AUDI, JETTA, PASSAT, 09G/09M

INDEX

AUTOMATIC TRANSMISSION SERVICE GROUP
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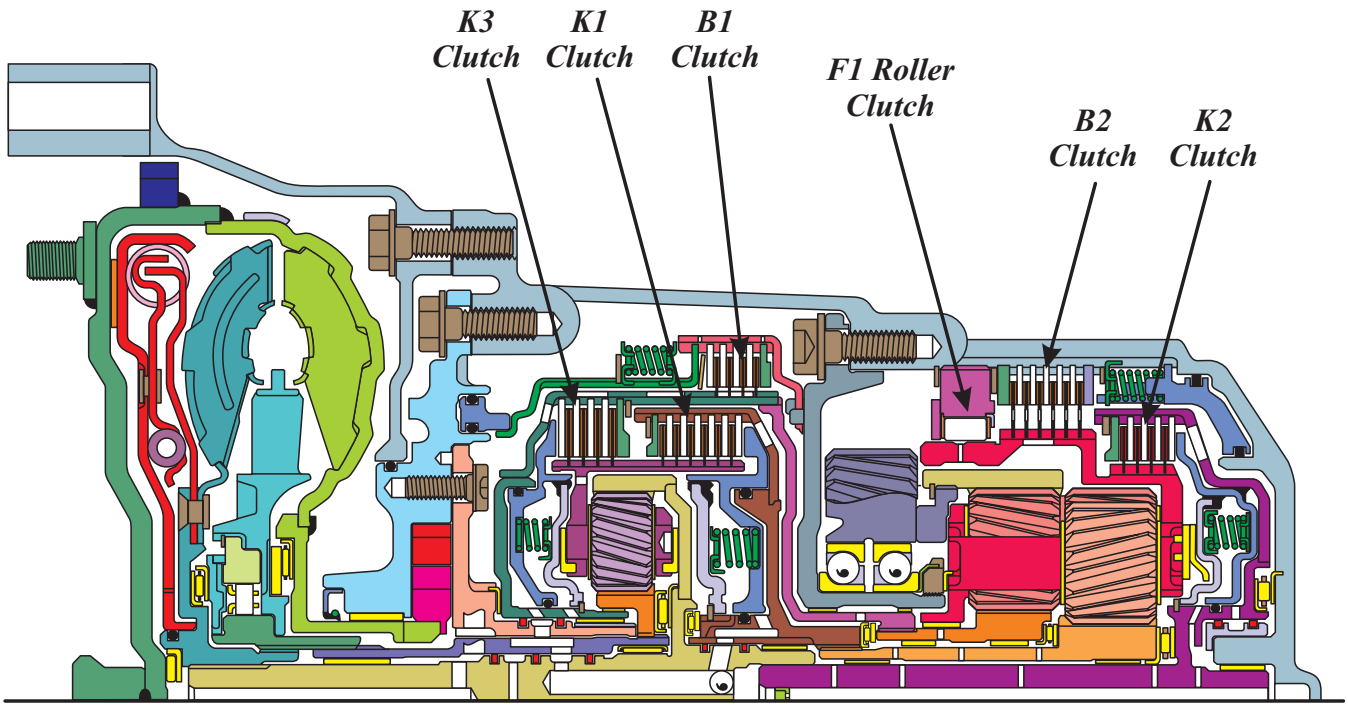
COMPONENT APPLICATION CHART



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	Engine 1.6L, 2.0L Ratio***	Engine 1.8L, Ratio****
1st Gear	On				On*	Hold		4.148	4.044
2nd Gear	On			On			On**	2.370	2.371
3rd Gear	On		On				On**	1.556	1.556
4th Gear	On	On					On**	1.155	1.159
5th Gear		On	On				On**	0.859	0.852
6th Gear		On		On			On**	0.686	0.676
Rev Gear			On		On			3.394	3.193

* 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.
*** Transaxle Codes (GSY 1.6L) and (GJZ 2.0L).
**** Transaxle Code (FXA 1.8L).

Transfer Gear Ratio, Codes GSY, GJZ, FXA, (Driven=52T/Drive=49T) Ratio = 1.061
Final Drive Gear Ratio, Codes GSY, FXA, (15T/61T) Ratio = 4.067
Final Drive Gear Ratio, Codes GJZ, (15T/58T) Ratio = 3.867

Figure 2

ELECTRONIC COMPONENTS

Input Speed Sensor (G182)

The Input Speed Sensor (G182) is located in the transaxle case below the valve body, as shown in Figure 6, and retained with a bolt. The ISS has a White connector that mounts on a bracket with a valve body bolt and goes through the 8-way case connector, also shown in Figure 6.

The ISS is triggered by the external lugs on the K-2 clutch housing to determine exact transaxle turbine speed. The TCM uses this information to control line pressure for garage shifts, control and monitor torque converter lock-up clutch, monitor gear ratios and diagnosis of shift components via the Dynamic Shift Program (DSP), which is VW,s name for the shift adapt feature in the TCM.

The ISS is based on the Hall Affect principle. The signal is a square-wave signal whose frequency is proportional to turbine shaft speed. Should the Input Speed Sensor fail, the engine RPM sensor is used as a back-up, no shift adapt operations, no controlled TCC lock-up (apply and release only) and no pressure control on garage shifts (N-D, N-R) harsh engagement.

The Input Speed Sensor is shown in Figure 4.

Output Speed Sensor (G195)

The Output Speed Sensor (G195) is located in the transaxle case below the valve body, as shown in Figure 6, and retained with a bolt. The OSS has a Blue connector that mounts on a bracket with a valve body bolt and goes through the 8-way case connector, also shown in Figure 6.

The OSS is triggered by the external lugs on the Parking Gear to determine exact transaxle output shaft speed. The TCM uses this information to determine shift points, control and monitor torque converter lock-up clutch, monitor gear ratios and diagnosis of shift components via the Dynamic Shift Program (DSP), which is VW,s name for the shift adapt feature in the TCM.

The OSS is based on the Hall Affect principle. The signal is a square-wave signal whose frequency is proportional to output shaft speed. Should the Output Speed Sensor fail, the speed signal from the ABS Control Module is used as back-up, with limited shift adapt capability.

The Output Speed Sensor is shown in Figure 5.

Special Note:

The ISS and OSS are Hall Affect Sensors and should be checked using a scope under operating conditions. The resistance values provided in the Figures below are from new sensors. Resistance checks on these type of sensors would, at best, inform you of either open or grounded circuits within the sensor itself.

INPUT SPEED SENSOR

5.0M Ohms Resistance
at room temperature

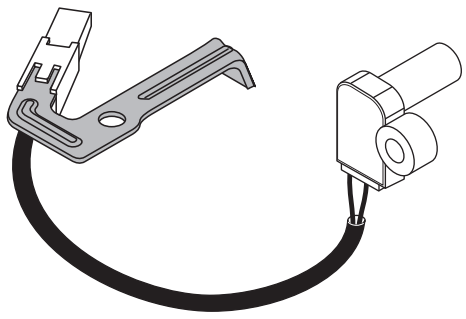


Figure 4

OUTPUT SPEED SENSOR

5.0M Ohms Resistance
at room temperature

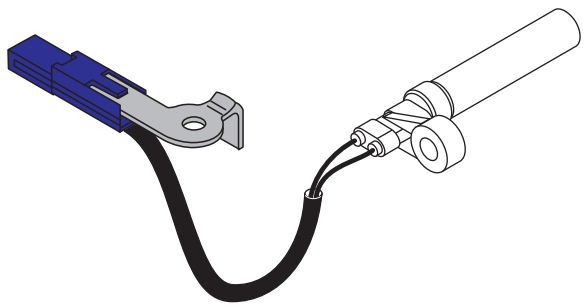


Figure 5

SHIFT SOLENOID AND CLUTCH APPLICATION CHART

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		

T = On in Tiptronic Mode
To = Solenoid is toggled On to Off

SOLENOID OBSERVED AMPERAGE CHART

SOLENOID	RANGE				GEAR					
	Park	Reverse	Neut	Drive 1	Manual 1	2	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 (TCC)	.200A	.200A	.200A	.200A	.200A	.200A	.200A .990A	.200A .990A	.200A .990A	.200A .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

.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)

Solenoids SV3, 5, 9 and 10 are Normally Applied, which applies their assigned component when they are Off. They are Energized (On) to release their assigned component. These solenoids are also Modulated, to control their assigned component apply and release rates. Consult the charts above to compare the amperage to clutch application.

