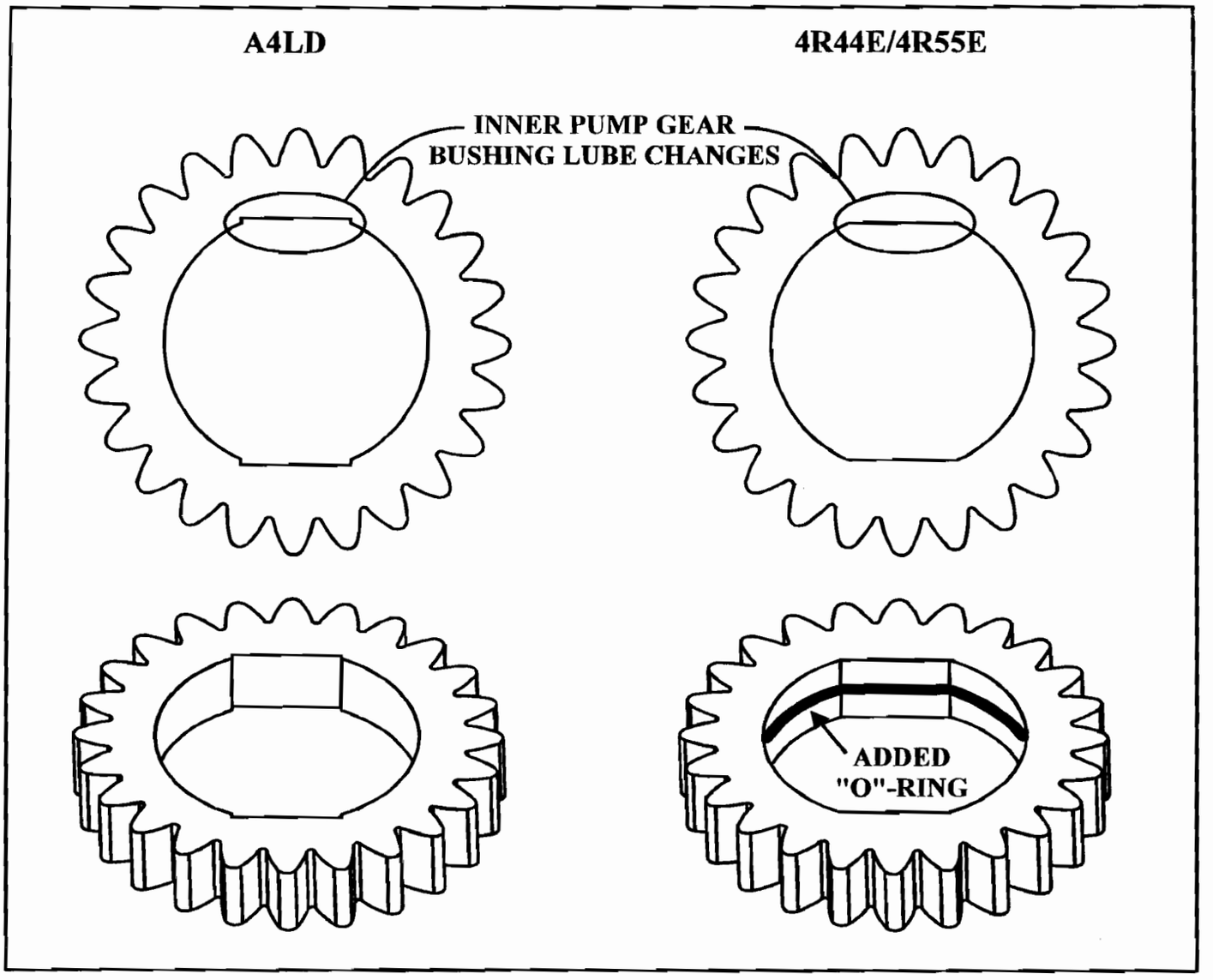

A4LD
4R44E/4R55E
INNER PUMP GEAR
BUSHING LUBE CHANGES
ADDED
"O"-RING

Figure 5

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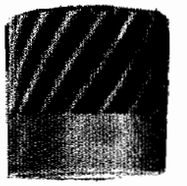

°Harsh 1-2 Shift & Stacked 2-3-4 °Slip or flare 2-3 & 3-4 shift

°Delayed/NO Engagement to Drive & Reserve °Slip during take off

°Clunk or harsh downshift °No passing gear condition

°Kalibrate & extent or shorten shifting pattern

°T/V plunger suck in DR position/No Shifting

°First-gear-start valve-body conversion Kit

°Broken springs, valves & misc. in valve body

°Air-test plate for 722.3,4,5 & Porsche 928

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°722.4 Rear Pump & Governor Retrofit Fix

°MERCEDES BENZ hard parts 1962 to 1995

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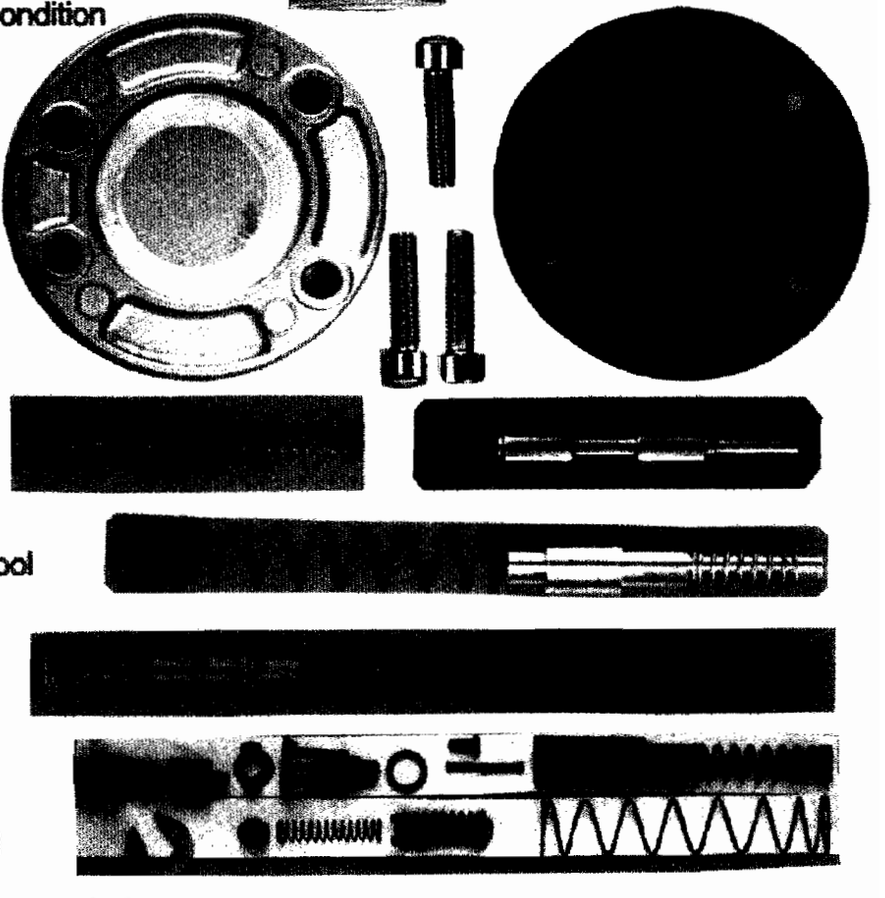

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FORD E4OD, 4R70W, 4R44E, 5R55E

NEW DIGITAL TRANSMISSION RANGE (DTR) SENSOR FOR SOME 1997 MODELS

CHANGE: Beginning at the start of production for 1997, some vehicles will be equipped with a new Digital Transmission Range (DTR) sensor, and externally looks identical to the previous Manual Lever Position Sensor (MLPS). Refer to Figure 1.
Internally however, the new Digital Transmission Range (DTR) sensor operates totally different than the previous sensor. The new DTR sensor completes the start circuit in Park and Neutral, the backup lamp circuit in Reverse, and the neutral sense circuit (4X4 Only) when in Neutral. The new DTR sensor also opens/closes a set of four different switches that are monitored by the Powertrain Control Module (PCM) to determine the position of the transmission manual lever.

REASON: Increased accuracy of information to the PCM, and increased durability of the sensor.

VEHICLES AFFECTED:

1997 model Mark VIII (4R70W), Aerostar (4R44E-5R55E), Econoline (4R70W Only), Expedition (4R70W Only), Explorer (4R44E-5R55E and 4R70W), F-150 Pick-up (E4OD and 4R70W), Ranger Pick-up (4R44E-5R55E), and Mountaineer (4R70W).

PARTS AFFECTED:

(1) DTR SENSOR - Replaces the previous manual lever position sensor and is identified by the new basic part number which is -7F293-, as shown in Figure 1. The prefix and suffix will be different depending on the vehicle model and transmission type. The ***only positive*** identification will be the F7TP-7F293-AA engineering number on the DTR in the location shown in Figure 1.

INTERCHANGEABILITY:

The new design Digital Transmission Range (DTR) sensor ***will not*** back service ***any*** previous model vehicles built before 1997, nor ***any*** current 1997 model vehicles that are equipped with the manual lever position sensor.
Manual Lever Position Sensor (MLPS) = basic part number -7A247- (Stamped on Part)
Digital Transmission Range Sensor (DTR) = basic part number -7F293- (Stamped on Part).

TESTING PROCEDURE:

Testing the new Digital Transmission Range sensor is totally different than the previous design Manual Lever Position Sensor. Refer to next page for testing procedure.

SERVICE INFORMATION:

4R70W, 4R44E, 5R55E, Transmissions equipped with the DTR F7LZ-7F293-AA
E4OD Transmissions equipped with the DTR F7TZ-7F293-AA

TESTING PROCEDURE FOR THE 1997 DESIGN LEVEL "DIGITAL TRANSMISSION RANGE SENSOR"

In Figure 1 we have provided you with pin number identification for both the transmission range sensor and the vehicle harness connector, and a chart that will give you the function of each pin.
In Figure 2 we have provided a chart that will give you the open/closed state of each internal switch, dependent on selector position, and notice that three positions read a 270Ω resistor that is also internal. Also in Figure 2 we have included a chart with wire colors, which is for the 1997 Ranger.
In Figure 3 we have provided you with a schematic of the Digital Transmission Range sensor in each of the six selector positions for those of you that want to follow each circuit.

NOTE: ***All testing that we have provided for you is done with a DVOM, set to the ohms position, and all tests are performed with the ignition switch in the "OFF" position.***

(1) Testing the transmission range 3A switch, and the 270Ω internal resistor is done across pins 2 and 3 of the DTR sensor, and must be checked in each selector position to determine the switch and resistor integrity. Refer to Figure 4.

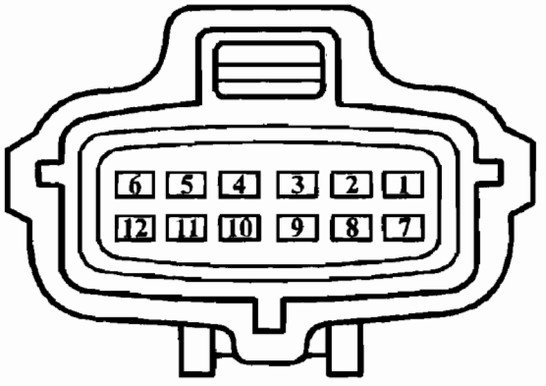
(2) Testing the transmission range 1 switch is done across pins 2 and 4 of the DTR sensor, and must be checked in each selector position to determine switch integrity. Refer to Figure 5.

(3) Testing the transmission range 2 switch is done across pins 2 and 5 of the DTR sensor, and must be checked in each selector position to determine switch integrity. Refer to Figure 6.

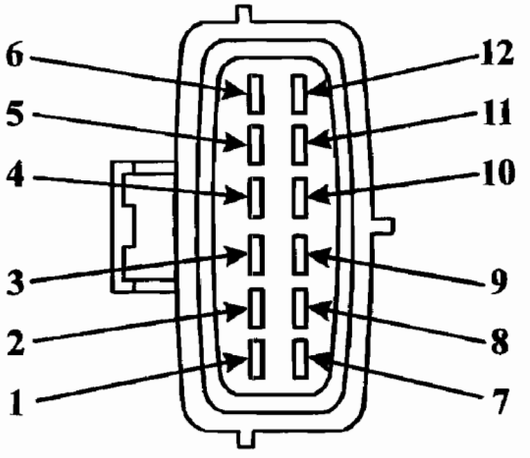
(4) Testing the transmission range 4 switch is done across pins 2 and 6 of the DTR sensor, and must be checked in each selector position to determine switch integrity. Refer to Figure 7.

(5) Testing the reverse lamp circuit is done across pins 9 and 11 of the DTR sensor, and must be checked in each selector position to determine switch integrity. Refer to Figure 8.

(6) Testing the neutral start circuit is done across pins 10 and 12 of the DTR sensor, and must be checked in each selector position to determine switch integrity. Refer to Figure 9.



View looking into DTR Sensor harness connector



View looking into DTR Sensor

PIN NO.	FUNCTION
1	*Not Used*
2	*Signal Return to the Powertrain Control Module*
3	*Transmission Range 3A Switch*
4	*Transmission Range 1 Switch*
5	*Transmission Range 2 Switch*
6	*Transmission Range 4 Switch*
7	*Ground (Not Used All Models)*
8	*Neutral Sense Circuit (Not Used All Models)*
9	*12 Volts from Ignition Switch (Run position only)*
10	*12 Volts out to Starter Solenoid (Start position only)*
11	*12 Volts out to Reverse Lamps (Run position only)*
12	*12 Volts from Ignition Switch (Start position only)*

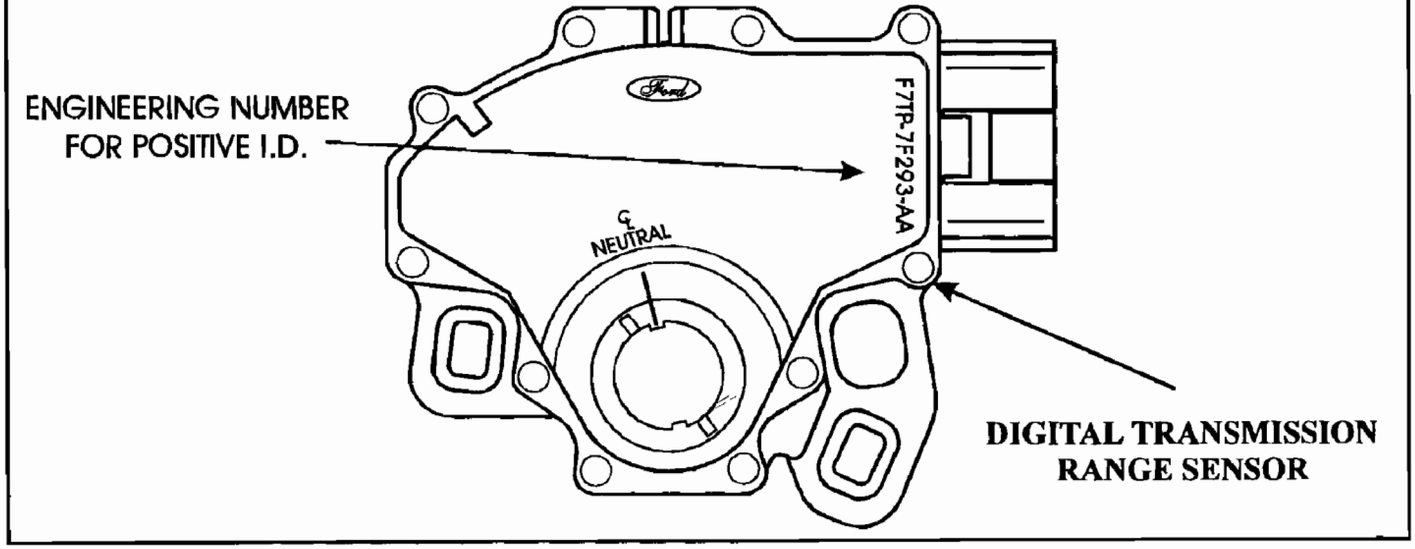
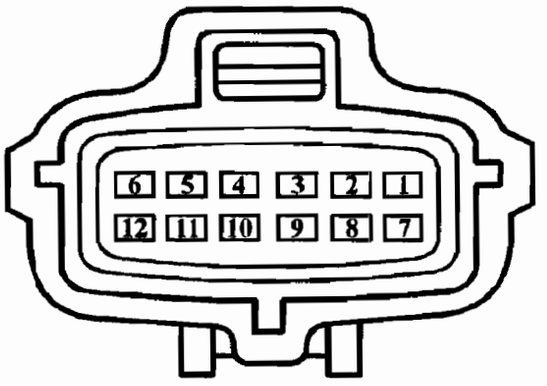
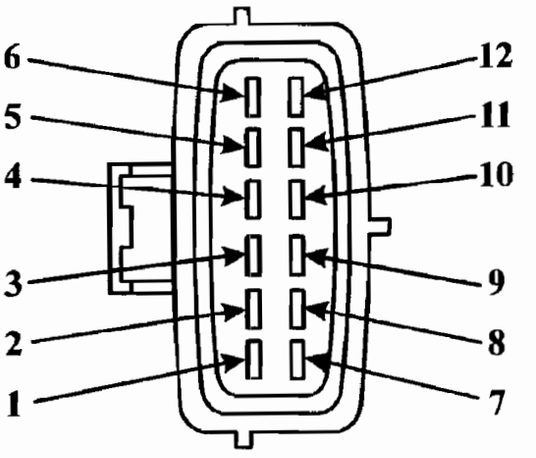


Figure 1



View looking into DTR Sensor harness connector



View looking into DTR Sensor

TERMINALS	P	R	N	Ⓓ	2	1
2 AND 3	CLOSED	269.5 Ω	269.5 Ω	269.5 Ω	CLOSED	CLOSED
2 AND 4	CLOSED	CLOSED	CLOSED	OPEN	OPEN	OPEN
2 AND 5	CLOSED	CLOSED	OPEN	OPEN	CLOSED	OPEN
2 AND 6	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED
9 AND 11	OPEN	CLOSED	OPEN	OPEN	OPEN	OPEN
10 AND 12	CLOSED	OPEN	CLOSED	OPEN	OPEN	OPEN

NOTE: Colors listed below are for 1997 Ranger with 5R55E.

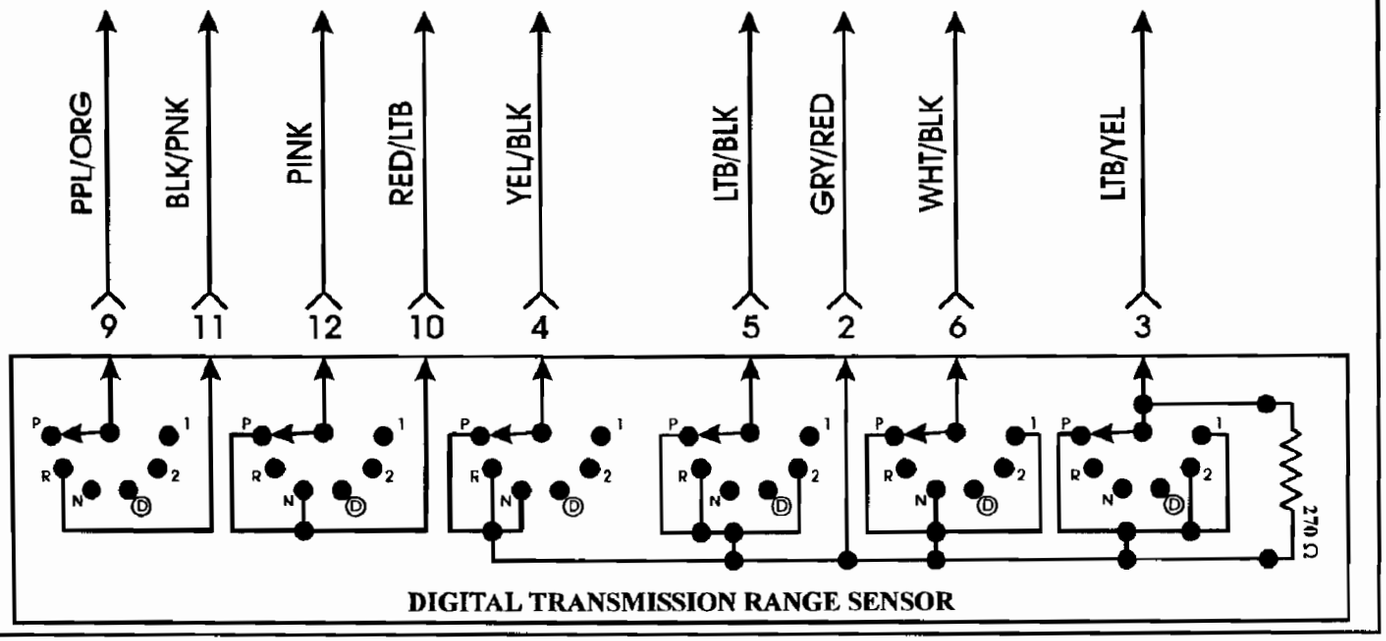


Figure 2

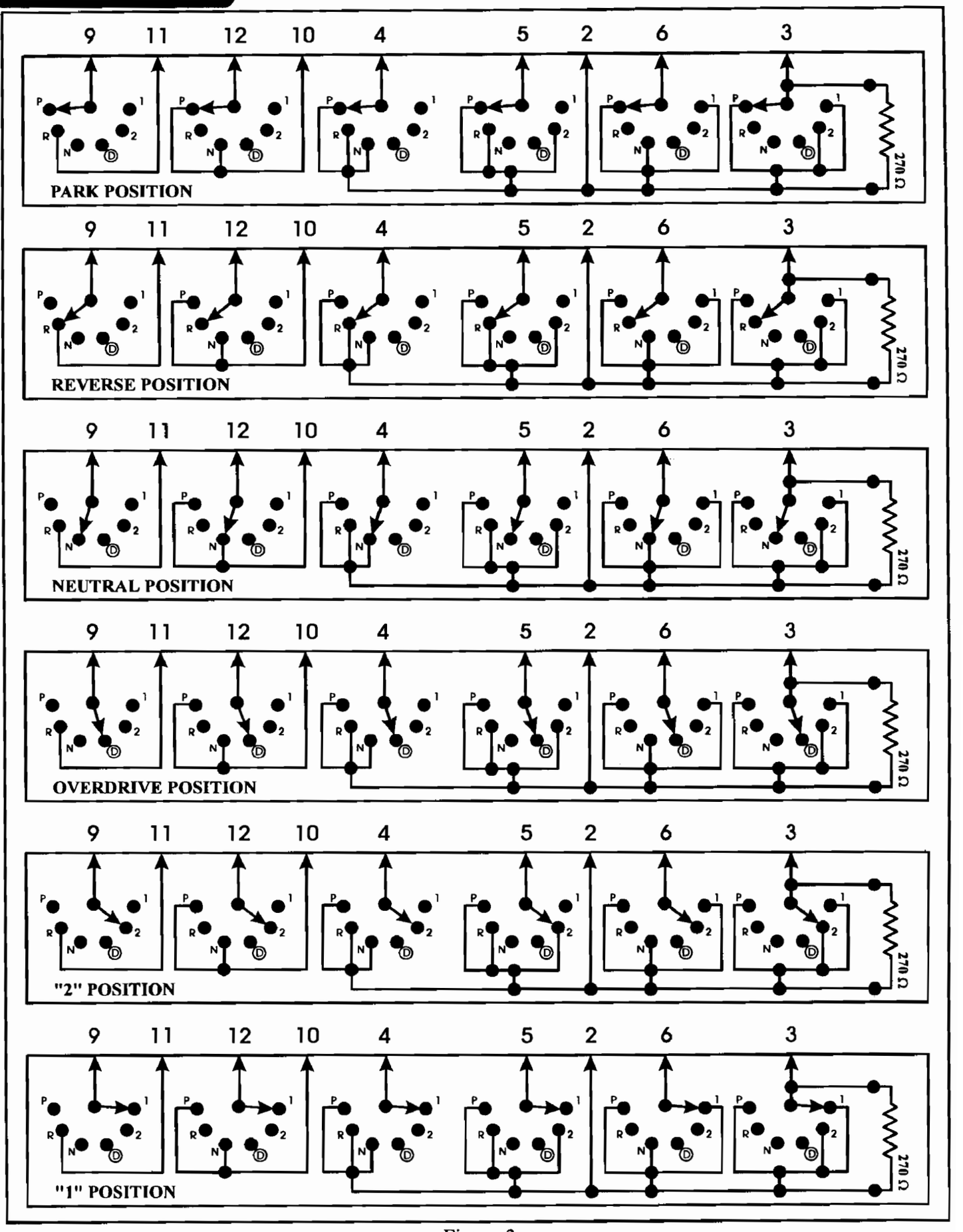
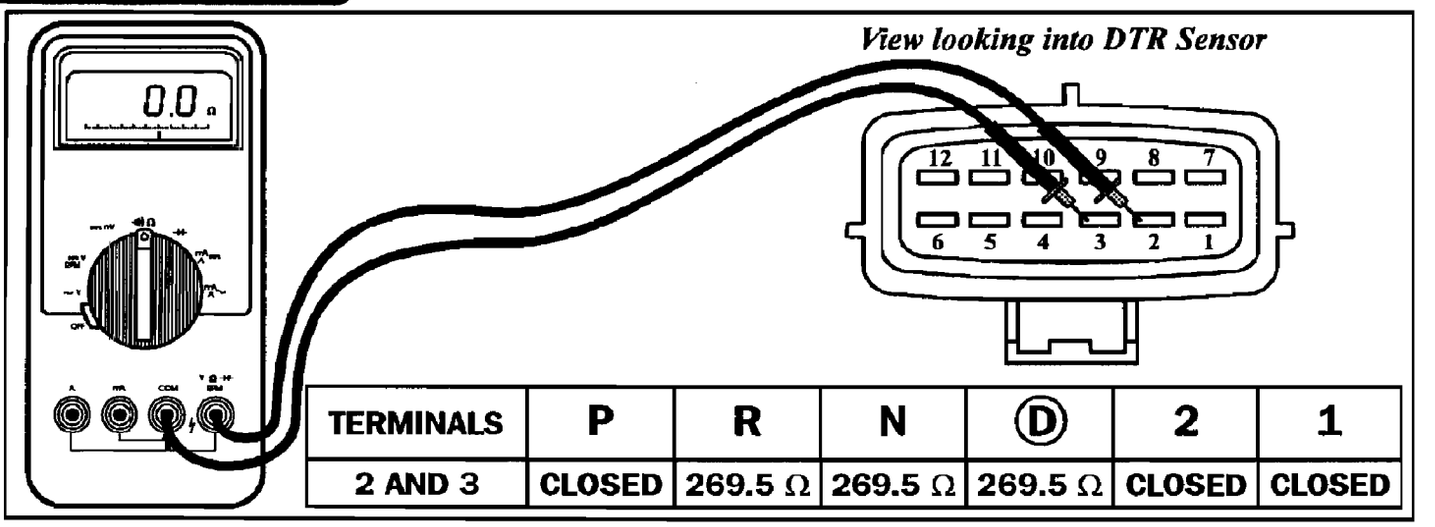
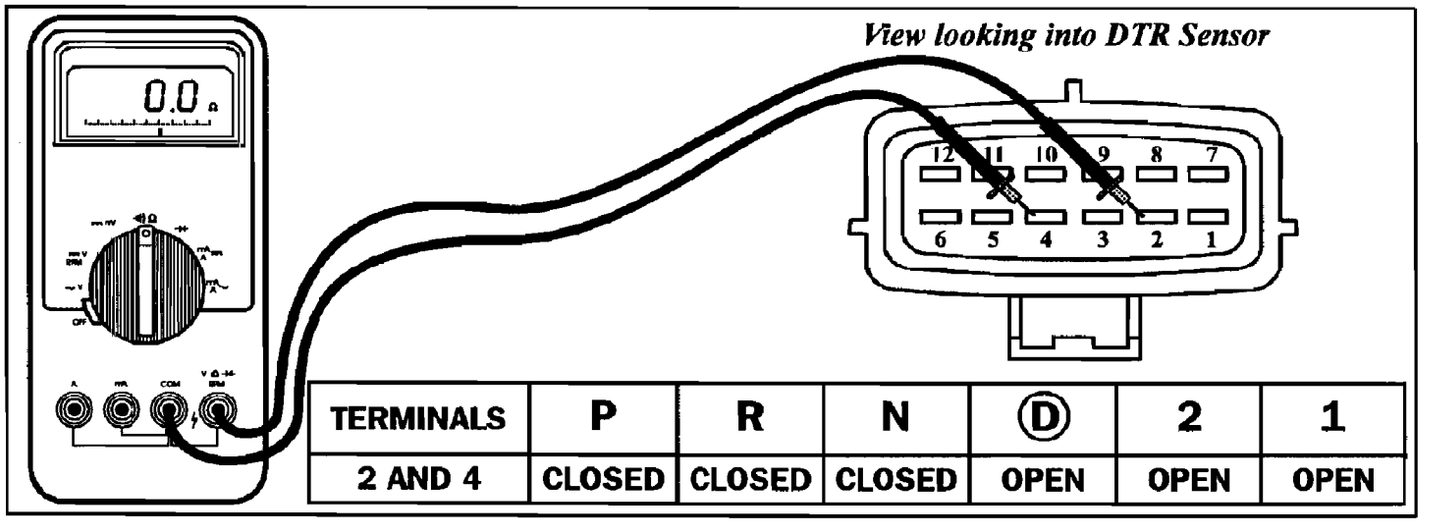


Figure 3
Automatic Transmission Service Group



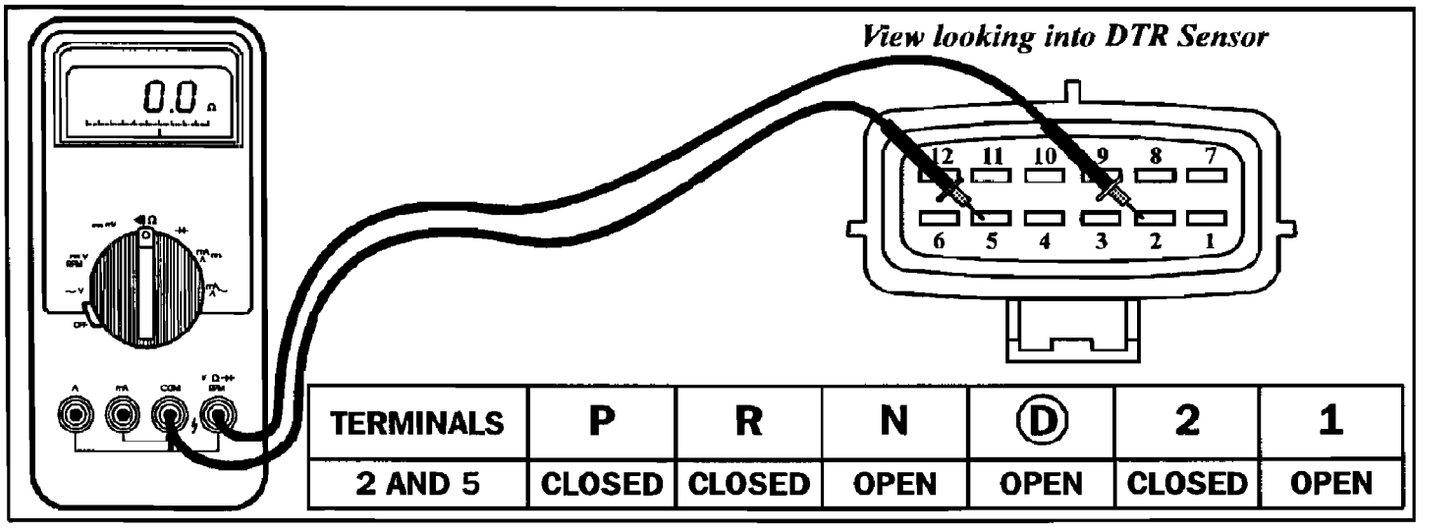
TERMINALS	P	R	N	Ⓓ	2	1
2 AND 3	CLOSED	269.5 Ω	269.5 Ω	269.5 Ω	CLOSED	CLOSED

Figure 4



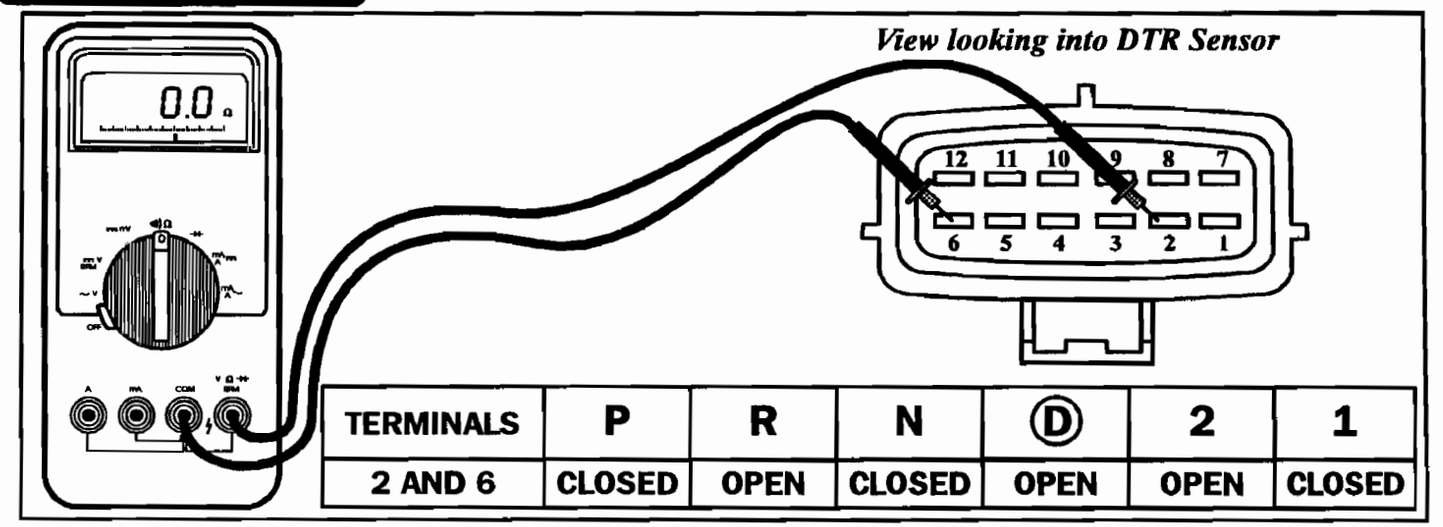
TERMINALS	P	R	N	Ⓓ	2	1
2 AND 4	CLOSED	CLOSED	CLOSED	OPEN	OPEN	OPEN

Figure 5



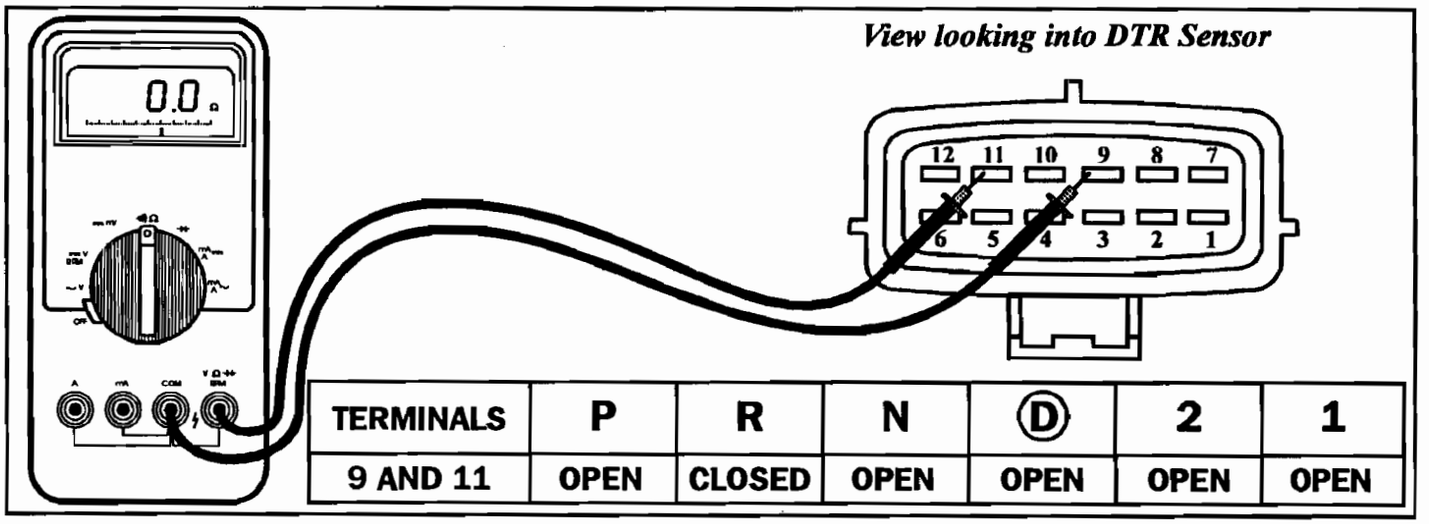
TERMINALS	P	R	N	Ⓓ	2	1
2 AND 5	CLOSED	CLOSED	OPEN	OPEN	CLOSED	OPEN

Figure 6



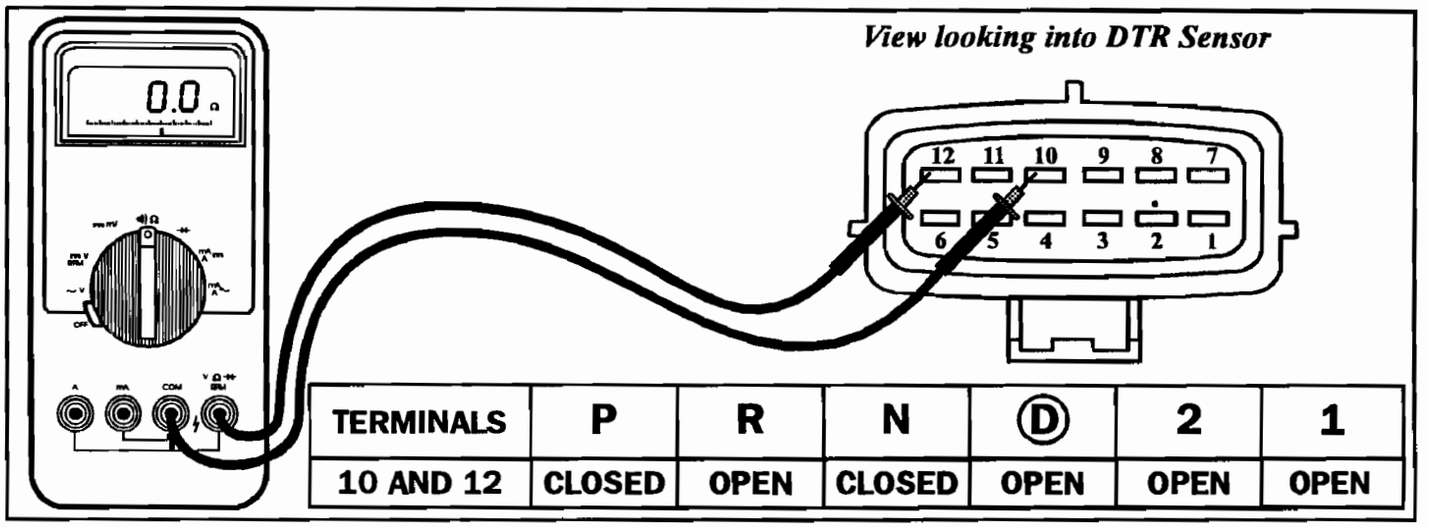
TERMINALS	P	R	N	D	2	1
2 AND 6	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED

Figure 7



TERMINALS	P	R	N	D	2	1
9 AND 11	OPEN	CLOSED	OPEN	OPEN	OPEN	OPEN

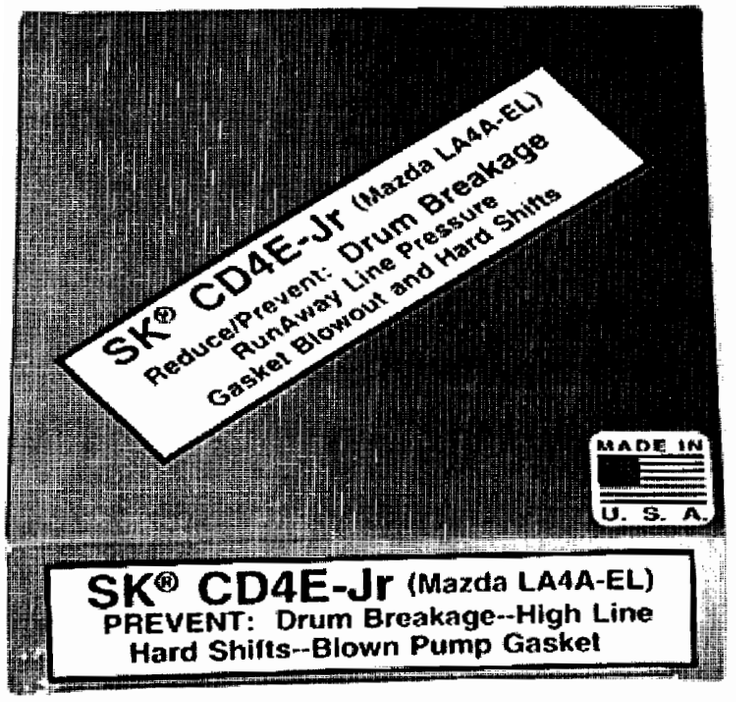
Figure 8



TERMINALS	P	R	N	D	2	1
10 AND 12	CLOSED	OPEN	CLOSED	OPEN	OPEN	OPEN

Figure 9

SK® CD4E-Jr Ford & Mazda LA4A-EL
Sure CURE for runAway line pressure.



--Stop--

Forward Drum Breakage

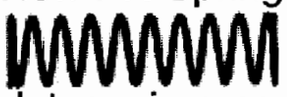
Broken Pump Shaft

Pump Gasket Blowout

Converter Ballooning

Hard Shift Complaints

New PR Spring

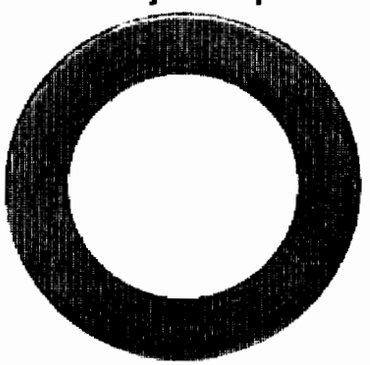


Regulates min pressures

EPC Relief Valve

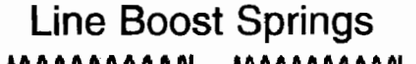
Prevents runAway line due to cross leaks, sticking EPC or electronics.

Band Adjust Spacer



Improves & regulates 1-2 and 2-3 shift feel.

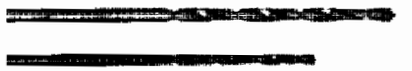
Line Boost Springs



Adjusts 2nd and 3rd

Inner Accumulator Spring

Corrects long soft 4th



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FORD CD4E
NEW DESIGN 2/4 SERVO PISTON AND RETURN SPRING FOR 1997

CHANGE: Beginning at the start of production for 1997 Probe models equipped with the CD4E transaxle, will contain a revised ***one piece*** intermediate/overdrive servo piston and rod assembly, and a new design servo piston return spring assembly, which is now green in color (See Figure 1).

REASON: Improved durability and calibration changes.

PARTS AFFECTED:

(1) SERVO PISTON AND ROD ASSEMBLY - 1997 Probe models are now a one piece design as shown in Figure 1.

(2) SERVO RETURN SPRING ASSEMBLY - Now has a revised return spring (Shorter) and is green in color for identification, as shown in Figure 1.

INTERCHANGEABILITY:

If replacement of the intermediate/overdrive servo piston assembly becomes necessary in a 1997 CD4E transaxle, you ***must*** use the new design level parts listed below.

SERVICE INFORMATION:

2-4 Piston And Rod Assembly, 97 Models (No Grooves)	F7RZ-7H188-CA
2-4 Piston And Rod Assembly, 97 Models (1 Groove)	F7RZ-7H188-BA
2-4 Piston And Rod Assembly, 97 Models (2 Grooves)	F7RZ-7H188-AA
2-4 Servo Return Spring, 97 Models (Green)	F7RZ-7H073-AA

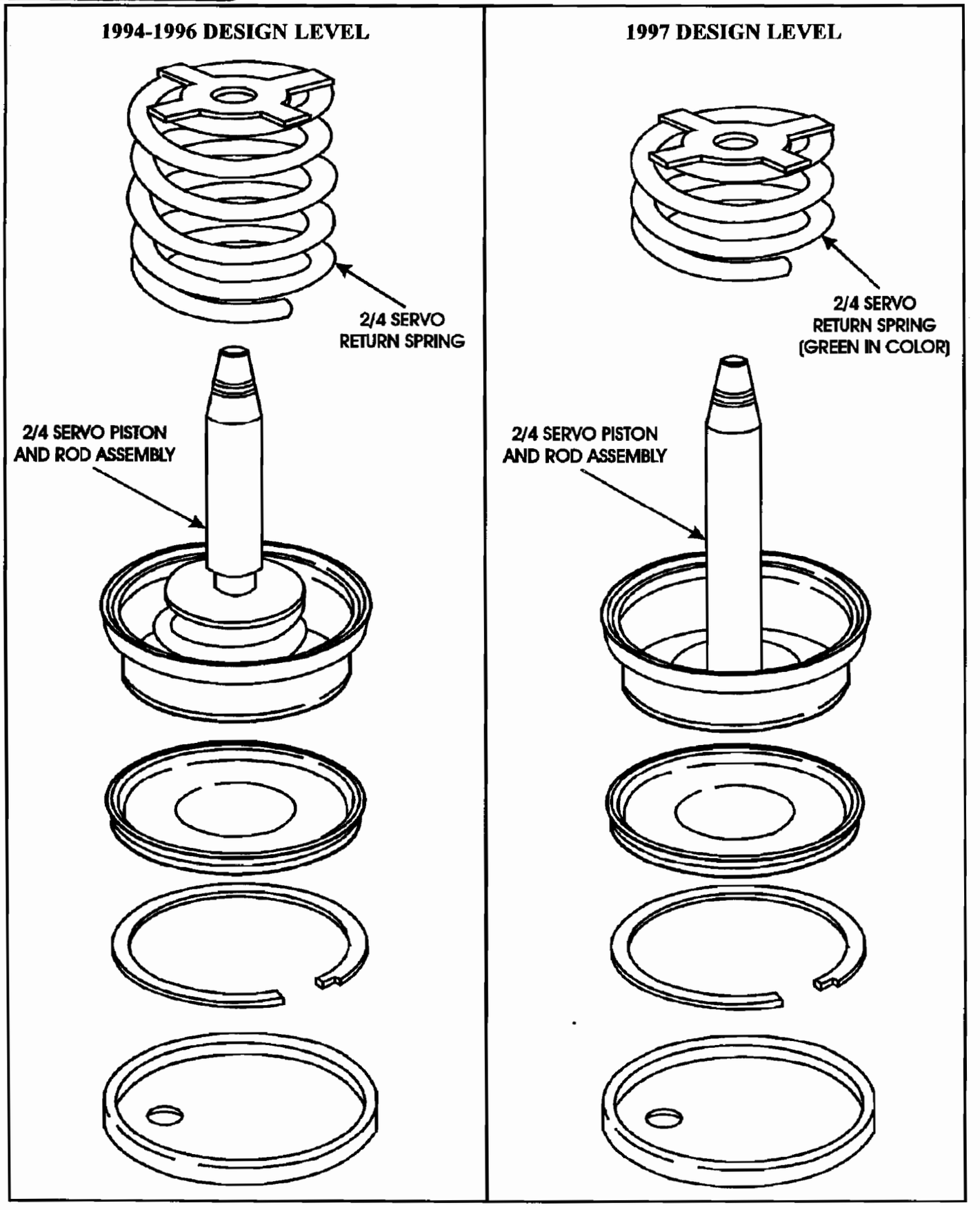
1994-1996 DESIGN LEVEL
2/4 SERVO RETURN SPRING
2/4 SERVO PISTON AND ROD ASSEMBLY
1997 DESIGN LEVEL
2/4 SERVO RETURN SPRING (GREEN IN COLOR)
2/4 SERVO PISTON AND ROD ASSEMBLY

Figure 1

FORD CD4E
RIGHT HAND DIFFERENTIAL SEAL LEAK

COMPLAINT: After overhaul, vehicle exhibits a leak from the right hand differential seal, noise or vibration concerns, or engine oil filter damage and subsequent engine issues.

