

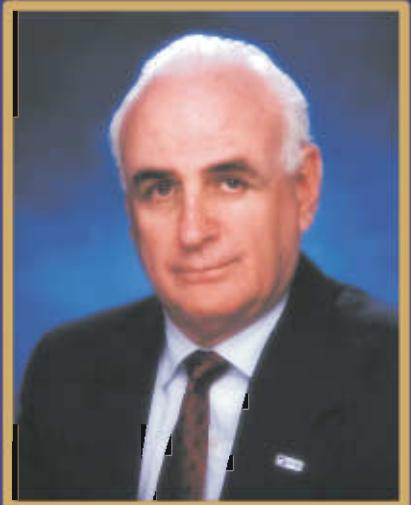
ATSG

AUTOMATIC TRANSMISSION SERVICE GROUP

"GREAT TECH AGAIN"
IN 2010

Pump

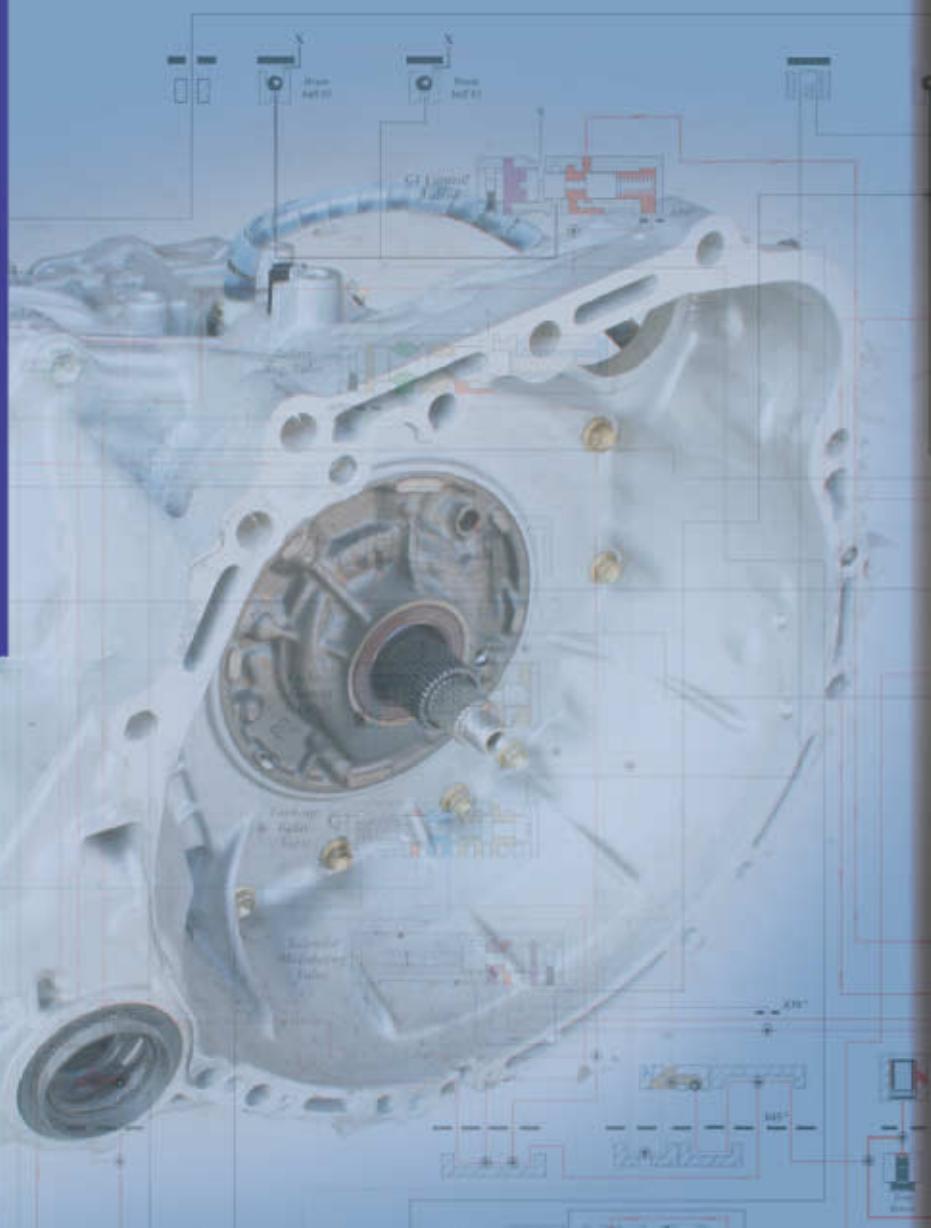
In Memory Of



Robert D Cherrnay



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"Great Tech Again in 2010" Seminar Information

ATSG Seminars

Bob Cherrnay in many ways was a real pioneer in the Transmission Industry such as conducting seminars in various cities year after year sharing technical information to help rebuilders. The product he was peddling was technical information which every one needed. He developed the Complaint, Cause and Correction format that ATSG is known for and others have copied. He also used videos in his seminar presentation as far back as the 1980's. And his legacy lives on as ATSG continues to produce technical information that techs need today to diagnose and repair automatic transmissions. Especially in a time where many manufacturers have decided to hold back their information from the aftermarket. We continue year after year producing manuals, bulletins and seminars with information that cannot be found anywhere else. The techs that are in the "know," knows that ATSG is an unparalleled source of technical information world wide. And it all started with Bob Cherrnay, an icon in our industry. And in dedicating this year's seminar in the memory of Bob, we thank you for attending the seminar where we once again provided information that will help you in your shop the very next working day. And as Bob would say, it helps to belong to a tech service, but belong to a tech service that helps....ATSG, we are the tech service that helps. It is your key to technical success.

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GERALD CAMPBELL
TECHNICAL CONSULTANT

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ED KRUSE
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GREGORY LIPNICK
TECHNICAL CONSULTANT

DAVID CHALKER
TECHNICAL CONSULTANT

GREG CATANZARO
TECHNICAL CONSULTANT

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P: **Can LUBEGARD quiet noisy lifters?**

S: Yes! —That is one of the biggest selling points for the LUBEGARD Biotech Engine Oil Protectant.



P: **Can I increase the mileage between oil changes if I use LUBEGARD BIO-TECH Engine Oil Protectant?**

S: LUBEGARD Bio-Tech Engine Oil Protectant will improve the oxidative stability of a regular GF-4 engine oil by 30%, allowing greater mileage accumulation between oil changes. However results can vary depending on multiple factors, such as driving conditions, base oil used, etc. In combination with other LUBEGARD products some have seen up to a 10% increase in MPG! Frequent physical observation (oil analysis) of the condition of the oil is needed to tell when your oil should be changed, if you do not follow the recommended service intervals found in the vehicles owners manual.



P: **Radiator Warranty Claims**

S: KOOL-IT Supreme Coolant Treatment is known to dramatically reduce warranty claims with radiators & water pumps! Some have even reported no comebacks and others up to a 78% drop!



P: **My automatic transmission has a stuck valve or solenoid is there anything I can add that will free it up?**

S: LUBEGARD ATF Protectants & Supplements are unique for their ability to free stuck valves as well as free up and lubricate solenoids.



P: **My differential runs hot, will LUBEGARD Gear Fluid Supplement reduce temperatures?**

S: LUBEGARD Gear Fluid Supplement will lower temperatures by improving heat transfer from the fluid to the case wall of final drives and gear boxes while at the same time imparting improved thermal and oxidative stability to the gear oil.



P: **My power steering pump is noisy, what can I do?**

S: LUBEGARD Power Steering Fluid Protectant is used by many professionals as a specific solution to quiet noisy power steering pumps.



P: **I'm experiencing torque converter shudder.**

S: We recommend that you use the LUBEGARD ATF Protectant. This is best for long term benefits and your transmission. It is also the only ATF Protectant approved for use by multiple OEMS. Dr. Tranny Instant Shudder Fixx is a great product however it is a quick fix and does not contain the patented LX Technology which is needed for a long lasting transmission.



P: **Many of my brake job comebacks are related to noises.**

S: Squeak Relief Brake Finishing Treatment eliminates customer broke squeal comebacks by providing superior noise suppression.



P: **I ream a lot of valve bodies when I rebuild them. Do you have a high performance tapping / reaming oil that will make my cutters last and will not give me dermatitis or rashes?**

S: LUBEGARD Bio-TAP Tapping Oil is a high performance biodegradable and water washable tapping oil that is used for tapping, drilling and reaming. It is proven to extend equipment life. And it is non-chlorinated, non-petroleum formulation will extend tool life and will not promote dermatological problems for you.



P: **My air conditioning smells bad when I turn it on.**

S: KOOL-IT Evaporator Foam Cleaner is an easy to use foam cleaner that will quickly clean and deodorize the air conditioning and heater ducting of your car or truck.



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HONDA BMXA/SLXA P0740, LOCKUP CONTROL SYSTEM FAULT

COMPLAINT: Either before or after overhaul a 2000-2005 Honda Civic with the BMXA/SLXA transmission may store a P0740 code indicating a mechanical converter clutch slip.

CAUSE: The lock-up shift valve bore plug was installed backwards. This mis-positions the valve, (Refer to Figure 1), which creates a leak in the lock-up apply circuit causing the converter clutch to slip.

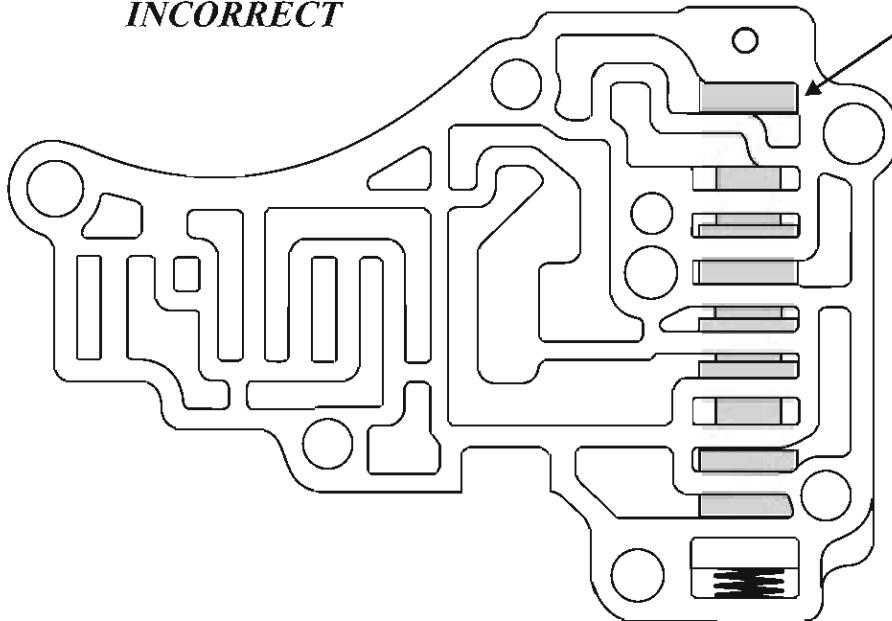
CORRECTION: Install the lock-up shift valve bore plug as shown in Figure 2, the difference in the lock-up shift valve position when the bore plug is installed correctly can be seen when compared to the incorrect position seen in Figure 1.

Note: A P0740 code can also be stored by leaking bore plugs, Sonnax® produces bore plugs with o-rings on them as well as interference plugs for the bore plugs that cannot have o-ring due to their design.

If the Sonnax® bore plugs cannot be obtained, at the very least, cut a ridge in the bore plug with a tubing cutter but be sure to not push the bore plugs too far into the bore. The same is true with CPC bore plugs. If they are too far into the bore, they increase spring tension which causes a variety of shift complaints.

HONDA BMXA/SLXA P0740, LOCKUP CONTROL SYSTEM FAULT

INCORRECT

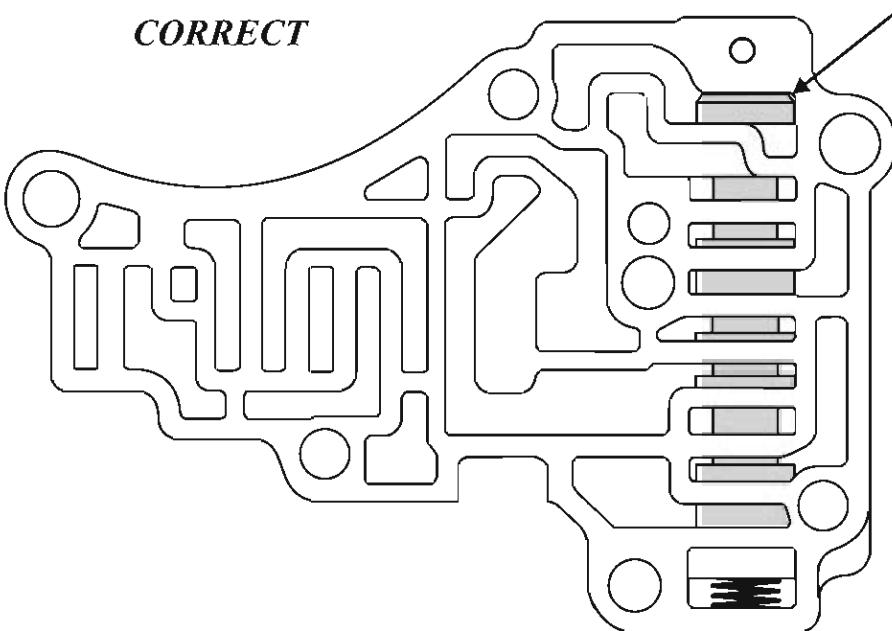


The bore plug is installed backwards allowing the lock-up timing valve to be positioned too close to the bore plug

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Figure 1

CORRECT



The bore plug is installed correctly so that the end of the valve can be seen

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Figure 2

AUDI 01J CVT FORWARD CLUTCH DRUM AND PULLEY ASSEMBLY/DISASSEMBLY UPDATE

Forward clutch updated assembly setup:

Forward and reverse friction clutch clearance is critical. Originally these units come with a six friction stack up. There was an update that increased the stack up to 7 friction trapezoid design plates. The 7 friction update is for 4 cylinder diesel or larger engines, the previous 6 friction assembly still applies to 4 cylinder 2.0 or smaller gas engines with trapezoid plates. The part numbers for the tools to set up the forward clutch are (seen in figure 1):

Assembly tool T10219/1

4 Calipers..... T40101

2 Rulers..... T40100

Digital depth gauge..... VAS 6087

Align all the forward fiber clutch plate teeth evenly, with the forward clutch wave plate above the selective lower apply plate for measuring purposes only, load into the forward drum. Once the forward clutch drum is loaded, a suitable tool or part number T10219/1 should be placed under the drum during end play measurements see figure 2.

Place all 4 Calipers spaced evenly, onto the Selective upper apply plate seen in figure 3. Place two of the Rulers one each onto two of the four Calipers. With the Digital depth gauge placed flat onto the two rulers, measure to the top or the Selective Upper Apply plate, measurements should be taken in four locations. Calculate the average of all four measurements, (total all 4 values and divide by 4) and this will be called measurement "A".

Next with the two rulers still in place measure to the top of the Thrust plate contact surface shown in figure 4. Measurements should be taken on both sides of the shaft. Move the two rulers 90 degrees and repeat measurements. Calculate the average of all four measurements, and this will be called measurement "B" (see figure 4). Subtract measurement "A" from "B" this will be calculation "K".

This same procedure must be performed with the forward clutch pressure plate using only two calipers with one ruler taking measurements in 3 places (figure 5). Subtract measurement "A" from "B" this will be calculation "D".

Total Air Gap (end play) measurement will be the difference between Calculated measurement "K" & "D". Using the chart below, determine the proper Selective disc (See Figure 2) to achieve the correct Air Gap measurement.

Air Gap specified value: 1.4 ± 0.2 mm 6 Disc 1.8 ± 0.2 mm 7 Disc				
Available Upper & Lower adjustment discs (thickness in mm)				
1.90	2.15	2.65	2.90	3.15

The last step is to reassemble the forward clutch assembly with the Waved disc above the Selective Upper Apply disc seen in figure 6. **Many thanks to Eddie Rose.**

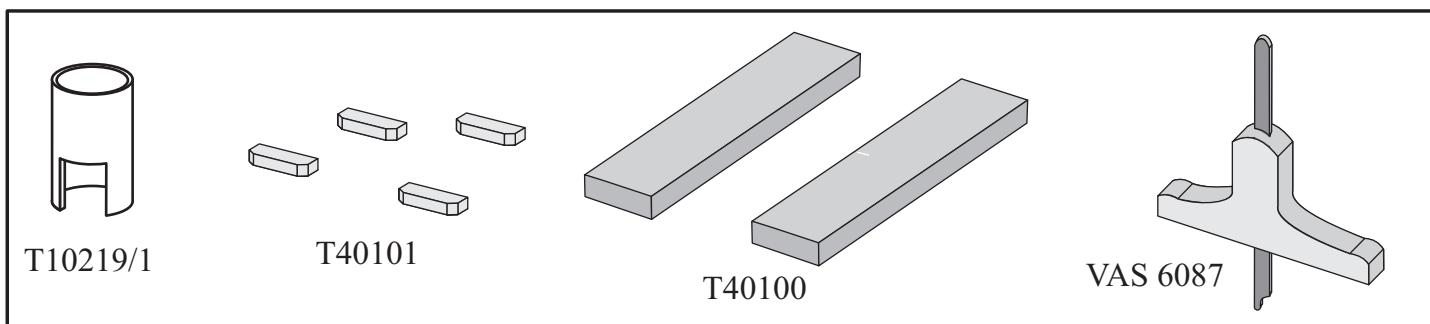


Figure 1

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AUDI 01J CVT FORWARD CLUTCH DRUM AND PULLEY ASSEMBLY/DISASSEMBLY UPDATE

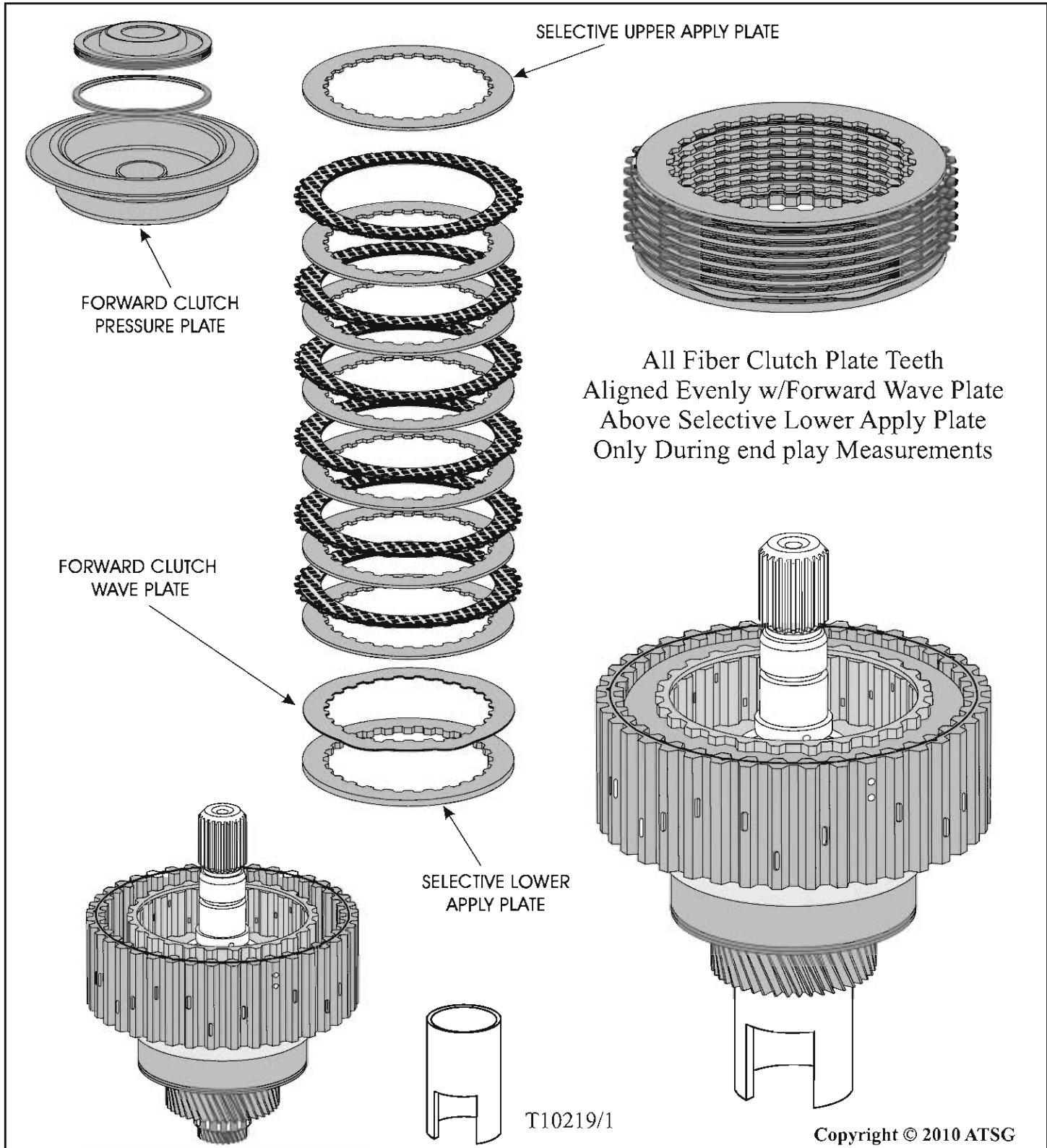
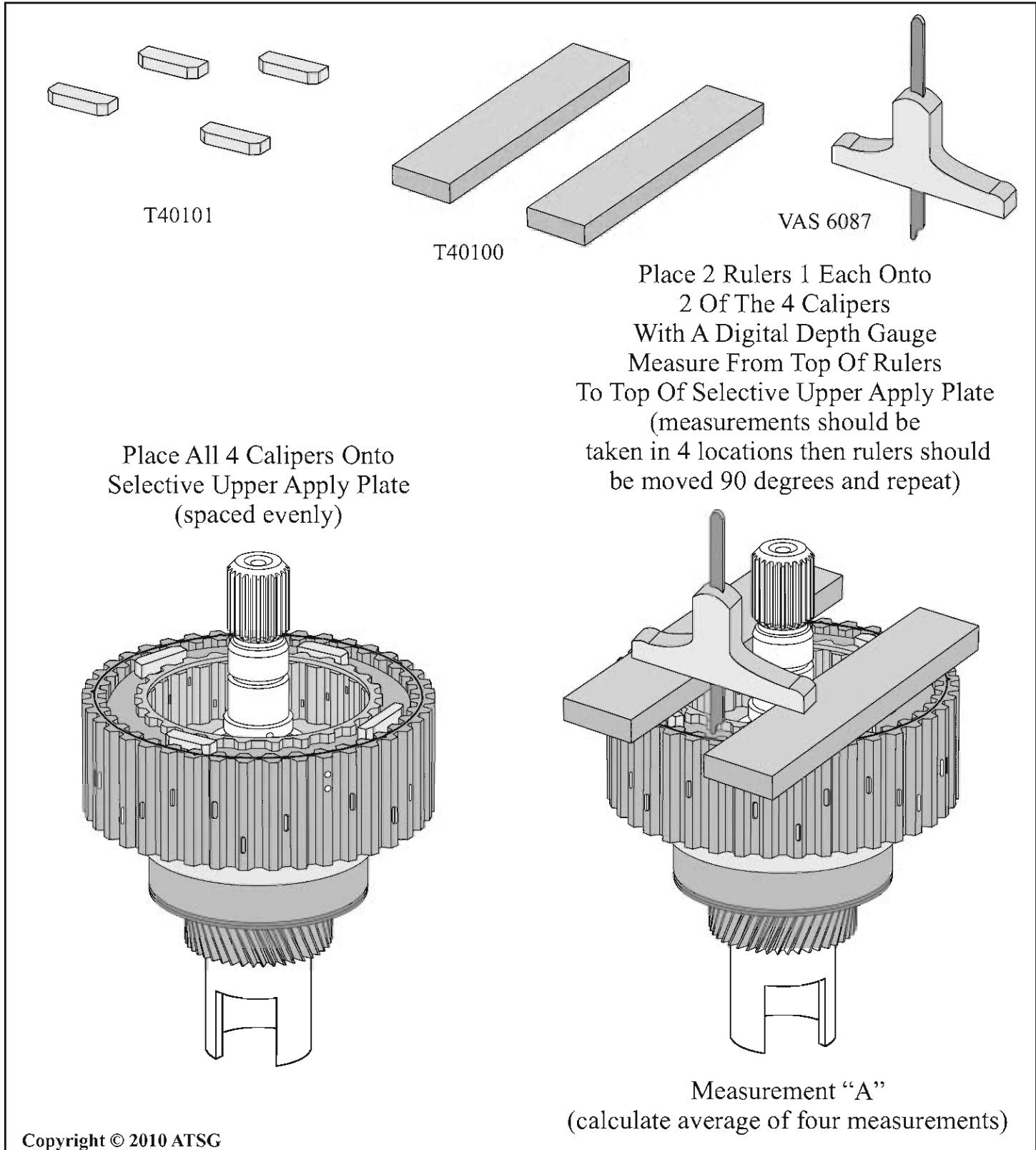


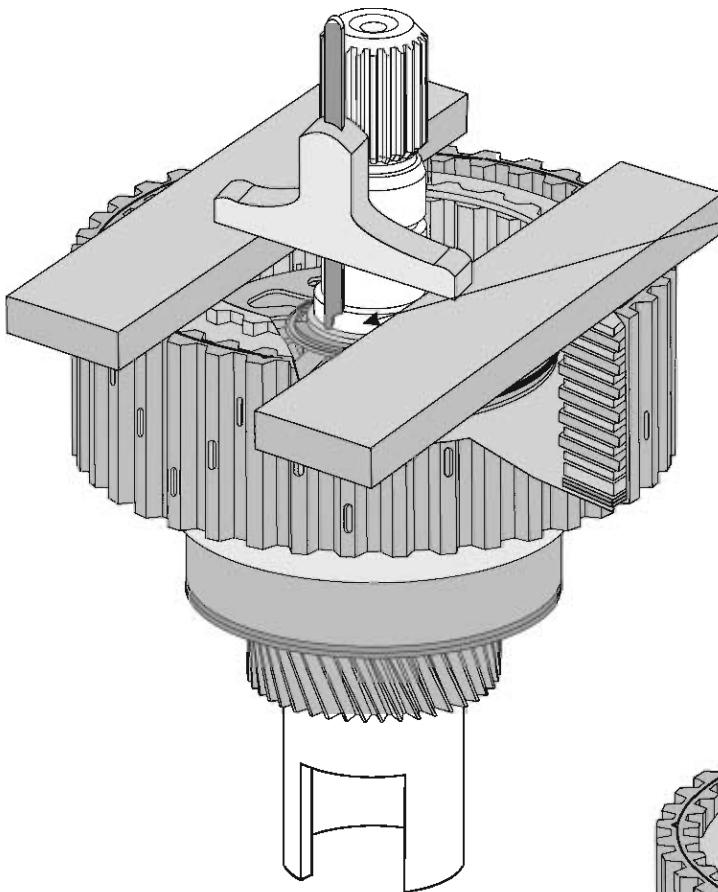
Figure 2

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AUDI 01J CVT FORWARD CLUTCH DRUM AND PULLEY ASSEMBLY/DISASSEMBLY UPDATE

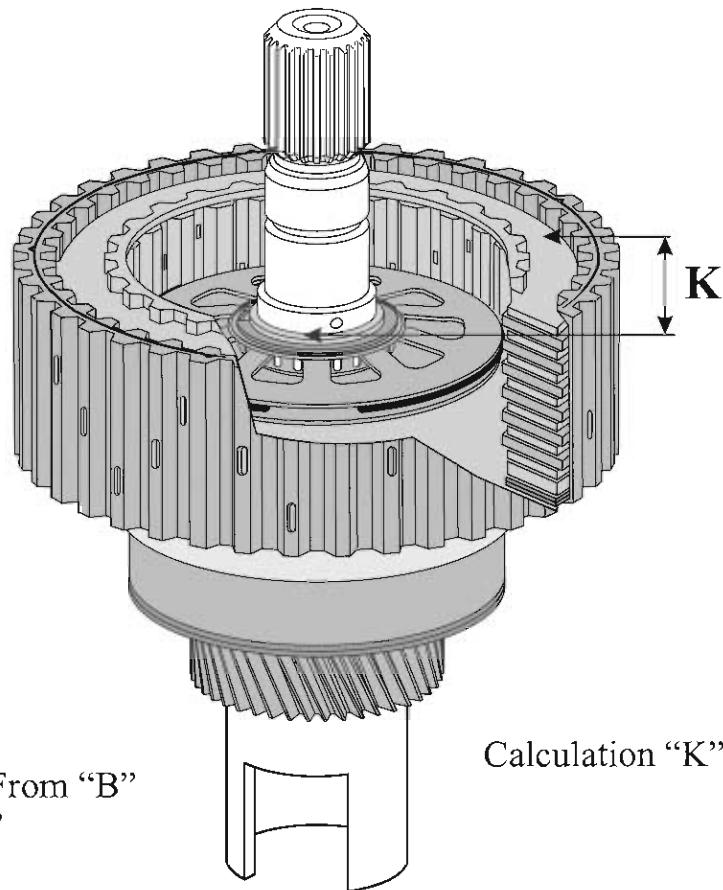


AUDI 01J CVT FORWARD CLUTCH DRUM AND PULLEY ASSEMBLY/DISASSEMBLY UPDATE



Measurement "B"
(calculate average of four measurements)

Place 2 Rulers 1 Each Onto
2 Of The 4 Calipers
With Digital Depth Gauge
Measure From Top Of Rulers
To Top Of Thrust Plate Contact Surface
(measurements should be taken
on both side of shaft then rulers should
be moved 90 degrees and repeat)



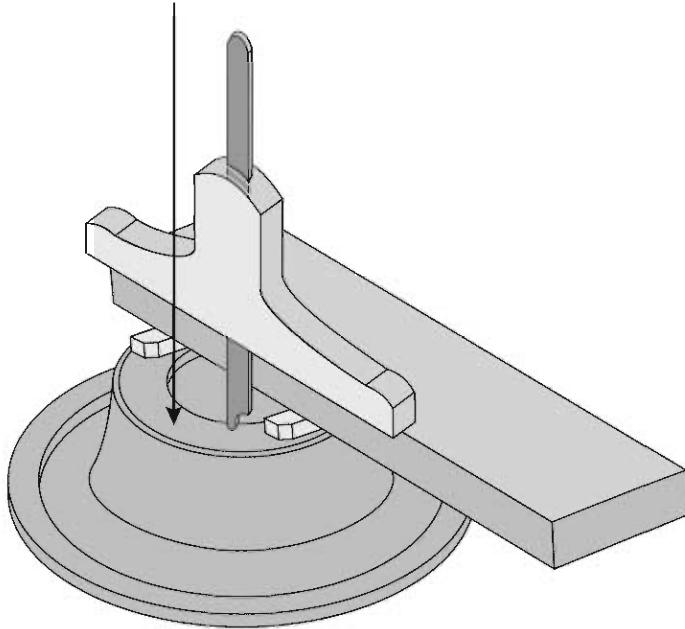
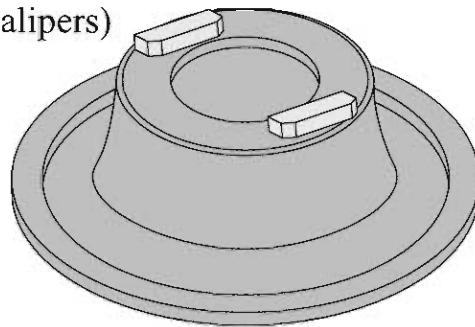
Subtract Calculated Measurement "A" From "B"
To Obtain Clutch Distance "K"

Calculation "K"

**AUDI 01J CVT
FORWARD CLUTCH DRUM AND PULLEY ASSEMBLY/DISASSEMBLY UPDATE**

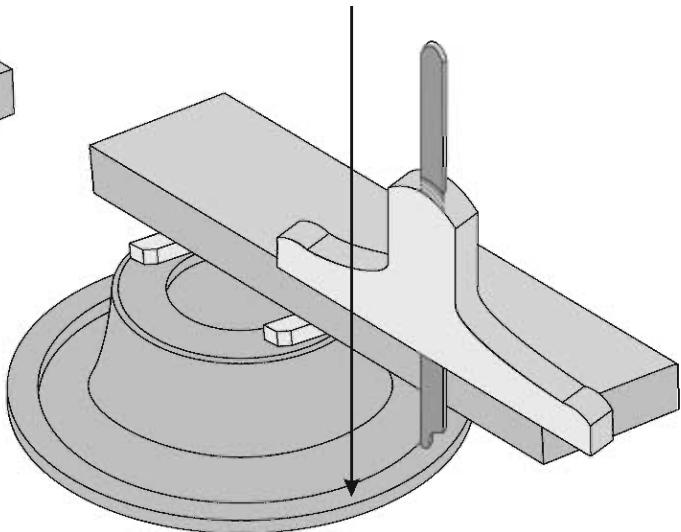
Place 1 Ruler Onto 2 Calipers
With Digital Depth Gauge
Measure From Top Of The Ruler
To Top Of The Forward Pressure
Plate Upper Running Surface
(move ruler 120 degrees and repeat
for a total of 3 measurements)

(use 2 calipers)



Measurement "A"
(calculate average of three measurements)

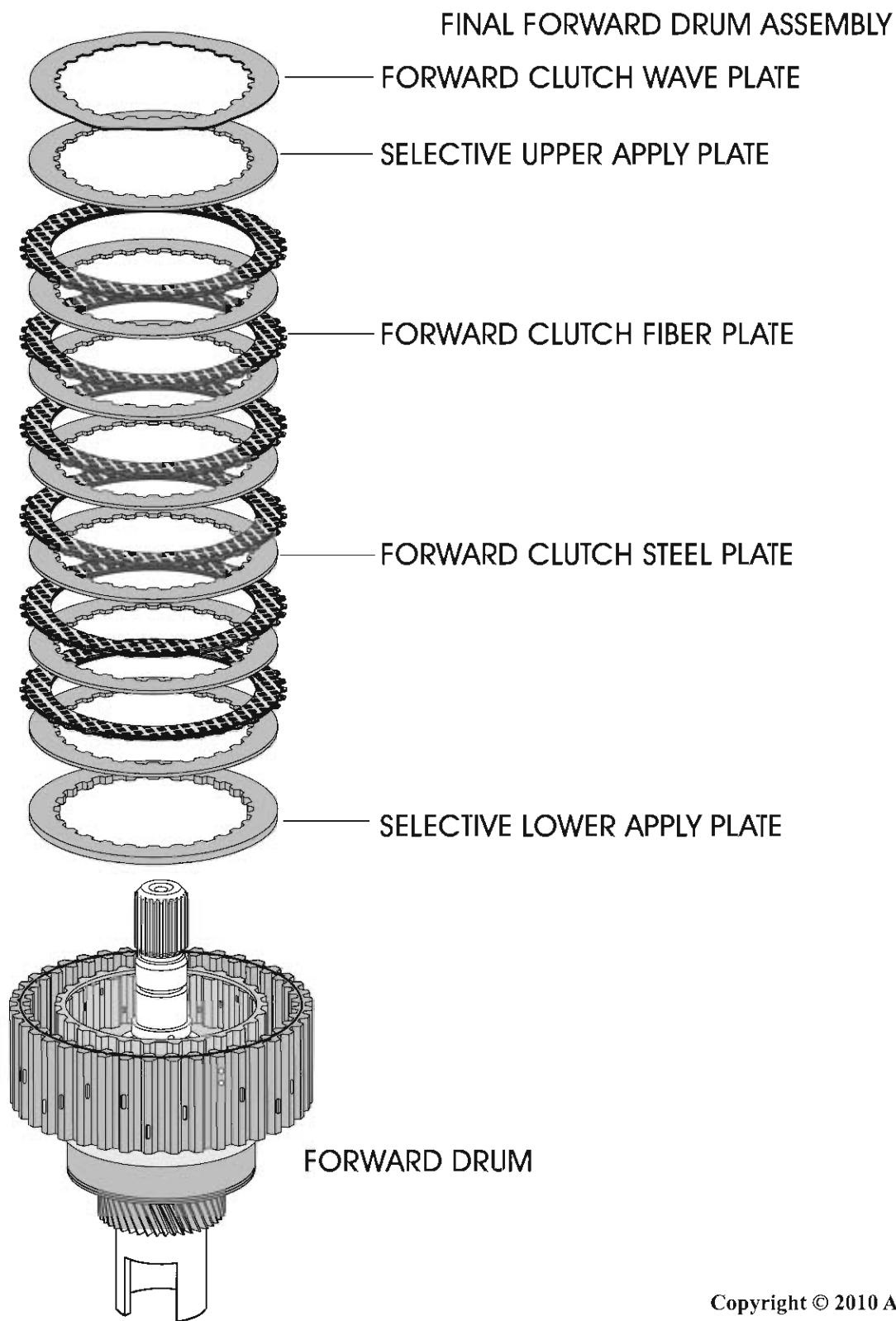
Place 1 Ruler Onto 2 Calipers
With Digital Depth Gauge
Measure From Top Of The Ruler
To Top Of The Forward Pressure
Plate Lower Running Surface
(move ruler 120 degrees and repeat
for a total of 3 measurements)



Measurement "B"
(calculate average of three measurements)

Subtract Calculated Measurement "A" From "B"
To Obtain Clutch Distance "D"

**AUDI 01J CVT
FORWARD CLUTCH DRUM AND PULLEY ASSEMBLY/DISASSEMBLY UPDATE**



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Figure 6
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Updated disassembly procedure:

1. Measure the height of the chain from pin end to pin end as seen in figure 7 represented by dimension "A." There are 2 design thicknesses of chains, one is 34 mm in thickness while another is 38 mm in thickness.
2. For the 34 mm chain, attach adapter tool number T40130/2 onto the output pulley set II as seen in figure 8. The O-rings inside the adapter tool and the sealing surfaces on the pulley set should be cleaned and lubricated with ATF.
3. For the 38 mm chain, attach adapter tool number T40130/2 onto the output pulley set II with spacers T40130/5 and T40130/6 as seen in figure 9. The O-rings inside the adapter tool and the sealing surfaces on the pulley set should be cleaned and lubricated with ATF.
4. Align and center the support bracket T40130/1 on the adapter as seen in figure 8. Once aligned, bolt the bracket down to the case (1).
5. Screw down the center bolt (2) on the bracket so that the center adapter is pressed up against pulley set II.
6. Connect an air hose to the adapter housing and apply approximately 3 bar of compressed air into the adapter so that the output pulley set opens and the chain becomes relaxed.
7. Slide the two arresters (3) into place where they secure the top side of the output pulley set II as seen in figure 8.
8. Lock the arresters into position using the knurled screws being careful not to trap the chain.
9. Turn the chain until the link with the production date stamp becomes visible as seen in figure 10.
10. Count over and identify the 4th pin to the right of the link with the production date stamping. Place a rag cloth under the chain and carefully knock off the 2 little spot welds on the end of the pin facing you. The pin is a two piece pin with a spot weld on the top of the left pin and one on the bottom of the right pin as it faces you (see figure 10).

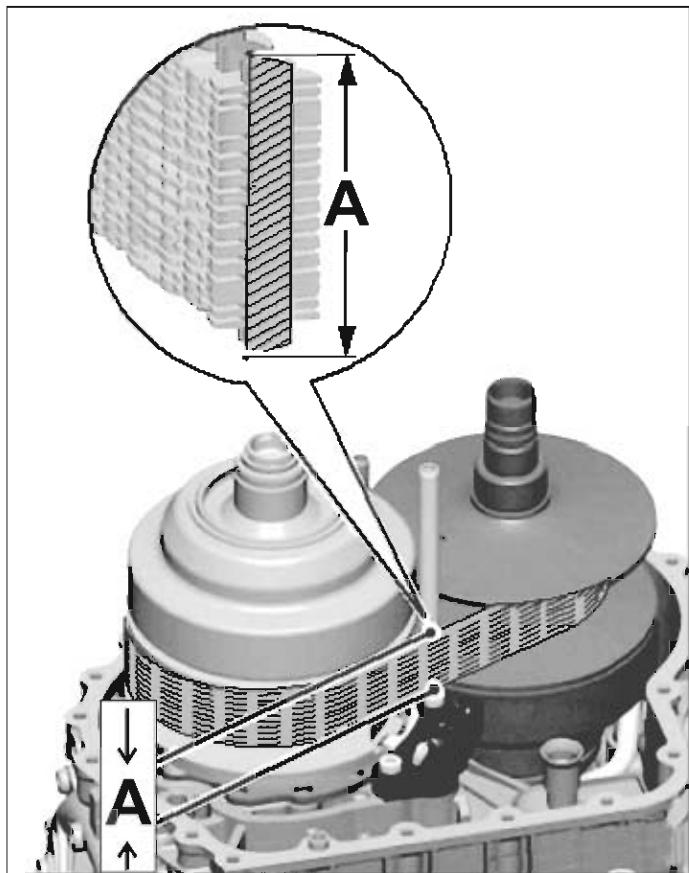


Figure 7

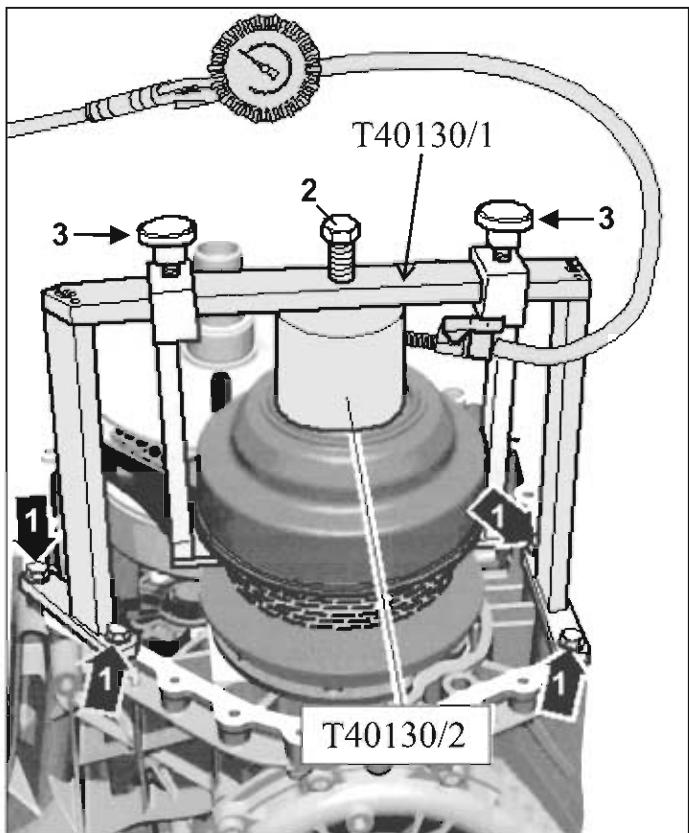


Figure 8

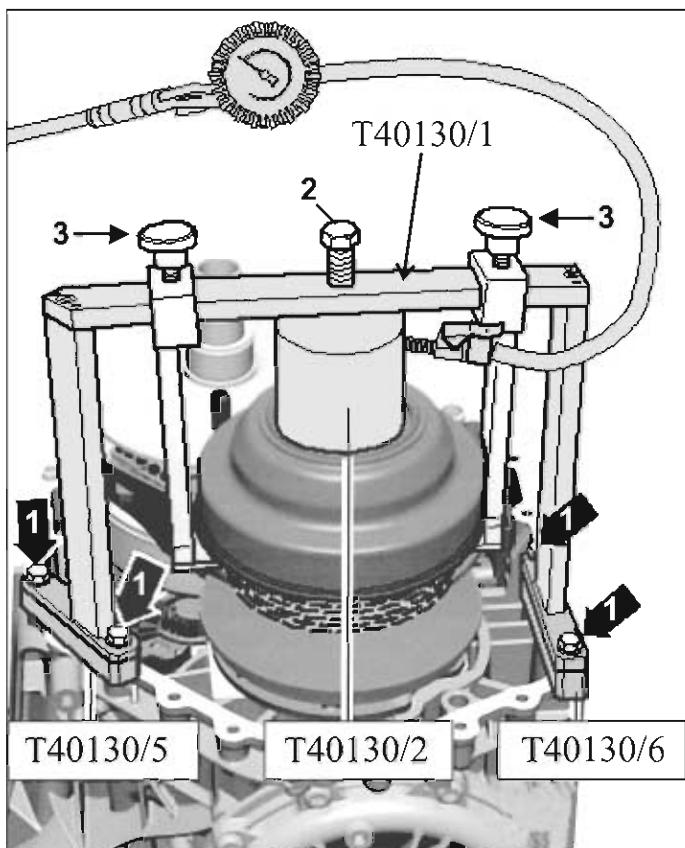


Figure 9

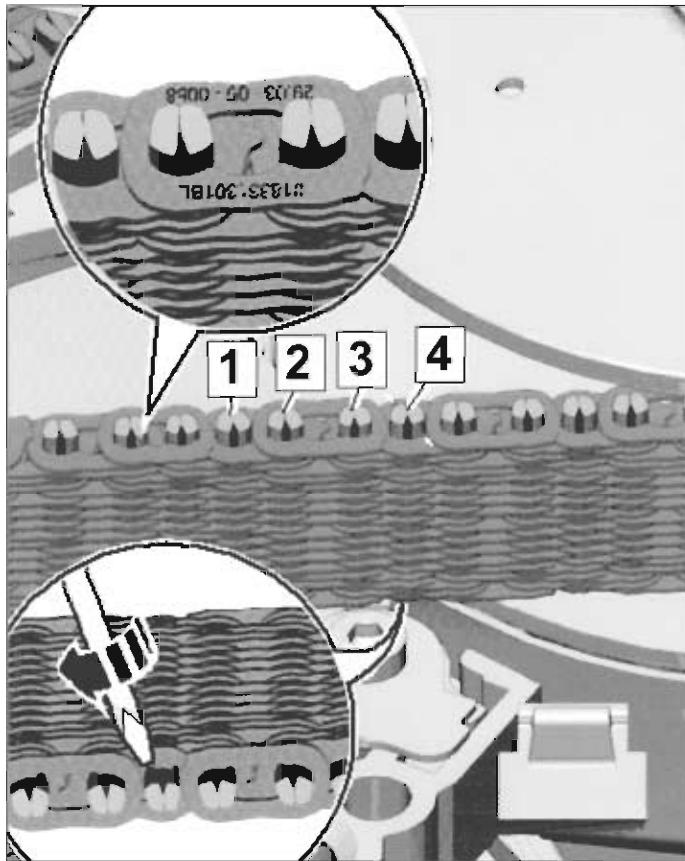


Figure 10

pins and open the chain.

12. Mark the position of the guard rail (1) in relationship to the chain. Then, unclip the guide rail from the oil pipe (2) and detach both the rail and chain from the pulleys as seen in figure 11. *Caution is needed to ensure that the chain does not get kinked*

13. Remove the input pulley assembly I (Figure 12).

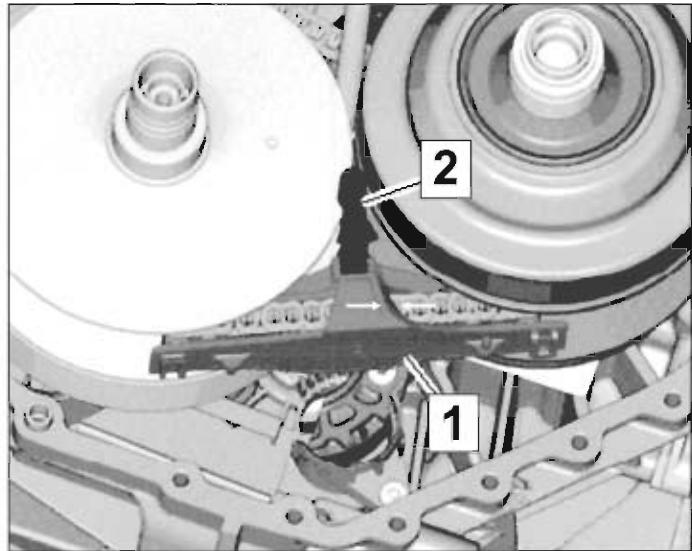


Figure 11

Note: Although not shown here, the tool assembly remains in place on the output pulley assembly II while the input pulley assembly I is removed and serviced.

Output Pulley Assembly II

Input Pulley Assembly I

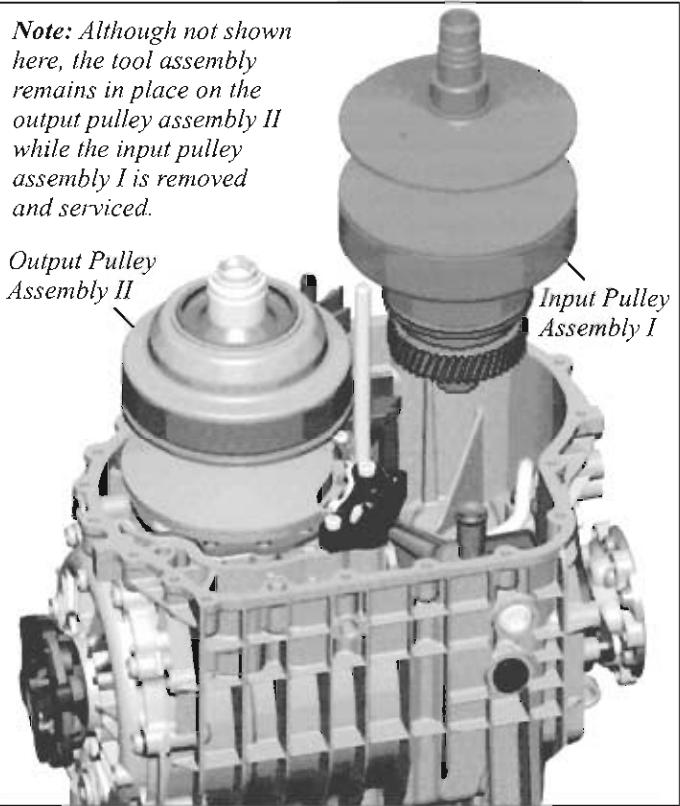


Figure 12

**Re-assembly procedure:**

1. In reverse order, carefully install the Drive Pulley assembly into the main case (figure 12).
2. Clip the guide rail (1) onto the oil pipe (2) with chain inserted (refer to marking made upon removal to facilitate instillation (figure 11)).
3. Wrap the chain around the pulleys until the two open ends meet and join them together as seen in figure 13. The distance between the links themselves vary due to different design reasons.
4. Insert the two asymmetrical pin halves (1 & 2) into the chain with the end that had the weld spots removed going in first and with the intact weld spots at the top (figure 14).
5. Loosen the knurled screws and slide the arresters out of position (3) as seen in figure 15.
6. Disconnect the air hose from the adapter.
7. Using a small screwdriver, press in on the valve stem and release the air from the adapter.

