"2002" SEMINAR INFORMATION

"What's New for '2002' Technical Seminar"

INDEX

Ford & Chrysler

Slides (Ford)

Digital Range Sensor Checks 4
A4LD Family 28
5R55N/5R55W 30
F4EAT 56
AX4S/AX4N 58
CD4E 76

Video (Chrysler)

Snap On MTG 2500 77
41TE/42LE 81

Slides (Chrysler)

41TE/42LE 84
RE/RH Family 92

ADVERTISER'S

Transtar ..... IFC
Lube Guard 2
Raybestos 9
Zoom Technology 20
ATEC Trans-Tool 33
Superior Transmission Parts 37
Bryco/SPX 43
Snap On Tools 60-61
Schaffer Test Products 63
A & Reds 69
axi-line (Hicklin Engineering) 80
Torrington 87
Drive Tech 103
World Wide 112
RN Rebuilders ..... IBC
Techpak - Fitzall ..... BC

AUTOMATIC TRANSMISSION SERVICE GROUP

9200 South Dadeland Boulevard Suite 720
Miami, Florida 33156
(305) 670-4161

WWW.TRANSONLINE.COM WWW.ATSGMIAMI.COM

INTRODUCTION

Information on Ford vehicles continues in this manual with the easy to follow Complaint, Cause, Correction format as well as part changes and interchangeability. The new 5R55W by Ford is compared to the 5R55N transmission in the event one may find its way into your shop when you least expect it. After the Ford segment concludes, we move right into the Chrysler material with a look at Snap-On's new MTG 2500 scanner. This new scanner provides an interesting new feature which you will see in action in the video.

ROBERT D. CHERRNAY
TECHNICAL DIRECTOR

DALE ENGLAND
FIELD SERVICE CONSULTANT

WAYNE COLONNA
TECHNICAL SUPERVISOR

JIM DIAL
TECHNICAL CONSULTANT

PETER LUBAN
TECHNICAL CONSULTANT

JERRY GOTT
TECHNICAL CONSULTANT

GERALD CAMPBELL
TECHNICAL CONSULTANT

DAVID CHALKER
TECHNICAL CONSULTANT

JON GLATSTEIN
ELECTRICAL CONSULTANT

ED KRUSE
TECHNICAL CONSULTANT

ROLAND ALVAREZ
TECHNICAL CONSULTANT

GREGORY LIPNICK
TECHNICAL CONSULTANT

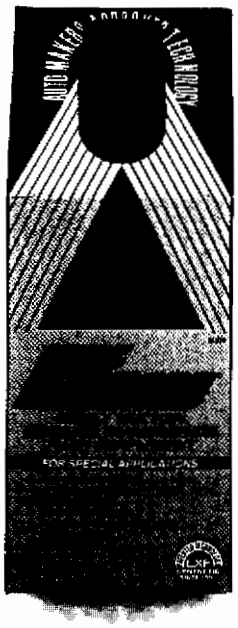
STANTON ANDERSON
TECHNICAL CONSULTANT

AUTOMATIC TRANSMISSION SERVICE GROUP
9200 South Dadeland Boulevard Suite 720
Miami, Florida 33156
(305) 670-4161
WWW.TRANSONLINE.COM
WWW.ATSGMIAMI.COM

ATSG

FORD AODE / 4R70W SHUDDERS

(Another Use For LUBEGARD® Highly Modified ATF Supplement)

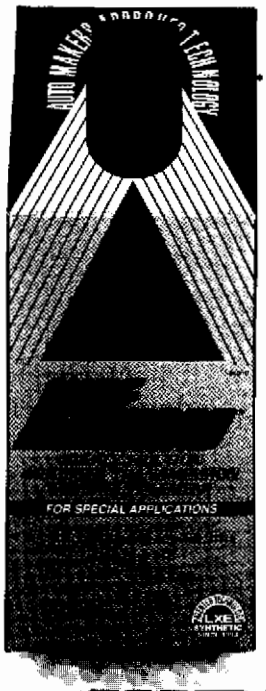


ISSUE: In the Ford AODE and 4R70W, a shudder or vibration may occur under light-to-moderate acceleration above 35 mph in third or fourth gear, or during a 3-4 upshift or a 4-3 downshift. This condition may be caused by the converter clutch. The condition normally is noticed on vehicles with 20,000 or more miles when the torque-converter clutch engages or disengages and the vehicle is under light load.

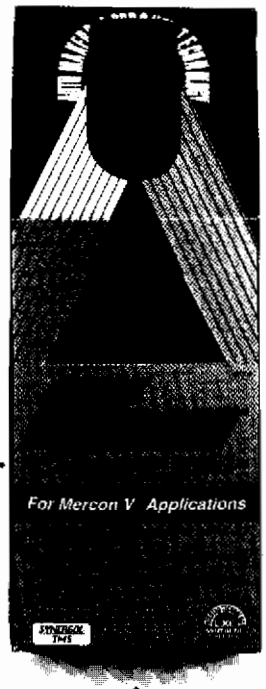
ACTION: It has been found that by changing the vehicles transmission fluid and adding the LUBEGARD Highly Friction Modified ATF Supplement you can ELIMINATE the PROBLEM. The vehicle may have to be driven up to 100 miles for the condition to be corrected.

SAVE TIME, SPACE and MONEY$$$

With LUBEGARD'S Highly Friction Modified and M-V ATF Supplements!



MAKE	MANUFACTURER'S ATF	MAKE	MANUFACTURER'S ATF
Acura	Honda Genuine	Lexus	Toyota Type T, T II & T IV
Chrysler	Mopar ATF + 3 (7176) ATF + 4 (9602)	Mitsubishi	Mitsubishi Diamond SP
Chrysler/Dodge	Mopar ATF + 3 (7176) ATF + 4 (9602)	Nissan	Nissanmatic D
Eagle	Mopar ATF + 3 (7176) ATF + 4 (9602)	Plymouth	Mopar ATF + 3 (7176) ATF + 4 (9602)
Honda	Honda Genuine	Saturn	Saturn Transaxle Fluid
Hyundai	Mopar ATF + 3 (7176)	Sterling	Sterling ATF
Infiniti	Nissanmatic D	Toyota	Toyota Type T, T II & T IV
Jeep	Mopar ATF + 3 (7176) ATF + 4 (9602)		



Car and Trucks Makes	Manufacturer's ATF
FORD	Mercon® V
LINCOLN	
MERCURY	
MAZDA	
BMW	
And all other makes that require Mercon V ATF	

LUBEGARD® World's Finest Lubricants!

LUBEGARD ALL STAR CONTENT

UNITED WE STAND!

INTERNATIONAL LUBRICANTS, INC.
7930 Occidental South ▪ Seattle, WA 98108 ▪ PO Box 24743 ▪ Seattle, WA 98124
206-762-5343 ▪ 800-333-LUBE (5823) ▪ Fax: 206-762-7989 ▪ **www.Lubegard.com**

FORD MOTOR COMPANY
NEW DIGITAL TRANSMISSION RANGE (DTR) SENSOR FOR SOME 1997 AND LATER MODEL VEHICLES

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), with the exception of 12 pin locations in the connector of the DTR. 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 (4WD 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.

PARTS AFFECTED:

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.

INTERCHANGEABILITY:

The new design Digital Transmission Range (DTR) sensor ***will not*** back service ***any*** previous model vehicles built before 1997, nor ***any***1997or later 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).

SPECIAL NOTES:

In Figure 1 we have provided you with pin number identification for both the transmission range sensor and the vehicle harness connector.
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.

Refer to following Page for Diagnostic Procedures.

TESTING PROCEDURE FOR THE 1997 AND LATER DESIGN LEVEL DIGITAL TRANSMISSION RANGE SENSOR (DTR)

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.

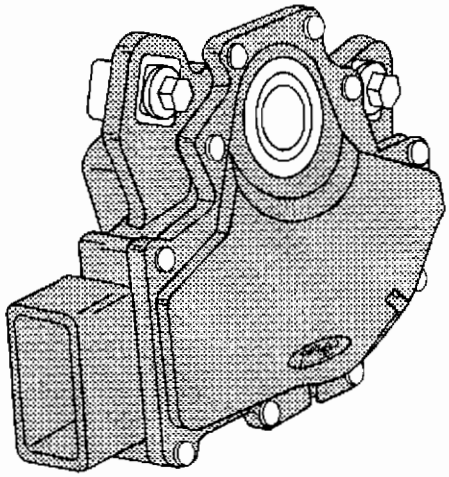
(4) Testing the transmission range 4 switch is done across pins 2 and 6 of the DTR sensor, and must be checked in each selector position to determine switch integrity. Refer to Figure 7.

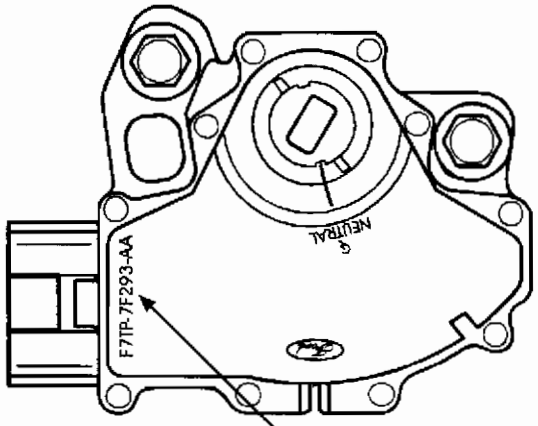
(5) Testing the reverse lamp circuit is done across pins 9 and 11 of the DTR sensor, and must be checked in each selector position to determine switch integrity. Refer to Figure 8.

(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.

In Figure 10 we have provided a chart that is based on data for the DTR that is seen when using the Snap-On Scanner. A brief description of voltage values has been provided as an aid in Digital Transmission Range sensor diagnosis.

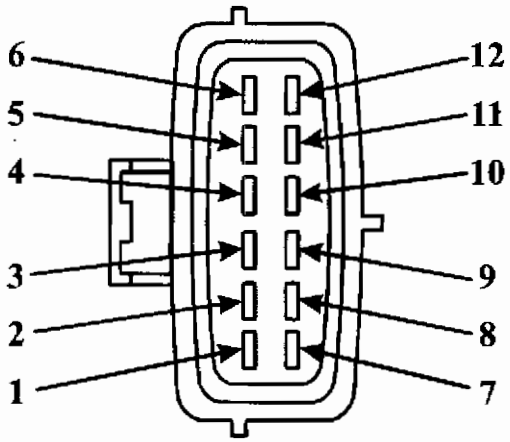
Refer to Figure 11 for an Index of charts that will provide you with pin identification and wire color information for DTR equipped vehicles up through model year 2000.





Identification

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side

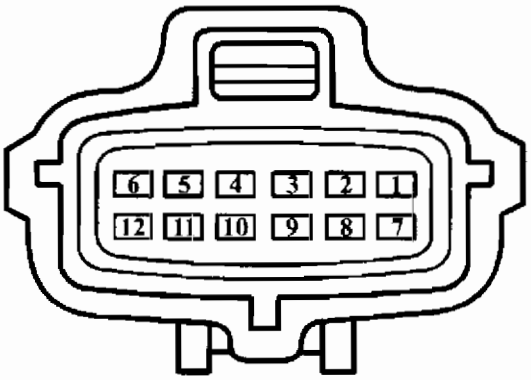
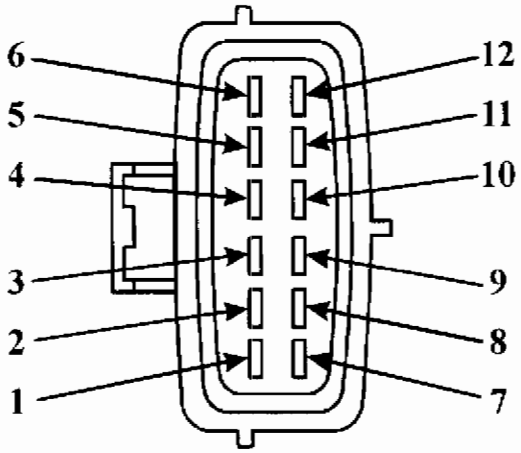
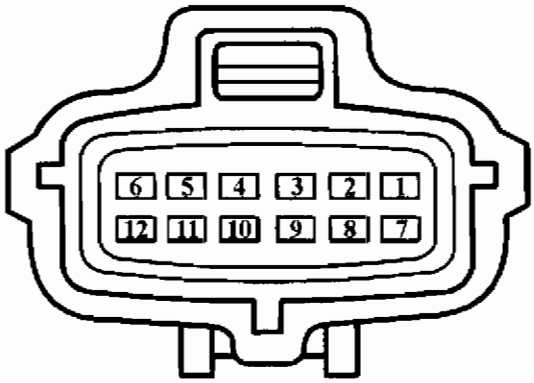


Figure 1



View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side

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

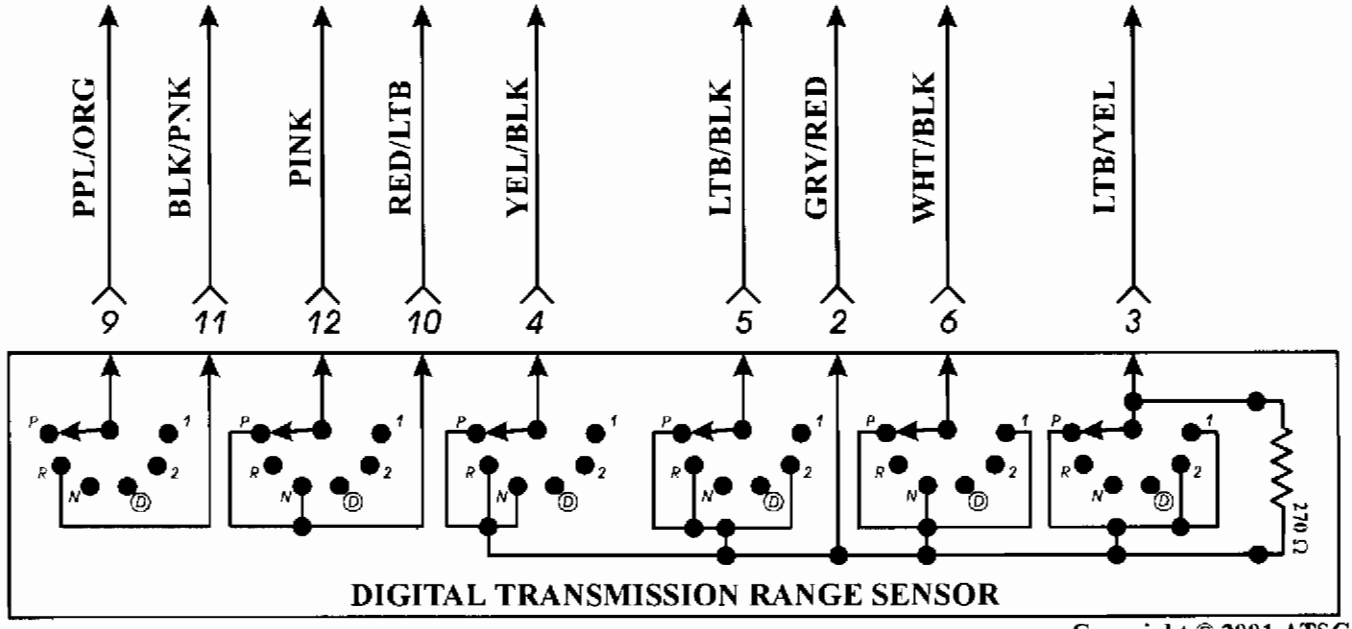


Figure 2

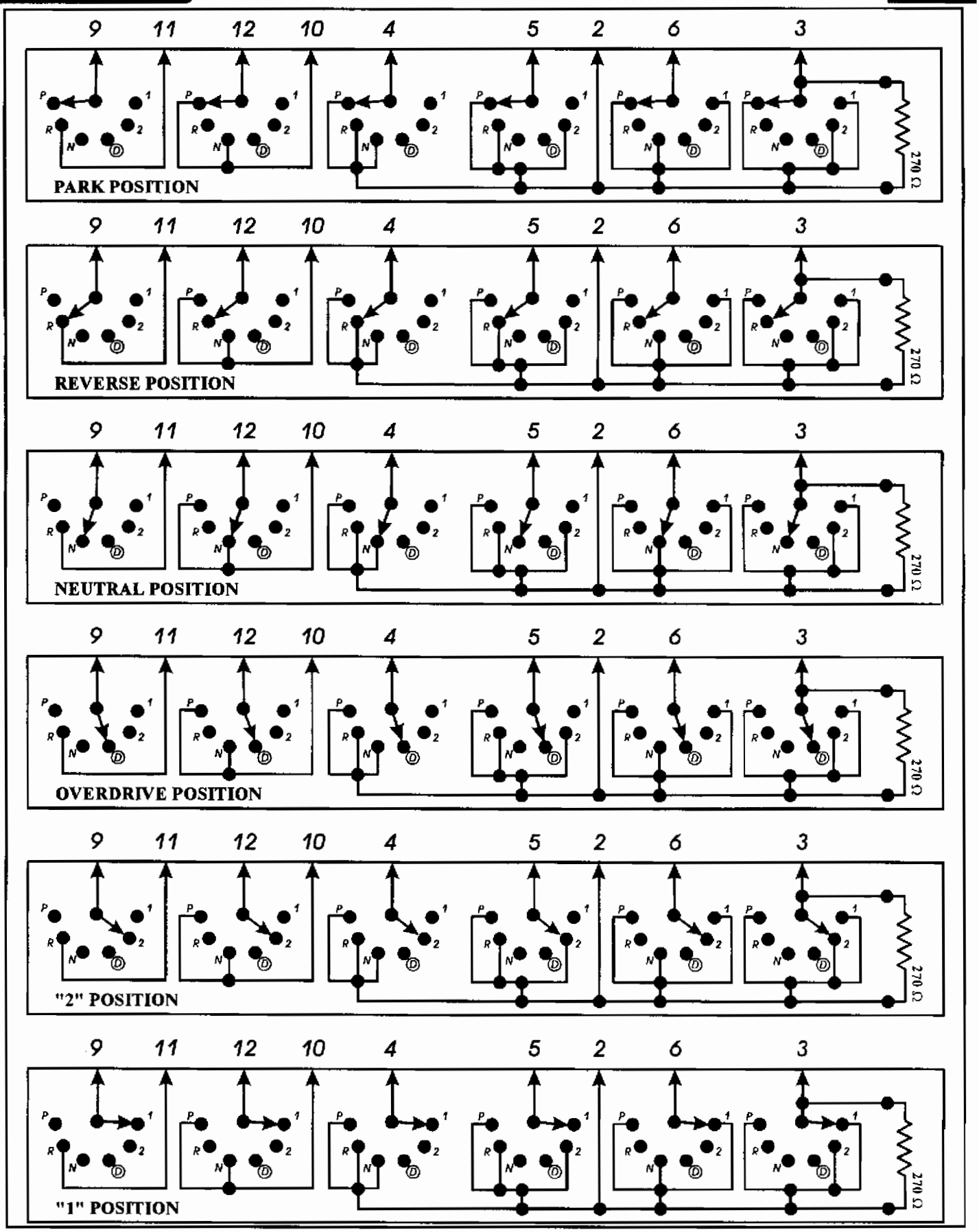

9 11 12 10 4 5 2 6 3
PARK POSITION
REVERSE POSITION
NEUTRAL POSITION
OVERDRIVE POSITION
"2" POSITION
"1" POSITION
270 Ω

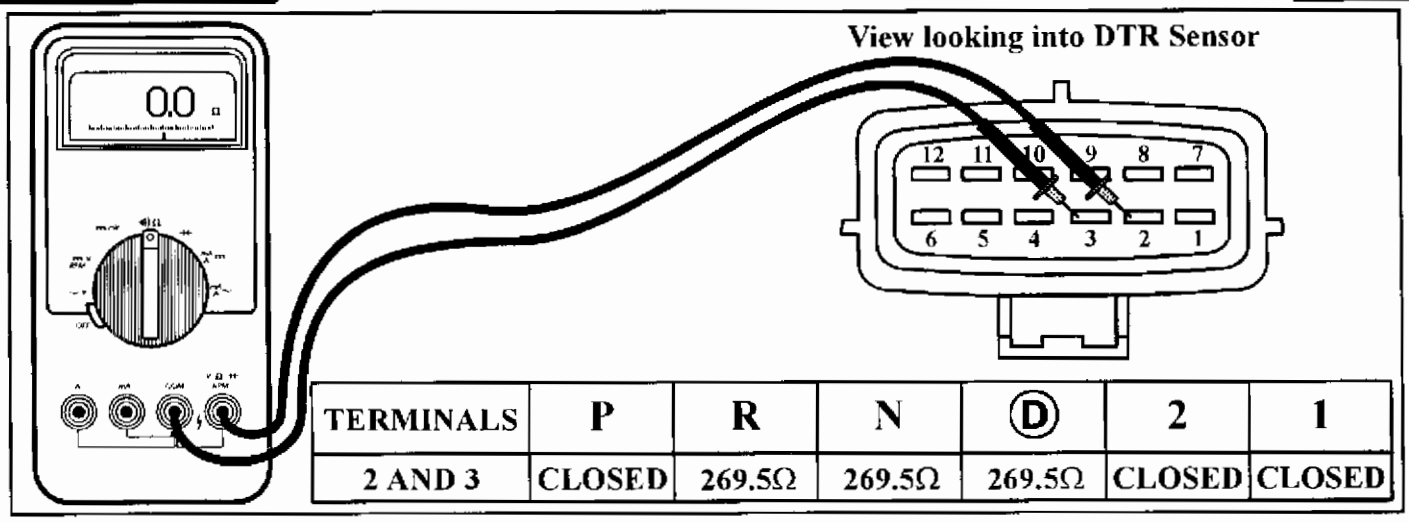
Figure 3

You want OEM?

...we've got it

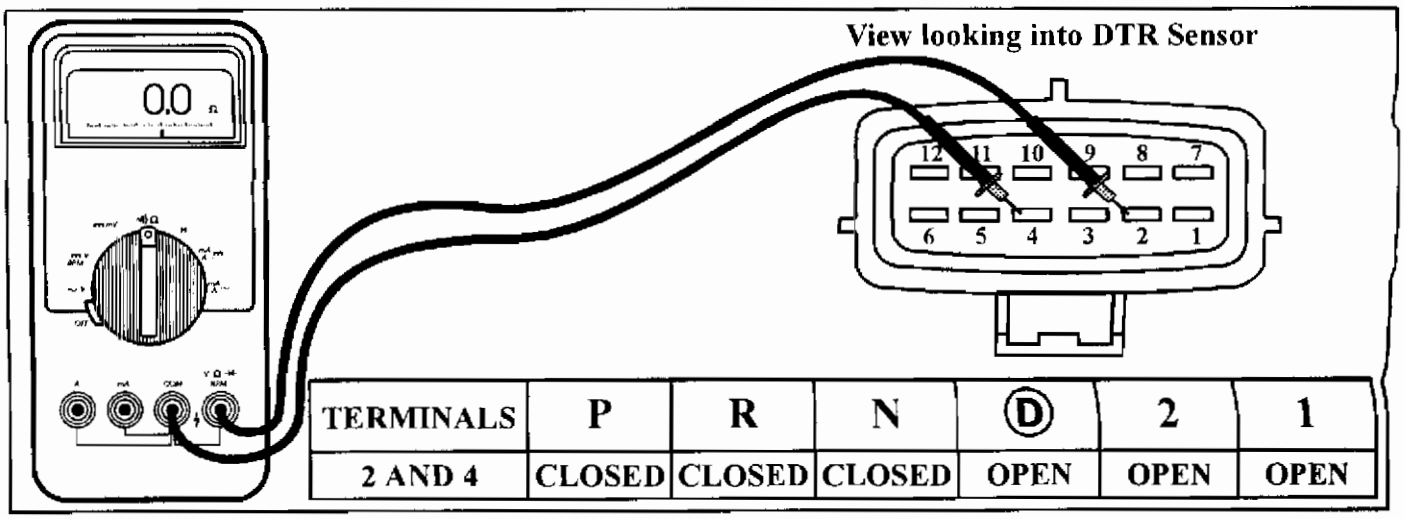
Filtertek

Means
Industries Inc



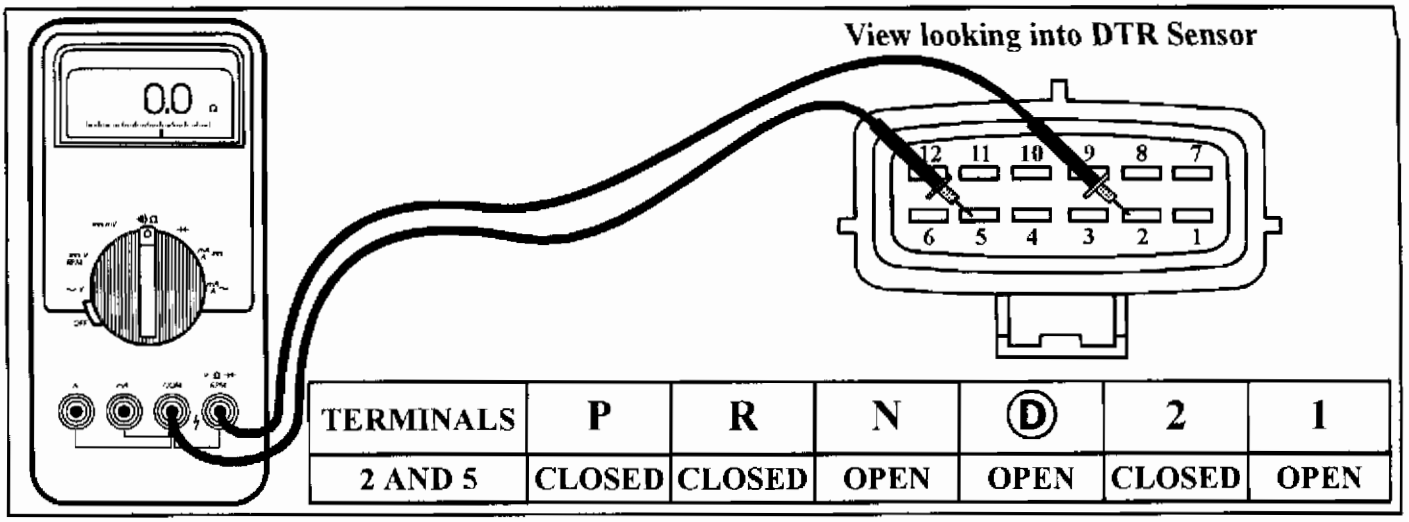
TERMINALS	P	R	N	Ⓓ	2	1
2 AND 3	CLOSED	269.5Ω	269.5Ω	269.5Ω	CLOSED	CLOSED

Figure 4



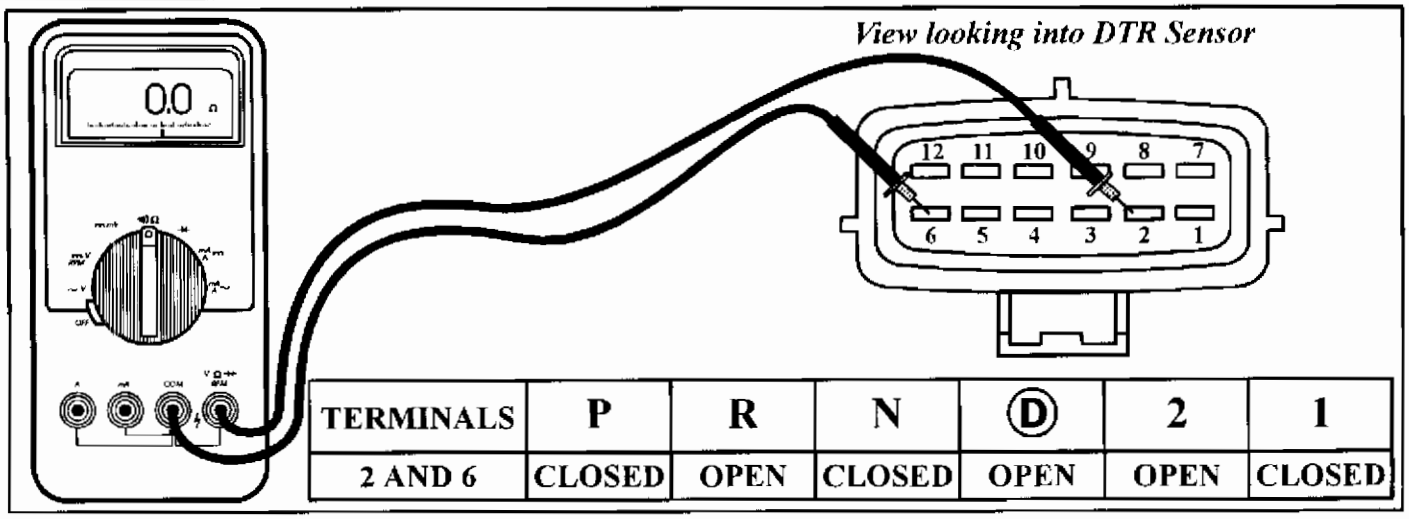
TERMINALS	P	R	N	Ⓓ	2	1
2 AND 4	CLOSED	CLOSED	CLOSED	OPEN	OPEN	OPEN

Figure 5



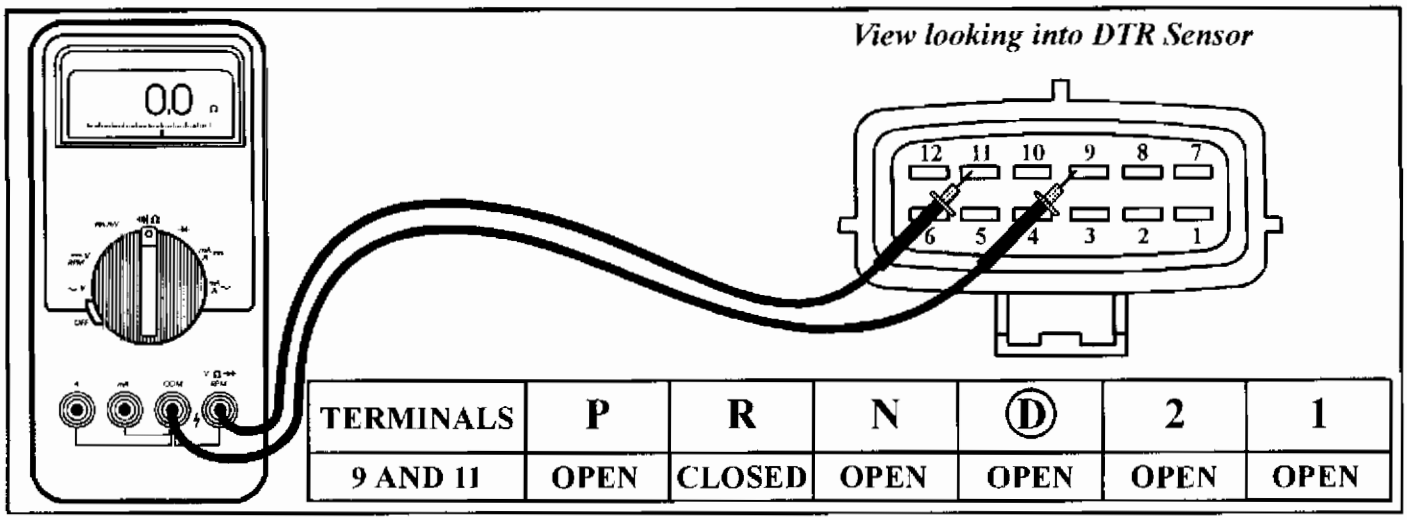
TERMINALS	P	R	N	Ⓓ	2	1
2 AND 5	CLOSED	CLOSED	OPEN	OPEN	CLOSED	OPEN

Figure 6



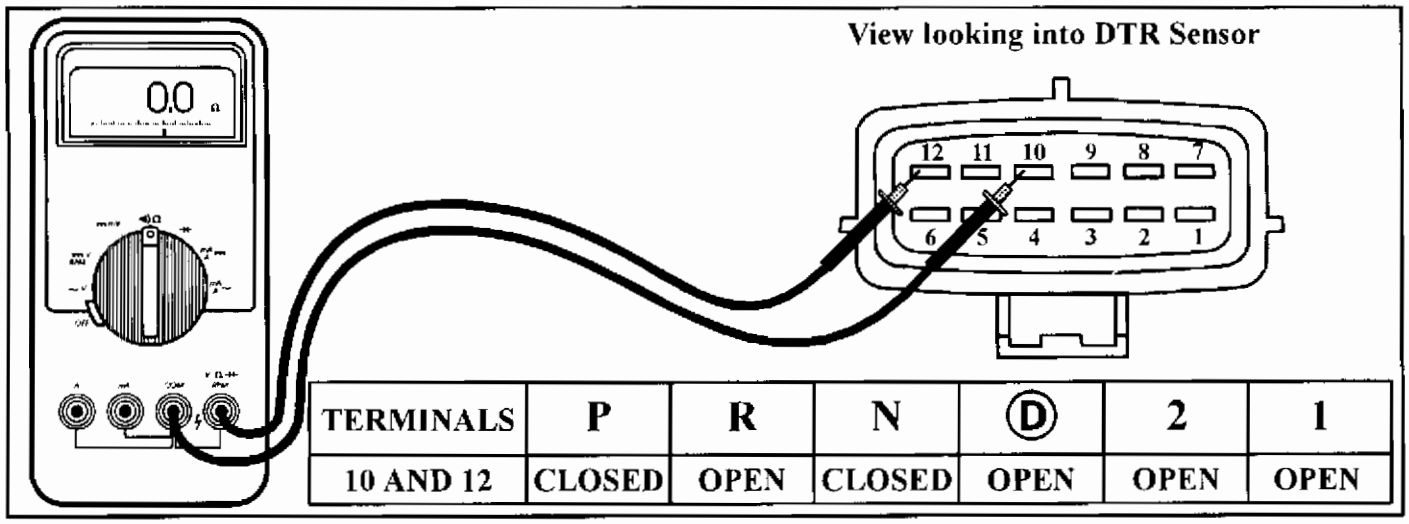
TERMINALS	P	R	N	D	2	1
2 AND 6	CLOSED	OPEN	CLOSED	OPEN	OPEN	CLOSED

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

DIGITAL TRANSMISSION RANGE (DTR) SENSOR DIAGNOSIS

SELECTOR POSITION	PID:TR	Snap-On Scanner Data: PID:TR_D				Snap-On Scanner Data: PID:TR_V
		TR4	TR3A	TR2	TR1	TR3A (175B pin 9 to sigrtn)
PARK	P/N	0	0	0	0	0.0 Volts
REVERSE	REV	1	1	0	0	1.3 to 1.8 Volts
NEUTRAL	NTRL	0	1	1	0	1.3 to 1.8 Volts
OVERDRIVE	OD*	1	1	1	1	1.3 to 1.8 Volts
MANUAL 2	MAN 2**	1	0	0	1	0.0 Volts
MANUAL 1	MAN 1	0	0	1	1	0.0 Volts

* Will read "Drive" if OD is canceled.
** MAN 2 = Drive for applications without OD cancel feature.

1. TR_V is the voltage at PCM connector 175B, pin 9 (TR3A Circuit) to Signal Return.
2. TR_D: 1 = Open DTR Switch
   0 = Closed DTR Switch
4. Breakout Box readings are taken from PCM signal pins for TR1, TR2, TR3A, TR4 to Signal Return.
   Voltages for TR1, TR2, TR4: 0 = 0.0 Volts (Shorted to Ground)
   1 = 9.0 to 14.0 Volts (Open Circuit)
   Voltages for TR3A: 0 = 0.0 Volts (Circuit Shorted to Ground)
   1 = 1.3 to 5.0 Volts (Open Circuit)
   1.8 to 5.0 Volts is an invalid reading and is usually an open in wires or bad resistor in DTR sensor.

NOTE: Example shown below is for 2000 Lincoln LS

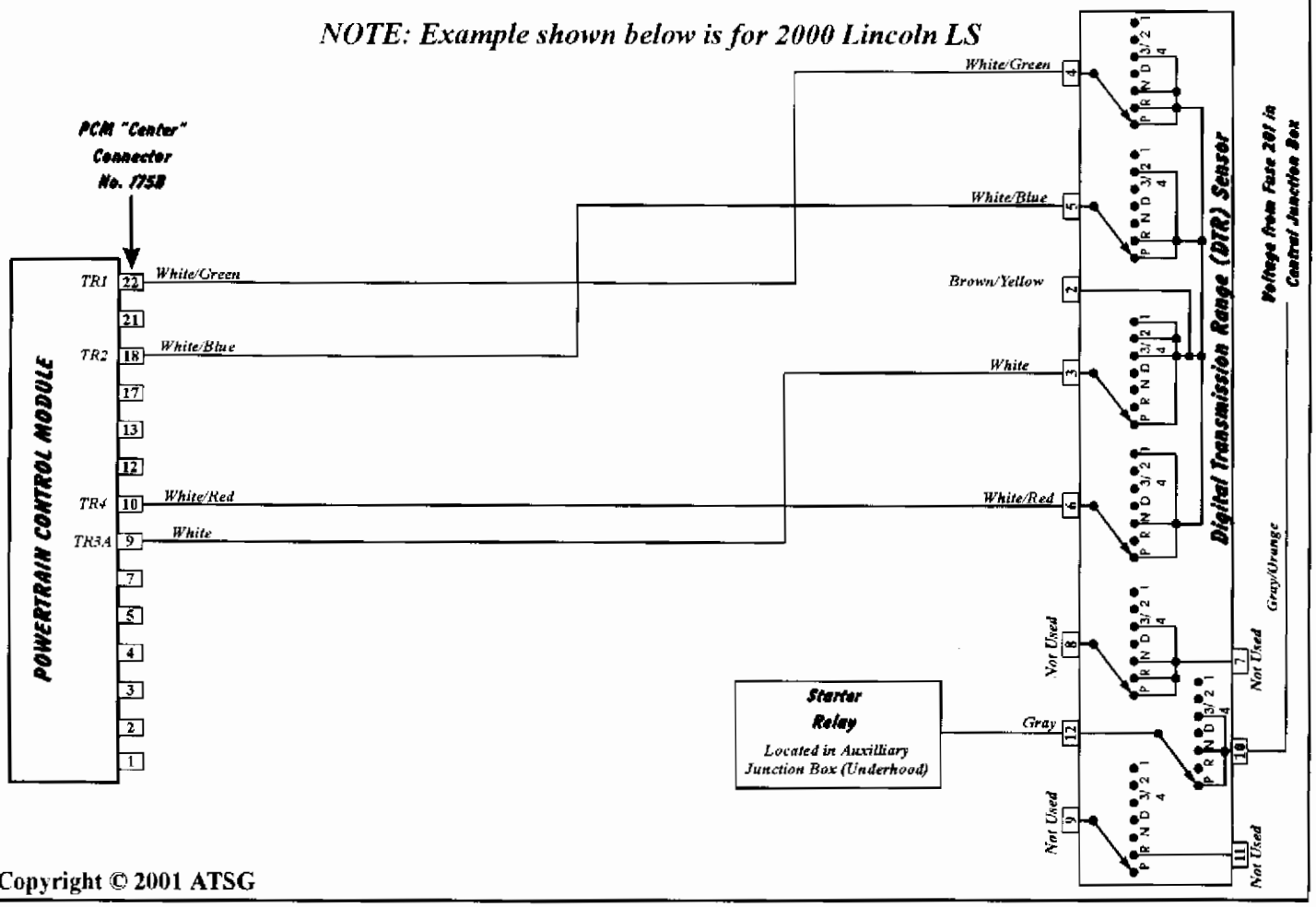


Figure 10

FORD MOTOR COMPANY

DIGITAL RANGE SENSOR (DTR) WIRING CHART

TABLE OF CONTENTS

1997 Aerostar 3.0-4.0 See Figure 12
1997 Expedition 4.6-5.4 See Figure 12
1997 Pickup 5.4 See Figure 12
1997 Explorer 4.0 SOHC See Figure 12
1997 Explorer 5.0 See Figure 12
1997 Mountaineer 5.0 See Figure 12
1997 Ranger 2.3-3.0-4.0 See Figure 12
1997 Lincoln Mark Eight See Figure 13
1997 F150-250 Light Duty 4.2 From 6-24-96 See Figure 13
1997 F150-250 Light Duty 4.6 From 6-24-96 See Figure 13
1997 Econoline Van 4.2-4.6 See Figure 13
1997 Econoline Van 5.4-6.8 See Figure 13
1997 Econoline Van 7.3 Diesel See Figure 13

1998 Lincoln Continental See Figure 14
1998 Crown Victoria See Figure 14
1998 Grand Marquis See Figure 14
1998 Expedition 5.4 See Figure 14
1998 Navigator 5.4 See Figure 14
1998 F150-250 Light Duty 5.4 See Figure 14
1998 Explorer/Mountaineer See Figure 14
1998 Ranger 2.5, 3.0, 4.0 See Figure 14
1998 Expedition 4.6 See Figure 15
1998 F150-250 Light duty 4.2-4.6 See Figure 15
1998 Lincoln Mark Eight See Figure 15
1998 Mustang 3.8-4.6 SOHC See Figure 15
1998 Sable/Taurus 3.0 12 Valve-3.0 Flex Fuel See Figure 15
1998 Lincoln Town Car See Figure 16
1998 Econoline Van 4.2-4.6-5.4 See Figure 16
1998 Econoline Van 7.3 Diesel See Figure 16

1999 Lincoln Continental See Figure 16
1999 Crown Victoria/Grand Marquis See Figure 17
1999 Econoline Van 4.2-4.6 See Figure 17
1999 Econoline 250-350 Super Duty 5.4-6.8 See Figure 17
1999 Econoline 250-350 Super Duty 7.3 Diesel See Figure 17
1999 Expedition 4.6 5.4 See Figure 18
1999 Navigator 5.4 See Figure 18
1999 Explorer 4.9 OHV See Figure 18
1999 Mountaineer 4.0 SOHC See Figure 18
1999 Explorer 5.0 See Figure 18
1999 Mountaineer 5.0 See Figure 18
1999 Mustang 3.8-4.6 SOHC See Figure 18
1999 F150-250 Light Duty 4.2-4.6-5.4 See Figure 19
1999 F250-350 Super Duty 5.4-6.8 See Figure 19
1999 F250-350 Super Duty 7.3 Diesel See Figure 19
1999 Ranger 2.5-3.0-4.0 See Figure 19
1999 Sable/Taurus 3.0 12 Valve, 3.0 flex Fuel See Figure 19
1999 Lincoln Town Car See Figure 20
1999 Windstar 3.0-3.8 See Figure 20

2000 Lincoln Continental See Figure 20
2000 Crown Victoria/Grand Marquis See Figure 20
2000 Econoline 150-250 4.2-4.6 See Figure 21
2000 Econoline 5.4 Super Duty See Figure 21
2000 Econoline 6.8 Super Duty See Figure 21
2000 Econoline 7.3 Diesel See Figure 21
2000 Excursion 5.4, 6.8 Gas See Figure 21
2000 Excursion 7.3 Diesel See Figure 22
2000 F250-350 Super Duty Gas See Figure 21
2000 F150-250 Light Duty See Figure 22
2000 F250-350 Super Duty 7.3 Diesel See Figure 22
2000 Expedition 4.6-5.4 See Figure 22
2000 Navigator 5.4 See Figure 22
2000 Explorer 4.0, 4.0 SOHC-5.0 See Figure 22
2000 Mountaineer 4.0 SOHC-5.0 See Figure 22
2000 Lincoln LS 3.0 See Figure 23
2000 Mustang 3.8-4.6 SOHC See Figure 23
2000 Ranger 2.5-3.0-4.0 See Figure 23
2000 Sable/Taurus See Figure 23
2000 Lincoln Town Car See Figure 24
2000 Windstar See Figure 24

2001 Ranger 2.5-3.0-4.0 SOHC See Figure 24

Figure 11

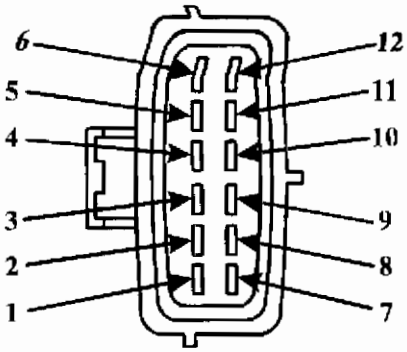
1997 Aerostar 3.0-4.0

TERM. NO.	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 5 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Pink		From Ign. Switch-Hot in Start

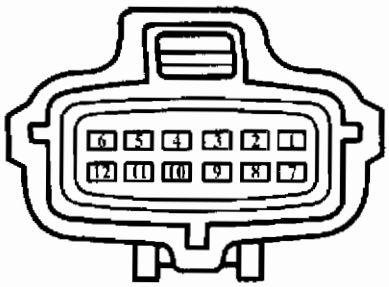
1997 Expedition 4.6-5.4 Pickup 5.4

TERM. NO.	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt. Blue-Pink		Fuse 5 15a. Hot in Run
10	Dk.Blue-Orange		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1997 Explorer 4.0 SOHC

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Purple-Orange		Fuse 28 10a.Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Pink		Fuse 24 10a. Hot in Start

1997 Explorer-Mountaineer 5.0 Ranger 2.3-3.0-4.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Purple-Orange		Fuse 26 10a.Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Pink		Fuse 24 10a. Hot in Start

Figure 12

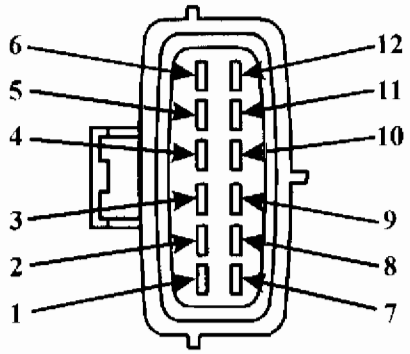
1997 Lincoln Mark Eight

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Red-Black		Fuse 34 15a. Hot in Run
10	Red-Lt.Blue		Fuse 6 10a. Hot in Start
11	Black-Pink		To Reverse Lights
12	White-Pink		To Starter Relay

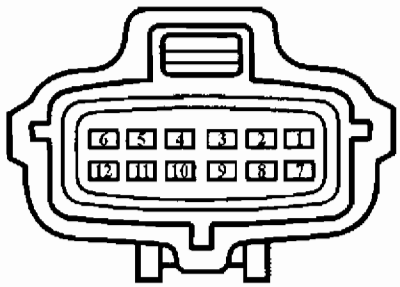
1997 F150-250 Light Duty
4.2 From 6-24-96
4.6 From 6-24-96

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Red-Black		Fuse 5 15a. Hot in Run
10	Dk.Blue-Orange		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1997 Econoline Van Gas 4.2-4.6

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	Grey-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink		Fuse 34 10a. Hot in Start

1997 Econoline Van Gas 5.4-6.8 and7.3 Diesel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Orange-Black	17 or 34	TR1
5	White-Pink	49	TR2
6	Grey-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink		Fuse 34 10a. Hot in Start

Figure 13

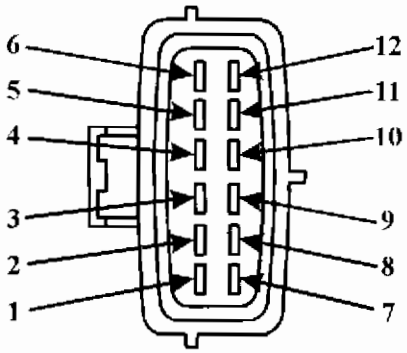
1998 Lincoln Continental

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Red-Black		Fuse 34 15a. Hot in Run
10	White-Orange		Fuse 23 10a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

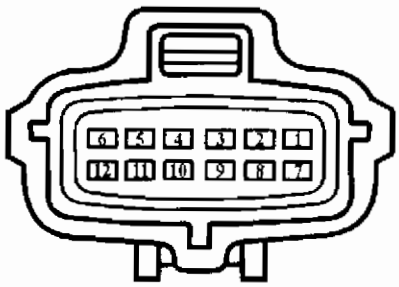
1998 Crown Victoria/Grand Marquis

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 5 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Violet-Black		To Reverse Lights
12	White-Pink		From Ign. Swit, Hot in Start

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1998 Expedition-Navigator F150-250 Light Duty 5.4

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt.Blue-Pink		Fuse 5 15a. Hot in Run
10	Dk.Blue-Pink		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

1998 Explorer-Mountaineer Ranger 2.5-3.0-4.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Purple-Orange		Fuse 27 15a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink or Pink		Fuse 24 7.5a. Hot in Start

Figure 14

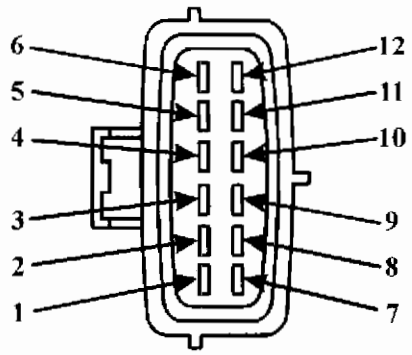
1998 Expedition 4.6
1998 F150-250 Light Duty 4.2-4.6

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt.Blue-Pink		Fuse 5 15a. Hot in Run
10	Dk.Blue-Orange		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

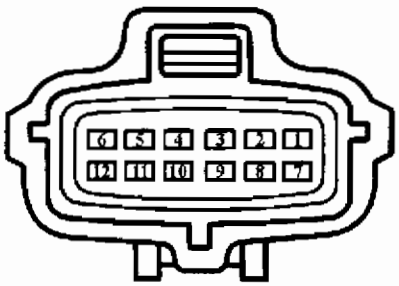
1998 Lincoln Mark Eight

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Red-Black		Fuse 34 15a. Hot in Run
10	Red-Lt.Blue		Fuse 6 10a. Hot in Start
11	Black-Pink		To Reverse Lights
12	White-Pink		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1998 Mustang 3.8-4.6 SOHC

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 1 15a. Hot in Run
10	Red-Lt.Blue		From Ign.Swit. Hot in Start
11	Black-Pink		To Reverse Lights
12	White-Pink		To Starter Relay

1998 Sable/Taurus 3.0 12Valve-3.0 Flex Fuel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 6 15a. Hot in Run
10	Red-LtBlue		Fuse 7 10a. Hot in Start
11	Black-Pink		To Reverse Lights
12	White-Pink		To Starter Relay

Figure 15

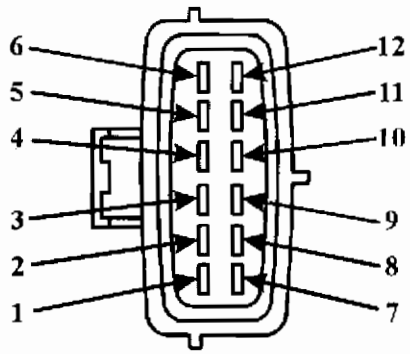
1998 Lincoln Town Car

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Lt.Blue-Black		Fuse 17 10a. Hot in Run
10	White-Pink		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Brown-Pink		Fuse 26 5a. Hot in Start

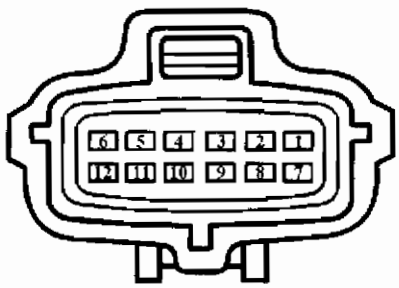
1998 Econoline Van Gas 4.2, 4.6, 5.4, 6.8

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	White-Yellow	3 or 34	TR1
5	Dk.Blue-White	49	TR2
6	Dk.Green-Yellow	50	TR4
7			
8			
9	Purple-Orange		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink		Fuse 34 10a. Hot in Start

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1998 Econoline Van 7.3 Diesel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	White-Yellow	17	TR1
5	Dk.Blue-White	49	TR2
6	Dk.Green-Yellow	50	TR4
7			
8			
9	Purple-Orange		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink		Fuse 34 10a. Hot in Start

1999 Lincoln Continental

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Orange-Black	3 or 34	TR1
5	Black-White	49	TR2
6	Dk.Green-Orange	50	TR4
7			
8			
9	Red-Black		Fuse 34 15a. Hot in Run
10	White-Orange		Fuse 23 10a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

Figure 16

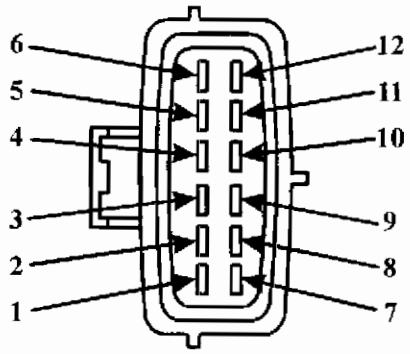
1999 Crown Victoria-Grand Marquis

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Purple-Orange		Fuse 5 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink		Fuse 10 20a. Hot in Start

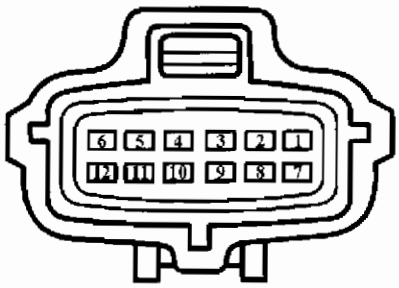
1999 Econoline Van Gas 4.2-4.6

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	Lt.Green-Black	50	TR4
7			
8			
9	Ppl-Org orWht-Ppl		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Tan-Red		Fuse 34 10a. Hot in Start

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1999 Econoline Van 250-350 Super Duty 5.4, 6.8

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	*Grey-Red*	*91*	*Ground*
3	*Lt.Blue-Yellow*	*64*	*TR3A 5 volts to DTR*
4	*Yellow-Black*	*3 or 34*	*TR1*
5	*Lt.Blue-Black*	*49*	*TR2*
6	*DkGrn-Yel or LtGrn-Red*	*50*	*TR4*
7			
8			
9	*Wht-Ppl or Ppl-Org*		*Fuse 12 15a. Hot in Run*
10	*Red-Lt.Blue*		*To Starter Relay*
11	*Black-Pink*		*To Reverse Lights*
12	*Tan-Red*		*Fuse 34 10a. Hot in Start*

1999 Econoline Van 250-350 Super Duty 7.3 Diesel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	*Grey-Red*	*91*	*Ground*
3	*Lt.Blue-Yellow*	*64*	*TR3A 5 volts to DTR*
4	*Yellow-Black*	*17*	*TR1*
5	*Lt.Blue-Black*	*49*	*TR2*
6	*Lt.Blue-Red*	*50*	*TR4*
7			
8			
9	*Wht-Ppl or Ppl-Org*		*Fuse 12 15a. Hot in Run*
10	*Red-Lt.Blue*		*To Starter Relay*
11	*Black-Pink*		*To Reverse Lights*
12	*Tan-Red*		*Fuse 34 10a. Hot in Start*

Figure 17

At Zoom we think our customers are the best form of advertisement!