Solenoid SV6 (N93) is modulated based on engine load to control main line pressure. Amperage will decrease to increase main line pressure.

Solenoid SV4 (N91) is modulated to control Torque Converter Clutch (TCC) apply and release rates, but dependends on the SV2 (N89) solenoid to be On to stroke the TCC switch valve so that N91 can complete its assigned task. There will be situations during Manual Tiptronic shifts, SV4 (N91) amperage will indicate .500 - .700 amps and the TCC will be Off, as SV2 (N89) is "0" which indicates Off.

Figure 14

RESISTANCE CHART THROUGH 14-WAY CASE CONNECTOR

Solenoid Number (Name)	*Positive Meter Lead Terminal No. (Wire Color)*	*Negative Meter Lead Terminal No. (Wire Color)*	Ohms Resistance
Solenoid No. 1 (N88)	1 (White)	Case Ground	*10.0 - 16.0*
Solenoid No. 2 (N89)	2 (Black)	Case Ground	*10.0 - 16.0*
Solenoid No. 3 (N90)	7 (Lt. Blue)	8 (Lt. Green)	*4.0 - 8.0*
Solenoid No. 4 (N91)	11 (Lt. Green)	12 (Brown)	*4.0 - 8.0*
Solenoid No. 5 (N92)	3 (Yellow)	4 (Purple)	*4.0 - 8.0*
Solenoid No. 6 (N93)	13 (Green)	14 (Grey)	*4.0 - 8.0*
Solenoid No. 9 (N282)	5 (Red)	6 (Blue)	*4.0 - 8.0*
Solenoid No. 10 (N283)	9 (White)	10 (Black)	*4.0 - 8.0*

When comparing resistance readings of On/Off solenoids, the resistance should be within .5 Ohms of one another.
When comparing resistance readings of PWM solenoids, the resistance should be within .5 Ohms of one another.

RESISTANCE CHART THROUGH 8-WAY CASE CONNECTOR

Sensor ID (Name)	*Positive Lead Term. No. (Color)*	*Negative Lead Term. No. (Color)*	*Temperature F° (C°)*	*Ohms Resistance*
TFT (G93)	1 (Orange)	2 (Orange)	*-22°F (-30°C)*	*37K - 51K Ohms*
			50°F (10°C)	*5K - 8K Ohms*
			77°F (25°C)	*3K - 5K Ohms*
			230°F (110°C)	*230 - 265 Ohms*
			293°F (145°C)	*100 - 120 Ohms*
ISS (G182)	3 (White)	4 (Red)	*77°F (25°C)*	*5.0M Ohms**
OSS (G195)	5 (Tan)	6 (Blue)	*77°F (25°C)*	*5.0M Ohms**
PS1 (G193)	7 (N/A)**	Case Ground		*0 = Open*
PS2 (G194)	8 (N/A)**	Case Ground		*0 = Open*

** The ISS and OSS are Hall Affect Sensors and should be checked using a scope under operating conditions. The resistance values provided in the chart are from new sensors. Resistance checks on these type of sensors would, at best, inform you of either open or grounded circuits within the sensor itself.*

*** Both pressure switches were eliminated in all 09G transaxles from June 2004 on.*

Wire colors provided in these charts are "Internal" colors.

Figure 21

TIPTRONIC UPSHIFT AND DOWNSHIFT

Steering Wheel Paddles

Steering wheel paddles are available as options,as shown in Figure 25, and they also will vary in appearance with the different vehicle applications. However, operation and function remains the same with the TF-60SN. These operational paddles are found in the steering wheel on the left and right hand side, as shown in Figure 25.

Upshifts and downshifts occur by tapping the appropriate paddle. The shift signals are an input to the TCM, which in turn carries out the request.

If the Tiptronic paddles in the steering wheel are operated while in automatic mode, the TCM enters "Tiptronic Mode". If the paddles are not operated, the TCM returns to the automatic mode after a preprogramed amount of time.

In case of a signal failure, no Tiptronic functions are possible using the steering wheel paddles.

Tiptronic Shifting Strategy

- - Automatic upshifts when the maximum RPM is reached.
- - Automatic downshifts when the RPM falls below the programed minimum RPM.
- - Kickdown shifting available.
- - Acceleration from standing start in second gear by selecting 2nd before accelerating.
- - Upshift or downshift prevention.

LED Display On Instrument Panel

These vehicles are also equipped with and LED display on the instrument panel that will display the gear selected with the selector lever, as shown in Figure 26.

When the vehicle is first started, the display will be "P", as shown in Figure 26. If reverse is selected the "R" will be displayed.

When Drive is selected for the automatic forward mode the "D" will be displayed momentarily and will then go to "1", as you are still in first gear. As you are driving, the gear that the transaxle is in will be displayed on the instrument panel.

When in the Tiptronic Mode, the gear selected by pressing the paddles will be displayed in the instrument panel. Keep in mind that 2nd gear starts can be achieved using this feature. 3rd gear standing starts are not allowed.

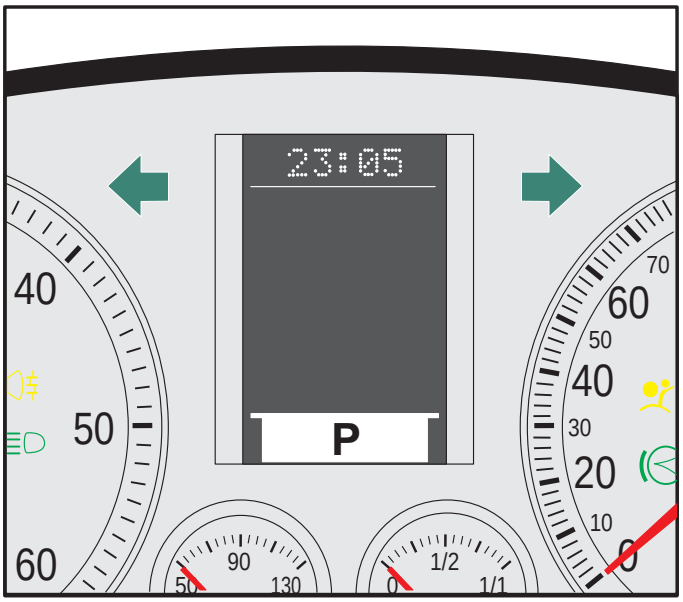


Figure 26

Emergency "Limp" Mode

In mechanical emergency running mode, 3rd gear is always engaged. If the transmission is already in 4th, 5th or 6th gear, the current gear is maintained until the selector lever is placed into the neutral position the engine is stopped.

