DIAGNOSIS AND TESTING > DIAGNOSIS AND TESTING - AUTOMATIC TRANSMISSION - GENERAL CONDITIONS

> ⚠ *CAUTION:*
>
> *Before attempting any repair on an automatic transmission, check for Diagnostic Trouble Codes with the appropriate scan tool.*

> ⚠ *CAUTION:*
>
> *A unique transmission fluid has been developed for this transmission. This fluid is NOT compatible with ATF+4 or any other current Chrysler transmission fluid. For specifics about this unique fluid, see FLUID AND FILTER SERVICE .*

Transmission malfunctions may be caused by these general conditions:

- Poor engine performance
- Improper adjustments
- Hydraulic malfunctions
- Mechanical malfunctions
- Electronic malfunctions

Diagnosis of these problems should always begin by checking the easily accessible variables: fluid level, fluid condition, and transmission fault codes using the appropriate scan tool. Then perform a road test to determine if the problem has been corrected or if more diagnosis is necessary.

DIAGNOSIS AND TESTING > PRELIMINARY DIAGNOSIS > VEHICLE IS DRIVABLE

1. Check for transmission fault codes using the appropriate scan tool.
2. Check fluid level and condition. Refer to FLUID AND FILTER, STANDARD PROCEDURE .
3. Road test and note how the transmission engages, upshifts, and downshifts.

DIAGNOSIS AND TESTING > PRELIMINARY DIAGNOSIS > VEHICLE IS DISABLED

1. Check for transmission fault codes using the appropriate scan tool.

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2. Position the vehicle on a hoist with the transmission in neutral. Refer to HOISTING, STANDARD PROCEDURE .
3. Check for cracked, leaking cooler lines.
4. Check the fluid level and condition. Refer to FLUID AND FILTER, STANDARD PROCEDURE .
5. With the transmission in the park position, attempt to rotate halfshafts to make sure the transmission output shaft is intact.
6. Check the Transmission Control Module (TCM), wiring, valve body, and solenoids (Utilize fault codes to diagnose if available). Refer to the DIAGNOSTIC CODE INDEX article.

DIAGNOSIS AND TESTING > ROAD TEST

Prior to performing a road test, verify that the fluid level, fluid condition, and linkage adjustment is correct.

During the road test, the transmission should be operated in each position to check for slipping and any variation in shifting.

If the vehicle operates properly at highway speeds, but has poor acceleration, the converter stator overrunning clutch may be slipping. If acceleration is normal, but high throttle opening is needed to maintain highway speeds, the converter stator clutch may have seized. Both of these stator defects require replacement of the torque converter and thorough transmission cleaning.

Slipping clutches can be isolated by comparing the "Elements in Use" chart with clutch operation encountered on a road test. This chart identifies which clutches are applied at each position of the selector lever.

A slipping clutch may also set a Diagnostic Trouble Code (DTC) and can be determined by operating the transmission in all selector positions.

948TE 9 Speed Planetary Automatic Transmission with 6 shift elements and 4 planetary gear sets.								
		CLUTCH-A	**CLUTCH-B**	**CLUTCH-C**	**CLUTCH-D**	**CLUTCH-E**	**CLUTCH-F**	**RATIO**
GEAR	**1st**	**X**			**X**		**X**	4.70:1
GEAR	**2nd**	**X**		**X**			**X**	2.84:1
GEAR	**3rd**	**X**	**X**				**X**	1.90:1
GEAR	**4th**	**X**				**X**	**X**	1.38:1
GEAR	**5th**	**X**	**X**			**X**		1.00:1
GEAR	**6th**	**X**		**X**		**X**		0.80:1
GEAR	**7th**	**X**			**X**	**X**		0.69:1
GEAR	**8th**			**X**	**X X**			0.58:1
GEAR	**9th**		**X**		**X**	**X**		0.47:1
GEAR	**N/P**				**X**		**X**	-

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GEAR	**R**		**X**		**X**		**X**	3.81:1
Default Gear	**4th Gear**					**X**	**X**	-

DIAGNOSIS AND TESTING > EMERGENCY RUNNING FUNCTION - LIMP IN MODE

In the event of a complete transmission electrical failure (loss of power to the Transmission Control Module (TCM), the transmission enters default limp-in mode. When the TCM loses power, all solenoids are de-energized. Maximum pressure locks the transmission in fourth gear, and a Diagnostic Trouble Code (DTC) is stored in memory. If the vehicle is in a forward gear range when the fault occurs, the transmission defaults to fourth gear.

The limp-in function remains active until the DTC is repaired or a stored DTC is erased with an appropriate scan tool.

STANDARD PROCEDURES > BEARING TURNING TORQUE MEASUREMENT

To determine proper select shim thickness for the differential and transfer gear bearings, the turning torque must be measured. If just the differential or transfer gear bearings are being replaced it is not necessary to measure the bearing turning torque. The original factory installed shims will be sufficient to properly preload the bearings when the transmission is assembled. If the differential, transfer gear, or transmission housing castings are replaced the differential and transfer gear bearing turning torque will need to be reestablished.

Verify that the bearings and races are **NEW** and properly installed on/in clean components with the factory installed select shims behind the bearing races. Lightly lubricate the bearings with transmission fluid.

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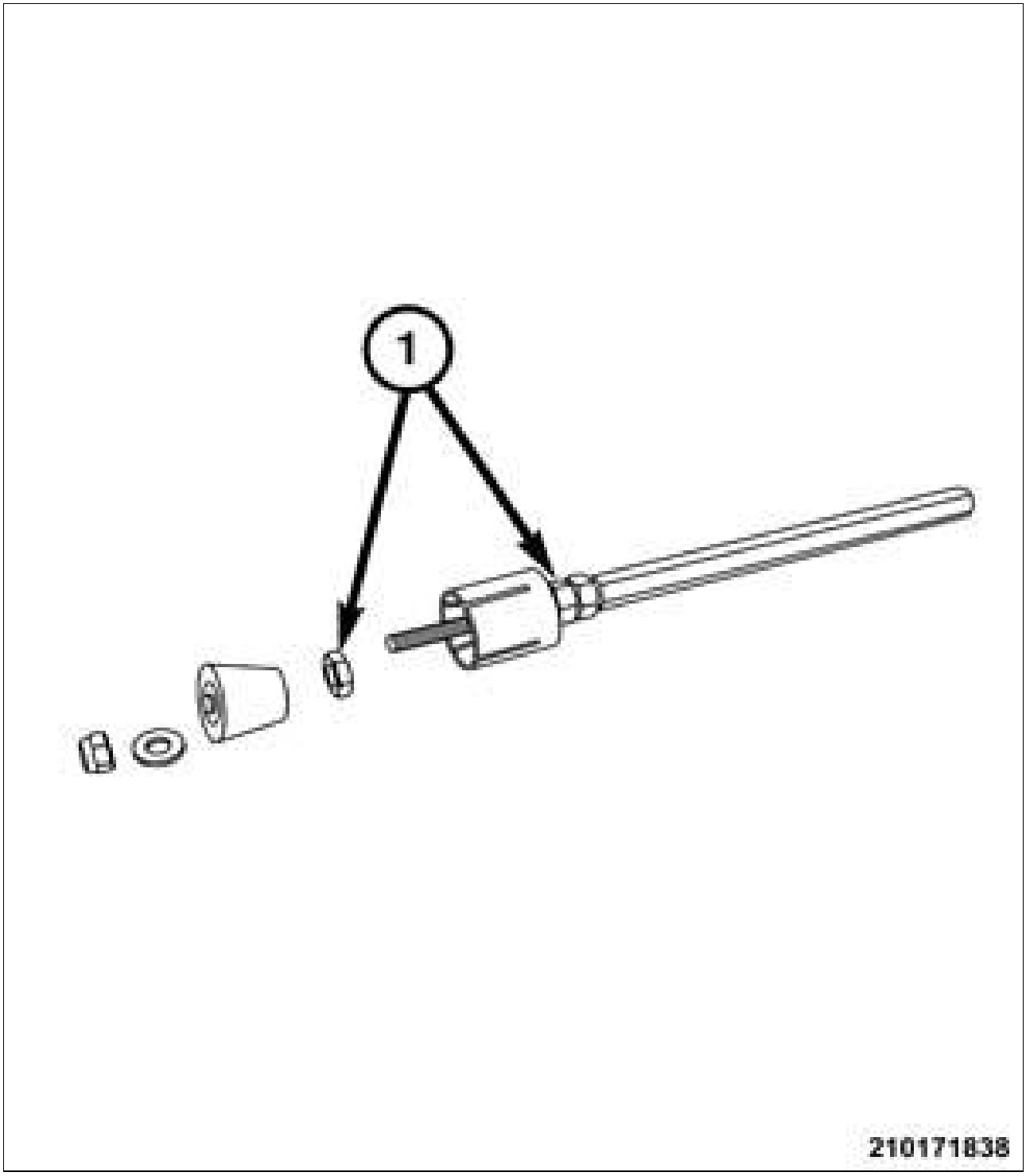
Fig 1: Special Tool Nuts



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TOOL SETUP

(special tool #C-4995A, Tool, Differential Bearing Torque) must be modified to be compatible with the following operation. Two 3/8-24 nuts (1) must be added to keep the center shaft from rotating in the cone and sleeve.

1. Remove the nylok™ nut and expander cone from the center shaft.

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2. Remove the sleeve from the center shaft.

3. Install a nut on the center shaft and tighten it against the existing nut. Install the sleeve.

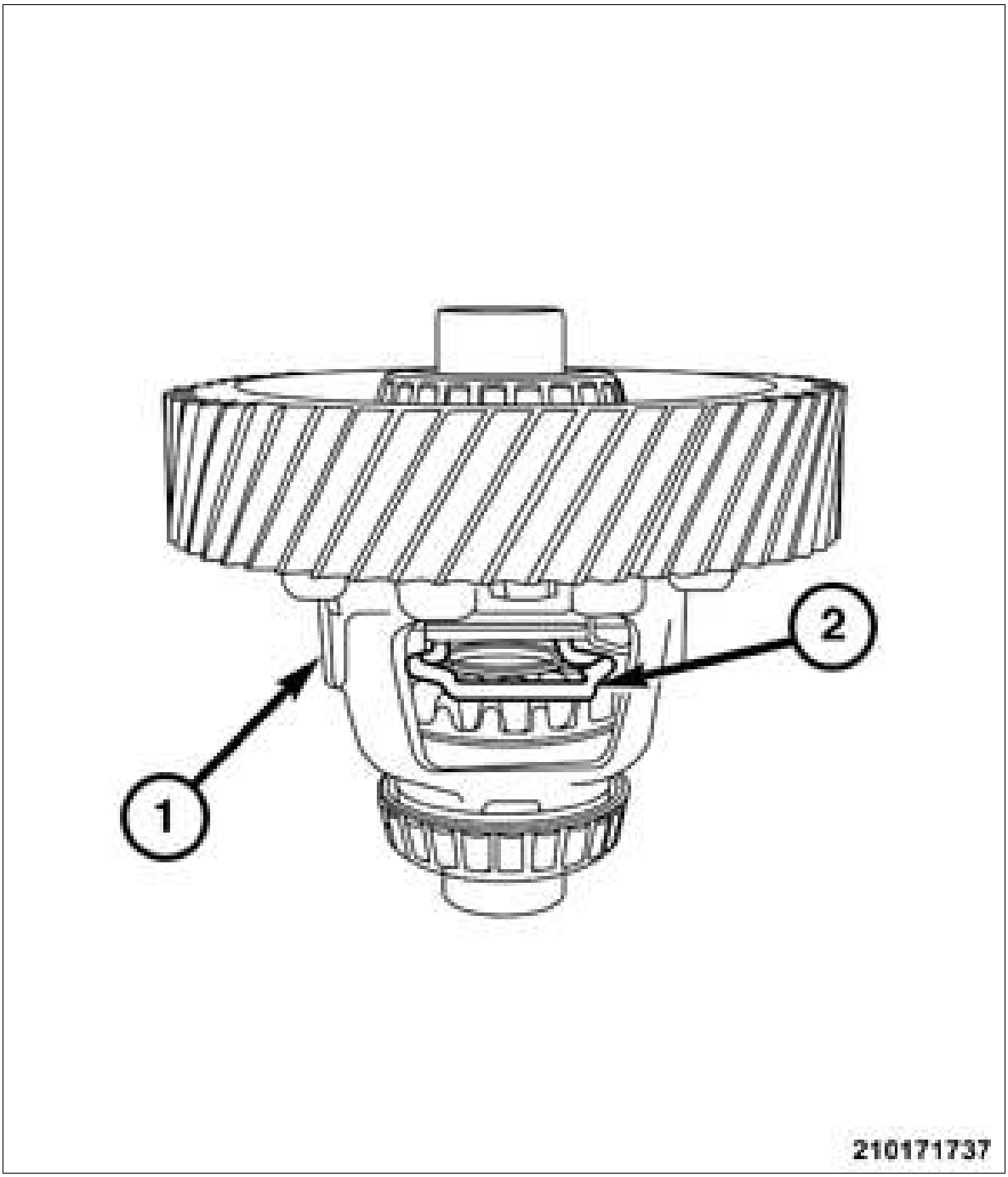
4. Install the 2nd nut inside the sleeve just far enough to install the cone and nut.

5. Install the cone and nut tight enough to keep the center shaft from rotating inside the cone and sleeve.

MEASUREMENT PROCEDURE

1. Position the differential on a clean work surface.

   Fig 2: Differential Pinion Gears & Lock Tool



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2. Four Wheel Drive (4WD) transmissions do not use tool 10425, there is no differential. For Front Wheel Drive (FWD) and All Wheel Drive (AWD) transmissions, install the lock tool (special tool #10425, Tool, Pinion and Side Gear Locking) (2) between the differential (1) pinion gears next to the link pin to prevent the differential from rotating.
3. Position the transmission and bell housing on a suitable clean work bench.
4. Install new bearing races with the original select shims.
5. Install the differential with new bearings lightly lubricated with transmission fluid in the transmission housing.
6. Install the bell housing.
7. Install the bolts to hold the bell housing to the transmission housing. Tighten bolts to 50% of the specified torque value. Refer to SPECIFICATIONS .
8. Insert modified tool (special tool #C-4995A, Tool, Differential Bearing Torque) into the differential until the sleeve (C-4995-1) enters the halfshaft spline in the differential side gear.
9. Tighten the nut until the sleeve expands tightly in the side gear.
10. Tighten the jamb nut to prevent the center shaft from rotating in the sleeve.
11. Using a suitable wrench, rotate the differential 20 rotations clockwise and 20 rotations counterclockwise.

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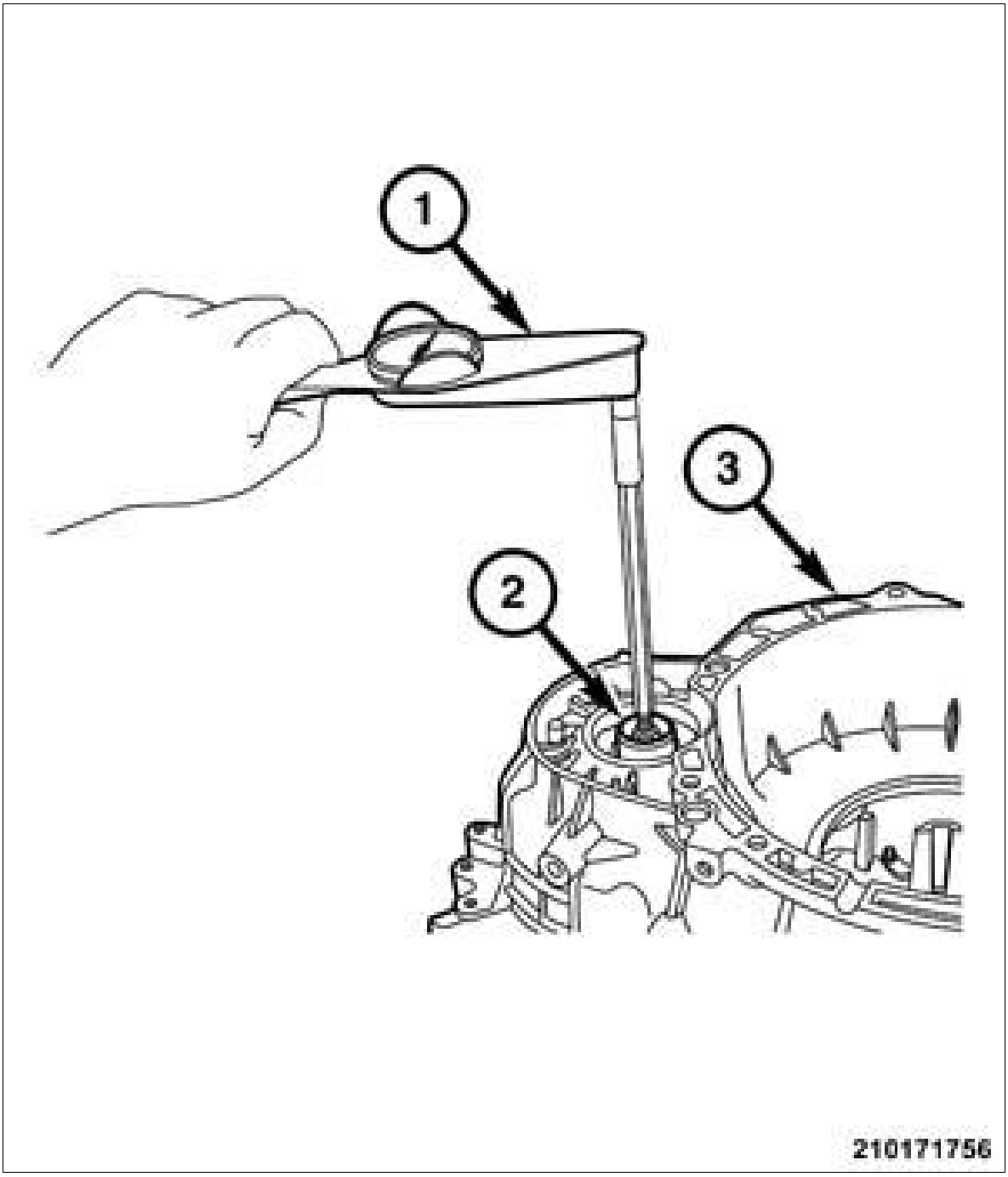
Fig 3: Torque Wrench & Differential



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12. Using a torque wrench (1), measure the turning torque of the differential (2) after the initial break away. It should measure between 1.7 to 2.8 N.m (15 and 25 in lbs).
13. Adjust the turning torque by adding to or subtracting from the thickness of the select shims behind the differential bearing races.
14. After achieving proper differential turning torque, separate the bell housing from the transmission housing.
15. Install the transfer gear with new bearings into the transmission housing.

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16. Install the bell housing.

17. Install the bolts to hold the bell housing to the transmission housing. Tighten bolts to 50% of the specified torque value. Refer to SPECIFICATIONS .

> *NOTE:*
>
> *The turning torque of the differential and the transfer gear will be higher than the differential alone. The ring gear is driving a smaller gear on the transfer shaft.*

18. Using a suitable wrench, rotate the differential 20 rotations clockwise and 20 rotations counterclockwise.

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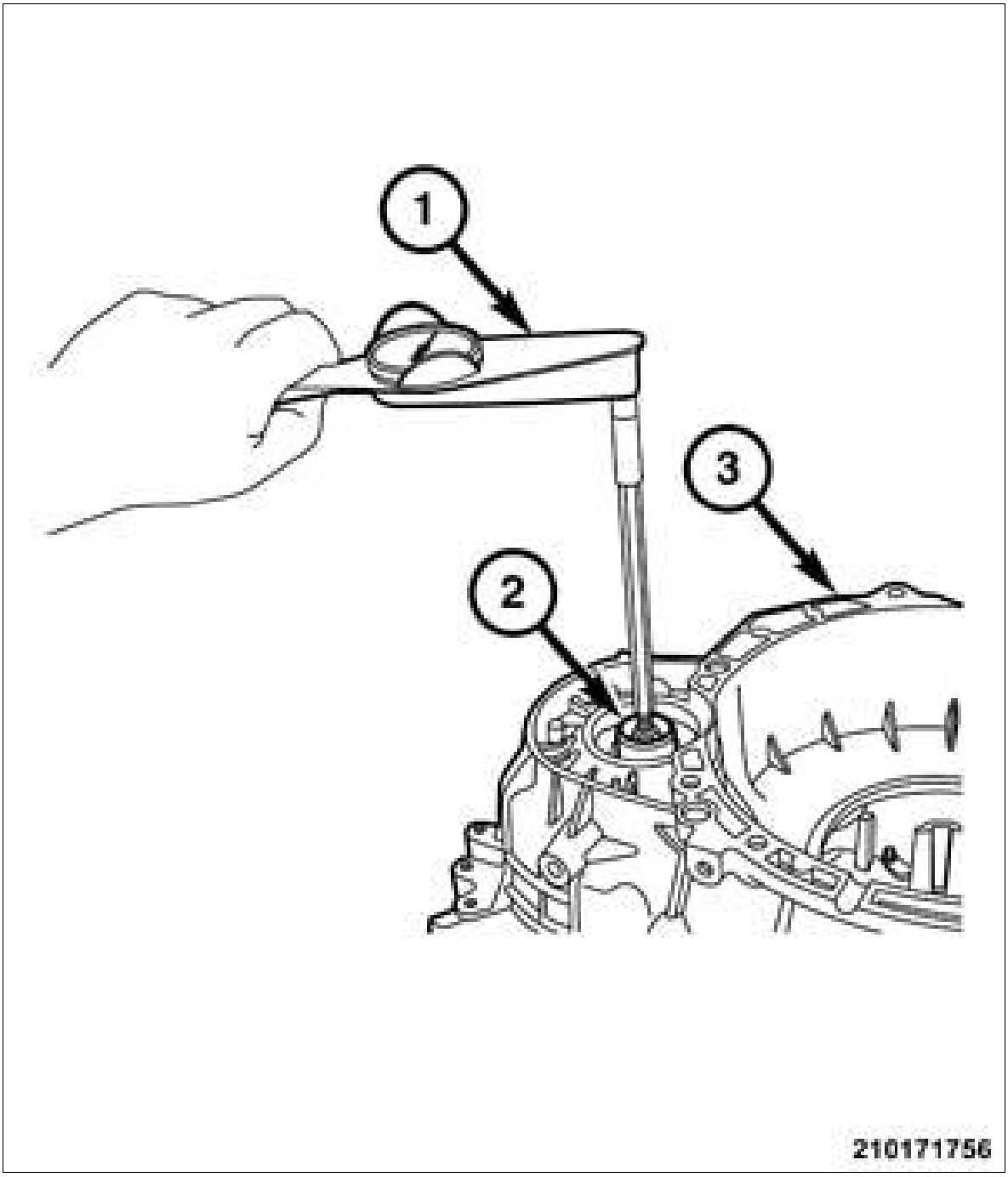
Fig 4: Torque Wrench & Differential



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19. Using a torque wrench (1), measure the turning torque of the differential (2) after the initial break away. It should measure between 3.4 to 6.8 N.m (35 and 60 in lbs).

20. Adjust the turning torque by adding to or subtracting from the thickness of the select shims behind the transfer shaft bearing races.

21. Remove tool C-4995 from the differential.

22. Separate the bell housing from the transmission housing.

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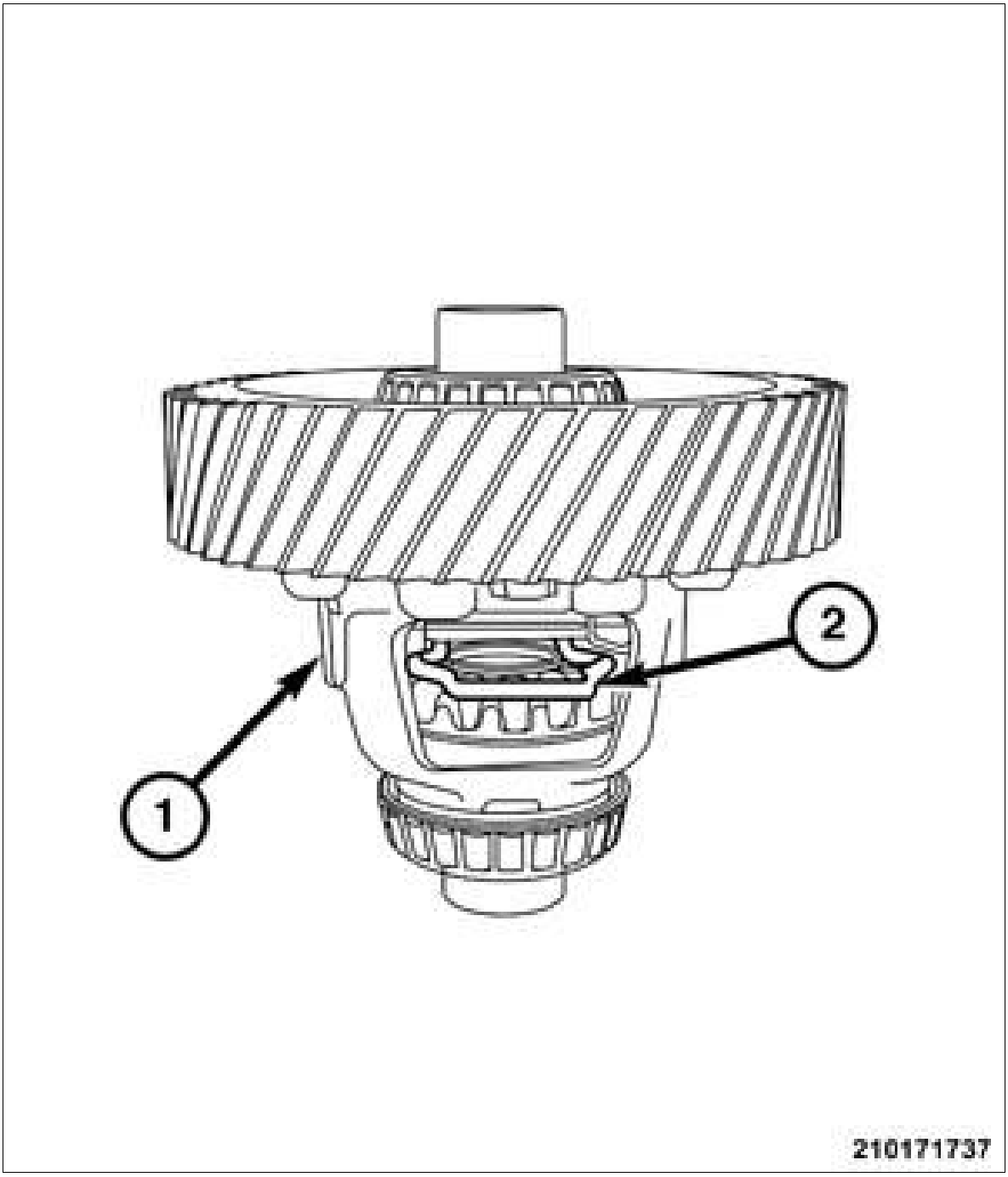
23. Remove the differential (1) and transfer gear (2).

Fig 5: Differential Pinion Gears & Lock Tool



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24. On FWD and AWD transmissions, remove lock tool 10425 (2) from the differential (1).

25. Prepare transmission components for final assembly.

STANDARD PROCEDURES > INPUT SHAFT END PLAY MEASUREMENT

Before disassembling the 948TE transmission measure the end play of the input shaft. This will aid in the

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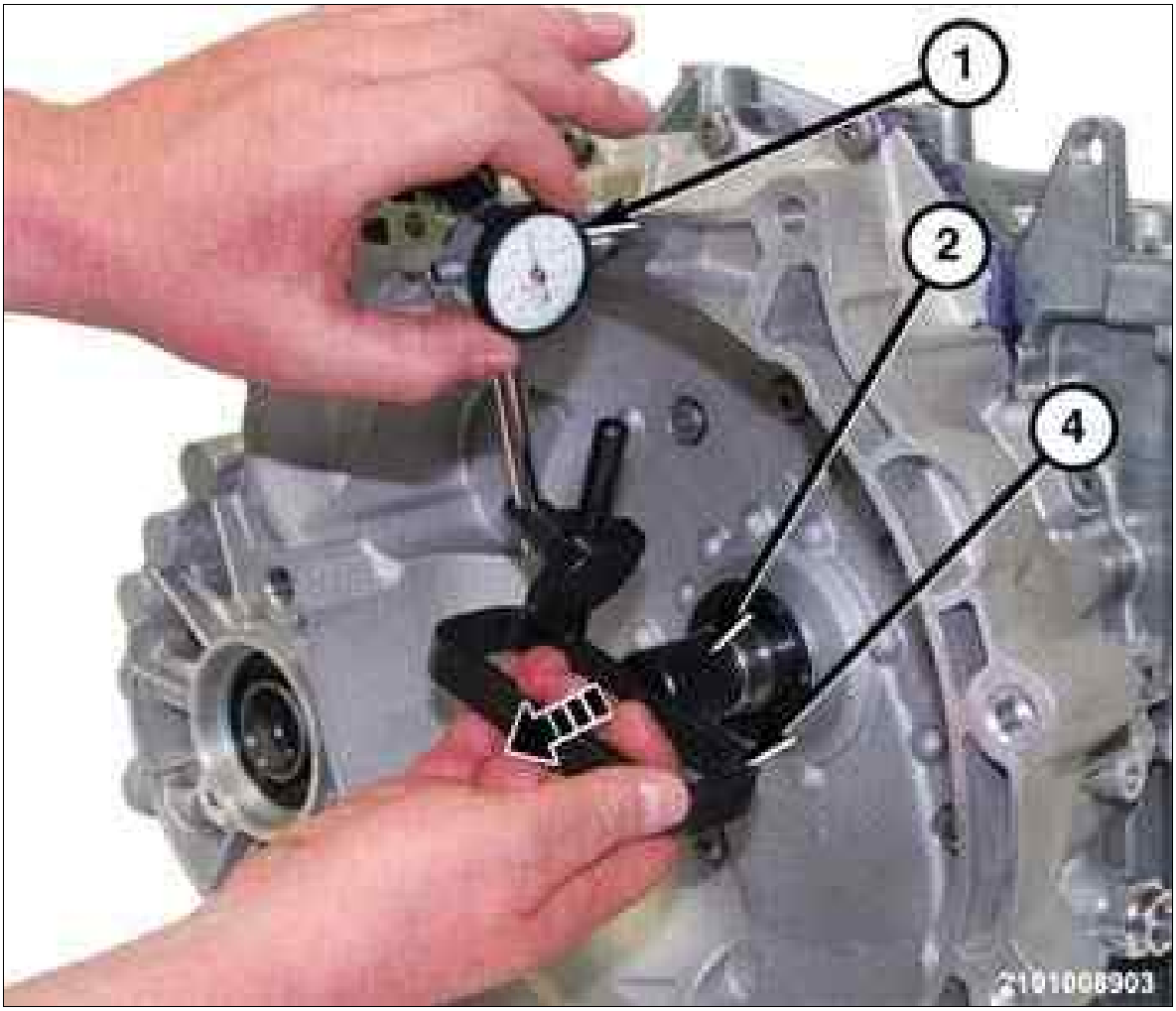
assembly process when selecting a select shim.