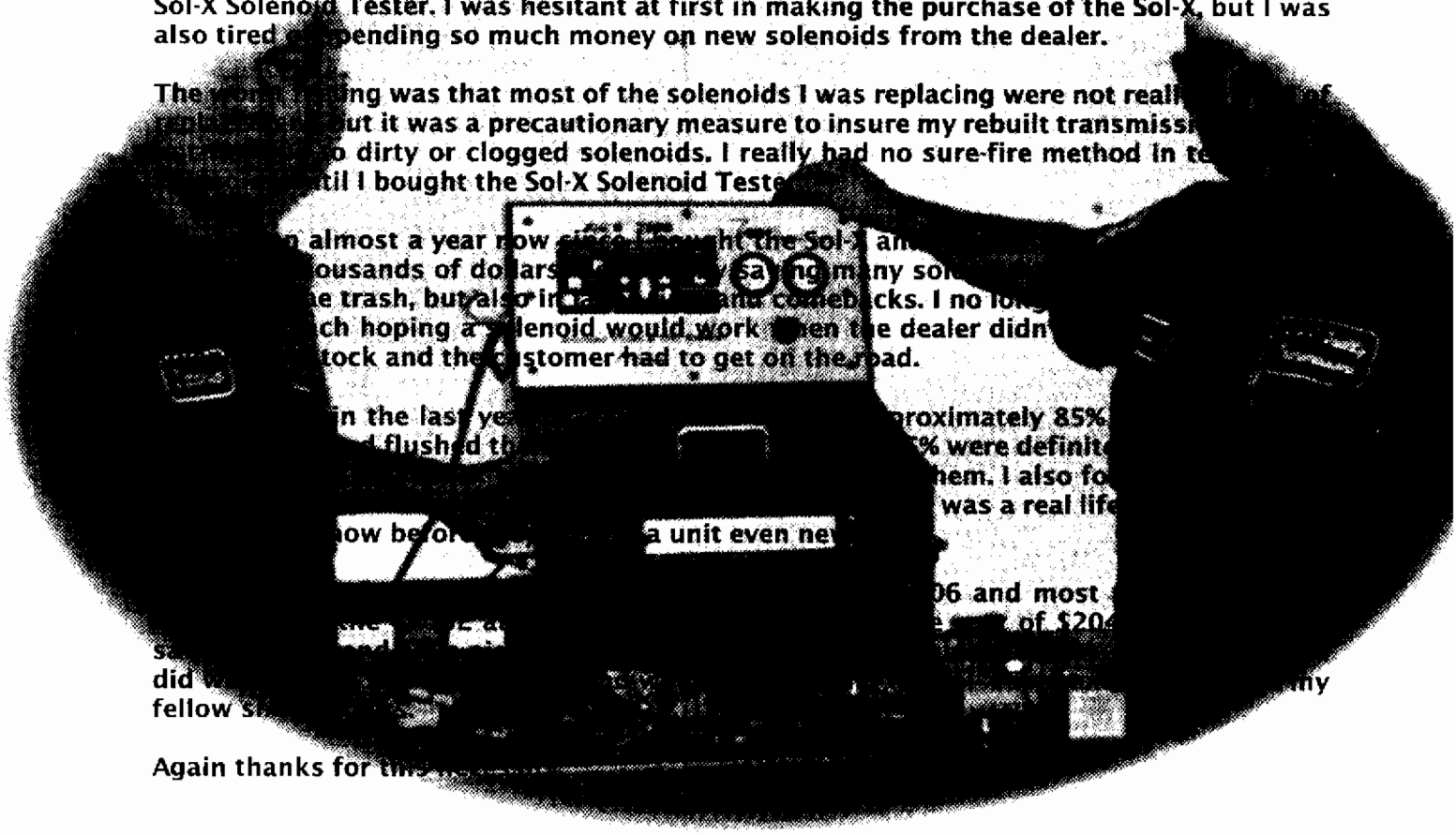
AAA QUALITY TRANSMISSIONS

November 13, 2001

Gentlemen,

I am writing to thank you for such an invaluable piece of equipment that you have in the Sol-X Solenoid Tester. I was hesitant at first in making the purchase of the Sol-X, but I was also tired of spending so much money on new solenoids from the dealer.

The main thing was that most of the solenoids I was replacing were not really [illegible] but it was a precautionary measure to insure my rebuilt transmissi[illegible] to dirty or clogged solenoids. I really had no sure-fire method in te[illegible] until I bought the Sol-X Solenoid Teste[illegible]



almost a year now since I bought the Sol-X and [illegible] thousands of dollars [illegible] saving many sol[illegible] the trash, but also in [illegible] and comebacks. I no lo[illegible] much hoping a solenoid would work when the dealer didn[illegible] stock and the customer had to get on the road.

In the last ye[illegible] proximately 85% [illegible] flushed th[illegible] % were definit[illegible] them. I also fo[illegible] was a real life[illegible]

ow be[illegible] a unit even ne[illegible]

06 and most [illegible] of $20[illegible]

s[illegible]
did [illegible] my
fellow s[illegible]

Again thanks for th[illegible]

Don Stone
AAA Quality Transmissions

Ask us about the SOLX
It pays for itself!

ZOOM TECHNOLOGY INC.
1003 Industrial Drive
West Berlin, New Jersey 08091
1.856.767.8840 ~ Fax 1.856 767 8839
1.800.322.0806
www.zoom-tech.com

Ask about our ATSG discount

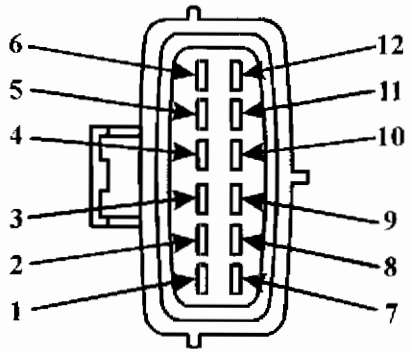
1999 Expedition 4.6-5.4
1999 Navigator 5.4

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt.Blue-Pink		Fuse 5 15a. Hot in Run
10	Dk.Blue-Orange		Fuse 21 15a.Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

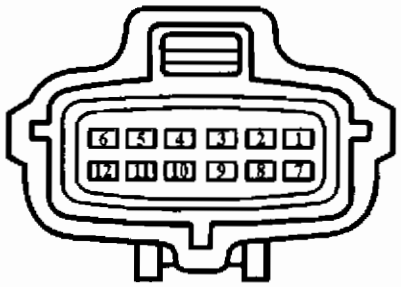
1999 Explorer 4.9 OHV
1999 Mountaineer 4.0 SOHC

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Purple-Orange		Fuse 27 15a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink or Pink		Fuse 24 7.5a. Hot in Start

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1999 Explorer/Mountaineer 5.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Yellow-Black	3	TR1
4	White-Black	50	TR4
5	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
6	Lt.Blue-Black	49	TR2
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Purple-Orange		Fuse 27 15a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink or Pink		Fuse 24 7.5a. Hot in Start

1999 Mustang 3.8-4.6 SOHC

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Orange		Fuse 11 15a. Hot in Run
10	Red-Lt.Blue		Fuse 6 20a. Hot in Start
11	Black-Pink		To Reverse Lights
12	White-Pink		To Starter Relay

Figure 18

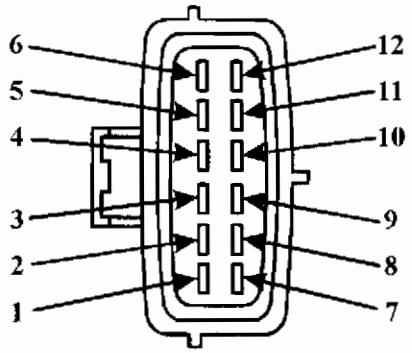
1999 F150-250 Light Duty 4.2, 4.6, 5.4

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt.Blue-Pink		Fuse 5 15a. Hot in Run
10	Dk.Blue-Orange		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

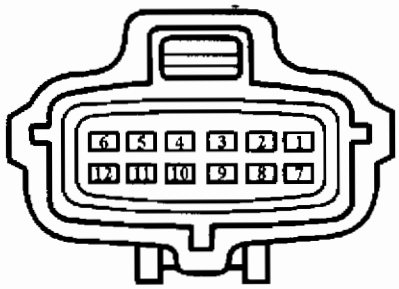
1999 F250-350 Super Duty 5.4-6.8 Gas
1999 F250-350 Super Duty 7.3 Diesel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	White-Black	50	TR4
4	Yellow-Black	17 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
7	Pnk-Org or Ppl-Org		Ground
8	Red-White	GEM 1	4WD
9	Lt.Blue-Pink		Fuse 28 10a. Hot in Run
10	Dk.Blue-Orange		Fuse 20 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



1999 Ranger 2.5-3.0-4.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black or Bare		Ground
8	Red-White	GEM 22	4WD
9	Purple-Orange		Fuse 27 15a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink or Pink		Fuse 24 7.5a. Hot in Start

1999 Sable-Taurus 3.0 12 Valve, 3.0 Flex Fuel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blu-Yel or Pnk-Blk	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Orange		Fuse 6 15a. Hot in Run
10	Brown-Pink		Fuse 7 10a. Hot in Start
11	Blk-Pnk or Pnk-Blk		To Reverse Lights
12	Tan-Red		To Starter Relay

Figure 19

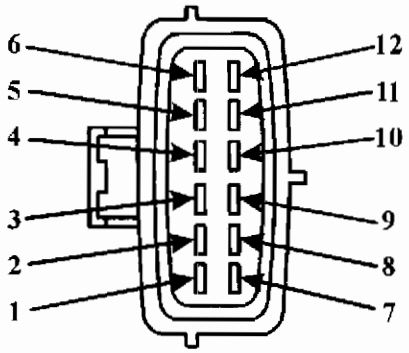
1999 Lincoln Town Car

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Lt.Blue-Black		Fuse 17 10a.a. Hot in Run
10	White-Pink		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Brown-Pink		Fuse 26 5a. Hot in Start

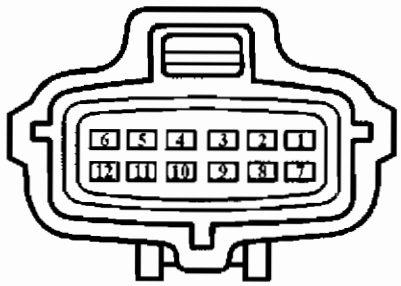
1999 Windstar 3.0-3.8

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Orange-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9			
10	Red-Lt.Blue		Fuse 19 10a. Hot in Start
11			
12	White-Pink		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



2000 Lincoln Continental

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Orange-Black	3 or 34	TR1
5	Black-White	49	TR2
6	Dk.Green-Orange	50	TR4
7			
8			
9	Red-Black		Fuse 34 15a. Hot in Run
10	White-Orange		Fuse 23 10a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

2000 Crown Victoria/Grand Marquis

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Violet-Orange		Fuse 5 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	White-Pink		From Ign.Swit. Hot in Start

Figure 20

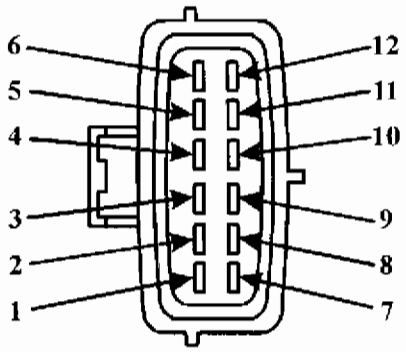
2000 Econoline Van 150-250 4.2, 4.6, 2000 Econoline Van 5.4 Super Duty

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	Lt.Green-Red	50	TR4
7			
8			
9	White-Violet		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Tan-Red		Fuse 34 10a. Hot in Start

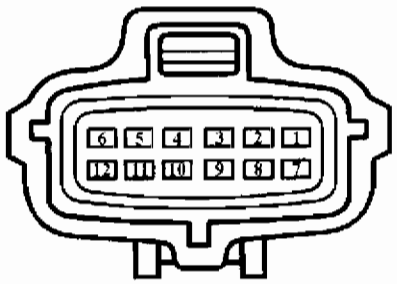
2000 Econoline 6.8 Super Duty

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	Dk.Green-Yellow	50	TR4
7			
8			
9	White-Violet		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Tan-Red		Fuse 34 10a. Hot in Start

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



2000 Econoline 7.3 Diesel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	17	TR1
5	Lt.Blu-Blk or Wht-Pnk	49	TR2
6	Lt.Blu-Red or Gry-Blk	50	TR4
7			
8			
9	White-Violet		Fuse 12 15a. Hot in Run
10	Red-Lt.Blue		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Tan-Red		Fuse 34 10a. Hot in Start

2000 Excursion 5.4, 6.8 Gas 2000 F250-350 Super Duty Gas

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Violet-Yellow	GEM 4	and Transfer Case Pin 4
8	Red-White	GEM 1	4WD
9	Lt.Blue-Pink		Fuse 28 15a. Hot in Run
10	Dk.Blu-Org or Wht-Pnk		Fuse 20 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

Figure 21

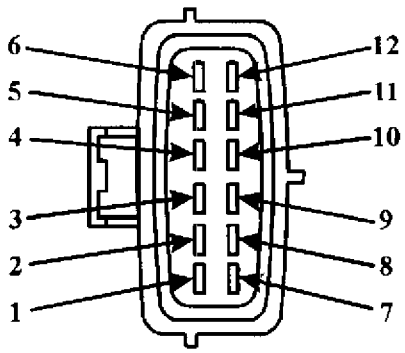
2000 F150-250 Light Duty

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt.Blue-Pink		
10	Dk.Blue-Orange		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

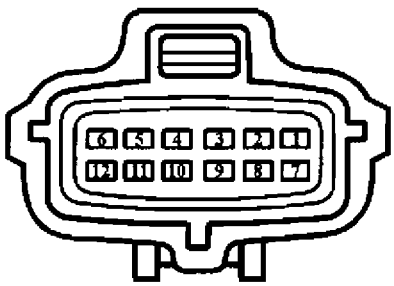
2000 Excursion 7.3 Diesel
2000 F250-350 Super Duty 7.3 Diesel

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	17	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Violet-Yellow	GEM 4	and Transfer Case Pin 4
8	Red-White	GEM 1	4WD
9	Lt.Blue-Pink		Fuse 28 15a. Hot in Run
10	Dk.Blu-Org or Wht-Pnk		Fuse 20 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



2000 Expedition 4.6, 5.4
2000 Navigator 5.4

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Lt.Blue-Pink		Fuse 5 15a. Hot in Run
10	Dk.Blue-Orange		Fuse 21 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

2000 Explorer 4.0, 4.0 SOHC, 5.0
2000 Mountaineer 4.0 SOHC, 5.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Violet-Orange		Fuse 27 15a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Pink		Fuse 24 7.5a. Hot in Start

Figure 22

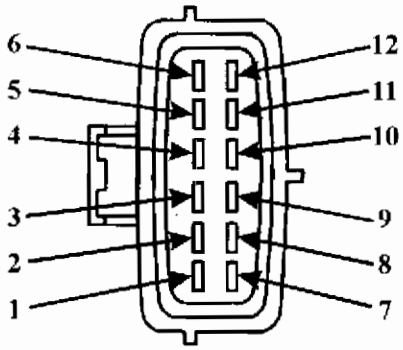
2000 Lincoln LS 3.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Brown-Yellow	17	Reverse Lights
3	White	9	TR3A 5 volts to DTR
4	White-Green	22	TR1
5	White-Blue	18	TR2
6	White-Red	10	TR4
7			
8			
9	Purple-Orange		Fuse 201 5a. Hot in Start
10			
11			
12	Grey		To Starter Relay

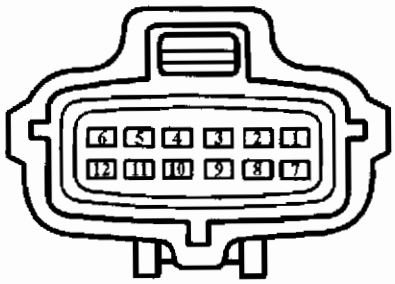
2000 Mustang 3.8-4.6 SOHC

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Orange		Fuse 11 15a. Hot in Run
10	Red-Lt.Blue		Fuse 6 20a. Hot in Start
11	Black-Pink		To Reverse Lights
12	White-Pink		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



2000 Ranger 2.5, 3.0, 4.0

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White	GEM 22	4WD
9	Violet-Orange		Fuse 6 15a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Wht-Pnk or Wht-Vio		Fuse 24 7.5a. Hot in Start

2000 Sable/Taurus

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Red-Black	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Black-Yellow		Fuse 236 15a. Hot in Run
10	Brown-Pink		Fuse 237 15a. Hot in Start
11	Black-Pink		To Reverse Lights
12	Tan-Red		To Starter Relay

Figure 23

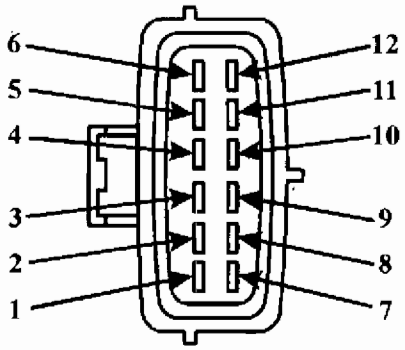
2000 Lincoln Town Car

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9	Lt.Blue-Black		Fuse 17 10a. Hot in Run
10	White-Pink		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Brown-Pink		Fuse 26 5a. Hot in Start

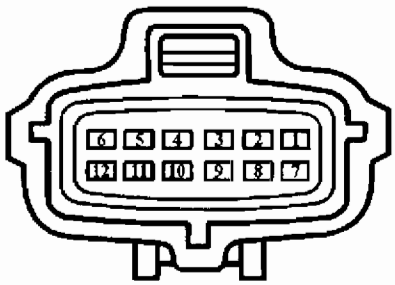
2000 Windstar

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Orange-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7			
8			
9			
10	Red-Lt.Blue		Fuse 19 10a. Hot in Start
11			
12	White-Pink		To Starter Relay

View looking into DTR Sensor



View looking into DTR Sensor harness connector-terminal side



2001 Ranger 2.5, 3.0, 4.0 SOHC

TERMINAL NUMBER	WIRE COLOR	PCM PIN NUMBER	CIRCUIT FUNCTION
1			
2	Grey-Red	91	Ground
3	Lt.Blue-Yellow	64	TR3A 5 volts to DTR
4	Yellow-Black	3 or 34	TR1
5	Lt.Blue-Black	49	TR2
6	White-Black	50	TR4
7	Black		Ground
8	Red-White		To 4WD Control Module
9	Violet-Orange		Fuse 20 10a. Hot in Run
10	Tan-Red		To Starter Relay
11	Black-Pink		To Reverse Lights
12	Pink		Fuse 50 7.5a. Hot in Start

Figure 24

FORD A4LD, 4R55E, 5R55E & 5R55N

PUMP TO CONVERTER HOUSING THREAD REPAIR OR PUMP BODY TO PUMP COVER

COMPLAINT: When tightening the pump to converter housing bolts, one or more of the bolt hole threads strips which will now require repair using the Heli-Coil® method.
After an attempt to locate a Heli-Coil® kit for 8mm x 1.00 thread, it is discovered that a repair kit does not exist for this size thread.

CAUSE: The causes of this complaint can be metal fatigue or over tightening.

CORRECTION: The original bolt size, seen in figure 1, is 8 x 1.00 x 35mm, since a thread repair kit does not exist for this size, use an 8 x 1.25mm tap to repair the damaged threads, since a thread repair kit does exist for this size thread.

Once the threads are restored, locate one of channel plate bolts from a 4T60 as shown in figure 2, because they match the original bolt length, and use it to secure the pump, and since these bolts are Torx head, they will fit into the narrow recess in the pump casting. Finish by tightening to 18 Ft. Lbs. of torque in a cris cross pattern as shown in figure 3.

NOTE: Be sure to use a pump alignment tool to avoid pump noise.

Special thanks for this information to A. Brian Zelinski at A.B.Z. Transmissions, New Bern, NC

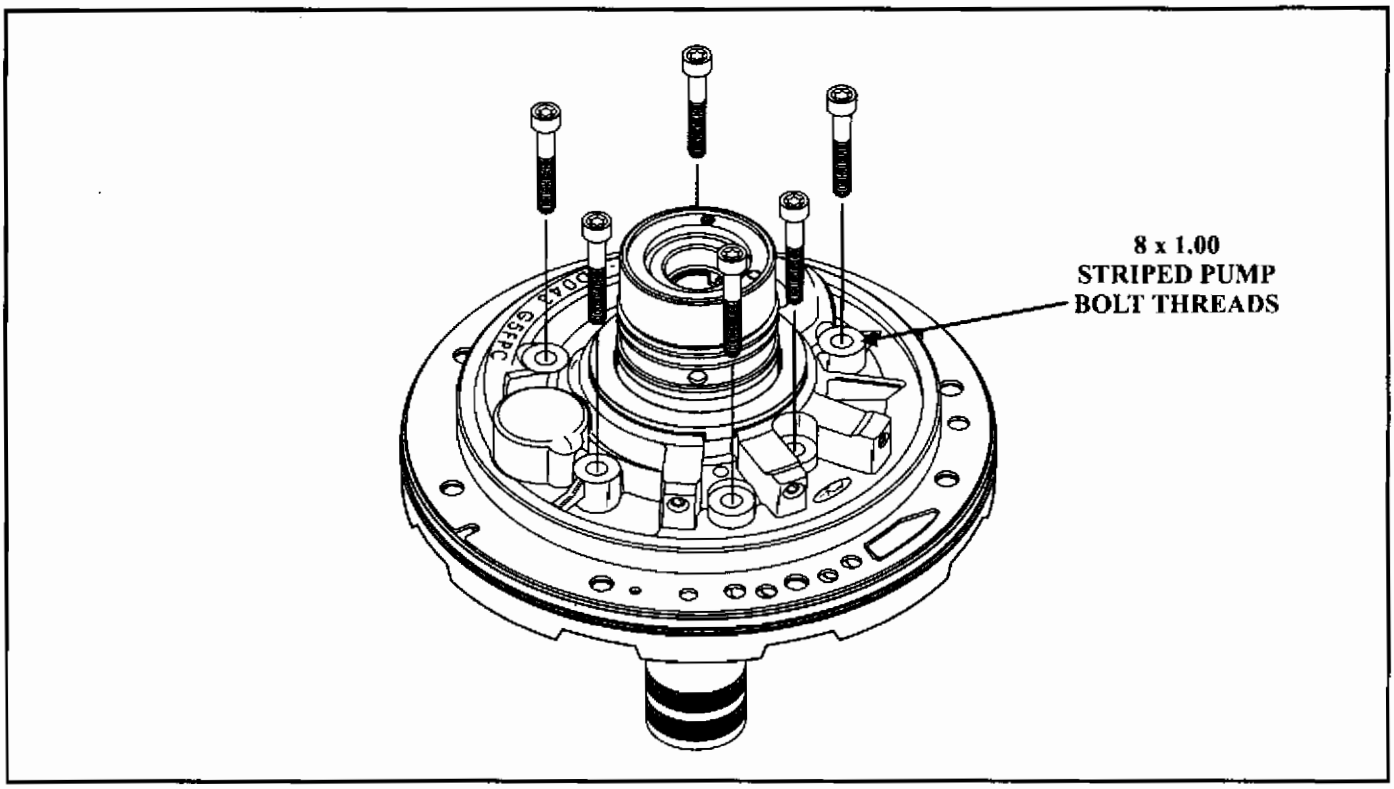


Figure 1

FORD A4LD, 4R55E, 5R55E & 5R55N

PUMP TO CONVERTER HOUSING THREAD REPAIR OR PUMP BODY TO PUMP COVER

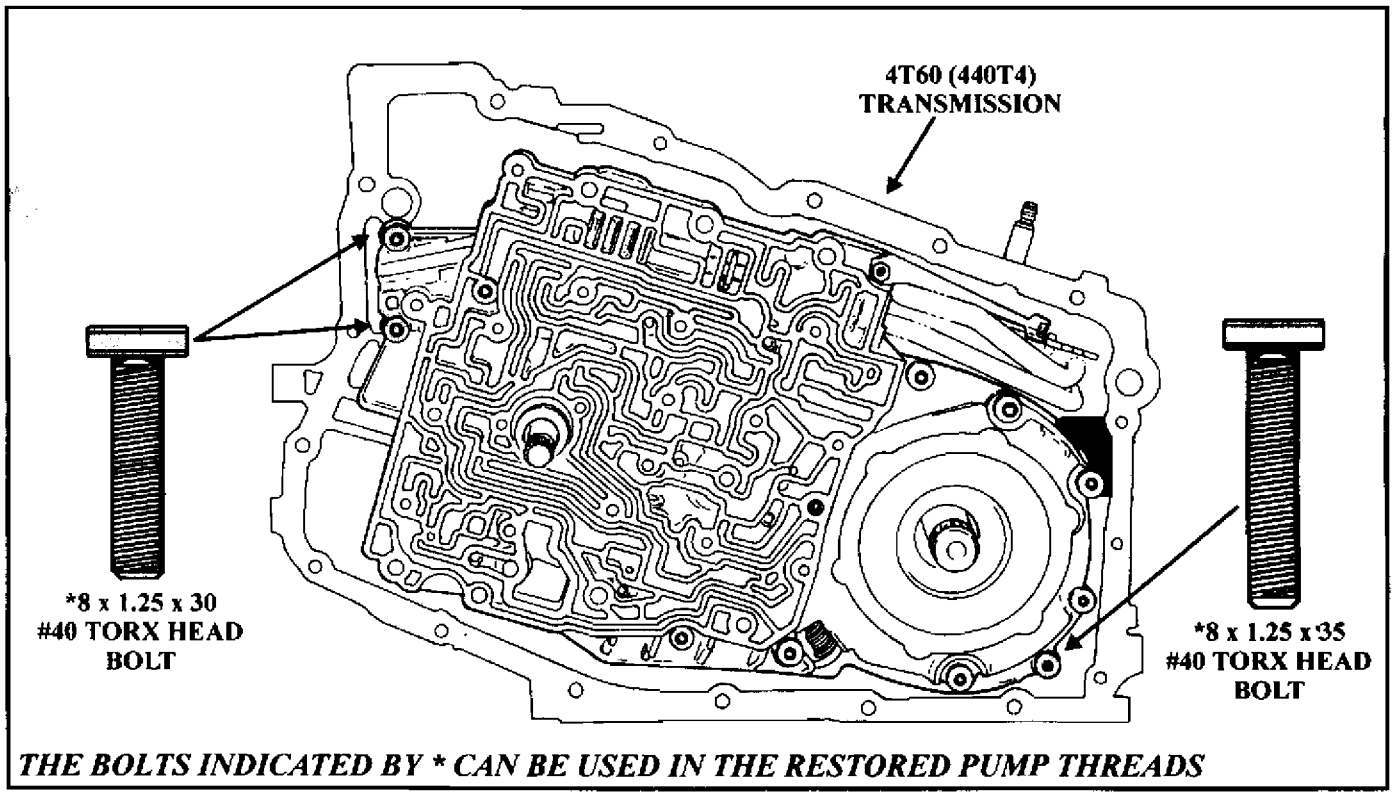


Figure 2

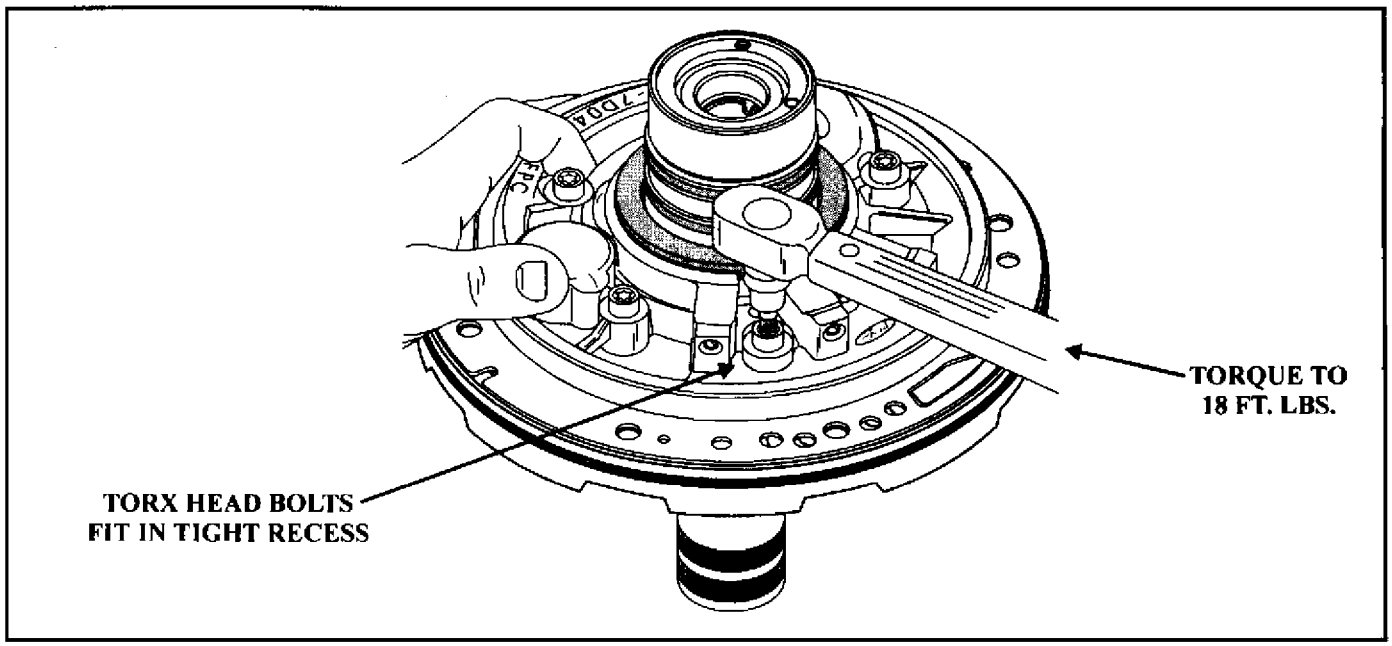


Figure 3

FORD 5R55N VERSUS 5R55W
TRANSMISSION DIFFERENCES

The Ford Motor Companys 5R55N (Non Sync.) transmission first appeared in the 2000 Lincoln "LS" and some of the Jaguar Models, which we are already somewhat familiar with. Beginning at the start of production for model year 2002, Ford has introduced the 5R55W (Wide Ratio) transmission into the some models of the Ranger and Explorer. The internal parts look almost identical, but will not interchange with their look alikes in the 5R55N transmission. The information in this bulletin will help you in getting the proper replacement parts back into the proper unit. Externally these transmissions are easy to identify and we have provided illustrations of both transmissions in Figure 1.

Figures 2 and 3 are illustrations of the fluid level checking procedure with a description of the procedure on the page preceding the illustrations.

Figure 4 is an illustration of the two different turbine shafts. They are identical in every respect except for the overall length.

Figures 5 and 6 show you the differences in the overdrive sun gear and drive plate. Notice the differences in the tooth count on the sun gear.

Figures 7 and 8 are illustrations of the two different coast clutch housings. Notice that the slots to accept the tabs on the adapter plate are narrower and angled to the left at a very slight angle. This means that it will engage into the coast clutch housing in only one direction.

Figures 9 and 10 are illustrations of the two different overdrive ring gears and the overdrive center shafts. Notice the difference in the tooth counts of both pieces.

Figure 11 illustrates the difference in the snap ring that retains the overdrive center shaft in the ring gear and the dimensions for identification.

Figures 12 and 13 are illustrations of the two different overdrive carriers. Notice the difference in the tooth counts on the planetary pinions.

Figure 14 illustrates the internal components of the forward clutch housing for the 5R55N. Figure 15 illustrates the internal components of the forward clutch housing for the 5R55W. The empty forward clutch housings and the forward clutch components are the same in both units.

Figures 16 and 17 are illustrations of the two different, completed forward clutch housing assemblies. Notice that the only visible difference is the piston and the return spring retainer.

Figures 18 and 19 are illustrations of the two different forward planetary carriers and the two different forward planetary internal ring gears. Notice the different tooth count on the planetary carrier pinions and the different tooth counts on the forward internal ring gear.

Continued on next Page.

Figures 20 and 21 are illustrations of the two different sun gear and shell assemblies. Notice that the 5R55N uses an intermediate sprag and the 5R55W does not. This required a taller spacer as shown in Figure 21. Notice also the difference in tooth count of the forward sun gear, but the rear sun gear remains the same.

Figure 22 shows illustrations of the two different solenoid pack assemblies. Notice that the 5R55W does not use a reverse pressure switch and the hole where it plugs in is obviously different.

Figure 23 shows 3 dimensional illustrations of the two different valve body assemblies. The most noticeable difference is the 5R55W does not use a cover plate. The bolt pattern however, is exactly the same as the 5R55N transmission.

Figure 24 shows illustrations of the two different valve body assemblies in the worm track area, different amount of checkballs and the locations, and the retainer locations for both valve bodies.

Figure 25 is illustrations of the two different valve body spacer plates. One hole location for the spacer plate retaining bolts has changed to help prevent you from a mis-match.

Figures 26 and 27 are illustrations of the two different reverse servo housings. Notice that the 5R55W transmission has two feed holes in the housing, has a larger diameter for the inner piston seal, and has a different reverse servo check valve.

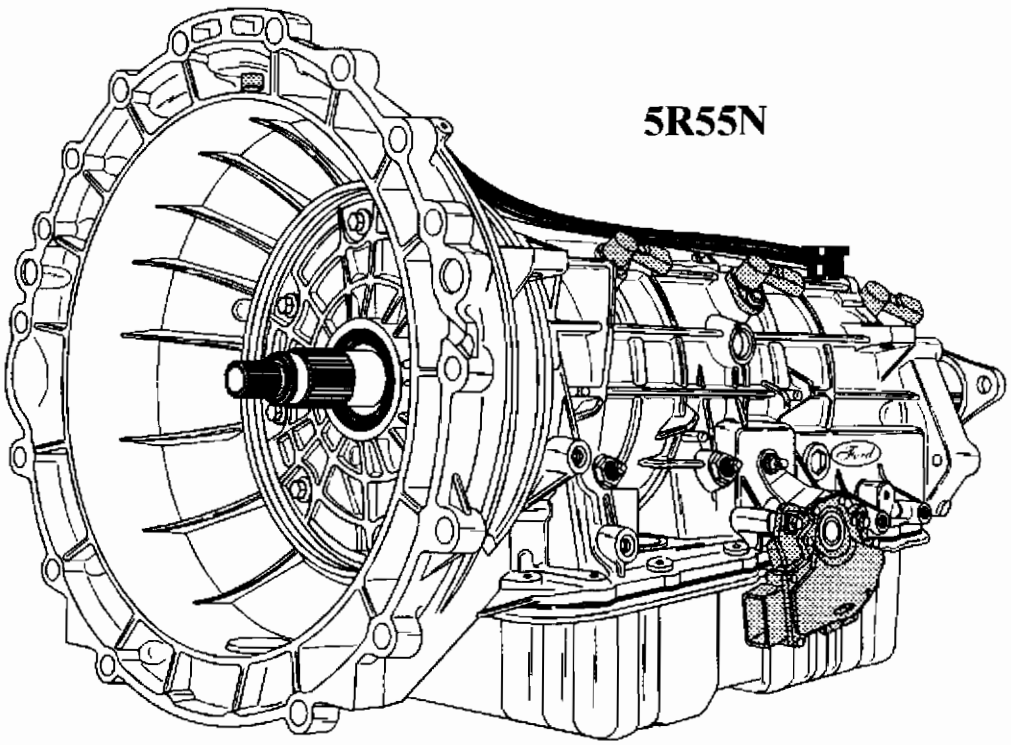
Figure 28 is illustrations of the two different of the two different reverse servo return springs. Notice the difference in the spring dimensions.

Figure 29 is illustrations of the two different of the two different reverse servo pistons. Notice the difference in the outside diameter of the body, to accommodate the larger diameter in the housing.

Figures 30 and 31 are illustrations of the two different reverse servo components and the assembly process for each of them.

Figures 32 and 33 are illustrations of the two different intermediate servo covers and the intermediate servo pistons.

CAUTION:
NONE OF THE COMPONENTS LISTED ABOVE WILL INTERCHANGE BETWEEN THESE TWO SIMILAR TRANSMISSIONS



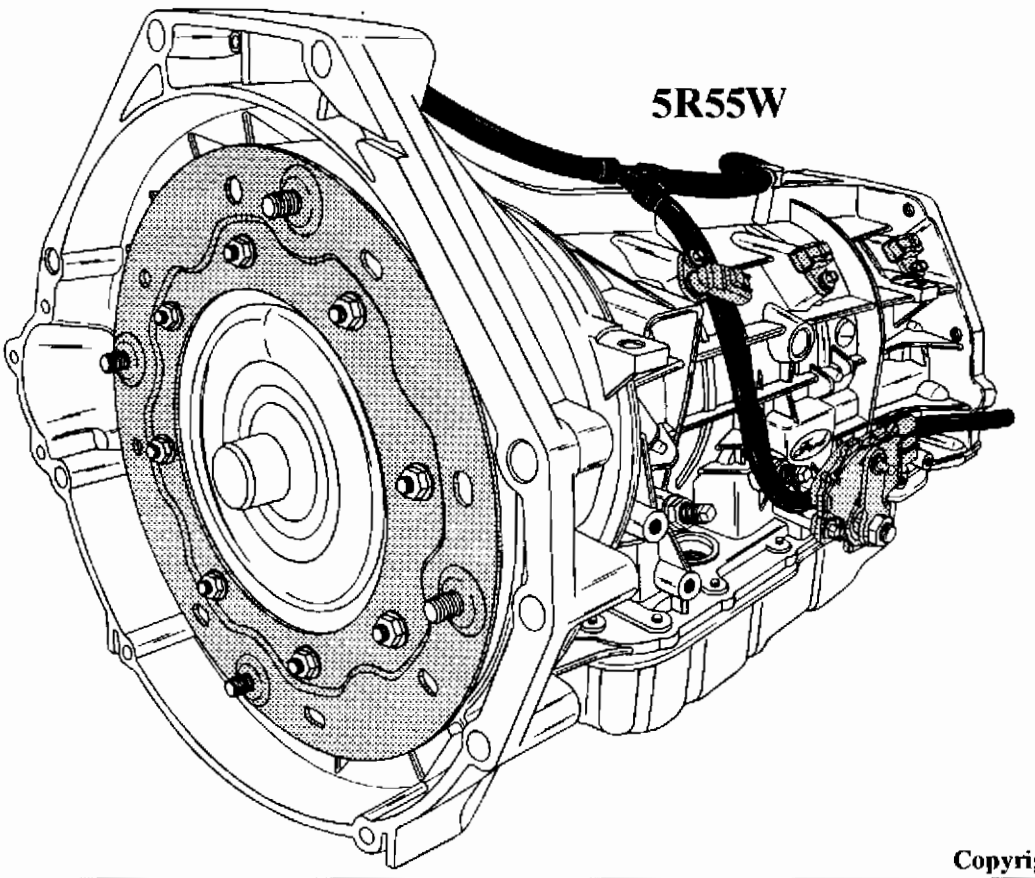
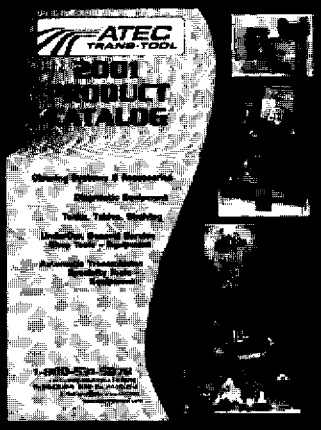
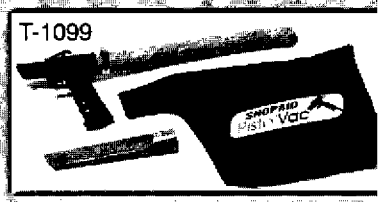


Figure 1

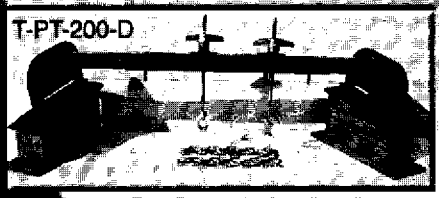
ATEC TRANS-TOOL

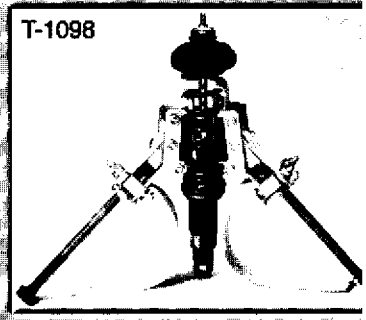
NEW PRODUCTS!

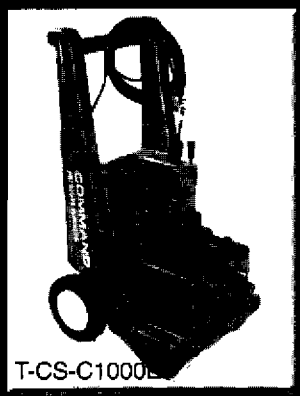


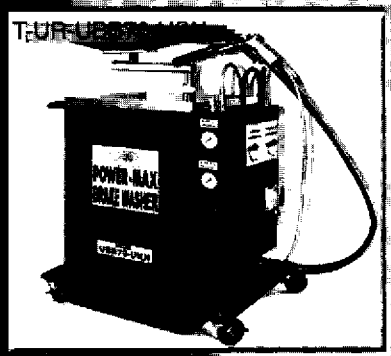


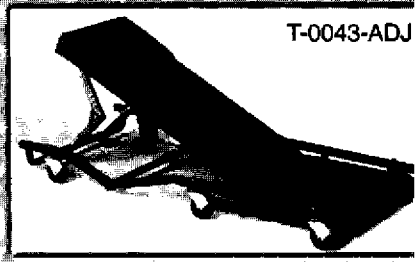
We're Not Just For Transmission Shops Any More!



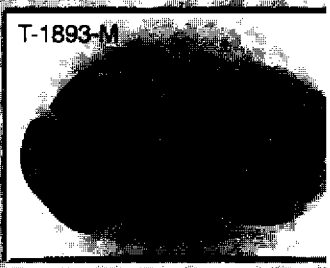


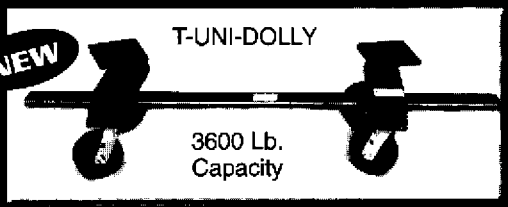






NEW FOR 2002
ATEC WEB CONNECTION
www.atec-trans-tool.com
For Catalog Call 800-531-5978





MORE NEW PRODUCTS THAN CAN FIT THE PAGE!

FORD 5R55N/5R55W

CHECKING FLUID LEVEL

5R55N PROCEDURE

Checking the fluid level on any vehicle equipped with Ford Motor Companys new 5R55N transmission may become confusing to some technicians. There is a plug in the extension housing, as shown in Figure 2, that would lead one to believe that this is where you check the fluid level, since some of the other manufacturers are currently checking fluid level in this manner, and it refers to the correct temperature to check the fluid right on the extension housing.

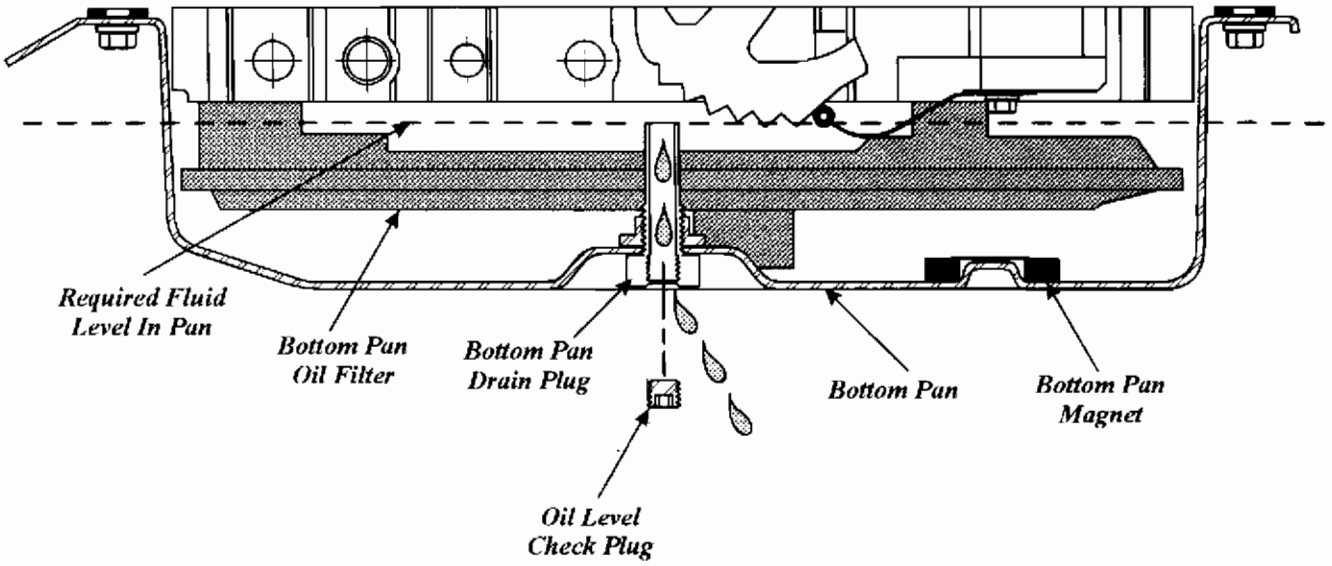
However, this is a ***"Fill" plug only*** on the new 5R55N transmission from Ford Motor Company, which is currently found in the 2000 Lincoln LS and some Jaguars. To ***"Check"*** for the correct fluid level, you must remove the check plug, which is located in the center of the bottom pan drain plug, and is removed with an allen wrench, as shown in Figure 2, while holding the drain plug with the proper size wrench so as not to loosen the drain plug.

We have provided you with a cut-away drawing of the bottom oil pan and the drain plug so that you will understand how this system works. Notice that the drain plug actually has a "stem" made on it that extends some distance up into the bottom pan, which is our way to establish the proper fluid level in the transmission. By removing the "Check" plug from the "Drain" plug, the fluid should just trickle over the stem and out through the center of the drain plug, as shown in Figure 2. The "Fill" plug in the extension housing is your only way to replace fluid in the transmission.

5R55W PROCEDURE

Checking the fluid level on any vehicle equipped with Ford Motor Companys new 5R55W transmission, is exactly the same as described above by removing the check plug which is located in center of the bottom pan drain plug, as shown in Figure 2. However, the ***"Fill"*** plug is located on the right rear of the transmission case, as shown in Figure 3. The 5R55W transmission is currently found the 2002 Explorer and 2002 Ranger.

CHECKING FLUID LEVEL



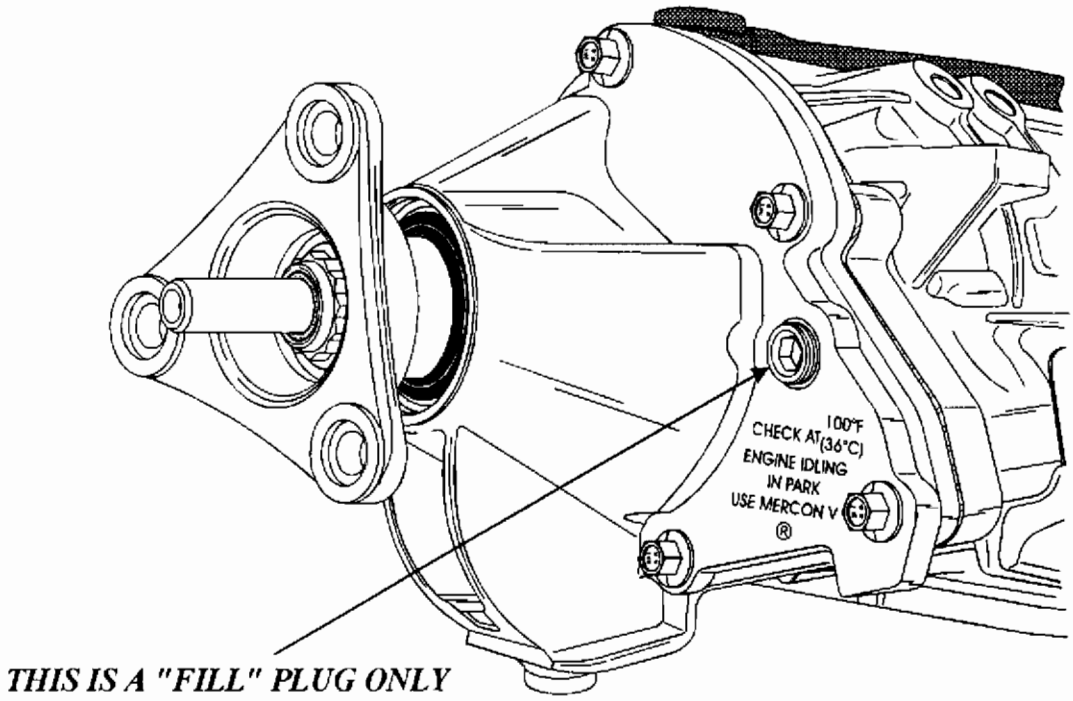


Figure 2

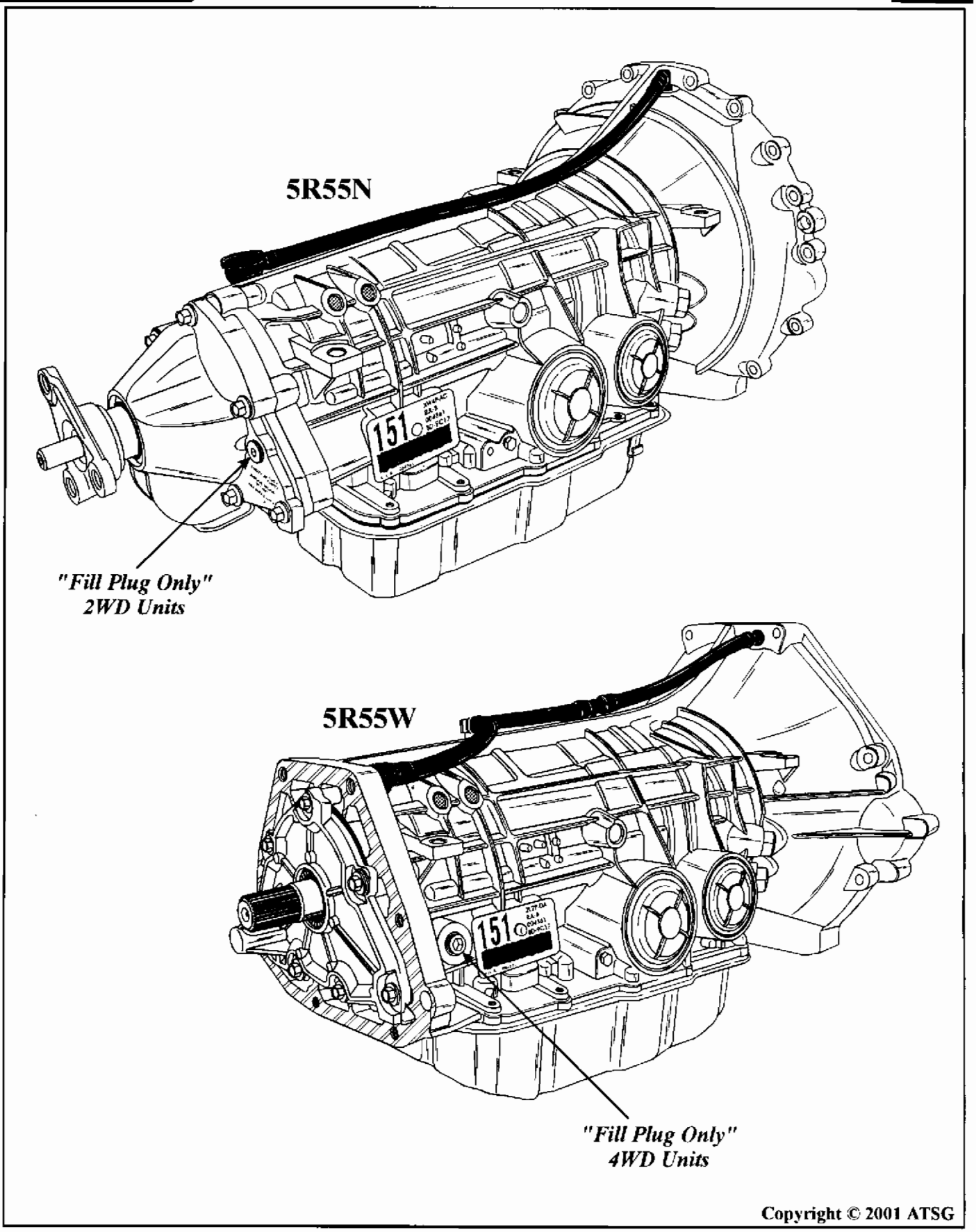
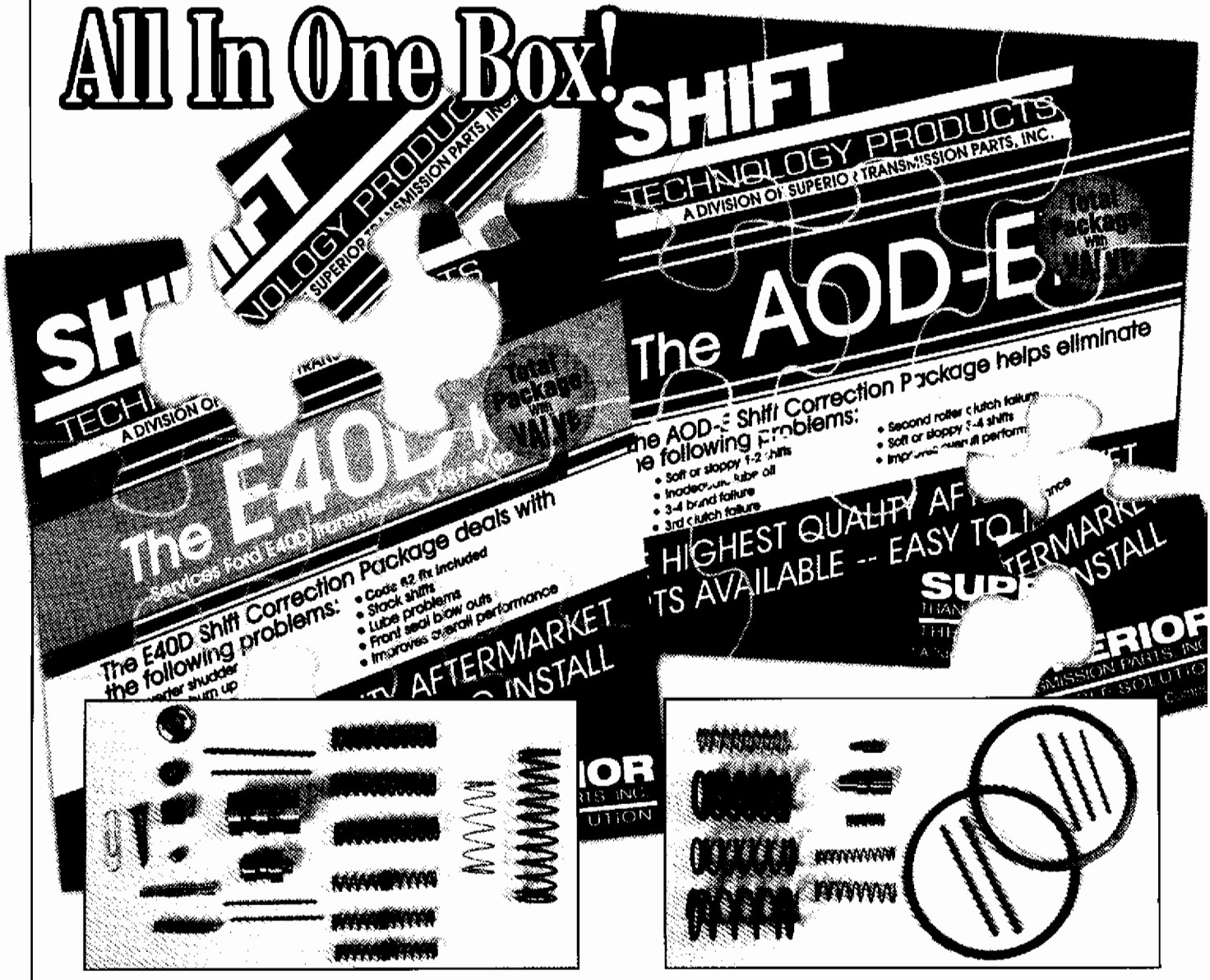


Figure 3

The Pieces To The Puzzle All In One Box!