CAUSE: The cause may be, inadvertently using the wrong set of mounting holes when remounting the intermediate shaft bearing and bracket assembly. For location refer to Figure 1. The original 1st design style of intermediate shaft bracket had two sets of mounting holes, one for CD4E applications, and the other set for MTX-75 (Standard Shift) applications, as shown in Figure 2.

CORRECTION: There are now unique support brackets to correct the concern and prevent mis-mounting the bracket in the wrong holes, one support bracket for CD4E applications, and one for MTX-75 applications. Refer to Figure 3. These new style support brackets were used in production during the 1996 model year. The support bracket is serviced as part of the Intermediate Shaft Assembly, and could contain either the 1st design bracket as shown in Figure 2, or the 2nd design bracket as shown in Figure 3. Use care if the 1st design bracket with four holes is supplied to mount it using the proper holes, as shown in Figure 2.

SERVICE INFORMATION:

Intermediate Shaft Assembly, CD4E Transaxle F5RZ-3A329-F
Intermediate Shaft Assembly, MTX-75 Transaxle F5RZ-3A329-E

SHAFT ASSEMBLY AND BRACKET LOCATION

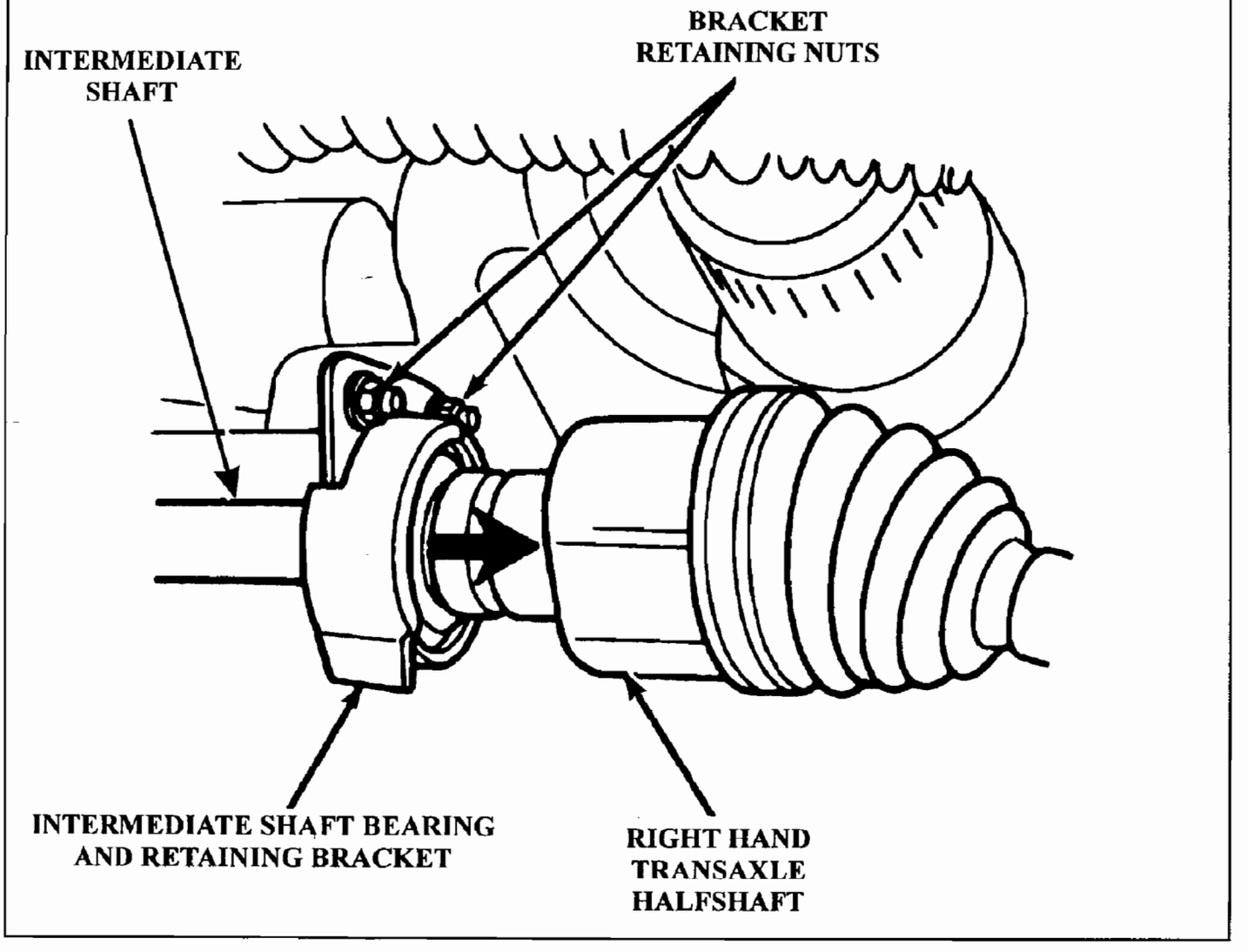

Figure 1

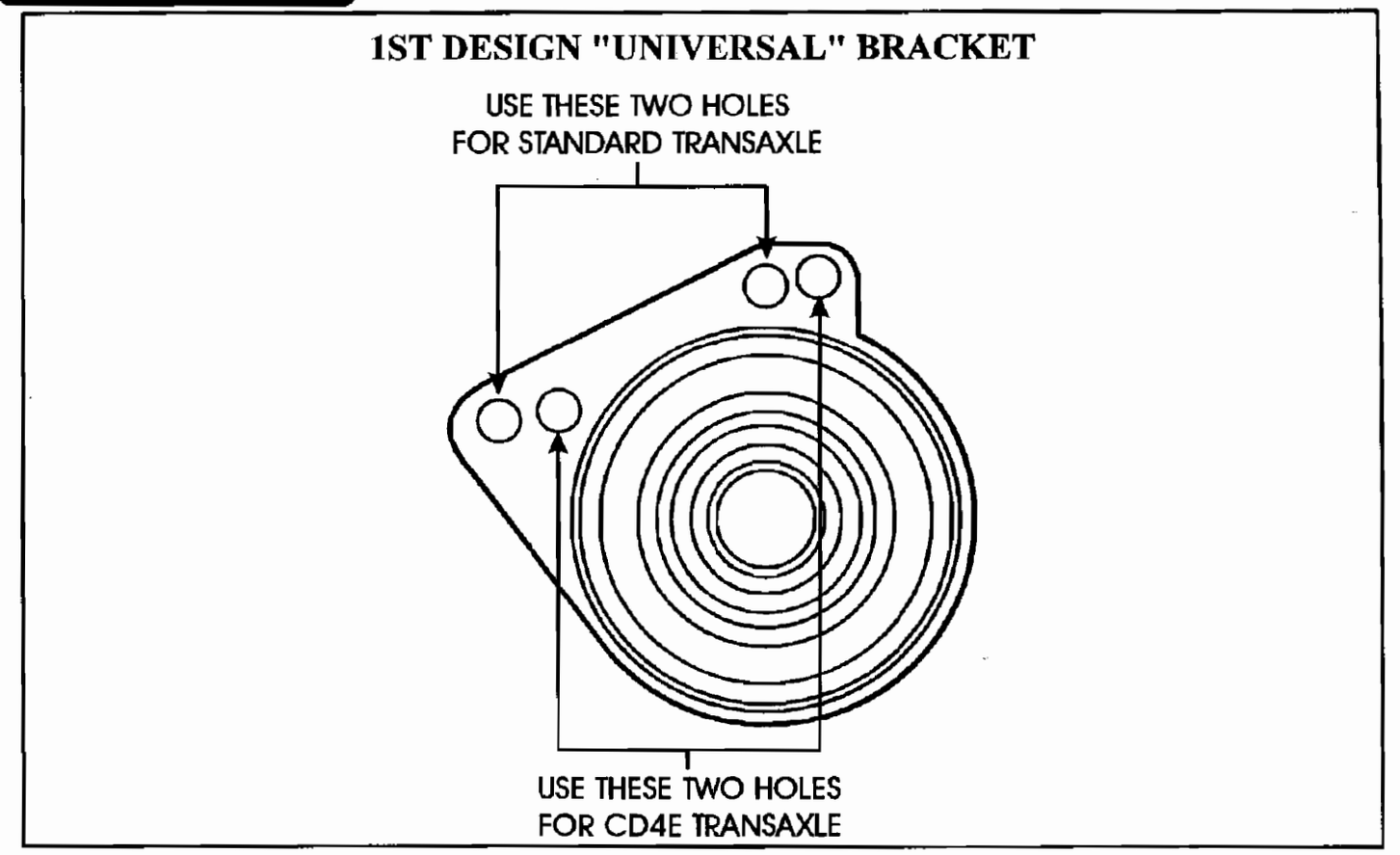

Figure 2

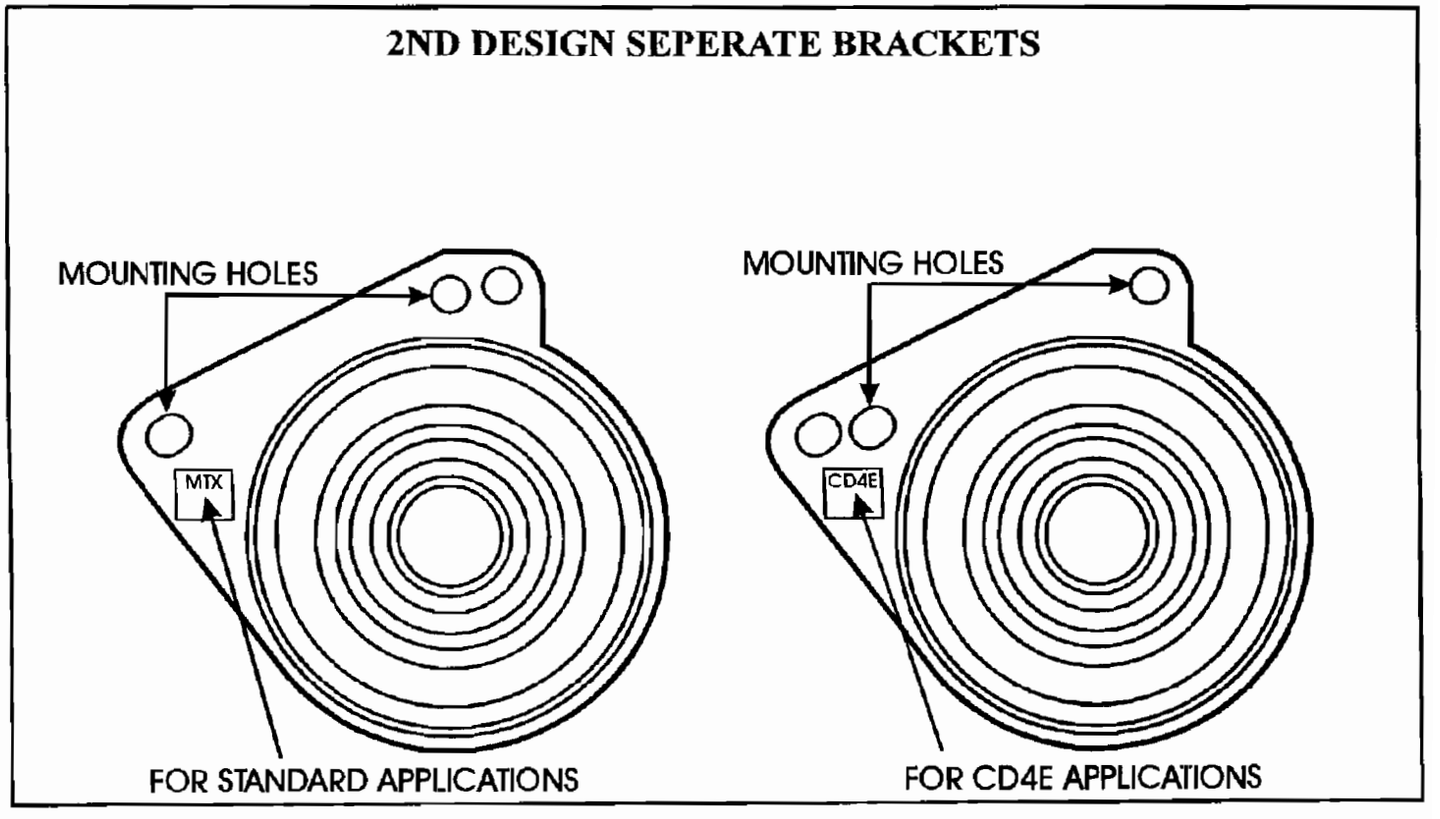

Figure 3

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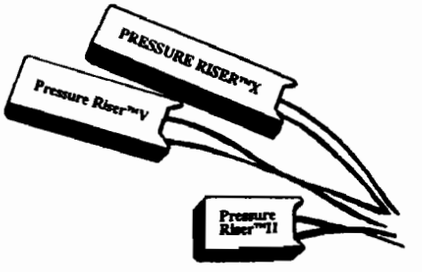

(Chart available which indicates exactly which PressureRiser® variation to order for your proper application)

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DRIVER ADJUSTABLE MODELS
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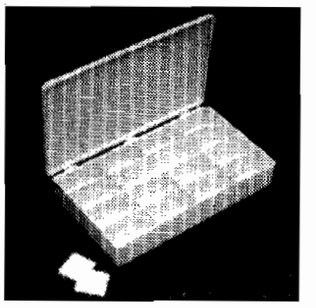

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- Ten Grounding Eyelets for "Positive Only" Wiring
- Connection Instructions for all Tested Applications
- Recommendation Charts on Which Product to Use
- Divided Container for Components with Reorder Number

PRESSURERISER® SELECTOR

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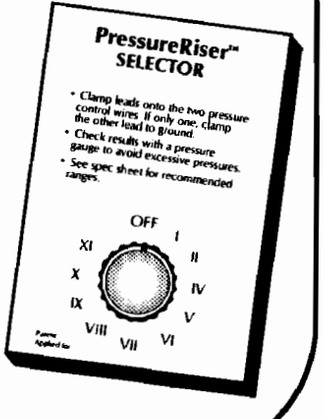


- Check Its Effect Before Installing
- Quickly Determine Optimum Pressure Level
- Quickly Determine the Proper PressureRiser® to Install Indicated by the Roman Numeral on the Dial
- Hook-up Instructions for Most Transmissions Provided with the Selector
- Expand Usage and Testing to Pulsed L/U Solenoids

FORD CD4E

TURBINE SHAFT SPEED SENSOR MOUNTING SURFACE ON PUMP BODIES INCORRECT

Some 1995 Contour, Probe and Mystique vehicles equipped with the CD4E transaxle, built from December 1994 through February 1995 with serial numbers 43350467 to 43370105 and 43410230 to 43420326 may have been assembled with incorrect turbine shaft speed sensor mounting surfaces on the pump bodies. The Turbine Shaft Speed Sensor (TSS) was modified to allow the TSS sensor to seat properly on these pump bodies. These TSS sensors were identified with a "Yellow" paint dot on the sensor itself in the location shown in Figure 2. The mis-machined pump bodies were identified with an "Orange" dot on the pump bodies in the location shown in Figure 2.

When servicing these units and TSS Sensor and/or Oil Pump assembly replacement is necessary, it will be mandatory that both pieces be replaced to prevent a clearance concern between the pump body and the Turbine Shaft Speed Sensor.

SERVICE INFORMATION:

Oil Pump Assembly F4RZ-7A103-A
Turbine Shaft Speed Sensor F3RZ-7M101-A

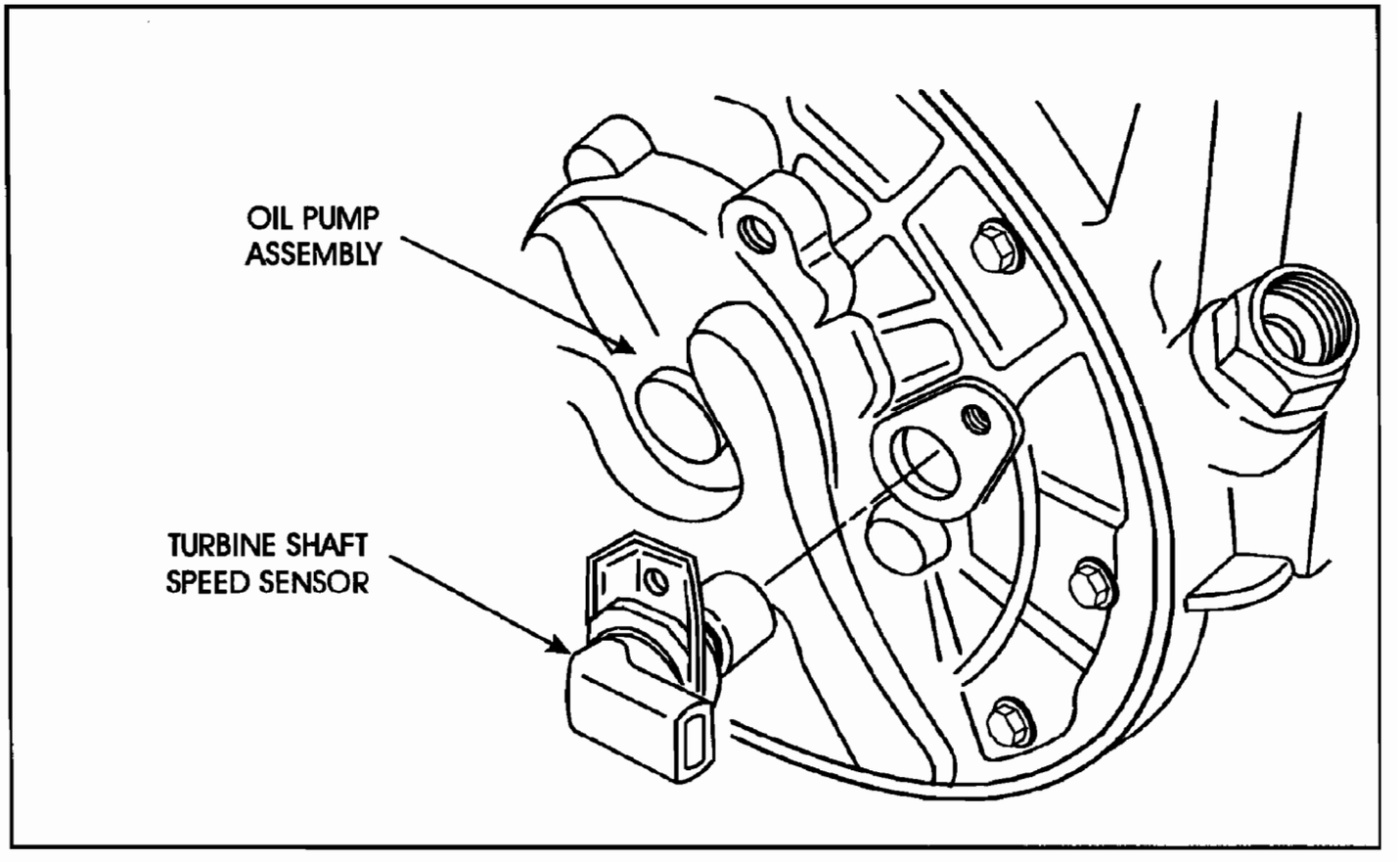
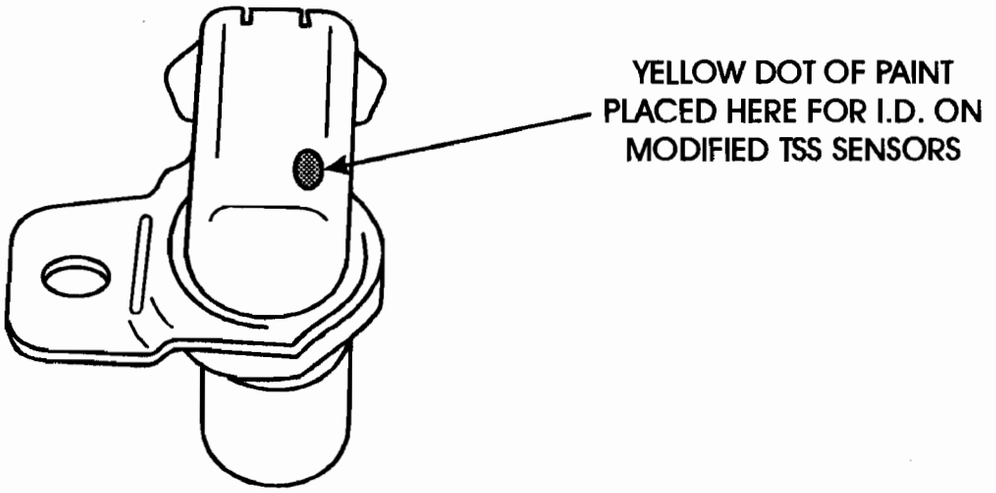
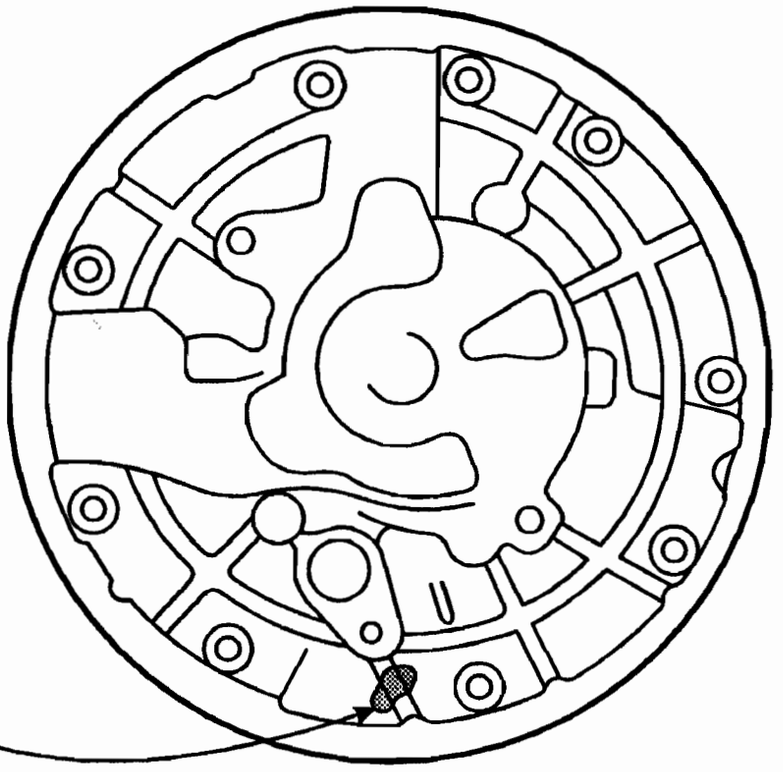


Figure 1



YELLOW DOT OF PAINT
PLACED HERE FOR I.D. ON
MODIFIED TSS SENSORS



ORANGE DOT OF PAINT
PLACED HERE FOR I.D. ON
MIS-MACHINED PUMP BODIES

Figure 2

FORD CD4E
INTERMITTENT TROUBLE CODE 628 OR P0741

COMPLAINT: Vehicle exhibits an intermittent Diagnostic Trouble Code 628, or OBD Code P0741, and when the code is stored in the PCM memory, you will have a flashing OD Cancel indicator lamp and harsh shifts will occur. This DTC is a "Torque Converter Clutch Engagement Error".

CAUSE: The cause may be, a "Blown" pump body gasket

CORRECTION: Beginning in January 1997, all CD4E transaxles will contain a new design level Oil Pump Assembly which includes a revised Pump Support, revised Pump Body Gasket and a revised Pump Seperator Plate. Refer to Figures 1, 2, and 3. This new design Pump Assembly will eliminate the "Blown" gasket concern. We have included all OEM part numbers in "Service Information" below to aquire the new design level parts.

PUMP SPACER PLATE - New design level has two less holes, as shown in Figure 1.

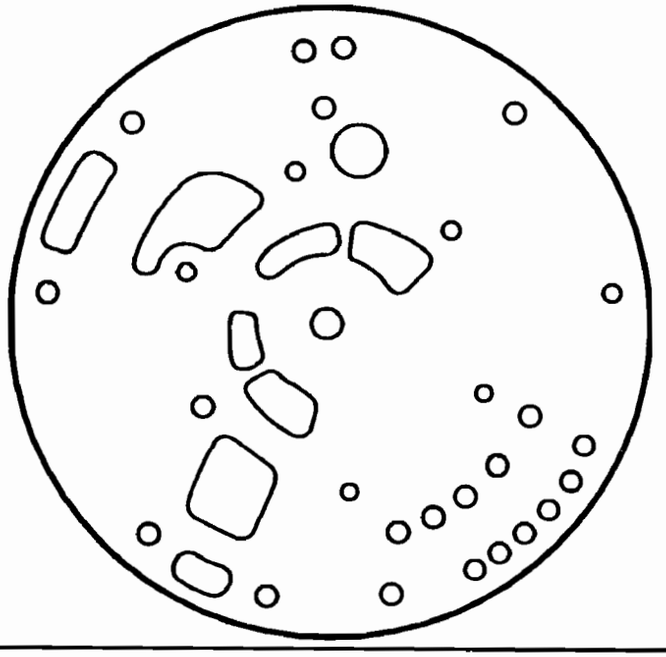
PUMP BODY GASKET - New design level has two less holes and is identified with a White stripe and part number on the gasket, as shown in Figure 2.

PUMP SUPPORT - New design level has different cavities and we have highlighted the cavities that are different for identification purposes, as shown in Figure 3.

SERVICE INFORMATION:

Pump Support (New Design)	F7RZ-7A103-AA
Pump Spacer Plate (New Design)	F7RZ-7A142-AA
Pump Support Gasket (New Design)	F7RZ-7G331-AA

PREVIOUS DESIGN
PUMP SPACER PLATE



NEW DESIGN
PUMP SPACER PLATE
F7RZ-7A142-AA

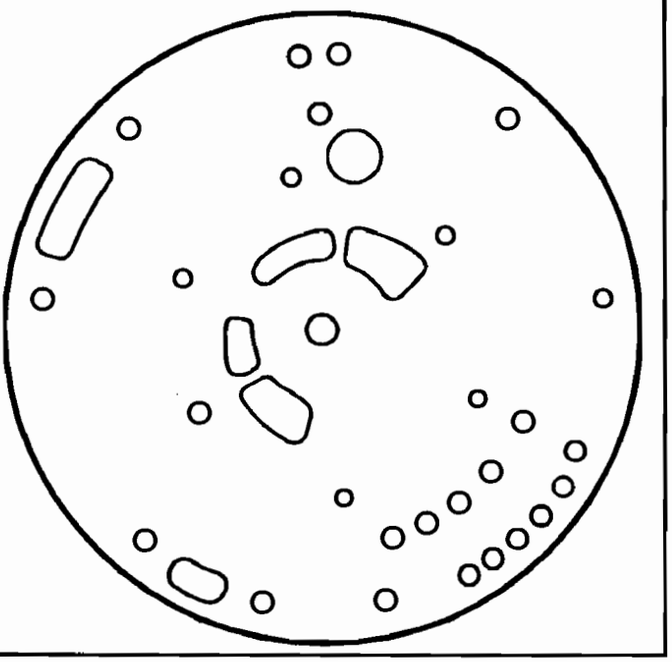
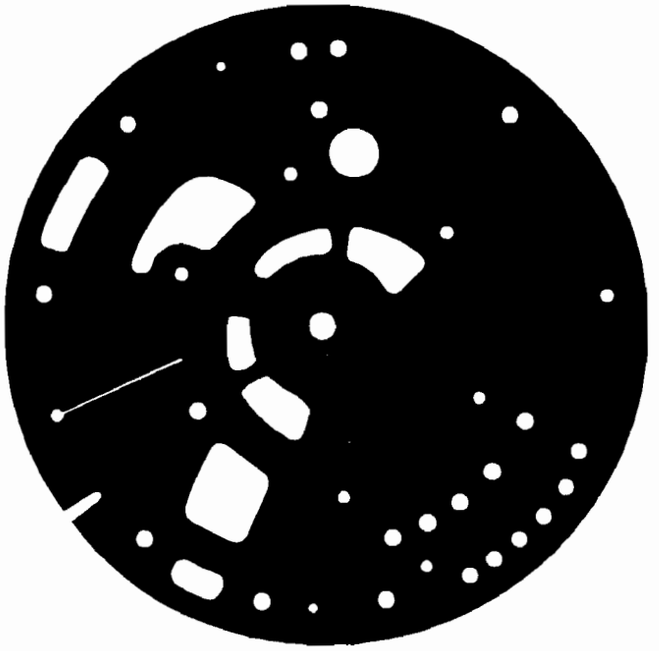
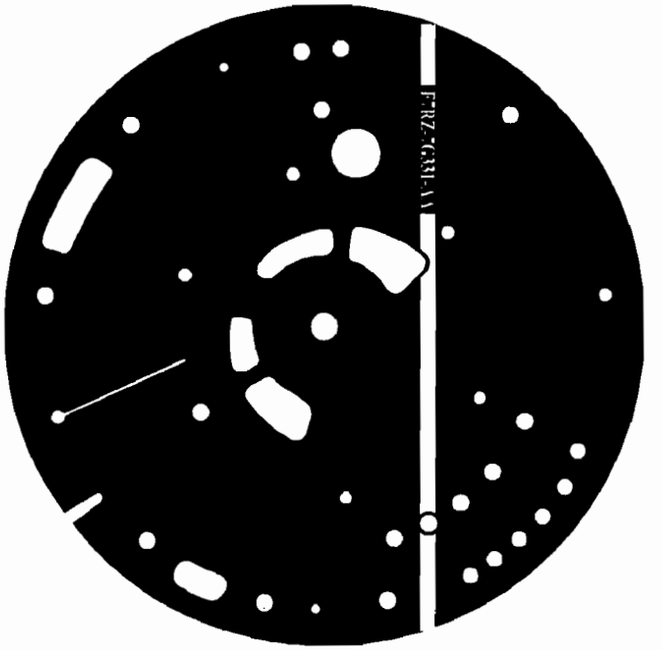


Figure 1

PREVIOUS DESIGN
PUMP BODY GASKET



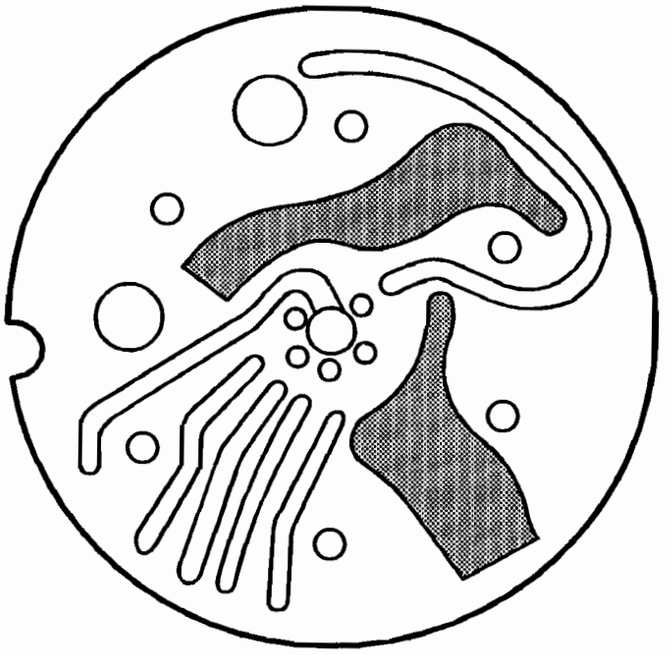
NEW DESIGN
PUMP BODY GASKET
F7RZ-7G331-AA



White stripe and part number on gasket for identification

Figure 2

PREVIOUS DESIGN
PUMP SUPPORT



NEW DESIGN
PUMP SUPPORT
F7RZ-7A103-AA

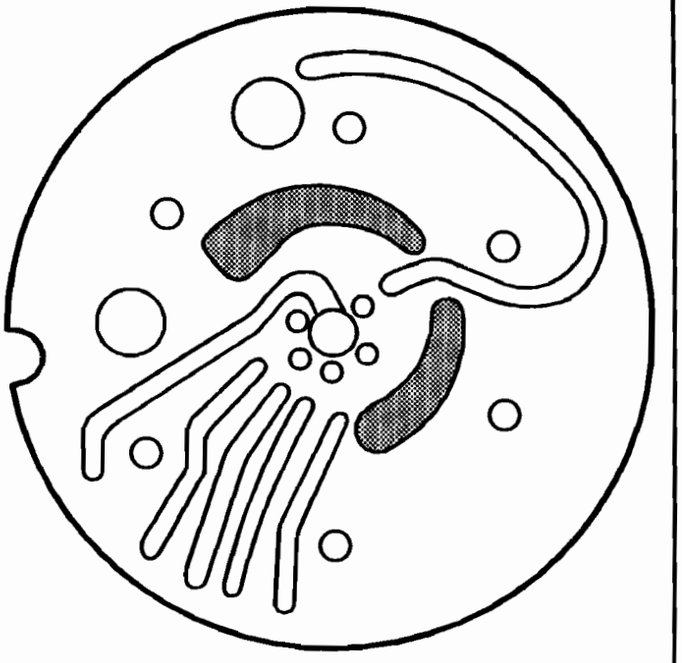
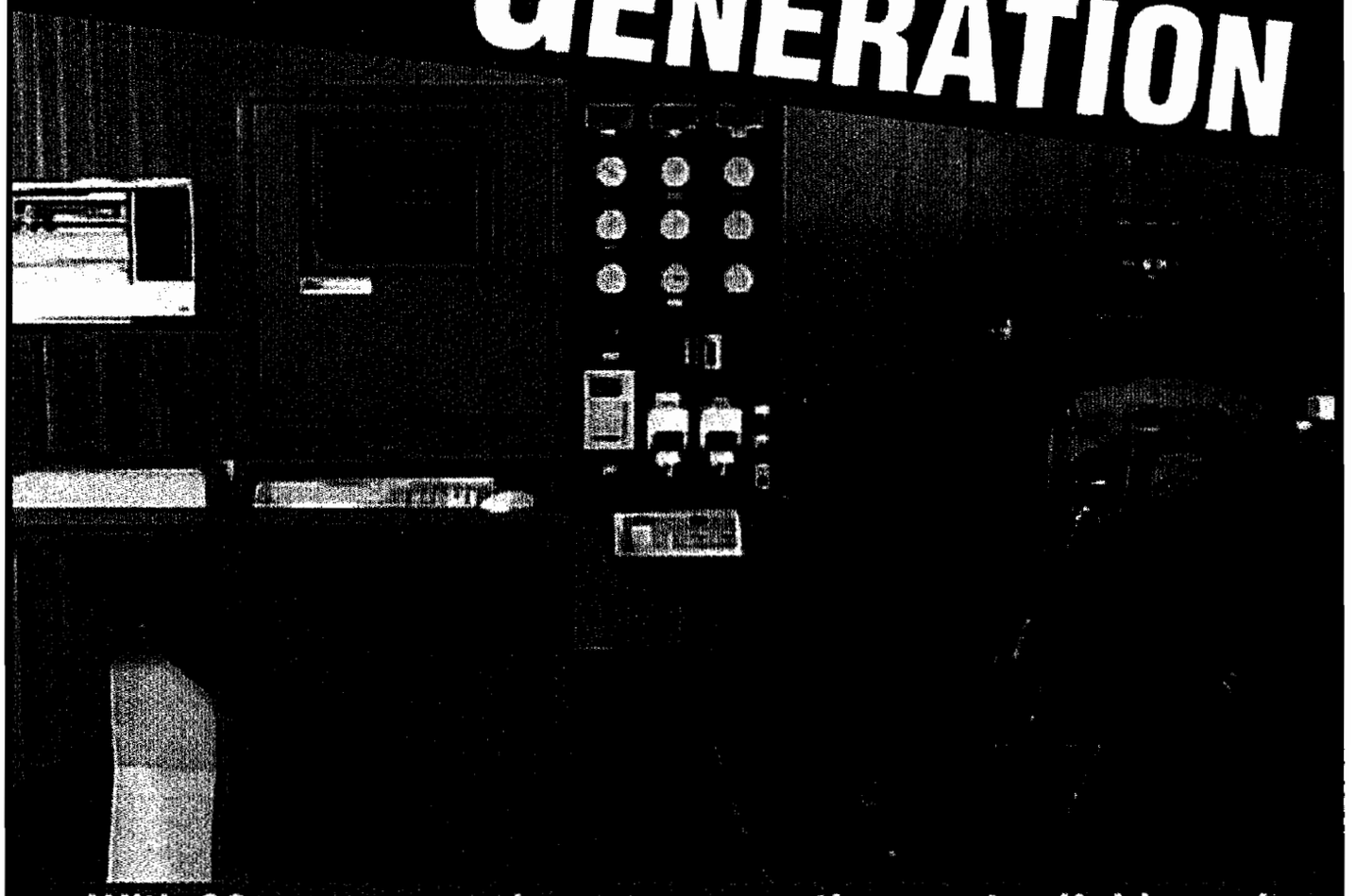


Figure 3

THE NEW GENERATION



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FORD AXODE (AX4S)

SLIP ON 2-3 SHIFT AND/OR NO 2-3 SHIFT

COMPLAINT: Before and/or after overhaul, the vehicle exibits a flare or slipping condition on the 2-3 shift, or a no 2-3 shift at all, on some 96-97 Taurus, 96-97 Sable, 96-97 Windstars.

CAUSE: The cause may be, a mis-machined direct/intermediate clutch cylinder, as shown in Figure 1, or the direct clutch steel plates binding in the clutch cylinder due to cylinder being out of round.

CORRECTION: Inspect the direct clutch cylinder hub machining in the area shown in Figure 1, and replace clutch cylinder as necessary. Check for free movement of the steel clutch plates in the direct clutch cylinder by installing and removing the plates, and turning the plates 2-3 splines each time. Replace direct clutch cylinder as necessary. Also the 3 tabs on the servo spring retainer must fit on the outside edge of the spring as shown in Figure 2. Replace the servo spring retainer if it is bent or damaged from an incorrect installation.

SERVICE INFORMATION:

Direct/Intermediate Clutch Cylinder (3.0L Taurus)	F6DZ-7G120-A
Direct/Intermediate Clutch Cylinder (3.0L "SHO" Taurus)	F3DZ-7G120-A
Direct/Intermediate Clutch Cylinder (3.8L Windstar)	F68Z-7G120-BA
Servo Spring Retainer (All Models)	F0DZ-7G151-A

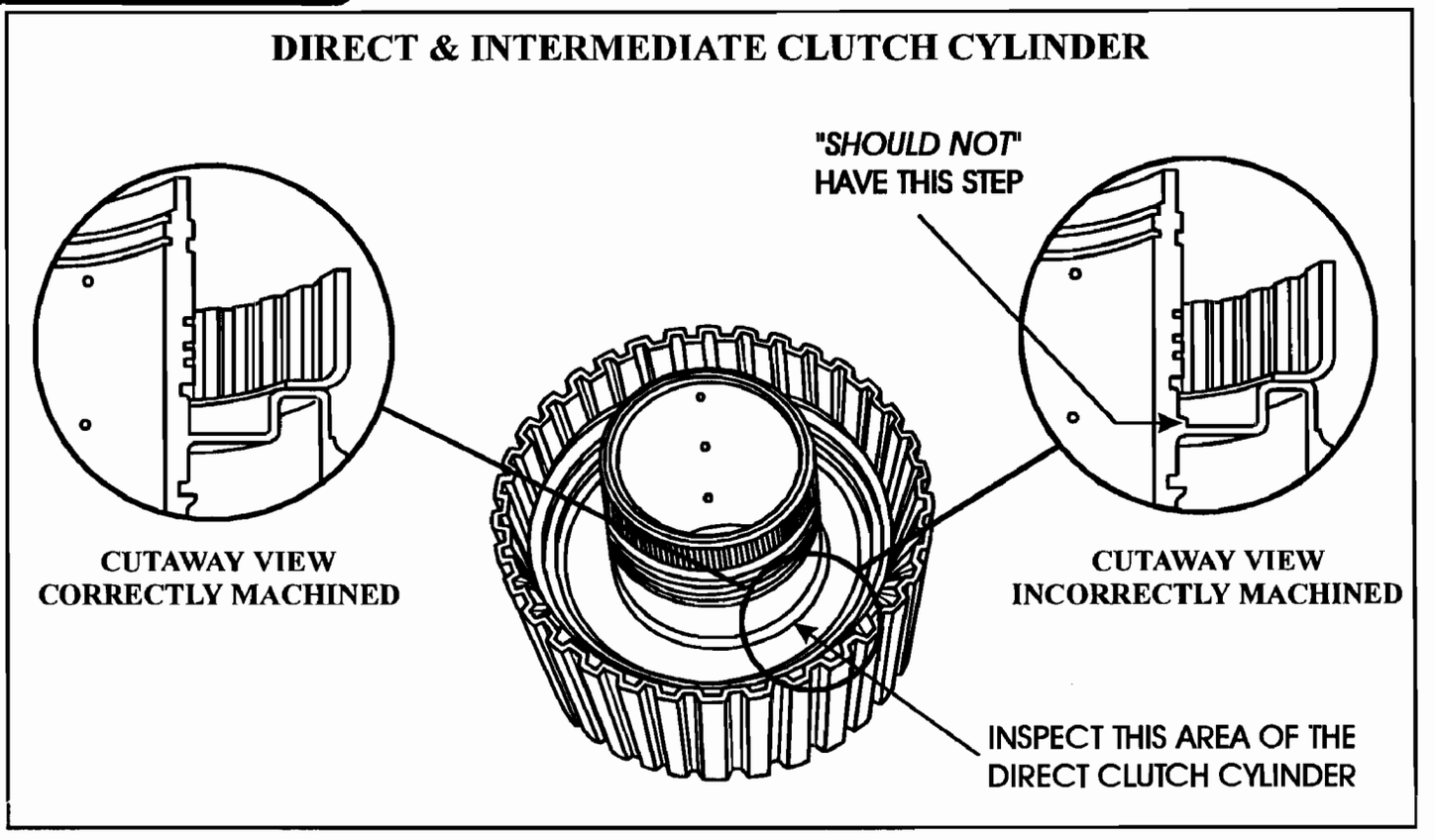


Figure 1

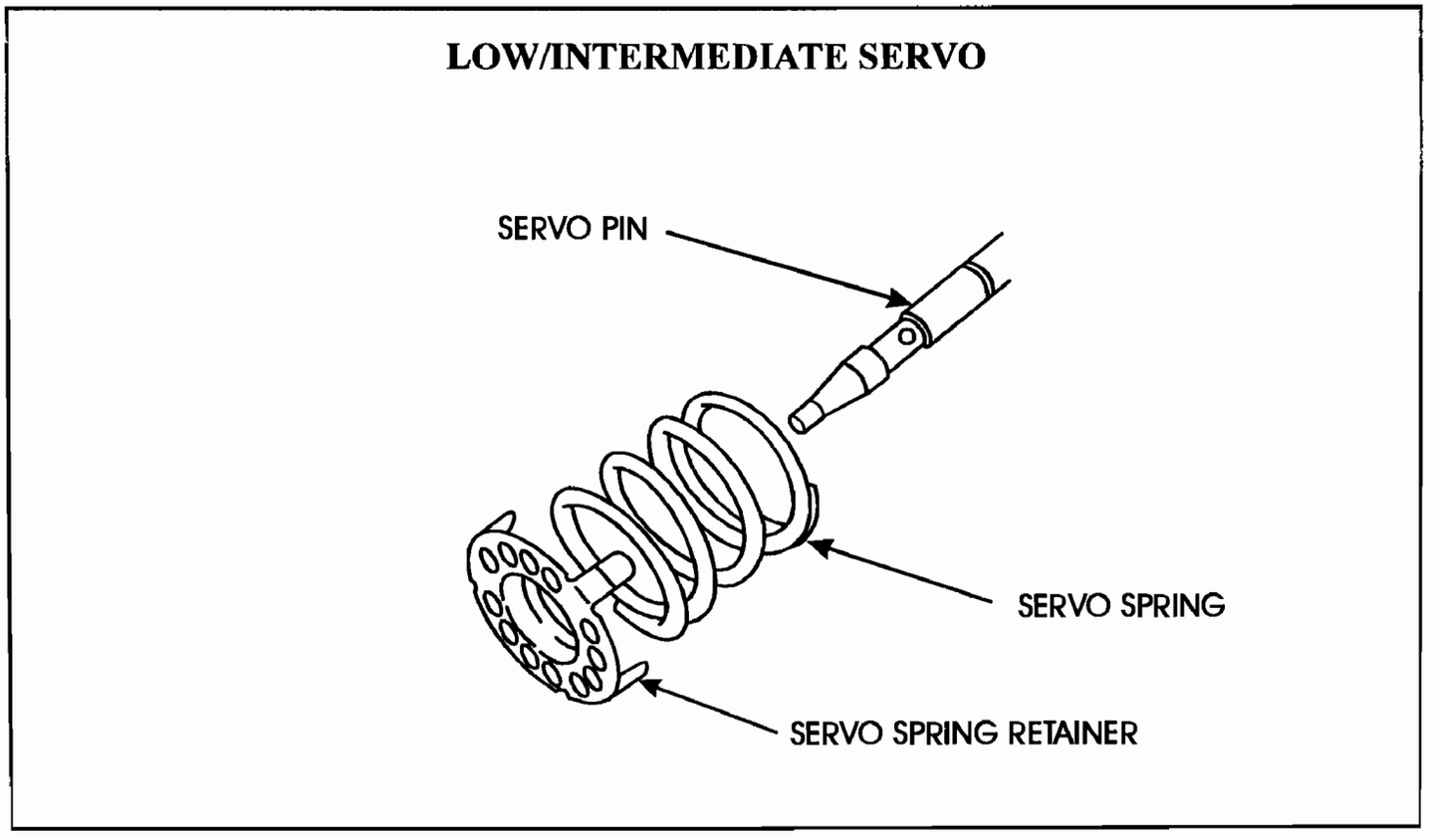
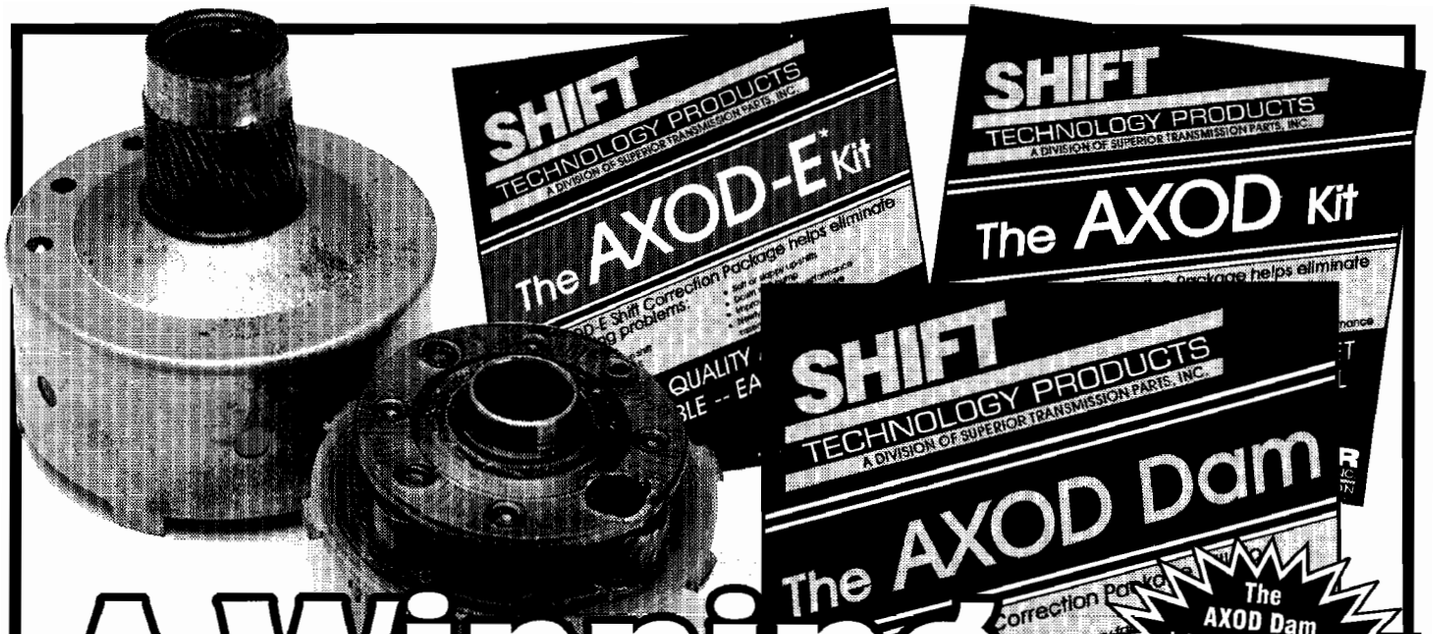


Figure 2



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Superior Transmission Parts, Inc. Holds Patent Number 5,558,591 For The AXOD DAM

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FORD AX4S (AXODE)

HARSH 1-2 UPSHIFT

COMPLAINT: Some 1996-97 TAURUS/SABLE and 1996-98 WINDSTAR, equipped with AX4S transaxles, may exhibit a harsh 1-2 upshift before or after overhaul with "NO" trouble codes.