1. Place the transmission on a suitable clean work surface.
2. Remove the torque converter.
3. Use tools (special tool #8266B, End Play Socket Set) and (special tool #C-3339A, Set, Dial Indicator) attached to the input shaft, to measure the input shaft end play.

   Fig 1: Measuring Input Shaft End Play



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4. Attach the dial indicator (1) to the handle 8266-8 (4).
5. Attach the handle (4) to the spline adapter 8266-6 (2).
6. Attach the spline adapter (2) to the input shaft.
7. Position the dial indicator plunger on the bellhousing rim.
8. Pull outward on the handle (4) and zero the dial indicator face (1).

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Fig 2: Input Shaft End Play Measurement

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9. Push inward on the handle and read the dial indicator (1).
10. Record the measurement as a reference number for selecting the proper thickness select spacer when assembling the transmission.

SPECIFICATIONS > TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

DESCRIPTION	N.m	Ft. Lbs.	In. Lbs.	NEW FASTENER*
Transmission Bolts (2.4L MultiAir)	70	52	-	
Flexplate to Torque Converter Bolts	40	30	-	X
***NEW FASTENER:** Do not reuse these fasteners. If removed, a new fastener must be installed and tightened to specifications.				

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948TE INTERNAL TIGHTENING SPECIFICATIONS

DESCRIPTION	N.m	Ft. Lbs.	In. Lbs.	NEW FASTENER*
Bolt - Pan to Case- Oil	10	-	88	
Valve Body to Case Bolts	8	-	71	
Valve Body Bolts	6	-	53	
Speed Sensor to Transmission Case Bolt	5.5	-	49	
***NEW FASTENER:** Do not reuse these fasteners. If removed, a new fastener must be installed and tightened to specifications.				

SPECIFICATIONS > CLUTCH SPECIFICATIONS

The B, C, D and E clutch clearance must be measured and properly set during the assembly process of the 948TE/9HP48 transmission. The recommended measurement procedures can be found in the STANDARD PROCEDURES in this service information. .

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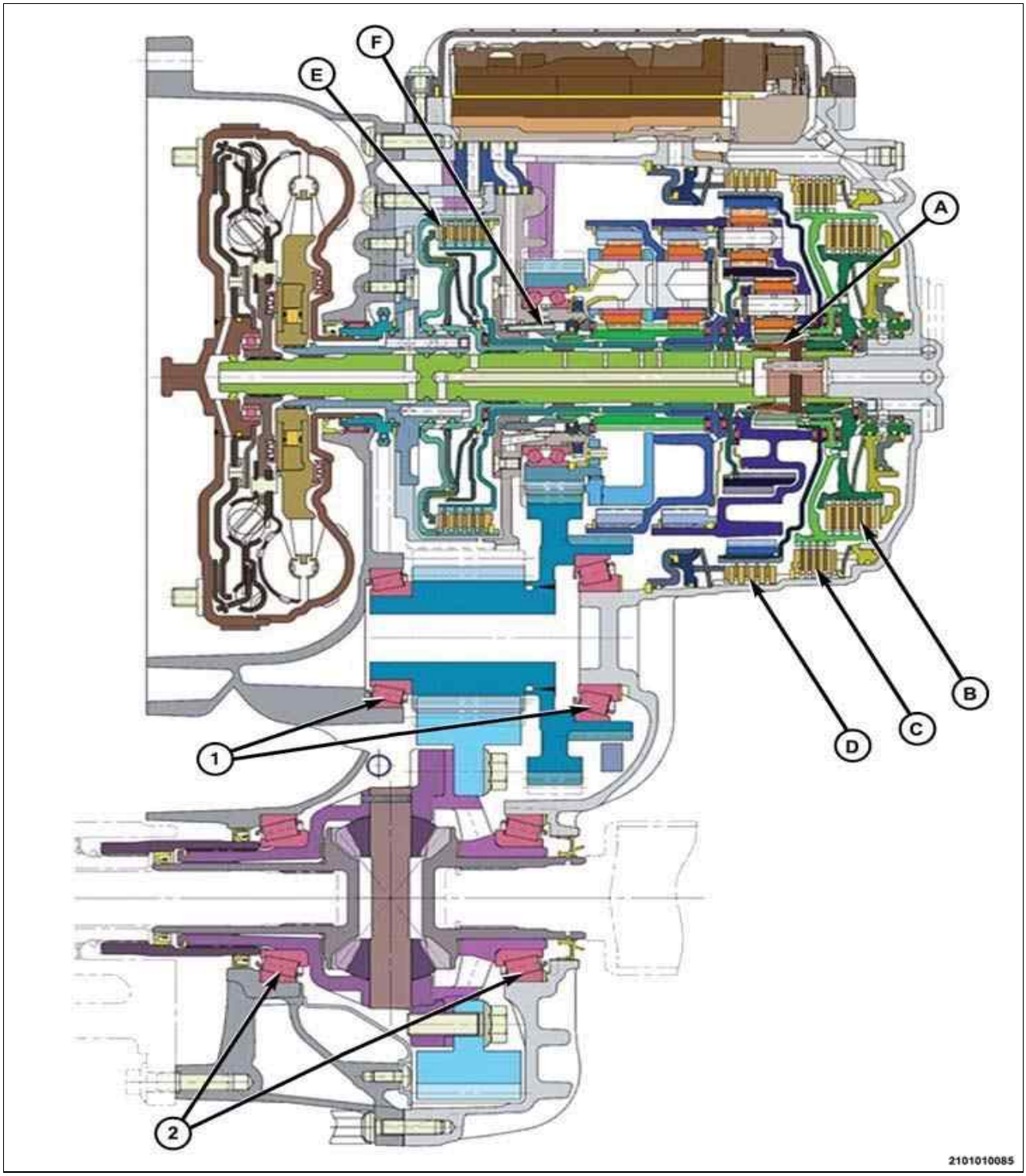
Fig 1: Cutaway View Clutch Locations



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CLUTCH COMPOSITION

A - Clutch	Dog Clutch
B - Clutch	5 Discs

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C - Clutch	4 Discs
D - Clutch	4 Discs
E - Clutch	5 Discs
F - Clutch	Dog Clutch

CLUTCH CLEARANCE

B-clutch = 1.28 - 1.77 (0.050 - 0.070 in)	C-clutch = 0.76 - 1.15 (0.030 - 0.045 in)
D-clutch = 1.01 - 1.50 (0.040 - 0.059 in)	E-clutch = 1.28 - 1.77 (0.050 - 0.070 in)

SPECIFICATIONS > TRANSMISSION GEAR RATIOS

Gear ratios for the 948TE/9HP48 automatic transmission are as follows:

GEAR	RATIO	FINAL DRIVE RATIO (4.334:1) 2.0 TURBO DIESEL 170HP
1ST	4.70:1	20.369:1
2ND	2.842:1	12.317:1
3RD	1.909:1	8.273:1
4TH	1.382:1	5.989:1
5TH	1.00:1	4.334:1
6TH	0.808:1	3.501:1
7TH	0.699:1	3.029:1
8TH	0.58:1	2.513:1
9TH	0.479:1	2.075:1
REVERSE	3.805:1	16.490:1

SCHEMATICS AND DIAGRAMS > INTERNAL HYDRAULIC PASSAGES

Provided in the following illustrations are the locations of hydraulic passages that will aid in diagnosing leaks and clutch malfunctions.

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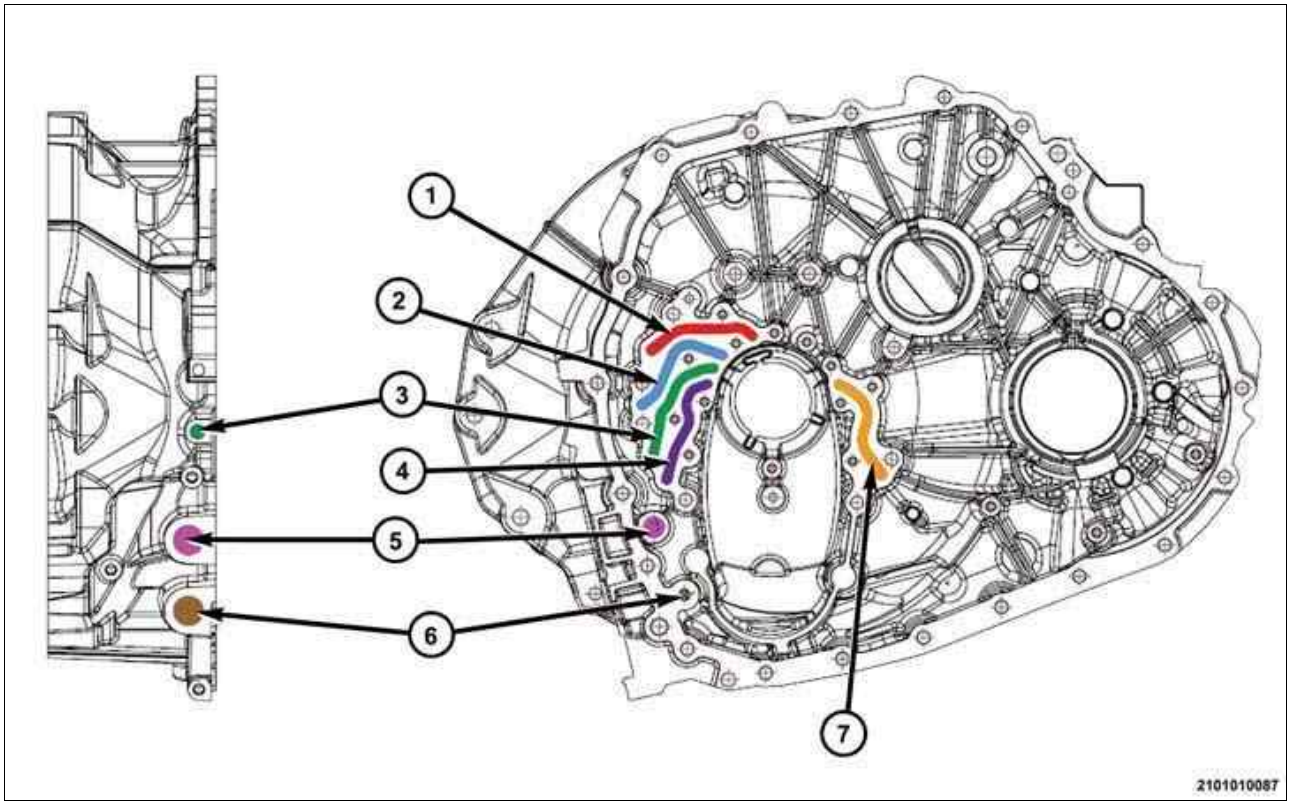
Fig 1: Hydraulic Ports In Bellhousing



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HYDRAULIC PORTS IN BELLHOUSING

1= Dog Clutch A - OFF	2= Clutch E
3= Torque Converter Open	4= Dog Clutch F - OFF
5= From Cooler	6= To Cooler
7= Dog Clutch F - ON	

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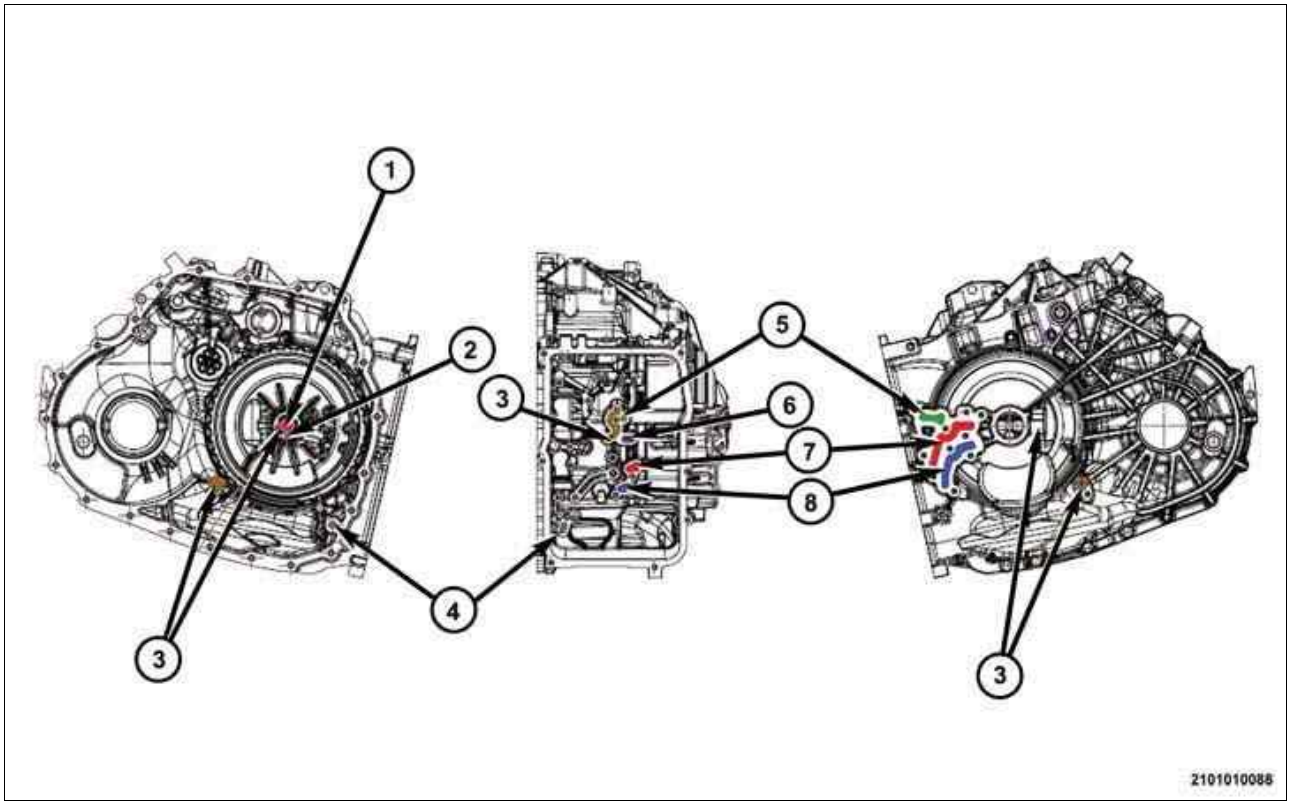
Fig 2: Hydraulic Ports In Housing



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HYDRAULIC PORTS IN HOUSING

1= Dog Clutch A - ON	2= Clutch B
3= Lubrication	4= To Cooler
5= Clutch C	6= Clutch D
7= Dog Clutch A - ON	8= Clutch B

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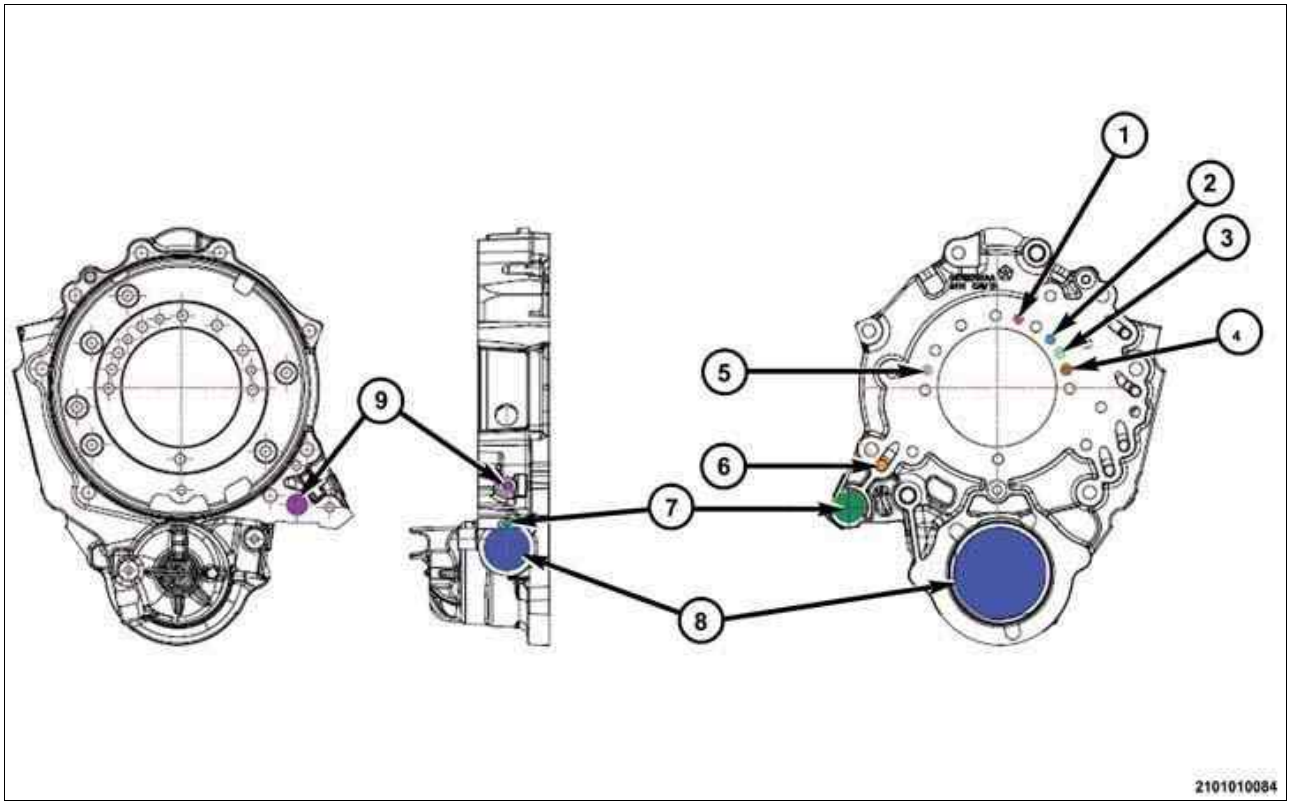
Fig 3: Hydraulic Ports In Intermediate Support Plate



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HYDRAULIC PORTS IN INTERMEDIATE SUPPORT PLATE

1= Dog Clutch A - OFF	2= Clutch E
3= Clutch J	4= Dog Clutch F - OFF
5= Dog Clutch F - ON	6= Front Lubrication
7= Rear Lubrication	8= Pump
9= From Cooler	

SPECIAL TOOLS > SPECIAL TOOLS

Tool (EMEA)	Tool (NAFTA)	Name	Function
1860898000	*	Anti-torque	Flywheel Retainer
2000040436	8434B	Support Kit	Power Train Support
2000040963	10323A	Dipstick	Checking the automatic transmission oil level 948 TE

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*Tool not available for NAFTA. Use a commercially available tool or contact Mopar Essential Tools to order the custom EMEA tool.

REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

The automatic transmission is removed from the vehicle as an assembly with the engine and separated from the engine outside of the vehicle. Refer to REMOVAL AND INSTALLATION for 1.6/2.0L Diesel, REMOVAL AND INSTALLATION for 1.4L or REMOVAL AND INSTALLATION for 2.4L.

REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION

NOTE:

If installing a new transmission, remove the shipping cap from the vent.

The automatic transmission is joined to the engine outside of the vehicle and then installed into the vehicle as an assembly with the engine. Refer to REMOVAL AND INSTALLATION for 1.6/2.0L Diesel, REMOVAL AND INSTALLATION for 1.4L or REMOVAL AND INSTALLATION for 2.4L.

DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY

The 948TE automatic transmission can be overhauled if the vehicle is beyond it's warranty coverage. Verify that the vehicle is no longer covered by warranty before proceeding with this procedure. A clean work area is necessary to assure a properly functioning transmission after the overhaul procedures are completed. Special tools have been developed and are required to disassemble this transmission. Acquire all of the special tools before starting this procedure.

WARNING:

Always wear safety glasses when cleaning, disassembling and assembling the transmission/transaxle. Contents of the transmission/transaxle can become projectiles (e.g., springs, snap-rings, as well as metal and other debris). Failure to wear safety glasses may result in severe personal injury.

CAUTION:

Tag all snap rings, thrust washers, washers, spacers and thrust bearings, etc. during disassembly for quick identification and assembly. Failure to follow these instructions will damage and cause transmission failure.

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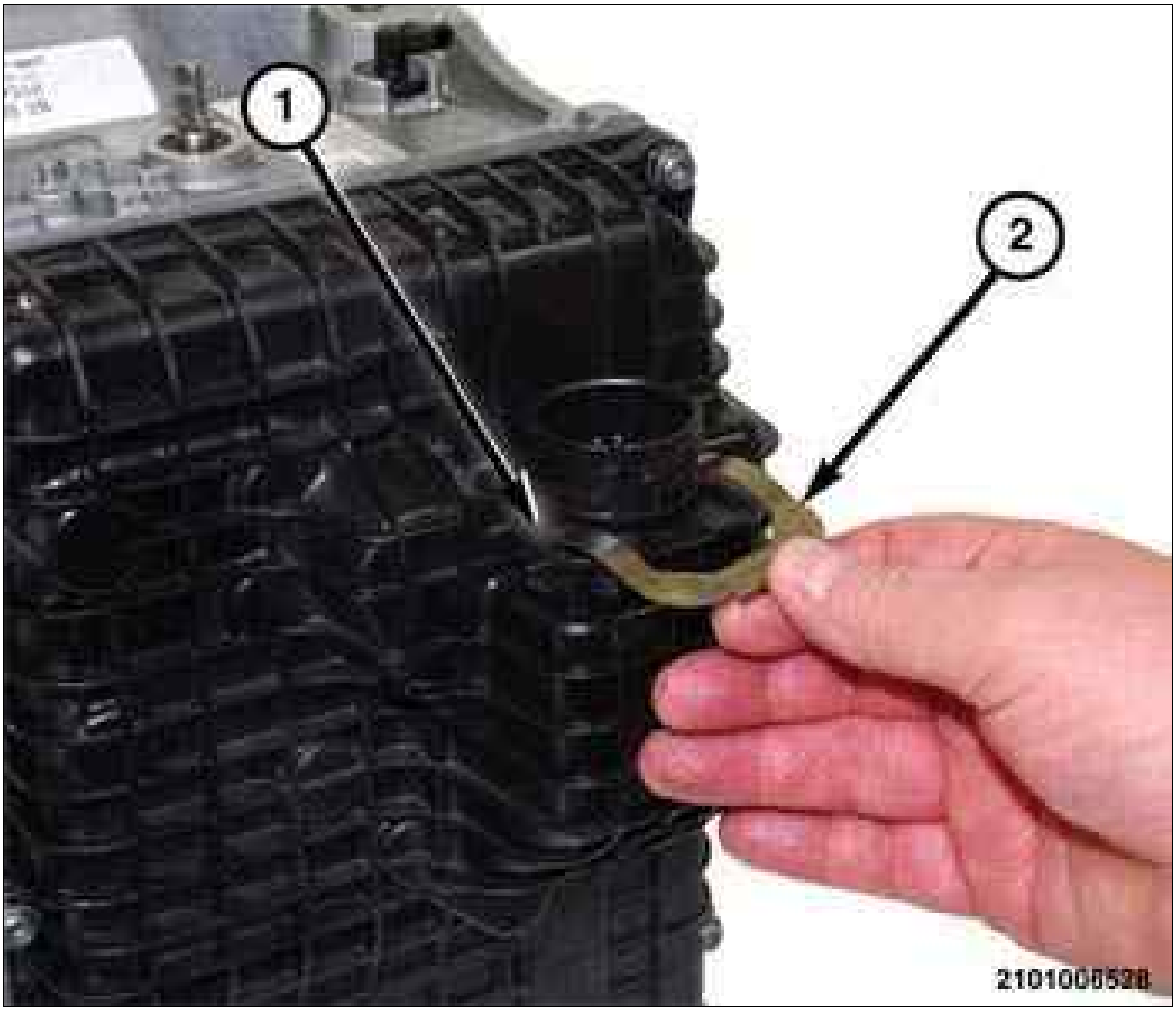
1. Before disassembling the transmission, remove any oily grime and loose dirt. Place the transmission on a clean work surface with ample fluid drainage or absorbency.

   Fig 1: Transmission Solenoid Connector & Clip



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2. Remove the clip (2) holding the transmission solenoid connector (1) in the valve body cover pan.

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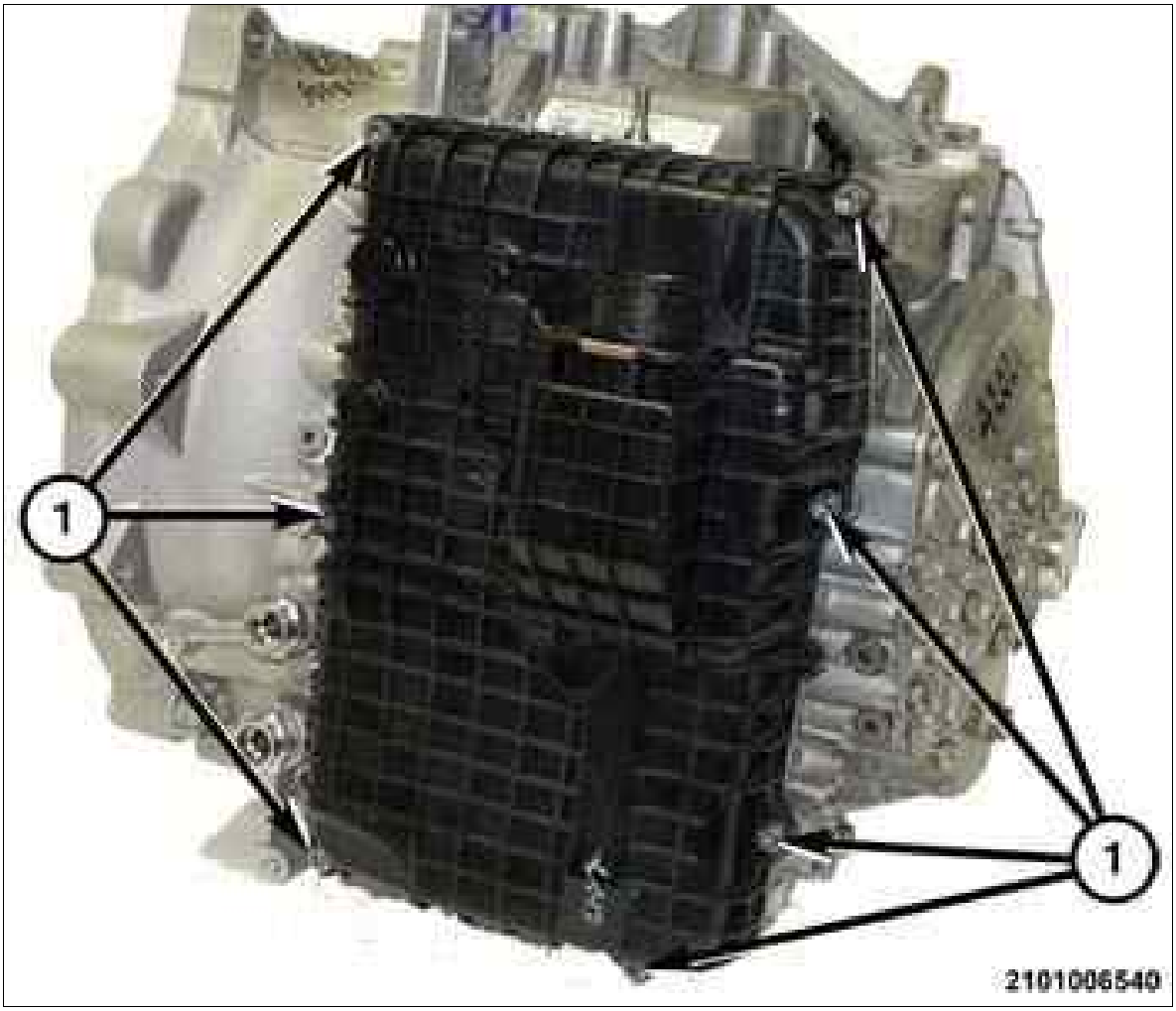
Fig 2: Valve Body Cover Pan Bolts



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3. Remove the valve body cover pan bolts (1) and the valve body cover pan.