When starting off, 3rd gear is always engaged whether the selector lever is in the D or S position. Reverse is available (R-gear locking is not active).

System pressure is controlled to the maximum value; the shifting elements are pressurized to maximum shifting pressure. This results in a hard shift when engaging the driving mode. The torque converter lock-up clutch remains off.

Towing Restrictions

When towing, the ATF pump is not operated, and therefore rotating components are not lubricated. To avoid severe damage to the transaxle, the following conditions ***must*** be met:

- - The selector lever must be in the “N” Neutral position.
- - Towing speed must not exceed 31 mph (50km/h).
- - Vehicle must not be towed further than 31 miles (50 km).

NOTE: For Jetta and Passat, if the battery is disconnected or discharged, the selector lever emergency release must be operated to shift the selector lever out of “P” into “N”.

VOLKSWAGEN "VAG" TO OBD11 DIAGNOSTIC TROUBLE CODES		
VAG	OBD11	DESCRIPTION
18010	P1602	Voltage supply too low
18255	P1847	DTC in ABS problem
18554	P2122	Throttle position sensor signal too low G79
19146	P2714	N91-SV4 Torque Converter Clutch PWM Solenoid, Circuit (Open or Short)
19147	P2715	N91-SV4 Torque Converter Clutch PWM Solenoid, Circuit (short to B+)
19148	P2716	N91-SV4 Torque Converter Clutch PWM Solenoid, electrical circuit fault
19155	P2723	N92-SV5 K1 Clutch control Solenoid, Circuit (Open or Short)
19156	P2724	N92-SV5 K1 Clutch control Solenoid, Circuit (short to B+)
19157	P2725	N92-SV5 K1 Clutch control Solenoid, electrical circuit fault
19164	P2732	N93-SV6 Pressure control Solenoid, Circuit (Open or Short)
19165	P2733	N93-SV6 Pressure control Solenoid, Circuit (short to B+)
19166	P2734	N93-SV6 Pressure control Solenoid, electrical circuit fault

Figure 30

TCC Operation

Depending on driving mode, engine load and vehicle speed, the torque converter lock-up clutch is first regulated with a minimal slip and subsequently completely applied. During regulated operation, fuel consumption is reduced when compared to a released torque converter clutch and driving comfort is improved compared to a fully applied clutch. Refer to the chart in Figure 31.

Using Tiptronic in “S” mode, the torque converter lock-up clutch is applied as soon as possible. The direct power connection between the engine and transaxle improves the "sporty" driving feel.

In a climbing mode, the torque converter lock-up clutch applies in 2nd gear.

When ATF temperature is above 130º C, the regulated apply feature is prohibited and an immediate apply occurs. This helps in cooling the fluid down to a normal operating temperature.

Refer to Figure 31 for the location of the torque converter identification code.