Superior's E40D & A0D-E* Total Packages give you everything you need to help eliminate the majority of shifting complaints and common reoccurring problems all in one economical package. Like all of Superior's Shift Correction Packages, The E40D & A0D-E Total Packages contain quality parts, easy to use instructions, plus a precision, U.S. made Superior Steel Series Replacement Valve.

A Better Value Than Buying a Valve Body Kit and Replacement Valve Separately!



The E40D Shift Correction Package helps to eliminate the following problems: ✔converter shudder ✔ converter burn up ✔reverse problems ✔weak shifts ✔ code 62 fix included ✔ stack shifts ✔ lube problems ✔ front seal blow outs ✔ improves overall performance.

The E40D Total Package includes a code 62 fix

The A0D-E* Shift Correction Package helps to eliminate the following problems: ✔soft or sloppy 1-2 shifts ✔inadequate lube oil ✔3-4 band failure ✔3rd clutch failure ✔second roller clutch failure ✔soft or sloppy 3-4 shifts ✔simproves overall performance.

SUPERIOR
TRANSMISSION PARTS, INC.™
THE SIMPLE SOLUTION

Call For The Distributor Nearest You:
800-451-3115
or Visit Us On Our Website @
www.superior-transmission.com

TURBINE SHAFT DIFFERENCES

"5R55N" Turbine Shaft

"5R55W" Turbine Shaft .200" Longer

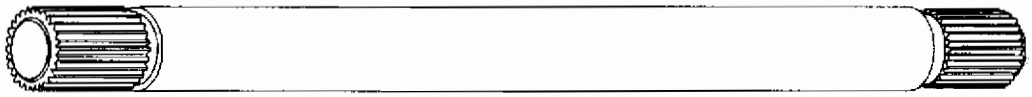
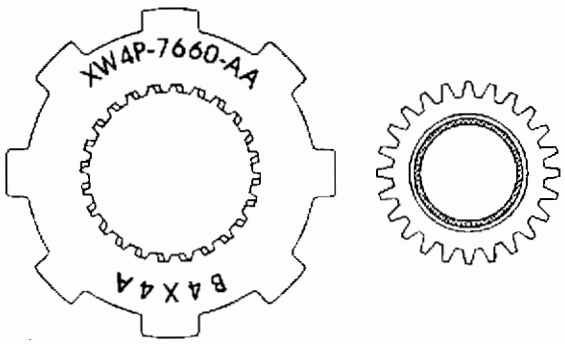


Figure 4



"5R55N"
Overdrive Sun Gear
24 Teeth

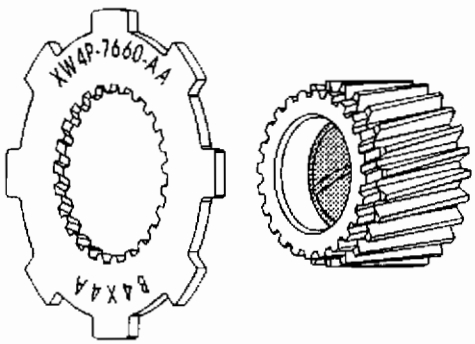
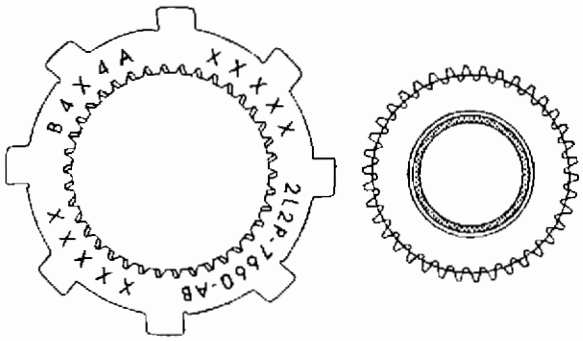


Figure 5



"5R55W"
Overdrive Sun Gear
38 Teeth

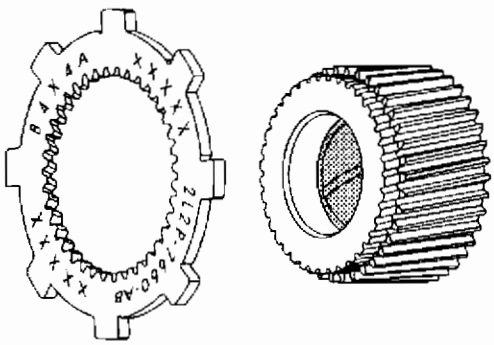


Figure 6

5R55N OVERRUN DRUM

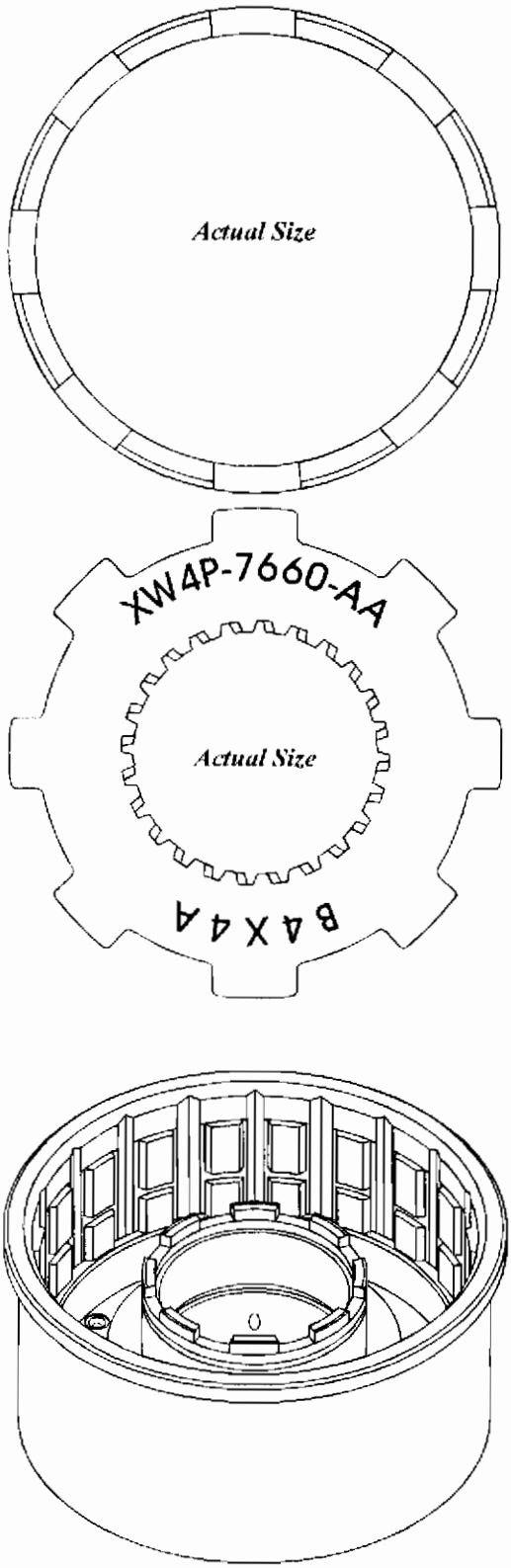


Figure 7

5R55W OVERRUN DRUM

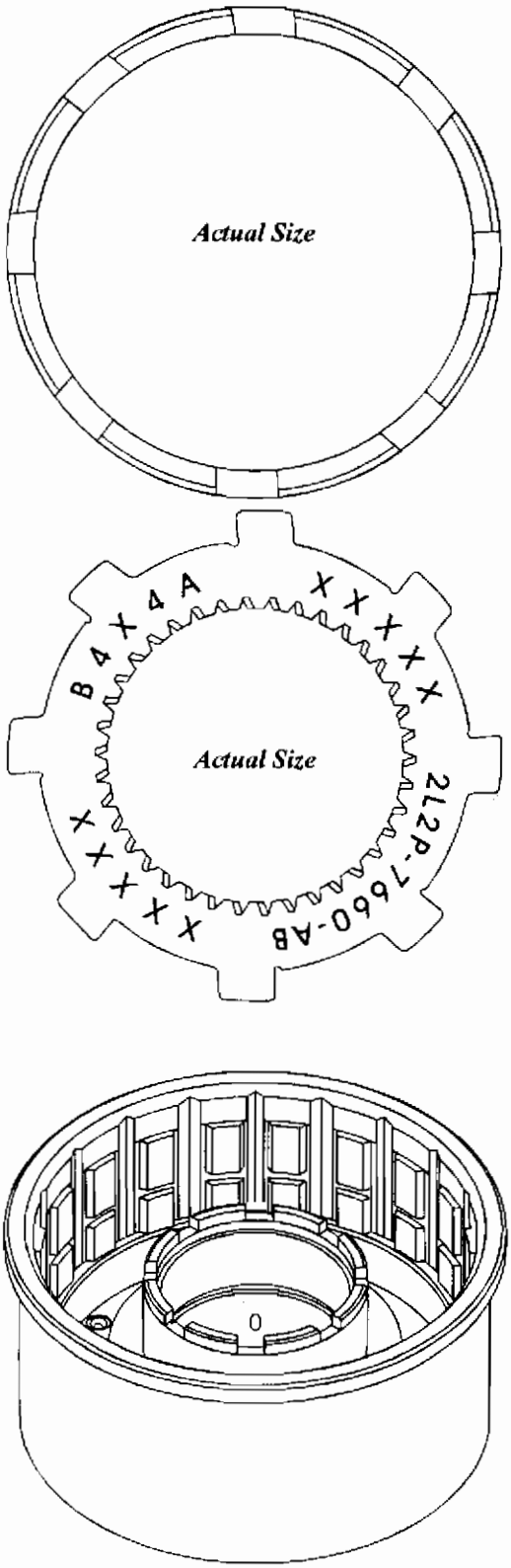


Figure 8

5R55N OVERDRIVE RING GEAR AND CENTER SHAFT

"5R55N"
Overdrive Ring Gear
72 Teeth

"5R55N"
Overdrive Center Shaft
72 Teeth

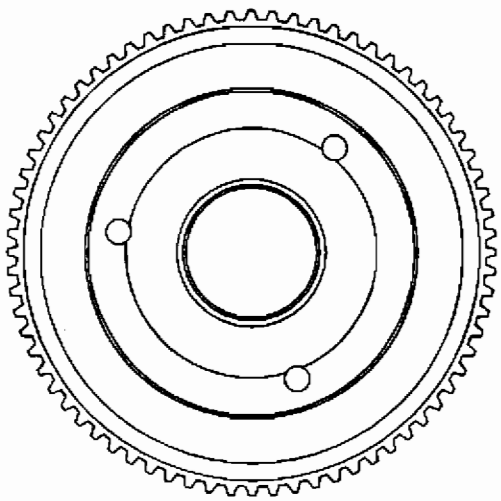


Figure 9

5R55W OVERDRIVE RING GEAR AND CENTER SHAFT

"5R55W"
Overdrive Ring Gear
94 Teeth

"5R55W"
Overdrive Center Shaft
94 Teeth

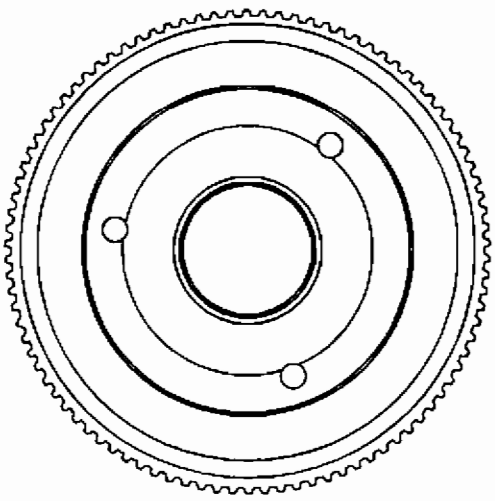
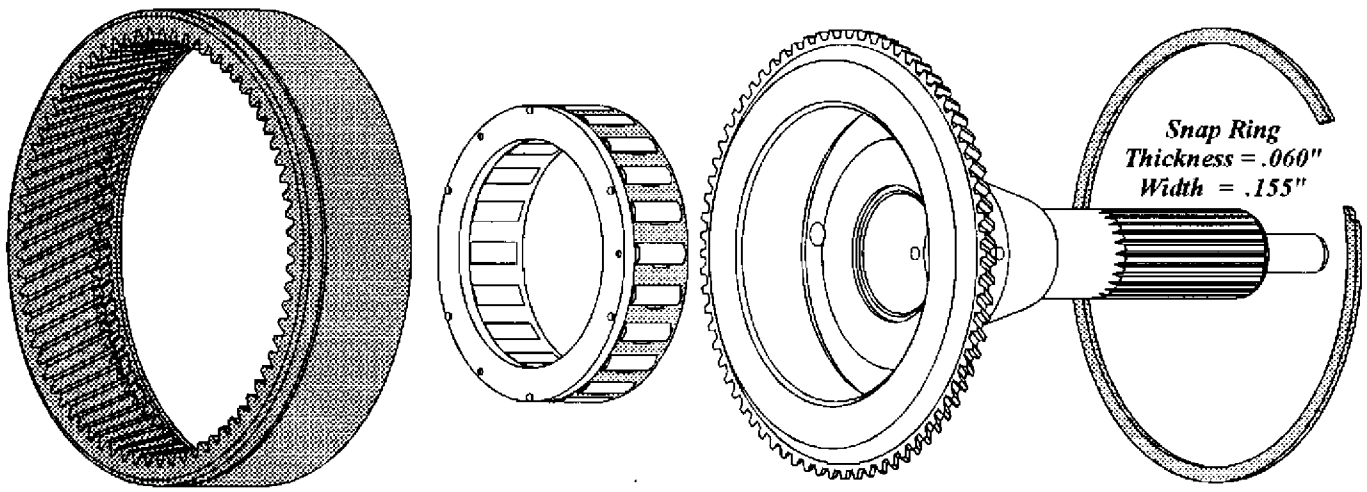


Figure 10

"5R55N" Overdrive Ring Gear Snap Ring



"5R55W" Overdrive Ring Gear Snap Ring

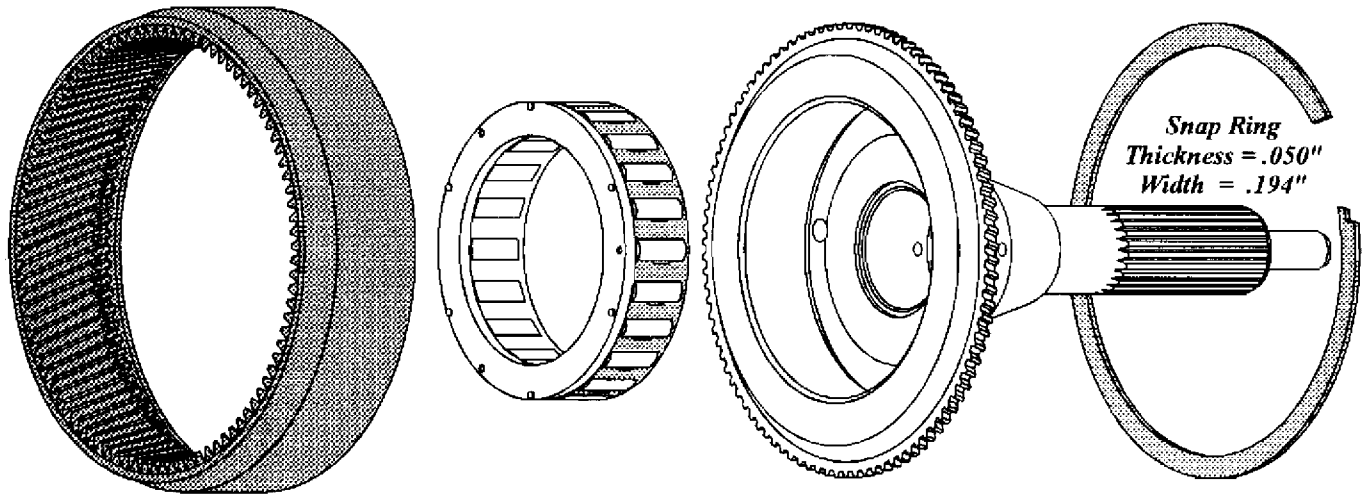
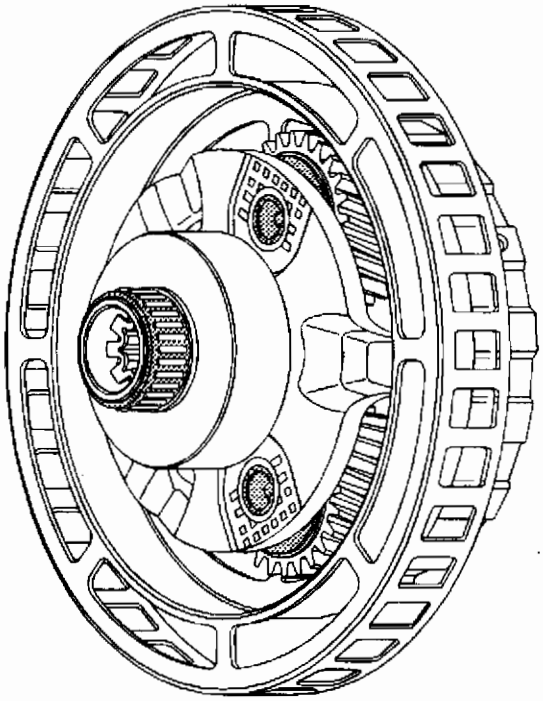


Figure 11

5R55N OVERDRIVE CARRIER



"5R55N" Overdrive Carrier
25 Tooth Pinions

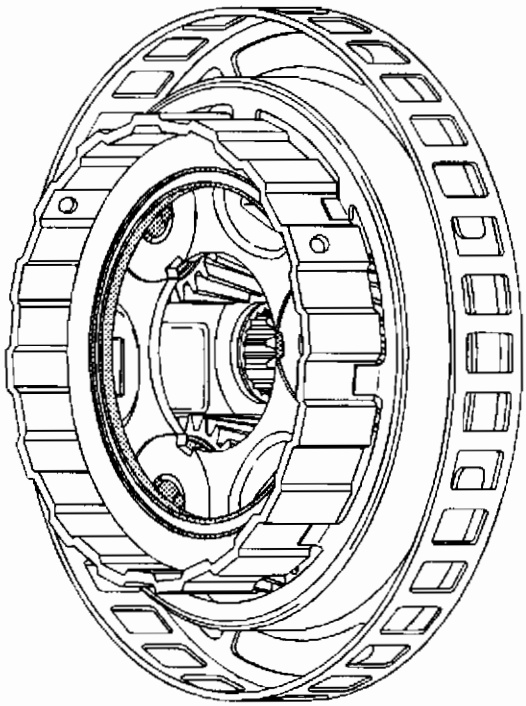
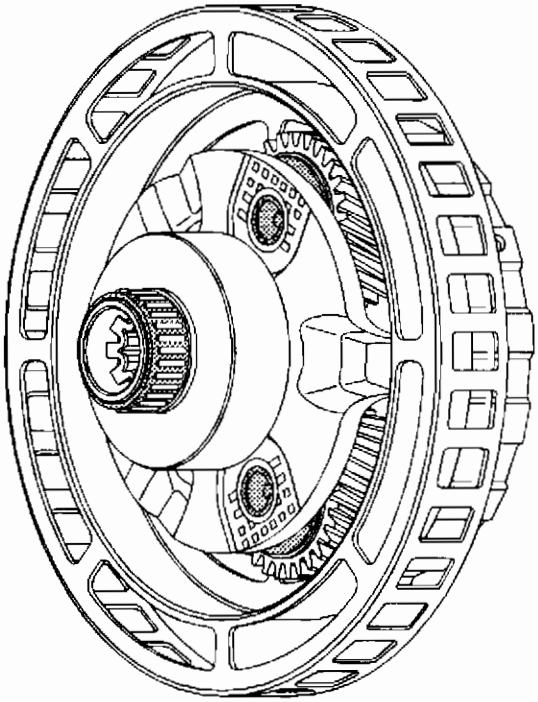


Figure 12

5R55W OVERDRIVE CARRIER



"5R55W" Overdrive Carrier
28 Tooth Pinions

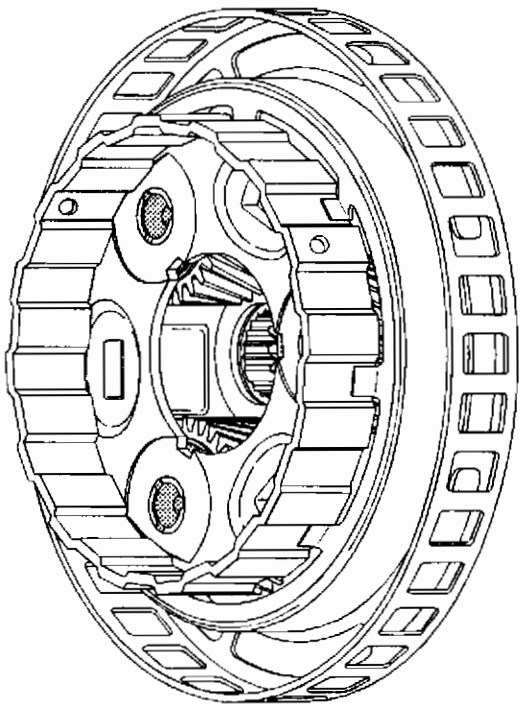


Figure 13

BLANK

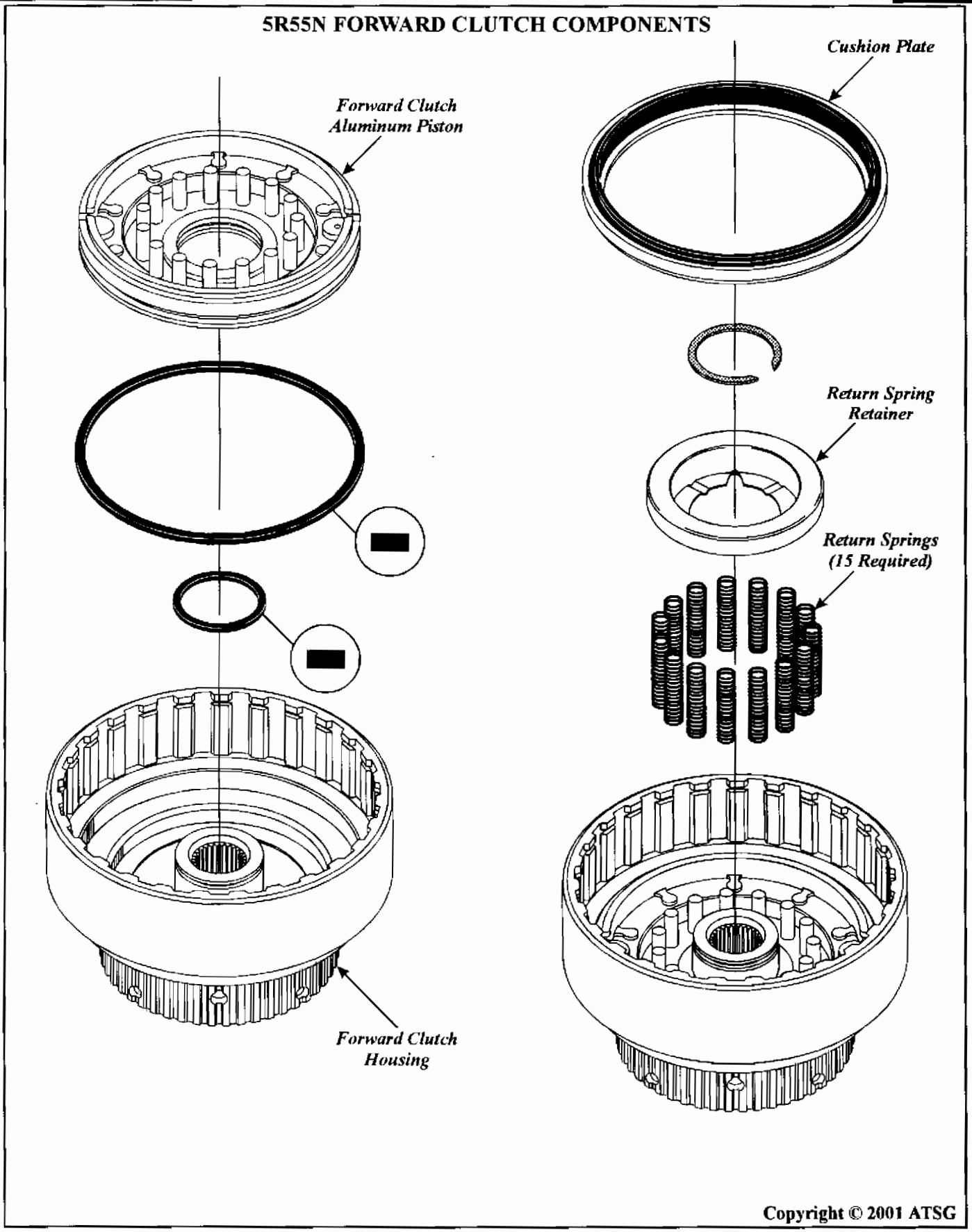

5R55N FORWARD CLUTCH COMPONENTS
Cushion Plate
Forward Clutch Aluminum Piston
Return Spring Retainer
Return Springs (15 Required)
Forward Clutch Housing
Copyright © 2001 ATSG

Figure 14

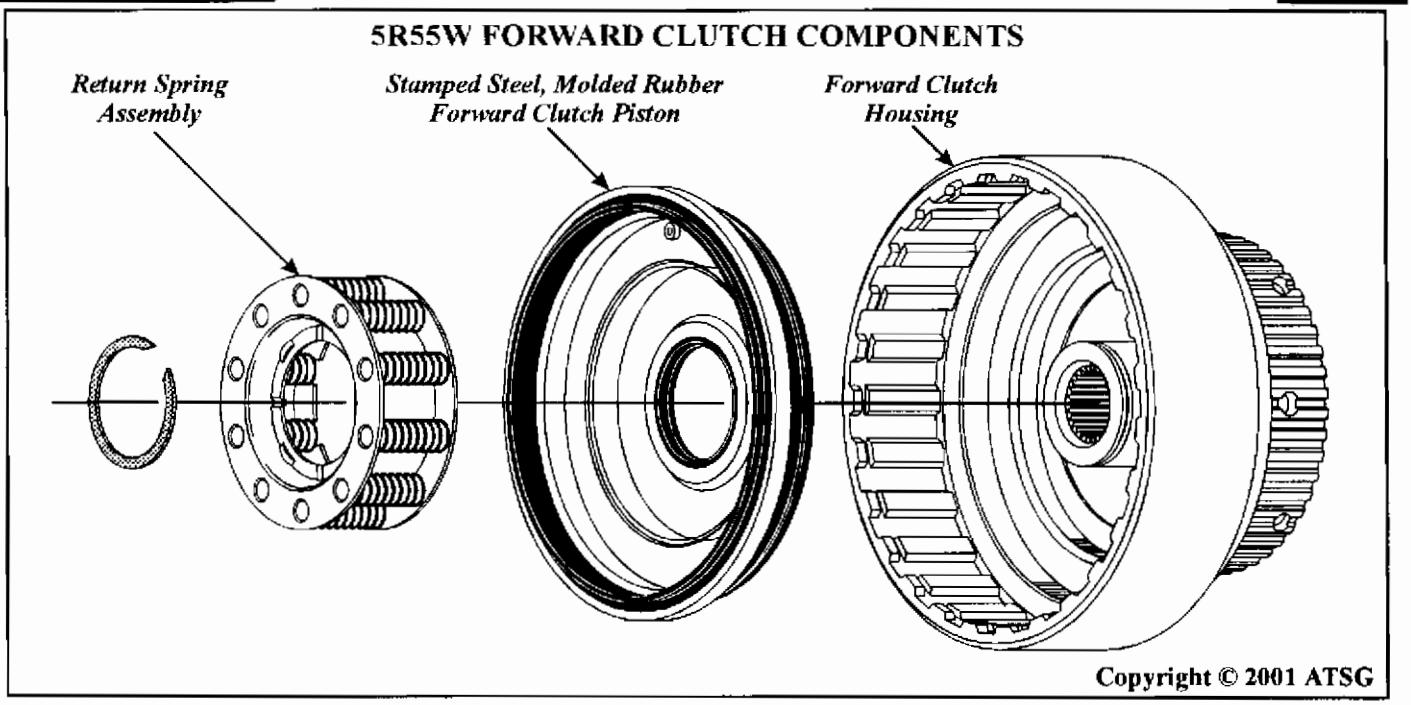


Figure 15

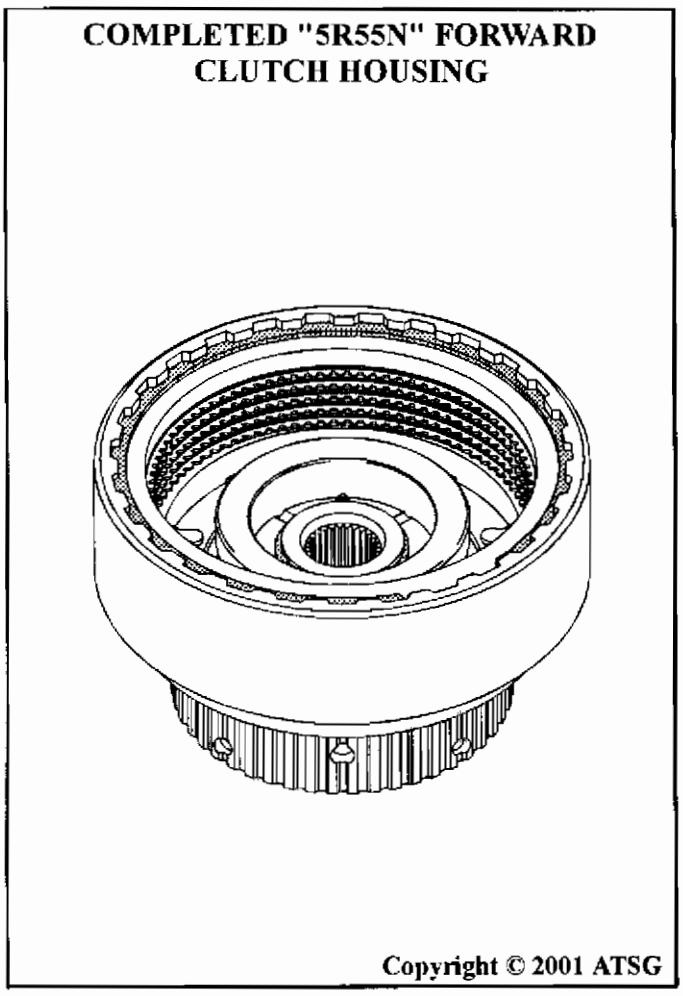


Figure 16

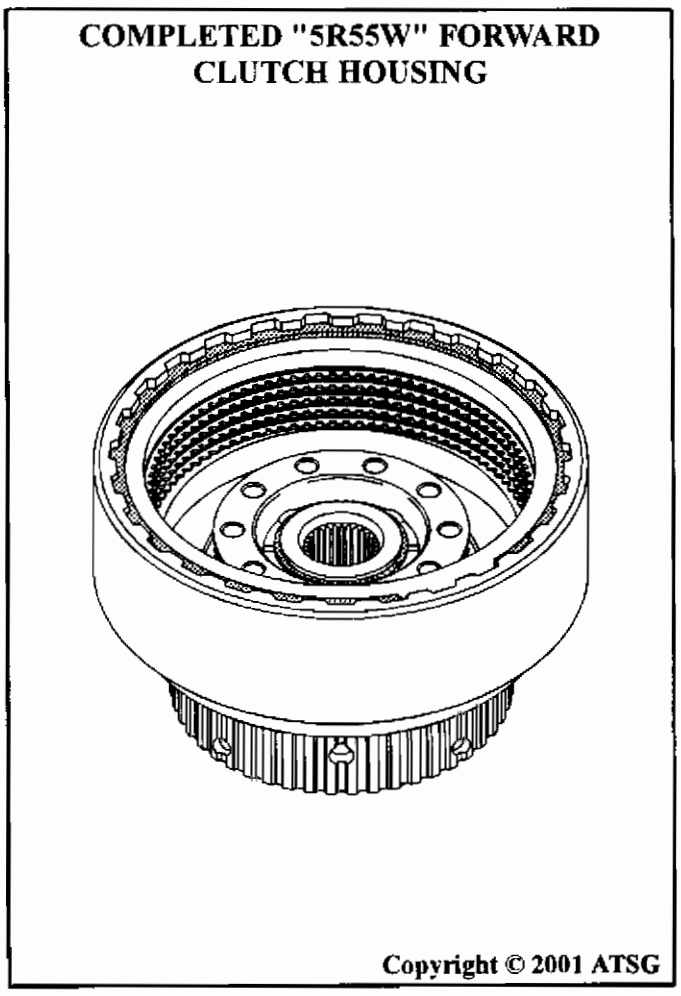


Figure 17

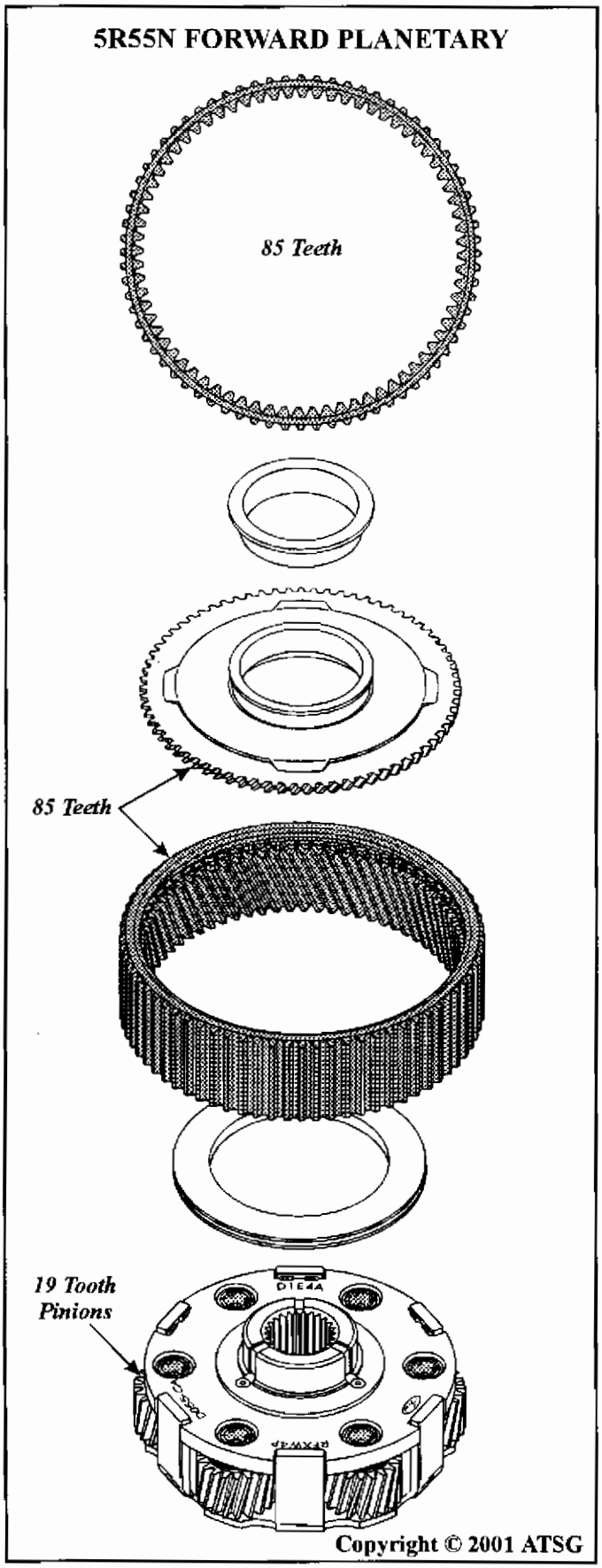


Figure 18

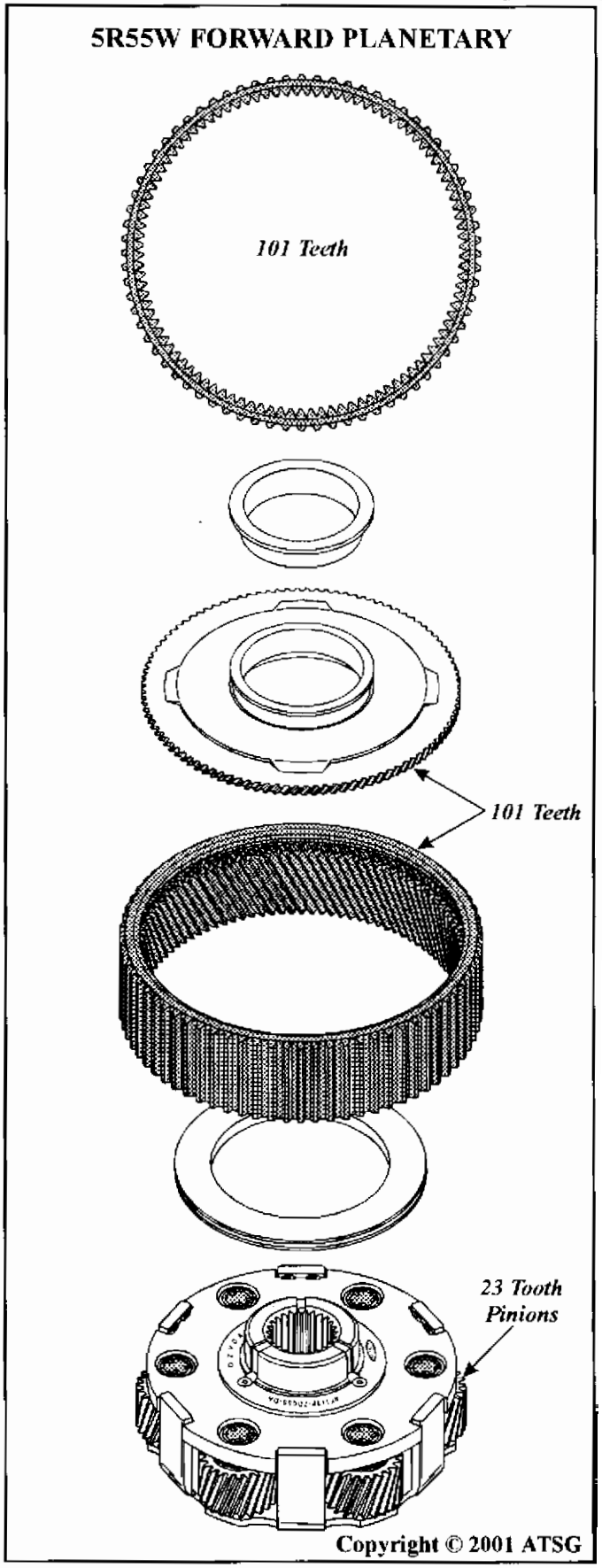


Figure 19

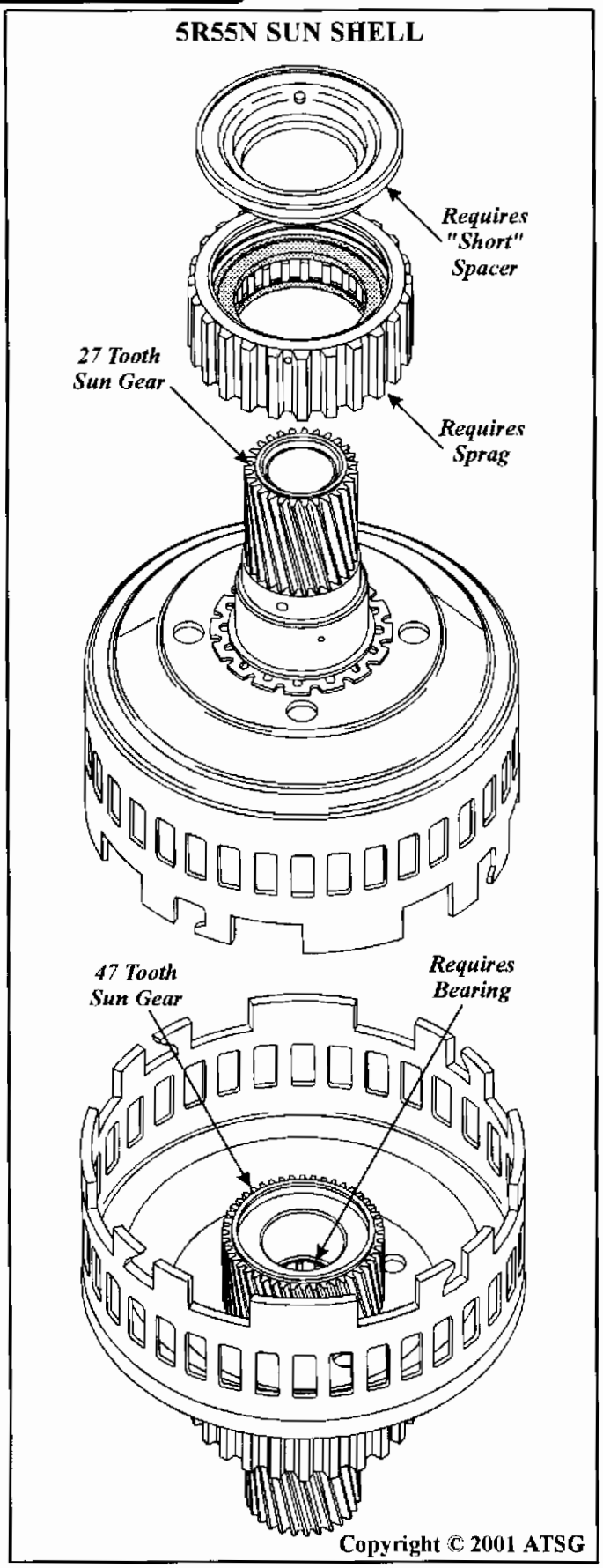


Figure 20

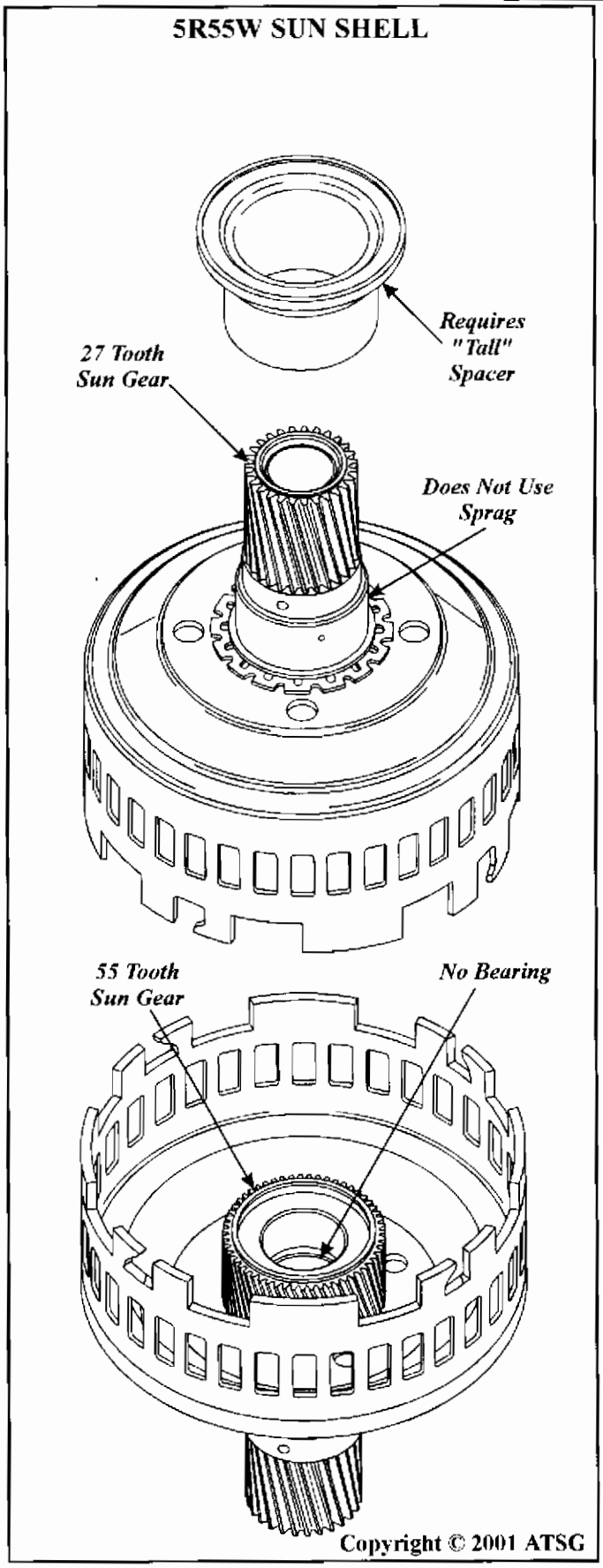
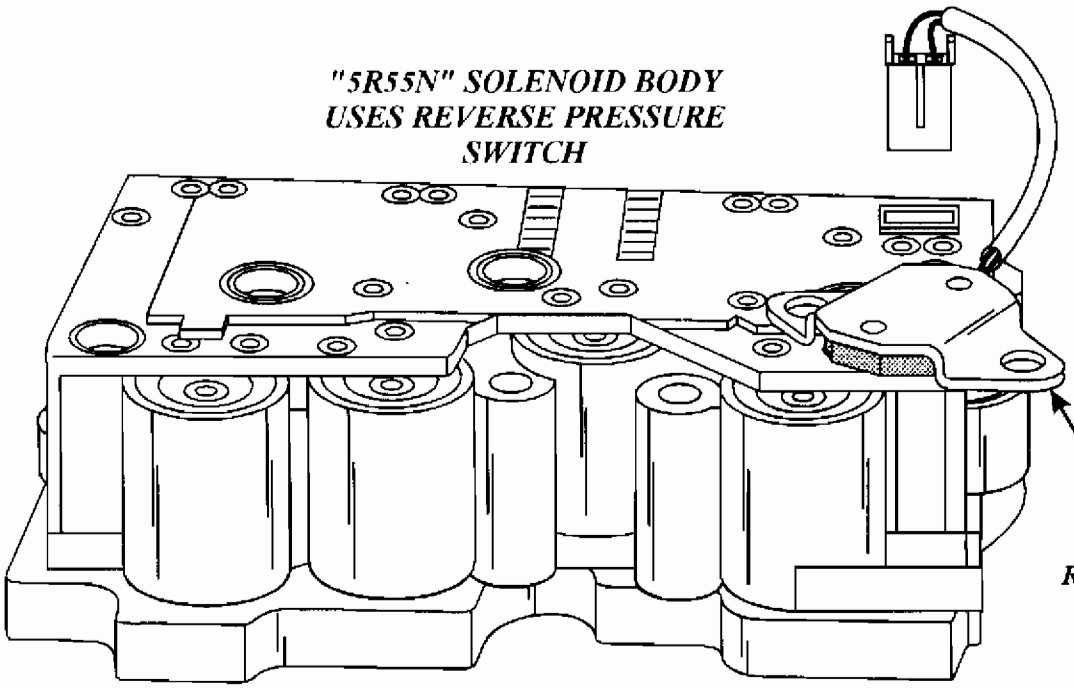


Figure 21

SOLENOID BODY ASSEMBLY DIFFERENCES

"5R55N" SOLENOID BODY USES REVERSE PRESSURE SWITCH



"5R55W" SOLENOID BODY DOES NOT USE REVERSE PRESSURE SWITCH

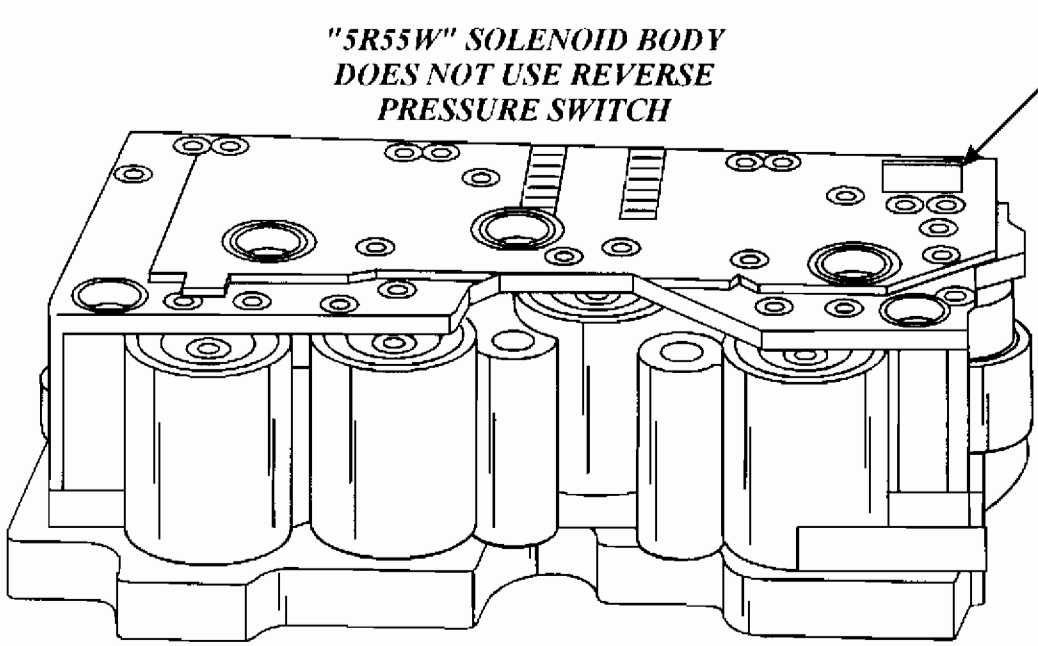
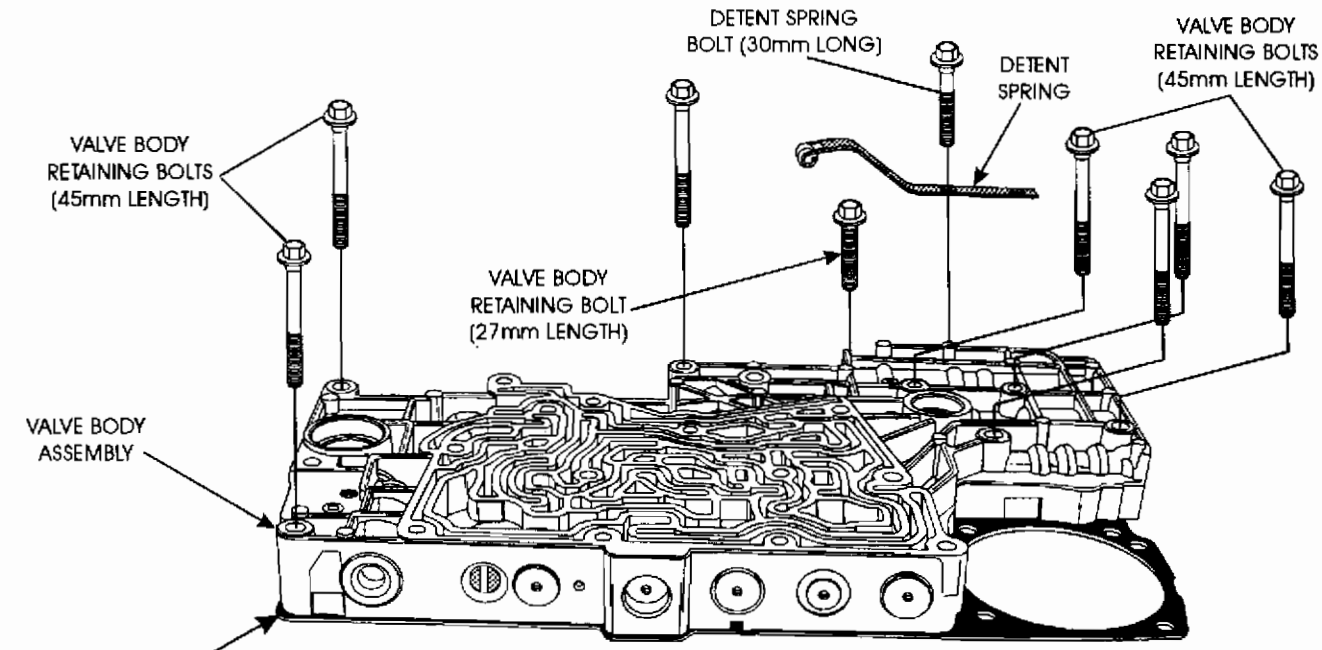
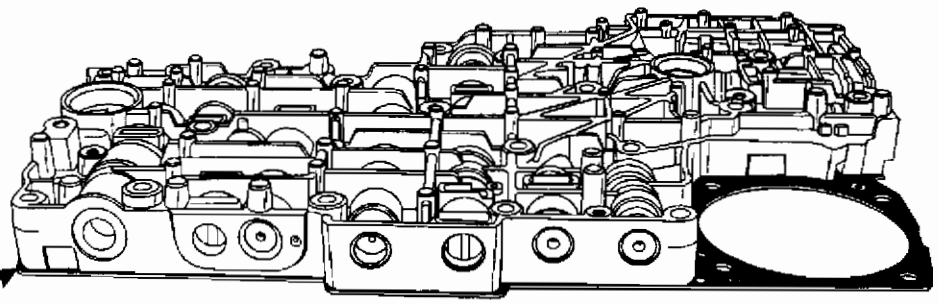


