

TOYOTA U660E PRELIMINARY INFORMATION

Model Application

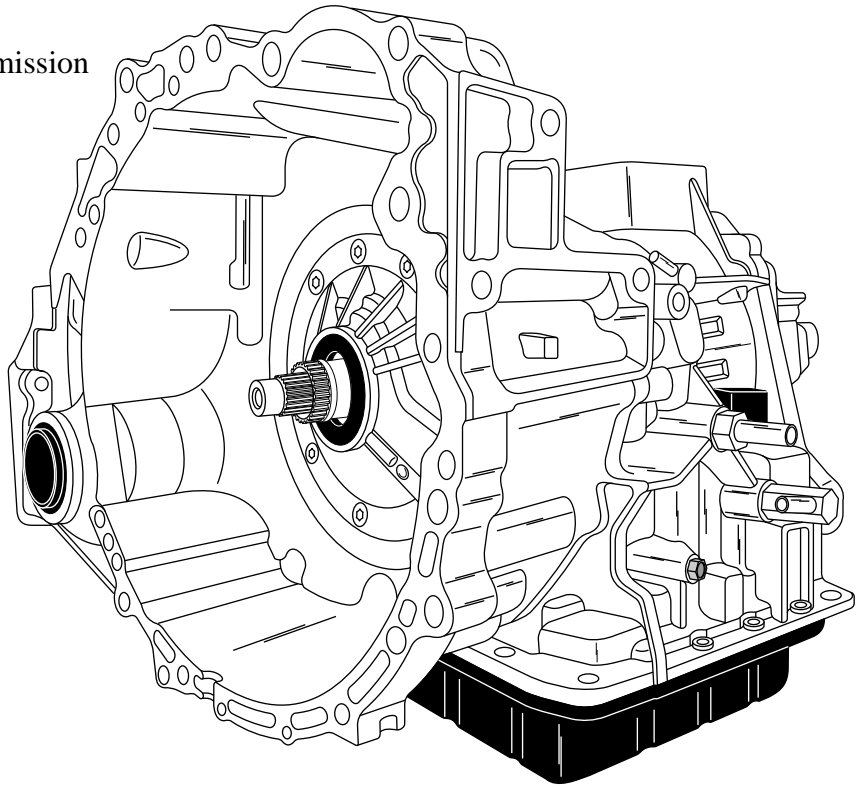
Taken from the 2011 Automatic Transmission Guide Global Edition by TRANStec®:

Toyota

Alphard	2008-2011
Aurion	2006-2011
Avalon	2008-2011
Avensis	2008-2011
Blade	2008-2011
Camry	2006-2011
Estima	2006-2011
Highlander	2009-2011
Mark X Z10	2007-2011
RAV 4	2008-2011
Sienna	2009-2011
Vanguard	2011
Venza	2008-2011
Verso	2009-2011

Lexus

ES350	2006-2011
RX350	2008-2011



Specifications

Gear Ratios for a 2007 Camry:

1st.....	3.300
2nd.....	1.900
3rd.....	1.420
4th.....	1.000
5th.....	0.713
6th.....	0.608
Reverse.....	4.148
Differential	
Gear Ratio.....	3.685
(Counter gear included)	

Fluid Capacity - Liters (US qts, Imp. qts)

6.57 (6.94, 5.78) Includes Differential

Fluid Type: Toyota Genuine ATF WS

Weight: 94.4kg - 208.1lbs - Includes fluid filled to maximum level

Two Driving Clutches : C1 & C2
 Three Brake Clutches : B1, B2 & B3
 One 1-way Clutch: F1

1 Ravigneaux Planetary Gear Set
 Front Sun Gear: 30 teeth
 Rear Sun Gear: 27 teeth
 Long Pinion Gear: 20 teeth
 Short Pinion Gear: 22 teeth
 Ring Gear: 69 teeth

U/D Planetary Gear Set
 Sun Gear: 66 teeth
 Pinion Gear: 21 teeth
 Ring Gear: 110 teeth

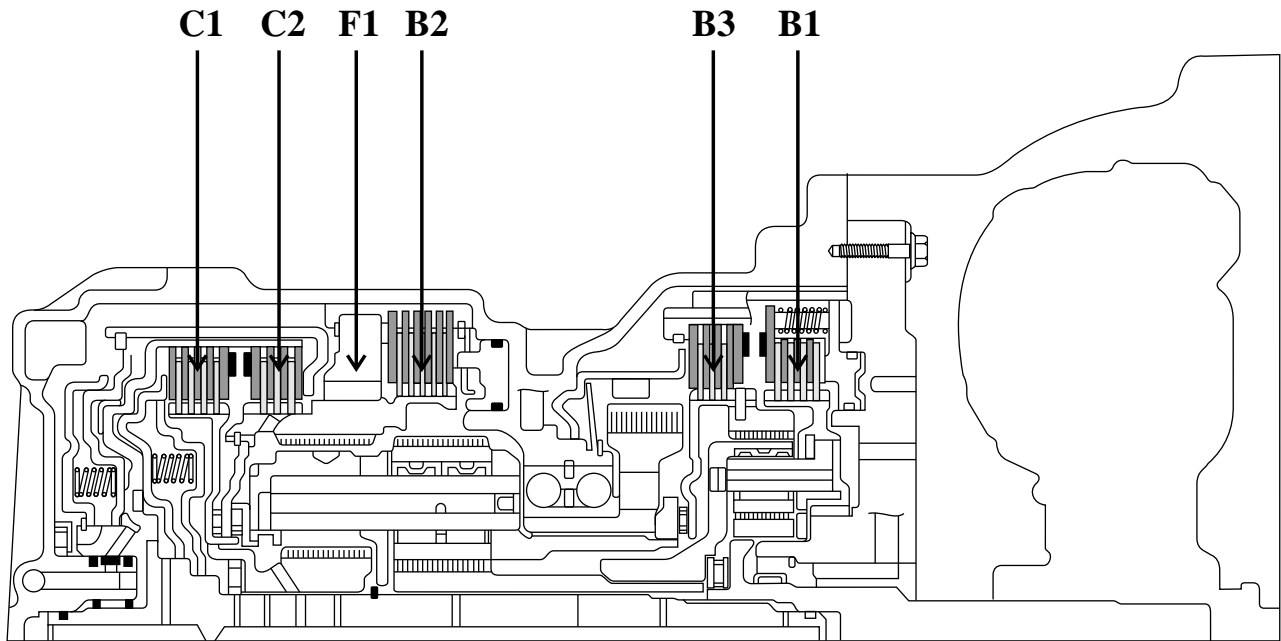
Counter Gear
 Drive gear: 44 teeth
 Driven Gear: 47 teeth

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Figure 1

TOYOTA U660E

COMPONENT APPLICATION CHART



Shift Lever	Gear	C1	C2	B1	B2	B3	F1
P	Park						
R	Reverse				X	X*	
N	Neutral						
D, S6	1st	X					X
	2nd	X		X			
	3rd	X				X	
	4th	X	X				
	5th		X			X	
	6th		X	X			
S1	1st/Manual	X			X		X

* - For safety reasons, the computer can inhibit a reverse engagement by energizing the SL solenoid which will release the B3 clutch.

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Figure 2

TOYOTA U660E

PRESSURE TAP IDENTIFICATION

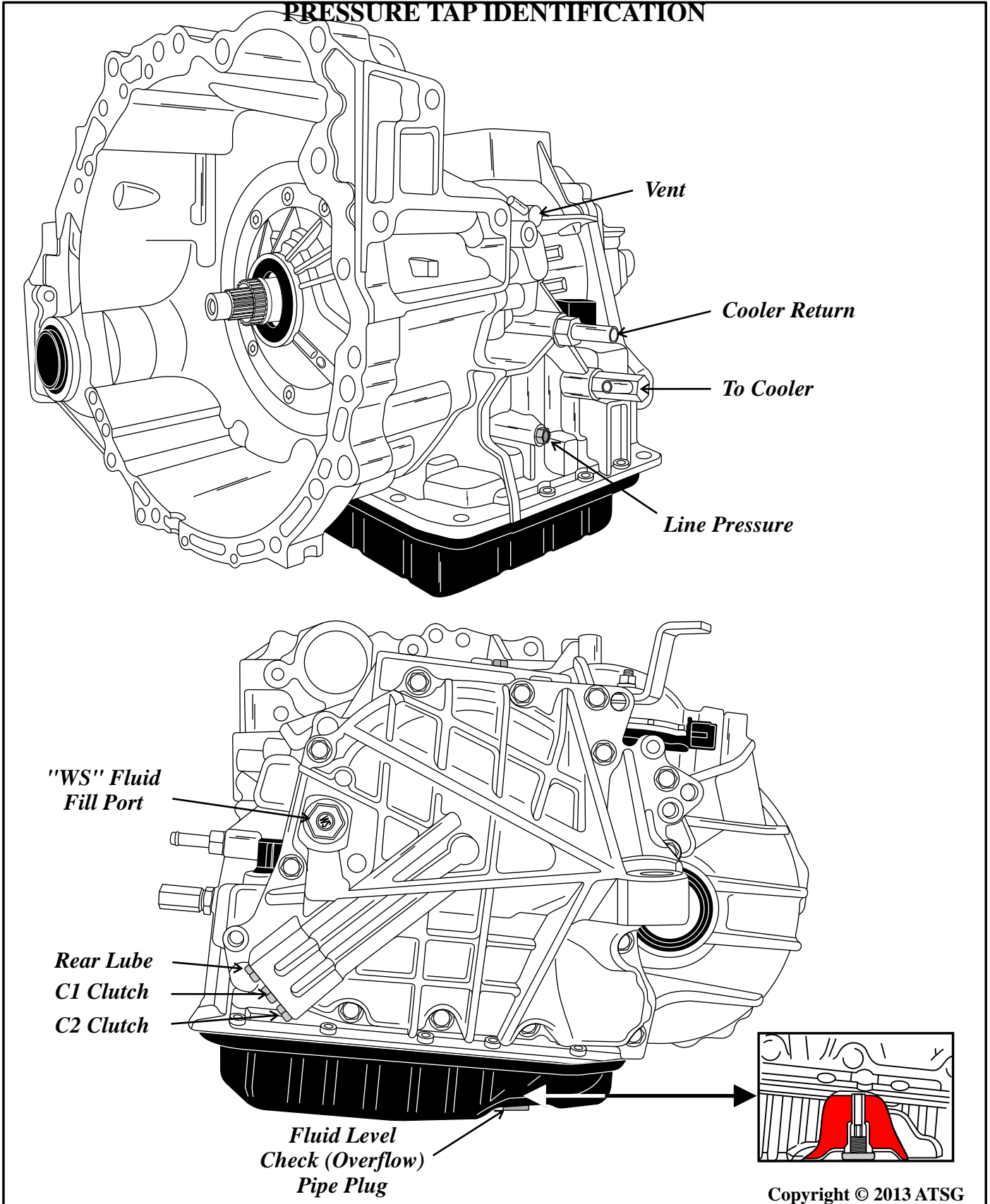
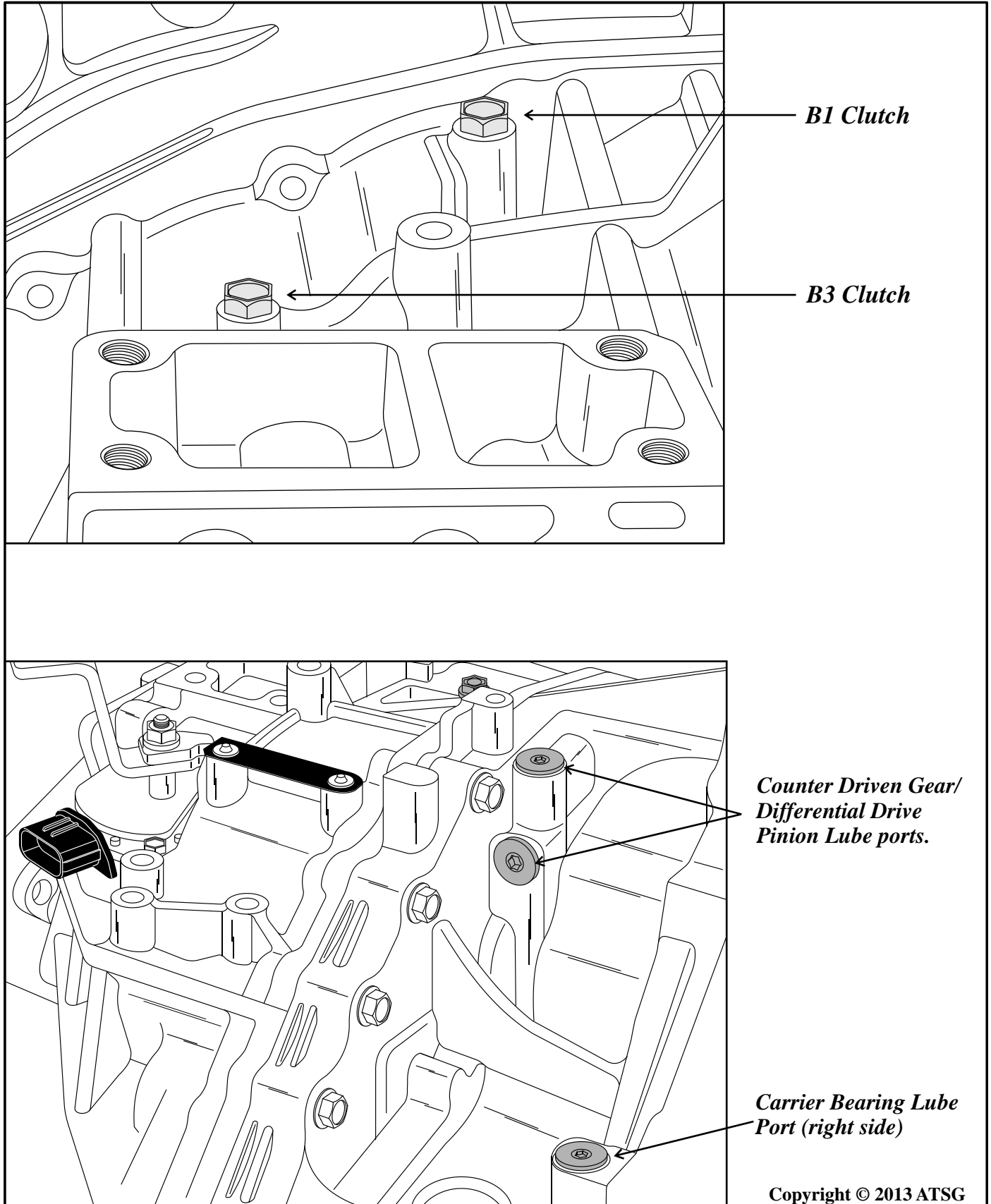


Figure 3

TOYOTA U660E

PRESSURE TAP IDENTIFICATION



B1 Clutch

B3 Clutch

*Counter Driven Gear/
Differential Drive
Pinion Lube ports.*

*Carrier Bearing Lube
Port (right side)*

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Figure 4



Technical Service Information

TOYOTA U660E FLUID FILL PROCEDURE

ATF FILLING PROCEDURES WITHOUT SCAN TOOL (From factory manual):

The ATF filling procedure is changed in order to improve the accuracy of the ATF level when the transaxle is being repaired or replaced. As a result, the oil filler tube and the oil level gauge used for a conventional automatic transaxle are discontinued, eliminating the need to inspect the fluid level as a part of routine maintenance.

This filling procedure employs a refill plug, overflow plug, ATF temperature sensor, and shift indicator light "D". After the transaxle is refilled with ATF, remove the overflow plug and drain the extra ATF at the proper ATF temperature. Thus, the appropriate ATF level can be obtained.