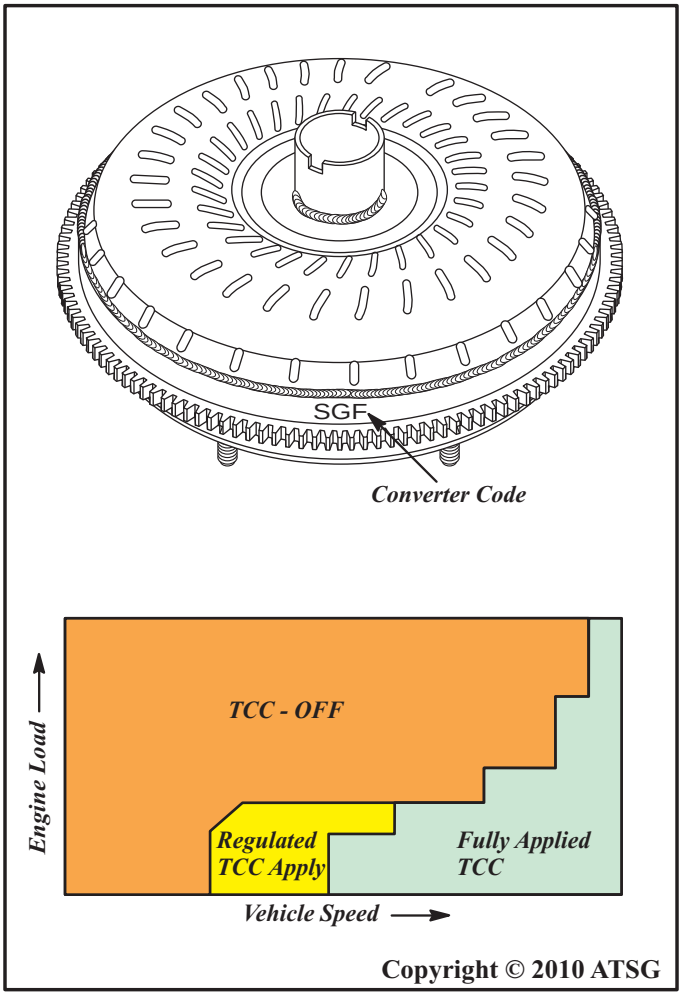


Figure 31

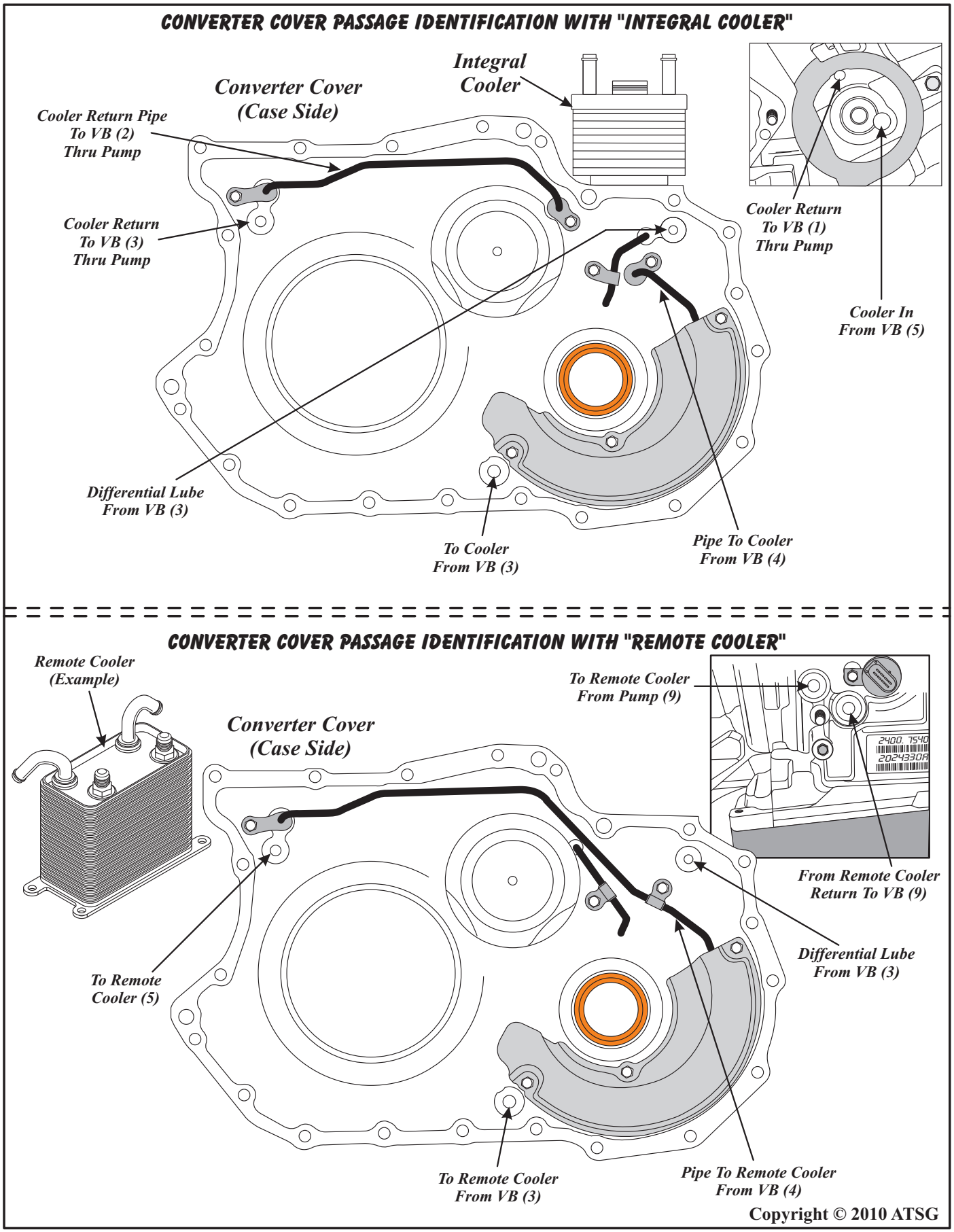

CONVERTER COVER PASSAGE IDENTIFICATION WITH "INTEGRAL COOLER"
Integral Cooler
Converter Cover (Case Side)
Cooler Return Pipe To VB (2) Thru Pump
Cooler Return To VB (3) Thru Pump
Differential Lube From VB (3)
To Cooler From VB (3)
Pipe To Cooler From VB (4)
Cooler Return To VB (1) Thru Pump
Cooler In From VB (5)
CONVERTER COVER PASSAGE IDENTIFICATION WITH "REMOTE COOLER"
Remote Cooler (Example)
Converter Cover (Case Side)
To Remote Cooler From Pump (9)
From Remote Cooler Return To VB (9)
Differential Lube From VB (3)
To Remote Cooler (5)
To Remote Cooler From VB (3)
Pipe To Remote Cooler From VB (4)
Copyright © 2010 ATSG

Figure 37

CAUTION:

There are 3 different lengths of the "stand-pipe" for VW, depending on vehicle and/or model. If the wrong oil pan or "stand-pipe are installed, the result will be a transaxle that is slipping, or a transaxle that is over-filled. Either way, it is a concern. At the time of this printing we have seen only 1 "stand-pipe" for the BMW Mini-Cooper with the 09G. The various lengths, colors and part numbers that were available at time of printing, are listed in Figure 44, and "will not" interchange.

Component	*Color*	*Overall Length*	*Part Number*	*Application*
Stand-Pipe	*White*	*49.6 mm (1.953")*	*09G-321-361*	*VW 09G*
Stand-Pipe	*Dark Brown*	*35.7 mm (1.408")*	*09G-321-361-D*	*VW 09G*
Stand-Pipe	*Red*			*VW 09K*
Stand-Pipe	*Blue*	*41.0 mm (1.615")*		*Mini-Cooper*

Figure 44

Many Thanks to Meenan Transmission for assisting in ID of the various stand-pipes.

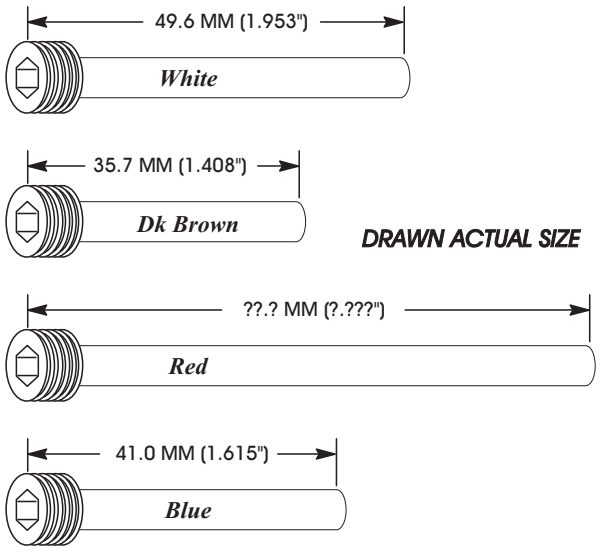
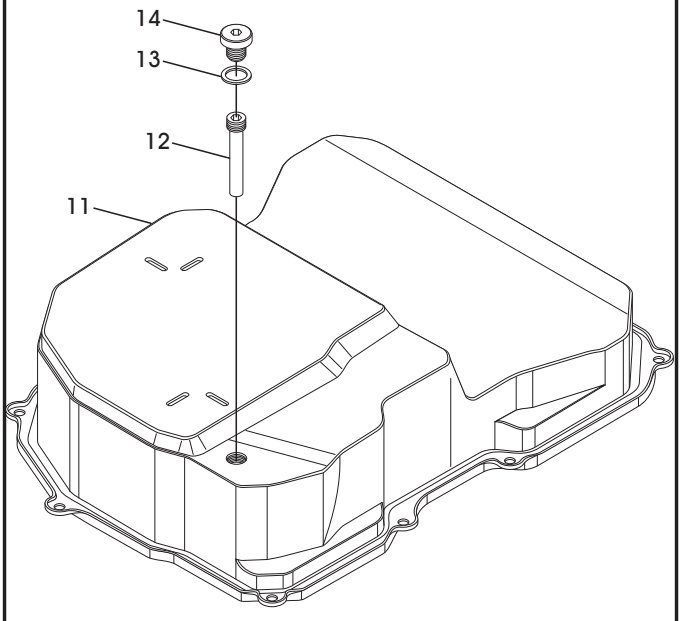


Figure 45

Note: If the "stand-pipe" is removed, it must be installed by hand tightening only with the allen socket and ensure it is completely seated. If not, the fluid level will not be correct and the bottom of the check plug may seat against the stand-pipe instead of seating on check plug sealing washer.



11 BOTTOM OIL PAN (MODEL DEPENDANT).
12 OIL PAN "STAND-PIPE" (MODEL DEPENDANT).
13 OIL LEVEL CHECK PLUG SEALING WASHER.
14 OIL LEVEL CHECK PLUG.