Figure 22

VALVE BODY COMPARISON



"5R55N" VALVE BODY ASSEMBLY



"5R55W" VALVE BODY ASSEMBLY

Figure 23

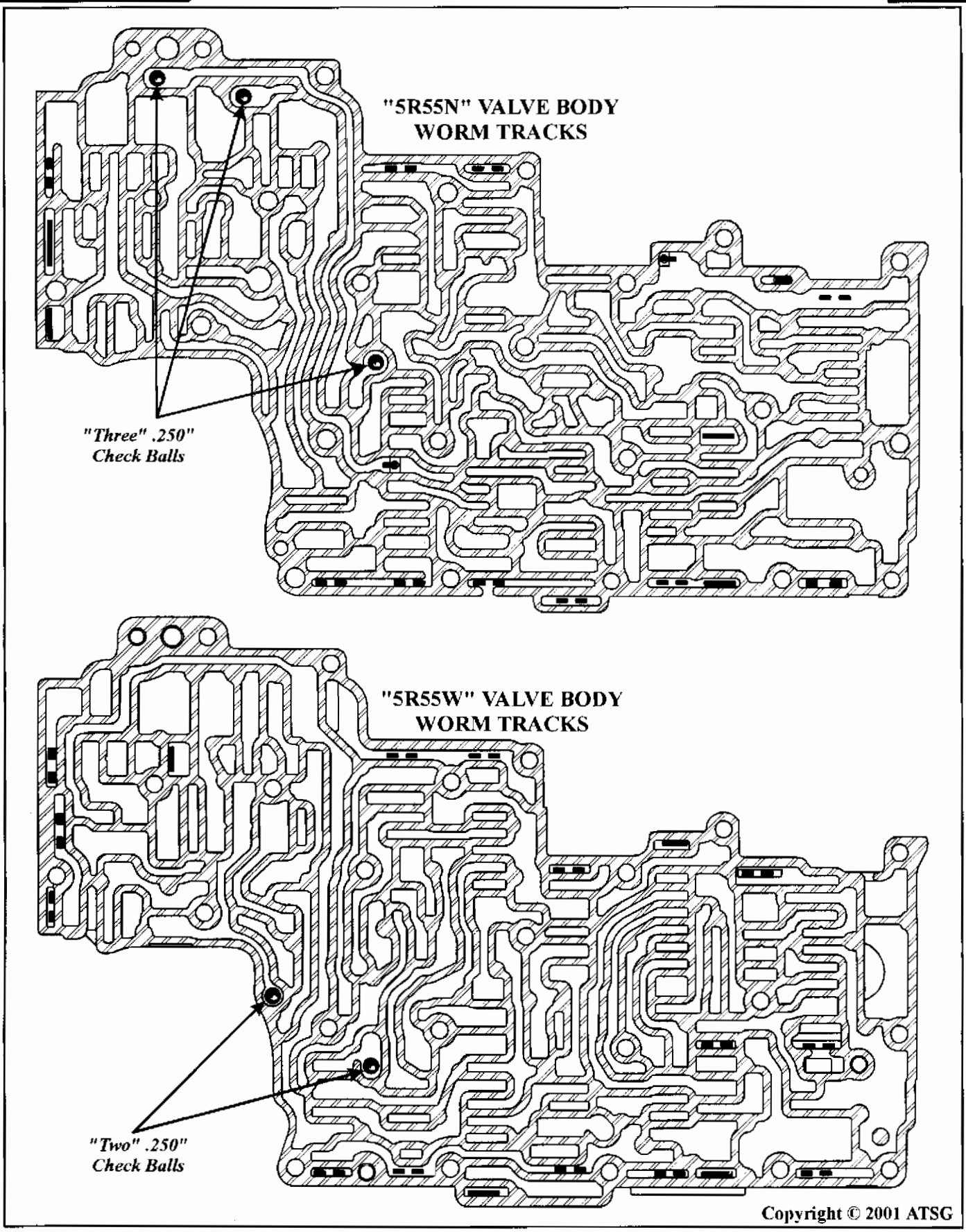

"5R55N" VALVE BODY
WORM TRACKS
"Three" .250"
Check Balls
"5R55W" VALVE BODY
WORM TRACKS
"Two" .250"
Check Balls
Copyright © 2001 ATSG

Figure 24

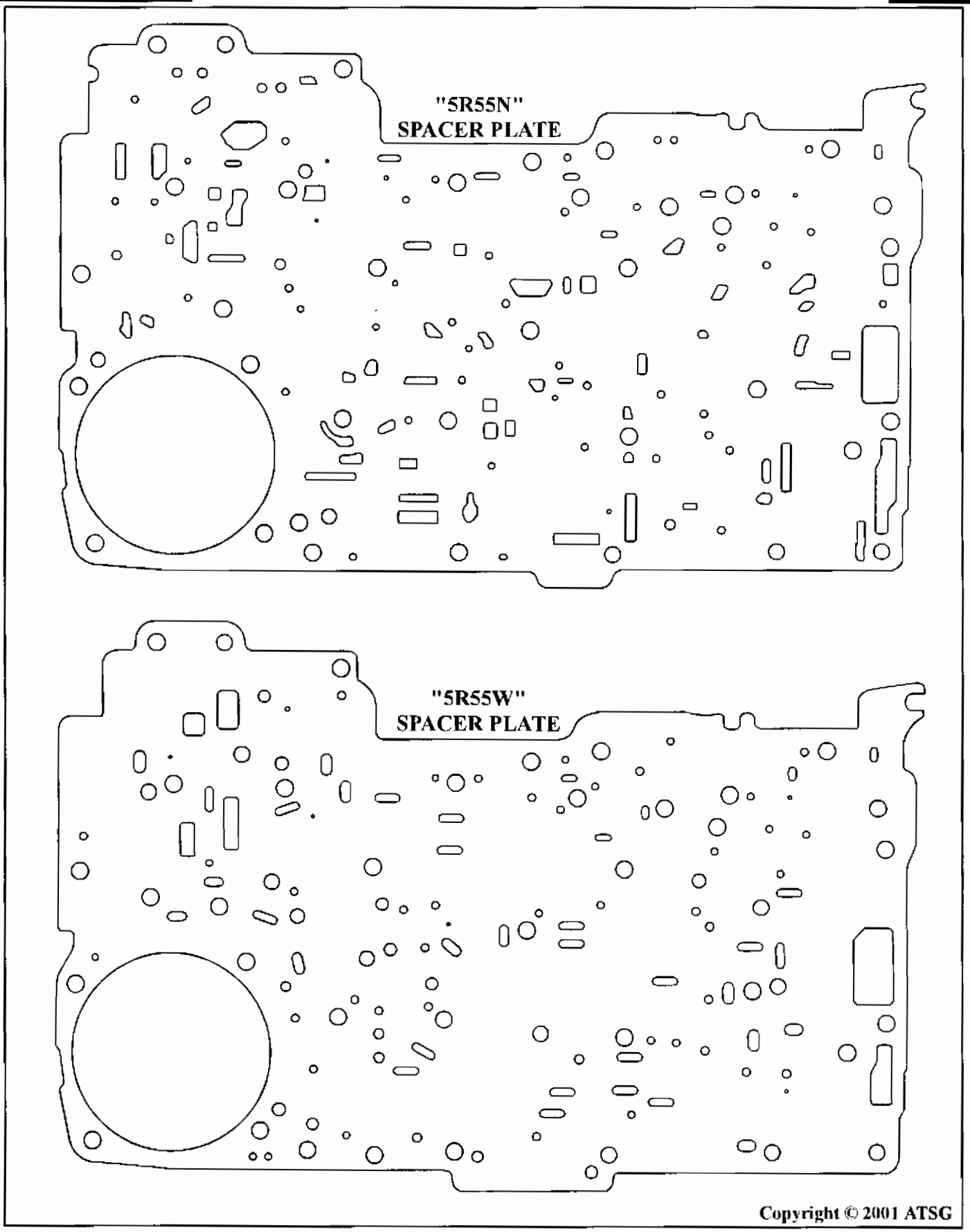


Figure 25

"5R55N" REVERSE SERVO HOUSING

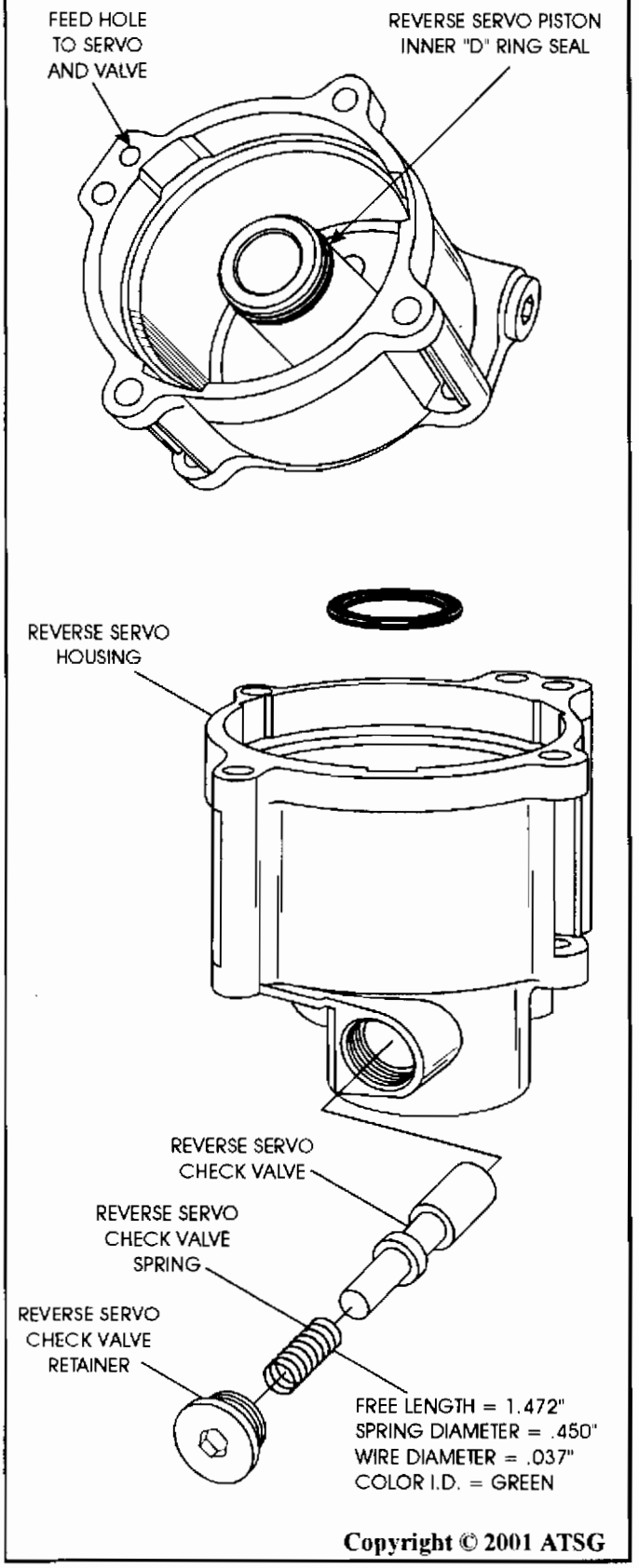


Figure 26

"5R55W" REVERSE SERVO HOUSING

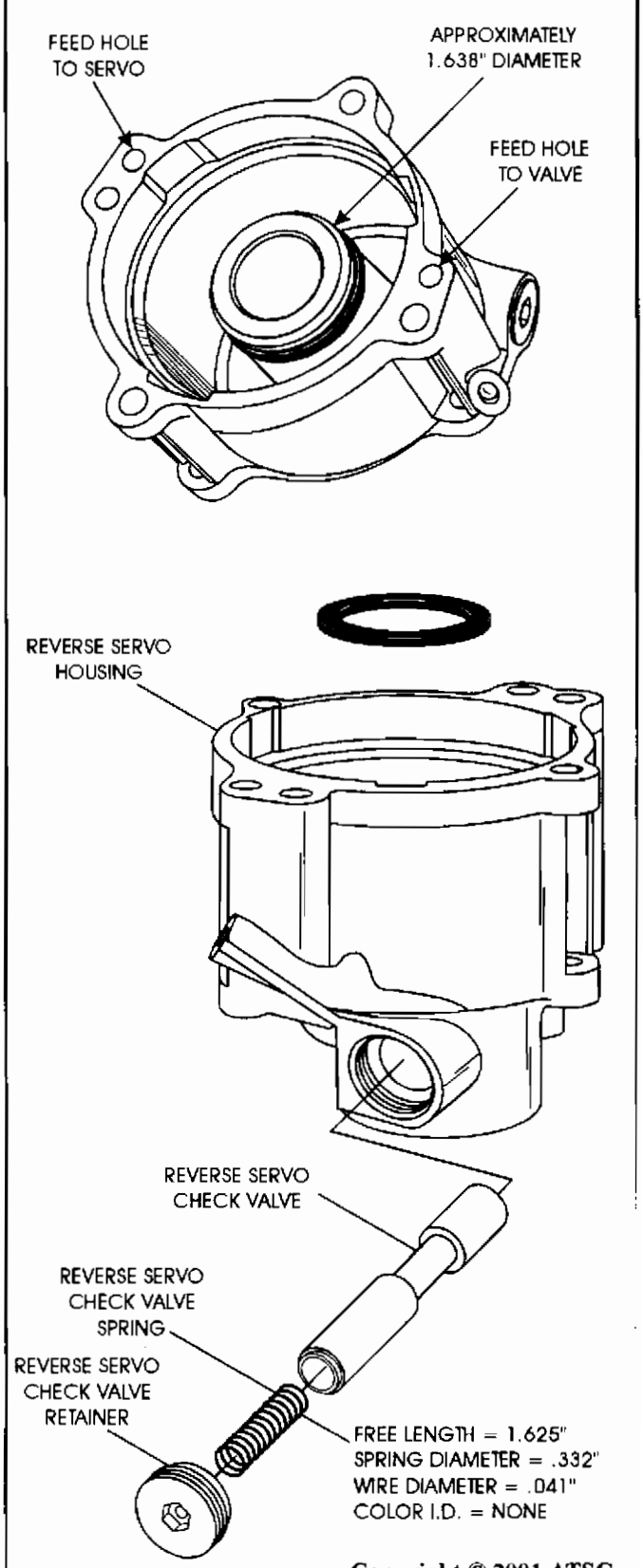


Figure 27

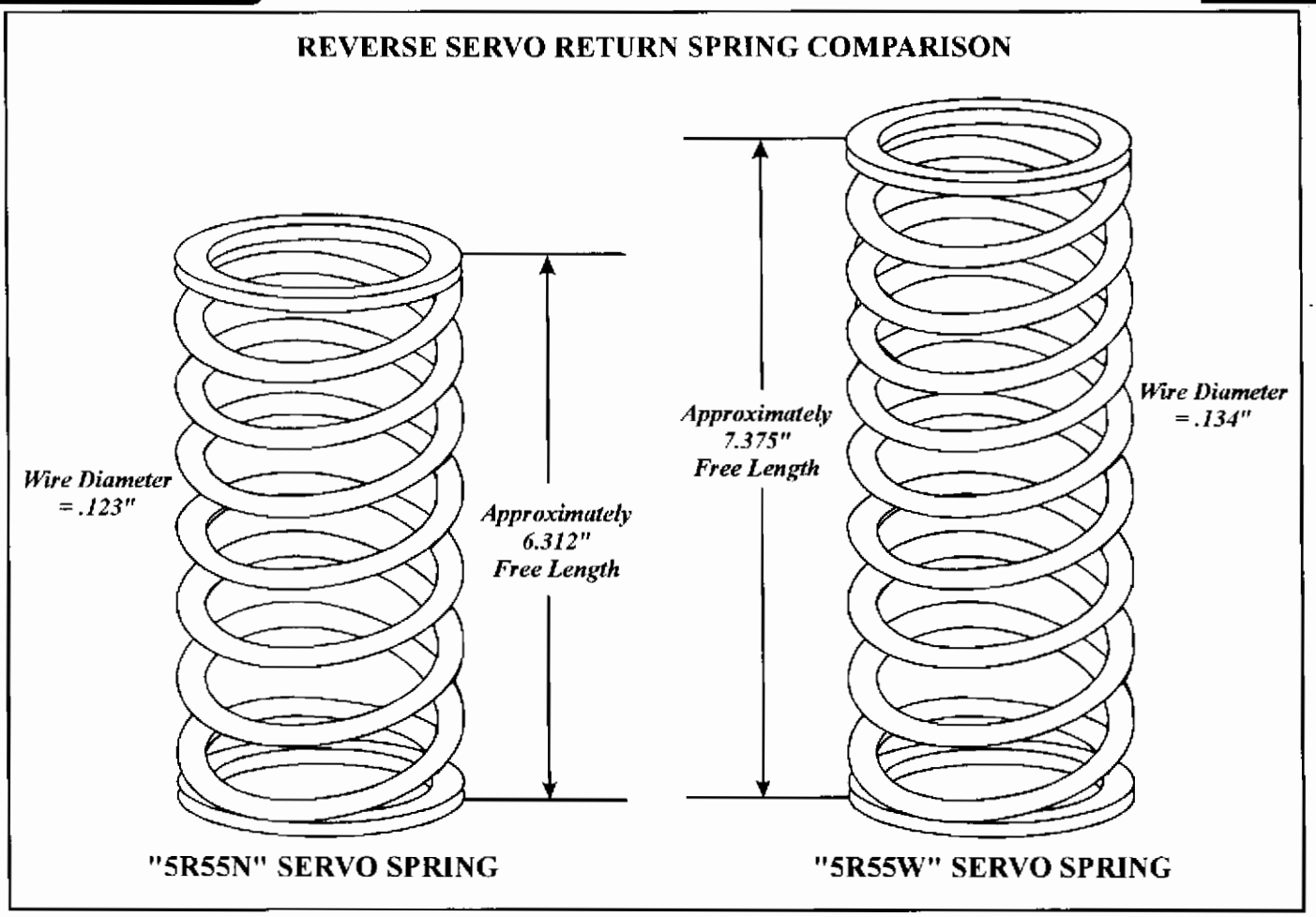


Figure 28

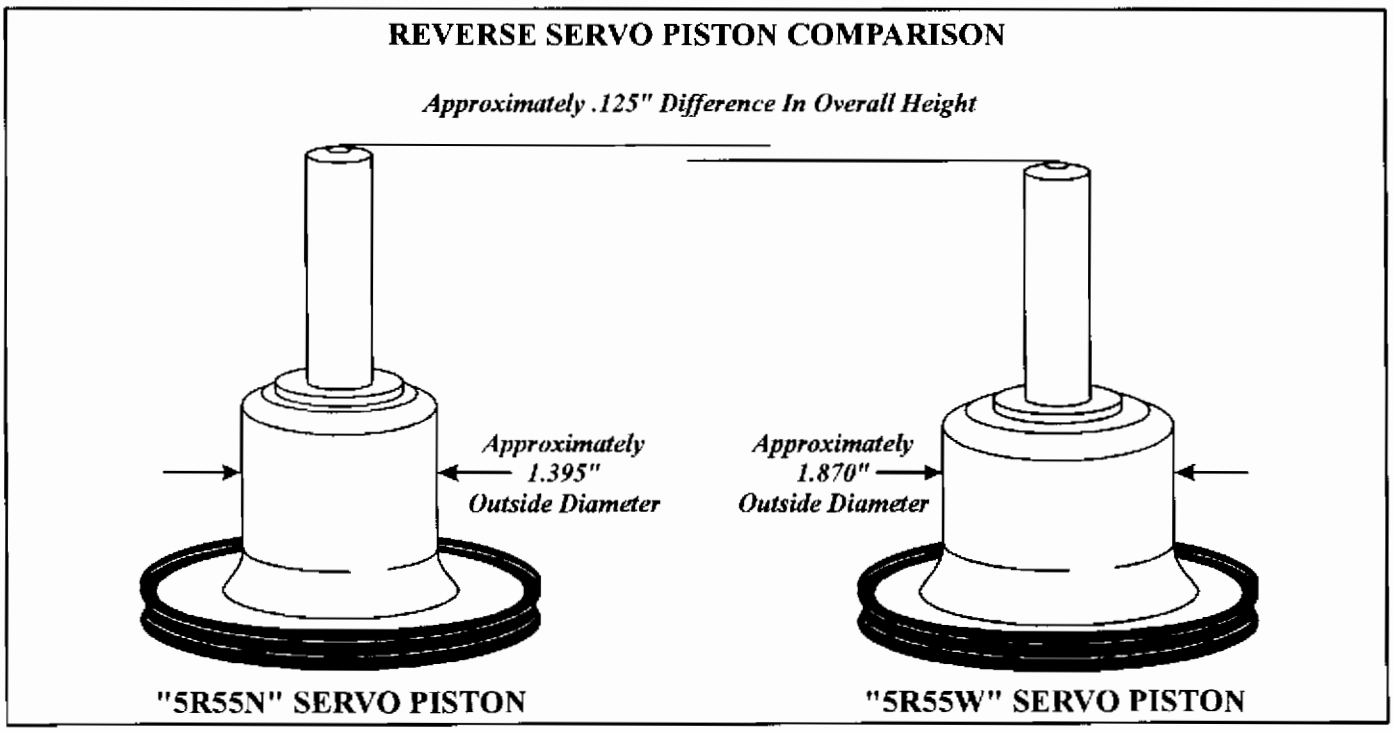


Figure 29

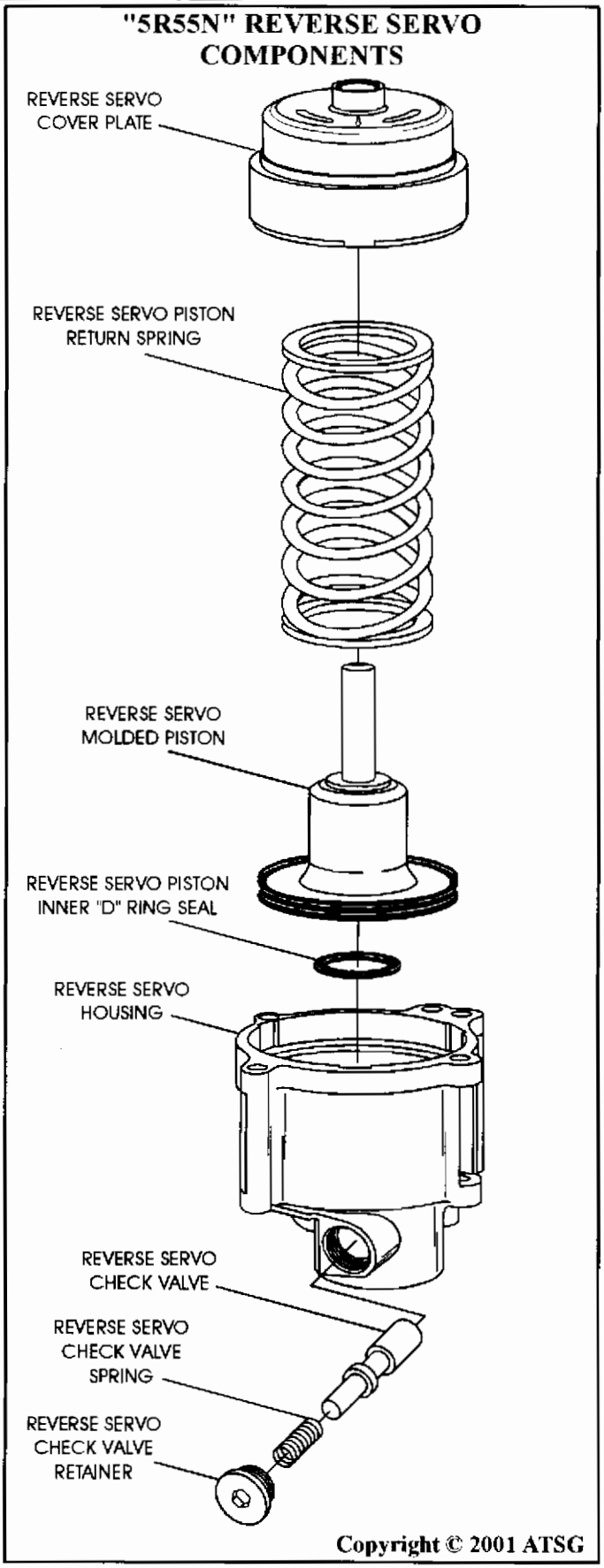


Figure 30

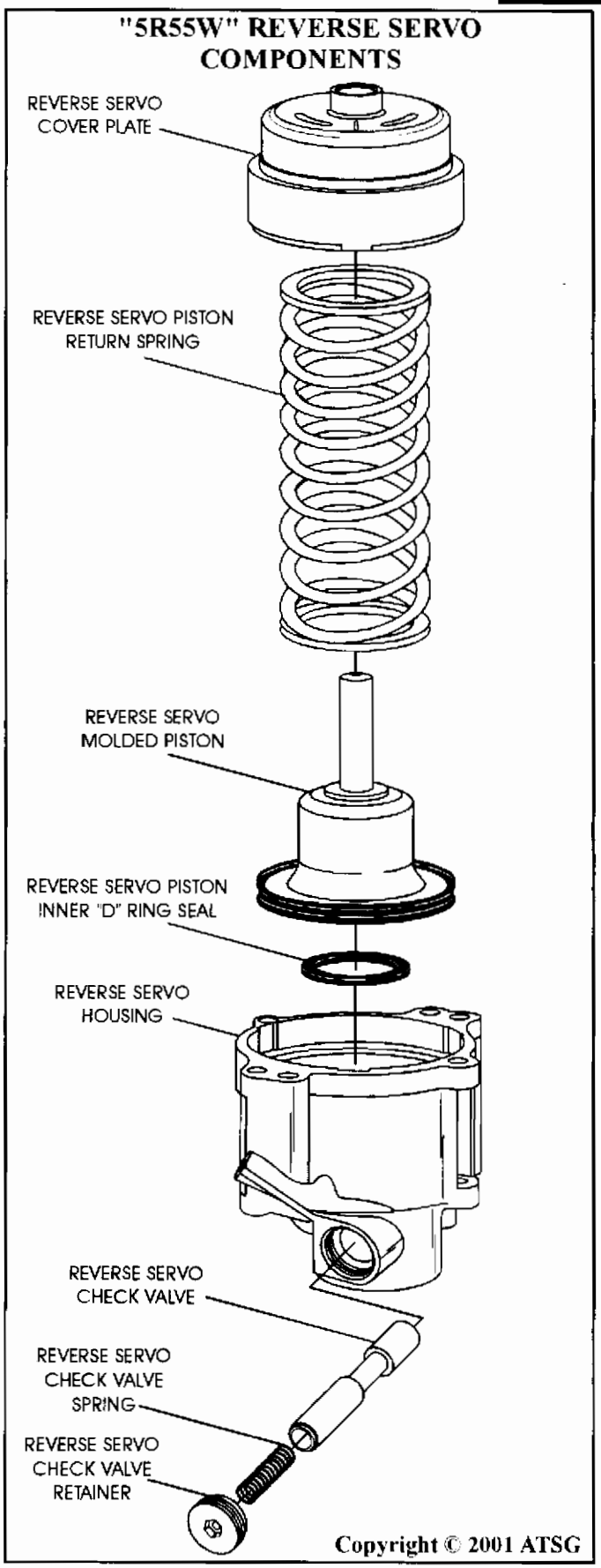


Figure 31

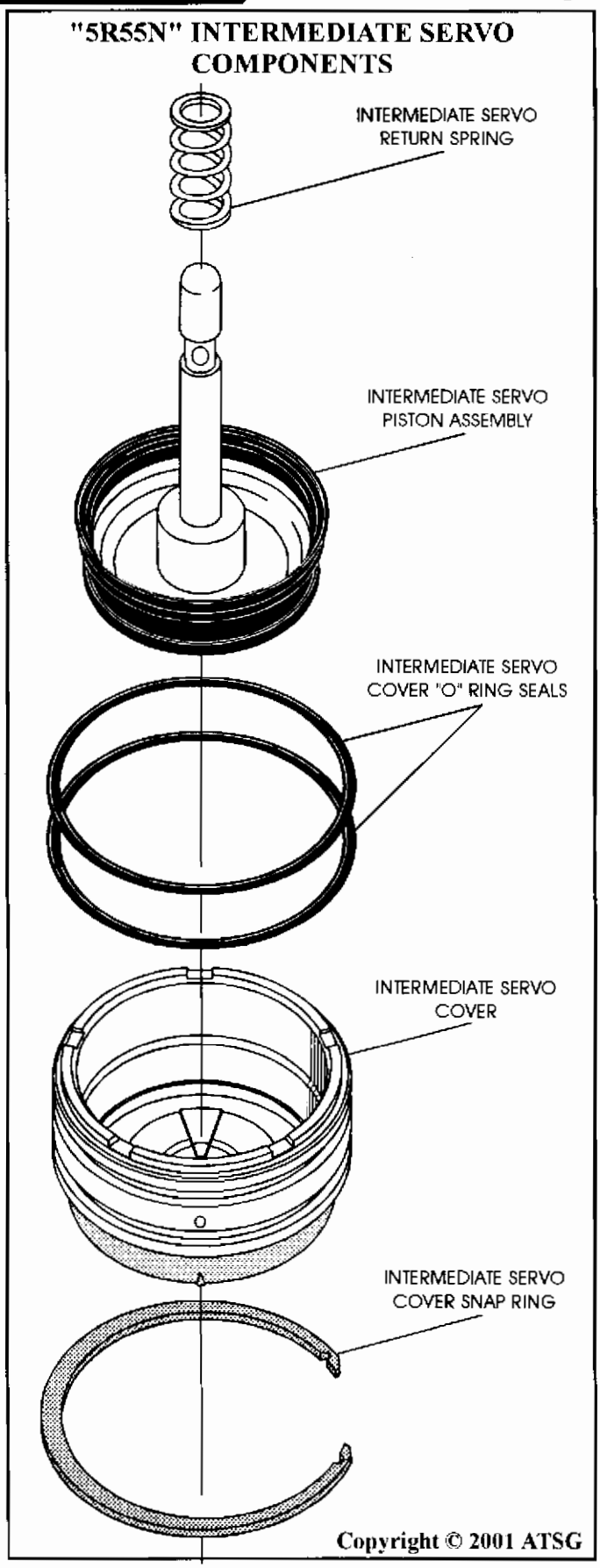


Figure 32

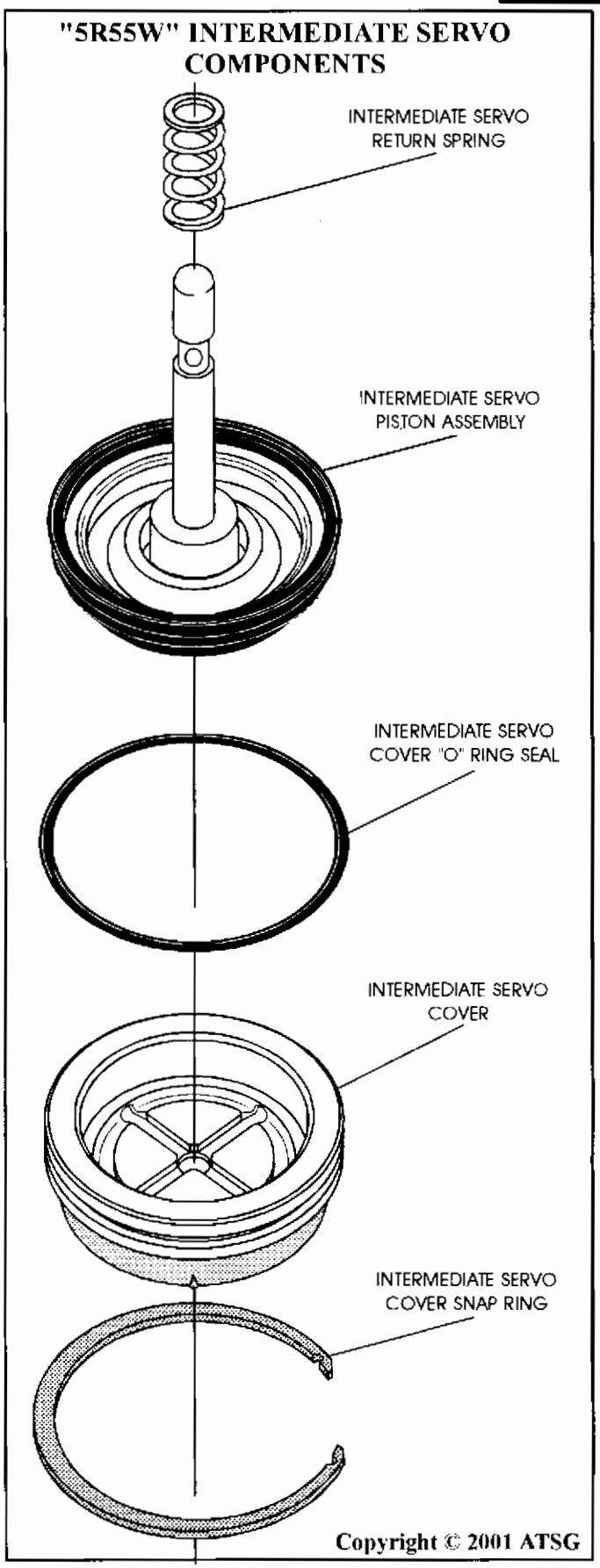


Figure 33

FORD ESCORT/TRACER SEDAN

STUCK IN THIRD GEAR

COMPLAINT: The transmission operates properly until the headlights are turned on, at which time the transmission is stuck in third gear and remains there until the headlights are turned off. The transmission now returns to proper operation.

NOTE: In many cases, the license plate lights will be dim.

CAUSE: The problem is the **G401** ground located in the **right rear corner** of the trunk which can be seen in figure 1.
When this ground is bad, feedback goes through the inhibitor switch reverse lamp circuit. When the computer receives this signal it turns off all shift solenoids and the transmission is in third gear because all shift solenoids are ***normally*** commanded off in reverse.

The loss of ground is created by the continual opening and closing of the trunk lid which is where the license plate and reverse lamp assemblies are located. The license plate and reverse lamp wiring sub-harness travels along the inside of the trunk and up to the passenger side trunk lid hinge where it joins the rest of the vehicle wiring harness as also seen in figure 1. This is where the constant flexing of the license plate and reverse lamp sub-harness takes place which results in the G401 ground wire breaking causing the above complaint.

CORRECTION: Remove the tape from this area of the wiring harness and repair the broken ground wire.

NOTE: Located in the **left rear corner** of the trunk, shown in figure 1, is the **G402** ground which is spliced to the G401 ground. In the event the problem for the above complaint is not found at the passenger side trunk lid hinge area, be sure to check the G402 ground circuit as well.

FORD ESCORT/TRACER SEDAN

STUCK IN THIRD GEAR

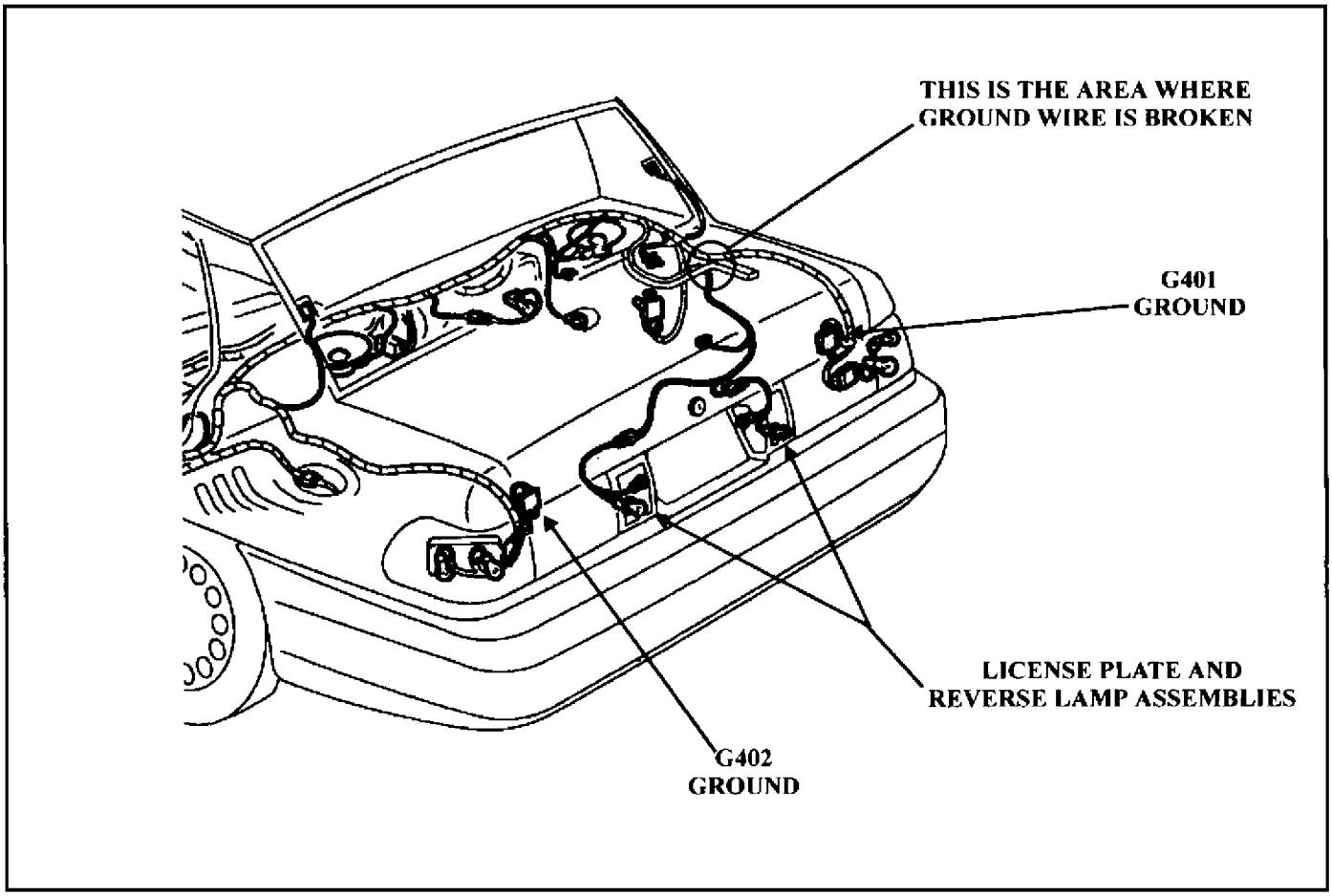


Figure 1

1996-97 FORD TAURUS & SABLE

NO TCC APPLY

COMPLAINT: The vehicle may have come into the shop for repairs not related to the above complaint. During the road test either before or after repairs, the scan tool indicates zero TCC duty cycle, no TCC apply.
Strangely enough, there are no codes stored for a TCC related problem, as a matter of fact, after repairs there are no codes stored of any kind nor is any MIL illuminated, and ***the transmission works perfectly.***

CAUSE: Some 1996 and 1997 Ford Taurus and Sable models equipped with 3.0 Liter 12 valve engines had complaints of engine surge or engine miss at vehicle speeds between 45 to 60 MPH (72 to 96 km/h) while still under factory warranty.
Ford's cure for this complaint was to reflash the PCM to completely eliminate TCC operation.

CORRECTION: If the PCM was reprogrammed to eliminate TCC operation, there are ***NO repairs required.*** One of the clues to help determine that TCC was eliminated would be a door jamb sticker such as the one seen in Figure1 with factory ***TSB 98-13-7*** written on it, which explains the reasons and actions that prompted the need to eliminate TCC operation.

Another clue would be a sticker under the hood that may have nothing more than a Ford part number on it which is the part number for the new calibration that eliminates TCC operation. The chart in Figure 2 illustrates the TCC elimination calibration part numbers that would be seen on the under hood sticker.

NO TCC APPLY

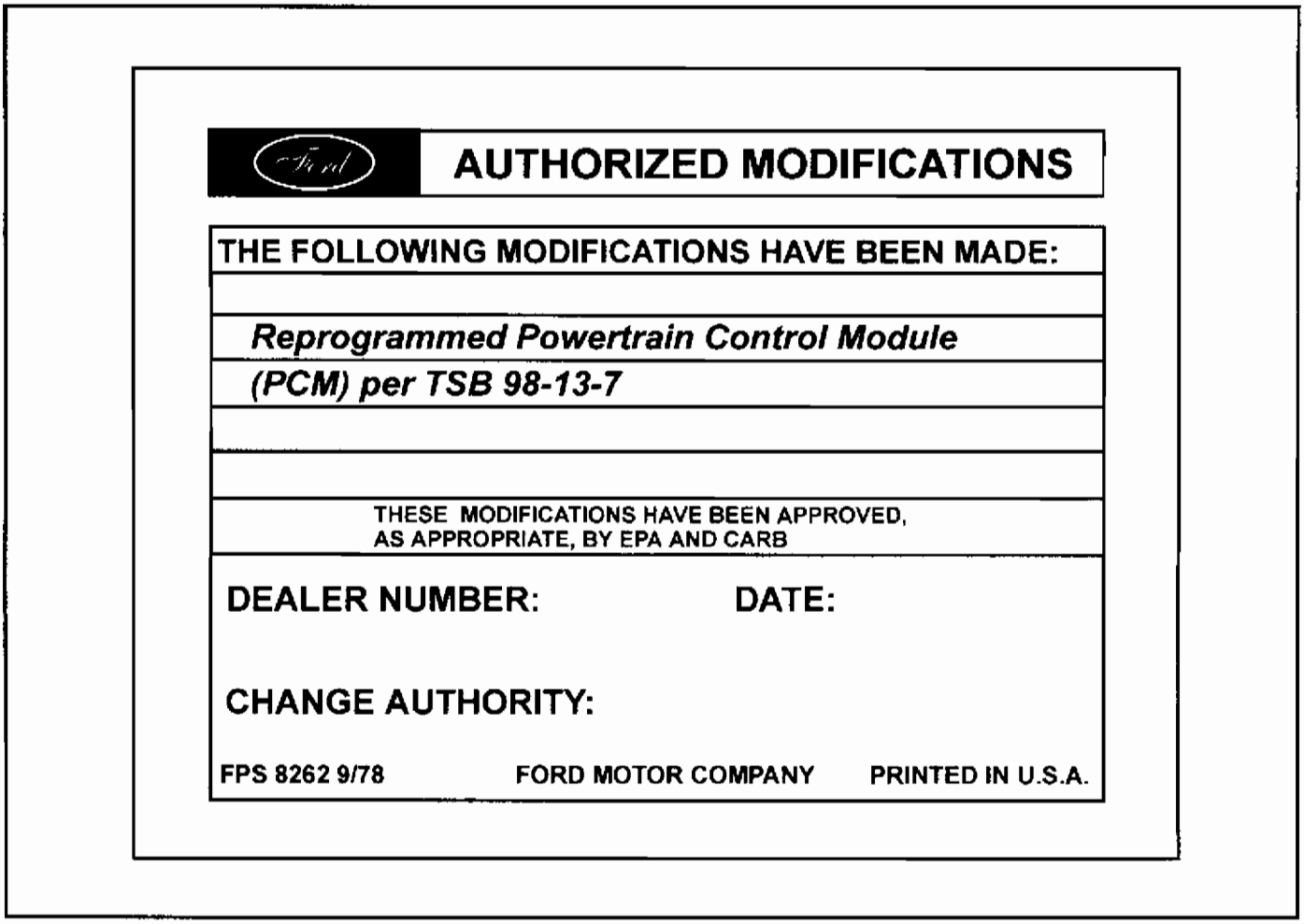


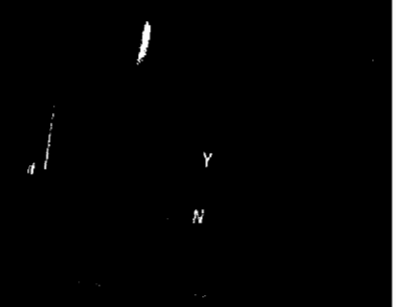
Figure 1

RECALIBRATION CROSS REFERENCE			
OLD CALIBRATION	OLD PART NUMBER	NEW CALIBRATION	NEW PART NUMBER
6-10A-R07, 10, 11, 12	F6PF-12A650-CVB	6-10A-R12	F6PF-12A650-CVC
6-10S-R07, 10, 11, 12	F6PF-12A650-CYB	6-10S-R12	F6PF-12A650-CYC
6-10B-R06, 11, 12	F6PF-12A650-CXA	6-10B-R12	F6PF-12A650-CXB
6-10T-R06, 11, 12	F6PF-12A650-CZA	6-10T-R12	F6PF-12A650-CZB
7-10A-R05, 10	F7PF-12A650-CA	7-10A-R10	F7PF-12A650-CB
7-10B-R05, 10	F7PF-12A650-DA	7-10B-R10	F7PF-12A650-DB
7-10A-R11, 12	F7DF-12A650-DE	7-10A-R12	F7PF-12A650-CKA
7-10B-R11, 12	F7DF-12A650-EE	7-10B-R12	F7PF-12A650-CLA
7-10R-R10, 11	F7DF-12A650-XD	7-10R-R11	F7PF-12A650-CMA

Figure 2

MTG2500 Color Graphing Scanner

Vantage



MicroVAT

Snap-Link

F.Y.D.I.

For Your Diagnostic Information!

Snap-on® has the tools you need for complete diagnostic information!

You can trust Snap-on® for the tools you need to get accurate diagnostic information.

The **MT2500 Scanner**™ and **MTG2500 Color Graphing Scanner**™ are the technician's choice for hand-held scan tools. Add the complete line-up of Primary cartridges, and Driveability, ABS and Transmission Fast-Track® Troubleshooter cartridges—each packed full of proven tips and repair strategies from certified specialists—to gain fresh insight and information on Domestics, Asian Imports, Mercedes-Benz and BMW.

Our hand-held **Vantage® MT2400 Power Graphing Meter** contains a comprehensive information system and diagnostic database. The new **MicroVAT**™ hand-held electrical system tester quickly takes all the guesswork out of battery analysis, and our **Snap-Link**™ software is the industry's first Windows®-based application to link all of these Snap-on hand-held diagnostic tools to a personal computer. When it comes to getting the diagnostic information you need now, you simply can't beat Snap-on tools to get the job done.

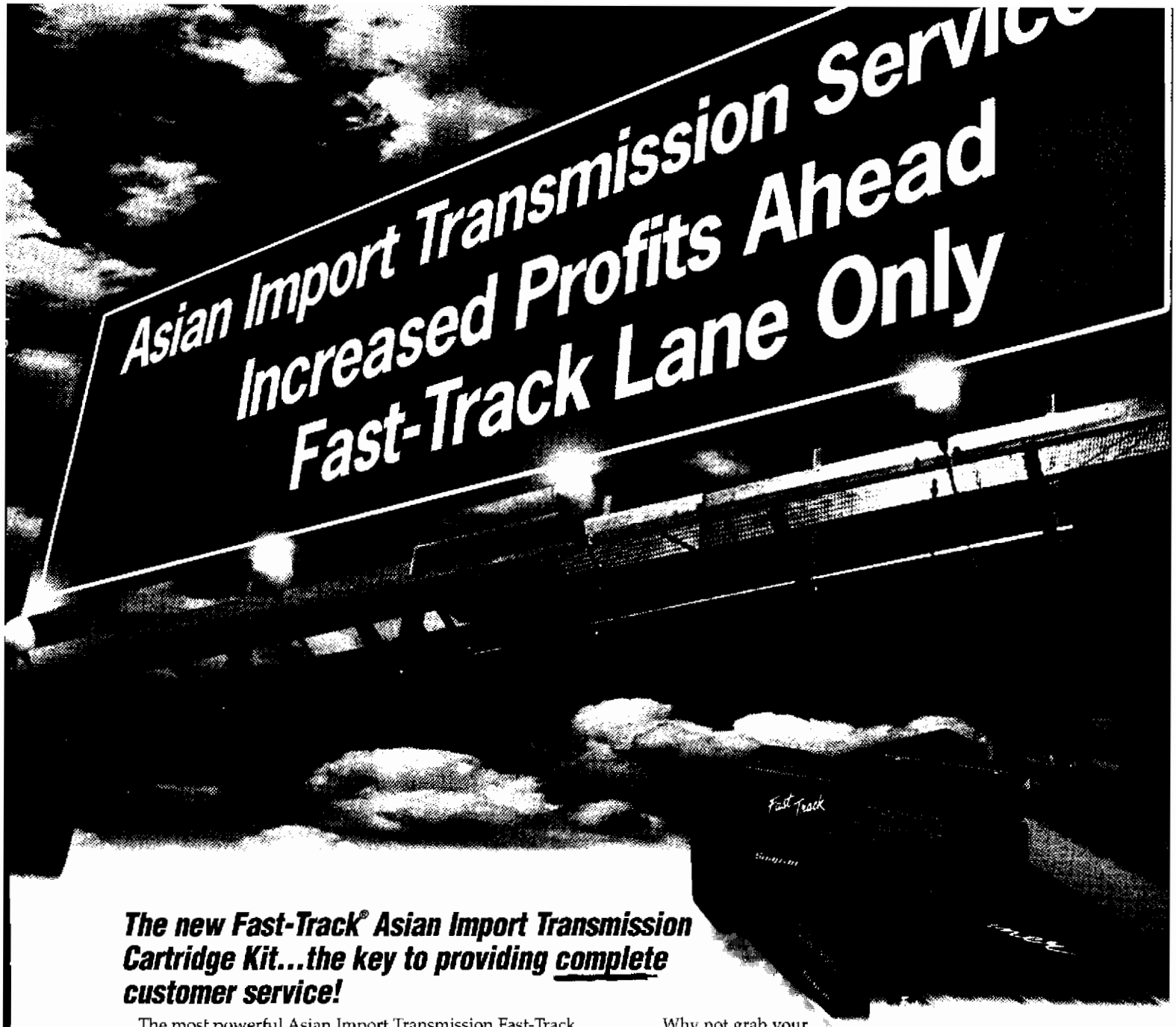
See your Snap-on Representative or call 1-800-424-7226 today.

You can also visit our web site to get more information, or to purchase these and other great Snap-on products.

Visit our Web site at: www.snapon.com

Snap-on®

Committed to bringing you the tools and global information you need to service and repair modern automobiles.



The new Fast-Track® Asian Import Transmission Cartridge Kit...the key to providing complete customer service!

The most powerful Asian Import Transmission Fast-Track Troubleshooter Cartridge ever offered is now available from your Snap-on Representative. When used with the 2000 Asian Import Primary Cartridge, the new Troubleshooter covers most hydraulic and virtually all electronically-controlled automatic transmissions through 1999. No longer do you need to turn away Asian "tranny" business. Now you can turn your MT2500 Scanner into the ultimate tool for diagnosing, testing and repairing Asian imports... including transmissions. Check out these updates:

- ***Supports electronic transmission controls for Acura, Chrysler Imports, Geo, Honda, Hyundai, Isuzu, Mazda, Mitsubishi, Nissan, Infiniti, Subaru, Toyota and Lexus***
- ***More than 50 new transmissions added since the last update***
- ***Revised Overhaul Tips section includes procedures and specifications for valve body repair, one-way clutch rotation, bearing and thrust washer installation, pressure testing, clearance checks, and many other repairs***
- ***Covers OBD-II and non-OBD-II transmission codes***
- ***Includes Fast-Track Data Scan (live data along with normal sensor values and ranges)***
- ***Expanded Service Specifications and Advice from Master Technicians, factory service bulletins, and trade organizations***

Why not grab your share of the growing Asian import transmission repair business, and improve your shop's bottom line? If you already service Asian imports, now you can service their transmissions too.

For more information about the powerful new 1999 Fast-Track Asian Import Transmission Cartridge Kit (MT250064**99**), ask your Snap-on Sales Representative or phone 1-800-424-7226.

See your Snap-on Representative or call 1-800-424-7226 today.

Snap-on®

Visit our website at:
www.snapondiag.com/scanner2/htm

FORD TAURUS & SABLE

3.0 LITER ENGINE REAR MAIN OIL SEAL LEAK

COMPLAINT: After flywheel replacement, the vehicle may return with an engine rear main oil seal leak. The vehicle did not have this leak after the road test leak check.

CAUSE: Ford Taurus and Sable cars equipped with the 3.0 Liter, 12 valve Vulcan engine can easily have the crankshaft pulled out of round by over tightening the flywheel to crankshaft bolts causing the above complaint.

CORRECTION: When replacing the flywheel, be sure to install flywheel with the stiffener plate towards the transmission and torque the flywheel to crankshaft bolts to 54-64 Ft. Lbs. in a cross pattern as seen in figure 1.

