

TOYOTA/LEXUS A750E/F PRELIMINARY INFORMATION

The A750E/A750F was introduced in 2003 in the U.S. market. It is found in Toyota 4Runner, Tundra and Land Cruiser, FJ Cruiser as well as some Lexus models. It is a Five Speed transmission equipped with Three Driving Clutches, Four Holding Brakes and Three freewheels. First thru Fourth gears are controlled with the assist of the freewheel devices and the Fourth to Fifth gear change is Clutch To Clutch. The ECM houses Engine control and Transmission control. The ECM monitors numerous sensors to control shift feel and shift timing.

The computer strategy which operates the transmission is called the **AI**: Electronically Controlled Transmission with Artificial Intelligence. The **AI** uses electronic controls to adjust hydraulic pressure and shift timing based on engine load, throttle opening and road condition, (up-hill or down-hill detection). These inputs control the main characteristics of how this transmission operates. The following information shows operational strategy of what gears are available in what range and also provides detailed information on Valve Body Breakdown, theory of operation and component location and Identification.

Figure 1 shows the cut-away of the A750F (4x4) and shows the Clutch, Brake and Freewheel locations.

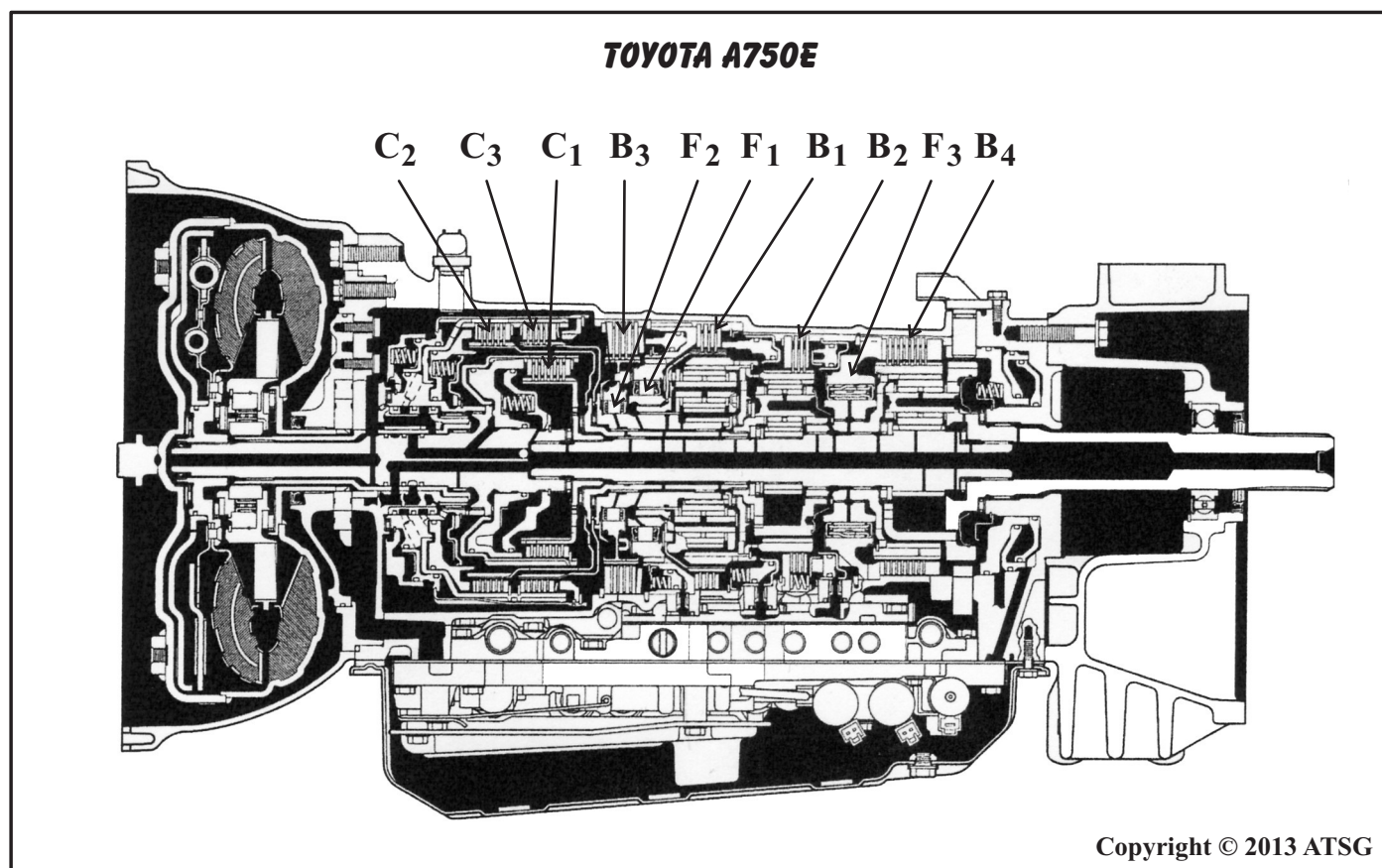
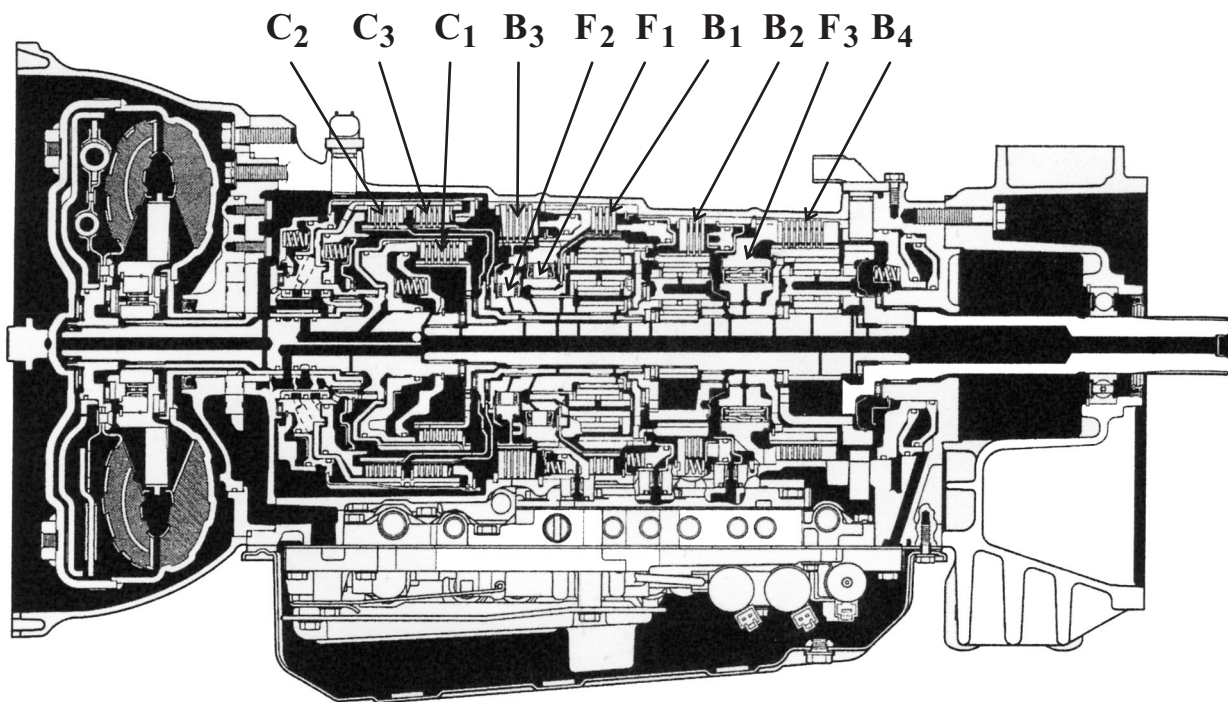


Figure 1

TOYOTA A750E COMPONENT APPLICATION CHART



Shift Lever Position	Solenoids						Driving Clutches			Brake Clutches				One-Way Clutches		
	S1	S2	SR	SL1	SL2	SLU	C1	C2	C3	B1	B2	B3	B4	F1	F2	F3
Park	ON				High											
Reverse	ON		**		High	-*-			○	○			○	○		
Neutral	ON				High											
D S5	1st	ON	**	-*-	High	-*-	○									○
	2nd	ON	ON	-*-	High		○					○		○	○	
	3rd		ON	-*-	High	Flex	○		○			●		○		
	4th			-*-	High	Flex	○	○	●			●				
	5th			ON	High	High		○	○	○		●				

** = Pulsed from On to OFF during application

-*- = Pulsed from OFF to High duty cycle to OFF during gear change and engagement of garage shifts (Based on Strategy)

○ = Applied/Operates

● = Applied but does not transmit power

(○) = Provides engine braking

Flex = Flex TCC strategy, which is low SLU duty cycle partial TCC application

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Figure 2

TOYOTA A750E COMPONENT APPLICATION CHART MANUAL RANGES S4

Shift Lever Position	Solenoids						Driving Clutches			Brake Clutches				One-Way Clutches		
	S1	S2	SR	SL1	SL2	SLU	C ₁	C ₂	C ₃	B ₁	B ₂	B ₃	B ₄	F ₁	F ₂	F ₃
S4	1st	ON		**	-*-	High	-*-	○								○
	2nd	ON	ON		-*-	High		○				○		○	○	
	3rd		ON		-*-	High		○		○		●		○		
	4th				-*-	High	High	○	○	●		●				

** = Pulsed from On to OFF during application

-*- = Pulsed from OFF to High duty cycle to OFF during gear change and engagement of garage shifts (Based on Strategy)

○ = Applied/Operates

● = Applied but does not transmit power

(○) = Provides engine braking

TOYOTA A750E COMPONENT APPLICATION CHART MANUAL RANGES S3

Shift Lever Position	Solenoids						Driving Clutches			Brake Clutches				One-Way Clutches		
	S1	S2	SR	SL1	SL2	SLU	C ₁	C ₂	C ₃	B ₁	B ₂	B ₃	B ₄	F ₁	F ₂	F ₃
S3	1st	ON		**	-*-	High	-*-	○								○
	2nd	ON	ON		-*-	High		○				○		○	○	
	3rd		ON		-*-			○		○	(○)	●		○		

** = Pulsed from On to OFF during application

-*- = Pulsed from OFF to High duty cycle to OFF during gear change and engagement of garage shifts (Based on Strategy)

○ = Applied/Operates

● = Applied but does not transmit power

(○) = Provides engine braking

TOYOTA A750E COMPONENT APPLICATION CHART MANUAL RANGES S2

Shift Lever Position		Solenoids						Driving Clutches			Brake Clutches				One-Way Clutches		
		S1	S2	SR	SL1	SL2	SLU	C ₁	C ₂	C ₃	B ₁	B ₂	B ₃	B ₄	F ₁	F ₂	F ₃
S2	1st	ON		**	-*-	High	-*-	○									○
	2nd	ON	ON	ON	-*-			○				(○)	○		○	○	

** = Pulsed from On to OFF during application

-*- = Pulsed from OFF to High duty cycle to OFF during gear change and engagement of garage shifts (Based on Strategy)

○ = Applied/Operates

● = Applied but does not transmit power

(○) = Provides engine braking

TOYOTA A750E COMPONENT APPLICATION CHART MANUAL RANGES S1

Shift Lever Position		Solenoids						Driving Clutches			Brake Clutches				One-Way Clutches		
		S1	S2	SR	SL1	SL2	SLU	C ₁	C ₂	C ₃	B ₁	B ₂	B ₃	B ₄	F ₁	F ₂	F ₃
S1	1st	ON		**	-*-		-*-	○						(○)			○

