

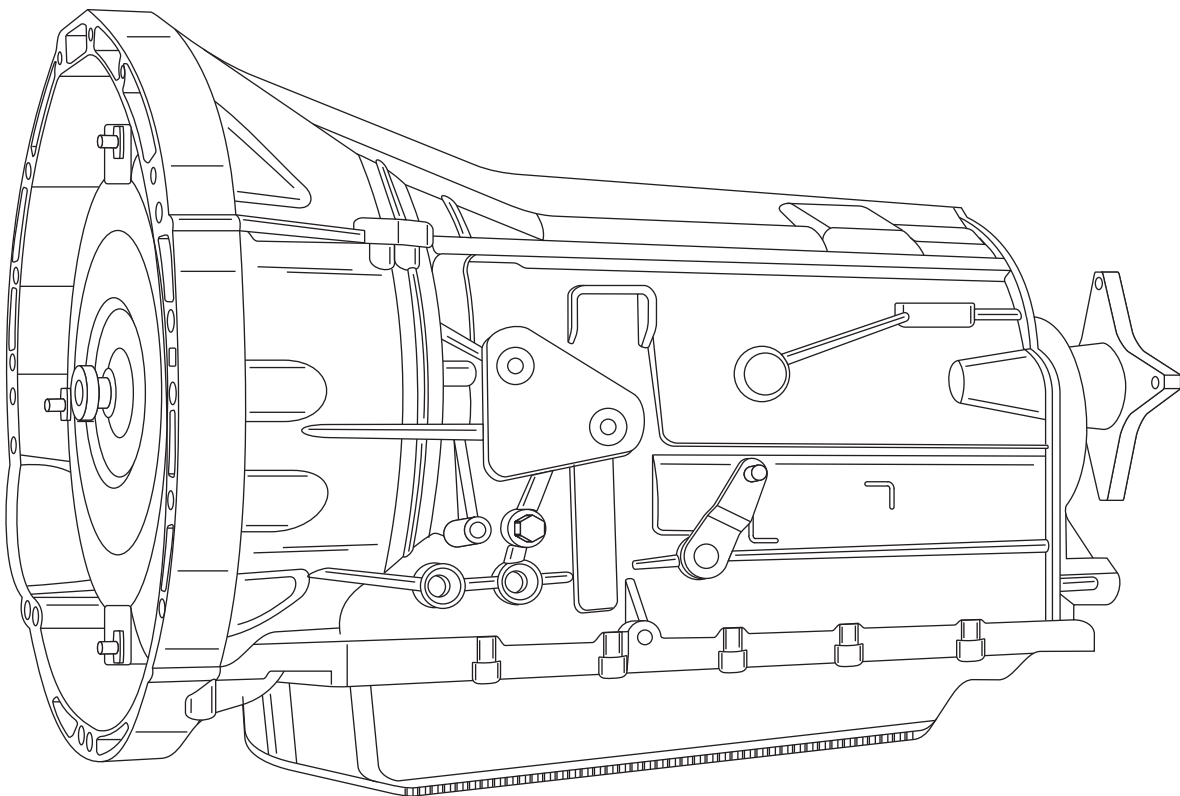
FORD 10R80**PRELIMINARY INFORMATION**

Beginning with the 2017 model year Ford introduced the 10R80 Ten Speed Transmission for selective use in the 2017 Ford Expedition, F150 Raptor, F150 Super Cab, Mustang and the 2018 Ford Ranger. This transmission has ten forward speeds and one reverse and is electronically controlled. The 10R80 Transmission utilizes a torque converter containing a lockup clutch, electronic shift and pressure controls, four planetary gear sets, two multiple plate holding clutches, four multiple plate driving clutches, one freewheel of a roller clutch design and a main control valve body.

The main control valve body consists of eight solenoids and the necessary valving to control shift feel and scheduling. The 10R80 Transmission is controlled by an externally mounted Transmission Control Module. Each clutch is controlled by its own regulating solenoid as well as one for lockup control and one for line pressure control. The TCM receives input from a variety of sensors to ensure proper transmission operation.

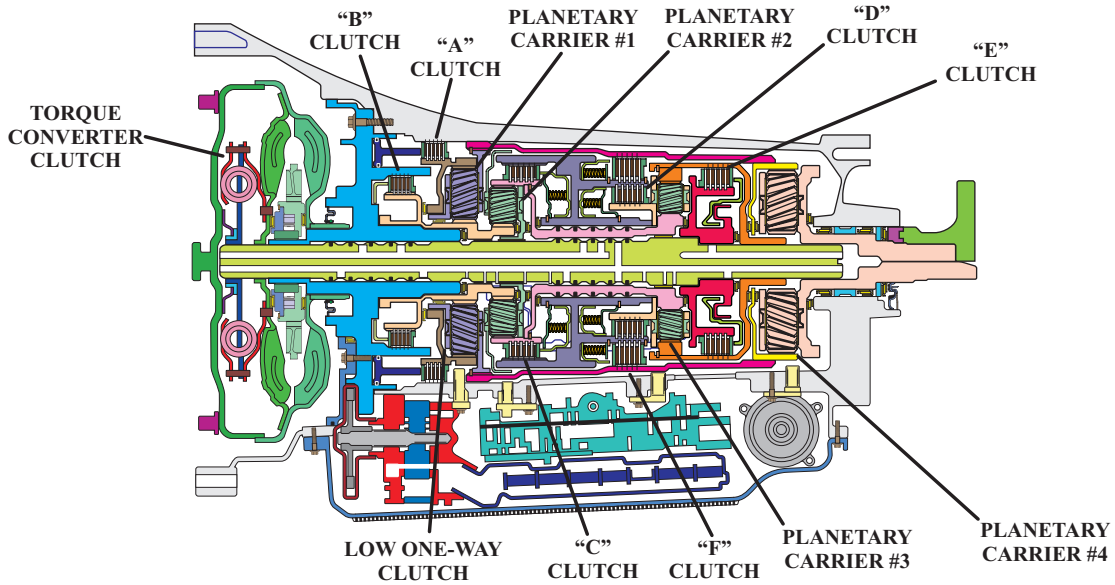
For those vehicles that are equipped with the stop/start feature, there is an auxiliary pump that is located to the rear of the valve body and is TCM controlled. The 10R80 Transmission requires MERCON®ULV fluid and the transmission weight is 234 pounds.

Many Thanks to Dean Mason of Superior Transmission Parts for his assistance in creating this information.



FORD 10R80 PRELIMINARY INFORMATION

COMPONENT LOCATION AND IDENTIFICATION



COMPONENT APPLICATION CHART

RANGE	A Clutch 1-2-3-5-6- M1-M2-R	B Clutch 2-8-9-10- M1-M2-R	C Clutch 2-3-4-5-7- 9-10-M2	D Clutch 2-3-4-6-7- 8-10-M2-R	E Clutch 1-3-5-6-7- 8-9-M1	F Clutch 4-5-6-7- 8-9-10-R	Low One-Way Clutch	Torque Converter Clutch	Gear Ratio
Park	On	On		On					
Reverse	On	On		On		On			4.86
Neutral	On	On		On					
"D"-1st	On			*	On		Hold		4.69
"D"-2nd	On		On	On	On		Hold	Applied	2.98
"D"-3rd	On		On	On				Applied	2.14
"D"-4th	On		On	On		On		Applied	1.76
"D"-5th	On		On	On	On	On		Applied	1.52
"D"-6th	On		On	On	On	On		Applied	1.27
"D"-7th			On	On	On	On		Applied	1.00
"D"-8th		On		On	On	On		Applied	0.85
"D"-9th		On	On		On	On		Applied	0.68
"D"-10th		On	On	On		On		Applied	0.63
"M"-1st		On		*	On		Hold		
"M"-2nd		On	On	On			Hold		
Planetary Component	Ring Gear #1	Low One- Way Clutch	Ring Gear #2 Sun Gear #3	Planetary #3	Ring Gear #3 Sun Gear #4	Ring Gear #4 Planetary #1	Sun Gear #1 Sun Gear #2		

*Applied to reduce frictional losses from a released clutch, but does not contribute to powerflow.

Figure 1
Automatic Transmission Service Group

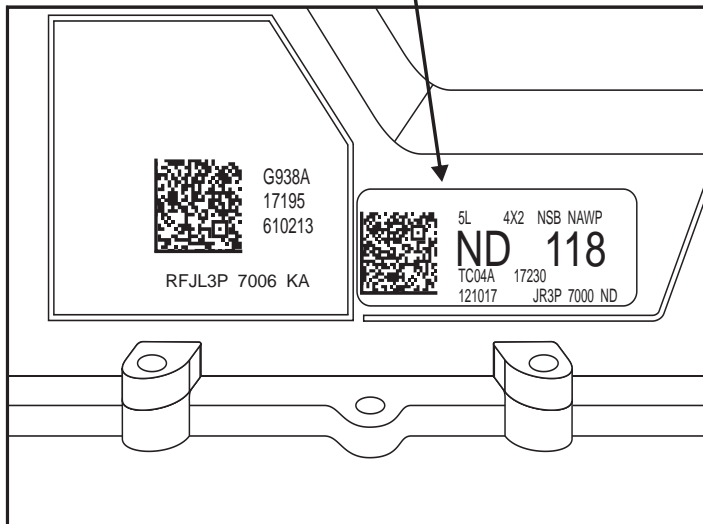
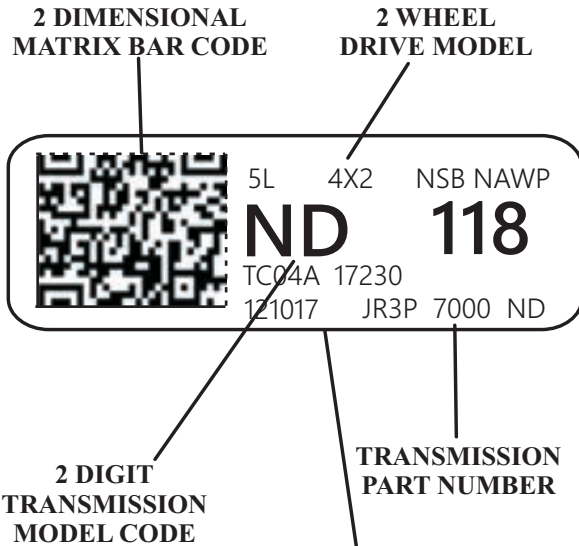


FORD 10R80

PRELIMINARY INFORMATION

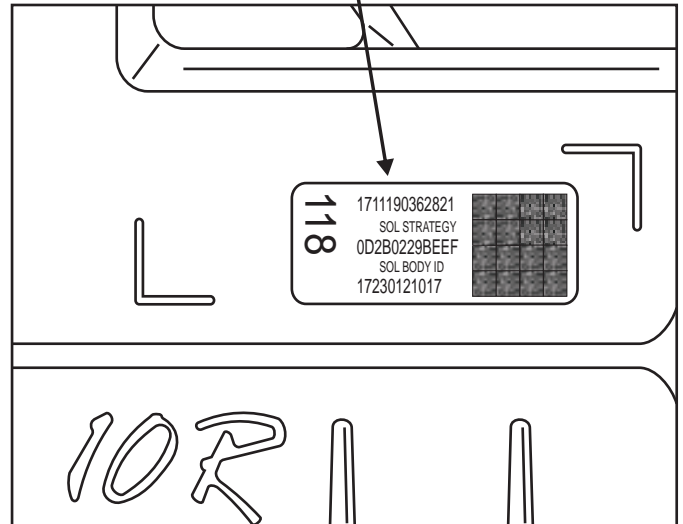
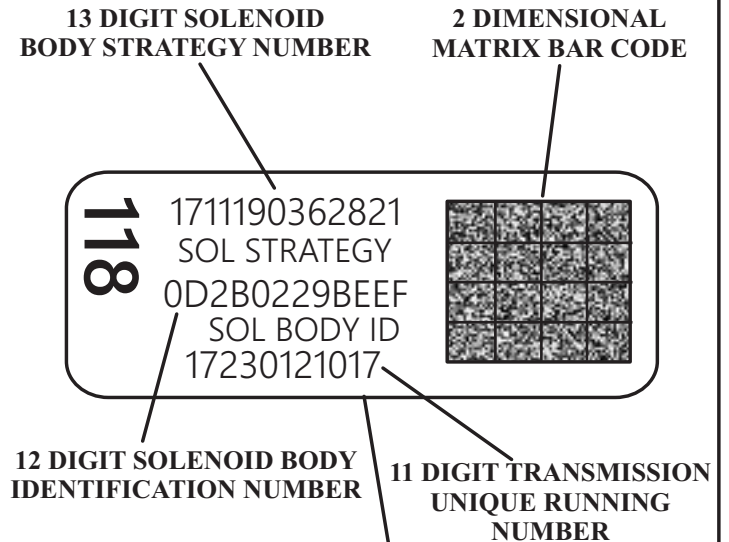
TRANSMISSION IDENTIFICATION TAG

The transmission identification tag is located on the RIGHT side of the transmission as seen in figure 1.



SOLENOID BODY STRATEGY IDENTIFICATION TAG

The solenoid body strategy identification tag is located on the LEFT side of the transmission as seen in figure 2.



Using a scan tool, verify that the 13 digit solenoid strategy and the 12 digit solenoid body identification number on the solenoid strategy tag match. If they do not the there may be complaints of shift quality issues. If the solenoid strategy screen on the scan tool is blank, then the file is corrupt or missing at the time the programmable parameters were completed. This can also be caused by an incorrect valve body or transmission exchange.

Figure 2

FORD 10R80

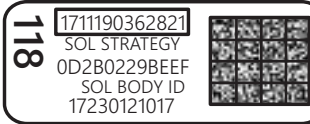
PRELIMINARY INFORMATION

TRANSMISSION STRATEGY DOWNLOAD PROCEDURE

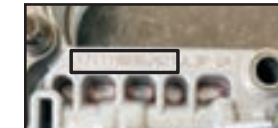
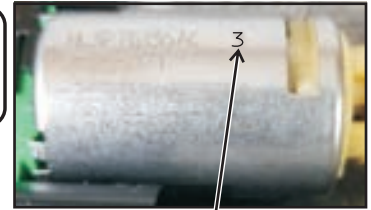
The solenoid body strategy etched into the main control valve body must match what the scan tool displays. If it does not, the solenoid strategy must be downloaded into the TCM or harsh or flared shifts may occur. This will require the use of the 13 digit solenoid strategy number and the 12 digit solenoid body ID off of the exterior tag on the case. If this tag is missing, a new valve body will need to be purchased which will come with a new tag. The TCM can then be programmed to match with the calibrated solenoids on the new valve body. If the 13 digit solenoid body strategy ID etched into the valve body matches with what the scan tool displays, the TCM is already matched to the solenoid body strategy and ID. To retrieve the necessary solenoid strategy files the Ford Professional Technician Society website will have to be accessed and the files downloaded.

Although all solenoids are calibrated from the factory, not all are the same. Each solenoid will have a band number of either 1, 2, 3, 4 or 5. When the solenoid is replaced, it must be replaced with the same band number. If they are not, harsh or flared shifts may occur. The 13 and 12 digit number matches with the band numbers of each solenoid. Switching these solenoids with different calibrated solenoid will produce a mismatch with TCM control producing poor quality shifts.