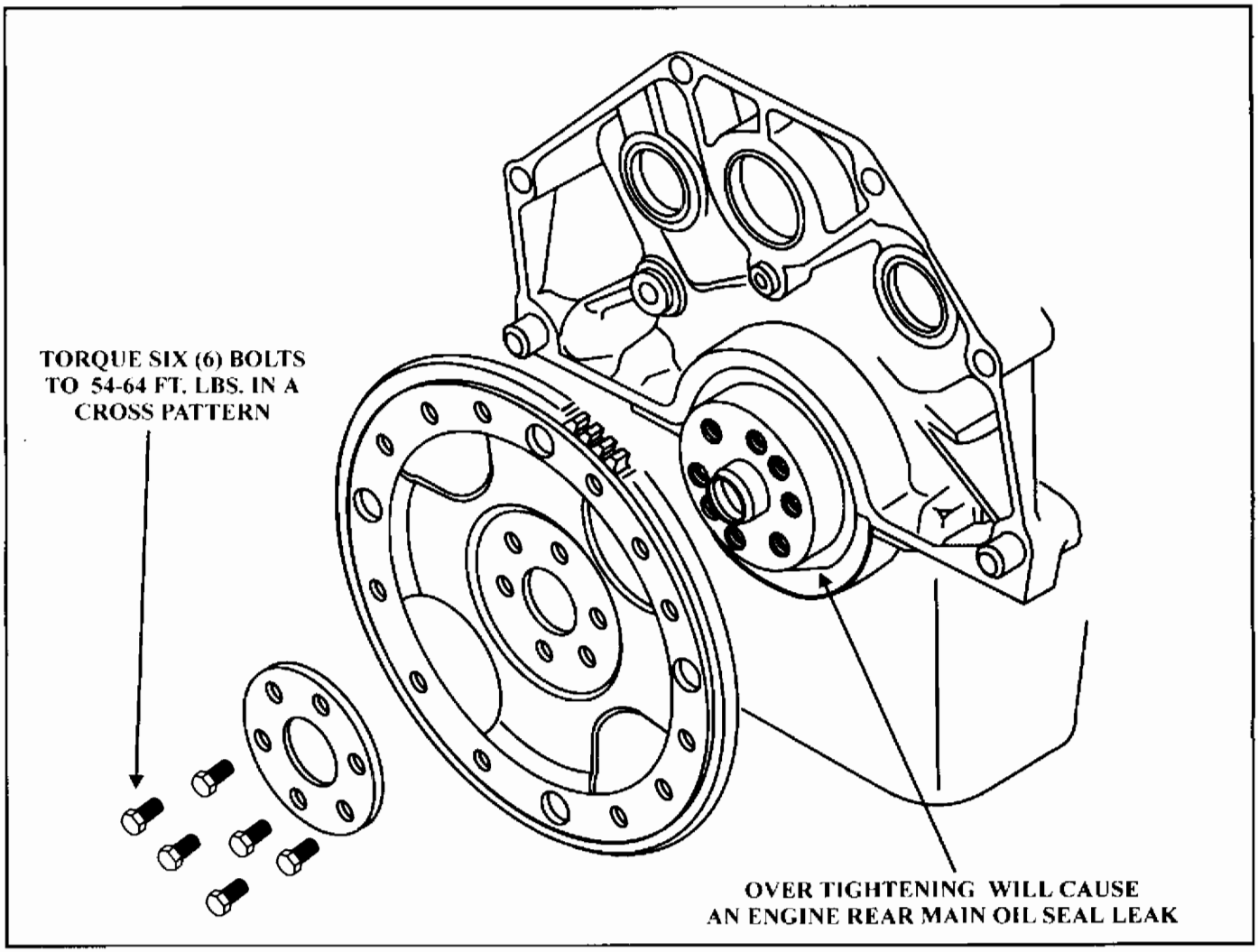


Figure 1

SCHAFFER®

Products tough as the American spirit and proudly made in the USA

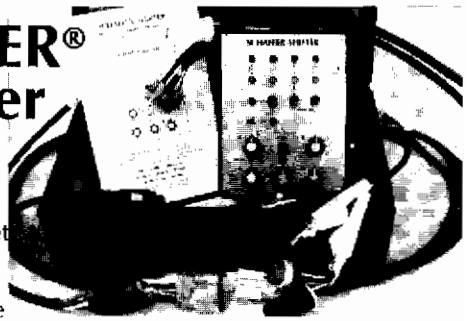
New!

SCHAFFER® Transmission Breakout Box

Simplifies testing of internal transmission components with or without the Schaffer Shifter®

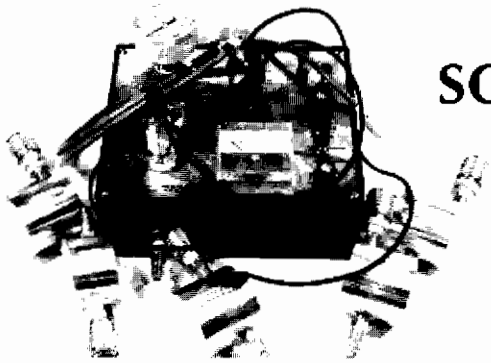
- ☆ Resistance & Amperage Tests
- ☆ Jacks for standard DMM leads
- ☆ Connects directly to trans with optional adapters
- ☆ Color-coded wire hook-up for single circuits without any optional adapters, or use readily available Schaffer Shifter® adapters and power cord for amp testing
- ☆ Technical assistance available for analyzing results
- ☆ Exclusive manual provides largest collection of connector/pin-out identification with point-to-point instructions for resistance tests

SCHAFFER SHIFTER® Transmission Tester



- Color-coded adapters serve as breakouts
- Highest Quality - Designed for decades of service.
- Largest application coverage on the market
- Fastest and simplest to operate
- Automatic short detection
- Most complete standard package available
- Break-out box to run tests on the transmission after the Shifter detects a problem
- Lowers power to solenoids to easily detect any intermittent problems
- Reversible Polarity PWM controllers available

All this, and still the lowest cost and most dependable controller in the industr



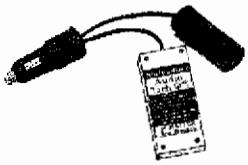
3-IN-1 SOLENOID TESTER

SOLENOID REGULATION
In or Out of Vehicle

- Bench test all automatic transmissio solenoid types - Simple, Modulated and Variable Force
- Simulated in-car operational tests

SHIFT-A-LIZER

Audio Tach

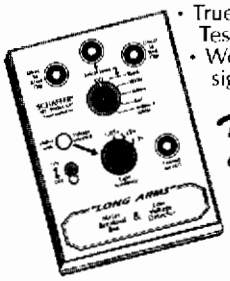


Now you can HEAR transmission shifts & TCC apply

"LONG ARMS®"

DMM Breakout Box
Electronic Test Light & Monitor

- Connect to 4 circuits at once
- Multi-Meter Breakout Box
- True Electronic Test Light
- Works as a signal monitor



The only equipment of it's kind in the World!

Lowest price anywhere-! under $100

DC Current Clamp

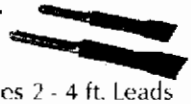
Measures from 10mA - 60A

DC or AC current with a frequency response of up to 20kHz. Narrow jaw design allows for measurement in tight spaces.

4 ft. DMM TEST LEADS

With insulation piercing probes! Allows testing during operation - ***Set of 2***

BACK PROBE KIT



Includes 2 - 4 ft. Leads with large and small probes.

Also

Schaffer now offers a new line of the finest AUTOMOTIVE DMM's at the lowest cost!

SCHAFFER® TEST PRODUCTS, INC.

If your distributor doesn't have it, call our Toll Free Sales (877) SHIFTER • Fax (863) 816-2425
Full color catalogs available • Technical (863) 859-1070 • www.schaffertest.com

FORD AXOD/AXODE/AX4S/AX4N

ACCUMULATOR SPRING USAGE

COMPLAINT: Shift quality complaints of various types, mostly harsh shift complaints, after the transmission has been overhauled.

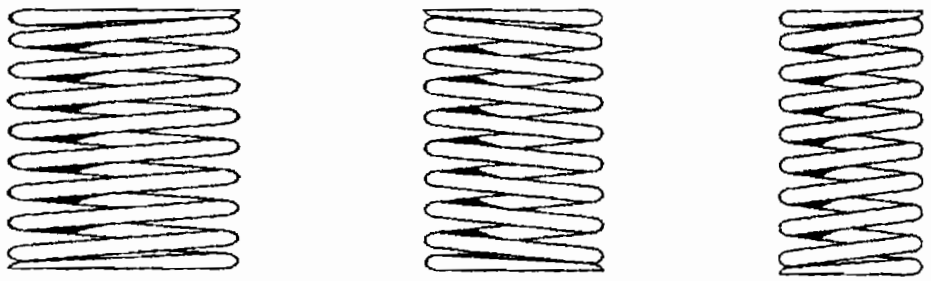
CAUSE: The accumulator springs have been installed in their incorrect position or the accumulator piston shafts are scored or worn and are interfering with proper accumulator piston movement. It is also important to insure that multiple accumulator spring applications must have the springs would in opposite directions of each other as shown in figure 1.

CORRECTION: Refer to the charts in figures 2 to 4 for proper accumulator spring usage for AXOD, AXODE and AX4S applications.
The chart in figure 5 lists the accumulator spring dimensions for AXOD, AXODE and AX4S applications.

Refer to the charts in figures 6 to 10 for proper accumulator spring usage for AX4N applications.
The chart in figure 11 lists the accumulator spring dimensions for AX4N applications.

SERVICE INFORMATION:
AXOD, AXODE and AX4S accumulator spring part numbers are listed in the charts in figures 2 to 4.
AX4N accumulator spring part numbers are listed in the charts in figures 6 to 10.

ACCUMULATOR SPRINGS



SPRINGS ARE WOUND OPPOSITE OF EACH OTHER TO AVOID COIL BIND-UP

Figure 1

AXOD/AXODE/AX4S

DRIVE SHIFT (N-D) ACCUMULATOR SPRINGS				
APPLICATION	INNER		OUTER	
	COLOR	PART NUMBER	COLOR	PART NUMBER
1986-97 ALL MODELS	BLUE	E6DZ-7G301-A	ORANGE	E6DZ-7D300-A
1995-97 WINDSTAR	BLUE	E6DZ-7G301-A	ORANGE	E6DZ-7D300-A
1998-01 ALL MODELS	———	———	GREEN	F8DZ-7G300-BA

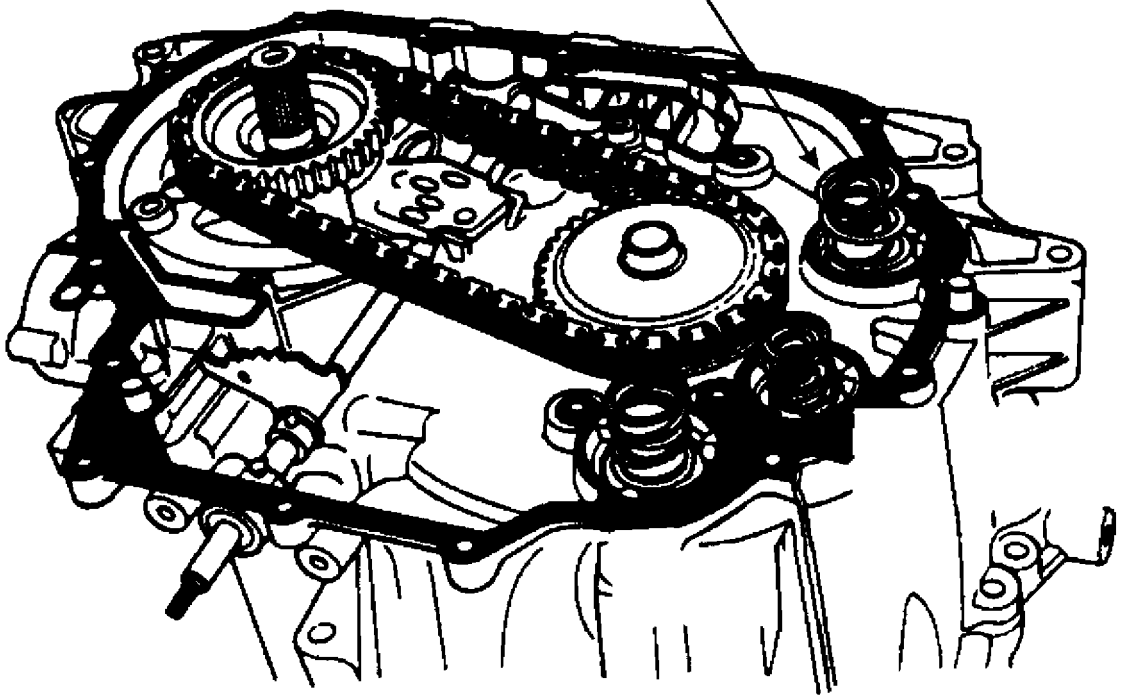
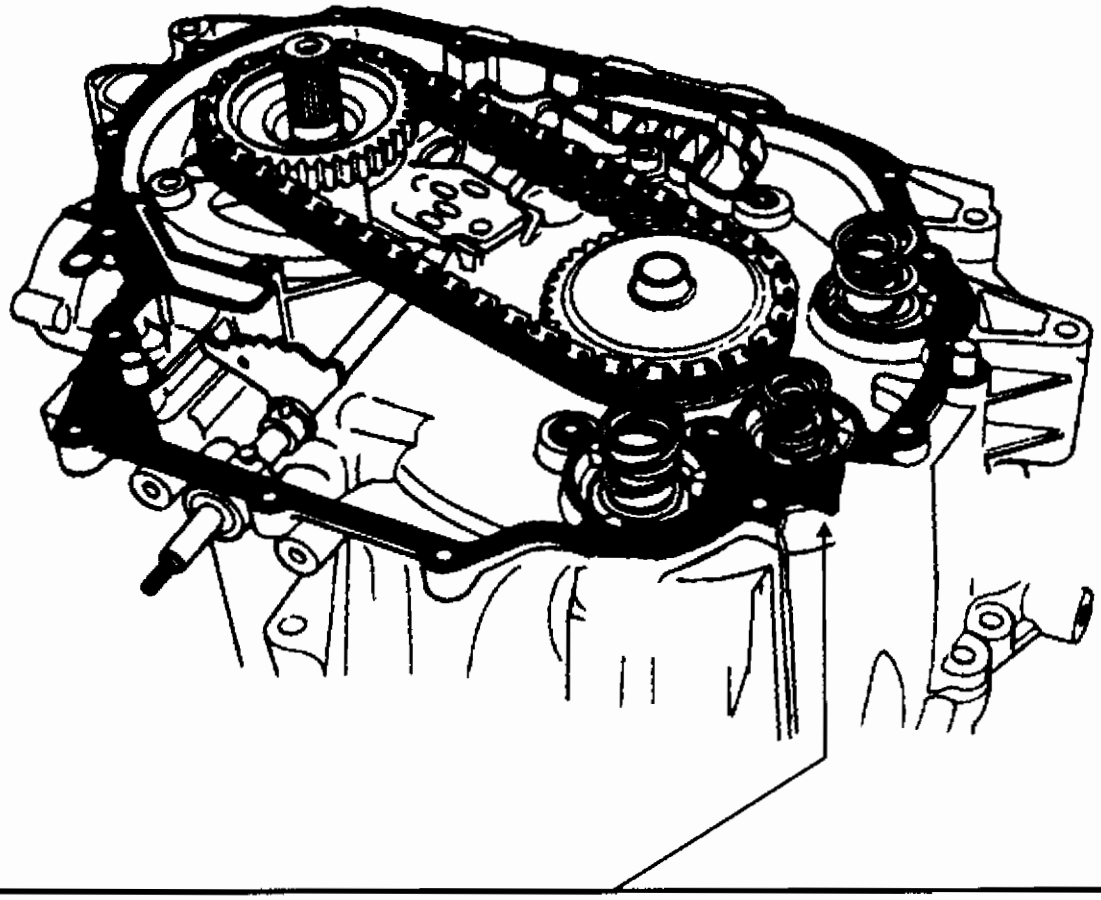


Figure 2

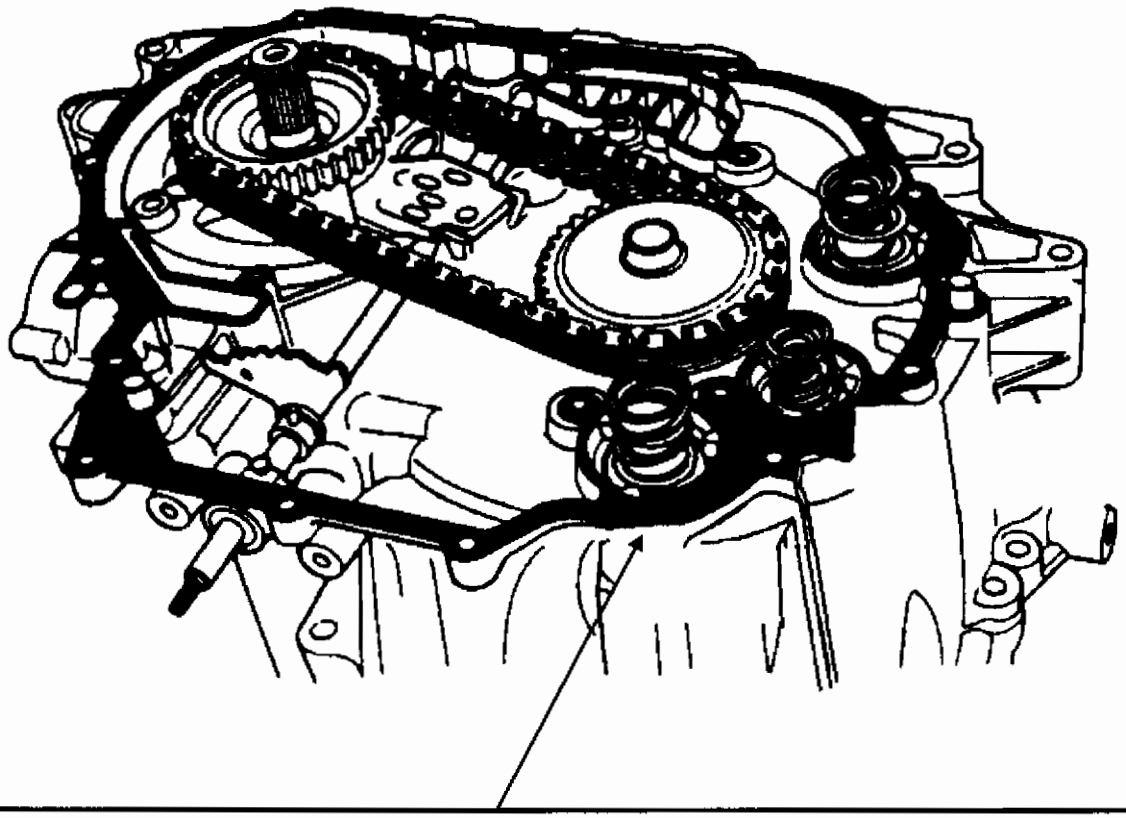
AXOD/AXODE/AX4S



3-4 ACCUMULATOR SPRINGS				
APPLICATION	INNER		OUTER	
	COLOR	PART NUMBER	COLOR	PART NUMBER
1986-90 3.0 LITER	GREEN	E6DZ-7F288-A	GREEN	E6DZ-7G266-A
1988 3.8 LITER CONTINENTAL	GREEN	E6DZ-7F288-A	GREEN	E6DZ-7G266-A
1988 3.8 LITER TAURUS/SABLE	GREEN	E6DZ-7F288-A	PLAIN	E8DZ-7G266-A
1991-97 3.0 LITER	GREEN	E6DZ-7F288-A	GREEN	E6DZ-7G266-A
1989-97 3.8 LITER			WHITE	E9DZ-7G266-A
1998-01 ALL MODELS	GREEN	E6DZ-7F288-A	YELLOW	F8DZ-7G266-AA

Figure 3

AXOD/AXODE/AX4S



1-2 ACCUMULATOR SPRINGS						
APPLICATION	INNER		MIDDLE		OUTER	
	COLOR	PART NUMBER	COLOR	PART NUMBER	COLOR	PART NUMBER
1986-90 3.0 LITER	YELLOW	E6DZ-7G326-A	———	———	YELLOW	E6DZ-7G267-A
1988-90 3.8 LITER	BROWN	E8DZ-7G326-A	BROWN	E8DZ-7G358-A	LIGHT BROWN	E8DZ-7G267-A
1991-94 ALL MODELS	*PURPLE	*E8DZ-7G326-A	*PINK	*E8DZ-7G358-A	LIGHT BROWN	E8DZ-7G267-A
1995-97 ALL MODELS & 1995 WINDSTAR	DARK BROWN	F58Z-7G326-A	PINK	E8DZ-7G358-A	DARK BROWN	F58Z-7G267-A
1998-01 ALL MODELS	*PURPLE	*E8DZ-7G326-A	———	———	DARK BROWN	F58Z-7G267-A
WINDSTAR 1996-01	DARK BROWN	F58Z-7G326-A	———	———	DARK BROWN	F58Z-7G267-A

***COLOR CHANGED.....PART NUMBER REMAINED THE SAME**

Figure 4

AXOD/AXODE/AX4S

N-D ACCUMULATOR SPRINGS			
COLOR	OUTSIDE DIAMETER	FREE LENGTH	WIRE DIAMETER
BLUE (INNER)	1.014" (25.75MM)	1.685" (42.82MM)	.097" (2.48MM)
ORANGE (OUTER)	1.480" (37.61MM)	1.813" (46.05MM)	.135" (3.44MM)
GREEN (OUTER)	1.513" (38.43MM)	1.880" (47.46MM)	135" (3.44MM) (OVATE WIRE)

3-4 ACCUMULATOR SPRINGS			
COLOR	OUTSIDE DIAMETER	FREE LENGTH	WIRE DIAMETER
GREEN (INNER)	.898" (22.81MM)	1.439" (36.55MM)	.081" (2.06MM)
DK. GREEN (OUTER)	1.189" (30.21MM)	1.484" (37.69MM)	.092" (2.34MM)
PLAIN (OUTER)	1.175" (29.85MM)	1.690" (42.93MM)	.098" (2.49MM)
WHITE (OUTER)	1.181" (30.00MM)	1.785" (45.34MM)	.099" (2.52MM)
YELLOW (OUTER)	1.183" (30.05MM)	1.735" (44.07MM)	.098" (2.49MM)

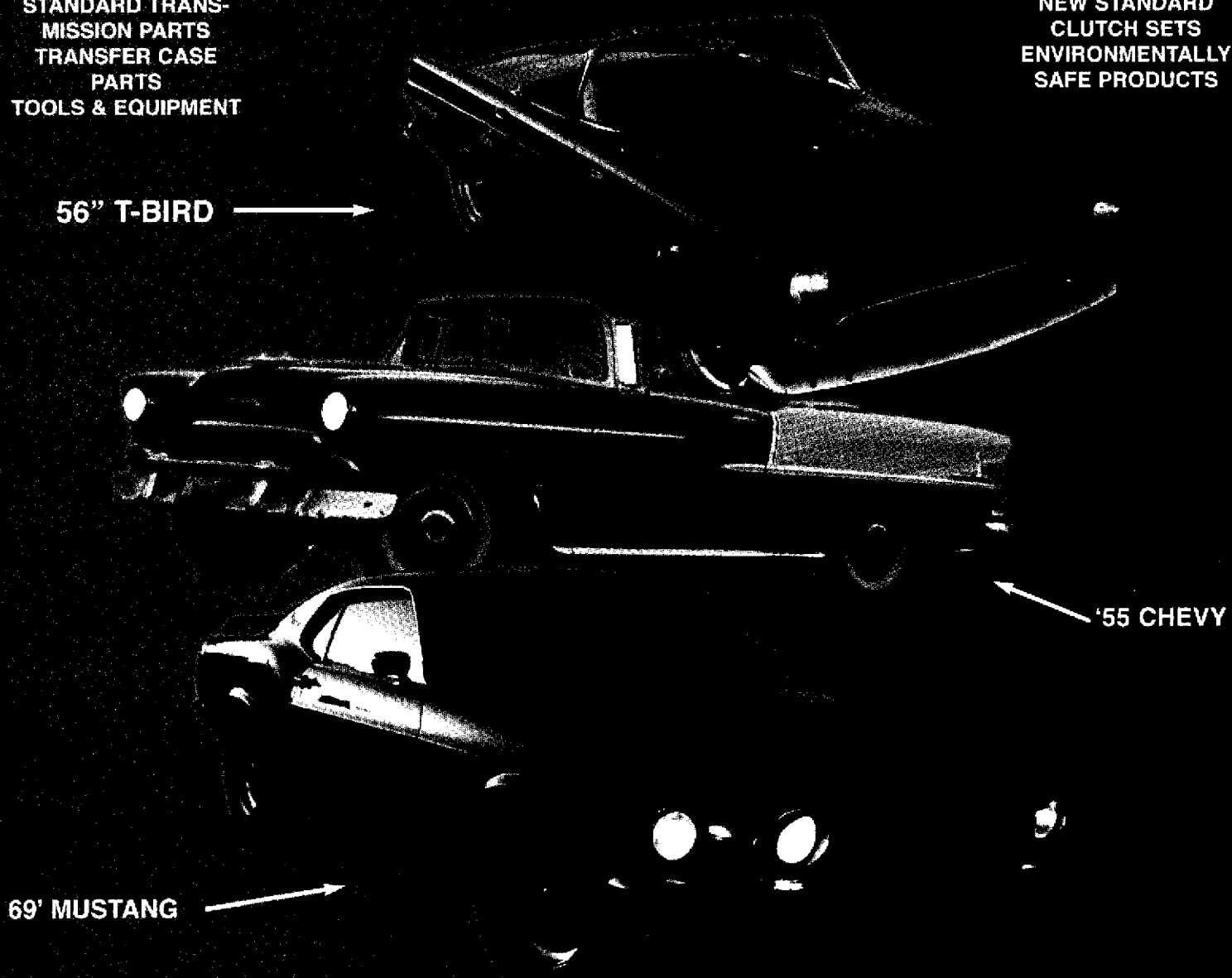
1-2 ACCUMULATOR SPRINGS			
COLOR	OUTSIDE DIAMETER	FREE LENGTH	WIRE DIAMETER
YELLOW (INNER)	1.180" (29.99MM)	1.542" (39.19MM)	.091" (2.30MM)
BROWN (INNER)	.902" (22.91MM)	1.507" (38.28MM)	.084" (2.15MM)
PURPLE (INNER)	.902" (22.91MM)	1.507" (38.28MM)	.084" (2.15MM)
DARK BROWN (INNER)	1.202" (30.55MM)	1.456" (36.99MM)	.106" (2.71MM)
BROWN (MIDDLE)	1.216" (30.89MM)	1.443" (36.67MM)	.106" (2.71MM)
PINK (MIDDLE)	1.205" (30.61MM)	1.443" (36.67MM)	.107" (2.73MM)
YELLOW (OUTER)	1.559" (39.60MM)	1.450" (36.83MM)	.126" (3.22MM)
LIGHT BROWN (OUTER)	1.587" (40.31MM)	1.408" (35.77MM)	.126" (3.22MM)
DARK BROWN (OUTER)	1.595" (40.52MM)	1.490" (37.85MM)	.126" (3.22MM)

Figure 5

KNOWLEDGEABLE SALES STAFF
CENTRALLY LOCATED
TECHNICAL SERVICE
REMANUFACTURED HARD PARTS
AUTOMATIC REBUILD KITS
STANDARD TRANSMISSION PARTS
TRANSFER CASE PARTS
TOOLS & EQUIPMENT

SAME DAY SHIPPING
800# & FAX SERVICE
E-MAIL ADDRESS
FULL SERVICE MACHINE SHOP
FOREIGN & DOMESTIC
NEW/USED FOREIGN & DOMESTIC
NEW STANDARD CLUTCH SETS
ENVIRONMENTALLY SAFE PRODUCTS

CHOOSE ONE.



HARD, ISN'T IT?

GOOD LOOKING CARS ARE LIKE SUPPLIERS, WE'RE ALL GOOD, BUT THERE'S ALWAYS ONE THAT REALLY STANDS OUT, THAT'S US!

A & REDS

CALL US TODAY

1-800-835-1007

AX4N

1-2 SHIFT ACCUMULATOR SPRINGS		
APPLICATION	**COLOR**	**PART NUMBER**
ALL EXCEPT SHO	PLAIN	F5DZ-7G267-A
SHO (V8) RETURN	PURPLE	F6DZ-7G267-A
*SHO (V8) CUSHION	PLAIN	F7DZ-7D397-AA

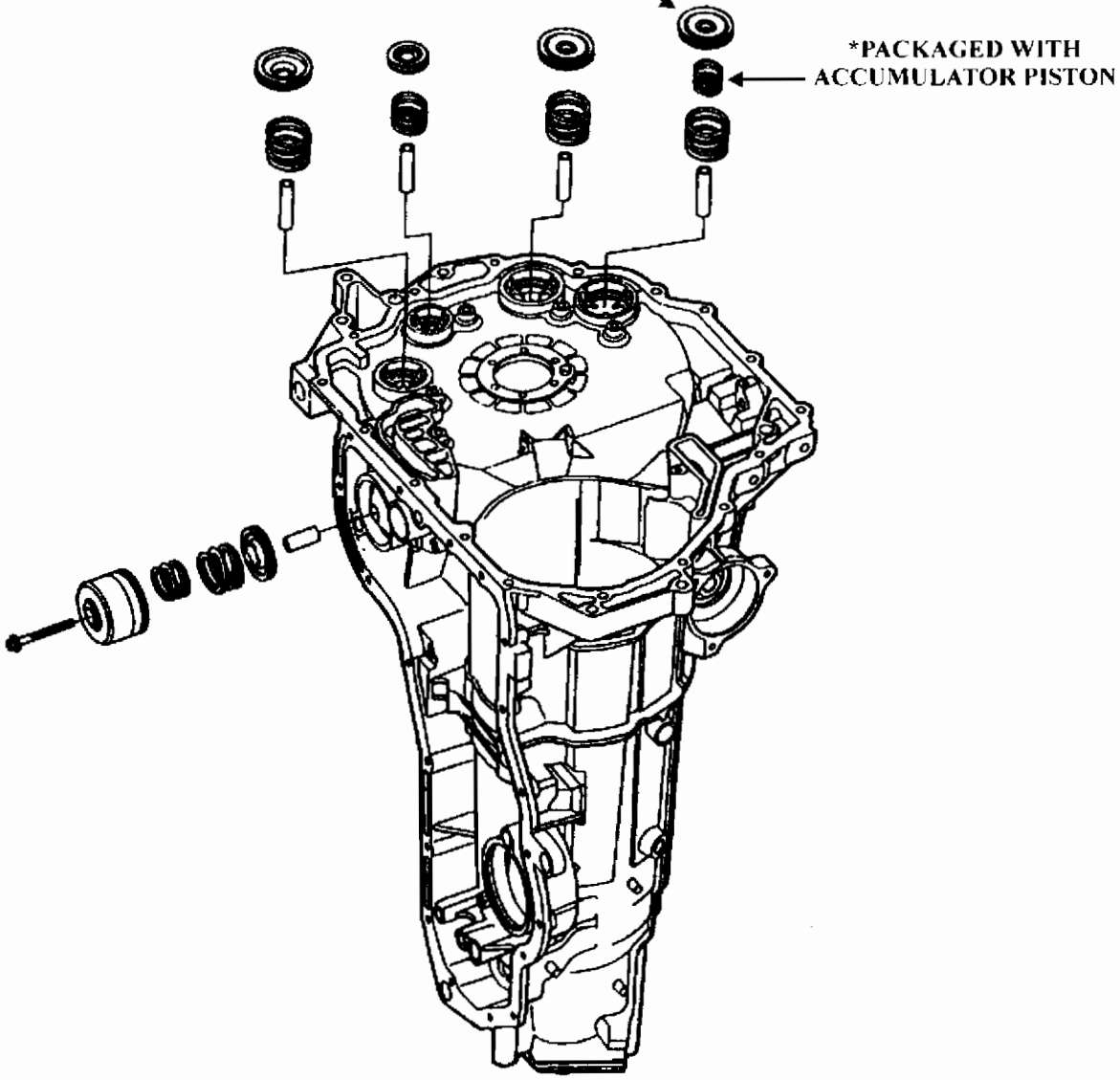


Figure 6

AX4N

2-3 SHIFT ACCUMULATOR SPRINGS		
APPLICATION	**COLOR**	**PART NUMBER**
ALL MODELS	ORANGE	F5DZ-7F285-A

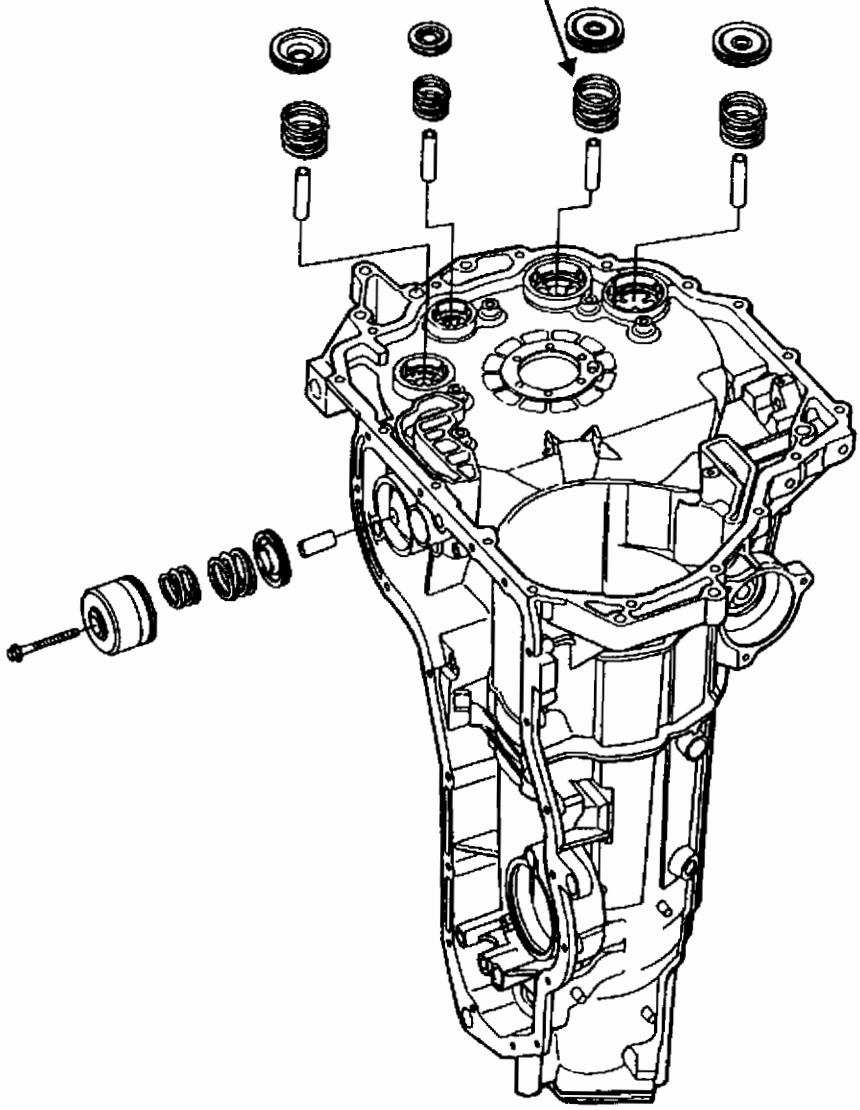


Figure 7

AX4N

REVERSE (N-R) SHIFT ACCUMULATOR SPRINGS		
APPLICATION	**COLOR**	**PART NUMBER**
1995-97 ALL MODELS	GREEN	F5DZ-7E485-A
1998-01 ALL MODELS	PLAIN	F8OZ-7E485-BA

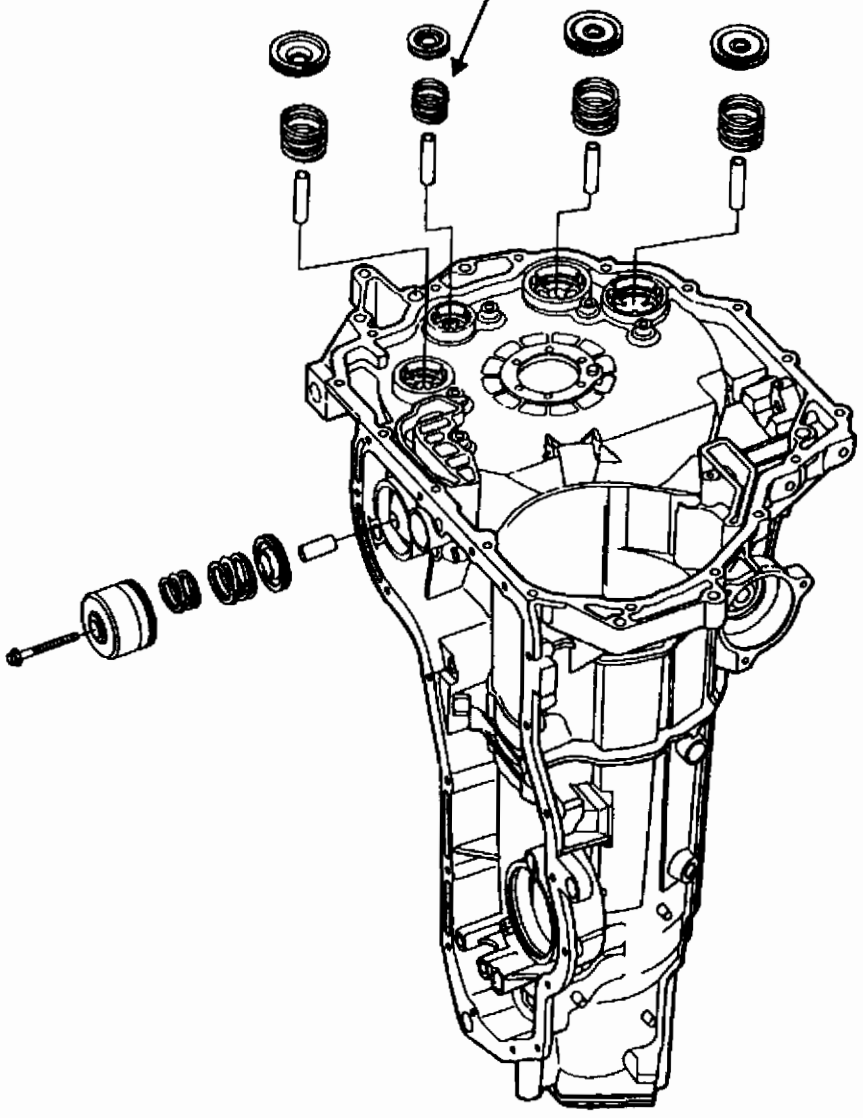


Figure 8

AX4N

3-4 SHIFT ACCUMULATOR SPRINGS		
APPLICATION	**COLOR**	**PART NUMBER**
ALL MODELS	BLUE	F5DZ-7G266-A

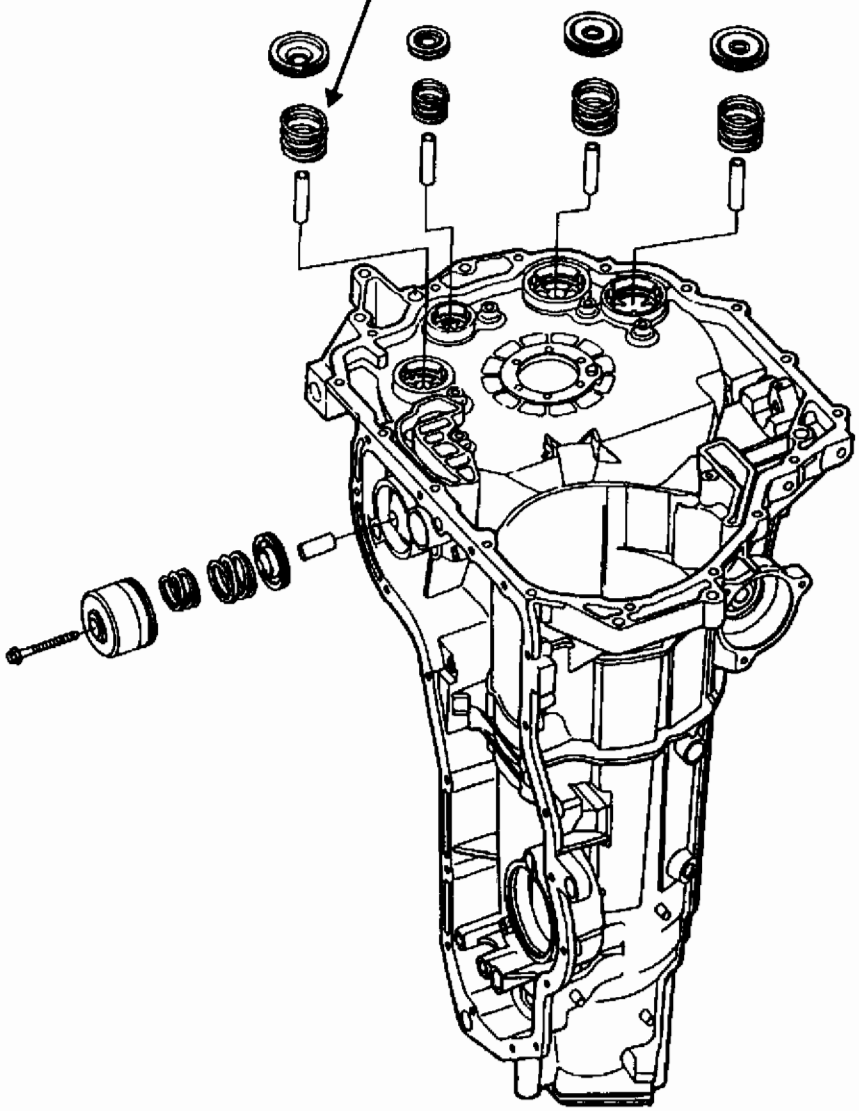


Figure 9

AX4N

DRIVE (N-D) SHIFT ACCUMULATOR SPRINGS				
APPLICATION	INNER		OUTER	
	COLOR	PART NUMBER	COLOR	PART NUMBER
1995 ALL MODELS	———	———	PLAIN	F4DZ-7G300-A
1996-01 ALL MODELS	BROWN	F5OZ-7G301-A	GREEN	F5OZ-7G300-A

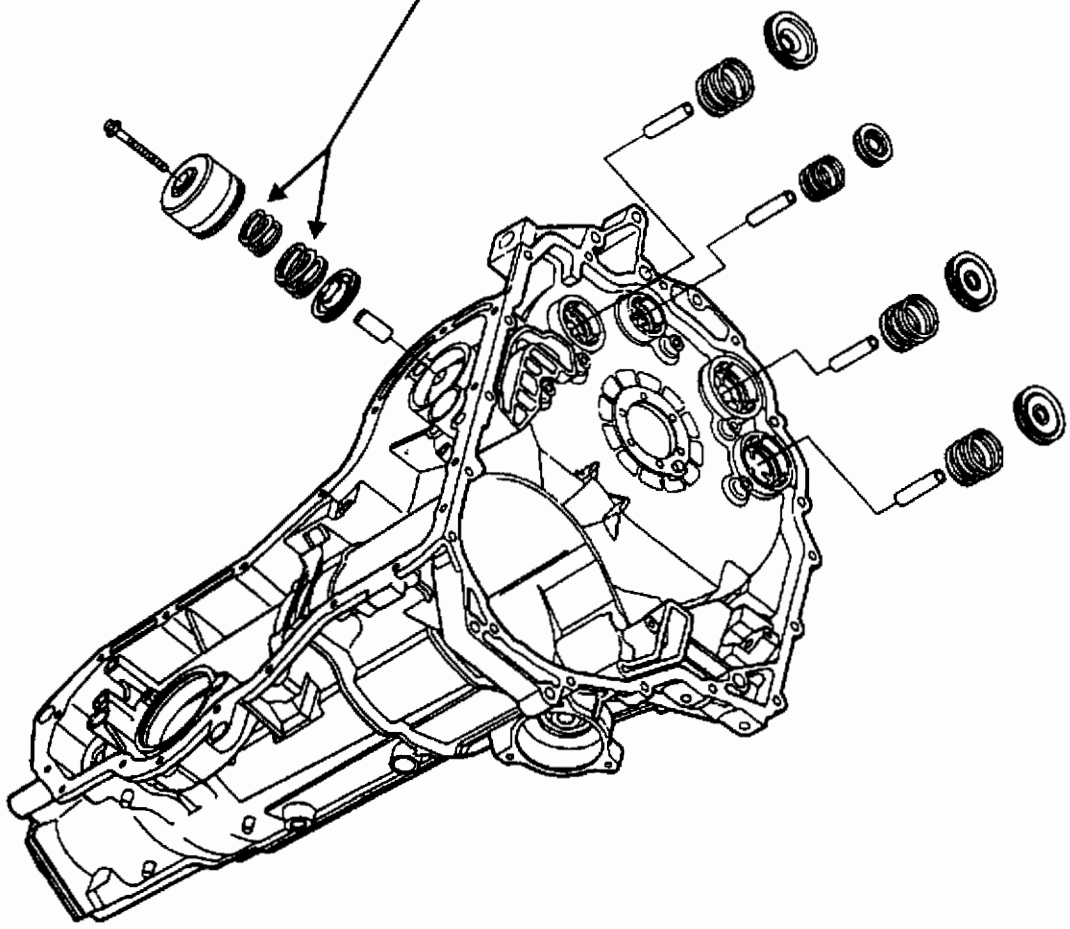


Figure 10

AX4N

1-2 SHIFT ACCUMULATOR SPRINGS			
COLOR	OUTSIDE DIAMETER	FREE LENGTH	WIRE DIAMETER
PLAIN	1.316" (33.43MM)	1.540" (39.12MM)	.114" (2.90MM)
PURPLE (RETURN)	1.507" (38.28MM)	1.389" (35.29MM)	.121" (3.07MM)
PLAIN (CUSHION)	1.022" (25.96MM)	.682" (17.32MM)	.135" (3.43MM)

2-3 SHIFT ACCUMULATOR SPRINGS			
COLOR	OUTSIDE DIAMETER	FREE LENGTH	WIRE DIAMETER
ORANGE	1.310" (33.28MM)	1.222" (31.04MM)	.110" (2.79MM)

REVERSE (N-R) SHIFT ACCUMULATOR SPRINGS			
COLOR	OUTSIDE DIAMETER	FREE LENGTH	WIRE DIAMETER
GREEN	.965" (24.52MM)	1.414" (35.92MM)	.093" (2.37MM)
PLAIN	.958" (24.34MM)	1.402" (35.61MM)	.092" (2.34MM)

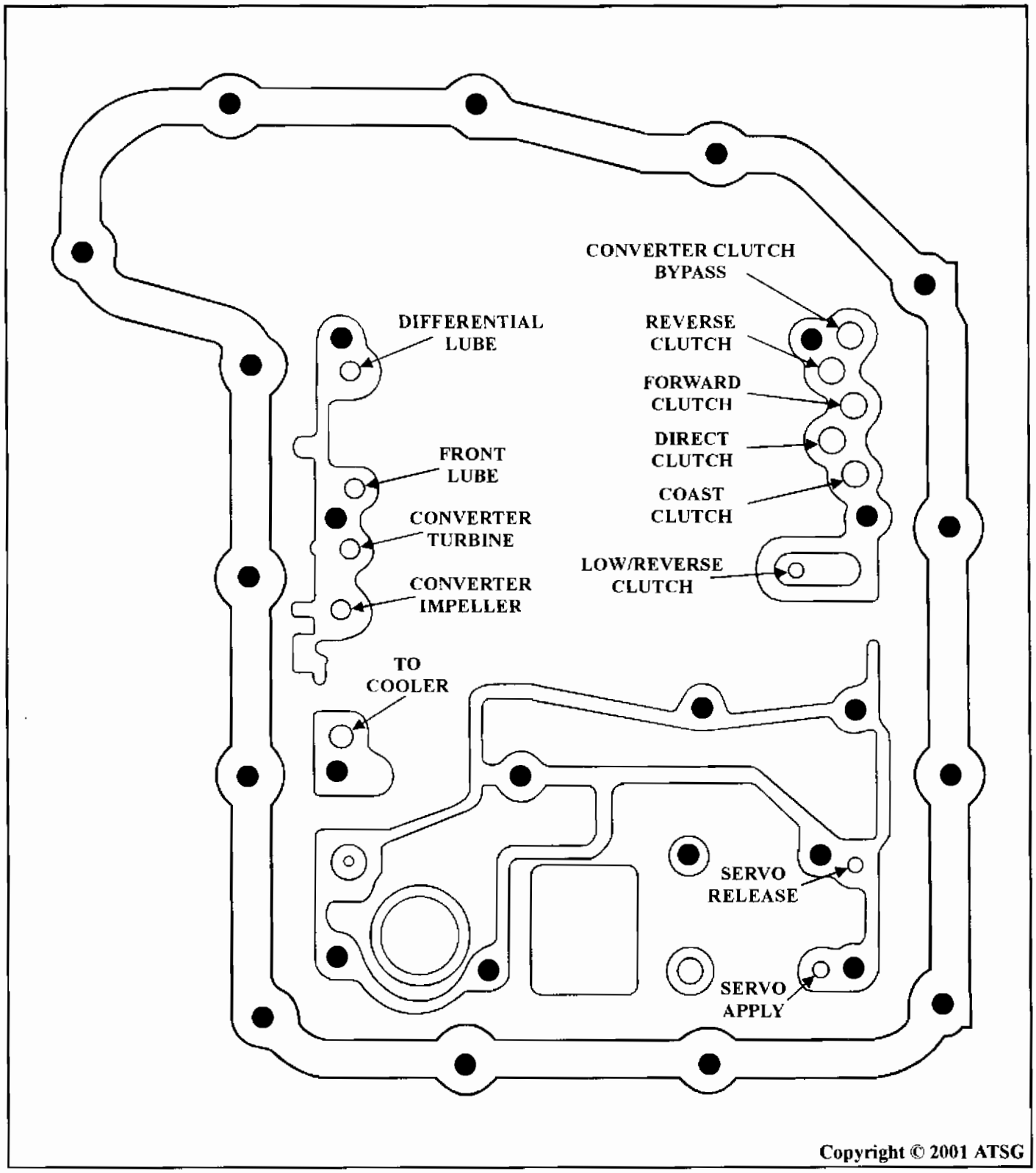
3-4 SHIFT ACCUMULATOR SPRINGS			
COLOR	OUTSIDE DIAMETER	FREE LENGTH	WIRE DIAMETER
BLUE	1.315" (33.40MM)	1.485" (37.72MM)	.113" (2.87MM)

DRIVE (N-D) SHIFT ACCUMULATOR SPRINGS			
COLOR	OUTSIDE DIAMETER	FREE LENGTH	WIRE DIAMETER
PLAIN	1.373" (34.87MM)	1.257" (31.93MM)	.091" (2.31MM)
BROWN (INNER)	1.164" (29.57MM)	1.200" (30.48MM)	.084" (2.14MM)
GREEN (OUTER)	1.472" (37.38MM)	1.219" (30.96MM)	.102" (2.59MM)

Figure 11

FORD CD4E

AIR CHECK PASSAGES



MTG 2500
A COLOR GRAPHING SCANNER

The MTG2500 Color Graphing Scanner is the next generation in the family of 2500 Scanners (See Figure 1) The new MTG2500 Scanner will function in the same manner as the previous MT2500 Scanner providing specific engine, transmission, anti-lock brake system and air-bag trouble codes, selected functional tests, and troubleshooting information. What is new about the MTG2500 is that it gives you the ability to select and graph live data parameters in color.

The advantage of being able to view data stream in a graphic form is that it allows you to quickly spot glitches, dropouts, spikes, and other signal inconsistencies. This comes in handy when you are road testing a vehicle alone or when conducting a wiggle test. Trying to drive and look at the scanner for a glitch is not only difficult, its dangerous too. Whether a wiggle test or a road test, you can drive or work with both hands with only an occasional glance at the screen to see if the graph pattern has changed.

Another advantage of having a graphic display is that it allows you to quickly compare the activity of two parameter signals to see if they are synchronized or if they both respond correctly to changes in operating condition. One good example of this is when you compare the crankshaft position sensor to the camshaft sensor signal, there should be a consistent number of crank shaft pulses between each camshaft pulse. This is much easier to observe with a graph than with viewing numerical data stream.

Just like the MT2500 with the later cartridge, freezing live data for review is still available which works well for capturing intermittent failures during a test drive.

The new Scanner will also operate using any of the current domestic or Asian Import primary cartridges.