** = Pulsed from On to OFF during application

-*- = Pulsed from OFF to High duty cycle to OFF during gear change and engagement of garage shifts (Based on Strategy)

○ = Applied/Operates

● = Applied but does not transmit power

(○) = Provides engine braking

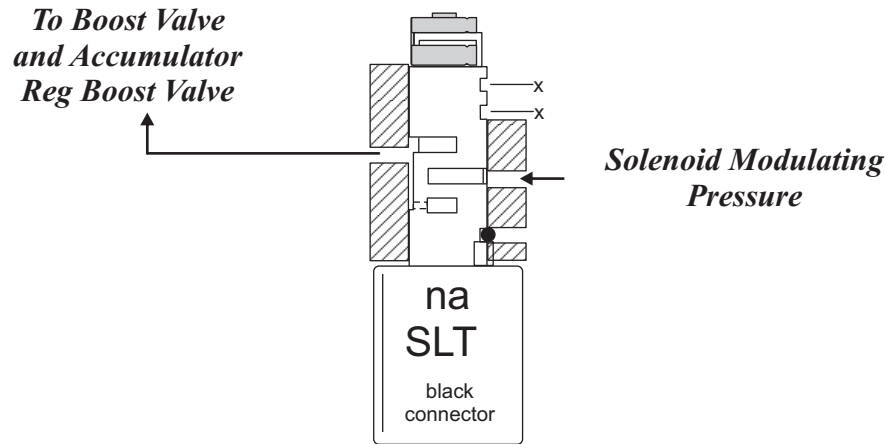
Gear Ratios

First.....	3.520
Second.....	2.042
Third.....	1.400
Fourth.....	1.000
Fifth.....	0.716
Reverse.....	3.224

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Figure 4

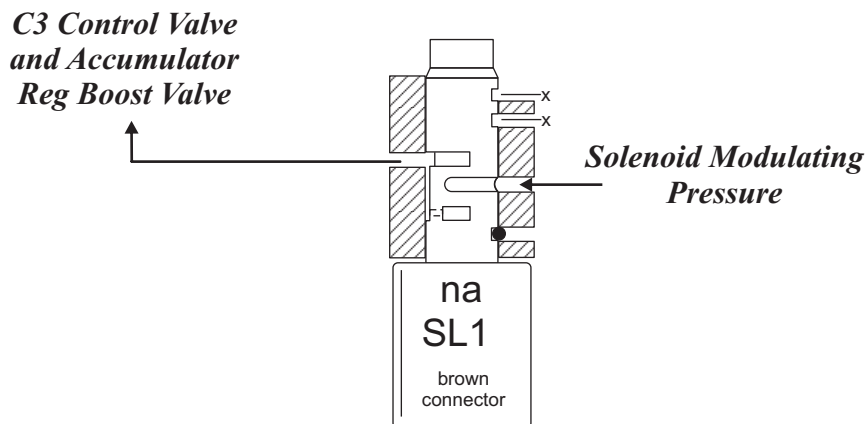
SLT LINE PRESSURE CONTROL SOLENOID



The SLT Solenoid is a Normally Applied Solenoid. It is fed from the Solenoid Modulating Valve. This solenoid controls Line pressure rise and Accumulator pressure for shift feel. When the solenoid is at a Low Duty Cycle, Pressure is high, when the Duty cycle is high, pressure is low.

Figure 5

SL1 SOLENOID

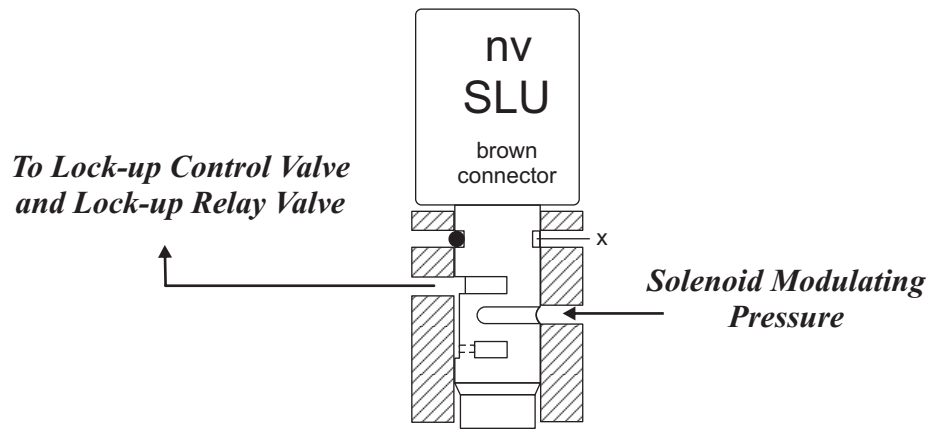


The SL1 Solenoid is a Normally Applied Solenoid. It is fed from the Solenoid Modulating Valve. This solenoid controls the Clutch Control valve and Accumulator pressure for shift feel based on the position of the Clutch Apply Control Valve. When the solenoid is at a Low Duty Cycle, Pressure is high to the Clutch Control Valve or Accumulator Regulator Boost Valve. When the Duty cycle is high, pressure is low to the Clutch Control Valve or Accumulator Regulator Boost Valve.

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Figure 6

SLU TCC CONTROL SOLENOID

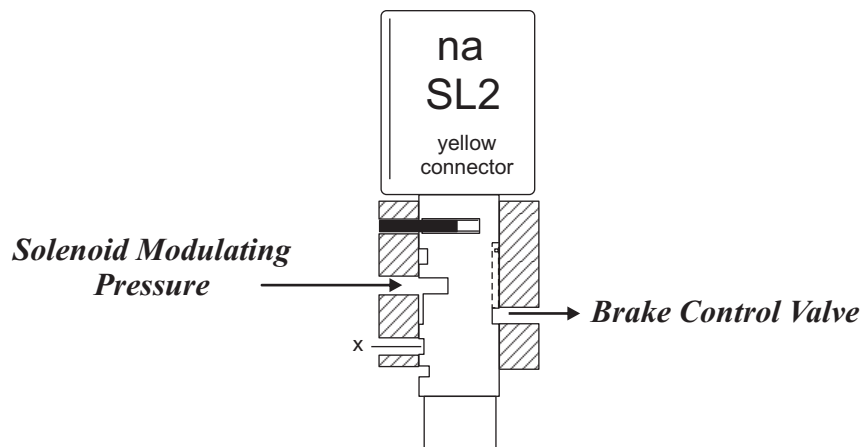


The SLU Solenoid is a Normally Vented Solenoid. It is fed from the Solenoid Modulating Valve. This solenoid controls Torque Converter Clutch Application. When the solenoid is at a Low Duty Cycle, the TCC is OFF, Flex Lock-up (partial TCC) is approximately 32%, when the Duty cycle is high approximately 62%, The TCC is fully ON.

Note: the Path connecting the SLU to the TCC Valves is thru the 1-2 Shift Valve.

Figure 7

SL2 SOLENOID

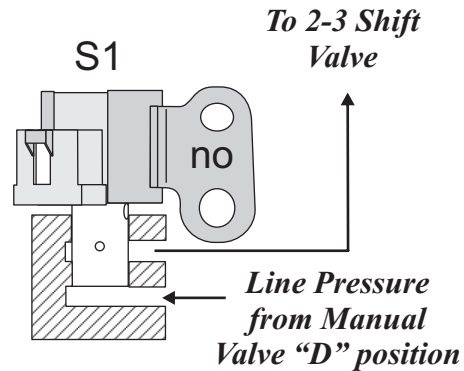


The SL2 Solenoid is a Normally Applied Solenoid. It is fed from the Solenoid Modulating Valve. This solenoid controls the Brake Control Valve. When the solenoid is at a Low Duty Cycle, Pressure is high to the Brake Control Valve, when the Duty cycle is high, pressure is low to the Brake Control Valve.

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Figure 8

S1 SOLENOID



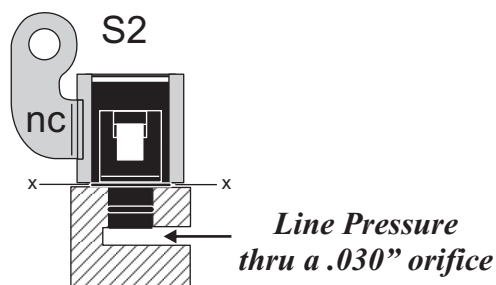
The S1 Solenoid is a Normally Open Solenoid. It is fed Line pressure from the Manual Valve "D" position.

When the Solenoid is OFF pressure is high to the 2-3 Shift Valve.

When the solenoid is ON pressure is blocked to 2-3 Shift Valve.

Figure 9

S2 SOLENOID



The S2 Solenoid is a Normally Closed Solenoid. It is fed Line pressure thru a .030" orifice.

The S2 hydraulic circuit is connected to the 1-2 and 3-4 Shift Valves.

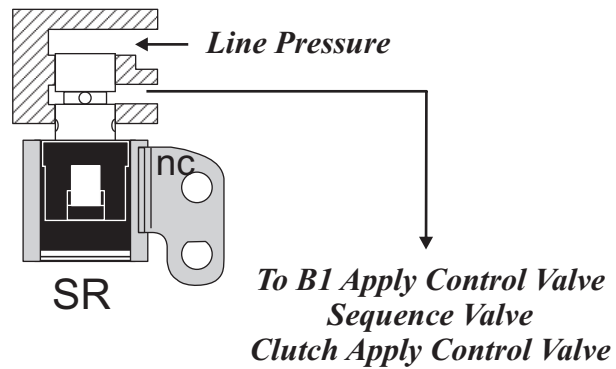
When the Solenoid is OFF pressure is high to the 1-2 and 3-4 Shift Valves.

When the solenoid is ON pressure is drained to 1-2 and 3-4 Shift Valves.

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Figure 10

SR SOLENOID



*The SR Solenoid is a Normally Closed Solenoid. It is fed Line pressure.
When the Solenoid is OFF pressure is blocked to the B1 Apply Control Valve, Sequence Valve
and Clutch Apply Control Valve.
When the solenoid is ON pressure is high to the B1 Apply Control Valve, Sequence Valve
and Clutch Apply Control Valve.*

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Figure 11

Shifter Assemblies

There are two types of Shifter assemblies, one located on the column and one located in the center floor console. They consist of a Park, Reverse, Neutral, Drive and Select Mode Driving position. A shift lock system is used to minimize the possibility of incorrect operation. This means that you can only shift out of Park when the brake pedal is depressed with the ignition switch in the ON position.

Once the selector lever is placed into the Drive position, the Engine Control Module provides an Artificial Intelligence (AI) shift control strategy.

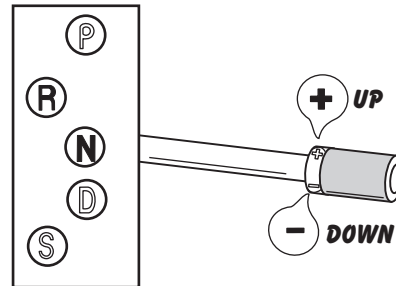
AI shifting control selects the most suitable shift range automatically according to the driver's operation and driving condition. It judges whether the road is downslope or up-slope by detecting the throttle opening degree or the vehicle speed. It can also detect turns by monitoring wheel speed and will prevent unnecessary up-shifting and down shifting. AI can also read the driver's intention by monitoring acceleration and tailor shift time and feel ideal for each driver. AI shift control operates automatically with the selector lever in the "D" position. When it is moved to the "S" position, this function will be cancelled.

