



Technical Service Information

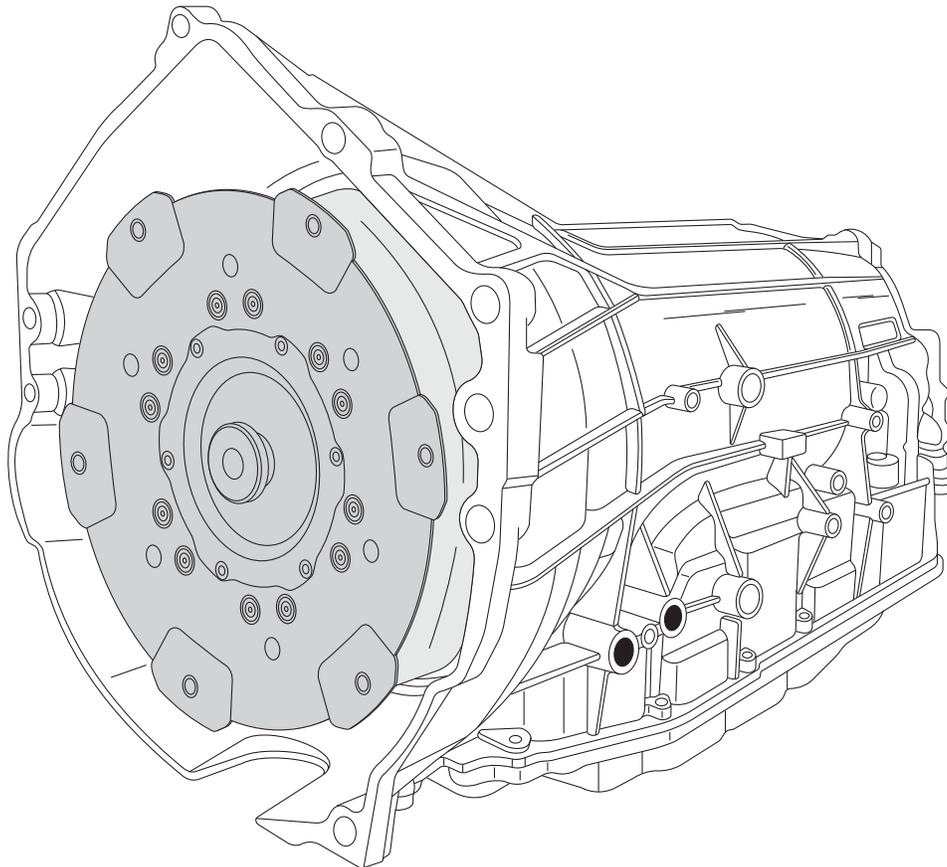
GM 8L45 - 8L90 PRELIMINARY INFORMATION

The General Motors 8 Speed Rear Wheel Drive Transmission is currently manufactured in two configurations, the 8L45 and the 8L90. The 8L45 has an RPO code of M5N and the 8L90 RPO is M5U. The difference being much the same as the 6L80 compared to the 6L50 as the 8L45 will be used behind less powerful engines than the 8L90. Vehicles equipped with the 8L90 have all wheel drive and stop-start options, GM's Driver Shift Control as well as Performance Algorithm Shifting (PAS). PAS is a computer program that will learn how the car is driven and will automatically adjust for optimum efficiency.

The 8L family of transmissions is an electronically controlled transmission that utilizes clutch to clutch shifting. It consists of a four element torque converter, four planetary gear sets, five friction elements and nine solenoids to provide eight forward speeds and one reverse. The Transmission Control Module is located outside of the transmission and will control shifting, converter clutch and line pressure control. A minimum of eleven sensors will provide input to the TCM as well as other modules in the vehicle.

This transmission uses an Off-Axis fluid pump located in the valve body and is chain driven by the engine through the torque converter.

8L90



Many thanks to the good folks at Transtec for the use of this transmission.

Copyright © 2017 ATSG

Figure 1



Technical Service Information

GM 8L45 - 8L90

GM 8L45 - 8L90 IDENTIFICATION

RPO CODES
 8L45 - M5N, M5T
 8L90 - M5U, M5X

1 Broadcast Code
 2 Source Data Universal Number System (DUNS)
 3 Transmission Unique Number (TUN)
 4 2nd Machine Readable Number
 5 UPPS Code
 6 Part Sequence Number
 7 Site Identification
 8 Broadcast Code
 9 Julian Date
 10 Year of Build
 11 Shift Identification
 12 Line Plant Identification
 13 GM Part Number

Copyright © 2017 ATSG

Figure 2

8L45/8L90 SPECIFICATIONS		
NAME	8L45	8L90
Torque Converter Turbine Size	238 MM	258 MM
Pressure Taps	Line Pressure/1-2-3-4-5-R	Line Pressure/1-2-3-4-5-R
Transmission Fluid Type	DEXRON® HP	DEXRON® HP
Typical Quadrant Positions	P-R-N-D-M	P-R-N-D-M
Transmission Net Weight w/ Converter (Wet)	196 lbs (89 kg)	229 lbs (104 kg)

Figure 3

GM 8L45 - 8L90 SHIFT QUADRANTS

The transmission shift quadrants vary by model. There may be as low as four and as high as seven different shift quadrant positions. Figures 3 and 4 show five positions.

Standard Shift Quadrant

- P** - Park position enables the engine to be started while preventing the vehicle from moving. For safety reasons, the vehicle's parking brake should always be used in addition to the "Park" position. Park position should not be selected until the vehicle has come to a complete stop.
- R** - Reverse enables the vehicle to be operated in a rearward direction.
- N** - Neutral position enables the engine to start and operate without driving the vehicle. If necessary, this position should be selected to restart the engine while the vehicle is moving.
- D** - Drive range should be used for all normal driving conditions for maximum efficiency and fuel economy. Drive range allows the transmission to operate in each of the eight forward gear ratios.
Downshifts to a lower gear are available for safe passing, by depressing the accelerator, or by manually selecting a lower gear with the shift lever.

TOW/HAUL - Tow/Haul Mode maintains lower gears longer and increases shift pressure. It is best used when combined vehicle & trailer weight is at least 75% of the vehicles GCW rating. It improves initial take-off performance as well as reducing shift busyness and assists in engine braking performance.

Manual Shift Ranges

Some vehicles are equipped with a shift quadrant that allow manual range selection. For example, "M" manual range and/or manual range "2" or "1", as shown in figure 3. These ranges can be used for conditions where it may be desirable to control the selection of gear ratios. These conditions include trailer towing, driving on hilly terrain, and is also helpful for engine braking when descending slight grades.

- M** - When manual mode is selected, the current gear range will be the highest attainable range with all of the lower gears available. Plus/Minus buttons may be used to select the desired range of gears for the current driving conditions.
- 2** - Manual 2nd just adds more performance for congested traffic and hilly terrain. It has the same starting ratio (1st gear) as the Drive range, but prevents the transmission from shifting above 2nd gear. Manual 2nd can be used to retain 2nd gear for acceleration and engine braking as desired. Manual 2nd can be selected at any vehicle speed, but will downshift into 2nd gear, only if vehicle speed is low enough not to over-rev the engine. This speed is calibrated in the TCM.
- 1** - Manual 1st has the same starting ratio as Drive range but prevents the transmission from shifting above 1st gear. Manual 1st can be used for heavy towing and engine braking as desired. Manual 1st can be selected at any vehicle speed but will downshift into 1st gear, only if vehicle speed is low enough not to over-rev the engine. This speed is calibrated in the TCM.

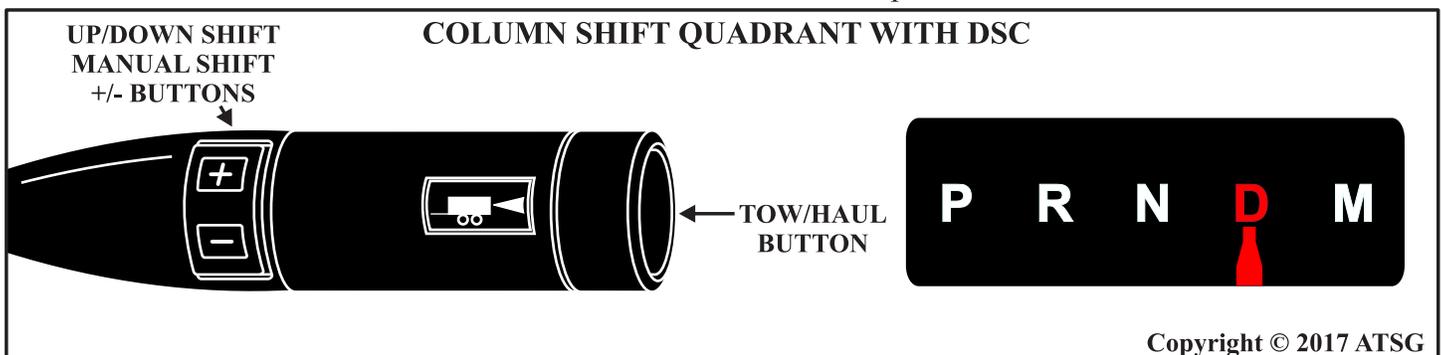


Figure 4

GM 8L45 - 8L90 SHIFT QUADRANTS (Continued)

Driver Shift Control (DSC) Quadrant

Some vehicles are equipped with a Driver Shift Control (DSC) version of the selector system, as shown in figure 4. This configuration allows the driver to manually shift between forward gears.

P - Park position enables the engine to be started while preventing the vehicle from moving. For safety reasons, the vehicle's parking brake should always be used in addition to the "Park" position. Park position should not be selected until the vehicle has come to a complete stop.

R - Reverse enables the vehicle to be operated in a rearward direction.

N - Neutral position enables the engine to start and operate without driving the vehicle. If necessary, this position should be selected to restart the engine while the vehicle is moving.

D - Drive range should be used for all normal driving conditions for maximum efficiency and fuel economy. Drive range allows the transmission to upshift and downshift in each of the eight forward gear ratios, according to the normal shift pattern that is programmed in the TCM.

M/S - In the M/S (Manual or Sport) position, the driver may manually select the range of gears by tapping the selector lever towards "+" or "-" to cause an up-shift or downshift, as shown in figure 4. The transmission will shift up or down depending on the request that is made by tapping the selector lever.

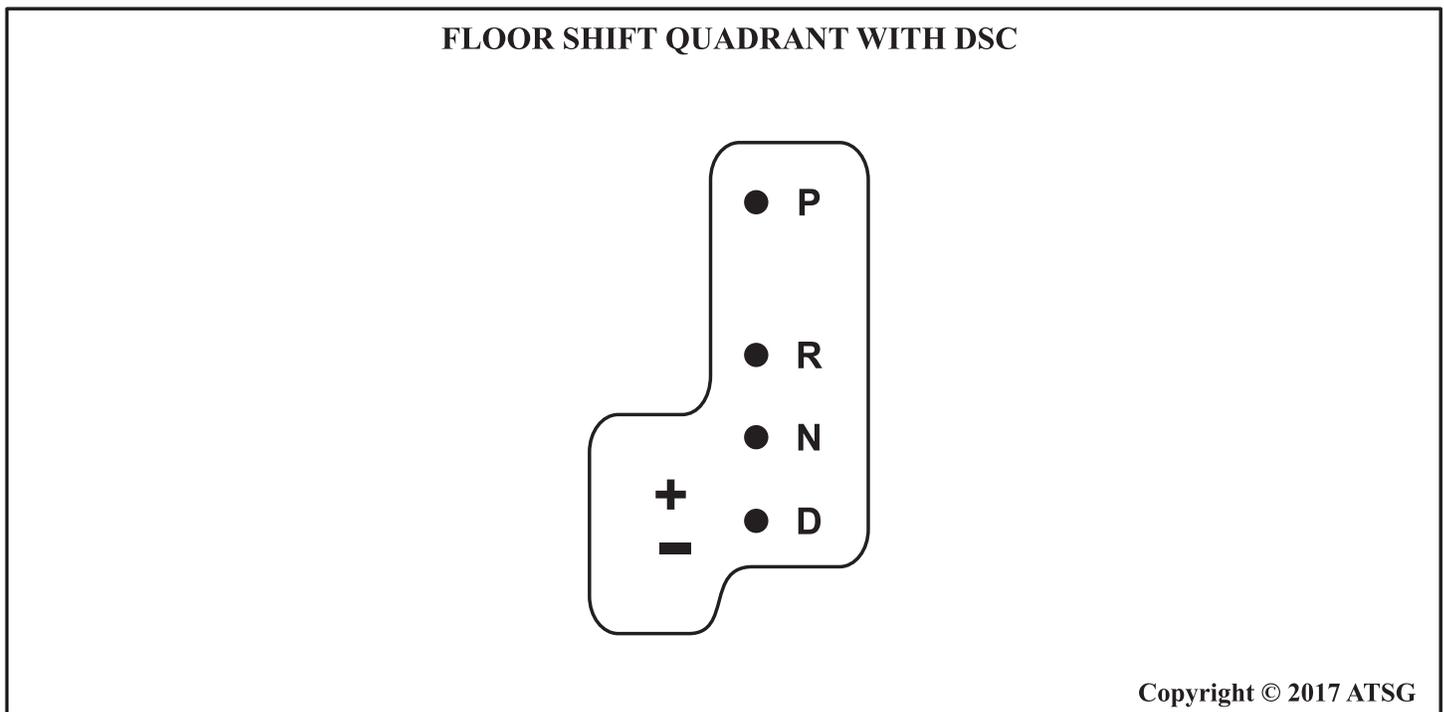
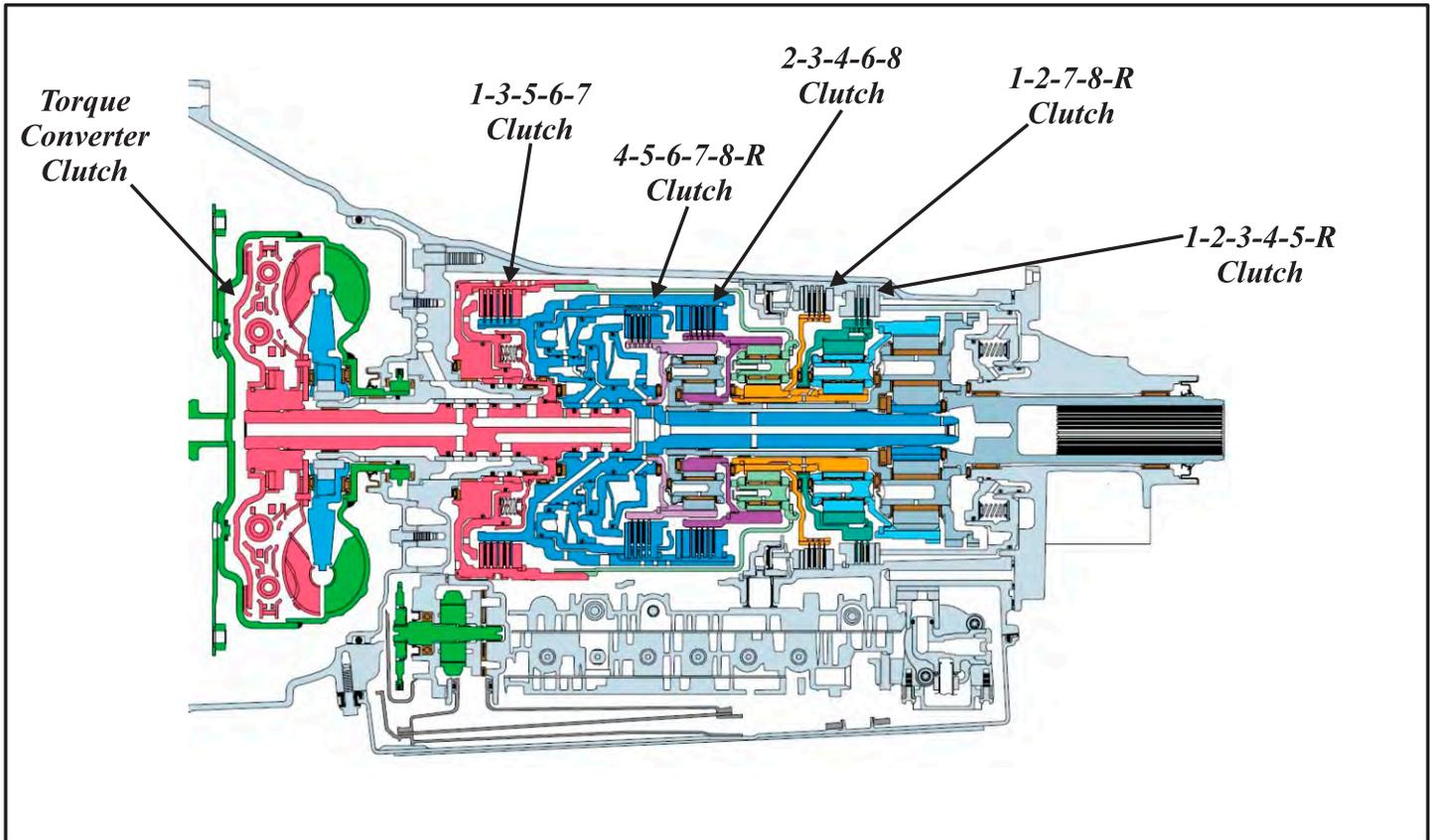