Service Tip

ATF filling procedure through the DLC3 Connector (Special Service Tool part # 09843-18040 is optional)

Recommended fluid temperature is: 104°F (40°C) or less (Observed with scan tool or flashing D light without scan tool).

When a large amount of ATF needs to be filled (i.e. after removal and installation of oil pan or torque converter), perform the procedure from step 1.

When a small amount of ATF is required (i.e. removal and installation of oil cooler tube, repair of a minor oil leak), perform the procedure from step 7.

- 1) Raise the vehicle while keeping it level.
- 2) Remove the refill plug and overflow plug (Figure 3).
- 3) Fill the transaxle with WS type ATF through the refill plug hole until it overflows from the overflow plug hole (Figure 3).
- 4) Reinstall the overflow plug.
- 5) Add the specified amount of ATF (specified amount is determined by the procedure that was performed) and reinstall the refill plug.

Procedure Liters (US qts, Imp.qts)

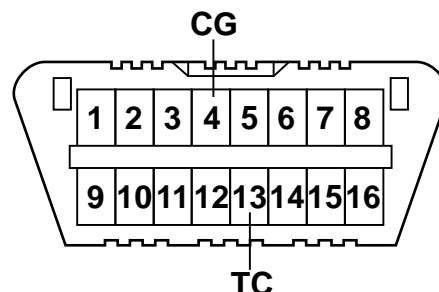
Removal and installation of transaxle oil pan (including oil drainage) - 2.9 (3.1, 2.6)

Removal and installation of transaxle valve body - 3.3 (3.5, 2.9)

Replacement of torque converter - 4.9 (5.2, 4.3)

Lower the vehicle:

- 7) Use the SST (09843-18040) or jumper to short between the TC and CG terminals of the DLC3 connector:



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Figure 5



Technical Service Information

TOYOTA U660E FLUID FILL PROCEDURE

- 8) Start the engine and allow it to idle. A/C switch must be turned off.
- 9) Move the shift lever from the P position to the S mode position and slowly select each gear S1 - S6. Then move the shift lever back to the P position.
- 10) Move the shift lever to the D position, and then quickly move it back and forth between N and D (at least once every 1.5 seconds) for at least 6 seconds. This will activate oil temperature detection mode.

Standard: The shift position indicator light “D” remains illuminated for 2 seconds and then goes off.

- 11) Return the shift lever to the P position and disconnect the TC terminal.
- 12) Idle the engine to raise the ATF temperature.
- 13) Immediately after the shift position indicator “D” light turns on, lift the vehicle up. The shift position indicator light “D” will indicate the ATF temperature according to the following table:

ATF Temp.	Optimal Temp.	Higher than Optimal Temp.	Lower than Optimal Temp.
Shift Position Indicator Light “D”	OFF	ON	Blinking

- 14) Remove the overflow plug and adjust the oil quantity. If the ATF overflows, go to step 17, and if the ATF does not overflow, go to step 15.
- 15) Remove the refill plug.
- 16) Add ATF through the refill plug hole until it flows out from the overflow plug hole.
- 17) When the ATF flow slows to a trickle, install the overflow plug and a new gasket.
- 18) Reinstall the refill plug (if the refill plug was removed).
- 19) Lower the vehicle.
- 20) Turn the ignition switch (engine switch) OFF to stop the engine.

LINE PRESSURE TESTING PROCEDURE

Perform the test at normal operating ATF temperature of: 50 to 80°C (122 to 176°F)

Perform the test with the A/C OFF.

When conducting stall test, do not continue more than 5 seconds.

Attach pressure gauge to the line pressure tap as seen in figure 3.

Lift vehicle off the ground with a hoist.

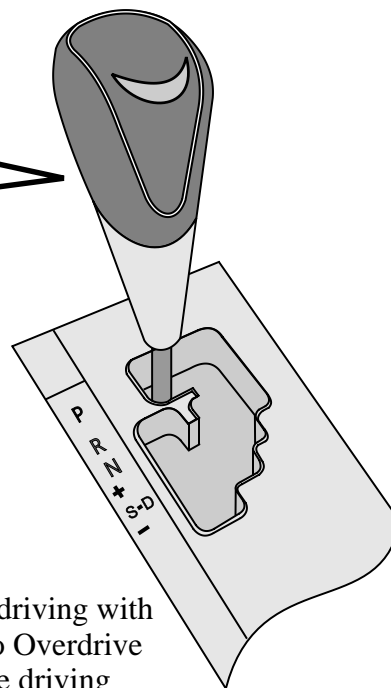
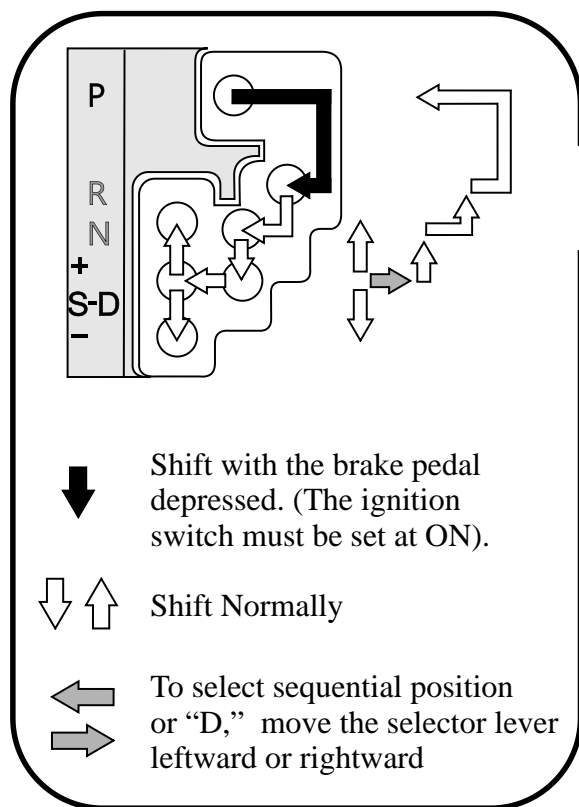
Start vehicle and warm the fluid to operating temperature.

- In Drive at idle: 52-60 psi
- In Drive at stall: 168-196 psi
- In Reverse at idle: 117-133 psi
- In Reverse at stall: 274-290 psi

Once proper line pressure is established, clutch pressure can be compared to line pressure. When the clutch is fully applied it should equal line pressure within 10 psi or less.

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TOYOTA U660E SELECTOR LEVER



- P: Park
- R: Reverse
- N: Neutral
- D: Normal driving with shift into Overdrive
- S: "S" mode driving
- +: Up-shift range
- : Downshift range

In the "D" position, a program called Artificial Intelligence shifting control (AI) will automatically select the most suitable shift range according to the driver's operation and driving condition. Once the lever is moved to the "S" position, this function will be cancelled.

Shifting control on the slope:

On inclines, you can drive smoothly with reduced shifting quantity. On declines, the vehicle will shift down automatically to obtain optimum engine braking and reduce the driver's foot braking load.

Automatic shifting point change control:

The most suitable shift range is selected depending on the driver's accelerator pedal operation and vehicle condition.

Driving in the "S" mode:

Once the selector lever has been positioned into the S mode, the shifter can be tapped forward "+" for manual up-shift control and rearward "-" for manual downshift control.

Once a particular gear range is selected, i.e. 5th gear range, if the driver no longer taps the lever for another up-shift or downshift, the transmission will automatically shift between 1st and 5th gear.

When the selector lever is initially shifted from the "D" to the "S" position, the transmission will be in 4th or 5th gear range depending on the vehicle speed.

However, if the selector lever is shifted to the "S" position when AI shifting control is being performed, the initial shift range position may be "3" (third range). This is because the suitable shift range is selected depending on the driving condition.

The "S" mode indicator light and the current shift range position are shown on the instrument cluster.

Shift range positions: *Following page*



Technical Service Information

TOYOTA U660E SELECTOR LEVER

“6” (Sixth range):

The most suitable gear is selected automatically between first and overdrive (sixth) gears according to the vehicle speed or driving conditions.

“5” (fifth range): The most suitable gear is selected automatically between first and fifth gears according to vehicle speed or driving conditions. This range is suitable for acceleration such as when passing a vehicle ahead of you during high speed driving.

“4” (Fourth range): The most suitable gear is selected automatically between first and fourth gears according to the vehicle speed or driving conditions. Slight engine braking will be obtained on a downhill road. Smooth running with less shifting will be obtained on an uphill road.

“3” (Third range): The most suitable gear is selected automatically between first and third gears according to the vehicle speed or driving conditions. This range is to be used when stronger engine braking is necessary.

“2” (Second range): First or second gear will be selected automatically according to the vehicle speed or driving conditions. This range is to be used when engine braking stronger than that of the “3” range position is necessary.

“1” (First range): The gear is fixed in first regardless of vehicle speed or driving conditions. This range is to be used when maximum engine braking is necessary.

If you attempt to downshift the transmission when it is not possible to downshift due to high vehicle speed, a warning tone sounds twice.

Speeds for a highway entrance or to pass slower traffic, maximum acceleration may be necessary. The following maximum allowable speeds should be observed in each of the following gear range:

Range km/h (mph)

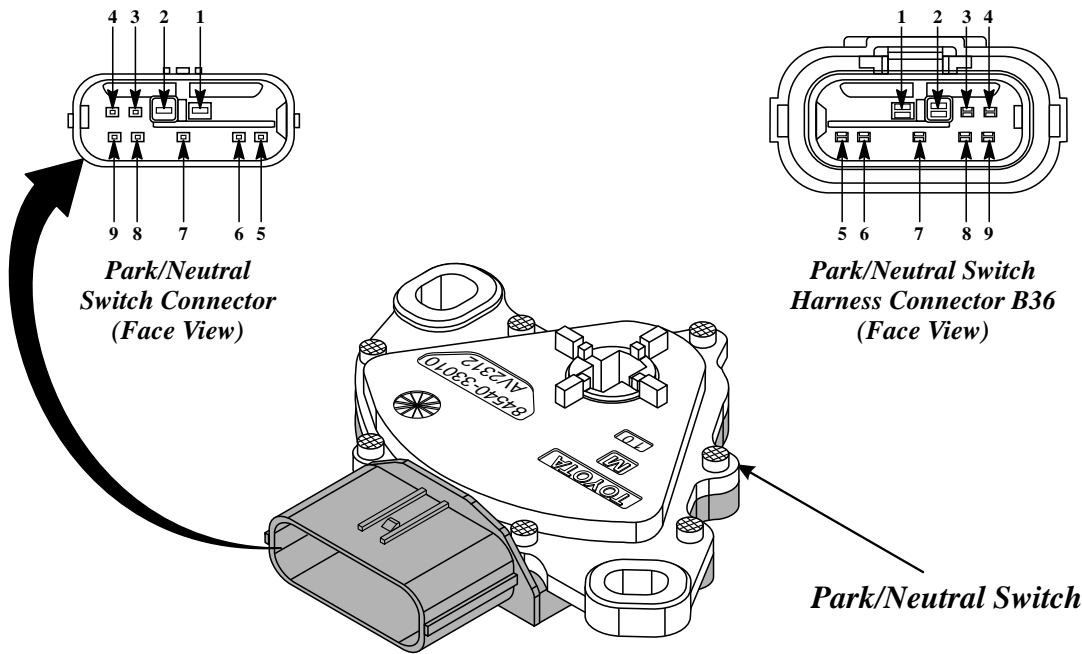
1	60	(37)
2	104	(65)
3	139	(86)
4	198	(123)

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TOYOTA U660E PARK NEUTRAL SWITCH

Terminal	Function
1	Ignition Voltage In
2	Reverse Signal to TCM
3	Park Signal to ECM
4	From Main Body Control Module
5	Not Used
6	Not Used
7	Drive Signal to TCM
8	Neutral Signal to ECM
9	Park/Neutral Switch - Start Signal to TCM

*Park/Neutral Switch Connector
Terminal Identification*



Terminals	Shifter Position	Resistance
1 - 3 & 4 - 9	"P"	Less Than 1 Ohm
	Except "P"	10k Ohms or Higher
1 - 2	"R"	Less Than 1 Ohm
	Except "R"	10k Ohms or Higher
1 - 8 & 4 - 9	"N"	Less Than 1 Ohm
	Except "N"	10k Ohms or Higher
1 - 7	"D", "S", "+" & "-"	Less Than 1 Ohm
	Except "D", "S", "+" & "-"	10k Ohms or Higher