If the selector lever is placed into the "S" range from the "D" range on the fly (while driving in the AI shift control strategy), the AI strategy will select the proper shift range based upon the driving condition at the time the selector lever was moved. Once selected, AI strategy will be cancelled.

Once in the "S" position, an upper range can be selected by pushing the shifter forward. Likewise, a lower range can be selected by pulling the shifter down. Once a range is selected and the shifter remains untouched in the "S" position, the transmission will shift between the lowest to the highest range selected.

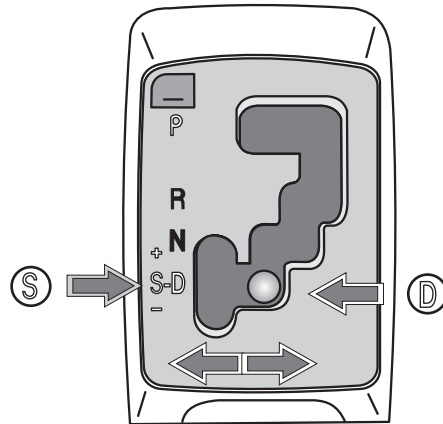
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COLUMN SHIFTER

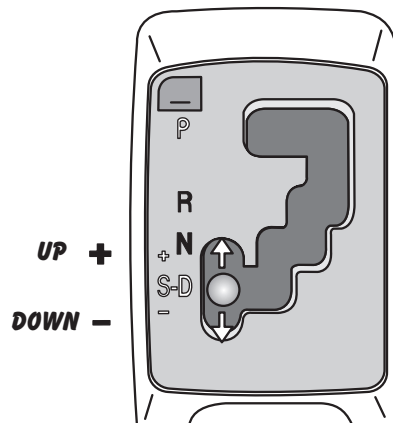


Transmission Control Switch

FLOOR SHIFTER



MANUAL SHIFT



RANGES AVAILABLE

Once a Range is selected, the Shift Position and the Range indicator light will display it in the Combination Meter.

“5” (fifth range): The most suitable gear is automatically selected between first and fifth gears according to vehicle speed and driving conditions. This range works well for passing a vehicle during high speed driving.

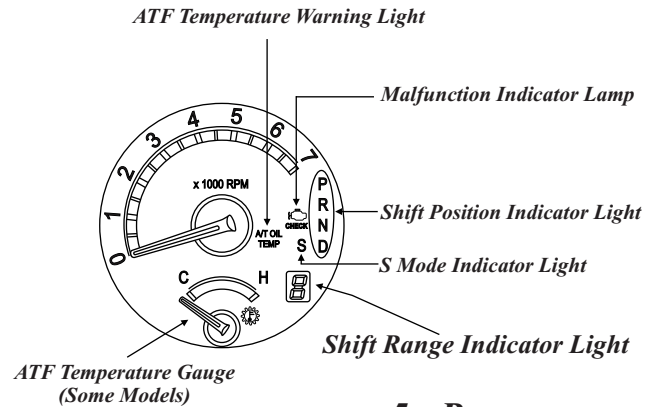
“4” (fourth range): The most suitable gear is automatically selected between first and fourth gears according to vehicle speed and driving conditions. In this range, the system will select the suitable gear during hilly driving or towing conditions.

“3” (third range): The most suitable gear is automatically selected between first and third gears according to vehicle speed and driving conditions. This selection is used if stronger engine braking is needed.

“2” (second range): The most suitable gear is automatically selected between first and second gears according to vehicle speed and driving conditions. This selection is used if stronger engine braking than that of third is needed.

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

Combination Meter Display



5 - Range
4 - Range
3 - Range
2 - Range
1 - Range

Lock-Up and Flexible Lock-Up Control

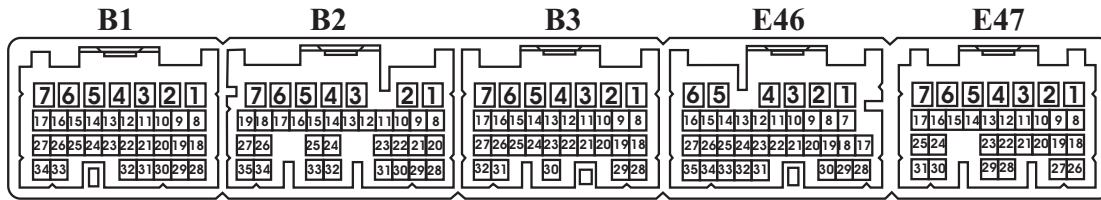
The Engine Control Module controls TCC operation through the high side of the SLU solenoid according to shift position, vehicle speed, throttle opening degree and running conditions. The ECM also steadily keeps applying the lock-up clutch to a delicate slippage to improve the transmission efficiency of the torque converter for increased fuel economy.

Lock-Up Control is prohibited if:

1. The brake pedal is depressed
2. The accelerator pedal is released
3. Engine coolant temperature is 140° F (60° C) or less.

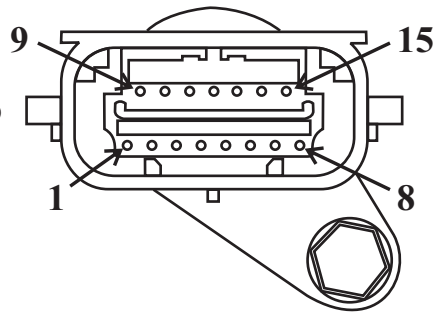
There is no lock-up function in 1st, 2nd gears. This is normal operation.

SOLENOID RESISTANCE CHECK CHART AT THE TRANS OR ECM



ECM Connector and Pin ID

Transmission Case Connector Pin ID



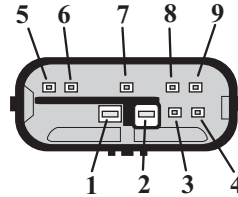
Solenoid Resistance Check at the Transmission Case Connector OR from the ECM Connector "B2"

Description	Transmission Case Connector		ECM "B2" Connector		Value
Solenoid	Positive	Negative	Positive	Negative	Approximate Ohm Value
S1	8	Case Ground	B2-11	B3-1 or Body	11 - 15
S2	15	Case Ground	B2-10	B3-1 or Body	11 - 15
SR	7	Case Ground	B2-9	B3-1 or Body	11 - 15
SL1	12	4	B2-19	B2-18	6
SL2	11	3	B2-17	B2-16	6
SLU	13	5	B2-15	B2-14	6
SLT	14	6	B2-13	B2-12	6
TFT-1 (THO)	10	2	B2-24	B1-28	3.5k @ 68° F .22k @ 230° F
TFT-2 (THO)	9	1	B2-32	B1-28	3.5k @ 68° F .22k @ 230° F
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Figure 14

CHECKING PARK/NEUTRAL SWITCH TRANSMISSION RANGE SENSOR

CONNECTOR VIEW



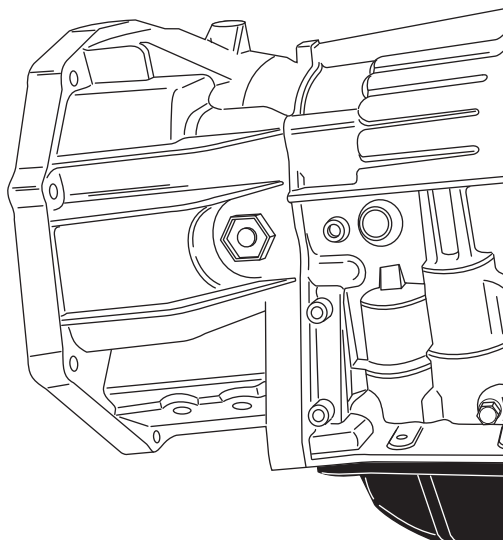
Disconnect the Park/Neutral switch connector and check for continuity between the terminals listed in the chart below

RANGE POSITION	TERMINALS	
P	2&6	4&5
R	1&2	
N	2&9	4&5
D OR 4	2&7	
3	2&3	
2 OR L	2&8	

Note: There should be continuity only on the terminals listed above

Figure 15

LINE PRESSURE SPECIFICATIONS



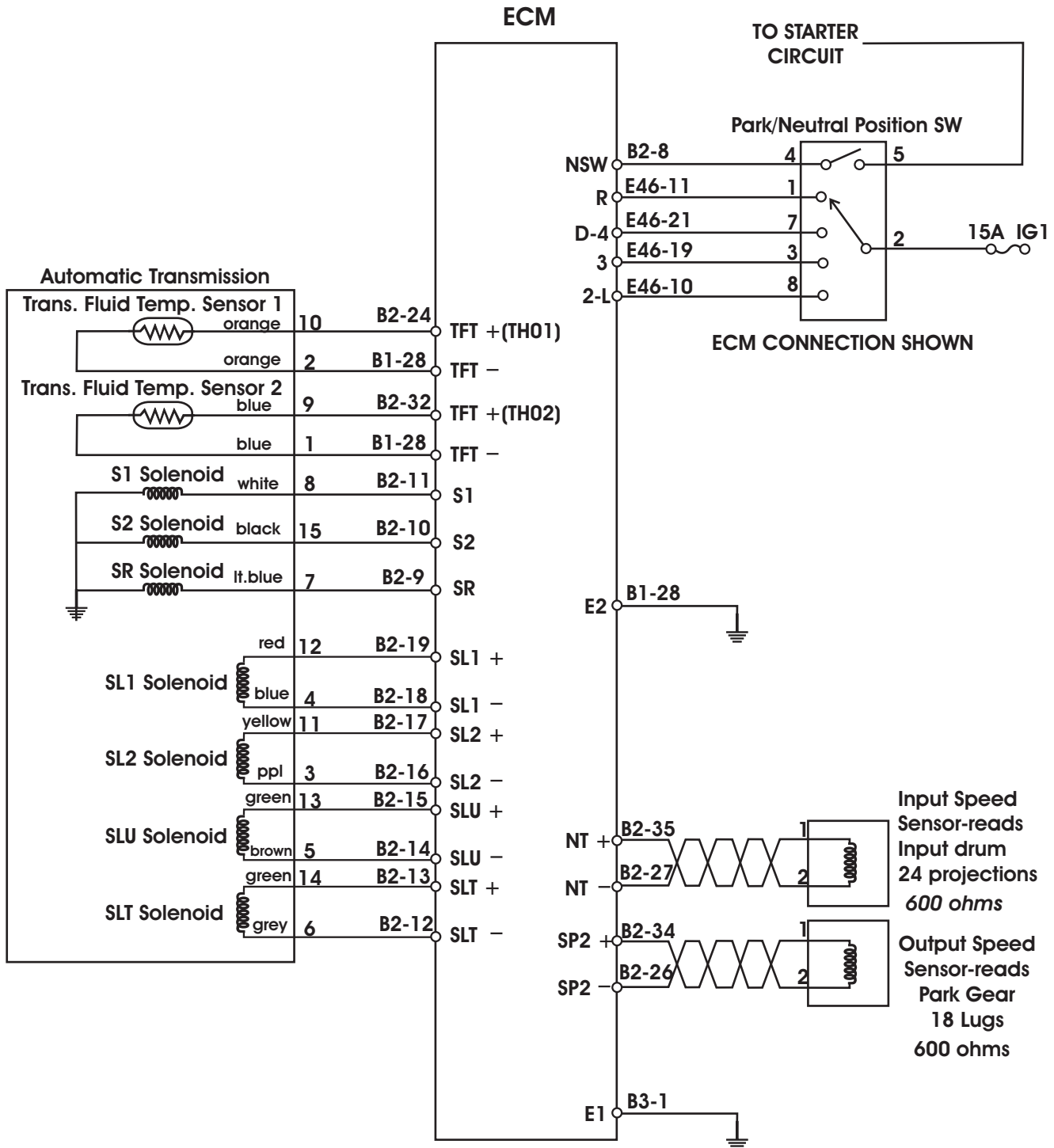
RPM	DRIVE	REVERSE
Idle	356 - 426 kPa (52-21 psi)	500 - 600 kPa (73-87 psi)
Stall	1367 - 1477 kPa (198-214 psi)	1278 - 1613 kPa (185-218 psi)