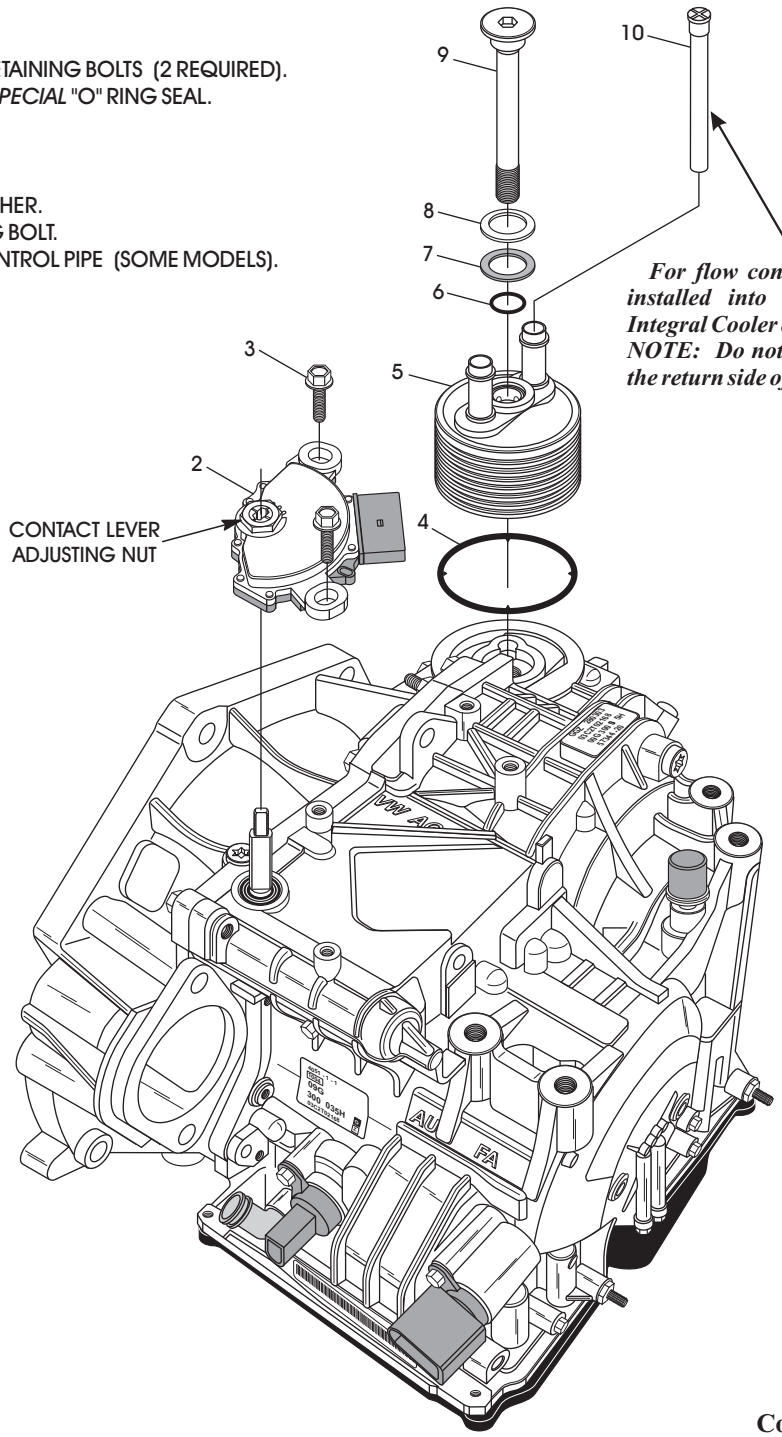
Figure 46

TRANSAXLE DISASSEMBLY (CONT'D)

5. Remove the 2 transaxle range switch retaining bolts and range switch, as shown in Figure 51.
   Note: The contact lever adjusting nut must not be loosened (See Figure 51).
6. Remove the integral cooler (if equipped) and set aside for flushing.
7. Remove and discard the 2 filter seals (4) & (6), as shown in Figure 51.
   Note: Notice that some models are equipped with a flow control distributor pipe in the supply side of cooler, as shown in Figure 51.

Continued on Page 44

2 TRANSAXLE RANGE SWITCH.
3 TRANSAXLE RANGE SWITCH RETAINING BOLTS (2 REQUIRED).
4 INTEGRAL COOLER TO CASE *SPECIAL* "O" RING SEAL.
5 INTEGRAL COOLER ASSEMBLY.
6 "O" RING SEAL.
7 FLAT WASHER.
8 CONE SHAPED LOCKING WASHER.
9 INTEGRAL COOLER RETAINING BOLT.
10 INTEGRAL COOLER FLOW CONTROL PIPE (SOME MODELS).



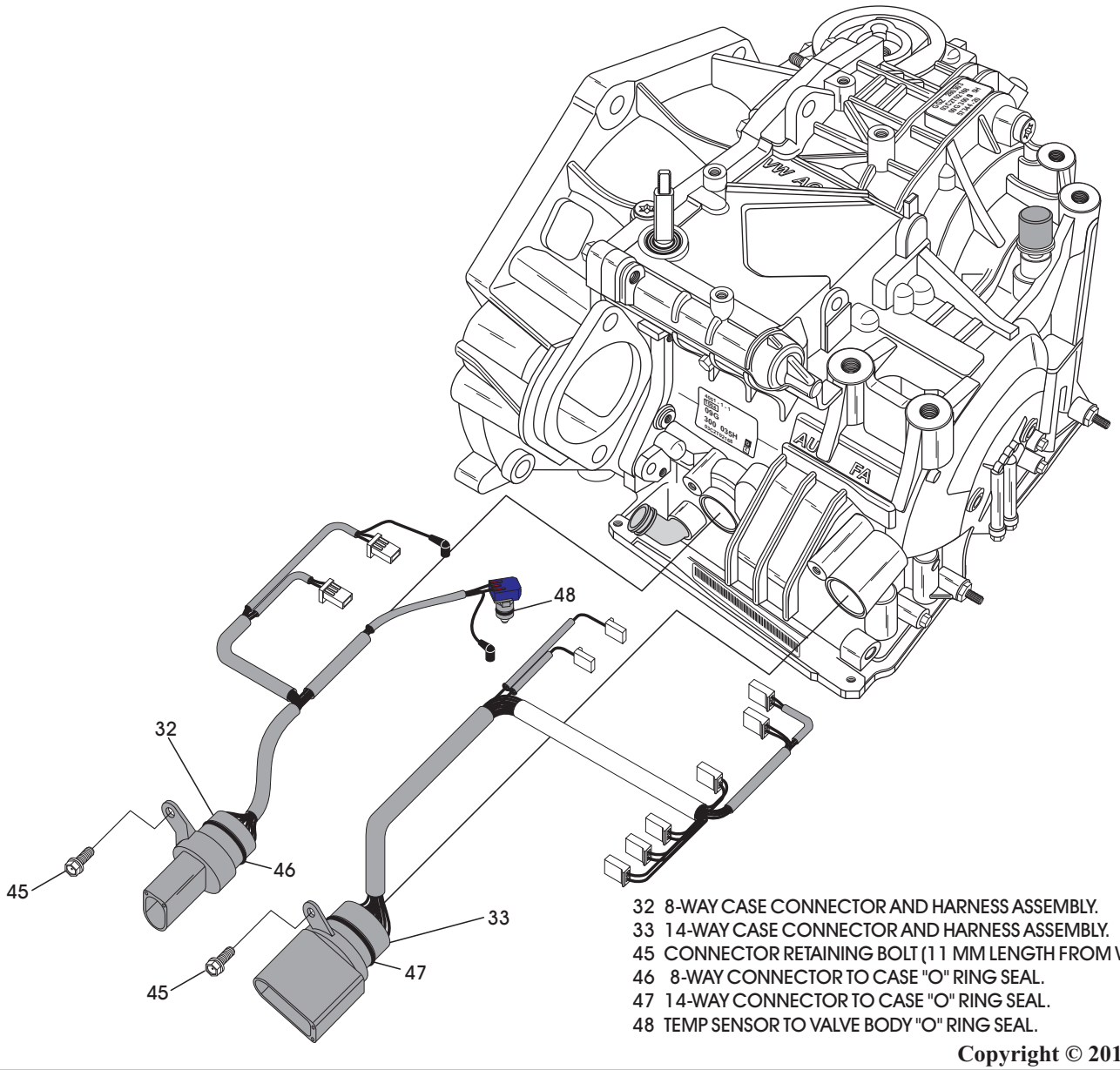
For flow control, a distributor pipe is installed into the supply side of the Integral Cooler on some models only.
NOTE: Do not install distributor pipe in the return side of the Integral Cooler.