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Figure 6

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TOYOTA U660E

TRANSMISSION CONTROL MODULE

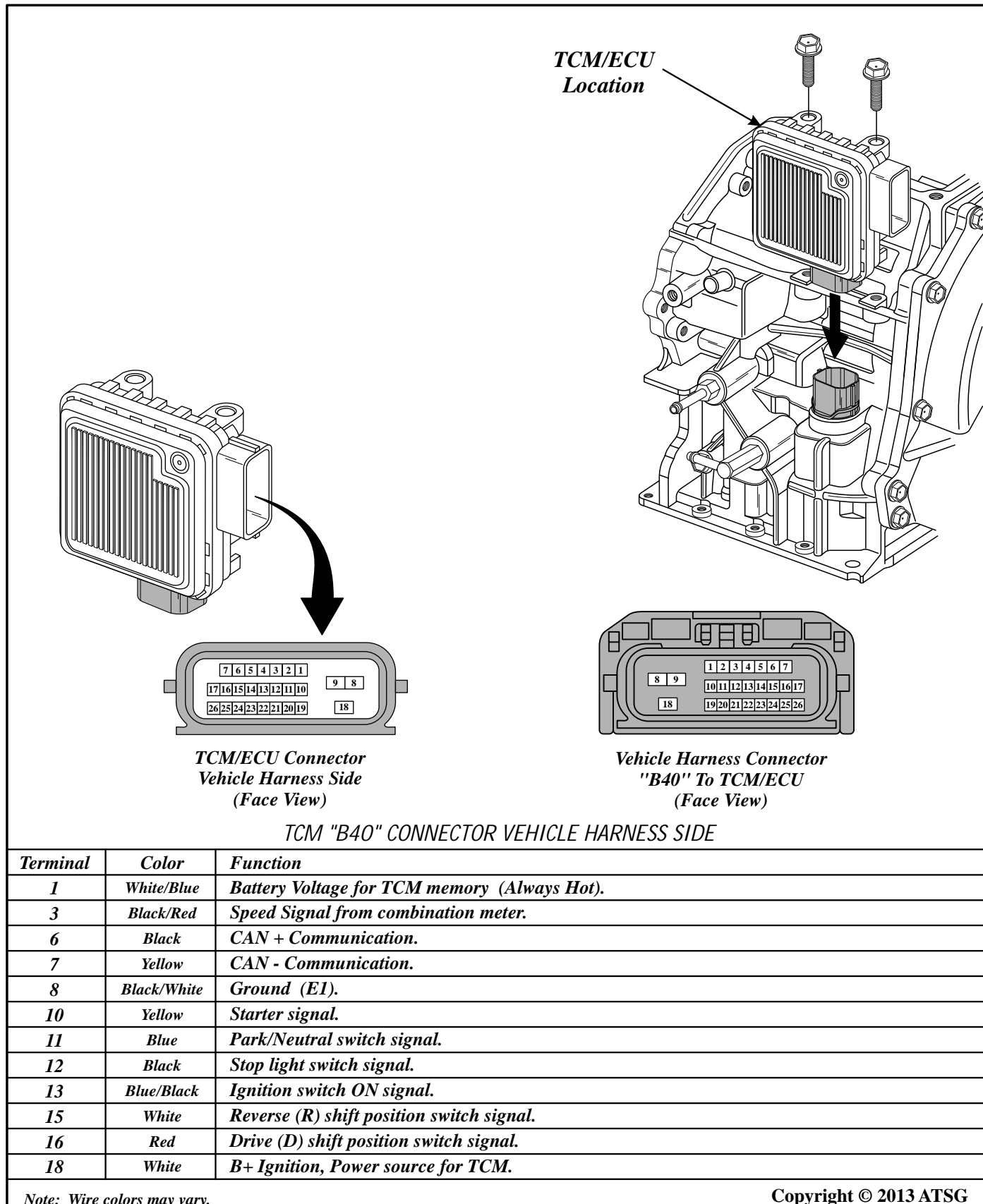
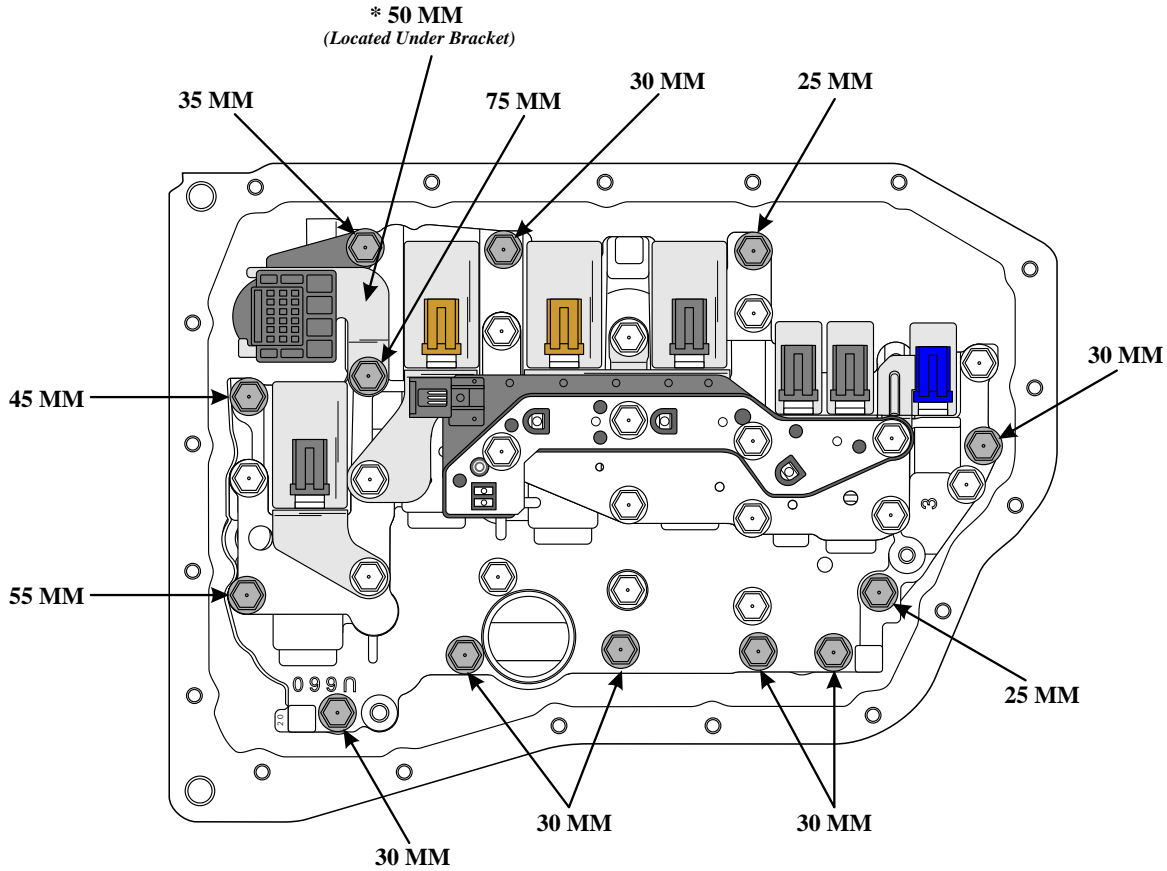


Figure 7

TOYOTA U660E VALVE BODY TO CASE RETAINING BOLTS

*Valve Body To Case Retaining Bolts Identification and Location
(Total 14)*



The Internal Wire Harness and Case Connector retaining bracket must be removed first. Then remove the remaining valve body to case retaining bolts as shown above to remove the valve body. CAUTION, the internal wire harness and case connector assembly "must" be removed with the valve body as an assembly, as the speed sensor assembly is bolted to the upper valve body and plugs into the case connector and internal harness assembly. If you try to remove it before removing the valve body, you will break the case connector assembly.

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Figure 8

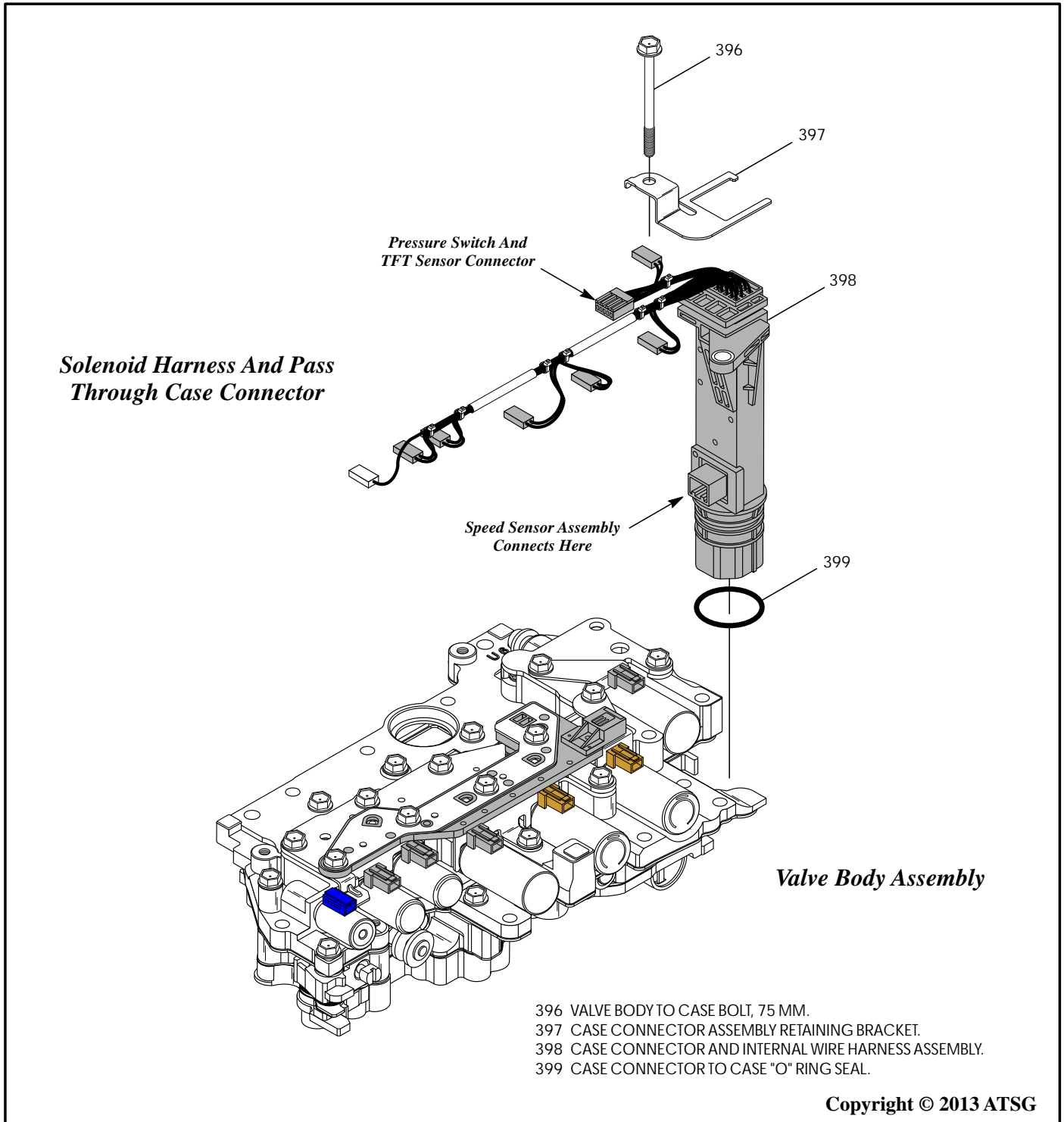


Figure 9



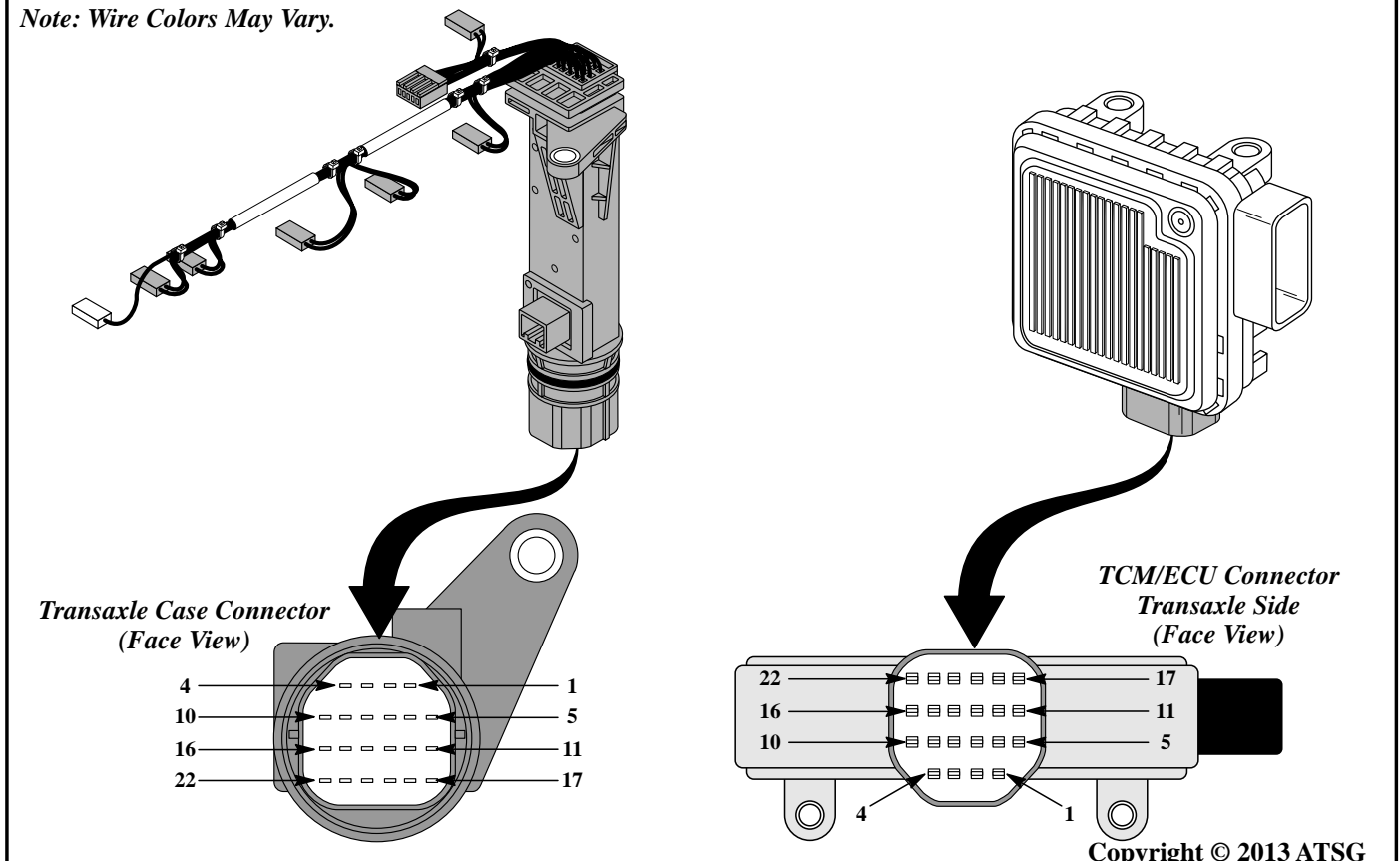
Technical Service Information

TOYOTA U660E

CASE CONNECTOR AND INTERNAL WIRE HARNESS TERMINAL ID

Terminal	Color	Function
1	Concealed	Turbine Speed Sensor Ground (NTB).
2	Concealed	Turbine Speed Sensor Signal (NTO).
3	Concealed	Counter Gear Speed Sensor Ground (NCB).
4	Concealed	Counter Gear Speed Sensor Signal (NCO).
5	Black	Linear Solenoid "SLU" Ground (TCC and B2 Brake Pressure Control).
6	Dk Blue	ON-OFF 3-Way Solenoid "SL" Positive (This Solenoid is internally grounded).
7	Black	Linear Solenoid "SLT" Ground (Line Pressure Control).
8	Black	Linear Solenoid "SL2" Ground (C2 Clutch Pressure Control).
9	Orange	Linear Solenoid "SL2" Positive (C2 Clutch Pressure Control).
10	White	Pressure Switch Number 1 (PS1).
11	White	Linear Solenoid "SLU" Positive (TCC and B2 Brake Pressure Control).
12	Grey	Linear Solenoid "SLT" Positive (Line Pressure Control).
13	Black	Linear Solenoid "SL1" Ground (C1 Clutch Pressure Control).
14	Red	Linear Solenoid "SL1" Positive (C1 Clutch Pressure Control).
15	Black	Linear Solenoid "SL3" Ground (B1 Brake Pressure Control).
16	Dk Blue	Linear Solenoid "SL3" Positive (B1 Brake Pressure Control).
17	Orange	Transaxle Fluid Temperature Ground (E2).
18	Grey	Transaxle Fluid Temperature Signal (TH01).
19	Tan	Pressure Switch Number 3 (PS3).
20	Yellow	Pressure Switch Number 2 (PS2).
21	Black	Linear Solenoid "SL4" Ground (B3 Brake Clutch Pressure Control).
22	Green	Linear Solenoid "SL4" Positive (B3 Brake Clutch Pressure Control).

Note: Wire Colors May Vary.