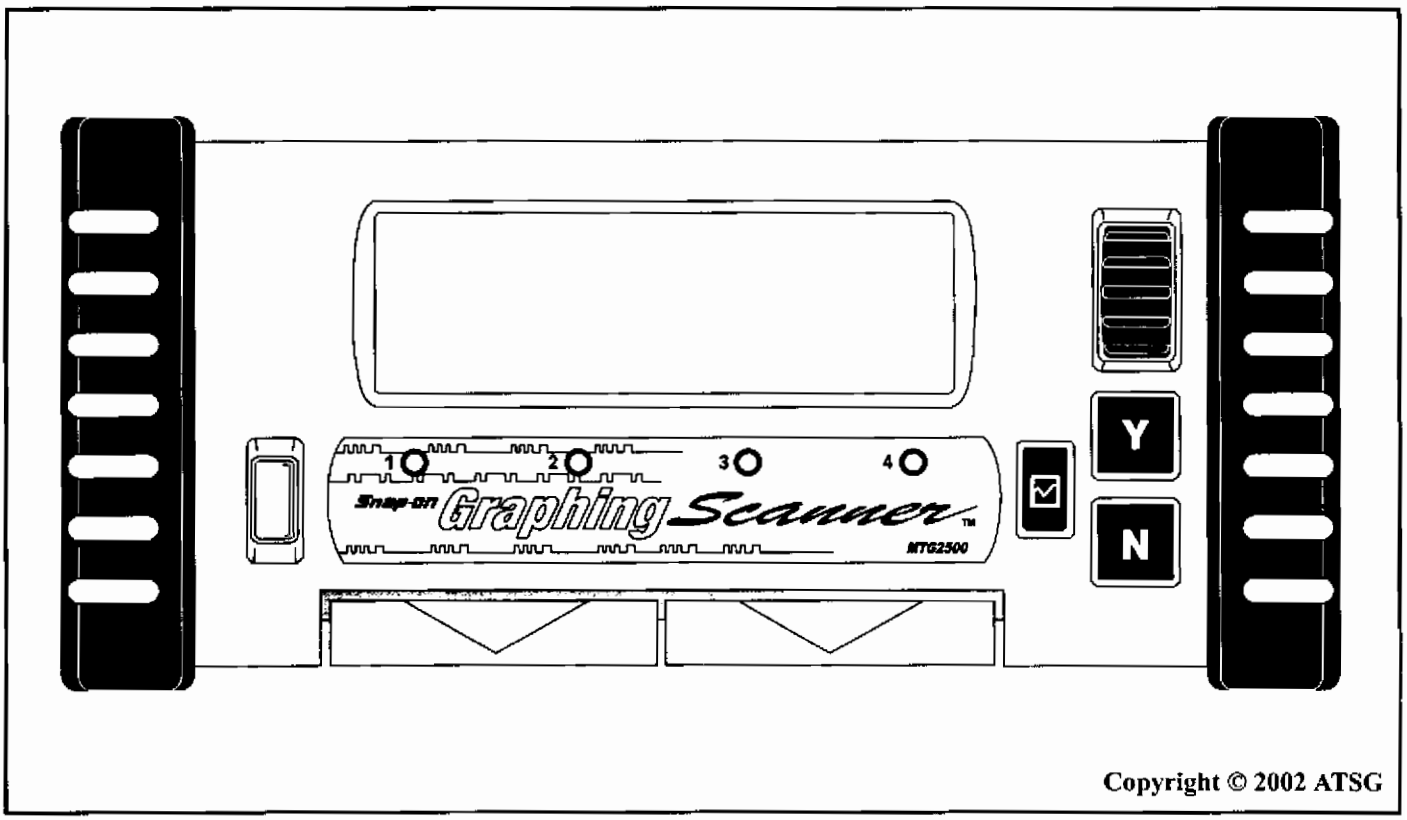


Figure 1

Once the scanner has been connected to the vehicles data link connector and the VIN number sequence has been entered, the scanner then has access to the on-board computer system. Select what is needed such as engine or transmission. Once there, enter the graph mode by pushing the graphing button to the left of the Yes and No buttons (See Figure 2). The scanner will determine the baud rate of the vehicles computer system and will ask you to select the appropriate baud rate. For our example, the vehicle is a 1997 Eagle Vision and the computer system wants to communicate with the scanner at a 9600 baud rate. So we go to the main menu and select "Custom Set Up" then "Communication Set Up" and there we can choose the 9600 Baud rate (See Figure 2). Once selected, hit the graphing button again and you will go right into the graph mode. Only two lines of data is provided at any given time while in the graphing mode as you can see in Figure 3. The data presented can be customized by locking the top line in place. In this example we have scrolled the thumb wheel until the Engine RPM data appeared in the top line. Then we hit the Yes button and a pad lock appeared (See Figure 3). This indicates that this line of data is locked into position.

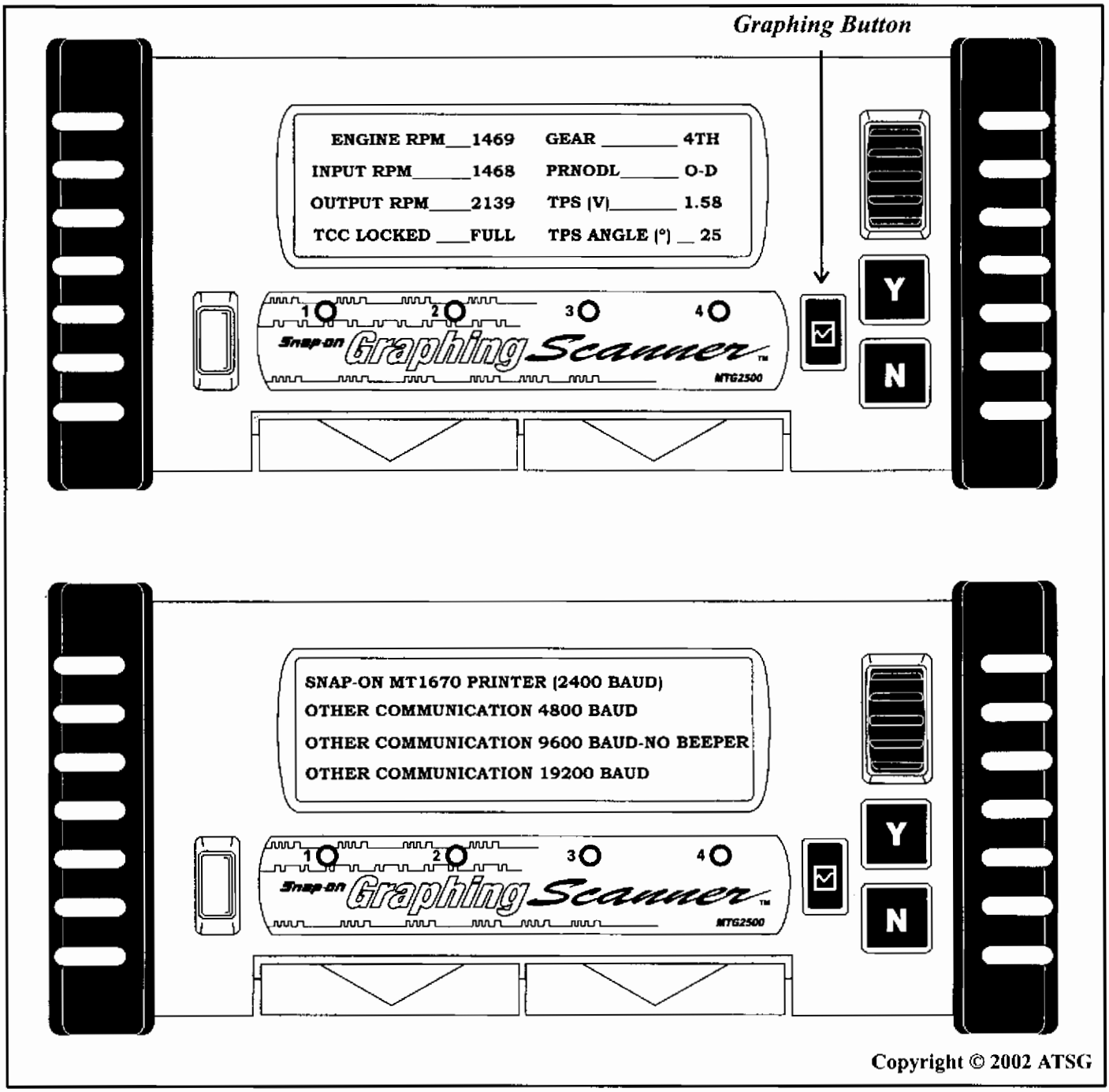


Figure 2

At this time the thumb wheel will allow you to scroll through all the other data for viewing. In Figure 3, the Input RPM data has been placed below the Engine RPM for a converter clutch test. Both RPM readings need to be very close to one another when the converter clutch is fully applied. If it is, the clutch is not slipping. If more than a 10 RPM slip is observed, the clutch is slipping. But if on a cruise with lock up fully applied and there is no slip indicated, step into the throttle hard enough to increase torque but light enough to prevent a converter clutch release command by the computer. If more than a 10 RPM difference is seen, the torque converter clutch is slipping while under load. When viewing the graph, you will notice that the graphing data begins at the right of the screen and moves to the left. So keep in mind that the new data always enters the screen from the right side and the speed of the graph is determined by the vehicles computer and not the scanner.

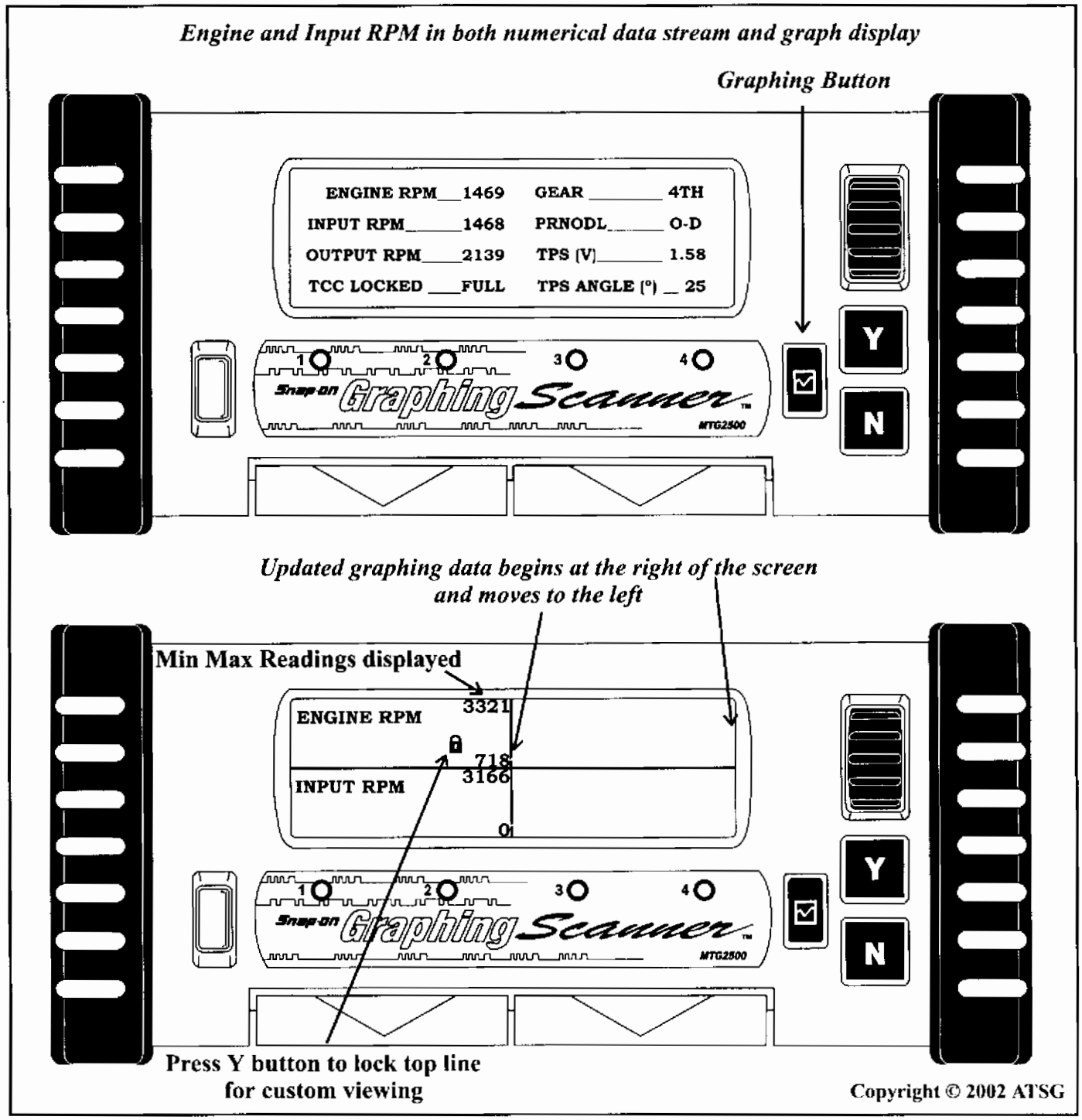


Figure 3

THE H•E•L•C GROUP

www.helc.net

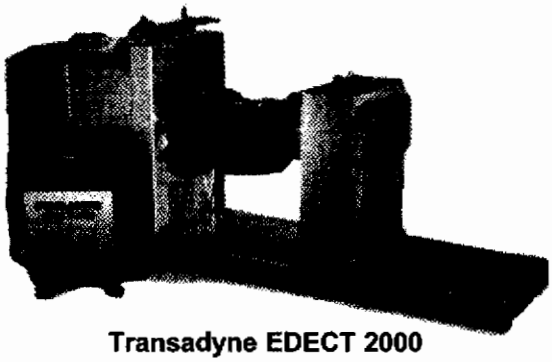
No Matter How Big or How Small Your Shop, A Transmission Dyno Provides:

1. **Reliable Units**
2. **Credibility in the Marketplace**
3. **An Improved Financial Statement**

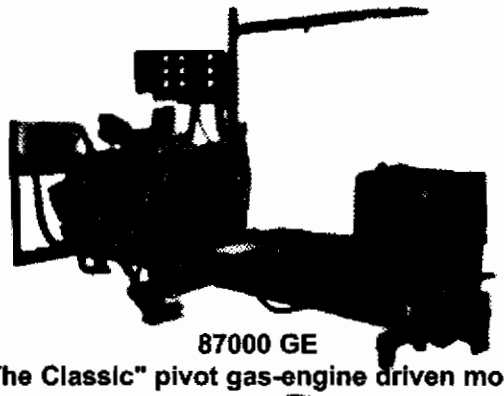
Whatever your transmission testing need, the H•E•L•C Group has the test stand for you. Buy what you need now. Many upgrade options available as your requirements change.

The H•E•L•C Group offers the widest range of transmission testers in the world. That's because, under the Hicklin Engineering and AxiLine names, we've pioneered many of the advances in the industry.

We were the FIRST to use electric drives on transmission dynos;
the FIRST to introduce a solenoid tester;
the FIRST to install an eddy current load unit on a transmission dyno;
and the FIRST with data acquisition and control.

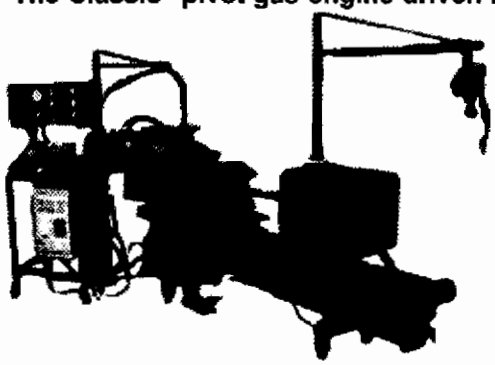


Transadyne EDECT 2000
For Heavy Duty Applications

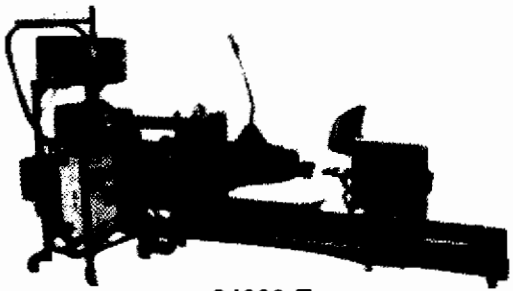


87000 GE
"The Classic" pivot gas-engine driven model

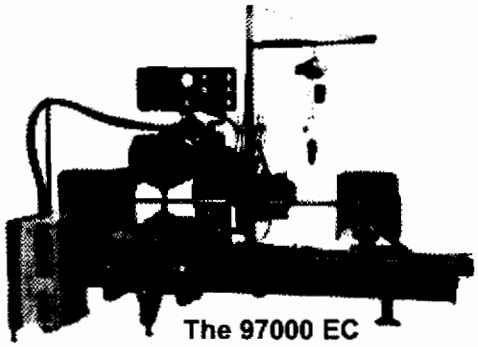
"The Flagship" 97000 ECRH
with TDAC Option



"The Flagship" 97000 ECRH
Manual Controls



84000 E
For Testing Manual Transmissions



The 97000 EC
Economy Version

axiline

Axl-Line Precision Products
4575 Anston Street · Green Bay, WI 54313
Phone: 1-800-245-2203 · (920) 865-4266
Fax: (920) 865-4270 · e-mail: axlline@helc.net

Hicklin Engineering
3001 NW 104th Street · Des Moines, IA 50322
Phone: (888) 442-5546 · (515) 254-1654
Fax: (515) 254-1656 · e-mail: hicklin@helc.net

HICKLIN ENGINEERING

CHRYSLER 41TE/42LE

LIMP MODE, NO CODES

COMPLAINT: The transmission is in second gear failsafe. When scanned for codes, none are retrieved. When data is displayed, the scan tool indicates that the transmission is not in limp-in. In some instances the scan tool also indicates that the transmission is shifting, although it is not.

CAUSE: **(1)** The EATX relay is faulty.

(2) A loss of power to TCM terminal 56.

(3) A loss of power to TCM terminal 11.

(4) A faulty TCM.

CORRECTION:

(1) The EATX relay will not always store a code 14 or 15 even though it is faulty.
NOTE: Swapping the EATX relay with the reverse relay has proven to be inconclusive because, in many instances, the reverse lamp relay is capable of operating the reverse lamps but not the transmission. Install a new EATX relay.

(2) TCM terminal 56 is "keep alive" power and should have battery voltage with the ignition off. If terminal 56 has no power, the TCM does not recognize that the transmission is in limp mode. There would be no codes stored because the TCM is incapable of realizing there is a malfunction.
Using a "jumper lead" direct from the positive battery connection, supply battery voltage by back probing terminal 56. If the above complaints are gone, the cause could be the fusible wire or fuse supplying power to terminal 56.
Using the illustrations in figures 1 and 2 as a guide, a new wire with a 30 amp in line fuse can be used to restore power to terminal 56.
Remember to also splice this wire into the "ignition off" battery voltage supply wire at the EATX relay in order to keep the relay coil powered up.
NOTE: The reason why you must supply power to terminal 56 rather then just checking for power is, we have seen full power on this circuit, but the wire is damaged in such a manner that insufficient current draw was enough to cause the problem.

(3) TCM terminal 11 is "ignition on" power and should have system voltage when the ignition is turned on. If terminal 11 does not have full power the above complaints will result.
Once again using the illustrations in figures 1 and 2, provide a direct source of power by back probing terminal 11, if the complaints are gone, the problem may be a faulty ignition switch or the wire to terminal 11 has been compromised.
NOTE: As with terminal 56, you must supply power in the event current draw in this circuit is the problem.
Make certain to remove the jumper lead before turning the ignition off!

(4) If none of the above corrections have eliminated the complaints, replace the TCM.

CAUTION: On some vehicles these wires run under the battery tray where they are subjected to battery corrosion. Be sure to check this area for wire damage.

LIMP MODE, NO CODES

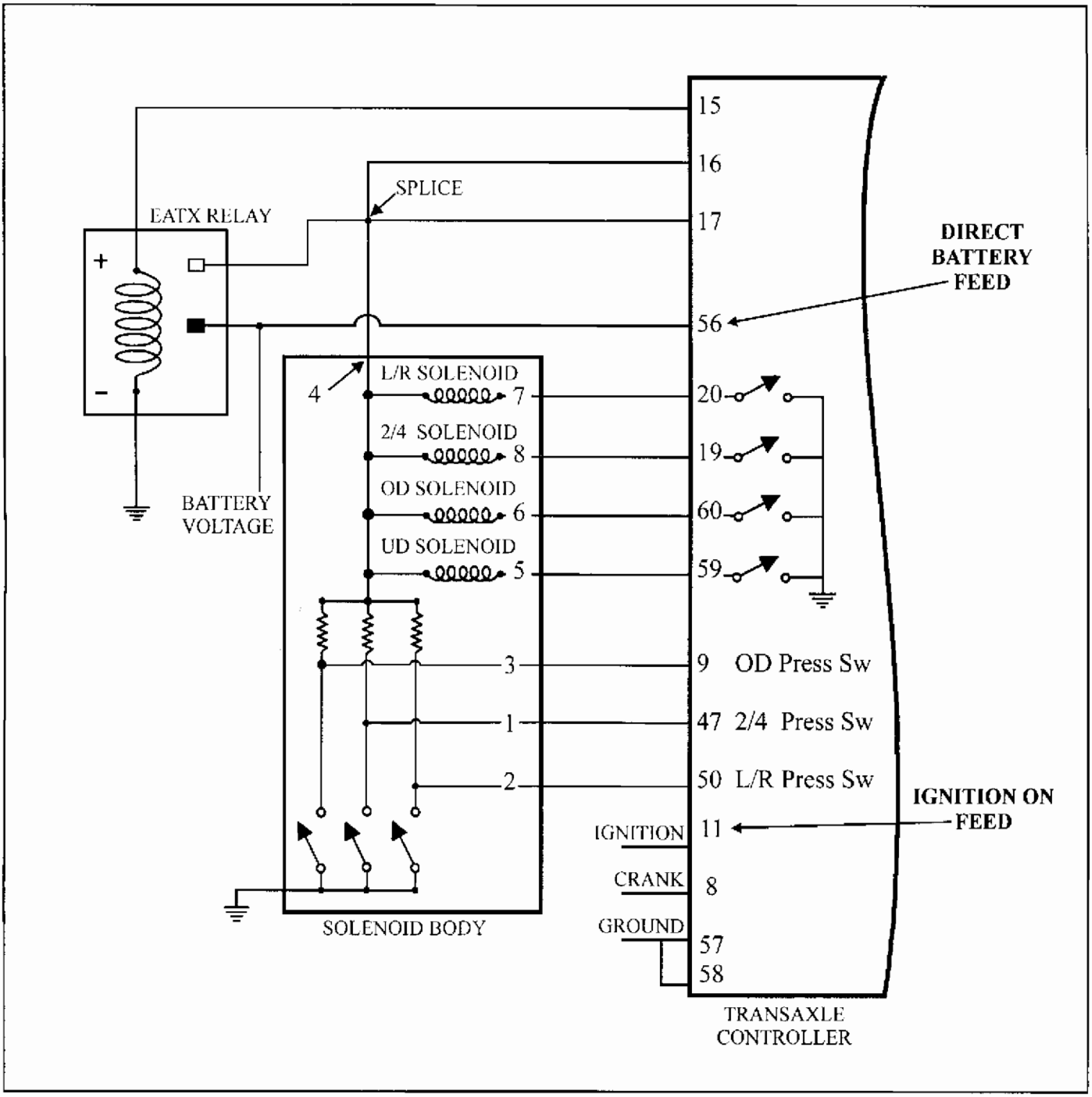


Figure 1

LIMP MODE, NO CODES

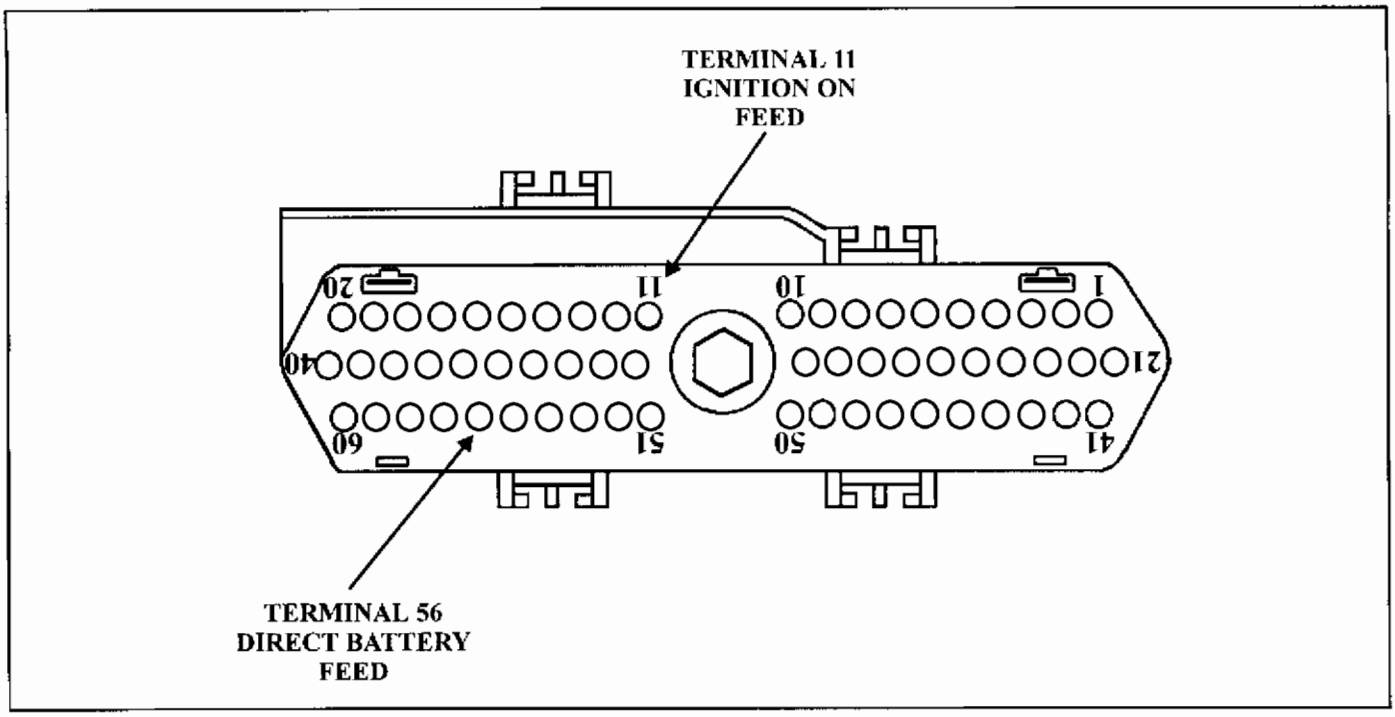


Figure 2

LH VEHICLES
CODE 18 ENGINE RPM-PRNODL LAMPS FLICKER

COMPLAINT: LH vehicles experience a limp in condition with code 18 for Engine RPM being present. It may be noted that this complaint occurs at or about the same time the coolant fans turn on. It may also be noted that the PRNODL lamps in the instrument cluster flicker.

CAUSE: Broken or corroded main ground wires are the most common causes for such complaints. There are several critical grounds located under the battery tray that experience corrosion from either battery acid or weathering (See Figure 1). Occasionally, an additional ground which is fastened near the starter (See Figures 1) has in some way been mis-positioned to where the suspension rubs through the wire.

CORRECTION: Locate and inspect grounds 100, 101, 102 and 103 as shown in Figure 1. Grounds 100 and 101 are the battery's main ground circuit (See Figure 2). Ground 103 is the Transmission Control Modules (TCM) main ground for terminals 53 and 57 (See Figure 3). Ground 102 is shared with many lamps, motors and relays through three splices as seen in Figure 4. There may be times that ground 102 may experience problems at splice locations within the harness. Removal of the protective conduit covering is required in order to gain access to the splice for repairs.

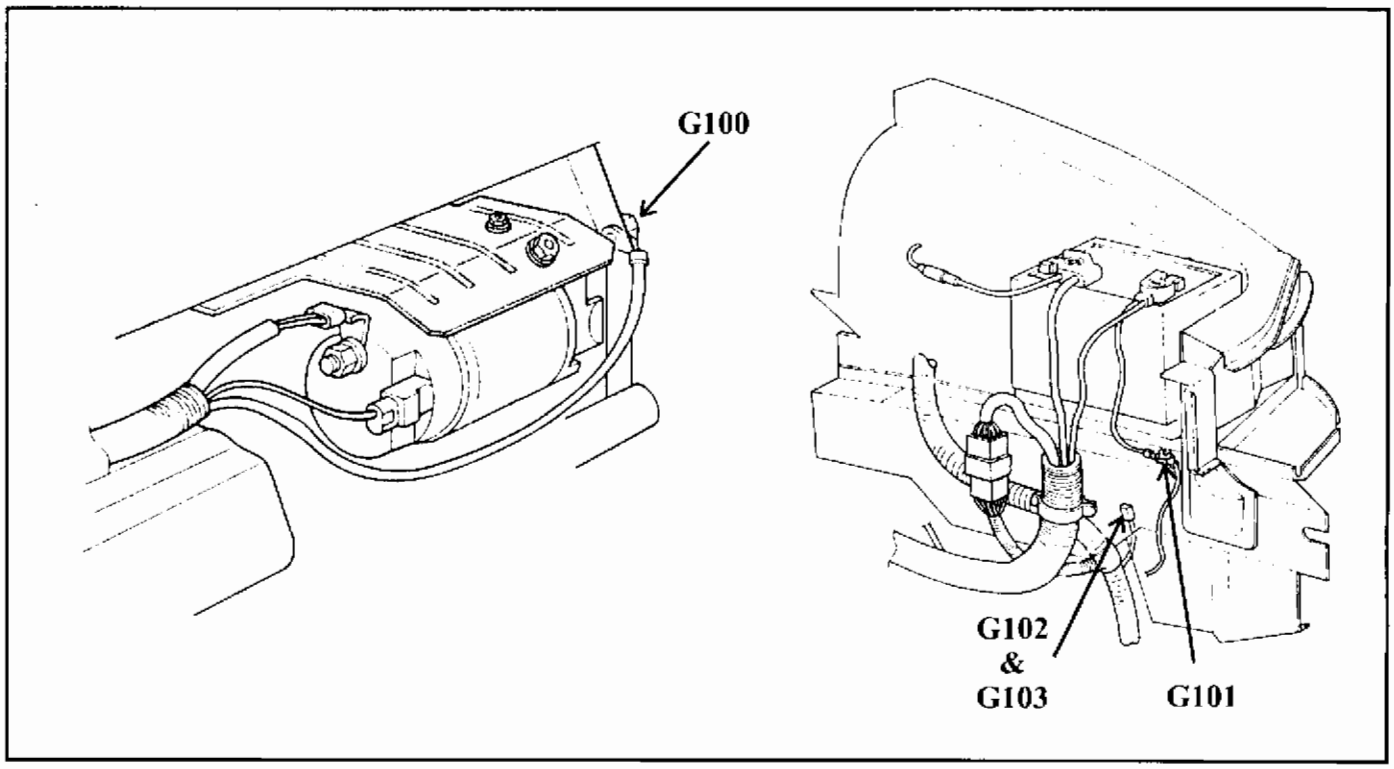


Figure 1

LH VEHICLES
CODE 18 ENGINE RPM-PRNODL LAMPS FLICKER

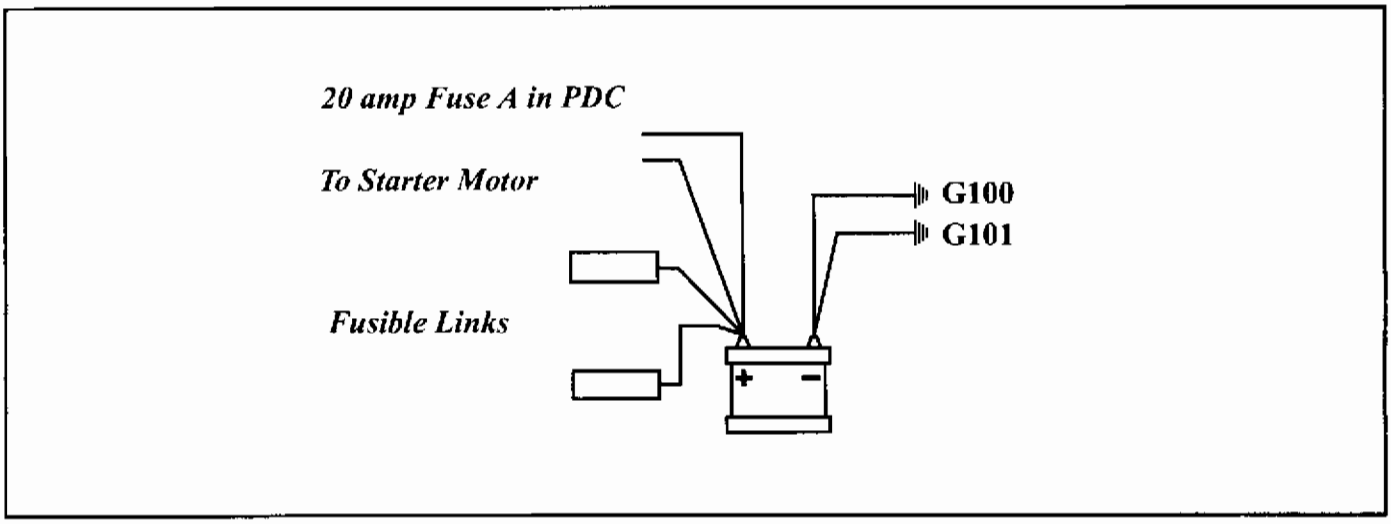


Figure 2

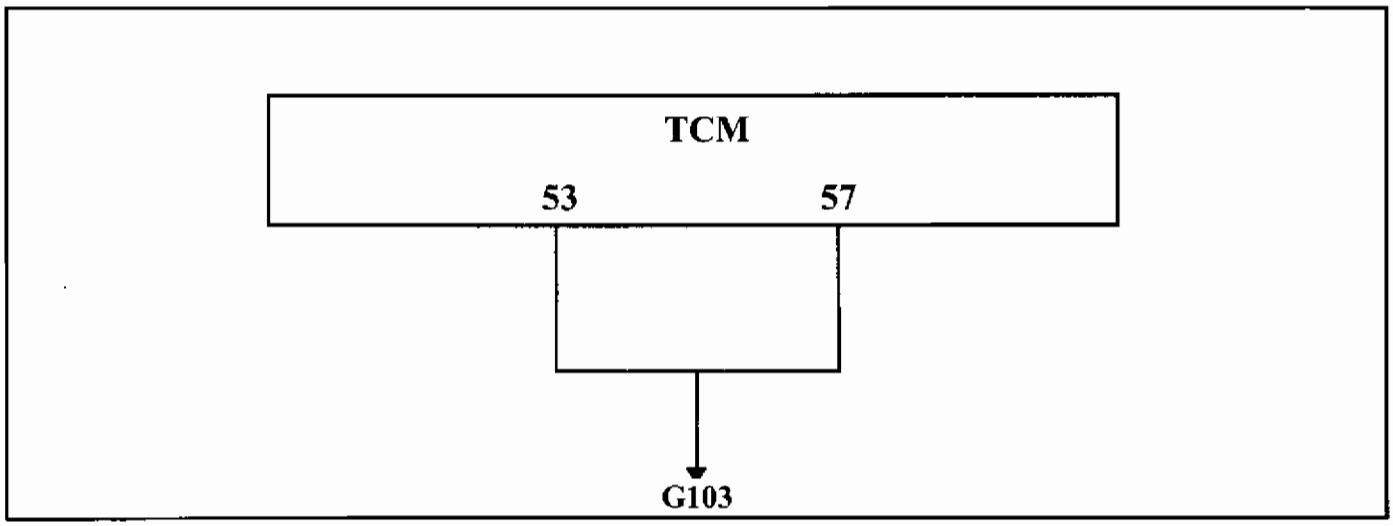


Figure 3

LH VEHICLES
CODE 18 ENGINE RPM-PRNODL LAMPS FLICKER

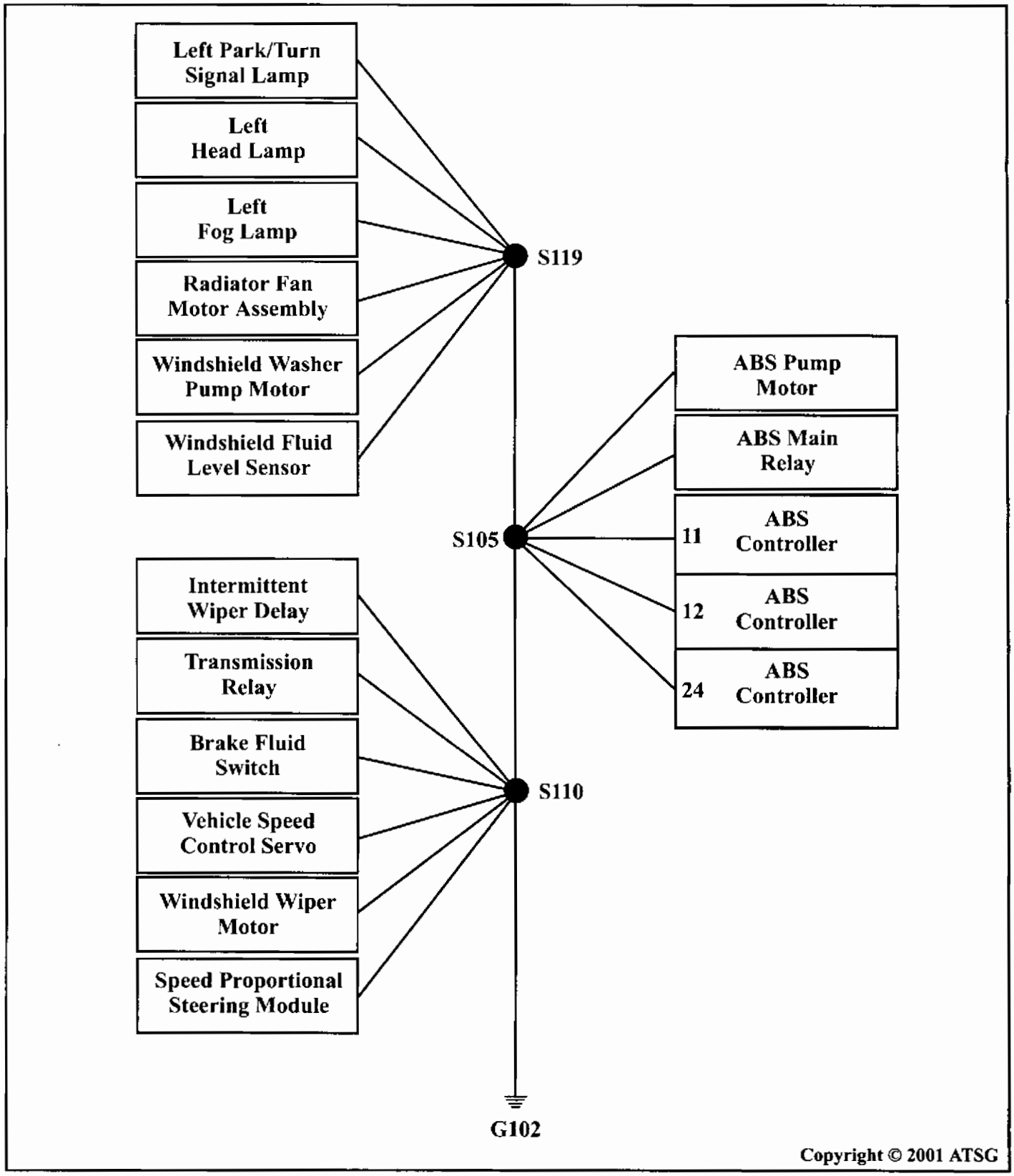
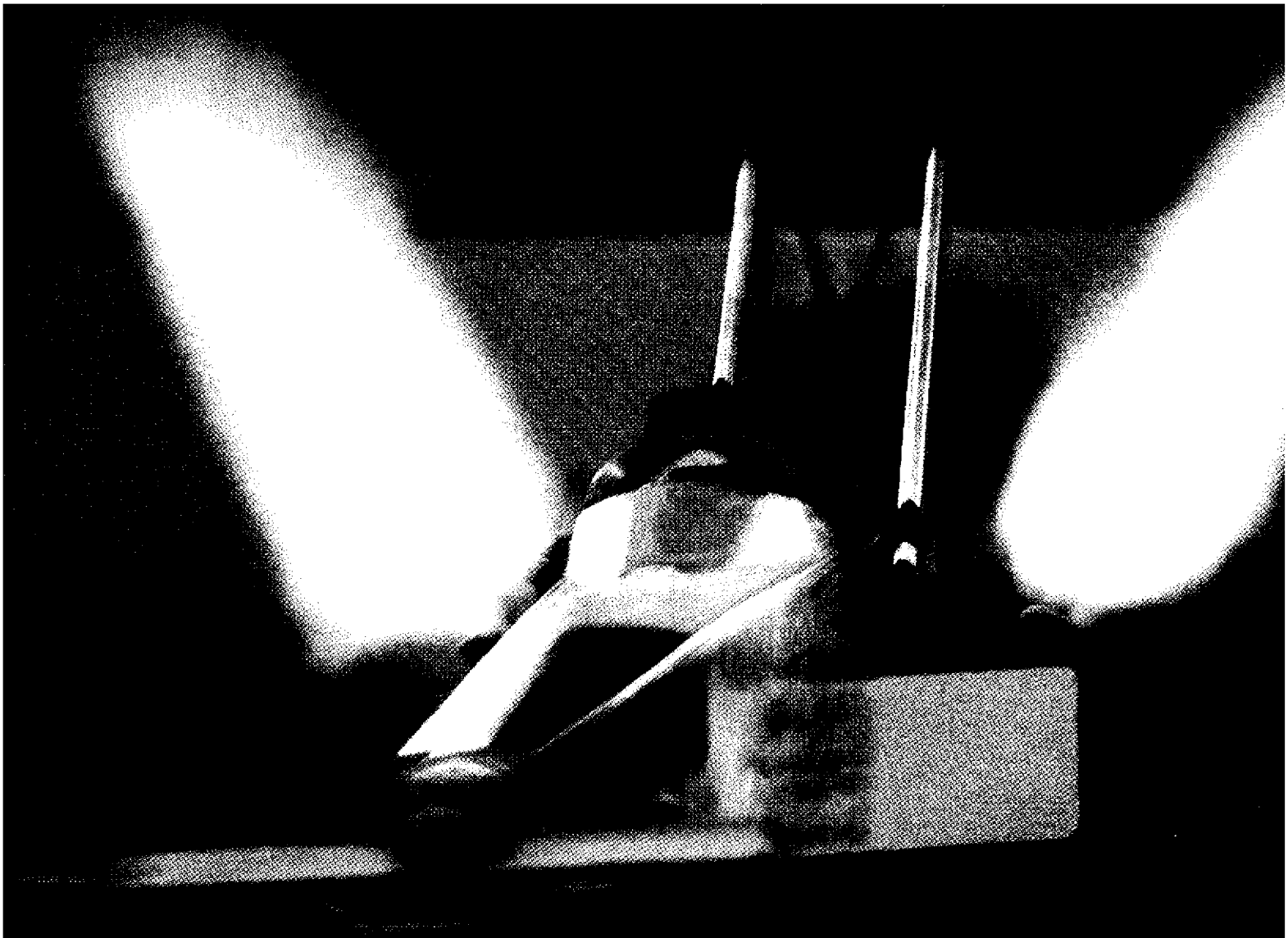
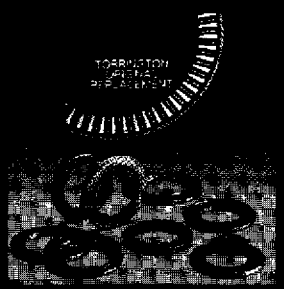


Figure 4



Winners Know How To Make Every Second Count.



Torrington Transmission Bearings Kits get you to the finish line faster.

Whether you're tearing down a drag strip or tearing down a transmission, you know that every second counts.

For you, the winning edge comes from doing a transmission job quickly and efficiently. And making sure it doesn't come back to haunt you.

Ask your parts supplier for Torrington Transmission Bearings Kits. Or ask yourself this question, "Do I have time to waste looking for old, worn out transmission bearings and reducing my profit margin when I can replace them for a fraction of the total cost of the job?"

Torrington Kits make it easy. You get the entire set of quality replacement bearings in one neat package.

If your goal is smooth running transmission repair work, let Torrington put you in the driver's seat.

www.torrrington.com

Torrington

CHRYSLER A670 (31TH) AND A604 (41TE)
NEW DESIGN FINAL DRIVE CROSS SHAFT RETAINERS

CHANGE: Beginning in the model year 2000, as a running change, Chrysler introduced a new design final drive cross shaft retainer and eliminated the retaining pin. The new design retainers are held in place by two of the ring gear retaining bolts (See Figure 1).

REASON: Eliminates the possibility of the cross shaft coming out and breaking the case.

PARTS AFFECTED:

(1) FINAL DRIVE HOUSING - Retaining pin hole eliminated (See Figure 2).

(2) CROSS SHAFT - Retaining pin hole eliminated (See Figure 2).

(3) CROSS SHAFT RETAINER - New design cross shaft retainer to replace the previous design retaining pin (See Figure 2).

INTERCHANGEABILITY:

Chrysler has now made available two service packages to back service previous design levels, one kit for the 31TH and one kit for the 41TE transaxles. The contents of these kits are illustrated in Figure 2 and part numbers are listed below under "Service Information".
The new design retainers are also available individually from the OEM, and are installed as shown in Figures 3 and 4.

SERVICE INFORMATION:

A604 (41TE) Differential Service Package (New Design)	4798858AB
A670 (31TH) Differential Service Package (New Design)	4798859AB
A604 (41TE) Cross Shaft Retaining Brackets (New Design)	4800058AA
A670 (31TH) Cross Shaft Retaining Brackets (New Design)	4800059AA

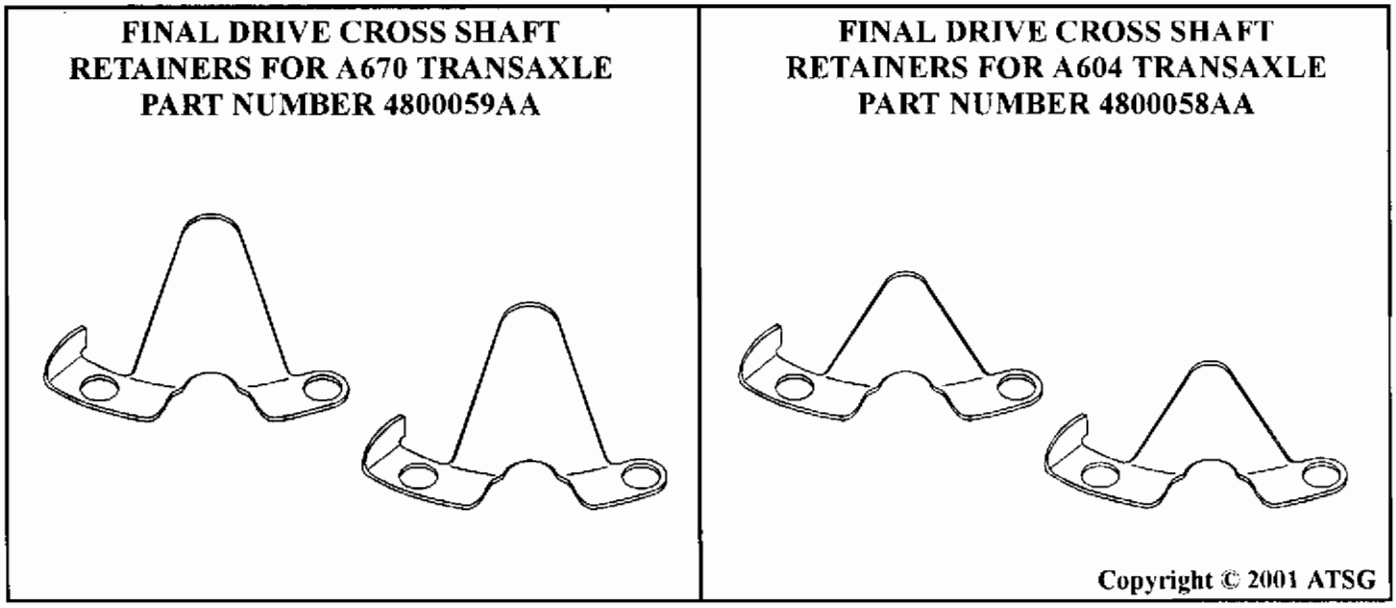
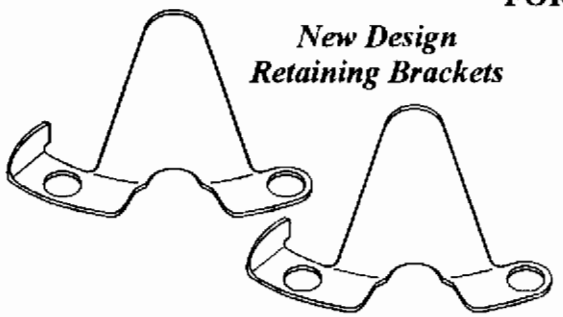
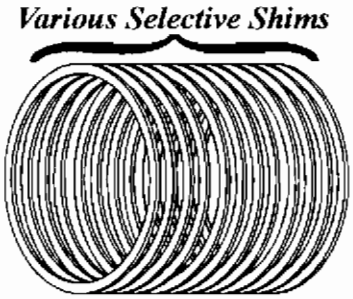
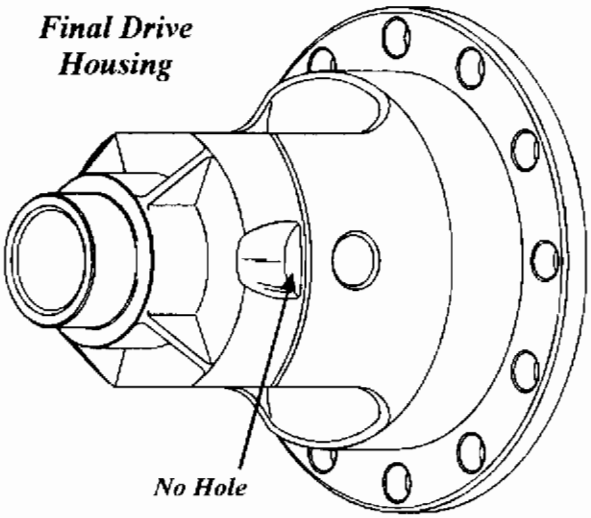


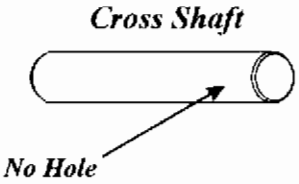
Figure 1

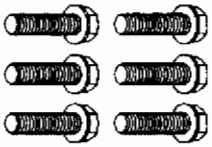
CONTENTS OF KIT NUMBER 4798859AB
FOR A670 FAMILY











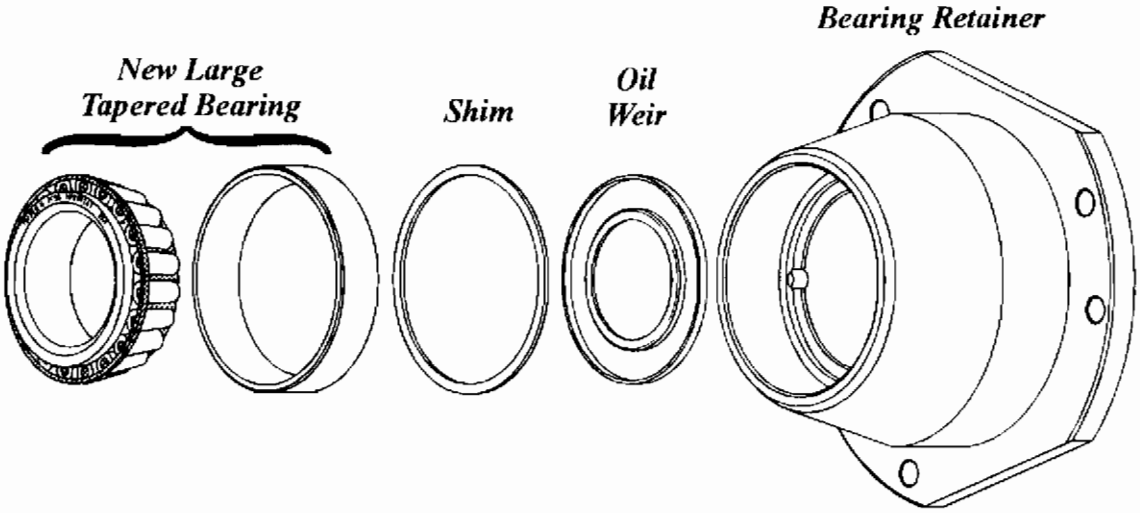


Figure 2

ASSEMBLY PROCEDURE

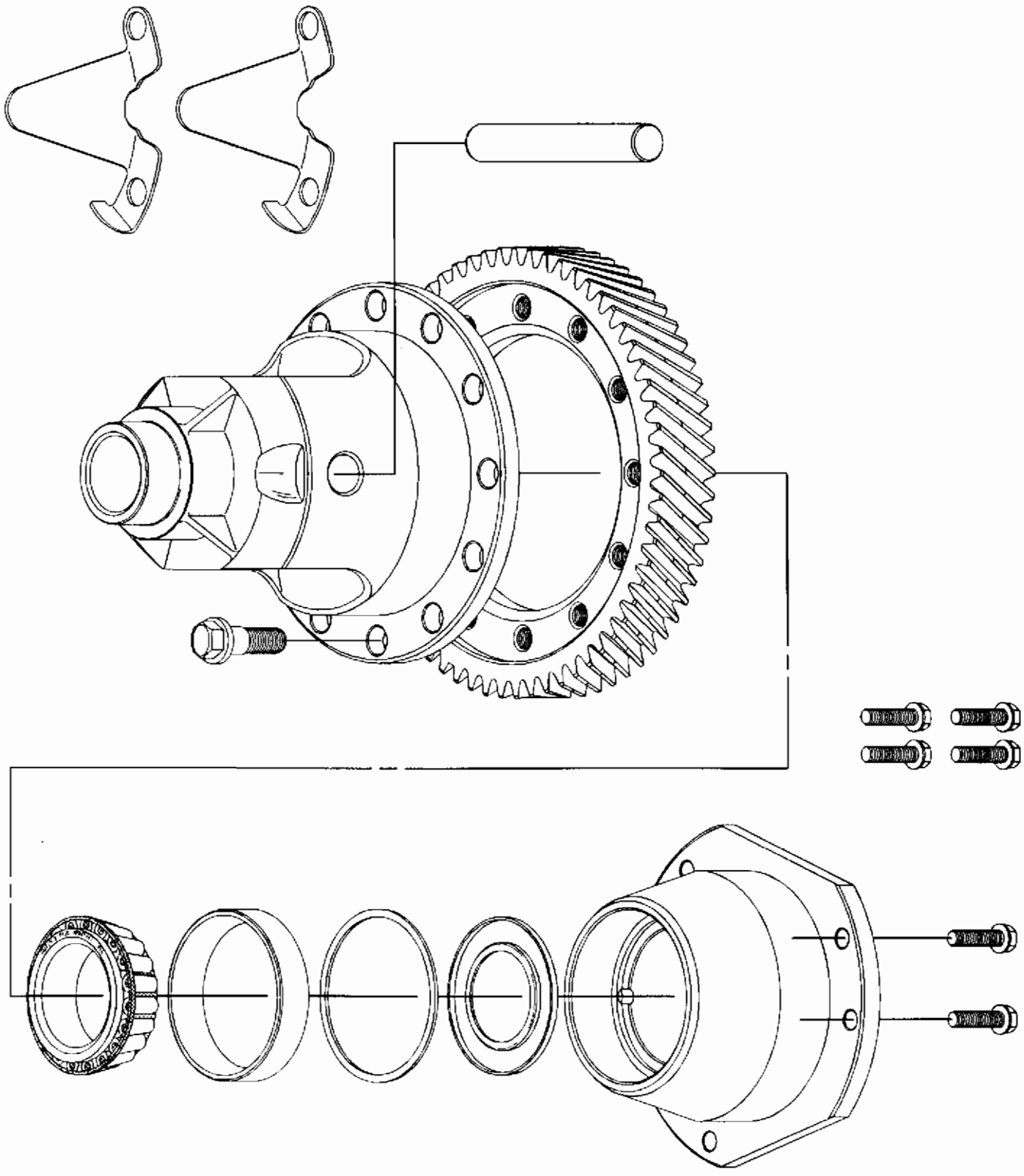


Figure 3

NEW DESIGN CROSS SHAFT RETAINER INSTALLATION

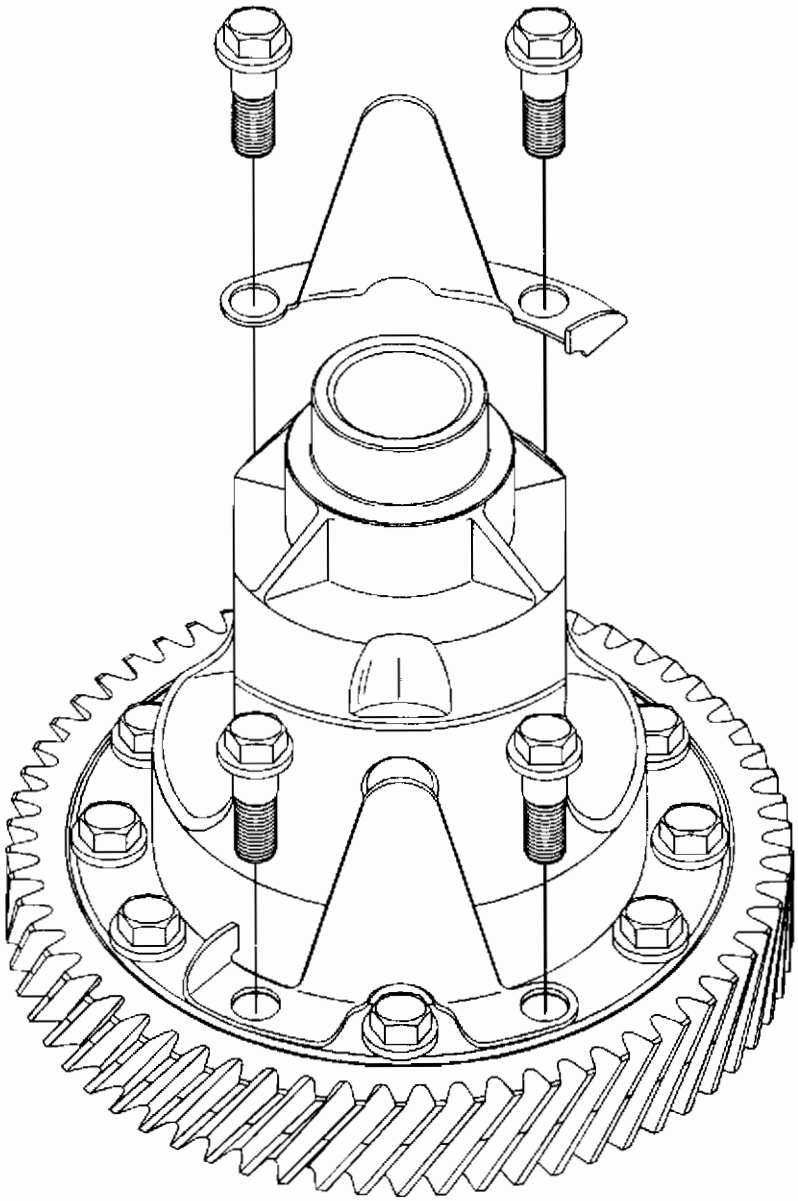


Figure 4

ALL DODGE RE & RH UNITS
PREMATURE FAILURE OF THE L/R BAND

COMPLAINT: Some RE and RH transmissions (The 500/518/618 transmissions with or without a governor pressure solenoid) may experience a premature low reverse band burn out immediately after overhaul.