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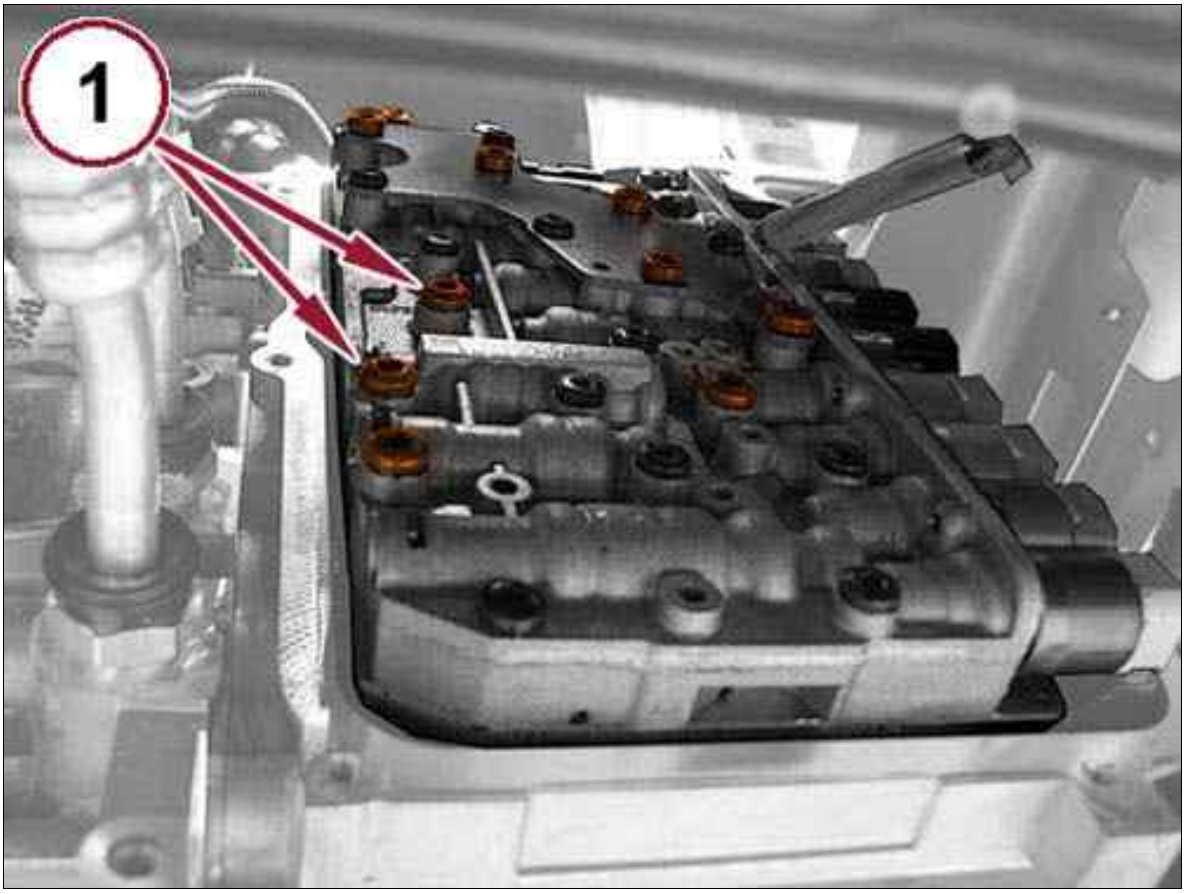
Fig 3: Valve Body & Bolts



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4. Remove the ten bolts (1) holding the valve body to the transmission housing.
5. Using a suitable prying tool, pry the valve body away from the adapter tubes.

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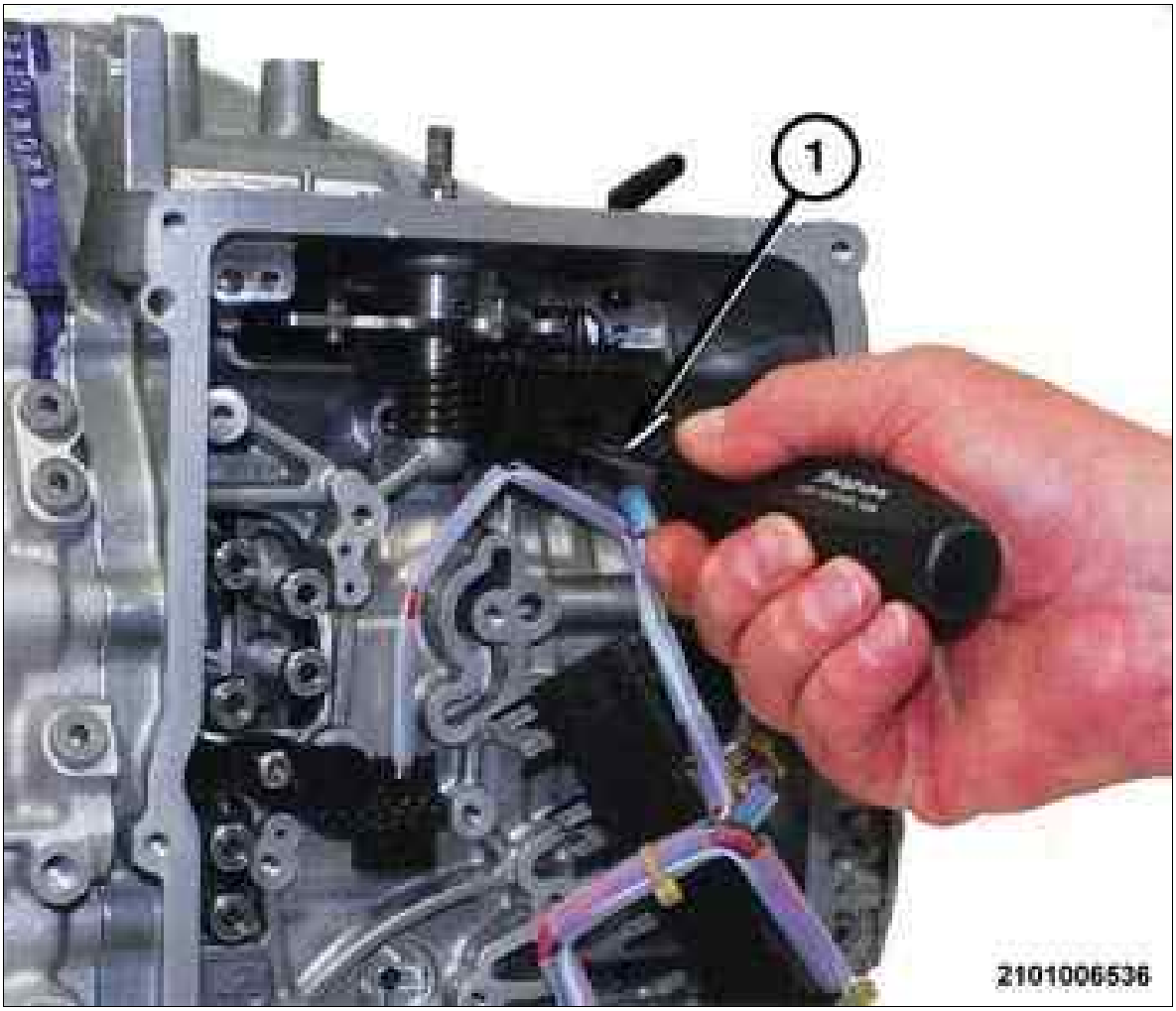
Fig 4: Removing/Installing Transmission Range Sensor (TRS) Screw



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6. Remove the Transmission Range Sensor (TRS) screw (1).

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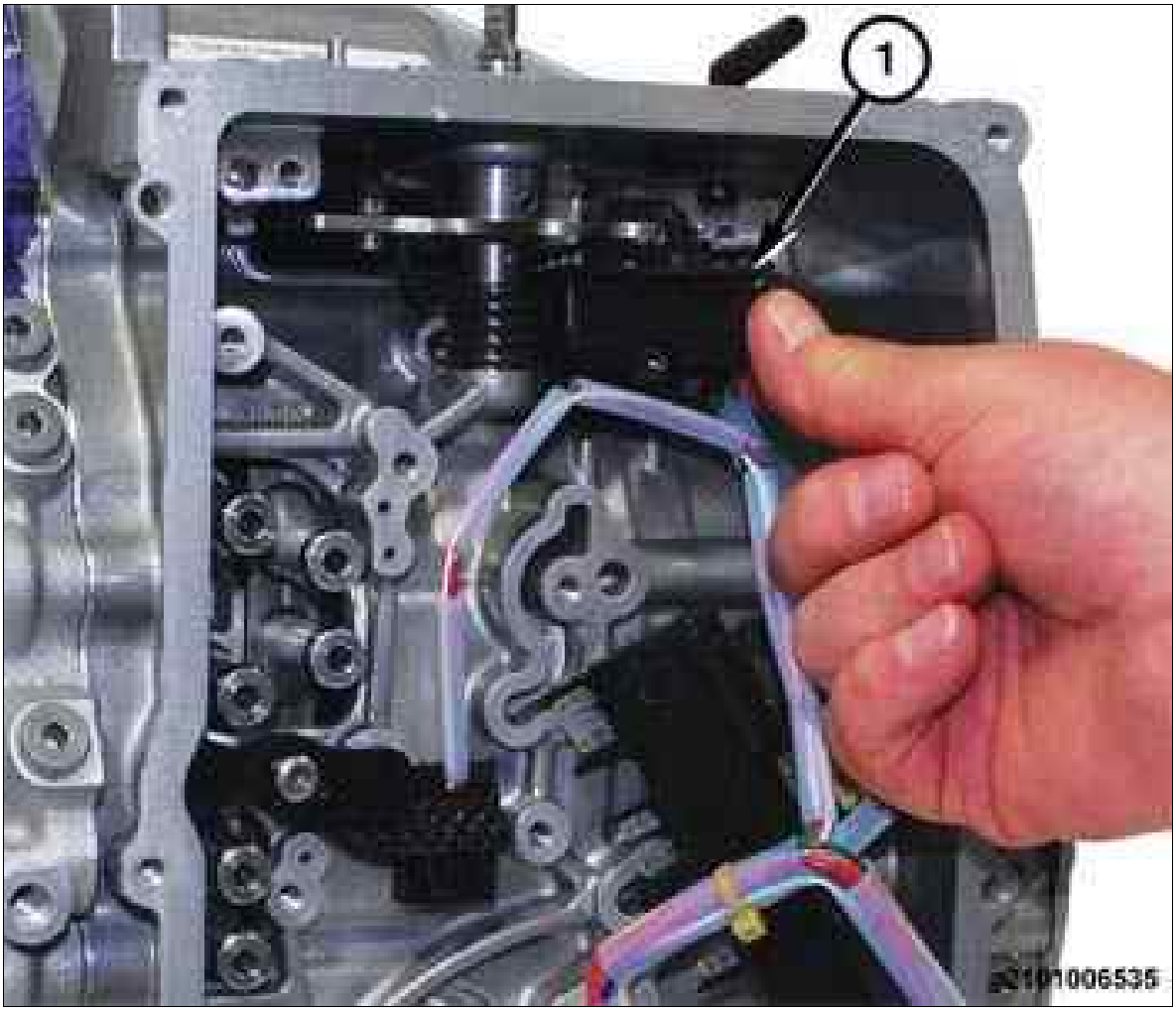
Fig 5: Removing/Installing Transmission Range Sensor



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7. Separate the TRS (1) from the transmission with the wire harness connected.

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Fig 6: Removing/Installing Speed Sensor Screw

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8. Remove the speed sensor screw (1).

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Fig 7: Removing/Installing Speed Sensor

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9. Separate the speed sensor (1) from the transmission with the wire harness connected.
10. Separate the valve body from the transmission.

> *NOTE:*
>
> *If the valve body is to be reused without disassembling it, store the valve body in a clean area until it is installed.*

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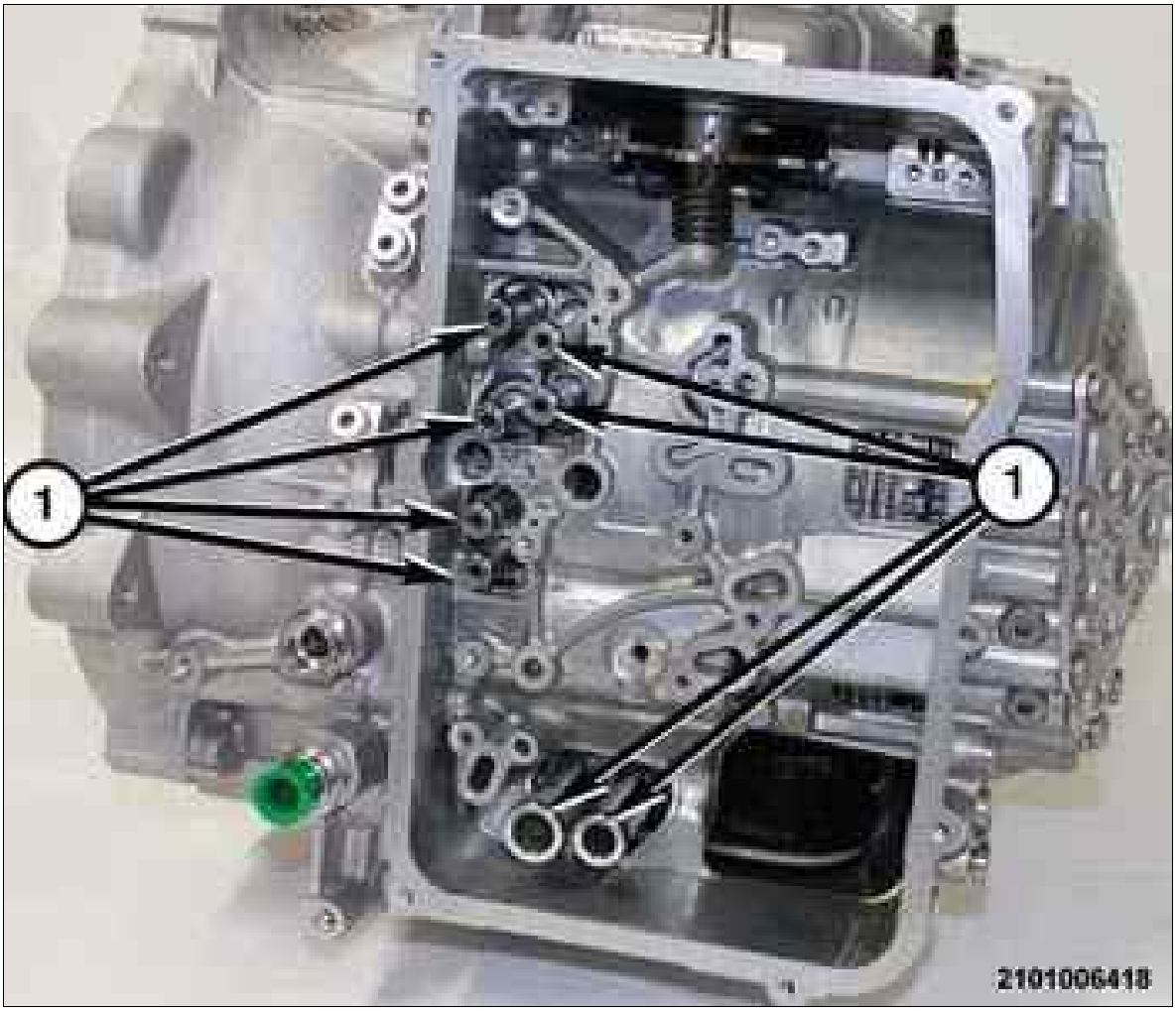
Fig 8: Fluid Adapter Tubes & O-Ring Seals



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11. Using suitable pliers, remove the fluid adapter tubes (1) from the transmission.

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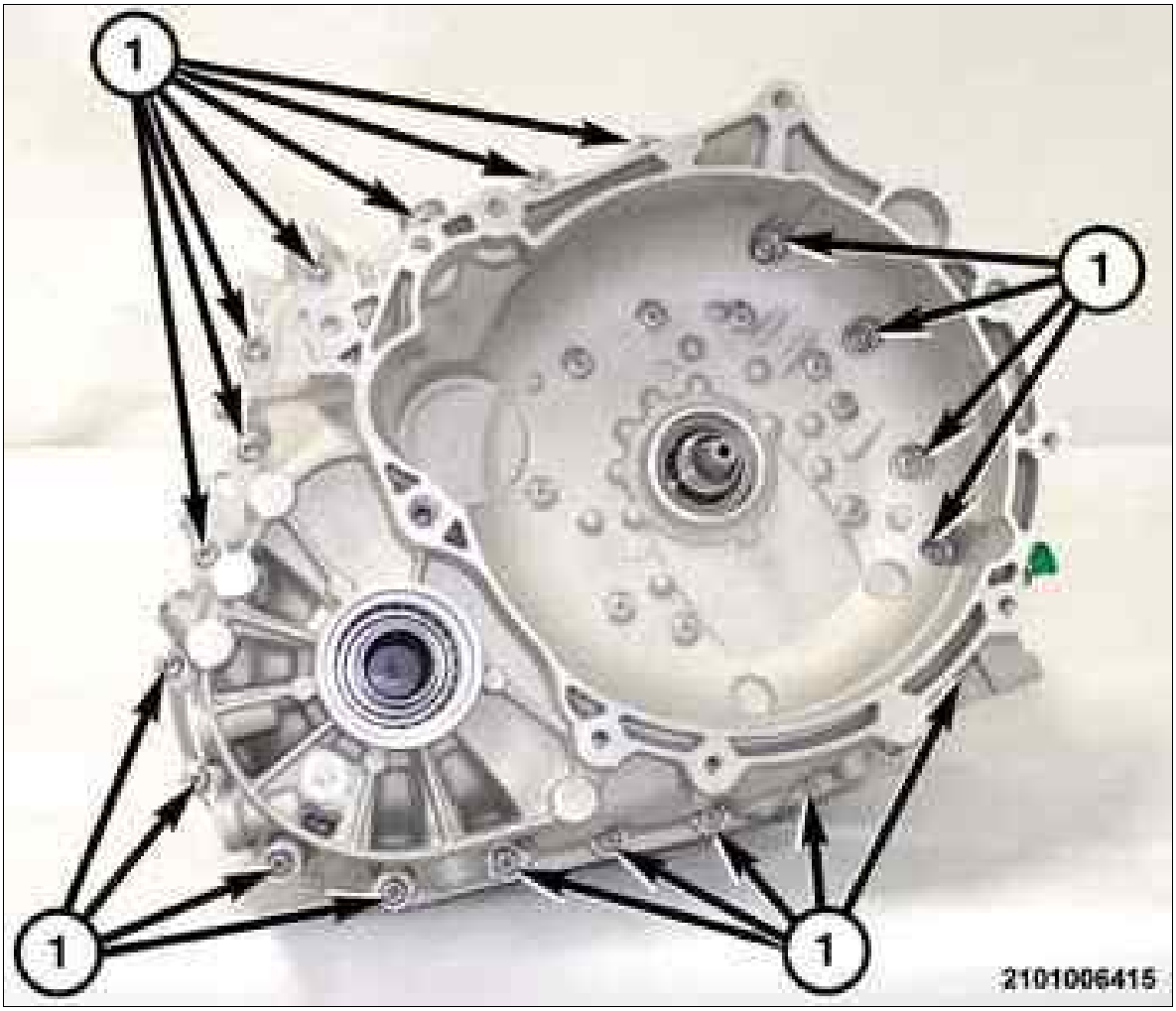
Fig 9: Bellhousing To Transmission Housing Bolts



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12. From around the perimeter of the transmission, remove the bellhousing bolts (1) holding the bellhousing to the transmission housing.

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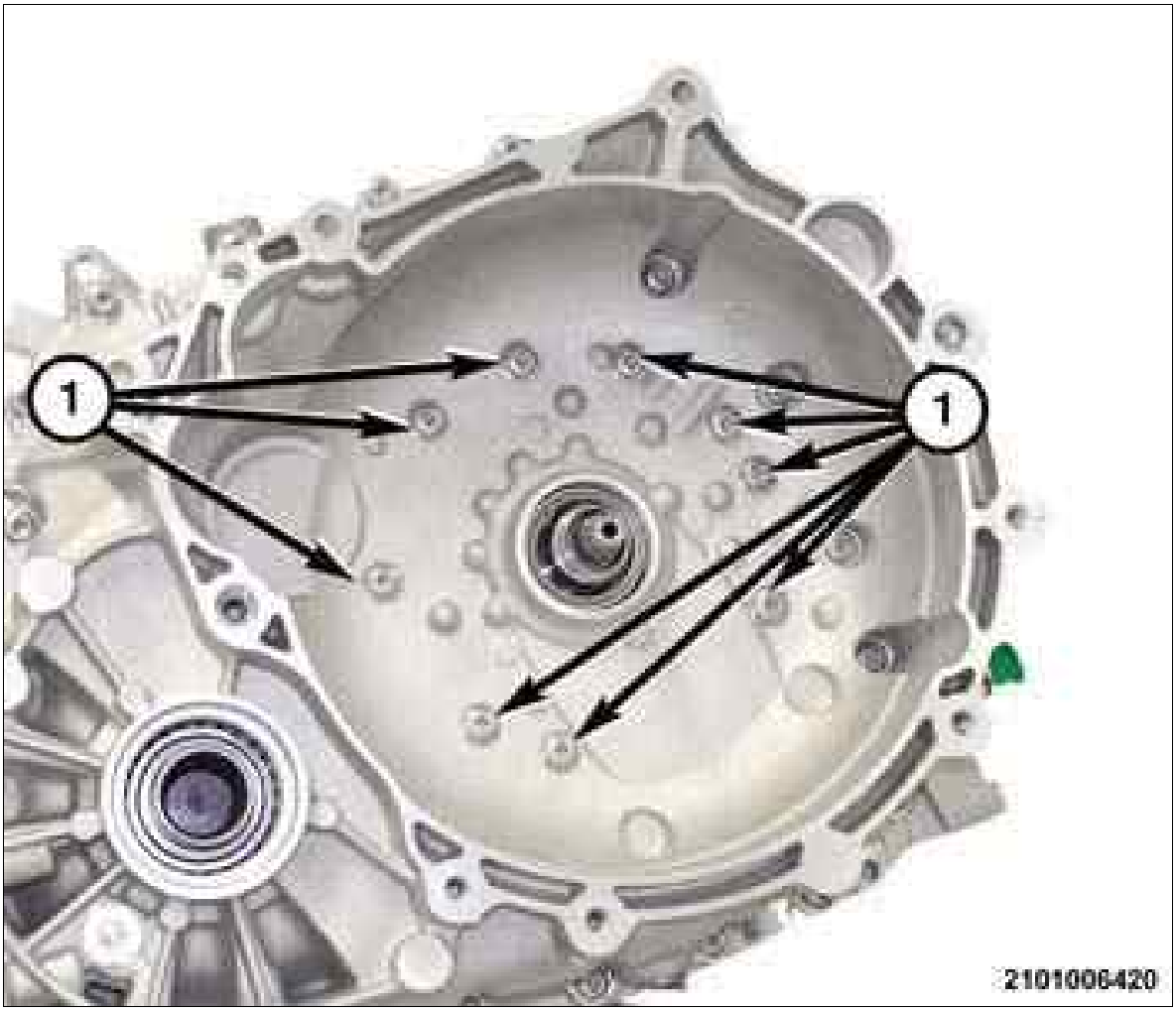
Fig 10: Bellhousing To Output Gear Support Bolts



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13. Remove the bellhousing bolts (1) holding the bellhousing to the output gear support.

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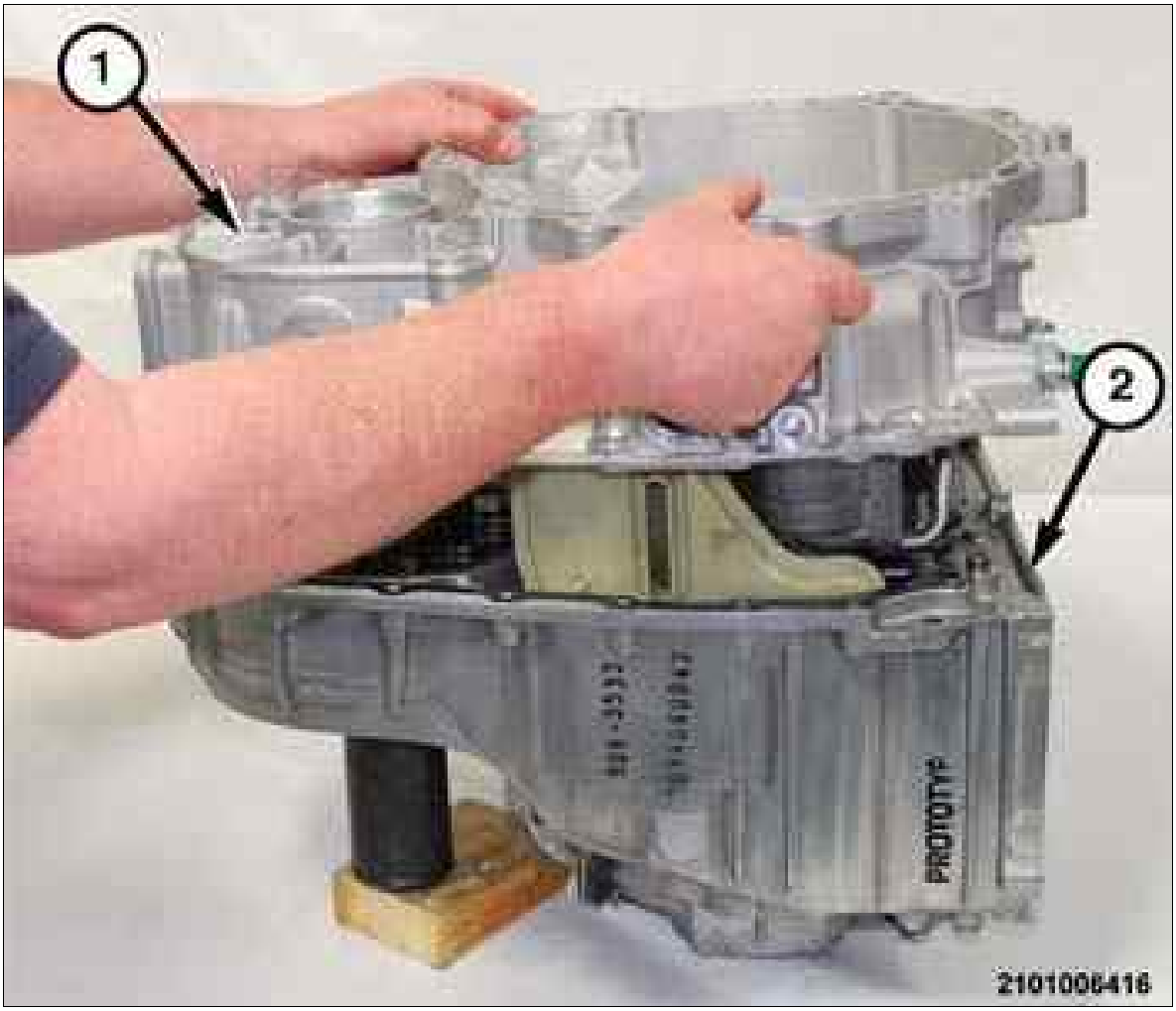
Fig 11: Removing/Installing Bellhousing At Transmission Housing



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14. Using wooden blocks to stabilize the transmission on the work surface, position the transmission on the bench with the bellhousing facing upward.

15. Using a suitable pry-bar in the pry point locations, pry upward to dislodge the bellhousing from the transmission housing.

16. Lift the bellhousing (1) upward and separate the assembly from the transmission housing (2).

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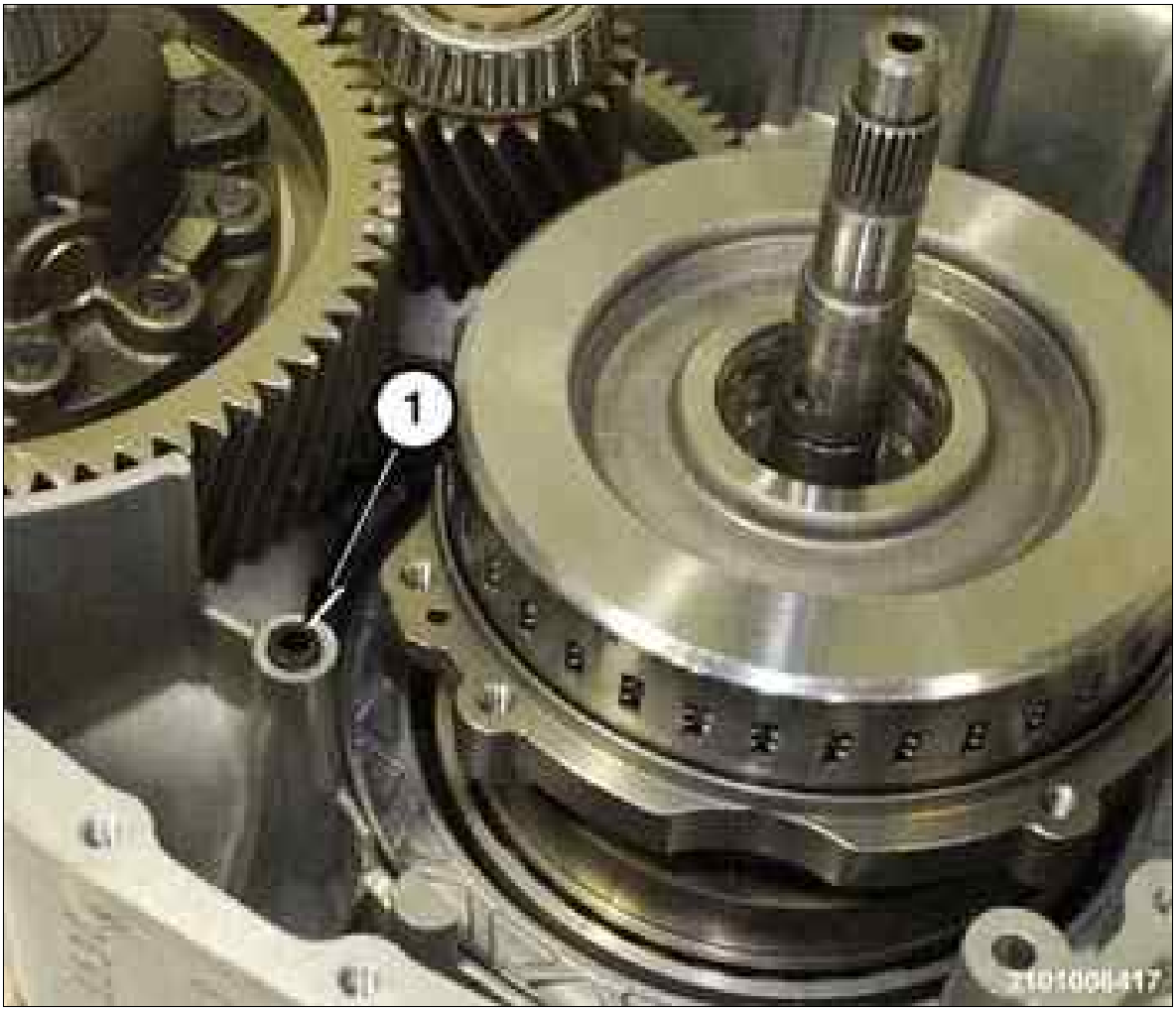
Fig 12: Port Seal



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17. Remove the seal (1) from the port in the transmission housing.