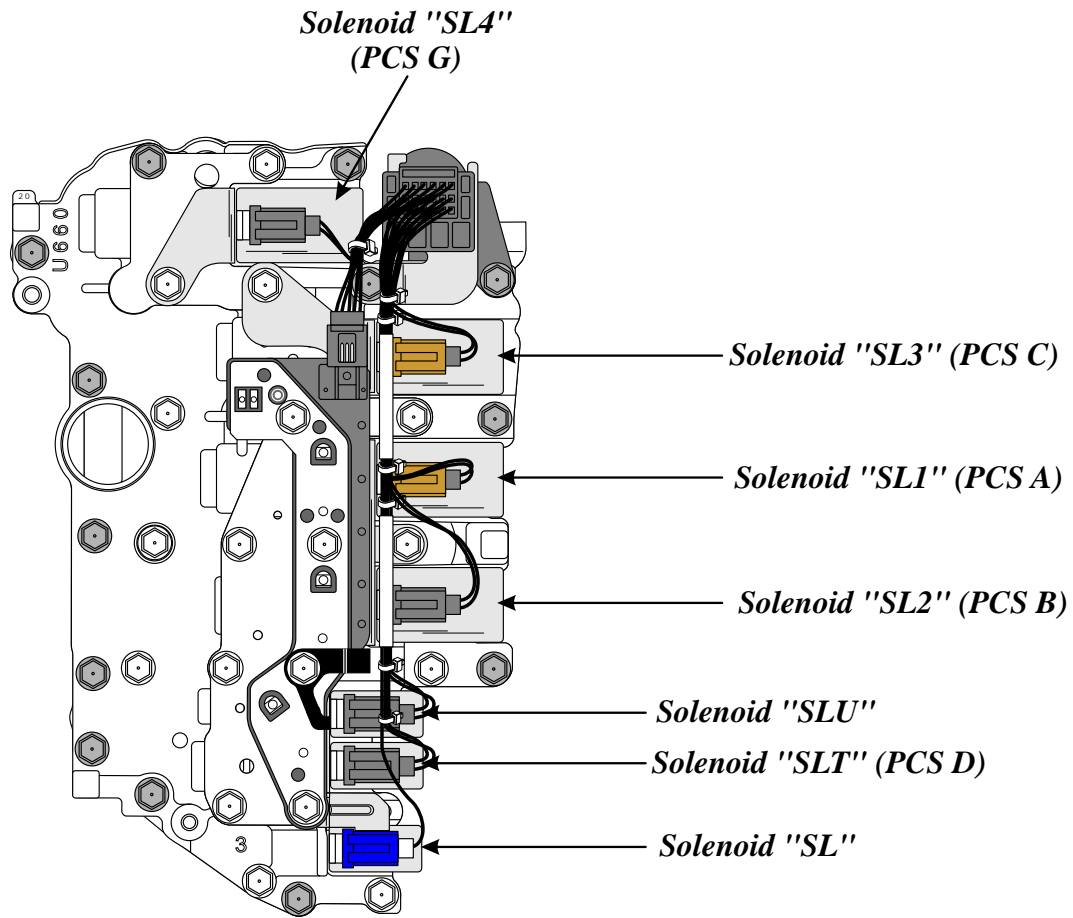
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Figure 10

Technical Service Information

TOYOTA U660E

SOLENOID IDENTIFICATION, LOCATIONS AND FUNCTION



<i>Solenoid</i>	<i>Type</i>	<i>Function</i>	<i>Ohms Resistance</i>
<i>SL1</i>	<i>Linear</i>	<i>C1 Clutch Pressure Control</i>	<i>5.0-5.6 @ 20°C (68°F)</i>
<i>SL2</i>	<i>Linear</i>	<i>C2 Clutch Pressure Control</i>	<i>5.0-5.6 @ 20°C (68°F)</i>
<i>SL3</i>	<i>Linear</i>	<i>B1 Brake Clutch Pressure Control</i>	<i>5.0-5.6 @ 20°C (68°F)</i>
<i>SL4</i>	<i>Linear</i>	<i>B3 Brake Clutch Pressure Control</i>	<i>5.0-5.6 @ 20°C (68°F)</i>
<i>SLT</i>	<i>Linear</i>	<i>Line Pressure Control</i>	<i>5.0-5.6 @ 20°C (68°F)</i>
<i>SLU</i>	<i>Linear</i>	<i>Torque Converter Clutch Pressure Control</i> <i>B2 Brake Clutch Pressure Control</i>	<i>5.0-5.6 @ 20°C (68°F)</i>
<i>SL</i>	<i>On-Off</i> <i>3-Way</i>	<i>Switches the Lock-Up relay valve</i> <i>Switches the B2 Brake Clutch Apply Control Valve</i> <i>Switches the Reverse Sequence Valve</i>	<i>11-15 @ 20°C (68°F)</i> Copyright © 2013 ATSG

Figure 11

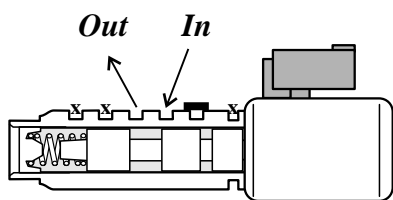
TOYOTA U660E SOLENOID FUNCTION

The SL1, SL2, SL3, SL4 and SLU linear solenoids provide hydraulic pressure proportional to the current flow. When the solenoid is off (no current), their respective apply circuits are open to exhaust otherwise referred to as being Normally Vented (N.V.). Pressure in their respective apply circuits increases as current to the solenoid increases.

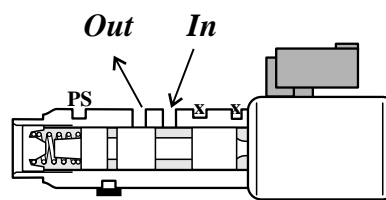
The SLT operates inversely in that when no current is applied, maximum pressure is applied to its respective circuit. This is a Normally Applied (N.A.) linear solenoid.

The SLT, SLU and SL solenoids are supplied with a pressure less than line pressure from a solenoid modulating valve in the valve body. These solenoids then operate their respective valves with this pressure.

The SL1, SL2, SL3 and SL4 are large flow linear solenoids supplied with line pressure to the regulating valve built into the snout of each of these solenoids. They then regulate the pressure to apply and release their respective clutch element.



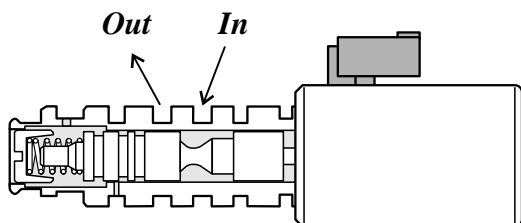
**N.A. "SLT" Solenoid
(Line Pressure Control)**



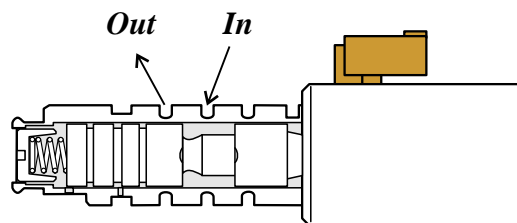
**N.V. "SLU" Solenoid
(Lock-Up & B2 Brake Control)**

The SLT Solenoid is supplied with Solenoid Modulating Valve Pressure. The SLT Solenoid regulates this pressure to both the Primary and Secondary Pressure Regulator Valves as well as the Sequence Valve.

The SLU Solenoid is supplied with Solenoid Modulating Valve Pressure. The SLU Solenoid regulates this pressure to both the Lock-Up Control Valve for Converter Clutch Flex Control and B2 Apply Control Valve for a manual S1 low gear.



**N.V. "SL2" (C2 Clutch Control)
N.V. "SL4" (B3 Brake Control)
Black Connector Solenoids**



**N.V. "SL1" (C1 Clutch Control)
N.V. "SL3" (B1 Brake Control)
Brown Connector Solenoids**

As mentioned above the SL1, SL2, SL3 and SL4 solenoids are supplied with main line pressure regulated by the SLT Solenoid. These solenoids then control the apply and release of their respective clutch element. The SL1 controls the C1 Clutch, the SL2 controls the C2 Clutch, the SL3 controls the B1 Brake and the SL4 controls the B3 Brake.

Technical Service Information

TOYOTA U660E

SOLENOID FUNCTION

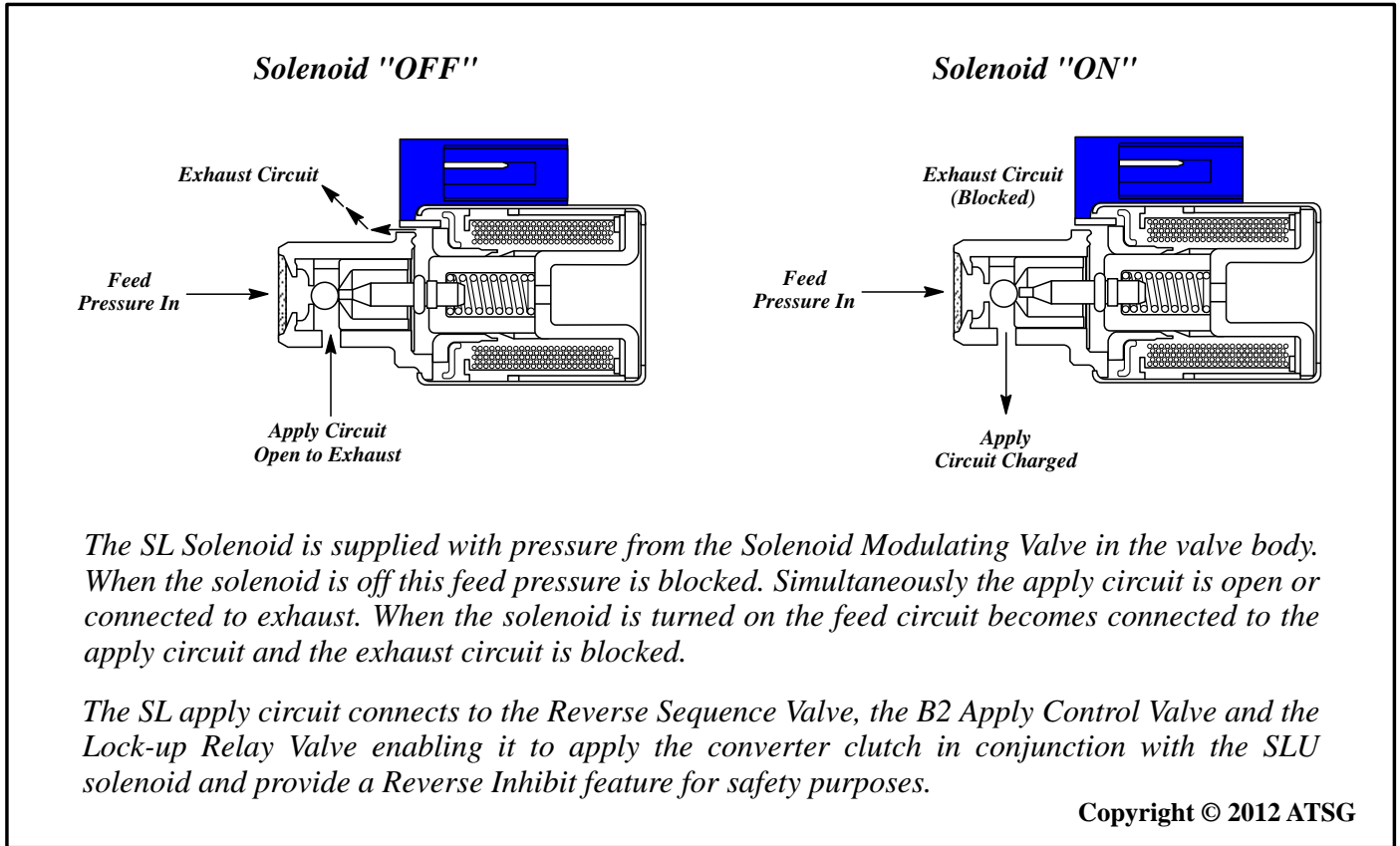


Figure 13

Solenoid Application Chart

		Gear (ON = Modulated)					
		1st	2nd	3rd	4th	5th	6th
Solenoid	SL1	ON	ON	ON	ON	Off	Off
	SL2	Off	Off	Off	ON	ON	ON
	SL3	Off	ON	Off	Off	Off	ON
	SL4	Off	Off	ON	Off	ON	Off

The SLT solenoid continuously modulates adjusting main line pressure according to temperature, engine load and monitored gear ratio and shift time

The SL and SLU solenoids can be active as early as 2nd gear due to the Converter Clutch Apply FLEX Strategy.

If forward motion is detected at the time when Reverse is selected, the SL solenoid will turn to on switch the Reverse Sequence Valve. This will shut off pressure to the B3 clutch enabling the "No Reverse" safety strategy.

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Figure 14



Technical Service Information

TOYOTA U660E FAILSAFE STRATEGY

Malfunction Part	Failsafe Strategy
Input Turbine Speed Sensor	1st or 3rd only
Counter Gear Speed Sensor	1st to 4th only *Counter Gear Speed is based on signals from the skid control ECU speed sensor signal.
ATF Temp. Sensor	1st to 4th only
ECT ECU Power Supply Low Voltage	If malfunction occurred in 6th the transmission will remain in 6th. If malfunction occurred in any lower gear the transmission will default to 5th
CAN communication	1st or 3rd only
Knock Sensor	1st to 4th only
SL1, SL2, SL3 or SL4	Current to the failed solenoid is turned off. The remaining solenoids operate normally which is referred to as "Shift Control." Thus various irregular shift patterns and failsafe strategies will be observed.
SL1 "On" Malfunction	No 5th or 6th
SL1 "Off" Malfunction	1st = N, 2nd = N, 3rd = N, 4th = N, 5th to 6th
SL1 "Off" Malfunction (With Failsafe strategy)	3rd or 5th only
SL1 "Off" Malfunction (With Failsafe strategy and PS 1 & 2 Malfunction)	3rd or 5th only
SL2 "On" Malfunction	4th to 6th only
SL2 "Off" Malfunction	1st to 3rd, 4th = 1st, 5th = N, 6th = N
SL2 "Off" Malfunction (With Failsafe strategy)	1st to 3rd only
SL2 "Off" Malfunction (With Failsafe strategy and PS 1 & 2 Malfunction)	2nd or 3rd only

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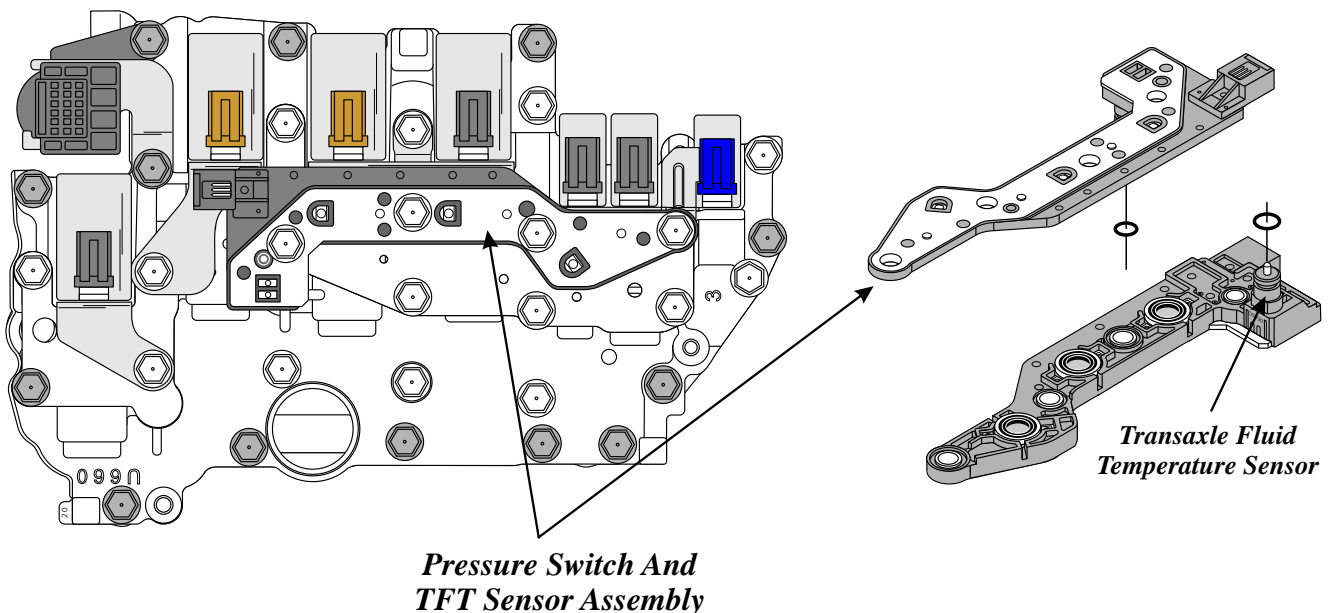
Figure 15