CAUSE: The cause may be, one or more of the following valves may be sticking:

- 1-2 Shift valve
- Intermediate Clutch Shuttle Valve
- 1-2 Capacity Modulator Valve
- Accumulator Regulator Valve
- Pressure Failsafe Valve

CORRECTION: Locate the the valve or valves in question shown in Figure 1. Remove them from the valve body and inspect the valve for scratches or scoring. Inspect the valve bore for scratches or scoring. Install the valve back into its bore without the spring and ensure that each valve falls in and out of its bore on its own weight. If the valve will not fall on its own weight it may be necessary to clean or polish the bore in the valve body. ***Do not polish the valve it may make the problem even worse***. If the valve or valve bore shows heavy scratches or scoring, valve body replacement may be necessary.

NOTE: THE FOLLOWING SENSORS MAY CAUSE EPC PRESSURE TO SPIKE INTERMITTENTLY AND CAUSE THE SAME CONDITION WITHOUT SETTING CODES: THROTTLE POSITION SENSOR, VEHICLE SPEED SENSOR, TRANSMISSION RANGE SENSOR (MLP), TURBINE SHAFT SPEED SENSOR.

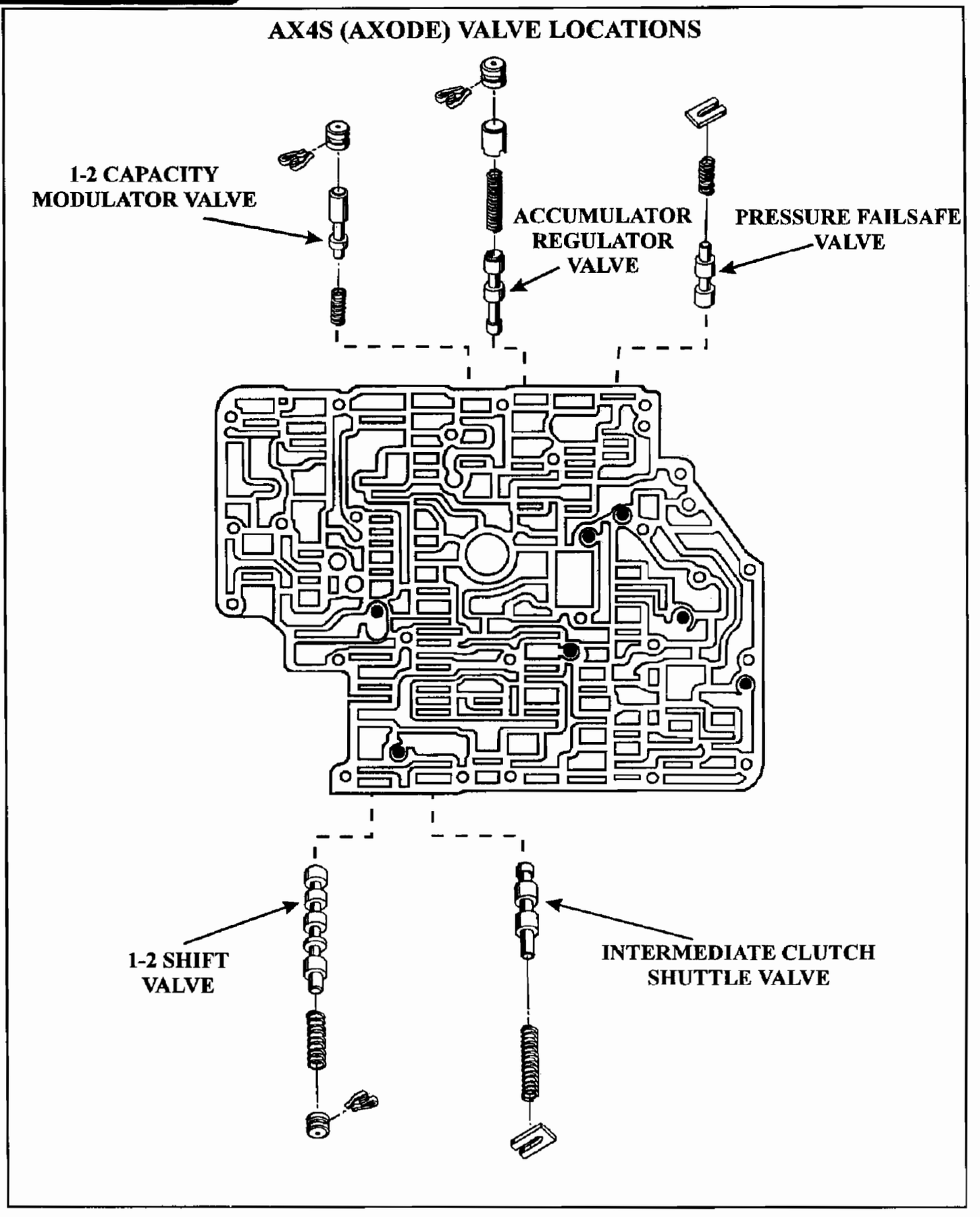
AX4S (AXODE) VALVE LOCATIONS
1-2 CAPACITY MODULATOR VALVE
ACCUMULATOR REGULATOR VALVE
PRESSURE FAILSAFE VALVE
1-2 SHIFT VALVE
INTERMEDIATE CLUTCH SHUTTLE VALVE

Figure 1

FORD AX4S (AXOD-E) AND AX4N
PRESSURE TAP LOCATIONS

Most technical manuals, including Ford Motor Company manuals, have the pressure tap locations identified wrong. Use the next two pages to correct your manuals at the shop for the correct pressure tap locations.

Refer to Figure 1 for the AX4S (AXOD-E) transaxle pressure tap locations.

Refer to Figure 2 for the AX4N transaxle pressure tap locations.

FORD AX4S (AXOD-E) "ONLY"

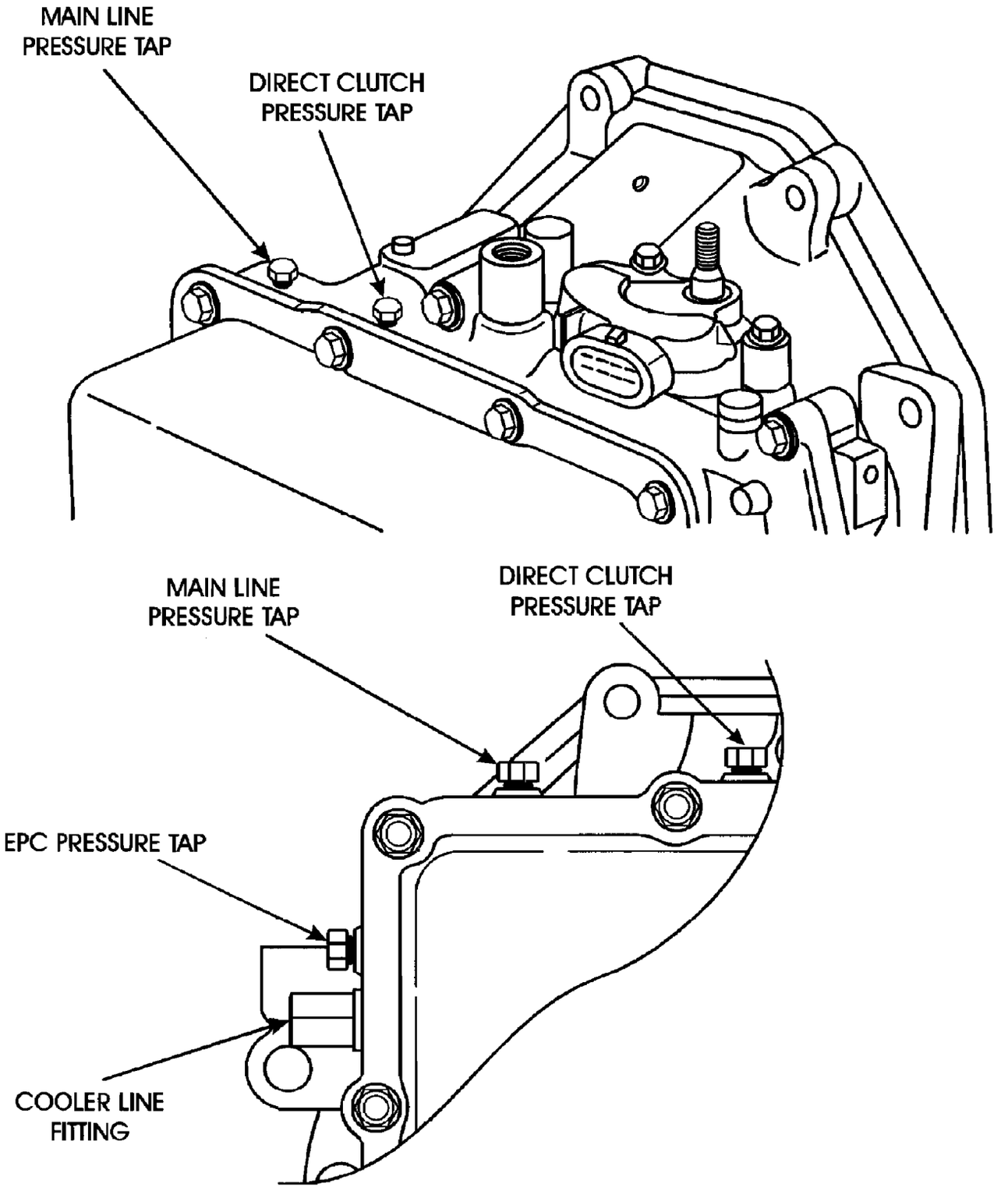

Figure 1

FORD AX4N "ONLY"

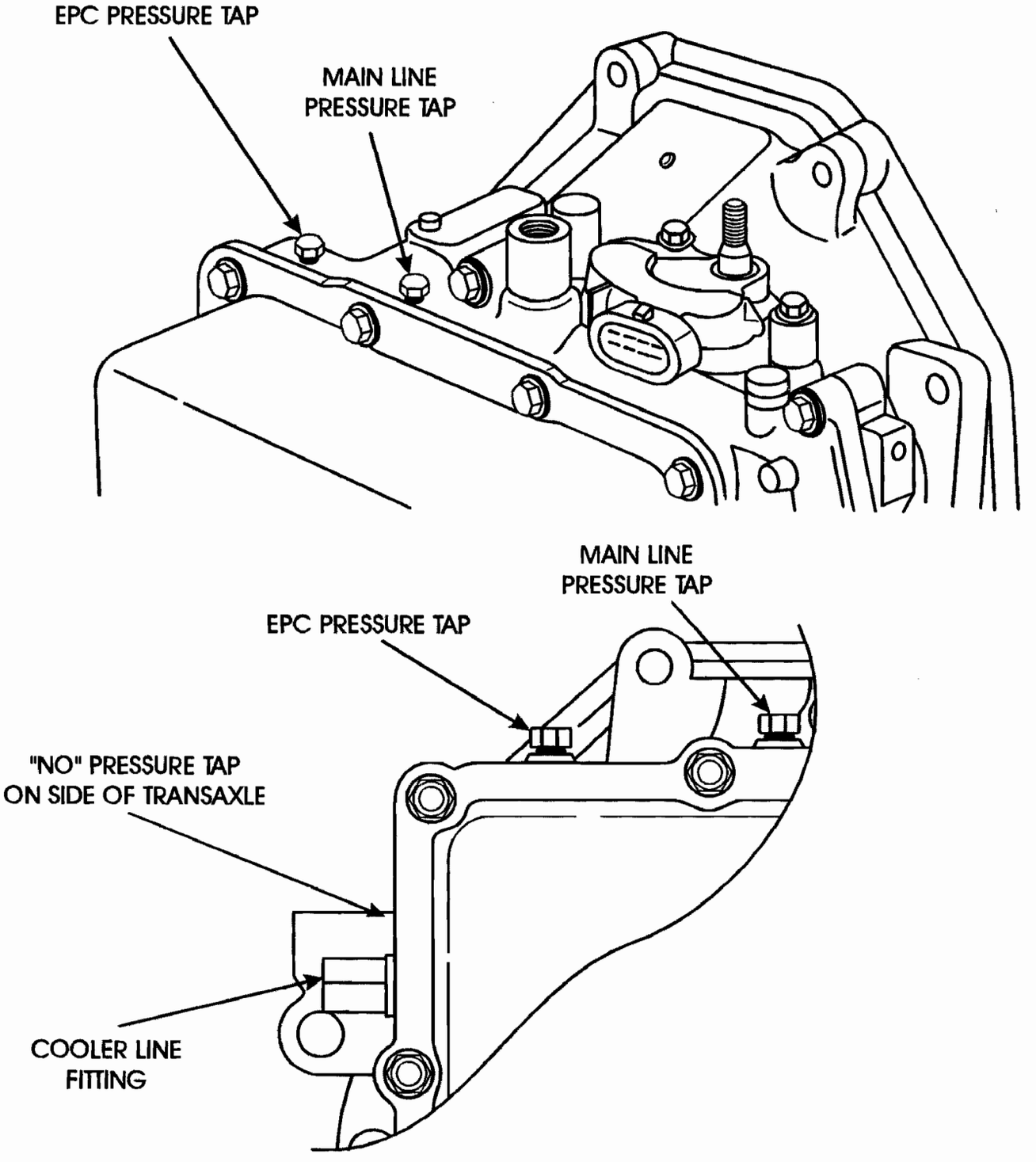

Figure 2

FORD AX4S (AXODE)
1991-1996 APPLICATION CHART

MODEL YEAR	VEHICLE	ENGINE	TRANS MODEL	DRIVE SPRKT	DRIVE SPROCKET PART NUMBER	DRIVEN SPRKT	DRIVEN SPROCKET PART NUMBER
1991	CONTINENTAL	3.8L	PNA-EB	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
	TAURUS/SABLE	3.0L	PNA-EC	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
	TAURUS/SABLE	3.8L	PNA-EA	38T	E9DZ-7G129-A	35T	F1DZ-7G132-C
1992	CONTINENTAL	3.8L	PNA-EK	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
	TAURUS/SABLE	3.0L	PNA-EG	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
	TAURUS/SABLE	3.8L	PNA-EH	38T	E9DZ-7G129-A	35T	F1DZ-7G132-C
1993	CONTINENTAL	3.8L	PNA-EK	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
	TAURUS SHO	3.2L	PNA-EJ	35T	F3DZ-7G129-A	38T	F3DZ-7G132-B
	TAURUS/SABLE	3.0L	PNA-EG	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
	TAURUS/SABLE	3.8L	PNA-EH	38T	E9DZ-7G129-A	35T	F1DZ-7G132-C
1994	CONTINENTAL	3.8L	PNA-ES	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
	TAURUS SHO	3.2L	PNA-EN	35T	F3DZ-7G129-A	38T	F3DZ-7G132-B
	TAURUS/SABLE	3.0L	PNA-EP	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
	TAURUS/SABLE	3.8L	PNA-ER	38T	E9DZ-7G129-A	35T	F1DZ-7G132-C
	TAURUS/POLICE	3.8L	PNA-ET	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
1995	CONTINENTAL	3.8L	PNA-ES	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
	TAURUS SHO	3.2L	PNA-EN	35T	F3DZ-7G129-A	38T	F3DZ-7G132-B
	TAURUS/SABLE	3.0L	PNA-EP	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
	TAURUS/SABLE	3.8L	PNA-ER	38T	E9DZ-7G129-A	35T	F1DZ-7G132-C
	TAURUS/POLICE	3.8L	PNA-ET	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
	WINDSTAR	3.0L	PNA-WA	34T	F1DZ-7G129-A	39T	F1DZ-7G132-B
	WINDSTAR	3.8L	PNA-WB	37T	E6DZ-7G129-A	36T	F1DZ-7G132-A
1996	TAURUS/SABLE	3.0L	PNA-EU	35T	F6DZ-7G129-A	38T	F6DZ-7G132-A
	WINDSTAR	3.0L	PNA-WA	34T	F1DZ-7G129-A	39T	F1DZ-7G132-B
	WINDSTAR	3.8L	PNA-WC	38T	E9DZ-7G129-A	39T	F1DZ-7G132-B

FORD AX4N

1994-1996 APPLICATION CHART

MODEL YEAR	VEHICLE	ENGINE	TRANS MODEL	DRIVE SPRKT	DRIVE SPROCKET PART NUMBER	DRIVEN SPRKT	DRIVEN SPROCKET PART NUMBER
1994	TAURUS/SABLE	3.0L	PNB-AA	37T	E6DZ-7G129-A	36T	F5DZ-7G132-A
1995	CONTINENTAL	4.6L	PNB-GA	38T	F6OZ-7G129-A	36T	F5OZ-7G132-A
	CONTINENTAL	4.6L	PNB-CA	38T	F6OZ-7G129-A	36T	F5OZ-7G132-A
	TAURUS/SABLE	3.0L	PNB-AA	37T	E6DZ-7G129-A	36T	F5DZ-7G132-A
1996	CONTINENTAL	4.6L	PNB-GA	38T	F6OZ-7G129-A	36T	F5OZ-7G132-A
	CONTINENTAL	4.6L	PNB-CA	38T	F6OZ-7G129-A	36T	F5OZ-7G132-A
	TAURUS SHO	3.4L	PNB-EA	35T	F3DZ-7G129-A	38T	F5DZ-7G132-B
	TAURUS/SABLE	3.0L-V	PNB-AA	37T	E6DZ-7G129-A	36T	F5DZ-7G132-A
	TAURUS/SABLE	3.0L-M	PNB-DA	35T	F3DZ-7G129-A	38T	F5DZ-7G132-B
	TAURUS/SABLE	3.0L-M	PNB-HA	35T	F3DZ-7G129-A	38T	F5DZ-7G132-B

Notes: ***3.0L-V = Vulcan Engine = Single Cam***
3.0L-M = Modular Engine = Twin Cam


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FORD MOTOR COMPANY UNITS

REPROGRAM AND/OR REPLACE THE PCM

Included on the following pages are several different models of Ford Motor Company transmissions and transaxles, that may exhibit transmission related problems, and ***may require*** reprograming the PCM and in some cases ***may require*** replacing the PCM. After you have exhausted all possibilities of internal and/or external sensor concerns, you may want to consider the PCM. We have included the Ford Motor Company bulletin numbers on the following pages, as the parts person sometimes is unaware of these concerns.

CONCERNS THAT MAY REQUIRE REPLACING OR REPROGRAMING THE PCM

AODE/4R70W

● TRANSMISSION - AODE - 4R70W - SHUDDER OR VIBRATION UNDER LIGHT TO MODERATE ACCELERATION ABOVE 56KM/H (35MPH) WHILE IN 3RD OR 4TH GEAR (1996-1997 THUNDERBIRD/COUGAR - 3.8L AND 4.6L) (1996-1997 CROWN VICTORIA/GRAND MARQUIS) (1996-1997 LINCOLN TOWN CAR)	FORD BULLETIN NUMBER 97-9-10

AX4S/AX4N

● TRANSAXLE - AX4S - HARSH DOWNSHIFTS FROM 3RD TO 2ND DURING BRAKING AND/OR COASTING TO A STOP -- VEHICLES EQUIPPED WITH THE 3.0L 2-VALVE ENGINE (1996 TAURUS/SABLE)	FORD BULLETIN NUMBER 97-15-12

● TRANSAXLE - AX4S-AX4N - STALLING ON TRANSAXLE ENGAGEMENT -- COLD ENGINE - 3.0L 2-VALVE VEHICLES ● TRANSAXLE - AX4S-AX4N - HARSH ENGAGEMENT - SABLE BUILT THROUGH 9/16/96 AND TAURUS BUILT THROUGH 8/16/96 -- 3.0L VEHICLES (1996-1997 TAURUS/SABLE)	FORD BULLETIN NUMBER 97-7-1

● TRANSAXLE - AX4N - DELAYED 4-2 DOWNSHIFT AND HESITATION/STUMBLE -- VEHICLES EQUIPPED WITH 3.0L 4-VALVE ENGINE (1996-1997 TAURUS/SABLE)	FORD BULLETIN NUMBER 97-7-2

CONCERNS THAT MAY REQUIRE REPLACING OR REPROGRAMING THE PCM

CD4E

● TRANSAXLE - CD4E - MALFUNCTION INDICATOR LAMP (MIL) ILLUMINATED -- DIAGNOSTIC TROUBLE CODES (DTCS) P0133 AND P0153 STORED IN MEMORY -- WITH 2.5L ENGINE (1995-1997 CONTOUR/MYSTIQUE) ● TRANSAXLE - CD4E - VEHICLE STALLS WHEN TRANSAXLE IS ENGAGED AFTER START-UP AT AMBIENT TEMPS OF 20°-50°F (-7° TO 10°C) --- VEHICLES BUILT WITH THE 2.5L ENGINE (1995-1997 CONTOUR/MYSTIQUE)	FORD BULLETIN NUMBER 97-12-3

4R55E

● TRANSMISSION - 4R55E - 2-1 COASTDOWN BUMP -- VEHICLES EQUIPPED WITH 4.0L ENGINE AND 4R55E TRANSMISSION (1995-1996 RANGER)	FORD BULLETIN NUMBER 97-22-9

E4OD

● TRANSMISSION - E4OD - HARSH 1-2 UPSHIFT ON LIGHT THROTTLE -- VEHICLES EQUIPPED WITH 5.4L ENGINE AND E4OD TRANSMISSION (1997 ECONOLINE)	FORD BULLETIN NUMBER 97-22-14

CONCERNS THAT MAY REQUIRE REPLACING OR REPROGRAMING THE PCM

5R55E

● TRANSMISSION - 5R55E - DIAGNOSTIC TROUBLE CODE (DTC) P0756 OR P1701 STORED IN MEMORY ON VEHICLES EQUIPPED WITH 4.0L ENGINE (1997 RANGER)	FORD BULLETIN NUMBER 97-22-16

● TRANSMISSION - 5R55E - DELAYED SHIFT ENGAGEMENT FROM "REVERSE" TO "DRIVE" IN AMBIENT TEMPERATURES OF 20°-70°F (-7° TO 21°C) VEHICLES WITH 4.0L ENGINE ● TRANSMISSION - 5R55E - SHIFT BUSYNESS BETWEEN 48-64 KM/H (30-40 MPH) -- VEHICLES EQUIPPED WITH 4.0L ENGINE (1997 AEROSTAR)	FORD BULLETIN NUMBER 97-15-26

● TRANSMISSION - 5R55E - DELAYED SHIFT ENGAGEMENT FROM "REVERSE" TO "DRIVE" IN AMBIENT TEMPERATURES OF 0°-50°F (-18° TO 10°C) VEHICLES EQUIPPED WITH 3.0L ENGINE (1997 AEROSTAR) ● TRANSMISSION - 5R55E - HESITATION/SURGE AT 56-72 KM/H (35-45 MPH) IN AMBIENT TEMPERATURES OF 0°-50°F (-18° TO 10C) -- VEHICLES EQUIPPED WITH THE 3.0L ENGINE (1997 AEROSTAR)	FORD BULLETIN NUMBER 97-14-18

FORD AXOD/AXODE

NO MOVEMENT OR NO CONVERTER CLUTCH

COMPLAINT: Before and/or after rebuild, the vehicle exhibits one of the following:

1. ***"No Movement" in forward or reverse.***
2. ***"No Converter Clutch" apply at any speed.***

CAUSE: The cause may be, one of the following:

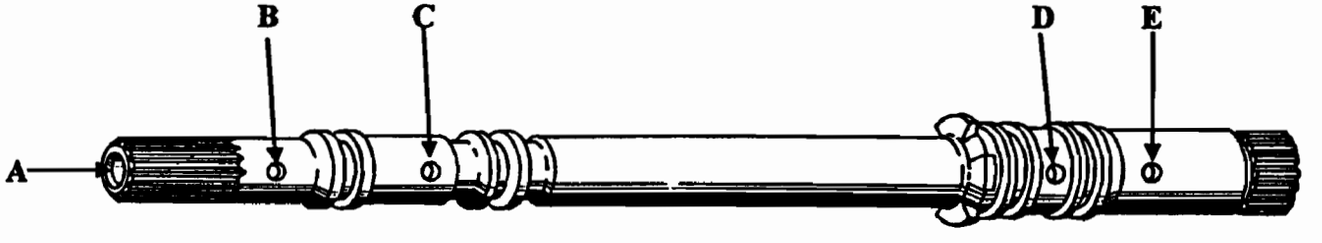
1. ***The converter feed passage in the Oil Pump Drive Shaft blocked with debris or was not machined properly to allow converter feed oil to enter the converter.***
2. ***The Oil Pump Drive Shaft leaking or not machined properly, allowing converter feed passage and converter release passage to be connected.***

CORRECTION: Refer to Figure 1 to *check* the Oil Pump Drive Shaft, and clean or replace as necessary.
NOTE: We have seen some replacement shafts, both reman and new that were leaking between the converter apply and release passages.

SERVICE INFORMATION:

Oil Pump Drive Shaft (AXOD/AXODE) E6DZ-7B328-A

OIL PUMP DRIVE SHAFT



NOTE: THERE ARE ADJOINING HOLES ON THE OPPOSITE SIDE OF THE OIL PUMP DRIVE SHAFT THAT ARE NOT ILLUSTRATED.

APPLY AIR PRESSURE INTO HOLE "D" AND ENSURE THAT AIR PRESSURE ESCAPES THROUGH HOLE "C" ONLY.

APPLY AIR PRESSURE INTO HOLE "A" AND ENSURE THAT AIR PRESSURE ESCAPES THROUGH HOLES "B"&"E" ONLY.

Figure 1

THE BEST PRODUCTS ALWAYS RISE TO THE TOP!

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- Prevents Torque Converter Lock Up Shudder & Sticking Valves
- Utilizes Synthetic Technology used by OEMs
- Inhibits Overheating & Oxidation
- Extends Fluid Life
- Makes Service Jobs Profitable

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- Prevents Torque Converter Lock Up Shudder & Sticking Valves
- Big Profit Increase

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FORD AOD-E/4R70W
GEAR TRAIN DIFFERENCES AND IDENTIFICATION

The Ford AOD-E which was introduced in 1992, and the Ford 4R70W which was introduced in 1993, look identical from the external appearances of the transmission, but have different gear ratios as shown in the chart below. This means that the gear train components have different tooth counts and look very similar when compared, but ***will not interchange***. Use this bulletin to identify the gear train components to ensure proper build content.

AOD-E	4R70W
1ST = 2.40 Ratio	1ST = 2.84 Ratio
2ND = 1.47 Ratio	2ND = 1.55 Ratio
3RD = 1.00 Ratio	3RD = 1.00 Ratio
4TH = 0.67 Ratio	4TH = 0.70 Ratio
REV = 2.00 Ratio	REV = 2.32 Ratio

OUTPUT SHAFT RING GEAR SUPPORT

There is a different profile on the supports and each support ***requires*** a different style rear case bearing, as shown in Figure 1. The AOD-E transmission ***requires*** a two piece open (needles exposed) rear case bearing that is approximately .113" thick (See Figure 1). The 4R70W transmission ***requires*** a three piece closed (needles not exposed) rear case bearing that is approximately .144" thick (See Figure 1).

OUTPUT SHAFT RING GEAR

The AOD-E has 72 teeth on the Output Shaft Ring Gear, and the direct drum ***will not*** pass through the front side of the ring gear (See Figure 2).
The 4R70W has 88 teeth on the Output Shaft Ring Gear, and the direct drum ***will*** pass through the front side of the ring gear (See Figure 2).

PLANETARY CARRIER ASSEMBLY

The AOD-E has 18 teeth on both the long, and the short pinions, and the thrust plate retaining pins are ***flush*** with the retaining plate (See Figure 3).
The 4R70W has 25 teeth on the long pinions, 24 teeth on the short pinions, and the thrust plate retaining pins are ***recessed*** (See Figure 3).

REVERSE SUN GEAR AND SUN GEAR SHELL

The AOD-E has 36 teeth on the Reverse Sun Gear Shell and the outside diameter of the gear is approximately 2.600" (See Figure 4).
The 4R70W has 38 teeth on the Reverse Sun Gear Shell and the outside diameter of the gear is approximately 2.438" (See Figure 4).

Continued on next Page.

FORWARD CLUTCH SUN GEAR

The AOD-E has 30 teeth on the sun gear and the outside diameter of the gear is approximately 2.225", as shown in Figure 4.
The 4R70W has 31 teeth on the sun gear and the outside diameter of the gear is approximately 2.062", as shown in Figure 4.

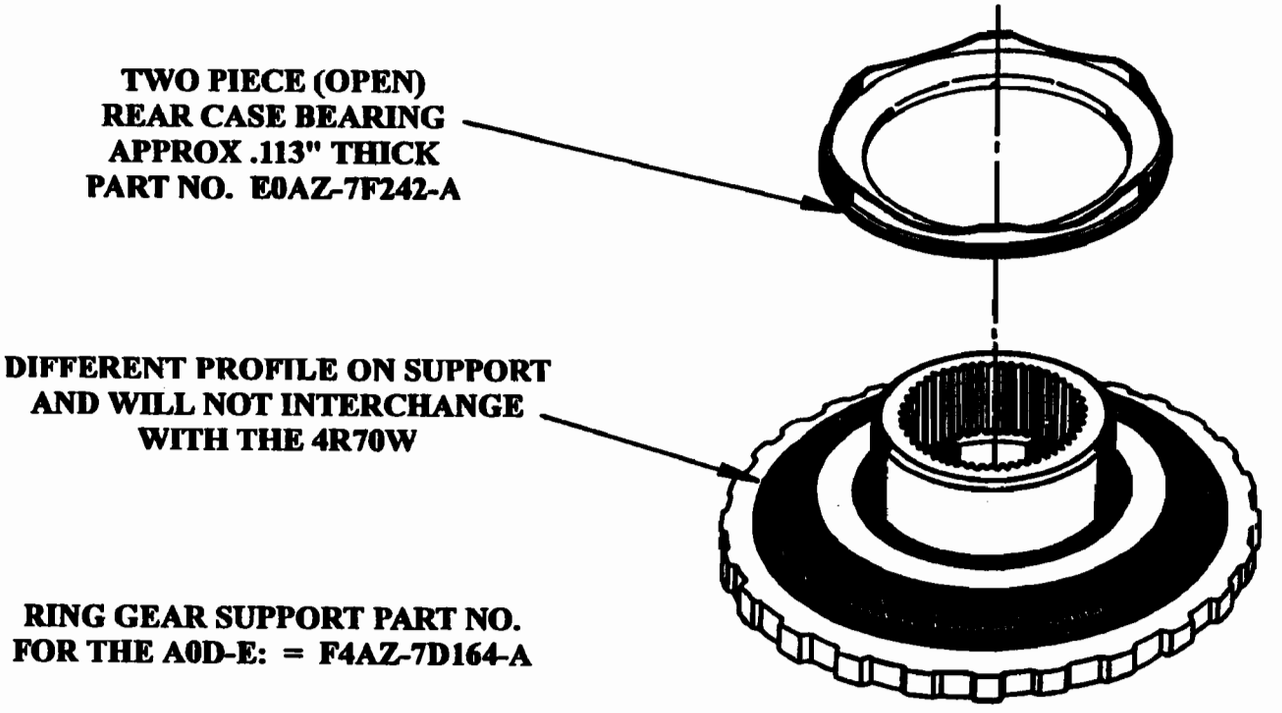
OUTPUT SHAFT

The output shaft on the AOD-E transmission is approximately one inch longer than the 4R70W output shaft.

PART NUMBER INFORMATION

	AOD-E	4R70W
Output Shaft Hub (Support)	F4AZ-7D164-A	F3LY-7D164-B
Rear Case Bearing (Number 9)	E0AZ-2F242-A	F3LY-7F242-A
Output Shaft Ring Gear	F4AZ-7A153-A	F3LY-7A233-A
Planetary Carrier Assembly	F2AZ-7A398-A	F3LY-7A398-A
Forward Clutch Sun Gear	E0AZ-7A399-A	F3LY-7A399-A
Reverse Sun Gear and Shell Assembly	F4AZ-7A019-A	F4SZ-7A019-A

FORD AOD-E
OUTPUT SHAFT RING GEAR SUPPORT AND
REAR CASE BEARING IDENTIFICATION



FORD 4R70W
OUTPUT SHAFT RING GEAR SUPPORT AND
REAR CASE BEARING IDENTIFICATION

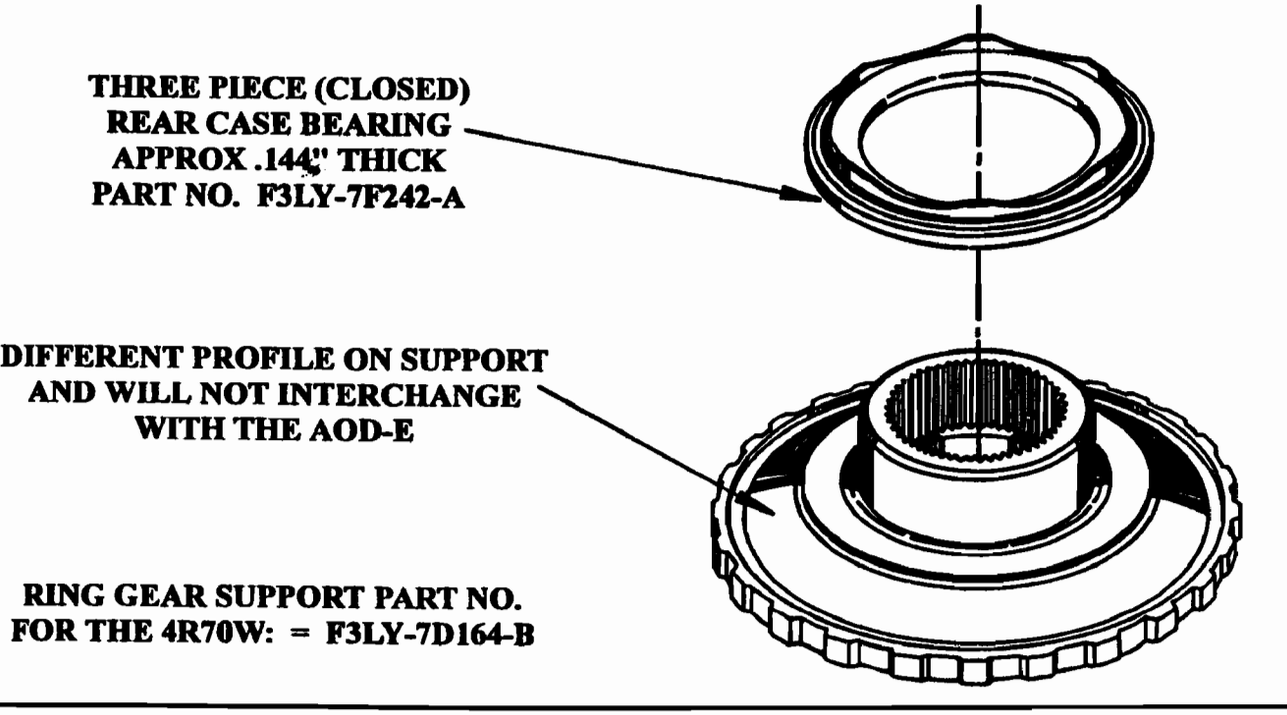
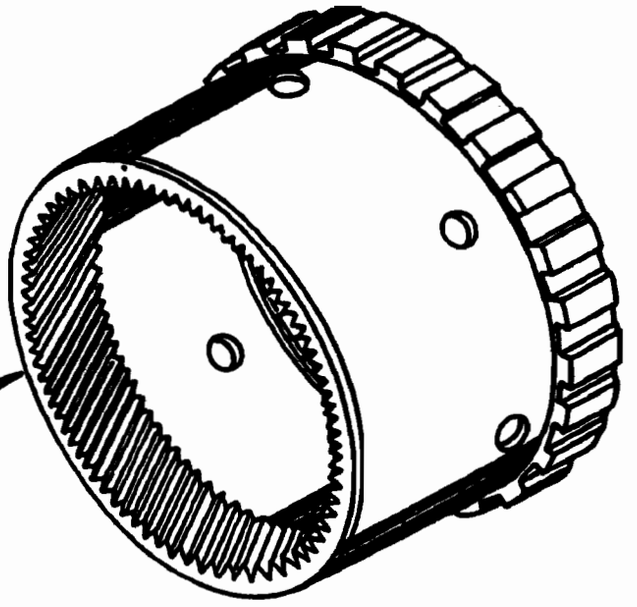


Figure 1

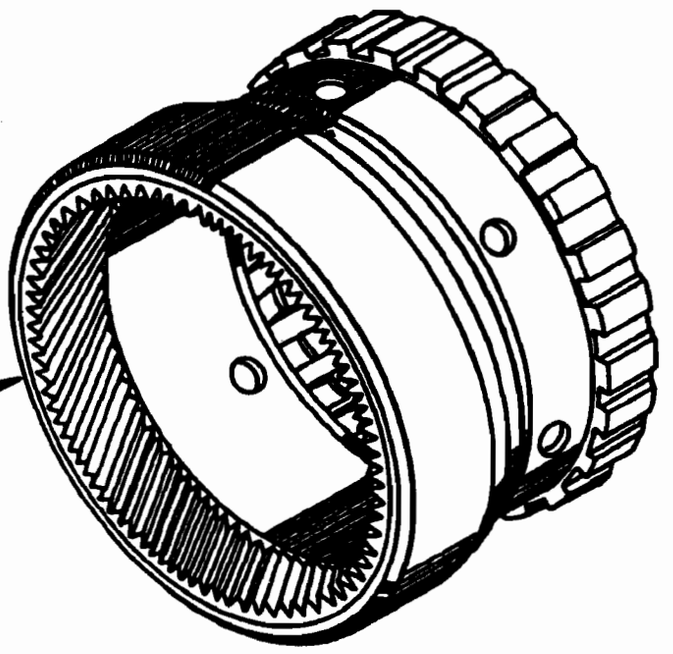
FORD AOD-E
OUTPUT SHAFT RING GEAR
PART NO. F4AZ-7A153-A



72 TEETH, AND THE RING GEAR IS SMALLER IN DIAMETER THAN THE 4R70W RING GEAR

DIRECT CLUTCH HOUSING CANNOT BE REMOVED THROUGH FRONT

FORD 4R70W
OUTPUT SHAFT RING GEAR
PART NO. F3LY-7A233-A

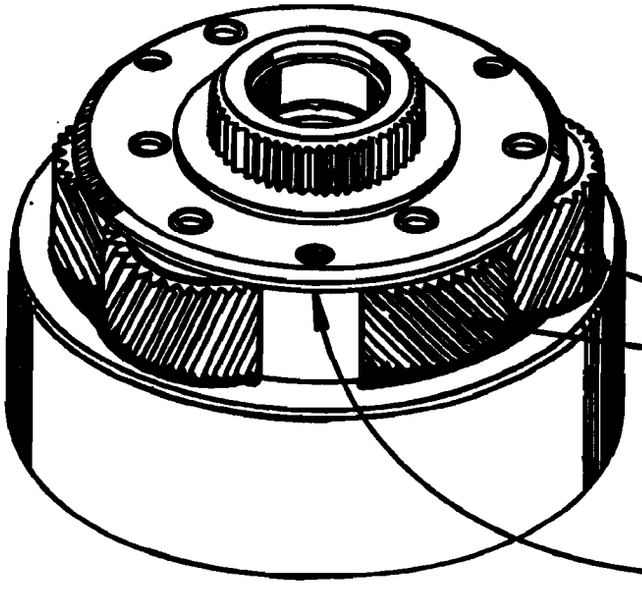


88 TEETH, AND THE RING GEAR IS LARGER DIAMETER THAN THE AOD-E RING GEAR

DIRECT CLUTCH HOUSING CAN BE REMOVED THROUGH FRONT

Figure 2

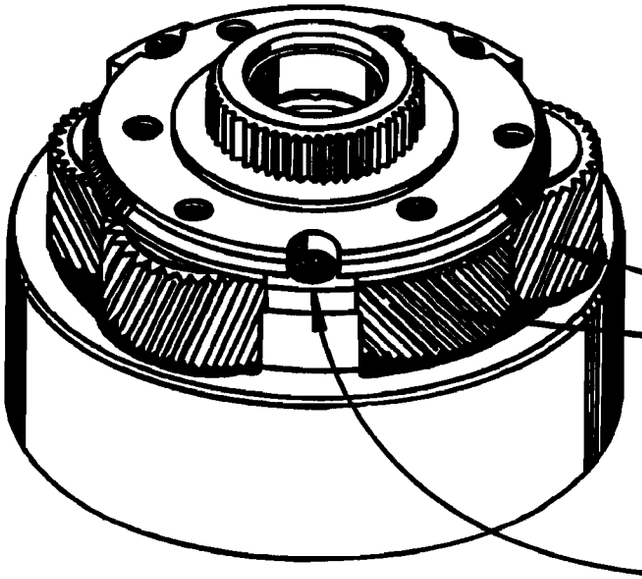
FORD AOD-E
PLANETARY CARRIER ASSEMBLY
PART NO. F2AZ-7A398-A



LONG PINIONS : 18 TEETH
SHORT PINIONS: 18 TEETH

THRUST PLATE RETAINING PINS ARE FLUSH WITH PLATE

FORD 4R70W
PLANETARY CARRIER ASSEMBLY
PART NO. F3LY-7A398-A

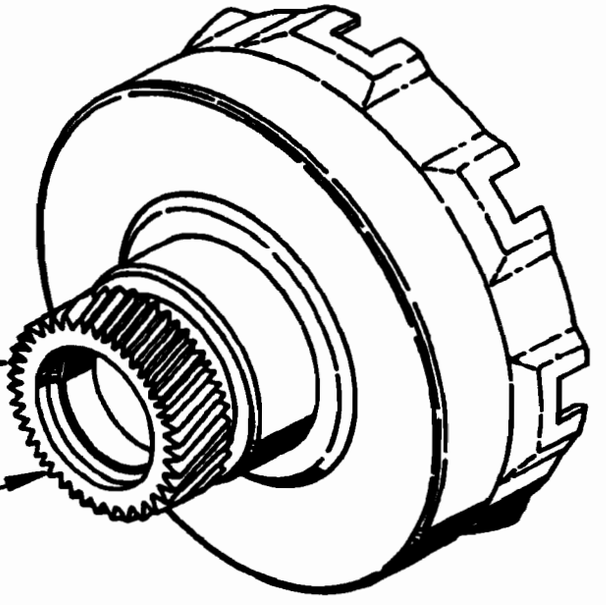


LONG PINIONS: 25 TEETH
SHORT PINIONS: 24 TEETH

THRUST PLATE RETAINING PINS ARE RECESSED ON PLATE

Figure 3

REVERSE SUN GEAR AND SUN GEAR SHELL IDENTIFICATION

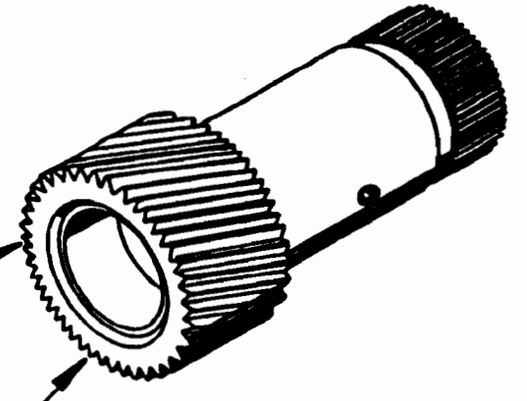


AOD-E: = 36 TEETH ON SUN GEAR
4R70W: = 38 TEETH ON SUN GEAR

AOD-E: = 2.600" OUTSIDE GEAR DIAMETER
4R70W: = 2.438" OUTSIDE GEAR DIAMETER

AOD-E: = PART NO. F4AZ-7A019-A
4R70W: = PART NO. F4SZ-7A019-A

FORWARD CLUTCH SUN GEAR IDENTIFICATION



AOD-E: = 30 TEETH ON SUN GEAR
4R70W: = 31 TEETH ON SUN GEAR

AOD-E: = 2.225" OUTSIDE GEAR DIAMETER
4R70W: = 2.062" OUTSIDE GEAR DIAMETER

AOD-E: = PART NO. E0AZ-7A399-A
4R70W: = PART NO. F3LY-7A399-A

Figure 4

FORD 4R70W

3-NEUTRAL SHIFT AND FORWARD CLUTCHES BURNT

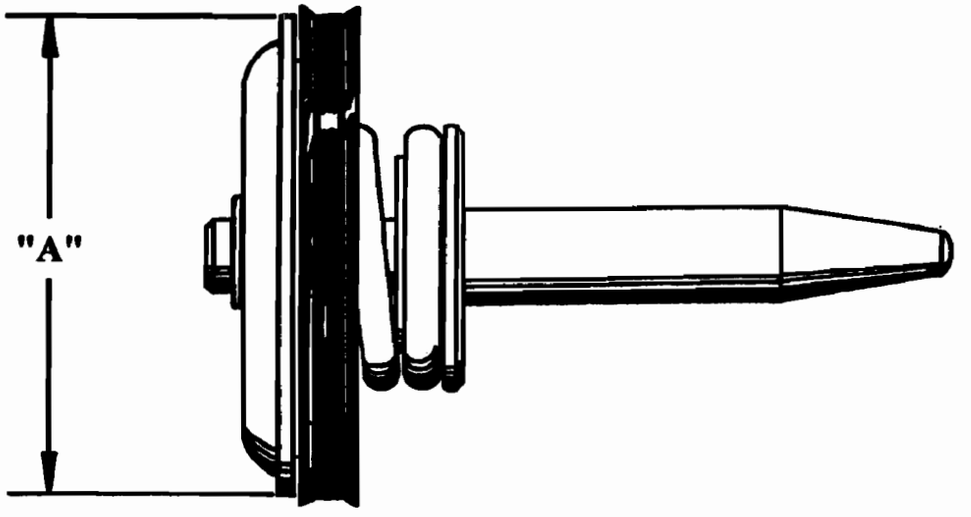
COMPLAINT: After overhaul, the 4R70W transmission displays a 3-neutral upshift, and upon disassembly you find the forward clutches burnt.

CAUSE: The cause may be a mis-assembled Overdrive Servo Assembly, with the "Rubber Coated Sleeve" omitted. The 4R70W transmission is calabrated with a smaller diameter overdrive servo piston than is the AOD-E transmission. To retain a common case between the two transmissions, an additional "Rubber Coated Sleeve" is required on the 4R70W Overdrive Servo Assembly, as shown in Figure 6.