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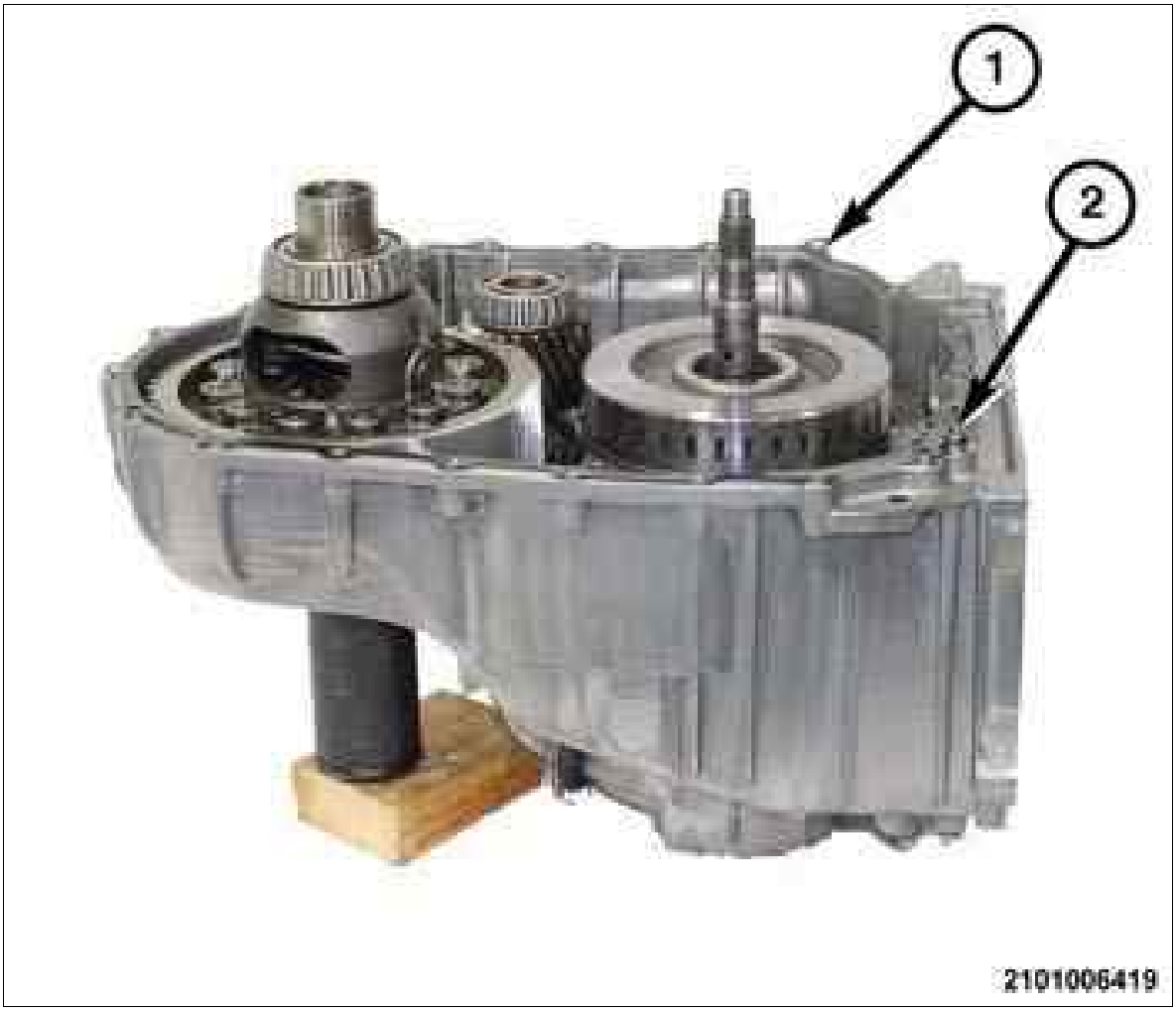
Fig 13: Gasket & Transmission Housing



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18. Separate the gasket (1) from the sealing surface of the transmission housing (2).

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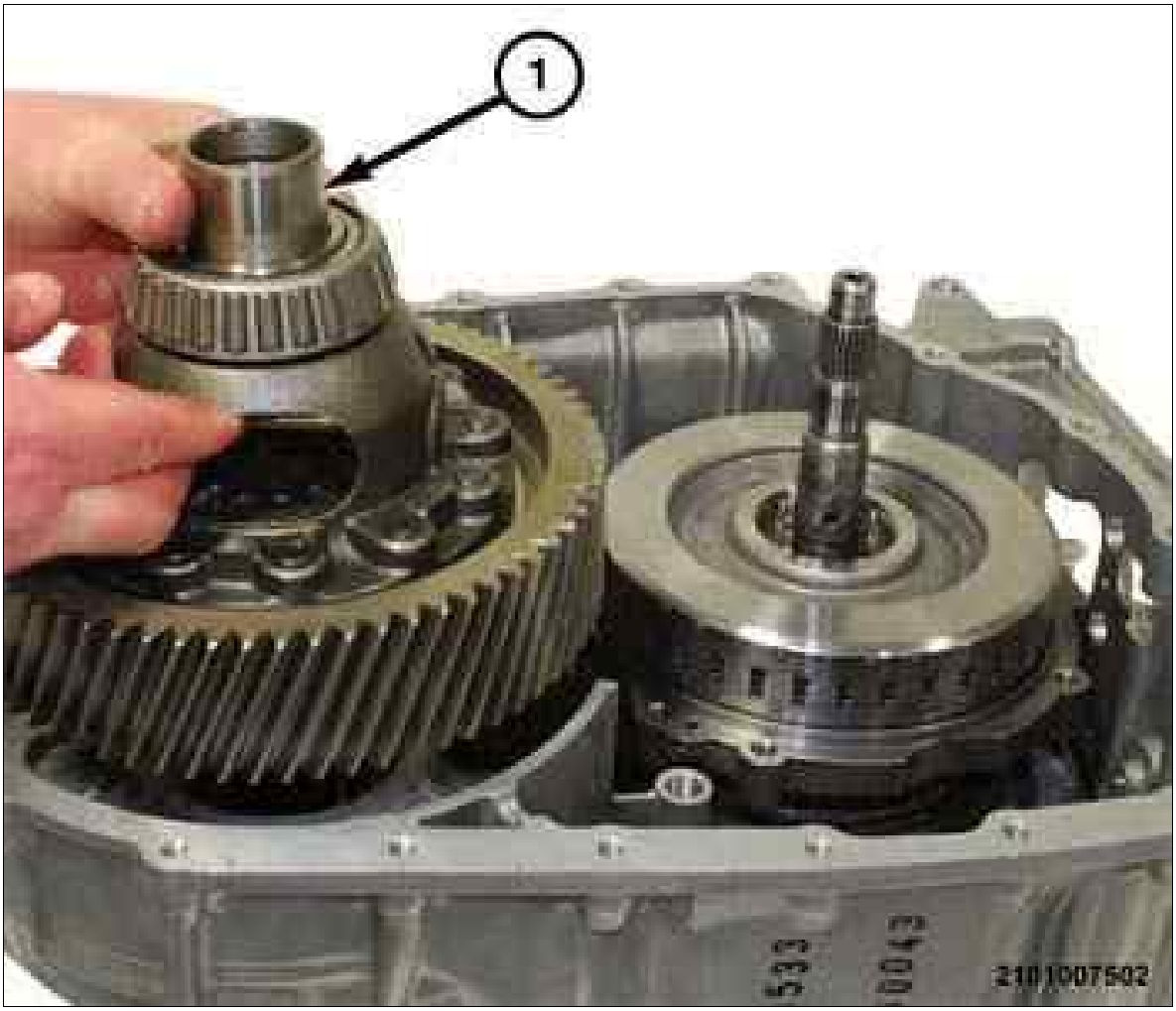
Fig 14: Differential Assembly



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19. Remove the differential assembly (1) from the transmission housing.

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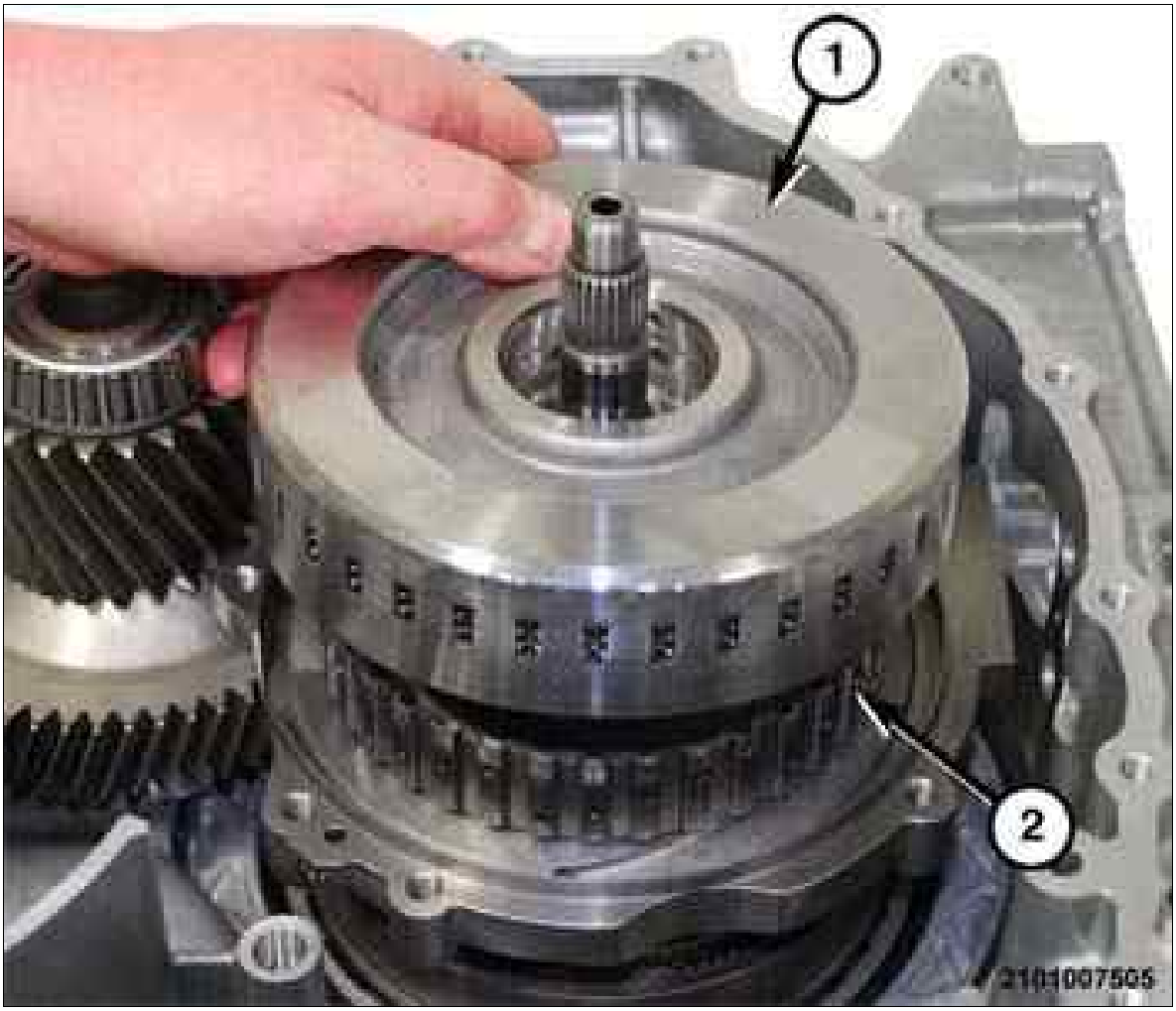
Fig 15: E-Clutch Drum & E-Clutch Assembly



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20. Separate the E-clutch drum (1) from the E-clutch assembly (2).

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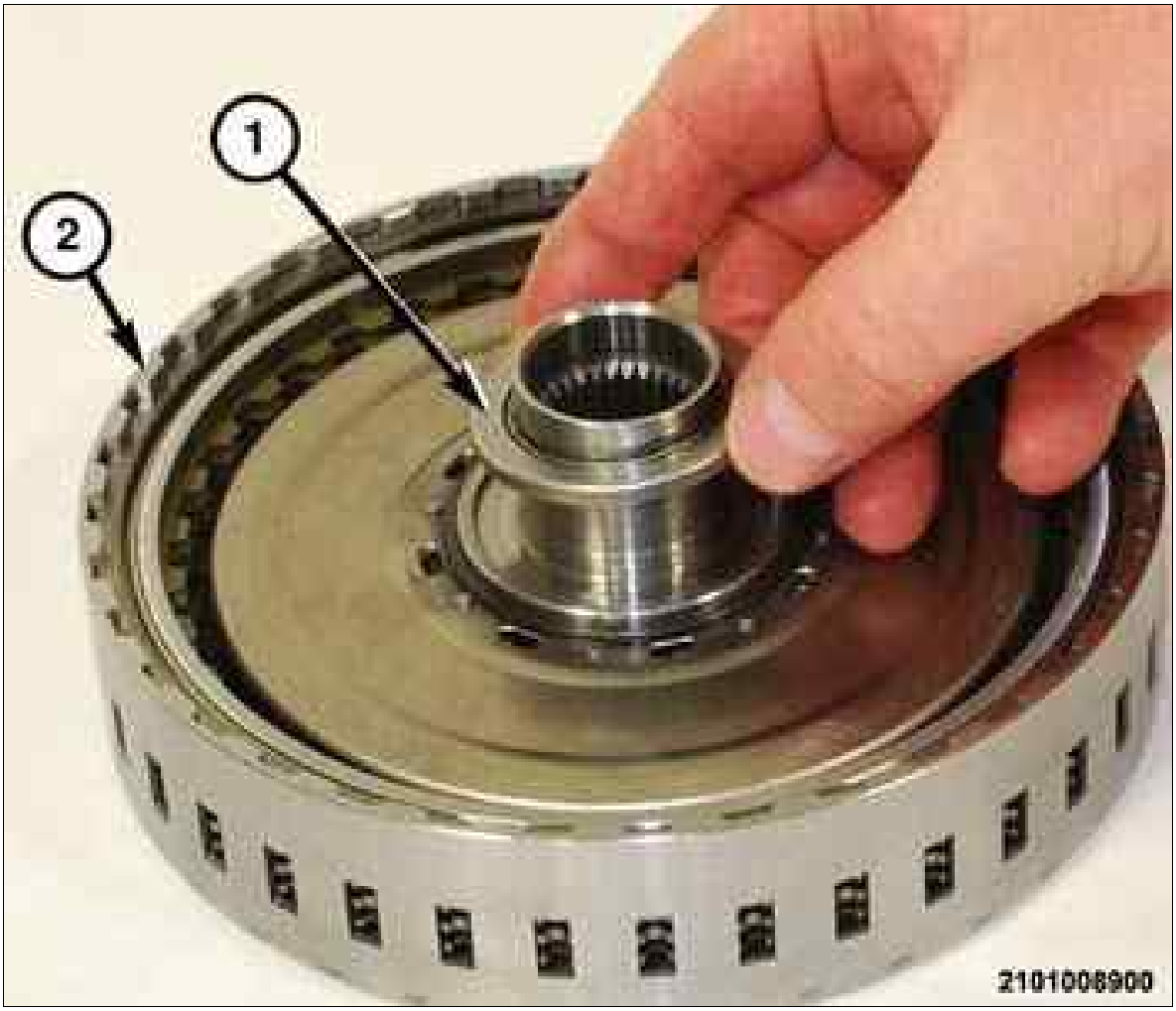
Fig 16: Removing/Installing Thrust Bearing At E-Clutch Assembly



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21. Separate the thrust bearing (1) from the E-clutch assembly.

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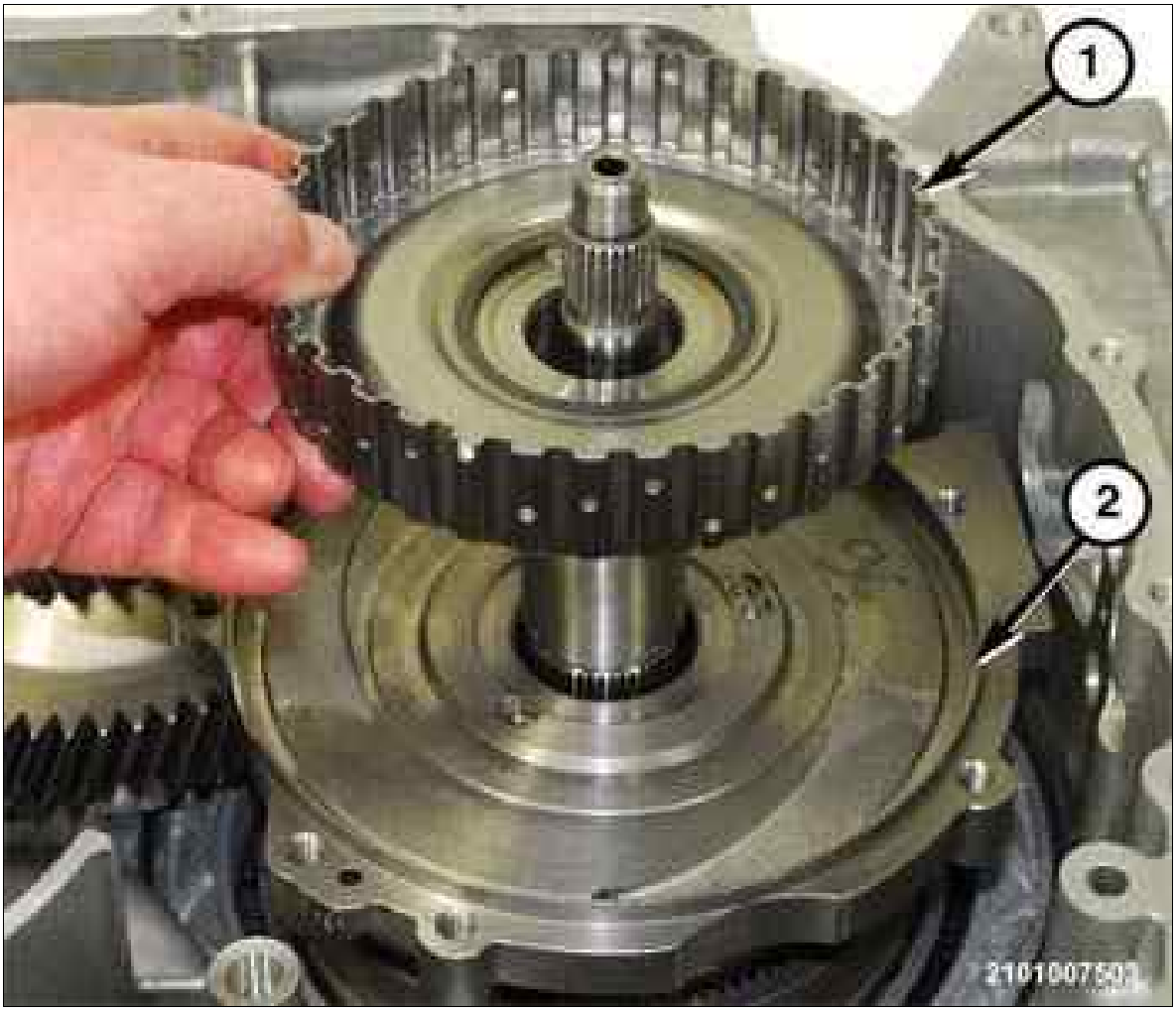
Fig 17: Output Gear Support, E-Clutch Hub & Shaft



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22. Separate the E-clutch hub (1) from the output gear support (2).

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Fig 18: Output Gear Support & Planetary Pinion Carrier

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23. Separate the output gear support (1) from the gear 4 planetary pinion carrier (2).

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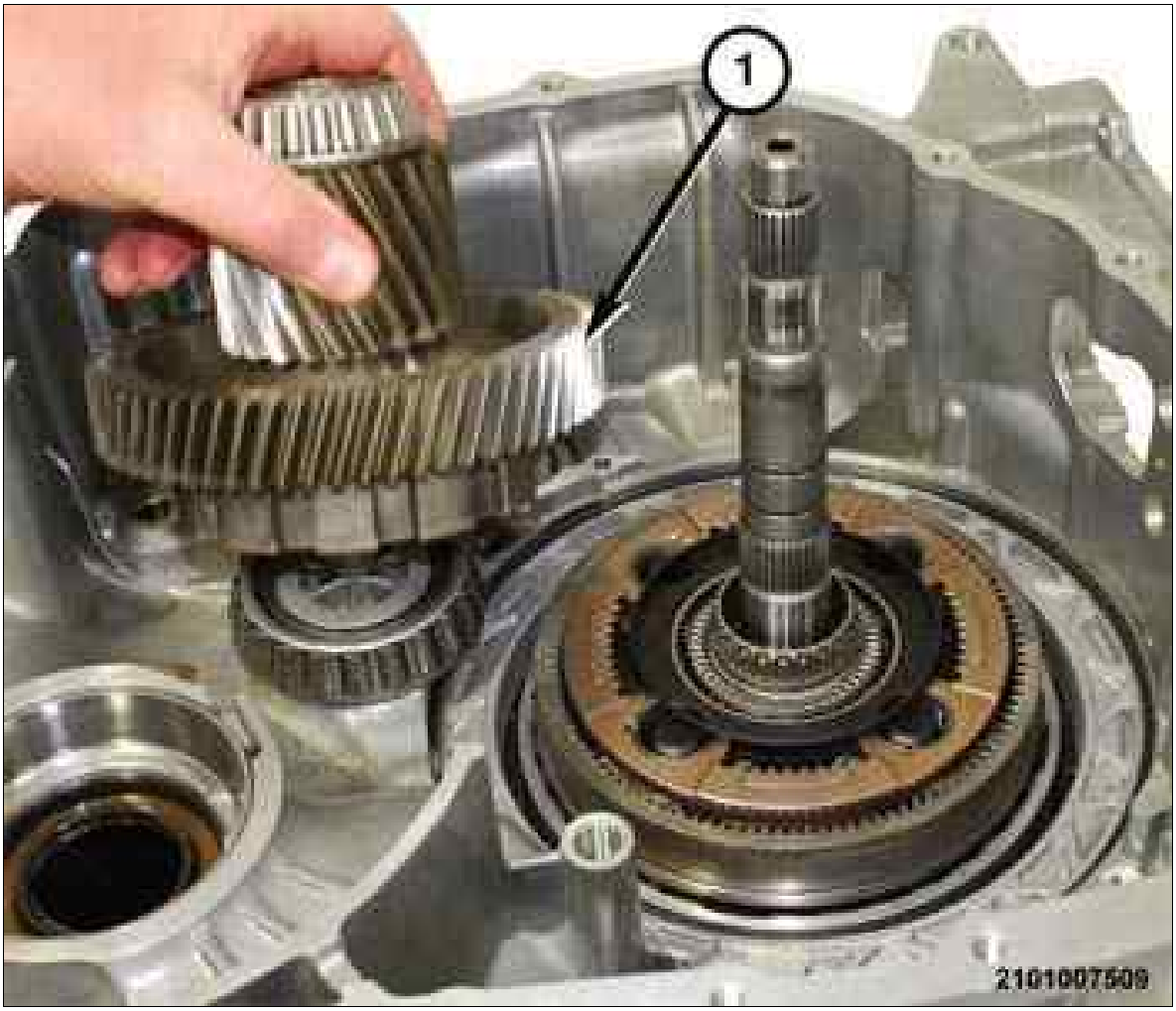
Fig 19: Removing/Installing Transfer Gear



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24. Remove the transfer gear (1) from the transmission housing.

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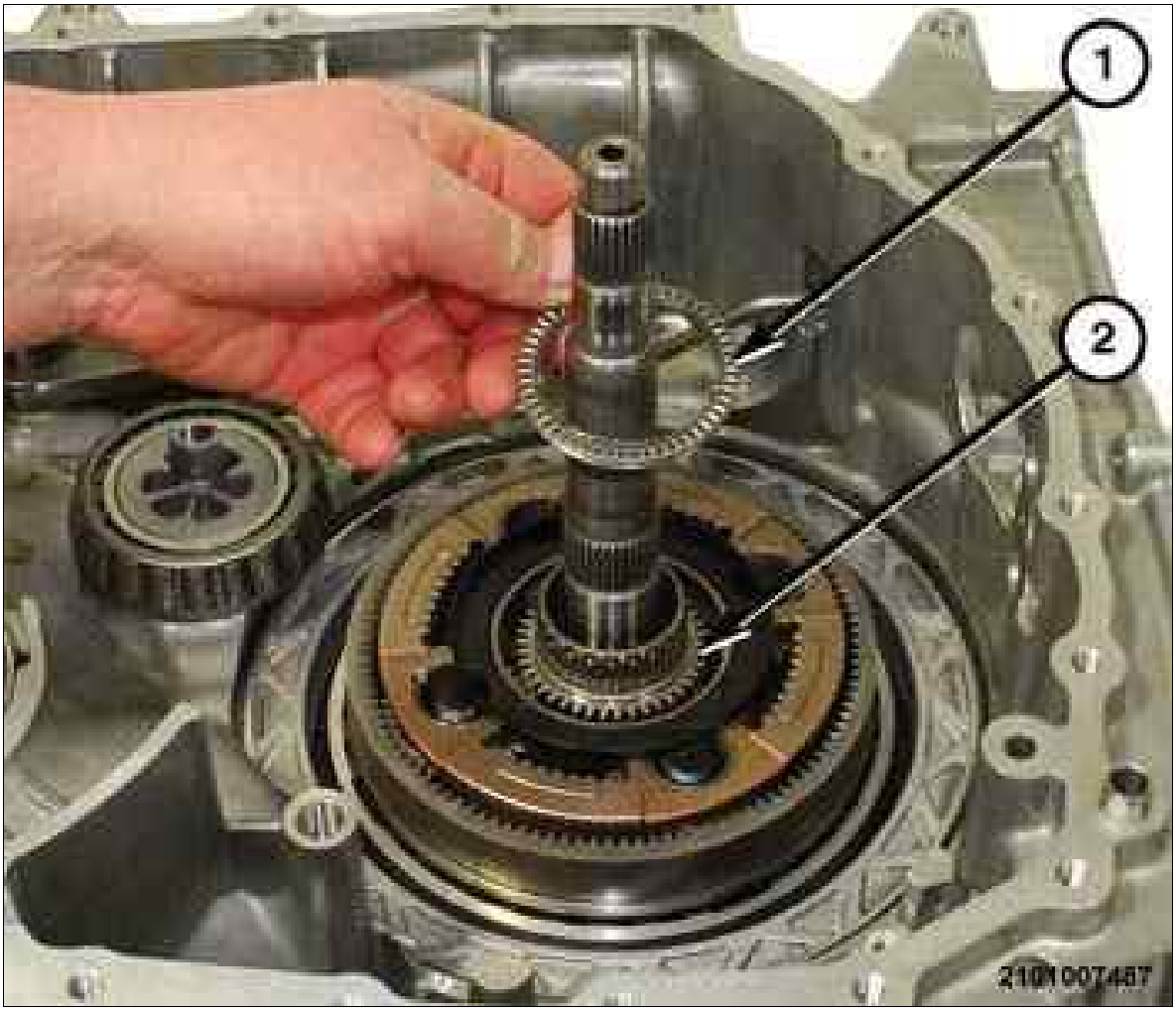
Fig 20: Roller Type Thrust Bearing, Sun Gear And Dog Clutch-F



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25. Separate the roller type thrust bearing (1) from the sun gear 3 and 4 and Dog Clutch-F (2).

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Fig 21: Removing/Installing Sun Gear 3, 4 And Dog Clutch-F At Gear 4 Planetary Pinion Carrier

Courtesy of CHRYSLER GROUP, LLC

26. Separate the sun gear 3 and 4 and Dog Clutch-F (1) from the gear 4 planetary pinion carrier.

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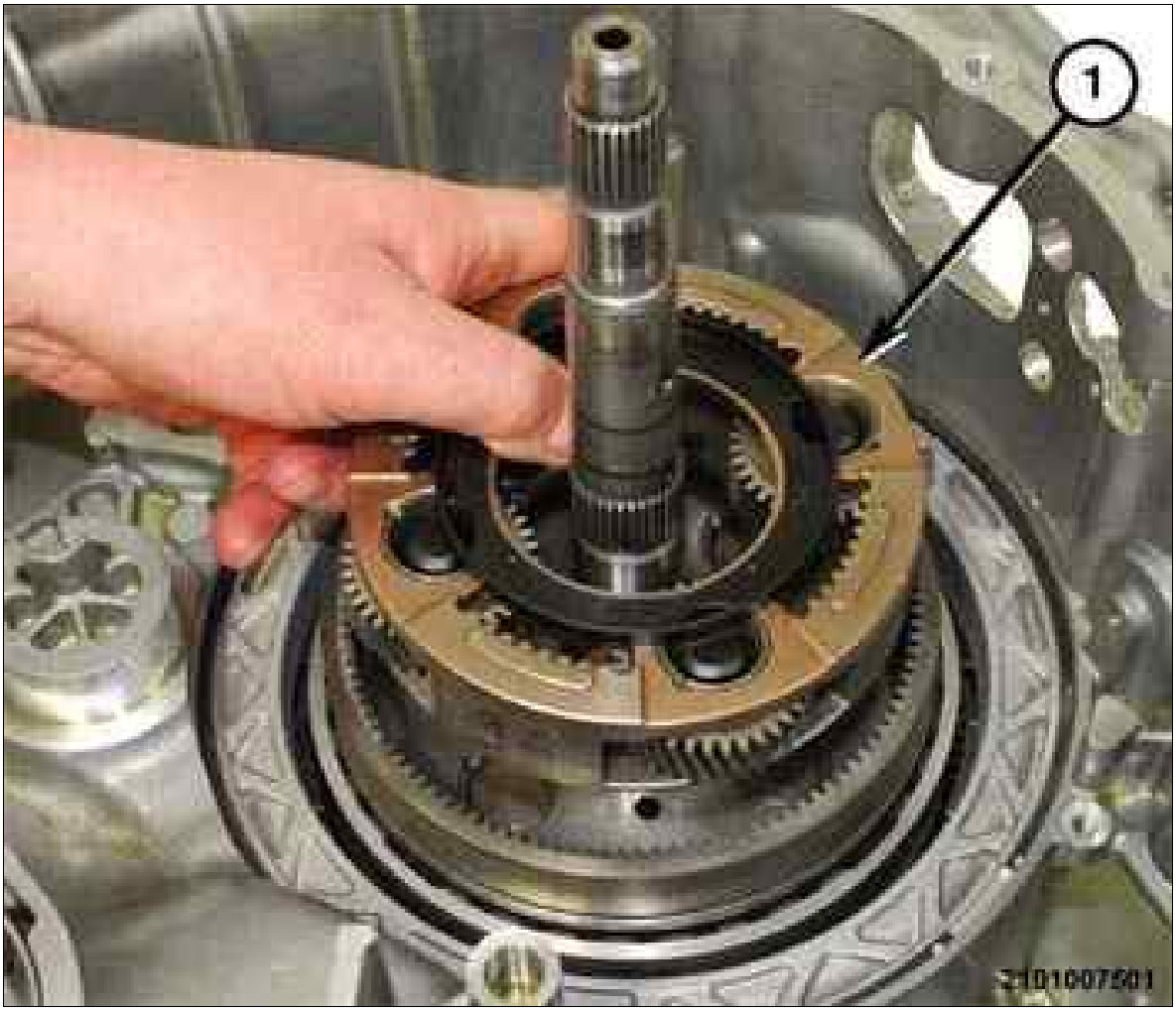
Fig 22: Gear 4 Planetary Pinion Carrier



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27. Separate the gear 4 planetary pinion carrier (1) from the annulus gear 4.