TOYOTA U660E FAILSAFE STRATEGY

Malfunction Part	Failsafe Strategy
SL3 "On" Malfunction	2nd - 6th only
SL3 "Off" Malfunction	1st, 3rd to 5th, 6th = N
SL3 "Off" Malfunction (With Failsafe strategy)	1st and 3rd to 5th
SL3 "Off" Malfunction (With Failsafe strategy and PS 1 & 2 Malfunction)	3rd only
SL4 "On" Malfunction	3rd to 5th only
SL4 "Off" Malfunction	1st to 2nd, 3rd = 1st, 4th, 5th = N, 6th
SL4 "Off" Malfunction (With Failsafe strategy)	1st to 2nd, 4th
SL4 "Off" Malfunction (With Failsafe strategy and PS 1 & 2 Malfunction)	2nd only
No Power to TCM	3rd only

Figure 16

PRESSURE SWITCH AND TFT SENSOR ASSEMBLY



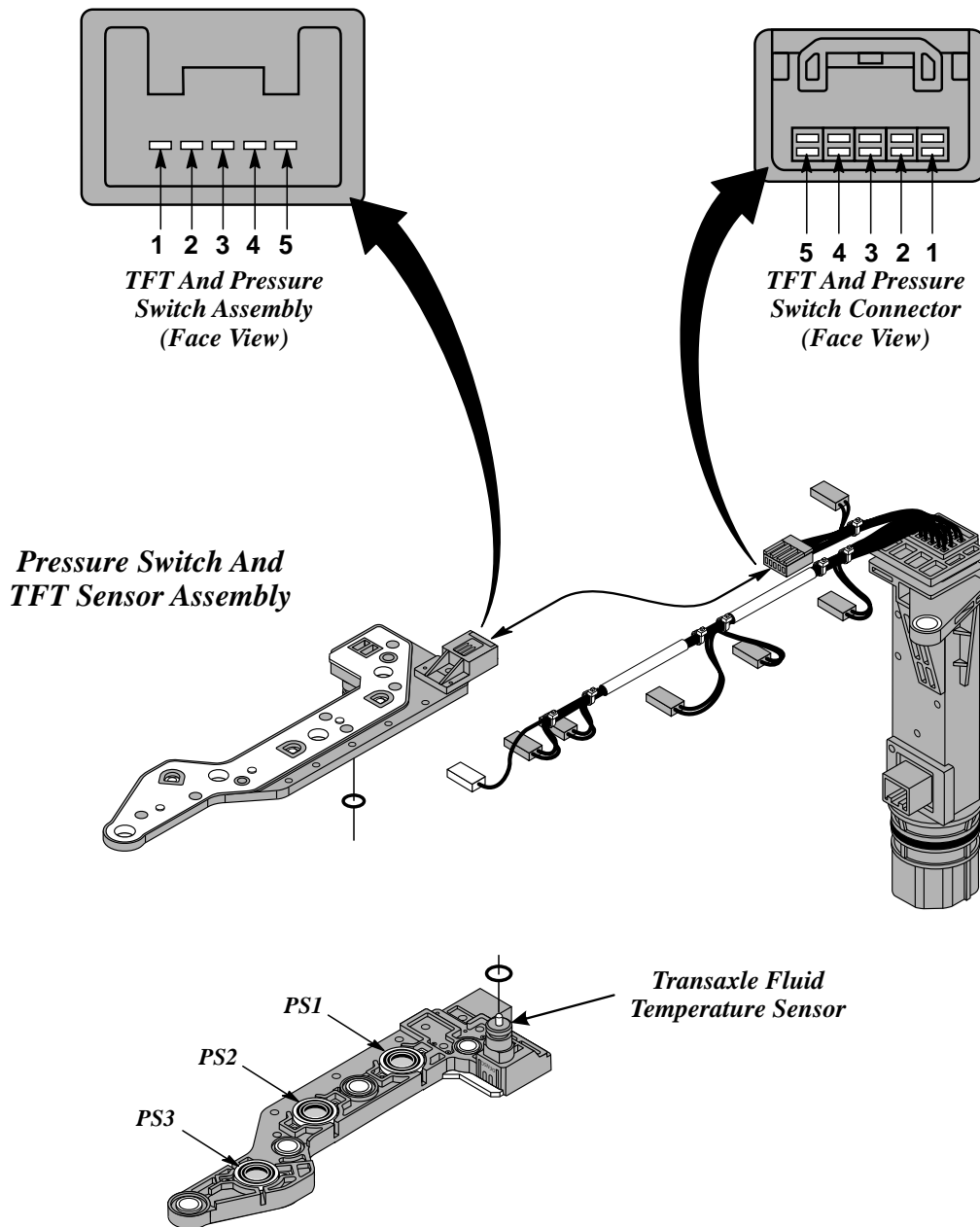
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Figure 17

Technical Service Information

TOYOTA U660E

PRESSURE SWITCH AND TFT SENSOR TERMINAL ID



TFT SENSOR AND PRESSURE SWITCH ASSEMBLY

<i>Terminal</i>	<i>Color</i>	<i>Function</i>
<i>1</i>	<i>Tan</i>	<i>Pressure Switch 3 (PS3) - Monitors the SLU Solenoid - TCC Flex and B2 apply in S1 (Manual 1st)</i>
<i>2</i>	<i>Yellow</i>	<i>Pressure Switch 2 (PS2) - Monitors the SL2 Solenoid - C2 Clutch Apply</i>
<i>3</i>	<i>White</i>	<i>Pressure Switch 1 (PS1) - Monitors the SL1 Solenoid - C1 Clutch Apply</i>
<i>4</i>	<i>Grey</i>	<i>Transaxle Fluid Temperature Signal</i>
<i>5</i>	<i>Orange</i>	<i>Transaxle Fluid Temperature Ground</i>

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Figure 18

TOYOTA U660E
SPEED SENSOR ASSEMBLY

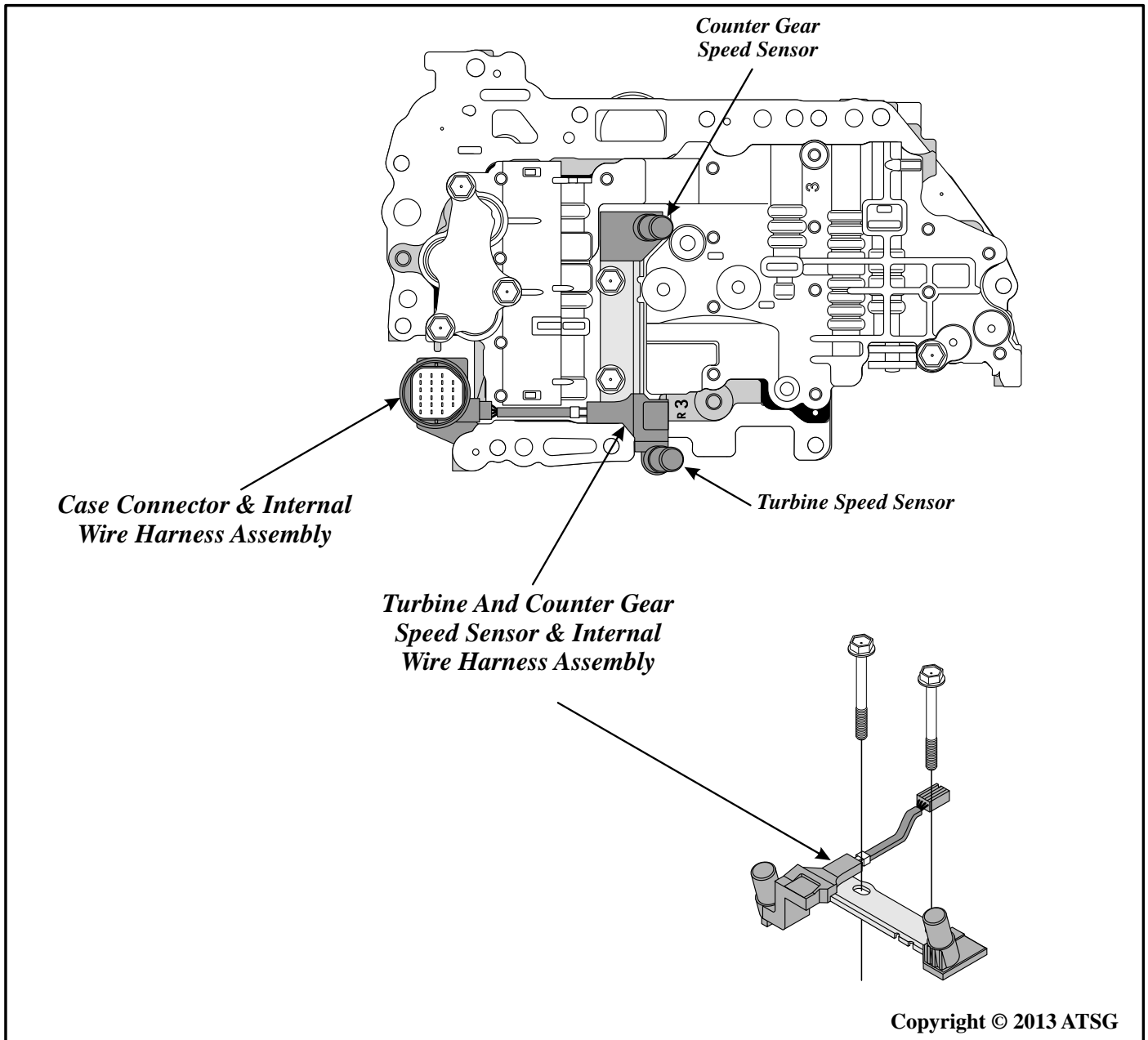
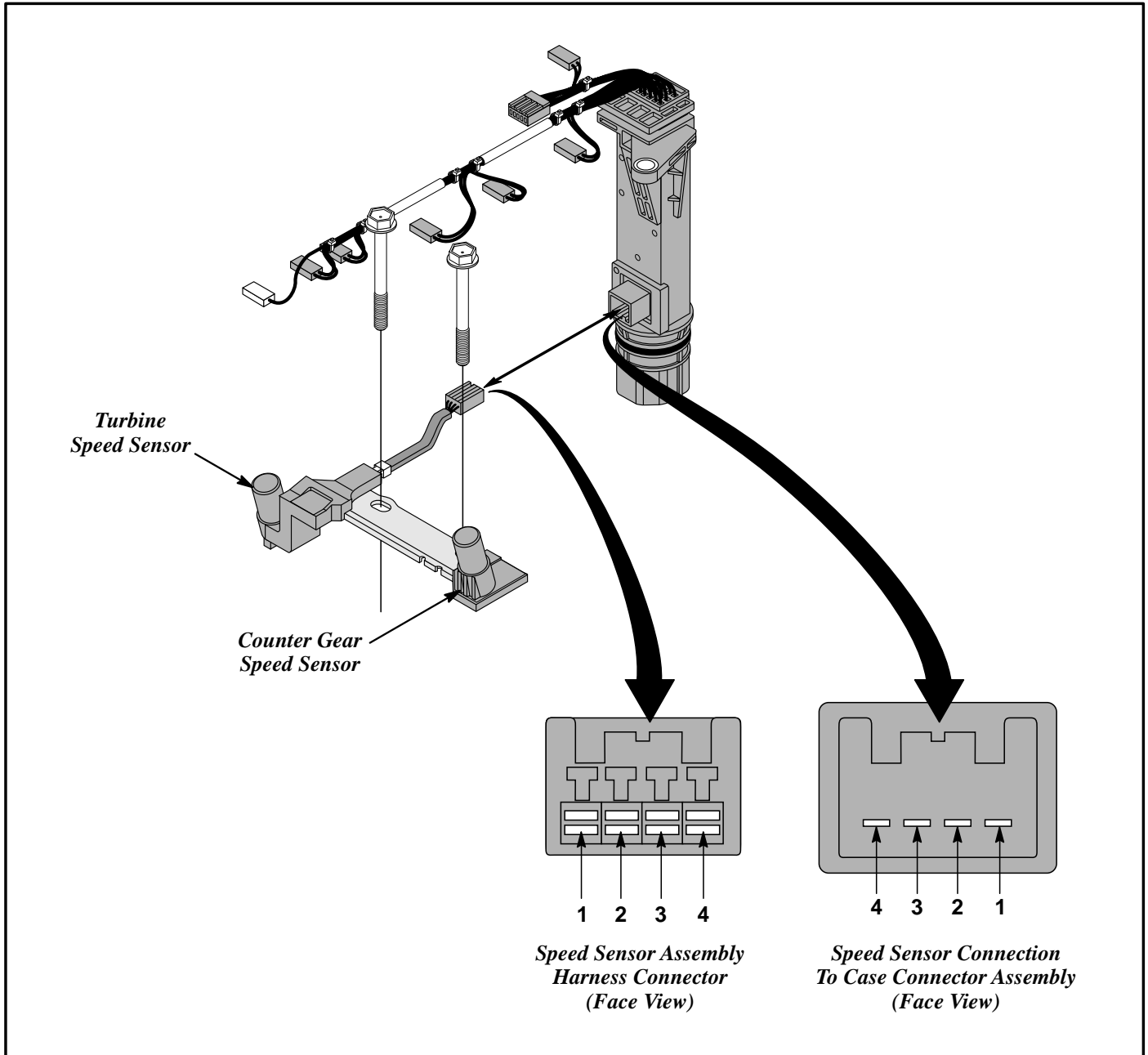


Figure 19

TOYOTA U660E

SPEED SENSOR ASSEMBLY TERMINAL IDENTIFICATION



TRANSAXLE CASE CONNECTOR AND INTERNAL WIRE HARNESS

Terminal	Color	Function	Resistance
1	White	Turbine Speed Sensor Ground (NTB)	}10k or Higher
2	Red	Turbine Speed Sensor Signal (NTO)	
3	Black	Counter Gear Speed Sensor Ground (NCB)	}10k or Higher
4	Yellow	Counter Gear Speed Sensor Signal (NCO)	

Note: Wire Colors May Vary.