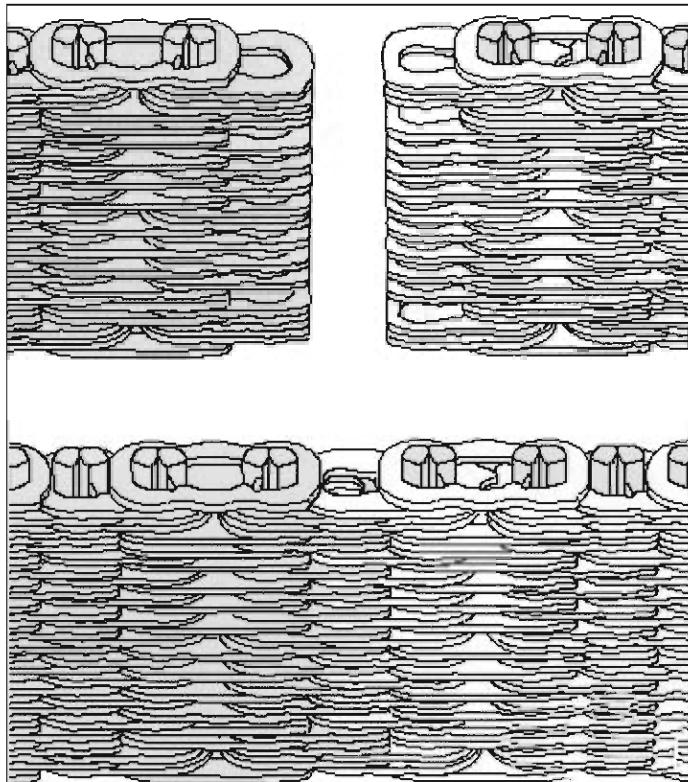


Figure 13

8. The output pullet set II should close and the chain should tighten.

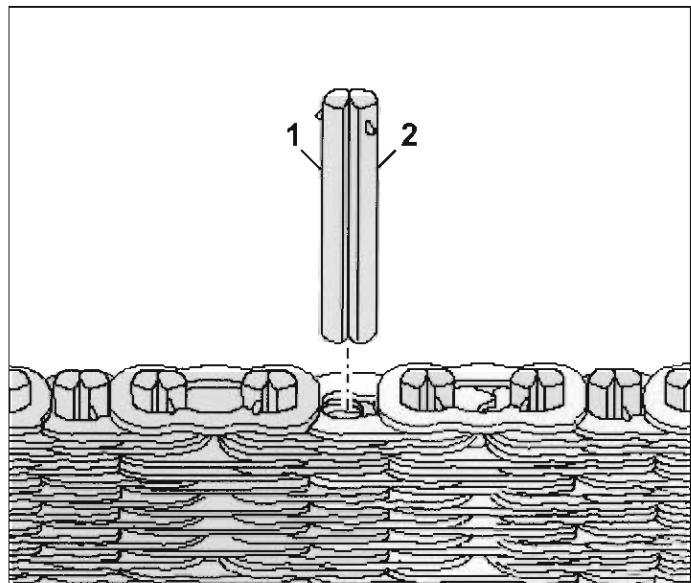


Figure 14

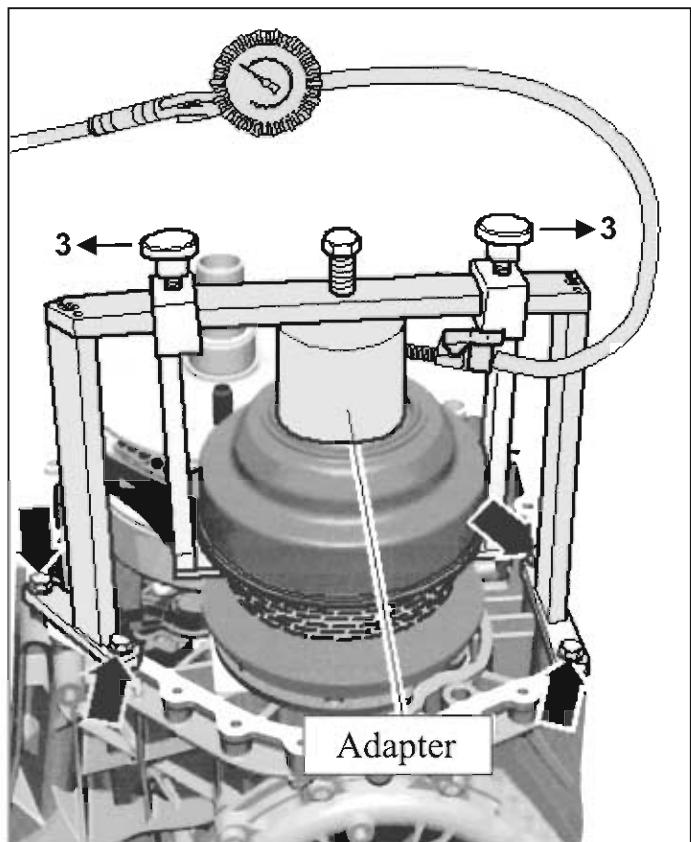


Figure 15

AUDI 01J ENGAGEMENT ISSUES

COMPLAINT #1: No reverse with VAG Code 17090 stored for a Multi-Function Switch Implausible Signal.

NOTE: The *Multifunction Transmission Range Sensor* has four Hall Effect Sensors which are controlled by a magnetic gate located in the rooster comb area of the selector shaft. The signals from the sensors are interpreted in the same way as the positions of mechanical switches either open or closed. With 4 sensors, 16 total open and closed combinations can be obtained. 6 combinations are used to inform the TCM of a Park, Reverse, Neutral and Drive manual valve selection as well as intermediate movement positions from Park to Reverse and a Reverse to Neutral to Drive movement. The other 10 possible combinations are reserved as being faulty.

COMPLAINT #2: A delayed engagement or shudder into drive.

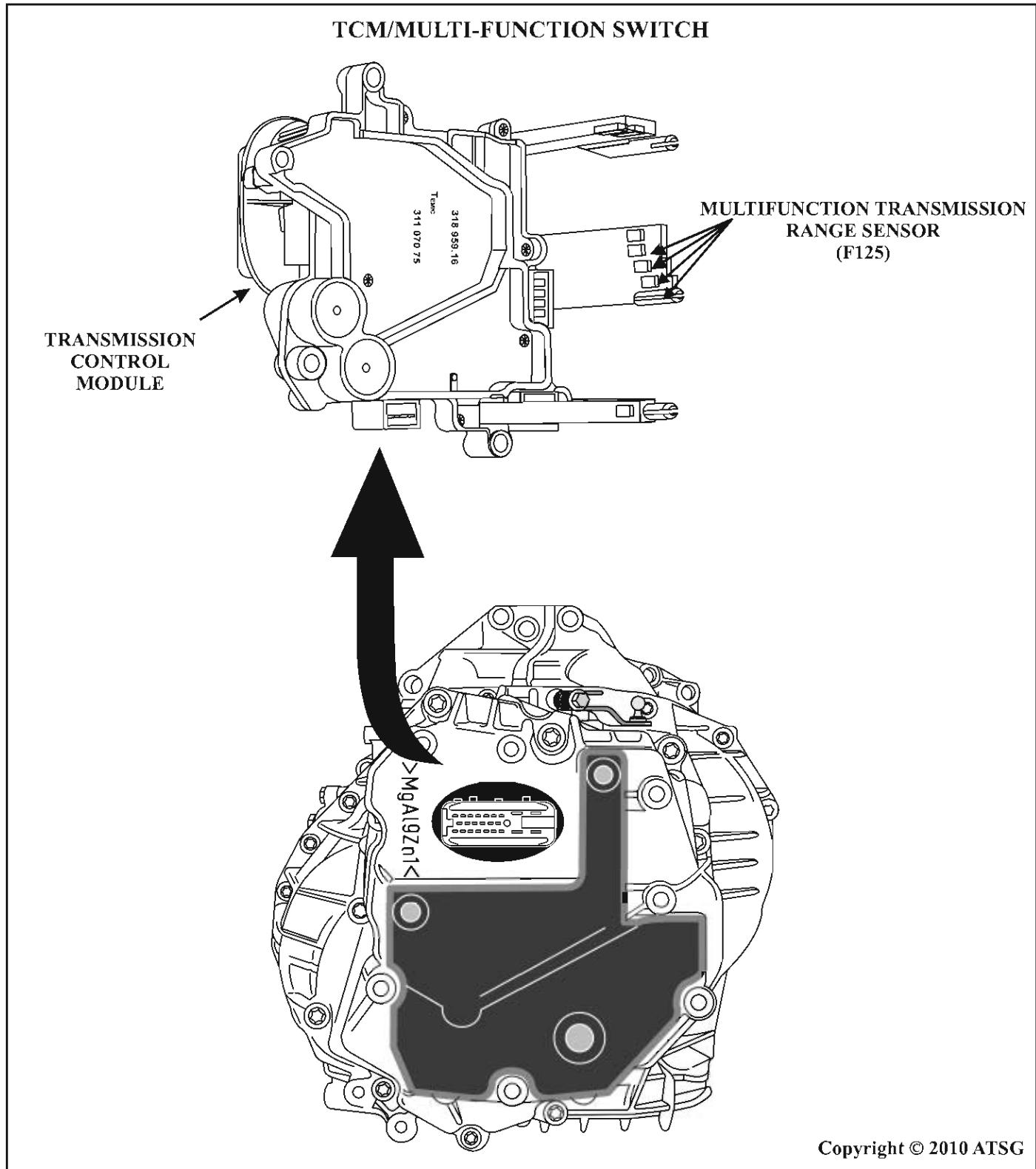
CAUSE #1: The Transmission Control Module is faulty.

CAUSE #2: A valve body problem.

CORRECTION #1: Replace the Transmission Control Module, Refer to Figure 1.

CORRECTION #2: Replace the valve body.

AUDI 01J ENGAGEMENT ISSUES



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Figure 1

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AUDI 01J CVT ADAPTATION

Adaptation must be performed after the following operations:

1. After replacing the Transmission Control Module (TCM) - J217 -
2. After coding the Transmission Control Module (TCM) - J217 -
3. After reprogramming (flash) the Transmission Control Module (TCM) - J217 -

Requirements:

1. No trouble codes in the DTC memory; read DTC memory.

Adaptation for forward:

1. Read measured value block display group 010 at engine idle.
2. Check whether transmission fluid temperature in the display field 3 is higher than 60°C. A short test drive may be necessary to reach this temperature.
3. Drive forward briefly and then brake to a stop again.
4. Check display in display field 2. Display must change from "ADP is running" to "ADP is O.K."
5. Repeat if necessary until "ADP is O.K." has been achieved.

Adaption for reverse is to be performed with the same procedure as forward.

MEASURED BLOCKS

08 Measured
Blocks

Sample Rate: 0.4

Label File: 01J-927-156LBL

Group	Clutch Adaptations (Basic Settings)				
010	0.275 A	ADP. Run	43.0° C	15.0 Nm	Specified Clutch Value
	Forward Clutch Adaption Curve	Adaptation from Stop behavior	Transmission Fluid Temp		
011	0.265 A	ADP. Run	43.0° C	15.0 Nm	Specified Clutch Value
	Reverse Clutch Adaption Curve	Adaptation from Stop behavior	Transmission Fluid Temp		

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Figure 1
Automatic Transmission Service Group

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- AW55-50SN Planets with one piece bushing
- Transmission teardown benches
- Custom bushings and sleeves
- Custom transmission tools

SERVICES

- AW55-50/51SN case repair, Volvo, Nissan
- 09G/TF60-SN case repair, VW, BMW
- Honda bearing pocket repair
- Retip main shafts and input gears
- Repair drums and housings

OMEGA
MACHINE & TOOL, INC.
www.omegamachine.com



AUDI/VOLKSWAGEN 01M/01N/01P K1 CLUTCH ASSEMBLY

COMPLAINT: After overhaul the transmission experiences a bind-up on the 3-4 shift and a bind-up in reverse.

CAUSE: Mis-assembly of the K1 clutch is responsible for the above complaints.

CORRECTION: During the 1995 model year the Phase 2 redesign of the K1 clutch took place. The obvious difference was the K1 drum now did not have a shaft. With the new design, the K1 and the K3 drums had to be pressed apart. Other differences are mainly dimensional. The K1 clutch pack is assembled as follows:

1. After the bottom piston, coil spring assembly, top spring assembly and snap ring have been installed into the drum, install the waved plate.
2. Install the .079" steel plate.
3. Install one friction plate then one .057" steel plate, then one friction and one .057" steel plate as shown in Figure 1.
4. Place the K1 clutch hub, large diameter end, down on the bench, See Figure 2.
5. Install the top pressure plate onto the clutch hub.
6. Stack the remaining friction and steel plates onto the clutch hub, ending with a friction plate.
7. Install the 4 plastic clutch retainers, making certain that they snap into their respective holes in the clutch hub. Make certain the top friction plate on the clutch hub is below the tab of the plastic retainers as seen in Figure 2. The retainers for the Phase 2 K1 clutch are .640" tall.

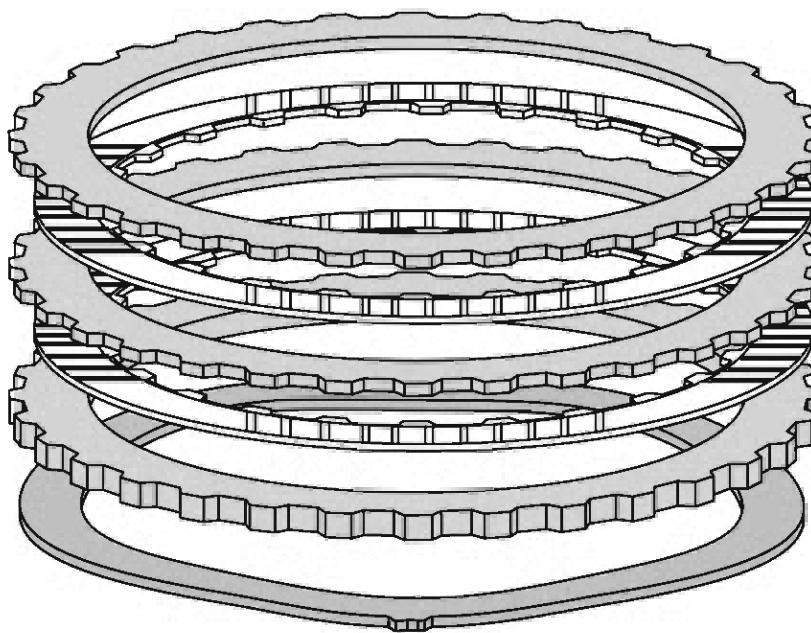
NOTE: Always replace these plastic retainers with new ones as they will most likely be broken because they are support bushings for the K3 drum.

8. Invert the clutch hub assembly and install it into the K1 drum as seen in Figure 2.
9. Install the snap ring into the groove of the K1 clutch drum working in between the clutch hub and the drum as also shown in Figure 2.

NOTE: The K1 clutch pack arrangement in this bulletin is for a 5 friction clutch pack.

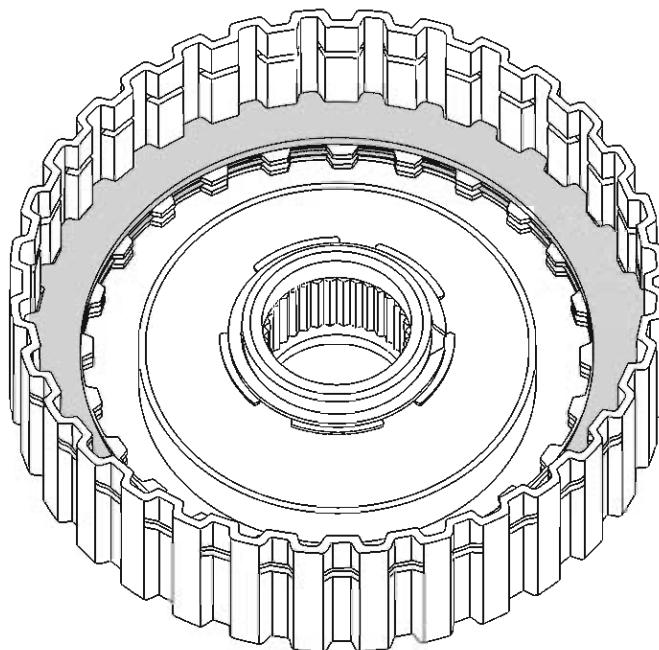
**AUDI/VOLKSWAGEN 01M/01N/01P
K1 CLUTCH ASSEMBLY**

*5 friction K1
clutch assembly*



FIRST INSTALL THIS
PART OF THE K1
CLUTCH

INTO THE
K1 CLUTCH DRUM
AS SHOWN



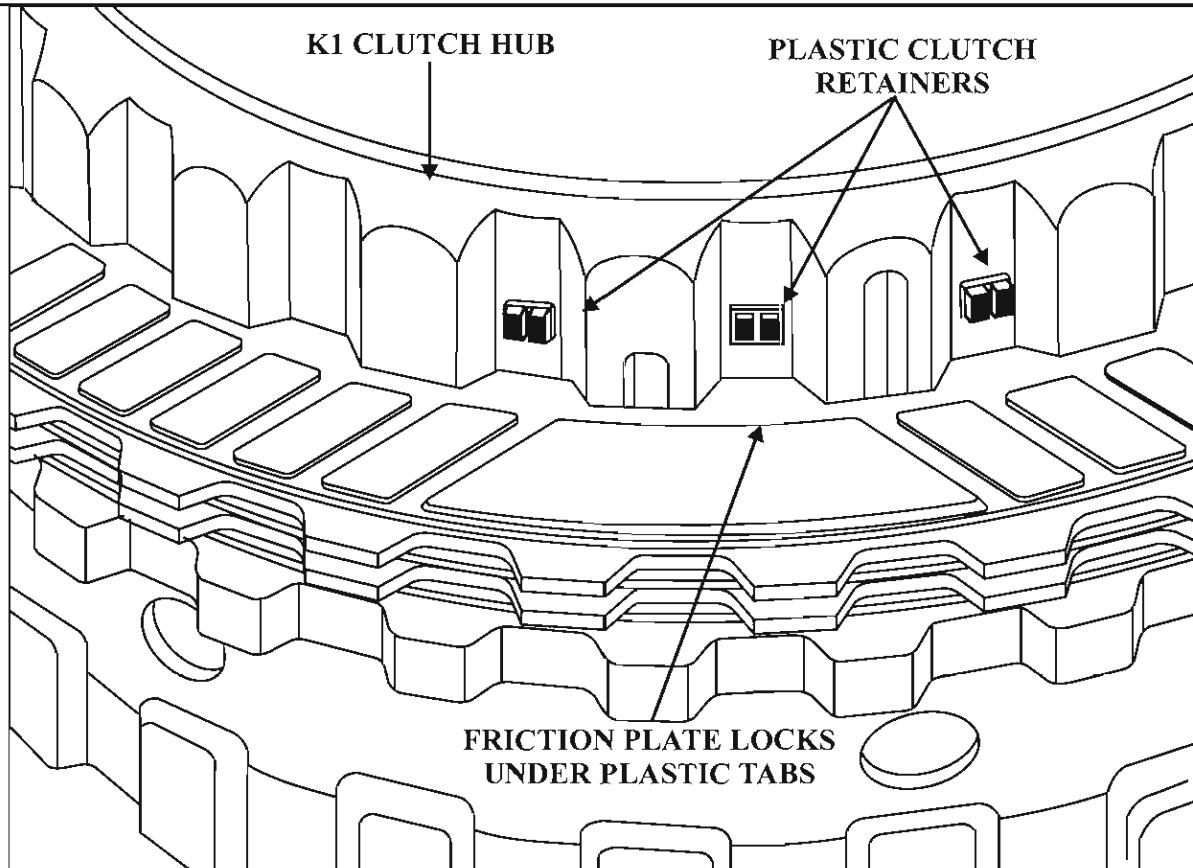
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Figure 1

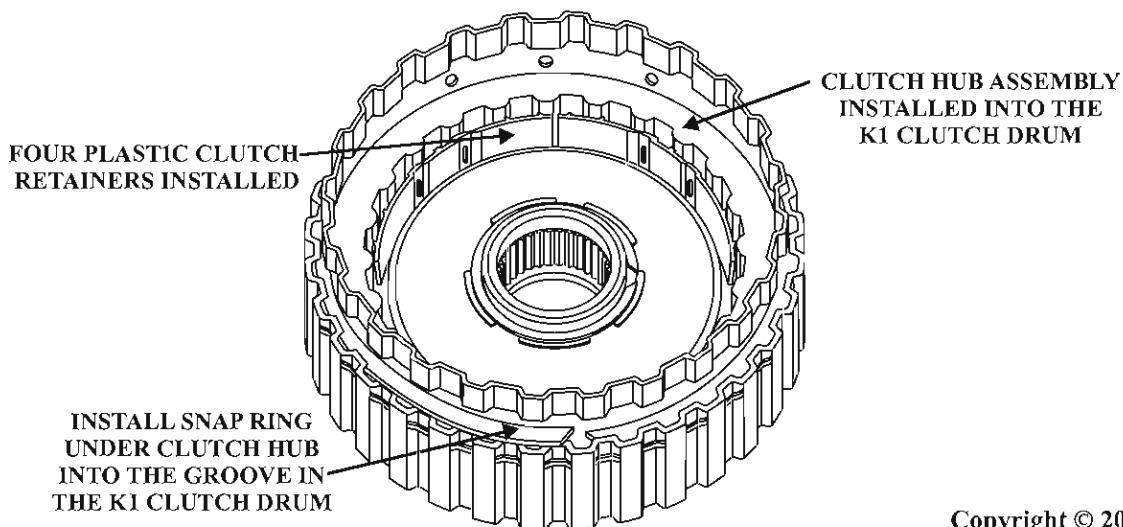
Automatic Transmission Service Group



AUDI/VOLKSWAGEN 01M/01N/01P K1 CLUTCH ASSEMBLY



Turn clutch hub upside down and load the .202" pressure plate onto it. Next, alternate clutch, steel, clutch, steel, ending with a clutch plate on top. Next, install plastic retainer as shown, then invert clutch hub assembly and install it into the K1 drum on top of the previously installed plates as shown below.



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Figure 2



VOLKSWAGEN 09G/MINI TF60-SN HARSH DOUBLE UP SHIFT 2-3

COMPLAINT: Before or after overhaul a Volkswagen or Mini vehicle equipped with the TF60-SN automatic transmission may exhibit a complaint of a harsh or double bump 2-3 up shift.

CAUSE: One cause may be a defective solenoid SV-3/N90 causing the K3 clutch to be applied in first and second gear. With the K3 clutch already applied, the computer is unable to properly control the shift transition from 2nd to 3rd and results in a harsh or double bump 2-3 up shift. Refer to the clutch apply diagram in Figure 1. Notice that the K3 clutch is not supposed to be applied in 1st or 2nd gear. Conventional wisdom might suggest that if a friction element is applied when it should not be a bind up condition should occur. That is not the case here. Take a look at the cutaway drawing in Figure 2. Notice that the K1 clutch is splined onto the Planetary Carrier 1. Now look at the K3 clutch in the cutaway drawing. The K3 clutch is also splined onto the Planetary Carrier 1. Since both friction elements are splined onto the planetary carrier a bind up condition cannot occur.

In order to determine whether the solenoid SV-3/N90 is the cause of this problem it will be necessary to install a pressure gauge onto the K3 clutch port of the transmission and drive the vehicle to see if pressure is present in first or second gear. Refer to the diagram in Figure 3 and install the pressure gauge. When the selector lever is placed into the drive position, there should be 0 psi. at the K3 pressure port. Additionally, there should be 0 psi. when the transmission makes an up shift into 2nd gear. If there is pressure in either 1st or 2nd gear it will be necessary to check the solenoid current pattern. If the solenoid current pattern is correct, this will conclusively identify shift solenoid SV-3/N90 as the cause of the complaint. Using the diagram in Figure 4, refer to the solenoid amp chart and locate the current pattern for solenoid SV-3/N90. You will notice the current pattern indicates approximately .980A or very high current in 1st and 2nd gear and the amperage is switched to .100A or very low current in 3rd gear. It will be necessary to perform this amperage check using an appropriate tool such as the VAG-COM software installed on a portable laptop computer. If the current pattern indicated by the scan tool shows correctly, the harsh or double bump 2-3 up shift can be isolated to a malfunctioning solenoid SV-3/N90.

CORRECTION: Locate a known good solenoid SV-3/N90, or find a suitable replacement valve body.



CLUTCH APPLICATION CHART

Gear	K-1 Clutch	K-2 Clutch	K-3 Clutch	B-1 Clutch	B-2 Clutch	F-1 Roller Clutch	Torque Conv. Clutch	Ratio
1st Gear	On				On*	Hold	On**	4.148
2nd Gear	On			On			On**	2.370
3rd Gear	On		On				On**	1.556
4th Gear	On	On					On**	1.155
5th Gear		On	On				On**	0.859
6th Gear		On		On			On**	0.686
Rev Gear			On		On			3.394

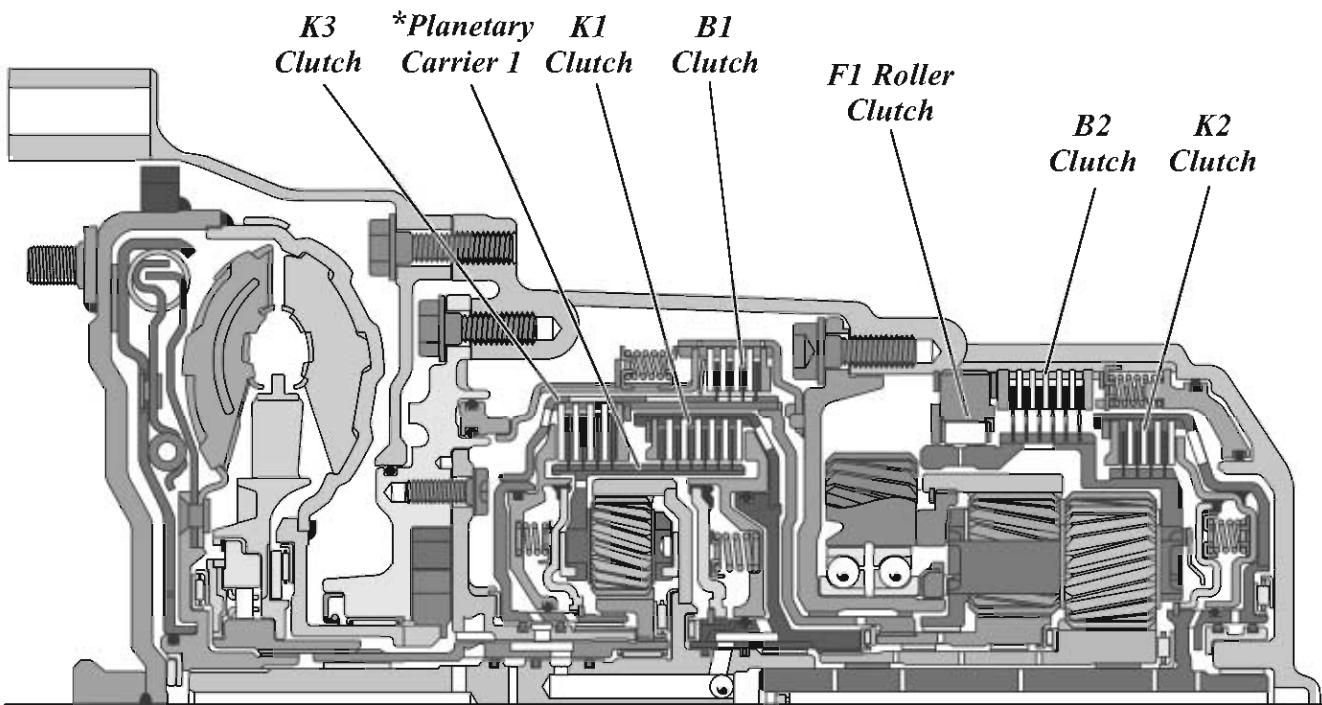
* The B-2 Clutch is applied in "Tiptronic Mode" 1st gear, only for engine braking.

** During normal driving operation, the Torque Converter Clutch can be applied in each gear.

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Figure 1

COMPONENT APPLICATION CHART



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Figure 2

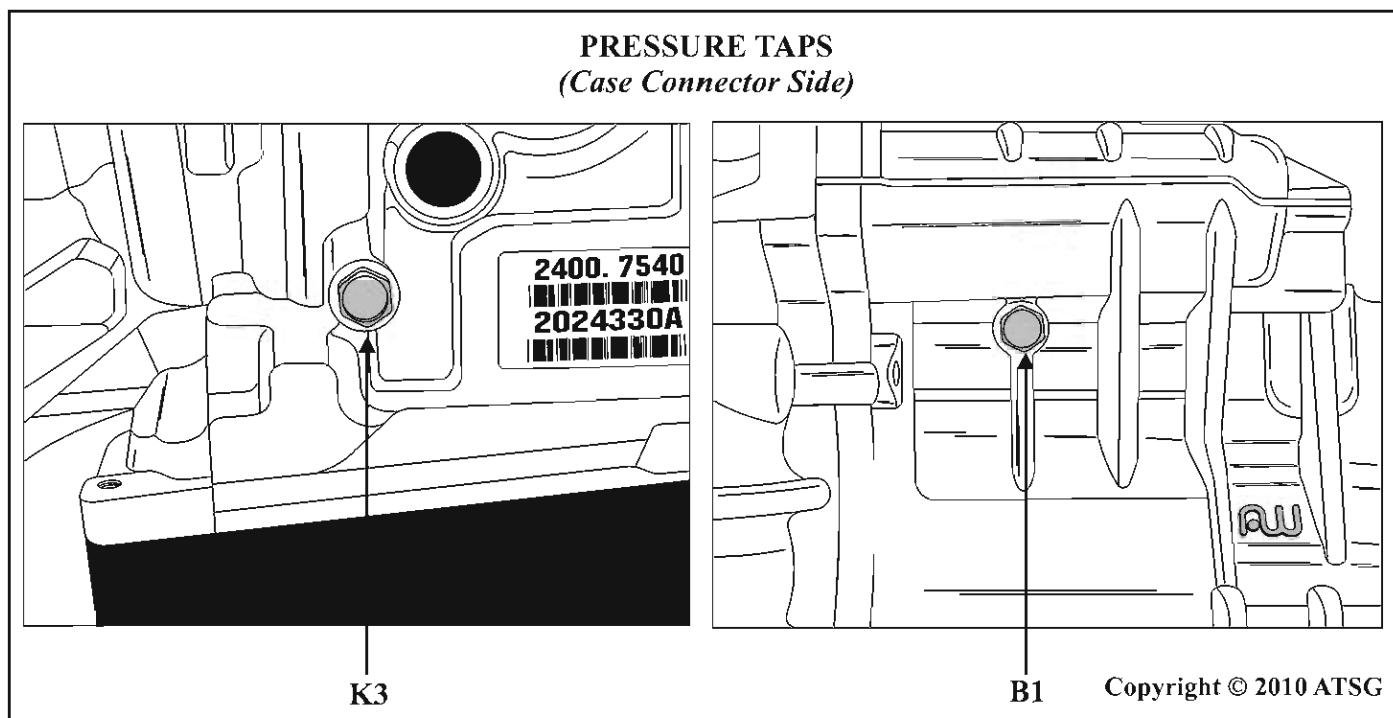


Figure 3

SOLENOID AMP CHART

SOLENOID	RANGE				GEAR					
	Park	Reverse	Neutral	Drive 1H	Manual 1H	2H	3H 3M	4H 4M	5H 5M	6H 6M
SV5-N92 (K1)	.100A	.980A	.980A	.100A	.100A	.100A	.100A	.100A	.980A	.980A
SV9-N282 (K2)	.100A	.980A	.980A	.980A	.980A	.980A	.980A	.100A	.100A	.100A
SV3-N90 (K3)	.980A	.100A	.980A	.980A	.980A	.980A	.100A	.980A	.100A	.980A
SV10-N283 (B1)	.980A	.980A	.980A	.980A	.980A	.100A	.980A	.980A	.980A	.100A
SV6-N93 (LP)	.980A	.980A	.980A	.980A	.740A	.860A	.980A	.980A	.740A	.740A
SV4-N91 (TC-PWM)	.200A	.200A	.200A	.200A	.200A	.200A	.990A	.990A	.990A	.990A
SV2-N89	0	0	0	0	1	0	3H=0 3M=1	4H=0 4M=1	5H=0 5M=1	6H=0 6M=1
SV1-N88	0	0	0	0	1	0	0*-1	0*-1	0*-1	0*-1

Description of terms:

.100A = Very Low amperage
Solenoid OFF

.980A = Very High amperage
Solenoid ON

SV1&2-N88&89

0 = OFF

1 = ON

0*-1 = OFF or ON
during shift transitions

3H = 3rd Gear TCC OFF

3M = 3rd Gear TCC ON
(This applies to gears 3-6)

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Figure 4



VOLKSWAGEN NEW BEETLE FAILSAFE DTC 01045 STORED

COMPLAINT: A 2003 or later Volkswagen New Beetle with the six speed 09G automatic transmission enters the shop in failsafe. Code retrieval reveals code DTC 01045 stored in memory.

CAUSE: One cause may be a faulty Tiptronic Switch F-189. The Tiptronic Switch F-189 is an integral part of the shifter assembly that allows the vehicle driver to manually up-shift and down-shift through all six forward speeds of the transmission.

The quickest way to diagnose this problem is to first take a look at the shifter. Refer to the diagram of the shifter assembly in Figure 1. There is a black flexible plastic alignment guide that serves as a locator for the Tiptronic Switch. If the plastic guide is missing or damaged the shifter assembly will need replacement. If the plastic guide appears to be in good shape further electrical diagnosis of DTC 01045 Tiptronic Switch F-189 requires the use of scan tool software such as VAG-COM or other capable hand-held scan tool.

Refer to the diagram in Figure 2. The diagram depicts an image using VAG-COM software. It will be necessary to navigate to Control Module 2 Auto Trans, Group 8, Data Blocks 12, and 13. Move the shifter through its gear selections including Tiptronic Mode using the tip up and tip down function while monitoring data on scan tool. If abnormality is found in switch function, shifter assembly must be replaced.

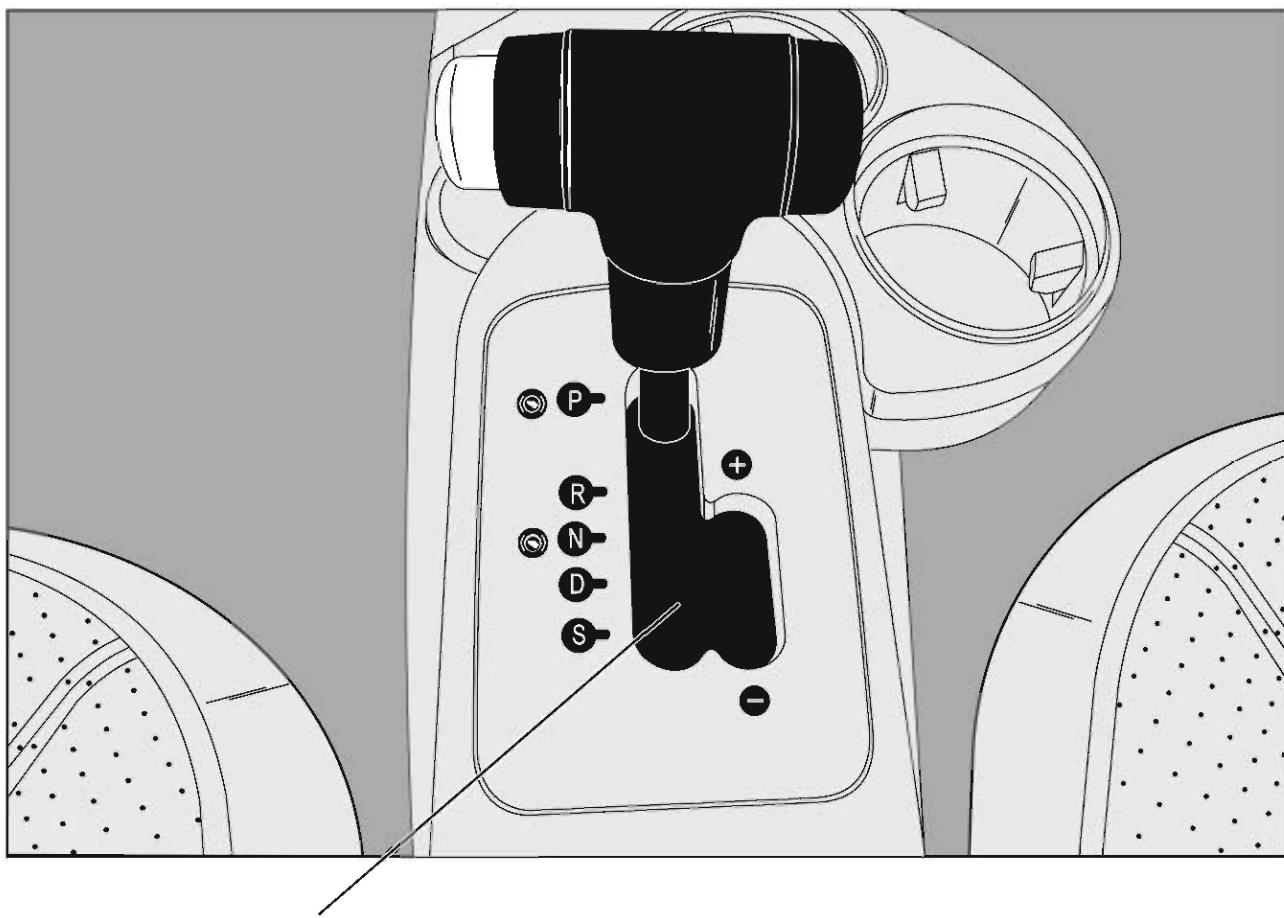
CORRECTION: If Tiptronic Switch replacement is determined, a new shifter assembly must be purchased from the dealer. Refer to Figure 3 for the parts that will need to be replaced.

Note: Parts listed in Figure 3 are sold as an assembly and must be ordered from the dealer using VIN number for appropriate trim package for the vehicle.



VOLKSWAGEN NEW BEETLE FAILSAFE DTC 01045 STORED

TIPTRONIC SHIFTER ASSEMBLY



TIPTRONIC SWITCH
ALIGNMENT GUIDE

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Figure 1

**VOLKSWAGEN NEW BEETLE
FAILSAFE DTC 01045 STORED**
TYPICAL VAG-COM SCREEN
CONTROL MODULE SELECTION

02 Auto Trans

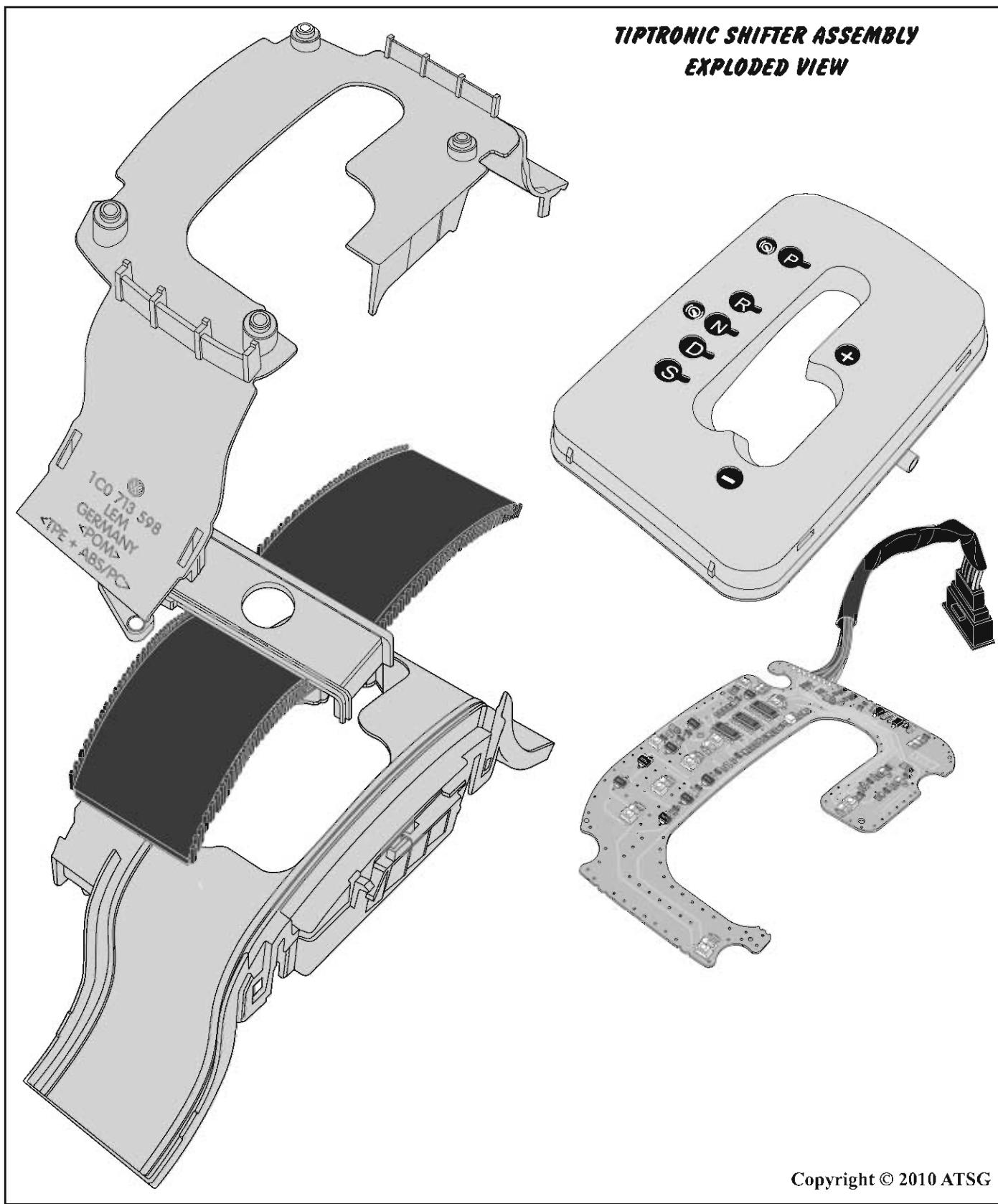
GROUP SELECTION

**08 Measured
Blocks**

012	Selector Lever 	Tiptronic Recognition 	Driving Mode 	Transferrable Torque 100.0%
	P-R-N-D Manual	P-R-N-D= Blank Manual= M	Park = 0 Reverse = R Neutral = 0 Drive = 1H-6H 3M-6M (Tcc)	
013	Selector Lever 	Multifunction Switch 00000000 	Tiptronic Recognition 	Tiptronic Recognition 00000000 
	P-R-N-D Manual	P=00001001 R=00001100 N=00000101 D=00000110 S=00001111	P-R-N-D= Blank Manual= M UP Button =UP DN Button = Down	D=00000000 M=00001000 UP=00011000 DN=00001100
014	Accelerator Pedal Position% 0-100%	N/A	Idle Switch Condition 	APP Condition 00000000
			Off Idle=00000000 At Idle=00000001	



VOLKSWAGEN NEW BEETLE
FAILSAFE DTC 01045 STORED



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Figure 3
Automatic Transmission Service Group



AUDI/VW DUAL SHIFT GEAR BOX 02E SHIFT SHUDDER AND/OR SHIFT ERRORS

COMPLAINT: After repairs, the Direct Shift Gear box may exhibit a shudder on the 1-2, 3-4 and 5-6 shift. In some instances the computer may report shift errors.

CAUSE: The K2 clutch assembly (Figure 1) drives Input Shaft 2 to provide 2nd, 4th and 6th gear. The frictions used in the K2 clutch assembly are directional sensitive friction plates. If they are installed incorrectly, the overlap transition from off to on is greatly reduced causing the above shift complaint.

CORRECTION: Caution must be taken to ensure that the frictions are installed into the drum with the grooves facing counterclockwise otherwise shifting effort will be affected due to clutch overlap issues (Figure 2).

Another possibility of having shifting effort complaints and/or shift errors are worn synchro assemblies, particularly for the 1-2 and the 2-3 shifts as they utilize a three piece synchronisation set. The shaft bearings are known to wear causing movement of the shafts causing premature wear of these synchro-rings (Figure 3). In most of these cases bearing noises are heard in addition to shift error complaints or shift error codes.

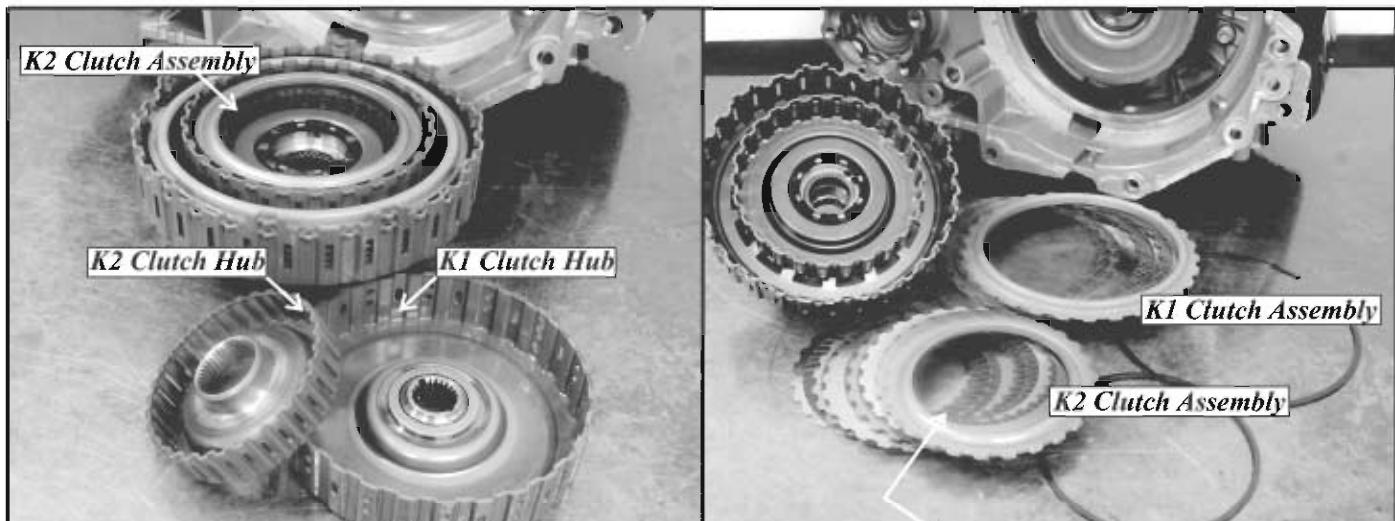


Figure 1

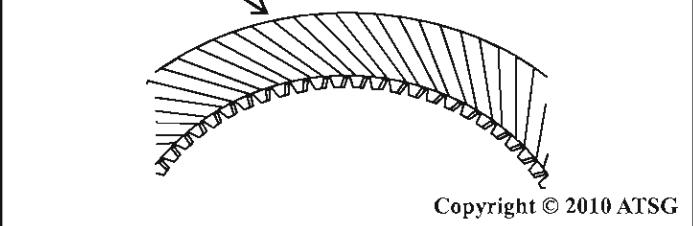
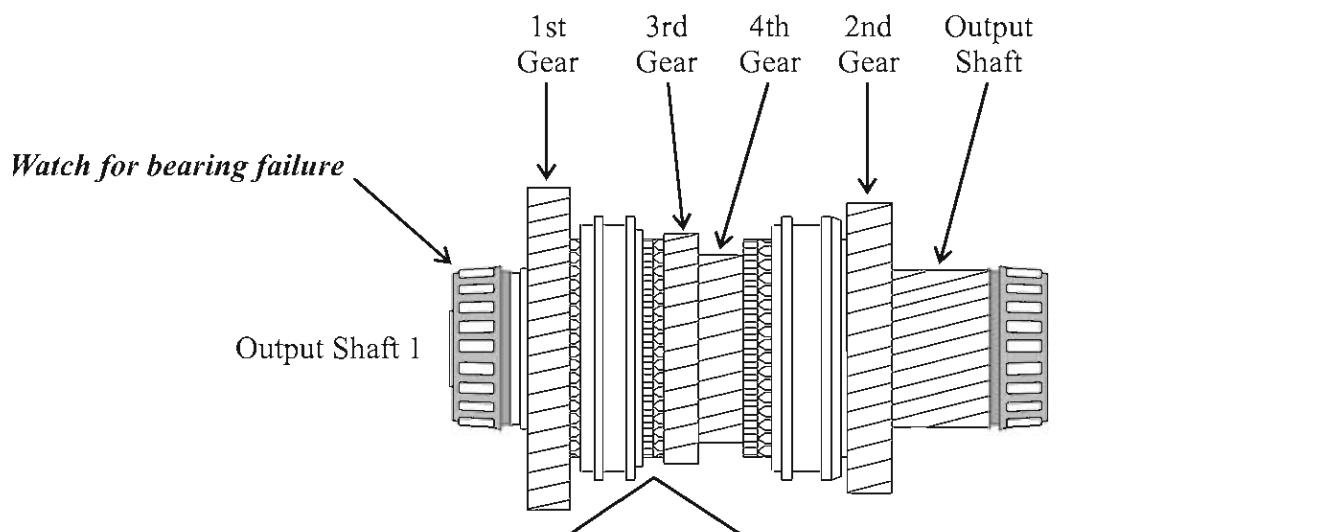


Figure 2

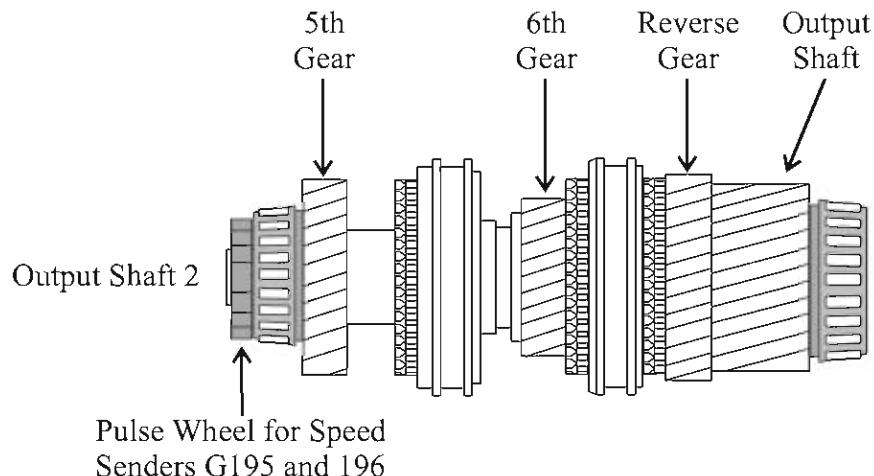


AUDI/VW DUAL SHIFT GEAR BOX 02E SHIFT SHUDDER AND/OR SHIFT ERRORS



1st, 2nd and 3rd gears utilize a three piece synchronisation which consists of an outer synchro-ring, an intermediate ring, and a friction cone that is integral to the gear.