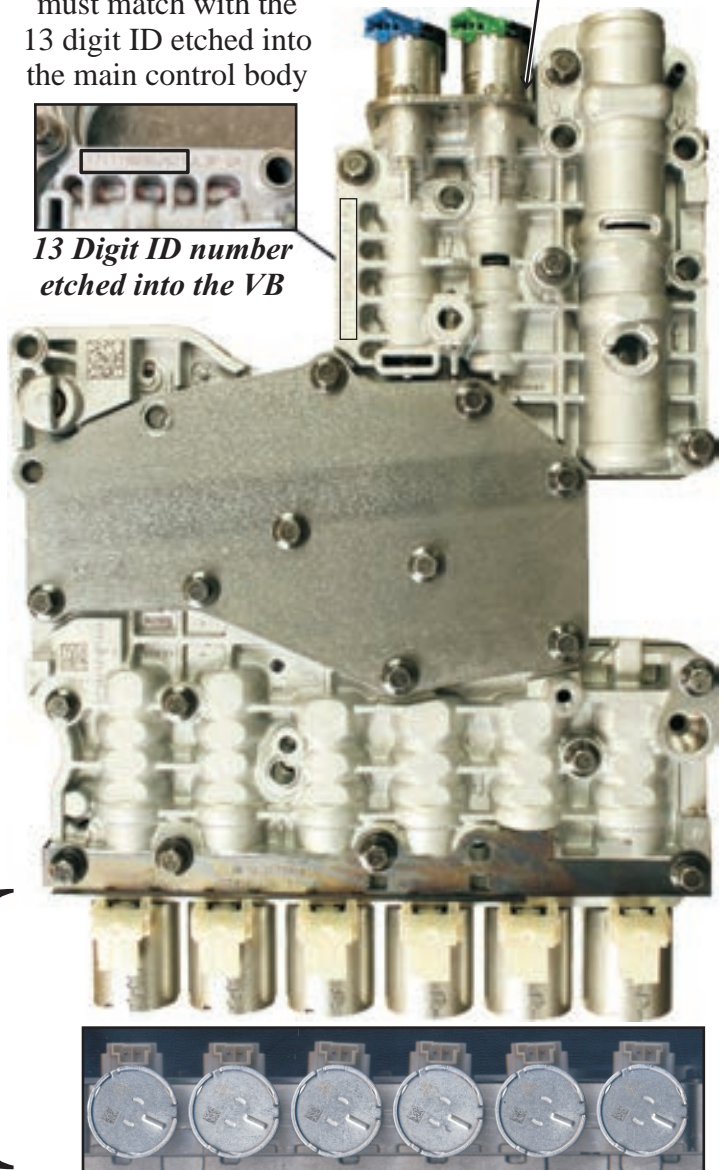
Solenoid Strategy Tag Solenoid Calibration Number



13 digit solenoid body strategy ID number on the exterior case tag must match with the 13 digit ID etched into the main control body



13 Digit ID number etched into the VB



Solenoid Calibration Number



Figure 3
Automatic Transmission Service Group



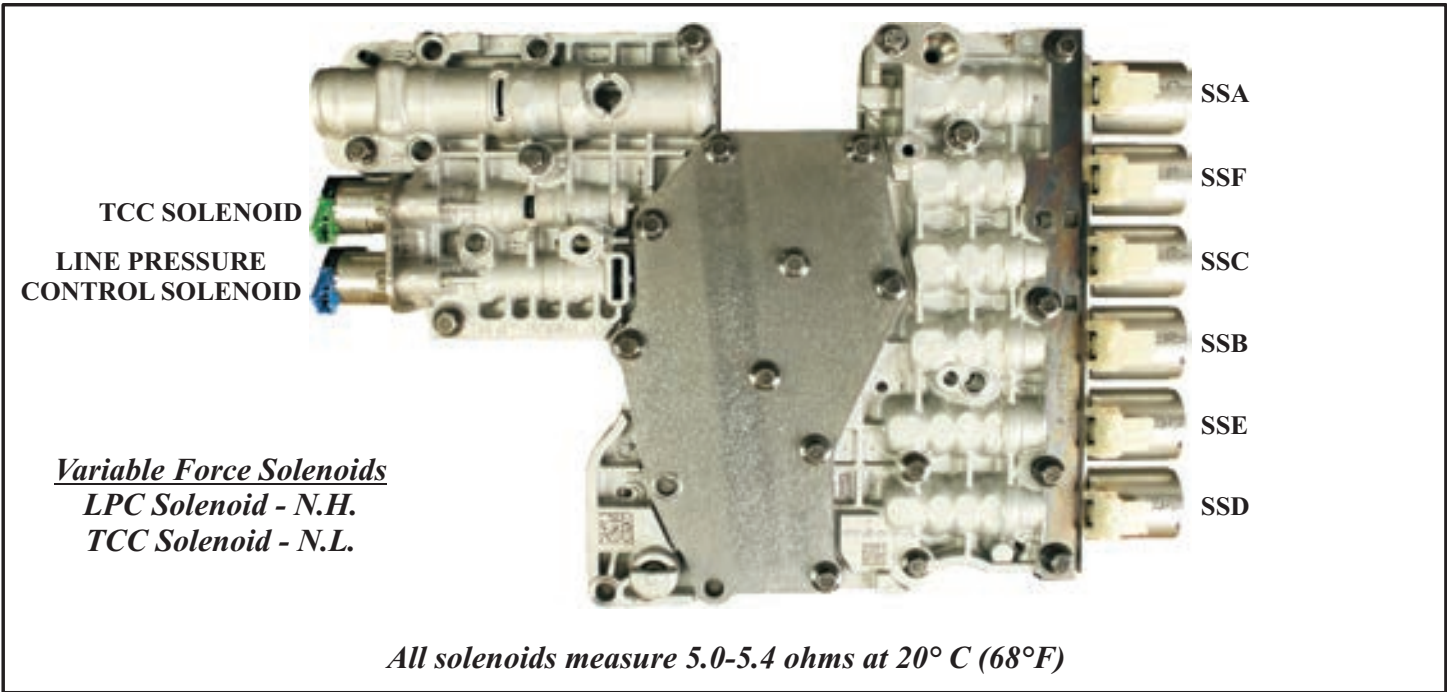
**FORD 10R80
PRELIMINARY INFORMATION**

ADAPTIVE LEARNING DRIVE CYCLE PROCEDURE

Prior to drive cycle be sure all codes in all systems have been cleared. The drive cycle must be followed exactly. Shift malfunctions must occur four times consecutively for a shift error code to set. TCC Malfunctions must occur five times consecutively for a continuous TCC code to set.

- 1 - Warm engine to operating temperature.
- 2 - Make certain transmission fluid level is correct.
- 3 - With the gear selector in drive, moderately accelerate from a stop to 50 mph (80 km/h) allowing the transmission to shift into tenth gear. Keep vehicle speed and throttle steady for a minimum of fifteen seconds.
- 4 - With the transmission in tenth gear and maintaining steady speed and throttle, lightly apply and release the foot brake just enough to operate the stop lamps. Maintain the speed and throttle for a minimum of five seconds.
- 5 - Brake to a stop and remain stopped for a minimum of twenty seconds.
- 6 - Repeat steps 3 to 5 five times.
- 7 - Check for any codes that may have been set during the drive cycle. Any engine related codes should be addressed first. If codes are present, perform the necessary repairs and repeat the drive cycle. The shift adapts will not learn if codes have been set.

FORD 10R80 PRELIMINARY INFORMATION



SOLENOID OPERATION CHART

Selector Lever Position	TCM Commanded Gear	SSA 1-2-3-5-6- M1-M2-R	SSB 2-8-9-10- M1-M2-R	SSC 2-3-4-5-7- 9-10-M2	SSD 2-3-4-6-7- 8-10-M2-R	SSE 1-3-5-6-7- 8-9-M1	SSF 4-5-6-7- 8-9-10-R	TCC Solenoid
Park	P	On	On	Off	On	Off	Off	Off
Reverse	R	On	On	Off	On	Off	On	Off
Neutral	N	On	On	Off	On	Off	Off	Off
"D"-1st	1	On	Off	Off	*	On	Off	Off
"D"-2nd	2	On	Off	On	On	Off	Off	On/Off
"D"-3rd	3	On	Off	On	On	On	Off	On/Off
"D"-4th	4	On	Off	On	On	Off	On	On/Off
"D"-5th	5	On	Off	On	Off	On	On	On/Off
"D"-6th	6	On	Off	Off	On	On	On	On/Off
"D"-7th	7	Off	Off	On	On	On	On	On/Off
"D"-8th	8	Off	On	Off	On	On	On	On/Off
"D"-9th	9	Off	On	On	Off	On	On	On/Off
"D"-10th	10	Off	On	On	On	Off	On	On/Off
"M"-1st	1	On	On	Off	*	On	Off	Off
"M"-2nd	2	On	On	On	On	Off	Off	Off

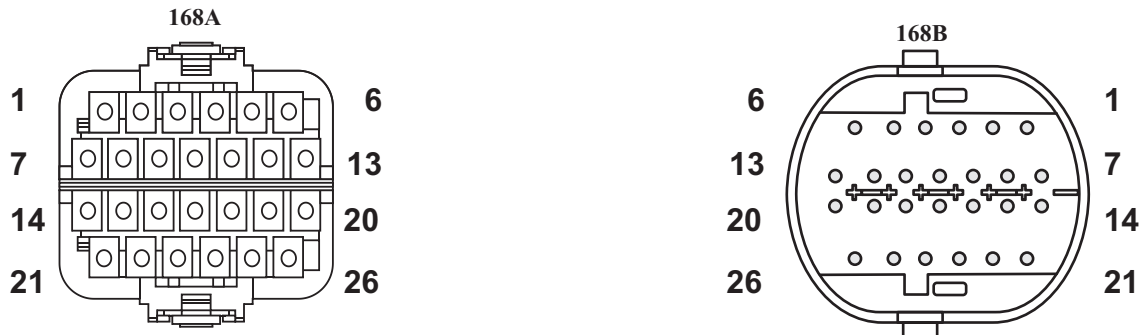
*On to reduce frictional losses from a released clutch, but does not contribute to powerflow.

Figure 4

FORD 10R80

PRELIMINARY INFORMATION

10R80 CASE CONNECTOR TERMINAL ID



Pin*	Wire Side*	Color	Circuit Function
1	A1	(YE-GY)	Terminal 2 at the TRS - PWM OUTPUT 2 (TR-P2)
2	A2	(BN-GN)	Terminal 1 at the TRS - PWM OUTPUT 1 (TR-P1)
3	A3	(YE-OG)	Output Shaft Speed Sensor (OSS)
4	A4	(WH-BU)	Input Shaft Speed Sensor # 2 (ISS2) +
5	A5	(VT-GN)	Input Shaft Speed Sensor # 1 (ISS1) +
6	A6	(WH-VT)	Turbine Shaft Speed Sensor (TSS) +
7	A7	(BN-YE)	Transmission Fluid Temperature Sensor (TFT)
8	A8	(YE-OG)	Not used in all models
9	A9	(BN)	LPC and TCC Power Supply (TSPC2)
10	A10	(GN-VT)	Not used in all models
11	A11	(BU-GN)	Shift Solenoid A, B, C, D, E and F Power Supply (TSPC)
12	A12	(BU)	Power Supply for ISS2, TSS and TRS (T-VREF2)
13	A13	(GN)	Power Supply for ISS1 and OSS (T-VREF)
26	B1	(BN-WH)	Shift Solenoid D Ground Control
25	B2	(YE-VT)	Shift Solenoid E Ground Control
24	B3	(BU-GY)	Shift Solenoid F Ground Control
23	B4	(GN-OG)	LPC Ground Control
22	B5	(GY-BN)	TCC Ground Control
21	B6	(BU-BN)	Not used in all models - Aux Pump
20	B7	(BU-GN)	Shift Solenoid A Ground Control
19	B8	(GN-BN)	Shift Solenoid B Ground Control
18	B9	(GY-OG)	Shift Solenoid C Ground Control
17	B10	(BK-YE)	Not used in all models - Aux Pump
16	B11	(GY-OG)	Not used in all models - Aux Pump
15	B12	(VT)	Not used in all models - Aux Pump
14	B13	(BN-BU)	Ground for the TRS and TFT Sensor (TRGND)

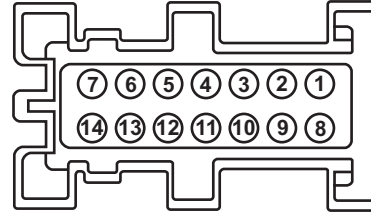
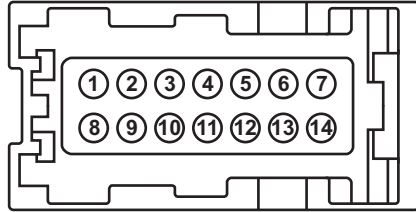
* - The C168A connector is the pin side of the connector. Wire colors shown in factory wiring are the external wires going to the connector. The C168B connector is the same connector but from the wire side or back side of the connector. The wire colors shown are the internal wires. When looking at the back side of the connector, one half is brown while the other half is blue. The A wire designation is the brown side of the connector. The B wire designation is the blue side of the connector. The chart above parallels the C168A pins to the C168B pins

Copyright © 2019 ATSG

Figure 5
Automatic Transmission Service Group

FORD 10R80 PRELIMINARY INFORMATION

TRANSMISSION INTERNAL CONNECTOR C177 TERMINAL ID



TRANSMISSION INTERNAL CONNECTOR C177 TERMINAL ID CHART		
TERMINAL #	WIRE COLOR	DESCRIPTION
1	Brown/Blue	Transmission Fluid Temperature Sensor Ground
2	Brown/Yellow	Transmission Fluid Temperature Sensor Signal
3	Yellow/Violet	Shift Solenoid E Control
4	Blue/Gray	Shift Solenoid F Control
5	Blue/Green	Solenoid 12 Volt Power Supply 1
*6	Blue/Brown	Shift Solenoid 3 Control
7	Gray/Brown	Torque Converter Clutch Solenoid Control
8	Blue/Green	Shift Solenoid A Control
9	Green/Brown	Shift Solenoid B Control
10	Gray/Orange	Shift Solenoid C Control
11	Brown/White	Shift Solenoid D Control
12	Brown	Solenoid 12 Volt Power Supply 2
*13	Yellow/Orange	Transmission Actuator Supply Voltage
14	Green/Orange	Line Pressure Solenoid Control

**Used Only With The Engine Stop/Start Feature*

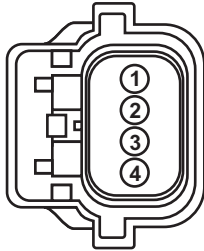
Copyright © 2019 ATSG

Figure 6

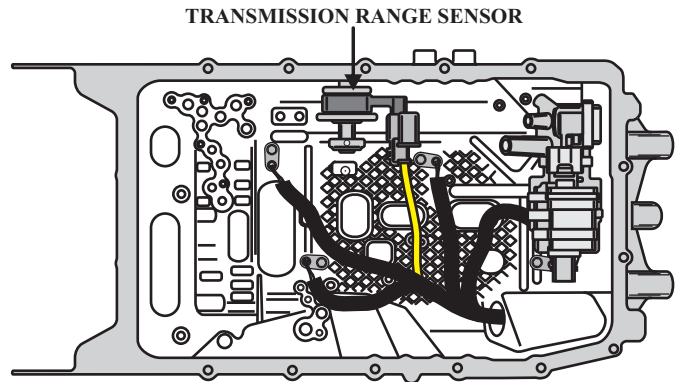
FORD 10R80

PRELIMINARY INFORMATION

TRANSMISSION RANGE SENSOR



- 1 - Transmission Range Sensor Ground
- 2 - Transmission Range Sensor PWM Output 1 (TR-P1)
- 3 - Transmission Range Sensor PWM Output 2 (TR-P2)
- 4 - Transmission Range Sensor 9 Volt Supply



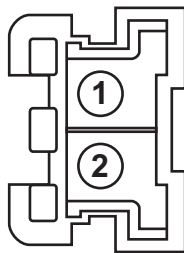
TRANSMISSION RANGE SENSOR PWM OUTPUT CHART				
	Transmission Range Sensor-A		Transmission Range Sensor-B	
Gear	Min (%)	Max (%)	Min (%)	Max (%)
Park	8.0	18.96	81.04	92.00
Reverse	35.50	47.90	52.10	64.50
Neutral	51.75	61.75	38.25	48.25
Drive	67.45	77.45	22.55	32.55
Sport	81.12	92.00	8.0	18.88

The 10R80 TRS is a dual sensor which ranges in a duty cycle as the shifter is moved from park to sport positions. When the shifter is moved from park to sport the duty cycle increases. When the shifter is moved from sport to park the duty cycle decreases. There is no manual valve to index.