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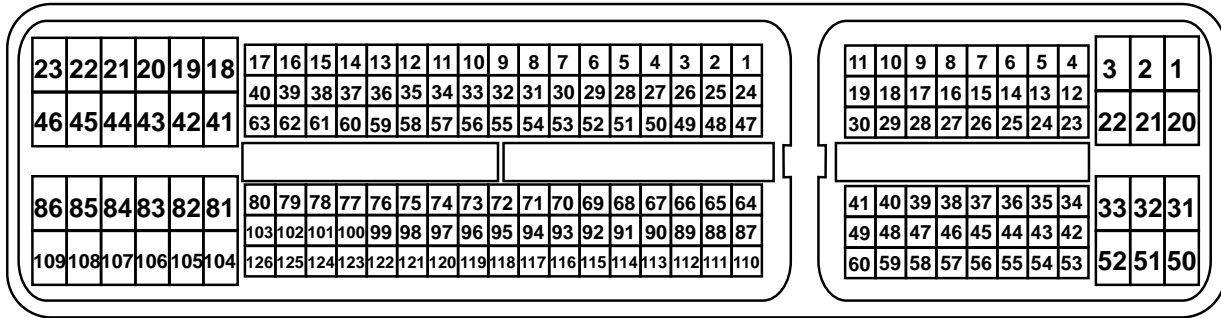
Figure 20



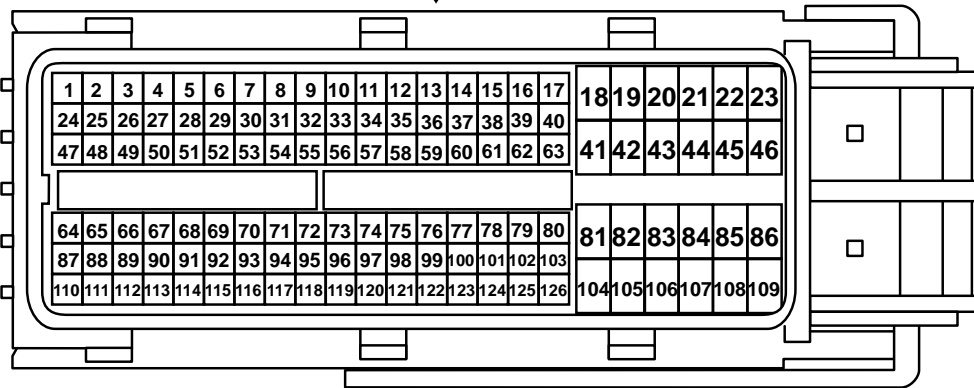
Technical Service Information

TOYOTA U660E

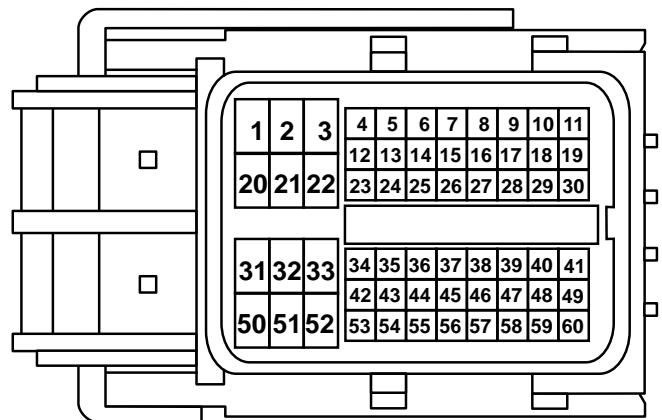
ECM CONNECTOR AND TERMINAL IDENTIFICATION



*ECM Terminal Identification
(Face View)*



*ECM Connector B12
Terminal Identification
(Face View)*



*ECM Connector A10
Terminal Identification
(Face View)*

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Figure 21

TOYOTA U660E PARTIAL WIRING SCHEMATIC

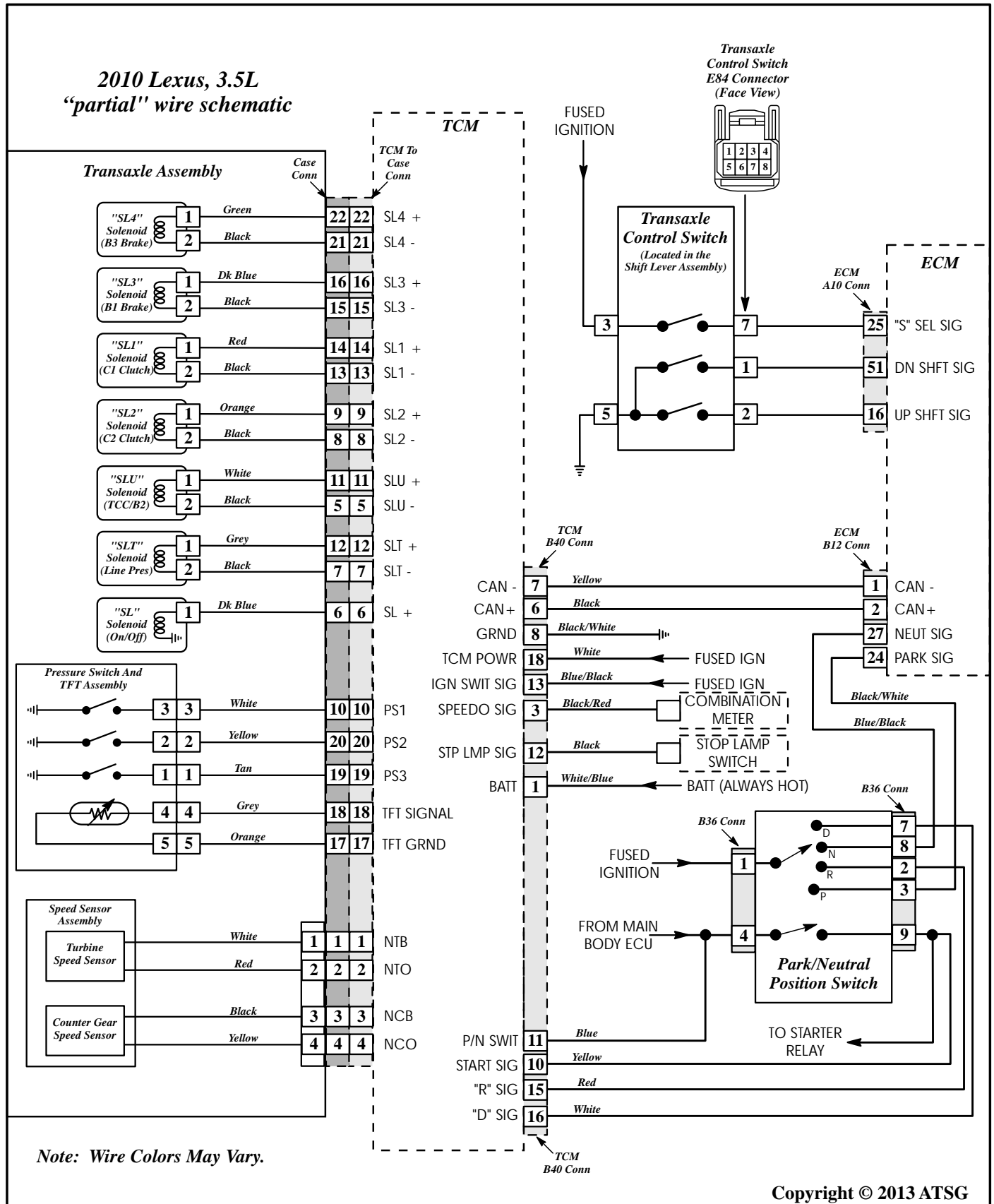
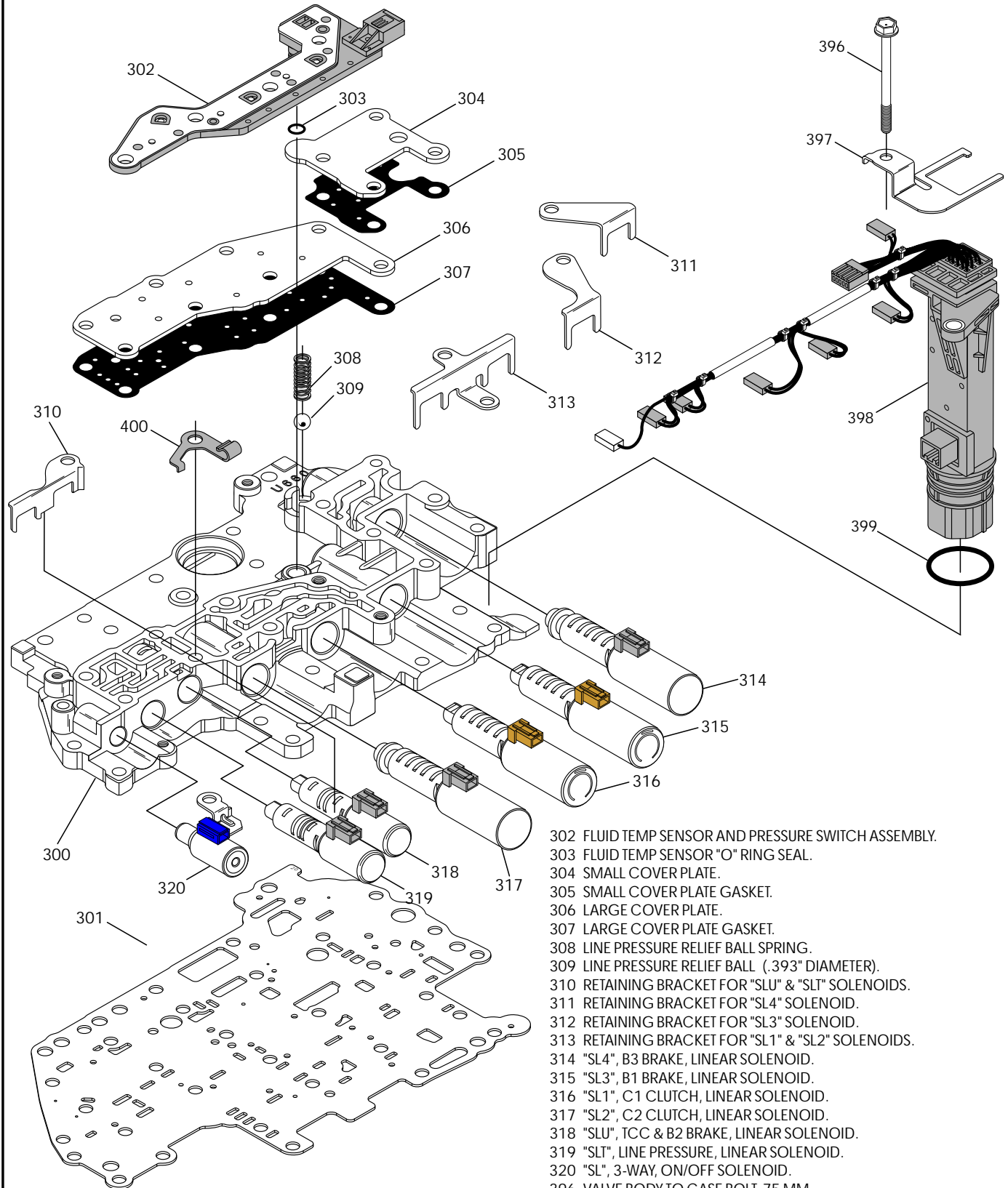


Figure 22

SOLENOID BODY EXPLODED VIEW



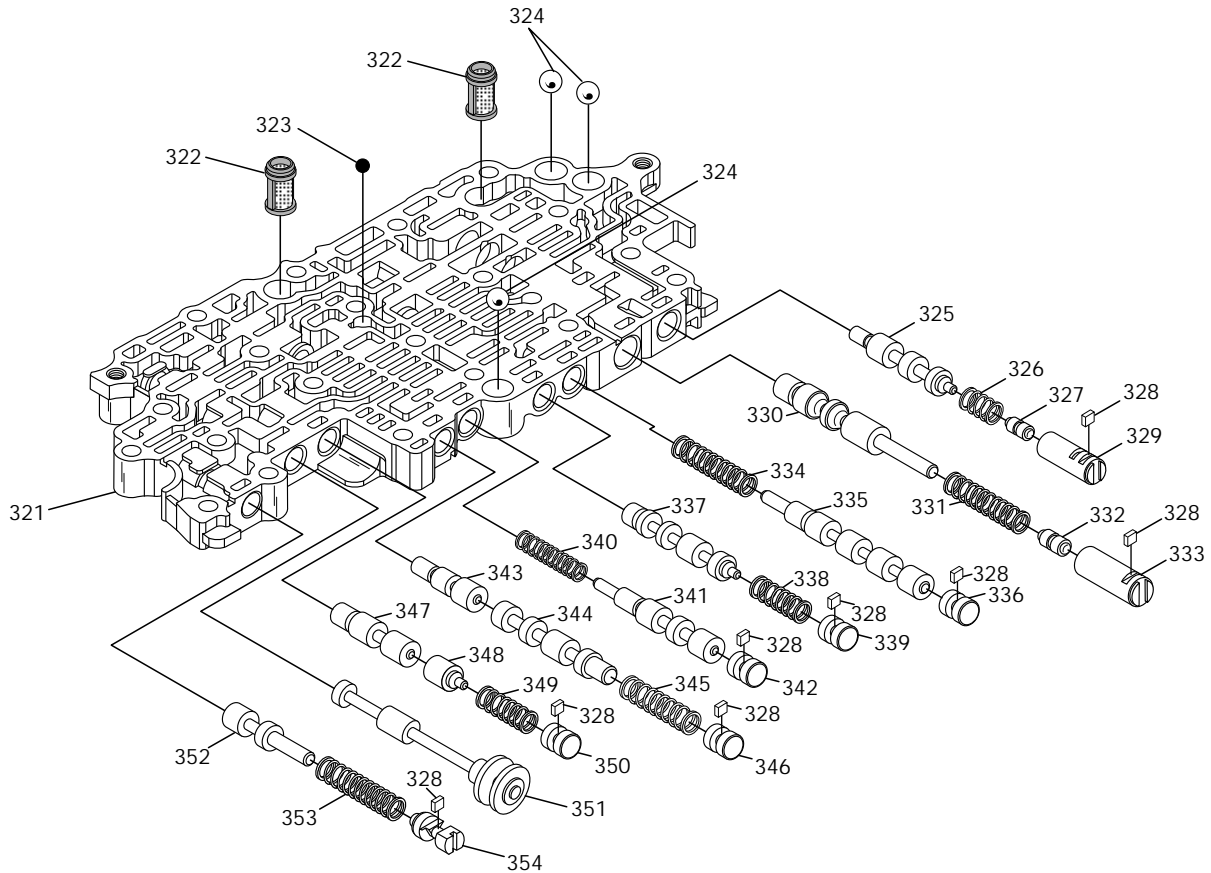
300 SOLENOID BODY CASTING.
301 SOLENOID BODY TO CENTER VALVE BODY SPACER PLATE.

- 302 FLUID TEMP SENSOR AND PRESSURE SWITCH ASSEMBLY.
- 303 FLUID TEMP SENSOR "O" RING SEAL.
- 304 SMALL COVER PLATE.
- 305 SMALL COVER PLATE GASKET.
- 306 LARGE COVER PLATE.
- 307 LARGE COVER PLATE GASKET.
- 308 LINE PRESSURE RELIEF BALL SPRING.
- 309 LINE PRESSURE RELIEF BALL (.393" DIAMETER).
- 310 RETAINING BRACKET FOR "SLU" & "SLT" SOLENOIDS.
- 311 RETAINING BRACKET FOR "SL4" SOLENOID.
- 312 RETAINING BRACKET FOR "SL3" SOLENOID.
- 313 RETAINING BRACKET FOR "SL1" & "SL2" SOLENOIDS.
- 314 "SL4", B3 BRAKE, LINEAR SOLENOID.
- 315 "SL3", B1 BRAKE, LINEAR SOLENOID.
- 316 "SL1", C1 CLUTCH, LINEAR SOLENOID.
- 317 "SL2", C2 CLUTCH, LINEAR SOLENOID.
- 318 "SLU", TCC & B2 BRAKE, LINEAR SOLENOID.
- 319 "SLT", LINE PRESSURE, LINEAR SOLENOID.
- 320 "SL", 3-WAY, ON/OFF SOLENOID.
- 396 VALVE BODY TO CASE BOLT, 75 MM.
- 397 CASE CONNECTOR ASSEMBLY RETAINING BRACKET.
- 398 CASE CONNECTOR AND INTERNAL WIRE HARNESS ASSEMBLY.
- 399 CASE CONNECTOR TO CASE "O" RING SEAL.

