



INTRODUCTION

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CHRYSLER, DODGE 62TE Transaxle

The new 62TE transaxle by the Chrysler Group is fitted behind a 3.5L V6 engine in the Avenger, Sebring and Sebring Convertibles (JS Body), the 4.0L V6 engines in Pacifica (CS Body) and the 3.3L, 3.8L, 4.0L Caravan and Grand Caravan vehicles. It has 6 forward speeds with a 7th forward gear used in a specific downshift sequence known as the "4th prime". Fourth prime ratio is 1.573:1 which is a ratio between third gear (2.284:1) and fourth gear (1:452:1). Refer to the Component Application Chart. Fourth prime is used for a smoother highway speed kick-down from sixth gear and to provide a better ratio for climbing grades under certain conditions.

This transaxle has another technical first for Chrysler in that this transaxle introduces the "double-swap" shifts on the 2-3, 3-2 and 4-2 shifts. This occurs when two components are turned off while two different components are turned on. This clutch to clutch synchronization takes place within 40-70 milliseconds, producing a very smooth shift.

To avoid a "Double-Swap" shift on a 6-4 downshift, the transaxle shifts into "4th Prime" instead of 4th gear, which requires only the OD clutch to be turned off and simultaneous application of the UD clutch. A freewheel device (sprag) is used to assist in smoother shifts with its nonsynchronous application and release properties. The sprag holds in first, third and fourth assisting in smoother 1-2, 2-1, 4-5 and 5-4 shifts.

We wish to thank Chrysler® for the information that has made this booklet possible.

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CHRYSLER, DODGE 62TE TRANSAXLE

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Technical Service Information

GENERAL DESCRIPTION

The new 62TE transaxle by the Chrysler Group is fitted behind a wide variety of engine sizes and across various vehicle lines, as shown in Figure 1. The 62TE replaces the 41TE but retained a large percentage of parts from the 4 speed design so many of the internal parts will be very familiar.

The new 62TE consists of a main centerline that includes two planetary gear sets, 2 brake clutch packs (L/R and 2/4), 3 driving clutch packs in the input housing (UD/OD/Rev), and in the same arrangement as the 41TE transaxle. Refer to Figure 2.

The addition of the underdrive centerline, which replaces the previous pinion shaft, consists of one planetary gear set, two clutch packs (Direct & Low) and a freewheel (Sprag), tied together via the transfer gears and creates the ability to achieve the seven forward ratios of the 62TE. Refer to Figure 2. The freewheel (Sprag) was considered necessary for control of "double-swap" shifts, which was required to achieve seven forward ratios. In a "double-swap" shift, four shift elements must be coordinated from the initiation to the completion of the shift. In a customary upshift or downshift only two elements are involved, one applying and one releasing.

The 62TE has 6 forward speeds with a 7th forward gear used in a specific downshift sequence known as "4th prime". Fourth prime ratio is 1.573:1 which is a ratio between third gear (2.284:1) and fourth gear (1:452:1). Refer to the Component Application Chart shown in Figure 3. Fourth prime is used for a smoother highway speed kick-down from sixth gear to fourth gear to provide a better ratio for climbing grades under certain conditions.

This transaxle has another technical first for Chrysler in that this transaxle introduces the "double-swap" shifts on the 2-3, 3-2 and 4-2 shifts. This occurs when two components are released while two different components are applied. This clutch to clutch synchronization takes place within 40-70 milliseconds with the help of the freewheel (sprag), producing a very smooth shift.

To avoid a "Double-Swap" shift on a 6-4 downshift, the transaxle shifts into "4th Prime" instead of 4th gear, which requires only the OD clutch to be released and simultaneous application of the UD clutch. A freewheel device (sprag) is used to assist in smoother shifts with its nonsynchronous application and release properties. The sprag holds in first, third and fourth assisting in a smoother 1-2, 2-1, 4-5 and 5-4 shifts.

In all gears, except normal operation of 1st gear above a predetermined vehicle speed, three friction elements are always applied to retain engine braking.

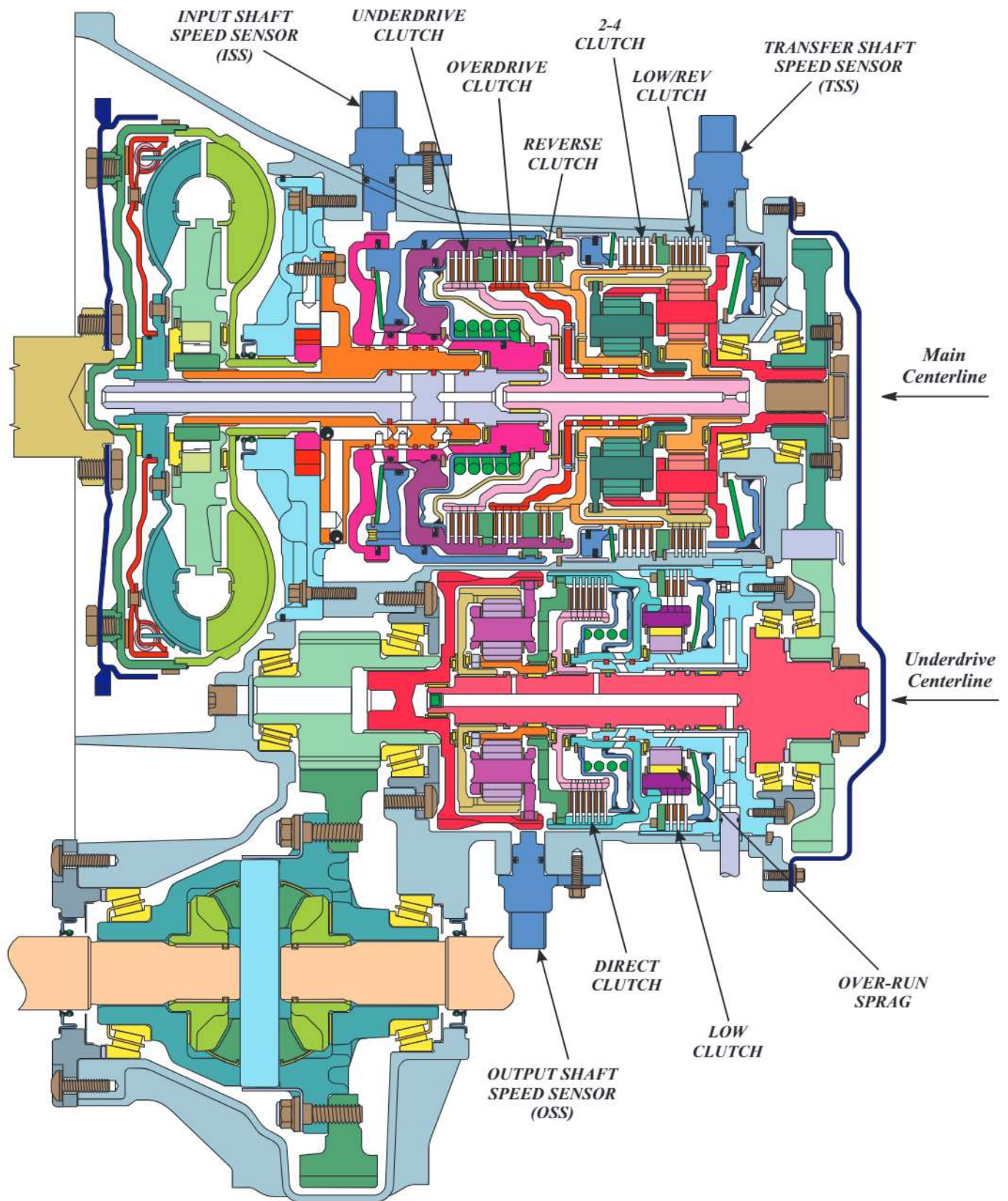
In normal 1st gear operation, the Low Clutch is applied for launch and released after 150 RPM of output speed is reached. Refer to the Component Application Chart in Figure 3.

A third speed sensor was required on the underdrive centerline for shift control.

VEHICLE APPLICATION CHART				
VEHICLE	YEAR	ENGINE	COUNTRY	TRANSAXLE
CHRYSLER, SEBRING	2006-10	2.4L, 2.5L (L4)	USA,	62TE
SEBRING CONVERTIBLE	2006-10	2.7L, 3.5L (V6)	USA, CAN,	62TE
CHRYSLER, VOYAGER	2007-08	2.8L (L4)	USA,	62TE
TOWN & COUNTRY	2007-11	3.6L, 3.8L, 4.0L (V6)	USA, CAN,	62TE
CHRYSLER, PACIFICA	2007-08	4.0L (V6)	USA, CAN,	62TE
DODGE, AVENGER	2007-10	2.4L, (L4), 2.7L, 3.5L (V6)	USA,	62TE
DODGE, CARAVAN	2007-11	3.3L, 3.6L, 3.8L, 4.0L (V6)	USA, CAN,	62TE
DODGE, GRAND CARAVAN	2007-11	3.3L, 3.6L, 3.8L, 4.0L (V6)	USA, CAN,	62TE
DODGE, JOURNEY	2009-11	2.7L, 3.5L, 3.6L (V6)	MEX,	62TE
VW, ROUTAN	2009-11	3.8L, 4.0L (V6)	USA, CAN,	62TE
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Figure 1

COMPONENT LOCATION AND IDENTIFICATION



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Figure 2

COMPONENT APPLICATION CHART									
<i>Gear</i>	<i>Underdrive Clutch</i>	<i>2-4 Clutch</i>	<i>Overdrive Clutch</i>	<i>Reverse Clutch</i>	<i>Low-Rev Clutch</i>	<i>Low Clutch</i>	<i>Direct Clutch</i>	<i>Over-run Sprag</i>	<i>Ratio</i>
<i>Reverse</i>				<i>ON</i>	<i>ON</i>	<i>ON</i>			<i>3.215</i>
<i>1st Gear</i>	<i>ON</i>				<i>ON</i>	<i>ON**</i>		<i>Hold</i>	<i>4.127</i>
<i>2nd Gear</i>	<i>ON</i>				<i>ON</i>		<i>ON</i>		<i>2.842</i>
<i>3rd Gear</i>	<i>ON</i>	<i>ON</i>				<i>ON*</i>		<i>Hold</i>	<i>2.284</i>
<i>4th Prime</i>	<i>ON</i>	<i>ON</i>					<i>ON</i>		<i>1.573</i>
<i>4th Gear</i>	<i>ON</i>		<i>ON</i>			<i>ON*</i>		<i>Hold</i>	<i>1.452</i>
<i>5th Gear</i>	<i>ON</i>		<i>ON</i>				<i>ON</i>		<i>1.000</i>
<i>6th Gear</i>		<i>ON</i>	<i>ON</i>				<i>ON</i>		<i>0.689</i>
<i>Note: 3rd Gear is used for "Limp-in Mode".</i> <i>Note: 4th Prime is used on a 6-4 downshift only to avoid "Double Swap" shift.</i> <i>Note: * = Effective on coast only for engine braking.</i> <i>Note: ** = In OD 1st gear, ON at launch, Off at 150 RPM output speed. Always ON in Manual Low.</i>									
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Figure 3

DESCRIPTION OF OPERATION AND POWERFLOW

Powerflow through the 62TE transaxle is similar to the 41TE transaxle. This is due to the addition of the new underdrive compounder assembly, as shown in Figure 2, and the new TCM strategy required to achieve the new ratios. The 62TE retains all of the 41TE ratios, as shown in the Component Application Chart above and adds the new ratios, which are achieved by multiplying main centerline ratios by the underdrive compounder carrier ratio of 1.452. In total, the 62TE provides seven forward ratios and one reverse.

The underdrive compounder assembly has basically two modes of operation, direct and reduction. Direct provides the original 41TE ratios, and reduction provides the four new ratios added in the 62TE.

Notice in the Component Application Chart above, the 2-3, 3-2, and 4-2 shifts require a "Double-Swap" shift. This occurs when two components are released while two different components are applied. This clutch to clutch synchronization takes place within 40-70 milliseconds, producing a smooth shift.

To avoid a "Double-Swap" shift on a 6-4 downshift, the transaxle shifts into "4th Prime" instead of 4th gear, which requires only the OD clutch to be released and simultaneous application of the UD clutch.

In normal 1st gear operation, the Low Clutch is applied for launch and released after 150 RPM of output speed is reached. Refer to the Component Application Chart in Figure 3.

IDENTIFICATION TAG LOCATION

The "Bar Code Label" is located on the top of the transaxle case, as shown in Figure 4, and contains useful information such as, transaxle part number, date of manufacture, serial number, etc.

If the label is not legible, transaxle identification numbers are also etched into the case next to the transfer gear cover, in the location shown in Figure 4.

Always refer to this information when replacement parts are required.

FLUID FILL AND FLUID REQUIREMENTS

Vehicles manufactured by Chrysler and equipped with the 62TE transaxle do not come equipped with a dipstick. There will be a locking cap, equipped with an "O" ring seal, found in the top of the filler tube, as shown in Figure 5.

The dipstick is considered a tool and must be purchased separately under Miller Tool No. 9336A, as shown in Figure 5.

Refer to Figure 5 for information on checking transmission fluid levels.

The 62TE Transaxle **requires** Mopar® "ATF+4" fluid.

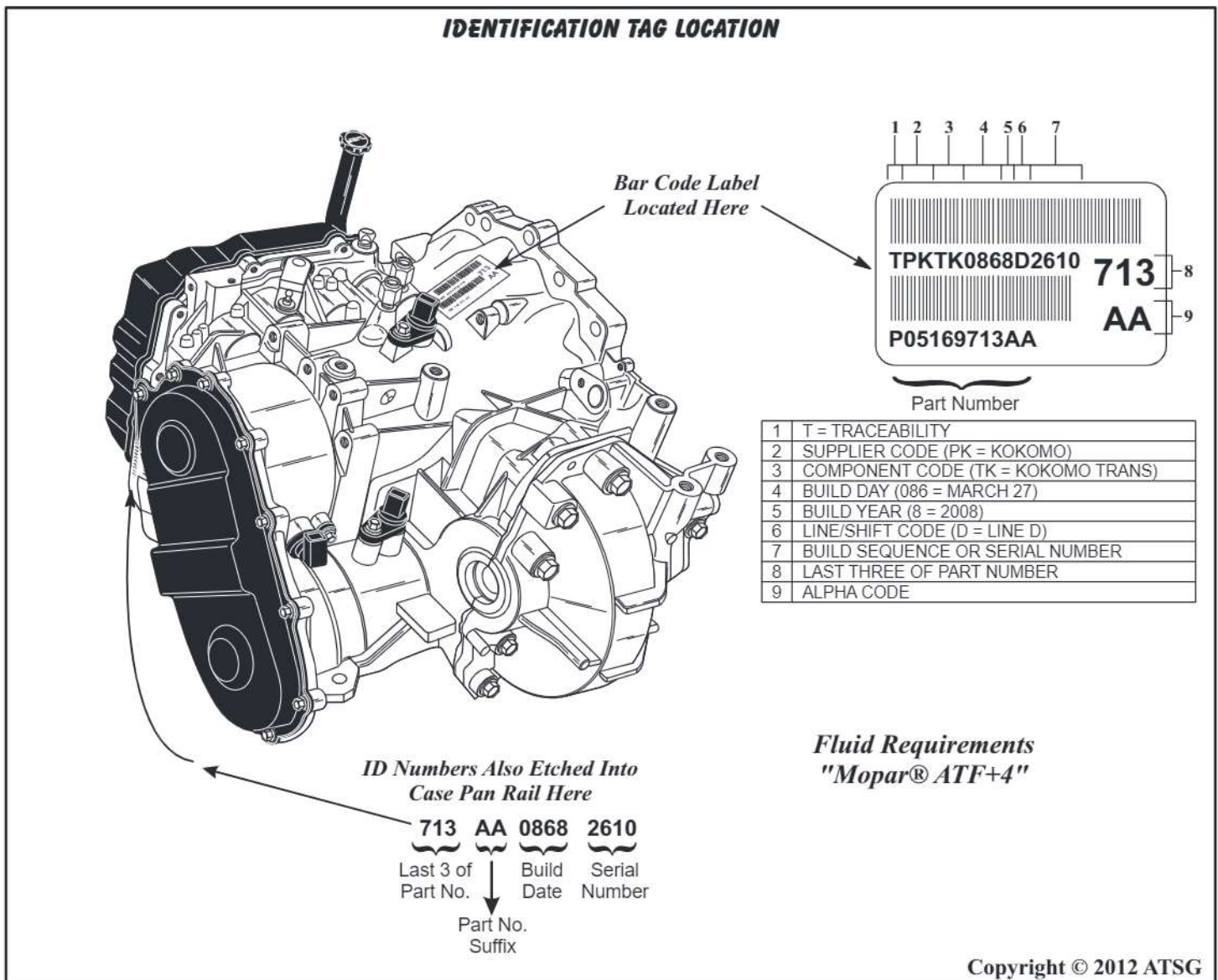


Figure 4

FLUID CHECKING PROCEDURE

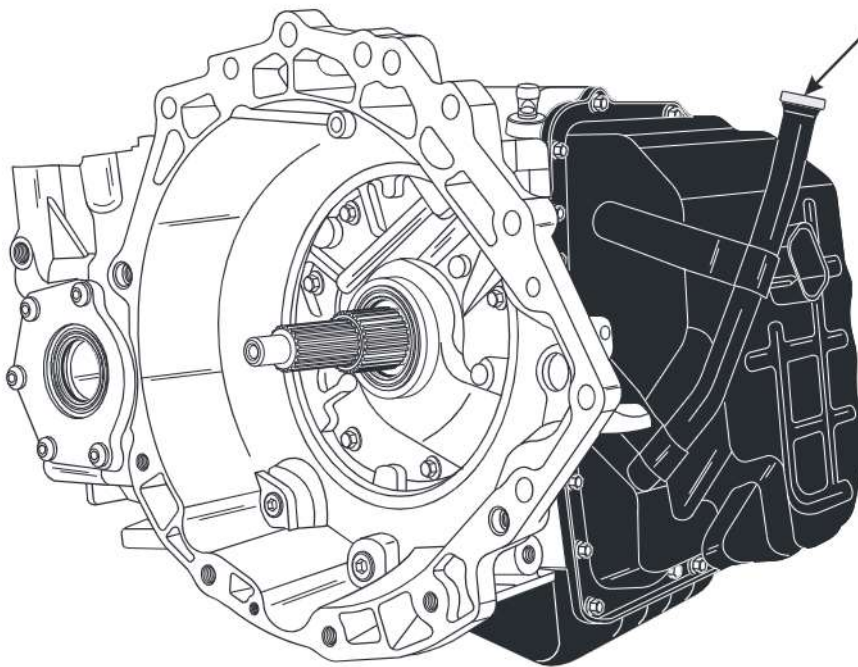
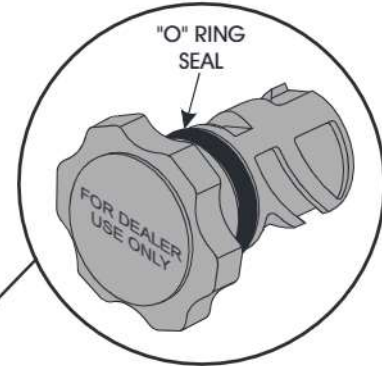
1. The vehicle must be parked on a level surface.
2. Apply the service (emergency) brake.
3. Shift through the transaxle modes several times with the vehicle stationary and the engine at idle. Wait at least 2 minutes and check the fluid level with the engine running in Park.
4. Remove the dipstick tube cap.
5. Install the **required** Miller Tool No. 9336A into the fill tube until the dipstick tip contacts dipstick stop bracket in bottom pan.

Note: When inserting dipstick special tool, any excessive force may cause the dipstick to slip past the stop bracket. An approximate distance the dipstick should be inserted into the fill tube is 424mm (16.690"). The dipstick tool will protrude from the fill tube when installed to the proper depth.

6. Add or remove fluid as necessary and recheck the fluid level using chart shown below and Miller tool 9336A.

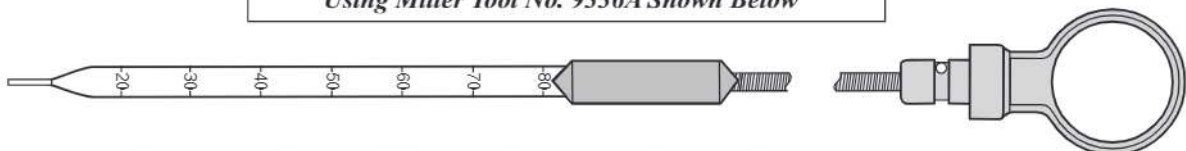
Note: Fluid temperature can be checked using proper scan tool.

7. The 62TE transaxle uses Mopar® ATF+4 fluid.
8. Once the fluid level is correct, install the dipstick tube cap.



Service Fill = 5.5 Qts (5.2 Litre)
Repair Fill = 9.0 Qts (8.5 Litre)
Fluid Requirements = Mopar® ATF+4

Fluid Temperature	Minimum	Maximum
77°F (25°C)	25mm	38mm
138°F (59°C)	29mm	42mm
191°F (88°C)	34mm	46mm
Using Miller Tool No. 9336A Shown Below		



FLUID CHECKING PROCEDURE STICK, Miller Tool No. 9336A

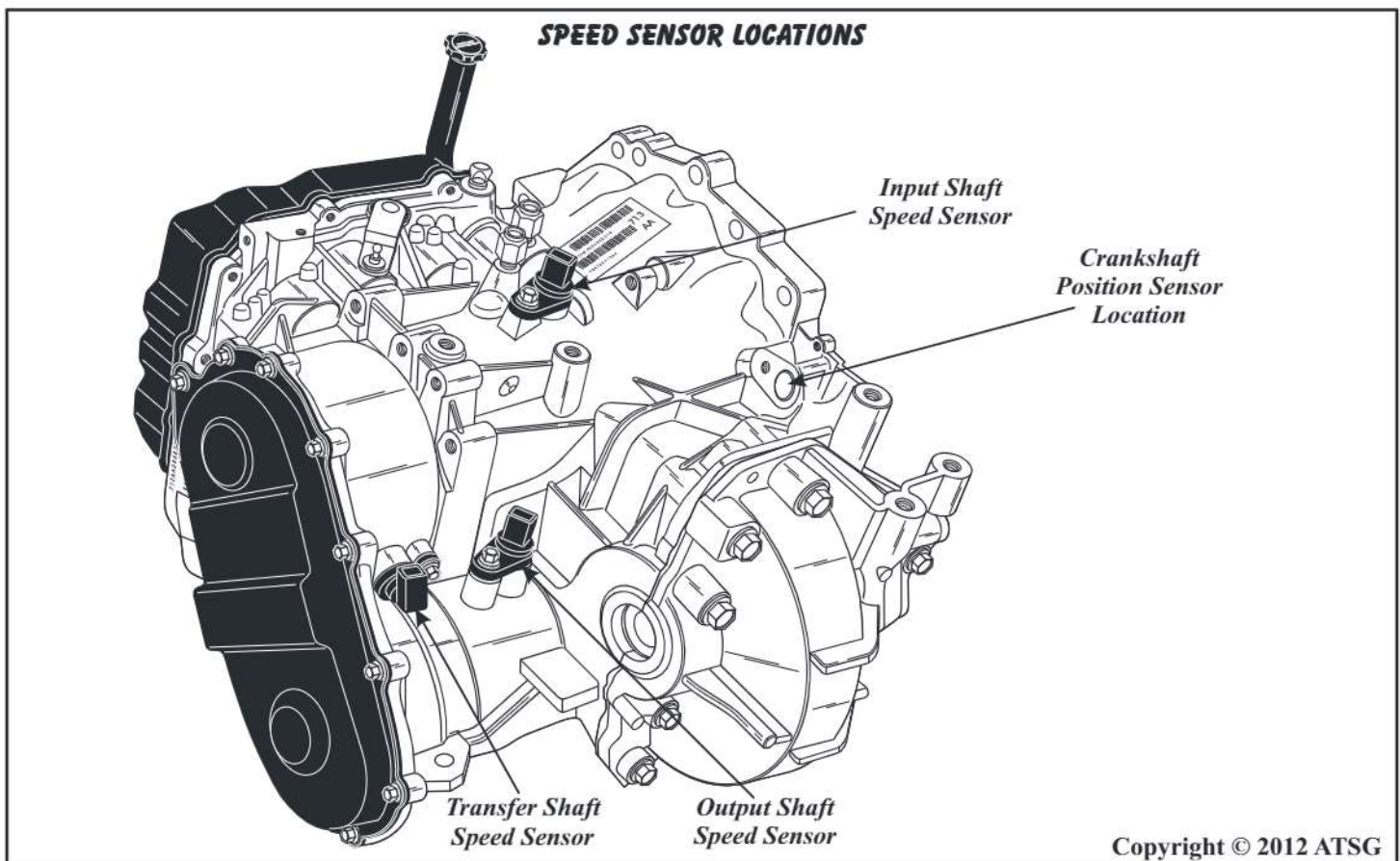


Figure 6

EXTERNAL ELECTRONIC COMPONENTS SPEED SENSORS

The speed sensors are no longer threaded into the case, but are similar to those used in the RFE and RLE series transmissions. Each of them are held in place with one bolt and an "O" ring seals the sensor to the case bore. The 62TE is equipped with three speed sensors and their new locations are shown in Figure 6.

With a total of three speed sensors, the 62TE can monitor three different ratios. One is the ratio check of the Input Shaft Speed Sensor (Nt) versus the Output Shaft Speed Sensor (No). This measures the overall transmission ratio.

A second ratio check is made between the Input Shaft Speed Sensor (Nt) and the Transfer Shaft Speed Sensor (Nc), which checks the main transmission centerline ratio.

A third ratio check is made between the Transfer Shaft Speed Sensor (Nc) and the Output Shaft Speed Sensor (No), which checks the underdrive centerline ratio.

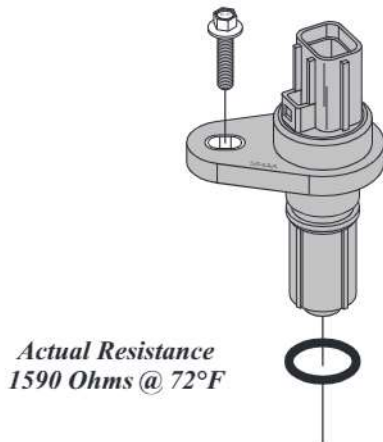
The control logic is to continuously check the three ratios while in gear. Should any of the three ratios fall outside of the programmed parameters, due to clutch slippage or clutch failure for a given period of time, the transmission is intelligently put into 3rd gear failsafe.

Input Shaft Speed Sensor (ISS)

The Input Speed Sensor (ISS) has been relocated to the top of the case, as shown in Figure 6, and continues to read turbine speed from the input clutch housing. The ISS is no longer threaded into the case but is held in place with one bolt and an "O" ring seals the sensor body to the transaxle case bore, as shown in Figure 7. The ISS is a two wire magnetic pickup device that generates AC signals as rotation of the input clutch housing occurs.

Continued on Page 9

INPUT SHAFT SPEED SENSOR



*Actual Resistance
1590 Ohms @ 72°F*

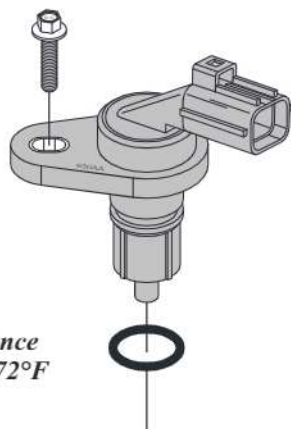
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Figure 7

Transfer Shaft Speed Sensor (TSS)

The Transfer Shaft Speed Sensor (TSS) has been relocated to the side of the case, as shown in Figure 6, and continues to read transfer shaft speed from the rear planetary carrier/front ring gear assembly. The TSS is held in place with one bolt and an "O" ring seals the sensor body to the transaxle case bore, as shown in Figure 8. The TSS is a two wire magnetic pickup device that generates AC signals as rotation of the rear planetary carrier occurs.

TRANSFER SHAFT SPEED SENSOR



*Actual Resistance
1424 Ohms @ 72°F*

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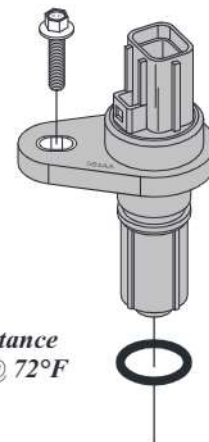
Figure 8

Output Shaft Speed Sensor (OSS)

The Output Speed Sensor (OSS) has been relocated to the underdrive centerline side of the case, as shown in Figure 6, and reads output shaft speed from the output planetary carrier assembly. The OSS is held in place with one bolt and an "O" ring seals the sensor body to the transaxle case bore, as shown in Figure 9. The OSS is a two wire magnetic pickup device that generates AC signals as rotation of the output planetary carrier occurs.

Speed sensor harness connectors and wire colors for a 2009 Grand Caravan, 3.8L, are shown in Figure 10.

OUTPUT SHAFT SPEED SENSOR

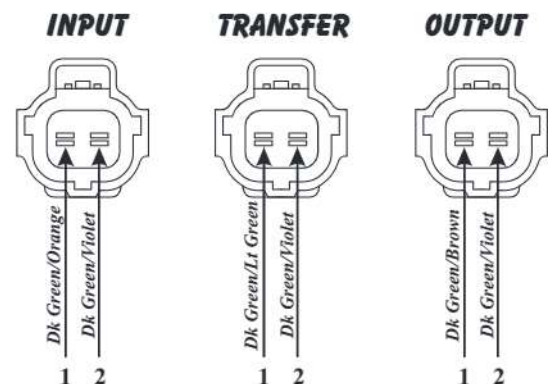


*Actual Resistance
1590 Ohms @ 72°F*

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Figure 9

SPEED SENSOR HARNESS CONNECTORS



1 = Speed Sensor Signal

2 = Speed Sensor Ground

Note: Wire colors shown are for 2009 Grand Caravan 3.8L.

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Figure 10

EXTERNAL ELECTRONIC COMPONENTS (CONT'D)

Transmission Control Relay

The Transmission Control Relay is located in the Totally Integrated Power Module (TIPM), as shown in Figure 11, and receives a ground signal from terminal (C4) 18 at the PCM/NGC to close the relay. Refer to the wiring schematic in Figure 14.

LIMP-IN MODE OPERATION

The PCM has the ability to monitor all transaxle related electrical components and if it detects a problem, takes appropriate action, and most of the time results in the PCM setting a Diagnostic Trouble Code (DTC). Whether this results in MIL illumination, or Limp-in Mode operation, depends on the type of DTC that was set.

If the PCM determines that transaxle damage may result from the DTC type that was set, the PCM will shut off the ground signal to the transaxle control relay which will shut off all power to the transaxle and the vehicle will be in Limp-in Mode Operation.

When in Limp-in Mode Operation, with the shift lever in the "Drive" position the transmission will be in 3rd gear. The Underdrive and 2/4 Solenoids are "Normally Applied" solenoids while the remaining clutch control solenoids are "Normally Vented". As a result of this, when the electrical system shuts down, failsafe or limp-in mode is 3rd gear.

The hydraulic control system design, without any electronic assist, provides the 62TE transaxle with PARK, REVERSE, NEUTRAL, and THIRD gears based solely on driver selection. This design allows the vehicle to be driven in "limp-in" mode (3rd gear) in the event of a total electronic control system failure, or a situation that the PCM recognizes as potentially damaging to the transaxle (DTC Stored).

ADAPTIVE LEARNING

The 62TE transaxle uses an "Adaptive Learning" feature which allows the PCM to modify the clutch apply rate to maintain consistent shift quality. This is done based on the amount of wear on the friction elements. The PCM then adjusts the duty cycle of the shift solenoids to achieve the smoothest possible upshifts and downshifts.

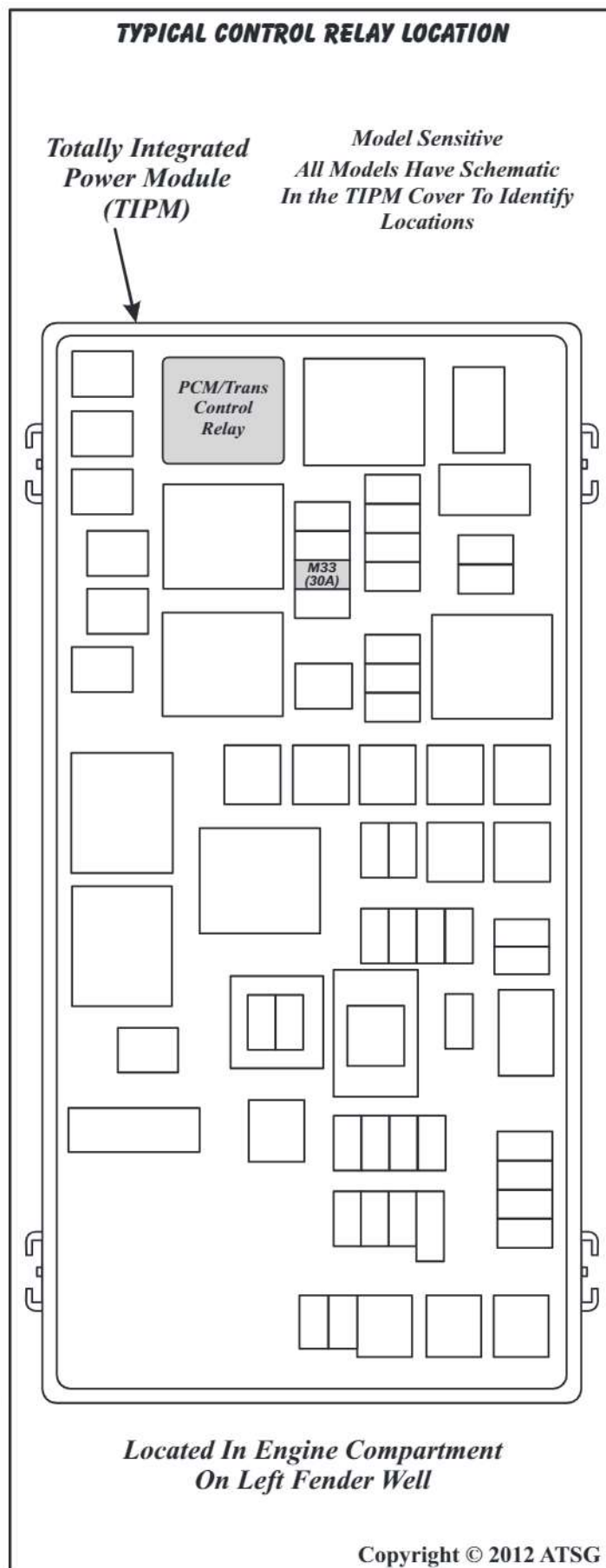


Figure 11

EXTERNAL ELECTRONIC COMPONENTS (CONT'D)

Transmission Control Module (TCM)

Vehicles equipped with the 62TE transaxle use a Powertrain Control Module (PCM) housed in the New Generation Controller (NGC) utilizing the C1, C2, C3 and C4 connectors for transaxle functions. The PCM/NGC controls **all** of the transaxle functions. The controller locations vary depending on vehicle model, as shown in Figure 13. Location for the Van models is illustrated in Figure 12.

The electronic components of the 62TE transaxle consist of various sensors and switches as input information to the PCM, that the PCM uses to determine the appropriate gear ratio and shift schedule points. There is also the associated wiring, fuses, relays, connectors, splices and grounds for the transaxle to function as designed. A typical transmission wiring schematic has been provided for you in Figure 14.

The final output from the PCM is to the six shift solenoids, line pressure control solenoid and the EMCC (Converter Clutch) solenoid located in the Solenoid Body/Transaxle Range Sensor assembly and bolted on the valve body as shown in Figure 21. The solenoids in this transmission are unique in that some are normally vented and some are normally applied and this is also illustrated in Figure 22. The PCM also communicates with other control modules via data communication lines. The New Generation Controller (NGC) modules currently use CAN C bus.

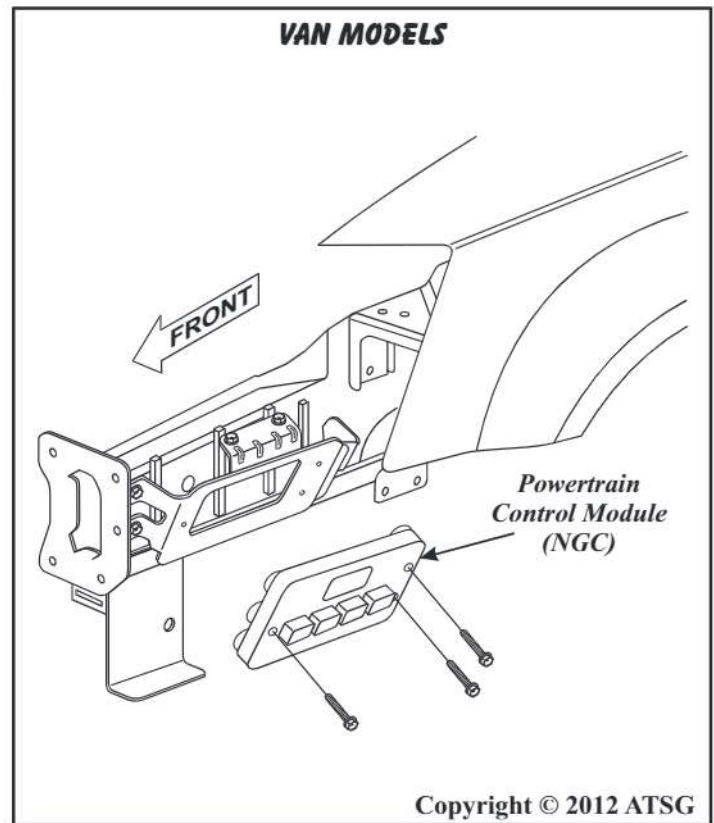


Figure 12

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POWERTRAIN CONTROL MODULE (NGC) LOCATIONS

VEHICLE	LOCATION
CHRYSLER, SEBRING	Mounted on Firewall, Left Rear of Engine Compartment
SEBRING CONVERTIBLE	Mounted on Firewall, Left Rear of Engine Compartment
CHRYSLER, VOYAGER	Behind Left Front Fender Splash Shield
TOWN & COUNTRY	Behind Left Front Fender Splash Shield
CHRYSLER, PACIFICA	Behind Left Front Fender Splash Shield
DODGE, AVENGER	Mounted on Firewall, Left Rear of Engine Compartment
DODGE, CARAVAN	Behind Left Front Fender Splash Shield
DODGE, GRAND CARAVAN	Behind Left Front Fender Splash Shield
DODGE, JOURNEY	Behind Left Front Fender Splash Shield

(Locations known at time of this printing)

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Figure 13

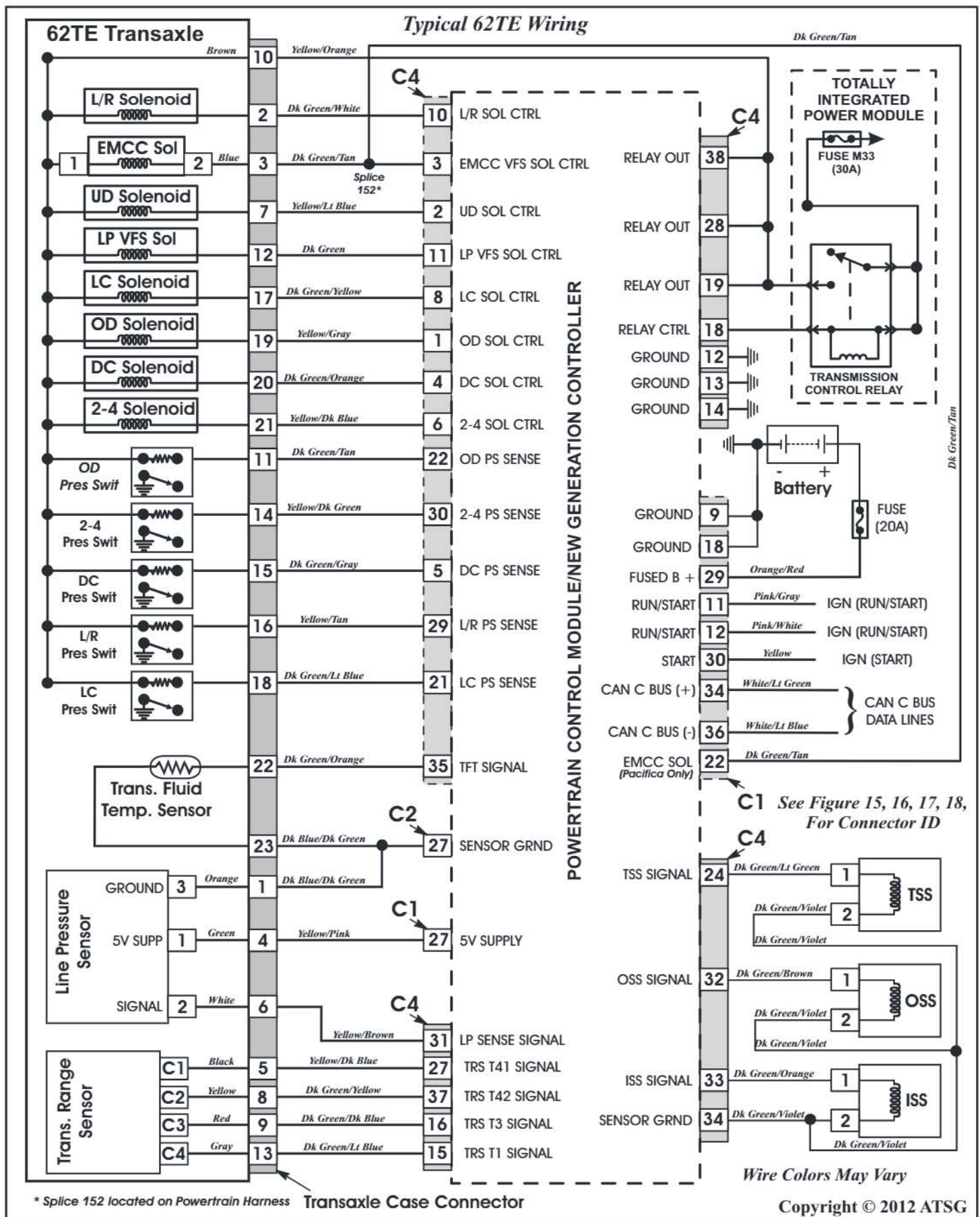
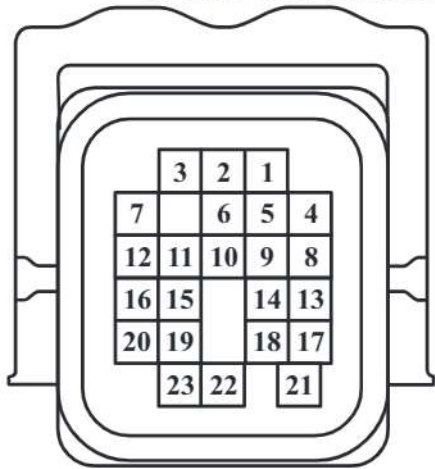


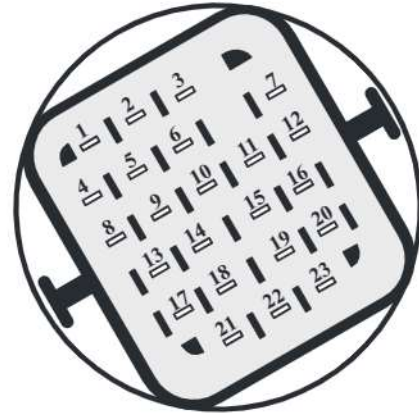
Figure 14

23-WAY CASE CONNECTOR PIN CAVITY IDENTIFICATION AND FUNCTION



Vehicle Harness Connector
(Face View)

"Front"



Transmission
Case Connector
(Face View)

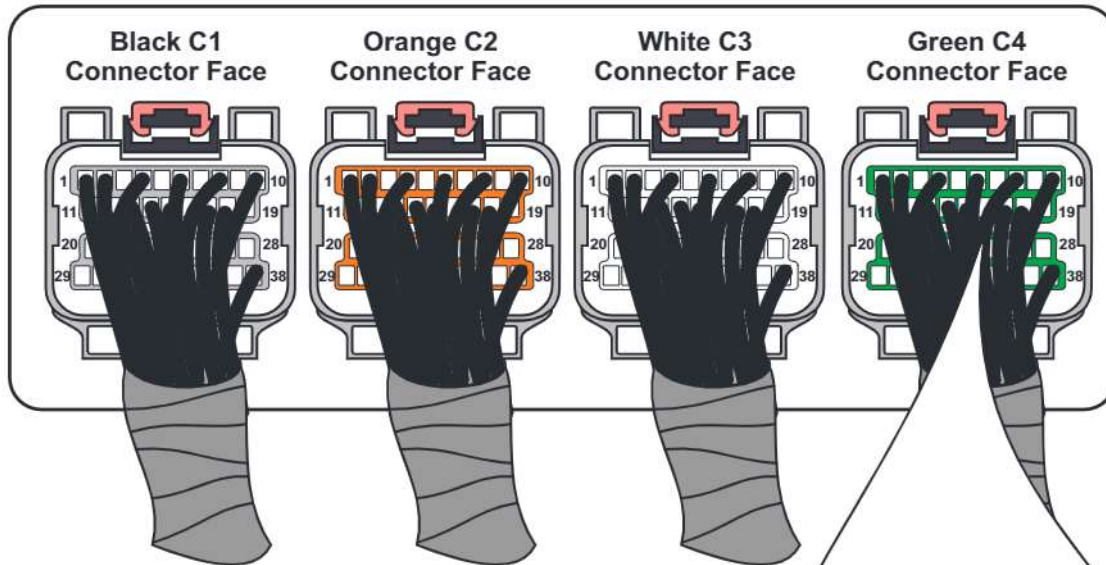
PIN CAVITY	EXTERNAL WIRE COLOR	FUNCTION
1	Dk Blue/Dk Green	Line Pressure Sensor Ground
2	Dk Green/White	Low/Reverse Clutch Solenoid Control
3	Dk Green/Tan	EMCC Solenoid Control
4	Yellow/Pink	Line Pressure Sensor 5V Supply Voltage
5	Yellow/Dk Blue	Transmission Range Sensor T41 (C1) Signal (P/N)
6	Yellow/Brown	Line Pressure Sensor Signal to PCM
7	Yellow/Lt Blue	Underdrive Clutch Solenoid Control
8	Dk Green/Yellow	Transmission Range Sensor T42 (C2) Signal
9	Dk Green/Dk Blue	Transmission Range Sensor T3 (C3) Signal
10	Yellow/Orange	Transmission Control Relay Output Voltage
11	Dk Green/Tan	Overdrive Clutch Pressure Switch Signal
12	Dk Green	Line Pressure VFS Solenoid Control
13	Dk Green/Lt Blue	Transmission Range Sensor T1 (C4) Signal
14	Yellow/Dk Green	2/4 Clutch Pressure Switch Signal
15	Dk Green/Gray	Direct Clutch Pressure Switch Signal
16	Yellow/Tan	Low/Reverse Clutch Pressure Switch Signal
17	Dk Green/Yellow	Low Clutch Solenoid Control
18	Dk Green/Lt Blue	Low Clutch Pressure Switch Signal
19	Yellow/Gray	Overdrive Clutch Solenoid Control
20	Dk Green/Orange	Direct Clutch Solenoid Control
21	Dk Blue/Yellow	2/4 Clutch Solenoid Control
22	Dk Green/Orange	Transmission Oil Temperature Sensor Signal
23	Dk Blue/Dk Green	Transmission Oil Temperature Sensor Ground

Wire Colors
May Vary

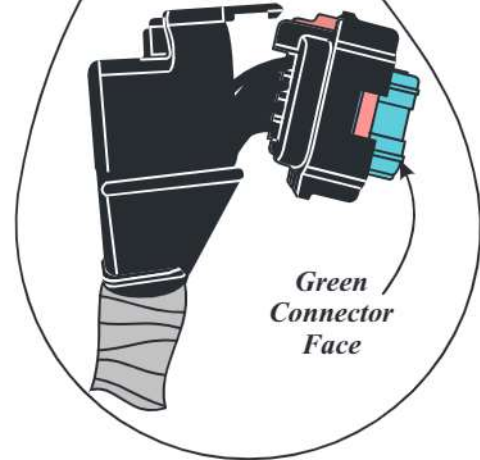
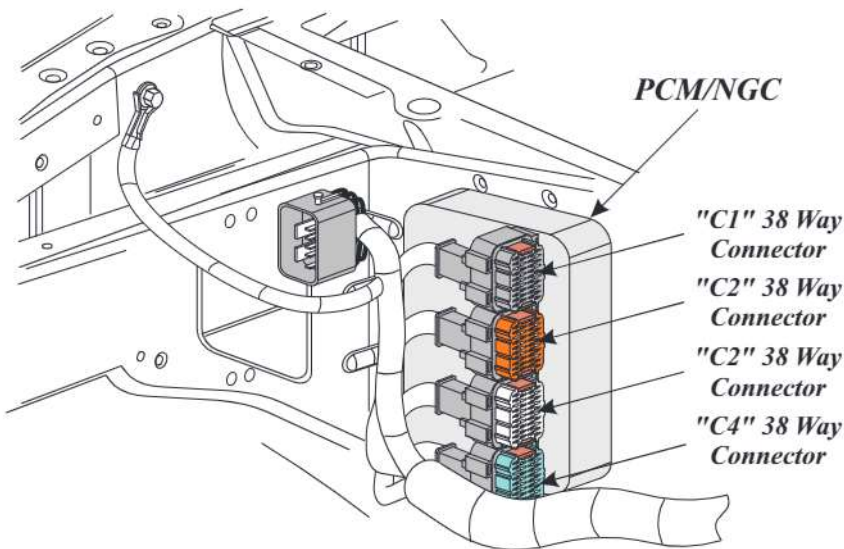
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Figure 15

62TE PCM/NGC CONNECTOR IDENTIFICATION



C1 and C4 Connectors are used for most Trans Circuits



POWERTRAIN CONTROL MODULE (NGC) LOCATIONS

VEHICLE	LOCATION
CHRYSLER, SEBRING	Mounted on Firewall, Left Rear of Engine Compartment
SEBRING CONVERTIBLE	Mounted on Firewall, Left Rear of Engine Compartment
CHRYSLER, VOYAGER	Behind Left Front Fender Splash Shield
TOWN & COUNTRY	Behind Left Front Fender Splash Shield
CHRYSLER, PACIFICA	Behind Left Front Fender Splash Shield
DODGE, AVENGER	Mounted on Firewall, Left Rear of Engine Compartment
DODGE, CARAVAN	Behind Left Front Fender Splash Shield
DODGE, GRAND CARAVAN	Behind Left Front Fender Splash Shield
DODGE, JOURNEY	Behind Left Front Fender Splash Shield

(Locations known at time of this printing)

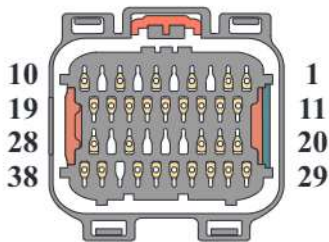
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Figure 16

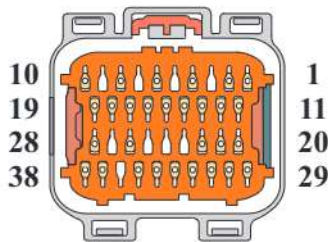
62TE CONNECTOR AND TERMINAL IDENTIFICATION

62TE PCM/NGC CONNECTOR IDENTIFICATION

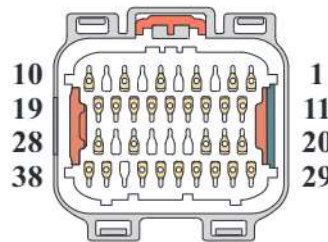
**C1 Connector
Face View (Black)**



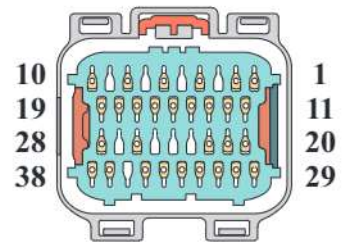
**C2 Connector
Face View (Orange)**



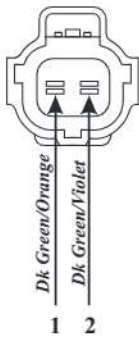
**C3 Connector
Face View (White)**



**C4 Connector
Face View (Green)**

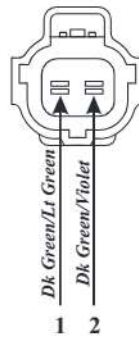


**Input Shaft Speed Sensor
Connector (Face View)**



(Wire Colors May Vary)

**Transfer Shaft Speed Sensor
Connector (Face View)**

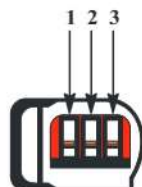


(Wire Colors May Vary)

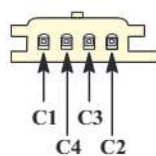
**Output Shaft Speed Sensor
Connector (Face View)**



**Line Pressure Sensor
Internal Harness
Connector (Face View)**



**TRS Internal
Harness Connector
(Face View)**



**EMCC Solenoid
Internal Harness
Connector (Face View)**



**Shift Lever
Assembly Connector
(Face View)**

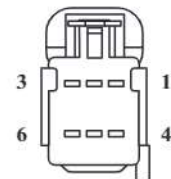
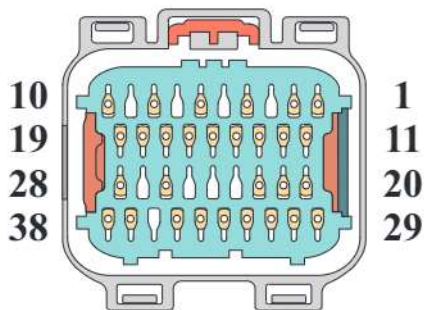


Figure 17

62TE PCM/NGC "C4" CONNECTOR TERMINAL I.D.

**C4 Connector
Face View (Green)**



**C4 Connector
Wire Side View**



**Wire Colors
May Vary**

PIN CAVITY	WIRE COLOR	FUNCTION
1	Yellow/Gray	Overdrive Clutch Solenoid Control
2	Yellow/Lt Blue	Underdrive Clutch Solenoid Control
3	Dk Green/Tan	EMCC (TCC) VFS Solenoid Control
4	Dk Green/Orange	Direct Clutch Solenoid Control
5	Dk Green/Gray	Direct Clutch Pressure Switch Signal
6	Yellow/Dk Blue	2-4 Clutch Solenoid Control
7		
8	Dk Green/Yellow	Low Clutch Solenoid Control
9		
10	Dk Green/White	Low/Reverse Clutch Solenoid Control
11	Dk Green	Line Pressure VFS Solenoid Control
12	Black	Ground
13	Black	Ground
14	Black	Ground
15	Dk Green/Lt Blue	Transmission Range Sensor T1 (C4) Signal
16	Dk Green/Dk Blue	Transmission Range Sensor T3 (C3) Signal
17		
18	Yellow/Brown	Transmission Control Relay Control
19	Yellow/Orange	Transmission Control Relay Output
20		
21	Dk Green/Lt Blue	Low Clutch Pressure Switch Signal
22	Dk Green/Tan	Overdrive Clutch Pressure Switch Signal
23		
24	Dk Green/Lt Green	Transfer Speed Sensor Signal
25		
26		
27	Yellow/Dk Blue	Transmission Range Sensor T41 (C1) Signal
28	Yellow/Orange	Transmission Control Relay Output
29	Yellow/Tan	Low/Reverse Clutch Pressure Switch Signal
30	Yellow/Dk Green	2/4 Clutch Pressure Switch Signal
31	Yellow/Brown	Line Pressure Sensor Signal
32	Dk Green/Brown	Output Speed Sensor Signal
33	Dk Green/Orange	Input Speed Sensor Signal
34	Dk Green/Violet	Speed Sensor Ground
35	Dk Green/Orange	Transmission Oil Temperature Sensor Signal
36		
37	Dk Green/Yellow	Transmission Range Sensor T42 (C2) Signal
38	Yellow/Orange	Transmission Control Relay Output

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Figure 18

EXTERNAL ELECTRONIC COMPONENTS (CONT'D)

Auto-Stick

The appearance of the selector lever, as shown in Figure 19, will vary between the different vehicle applications. However, the operation and function remains the same with the use of the 62TE.

These vehicles are equipped with an LED display on the instrument panel that will display the gear selected with the selector lever "P", "R", "N", "D".

If the selector lever is moved to the Auto-Stick position the gear that the transaxle is currently in will be displayed on the instrument panel. If you were sitting still when Auto-Stick is selected, "1" will be displayed. Second gear starts can be achieved by tapping the shift lever towards the (+) symbol for starting on snow or ice conditions. Upshifts and downshifts occur by tapping the shift lever in the appropriate direction. The shift signals are an input to the PCM/NGC, which in turn carries out the request. When the shift lever is returned to the "D" position, normal operation resumes.

Refer to Figure 20 for the Auto-Stick switch wire schematic.

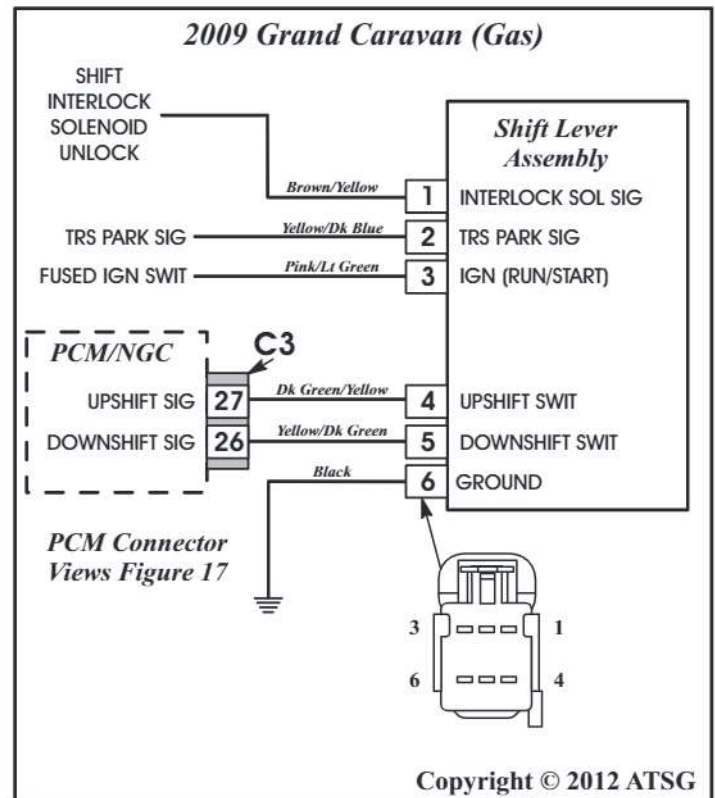


Figure 20

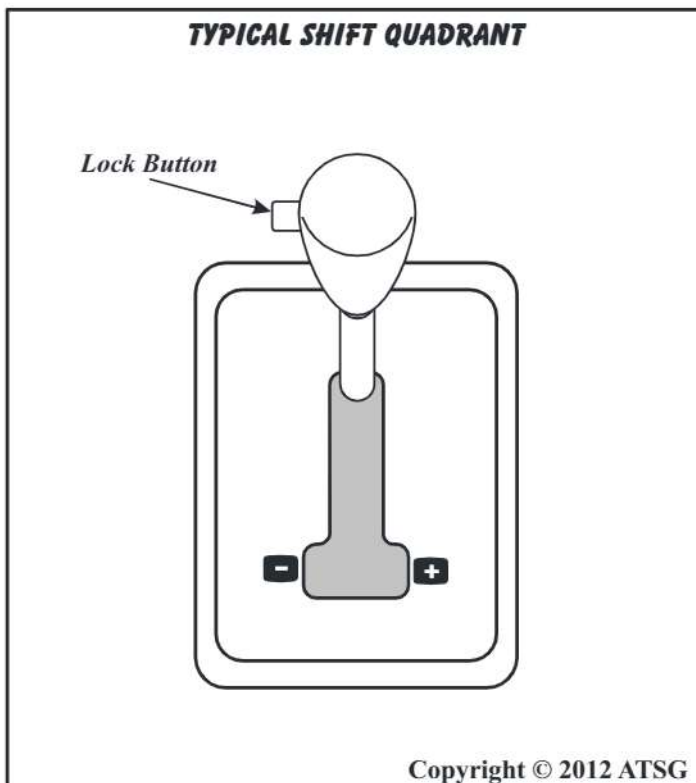


Figure 19

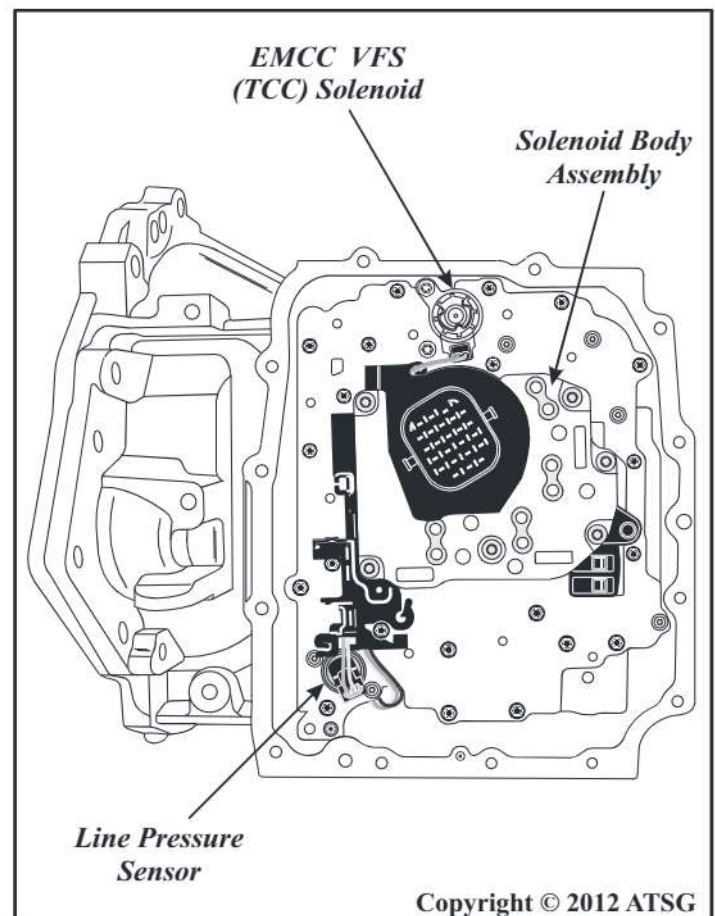


Figure 21

INTERNAL ELECTRONIC COMPONENTS

Solenoids

The 41TE transmission was operated using only four clutch control solenoids; the UD, L/R, 2/4 and OD. The 62TE uses the same 4 solenoids, as well as four additional solenoids. Direct Clutch Solenoid (DC), Low Clutch Solenoid (LC), a Pressure Control (PC) VFS Solenoid and an Electronically Modulated Converter Clutch (EMCC) VFS Solenoid were added. Solenoid description and function has been provided here, and notice that the 2/4 solenoid is a "Double Duty" solenoid. The EMCC solenoid, bolted directly to the valve body, is the only one that is serviced separately. The remainder are serviced only with a complete solenoid body, as shown in Figure 21.

The Underdrive and 2/4 Solenoids are "Normally Applied" solenoids while the remaining clutch control solenoids are "Normally Vented" (See Figure 22).

A solenoid, pressure switch and clutch application chart has been provided for you in Figure 23.

Solenoid resistance checks and terminal information are found on Page 20.

Solenoid Description and Function

Underdrive Clutch Solenoid - is **normally applied** and controls oil to the Underdrive Clutch in 1st, 2nd, 3rd, 4th and 5th gears of the transaxle.

2-4 Clutch Solenoid - is **normally applied** and when in the Drive position, controls oil to the 2/4 clutch in 3rd, 4th prime and 6th gears of the transaxle.

Note: The 2-4 Clutch Solenoid is also used for reverse inhibit.

When the selector lever is placed into Reverse, line pressure from this solenoid is directed through the manual valve and L/R switch valve one, in the valve body, to apply the Low/Reverse clutch.

Overdrive Clutch Solenoid - is **normally vented** and controls oil to the Overdrive Clutch in 4th, 5th, and 6th gears in the transaxle.

Direct Clutch Solenoid - is **normally vented** and controls oil to the Direct Clutch in 2nd, 4th, 5th, and 6th gears in the transaxle.

Low Clutch Solenoid - is **normally vented** and controls oil to the Low Clutch in 1st, 3rd, and 4th gears in the transaxle.

Low/Reverse Clutch Solenoid - is **normally vented** and is used to apply the Low/Reverse clutch in 1st and 2nd gear from Park or Neutral, or a coast down to 1st and 2nd gear.

Line Pressure VFS Solenoid - is **normally vented** and is used to control line pressure in the transaxle. It provides a pressure output to the regulator valve that brings regulated pressure to a specified value. Refer to the chart in Figure 23 for specified values.

EMCC VFS Solenoid - is **normally vented** and is a variable force solenoid used to control the torque converter clutch application, release and the force with which it is applied or released. This new converter allows the use of precise Electronically Modulated Converter Clutch (EMCC) lockup strategy, that allows the clutch to slip continuously under certain driving combinations. Converter clutch is available in 3rd, 4th, 5th, and 6th gear.

Refer to Page 31 for additional EMCC operation.

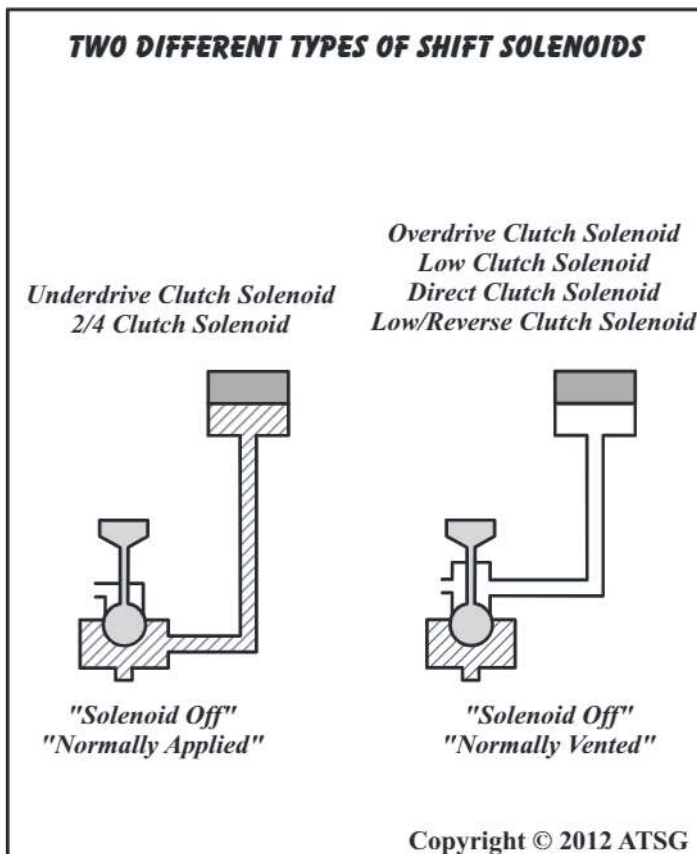


Figure 22

SOLENOID, PRESSURE SWITCH AND CLUTCH APPLICATION CHART

GEAR	RATIO	LP (PSI)	Solenoid Status								Pressure Switch Status					Clutch Status						
			VFS	PWM	PWM	PWM	PWM	PWM	PWM	VFS	OD	L/R	2-4	LC	DR	UD	OD	L/R	2-4	LC	DR	REV
			LP	UD	OD	L/R	2-4*	LC	DR	EMCC												
			%DC	NA	NV	NV	NA	NV	NV	%DC												
P/N		135	dcc			X						X					X					
Rev	3.215	235	dcc														X		X			X
OD-1	4.127	135	dcc			X	X	X(a)				X		X(a)		X	X		X(a)			
OD-2	2.842	135	dcc			X	X		X			X			X	X	X				X	
OD-3	2.284	135	dcc					X		(dcc)			X	X		X			X	X		
Default	2.284	135	dcc													X			X			
OD-4'	1.573	135	dcc						X	(dcc)			X		X	X			X		X	
OD-4	1.452	95	dcc		X		X	X		dcc	X			X		X	X		X			
OD-5	1.000	95	dcc		X		X		X	dcc	X				X	X	X				X	
OD-6	0.689	95	dcc	X	X				X	dcc	X		X		X		X		X		X	

(a) = Released after output shaft speed exceeds 150 RPM. Not released in Manual 1.

dcc = Duty Cycle Control.

(dcc) = Overheat strategy only.

4' = Fourth Prime.

← = 2-3, 3-2, 4-2 Double Swap Shifts.

←... = 6-4' Kickdown to Fourth Prime.

* = 2/4 Solenoid is also used for Reverse Inhibit.

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Figure 23

INTERNAL TRANSAXLE COMPONENTS (CONT'D)

Line Pressure Sensor

Line pressure is electronically controlled by the PCM/NGC and is measured by the Line Pressure Sensor (transducer). LP sensor is bolted on the valve body assembly, as shown in Figure 21.

The desired line pressure is continuously being compared to the actual line pressure and is regulated by changing the duty cycle of the Pressure Control Solenoid located *inside* the solenoid body, as shown in Figure 21.

The monitored Line Pressure Sensor voltage should always be between 0.35 and 4.75 volts and operates much like a TPS/APPS. (See Figure 24). Outside of these parameters will cause either DTC P0934 or DTC P0935 to be stored in PCM/NGC.

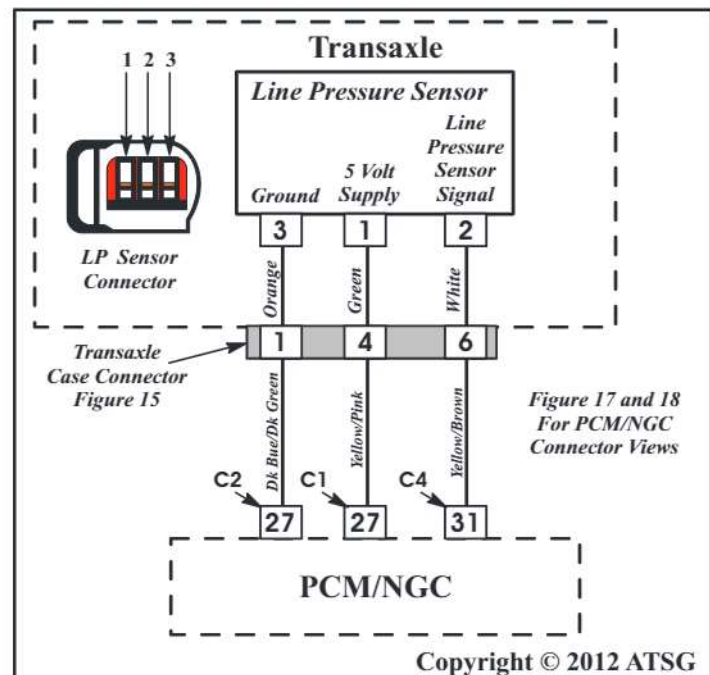
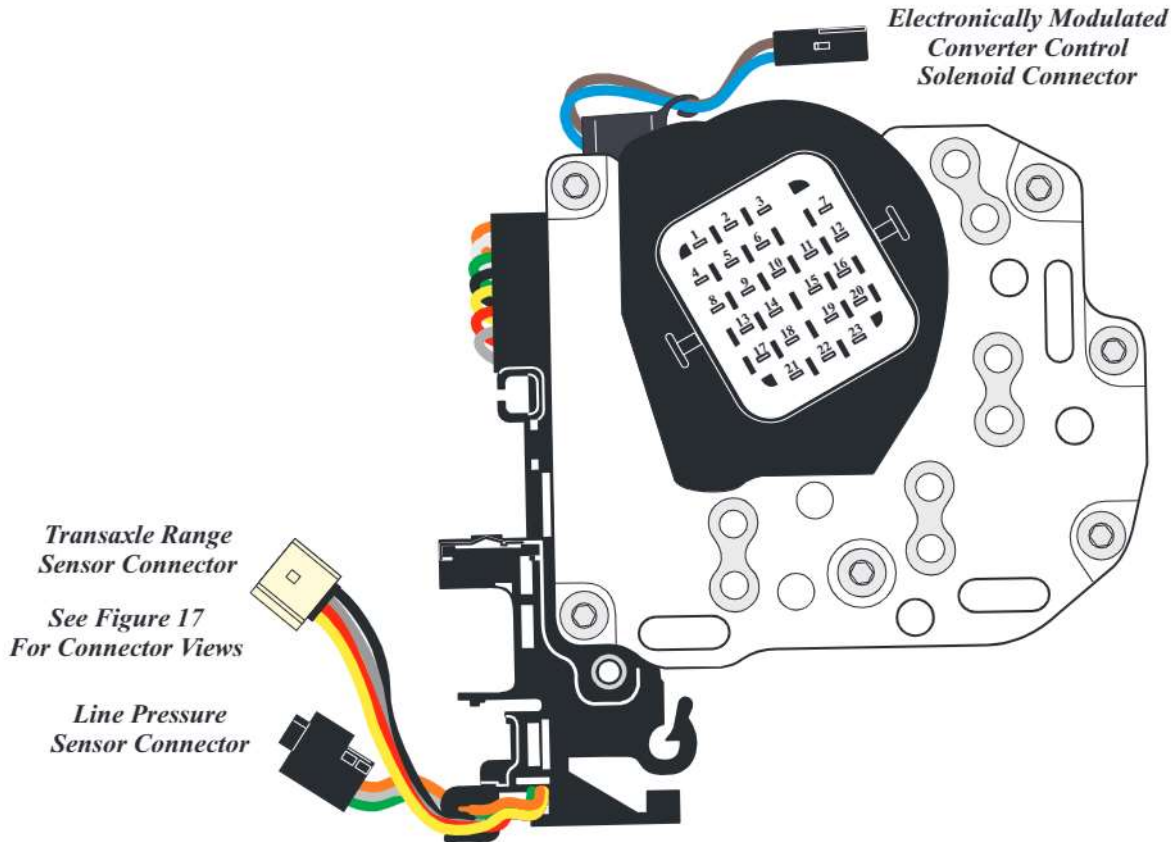


Figure 24

SOLENOID RESISTANCE CHECK



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Figure 25

Pos (+) Lead	Neg (-) Lead	Component	Approx. Resistance Ω @ 72°F
10	2	Low/Reverse Clutch Solenoid	2 Ohms
	3	EMCC VFS (TCC) Solenoid	5 Ohms
	7	Underdrive Clutch Solenoid	2 Ohms
	11	OD Pressure Switch Resistor	300 Ohms
	12	Line Pressure VFS Solenoid	5 Ohms
	14	2-4 Pressure Switch Resistor	300 Ohms
	15	DC Pressure Switch Resistor	300 Ohms
	16	L/R Pressure Switch Resistor	300 Ohms
	17	Low Clutch Solenoid	2 Ohms
	18	LC Pressure Switch Resistor	300 Ohms
	19	Overdrive Clutch Solenoid	2 Ohms
22	20	Direct Clutch Solenoid	2 Ohms
	21	2-4 Clutch Solenoid	2 Ohms
22	23	Fluid Temperature Sensor	11k Ohms

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Figure 26

INTERNAL TRANSAXLE COMPONENTS (CONT'D)

Solenoid & Pressure Switch Resistance Check

Solenoid resistance **must** be checked through the 38-Way transaxle case connector, shown in Figure 25, and using the resistance chart shown in Figure 26.

The EMCC VFS (TCC) Solenoid is bolted on the valve body, external from the solenoid body, as shown in Figure 27. This solenoid **must** be connected if you are going to check it through the 38-Way transaxle case connector, which is the best way as it also checks the wire harness to the solenoid. You may also disconnect it and check it across the two terminals directly at the solenoid.

Pressure switches **must** also be checked through the 38-Way transaxle case connector, using the resistance chart in Figure 26.

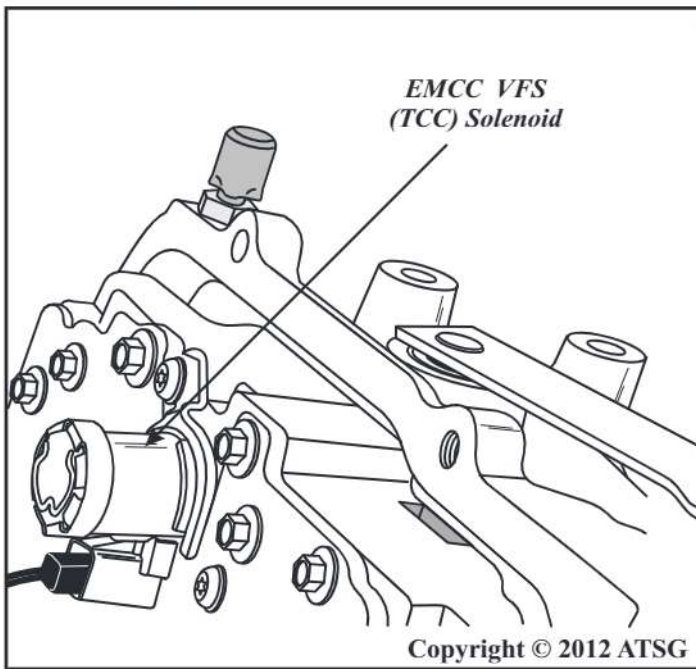


Figure 27

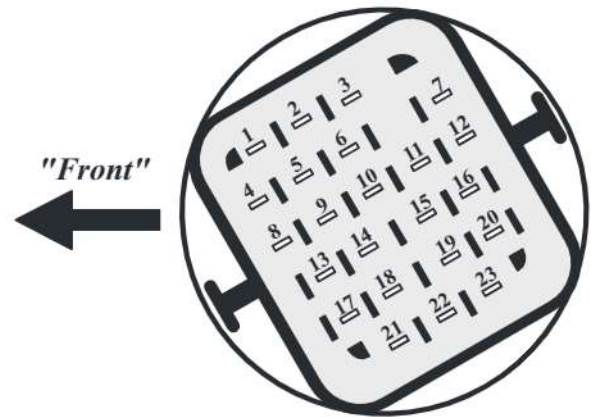
INTERNAL TRANSAXLE COMPONENTS (CONT'D)

Transaxle Range Sensor

The Transaxle Range Sensor (TRS) is a series of four switches that open or close depending on selector lever position, and informs the PCM of the selector lever position chosen by the operator. The TRS is held in position to the inside detent lever by the detent roller and spring assembly, as shown in Figure 28.

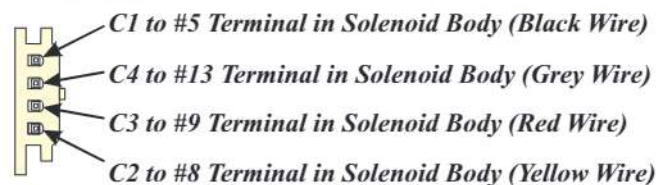
The Transmission Range Sensor can be bench tested using a DVOM set to ohms. Place the negative lead anywhere on the valve body as close to the detent plate as possible. With the positive lead, check each circuit one at a time through all of its ranges, either through the main transaxle 38-Way case connector if unit is still in the vehicle, or at the sensor itself. Refer to the chart in Figure 28.

C = Closed or "Continuity"
O = Open or "No Continuity"



38-Way Transaxle
Case Connector
Face View and ID

TRS Internal Harness Connector View and ID



Transmission Range Sensor Open/Closed Signal Chart

	P	R	N	OD	3	L
C1	C	O	C	O	O	O
C2	C	C	C	O	O	C
C3	C	O	O	O	C	C
C4	O	O	C	C	O	C

Detent Roller and Spring

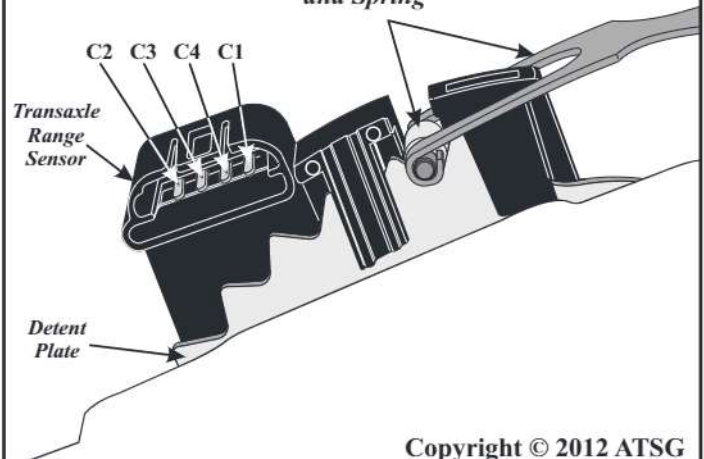


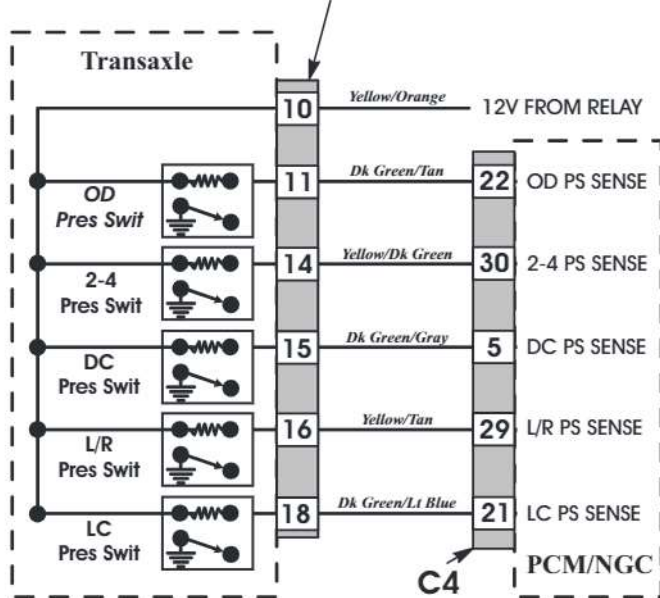
Figure 28

PRESSURE SWITCH STATUS CHART

GEAR	L/R	2/4	OD	LC	DC
P/N	C	O	O	O	O
R	O	O	O	O	O
1st	C	O	O	O*	O
2nd	C	O	O	O	C
3rd	O	C	O	C	O
4th (P)	O	C	O	O	C
4th	O	O	C	C	O
5th	O	O	C	O	C
6th	O	C	C	O	C

(P) = 4th Prime
 O = Switch Open
 O* = Closed in M1 and when output shaft speed is less than 150 RPM in Drive ranges
 C = Switch Closed

Transaxle Case
 Connector View
 Figure 15



PCM C4
 Connector View
 Figure 18

(Wire Colors May Vary)

INTERNAL ELECTRONIC COMPONENTS (CONT'D)

Pressure Switches

The transaxle system uses five pressure switches to monitor the fluid pressure in five elements, as shown in Figure 29. The pressure switches are part of the complete solenoid body assembly and are not serviced separately. The pressure switches are continuously monitored for correct states in each gear.

The pressure switches are normally off or open (no pressure applied) and read "high" (+12 volts). When an element is applied, the corresponding pressure switch closes to ground and reads "low" (0 volts).

Refer to the Open/Closed switch chart and wiring schematic in Figure 29.

The PCM tests the OD and 2/4 pressure switches when they are off, or when the corresponding friction element is not applied, by briefly applying the OD and 2/4 elements which will cause the corresponding pressure switch to close. This test verifies that these switches are operational and that the switch will close when the corresponding element is applied. If a switch fails to respond, it is retested. If the repeat test also fails, the MIL is illuminated and the system will default to Limp-in mode and store DTC P0992 in the PCM/NGC.

Figure 29

CHECKING LINE PRESSURE

The 62TE transaxle has an "upgraded" oil pump assembly with pump gears that are 2mm (.080") thicker and reduction of the inner and outer pump gear tooth clearance to the crescent. The pump pressure regulation system also includes a Variable Force (Line Pressure) Solenoid located inside the solenoid body. Line pressure is monitored by the line pressure sensor (transducer). Refer to Page 19. Use of the line pressure sensor permits a further pressure reduction since the actual value of line pressure is known.

Regulation is achieved by changing the duty cycle of the Line Pressure VFS Solenoid and is controlled by the PCM. 5% duty cycle = solenoid OFF which equals maximum line pressure. 62% duty cycle = solenoid ON which equals minimum line pressure. The PCM calculates the desired line pressure based on inputs from both engine and transaxle load.

With conventional pump systems under most driving conditions, pump output pressure used to engage the clutches greatly exceeds the need and is wasting considerable power. This pump pressure control system monitors clutch torque requirements and adjusts the pump pressure accordingly, using only what is necessary to prevent clutch slip.

The Transmission Control System calculates torque input to the transaxle and uses it as the primary input to the desired pressure calculation. This is called Torque Based Line Pressure. In addition, the line pressure is set to a preset level 827 or 931 kPa (120 or 135 psi) during shifts and in Park and Neutral to ensure consistent shift quality. The desired line pressure is continuously being compared to the actual line pressure. If the actual line pressure is consistently lower than the target while driving, the line pressure low DTC P0868 will set.

The only pressure tap available on the 62TE is for line pressure and is located, as shown in Figure 30.

We have provided you with a line pressure chart in Figure 31, that provides "Base Line Pressure" and "Observed Line Pressure" in actual road test in the vehicle. Keep in mind that any increase in throttle pressure will increase line pressure.

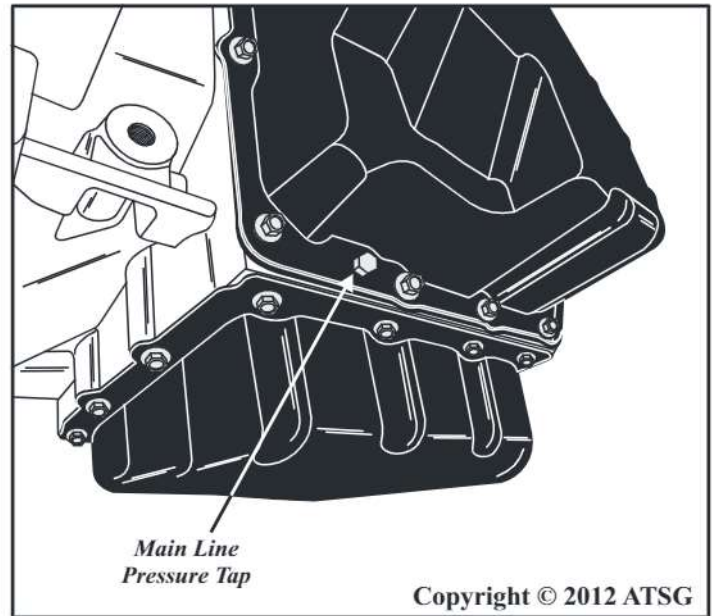


Figure 30

LINE PRESSURE CHART		
GEAR	BASE LINE PRESSURE (PSI)	OBSERVED PRESSURES (PSI)
P/N	135	70-135
Rev	235	230-260
OD-1	135	70-180
OD-2	135	70-180
OD-3	135	70-180
*OD-4'	135	70-180
OD-4	95	70-150
OD-5	95	70-150
OD-6	95	70-150
<i>* OD-4' = 4th Prime, Used on 6-4 and 5-4 downshift.</i>		

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Figure 31

62TE DIAGNOSTIC TROUBLE CODES	
DTC	DESCRIPTION
<i>P0116</i>	<i>Engine Coolant Sensor Circuit Performance</i>
<i>P0117</i>	<i>Engine Coolant Sensor Circuit Low</i>
<i>P0118</i>	<i>Engine Coolant Sensor Circuit High</i>
<i>P0122</i>	<i>TPS/APPS Circuit Low</i>
<i>P0123</i>	<i>TPS/APPS Circuit High</i>
<i>P0124</i>	<i>TPS/APPS Circuit Intermittent</i>
<i>P0218</i>	<i>High Temperature Operation Activated</i>
<i>P0562</i>	<i>Battery System Voltage Low</i>
<i>P0563</i>	<i>Battery System Voltage High</i>
<i>P0571</i>	<i>Brake Switch Performance</i>
<i>P0572</i>	<i>Brake Switch Stuck On</i>
<i>P0573</i>	<i>Brake Switch Stuck Off</i>
<i>P0604</i>	<i>Control Module, Internal RAM Error</i>
<i>P0605</i>	<i>Control Module, Internal ROM Error</i>
<i>P0613</i>	<i>Internal Transmission Control Module Error</i>
<i>P0700</i>	<i>Transmission Control System, MIL Request (Code Set)</i>
<i>P0703</i>	<i>Brake Switch 2 Performance</i>
<i>P0706</i>	<i>Transmission Range Sensor Rationality</i>
<i>P0711</i>	<i>Transmission Temperature Sensor Performance</i>
<i>P0712</i>	<i>Transmission Temperature Sensor Circuit Low</i>
<i>P0713</i>	<i>Transmission Temperature Sensor Circuit High</i>
<i>P0714</i>	<i>Transmission Temperature Sensor Circuit Intermittent</i>
<i>P0716</i>	<i>Input Speed Sensor Circuit Performance</i>
<i>P0721</i>	<i>Output Speed Sensor Circuit Performance</i>
<i>P0726</i>	<i>Engine Speed Sensor Circuit Range/Performance</i>
<i>P0729</i>	<i>6th Gear Ratio Error</i>
<i>P0731</i>	<i>1st Gear Ratio Error</i>
<i>P0732</i>	<i>2nd Gear Ratio Error</i>
<i>P0733</i>	<i>3rd Gear Ratio Error</i>
<i>P0734</i>	<i>4th Gear Ratio Error</i>
<i>P0735</i>	<i>5th Gear Ratio Error</i>
<i>P0736</i>	<i>Reverse Gear Ratio Error</i>
<i>P0740</i>	<i>Torque Converter Clutch (EMCC) Out Of Range/Slip Fault</i>
<i>P0750</i>	<i>Low/Reverse Clutch Solenoid Circuit</i>
Continued on Page 25	
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Figure 32

62TE DIAGNOSTIC TROUBLE CODES	
DTC	DESCRIPTION
<i>P0755</i>	<i>2/4 Clutch Solenoid Circuit Fault</i>
<i>P075A</i>	<i>Low Clutch Solenoid Circuit Fault</i>
<i>P0760</i>	<i>Overdrive Clutch Solenoid Circuit Fault</i>
<i>P0765</i>	<i>Underdrive Clutch Solenoid Circuit Fault</i>
<i>P076A</i>	<i>Direct Clutch Solenoid Circuit Fault</i>
<i>P0791</i>	<i>Transfer Shaft Speed Sensor Circuit Performance</i>
<i>P0792</i>	<i>Compounder Speed Ratio Error</i>
<i>P083A</i>	<i>Low Clutch Hydraulic Pressure Test</i>
<i>P083B</i>	<i>Low Clutch Pressure Switch Rationality</i>
<i>P0841</i>	<i>Low/Reverse Clutch Pressure Switch Rationality</i>
<i>P0845</i>	<i>2/4 Clutch Pressure Switch, Pressure Test</i>
<i>P0846</i>	<i>2/4 Clutch Pressure Switch Rationality</i>
<i>P084A</i>	<i>Direct Clutch Hydraulic Pressure Test</i>
<i>P084B</i>	<i>Direct Clutch Pressure Switch Rationality</i>
<i>P0850</i>	<i>Park/Neutral Switch Rationality</i>
<i>P0868</i>	<i>Line Pressure Low, Electrical or Mechanical</i>
<i>P0869</i>	<i>Line Pressure High, Electrical or Mechanical</i>
<i>P0870</i>	<i>Overdrive Clutch Pressure Switch, Pressure Test</i>
<i>P0871</i>	<i>Overdrive Clutch Pressure Switch Rationality</i>
<i>P0882</i>	<i>Transmission Control Module Power Input Low</i>
<i>P0883</i>	<i>Transmission Control Module Power Input High</i>
<i>P0884</i>	<i>Power Up At Speed</i>
<i>P0888</i>	<i>Transaxle Relay Always Off</i>
<i>P0890</i>	<i>Switched Battery Fault</i>
<i>P0891</i>	<i>Transaxle Relay Always On</i>
<i>P0897</i>	<i>Transaxle Fluid Deteriorated</i>
<i>P0932</i>	<i>Line Pressure Sensor Circuit Performance</i>
<i>P0933</i>	<i>Line Pressure Sensor Performance</i>
<i>P0934</i>	<i>Line Pressure Sensor Circuit Low</i>
<i>P0935</i>	<i>Line Pressure Sensor Circuit High</i>
<i>P0944</i>	<i>Loss Of Hydraulic Pump Prime</i>
<i>P0952</i>	<i>Auto-stick Input Circuit Low</i>
<i>P0957</i>	<i>Auto-stick Circuit Low</i>
<i>P0958</i>	<i>Auto-stick Circuit High</i>
<i>P0992</i>	<i>2-4/OD Hydraulic Pressure Test</i>

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Figure 33

Figure 34

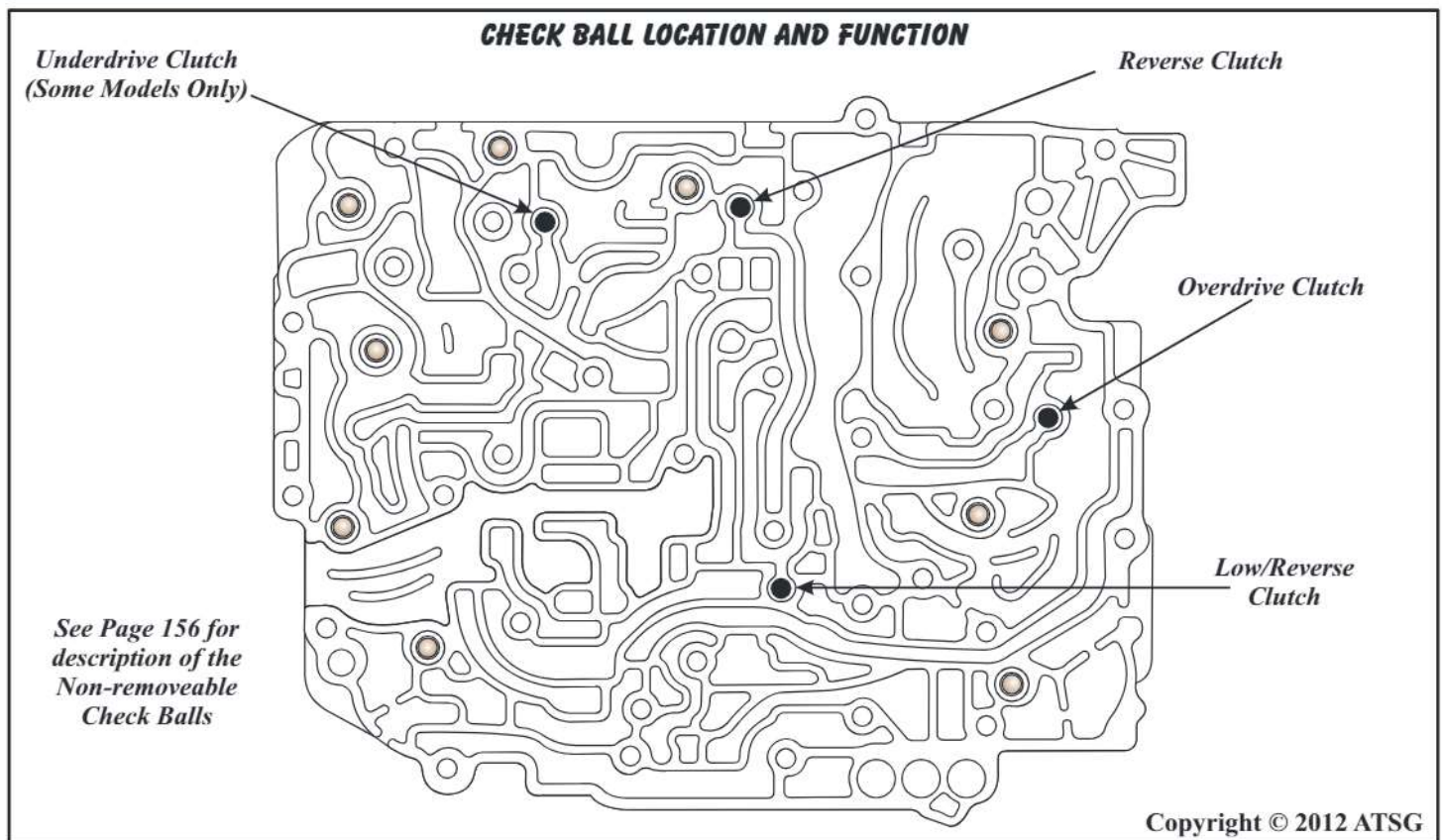


Figure 35

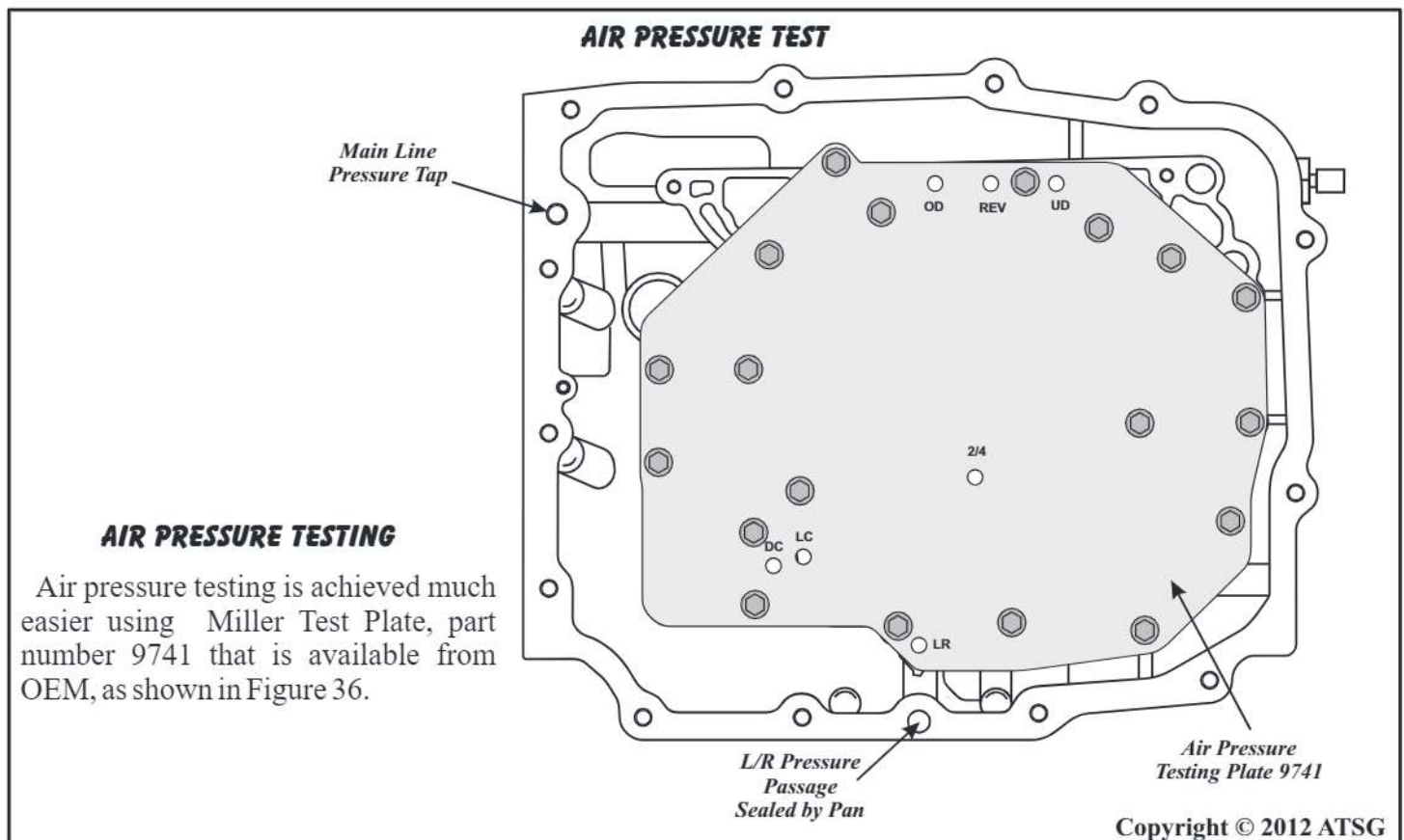
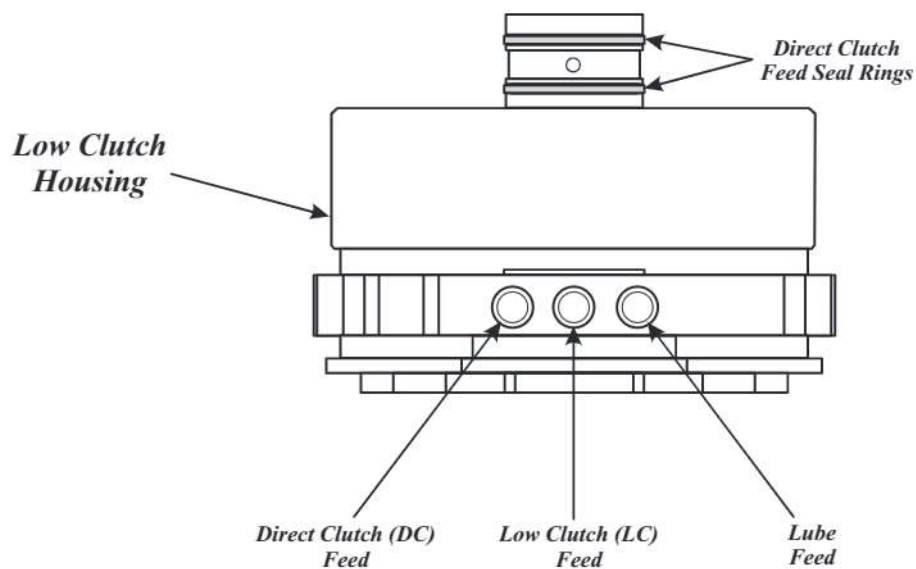
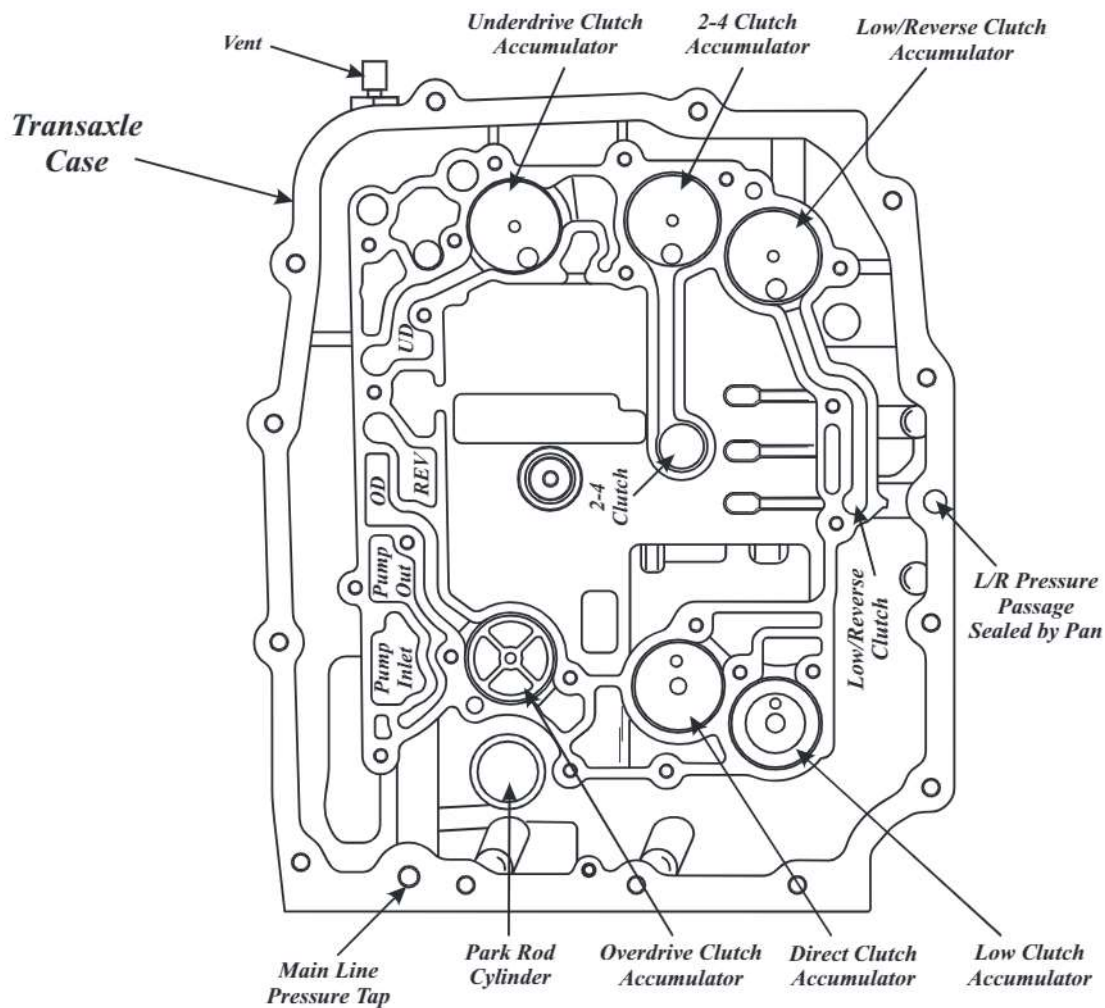


Figure 36

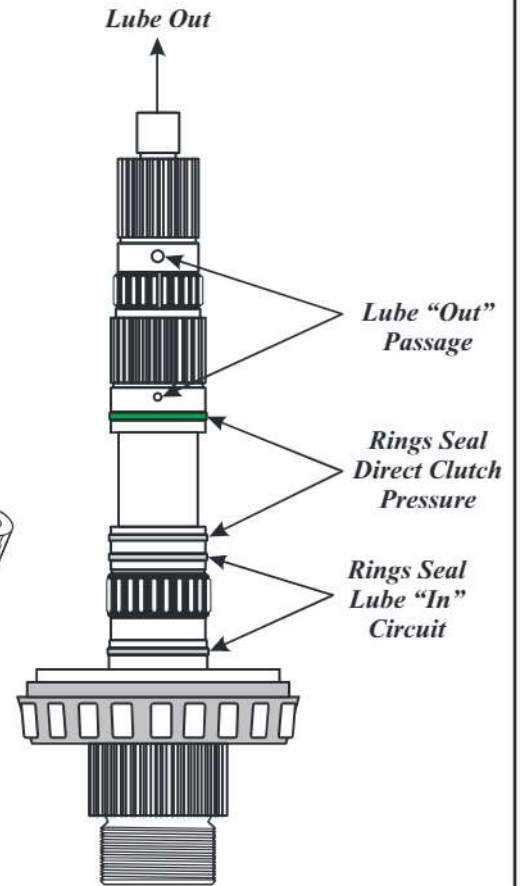
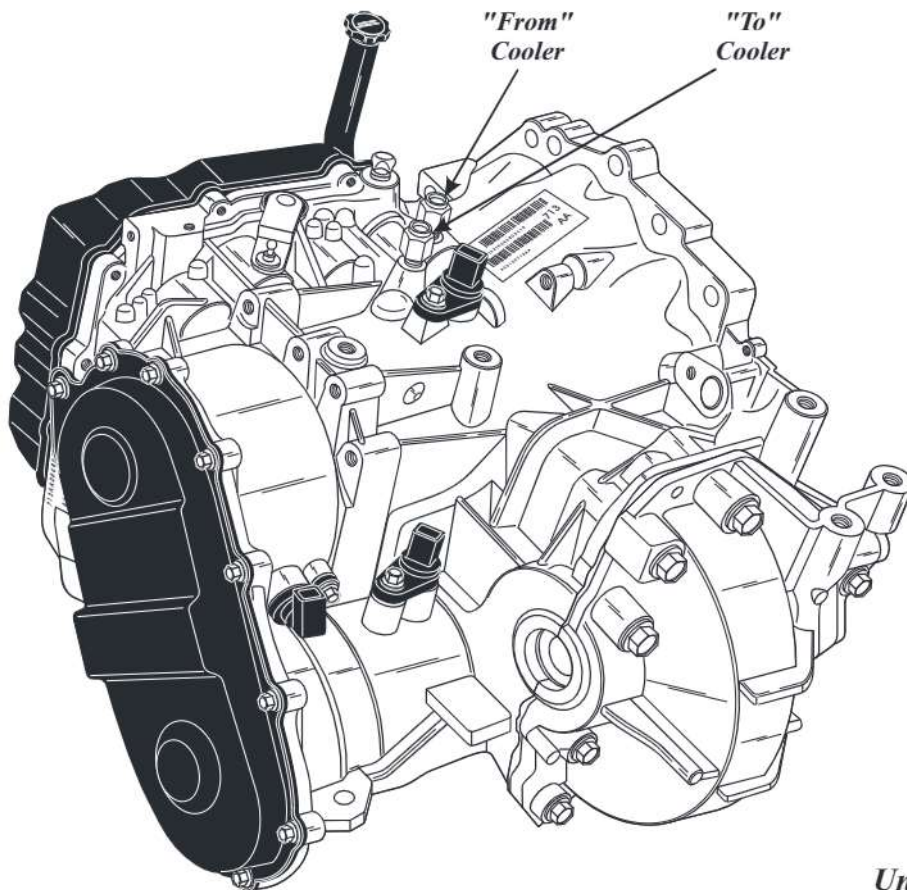
PASSAGE IDENTIFICATION



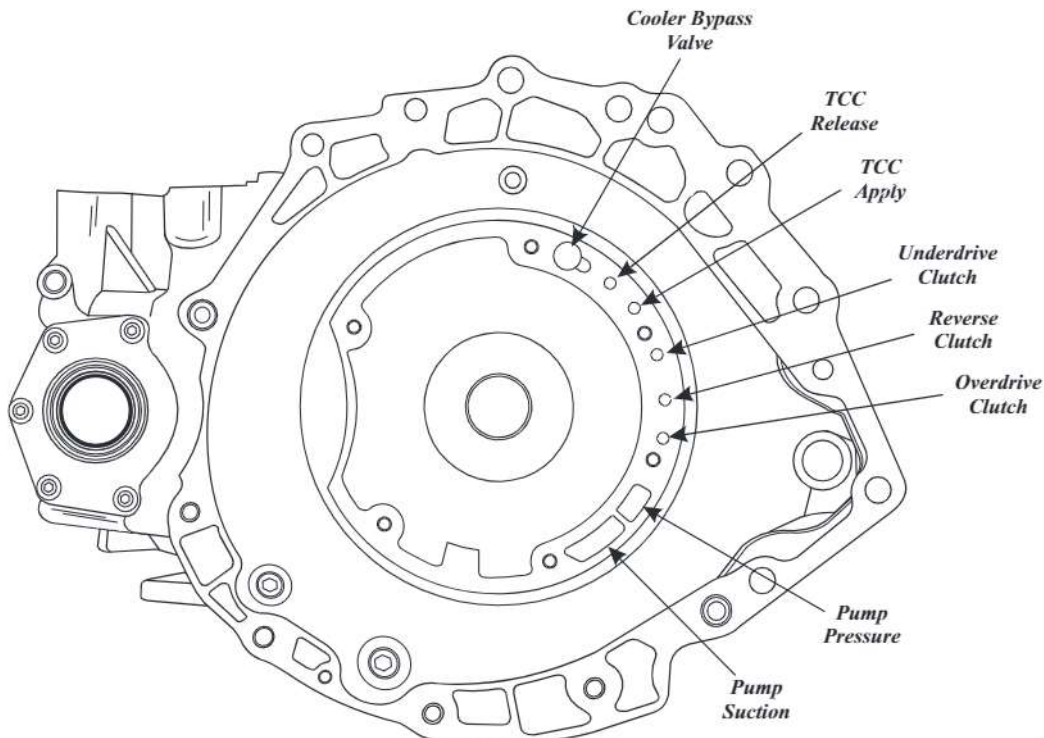
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Figure 37

PASSAGE IDENTIFICATION



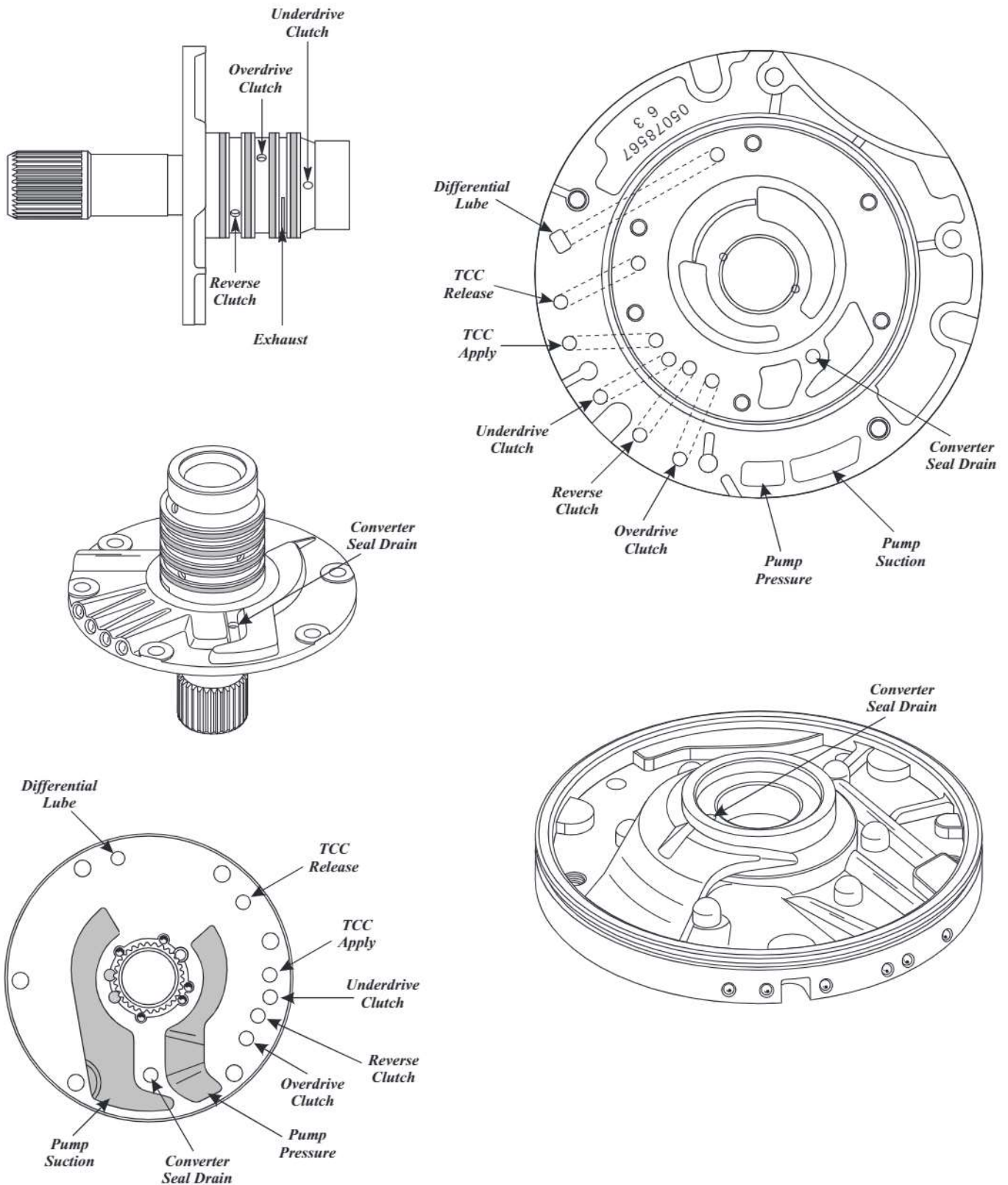
Underdrive Centerline Shaft Ring and Passage Identification



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Figure 38

OIL PUMP PASSAGE IDENTIFICATION



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Figure 39

CONVERTER CLUTCH OPERATION

The Torque Converter has been redesigned from a circular geometry to an elliptical geometry of the torus, making the converter dimensionally shorter longitudinally by 12 mm and weighing less, as shown in Figure 40.

