



# Technical Service Information

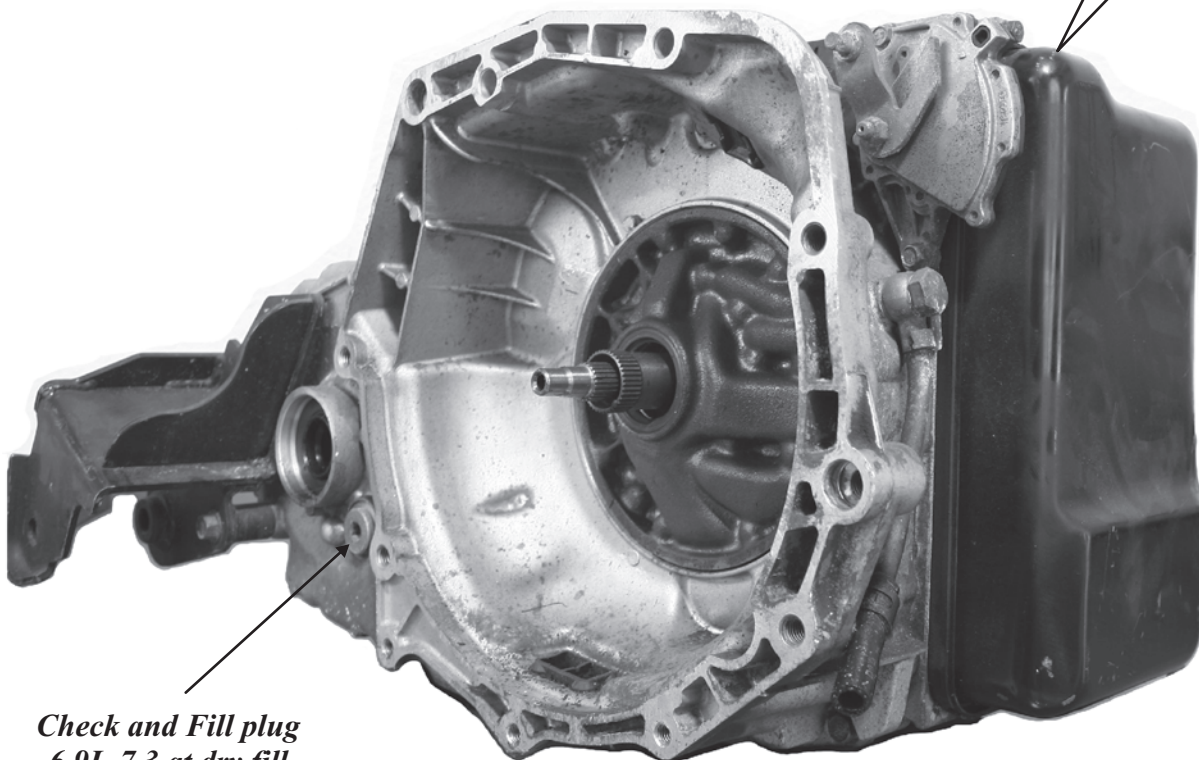
## SUZUKI FORENZA ZF4HP16/20 PRELIMINARY INFORMATION

### **ZF4HP16**

#### GEAR RATIOS

*1st - 2.719  
2nd - 1.487  
3rd - 1.00  
4th - 0.717  
Reverse - 2.529  
Final - 3.847 (US)*

#### *IDENTIFICATION TAG*



*Check and Fill plug  
6.9L-7.3 qt dry fill  
Esso LT ATF  
Use 8mm square  
drive socket*

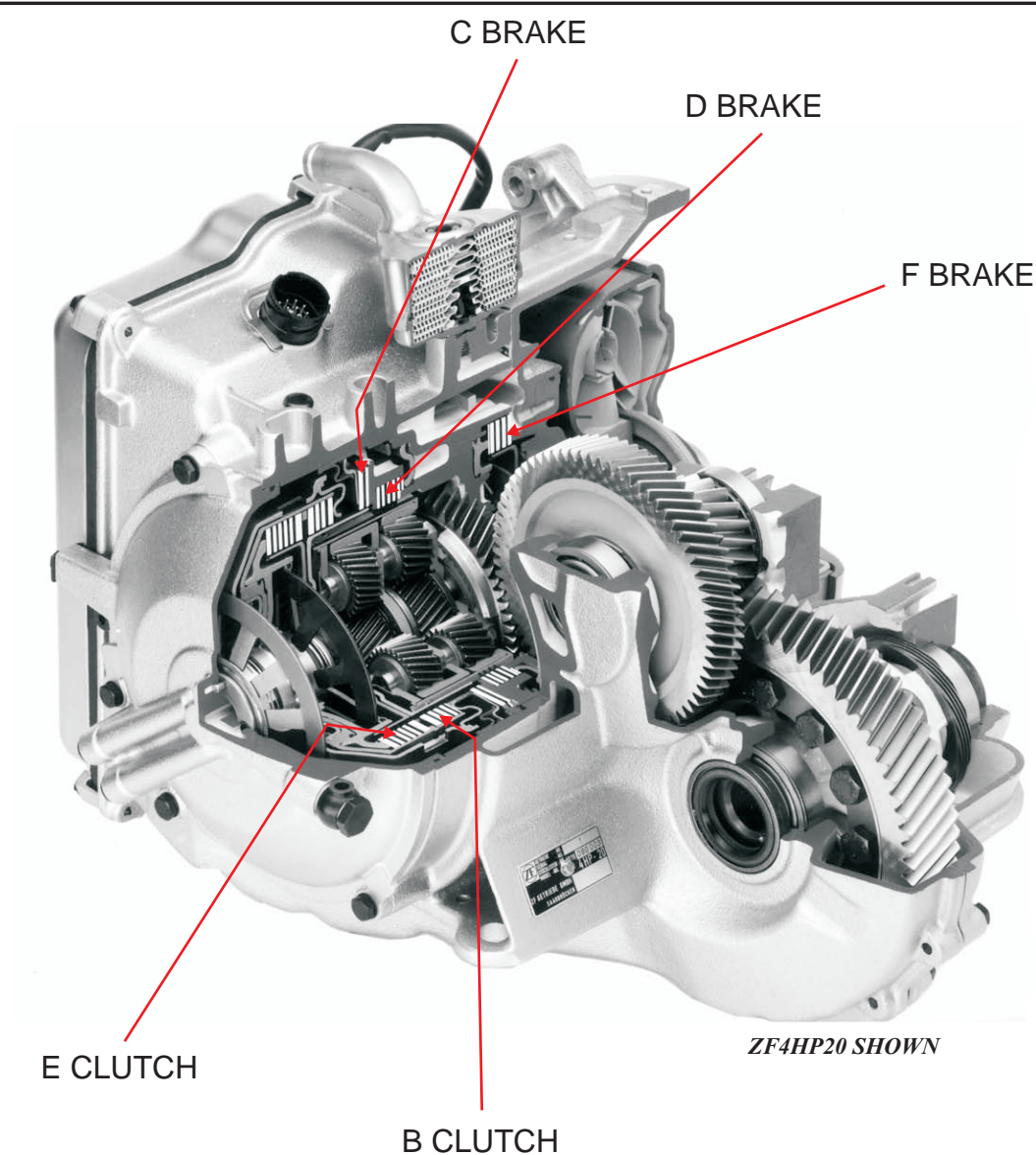
#### VEHICLE APPLICATION

*2004-2008 Suzuki Forenza US  
2004-2006 Suzuki Verona US  
2000-2006 Citroen (various vehicles) European ZF4HP20  
2000-2010 Daewoo (various vehicles) European*

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# Technical Service Information

## COMPONENT LOCATION AND APPLICATION CHART



GEAR	B CLUTCH	E CLUTCH	C BRAKE	D BRAKE	F BRAKE
P	X				
R	X			X	
N	X*				
D-1st	X				X
D-2nd		X			X
D-3rd	X	X			
D-4th		X	X		

X\* = ON In Park and N\*, clutch B is on to anticipate an engagement in R or D-1st

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Figure 1

# Technical Service Information

## COMPONENT AND SOLENOID APPLICATION CHART

GEAR	B Clutch	E Clutch	C Brake	D Brake	F Brake	MV1	MV2	EDS3	EDS4	EDS5	EDS6	TCC CLUTCH
P	X					X	X		X		X	
R	X			X		X-	X					
N	X*					X	X		X		X*	
D-1st	X				X	X-	X		X	X	X	
D-2nd		X			X	X-		-X	X	X		X
D-3rd	X	X				X-		-X	X		X	X
D-4th		X	X			X-		-X				X

X\* = ON In Park and N\*, clutch B is on to anticipate an engagement in R or D-1st