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Figure 23

TOYOTA U660E MIDDLE VALVE BODY EXPLODED VIEW



- | | |
|--|--|
| 321 MIDDLE VALVE BODY CASTING. | 340 C2 CLUTCH APPLY CONTROL VALVE SPRING. |
| 322 FLUID SCREENS (2 REQUIRED). | 341 C2 CLUTCH APPLY CONTROL VALVE. |
| 323 VITON CHECK BALL, 218" DIAMETER (1 REQUIRED). | 342 C2 CLUTCH APPLY CONTROL VALVE BORE PLUG. |
| 324 STEEL CHECK BALL, 393" DIAMETER (3 REQUIRED). | 343 B2 APPLY CONTROL RELAY VALVE. |
| 325 B1 APPLY CONTROL VALVE. | 344 B2 APPLY CONTROL VALVE. |
| 326 B1 APPLY CONTROL VALVE SPRING. | 345 B2 APPLY CONTROL VALVE SPRING. |
| 327 B1 APPLY BOOST VALVE. | 346 B2 APPLY CONTROL VALVE BORE PLUG. |
| 328 VALVE RETAINER (8 REQUIRED). | 347 B2 CONTROL VALVE. |
| 329 B1 APPLY BOOST VALVE SLEEVE. | 348 B2 CONTROL RELAY VALVE. |
| 330 PRIMARY PRESSURE REGULATOR VALVE. | 349 B2 CONTROL VALVE SPRING. |
| 331 PRIMARY PRESSURE REGULATOR VALVE SPRING. | 350 B2 CONTROL VALVE BORE PLUG. |
| 332 PRIMARY PRESSURE REGULATOR BOOST VALVE. | 351 MANUAL VALVE. |
| 333 PRIMARY PRESSURE REGULATOR BOOST VALVE SLEEVE. | 352 SOLENOID MODULATOR VALVE. |
| 334 SEQUENCE VALVE SPRING. | 353 SOLENOID MODULATOR VALVE SPRING. |
| 335 SEQUENCE VALVE. | 354 SOLENOID MODULATOR VALVE ADJUSTABLE BORE PLUG. |
| 336 SEQUENCE VALVE BORE PLUG. | |
| 337 CLUTCH CONTROL VALVE. | |
| 338 CLUTCH CONTROL VALVE SPRING. | |
| 339 CLUTCH CONTROL VALVE BORE PLUG. | |

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Figure 24



Technical Service Information

TOYOTA U660E

VALVE BODY SMALL PARTS LOCATION

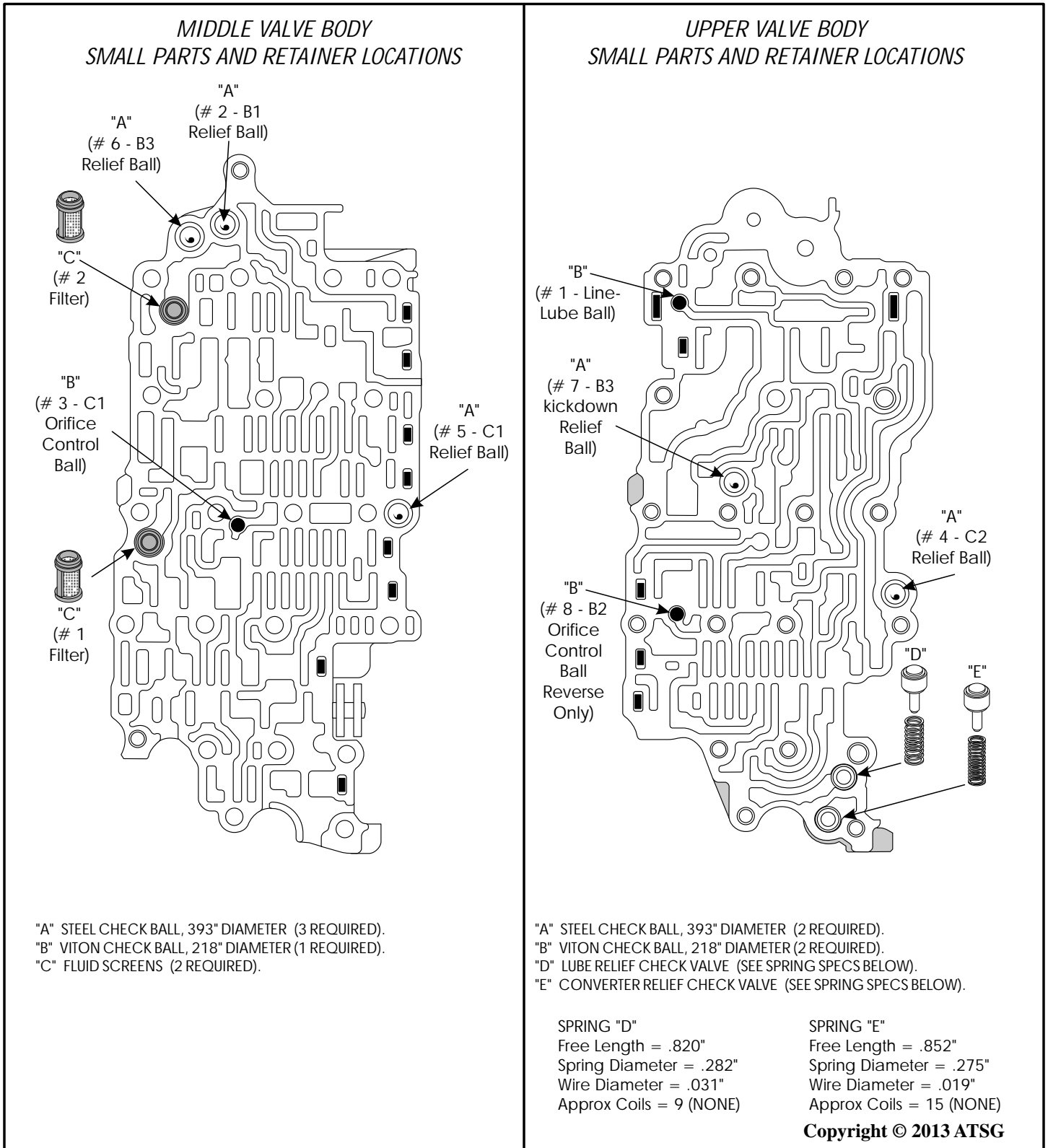
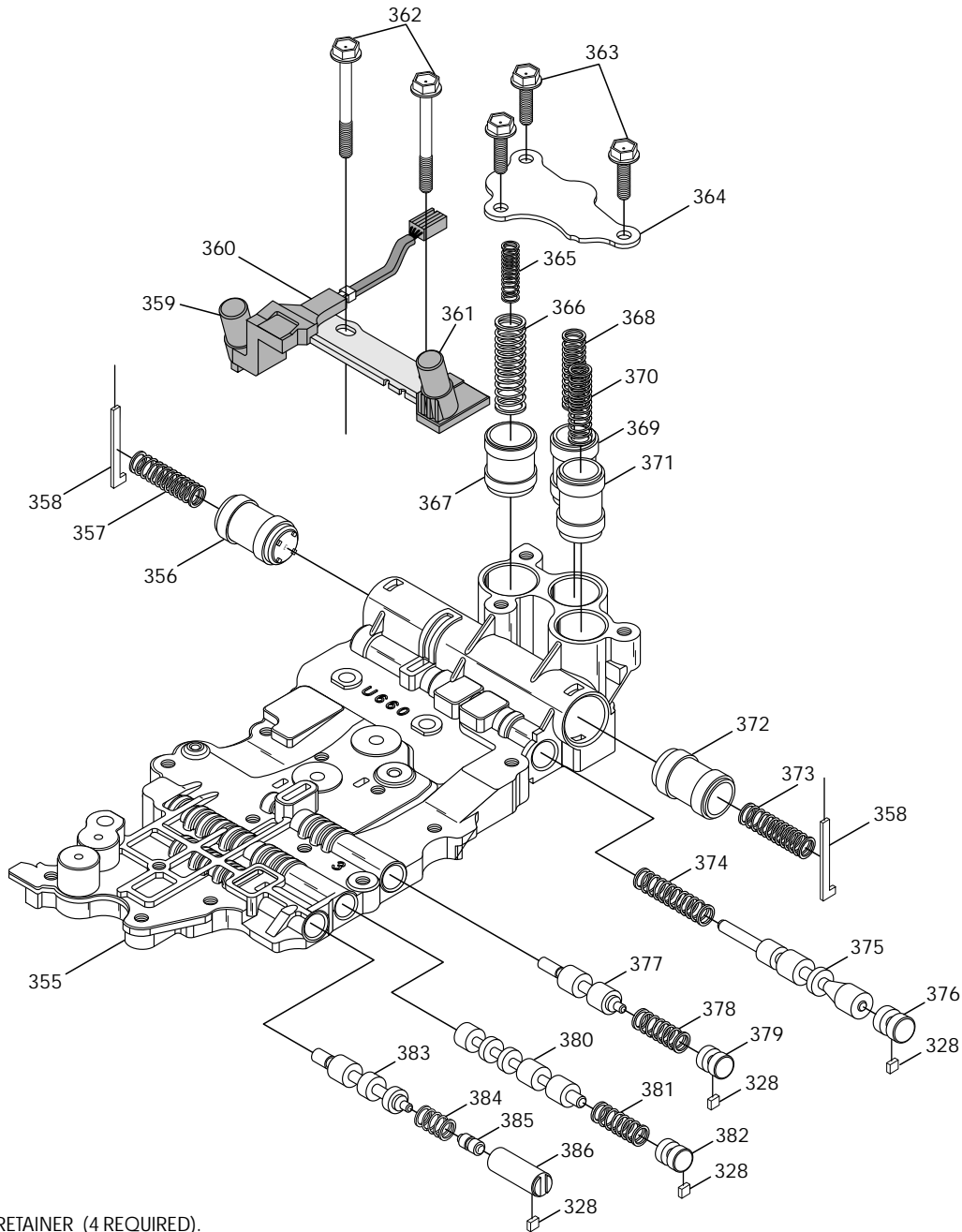


Figure 25

UPPER VALVE BODY EXPLODED VIEW



328 BORE PLUG RETAINER (4 REQUIRED).

355 UPPER VALVE BODY CASTING.

356 C2 ACCUMULATOR PISTON.

357 C2 ACCUMULATOR SPRING.

358 ACCUMULATOR RETAINER (2 REQUIRED).

359 INPUT SPEED SENSOR (PART OF ASSEMBLY).

360 SPEED SENSOR AND HARNESS ASSEMBLY.

361 COUNTER GEAR (OUTPUT) SPEED SENSOR (PART OF ASSEMBLY).

362 SPEED SENSOR ASSEMBLY RETAINING BOLTS.

363 ACCUMULATOR COVER RETAINING BOLTS (3 REQUIRED).

364 ACCUMULATOR COVER.

365 C1 ACCUMULATOR INNER SPRING.

366 C1 ACCUMULATOR OUTER SPRING.

367 C1 ACCUMULATOR PISTON (LARGER THAN THE OTHERS).

368 B2 ACCUMULATOR SPRING.

369 B2 ACCUMULATOR PISTON.

370 B1 ACCUMULATOR SPRING.

371 B1 ACCUMULATOR PISTON.

372 B3 ACCUMULATOR PISTON.

373 B3 ACCUMULATOR SPRING.

374 SECONDARY PRESSURE REGULATOR VALVE SPRING.

375 SECONDARY PRESSURE REGULATOR VALVE.

376 SECONDARY PRESSURE REGULATOR VALVE BORE PLUG.

377 REVERSE SEQUENCE VALVE.

378 REVERSE SEQUENCE VALVE SPRING.

379 REVERSE SEQUENCE VALVE BORE PLUG.

380 LOCK-UP RELAY VALVE.

381 LOCK-UP RELAY VALVE SPRING.

382 LOCK-UP RELAY VALVE BORE PLUG.

383 LOCK-UP CONTROL VALVE.

384 LOCK-UP CONTROL VALVE SPRING.

385 LOCK-UP CONTROL BOOST VALVE.

386 LOCK-UP CONTROL BOOST VALVE SLEEVE.

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Figure 26

TOYOTA U660E UPPER VALVE BODY EXPLODED VIEW

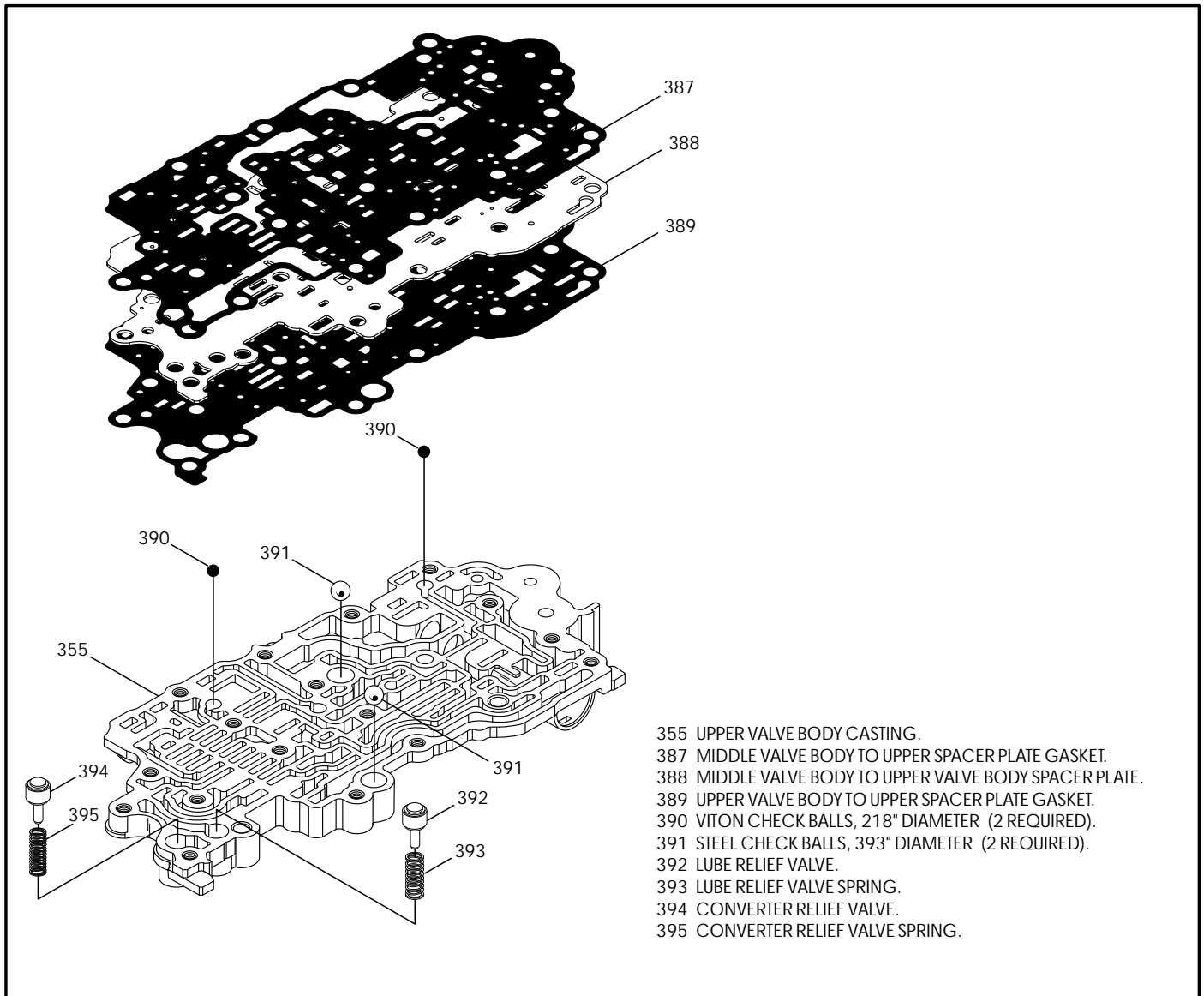


Figure 27

ACCUMULATOR SPRING SPECIFICATIONS

SPRING NO. 365 "INNER"
 Free Length = 1.435"
 Spring Diameter = .393"
 Wire Diameter = .063"
 Approx Coils = 13 (NONE)

SPRING NO. 366 "OUTER"
 Free Length = 2.320"
 Spring Diameter = .557"
 Wire Diameter = .063"
 Approx Coils = 13 (DK BLUE)