The apply and release of the TCC are automatic and controlled by the PCM which signals the variable force EMCC (VFS) Solenoid that is mounted on the valve body. The TCC will engage at approximately 35 mph at light throttle, after the shift to third gear.

This new converter allows the use of precise Electronically Modulated Converter Clutch (EMCC) lockup strategy that will allow the converter clutch to slip continuously under certain driving combinations.

With the EMCC there are four different converter clutch operational modes.

- *No EMCC*
- *Partial EMCC*
- *Full EMCC*
- *Gradual EMCC Release*

NO EMCC Under No EMCC conditions, the EMCC (VFS) Solenoid is Off. There are several things that can result in No EMCC operations. No EMCC can be initiated due to a fault in the transaxle or because the PCM does not see the need for EMCC under current driving conditions.

PARTIAL EMCC Partial EMCC operation will modulate the EMCC (VFS) Solenoid duty cycle to obtain partial converter clutch application. Partial EMCC operation is maintained until Full EMCC is called for and actuated. During Partial EMCC some slip does occur. Partial EMCC will usually occur at low speeds, low load and light throttle situations.

FULL EMCC During Full EMCC operation, the PCM increases the EMCC (VFS) Solenoid duty cycle to full On, after Partial EMCC control brings the engine speed within the desired slip range of transaxle input speed relative to engine RPM.

GRADUAL EMCC RELEASE This operation is to soften the change from Full or Partial EMCC down to No EMCC. This is done at mid-throttle by slowly decreasing the Emcc (VFS) Solenoid duty cycle.

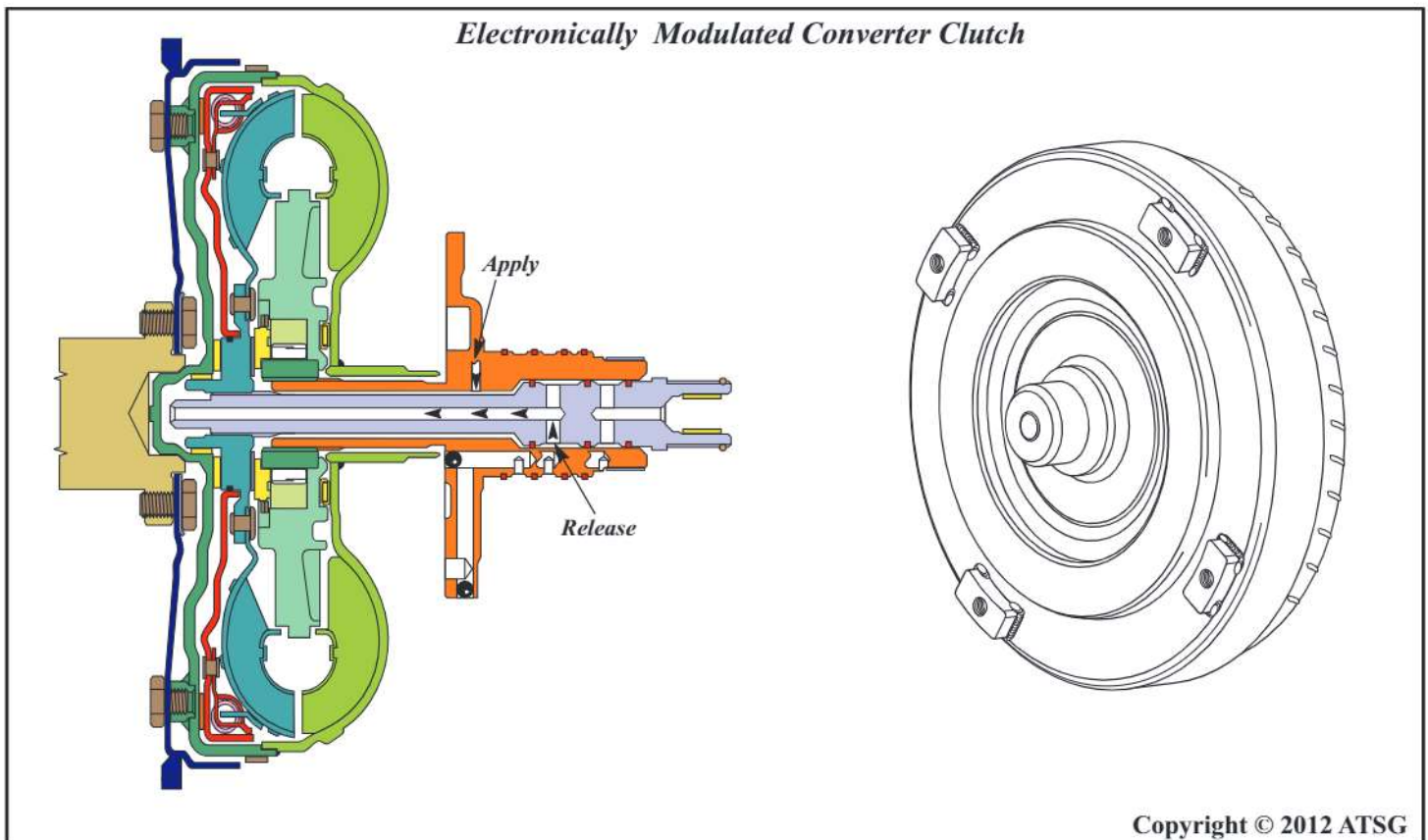


Figure 40

SAFETY PRECAUTIONS

Service information provided in this manual by ATSG is intended for use by professional, qualified technicians. Attempting repairs or service without the appropriate training, tools and equipment could cause injury to you or others.

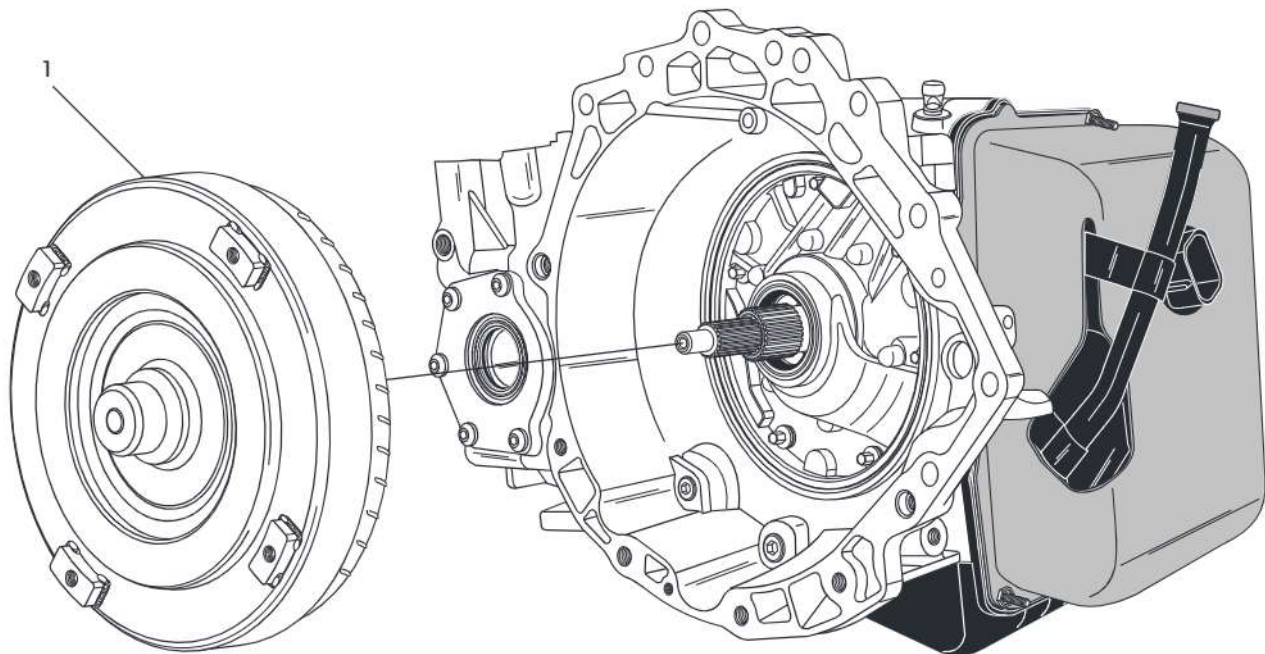
The service procedures we recommend and describe in this manual are effective methods of performing service and repair on this unit. Some of the procedures require the use of special tools that are designed for specific purposes.

This manual contains CAUTIONS that you must observe carefully in order to reduce the risk of injury to yourself or others. This manual also contains NOTES that must be carefully followed in order to avoid improper service that may damage the vehicle, tools and/or equipment.

TRANSAXLE DISASSEMBLY

1. Drain all fluid from the transaxle.
2. Clean exterior of the transaxle thoroughly with a suitable solvent or pressure washer.
3. Remove the torque converter from the transaxle, as shown in Figure 41.
Caution: Use care removing torque converter to prevent injury or damage, as it is heavy.
4. Remove the 3 sound cover retainers from the stud type retaining bolts, as shown in Figure 42.
5. Remove the front sound cover, as shown in Figure 42.
6. Remove all three of the speed sensors, as shown in Figure 43.
7. Remove and discard the "O" ring seals.

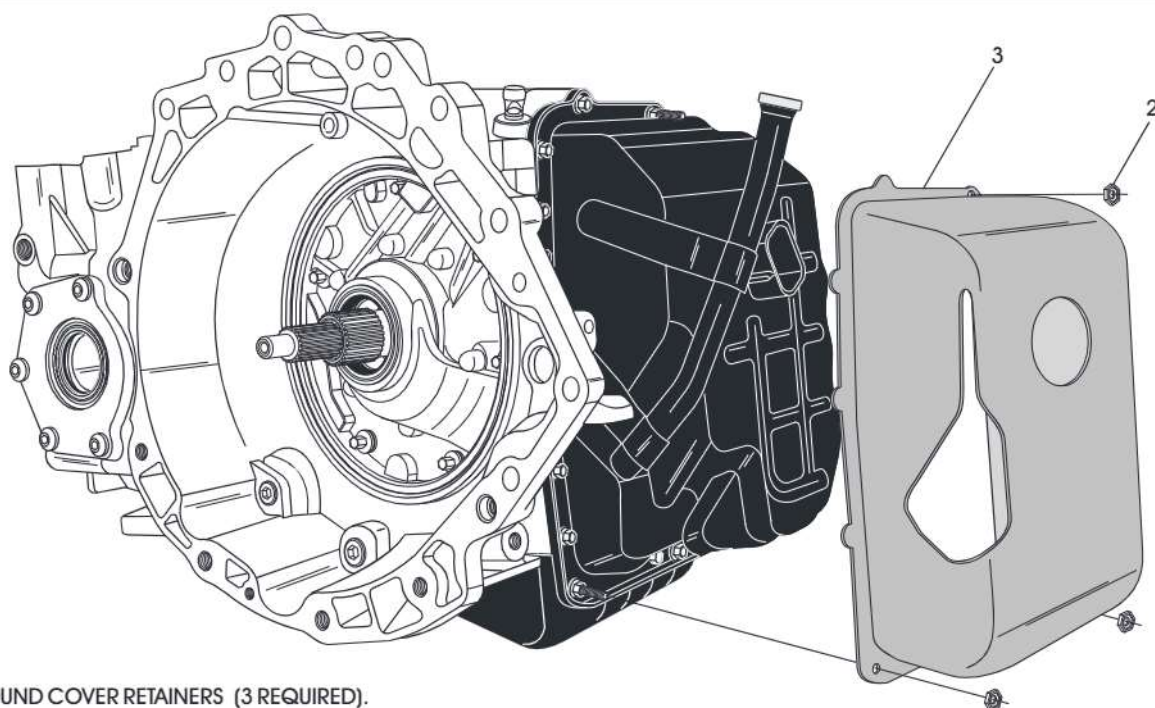
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1 EMCC TORQUE CONVERTER ASSEMBLY.

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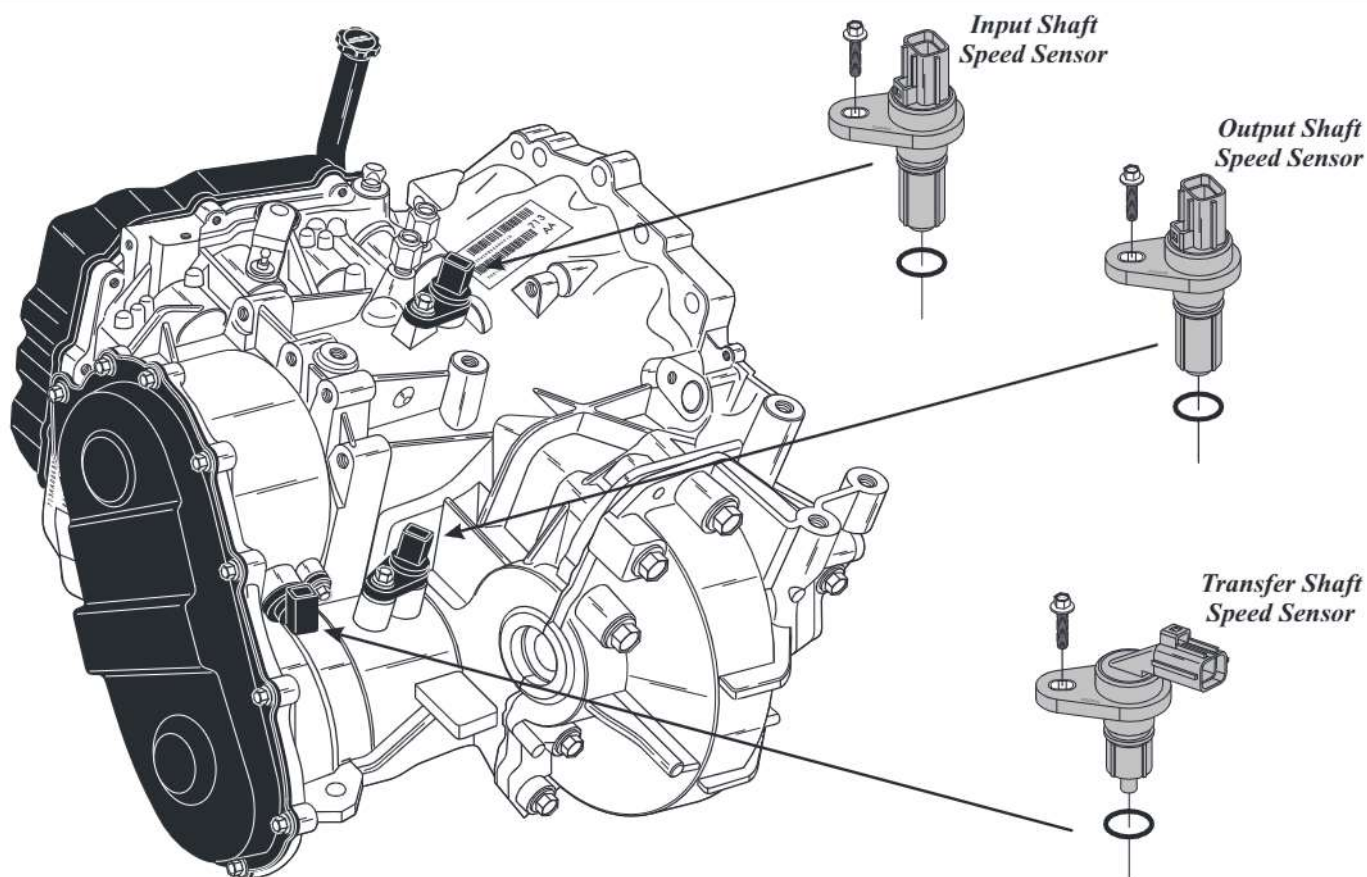
Figure 41



2 FRONT SOUND COVER RETAINERS (3 REQUIRED).
3 FRONT SOUND COVER.

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Figure 42



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Figure 43

TRANSAXLE DISASSEMBLY (CONT'D)

8. Remove the 12 bottom pan bolts, using an 8 mm socket, as shown in Figure 44.
9. Remove the bottom pan, as shown in Figure 44.
10. Remove the two main filter bolts, using a 25 torx bit, as shown in Figure 44.
11. Remove and discard the main oil filter, as shown in Figure 44.
12. Remove and discard the main filter seal from the case bore, as shown in Figure 45.
13. Remove the dipstick stop from the case using a 25 torx bit, as shown in Figure 45.

Note: This is done to prevent damage while maneuvering the transaxle during disassembly.

Continued on Page 35

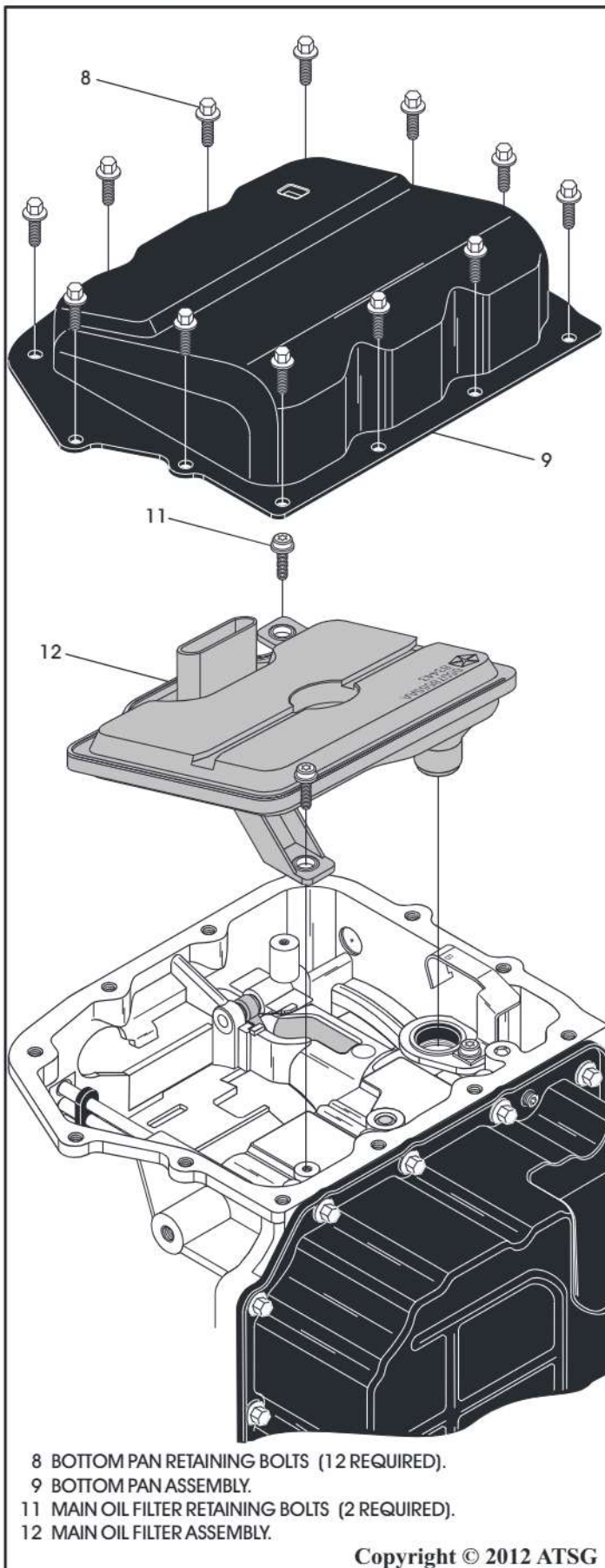


Figure 44

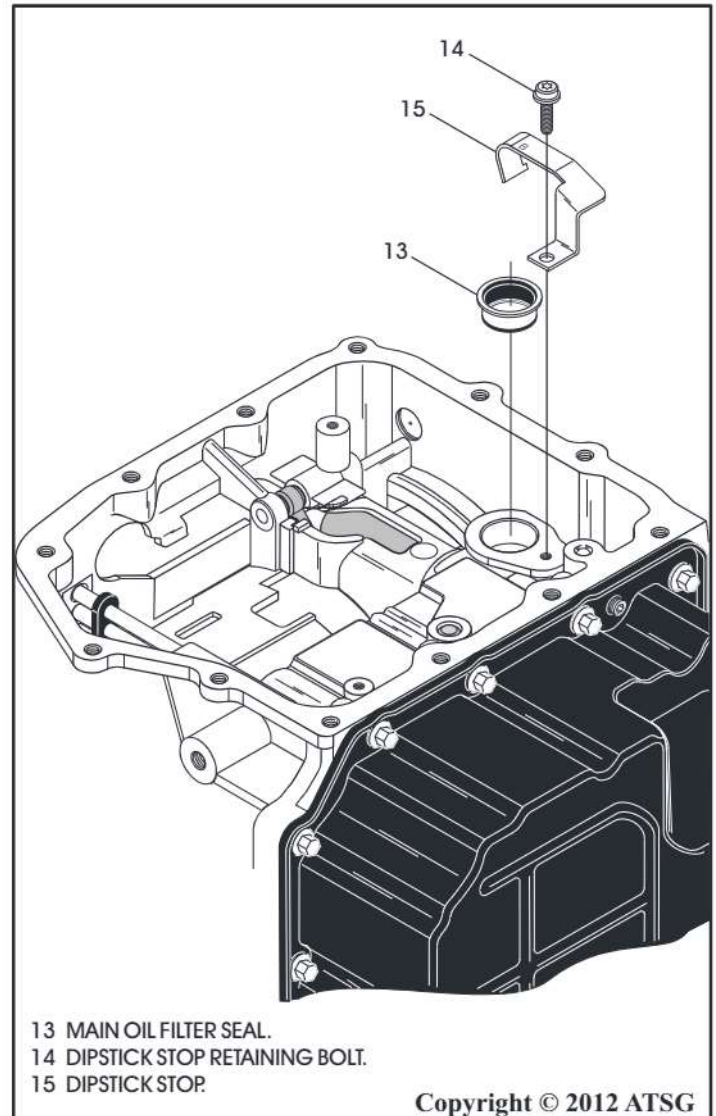


Figure 45

TRANSAXLE DISASSEMBLY (CONT'D)

14. Before removing valve body side cover bolts check the style of line pressure plug in the unit you are working on, as shown in Figure 46.
Note: If your unit has the Hex-Head style line pressure plug it must be removed to remove the side cover. If your unit has Allen-Head style, it can be left in place (See Figure 46).
15. Remove the 13 valve body side cover bolts, as shown in Figure 47, using 8 mm socket on the regular style bolts and 10 mm on the stud style bolts.
Note: Record the locations of the 3 stud style retaining bolts (See Figure 46).
16. Remove the valve body side cover from the transaxle, as shown in Figure 47.

Continued on Page 36

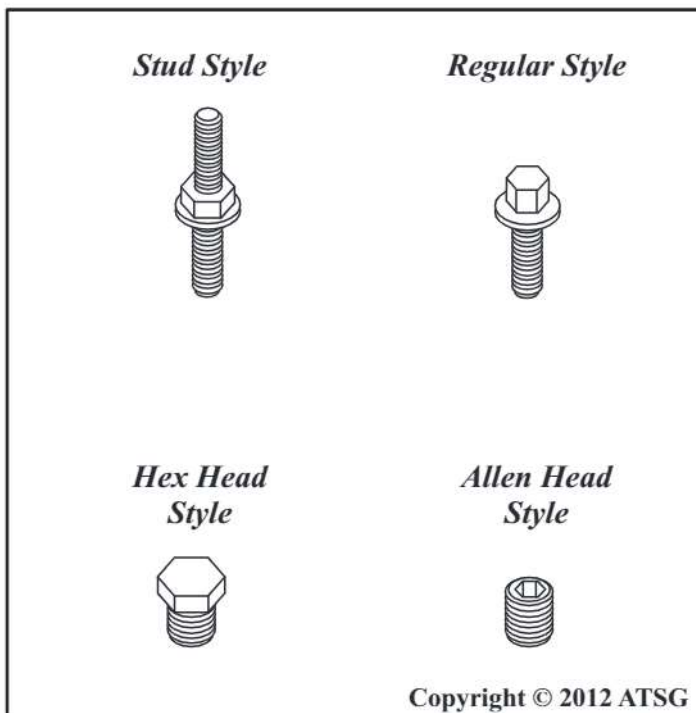


Figure 46

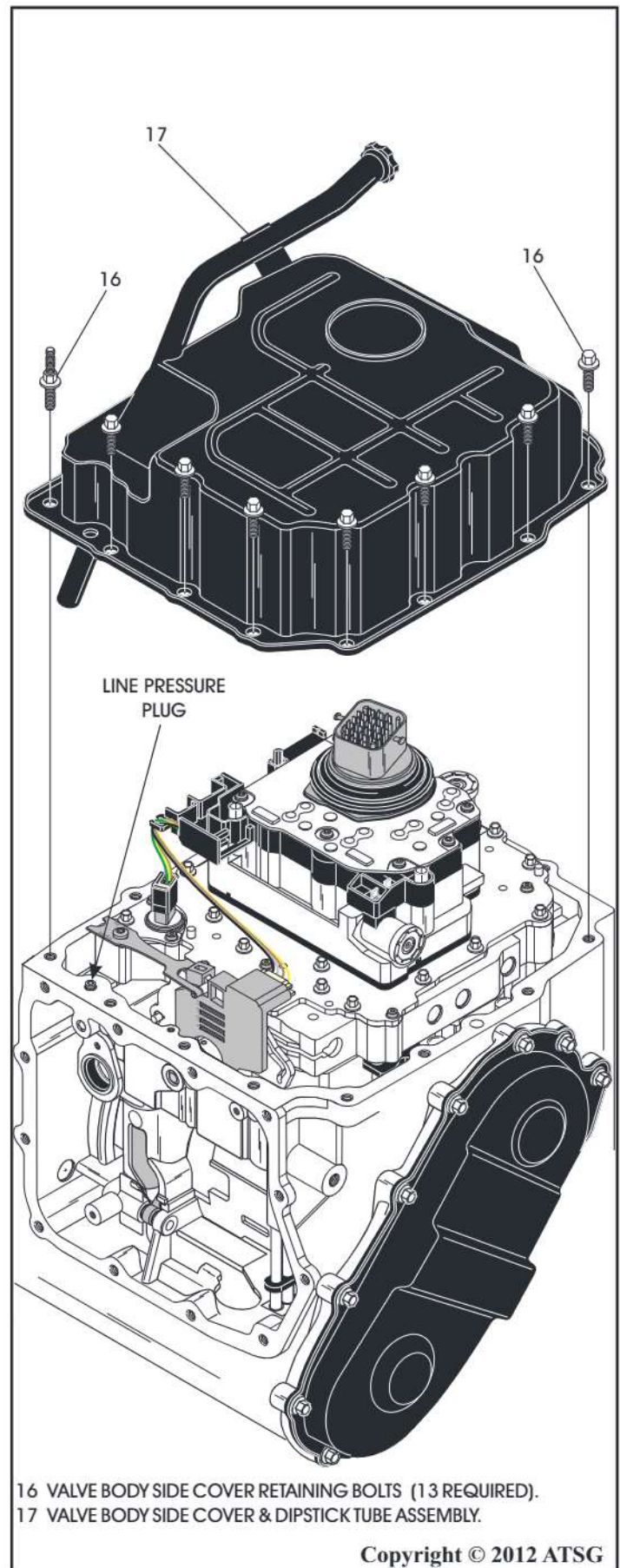


Figure 47

TRANSAXLE DISASSEMBLY (CONT'D)

17. Remove the "shouldered" bolt retaining the detent spring and roller assembly, as shown in Figure 48, using a 25 torx bit.
18. Remove the detent spring and roller assembly, as shown in Figure 48.
Note: The detent spring and roller assembly is used to align the Transaxle Range Switch with the inside detent lever (See Figure 49).
19. Disconnect the electrical connector from the transaxle range switch, as shown in Figure 48.

Continued on Page 37

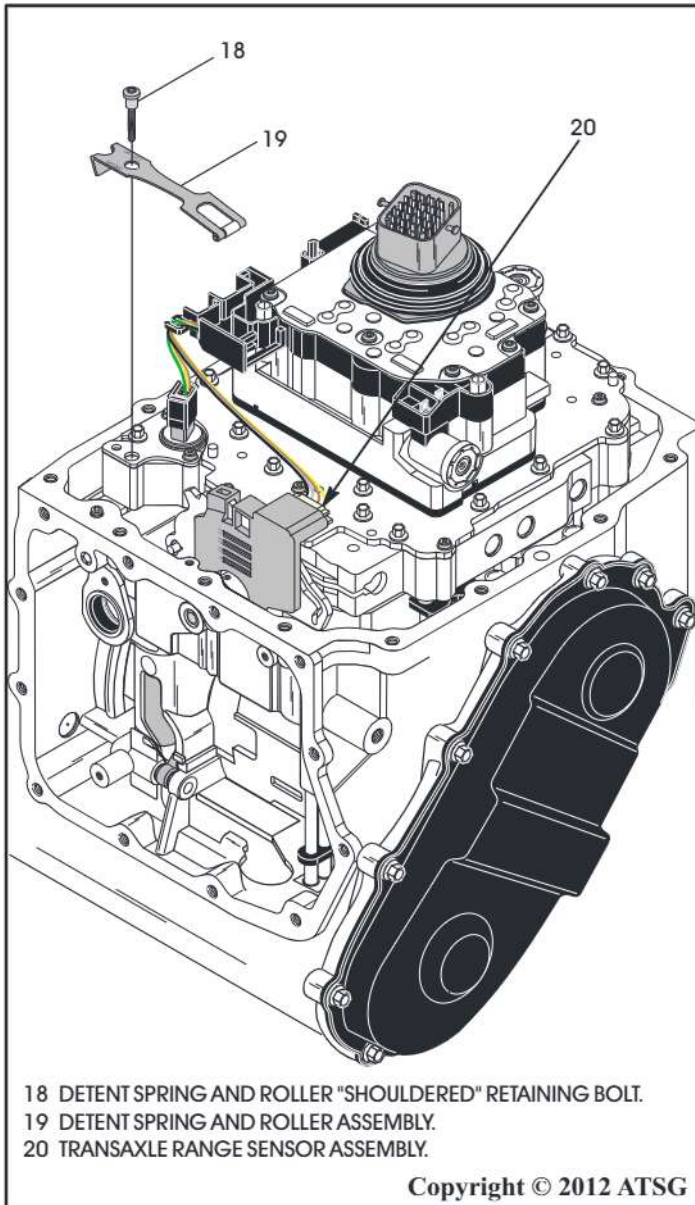


Figure 48

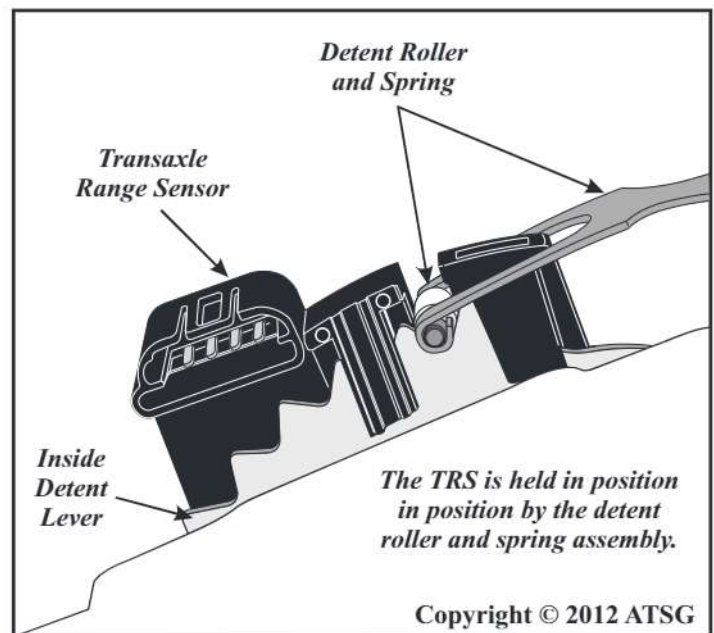


Figure 49

TRANSAXLE DISASSEMBLY (CONT'D)

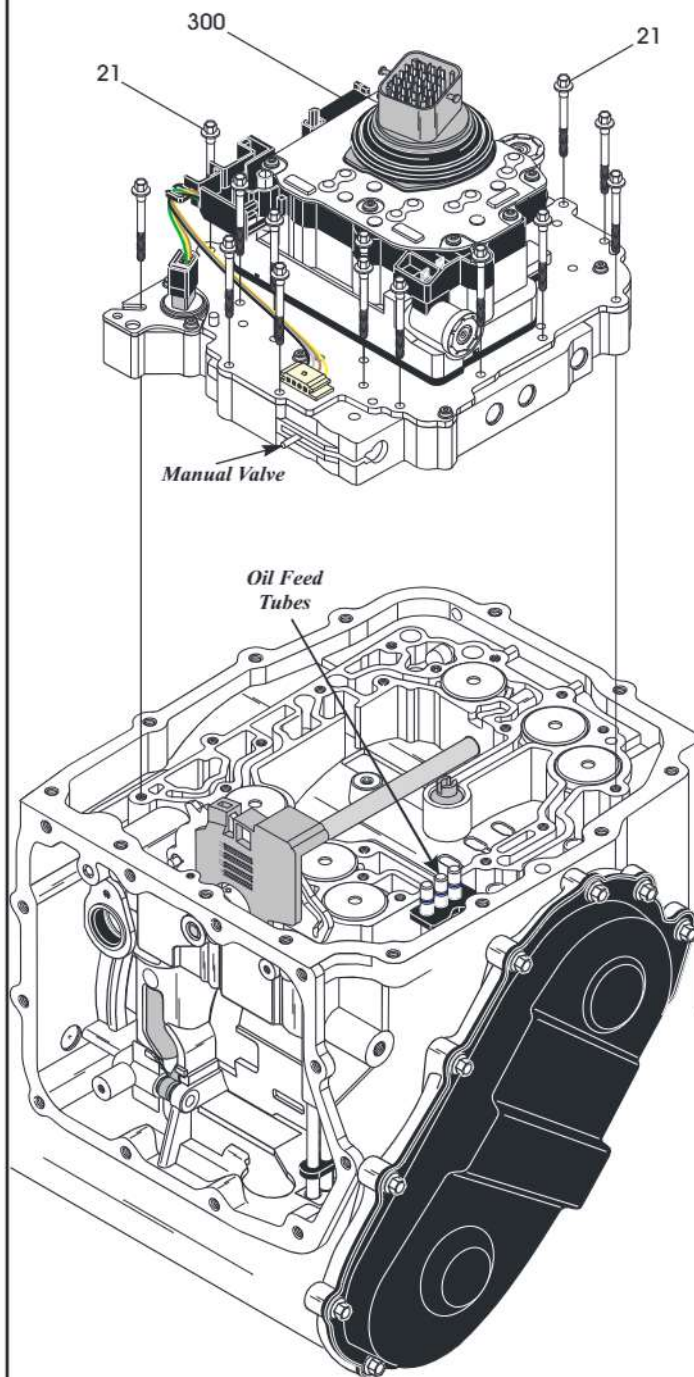
20. Remove 21 valve body to case retaining bolts, as shown in Figure 50, using a 7 mm socket or a 9/32" socket.

Note: Their locations are shown in Figure 51.

21. Carefully remove the valve body assembly and ensure you are free from the oil feed tubes and release manual valve from the inside detent lever slot, as shown in Figure 50.

22. Set valve body assembly aside for component rebuild section.

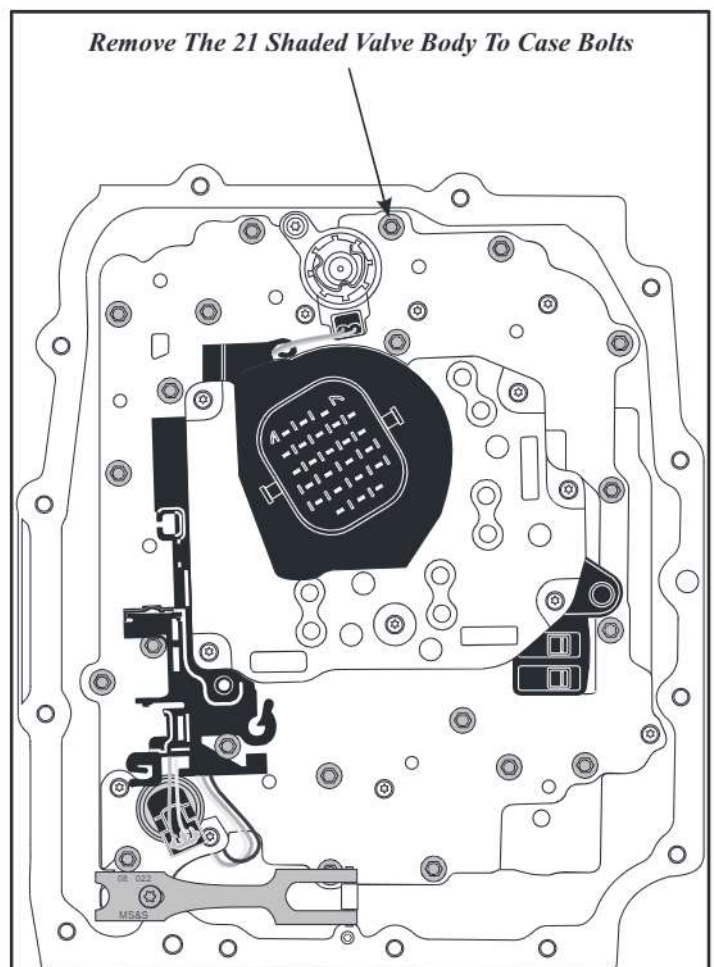
Continued on Page 38



21 VALVE BODY TO CASE RETAINING BOLTS (21 REQUIRED).
300 VALVE BODY ASSEMBLY.

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Figure 50



Remove The 21 Shaded Valve Body To Case Bolts

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Figure 51

TRANSAXLE DISASSEMBLY (CONT'D)

23. Remove the oil feed tube assembly from case, as shown in Figure 52.
24. Set oil feed tube assembly aside for component rebuild section.
25. Remove the 2-4 clutch feed tube from the case bore, as shown in Figure 53.
26. Remove and discard "O" ring seal and tube to support seal, as shown in Figure 53.

Continued on Page 39

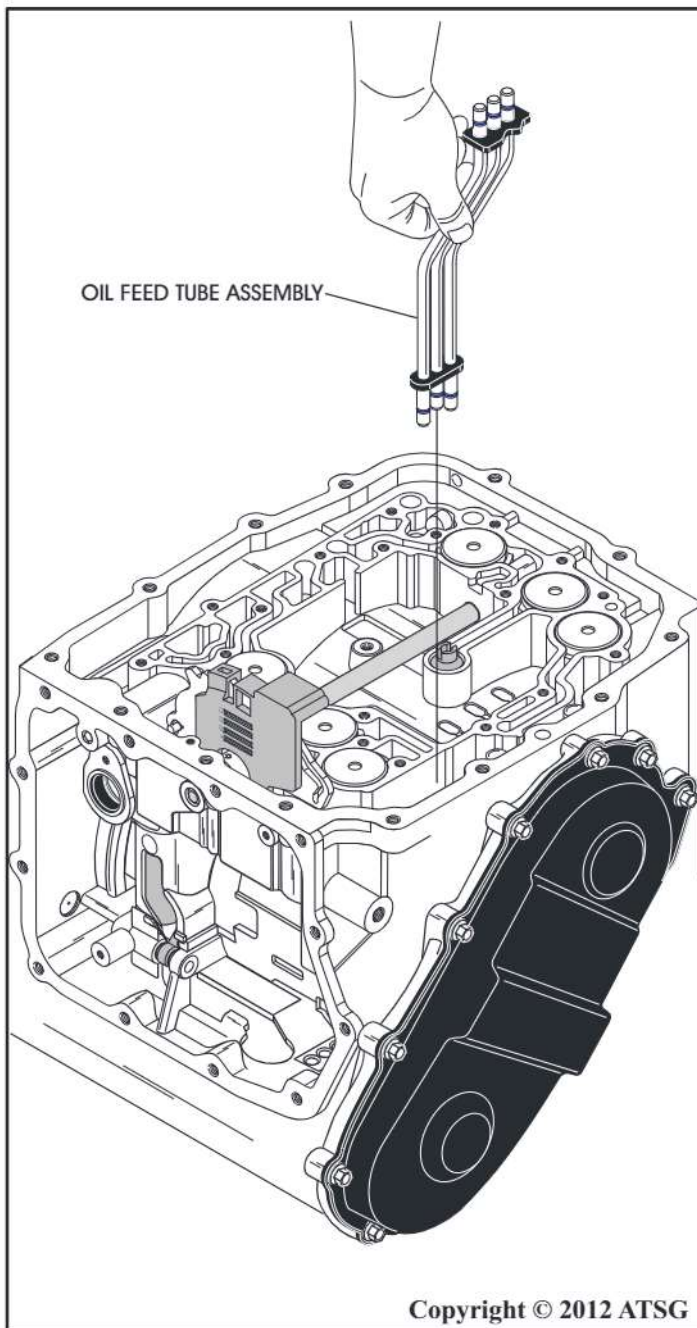


Figure 52

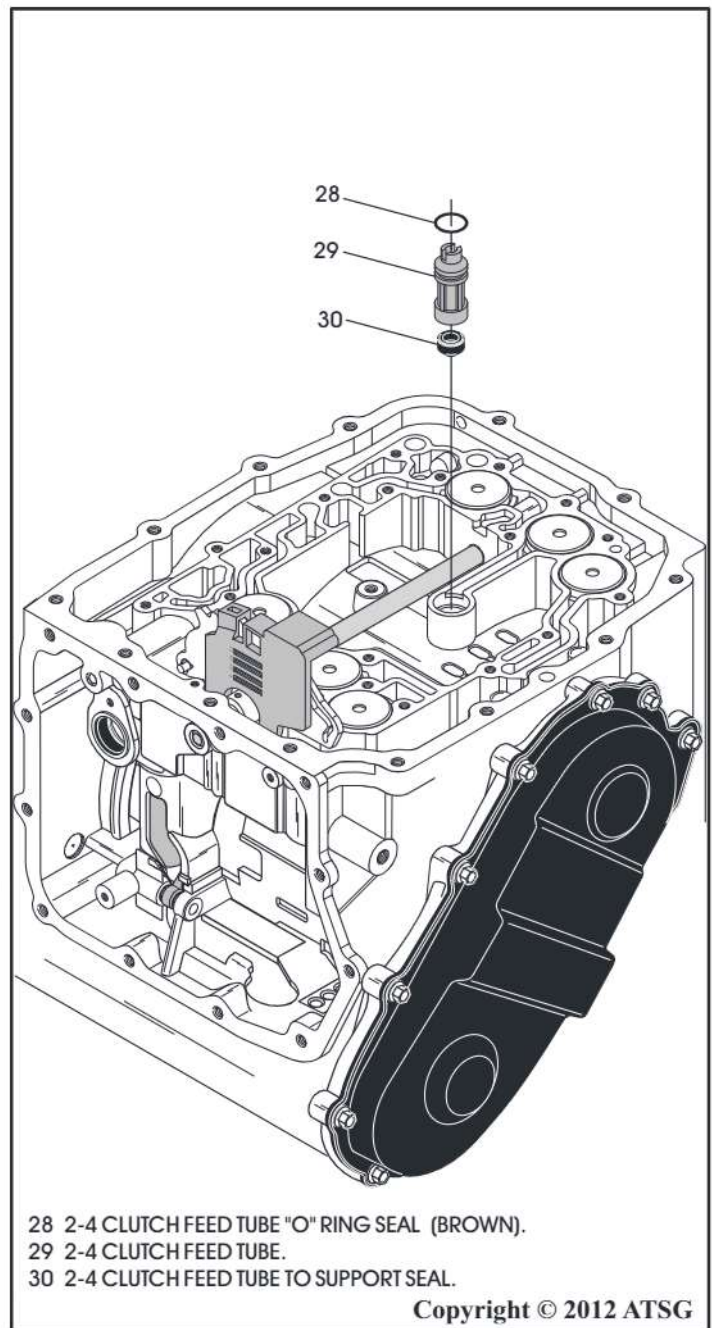


Figure 53

TRANSAXLE DISASSEMBLY (CONT'D)

27. Remove each of the 6 accumulator pistons and their springs, as shown in Figure 54.
Note: All of the accumulator pistons and their springs are the same and will interchange, at the time of this printing.
If your configuration is different, then tag each of the springs for identification.
28. Remove and discard the accumulator piston seals, as shown in Figure 54.
29. Remove manual shaft anchor pin from case, as shown in Figure 55, with a 3 mm allen wrench.
Note: Manual shaft must be removed to replace the manual shaft seal and will also allow the removal of TRS, to prevent any damage while maneuvering the transaxle during disassembly.

Continued on Page 40

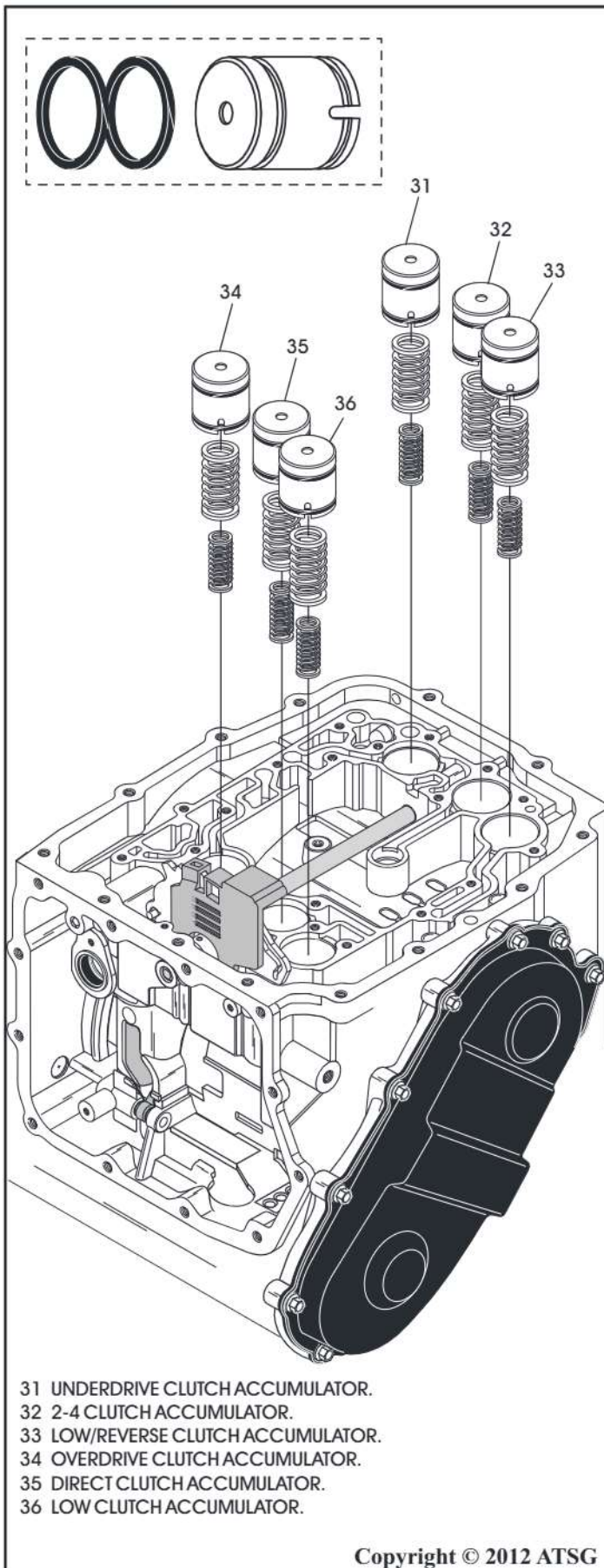


Figure 54

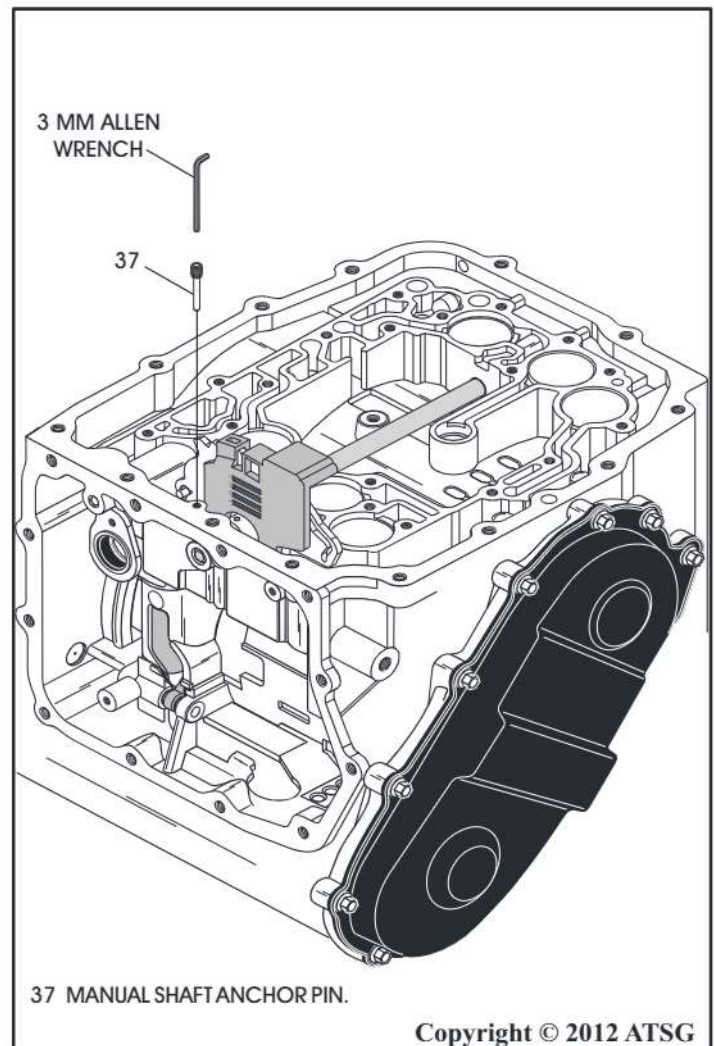


Figure 55

TRANSAXLE DISASSEMBLY (CONT'D)

30. Remove the manual shaft roll pin from the inside detent lever, using a pin punch, as shown in Figure 56.
31. Remove the manual shaft and lever assembly, as shown in Figure 57.
32. Remove and discard the manual shaft seal, as shown in Figure 57.

Continued on Page 41

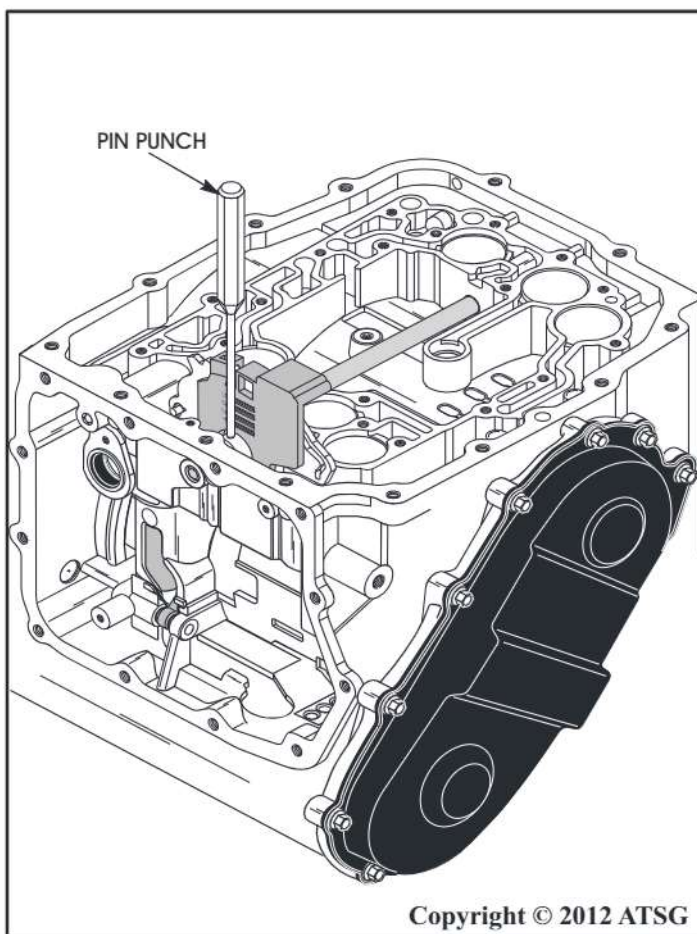


Figure 56

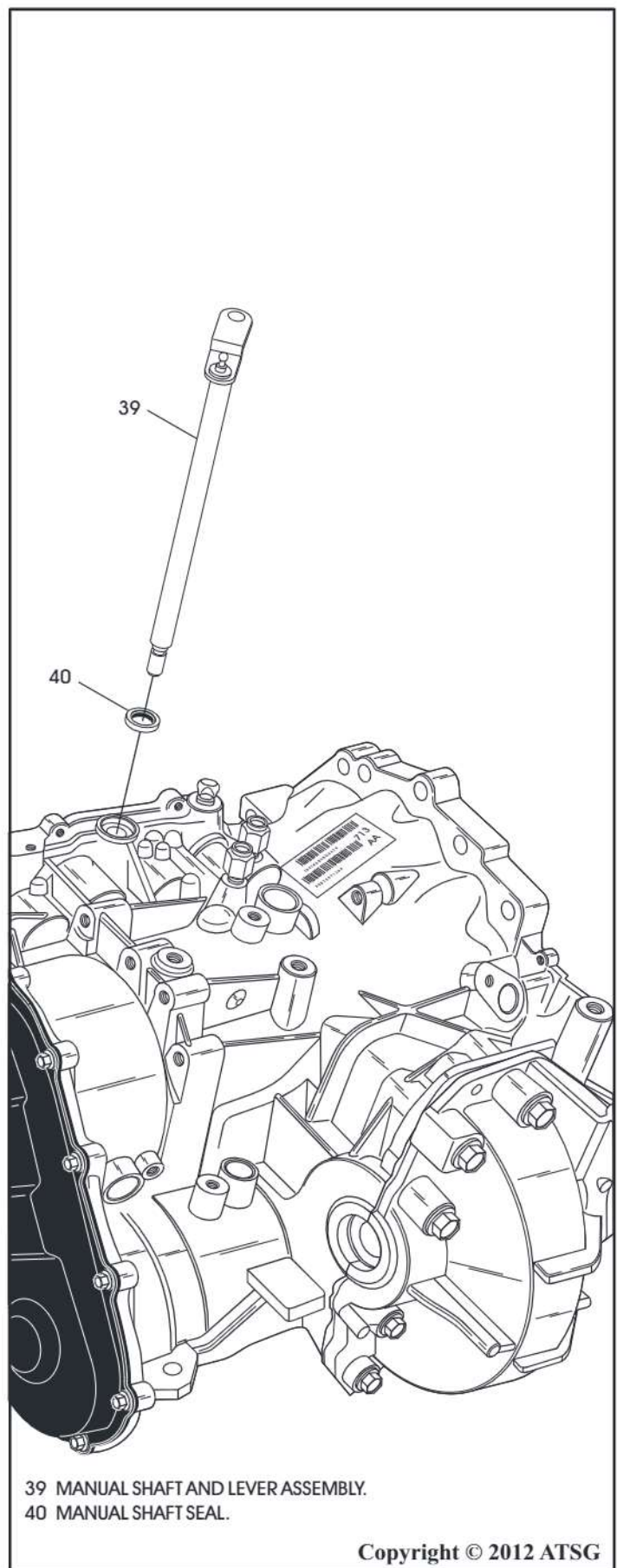


Figure 57

TRANSAXLE DISASSEMBLY (CONT'D)

33. Remove the Transaxle Range Sensor/Switch and inside detent lever, as shown in Figure 58.
34. Separate the parking rod from the inside detent lever, as shown in Figure 58.
35. Maneuver transaxle so the input shaft is vertical, as shown in Figure 59, and install dial indicator.
36. Measure input shaft end-play and record the dial indicator reading for reassembly reference.
Note: End-play reading should be within 0.13-0.64mm (.005" - .025").

37. Remove the six front pump retaining bolts, as shown in Figure 60, using an 8 mm (5/16") six point socket.

Continued on Page 42

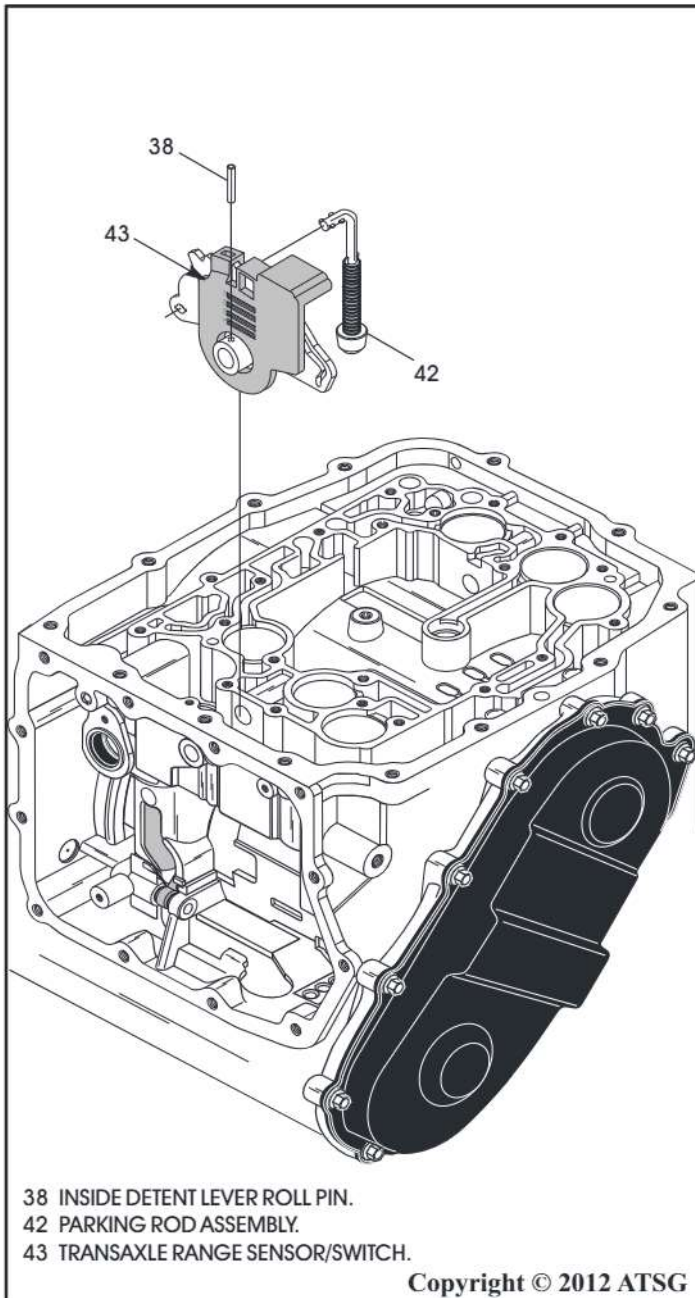


Figure 58

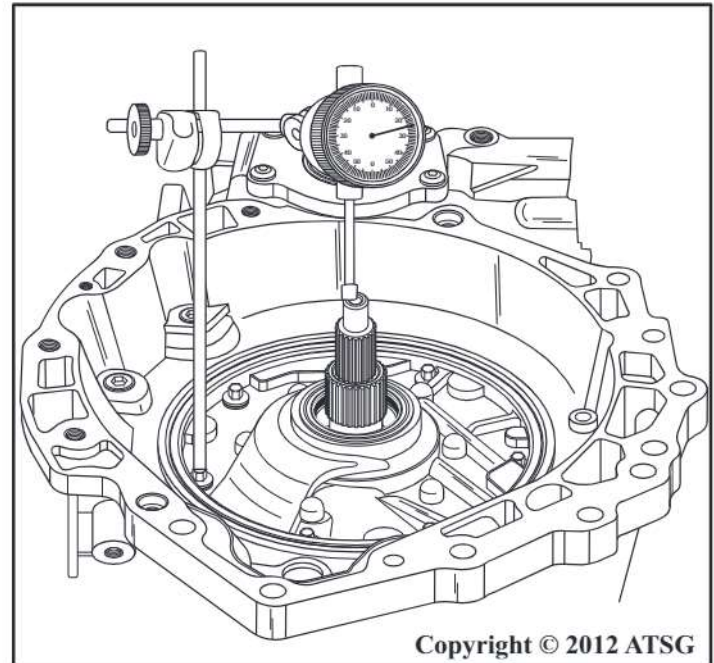


Figure 59

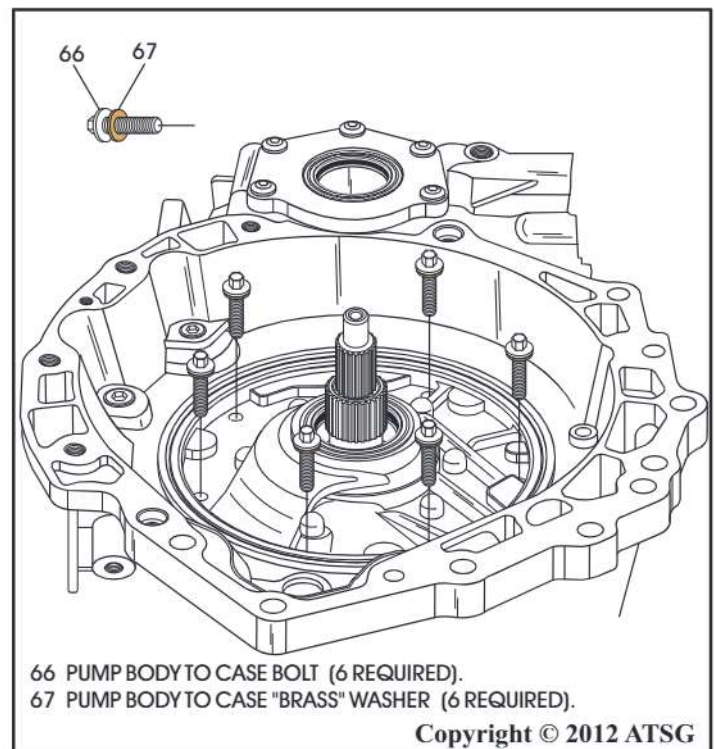


Figure 60

TRANSAXLE DISASSEMBLY (CONT'D)

38. Install slide hammers into oil pump, as shown in Figure 61, and loosen oil pump.
39. Remove complete oil pump assembly, as shown in Figure 62.

Note: Number 1 thrust bearing may be stuck to back side of oil pump (See Figure 62).

40. Set oil pump assembly aside for the component rebuild section.
41. Remove and discard the oil pump to case gasket, as shown in Figure 62.
42. Remove the cooler by-pass valve assembly from case, as shown in Figure 62 and 63.

Note: If transaxle failure has occurred, cooler by-pass valve "must" be replaced. Do not re-use or attempt to clean valve.

Continued on Page 43

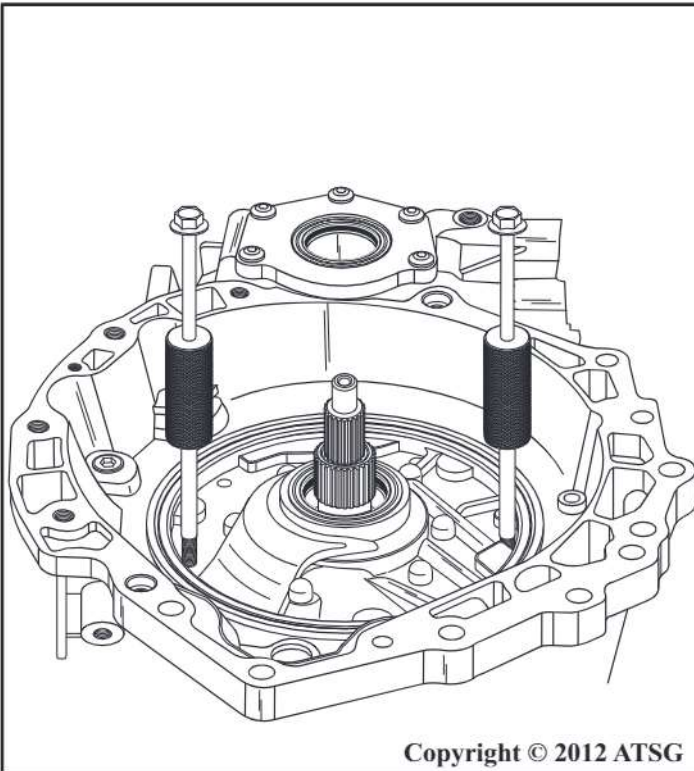
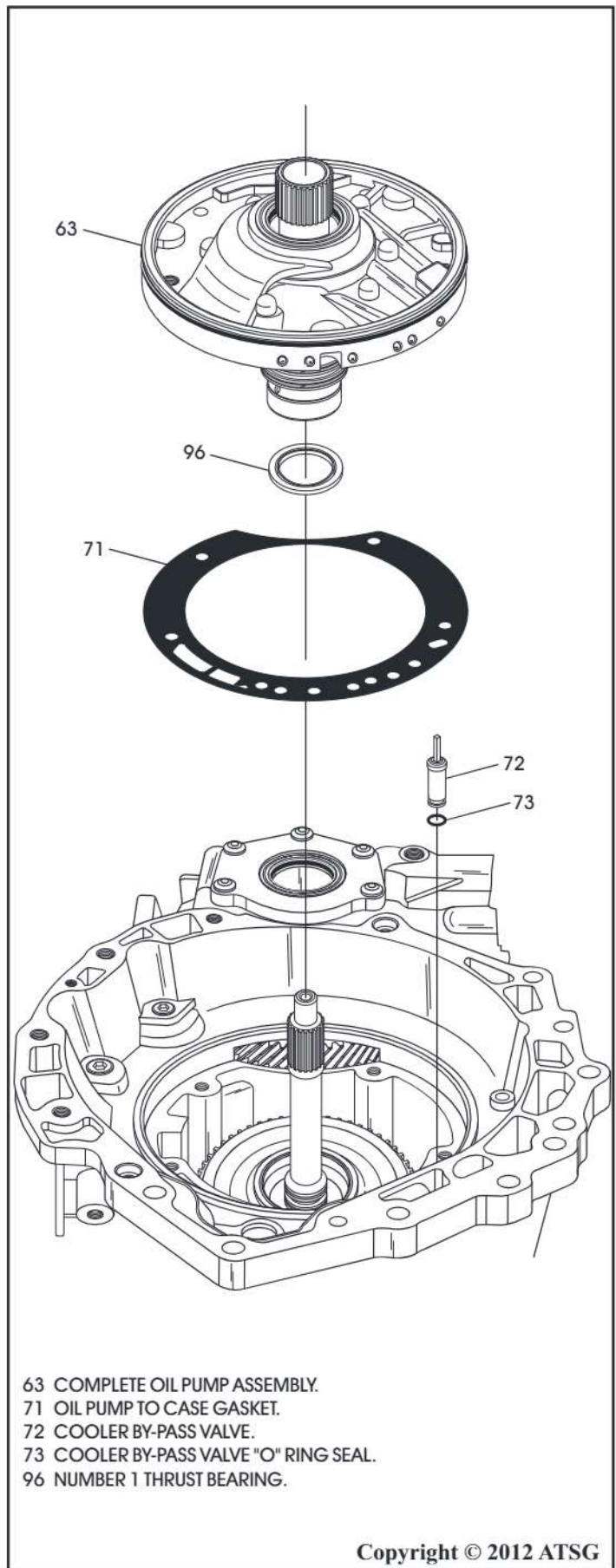


Figure 61



- 63 COMPLETE OIL PUMP ASSEMBLY.
- 71 OIL PUMP TO CASE GASKET.
- 72 COOLER BY-PASS VALVE.
- 73 COOLER BY-PASS VALVE "O" RING SEAL.
- 96 NUMBER 1 THRUST BEARING.

Figure 62

TRANSAXLE DISASSEMBLY (CONT'D)

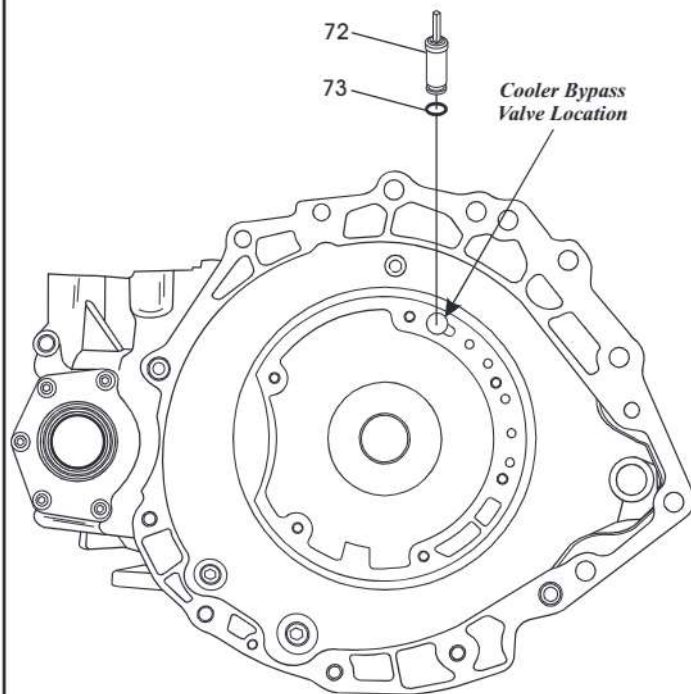
43. Remove the complete input housing assembly, as shown in Figure 64.
44. Remove the number 4 thrust plate, as shown in Figure 64, which may be stuck to back side of the input housing.

Note: The number 4 thrust plate is selective and used to set front end-play.

45. Set the complete input housing aside for the component rebuild section.

Continued on Page 44

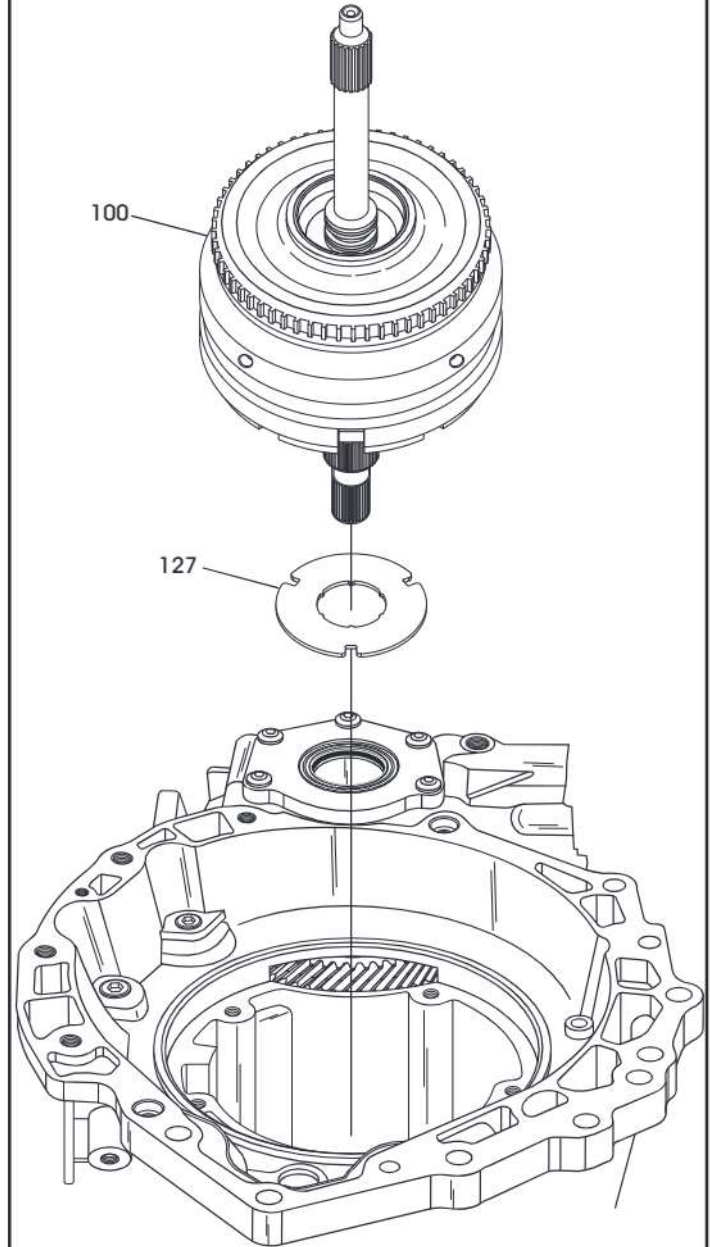
If transaxle failure has occurred, the cooler by-pass valve "must" be replaced. Do not re-use or attempt to clean valve.



72 COOLER BY-PASS VALVE.
73 COOLER BY-PASS VALVE "O" RING SEAL.

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Figure 63



100 INPUT CLUTCH HOUSING ASSEMBLY.
127 NUMBER 4 "SELECTIVE" THRUST PLATE.

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Figure 64

TRANSAXLE DISASSEMBLY (CONT'D)

46. Remove the number 4 thrust washer and reverse clutch hub & front sun gear assembly, as shown in Figure 65.
47. Remove the flat snap ring from the case that is retaining the 2-4 clutch retainer, as shown in Figure 66.
48. Remove the 2-4 retainer and piston assembly, as shown in Figure 66.
49. Remove the 2-4 clutch "bellville" return spring, as shown in Figure 66.
50. Remove the 2-4 clutch steel and friction plates, as shown in Figure 66.

Continued on Page 45

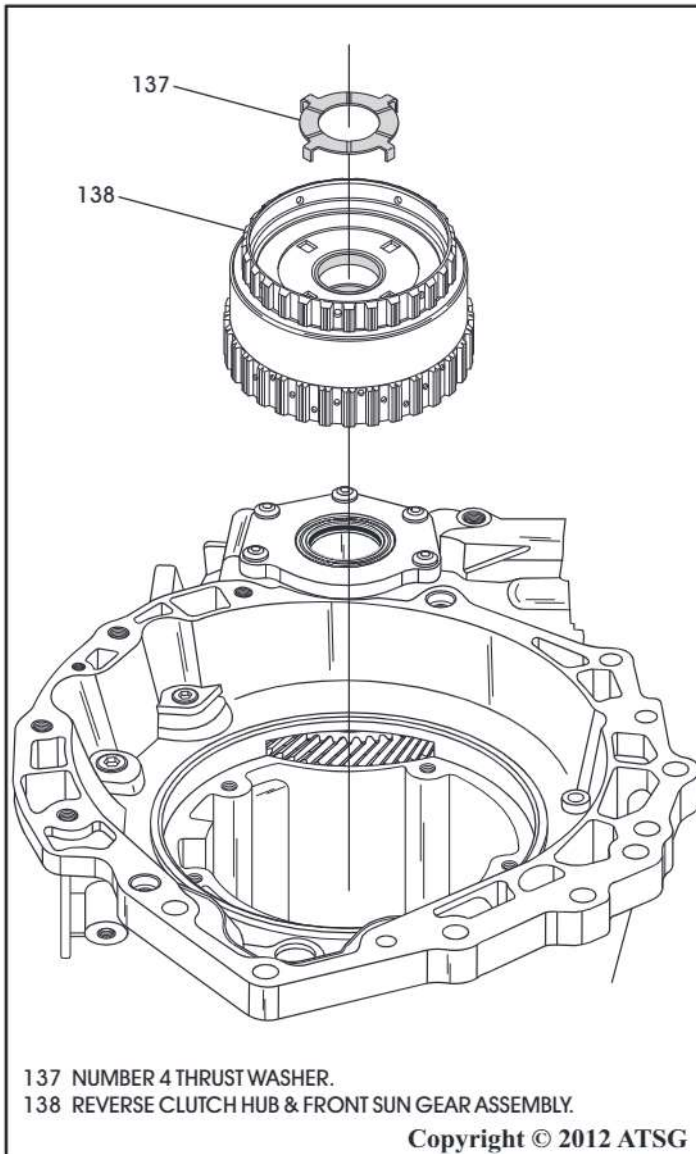


Figure 65

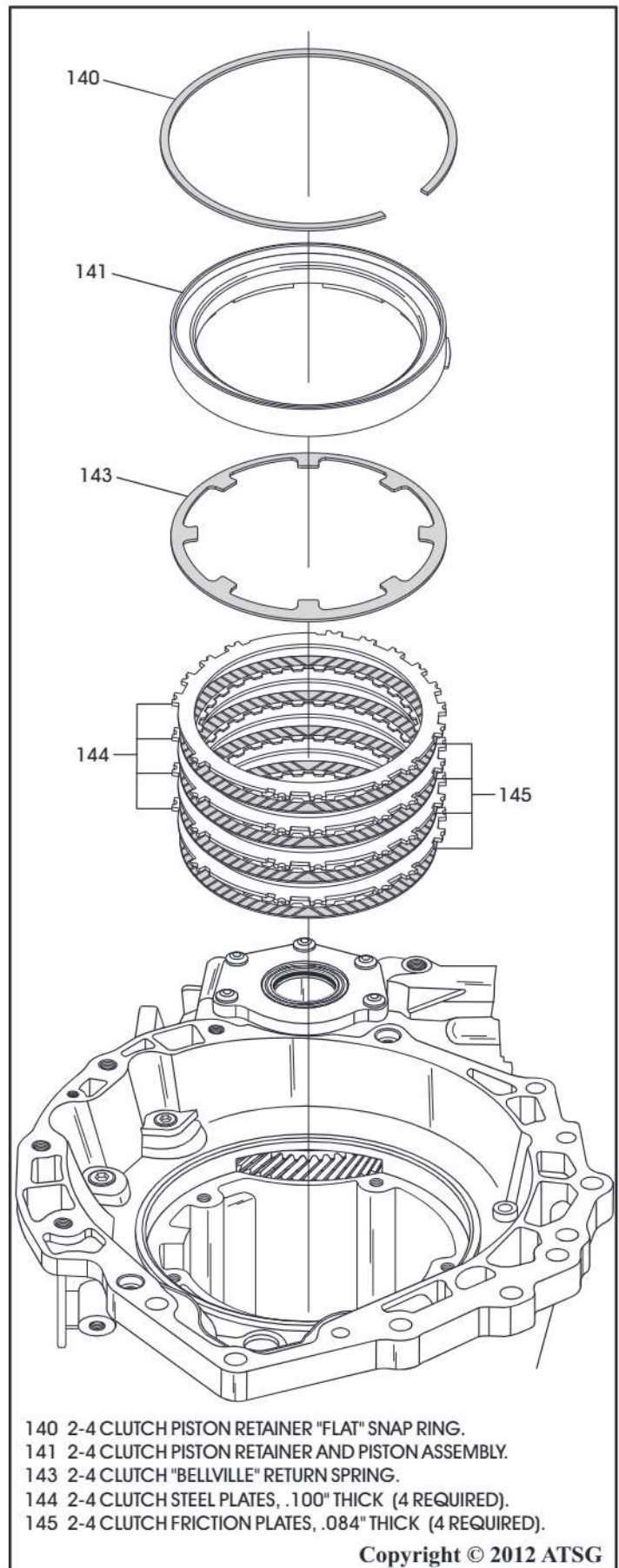


Figure 66

TRANSAXLE DISASSEMBLY (CONT'D)

51. Remove the front planetary carrier and rear ring gear assembly, as shown in Figure 67.

Note: Number 5 thrust bearing is "captured" in the front planetary carrier.

52. Remove the number 6 thrust bearing, as shown in Figure 68.

Note: Number 6 thrust bearing may be stuck to back side of front planetary.

53. Remove the rear planetary sun gear, as shown in Figure 68.

54. Remove the number 7 thrust bearing, as shown in Figure 68.

Note: Number 7 thrust bearing may be stuck to back side of rear sun gear.

Continued on Page 46

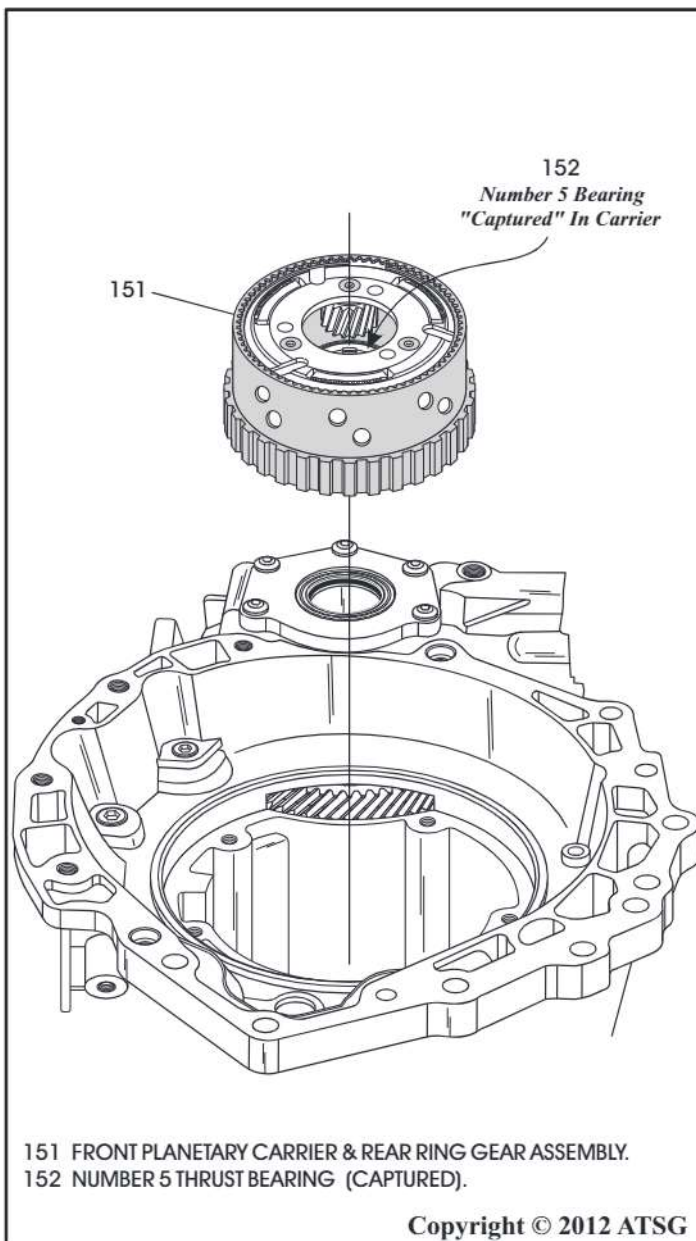


Figure 67

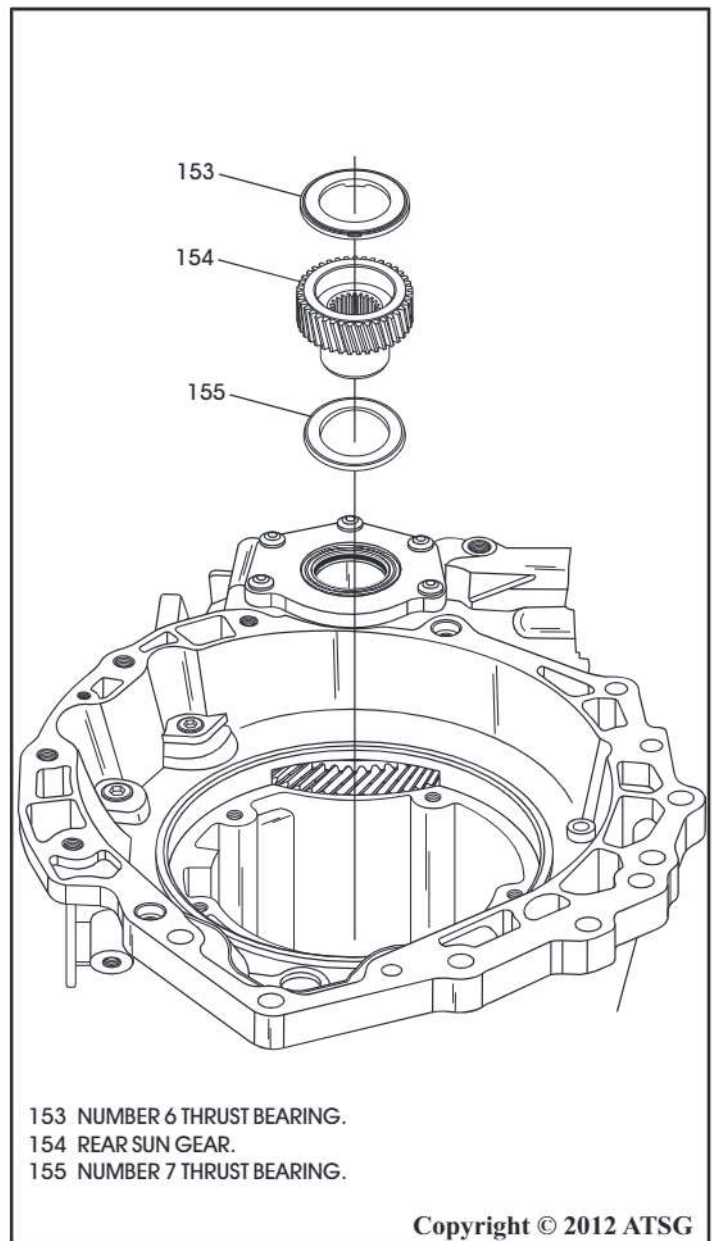


Figure 68

TRANSAXLE DISASSEMBLY (CONT'D)

55. Remove the 2-4 & low/reverse clutch pressure plate "tapered" snap ring from case, as shown in Figure 69.
56. Remove the 2-4 & low/reverse clutch pressure plate, as shown in Figure 69.
57. Remove the 2-4 & low/reverse clutch pressure plate "flat" snap ring from the case, as shown in Figure 69.
58. Remove the low/reverse clutch plates from the case, as shown in Figure 70.

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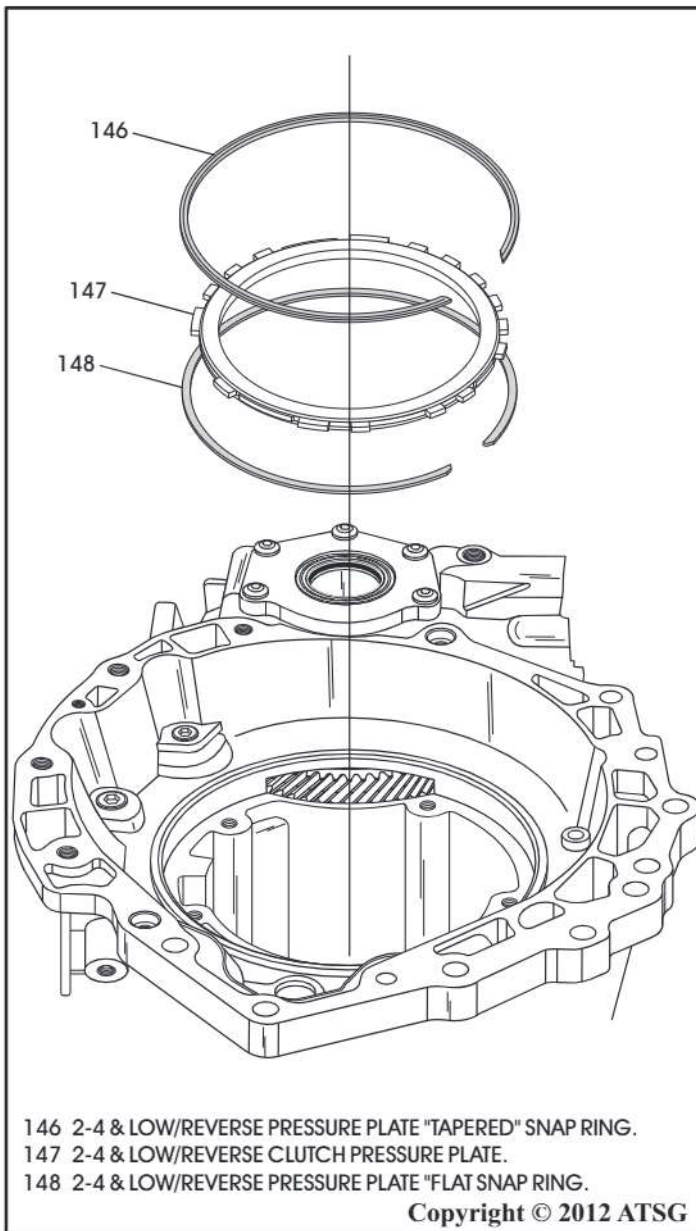


Figure 69

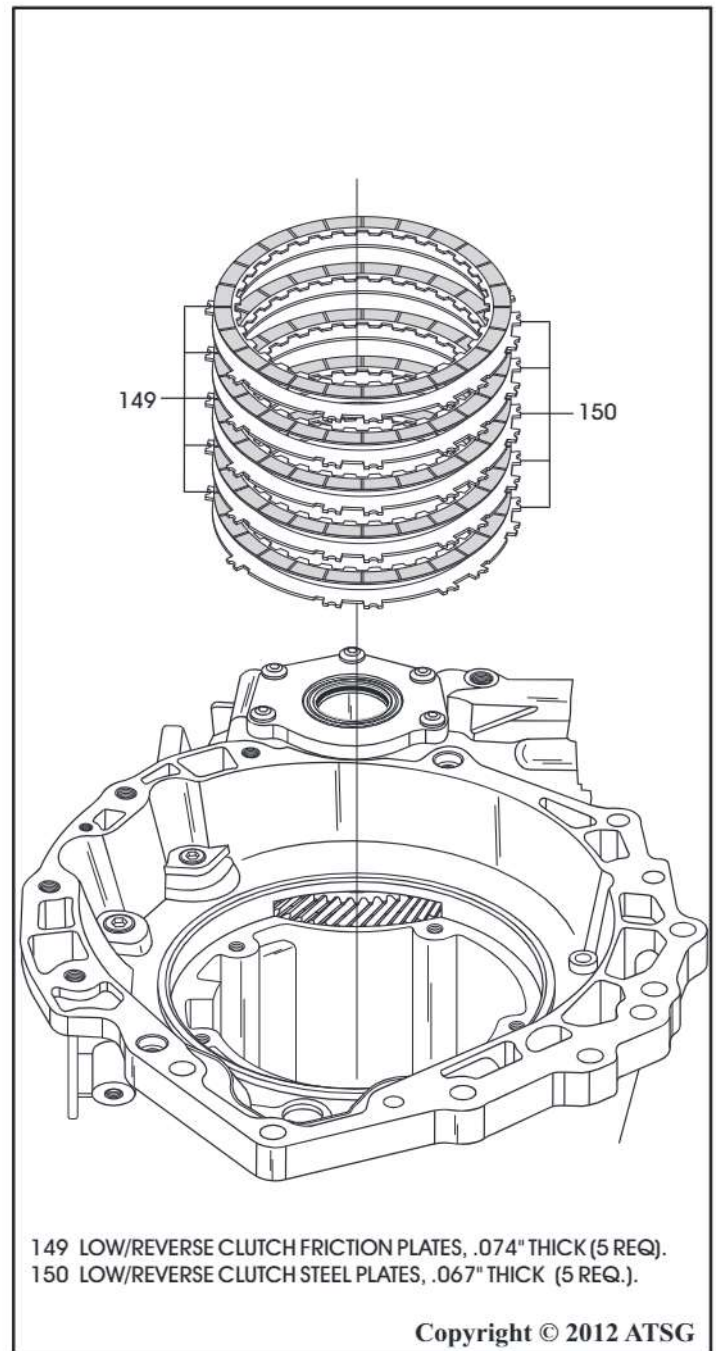


Figure 70

TRANSAXLE DISASSEMBLY (CONT'D)

59. Remove the 13 transfer gear cover retaining bolts, as shown in Figure 71.
60. Remove the transfer gear cover and the support strap, as shown in Figure 71.
61. Remove transfer gear oil scavenger, as shown in Figure 72.
62. Bend back the staked tabs on the nut retaining the driven transfer gear using a center punch, as shown in Figure 73.