CORRECTION: Install the "Rubber Coated Sleeve" in the Overdrive Servo Assembly, as shown in Figure 6. If your rubber coated sleeve is missing or lost, you ***MUST*** buy the complete Overdrive Servo Assembly, available under OEM part number F3LY-7H188-A. It is not available individually.
Overdrive servo piston dimensions are shown in Figure 5, to identify the two different overdrive pistons.

SERVICE INFORMATION:

4R70W Overdrive Servo Assembly (Includes Sleeve) F3LY-7H188-A
AOD-E Overdrive Servo Assembly F2VY-7H188-A



DIMENSION "A" = 2.470" (4R70W PISTON)
DIMENSION "A" = 2.680" (AOD-E PISTON)

Figure 5

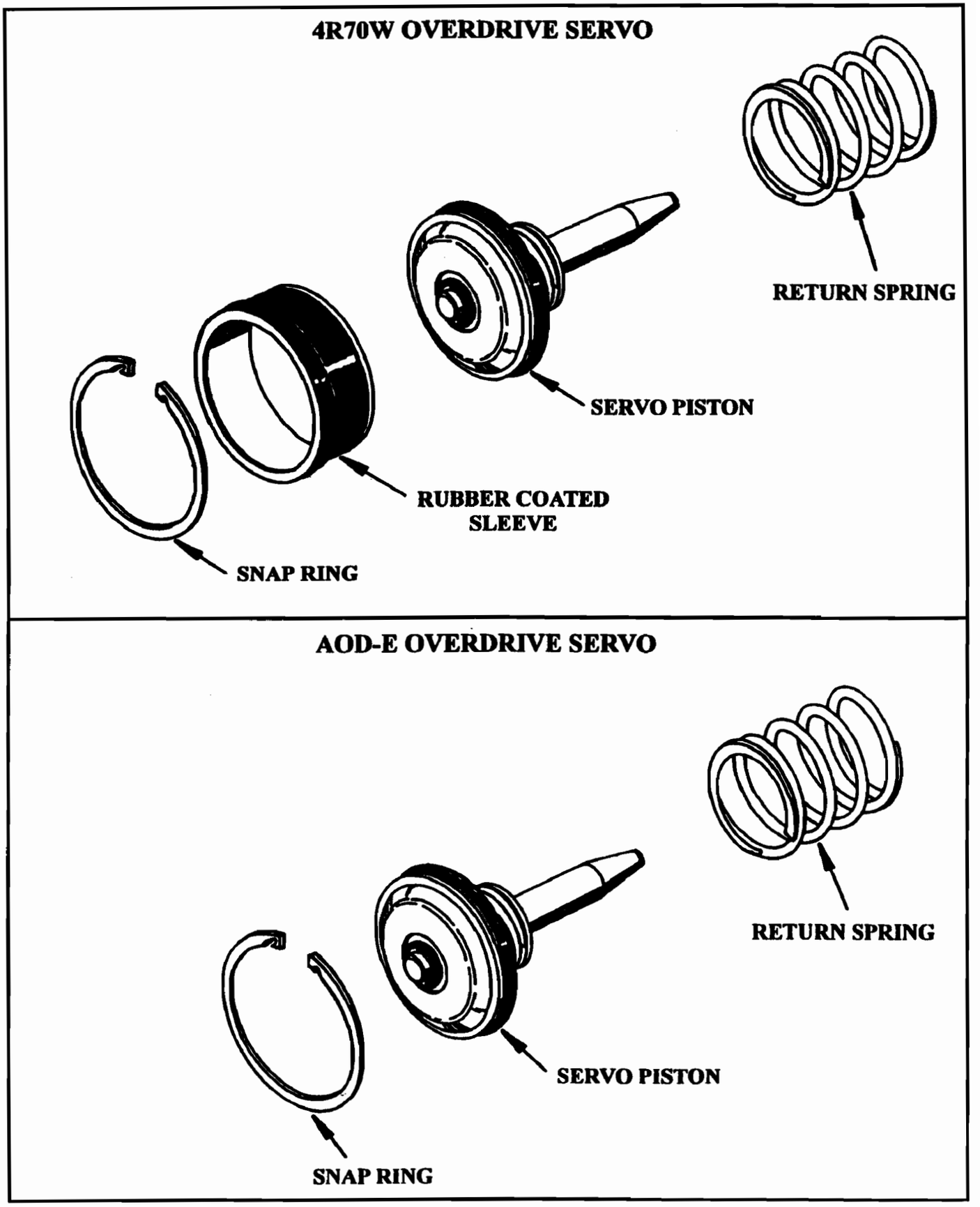

4R70W OVERDRIVE SERVO
RETURN SPRING
SERVO PISTON
RUBBER COATED SLEEVE
SNAP RING
AOD-E OVERDRIVE SERVO
RETURN SPRING
SERVO PISTON
SNAP RING

Figure 6

Hundreds of New Data Parameters, Plus GM Bi-Directional Controls, Ford ABS & Body (G.E.M.) Systems, and Universal OBD-II Coverage!

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Used with the Asian Import Primary cartridge, this new Fast-Track® Troubleshooter covers virtually all electronically-controlled transmissions and most hydraulically-controlled through 1995. The Troubleshooter gives you the following types of VIN-specific tips for specific transmissions:

- Code Tips (including OBD-II codes)
- Standardized Symptom Tips
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- Technical Assistance
- Fast-Track Data Scan (normal sensor values and ranges)
- Overhaul Tips

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CONNECTOR AND TERMINAL I.D.
1993-1997 LH MODELS

The 42LE transaxle has both the solenoid body and transmission range sensor mounted on the valve body. Each have their own connector coming through the case both of which are not easily accessible with the unit installed in the vehicle. To perform resistance checks of the solenoids, voltage checks on the pressure switches, resistance or volt checks on the Transmission Range Sensor (TRS) is near impossible at the case connector. The harness plugging into the solenoid body and the Transmission Range Sensor runs up to the top of the case above the bell housing where it plugs into the main vehicle harness (See Figure 1). This short wiring harness from the bell housing down to the solenoid body and TRS will allow for checks to be performed with ease. Figure 2 shows the top two connectors in this short pig tail harness. Each pin in these two connectors are numbered and identified. Should a resistance check need to be made on the solenoid body, rather than unplugging the solenoid body at the case (which could fill up with fluid if the unit is full), locate the 8 pin connector above the bell housing and unplug it. Place the positive meter lead of an ohm meter to pin 7. With the negative lead, touch pins 1, 2, 3 and 8 to obtain all 4 solenoid resistance values (See Figure 3). The chart in Figure 3 also provides checks that can be made through the 12 pin connector on the Turbine Shaft RPM sensor, the Output RPM sensor and the Transmission Fluid Temperature sensor. Figures 4, 5 and 6 provide terminal I.D. for the solenoid and TRS case connectors as testing information. Figure 7 provides information for solenoid resistance checks at the TCM. Figure 8 provides a chart which can be used to perform continuity checks across the harness.

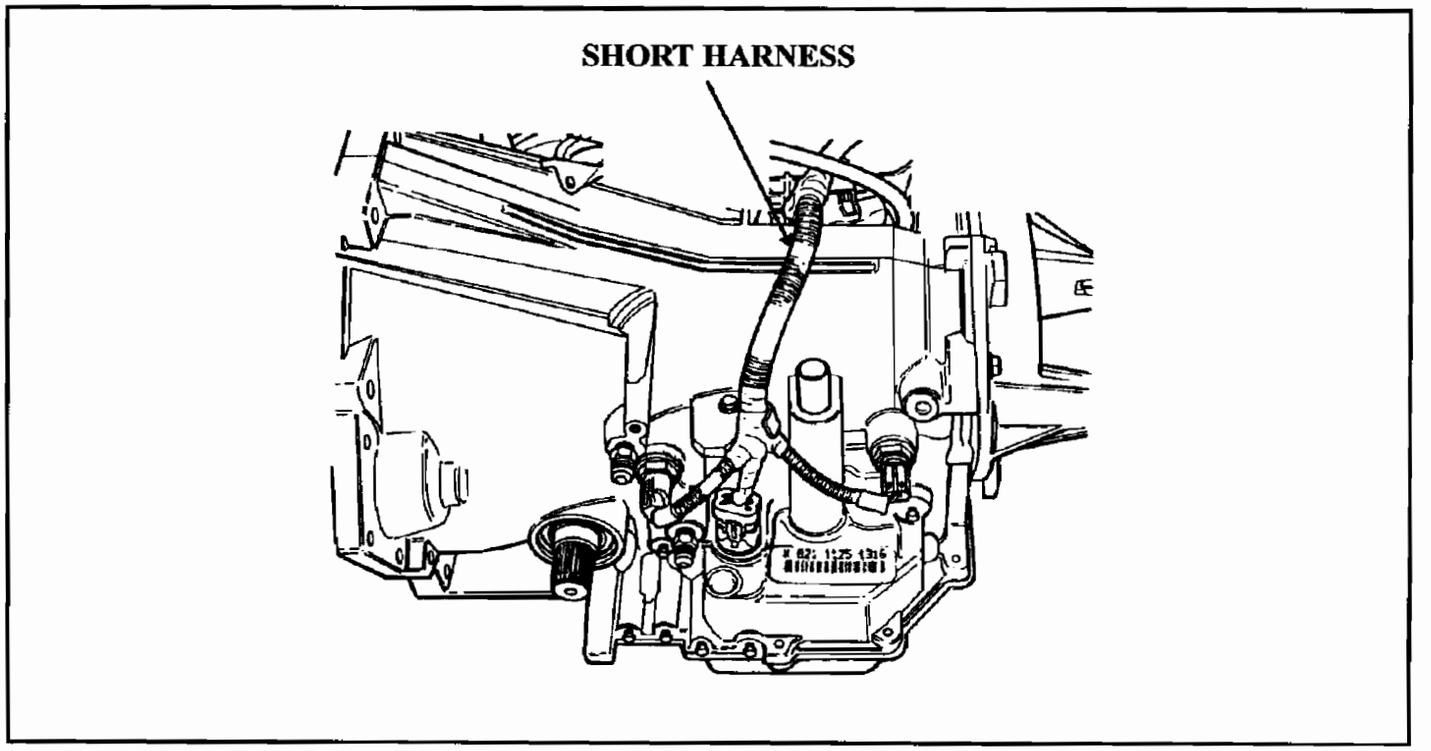
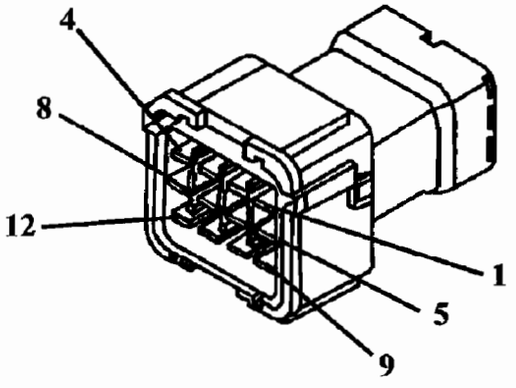


Figure 1

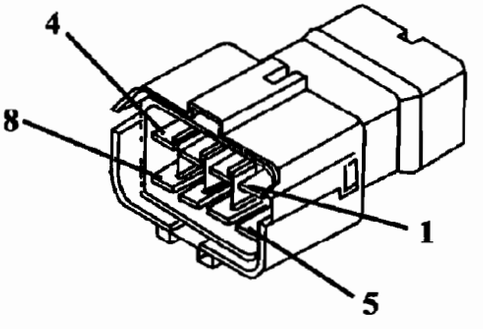
12 PIN CONNECTOR (TRANSMISSION SIDE)



CAVITY	COLOR	FUNCTION
1	RD/BK	INPUT SPEED SENSOR SIGNAL
2	DB/BK	SPEED SENSOR GROUND
3	LG/WT	OUTPUT SPEED SENSOR SIGNAL
4	BR/YL	TRS-T1 SENSE
5	VT/WT	TRS-T2 SENSE
6	VT	TRS-T3 SENSE
7	LG/BK	TRS-T4 SENSE
8	VT *	TRANS TEMP. SENSOR SIGNAL
9	DG/OR *	AUTOMATIC SHUT DOWN RELAY
10	VT/BK	REVERSE LAMP SENSE
11	WT	FUSED IGNITION SWITCH OUTPUT
12	BK/LG	FUSED IGNITION SWITCH OUTPUT

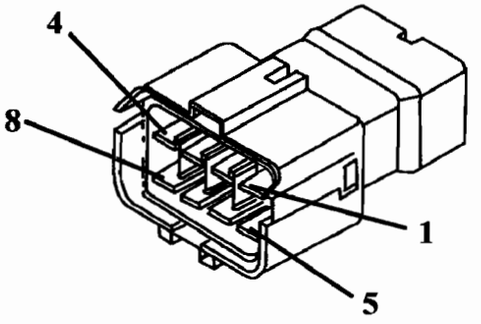
* 1996-97 LH

8 PIN CONNECTOR (TRANSMISSION SIDE)

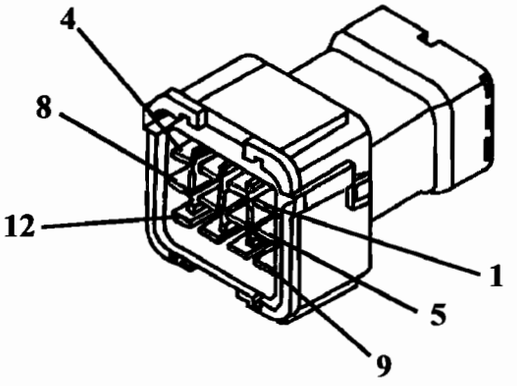


CAVITY	COLOR	FUNCTION
1	BR	O.D. SOLENOID
2	WT	2-4 SOLENOID
3	PK	U.D. SOLENOID
4	DG	L-R PRESSURE SWITCH
5	YL/BK	2-4 PRESSURE SWITCH
6	OR/BK	O.D. PRESSURE SWITCH
7	RD	TRANS CONTROL RELAY OUTPUT
8	LB	L-R SOLENOID

Figure 2



TEST	POSITIVE LEAD	NEGATIVE LEAD	RESISTANCE
L/R SOLENOID	7	8	1.5-2.0 OHMS
2-4 SOLENOID		2	1.5-2.0 OHMS
UD SOLENOID		3	1.5-2.0 OHMS
OD SOLENOID		1	1.5-2.0 OHMS



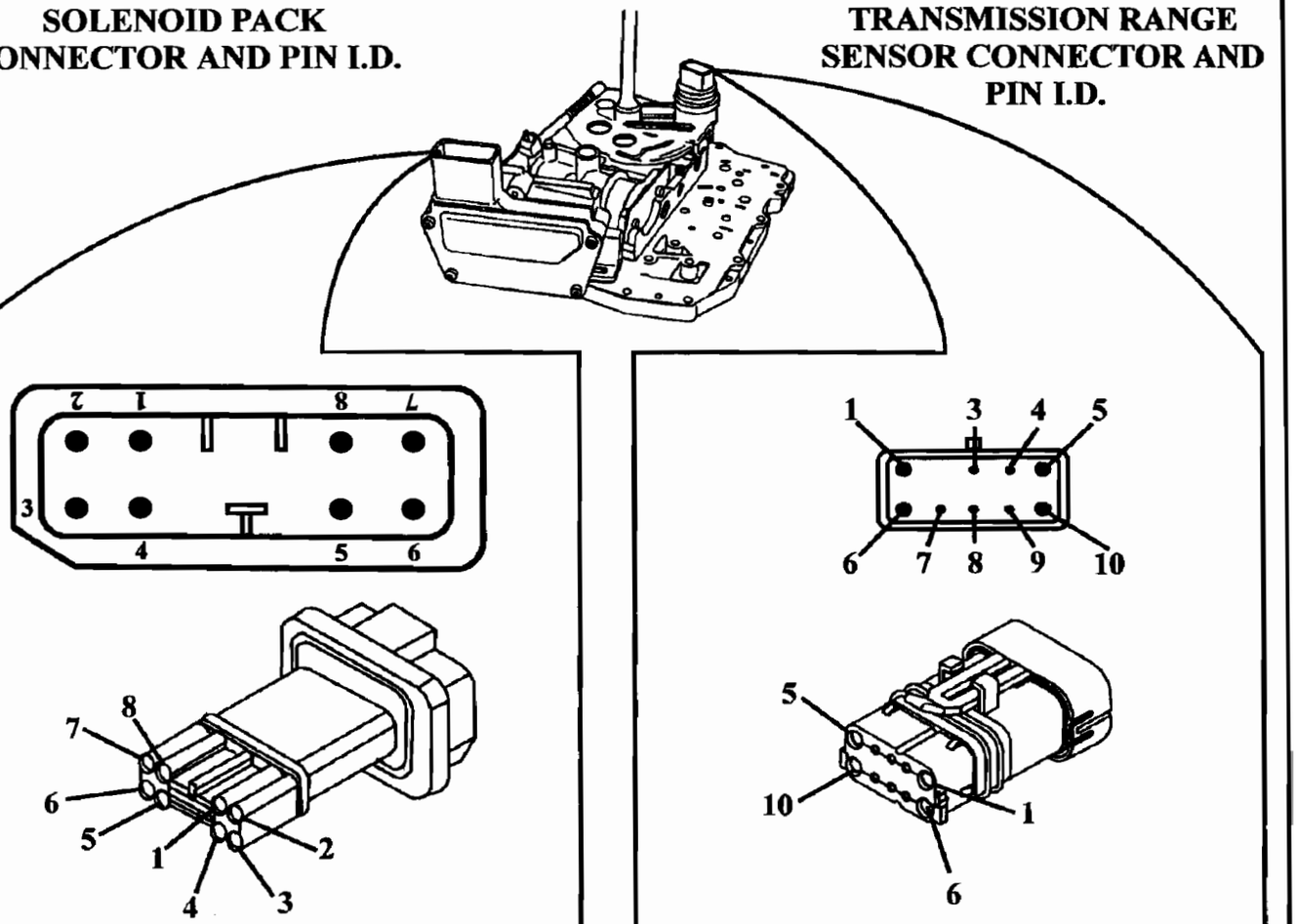
TEST	POSITIVE LEAD	NEGATIVE LEAD	RESISTANCE
TURBINE RPM	1		300-1200 OHMS
OUTPUT RPM	3	2	300-1200 OHMS
TEMP. SENSOR	8		VARIES (See Page 83)

Figure 3

1993-1997 LH MODELS

SOLENOID PACK CONNECTOR AND PIN I.D.

TRANSMISSION RANGE SENSOR CONNECTOR AND PIN I.D.



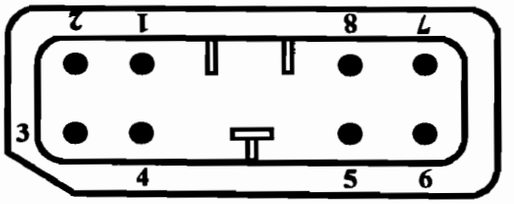
CAVITY	COLOR	FUNCTION
1	OR/BK	O.D. PRESSURE SWITCH
2	DG	L-R PRESSURE SWITCH
3	YL/BK	2-4 PRESSURE SWITCH
4	RD	TRANS CONTROL RELAY OUTPUT (SWITCHED B(+))
5	WT	2-4 SOLENOID
6	OR/BK	L-R SOLENOID
7	RD	O.D. SOLENOID
8	LB	U.D. SOLENOID

CAVITY	COLOR	FUNCTION
1	WT	FUSED IGNITION SWITCH OUTPUT
3	DB/BK *	SPEED SENSOR GROUND
4	VT *	TRANS. TEMP. SENSOR SIGNAL
5	BK/LG	PARK/NEUT. POSITION SWITCH SENSE
6	VT/BK	REVERSE LAMP SENSE
7	LG/BK	TRS T1 SENSE
8	VT	TRS T3 SENSE
9	VT/WT	TRS T42 SENSE
10	BR/YL	TRS T41 SENSE

* 1996-97 LH

Figure 4

SOLENOID AND PRESSURE SWITCH ASSEMBLY TEST

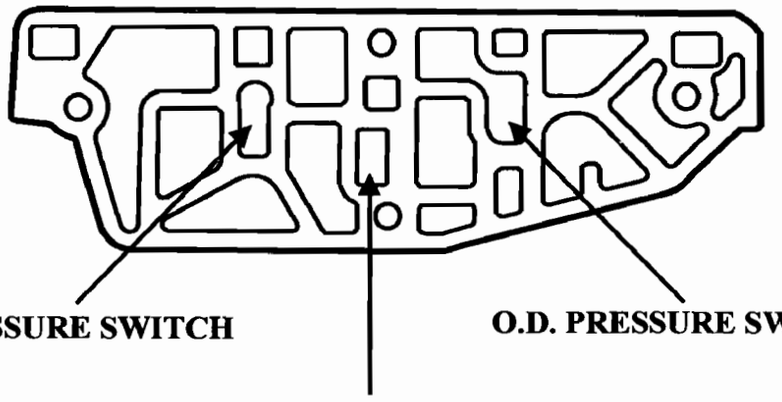


OHM TEST

ALL 4 SOLENOIDS RANGE BETWEEN APPROXIMATELY 1.5-3.0 OHMS, AT 68° F, AND SHOULD BE WITHIN .50 OHMS OF EACH OTHER.

SOLENOID	CONNECT OHMMETER LEADS TO PINS
2-4	4 & 5
L-R	4 & 6
O.D.	4 & 7
U.D.	4 & 8

PRESSURE SWITCH TEST



PRESSURE SWITCH	CONNECT OHMMETER LEADS TO PIN
O.D.	1 & GROUND
L-R	2 & GROUND
2-4	3 & GROUND

OHM METER SHOULD READ "NO CONTINUITY" WITH NO AIR APPLIED TO THE PRESSURE SWITCH. OHM METER SHOULD READ "0" OHMS WITH 50 PSI. OF AIR PRESSURE APPLIED TO THE PRESSURE SWITCH.

Figure 5

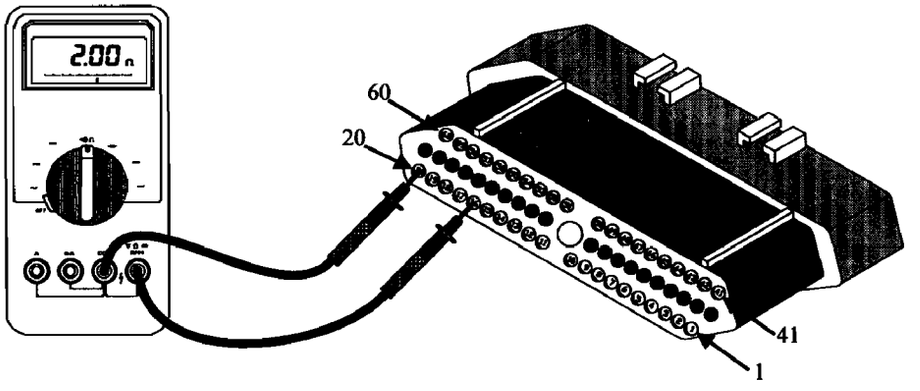
NORMAL TRANSMISSION RANGE SENSOR SWITCH STATES

RANGE		T42 (C2)	T41 (C1)	T3 (C3)	T1 (C4)
P	P	CL	CL	CL	OP
R	R	CL	OP	OP	OP
N	N	CL	CL	OP	CL
OD	D	OP	OP	OP	CL
3	2	OP	OP	CL	OP
1	1	CL	OP	CL	CL

OP = SWITCH IS OPEN
CL = SWITCH IS CLOSED

"TRS" SWITCH STATES MAY BE OBSERVED WITH A SCANNER .

Figure 6



POSITIVE LEAD	NEGATIVE LEAD	SOLENOID	RESISTANCE
PIN # 16 or 17	PIN # 59	UD	1.5 - 2.0 ohms
PIN # 16 or 17	PIN # 60	OD	1.5 - 2.0 ohms
PIN # 16 or 17	PIN # 20	L/R	1.5 - 2.0 ohms
PIN # 16 or 17	PIN # 19	2/4	1.5 - 2.0 ohms

Figure 7

CIRCUIT NAME	SOLENOID BODY TERMINAL #	CONTROLLER TERMINAL #	POSSIBLE CODES
UD SOL	8	59	44
OD SOL	7	60	43
L/R SOL	6	20	41
2/4 SOL	5	19	42

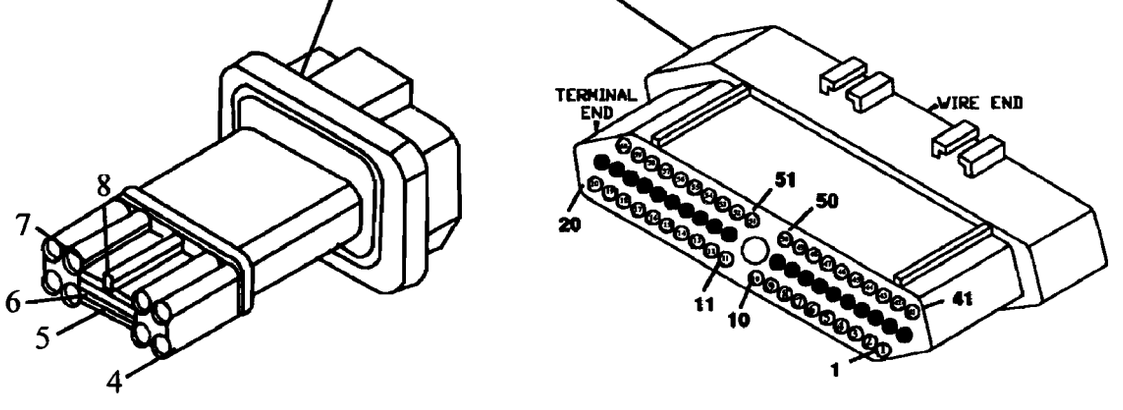


Figure 8

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NEW/USED FOREIGN & DOMESTIC
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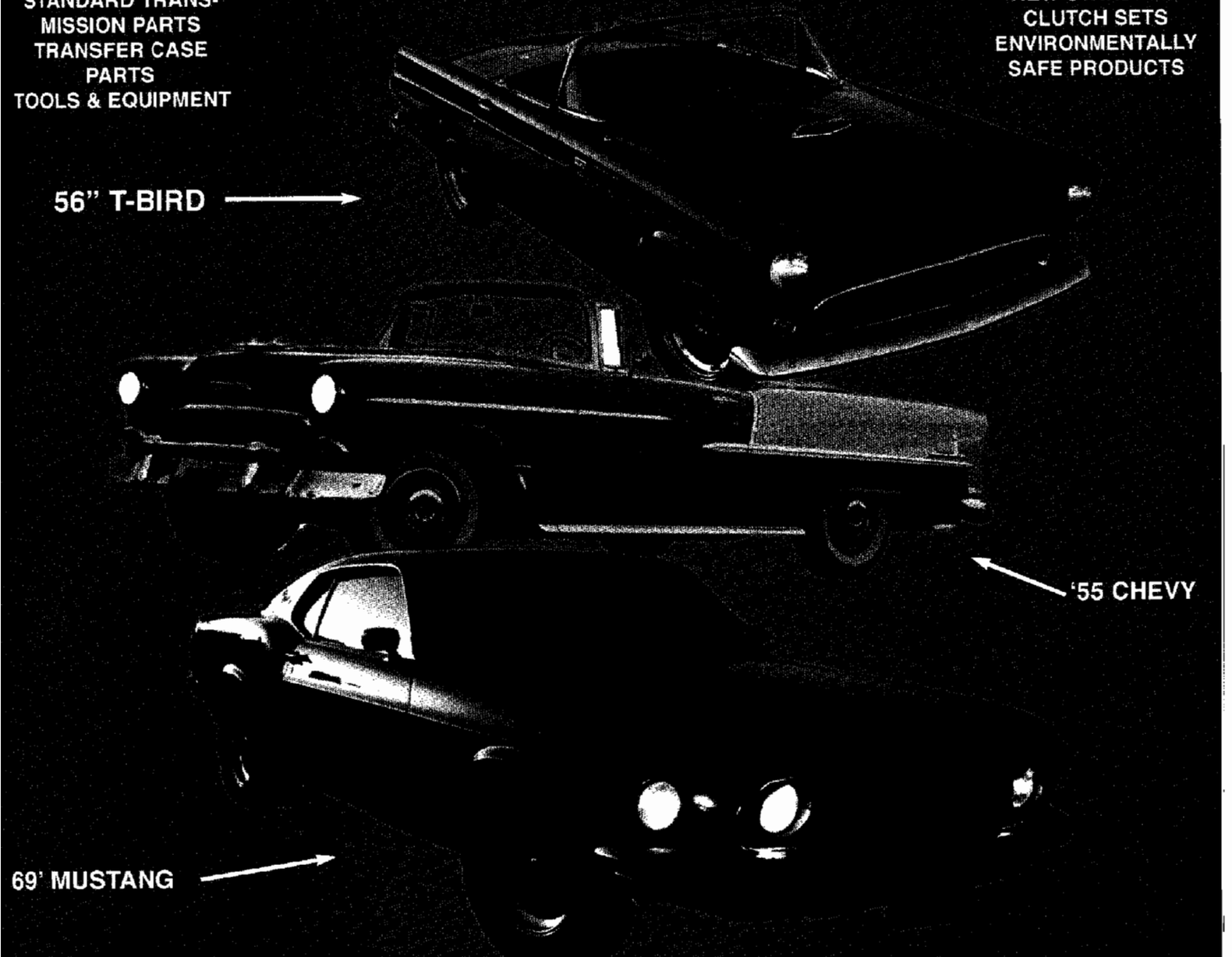

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CHRYSLER 41TE

NEW TRANSMISSION RANGE SENSOR

CHANGE: Beginning at the start of production 1996, some models equipped with the 41TE (A604) transaxle replaced the PRNODL and Neutral Safety Switch with a Transmission Range Sensor as seen in Figure 1.

REASON: To provide a common shift lever position sensor and Transmission Control Module (TCM) logic system with that used in the 42LE (A606) transaxle for durability and reliability.

PARTS AFFECTED:

(1) PRNODL SWITCH - The previously used Park, Reverse, Neutral, Overdrive, Drive, Low Switch PRNODL) has been eliminated and replaced with the new Transmission Range Sensor (See Figure 1).

(2) NEUTRAL SWITCH - The previously used Neutral Switch has been eliminated and replaced with the new Transmission Range Sensor (See Figure 1).

(3) TRANSAXLE CASE - The casting of the case change with the elimination of the two threaded holes for the PRNODL and Neutral Safety Switch. An access hole has been added to accommodate the new TRS sensor connector as the switch which is mounted on the valve body (See Figure 1).

(4) VALVE BODY - The manual arm shaft and rooster comb assembly and the valve body changed in design to accommodate the mounting of the new TRS sensor (See Figure 2).

(5) TCM - The logic system flashed into the computer program changed to accept the open and closed state of the new Transmission Range Sensor. With the PRNODL and Neutral switches having been integrated into the one Transmission Range Sensor, the new logic system now has to utilize the one sensor to determine start up functions, reverse lamp operation, as well as forward drive range shift and converter clutch strategies.

INTERCHANGEABILITY:

None of the updated parts listed above will interchange with any of the first design parts used in the previous model vehicles between 1989 and 1995. First design parts must be used with first design models and second design parts must be used with second design models, 1996 and above.

DIAGNOSTIC STEPS FOR VEHICLES WITH A TRS

A scanner can be used to observe the OPEN/CLOSED state of the C1/T41, C2/T42, C3/T3 and the C4/T1 circuits. This can be especially helpful in determining which exact circuit is malfunctioning. Refer to Figure 3 for the OPEN/CLOSED status chart and circuit identification.

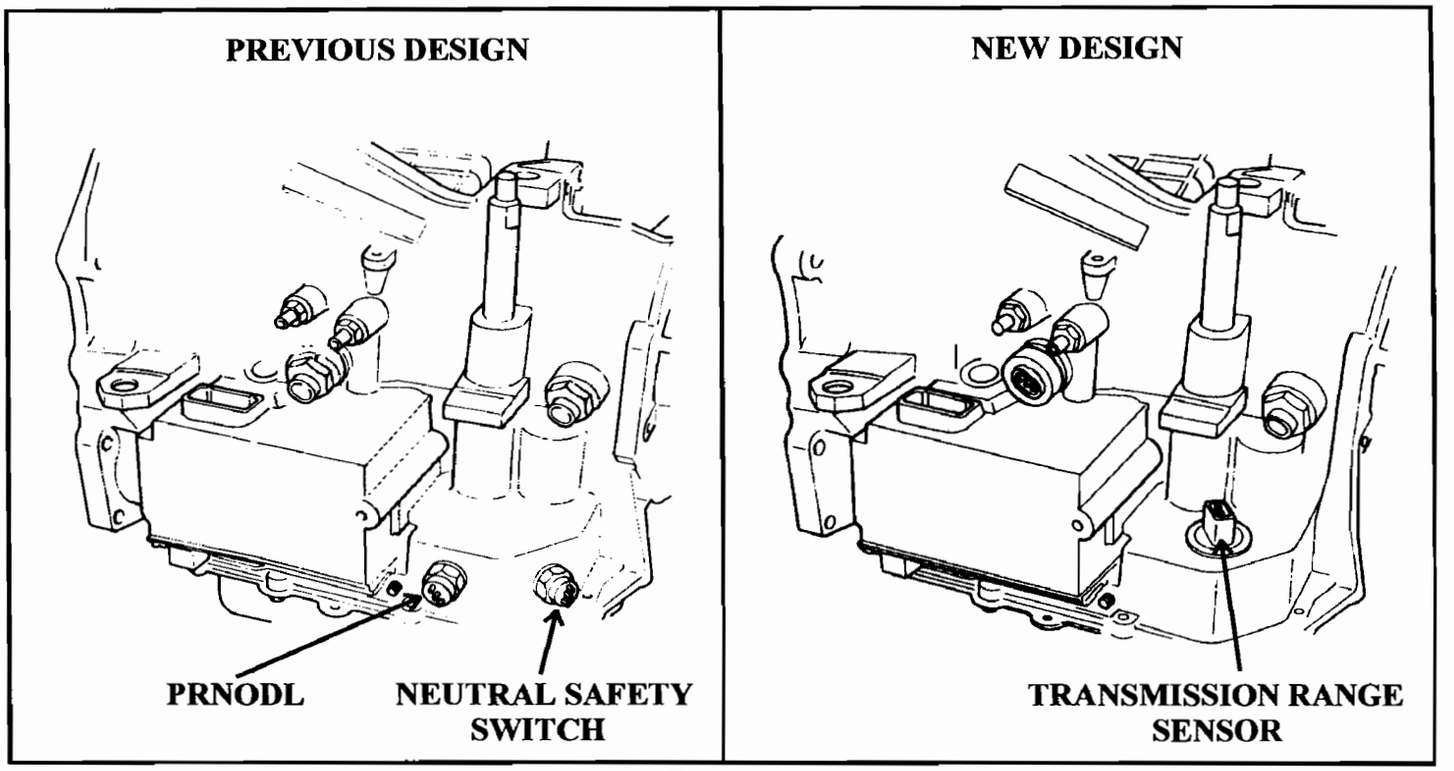


Figure 1

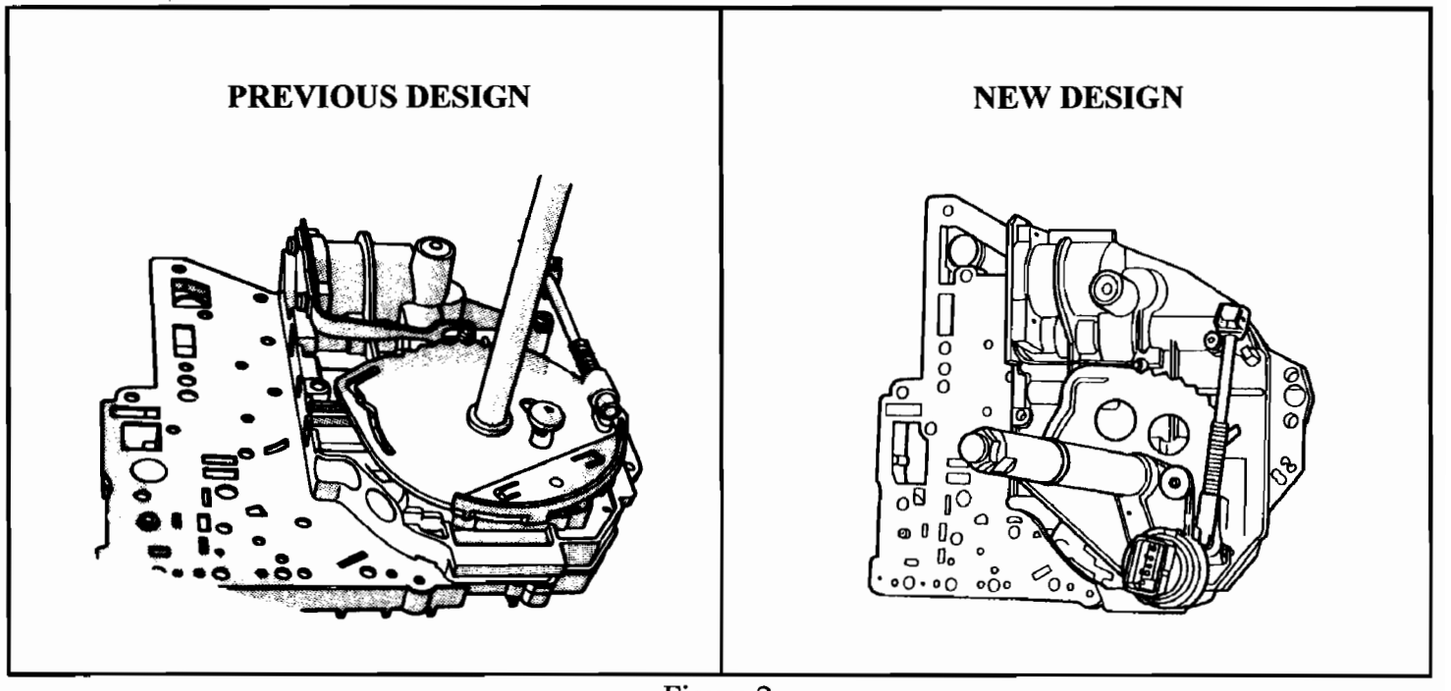


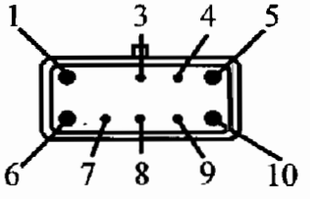
Figure 2

CAVITY	COLOR	FUNCTION
1	WT	FUSED IGNITION SWITCH OUTPUT
3	DB/BK *	SPEED SENSOR GROUND
4	VT *	TRANS. TEMP. SENSOR SIGNAL
5	BK/LG	PARK/NEUT. POSITION SWITCH SENSE
6	VT/BK	REVERSE LAMP SENSE
7	LG/BK	TRS T1 SENSE
8	VT	TRS T3 SENSE
9	VT/WT	TRS T42 SENSE
10	BR/YL	TRS T41 SENSE

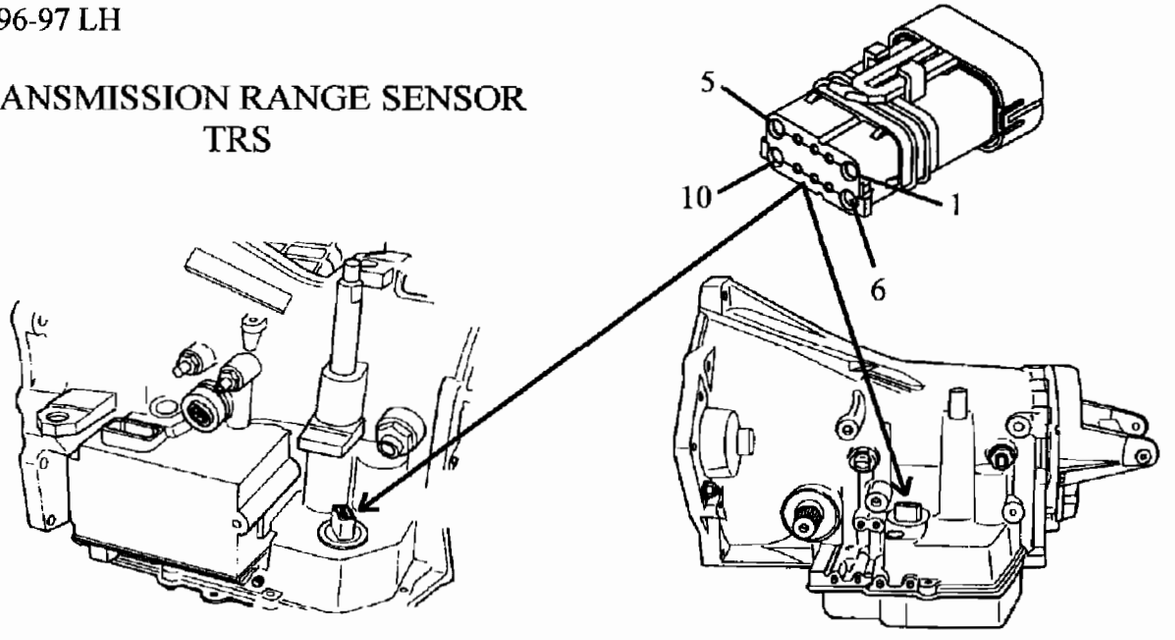
* 1996-97 LH

RANGE		T42 (C2)	T41 (C1)	T3 (C3)	T1 (C4)
P	P	CL	CL	CL	OP
R	R	CL	OP	OP	OP
N	N	CL	CL	OP	CL
OD	D	OP	OP	OP	CL
3	2	OP	OP	CL	OP
1	1	CL	OP	CL	CL

OP = SWITCH IS OPEN
CL = SWITCH IS CLOSED



TRANSMISSION RANGE SENSOR
TRS



41TE **42LE**

Figure 3

DIAGNOSTIC STEPS FOR VEHICLES WITH A TRS *continued*

Once the circuit which malfunctioned has been identified, a continuity check should be made on that circuit. Use the chart found in Figure 4 to assist in identifying the specific circuit or circuits in question. For example, if the scanner reveals that the T3 (C3) circuit does not close when the selector lever is placed in Park, 3 or 1, that specific circuit will need to be checked. In the chart below circuit T3 is the wire which runs from the number eight cavity in the TRS connector to the number three cavity in the TCM connector.

CIRCUIT NAME	TRANSMISSION RANGE SENSOR	CONTROLLER TERMINAL #	POSSIBLE CODES
C1/T41	10	41	28
C2/T42	9	42	28
C3/T03	8	3	28
C4/T01	7	1	28

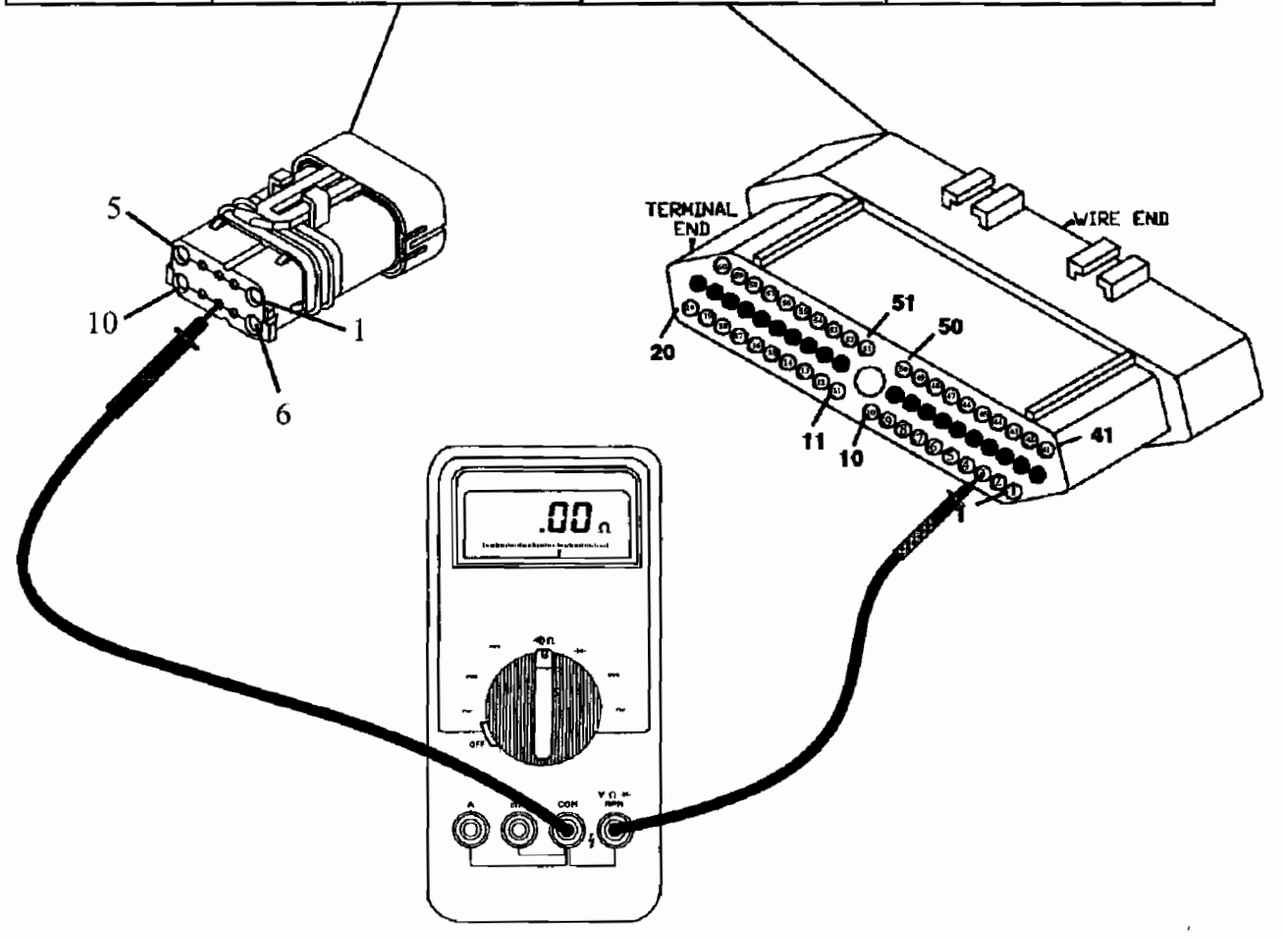
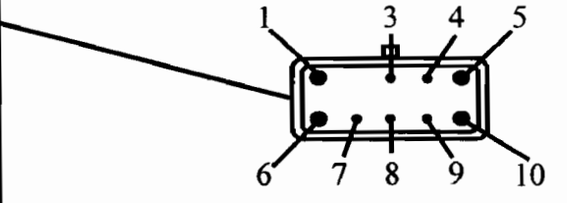


Figure 4

DIAGNOSTIC STEPS FOR VEHICLES WITH A TRS *continued*

If an open circuit is seen when checking for continuity across any one of the Transmission Range Sensor wires, repair or replace the wire or wires. If continuity is seen, inspect both the TCM and TRS connector cavities for drag and that they have not been pushed back into the connector. The shank end of a drill bit may be employed to check for pin drag in the TRS connector. For cavities 7, 8 and 9, use a .035" wire gauge or a # 65 drill bit. For cavity 10, use an .089" wire gauge or a # 43 drill bit. If pin cavities are not pushed back and they have a good drag on the wire gauge test remove the valve body from the transmission. With the TRS still mounted to the valve body, place the manual valve in the park position. Fasten the negative meter lead to the metal portion of the rooster comb (See Figure 5). While pushing the switch down onto the rooster comb with one hand, use the positive meter lead to make contact with pins 7, 8, 9 and 10 individually. Approximately .05 to 1.5 ohms should be seen on each pin except # 7, it should read open. Use the chart in Figure 5 to check the TRS in each manual valve selection. Replace the TRS sensor if necessary. If all ranges test good, replace the TCM.