4th, 5th and 6th gears utilize a simple cone system consisting of a synchro-ring and the friction cone on the gear. The speed difference with these gears is not as great as with 1st, 2nd and 3rd. As a result, the balance of speed requires less effort in synchronization and occurs faster.





VOLKSWAGEN 09D PRELIMINARY INFORMATION

The 09D (TR-60SN) is the rear wheel drive version of the 09G (TF-60SN) front drive transmission used by Volkswagen, Audi and Mini Cooper. The 09D is currently in use in the U.S. in the Volkswagen Touareg, Audi Q7 and Porsche Cayenne.

The TCM utilizes software to control shift feel based on engine torque, transmission rpm and fluid temperature. There is also a strategy called "Skip Shift Control" which is used to minimize shift busyness and provide smooth shift feel and good response. The Skip Shift Control has two basic strategies: a Two-Step Skip Shift strategy is used during certain driving conditions where it will make a 1-3, 2-4 or 3-5 upshift while a Three-Step Skip Shift strategy is used to make a 6-3 or 5-2 downshift. These strategies are made possible by the way in which each clutch element is being controlled using linear solenoids.

Refer to Figure 1 for 09D vehicle application.

Refer to Figure 2 for the clutch application chart.

Refer to Figures 3, 4, and 5 for pressure port locations.

Refer to Figure 6 for front case passage identification.

Refer to Figure 7 for bottom case passage identification.

Refer to Figure 8 for terminal function for the 14 pin transmission case connector.

Refer to Figure 9 for the terminal function for the 8 pin transmission case connector.

Refer to Figure 10 for solenoid and electrical component identification.

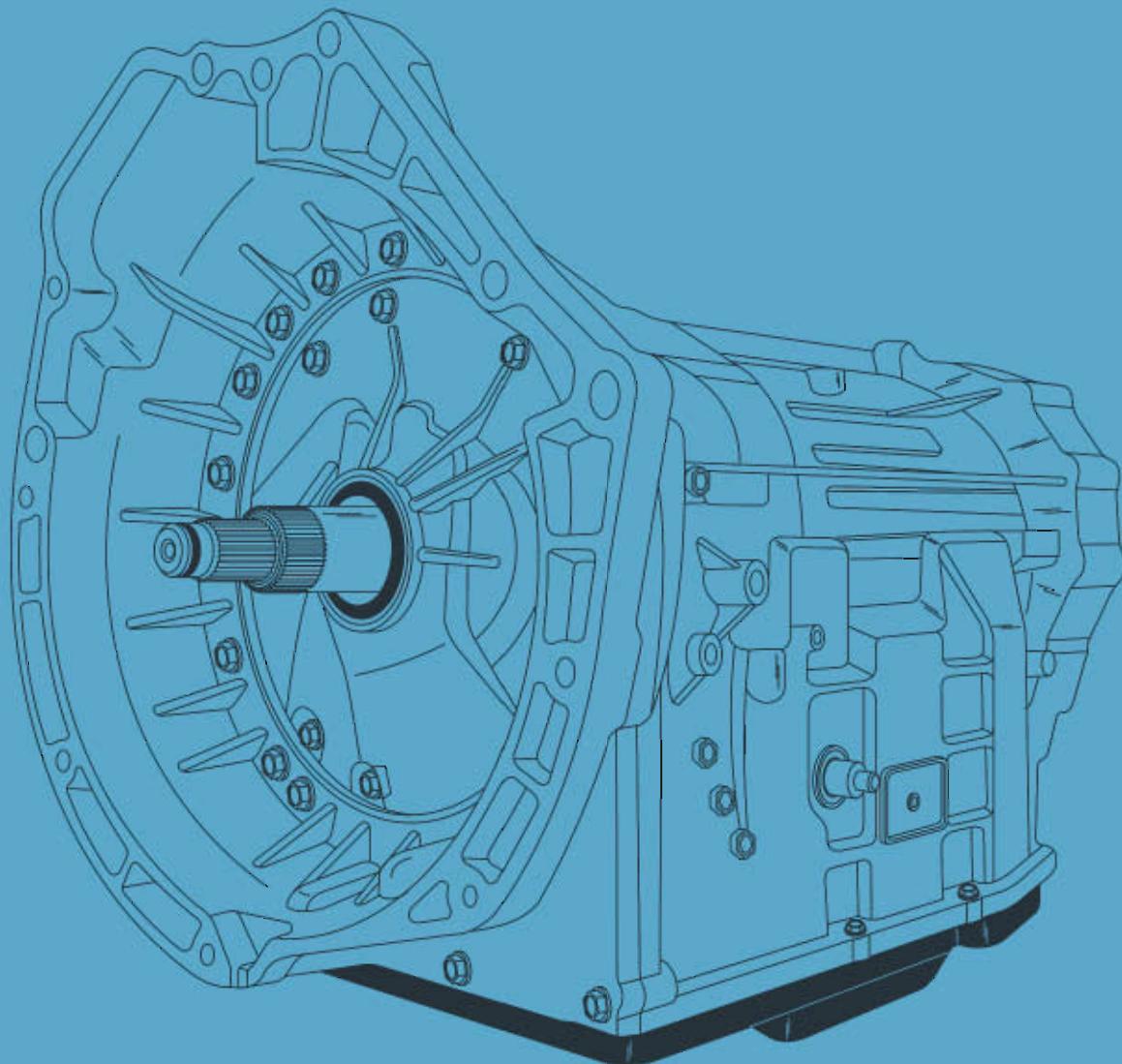
Refer to Figure 11 for solenoid/clutch application chart.

Refer to Figure 12 for upper valve body small parts locations.

Refer to Figure 13 for lower valve body small parts locations.



VOLKSWAGEN 09D

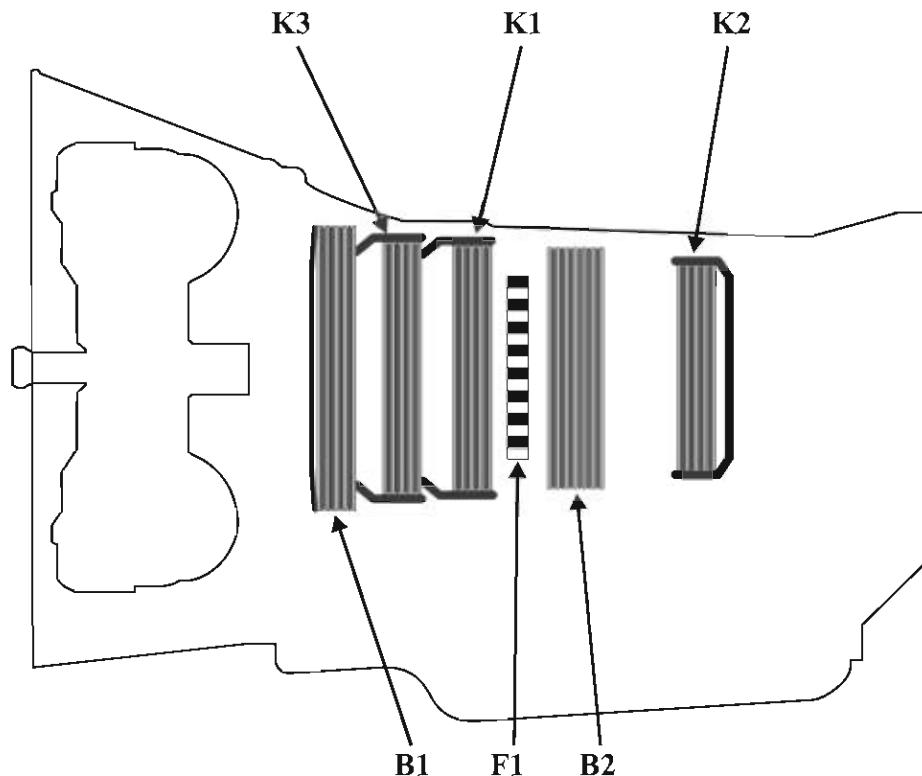


2004 To Present VW Touareg
2008 To Present Porsche Cayenne
2007 To Present Audi Q7



VOLKSWAGEN 09D PRELIMINARY INFORMATION

CLUTCH POSITION



Gear	Component					
	K1	K2	K3	B1	B2	F1
1st Gear	X					X*
2nd Gear	X				X	
3rd Gear	X			X		
4th Gear	X	X				
5th Gear		X	X			
6th Gear		X			X	
Rev Gear			X			X

* The B2 clutch is applied in Tiptronic Mode 1st gear only for engine braking.

VOLKSWAGEN 09D PRELIMINARY INFORMATION

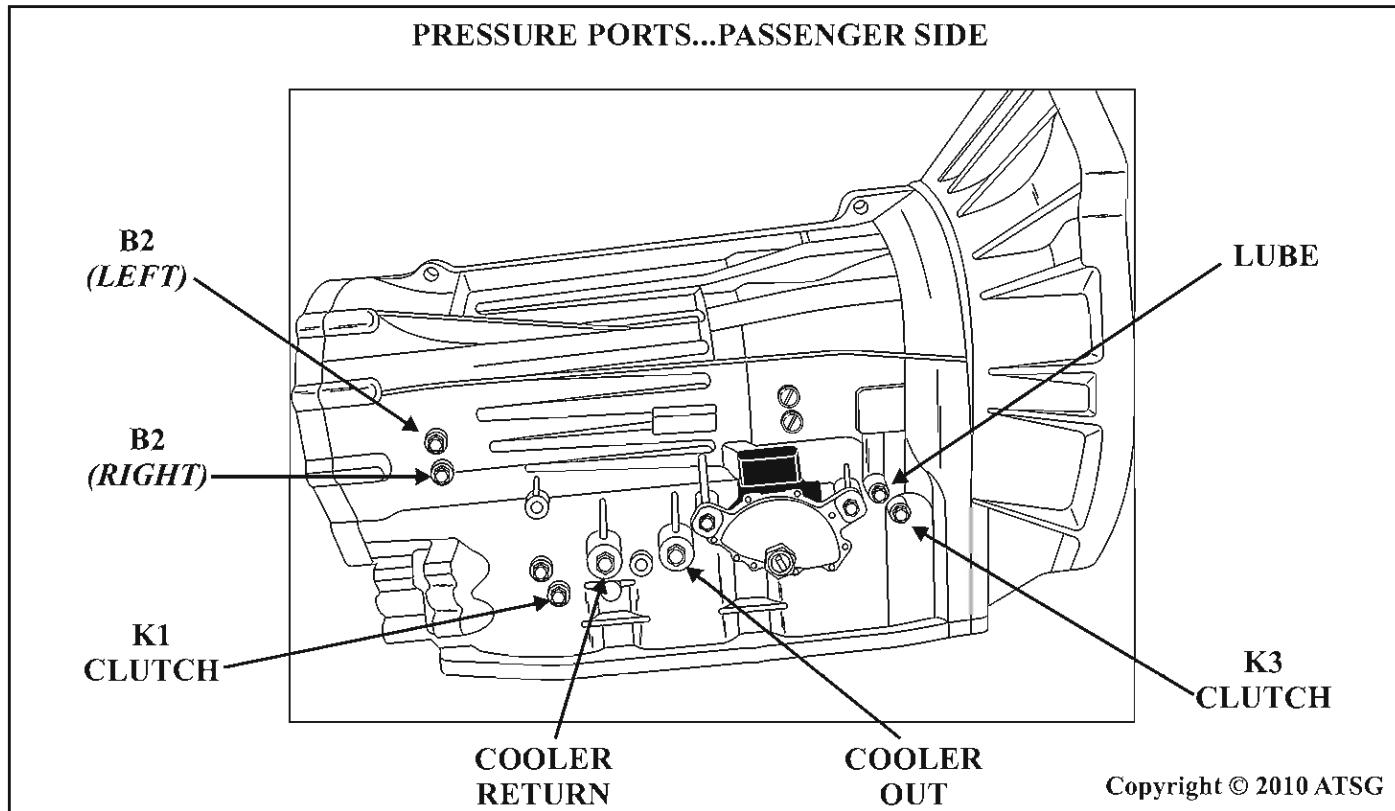


Figure 3

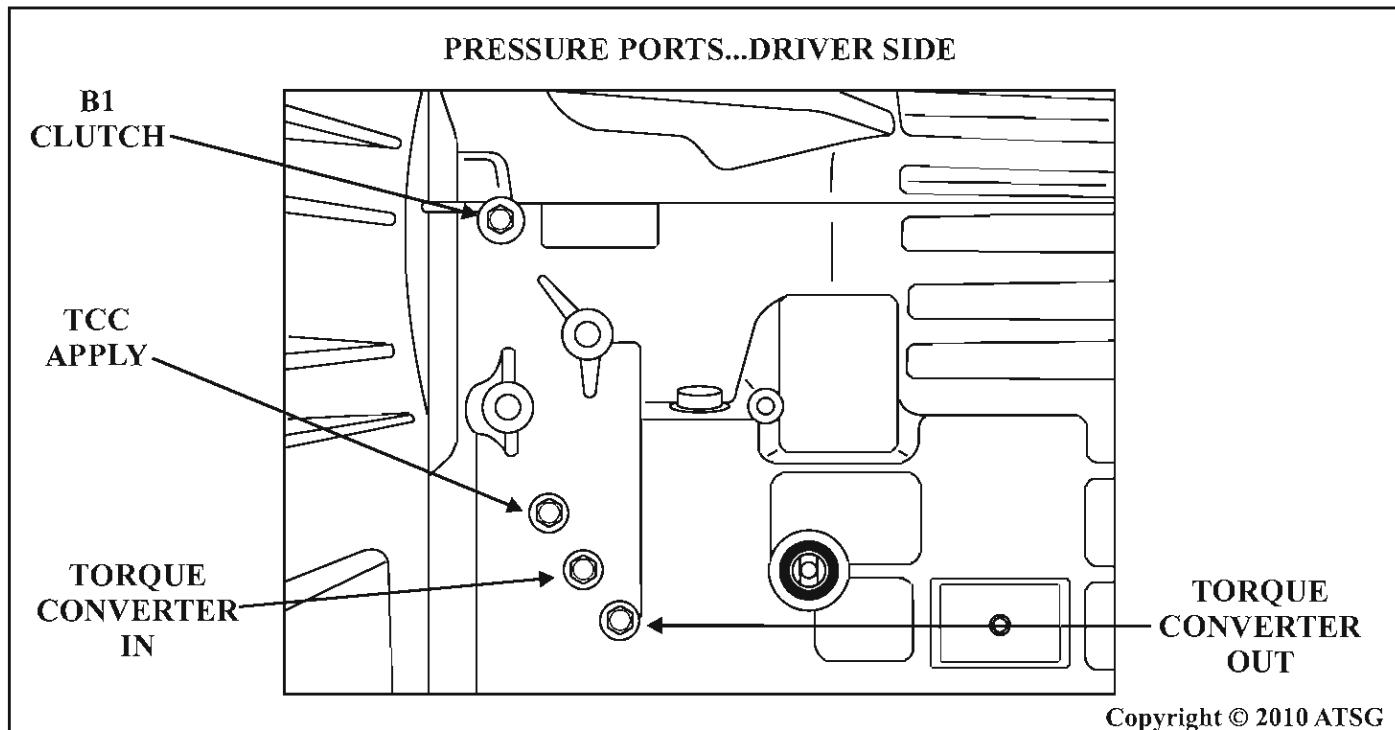
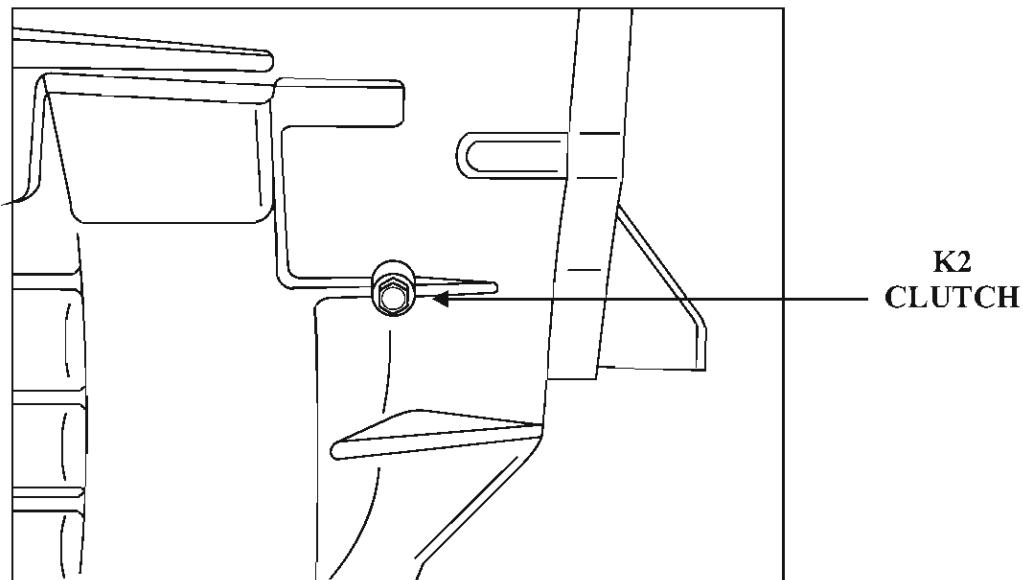
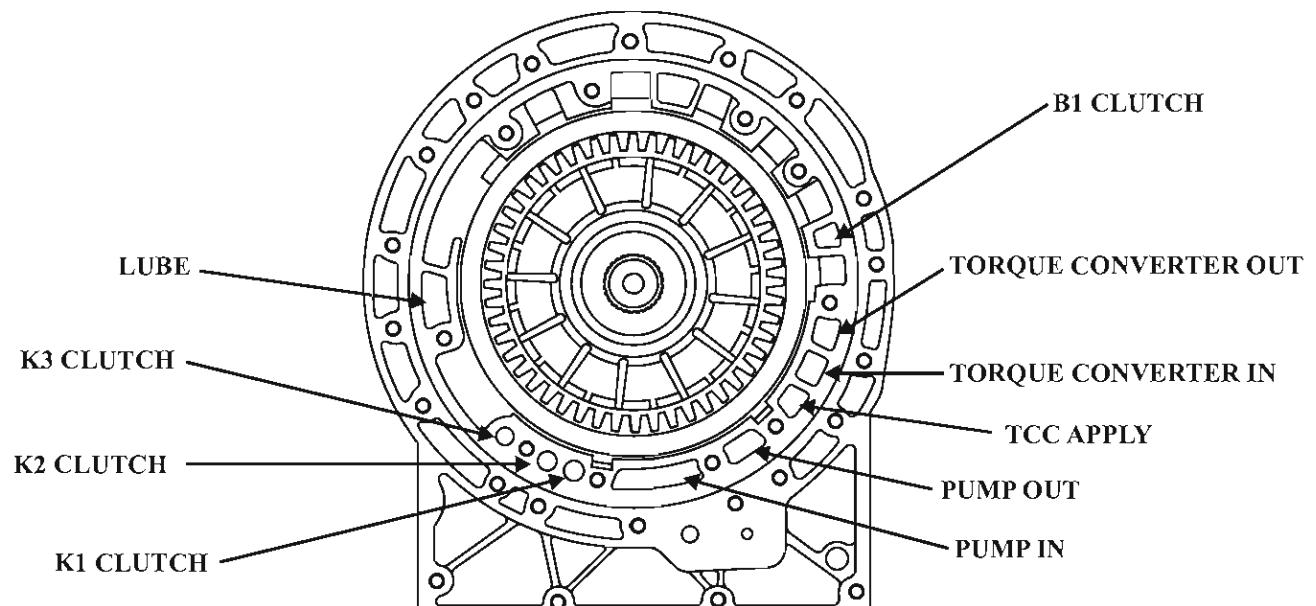


Figure 4

**VOLKSWAGEN 09D
PRELIMINARY INFORMATION****PRESSURE PORTS...REAR**

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Figure 5

CASE PASSAGE ID...FRONT

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Figure 6

VOLKSWAGEN 09D PRELIMINARY INFORMATION

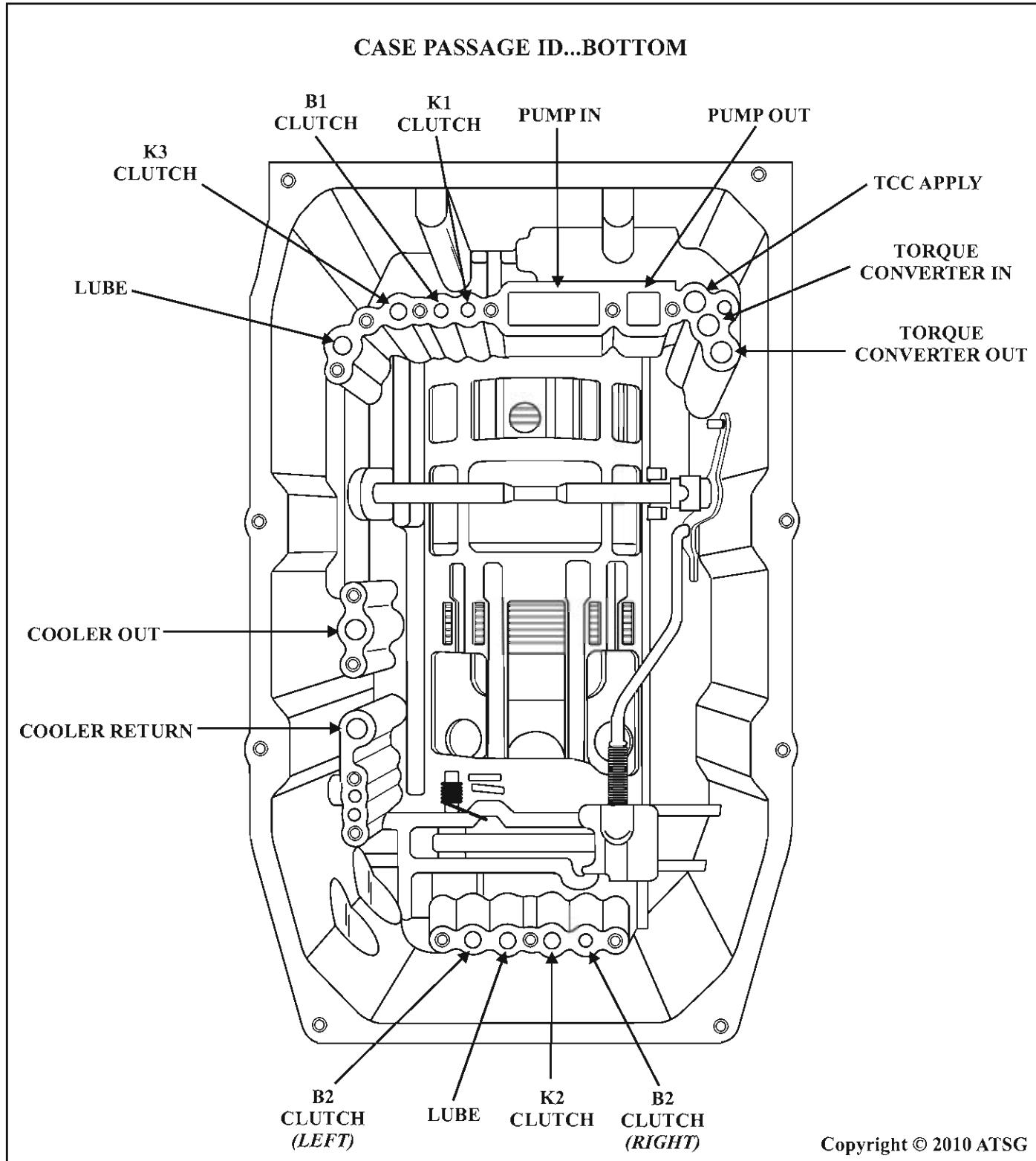
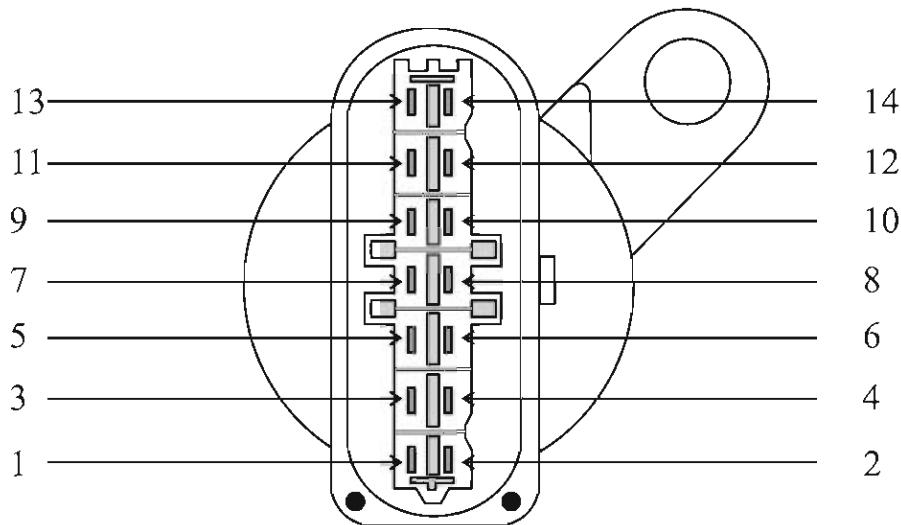


Figure 7



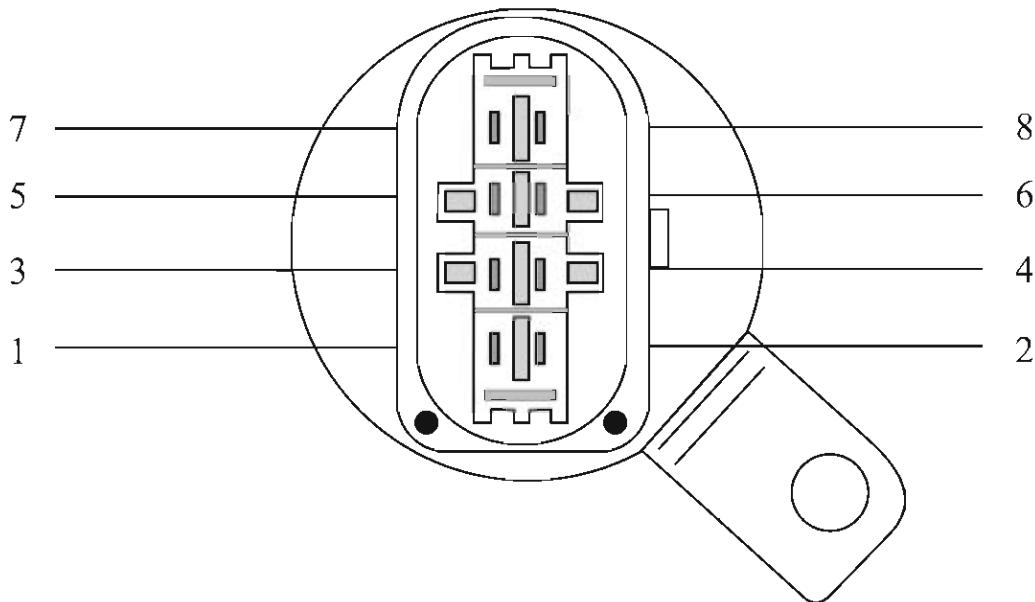
VOLKSWAGEN 09D PRELIMINARY INFORMATION

14 PIN TRANSMISSION CASE CONNECTOR



Terminal	Solenoid	Resistance	Internal Wire Color
1	N88	15	White
2	N89	15	Black (<i>Blue Solenoid Connector</i>)
3 & 4	N90	7.5	Yellow & Purple
5 & 6	N282	7.5	Red & Blue
7 & 8	N92	7.5	Lt. Blue & Yellow
9 & 10	N283	7.5	White & Black
11 & 12	N91	7.5	Lt Green & Brown
13 & 14	N93	7.5	Green & Grey

NOTE: Terminal numbers are assigned by ATSG due to a lack of service information on the part of the manufacturer.

**VOLKSWAGEN 09D
PRELIMINARY INFORMATION****8 PIN TRANSMISSION CASE CONNECTOR**

Terminal	Device	Resistance	Internal Wire Color
1 & 2	TFT (G93)	3.4 K	Orange (2)
3 & 4	ISS (G182)	Hall 6.3M	White & Red
5 & 6	OSS (G195)	Hall 6.3M	Orange and Blue
7	PS (G193)		Blue
8	PS (G194)		Yellow

NOTE: Terminal numbers are assigned by ATSG due to a lack of service information on the part of the manufacturer.

VOLKSWAGEN 09D PRELIMINARY INFORMATION

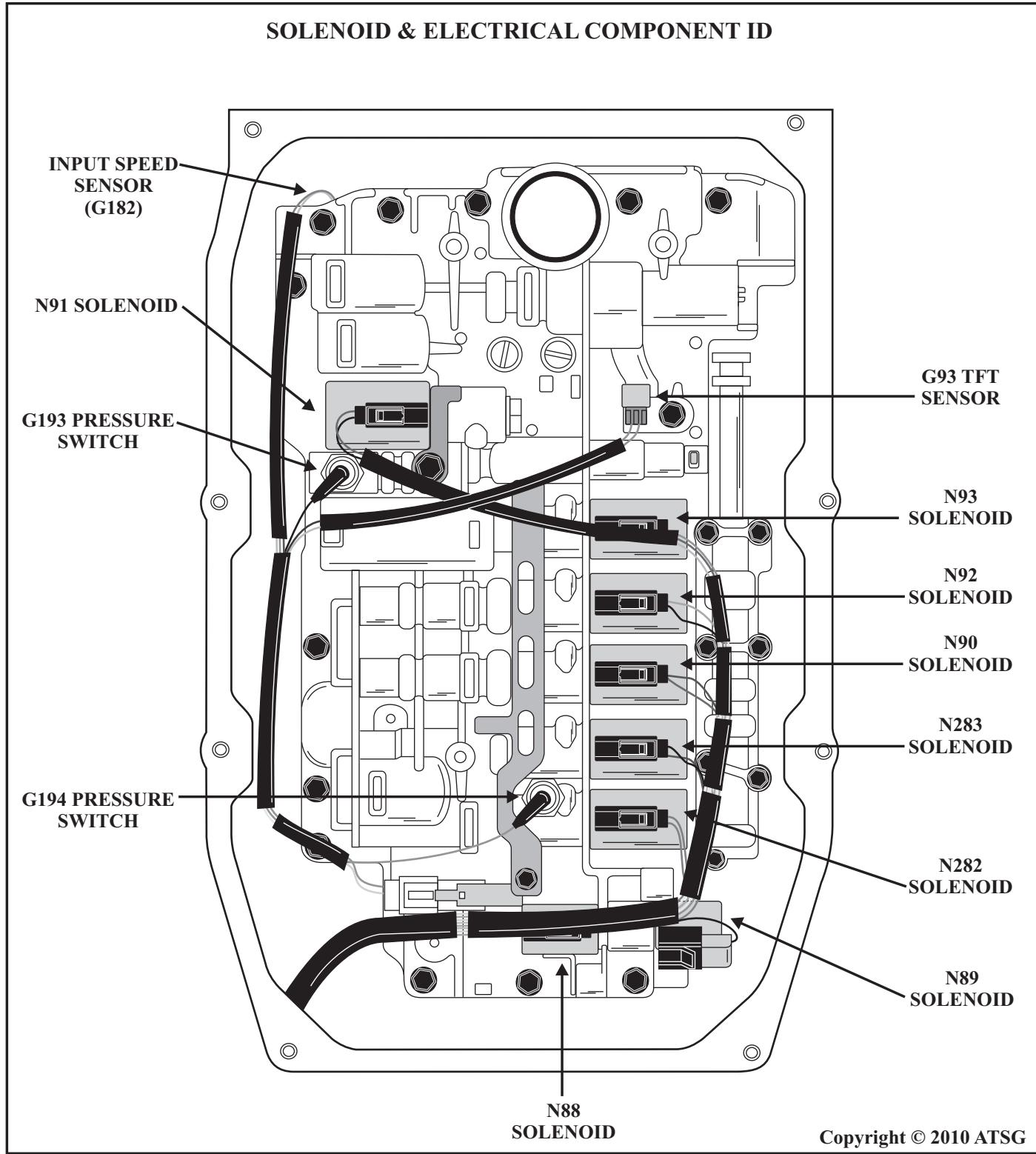


Figure 10

VOLKSWAGEN 09D PRELIMINARY INFORMATION

SOLENOID/CLUTCH APPLICATION

Gear Shift Position	Solenoid Shift Sequence								Clutch Application Chart					
	On/Off Solenoids		Pressure Control Solenoids						Clutch and Freewheel Components					
	N89 SV-2	N88 SV-1	N92 SV-5	N282 SV-9	N90 SV-3	N283 SV-10	N93 SV-6	N91 SV-4	K1	K2	K3	B1	B2	F1
Park			OFF	OFF	ON	ON	PWM							
Neutral			ON	ON	ON	ON	PWM							
Reverse			ON	ON	OFF	ON	PWM				ON		ON	
1st Gear	T	T	OFF	ON	ON	ON	PWM		ON					ON
2nd Gear			OFF	ON	ON	OFF	PWM	PWM	ON			ON		
3rd Gear	T/To	To	OFF	ON	OFF	ON	PWM	PWM	ON		ON			
4th Gear	T/To	To	OFF	OFF	ON	ON	PWM	PWM	ON	ON				
5th Gear	T/To	To	ON	OFF	OFF	ON	PWM	PWM		ON	ON			
6th Gear	ON	To	ON	OFF	ON	OFF	PWM	PWM		ON		ON		

N90 controls the K3 clutch apply

N91 controls converter clutch apply

N92 controls the K1 clutch apply

N93 controls main line pressure

N282 controls the K2 clutch apply

N283 controls the B1 clutch apply

N88 and N89 are alternately toggled On and Off to control the 4th through 6th shifts.

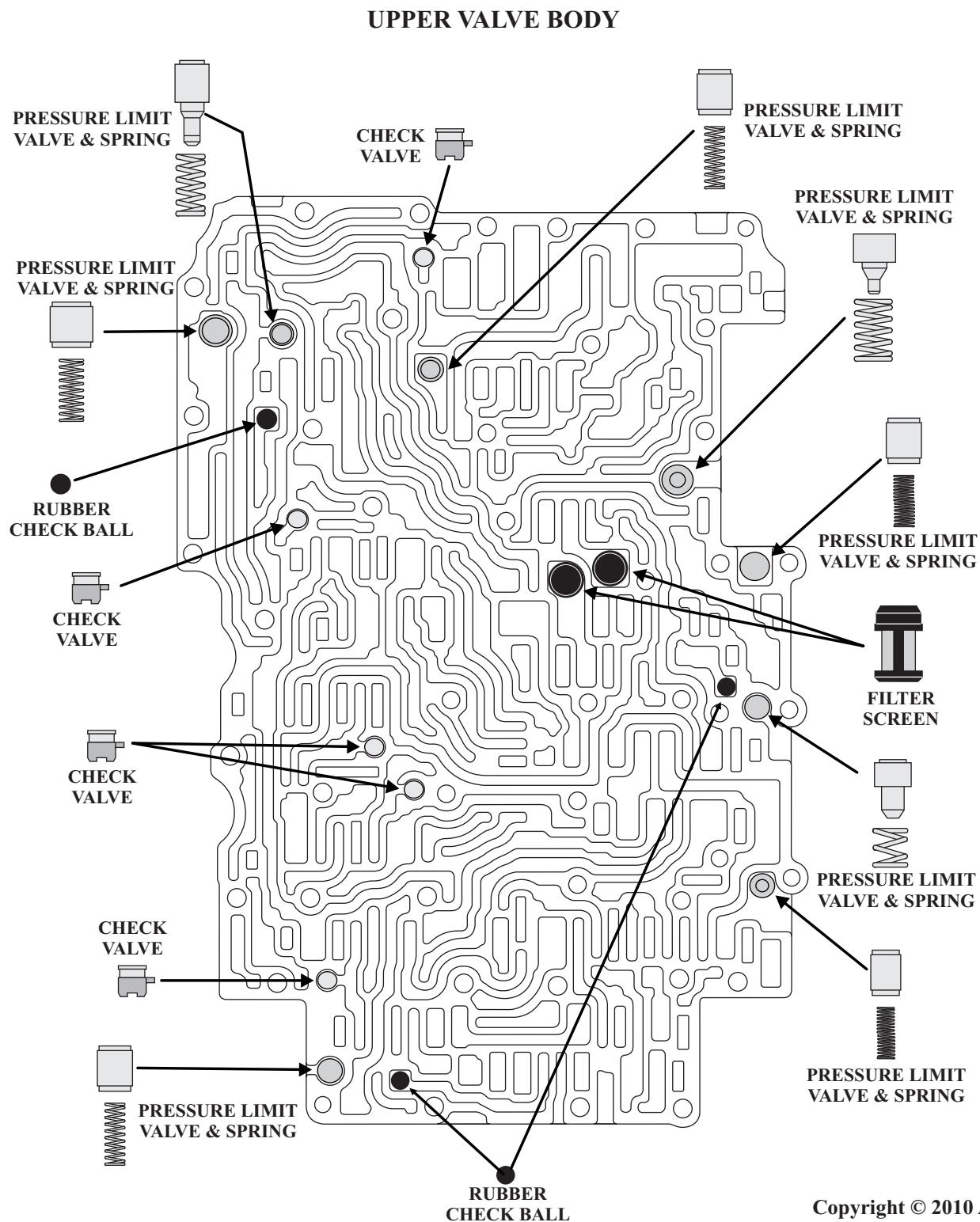
N88 and N89 also controls B2 clutch apply in Tiptronic first gear for engine breaking.

T = On in Tiptronic Mode

To = Solenoid is toggled On to Off

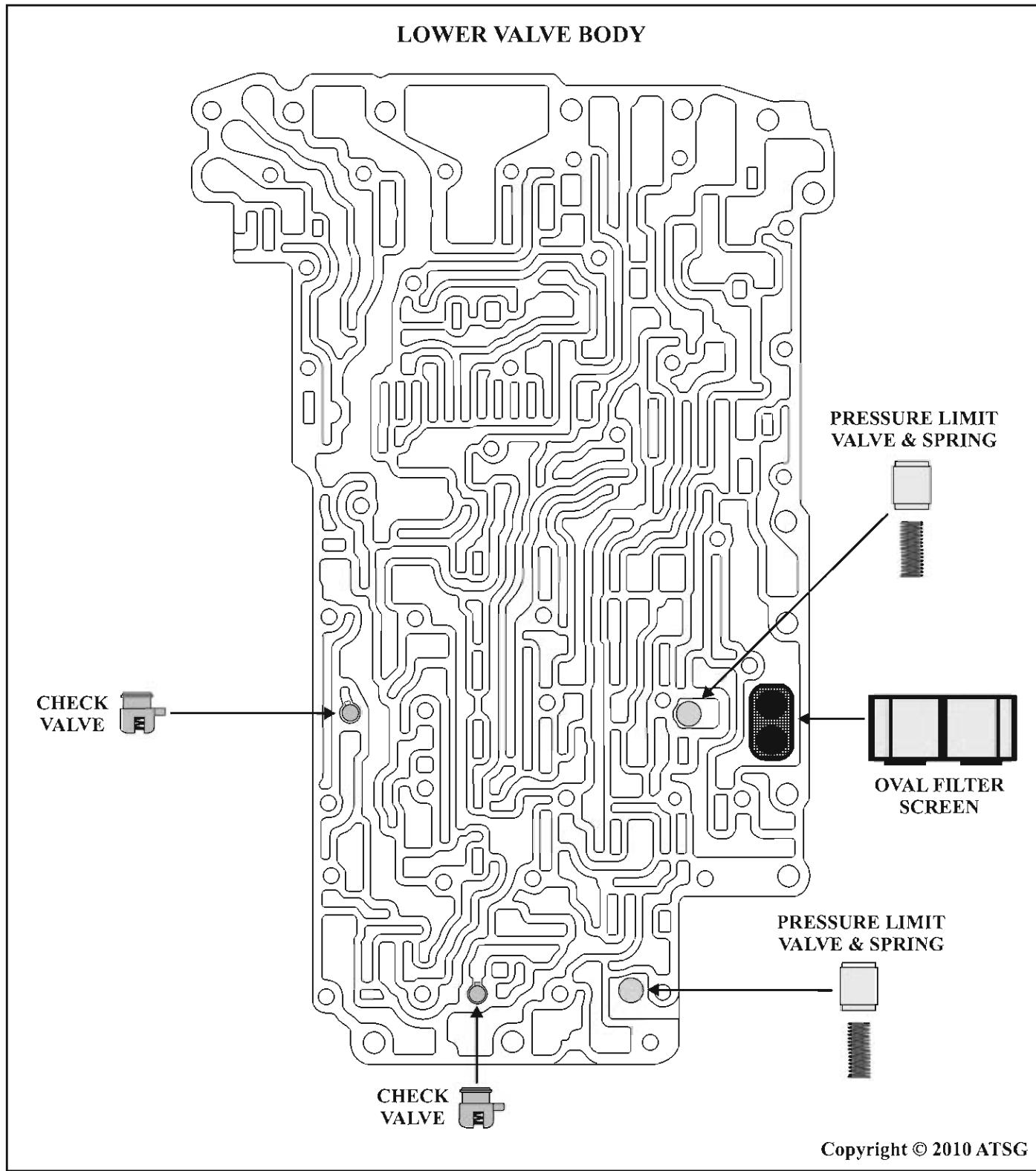
NOTE: When a linear solenoid is turned off, its respective clutch is applied. Although this chart seems to indicate that these style solenoids are ON/OFF, they are pulse width modulated as they come on and off controlling both the apply and release of a clutch.

VOLKSWAGEN 09D PRELIMINARY INFORMATION



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Figure 12

**VOLKSWAGEN 09D
PRELIMINARY INFORMATION**

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Figure 13



VOLKSWAGEN 09D “PRNDS” INDICATOR ILLUMINATED

COMPLAINT: A Volkswagen Touareg may come into the shop with the “PRNDS” Lamps illuminated and the transmission is in limp mode.

When the Transmission Control Module is scanned for codes, one or more solenoid codes or a code for the Multi-Function Switch may be stored, Refer to Figure 1. When the coded circuit is checked for resistance, it is found to be open.

CAUSE: The solenoid and multi-function switch wires are breaking at the terminal end crimp in the connectors that come from the TCM and plug into the transmission case connectors.

CORRECTION: Locate the broken wire (See Figure 2) and remove that terminal end from the connector, the terminal ends are rather difficult to remove so the use of a proper terminal removal tool will make the extraction easier, Refer to Figure 3.

Once the terminal end is removed from the connector, snip the wire approximately 12 inches back from the terminal end.

Acquire a wire end repair kit from a VW dealer (Refer to Figure 4) which will get you a new 24 inch length of wire with a terminal end on each end of the wire. Cut it in half, this will allow you to repair two wires. Splice one of the halves to the vehicle wire and insert the terminal end into the connector until you hear a click, exercise care as the terminal ends are fragile.

NOTE: The color of the wire in the repair kit may not match the wire you are repairing.

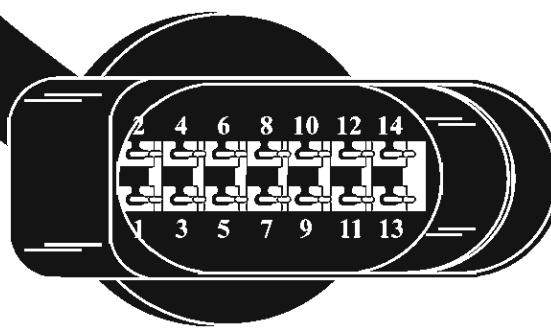
SERVICE INFORMATION:

09D Wire End Repair Kit.....000-979-131-A



VAG CODE	VAG ID	GENERIC ID	WIRE COLOR
00293	F125	MULTI-FUNCTION SWITCH	N/A
00258	N88	SOLENOID VALVE 1	YELLOW
00260	N89	SOLENOID VALVE 2	YELLOW/WHITE
00262	N90	SOLENOID VALVE 3	YELLOW/GREY YELLOW/BROWN
00264	N91	SOLENOID VALVE 4	GREEN/BLACK GREEN/BROWN
00266	N92	SOLENOID VALVE 5	YELLOW/RED YELLOW/VIOLET
00268	N93	SOLENOID VALVE 6	GREEN/WHITE BLUE/WHITE
00348	N282	SOLENOID VALVE 9	YELLOW/GREEN YELLOW/BLUE
00349	N283	SOLENOID VALVE 10	BLUE/YELLOW YELLOW/BLACK

Figure 1



TERMINAL	SOLENOID	RESISTANCE	INTERNAL WIRE COLOR
1	N88	15	White
2	N89	15	Black (<i>Blue Solenoid Connector</i>)
3 & 4	N90	7.5	Yellow & Purple
5 & 6	N282	7.5	Red & Blue
7 & 8	N92	7.5	Lt. Blue & Yellow
9 & 10	N283	7.5	White & Black
11 & 12	N91	7.5	Lt Green & Brown
13 & 14	N93	7.5	Green & Grey

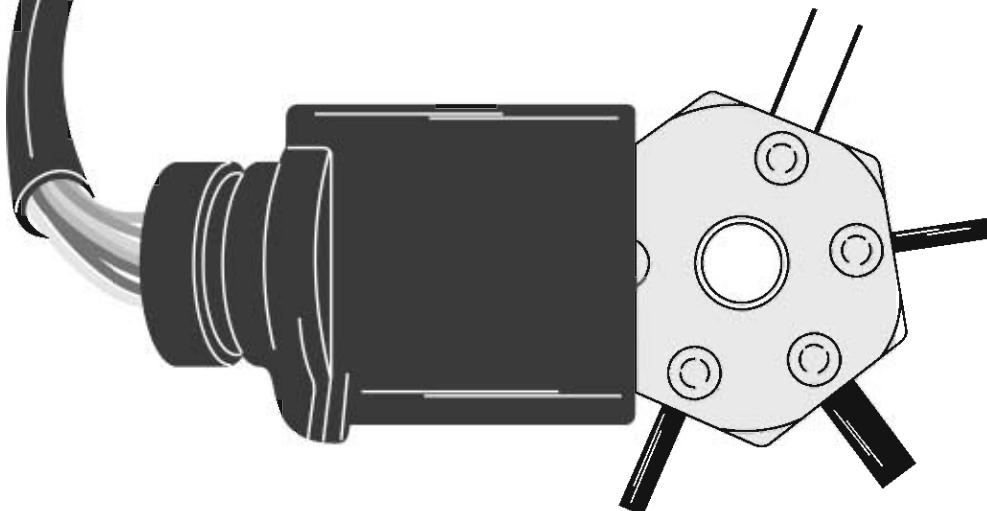
NOTE: Terminal numbers are assigned by ATSG due to a lack of service information on the part of the manufacturer. Copyright © 2010 ATSG

Figure 2

Automatic Transmission Service Group

**VOLKSWAGEN 09D
"PRNDS" INDICATOR ILLUMINATED**

REMOVE WIRE TERMINAL END WITH A REMOVAL TOOL

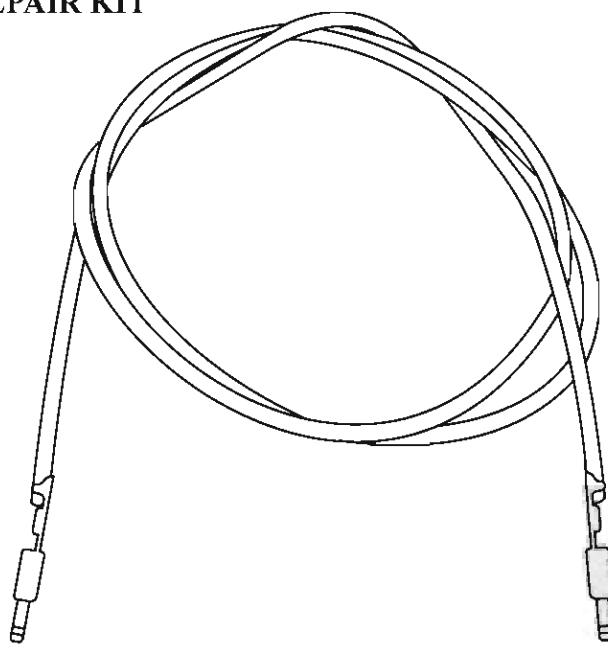


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Figure 3

WIRE END REPAIR KIT

000-979-131-A		QTY
ONE		
AA 205 D02 WIRES		
		Ctn Ogn Hax Mat
PO# 4101709	HU# 21619 706	3007145442-000080
405-041		2002724788-0008
		B2



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Figure 4

BMW/JAGUAR ZF5HP24 "A" CLUTCH DRUM FAILURE

COMPLAINT: A vehicle with a ZF5HP24 comes in with a complaint of little or no movement forward, reverse is good.

Upon disassembly of the transmission the "A" Clutch drum is found to be broken at the clutch pack retaining snap ring (Refer to Figure 1) and the snap ring has come out of the drum. The technician replaced the drum with the updated part only to have it come back with the same complaint and the same broken drum.

CAUSE: The drum is breaking in the snap ring area due to ***un-commanded*** pressure spikes. There is an updated pressure regulator valve (See Figure 2) which could help the situation as long as the valve bore is not worn. The pressure spikes can still occur and are caused by wear in the pressure regulator valve bore in the lower front valve body, Refer to Figure 3.