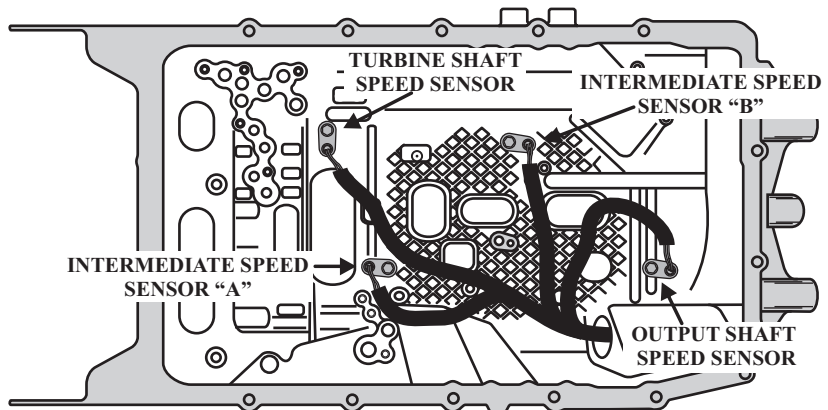
Copyright © 2019 ATSG

Figure 7

TRANSMISSION SPEED SENSORS



- 1 - Speed Sensor Signal
- 2 - Speed Sensor 9 Volt Supply



All Speed Sensors are a Hall Effect type that receives a 9 volt power supply from the TCM from which it provides a DC square wave signal. The Speed Sensors are internally grounded.

The Turbine Speed Sensor monitors the rotational speed of the #2 planetary carrier.

Intermediate Speed Sensor A monitors the rotational speed of ring gear #1.

Intermediate Speed Sensor B monitors the rotational speed of planetary carrier #1/ring gear #4.

The Output Speed Sensor monitors the rotational speed of planetary carrier #4.

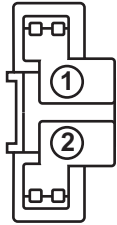
Copyright © 2019 ATSG

Figure 8

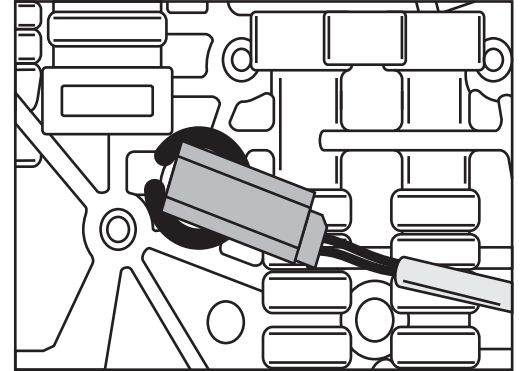
FORD 10R80

PRELIMINARY INFORMATION

TRANSMISSION FLUID TEMPERATURE SENSOR



- 1 - TFT Sensor Ground
- 2 - TFT Sensor Signal



TRANSMISSION FLUID TEMPERATURE SENSOR CHART

RESISTANCE Ω	F°	C°
1967K to 284K	-40 to -4	-40 to -20
284K to 100K	-3 to -31	-19 to -1
100K to 37K	32 to 68	0 to 20
37K to 16K	69 to 104	21 to 40
16K to 5K	105 to 158	41 to 70
5K to 2.7K	159 to 194	71 to 90
2.7K to 1.5K	195 to 230	91 to 110
1.5K to 0.8K	231 to 266	111 to 130
0.8K to 0.54K	267 to 302	131 to 150

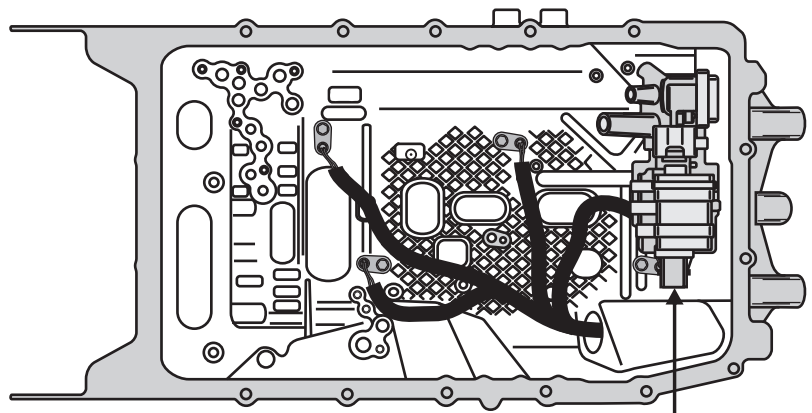
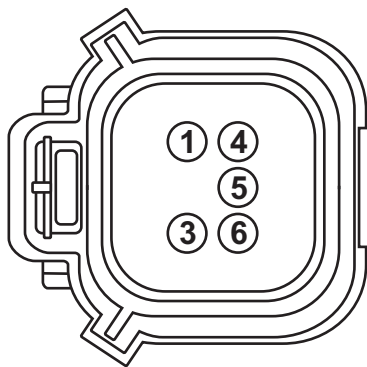
The Transmission Fluid Temperature Sensor is located on the valve body assembly which allows the sensor to remain submerged in transmission sump oil.

The higher the signal voltage the lower the temperature signal will be which makes this sensor a Negative Temperature Coefficient temperature sensor.

Copyright © 2019 ATSG

Figure 9

AUXILIARY TRANSMISSION FLUID PUMP



AUXILIARY TRANSMISSION FLUID PUMP

- 1 - Run/Start 12 Volt Power Supply
- 2 - Not Used
- 3 - Transmission Actuator 12 Volt Power Supply (TASV)
- 4 - Auxiliary Transmission Fluid Pump Control (ATFPC)
- 5 - Auxiliary Transmission Fluid Pump Motor (ATFPM)
- 6 - Ground

The electronic Auxiliary Transmission Fluid Pump is used to keep the transmission engaged when the engine is stopped and the transmission is in drive. The pump runs at a cycle range of 10% to 90% controlled by the TCM.

Copyright © 2019 ATSG

Figure 10

FORD DIAGNOSTIC TROUBLE CODES	
DTC	DESCRIPTION
P0603	Internal Control Module (TCM) Keep Alive Memory (KAM) Error
P0604	Internal Control Module (TCM) Random Access Memory (RAM) Error
P0605	Internal Control Module (TCM) Read Only Memory (ROM) Error
P0607	Transmission Control Module Performance Error
P060A	Internal Control Module (TCM) Monitoring Processor Performance Error
P060C	Internal Control Module (TCM) Main Processor Performance Error
P061A	Internal Control Module (TCM) Torque Performance Error
P062C	Internal Control Module (TCM) Vehicle Speed Performance Error
P064F	Unauthorized Software/Calibration Detected
P0657	Actuator Supply Voltage "A" Circuit Open
P068A	PCM Power Relay De-energized Too Early
P068B	Internal Control Module (TCM) Non-Volatile Random Access Memory (NVRAM) Error
P0702	Transmission Control Electrical System, Voltage Too High or Too Low
P0706	Transmission Range Sensor (TRS) "A" Circuit Range/Performance
P0707	Transmission Range Sensor (TRS) "A" Circuit Low
P0708	Transmission Range Sensor (TRS) "A" Circuit High
P0709	Transmission Range Sensor (TRS) "A" Circuit Intermittent
P0710	Transmission Fluid Temperature (TFT) Sensor "A" Circuit Excessive Voltage Drop
P0711	Transmission Fluid Temperature (TFT) Sensor "A" Circuit Range/Performance
P0712	Transmission Fluid Temperature (TFT) Sensor "A" Circuit Low
P0713	Transmission Fluid Temperature (TFT) Sensor "A" Circuit High
P0715	Turbine Speed Sensor (TSS) "A" Circuit Loss of Signal
P0716	Turbine Speed Sensor (TSS) "A" Circuit Range/Performance
P0717	Turbine Speed Sensor (TSS) "A" Circuit No Signal
P0718	Turbine Speed Sensor (TSS) "A" Circuit Intermittent
P0720	Output Shaft Speed Sensor (OSS) Loss of Signal
P0721	Output Shaft Speed Sensor (OSS) Range/Performance
P0722	Output Shaft Speed Sensor (OSS) "A" Circuit No Signal
P0723	Output Shaft Speed Sensor (OSS) "A" Circuit Intermittent
P0729	Incorrect 6th Gear Ratio
P0731	Incorrect 1st Gear Ratio
P0732	Incorrect 2nd Gear Ratio
P0733	Incorrect 3rd Gear Ratio
P0734	Incorrect 4th Gear Ratio
P0735	Incorrect 5th Gear Ratio
P0736	Incorrect Reverse Gear Ratio
P0740	Torque Converter Clutch (TCC) Solenoid Circuit Open
P0741	Torque Converter Clutch (TCC) Performance/Stuck Off
P0743	Torque Converter Clutch (TCC) Solenoid Circuit Open or Shorted
P0748	Pressure Control Solenoid Electrical Circuit Fault
P0751	Shift Solenoid "A" (SSA) Performance/Stuck Off
P0752	Shift Solenoid "A" (SSA) Performance/Stuck On
P0753	Shift Solenoid "A" (SSA) Electrical Circuit Fault
P0754	Shift Solenoid "A" (SSA) Intermittent Electrical Circuit Fault
P0756	Shift Solenoid "B" (SSB) Performance/Stuck Off
P0757	Shift Solenoid "B" (SSB) Performance/Stuck On
P0758	Shift Solenoid "B" (SSB) Electrical Circuit Fault

FORD DIAGNOSTIC TROUBLE CODES	
DTC	DESCRIPTION
P0759	Shift Solenoid "B" (SSB) Intermittent Electrical Circuit Fault
P0761	Shift Solenoid "C" (SSC) Performance/Stuck Off
P0762	Shift Solenoid "C" (SSC) Stuck On
P0763	Shift Solenoid "C" (SSC) Electrical Circuit Fault
P0764	Shift Solenoid "C" (SSC) Intermittent Circuit Open or Shorted
P0766	Shift Solenoid "D" (SSD) Performance/Stuck Off
P0767	Shift Solenoid "D" (SSD) Stuck On
P0768	Shift Solenoid "D" (SSD) Electrical Circuit Failure
P0769	Shift Solenoid "D" (SSD) Intermittent Circuit Open or Shorted
P076F	Incorrect 7th Gear Ratio
P0771	Shift Solenoid "E" (SSE) Performance/Stuck Off
P0772	Shift Solenoid "E" (SSE) Stuck On
P0773	Shift Solenoid "E" (SSE) Electrical Circuit Fault
P0774	Shift Solenoid "E" (SSE) Intermittent Circuit Open or Shorted
P077D	Output Shaft Speed Sensor Circuit High
P07A9	Transmission Friction Element "D" Stuck ON
P07AB	Transmission Friction Element "E" Stuck ON
P07AD	Transmission Friction Element "F" Stuck ON
P07C0	Input/Turbine Shaft Speed Sensor "A" Circuit High
P07C6	Intermediate Shaft Speed Sensor "A" Circuit High
P07C8	Intermediate Shaft Speed Sensor "B" Circuit High
P07D9	Incorrect 8th Gear Ratio
P07F6	Incorrect 9th Gear Ratio
P07F7	Incorrect 10th Gear Ratio
P0868	Transmission Fluid Pressure Low
P0882	PCM/TCM Power Input Signal Low
P0883	PCM/TCM Power Input Signal High
P0884	PCM/TCM Power Input Signal Intermittent Fault
P0960	Pressure Control Solenoid Control Circuit Open
P0961	Pressure Control Solenoid Control Circuit Range/Performance
P0962	Pressure Control Solenoid Control Circuit Low
P0963	Pressure Control Solenoid Control Circuit High
P0973	Shift Solenoid "A" (SSA) Control Circuit Low
P0974	Shift Solenoid "A" (SSA) Control Circuit High
P0976	Shift Solenoid "B" (SSB) Control Circuit Low
P0977	Shift Solenoid "B" (SSB) Control Circuit High
P0979	Shift Solenoid "C" (SSC) Control Circuit Low
P097A	Shift Solenoid "A" (SSA) Control Circuit Open
P097B	Shift Solenoid "B" (SSB) Control Circuit Open
P097C	Shift Solenoid "C" (SSC) Control Circuit Open
P097D	Shift Solenoid "D" (SSD) Control Circuit Open
P097E	Shift Solenoid "D" (SSD) Control Circuit High
P097F	Shift Solenoid "F" (SSF) Control Circuit Open
P0980	Shift Solenoid "C" (SSC) Control Circuit High
P0982	Shift Solenoid "D" (SSD) Control Circuit Low
P0983	Shift Solenoid "D" (SSD) Control Circuit High
P0985	Shift Solenoid "E" (SSE) Control Circuit Low

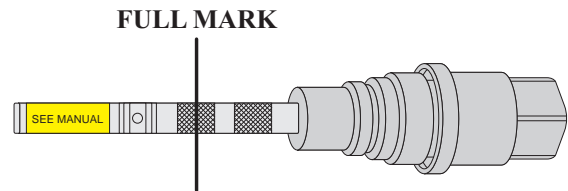
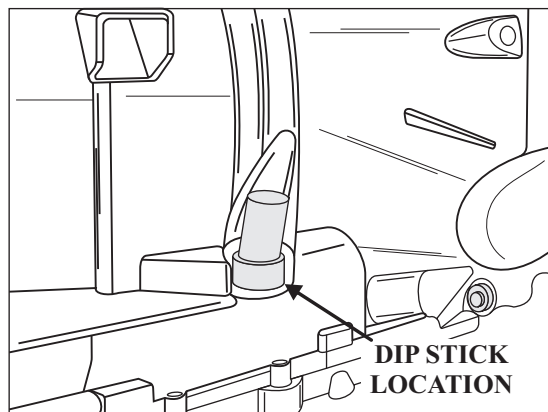
Figure 12
Automatic Transmission Service Group

FORD DIAGNOSTIC TROUBLE CODES	
DTC	DESCRIPTION
P0986	Shift Solenoid "E" (SSE) Control Circuit High
P0998	Shift Solenoid "F" (SSF) Control Circuit Low
P0999	Shift Solenoid "F" (SSF) Control Circuit High
P0B0D	Electric Auxiliary Transmission Fluid Pump Motor Control Module
P0C27	Electric Auxiliary Transmission Fluid Pump Motor Current Low
P0C28	Electric Auxiliary Transmission Fluid Pump Motor Current High
P0C29	Electric Auxiliary Transmission Fluid Pump Motor Performance
P0C2A	Electric Auxiliary Transmission Fluid Pump Motor Stalled
P0C2C	Electric Auxiliary Transmission Fluid Pump Control Module Feedback Signal Range
P0C2D	Electric Auxiliary Transmission Fluid Pump Control Module Feedback Signal Low
P0C2E	Electric Auxiliary Transmission Fluid Pump Control Module Feedback Signal High
P1001	KOER Self Test Aborted
P1397	System Voltage Out of Self Test Range
P1501	Vehicle Speed Sensor (VSS) Out of Self Test Range
P160A	Control Module Vehicle Options Reconfiguration Error
P1636	Inductive Signature Chip Communication Error
P163E	TCM Programming Error
P163F	Transmission ID Block Corrupted/Not Programmed
P1674	Control Module (TCM) Software Corrupted
P1705	Transmission Range Sensor (TRS) Not In Park During Self Test
P1711	Transmission Fluid Temperature (TFT) Sensor Out of Self Test Range
P1744	Torque Converter Clutch (TCC) Range/Performance
P175A	Transmission Fluid Overtemp Condition - Auxiliary Pump Disabled
P1783	Transmission Over Temperature Condition
PIA02	Transmission One-Way Clutch Performance
P2531	Ignition Switch Run Position Circuit Low
P2532	Ignition Switch Run Position Circuit High
P2669	Actuator Supply Voltage "B" Circuit Open
P26C3	Internal Control Module Transmission Range Sensor Performance
P2700	Transmission Friction Element "A" Apply Time Range/Performance
P2701	Transmission Friction Element "B" Apply Time Range/Performance
P2702	Transmission Friction Element "C" Apply Time Range/Performance
P2703	Transmission Friction Element "D" Apply Time Range/Performance
P2704	Transmission Friction Element "E" Apply Time Range/Performance
P2705	Transmission Friction Element "F" Apply Time Range/Performance
P2707	Shift Solenoid "F" (SSF) Performance - Stuck OFF
P2708	Shift Solenoid "F" (SSF) Performance - Stuck ON
P2709	Shift Solenoid "F" (SSF) Electrical Circuit Fault
P2710	Shift Solenoid "F" (SSF) Electrical Intermittent Circuit Fault
P2745	Intermediate Shaft Speed Sensor "B" Circuit Fault
P2746	Intermediate Shaft Speed Sensor "B" Circuit Range/Performance
P2747	Intermediate Shaft Speed Sensor "B" Circuit No Signal
P2748	Intermediate Shaft Speed Sensor "B" Circuit Intermittent
P2758	Torque Converter Clutch (TCC) Pressure Control Solenoid Stuck On
P2760	Torque Converter Clutch (TCC) Pressure Control Solenoid Circuit Intermittent
P2769	Torque Converter Clutch (TCC) Pressure Control Solenoid Circuit Low
P2770	Torque Converter Clutch (TCC) Pressure Control Solenoid Circuit High