RANGE		10	9	8	7
P	P	CL	CL	CL	OP
R	R	CL	OP	OP	OP
N	N	CL	CL	OP	CL
OD	D	OP	OP	OP	CL
3	2	OP	OP	CL	OP
1	1	CL	OP	CL	CL



OP = SWITCH IS OPEN
CL = SWITCH IS CLOSED

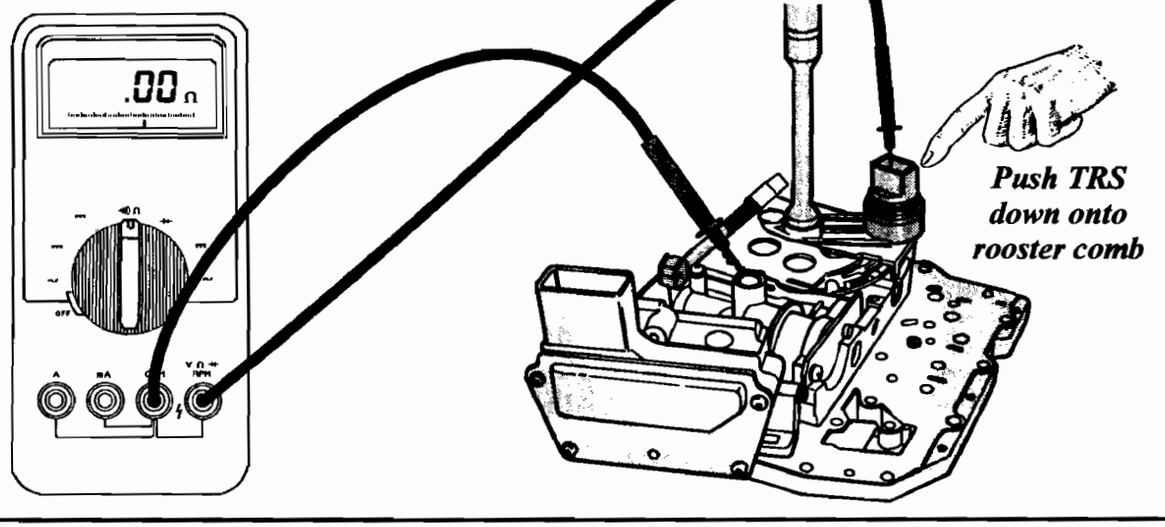


Figure 5

CHRYSLER 41TE (A604), 42LE (A606)
"AUTOSTICK" OPERATION AND DIAGNOSING

NEW FOR 1996: Beginning in 1996, some models have an Autostick feature built into the gear shift lever (See Figure 1). Autostick is a driver-interactive transaxle feature that offers manual gear shift capability. When the shifter is moved into the Autostick position, the transaxle remains in whatever gear it was using before Autostick was activated. Moving the shifter to the left (towards the driver) causes a downshift, and moving it to the right (towards the passenger) causes an upshift. The instrument cluster will illuminate the selected gear (See Figure 1). The vehicle can be launched in 1st, 2nd or 3rd gear while in the Autostick mode. Speed control will be deactivated if the transaxle is shifted to 2nd gear. Shifting into OD position cancels the Autostick mode, and the transaxle resumes the OD shift schedule. Some shifts are executed automatically or prevented. Automatic shifts will occur under the following conditions:

TYPE OF SHIFT	APPROXIMATE SPEED
4-3 coast downshift	13 mph
3-2 coast downshift	9 mph
2-1 coast downshift	5 mph
1-2 upshift	6300 engine rpm
2-3 upshift	6300 engine rpm
4-3 kickdown shift	13-47 mph w/sufficient throttle

Additionally, under certain circumstances, the TCM may take over and override the autostick features when one of the following conditions occur: There are autostick errors detected, error over speed, engine overheating or transmission over heating.

Autostick shifts are not permitted under the following conditions:

TYPE OF SHIFT	APPROXIMATE SPEED
3-4 upshift	Below 15 mph
3-2 downshift	Above 74 mph @ closed throttle or 70 mph otherwise
2-1 downshift	Above 41 mph @ closed throttle or 38 mph otherwise

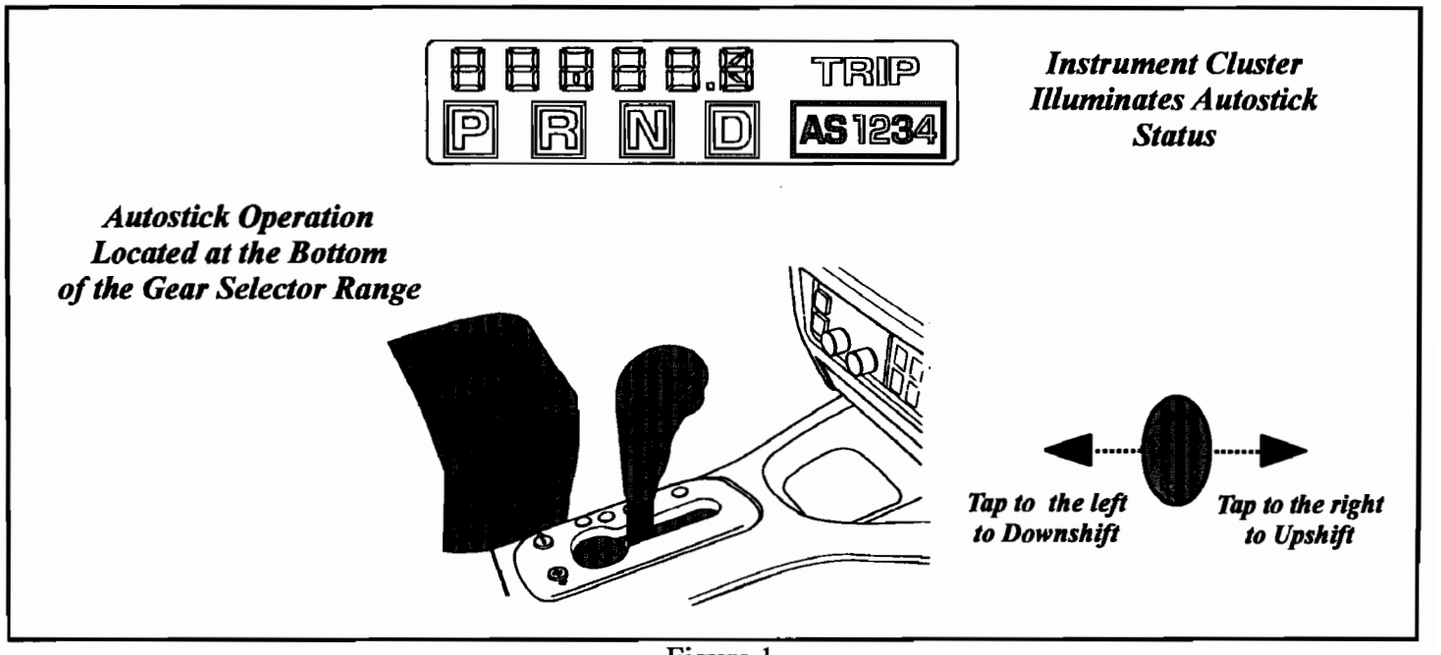


Figure 1

DIAGNOSTIC STEPS

(1) Locate and unplug the Autostick Switch in the center console (See Figure 2). Using a volt meter, turn the ignition ON and place the negative lead to ground. With the positive lead check for battery voltage at pin 1 in the Autostick connector (See Figure 3). If voltage is not seen, check for a blown fuse. LH vehicles check fuse # 17, all others check fuse # 11. If the fuse is good, the wire from the fuse to pin 1 is severed and will need to be repaired or replaced.

(2) If voltage is seen, turn the ignition off and change the meter to read ohms. Keep the negative lead to ground and place the positive lead into terminal 2 of the Autostick connector (See Figure 4). If continuity is not seen, the ground wire is severed or corroded. Repair or replace the wire.

(3) If continuity (5 ohms or less) is observed, unplug the TCM and perform a continuity check from terminal 3 in the Autostick connector to terminal 5 in the TCM (See Figure 5). If continuity is not seen, the wire is severed. Repair or replace the wire.

(4) If continuity is seen, perform a continuity check from terminal 4 in the Autostick connector to terminal 44 in the TCM (See Figure 6). If continuity is not seen, the wire is severed. Repair or replace the wire.

(5) If continuity is seen, replace the Autostick switch. If replacement is necessary the entire shift lever mechanism is replaced as a unit in order to replace the switch.

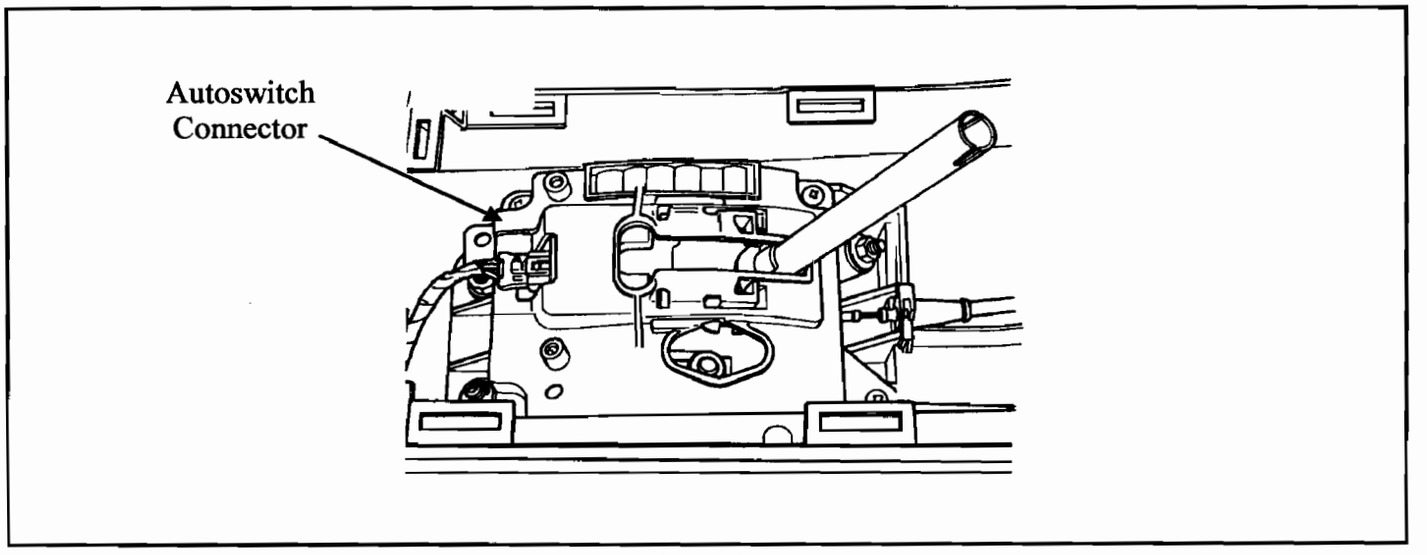


Figure 2

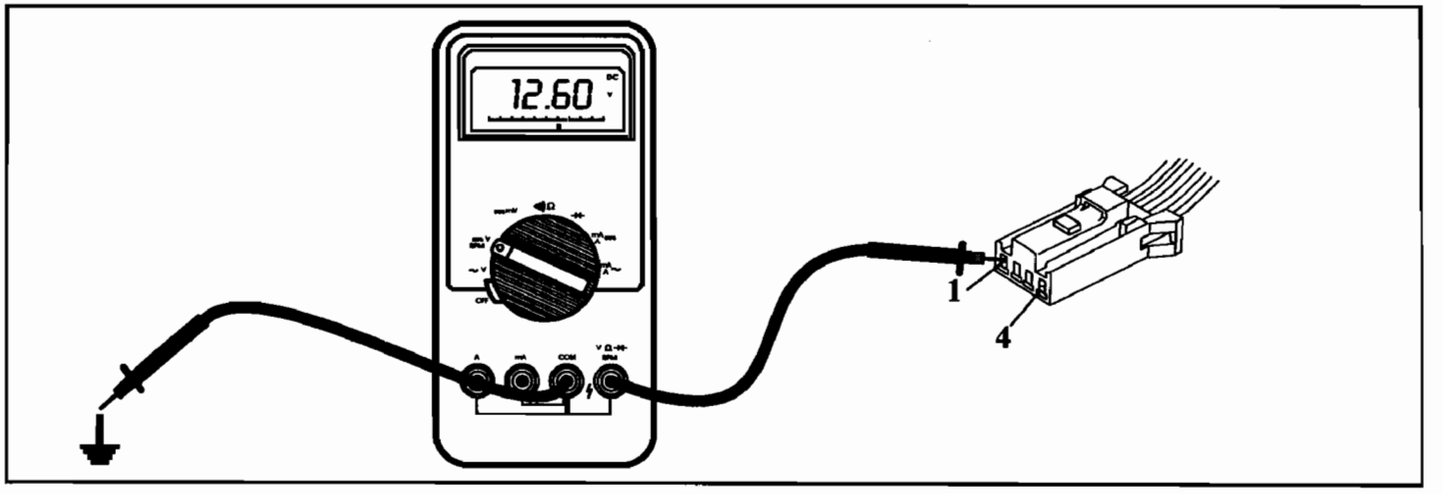


Figure 3

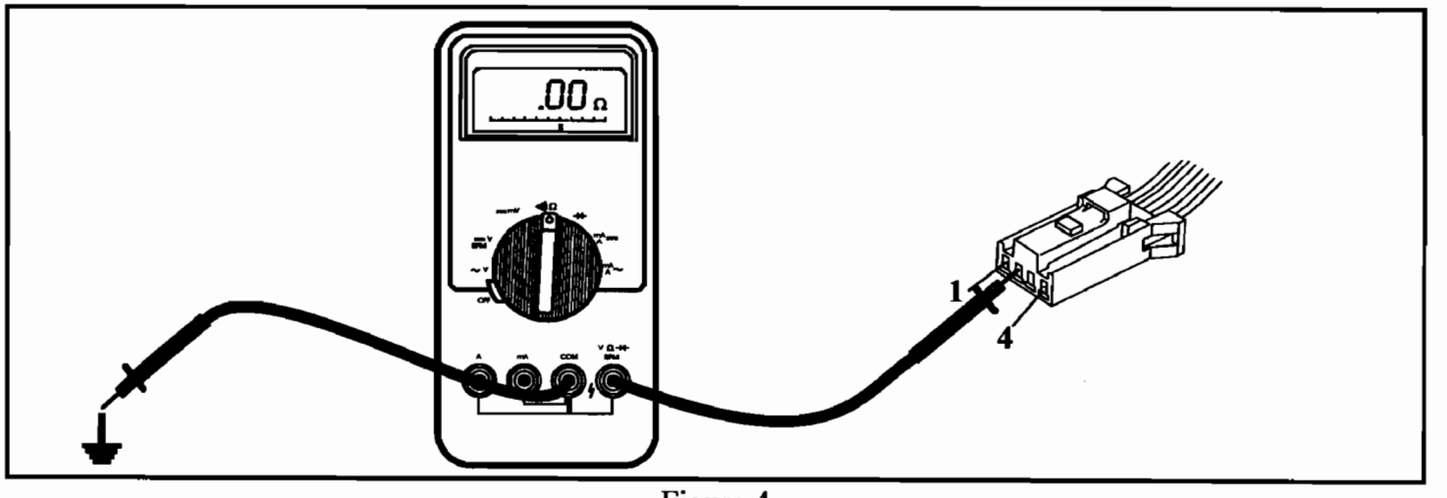


Figure 4

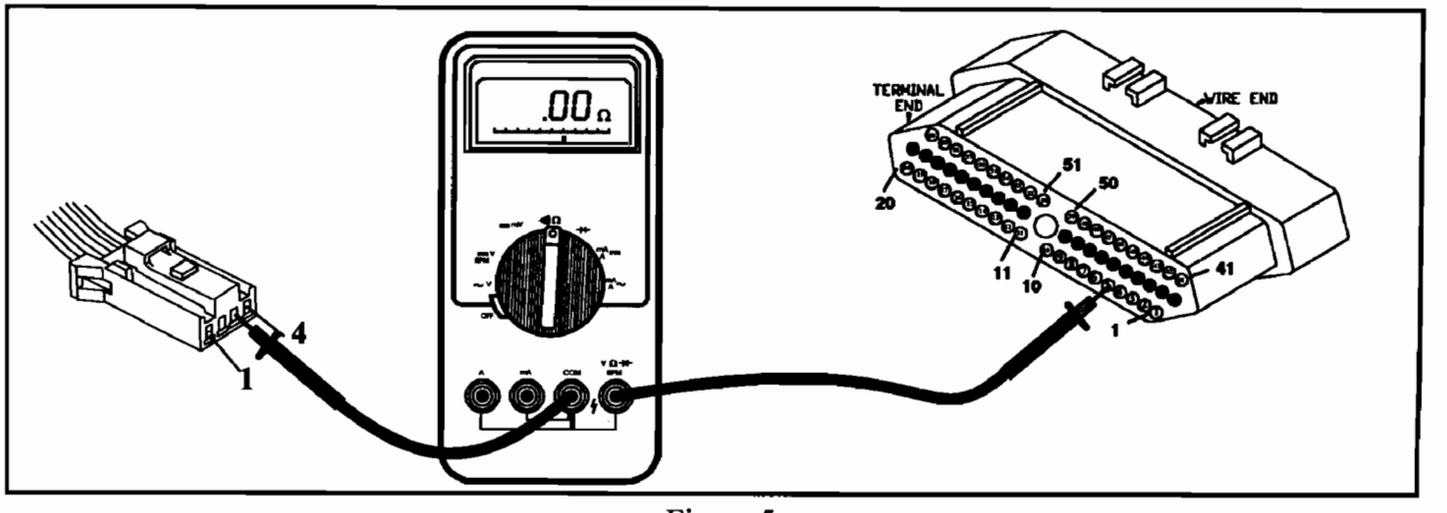


Figure 5

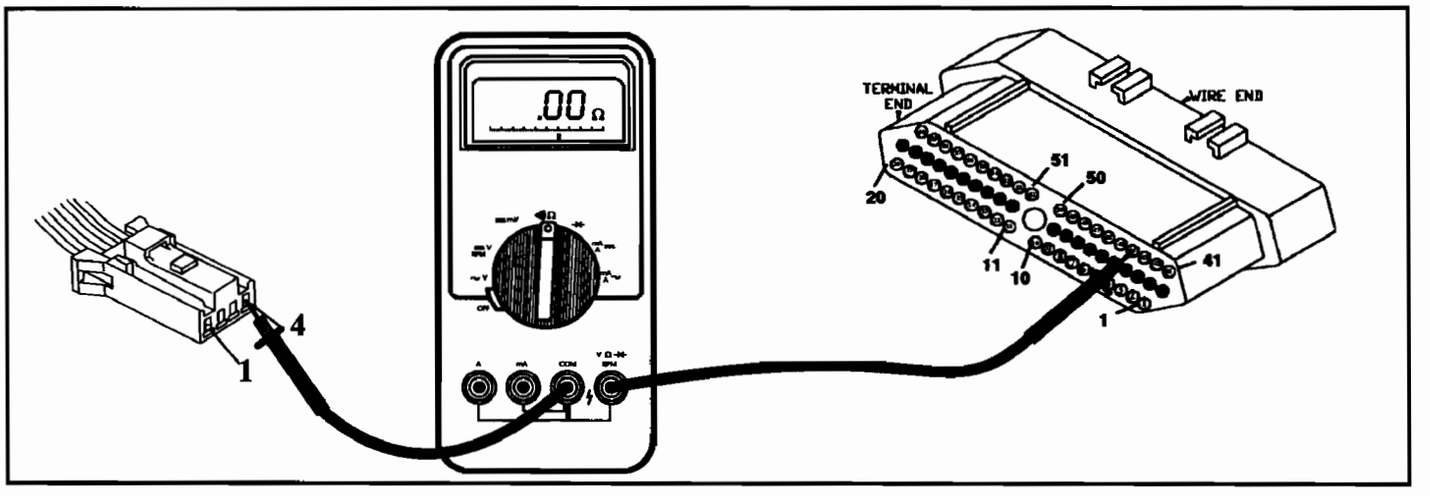
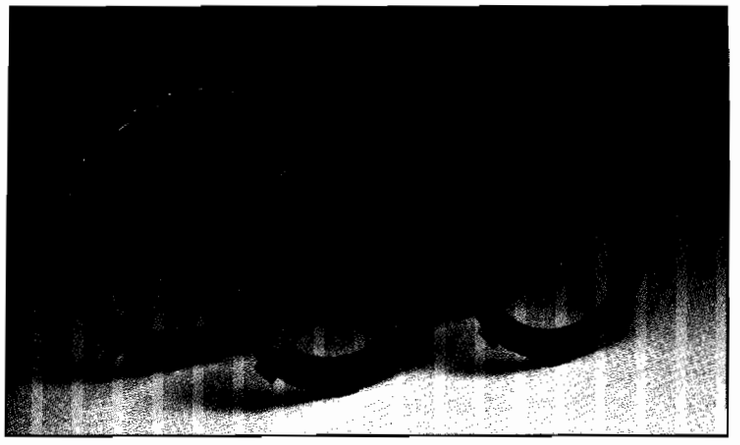


Figure 6



Honda

Selective Steels

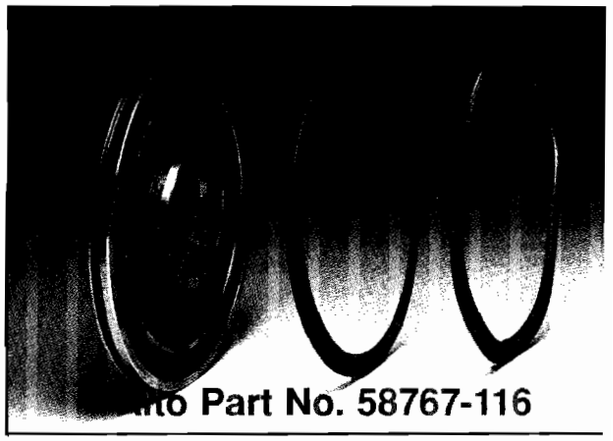
Clutch clearance is critical. Selective Steels enable you to get correct clearance.

Avoid buying many selective pressure plates by using selective steels.

Alto Part No.	Application With
58701-2.1	105 mm 0.004 Oversize
58701A	105 mm 0.009 Undersize
58711-2.1	110 mm 0.004 Oversize
58711A	110 mm 0.009 Undersize
58721-2.1	116 mm 0.004 Oversize
58721A	116 mm 0.009 Undersize
78701-2.1	120 mm 0.004 Oversize
78701A	120 mm 0.009 Undersize

Honda Wave Spring

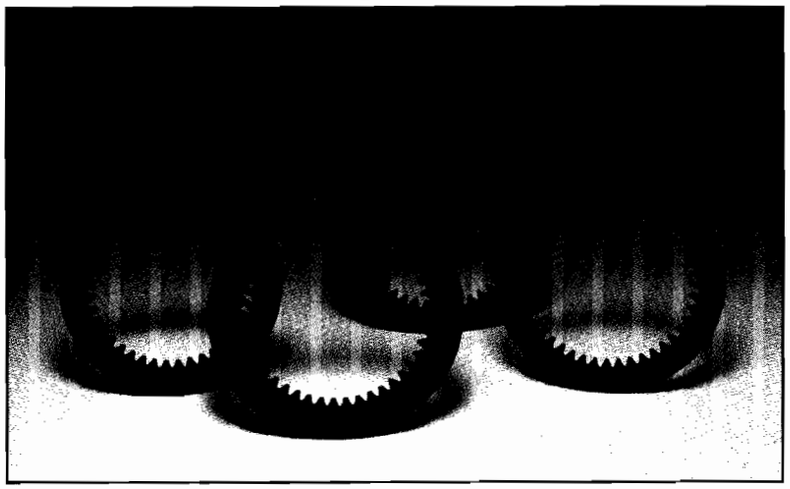
Alto Products Corp. announces the availability of the Honda Repair Wave Spring, part number 58767-116. Used in 1986 - on Honda, Sterling and Acura models with 116MM/4.5 clutch. It is designed to prevent clearance problems that are caused by the Belleville spring cutting into the bottom steel plate.



Alto Part No. 58767-116

New!

120 mm Wave Spring. Alto Part No. 78767



Honda Green Plates

Alto manufactures a line of Honda green plates to improve shift quality.

Alto Part No.	Application
58700G	105 mm Frictions
58710G	110 mm Frictions
58720G	116 mm Frictions
58730G	116 mm Frictions
78700G	120 mm Frictions

CHRYSLER 41TE (A604) & 42LE (A606)
NEW DIAGNOSTIC TROUBLE CODES

NEW: New 70 series Diagnostic Trouble Codes were added beginning in 1996 model year vehicles *equipped with either the 41TE or the 42 LE transaxle.*

REASON: Code 70 (Autostick Sensor Circuit) was added as an aid to diagnosing the new Autostick feature. Codes 71 - 75 were added for overall improved diagnostic capabilities. The breakdown of the new 70 series codes are as follows, ***including diagnostic procedures.***

Fault Code	Description	Limp-in Set	MIL Illumination Late Models Only
70	Autostick Sensor Circuit	NO	NO
71	Manual Shift Overheat	NO	NO
72	Temperature Sensor	NO	NO
73	Worn Out/Burnt Transaxle Fluid	NO	NO
74	Calculated Oil Temp. in Use	NO	NO
75	Repairing High Temperature Operations Activated	NO	NO
76	Repairing Power-Up At Speed	NO	NO

CODES 71&75:

The transmission and engine temperatures are constantly monitored during the operation of the vehicle. If overheating occurs with either the engine or transmission, the Autostick feature will be canceled and code 71 will be set. The conditions the TCM looks for to set this code is engine temperature exceeding 255°F while operating in the Autostick mode. Or, the transmission fluid temperature exceeding 275°F while in the Autostick mode. Strenuous driving may cause high temperatures to occur in both the engine and transmission. If Autostick is selected when these temperatures are high, code 71will set. *Note: If code 74 is set along with 71,code 74 should be placed first in the diag nostic procedure. For codes 71 and/or 75, perform the following steps.*

1. Observe engine coolant temperature with a scanner. If temperatures exceed 200°F, check fan, engine coolant temp sensor and thermostat for proper operation.
2. Observe the transmission fluid temperature with a scanner. If temperatures exceed 250°F, check the fluid temperature sensor (See Code 74).
3. Check converter clutch operation. When lock up is full, both engine and turbine RPM should be the same. If the converter clutch does not have full apply while driving in fourth gear, a code 38 should be set. If there is not a full converter clutch apply, fluid temperature will rise dramatically.
4. Ensure that a minimum of one quart per 20 seconds is being pumped out of the return cooling line idling in the drive range. The return line for the 41TE is the front line while the 42LE is the bottom line.
5. Check fluid lever and adjust if necessary.
6. Identify the style of driving that the vehicle was operating under when the code was set. If it was during lengthy aggressive driving, this would be the reason for the code.

CODES 72&74:

1. If gear ratio code 51-54, or RPM sensor codes 56-58, or code Shift Signal Code 28 accompanies code 74, these codes should be placed first in the diagnostic routine. Once gear ratio codes, speed sensor codes and TRS code has been eliminated, road test the vehicle. If code 74 reappears without other codes, unplug the TRS connector. Place the ignition to the "ON" position. With a volt meter placed to DC volts, put the negative lead to a good known ground. With the positive lead, check terminal 4 for voltage (See Figure 1).
2. If less than 4.5 volts is observed, turn the ignition off and unplug the TCM. Change the meter to an ohms setting and check for continuity between terminal 54 in the TCM connector to terminal 4 in the TRS connector (See Figure 2). If continuity (5 ohms or less) is seen, replace the TCM. If continuity is not seen, repair or replace the wire.
3. If voltage is above 4.5 volts, perform a continuity check on the TFT's ground wire by placing one meter lead to terminal 3 in the TRS connector and terminal 13 in the TCM as shown in Figure 3.
4. If continuity is not seen, repair or replace wire. If the wire is to be replaced, the turbine and output RPM sensor also uses this wire for ground. Be sure to include them in the new wire.
5. If continuity is seen, re-connect the TRS sensor and perform a resistance check on the TFT sensor from the TCM connector. Place one meter lead into terminal 13 and the other meter lead into terminal 54 (See Figure 4). The range for the sensor from cold to hot is 100,000 ohms to 150 ohms (See Table in Figure 5). If the change in resistance is proportional to the change in the transmission fluid temperature and the resistance remains within specification, change the TCM. If the resistance is out of specification or does not change in resistance proportional to temperature, change the TRS.

   Another test method that can be employed at this point is to have the TCM and the TRS connected. Carefully back probe the number 54 wire at the TCM with positive meter lead. Place the negative lead to ground and have the meter set to DC volts. Start up the vehicle after it has set a while so the transmission fluid is at room temperature. Once the vehicle is running observe the voltage reading. The voltage should change proportionally with temperature. As it warms, the voltage should drop. Voltage values should always remain with 4.96 to 0.07 DC volts. If the voltage observed exceeds these values or never changes at all, change the TRS. If voltage values change proportionally to temperature and does not exceed the specified values, change the TCM.

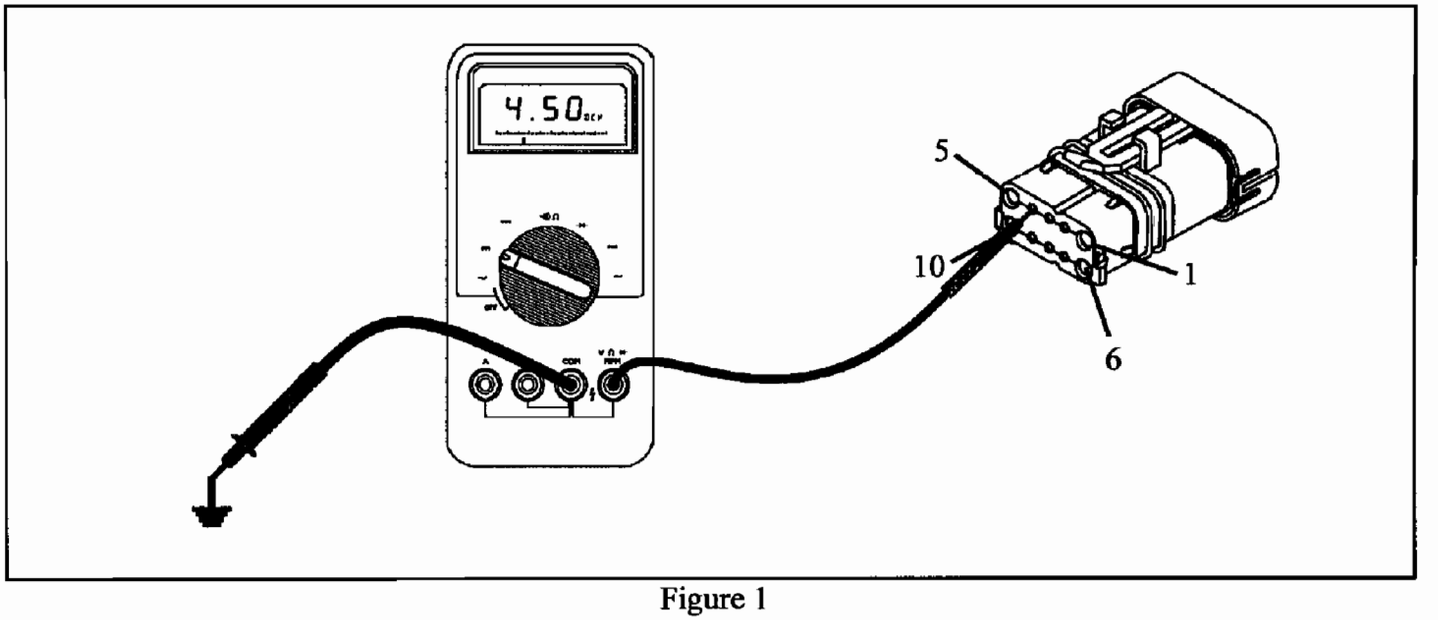


Figure 1

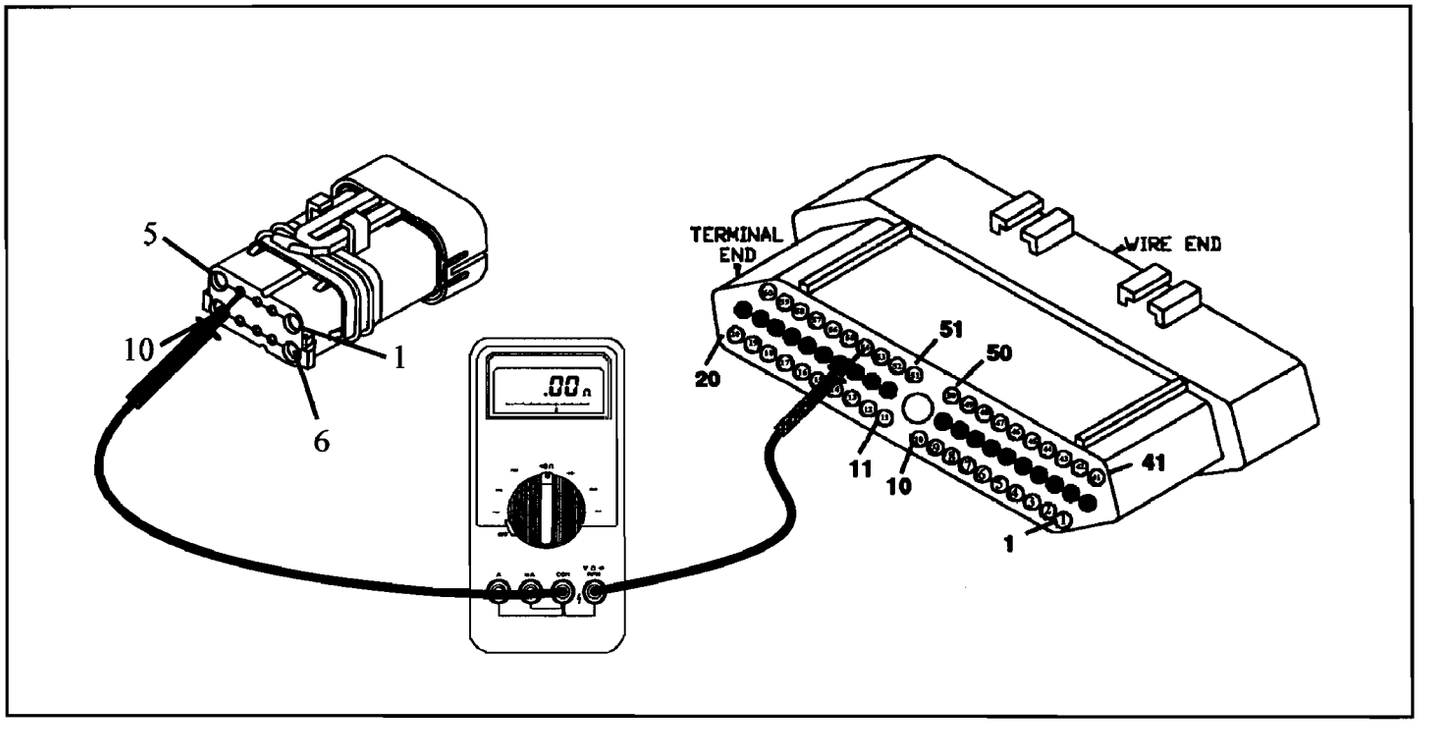


Figure 2

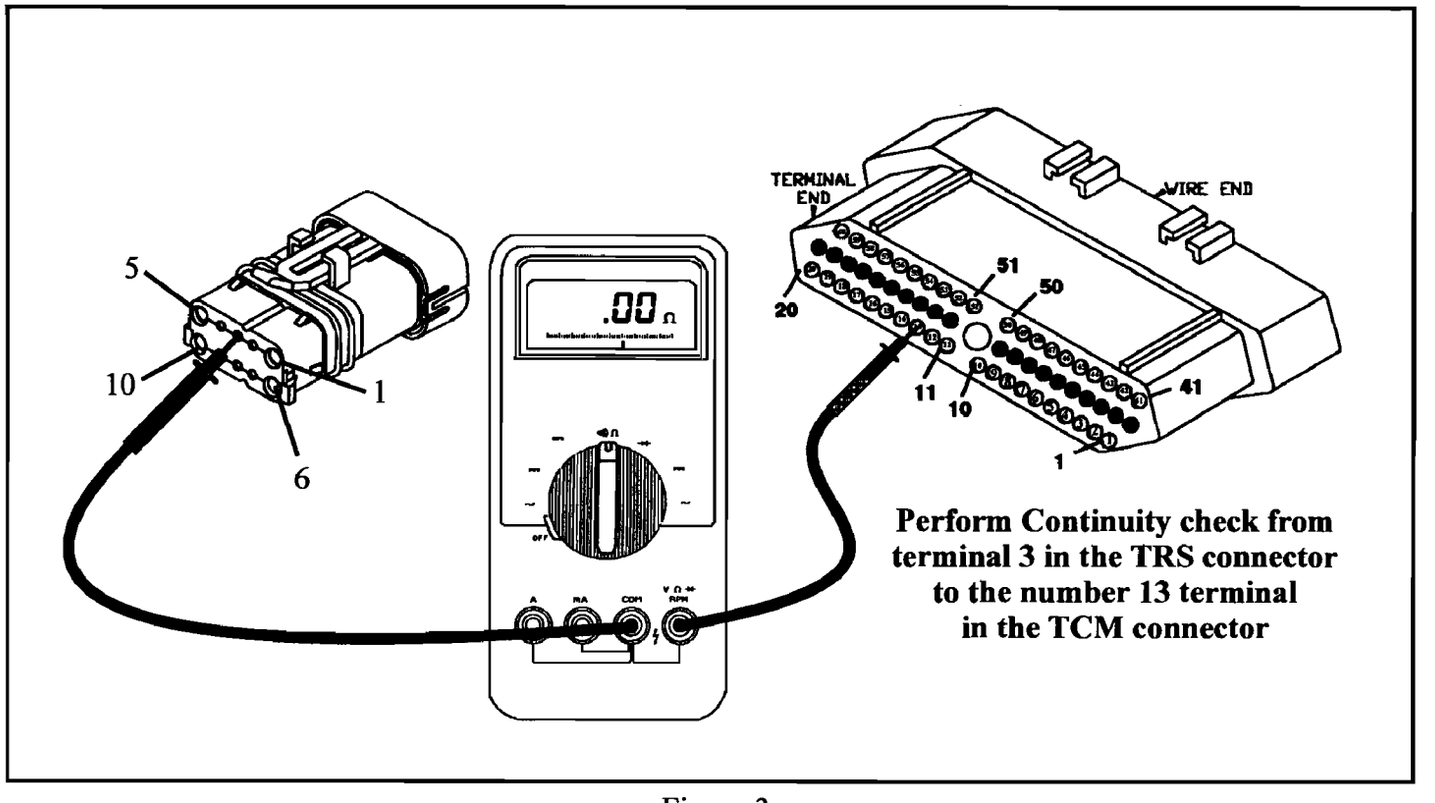


Figure 3

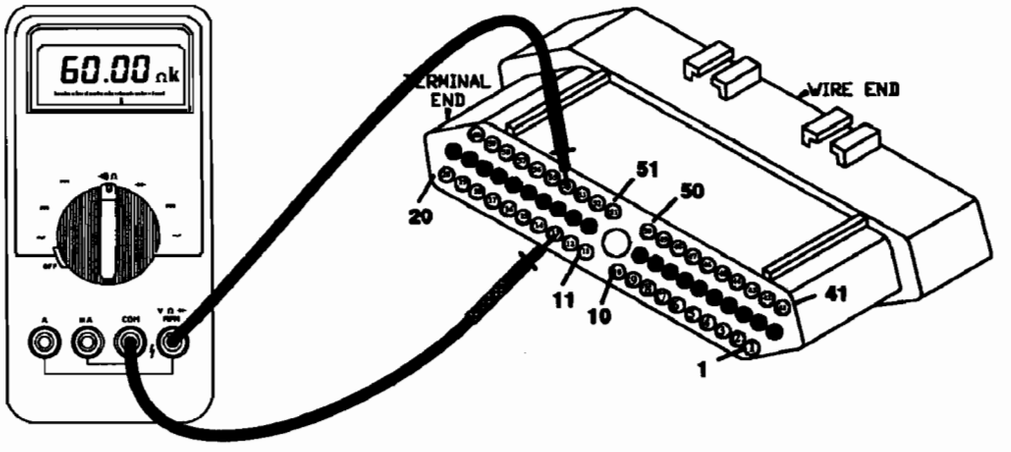


Figure 4

Approximate Temperature Resistance Specification Table

Temperature	Resistance	Temperature	Resistance
14°F	61.3K ohms	108°F	5.5K ohms
40°F	20.1K ohms	150°F	2.7K ohms
70°F	11.2K ohms	160°F	1.9K ohms
88°F	8.5K ohms	175°F	1.3K ohms
		180°F	1.2K ohms

Figure 5

CODES 73
THE COMPUTER STRATEGY:

While in 3rd or 4th gear during full converter clutch and prior to the engagement of the A/C clutch, the PCM requests the TCM to momentarily establish partial lock up operation. If a shudder is detected during the transition from full lock up to partial lock up, a counter is incremented. If the count reaches 20, the trouble code is set. The driver may notice harsh bumps when the A/C clutch is being cycled, but vehicle shudder will be eliminated. After 35 OBDII warm-up starts or if the code is cleared, partial lock up will be reactivated to see if the shudder is still present. If one shudder event occurs, the code will reset. Clearing the code by performing a battery disconnect routine with a scanner is the only way to reset the shudder counter from 20 back to 0.

THE DIAGNOSTIC PROCEDURES:

1. Inspect tires for abnormal wear. If evidence of tread wear exists, have the alignment checked. Repair if necessary.
2. If code 38 is set indicating converter clutch problems drop the pan for inspection. If excessive clutch material is found in the pan or filter, the unit will need to be removed for repairs. If very little clutch material is observed, perform the diagnostic procedures for a code 38.
3. If no other code is set and the pan is clean, change the fluid and filter.

CODES 76
THE COMPUTER STRATEGY:

If a vehicle loses power to the TCM the vehicle will go to the 2nd gear mode since there is no power available to control the transmission solenoids. However if power is restored, the TCM will power-up and normal operation will be restored. All 41TE applications built before 97 model year will not set a fault code which may result in great difficulty for the technician to try to diagnose the problem. New for 97 model year code 76 was added which identifies that power to the TCM was restored when the gear selector was in a "Drive" position while the vehicle was moving at speeds above 20 MPH. Unfortunately, if a person shifts to Neutral and cycles the ignition key and quickly shifts to the Drive position while moving before the TCM comes out of its START ROUTINE, the fault code can be set. Therefore it is critical that this fault code diagnosis repair procedure should only be used if the vehicle is experiencing intermittent 2nd gear operation and subsequently a return to normal operation during normal driving.

THE DIAGNOSTIC PROCEDURES:

1. Check for voltage supply at pin 56 in the TCM connector. If battery voltage is not present, repair or replace fusible wire or fuse.
2. Check main TCM ground wires and repair if necessary.
3. Perform diagnostic procedures for the EATX relay and replace if nesessary.
4. If direct battery feed is good, the ground is good and the EATX relay is good, change the TCM.

CHRYSLER 41TE (A604)
CHECKBALL LOCATION CHANGES FOR THE 1995 MODEL YEAR

CHANGE: Beginning at the start of production for all 1995 models of the A604 transaxle, Chrysler made changes to the valve body that will affect service, and includes checkball changes in the valve body. Refer to Figures 1, 2, and 3.

REASON: Improved the coast downshift clunk concerns, and converter clutch durability.

PARTS AFFECTED:

(1) VALVE BODY - New valve body casting with the Number 1 checkball eliminated, as shown in Figure 1. Two new valves were added to the valve body, first was a L/R Switch Valve to serve the same function as the number 1 checkball, and second was a T/C Regulator Valve to limit converter clutch apply pressure to a maximum of 95 PSI. Refer to Figure 1 for the locations of these new valves and the new checkball locations.

(2) TRANSFER PLATE - New transfer plate casting to accommodate the changes in the new design valve body. Refer to Figure 2 for the new transfer plate.

(3) SPACER PLATE - New spacer plate stamping to accommodate the changes in the new valve body, as shown in Figure 3.

INTERCHANGEABILITY:

Currently not recommended to retro-fit back to previous models, but new design service valve bodies will soon be available.

SERVICE INFORMATION:

Casting number for identification on new valve body is 4659463.
Casting number for identification on new transfer plate is 4659465.
Number stamped for identification into new spacer plate is "66" (See Figure 3).