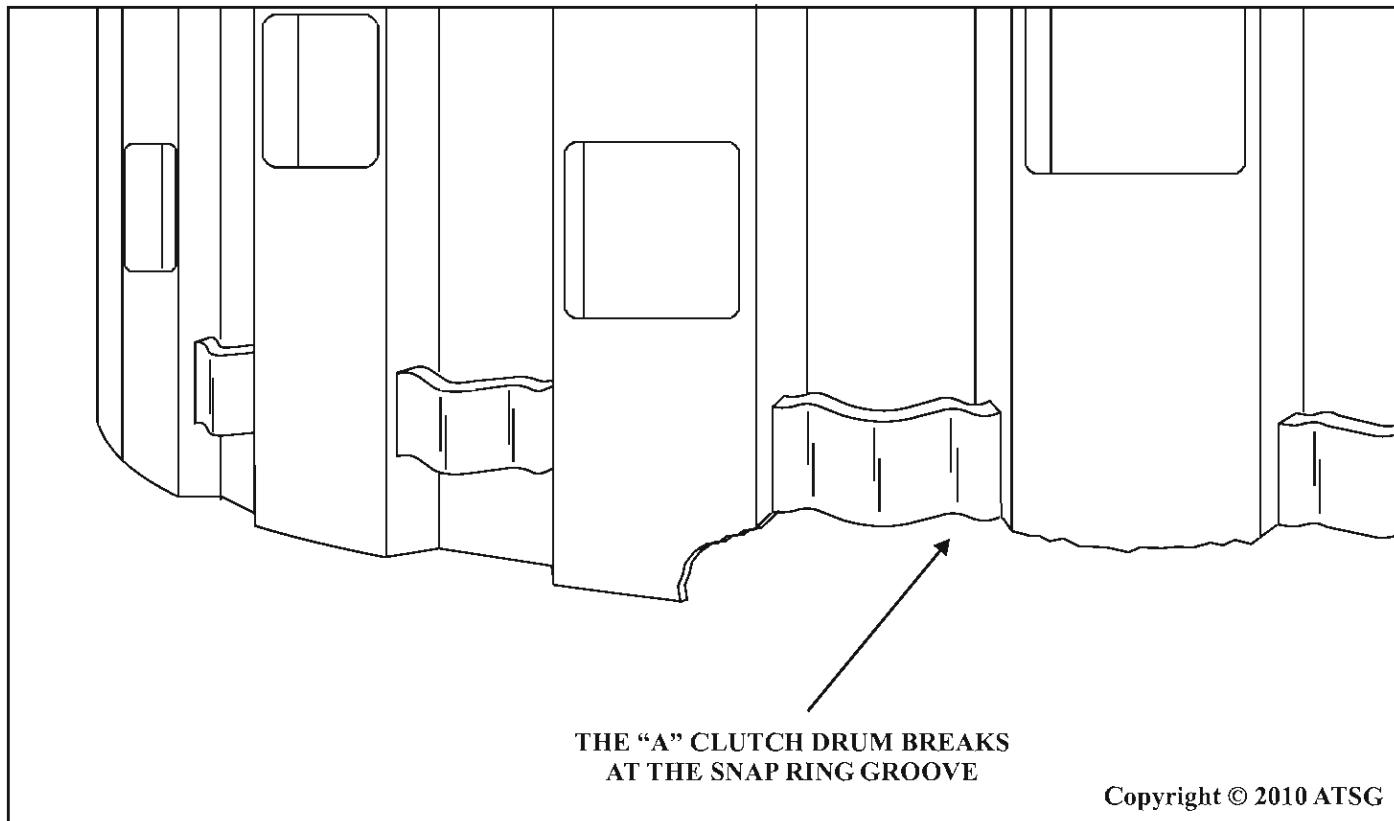
CORRECTION: Using the part numbers found under Service Information, replace the pressure regulator valve and the lower front valve body.

SERVICE INFORMATION "Clutch Drum".....1058-270-040

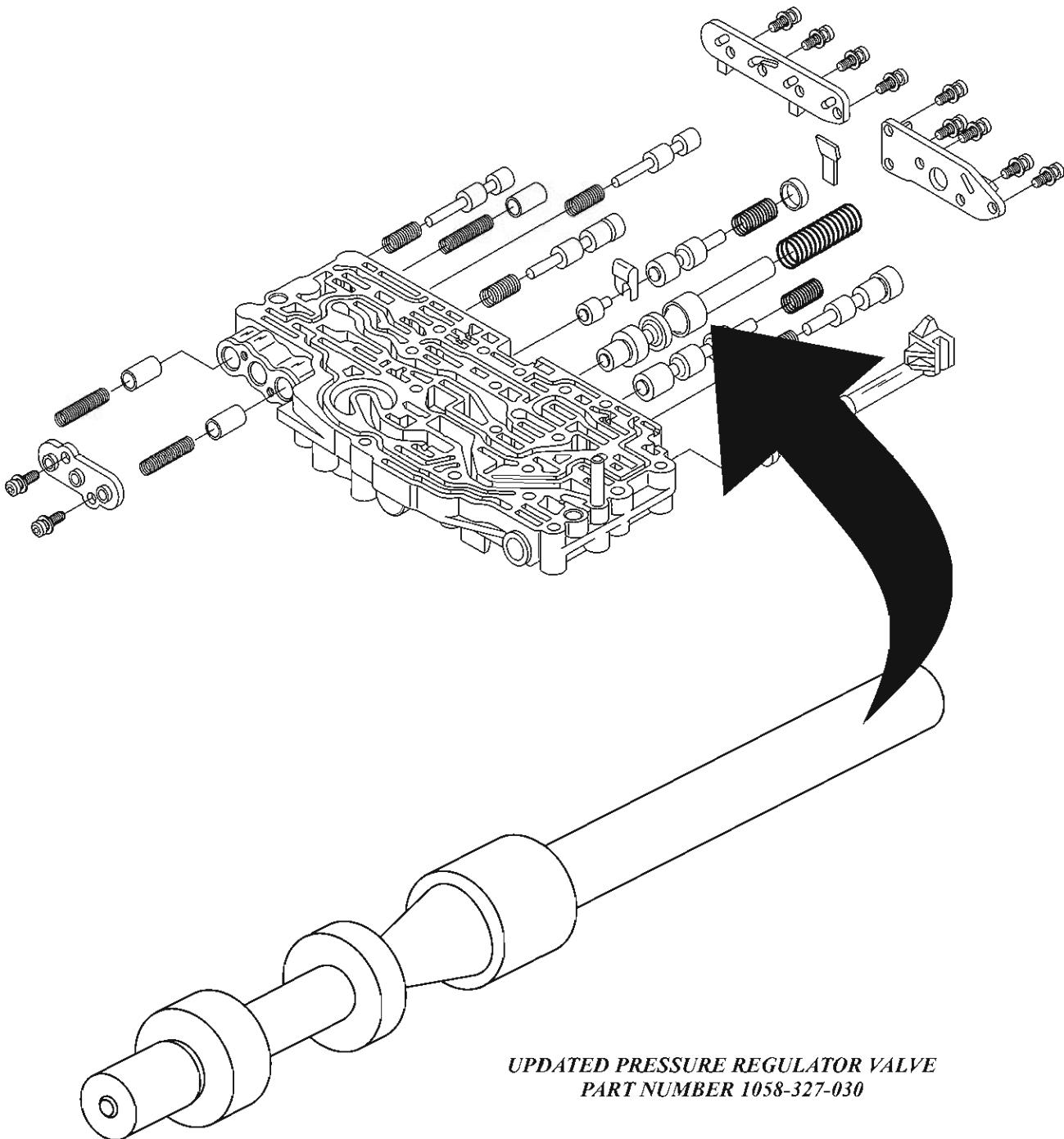
Updated Pressure Regulator Valve.....1058-327-030

Lower Front Valve Body.....1058-327-022

A special thanks to Nat Wentworth of Eriksson Industries for supplying photos and part numbers.



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**BMW/JAGUAR ZF5HP24
"A" CLUTCH DRUM FAILURE****ZF-5HP-24 LOWER FRONT VALVE BODY**

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Figure 2

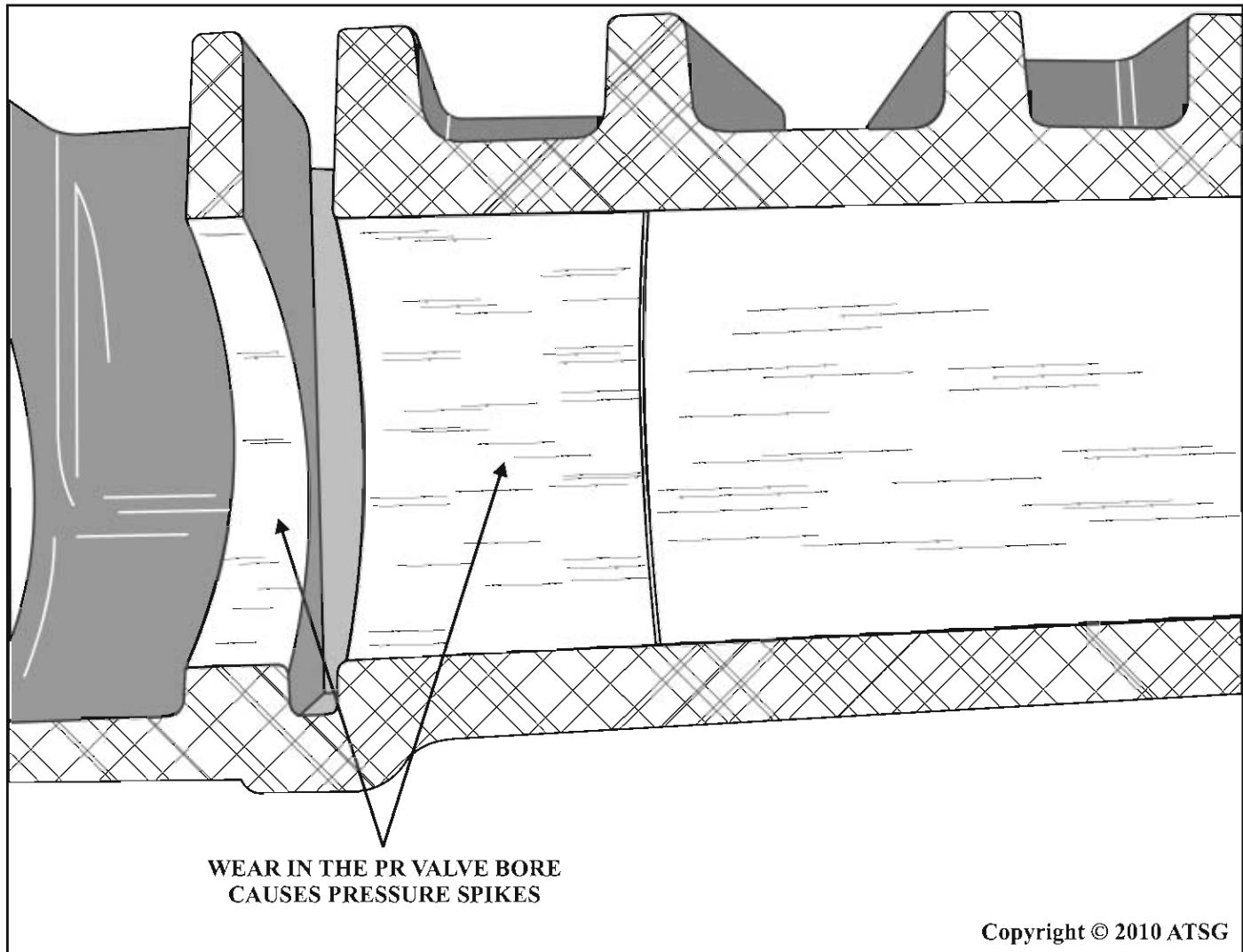
**BMW/JAGUAR ZF5HP24
"A" CLUTCH DRUM FAILURE**

Figure 3



MITSUBISHI SPORT LAMP FLASHING

COMPLAINT: A 1995 Mitsubishi 3000GT came into the shop in limp mode and the Sport Lamp in the instrument cluster was flashing, the codes that were retrieved were gear ratio codes. As it turns out a transmission was installed with the wrong gear ratio.

Once repairs were completed using the correct gear ratio parts, the transmission worked flawlessly, however, the Sport Lamp was still flashing, (Refer to Figure 1). Code retrieval indicated, no codes were stored.

Because this vehicle was equipped with a "Power/Econo" switch on the console, and many other vehicles are equipped with similar switches that may say power, normal, sport, etc. and it is not uncommon for one of these lamps to flash when a transmission related problem exists (See Figure 2), the technician thought that this might have something to do with the flashing Sport Lamp.

CAUSE: The technician decided it was time to look at a wiring diagram in order to see what part the Sport Lamp played with the transmission control system. The wiring diagram revealed no Sport Lamp in the transmission control system.

The technician decided to backtrack and look at a wiring diagram for the instrument cluster starting from the Sport Lamp and seeing where it comes from.

The IC wiring diagram indicated both a Sport Lamp and a Tour Lamp, which is controlled by an Electronically Controlled Suspension Module.

At this time the technician sees a button on the dash that is marked "ECS", (Refer to Figure 3), and decides to scan for trouble codes in the ECS system. Should the scan tool not communicate with this module, codes can be retrieved manually by using a voltmeter.

With ignition on, connect the voltmeter positive lead to DLC terminal 3 and the negative lead to DLC terminals 4 or 5 as shown in Figure 4. The voltmeter screen shot seen in Figure 5 indicates six long flashes and one short flash, this would equate to a Code 61. By consulting a ECS Trouble chart as seen in Figure 6, Code 61 indicates that the problem lies in the Right Front Strut Actuator. When the technician looked at the top of the strut tower, there were wires attached to it, (See Figure 7).

It seems that the ECS module controls the softness or firmness of all four shock absorbers. What further complicated the situation was the fact that the Tour Lamp was burnt out, when a problem exists in the ECS system, both the Sport Lamp and the Tour Lamp are supposed to flash, (Refer to Figure 8).

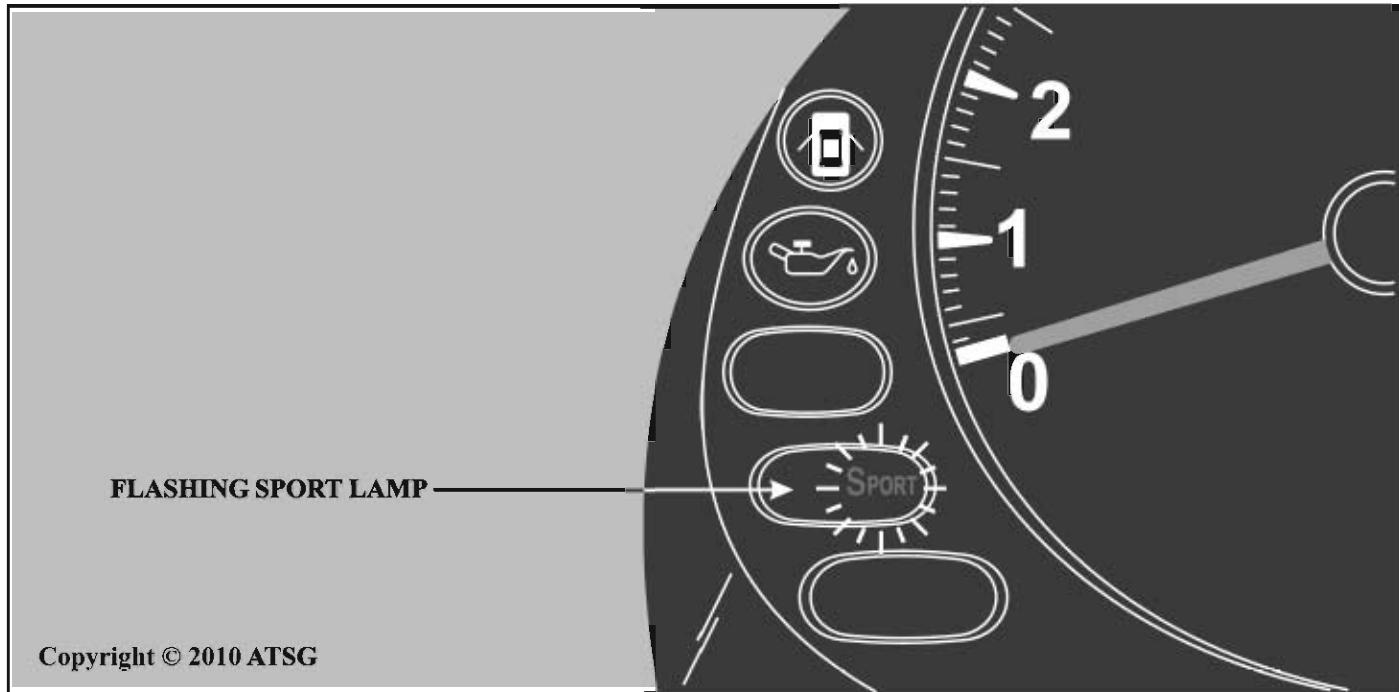
CORRECTION: When the ECS system is working properly, upon startup the Tour Lamp will be illuminated and the ECS module will automatically control the dampening of the struts depending on driving conditions.

When the ECS button is pushed, the system will switch to "Sport Mode", the Sport Lamp will illuminate and strut dampening is set to the firmest setting at all times regardless of driving conditions.

A special thank you to Chris Colucci from C.N.S. Transmissions in Walnut, MS for sharing his experience with us in order to make this bulletin possible.

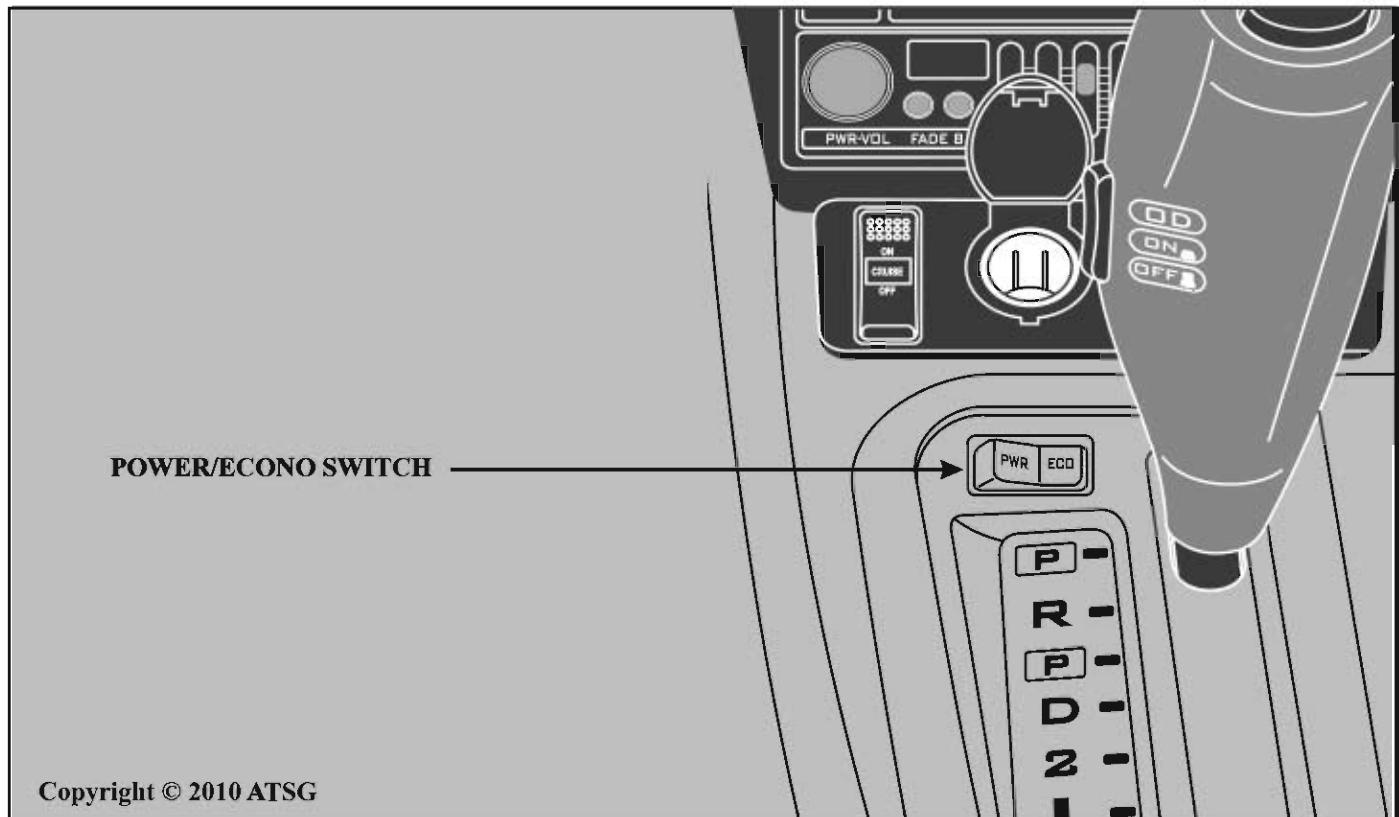


MITSUBISHI SPORT LAMP FLASHING



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Figure 1



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Figure 2

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MITSUBISHI SPORT LAMP FLASHING

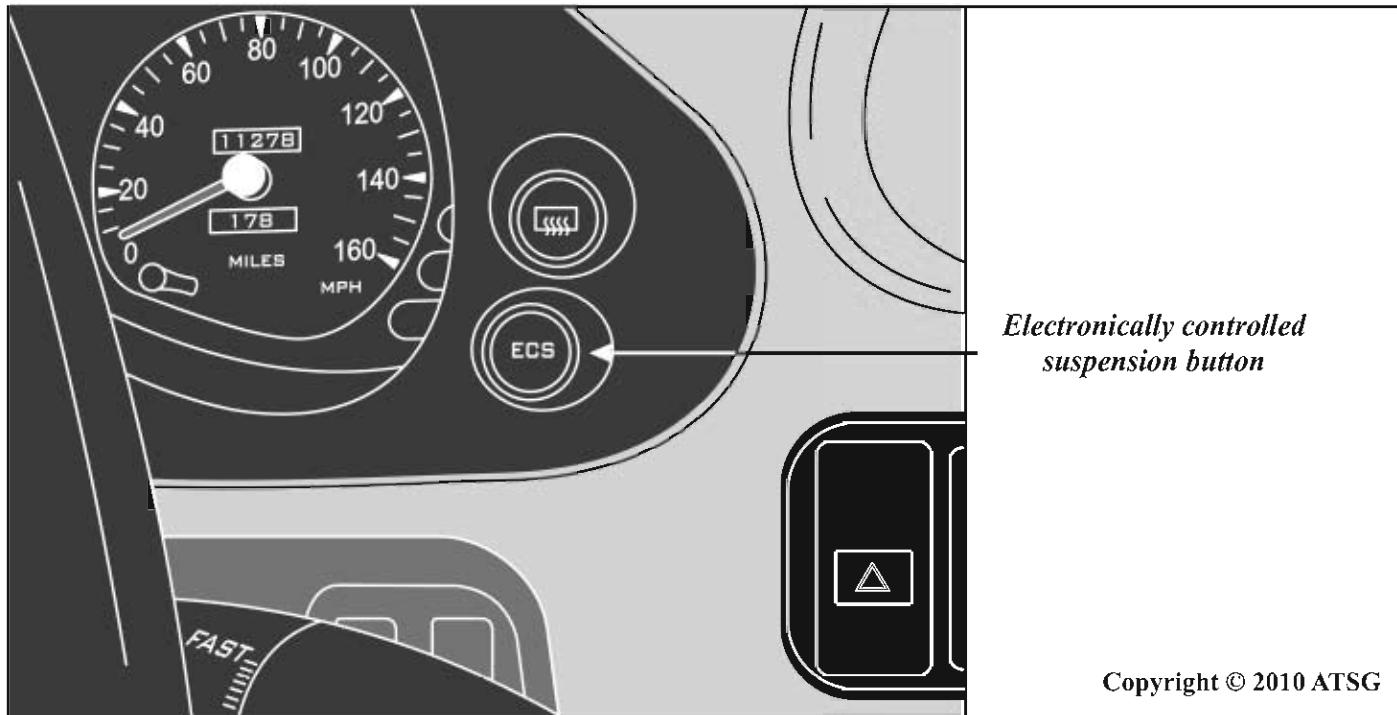


Figure 3

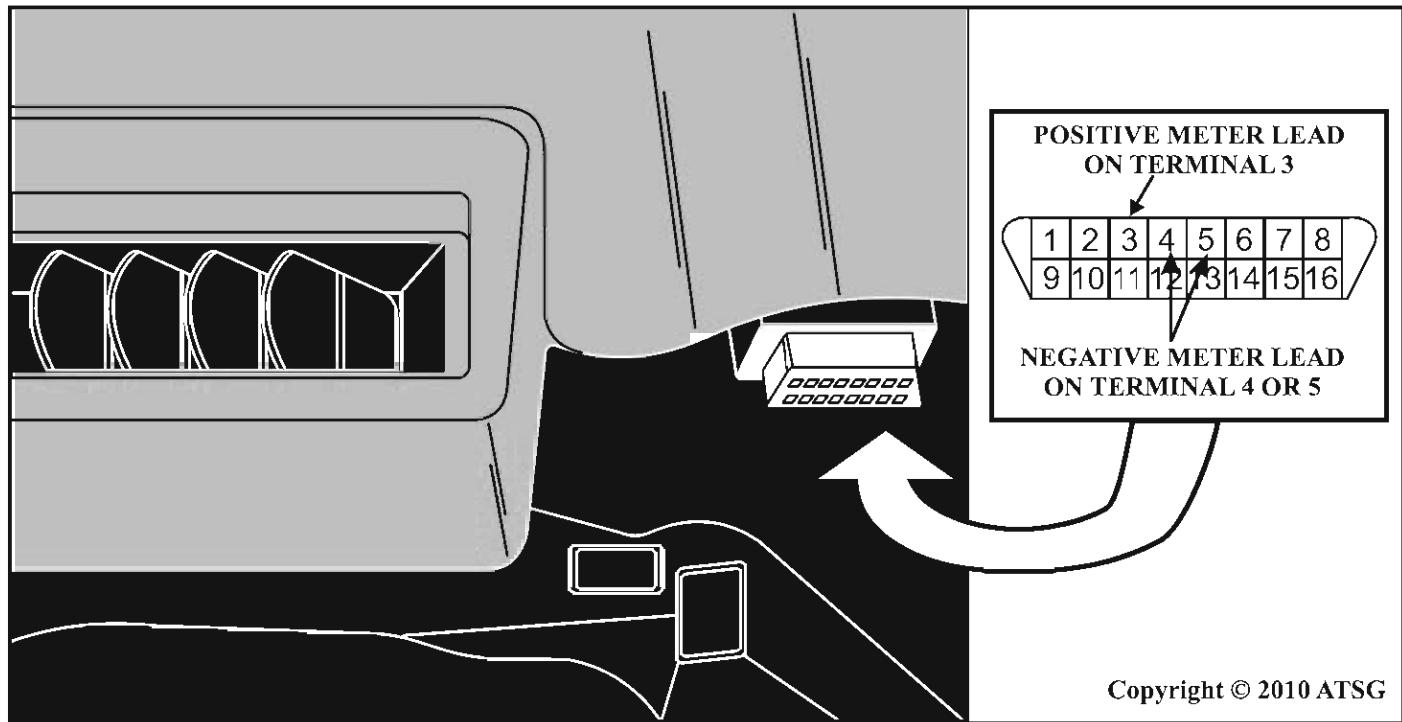


Figure 4

MITSUBISHI SPORT LAMP FLASHING

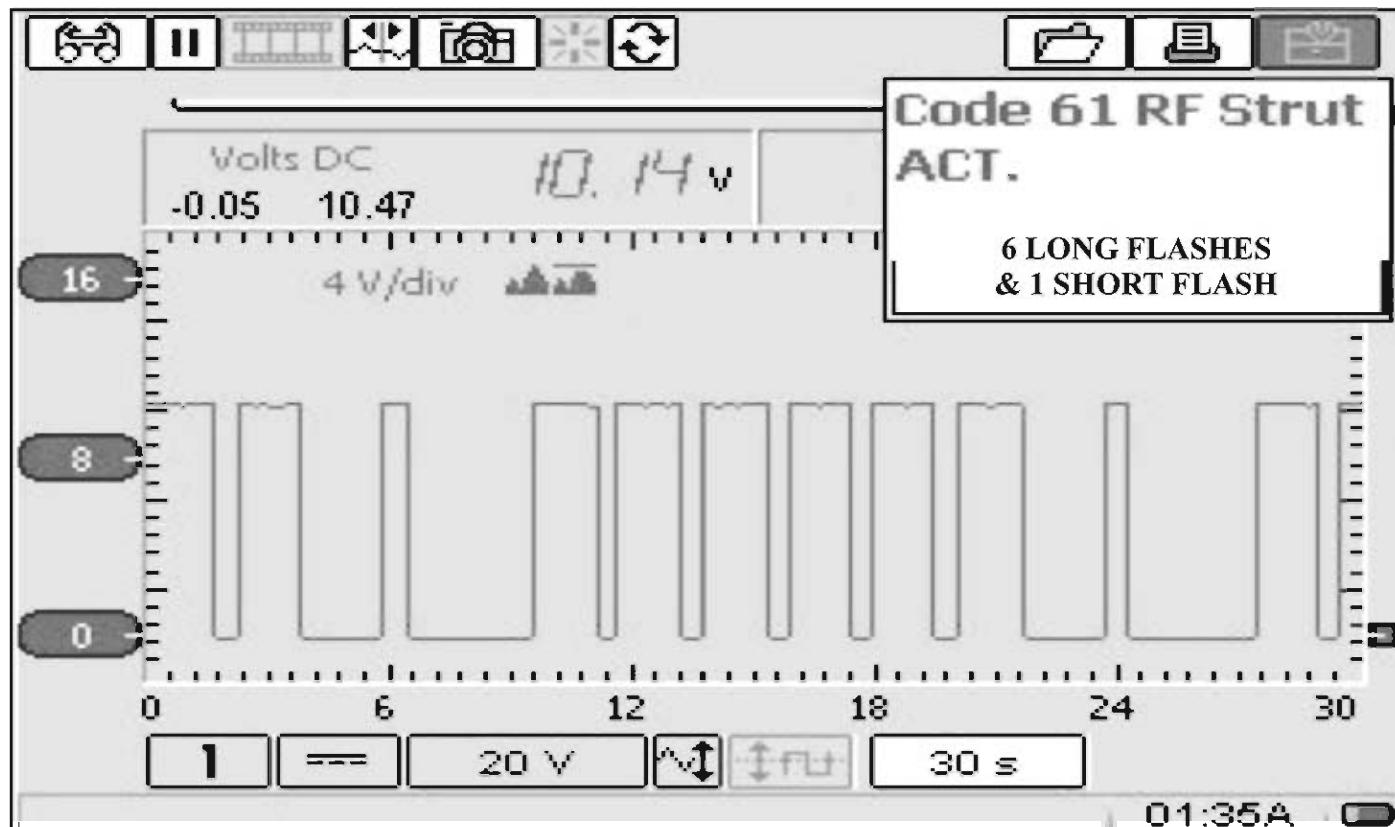


Figure 5

DTC	ECS CODE DESCRIPTION
11	"G" SENSOR
14	THROTTLE POSITION SENSOR (TPS)
21	STEERING WHEEL SENSOR
24	VEHICLE SPEED SENSOR (VSS)
26	BRAKE LIGHT SWITCH
61	RIGHT FRONT STRUT ACTUATOR
62	LEFT FRONT STRUT ACTUATOR
63	RIGHT REAR STRUT ACTUATOR
64	LEFT REAR STRUT ACTUATOR

Figure 6

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MITSUBISHI SPORT LAMP FLASHING

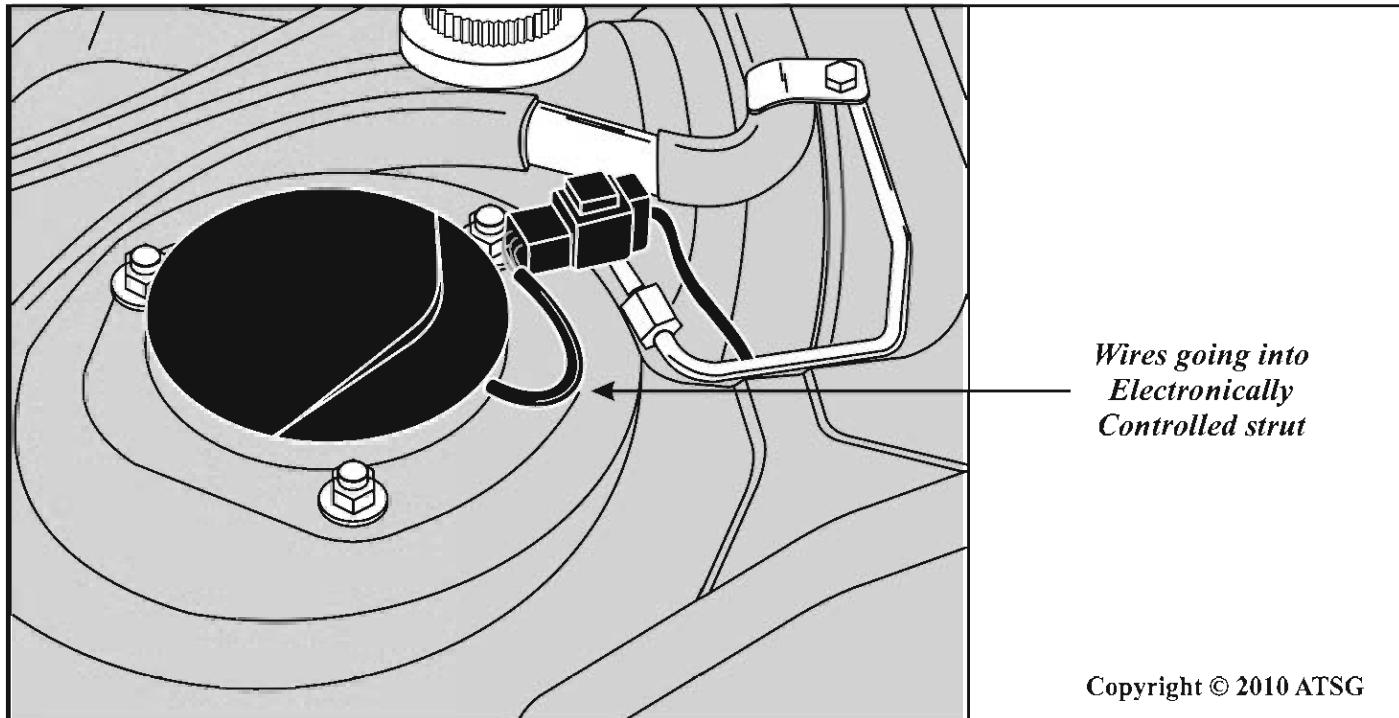


Figure 7

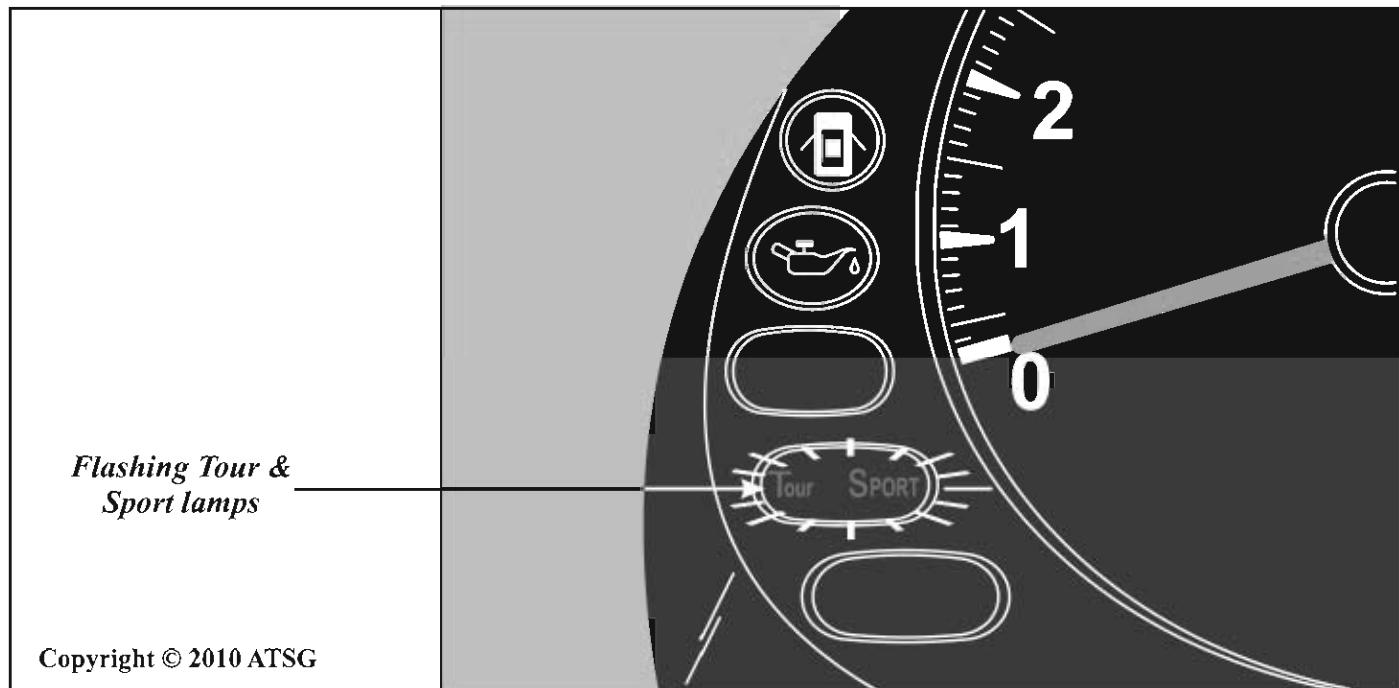


Figure 8



**NISSAN/INFINITI RE4F04B
STALLS ENGINE IN GEAR WHEN ACCELERATING
FROM A STOP AFTER OVERHAUL**

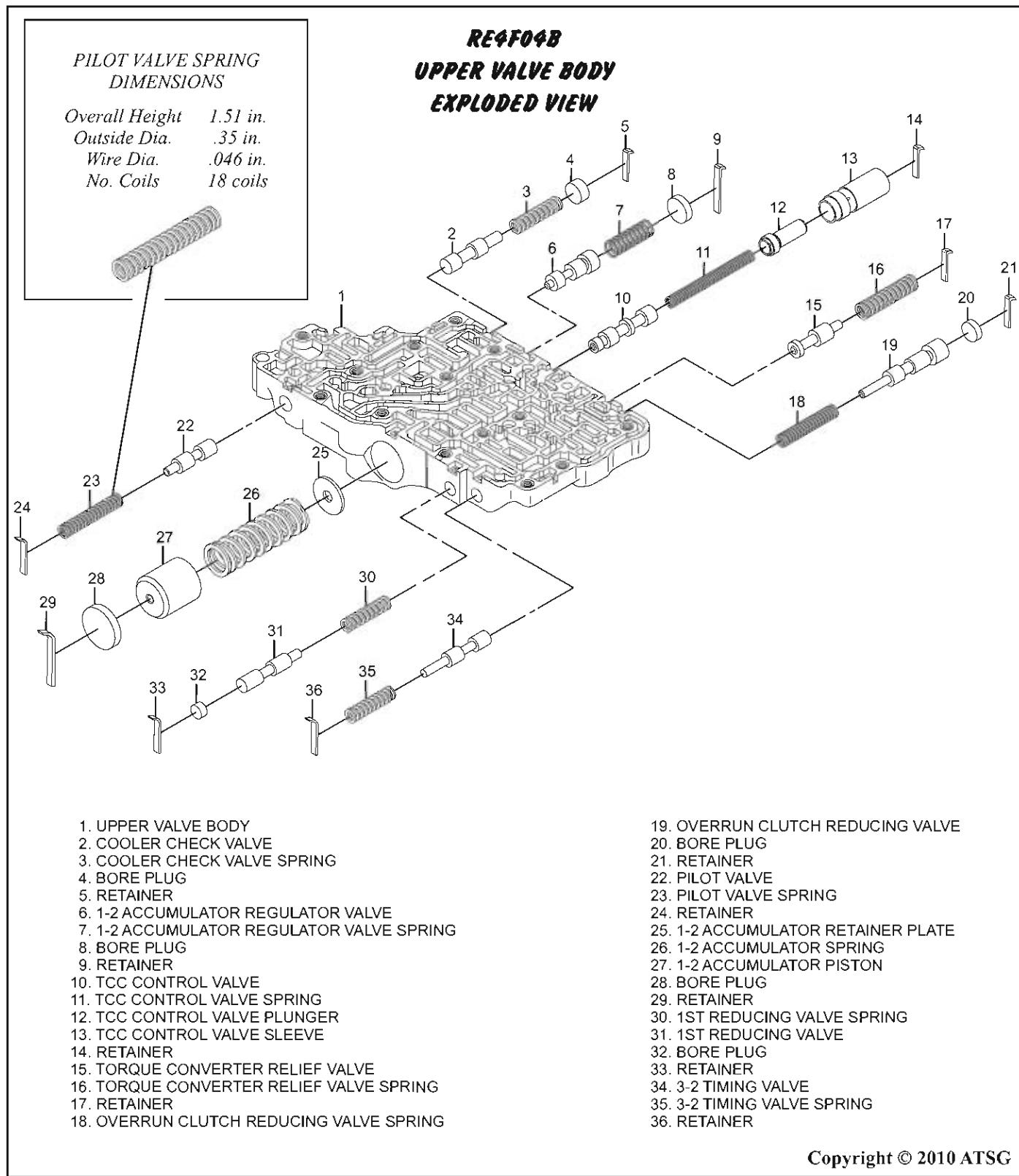
COMPLAINT: After an overhaul a Nissan/Infiniti vehicle equipped with the RE4F04B automatic transaxle exhibits a complaint that the engine stalls when the selector lever is placed into a forward or reverse gear and the vehicle accelerates from a stop.

CAUSE: One cause may be the pilot valve spring tension is too heavy. The pilot valve in the RE4F04B is used to regulate oil pressure to the solenoids. If during overhaul the pilot valve spring is changed to a different spring that is heavier, increased pilot pressure will result. This means higher pilot pressure will be fed to the solenoids. If pilot pressure becomes too high, it can flood the TCC solenoid to a point where the TCC solenoid cannot exhaust enough pilot pressure to keep the TCC valve from stroking and applying the converter clutch during acceleration from a stop.

CORRECTION: Use care when overhauling the transmission and choosing to change the pilot valve spring. A spring that is significantly heavier than the O.E.M. spring may cause engine stall.

Refer to the diagram in Figure 1 for pilot valve and spring location in the upper valve body and use the spring dimensions provided as a guide during overhaul.

**NISSAN/INFINITI RE4F04B
STALLS ENGINE IN GEAR WHEN ACCELERATING
FROM A STOP AFTER OVERHAUL**





NISSAN/INFINITI RE4F04B NO UP-SHIFT DTC P0720 MAY BE STORED

COMPLAINT: After an overhaul a Nissan/Infiniti vehicle equipped with the RE4F04B automatic transaxle exhibits a no up-shift condition. Upon checking for codes, DTC P0720 may be stored.

CAUSE: One cause may be the connectors for the output sensor and turbine sensor cross-connected. Some late model Nissan/Infiniti models with the RE4F04B transmission utilize a turbine sensor as well as an output sensor. The turbine sensor and the output sensor are both Hall Effect type sensors and are located on the back of the transmission near the driver side axle. Refer to Figure 1 for output and turbine sensor locations.

If the output sensor connector is incorrectly plugged into the turbine sensor, the Transmission Computer (TCM) will not detect any output rpm when taking off, thereby causing DTC P0720 to be stored with a no up-shift condition.

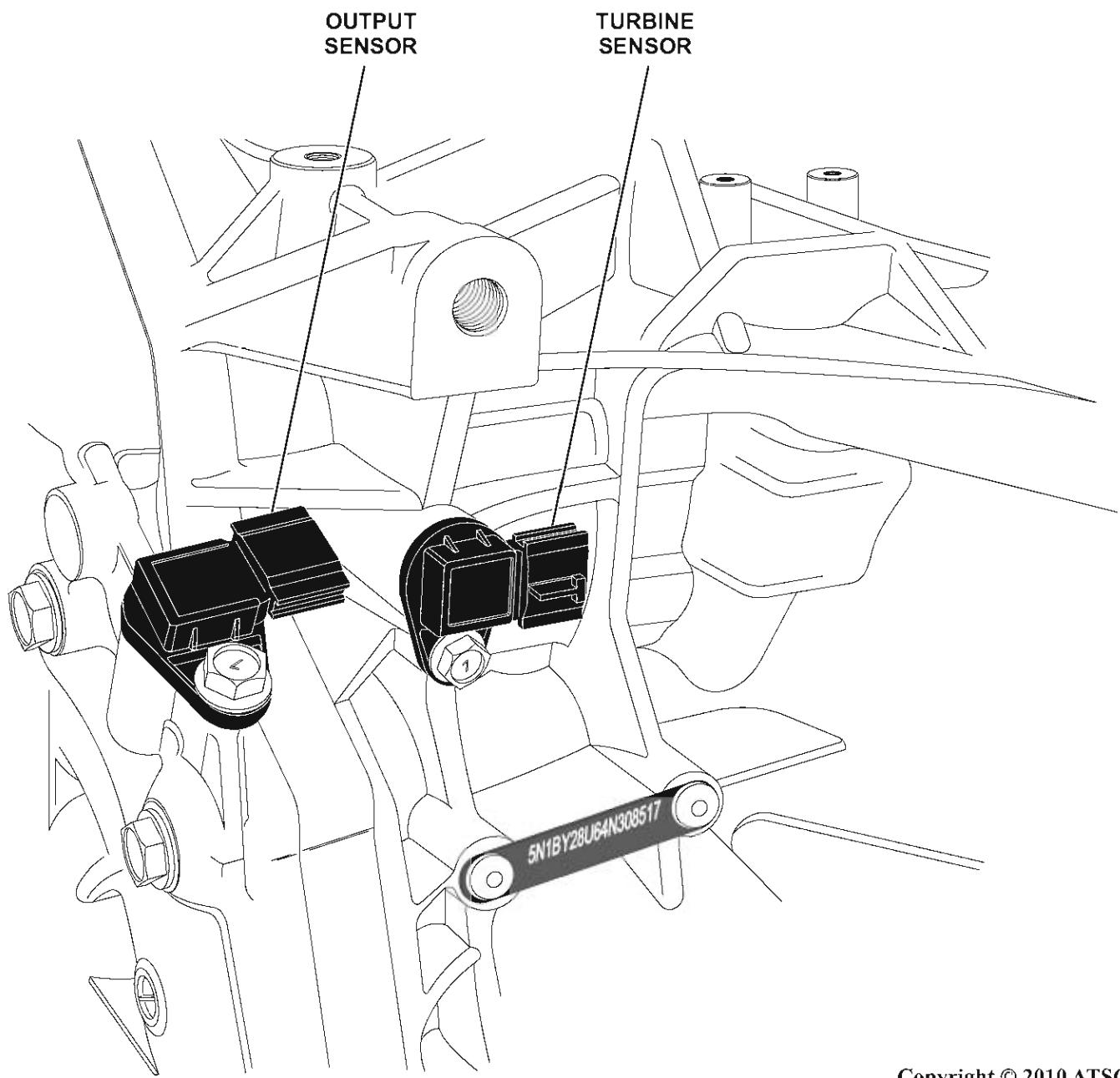
The reason the TCM detects no output rpm is because there is no turbine sensor reading when the transmission is in 1st gear. Refer to the partial cut-away view of the RE4F04B in Figure 2. The output sensor obtains its reading from the output gear while the turbine sensor obtains its reading from the forward clutch drum. In first gear the forward clutch drum is held stationary by the action of the low one-way clutch.

CORRECTION: When installing the transmission make certain to connect the sensors correctly. Refer to the wiring diagrams provided in Figure 3 for wire color reference.

Note: Wire colors may differ between models and years. Consult the appropriate factory service manual for the vehicle you are working on. It may also be a good idea to tag the connectors before removal of the transmission to avoid cross-connecting.