Continued on Page 48

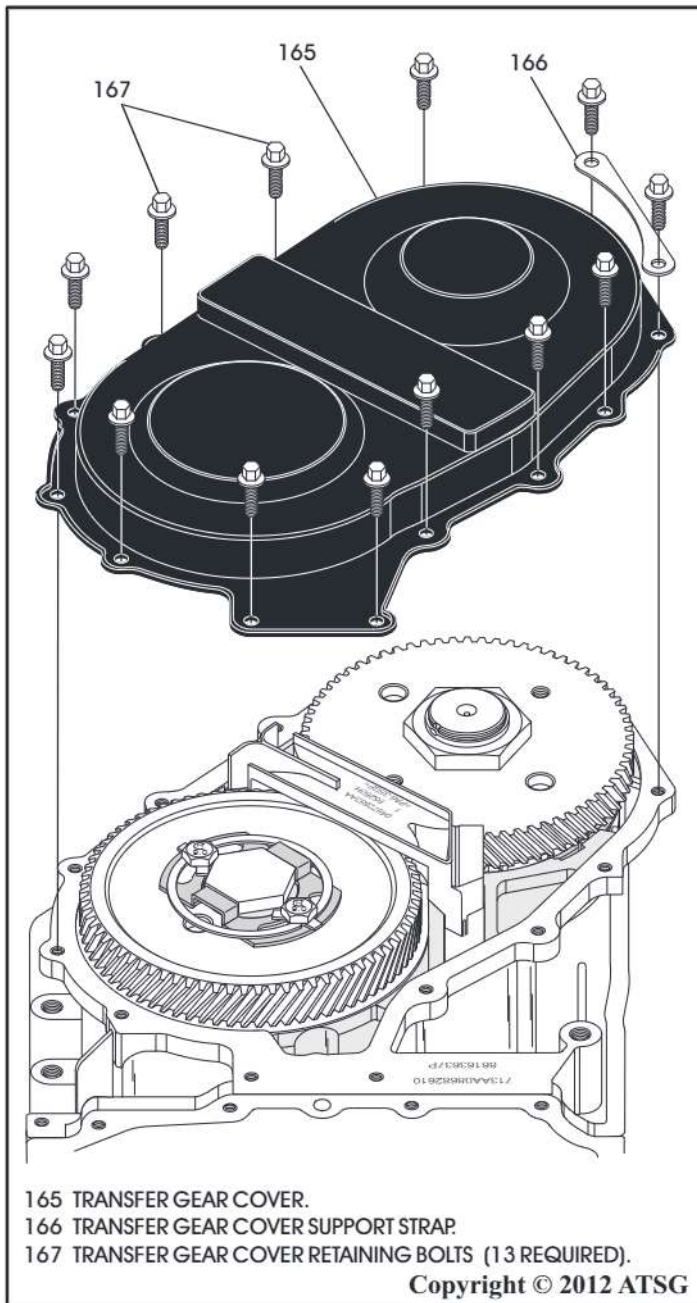


Figure 71

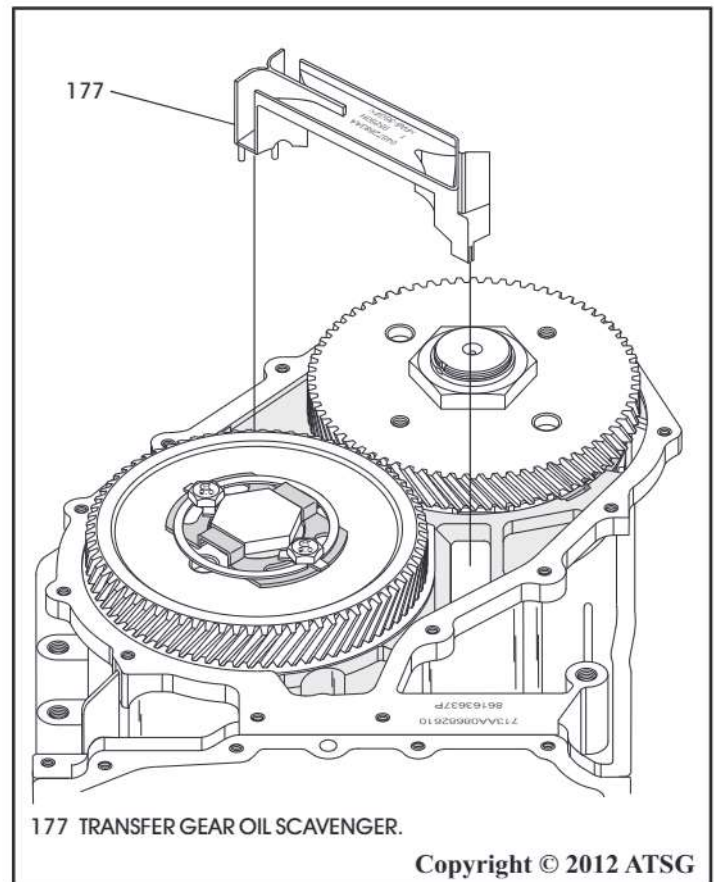


Figure 72

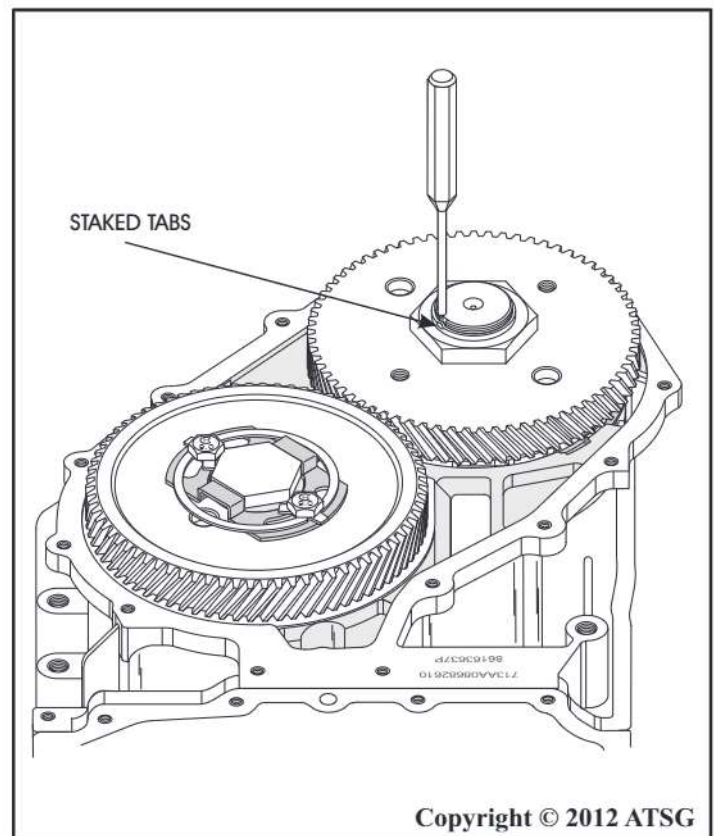
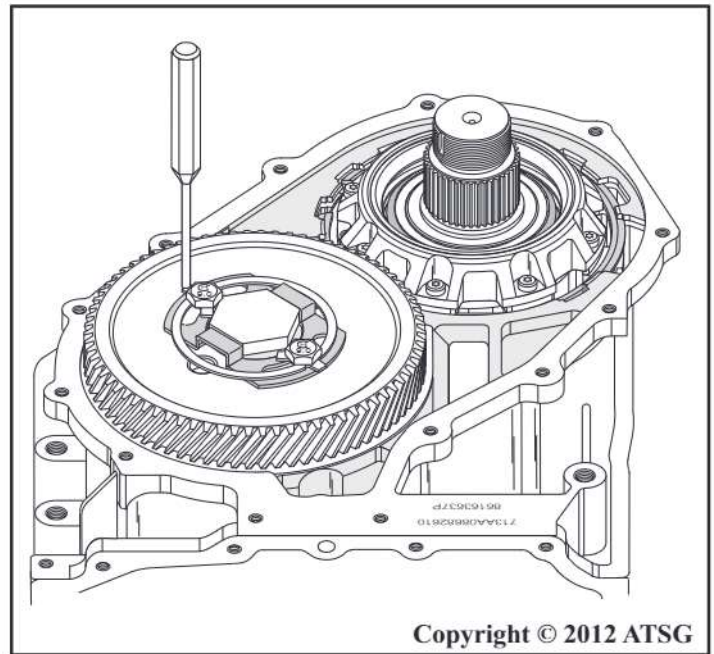


Figure 73

TRANSAXLE DISASSEMBLY (CONT'D)

63. Remove the transfer driven gear retaining nut using a 2 inch socket, as shown in Figure 74.
64. Remove the transfer driven gear and selective shim, as shown in Figure 74.
65. Bend locking tabs down on transfer gear locking tab retainer using a pin punch (See Figure 75).
66. Remove the two transfer drive gear locking tab bolts, as shown in Figure 76.
67. Remove the transfer drive gear locking tab and drive gear retaining bolt locking strap, as shown in Figure 76.

Continued on Page 49



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Figure 75

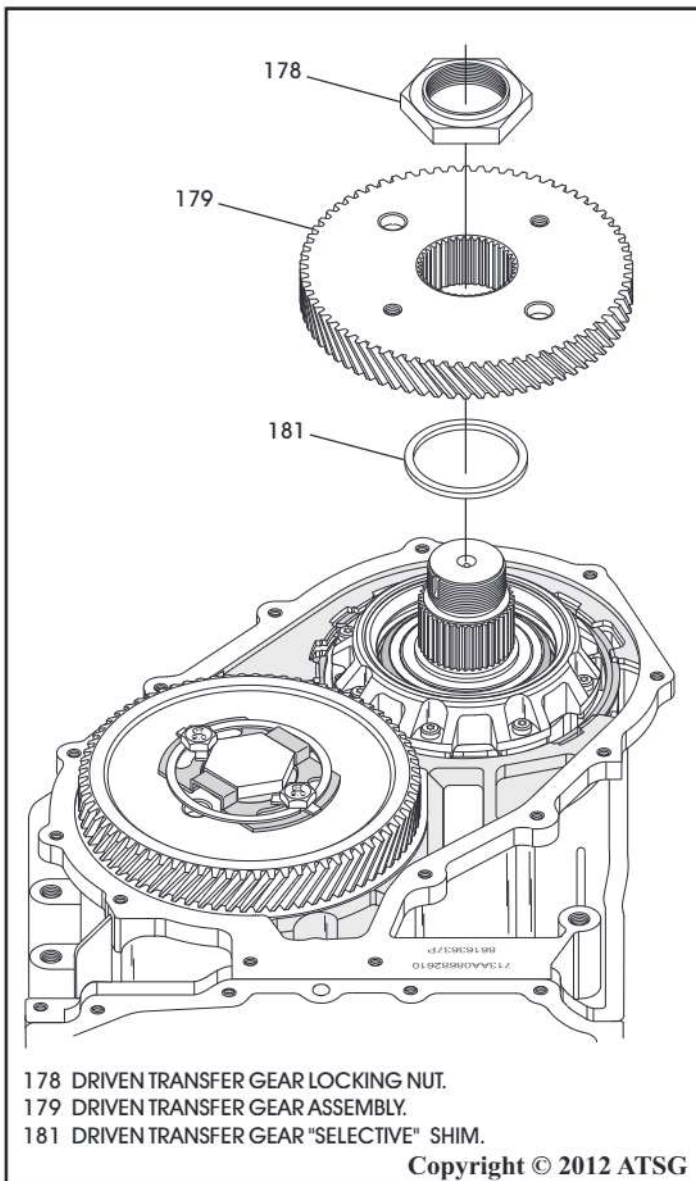


Figure 74

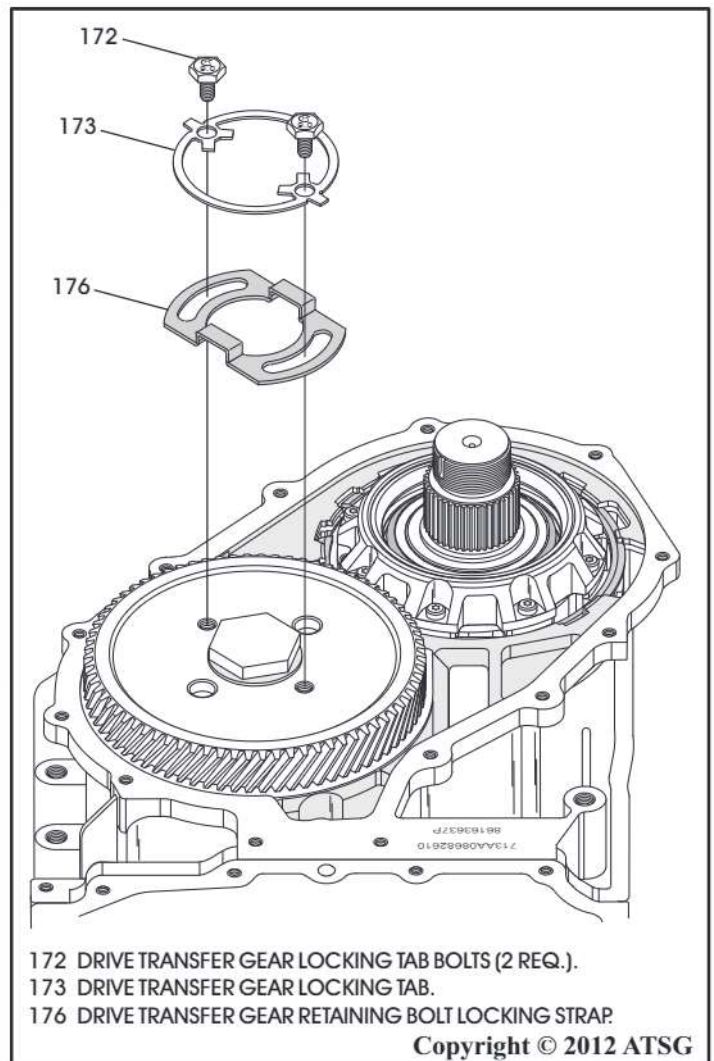


Figure 76

TRANSAXLE DISASSEMBLY (CONT'D)

68. Remove the transfer drive gear retaining bolt and convex washer, as shown in Figure 77.
 69. Install universal gear puller onto transfer drive gear, as shown in Figure 78, and remove the transfer drive gear.
- Note:** This step must be done with the transaxle centerline in a horizontal position, as shown in Figure 78 to prevent any damage to the rear planetary carrier.
70. Remove the transfer drive gear selective shim from the rear planetary carrier (See Figure 78).

Continued on Page 50

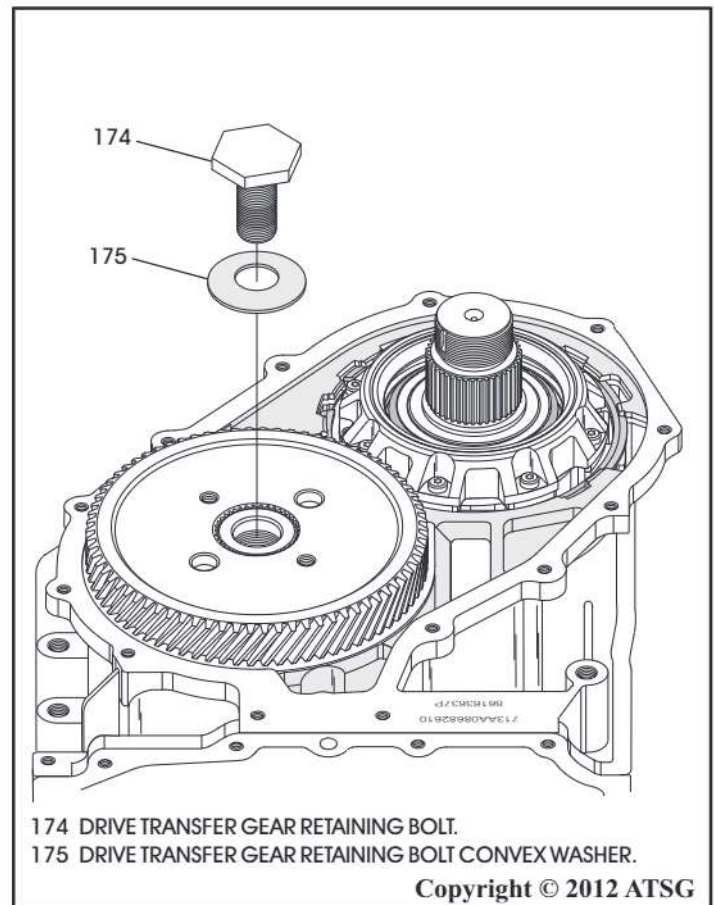


Figure 77

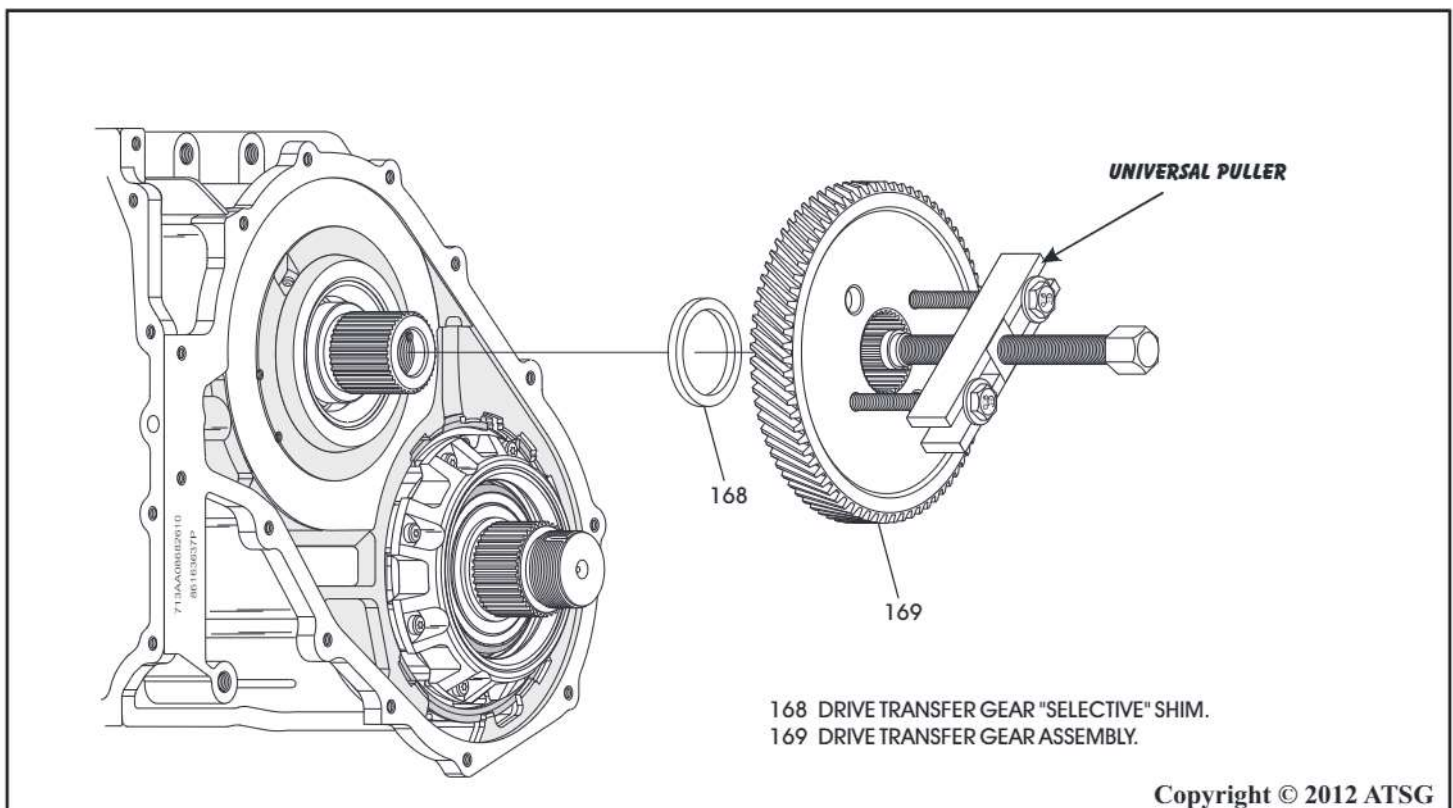


Figure 78

TRANSAXLE DISASSEMBLY (CONT'D)

71. Remove the rear planetary carrier assembly and the number 7 thrust bearing from the case, as shown in Figure 79.

Note: Number 7 thrust bearing may be stuck to back side of rear sun gear (See Page 45).

72. Set the rear planetary carrier and both transfer gears aside for component rebuild.
73. Using a universal spring compressor, compress the low/reverse clutch bellville return spring and remove the snap ring, as shown in Figure 80.

74. Remove the low/reverse clutch bellville return spring as shown in Figure 80.
75. Remove low/reverse clutch bonded apply piston, as shown in Figure 80.

Continued on Page 51

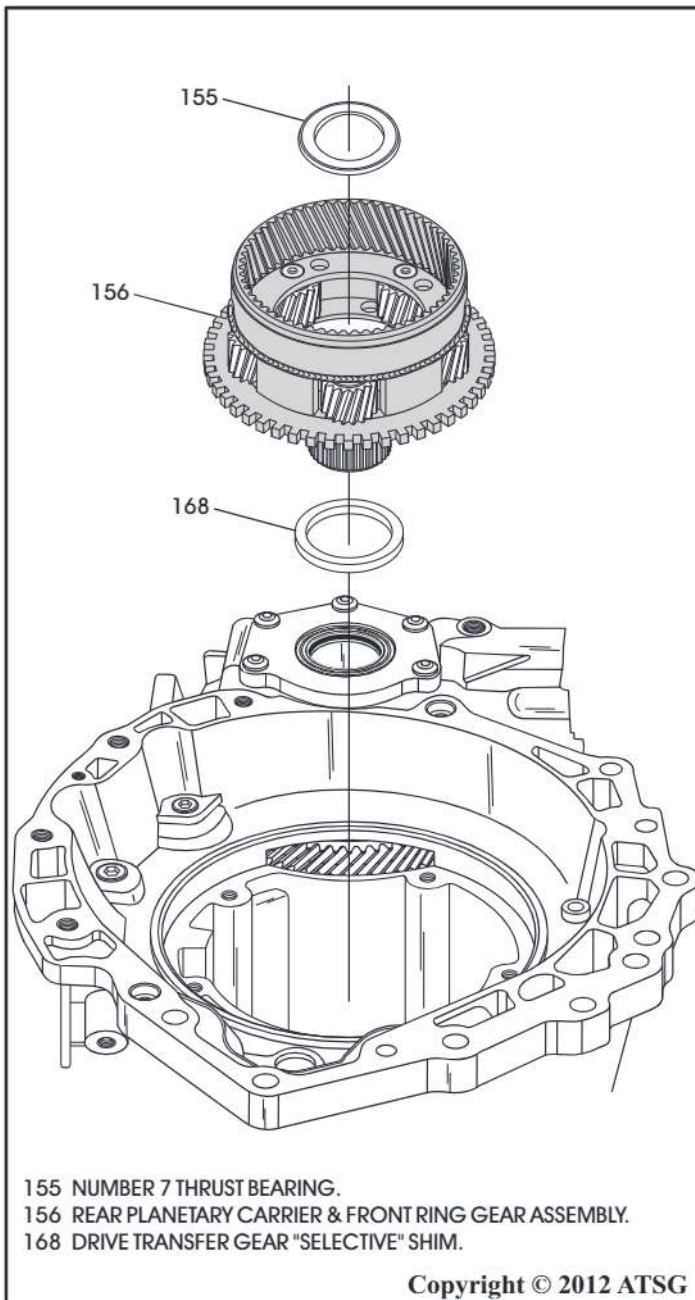


Figure 79

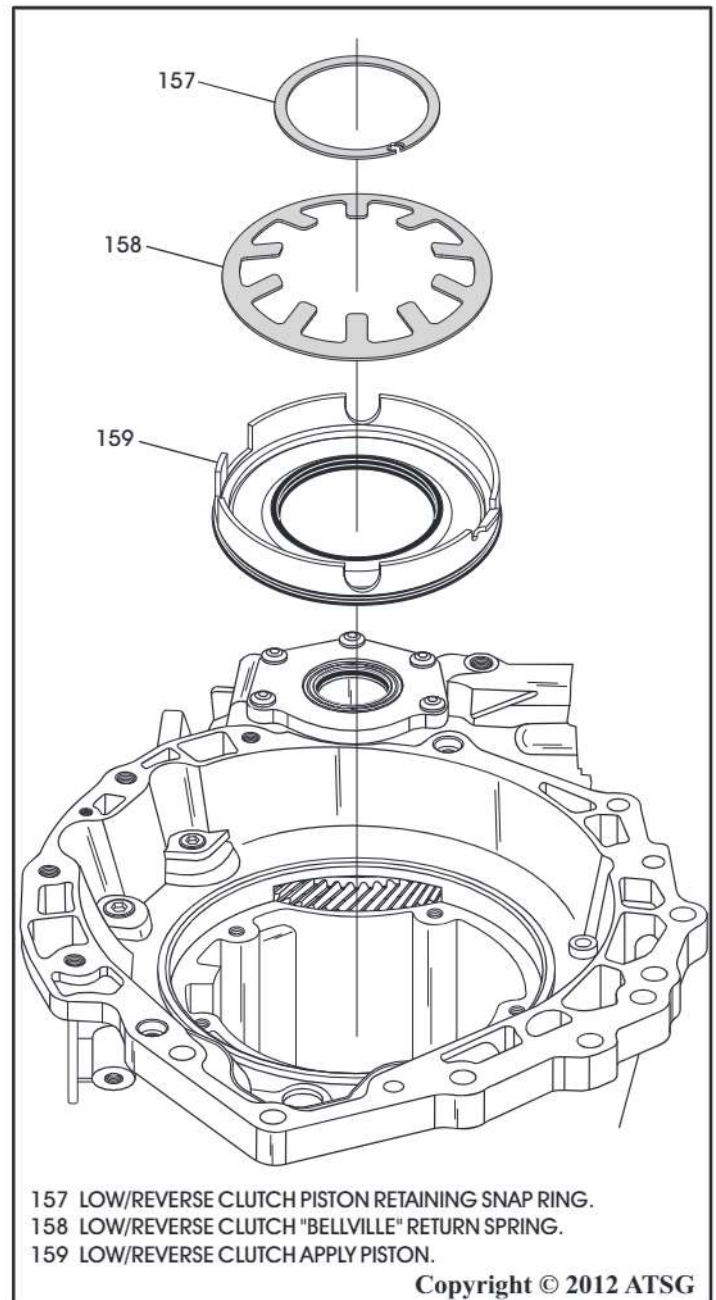


Figure 80

TRANSAXLE DISASSEMBLY (CONT'D)

76. Remove 3 Torx screws retaining the low/reverse piston retainer using a T-20 Torx bit, as shown in Figure 81.
77. Remove and discard the low/reverse clutch piston retainer, as shown in Figure 81.
Note: The L/R piston retainer is included in most gasket kits.
78. Remove and discard low/reverse clutch piston retainer gasket, as shown in Figure 81.
79. Remove tapered snap ring retaining underdrive compounder assembly in the transaxle case, as shown in Figure 82.

Continued on Page 52

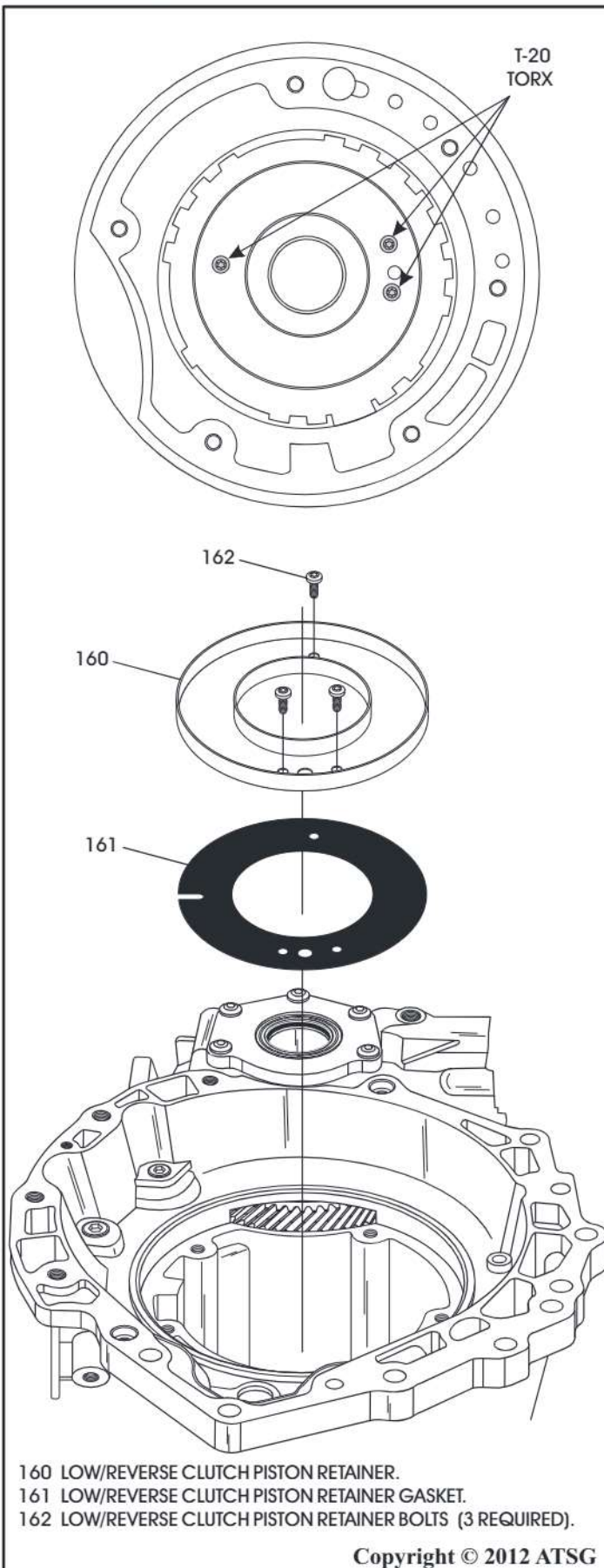


Figure 81

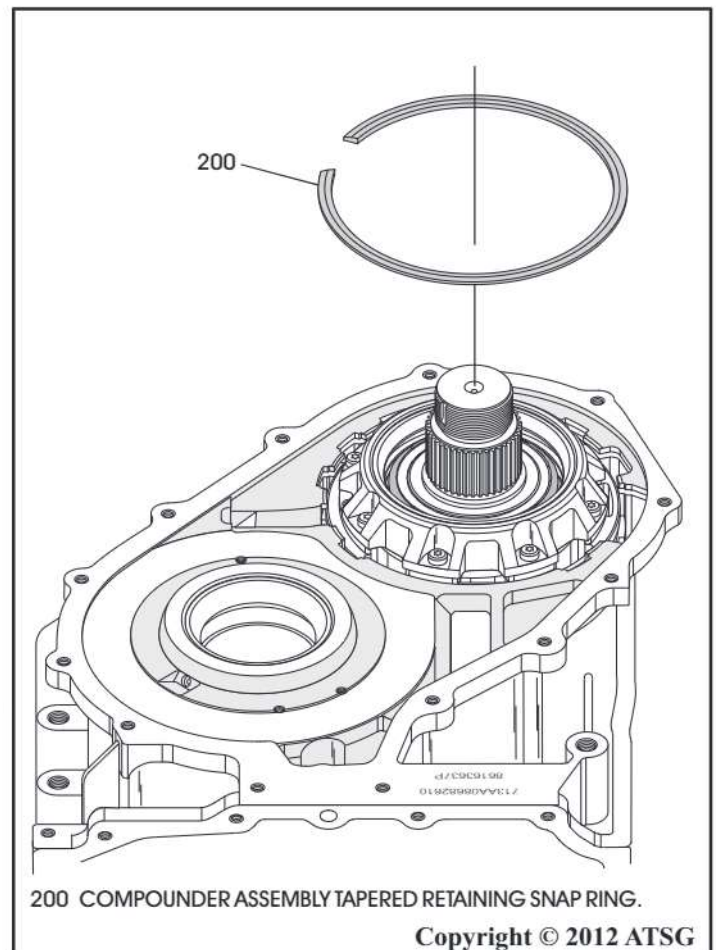


Figure 82

TRANSAXLE DISASSEMBLY (CONT'D)

80. Remove the four bolts from the compounder bearing retainer that are shown in Figure 83.
81. Install the adapter/puller tool number 9908 to the compounder assembly (See Figure 83).
82. Attach a slide hammer to adapter/puller 9908, as shown in Figure 84.

Note: Slide Hammer is required to loosen the compounder assembly from transaxle case.

Continued on Page 53

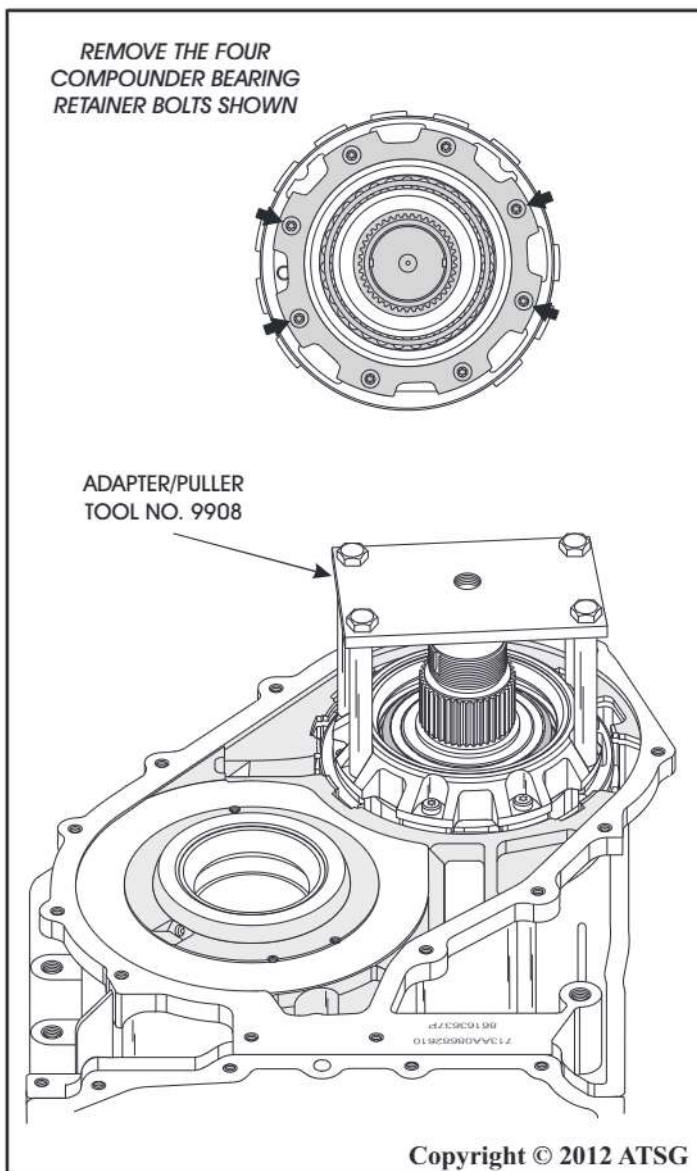


Figure 83

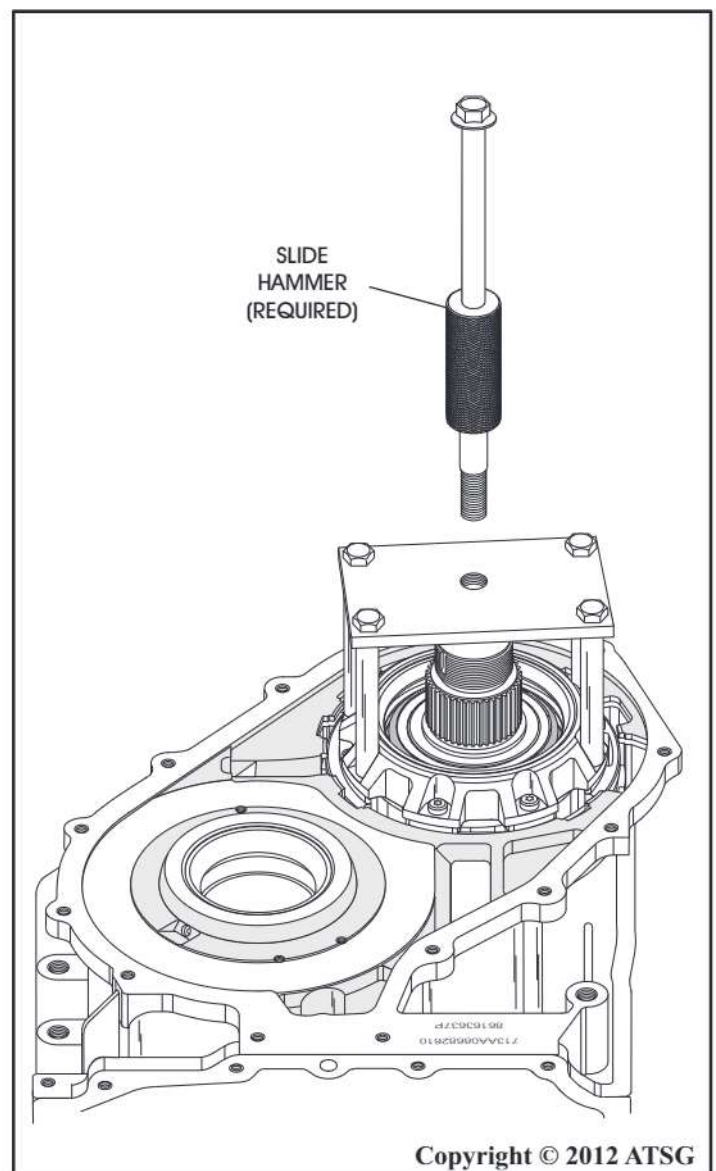


Figure 84

TRANSAXLE DISASSEMBLY (CONT'D)

83. Remove the compounder assembly from the transaxle case by lifting straight up, as shown in Figure 85, and set aside for component rebuild.
84. Lift the output planetary carrier and housing out of case using a pair of snap ring pliers, as shown in Figure 86, and set aside for the component rebuild section.

Continued on Page 54

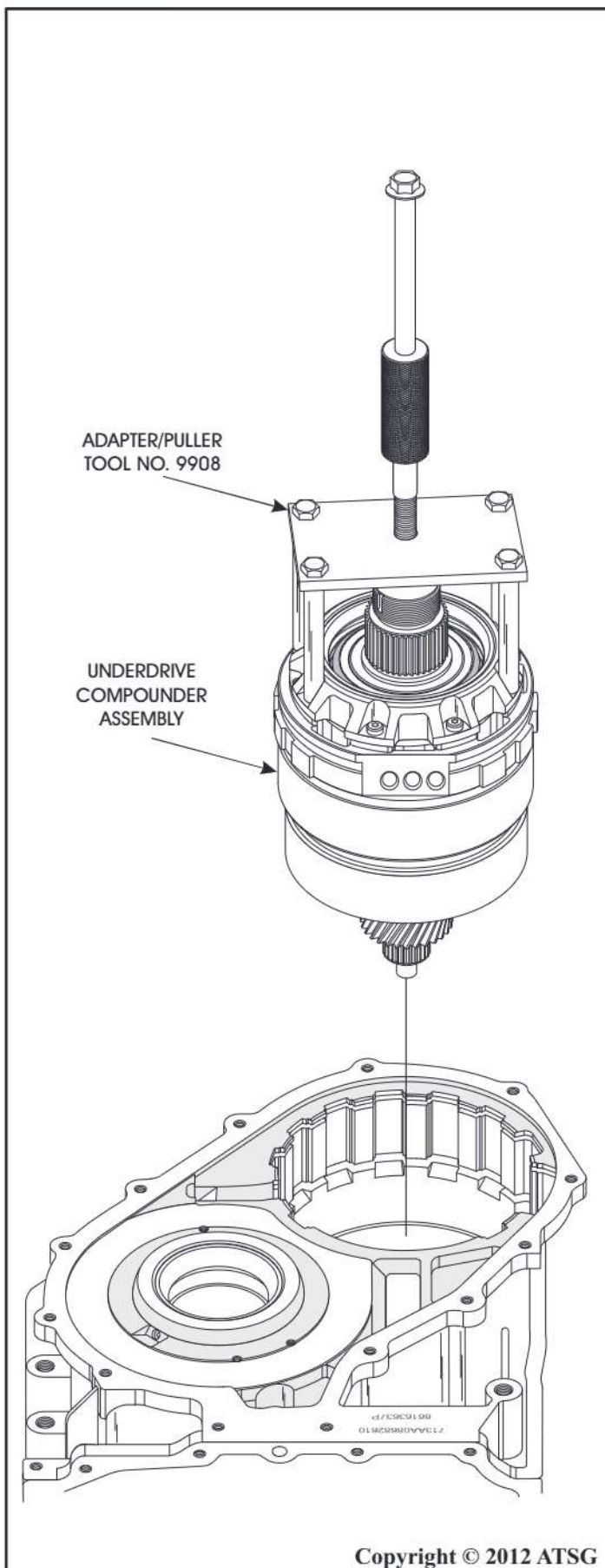


Figure 85

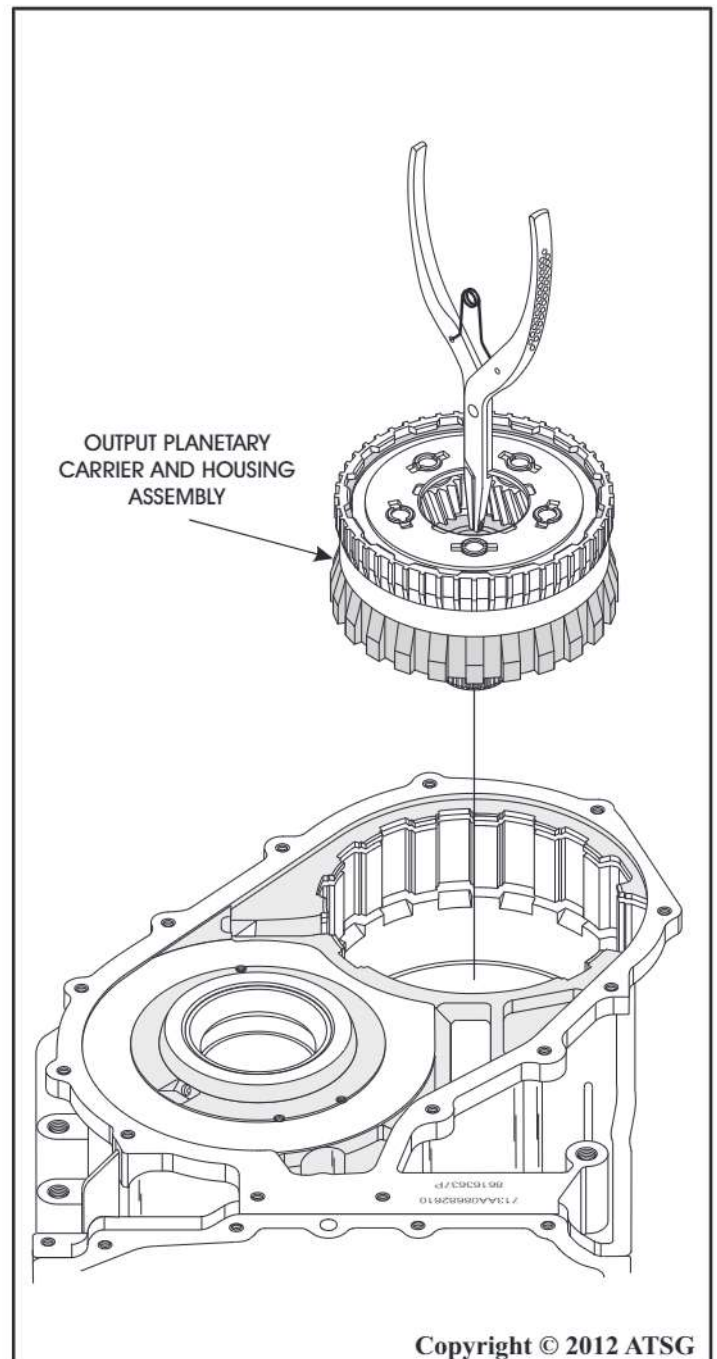


Figure 86

TRANSAXLE DISASSEMBLY (CONT'D)

85. Remove the 10 bolts retaining the pinion gear cover in the case using a T30 Torx bit, as shown in Figure 87.

Note: These 10 bolts are same size thread and length as driven transfer gear roller bearing support bolts, but "will not" interchange. The driven transfer gear bearing support have T25 Torx head and pinion gear cover use T30 Torx.

86. After removing retaining bolts, the cover and pinion gear can be removed as an assembly with snap ring pliers.

87. Remove the 5 differential output bearing cover bolts, as shown in Figure 88, using a T45 Torx bit.

88. Remove the differential output bearing cover, as shown in Figure 88.

89. Remove the differential output bearing selective shim, as shown in Figure 88.

Note: This shim is used to set the differential bearing pre-load.

Continued on Page 55

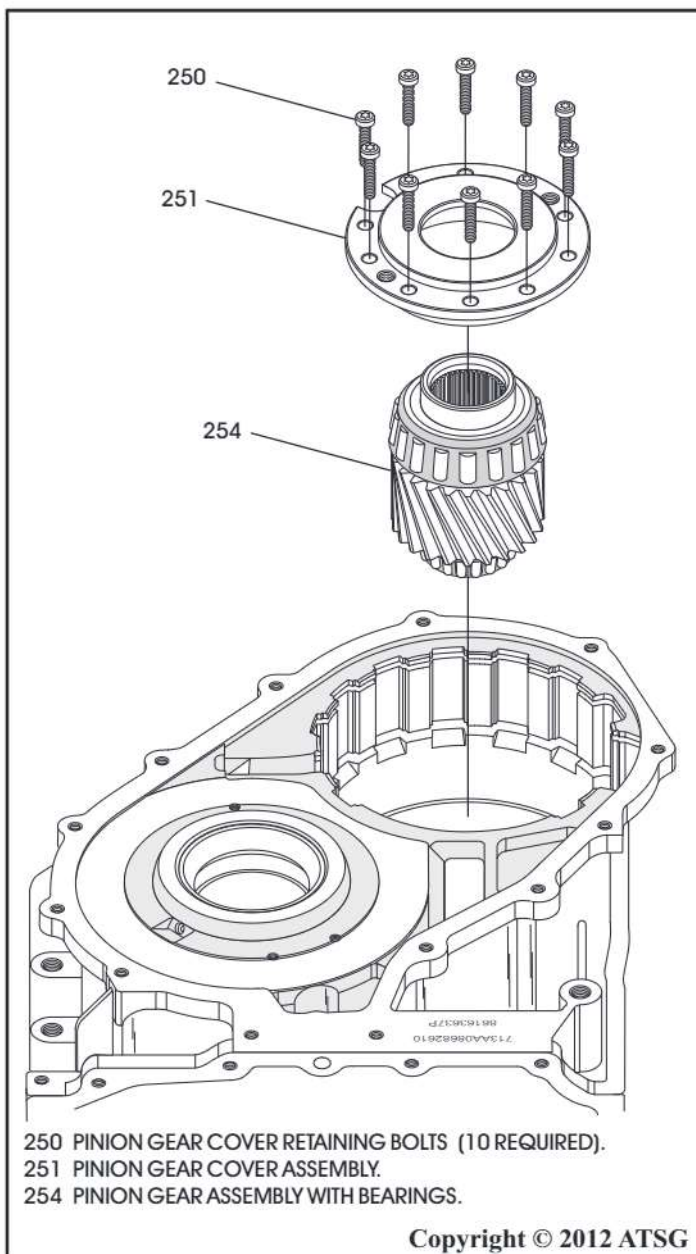


Figure 87

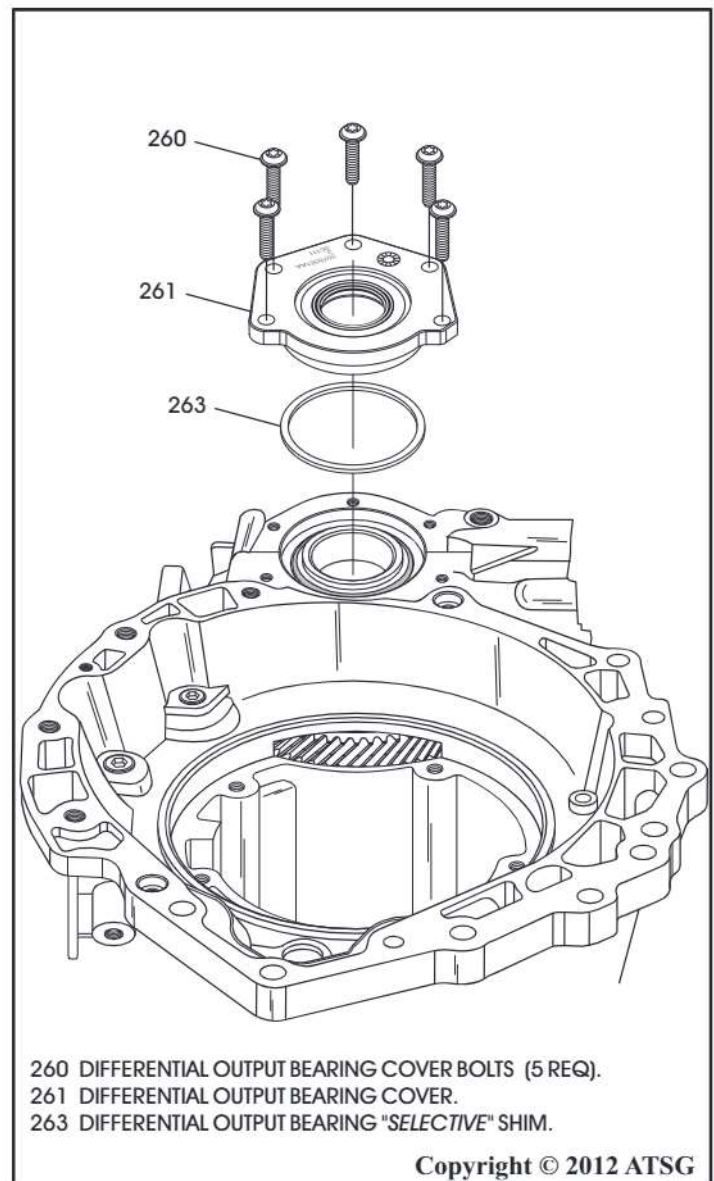


Figure 88

TRANSAXLE DISASSEMBLY (CONT'D)

90. Remove the 10 differential case cover retaining bolts, as shown in Figure 89.
91. Remove the differential case cover, as shown in Figure 89.

Note: There are two "Notches" provided in the case for two large screwdrivers that will allow you to dis-lodge the differential case cover from the case, as shown in Figure 89.

92. Remove the complete differential assembly, both bearing races and the oil weir as an assembly, as shown in Figure 90.
93. Set differential assembly aside for component rebuild section.

**Component Rebuild
begins on Page 56**

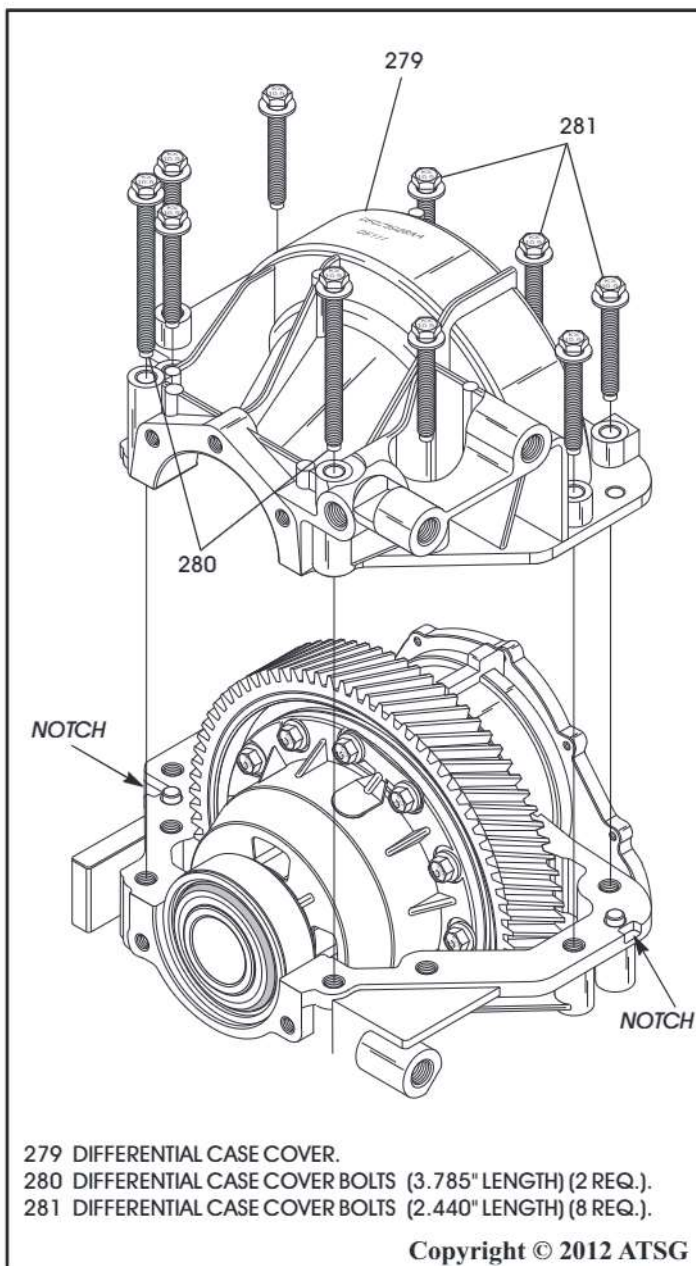


Figure 89

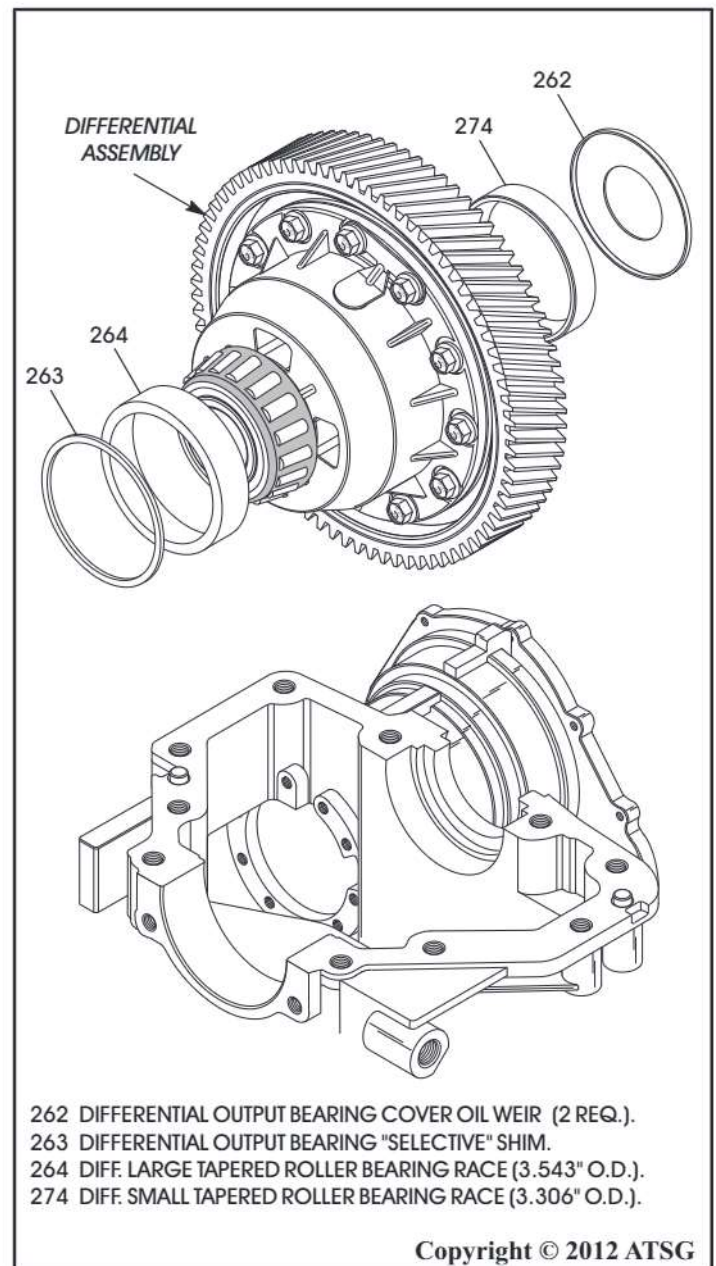


Figure 90

COMPONENT REBUILD

Transaxle Case And Differential

CAUTION: The rotational torque on the pinion and differential must be checked individually. We will install and check the pinion gear first, to verify we have the proper selective shim, and then remove it, so that the differential can be checked.

1. Install new large & small tapered roller bearings on the pinion gear, as shown in Figure 91, using proper adapters and hydraulic shop press.
2. Install new large tapered roller bearing cup into pinion gear cover along with selective shim, as shown in Figure 91, using proper adapters and hydraulic shop press.

3. Use the two special tools shown in Figure 92 to remove the small tapered roller bearing cup from the case.

Note: Very difficult to remove without special tools that are shown.

4. Install new small tapered roller bearing cup into case using the proper drivers until fully seated.

Continued on Page 57

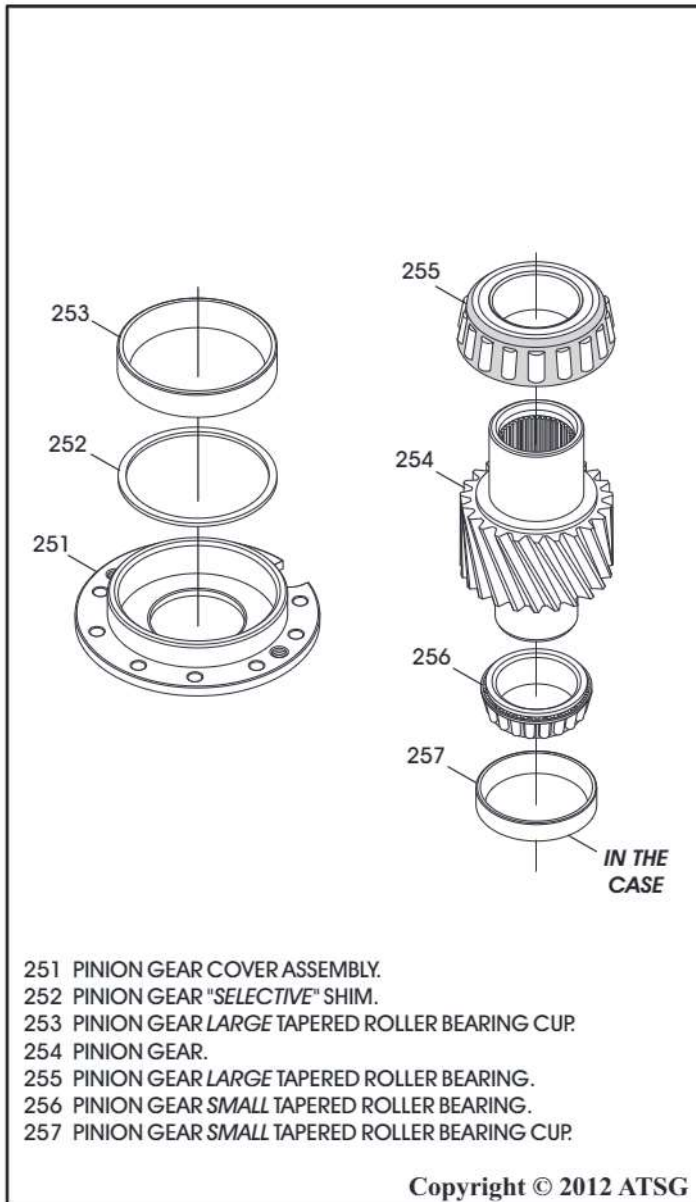


Figure 91

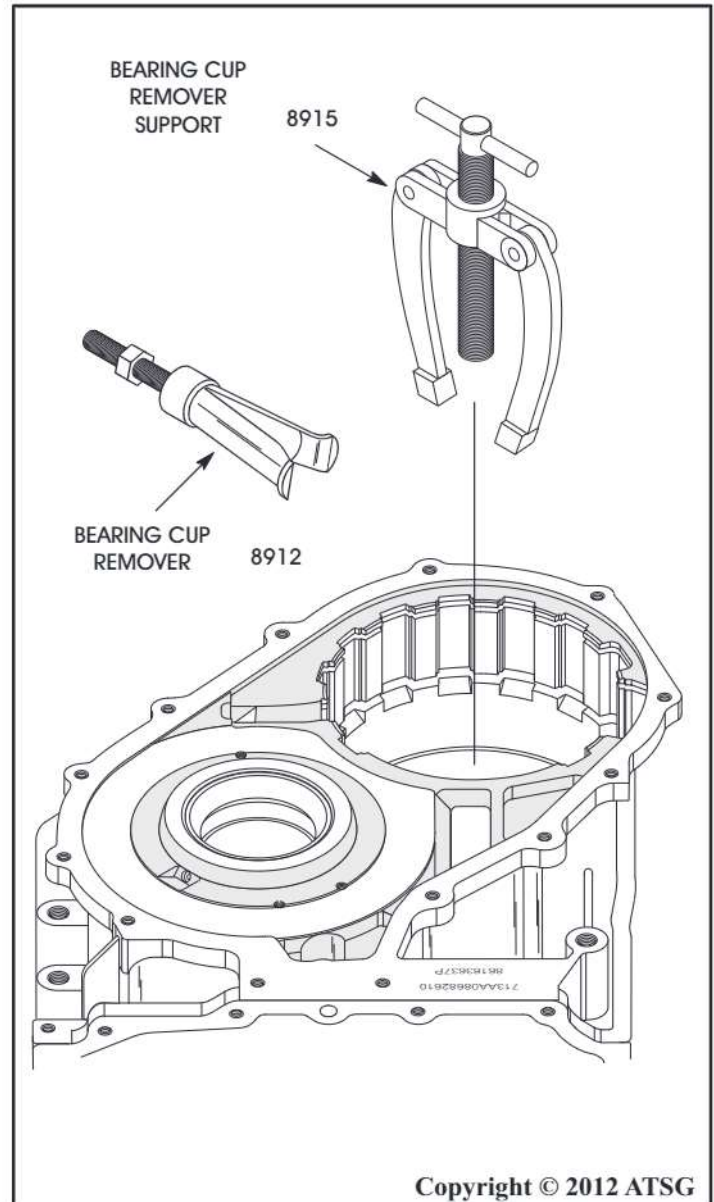


Figure 92

COMPONENT REBUILD

Transaxle Case And Differential (Cont'd)

5. Install the completed pinion gear and bearings into case, as shown in Figure 93.
 6. Install the completed pinion gear cover and race assembly into the case, as shown in Figure 93.
 7. Install the 10 retaining bolts for the pinion gear cover, as shown in Figure 93.
- Note: Remember, these bolts are 30 Torx head.**
8. Torque the pinion gear cover retaining bolts to 12 N·m (105 in.lb.).

9. Check rotating torque using pinion gear torque tool C-4995A and an inch pound, dial type torque wrench, as shown in Figure 94.
- Note: The differential assembly must not be installed when checking pinion pre-load torque.**
10. Rotating torque for the pinion gear should be 2 to 8 in.lb. If more than 8 in.lb., decrease shim thickness under pinion gear cover race. If less than 2 in.lb., increase shim thickness.
- Note: Shims available from local OEM dealer.**
11. Once you have verified proper shim thickness remove the pinion gear cover and gear assembly.

Continued on Page 58

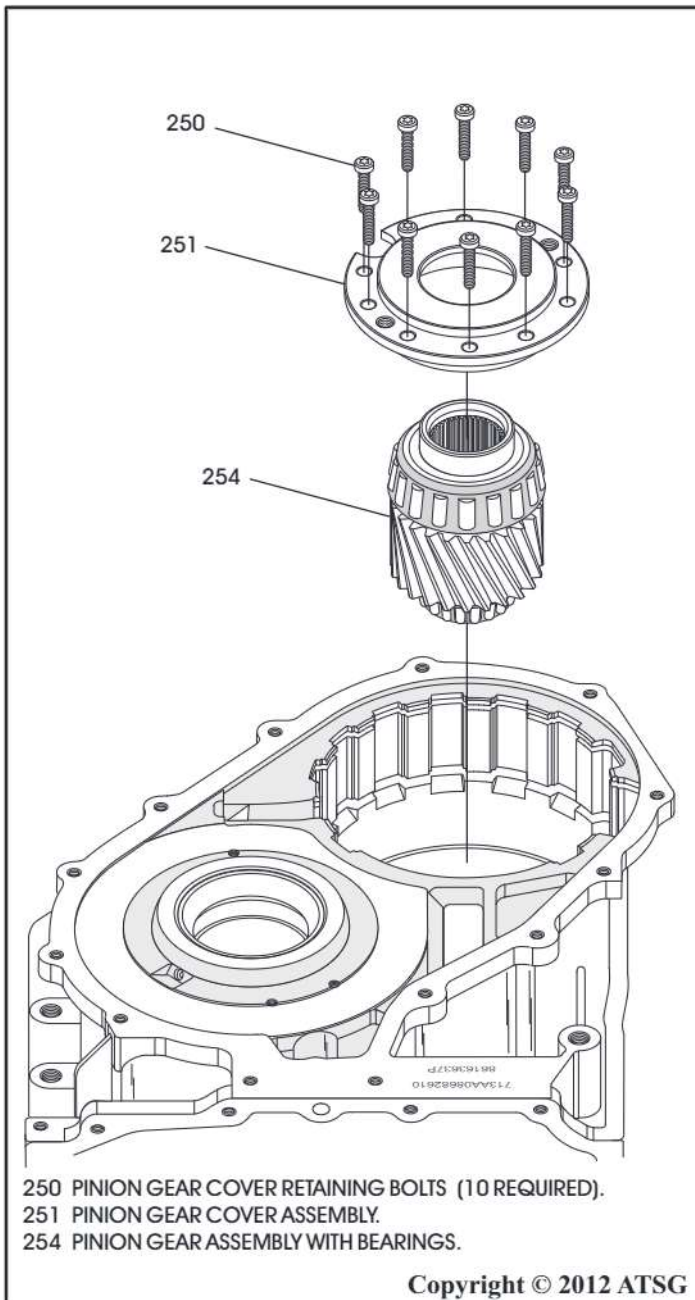


Figure 93

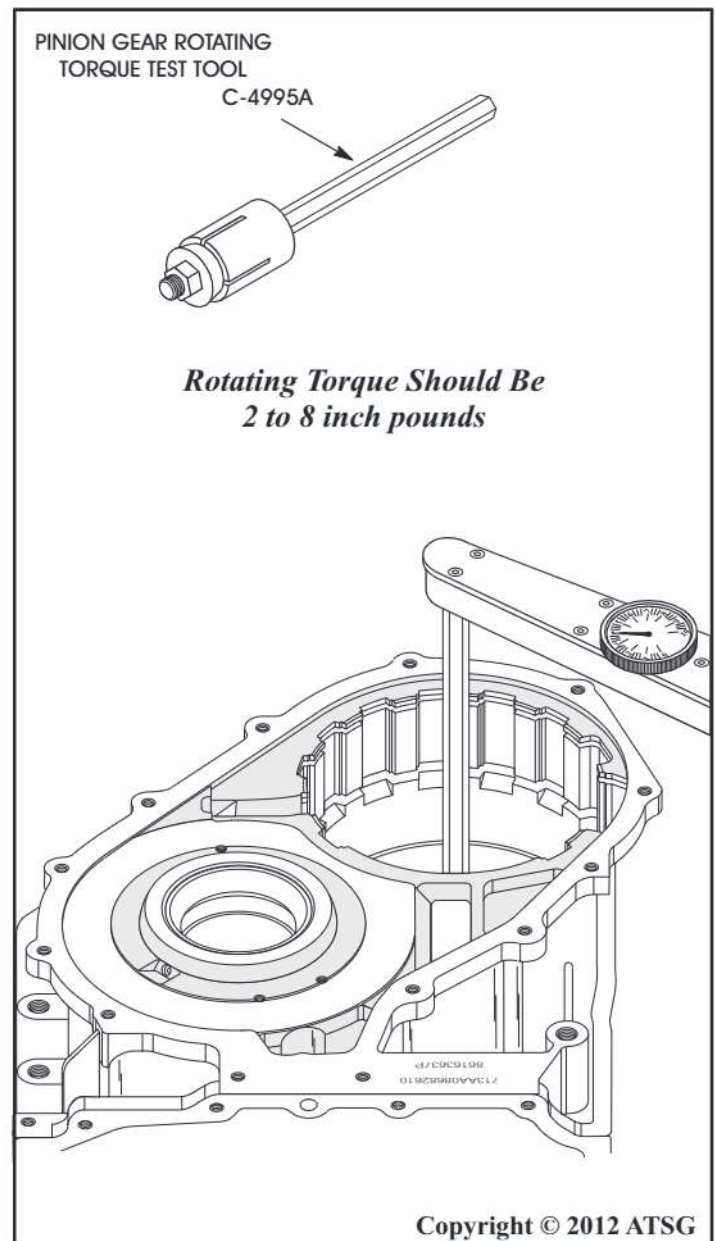


Figure 94

COMPONENT REBUILD

Transaxle Case And Differential (Cont'd)

12. Disassemble the differential assembly using Figure 97 as a guide.
13. Clean and inspect all of the differential parts thoroughly. Replace as necessary.
14. If bearing service is required, the tools shown in Figure 95, or their equivalent, and suitable hydraulic shop press will be necessary.

Note: Always replace tapered roller bearings and cups in sets.

15. Install one oil weir into back side of the output bearing cover with lip facing up, as shown in Figure 96.

Note: Not necessary to remove oil weir unless it is damaged.

16. Install new axle seal into front side of the output bearing cover, as shown in Figure 96.
 17. Install one side gear and washer into differential case housing, using Figure 97 as a guide.
 18. Install both pinion gears and washers into the differential case housing, while orientating the washer tabs to notch in housing (See Figure 97).
 19. Install the differential pinion gear cross shaft using Figure 97 as a guide.
 20. Install remaining side gear and then side gear washer using Figure 97 as a guide.
 21. Install differential case cover on top of housing while aligning through the holes (See Figure 97).
 22. Install the differential ring gear to the differential case housing, as shown in Figure 97.
 23. Install the 12 retaining bolts along with pinion cross shaft retainers, as shown in Figure 97.
- Note: Use red Loc-tite® on all ring gear bolts.**
24. Torque the 12 ring gear retaining bolts to 95 N·m (70 ft.lb.).
 25. Install new tapered roller bearings as necessary using the proper adapters and hydraulic shop press.

Continued on Page 60

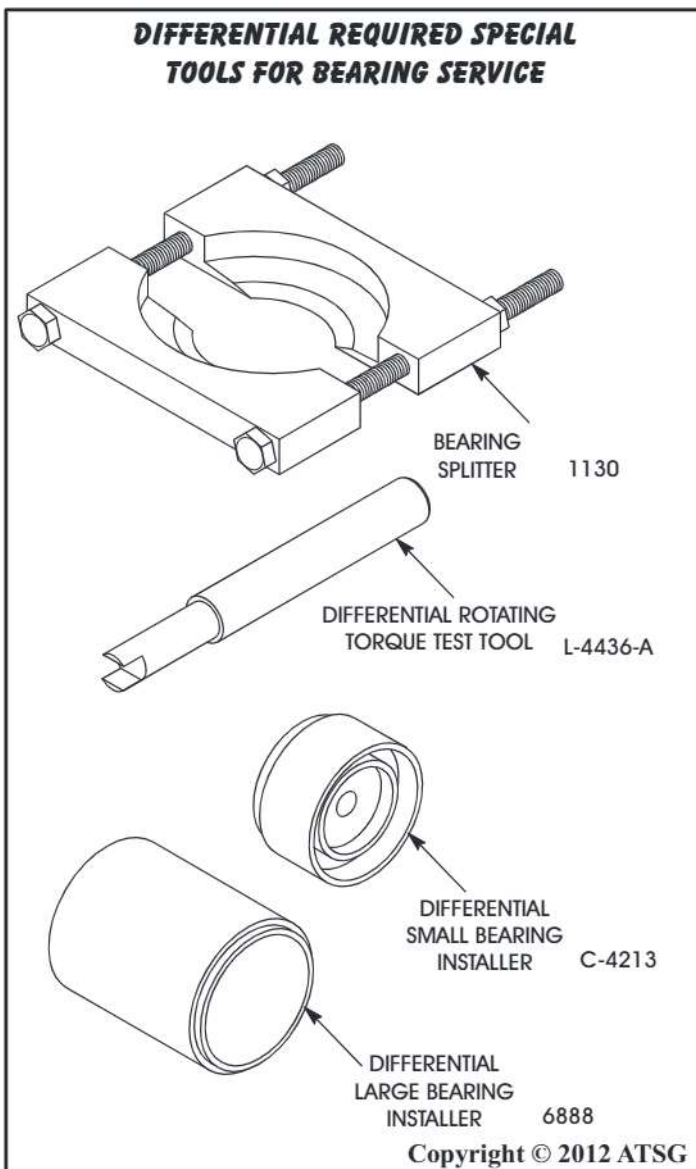


Figure 95

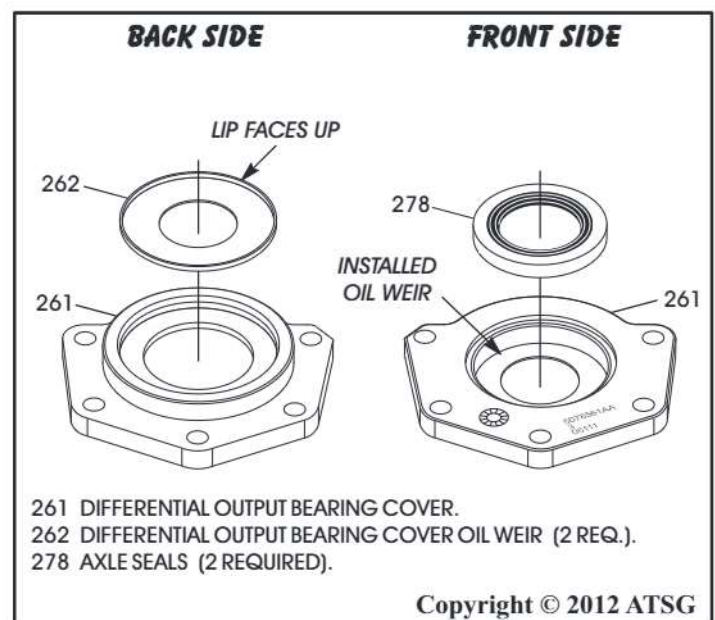
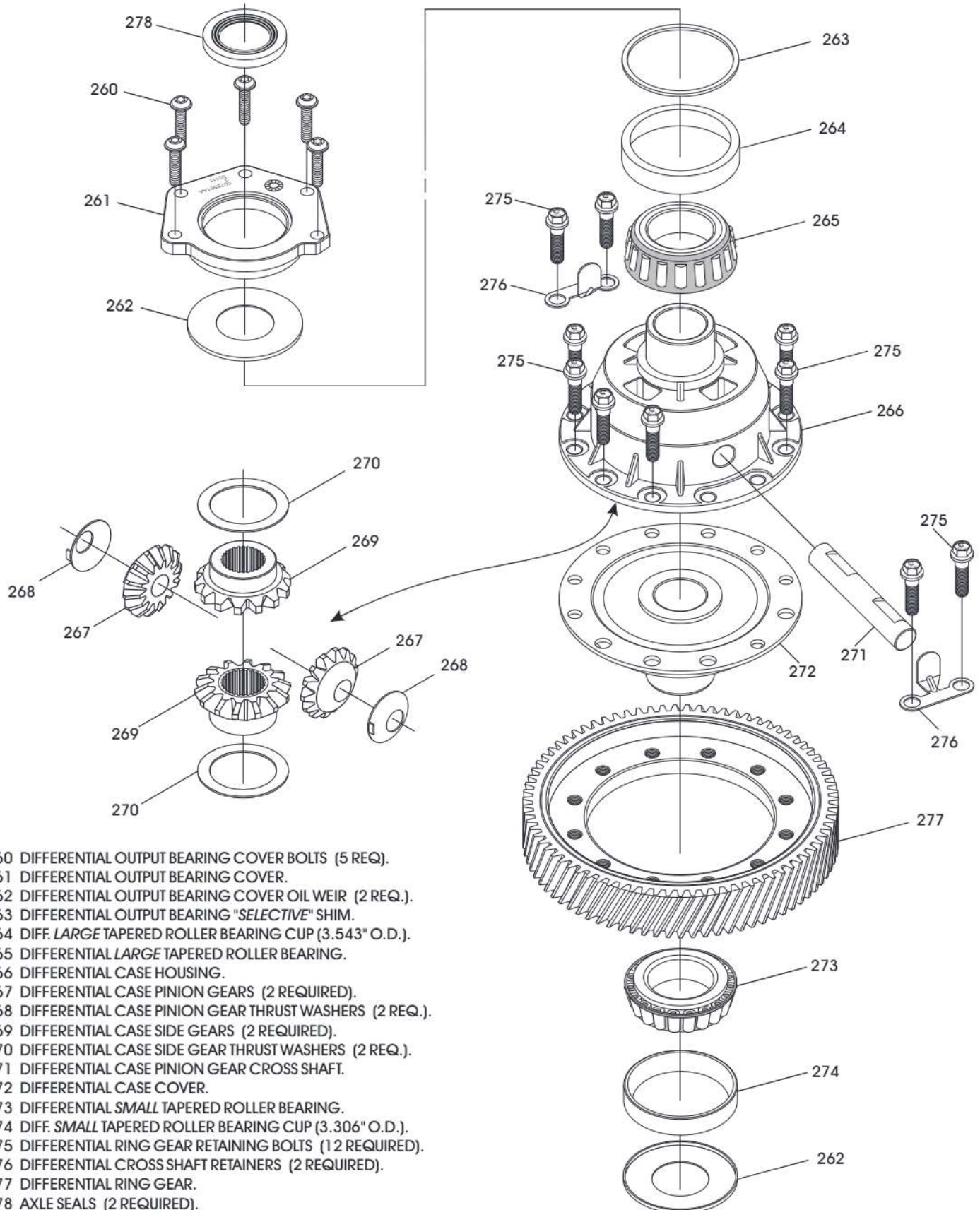


Figure 96

DIFFERENTIAL EXPLODED VIEW



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Figure 97

COMPONENT REBUILD

Transaxle Case And Differential (Cont'd)

26. Install the completed differential assembly, both bearing cups and the oil weir as an assembly, as shown in Figure 98.

Note: Ensure that oil weir is placed in proper position in the case, as it is smaller diameter than the bearing cup (See Figure 99).

27. Install selective shim against the large tapered roller bearing cup, as shown in Figure 98.

28. Install bead of Mopar® RTV, or equivalent, on the differential cover, as shown in Figure 100.

Continued on Page 61

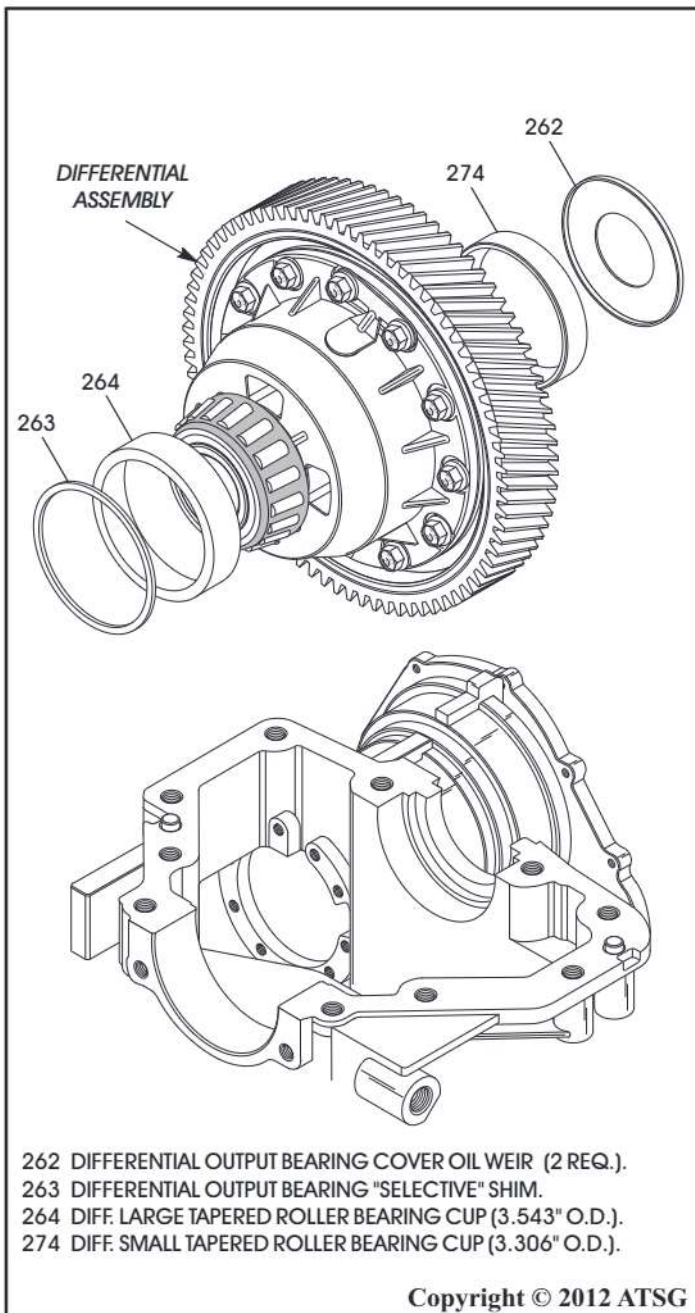


Figure 98

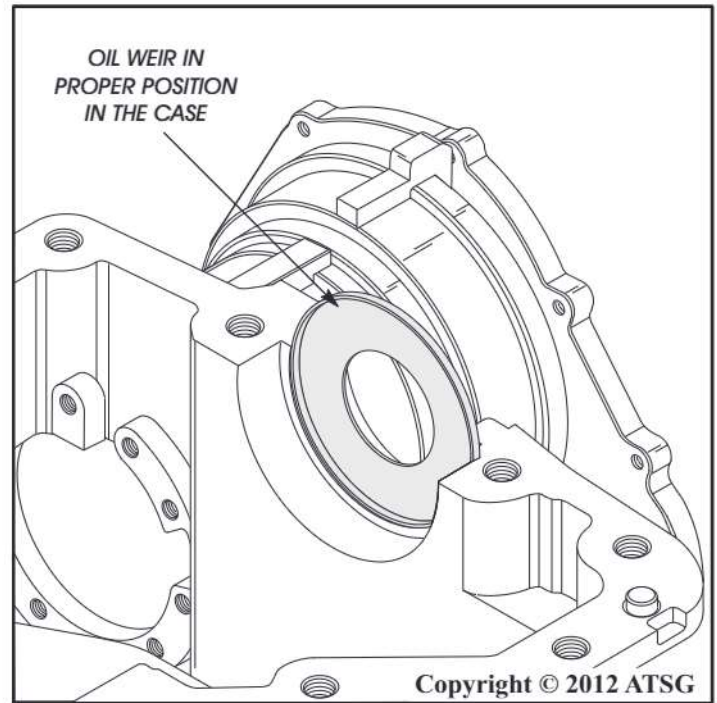


Figure 99

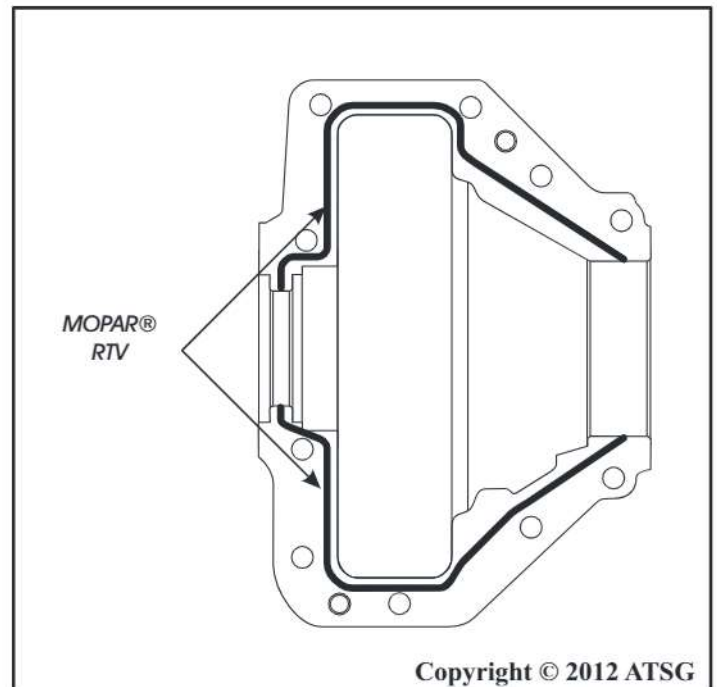


Figure 100

COMPONENT REBUILD

Transaxle Case And Differential (Cont'd)

29. Install differential case cover and bolts in their proper positions, as shown in Figure 101.
- Note:** Four of the ten bolts, marked with the arrows in Figure 101, are installed with green **Loc-tite® 290** on the threads.
30. Torque all of the differential case cover bolts to 61 N·m (45 ft.lb.).
31. Install bead of RTV on the output bearing cover.
32. Install the output bearing cover along with the selective shim, as shown in Figure 103
33. Install 5 retaining bolts, as shown in Figure 103 and torque to 12 N·m (105 in.lb.).

Continued on Page 62

TORQUE DIFFERENTIAL COVER BOLTS TO 61 N·M (45 FT.LB.)

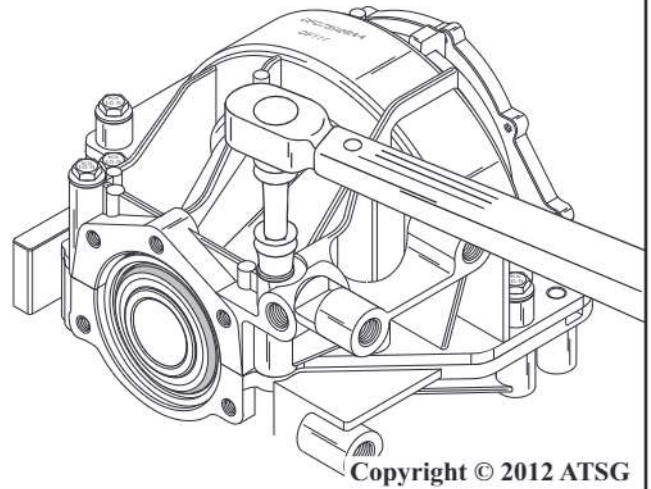
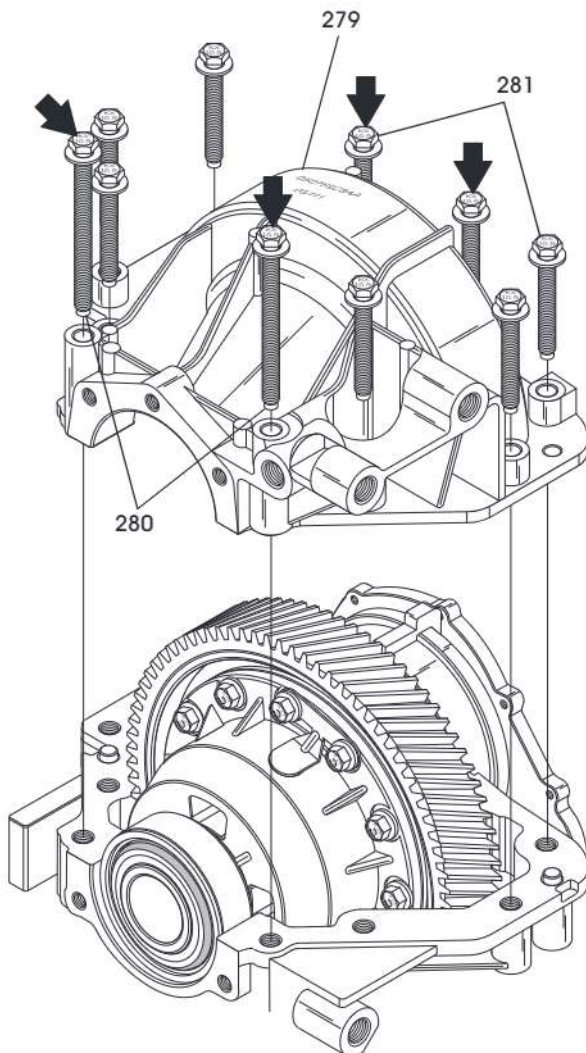


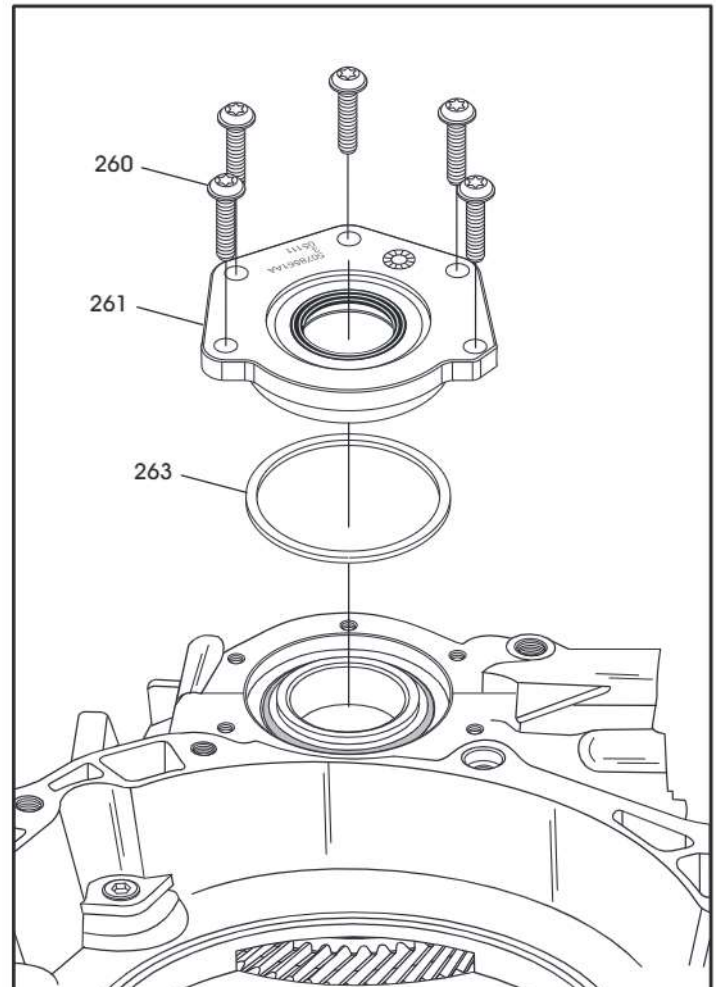
Figure 102



- 279 DIFFERENTIAL CASE COVER.
280 DIFFERENTIAL CASE COVER BOLTS (3.785" LENGTH) (2 REQ.).
281 DIFFERENTIAL CASE COVER BOLTS (2.440" LENGTH) (8 REQ.).

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Figure 101



- 260 DIFFERENTIAL OUTPUT BEARING COVER BOLTS (5 REQ.).
261 DIFFERENTIAL OUTPUT BEARING COVER.
263 DIFFERENTIAL OUTPUT BEARING "SELECTIVE" SHIM.

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Figure 103

COMPONENT REBUILD

Transaxle Case And Differential (Cont'd)

34. Check the rotating torque of differential assembly using tool L4436-A and an inch pound, dial type torque wrench, as shown in Figure 104.

Note: The pinion gear assembly must not be installed when checking differential pre-load.

35. Rotating torque for differential assembly should be 10 to 20 inch pounds. If more than 20 in.lb., decrease shim thickness under output bearing cover. If less than 10 in.lb., increase the shim thickness under output bearing cover.

Note: Shims available from local OEM Dealer.

36. Install new left hand axle seal using the proper driver, as shown in Figure 105.
37. Now you can re-install the pinion gear assembly, pinion gear cover and the retaining bolts, as shown in Figure 106.
38. Torque the pinion gear cover retaining bolts to 12 N·m (105 in.lb.).

Continued on Page 63

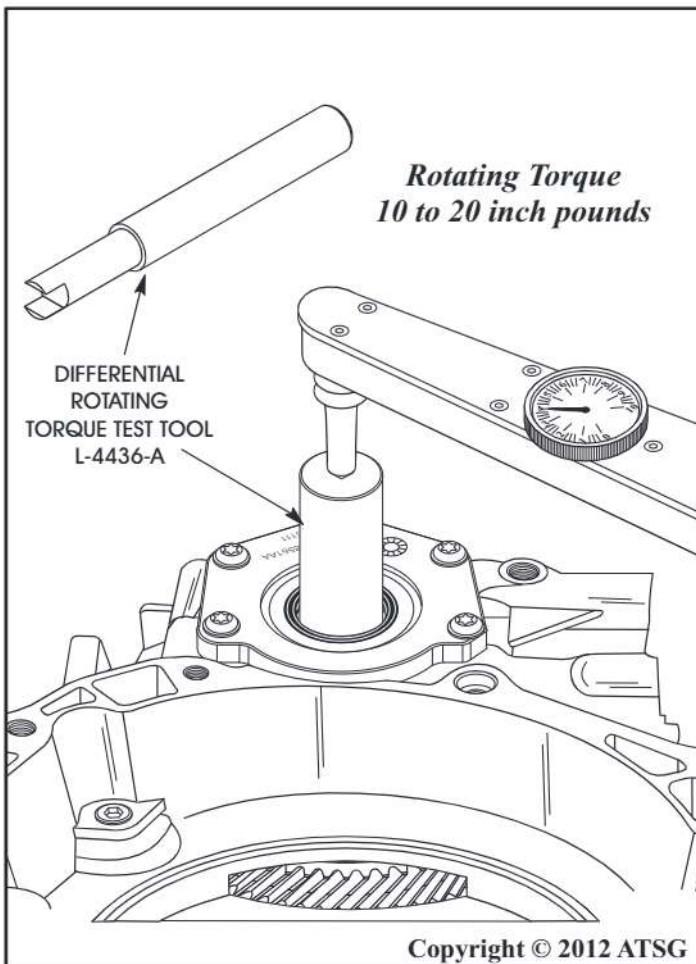


Figure 104

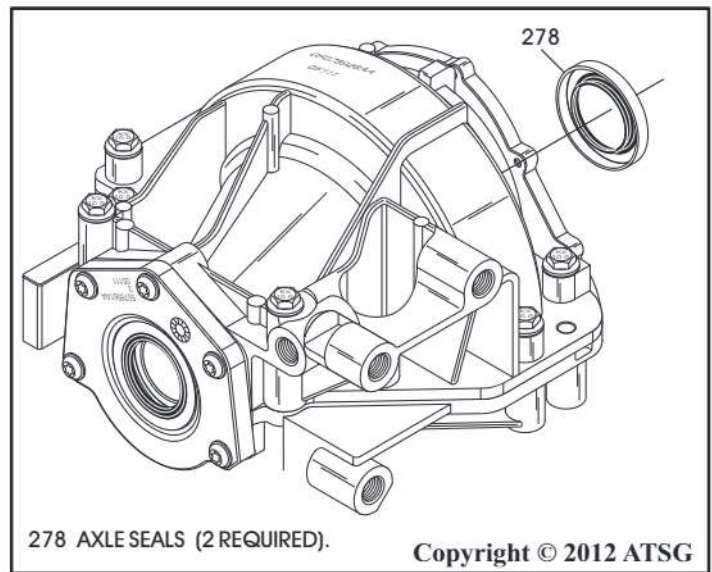


Figure 105

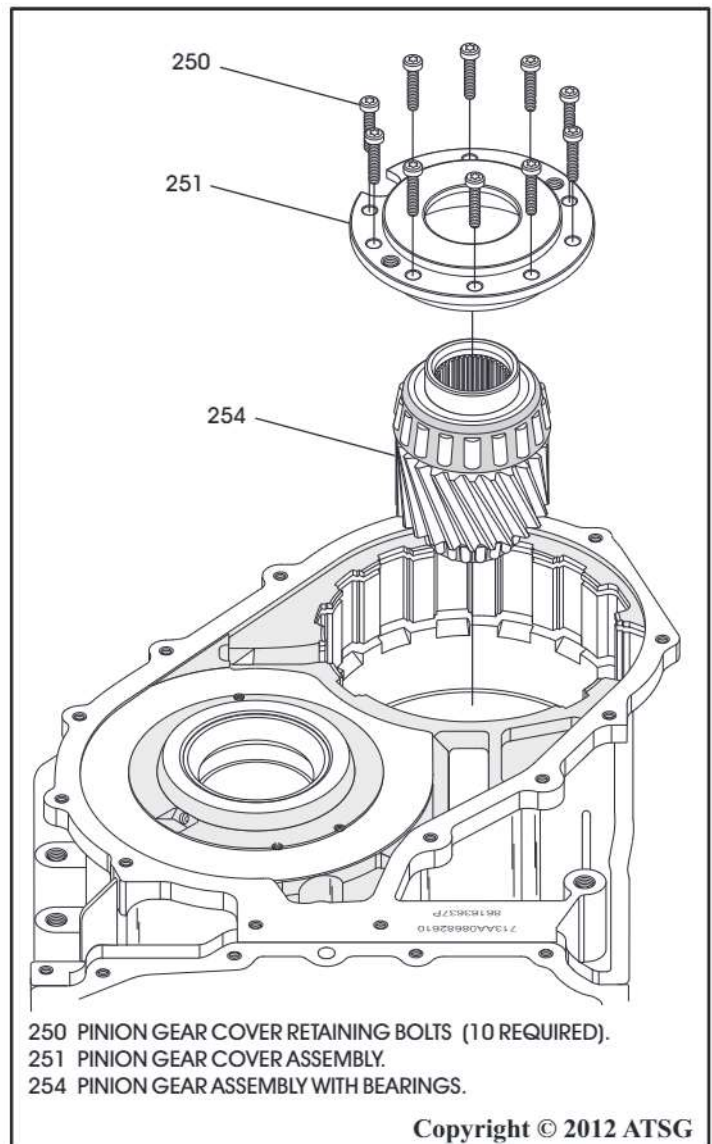


Figure 106

COMPONENT REBUILD

Transaxle Case And Differential (Cont'd)

39. If bearing service is necessary, replace the two tapered roller bearing cups for rear planetary carrier and drive transfer gear, as shown in Figure 107, using the proper drivers.

Note: If rear planetary carrier replacement is necessary (common concern) because of the number 7 thrust bearing failure, ensure that you have the proper replacement part. Some technicians have mistakenly installed the late 5 pinion "604" carrier and spoiled their day. Even though the gear ratio is the same, the speed sensor reductor tooth count is different and they "will not" interchange, as shown in Figure 108.

40. Install new tapered roller bearings on the rear planetary carrier and the drive transfer gear, as shown in Figure 109, using the proper adapters and hydraulic shop press.