FORD DIAGNOSTIC TROUBLE CODES	
DTC	DESCRIPTION
P2783	Torque Converter Temperature Too High
P2796	Electric Auxiliary Transmission Fluid Pump Control Circuit - No PWM Signal From TCM
P27B4	Internal Control Module Transmission Gear Ratio Control Performance
P27B5	Internal Control Module Transmission Gear Select Performance
P27B6	Internal Control Module Transmission Speed Sensor Performance
P2801	Transmission Range Sensor "B" Circuit Range/Performance
P2802	Transmission Range Sensor "B" Circuit Low
P2803	Transmission Range Sensor "B" Circuit High
P2804	Transmission Range Sensor "B" Circuit Intermittent
P2805	Transmission Range Sensor "A/B" Correlation
U0028	Vehicle Communication BUS "A" Fault
U0037	Vehicle Communication BUS "B" Fault
U0073	Control Module Communication BUS "A" OFF
U0074	Control Module Communication BUS "B" OFF
U0100	Lost Communication With PCM "A"
U0121	The PCM/TCM Lost Communication With The ABS Module
U0140	The PCM/TCM Lost Communication With the Body Control Module (BCM)
U0146	Lost Communication With Gateway "A"
U0155	The PCM/TCM Lost Communication With Instrument Panel Cluster (IPC)
U0401	Invalid Data Received From The PCM "A"
U0415	The PCM/TCM Has Received Invalid Data From the ABS Module
U0422	Invalid Data Received From The Body Control Module (BCM)
U2100	Initial Configuration Not Complete
U2101	Control Module Configuration Incompatible
U2200	Control Module Configuration Memory Corrupt

Copyright © 2019 ATSG

TRANSMISSION FLUID FILL & CHECK PROCEDURES



The 10R80 Transmission has a dip stick located on the right front of the transmission behind the bell housing. Fluid level should be checked at operating temperature which is 206°F to 215°F (96°C to 101°C). Total fill capacity is 13 Quarts (12.3 Liters) of MERCON® ULV fluid. Service fill is 3.5 quarts (3.3 Liters). The full mark on the dip stick is in the "B" area and should be at the middle of the checkered zone. The dip stick should be torqued to 18 lb. ft. (25 Nm).

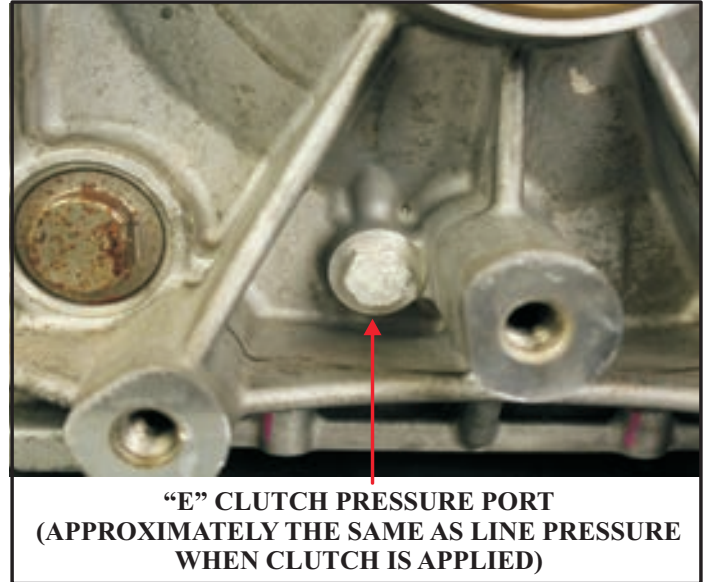
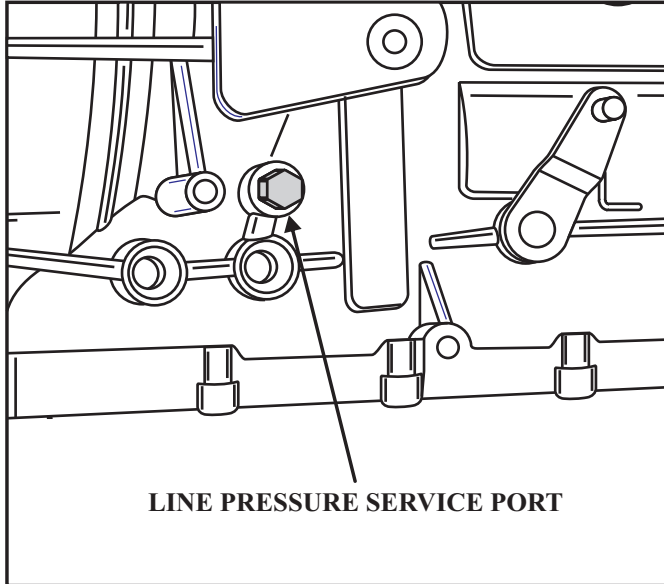
Copyright © 2019 ATSG

Figure 15

FORD 10R80

PRELIMINARY INFORMATION

LINE PRESSURE CHECK & SPECIFICATIONS



NOTE: Actual and commanded pressures vary based on calibration and transmission adaptive strategies.
All listed pressures are approximate.

LINE PRESSURE SPECIFICATION CHART				
Gear	Line Pressure - kPa (psi)		Commanded Line Pressure - kPa (psi)	
	Idle	WOT	Idle	WOT
P/N	619 (90)	————	94 (14)	————
Reverse	619 (90)	1,675 (240)	94 (14)	410 (60)
Drive	619 (90)	1,600 (230)	94 (14)	375 (55)
3	619 (90)	1,230 (180)	94 (14)	275 (40)
2	619 (90)	1,675 (240)	94 (14)	410 (60)
1	619 (90)	1,600 (230)	94 (14)	375 (55)

*The Line Pressure Service Port Plug Thread is M10 x 1.00 NPT
Torque Line Pressure Service Port Plug To 97 Lb In (11 Nm)*