Figure 5

GM 8L45 - 8L90

CLUTCH APPLICATION & LOCATION



COMPONENT APPLICATION CHART

RANGE	GEAR	1-3-5-6-7 Clutch	4-5-6-7-8 -Reverse Clutch	2-3-4-6-8 Clutch	1-2-7-8-Reverse Clutch	1-2-3-4-5 -Reverse Clutch	Torque Converter Clutch	8L45 GEAR RATIO	8L90 GEAR RATIO
Park	P				Applied*	Applied*			
Reverse	R		Applied		Applied	Applied		3.93	3.82
Neutral	N				Applied*	Applied*			
D	1st	Applied			Applied	Applied	Applied**	4.62	4.56
	2nd			Applied	Applied	Applied	Applied**	3.04	2.97
	3rd	Applied		Applied		Applied	Applied**	2.07	2.08
	4th		Applied	Applied		Applied	Applied**	1.66	1.69
	5th	Applied	Applied			Applied	Applied**	1.26	1.27
	6th	Applied	Applied	Applied			Applied**	1.00	1.00
	7th	Applied	Applied		Applied		Applied**	0.85	0.84
	8th		Applied	Applied	Applied		Applied**	0.66	0.65

**The converter clutch can be applied from 1st thru 8th gears depending on shift conditions.

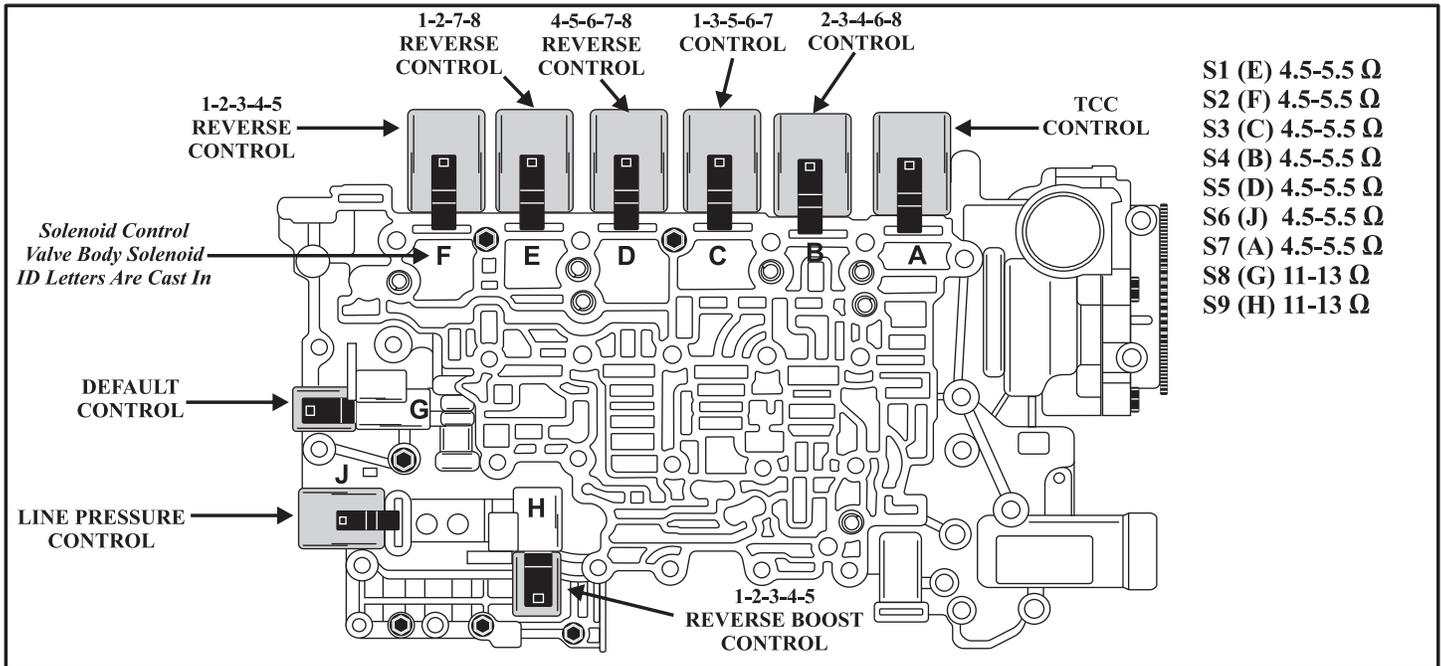
*Applied with no output load.

Copyright © 2017 ATSG

Figure 6

GM 8L45 - 8L90

SOLENOID IDENTIFICATION & FUNCTION



- S1 (E) 4.5-5.5 Ω
- S2 (F) 4.5-5.5 Ω
- S3 (C) 4.5-5.5 Ω
- S4 (B) 4.5-5.5 Ω
- S5 (D) 4.5-5.5 Ω
- S6 (J) 4.5-5.5 Ω
- S7 (A) 4.5-5.5 Ω
- S8 (G) 11-13 Ω
- S9 (H) 11-13 Ω

SOLENOID APPLICATION CHART

RANGE	GEAR	1-2-7-8-Reverse Clutch Sol. S1 or E N.H.	1-2-3-4-5-Reverse Clutch Sol. S2 or F N.L.	1-3-5-6-7 Clutch Sol. S3 or C N.L.	2-3-4-6-8 Clutch Sol. S4 or B N.H.	4-5-6-7-8-Reverse Clutch Sol. S5 or D N.H.	Line Press. Control Sol. S6 or J N.H.	Torque Converter Clutch Sol. S7 or A N.L.	Default Control Sol. S8 or G ON/OFF	1-2-3-4-5 Reverse Boost Sol. 9 or H ON/OFF
Park	P	ON	ON	OFF	OFF	OFF	◇	OFF	OFF	OFF
Reverse	R	ON	ON	OFF	OFF	ON	◇	OFF	OFF	OFF
Neutral	N	ON	ON	OFF	OFF	OFF	◇	OFF	OFF	OFF
D	1st	ON	ON	ON	OFF	OFF	◇	ON**	OFF/ON	OFF
	2nd	ON	ON	OFF	ON	OFF	◇	ON**	ON/OFF	OFF
	3rd	OFF	ON	ON	ON	OFF	◇	ON**	OFF*	OFF
	4th	OFF	ON	OFF	ON	ON	◇	ON**	OFF*	OFF
	5th	OFF	ON	ON	OFF	ON	◇	ON**	OFF*	OFF
	6th	OFF	OFF	ON	ON	ON	◇	ON**	OFF*	ON
	7th	ON	OFF	ON	OFF	ON	◇	ON**	OFF*	ON
	8th	ON	OFF	OFF	ON	ON	◇	ON**	OFF*	ON

*Default valve is hydraulically latched in stroked position in this state, Default solenoid can be commanded ON for lube override.

**The converter clutch can be applied from 1st thru 8th gears depending on shift conditions.

◇ The TCM controls the Line Pressure Solenoid based in inputs from throttle position, transmission temperature & engine load.

Note: Failsafe is sixth gear.

OFF/ON = Solenoid control port is not pressurized at low speed in 1st gear, solenoid port is pressurized at high speed in 1st gear.

ON/OFF = Solenoid control port is not pressurized at low speed in 2nd gear, solenoid port is pressurized at high speed in 2nd gear.

Note: ON = Solenoid control port pressurized.

Note: OFF = Solenoid pressure port not pressurized.

Copyright © 2017 ATSG

Figure 7



GM 8L45 - 8L90

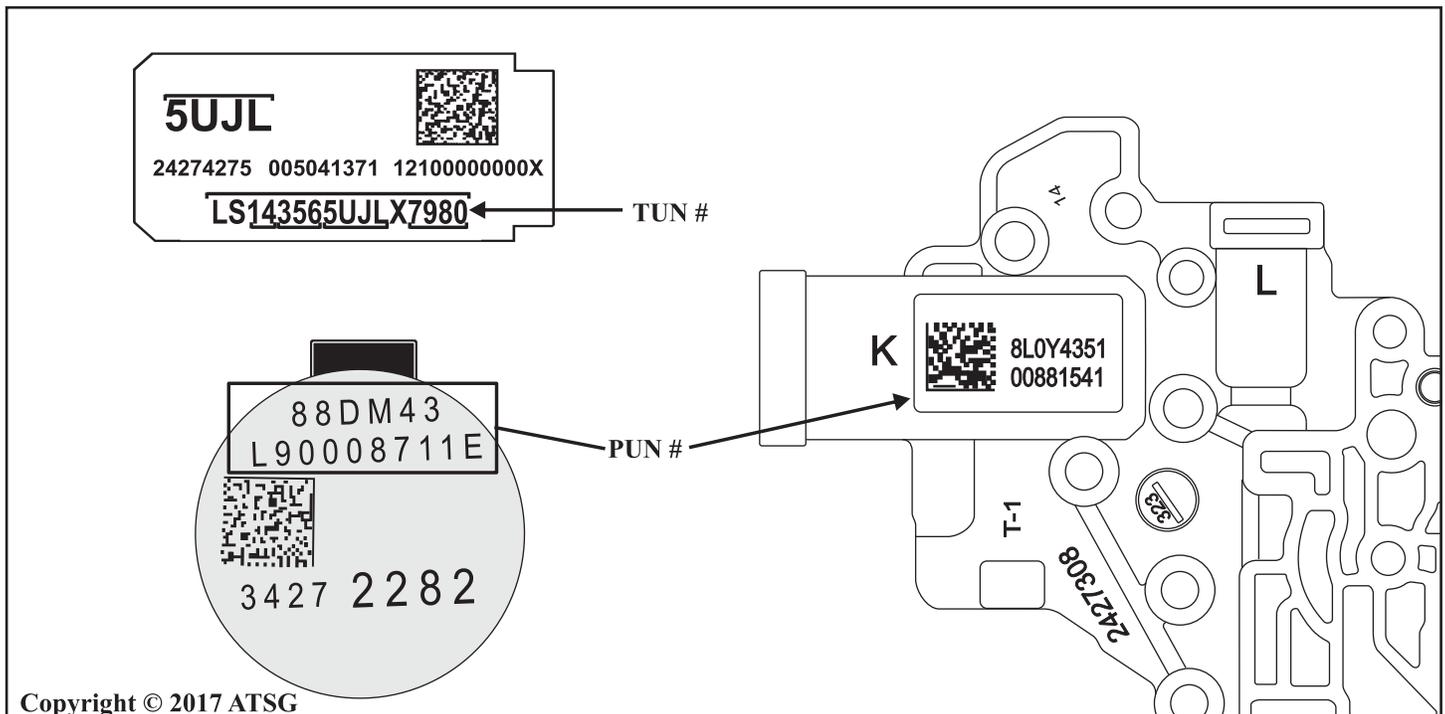
SOLENOID CHARACTERIZATION REPROGRAMMING

Shift Characterization Reprogramming:

The solenoids in this transmission require unique performance characteristic data in order to function at maximum efficiency. This data is programmed and stored in the Transmission Control Module. When a transmission assembly, TCM or solenoids are replaced, the performance characteristic data for the solenoids must be retrieved from the GM Repository (TIS2 Website) and reprogrammed into the TCM. This is to ensure that the characteristic data is properly matched between the solenoids, valve body and transmission. Solenoid characterization may also be performed to refresh characterization data.

To Perform Solenoid Characterization Component Replacement:

- 1 - Document the new Transmission Unique Number (TUN) as required, Refer to figures 2 and 8.
- 2 - Log into TIS2Web/SPS, (after the chosen subscription rate is paid).
- 3 - Type in the vehicles VIN number.
- 4 - Perform the SPS Transmission Control Module programming event:
 - Select “Transmission Control Module - Programming” to update TCM calibrations and solenoid data.
OR
 - Select “Transmission Control Module - MCVM Operations” to update Solenoid Characterization Data only.
- 5 - From the “MCVM (Mechanical Characterization and Virtual Matching) Operation Selection” screen, select the applicable service procedure to be performed. You will be prompted to provide the necessary Transmission Unique Number (TUN) or Part Unique Number (PUN). Refer to figures 2 and 8 when replacing a transmission part. At this time, the system will read the VIN from the Engine Control Module using the Multiple Diagnostic Interface (MDI) and then retrieve the applicable genealogy data tree from the “cloud”. This data tree accesses the original characterization data so that it may be updated with new component information.



Copyright © 2017 ATSG

Figure 8



Technical Service Information

GM 8L45 - 8L90

DIAGNOSTIC TROUBLE CODES

DTC	CODE DESCRIPTION	CODE TYPE
P0601	<i>Control Module Read Only Memory (ROM) Performance</i>	A
P0602	<i>Control Module Not Programmed</i>	A
P0603	<i>Control Module Long Term Memory Reset</i>	A
P0604	<i>Control Module Random Access Memory (RAM) Performance</i>	A
P0606	<i>Control Module Processor Performance</i>	A
P062F	<i>Control Module Long Term Memory Performance</i>	A
P16F3	<i>Control Module Redundant Memory Performance</i>	A
P16F4	<i>Control Module Transmission Range Switch Input Circuitry Performance</i>	A
P16FB	<i>Control Module Speed Signal Analog To Digital Converter Performance</i>	A
P0658	<i>Actuator High Control Circuit Group 1 Voltage Low</i>	C
P0659	<i>Actuator High Control Circuit Group 1 Voltage High</i>	C
P0711	<i>Transmission Fluid Temperature Sensor Performance</i>	B
P0712	<i>Transmission Fluid Temperature Sensor Circuit Voltage Low</i>	B
P0713	<i>Transmission Fluid Temperature Sensor Circuit Voltage High</i>	B
P0716	<i>Input Speed Sensor Performance</i>	A
P0717	<i>Input Speed Sensor Circuit No Signal</i>	A
P07BF	<i>Input Speed Sensor Circuit Voltage Low</i>	A
P07C0	<i>Input Speed Sensor Circuit Voltage High</i>	A
P071A	<i>Transmission Tow Mode SwitchCircuit Fault</i>	C
P0722	<i>Output Speed Sensor No Signal</i>	A
P0723	<i>Output Speed Sensor Intermittent Circuit Fault</i>	A
P077C	<i>Output Speed Sensor Intermittent Circuit Voltage Low</i>	A
P077D	<i>Output Speed Sensor Intermittent Circuit Voltage High</i>	A
P0746	<i>Transmission Control Solenoid 1 Stuck Off (1-2-7-8-R Clutch)</i>	A
P0747	<i>Transmission Control Solenoid 1 Stuck On (1-2-7-8-R Clutch)</i>	A
P0776	<i>Transmission Control Solenoid 2 Stuck Off (1-2-3-4-5-R Clutch)</i>	A
P0777	<i>Transmission Control Solenoid 2 Stuck On (1-2-3-4-5-R Clutch)</i>	A
P0796	<i>Transmission Control Solenoid 3 Stuck Off (1-3-5-6-7 Clutch)</i>	A
P0797	<i>Transmission Control Solenoid 3 Stuck On (1-3-5-6-7 Clutch)</i>	A
P0815	<i>Upshift Switch Circuit Fault</i>	C
P0816	<i>Downshift Switch Circuit Fault</i>	C
P0826	<i>Up & Down Shift Switch Circuit Fault</i>	C
P0851	<i>Park/Neutral Position Switch Circuit Voltage Low</i>	C
P0960	<i>Transmission Control Solenoid 1 Circuit Open</i>	A
P0962	<i>Transmission Control Solenoid 1 Circuit Voltage Low</i>	A
P0963	<i>Transmission Control Solenoid 1 Circuit Voltage High</i>	A
P0964	<i>Transmission Control Solenoid 2 Circuit Open</i>	A
P0966	<i>Transmission Control Solenoid 2 Circuit Voltage Low</i>	A
P0967	<i>Transmission Control Solenoid 2 Circuit Voltage High</i>	A