Continued on Page 64

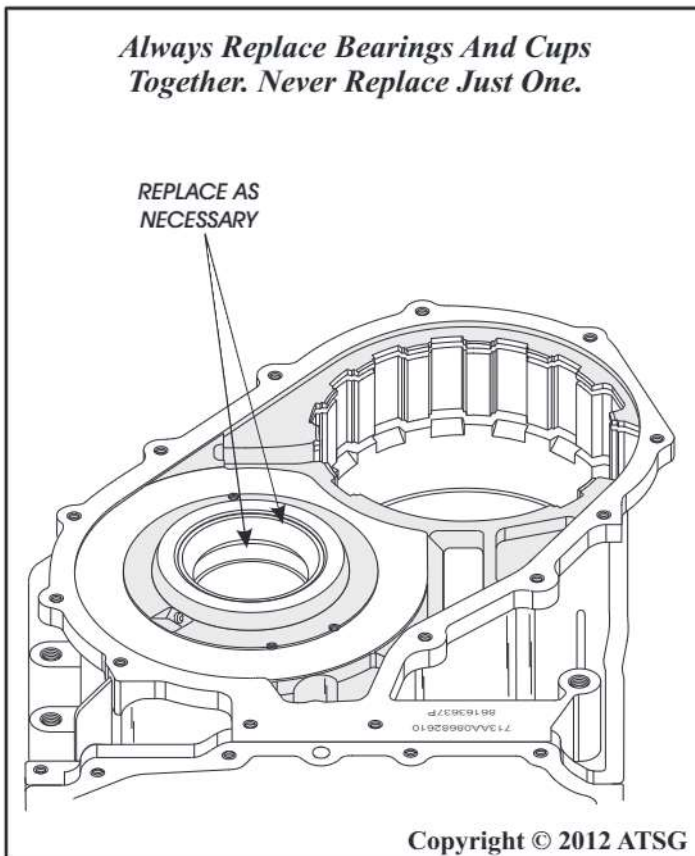


Figure 107

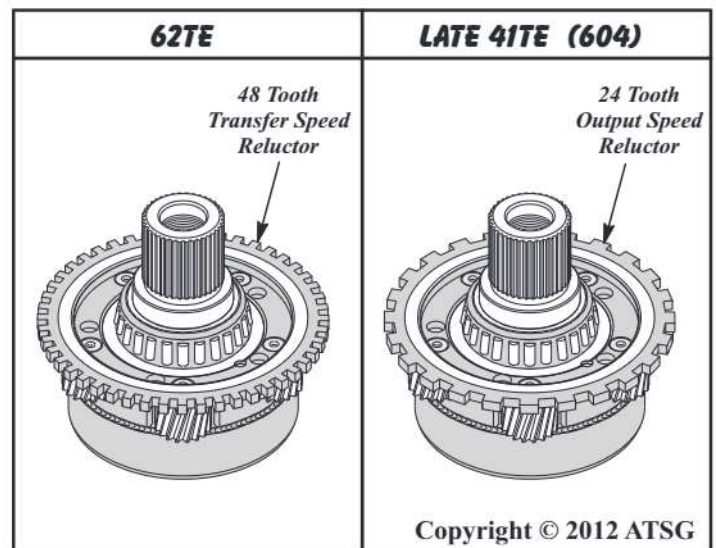


Figure 108

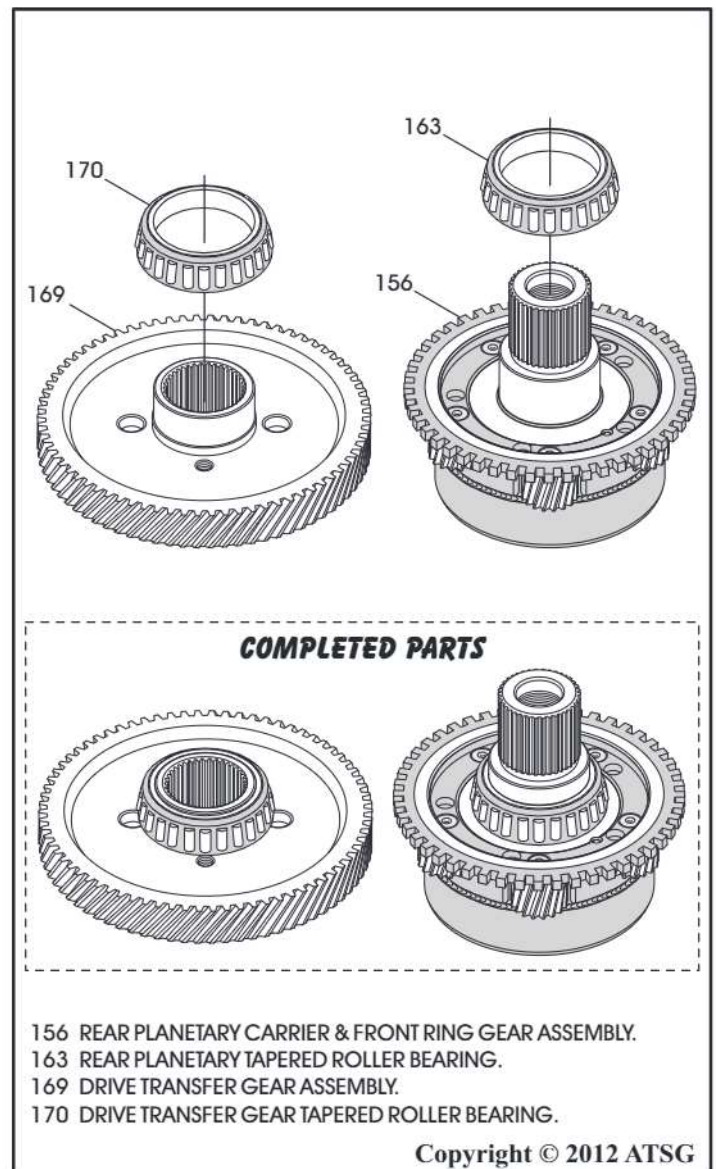


Figure 109

COMPONENT REBUILD

Transaxle Case And Differential (Cont'd)

41. Install low/reverse clutch piston retainer gasket in case, as shown in Figure 110, and align holes in gasket to holes in case.
42. Install the new low/reverse clutch piston retainer into case, as shown in Figure 110, and align holes.
- Note: The low/reverse clutch piston retainer is included in most gasket sets.**
43. Install the 3 Torx retaining screws, as shown in Figure 110, and torque to 5 N·m (45 in.lb.) using a T-20 Torx bit.
44. Lubricate **new** low/reverse clutch bonded piston and the seal surfaces of low/reverse retainer with a small amount of Trans-Jel®.
45. Install the **new** low/reverse clutch bonded piston, as shown in Figure 111, and ensure fully seated.

Continued on Page 65

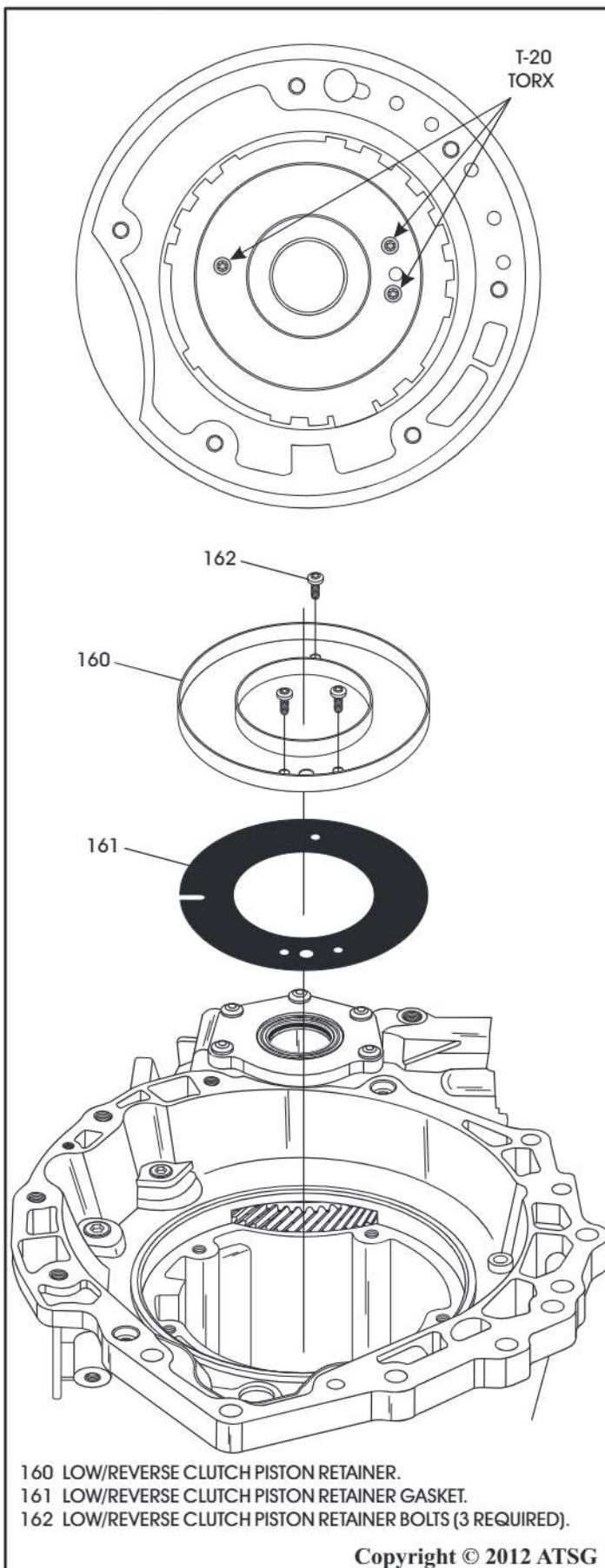


Figure 110

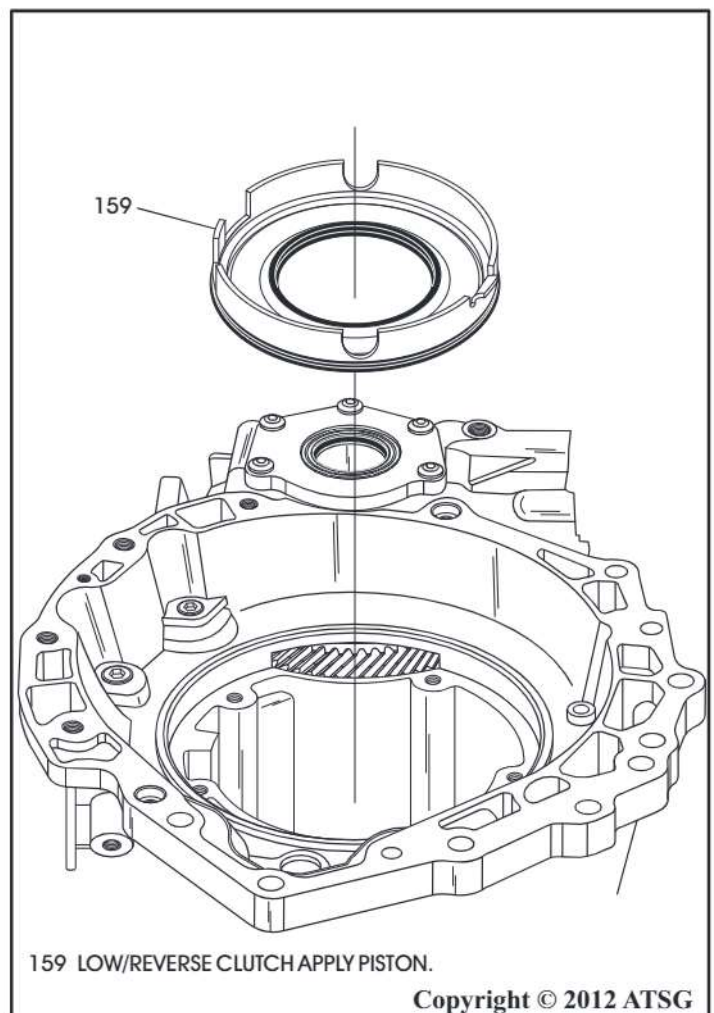


Figure 111

COMPONENT REBUILD

Transaxle Case And Differential (Cont'd)

46. Install the low/reverse clutch piston "bellville" return spring in the direction that is shown in Figure 112.

Note: If replacement is necessary, ensure that you do not inadvertently grab one for the 41TE aluminum piston from the shelf, as they will not interchange, as shown in Figure 113.

47. Compress the return spring using a universal spring compressor and install the retaining snap ring, as shown in Figure 112

Note: Snap ring opening must be between the return spring levers..

48. Install the completed rear planetary carrier, as shown in Figure 114.

Continued on Page 66

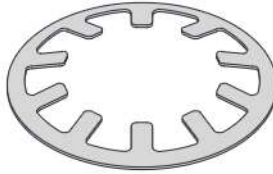
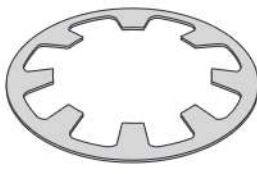
41TE Bonded Piston 62TE Bonded Piston	41TE Aluminum Piston
	
10 Apply Legs 5.725" O.D.	8 Apply Legs 5.409" O.D.
WILL NOT INTERCHANGE	
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Figure 113

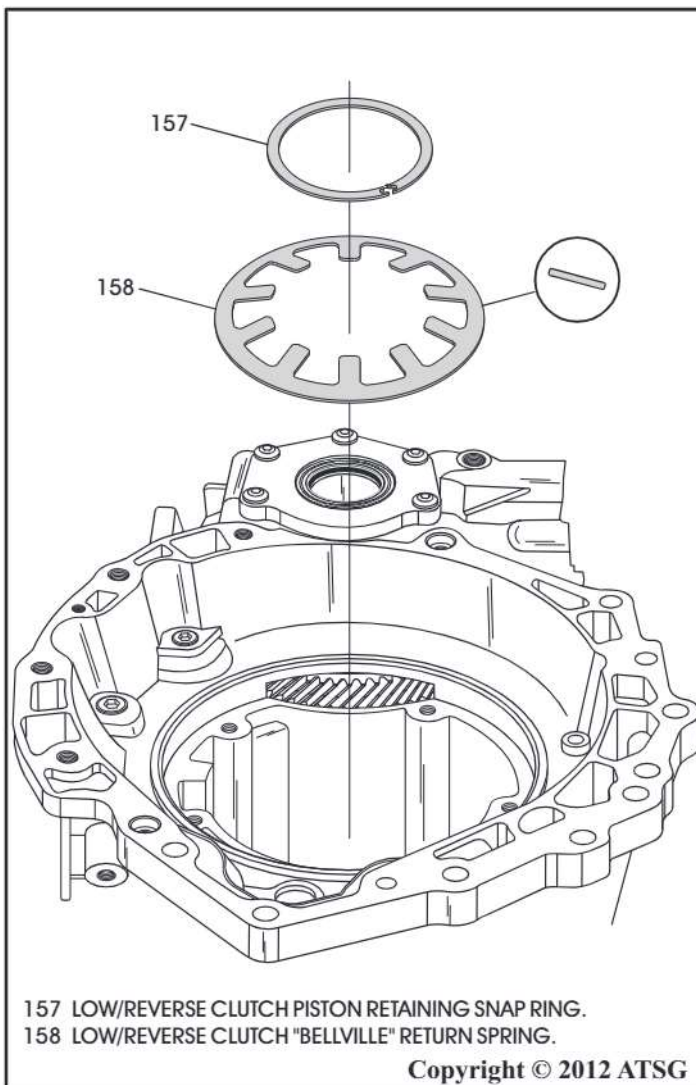


Figure 112

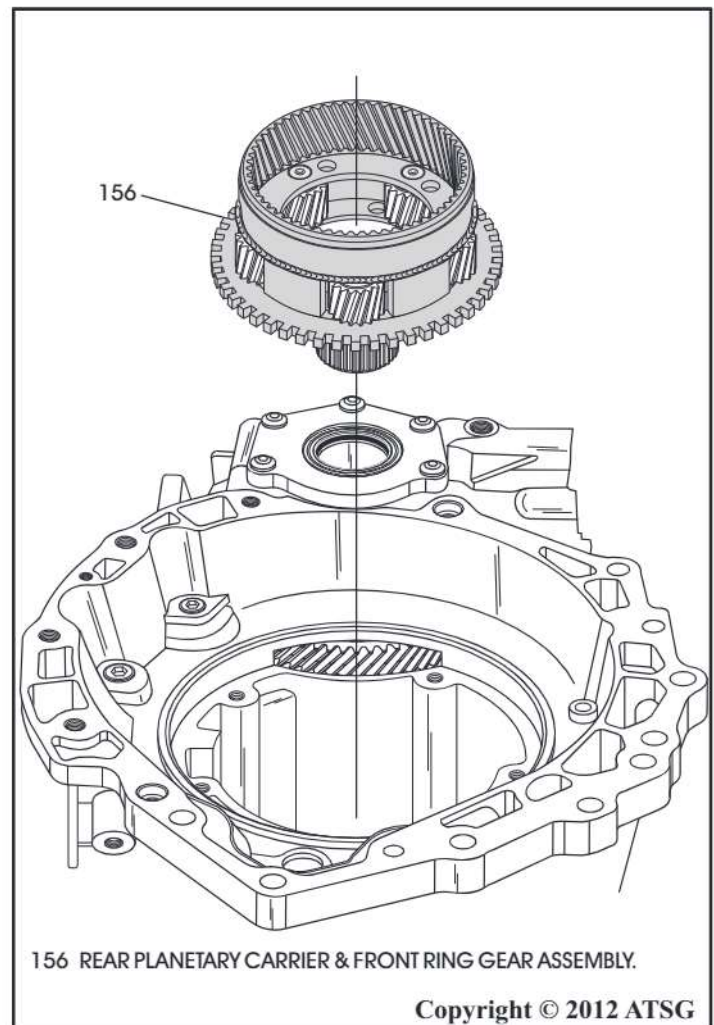


Figure 114

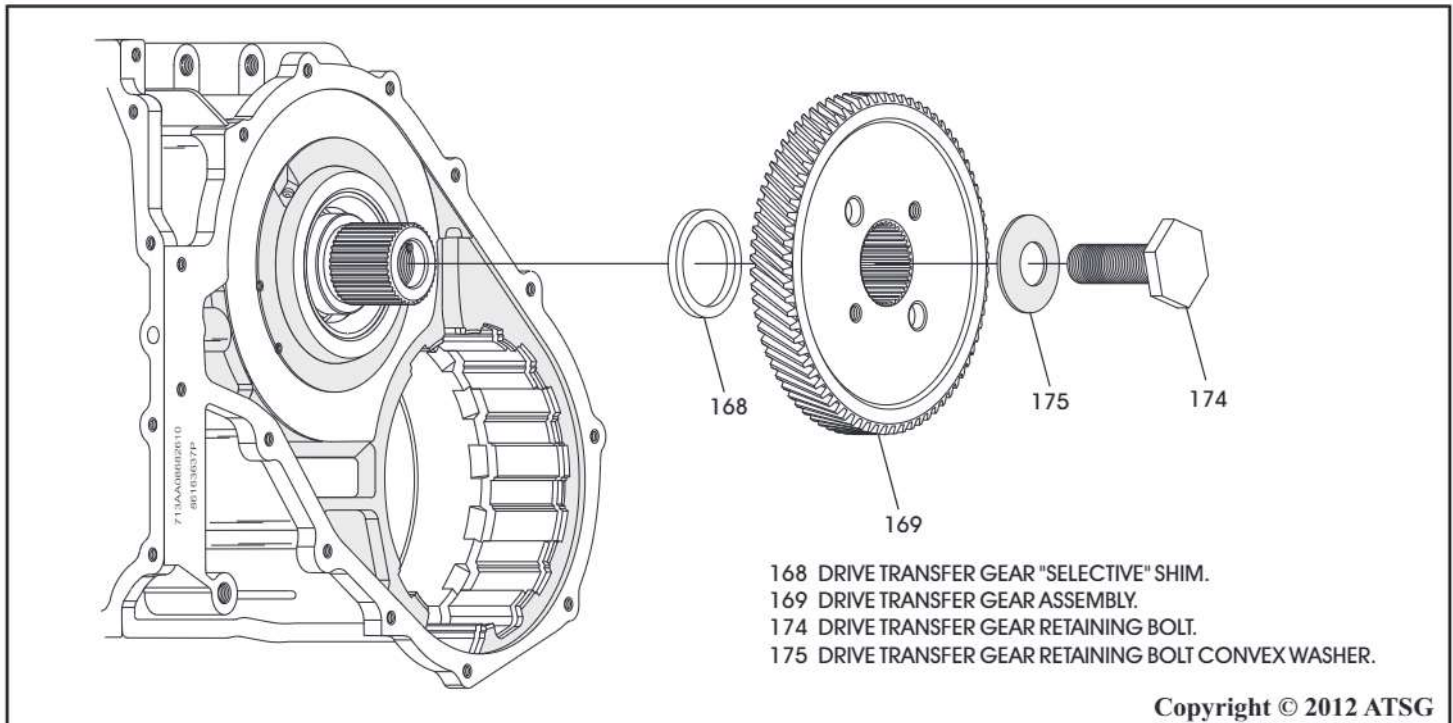


Figure 115

COMPONENT REBUILD

Transaxle Case And Differential (Cont'd)

49. Install the selective shim onto the rear planetary shaft, as shown in Figure 115.

Note: These steps should be done with the transaxle centerline in a horizontal position, as shown in Figure 115, to prevent any damage to the rear planetary carrier.

50. Install the transfer drive gear onto the planetary shaft, as shown in Figure 115.
51. Use the convex washer and retaining bolt to pull and seat the transfer drive gear, as shown in Figure 115.

Note: Transfer gear retaining bolt should be installed with Blue Loc-tite® on threads.

52. Torque the transfer gear retaining bolt to 271 N·m (200 ft.lb.).
53. Check the rotating torque of the transfer drive gear using a 1-1/2" socket and inch pound, dial type torque wrench, as shown in Figure 116.
54. Rotating torque should be 3-8 inch pounds. If the rotating torque is too high, install a thicker shim. If the rotating torque is too low, install a thinner shim. Available selective shims and their part numbers are provided in Figure 117.
55. Set completed case aside for final assembly.

Continued on Page 67

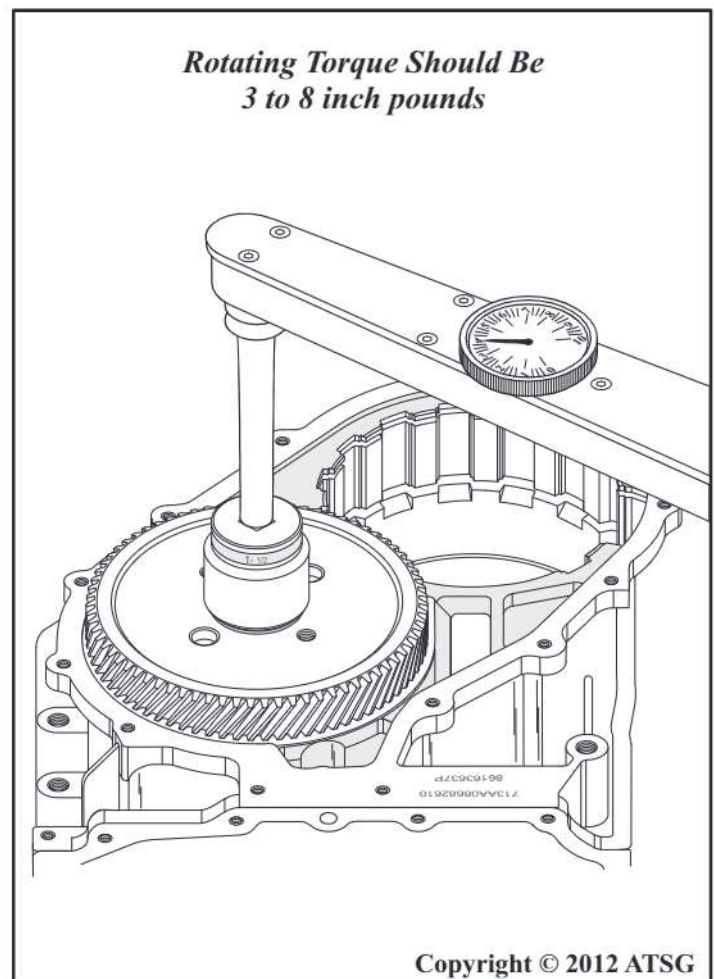


Figure 116

COMPONENT REBUILD

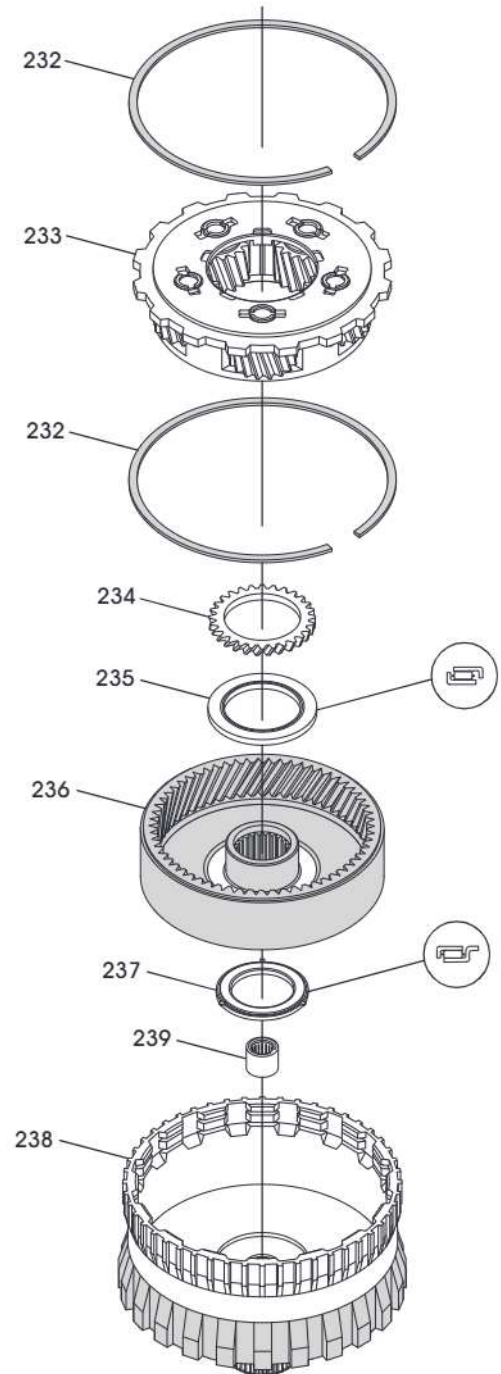
Output Planetary Assembly

1. Disassemble the output planetary assembly using Figure 118 as a guide.
2. Clean all output planetary parts thoroughly and dry with compressed air.
3. Inspect all output planetary parts thoroughly for any wear and/or damage. Replace as necessary.

Continued on Page 68

Rear Planetary Carrier/Transfer Drive Gear Shim Chart	
Shim Thickness	Part Number*
4.42mm (.174")	4412830AB
4.38mm (.172")	4412829AB
4.34mm (.171")	4412828AB
4.30mm (.169")	4412827AB
4.26mm (.168")	4412826AB
4.22mm (.166")	4412825AB
4.18mm (.165")	4412824AB
4.14mm (.163")	4412823AB
4.10mm (.161")	4412822AB
4.06mm (.160")	4412821AB
4.02mm (.158")	4412820AB
3.98mm (.157")	4412819AB
3.94mm (.155")	4412818AB
3.90mm (.154")	4412817AB
3.86mm (.152")	4412816AB
3.82mm (.150")	4412815AB
3.78mm (.149")	4412814AB
3.74mm (.147")	4412813AB
3.70mm (.146")	4412812AB
3.66mm (.144")	4412811AB
3.62mm (.143")	4412810AB
3.58mm (.141")	4412809AB
3.54mm (.139")	4412808AB
3.50mm (.138")	4412807AB
Copyright © 2012 ATSG	*At Time of Printing

Figure 117



- 232 OUTPUT PLANETARY CARRIER RETAINING SNAP RINGS (2 REQ.).
- 233 OUTPUT PLANETARY CARRIER.
- 234 OUTPUT PLANETARY SUN GEAR "HELICAL" SELECTIVE SHIM.
- 235 NUMBER 11 THRUST BEARING.
- 236 OUTPUT PLANETARY INTERNAL RING GEAR.
- 237 NUMBER 12 THRUST BEARING.
- 238 OUTPUT PLANETARY GEAR HOUSING & SHAFT ASSEMBLY.
- 239 OUTPUT GEAR HOUSING & SHAFT CAGED NEEDLE BEARING.

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Figure 118

COMPONENT REBUILD

Output Planetary Assembly

4. Install new caged needle bearing as necessary in output planetary gear housing using the proper driver, as shown in Figure 119.
5. Install number 12 thrust bearing in the direction shown in Figure 120.
6. Install the output planetary internal ring gear, as shown in Figure 120.
7. Install number 11 thrust bearing in the direction shown in Figure 121, into the ring gear.
8. Install the helical cut "selective" shim on top of the number 11 thrust bearing, as shown in Figure 121.

Note: The helical cut "selective" shim is used to set the compounder section end-play, which we will check during final assembly.

Continued on Page 69

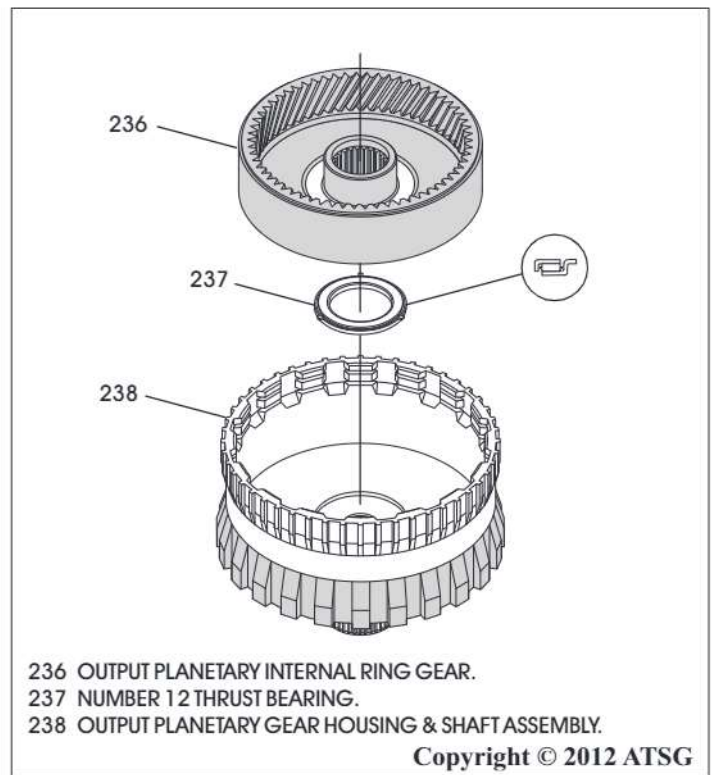


Figure 120

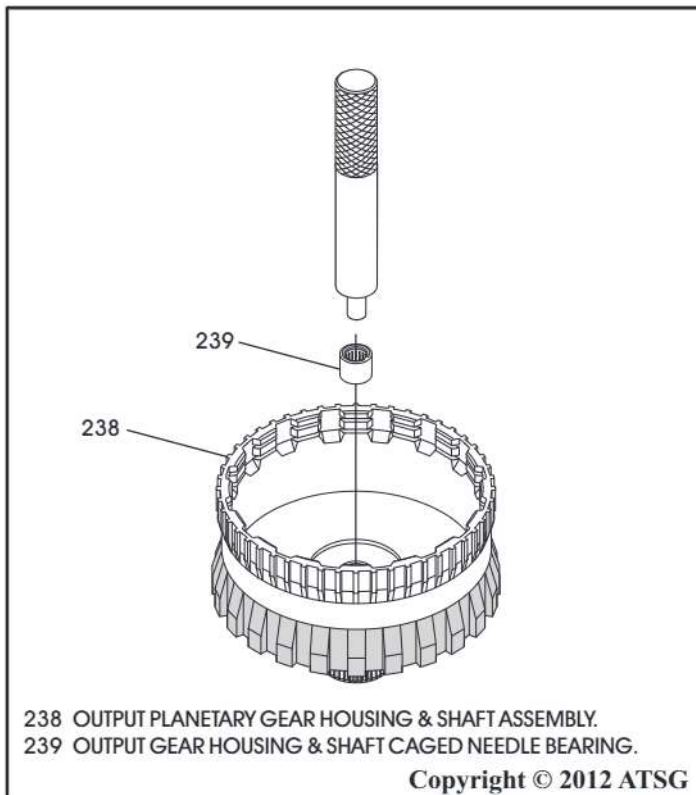


Figure 119

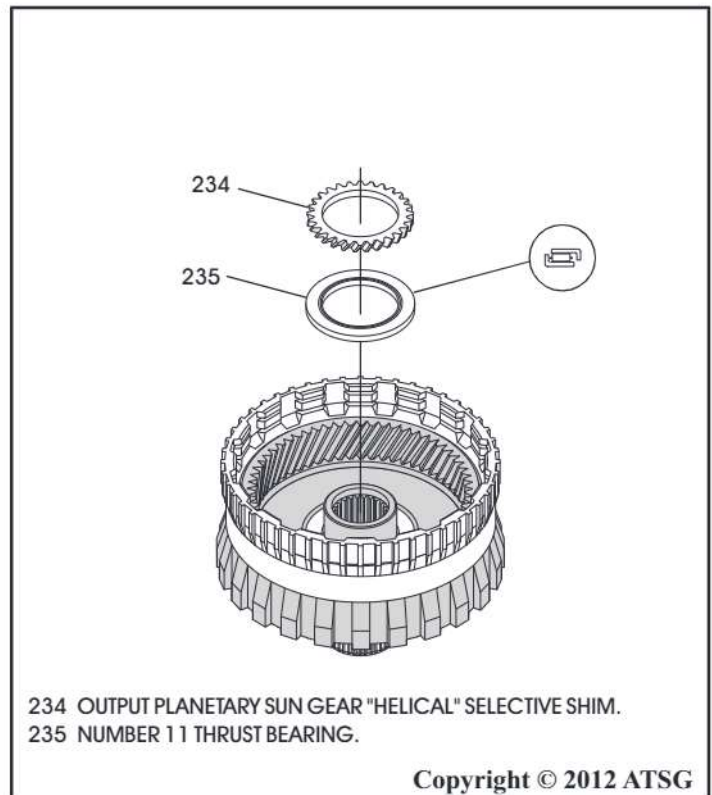


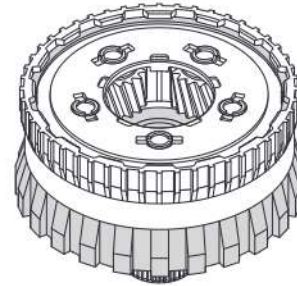
Figure 121

COMPONENT REBUILD

Output Planetary Assembly (Cont'd)

9. Install the first snap ring into the lower groove of the output planetary gear housing, as shown in Figure 122.
10. Install the output planetary carrier into housing until fully seated on first snap ring, as shown in Figure 122.
11. Install the second snap ring into upper groove of the output planetary gear housing, as shown in Figure 122, and ensure it is fully seated.
12. Set the completed output planetary assembly aside for final assembly (See Figure 123).

COMPLETED OUTPUT PLANETARY ASSEMBLY



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Figure 123

COMPONENT REBUILD

Underdrive Compounder Assembly

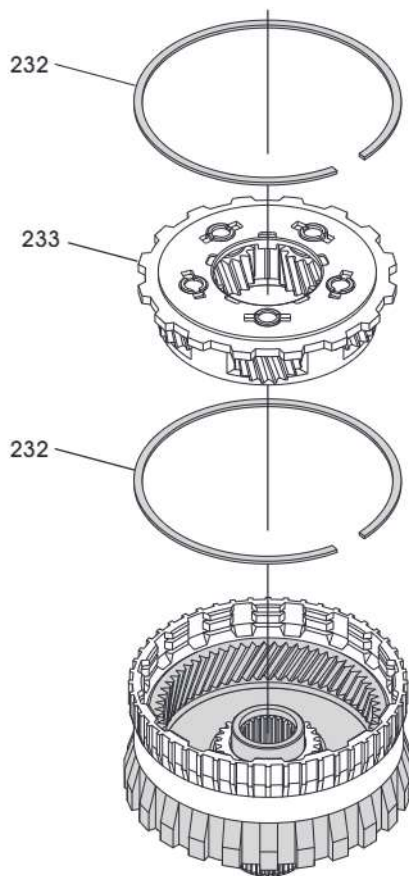
CAUTION:

The addition of the underdrive centerline, which replaces the previous pinion shaft, consists of the output planetary gear set, two new clutch packs (Direct & Low) and a freewheel (Sprag), tied together via the transfer gears. This creates the ability to achieve the seven forward ratios of the 62TE.

The underdrive section is sometimes difficult and confusing to disassemble and reassemble. We are going to provide a detailed description of the disassembly and the reassembly procedure to make it easier to understand.

We have provided you with detailed exploded views of the underdrive compounder assembly in Figure 124 and 125, for reference.

Underdrive Section Disassembly Continued on Page 72

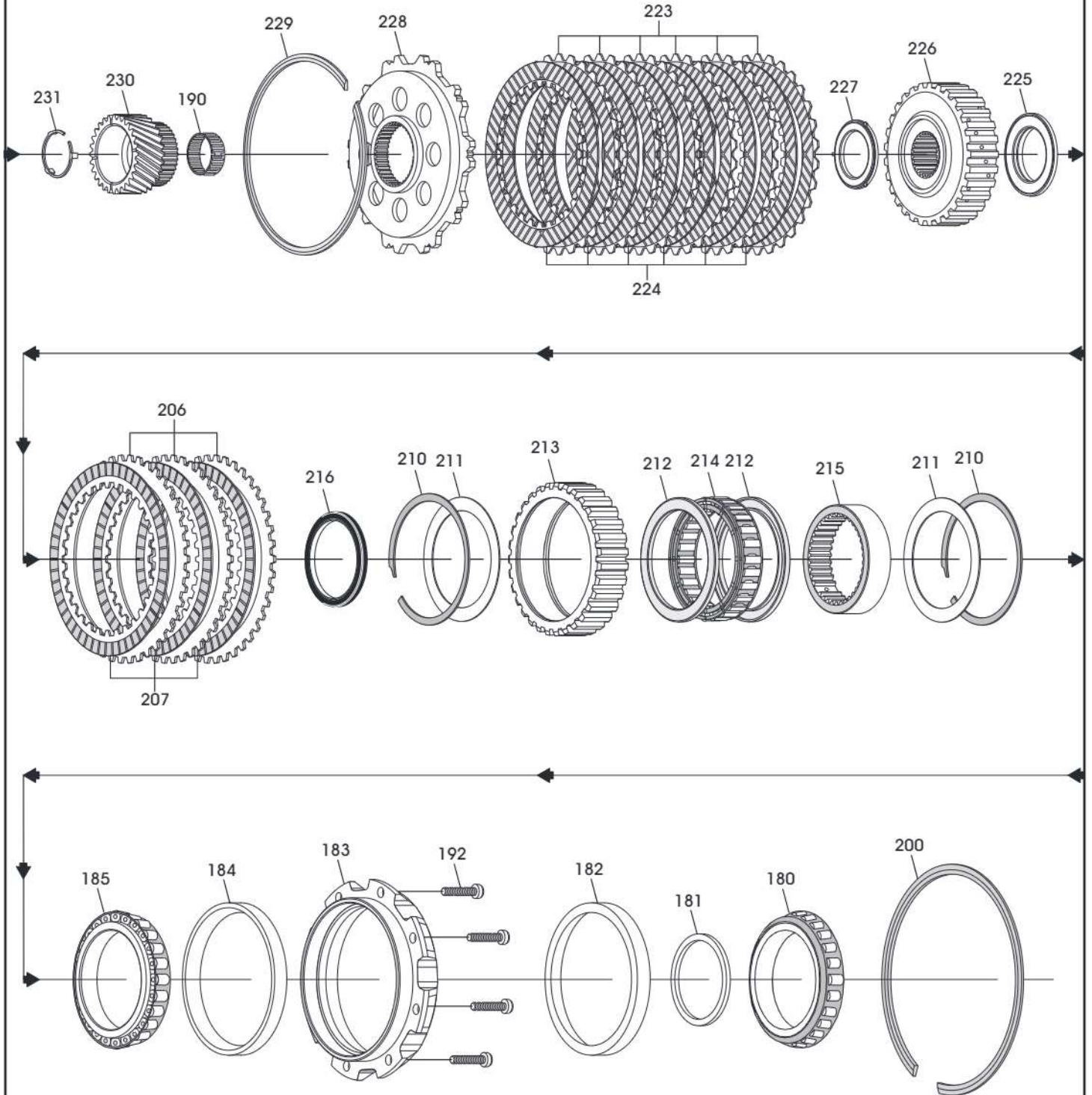


232 OUTPUT PLANETARY CARRIER RETAINING SNAP RINGS (2 REQ.).
233 OUTPUT PLANETARY CARRIER.

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Figure 122

UNDERDRIVE COMPOUNDER ASSEMBLY EXPLODED VIEW

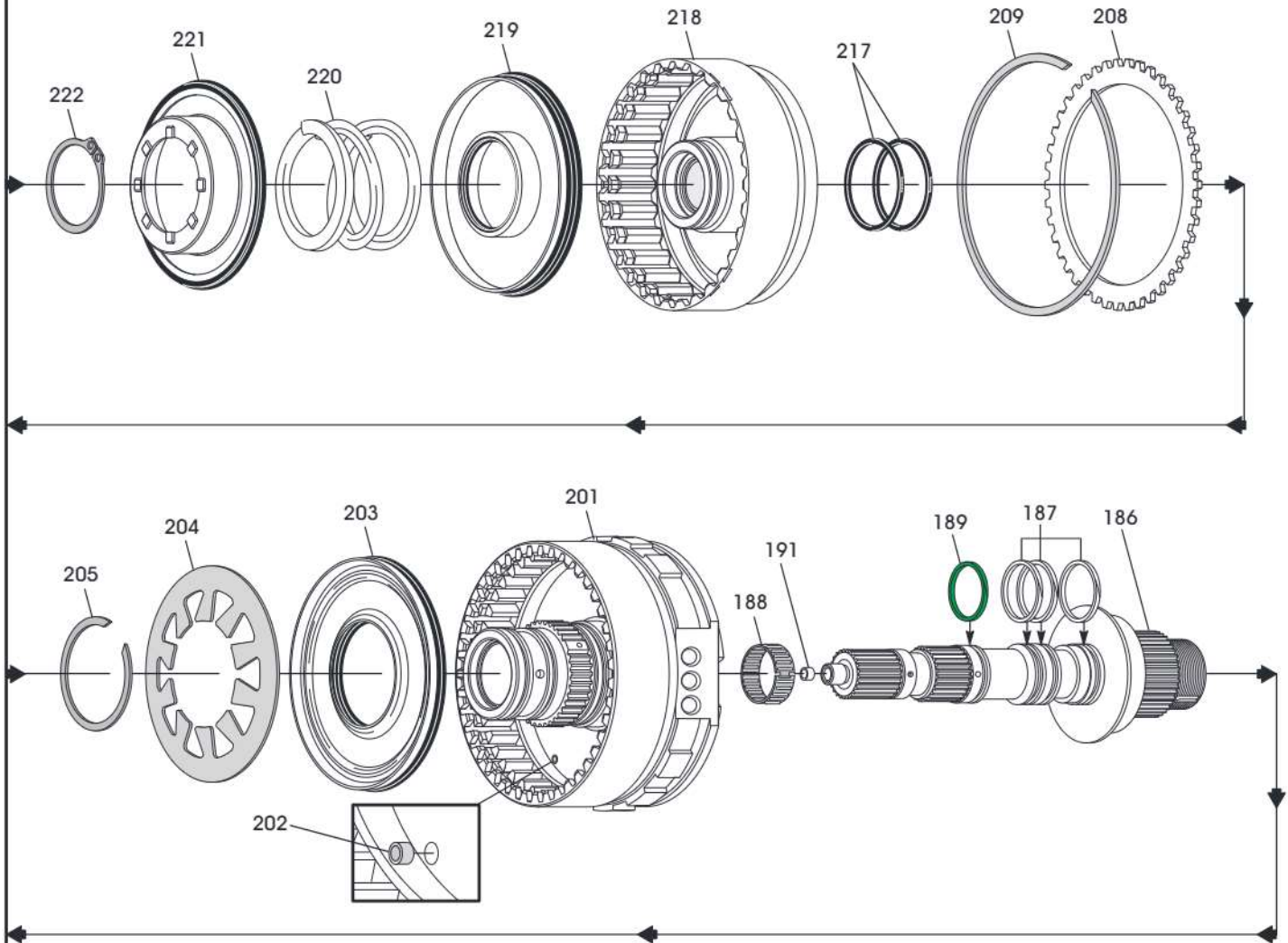


See Legend In Figure 125

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Figure 124

UNDERDRIVE COMPOUNDER ASSEMBLY EXPLODED VIEW



- 180 DRIVEN TRANSFER GEAR TAPERED ROLLER BEARING.
- 181 DRIVEN TRANSFER GEAR "SELECTIVE" SHIM.
- 182 DRIVEN TRANSFER GEAR TAPERED ROLLER BEARING CUP.
- 183 DRIVEN TRANSFER GEAR ROLLER BEARING RACE SUPPORT.
- 184 UNDERDRIVE CENTER SHAFT TAPERED ROLLER BEARING CUP.
- 185 UNDERDRIVE CENTER SHAFT TAPERED ROLLER BEARING.
- 186 UNDERDRIVE CENTER SHAFT.
- 187 CENTER SHAFT, WHITE, SCARF-CUT SEALING RINGS (3 REQ.).
- 188 "SPLIT" CAGED NEEDLE BEARING ASSEMBLY (LARGE).
- 189 CENTER SHAFT, GREEN, SCARF-CUT SEALING RING.
- 190 "SPLIT" CAGED NEEDLE BEARING ASSEMBLY (SMALL).
- 191 UNDERDRIVE CENTER SHAFT ORIFICED CUP PLUG.
- 192 ROLLER BEARING RACE SUPPORT RETAINING BOLTS (8 REQ.).
- 200 COMPOUNDER ASSEMBLY TAPERED RETAINING SNAP RING.
- 201 LOW CLUTCH HOUSING ASSEMBLY.
- 202 LOW CLUTCH HOUSING SCREEN/ORIFICE.
- 203 LOW CLUTCH BONDED APPLY PISTON.
- 204 LOW CLUTCH PISTON "BELLVILLE" RETURN SPRING.
- 205 LOW CLUTCH "BELLVILLE" RETURN SPRING SNAP RING.
- 206 LOW CLUTCH STEEL PLATES (3 REQUIRED).
- 207 LOW CLUTCH FRICTION PLATES (3 REQUIRED).
- 208 LOW CLUTCH BACKING PLATE.
- 209 LOW CLUTCH BACKING PLATE "SELECTIVE" SNAP RING.

- 210 LOW SPRAG OUTER RACE SNAP RING (2 REQUIRED).
- 211 LOW SPRAG END BEARING THRUST WASHER (2 REQUIRED).
- 212 LOW SPRAG END BEARING (2 REQUIRED).
- 213 LOW SPRAG OUTER RACE.
- 214 LOW SPRAG CAGE & ELEMENT ASSEMBLY.
- 215 LOW SPRAG INNER RACE.
- 216 NUMBER 8 THRUST BEARING.
- 217 DIRECT CLUTCH HOOK-JOINT SEALING RINGS (2 REQUIRED).
- 218 DIRECT CLUTCH HOUSING.
- 219 DIRECT CLUTCH BONDED APPLY PISTON.
- 220 DIRECT CLUTCH PISTON RETURN SPRING.
- 221 DIRECT RETURN SPRING RETAINER AND BALANCE PISTON.
- 222 DIRECT CLUTCH RETURN SPRING RETAINER SNAP RING.
- 223 DIRECT CLUT. SINGLE-SIDED, OUTSIDE SPLINE PLATES (6 REQ.).
- 224 DIRECT CLUT. SINGLE-SIDED, INSIDE SPLINE PLATES (6 REQ.).
- 225 NUMBER 9 THRUST BEARING.
- 226 DIRECT CLUTCH HUB.
- 227 NUMBER 10 THRUST BEARING.
- 228 DIRECT CLUTCH "SELECTIVE" BACKING PLATE.
- 229 DIRECT CLUTCH BACKING PLATE TAPERED SNAP RING.
- 230 OUTPUT PLANETARY SUN GEAR.
- 231 OUTPUT PLANETARY SUN GEAR "TABBED" SNAP RING.

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Figure 125

COMPONENT REBUILD

Underdrive Section Disassembly

1. Place underdrive gear train on a set of blocks, as shown in Figure 126, and remove adapter 9908.
2. Turn the underdrive geartrain over and place on the blocks, as shown in Figure 127.

Note: You must turn the assembly over several times during this process.

3. Remove the small "tabbed" snap ring from the underdrive center shaft that retains the output sun gear, as shown in Figure 127.
Note: You must go down inside the output sun gear to reach the small "tabbed" snap ring and is difficult to remove. It requires a small set of snap ring pliers and sometimes the assistance of a pick.
4. After you have the snap ring released and up on the splines, you can use the sun gear to remove snap ring by pulling straight up.

Continued on Page 73

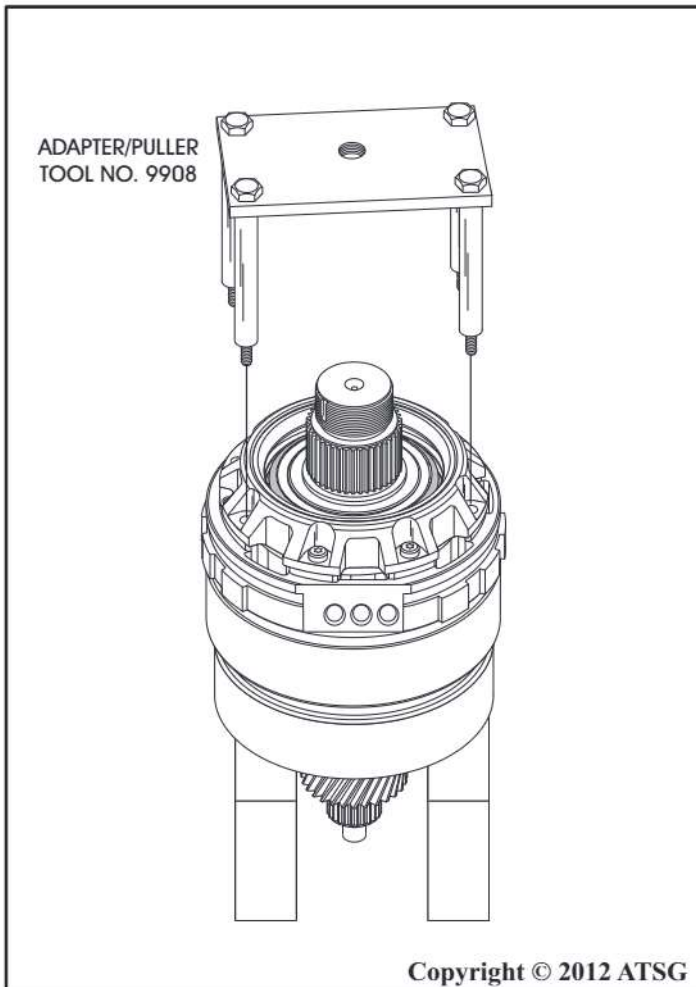


Figure 126

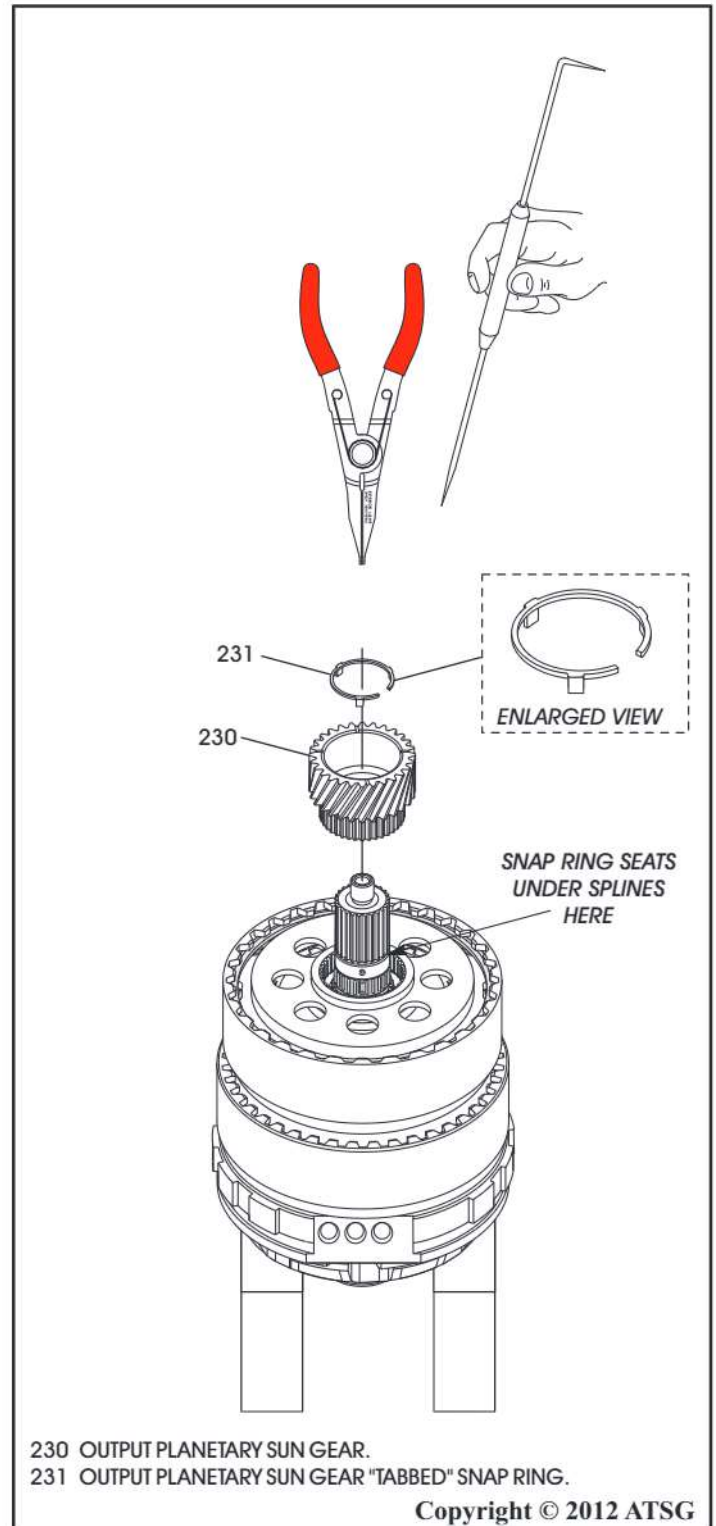


Figure 127

COMPONENT REBUILD

Underdrive Section Disassembly (Cont'd)

5. Turn the assembly over again and remove the 4 remaining roller bearing race support retaining bolts, as shown in Figure 128.
6. Remove the roller bearing race support and the transfer gear selective shim, as shown in Figure 128.
Note: This is the selective shim that sets the pre-load for transfer gear bearings.
7. Turn the assembly over again and remove the direct clutch backing plate tapered snap ring, as shown in Figure 129.
8. Remove direct clutch backing plate, as shown in Figure 129.

9. Remove the small "split" caged needle bearing from the underdrive center shaft, as shown in Figure 129.

Note: Direct clutch housing cannot be removed until the "split" needle bearing is removed.

10. Remove the number 10 thrust bearing, as shown in Figure 129.

Continued on Page 74

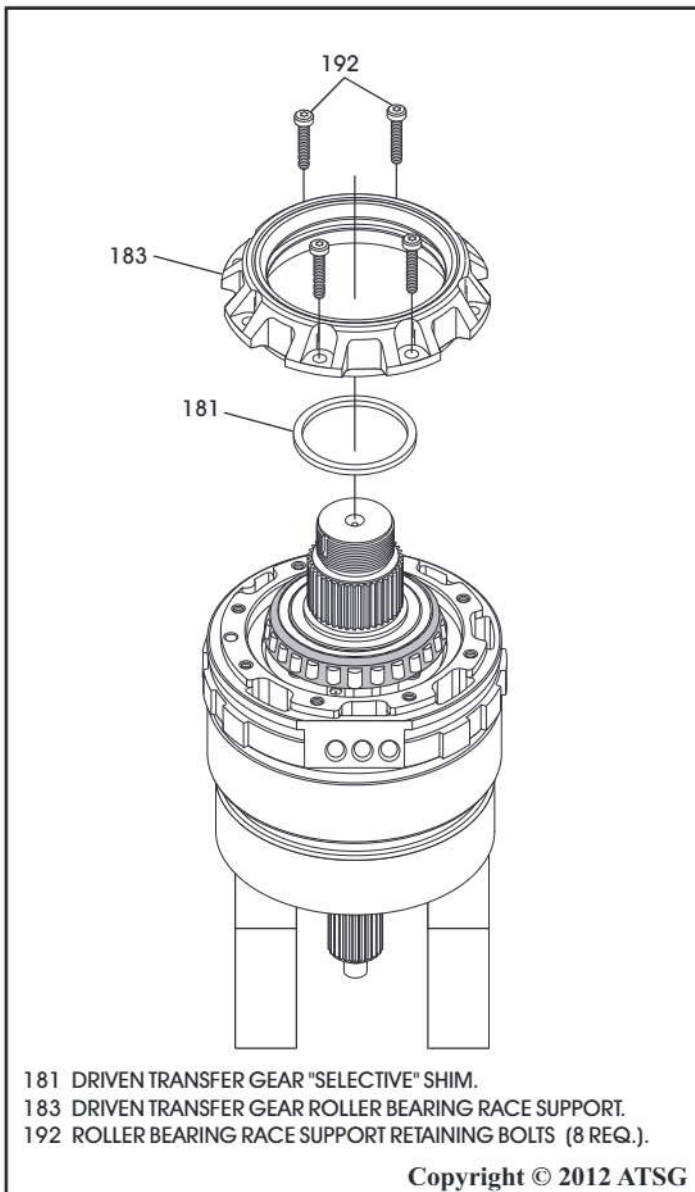


Figure 128

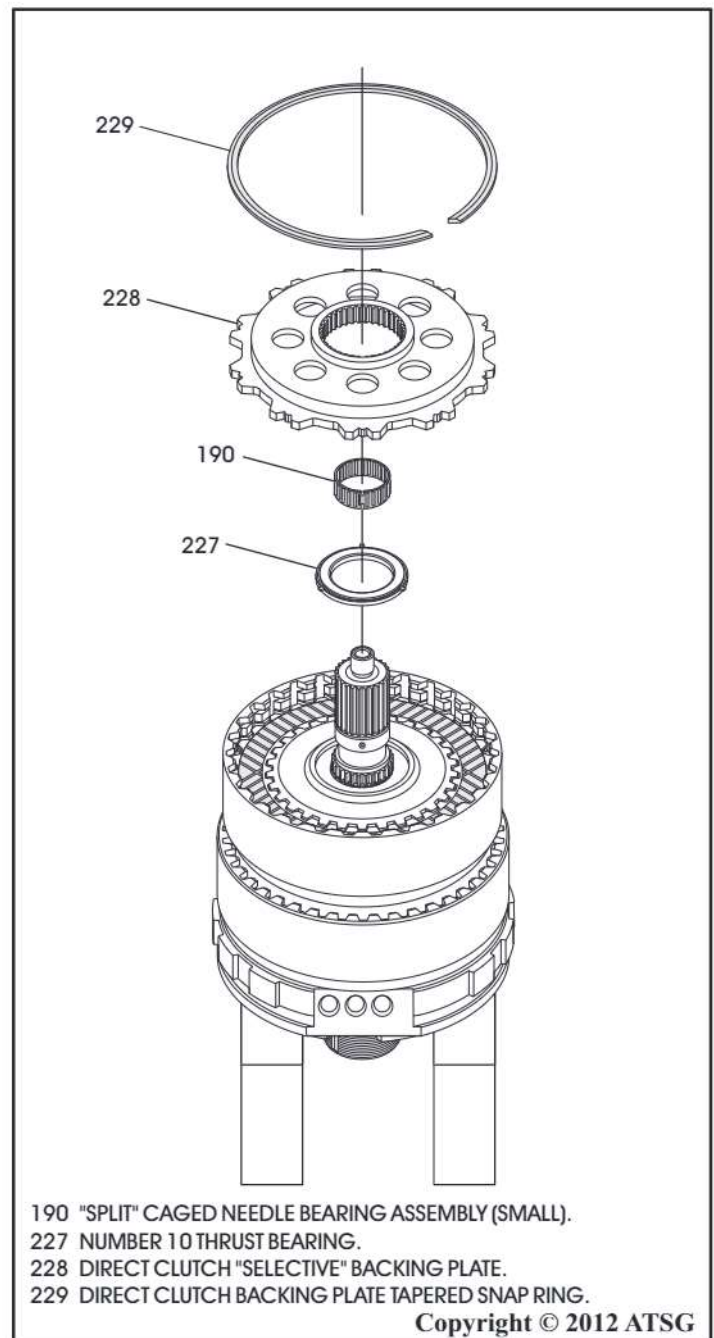


Figure 129

COMPONENT REBUILD

Underdrive Section Disassembly (Cont'd)

11. Remove the direct clutch housing assembly off of the underdrive center shaft, as shown in Figure 130, and set aside for direct clutch sub assembly.
12. Remove the number 8 thrust bearing, as shown in Figure 130.

Note: Number 8 thrust bearing may be stuck to back of direct clutch housing.

13. Remove the low clutch housing and low sprag from the underdrive center shaft as an assembly, as shown in Figure 131, and set aside for the low clutch sub assembly.

Continued on Page 75

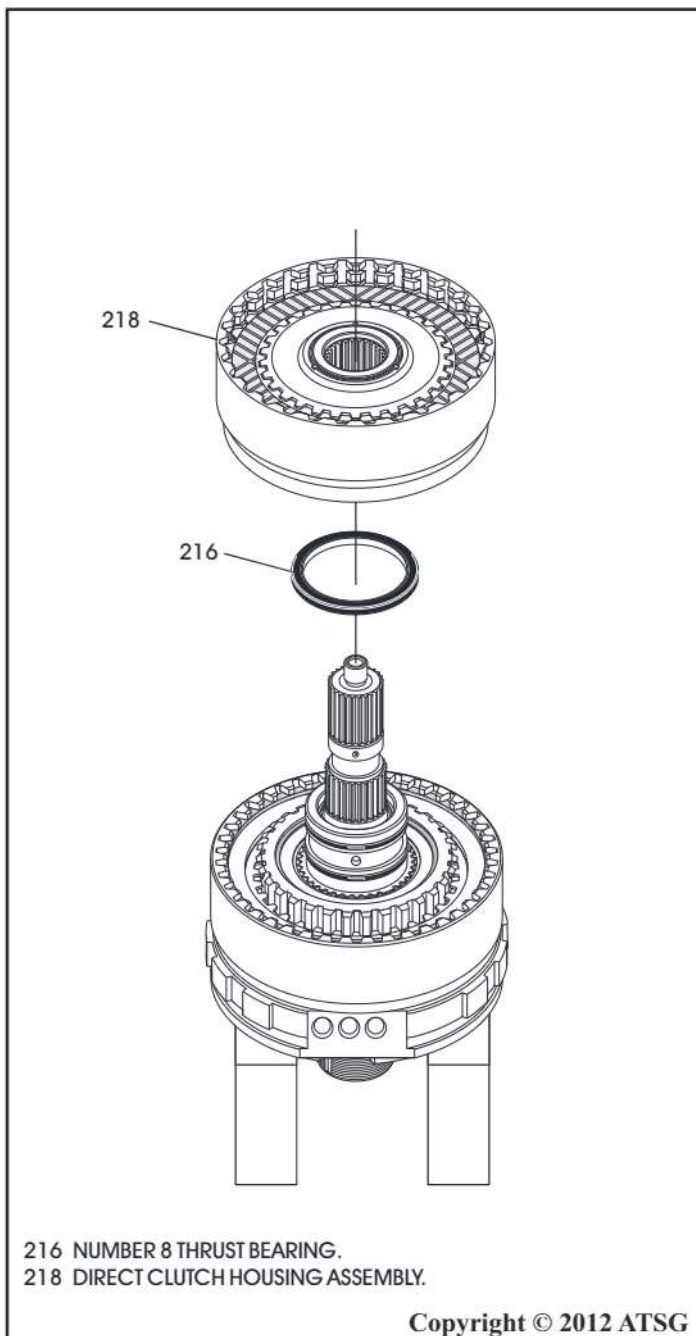


Figure 130

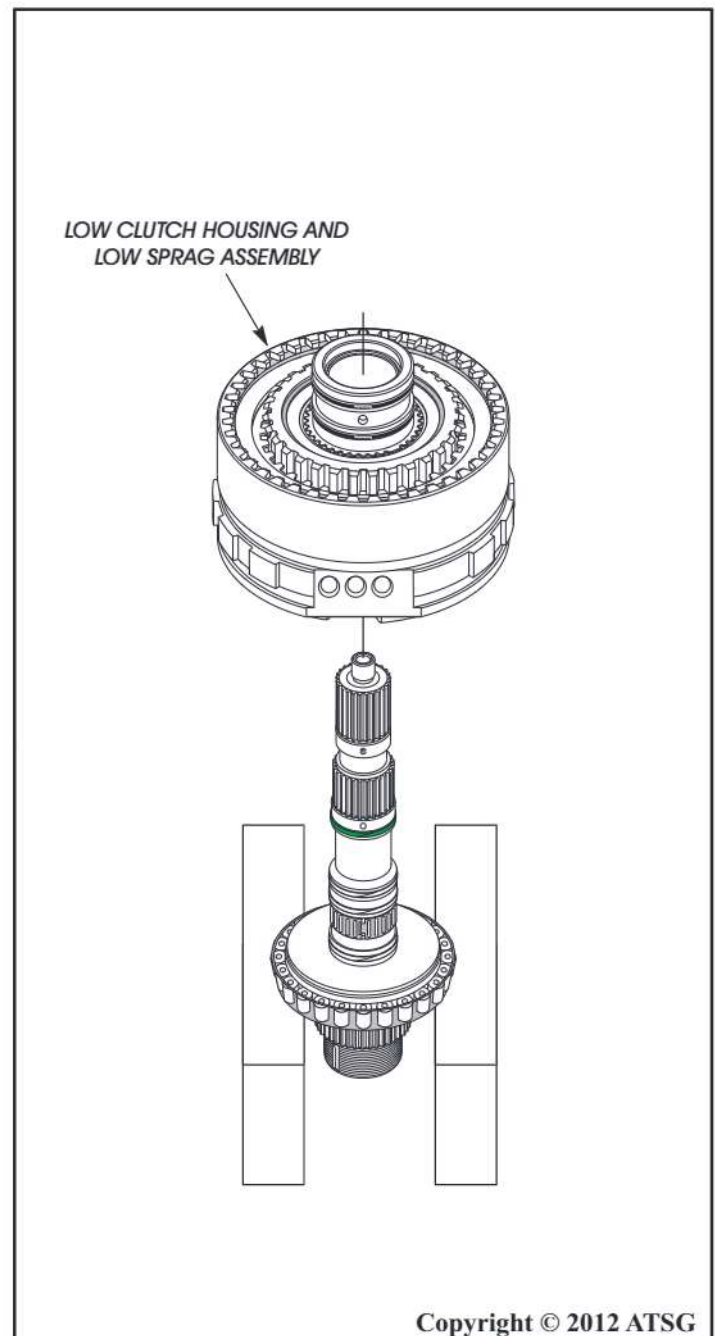


Figure 131

COMPONENT REBUILD

Underdrive Section Disassembly (Cont'd)

14. Remove the 4 scarf-cut sealing rings and large "split" caged needle bearing from the underdrive center shaft, as shown in Figure 132.
15. If bearing service is needed, replace the tapered roller bearing cups in the driven transfer gear roller bearing support, as shown in Figure 133, using proper adapters and hydraulic shop press.
Note: Due to a coordinated vendor change of cup & bearing, replacement of either must be done as a set. Mixing old and new parts would result in a bearing failure.

Note (Cont'd): There are known concerns with this set of roller bearings and cups. Always replace bearing and cup as a set, using OEM part number 68051332AA, which was a valid number at time of printing.

16. Replace the tapered roller bearings on the driven transfer gear and the underdrive center shaft, as shown in Figure 134, using proper adapters and hydraulic shop press.

Component Rebuild Continued on Page 76

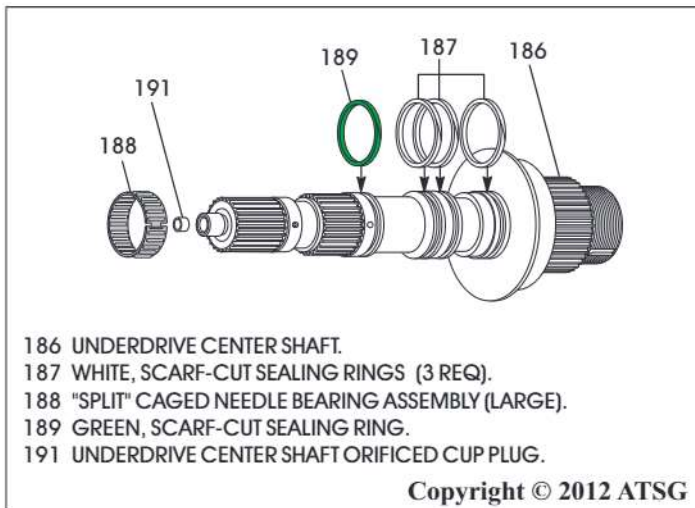


Figure 132

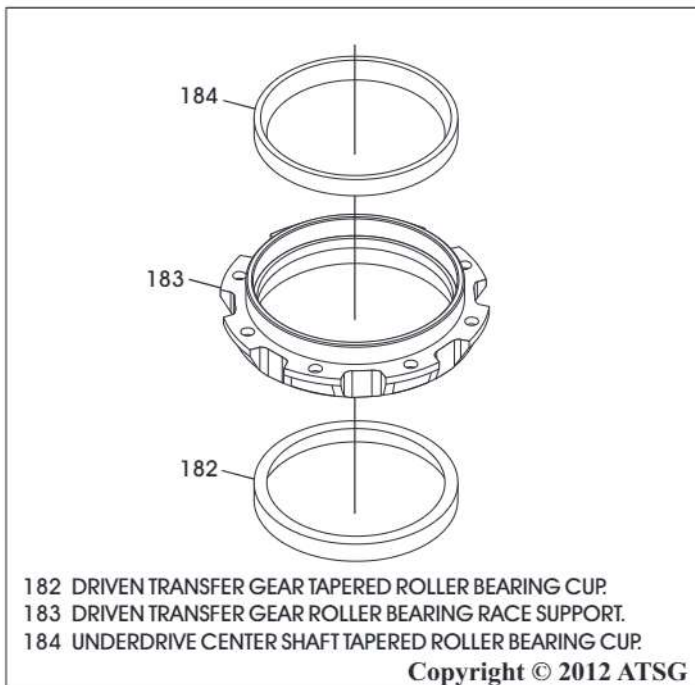


Figure 133

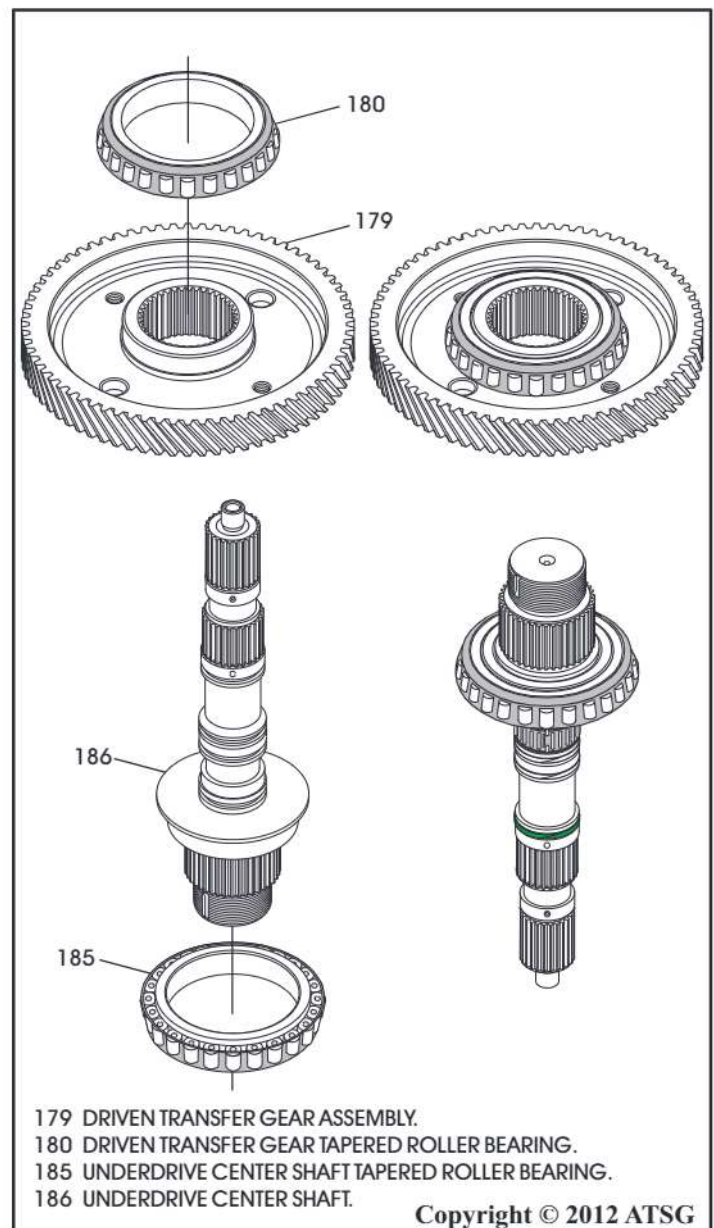
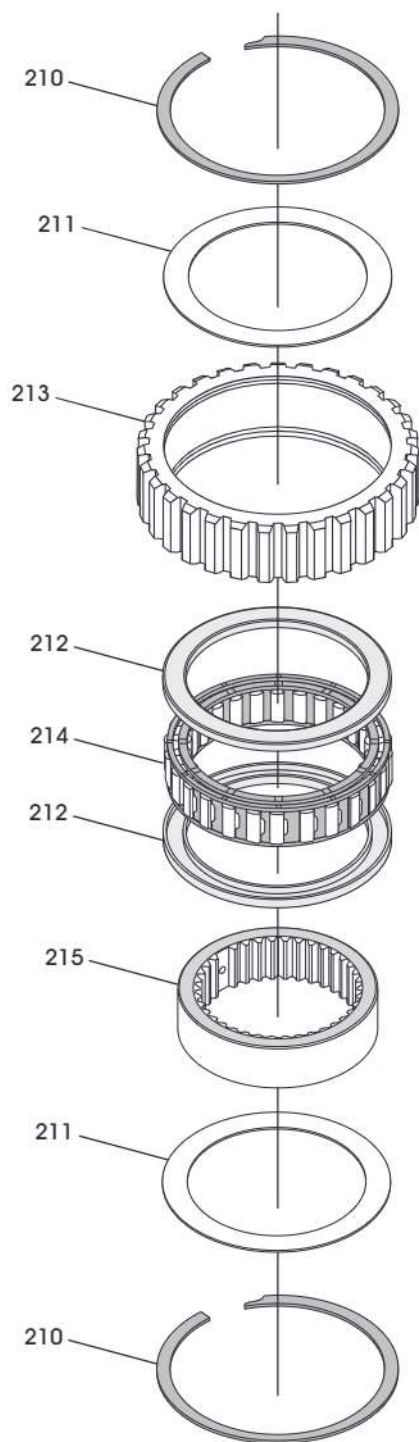


Figure 134

LOW SPRAG, EXPLODED VIEW



- 210 LOW SPRAG OUTER RACE SNAP RING (2 REQUIRED).
- 211 LOW SPRAG END BEARING THRUST PLATE (2 REQUIRED).
- 212 LOW SPRAG END BEARING (2 REQUIRED).
- 213 LOW SPRAG OUTER RACE.
- 214 LOW SPRAG CAGE & ELEMENT ASSEMBLY.
- 215 LOW SPRAG INNER RACE.

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Figure 135

COMPONENT REBUILD

Low Sprag Assembly

1. Disassemble the low sprag by removing the snap ring and using Figure 135 as a guide.

Caution: The low sprag can be mis-assembled very easily. Figure 135 shows sprag assembly the correct way that it goes into Low Clutch Housing. There are however, three pieces that are directional

Notice in Figure 136 that the outer race has a step and is chamfered on the bottom side and the top side is flat.

Notice in Figure 137 that the inner sprag race is blackened (heat treating) on top side and has two blind splines, one male and one female. Since the blind splines are also off-set, it makes the inner race directional and will not install on the low clutch housing if upside down.

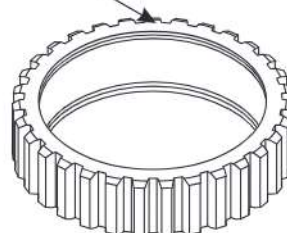
Notice in Figure 138 that the sprag cage and element assembly has "channels" cut on the top side and none on the bottom side.

We will assemble the low sprag assembly from the bottom side, that has the step and chamfer, as it is easier to assemble from this side.

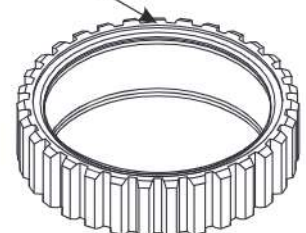
Continued on Page 77

LOW SPRAG OUTER RACE

Top Side



Bottom Side



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Figure 136

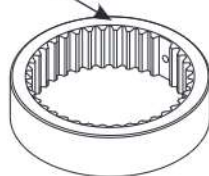
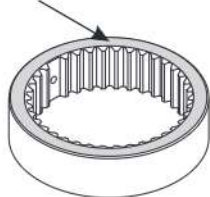
LOW SPRAG INNER RACE

Top Side

Bottom Side

Blackened Surface
(Heat Treating)

Plain Surface

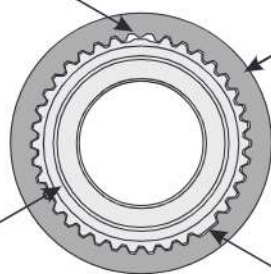


Blind
Spline

Low Sprag
Inner Race

Low Clutch
Housing

Blind
Spline



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Figure 137

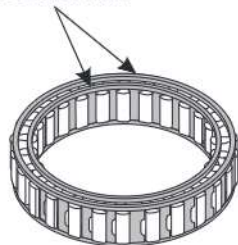
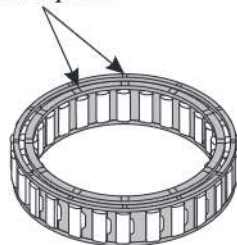
LOW SPRAG CAGE AND ELEMENT ASSEMBLY

Top Side

Bottom Side

Channels Cut
On Top Side

No Channels
On Bottom Side



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Figure 138

COMPONENT REBUILD

Low Sprag Assembly (Cont'd)

- Place the outer race on flat work surface with one snap ring installed and **stepped side facing up**, as shown in Figure 139.

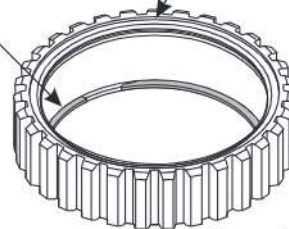
Note: Stepped side must be facing up.

- Install the first end bearing thrust plate and the first sprag end bearing in the direction shown in Figure 140.
- Push them all the way down against snap ring.

Continued on Page 78

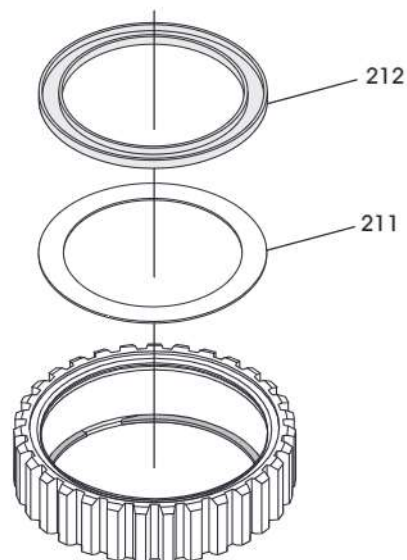
Stepped Surface "Must"
Be Facing Up As Shown

Snap Ring
Installed



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Figure 139



211 LOW SPRAG END BEARING THRUST PLATE (2 REQUIRED).
212 LOW SPRAG END BEARING (2 REQUIRED).

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Figure 140

COMPONENT REBUILD

Low Sprag Assembly (Cont'd)

5. Install the sprag cage and element assembly into outer race, as shown in Figure 141.

Note: The "channels" in plastic sprag cage (See Figure 138) must be facing down and the "windows" facing left, as shown in Figure 141.

6. Lubricate and install the sprag inner race into the cage and elements, as shown in Figure 141, using a counter-clockwise motion.

Note: Inner race must be installed with the blackened side facing down so the blind splines will be aligned for assembly (See Figure 137).

7. Install second sprag end bearing in the direction shown in Figure 141 and push it down against the sprag cage and element assembly.

8. Install the second end bearing thrust plate and snap ring, as shown in Figure 142.

Note: If there is an etched number on thrust plate, install with number facing up, as shown in Figure 142.

9. Install completed low sprag assembly into the empty low clutch housing (See Figure 143).

Note: The sprag outer race should freewheel in a counter-clockwise direction and lock in a clockwise direction (See Figure 143).

Component Rebuild Continued on Page 79

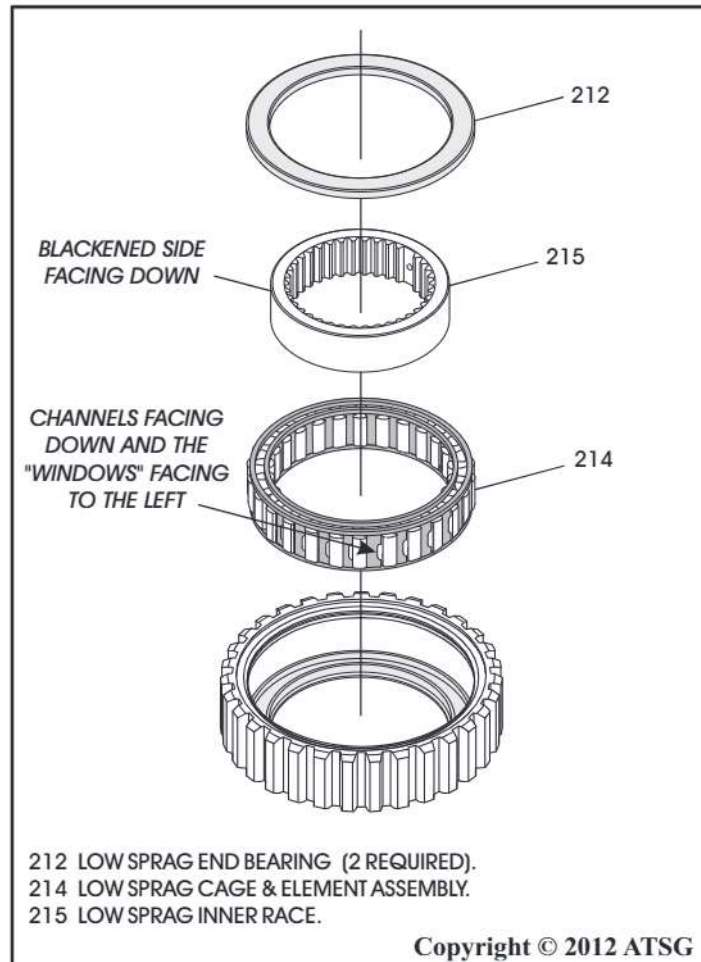


Figure 141

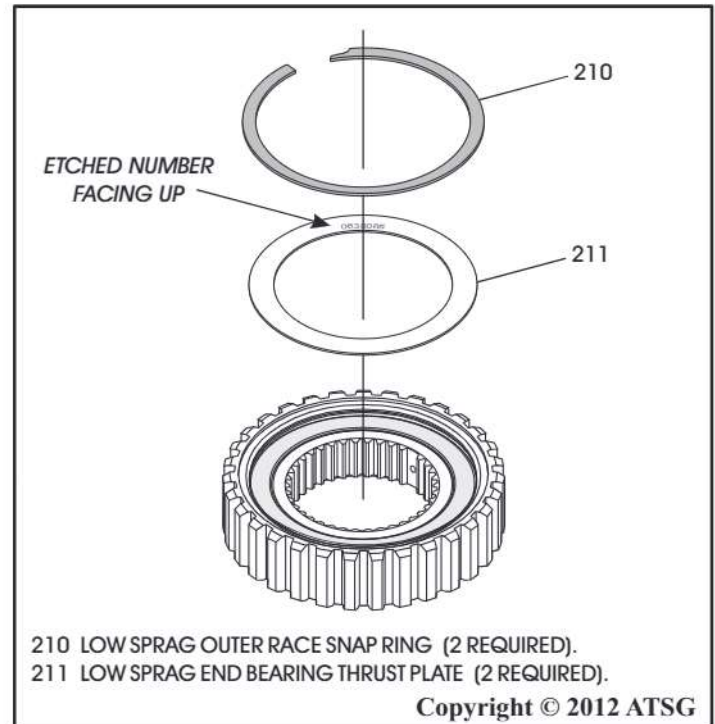


Figure 142

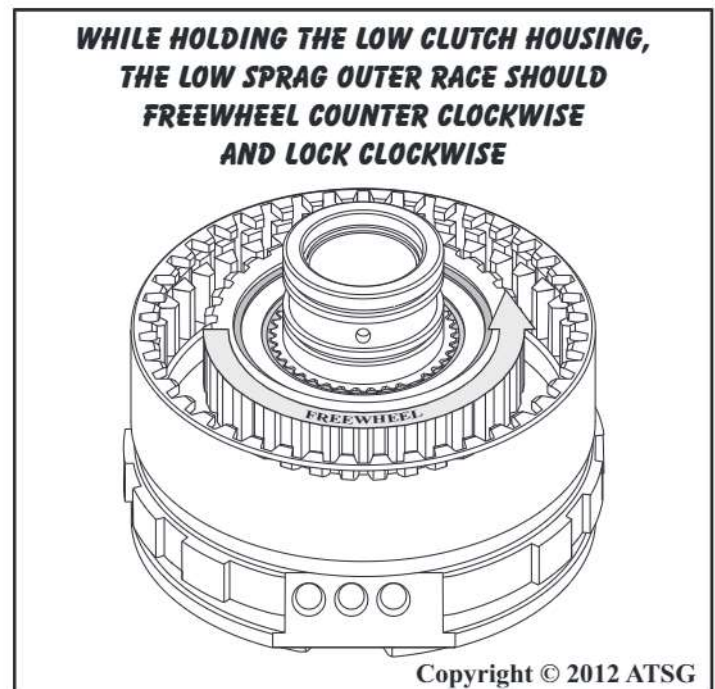


Figure 143

COMPONENT REBUILD

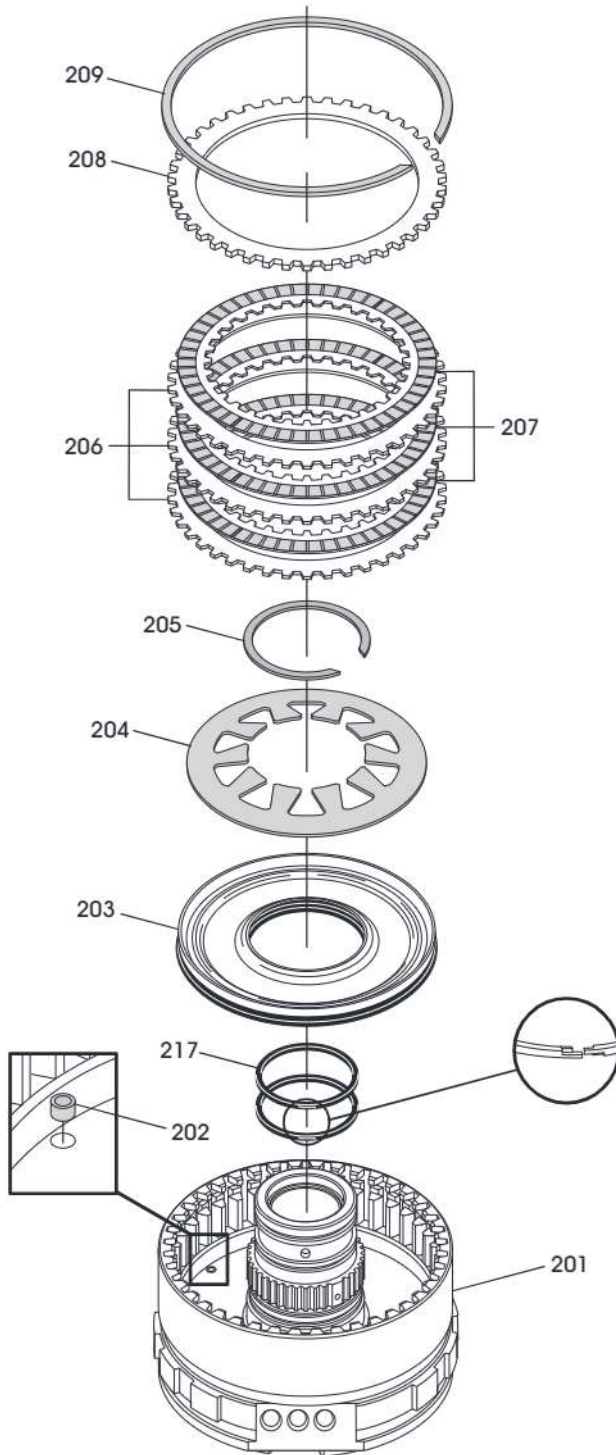
Low Clutch Housing Assembly

1. Disassemble the low clutch housing assembly using Figure 144 as a guide.
2. Clean all low clutch housing parts thoroughly and dry with compressed air.
3. Inspect all low clutch housing parts thoroughly for any wear and/or damage.

Note: This unit is known for extreme sealing ring groove wear on the low clutch housing, as shown in Figure 145. These rings actually seal direct clutch oil.

Measure with new seal rings in place in their grooves, maximum clearance is .010" and most will require replacement low clutch housing. Also check to ensure screen/orifice is still in place after cleaning, as shown in Figure 145.

Continued on Page 80



- 201 LOW CLUTCH HOUSING ASSEMBLY.
- 202 LOW CLUTCH HOUSING SCREEN/ORIFICE.
- 203 LOW CLUTCH BONDED APPLY PISTON.
- 204 LOW CLUTCH PISTON "BELLVILLE" RETURN SPRING.
- 205 LOW CLUTCH "BELLVILLE" RETURN SPRING SNAP RING.
- 206 LOW CLUTCH STEEL PLATES (3 REQUIRED).
- 207 LOW CLUTCH FRICTION PLATES (3 REQUIRED).
- 208 LOW CLUTCH BACKING PLATE.
- 209 LOW CLUTCH BACKING PLATE "SELECTIVE" SNAP RING.
- 217 DIRECT CLUTCH HOOK-JOINT SEALING RINGS (2 REQUIRED).

Figure 144

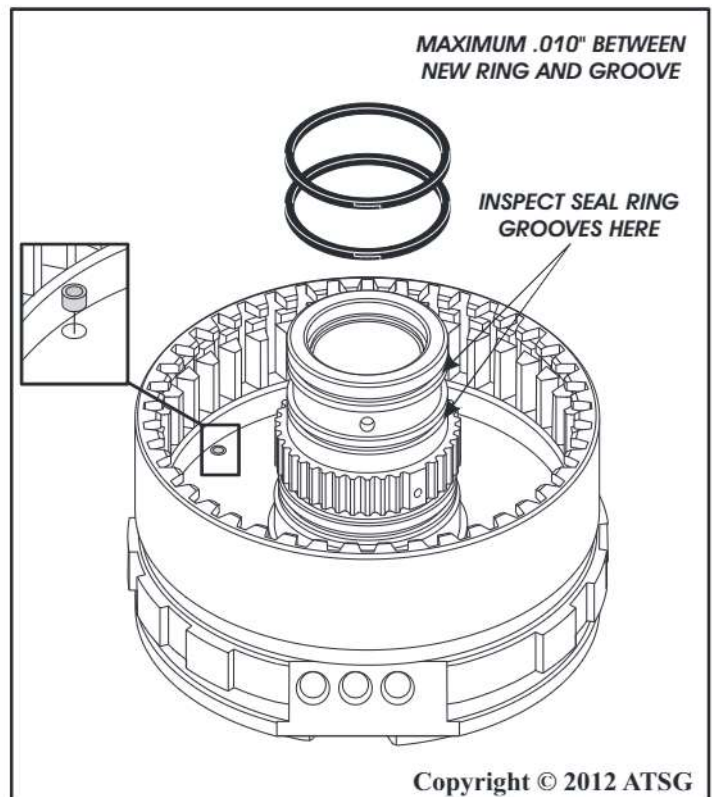


Figure 145

COMPONENT REBUILD

Low Clutch Housing Assembly (Cont'd)

4. Install new direct clutch sealing rings into their grooves in the low clutch housing, as shown in Figure 146.
5. Ensure screen/orifice is in place and lube seal surfaces of low clutch housing and the bonded low clutch apply piston (See Figure 146).
6. Install the bonded low clutch apply piston, as shown in Figure 146.
7. Install the low clutch piston return spring in the direction shown in Figure 146.
8. Compress the return spring and install the snap ring, as shown in Figure 146, and ensure it is fully seated.

9. Install the completed low sprag assembly into low clutch housing, as shown in Figure 147.
10. Once again, check for proper sprag operation, as shown in Figure 148.

Continued on Page 81

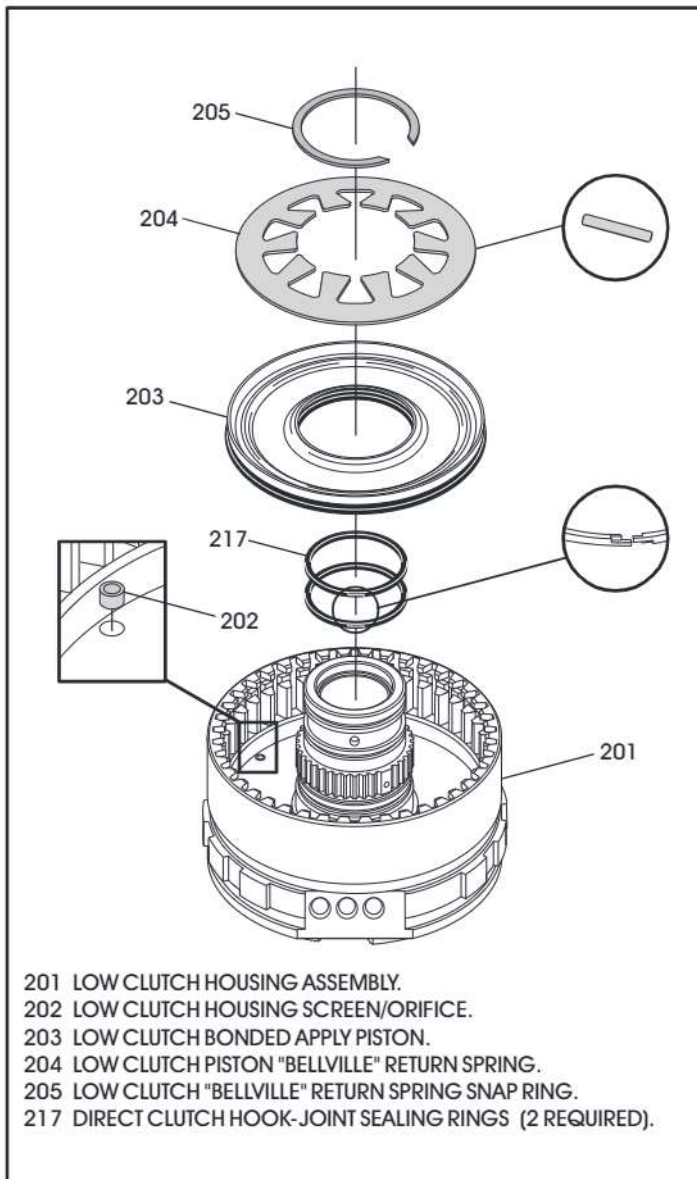


Figure 146

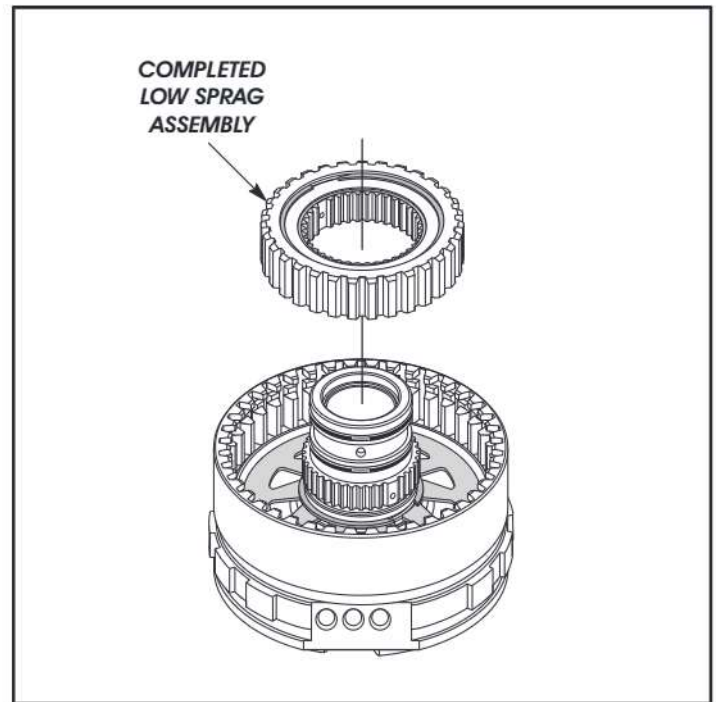
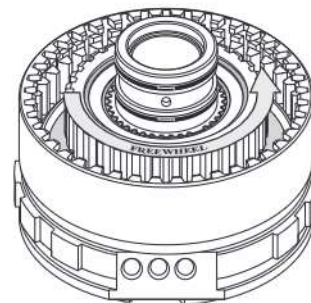


Figure 147

WHILE HOLDING THE LOW CLUTCH HOUSING, THE LOW SPRAG OUTER RACE SHOULD FREEWHEEL COUNTER CLOCKWISE AND LOCK CLOCKWISE



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Figure 148

COMPONENT REBUILD

Low Clutch Housing Assembly (Cont'd)

11. Install the low clutch plates beginning with a steel plate and alternating with frictions until you have installed three of each, as shown in Figure 149.
- Note: All clutch plates should be soaked for 1 hour in proper fluid prior to assembly.*
12. Install the low clutch backing plate on top of the last friction, as shown in Figure 149.
- Note: Backing plate installs with the rounded edge toward the friction (See Figure 150).*
13. Install the low clutch backing plate "selective" snap ring, as shown in Figure 149.
14. Mount dial indicator with probe against backing plate, as shown in Figure 151, and zero indicator.

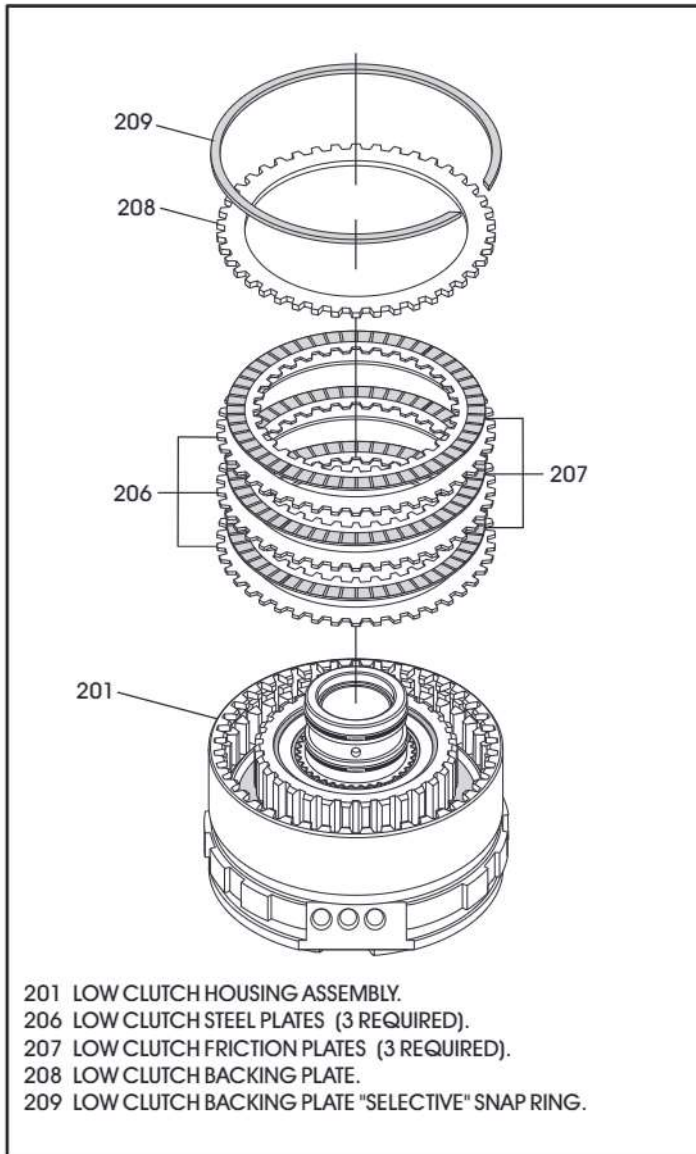


Figure 149

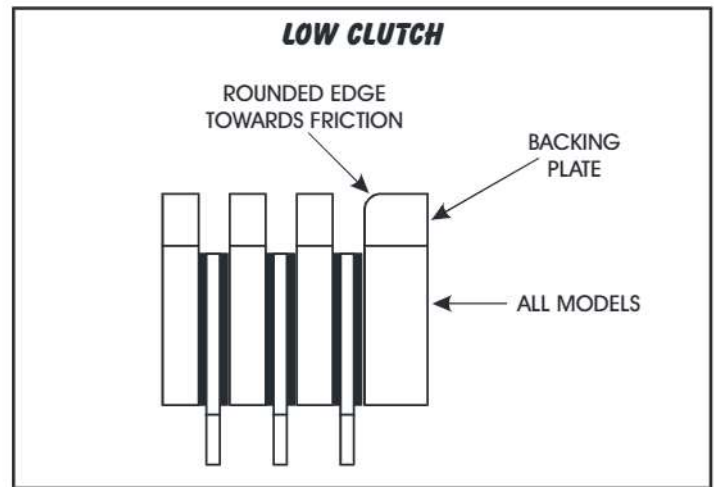
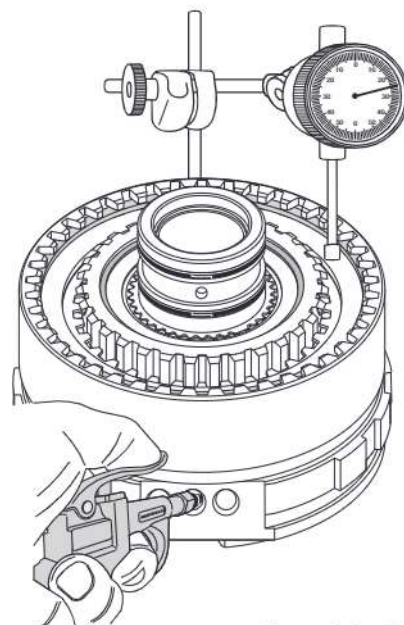


Figure 150

15. Apply air pressure, as shown in Figure 151, and measure low clutch clearance.
16. Low clutch clearance should measure between 0.48-0.76mm (.019"-.030").
17. Change the selective snap ring as necessary to obtain proper low clutch clearance.
18. Set completed low clutch housing aside for the underdrive section assembly process.