FORD 10R80
TRANSMISSION DISASSEMBLY PROCEDURES

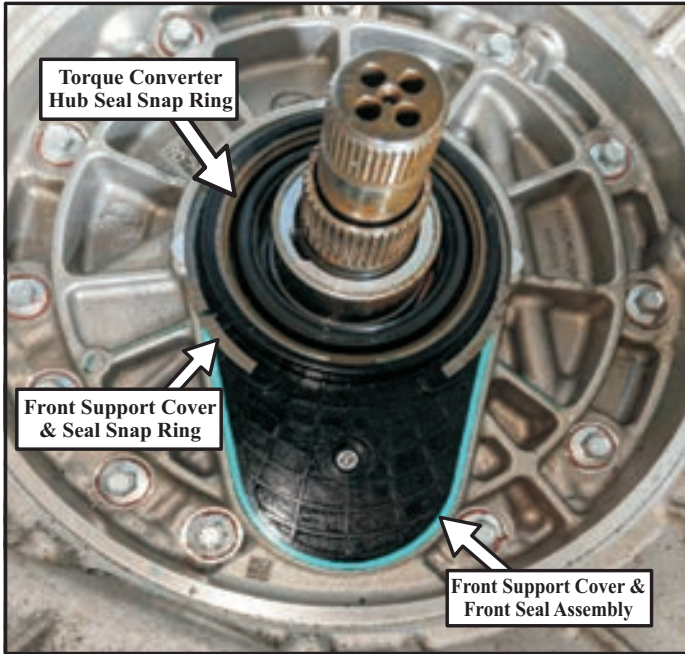


Figure 1



Figure 3



Figure 2

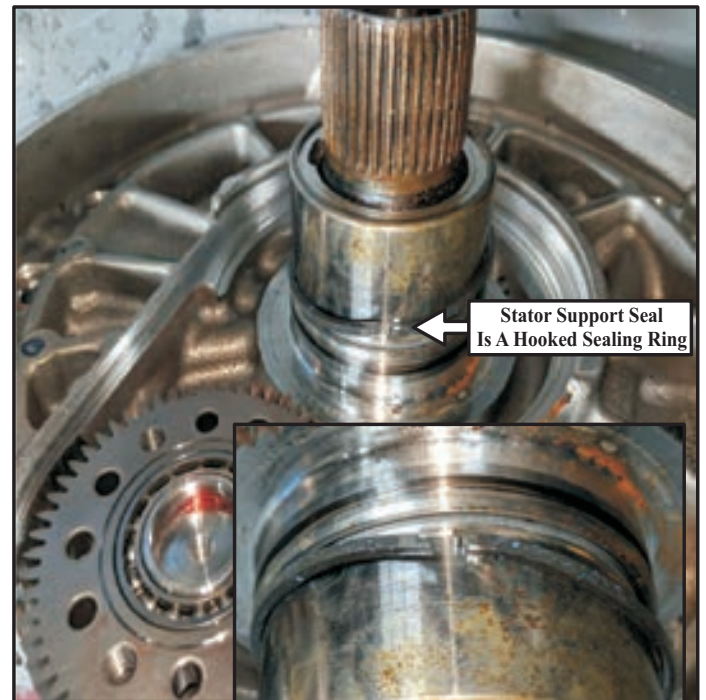


Figure 4

FORD 10R80

TRANSMISSION DISASSEMBLY PROCEDURES



Figure 5



Figure 8

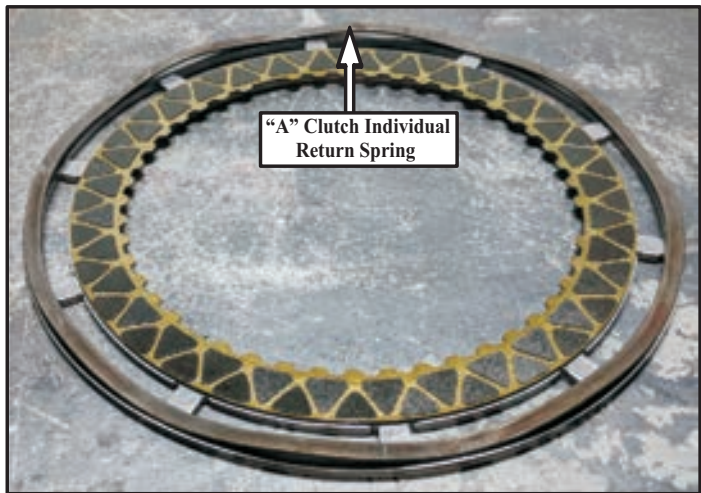


Figure 9



Figure 6



Figure 10



Figure 7

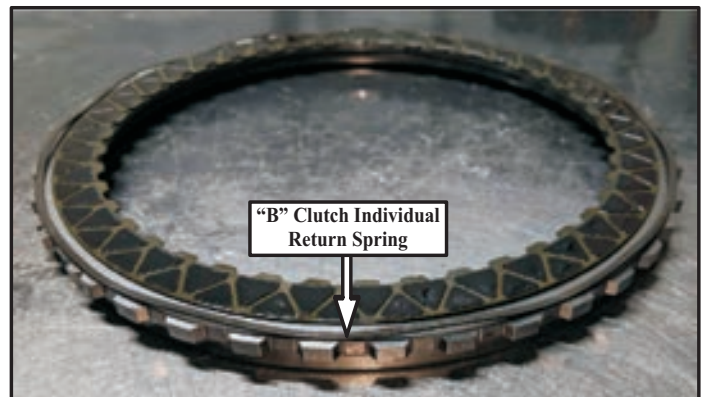


Figure 11

FORD 10R80
TRANSMISSION DISASSEMBLY PROCEDURES

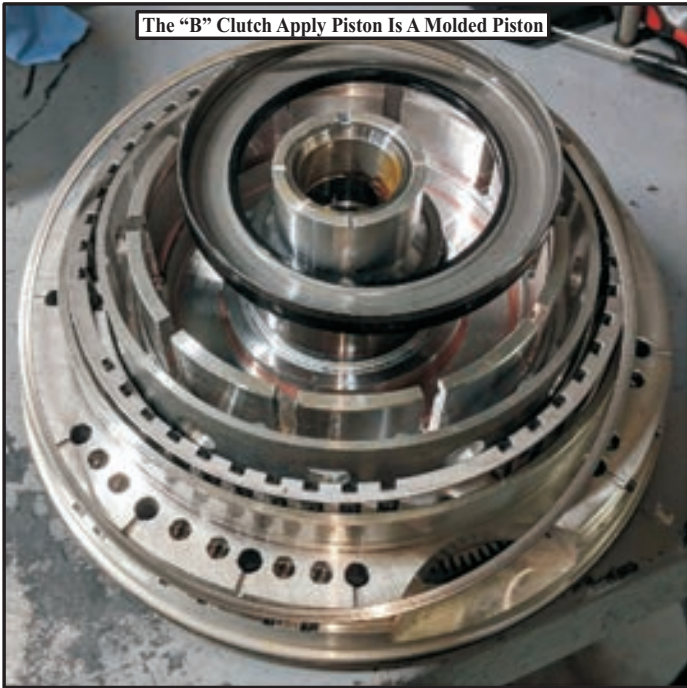


Figure 12



Figure 14



Figure 13

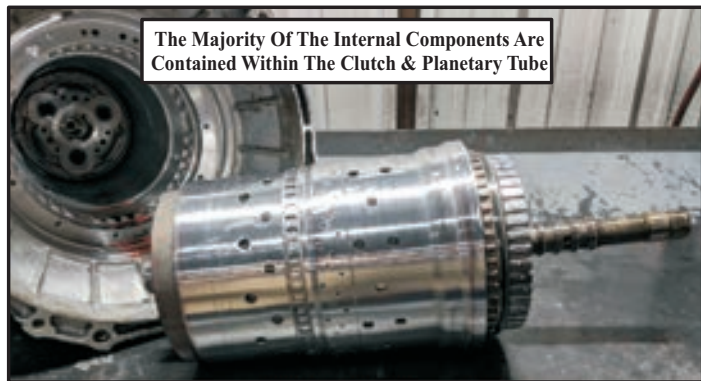


Figure 15

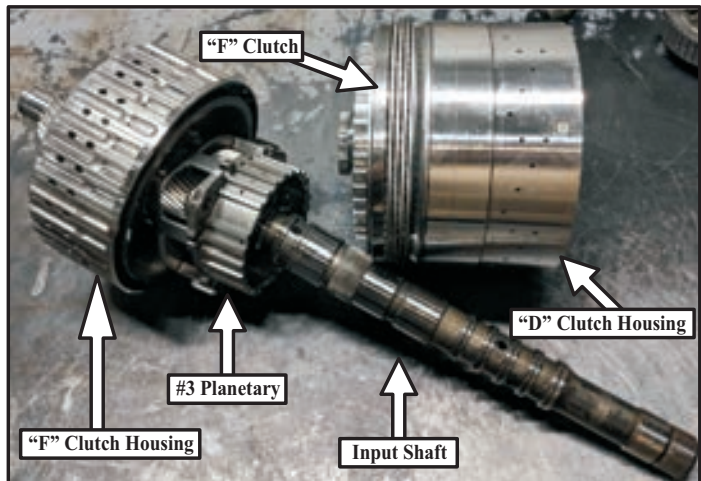


Figure 16

FORD 10R80
TRANSMISSION DISASSEMBLY PROCEDURES



Figure 17



Figure 19

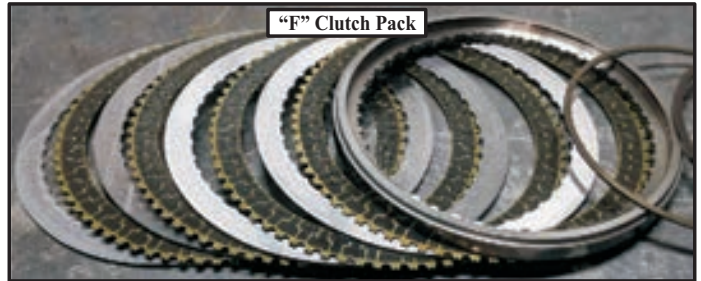


Figure 20

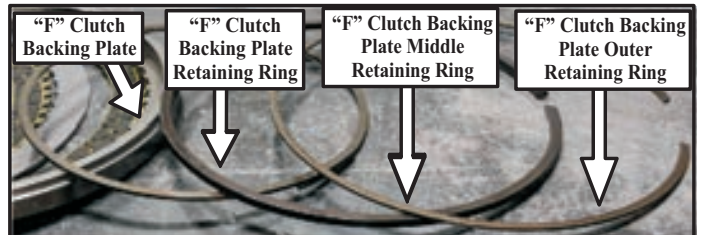


Figure 21

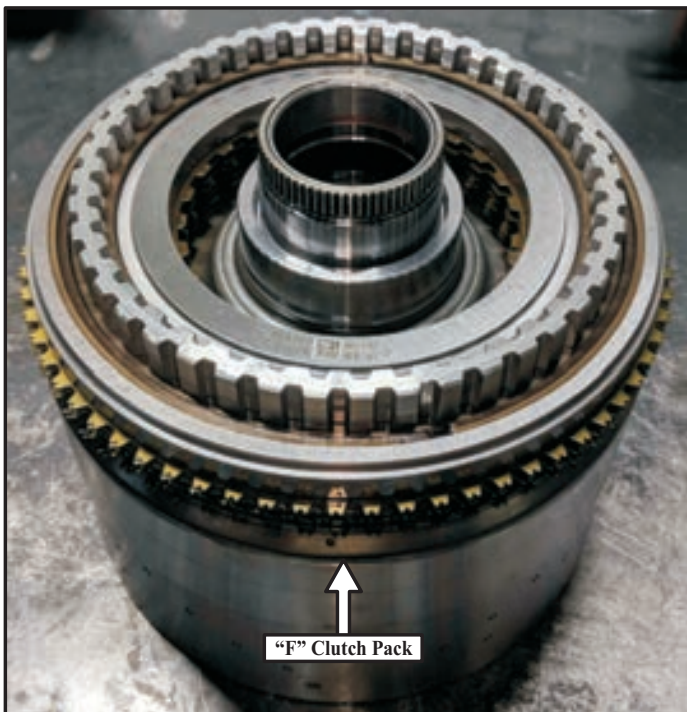


Figure 18

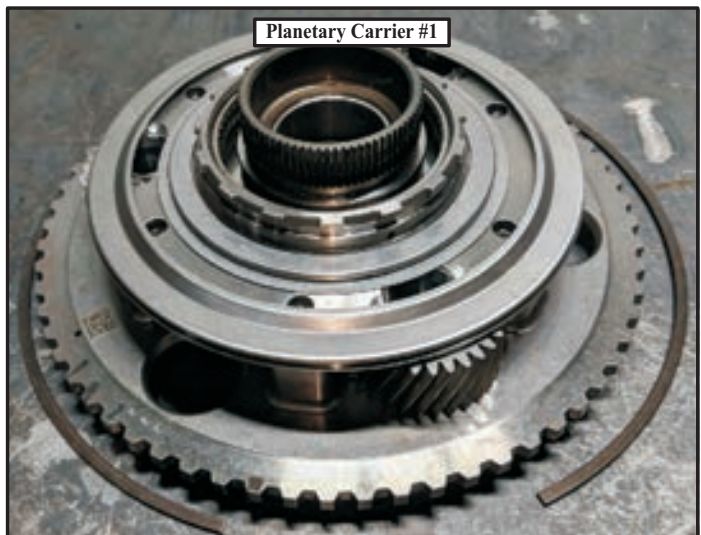


Figure 22

FORD 10R80
TRANSMISSION DISASSEMBLY PROCEDURES

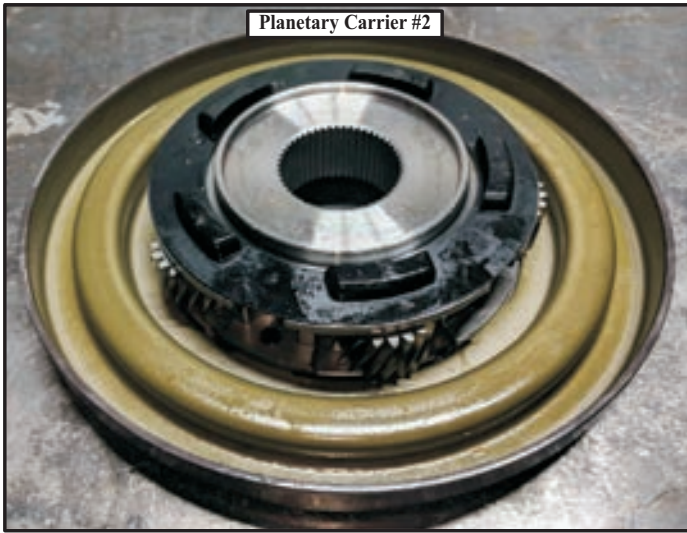


Figure 23



Figure 25

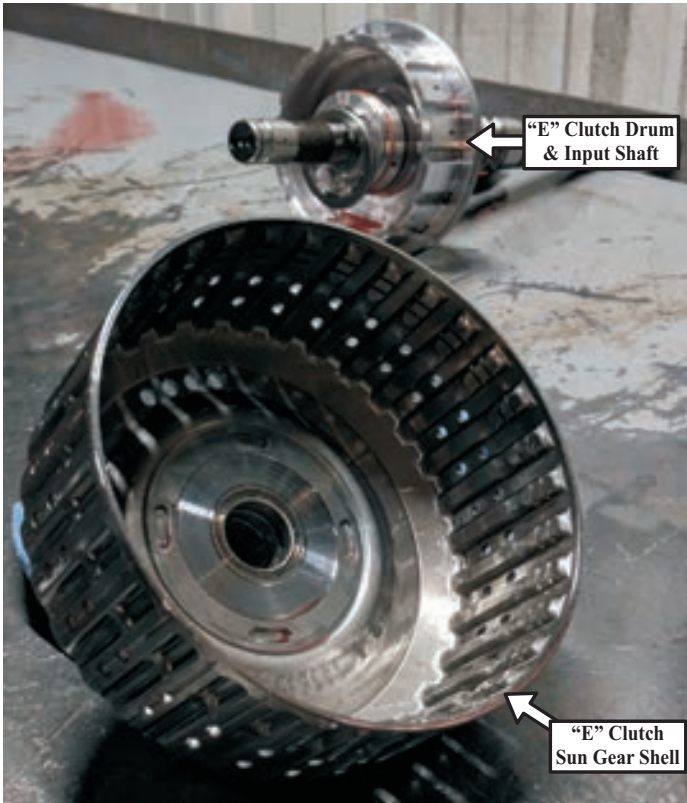


Figure 24

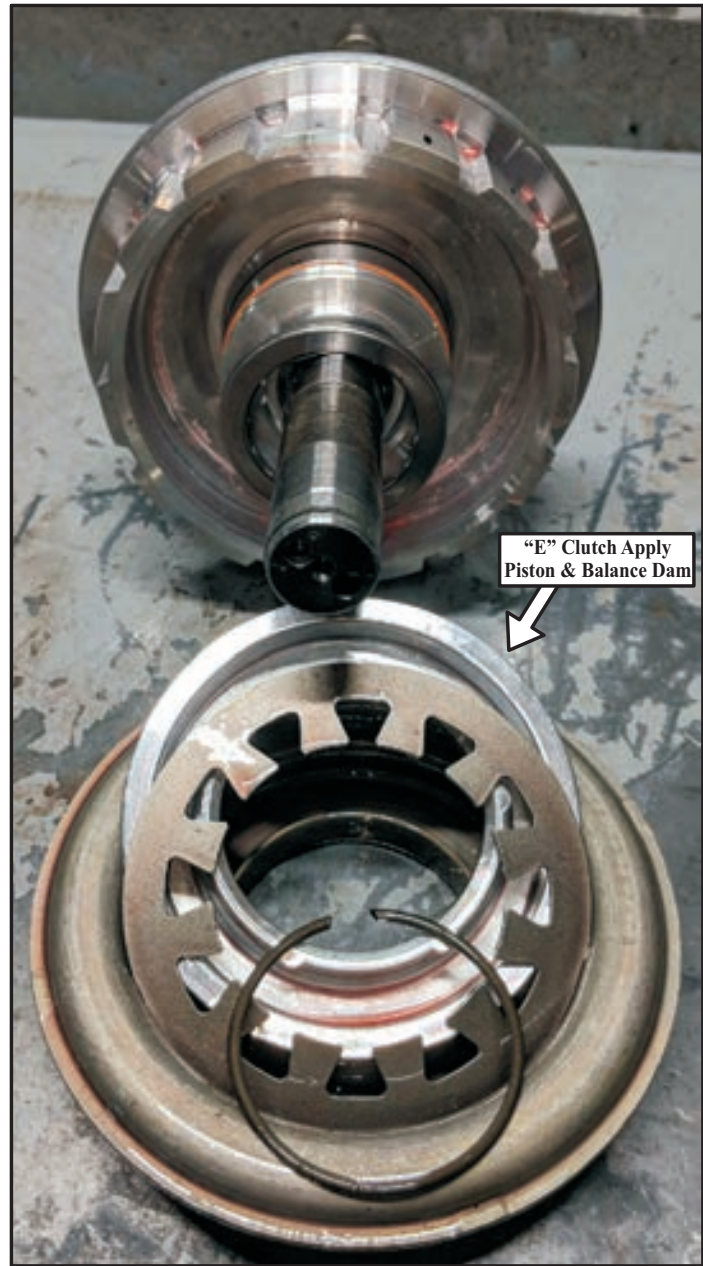


Figure 26

FORD 10R80
TRANSMISSION DISASSEMBLY PROCEDURES

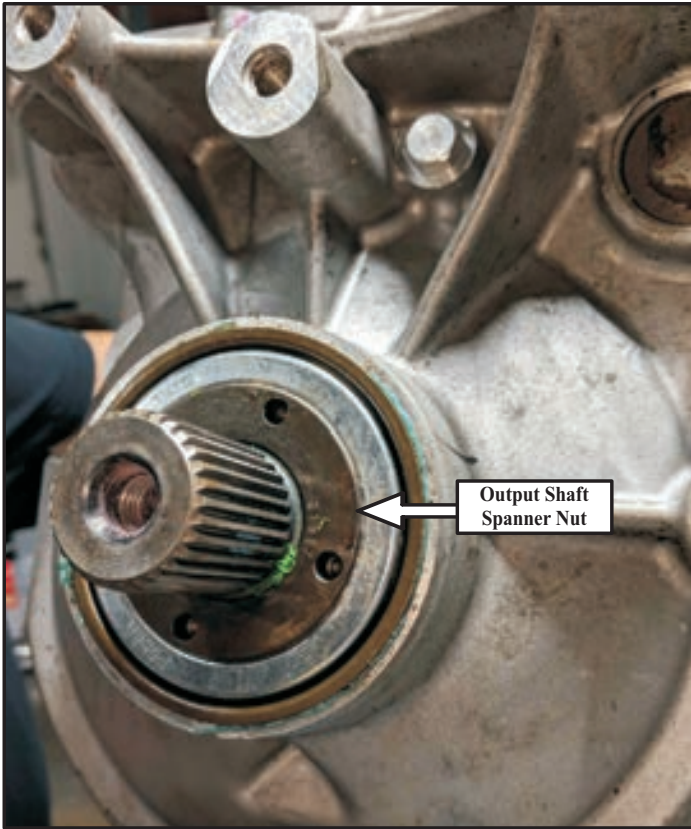


Figure 27



Figure 29



Figure 28

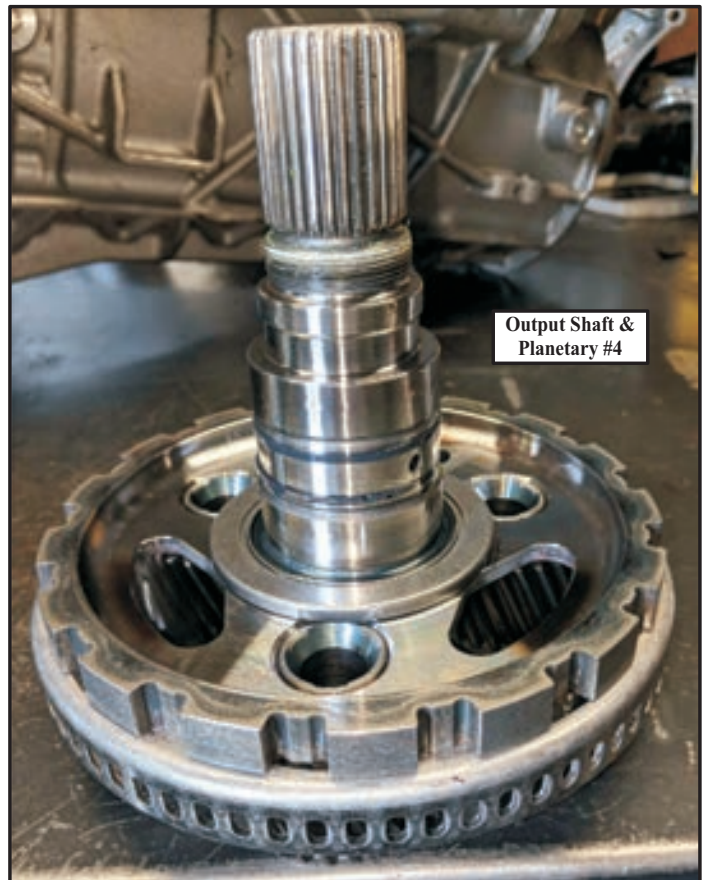


Figure 30

FORD 10R80

TRANSMISSION DISASSEMBLY PROCEDURES

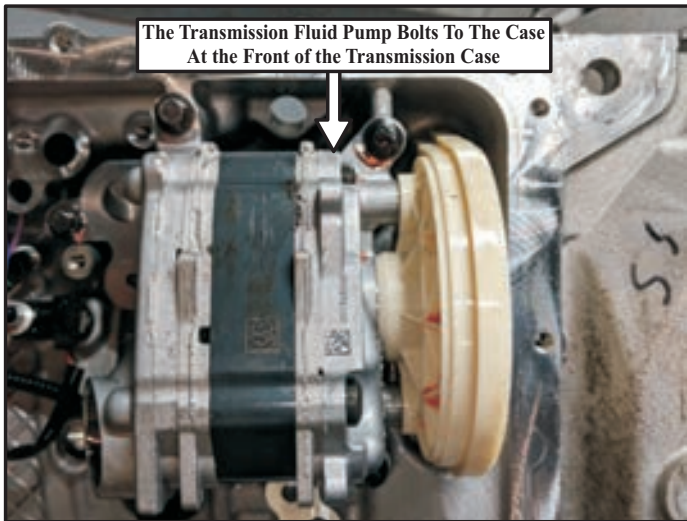


Figure 31



Figure 32

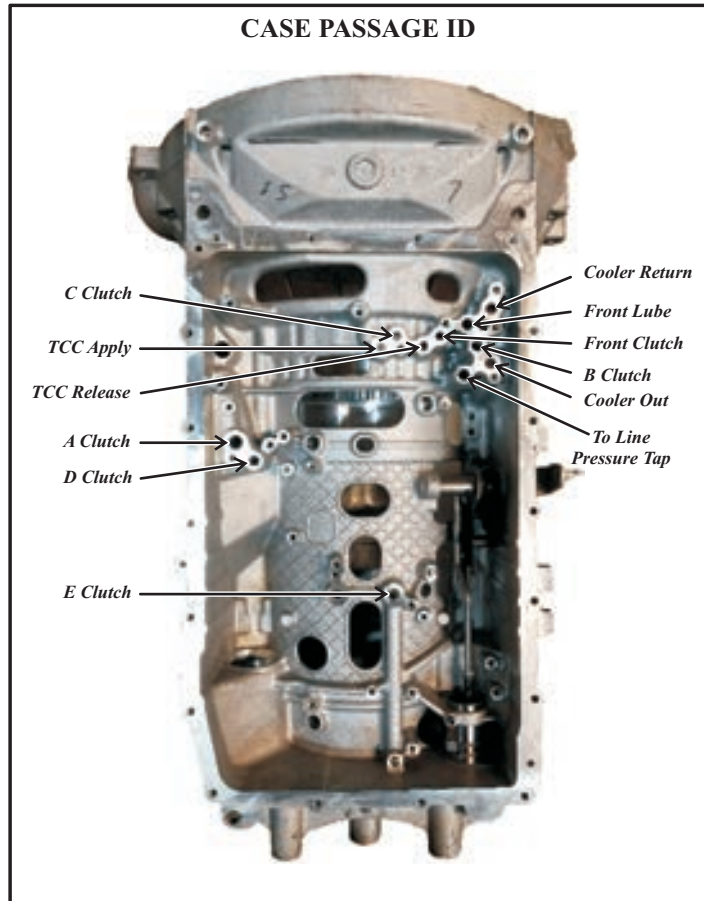


Figure 33

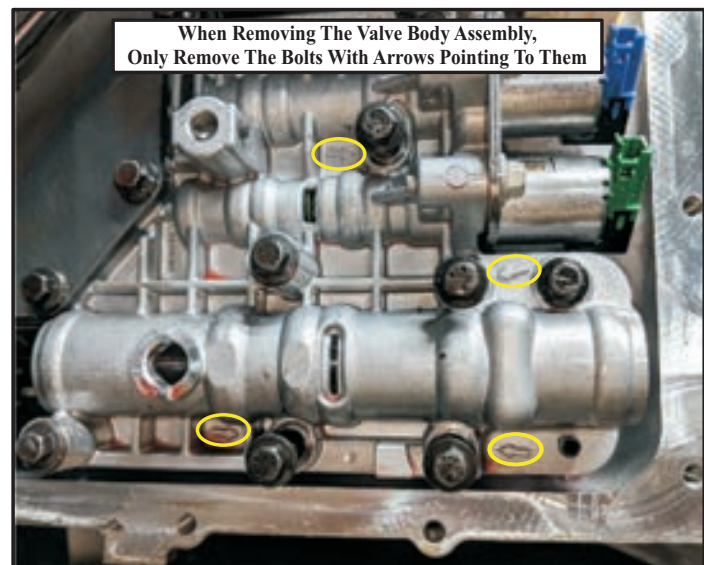


Figure 34

FORD 10R80
 MAIN CONTROL VALVE BODY INFORMATION

Variable Force Solenoids

LPC Solenoid - N.H.

TCC Solenoid - N.L.

All Casting Integrated Direct
 Acting Solenoids (CIDAS) are N.L.

All solenoids measure 5.0-5.4 ohms
 at 20° C (68°F)

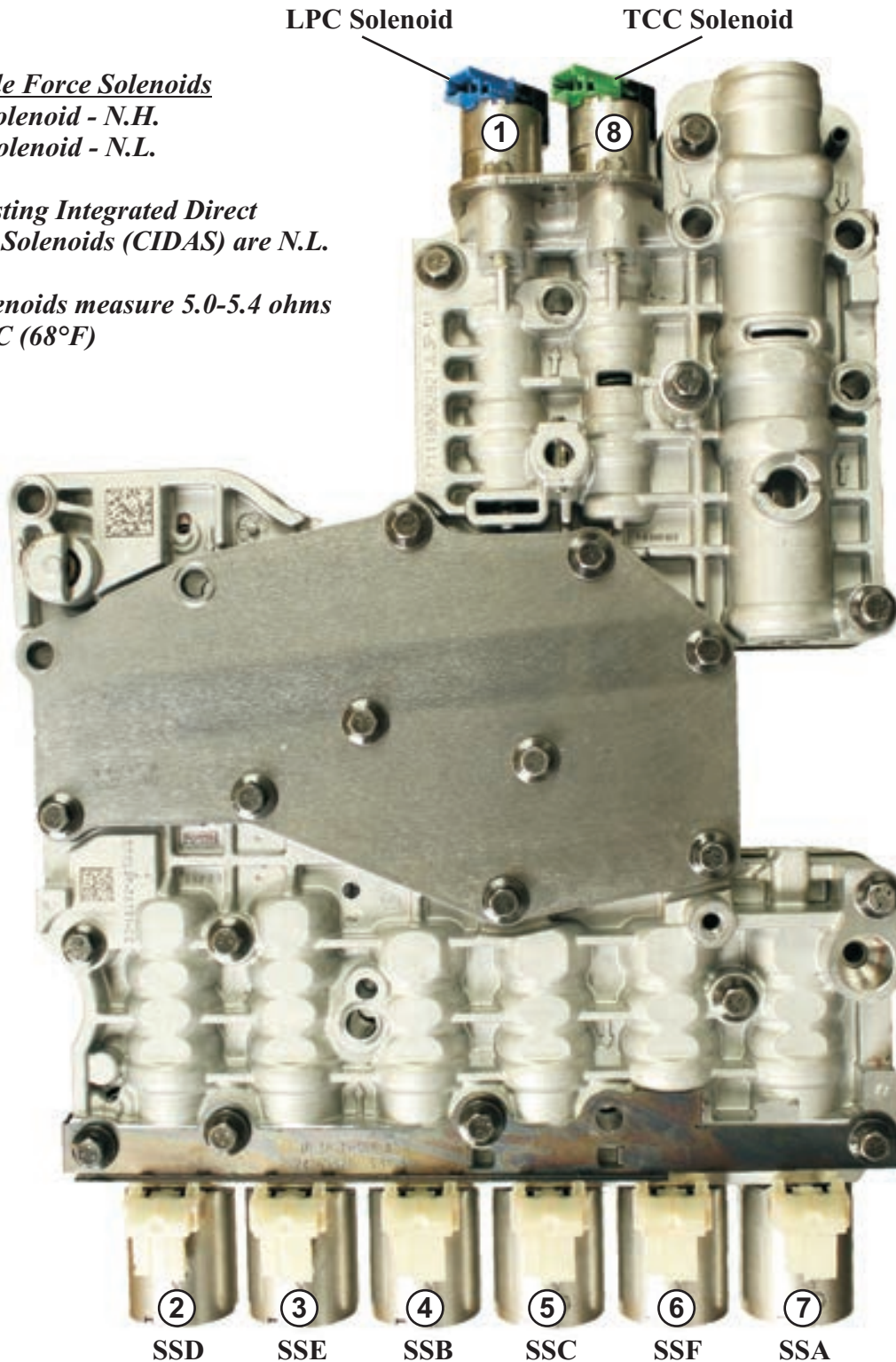


Figure 35
 Automatic Transmission Service Group

FORD 10R80

MAIN CONTROL VALVE BODY INFORMATION