Line pressure port

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Figure 16

TRANSMISSION TO ECM PARTIAL WIRING SCHEMATIC



TERMINAL ID SHOWN IS BASED ON A 07 FJ CRUISER



Technical Service Information

DIAGNOSTIC TROUBLE CODE DESCRIPTIONS

DTC	DESCRIPTION	TROUBLE AREAS	E	M	MIL-1	MIL-2
P0705	Transmission Range Sensor Circuit Malfunction	Open or short in PRNDL Park/Neutral ckt.	Y		ON	DTC Stored
P0710	Transmission Fluid Temp. Sensor "A" Circuit	Open or short in No.1 Temp sensor circuit	Y		ON	DTC Stored
P0711	Transmission Fluid Temp. Sensor "A" Performance	Open or short in No.1 Temp sensor circuit- <i>may be also related to overheat</i>	Y	Y	ON	DTC Stored
P0712	Transmission Fluid Temp. Sensor "A" Circuit Low Input	Short in No.1 Temp sensor circuit	Y		ON	DTC Stored
P0713	Transmission Fluid Temp. Sensor "A" Circuit High Input	Open in No.1 Temp sensor circuit	Y		ON	DTC Stored
P0717	Input Speed Sensor (NT) circuit fault	Open or short in NT circuit	Y		ON	DTC Stored
P0722	Output Speed Sensor (SP2) circuit fault	Open or short in SP2 circuit	Y		ON	DTC Stored
P0748	Pressure Control Solenoid "A" Circuit Fault (SL1)	Open or short in SL1 circuit	Y		ON	DTC Stored
P0751	Shift Solenoid "A" Performance (S1)	Mechanical malfunction in S1 hydraulic circuit		Y	ON	DTC Stored
P0756	Shift Solenoid "B" Performance (S2)	Mechanical malfunction in S2 hydraulic circuit		Y	ON	DTC Stored
P0771	Shift Solenoid "E" Performance (SR)	Mechanical malfunction in SR hydraulic circuit		Y	ON	DTC Stored
P0776	Pressure Control Solenoid "B" performance Fault (SL2)	Mechanical malfunction SL2 hydraulic circuit		Y	ON	DTC Stored
P0778	Pressure Control Solenoid "B" electrical Fault (SL2)	Open or short in SL2 electrical circuit	Y		ON	DTC Stored
P0781	1-2 Shift valve mechanical fault	Mechanical malfunction related to the 1-2 Shift Valve being stuck		Y	ON	DTC Stored

Figure 18



Technical Service Information

DIAGNOSTIC TROUBLE CODE DESCRIPTIONS

DTC	DESCRIPTION	TROUBLE AREAS	E	M	MIL-1	MIL-2
P0818	Driveline Disconnect Switch Input Circuit	Short in No.2 Transfer case indicator switch.	Y		ON	DTC Stored
P0973	Shift Solenoid “A” control circuit Low (S1)	Short in S1 electrical circuit	Y		ON	DTC Stored
P0974	Shift Solenoid “A” control circuit High (S1)	Open in S1 electrical circuit	Y		ON	DTC Stored
P0976	Shift Solenoid “B” control circuit Low (S2)	Short in S2 electrical circuit	Y		ON	DTC Stored
P0977	Shift Solenoid “B” control circuit High (S2)	Open in S2 electrical circuit	Y		ON	DTC Stored
P0985	Shift Solenoid “E” control circuit Low (SR)	Short in SR electrical circuit	Y		ON	DTC Stored
P0986	Shift Solenoid “E” control circuit High (SR)	Open in SR electrical circuit	Y		ON	DTC Stored
P2714	Pressure Control Solenoid “D” performance Fault (SLT)	Mechanical malfunction SLT hydraulic circuit		Y	ON	DTC Stored
P2716	Pressure Control Solenoid “D” electrical Fault (SLT)	Open or short in SLT electrical circuit	Y		ON	DTC Stored
P2740	Transmission Fluid Temp. Sensor “B” Circuit Low Input	Open or Short in No.2 Temp sensor circuit	Y		ON	DTC Stored
P2742	Transmission Fluid Temp. Sensor “B” Circuit Low Input	Short in No.2 Temp sensor circuit	Y		ON	DTC Stored
P2743	Transmission Fluid Temp. Sensor “B” Circuit High Input	Open in No.2 Temp sensor circuit	Y		ON	DTC Stored

Figure 19



Technical Service Information

DIAGNOSTIC TROUBLE CODE DESCRIPTIONS

DTC	DESCRIPTION	TROUBLE AREAS	E	M	MIL-1	MIL-2
P2757	TCC Control Solenoid performance Fault (SLU)	Mechanical malfunction SLU hydraulic circuit TCC slip		Y	ON	DTC Stored
P2759	TCC Control Solenoid Electrical Fault (SLU)	Open or short in SLU electrical circuit	Y		ON	DTC Stored
P2772	Transfer “L4” Switch electrical circuit	Short in No.1 transfer L4 indicator switch	Y		ON	DTC Stored

Figure 20

TRANSMISSION FLUID CHECK AND CAPACITY

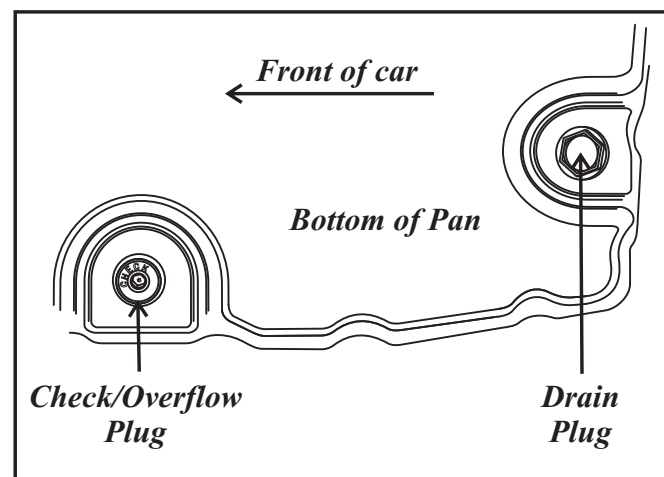
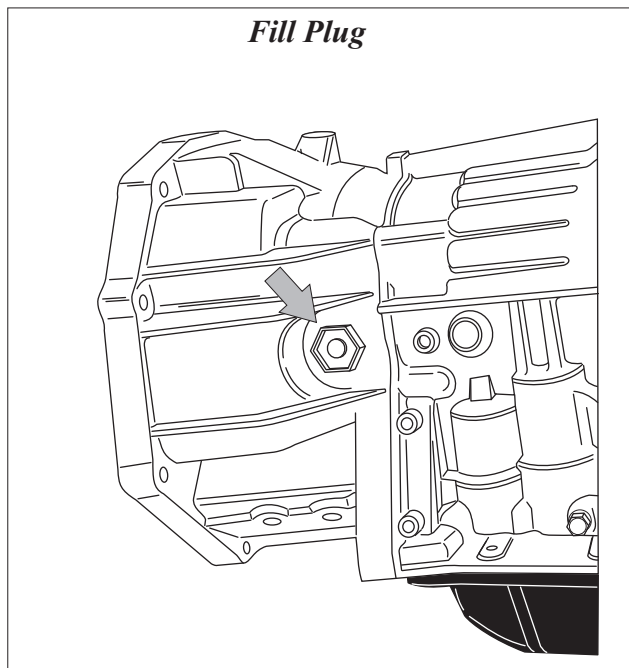
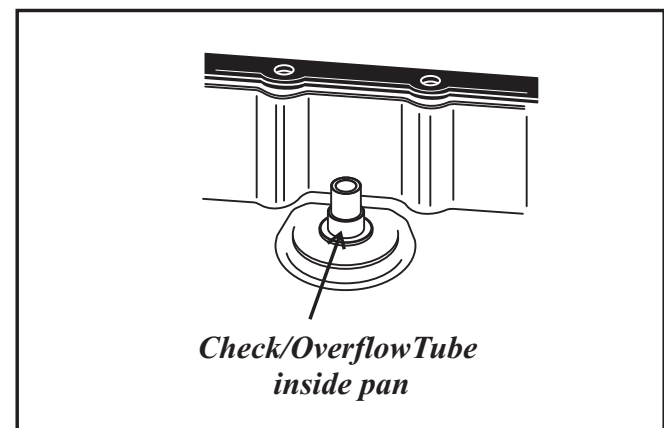
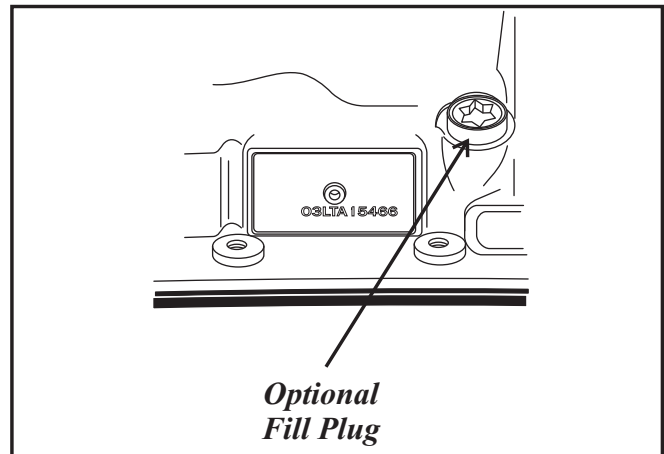
The A750E/F transmission does not utilize a conventional filler tube and dip stick for checking the fluid level. Looking at the bottom of the pan you will find two plugs one of which is marked as "check". The other is a drain plug.

Looking inside the pan, you can see that on the other side of this check plug is a check pipe. Fluid is to be filled until the level is high enough to run over and out of the check pipe.

To fill the transmission, there are two options. Remove the 24mm fill plug on the passenger side rear of the case, marked with a "WS" and fill the trans or, there is also a 55 torx head bolt at the rear of the case on the drivers side of the vehicle which can also be used to fill the transmission as well.

This transmission utilizes a "WS" designated fluid and on a dry fill it will require 11 quarts (10.9L). 3.2 quarts (3.0L) on a drain and refill.