Figure 9

Copyright © 2017 ATSG



Technical Service Information

GM 8L45 - 8L90

DIAGNOSTIC TROUBLE CODES

DTC	CODE DESCRIPTION	CODE TYPE
P0968	Transmission Control Solenoid 3 Circuit Open	A
P0970	Transmission Control Solenoid 3 Circuit Voltage Low	A
P0971	Transmission Control Solenoid 3 Circuit Voltage High	A
P175F	Acceleration Sensor Signal Message Counter Incorrect	C
P1761	Up & Down Shift Switch Message Counter Incorrect	C
P176B	Intermediate Speed Sensor Circuit Performance	B
P176C	Intermediate Speed Sensor Circuit Voltage Low	B
P176D	Intermediate Speed Sensor Circuit Voltage High	B
P1824	Internal Mode Switch "P" Circuit Voltage Low	B
P182D	Internal Mode Switch "P" Circuit Voltage High	B
P18B8	Internal Mode Switch "P" Circuit Shorted	B
P18BD	Internal Mode Switch "P" Circuit Stuck Off - Invalid Voltage Range	B
P18C2	Internal Mode Switch "P" Circuit Stuck On - Invalid Voltage Range	B
P182A	Internal Mode Switch "A" Circuit Voltage Low	B
P1838	Internal Mode Switch "A" Circuit Voltage High	B
P18B5	Internal Mode Switch "A" Circuit Shorted	B
P18BA	Internal Mode Switch "A" Circuit Stuck Off - Invalid Voltage Range	B
P18BF	Internal Mode Switch "A" Circuit Stuck On - Invalid Voltage Range	B
P182B	Internal Mode Switch "B" Circuit Voltage Low	B
P182C	Internal Mode Switch "B" Circuit Voltage High	B
P18B6	Internal Mode Switch "B" Circuit Shorted	B
P18BB	Internal Mode Switch "B" Circuit Stuck Off - Invalid Voltage Range	B
P18C0	Internal Mode Switch "B" Circuit Stuck On - Invalid Voltage Range	B
P182E	Internal Mode Switch Indicates Invalid Range	B
P1915	Internal Mode Switch Does Not Indicate Park/Neutral During Start	B
P182F	Internal Mode Switch "C" Circuit Voltage Low	B
P1839	Internal Mode Switch "C" Circuit Voltage High	B
P18B7	Internal Mode Switch "C" Circuit Shorted	B
P18BC	Internal Mode Switch "C" Circuit Stuck Off - Invalid Voltage Range	B
P18C1	Internal Mode Switch "C" Circuit Stuck On - Invalid Voltage Range	B
P1840	Internal Mode Switch "S" Circuit Voltage Low	B
P1841	Internal Mode Switch "S" Circuit Voltage High	B
P18B9	Internal Mode Switch "S" Circuit Shorted	B
P18BE	Internal Mode Switch "S" Circuit Stuck Off - Invalid Voltage Range	B
P18C3	Internal Mode Switch "S" Circuit Stuck On - Invalid Voltage Range	B
P2670	Actuator High Control Circuit Group 2 Voltage Low	A
P2671	Actuator High Control Circuit Group 2 Voltage High	C
P2714	Transmission Control Solenoid 4 Stuck Off (2-3-4-6-8 Clutch)	A
P2715	Transmission Control Solenoid 4 Stuck On (2-3-4-6-8 Clutch)	A

Figure 10

Copyright © 2017 ATSG



Technical Service Information

GM 8L45 - 8L90 DIAGNOSTIC TROUBLE CODES

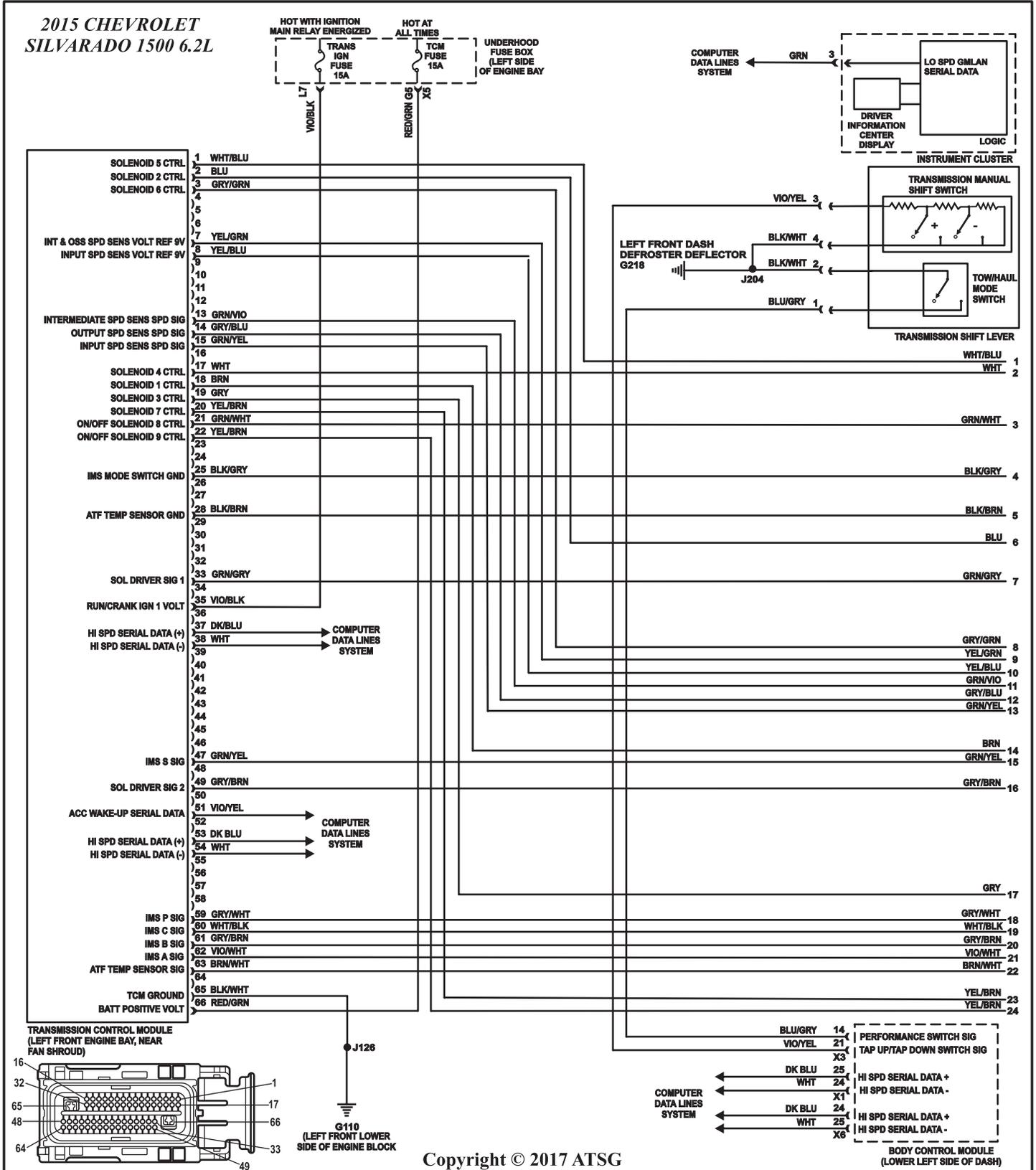
DTC	CODE DESCRIPTION	CODE TYPE
<i>P2718</i>	<i>Transmission Control Solenoid 4 Circuit Open</i>	<i>A</i>
<i>P2720</i>	<i>Transmission Control Solenoid 4 Circuit Voltage Low</i>	<i>A</i>
<i>P2721</i>	<i>Transmission Control Solenoid 4 Circuit Voltage High</i>	<i>A</i>
<i>P2723</i>	<i>Transmission Control Solenoid 5 Stuck Off (4-5-6-7-8-R Clutch)</i>	<i>A</i>
<i>P2724</i>	<i>Transmission Control Solenoid 5 Stuck On (4-5-6-7-8-R Clutch)</i>	<i>A</i>
<i>P2727</i>	<i>Transmission Control Solenoid 5 Circuit Open</i>	<i>A</i>
<i>P2729</i>	<i>Transmission Control Solenoid 5 Circuit Voltage Low</i>	<i>A</i>
<i>P2730</i>	<i>Transmission Control Solenoid 5 Circuit Voltage High</i>	<i>A</i>
<i>P2736</i>	<i>Transmission Control Solenoid 6 Circuit Open</i>	<i>A</i>
<i>P2738</i>	<i>Transmission Control Solenoid 6 Circuit Voltage Low</i>	<i>A</i>
<i>P2739</i>	<i>Transmission Control Solenoid 6 Circuit Voltage High</i>	<i>A</i>
<i>P27A7</i>	<i>Transmission Control Solenoid 1 Calibration Incorrect</i>	<i>A</i>
<i>P27A8</i>	<i>Transmission Control Solenoid 2 Calibration Incorrect</i>	<i>A</i>
<i>P27A9</i>	<i>Transmission Control Solenoid 3 Calibration Incorrect</i>	<i>A</i>
<i>P27AA</i>	<i>Transmission Control Solenoid 4 Calibration Incorrect</i>	<i>A</i>
<i>P27AB</i>	<i>Transmission Control Solenoid 5 Calibration Incorrect</i>	<i>A</i>
<i>P27AC</i>	<i>Transmission Control Solenoid 6 Calibration Incorrect</i>	<i>A</i>
<i>P27AD</i>	<i>Transmission Control Solenoid 7 Calibration Incorrect</i>	<i>A</i>
<i>P2808</i>	<i>Torque Converter Clutch System Stuck Off</i>	<i>B</i>
<i>P2809</i>	<i>Torque Converter Clutch System Stuck On</i>	<i>A</i>
<i>P2812</i>	<i>Transmission Control Solenoid 7 Circuit Open</i>	<i>A</i>
<i>P2814</i>	<i>Transmission Control Solenoid 7 Circuit Voltage Low</i>	<i>A</i>
<i>P2815</i>	<i>Transmission Control Solenoid 7 Circuit Voltage High</i>	<i>A</i>
<i>P2817</i>	<i>Transmission Control Solenoid 8 Stuck Off (No 4th Gear)</i>	<i>A</i>
<i>P2818</i>	<i>Transmission Control Solenoid 8 Stuck On (TCC Slip RPM Too Low In Park)</i>	<i>B</i>
<i>P281D</i>	<i>Transmission Control Solenoid 8 Circuit Voltage Low</i>	<i>A</i>
<i>P281E</i>	<i>Transmission Control Solenoid 8 Circuit Voltage High</i>	<i>A</i>
<i>P2824</i>	<i>Transmission Control Solenoid 9 Circuit Open</i>	<i>A</i>
<i>P2826</i>	<i>Transmission Control Solenoid 9 Circuit Voltage Low</i>	<i>A</i>
<i>P2827</i>	<i>Transmission Control Solenoid 9 Circuit Voltage High</i>	<i>A</i>

Figure 11

Copyright © 2017 ATSG

GM 8L45 - 8L90

ELECTRICAL WIRING DIAGRAM



Copyright © 2017 ATSG

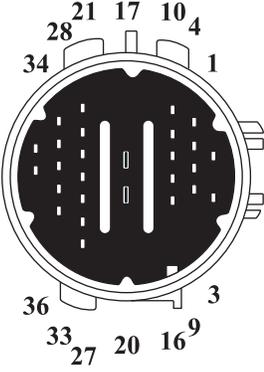
Figure 12

GM 8L45 - 8L90

TRANSMISSION CASE CONNECTOR

X175 CONNECTOR	TERMINAL NUMBER	CIRCUIT DESCRIPTION	WIRE COLOR	INTERNAL CONNECTOR COLOR
	1	Transmission Control Solenoid 9 (1-2-3-4-5-R Boost)	Green/Blue	White
	2	Not Used	_____	_____
	3	Transmission Control Solenoid 7 (TCC)	Yellow/Red	Gray
	4	Transmission Control Solenoid 6 (Line Pressure)	Gray/Green	Purple
	5	Transmission Control Solenoid 1 (1-2-7-8-R)	Brown	Purple
	6	Transmission Control Solenoid 2 (1-2-4-5-R)	Blue	Gray
	7	Transmission Control Solenoid 8 (Default Control)	Yellow/Red	White
	8	Not Used	_____	_____
	9	Not Used	_____	_____
	10	Transmission Control Solenoid 3 (1-3-5-6-7)	Gray	Gray
	11	Transmission Fluid Temperature Sensor Ground	Black/Brown	N/A
	12	Transmission Fluid Temperature Sensor Signal	Brown/White	N/A
	13	Transmission Control Solenoid 4 (2-3-4-6-8)	White	Clear
	14	Transmission Control Solenoid 5 (4-5-6-7-8-R)	Blue/White	Purple
	15	Not Used	_____	_____
	16	Not Used	_____	_____
	17	Not Used	_____	_____
	18	12V Power Supply To Sols 4, 5 & 9	Green/Gray	Purple, Clear, White
	19	12V Power Supply To Sols 1, 2, 3, TCC, LP & Default Control	Gray/Brown	Gray, Purple, Gray, Gray, Purple, White
	20	Not Used	_____	_____
	21	IMS Range "C" Signal	White/Black	Brown
	22	IMS Range "A" Signal	Purple/White	Brown
	23	IMS Range "P" Signal	Gray/White	Brown
	24	Output Speed Sensor Signal	Gray/Blue	White
	25	9 Volt Reference For Intermediate/Output Speed Sensor	Yellow/Green	White
	26	Input Speed Sensor Signal	Green/Yellow	White
	27	9 Volt Reference For Input Speed Sensor	Yellow/Blue	White
	28	IMS Range "B" Signal	Gray/Orange	Brown
	29	9 Volt Reference For Internal Mode Switch	Yellow/Blue	Brown
	30	Internal Mode Switch Ground	Black/Gray	Brown
	31	9 Volt Reference For Internal Mode Switch	Yellow/Green	Brown
	32	Intermediate Speed Sensor Signal	Green/Violet	White
	33	Not Used	_____	_____
	34	IMS Range "S" Signal	Gray/Yellow	Brown
	35	IMS Park/Neutral Signal To Engine Control Module	White/Gray	Brown
	36	Not Used	_____	_____

X175 CONNECTOR



VEHICLE HARNESS CONNECTOR



TRANSMISSION CASE CONNECTOR

Copyright © 2017 ATSG

Figure 14



Technical Service Information

GM 8L45 - 8L90

INTERNAL MODE SWITCH

The Park/Neutral switch which is an integral part of the Internal Mode Switch indicates to the Engine Control Module (ECM) if the vehicle is in park or neutral or in a drive range position. With ignition ON, the ECM provides 12 volts on the park/neutral signal wire to the park/neutral position switch. A separate ground circuit from the park/neutral position switch to the Transmission Control Module (TCM) completes the path to ground.

With the gear shift lever in park or neutral, the switch closes and drops the voltage on the signal circuit to zero volts. In this state the engine will start and run. In reverse or drive range the park/neutral switch opens, 12 volts is then present on the signal circuit which will inhibit engine starting.

The Internal Mode Switch indicates to the Transmission Control Module (TCM) which gear position the driver has selected. The Internal Mode Switch consists of five (5) separate Hall Effect Sensors. Each Hall Effect Sensor is supplied a nine (9) volt reference circuit and a signal circuit from the TCM. Each signal circuit for each gear selector position will have either a voltage reading of 0.70V indicating ON, or 1.68 - 2.38V indicating OFF. The voltage values on each circuit will change and are dependant on the position of the gear selector. The state of each Hall Effect Sensor circuit is displayed on the scan tool.