**NISSAN/INFINITI RE4F04B
NO UP-SHIFT DTC P0720 MAY BE STORED**

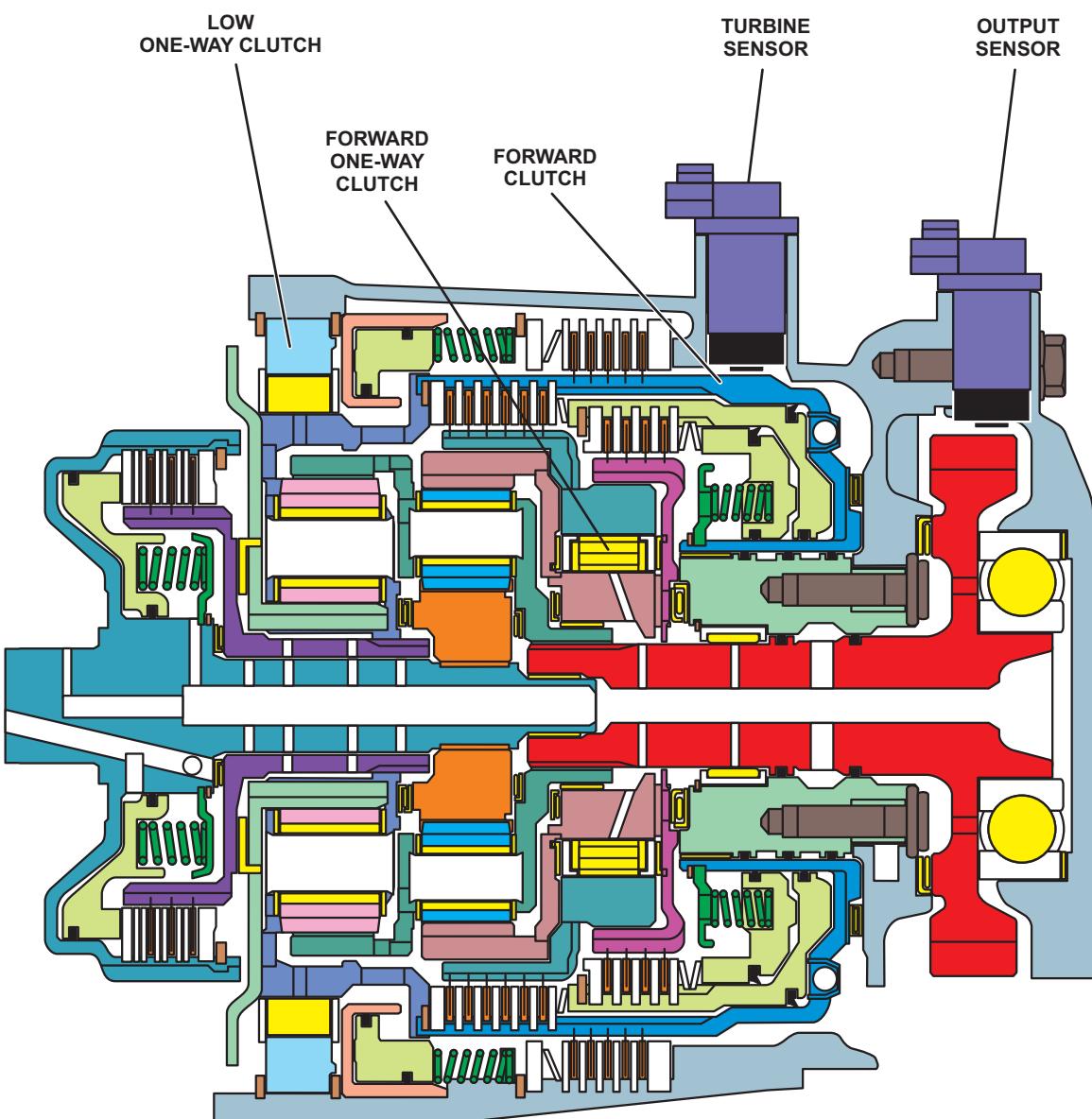
**RE4F04B
TURBINE AND OUTPUT
SENSOR LOCATIONS**



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Figure 1

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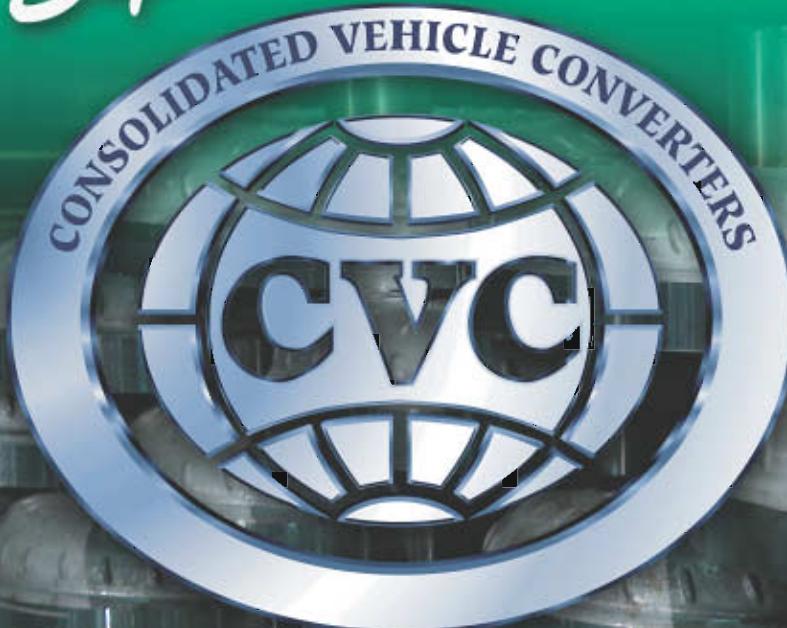
**NISSAN/INFINITI RE4F04B
NO UP-SHIFT DTC P0720 MAY BE STORE**

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Figure 2

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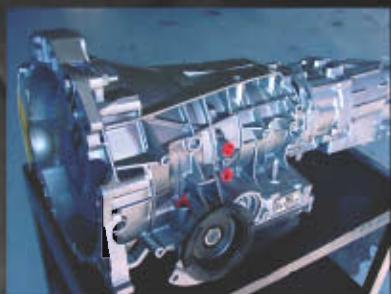
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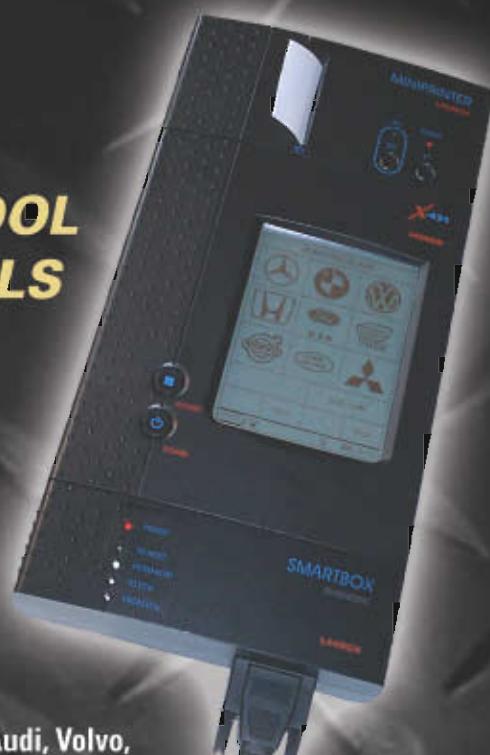
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*Frost & Sullivan Study 2008.

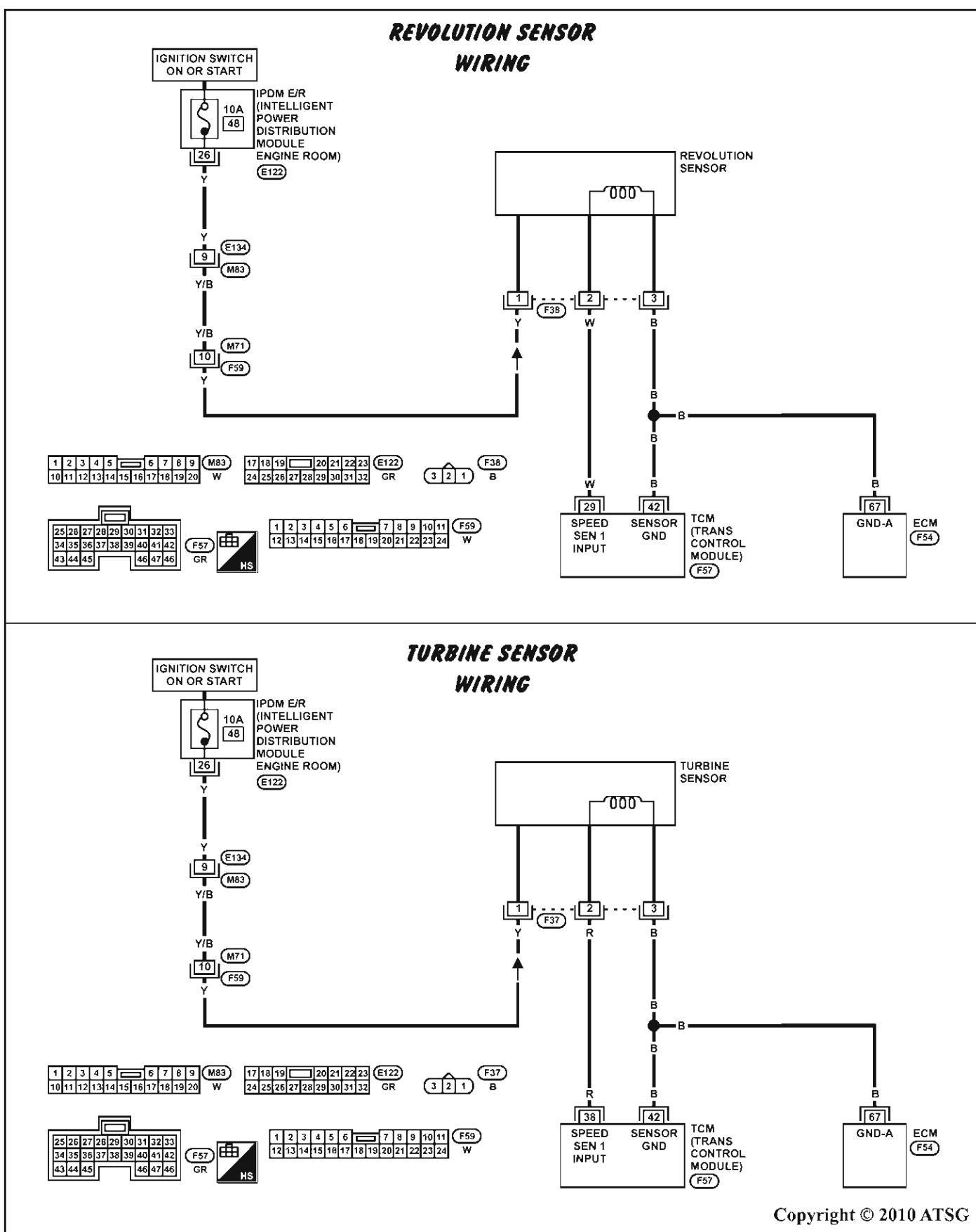


Figure 3

Automatic Transmission Service Group

NISSAN RE5R05A

TORQUE CONVERTER CLUTCH SHUDDER AND/OR INTERMITTENT SOLENOID/PRESSURE SWITCH CIRCUIT FAULTS

COMPLAINT: Late 04 and up Nissan vehicles equipped with the RE5R05A transmission may exhibit a complaint of Torque Converter Clutch Shudder along with intermittent solenoid circuit and or pressure switch faults, which may cause a limp mode condition. See Figure 1 for a list of possible codes.

CAUSE: The cause may be, that the transmission cooler in the radiator has ruptured causing water to be mixed into the transmission fluid. This can cause the Torque Converter Clutch linings to delaminate, causing the TCC shudder. This same cause may create the intermittent solenoid circuit or pressure switch faults as well, by means of the water intrusion into the Transmission Control Module, which is mounted on top of the Valve Body as shown in Figures 2 and 3.

CORRECTION: To correct this condition, the transmission will need to be overhauled as well as the Torque Converter. Refer to Figure 3 for solenoid location and ohm values. If there is a solenoid circuit fault for a specific solenoid, locate it in Figure 3 and verify the ohm value is correct. If the ohm value is correct, the TCM may be faulty and will have to be replaced. Refer to Figure 2 and note that the pressure switches are part of the TCM and can not be tested, without the use of a scan tool. *Note: There may be instances where the vehicle will come into the shop and there will be NO solenoid circuit faults and the transmission will have water intrusion. The vehicle could leave the shop for a month and everything be fine, and all of a sudden start setting solenoid circuit faults. Refer to Figure 3 and verify the solenoid in question has the correct ohm value at that point if it is good the TCM will have to be replaced. Make sure the customer is aware that the TCM may go bad if there was water intrusion, and an additional cost may be necessary down the road.*

SERVICE INFORMATION:

Contact your local Nissan Dealer, as the TCM does not come separate than the Valve Body.

DIAGNOSTIC TROUBLE CODE (DTC) DESCRIPTION		
TCM DTC	OBD II	DESCRIPTION
P0700	P0700	<i>MIL Request, Transmission related trouble code set</i>
P0740	P0740	<i>Torque Converter Clutch Solenoid Circuit</i>
P0745	P0745	<i>Line Pressure Solenoid Circuit</i>
P1731		<i>First Gear Engine Braking (Fluid Pressure Switch 2 fault)</i>
P1752	P1752	<i>Input Clutch Solenoid Circuit</i>
P1757	P1757	<i>Front Brake Band Solenoid Circuit</i>
P1762	P1762	<i>Direct Clutch Solenoid Circuit</i>
P1767	P1767	<i>High And Low/Reverse Clutch Solenoid Circuit</i>
P1772	P1772	<i>Low Coast Brake Clutch Solenoid Circuit</i>
P1841		<i>Fluid Pressure Switch 1 Circuit</i>
P1843		<i>Fluid Pressure Switch 3 Circuit</i>
P1845		<i>Fluid Pressure Switch 5 Circuit</i>
P1846		<i>Fluid Pressure Switch 6 Circuit</i>

Figure 1

Automatic Transmission Service Group

NISSAN RE5R05A

TORQUE CONVERTER CLUTCH SHUDDER AND/OR INTERMITTENT SOLENOID/PRESSURE SWITCH CIRCUIT FAULTS

PRESSURE SWITCH LOCATIONS (EARLY MODEL SHOWN)	
Pressure Switch 3 (Input Clutch)	Pressure Switch 5 (Direct Clutch)
Pressure Switch 1 (Front Brake Band)	Pressure Switch 6 (High & Low Reverse Clutch)
Pressure Switch 2 (Low Coast Brake Clutch)	

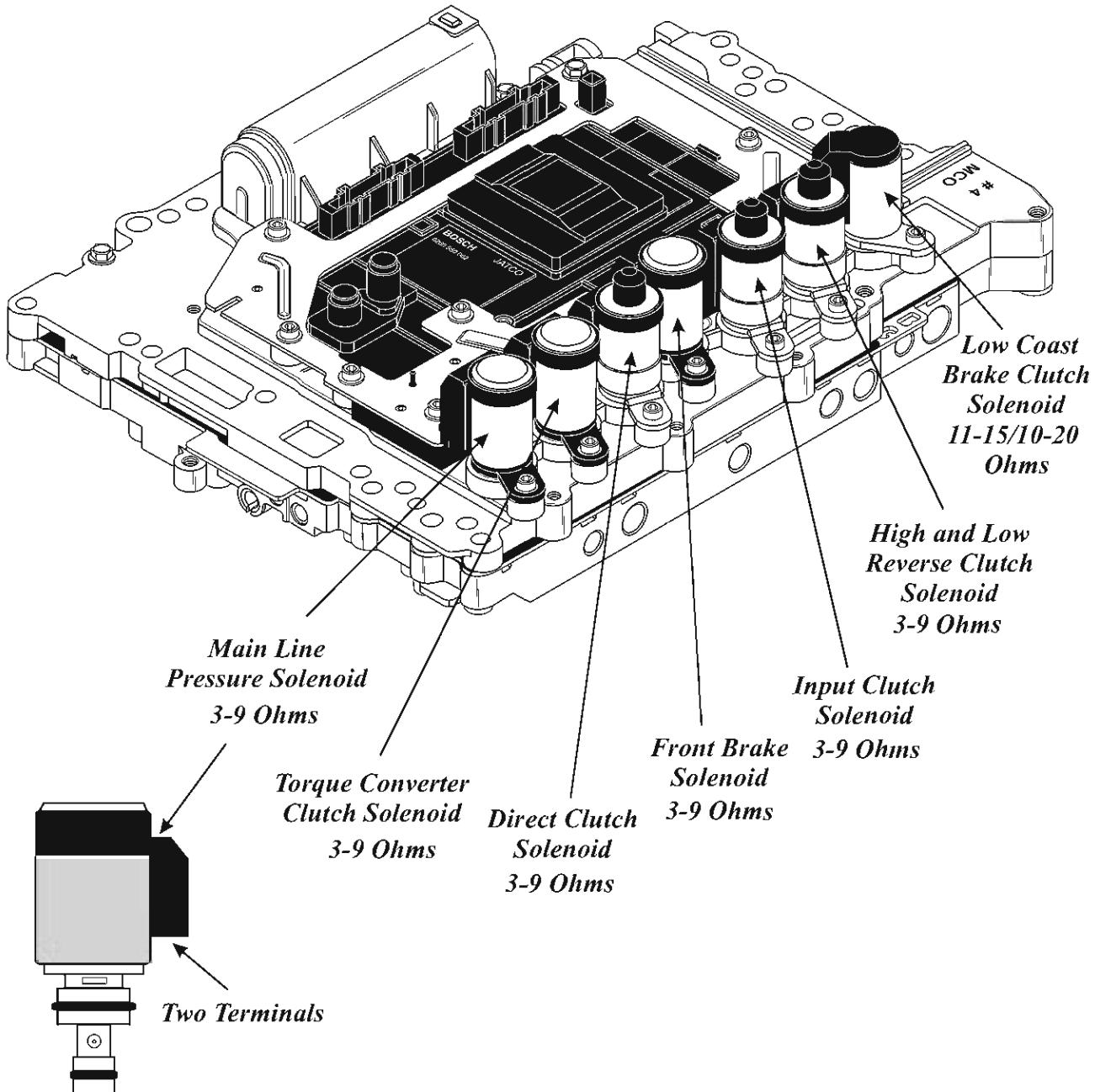
PRESSURE SWITCH FUNCTION	
Name	Function
Pressure Switch 1 (Front Brake Band)	Detects any malfunction in the front brake band hydraulic circuit. When it detects any malfunction, it puts the system into "Fail-Safe mode."
Pressure Switch 2 (Low Coast Brake Clutch)	Detects any malfunction in the low coast brake clutch hydraulic circuit. When it detects any malfunction, it puts the system into "Fail-Safe mode."
Pressure Switch 3 (Input Clutch)	Detects any malfunction in the input clutch hydraulic circuit. When it detects any malfunction, it puts the system into "Fail-Safe mode."
Pressure Switch 5 (Direct Clutch)	Detects any malfunction in the direct clutch hydraulic circuit. When it detects any malfunction, it puts the system into "Fail-Safe mode."
Pressure Switch 6 (High & Low Reverse Clutch)	Detects any malfunction in the high & low reverse clutch hydraulic circuit. When it detects any malfunction, it puts the system into "Fail-Safe mode."

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Figure 2

NISSAN RE5R05A TORQUE CONVERTER CLUTCH SHUDDER AND/OR INTERMITTENT SOLENOID/PRESSURE SWITCH CIRCUIT FAULTS

NISSAN RE5R05A SOLENOID LOCATIONS AND OHM VALUES



Example: Line Pressure Solenoid. Connect terminals of Ohm meter to the two terminals in the solenoid shown above, the resistance value should be 3-9 Ohms.

Note: Be Careful not to break the solenoid as it is usually difficult to remove out of the Valve Body. A simple Punch from the bottom of the Channel plate, to the snout of the solenoid can ease the removal of the solenoids.

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NISSAN RE5F22A HARSH DOWNSHIFT ON THROTTLE UP

COMPLAINT: After overhaul or valve body replacement, 2004 model Nissan Maximas equipped with the RE5F22A may exhibit a complaint of a harsh tip-in or throttle up 3-1 or 2-1 downshift, that can be at times very violent/harsh.

CAUSE: The cause may be, that during overhaul the valve body was replaced with a 2005 and up version that is not compatible with 2004 model Maxima programing. The main difference between the 04 and 05 models is that 04 models do not use a spring for the B5 Control Valve as shown in Figure 7 valve number 53. Refer to Figures 1 and 2 for a partial hydraulic circuit diagram that explains that during the 3-1 downshift transition, the B5 Control Valve regulates the apply rate of the Low and Reverse Clutch (B3), which is switched on by the PCM (**Note: this strategy is not shown in repair manuals**). The B5 Control Valves position is regulated by the "High" duty cycle of the SLU/TCC Lock-up Pressure Control Solenoid. The reason for the harsh downshift is because the 05 and up model valve body utilizes a spring at the end of the B5 Control Valve which causes the valve to be positioned to the left slowing the apply of the Low - Reverse clutch, when it finally applies it slams on causing the harshness.

CORRECTION: To correct this condition, simply refer to Figure 7 and remove the two bolt plate and dis-card the spring from the B5 Control Valve (number 53). Figures 3-9 show the exploded views of the 2004 Maxima Valve Body and spring specifications.

*Special thanks to
Mike Steen of
Certified Trans.*

NISSAN RE5F22A HARSH DOWNSHIFT ON THROTTLE UP

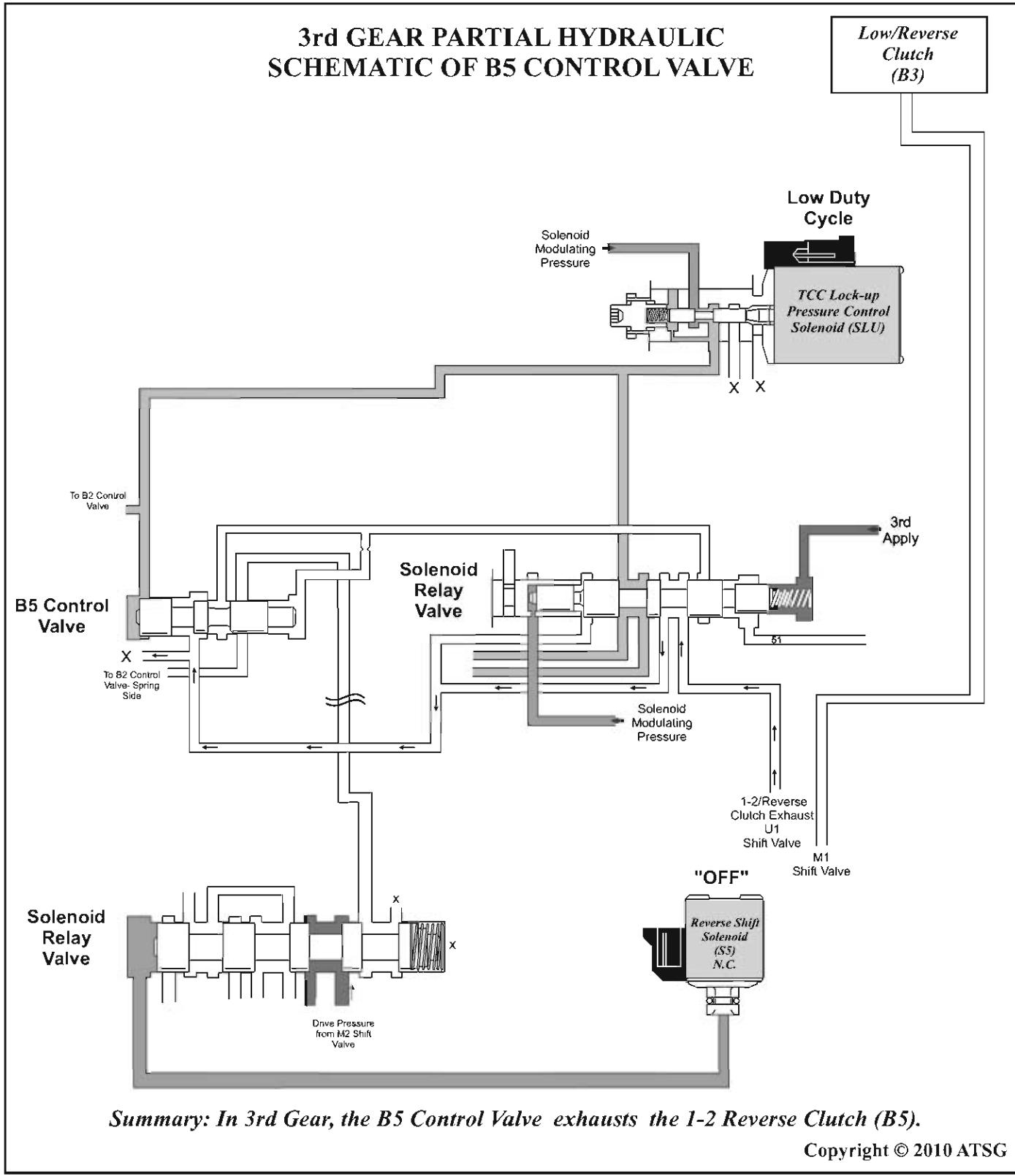
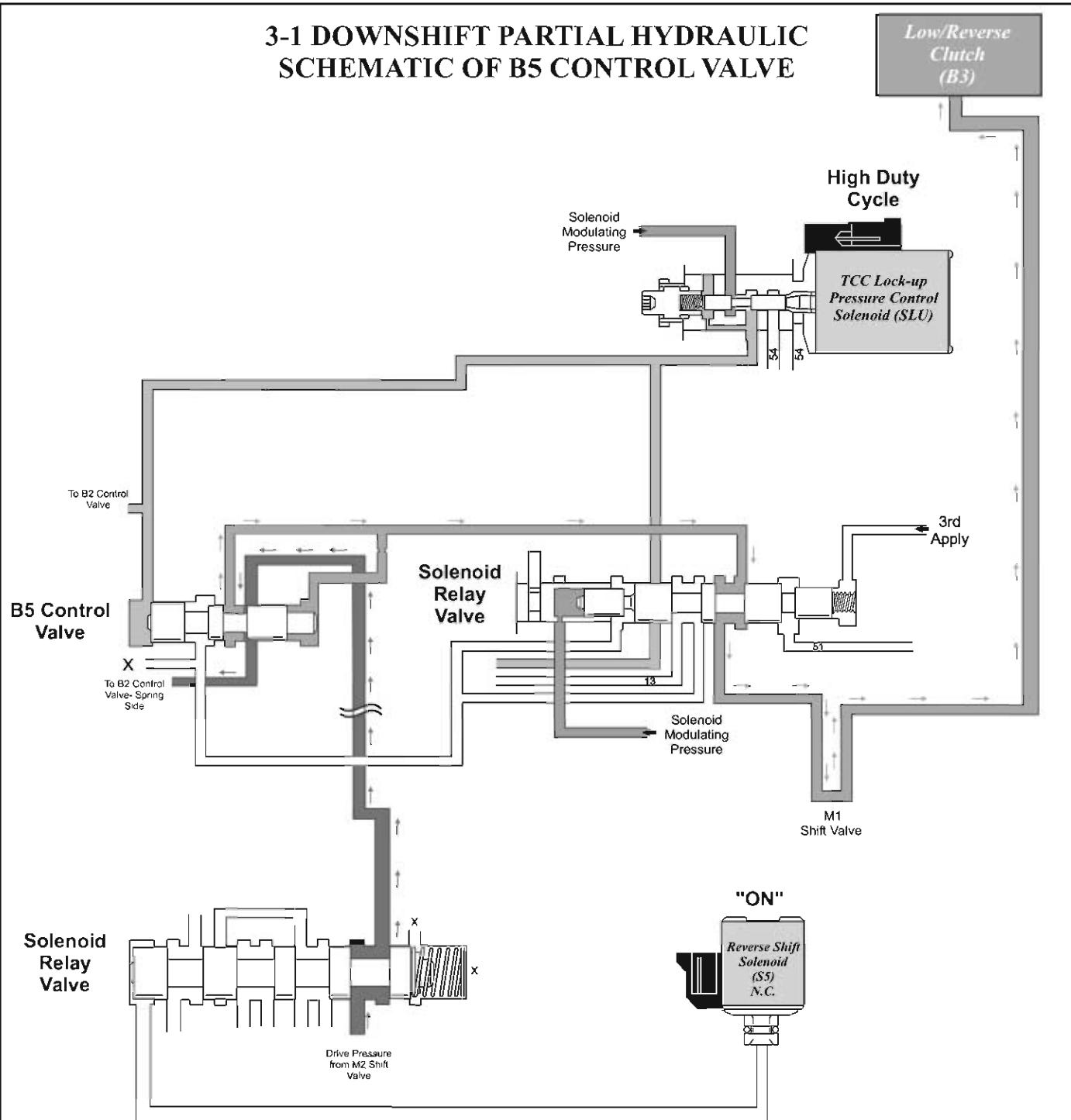


Figure 1
Automatic Transmission Service Group

NISSAN RE5F22A HARSH DOWNSHIFT ON THROTTLE UP



Summary: During a 3-1 tip-in downshift the S5 Solenoid is energized and the SLU duty cycle is High, which controls the application of the Low Reverse Clutch. Note: the S5 solenoid is only on briefly during the transition to 1st then goes Off.

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"2010" SEMINAR INFORMATION

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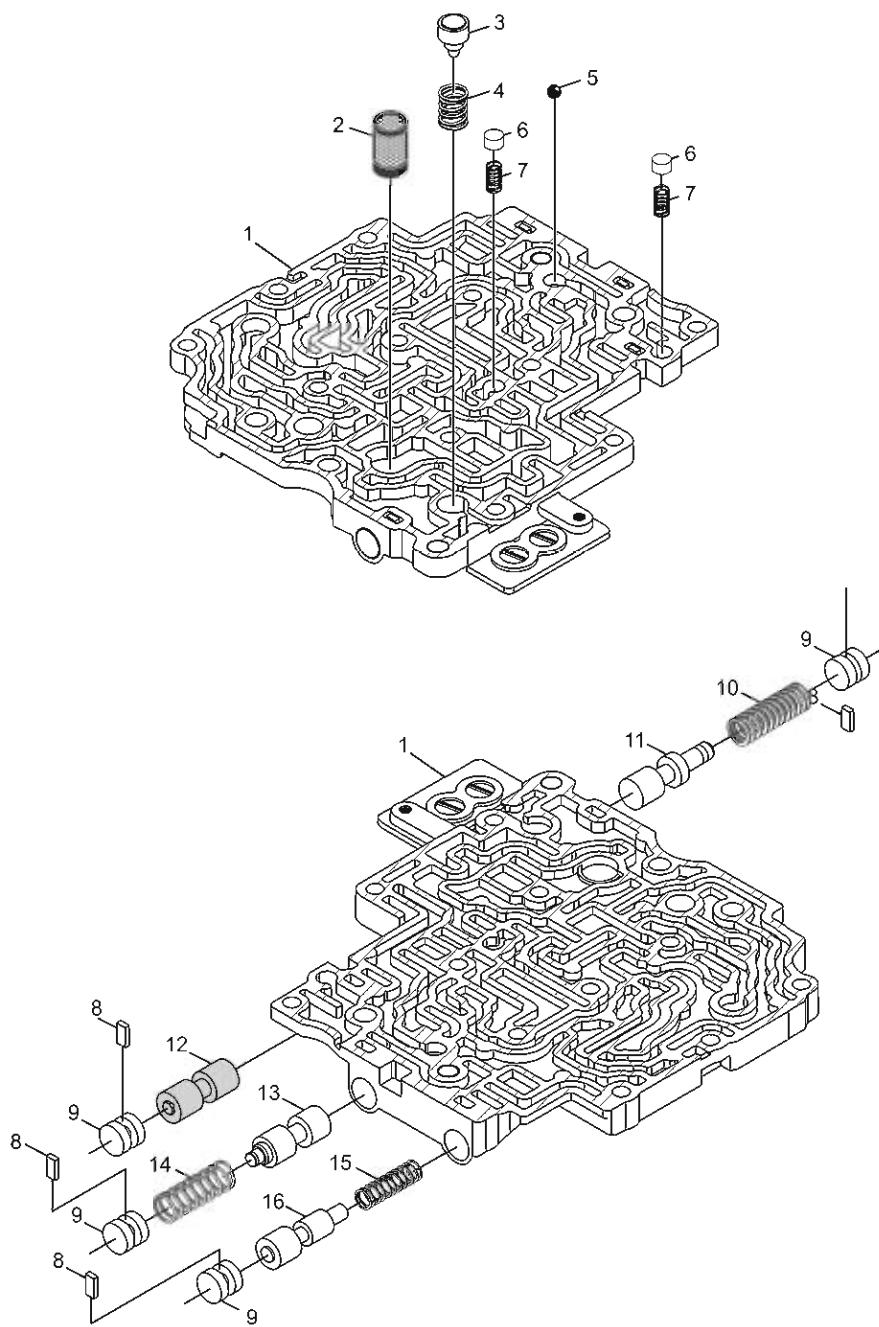
NISSAN RE5F22A HARSH DOWNSHIFT ON THROTTLE UP

CONTROL VALVE BODY ASSEMBLY LEGEND

- 100. 1-2, 2-3, REVERSE SHIFT SOLENOID (S3)
CONNECTOR (DARK GRAY)
- 101. CONTROL VALVE BODY BOLT
(M5 X 0.8 X 62 mm) (1 REQUIRED)
- 102. CONTROL VALVE BODY BOLT
(M5 X 0.8 X 28 mm) (3 REQUIRED)
- 103. 3-4, 4-5 SHIFT SOLENOID (S4)
CONNECTOR (BLUE)
- 104. CONTROL VALVE BODY BOLT
(M5 X 0.8 X 50mm) (2 REQUIRED)
- 105. REVERSE SHIFT SOLENOID (S5)
CONNECTOR (BROWN)
- 106. SHIFT SOLENOID VALVE O-RING SEAL
(5 REQUIRED)
- 107. CONTROL VALVE BODY BOLT
(M5 X 0.8 X 10 mm) (2 REQUIRED)
- 108. 2-3, 3-4 SHIFT SOLENOID (S2)
CONNECTOR (BLACK)
- 109. REVERSE, 1ST SHIFT SOLENOID (S1)
CONNECTOR (BLACK)
- 110. CONTROL VALVE BODY BOLT
(M5 X 0.8 X 13 mm) (1 REQUIRED)
- 111. SOLENOID HOLD DOWN BRACKET
(SOLENOID SLS/SLT)
- 112. CONTROL VALVE BODY BOLT
(M5 X 0.8 X 20 mm) (4 REQUIRED)
- 113. CONTROL VALVE BODY BOLT
(M5 X 0.8 X 16 mm) (2 REQUIRED)
- 114. FRONT CONTROL VALVE BODY ASSEMBLY
- 115. LINE PRESSURE CONTROL SOLENOID (SLT)
CONNECTOR (BLUE)
- 116. A/T INTERNAL WIRE HARNESS CLIP
- 117. TCC PRESSURE CONTROL SOLENOID (SLU)
RETAINING BRACKET
- 118. FRONT CONTROL VALVE BODY SPACER PLATE TO
FRONT CONTROL VALVE BODY GASKET
- 119. FRONT CONTROL VALVE BODY SEPARATOR PLATE
- 120. FRONT CONTROL VALVE BODY TO
MIDDLE CONTROL VALVE BODY GASKET
- 121. MIDDLE CONTROL VALVE BODY ASSEMBLY
- 122. MIDDLE CONTROL VALVE BODY ASSEMBLY TO
LOWER CONTROL VALVE BODY SEPARATOR PLATE
AND BONDED GASKETS
- 123. REAR CONTROL VALVE BODY ASSEMBLY
- 124. REAR CONTROL VALVE BODY ASSEMBLY TO
NO. 2 REAR CONTROL VALVE BODY ASSEMBLY
GASKET
- 125. REAR CONTROL VALVE BODY SPACER PLATE
- 126. REAR CONTROL VALVE BODY SPACER PLATE TO
NO. 2 REAR CONTROL VALVE BODY GASKET
- 127. NO. 2 REAR CONTROL VALVE BODY ASSEMBLY
- 128. CONTROL VALVE BODY BOLT
(M5 X 0.8 X 76 mm) (1 REQUIRED)
- 129. CONTROL VALVE BODY BOLT
(M5 X 0.8 X 49.5 mm) (4 REQUIRED)
- 130. CONTROL VALVE BODY BOLT
(M5 X 0.8 X 40 mm) (1 REQUIRED)
- 131. CONTROL VALVE BODY ASSEMBLY PRESSURE
TEST PORT BOLT (M6 X 1.0 X 12 mm) (1 REQUIRED)
- 132. CONTROL VALVE BODY BOLT
(M5 X 0.8 X 35 mm) (2 REQUIRED)
- 133. MANUAL VALVE LINK
- 134. MANUAL VALVE
- 135. MANUAL VALVE LINK RETAINING CLIP
- 136. TCC PRESSURE CONTROL SOLENOID (SLU)
CONNECTOR (BLACK)
- 137. SHIFT PRESSURE CONTROL SOLENOID (SLS)
CONNECTOR (GREEN)

NISSAN RE5F22A HARSH DOWNSHIFT ON THROTTLE UP

FRONT CONTROL VALVE BODY





MIDDLE CONTROL VALVE BODY

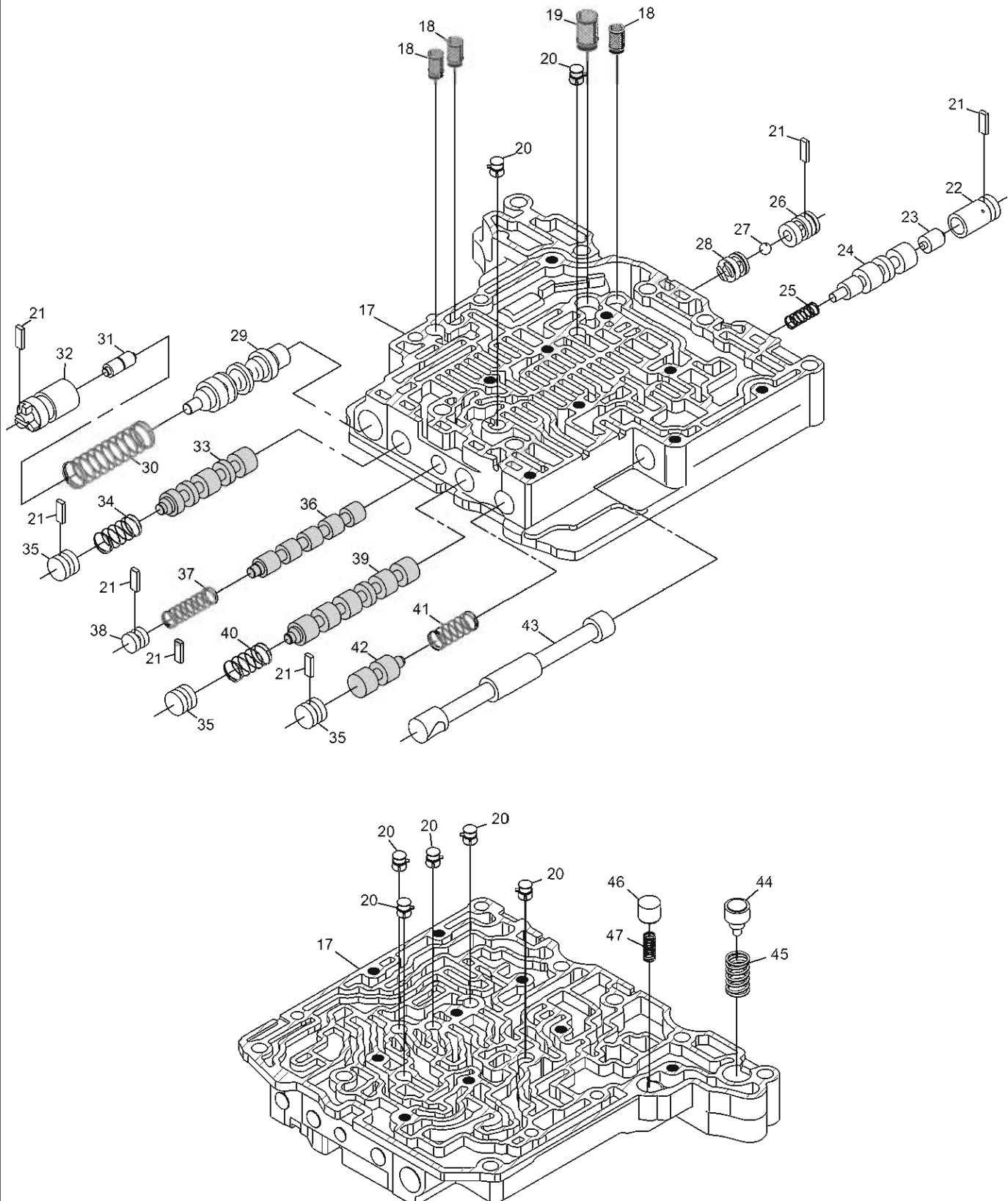
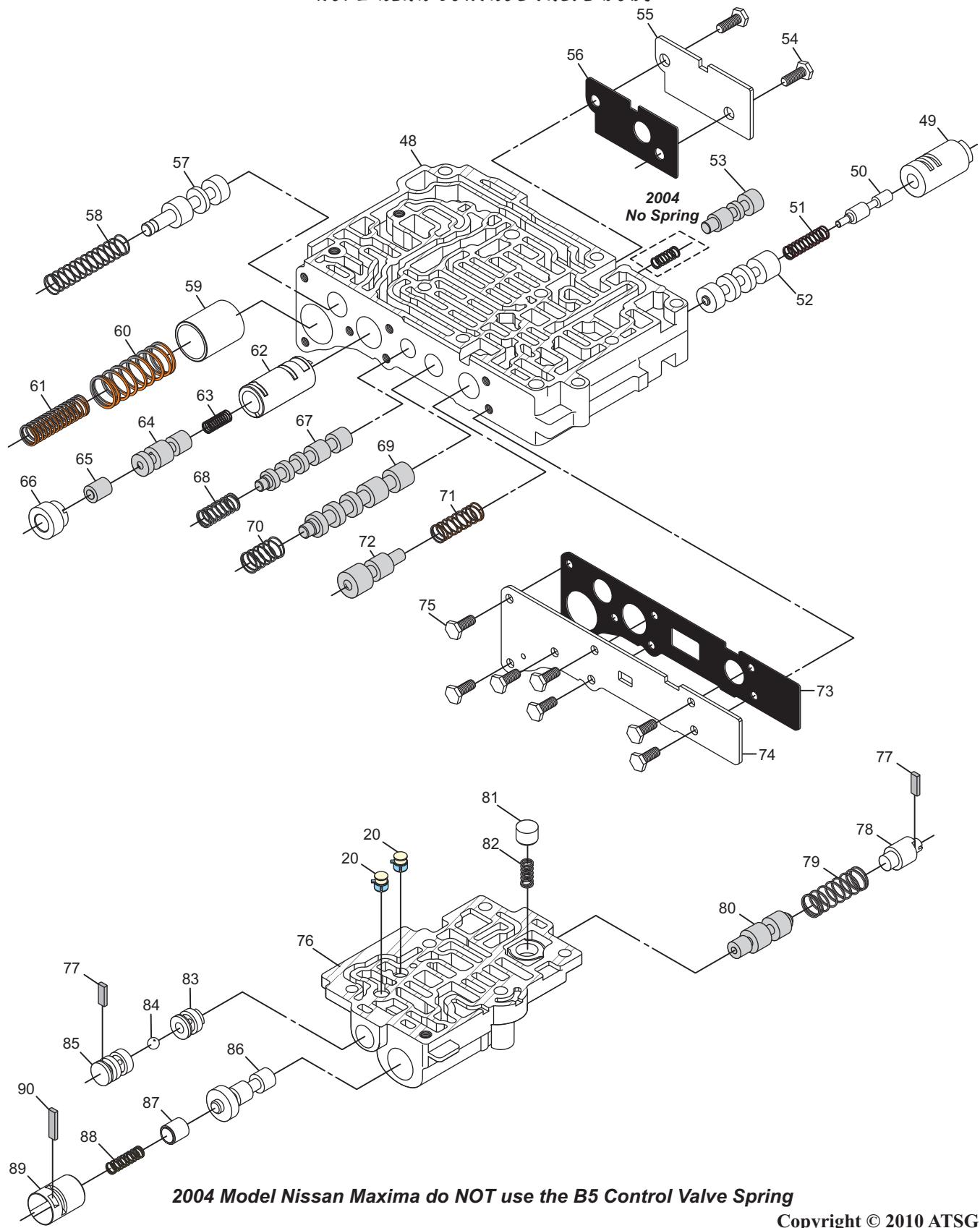


Figure 6

Automatic Transmission Service Group



REAR CONTROL VALVE BODY
NO. 2 REAR CONTROL VALVE BODY



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Figure 7

NISSAN RE5F22A

HARSH DOWNSHIFT ON THROTTLE UP

CONTROL VALVE BODY ASSEMBLY LEGEND

- | | |
|---|---|
| 1. FRONT CONTROL VALVE BODY | 46. TCC CHECK VALVE |
| 2. SOLENOID MODULATOR VALVE OIL FILTER | 47. TCC CHECK VALVE SPRING (ID. YELLOW) |
| 3. PRESSURE RELIEF VALVE | 48. REAR CONTROL VALVE BODY |
| 4. PRESSURE RELIEF VALVE SPRING (ID. NONE) | 49. LOCK UP RELAY CONTROL VALVE SLEEVE |
| 5. FORWARD CLUTCH (C1) ACCUMULATOR BALL #12 | 50. LOCK UP RELAY CONTROL VALVE PLUNGER |
| 6. EXHAUST CHECK VALVE (2 REQUIRED) | 51. LOCK UP RELAY CONTROL VALVE SPRING (ID. RED) |
| 7. EXHAUST CHECK VALVE SPRING (ID. NONE) (2 REQUIRED) | 52. LOCK UP RELAY CONTROL VALVE |
| 8. BORE PLUG RETAINER (4 @ 3.2 X 5 X 10 mm) | 53. 1-2/REVERSE CLUTCH (B5) CONTROL VALVE |
| 9. BORE PLUG (4) | 54. COVER PLATE ATTACHING BOLT (2 REQUIRED) |
| 10. SOLENOID MODULATOR VALVE SPRING (ID. YELLOW) | 55. REAR CONTROL VALVE BODY COVER PLATE |
| 11. SOLENOID MODULATOR VALVE | 56. REAR CONTROL VALVE BODY COVER PLATE GASKET |
| 12. FORWARD CLUTCH (C1) CONTROL VALVE | 57. SECONDARY REGULATOR VALVE |
| 13. NEUTRAL RELAY VALVE | 58. SECONDARY REGULATOR VALVE SPRING (ID. NONE) |
| 14. NEUTRAL RELAY VALVE SPRING (ID. LT. GREEN) | 59. SOLENOID SLT ACCUMULATOR PISTON |
| 15. 2ND COAST (B1) CONTROL VALVE SPRING (ID. BLUE) | 60. SLT ACCUMULATOR OUTER SPRING (ID. ORANGE) |
| 16. 2ND COAST (B1) CONTROL VALVE | 61. SLT ACCUMULATOR INNER SPRING (ID. ORANGE) |
| 17. MIDDLE CONTROL VALVE BODY | 62. SHIFT PRESSURE CONTROL VALVE SLEEVE |
| 18. SOLENOID OIL FILTER (S2, S3, S4) | 63. SHIFT PRESSURE CONTROL VALVE SPRING (ID. WHITE) |
| 19. SOLENOID OIL FILTER (S1, S5) | 64. SHIFT PRESSURE CONTROL VALVE |
| 20. ACCUMULATOR CHECK VALVE | 65. SHIFT PRESSURE CONTROL VALVE PLUNGER |
| 21. BORE PLUG RETAINER (7 @ 3.2 X 5 X 12.5 mm) | 66. SHIFT PRESSURE CONTROL VALVE PLUNGER SLEEVE |
| 22. SOLENOID RELAY VALVE SLEEVE | 67. M2 SHIFT VALVE |
| 23. SOLENOID RELAY VALVE PLUNGER | 68. M2 SHIFT VALVE SPRING (ID. LT. BLUE) |
| 24. SOLENOID RELAY VALVE | 69. SHIFT PRESSURE RELAY VALVE |
| 25. SOLENOID RELAY VALVE SPRING (ID. ORANGE) | 70. SHIFT PRESSURE RELAY VALVE SPRING (ID. LT. GREEN) |
| 26. REVERSE SHIFT CHECK BALL OUTER BUSHING | 71. B4 BAND CONTROL VALVE SPRING (ID. ORANGE) |
| 27. REVERSE SHIFT CHECK BALL | 72. B4 BAND CONTROL VALVE |
| 28. REVERSE SHIFT CHECK BALL INNER BUSHING | 73. REAR CONTROL VALVE BODY COVER PLATE GASKET |
| 29. PRESSURE REGULATOR VALVE | 74. REAR CONTROL VALVE BODY COVER PLATE |
| 30. PRESSURE REGULATOR VALVE SPRING (ID. PURPLE) | 75. COVER PLATE ATTACHING BOLT (7 REQUIRED) |
| 31. PRESSURE REGULATOR VALVE PLUNGER | 76. NO. 2 REAR CONTROL VALVE BODY |
| 32. PRESSURE REGULATOR VALVE SLEEVE | 77. BORE PLUG RETAINER (2 @ 3.2 X 5 X 15 mm) |
| 33. U2 SHIFT VALVE | 78. 2ND CLUTCH (B2) CONTROL VALVE PLUG |
| 34. U2 SHIFT VALVE SPRING (ID. LT. GREEN) | 79. 2ND CLUTCH (B2) CONTROL VALVE SPRING (ID. NONE) |
| 35. BORE PLUG (3) | 80. 2ND CLUTCH (B2) CONTROL VALVE |
| 36. M1 SHIFT VALVE | 81. TCC CHECK VALVE |
| 37. M1 SHIFT VALVE SPRING (ID. LT. GREEN) | 82. TCC CHECK VALVE SPRING (ID. WHITE) |
| 38. M1 SHIFT VALVE BORE PLUG (1) | 83. REVERSE INHIBIT CHECK BALL INNER BUSHING |
| 39. U1 SHIFT VALVE | 84. REVERSE INHIBIT CHECK BALL |
| 40. U1 SHIFT VALVE SPRING (ID. LT. GREEN) | 85. REVERSE INHIBIT CHECK BALL OUTER BUSHING |
| 41. B4 RELEASE VALVE SPRING (ID. BLUE) | 86. LOCK UP CONTROL VALVE |
| 42. B4 RELEASE VALVE | 87. LOCK UP CONTROL VALVE PLUNGER |
| 43. MANUAL VALVE | 88. LOCK UP CONTROL VALVE SPRING (ID. YELLOW) |
| 44. COOLER BYPASS VALVE | 89. LOCK UP CONTROL VALVE SLEEVE |
| 45. COOLER BYPASS VALVE SPRING (ID. NONE) | 90. BORE PLUG RETAINER (1 @ 3.2 X 5 X 21.2 mm) |

NISSAN RE5F22A

HARSH DOWNSHIFT ON THROTTLE UP

**CONTROL VALVE BODY ASSEMBLY
SPRING SPECIFICATIONS
LATE VALVE BODY ID. STAMP "B"**

PRESSURE RELIEF VALVE SPRING (4) WIRE DIAMETER .050" OUTSIDE DIAMETER .370" OVERALL LENGTH 1.128" COILS 5 COLOR ID. NONE	SOLENOID MODULATOR VALVE SPRING (10) WIRE DIAMETER .043" OUTSIDE DIAMETER .315" OVERALL LENGTH 1.113" COILS 12 COLOR ID. YELLOW	NEUTRAL RELAY VALVE SPRING (14) WIRE DIAMETER .026" OUTSIDE DIAMETER .324" OVERALL LENGTH 1.021" COILS 9 COLOR ID. LT. GREEN	B1 CONTROL VALVE SPRING (15) WIRE DIAMETER .022" OUTSIDE DIAMETER .233" OVERALL LENGTH .718" COILS 11 COLOR ID. BLUE
SOLENOID RELAY VALVE SPRING (25) WIRE DIAMETER .019" OUTSIDE DIAMETER .235" OVERALL LENGTH .800" COILS 9 COLOR ID. ORANGE	PRESSURE REGULATOR VALVE SPRING (30) WIRE DIAMETER .047" OUTSIDE DIAMETER .525" OVERALL LENGTH 1.890" COILS 12 COLOR ID. PURPLE	U2 SHIFT VALVE SPRING (34) WIRE DIAMETER .032" OUTSIDE DIAMETER .394" OVERALL LENGTH 1.035" COILS 7 COLOR ID. LT. GREEN	M1 SHIFT VALVE SPRING (37) WIRE DIAMETER .026" OUTSIDE DIAMETER .323" OVERALL LENGTH 1.040" COILS 9 COLOR ID. LT. GREEN
U1 SHIFT VALVE SPRING (40) WIRE DIAMETER .032" OUTSIDE DIAMETER .396" OVERALL LENGTH 1.044" COILS 7 COLOR ID. LT. GREEN	84 BAND RELEASE VALVE SPRING (41) WIRE DIAMETER .027" OUTSIDE DIAMETER .354" OVERALL LENGTH 0.92" COILS 8 COLOR ID. BLUE	COOLER BYPASS VALVE SPRING (45) WIRE DIAMETER .042" OUTSIDE DIAMETER .471" OVERALL LENGTH .680" COILS 6 COLOR ID. NONE	TCC CHECK VALVE SPRING (47) WIRE DIAMETER .019" OUTSIDE DIAMETER .270" OVERALL LENGTH .654" COILS 11 COLOR ID. YELLOW
LOCK UP RELAY VALVE SPRING (51) WIRE DIAMETER .022" OUTSIDE DIAMETER .231" OVERALL LENGTH 0.927" COILS 12 COLOR ID. RED	SECONDARY REGULATOR VALVE SPRING (58) WIRE DIAMETER .038" OUTSIDE DIAMETER .375" OVERALL LENGTH 1.860" COILS 16 COLOR ID. NONE	SLT ACCUMULATOR SPRING OUTER (60) WIRE DIAMETER .088" OUTSIDE DIAMETER .642" OVERALL LENGTH 1.560" COILS 9 COLOR ID. ORANGE	SLT ACCUMULATOR SPRING INNER (61) WIRE DIAMETER .063" OUTSIDE DIAMETER .409" OVERALL LENGTH 1.550" COILS 15 COLOR ID. ORANGE
SHIFT PRESSURE CONTROL VALVE SPRING (63) WIRE DIAMETER .025" OUTSIDE DIAMETER .229" OVERALL LENGTH 0.620" COILS 12 COLOR ID. WHITE	M2 SHIFT VALVE SPRING (68) WIRE DIAMETER .027" OUTSIDE DIAMETER .320" OVERALL LENGTH 1.044" COILS 9 COLOR ID. LT. BLUE	SHIFT PRESSURE RELAY VALVE SPRING (70) WIRE DIAMETER .033" OUTSIDE DIAMETER .397" OVERALL LENGTH 1.045" COILS 7 COLOR ID. LT. GREEN	B4 CONTROL VALVE SPRING (71) WIRE DIAMETER .032" OUTSIDE DIAMETER .293" OVERALL LENGTH 0.977" COILS 10 COLOR ID. ORANGE
B2 CONTROL VALVE SPRING (79) WIRE DIAMETER .032" OUTSIDE DIAMETER .382" OVERALL LENGTH 1.339" COILS 9 COLOR ID. NONE	TCC CHECK VALVE SPRING (82) WIRE DIAMETER .018" OUTSIDE DIAMETER .205" OVERALL LENGTH 0.468" COILS 7 COLOR ID. WHITE	TCC CONTROL VALVE SPRING (88) WIRE DIAMETER .025" OUTSIDE DIAMETER .219" OVERALL LENGTH 0.830" COILS 11 COLOR ID. YELLOW	EXHAUST CHECK VALVE SPRING (7) WIRE DIAMETER .010" OUTSIDE DIAMETER .173" OVERALL LENGTH 0.465" COILS 8 COLOR ID. NONE

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Figure 9

SUBARU PHASE II P0741 TORQUE CONVERTER SLIP

COMPLAINT: Before or after overhaul, 1998 and up Subaru vehicles equipped with the Phase II Four Speed transmission may exhibit a Diagnostic Trouble Code P0741 Torque Converter Slip.