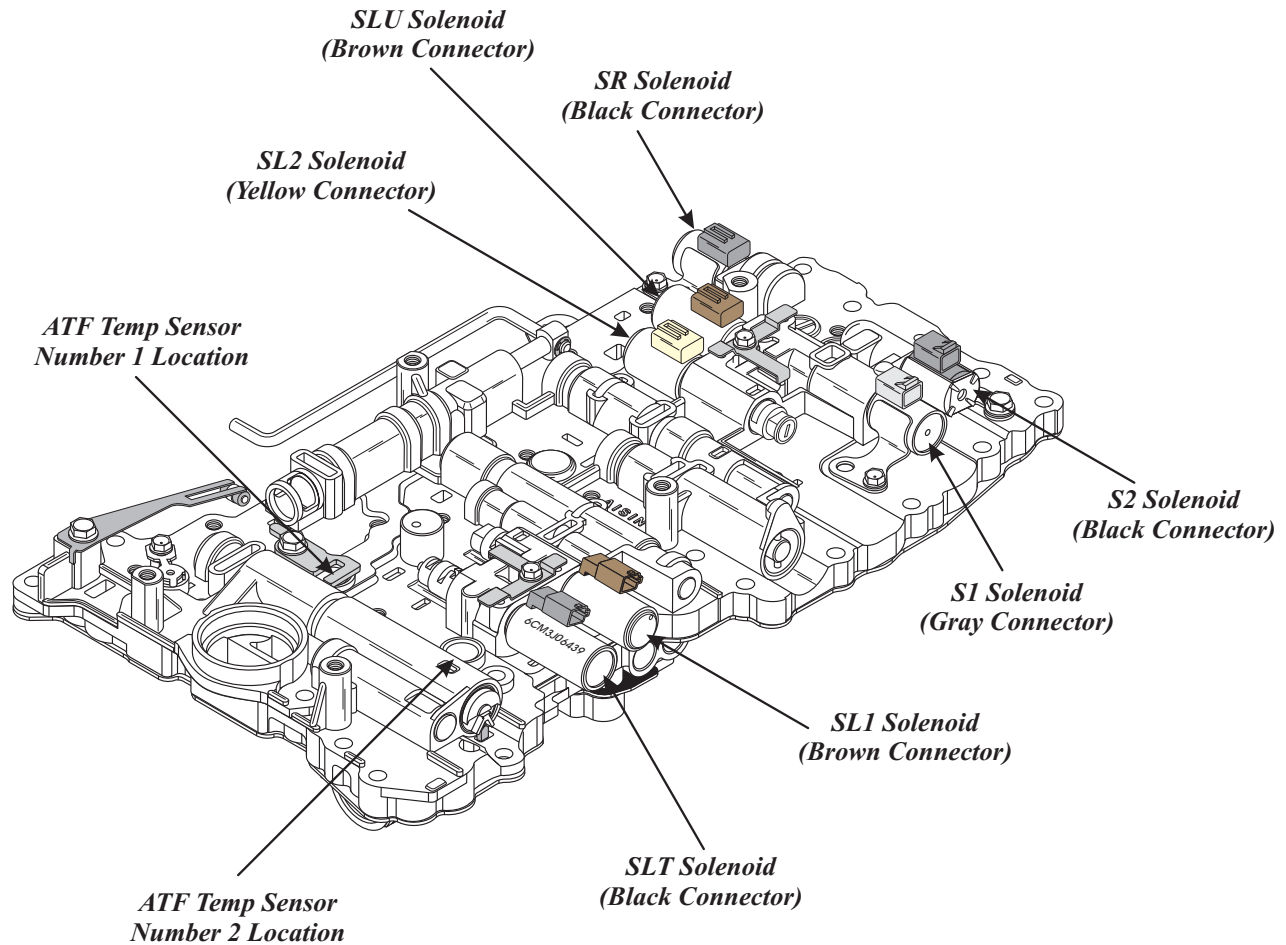
Note: The transmission fluid must be up to operating temperature when topping off. Oil overflow should be the thickness of a strand of spaghetti, when the level is correct.



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Figure 21

TOYOTA 750 SOLENOID IDENTIFICATION AND LOCATION

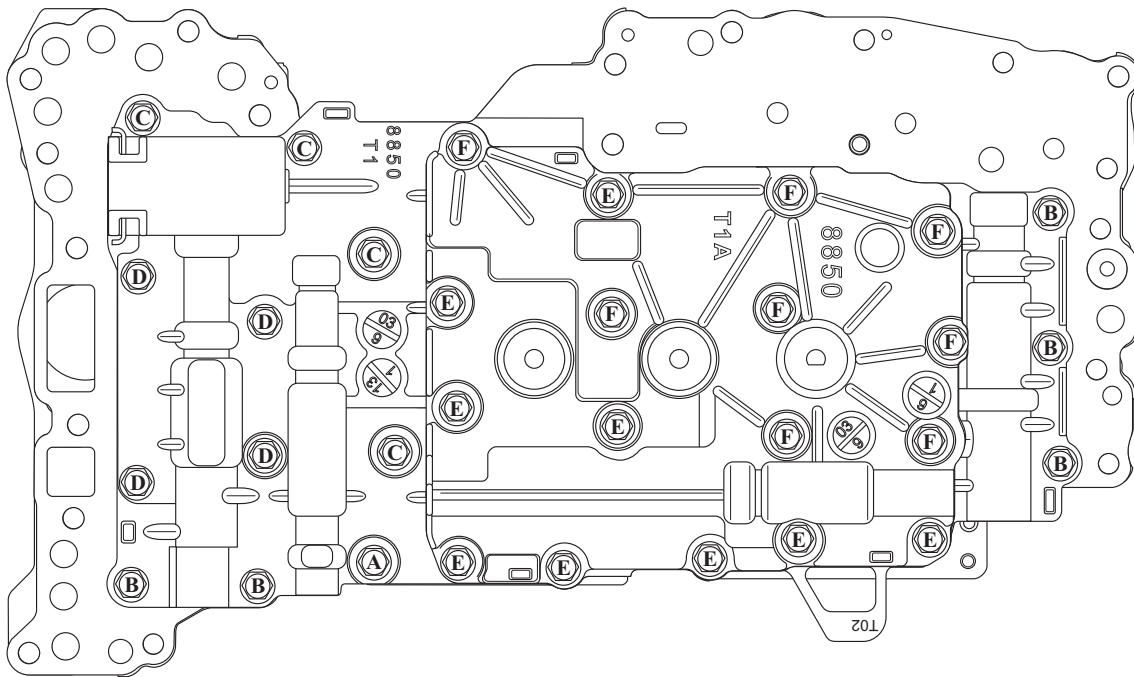


Valve Body Disassembly

All valve body bolts that hold the assembly together are removed from the upper side of the assembly, as shown in Figure 23. There are six different lengths of valve body bolts, as shown in Figure 23. The assembly bolts identified with letters "E" and "F" should be removed first. This will allow you to remove the upper valve body cover and spacer plate, as shown in Figure 28. Remove the upper valve body cover and spacer plate while holding them together, to prevent any of the 8 check balls in the cover from escaping and getting lost.

Remove the bolts identified with letters "A", "B", "C", and "D" to separate the remaining three pieces, as shown in Figure 24. Remove the upper valve body and transfer plate spacer plate while holding them together, to prevent any of the 10 check balls in the upper valve body from escaping and getting lost.

TOYOTA 750 VALVE BODY BOLT IDENTIFICATION AND LOCATION

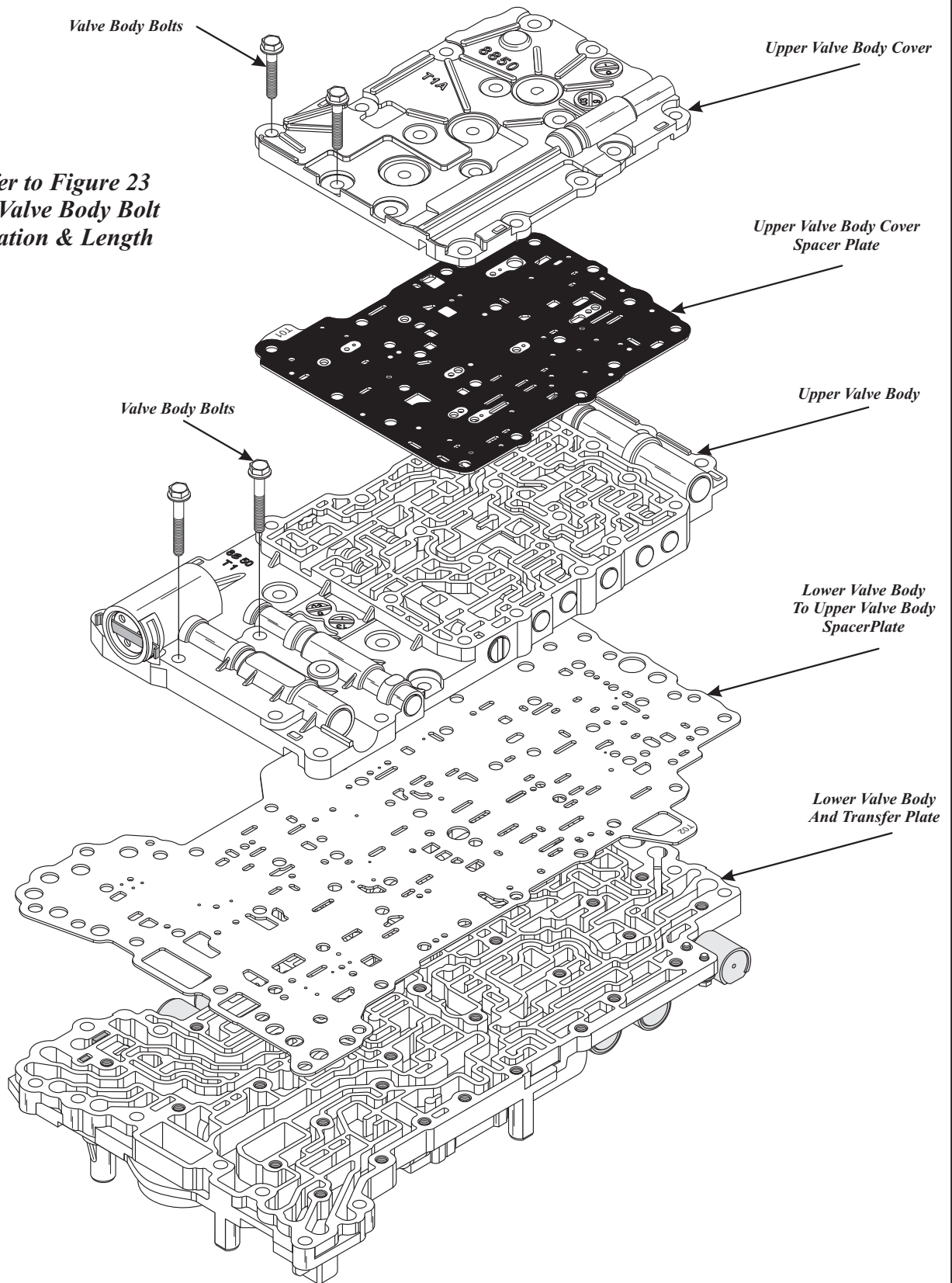


Letter "A" = 20 mm (0.787") in length (1 Required).
 Letter "B" = 24.5 mm (0.964") in length (5 Required).
 Letter "C" = 25 mm (0.984") in length (4 Required).
 Letter "D" = 32 mm (1.259") in length (4 Required).
 Letter "E" = 39.4 mm (1.551") in length (9 Required).
 Letter "F" = 44.4 mm (1.748") in length (8 Required).