TERMINAL #	TERMINAL FUNCTION
1	<i>PARK/NEUTRAL SIGNAL TO ECM</i>
2	<i>TCM SUPPLIED IMS GROUND</i>
3	<i>NOT USED</i>
4	<i>9 VOLT REFERENCE SUPPLY</i>
5	<i>IMS RANGE "A" SIGNAL</i>
6	<i>IMS RANGE "C" SIGNAL</i>
7	<i>IMS RANGE "S" SIGNAL</i>
8	<i>IMS RANGE "B" SIGNAL</i>
9	<i>IMS RANGE "P" SIGNAL</i>
10	<i>9 VOLT REFERENCE SUPPLY</i>

Copyright © 2017 ATSG

INTERNAL MODE SWITCH VOLTAGE CHART					
SHIFT LEVER POSITION	IMS "A" CIRCUIT	IMS "B" CIRCUIT	IMS "C" CIRCUIT	IMS "P" CIRCUIT	IMS "S" CIRCUIT
PARK	1.68 - 2.38V	0.70 - 0.96V	1.68 - 2.38V	0.70 - 0.96V	0.70 - 0.96V
REVERSE	0.70 - 0.96V	1.68 - 2.38V	1.68 - 2.38V	0.70 - 0.96V	1.68 - 2.38V
NEUTRAL	0.70 - 0.96V	1.68 - 2.38V	0.70 - 0.96V	1.68 - 2.38V	0.70 - 0.96V
DRIVE	1.68 - 2.38V	0.70 - 0.96V	0.70 - 0.96V	1.68 - 2.38V	1.68 - 2.38V
M SHIFT	1.68 - 2.38V	0.70 - 0.96V	0.70 - 0.96V	1.68 - 2.38V	0.70 - 0.96V

Figure 15



Technical Service Information

GM 8L45 - 8L90

INTERNAL WIRE HARNESS CONNECTOR

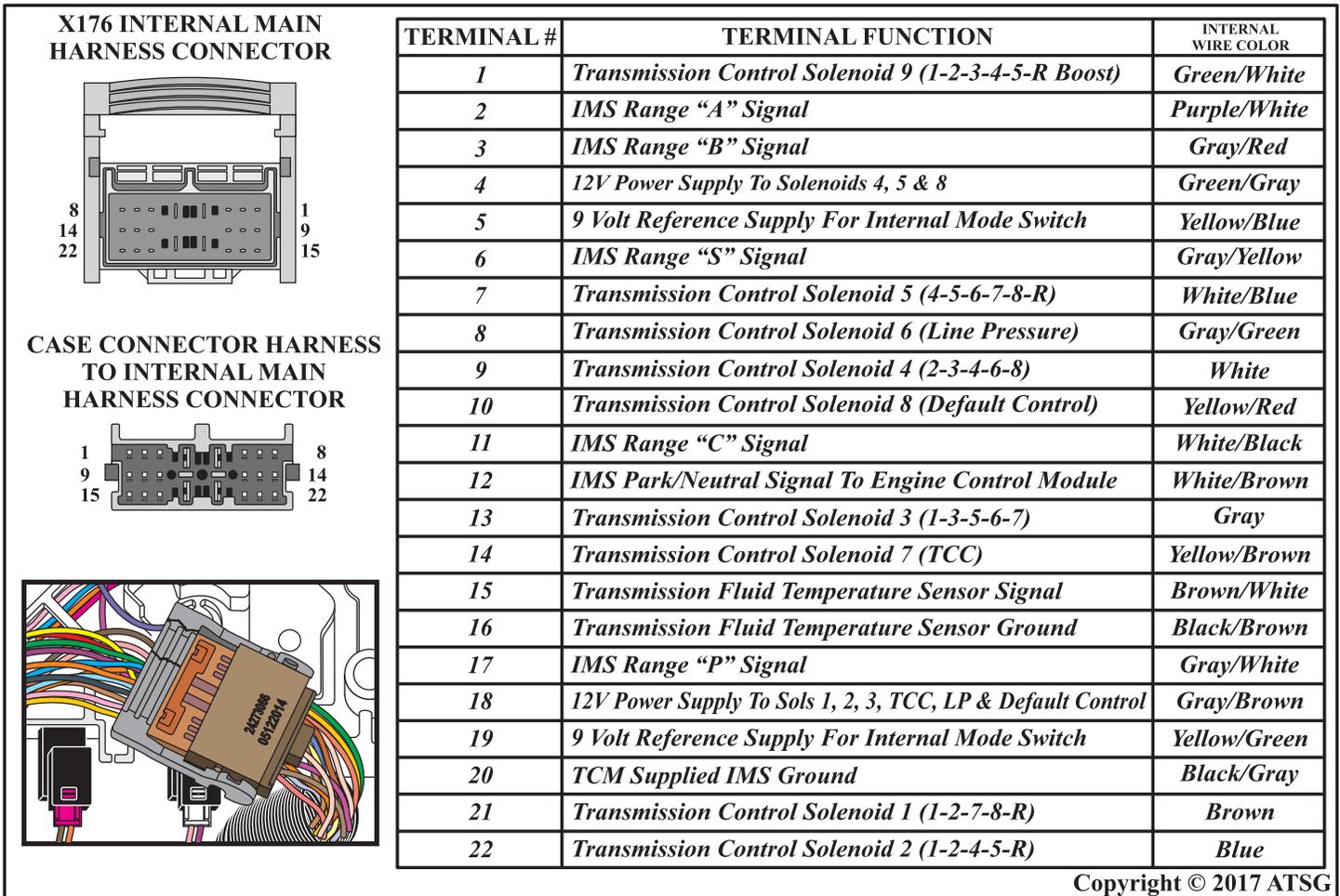


Figure 16

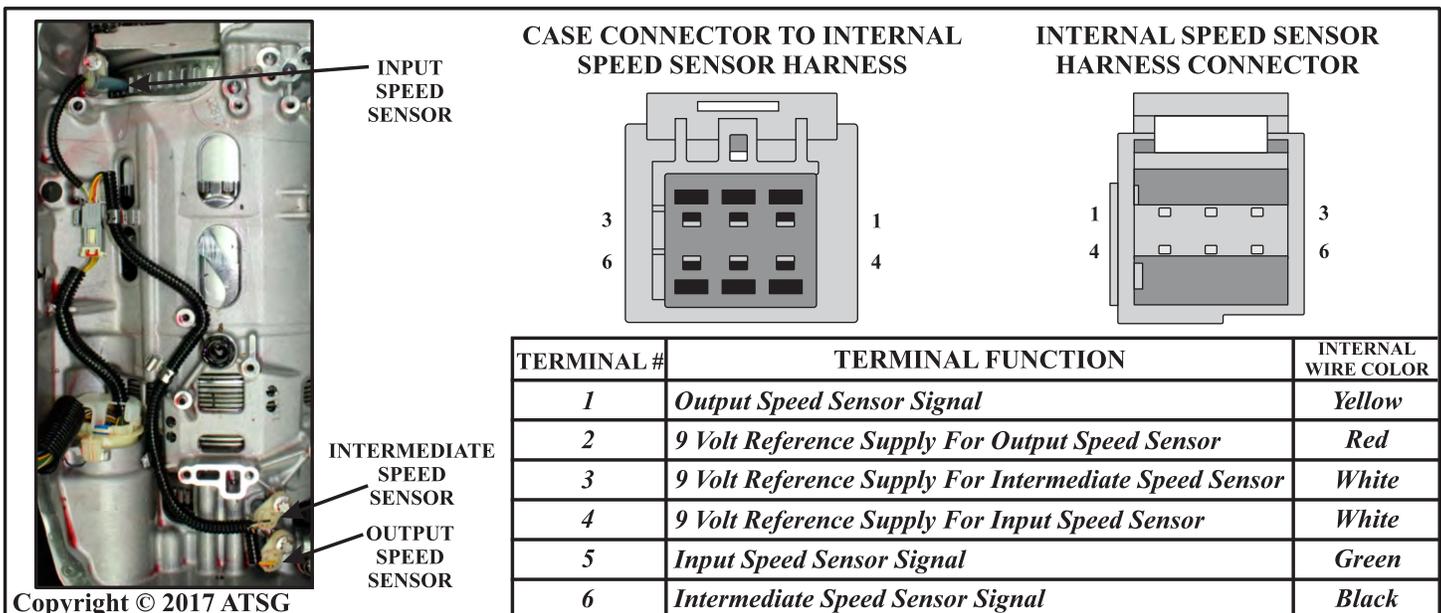
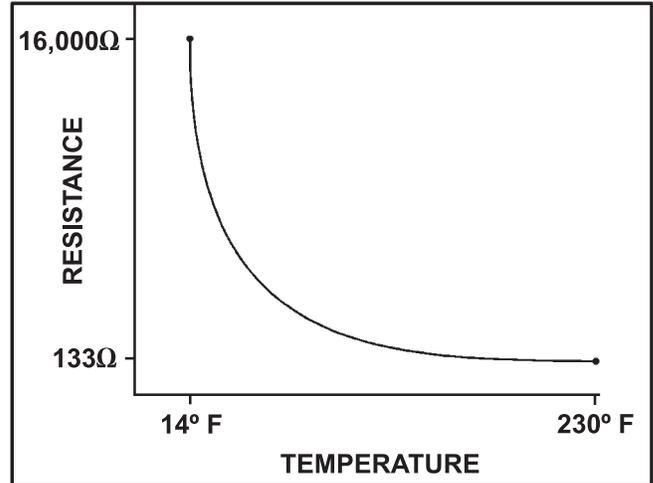
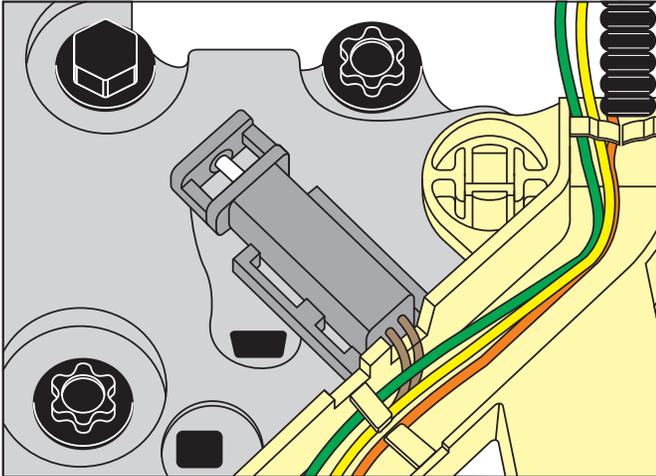


Figure 17

GM 8L45 - 8L90

TRANSMISSION FLUID TEMPERATURE SENSOR

The Transmission Fluid Temperature Sensor is an integral part of the internal wire harness. This sensor is a negative temperature coefficient type which means as temperature increases, resistance decreases. The TCM supplies a reference voltage to the sensor and measures the voltage drop in the circuit. As the temperature increases, signal voltage decreases. The TCM uses this information to maintain shift quality and converter clutch apply over the operating temperature range.



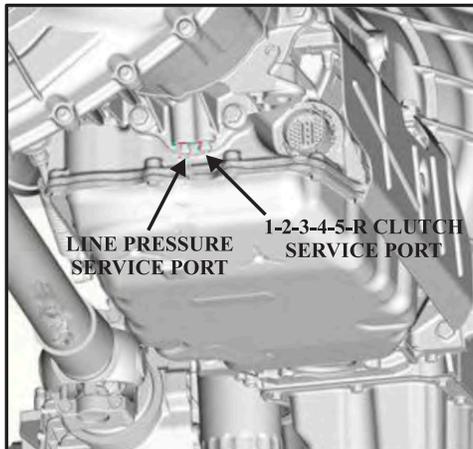
Copyright © 2017 ATSG

Figure 18

LINE PRESSURE CHECK PROCEDURE

The 8L90 is equipped with two pressure ports located at the bottom of the extension housing as seen in Figure 19. Although there are pressure specifications for line pressure values, they are unrealistic when comparing scan tool commanded line pressure to the actual pressure shown on a gauge. As seen in the chart provided below, these two values do come close to each other.

Make certain all codes are cleared. Then control line pressure using the scan tools bidirectional control to see if a pressure range between 45 to 300 PSI can be obtained, this should be done with the transmission in the park position to protect internal components. Increase and decrease line pressure in increments allowing the pressure to stabilize between each increment. When the procedure is complete, torque the pressure port plug to 97 lb. in. (10.96 N·m).



Scan tool commanded line pressure (KPa)	Line pressure displayed on pressure gauge @ 1500 rpm	
	PSI	KPa
<i>Not Displayed</i>	45 - 80	310 - 550
200	95 - 130	655 - 900
400	160 - 190	1100 - 1310
600	220 - 250	1520 - 1725
800	270 - 300	1860 - 2070
1000	270 - 300	1860 - 2070
1200	270 - 300	1860 - 2070
1400	270 - 300	1860 - 2070
1600	270 - 300	1860 - 2070
1800	270 - 300	1860 - 2070
2000	270 - 300	1860 - 2070

Copyright © 2017 ATSG

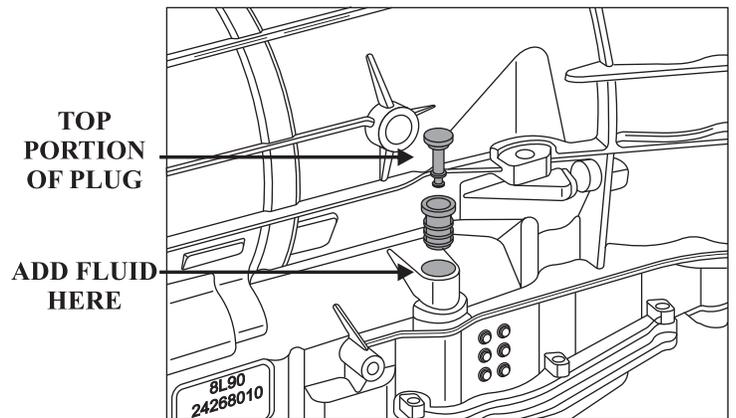
Figure 19

GM 8L45 - 8L90

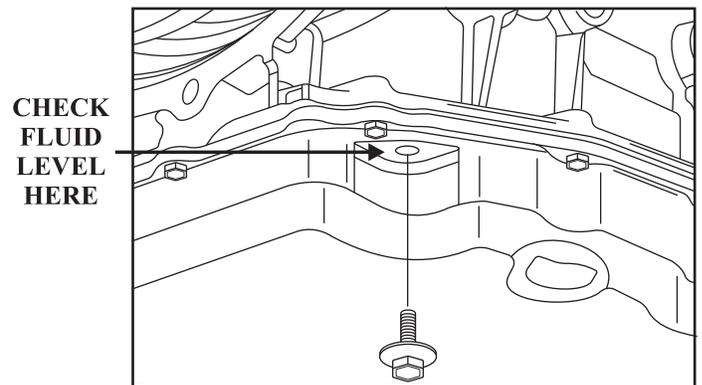
TRANSMISSION FLUID LEVEL CHECK & FILL PROCEDURE

The 8L90 transmission does not have a filler tube or dipstick. Fluid level is checked through the check plug in the bottom of the oil pan. Using a scan tool to view temperature, the fluid level must be checked when the transmission fluid temperature is between 95 - 113°F (35 - 45°C). Make certain the vehicle is level when checking fluid level and that the transmission is in park with the engine running. *Carefully* remove the check plug to avoid coming in contact with hot fluid. If the fluid level is too high, the excess will flow out of the check plug. If it is too low, fluid will have to be added until it trickles out of the check plug which is determined by the height of the “stand pipe” inside the oil pan. To add fluid, remove the fill plug by pulling up on the top portion of it. Then pull the plug out of the fill opening. When enough fluid has been added, replace the fill plug and push the top of it down to lock it in place.

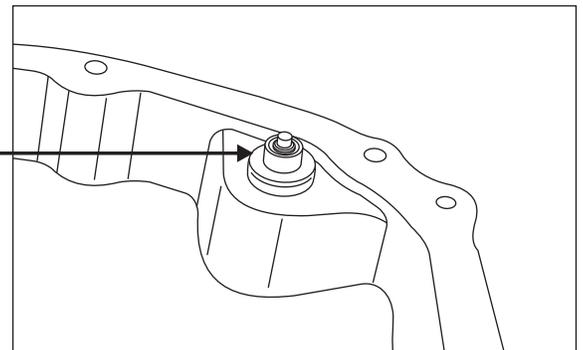
CHEVROLET & GMC TRUCKS - 8L90		
SERVICE PROVIDED	QUARTS	LITERS
<i>Pan & Filter Service</i>	6.0	5.7
<i>Transmission Overhaul</i>	10.5	9.9
<i>Overhaul w/Cooling System</i>	12.2	11.5
<i>Overhaul w/ HD Cooling System</i>	12.4	11.7



CHEVROLET CORVETTE - 8L90		
SERVICE PROVIDED	QUARTS	LITERS
<i>Pan & Filter Service</i>	7.4	7.0
<i>Transmission Overhaul</i>	11.30	10.7
<i>Overhaul w/Cooling System</i>	11.73	11.1



STANDPIPE WILL DETERMINE CORRECT FLUID LEVEL



CADILLAC - 8L45		
SERVICE PROVIDED	QUARTS	LITERS
<i>Pan & Filter Service</i>	6.4	6.0
<i>Transmission Overhaul</i>	10.1	9.5
<i>Overhaul w/Cooling System</i>	10.8	10.3