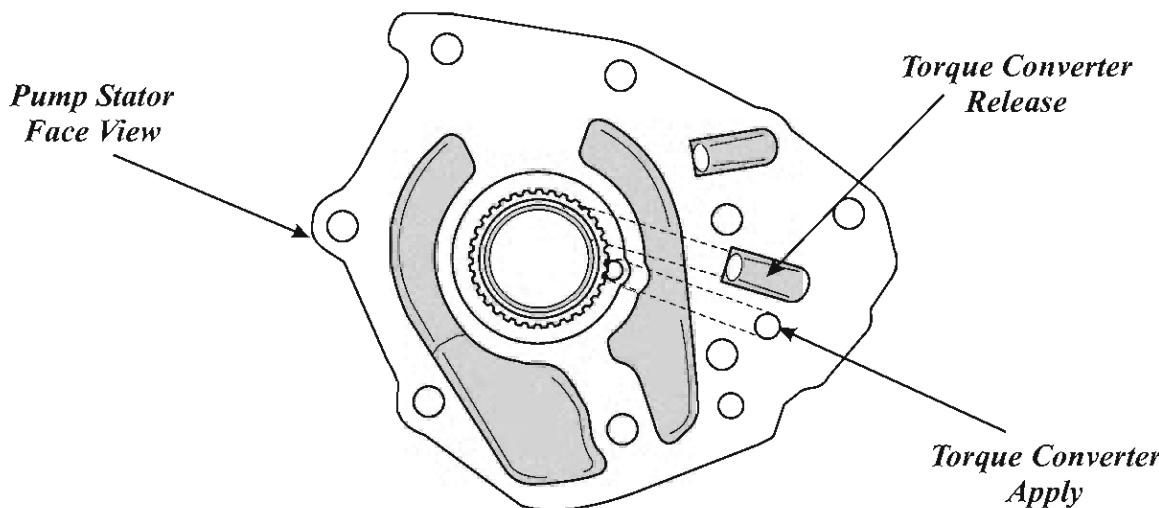
CAUSE: The cause may be, worn stator bushings allowing a pressure loss in the Torque Converter apply circuit.

CORRECTION: Refer to Figure 1 to identify the Torque Converter release port and the Torque Converter apply port in the face side of the Stator assembly. See Figure 2 for an illustration of the Torque Converter Apply Circuit and how the TCC Apply pressure can be lost with the worn stator bushings. Refer to Figure 3 and assemble the Turbine shaft into the Stator shaft. Locate the Torque Converter release port on the face view of the stator and close it off with your finger. Apply 80-100 psi of air pressure to the center of the turbine shaft, and ensure no leakage past the bushing that is illustrated in Figure 3. *Note: This is the only sealing surface separating Torque Converter Off and Torque Converter Apply.*

SERVICE INFORMATION:

At the time of this printing there are no bushings available from aftermarket suppliers. It may be necessary to replace the stator to repair this condition.

TORQUE CONVERTER PORT IDENTIFICATION

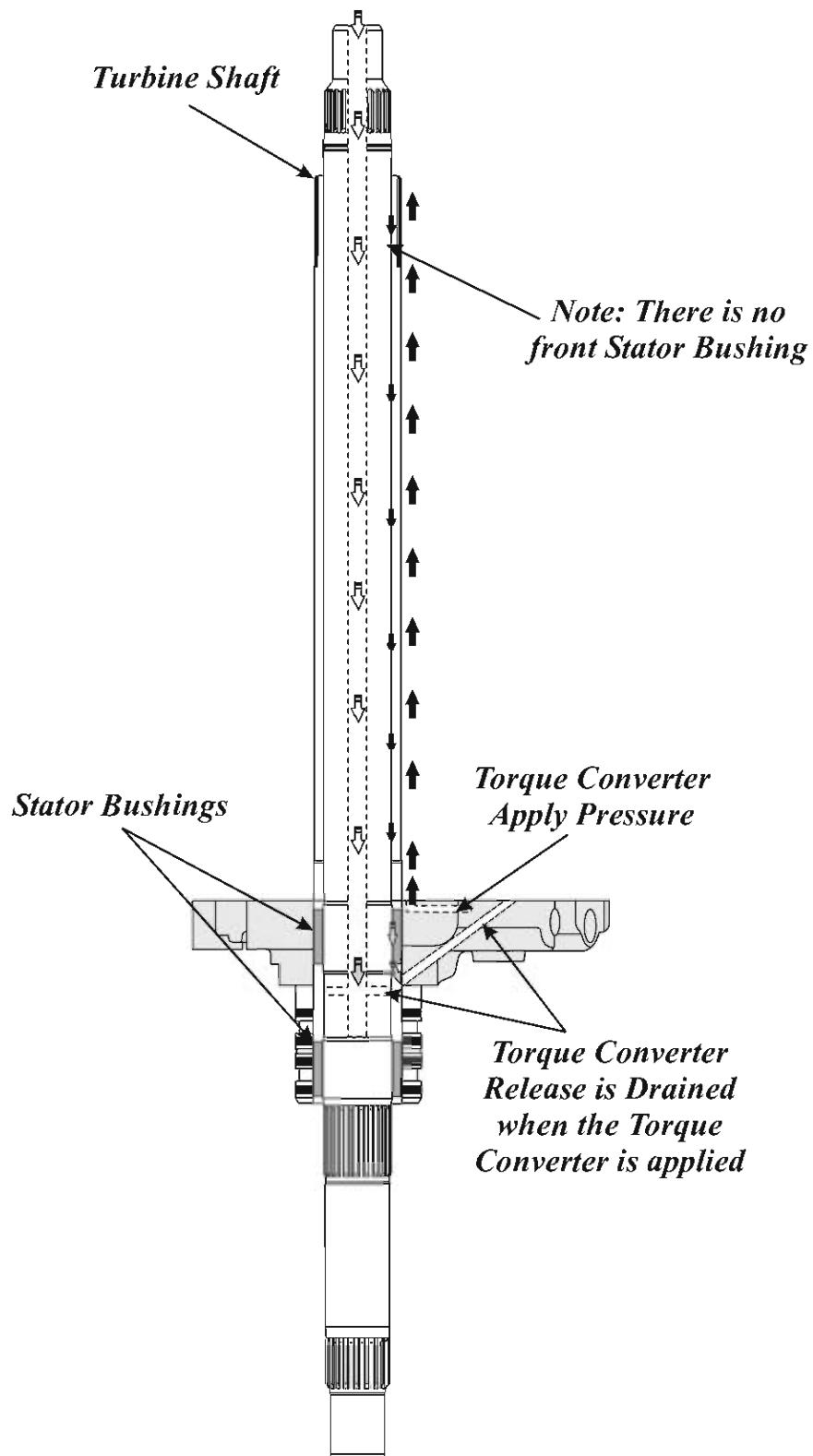


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Figure 1



TORQUE CONVERTER APPLIED



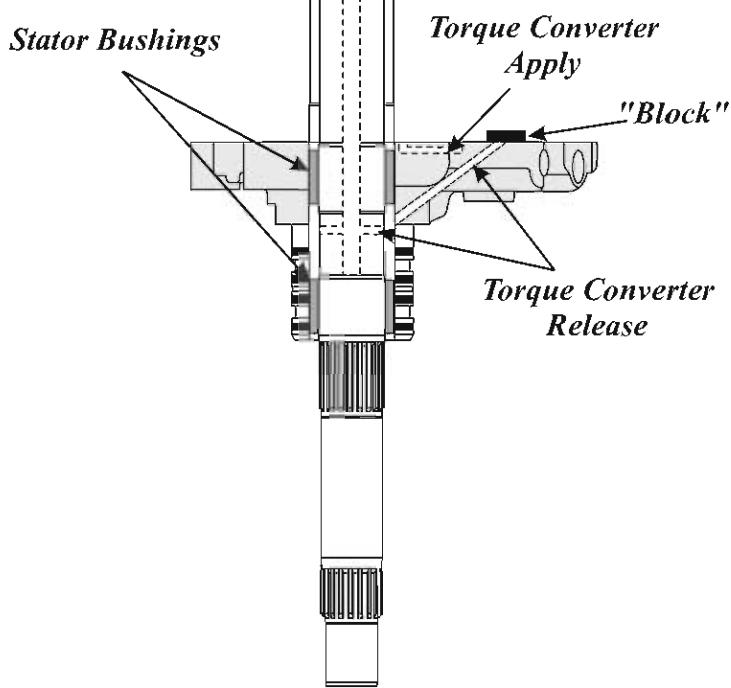
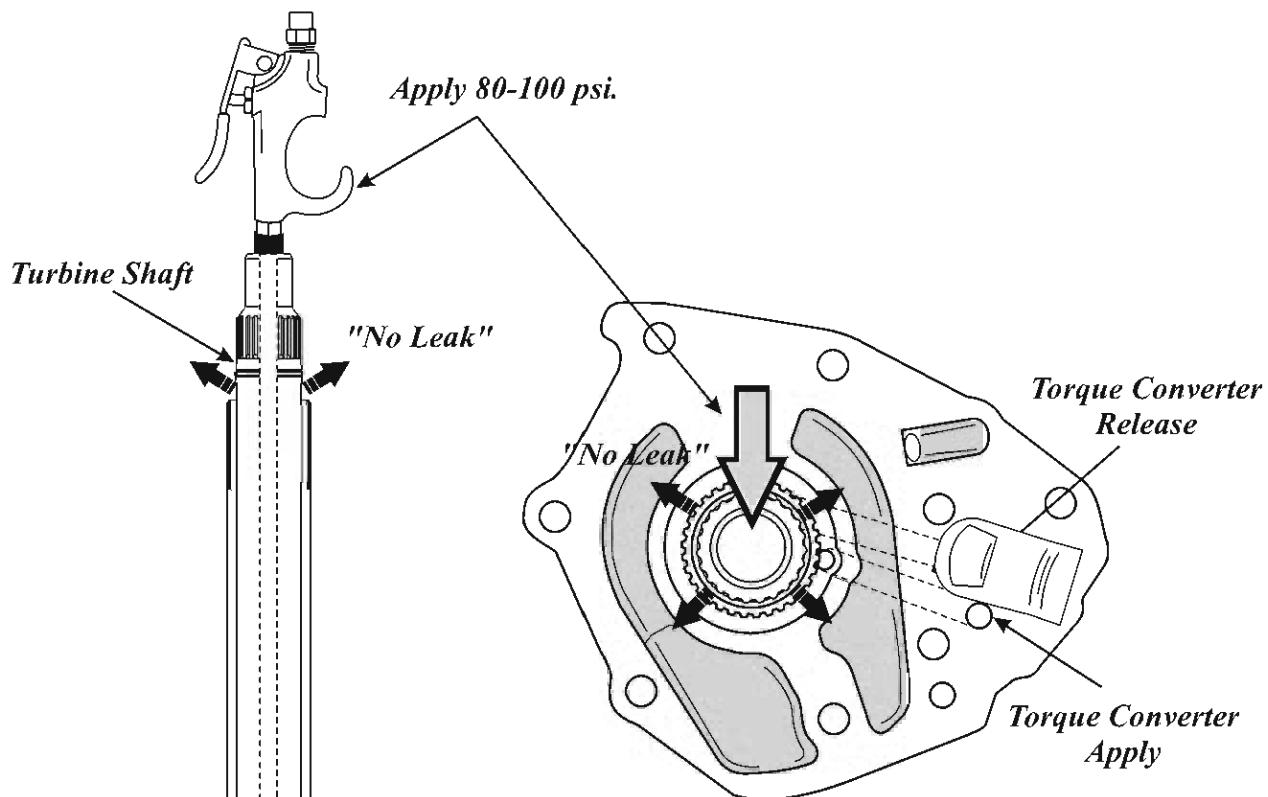
Note: Torque Converter Apply Pressure will be lost to the already exhausting Torque Converter release circuit, when the stator bushings are worn.

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Figure 2



STATOR BUSHING AIR CHECK



Note: There should be little to NO air leaking in between the Turbine shaft and the Stator bushings. Move the Turbine shaft from side to side to make sure the bushing is tight while applying air pressure

Figure 3



TOYOTA A140/A240/A340/A540 SERIES TRANSMISSIONS REPEATED TROUBLE CODE DTC P0770

COMPLAINT: Before or after overhaul, a Toyota vehicle equipped with the A140/A240/A340/A540 series transmission may exhibit a complaint of MIL illuminated with trouble code DTC P0770 stored in memory. This problem may be intermittent occurring after extended driving periods.

CAUSE: One cause may be a worn front stator bushing. The front stator bushing in the Toyota A140/A240/A340/A540 transmission separates converter apply oil pressure and converter release oil pressure. When the front stator bushing is worn and TCC is applied, torque converter apply oil pressure will be able to pass between the bushing and the turbine shaft into the converter release passage and will exhaust through the stator causing a drop in converter apply pressure such that the converter clutch may no longer have the ability to hold adequately. The PCM detects the slip and stores the DTC P0770.

Refer to Figure 1 for diagram of front stator bushing location. Look at the partial cutaway diagram as shown in Figure 2. The diagram depicts how converter apply oil pressure passes between the bushing and turbine shaft and exhausts along with converter release pressure.

CORRECTION: Install a new front stator bushing.

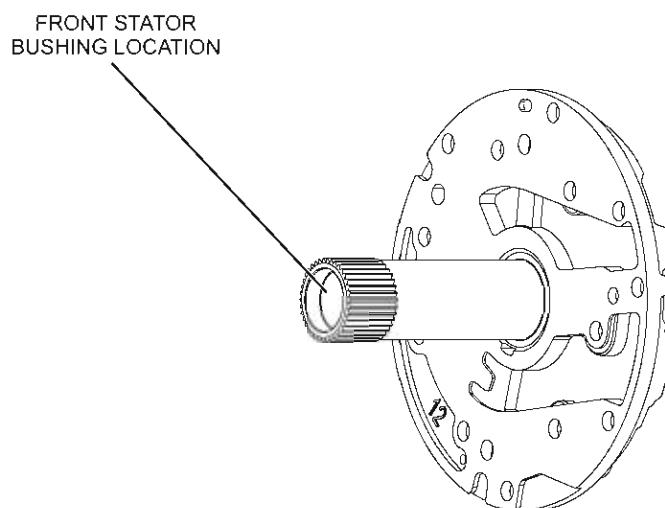
NOTE: Toyota A140/A240/A540 series transmissions purchase a new factory bushing from Transtar.

Toyota A340 series transmissions purchase a new bushing from Omega Machine & Tool inc.

SERVICE INFORMATION:

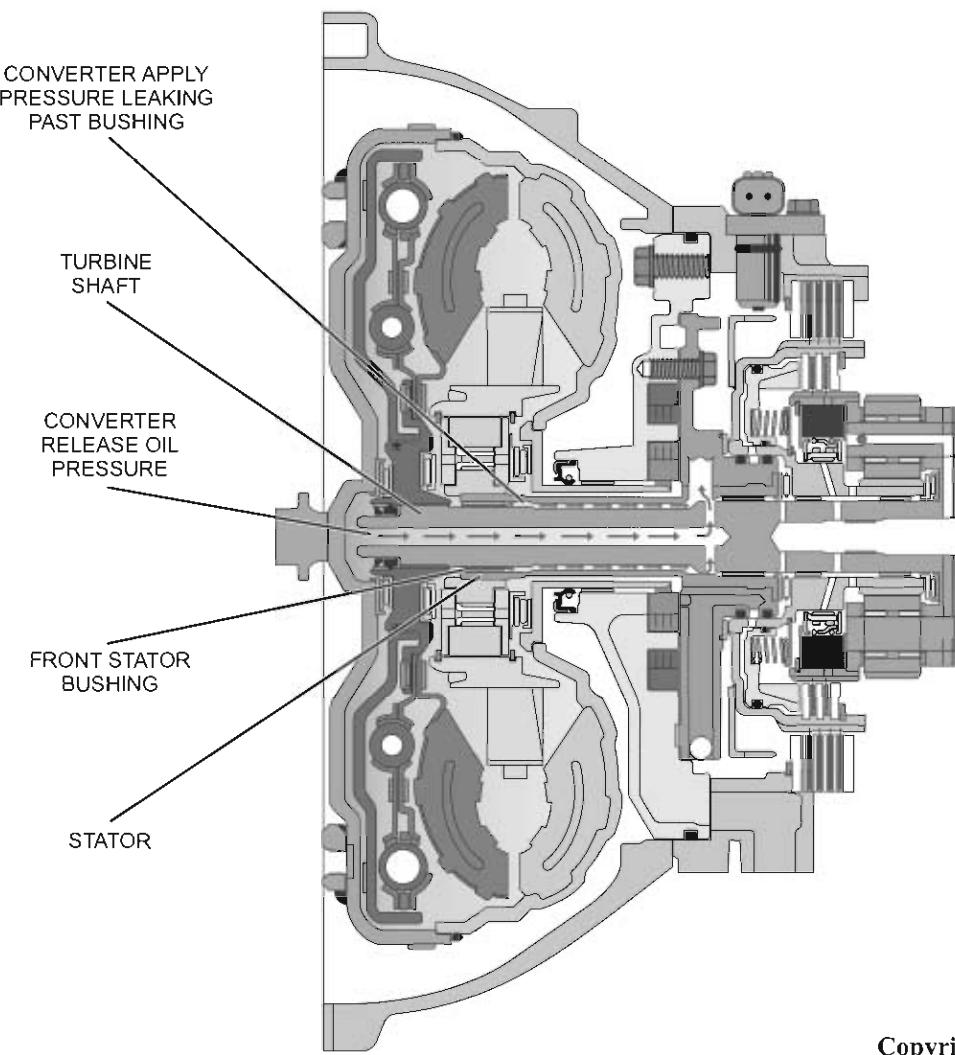
Transtar Toyota A140/A240/A540 series.....46007-A

Omega Machine & Tool inc. Toyota A340 series.....27428



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Figure 1



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Figure 2



TOYOTA A245/246 HARSH FORWARD ENGAGEMENT

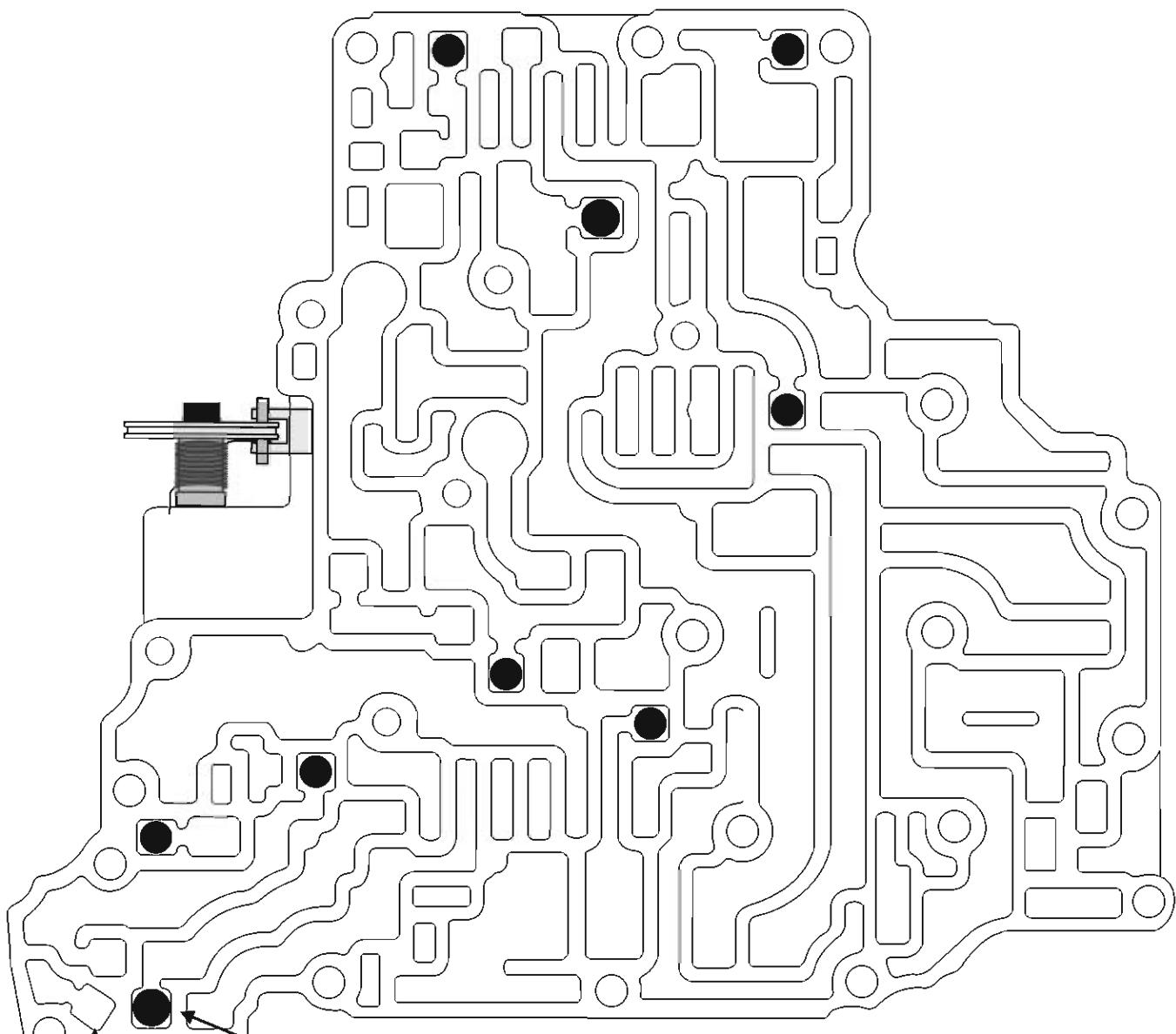
COMPLAINT: After overhaul the forward engagement garage shift into drive is extremely harsh.

CAUSE: The .250" (6.35mm) plastic checkball in the lower left corner of the upper valve body was misplaced.

CORRECTION: The checkball was misplaced into the incorrect checkball pocket, Refer to Figures 1 and 2. The pocket all the way to the left is incorrect, it should be placed into the pocket to the immediate right.

**TOYOTA A245/246
HARSH FORWARD ENGAGEMENT****UPPER VALVE BODY (Front Side)**

(With TV Cable)



PLASTIC CHECKBALL
.250" (6.35MM)
CORRECT LOCATION

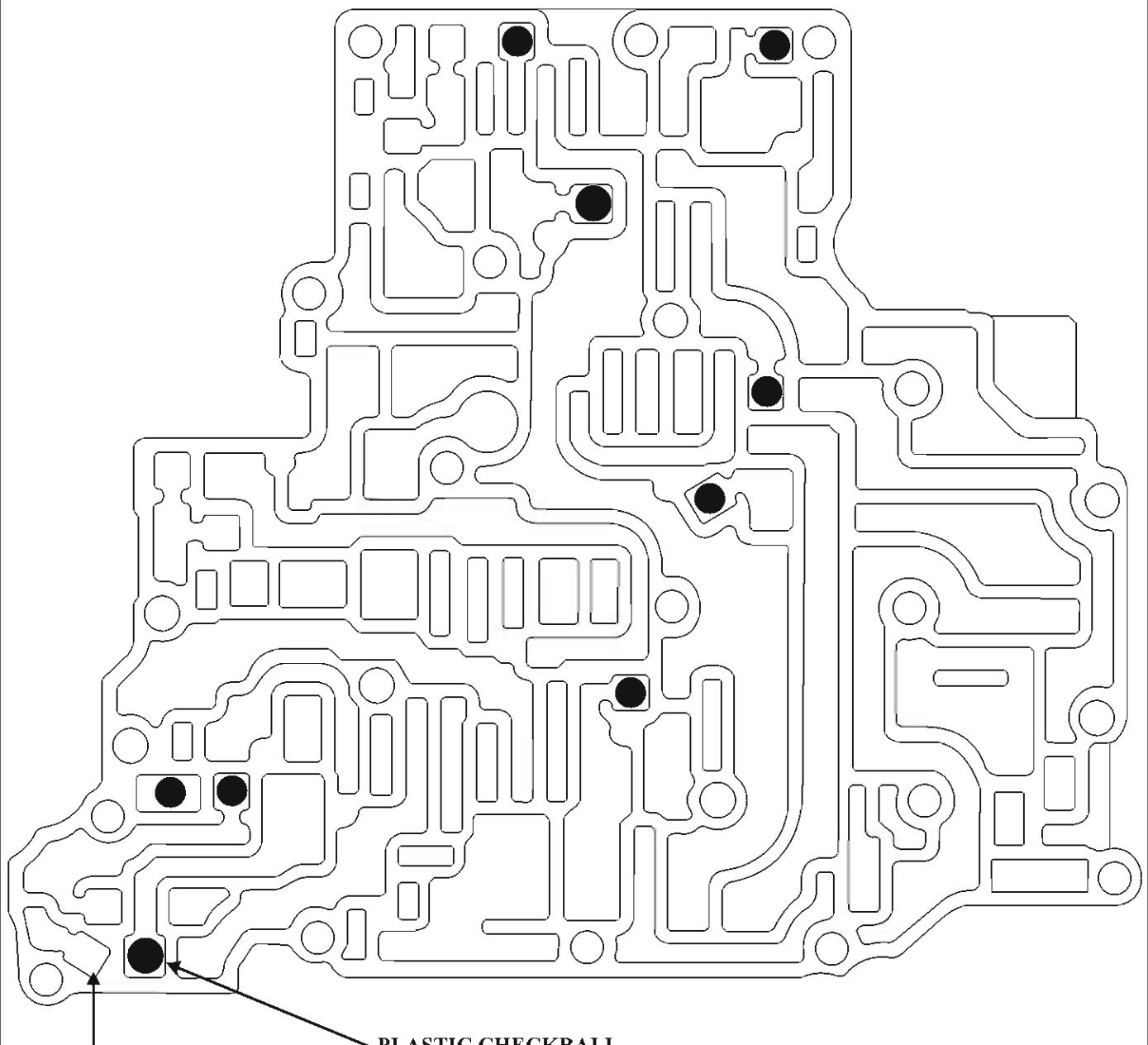
*INCORRECT
LOCATION*

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Figure 1

**TOYOTA A245/246
HARSH FORWARD ENGAGEMENT****UPPER VALVE BODY**

(With Line Pressure Solenoid first version)

**INCORRECT
LOCATION****PLASTIC CHECKBALL
.250" (6.35MM)
CORRECT LOCATION**

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Figure 2



TOYOTA "U" SERIES TRANSMISSIONS MANUAL VALVE DIFFERENCES

COMPLAINT: During an overhaul of a U140E transmission, it was determined that the original valve body needed replacement. After installation the vehicle had no reverse engagement unless the selector lever was moved around. When drive was selected, a severe delayed engagement was present. When the selector lever was moved one detent lower, engagement was immediate.

CAUSE: When the technician compared the experienced valve body to the original, he noticed that the manuals valves were different lengths. Upon further investigation, all U140E transmissions have the same length manual valve.
What had happened was, the experienced valve body had a U151E manual valve in it which is a different length than the U140E valve.

CORRECTION: The technician then put the manual valve from the original valve body into the used valve body and the transmission performed flawlessly.
The dimensions for the U140E Manual Valve can be seen in Figure 1 and the U151E manual valve is shown in Figure 2.



TOYOTA "U" SERIES TRANSMISSIONS MANUAL VALVE DIFFERENCES

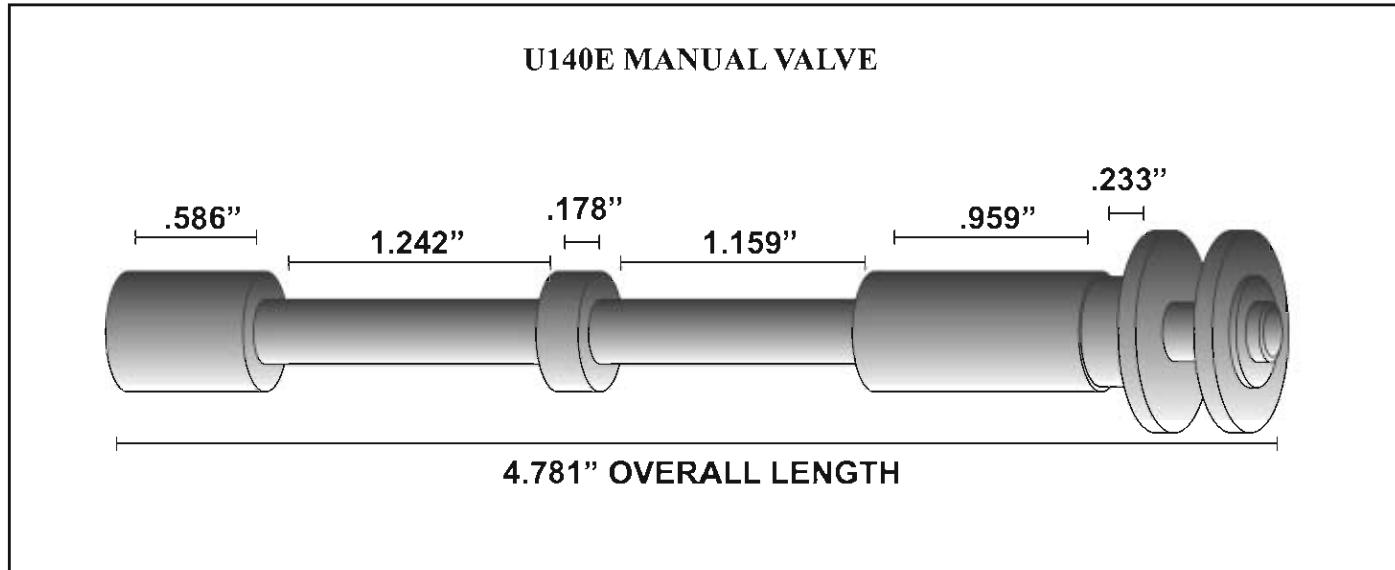


Figure 1

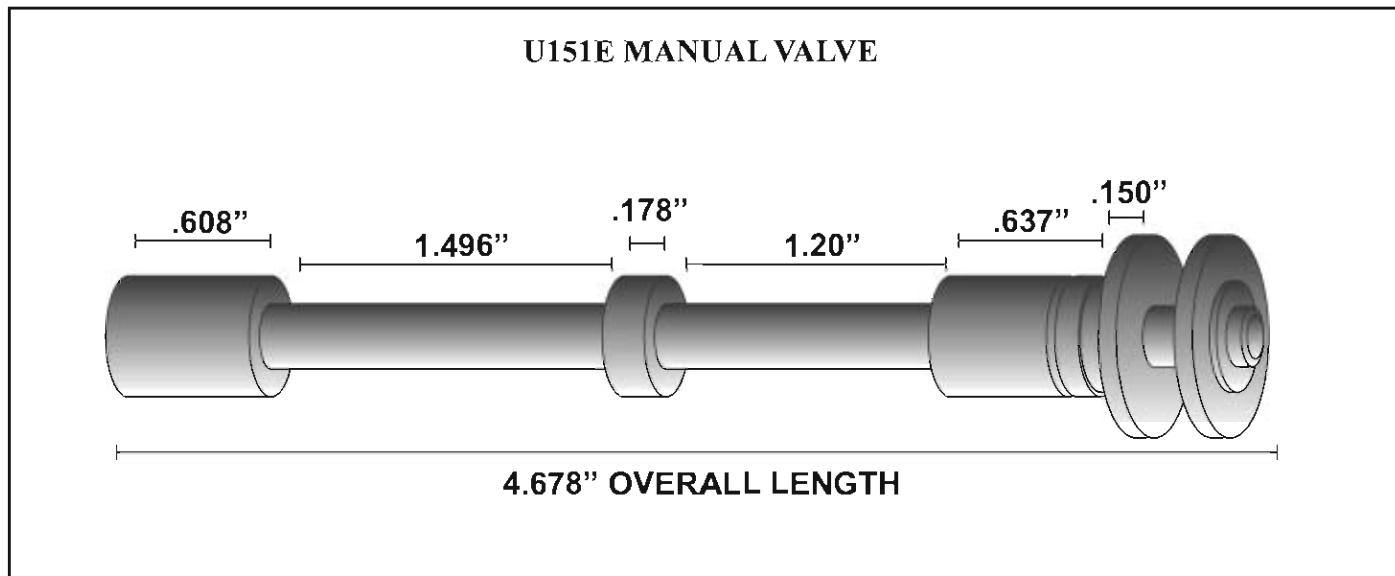


Figure 2

TOYOTA U250 HARSH 5-4 DOWNSHIFT

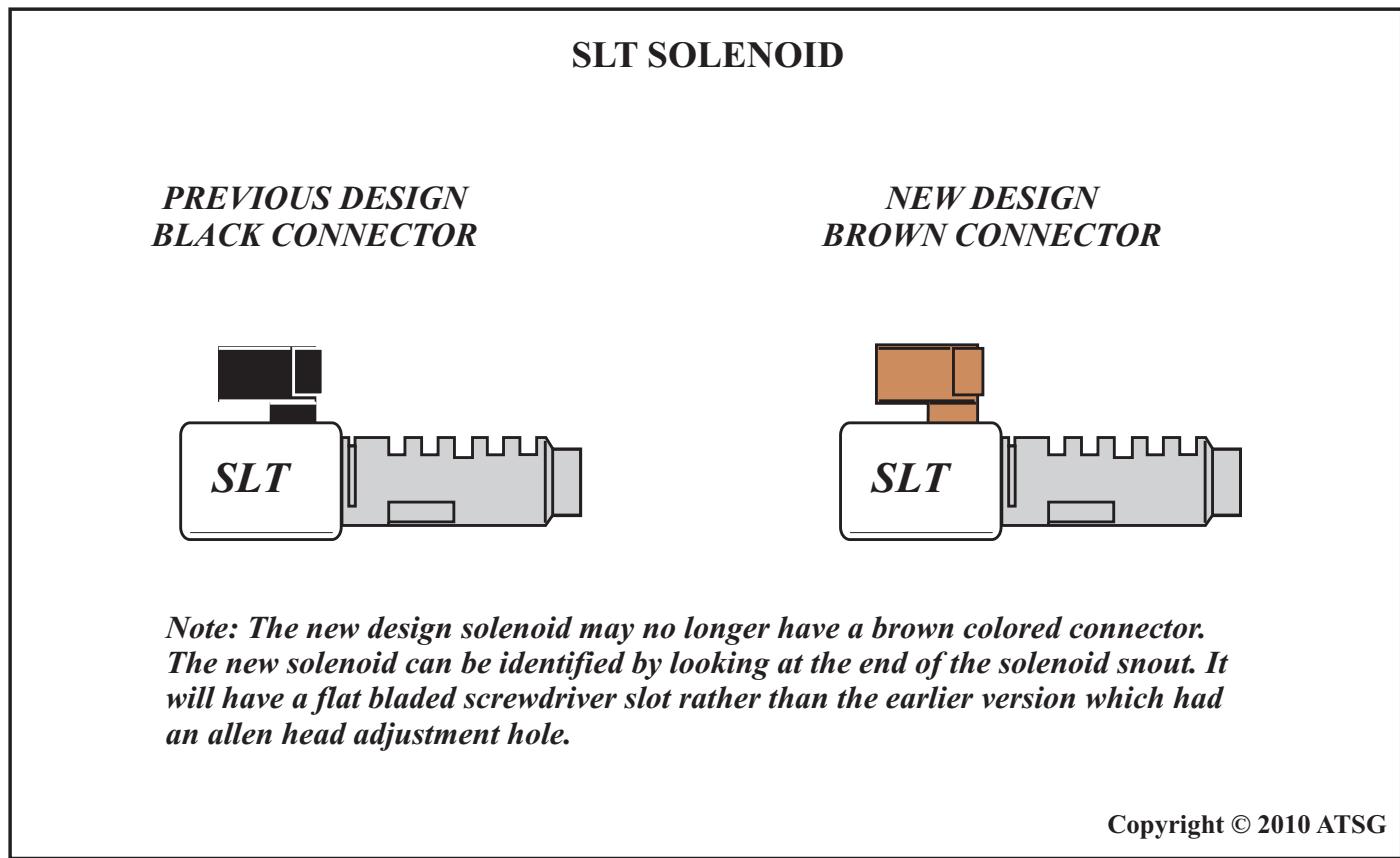
COMPLAINT: Some 2005 - 2007 Toyota Camry's equipped with the 2AZ-FE engine and U250 transaxle may exhibit a harsh 5-4 downshift after driving at speeds above 45mph and decelerating to 28 mph. Toyota TSB numbers, TC013-05 and TC010-06.

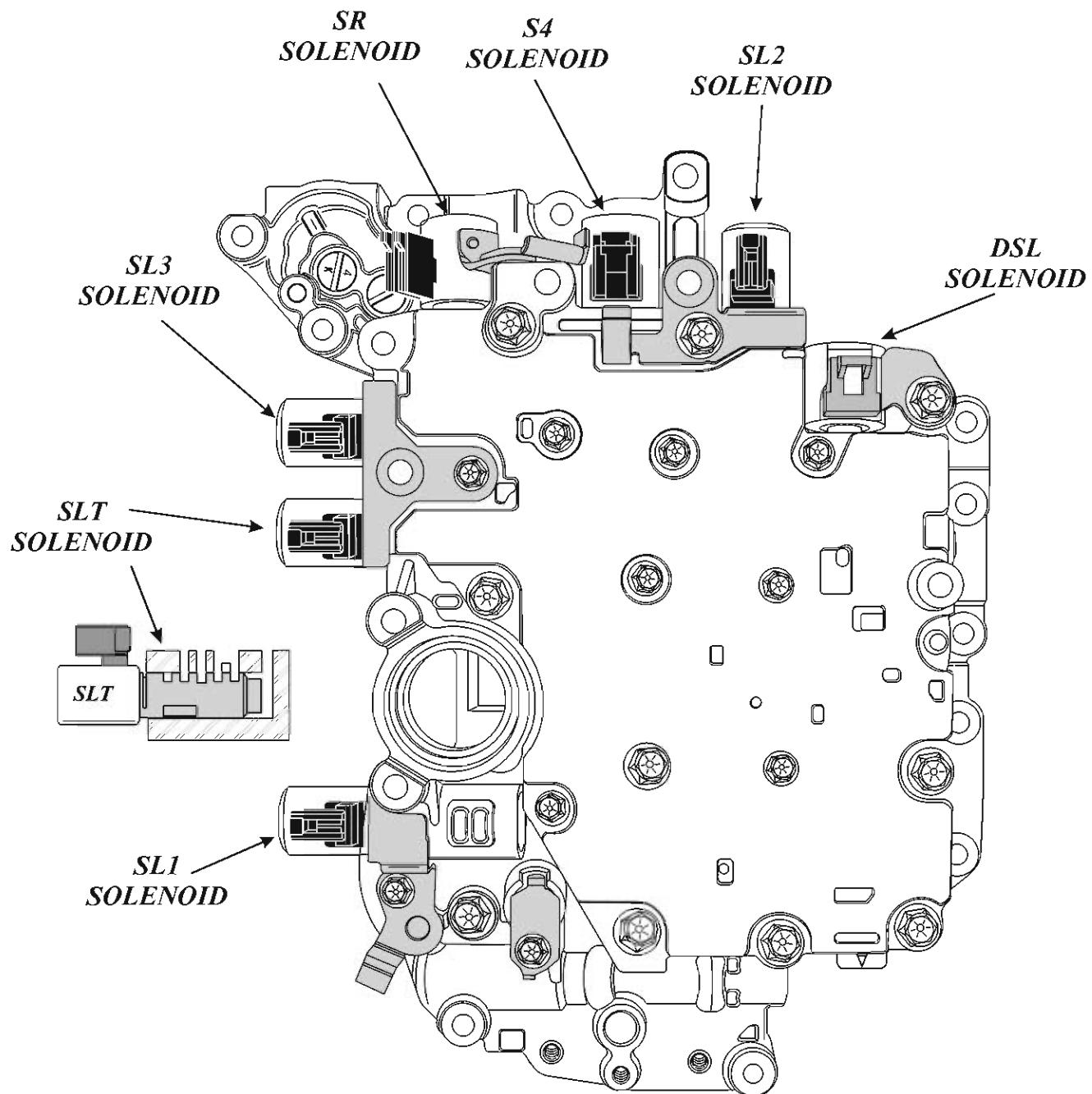
CAUSE: The cause may be, pressure instability problems with the SLT Solenoid (Line Pressure Control Solenoid).

CORRECTION: Replace the previous design SLT identified with a Black Connector, with the new design that has a brown connector, as shown in Figure 1. Refer to Figure 2 for a location of the SLT solenoid on the Valve Body.

SERVICE INFORMATION:

SLT (LINE PRESSURE CONTROL SOLENOID) Toyota part number.....35290-45010



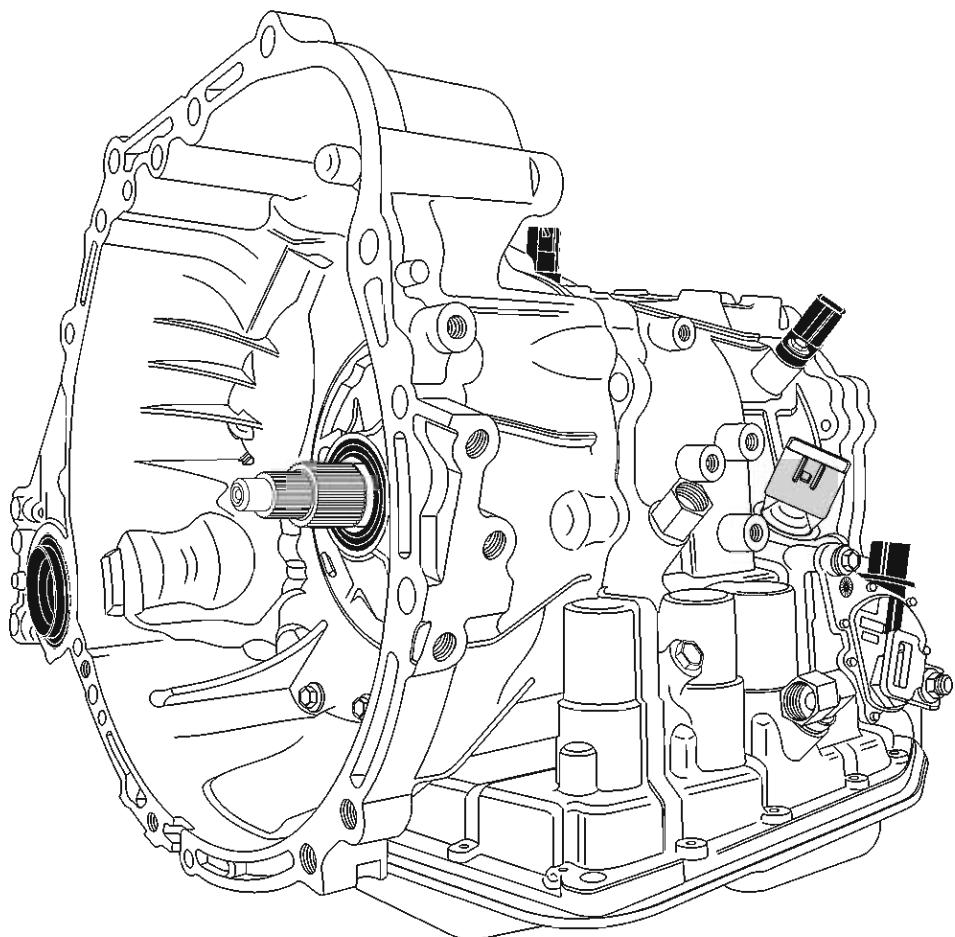
**TOYOTA U250
HARSH 5-4 DOWNSHIFT****U150/U250 SERIES SOLENOID I.D.**

TOYOTA/LEXUS U150/U250 PRELIMINARY INFORMATION

Starting at the beginning of production for the 2002 model year for Lexus and 2004 for Toyota, a spin-off of the U140/U240 Four speed transaxle, designated as the U150/U250 series was born. This transmission is classified as a 5 speed transmission, although it has 6 ratio's possible in the Drive position. The U150/250 is very similar to it's smaller brother, the U140, and actually uses some of the same parts.

This transaxles shift points, and shift feel are electronically controlled by a Powertrain Control Module. This is accomplished by the PCM monitoring engine load and adjusting solenoid duty cycle to match pressure rise and shift feel. The PCM also monitors the turbine and output speed sensors to calculate gear ratio and the Transmission Range Sensor for gear selection.

TOYOTA/LEXUS U150/U250 TRANSAXLE



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TOYOTA/LEXUS U150/U250 PRELIMINARY INFORMATION

Refer to Figure 1 for a component application chart.

Refer to Figure 2 for the Solenoid internal harness and connector I.D.

Refer to Figure 3 for the Solenoid ohm values.

Refer to Figure 4 for the Internal harness schematic.

Refer to Figure 5 for the Solenoid Identification and location.

Refer to Figure 6 for the Solenoid Firing Order.

Refer to Figure 7 for the SLT Solenoid function.

Refer to Figure 8 for the SL1 Solenoid function.

Refer to Figure 9 for the SL2 Solenoid function.

Refer to Figure 10 for the SL3 Solenoid function.

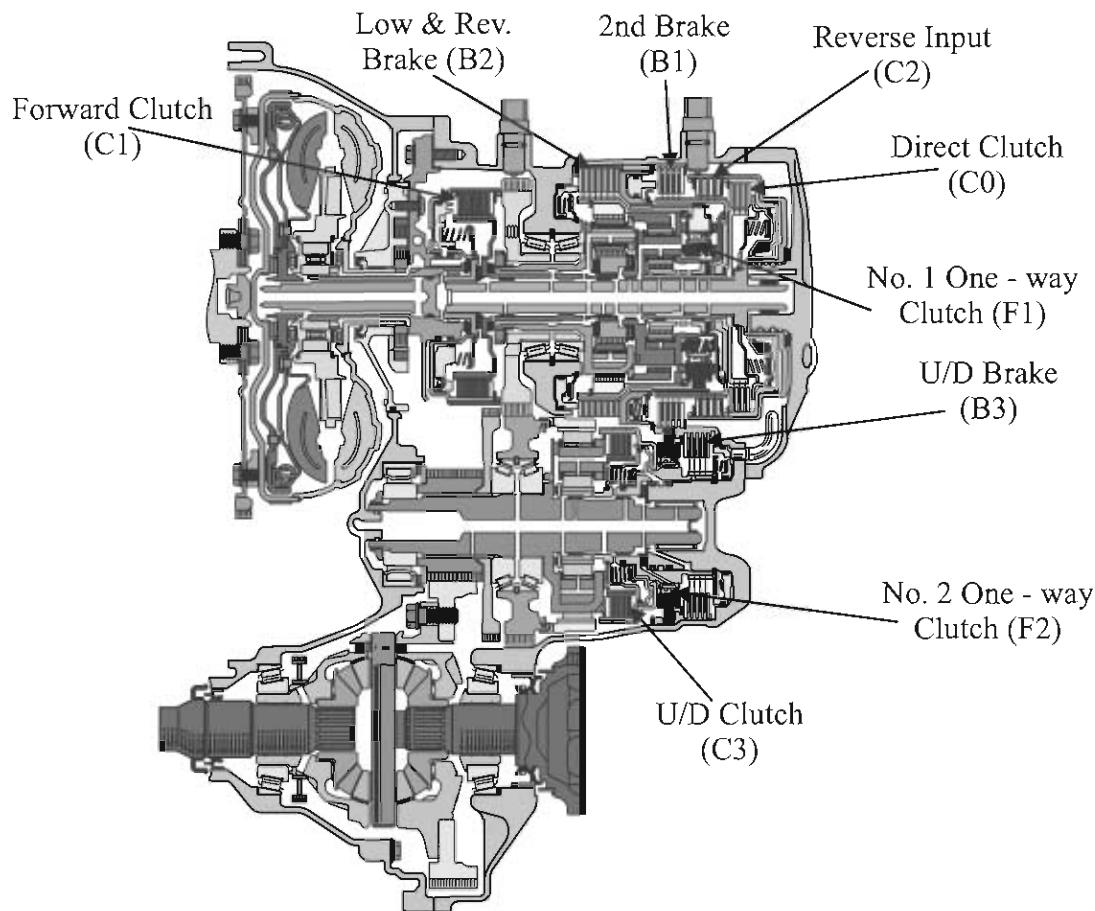
Refer to Figure 11 for the SR Solenoid function.

Refer to Figure 12 for the S4 Solenoid function.