X- = ON then - OFF

-X = OFF then X ON

Emergency mode= 3rd gear in Forward ranges and Reverse

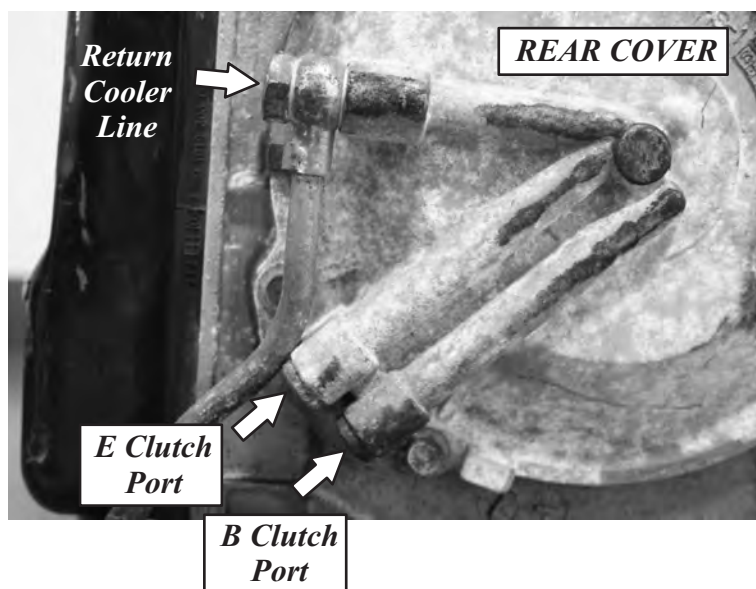
EDS3 is used for TCC control

Figure 2

### PRESSURE CHECKS AND SPECIFICATIONS

#### PRESSURE CHECKING B CLUTCH PORT AT 1000-1500 RPM

*Park or Neutral = 90-124 psi. MV1- ON*  
*Park or Neutral = 221-251 psi. MV1- OFF*  
*Reverse= 90-124 psi. MV1- ON*  
*Reverse = 221-251 psi. MV1- OFF*  
*Drive= 90-124 psi. MV1- ON*  
*Drive = 221-251 psi. MV1- OFF*



*Note: Line pressure is not modulated on this transmission. There are two settings 90-124 psi. and 221-251. Low pressure is accomplished when the MV1 solenoid is energized and hydraulic pressure acts on the first land of the Pressure Regulator valve stroking it, decreasing line pressure. High Pressure is accomplished by the MV1 solenoid turning off.*

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Figure 3

# Technical Service Information

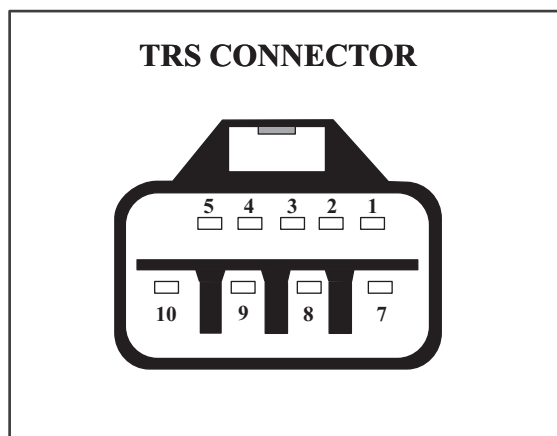
## TRANSMISSION RANGE SENSOR LOCATION

**TRANSMISSION RANGE SENSOR  
PARITY CHART ON SCAN TOOL**

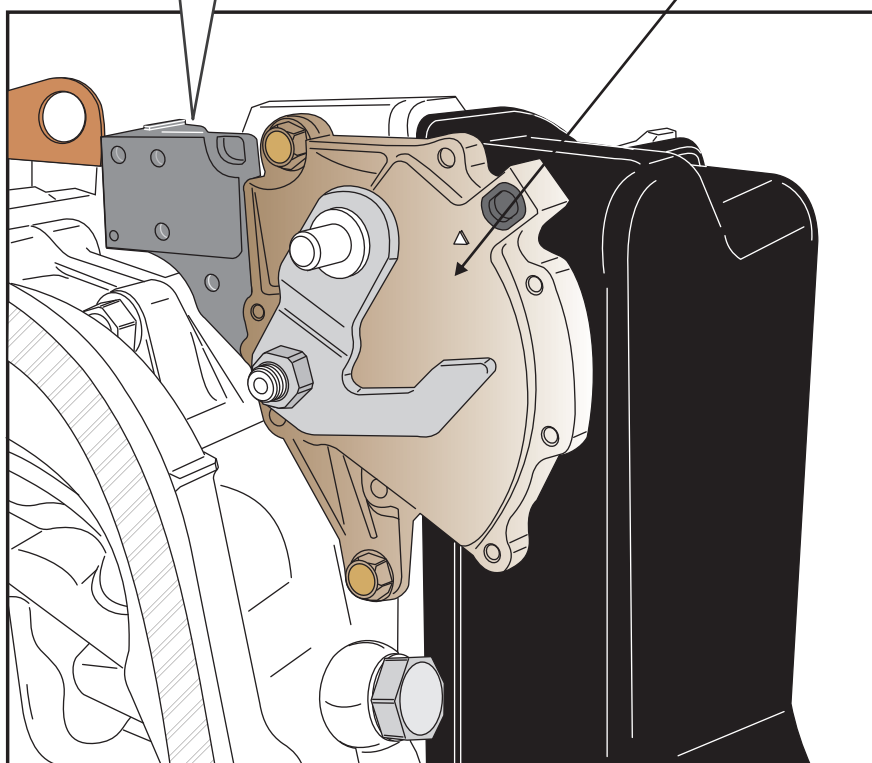
	L1	L2	L3	L4
P	0	0	12	0
R	0	0	0	12
N	0	12	0	0
D	12	12	12	0
3	12	12	0	12
2	12	0	12	12
1	0	12	12	12

0 = 0 Volts

12 = 12 Volts



*Transmission Range Sensor*



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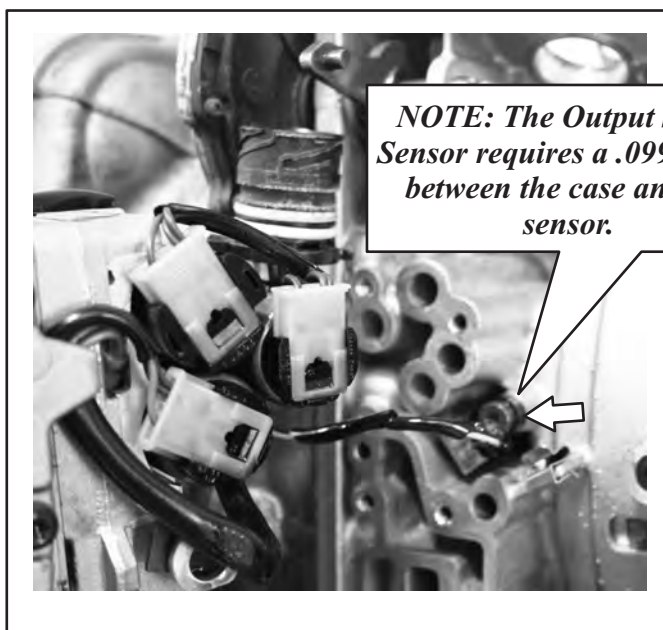
Figure 4



# Technical Service Information

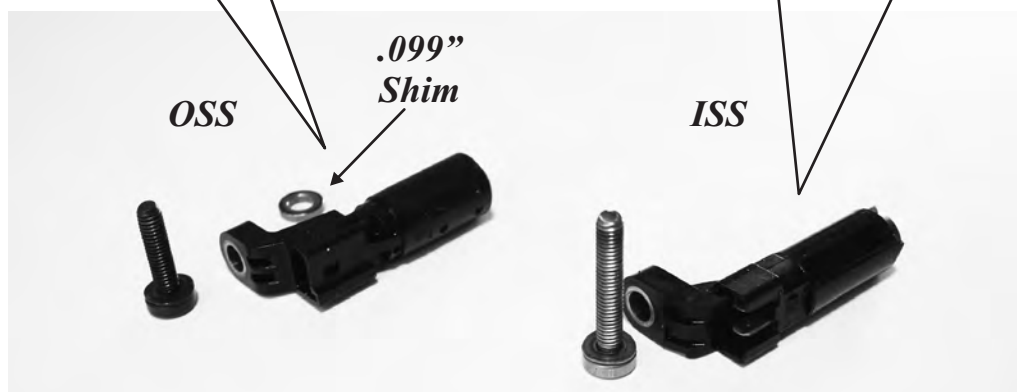
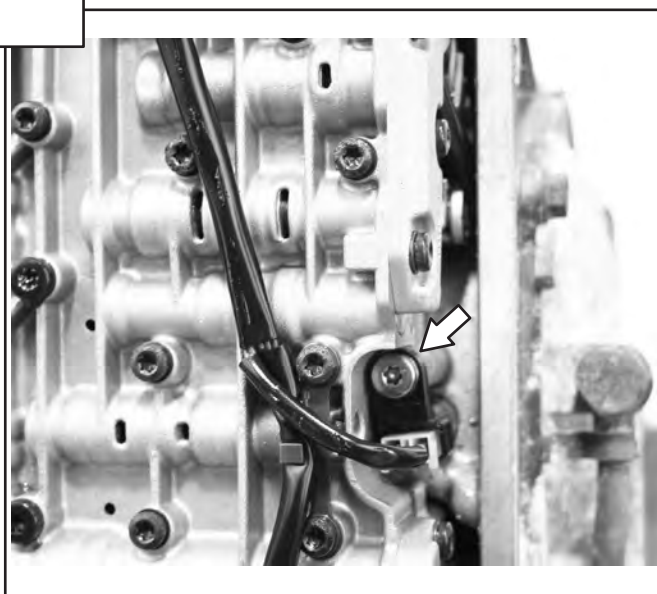
## INPUT AND OUTPUT SPEED SENSOR LOCATION