Copyright © 2017 ATSG

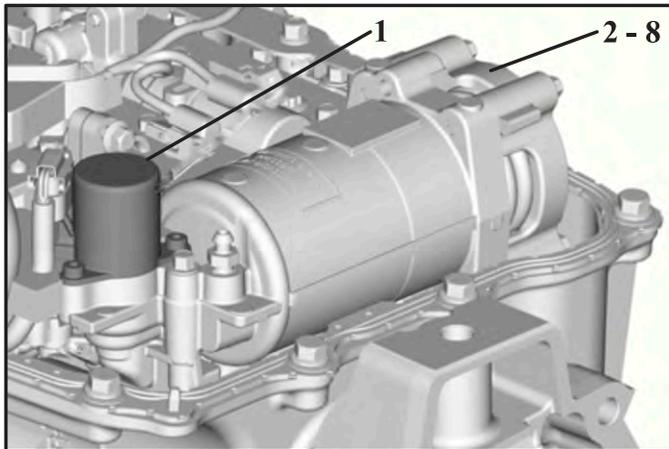
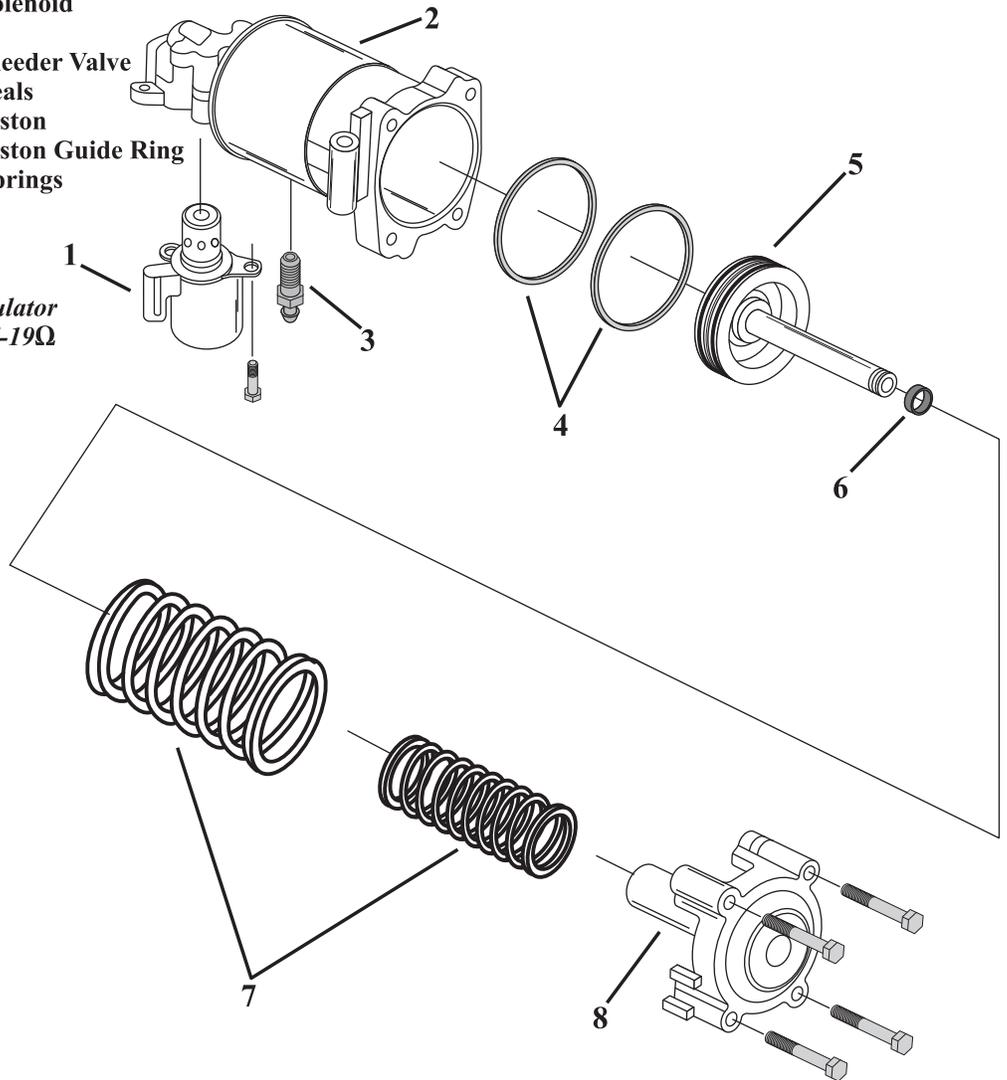
Figure 20

GM 8L45 - 8L90

TRANSMISSION STOP/START SURGE ACCUMULATOR

- 1 Auxiliary Fluid Accumulator Solenoid
- 2 Auxiliary Fluid Housing
- 3 Auxiliary Fluid Accumulator Bleeder Valve
- 4 Auxiliary Fluid Accumulator Seals
- 5 Auxiliary Fluid Accumulator Piston
- 6 Auxiliary Fluid Accumulator Piston Guide Ring
- 7 Auxiliary Fluid Accumulator Springs
- 8 Auxiliary Fluid Cover

Auxiliary Fluid Accumulator Solenoid Resistance: 17-19Ω

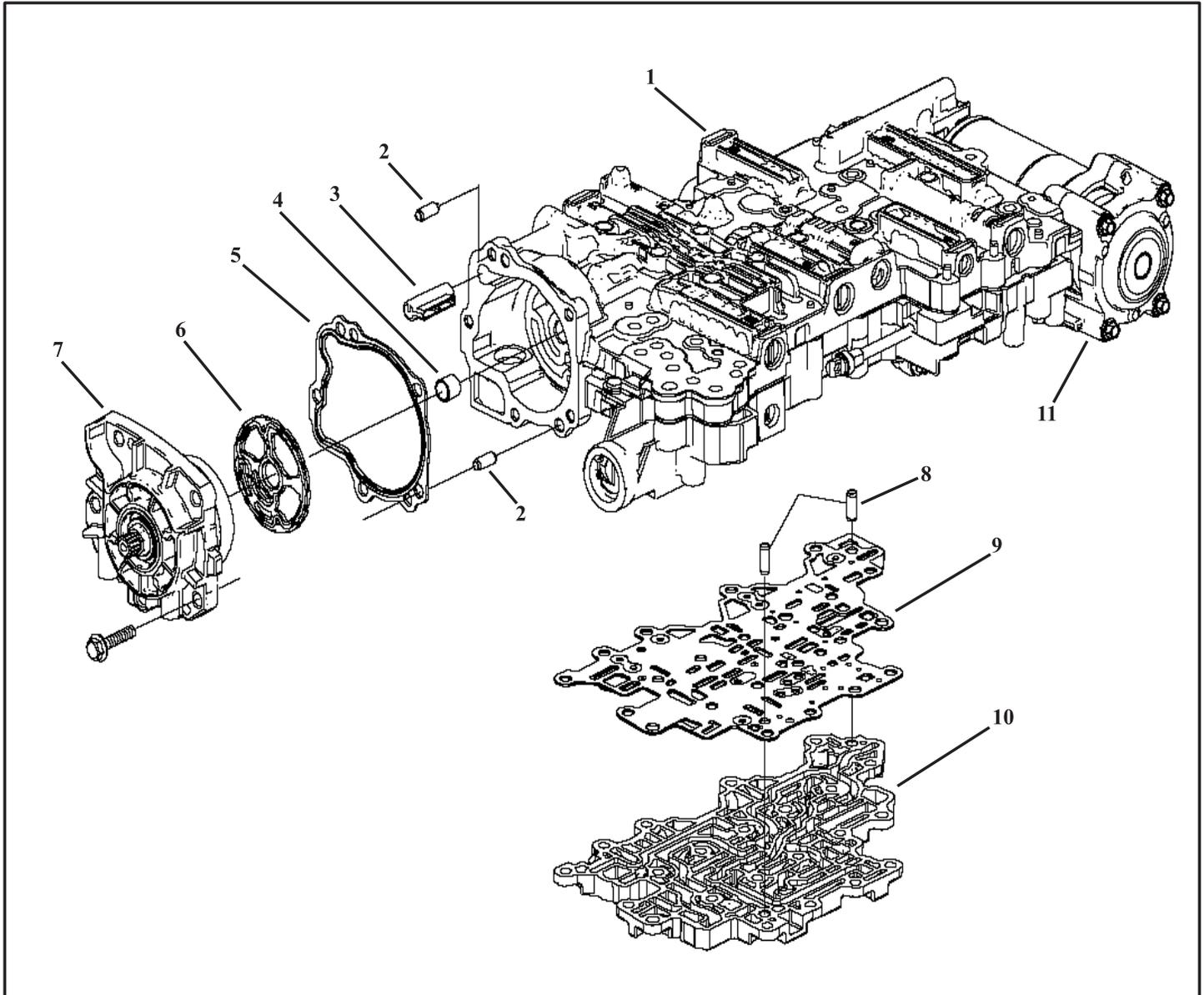


The Surge Accumulator assembly is bolted to the Control Valve Upper Body and is only used when the vehicle is equipped with the Auto-Stop/Start System. During engine OFF conditions the surge accumulator stores line pressure. When the driver lets off the brake and steps on the throttle pedal, the surge accumulator solenoid opens, sending stored pressure in two directions. First, it unseats checkball #20 and seats checkball #9 to prevent surge oil from going to the pump. This oil goes through the 1-3-5-6-7 Regulator Valve to apply the 1-3-5-6-7 clutch and through the 1-2-7-8-R Regulator Valve to apply the 1-2-7-8-R clutch. Secondly, the surge oil goes directly to the 1-2-3-4-5-R clutch. These clutches provide 1st gear in preparation for engine restart.

Copyright © 2017 ATSG

Figure 21

GM 8L45 - 8L90 CONTROL VALVE ASSEMBLY

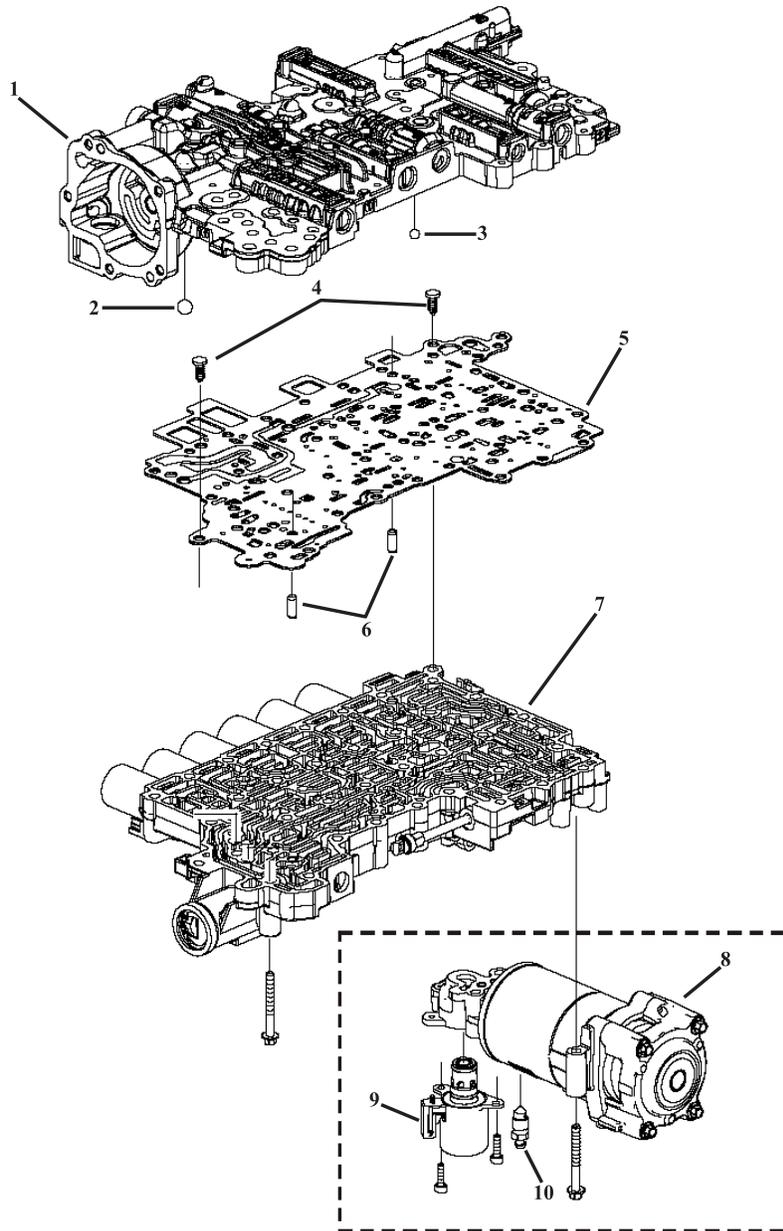


- 1 Control Valve Body Assembly**
- 2 Transmission Fluid Pump Locator Pin (2)**
- 3 Transmission Fluid Passage Sleeve**
- 4 Transmission Fluid Pump Drive Shaft Bushing**
- 5 Transmission Fluid Pump Gasket**
- 6 Transmission Fluid Pump Seal**
- 7 Transmission Fluid Pump Assembly**
- 8 Control Valve Body Locator Pin (2)**
- 9 Control Valve Body Channel Plate Spacer Plate (bonded)**
- 10 Control Valve Channel Plate**

Figure 22

GM 8L45 - 8L90

CONTROL VALVE ASSEMBLY



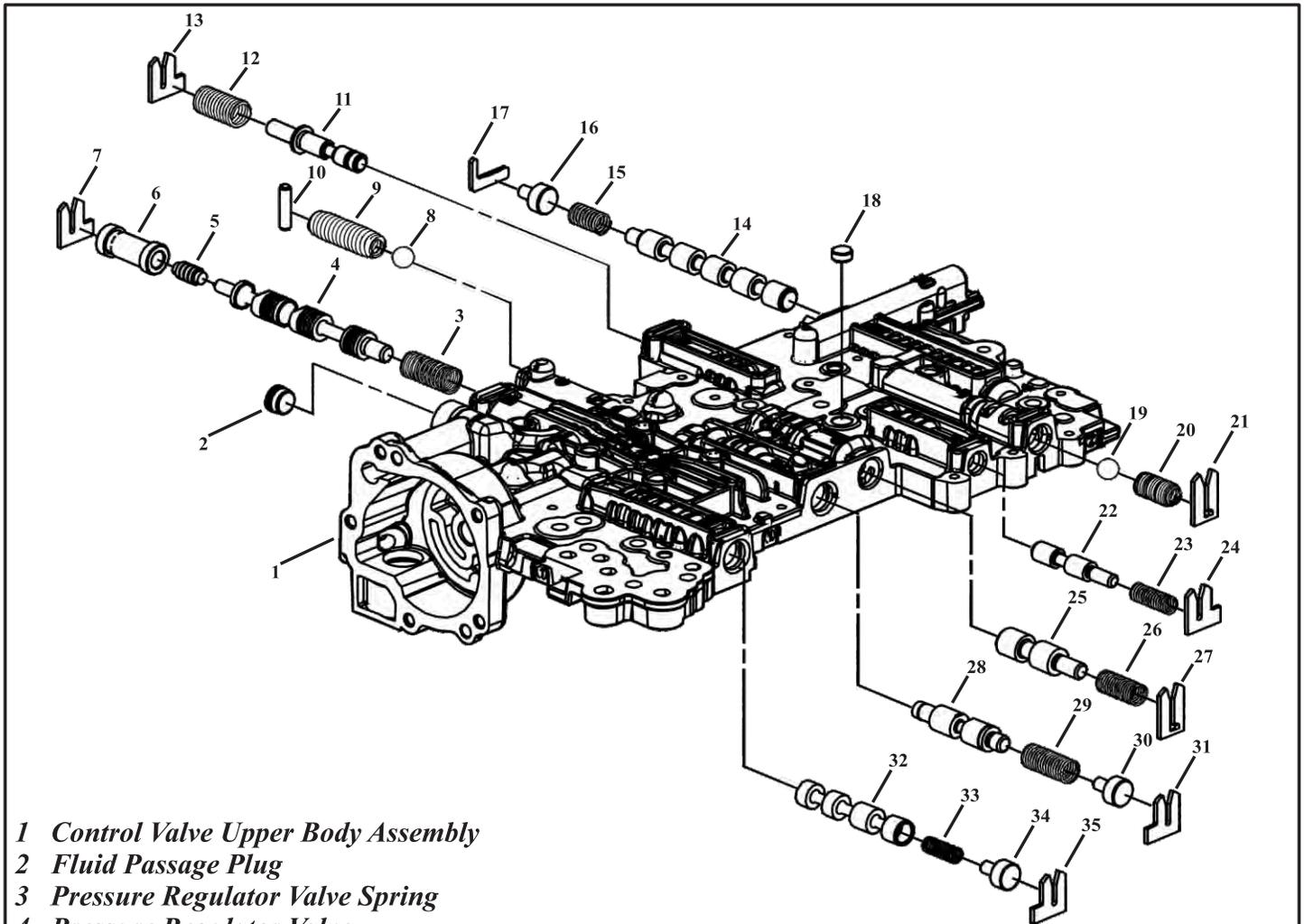
- 1** Control Valve Upper Valve Body
- 2** Control Valve Body Ball Check Valve (3)
- 3** Cooler Flow Blow-off Ball Valve
- 4** Control Valve Body Spacer Plate Retainer (2)
- 5** Control Valve Body Spacer Plate (bonded)
- 6** Control Valve Body Locator Pin (2)
- 7** Control Valve Body Solenoid Assembly
- 8** Transmission Auxiliary Surge Accumulator Assembly (auto-stop Only)
- 9** Transmission Auxiliary Surge Accumulator Solenoid (auto-stop Only)
- 10** Transmission Auxiliary Surge Accumulator Bleeder Valve (auto-stop Only)