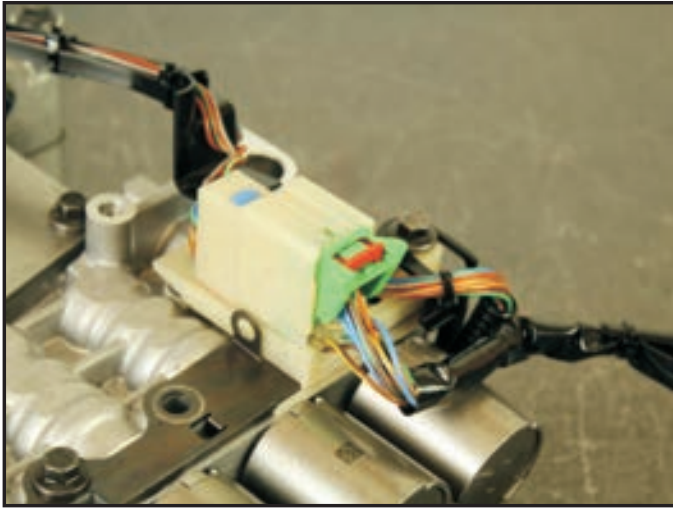


Figure 36

1. If the internal harness is still attached to the valve body seen in figure 36, pull the red locking tab outwards as shown in figure 37 and 38.

2. With the red locking tab in the unlocked position, a green release tab is located forward of the red locking tab as seen in figure 38. Push the green release tab down as shown in figure 39.

3. Once the green release tab is pressed down, carefully roll the top of the transmission harness connector out of the solenoid harness connector as seen in figure 40. Once out, separate the transmission harness from the valve body harness.

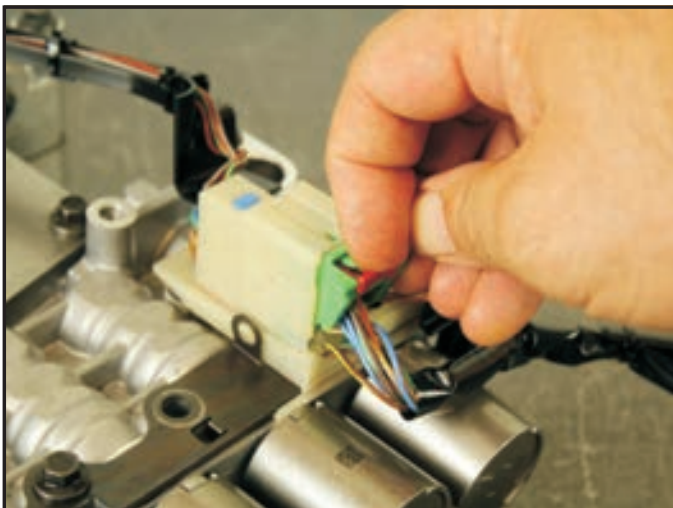


Figure 37

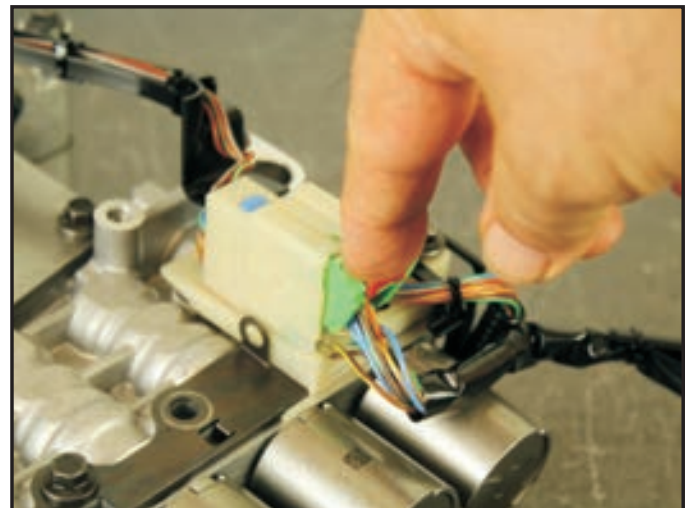


Figure 39

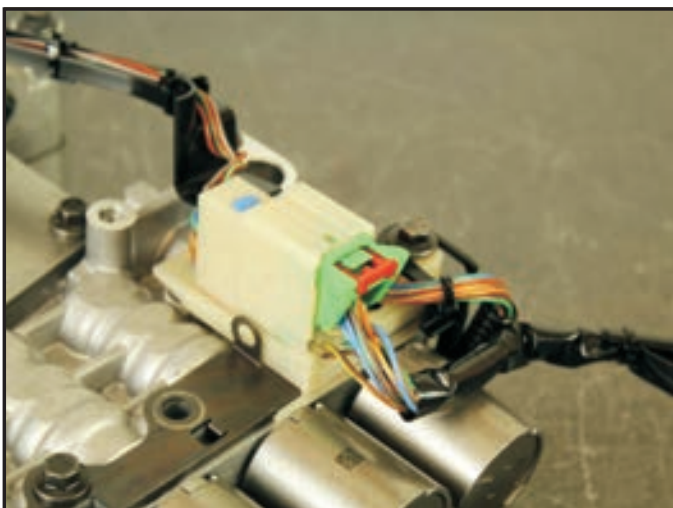


Figure 38

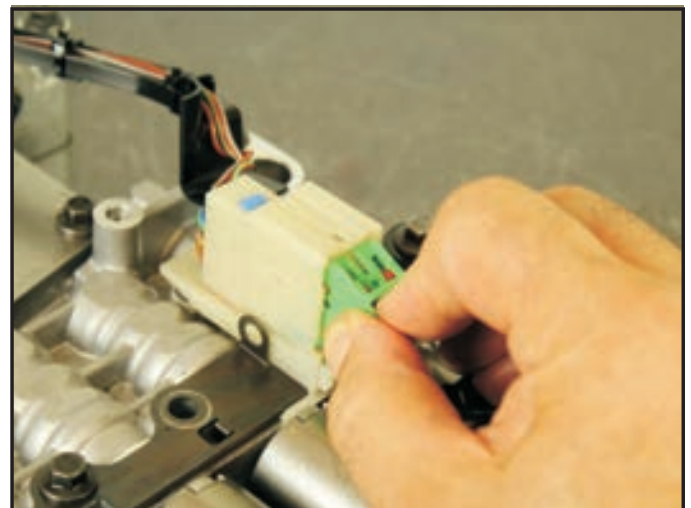


Figure 40

FORD 10R80

MAIN CONTROL VALVE BODY INFORMATION

4. The TFT sensor is connected to the valve body harness and it too has a red locking tab that must be slid outward as seen in figure 41.

5. The pick can then be used to compress the brown release tab while slightly pulling on the connector (figure 42).

6. Once the valve body harness has been disconnected from the TFT sensor, the TFT sensor can be removed from the valve body. Lift the locating/locking tab with a pick as seen in figure 43. Rotate the sensor in a clockwise direction (figure 44). Once an approximate 90° turn has been made, the TFT sensor should be properly aligned for removal (figure 45).

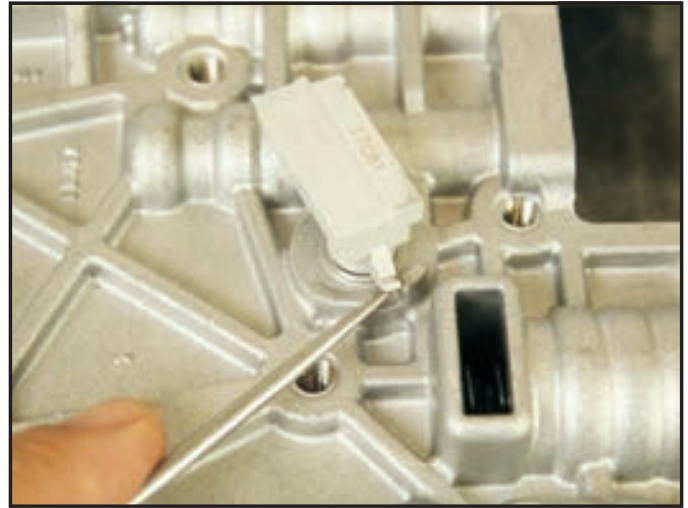


Figure 43

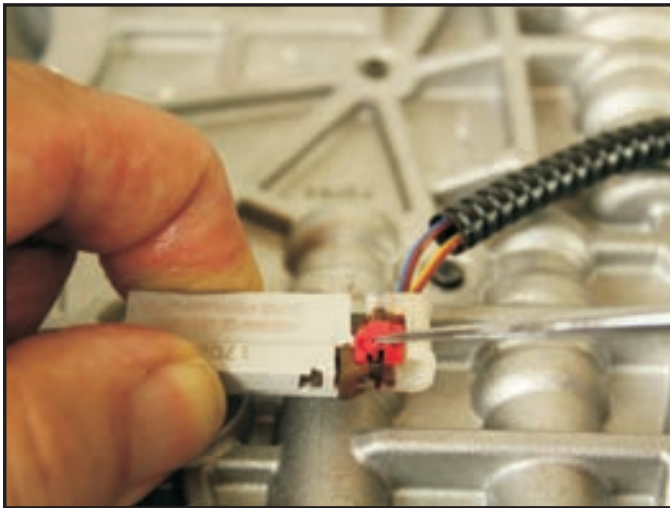


Figure 41



Figure 44



Figure 42



Figure 45

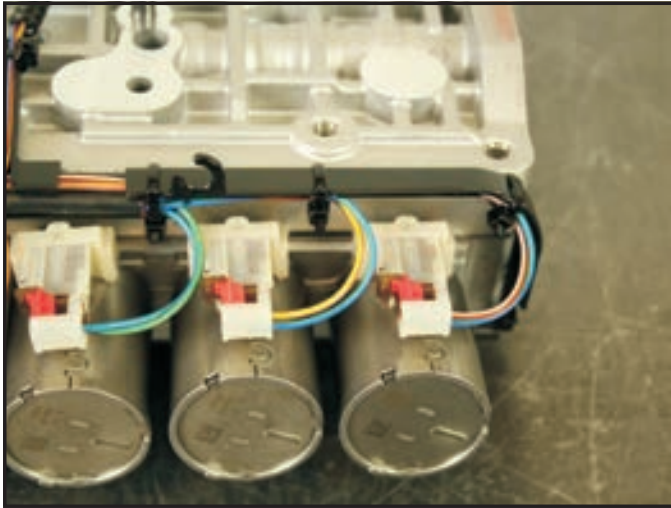
FORD 10R80**MAIN CONTROL VALVE BODY INFORMATION**

Figure 46

7. All 6 CIDAS solenoids have the same type of connector as the TFT sensor (figure 46). Disconnect all the CIDAS connectors in the same fashion.