### Output Speed Sensor



**NOTE:** The Output Speed Sensor requires a .099" shim between the case and the sensor.

### Input Speed Sensor



*The Output Speed Sensor is a Hall type sensor. It reads the Transfer Gear. There is no ohm value for this type of sensor.*

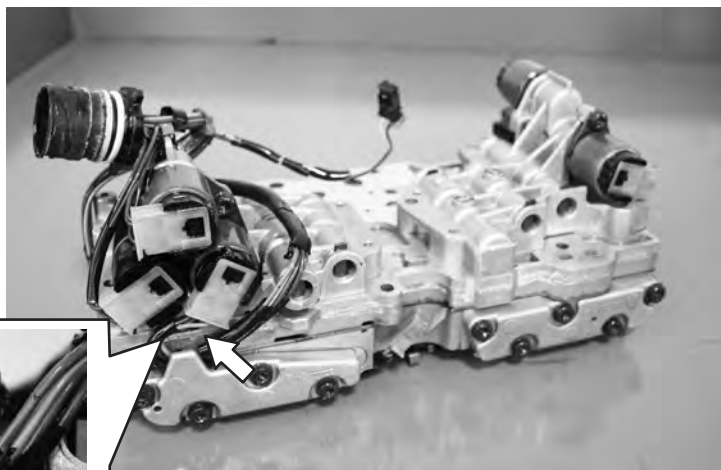
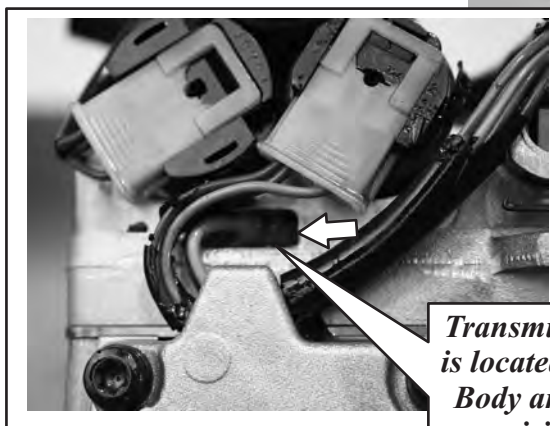
*The Input Speed Sensor is an AC Pulse generator. It reads the Input Drum. Ohm value is approx. 800 Ohms*

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Figure 5

## TRANSMISSION FLUID TEMP SENSOR LOCATION

*Valve Body Assembly  
Rear View*



*Transmission Fluid Temp sensor  
is located in a pocket in the Valve  
Body and is part of the internal  
wiring harness assembly*

## TRANSMISSION FLUID TEMP SENSOR RESISTANCE CHART

°C (°F)	OHM VALUE
-10 (14)	760
0 (32)	825
10 (50)	893
30 (86)	1039
50 (122)	1206
80 (176)	1485
100 (212)	1690
120 (248)	1910

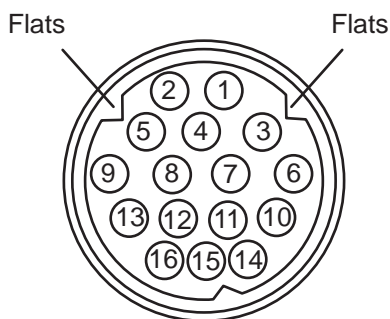
*The TFT sensor is a positive coefficient sensor*

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Figure 6

# Technical Service Information

## INTERNAL HARNESS CASE CONNECTOR



TERMINAL	COMPONENT DESCRIPTION
1	Output speed sensor 5 Volts (+)
2	Output speed sensor (-)
3	Solenoid Valve 1 and 2 Power supply (+)
4	Trans Fluid Temp sensor (-)
5	Pressure Control Solenoid Power supply (+)
6	Pressure Control Solenoid EDS3 (-)
7	Pressure Control Solenoid EDS4 (-)
8	Not Used
9	Trans Fluid Temp sensor (+)
10	Pressure Control Solenoid EDS5 (-)
11	Pressure Control Solenoid EDS6 (-)
12	Solenoid Valve 1/MV1 (-)
13	Solenoid Valve 2/MV2 (-)
14	Not Used
15	Input speed sensor (+)
16	Input speed sensor (-)

### COMPONENT RESISTANCE CHART

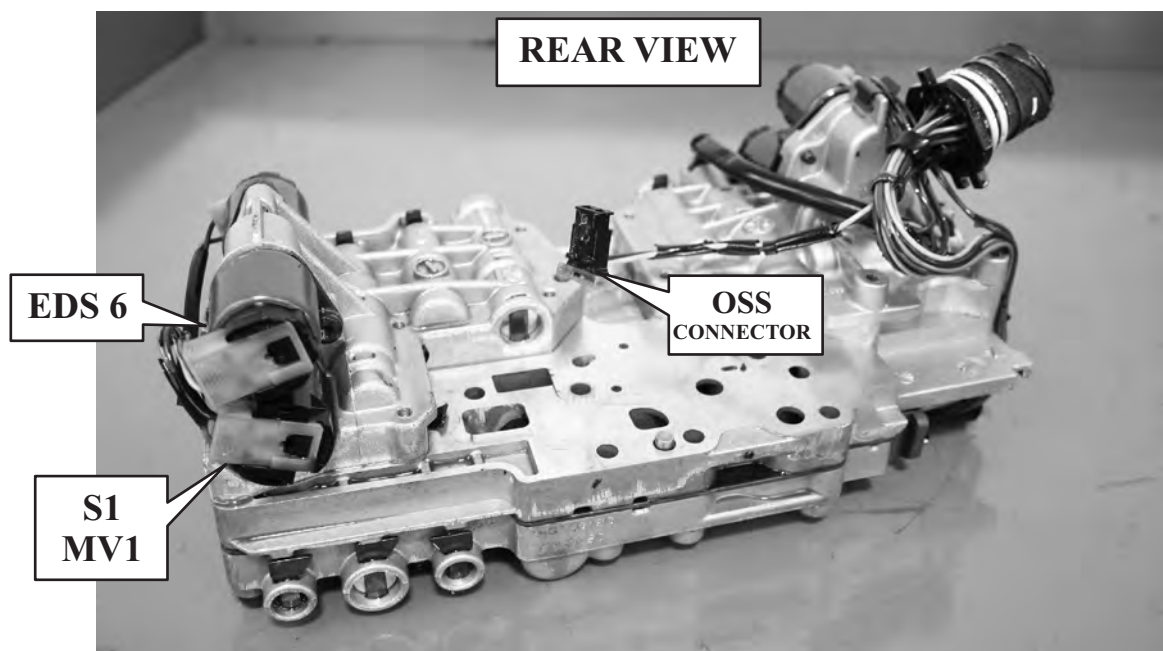
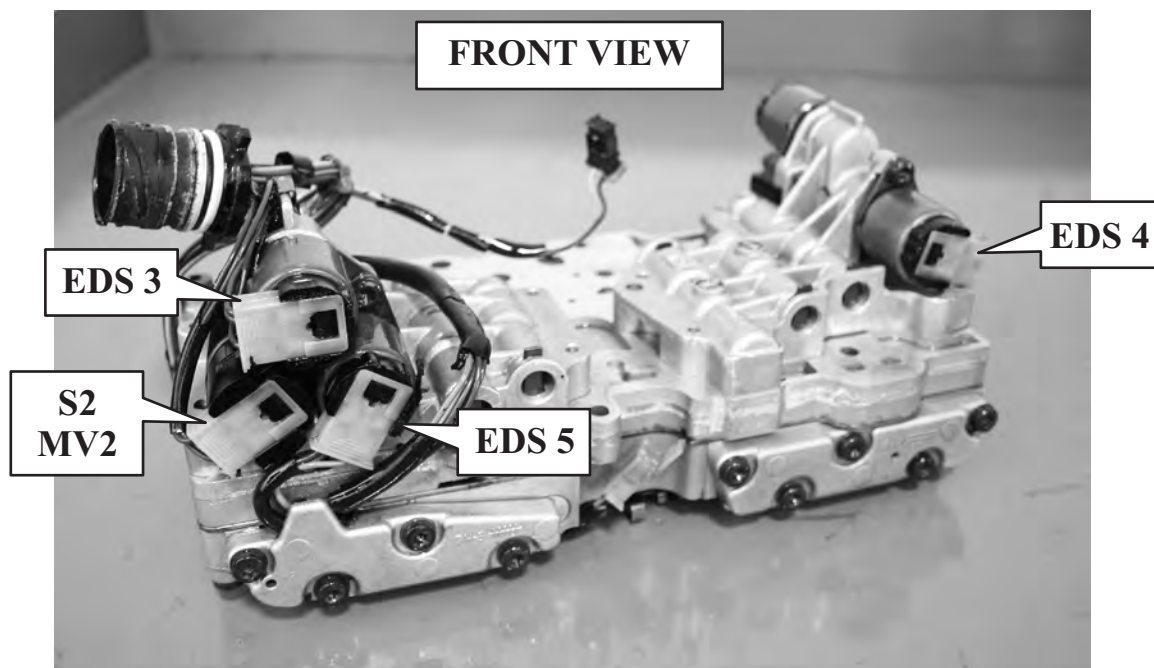
COMPONENT	TERMINALS	RESISTANCE VALUE
Solenoid Valve 1/MV1	3 & 12	26-34 Ohms
Solenoid Valve 2/MV2	3 & 13	26-34 Ohms
Pressure Control Solenoid EDS3	5 & 6	5.3-6.3 Ohms
Pressure Control Solenoid EDS4	5 & 7	5.3-6.3 Ohms
Pressure Control Solenoid EDS5	5 & 10	5.3-6.3 Ohms
Pressure Control Solenoid EDS6	5 & 11	5.3-6.3 Ohms
Trans Fluid Temp sensor	4 & 9	980-1K Ohms @ 86°F
Input speed sensor	15 & 16	830 Ohms
Output speed sensor	1 & 2	No value Hall type sensor