Figure 51

TRANSAXLE DISASSEMBLY (CONT'D)

29. Remove the retaining bolt from 8-way connector and carefully remove the 8-way connector and wiring harness assembly, through the case bore, as shown in Figure 63.
Note: Remove and discard the case connector "O" ring and temp sensor "O" ring.
30. Remove retaining bolt from 14-way connector and carefully remove the 14-way connector and wiring harness assembly through the case bore, as shown in Figure 63.
Note: Remove and discard the case connector "O" ring.

Continued on Page 50



32 8-WAY CASE CONNECTOR AND HARNESS ASSEMBLY.
33 14-WAY CASE CONNECTOR AND HARNESS ASSEMBLY.
45 CONNECTOR RETAINING BOLT (11 MM LENGTH FROM WASHER).
46 8-WAY CONNECTOR TO CASE "O" RING SEAL.
47 14-WAY CONNECTOR TO CASE "O" RING SEAL.
48 TEMP SENSOR TO VALVE BODY "O" RING SEAL.

Figure 63

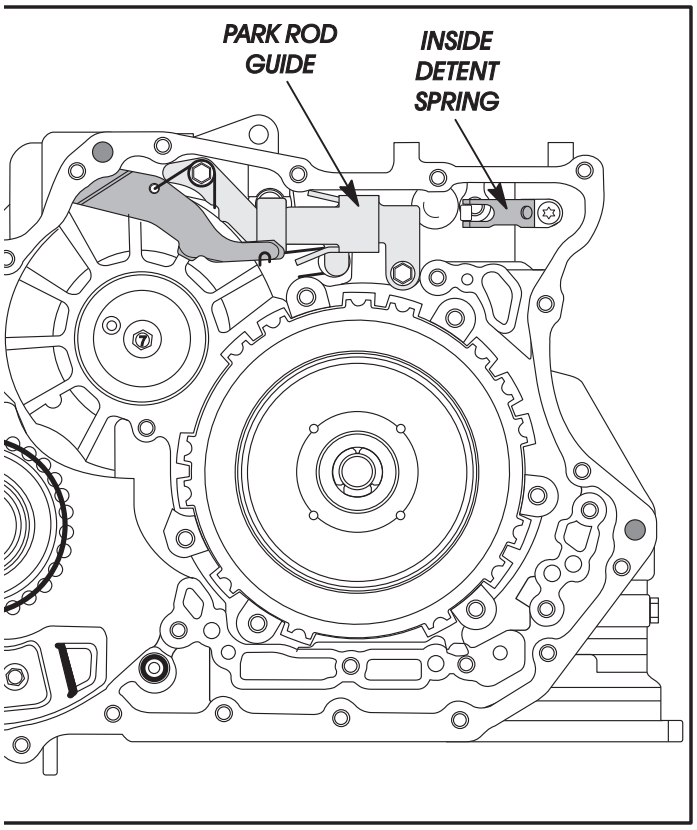
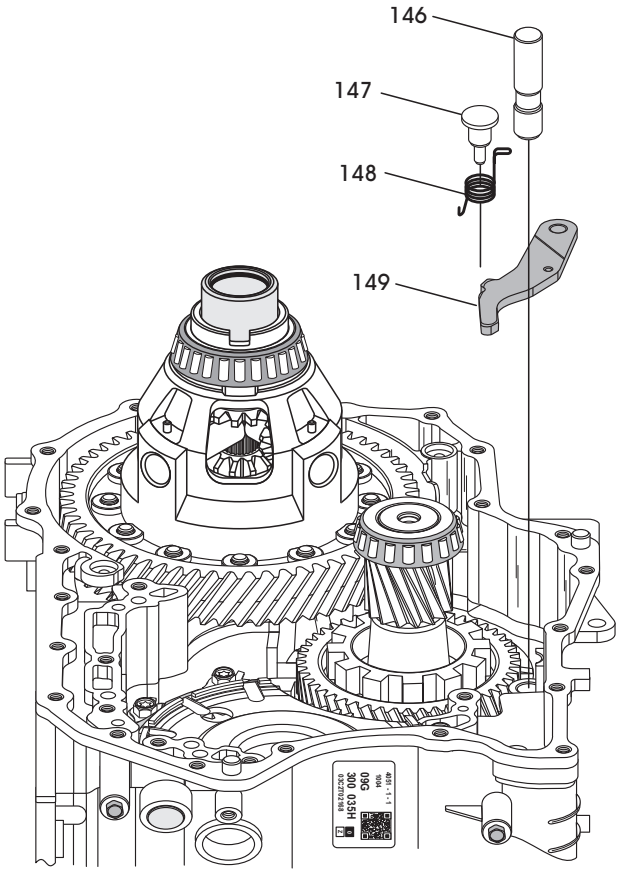


Figure 78

TRANSAXLE DISASSEMBLY (CONT'D)

56. Remove park pawl anti-rattle spring and pivot pin, as shown in Figure 79.
57. Remove the park rod roller and pin assembly, as shown in Figure 79.
58. Remove the park pawl as shown in Figure 79.

Continued on Page 58



146 PARK ROD ROLLER AND PIN ASSEMBLY.
147 PARK PAWL ANTI-RATTLE SPRING PIVOT PIN.
148 PARK PAWL ANTI-RATTLE SPRING.
149 PARK PAWL.

Figure 79

COMPONENT REBUILD (CONT'D)
OIL PUMP ASSEMBLY (CONT'D)

15. Torque the eight oil pump cover to pump body bolts down to 11 N·m (97 in.lb.), as shown in Figure 102, using a criss-cross pattern.
16. Lubricate the "O" ring seal surfaces in the oil pump cover with small amount of Trans-Jel®.
17. Install the B1 clutch apply piston into the oil pump cover, as shown in Figure 103.
18. Install the number 1 thrust washer onto back of pump cover, as shown in Figure 104, and retain with small amount of Trans-Jel®.
    Note: This thrust washer is included in the Trans-Tec® gasket pack.
19. Install two new sealing rings into grooves of the pump cover, as shown in Figure 104, and ensure butt ends meet.
20. Lubricate seal rings with transaxle fluid and set completed oil pump aside for final assembly, as shown in Figure 105.