Copyright © 2017 ATSG

Figure 23

GM 8L45 - 8L90

UPPER CONTROL VALVE BODY ASSEMBLY



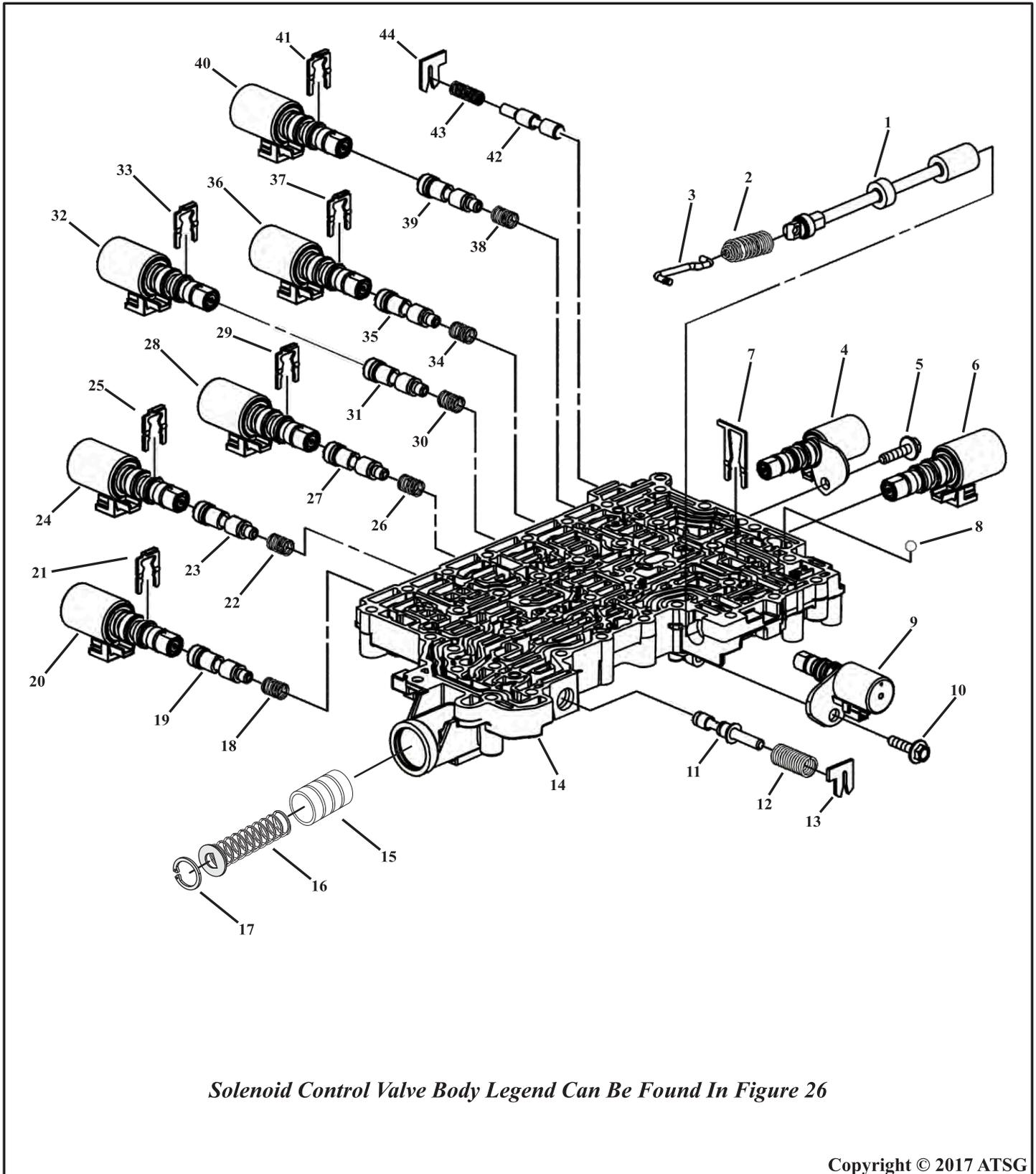
- | | |
|--|--|
| <ul style="list-style-type: none"> 1 Control Valve Upper Body Assembly 2 Fluid Passage Plug 3 Pressure Regulator Valve Spring 4 Pressure Regulator Valve 5 Pressure Regulator Shuttle Valve 6 Pressure Regulator Valve Bore Bushing 7 Pressure Regulator Valve Spring Retainer 8 Line Pressure Blow Off Ball 9 Line Pressure Blow Off Ball Spring 10 Line Pressure Blow Off Ball Spring Retainer 11 Actuator Feed Limit Valve 12 Actuator Feed Limit Valve Spring 13 Actuator Feed Limit Valve Spring Retainer 14 Default Override Valve 15 Default Override Valve Spring 16 Default Override Valve Bore Plug 17 Default Override Valve Retainer 18 Control Valve Center Body Hole Plug 19 Clutch Piston Exhaust Blow Off Ball 20 Clutch Piston Exhaust Blow Off Ball Spring | <ul style="list-style-type: none"> 21 Clutch Piston Exhaust Blow Off Ball Spring Retainer 22 1-2-3-4-5 Reverse Clutch Boost Valve 23 1-2-3-4-5 Reverse Clutch Boost Valve Spring 24 1-2-3-4-5 Reverse Clutch Boost Valve Spring Retainer 25 TCC Valve 26 TCC Valve Spring 27 TCC Valve Spring Retainer 28 Lube Regulator Valve 29 Lube Regulator Valve Spring 30 Lube Regulator Valve Bore Plug 31 Lube Regulator Valve Retainer 32 TCC Control Valve 33 TCC Control Valve Spring 34 TCC Control Valve Bore Plug 35 TCC Control Valve Spring Retainer |
|--|--|

Copyright © 2017 ATSG

Figure 24

GM 8L45 - 8L90

SOLENOID CONTROL VALVE BODY ASSEMBLY



Solenoid Control Valve Body Legend Can Be Found In Figure 26

Figure 25



GM 8L45 - 8L90

SOLENOID CONTROL VALVE BODY ASSEMBLY...continued

SOLENOID CONTROL VALVE BODY LEGEND FROM FIGURE 25

- 1 *Manual Valve*
- 2 *Manual Valve Spring*
- 3 *Manual Valve Link*
- 4 *Default Control Solenoid*
- 5 *Default Control Solenoid Retaining Bolt*
- 6 *Line Pressure Control Solenoid*
- 7 *Line Pressure Control Solenoid Retainer*
- 8 *Cooler Flow Blow Off Ball*
- 9 *1-2-3-4-5 Reverse Boost Control Solenoid*
- 10 *1-2-3-4-5 Reverse Boost Control Solenoid Retaining Bolt*
- 11 *Converter Feed Limit Valve*
- 12 *Converter Feed Limit Valve Spring*
- 13 *Converter Feed Limit Valve Spring Retainer*
- 14 *Solenoid Control Valve Body*
- 15 *1-3-5-6-7 Clutch Accumulator Piston*
- 16 *1-3-5-6-7 Clutch Accumulator Piston Spring*
- 17 *1-3-5-6-7 Clutch Accumulator Piston Retaining Ring*
- 18 *TCC Control Valve Spring*
- 19 *TCC Control Valve*
- 20 *TCC Control Solenoid*
- 21 *TCC Control Solenoid Retainer*
- 22 *2-3-4-6-8 Control Valve Spring*
- 23 *2-3-4-6-8 Control Valve*
- 24 *2-3-4-6-8 Control Solenoid*
- 25 *2-3-4-6-8 Control Solenoid Retainer*
- 26 *1-3-5-6-7 Control Valve Spring*
- 27 *1-3-5-6-7 Control Valve*
- 28 *1-3-5-6-7 Control Solenoid*
- 29 *1-3-5-6-7 Control Solenoid Retainer*
- 30 *4-5-6-7-8 Reverse Control Valve Spring*
- 31 *4-5-6-7-8 Reverse Control Valve*
- 32 *4-5-6-7-8 Reverse Control Solenoid*
- 33 *4-5-6-7-8 Reverse Control Solenoid Retainer*
- 34 *1-2-7-8 Reverse Control Valve Spring*
- 35 *1-2-7-8 Reverse Control Valve*
- 36 *1-2-7-8 Reverse Control Valve Solenoid*
- 37 *1-2-7-8 Reverse Control Valve Solenoid Retainer*
- 38 *1-2-3-4-5 Reverse Control Valve Spring*
- 39 *1-2-3-4-5 Reverse Control Valve*
- 40 *1-2-3-4-5 Reverse Control Solenoid*
- 41 *1-2-3-4-5 Reverse Control Solenoid Retainer*
- 42 *Lube Regulator Valve*
- 43 *Lube Regulator Valve Spring*
- 44 *Lube Regulator Valve Spring Retainer*

Copyright © 2017 ATSG

Figure 26

GM 8L45 - 8L90

CHECKBALL LOCATIONS & FUNCTION

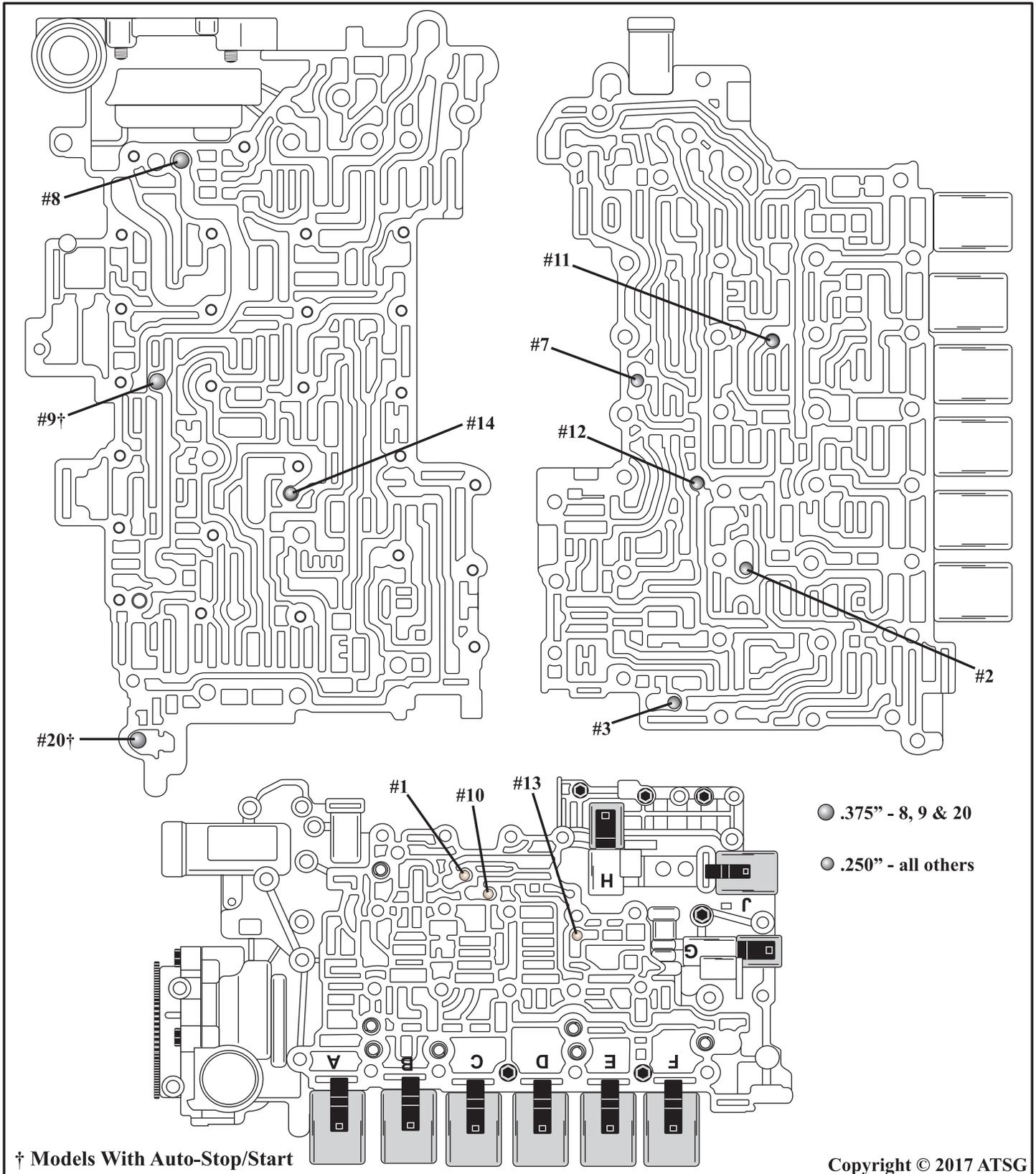


Figure 27



Technical Service Information

GM 8L45 - 8L90

CHECKBALL LOCATIONS & FUNCTION

#1 2-3-4-6-8 Clutch/Reverse

Located in the upper control solenoid body, this “Shuttle Ball Valve” is seated against the reverse fluid passage while the transmission is operating in Park, Neutral and Drive, 1st through 8th gears. With the ball in this position, 2-3-4-5-8 Clutch fluid enters the 2-3-4-5-8 Clutch/Reverse fluid circuit and then is routed to the Default Override Valve. When the transmission is operating in Reverse, the ball seats against the 2-3-4-6-8 Clutch fluid passage to allow reverse fluid to enter the 2-3-4-6-8 Clutch/Reverse fluid circuit and is then routed to the Default Override Valve.

#2 4-5-6-7-8-R Clutch Drive Feed/Reverse

Located in the upper control solenoid body, this “Shuttle Ball Valve” is seated against the reverse fluid passage while the transmission is operating in Park, Neutral and Drive, 1st through 8th gears. With the ball in this position, DRIVE fluid enters the 4-5-6-7-8-R CLUTCH FEED fluid circuit to the 4-5-6-7-8 Control Valve. When the transmission is operating in Reverse, the ball seats against the DRIVE fluid passage to allow REVERSE fluid to enter the 4-5-6-7-8-R CLUTCH FEED fluid circuit to the 4-5-6-7-8 Control Valve.

#3 Default Latch/S9 On/Off Sig

Located in the upper control solenoid body, this “Shuttle Ball Valve” is seated against the DEFAULT LATCH passage while the transmission is operating in Drive first gear. With the ball in this position, S8 ON/OFF SIG fluid enters the DFLT LATCH/S8 ON/OFF SIG fluid circuit to apply the default Override Valve. When the transmission is operating in Drive 2nd through 8th gears, the ball seats against the S8 ON/OFF SIG fluid passage to allow DEFAULT LATCH fluid to enter the DFLT LATCH/S8 ON/OFF SIG fluid circuit and hold the Default Override Valve in the applied position.

#7 Regulated Lube/Lube Override

Located in the upper control valve body, this “Shuttle Ball Valve” is seated against the LUBE OVERRIDE passage while the transmission is operating in Park, Reverse, Neutral, Drive 1st, 2nd and 3rd gear ranges. With the ball in this position, regulated lube fluid enters the REG LUBE/LUBE OVERRIDE fluid circuit to hold the Lube Flow Regulator Valve in the regulating position. When the transmission is operating in Drive 4th through 8th gears, LUBE OVERRIDE fluid pressure unseats the ball against the regulated lube fluid pressure to allow LUBE OVERRIDE fluid and regulated lube fluid to enter the REG LUBE/LUBE OVERRIDE fluid circuit to hold the Lube Flow Regulator Valve in the regulating position.

#8 Line/Secondary Line

Located in the upper control valve body, this “Shuttle Ball Valve” is seated against the SECONDARY LINE fluid passage by LINE fluid while the transmission is operating in ALL ranges. With the ball in this position, LINE fluid pressure is greater than SECONDARY LINE pressure and is routed to the line pressure Blow-Off Ball Valve. When SECONDARY LINE pressure is greater than LINE fluid pressure, the ball unseats to allow SECONDARY LINE fluid to enter the LINE fluid circuit.

#9 Line/Line†

Located in the upper control valve body, this “One Way” ball is used in Start/Stop conditions to keep line pressure coming from the Surge Accumulator back feeding into the pump.

#10 2-3-4-6-8 Clutch/4-5-6-7-8-R Clutch

Located in the upper control solenoid body, this “Shuttle Ball” is seated against the 2-3-4-6-8 CLUTCH fluid passage while the transmission is operating in Reverse, 5th and 7th gears. With the ball in this position, 4-5-6-7-8-R CL fluid enters the 4-5-6-7-8-R CL/2-3-4-6-8 CL fluid circuit, this applies the Lube Override Enable Valve. When the transmission is operating in 2nd and 3rd gears, the ball seats against the 4-5-6-7-8-R CLU fluid passage to allow 2-3-4-6-8 CLU fluid to enter the 4-5-6-7-8-R CLU/2-3-4-6-8 CL fluid circuit and is then routed to the Lube Override Enable Valve.



GM 8L45 - 8L90

CHECKBALL LOCATIONS & FUNCTION

#11 1-3-5-6-7 Clutch Feed

Located in the upper control solenoid body, this “One Way Orifice Control Ball” is used to differentiate the flow rate of fluid between applying and releasing the 1-3-5-6-7 Control Valve. 1-3-5-6-7 CL FEED fluid pressure opens the ball while the transmission is operating in Drive 1st, 3rd, 5th, 6th and 7th gears. With the ball in this position, 1-3-5-6-7 CL FEED fluid flows freely into the 1-3-5-6-7 CL FEED fluid passage. Exhausting 1-3-5-6-7 CL FEED fluid seats the ball and fluid is forced through Orifice #32. This allows for a controlled exhaust of 1-3-5-6-7 CL FEED fluid.

#12 Actuator Feed/4-5-6-7-8-R Clutch Feedback

Located in the upper control solenoid body, this “One Way Ball” is one of two boost balls. When feedback pressure on the end of the 4-5-6-7-8-R Control Valve is higher than actuator feed limit pressure, it opens and lowers the valve feedback pressure (raising or boosting clutch apply pressure). When 4-5-6-7-8-R regulator valve feedback pressure is at or below actuator feed limit pressure the ball is seated.