1995 A604 VALVE BODY CHANNELS AND CHECKBALL LOCATIONS

CASTING NUMBER 4659463

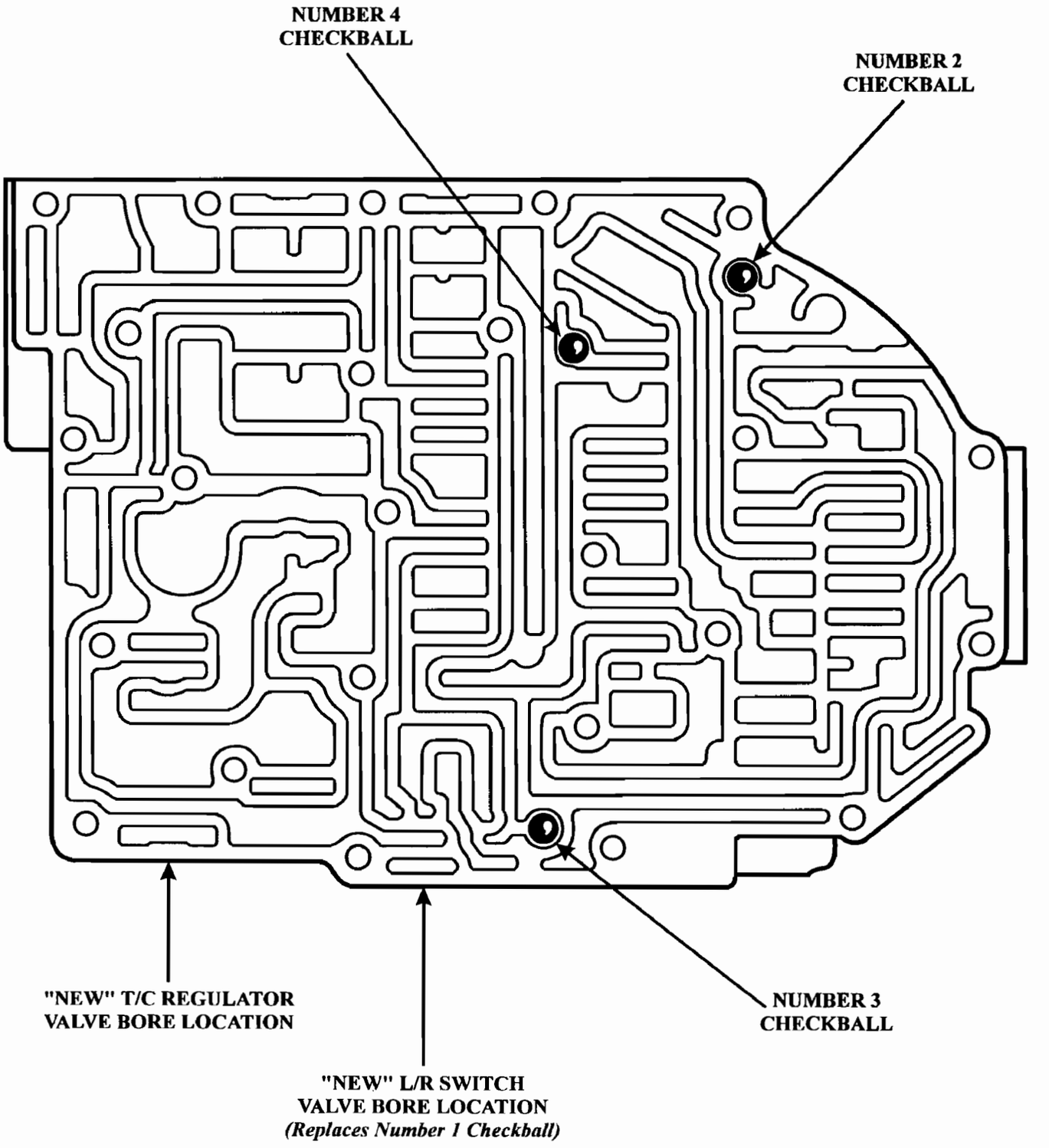


Figure 1

1995 A604 TRANSFER PLATE
OIL CHANNELS

CASTING NUMBER 4659465

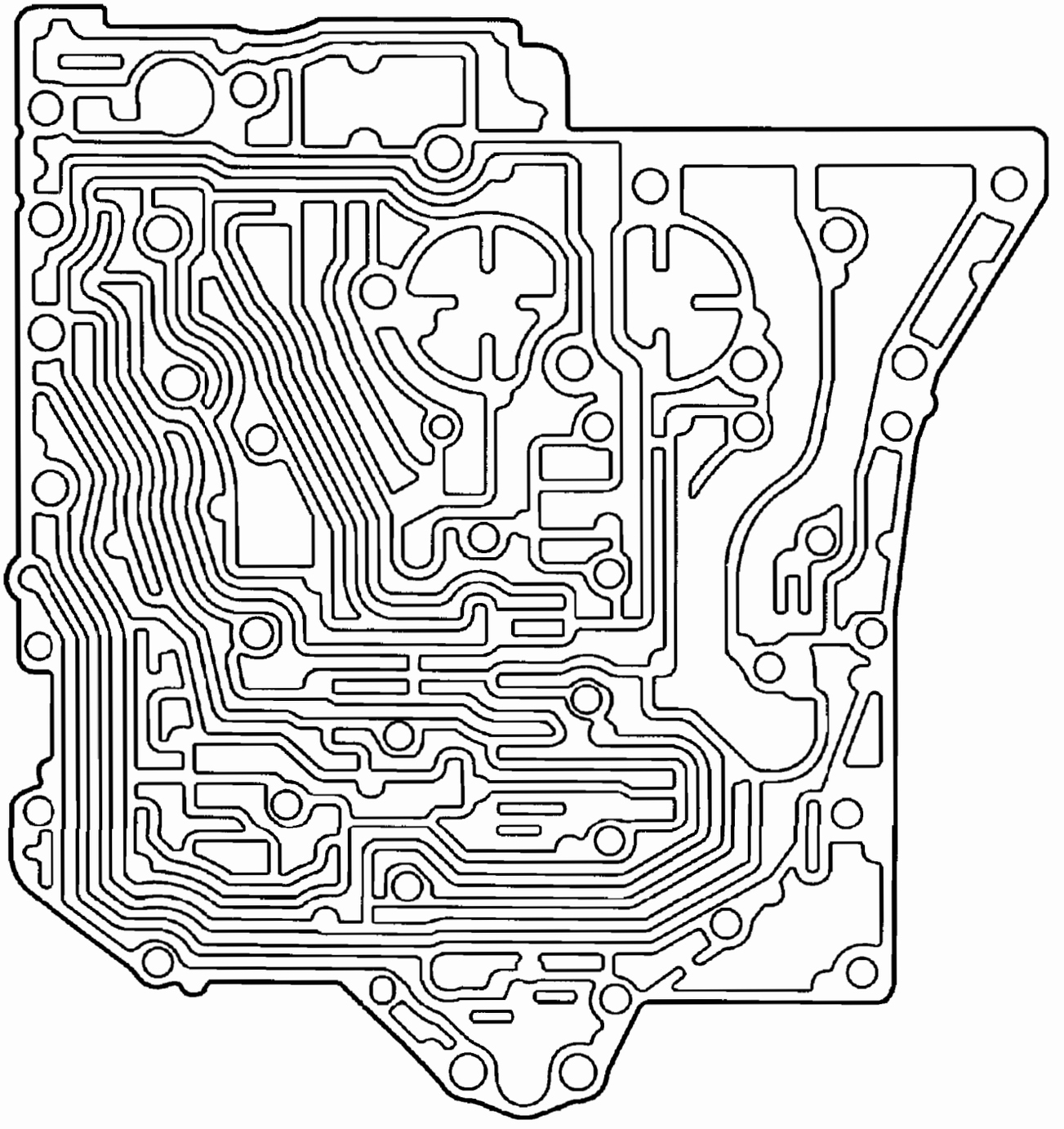


Figure 2

1995 A604 SPACER PLATE

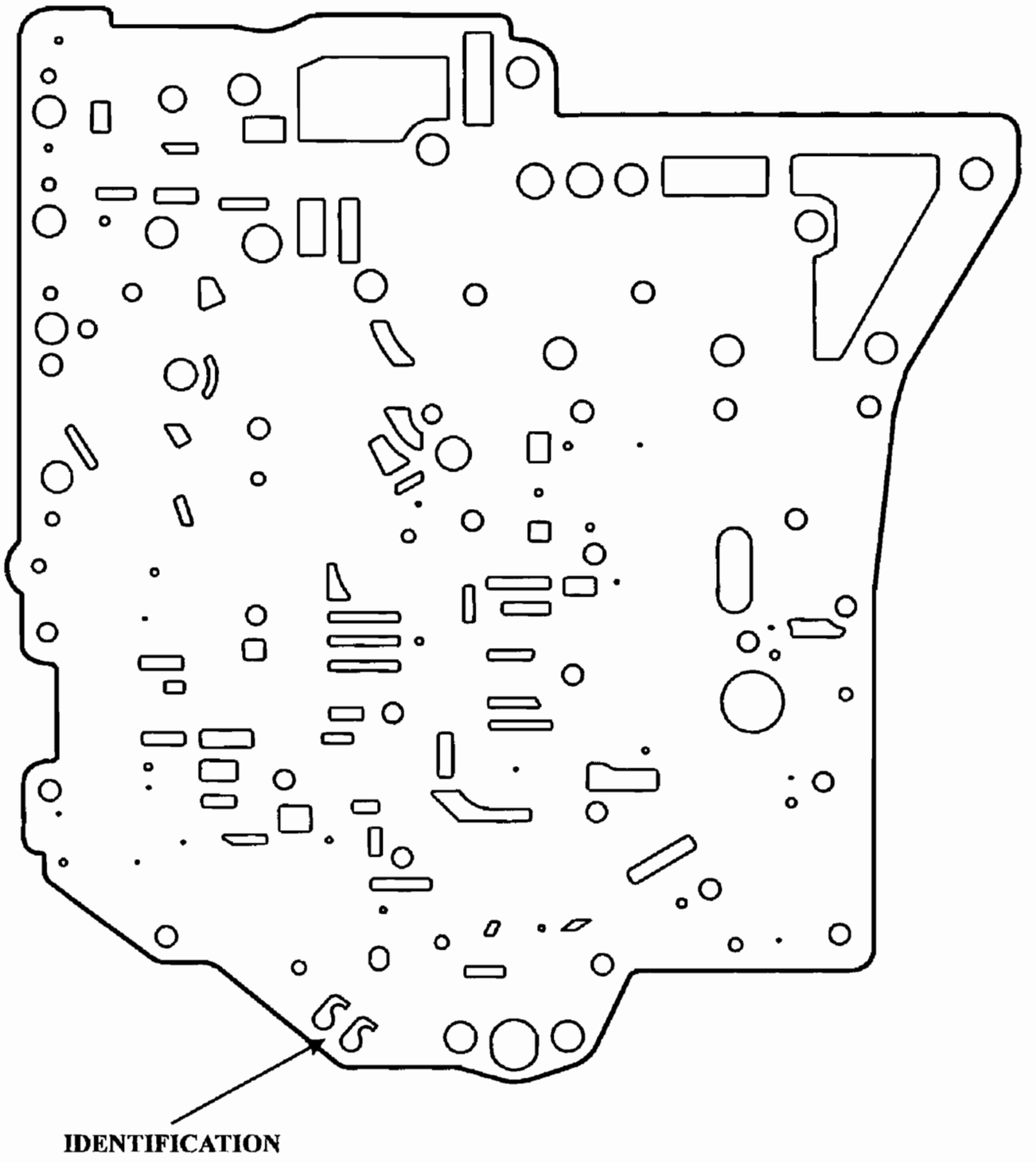


Figure 3

CHRYSLER'S 41TE, 42LE & 42RE TRANSMISSIONS
TYPICAL RELAY CHECKS

DIAGNOSTIC TIP:

Relays have become more widely used in the automotive industry during these past several years. Particularly with controlling electrical circuits related to the transmission. Relays are normally open switches which close when energized. Its purpose is to isolate one part of an electrical circuit from another. Once the operation of a relay is understood, any relay can be checked with ease. Figure 1 is a wiring diagram of a typical relay. Each terminal is lettered for identification. Terminal A energizes the relay from either the ignition or from a control module. Terminal B is a fused direct battery feed terminal. Terminal C is a ground circuit going to either a direct ground or to a control module. Terminal D is the intended circuit in which the direct battery feed terminal (terminal B) will supply when the switch is closed. When terminal C is grounded and voltage is supplied to terminal A, the relay becomes energized which pull two contacts together joining terminal B to D. To check a relay for proper operation would be to supply 12 volts to terminal A, ground terminal C and check for continuity across terminals B and D with a DVOM. If terminal identification is uncertain, simply unplug the relay from the connector. Place the negative lead of a DVOM to ground with the meter set to DC volts. With the positive lead, carefully check each terminal in the connector with the ignition off (See Figure 2). The terminal in the connector that provides battery voltage would be terminal B. The terminal opposite of terminal B is D (See Figure 1). Now turn the ignition on. Recheck the remaining two unidentified terminals. The one that has voltage with the ignition on is terminal A (See Figure 3). The remaining terminal is the (C) ground terminal.

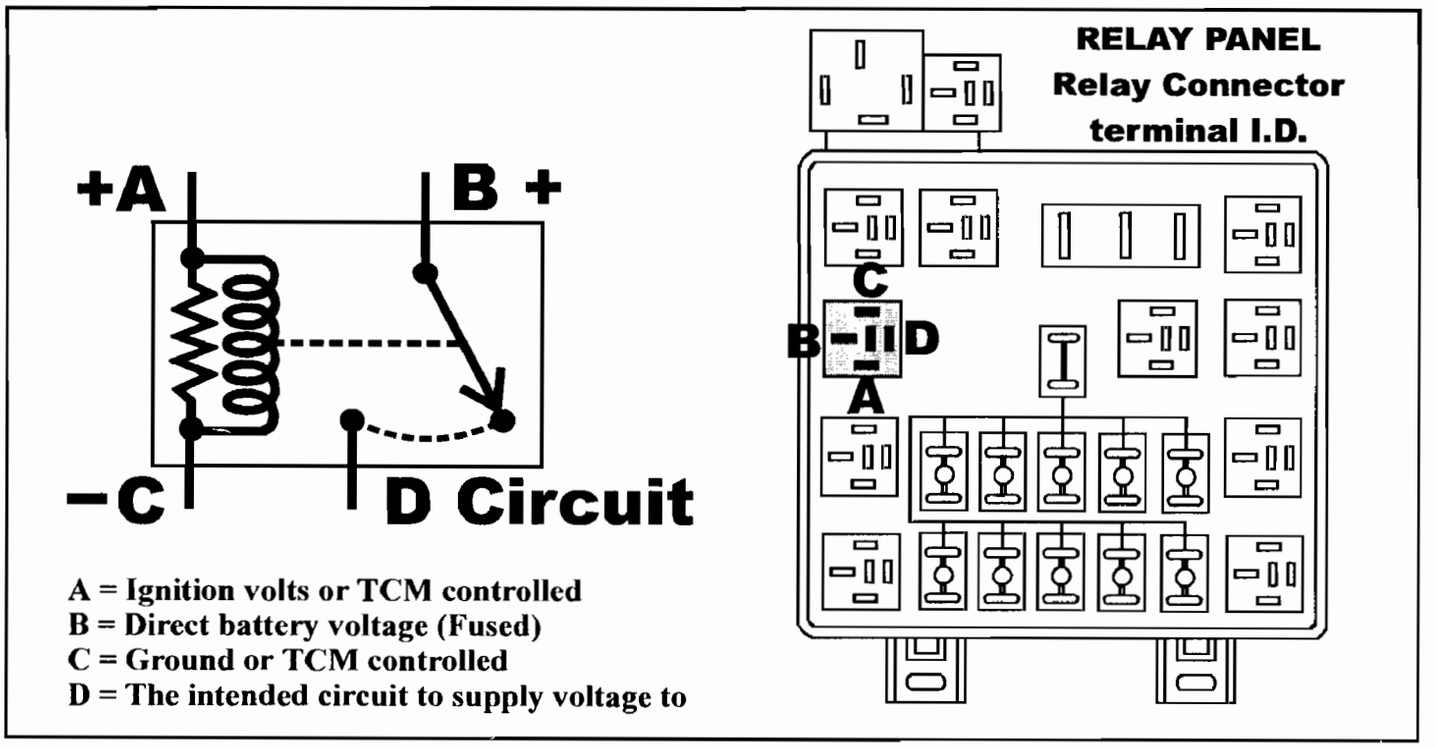


Figure 1

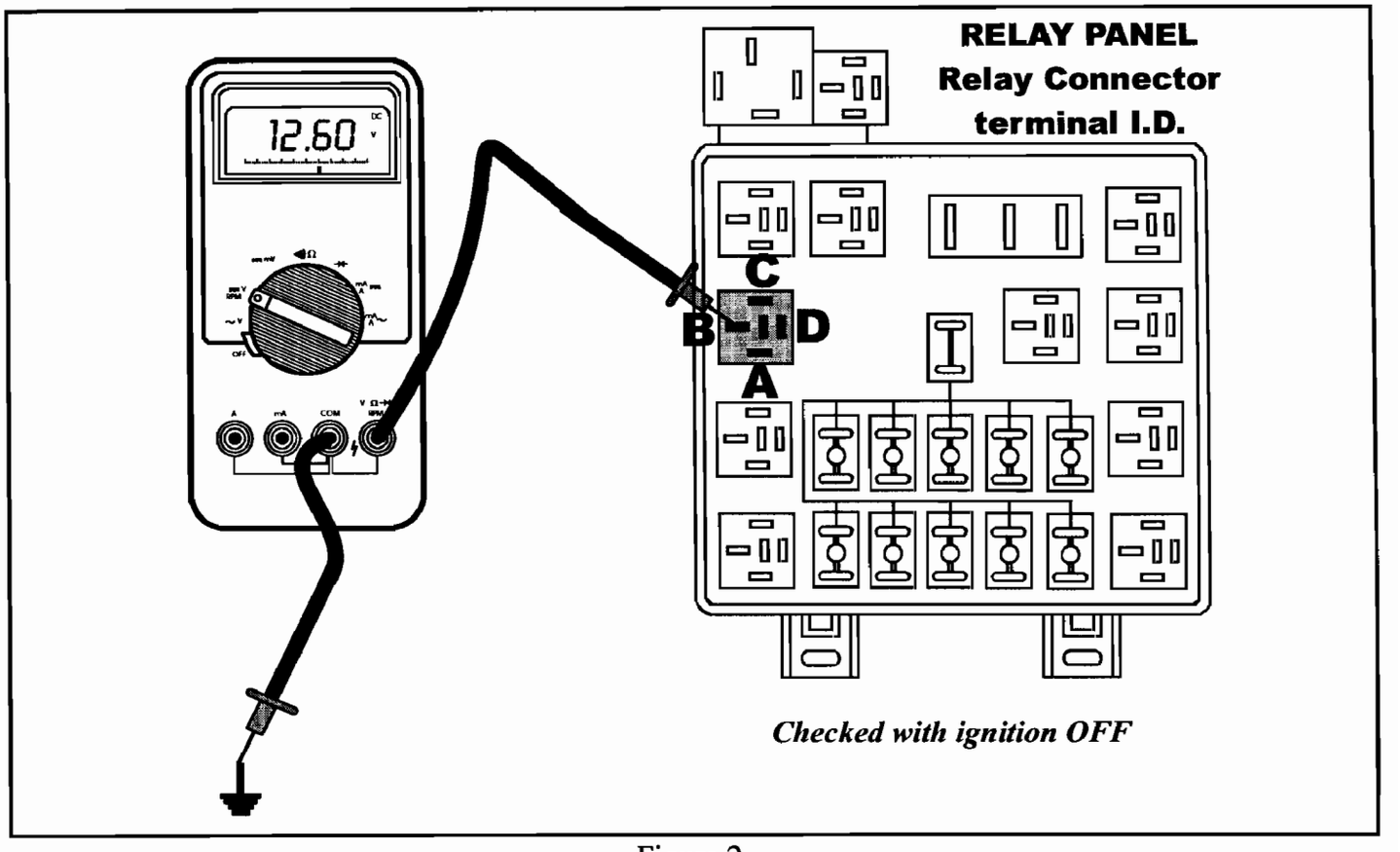


Figure 2

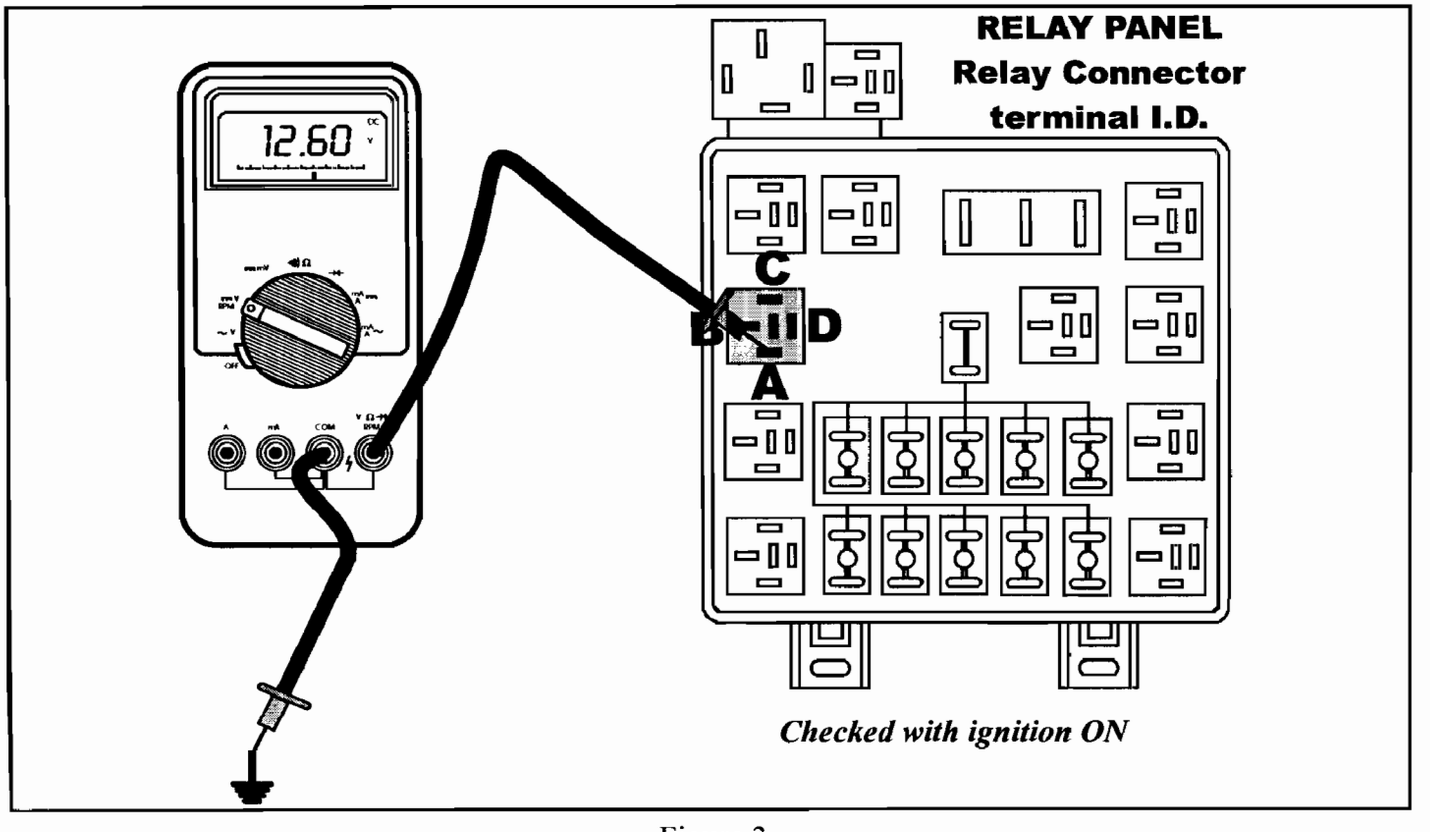


Figure 3

CHRYSLER'S 41TE, 42LE & 42RE TRANSMISSIONS
TYPICAL RELAY CHECKS

DIAGNOSTIC TIP *continued*:

With the terminals identified in the connector, the relay terminals can be identified and ready for testing. Run two jumper wires from the battery. Place the positive battery post jumper wire to terminal A. Have the negative battery post jumper lead prepared to ground terminal C. With a DVOM set to ohms, place leads across terminals B and D. When terminal C is grounded, a click should be heard and continuity should be seen on the meter display (See Figure 4). When terminal C is not grounded, the switch should be open and the meter should display the same. If the relay does not open and close as described, replace the relay.

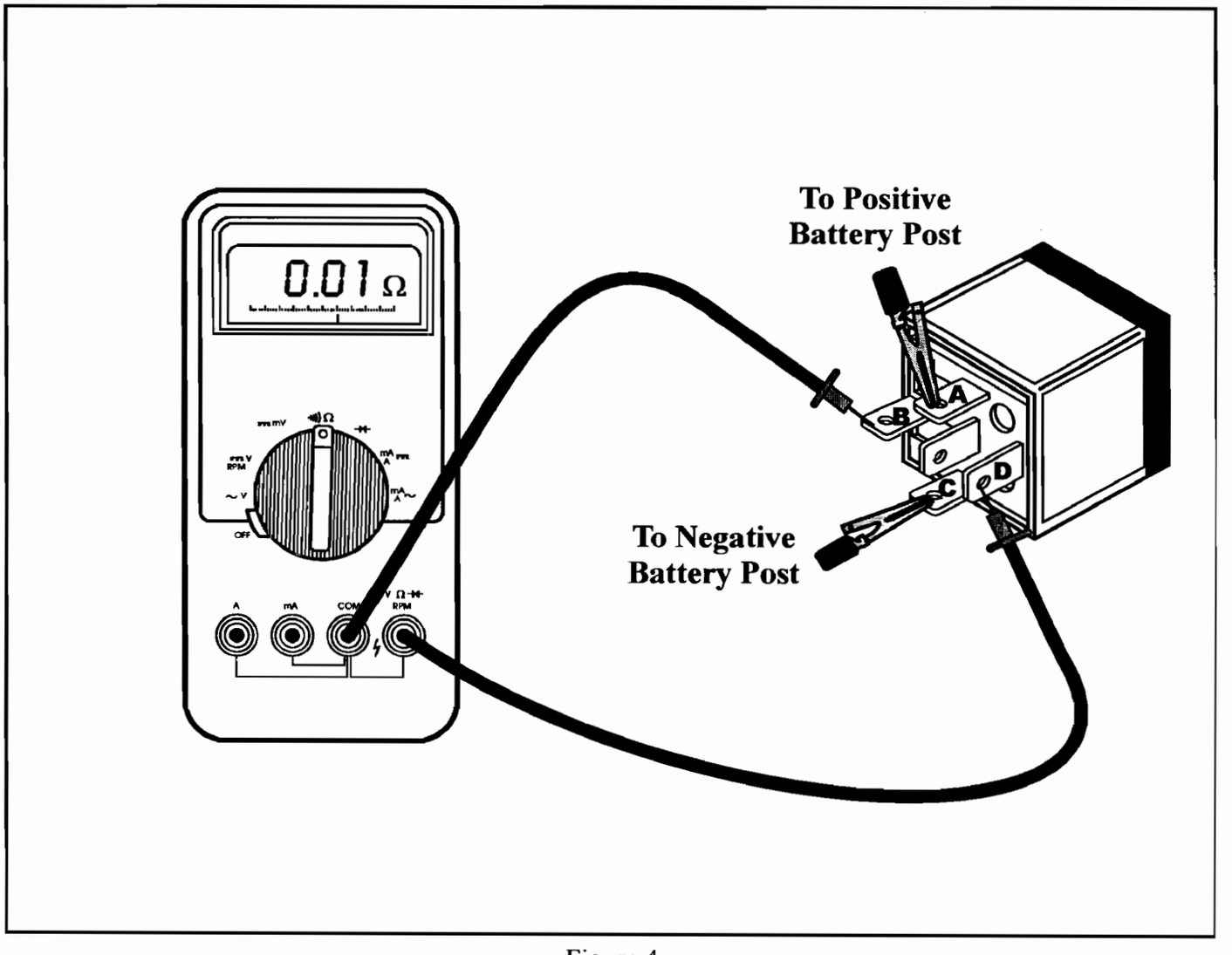
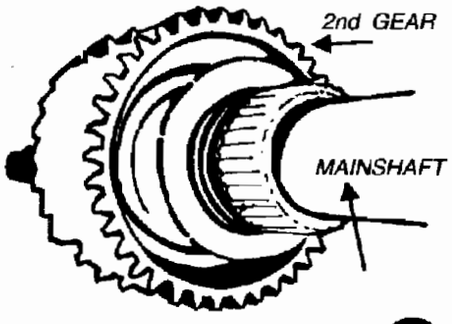


Figure 4

NEW PRODUCTS FROM OTS

Bronze Thrust Washer

OTS 88406AW



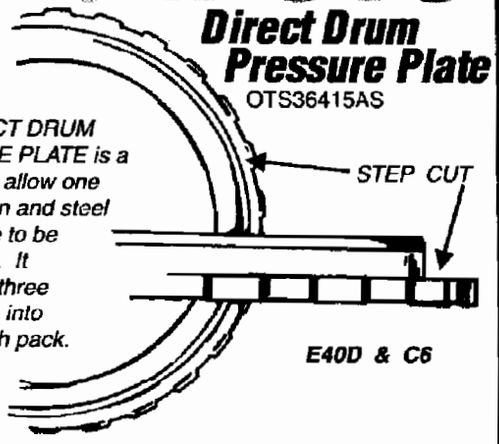
On Honda 4 speed transmissions, the mainshaft 2nd gear wears severely from the 2nd clutch needle roller bearing. This bearing also needs frequent replacement due to wear.

Replace the needle bearing with OTS 88406AW. This high quality BRONZE THRUST WASHER is designed to withstand the wear and axial thrust load of the mainshaft 2nd gear assembly.

Direct Drum Pressure Plate

OTS36415AS

This DIRECT DRUM PRESSURE PLATE is a step cut, to allow one extra friction and steel clutch plate to be assembled. It converts a three clutch pack into a four clutch pack.



Oklahoma City Location:
927 N.W. First Street
(405) 236-4391
(800) 288-3668
FAX #: (405) 236-1176

Tulsa Location:
1510 E. Third St.
(918) 584-7444
(800) 369-7444
FAX #: (918) 584-1208

Denver Location:
3300 East 43rd Ave.
(303) 296-2500
(800) 962-9652
FAX #: (303) 296-2561

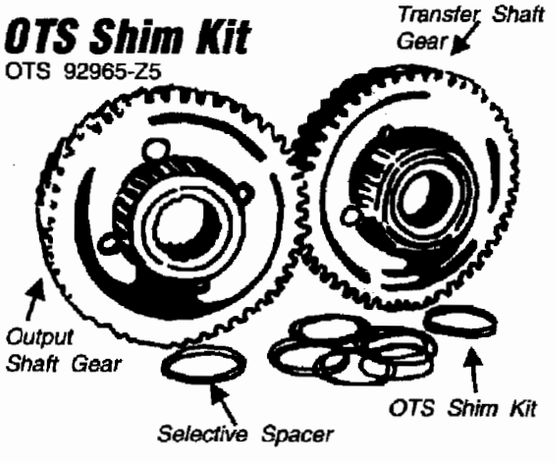
AUTOMOTIVE PRODUCTS

Specialty Bushings

T1599	*Accumulator Piston Repair Tool TH700*
T5698	*A4LD Roller Clutch Race Removing Tool*
T9699	*AXOD Case Cover Repair Tool*
77099	*Accumulator Piston Sleeve TH700*
56437	*A4LD Rear Case Washer 90-on 4.OL*
96030	*AXOD Case Cover Repair Sleeve*
36007EX	*E40D Rear Case Bushing 1-Piece*
RB1	*Nissan 5 Speed Ext. Housing Bushing*
RB2	*TOYO KOYGO 5 Speed Ext. Housing Bushing*
RB3	*Suzuki 5 Speed Ext. Housing Bushing*
RB4	*Ranger 5 Speed Ext. Housing Bushing*

OTS Shim Kit

OTS 92965-Z5



It is difficult to set the output shaft gear preload and transfer shaft gear endplay. Rebuilders often go through many shim kits to get the useful size. The shim thickness must be adjusted when any of the following components are replaced: case, carrier, carrier bearings, extension housing or bearing cups.

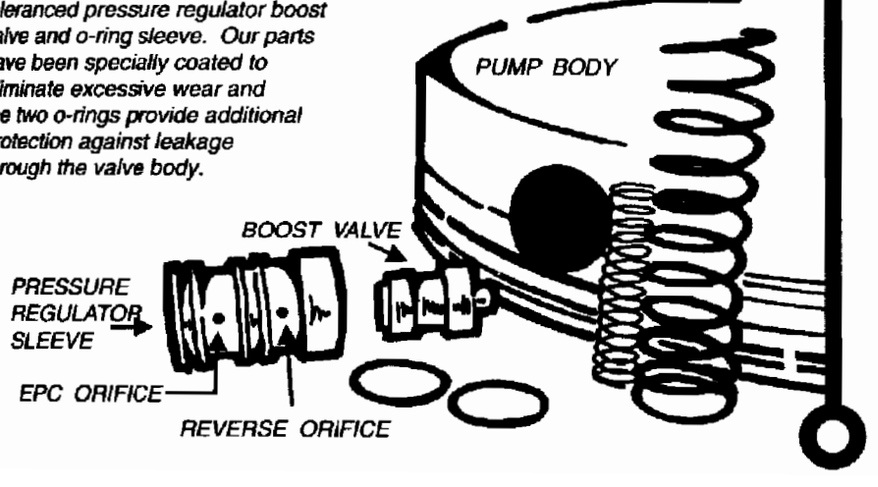
OTS SHIM KITS contains 10 shims that are .005 thick. These may be used in conjunction with leftover selective spacers to set the correct preload or endplay.

OTS Replacement Assemble

OTS 36424-01K

Vehicles with an E40D transmission frequently have problems with poor line rise and/or soft shifts.

The OTS REPLACEMENT ASSEMBLY 35424-01K eliminates these problems with a closely toleranced pressure regulator boost valve and o-ring sleeve. Our parts have been specially coated to eliminate excessive wear and the two o-rings provide additional protection against leakage through the valve body.



CHRYSLER/JEEP 42RE
WRONG GEAR STARTS
(MAY OR MAY NOT UPSHIFT)

COMPLAINT: Any Chrysler/Jeep vehicles equipped with the 42RE transmission may display one of the following complaints: ***(A)*** The vehicle exhibits a second or third gear start, ***with*** an upshift into fourth gear. ***(B)*** The vehicle exhibits a third gear start, ***with no*** upshift into fourth gear.

CAUSE: **(A)** If the vehicle has a wrong gear start, and ***does*** upshift into fourth gear, the cause may be a stuck 1-2 shift valve in the valve body, a defective governor pressure sensor, a defective governor pressure solenoid, or a defective computer.

(B) If the vehicle starts in third gear and ***does not*** upshift into fourth gear, the cause may be, either a power loss to the computer, or the computer is defective.

CORRECTION (A):

(1) If the vehicle has a wrong gear start and upshifts to fourth gear, place a pressure gauge on the governor tap, as shown in Figure 1. Should 0 PSI be observed while taking off in second gear, a sticking 1-2 shift valve is the cause. To correct this condition will require removing the valve body and freeing the 1-2 shift valve.
Should 7 to 12 PSI be seen at 0 MPH, the governor pressure sensor or the governor pressure solenoid may be the problem. If a DRB III scanner ***is*** available, go to Step 2 as the next diagnostic procedure. If a DRB III scanner ***is not*** available, go to Step 3.

(2) Chryslers dedicated DRB III scanner displays governor pressure sensor values that the computer moniters. The governor pressure sensor provides information to the computer as to the approximate pressure in the governor circuit. If at a stop, the sensor tells the computer that 0 PSI is in the governor circuit, but a pressure gauge reveals that there is actually 12 PSI in the governor circuit, the computer does not know to cycle the governor solenoid to a lower pressure since it already thinks it is at 0 PSI. If the sensor indicates that 12 PSI is in the governor circuit, and the pressure gauge verifies it, this means that the sensor is working properly and the governor pressure solenoid is most likely defective and will need to be replaced.

(3) Without the DRB III scanner, voltage checks will have to be made on the governor pressure solenoid wire, and the governor pressure sensor wire with your DVOM, while a pressure gauge is attached to the governor pressure port as shown in Figure 1. Following is the procedure for these tests.

(a) Orient yourself to the transmissions case connector and the vehicle harness connector as shown in Figure 2.

(b) Once oriented to the case connector and vehicle harness connector, locate terminal number 4 and connect the vehicle harness back onto the case connector. With your DVOM set on DC volts, place the negative lead to a known good ground. Carefully backprobe into wire number 4 with the positive lead, as shown in Figure 3.

Continued on next Page.

CORRECTION (A): (Continued)

(c) Now compare vehicle speed, governor pressure from the gauge, and governor sensor signal voltage from your DVOM, to that which is indicated in the chart in Figure 4. If at 0 MPH, your pressure gauge indicates 12 PSI, while the sensor voltage reads .66 volts, the governor pressure sensor is defective and will need to be replaced.
If governor pressure sensor voltage corresponds to the pressure seen on the gauge, and agrees with the chart shown in Figure 4, move on to the next step.
(Example:) Pressure gauge indicates 12 PSI, at 0 MPH, while the sensor voltage indicates .95 volts. This example shows that the sensor is okay.

(d) Maintain the ground lead to a known good ground and carefully backprobe into wire number 5 (Governor Pressure Solenoid) with the positive lead (See Figure 5). Again using the chart in Figure 6, compare the voltage values for the governor pressure solenoid, to the actual governor pressure indicated on the gauge.
If for example at 0 MPH, the pressure gauge indicates 12 PSI, and the DVOM shows that governor pressure solenoid voltage reads 8.30 volts, The solenoid is mechanically bad (Debris) and will need to be replaced. If the pressure gauge reads 12 PSI, and 8.70 volts is seen, the VSS or the computer is malfunctioning. Unplug the Vehicle Speed Sensor and see if governor pressure drops to 0 PSI. If it does, replace the VSS. If it does not, the computer will need to be replaced.

CORRECTION (B):

(1) If the vehicle is stuck in third gear, with no upshifts to fourth gear, turn the engine off and place the ignition switch to the ON position, unplug the transmission harness connector and perform the following tests.

(a) Check pin cavity number 1 in the vehicle harness connector for battery voltage, as shown in Figure 7. If 0 volts is seen, the computer is either defective, or the computer has lost its power source, or the wire from the computer down to pin number 1 is broken. First locate the computer which is under the dash on the drivers side, and unplug the connector as seen in Figure 8, and continue to the next step.

(b) Locate pin cavity number D16 in the transmission control module connector, as shown in Figure97. Perform a continuity test between cavity number D16 and pin cavity number 1 in the vehicle harness connector, as shown in Figure 10. There should be 5 ohms or less. If there is an open reading (Infinity), the wire is broken and will need to be repaired. If there is more than 5 ohms resistance observed, there is corrosion somewhere in the wiring, or a short to ground may have occured, which means the wire will have to be replaced as well. If 5 ohms or less is seen, move on to the next step.

(c) With the engine off and the ignition switch in the ON position, check for battery voltage in the transmission control module connector, om pins C8, C9 and D8, as shown in Figure 11. If battery voltage is lost at ***any*** one of these terminals, check for blown fuses in the power distribution center, located on the passenger side fender shield by the battery. Check fuses F2, F3, F6, F15, and replace as necessary, as shown in Figure 12. If battery voltage is seen at all three locations, continue on to the next step.

Continued on next Page.

CORRECTION (B): (Continued)

(d) Plug the transmission control module connector back into the computer, and with the engine off and ignition switch in the ON position, check for 5 volts at cavity number 2 in the vehicle harness connector, as shown in Figure 13. If no voltage is seen, unplug the transmission control module connector and test for continuity between cavity C10 at the transmission control module connector and terminal number 2 at the vehicle harness connector, as shown in Figure 14. If 5 ohms or less is indicated, the computer will need to be replaced. If an open circuit is indicated, repair or replace the broken wire between C10 and terminal 2.

SERVICE INFORMATION:

Governor Pressure Sensor	56027562
Governor Pressure Solenoid	4617210

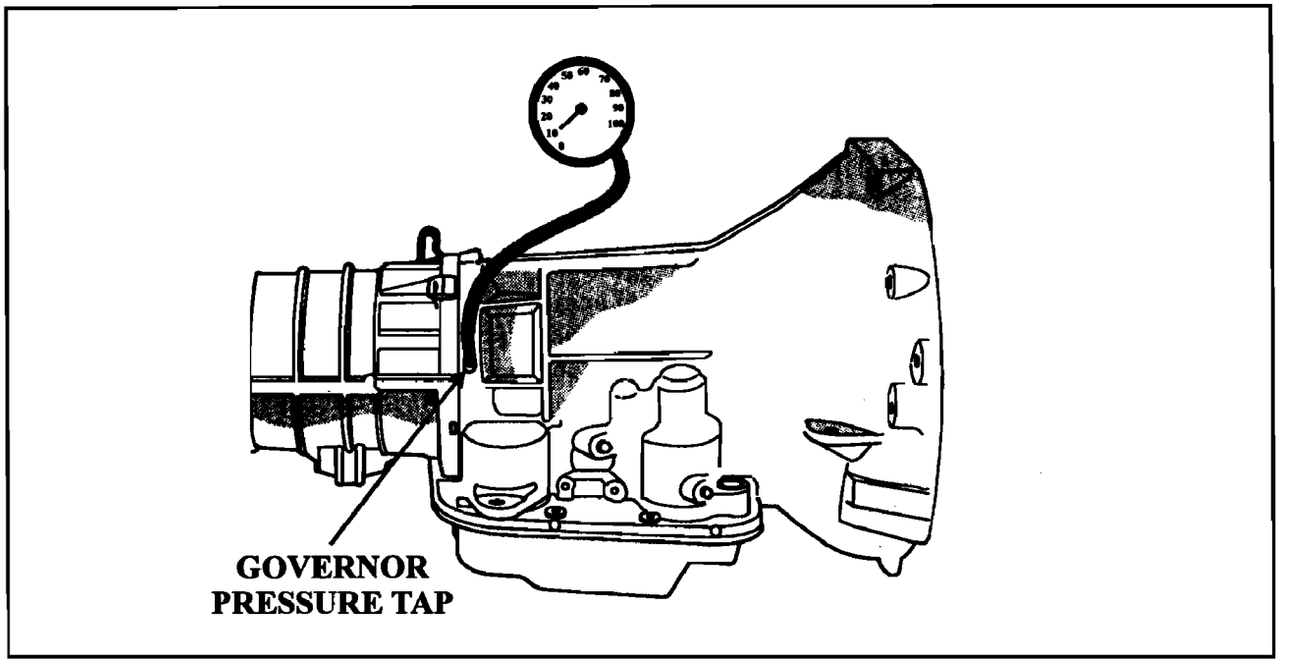


Figure 1

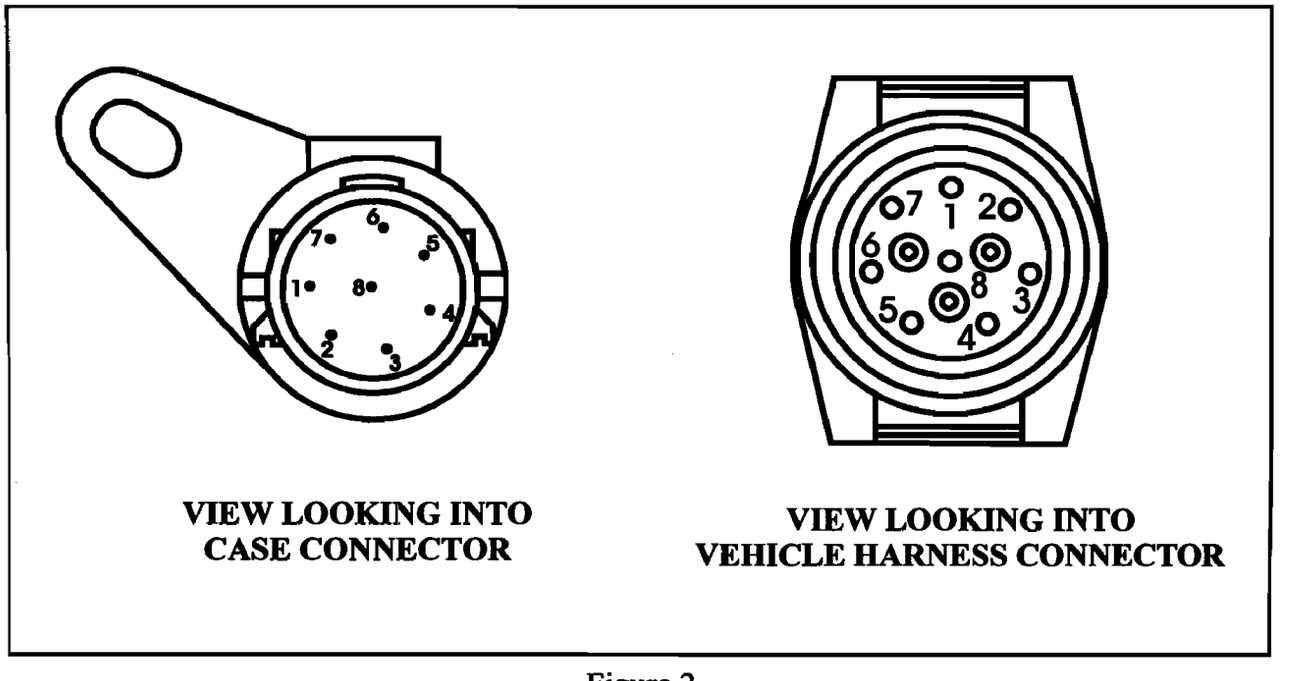


Figure 2

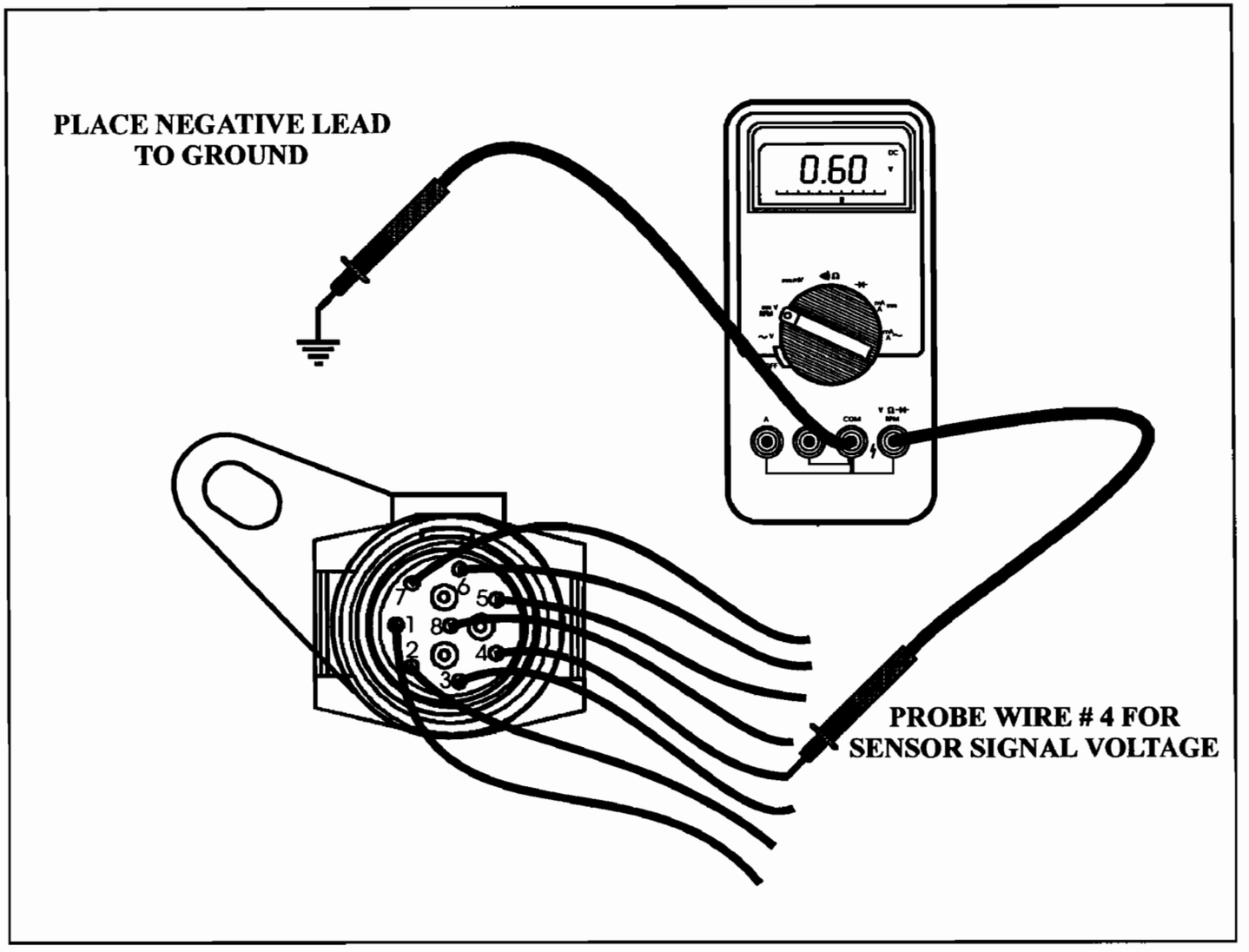


Figure 3

MPH	0	10	20	30	40	50	60
SENSOR SIGNAL VOLTAGE WIRE # 4	.66	.90	1.10	1.45	1.80	2.15	2.95
SOLENOID VOLTAGE WIRE # 5	8.30	8.60	9.45	9.80	10.30	10.80	13.80
APPROXIMATE GOVERNOR PRESSURE	0	10	20	30	40	50	60