Refer to Figure 13 for the DSL/TCC Solenoid function.

Refer to Figure 14-24 for the complete Valve Body assembly exploded views and valve descriptions.

Refer to Figure 25 for case passage I.D. and air Checks.

TOYOTA/LEXUS U150/U250
COMPONENT APPLICATION CHART

Gear Range	Fwd Clutch C1	Rev Input Clutch C2	Dir Clutch C0	U/D Clutch C3	2nd Brake B1	L/R Brake B2	U/D Brake B3	No. 1 One Way Clutch F1	No. 2 One Way Clutch F2
Park								ON	
Reverse		ON				ON	ON		
Neutral							ON		
D-1st. Gear	ON						ON	ON	ON
D-2nd. Gear	ON				ON		ON		ON
D-3rd. Gear Version 1	ON		ON	ON					
D-3rd. Gear Version 2	ON		ON				ON		ON
D-4th. Gear			ON		ON		ON		ON
D-5th. Gear			ON	ON	ON				

3rd Gear Version 1 is a higher ratio, as the Transfer assembly is turning 1:1

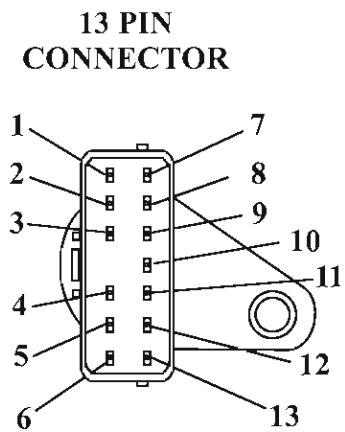
3rd Gear Version 2 is a lower ratio, as the Transfer assembly is in reduction

Note: These two versions are controlled by PCM scheduling and Line pressure. Version 2 is used at higher throttle/pressure.

Figure 1

TOYOTA/LEXUS U150/U250 PRELIMINARY INFORMATION

SOLENOID INTERNAL HARNESS AND CONNECTOR I.D.

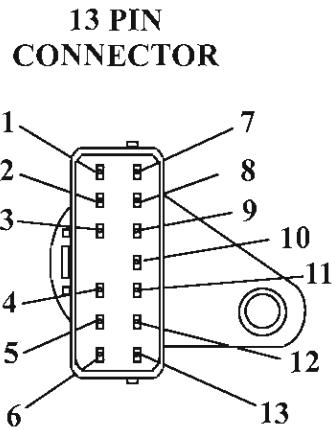


Terminal	Function	Internal wire Color
1	THO (temp +)	Orange
2	SLT +	Green
3	S4 +	Yellow
4	SL3+	Red
5	SL2+	Green
6	SL1+	White
7	E2 (temp -)	Orange
8	SLT -	Grey
9	SR+	Purple
10	DSL+	Light Blue
11	SL3-	Blue
12	SL2-	Brown
13	SL1-	Black

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Figure 2

SOLENOID OHM VALUES



Test	Connect to terminals	Ohm Value
Temp Sensor	1 and 7	3.8k ohms @ 70°F
SLT	2 and 8	4.5 to 6.0
S4	3 and Gnd to the case	11 to 15
SL3	4 and 11	4.5 to 6.0
SL2	5 and 12	4.5 to 6.0
SL1	6 and 13	4.5 to 6.0
SR	9 and Gnd to the case	11 to 15
DSL	10 and Gnd to the case	11 to 15

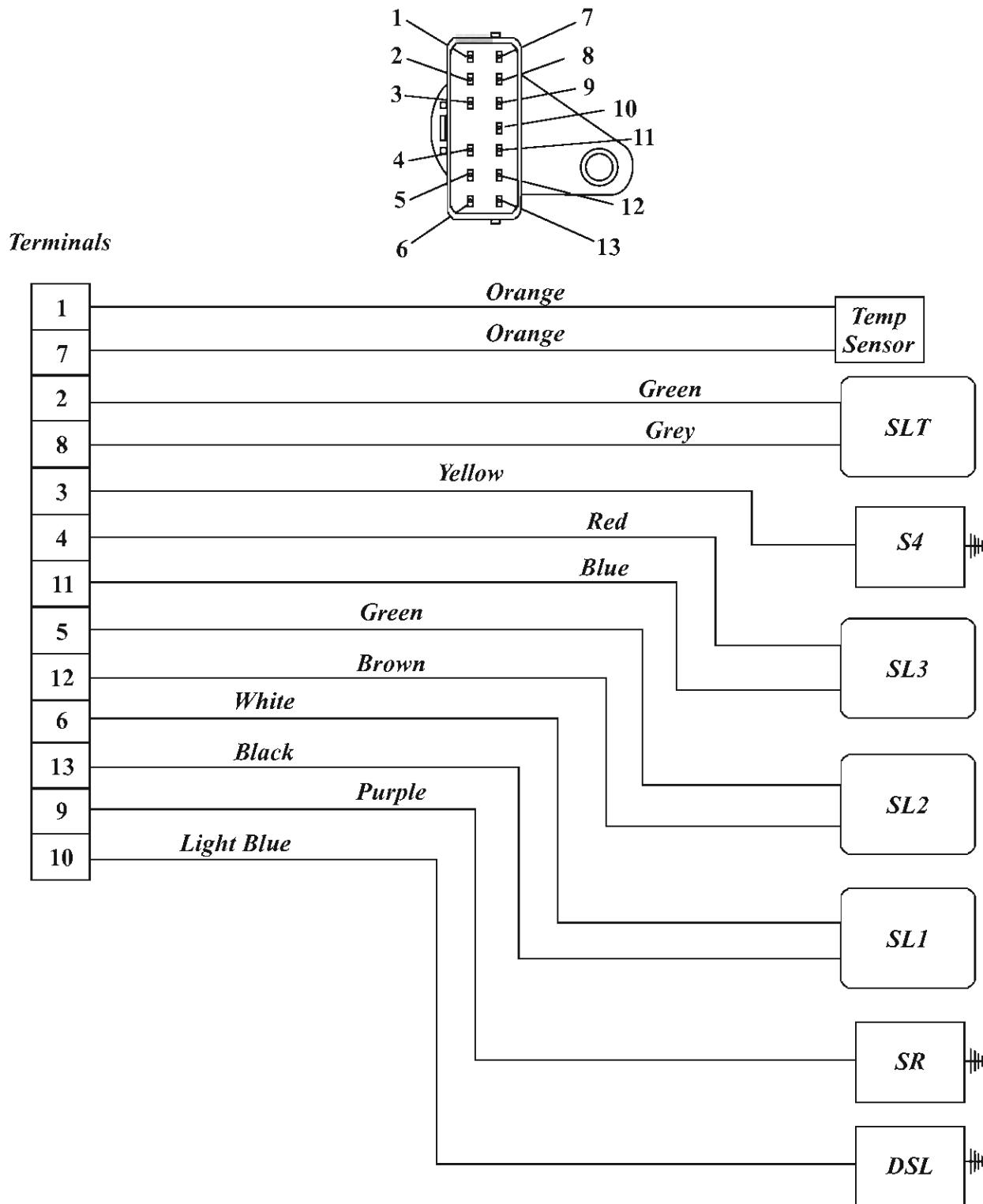
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Figure 3

Automatic Transmission Service Group



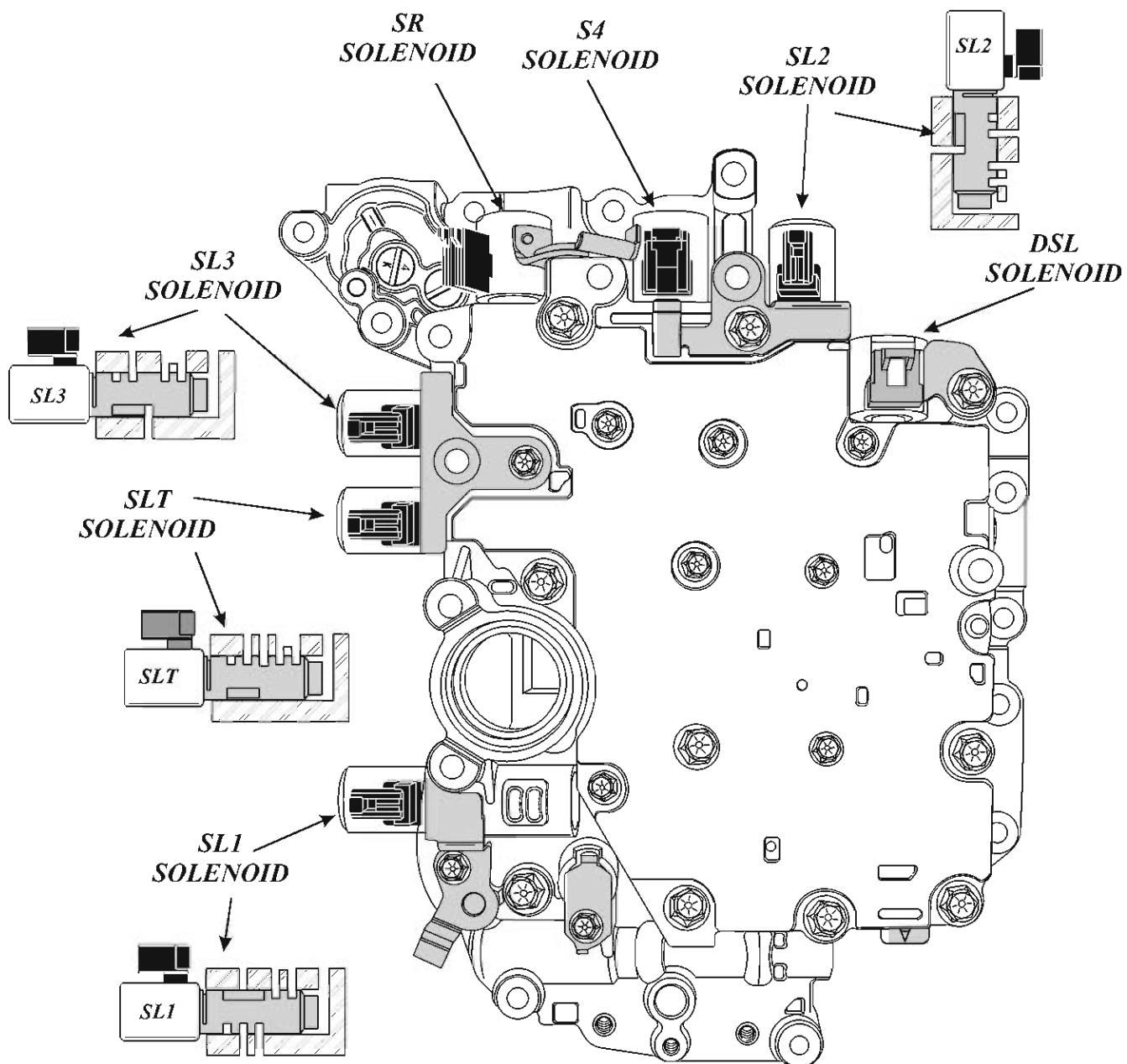
13 PIN CONNECTOR INTERNAL HARNESS SCHEMATIC



Note: The DSL, SR and S4 Solenoid are grounded to the case

TOYOTA/LEXUS U150/U250
PRELIMINARY INFORMATION

U150 SERIES SOLENOID I.D.



*Note: The Linear solenoids can be put into the wrong holes in the Valve Body.
Refer to the illustration above with the cross-sectional views and verify
that the solenoid is in the correct location.*

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Figure 5

Automatic Transmission Service Group



TOYOTA/LEXUS U150/U250 PRELIMINARY INFORMATION

TYPICAL SOLENOID FIRING ORDER

	SL1	SL2	SL3	S4	SR	DSL/TCC	SLT
1st	ON	ON	Off	Off	Off	ON/M1**	Modulates based on engine load
2nd	Off	ON	Off	Off	Off		
3rd	ON	Off	Off	Off	ON*	ON**	
4th	Off	Off	ON	Off	ON*	ON**	
5th	Off	Off	ON	ON	ON*	ON**	

*SR- must be ON for TCC apply, and must be OFF to provide the connection for the DSL to the B2 Control Valve for Reverse inhibit. The SR is also Off during the 2-3 upshift transition.

**DSL - has 3 functions in Manual Low controls B2 brake to provide engine braking in Manual 1, in 3rd, 4th and 5th gear it controls TCC, and if turned on in Reverse will inhibit Reverse application.

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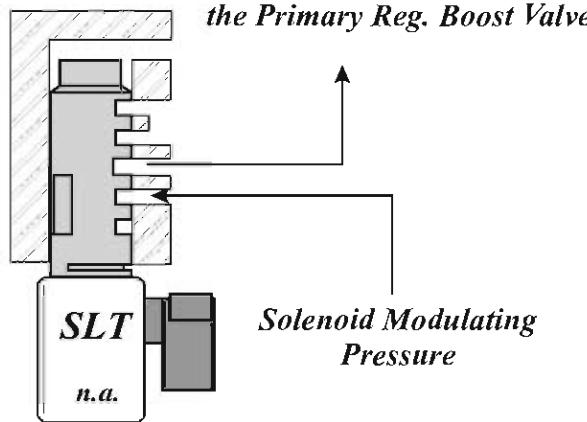
Figure 6



SLT LINE PRESSURE CONTROL SOLENOID

4.5-6.0
Ohms

To 2ndary Reg. Valve
Spring side, B-3 Orifice
Control Valve and
the Primary Reg. Boost Valve



Normally Applied

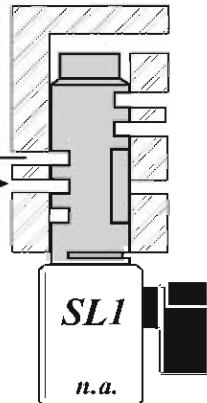
The SLT or Line Pressure Control Solenoid is a Normally Applied linear type Solenoid. When the Solenoid is OFF Solenoid Modulating Pressure will be connected to the port leading to the 2ndary Reg. Valve Spring side, B-3 Orifice Control Valve and the Primary Reg. Boost Valve causing Pressure to be high in those circuits, as well as Main Line Pressure. When the SLT Solenoid is ON pressure will be low leading to the valves listed above, as well as Line Pressure. This Solenoid is controlled by the PCM which calculates the duty cycle to match Line Pressure to engine load.

Figure 7

4.5-6.0
Ohms

SL1 SOLENOID

B-1 Control Valve
Solenoid Modulating Pressure



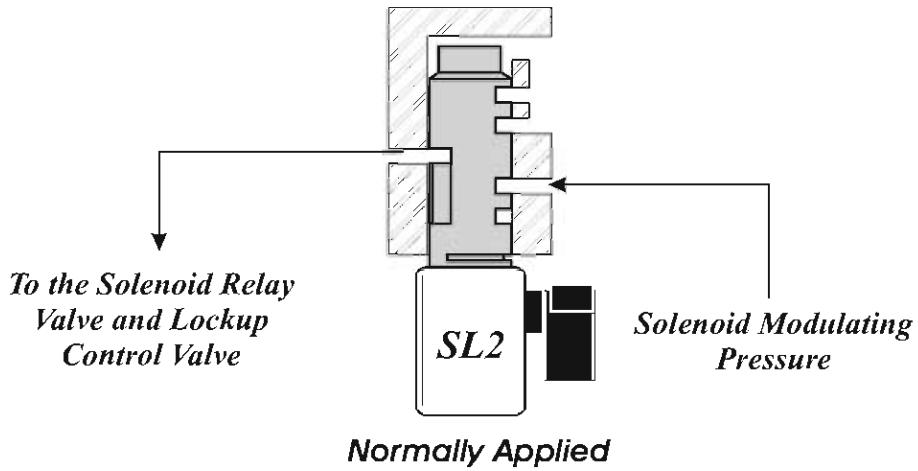
Normally Applied

The SL1 Solenoid is a Normally Applied linear type Solenoid. When the Solenoid is OFF Modulating Pressure will be connected to the port leading to the B-1 Control valve, which controls B-1 application. When the Solenoid is ON Modulating pressure will be blocked to the Valve.

Figure 8



SL2 SOLENOID

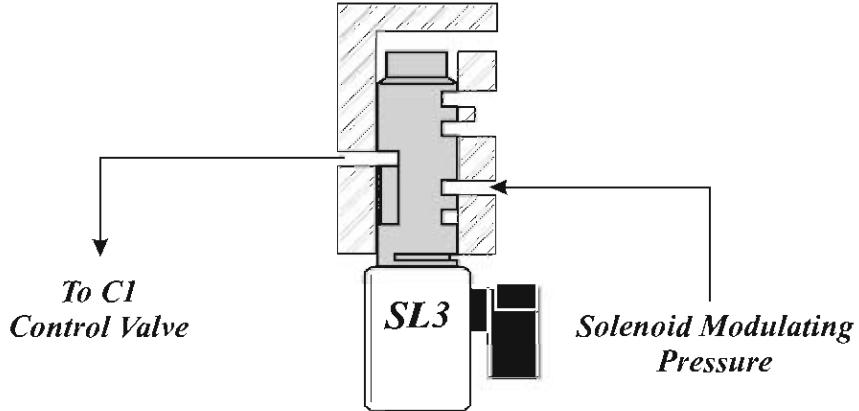
4.5-6.0
Ohms

The SL2 Solenoid is a Normally Applied linear type Solenoid. When the Solenoid is OFF Modulating Pressure will be connected to the port leading to the Solenoid Relay Valve, to control the 2-3 upshift, thru the C0 Control Valve, and the third land of the Lockup Control Valve. When the Solenoid is ON Modulating pressure will be blocked to the Valves listed above.

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Figure 9

SL3 SOLENOID

4.5-6.0
Ohms

Normally Applied

The SL3 Solenoid is a Normally Applied linear type Solenoid. When the Solenoid is OFF Modulating Pressure will be connected to the port leading to the C1 Control Valve. When the Solenoid is ON Modulating pressure will be blocked to the Valves listed above.

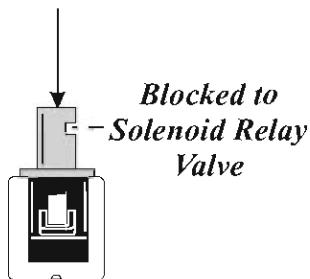
Copyright © 2010 ATSG

Figure 10

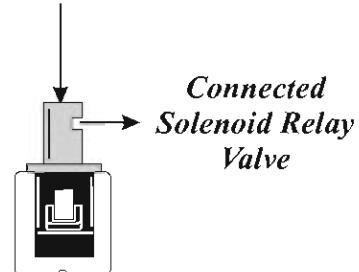


SR SOLENOID

OFF

*Orificed Forward Clutch
Pressure from Manual valve*11-15
Ohms

ON

*Orificed Forward Clutch
Pressure from Manual valve*

Normally Closed

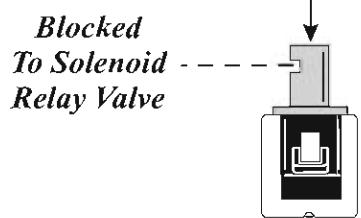
The SR Solenoid is a Normally Closed Solenoid. When OFF it blocks orificed Forward Clutch pressure from stroking the Solenoid Relay Valve. When ON it connects orificed Forward Clutch pressure to the First land of the Solenoid Relay Valve stroking the valve.

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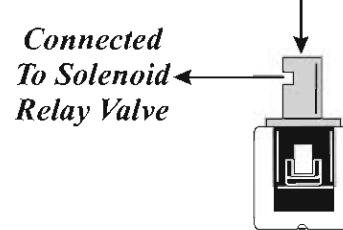
Figure 11

S4 SOLENOID

OFF

*Orificed Forward Clutch
Pressure from Manual valve*11-15
Ohms

ON

*Orificed Forward Clutch
Pressure from Manual valve*

Normally Closed

The S4 Solenoid is a Normally Closed Solenoid. When OFF it blocks orificed Forward Clutch pressure from the port leading to the Solenoid Relay Valve . When ON it connects orificed Forward Clutch pressure to the Solenoid Relay Valve, which in-turn leads to the 4-5 Shift Valve or Clutch Apply Control Valve, based on the position of the Solenoid Relay Valve..

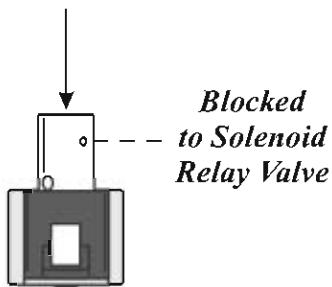
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Figure 12

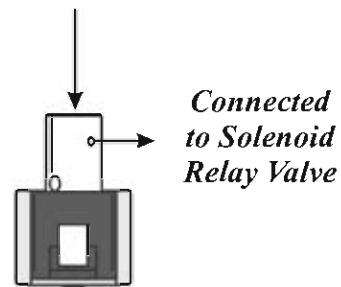
TOYOTA/LEXUS U150/U250
PRELIMINARY INFORMATION

DSL - TCC SOLENOID

OFF

Solenoid Modulating Pressure

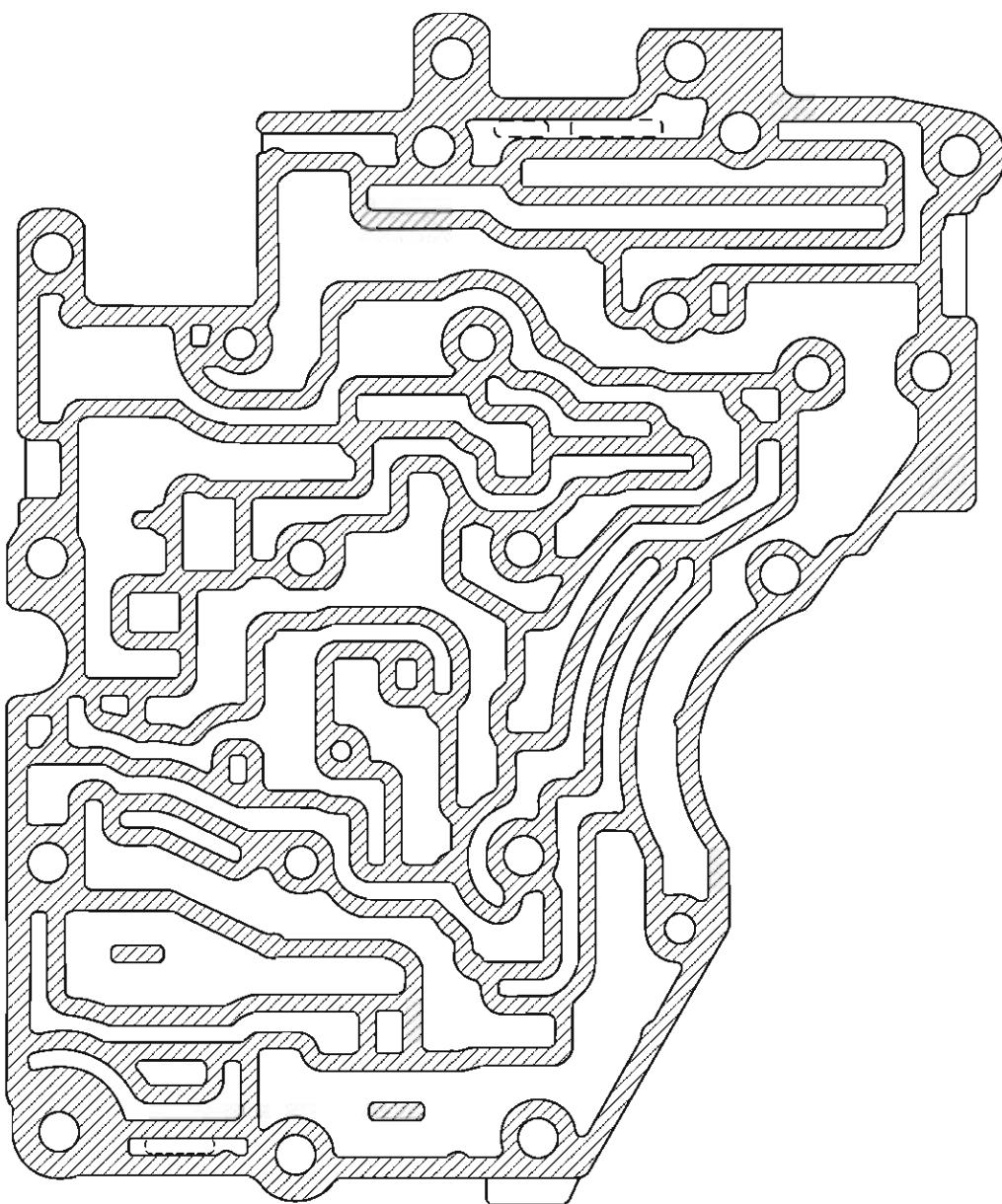
ON

Solenoid Modulating Pressure11-15
Ohms*Normally Closed*

The DSL/TCC Solenoid is a Normally Closed Solenoid. When OFF it blocks Solenoid modulating pressure from the Solenoid Relay Valve. When ON it connects Solenoid Modulating pressure to the B-2 Control Valve when the Solenoid Relay Valve is not stroked, for Reverse inhibit and for B2 application in Manual Low for engine braking. When On it connects Solenoid Modulating pressure to the Lock-up Relay Valve for TCC application

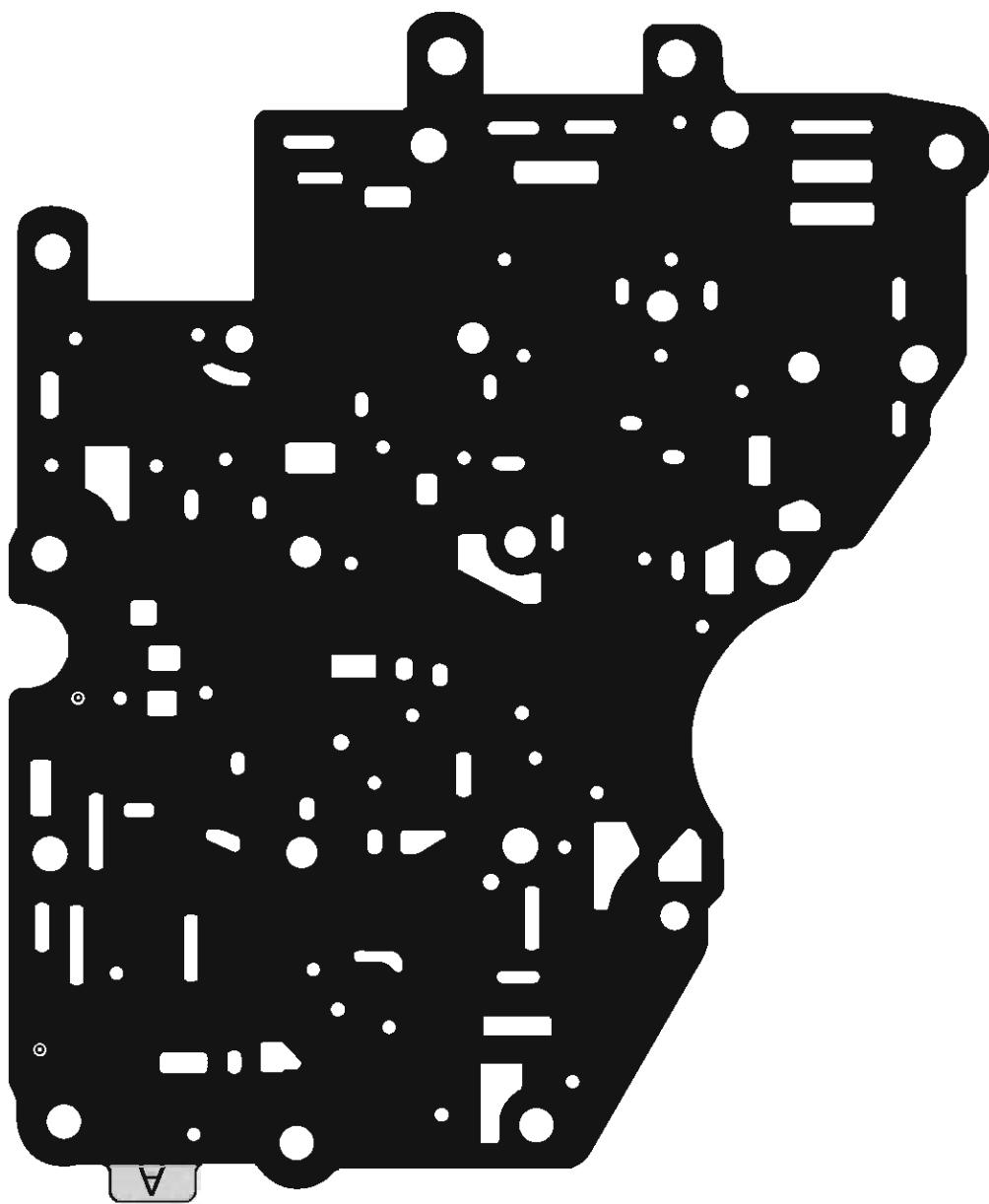
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Figure 13

**TOYOTA/LEXUS U150/U250
PRELIMINARY INFORMATION****LOWER CHANNEL
PLATE**

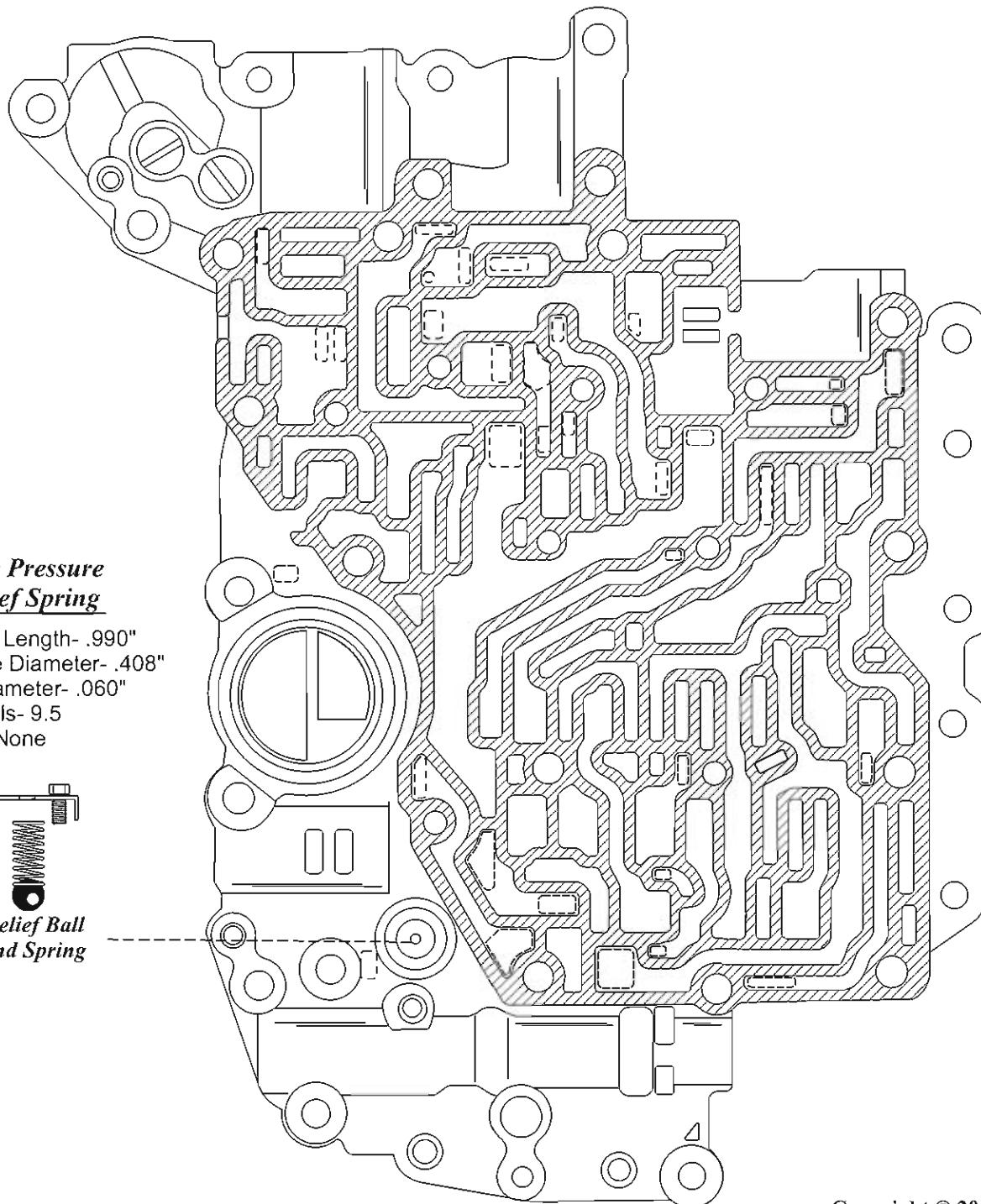
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Figure 14
Automatic Transmission Service Group

**TOYOTA/LEXUS U150/U250
PRELIMINARY INFORMATION****LOWER BONDED
SPACER PLATE**

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Figure 15
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TOYOTA/LEXUS U150/U250
PRELIMINARY INFORMATIONLOWER VALVE BODY LOWER SIDE
RELIEF BALL LOCATION

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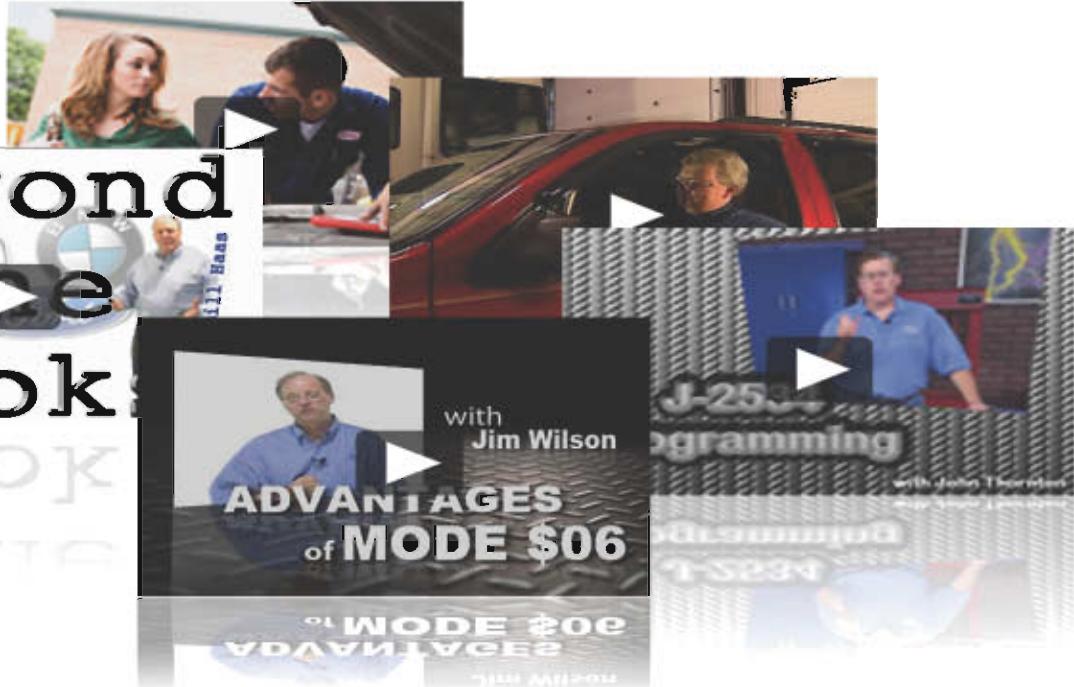
Figure 16

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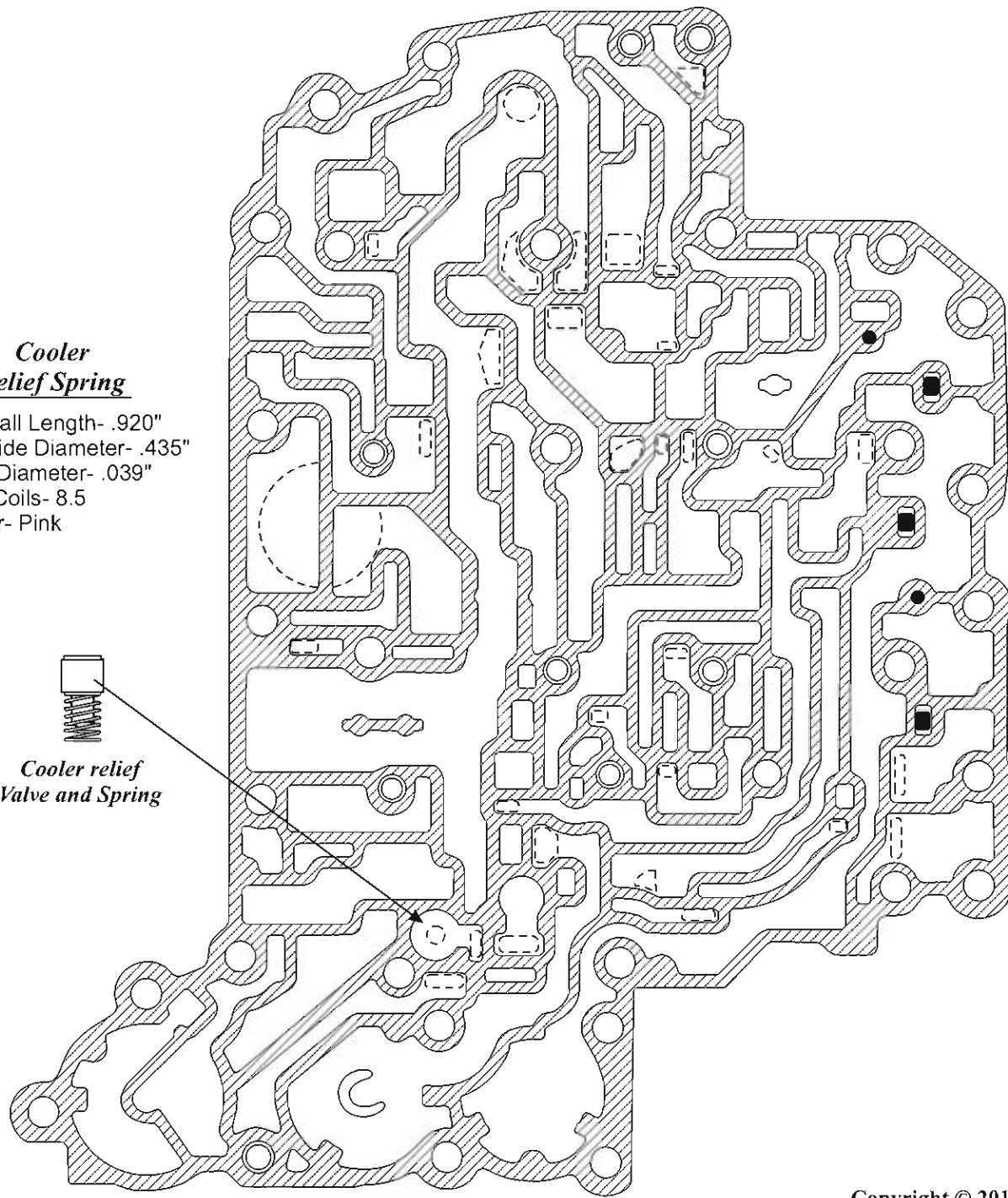
Learn more by contacting Gary Urwiler, Supt. of Education, at 630-906-3646, or GUrwiler@mooseheart.org—and thanks!



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**TOYOTA/LEXUS U150/U250
PRELIMINARY INFORMATION****LOWER VALVE BODY UPPER SIDE RELIEF VALVE
AND RETAINER LOCATIONS**

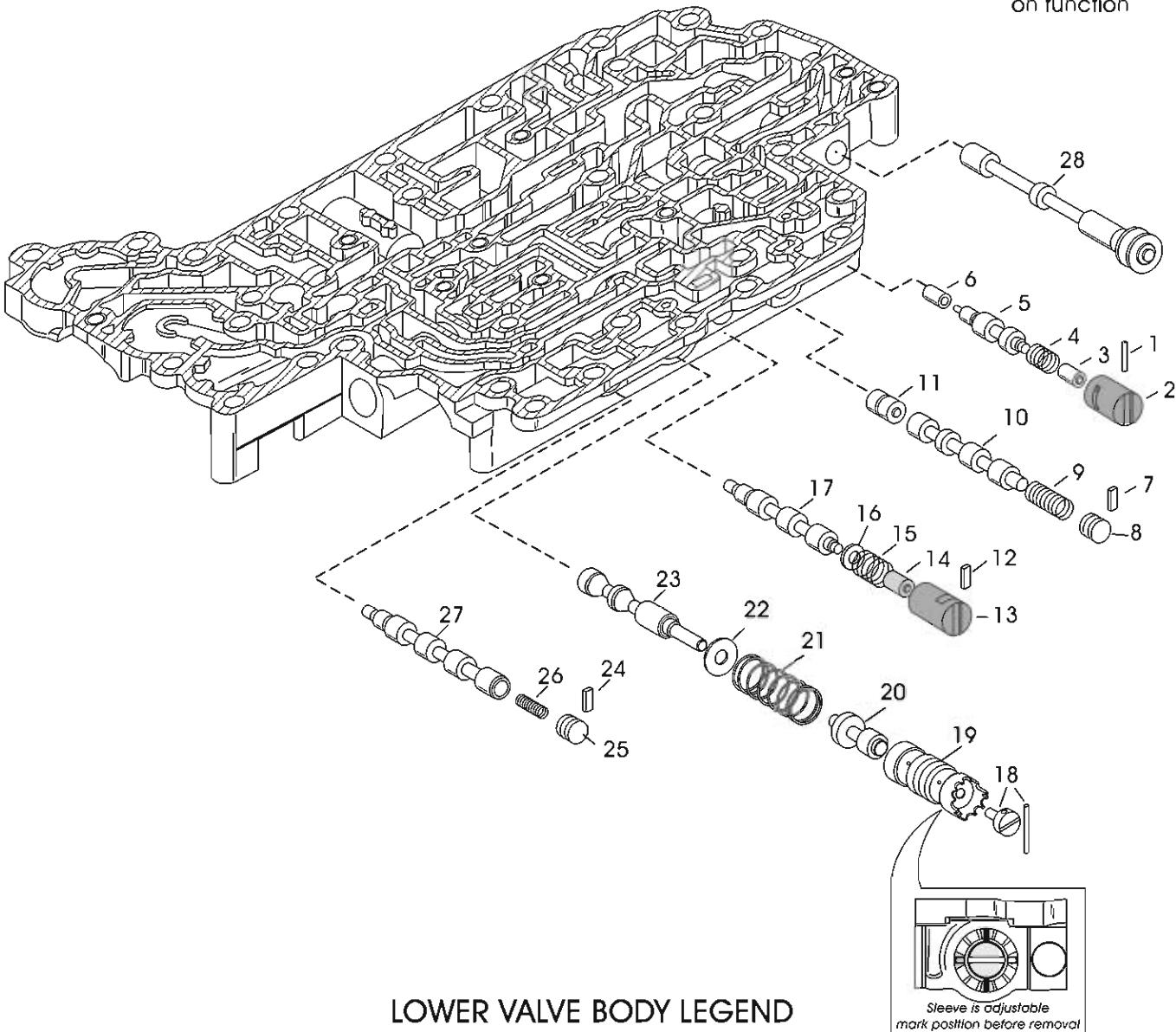
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Figure 17

Automatic Transmission Service Group

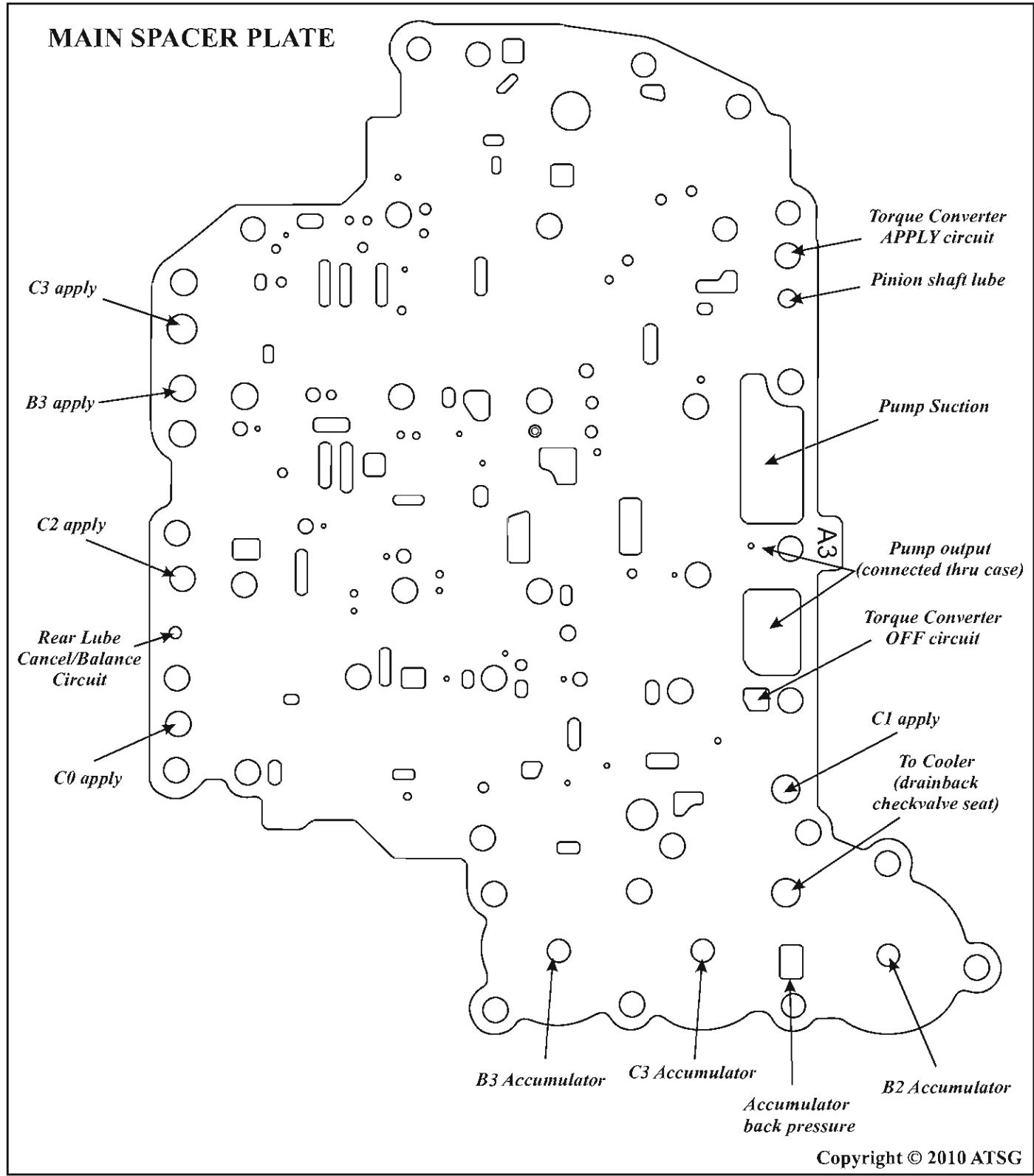
LOWER VALVE BODY
VALVE DESCRIPTIONS

Note: Some Valve names are ATSG's interpretation based on function



LOWER VALVE BODY LEGEND

1. B2 Switch Valve Retainer
2. B2 Switch Valve Baost Sleeve
3. B2 Switch Valve Baost Valve
4. B2 Switch Valve Spring
5. B2 Switch Valve
6. B2 Switch Valve Plug
7. 4-5 Shift Valve Retainer
8. 4-5 Shift Valve Bare Plug
9. 4-5 Shift Valve Spring
10. 4-5 Shift Valve
11. 4-5 Shift Valve Plug
12. B1 Switch Valve Retainer
13. B1 Switch Valve Boost Sleeve
14. B1 Switch Valve Baost Valve
15. B1 Switch Valve Spring
16. B1 Switch Valve Spring Shim .040"
17. B1 Switch Valve
18. Main Regulator Valve Plug and retainer
19. Main Regulator Valve Baost Sleeve
20. Main Regulator Valve Baost Valve
21. Main Regulator Valve Spring
22. Main Regulator Valve Washer
23. Main Regulator Valve
24. Clutch Apply Control Valve Retainer
25. Clutch Apply Control Valve Bare Plug
26. Clutch Apply Control Valve Spring
27. Clutch Apply Control Valve
28. Manual Valve

TOYOTA/LEXUS U150/U250
PRELIMINARY INFORMATION

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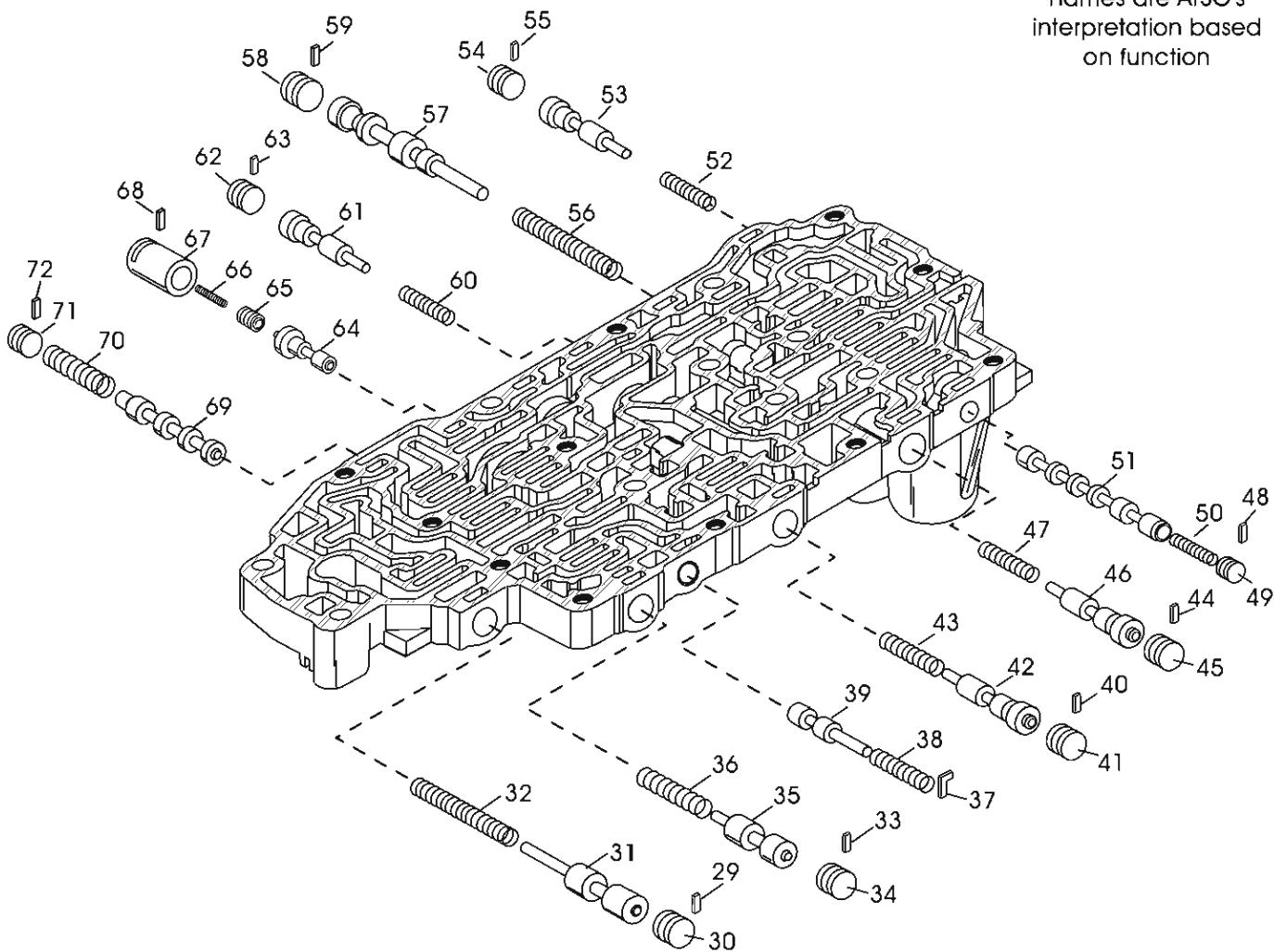
Figure 19