Component Rebuild Continued on Page 82

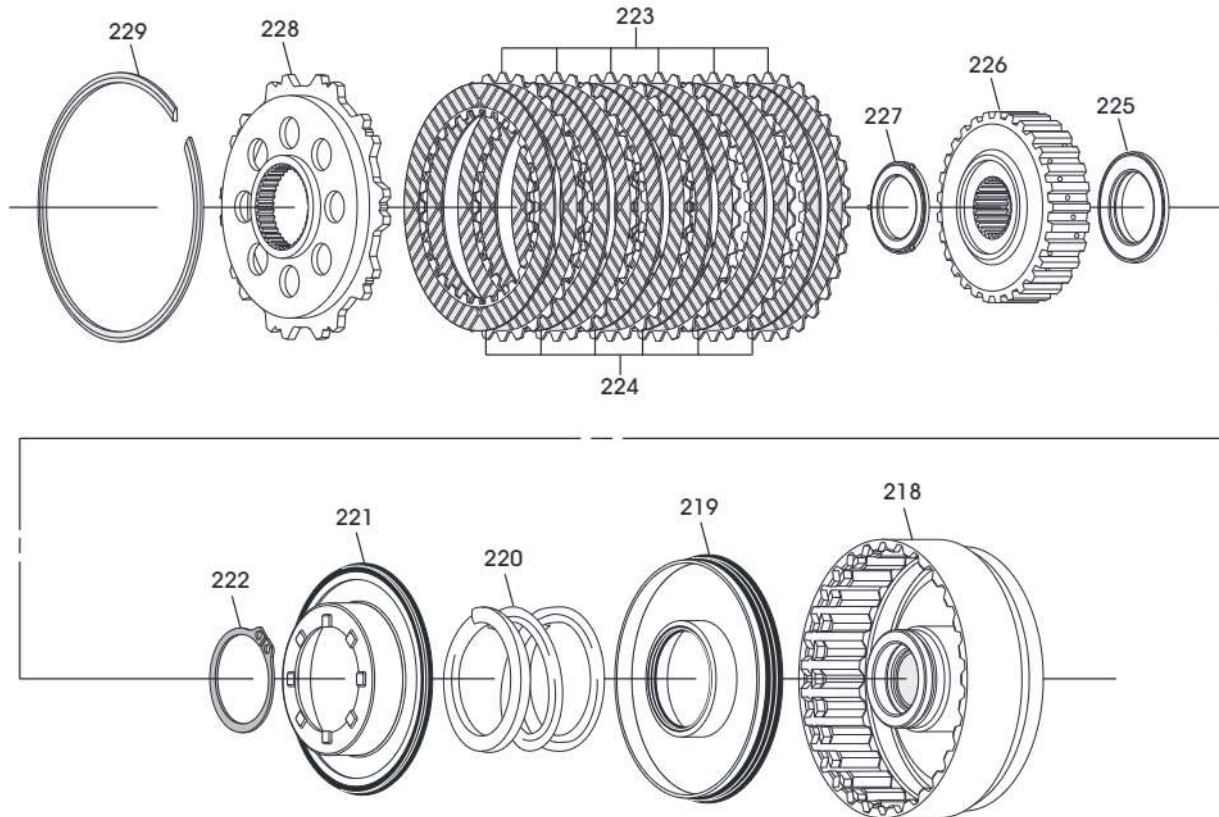
**Low Clutch Clearance Should Be
0.48-0.76mm (.019"-.030")**



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Figure 151

DIRECT CLUTCH EXPLODED VIEW



218 DIRECT CLUTCH HOUSING.
 219 DIRECT CLUTCH BONDED APPLY PISTON.
 220 DIRECT CLUTCH PISTON RETURN SPRING.
 221 DIRECT RETURN SPRING RETAINER AND BALANCE PISTON.
 222 DIRECT CLUTCH RETURN SPRING RETAINER SNAP RING.
 223 DIRECT CLUT. SINGLE-SIDED, OUTSIDE SPLINE PLATES (6 REQ.).

224 DIRECT CLUT. SINGLE-SIDED, INSIDE SPLINE PLATES (6 REQ.).
 225 NUMBER 9 THRUST BEARING.
 226 DIRECT CLUTCH HUB.
 227 NUMBER 10 THRUST BEARING.
 228 DIRECT CLUTCH "SELECTIVE" BACKING PLATE.
 229 DIRECT CLUTCH BACKING PLATE TAPERED SNAP RING.

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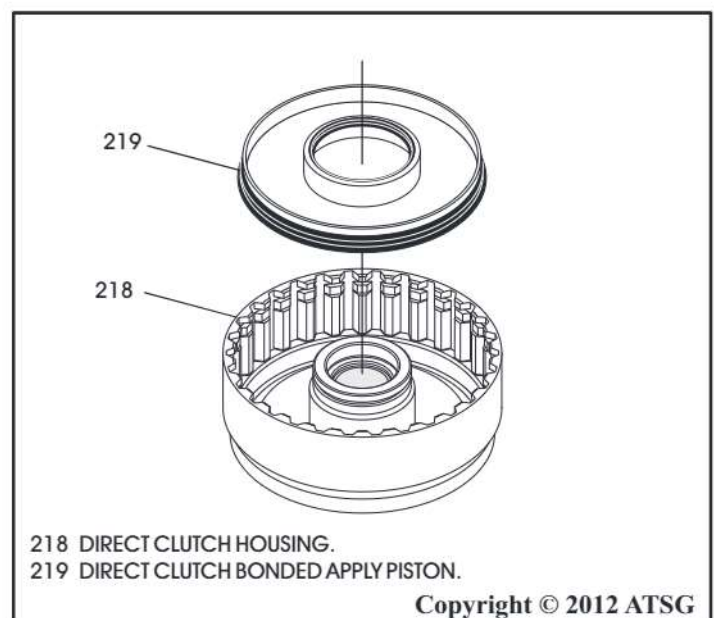
Figure 152

COMPONENT REBUILD

Direct Clutch Assembly

1. Disassemble the remainder of the direct clutch assembly using Figure 152 as a guide.
2. Clean all direct clutch assembly parts thoroughly and dry with compressed air.
3. Inspect all direct clutch parts thoroughly for any wear and/or damage, replace as necessary.
Note: The direct clutch will only be partially assembled in the component rebuild section and will be finished during the final assembly of the complete underdrive section.
4. Lube seal surfaces of the bonded direct clutch piston and direct clutch housing and install the piston, as shown in Figure 153.

Continued on Page 83



218 DIRECT CLUTCH HOUSING.
 219 DIRECT CLUTCH BONDED APPLY PISTON.

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Figure 153

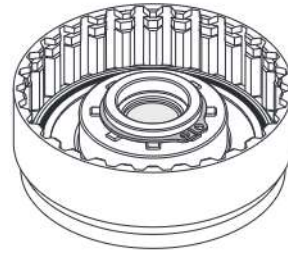
COMPONENT REBUILD

Direct Clutch Assembly (Cont'd)

5. Install the direct clutch piston return spring, as shown in Figure 154.
6. Lube seal surfaces of the direct clutch balance piston and direct clutch apply piston that is already installed.
7. Install direct clutch return spring retainer and balance piston, as shown in Figure 154.
8. Compress the direct clutch return spring retainer and install the snap ring, as shown in Figure 154.
9. Set the partially completed direct clutch housing aside for underdrive section final assembly.

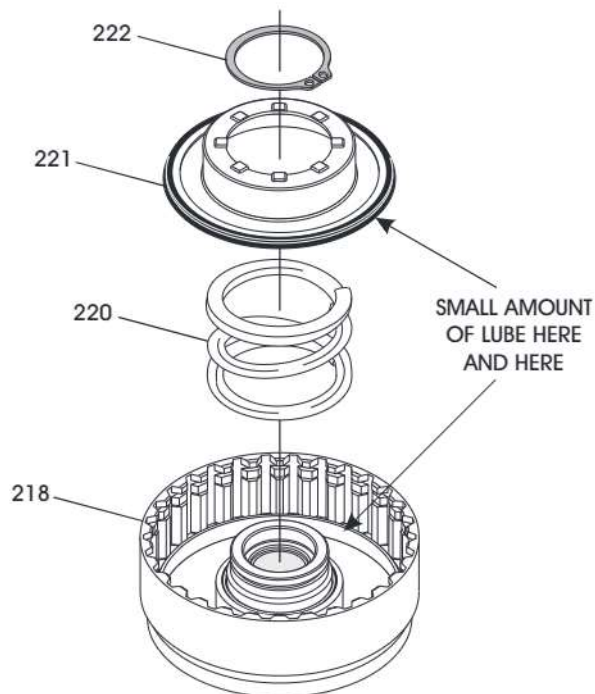
Component Rebuild
Continued on Page 84

PARTIALLY ASSEMBLED DIRECT CLUTCH HOUSING



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Figure 155



- 218 DIRECT CLUTCH HOUSING WITH PISTON.
220 DIRECT CLUTCH PISTON RETURN SPRING.
221 DIRECT RETURN SPRING RETAINER AND BALANCE PISTON.
222 DIRECT CLUTCH RETURN SPRING RETAINER SNAP RING.

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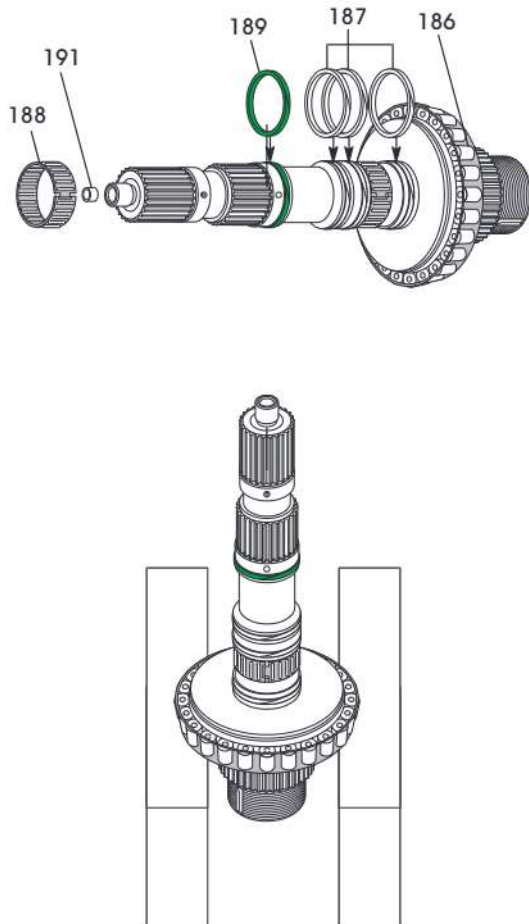
Figure 154

COMPONENT REBUILD

Underdrive Section Final Assembly

1. Install the 3 white scarf-cut sealing rings into their proper positions on the underdrive center shaft, as shown in Figure 156.
2. Install the large, "split", caged needle bearing in the proper position on underdrive center shaft, as shown in Figure 156.
3. Install the green scarf-cut sealing ring into the proper groove on the underdrive center shaft, as shown in Figure 156.
4. Ensure that orificed cup plug is in position in the underdrive center shaft (See Figure 156).
5. Place the underdrive center shaft into low clutch housing and place on the blocks, as shown in Figure 157.
6. Install the driven transfer gear selective shim, as shown in Figure 157.
7. Install the completed roller bearing race support and retaining bolts, as shown in Figure 157.
8. Torque the 8 bolts to 12 N·m (105 in.lb.).

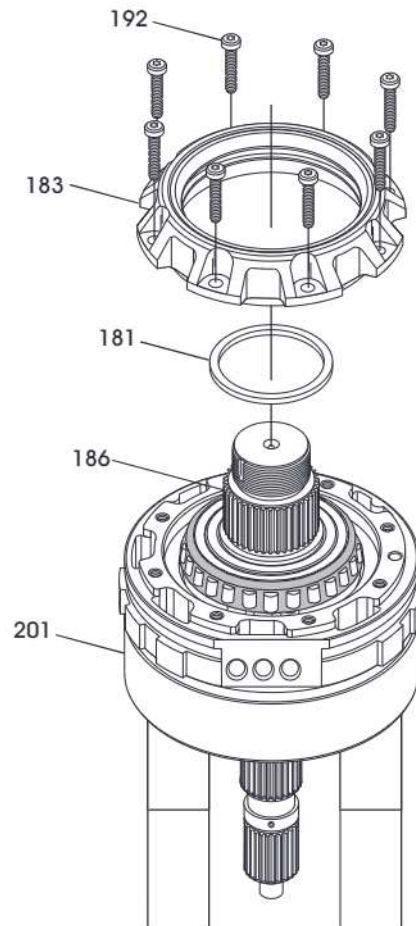
Continued on Page 85



- 186 UNDERDRIVE CENTER SHAFT.
 187 CENTER SHAFT, WHITE, SCARF-CUT SEALING RINGS (3 REQ.).
 188 "SPLIT" CAGED NEEDLE BEARING ASSEMBLY (LARGE).
 189 CENTER SHAFT, GREEN, SCARF-CUT SEALING RING.
 191 UNDERDRIVE CENTER SHAFT ORIFICED CUP PLUG.

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Figure 156



- 181 DRIVEN TRANSFER GEAR "SELECTIVE" SHIM.
 183 DRIVEN TRANSFER GEAR ROLLER BEARING RACE SUPPORT.
 186 UNDERDRIVE CENTER SHAFT.
 192 ROLLER BEARING RACE SUPPORT RETAINING BOLTS (8 REQ.).
 201 LOW CLUTCH HOUSING ASSEMBLY.

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Figure 157

COMPONENT REBUILD

Underdrive Section Final Assembly (Cont'd)

9. Install the completed driven transfer gear assembly onto the underdrive center shaft on top of the selective shim, as shown in Figure 158.
10. Install the driven transfer gear locking nut onto the underdrive center shaft, as shown in Figure 158.
11. Torque the nut to 271 N·m (200 ft.lb.) using the gear holder 9739, as shown in Figure 159.
12. You can mount the assembly into a bench vice, as shown in Figure 160, to make this process less difficult.

Note: Use extra care so as not to damage the low clutch housing in the vice.

Continued on Page 86

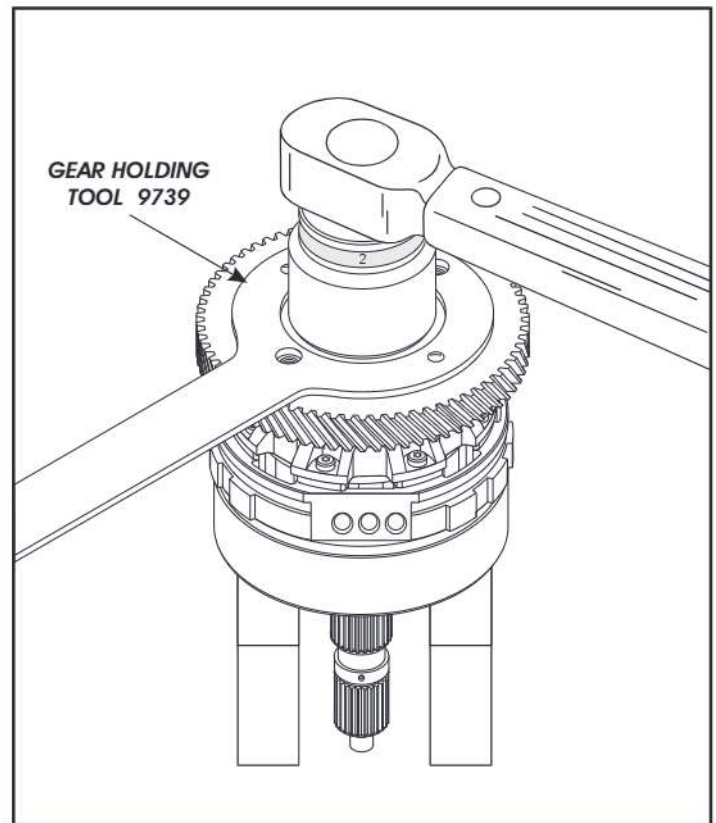


Figure 159

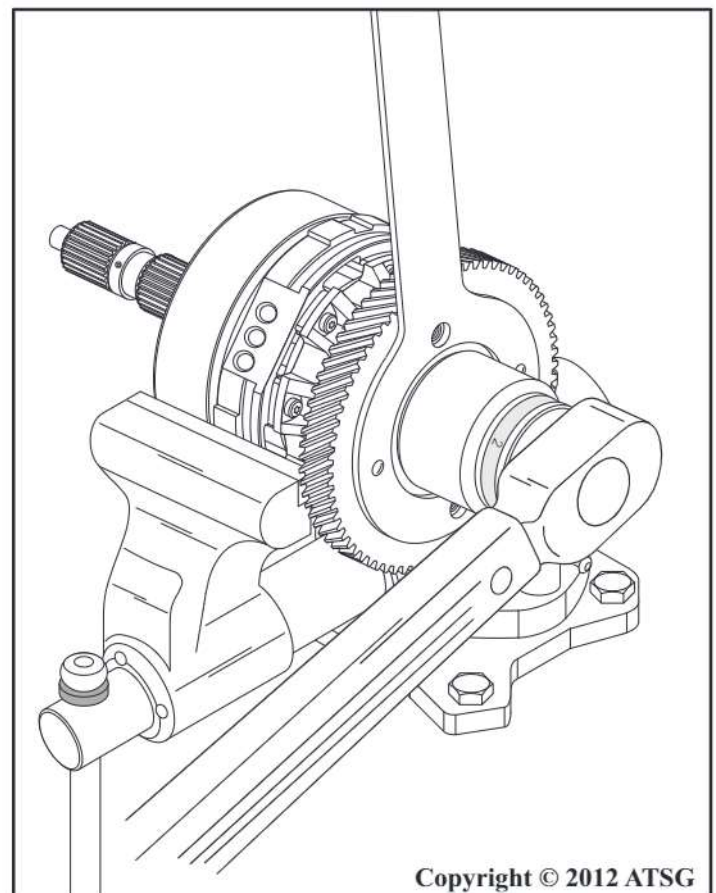


Figure 160

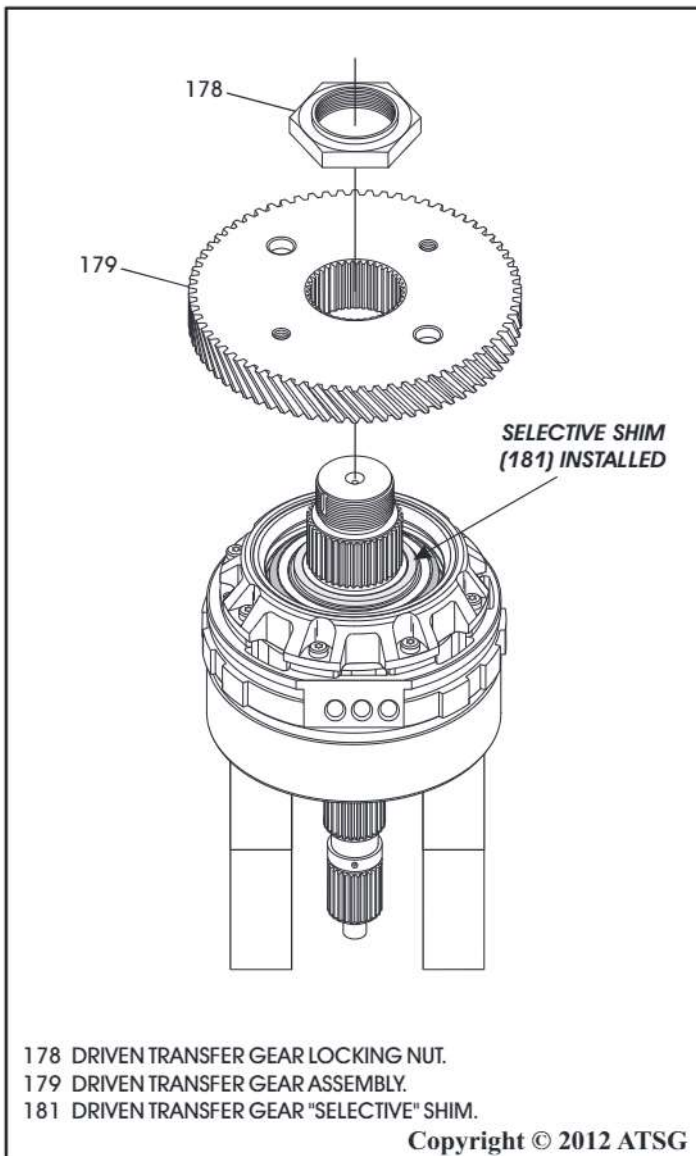


Figure 158

COMPONENT REBUILD

Underdrive Section Final Assembly (Cont'd)

13. Check the rotating torque using an inch pound, dial type torque wrench, while holding low clutch housing, as shown in Figure 161 and 162.
 14. Rotating torque should be 8.0 to 18.0 in.lb.
If more than 18.0 in.lb. select a thicker shim.
If less than 8.0 in.lb. select a thinner shim.
Change selective shim as necessary to obtain the proper rotating torque (Pre-load).
- Note: Shims available from local OEM dealer.**
15. After proper rotating torque (Pre-load) is obtained, remove the retaining nut, driven transfer gear, roller bearing race support and selective shim.

Continued on Page 87

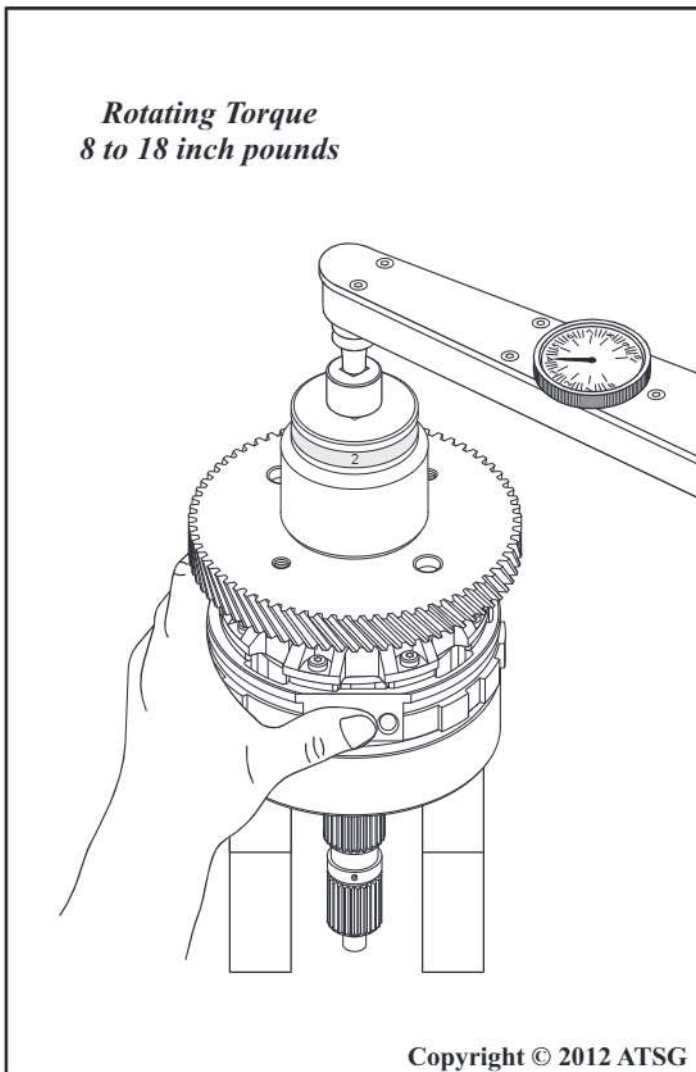


Figure 161

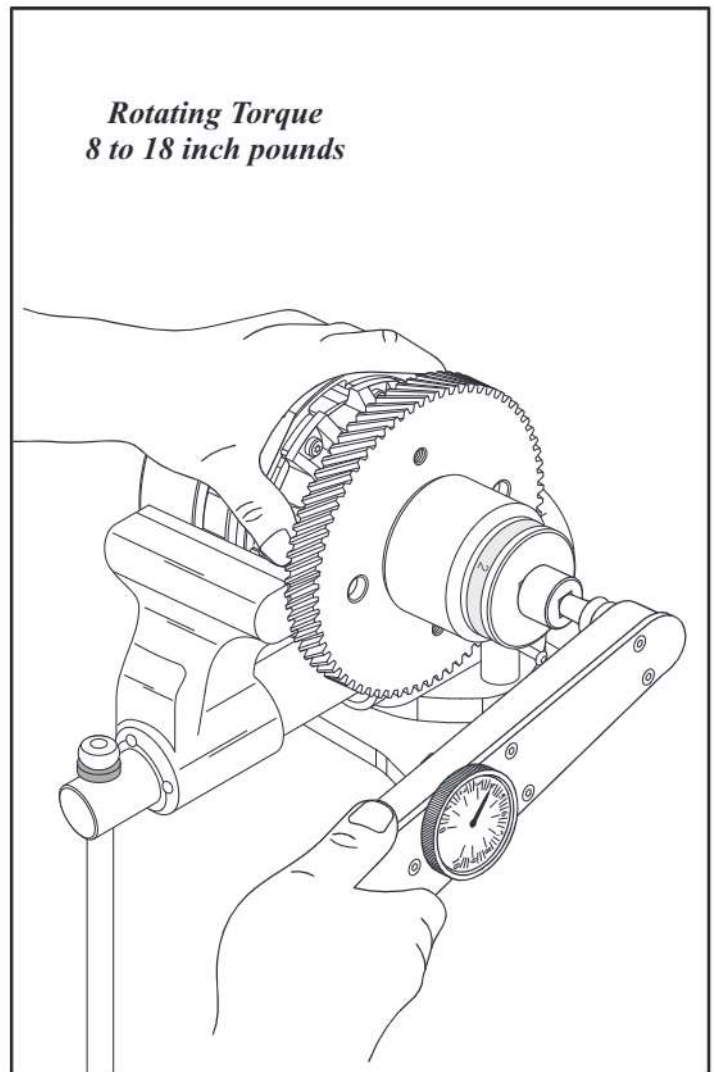


Figure 162

COMPONENT REBUILD

Underdrive Section Final Assembly (Cont'd)

16. After removing the driven transfer gear, place the underdrive center shaft on the blocks, as shown in Figure 163.
17. Install the completed low clutch housing onto the underdrive center shaft, as shown in Figure 163 and ensure sprag is still fully seated.
18. Install the number 8 thrust bearing in the direction shown in Figure 164.

19. Install partially assembled direct clutch housing, as shown in Figure 164, and ensure that it is engaged onto the outer sprag race.

Note: Once again, check low sprag for proper freewheel. The direct clutch housing should freewheel counter-clockwise & lock clockwise.

Continued on Page 88

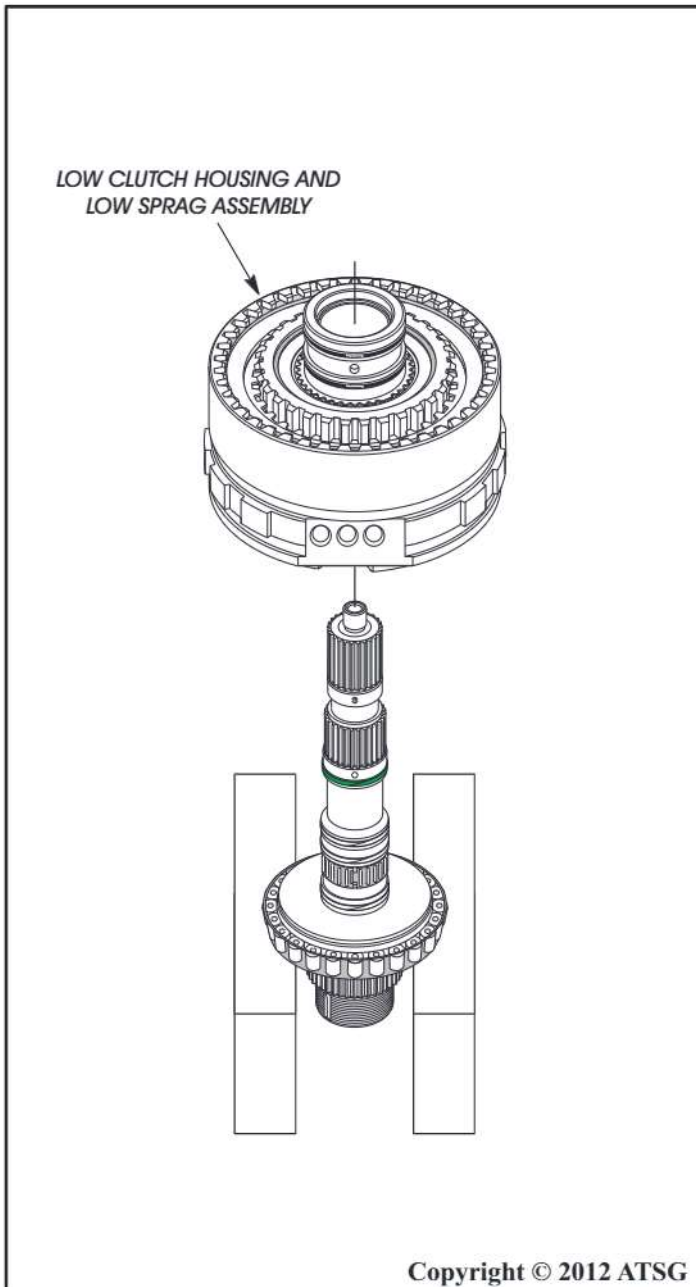


Figure 163

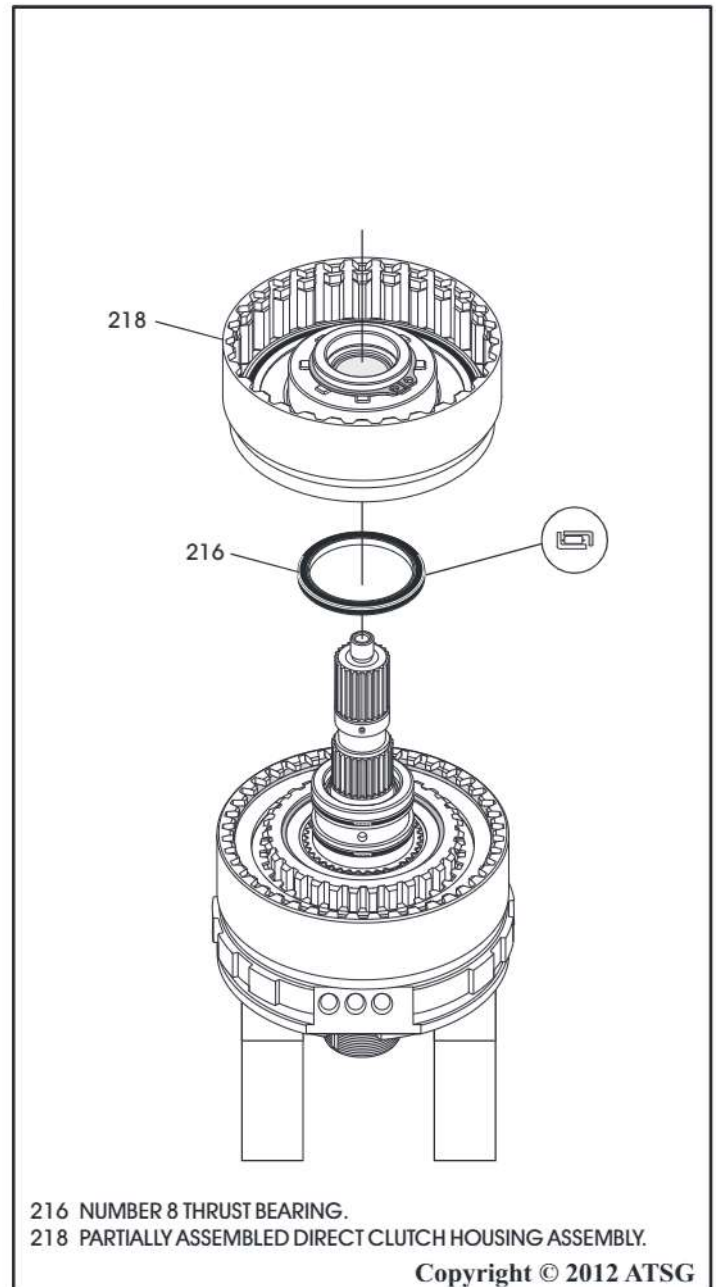


Figure 164

COMPONENT REBUILD

Underdrive Section Final Assembly (Cont'd)

20. Install the number 9 thrust bearing in the direction shown in Figure 165.
21. Install the direct clutch hub in the direction shown in Figure 165.
22. Install the number 10 thrust bearing in the direction shown in Figure 165 and retain with a small amount of Trans-Jel®.
23. Install the small "split" caged needle bearing in proper position on the underdrive center shaft, as shown in Figure 165.

Note: Direct clutch housing will not install with this caged needle bearing in place, which is why we have to assemble this way.

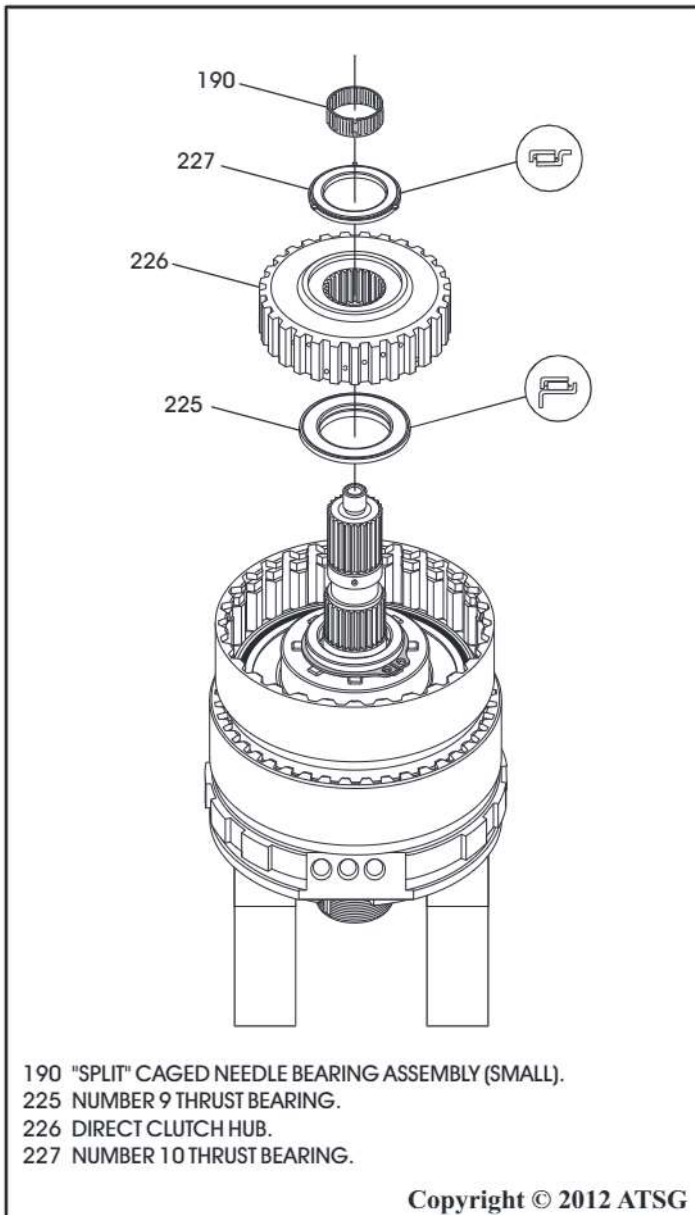


Figure 165

24. Install the "single-sided" direct clutch plates beginning with an outside-spline plate and then alternating with inside-spline plates until you have installed 6 of each, as shown in Figure 166.

Note: All clutch plates should be soaked in the proper fluid for 1 hour prior to assembly.

Continued on Page 89

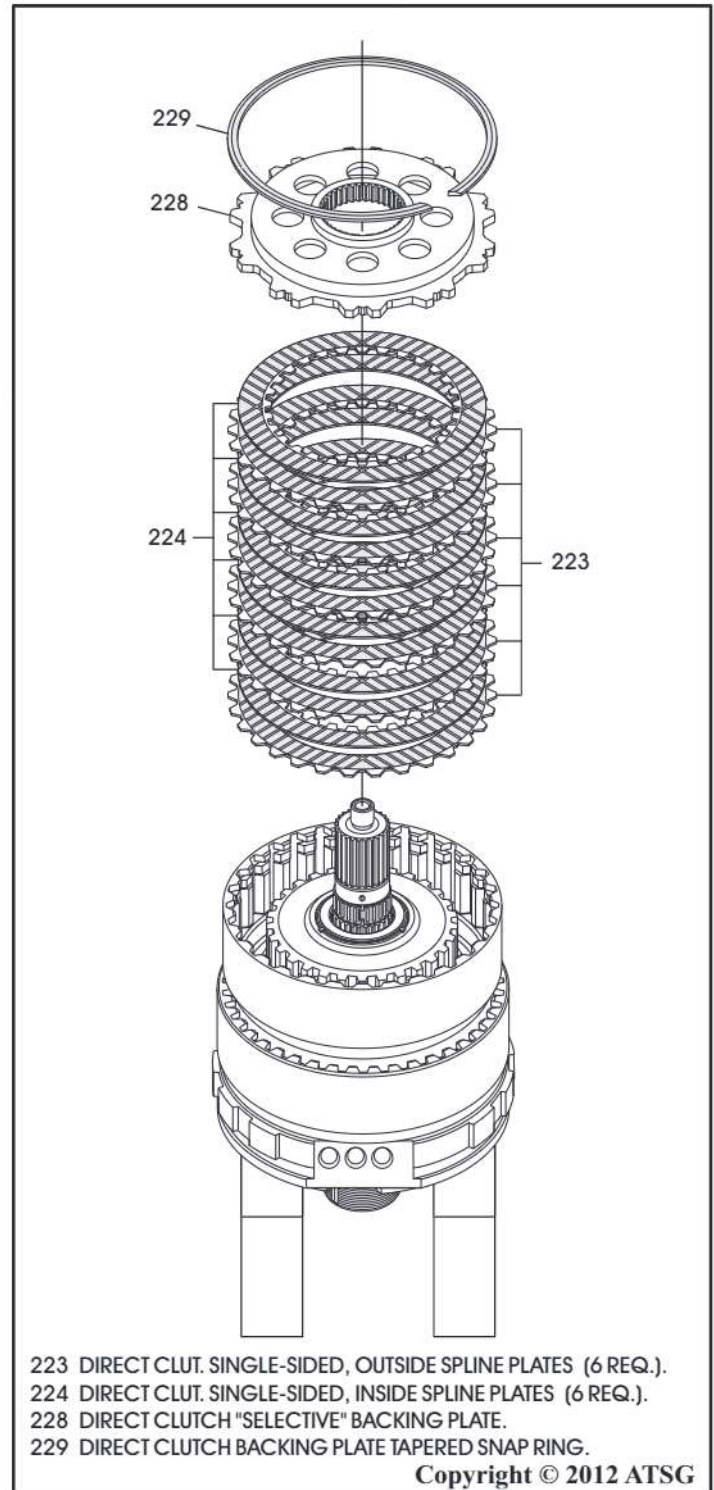


Figure 166

COMPONENT REBUILD

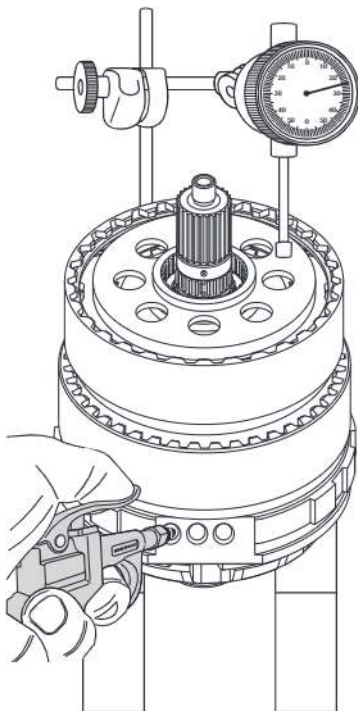
Underdrive Section Final Assembly (Cont'd)

25. Install the "selective" direct clutch backing plate as shown in Figure 166.
 26. Install the direct clutch backing plate **tapered** snap ring, with tapered side facing up, as shown in Figure 166.
 27. Mount dial indicator with probe against backing plate, as shown in Figure 167, and zero indicator.
 28. Apply air pressure, as shown in Figure 167, and measure direct clutch clearance.
 29. Direct clutch clearance should measure between 0.95-1.41mm (.037"-.056").
 30. Change "selective" direct clutch backing plate as necessary to obtain the proper direct clutch clearance.
- Note: Selective backing plates available from local OEM dealer.**
31. Install the output planetary sun gear, as shown in Figure 168.
 32. Install a new "tabbed" snap ring with the tabs facing down and just start over the splines, as shown in Figure 168.

33. Push the "tabbed" snap ring down using a piece of one inch conduit or 2 small screwdrivers until it snaps into place below the splines.

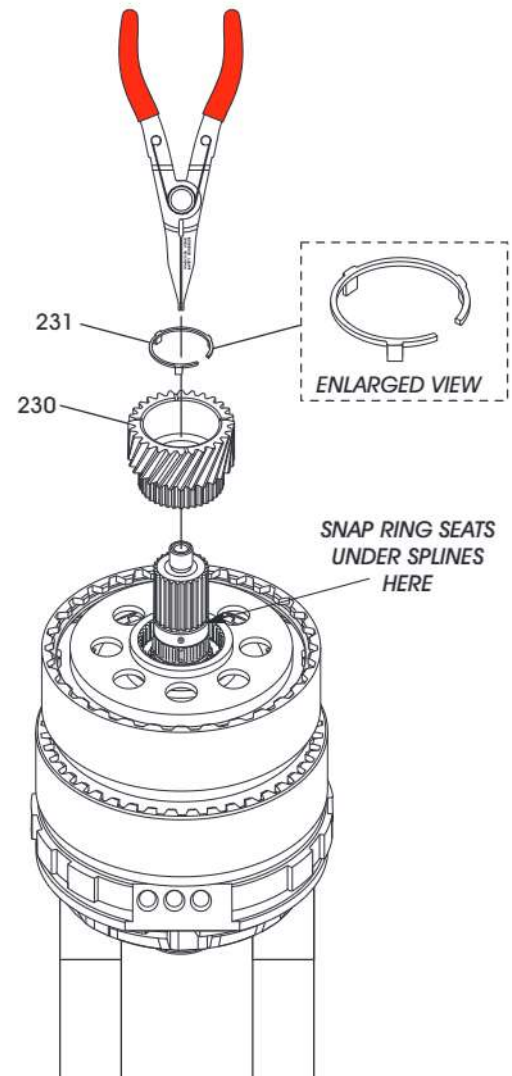
Continued on Page 90

**Direct Clutch Clearance Should Be
0.95-1.41mm (.037"-.056")**



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Figure 167



230 OUTPUT PLANETARY SUN GEAR.
231 OUTPUT PLANETARY SUN GEAR "TABBED" SNAP RING.

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Figure 168

COMPONENT REBUILD

Underdrive Section Final Assembly (Cont'd)

34. Turn the complete assembly over and place on blocks, as shown in Figure 169.
35. Install the driven transfer gear "selective" shim that was previously determined for pre-load, onto underdrive center shaft, as shown in Figure 169.
36. Install the driven transfer gear roller bearing race support, as shown in Figure 169.
37. Install only 4 transfer gear bearing support bolts in the positions shown in Figure 169 and torque bolts to 12 N·m (105 in.lb.), as shown in Figure 170.

Continued on Page 91

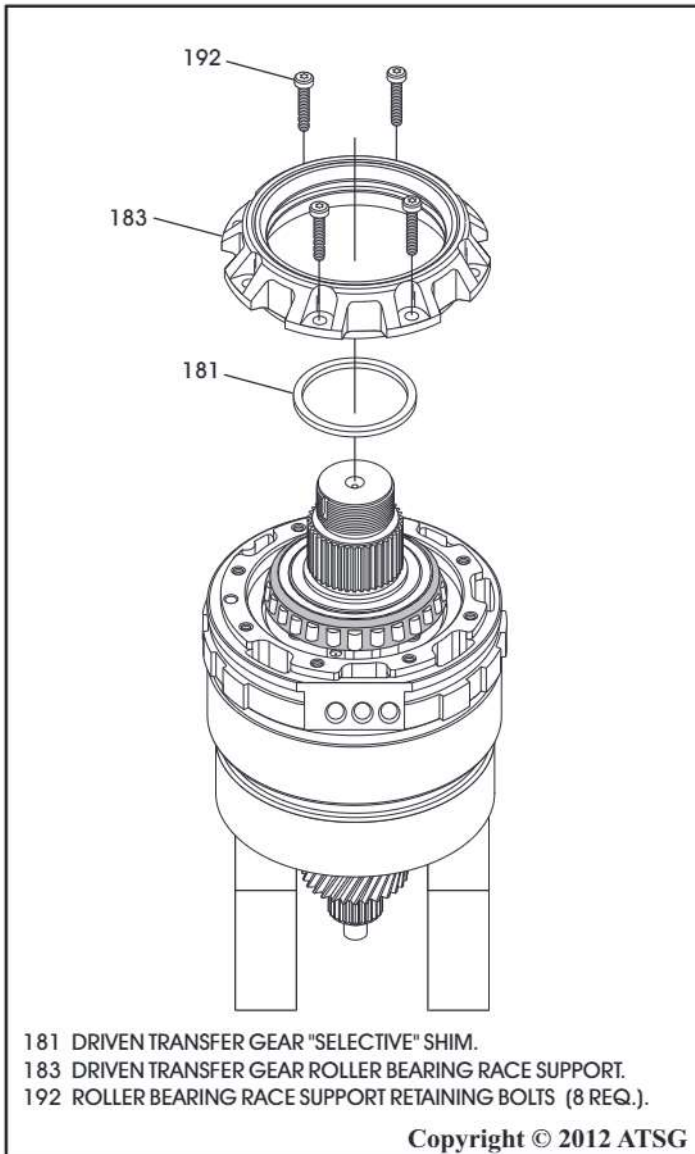


Figure 169

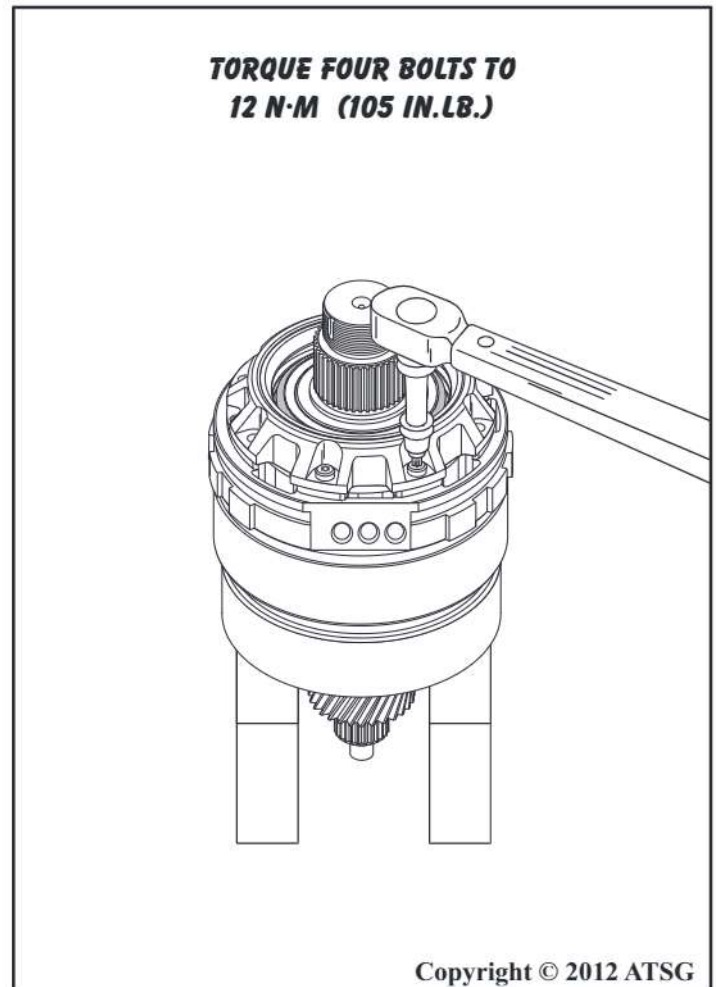


Figure 170

COMPONENT REBUILD

Underdrive Section Final Assembly (Cont'd)

38. Install Adapter/Puller 9908 onto the underdrive assembly, as shown in Figure 167, as an aid for the final assembly process.
39. Set the completed assembly aside for the final assembly process.

Component Rebuild Continued on Page 92

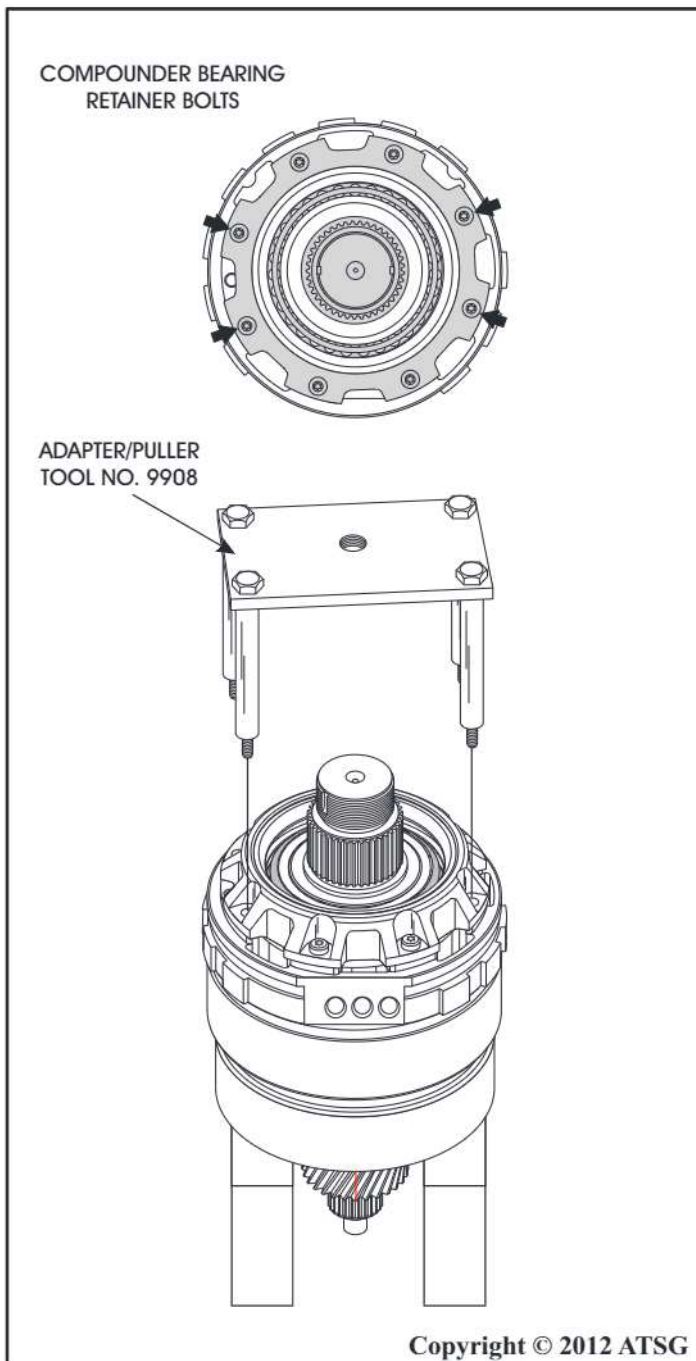
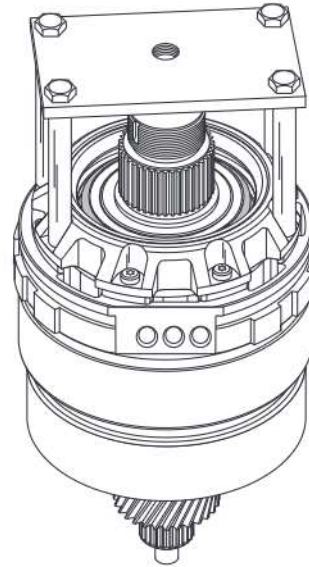


Figure 171

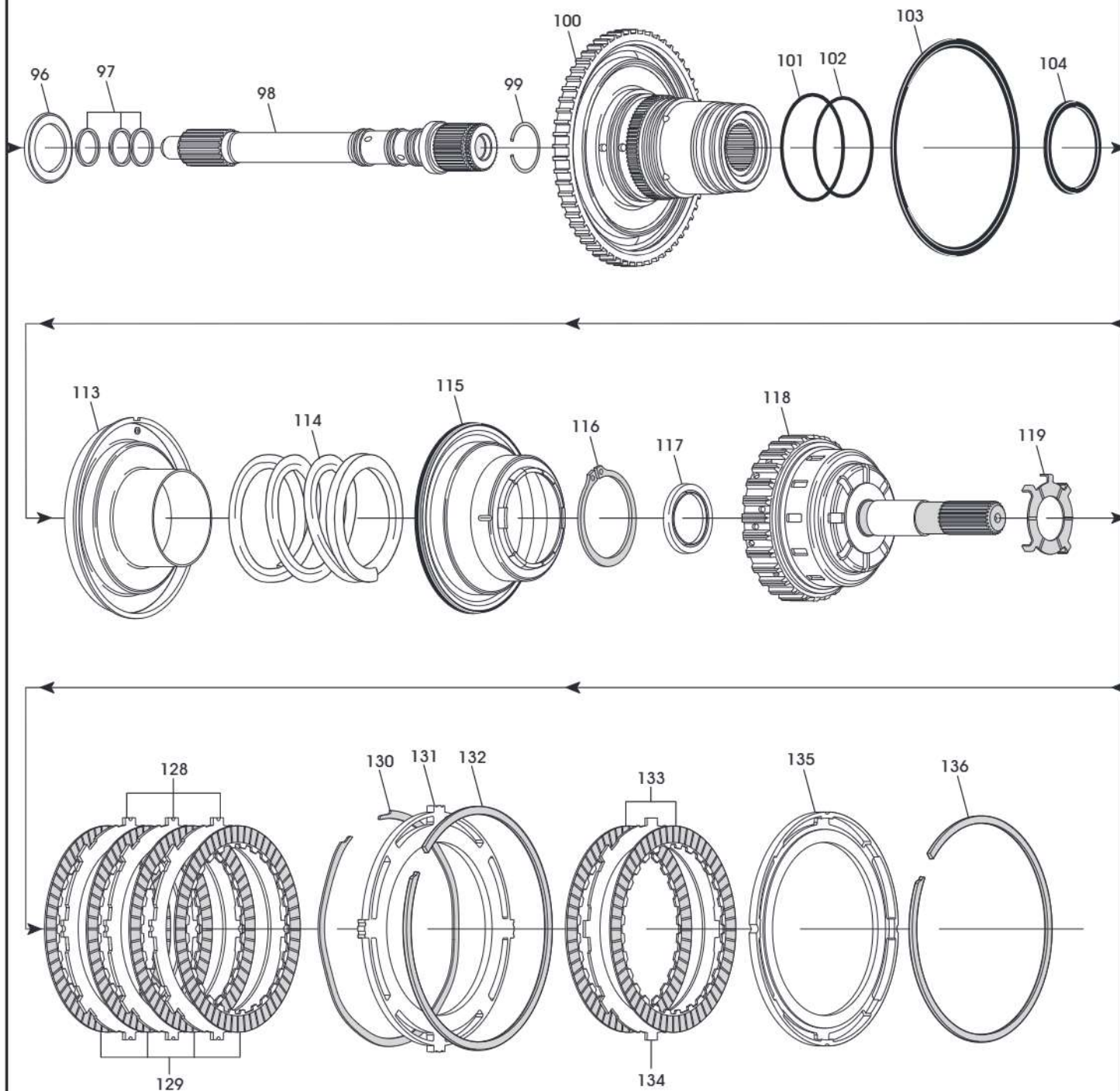
COMPLETED UNDERDRIVE COMPOUNDER SECTION ASSEMBLY



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Figure 172

62TE INPUT CLUTCH HOUSING COMPONENTS EXPLODED VIEW

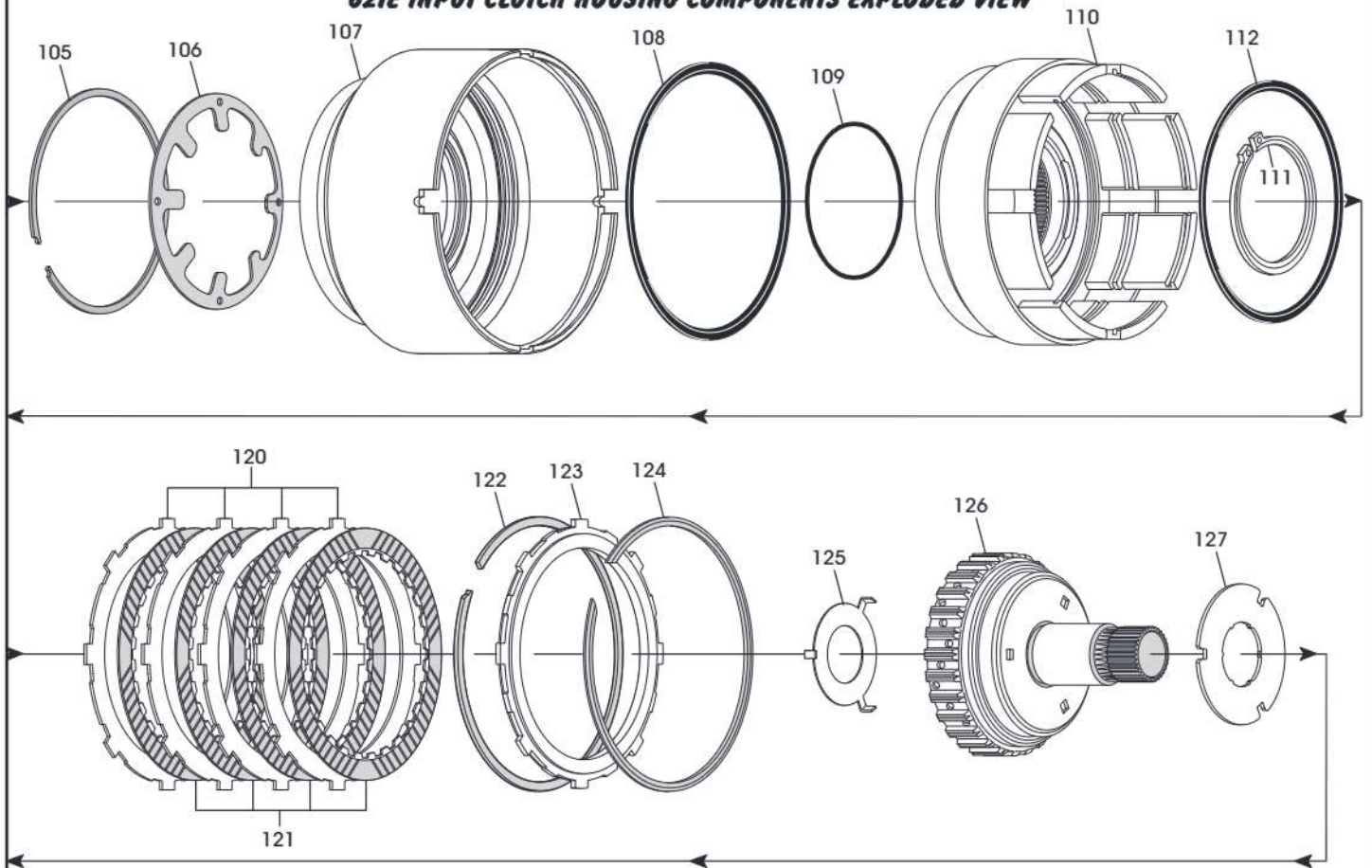


See Legend Figure 174

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Figure 173

62TE INPUT CLUTCH HOUSING COMPONENTS EXPLODED VIEW



- 96 NUMBER 1 THRUST BEARING.
- 97 INPUT SHAFT SEAL RINGS (3 REQUIRED).
- 98 INPUT SHAFT.
- 99 INPUT SHAFT RETAINING CIR-CLIP.
- 100 INPUT CLUTCH HUB.
- 101 BLUE COLORED "O" RING SEAL.
- 102 RED COLORED "O" RING SEAL.
- 103 REVERSE OUTER LIP SEAL (INSIDE LIP).
- 104 UNDERDRIVE INNER LIP SEAL (OUTSIDE LIP).
- 105 OVERDRIVE/REVERSE PISTON BELLVILLE PLATE SNAP RING.
- 106 OVERDRIVE/REVERSE PISTON BELLVILLE PLATE.
- 107 OVERDRIVE/REVERSE PISTON ASSEMBLY.
- 108 OVERDRIVE OUTER LIP SEAL (INSIDE LIP).
- 109 OVERDRIVE/REVERSE INNER "O" RING SEAL.
- 110 INPUT CLUTCH RETAINER.
- 111 "TAPERED" SNAP RING (INSIDE BEVEL).
- 112 UNDERDRIVE OUTER LIP SEAL (INSIDE LIP).
- 113 UNDERDRIVE CLUTCH PISTON ASSEMBLY.
- 114 UNDERDRIVE CLUTCH RETURN SPRING ASSEMBLY.
- 115 RETURN SPRING RETAINER AND BALANCE PISTON ASSEMBLY.
- 116 RETURN SPRING RETAINER "FLAT" SNAP RING.
- 117 NUMBER 2 THRUST BEARING.

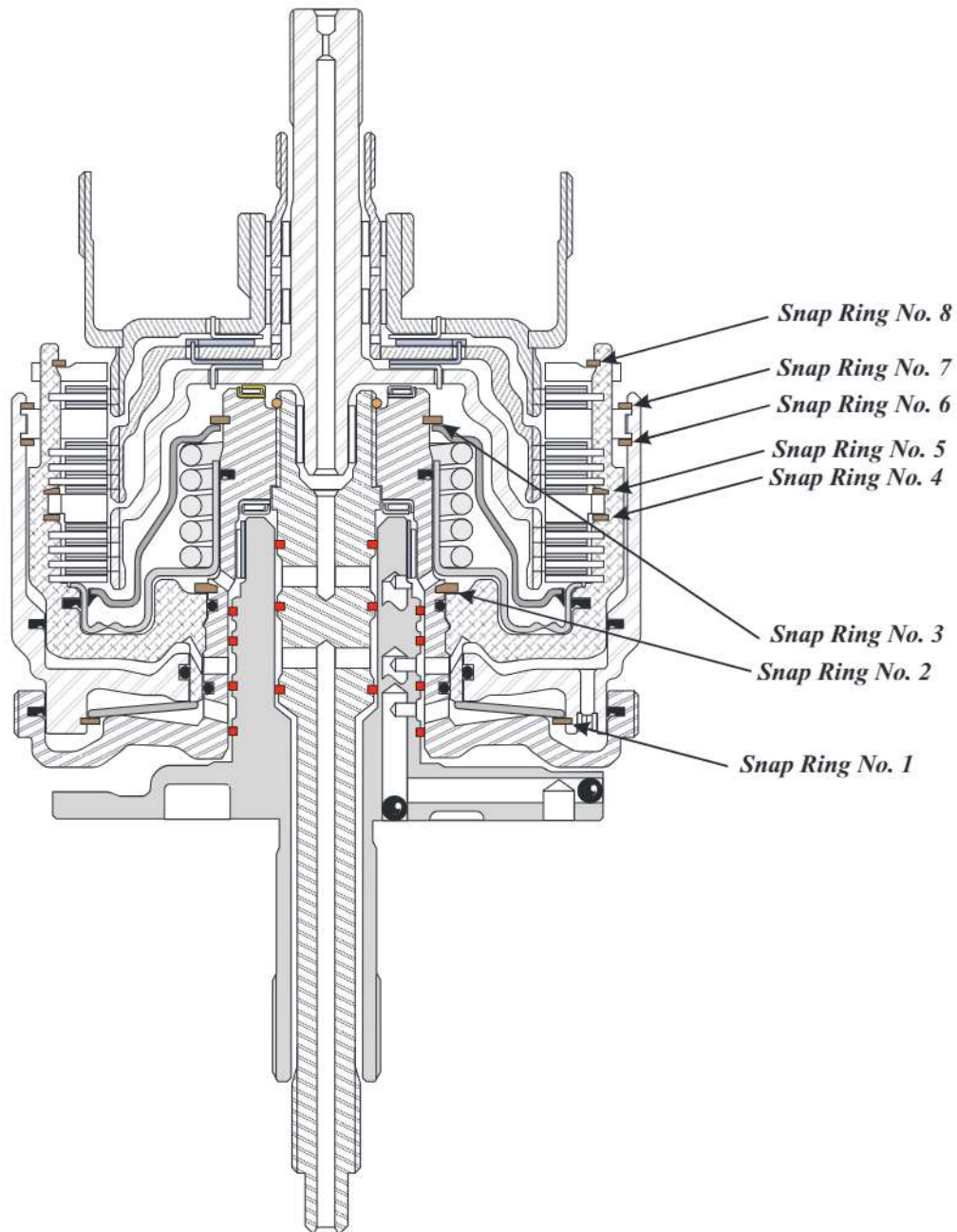
- 118 UNDERDRIVE CLUTCH HUB AND SHAFT ASSEMBLY.
- 119 NUMBER 3 THRUST WASHER.
- 120 UNDERDRIVE CLUTCH STEEL PLATES, .068" (4 REQUIRED).
- 121 UNDERDRIVE CLUTCH FRICTION PLATES, .073" (4 REQUIRED).
- 122 UNDERDRIVE/OVERDRIVE BACKING PLATE "FLAT" SNAP RING.
- 123 UNDERDRIVE/OVERDRIVE "SELECTIVE" BACKING PLATE.
- 124 UNDERDRIVE/OD BACKING PLATE "TAPERED" SNAP RING.
- 125 NUMBER 3 THRUST PLATE.
- 126 OVERDRIVE CLUTCH HUB AND SHAFT ASSEMBLY.
- 127 NUMBER 4 "SELECTIVE" THRUST PLATE.
- 128 OVERDRIVE CLUTCH STEEL PLATES, .079" THICK (3 REQ.).
- 129 OVERDRIVE CLUTCH FRICTION PLATES, .070" THICK (4 REQ.).
- 130 OVERDRIVE/REVERSE BACKING PLATE "WAVE" SNAP RING.
- 131 OVERDRIVE/REVERSE BACKING PLATE.
- 132 OVERDRIVE/REVERSE BACKING PLATE "FLAT" SNAP RING.
- 133 REVERSE CLUTCH FRICTION PLATES, .070" THICK (2 REQ.).
- 134 REVERSE CLUTCH STEEL PLATE, .068" THICK (1 REQ.).
- 135 REVERSE CLUTCH BACKING PLATE.
- 136 REVERSE CLUTCH BACKING PLATE "SELECTIVE" SNAP RING.

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Figure 174

62TE INPUT CLUTCH HOUSING SNAP RING IDENTIFICATION CHART

	Thickness	I.D. to O.D.
Snap Ring No. 1	Flat .062"	.220"
Snap Ring No. 2	Tapered .092"	Varies
Snap Ring No. 3	Flat .075"	Varies
Snap Ring No. 4	Flat .075"	.175"
Snap Ring No. 5	Tapered .090"	.140"
Snap Ring No. 6	Waved .061"	.110"
Snap Ring No. 7	Flat .069"	.110"
Snap Ring No. 8	Flat .070" (Selective)	.157"



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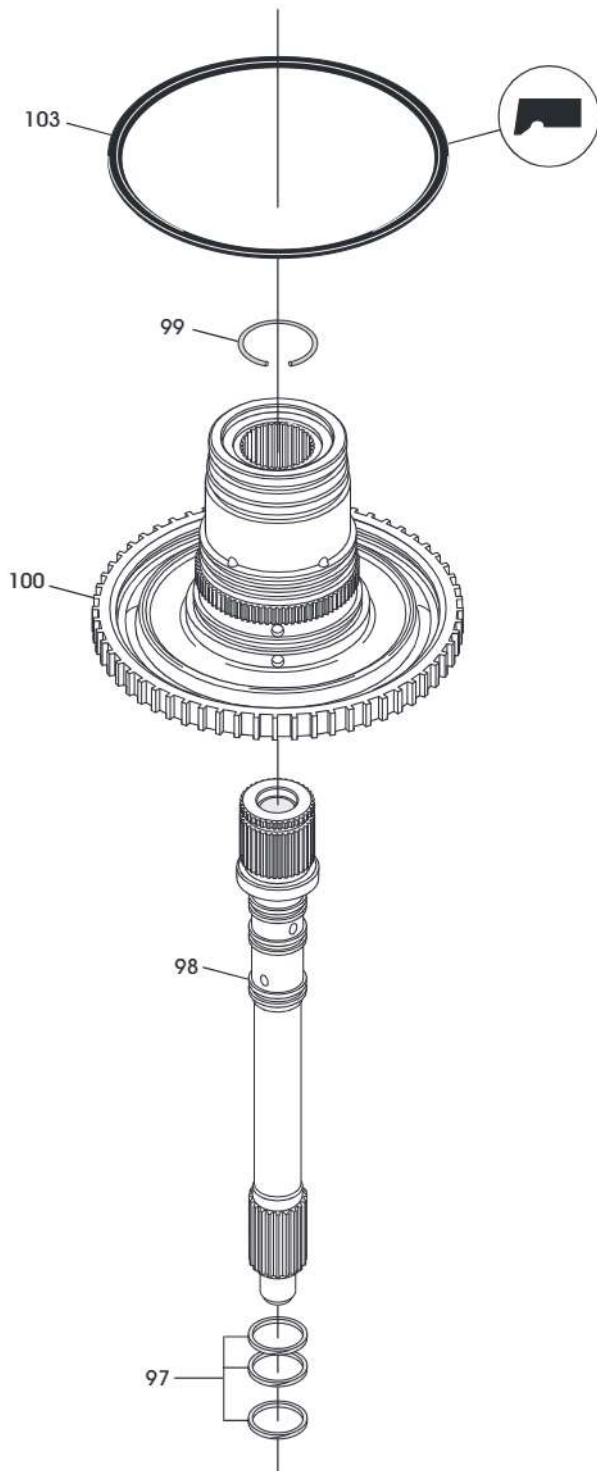
Figure 175

COMPONENT REBUILD

Input Housing Assembly

1. Disassemble the input clutch housing using the illustrations in Figures 173 and 174 as a guide.
2. Clean all input housing parts thoroughly and dry with compressed air.
3. Inspect all input housing parts thoroughly for any wear and/or damage, replace as necessary.
4. Install 3 new sealing rings in their grooves in the input shaft, as shown in Figure 176.
5. Install the input shaft into the input clutch hub, as shown in Figure 176, and install cir-clip.
6. Install new "inside" lip seal (103) into input clutch hub in position shown in Figure 176, with lip facing down and lube with a small amount of Trans-Jel®.
7. Install new "outside" lip seal (104) into input clutch hub in position shown in Figure 177, with lip facing down and lube with a small amount of Trans-Jel®.
8. The "O" rings on the input clutch hub are color coded. Install Blue and Red colored "O" rings in the positions shown in Figure 177, and lube with a small amount of TransJel®.

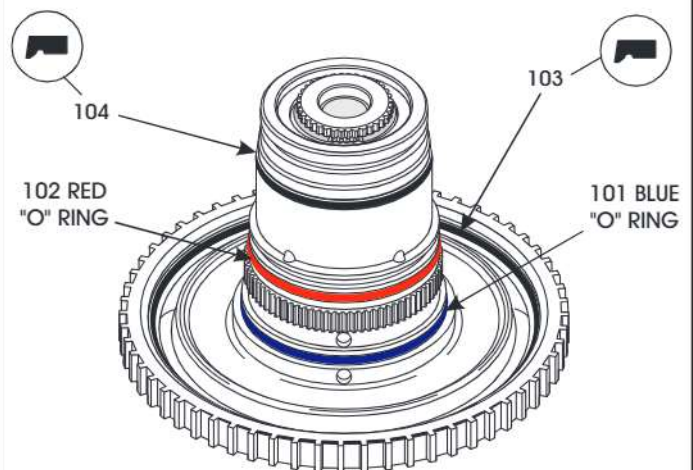
Continued on Page 96



- 97 INPUT SHAFT SEAL RINGS (3 REQUIRED).
 98 INPUT SHAFT.
 99 INPUT SHAFT RETAINING CIR-CLIP.
 100 INPUT CLUTCH HUB.
 103 REVERSE OUTER LIP SEAL (INSIDE LIP).

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Figure 176



- 101 BLUE COLORED "O" RING SEAL.
 102 RED COLORED "O" RING SEAL.
 103 REVERSE OUTER LIP SEAL (INSIDE LIP).
 104 UNDERDRIVE INNER LIP SEAL (OUTSIDE LIP).

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Figure 177

COMPONENT REBUILD

Input Housing Assembly (Cont'd)

9. Install the overdrive/reverse piston "bellville" plate and the snap ring in the direction shown in Figure 178.
10. Install overdrive outer lip seal (inside lip) into groove on the inside of the overdrive/reverse piston, with the lip facing down, as shown in Figure 179.
11. Install the overdrive/reverse inner "O" ring seal into the groove in the overdrive/reverse piston, as shown in Figure 179.
12. Ensure the orifice/screen in the overdrive/reverse piston is still in place, as shown in Figure 180.

Continued on Page 97

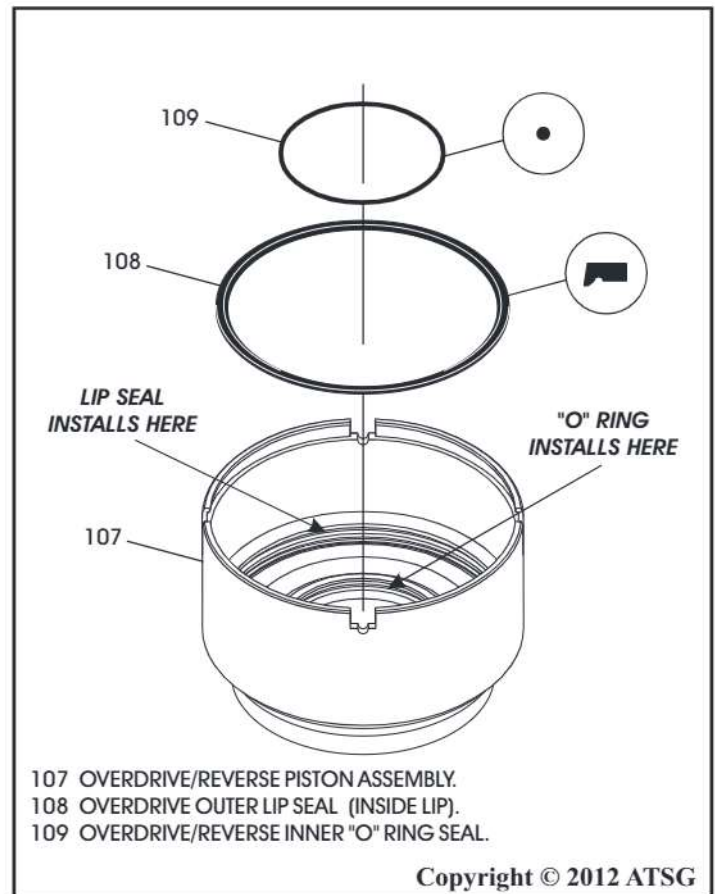


Figure 179

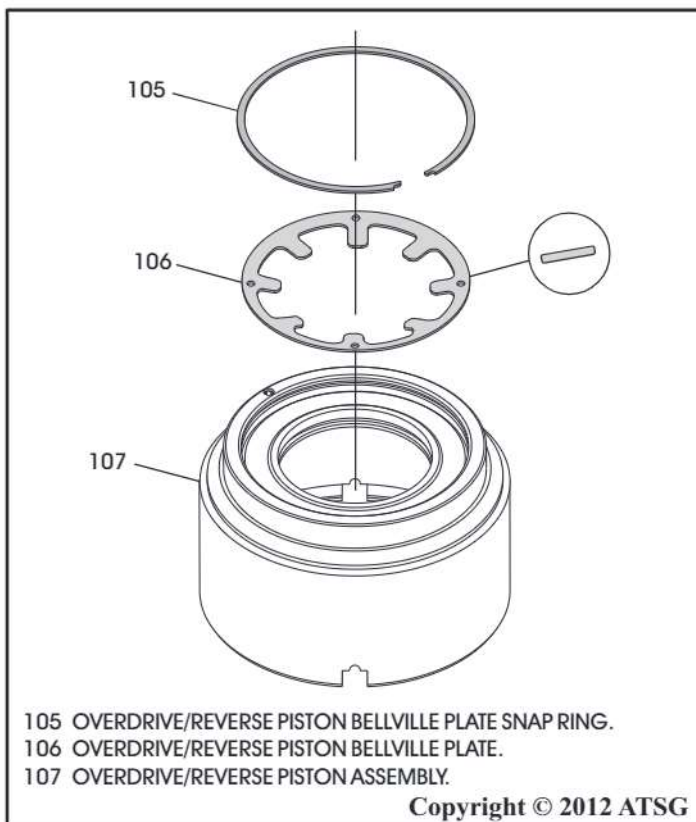


Figure 178

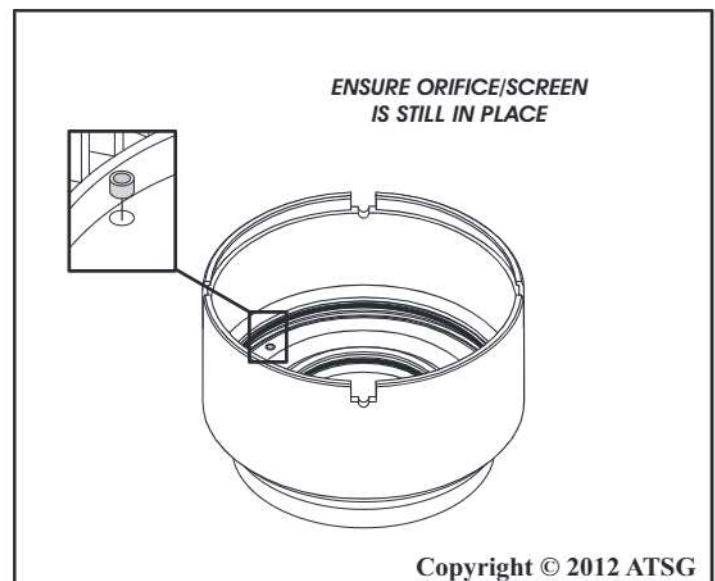


Figure 180

COMPONENT REBUILD

Input Housing Assembly (Cont'd)

13. Install the underdrive outer lip seal (inside lip) into the groove inside the input clutch retainer, as shown in Figure 181.

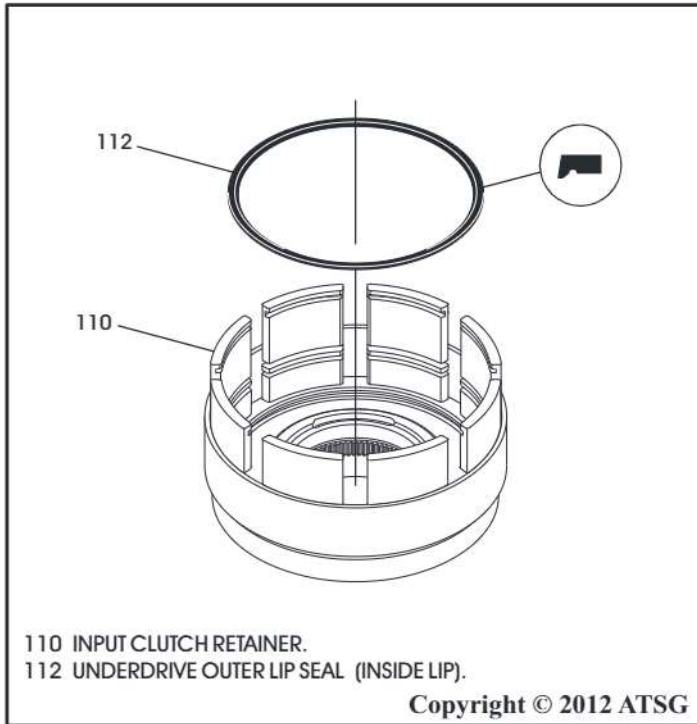


Figure 181

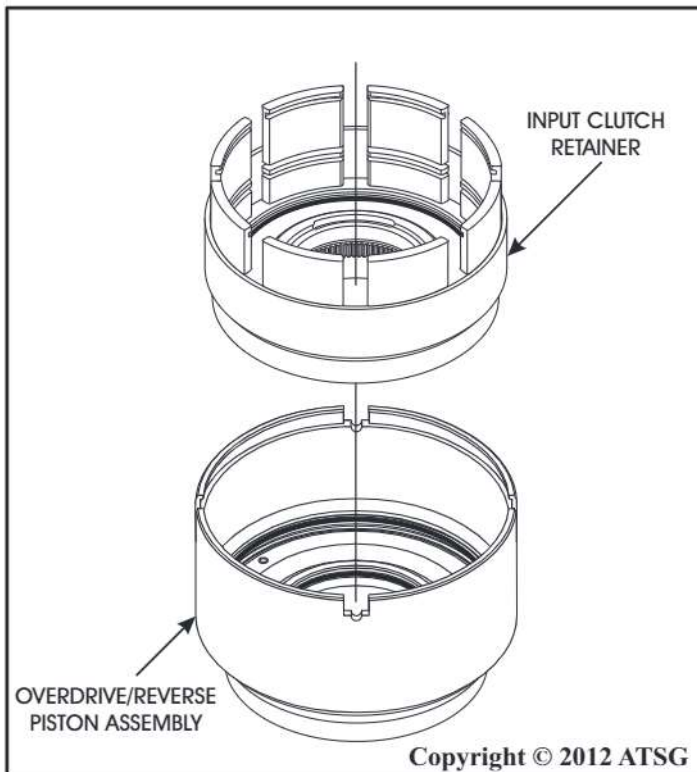


Figure 182

14. Lubricate all seals and install the input clutch retainer into the overdrive/reverse piston by rotating into position, as shown in Figure 182, until fully seated.
15. Lubricate the "O" rings and lip seal on the input clutch hub and install overdrive/reverse & input clutch retainer assembly onto the input clutch hub, as shown in Figure 183.
16. Push down to install and rotate to align splines of the input clutch retainer.
17. Install the tapered snap ring with inside bevel facing up, as shown in Figure 183, and eyelets in cavity of the input clutch retainer.

Special Note: We have provided you with a snap ring identification chart to identify the snap rings, and identify their locations, in Figure 175 on Page 94. This chart will identify all snap rings in the input housing.

Continued on Page 98

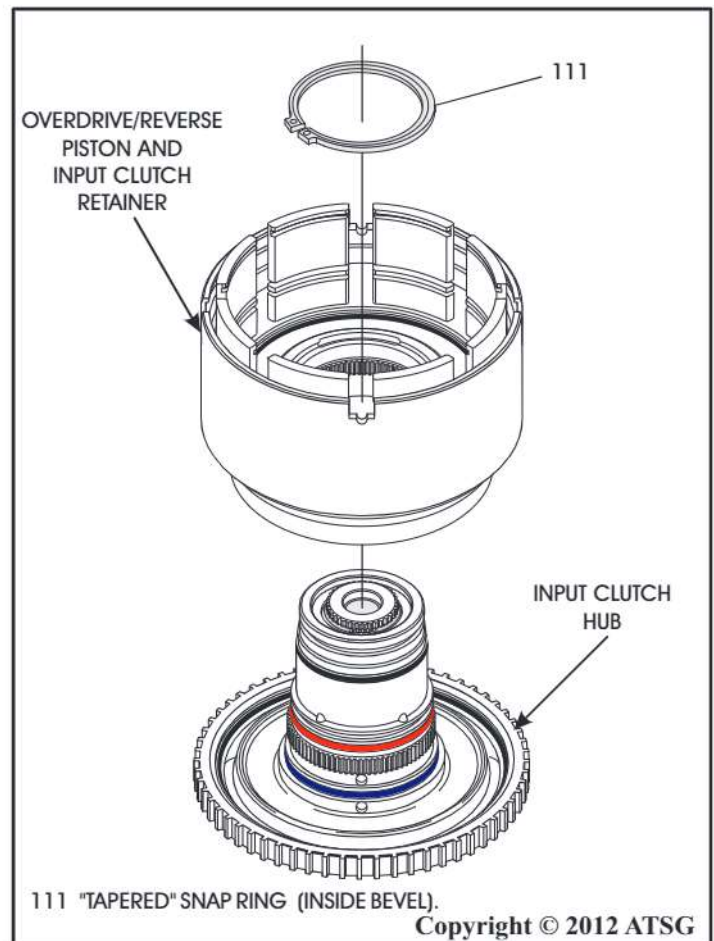


Figure 183

COMPONENT REBUILD

Input Housing Assembly (Cont'd)

18. Lubricate the seal surfaces of underdrive clutch piston and install into the input clutch retainer, as shown in Figure 184.
19. Install the underdrive clutch piston return spring, as shown in Figure 184.
20. Lubricate the bonded seal of the return spring retainer/balance piston and install, as shown in Figure 184.

21. Using a suitable shop press, compress the return spring assembly and install the flat snap ring into the groove, as shown in Figure 184.

Special Note: We have provided you with a snap ring identification chart to identify the snap rings, and identify their locations, in Figure 175 on Page 94. This chart will identify all snap rings in the input housing.

Continued on Page 99

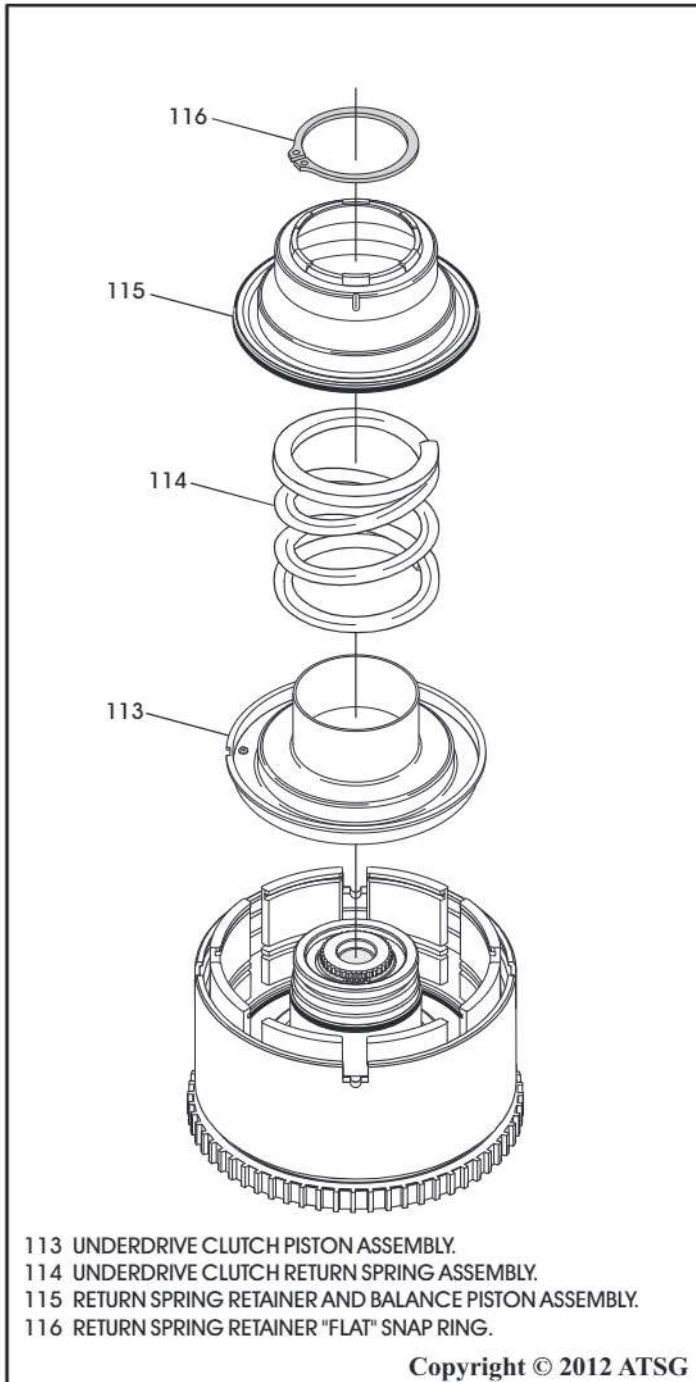


Figure 184

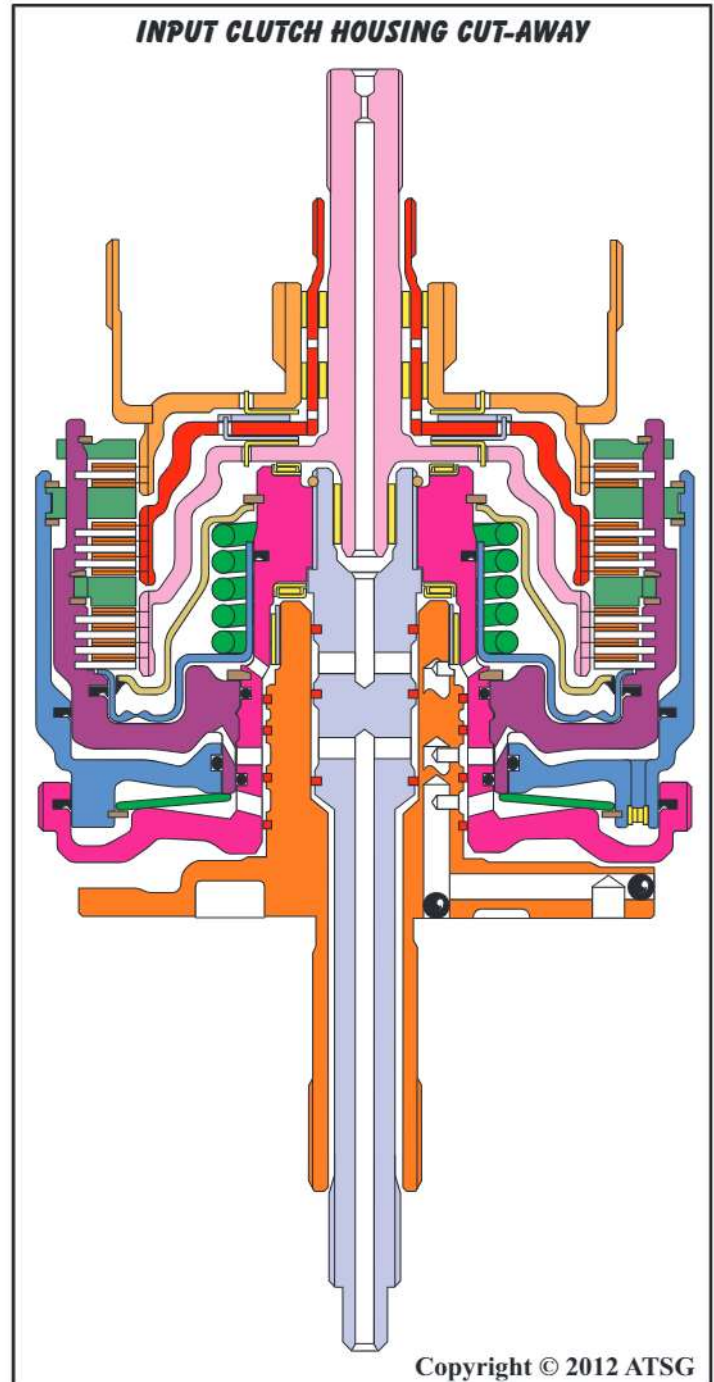


Figure 185

COMPONENT REBUILD

Input Housing Assembly (Cont'd)

22. Install the underdrive clutch pack beginning with a steel plate and alternating with a friction plate, as shown in Figure 186, until you have installed four of each.

Note: Ensure that you are installing the proper clutches. Refer to Figure 187 for differences between the underdrive and overdrive clutches.
Note: All clutches should be soaked in proper fluid for 1 hour, prior to assembly.

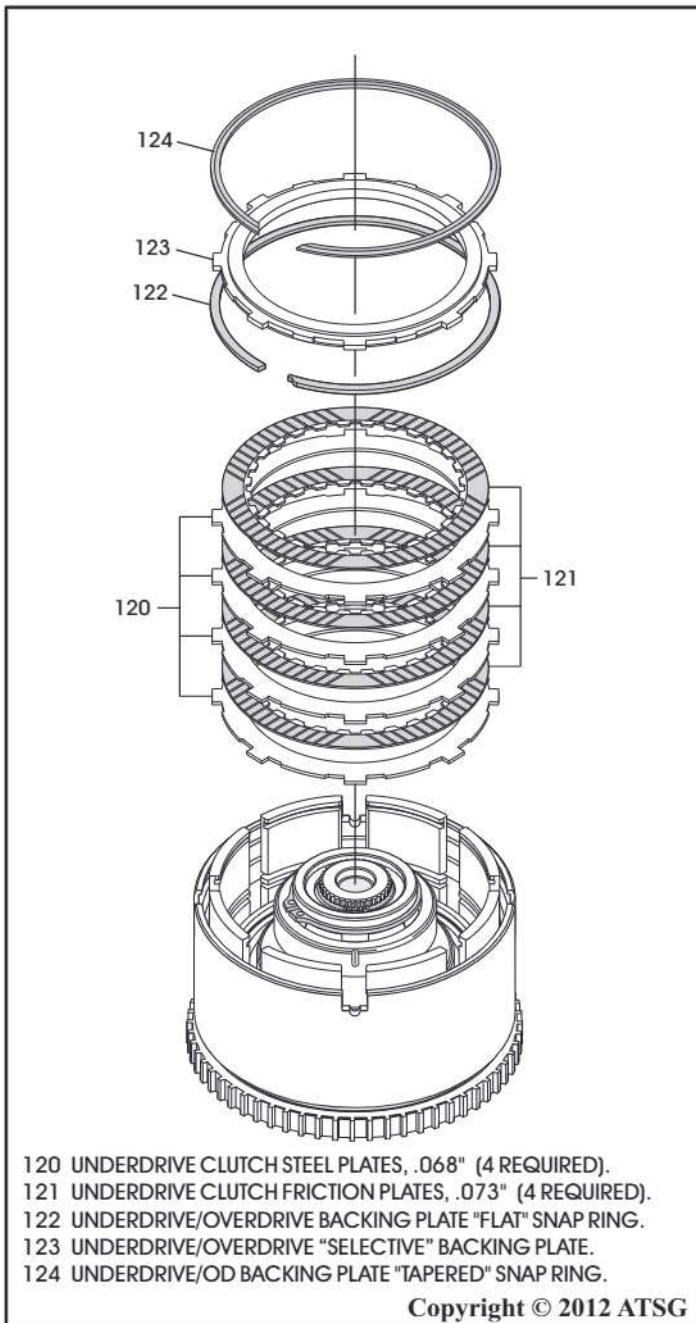


Figure 186

23. To prevent damage to the clutch plate, remove the last friction plate installed and install the underdrive backing plate **flat** snap ring, as shown in Figure 186, into bottom groove.
24. Re-install the last friction plate.
25. Install the underdrive/overdrive selective backing plate on top of the flat snap ring, as shown in Figure 186.
- Note:** Widest clutch surface faces down and is selective on the underdrive side only.
26. Install the underdrive/overdrive backing plate "tapered" snap ring with the taper facing up, as shown in Figure 186, and ensure fully seated.

Special Note: We have provided you with a snap ring identification chart to identify the snap rings, and identify their locations, in Figure 175 on Page 94. This chart will identify all snap rings in the input housing.

Continued on Page 100

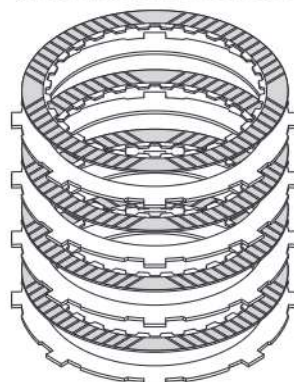
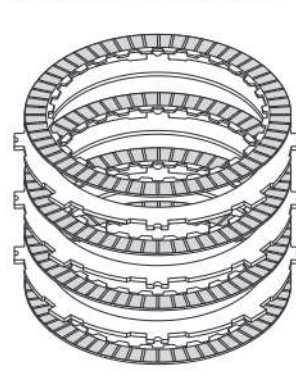
Underdrive Clutch Pack	Overdrive Clutch Pack
NOTE GROOVE PATTERN IN UNDERDRIVE FRICTIONS  NOTE THAT ALL TEETH ARE STRAIGHT CUT ON UNDERDRIVE STEEL PLATES	NOTE GROOVE PATTERN IN OVERDRIVE FRICTIONS  NOTE HALF-MOON CUT IN EVERY OTHER TOOTH ON OVERDRIVE STEEL PLATES
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Figure 187

COMPONENT REBUILD

Input Housing Assembly (Cont'd)

27. Mount a dial indicator to the input housing and zero the indicator against tooth of the underdrive friction plate, as shown in Figure 188.
 28. Apply 20 psi of air pressure or lift with picks and record the dial indicator reading.
 29. The correct underdrive clutch clearance should be 0.91-1.47mm (.036"-.058").
 30. Change the selective backing plate as necessary using the chart in Figure 188, to obtain proper underdrive clutch clearance.
 31. Install the overdrive clutch pack beginning with a friction plate and alternating with steel plates until you have installed 4 friction and 3 steel plates, as shown in Figure 189.
- Note: Ensure that you are installing the proper clutches. Refer to Figure 187 for differences between the underdrive and overdrive clutches.**
- Note: All clutches should be soaked in proper fluid for 1 hour, prior to assembly.**
32. Install the overdrive/reverse backing plate **wave** snap ring into the wide groove of the overdrive and reverse piston and push snap ring to bottom of the groove, as shown in Figure 189.

33. Install the overdrive/reverse backing plate into the retainer, as shown in Figure 189, with the stepped side facing down.
34. Install the overdrive/reverse backing plate **flat** snap ring on top of the backing plate and into the wide groove in piston, by pushing down on the backing plate to pre-load the wave snap ring.

Special Note: We have provided you with a snap ring identification chart to identify the snap rings, and identify their locations, in Figure 175 on Page 94. This chart will identify all snap rings in the input housing.