Figure 4

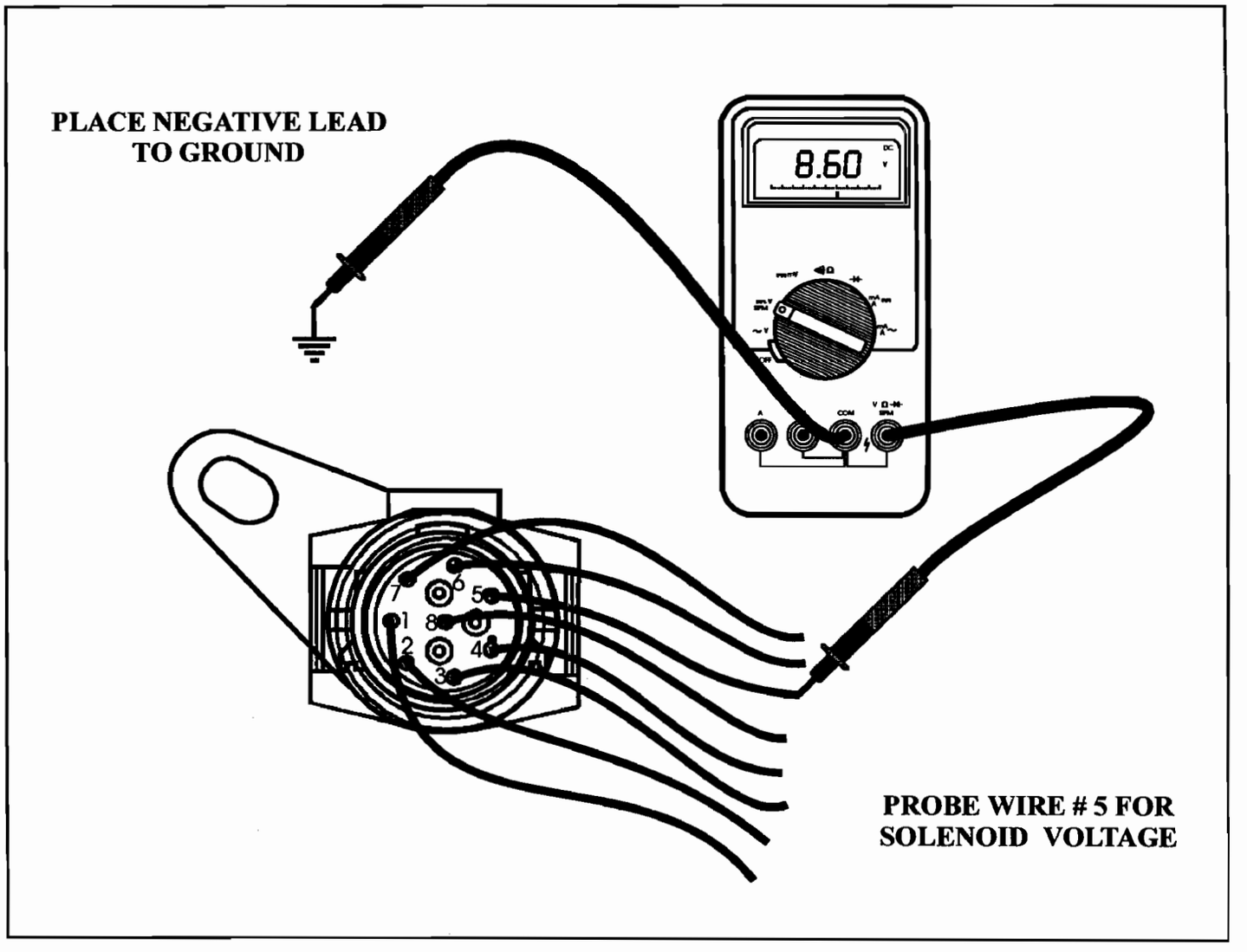


Figure 5

MPH	0	10	20	30	40	50	60
SENSOR SIGNAL VOLTAGE WIRE # 4	.66	.90	1.10	1.45	1.80	2.15	2.95
SOLENOID VOLTAGE WIRE # 5	8.30	8.60	9.45	9.80	10.30	10.80	13.80
APPROXIMATE GOVERNOR PRESSURE	0	10	20	30	40	50	60

Figure 6

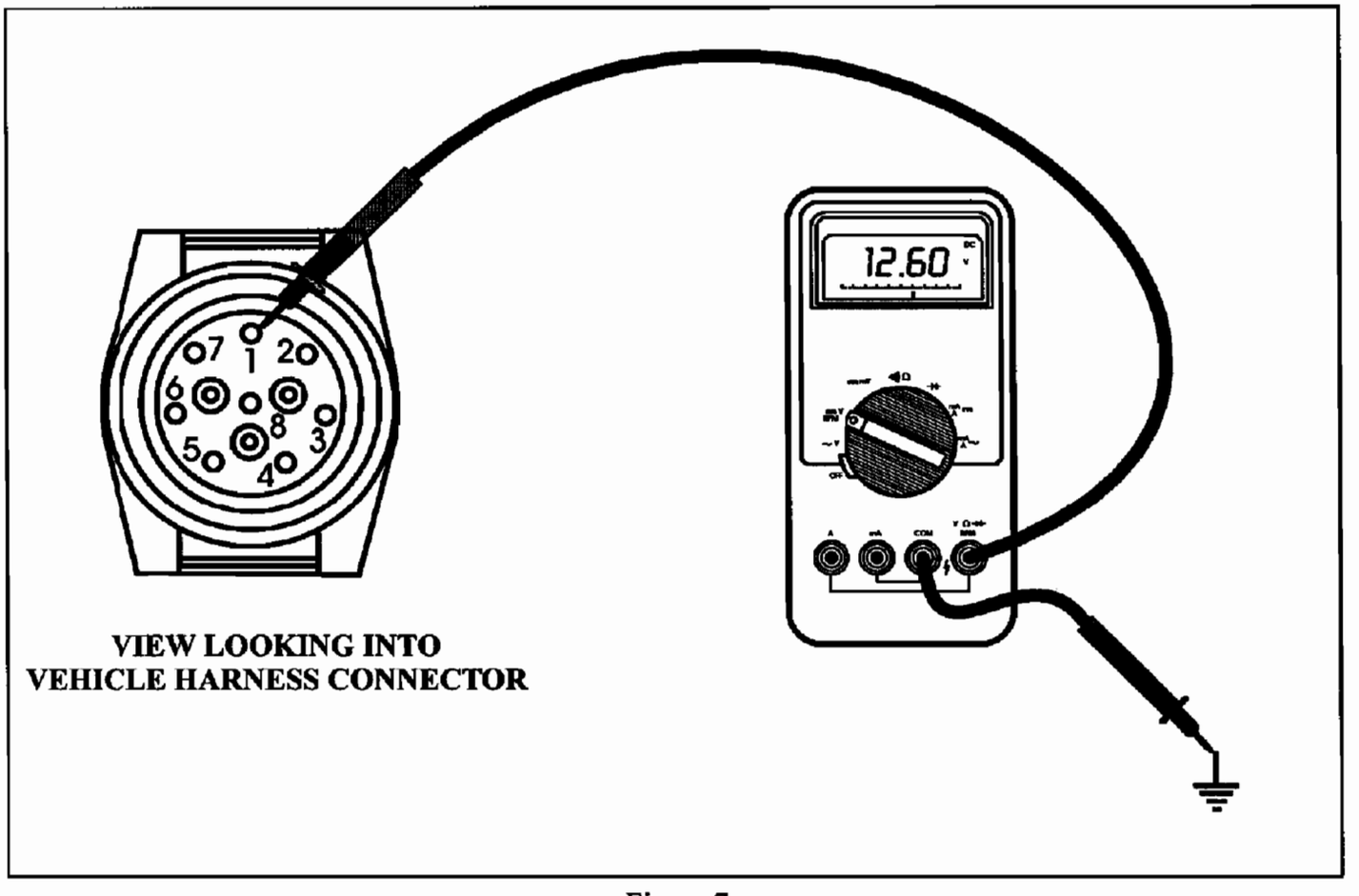


Figure 7

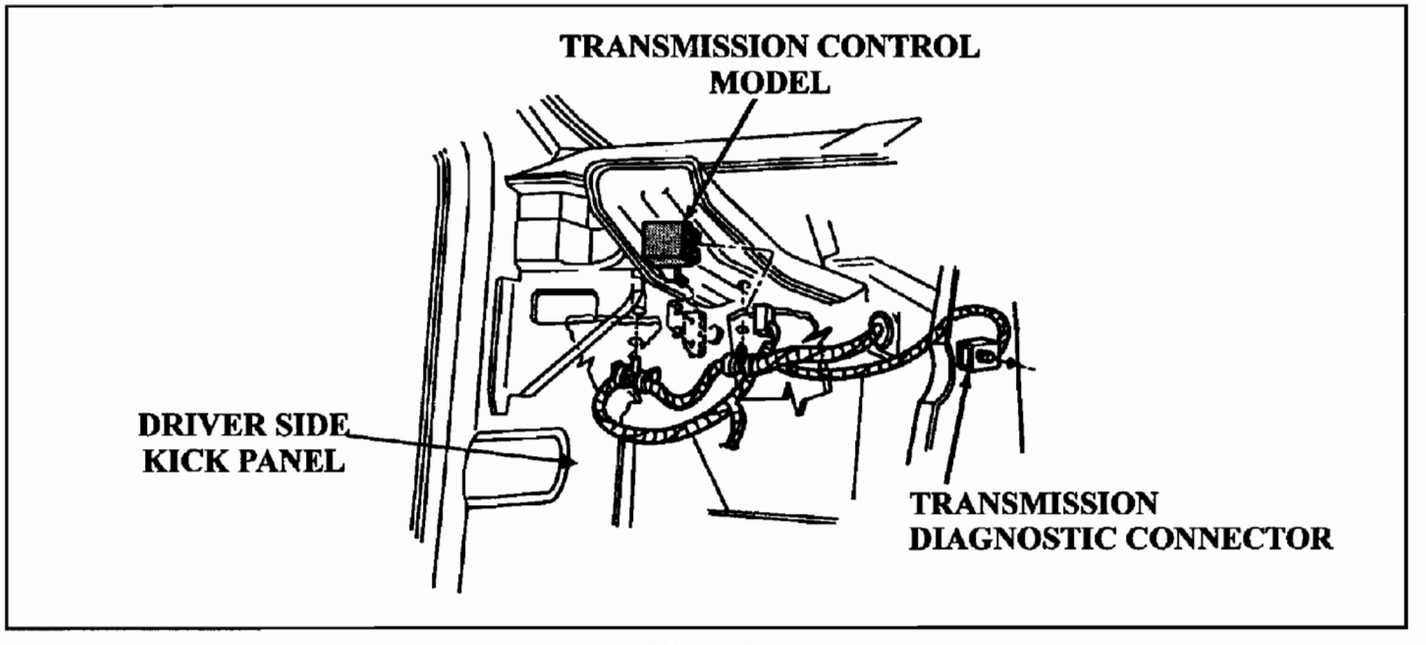


Figure 8

TRANSMISSION CONTROL MODULE CONNECTOR

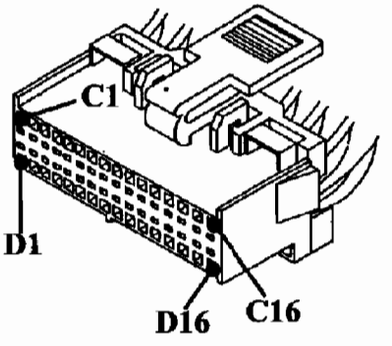


Figure 9

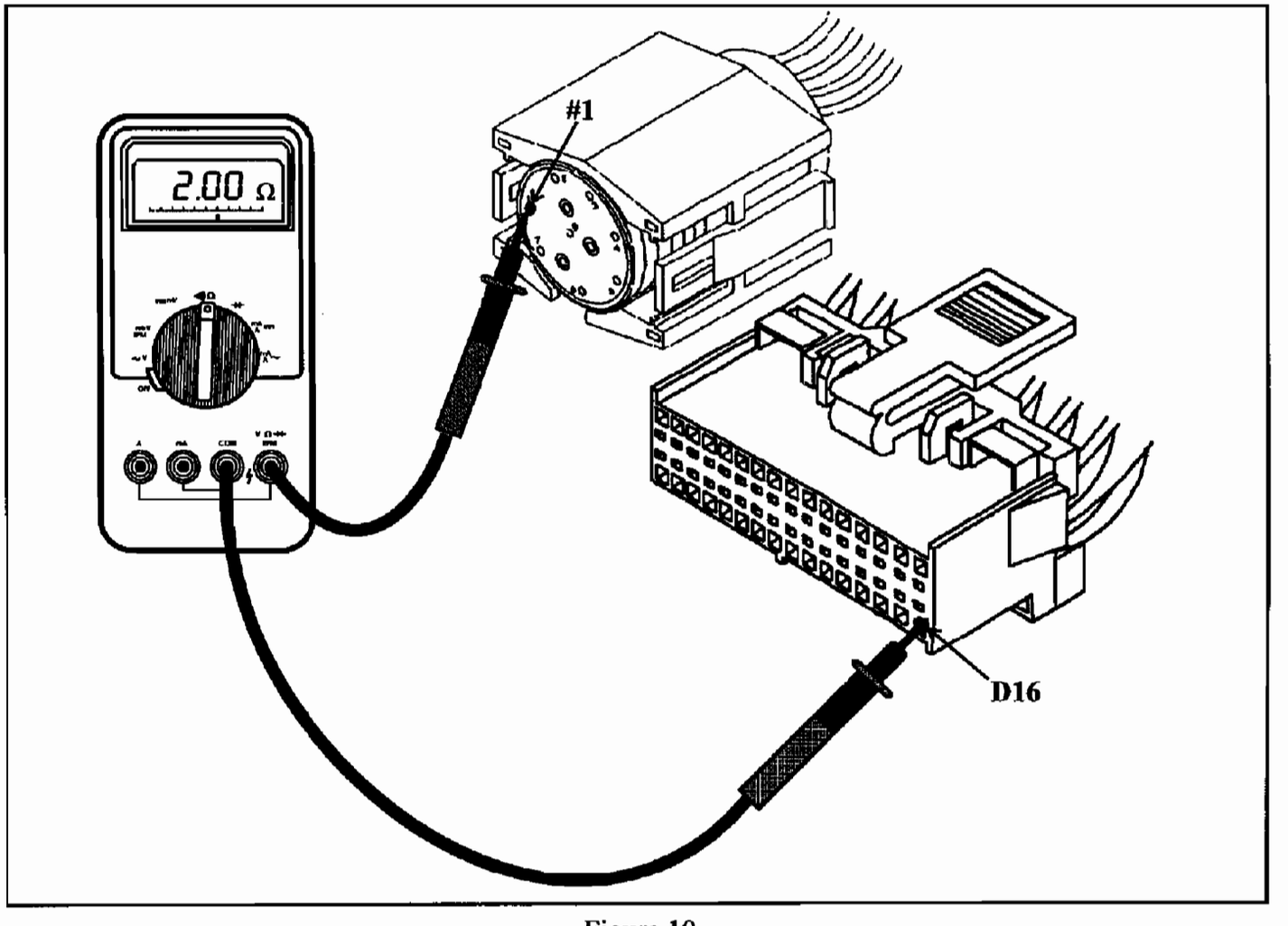


Figure 10

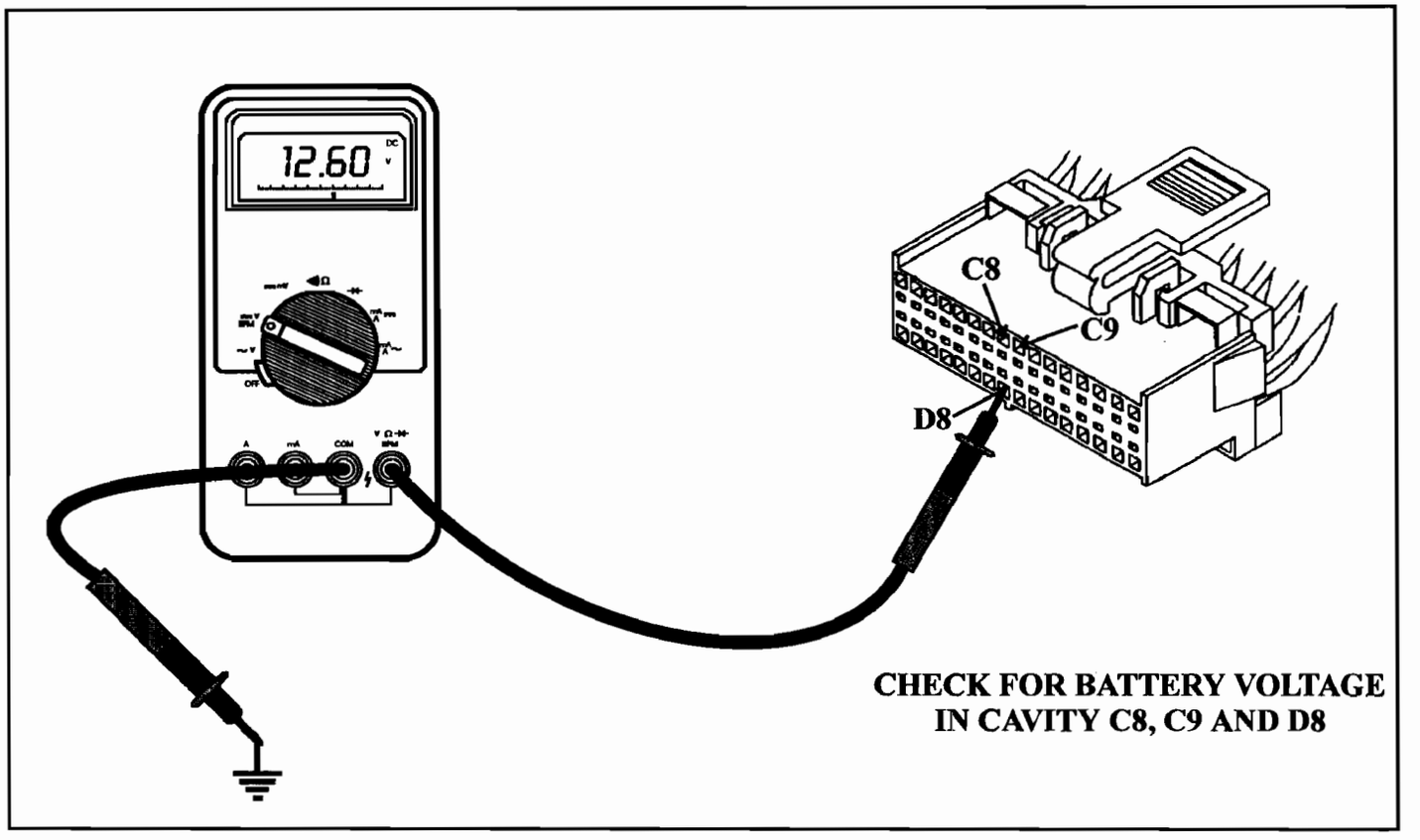


Figure 11

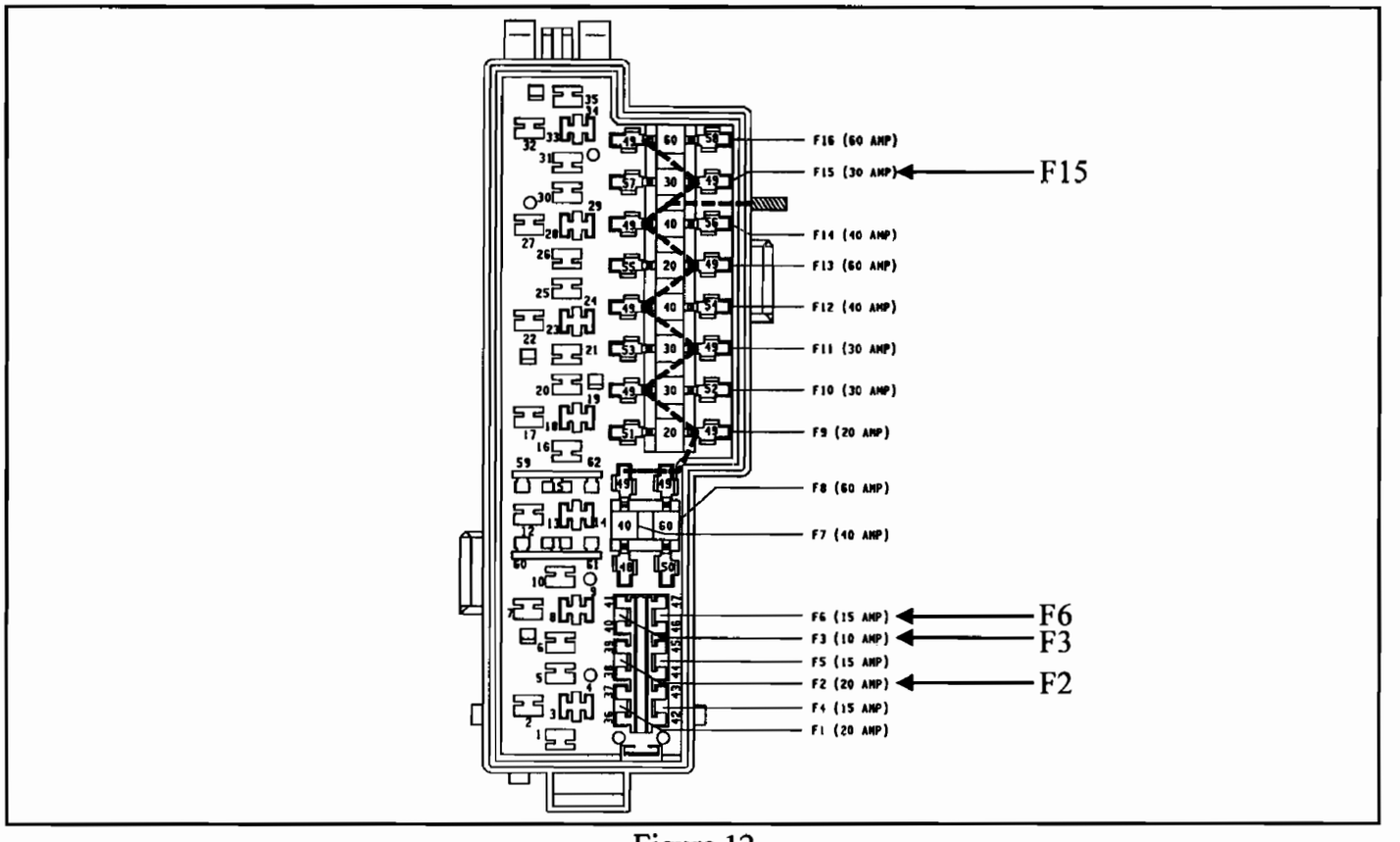


Figure 12

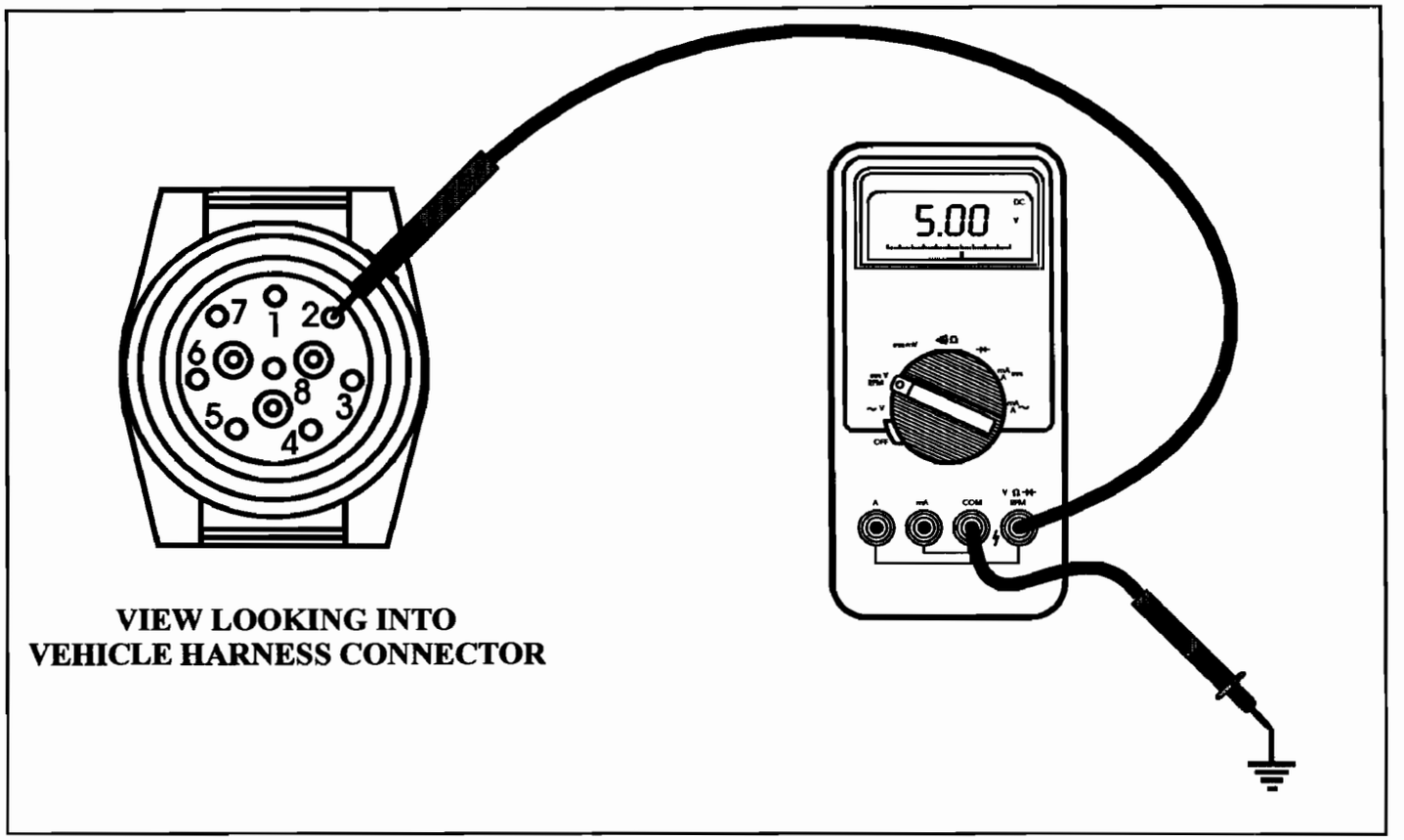


Figure 13

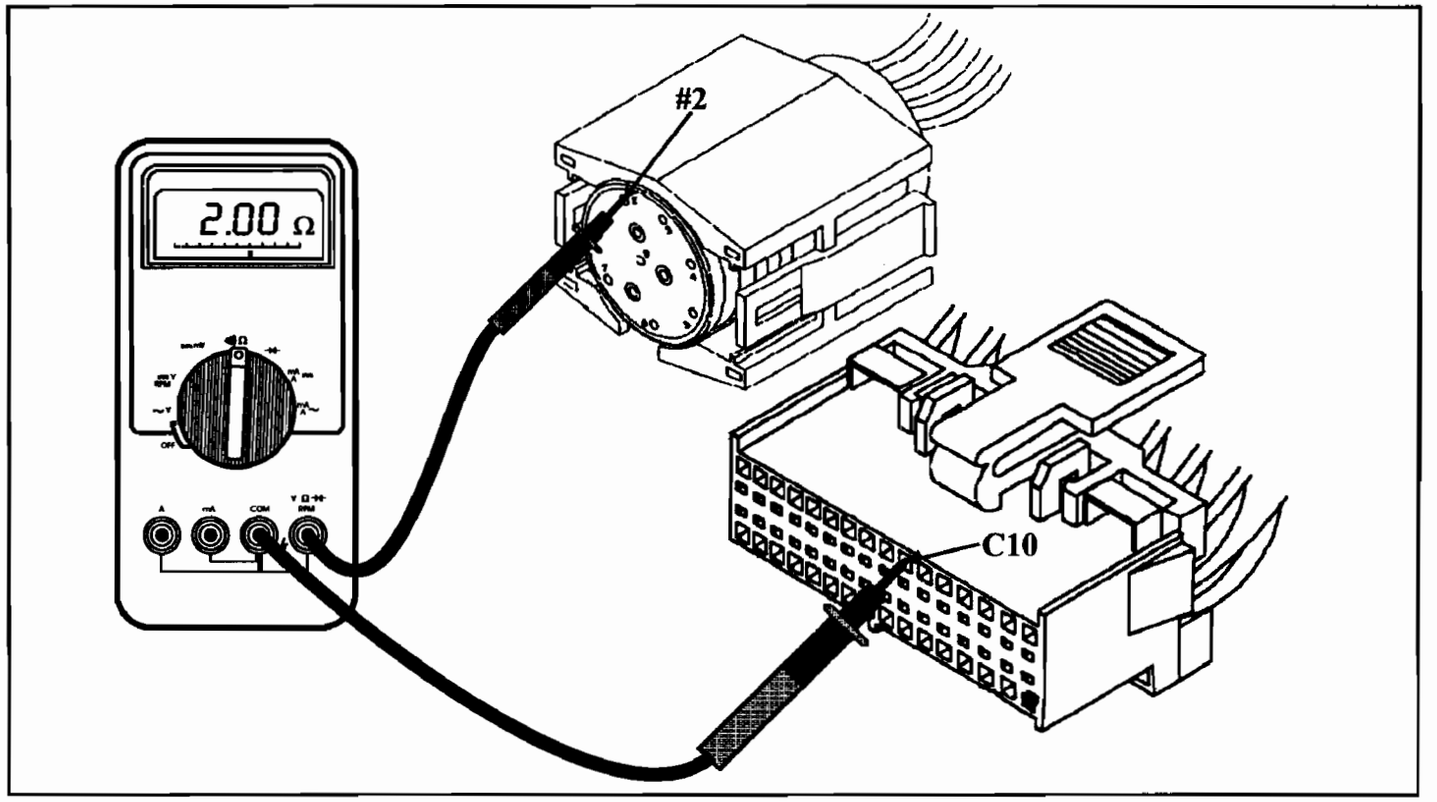


Figure 14

CHRYSLER 42RE, 44RE, 46RE, 47RE

NEW DESIGN GOVERNOR PRESSURE SENSOR AND TRANSMISSION CONTROL RELAY ADDED

CHANGE: ***Change No. 1*** - Beginning at the start of production for 1996 models, all Chrysler 42RE, 44RE, 46RE and 47RE transmissions were built with a new design Governor Pressure Sensor that now incorporates the Transmission Fluid Temperature (TFT) sensor inside the Governor Pressure Sensor assembly. The previous design has the TFT pop-riveted to the solenoid assembly. Refer to Figure 1.

Change No. 2 - Beginning at the start of production for 1996 models, all Chrysler vehicles equipped with a 42RE, 44RE, 46RE or 47RE transmission were built with a Powertrain Control Module (PCM), instead of the previous Transmission Control Module (TCM). Chrysler has installed a new "Transmission Control Relay" on these models that now controls the voltage to pin number one at the transmission, via a ground signal from the PCM. Refer to Figure 2 for locations and wire colors on the various models, and Figure 3 for a complete wiring schematic including the Transmission Control Relay.

REASON: ***Change No. 1*** - Increased Transmission Fluid Temperature Sensor accuracy for improved reliability and durability.

Change No. 2 - Increased reliability and durability by relieving the added solenoids amperage from the circuit and improves "Limp Mode" control when fault codes are stored in the PCM.

PARTS AFFECTED:

(1) GOVERNOR PRESSURE SENSOR - Now incorporates the Transmission Fluid Temperature Sensor which requires four terminals on the sensor instead of the previous three, as shown in Figure 1.

(2) INTERNAL WIRING HARNESS - Eliminates the previous TFT from the solenoid assembly and requires a new connector with four wires to accommodate the new design Governor Pressure Sensor. Refer to Figure 1.

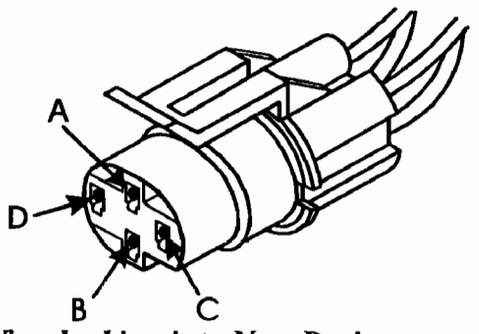
(3) TRANSMISSION CONTROL MODULE - Eliminated, and transmission functions are now handled by the Powertrain Control Module (PCM).

(4) TRANSMISSION CONTROL RELAY - Added to control the voltage to pin number one at the transmission and controled with a ground signal from the PCM. Refer to Figure 2 for the locations and wire colors on the various models, and Figure 3 for a complete wire schematic.

INTERCHANGEABILITY:

None of the parts listed above will interchange with any previous model vehicles.

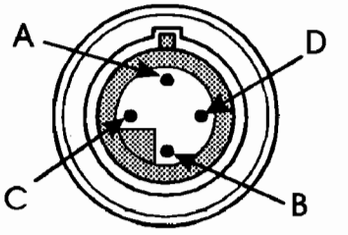
NEW DESIGN GOVERNOR PRESSURE SENSOR WITH "TFT" INCORPORATED INSIDE THE SENSOR



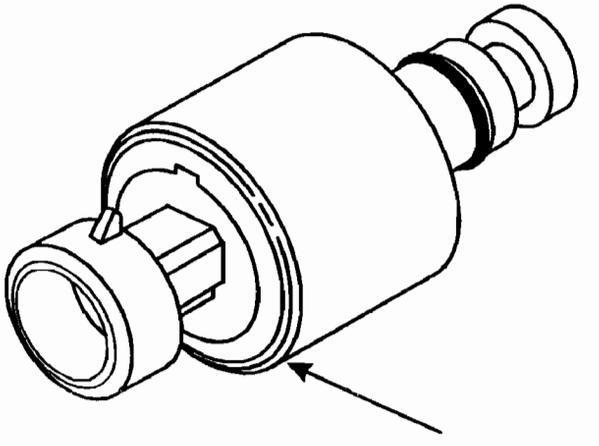
View looking into New Design Governor Pressure Sensor Connector

Pin Number	All Models
A	RED
B	WHITE
C	BLACK
D	GREEN

PIN FUNCTION
A 5-Volt supply to sensor from PCM
B Governor Pressure Sensor Signal to PCM
C Transmission Fluid Temperature Signal to PCM
D Governor Pressure Sensor Ground

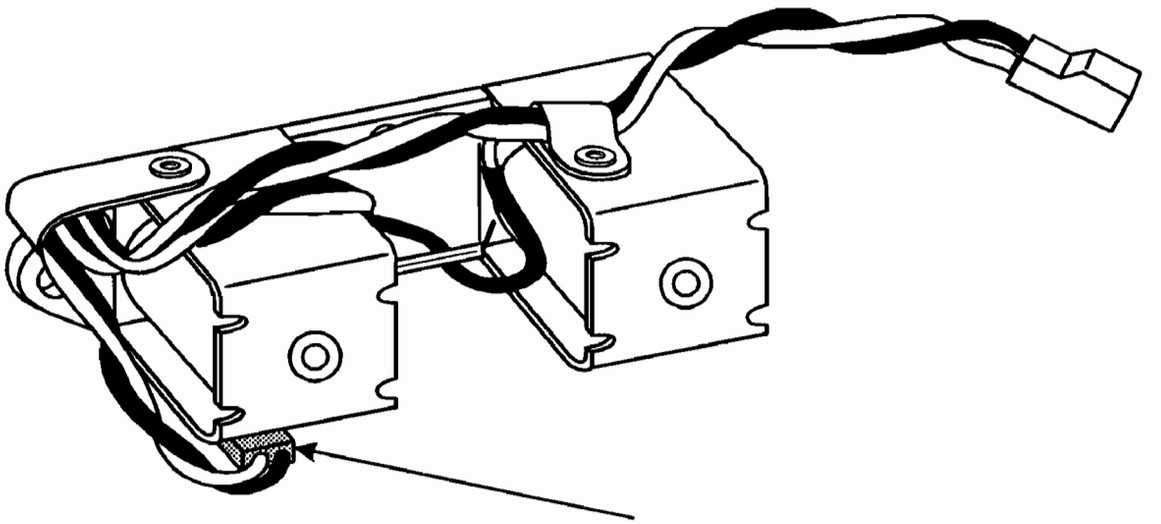


View looking into the Governor Pressure Sensor



Governor Pressure Sensor

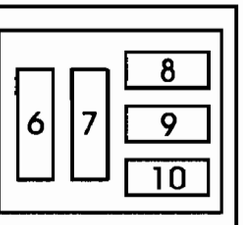
PREVIOUS DESIGN "TFT" SENSOR LOCATION



Transmission Fluid Temperature Sensor

Figure 1

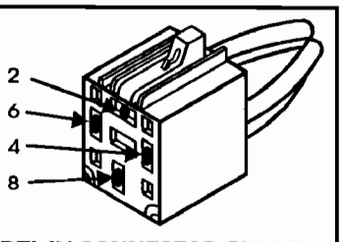
Pin Number	Model "BR" Ram Pick-up	Model "ZJ" Grand Cherokee
6	RED/WHT	LT GREEN
7	RED	LT BLUE
8	PINK	BRN/ORG
10	LTG/BLK	RED/ORG



TRANSMISSION CONTROL RELAY CONNECTOR PIN I.D. FOR "BR" AND "ZJ" MODELS

PIN	FUNCTION
6	Fused Battery Voltage
7	Transmission Control Relay Output (12V to Transmission)
8	Transmission Relay Control (Grnd Signal from PCM)
10	Fused Ignition Switch (12V to Relay from Ign. Switch)

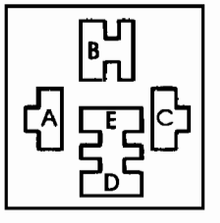
Pin Number	Model "AB" Ram Van, Wagons and Jeeps
2	LIGHT BLUE
4	LT GREEN/BLACK
6	VIOLET/LT BLUE
8	RED/WHT



TRANSMISSION CONTROL RELAY CONNECTOR PIN I.D. FOR "AB" MODELS

PIN	FUNCTION
2	Transmission Control Relay Output (12V to Transmission)
4	Fused Ignition Switch (12V to Relay from Ign. Switch)
6	Transmission Relay Control (Grnd Signal from PCM)
8	Fused Battery Voltage

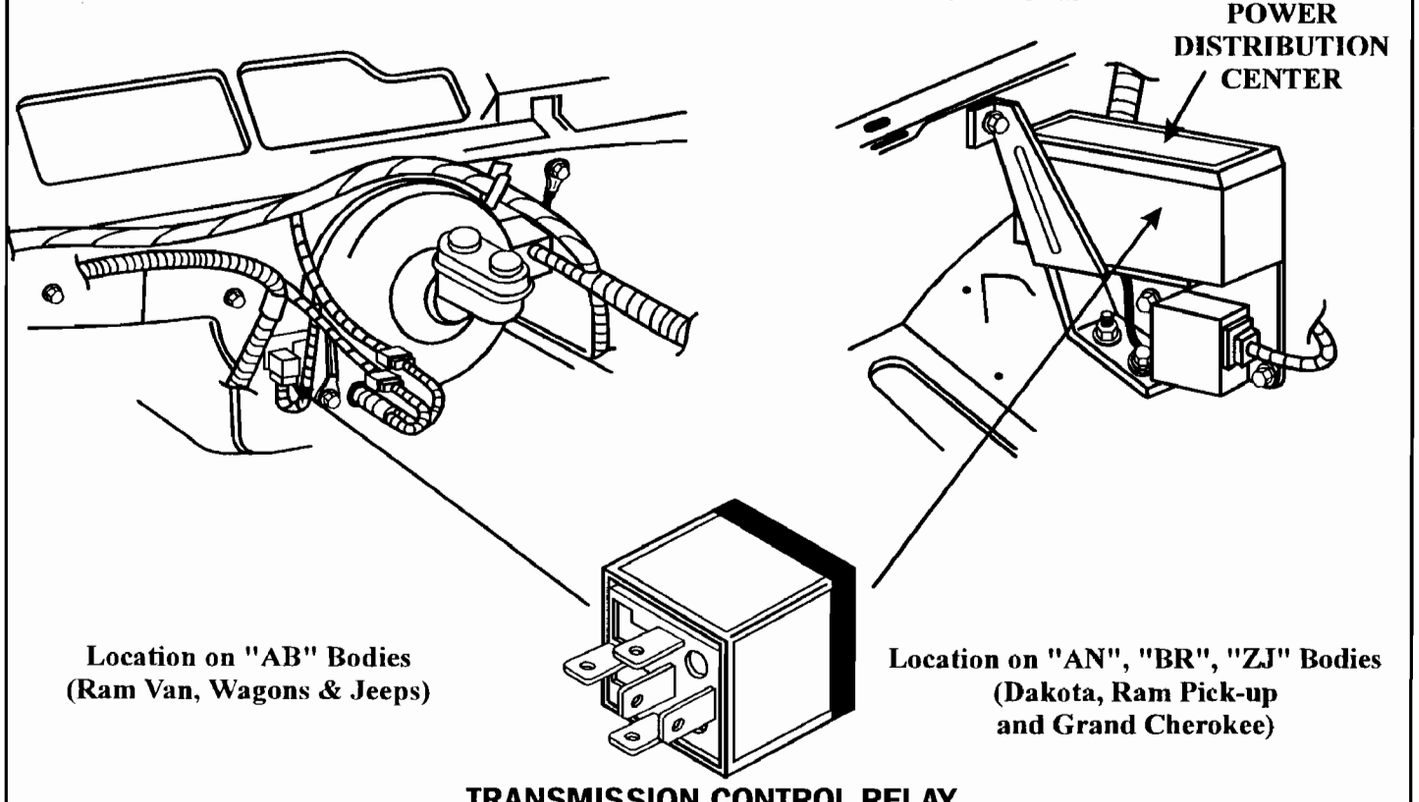
Pin Number	Model "AN" Dakota Pick-up
A	DK BLUE
B	PNK/DKB
C	DKB/WHT
D	LT GREEN



TRANSMISSION CONTROL RELAY CONNECTOR PIN I.D. FOR "AN" MODELS

PIN	FUNCTION
A	Fused Ignition Switch (12V to Relay from Ign. Switch)
B	Fused Battery Voltage
C	Transmission Relay Control (Grnd Signal from PCM)
D	Transmission Control Relay Output (12V to Transmission)

TRANSMISSION CONTROL RELAY LOCATIONS



Location on "AB" Bodies (Ram Van, Wagons & Jeeps)

Location on "AN", "BR", "ZJ" Bodies (Dakota, Ram Pick-up and Grand Cherokee)

TRANSMISSION CONTROL RELAY

Figure 2

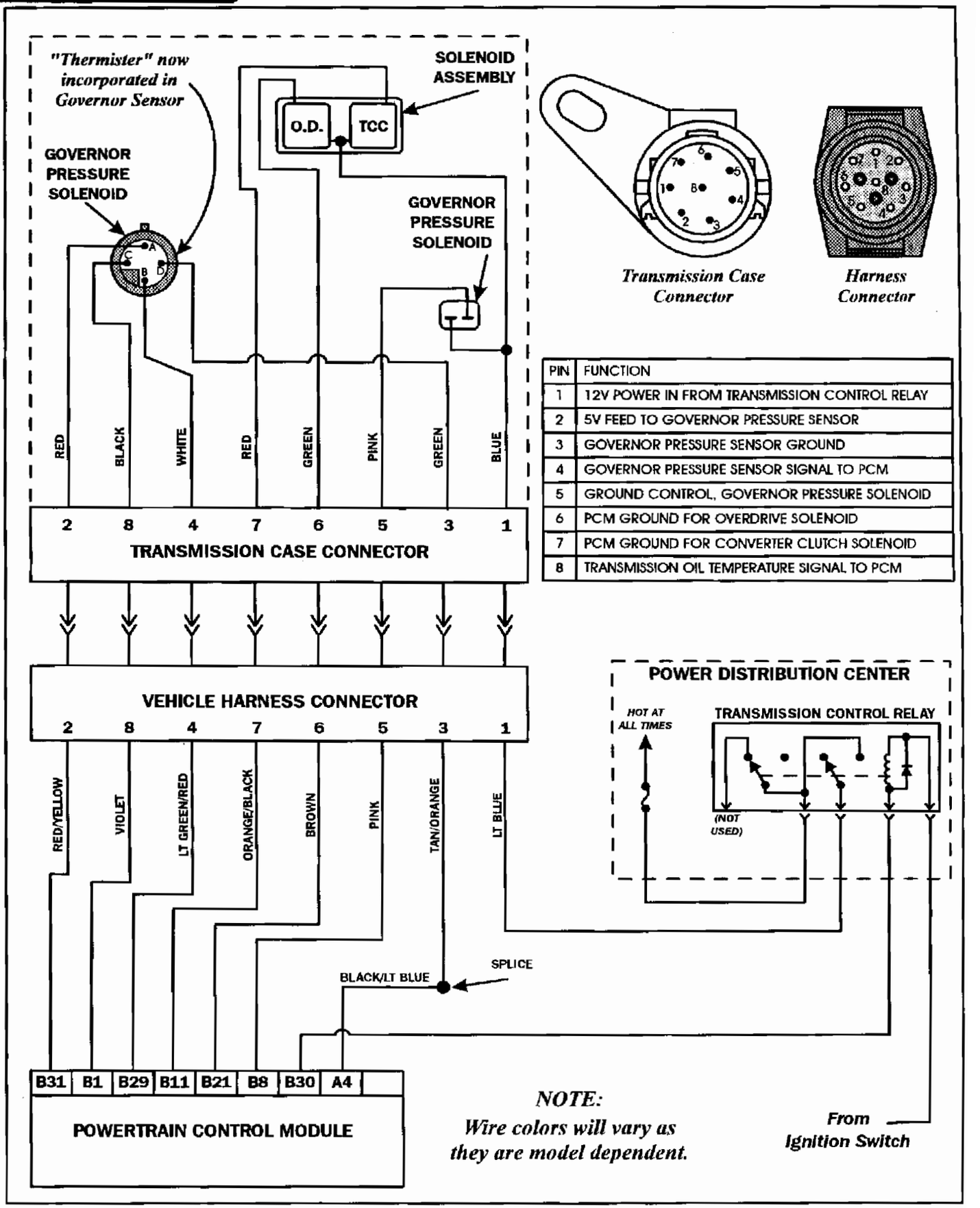

"Thermister" now incorporated in Governor Sensor
SOLENOID ASSEMBLY
O.D.
TCC
GOVERNOR PRESSURE SOLENOID
GOVERNOR PRESSURE SOLENOID
A
B
C
D
RED
BLACK
WHITE
RED
GREEN
PINK
GREEN
BLUE
2 8 4 7 6 5 3 1
TRANSMISSION CASE CONNECTOR
Transmission Case Connector
Harness Connector
PIN | FUNCTION
1 | 12V POWER IN FROM TRANSMISSION CONTROL RELAY
2 | 5V FEED TO GOVERNOR PRESSURE SENSOR
3 | GOVERNOR PRESSURE SENSOR GROUND
4 | GOVERNOR PRESSURE SENSOR SIGNAL TO PCM
5 | GROUND CONTROL, GOVERNOR PRESSURE SOLENOID
6 | PCM GROUND FOR OVERDRIVE SOLENOID
7 | PCM GROUND FOR CONVERTER CLUTCH SOLENOID
8 | TRANSMISSION OIL TEMPERATURE SIGNAL TO PCM
VEHICLE HARNESS CONNECTOR
2 8 4 7 6 5 3 1
POWER DISTRIBUTION CENTER
HOT AT ALL TIMES
TRANSMISSION CONTROL RELAY
(NOT USED)
RED/YELLOW
VIOLET
LT GREEN/RED
ORANGE/BLACK
BROWN
PINK
TAN/ORANGE
LT BLUE
BLACK/LT BLUE
SPLICE
B31 B1 B29 B11 B21 B8 B30 A4
POWERTRAIN CONTROL MODULE
NOTE:
Wire colors will vary as they are model dependent.
From Ignition Switch

Figure 3

CHRYSLER 42RE, 44RE, 46RE & 47RE

DIAGNOSTIC INFORMATION

CODES: The DLC (data link connector) is a 16 pin OBD II connector located under the driver side dash. A scanner equipped with the appropriate cartridge, OBD II connector and access key will retrieve both Engine and Transmission Diagnostic Codes. If a scanner is not available, MIL codes may be retrieved by cycling the ignition ON and OFF three consecutive times. The codes will be displayed on the digital odometer. The difference between scanner codes and MIL codes is the scanner codes are specific OBD II diagnostic codes while MIL codes are very general. A chart in Figure 3 displays codes specifically related to the transmission showing both the OBD II and MIL codes.