CAUSE: One such cause may be a cross leak between spacer plate and channel plate near the # 3 check ball seat area (See Figures 1 & 2). The cross leak may be the result of an incorrectly aligned spacer plate to channel plate. This misalignment may allow minimal 3rd gear oil pressure to cross over and intrude into the low/reverse band circuit after a 2-3 shift has occurred. This minimal pressure is enough to make the band drag on the low drum while driving in third and forth gear causing the premature failure of the band.

CORRECTION: If the band is destroyed the unit will obviously need to be removed for service. During the transmission repair procedure, disassemble the valve body and carefully flat sand the channel plate to ensure that the channel plate will mate flat to the spacer plate. When assembling the valve body, there are two holes that are to be used to properly align the spacer plate to the channel plate as seen in Figures 2 and 3. Place the spacer plate onto the channel plate and install the two bolts one in each alignment hole by hand. Then put the tension plate in place and tighten to 35 inch pounds to secure the spacer plate to the channel plate (See Figure 4). Remove the two bolts used to align the plate and re-use the same bolts to align the valve body and torque all the attaching bolts to 35 inch pounds. After the unit has been repaired and installed into the vehicle, attach a pressure gauge to the low/reverse pressure port (See Figure 5) and ensure that 0 psi is present while in third and forth gear.

**** Special thanks goes to Tony Garcin from Dunrite Performance Converters***

ALL DODGE RE & RH UNITS
PREMATURE FAILURE OF THE L/R BAND

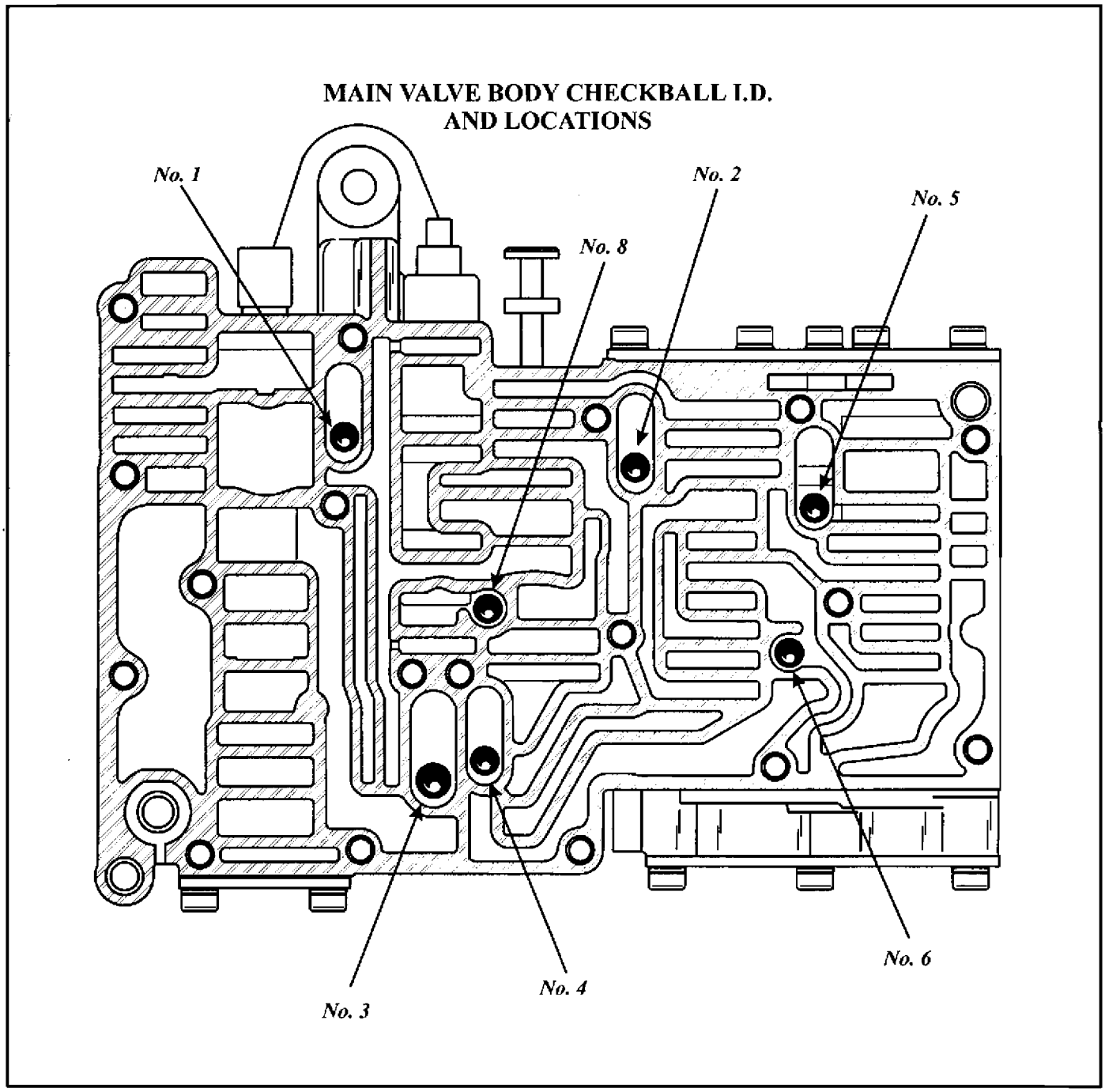


Figure 1

ALL DODGE RE & RH UNITS
PREMATURE FAILURE OF THE L/R BAND

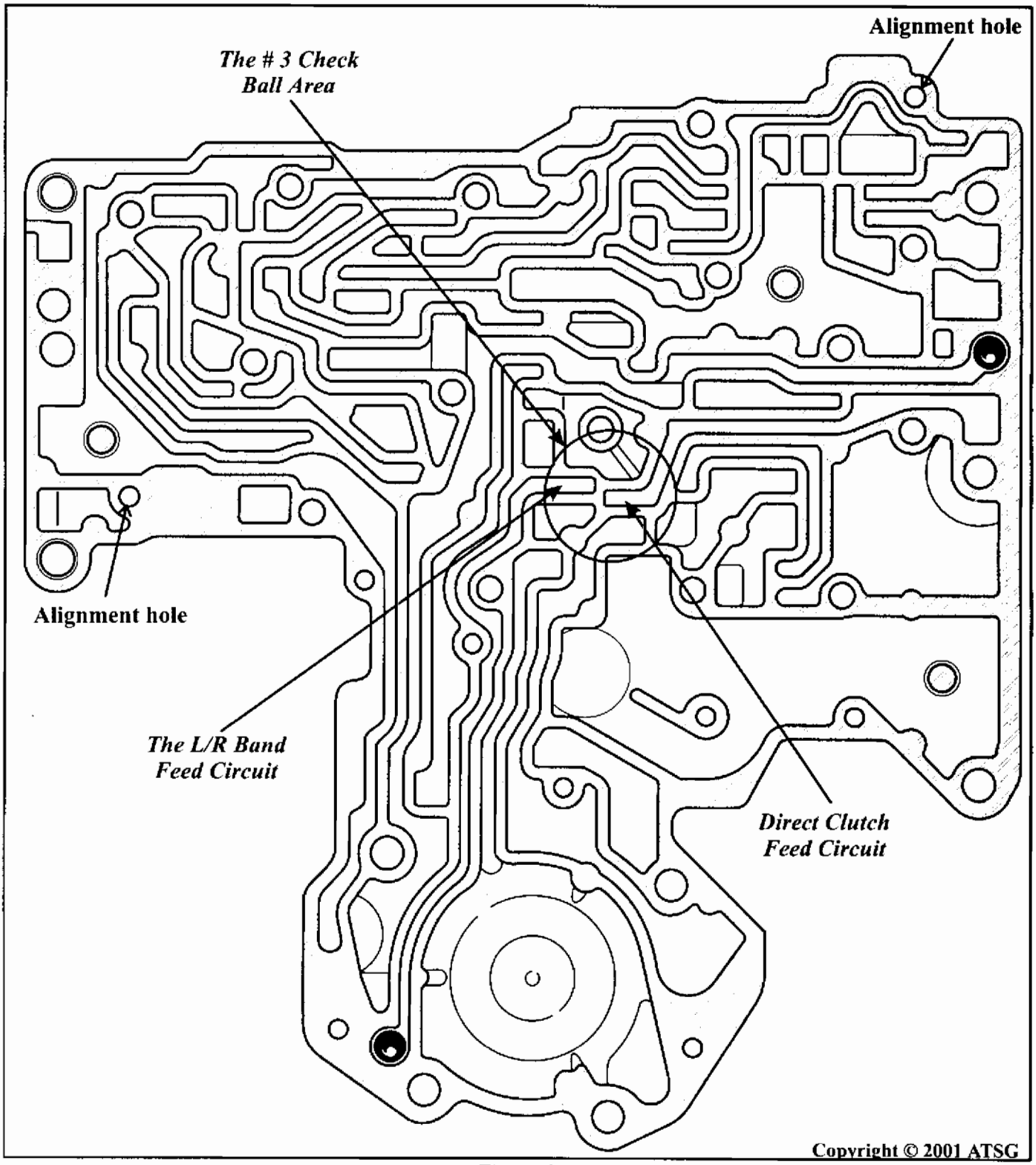


Figure 2

ALL DODGE RE & RH UNITS

PREMATURE FAILURE OF THE L/R BAND

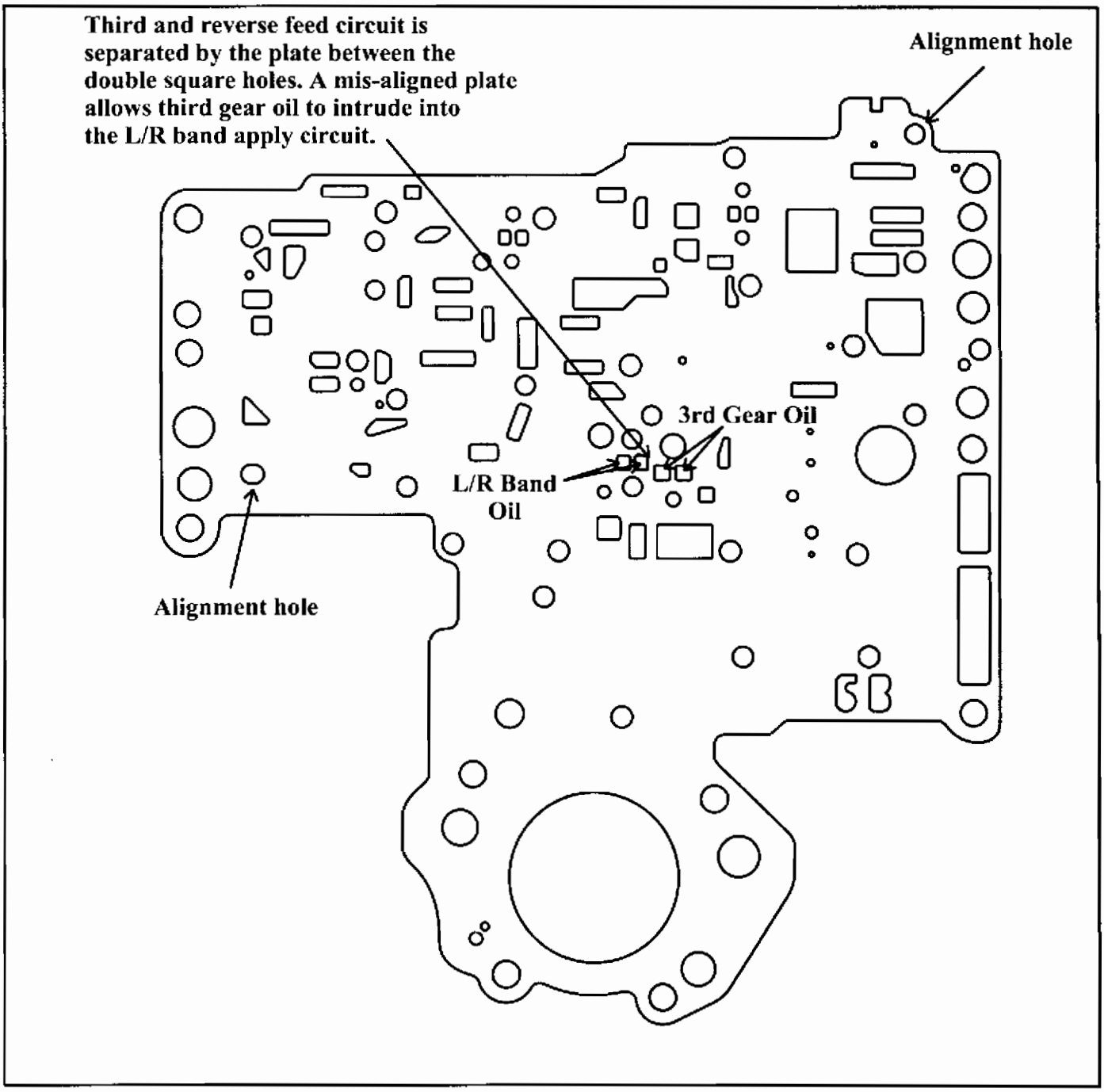


Figure 3

ALL DODGE RE & RH UNITS

PREMATURE FAILURE OF THE L/R BAND

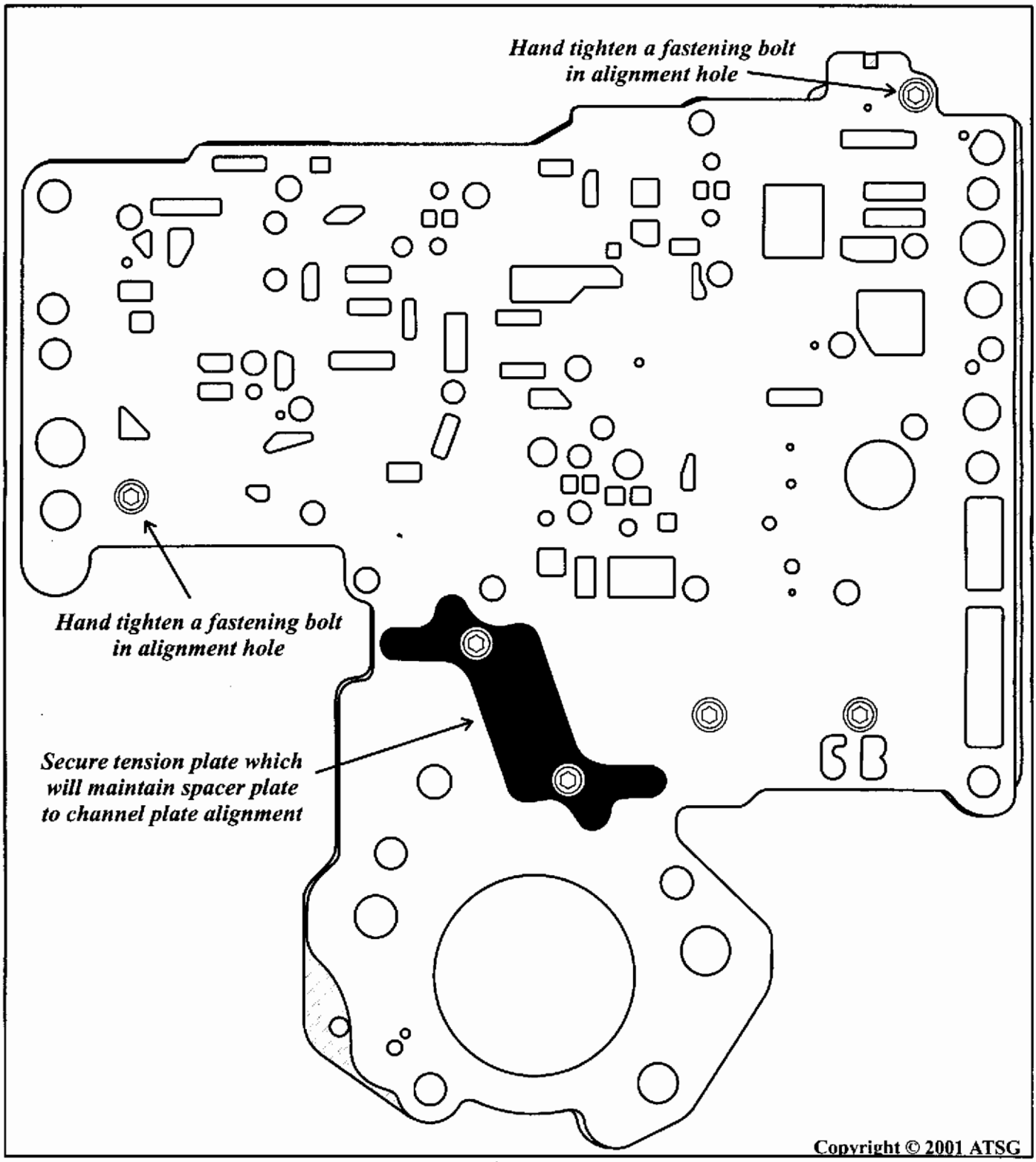


Figure 4

ALL DODGE RE & RH UNITS

PREMATURE FAILURE OF THE L/R BAND

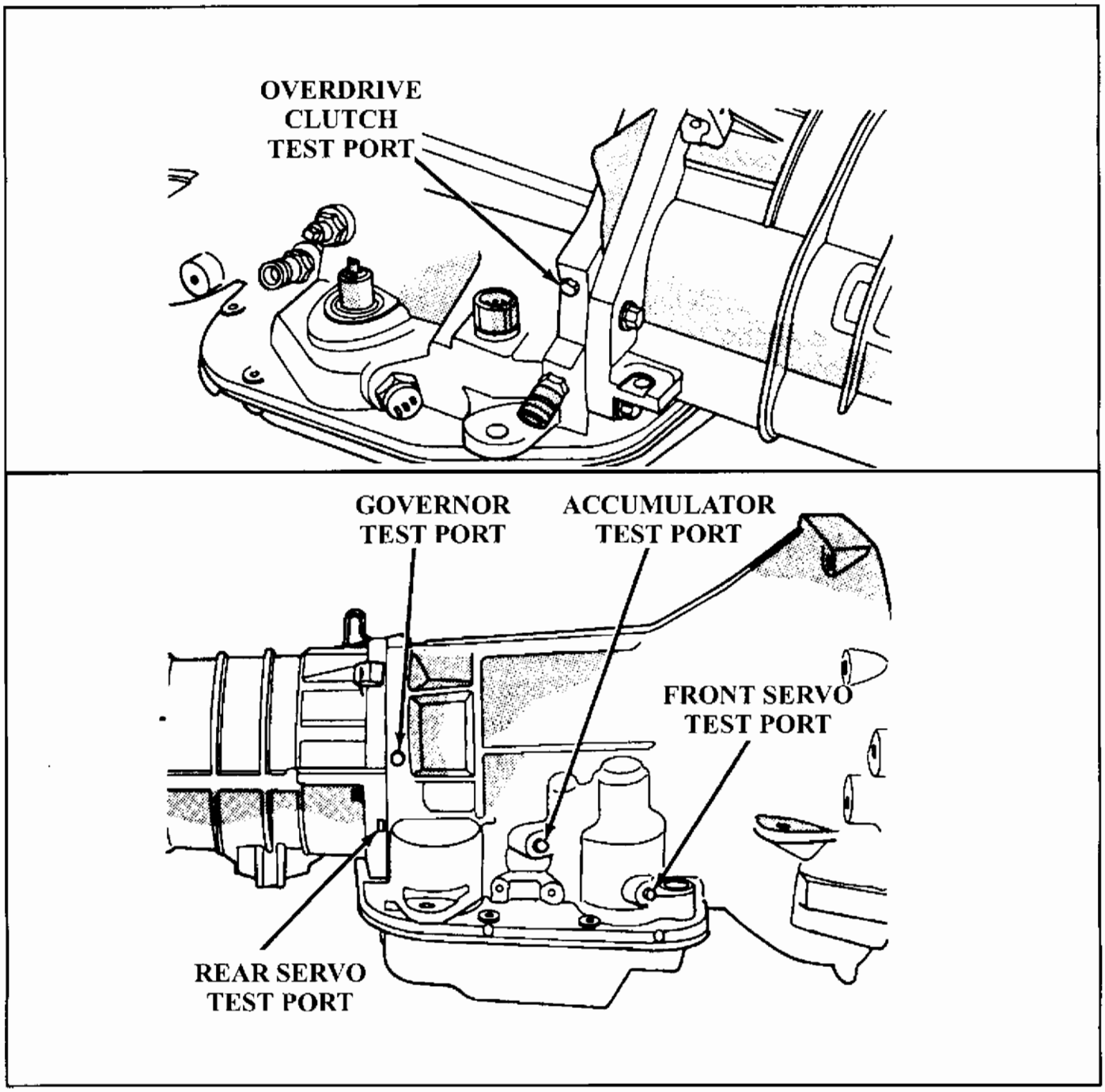


Figure 5

CHRYSLER 42RE-47RE
CODE P1762 DIAGNOSIS

COMPLAINT: Some 1996-99 vehicles equipped with the 42-47RE transmissions may exhibit a continual trouble code 1762, Governor Sensor Offset volts or ***drift*** too low or too high, before or after overhaul. This means that governor pressure, which is determined from the governor sensor, is higher or lower than the amount the computer has commanded.

CAUSE: The cause may be,

- A defective governor pressure solenoid causing pressure to be too high.
- A defective governor pressure sensor.
- An open or shorted ground wire leading to the governor pressure sensor. See the note in Figure 4.
- A system voltage overcharge, due to an alternator problem, causing the 5 volt feed to the sensor to be closer to 6 volts. This can cause the signal return voltage to be higher than .76 volts when the selector is in Park or Neutral.

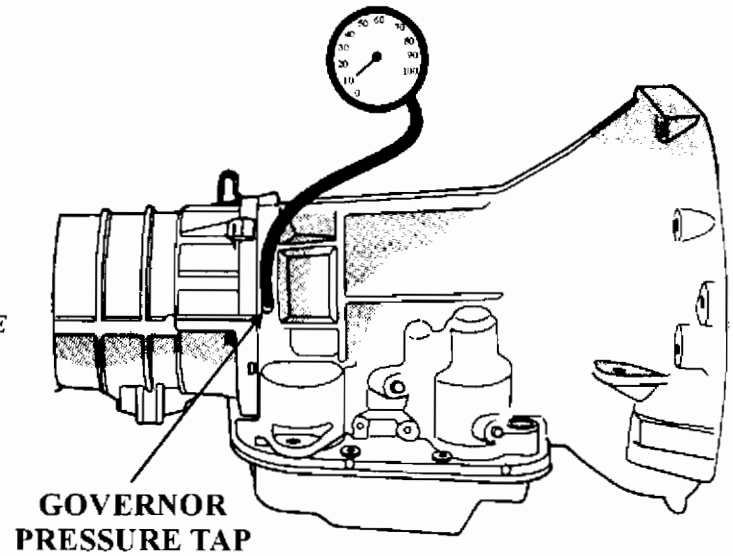
CORRECTION: Refer to the corrections below to repair this condition,

- To verify the operation of the Governor Pressure Solenoid: Connect scan tool to OBD-II connector and monitor the Governor Pressure ***Desired*** parameter. This reading is the command line to the Governor Solenoid and should be the same as the Governor Pressure ***Actual*** parameter . ***Example***: If the ***Desired*** is 0 at 0 mph. and the ***Actual*** is 20psi., refer to Figure 1, and connect a 0-100 psi. gage to the governor pressure port. If the pressure gage indicates a reading of 20 psi. this will indicate that the solenoid is not doing it's job, and replacement is necessary.
- Refer to Figure 2 for identification of the Governor Pressure Sensor and to Figure 3 for diagnosis chart, to verify the operation of the Sensor.

SERVICE INFORMATION:

Governor Pressure Solenoid 4617210
Governor Pressure Sensor (96-99) ..... (90°)56041403-AA

GOVERNOR PRESSURE TEST

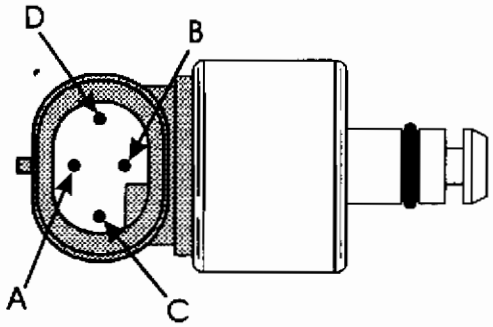


GOVERNOR PRESSURE SHOULD MATCH VEHICLE SPEED

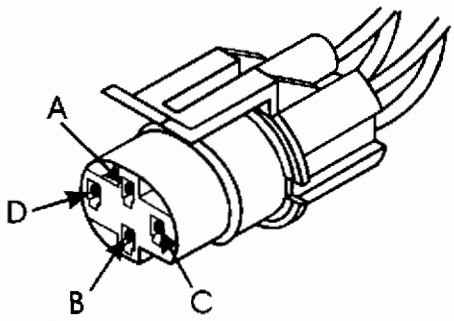
GOVERNOR PRESSURE TAP

Figure 1

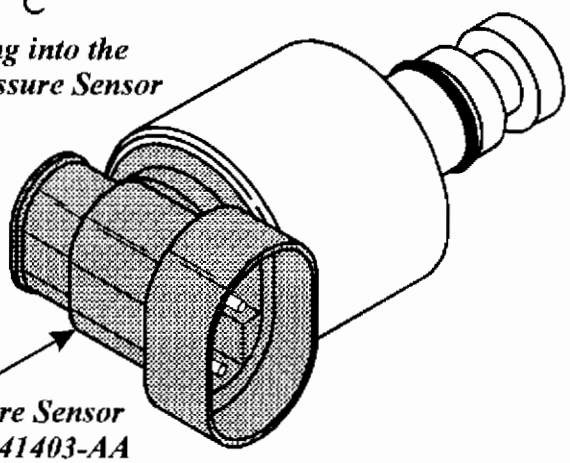
"3RD DESIGN" 4 PIN "90 DEGREE" GOVERNOR PRESSURE SENSOR WITH "TFT" INCORPORATED INSIDE THE SENSOR



View looking into the Governor Pressure Sensor



View looking into "3rd Design" Governor Pressure Sensor Connector



Governor Pressure Sensor Part Number 56041403-AA

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

Figure 2

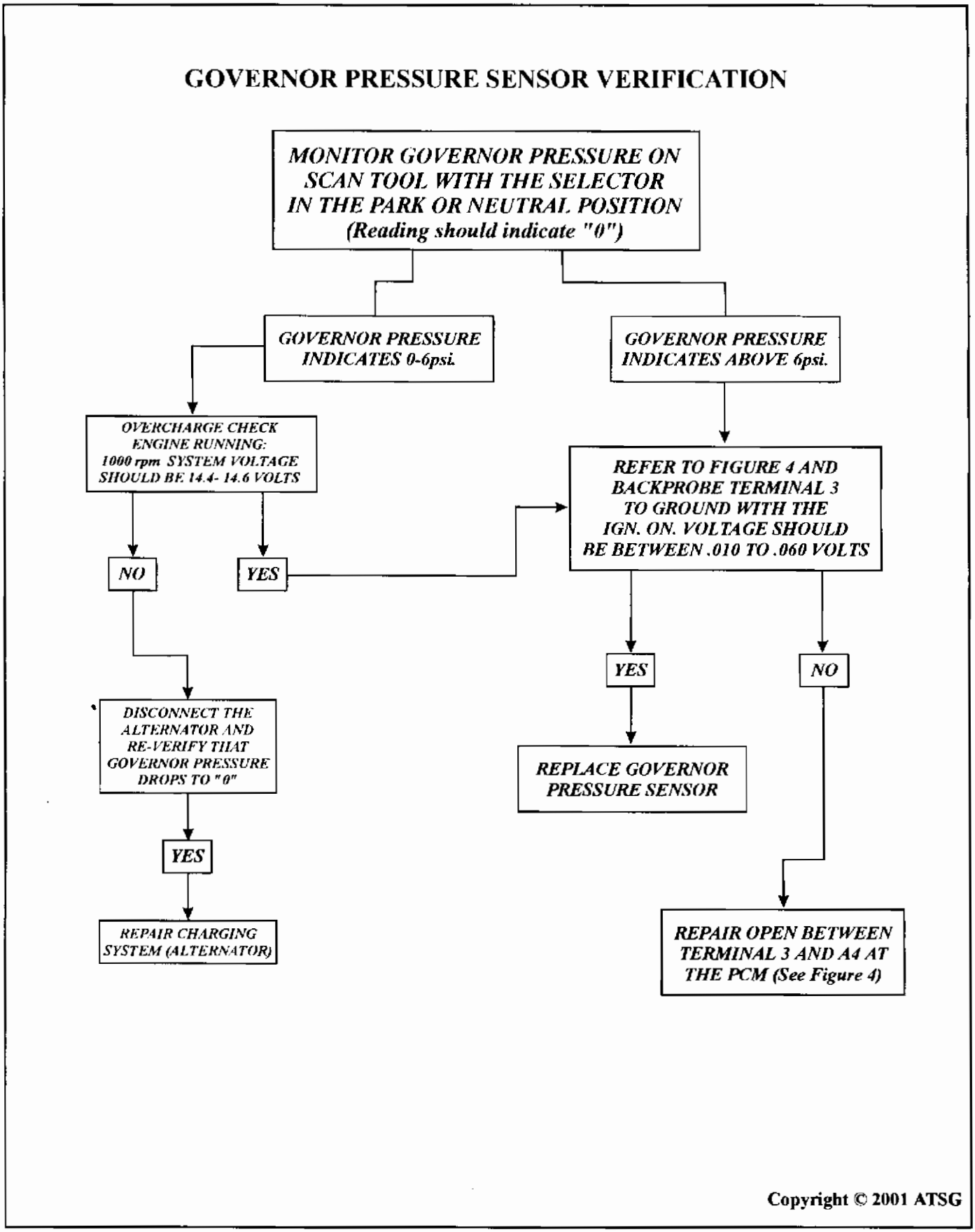

GOVERNOR PRESSURE SENSOR VERIFICATION
MONITOR GOVERNOR PRESSURE ON SCAN TOOL WITH THE SELECTOR IN THE PARK OR NEUTRAL POSITION (Reading should indicate "0")
GOVERNOR PRESSURE INDICATES 0-6psi.
GOVERNOR PRESSURE INDICATES ABOVE 6psi.
OVERCHARGE CHECK ENGINE RUNNING: 1000 rpm SYSTEM VOLTAGE SHOULD BE 14.4- 14.6 VOLTS
NO
YES
REFER TO FIGURE 4 AND BACKPROBE TERMINAL 3 TO GROUND WITH THE IGN. ON. VOLTAGE SHOULD BE BETWEEN .010 TO .060 VOLTS
YES
NO
DISCONNECT THE ALTERNATOR AND RE-VERIFY THAT GOVERNOR PRESSURE DROPS TO "0"
REPLACE GOVERNOR PRESSURE SENSOR
YES
REPAIR CHARGING SYSTEM (ALTERNATOR)
REPAIR OPEN BETWEEN TERMINAL 3 AND A4 AT THE PCM (See Figure 4)
Copyright © 2001 ATSG

Figure 3

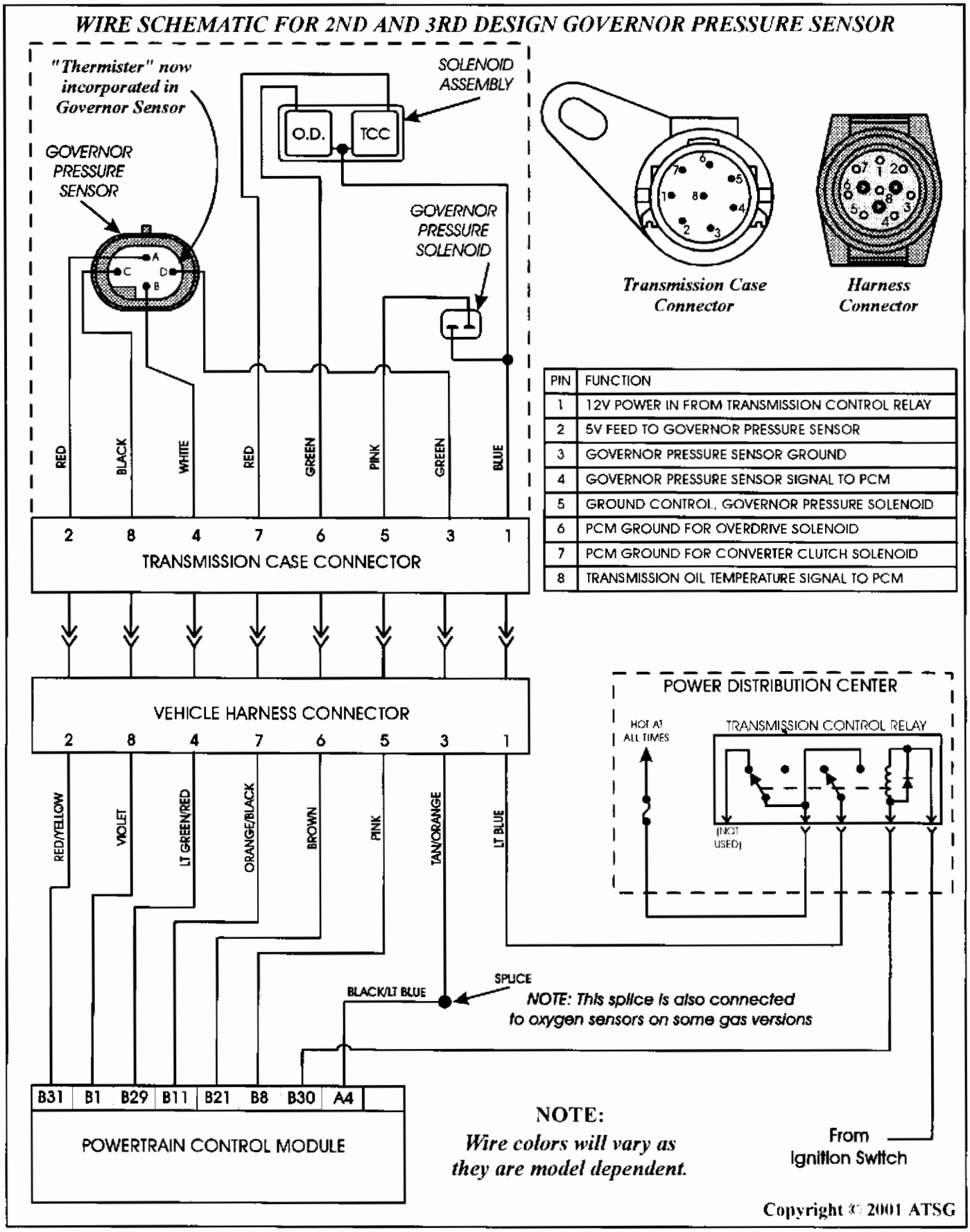

WIRE SCHEMATIC FOR 2ND AND 3RD DESIGN GOVERNOR PRESSURE SENSOR
"Thermister" now incorporated in Governor Sensor
SOLENOID ASSEMBLY
O.D.
TCC
GOVERNOR PRESSURE SENSOR
GOVERNOR PRESSURE SOLENOID
A
B
C
D
RED
BLACK
WHITE
RED
GREEN
PINK
GREEN
BLUE
2 8 4 7 6 5 3 1
TRANSMISSION CASE CONNECTOR
Transmission Case 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
NOTE: This splice is also connected to oxygen sensors on some gas versions
B31 B1 B29 B11 B21 B8 B30 A4
POWERTRAIN CONTROL MODULE
NOTE:
Wire colors will vary as they are model dependent.
From Ignition Switch
Copyright © 2001 ATSG

Figure 4

CHRYSLER
47RE TCC SHUTTLE

COMPLAINT: Some 1998-1999 Ram trucks, equipped with the 5.9 24 valve Diesel engines, may exhibit Torque Converter Clutch shuttling or erratic on/off cycling of the Converter Clutch.

CAUSE: The cause may be, "Electrical noise from the Throttle Position Sensor or Alternator."

DIAGNOSIS: Warm the Vehicle to operating temperature, with a scan tool attached to the diagnostic connector and drive the vehicle with the assistance of another technician monitoring the scan tool. Bring the vehicle up to where the output shaft speed sensor is reading above 2200 rpm. Hold the throttle so the TPS reading is at 1 volt. Monitor the Torque Converter Clutch status to see if it is cycling on and off, when it should stay on. If it is, monitor tps voltage to see if it is fluctuating 0.2 volts or more. If it is, the PCM will have to be re-flashed.

CORRECTION: Refer to Chrysler Technical Bulletin number 18-02-99, Group-Vehicle Performance, Date: Feb. 19, 1999. This bulletin will give the technician the procedure and the part numbers for the software updates to be performed. This procedure can only be performed with the use of a DRBIII® and should help de-sensitize the PCM so the TCC can stay locked up.

DRIVETEK

DriveTek, Transmission Academy
The ONLY year round, comprehensive transmission training facility in the United States.

Offering a full range of training - year round

* **How to diagnose tranny problems**
* **How to remove trannys faster**
* **How to reinstall trannys more accurately**
* **How to reduce the risk of comebacks**
* **How to tear down the unit with speed and organization**
* **How to rebuild specific units**

Only six (6) students per instructor

Hands-on training/instruction with live cores and dyno testing

Classes begin each Monday

Housing available during training

Airport drop off/pickup available

Daily transportation to and from training center provided

For additional information and Diverse funding options for employers/owners, Call:

812-284-2930

e mail: DriveTek 1@ aol.com

DriveTek is owned by

Becky Ramer

AC0022

213 East Market Street
Jeffersonville, IN 47130
Phone: 812-284-2930
Fax: 812-284-1981
E-mail: drivetek1@aol.com

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

ANOTHER GOVERNOR PRESSURE SENSOR AND SOLENOID ASSEMBLY HARNESS DESIGN CHANGE

CHANGE: Beginning in the model year 2000, Chrysler Corporation introduced another new governor pressure sensor (transducer), as a running change, which also required another internal wiring harness for all Chrysler 42RE, 44RE, 46RE and 47RE transmissions. This is now the 4th design governor pressure sensor that we have seen and we will cover all 4 design level changes that have occured to date, in this bulletin.

PARTS AFFECTED:

1ST DESIGN:

Originally, the Governor Pressure Sensor/Transducer was a 3 terminal sensor, with the Transmission Fluid Temperature (TFT) Sensor mounted on the Overdrive/TCC Solenoid.
The original 3 wire sensor is illustrated in Figure 1, and the wiring schematic for these models is shown in Figure 5.

2ND DESIGN:

Beginning at the start of production for all 1996 models, Chrysler incorporated the externally mounted TFT sensor into a new design governor sensor, which required a fourth pin to be added to the new sensor. This also necessitated an internal harness change, to accommodate the redesigned 4 terminal governor sensor.

Reason: - Increased Transmission Fluid Temperature Sensor accuracy for improved reliability and durability.
The 2nd design 4 wire sensor is illustrated in Figure 2, and the wiring schematic for these models is shown in Figure 6. Each terminal in the new sensor has been identified with the letters A, B, C and D, as shown in Figures 2 and 6.

3RD DESIGN:

Late in the 1996 model year, Chrysler again changed the connector on the governor pressure sensor, from the previous straight, to a 90 degree connector. This change however, did not require a new internal harness and solenoid assembly.

Reason: - Relieved the stress on the internal harness connector, and once again improved reliability and durability.
The 3rd design 4 wire, 90 degree sensor is illustrated in Figure 3, and the wiring schematic for these models is shown in Figure 6. Each terminal in the new sensor has been identified with the letters A, B, C and D, as shown in Figures 2 and 6.

Continued On Next Page

PARTS AFFECTED: (Cont'd From Previous Page)

4TH DESIGN:

During the 2000 model year, Chrysler Corporation introduced another new governor pressure sensor (transducer), as a running change, which also required another new internal wiring harness, to accommodate the new sensor. The 4th design governor sensor is made of plastic and has four larger "spade" type terminals, transmits a different signal, has a redesigned connector and a shorter snout where it goes into the adapter body.

Reason: - More cost effective because of the material, and the shorter snout allows a much improved flow of governor oil to the sensor, for greatly improved accuracy and reliability. Refer to Figure 8 for illustrations of 3rd and 4th design sensors in the adapter housing.

The 4th design 4 wire, 90 degree sensor is illustrated in Figure 4, and the wiring schematic for these models is shown in Figure 7. Each terminal in the new sensor has been identified with the numbers 1, 2, 3 and 4, as shown in Figures 4 and 7. The 4th design level is illustrated mounted on the valve body in Figure 8. There is also a new design retainer that is required for the 4th design level parts and is illustrated in Figure 8.

INTERCHANGEABILITY:

1st Design Level - 3 pin sensor is not recommended for use in any model, and is no longer available from OEM parts department.

2nd Design Level - Will retro-fit back on all models, but requires the upgraded internal harness and solenoid assembly. This one also is not recommended and is no longer available.

3rd Design Level - Will retro-fit back on all models, but requires the upgraded internal harness and solenoid assembly, part number 52118500, as shown below.

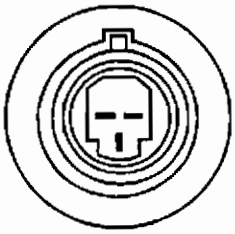
4th Design Level - "Will Not" retro-fit back. The 4th design level, is for 2000 model year and later only, that are so equipped. Some 2000 models may be equipped with the 3rd design level parts. 3rd Design level parts must be used in 3rd design level vehicles, and 4th design level parts must be used in 4th design level vehicles. ***They will not interchange!***

SERVICE INFORMATION:

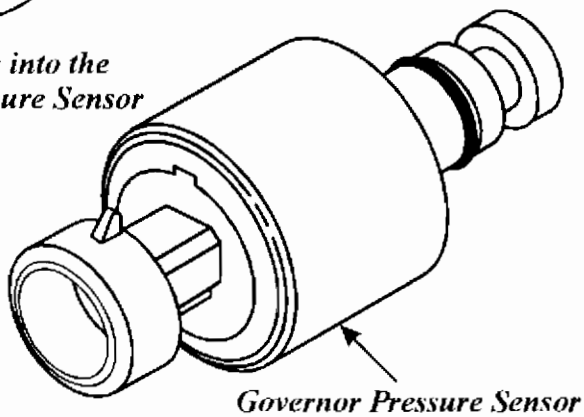
Governor Pressure Sensor/Transducer (3rd Design Level)	56041403AA
Internal Harness And Solenoid Assembly (3rd Design Level)	52118500
Retaining Clip (3rd Design Level)	4617219
Governor Pressure Sensor/Transducer (4th Design Level)	56028196AA
Internal Harness And Solenoid Assembly (4th Design Level)	52118500AB
Retaining Bracket (4th Design Level)	52117937AB

"1ST DESIGN" 3 PIN GOVERNOR PRESSURE SENSOR WITH "TFT" LOCATED ON SOLENOID ASSEMBLY

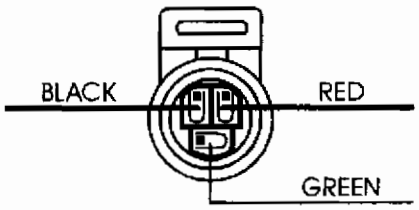
No Longer Available For Service.



View looking into the Governor Pressure Sensor



Governor Pressure Sensor

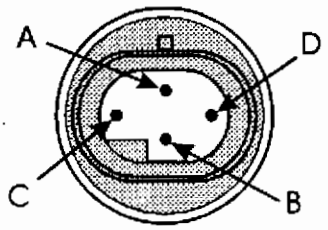


View looking into the "1st Design" Sensor Harness Connector

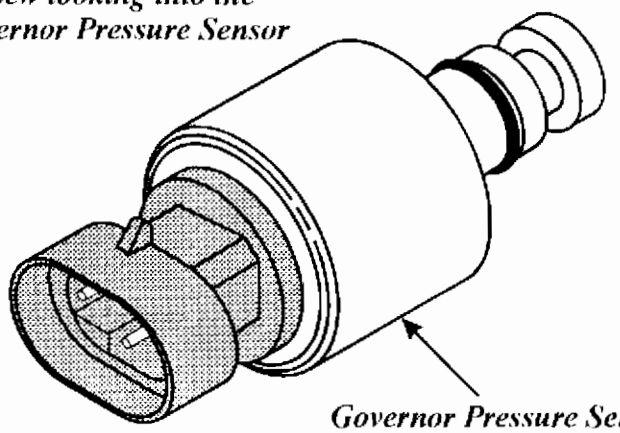
Figure 1

"2ND DESIGN" 4 PIN "STRAIGHT" GOVERNOR PRESSURE SENSOR WITH "TFT" INCORPORATED INSIDE THE SENSOR

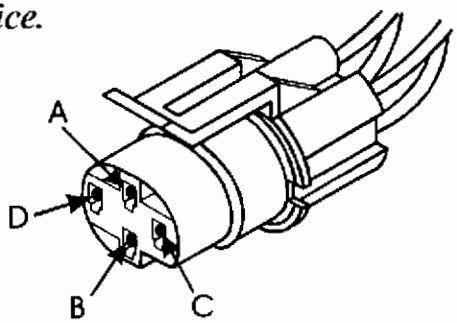
No Longer Available For Service.