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Figure 23

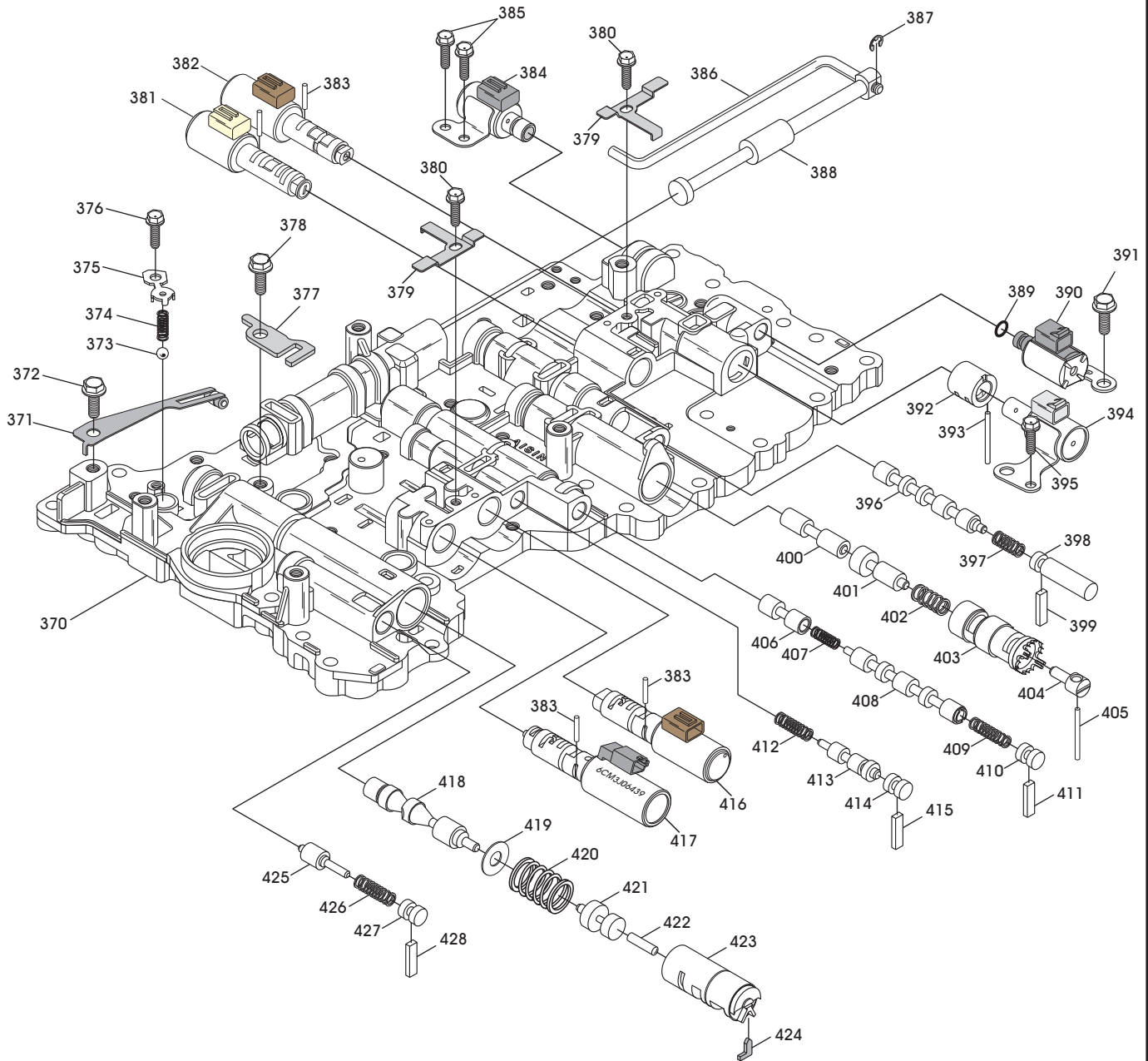
*Refer to Figure 23
For Valve Body Bolt
Location & Length*



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Figure 24

TRANSFER PLATE & LOWER VALVE BODY EXPLODED VIEW



See Figure 26 For Legend

See Figure 29 For Spring Specifications

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Figure 25

AUTOMATIC TRANSMISSION SERVICE GROUP



Technical Service Information

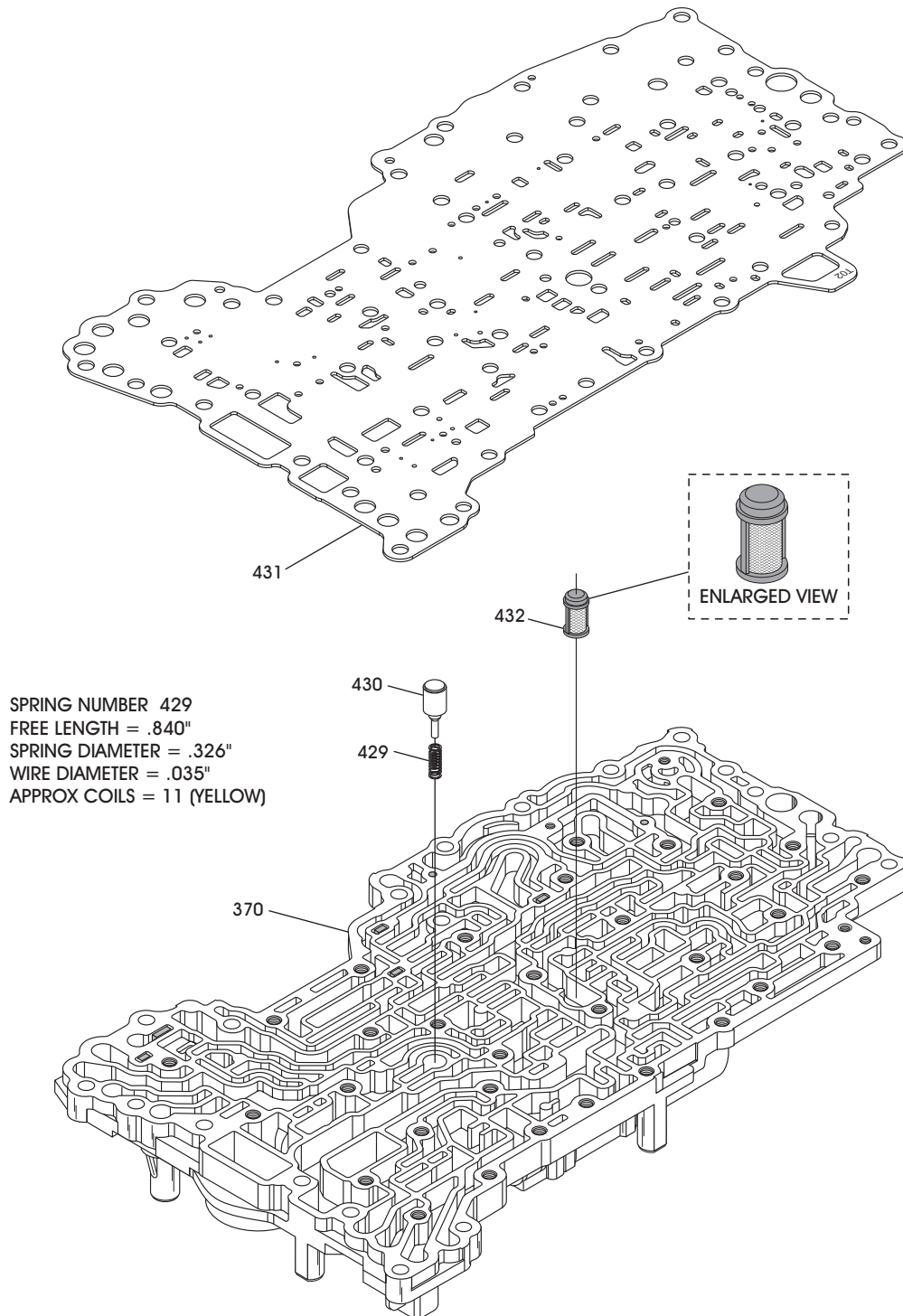
TRANSFER PLATE & LOWER VALVE BODY LEGEND

370 TRANSFER PLATE & LOWER VALVE BODY CASTING.	400 ACCUMULATOR REGULATOR VALVE.
371 INSIDE DETENT SPRING.	401 ACCUMULATOR REGULATOR BOOST VALVE.
372 DETENT SPRING RETAINING BOLT.	402 ACCUMULATOR REGULATOR VALVE SPRING.
373 LINE PRESSURE BLOW-OFF BALL, 8.0 MM (.315") DIAMETER	403 ACCUMULATOR REGULATOR VALVE ADJUSTABLE SLEEVE.
374 LINE PRESSURE BLOW-OFF BALL SPRING.	404 ADJUSTABLE SLEEVE PLUG.
375 LINE PRESSURE BLOW-OFF BALL SPRING RETAINER.	405 ADJUSTABLE SLEEVE PLUG RETAINING PIN.
376 LINE PRESSURE BLOW-OFF BALL RETAINING BRACKET BOLT.	406 CLUTCH APPLY CONTROL "INNER" VALVE.
377 FLUID TEMPERATURE SENSOR NO. 1 RETAINER.	407 CLUTCH APPLY CONTROL "INNER" SPRING.
378 FLUID TEMPERATURE SENSOR NO. 1 RETAINING BOLT.	408 CLUTCH APPLY CONTROL "OUTER" VALVE.
379 SOLENOID PIN RETAINING BRACKET (2 REQUIRED).	409 CLUTCH APPLY CONTROL "OUTER" SPRING.
380 SOLENOID PIN RETAINING BRACKET BOLT (2 REQUIRED).	410 CLUTCH APPLY CONTROL VALVE BORE PLUG.
381 SL2 "BRAKE" SOLENOID (YELLOW CONN.).	411 CLUTCH APPLY CONTROL VALVE BORE PLUG RETAINER.
382 SLU "TCC" SOLENOID (BROWN CONN.).	412 CLUTCH CONTROL VALVE SPRING.
383 SOLENOID RETAINING PINS (4 REQUIRED).	413 CLUTCH CONTROL VALVE.
384 SR "3-WAY" SOLENOID (BLACK CONN.)	414 CLUTCH CONTROL VALVE BORE PLUG.
385 SR SOLENOID RETAINING BOLTS (2 REQUIRED).	415 CLUTCH CONTROL VALVE BORE PLUG RETAINER.
386 MANUAL VALVE LINK.	416 SL1 "CLUTCH" SOLENOID (BROWN CONN.).
387 MANUAL VALVE LINK RETAINING "E" CLIP.	417 SLT "LINE PRESSURE" SOLENOID (BLACK CONN.).
388 MANUAL VALVE.	418 PRIMARY PRESSURE REGULATOR VALVE.
389 S2 "2-WAY" SOLENOID "O" RING.	419 PRIMARY PRESSURE REGULATOR SPRING SEAT.
390 S2 "2-WAY" SOLENOID (BLACK CONN.).	420 PRIMARY PRESSURE REGULATOR SPRING.
391 S2 "2-WAY" SOLENOID RETAINING BOLT.	421 PRIMARY PRESSURE REGULATOR BOOST VALVE.
392 S1 "3-WAY" SOLENOID SLEEVE.	422 PRIMARY PRESSURE REGULATOR BOOST VALVE PLUG.
393 S1 "3-WAY" SOLENOID SLEEVE RETAINING PIN.	423 PRIMARY PRESSURE REGULATOR BOOST VALVE SLEEVE.
394 S1 "3-WAY" SOLENOID (GRAY CONN.).	424 BOOST VALVE SLEEVE RETAINER.
395 S1 "3-WAY" SOLENOID RETAINING BOLT.	425 SLT "LINE" DAMPER VALVE.
396 SEQUENCE VALVE.	426 SLT "LINE" DAMPER VALVE SPRING.
397 SEQUENCE VALVE SPRING.	427 SLT "LINE" DAMPER VALVE BORE PLUG.
398 SEQUENCE VALVE BORE PLUG.	428 SLT "LINE" DAMPER VALVE BORE PLUG RETAINER.
399 SEQUENCE VALVE BORE PLUG RETAINER.	