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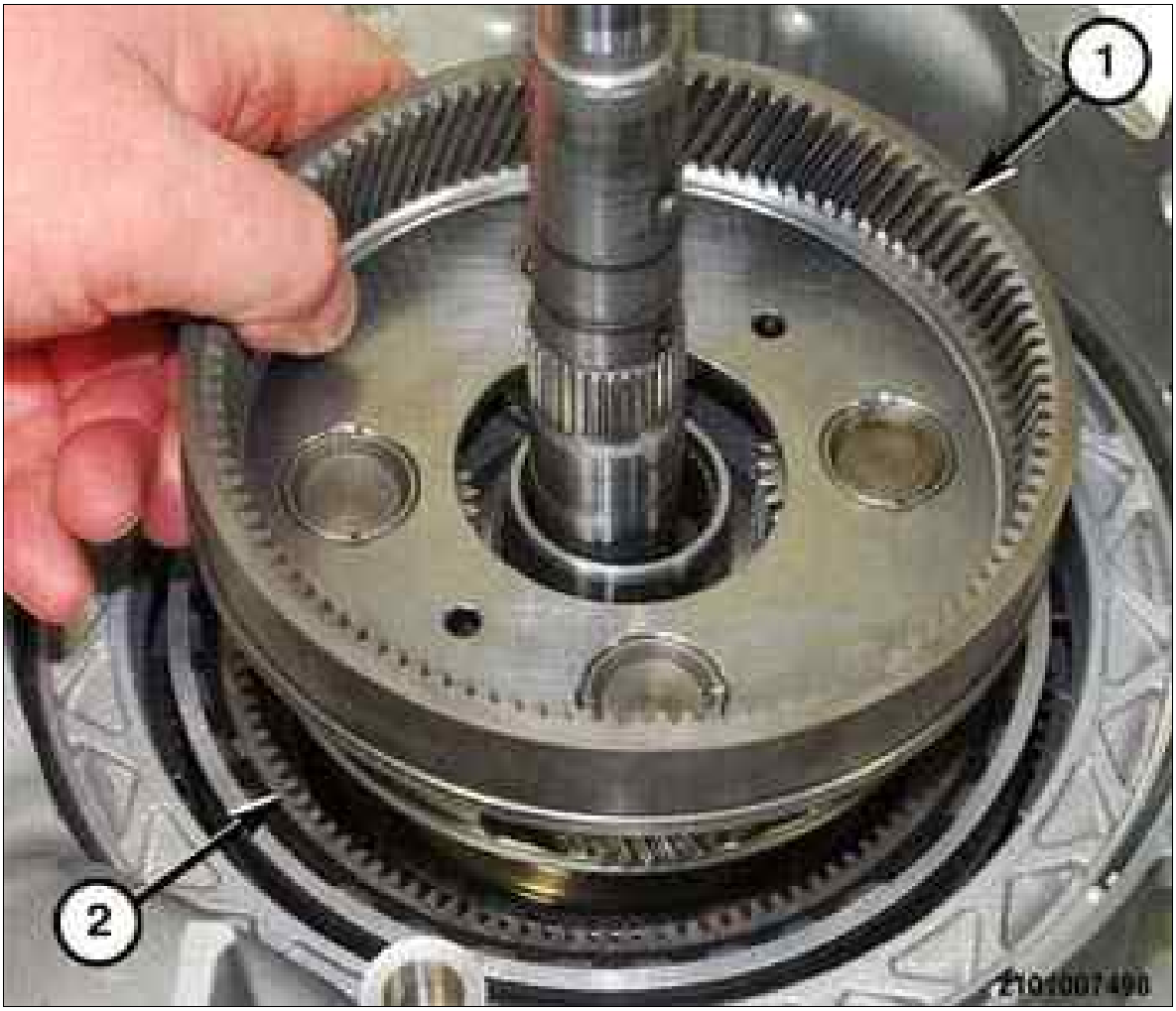
Fig 23: Annulus Gear 4 & Annulus Gear 3



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28. Separate the annulus gear 4 (1) from the annulus gear 3 (2).

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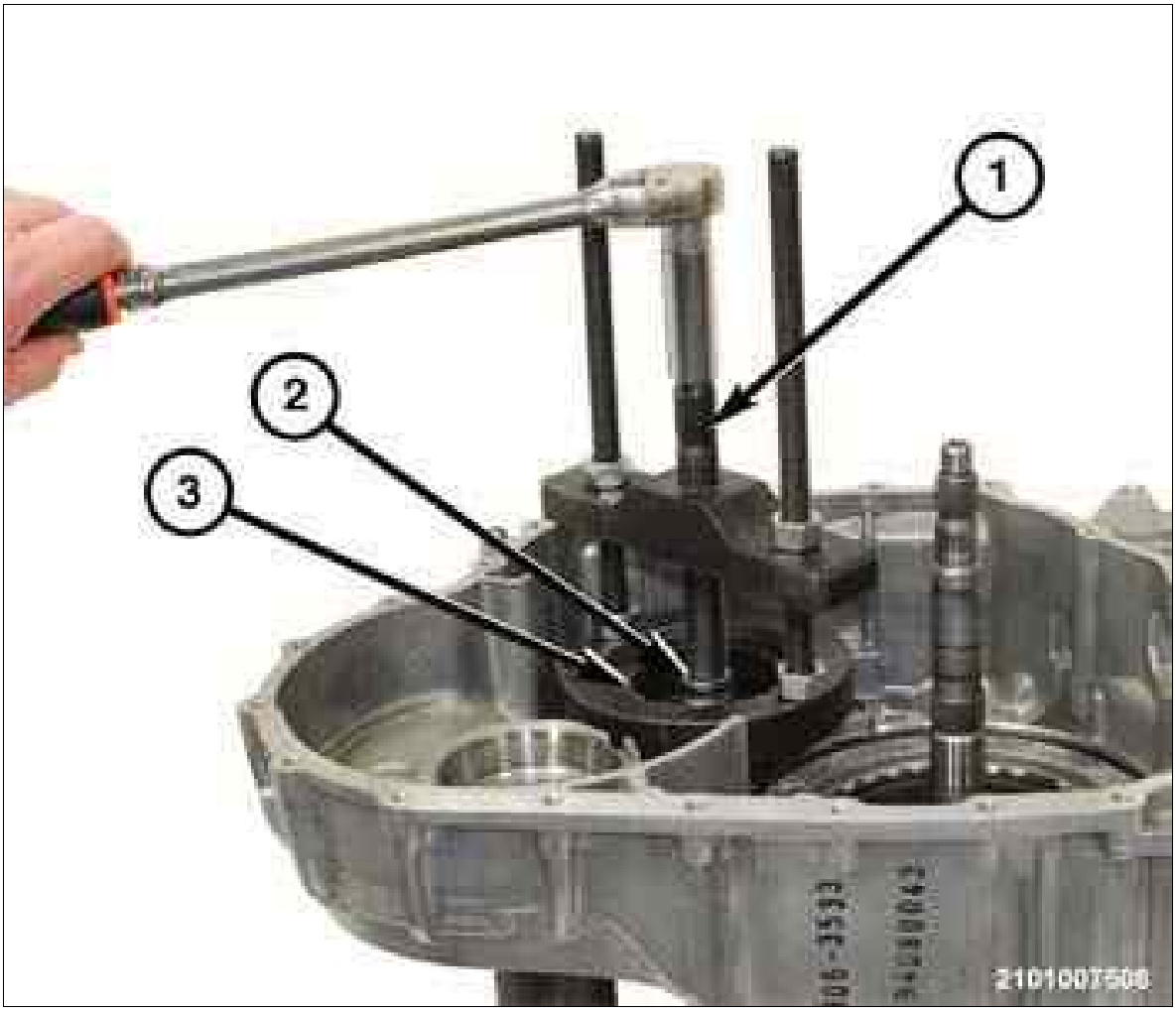
Fig 24: Removing Transfer Gear Bearing Cone



Courtesy of CHRYSLER GROUP, LLC

29. Using the (special tool #C-293-PA, Puller, Press) (1), (special tool #9738, Blocks, Adapter) (3) and a suitable socket as a plug (2), remove the transfer gear bearing cone from the transmission housing.

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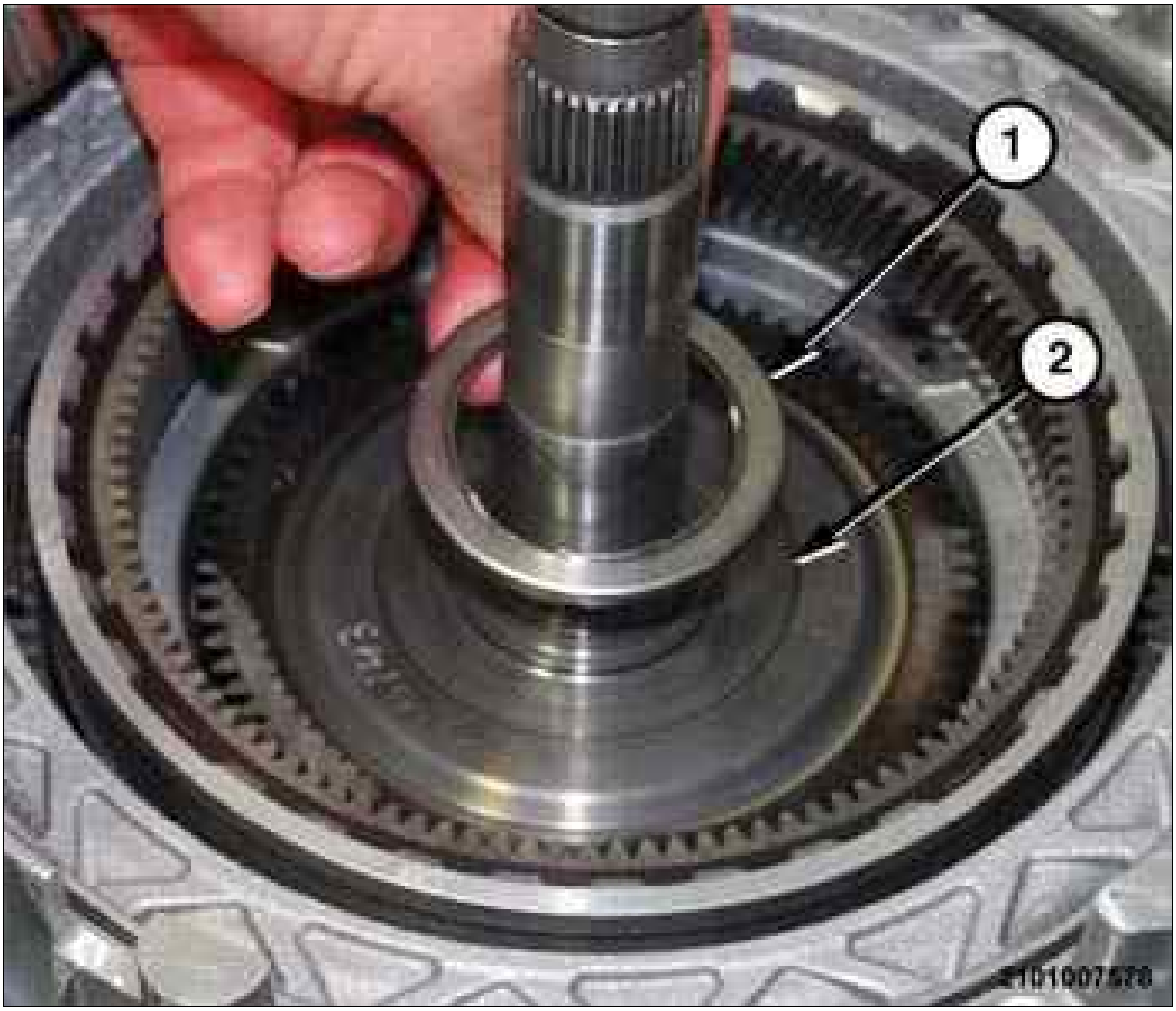
Fig 25: Thrust Bearing & Annulus Gear 1 Planetary Hub



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30. Separate the trust bearing (1) from the annulus gear 1 planetary hub (2).

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Fig 26: Annulus Gear 1 Planetary Hub, Carrier Gear 1 And 2

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31. Separate the annulus gear 1 planetary hub (1) from the carrier gear 1 and 2 (2).

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Fig 27: Thrust Bearing & Annulus Gear 1 Planetary Hub

Courtesy of CHRYSLER GROUP, LLC

32. Separate the thrust bearing (1) from under the annulus gear 1 planetary hub (2).

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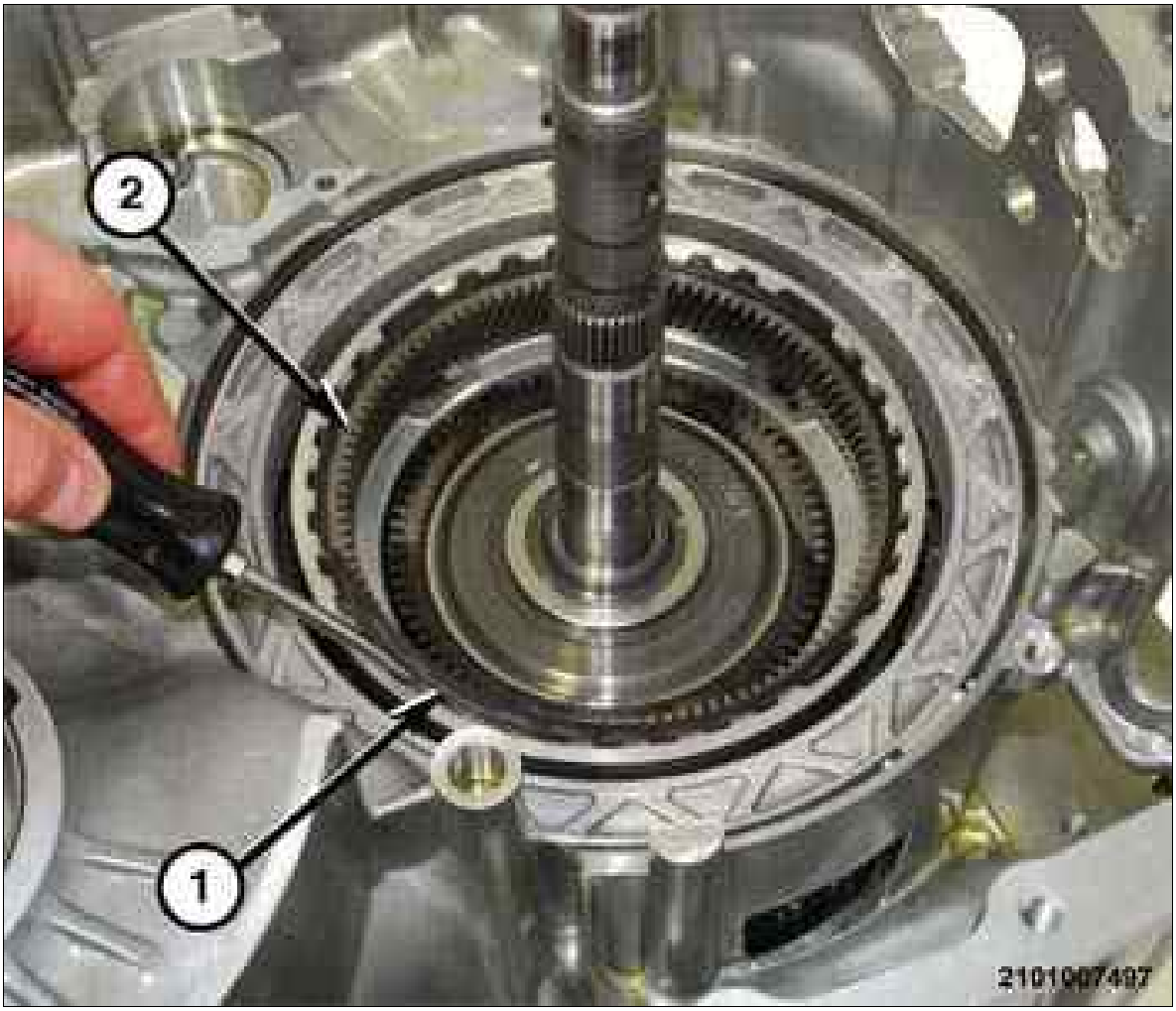
Fig 28: Remove Snap-Ring & Annulus Gear 3



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33. Using a suitable screw driver, remove the snap-ring (1) holding the annulus gear 3 (2).

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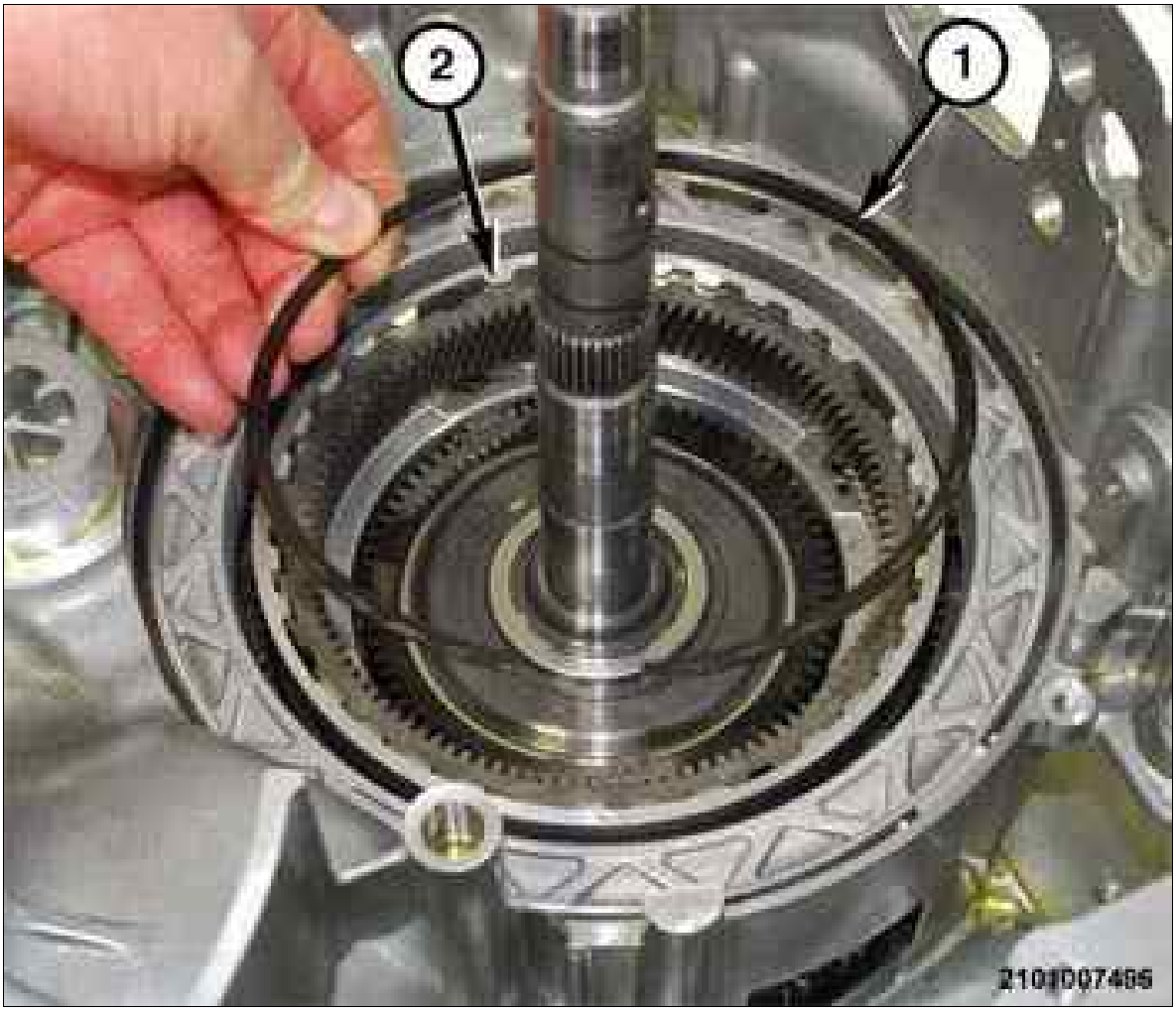
Fig 29: Separate Snap-Ring & Annulus Gear 3



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34. Separate the snap-ring (1) from the annulus gear 3 (2).

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Fig 30: Annulus Gear 3 & Carrier Gear 1&2

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35. Separate the annulus gear 3 (1) from the carrier gear 1 and 2.

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Fig 31: Carrier Gear 1&2 & O-Ring Seal

Courtesy of CHRYSLER GROUP, LLC

36. Remove the O-ring seal (1) from the carrier gear 1 and 2.

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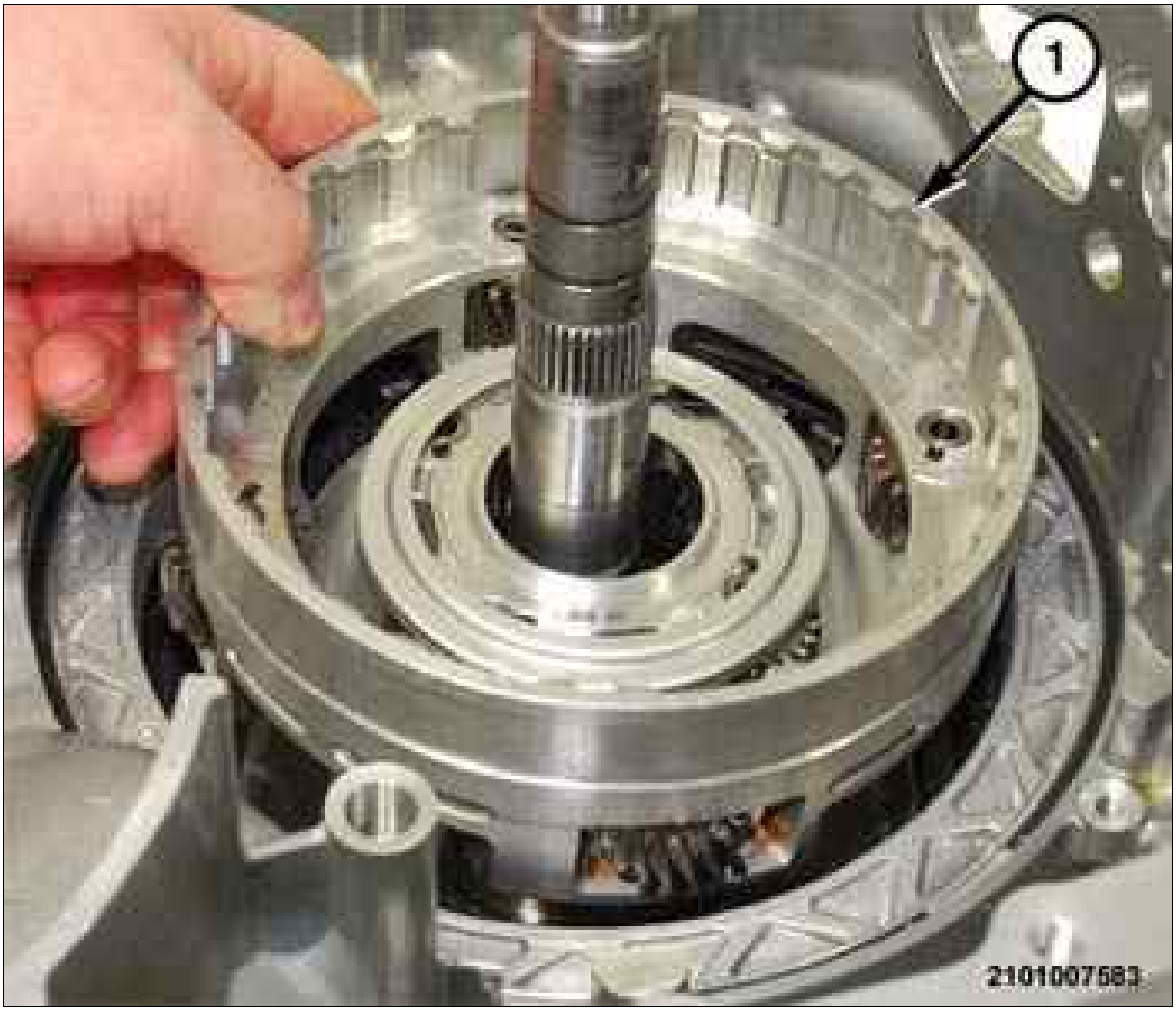
Fig 32: Carrier Gear, Annulus Gear & D-Clutch Hub



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37. Separate the carrier gear 1 and 2 (1) annulus gear 2, D-clutch hub and input shaft assembly.

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Fig 33: Snap Ring, D-clutch Piston Retainer, Transmission Housing & Special Tool

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38. Position the transmission housing on a suitable arbor press using wooden blocks for support.

39. Using (special tool #8901A, Pressing Tool) (1) (with pressure scale removed) and (special tool #10428, Adapter, Pressing Tool), compress the bellville spring to gain access to the snap ring-ring (3) holding the D-clutch piston retainer (2) into the transmission housing (4).

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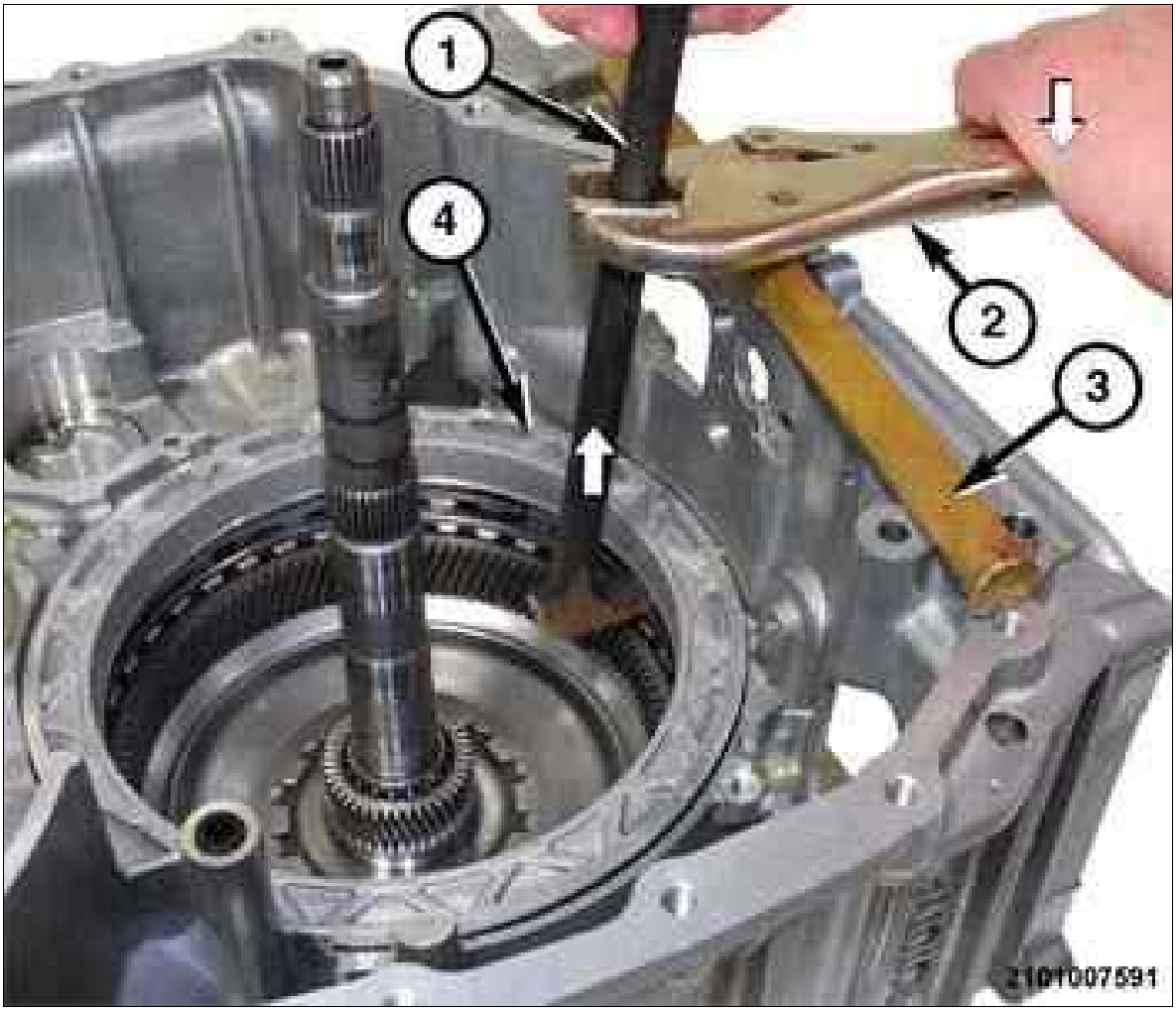
Fig 34: Pry-Bar, Vise-Grip Pliers, Base Drift & D-Clutch Piston Retainer



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> *NOTE:*
>
> *The O-ring seal on the D-clutch piston retainer will hang up in the snap-ring groove during removal and will need to be pried out of the transmission housing.*

40. Using a suitable pry-bar (1) vise-grip pliers (2) and a brass drift (3) coupled together, pry the D-clutch piston retainer (4) upward and out of the transmission housing.

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Fig 35: D-Clutch Piston & Retainer

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41. Remove the D-clutch piston (2) from the retainer (1).