#13 4-5-6-7-8-R Clutch Feed

Located in the upper control solenoid body, this “One Way Orifice Control Ball” is used to differentiate the flow rate of fluid between applying and releasing the 4-5-6-7-8 Control Valve. 4-5-6-7-8 CLUTCH FEED fluid pressure opens the ball while the transmission is operating in Reverse and Drive 4th through 8th gears. With the ball in this position, 4-5-6-7-8 CLUTCH FEED fluid flow freely through the 4-5-6-7-8-R Control Valve into the 4-5-6-7-8-R CLU feed passage. When in Drive 1st, 2nd and 3rd gears, 4-5-6-7-8 CLUTCH FEED fluid flow is stopped at the 4-5-6-7-8-R Control Valve. Exhausting 4-5-6-7-8 CLUTCH FEED fluid is forced through Orifice #35. This allows for a controlled exhaust of 4-5-6-7-8 CLUTCH FEED fluid.

#14 Actuator Feed/1-2-7-8-R Clutch Feedback

Located in the upper control valve body, this “One Way Ball” is one of two boost balls. When feedback pressure on the end of the 1-2-7-8-R Control Valve is higher than actuator feed limit pressure, it opens and lowers the valve feedback pressure (raising or boosting clutch apply pressure). When 1-2-7-8-R regulator valve feedback pressure is at or below actuator feed limit pressure, the ball is seated. This allows for a controlled exhaust of 1-2-7-8-R CL FDBK fluid.

#20 Line/Line†

Located in the upper control valve body, this “One Way” ball is used to prevent line pressure from going to the 1-2-3-4-5-R Clutch during normal driving conditions. On a restart during Stop/Start conditions, it opens to allow Surge Accumulator oil to enter the line pressure circuit.

GM 8L45 - 8L90 ACCUMULATOR LOCATIONS & FUNCTION

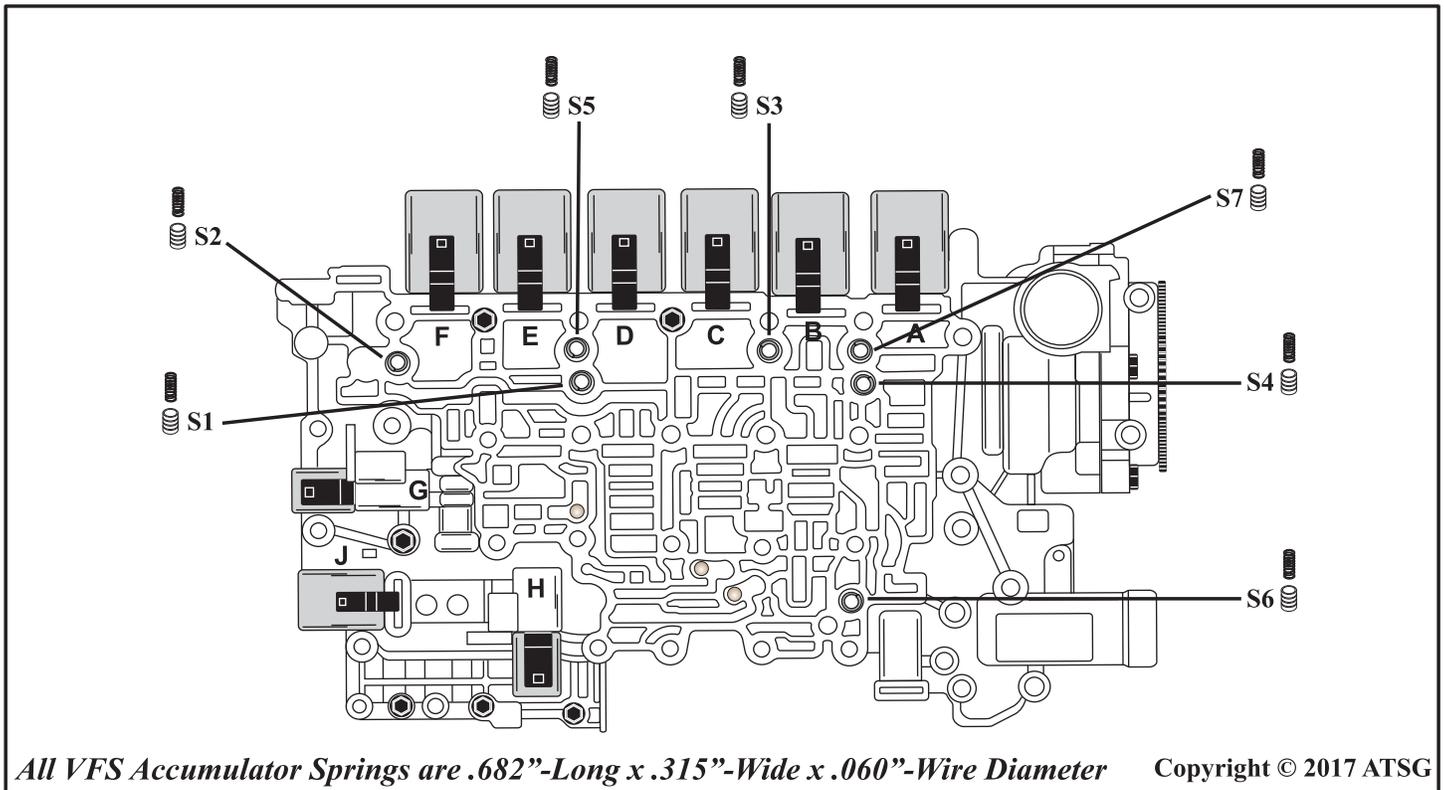


Figure 28

S1 VFS ACCUMULATOR

The S1 VFS Accumulator is used to control shift feel of the 1-2-7-8-R Clutch while the transmission is operating in Park, Neutral and Drive 1st, 2nd, 7th and 8th gears.

S2 VFS ACCUMULATOR

The S2 VFS Accumulator is used to control shift feel of the 1-2-3-4-5-R Clutch while the transmission is operating in Park, Reverse, Neutral and Drive 1st through 5th gears.

S3 VFS ACCUMULATOR

The S3 VFS Accumulator is used to control shift feel of the 1-3-5-6-7 Clutch while the transmission is operating in Reverse and Drive 1st, 3rd, 5th, 6th and 7th gears.

S4 VFS ACCUMULATOR

The S4 VFS Accumulator is used to control shift feel of the 2-3-4-6-8 Clutch while the transmission is operating in Drive 2nd, 3rd, 4th, 6th and 8th gears.

S5 VFS ACCUMULATOR

The S5 VFS Accumulator is used to control shift feel of the 4-5-6-7-8-R Clutch while the transmission is operating in Reverse and Drive 4th through 8th gears.

S6 VFS ACCUMULATOR

The S6 VFS Accumulator is used to help regulate line fluid pressure while the transmission is operating in ALL ranges.

S7 VFS ACCUMULATOR

The S7 VFS Accumulator is used to control pressure of the Converter Control Valve and Converter Fault Valve engagement while the transmission is operating in 7th and 8th gears.

8L45/90 TECHNICIANS TIPS

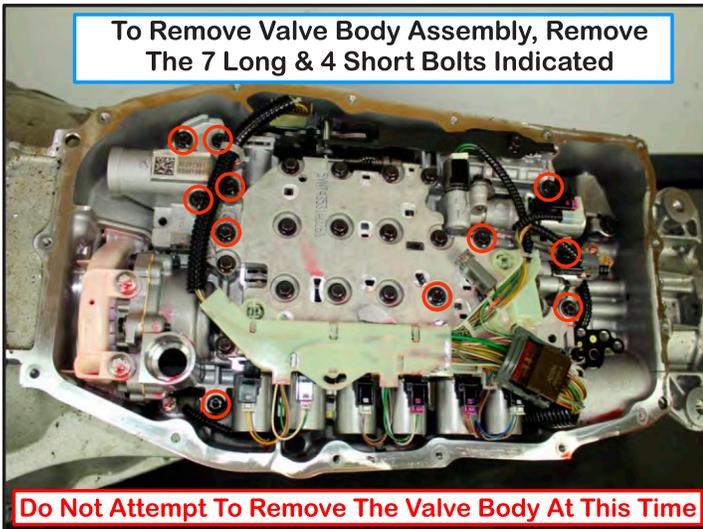


Figure 29

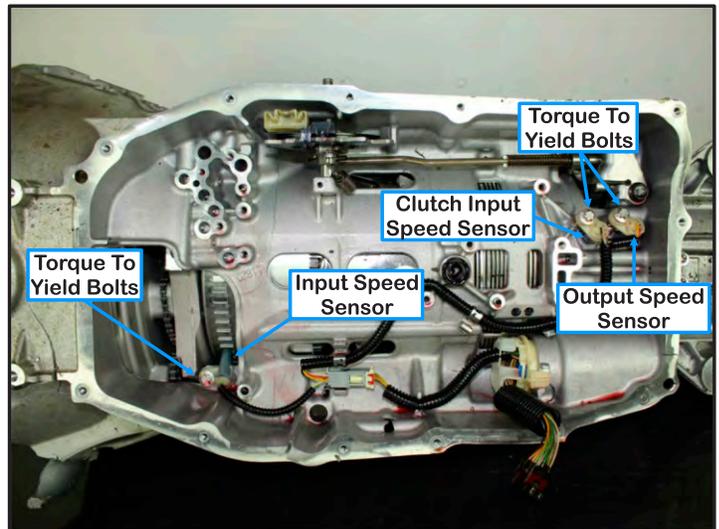


Figure 32

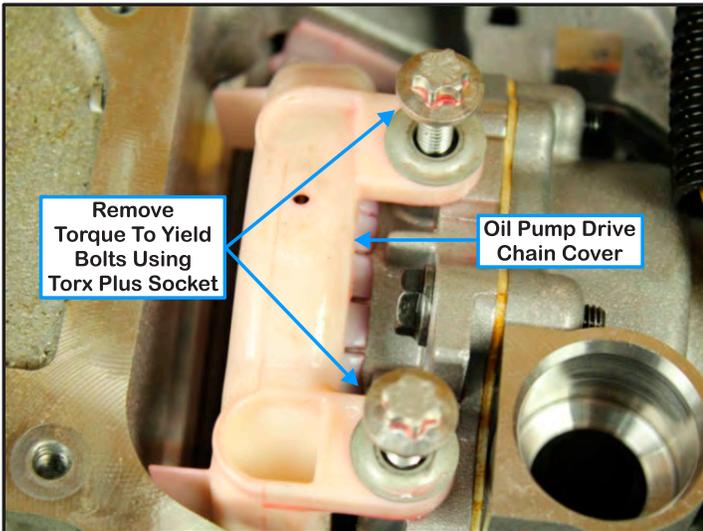


Figure 30

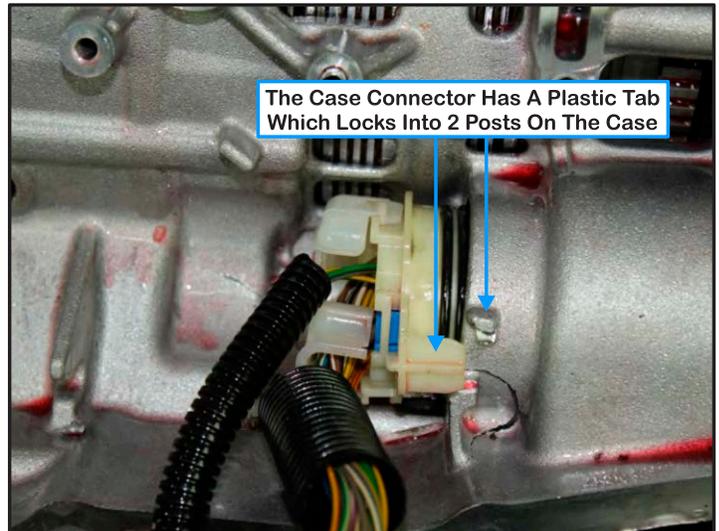


Figure 33

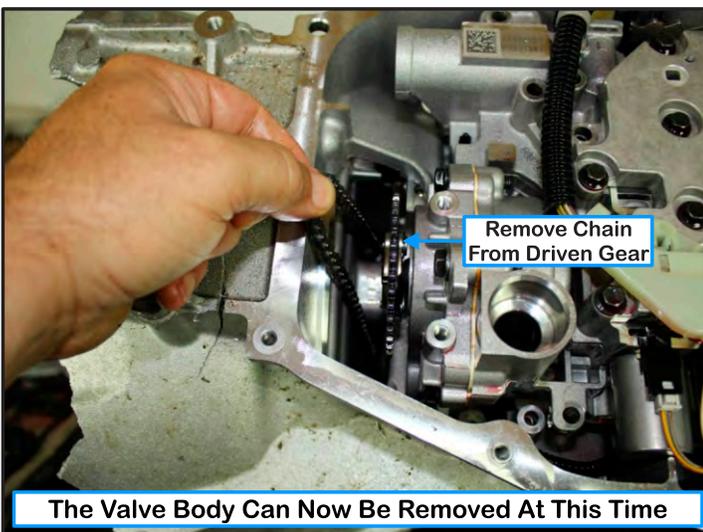


Figure 31

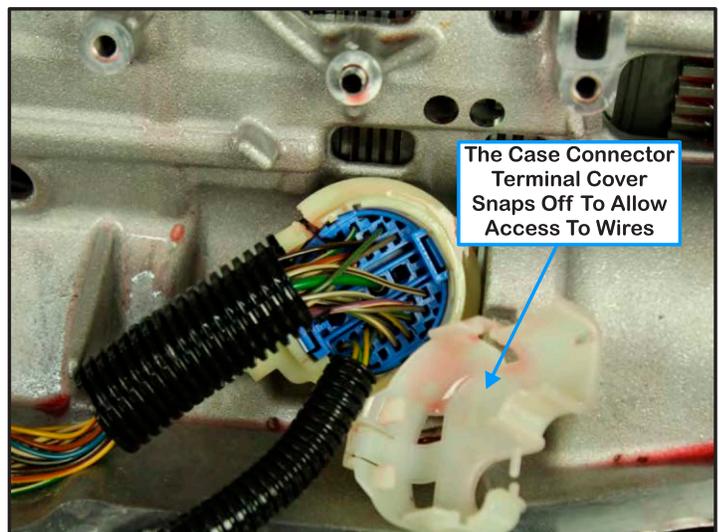
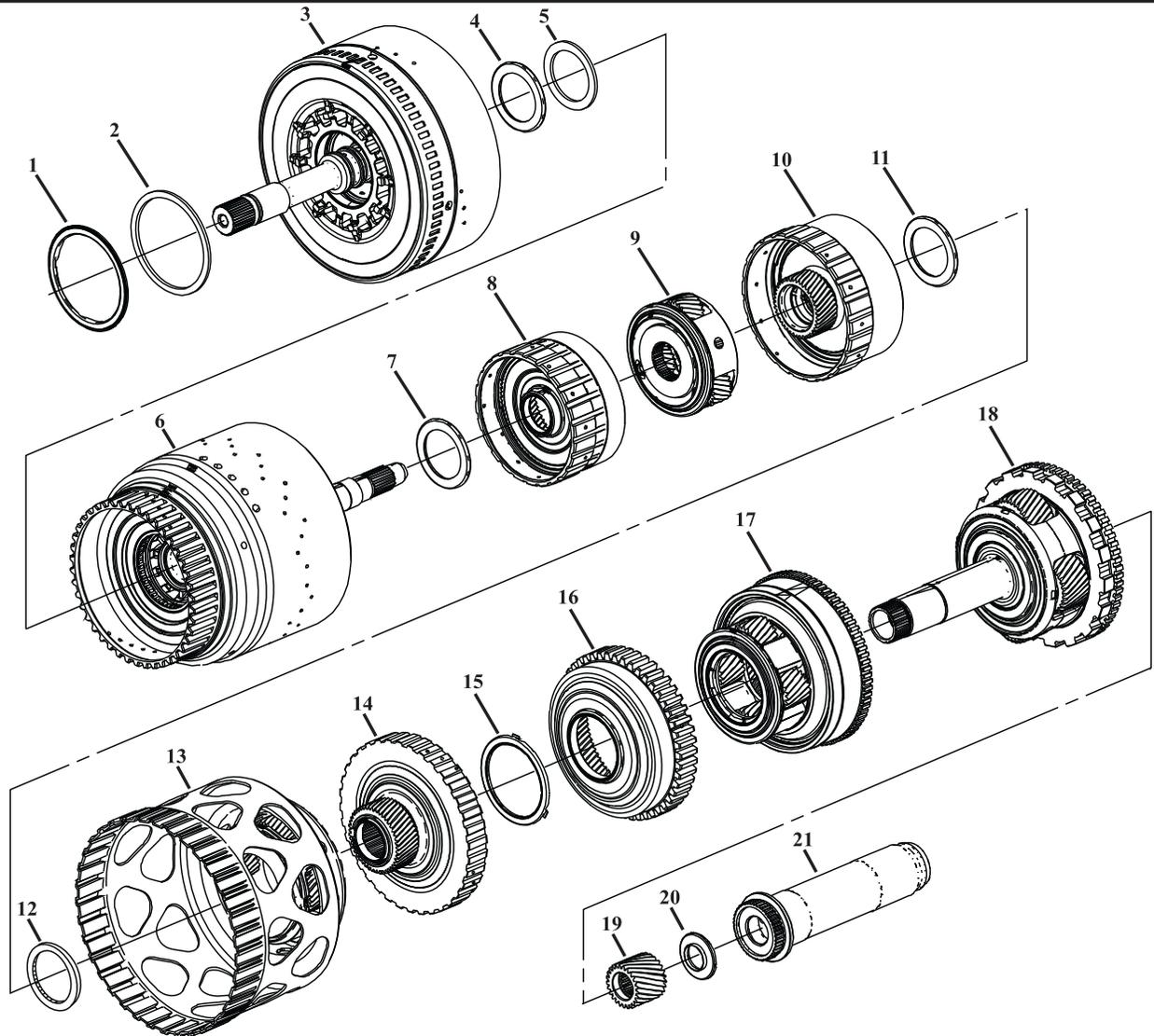