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Figure 7

# Technical Service Information

## SOLENOID LOCATIONS ON VALVE BODY



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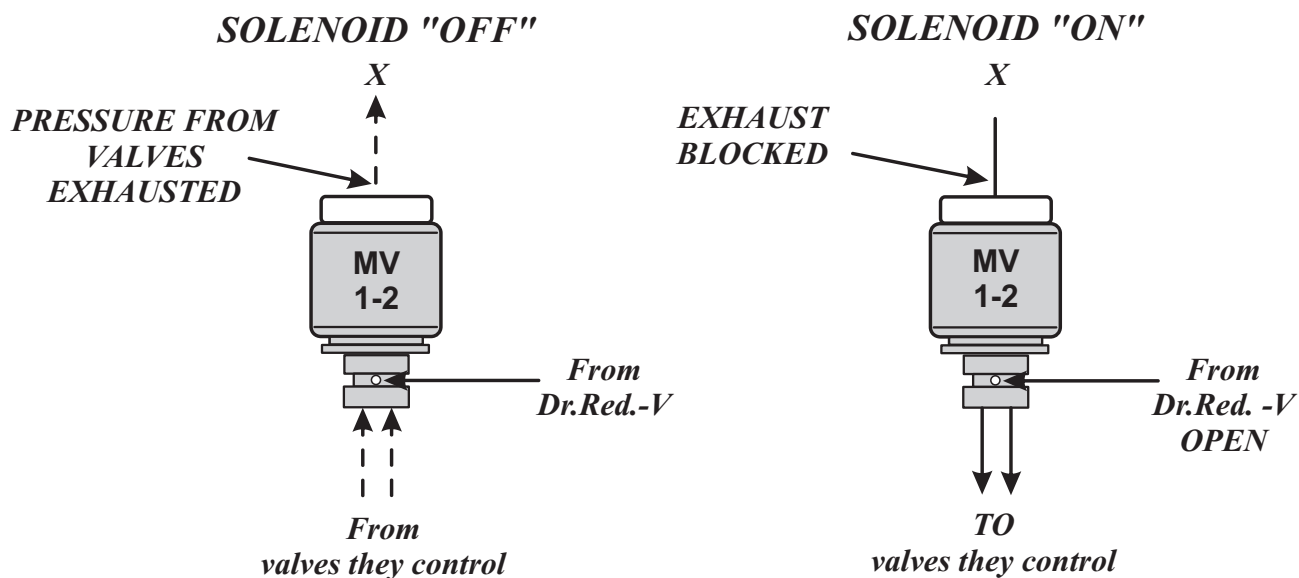
Figure 8



## SOLENOID FUNCTION



### MV1 AND MV2



#### SUMMARY:

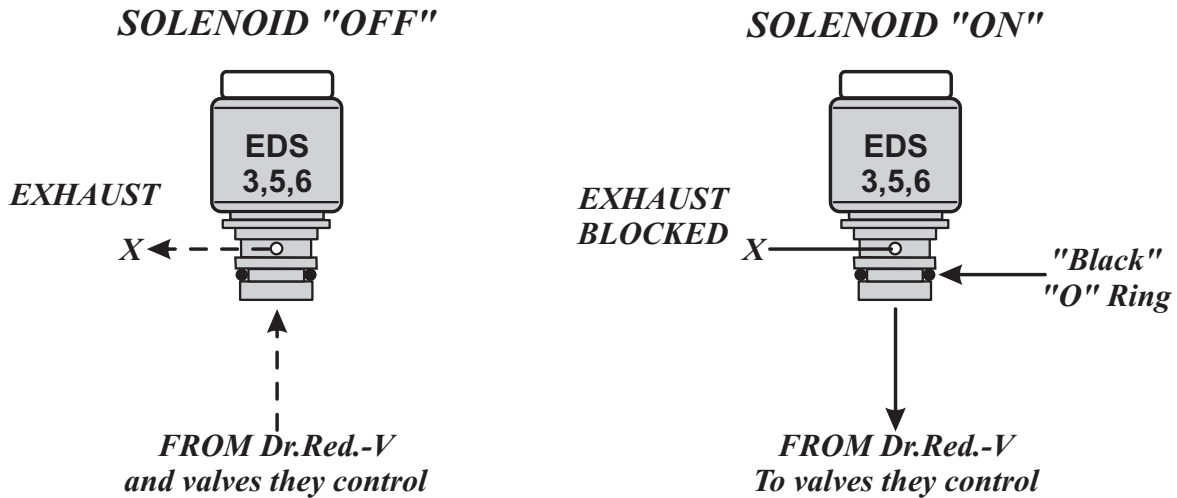
When MV 1 and MV2 are "OFF" Solenoid reducing pressure, from Dr.Red. -V, is blocked by the solenoid and oil pressure from the valves they control are exhausted at the rear of the solenoid.

When MV and MV2 are "ON" Solenoid reducing pressure, From Dr.Red. -V, is open through the solenoid and is applied to the valves they control. The exhaust at the rear of the solenoid is closed.

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Figure 9

## EDS 3, 5 AND 6



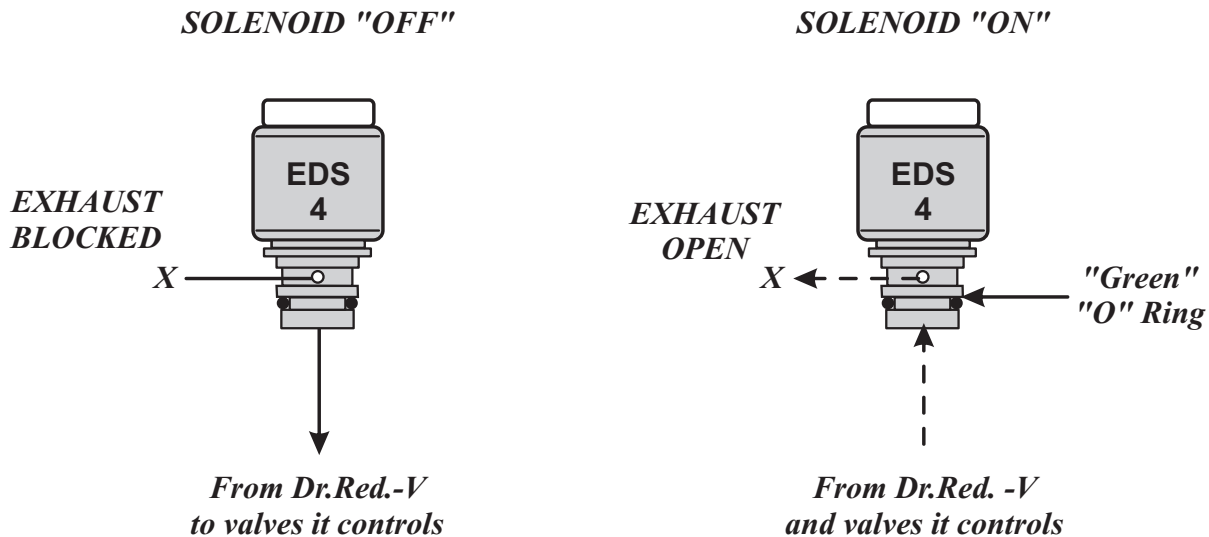
### SUMMARY:

*When EDS 3, 5 and 6 solenoids are "OFF" they exhaust orificed solenoid reducing pressure, from Dr. Red. -V, and the oil pressure from the valves the solenoids control.*

*When EDS 3, 5 and 6 solenoids are "ON" the exhaust is blocked by the solenoid and solenoid reducing pressure, from Dr. Red. -V, is applied to the valves the solenoids control.*