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Figure 26

TRANSFER PLATE UPPER SIDE EXPLODED VIEW

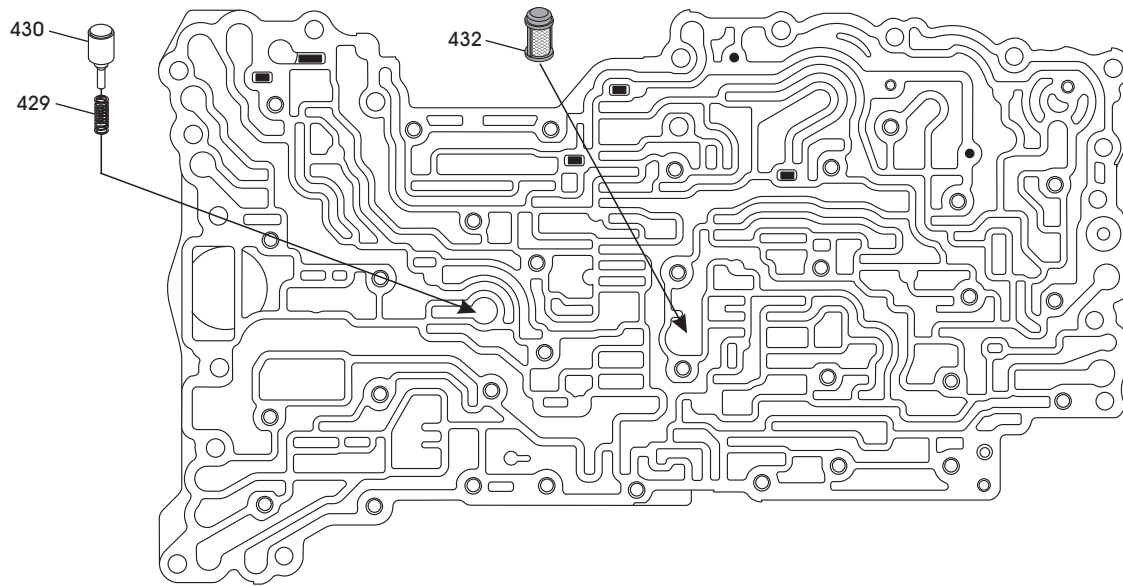


- 370 TRANSFER PLATE CASTING.
- 429 COOLER RELIEF CHECK VALVE SPRING.
- 430 COOLER RELIEF CHECK VALVE.
- 431 TRANSFER PLATE TO UPPER VALVE BODY SPACER PLATE.
- 432 SOLENOID FEED SCREEN.

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Figure 27

TRANSFER PLATE RETAINER AND SMALL PARTS LOCATIONS



● = Retaining Pin Locations
 ■ = Retainer Locations

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Figure 28

TRANSFER PLATE OBSERVED SPRING SPECIFICATIONS

SPRING NUMBER 374
 FREE LENGTH = .710"
 SPRING DIAMETER = .308"
 WIRE DIAMETER = .043"
 APPROX COILS = 9 (BLUE)

SPRING NUMBER 397
 FREE LENGTH = 1.000"
 SPRING DIAMETER = .390"
 WIRE DIAMETER = .032"
 APPROX COILS = 7 (RED)

SPRING NUMBER 402
 FREE LENGTH = .855"
 SPRING DIAMETER = .329"
 WIRE DIAMETER = .027"
 APPROX COILS = 8 (VIOLET)

SPRING NUMBER 407
 FREE LENGTH = .930"
 SPRING DIAMETER = .254"
 WIRE DIAMETER = .019"
 APPROX COILS = 10 (NONE)

SPRING NUMBER 409
 FREE LENGTH = 1.142"
 SPRING DIAMETER = .298"
 WIRE DIAMETER = .029"
 APPROX COILS = 12 (WHITE)

SPRING NUMBER 412
 FREE LENGTH = .790"
 SPRING DIAMETER = .329"
 WIRE DIAMETER = .027"
 APPROX COILS = 8 (YELLOW)

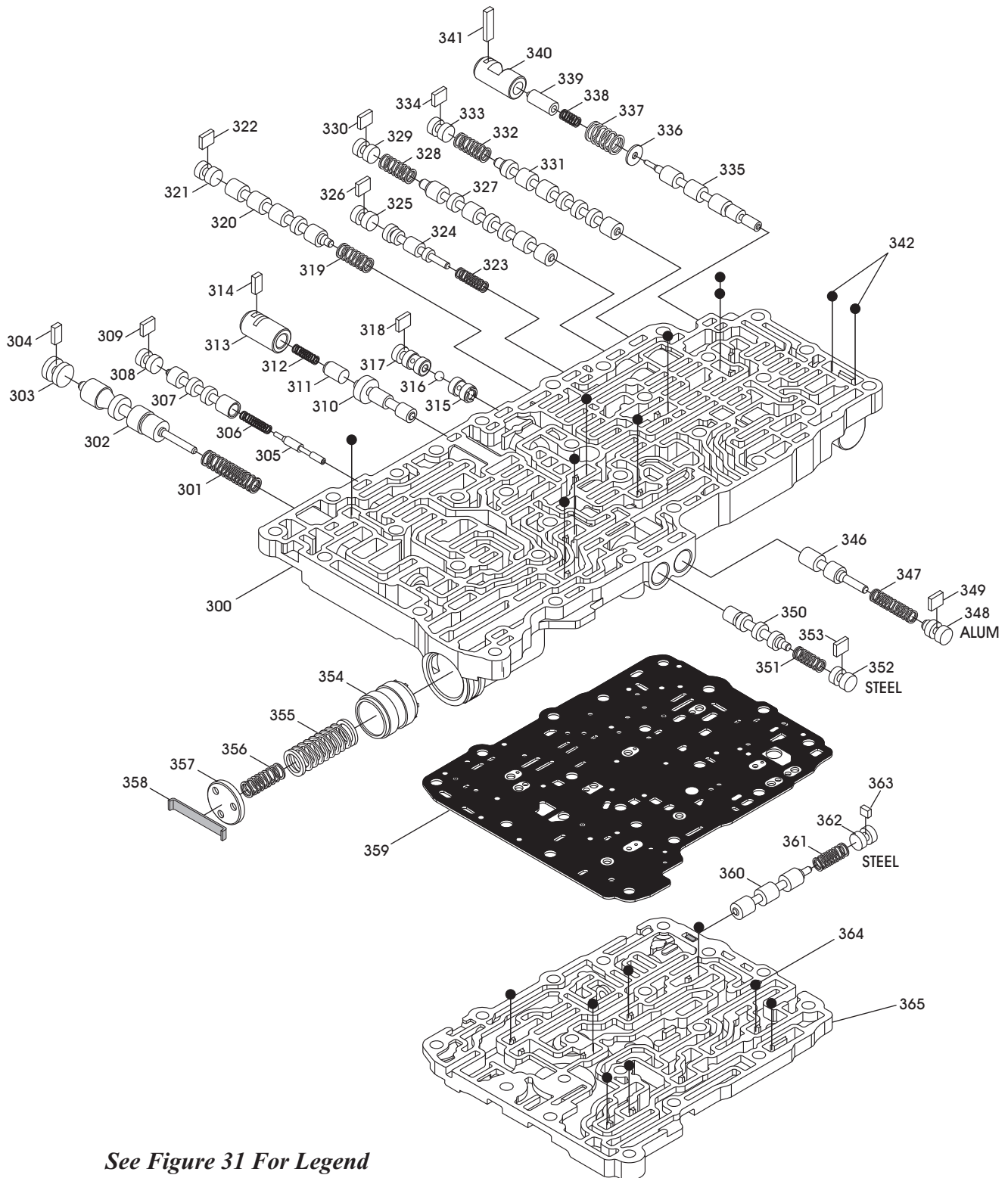
SPRING NUMBER 420
 FREE LENGTH = .1.465"
 SPRING DIAMETER = .865"
 WIRE DIAMETER = .067"
 APPROX COILS = 6 (NONE)

SPRING NUMBER 426
 FREE LENGTH = .1.477"
 SPRING DIAMETER = .418"
 WIRE DIAMETER = .050"
 APPROX COILS = 11 (NONE)

SPRING NUMBER 429
 FREE LENGTH = .840"
 SPRING DIAMETER = .326"
 WIRE DIAMETER = .035"
 APPROX COILS = 11 (YELLOW)

Figure 29

UPPER VALVE BODY AND COVER EXPLODED VIEW



See Figure 31 For Legend

See Figure 32 For Check Ball Locations

See Figure 33 For Spring Specifications

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Figure 30

FIGURE 5 LEGEND

300 UPPER VALVE BODY CASTING.	335 B1 APPLY CONTROL VALVE.
301 SECONDARY PRESSURE REGULATOR VALVE SPRING.	336 B1 APPLY CONTROL VALVE SPRING SEAT.
302 SECONDARY PRESSURE REGULATOR VALVE.	337 B1 APPLY CONTROL VALVE SPRING.
303 ALUMINUM BORE PLUG.	338 B1 APPLY CONTROL BOOST VALVE SPRING.
304 SHORT BORE PLUG RETAINER.	339 B1 APPLY CONTROL BOOST VALVE.
305 LOCK-UP RELAY "INNER" VALVE.	340 B1 APPLY CONTROL BOOST VALVE SLEEVE.
306 LOCK-UP RELAY VALVE SPRING.	341 B1 APPLY CONTROL BOOST VALVE SLEEVE RETAINER.
307 LOCK-UP RELAY VALVE.	342 5.5 MM (.216") DIA. VITON CHECK BALLS (10 REQ. IN V.B.)
308 STEEL BORE PLUG.	346 SOLENOID MODULATOR VALVE.
309 BORE PLUG RETAINER.	347 SOLENOID MODULATOR VALVE SPRING.
310 LOCK-UP CONTROL VALVE.	348 SOLENOID MODULATOR VALVE ALUMINUM BORE PLUG.
311 LOCK-UP CONTROL BOOST VALVE.	349 SOLENOID MODULATOR VALVE BORE PLUG RETAINER.
312 LOCK-UP CONTROL BOOST VALVE SPRING.	350 CLUTCH LOCK VALVE.
313 LOCK-UP CONTROL BOOST VALVE SLEEVE.	351 CLUTCH LOCK VALVE SPRING.
314 LOCK-UP CONTROL BOOST SLEEVE RETAINER	352 CLUTCH LOCK VALVE STEEL BORE PLUG.
315 INNER CHECK BALL SEAT (C3).	353 CLUTCH LOCK VALVE BORE PLUG RETAINER.
316 STEEL SHUTTLE BALL (.250" DIAMETER).	354 B1 ACCUMULATOR PISTON.
317 OUTER CHECK BALL SEAT.	355 B1 ACCUMULATOR PISTON OUTER SPRING.
318 OUTER CHECK BALL SEAT RETAINER.	356 B1 ACCUMULATOR PISTON INNER SPRING.
319 3-4 SHIFT VALVE SPRING.	357 B1 ACCUMULATOR VENTED BORE PLUG.
320 3-4 SHIFT VALVE.	358 B1 ACCUMULATOR BORE PLUG RETAINER.
321 3-4 SHIFT VALVE BORE PLUG.	359 UPPER V.B. COVER TO UPPER V. B. SPACER PLATE (ID "T01").
322 3-4 SHIFT VALVE BORE PLUG RETAINER.	360 COAST BRAKE RELAY VALVE.
323 BRAKE CONTROL VALVE SPRING.	361 COAST BRAKE RELAY VALVE SPRING.
324 BRAKE CONTROL VALVE.	362 COAST BRAKE RELAY VALVE STEEL BORE PLUG.
325 BRAKE CONTROL VALVE BORE PLUG.	363 COAST BRAKE RELAY VALVE BORE PLUG RETAINER.
326 BRAKE CONTROL VALVE BORE PLUG RETAINER.	364 5.5 MM (.216") DIAMETER CHECK BALLS (8 REQ. IN COVER).
327 2-3 SHIFT VALVE.	
328 2-3 SHIFT VALVE SPRING.	
329 2-3 SHIFT VALVE BORE PLUG.	
330 2-3 SHIFT VALVE BORE PLUG RETAINER.	
331 1-2 SHIFT VALVE.	
332 1-2 SHIFT VALVE SPRING.	
333 1-2 SHIFT VALVE BORE PLUG.	
334 1-2 SHIFT VALVE BORE PLUG RETAINER.	