8. Using an 8mm socket and impact, remove the valve body harness retaining bolt as seen in figure 47. Then, unhook the connector from the eyelet bracket and remove the harness (figure 48).

9. Using the same 8mm socket and impact, remove 9 cover plate bolts (figure 49) and the cover plate (figure 50).

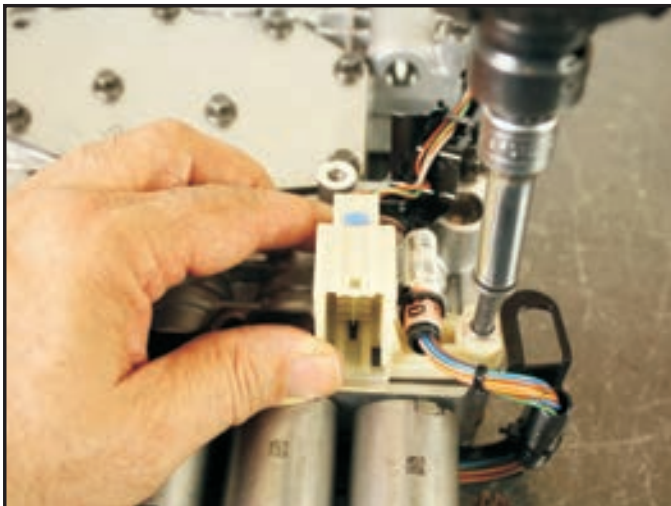


Figure 47

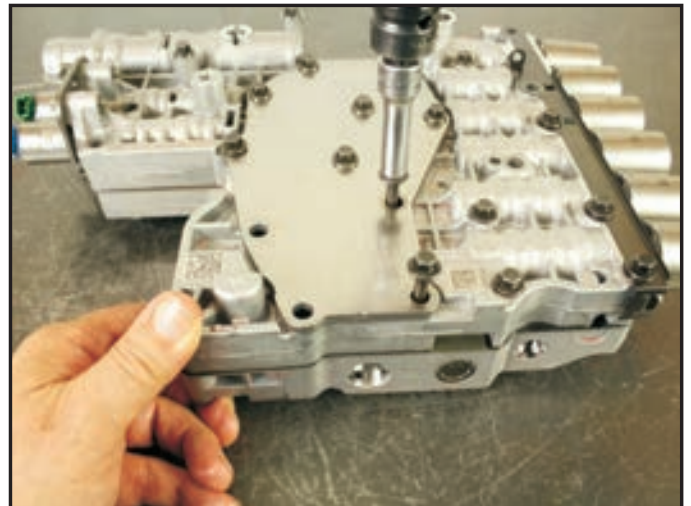


Figure 49

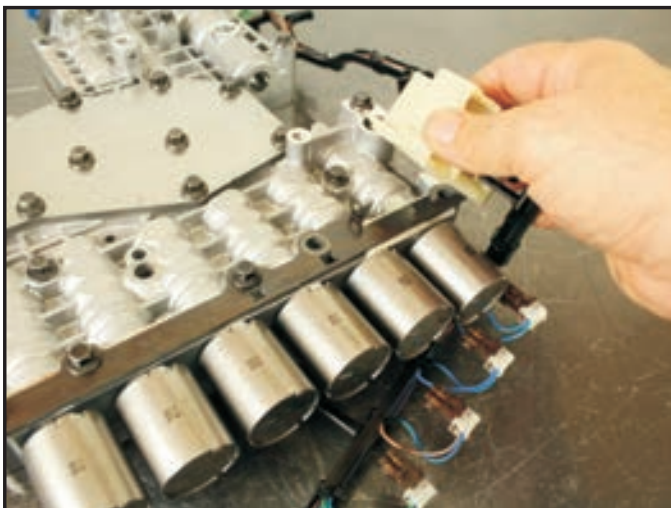


Figure 48

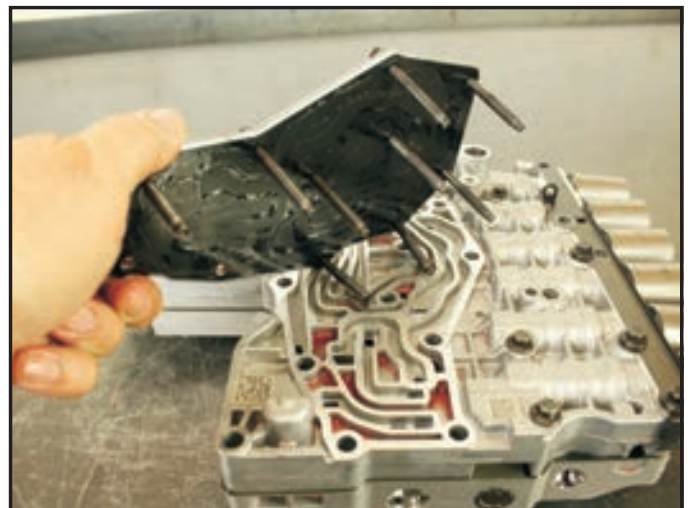


Figure 50

FORD 10R80

MAIN CONTROL VALVE BODY INFORMATION

10. The bracket that covers the retaining clips for all the CIDAS solenoids can be unbolted and removed (figure 51).

11. The remaining valve body bolts can now be removed (figure 52).

12. Lift the upper main control valve body off of the with the spacer plate as seen in figure 53. **Note:** The spacer plate is bolted to the upper main control body.

13. **Caution:** Lifting the upper main control body off of the lower body will take effort. There are two aligning role pins in the lower body that will give resistance if not lifted straight up off the two pins (figure 54 and 55).

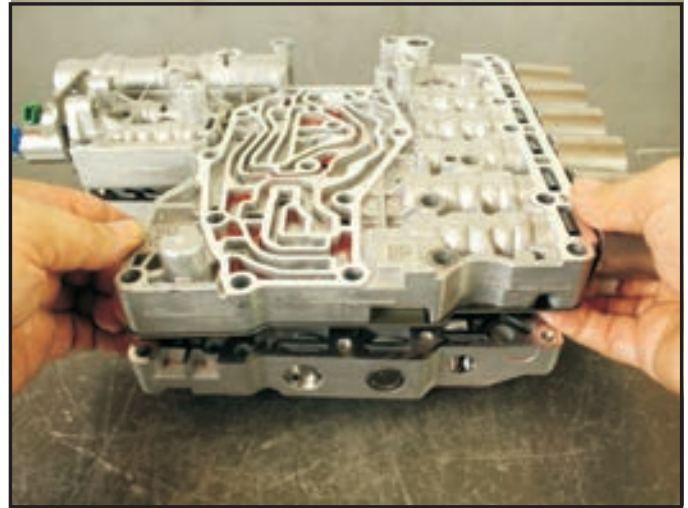


Figure 53

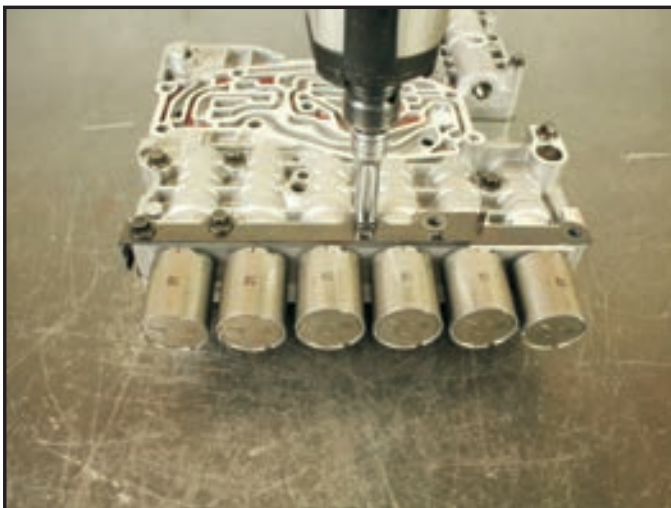


Figure 51



Figure 54

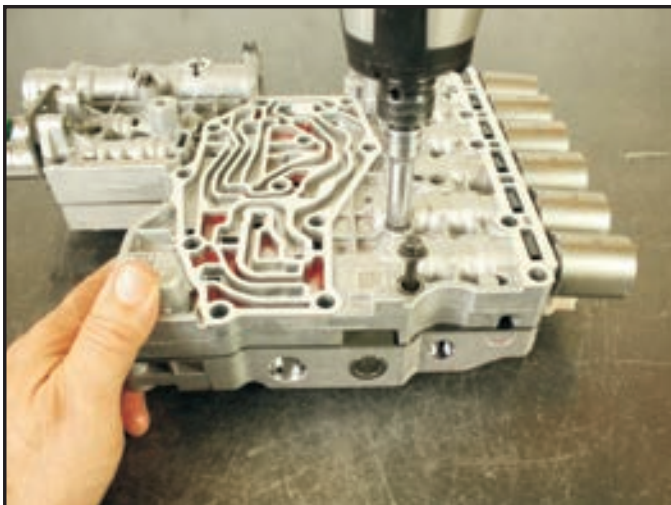


Figure 52

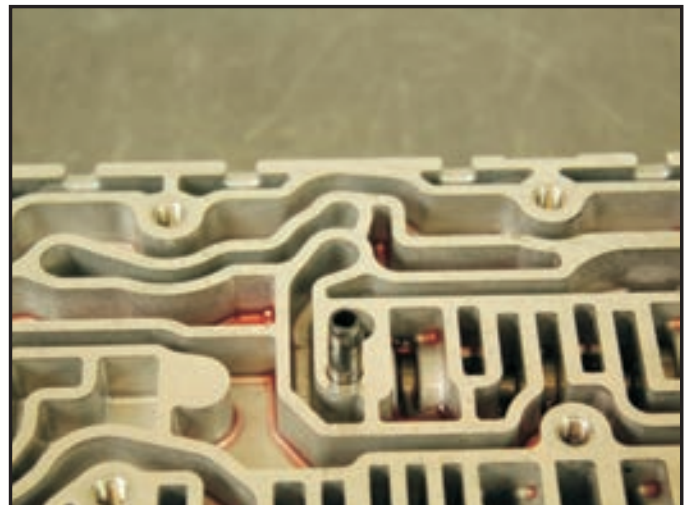


Figure 55

FORD 10R80

MAIN CONTROL VALVE BODY INFORMATION

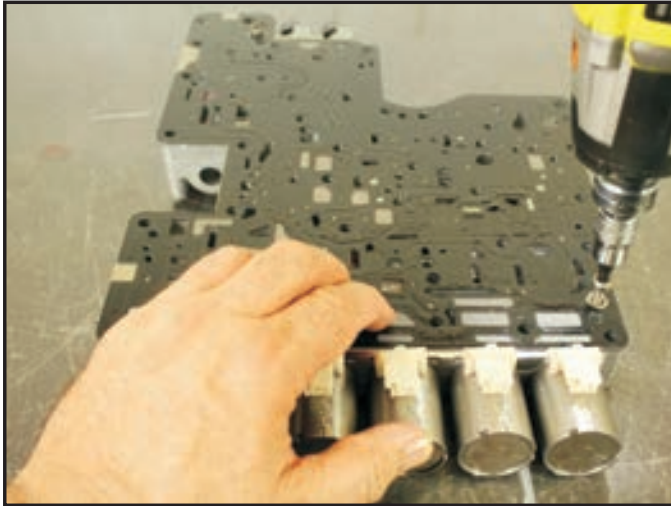


Figure 56

14. Using a #27 torx, remove two spacer plate to main control valve body attaching bolts (figure 56). Carefully lift and remove the spacer plate (figure 57).

15. There are 3 check valve assemblies of the same dimension. One has its spring facing upwards while the other two have their springs going down (figure 58). There is both a smaller and larger check valve with the spring down as well. The small one is a TCC Damper while the large one is an LPC Damper (figure 59). See figure 69 for their locations.

16. Using two picks, one on either side, lift each CIDAS retainers out of the main control body as shown in figure 60. Remove the solenoids and valves.

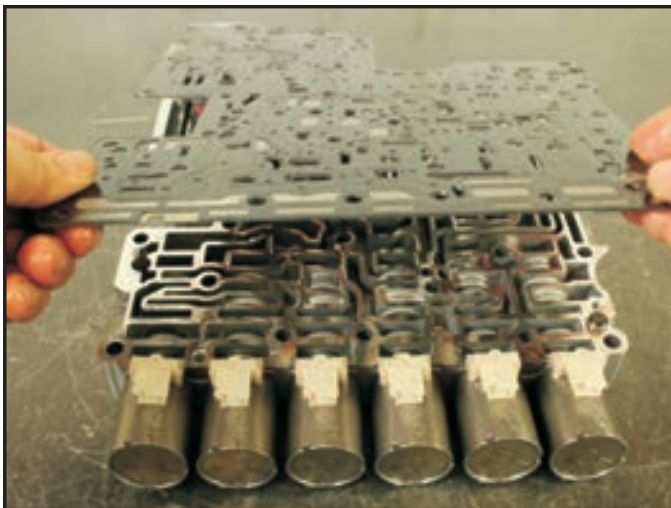


Figure 57



Figure 59

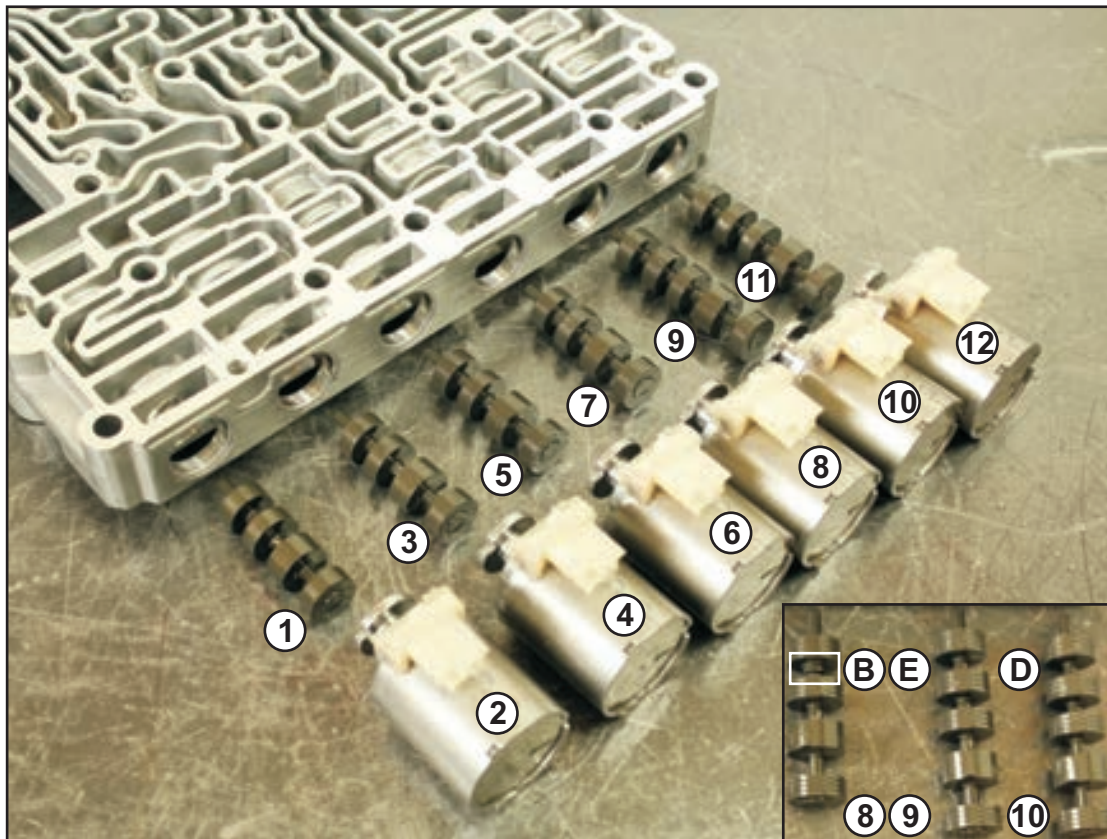


Figure 58



Figure 60

FORD 10R80
 MAIN CONTROL VALVE BODY INFORMATION



LOWER MAIN (SOLENOID) CONTROL BODY

- | | |
|---------------------------|----------------------------|
| 1. A Clutch Control Valve | 7. B Clutch Control Valve |
| 2. Shift Solenoid A | 8. Shift Solenoid B |
| 3. F Clutch Control Valve | 9. E Clutch Control Valve |
| 4. Shift Solenoid F | 10. Shift Solenoid E |
| 5. C Clutch Control Valve | 11. D Clutch Control Valve |
| 6. Shift Solenoid C | 12. Shift Solenoid D |