*Note: EDS 3 is used for TCC control.*

## EDS 4



### SUMMARY:

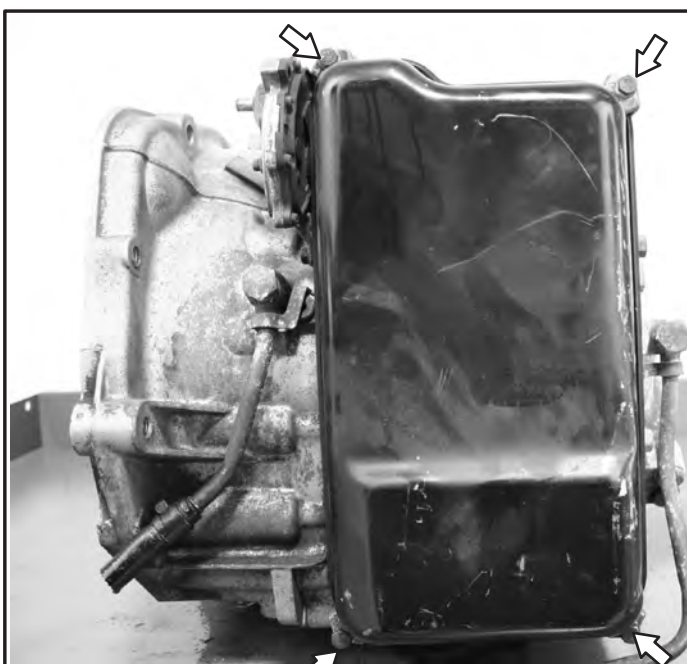
*When EDS 4 solenoid is "OFF," solenoid reducing pressure, from Dr. Red.-V, is high to the valves EDS 4 controls.*

*When EDS 4 solenoid is "ON," solenoid reducing pressure, from Dr. Red. -V, is low to the valves EDS 4 controls.*

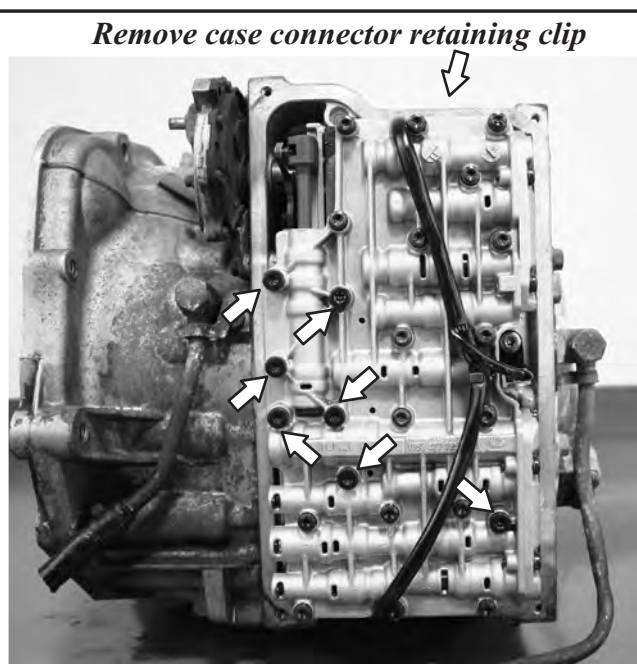
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Figure 10

## CASE DIS-ASSEMBLY



*Remove 10mm front pan retaining bolts and pan*



*Remove case connector retaining clip*

*Remove 27 torx valve body retaining bolts*



*Remove 27 torx ISS retaining bolt and remove the sensor*  
*Remove cooler return pipe and banjo fitting.*



*Push case connector thru the case*

*Remove Valve body. remove 27 torx OSS retaining bolt and remove the sensor- note there is a .099" shim in between the sensor and the case*

## CASE DIS-ASSEMBLY CONTINUED



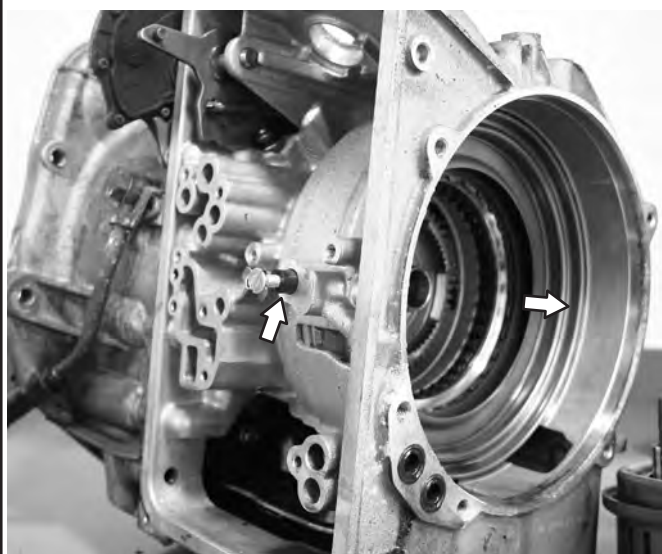
*Remove the rear cover retaining bolts and cover*



*Remove B and E Clutch housing*



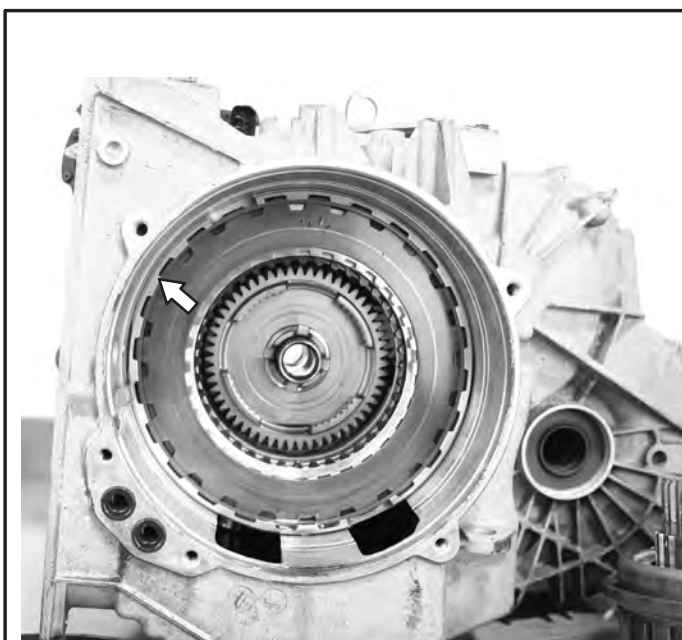
*Remove snap ring for C Brake*



*Using a suitable bolt, remove the C Brake feed tube and piston assembly*

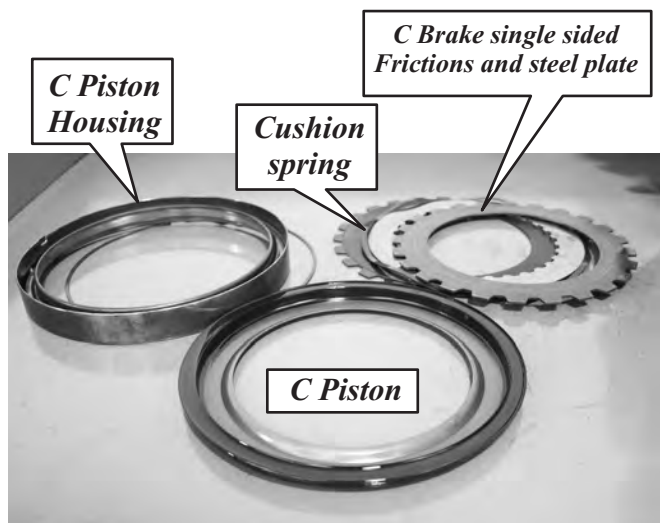


## CASE DIS-ASSEMBLY CONTINUED

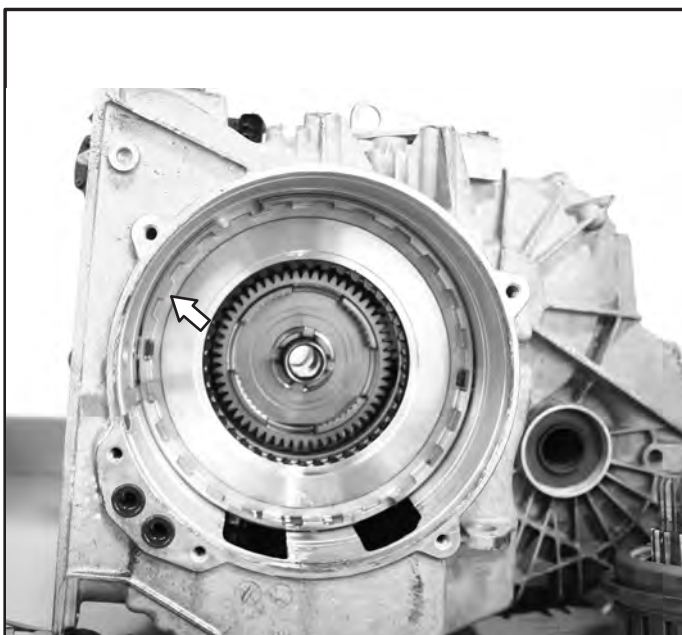


**Remove C Brake retaining snap ring**  
*Note: this assembly is spring loaded by the cushion spring*

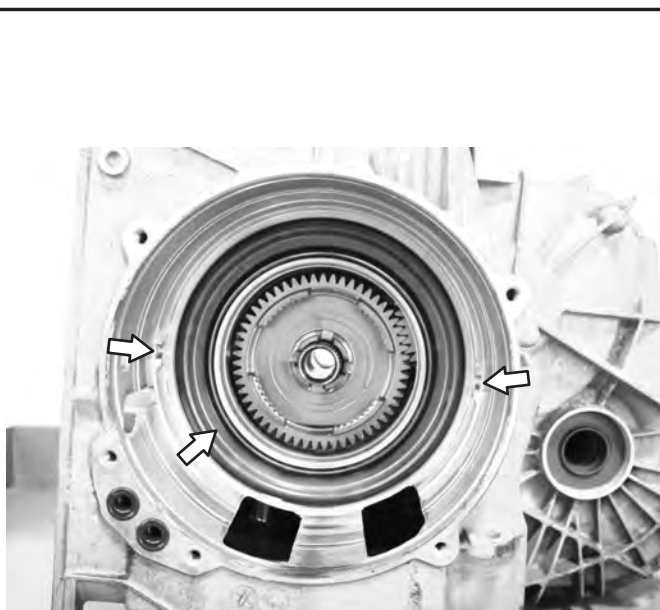
### C BRAKE COMPONENTS



*Note: The C Piston is a common failure on this trans. Will cause a P0734 DTC "No 4th"*