Component Rebuild
Continued on Page 69

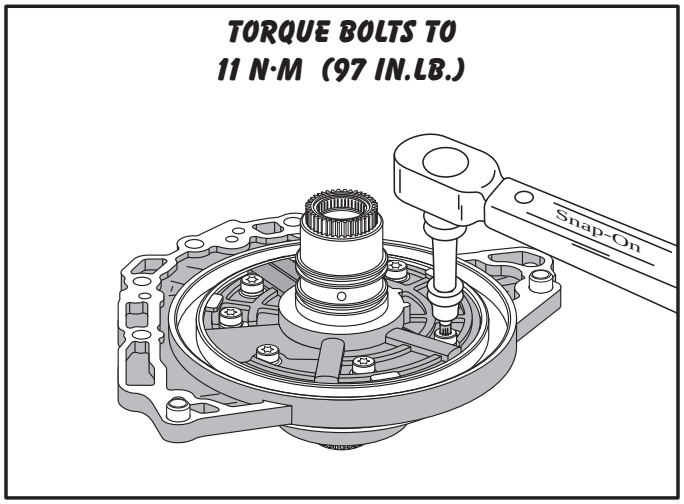


Figure 102

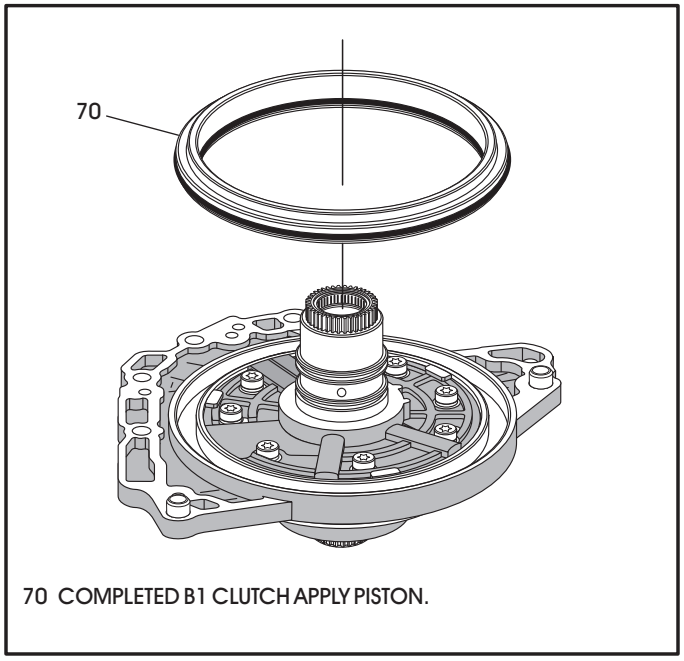


Figure 103

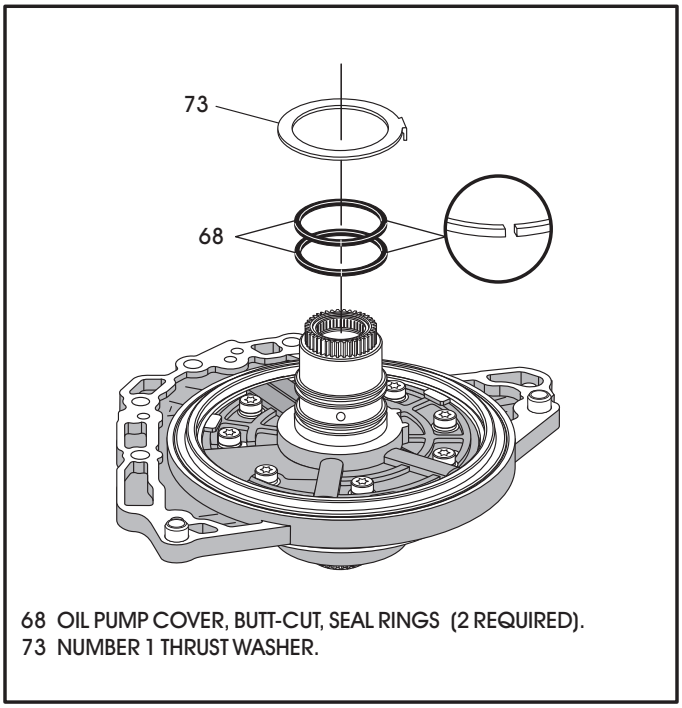


Figure 104

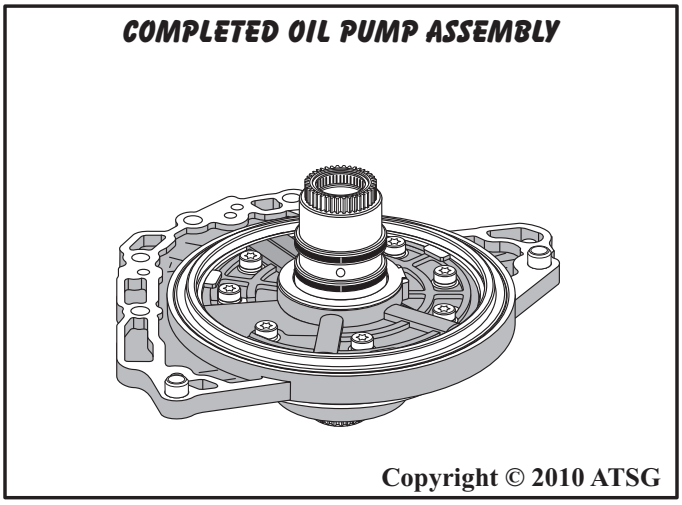
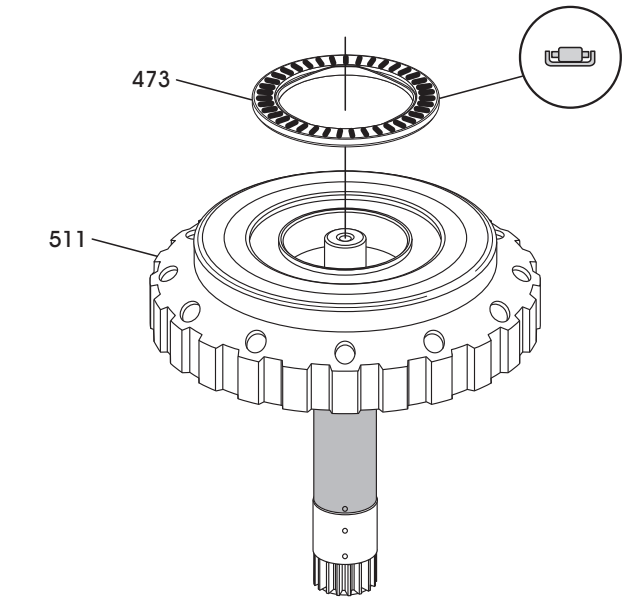


Figure 105

COMPONENT REBUILD (CONT'D)
K2 CLUTCH HOUSING ASSEMBLY (CONT'D)

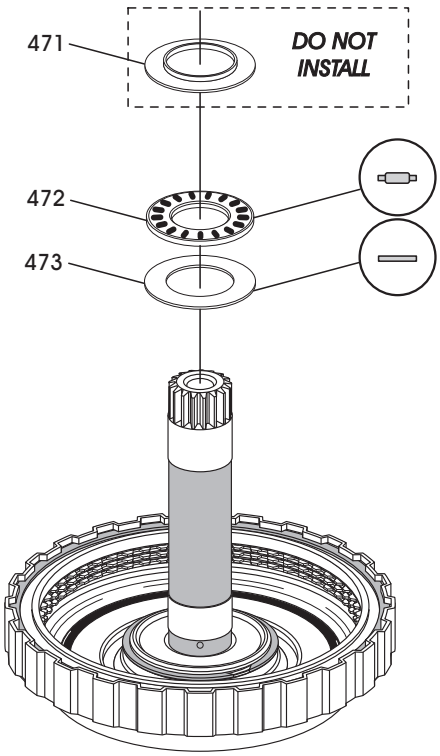
15. Turn the K2 clutch housing assembly over and install the number 11 thrust bearing, as shown in Figure 126, with the needles facing up.
16. Retain the number 11 thrust bearing with liberal amount of Trans-Jel®.
17. Turn the K2 clutch housing assembly over again and install the number 9 "rear" thrust bearing race, as shown in Figure 127, and retain with a small amount of Trans-Jel®.
18. Install the K2 clutch housing number 9 thrust bearing, as shown in Figure 127, and retain with Trans-Jel®.
    Note: "Do Not" install the number 9 "front" thrust bearing race (471) illustrated in Figure 127. This will be installed on the rear sun gear of the rear planetary.
19. Set the completed K2 clutch housing aside for the final assembly process.