Continued on Page 101

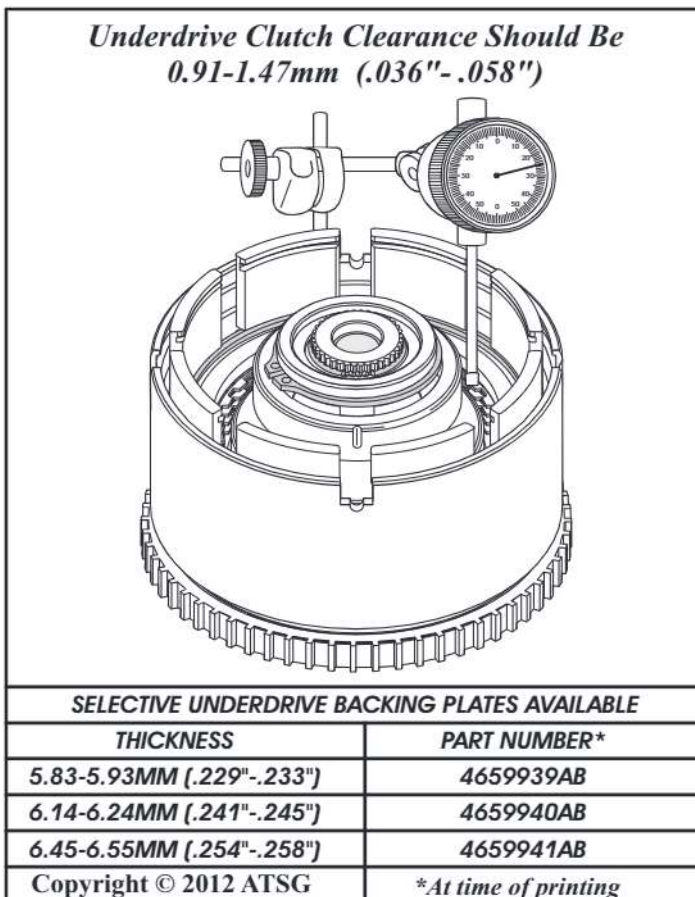


Figure 188

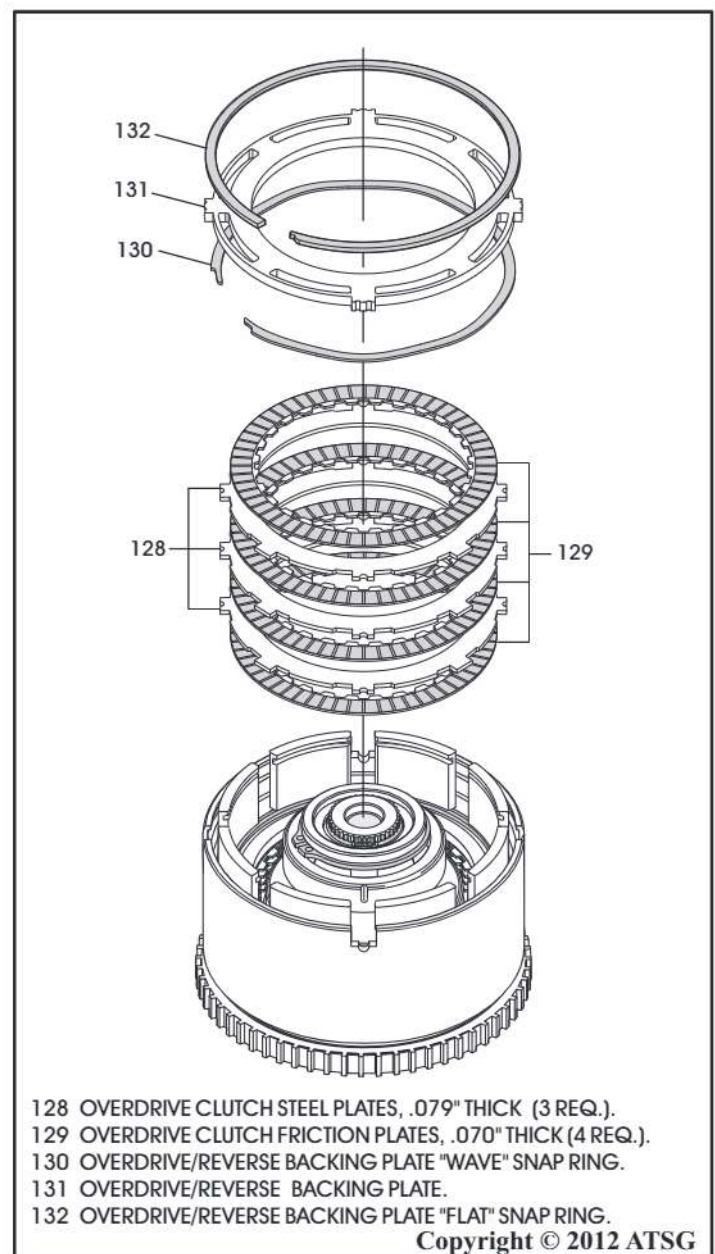


Figure 189

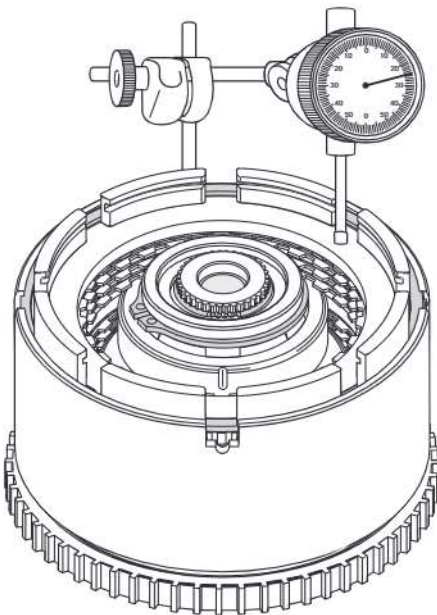
COMPONENT REBUILD

Input Housing Assembly (Cont'd)

35. Mount a dial indicator to the input housing and zero the indicator against the backing plate, as shown in Figure 190.
36. Apply 30 psi of air pressure (wave snap ring) and record the dial indicator reading.
37. The correct overdrive clutch clearance should be 1.10-2.34mm (.043"-.092").
38. There are no selectives for the overdrive clutch.
Note: If the overdrive clutch clearance is not correct, you have something mis-assembled.
39. Install the reverse clutch pack beginning with a friction plate and alternating with steel plate until you have installed 2 "**pre-soaked**" frictions and 1 steel plate, as shown in Figure 191.
40. Install the reverse clutch backing plate with the flat side facing down, as shown in Figure 191.
41. Install reverse clutch backing plate **selective** snap ring, as shown in Figure 191.
42. Tap reverse clutch backing plate down to allow installation of the selective snap ring.
43. Pry the reverse backing plate up to seat the snap ring in the groove and free the reverse clutch, as shown in Figure 192.

Continued on Page 102

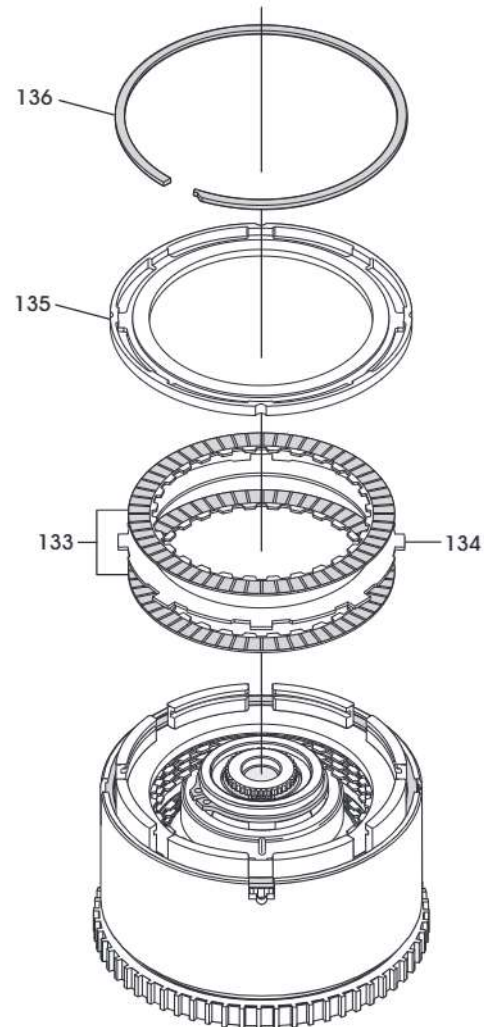
**Overdrive Clutch Clearance Should Be
1.1-2.3mm (.043"-.092")**



There are no selectives for the Overdrive Clutch.

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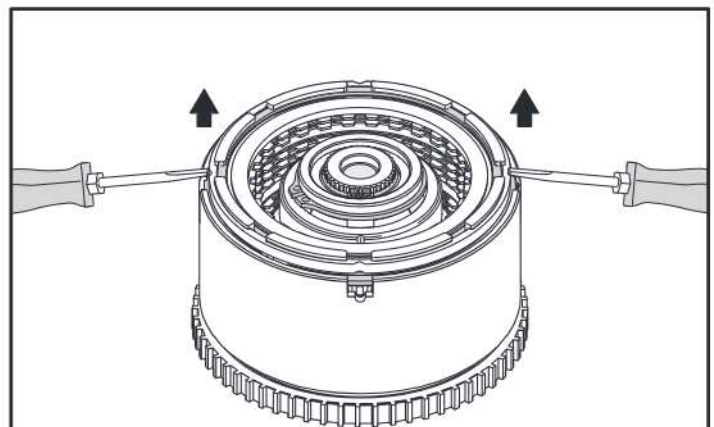
Figure 190



- 133 REVERSE CLUTCH FRICTION PLATES, .070" THICK (2 REQ.).
- 134 REVERSE CLUTCH STEEL PLATE, .068" THICK (1 REQ.).
- 135 REVERSE CLUTCH BACKING PLATE.
- 136 REVERSE CLUTCH BACKING PLATE "SELECTIVE" SNAP RING.

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Figure 191



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Figure 192

COMPONENT REBUILD

Input Housing Assembly (Cont'd)

44. Mount a dial indicator to the input housing and zero the indicator against a tooth of the reverse friction plate, as shown in Figure 193.
45. Apply 30 psi of air pressure or lift with picks and record the dial indicator reading.
46. The correct reverse clutch clearance should be 0.76-1.24mm (.030"-.049") (See Figure 193).
47. Change selective snap ring as necessary using the chart in Figure 193, to obtain proper reverse clutch clearance.
48. To complete the input housing, reverse clutch and overdrive clutch must now be removed to install the 2 clutch hubs and shafts, as shown in Figure 194 and 195.
49. Install number 2 thrust bearing into the clutch hub and shaft, in direction shown in Figure 194.
Note: Number 2 thrust bearing is a light press fit into housing assembly. There are 5 dimples that can be pressed in by hand.

50. Install the underdrive clutch hub and shaft into input housing, as shown in Figure 194, by rotating until all underdrive clutches are engaged and fully seated on number 2 thrust bearing.
51. Install the number 3 thrust washer onto the underdrive clutch hub and shaft, as shown in Figure 194, and retain with Trans-Jel®.

Continued on Page 103

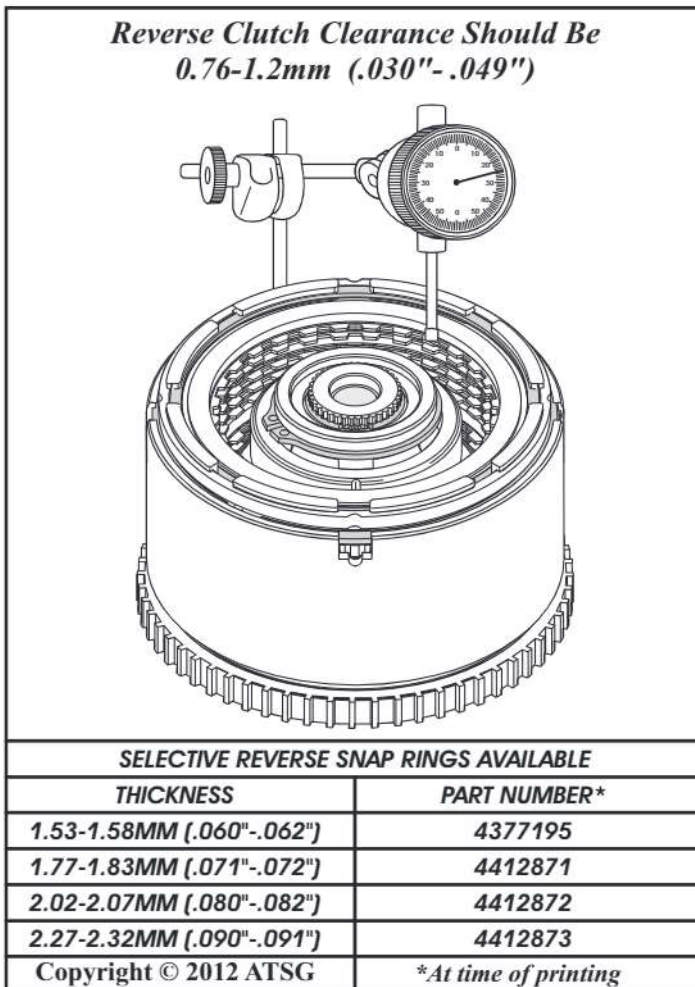


Figure 193

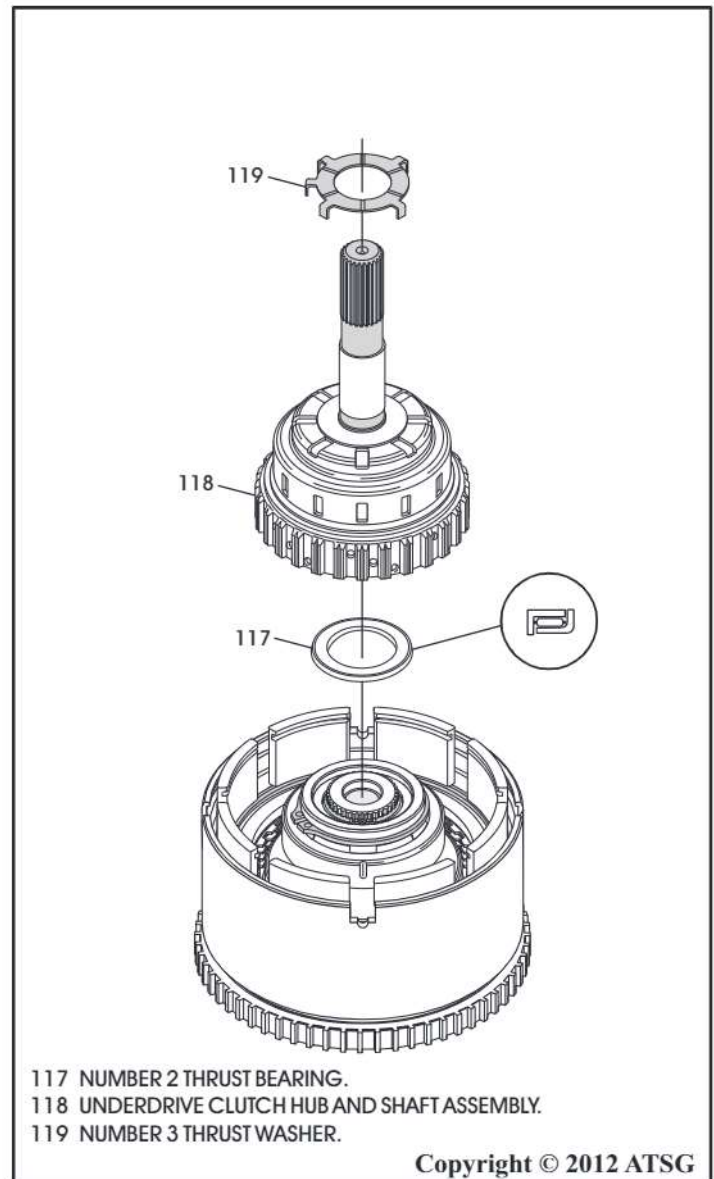


Figure 194

COMPONENT REBUILD

Input Housing Assembly (Cont'd)

52. Install the number 3 thrust plate into back side of the overdrive clutch hub in direction shown in Figure 195, and retain with Trans-Jel®.
53. Install the overdrive clutch hub and thrust plate over underdrive shaft, as shown in Figure 195, until fully seated against No. 3 thrust washer.
54. Re-install overdrive and reverse clutch as shown in Figure 196. Overdrive = Step 31, Page 100. Reverse = Step 39, Page 101.
- Note: Re-checking clearances is not necessary.**
55. Set the completed Input Clutch Housing aside, as shown in Figure 197, for final assembly.

**Component Rebuild
Continued on Page 102**

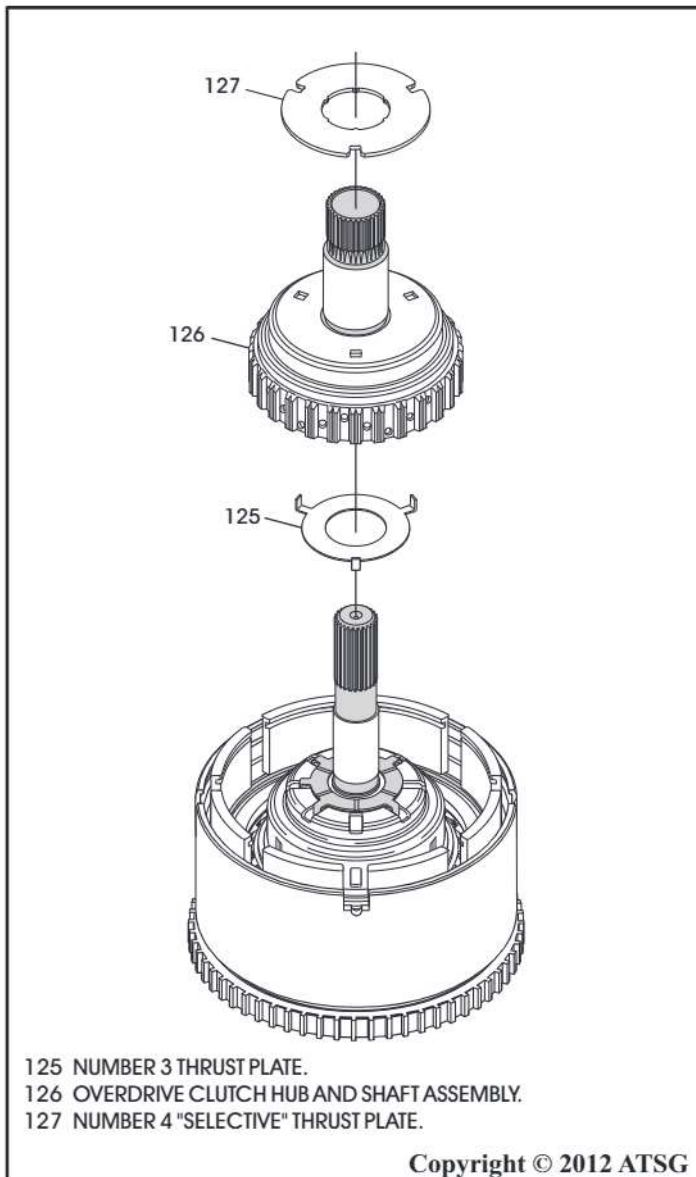


Figure 195

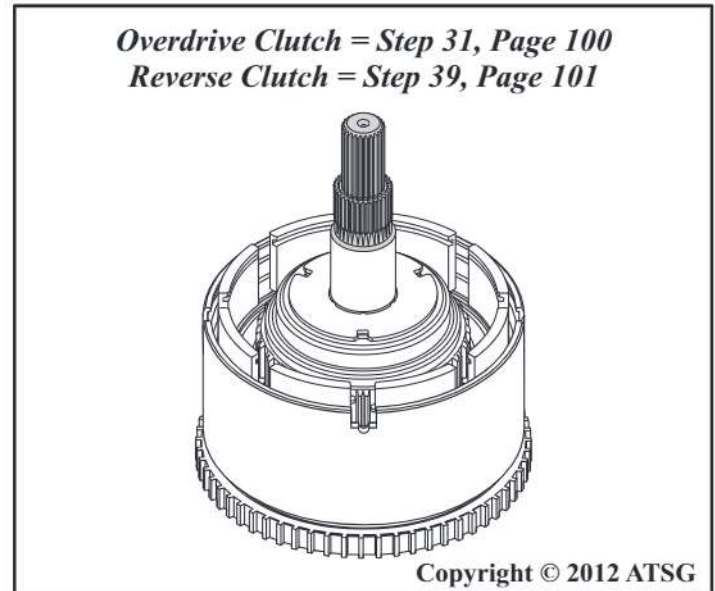


Figure 196

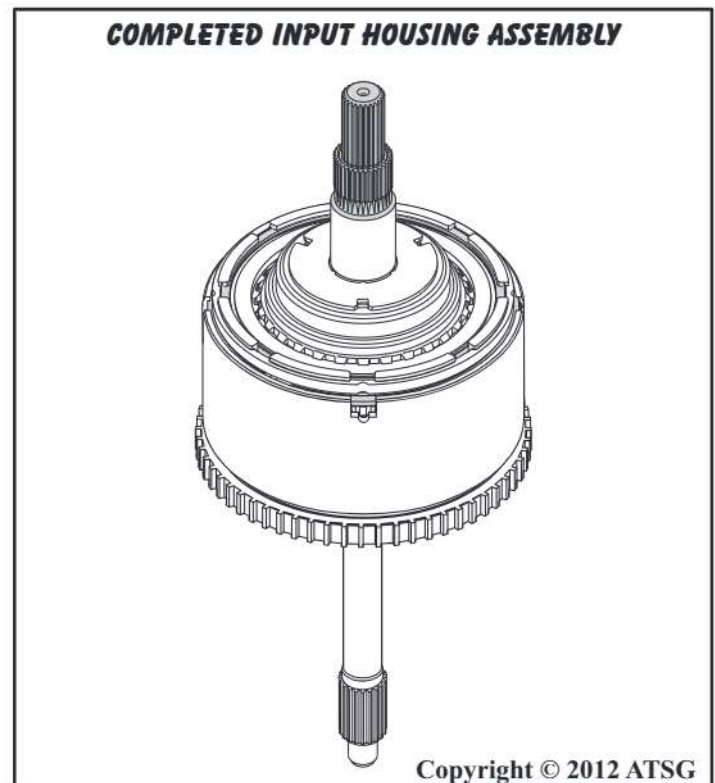
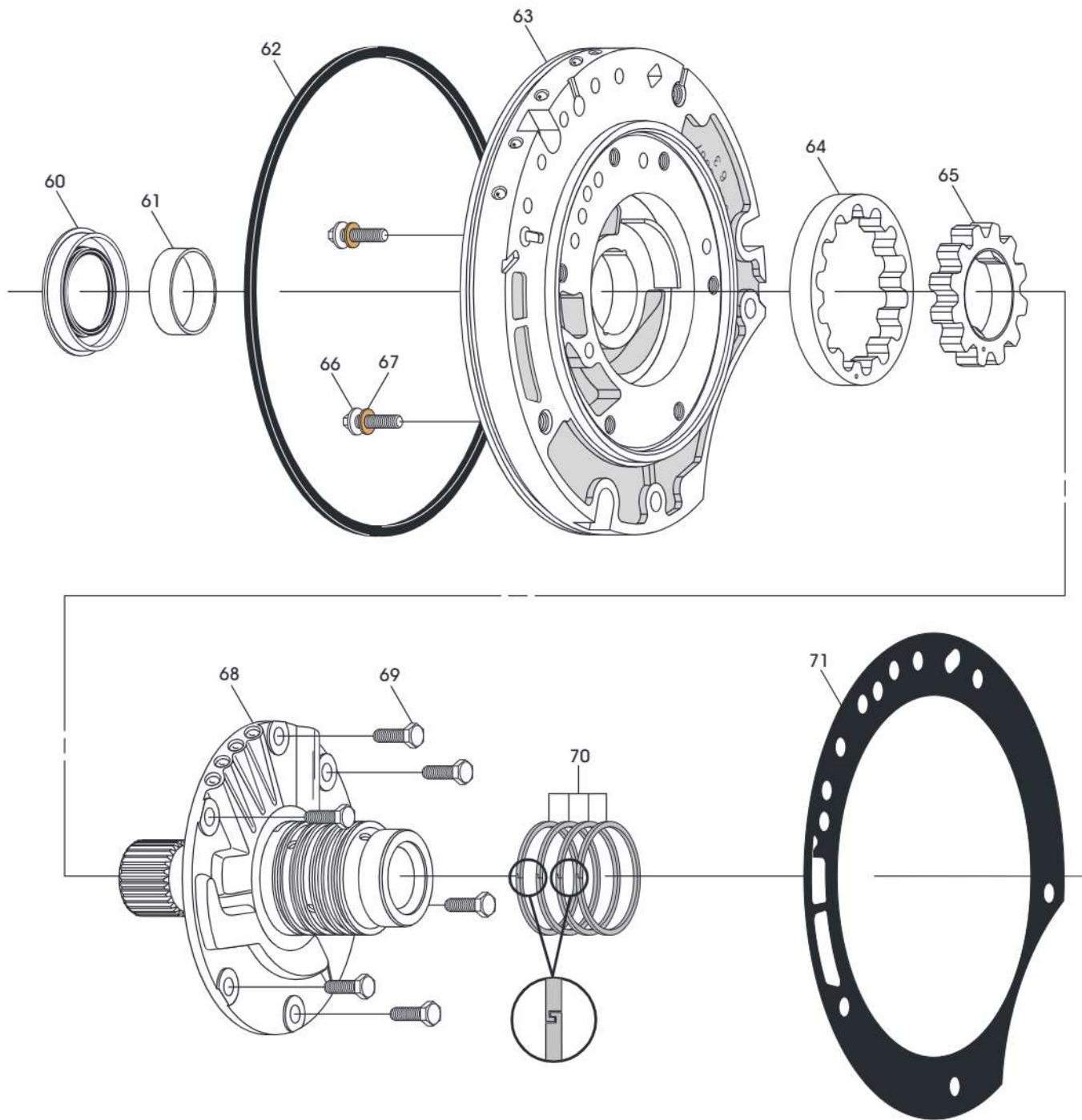


Figure 197

OIL PUMP EXPLODED VIEW



- 60 OIL PUMP CONVERTER SEAL.
- 61 OIL PUMP CONVERTER BUSHING.
- 62 OIL PUMP TO CASE "O" RING SEAL.
- 63 OIL PUMP BODY.
- 64 OIL PUMP OUTER GEAR.
- 65 OIL PUMP INNER GEAR.
- 66 PUMP BODY TO CASE BOLT (6 REQUIRED).
- 67 PUMP BODY TO CASE "BRASS" WASHER (6 REQUIRED).

- 68 OIL PUMP COVER/STATOR SHAFT ASSEMBLY.
- 69 PUMP COVER TO PUMP BODY RETAINING BOLTS (6 REQUIRED).
- 70 HOOK-JOINT SEAL RINGS (4 REQUIRED).
- 71 OIL PUMP TO CASE GASKET.

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Figure 198

COMPONENT REBUILD

Oil Pump Assembly

1. Disassemble the complete oil pump assembly using Figure 198 as a guide.
2. Clean all oil pump parts thoroughly and dry with compressed air.
3. Inspect all oil pump parts thoroughly for any wear and/or damage. Replace as necessary.
4. Install new converter bushing as necessary, as shown in Figure 199, and stake the new bushing as shown in Figure 200.
5. Install new converter seal using the proper drivers, as shown in Figure 199.
6. Install the inner and outer oil pump gears into pump pocket, with the dots facing up, as shown in Figure 201.

Continued on Page 106

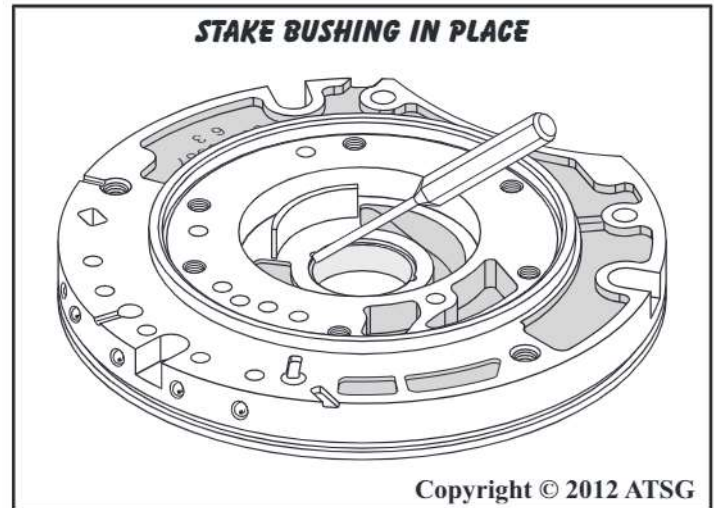


Figure 200

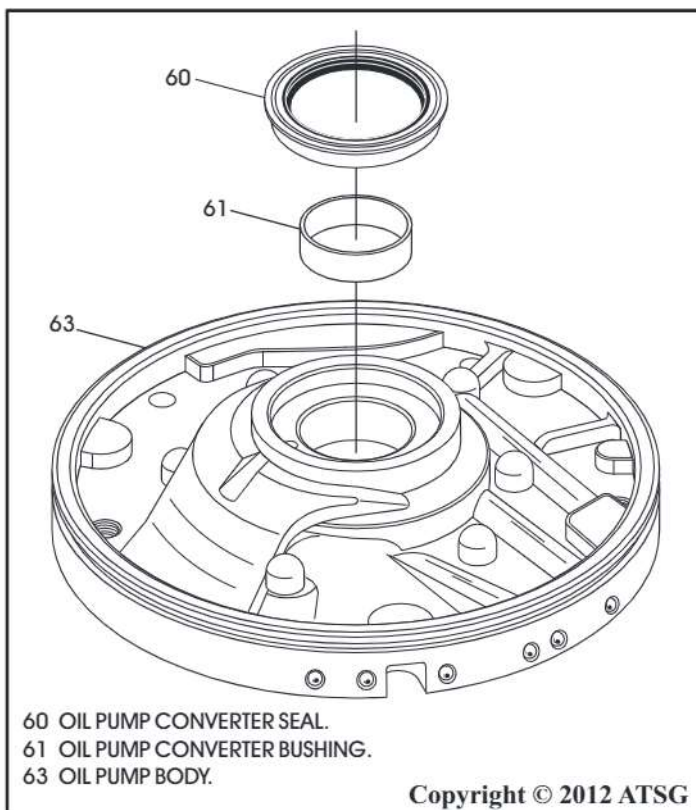


Figure 199

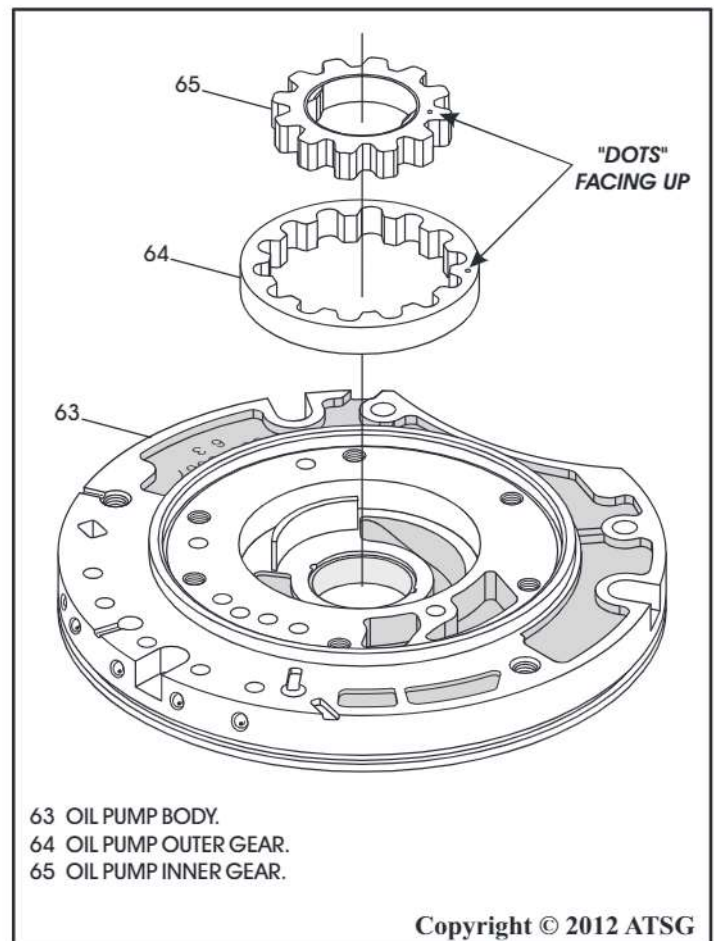


Figure 201

COMPONENT REBUILD

Oil Pump Assembly (Cont'd)

7. Check the gear to face clearances using a feeler gauge with straight edge, or a depth micrometer, as shown in Figure 202.

Note: Acceptable pump specifications are also shown in Figure 202.

8. Check the pump gear to crescent clearance using a feeler gauge, as shown in Figure 203.

Note: Oil pump gear to crescent specifications are also shown in Figure 203.

9. Install four new hook-joint sealing rings onto the oil pump cover/stator shaft, as shown in Figure 204.

10. Ensure that the joints are properly hooked and the rings rotate freely in their grooves.

Continued on Page 107

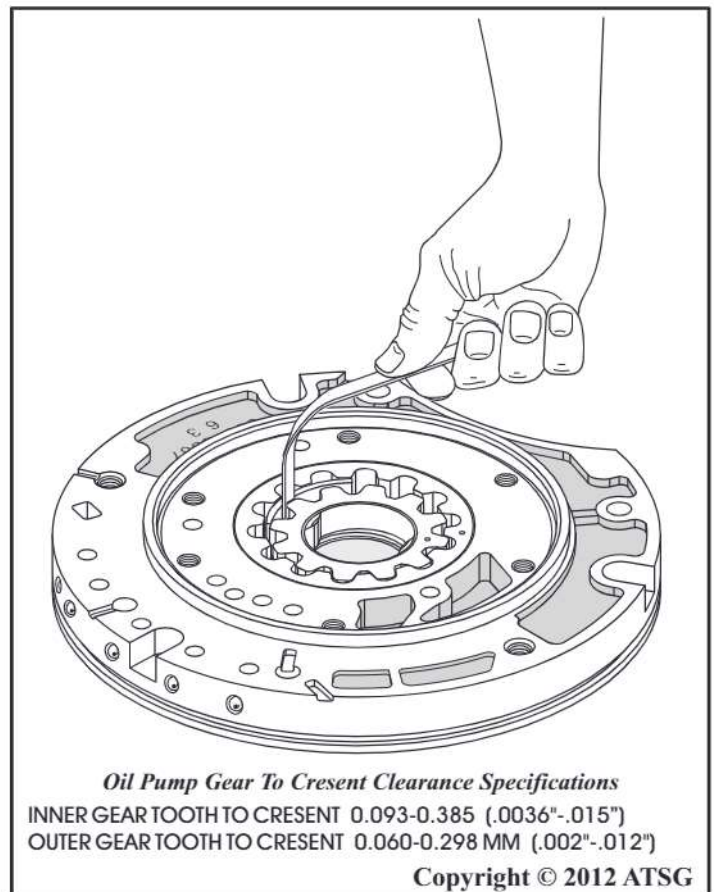


Figure 203

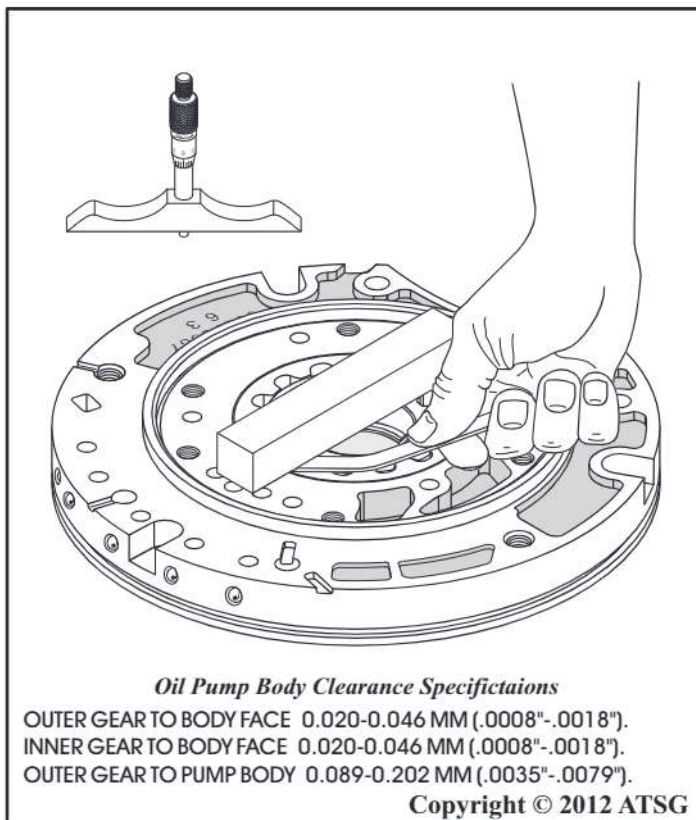


Figure 202

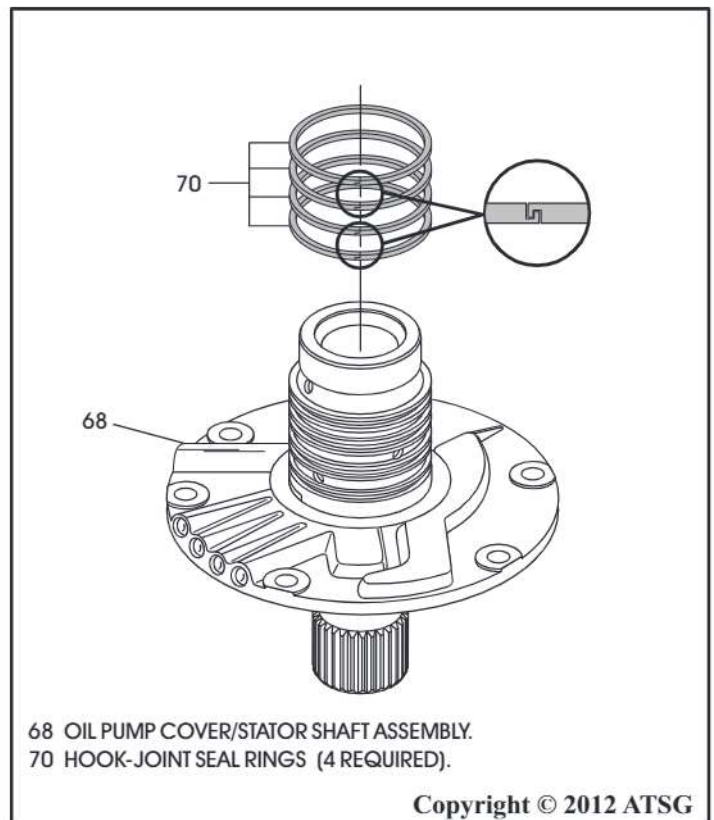


Figure 204

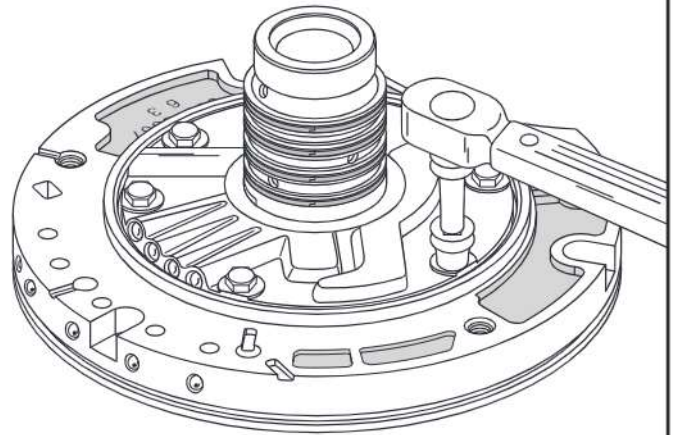
COMPONENT REBUILD

Oil Pump Assembly (Cont'd)

11. Lubricate the oil pump gears with ATF+4 fluid.
12. Install the completed pump cover/stator shaft onto the oil pump body and gears, as shown in Figure 205.
13. Install the 6 oil pump cover retaining bolts, as shown in Figure 205.
14. Torque the 6 oil pump cover retaining bolts to 27 N·m (20 ft.lb.), as shown in Figure 206.
15. Install new oil pump body to case seal into the groove, as shown in Figure 207.
16. Set the completed oil pump assembly aside for final assembly.

Continued on Page 108

**TORQUE 6 PUMP COVER/STATOR BOLTS TO
27 N·M (20 FT.LB.)**



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Figure 206

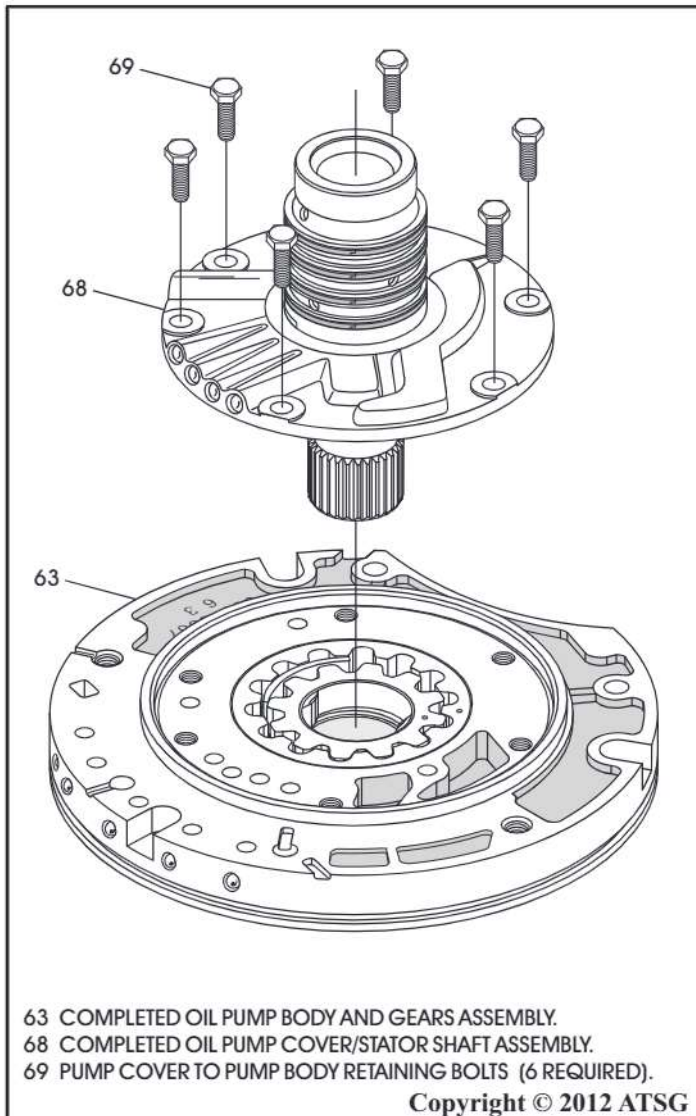


Figure 205

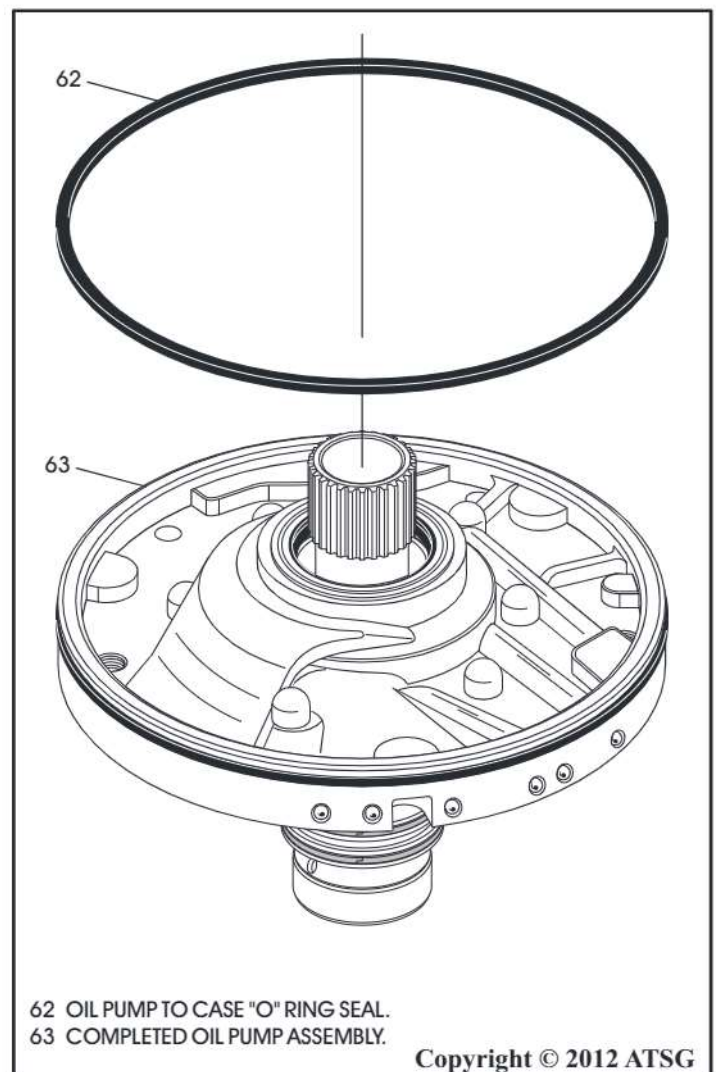
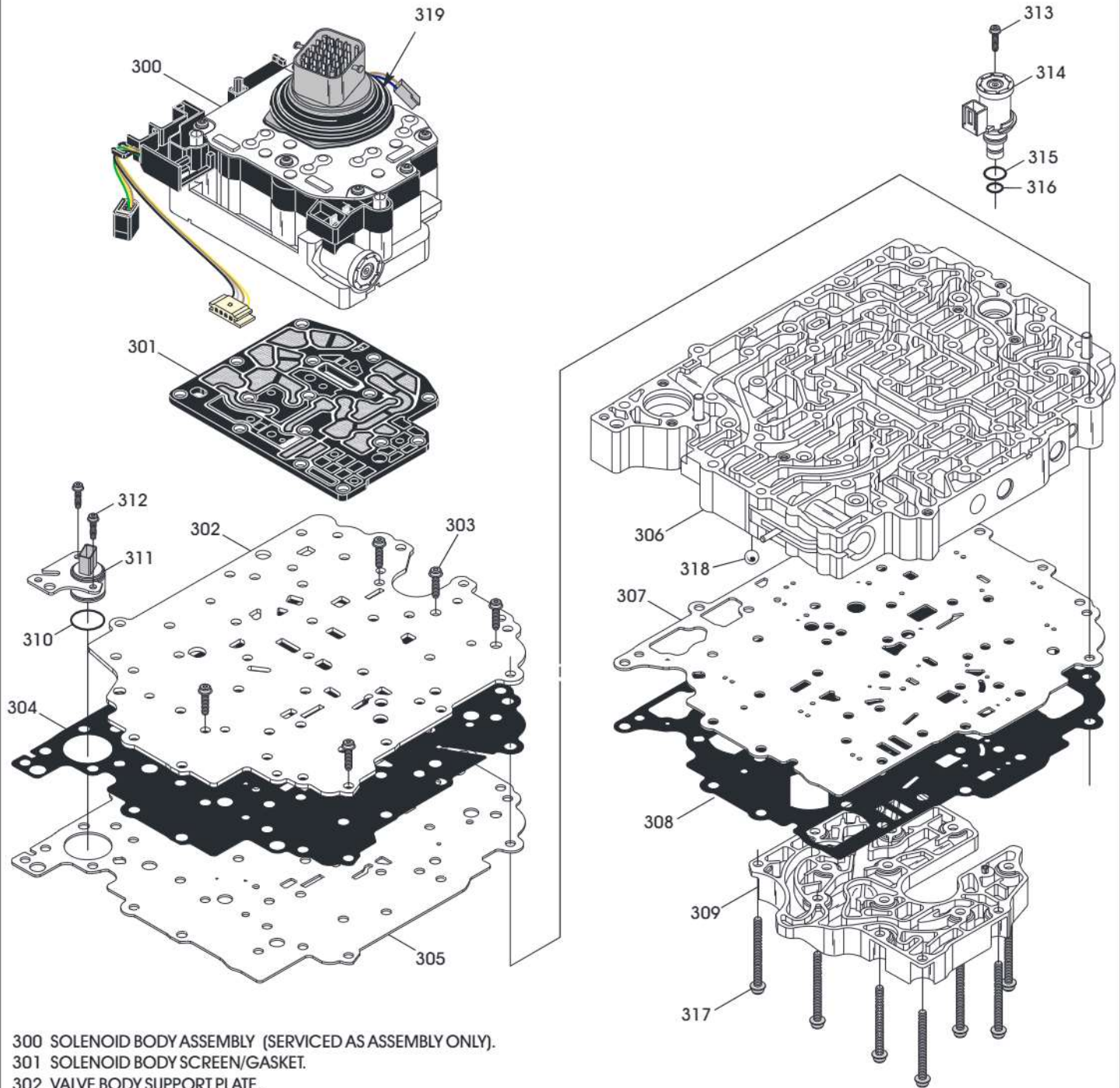


Figure 207

COMPLETE VALVE BODY, EXPLODED VIEW



- 300 SOLENOID BODY ASSEMBLY (SERVICED AS ASSEMBLY ONLY).
- 301 SOLENOID BODY SCREEN/GASKET.
- 302 VALVE BODY SUPPORT PLATE.
- 303 VALVE BODY SUPPORT PLATE SCREWS (5 REQUIRED).
- 304 SUPPORT PLATE TO OUTER SPACER PLATE GASKET.
- 305 VALVE BODY OUTER SPACER PLATE.
- 306 VALVE BODY ASSEMBLY.
- 307 VALVE BODY INNER SPACER PLATE.
- 308 VALVE BODY INNER SPACER PLATE TO CASE GASKET.
- 309 VALVE BODY TRANSFER PLATE.
- 310 LINE PRESSURE SENSOR "O" RING.
- 311 LINE PRESSURE SENSOR ASSEMBLY.
- 312 LINE PRESSURE SENSOR RETAINING BOLTS (2 REQUIRED).

- 313 EMCC (TCC) SOLENOID RETAINING BOLT.
- 314 EMCC (TCC) SOLENOID ASSEMBLY.
- 315 EMCC (TCC) SOLENOID LARGE "O" RING.
- 316 EMCC (TCC) SOLENOID SMALL "O" RING.
- 317 TRANSFER PLATE TO SOLENOID BODY BOLTS (14 REQUIRED).
- 318 REMOVABLE TORLON (TAN) CHECK BALLS. (3 OR 4 REQUIRED, MODEL SENSITIVE)
- 319 SOLENOID BODY TO SIDE COVER SEAL.

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Figure 208

COMPONENT REBUILD

Valve Body Assembly

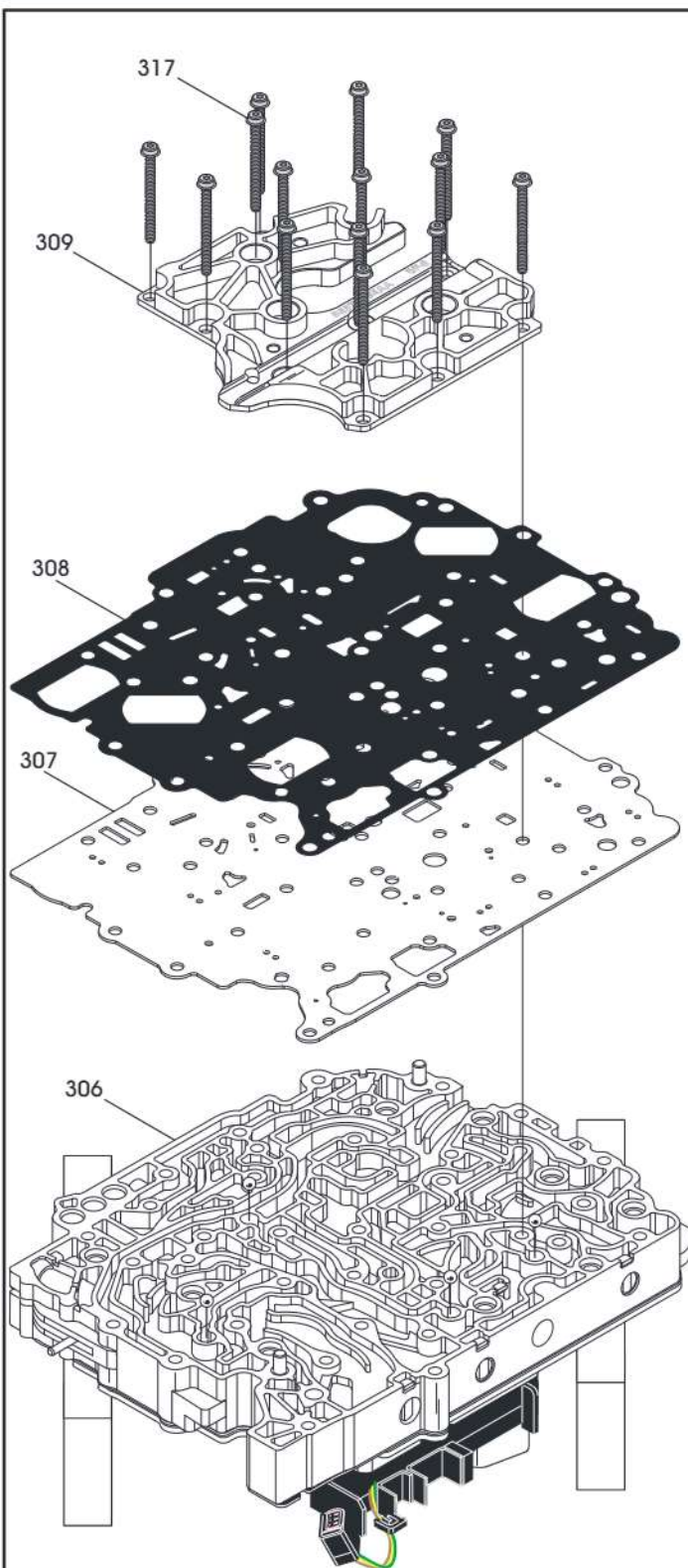
1. Place the complete valve body assembly on flat work surface with solenoid body facing down, as shown in Figure 209.

Note: Use blocks as necessary to maintain a level valve body to prevent check ball loss.

2. Remove the 14 transfer plate to solenoid body retaining bolts, as shown in Figure 209, using a T-25 Torx bit.
3. Remove the inner spacer plate gasket and the inner spacer plate, as shown in Figure 209.
4. Remove the 3, or 4, check balls as shown in Figure 210 and 211.

Note: The large arrows in Figure 210 show the locations of nine "Non-Removeable" check balls (See Page 156).

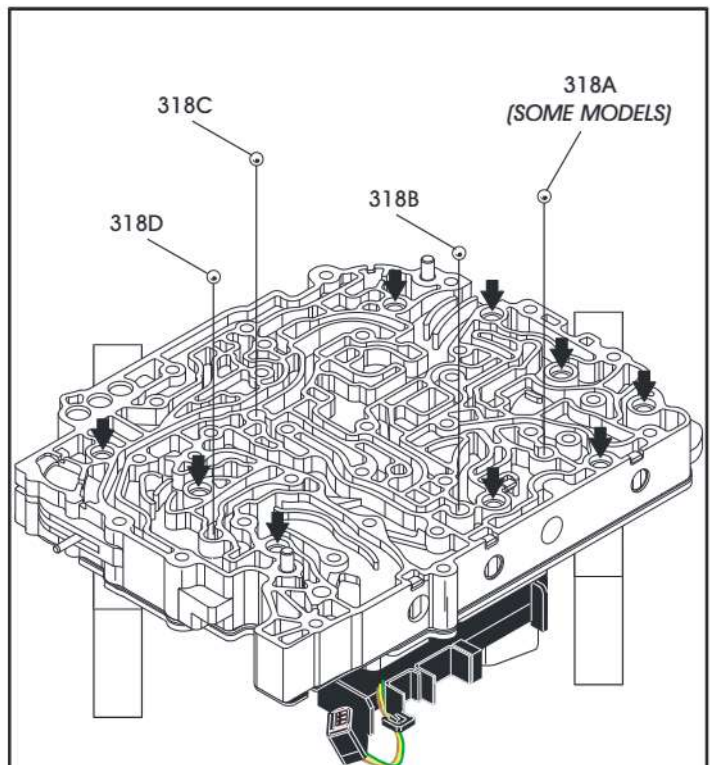
Continued on Page 110



306. VALVE BODY ASSEMBLY.
307 VALVE BODY INNER SPACER PLATE.
308 VALVE BODY INNER SPACER PLATE TO CASE GASKET.
309 VALVE BODY TRANSFER PLATE.
317 TRANSFER PLATE TO SOLENOID BODY BOLTS (14 REQUIRED).

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Figure 209



318A UNDERDRIVE CLUTCH (SOME MODELS ONLY).
318B REVERSE CLUTCH.
318C OVERDRIVE CLUTCH.
318D LOW/REVERSE CLUTCH.

↓ = LOCATIONS OF "NON-REMOVEABLE" CHECK BALLS.

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Figure 210

COMPONENT REBUILD

Valve Body Assembly (Cont'd)

5. Carefully turn the valve body assembly over, as shown in Figure 212.
- Note: This must be done carefully as solenoid body is now loose from the valve body.**
6. Disconnect the EMCC (TCC) solenoid and the line pressure sensor, as shown in Figure 212.
7. Remove the complete solenoid body and the solenoid body gasket/screen assembly, as shown in Figure 212.
8. Remove the EMCC (TCC) solenoid retaining screw and solenoid, as shown in Figure 212.
9. Remove and discard the two EMCC solenoid "O" rings, as shown in Figure 212.
10. Remove the two line pressure sensor retaining screws and sensor, as shown in Figure 212.
11. Remove and discard the line pressure sensor "O" ring seal, as shown in Figure 212.

Continued on Page 111

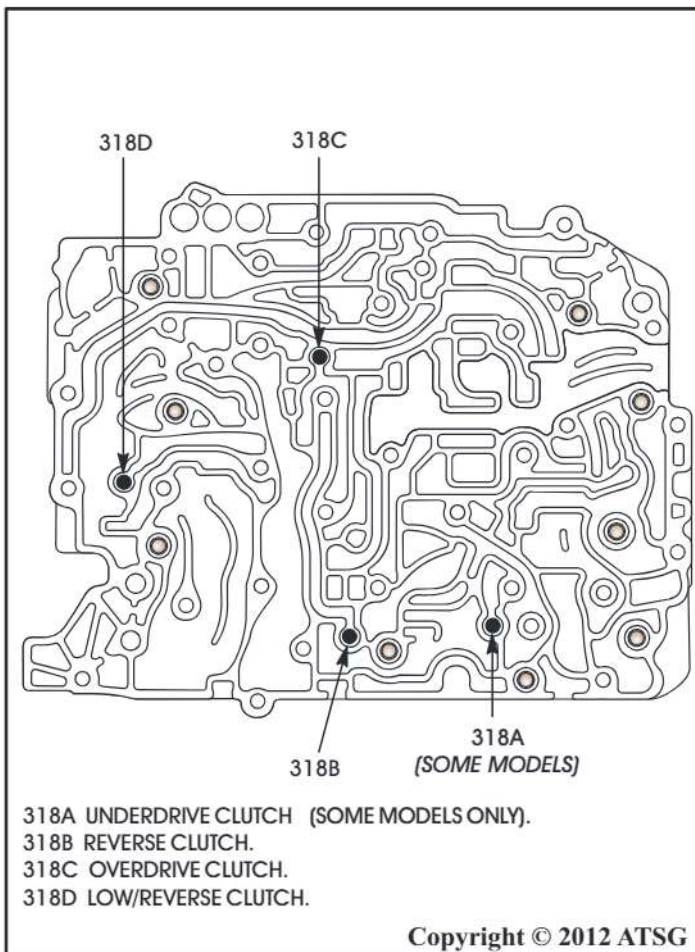


Figure 211

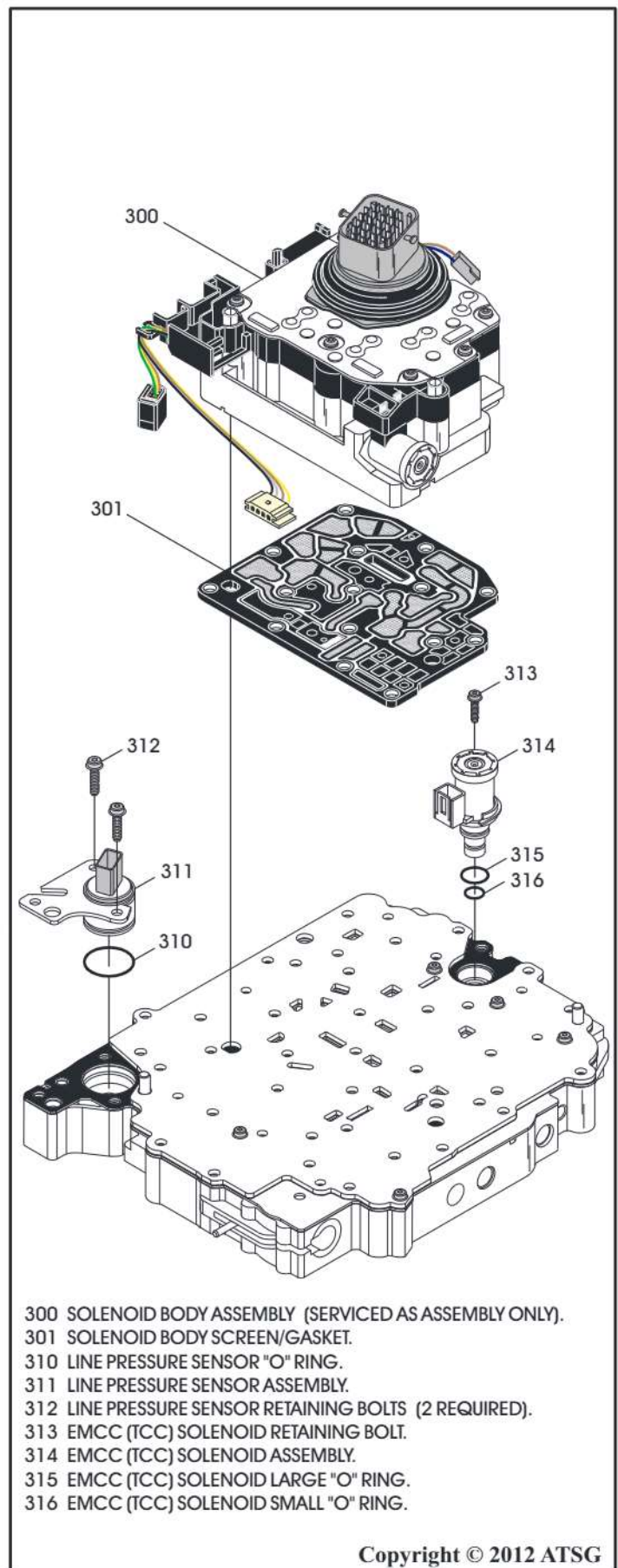


Figure 212

COMPONENT REBUILD

Valve Body Assembly (Cont'd)

12. Remove the 5 retaining screws from the valve body support plate, as shown in Figure 213.
13. Remove the valve body support plate, as shown in Figure 213.
14. Remove and discard the support plate to outer spacer plate gasket, as shown in Figure 213.
15. Remove the outer valve body spacer plate, as shown in Figure 213.

Continued on Page 113

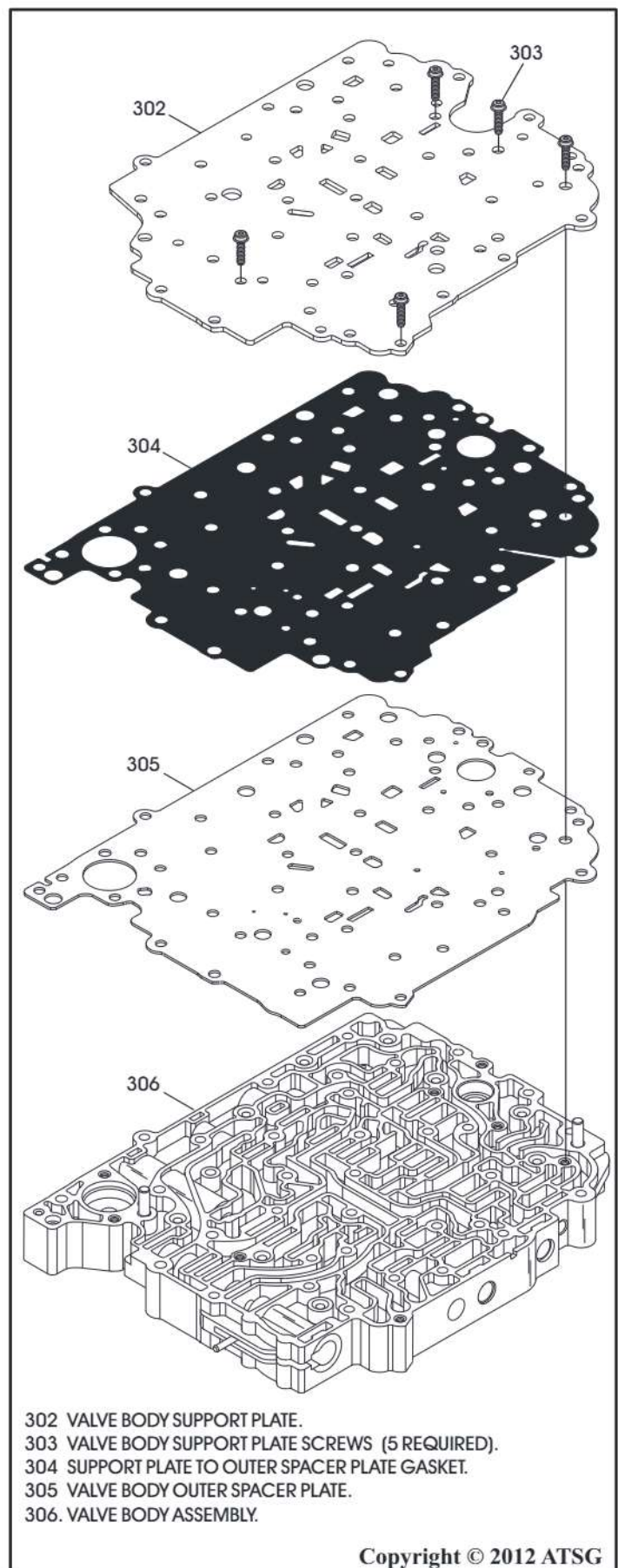
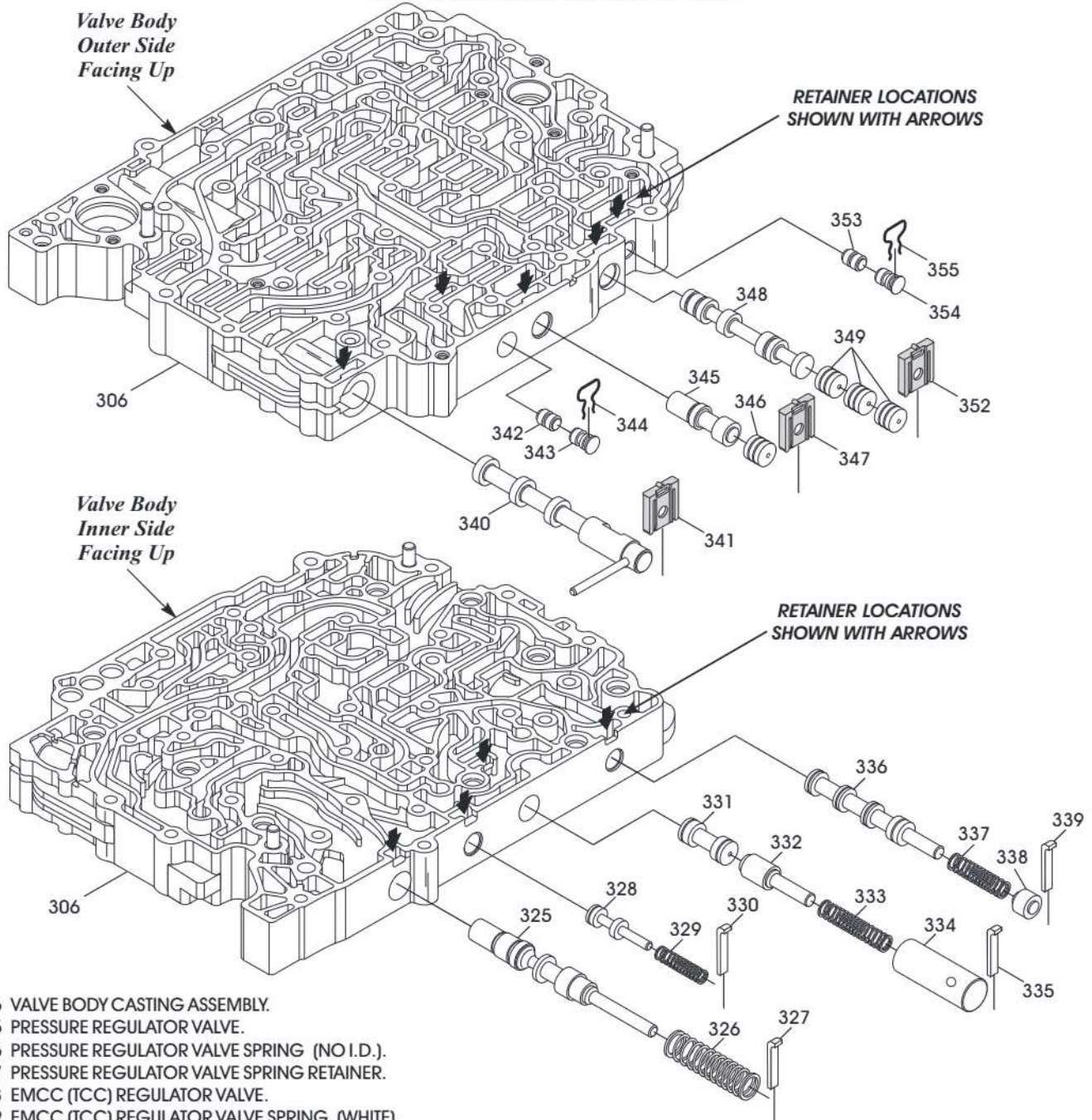


Figure 213

62TE VALVE BODY EXPLODED VIEW



- 306 VALVE BODY CASTING ASSEMBLY.
- 325 PRESSURE REGULATOR VALVE.
- 326 PRESSURE REGULATOR VALVE SPRING (NO I.D.).
- 327 PRESSURE REGULATOR VALVE SPRING RETAINER.
- 328 EMCC (TCC) REGULATOR VALVE.
- 329 EMCC (TCC) REGULATOR VALVE SPRING (WHITE).
- 330 EMCC (TCC) REGULATOR VALVE SPRING RETAINER.
- 331 TCC CONTROL VALVE 1.
- 332 TCC CONTROL VALVE 2.
- 333 TCC CONTROL VALVE SPRING (VIOLET).
- 334 TCC CONTROL VALVE SLEEVE.
- 335 TCC CONTROL VALVE SLEEVE RETAINER.
- 336 TCC SWITCH VALVE.
- 337 TCC SWITCH VALVE SPRING (YELLOW).
- 338 TCC SWITCH VALVE BORE PLUG.
- 339 TCC SWITCH VALVE BORE PLUG RETAINER.
- 340 MANUAL VALVE.
- 341 MANUAL VALVE RETAINER.
- 342 LOW/REVERSE SWITCH VALVE.
- 343 LOW/REVERSE SWITCH VALVE BORE PLUG.

- 344 LOW/REVERSE SWITCH VALVE BORE PLUG RETAINER.
- 345 DIRECT CLUTCH SWITCH VALVE.
- 346 DIRECT CLUTCH SWITCH VALVE BORE PLUG.
- 347 DIRECT CLUTCH SWITCH VALVE BORE PLUG RETAINER.
- 348 SOLENOID SWITCH VALVE.
- 349 SOLENOID SWITCH VALVE PLUGS (3 REQUIRED).
- 352 SOLENOID SWITCH VALVE PLUG RETAINER.
- 353 LOW CLUTCH SWITCH VALVE.
- 354 LOW CLUTCH SWITCH VALVE BORE PLUG.
- 355 LOW CLUTCH SWITCH VALVE BORE PLUG RETAINER.

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Figure 214

COMPONENT REBUILD

Valve Body Assembly (Cont'd)

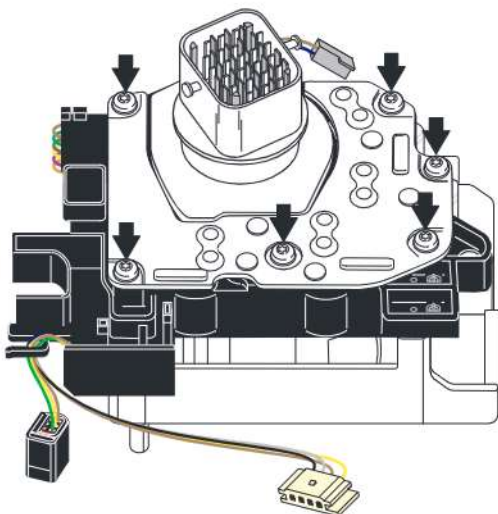
16. Disassemble the valves, springs, bore plugs and retainers, using Figure 214 as a guide, and place on trays exactly as they are removed.
17. Clean all valve body parts thoroughly and dry with compressed air.
18. Inspect all valve body parts thoroughly for any wear and/or damage and replace as necessary.
19. Assemble the valves, springs, bore plugs and retainers **exactly**, as shown in Figure 214, and lube with ATF+4 fluid as they are installed.
Note: Use small amount of Trans-Jel® to keep the 3 black plastic retainers in place, as their valve line ups are not spring loaded.
20. **"Do Not"** remove the six screws on top of the Solenoid Body assembly (See Figure 215).
Note: There is nothing on the inside of the Solenoid Body that is serviced, including the line pressure solenoid. It must be replaced as a complete assembly.
21. Install new solenoid body to side cover seal over and onto the solenoid connector, as shown in Figure 216.
22. Install new solenoid body screen/gasket onto the bottom of solenoid body (See Figure 216).

23. The solenoid body assembly is serviced **only** as a complete unit, which is why we told you not to remove the six screws on top that retain the the cover plate.
24. However, if someone has disassembled it, we have provided you with an exploded view of the solenoid body in Figure 217.

Caution: The illustrations in Figure 217 are provided for reference only. We recommend that the solenoid body NOT be disassembled as no internal parts are serviced separately.

Continued on Page 115

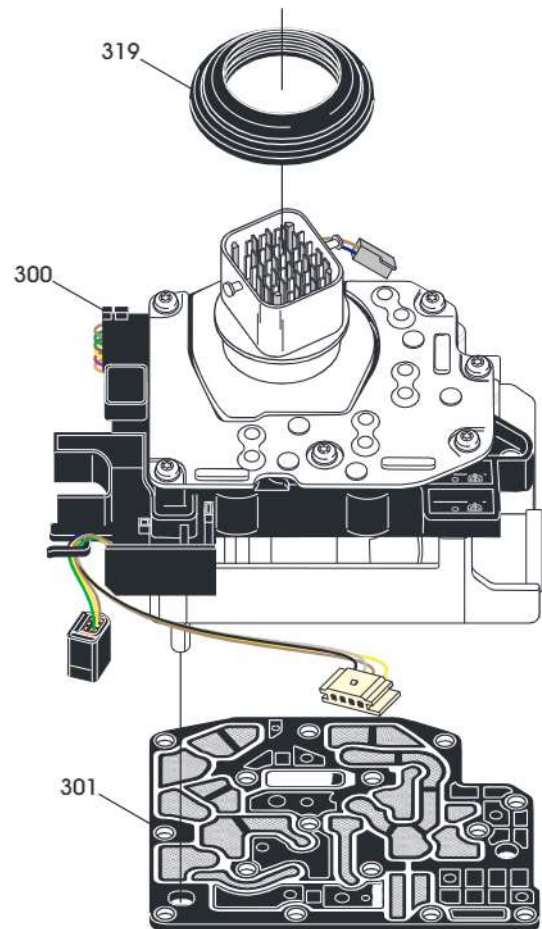
"DO NOT" REMOVE THESE SIX SCREWS FROM TOP OF SOLENOID BODY ASSEMBLY



"DO NOT" CLEAN WITH SOLVENT

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Figure 215

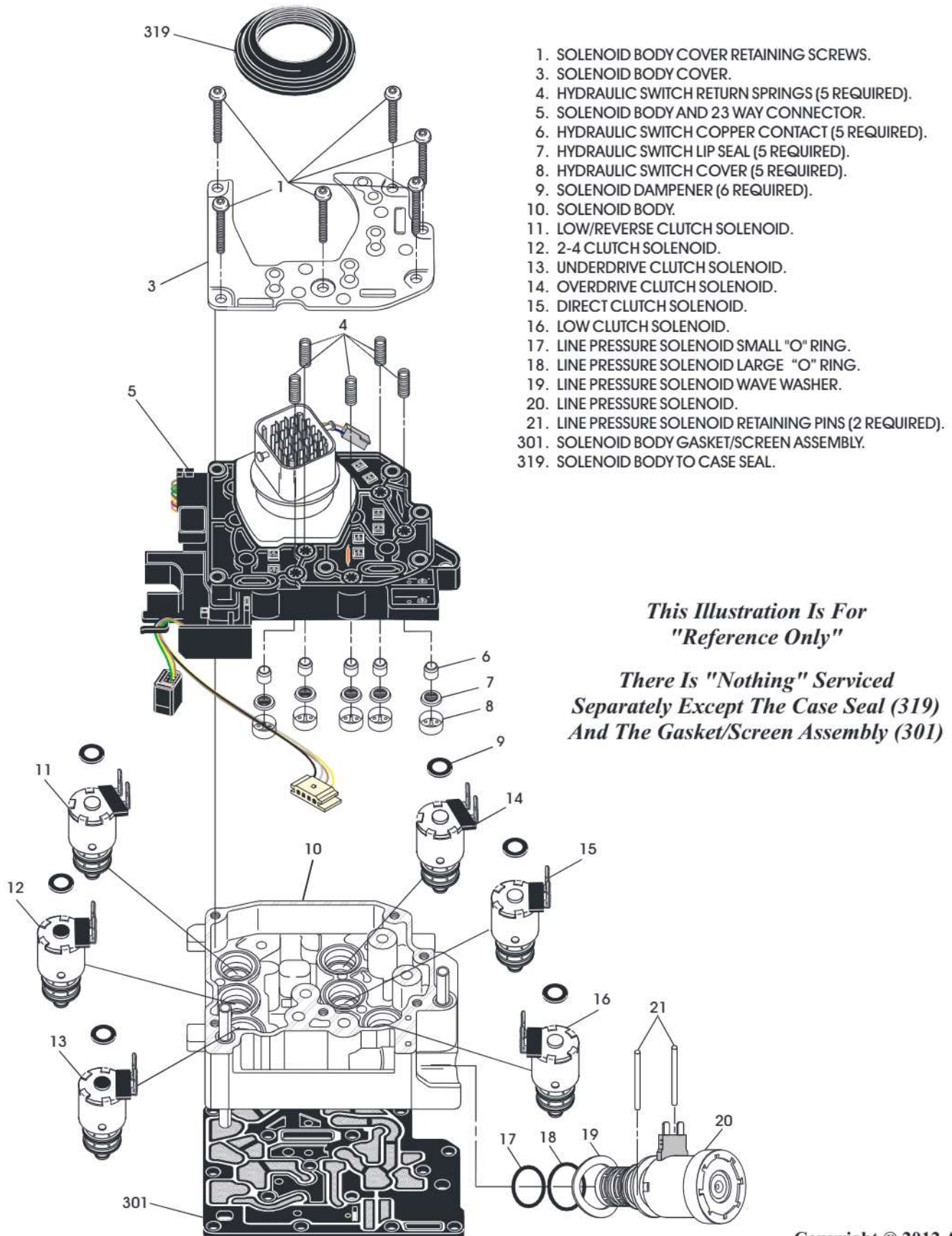


- 300 SOLENOID BODY ASSEMBLY (SERVICED AS ASSEMBLY ONLY).
- 301 SOLENOID BODY SCREEN/GASKET.
- 319 SOLENOID BODY TO SIDE COVER SEAL.

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Figure 216

TRANSMISSION RANGE SENSOR/SOLENOID BODY, EXPLODED VIEW



*This Illustration Is For
"Reference Only"*

*There Is "Nothing" Serviced
Separately Except The Case Seal (319)
And The Gasket/Screen Assembly (301)*

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Figure 217

COMPONENT REBUILD

Valve Body Assembly (Cont'd)

25. Place the completed valve body on a flat work surface, as shown in Figure 218.
26. Install the outer valve body spacer plate over the alignment dowels and onto the valve body, as shown in Figure 218.
27. Install new support plate to outer spacer plate gasket over the alignment dowels and onto the spacer plate, as shown in Figure 218.
28. Install the valve body support plate over the alignment dowels and onto the outer spacer plate gasket, as shown in Figure 218.
29. Install the 5 support plate retaining screws in the positions shown in Figure 218.
30. Torque the 5 support plate retaining screws to 6 N·m (53 in.lb.), as shown in Figure 219.

Continued on Page 116

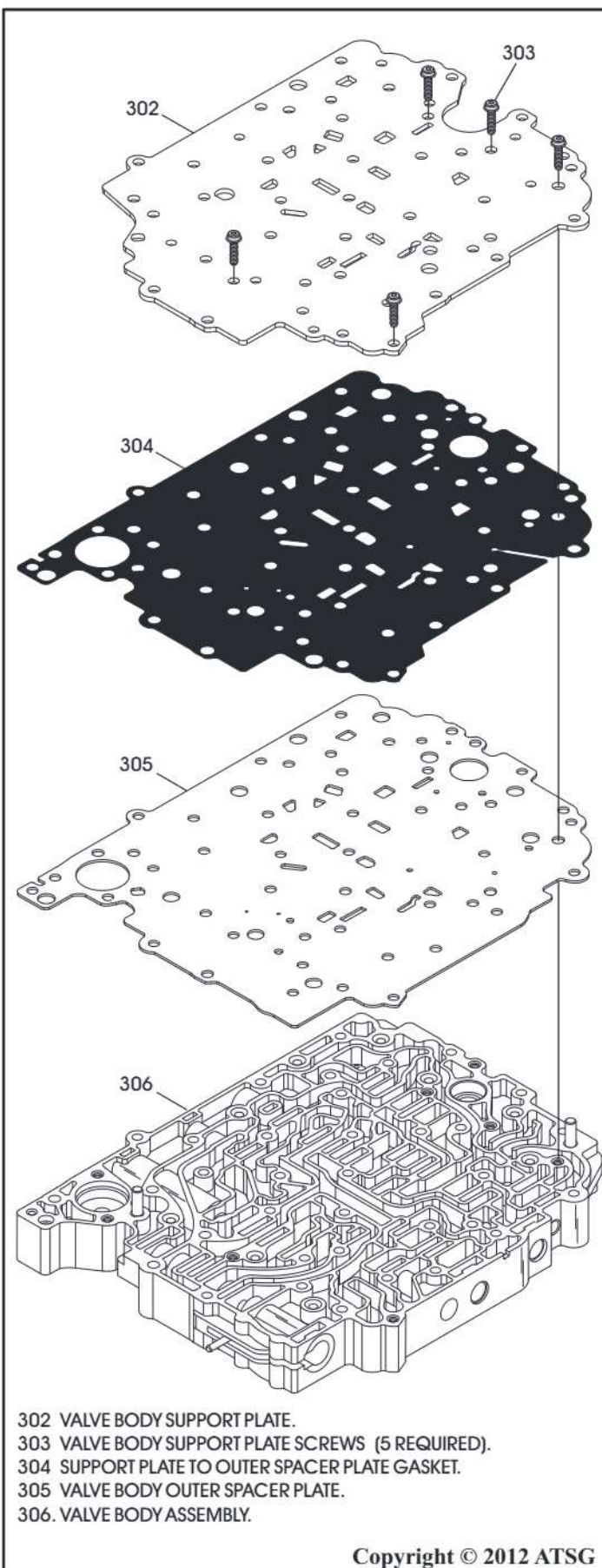


Figure 218

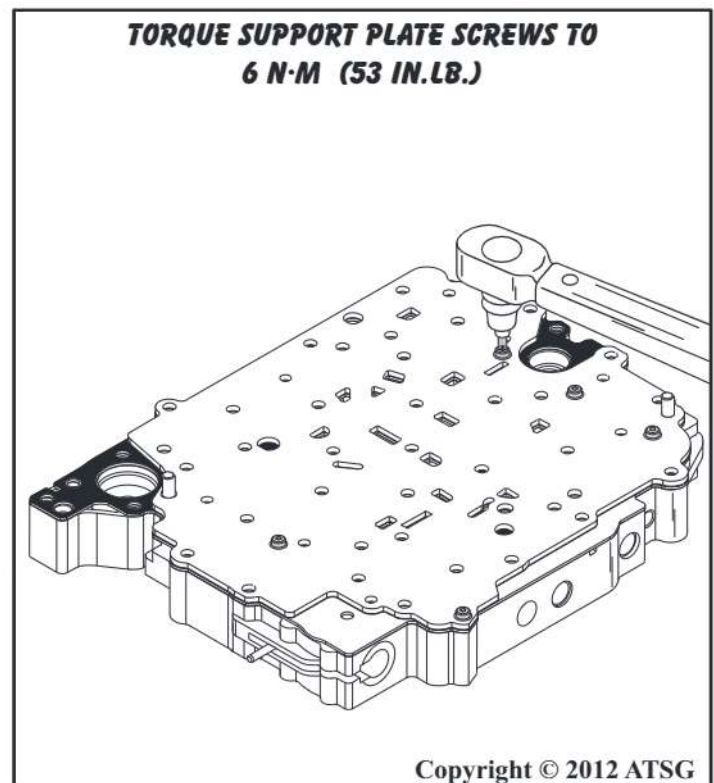


Figure 219

COMPONENT REBUILD

Valve Body Assembly (Cont'd)

31. Install new "O" rings on EMCC (TCC) solenoid, as shown in Figure 220, and lube with a small amount of Trans-Jel®.
32. Install EMCC (TCC) solenoid into valve body, as shown in Figure 220.
33. Install the retaining screw and torque screw to 6 N·m (53 in.lb.) (See Figure 220).
34. Install new "O" ring on the line pressure sensor, as shown in Figure 220, and lube with a small amount of Trans-Jel®.
35. Install the line pressure sensor into valve body, as shown in Figure 220.
36. Install the 2 retaining screws and torque both to 6 N·m (53 in.lb.) (See Figure 220).
37. Install the completed solenoid body along with the screen/gasket onto the valve body, as shown in Figure 221, and ensure alignment dowels are engaged into support plate.
38. Connect the line pressure sensor harness and the EMCC (TCC) solenoid harness to the respective components.

Continued on Page 117

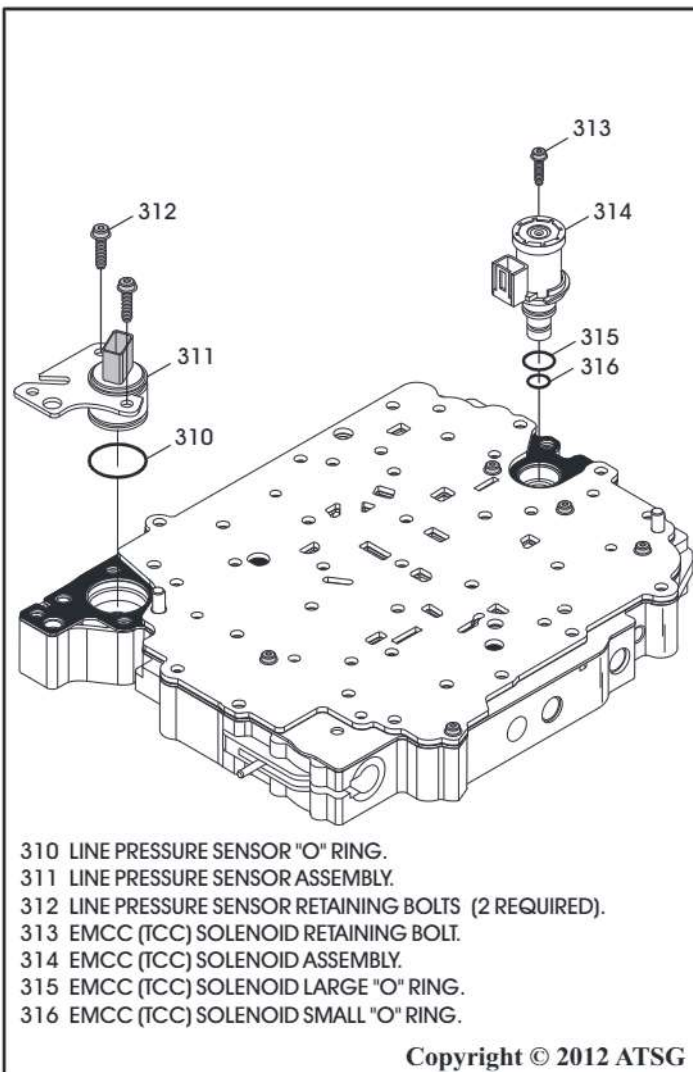


Figure 220

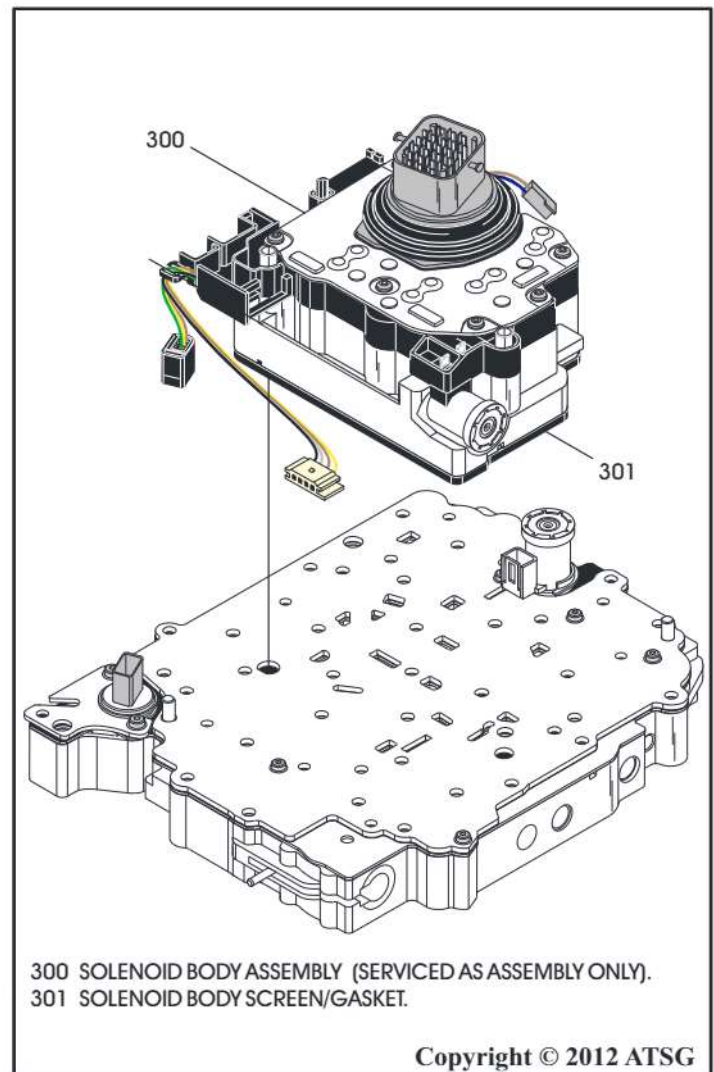


Figure 221

COMPONENT REBUILD

Valve Body Assembly (Cont'd)

39. Very carefully turn the assembly over and place on flat work surface, as shown in Figure 222.

Note: Use blocks as necessary to maintain a level valve body and also maintain pressure to hold solenoid body in place.

40. Install the 3, or 4, check balls in their positions, as shown in Figure 222 and 223.

Note: The large arrows in Figure 222 show the locations of nine "Non-Removeable" check balls (See Page 156).

Continued on Page 118

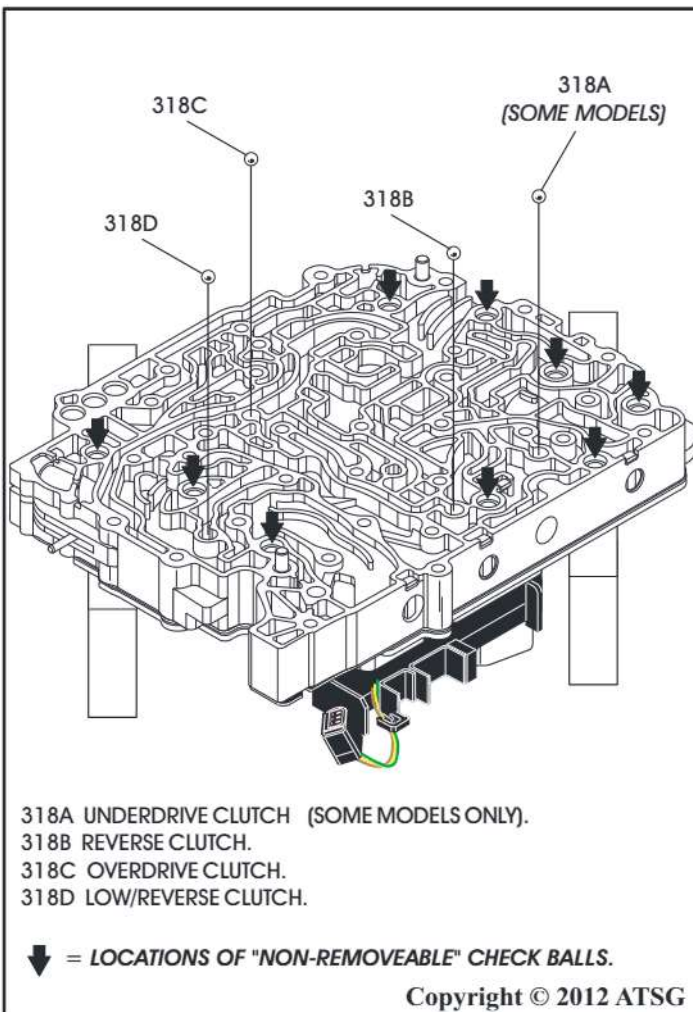


Figure 222

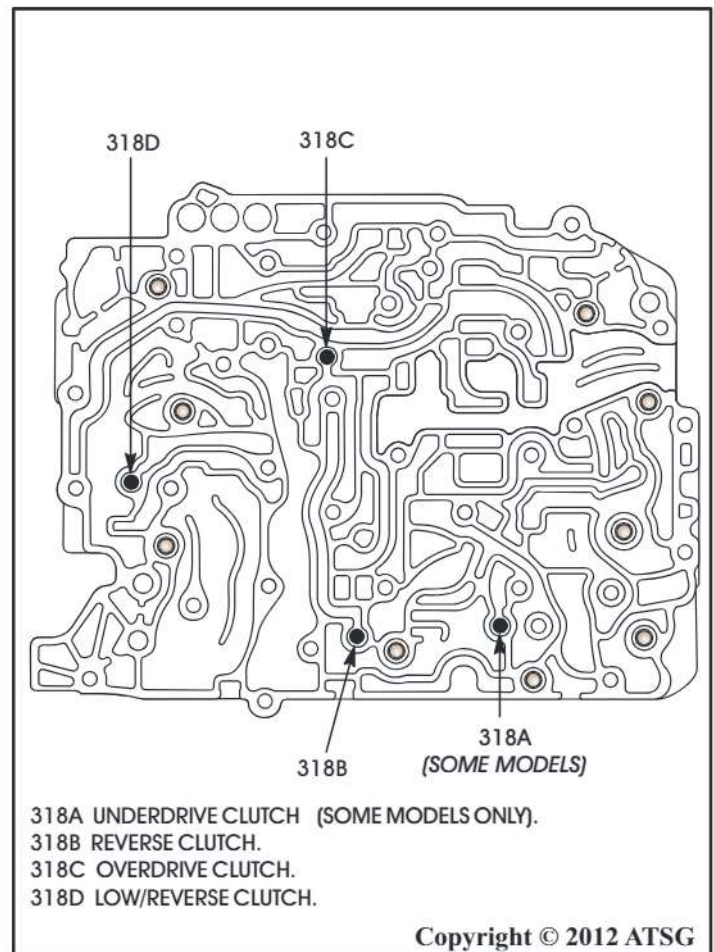


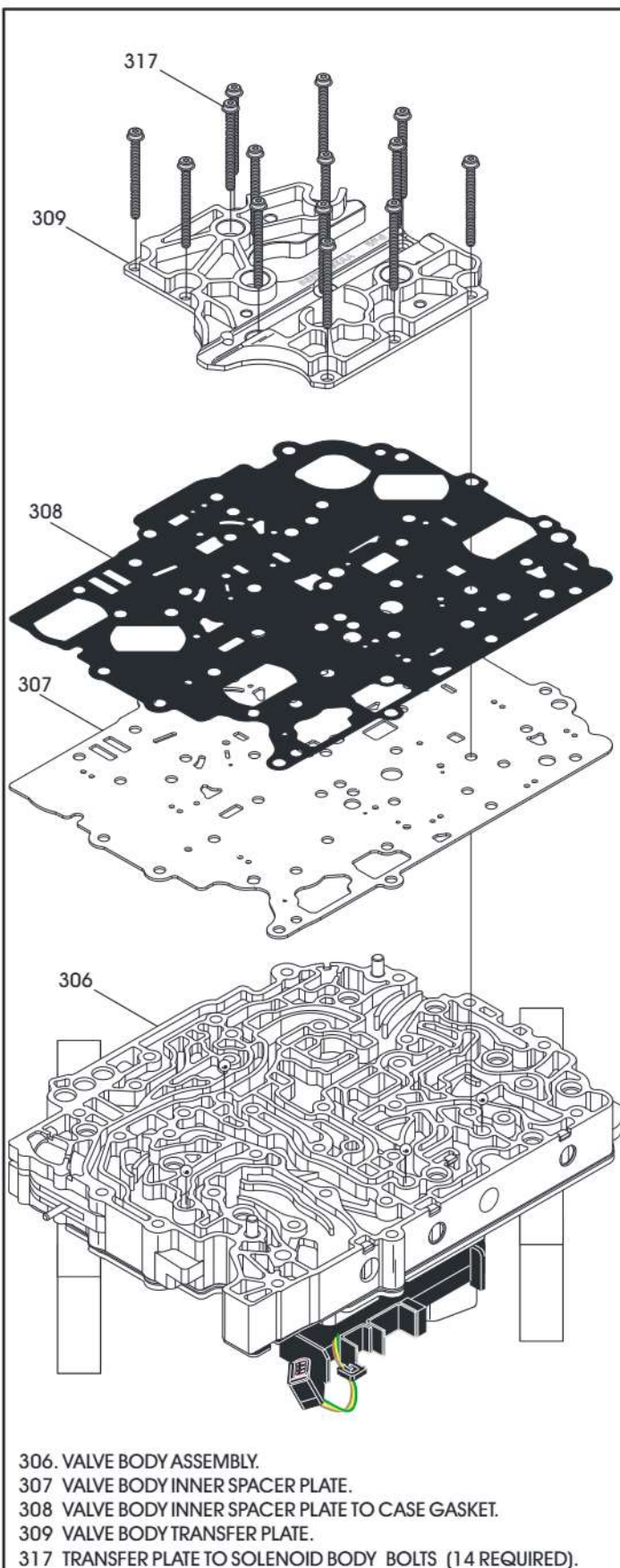
Figure 223

COMPONENT REBUILD

Valve Body Assembly (Cont'd)

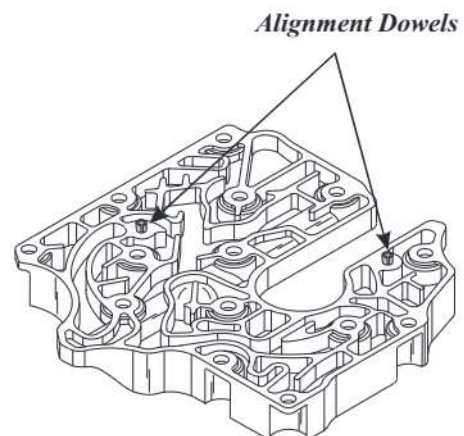
41. Install the inner spacer plate over the alignment dowels and onto the valve body, as shown in Figure 224.
42. Install new inner spacer plate gasket over the alignment dowels and onto inner spacer plate, as shown in Figure 224.
43. Install the valve body transfer plate onto the gasket, as shown in Figure 224.
Note: The transfer plate also is equipped with two split roll pins that serve as alignment dowels, as shown in Figure 225.
44. Ensure that the transfer plate is fully seated and alignment dowels are engaged into the inner spacer plate.
45. Install the 14 transfer plate to solenoid body retaining bolts, as shown in Figure 224, using a T-25 Torx bit.

Continued on Page 119



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Figure 224



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Figure 225

COMPONENT REBUILD

Valve Body Assembly (Cont'd)

46. Torque the 14 transfer plate to solenoid body retaining bolts to 6 N·m (53 in.lb.), as shown in Figure 226.
47. Set the completed valve body assembly aside for final assembly, as shown in Figure 227.

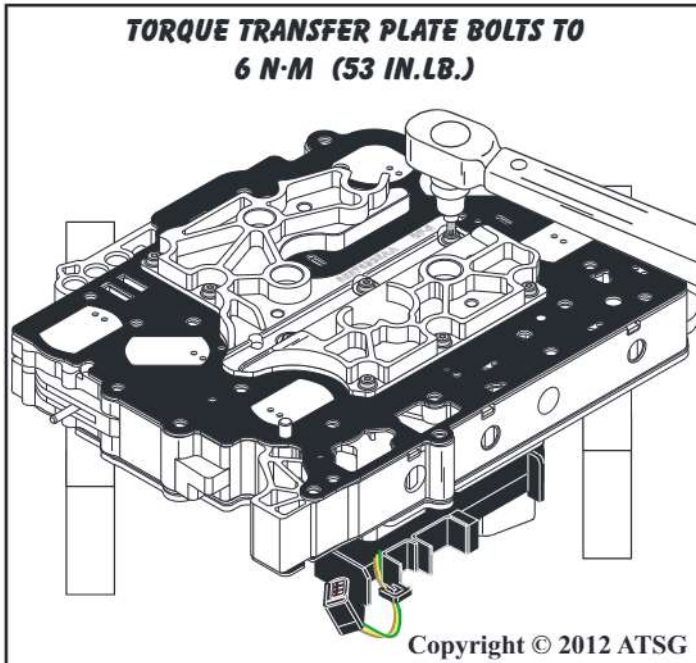


Figure 226

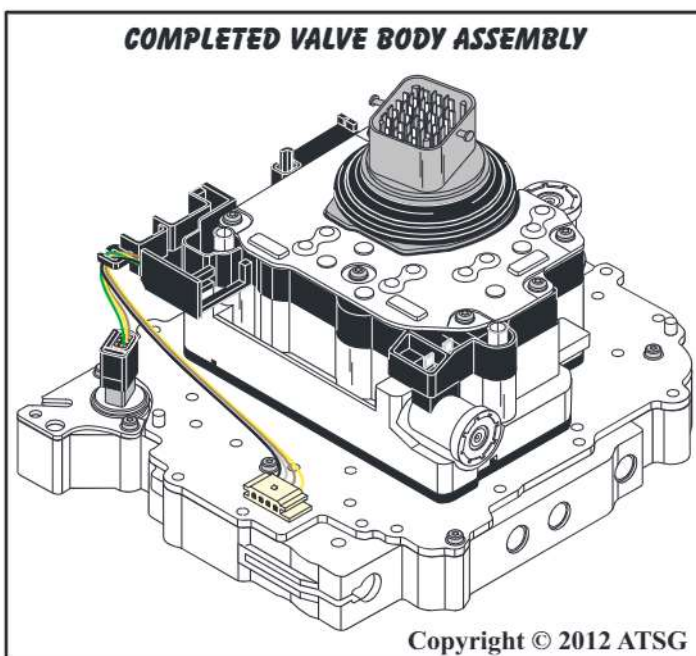


Figure 227

FINAL TRANSAXLE ASSEMBLY

1. Set the pre-assembled transaxle case assembly up on the bell housing, as shown in Figure 228.
Note: Rear planetary carrier, final drive and the pinion gear pre-loads were all set during the case sub-assembly process.
2. Install the output planetary carrier assembly, as shown in Figure 228, using a pair of snap ring pliers and ensure it is fully seated.
Note: Now is when we must check for proper compounder section end-play.