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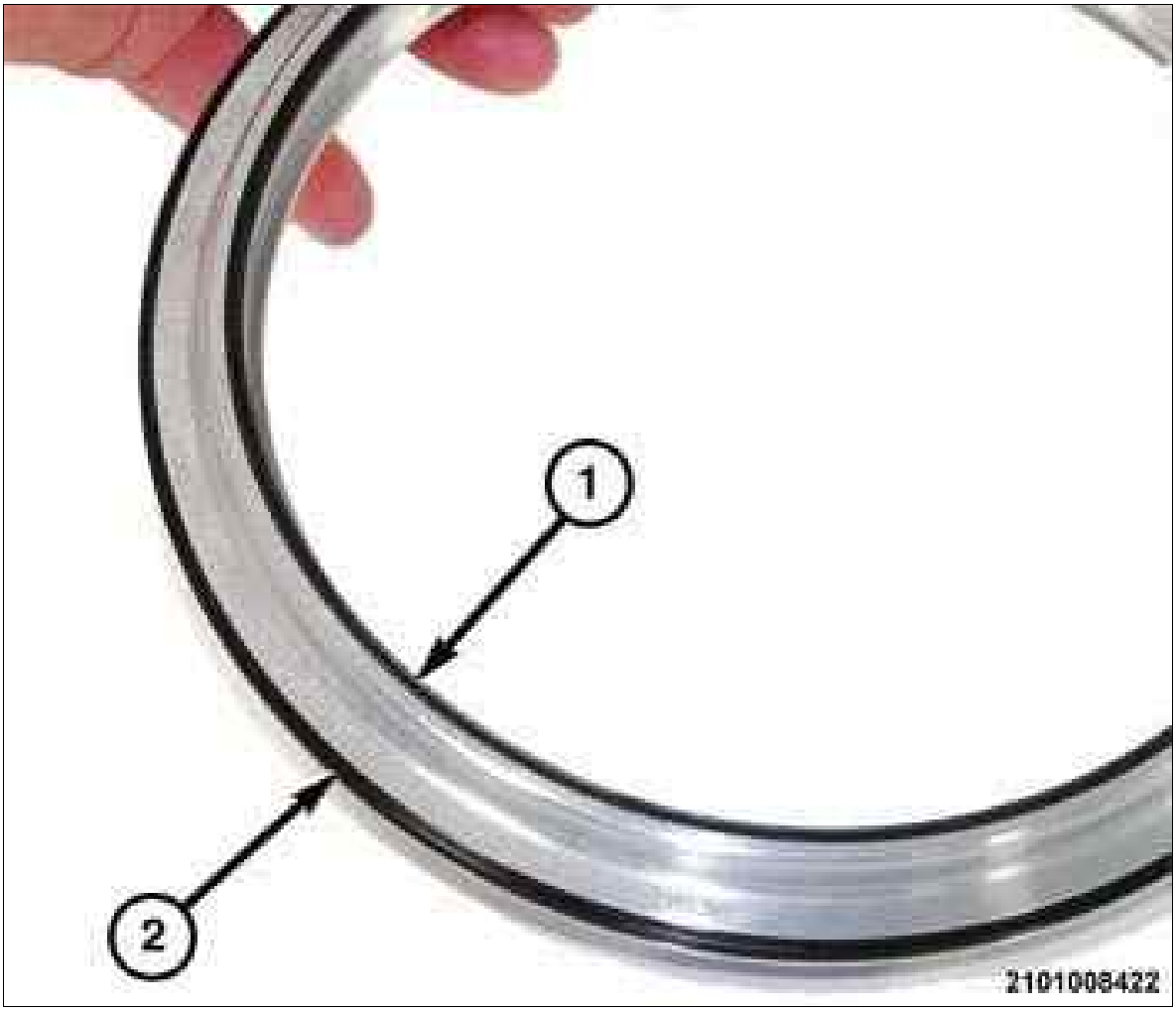
Fig 36: D-Clutch Piston Inner & Outer Seals



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42. Remove the inner (1) and outer (2) lip seals from the D-clutch piston.

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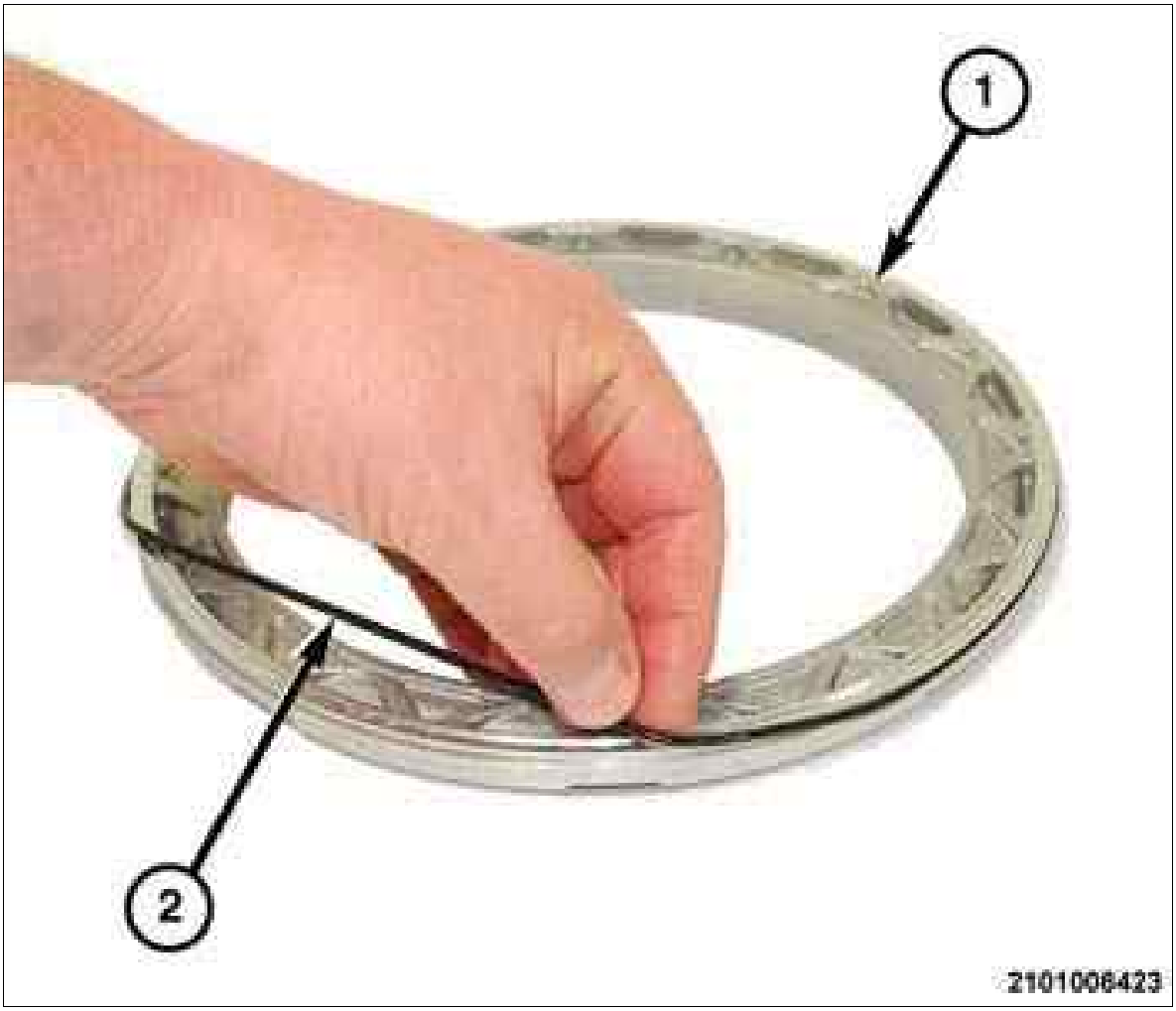
Fig 37: D-Clutch Piston Retainer & O-Ring Seal



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43. Remove the O-ring seal (2) from the D-clutch piston retainer (1).

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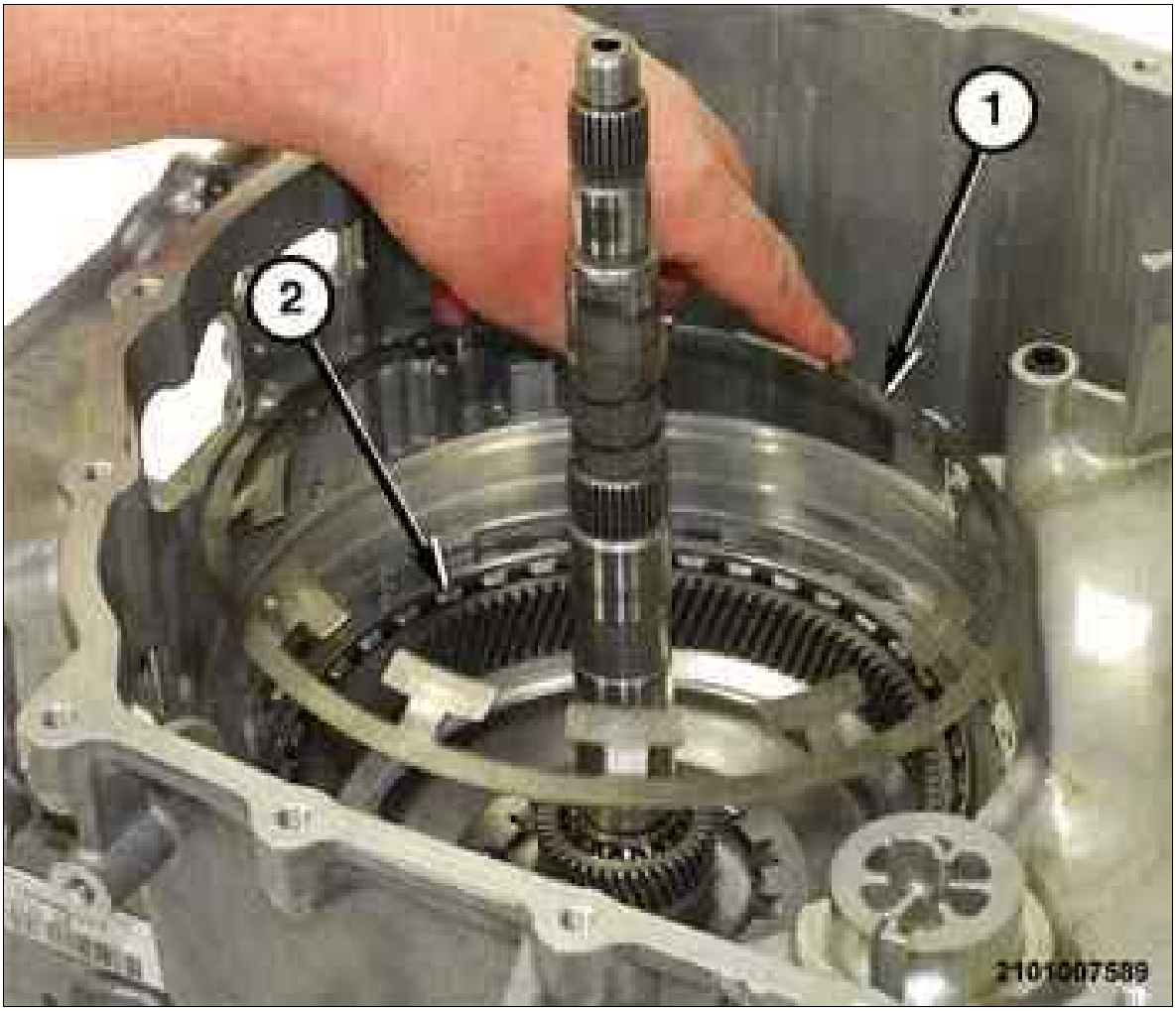
Fig 38: Bellville Spring & Transmission Housing



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44. Separate the bellville spring (1) from the transmission housing (2).

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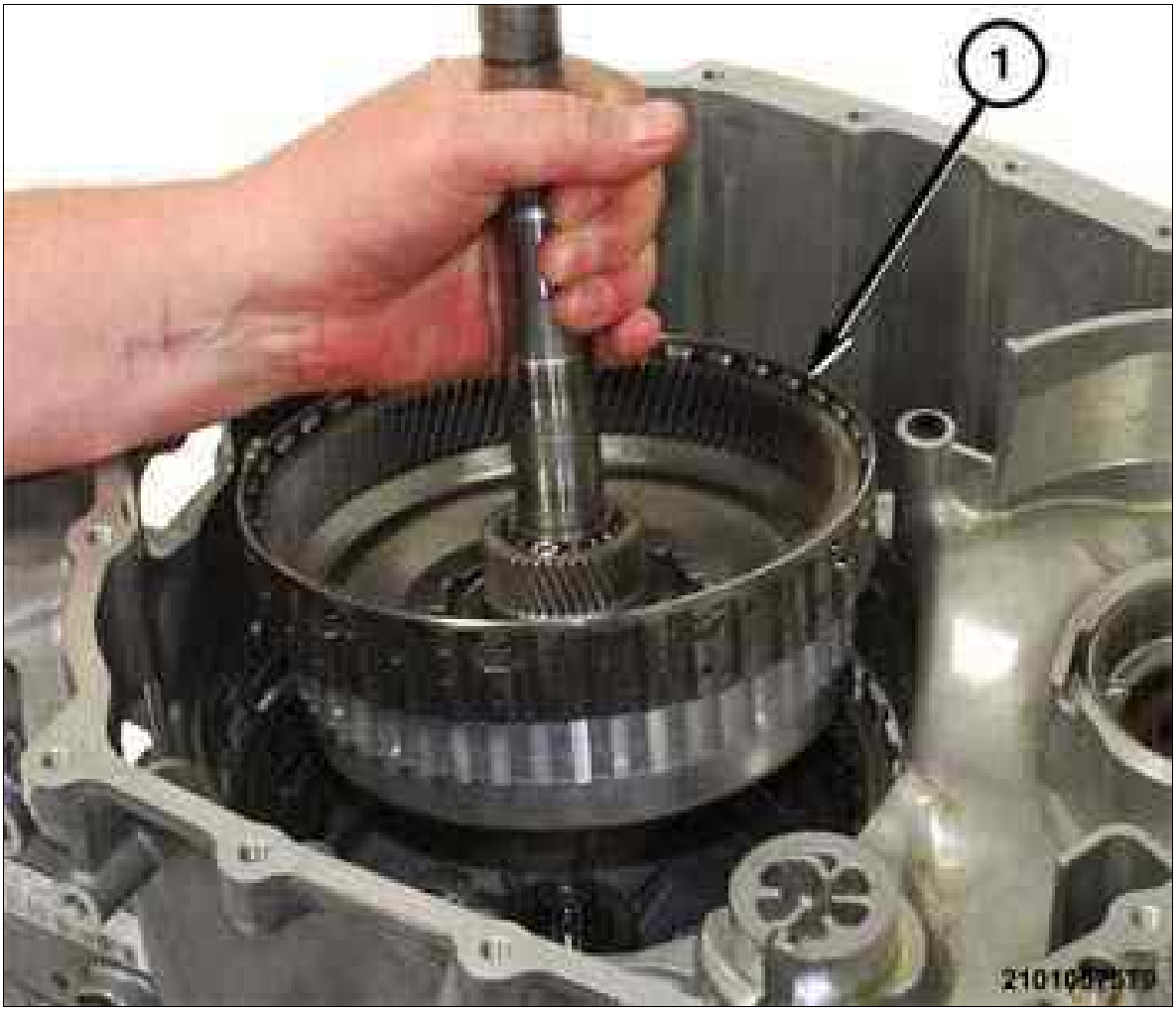
Fig 39: Annulus Gear 2, D & C-Clutch Hub And Input Shaft Assembly



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45. Separate the annulus gear 2, D and C-clutch hub and input shaft assembly (1) from the transmission housing.

46. Remove the annulus gear 2, D and C-clutch hub from the input shaft and B-clutch.

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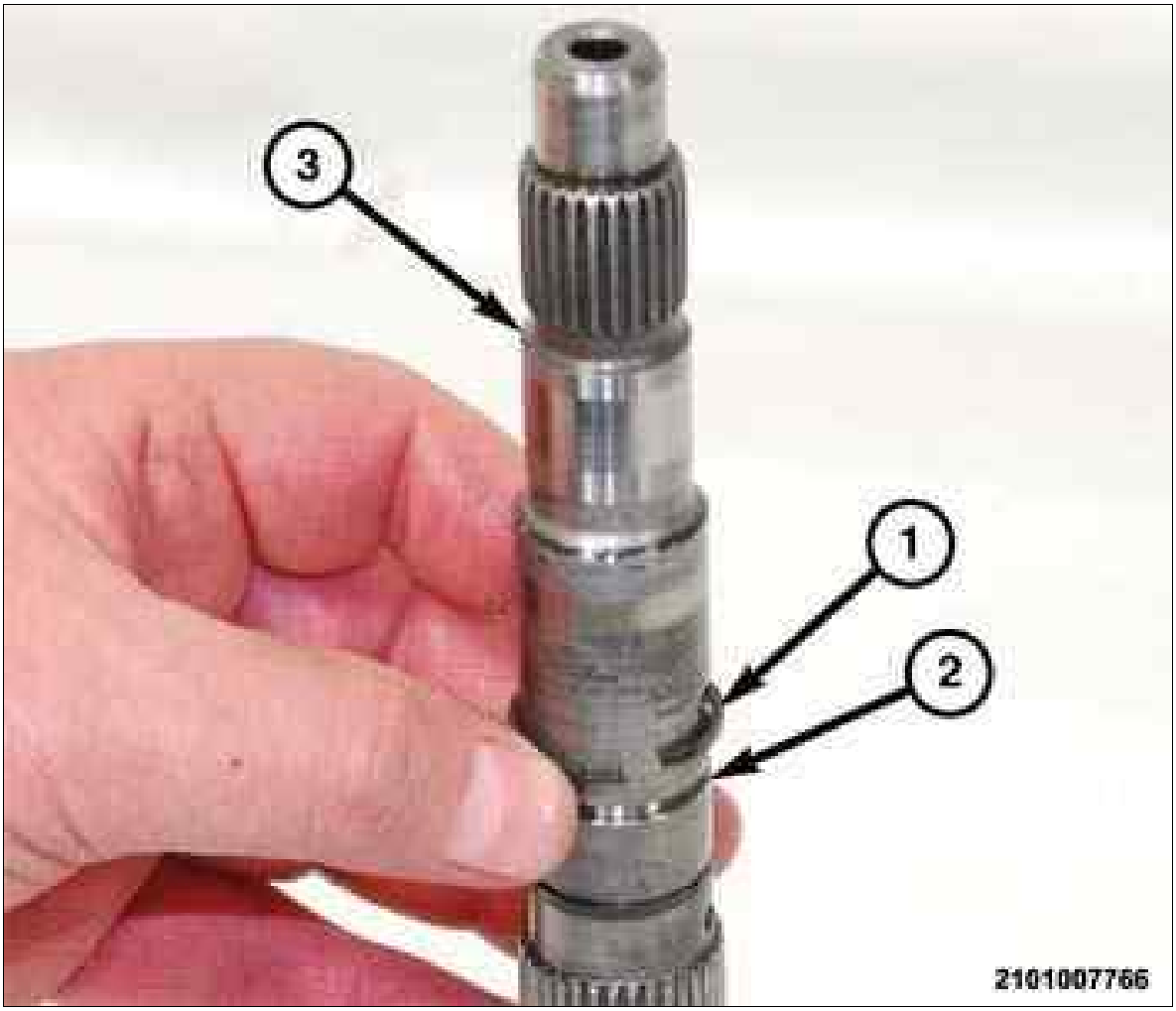
Fig 40: Input Shaft, Lands & Seal Rings



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47. Remove the seal-rings (1) from the lands (2) on the input shaft (3).

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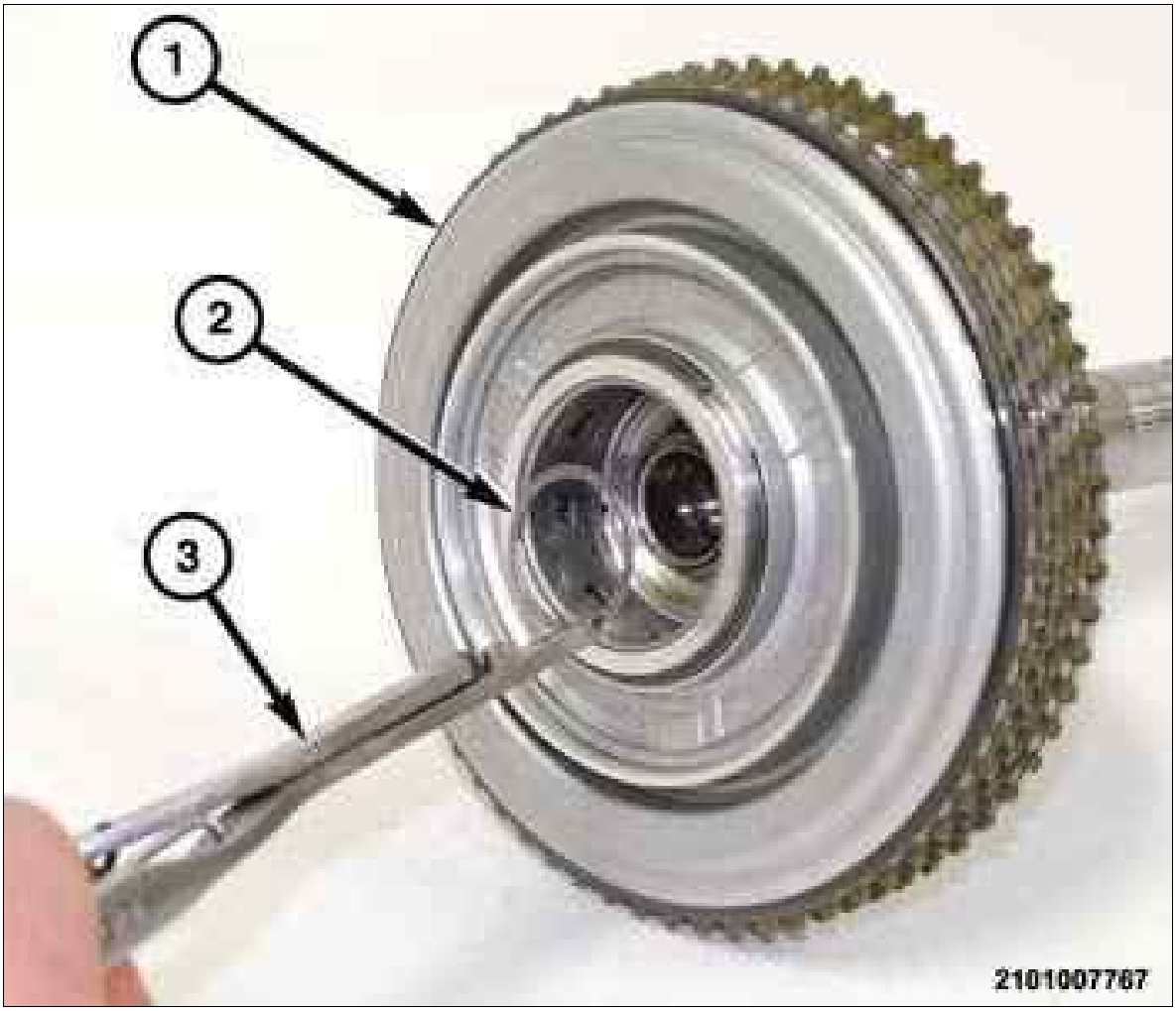
Fig 41: Input Shaft/Dog Clutch A, B-Clutch Hub & Snap-Ring



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> *NOTE:*
>
> *Dog clutch A is permanently attached to the input shaft and cannot be disassembled.*

48. Using suitable snap-ring pliers (3), remove the snap-ring (2) holding the input shaft to the B-clutch (1) hub.
49. Separate the input shaft/dog clutch A from the B-clutch (1) hub.

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Fig 42: Annulus Gear 2, D And C-Clutch Hub/B-Clutch Retainer

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50. Place the annulus gear 2, D and C-clutch hub (1) on tool (special tool #9611, Plug, Differential End) (2) to hold the sun gear in position.

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Fig 43: Remove/Install Snap-Ring & Pliers

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51. Using a suitable snap-ring pliers (1), remove the snap-ring (2) holding the sun gear 1 to the annulus gear 2, D and C-clutch hub.

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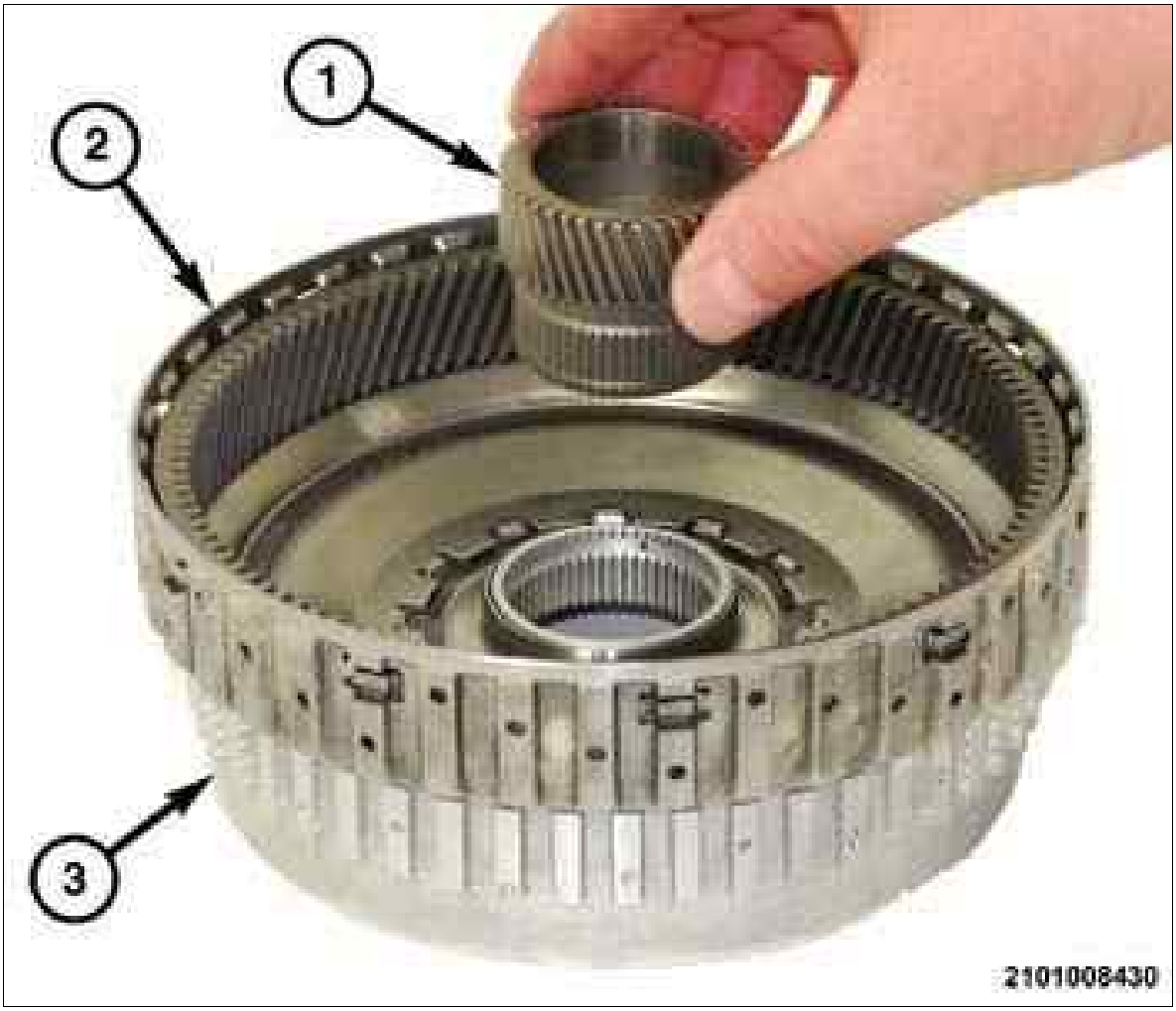
Fig 44: Annulus Gear 2, D And C-Clutch Hub & Sun Gear 1



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52. Turn the annulus gear 2 (2), D and C-clutch hub (3) over and remove sun gear 1 (1).

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Fig 45: Annulus Gear 2, D-Clutch Hub & C-Clutch Hub/B-Clutch Retainer

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53. Separate the Annulus gear 2, D-clutch hub (1) from the C-clutch hub (2).