Component Rebuild
Continued on Page 80



511 K2 CLUTCH HOUSING ASSEMBLY.
512 NUMBER 11 THRUST BEARING.

Figure 126



471 NUMBER 9 "FRONT" THRUST BEARING RACE.
472 NUMBER 9 THRUST BEARING.
473 NUMBER 9 "REAR" THRUST BEARING RACE.
511 K2 CLUTCH HOUSING ASSEMBLY.

Figure 127

COMPLETED K2 CLUTCH HOUSING

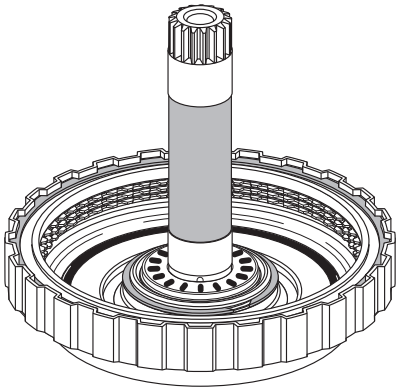
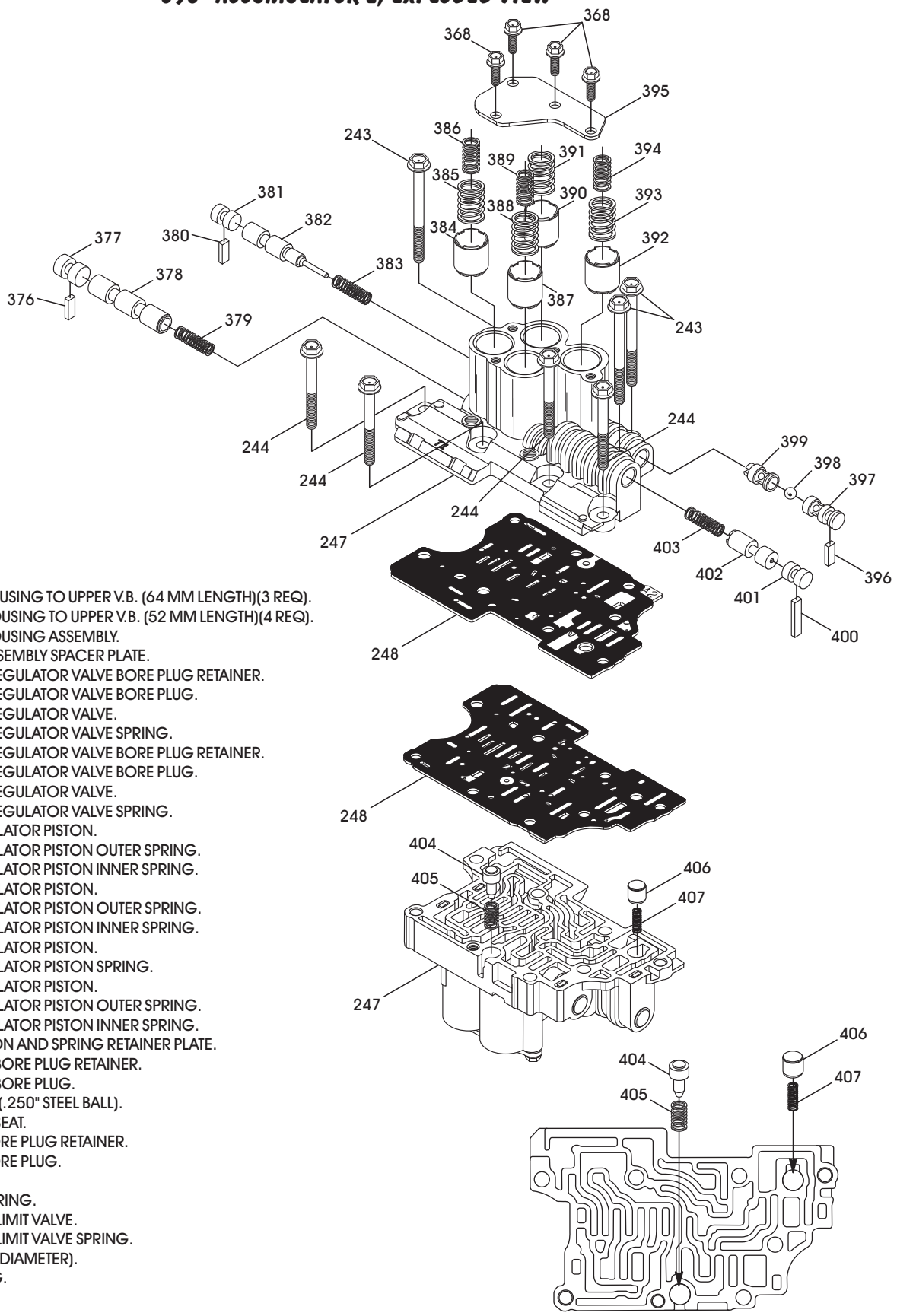


Figure 128

"09G" ACCUMULATOR 2, EXPLODED VIEW



243 ACCUMULATOR 2 HOUSING TO UPPER V.B. (64 MM LENGTH)(3 REQ).
244 ACCUMULATOR-2 HOUSING TO UPPER V.B. (52 MM LENGTH)(4 REQ).
247 ACCUMULATOR-2 HOUSING ASSEMBLY.
248 ACCUMULATOR-2 ASSEMBLY SPACER PLATE.
376 K3 ACCUMULATOR REGULATOR VALVE BORE PLUG RETAINER.
377 K3 ACCUMULATOR REGULATOR VALVE BORE PLUG.
378 K3 ACCUMULATOR REGULATOR VALVE.
379 K3 ACCUMULATOR REGULATOR VALVE SPRING.
380 K1 ACCUMULATOR REGULATOR VALVE BORE PLUG RETAINER.
381 K1 ACCUMULATOR REGULATOR VALVE BORE PLUG.
382 K1 ACCUMULATOR REGULATOR VALVE.
383 K1 ACCUMULATOR REGULATOR VALVE SPRING.
384 B2 CLUTCH ACCUMULATOR PISTON.
385 B2 CLUTCH ACCUMULATOR PISTON OUTER SPRING.
386 B2 CLUTCH ACCUMULATOR PISTON INNER SPRING.
387 K3 CLUTCH ACCUMULATOR PISTON.
388 K3 CLUTCH ACCUMULATOR PISTON OUTER SPRING.
389 K3 CLUTCH ACCUMULATOR PISTON INNER SPRING.
390 K1 CLUTCH ACCUMULATOR PISTON.
391 K1 CLUTCH ACCUMULATOR PISTON SPRING.
392 K2 CLUTCH ACCUMULATOR PISTON.
393 K2 CLUTCH ACCUMULATOR PISTON OUTER SPRING.
394 K2 CLUTCH ACCUMULATOR PISTON INNER SPRING.
395 ACCUMULATOR PISTON AND SPRING RETAINER PLATE.
396 B1/K3 CHECK VALVE BORE PLUG RETAINER.
397 B1/K3 CHECK VALVE BORE PLUG.
398 B1/K3 CHECK VALVE (.250" STEEL BALL).
399 B1/K3 CHECK VALVE SEAT.
400 NUMBER 20 VALVE BORE PLUG RETAINER.
401 NUMBER 20 VALVE BORE PLUG.
402 NUMBER 20 VALVE.
403 NUMBER 20 VALVE SPRING.
404 MAIN LINE PRESSURE LIMIT VALVE.
405 MAIN LINE PRESSURE LIMIT VALVE SPRING.
406 CHECK VALVE (.392" DIAMETER).
407 CHECK VALVE SPRING.

Figure 163