**Remove D Brake housing assembly**

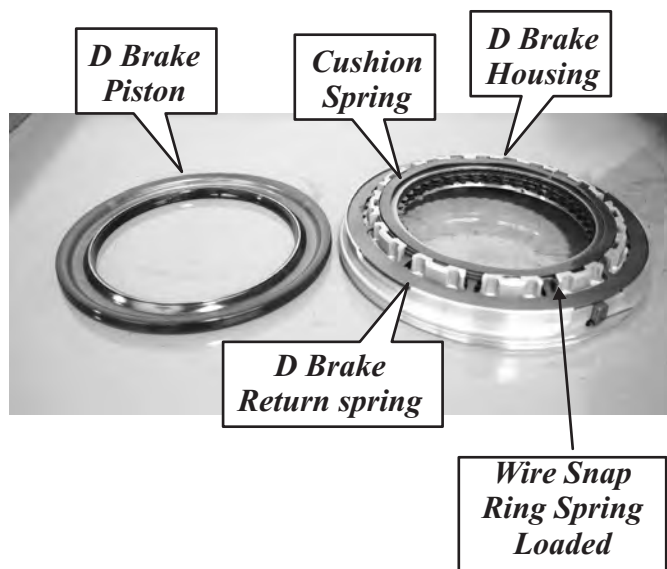


**Remove D Brake Piston**  
*Note position of alignment slots for D housing*

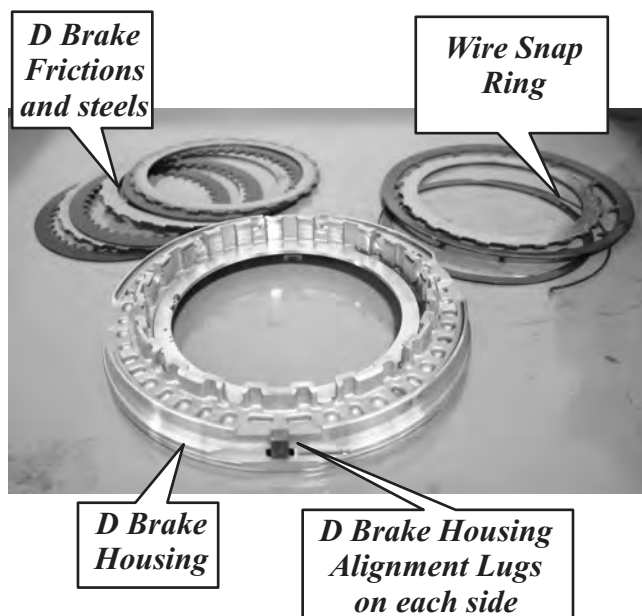


## CASE DIS-ASSEMBLY CONTINUED

### D BRAKE COMPONENTS ASSEMBLED



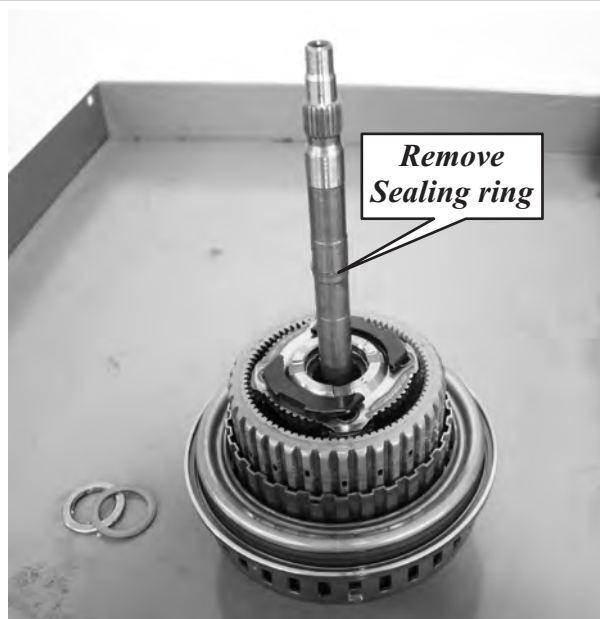
### D BRAKE COMPONENTS



### REAR COVER



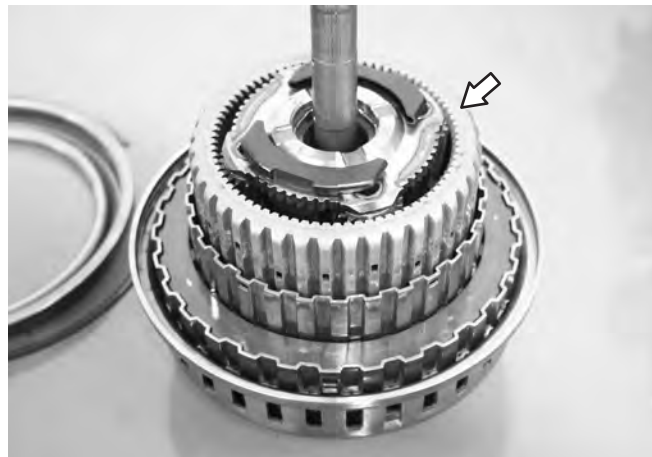
*B and E Clutch Sealing rings*



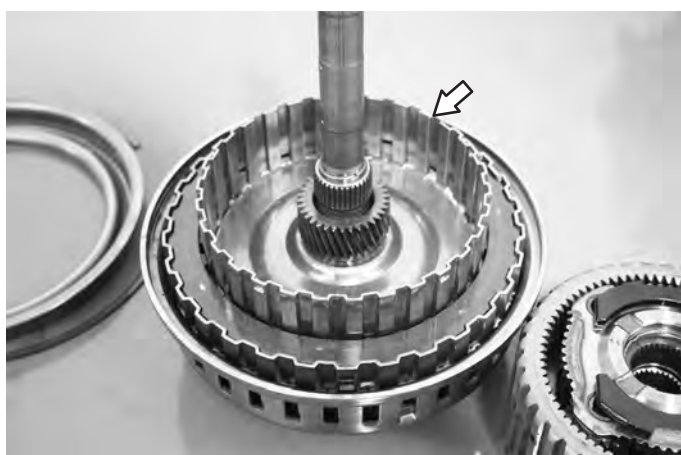
*B and E Clutch housing and cover thrust bearing and spacer*