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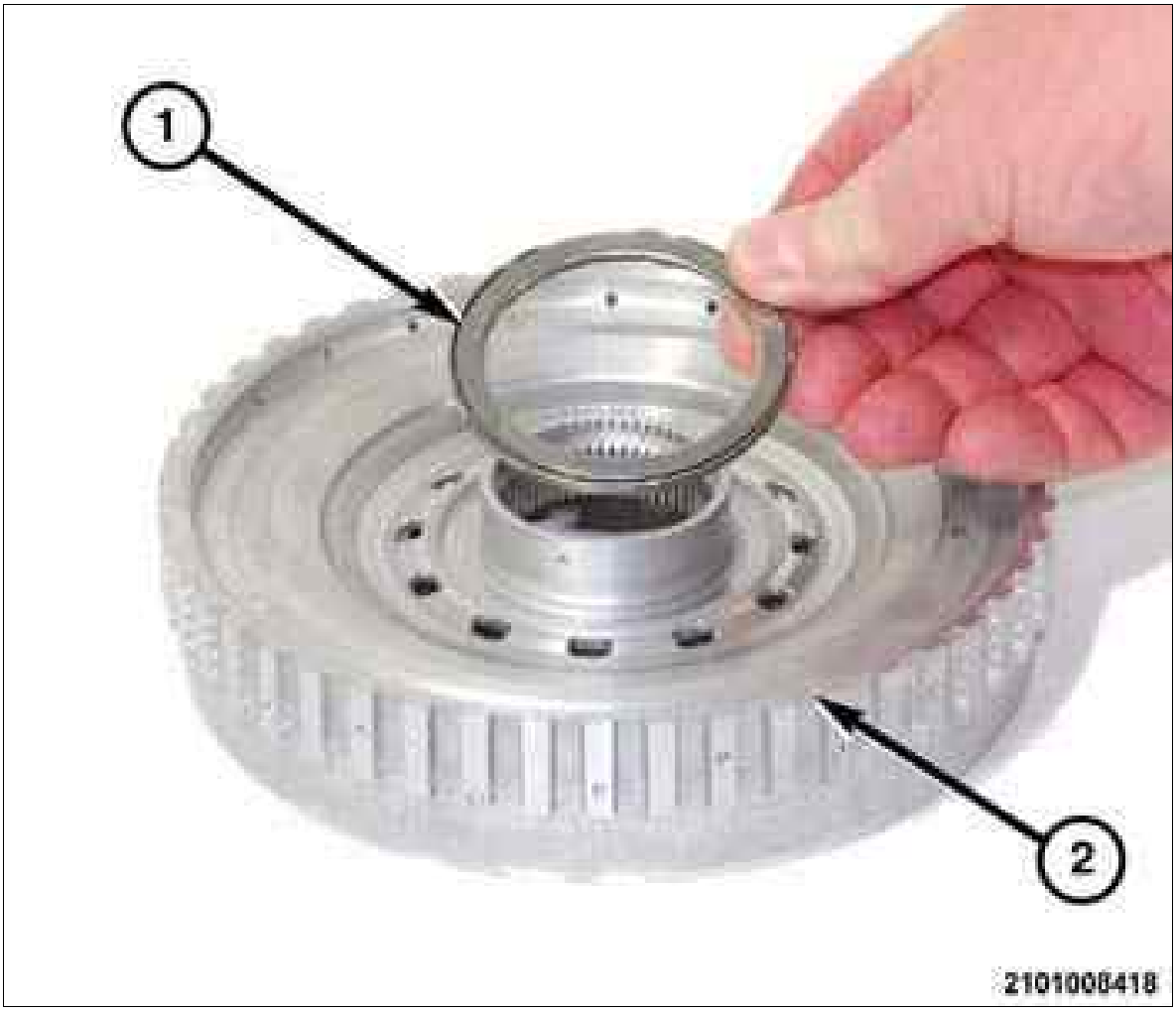
Fig 46: Thrust Bearing & C-Clutch Hub



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54. Separate the thrust bearing (1) from the C-clutch hub (2).

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Fig 47: Thrust Bearing & Input Shaft Rear Support

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55. Remove the thrust bearing (1) from the input shaft rear support.

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Fig 48: Removing/Installing Input Shaft Rear Support Selective Thrust Washer

Courtesy of CHRYSLER GROUP, LLC

56. Remove the input shaft rear support selective thrust washer (1).

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Fig 49: Removing D-Clutch Friction Discs & Steel Plates From Transmission Housing

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57. Separate the D-clutch friction discs and steel plates (1) from the transmission housing.

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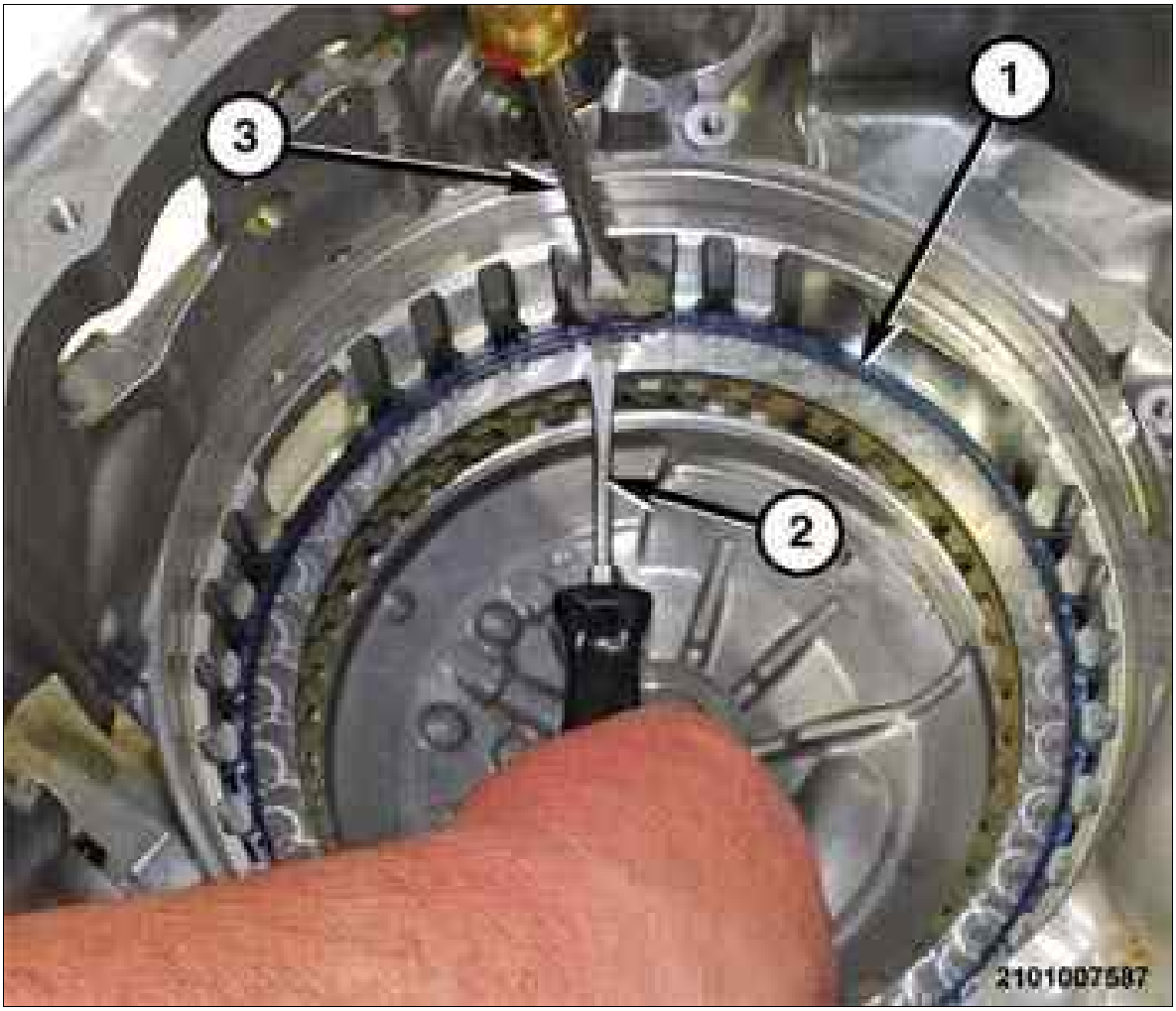
Fig 50: Screw Drivers, Snap-Ring & Groove



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58. Using two suitable screw drivers (2) and (3), lift the snap-ring (1) and pry it inward with the screwdriver (3) and out of from the groove (1) in the transmission housing.

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Fig 51: Removing C-Clutch Friction Discs & Steel Plates From Transmission Housing

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59. Separate the C-clutch friction discs and steel plates (1) from the transmission housing.

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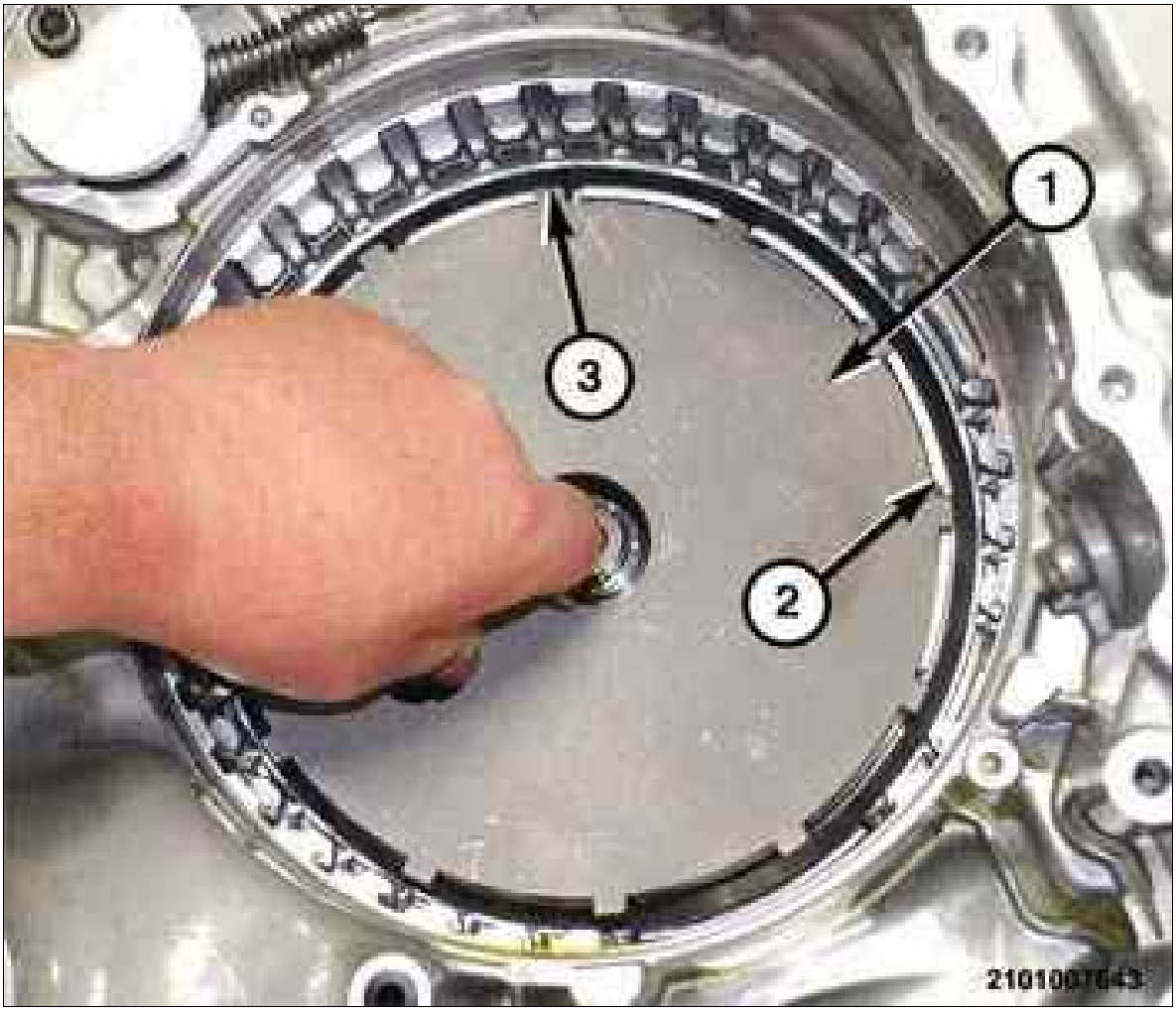
Fig 52: C-Clutch Bellville Spring & Special Tool



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60. Place the (special tool #10504, Compressor, Spring) (1) over the C-clutch bellville spring at the bottom of the transmission housing.

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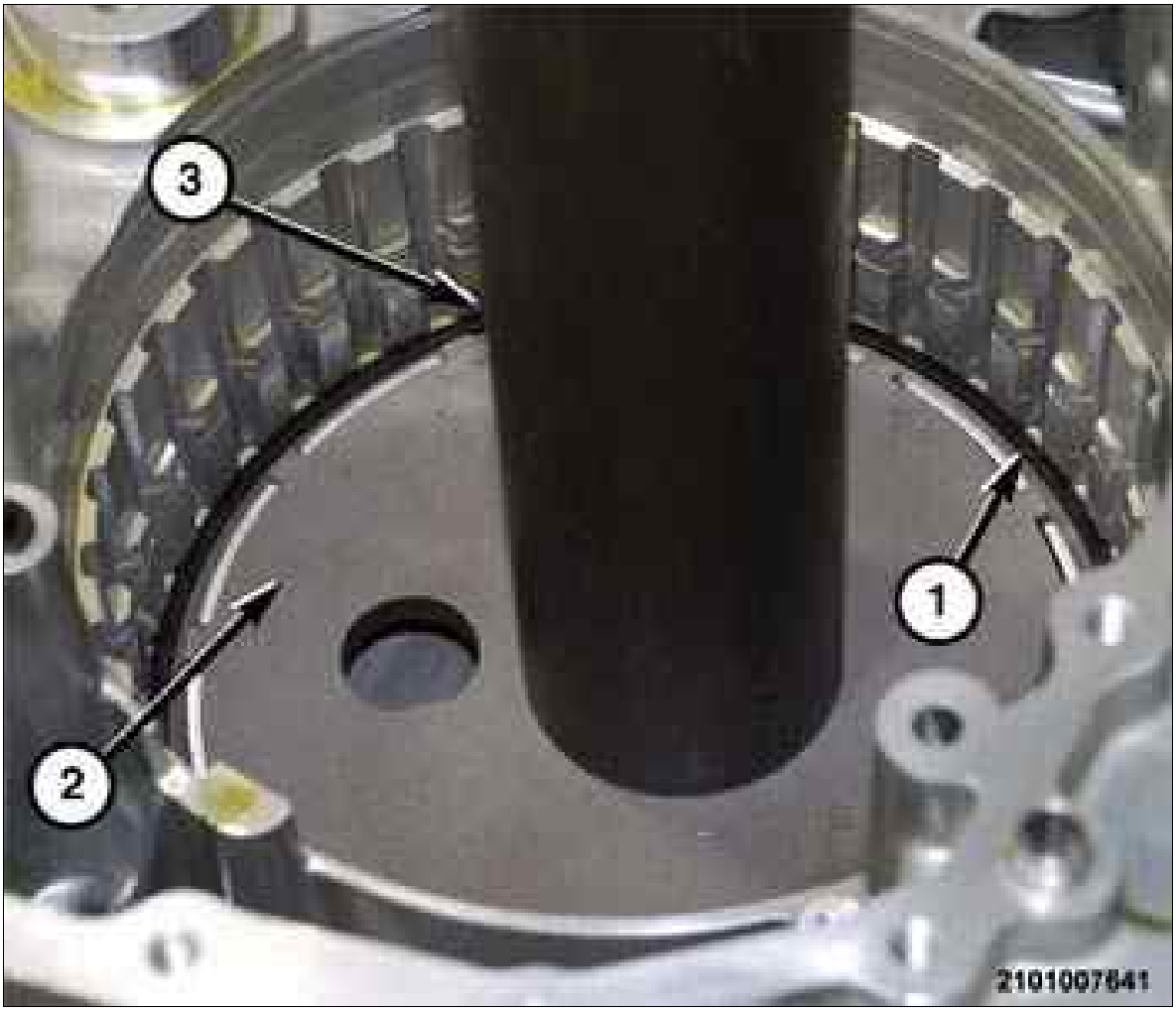
Fig 53: C-Clutch Bellville Spring & Special Tools



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61. Place tool (special tool #8228, Installer, Bearing) (3) over the input shaft support (tool 8901 with 10428 legs can also be used), compress the bellville spring to gain access to the stepped snap-ring (1).

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Fig 54: Removing/Installing Snap-Ring

Courtesy of CHRYSLER GROUP, LLC

62. Using a suitable screw driver, remove the snap-ring (1) holding the C-clutch bellville spring in the transmission housing.

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Fig 55: C-Clutch Bellville Spring & C-Clutch Piston

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63. Separate the C-clutch bellville spring (1) from the C-clutch piston (2).

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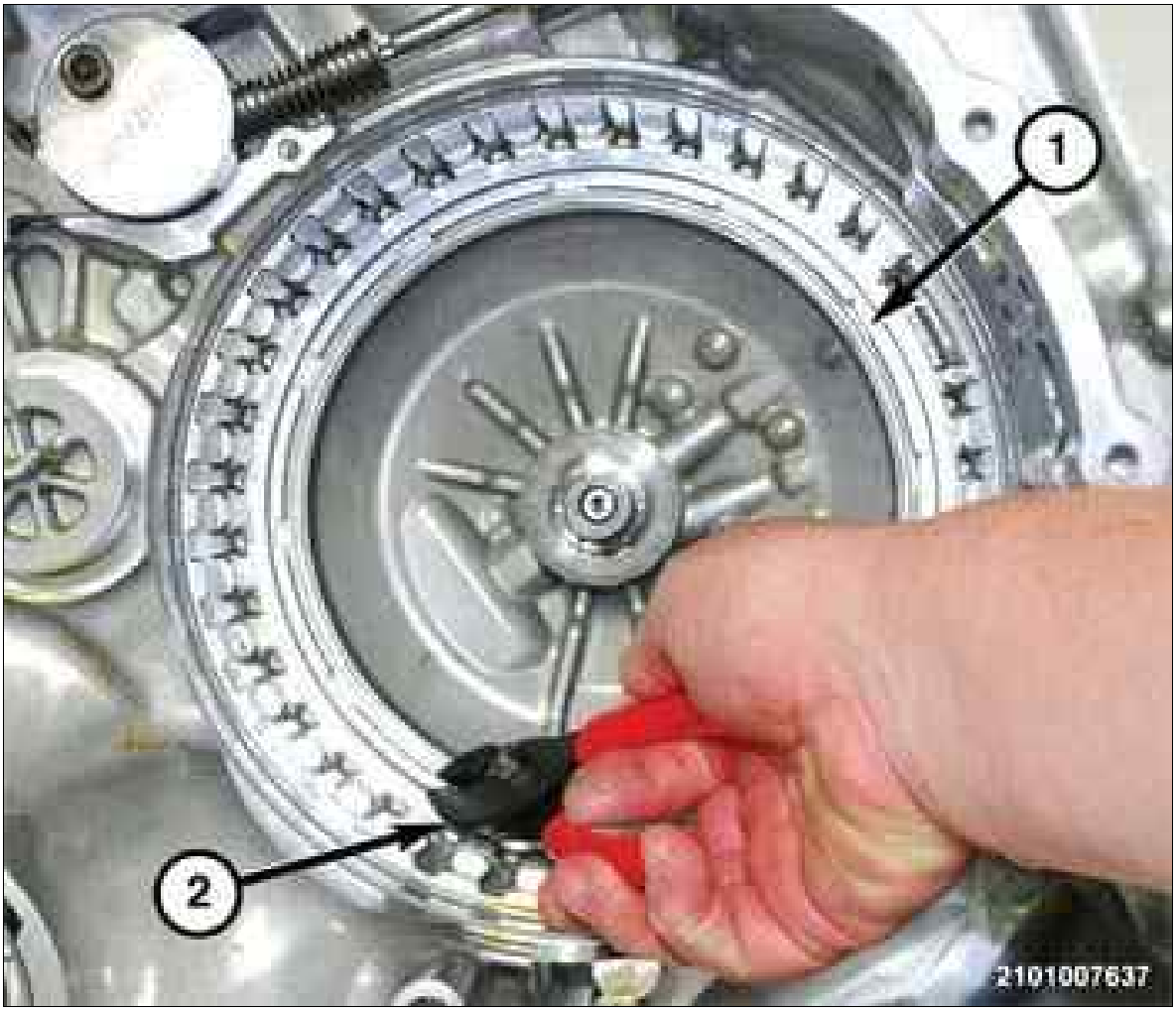
Fig 56: Removing/Installing C-Clutch Piston



Courtesy of CHRYSLER GROUP, LLC

64. Using suitable pliers (2), remove the C-clutch piston (1) from the transmission housing.

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Fig 57: C-Clutch Piston & Seals

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65. If overhaul is being performed, remove inner (1) and outer (2) seals from the C-clutch piston (3).

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Fig 58: Removing/Installing Inner Seal-Rings

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66. Using a suitable hook tool, remove the inner seal-rings (1) from the input shaft support.

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Fig 59: Removing/Installing Outer Seal-Rings

Courtesy of CHRYSLER GROUP, LLC

67. Using a suitable hook tool, remove the outer seal-rings (1) from the input shaft support.

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Fig 60: Removing/Installing Split Roller Bearing

Courtesy of CHRYSLER GROUP, LLC

68. Using a suitable hook tool, remove the split roller bearing (1) from the input shaft support.

DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > ASSEMBLY

The work area, counter surfaces and tools must be thoroughly cleaned before attempting to assemble the 948TE transmission. All of the sub assemblies should be disassembled, cleaned, and assembled with new sealing components where applicable. The transmission housing should be clean and oil free before beginning this procedure. The B, C, D, and E-clutches should be properly measured and adjusted prior to assembling the transmission. If the transmission was contaminated with metallic material, all of the thrust bearings and roller bearing should be replaced. The bearing in the output gear support assembly is not serviceable. The output gear support assembly should be replaced if metal debris is present.

WARNING:

Always wear safety glasses when cleaning, disassembling and assembling the transmission/transaxle. Contents of the transmission/transaxle can become projectiles (e.g., springs, snap-rings, as well as metal and other debris). Failure to wear safety glasses may

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result in severe personal injury.

1. Place the transmission housing on a clean work surface with the open interior upward.
2. Place wooden blocks under the transmission to stabilize it for assembly.

Fig 1: Removing/Installing Split Roller Bearing

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3. Install the split roller bearing (1) in position on the input shaft support.

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Fig 2: Removing/Installing Outer Seal-Rings

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4. Install the outer seal-rings (1) in the lands in the input shaft support.

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Fig 3: Removing/Installing Inner Seal-Rings

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5. Install the inner seal-rings (1) in the lands in the input shaft support.

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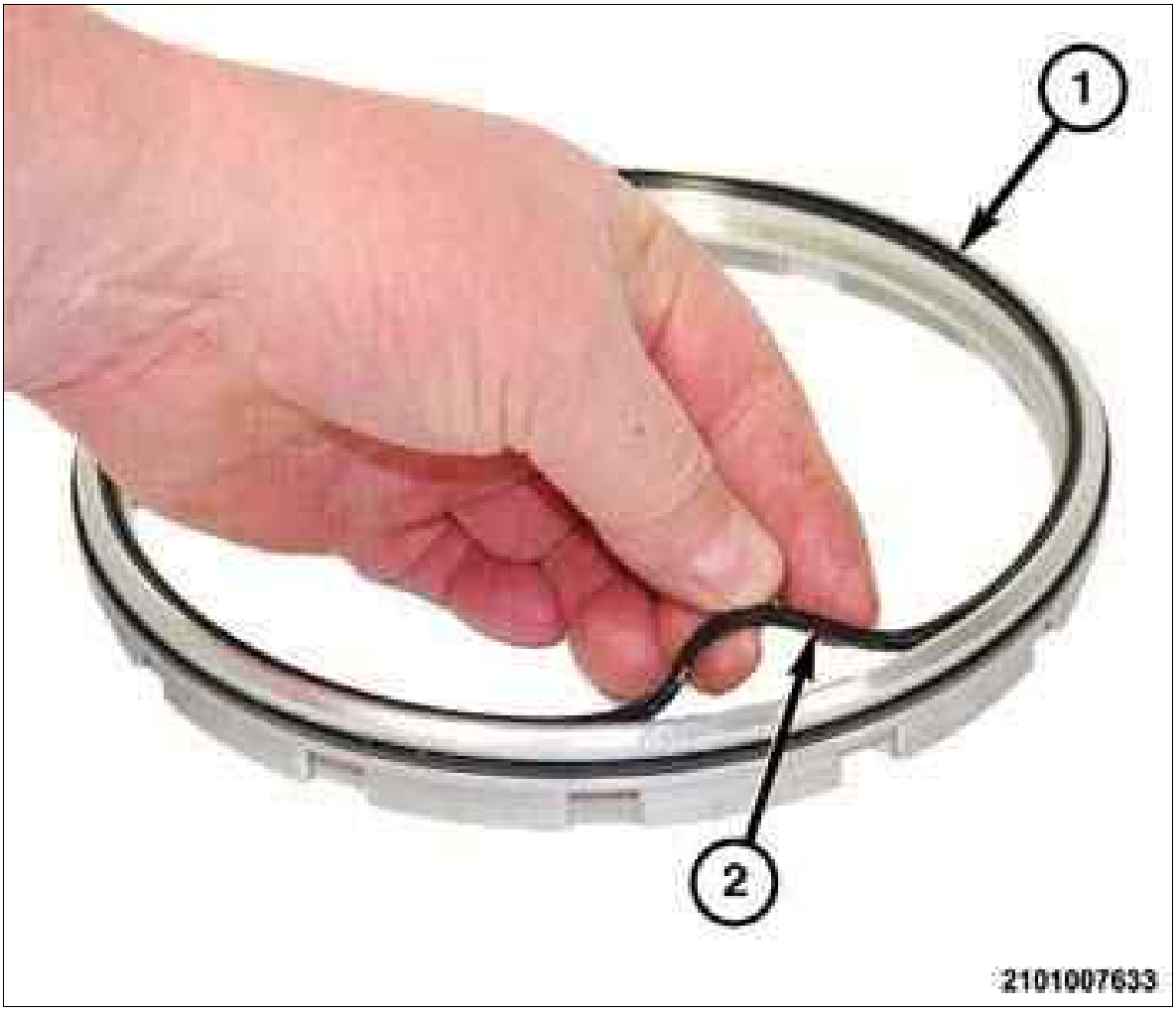
Fig 4: Installing Inner Seal On C-Clutch Piston



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6. Install the inner seal (2) on the C-clutch piston (1).

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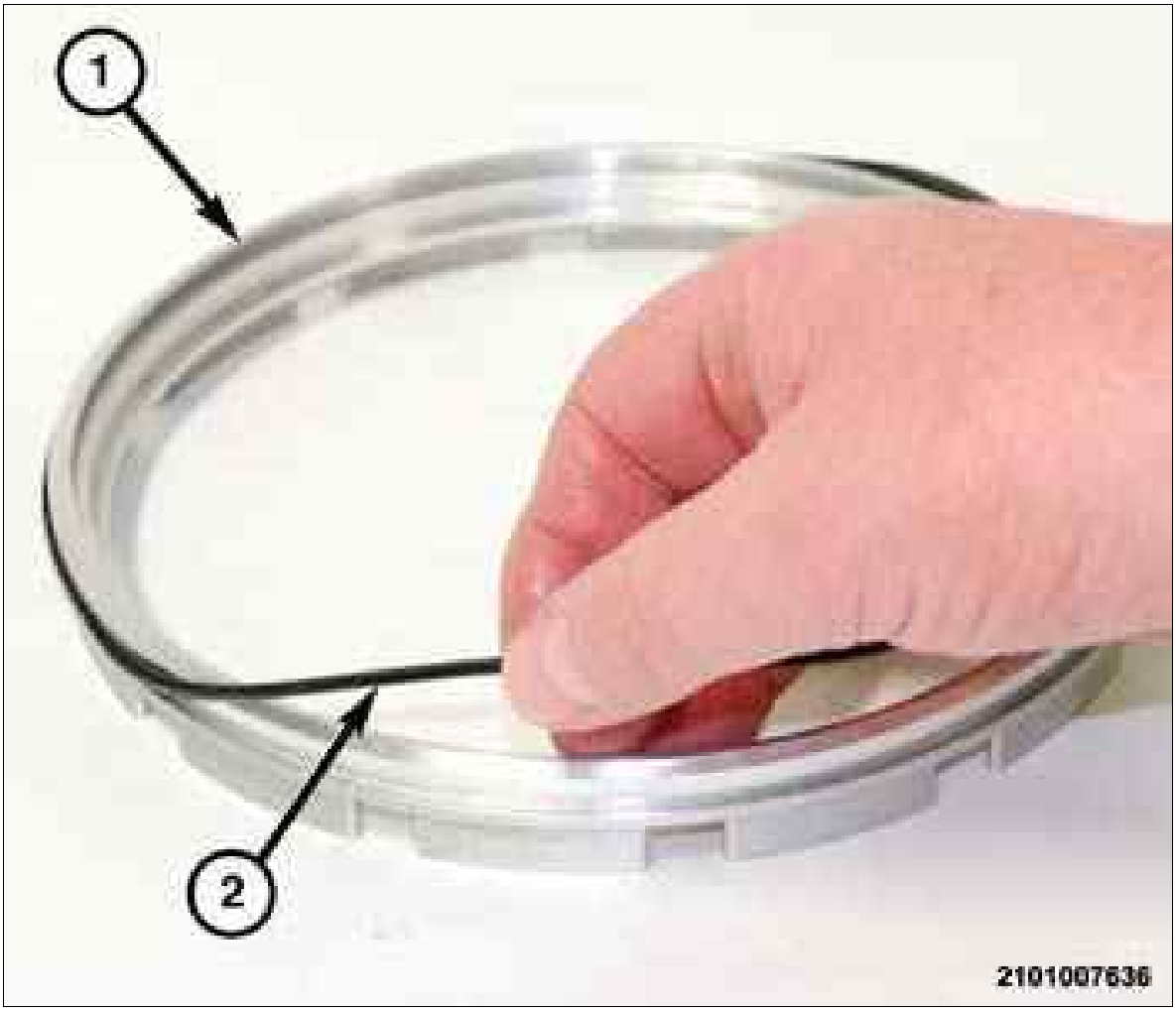
Fig 5: Installing Outer Seal On C-Clutch Piston



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7. Install the outer seal (2) on the C-clutch piston (1).