View looking into the Governor Pressure Sensor



Governor Pressure Sensor



View looking into "2nd 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

Figure 2

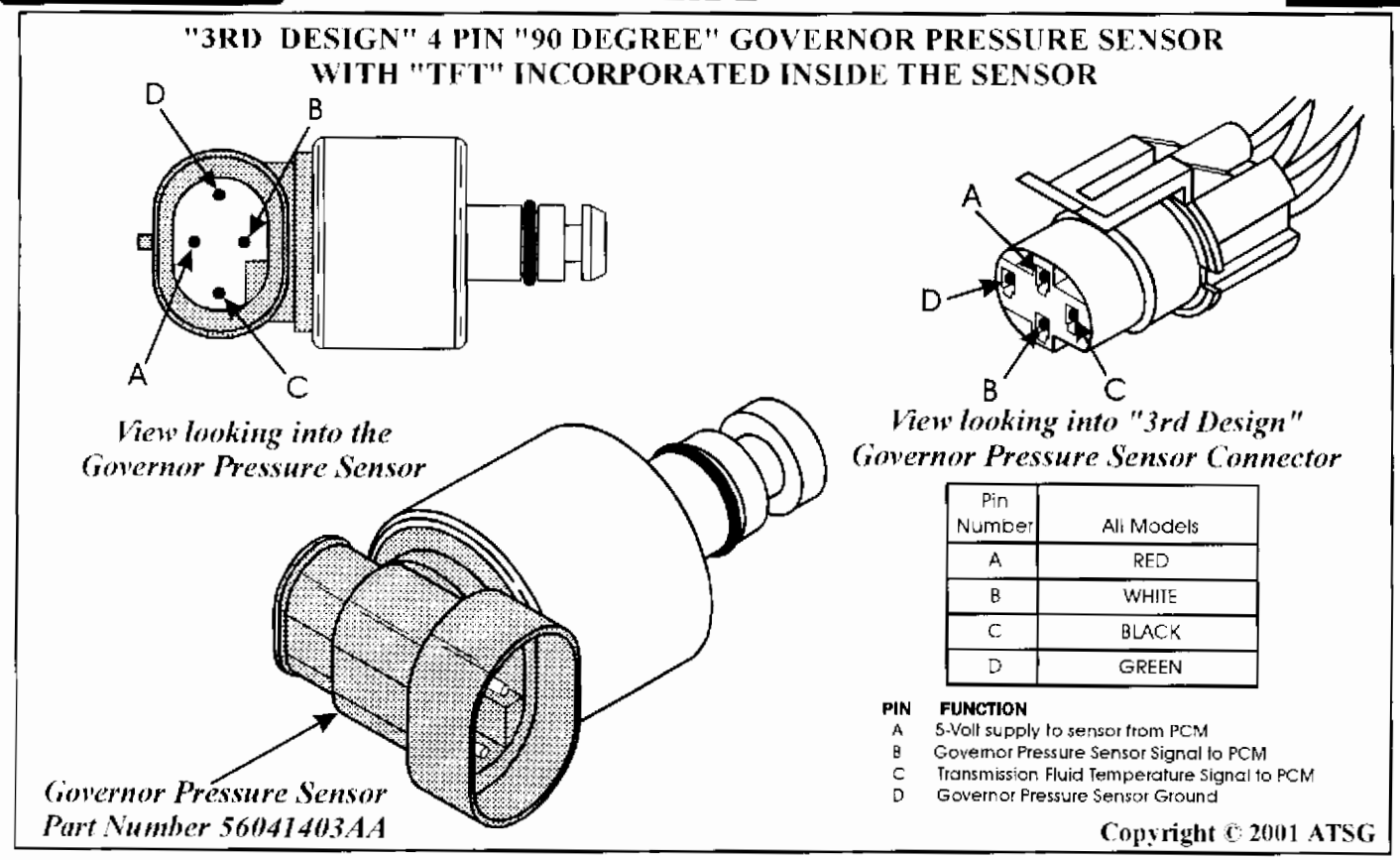


Figure 3

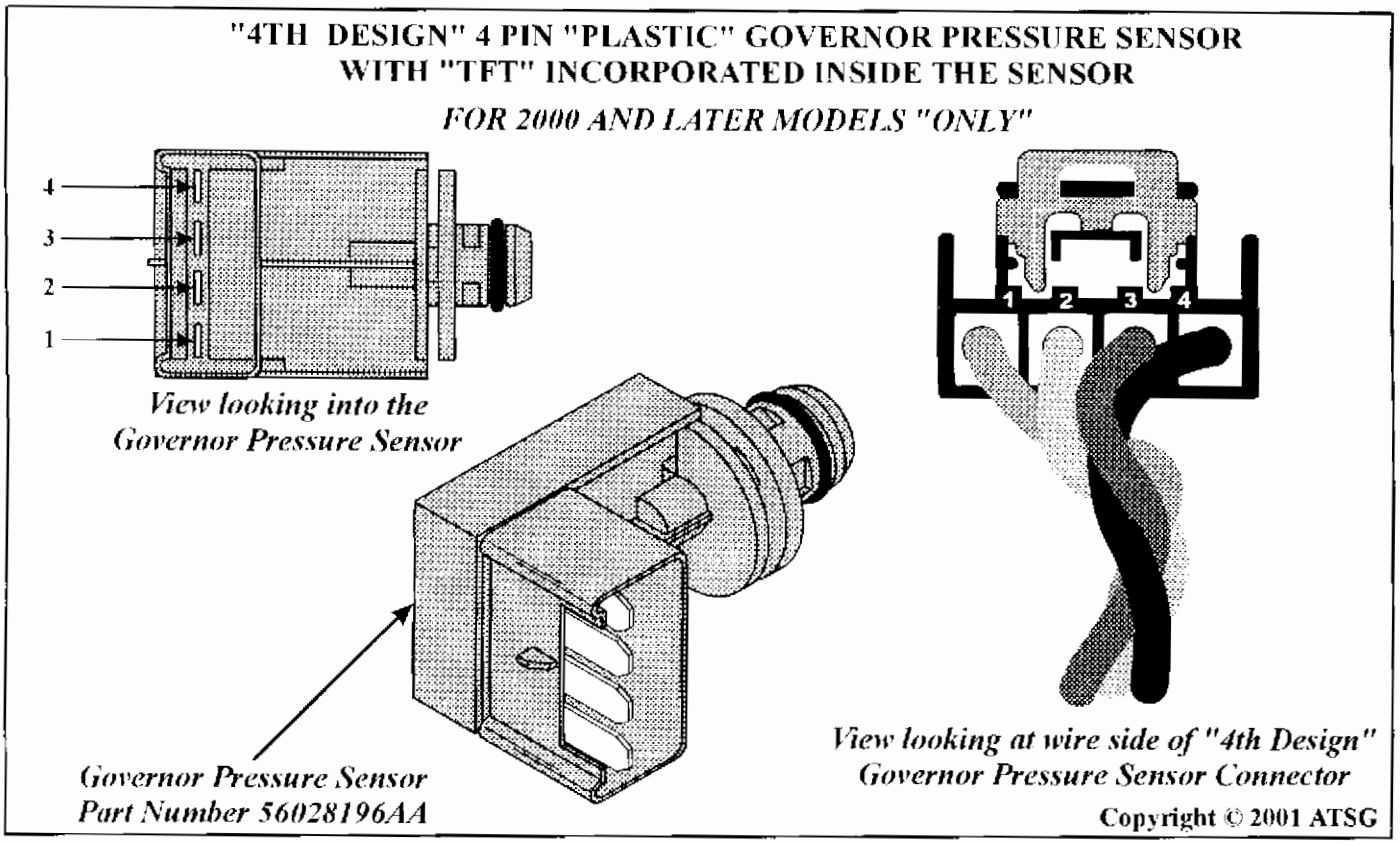
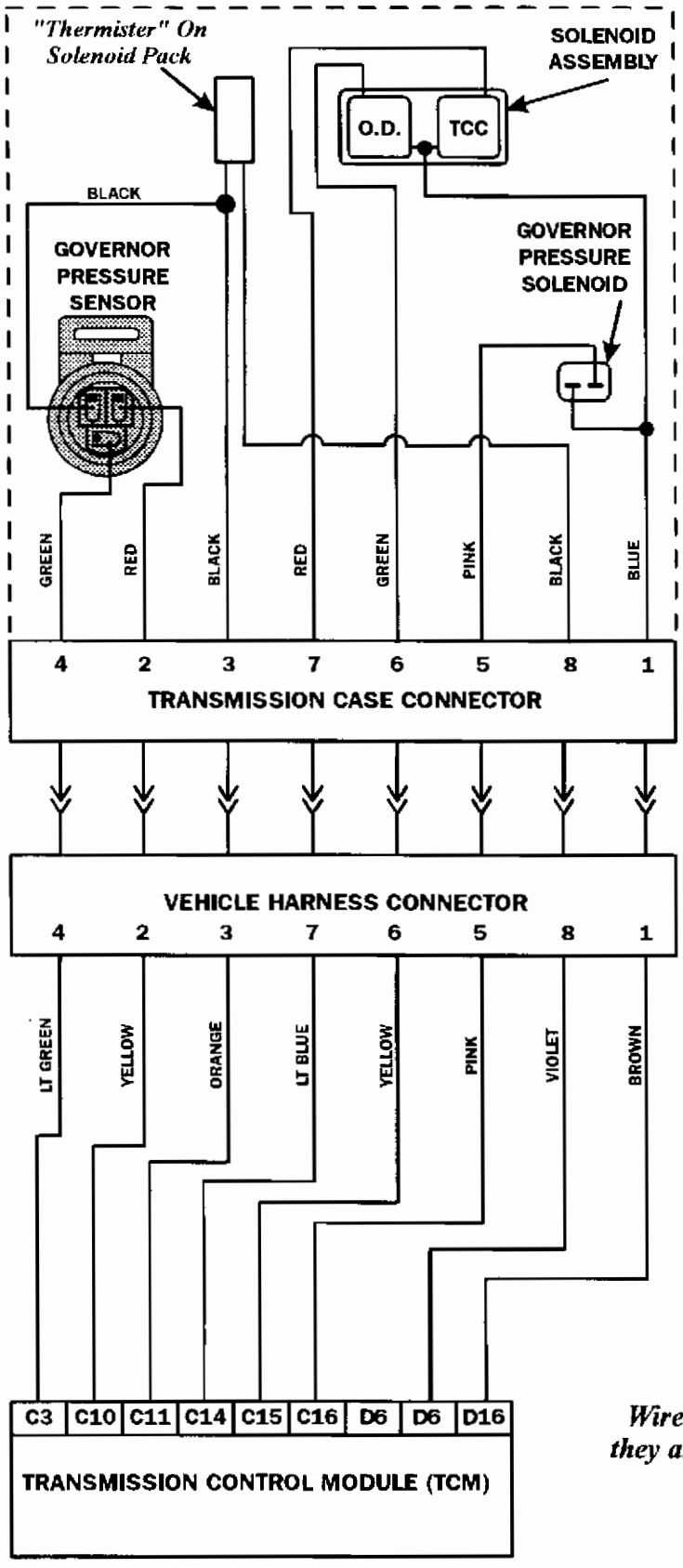
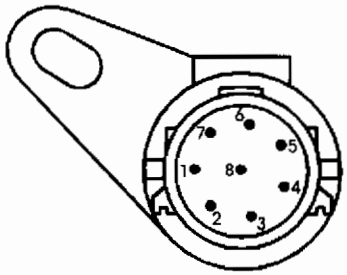


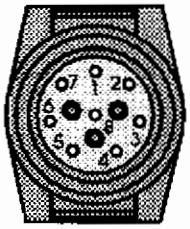
Figure 4

WIRE SCHEMATIC FOR 1ST DESIGN GOVERNOR PRESSURE SENSOR





Transmission Case Connector



Harness Connector

PIN	FUNCTION
1	12V POWER IN FROM TCM TERMINAL D16
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

NOTE:
Wire colors will vary as they are model dependent.

Figure 5

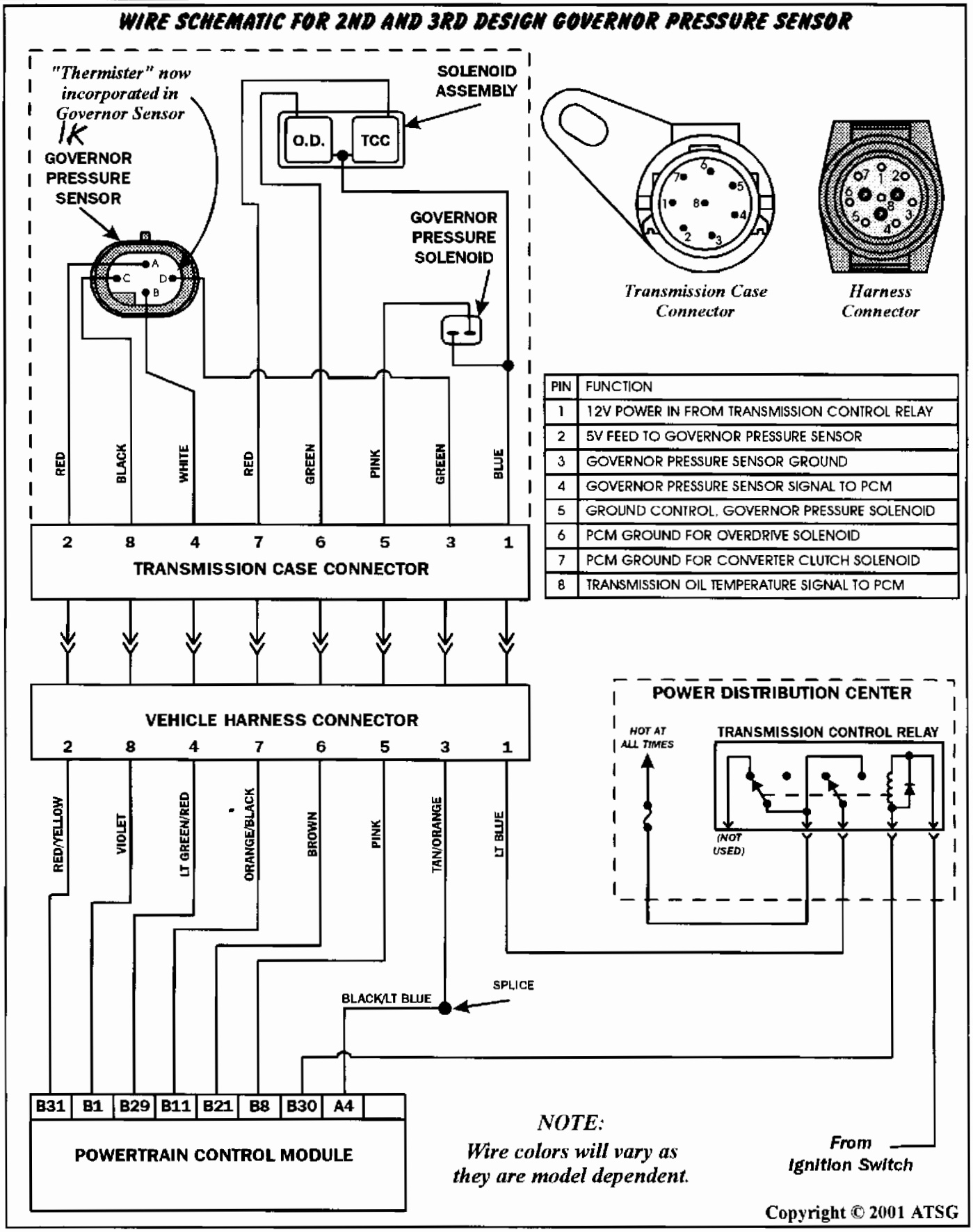

WIRE SCHEMATIC FOR 2ND AND 3RD DESIGN GOVERNOR PRESSURE SENSOR
"Thermister" now incorporated in Governor Sensor
IK
GOVERNOR PRESSURE SENSOR
SOLENOID ASSEMBLY
O.D.
TCC
GOVERNOR PRESSURE SOLENOID
A
B
C
D
RED
BLACK
WHITE
RED
GREEN
PINK
GREEN
BLUE
2 8 4 7 6 5 3 1
TRANSMISSION CASE CONNECTOR
Transmission 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
Copyright © 2001 ATSG

Figure 6

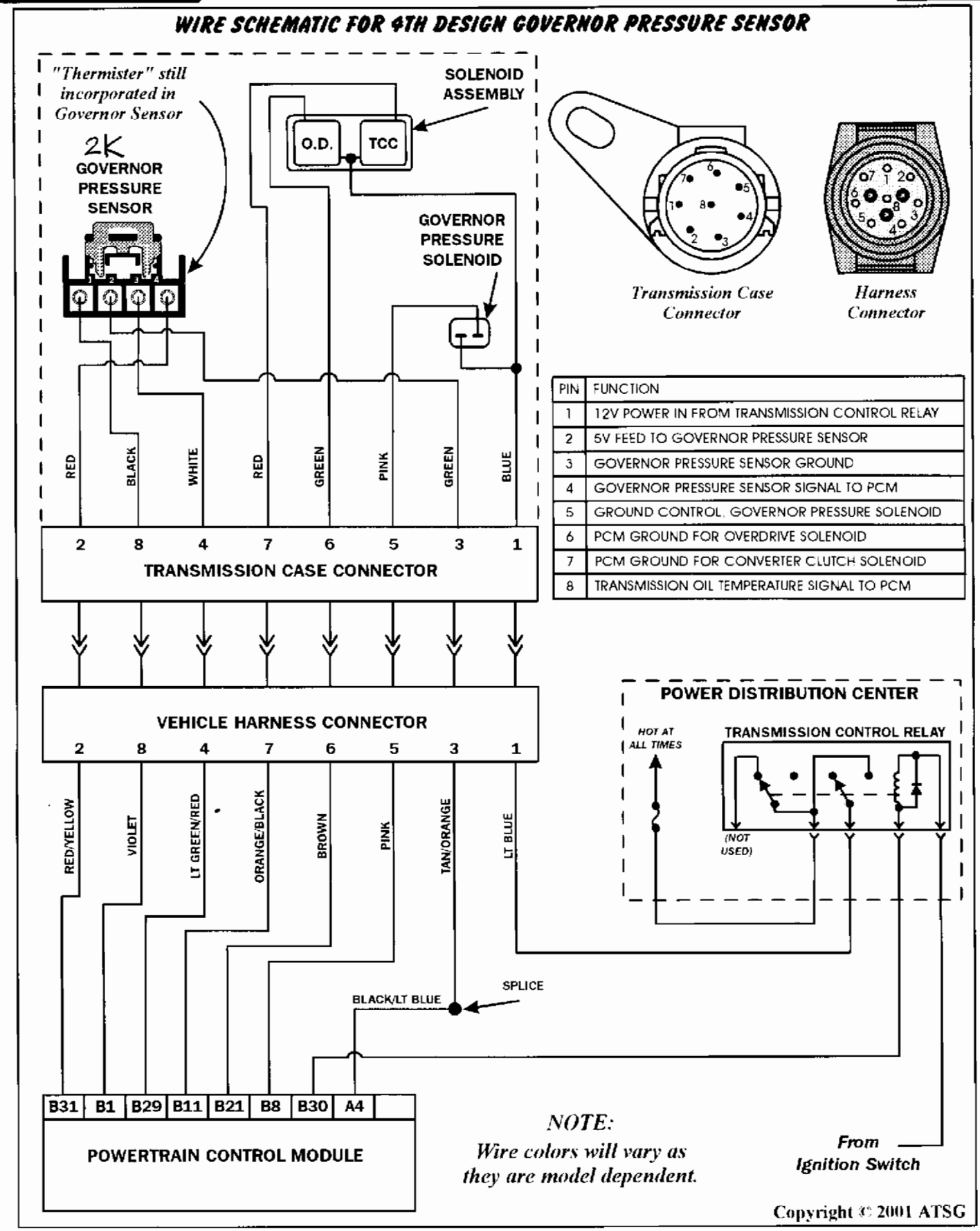
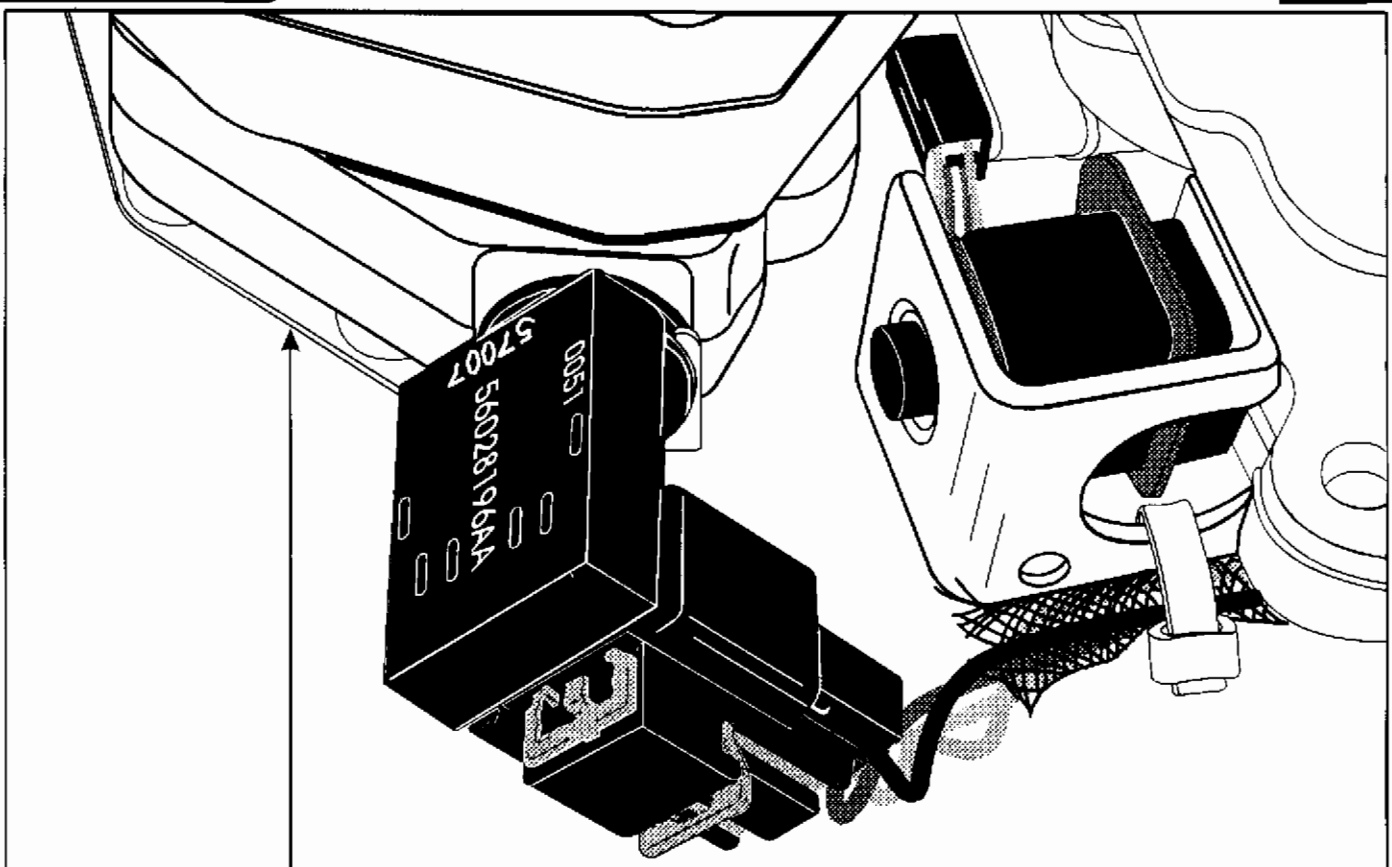
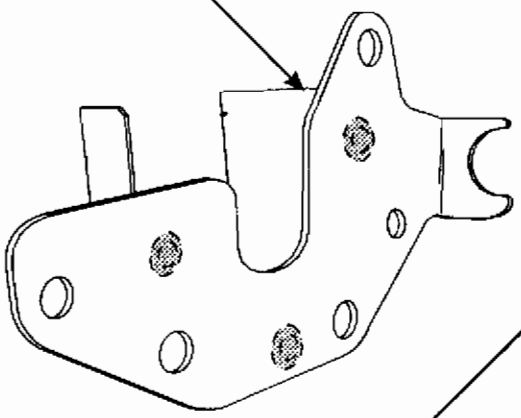

WIRE SCHEMATIC FOR 4TH DESIGN GOVERNOR PRESSURE SENSOR
"Thermister" still incorporated in Governor Sensor
2K GOVERNOR PRESSURE SENSOR
SOLENOID ASSEMBLY
O.D.
TCC
GOVERNOR PRESSURE SOLENOID
Transmission Case Connector
Harness Connector
PIN FUNCTION
1 12V POWER IN FROM TRANSMISSION CONTROL RELAY
2 5V FEED 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
RED
BLACK
WHITE
RED
GREEN
PINK
GREEN
BLUE
2 8 4 7 6 5 3 1
TRANSMISSION CASE CONNECTOR
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
SPLICE
BLACK/LT BLUE
B31 B1 B29 B11 B21 B8 B30 A4
POWERTRAIN CONTROL MODULE
NOTE:
Wire colors will vary as they are model dependent.
From Ignition Switch
Copyright © 2001 ATSG

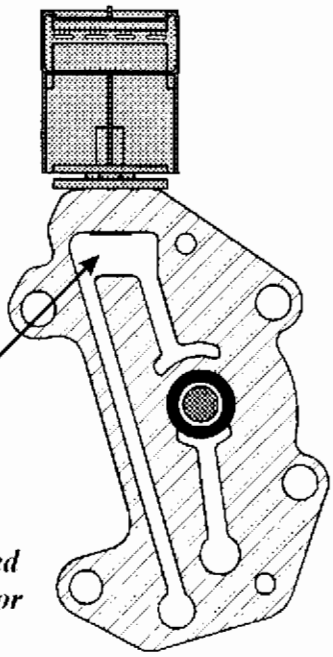
Figure 7



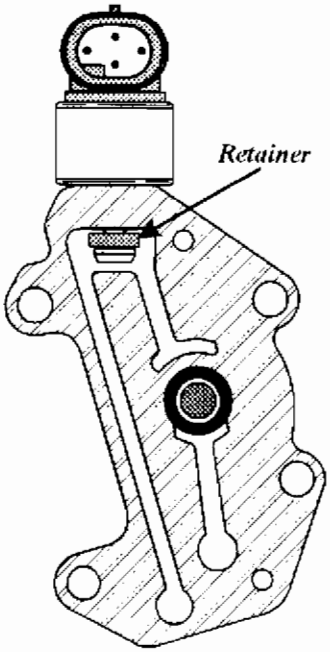
New Hold Down Bracket Required
For 4th Design Level Sensor
Part Number 52117937AB



4th Design



3rd Design



4th Design Allows Unobstructed
Flow Of Governor Oil To Sensor

Viewed From Bottom Of Adapter Housing

Figure 8

WORLDWIDE
TRANSMISSION GROUP

WE CARRY OVER 500 DIFFERENT TYPES OF UNITS IN STOCK, AT ALL TIMES

- Transmissions (Stick and Automatic)
- Transfer cases
- Foreign and Domestic
- From 1980 to Present
- From cars to one ton trucks

We are your complete Hard Parts Supplier
Good Used
Rebuilt
New
Automatic & Standard

Buyers & Sellers

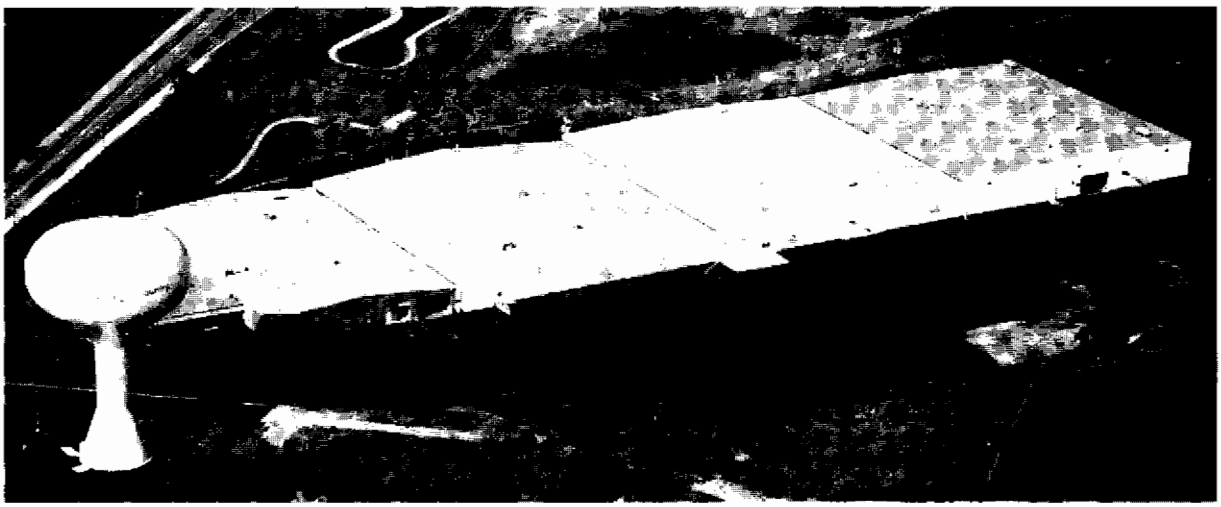
- Core, good used, new
- Large inventory in stock

Units are sold at your request:

- Cores (as is, complete not broken)
- Buildable (guaranteed all hard parts and/or all gears)
- Take out (good used units, guaranteed 90 days)
- New

"Hard to find our specialty"

1-800-822-1436



WORLDWIDE TRANSMISSION CORE SUPPLY INC. 650 CHURCH STREET, LAKE ZURICH, IL 60047
PHONE: 847-550-8152 FAX: 847-550-8183

1996 AND NEWER DODGE & JEEP VEHICLES

PCM CONNECTOR REPAIR KIT

COMPLAINT: Deteriorated PCM connectors causing a variety of Diagnostic Trouble Codes.

CAUSE: The PCM on 1996 and later vehicles is located in the engine compartment (See Figure 1). This location allows connectors A, B and C (See Figure 2) and their associated wiring plugging into the PCM to be subjected to engine compartment heat for sustained periods of time. This heat combined with weathering contributes to the deterioration of the connector.

CORRECTION: Chrysler/Dodge/Plymouth has made available PCM connector repair kits under the following part numbers:

Connector A (32 terminal Black C-1 connector)	56017957
Connector B (32 terminal White C-2 connector)	56018614
Connector C (32 terminal Grey C-3 connector)	56018615
20 wires with terminals on both ends and 40 pieces of heat shrink tubing	04882087
Connector Cover	56018606
Connector Plug	56038347

SERVICE PROCEDURE:

1. Record the memorized preset radio stations
2. Disconnect the battery or batteries on 5.9 L Diesel Cummins and isolate the cable ends.
3. Unplug the damaged connector from the PCM
4. Locate and inspect the connector lock tab and insulator for damage (See Figure 3). If it is damaged, the entire connector will need to be replaced.
5. Write down each wire color to its appropriate cavity location within the connector before disassembling the connector.
6. Next, pull on the wires individually. If they come out the connector will need to be disassembled to inspect the initial and final locks (See Figure 3).
7. To disassemble the connector, push in on the single locking tab as seen in Figure 4.
8. With Chrysler's special tool 6934 or one similar, insert the tool into the back of the insulator cavity alongside each wire removing them from the connector assembly one at a time as seen in Figure 5.
9. With all the wires removed from the connector, inspect the entire connector assembly as seen in Figure 3. If any of the parts are damaged, replace the connector assembly.
10. While the wires are out of the connector, inspect each terminal end for damage or corrosion. Place each terminal end onto the mating pin in the PCM and check for drag (See Figure 6). If any of the connections are loose, replace the wire.
11. Using the notations taken in step 5 of wire color and location, carefully assemble the new and/or repaired connector assembly. When all of the wires are in place, push the two locking tabs into place to secure the wire terminals in the connector assembly (See Figure 7).
12. Cross your fingers, attach the battery cable or cables, reset the radio station and pray that all your codes do not return.

1996 AND NEWER DODGE & JEEP VEHICLES

PCM CONNECTOR REPAIR KIT

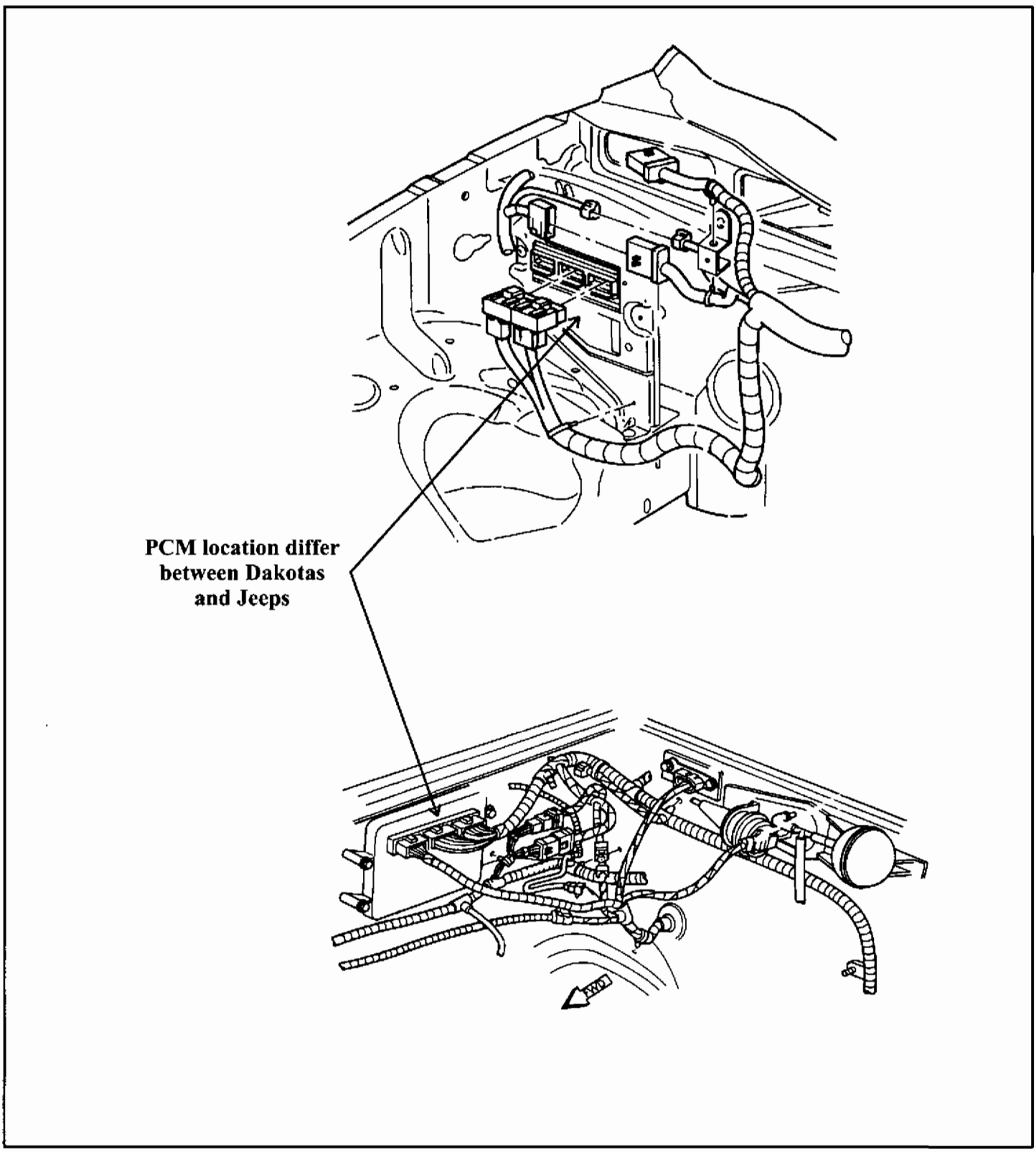


Figure 1

1996 AND NEWER DODGE & JEEP VEHICLES

PCM CONNECTOR REPAIR KIT

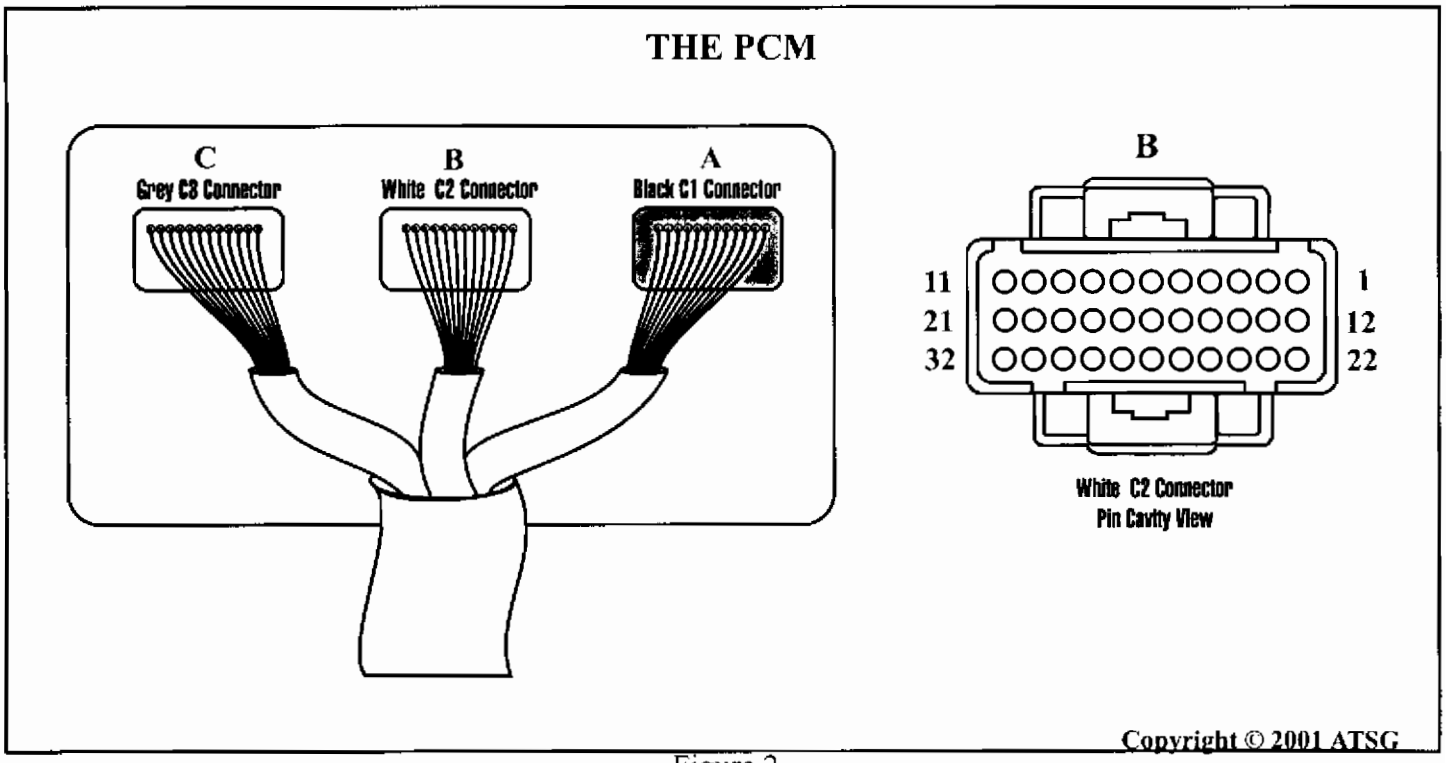


Figure 2

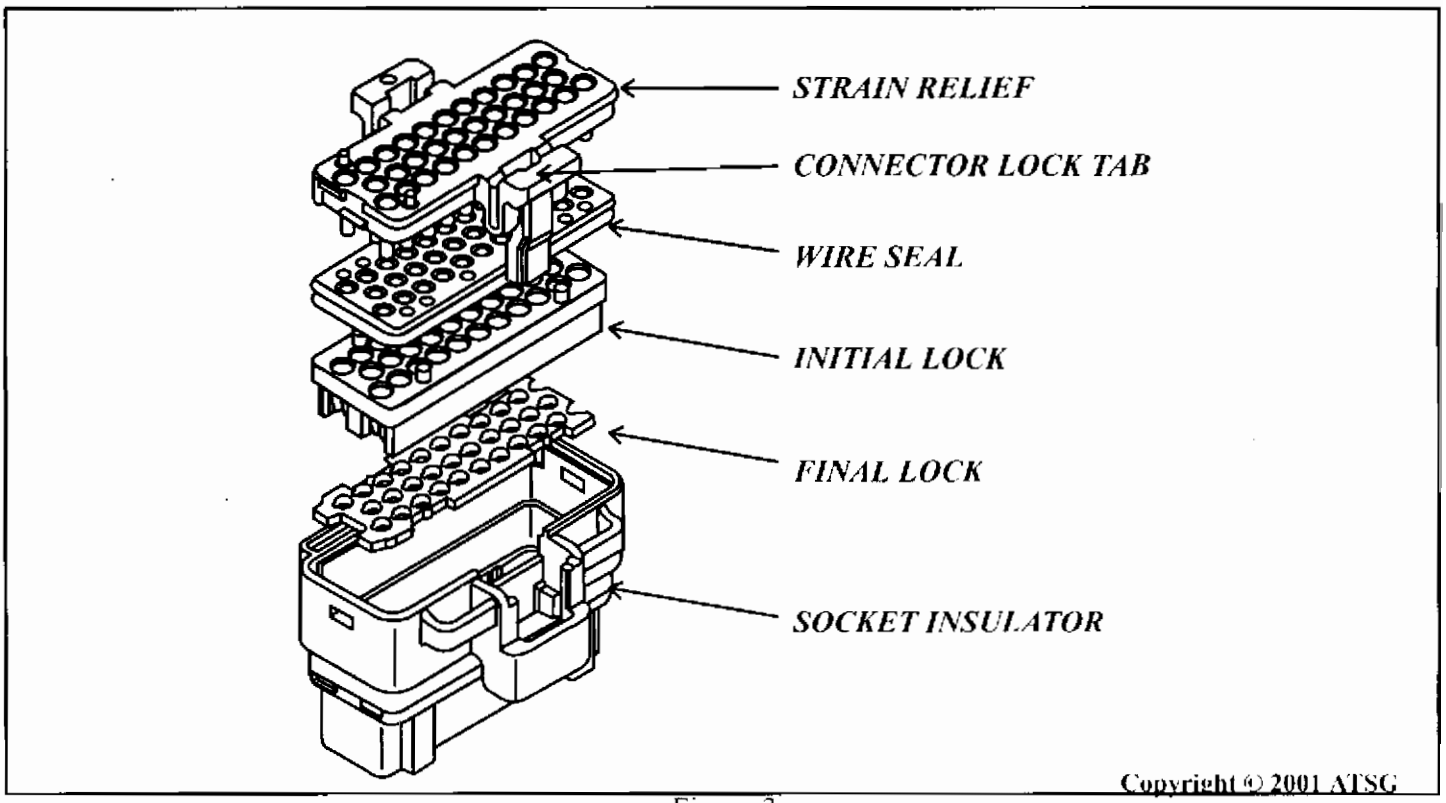


Figure 3

1996 AND NEWER DODGE & JEEP VEHICLES

PCM CONNECTOR REPAIR KIT

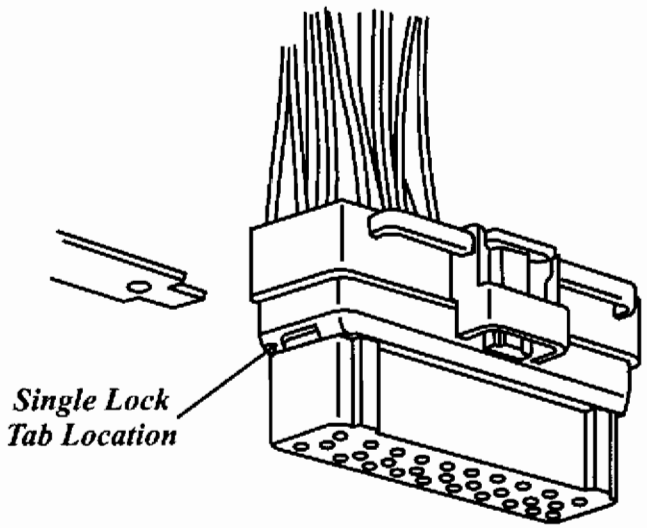
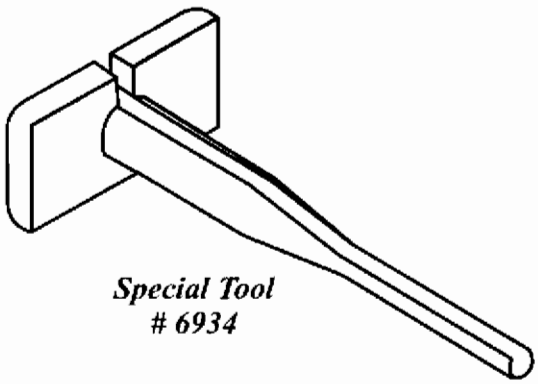


Figure 4



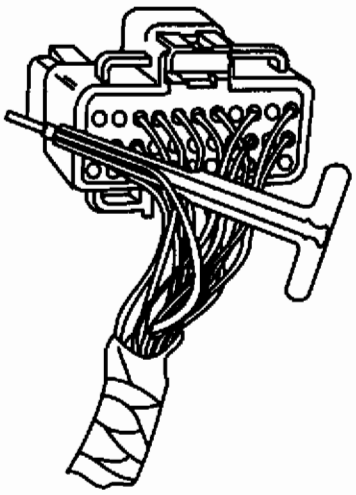


Figure 5

1996 AND NEWER DODGE & JEEP VEHICLES

PCM CONNECTOR REPAIR KIT

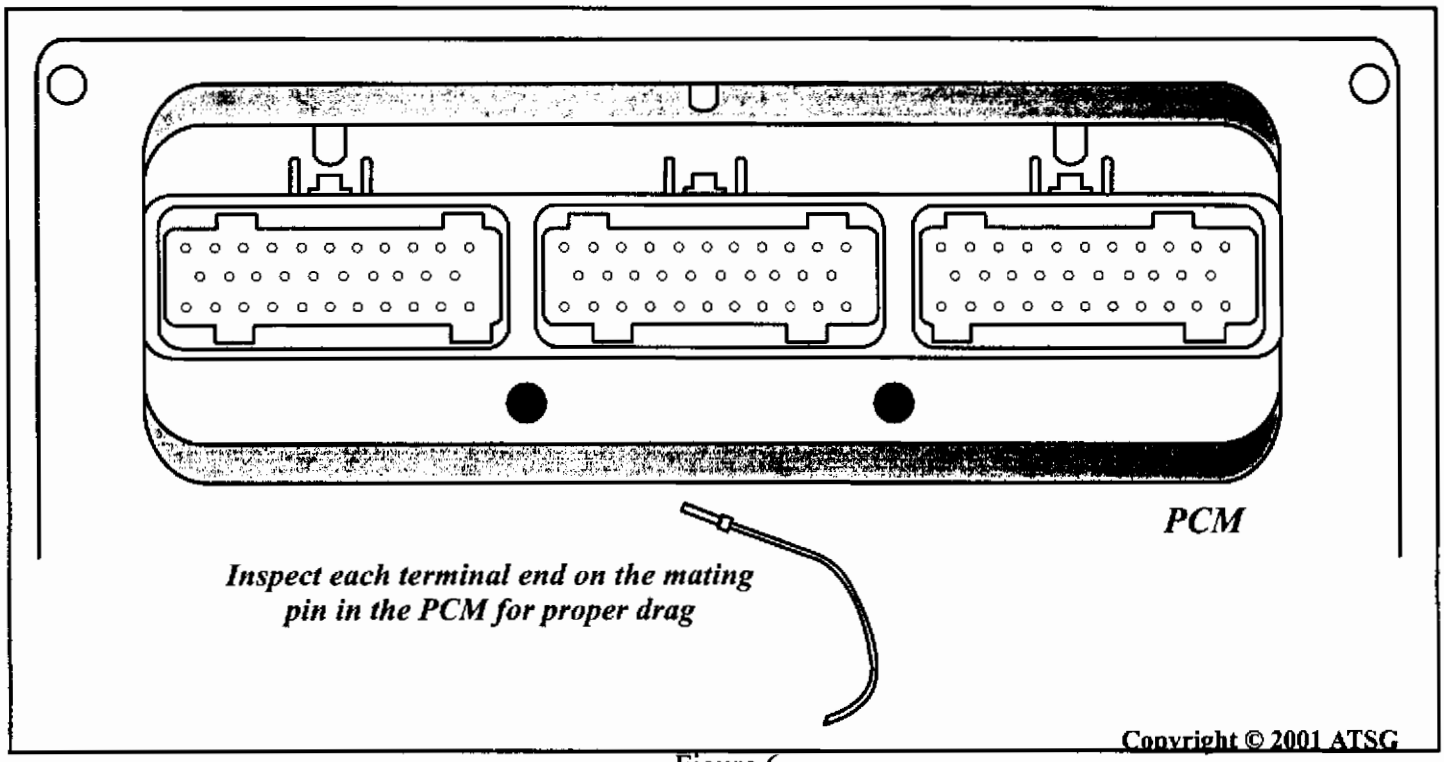


Figure 6

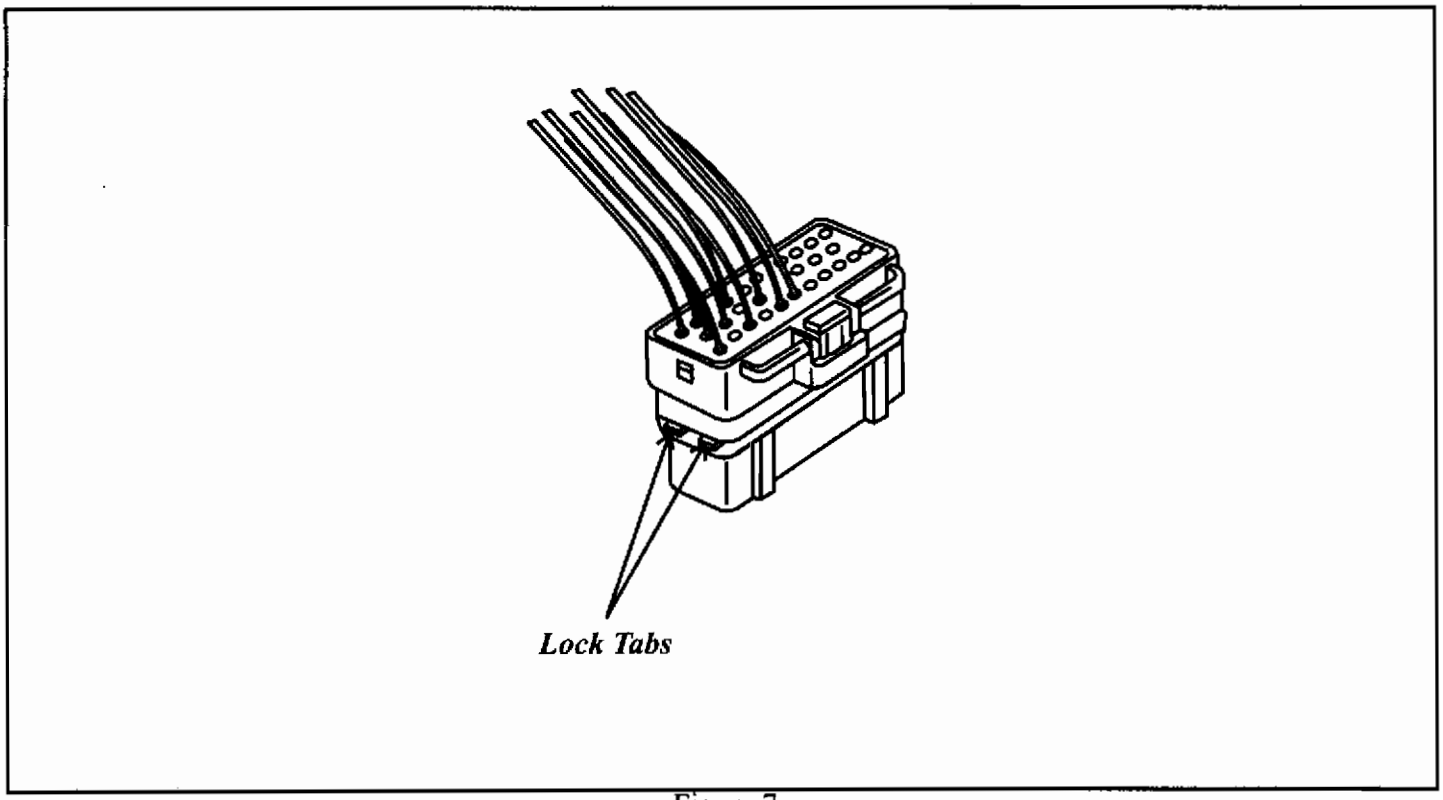


Figure 7

F
The RE Family
NO SHIFT QUICK SHIFT

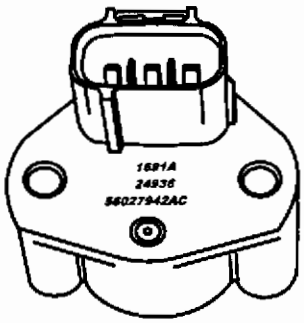
COMPLAINT: A no shift or a quick shift occurs after changing the TPS.

CAUSE: Mid 1999 and Later 4.7 liter Jeep Grand Cherokees had a design change to the TPS where idle voltage is at approximately 4.5 volts and wide open throttle voltage at approximately 0.5 volts (See Figure 1). This is opposite to the typical 0.5 volt to wide open throttle 4.5 volt Dodge/Jeep TPS (See Figure 1). If these TPS's are installed incorrectly, there will either be a no up shift condition or a stacked up shift condition. Although these TPS's have a significant difference in design, they both have the same style connector allowing the installation.

CORRECTION: Install the correct TPS.

AW4

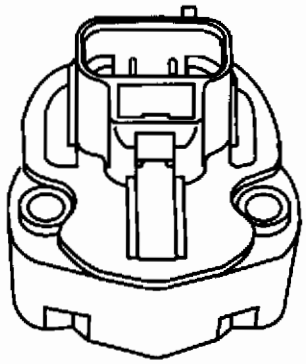
Previous style TPS
Idle Throttle Voltage Low
Open Throttle Voltage High



04874371AC

45RFE

Late style TPS
Idle Throttle Voltage High
Open Throttle Voltage Low



05017479AA

Figure 1

5.9 Liter Cummins Diesel Trucks

PREMATURE CONVERTER CLUTCH FAILURE

COMPLAINT: Dodge and Jeep 5.9 Liter Cummins Diesel vehicles may experience premature converter clutch failure. The friction material of the failed converter clutch may then restrict or stop all lubrication fluid by clogging the cooler in the radiator causing premature failure of the planetaries as well.

CAUSE: The premature failure of the Converter Clutch is the result of an accumulation of causes. The first being excessive tolerance levels in the converter making it very loose internally. Second, there is a very high speed difference between the turbine and the impeller at the time the clutch is applied. Thirdly, there are damper plate springs which load up to over 2000 pounds of tension when the clutch is applied during pulling conditions. When de-acceleration occurs, the energy from the springs releases in the opposite direction of engine rotation. Incorporate these conditions with perhaps the use of a Jake brake, engine speed trying to go to idle, converter clutch releasing and the weight of the vehicle, a momentary tie up (torque reversal) occurs with all the stress being transferred to the converter bolts. The pads attached to the cover slightly flex dimpling the internal clutch surface. With the clutch surface slightly dimpled, apply pressure drops as it leaks past the clutch into the exhausting release circuit. All these combinations work together resulting in premature failure of the clutch with its fragmented material finding its way into the cooler and valve body. This also leads to the unpleasant experience of a clogged cooler and planetary failure.

CORRECTION: Ideally, the correction is to have a customized converter made where the internal tolerance is brought down to a minimum and a change made to the fluid coupling characteristics to lessen the high speed differential and torque reversal stress on the pads. Then making modifications to the valve body providing increased converter clutch apply pressure during peak load conditions becomes profitable.

Tony Garcin from Dunrite Converters has developed a kit specifically made for the 5.9 Liter Cummins diesels called the PowerPuller℠ TransButty™ (See Figure 1). This kit provides the needed increased converter clutch apply pressure as well as cures for other common complaints like the parking lot 1-2-1-2 shift shuttle and drain back problems. These kits can be obtained by calling for Tony himself at (626) 442-1404 Tuesday through Friday West Coast time. Custom made converters are also available.

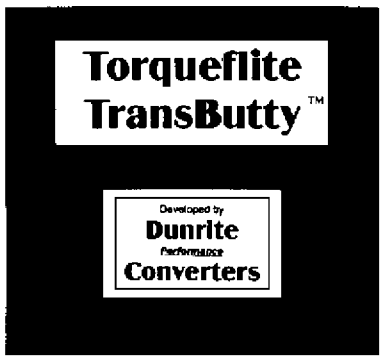


Figure 1

SCHAFFER® TEST PRODUCTS

TRANSMISSION BREAKOUT BOX

Schaffer® Test Products has made available a Transmission Breakout Box (shown in figure 1) for the purpose of checking the transmission internal components.
The tester can be used to check the resistance of the internal components individually or with the Schaffer® Shifter wire harness adaptors.
The tester can also be used with the Schaffer® Shifter power cord and an ammeter to check amps in the internal component circuits and using the appropriate Schaffer® Shifter adaptor solenoid power and ground signals can also be verified.

The manual that is provided with the tester will illustrate the wire side of the transmission case connector as well as terminal assignment with each terminal's color code that can be matched to the coordinating color coded jack in the tester.

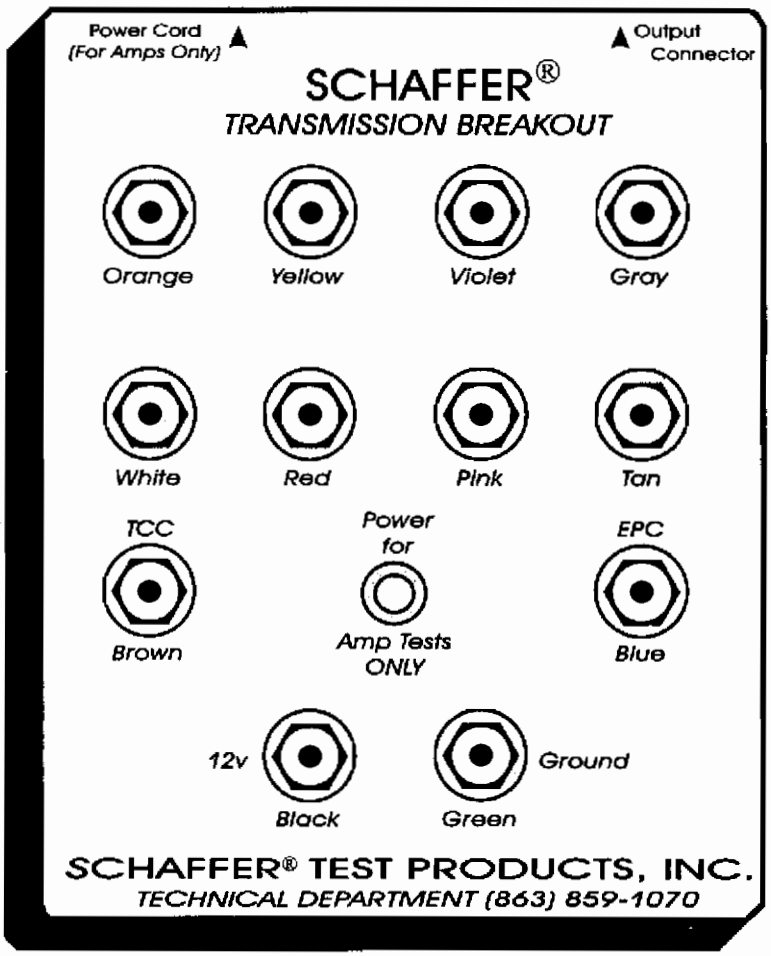


Figure 1