Automatic Transmission Service Group



UPPER VALVE BODY VALVE DESCRIPTIONS

Note: Some Valve names are ATSG's interpretation based on function



UPPER VALVE BODY LEGEND

- | | |
|---|---|
| 29. Solenoid Modulating Valve retainer | 52. C1 Control Valve Spring |
| 30. Solenoid Modulating Valve Bore Plug | 53. C1 Control Valve |
| 31. Solenoid Modulating Valve | 54. C1 Control Valve Bore Plug |
| 32. Solenoid Modulating Valve Spring | 55. C1 Control Valve retainer |
| 33. B2 Control Valve retainer | 56. Secondary Regulator Valve Spring |
| 34. B2 Control Valve Bore Plug | 57. Secondary Regulator Valve |
| 35. B2 Control Valve | 58. Secondary Regulator Valve Bore Plug |
| 36. B2 Control Valve Spring | 59. Secondary Regulator Valve retainer |
| 37. B3 Orifice Control Valve retainer | 60. B1 Control Valve Spring |
| 38. B3 Orifice Control Spring | 61. B1 Control Valve |
| 39. B3 Orifice Control Valve | 62. B1 Control Valve Bore Plug |
| 40. Accumulator Control Valve retainer | 63. B1 Control Valve retainer |
| 41. Accumulator Control Valve Bore plug | 64. Lock-up Control Valve |
| 42. Accumulator Control Valve | 65. Lock-up Control Valve Plunger |
| 43. Accumulator Control Valve Spring | 66. Lock-up Control Valve Spring |
| 44. C0 Control Valve retainer | 67. Lock-up Control Valve Sleeve |
| 45. C0 Control Valve Bore Plug | 68. Lock-up Control Valve retainer |
| 46. C0 Control Valve | 69. Lock-up Relay Valve |
| 47. C0 Control Valve Spring | 70. Lock-up Relay Valve Spring |
| 48. Solenoid Relay Valve retainer | 71. Lock-up Relay Valve Bore Plug |
| 49. Solenoid Relay Valve Bore Plug | 72. Lock-up Relay Valve retainer |
| 50. Solenoid Relay Valve Spring | |
| 51. Solenoid Relay Valve | |



TOYOTA/LEXUS U150/U250 PRELIMINARY INFORMATION

LOWER VALVE BODY SPRING SPECS

4. B2 Switch Valve Spring

No. Coils-5.5
Overall Length-.958"
Outside Diameter-.412"
Coil Diameter-.029"
Color- Lt. Blue

9. 4-5 Shift Valve Spring

No. Coils-10.5
Overall Length-1.120"
Outside Diameter-.380"
Coil Diameter-.035"
Color- none

15. B-1 Switch Valve Spring

No. Coils-4.5
Overall Length-.645"
Outside Diameter-.505"
Coil Diameter-.037"
Color- Blue

21. Main Regulator Valve Spring

No. Coils-7.5
Overall Length-2.260"
Outside Diameter-.784"
Coil Diameter-.063"
Color- none

26. Clutch Apply Control Valve Spring

No. Coils-16.5
Overall Length-1.110"
Outside Diameter-.290"
Coil Diameter-.025"
Color- none

32. Solenoid Modulating Valve Spring

No. Coils-14
Overall Length-1.888"
Outside Diameter-.433"
Coil Diameter-.063"
Color- none

36. B2 Control Valve Spring

No. Coils-14.5
Overall Length-2.270"
Outside Diameter-.392"
Coil Diameter-.023"
Color- pink

38. B-3 Orifice Control Valve Spring

No. Coils-19
Overall Length-2.400"
Outside Diameter-.305"
Coil Diameter-.019"
Color- White

43. Accumulator Control Valve Spring

No. Coils-19
Overall Length-2.400"
Outside Diameter-.305"
Coil Diameter-.019"
Color- none

47. C0 Control Valve Spring

No. Coils-12.5
Overall Length-1.180"
Outside Diameter-.312"
Coil Diameter-.037"
Color- none

50. Solenoid Relay Valve Spring

No. Coils-10.5
Overall Length-1.000"
Outside Diameter-.264"
Coil Diameter-.027"
Color- White

52. C1 Control Valve Spring

No. Coils-12
Overall Length-1.190"
Outside Diameter-.313"
Coil Diameter-.029"
Color- none

56. Secondary Reg. Valve Spring

No. Coils-20
Overall Length-2.290"
Outside Diameter-.346"
Coil Diameter-.048"
Color- Blue

60. B-1 Control Valve Spring

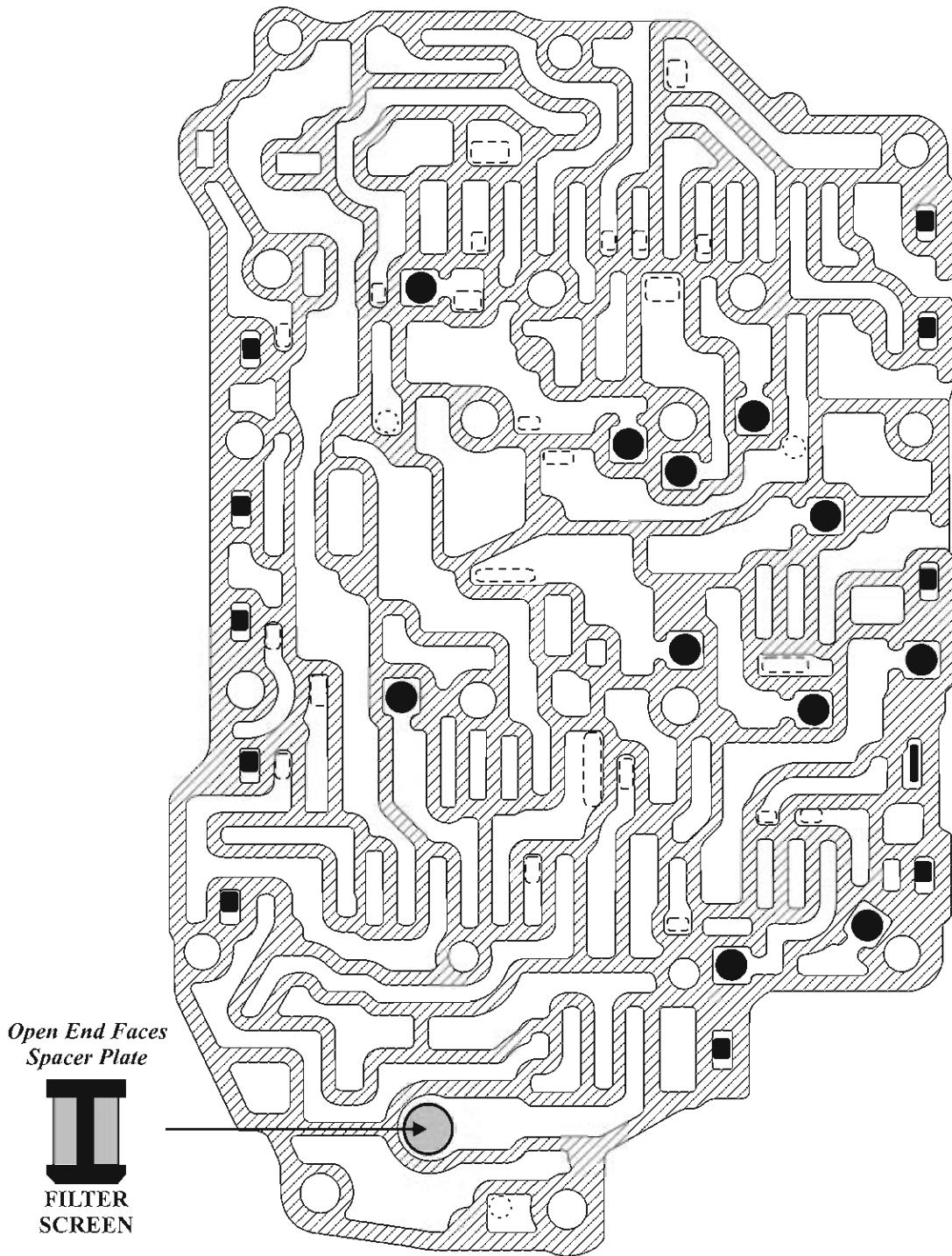
No. Coils-12
Overall Length-1.180"
Outside Diameter-.313"
Coil Diameter-.029"
Color- none

66. Lock-up Control Valve Spring

No. Coils-12
Overall Length-.835"
Outside Diameter-.218"
Coil Diameter-.023"
Color- White

70. Lock-up Relay Valve Spring

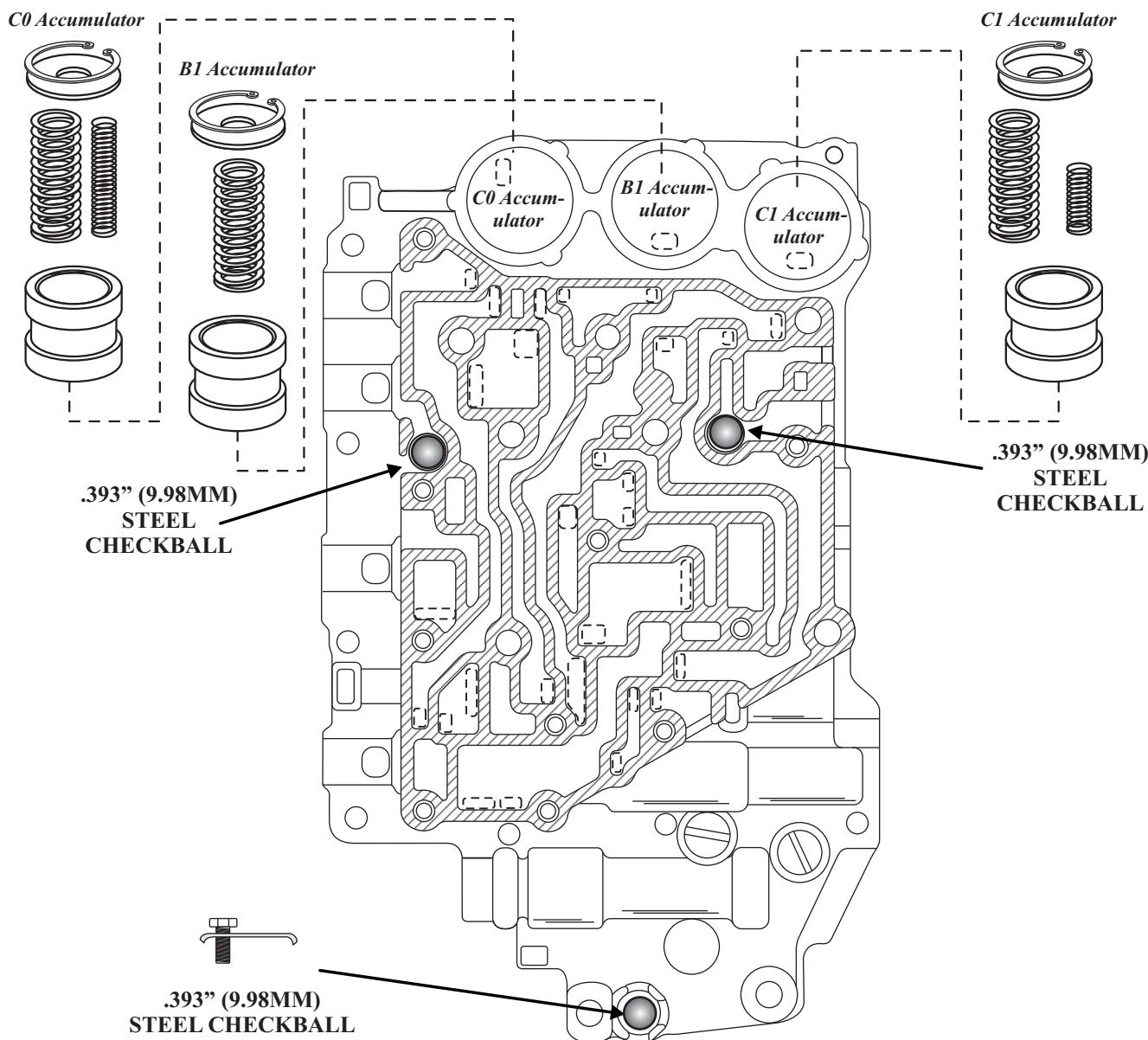
No. Coils-10
Overall Length-1.120"
Outside Diameter-.380"
Coil Diameter-.035"
Color- Blue

TOYOTA/LEXUS U150/U250
PRELIMINARY INFORMATIONUPPER VALVE BODY LOWER SIDE
CHECK BALL AND RETAINER LOCATIONS

NOTE: All 11 Plastic Checkballs Are .218" (5.5MM) Copyright © 2010 ATSG

Figure 22
Automatic Transmission Service Group

UPPER VALVE BODY UPPER SIDE CHECK BALL AND ACCUMULATOR LOCATIONS



UPPER VALVE BODY ACCUMULATOR SPRING SPECS

C0 Accumulator Outer Spring

No. Coils-10
Overall Length-2.000"
Outside Diameter-.630"
Coil Diameter-.085"
Color- Light Green

C0 Accumulator Inner Spring

No. Coils-15.5
Overall Length-2.175"
Outside Diameter-.420"
Coil Diameter-.051"
Color- Light Green

B1 Accumulator Spring

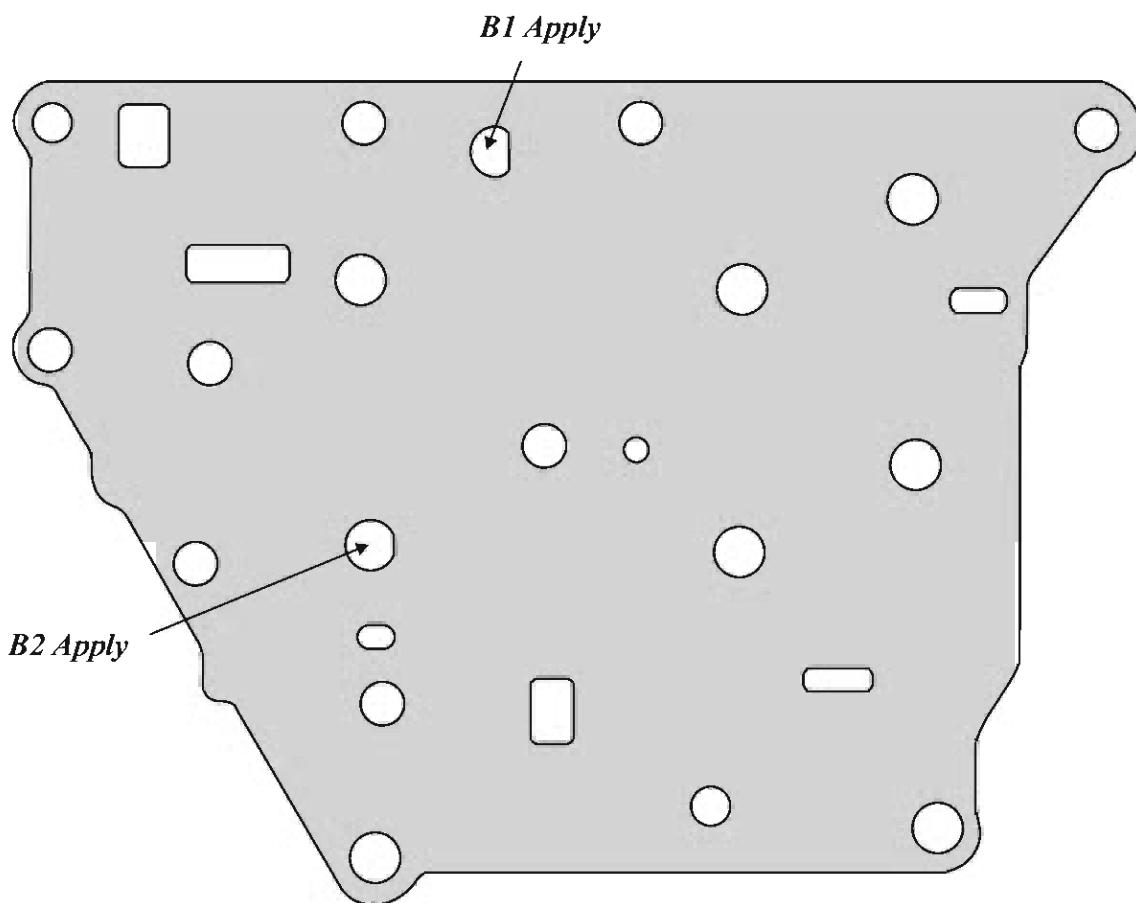
No. Coils-10
Overall Length-1.966"
Outside Diameter-.620"
Coil Diameter-.083"
Color- Green

C1 Accumulator Outer Spring

No. Coils-11.5
Overall Length-2.160"
Outside Diameter-.635"
Coil Diameter-.077"
Color- Red

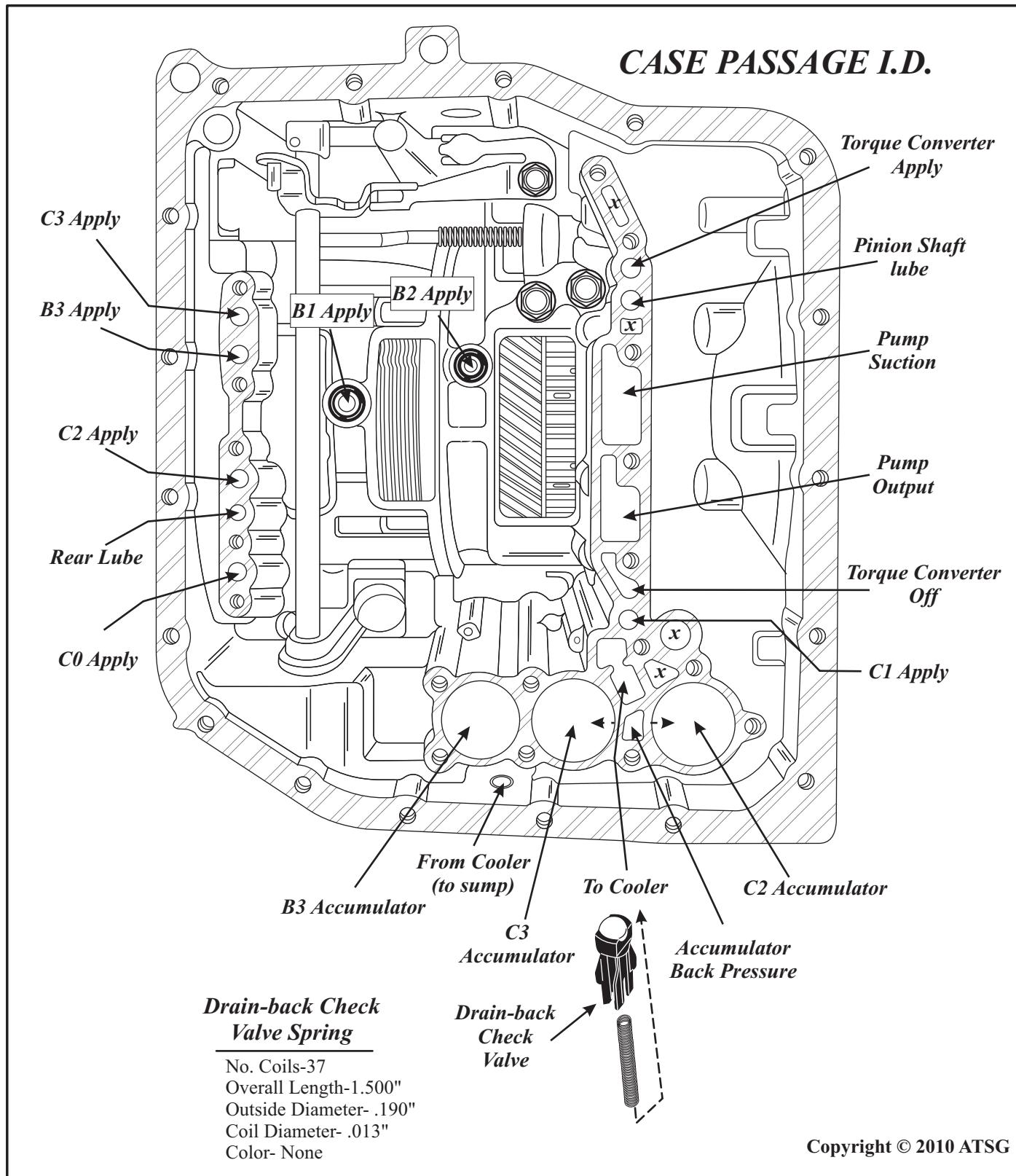
C1 Accumulator Inner Spring

No. Coils-11
Overall Length-1.185"
Outside Diameter-.430"
Coil Diameter-.055"
Color- Red

**TOYOTA/LEXUS U150/U250
PRELIMINARY INFORMATION****UPPER VALVE BODY UPPER SIDE PLATE**

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Figure 24

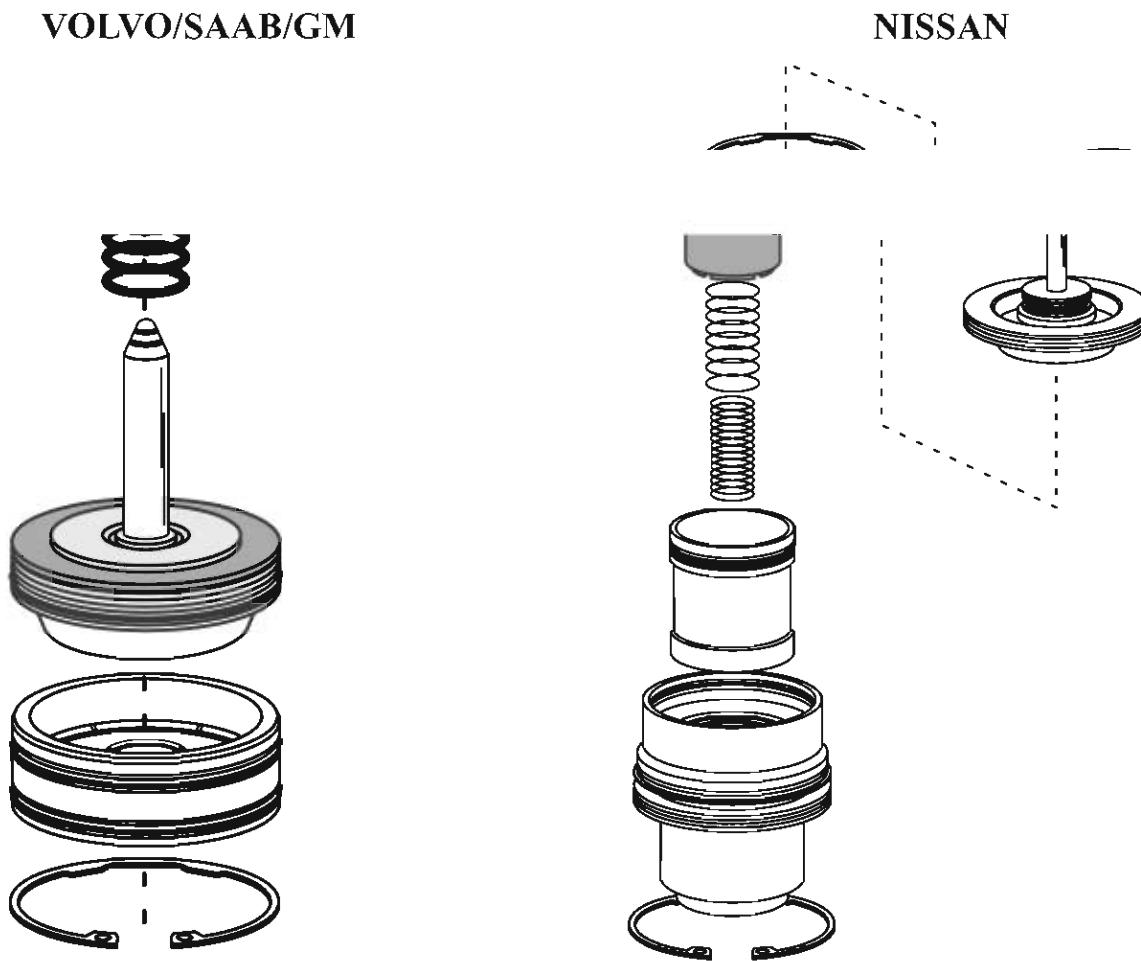
TOYOTA/LEXUS U150/U250
PRELIMINARY INFORMATIONFigure 25
Automatic Transmission Service Group



AW55-50SN SERVO DIFFERENCES

SERVICE INFORMATION:

There are two different style servos being used in the AW 55-50SN. In Figure 1 below the servo illustrated on the left is the typical servo seen in Volvo, Saab and GM applications. The servo illustrated on the right is the style servo Nissan utilizes.



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Figure 1





VOLVO AW55-50SN HARSH OR FLARED 2-3 SHIFT

COMPLAINT: A 2001-2002 Volvo S60, V70 or V70XC with the AW55-50SN transmission may have one or more of the following complaints:

- A flare on the 2-3 shift
- A harsh 2-3 shift
- A flared 3-4 shift
- A harsh 4-3 downshift

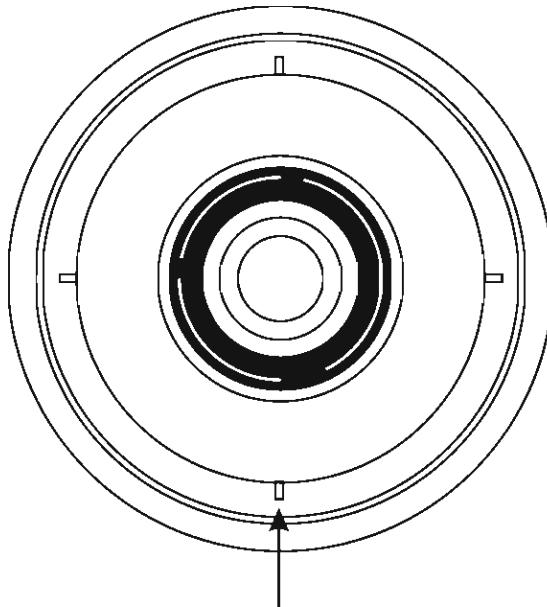
CAUSE: Inside the B4 servo cover is a washer that is staked in place, (Refer to Figure 1), this washer comes loose and interferes with servo operation causing the above mentioned complaints.

CORRECTION: Replace this style servo cover with the B4 updated servo cover as seen in Figure 2. The washer in the updated servo cover is held in place with a snap ring.

SERVICE INFORMATION:

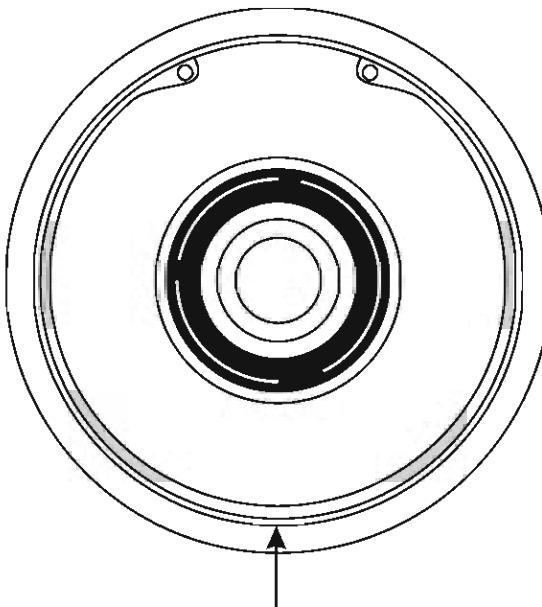
*Volvo AW55-50SN Updated Servo Cover Kit.....*30651771

PREVIOUS DESIGN B4 SERVO COVER



WASHER IS STAKED IN PLACE

UPDATED B4 SERVO COVER



WASHER IS HELD IN PLACE BY A SNAP RING

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Figure 1

Figure 2



AW55-50SN BUSHING & CASE FAILURE

COMPLAINT: The reason the vehicle came into the shop was due to the transmission not working properly because of metal contamination. Upon disassembly, various bushings are found to be extremely worn or in some instances, spun out. Further inspection reveals that the drive transfer gear bearing sleeve has too much lateral movement. When the sleeve is removed, the case is found to be worn.

CAUSE: There can be two causes for the above mentioned condition, one cause could be a loss of lube pressure due to main or secondary regulator valve wear. The second cause can be attributed to opposing forces between the Drive Transfer Gear and the Driven Transfer Gear. These opposing forces cause the drive transfer gear bearing support sleeve to wear the case, See Figure 1. As the side loading continues, excessive clearance is created between the bearing support and the case causing excessive lateral movement. This will spin the two bushings in the rear carrier which are poorly supported to begin with as well as the failure of various other bushings.

CORRECTION: The worn valves causing low lube pressure can be corrected by repairing the valve body using Sonnax products or by purchasing a new or tested valve body.

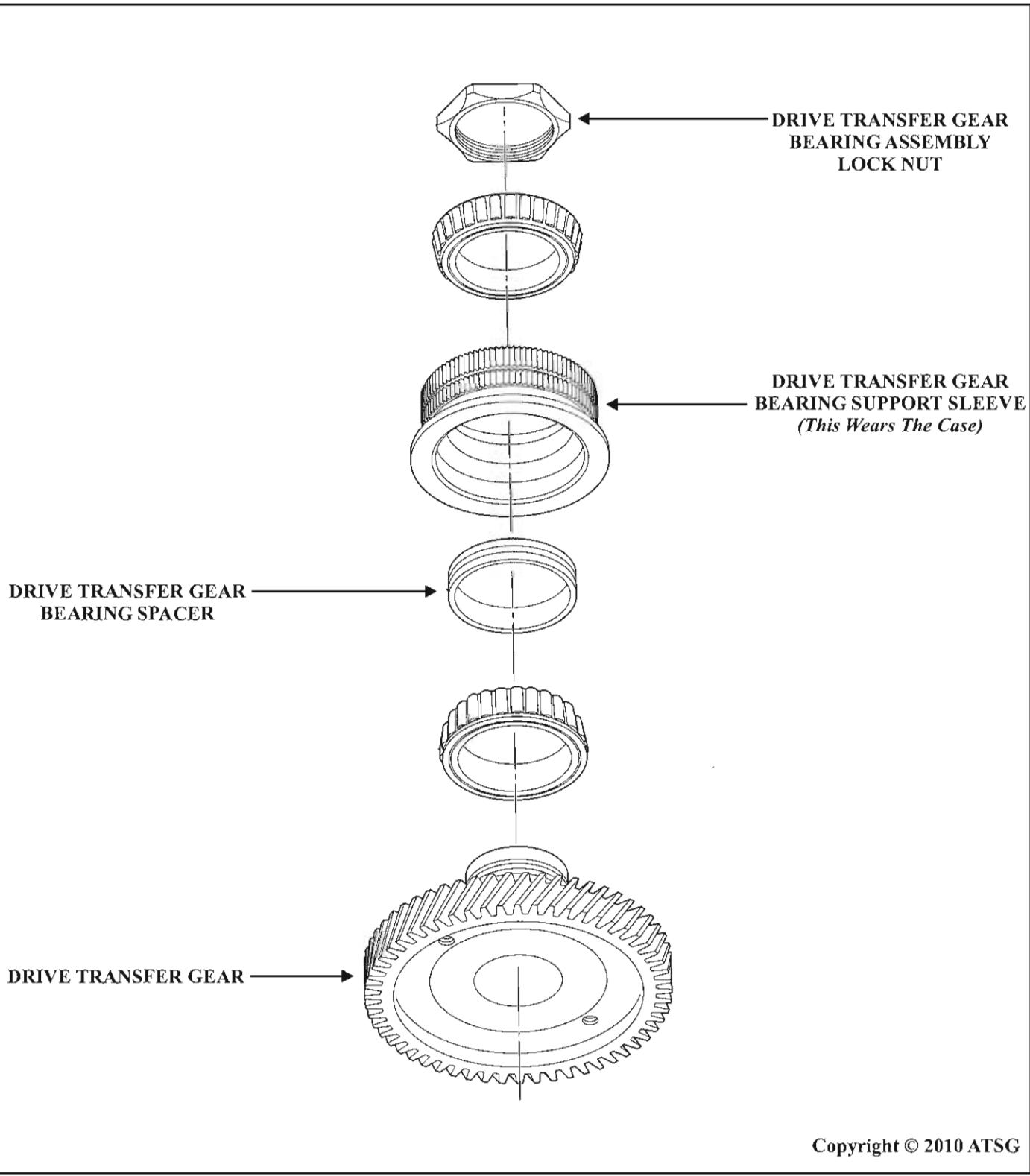
Lube pressure can be checked at the lube pressure service port in the end cover as shown in Figure 2. Lube pressure can be high as 30 psi when temperature is minus 10 degrees Fahrenheit but at 150 degrees Fahrenheit normal lube pressure is approximately 5 psi in Drive and 8 psi in Reverse. If 0 to 3 psi is observed at operating temperature, then the valves and/or bushings are worn.

The bushing wear issue can be corrected by installing a bushing kit available from Omega Machine & Tool. The rear carrier with the two piece bushing has to sent to Omega Machine & Tool where they will machine the carrier and install a one piece bushing, Refer to Figure 3. The case can be corrected by sending it to Omega Machine and Tool to be machined and sleeved, See figure 4.

SERVICE INFORMATION:

Omega Machine & Tool.....800-601-7722 or omegamachine.com

AW55-50SN BUSHING & CASE FAILURE



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Figure 1



AW55-50SN BUSHING & CASE FAILURE

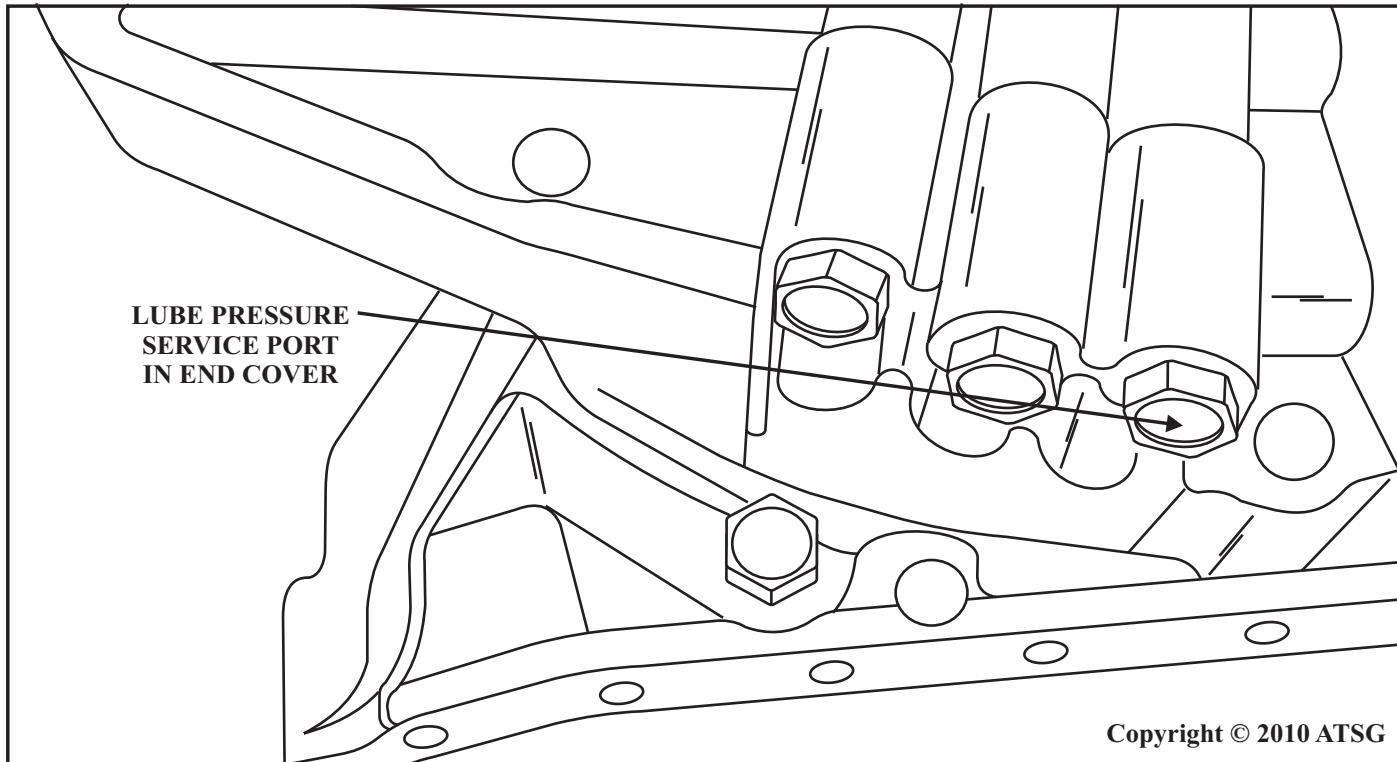


Figure 2

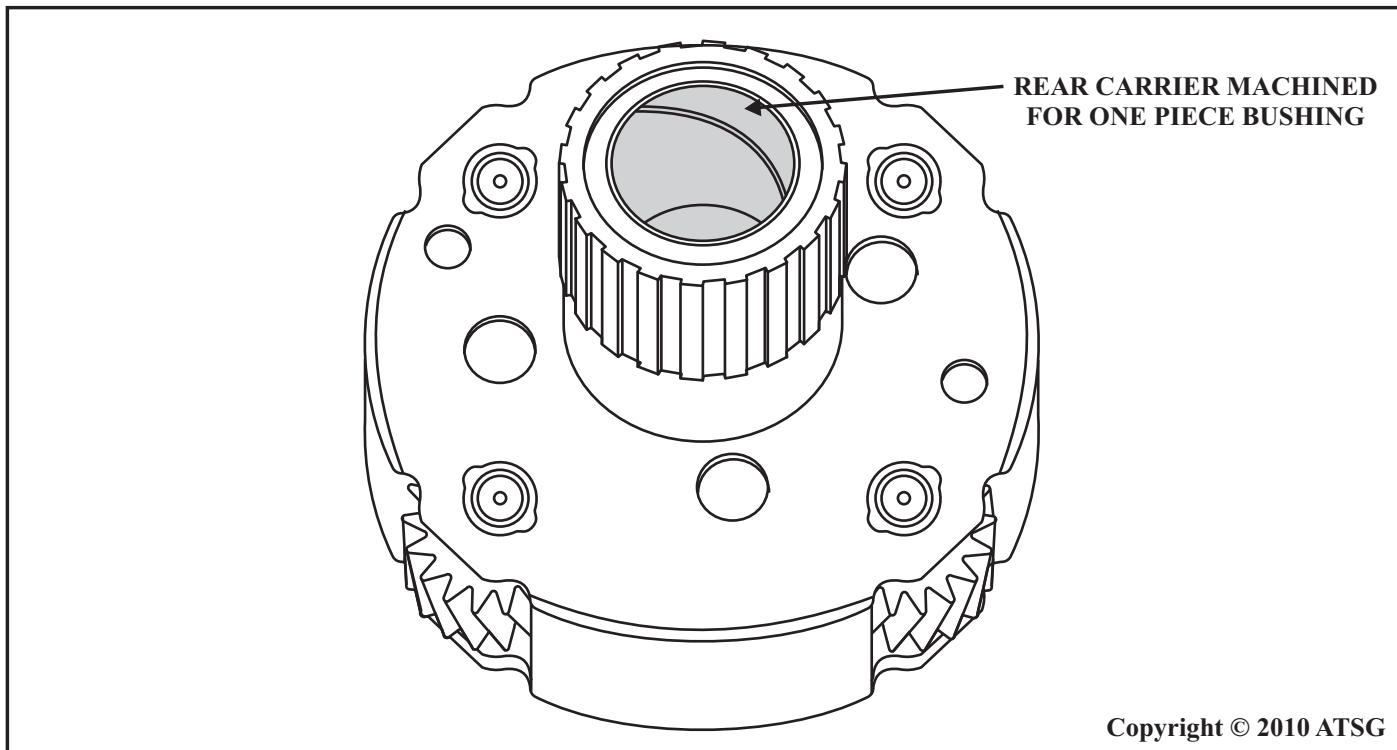


Figure 3

Automatic Transmission Service Group

AW55-50SN BUSHING & CASE FAILURE

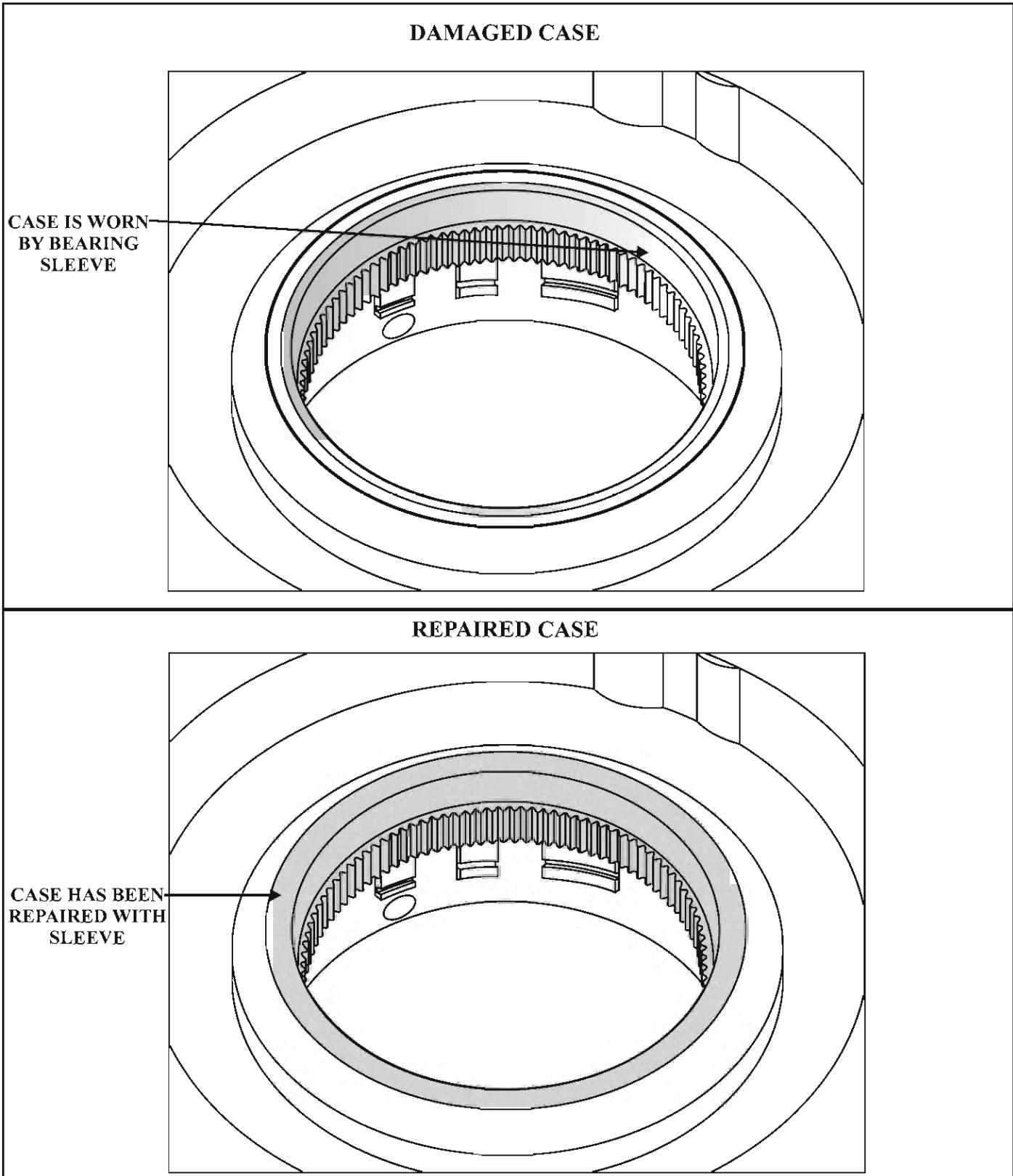
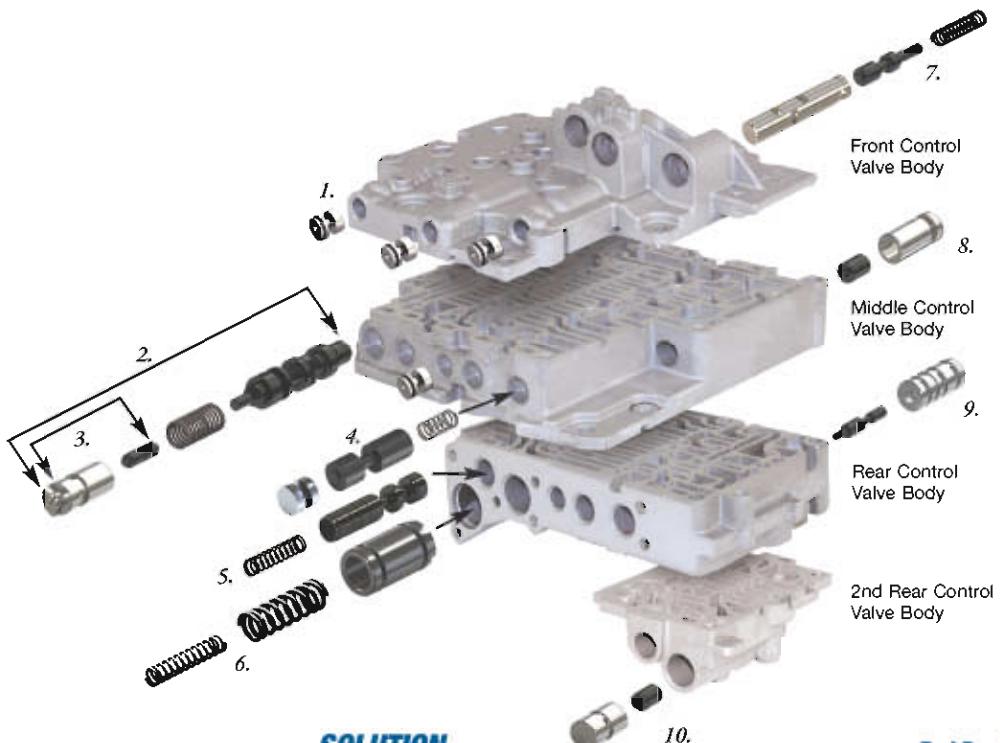


Figure 4
Automatic Transmission Service Group

10 Great Sonnax Solutions for AW55-50SN!



PROBLEM	SOLUTION	Tool Required	Part Number
• Delayed forward engagement • 2-3 upshift flare/low SLT pressure	1. O-Ringed End Plug Kit *4 Small & 1 Large		59947-21K
• Delayed engagement & harsh reverse • TCC slip or engine stall	2. Oversized Pressure Regulator Valve & Boost Valve Kit F-59947-TL12 & VB-FIX		59947-12K
• Slip in reverse • Poor upshift	3. Main Boost Valve & Sleeve Kit		59947-07K
• 2-3, 3-2 shift concern • 3-2 neutral	4. B4 Release Valve Kit F-59947-TL26 & VB-FIX		59947-26K
• Overheating of fluid, bushing & converter • Harsh reverse engagement	5. Secondary Regulator Valve & Spring Kit F-59947-TL16 & VB-FIX		59947-16K
• Delayed forward engagement • Low line, lube & converter pressure	6. LPC Accumulator Piston Kit		59947-LPC
• TCC slip or RPM surge • Low SLT pressure	7. Solenoid Modulator Valve Capsule Kit		59947-09K
• No TCC apply • Loss of solenoid modulator oil pressure	8. Solenoid Relay Valve & Sleeve Kit		59947-05K
• No TCC apply • TCC cycle or RPM fluctuation	9. Lockup Relay Control Valve & Sleeve Kit		59947-01K
• Excess TCC slippage • Harsh downshifts/converter doesn't release	10. Lockup Control Valve & Sleeve Kit		59947-03K

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Automotive Technical Newsletters

Volume 24, No. 10

48RE • 450-43LE • 5R110W • AX4S/AX4N/4F50N

At the beginning of the 2005 model year, an electronically controlled actuator replaced the throttle-valve cable on Dodge trucks with the 5.9-liter diesel and 48RE transmission.

After overhaul, an Alsin Selki 450-43LE exhibits deteriorating shift quality and slips badly in reverse after the truck is driven a mile or two.

During the 2005 model year, Ford redesigned low-reverse-dutch retaining snap ring for both gas and diesel applications.

2000-and-up Ford vehicles equipped with the AX4S, AX4N or 4F50N may be difficult to fill with fluid.



Dodge 48RE

Transmission Throttle-Valve Actuator

Change:

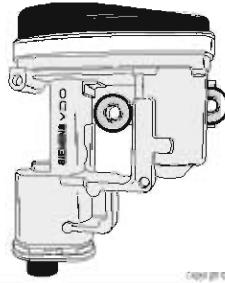
Beginning at the start of production for model year 2005, Dodge trucks equipped with the 5.9-liter diesel and 48RE transmission were equipped with an electronically controlled transmission throttle-valve actuator (TTVA). This actuator (see Figure 1) has replaced the previous throttle-valve cable, which controlled the throttle valve in the valve body.

Reason:

For electronic control of the throttle valve in the valve body.

Figure 1

Transmission Throttle-Valve Actuator



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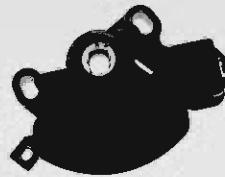
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T42436LB

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41437A

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