Figure 34

GM 8L45 - 8L90 CLUTCH & GEARTRAIN COMPONENTS



- 1 1-3-5-6-7 Clutch Thrust Bearing
- 2 1-3-5-6-7 Clutch Thrust Bearing Washer
- 3 1-3-5-6-7 Clutch Assembly
- 4 2-3-4-5-8/4-5-6-7-8 Reverse Clutch Thrust Bearing
- 5 2-3-4-5-8/4-5-6-7-8 Reverse Clutch Thrust Bearing Washer
- 6 2-3-4-6-8 /4-5-6-7-8 Reverse Clutch Assembly
- 7 Input Sun Gear Thrust Bearing
- 8 Direct/Overdrive Internal Gear Assembly
- 9 Direct/Overdrive Carrier Assembly
- 10 Input Internal Gear Assembly
- 11 Input Sun Gear Thrust Bearing

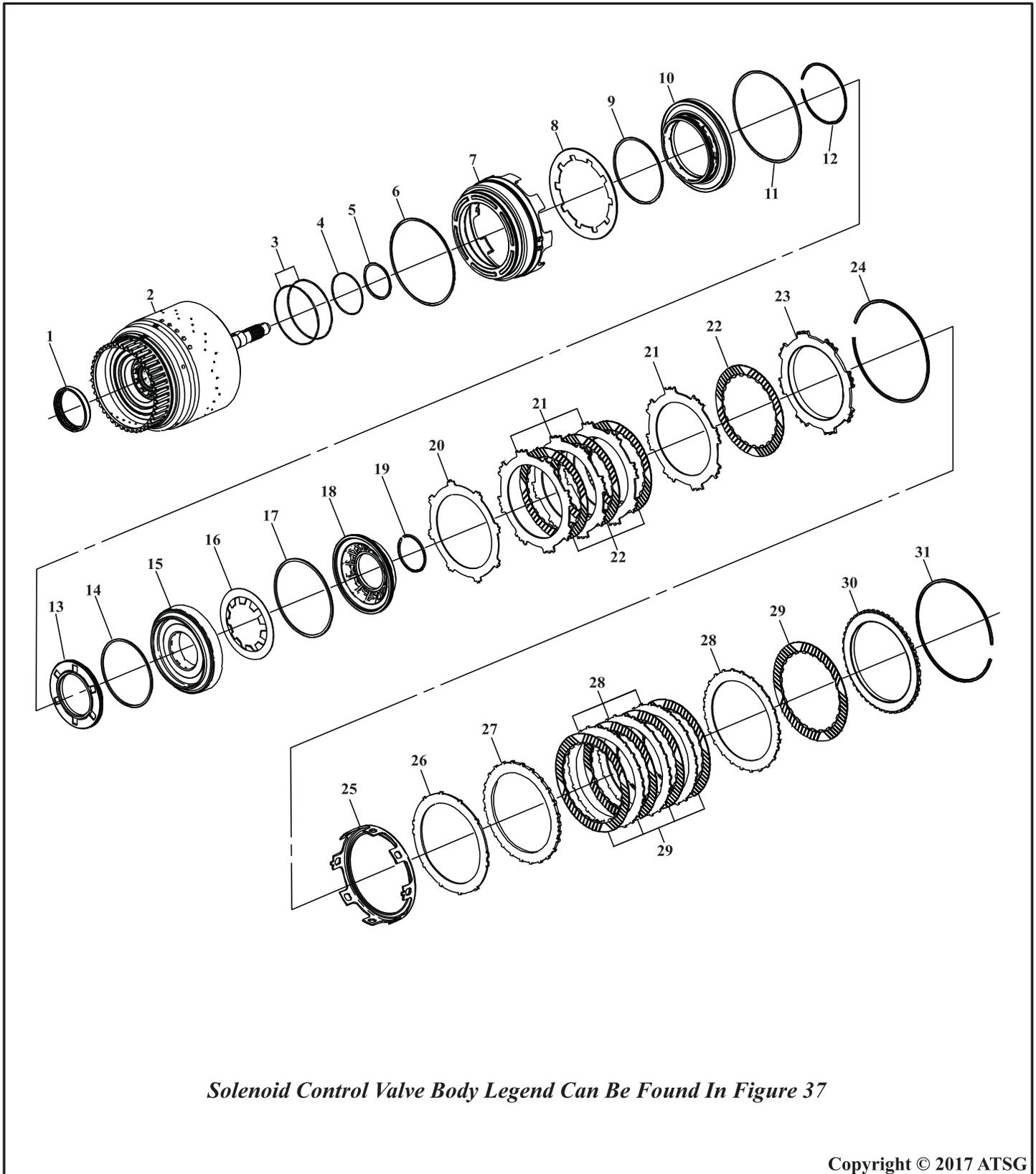
- 12 Input Carrier Spacer
- 13 Input Carrier Assembly
- 14 Input Sun Gear Assembly
- 15 1-2-3-4-5 Reverse Clutch Hub Thrust Bearing
- 16 Reaction Internal Gear/1-2-3-4-5 Reverse Hub
- 17 Reaction Gear/Output Internal Gear Assembly
- 18 Output Carrier Assembly
- 19 Output Sun Gear
- 20 Output Sun Gear Thrust Bearing
- 21 Output Shaft (Model Dependant)

Copyright © 2017 ATSG

Figure 35

GM 8L45 - 8L90

2-3-4-6-8/4-5-6-7-8 REVERSE CLUTCH HOUSING ASSEMBLY



Solenoid Control Valve Body Legend Can Be Found In Figure 37

Figure 36



GM 8L45 - 8L90

2-3-4-6-8/4-5-6-7-8 REVERSE CLUTCH HOUSING ASSEMBLY

SOLENOID CONTROL VALVE BODY LEGEND FROM FIGURE 36

- 1 2-3-4-6-8/4-5-6-7-8 Reverse Clutch Housing Bearing**
- 2 2-3-4-6-8/4-5-6-7-8 Reverse Clutch Housing**
- 3 2-3-4-6-8 Clutch Piston Dam Seal**
- 4 4-5-6-7-8 Reverse Clutch Piston Stop O-Ring Seal**
- 5 4-5-6-7-8 Reverse Clutch Piston Seal**
- 6 2-3-4-6-8 Clutch Piston Seal**
- 7 2-3-4-6-8 Clutch Piston**
- 8 2-3-4-6-8 Clutch Piston Return Spring**
- 9 2-3-4-6-8 Clutch Piston Dam Inner Seal**
- 10 2-3-4-6-8 Clutch Piston Dam**
- 11 2-3-4-6-8 Clutch Piston Dam Outer Seal**
- 12 2-3-4-6-8 Clutch Piston Dam Retaining Ring**
- 13 4-5-6-7-8 Reverse Clutch Piston Stop**
- 14 4-5-6-7-8 Reverse Clutch Piston Seal**
- 15 4-5-6-7-8 Reverse Clutch Piston**
- 16 4-5-6-7-8 Reverse Clutch Piston Return Spring**
- 17 4-5-6-7-8 Reverse Clutch Piston Dam Seal**
- 18 4-5-6-7-8 Reverse Clutch Piston Dam**
- 19 4-5-6-7-8 Reverse Clutch Piston Dam Retaining Ring**
- 20 4-5-6-7-8 Reverse Clutch Waved Plate**
- 21 4-5-6-7-8 Reverse Clutch Steel Plates**
- 22 4-5-6-7-8 Reverse Clutch Friction Plates**
- 23 4-5-6-7-8 Reverse Clutch Backing Plate**
- 24 4-5-6-7-8 Reverse Clutch Backing Plate Retaining Ring (Selective)**
- 25 2-3-4-6-8 Clutch Apply Ring**
- 26 2-3-4-6-8 Clutch Waved Plate**
- 27 2-3-4-6-8 Clutch Apply Plate**
- 28 2-3-4-6-8 Clutch Steel Plates**
- 29 2-3-4-6-8 Clutch Friction Plates**
- 30 2-3-4-6-8 Clutch Backing Plate**
- 31 2-3-4-6-8 Clutch Backing Plate Retaining Ring**

8L45/90 TECHNICIANS TIPS

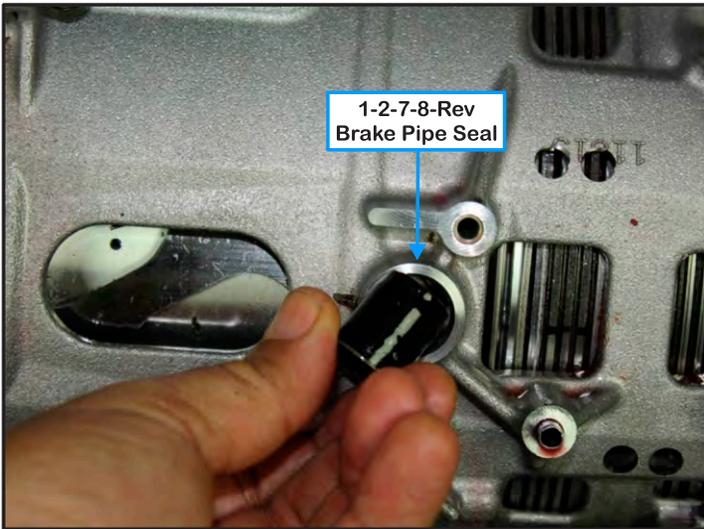


Figure 38



Figure 41

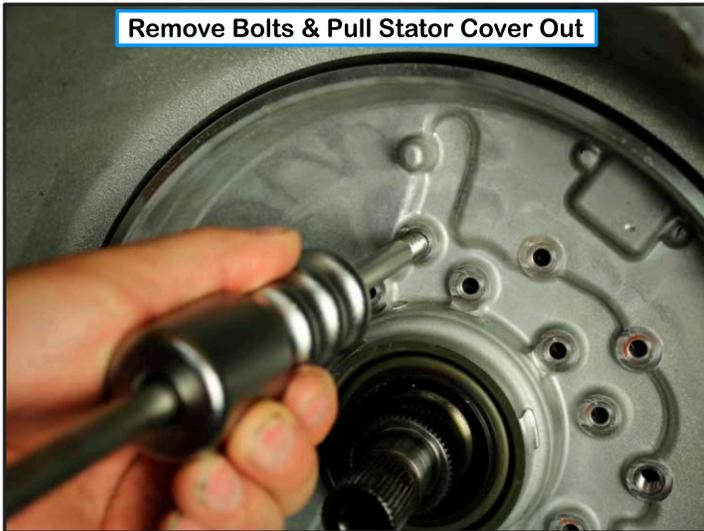


Figure 39



Figure 42



Figure 40

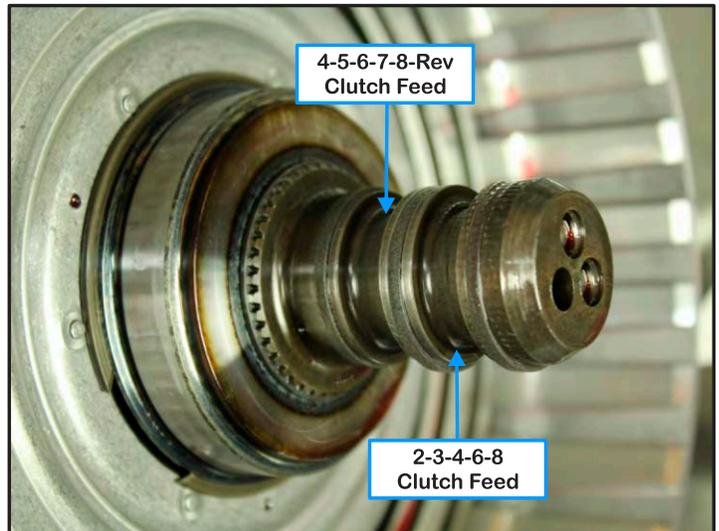


Figure 43

8L45/90 TECHNICIANS TIPS



Figure 44



Figure 47



Figure 45



Figure 48

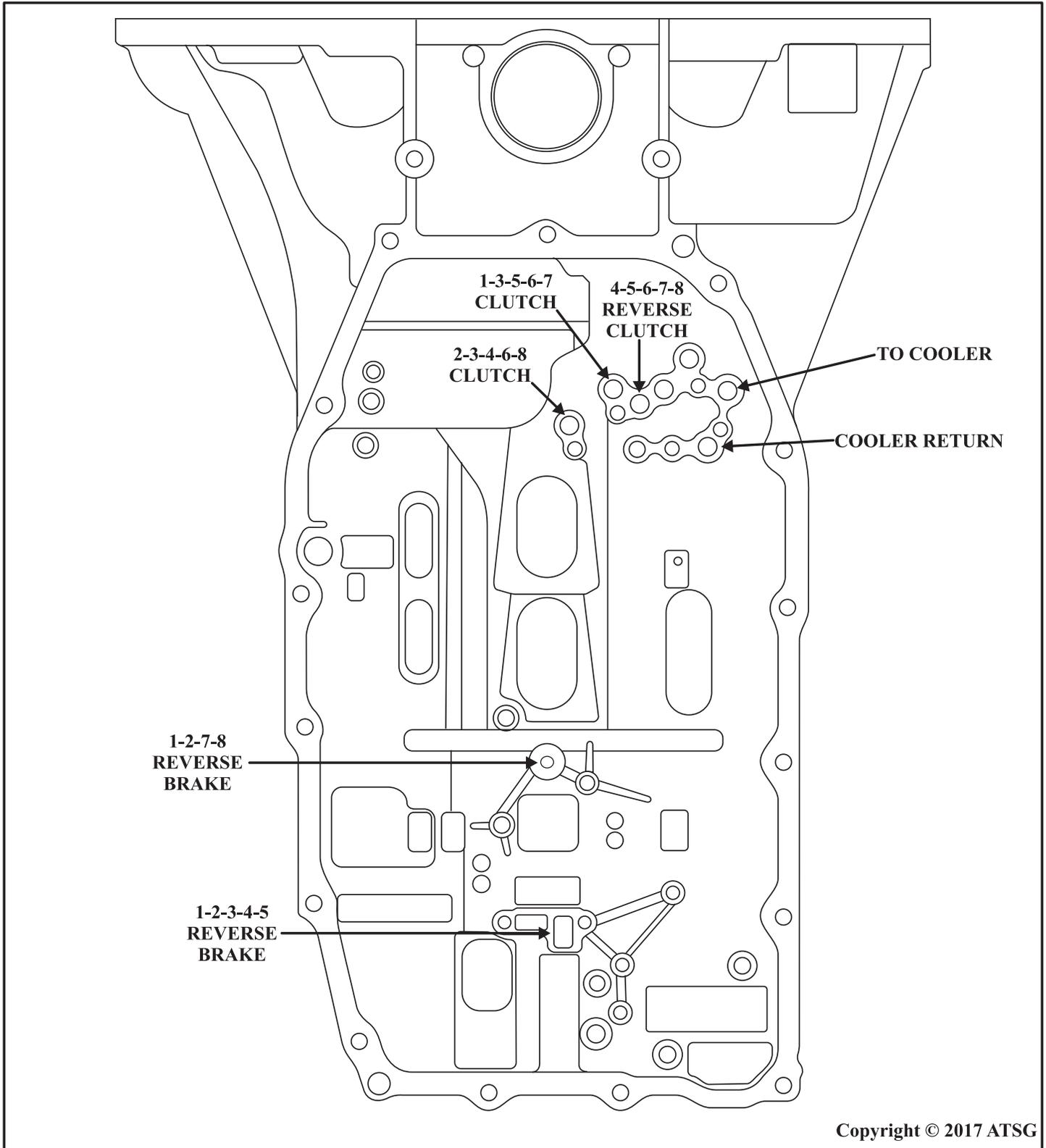


Figure 46



Figure 49

**GM 8L45 - 8L90
CASE PASSAGE IDENTIFICATION**



Copyright © 2017 ATSG

Figure 50
AUTOMATIC TRANSMISSION SERVICE GROUP