The D and E clutch control valves are used to regulate line pressure for smooth clutch application. The clutch control valve design is similar to the A, B, C, and F clutch control valves, except there are 2 progressively smaller diameter lands at the right end of the valve. The different diameter lands create two differential chambers. Valve operation is identical to the other clutch control valves except the D and E clutch control valve can use 2 different forces to balance the valve against the solenoid. Under low load conditions, the X clutch control circuit feeds both differential chambers resulting more force acting against the solenoid. The clutch control valve is positioned relatively close to the solenoid and about 100 PSI of regulated line pressure applies or holds the clutch. Under high load conditions, the X clutch control circuit feeds only 1 differential chamber resulting less force acting against the solenoid. The clutch control valve is positioned relatively further away from the solenoid and about 200 PSI of regulated line pressure applies or holds the clutch.

Note: Clutch Valve B, although it functions the same as A, C and F, it is dimensionally different and is easily identified with an extra step on the stems between the last two spools.

Figure 61

FORD 10R80

MAIN CONTROL VALVE BODY INFORMATION



Figure 62

17. Using an 8mm socket and impact, remove the LPC (Blue) and TCC (Green) solenoid retaining bolts and bracket (figure 62) and remove the solenoids (figure 63).

18. **Caution:** When removing valve and spring retainers from the valve body, be sure to have the bore openings covered so as to not loose the springs when they pop out of the bore (figures 64 and 65).

19. Figure 66 is a view of the LPC anti-backflow valve line up on the left (13), and the TCC priority valve line up on the right (14) with spring dimensions. **Caution:** The LPC anti-backflow valve line up have two very similar springs. Be careful to not swap them.



Figure 63



Figure 65



Figure 64

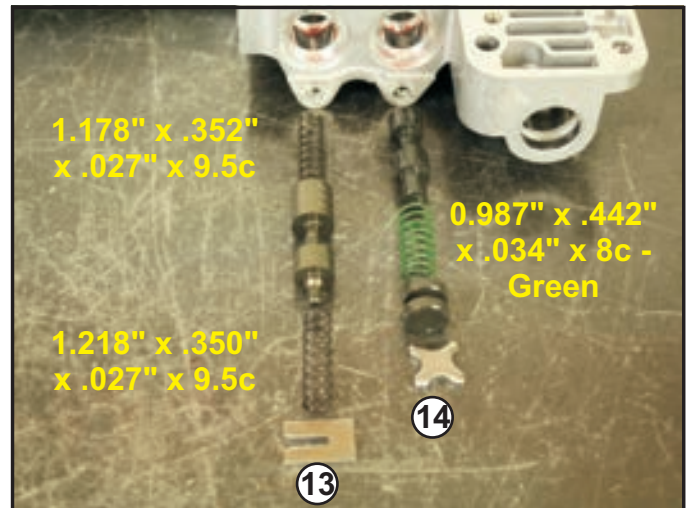
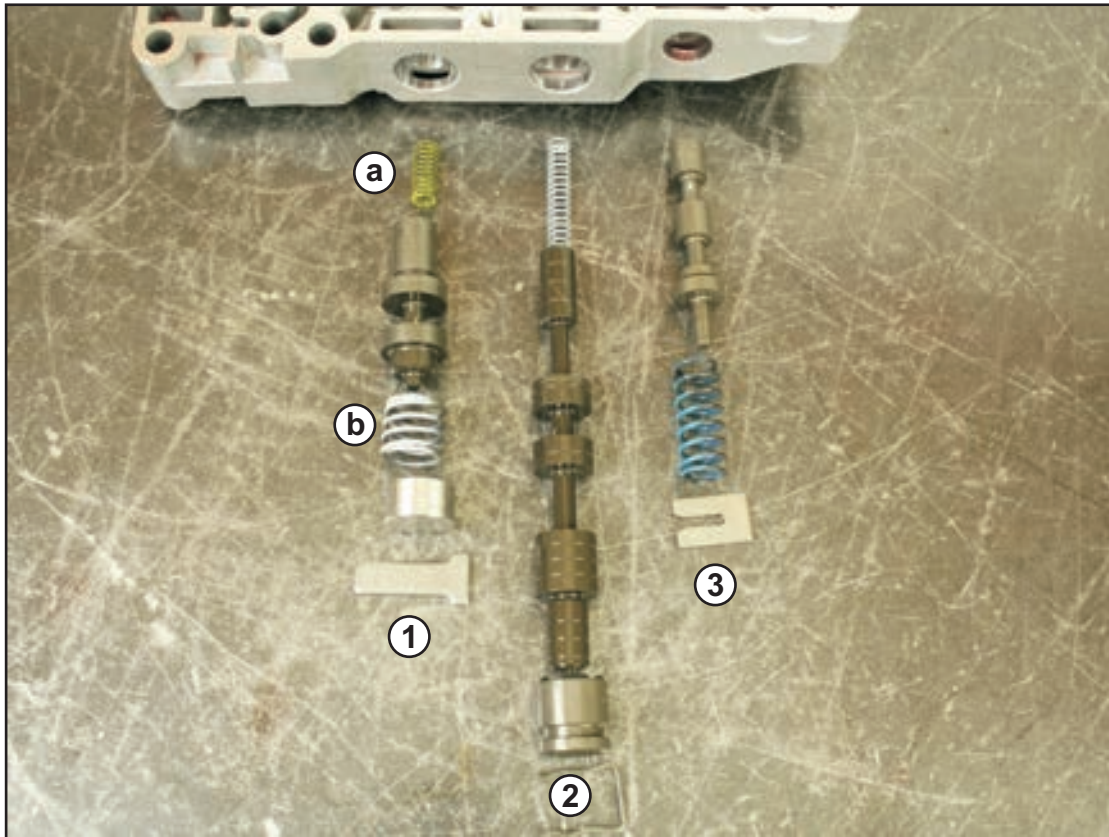


Figure 66

FORD 10R80 MAIN CONTROL VALVE BODY INFORMATION

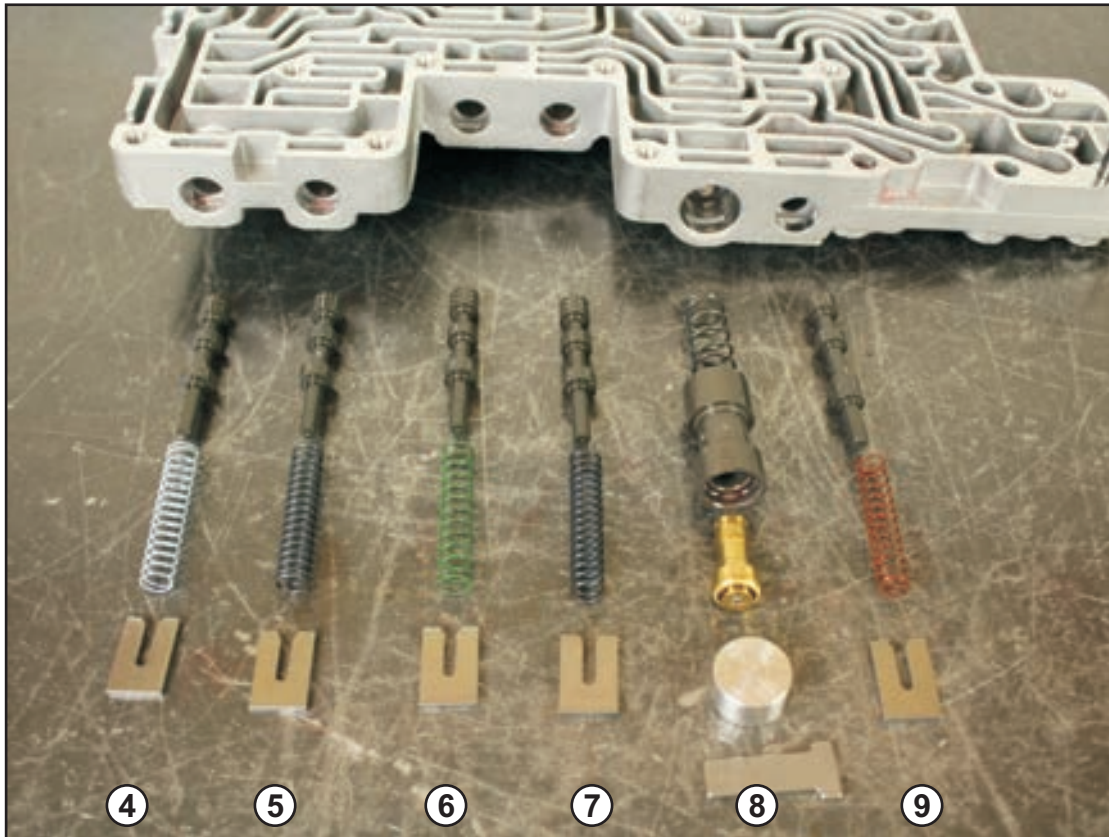


UPPER CONTROL BODY

1. Main Regulator Valve Line-up
Spring a: 0.700" x .289" x .040" x 12c - Yellow
Spring b: 0.597" x .648" x .058" x 5c - White
2. TCC Regulator Valve Line-up
Spring: 1.340" x .267" x .034" x 16c - White
3. Clutch Gain Control Valve Line-up
Spring: 1.242" x .414" x .057" x 8c - Blue

Figure 67

**FORD 10R80
MAIN CONTROL VALVE BODY INFORMATION**



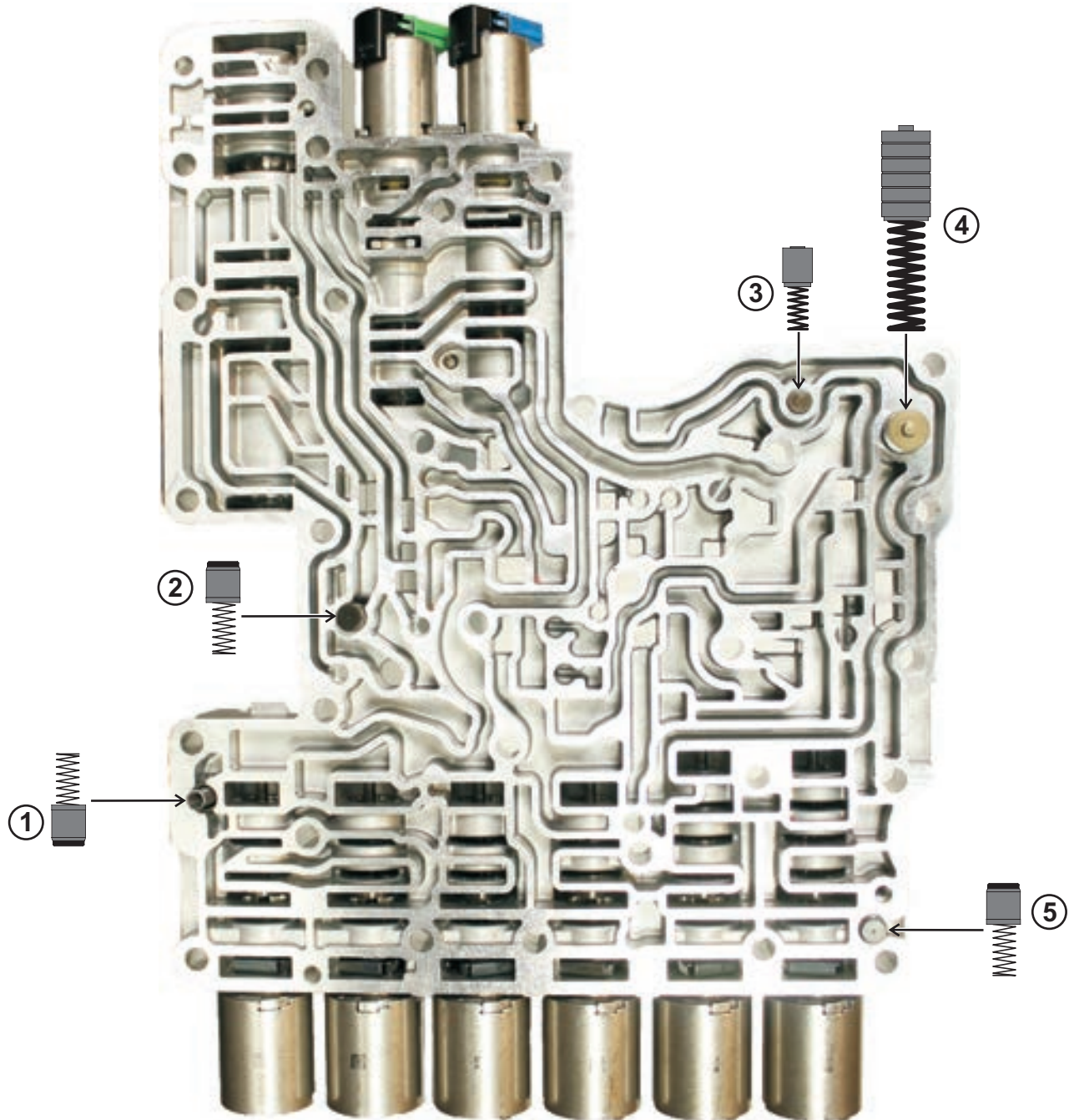
UPPER CONTROL BODY

- 4. A Clutch Latch Valve Line-up
Spring: 1.678" x .336" x .029" x 15c - White
- 5. F Clutch Latch Valve Line-up
Spring: 1.647" x .336" x .032" x 17c
- 6. B Clutch Latch Valve Line-up
Spring: 1.685" x .336" x .028" x 13c - Green
- 7. C Clutch Latch Valve Line-up
Spring: 1.647" x .336" x .032" x 17c
- 8. Cooler Thermal Bypass Valve Line-up
Spring: 0.981" x .492" x .042" x 5.5c - White
- 9. Lube Control Valve Line-up
Spring: 1.678" x .336" x .029" x 15c - White

Figure 68

FORD 10R80 MAIN CONTROL VALVE BODY INFORMATION

LOWER MAIN (SOLENOID) CONTROL BODY



1. Line Pressure Check Valve Assembly: Spring - 0.854" x .250" x .018" x 13c
(For Aux-Pump in Auto Stop equipped vehicles:)
2. Check Valve Assembly: Spring - 0.854" x .250" x .018" x 13c
3. TCC Signal Damper Assembly: Spring - 0.432" x .228" x .038" x 7c
4. LPC Signal Damper (Isolator: GM) Assembly: Spring - 1.273" x .375" x .062" x 12c
5. Converter Feed Check Valve Assembly: Spring - 0.854" x .250" x .018" x 13c

Figure 69