SPRING NO. 368
 Free Length = 1.870"
 Spring Diameter = .470"
 Wire Diameter = .075"
 Approx Coils = 14 (RED)

SPRING NO. 370
 Free Length = 1.680"
 Spring Diameter = .473"
 Wire Diameter = .079"
 Approx Coils = 12 (WHITE)

SPRING NO. 357
 Free Length = 1.724"
 Spring Diameter = .471"
 Wire Diameter = .079"
 Approx Coils = 12 (BLUE)

SPRING NO. 373
 Free Length = 1.680"
 Spring Diameter = .473"
 Wire Diameter = .079"
 Approx Coils = 12 (WHITE)

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Figure 28

TOYOTA U660E

VALVE BODY BOLT IDENTIFICATION AND LOCATION

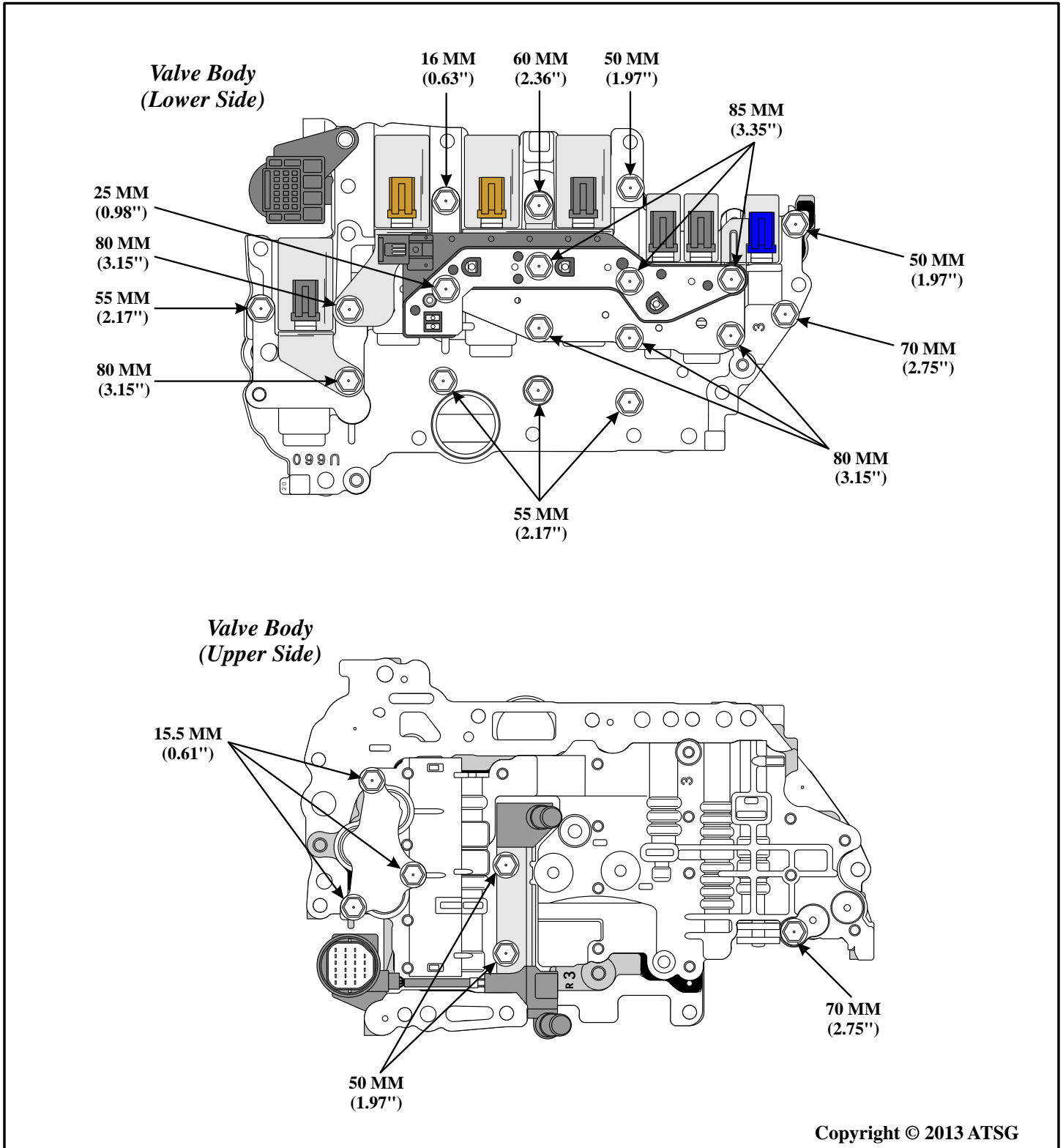


Figure 29



Technical Service Information

TOYOTA U660E

CASE PASSAGE IDENTIFICATION

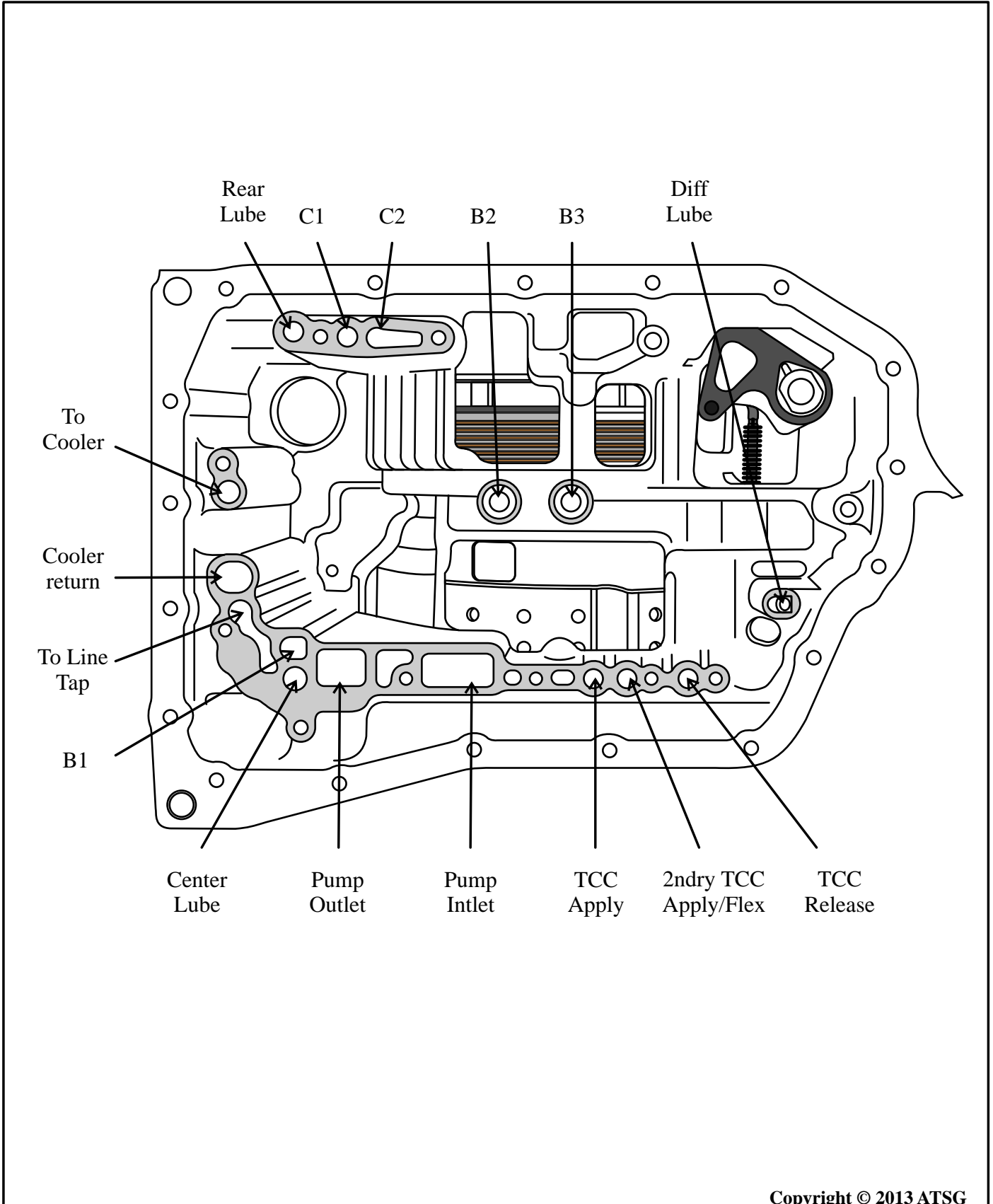


Figure 30

TOYOTA U660E

SPRAG ROTATION

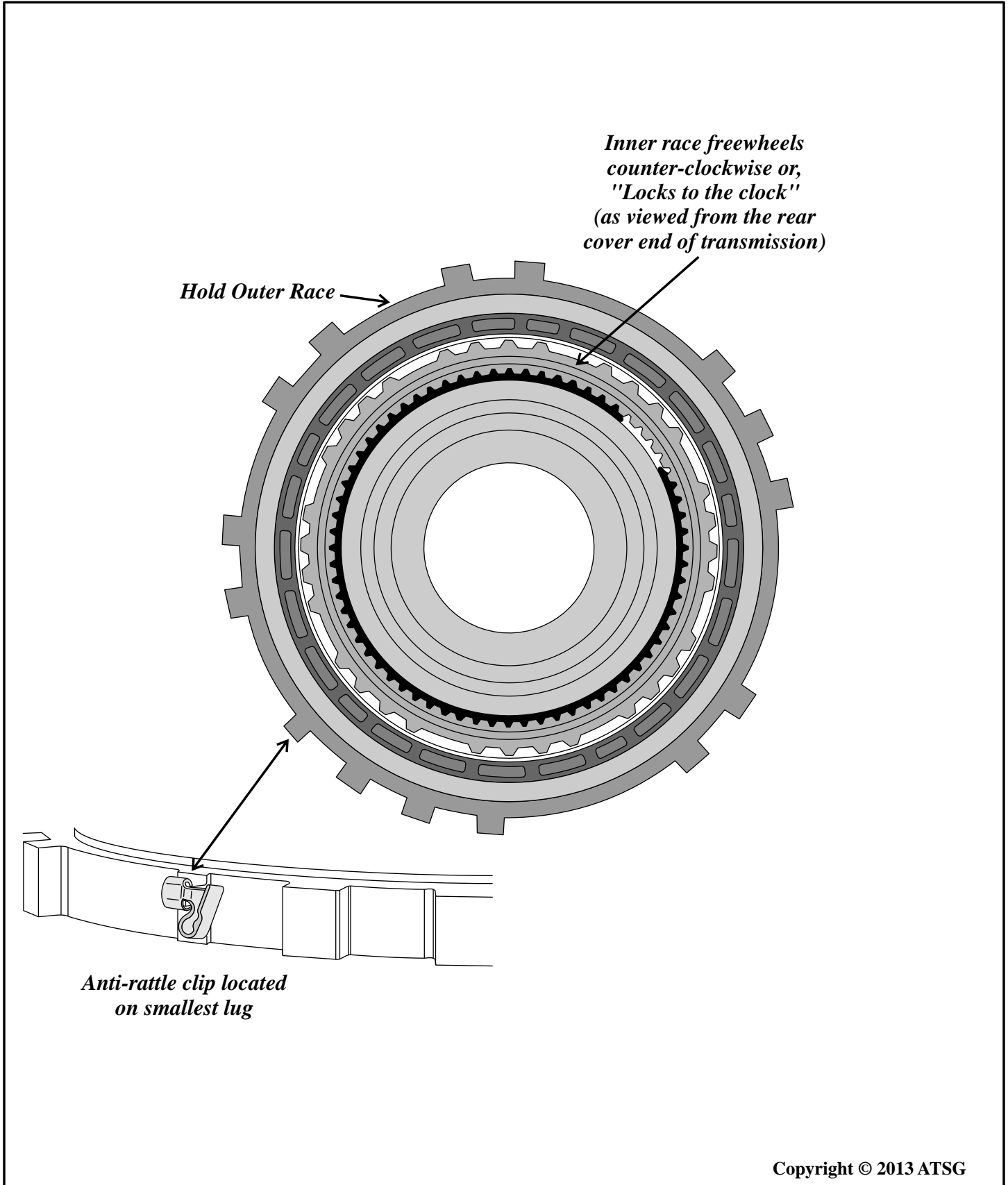


Figure 31



Technical Service Information

TOYOTA U660E DIAGNOSTIC CODES

<i>TOYOTA U660E DIAGNOSTIC TROUBLE CODES</i>	
<i>DTC</i>	<i>DESCRIPTION</i>
<i>P0500</i>	<i>Vehicle Speed Sensor "A"</i>
<i>P0560</i>	<i>System Voltage</i>
<i>P0710</i>	<i>TFT Sensor "A" Open or Shorted Circuit</i>
<i>P0711</i>	<i>TFT Sensor "A" Performance Fault</i>
<i>P0712</i>	<i>TFT Sensor "A" Circuit Low Input</i>
<i>P0713</i>	<i>TFT Sensor "A" Circuit High Input</i>
<i>P0715</i>	<i>Input/Turbine Speed Sensor Circuit Malfunction</i>
<i>P0717</i>	<i>Input/Turbine Speed Sensor Circuit No Signal</i>
<i>P0724</i>	<i>Brake Switch "B" Circuit High</i>
<i>P0741</i>	<i>SL TCC Solenoid Performance Fault (Stuck Closed)</i>
<i>P0746</i>	<i>Pressure Control Solenoid A (SL1) Performance Fault</i>
<i>P0748</i>	<i>Pressure Control Solenoid A (SL1) Shorted or Open Circuit</i>
<i>P0776</i>	<i>Pressure Control Solenoid B (SL2) Performance Fault</i>
<i>P0778</i>	<i>Pressure Control Solenoid B (SL2) Shorted or Open Circuit</i>
<i>P0791</i>	<i>Intermediate Shaft Speed Sensor "A" Circuit</i>
<i>P0793</i>	<i>Intermediate Shaft Speed Sensor "A" Circuit</i>
<i>P0796</i>	<i>Pressure Control Solenoid C (SL3) Performance Fault</i>
<i>P0798</i>	<i>Pressure Control Solenoid C (SL3) Shorted or Open Circuit</i>
<i>P0872</i>	<i>Transmission Fluid Pressure Switch 1 Circuit Low</i>
<i>P0873</i>	<i>Transmission Fluid Pressure Switch 1 Circuit High</i>
<i>P0877</i>	<i>Transmission Fluid Pressure Switch 2 Circuit Low</i>
<i>P0878</i>	<i>Transmission Fluid Pressure Switch 2 Circuit High</i>
<i>P0989</i>	<i>Transmission Fluid Pressure Switch 3 Circuit Low</i>
<i>P0990</i>	<i>Transmission Fluid Pressure Switch 1 Circuit High</i>
<i>P2714</i>	<i>Pressure Control Solenoid D (SLT) Performance Fault</i>
<i>P2716</i>	<i>Pressure Control Solenoid D (SLT) Shorted or Open Circuit</i>
<i>P2757</i>	<i>TCC Solenoid (SLU) Performance Fault</i>
<i>P2759</i>	<i>TCC Solenoid (SLU) Shorted or Open Circuit</i>
<i>P2769</i>	<i>TCC Solenoid (SL) Shorted Circuit</i>
<i>P2770</i>	<i>TCC Solenoid (SL) Open Circuit</i>
<i>P2808</i>	<i>Pressure Control Solenoid G (SL4) Performance Fault</i>
<i>P2810</i>	<i>Pressure Control Solenoid G (SL4) Shorted or Open Circuit</i>
<i>U0100</i>	<i>TCM Lost Communication with ECM/PCM "A"</i>

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Figure 32