FAULT DESCRIPTION	OBD II CODES	MIL CODES
3-4 SHIFT SOL - NO RPM DROP @ 3-4 SHIFT	**P0783**	**45**
GOV PRESS ABOVE 3 PSI IN GEAR WITH 0 MPH	**P1757**	**45**
GOV PRESS NOT EQUAL TO TARGET @ 15-20 PSI	**P1756**	**45**
GOV PRESS SENSOR OFFSET VOLTS TOO LOW OR HIGH	**P1762**	**45**
GOV PRESS SENSOR VOLTS TOO HIGH	**P1763**	**45**
GOV PRESS SENSOR VOLTS TOO LOW	**P1764**	**45**
GOV PRESS SOLENOID/TRANS RELAY CIRCUIT	**P0748**	**45**
O/D SWITCH PRESSED (LO) MORE THAN 5 MIN	**N/A**	**45**
P/N SWITCH STUCK IN PARK OR IN GEAR	**P0600**	**37**
TCC - NO RPM DROP AT L.U.	**P1765**	**37**
TCC SOLENOID/TRANS RELAY CIRCUIT	**P1780**	**37**
TRANS 12 VOLT SUPPLY RELAY CNTRL CIRCUIT	**P1765**	**45**
TRANS 3-4 SOLENOID/TRANS RELAY CIRCUIT	**P0753**	**45**
TRANS TEMP SENSOR VOLTAGE TOO HIGH	**P0713**	**37**
TRANS TEMP SENSOR VOLTAGE TOO LOW	**P0712**	**37**
TRANS TEMP SENSOR WITH NO TEMP RISE AFTER START	**P0711**	**37**

Figure 3

CHRYSLER 42RE, 44RE, 46RE & 47RE

DIAGNOSTIC INFORMATION

DIAGNOSTIC TIP:

With the introduction of the On Board Diagnostic Systems Version 2 (OBD II) in 1996, Chrysler eliminated the previously used TCU (Transmission Control Unit) and incorporated it into the engine computer called the PCM (Power Train Control Unit). This system is also known as the JTEC (pronounced like Jay Tech) which stands for Jeep Truck Electronic Control. Resistance checks on the Torque Converter Clutch, Governor and Overdrive solenoids may be easily performed between the PCM connector and Transmission Relay connector with a DVOM in the following manner:

1. Locate the PCM
   A) Dakota - In the engine compartment on the right inner fender panel.
   B) Ram Pick Up - In the engine compartment on the right side of dash panel.
   C) Ram Van/Wagon - Center of firewall
   D) Jeep Grand Cherokee - On right rear of engine compartment
2. Locate the Transmission Control Relay (See Figure 2).
3. Unplug the Transmission Control Relay and place the positive meter lead of a DVOM set to ohms into the Trans Control Relay Output terminal (See Figure 3).
4. The PCM has three 32 pin connectors, black, grey and white. Unplug the middle connector which is the white connector. With the negative lead resistance checks on the Torque Converter Clutch, Governor and Overdrive solenoids may be checked at terminals 8, 11 and 21 individually (See Figure 4). Both the TCC and OD solenoids should measure between 25 and 40 ohms. The Governor Pressure Solenoid should measure between 3 to 5 ohms.

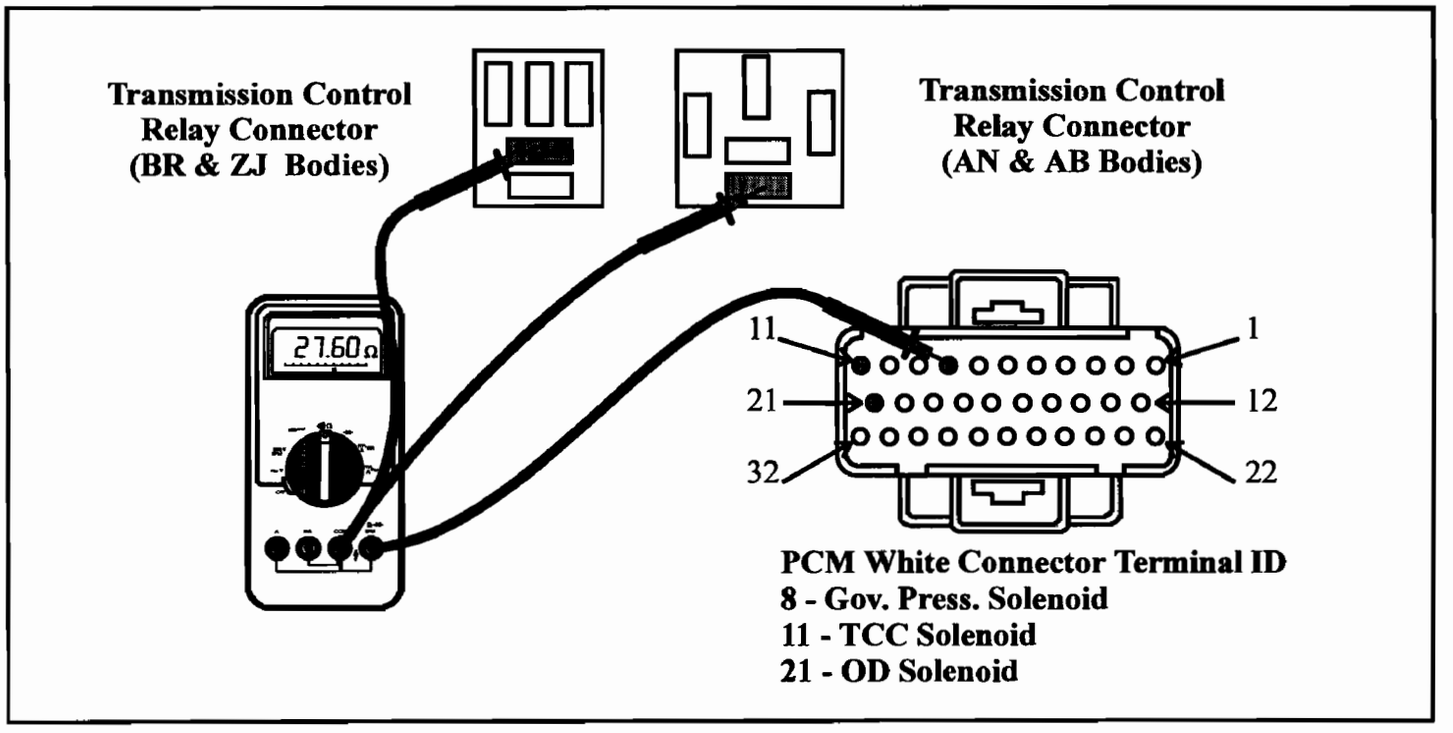


Figure 4

CHRYSLER A518
TIE-UP IN PARK AND REVERSE MOVES FORWARD IN NEUTRAL

COMPLAINT: After rebuild, the vehicle exhibits a tie-up condition when the shift lever is in the Park or Reverse positions, and moves forward when the selector lever is in Neutral.

CAUSE: The cause may be, an A618 stator assembly installed into an A518.

CORRECTION: Install the proper A518 stator into the unit. The biggest problem is identification of these two very similar parts. The diameter in the sealing ring area on the turbine shaft on the A518 is 1.165", and the A618 diameter in the same area is 1.235", as shown in Figure 1. Obviously the diameter on the inside of the stator where the sealing rings ride must correspond with these dimensions. When the larger diameter A618 stator is installed on the A518 turbine shaft, converter release oil goes past the sealing ring and applies the forward clutch, as long as the engine is running. Refer to Figures 1 and 2.

TURBINE SHAFT AND FORWARD DRUM ASSEMBLY

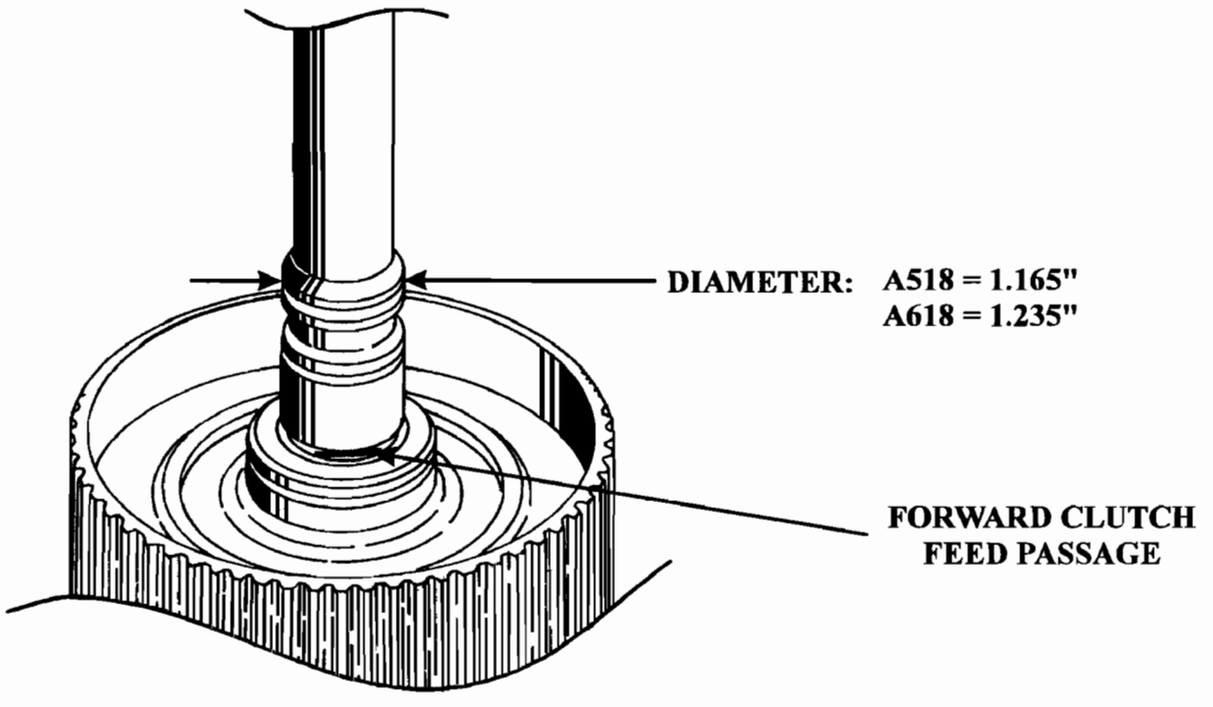


Figure 1

STATOR ASSEMBLY

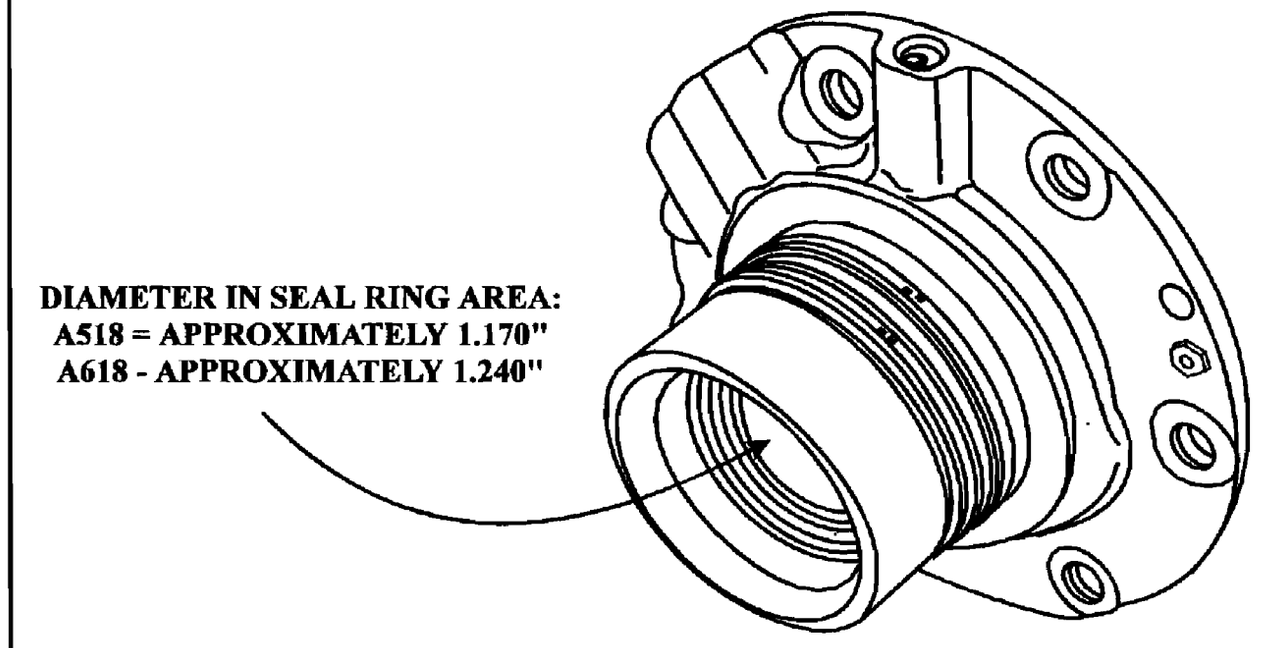
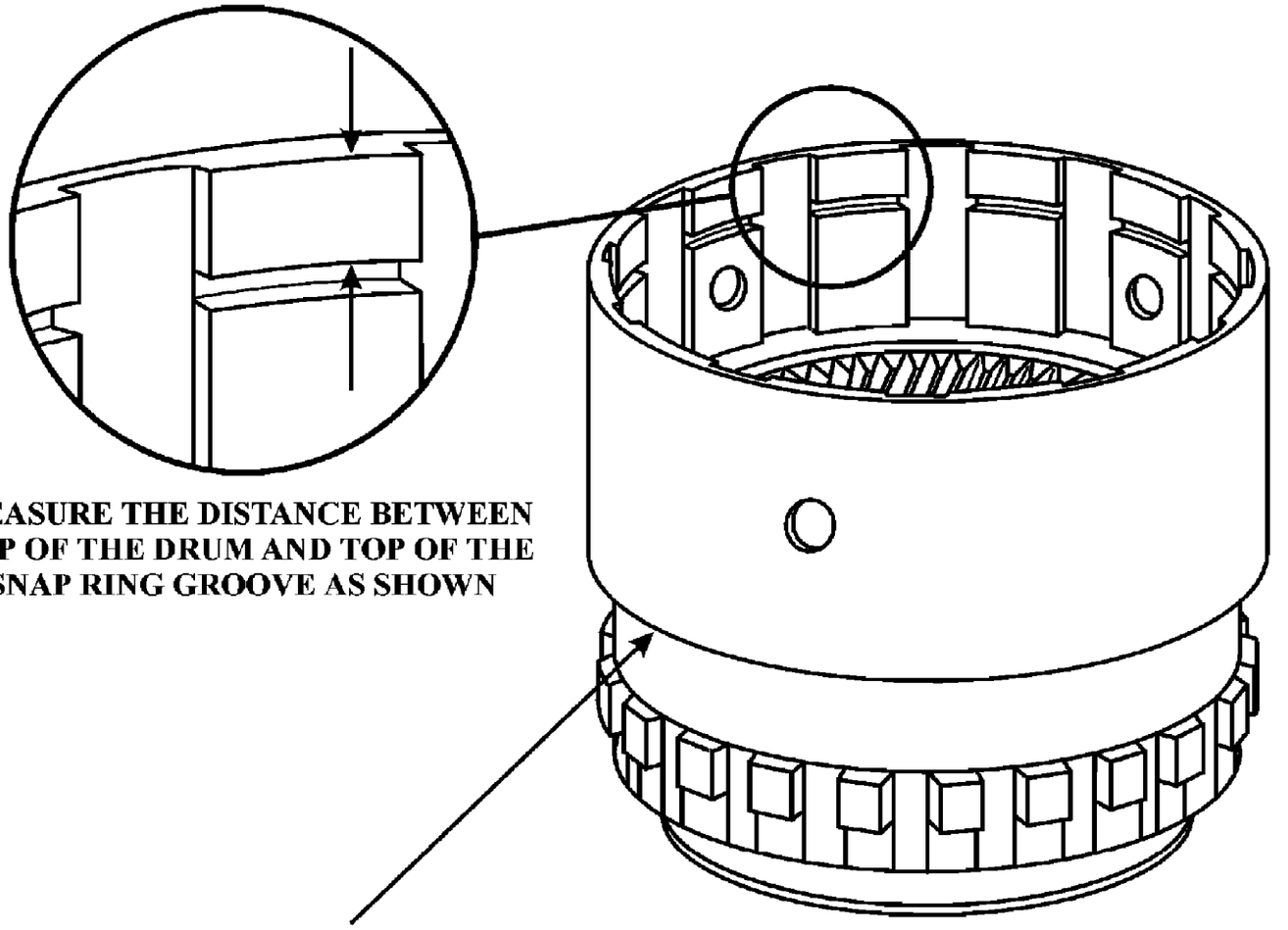


Figure 2

CHRYSLER A500/A518/A618
OVERDRIVE DIRECT CLUTCH HOUSING IDENTIFICATION

There are currently four different Overdrive/Direct clutch housings dependent on the engine size and the transmission model you are working on. If it becomes necessary to replace the drum, measure the distance between the top of snap ring groove and the top of the housing, as shown below, and use the chart below to determine the amount of friction plates and steel plates for the model you are working on. Choosing the wrong amount may create a tie-up on the 3-4 shift, or a no reverse condition.

TRANSMISSION	LINED	STEEL	MEASUREMENT
A500 (40RH) 3.9L	5	4	.485"
A500 (42RH) 5.2L	6	5	.350"
A518 (46RH)	8	7	.100"
A618 (47RH)	9	8	.090"



MEASURE THE DISTANCE BETWEEN TOP OF THE DRUM AND TOP OF THE SNAP RING GROOVE AS SHOWN

OVERDRIVE/DIRECT CLUTCH HOUSING

CHRYSLER JEEP AW4
HIGH GEAR STARTS

COMPLAINT: Vehicle takes off in high gear in the Overdrive range but will shift manually moving the selector through all the ranges.

CAUSE: One cause may be a resistor pack has shorted in the brake switch circuit to the TCM blowing a 15 amp fuse (See Figure 1). Another possibility is a severed direct battery feed wire to the TCU or a bad TCU itself.

CORRECTION: Remove the panel below the glove box and locate the TCU (See Figure 1). In the harness near the TCU unit there is a 15 amp in line fuse on a yellow wire with a resistor pack just a little further down stream on the same wire. This wire provides battery feed to the TCU from the ignition switch. To check the power circuit, unplug the TCU and turn the ignition to the "ON" position. With a volt meter set to DC volts, place the negative lead to a good known ground and with the positive meter lead, check terminal D16 for battery voltage (See Figure 2). If the fuse is blown, the resistor pack may be shorted to ground or shorted across itself and will need to be replaced. The part number for a new resistor pack is 83504880. When the fuse and resistor pack are known to be good, battery voltage should be seen at D16. Terminal C10 should have battery voltage only when the brake is depressed. When the brake is released C10 should drop to 0 volts. If battery voltage is not seen at either D16 or C10 and the fuse and resistor pack is known to be good, the ignition switch or the wire from the ignition switch is bad and will need to be repaired. Once the TCU power supply has been verified to be in good working order, road test the vehicle. If the vehicle is continuing to take off in 4th gear, check terminal D14 for battery voltage. This is direct battery feed into the TCU and should be hot with the key on or off. If voltage is not seen, run your own wire into the connector from the battery through a 10 amp fuse and your done. However, if you still have 4th gear starts after this repair, either the TCU is bad or other electrical problems remain. When faced with this situation you have 3 choices:

1. Get a scanner that will give you codes or
2. Take a chance and change the TCU or
3. Perform a step by step pin check at the TCU connector to determine the electrical failure.

Figure 3 is a chart providing the values to be observed when performing a pin test at the TCU connector. Most of the testing is to be performed by carefully back probing each wire with the connector plugged into the TCU unless otherwise instructed (a company called J.S. Popper in N.J. sells test leads designed to do this kind of work limiting the possibility of damaging the wire or connector). In the chart you will see an asterisk next to the neutral switch and comfort switch checks. If battery voltage is not seen as indicated in the chart on both sensors, check for a blown 7.5 amp # 13 fuse in the main fuse panel. Figure 4 provides a partial wiring schematic for the purpose of wire color identification. If each pin check falls within the proper specification, you can safely say your TCU is a Transmission Condemned Unit. The following information lists that which can be observed with the use of a Snap-On Scanner 4.7 or later version Domestic cartridge.

The following is information that can be observed using a Snap-On Scanner equipped with a 4.7 (or later) version Domestic Cartridge

JEEP AW4 TRANSMISSION APPLICATION
1987-1990 - Jeep 2.5L & 4.0L Cherokee & Comanche
1991-1993 - Jeep 4.0L Cherokee & Comanche
1994-1997 - Jeep 4.0L Cherokee

The AW4 TCU is capable of producing 3 different code types:
"CURRENT CODE" will only be displayed while condition which set it still exists.
"STORED" CODES" are stored in memory. Condition that caused code to set may or may still exist.
"STATUS_____/_____" codes are in codes and data display.
If condition causing code no longer exists, stored code will be erased after about 75 key cycles.

1987 TO 1990 CODES
CODE 700 - SOLENOID FAULTS (ALL 3)
CODE 701 - POWER/COMFORT SWITCH FAULT
CODE 702 - SPEED SENSOR FAULT
CODE 703 - GEAR SELECT FAULT
CODE 704 - NO SERIAL DATA
CODE 705 - TPS FAULT
CODE 706 - BRAKE. SWITCH FAULT
CODE 707 - TEMP GROUND FAULT
CODE 708 - WRONG TCM
CODE 709 - IGNITION LINE OFF WITH KEY ON
CODE 710 - INTERMITTENT SOLENOID FAULT

1991 & LATER
CODE 700 - SOLENOID # 1
CODE 700 - SOLENOID # 2
CODE 700 - SOLENOID # 3
CODE 702 - SPEED SENSOR FAULT
CODE 703 - GEAR SELECT FAULT
CODE 704 - TPS FAULT
CODE 708 - WRONG TCM

DATA STREAM PARAMETERS
BRAKE: PRSD/RLSD (Pressed/Released)
CURRENT GEAR: 1st, 2nd, 3rd, 4th
LOCK-UP: ON/OFF
MODE: POWER/COMFORT (1992 & Later always reads power, switch eliminated)
MODULE: 01/02 (01 = 4.0L, 02 = 2.5L)
PRNDL: PRND, 3, 1-2
RPM: OUTPUT SHAFT RPM
SOLENOID 1: ON/OFF
SOLENOID 2: ON/OFF
SOLENOID 3: ON/OFF (TCC)
TPS STEPS: (1 thru 7)
STATUS____/____ A value other than 0 in first half of display indicates solenoid fault. A value other than 0 in second half of status display indicates TPS fault.

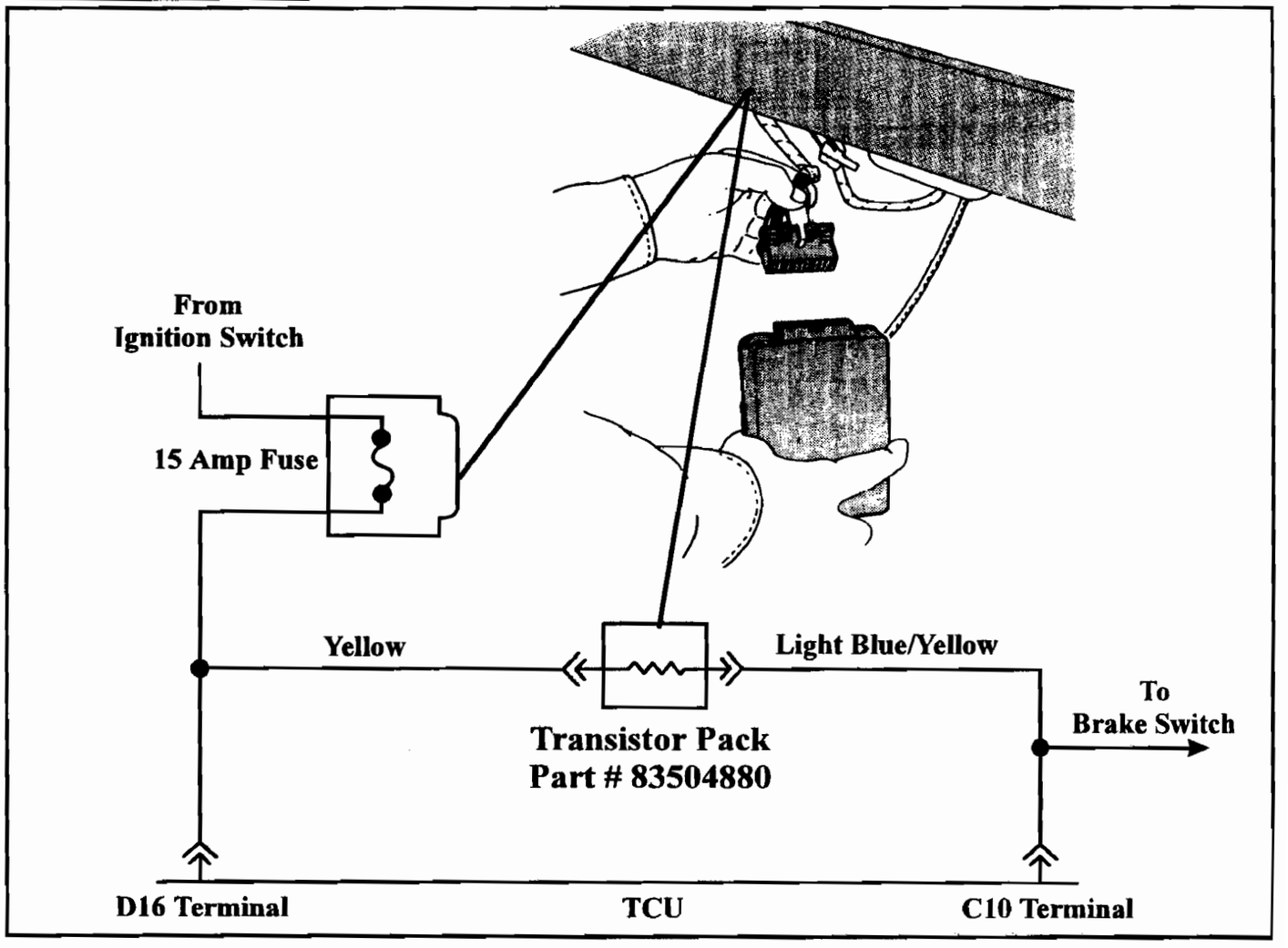


Figure 1

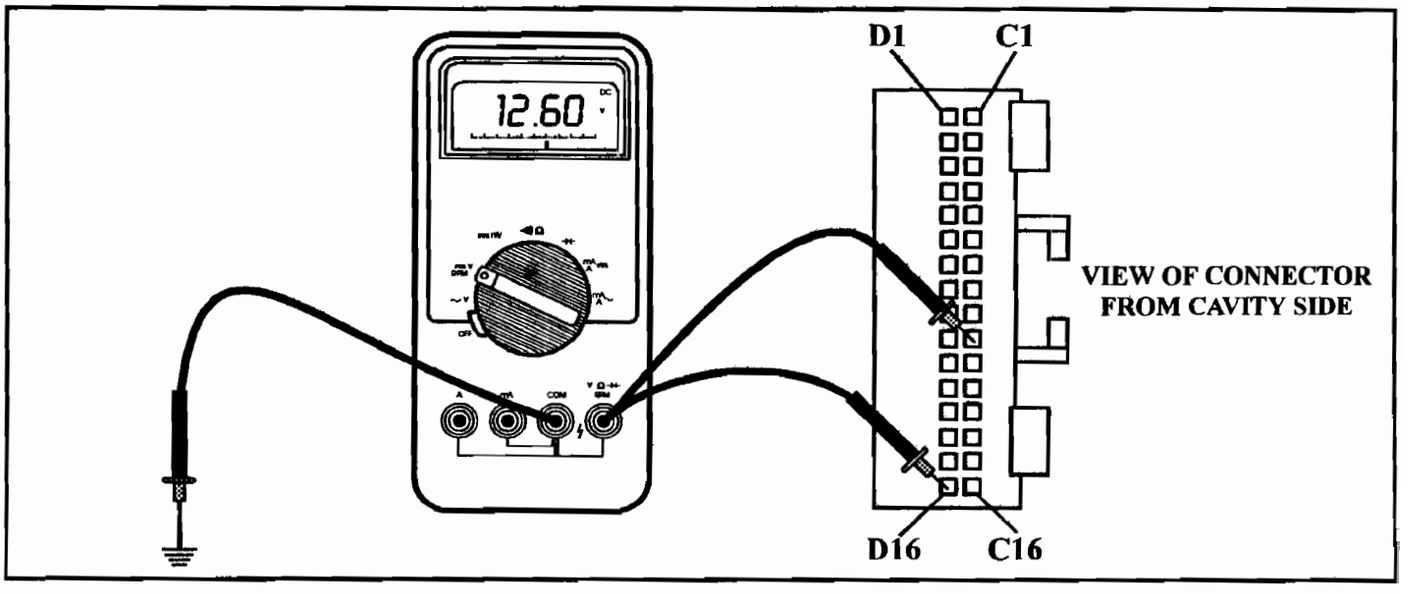


Figure 2

TCU Terminal No.		Inspection Procedure	Standard Value
Neg. Lead	Pos. Lead		
D7	C3	Key On Engine Off. Meter set to DC volts. Speed Sensor	5 to 8 volt pulse per one revolution
	C8	Key On Engine Off. Selector Lever in the 1-2 position. Meter set to DC volts.	Battery Voltage *
	C9	Key On Engine Off. Selector Lever in the D position. Meter set to DC volts.	Battery Voltage *
	C10	Key On Engine Off. Meter set to DC volts Brake OFF..... Brake ON.....	 O Volts Battery Voltage
	C11	Key On Engine Off. Meter set to DC volts Comfort switch in POWER mode..... Comfort switch in COMFORT mode.....	 Battery Voltage * O Volts
	C14	Key Off. TCU unplugged. Meter set to Ohms Converter Clutch Solenoid Resistance	11 - 15 ohms
	C15	Key Off. TCU unplugged. Meter set to Ohms Shift Solenoid # 2	11 - 15 ohms
	C16	Key Off. TCU unplugged. Meter set to Ohms Shift Solenoid # 1	11 - 15 ohms
	D1	Key On Engine Off Meter set to DC Volts TPS Voltge Supply	Approx. 5 Volts
	D2	Key On Engine Off Meter set to DC Volts TPS Voltge Input (1987-1990 Models Only) Closed Throttle..... Wide Open Throttle.....	 Approx.4.5 Volts Approx.0.5 Volts
		Key On Engine Off Meter set to DC Volts TPS Voltge Input (1991-Up Models Only) Closed Throttle..... Wide Open Throttle.....	 Approx.0.5 Volts Approx.4.5 Volts
	D3	Key On Engine Off Meter set to DC Volts TPS Ground	0.1 Volt or less
	D14	Key Off Meter set to DC Volts Direct Battery Feed	Battery Voltage
	D16	Key On Engine Off Meter set to DC Volts Ignition Voltage	Battery Voltage

Figure 3

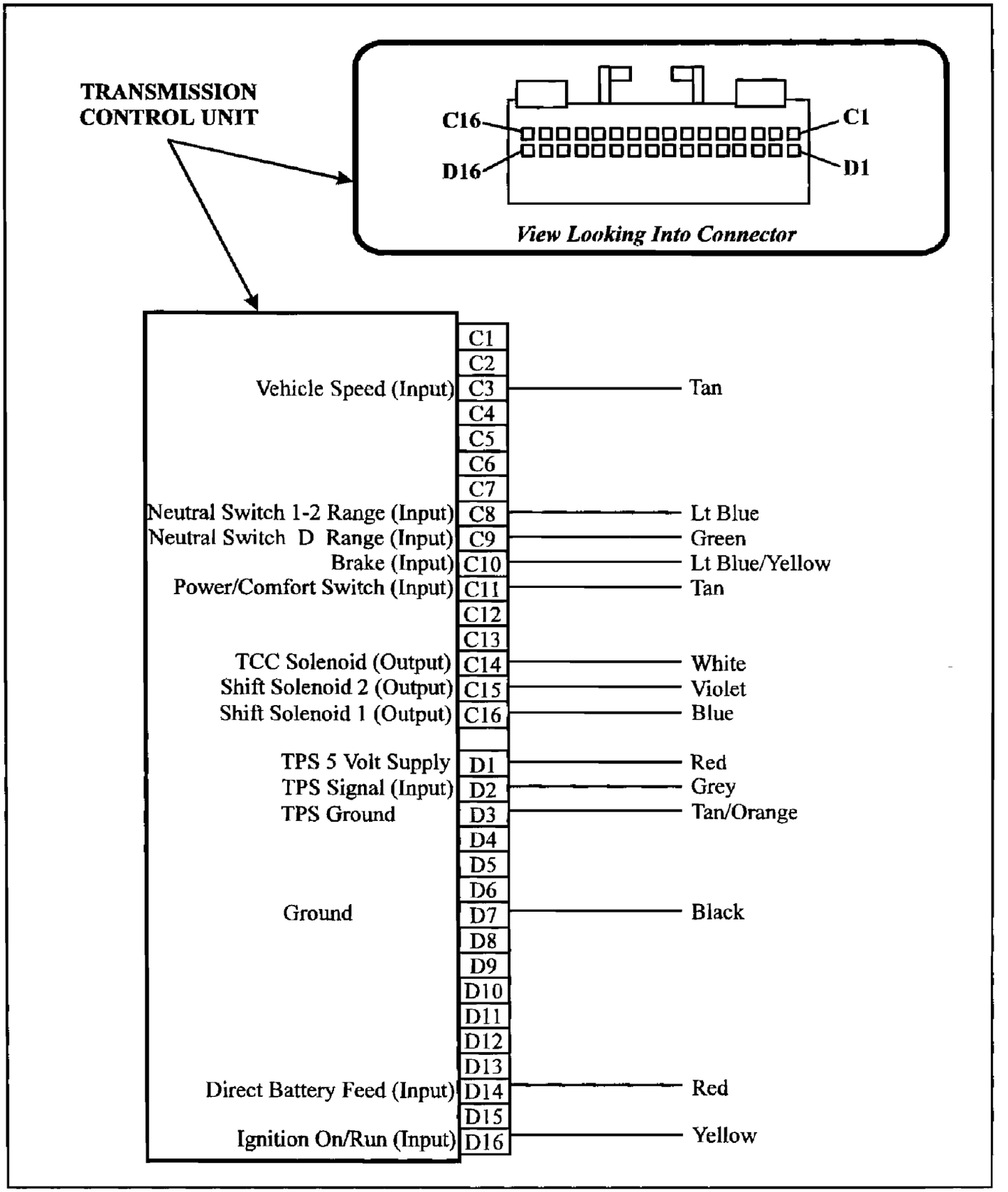

TRANSMISSION CONTROL UNIT
C16
C1
D16
D1
View Looking Into Connector
C1
C2
Vehicle Speed (Input) C3
C4
C5
C6
C7
Neutral Switch 1-2 Range (Input) C8
Neutral Switch D Range (Input) C9
Brake (Input) C10
Power/Comfort Switch (Input) C11
C12
C13
TCC Solenoid (Output) C14
Shift Solenoid 2 (Output) C15
Shift Solenoid 1 (Output) C16
TPS 5 Volt Supply D1
TPS Signal (Input) D2
TPS Ground D3
D4
D5
D6
Ground D7
D8
D9
D10
D11
D12
D13
Direct Battery Feed (Input) D14
D15
Ignition On/Run (Input) D16
Tan
Lt Blue
Green
Lt Blue/Yellow
Tan
White
Violet
Blue
Red
Grey
Tan/Orange
Black
Red
Yellow

Figure 4

CHRYSLER A904/A999
NO UPSHIFT, AFTER REBUILD

COMPLAINT: After overhaul the transmission will not upshift at any speed, and will have zero governor pressure at the governor tap.

CAUSE: The cause may be, the Governor Support installed into the case incorrectly.

CORRECTION: The late model Chrysler A904/A999 transmissions have a Governor Support with the mounting holes evenly spaced, or concentric around the support, which will now allow you to install the Governor Support so that the governor feed passage is blocked.
Some Governor Supports have an arrow with the words "PAN FACE" cast into the support as shown in Figure 2, and should be installed with the arrow towards the pan face. If your support is not so marked, make your own reference marks on the support and the case with a center punch as shown in Figure 1, before removing.
If you have already removed the support, and your support is not marked with the arrow, the support must be installed into the case with the feed holes lined up with the coresponding case passages, as shown in Figure 3.

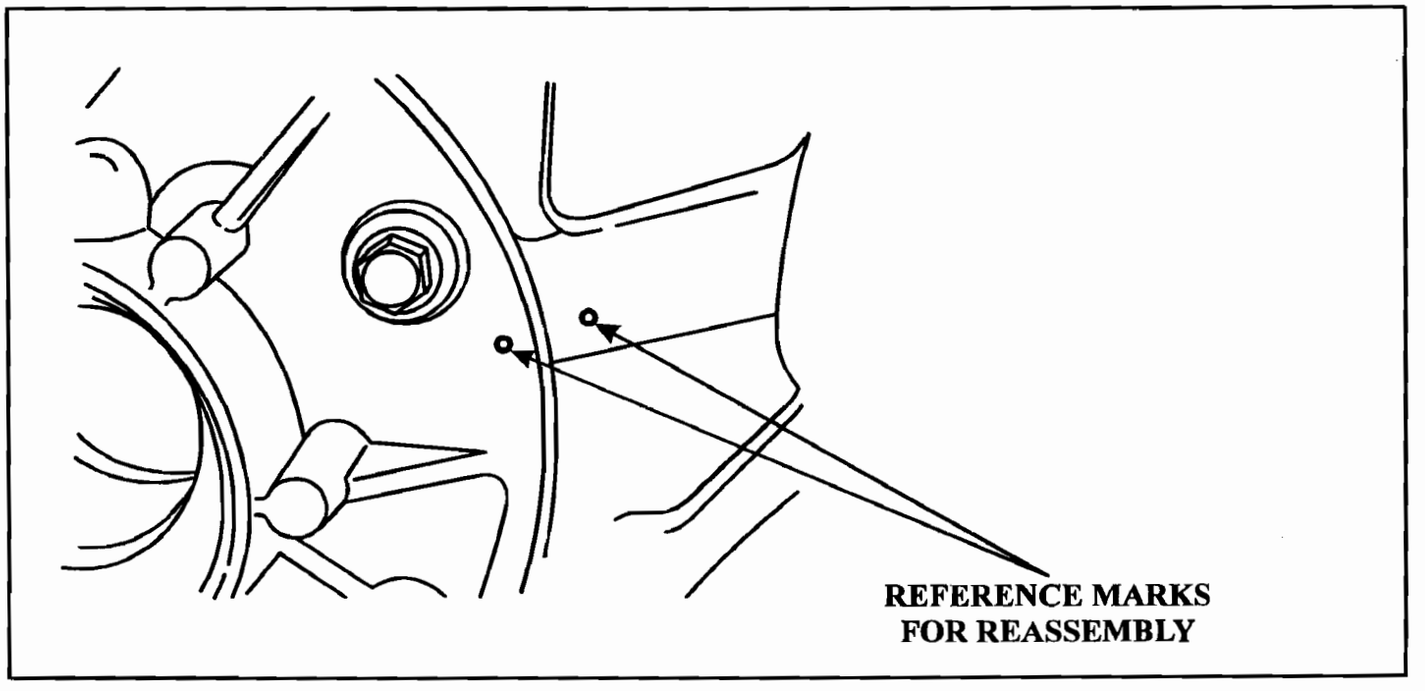


Figure 1

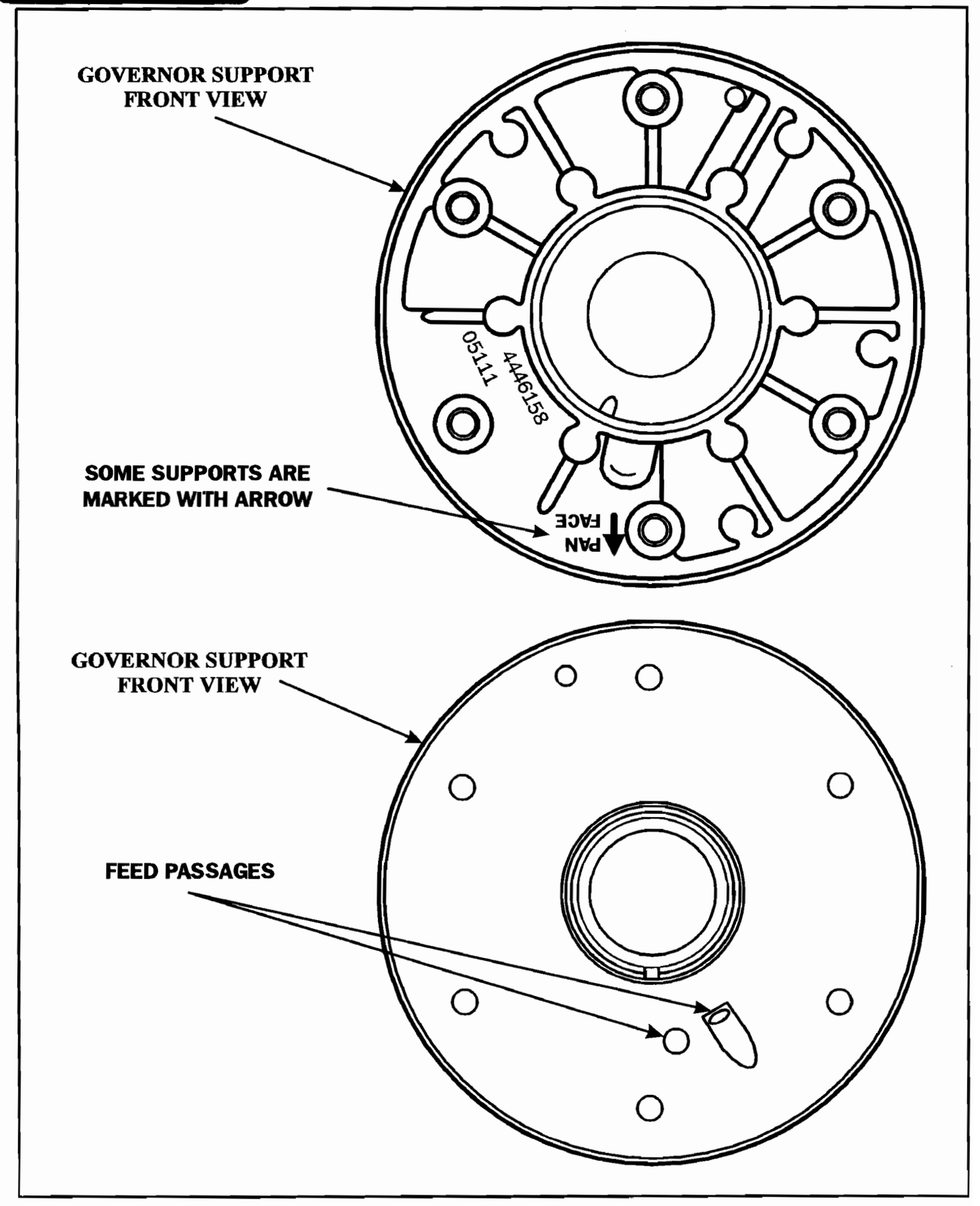
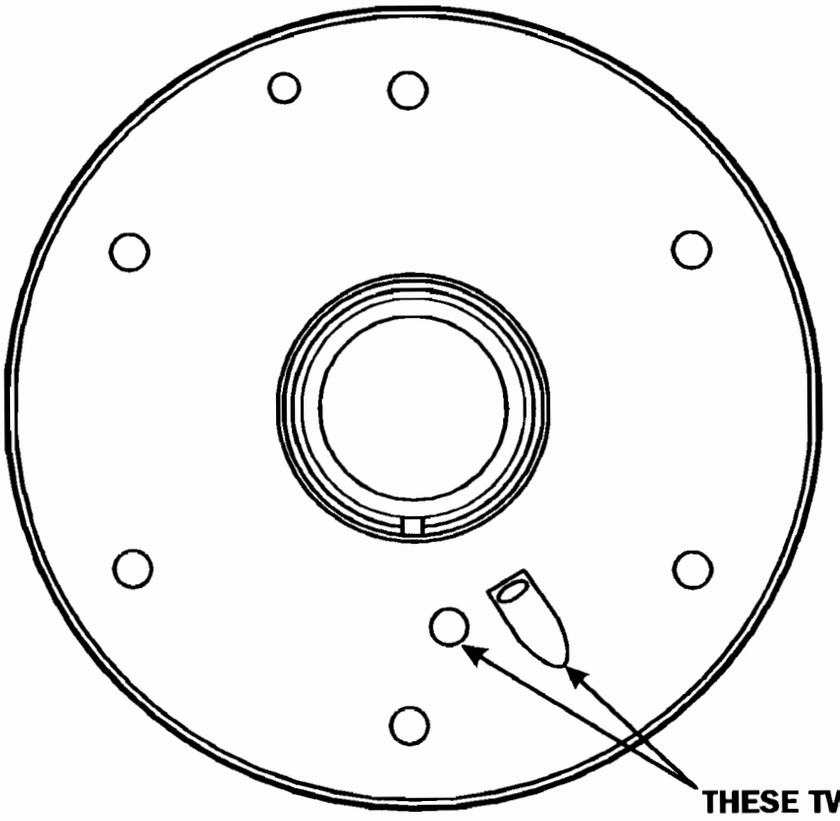

GOVERNOR SUPPORT
FRONT VIEW
05111
4446158
SOME SUPPORTS ARE
MARKED WITH ARROW
PAN
FACE
GOVERNOR SUPPORT
FRONT VIEW
FEED PASSAGES

Figure 2

INSTALLING GOVERNOR SUPPORT



THESE TWO FEED PASSAGES MUST BE ALIGNED WITH, THESE TWO CASE PASSAGES

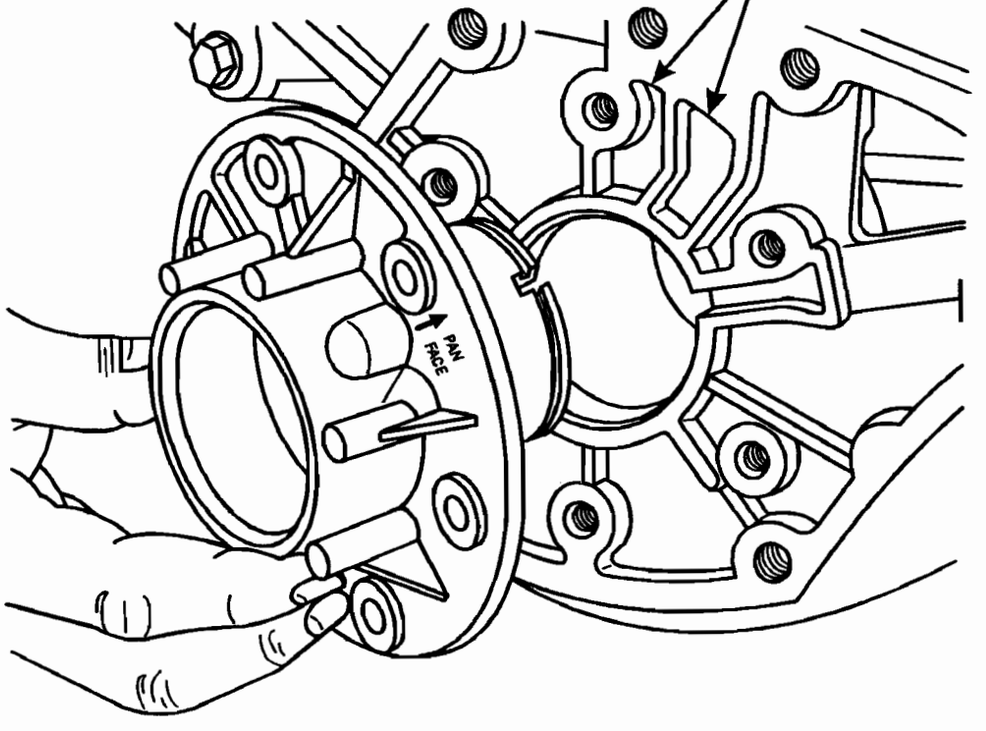


Figure 3