Final Assembly
Continued on Page 120

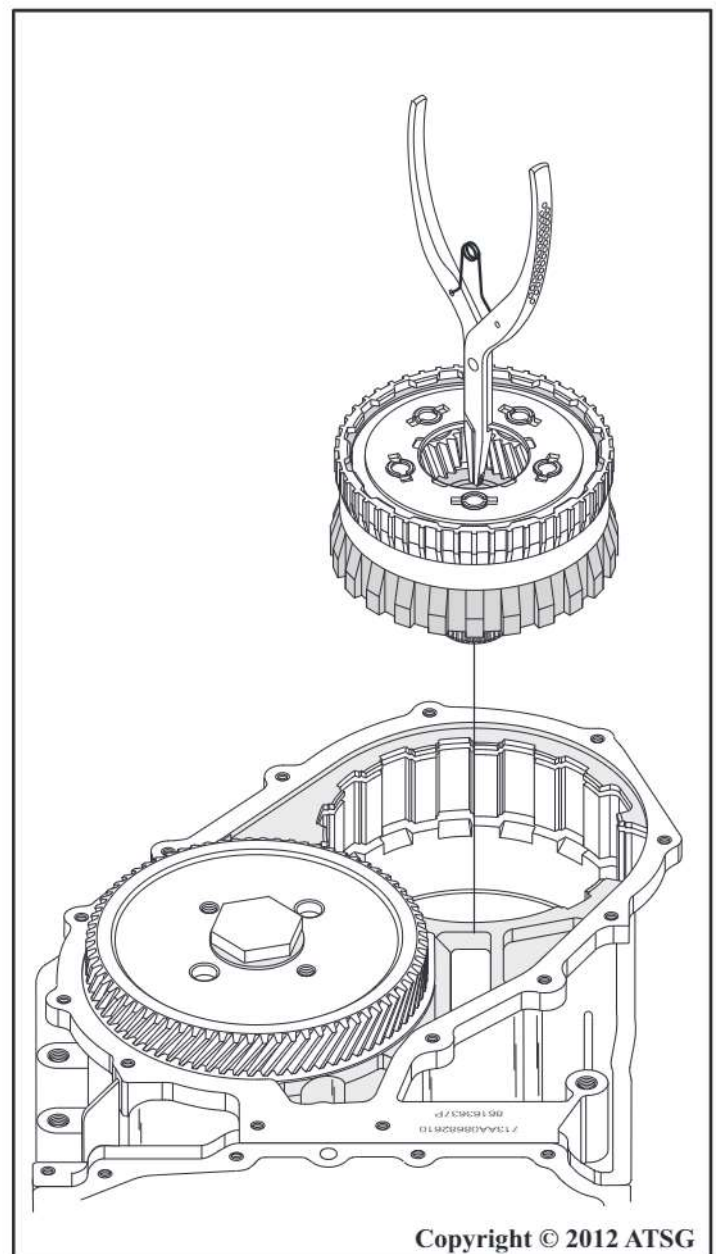


Figure 228

FINAL TRANSAXLE ASSEMBLY (CONT'D)

3. Install "H" gage into transaxle case against the surface where the low clutch housing rests, as shown in Figure 229 and 230.
4. Lower the adjustment rod to the surface of the helical cut shim in the output planetary carrier, as shown in Figure 230, and tighten adjustment rod locking knob.
5. Remove the "H" gage from case, turn it over and place on pre-assembled compounder assembly as shown in Figure 231.
6. Measure with feeler gauge between output sun gear and the adjustment rod, as shown in Figure 231.
7. The compounder end-play should measure 0.25-0.50mm (.010" - .020").
8. Change helical cut shim in the output planetary carrier as necessary to obtain proper clearance, as shown on Page 68.

Continued on Page 121

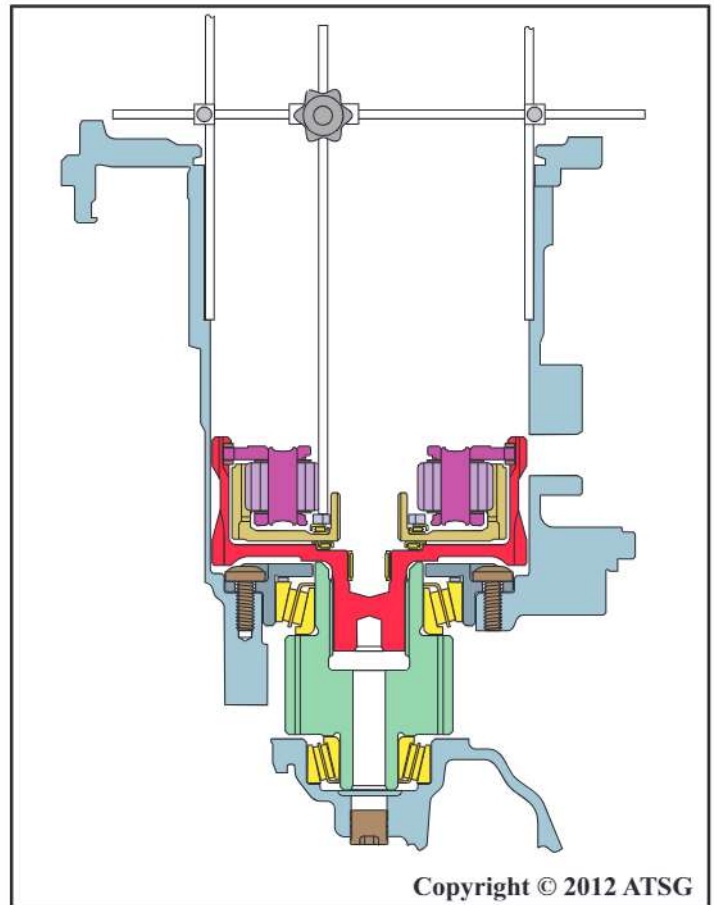


Figure 230

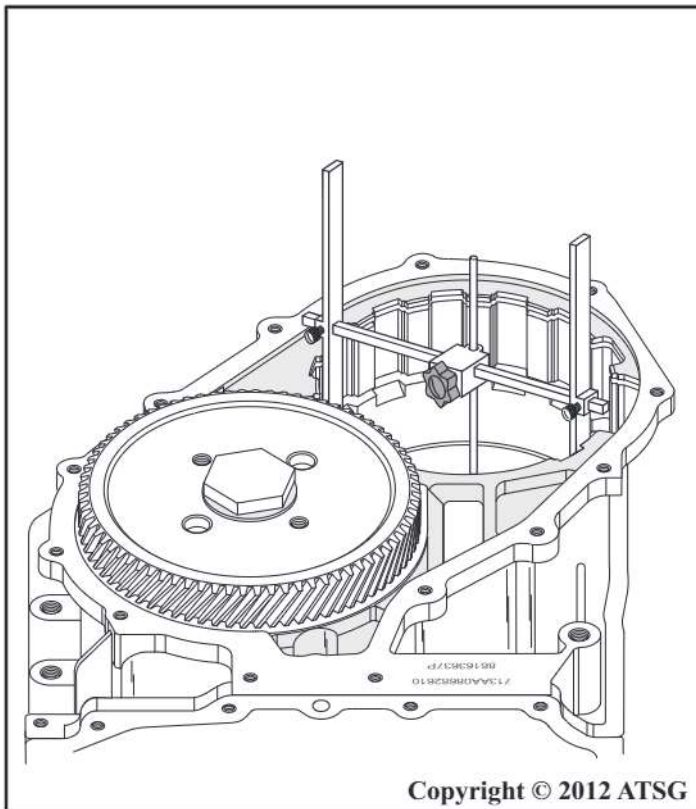


Figure 229

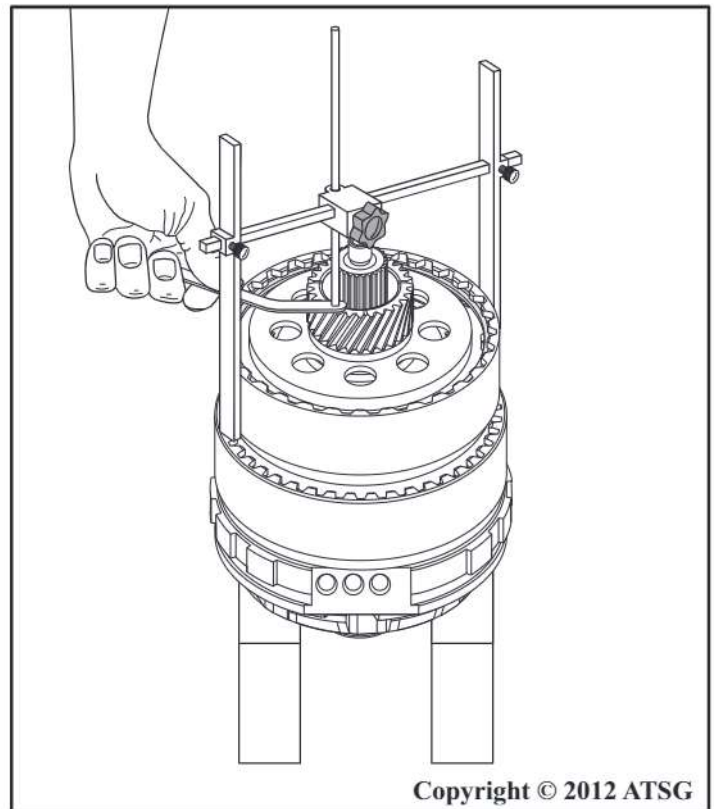


Figure 231

FINAL TRANSAXLE ASSEMBLY (CONT'D)

9. Install the pre-assembled compounder assembly using adapter/puller tool 9908, as shown in Figure 232.

Note: Feed tube holes must face valve body.

Note: The output sun gear must be rotated to engage the output planetary carrier.

10. Remove the special tool and re-install the four compounder bearing retainer bolts, as shown in Figure 233, and torque to 12 N·m (105 in.lb.).

Continued on Page 122

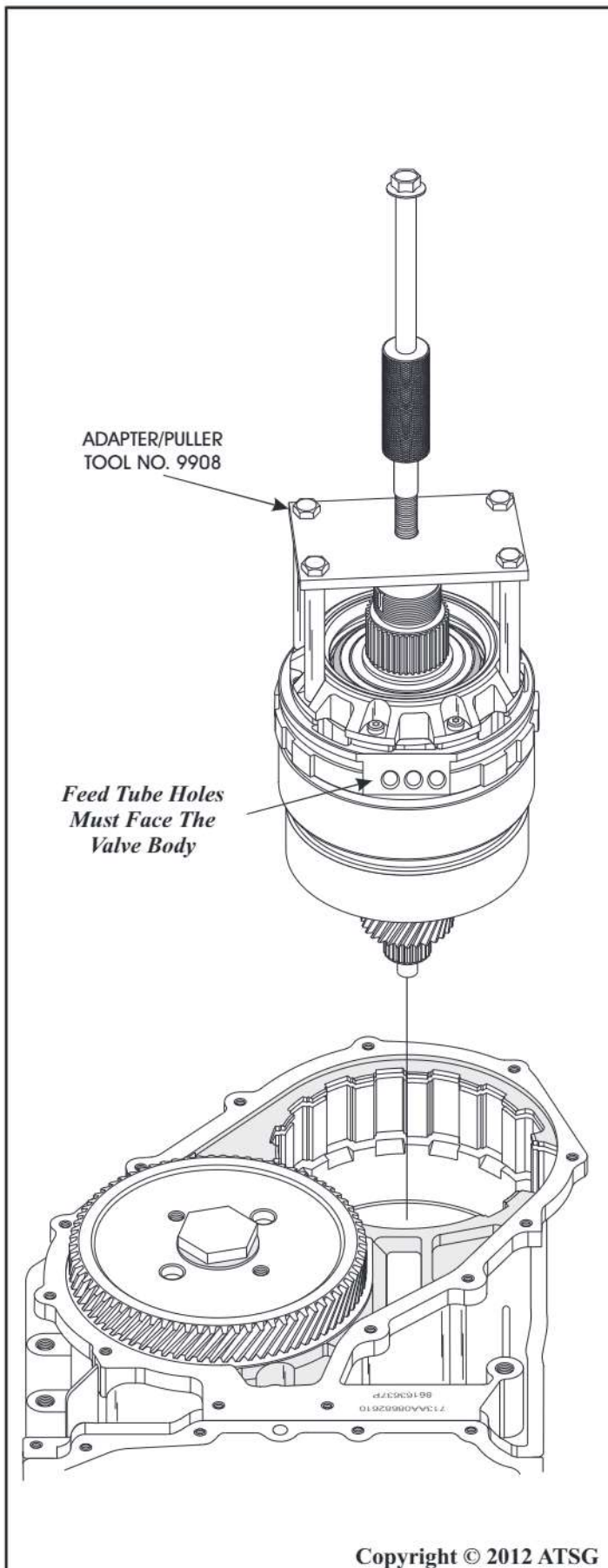


Figure 232

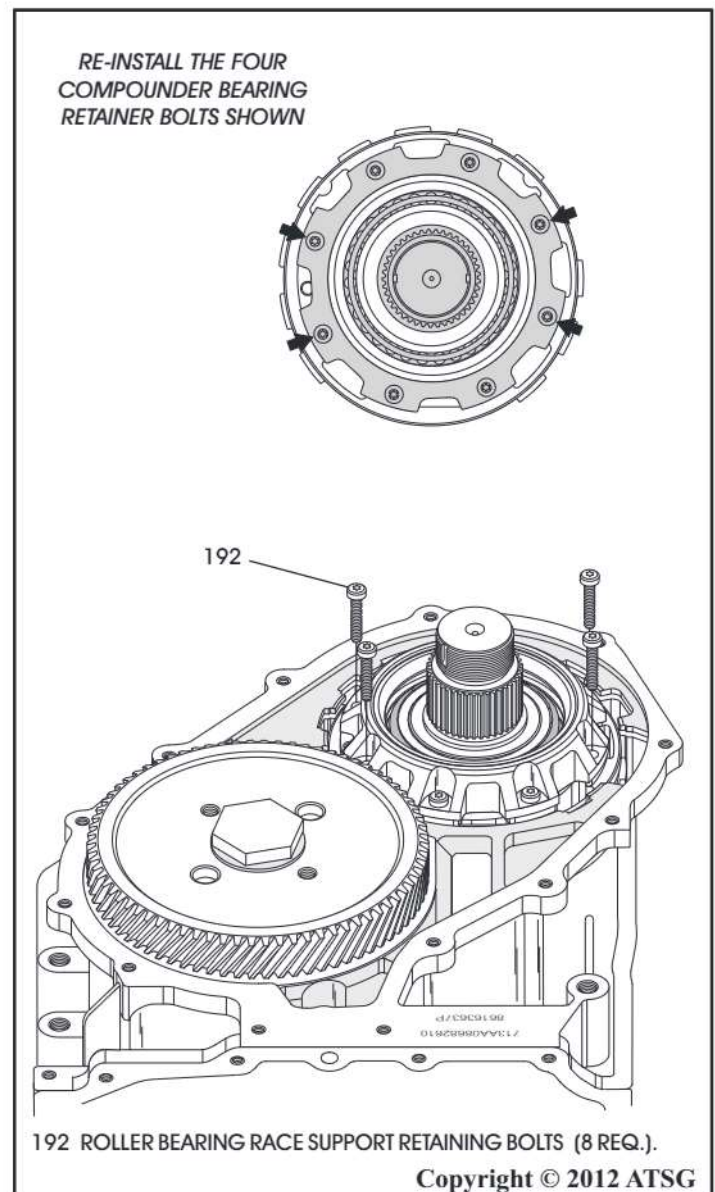


Figure 233

FINAL TRANSAXLE ASSEMBLY (CONT'D)

11. Install the tapered snap ring that retains the compounder assembly in the case, as shown in Figure 234, with the taper facing up.
12. Install drive transfer gear retaining bolt locking strap, as shown in Figure 235.
13. Install drive transfer gear locking tab, as shown in Figure 235.
14. Install the two retaining bolts and torque bolts to 23 N·m (17 ft.lb.).
15. Bend the locking tabs up against the head on each bolt, as shown in Figure 236.

Continued on Page 123

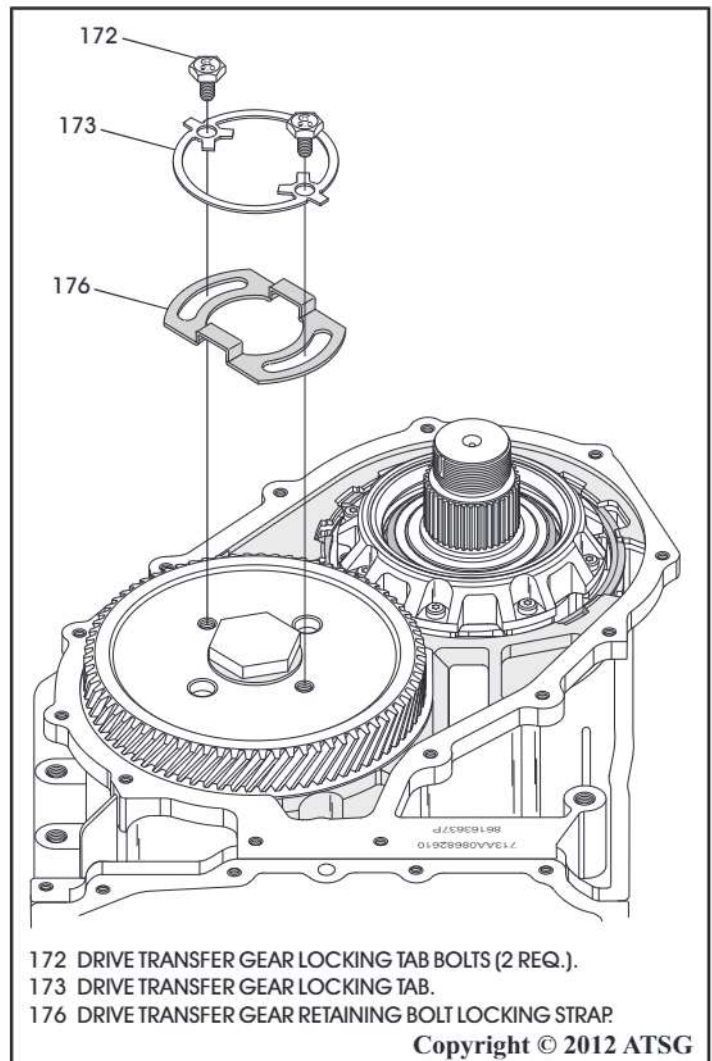


Figure 235

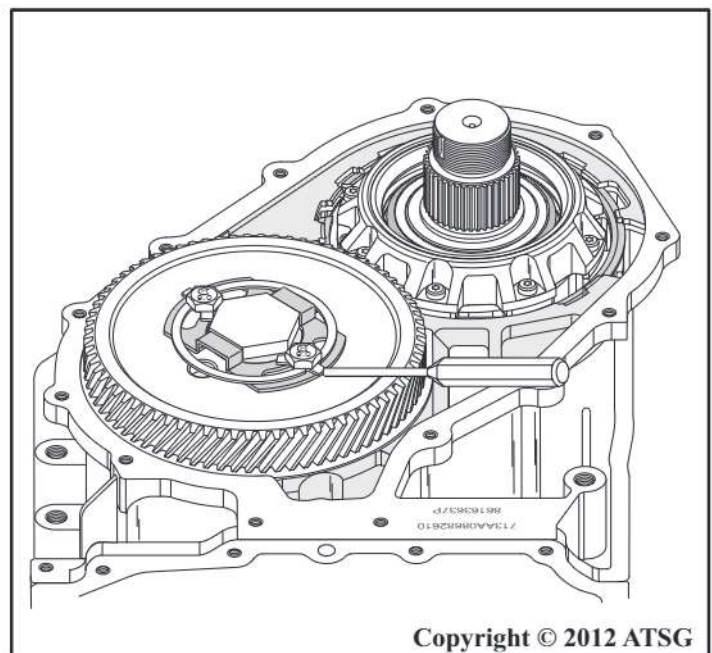


Figure 236

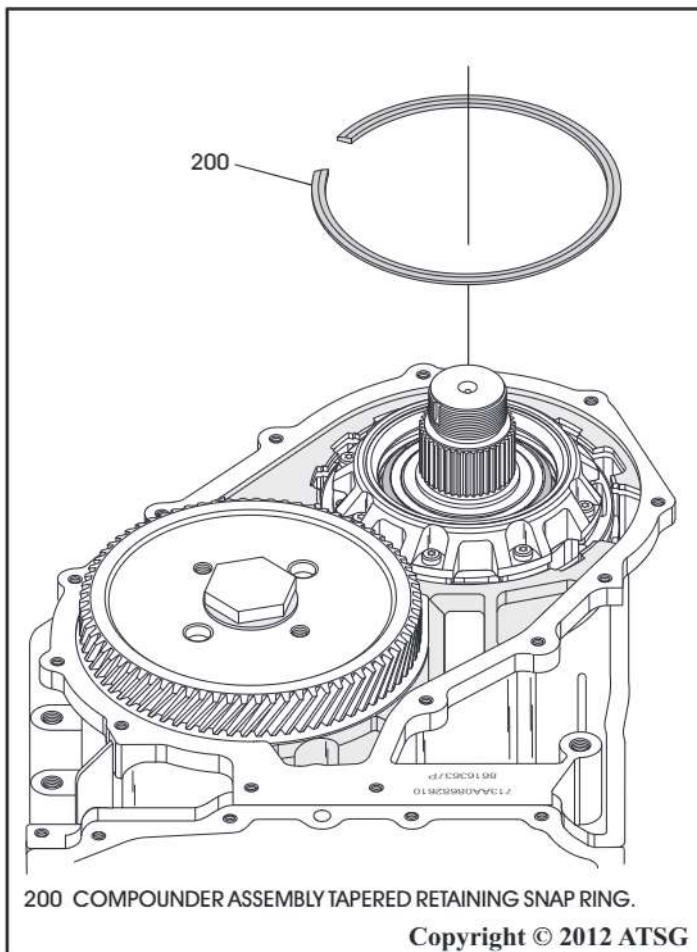


Figure 234

FINAL TRANSAXLE ASSEMBLY (CONT'D)

16. Install the pre-selected (Page 86) shim onto the underdrive center shaft, as shown in Figure 237.
17. Install the driven transfer gear and nut, as shown in Figure 237.
18. Torque the nut to 271 N·m (200 ft.lb.) using the gear holder tool 9739, as shown in Figure 238.
Note: It is not necessary to re-check the rotating torque, or pre-load.
19. Stake nut in place on both sides, using a center punch, as shown in Figure 239.

Continued on Page 124

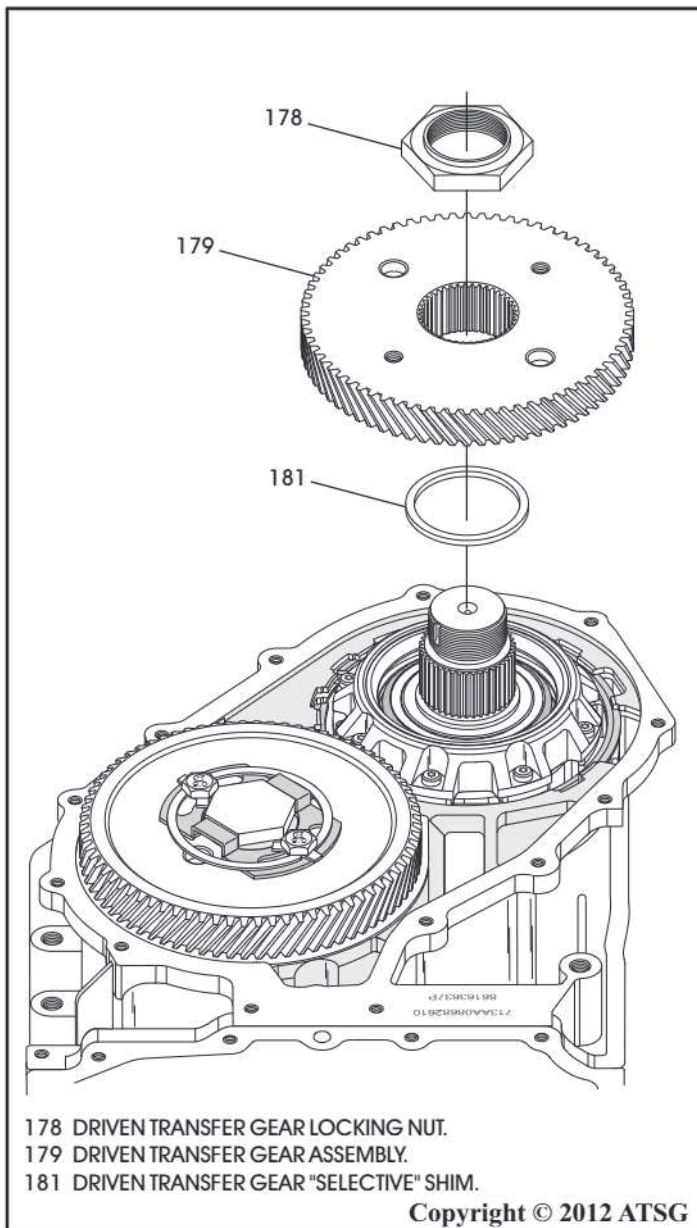


Figure 237

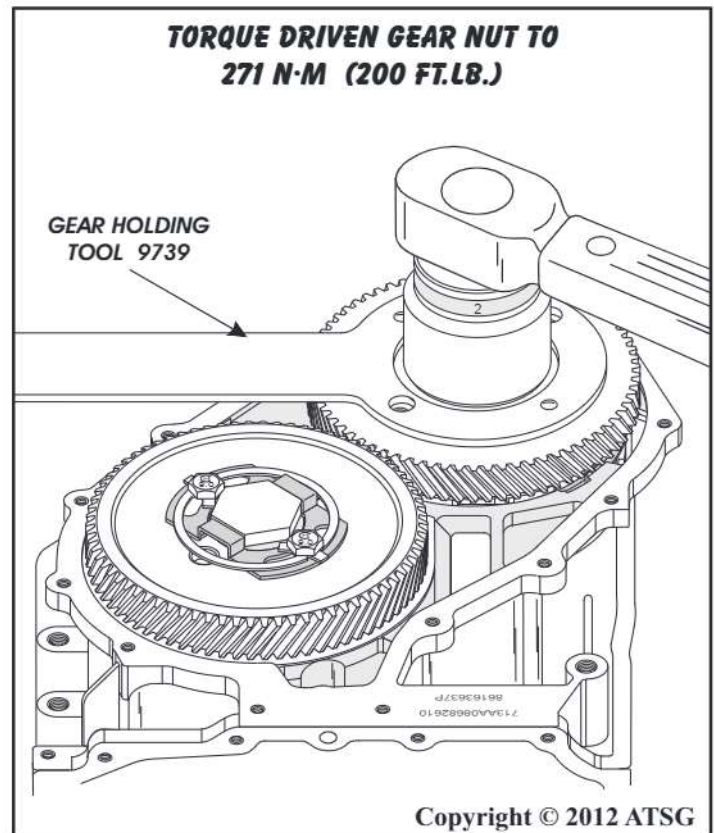


Figure 238

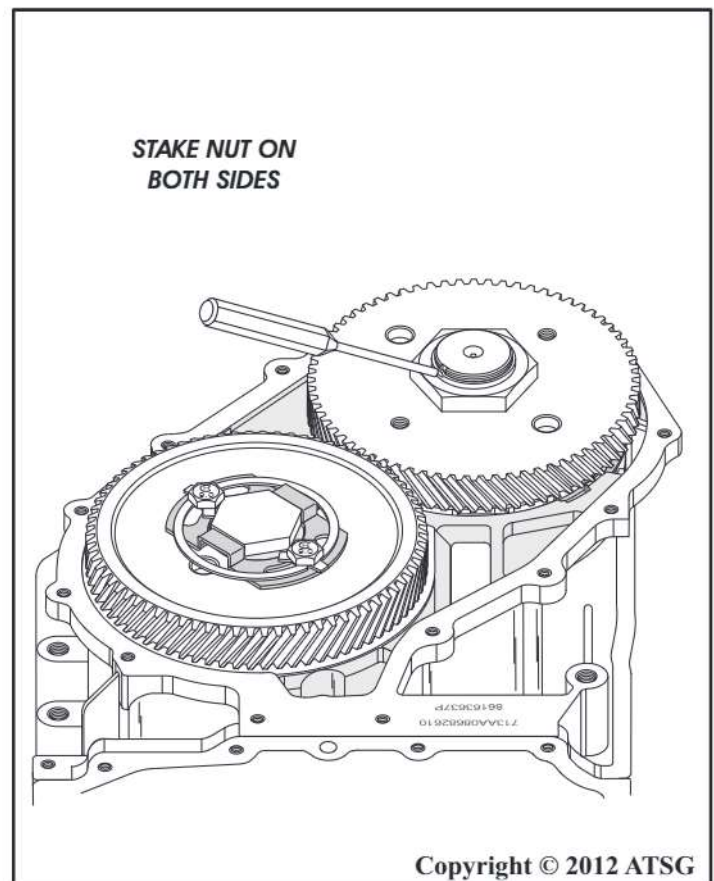


Figure 239

FINAL TRANSAXLE ASSEMBLY (CONT'D)

20. Install the transfer gear oil scavenger, as shown in Figure 240, by snapping into place.
21. Install a bead of Mopar® RTV, or equivalent, on transfer gear cover, as shown in Figure 241.
22. Install the transfer gear cover to the case, as shown in Figure 241.
23. Install the 13 transfer gear cover retaining bolts and the gear cover support strap (166), as shown in Figure 241.

Continued on Page 125

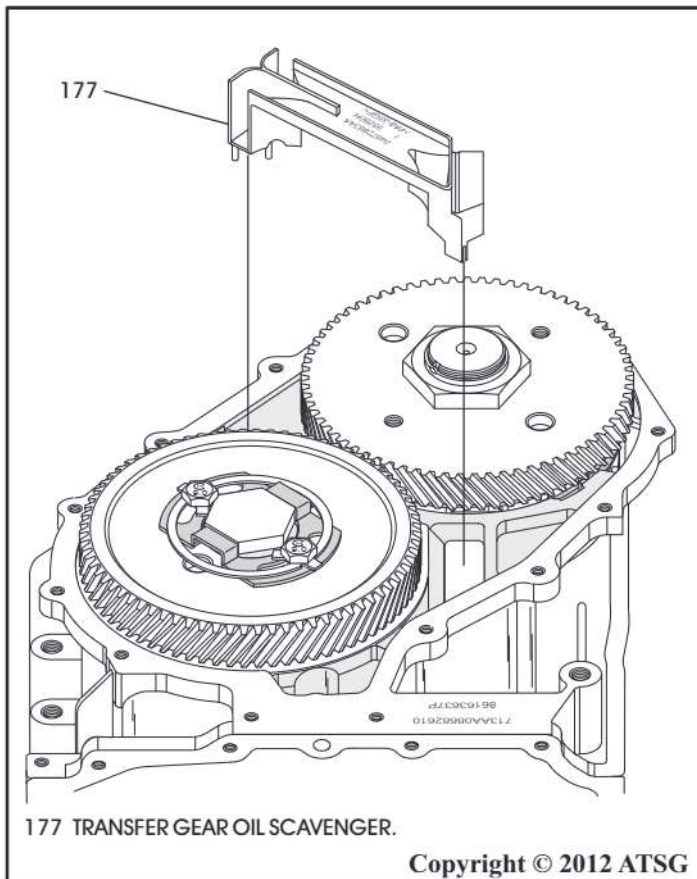


Figure 240

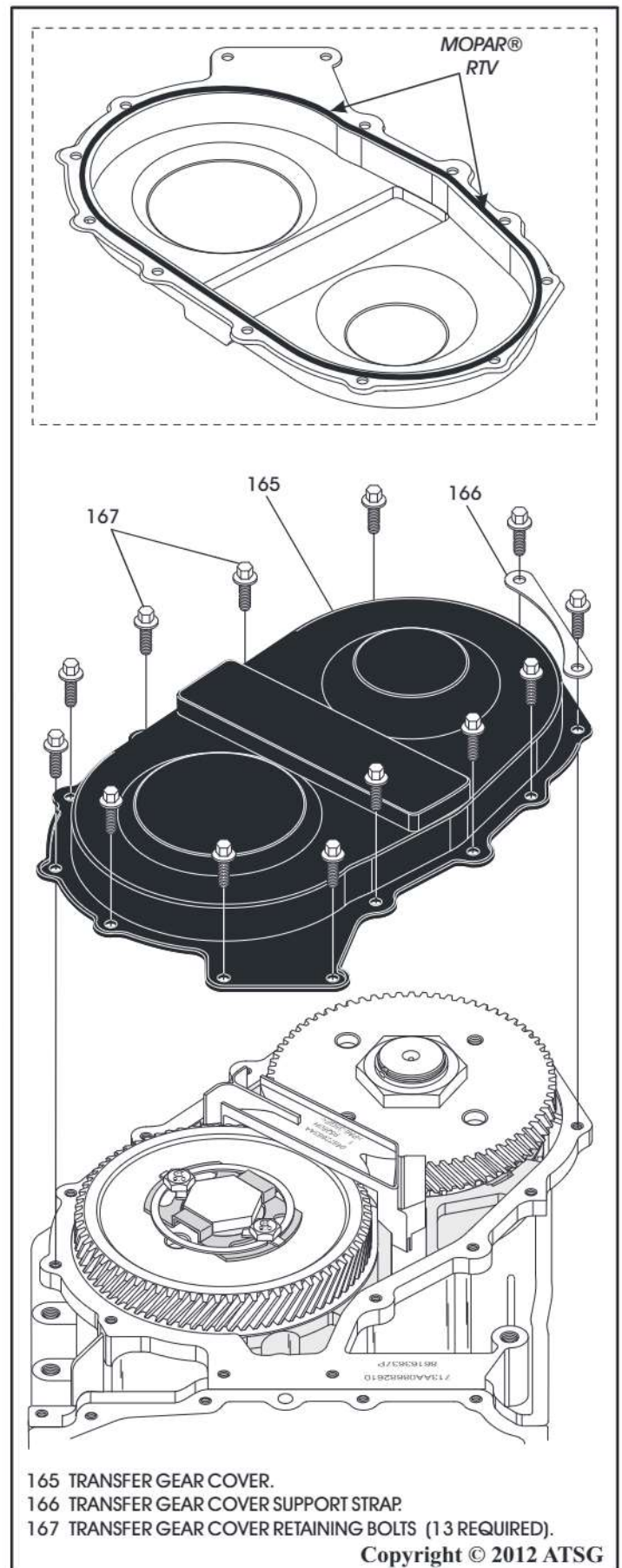


Figure 241

FINAL TRANSAXLE ASSEMBLY (CONT'D)

24. Torque the thirteen transfer gear cover bolts to 12 N·m (105 in.lb.) as shown in Figure 242.
25. Installing the low/reverse clutch pack and the 2-4 clutch pack is the next step and you must ensure that you are installing the proper clutches in the proper place, as they **will not** interchange.
26. The Low/Reverse friction plates are a different thickness and have different groove pattern than 2-4 friction plates, as shown in Figure 243.
27. The Low/Reverse steel plates are a different thickness than the 2-4 steel plates, as shown in Figure 243.

Continued on Page 126

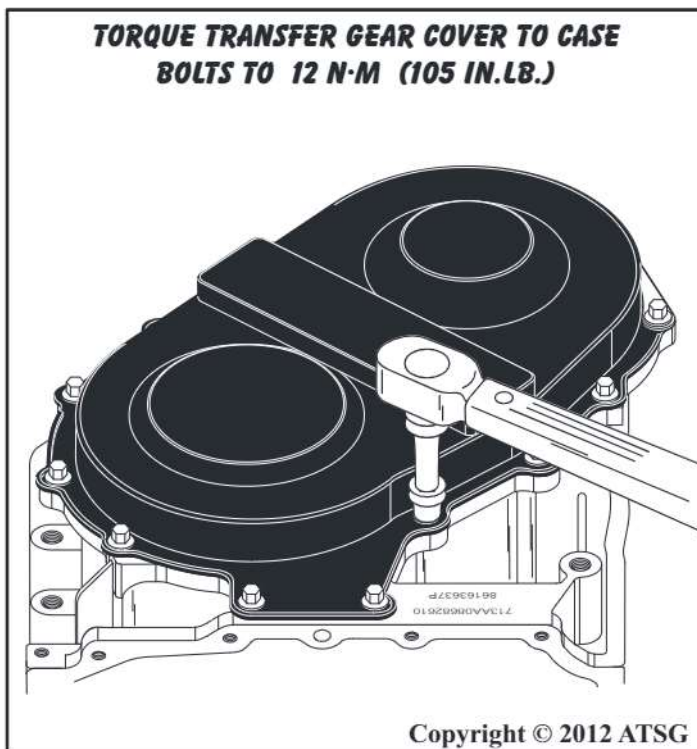


Figure 242

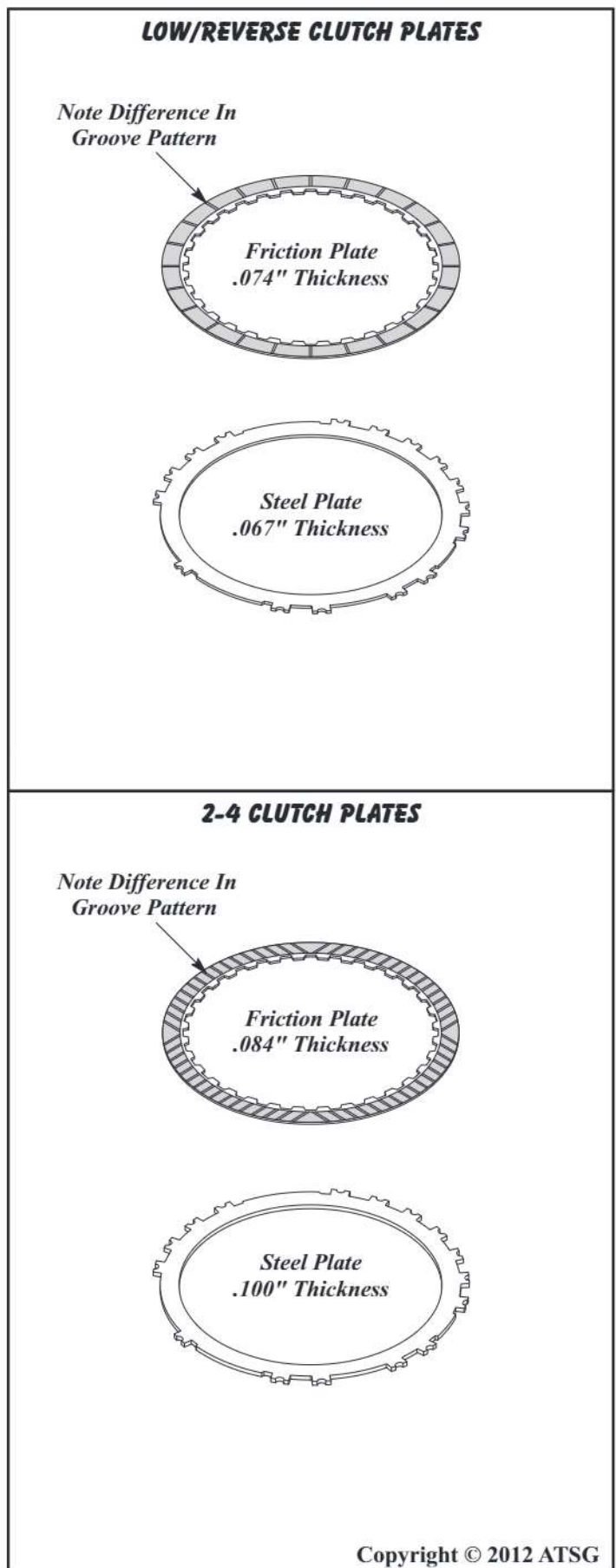


Figure 243

FINAL TRANSAXLE ASSEMBLY (CONT'D)

28. Install the low/reverse clutch plates beginning with a steel plate and alternating with a friction plate, as shown in Figure 244, until you have installed 5 of each, leaving out the last friction until the flat snap ring is installed.

Note: All clutch plates should be soaked in the proper fluid for 1 hour, prior to assembly.

29. Install the low/reverse clutch pressure plate flat snap ring (148) into the case groove, as shown in Figure 244.

Note: Flat snap ring with opening between the 2:00 and 3:00 O'clock position.

30. Now, you can install the last friction plate.

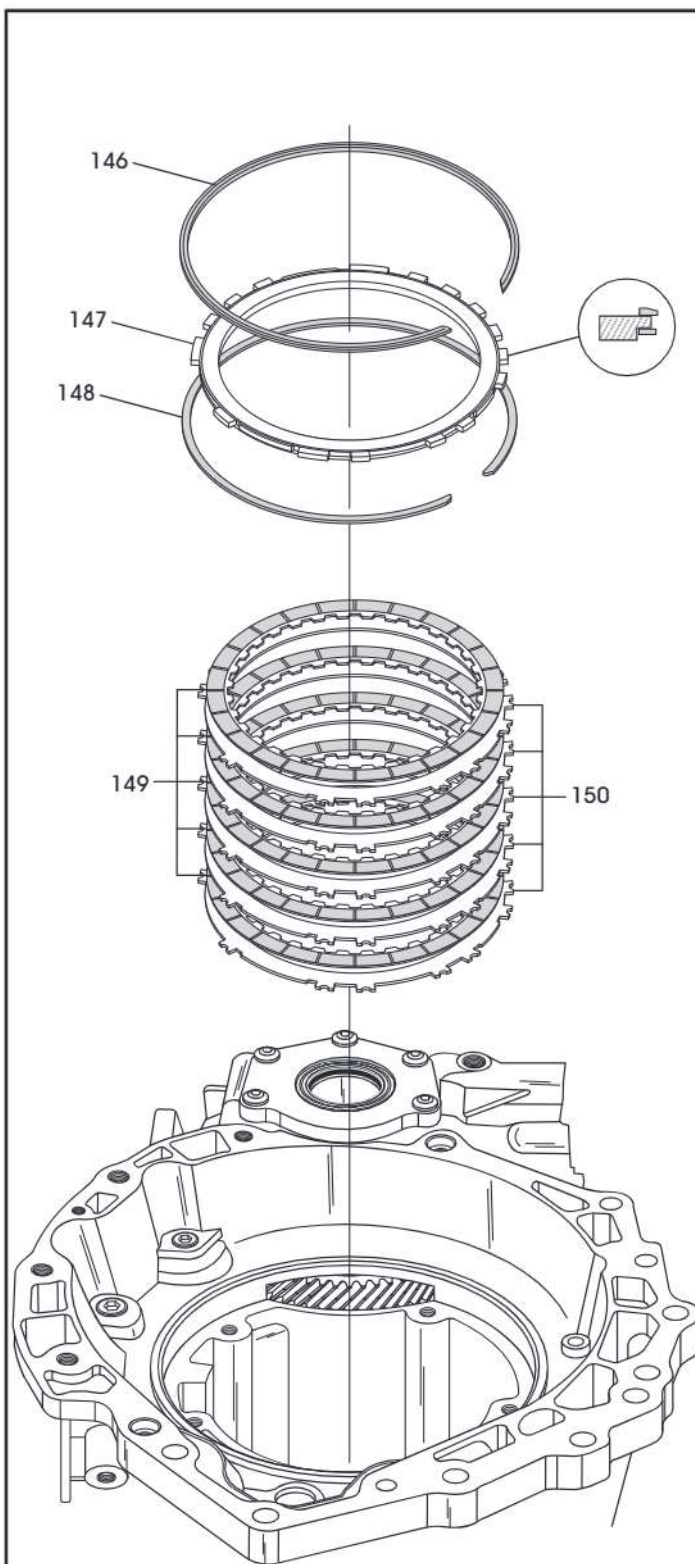
31. Install the low/reverse clutch pressure plate with the flat side facing up, as shown in Figure 244.

32. Install the low/reverse clutch pressure plate "tapered" snap ring with the tapered side facing up, as shown in Figure 244.

Note: Tapered snap ring with opening between the 9:00 and 10:00 O'clock position.

33. Tap the tapered snap ring into the groove with large screwdriver around the perimeter until it is fully seated.

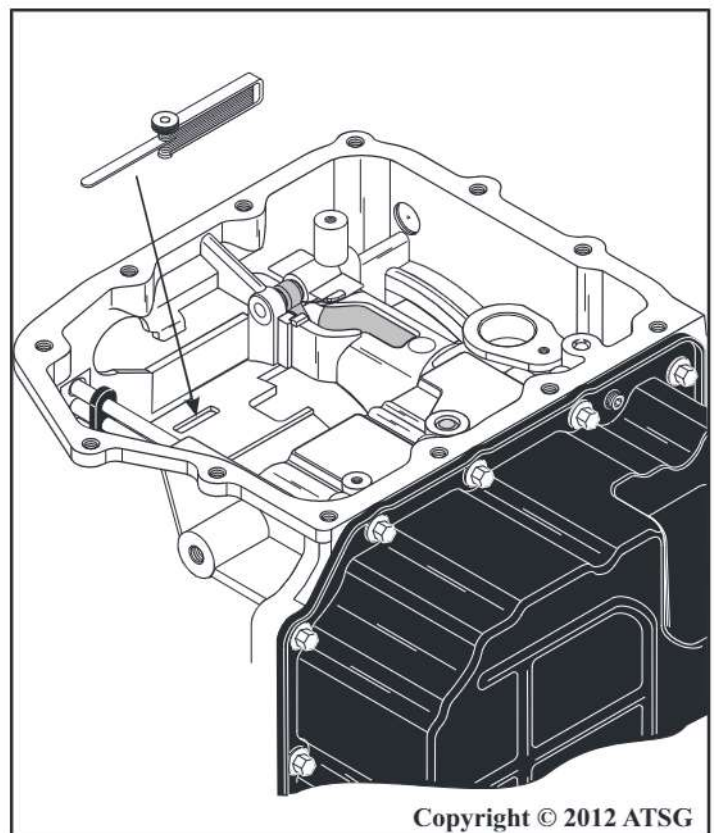
Continued on Page 127



- 146 2-4 & LOW/REVERSE PRESSURE PLATE "TAPERED" SNAP RING.
147 2-4 & LOW/REVERSE CLUTCH PRESSURE PLATE.
148 2-4 & LOW/REVERSE PRESSURE PLATE "FLAT" SNAP RING.
149 LOW/REVERSE CLUTCH FRICTION PLATES, .074" THICK (5 REQ.).
150 LOW/REVERSE CLUTCH STEEL PLATES, .067" THICK (5 REQ.).

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Figure 244



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Figure 245

FINAL TRANSAXLE ASSEMBLY (CONT'D)

34. Mount a dial indicator to the case and zero the indicator against tooth of the low/reverse friction plate, as shown in Figure 246.

Note: Requires longer dial indicator actuating rod, Tool No. 6268.

35. Apply 30 psi of air pressure or lift with picks and record the dial indicator reading.
 36. The correct low/reverse clutch clearance should be 0.89-1.47mm (.035"-.058").
 37. Change the selective pressure plate as necessary using the chart in Figure 247, to obtain proper low/reverse clutch clearance.

Alternatives To Dial Indicator With Long Actuating Rod

- A. Feeler gauge bent at 90 degrees to access the clutches past the front planetary ring gear.
- B. Using small distributor point feeler gauge thru small access slot in bottom of case, as shown in Figure 245.
- C. Loading case with the L/R clutches and the 2-4 clutch assembly, after L/R piston is installed and "before" rear planetary carrier is installed, checking clutch clearance and then removing them for final assembly. This way clearance can be checked easily with feeler gauge.

Continued on Page 128

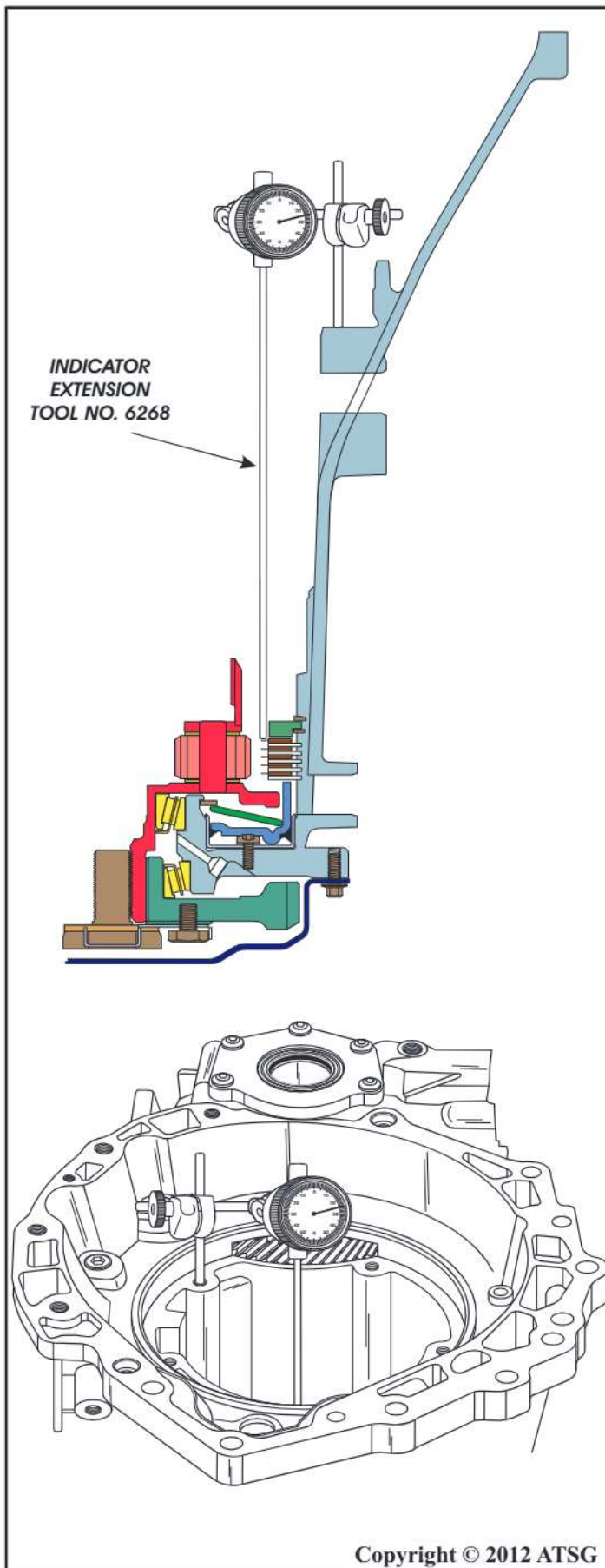


Figure 246

**Low/Reverse Clutch Clearance Should Be
0.89-1.47mm (.035"-.058")**

Low/Reverse Pressure Plate Chart

Plate Thickness	Part Number*
5.88mm (.232")	4799846AA
6.14mm (.242")	4799847AA
6.40mm (.252")	4799848AA
6.66mm (.262")	4799849AA
6.92mm (.273")	4799855AA
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Figure 247

FINAL TRANSAXLE ASSEMBLY (CONT'D)

38. Lubricate new 2-4 clutch piston with a small amount of Trans-Jel® and install it into the 2-4 clutch retainer, as shown in Figure 248.
Note: Rotate the piston in the retainer until the slot for one of the legs of the bellville return spring is "perfectly" aligned with the locating tab on the retainer, as shown in Figure 248.
39. Install the 2-4 clutches into the case beginning with a friction plate and alternating with steel plates, as shown in Figure 249, until you have installed 4 of each.
Note: All clutch plates should be soaked in the proper fluid for 1 hour, prior to assembly.
40. Install the 2-4 clutch bellville return spring on top of the last steel plate in the direction shown in Figure 249.
Note: Rotate the bellville spring so that center of one leg is on same centerline as the slot in case for the 2-4 retainer locating tab, as shown in Figure 249.

Continued on Page 129

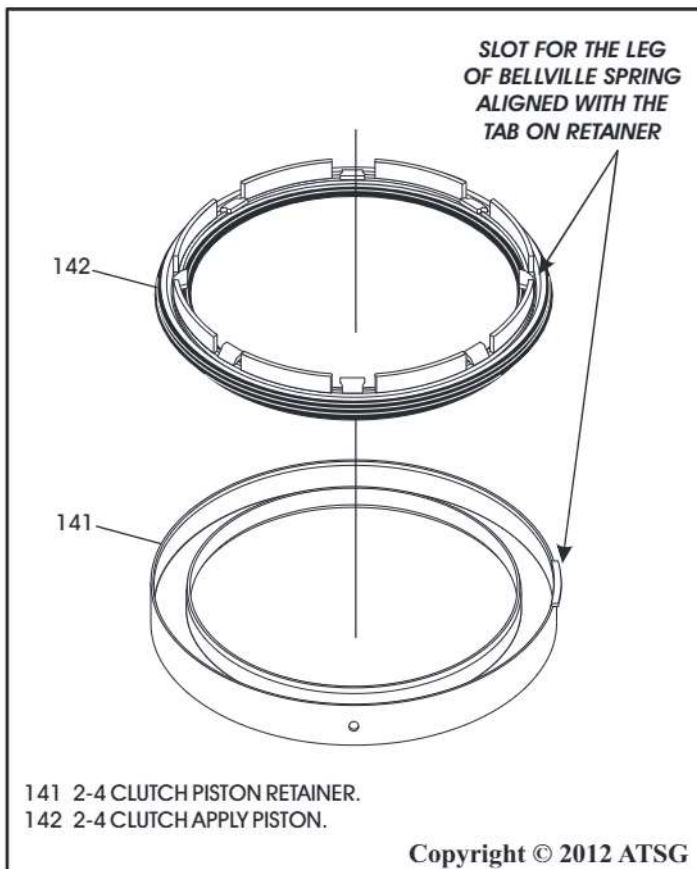


Figure 248

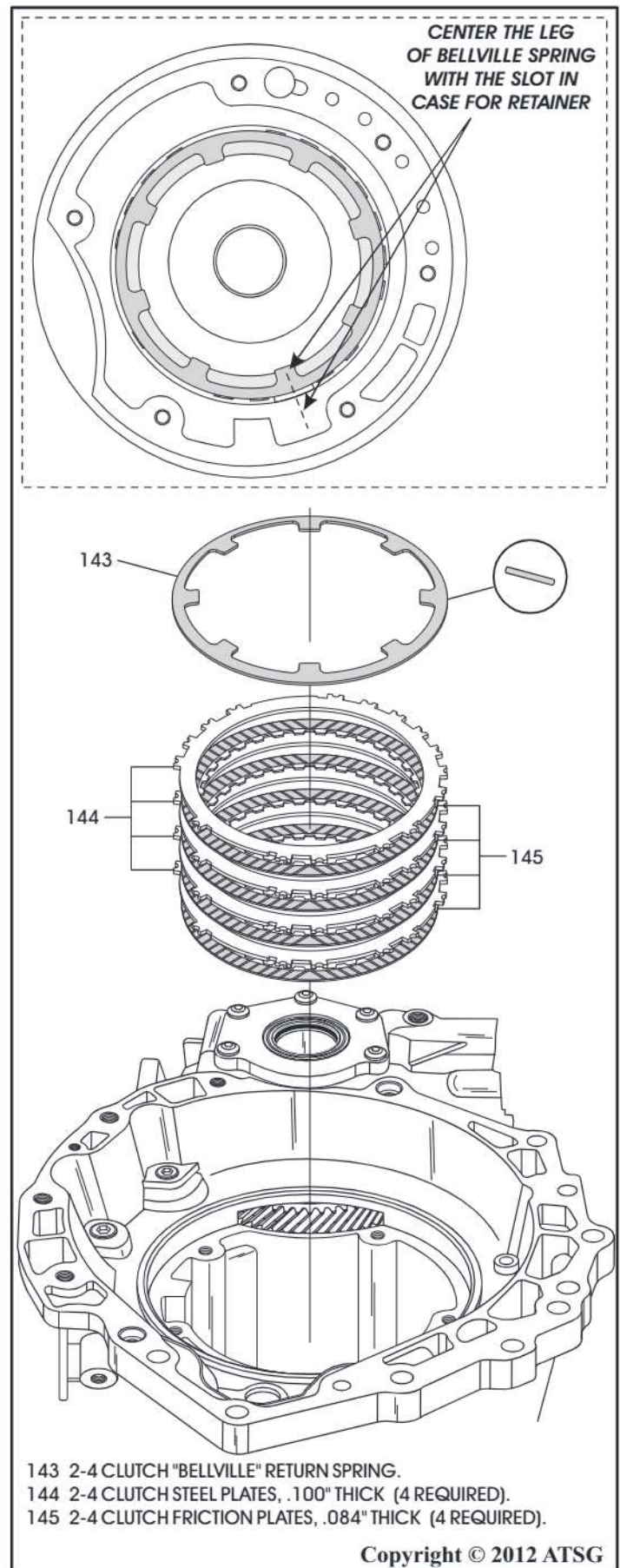


Figure 249

FINAL TRANSAXLE ASSEMBLY (CONT'D)

41. Install 2-4 clutch retainer with piston assembly, as shown in Figure 250.

Note: It should fall right into place, if you have followed the alignment instructions on the previous page.

42. Compress the retainer and install the 2-4 clutch retainer snap ring, as shown in Figure 250.

43. Mount a dial indicator to the case and zero the indicator against tooth of the 2-4 friction plate, as shown in Figure 251.

Note: Requires longer dial indicator actuating rod, Tool No. 6268.

Note: Refer to Page 127 for alternatives.

44. Apply 30 psi of air pressure or lift with picks and record the dial indicator reading.

45. The correct 2-4 clutch clearance should be 0.76-2.64mm (.030"-.104").

46. If clearance is outside this range, the 2-4 clutch is assembled improperly.

Note: There are no selectives for 2-4 clutch.

Continued on Page 130

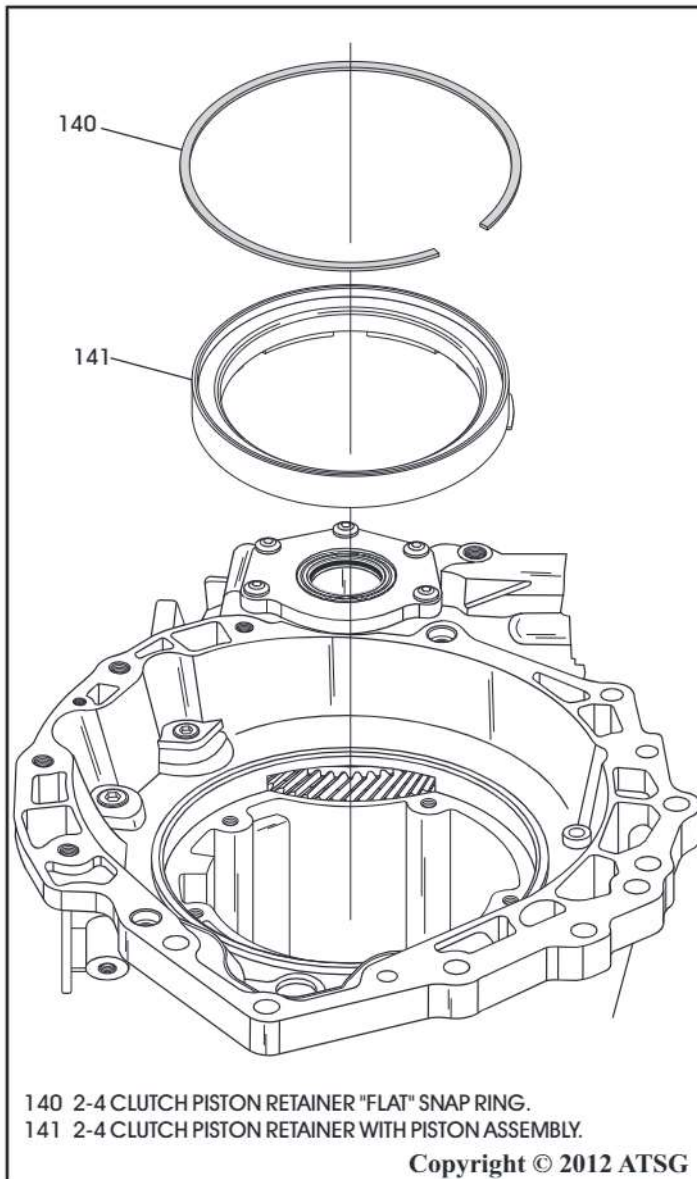


Figure 250

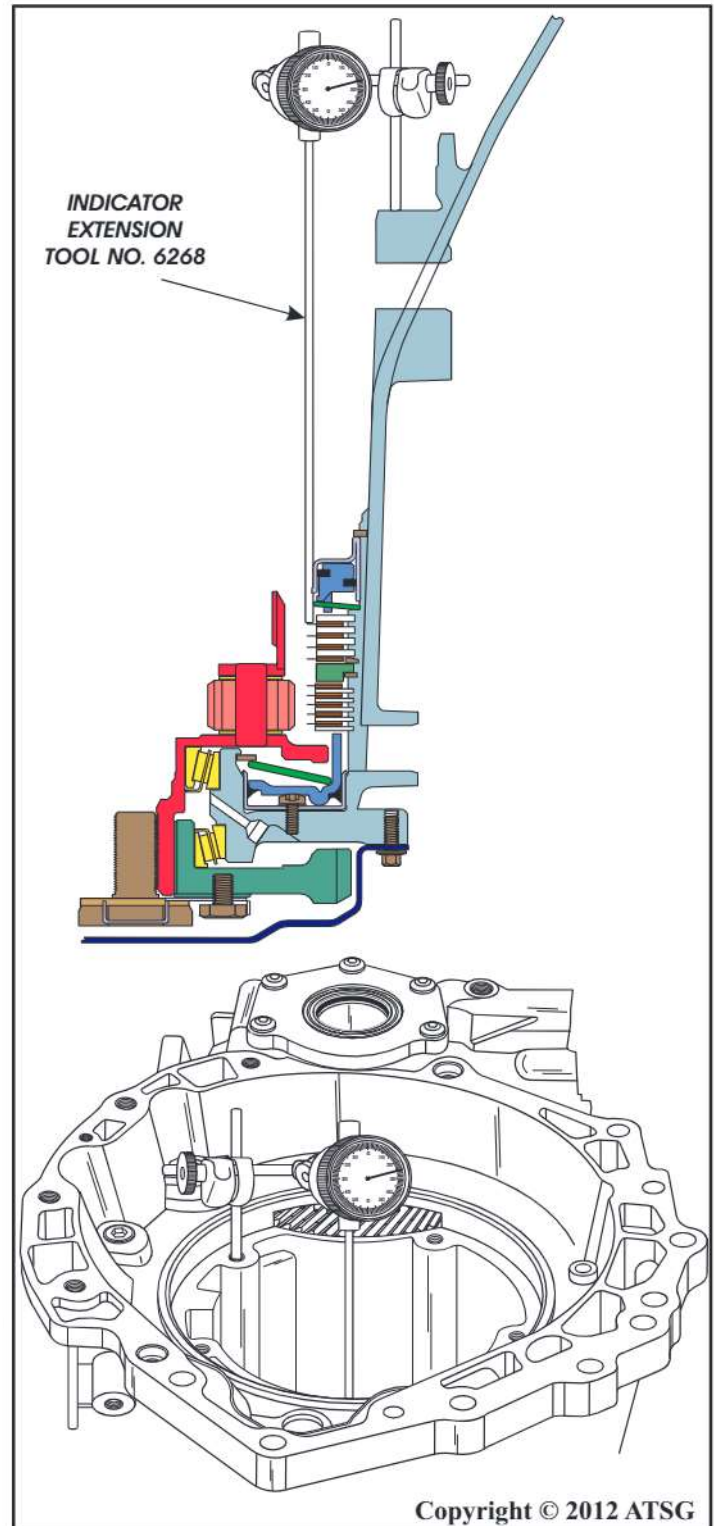


Figure 251

FINAL TRANSAXLE ASSEMBLY (CONT'D)

47. Install number 7 thrust bearing on bottom of the rear planetary sun gear in the direction shown in Figure 252 and retain with Trans-Jel®.
48. Install number 6 thrust bearing on top of the rear planetary sun gear in the direction shown in Figure 252 and retain with Trans-Jel®.
49. Install the rear planetary sun gear and bearings as an assembly using a pair of snap ring pliers, as shown in Figure 253, by rotating to engage planetary gears until fully seated.
50. Install the front planetary carrier and ring gear, as shown in Figure 254, by rotating back and forth to fully engage the low/reverse clutches.

Note: Number 5 thrust bearing is captured in front planetary carrier.

Continued on Page 131

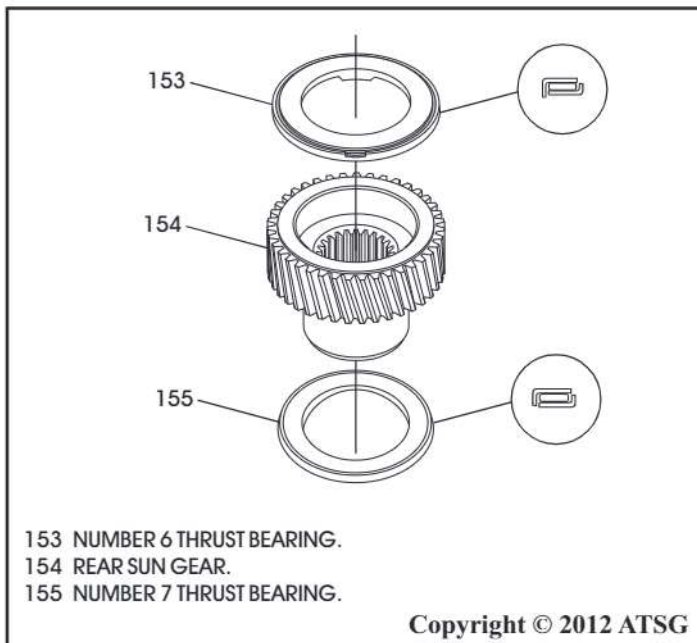


Figure 252

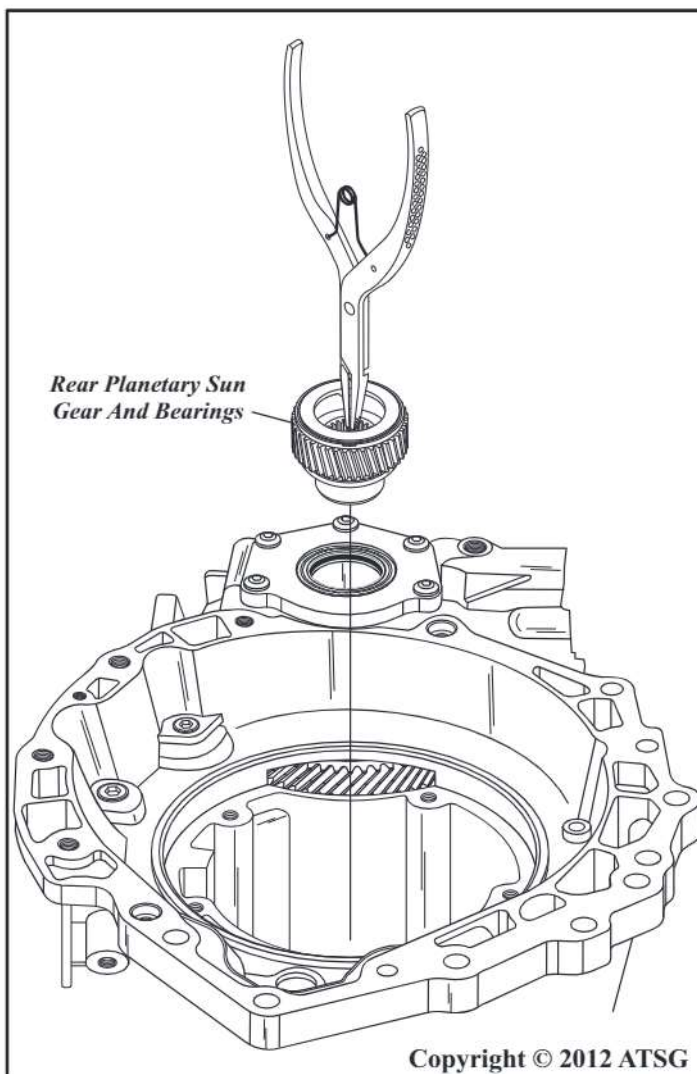


Figure 253

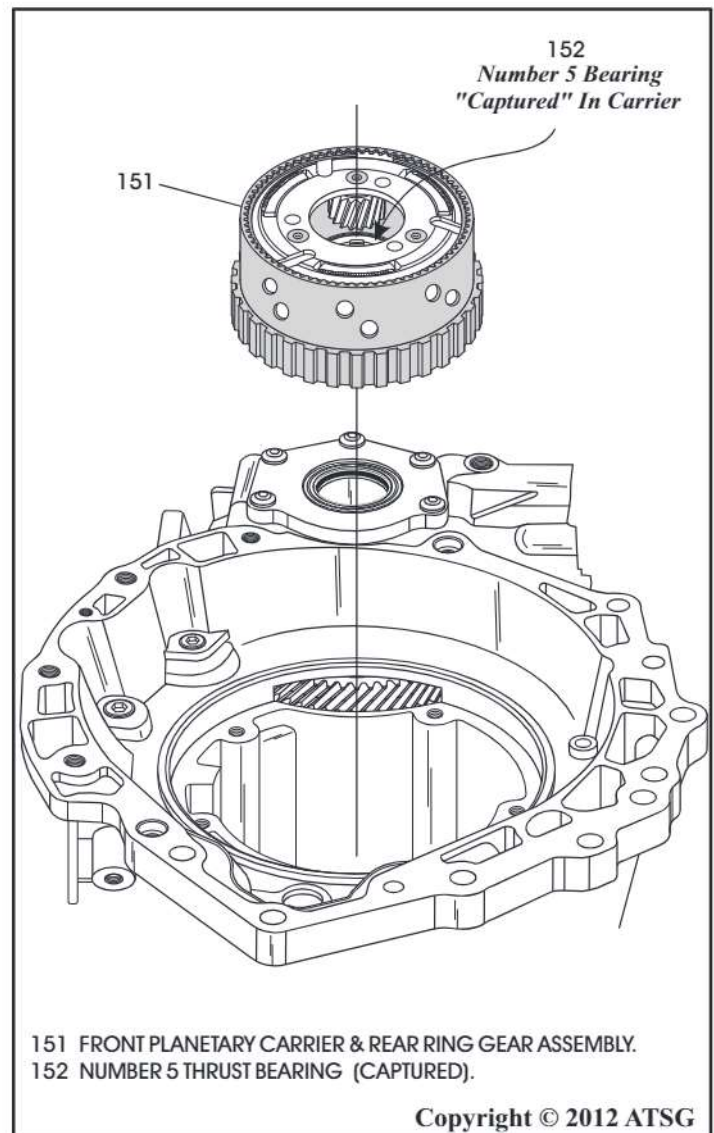


Figure 254

FINAL TRANSAXLE ASSEMBLY (CONT'D)

51. Install reverse clutch hub and sun gear assembly, as shown in Figure 255, by rotating back and forth to engage the 2-4 clutches until it is fully seated.
52. Install the number 4 thrust washer, as shown in Figure 255, and retain with Trans-Jel®.

53. Ensure that number 4 "selective" thrust plate is still stuck to pre-assembled input housing with a liberal amount of Trans-Jel®, as shown in Figure 256.

Note: Number 4 selective thrust plate is used to set transaxle end-play.

Continued on Page 132

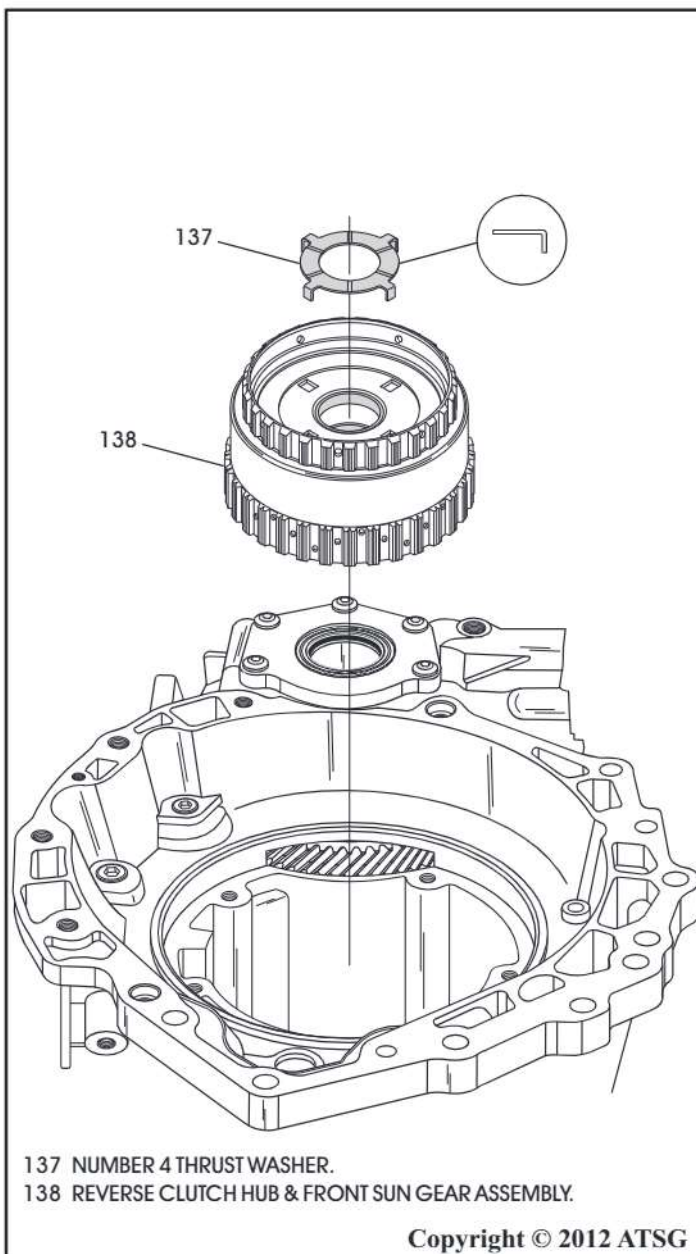


Figure 255

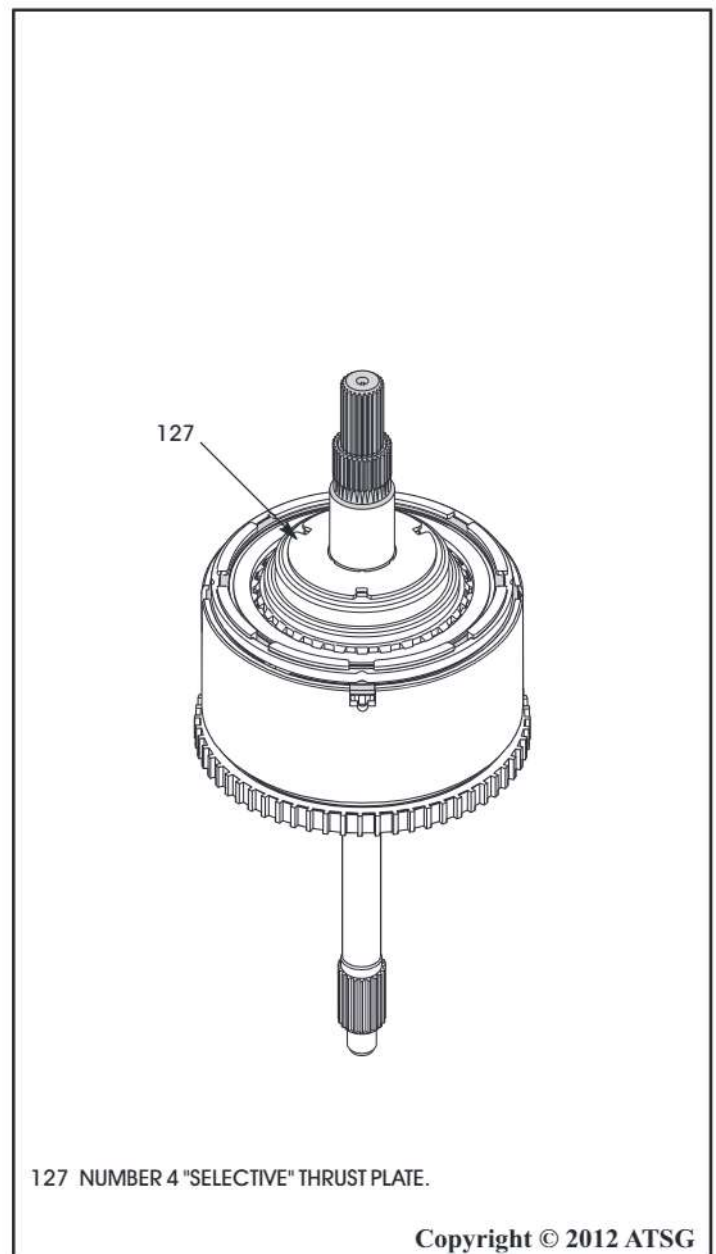


Figure 256

FINAL TRANSAXLE ASSEMBLY (CONT'D)

54. Install pre-assembled input housing assembly, as shown in Figure 257, by rotating back and forth until it is fully seated.

Note: The input housing is fully seated when the teeth on input clutch hub are centered in the input speed sensor bore (See Figure 258).

55. Install the number 1 thrust bearing over input shaft and into housing in the direction shown in Figure 257.

56. Install "H" gage on transaxle case pump surface, as shown in Figure 259, and lower adjustment rod down inside the housing to the surface of the number 1 thrust bearing and tighten adjustment rod locking knob.

Note: Adjustment rod "must" be resting on the number 1 thrust bearing.

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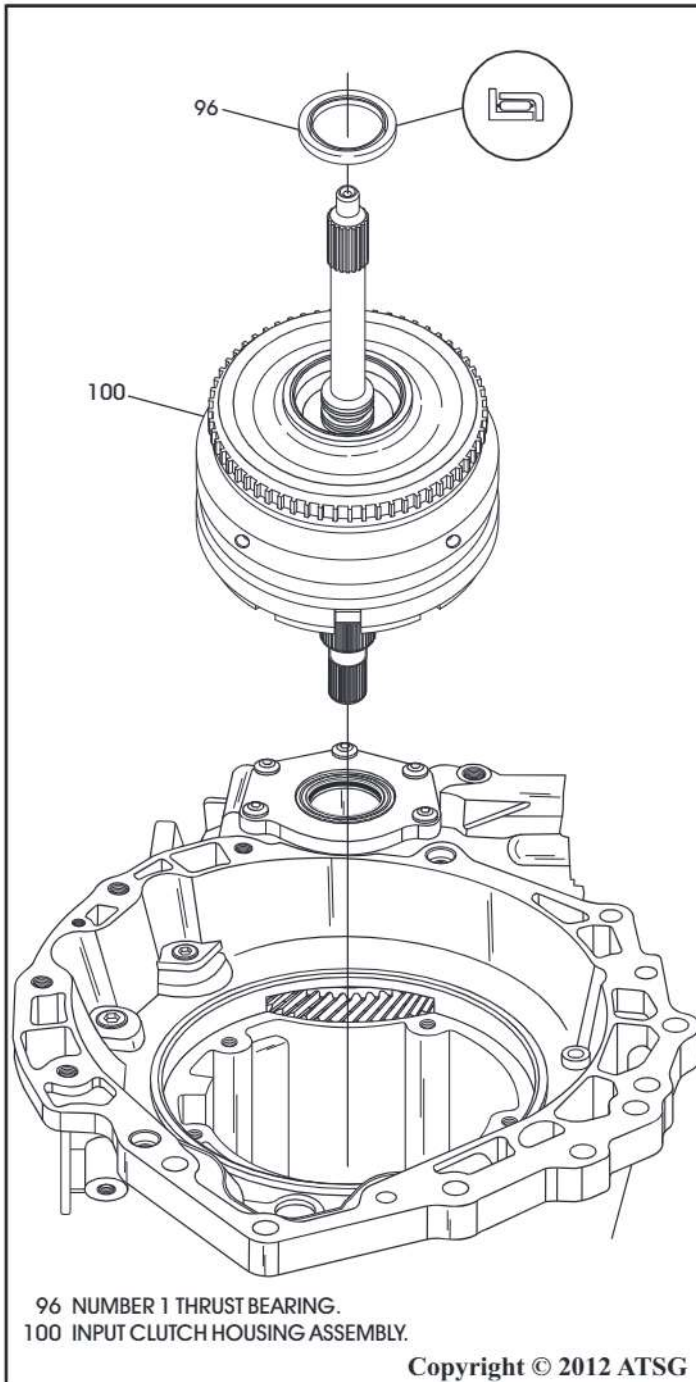


Figure 257

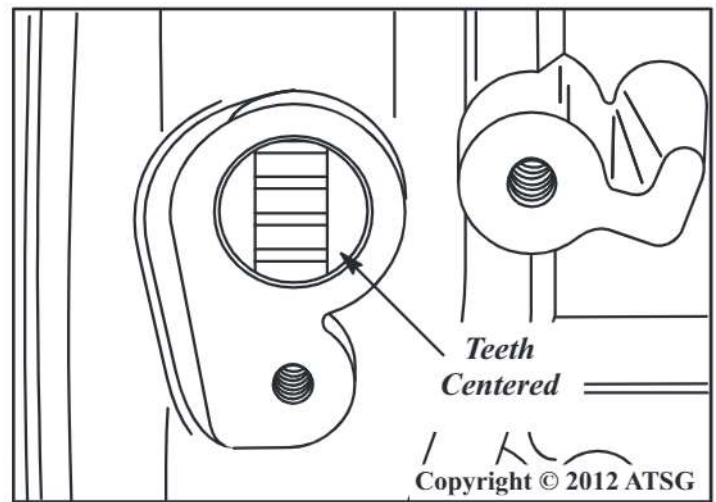


Figure 258

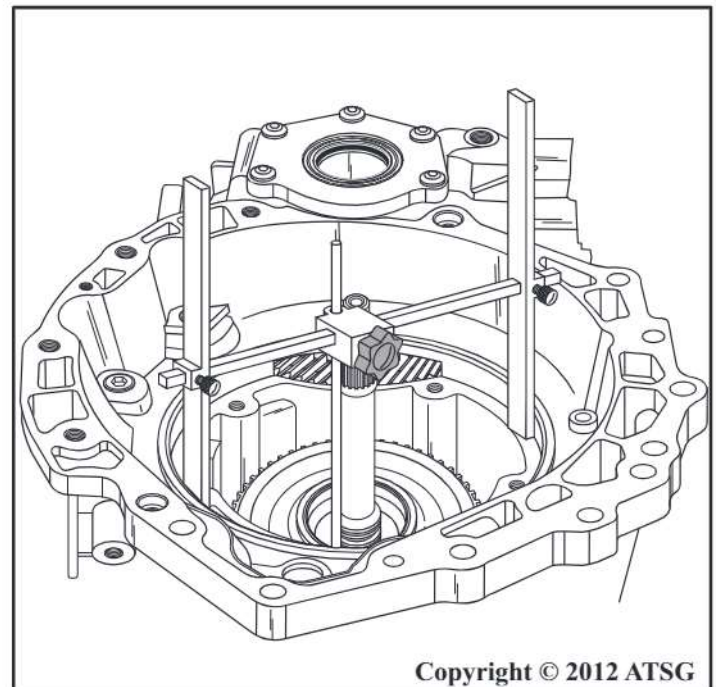


Figure 259

FINAL TRANSAXLE ASSEMBLY (CONT'D)

57. Now turn "H" gage over and set it on completed oil pump assembly, as shown in Figure 260, with adjustment rod over the pump tower and pump gasket in place.

Note: Oil pump to case gasket "must" be in place for this measurement.

58. Measure between adjustment rod and oil pump tower to determine transaxle end-play, as shown in Figure 260.

59. Transaxle end-play for this unit should be 0.13-0.64mm (.005"-.025").

60. Change the number 4 thrust plate as necessary using the chart in Figure 261.

61. Install **new** cooler by-pass valve, as shown in Figure 262, with "O" ring end towards the rear of case.

Note: If transaxle failure has occurred, it is mandatory that the cooler by-pass valve be replaced. Do not re-use or attempt to clean the cooler by-pass valve.

Continued on Page 134

Number 4 Thrust Plate Transaxle End-play Chart	
Shim Thickness	Part Number*
1.60mm (.063")	4431665AB
1.73mm (.068")	3836237AB
1.80mm (.071")	4431666AB
1.96mm (.077")	3836238AB
2.03mm (.080")	4431667AB
2.16mm (.085")	3836239AB
2.24mm (.088")	4431668AB
2.39mm (.094")	3836240AB
2.46mm (.097")	4431669AB
2.62mm (.103")	3836241AB
2.67mm (.105")	4446670AB
2.90mm (.114")	4446671AB
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Figure 261

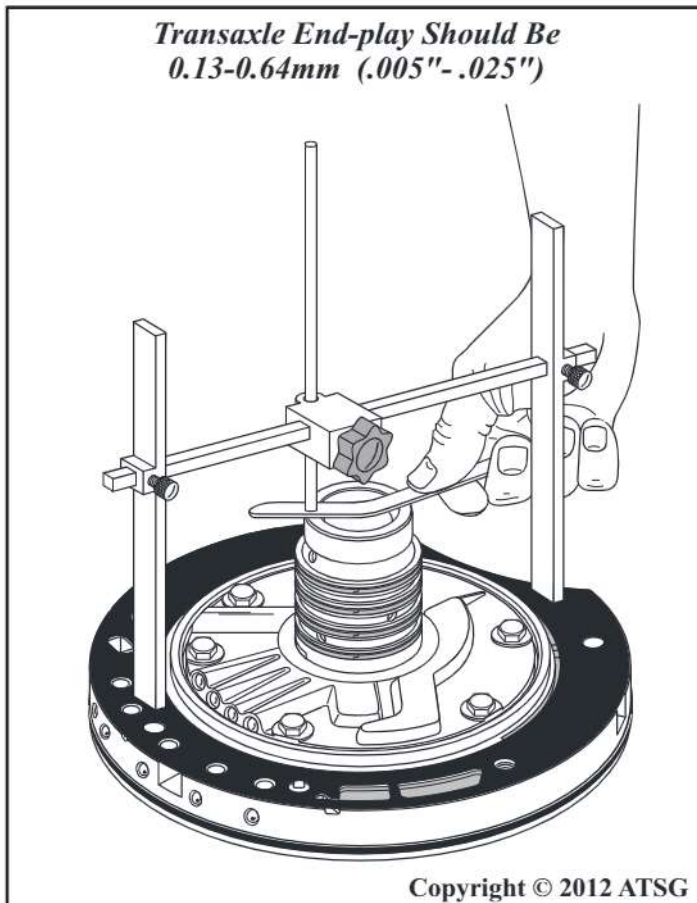


Figure 260

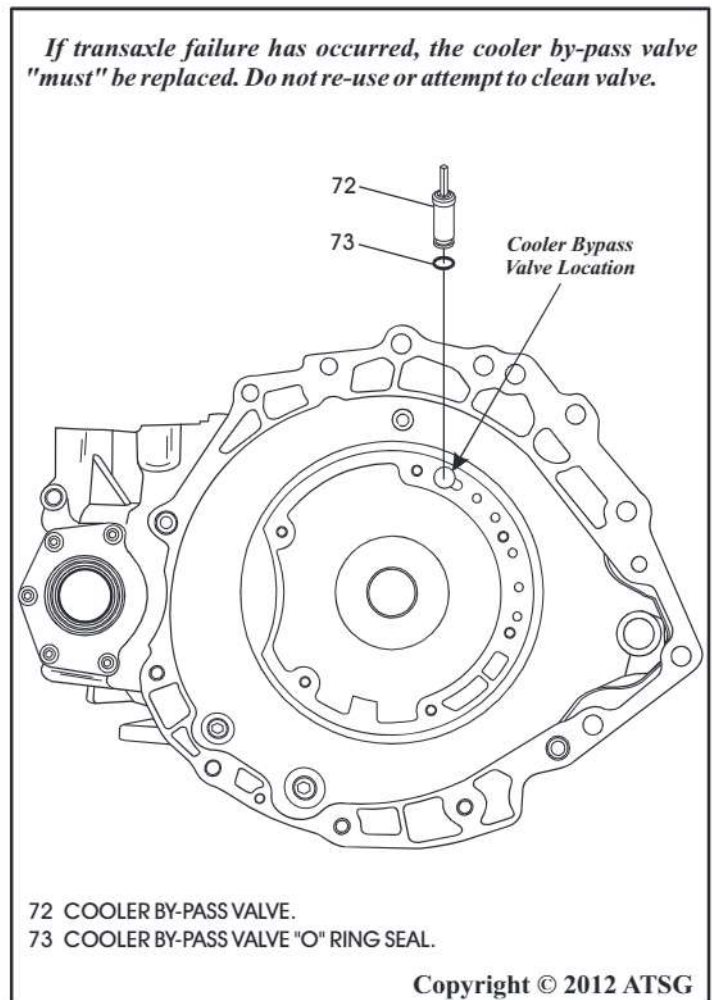


Figure 262

FINAL TRANSAXLE ASSEMBLY (CONT'D)

62. Ensure that number 1 thrust bearing is in place in the input housing (See Figure 263).
63. Install new oil pump to case gasket into the case, as shown in Figure 263.
64. Install the completed oil pump assembly into the case, as shown in Figure 263.
65. Install new brass sealing washers on each of the six oil pump to case bolts (See Figure 264).
66. Install the six oil pump to case bolts, as shown in Figure 264.

Continued on Page 135

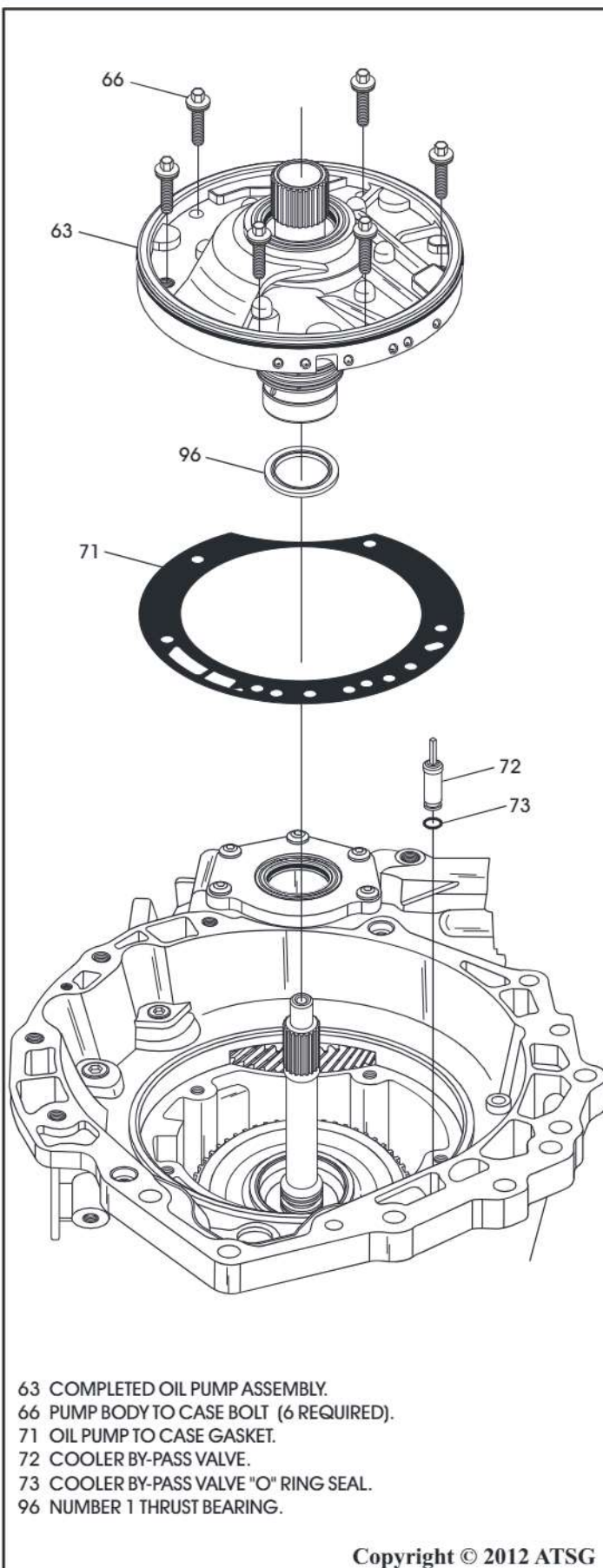


Figure 263

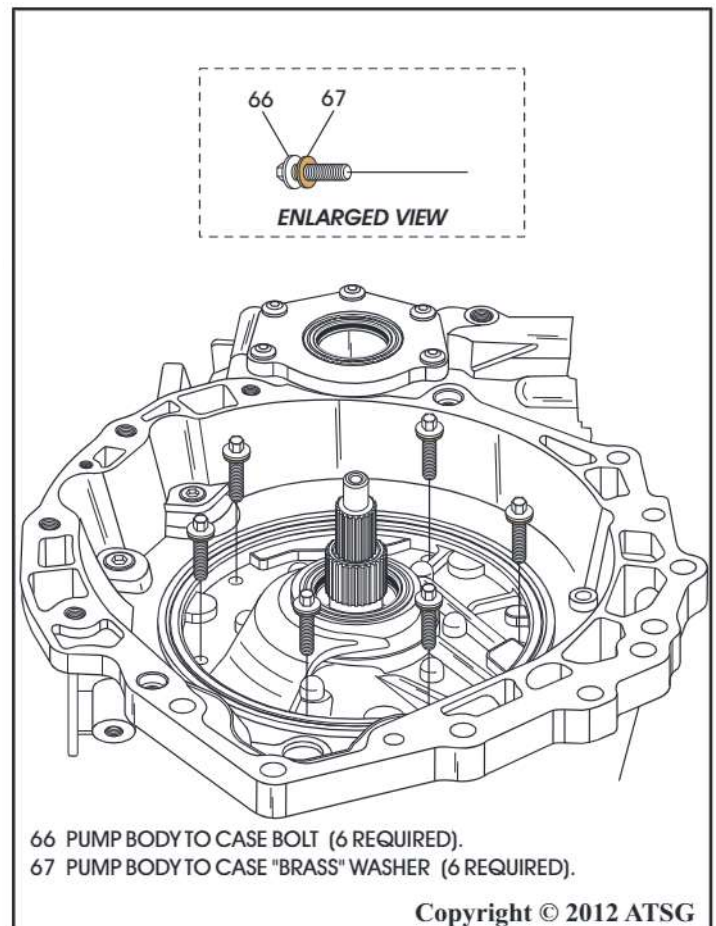


Figure 264

FINAL TRANSAXLE ASSEMBLY (CONT'D)

67. Torque all six of the oil pump to case bolts to 30 N·m (22 ft.lb.), as shown in Figure 265.
68. Install dial indicator on transaxle, as shown in Figure 266, to verify transaxle end-play which should be 0.13-0.64mm (.005"- .025").
69. Install a new manual shaft seal into case bore, as shown in Figure 267.

Continued on Page 136

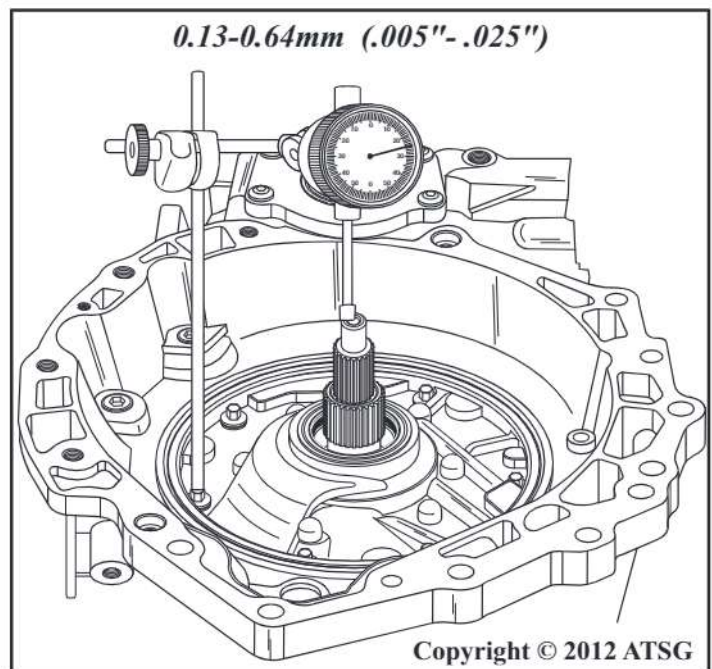


Figure 266

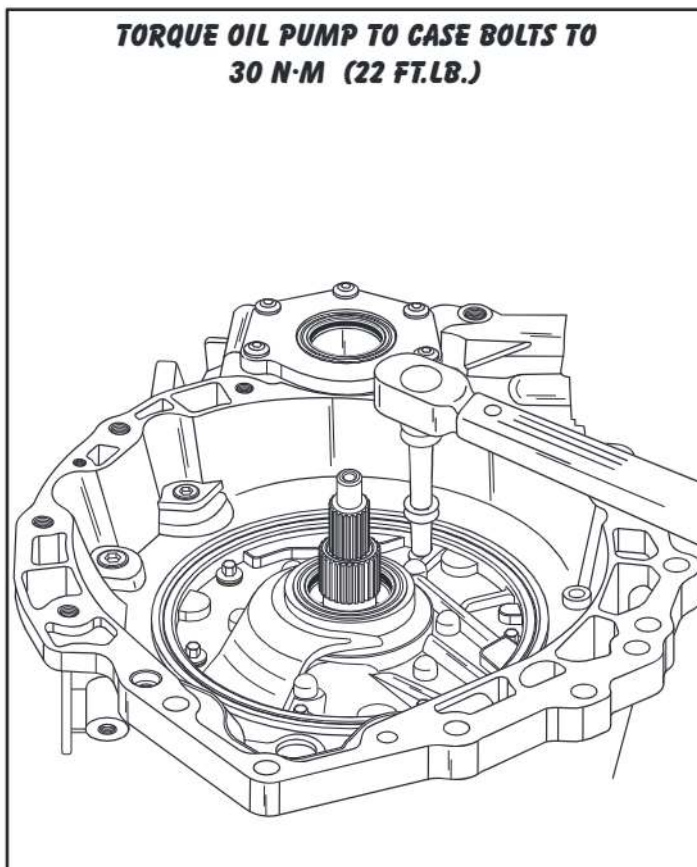


Figure 265

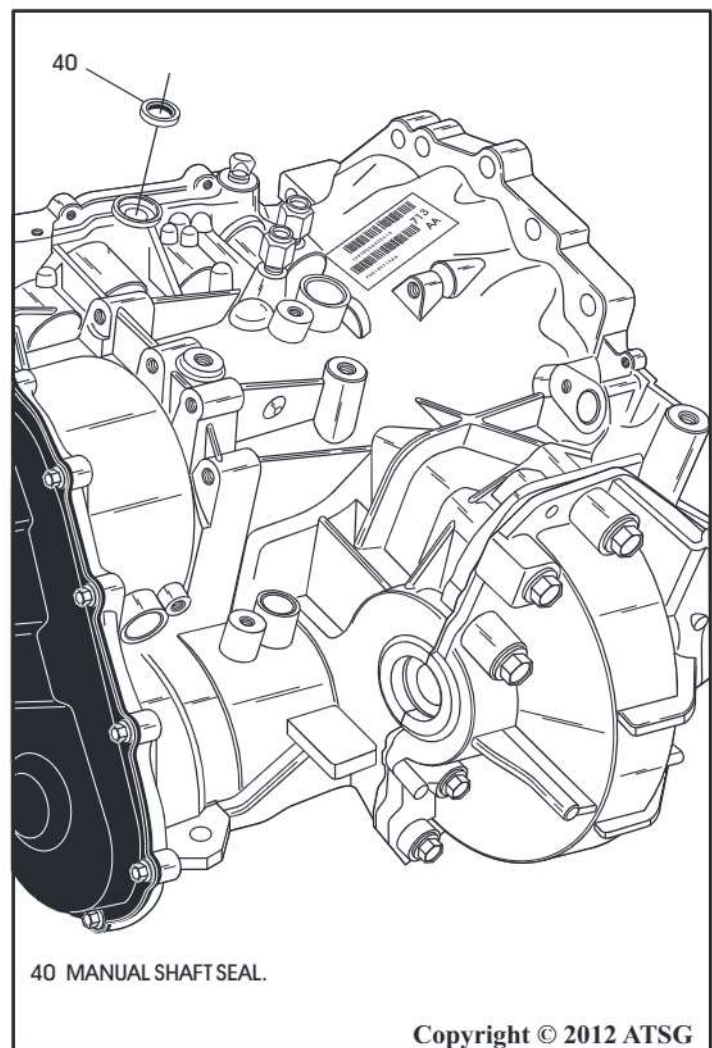


Figure 267

FINAL TRANSAXLE ASSEMBLY (CONT'D)

70. Lube manual shaft seal and install the manual shaft and lever assembly into the case bore, as shown in Figure 268, about half way.
71. Install the parking rod into inside detent lever, as shown in Figure 269.

72. Install the Transaxle Range Sensor/Switch into case, as shown in Figure 269, and then feed the manual shaft through the inside detent lever and into case bore behind it.