*Remove snap ring and B Clutch apply cup*



*Remove planetary assembly*



*Remove sun gear and hub*



*Remove B Clutch*



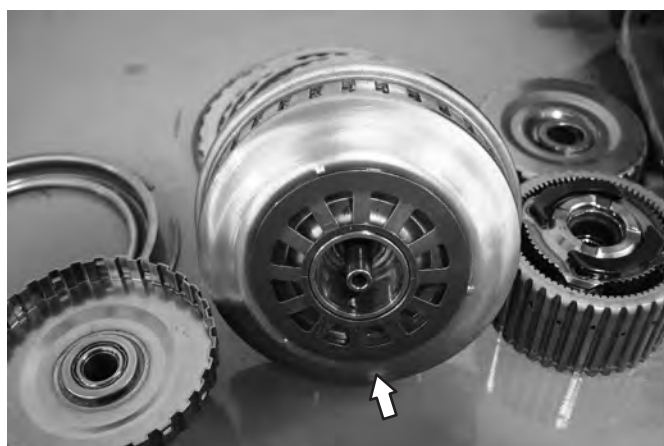
*Remove snap ring and E Clutch hub*



*Remove E Clutch*



*E Clutch apply piston*



*B Clutch apply piston*

### PLANETARY DIS-ASSEMBLY



*Remove snap ring*



*Remove Planetary*



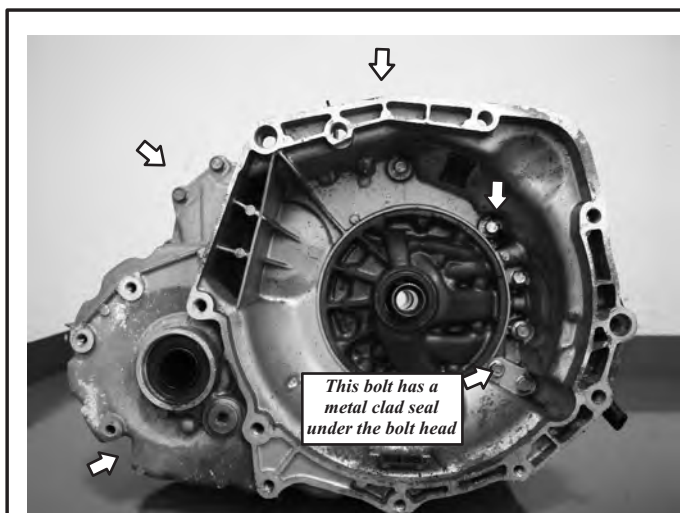
*Remove lower planetary*



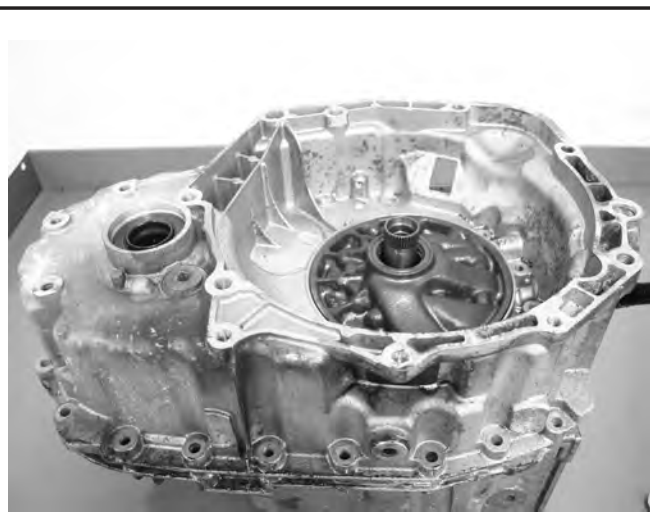
*Remove Sun gear*



## FRONT CASE DIS-ASSEMBLY



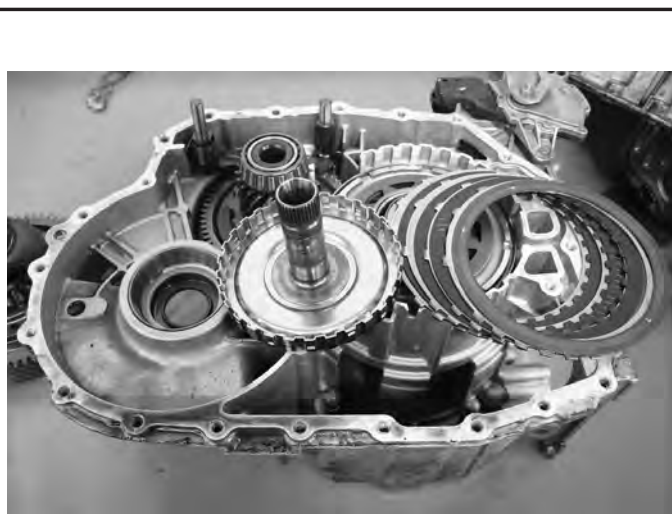
*Remove Bellhousing attaching bolts*



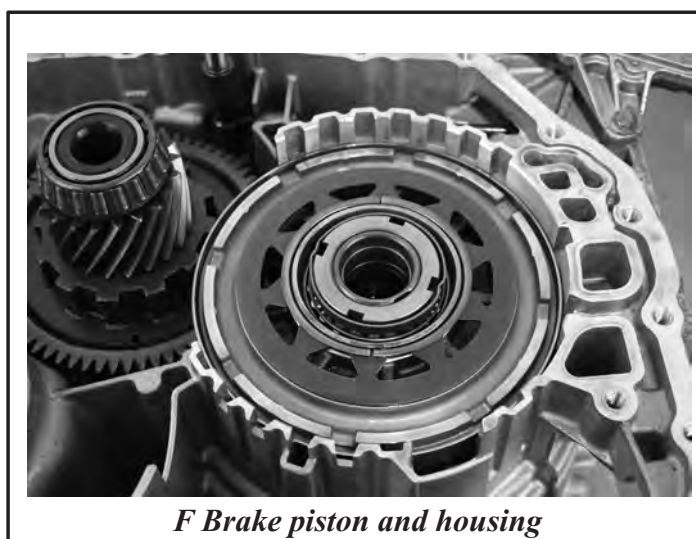
*Remove Bellhousing*



*Remove Bellhousing Differential*



*Remove F Brake and hub*



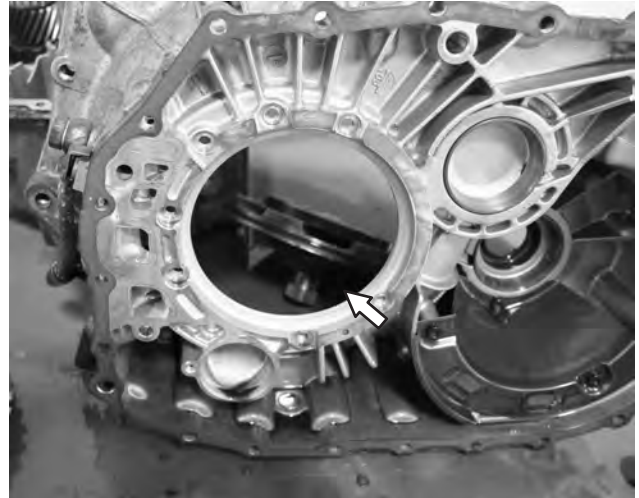
*F Brake piston and housing*

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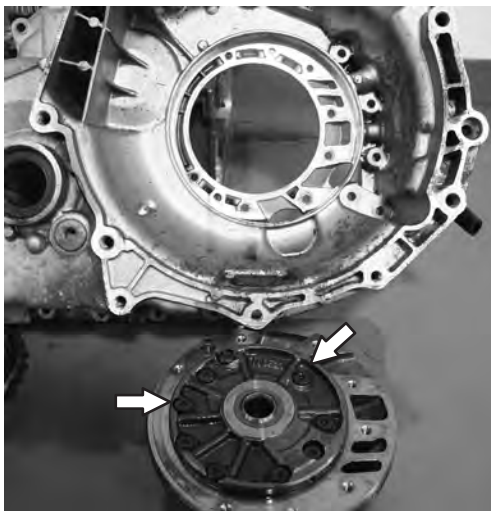
## BELLHOUSING AND PUMP DIS-ASSEMBLY



*Remove 10mm filter attaching bolt and filter  
Remove 27 torx pump to case bolts*



*Push pump thru bellhousing*



*Remove 27 torx pump to cover bolts*



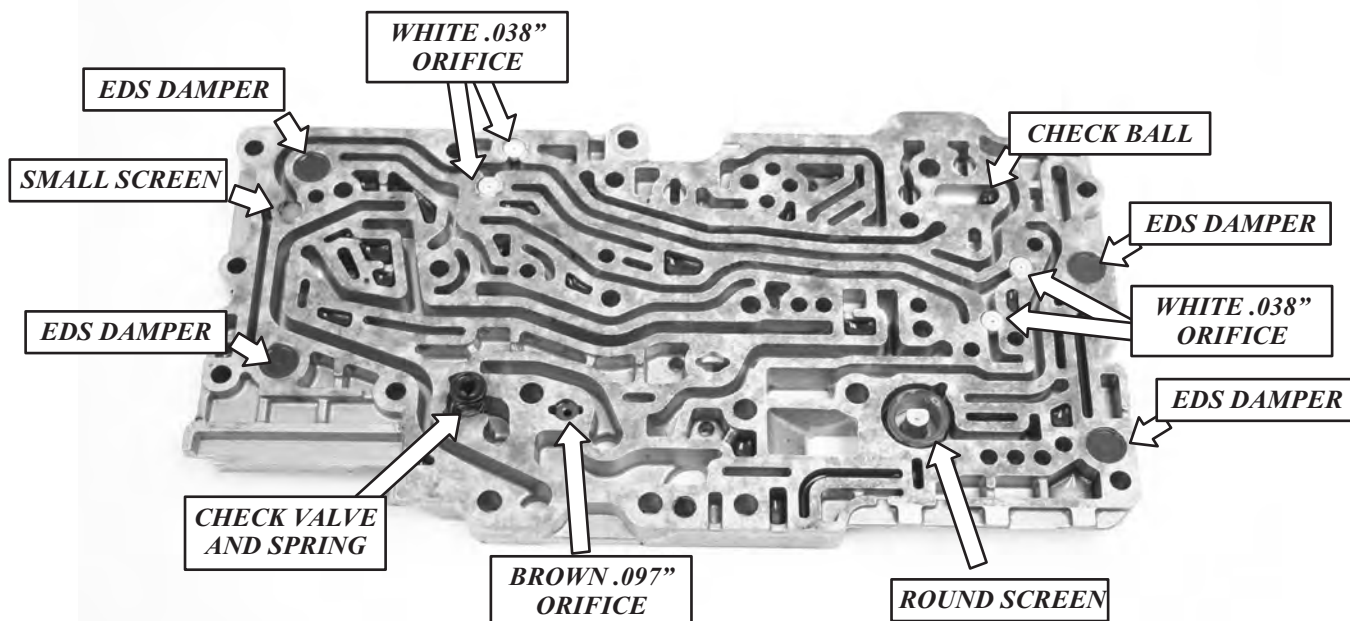
*Pump assembly*

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## VALVE BODY COMPONENT I.D.