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Figure 31

UPPER VALVE BODY AND COVER CHECK BALL & RETAINER LOCATIONS

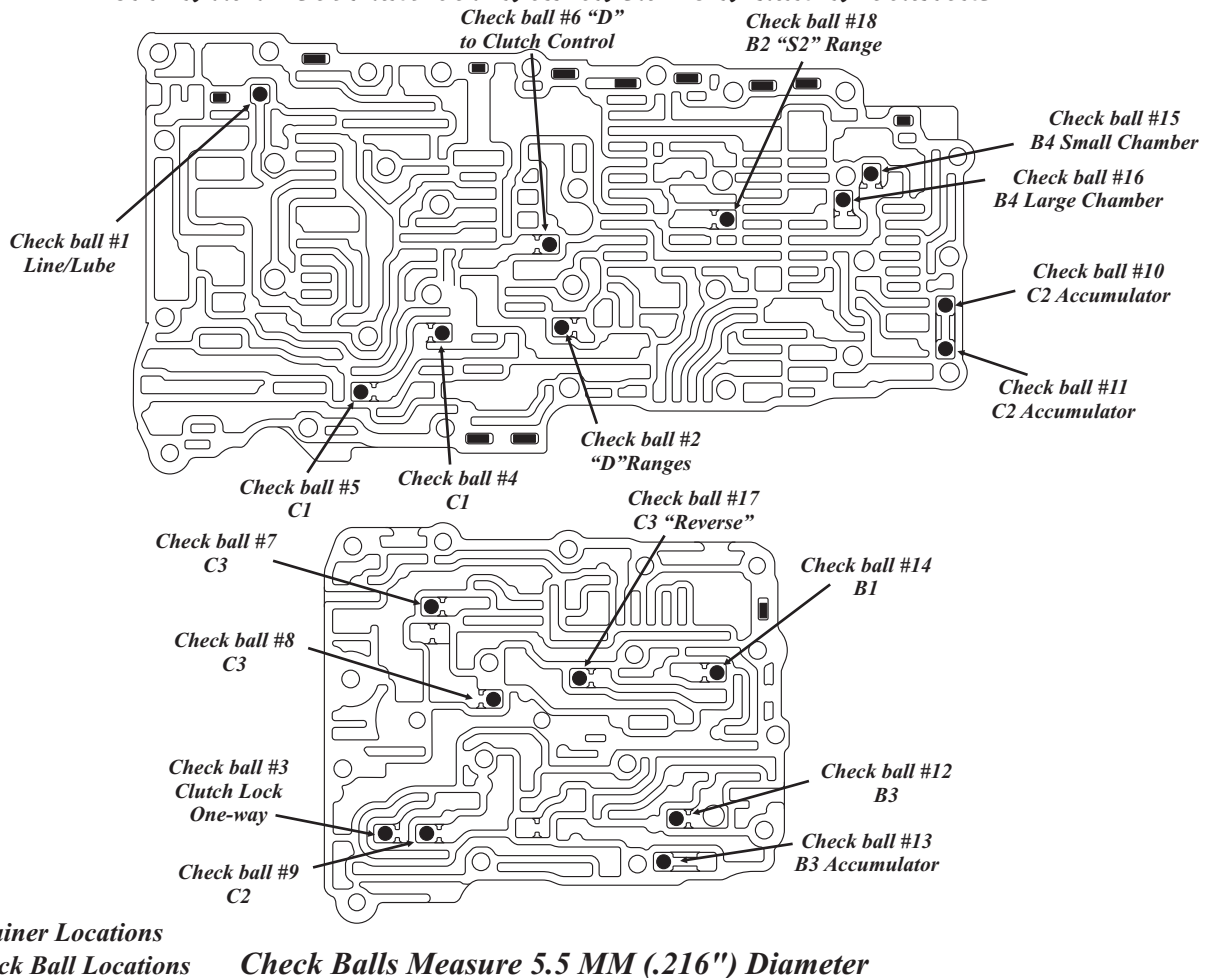


Figure 32

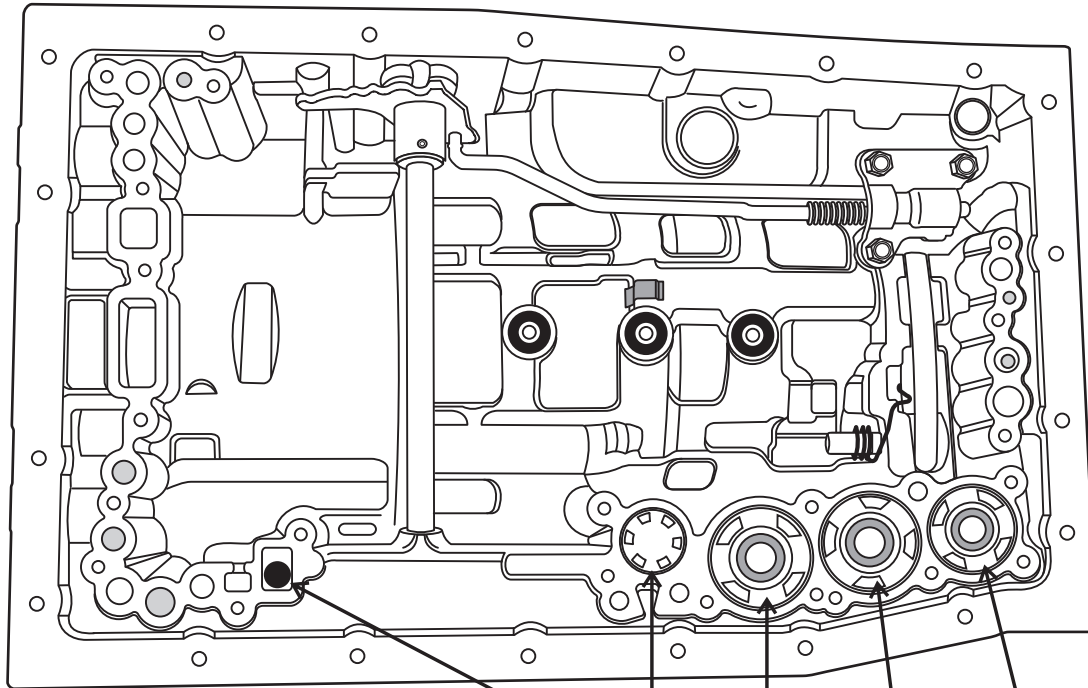
UPPER VALVE BODY AND COVER OBSERVED SPRING SPECIFICATIONS

<p>SPRING NUMBER 301 FREE LENGTH = 1.370" SPRING DIAMETER = .355" WIRE DIAMETER = .046" APPROX COILS 14 = (ORANGE)</p> <p>SPRING NUMBER 306 FREE LENGTH = .930" SPRING DIAMETER = .235" WIRE DIAMETER = .024" APPROX COILS 8 = (RED)</p> <p>SPRING NUMBER 312 FREE LENGTH = .820" SPRING DIAMETER = .220" WIRE DIAMETER = .030" APPROX COILS 10 = (YELLOW)</p> <p>SPRING NUMBER 319 FREE LENGTH = 1.007" SPRING DIAMETER = .389" WIRE DIAMETER = .031" APPROX COILS 7 = (RED)</p>	<p>SPRING NUMBER 323 FREE LENGTH = .710" SPRING DIAMETER = .256" WIRE DIAMETER = .027" APPROX COILS 10 = (NONE)</p> <p>SPRING NUMBER 328 FREE LENGTH = 1.000" SPRING DIAMETER = .388" WIRE DIAMETER = .031" APPROX COILS 7 = (RED)</p> <p>SPRING NUMBER 332 FREE LENGTH = 1.000" SPRING DIAMETER = .388" WIRE DIAMETER = .031" APPROX COILS 7 = (RED)</p> <p>SPRING NUMBER 337 FREE LENGTH = .548" SPRING DIAMETER = .256" WIRE DIAMETER = .021" APPROX COILS 6 = (NONE)</p>	<p>SPRING NUMBER 338 FREE LENGTH = .738" SPRING DIAMETER = .464" WIRE DIAMETER = .027" APPROX COILS 6 = (NONE)</p> <p>SPRING NUMBER 347 FREE LENGTH = 1.690" SPRING DIAMETER = .432" WIRE DIAMETER = .054" APPROX COILS 13 = (PINK)</p> <p>SPRING NUMBER 351 FREE LENGTH = 1.280" SPRING DIAMETER = .370" WIRE DIAMETER = .021" APPROX COILS 8 = (NONE)</p> <p>SPRING NUMBER 355 FREE LENGTH = 1.815" SPRING DIAMETER = .673" WIRE DIAMETER = .094" APPROX COILS 10 = (NONE)</p>	<p>SPRING NUMBER 356 FREE LENGTH = 1.197" SPRING DIAMETER = .408" WIRE DIAMETER = .063" APPROX COILS 14 = (NONE)</p> <p>SPRING NUMBER 361 FREE LENGTH = 1.049" SPRING DIAMETER = .320" WIRE DIAMETER = .027" APPROX COILS 10 = (LT GREEN)</p>
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Figure 33

ACCUMULATOR & SPRING ID



C1 Accumulator Spring

Inner Spring

Free Length	Outer Diameter	Color
1.200"	.448"	Violet

Outer Spring

Free Length	Outer Diameter	Color
1.930"	.650"	Lt.Green

C3 Accumulator Spring

Inner Spring

Free Length	Outer Diameter	Color
1.730"	.650"	Green

Outer Spring

Free Length	Outer Diameter	Color
2.860"	.782"	Red

B3 Accumulator Spring

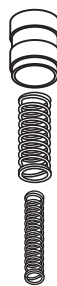
Free Length	Outer Diameter	Color
2.780"	.773"	Purple

C2 Accumulator Spring

Free Length	Outer Diameter	Color
2.428"	.624"	White



C1



C3



B3



C2



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Figure 34

Case Passages