Continued on Page 137

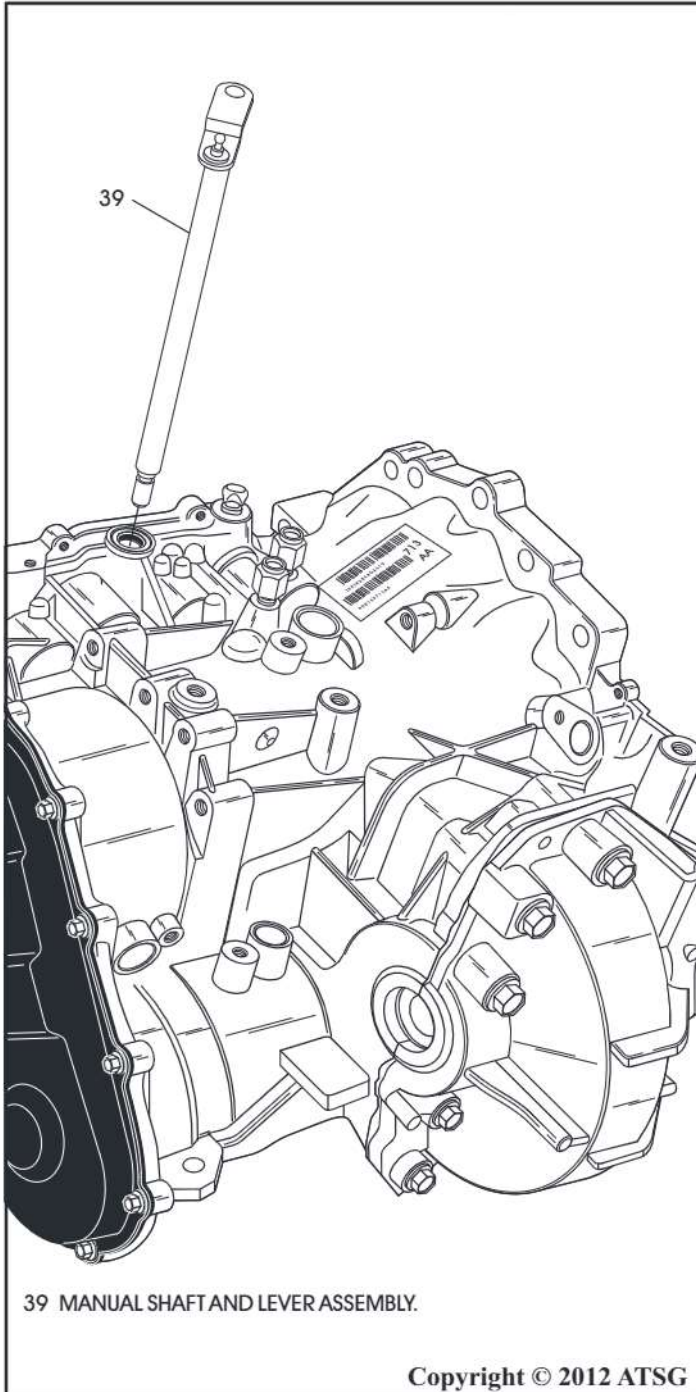


Figure 268

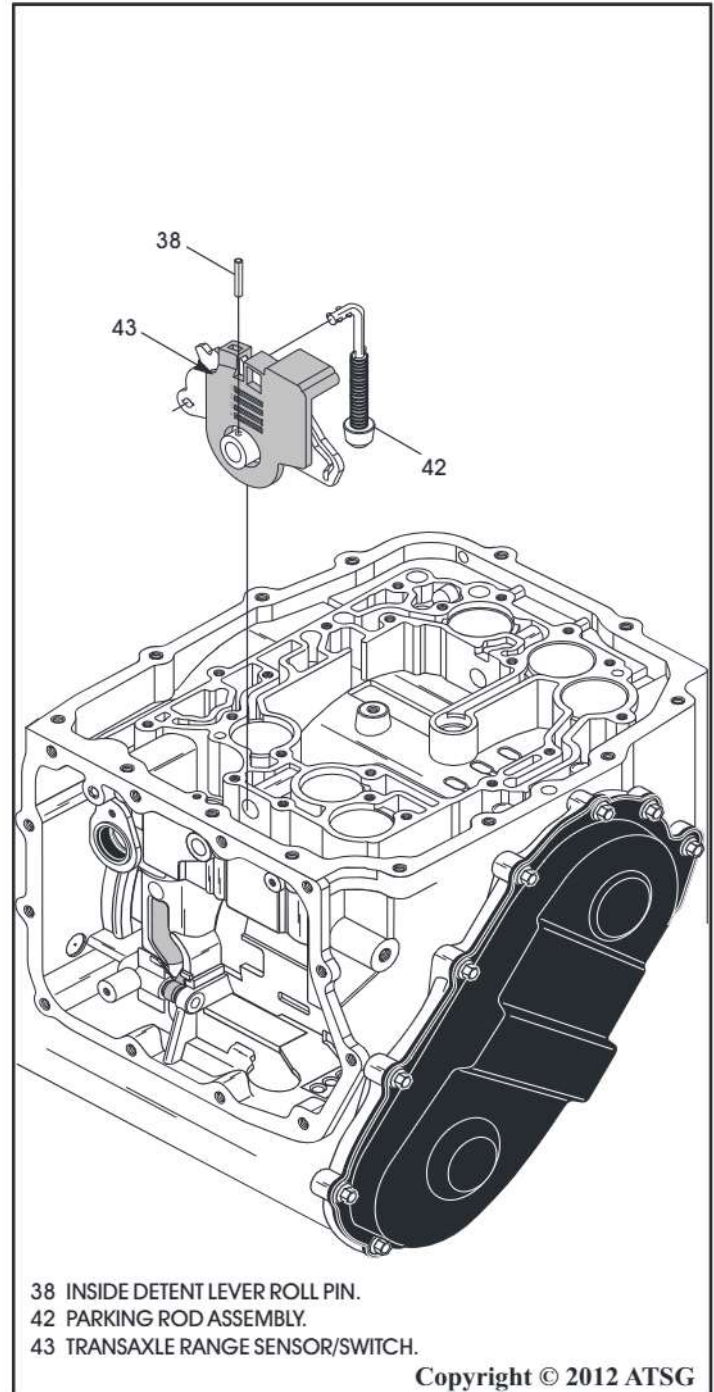


Figure 269

FINAL TRANSAXLE ASSEMBLY (CONT'D)

73. Align the hole on the inside detent lever with the hole on the manual shaft and lever assembly.
74. Install the manual shaft roll pin through inside detent lever and manual shaft using a pin punch, as shown in Figure 270.
75. Install the manual shaft anchor pin into the case, as shown in Figure 271, using a 3mm allen wrench, and tighten carefully.
Note: Torque spec is 1 N·m (10 in.lb.).
76. Install new accumulator piston seals on all six accumulator pistons, as shown in Figure 272.

Continued on Page 138

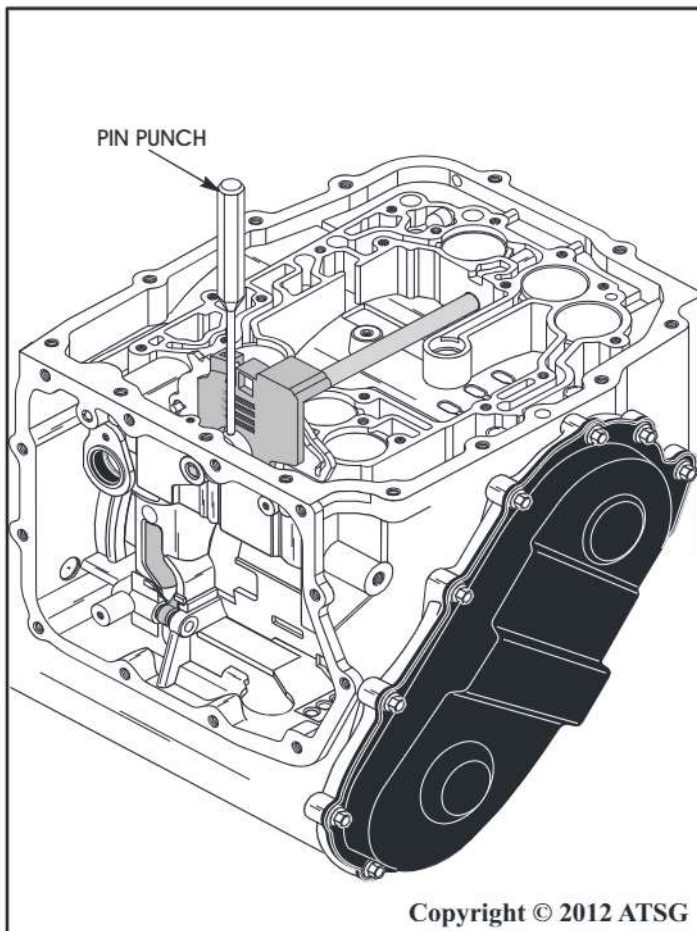


Figure 270

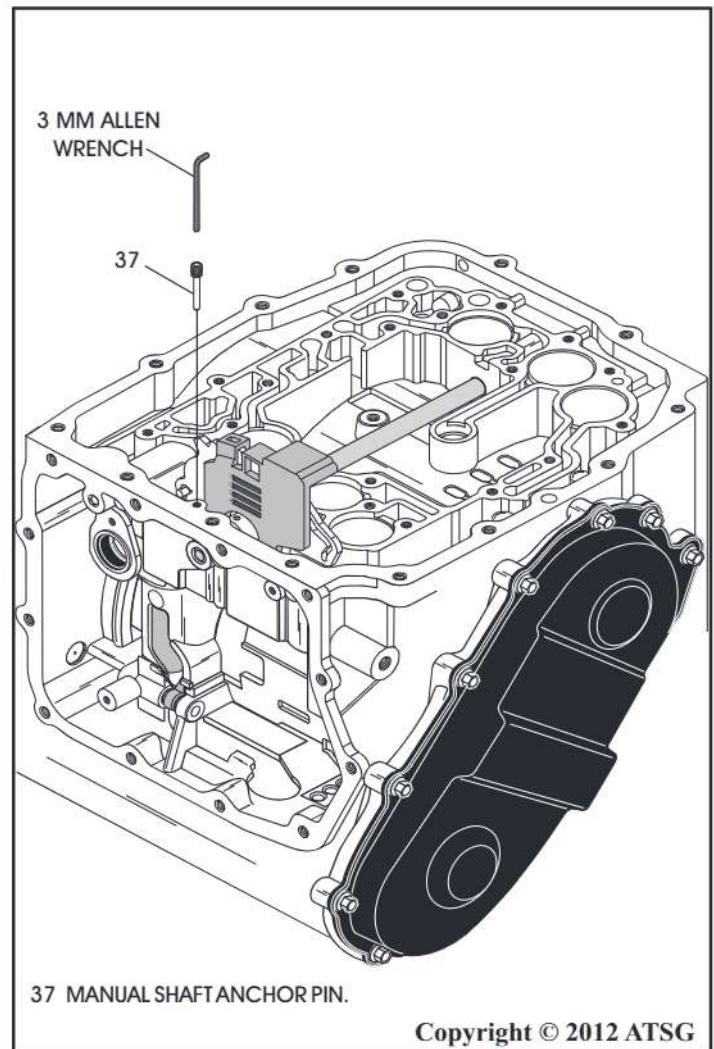


Figure 271

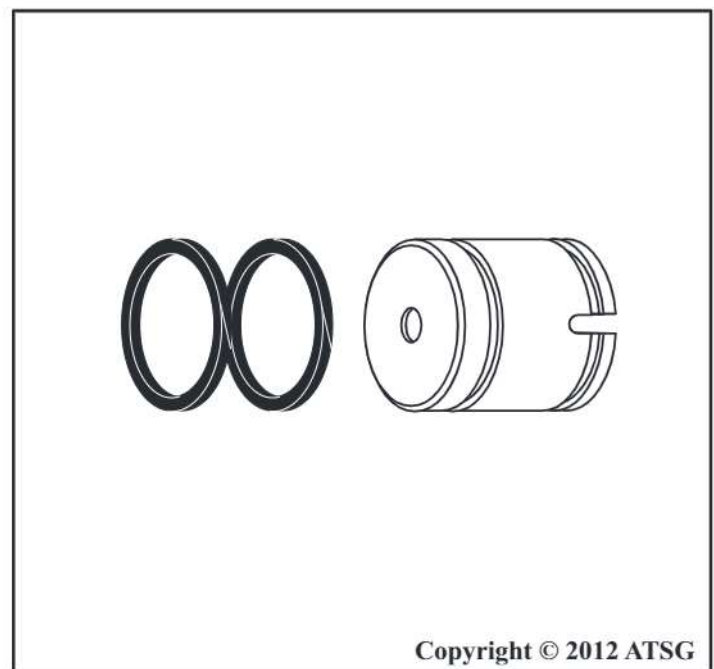


Figure 272

FINAL TRANSAXLE ASSEMBLY (CONT'D)

77. Install all 6 of the accumulator piston and spring assemblies in their respective bores, as shown in Figure 273.

Note: At time of this printing all accumulator pistons and springs are the same and will interchange. Notice also that all have inner and outer springs.

78. Install new 2-4 clutch feed tube to support seal, **exactly** as shown in Figure 274.

79. Lube and install new "O" ring seal on 2-4 clutch feed tube, as shown in Figure 274.

80. Install the 2-4 clutch feed tube assembly into the case bore, **exactly** as shown in Figure 274.

Continued on Page 139

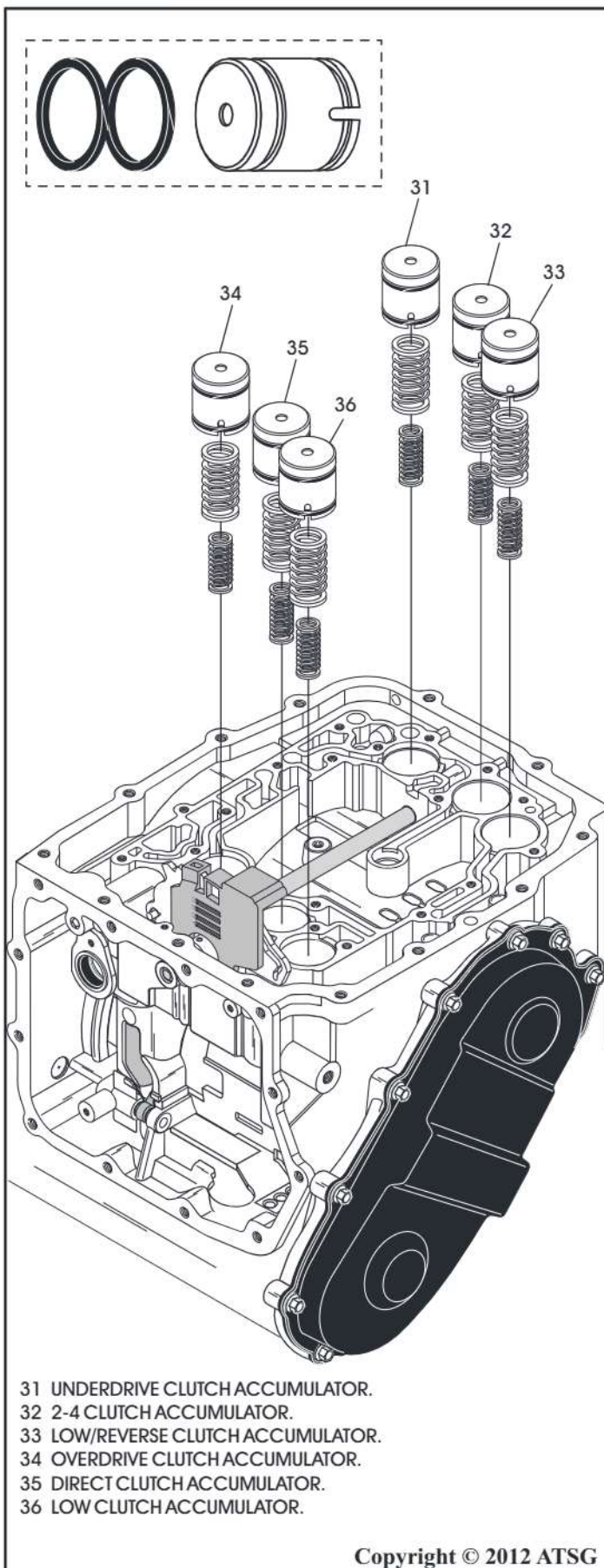


Figure 273

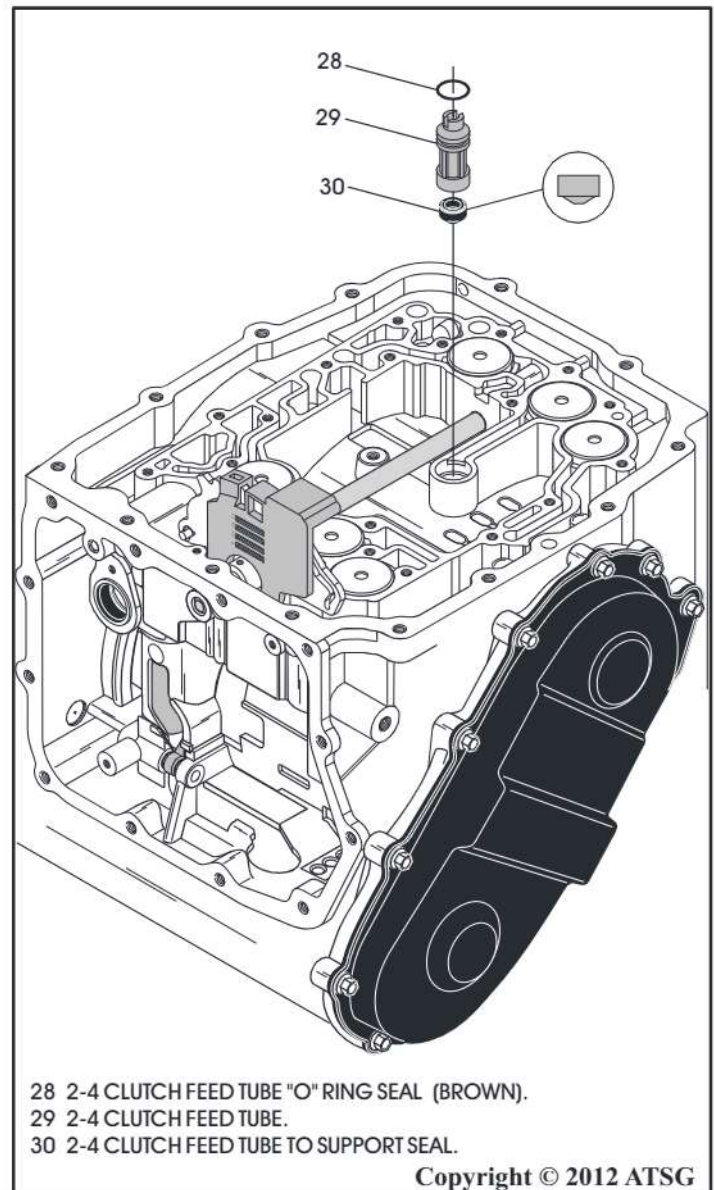


Figure 274

FINAL TRANSAXLE ASSEMBLY (CONT'D)

81. If the feed tube assembly has come apart during the cleaning process, which they sometimes do, refer to Figure 275 for proper assembly.

Note: Notice that one tube is shorter than the others and goes in the center position.

82. Install new "O" ring seals on the ends of all 3 feed tubes, as shown in Figure 275 and lube with small amount of Trans-Jel®.
83. Install the assembled oil feed tubes through the case passage and into the low clutch housing, as shown in Figure 276.

Continued on Page 140

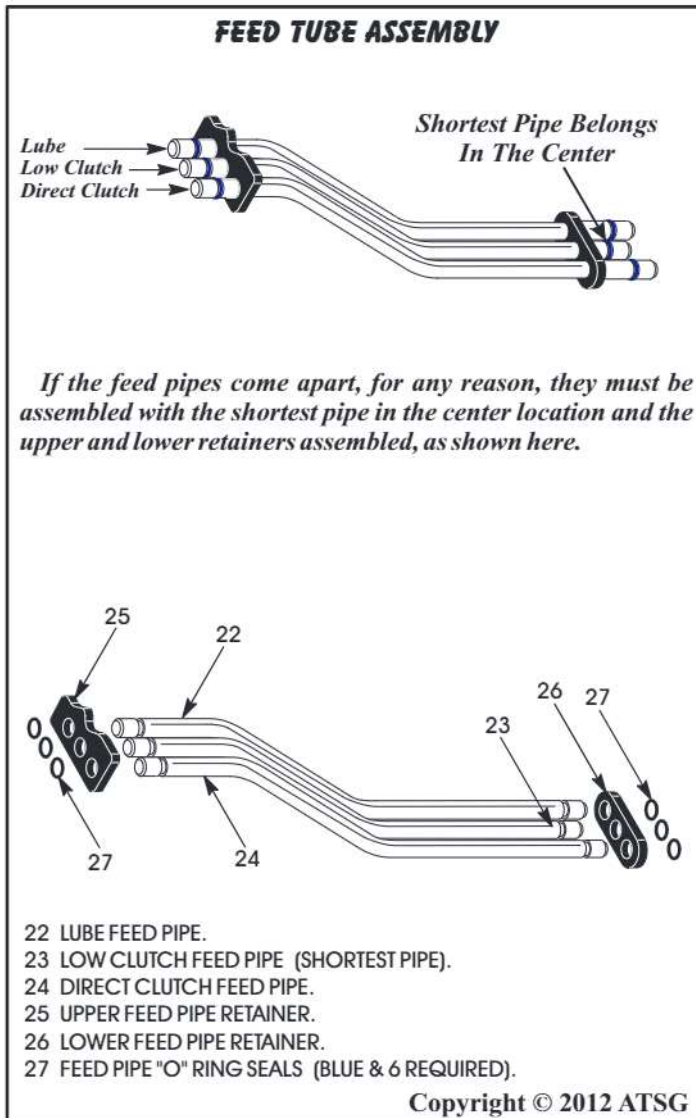


Figure 275

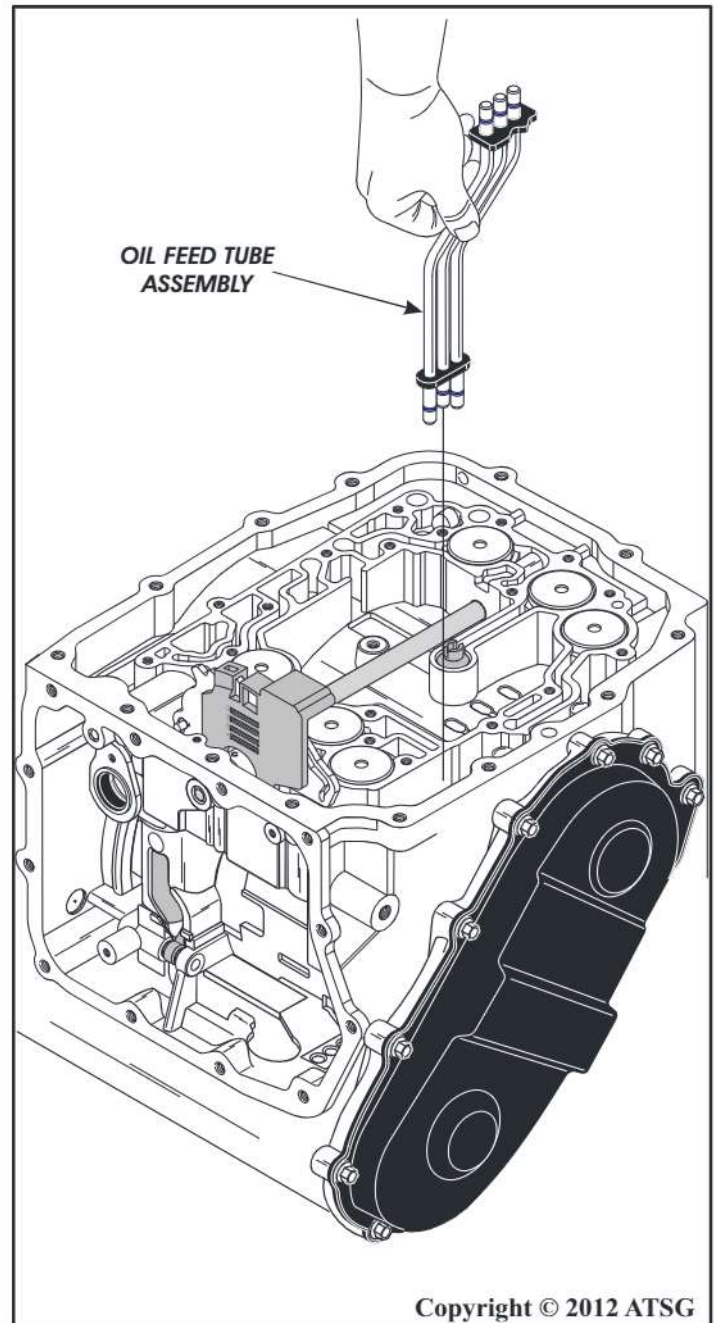


Figure 276

FINAL TRANSAXLE ASSEMBLY (CONT'D)

84. Ensure that oil feed tubes are fully seated into the low clutch housing, as shown in Figure 277.
85. Ensure that 2-4 oil feed tube is fully seated, as shown in Figure 277.

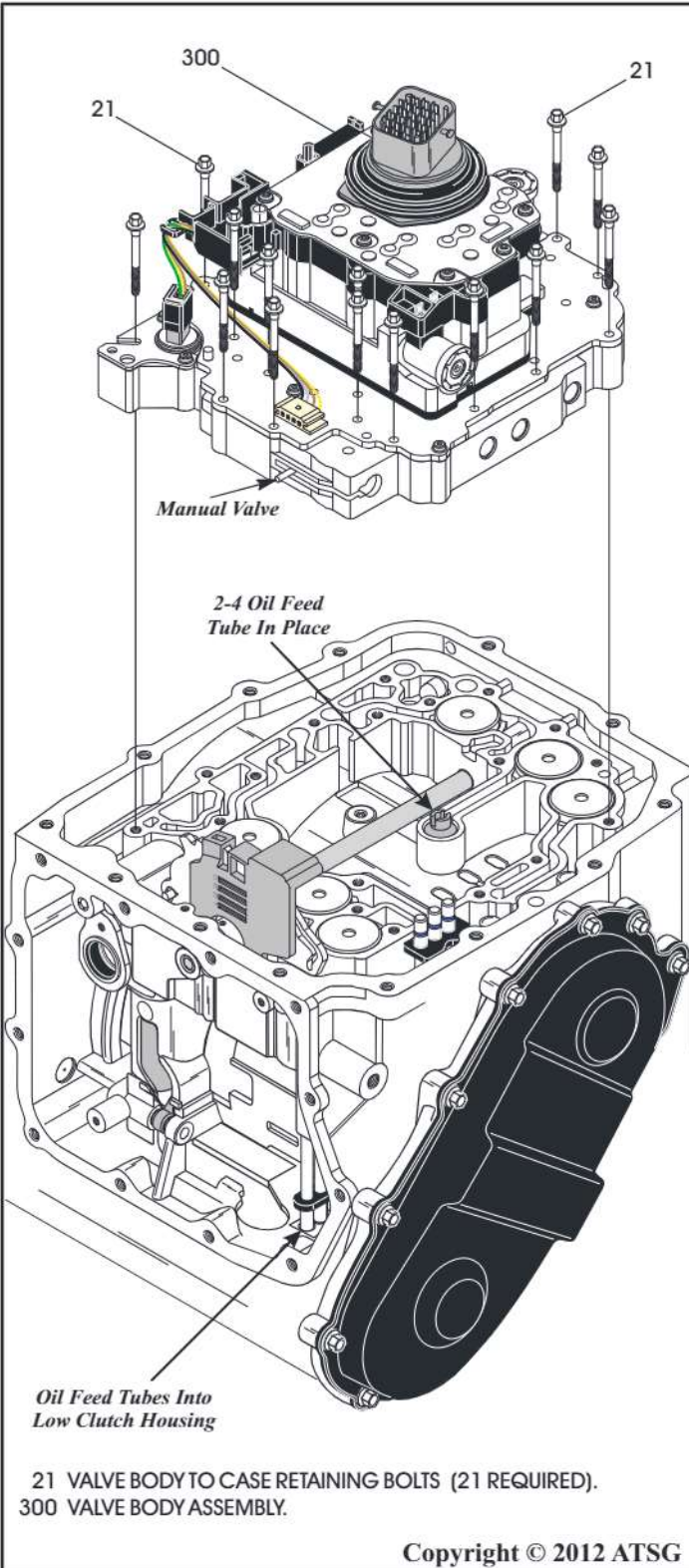


Figure 277

86. Install the completed valve body assembly, as shown in Figure 277, engaging the oil feed tubes into valve body and manual valve into the inside detent lever slot.
87. Install the 21 valve body to case retaining bolts, as shown in Figure 277, using a 7mm socket or a 9/32" socket.
Note: Valve body retaining bolt locations are shown in Figure 278.
88. Torque all valve body to case retaining bolts to 7 N·m (62 in.lb.), as shown in Figure 279.
89. Connect the wire harness to the transaxle range switch and ensure that line pressure sensor and EMCC (TCC) solenoid connectors are in place.

Continued on Page 141

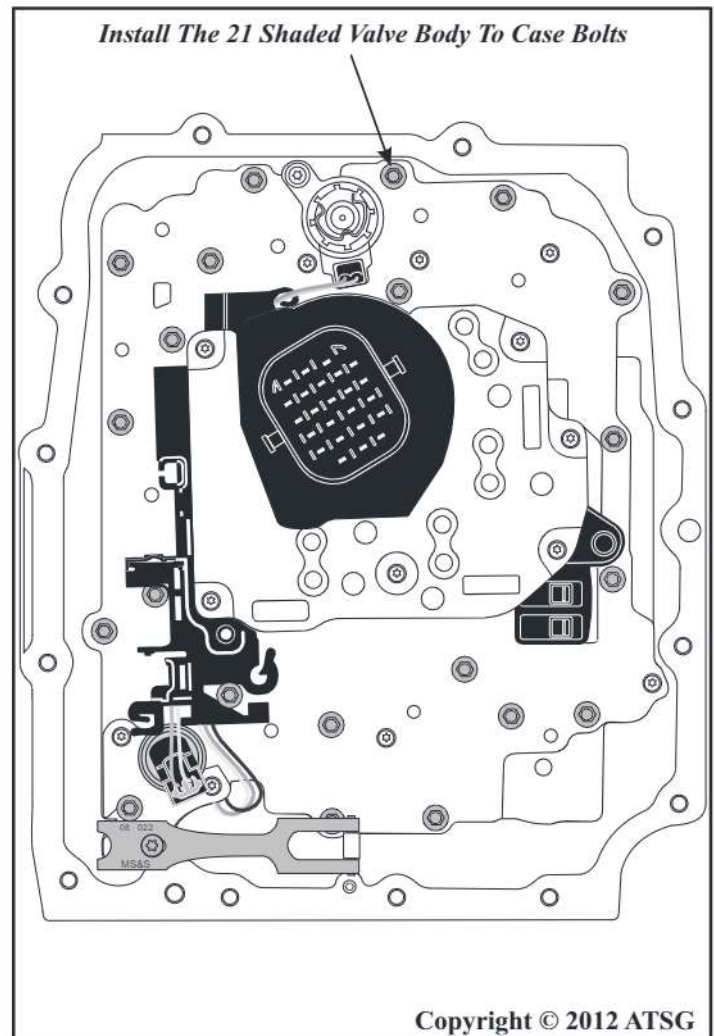
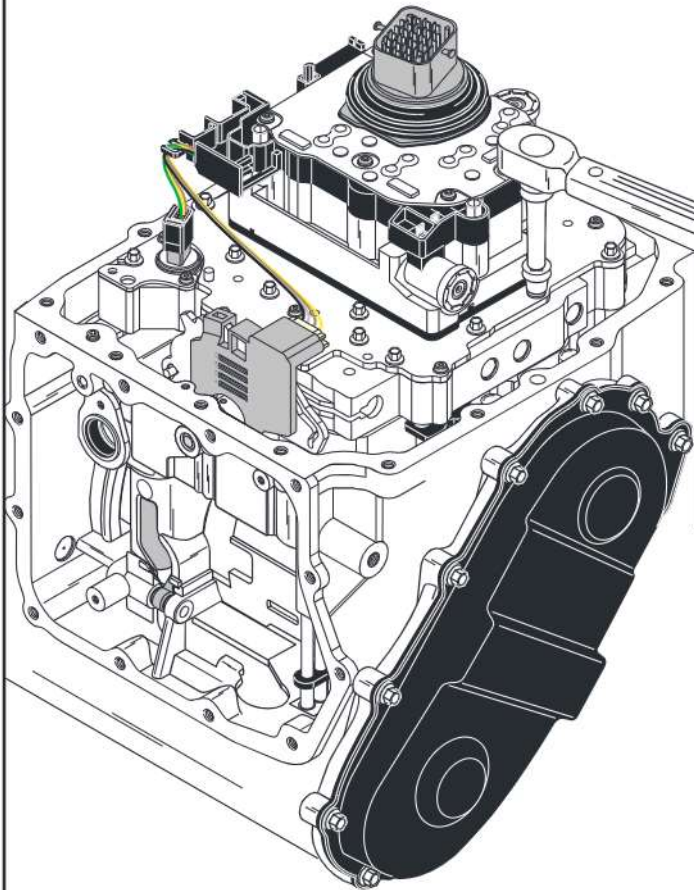


Figure 278

TORQUE VALVE BODY RETAINING BOLTS TO 7 N·M (62 IN.LB.)



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Figure 279

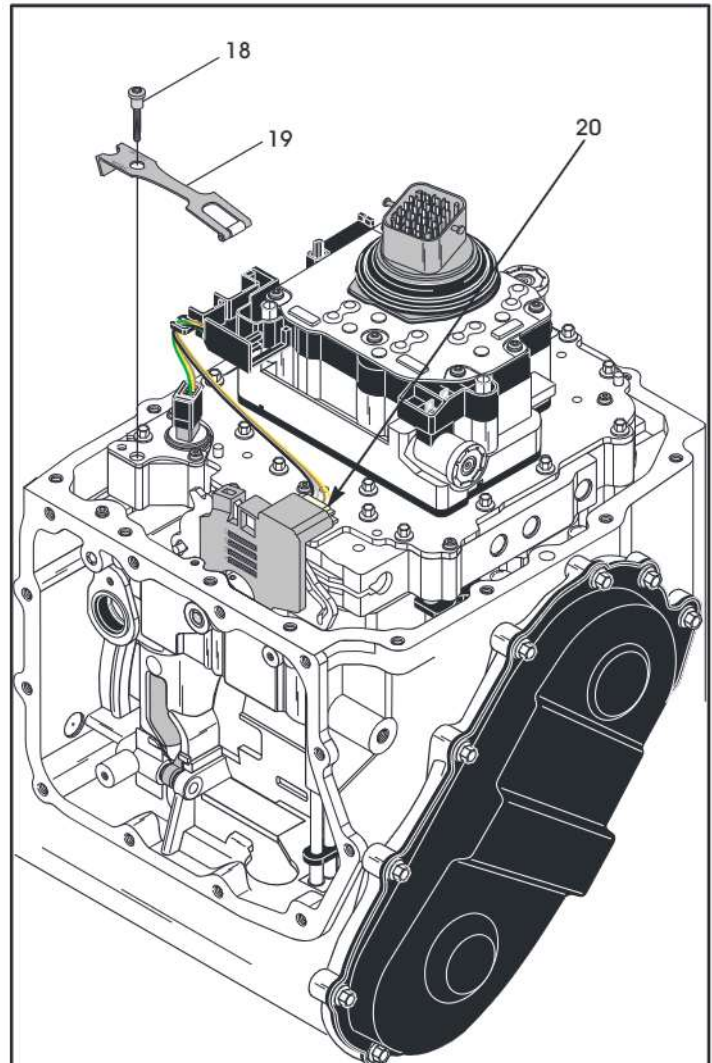
FINAL TRANSAXLE ASSEMBLY (CONT'D)

90. Install the detent spring and roller assembly, as shown in Figure 281, and ensure it is in proper position over transaxle range switch and on the inside detent lever.

Note: The detent spring and roller assembly is used to align Transaxle Range Switch with the inside detent lever (See Figure 280).

91. Install the "shouldered" bolt retaining the detent spring and roller assembly, as shown in Figure 281, using a T-25 Torx bit and torque to 7 N·m (62 in.lb.).

Continued on Page 142



- 18 DETENT SPRING AND ROLLER "SHOULDERED" RETAINING BOLT.
19 DETENT SPRING AND ROLLER ASSEMBLY.
20 TRANSAXLE RANGE SENSOR ASSEMBLY.

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Figure 281

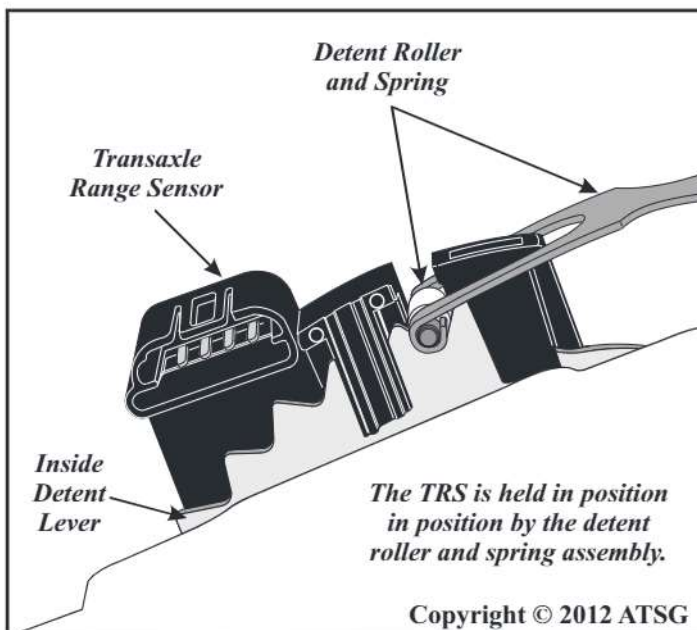


Figure 280

FINAL TRANSAXLE ASSEMBLY (CONT'D)

92. Install a bead of Mopar® RTV, or equivalent, on valve body side cover, as shown in Figure 282.

Note: Install RTV 360 degrees around the L/R passage and line pressure tap to ensure good seal in these areas.

93. Install the valve body side cover to the case, as shown in Figure 283.

Note: This would be a good time to ensure all electrical connectors have been fastened and the manual valve is in place in the inside detent lever.

94. Install the 13 valve body side cover retaining bolts, as shown in Figure 283, using an 8mm socket on the regular style bolts and 10mm on the stud style bolts.

Note: Ensure the stud style bolts are back in the proper locations as these are what retain the sound cover (See Figure 284).

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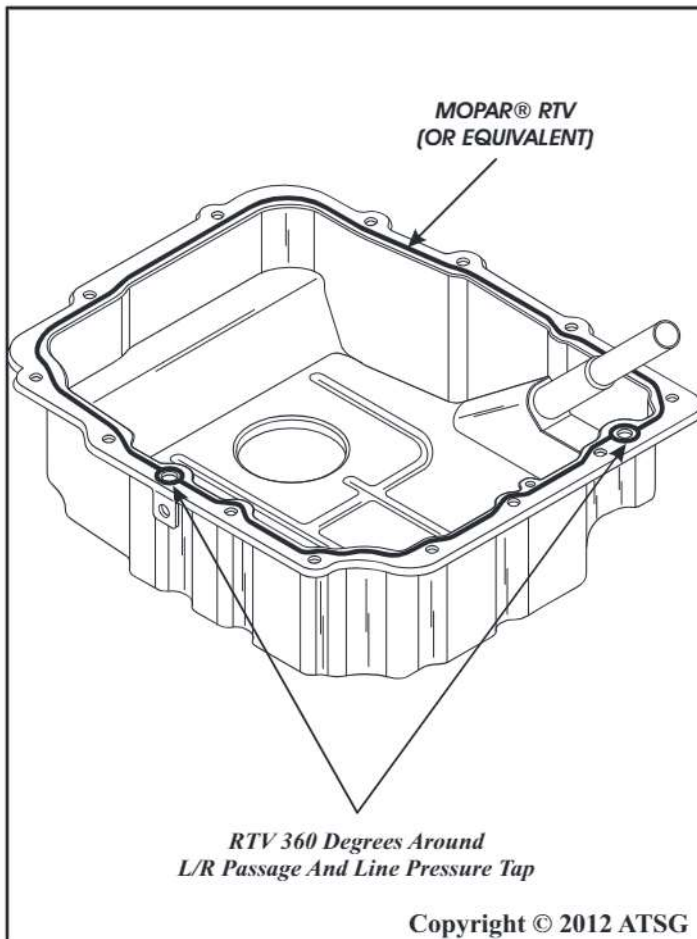


Figure 282

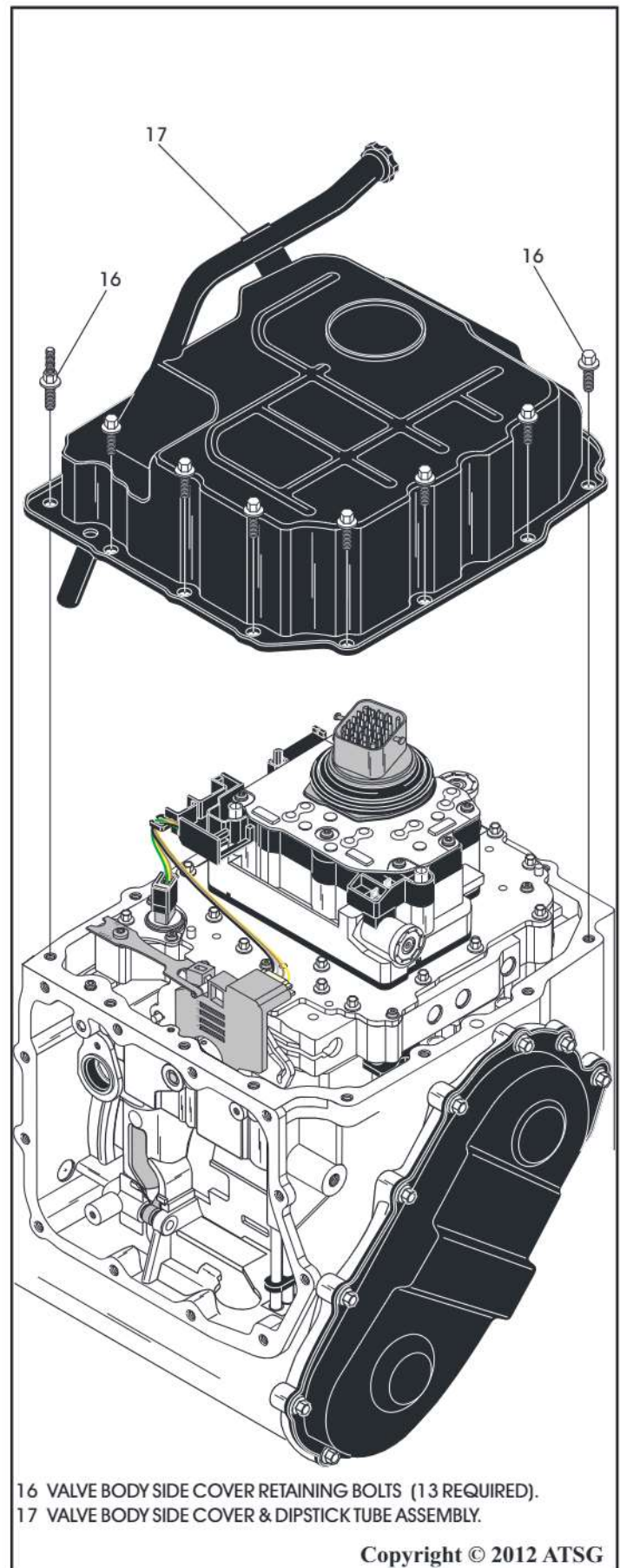


Figure 283

FINAL TRANSAXLE ASSEMBLY (CONT'D)

95. Torque the valve body side cover bolts to 12 N·m (105 in.lb.) (See Figure 285).
96. Install a new main filter seal into the case bore, as shown in Figure 286, using the proper driver.
97. Install the dipstick stop into the case, as shown Figure 286.
98. Install the dipstick stop retaining bolt and torque to 6 N·m (53 in.lb.).

Continued on Page 144

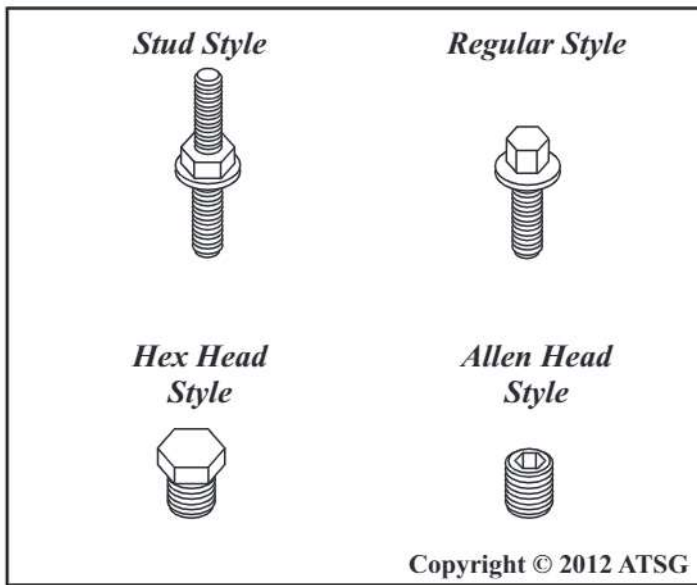


Figure 284

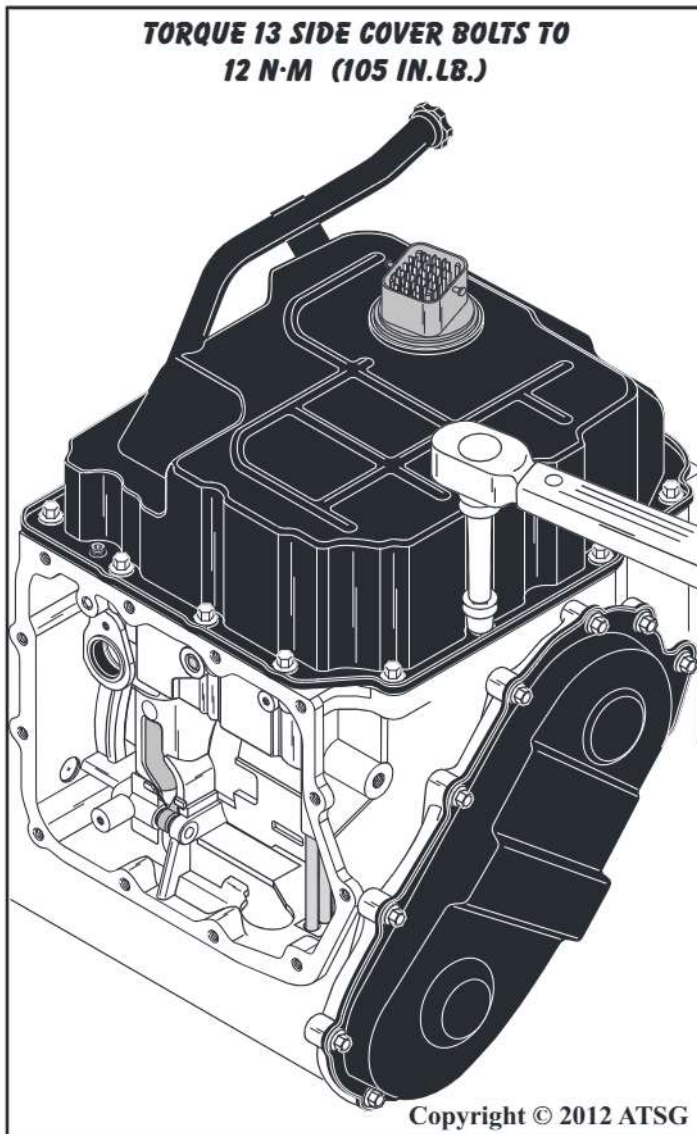


Figure 285

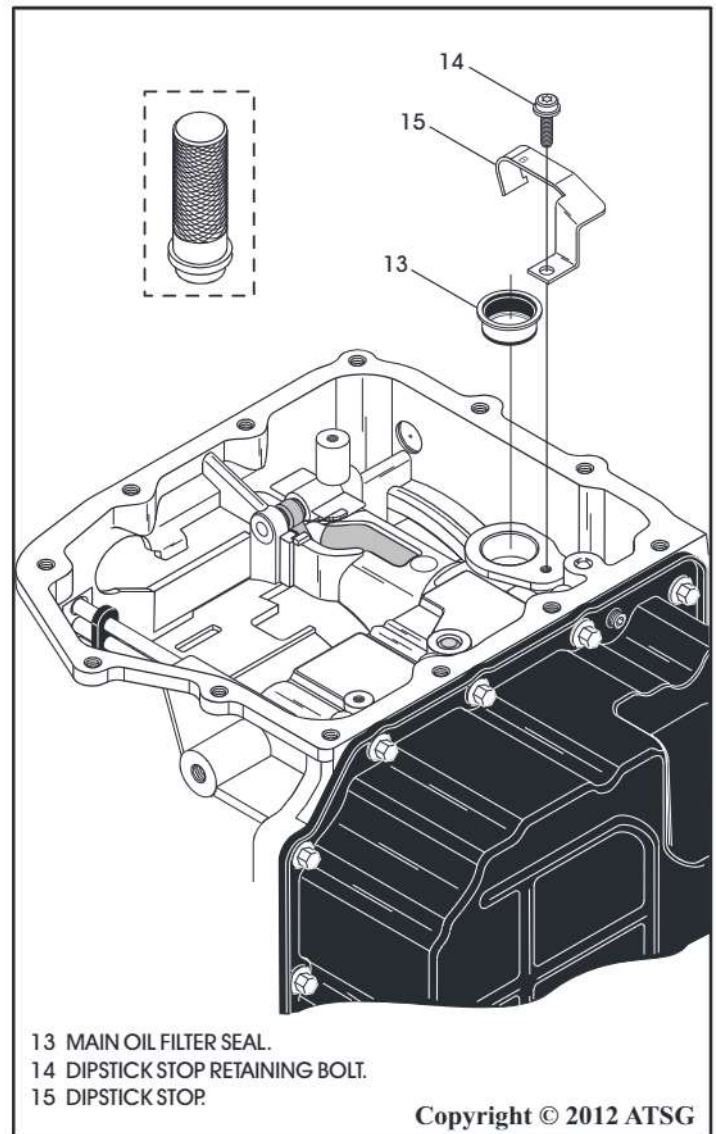


Figure 286

FINAL TRANSAXLE ASSEMBLY (CONT'D)

99. Lubricate new filter neck with a small amount of Trans-Jel® and install the main oil filter into case, as shown in Figure 287.
100. Install both main oil filter retaining bolts, as shown in Figure 287, and torque filter bolts to 5 N·m (45 in.lb.), using a T-25 Torx bit as shown in Figure 288.
101. Ensure bottom pan magnet is in proper position in the pan and install bead of Mopar® RTV, or equivalent, as shown in Figure 289.

Continued on Page 145

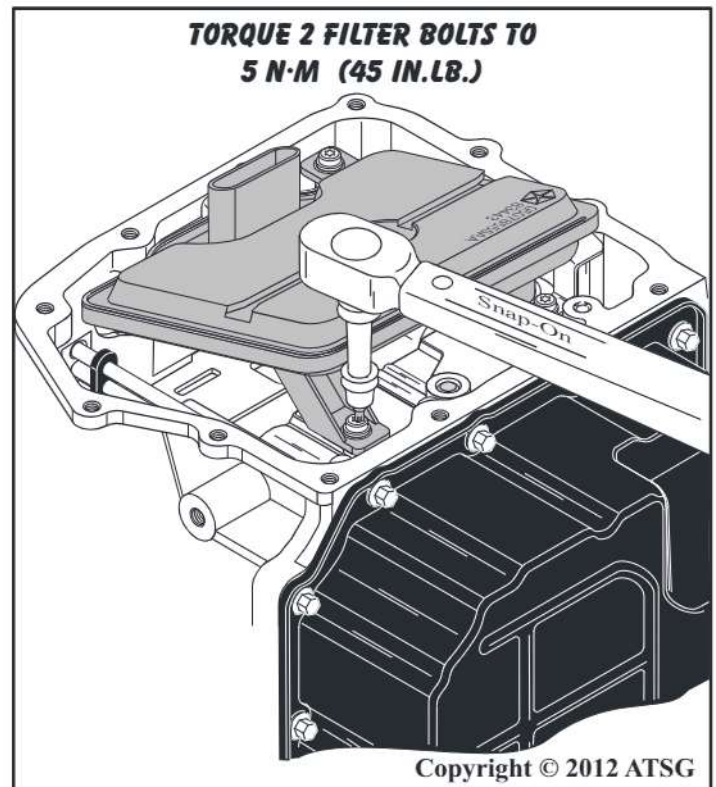


Figure 288

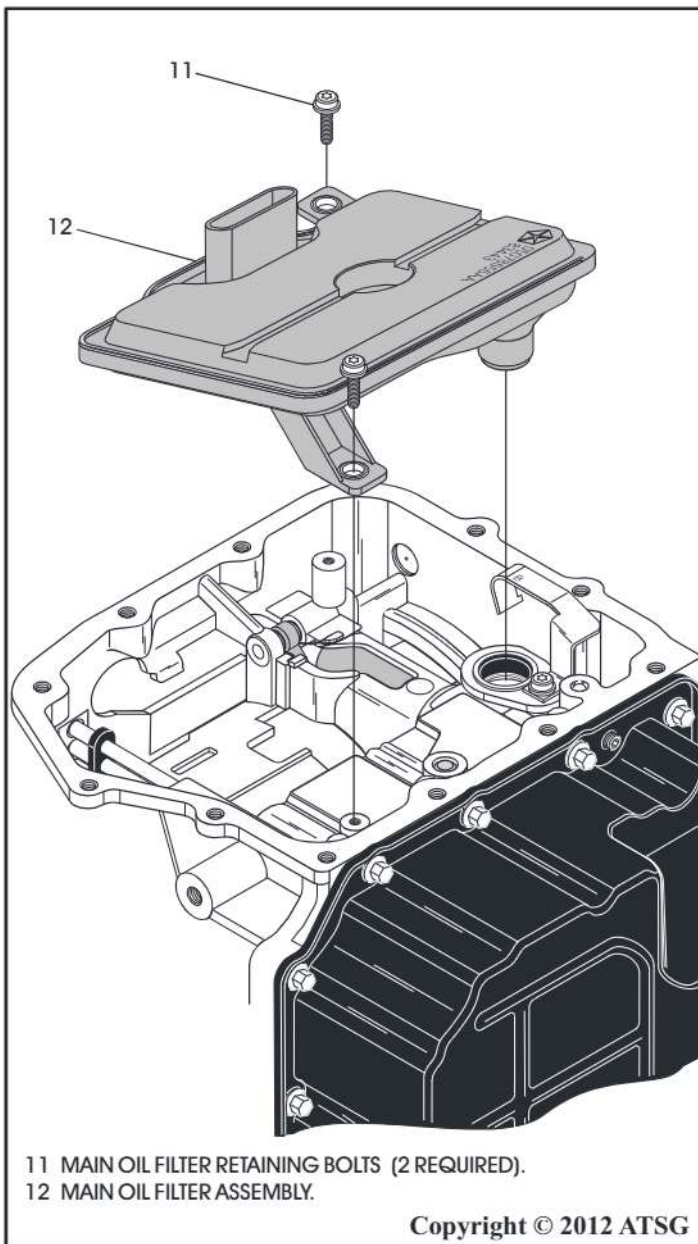


Figure 287

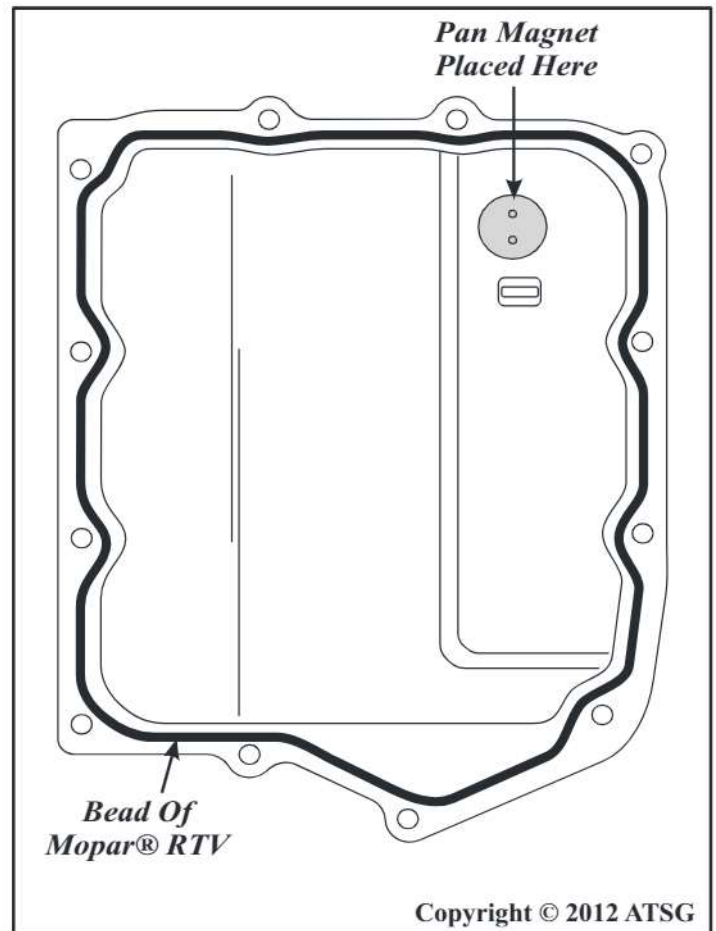


Figure 289

FINAL TRANSAXLE ASSEMBLY (CONT'D)

102. Install the bottom oil pan onto the transaxle, as shown in Figure 290, and install the 12 bottom oil pan retaining bolts.
103. Torque the 12 bottom oil pan retaining bolts to 12 N·m (105 in.lb.) (See Figure 291).

Continued on Page 146

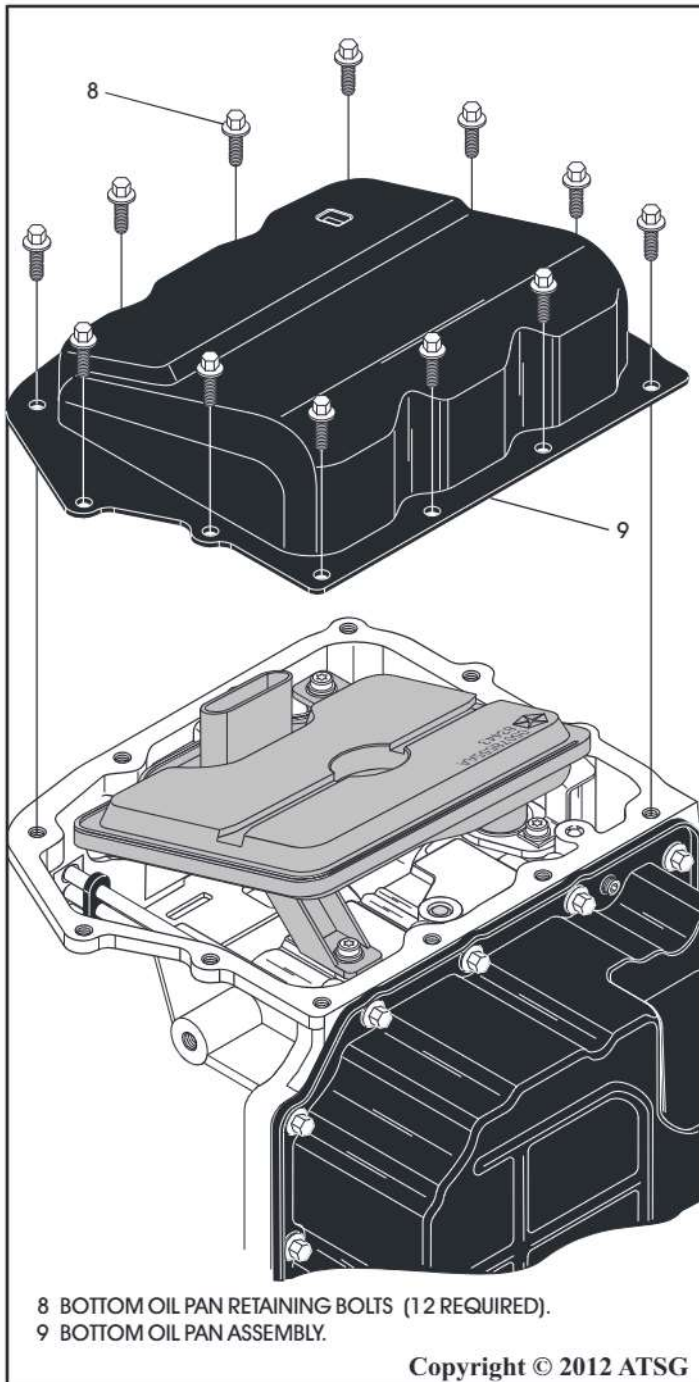


Figure 290

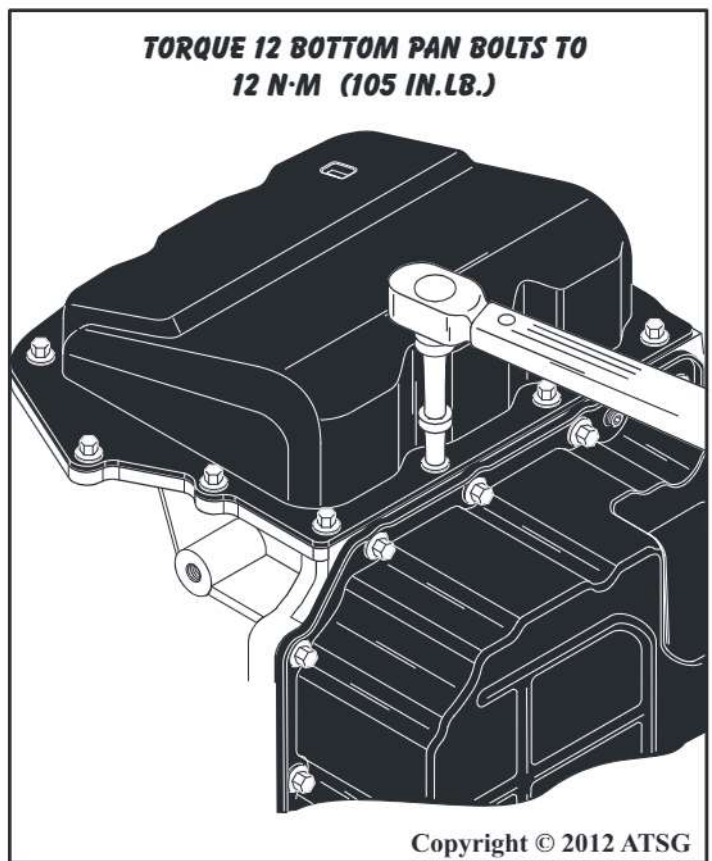


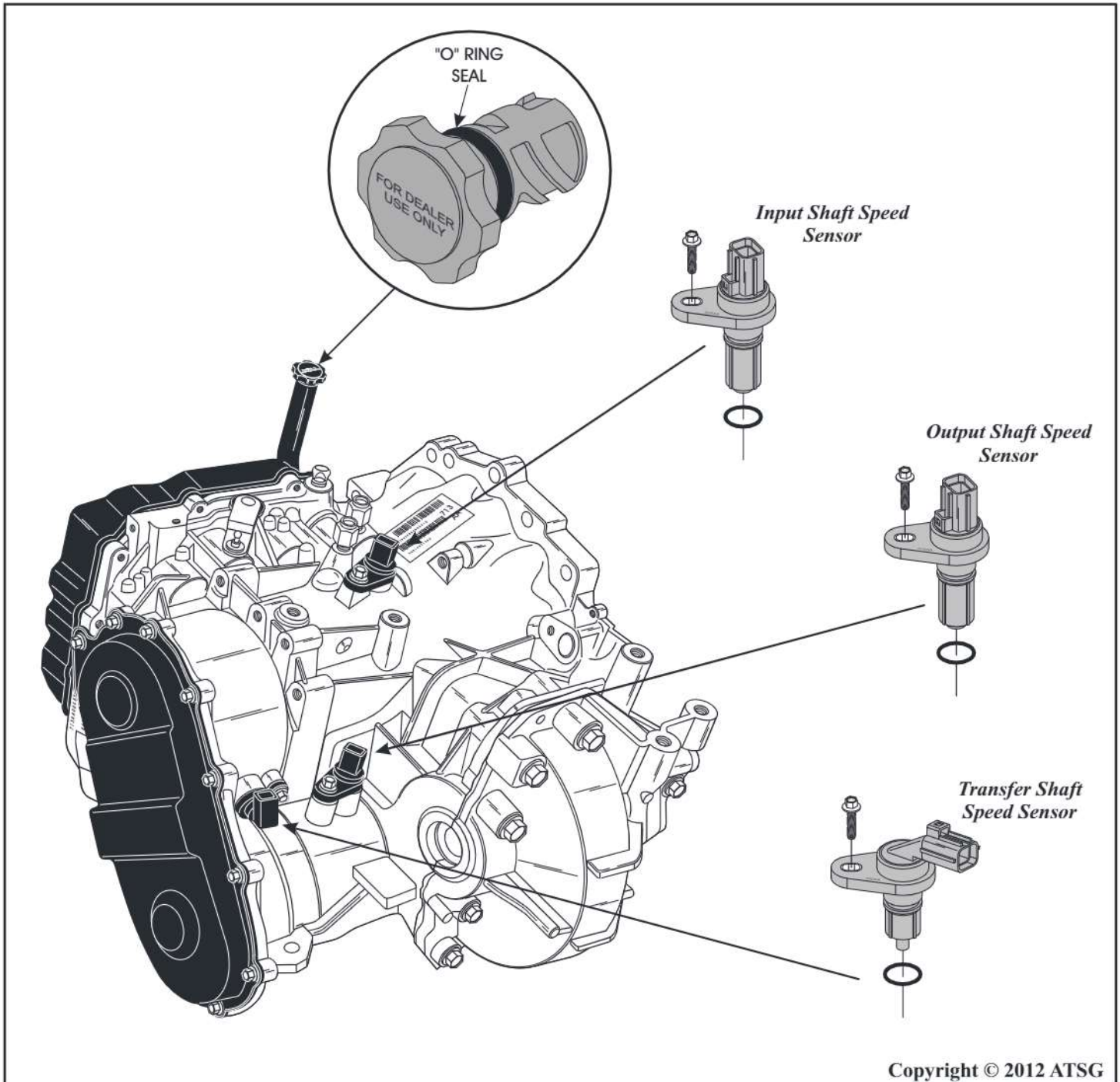
Figure 291

FINAL TRANSAXLE ASSEMBLY (CONT'D)

104. Install new "O" ring seal on each of the speed sensors, as shown in Figure 292.
105. Install each of the speed sensors into their respective bores, as shown in Figure 292.
106. Install each of the speed sensor retaining bolts and torque all to 12 N·m (105 in.lb.).

107. Install new "O" ring on the dipstick tube cap as shown in Figure 292 and install cap into the dipstick tube.

Continued on Page 147



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Figure 292

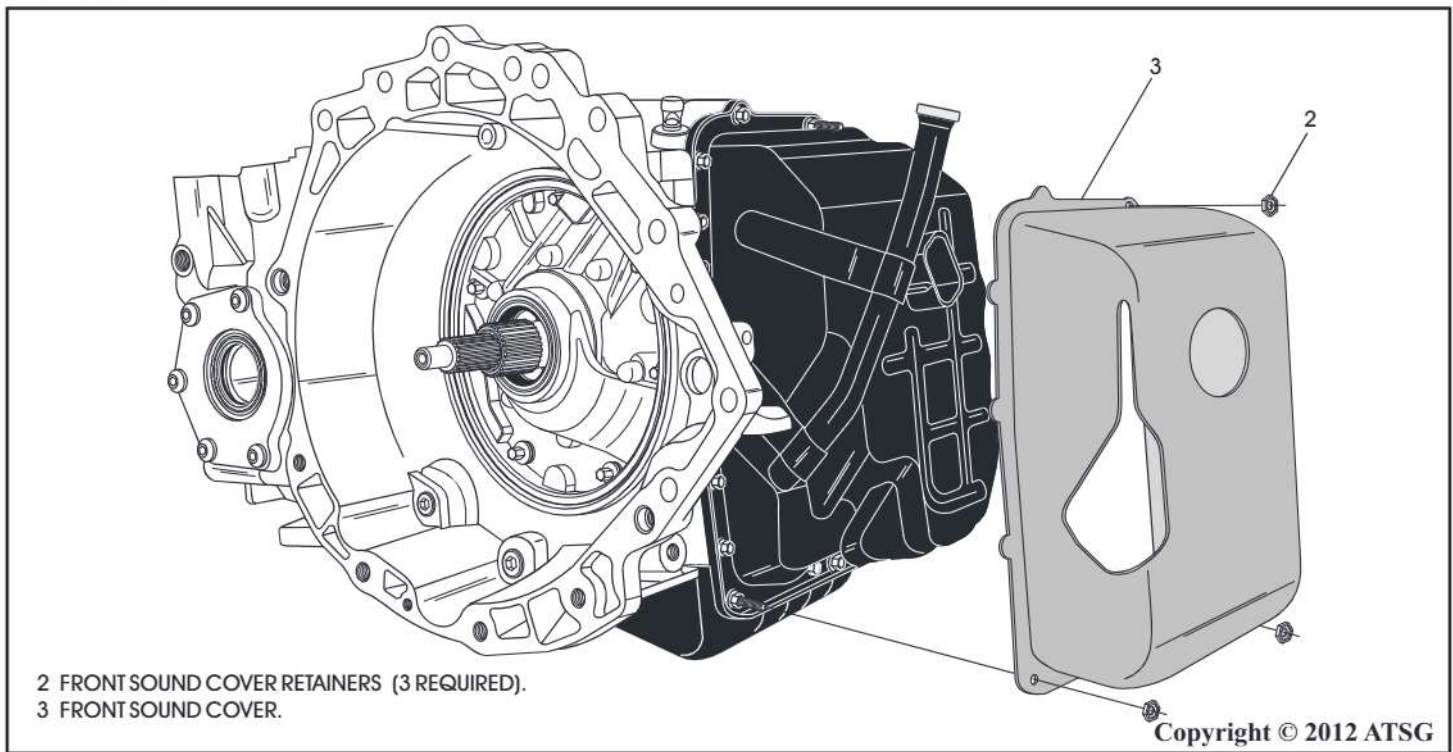


Figure 293

FINAL TRANSAXLE ASSEMBLY (CONT'D)

108. Install the front sound cover over the dipstick tube and onto the 3 stud type retaining bolts, as shown in Figure 293.

109. Install the front sound cover retainers over the stud type bolts.

**CONGRATULATIONS
YOU ARE FINISHED!**

**NOTE: PRIME CONVERTER TO SOAK CLUTCH
PRIOR TO INSTALLATION.**

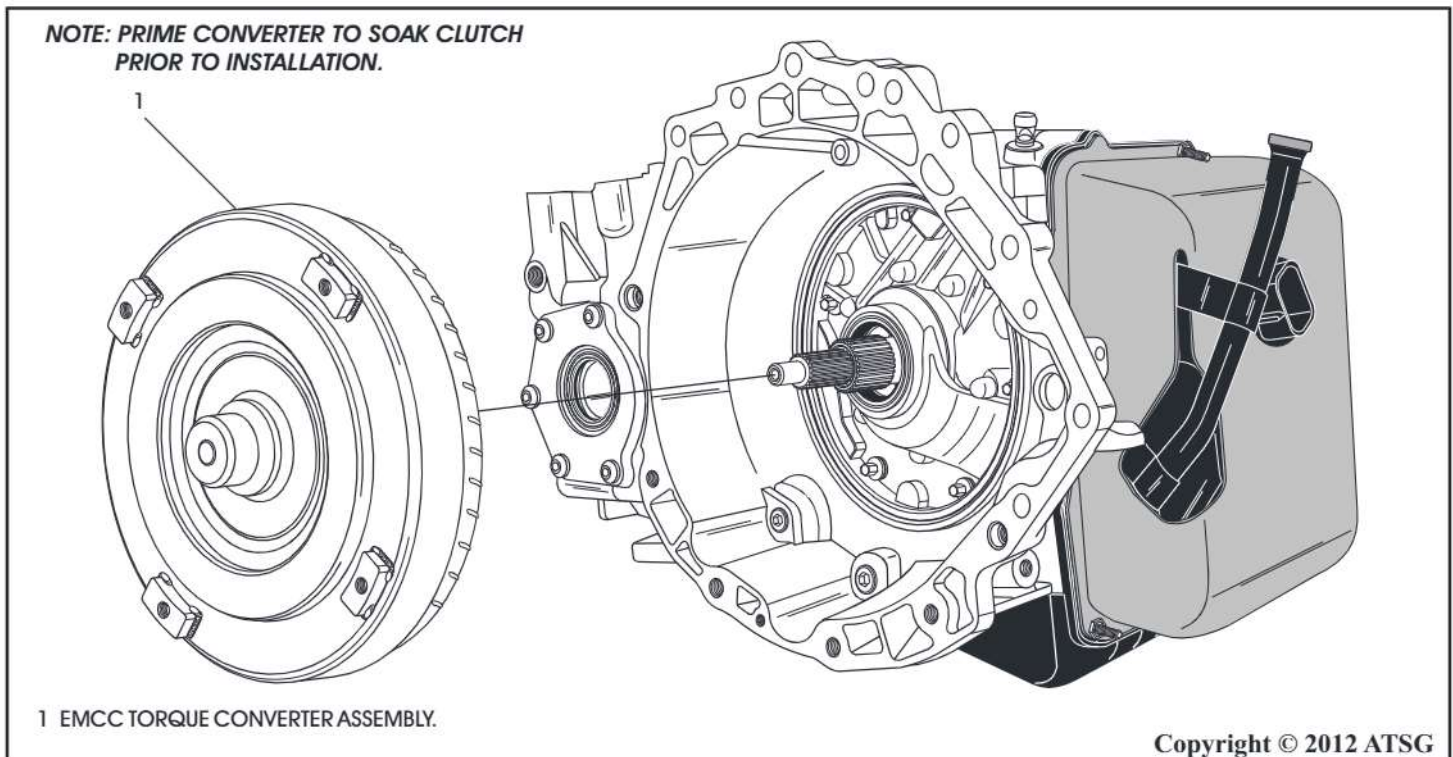
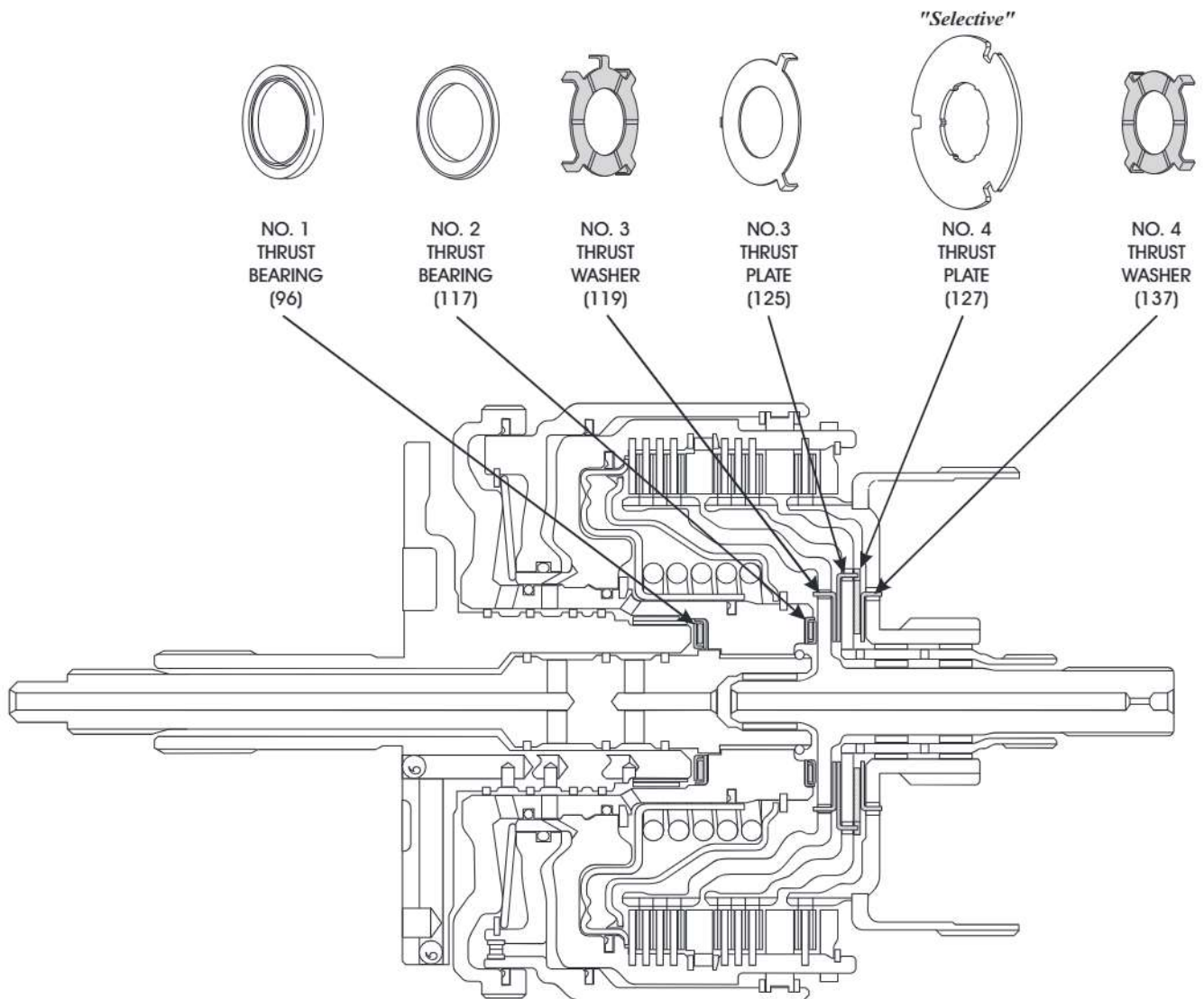


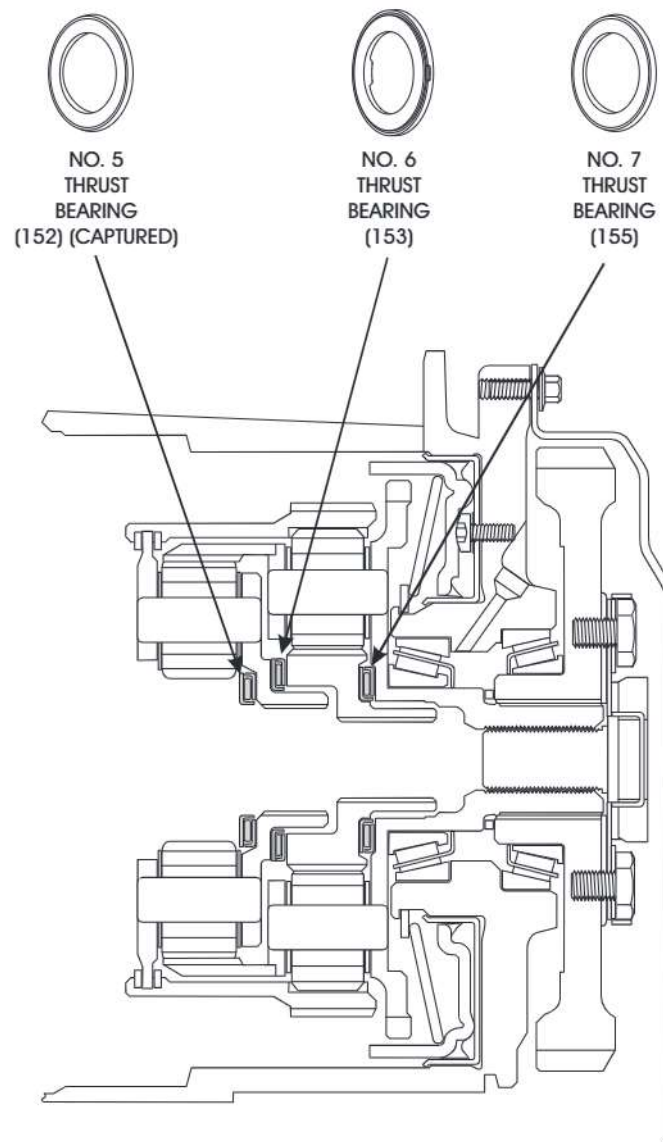
Figure 294

62TE TRANSAXLE THRUST BEARING, THRUST PLATE AND THRUST WASHER IDENTIFICATION AND LOCATION



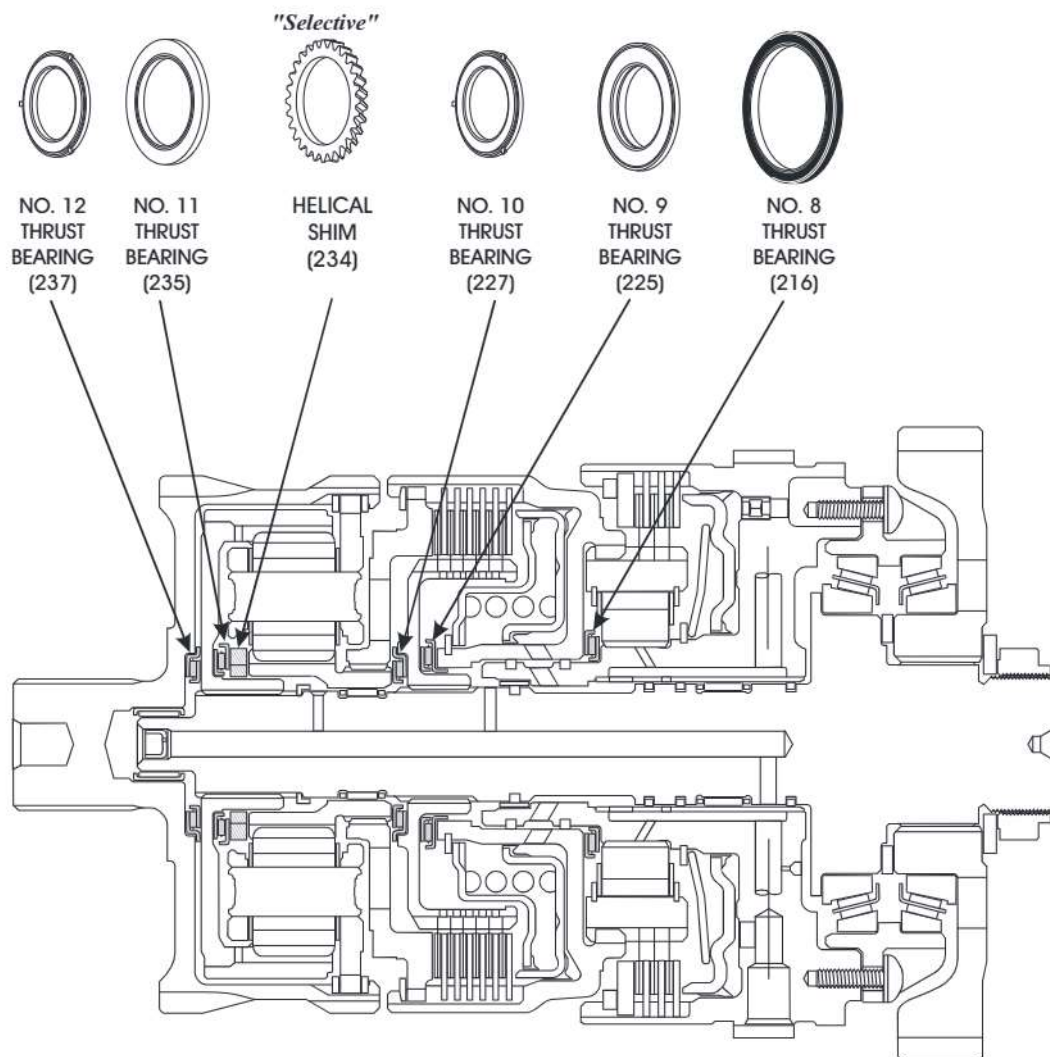
NO. 1 THRUST BEARING, STATOR SUPPORT TO INPUT CLUTCH HUB.
 NO. 2 THRUST BEARING, INPUT CLUTCH HUB TO UNDERDRIVE CLUTCH HUB AND SHAFT.
 NO. 3 THRUST WASHER, UNDERDRIVE CLUTCH HUB AND SHAFT TO NO. 3 THRUST PLATE
 NO. 3 THRUST PLATE, NO. 3 THRUST WASHER TO OVERDRIVE CLUTCH HUB AND SHAFT.
 NO. 4 THRUST PLATE, OVERDRIVE CLUTCH HUB AND SHAFT TO NO. 4 THRUST WASHER (SELECTIVE FOR TRANSAXLE END-PLAY).
 NO. 4 THRUST WASHER, NO. 4 THRUST PLATE TO REVERSE CLUTCH HUB.

62TE TRANSAXLE THRUST BEARING, THRUST PLATE AND THRUST WASHER IDENTIFICATION AND LOCATION



NO. 5 THRUST BEARING, CAPTURED BEARING IN FRONT PLANETARY CARRIER.
 NO. 6 THRUST BEARING, FRONT PLANETARY CARRIER TO REAR SUN GEAR.
 NO. 7 THRUST BEARING, REAR SUN GEAR TO REAR PLANETARY CARRIER.

62TE COMPOUNDER SECTION THRUST BEARING IDENTIFICATION AND LOCATION



NO. 8 THRUST BEARING, LOW SPRAG INNER RACE TO DIRECT CLUTCH HOUSING.
 NO. 9 THRUST BEARING, DIRECT CLUTCH HOUSING TO DIRECT CLUTCH HUB.
 NO. 10 THRUST BEARING, DIRECT CLUTCH HUB TO DIRECT CLUTCH BACKING PLATE.
 SELECTIVE HELICAL-CUT SHIM, OUTPUT SUN GEAR TO NUMBER 11 THRUST BEARING.
 NO. 11 THRUST BEARING, HELICAL-CUT SHIM TO OUTPUT PLANETARY CARRIER RING GEAR.
 NO. 12 THRUST BEARING, OUTPUT PLANETARY CARRIER RING GEAR TO OUTPUT PLANETARY CARRIER HOUSING.

Figure 297

TORQUE SPECIFICATIONS			
<i>Component</i>	N•m	Ft.Lb.	In.Lb.
Differential Pinion Gear Cover (30 Torx)	12		105
Differential Ring Gear	95	70	
Differential Case Cover	61	45	
Differential Output Bearing Cover	12		105
Underdrive Compounder Bearing Retainer To Low Clutch Housing	12		105
Drive Transfer Gear Locking Tab Bolts	23	17	
Drive Transfer Gear Retaining Bolt (1-1/2" Socket)	271	200	
Driven Transfer Gear Nut (2" Socket)	271	200	
Low/Reverse Clutch Piston Retainer To Case	5		45
Oil Pump Cover/Stator To Oil Pump Body	27	20	
Oil Pump Assembly To Case	30	22	
Valve Body Support Plate To Valve Body	6		53
Line Pressure Sensor To Valve Body	6		53
EMCC (TCC) Solenoid To Valve Body	6		53
Transfer Plate To Solenoid Body	6		53
Valve Body Side Cover To Case	12		105
Transfer Gear Cover To Case	12		105
Dipstick Stop Bolt	6		53
Main Oil Filter Bolts	5		45
Bottom Oil Pan To Case	12		105
All Speed Sensor Retaining Bolts	12		105
Manual Shaft Anchor Pin	1		10
Valve Body To Case	7		62
Detent Spring And Roller Shoulder Bolt	7		62

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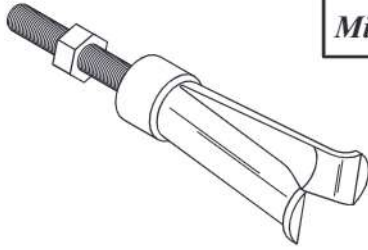
Figure 298

END-PLAY, CLUTCH CLEARANCE, AND ROTATING TORQUE SPECIFICATIONS	
<i>COMPONENT</i>	<i>SPECIFICATION</i>
<i>Transaxle End-Play (Number 4 Thrust Plate)</i>	<i>0.13 - 0.64 mm (.005" - .025")</i>
<i>Compounder End-Play (Helical-Cut Shim In Output Planetary Carrier)</i>	<i>0.25 - 0.50 mm (.010" - .020")</i>
<i>Underdrive Clutch Clearance</i>	<i>0.91 - 1.47 mm (.036" - .058")</i>
<i>Overdrive Clutch Clearance</i>	<i>1.1 - 2.3 mm (.043" - .092")</i>
<i>Reverse Clutch Clearance</i>	<i>0.76 - 1.2 mm (.030" - .049")</i>
<i>2-4 Clutch Clearance</i>	<i>0.76 - 2.64 mm (.030" - .104")</i>
<i>Low/Reverse Clutch Clearance</i>	<i>0.89 - 1.47 mm (.035" - .058")</i>
<i>Direct Clutch Clearance</i>	<i>0.95 - 1.41 mm (.037" - .056")</i>
<i>Low Clutch Clearance</i>	<i>0.48 - 0.76 mm (.019" - .030")</i>
<i>Rear Planetary Carrier, Rotating Torque</i>	<i>3 to 8 in.lb. (Pre-load)</i>
<i>Differential Pinion Gear, Rotating Torque</i>	<i>2 to 8 in.lb. (Pre-load)</i>
<i>Differential Carrier Assembly, Rotating Torque</i>	<i>10 to 20 in.lb. (Pre-load)</i>
<i>Underdrive Center Shaft In Compounder, Rotating Torque</i>	<i>8 to 18 in.lb. (Pre-load)</i>

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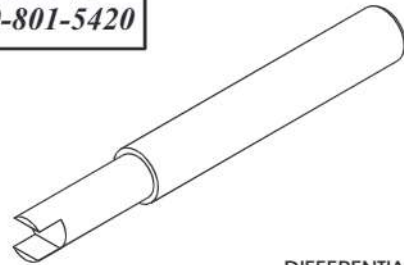
Figure 299

*During the time of printing, these are the
O.E. recommended tools available at
Miller Special Tools SPX - 1-800-801-5420*



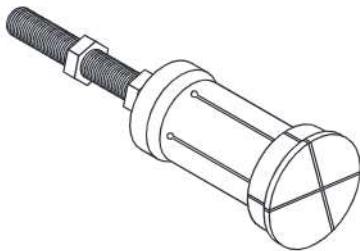
BEARING CUP
REMOVER

8912



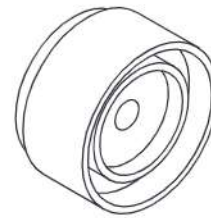
DIFFERENTIAL
ROTATING
TORQUE TEST

L-4436-A



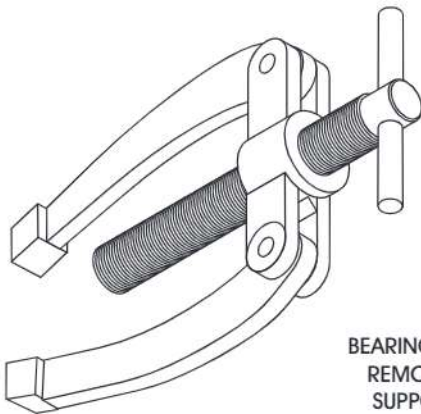
BEARING CUP
REMOVER

8913



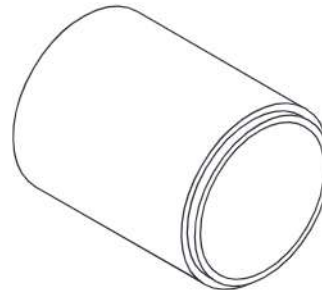
DIFFERENTIAL
SMALL BEARING
INSTALLER

C-4213



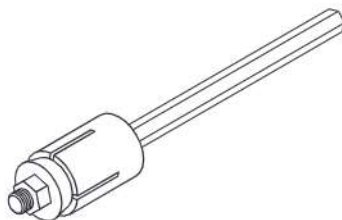
BEARING CUP
REMOVER
SUPPORT

8915



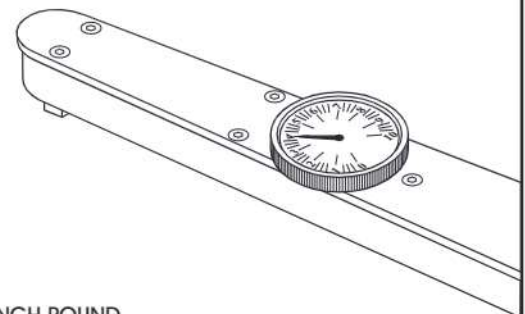
DIFFERENTIAL
LARGE BEARING
INSTALLER

6888



PINION GEAR
ROTATING
TORQUE TEST

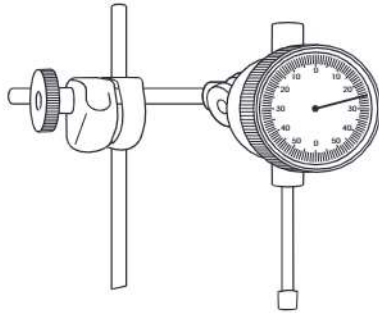
C-4995A



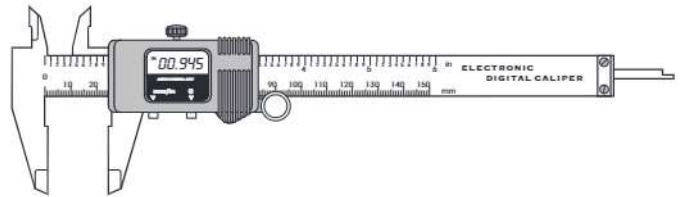
UNIVERSAL INCH POUND,
DIAL TYPE TORQUE WRENCH

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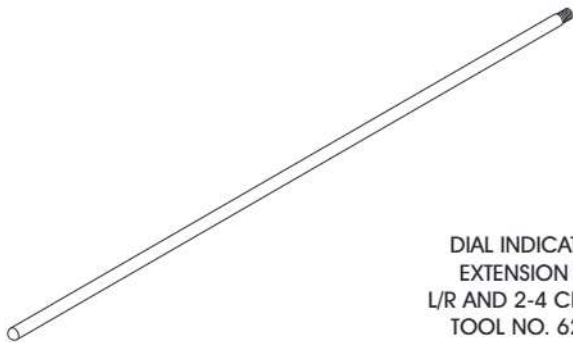
Figure 300



UNIVERSAL
DIAL INDICATOR



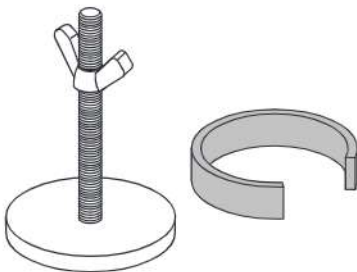
UNIVERSAL
DIGITAL CALIPER



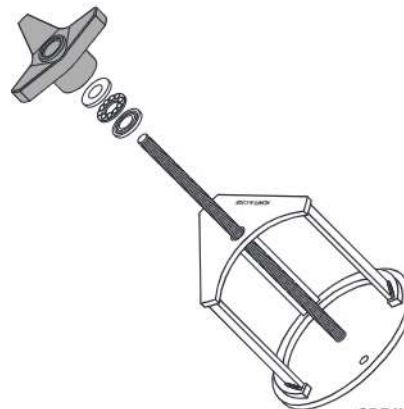
DIAL INDICATOR
EXTENSION TIP
L/R AND 2-4 CLUTCH
TOOL NO. 6268



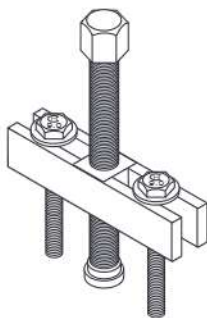
SNAP RING PLIERS
MAC TOOL TP 15P



UNIVERSAL
SPRING COMPRESSOR



UNIVERSAL
SPRING COMPRESSOR

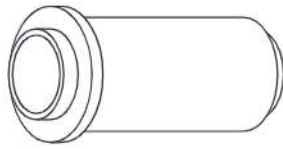


UNIVERSAL
PULLER



UNIVERSAL
SLIDE HAMMERS
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Figure 301



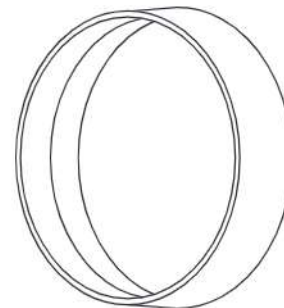
SEAL INSTALLER
TOOL NO. MD998334



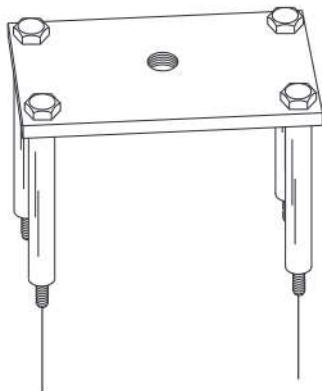
SPRING COMPRESSOR
TOOL NO. 8250



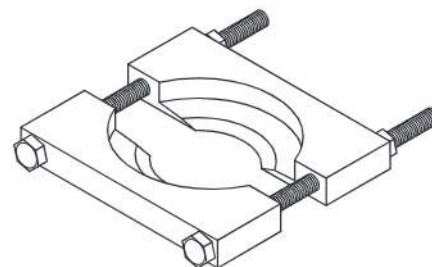
SPRING COMPRESSOR
TOOL NO. 9725



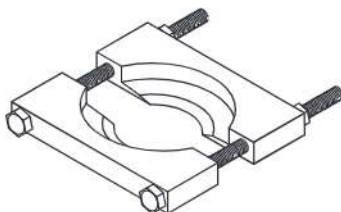
PISTON INSTALLER
TOOL NO. 9727



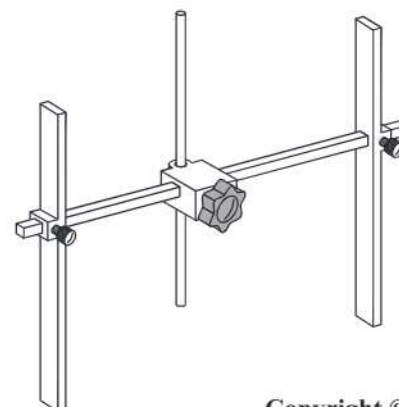
ADAPTER/PULLER
TOOL NO. 9908



BEARING SPLITTER
TOOL NO. 1130



BEARING SPLITTER
TOOL NO. P-334



UNIVERSAL
"H" GAGE

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Figure 302

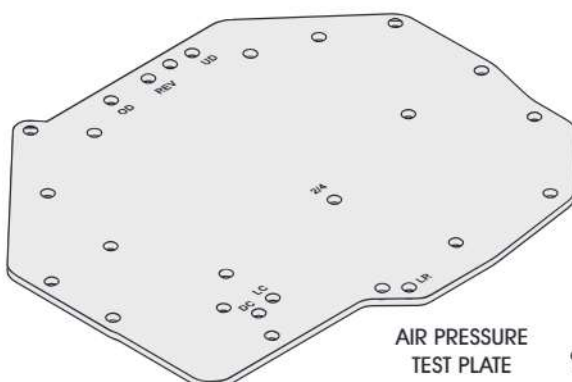
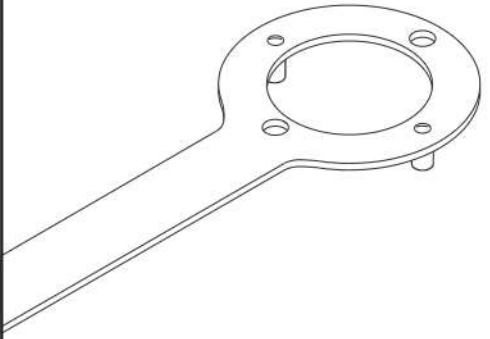
 AIR PRESSURE TEST PLATE 9741	 GEAR HOLDER TOOL NO. 9739
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Figure 303

CLUTCH PRESSURE TAPS ELIMINATED

The expense of machined pressure taps and the cost of inserting the plug, combined with potential areas for leaks, gave way to the decision of eliminating all Clutch Pressure Taps in the valve body.

However, the ability to perform clutch circuit pressure testing on the assembly line was necessary to ensure correct assembly and consistent quality. The engineers decided to use a series of nine check ball capsules positioned in specific tapered ports in the valve body, as shown in Figure 304.

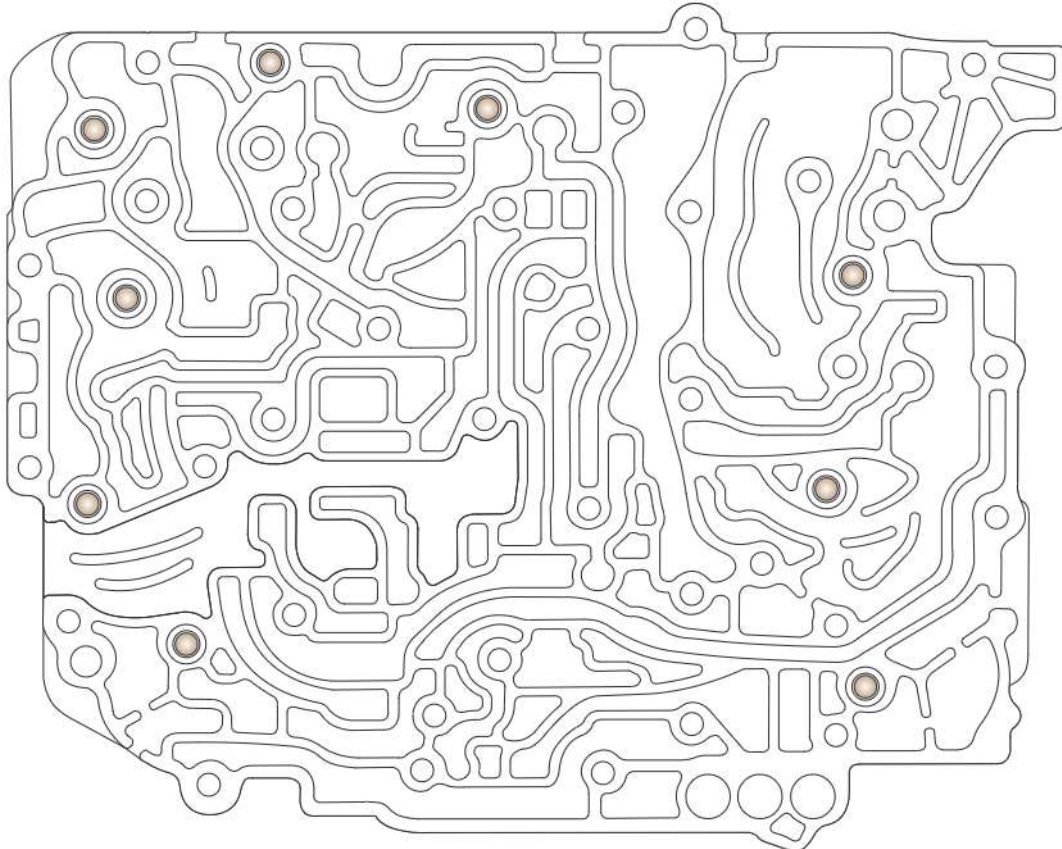
This allowed a test machine to come in with a probe and unseat the check balls in the capsules so that measurement of clutch pressures could be verified. Once the test has been completed and the test machine retracts, the check balls are then used to seal their respective clutch circuit. The nine check balls, shown in Figure 304, are the check balls used during the assembly line clutch testing procedure.

Note: Do not attempt to remove these balls or capsules, but ensure that they seal pressure.

There are 4 hydraulic shift control balls that are not used for assembly line testing and they do fall out of the valve body. Refer to Page 27, Figure 35 for their locations and function.

Although there are no Clutch Pressure Taps, there is a Main Line Pressure Tap, located at the bottom left side of the valve body cover pan rail, as shown on Page 23 in Figure 30.

PRESSURE SEALING CHECK BALL CAPSULES - PRESSURE TAPS ELIMINATED



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Figure 304