### CHANNEL PLATE SMALL PARTS



### SPACER PLATE AND GASKET

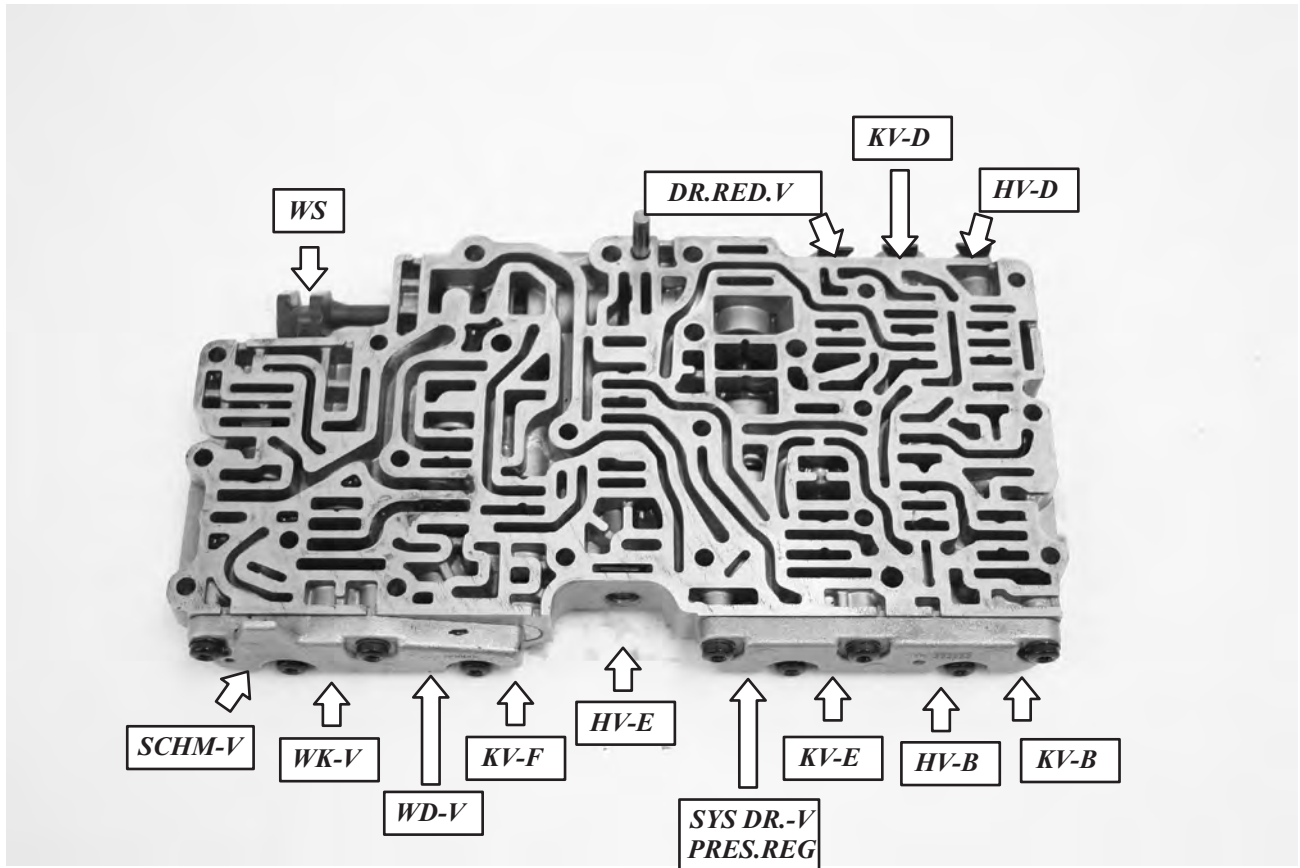


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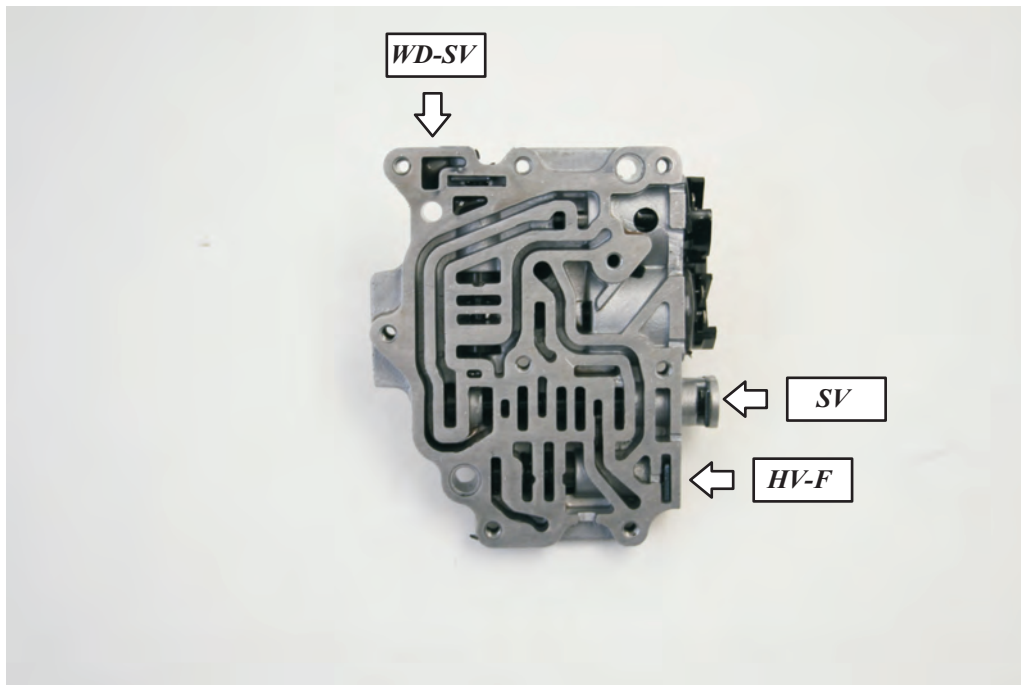
# Technical Service Information

## VALVE BODY COMPONENT I.D.

### MAIN VALVE BODY VALVE LOCATIONS



### UPPER VALVE BODY 1 VALVE LOCATIONS



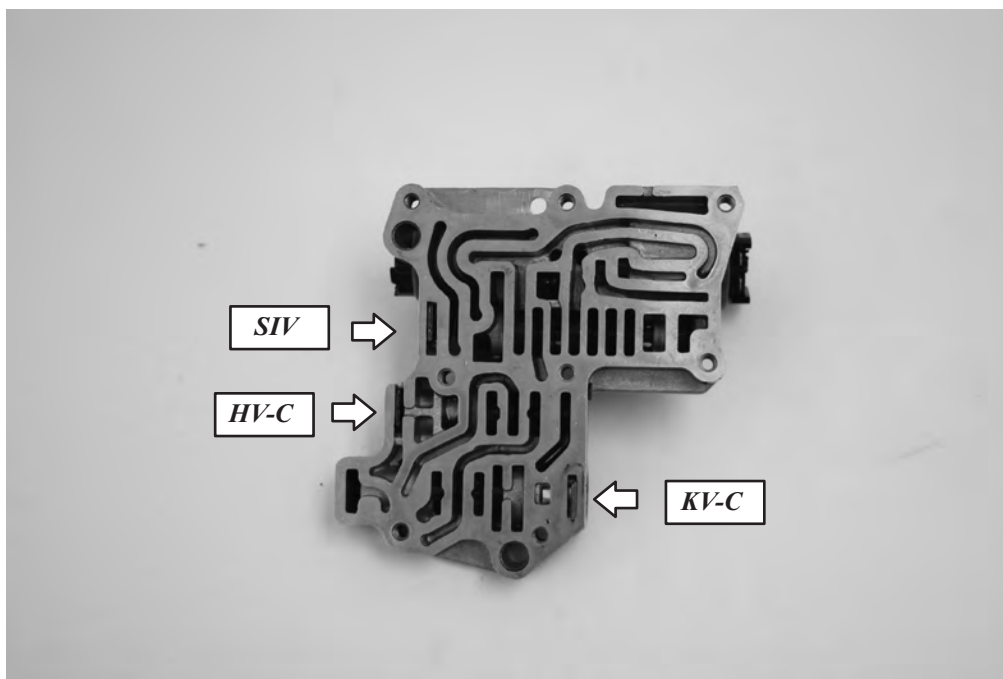
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## Technical Service Information

### VALVE BODY COMPONENT I.D.

#### *UPPER VALVE BODY 2 VALVE LOCATIONS*



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