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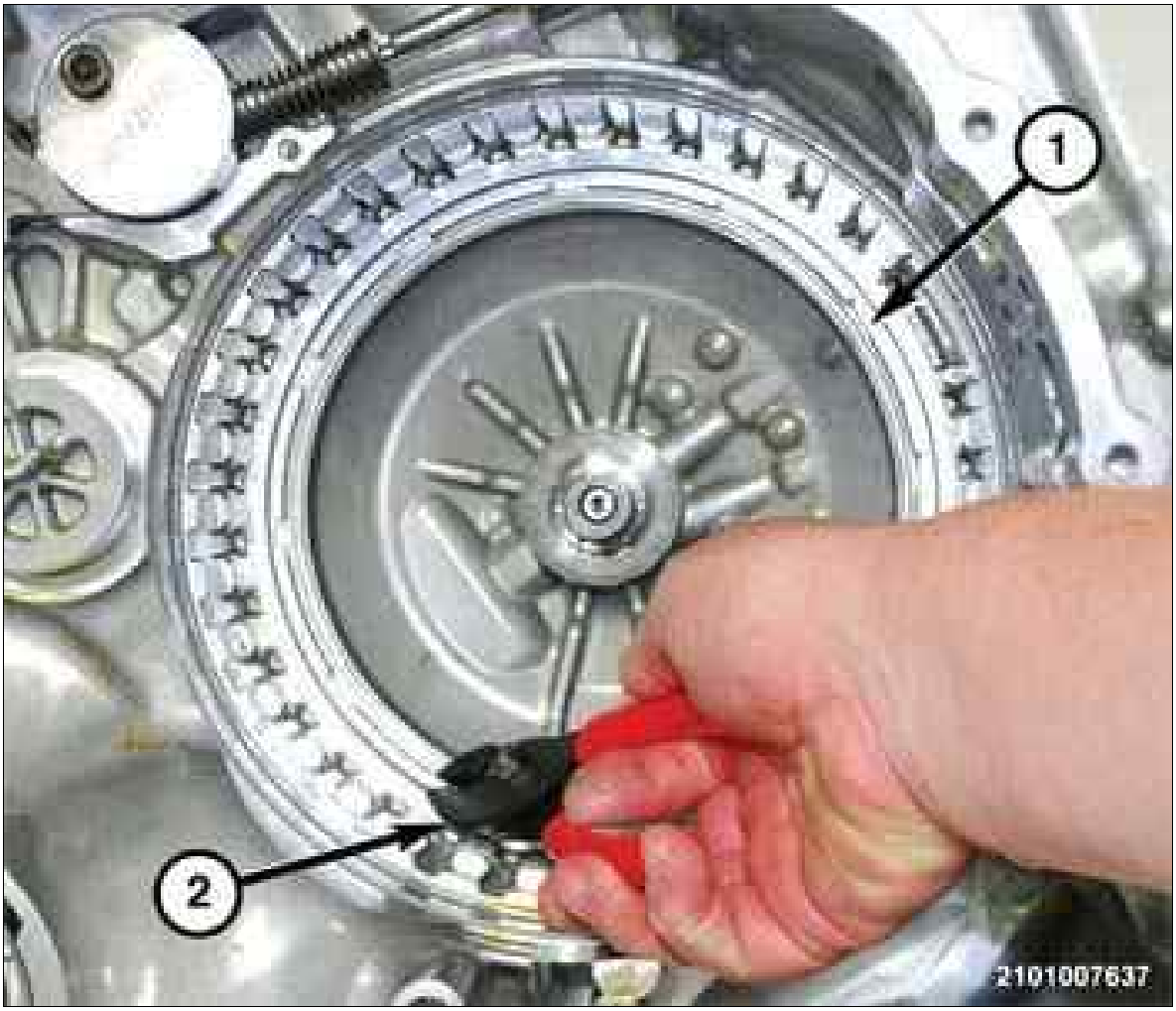
Fig 6: Removing/Installing C-Clutch Piston



Courtesy of CHRYSLER GROUP, LLC

8. Install the C-clutch piston (1) in the transmission housing.

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Fig 7: Using Feeler Gauge To Turn Lip On Seal

Courtesy of CHRYSLER GROUP, LLC

9. If necessary, use a thin feeler gauge (3) to turn the lip on the seal into the retainer (2) as the piston (1) is pushed downward.

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Fig 8: C-Clutch Bellville Spring & C-Clutch Piston

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10. Place the C-clutch bellville spring (1) in position on the C-clutch piston (2).

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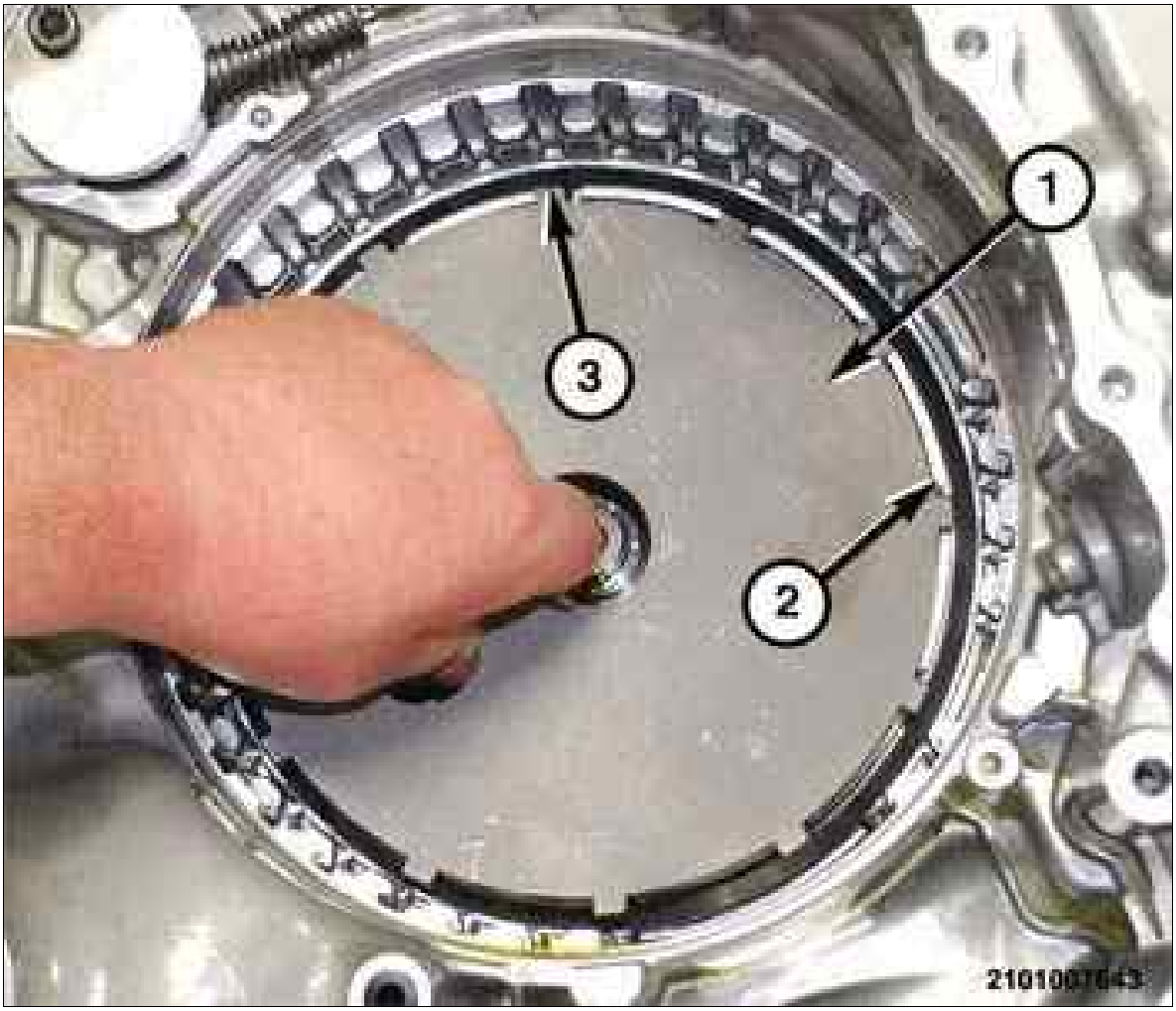
Fig 9: C-Clutch Bellville Spring & Special Tool



Courtesy of CHRYSLER GROUP, LLC

11. Place the (special tool #10504, Compressor, Spring) (1) over the C-clutch bellville spring (2) at the bottom of the transmission housing (3).

12. Position the transmission housing on a suitable arbor press using wooden blocks for support.

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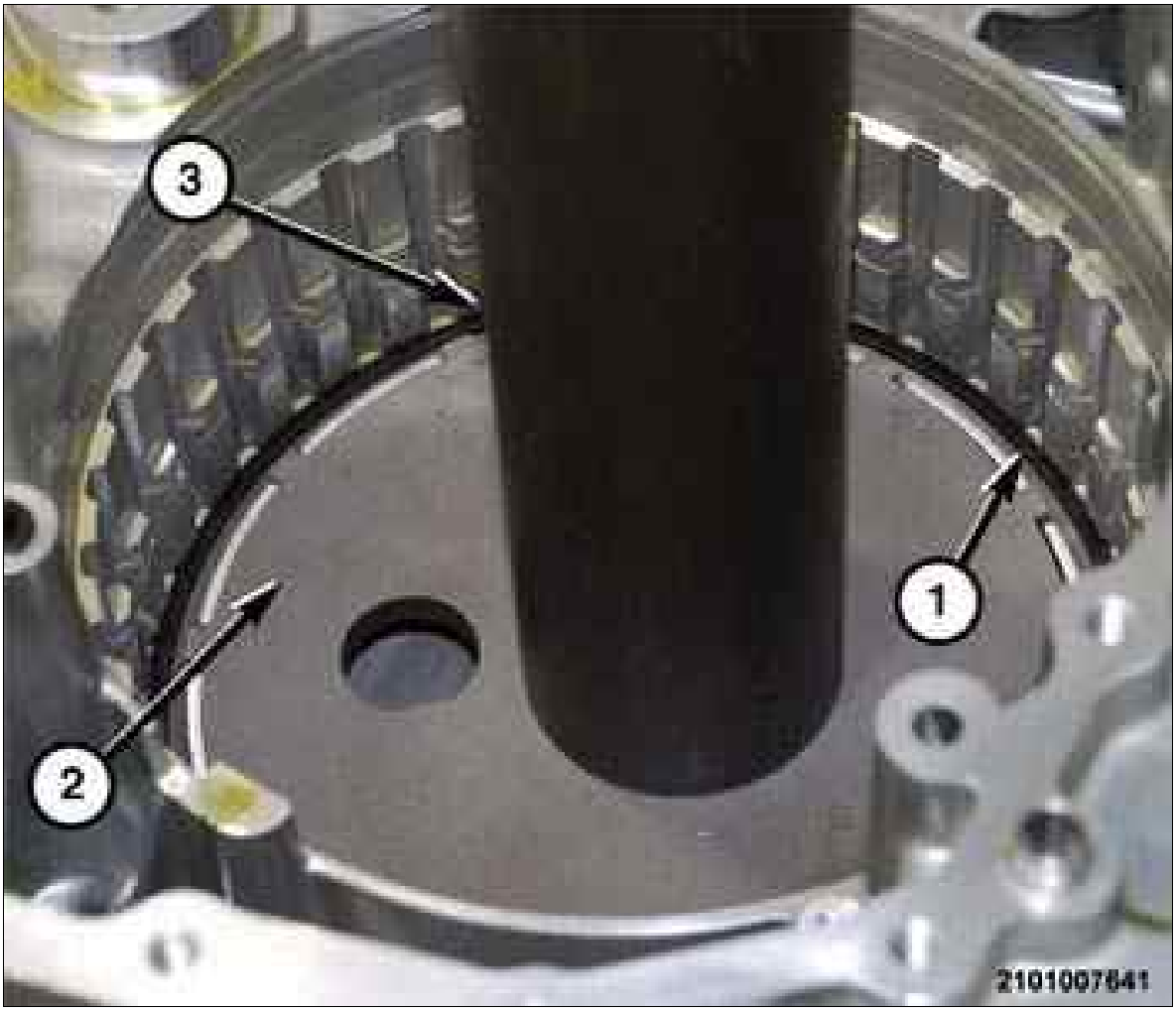
Fig 10: C-Clutch Bellville Spring & Special Tools



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13. Place tool (special tool #8228, Installer, Bearing) (3) over the input shaft support (tool 8901 with 10428 legs can also be used), compress the bellville spring to gain access to the snap-ring (1) groove.

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Fig 11: Removing/Installing Snap-Ring

Courtesy of CHRYSLER GROUP, LLC

14. Install the snap-ring (1), stepped side down, to hold the C-clutch bellville spring in the transmission housing.

15. Remove the transmission housing from the arbor press and position it on a clean work bench. Position wood blocks under transmission to stabilize it for assembly.

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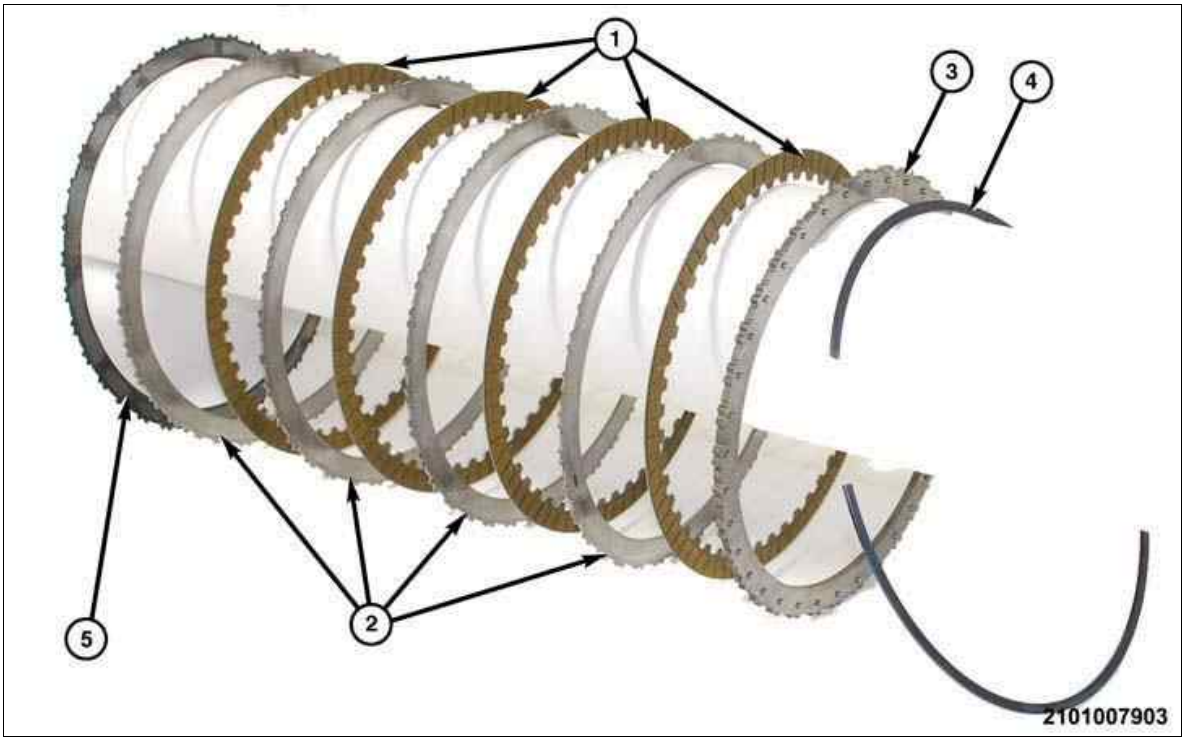
Fig 12: C-Clutch Wave Plate, Steel Plates, & Friction Discs



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16. Install the C-clutch wave plate (5), one steel plate (2), then install the friction discs (1) alternately separated with steel plates (2) into the transmission housing on top of the C-clutch piston.

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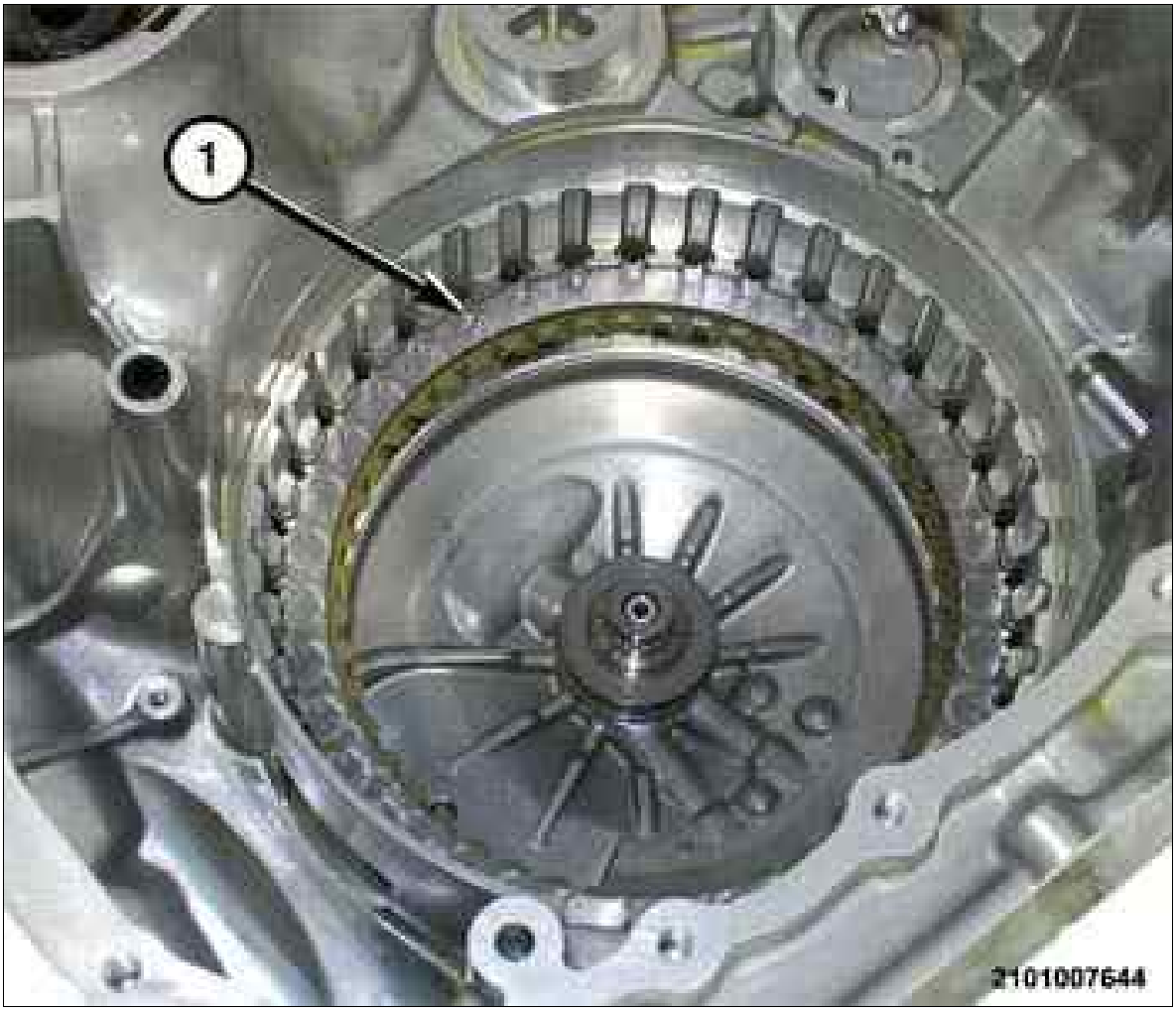
Fig 13: C-Clutch Selective Reaction Plate



Courtesy of CHRYSLER GROUP, LLC

17. Install the C-clutch selective reaction plate (1) with raised bosses upward on top of the C-clutch disc and plate pack.

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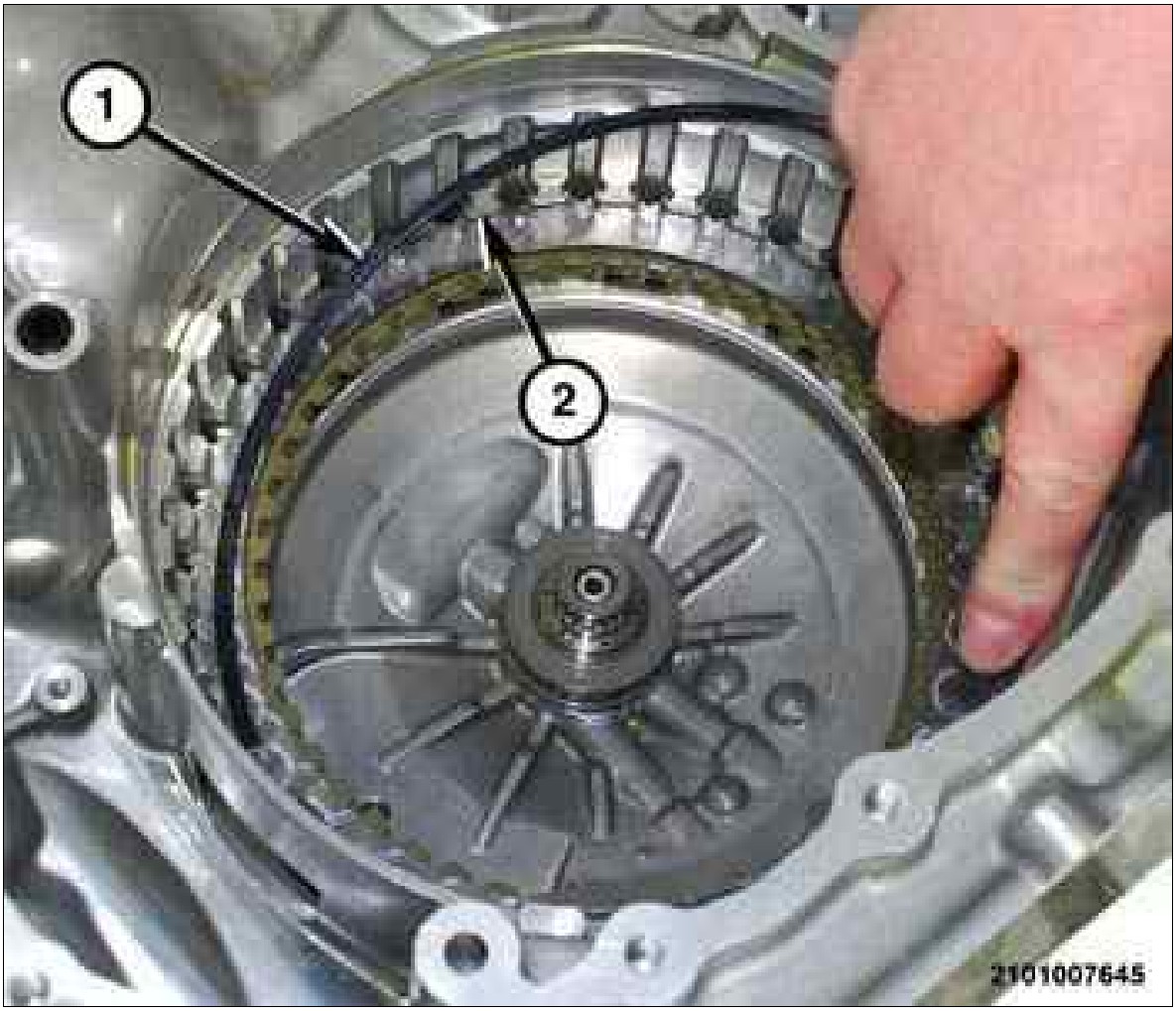
Fig 14: Snap-Ring & Groove



Courtesy of CHRYSLER GROUP, LLC

18. Install the snap-ring (1) in the groove (2) in the transmission housing.

> *NOTE:*
>
> *Perform C-clutch measurements to verify that the correct selective reaction plate is installed. Refer to ADJUSTMENTS .*

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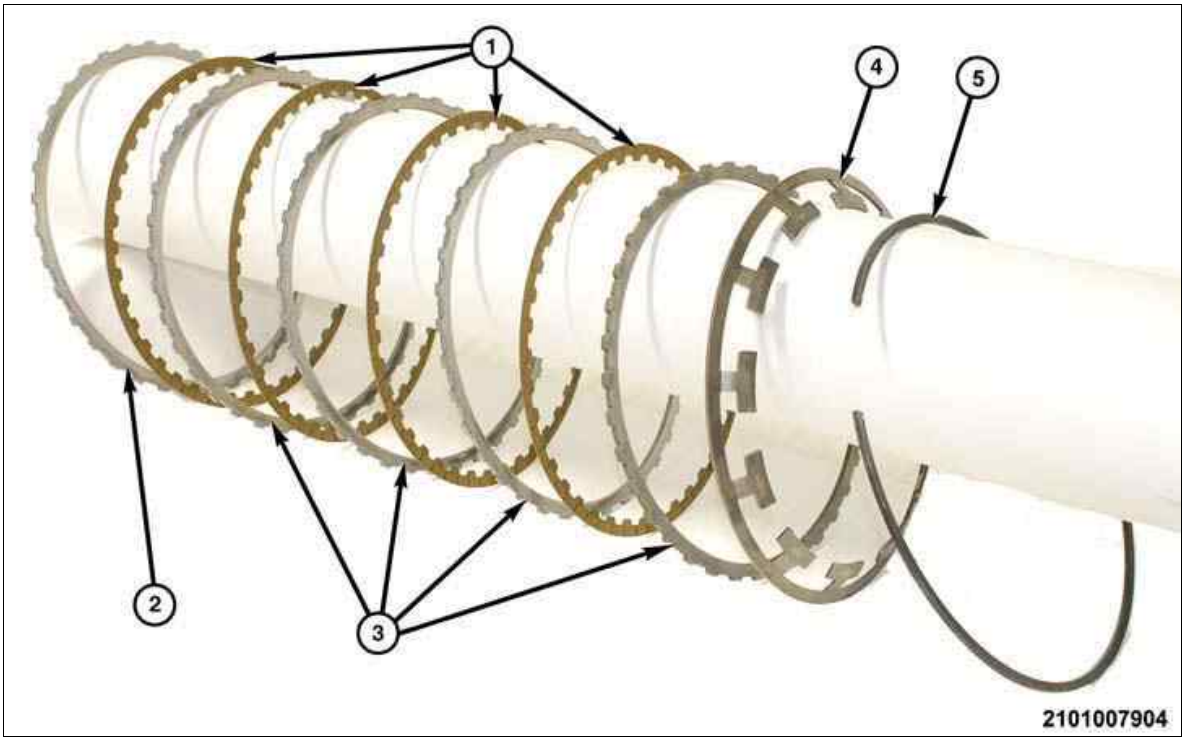
Fig 15: D-Clutch, Selective Reaction Plate, Friction Plate & Steel Plates



Courtesy of CHRYSLER GROUP, LLC

19. Install the correct thickness selective reaction plate (2).
20. Starting with a friction plate (1), alternately install the friction (1) and steel plates (3) in to the case.

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Fig 16: Input Shaft Rear Support Selective Thrust Washer & Selective Reaction Plate

Courtesy of CHRYSLER GROUP, LLC

> *NOTE:*
>
> *Perform D-clutch measurements to verify that the correct selective reaction plate (2) is installed. Refer to ADJUSTMENTS .*

21. Install the input shaft rear support selective thrust washer (1).

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Fig 17: Thrust Bearing & Input Shaft Rear Support

Courtesy of CHRYSLER GROUP, LLC

22. Install the thrust bearing (1) onto the input shaft rear support.

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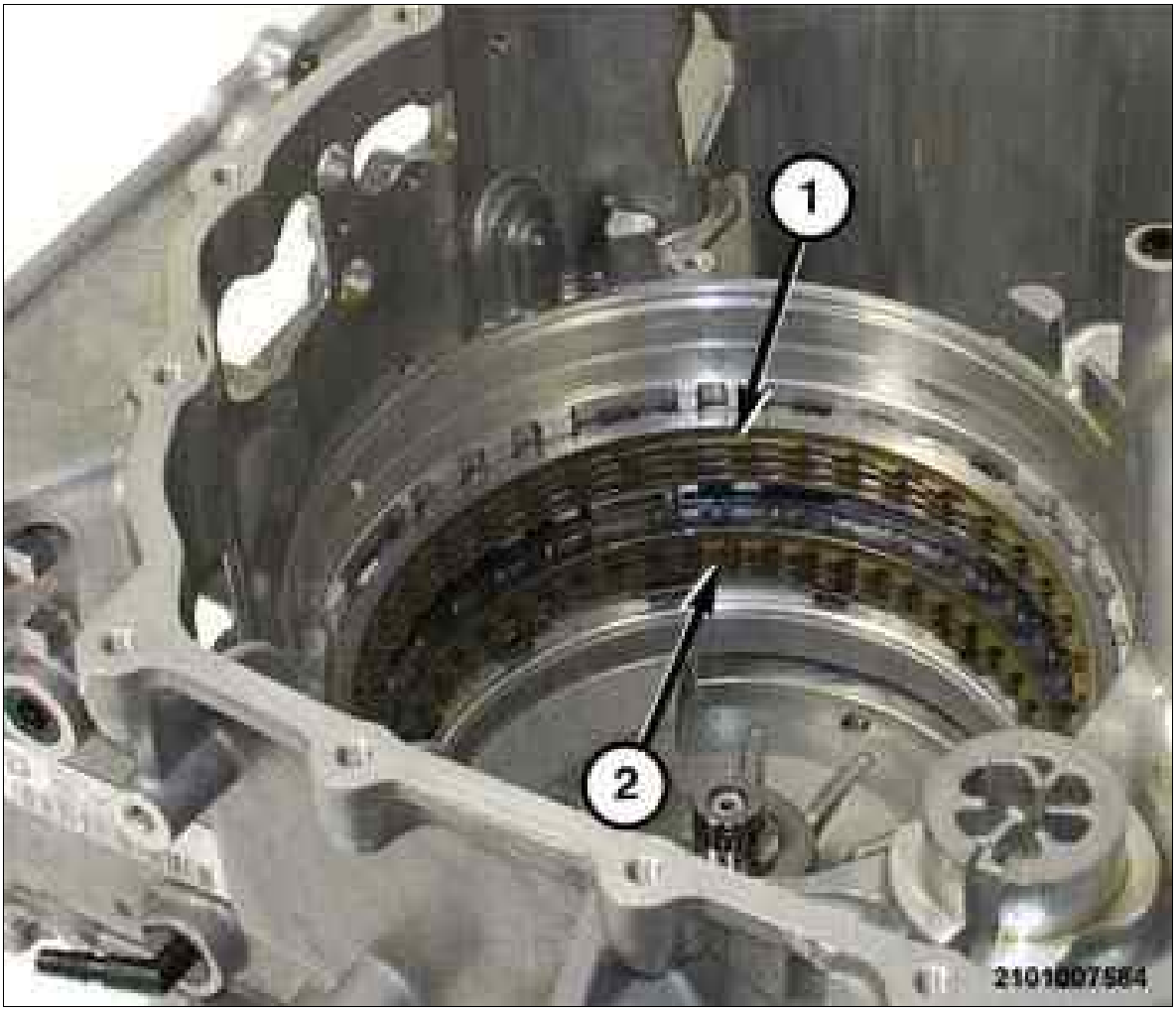
Fig 18: D And C-Clutch Hubs & Input Shaft Assembly



Courtesy of CHRYSLER GROUP, LLC

23. Align the teeth of the friction discs for the D- and C-clutches (1, 2) to facilitate the installation of the annulus gear 2, D and C clutch hubs, and input shaft assembly.

> *NOTE:*
>
> *Before final assembly of the annulus gear 2, D and C-clutch hub and input shaft, measure the B-clutch to verify that proper selective reaction plate was installed. Refer to ADJUSTMENTS .*

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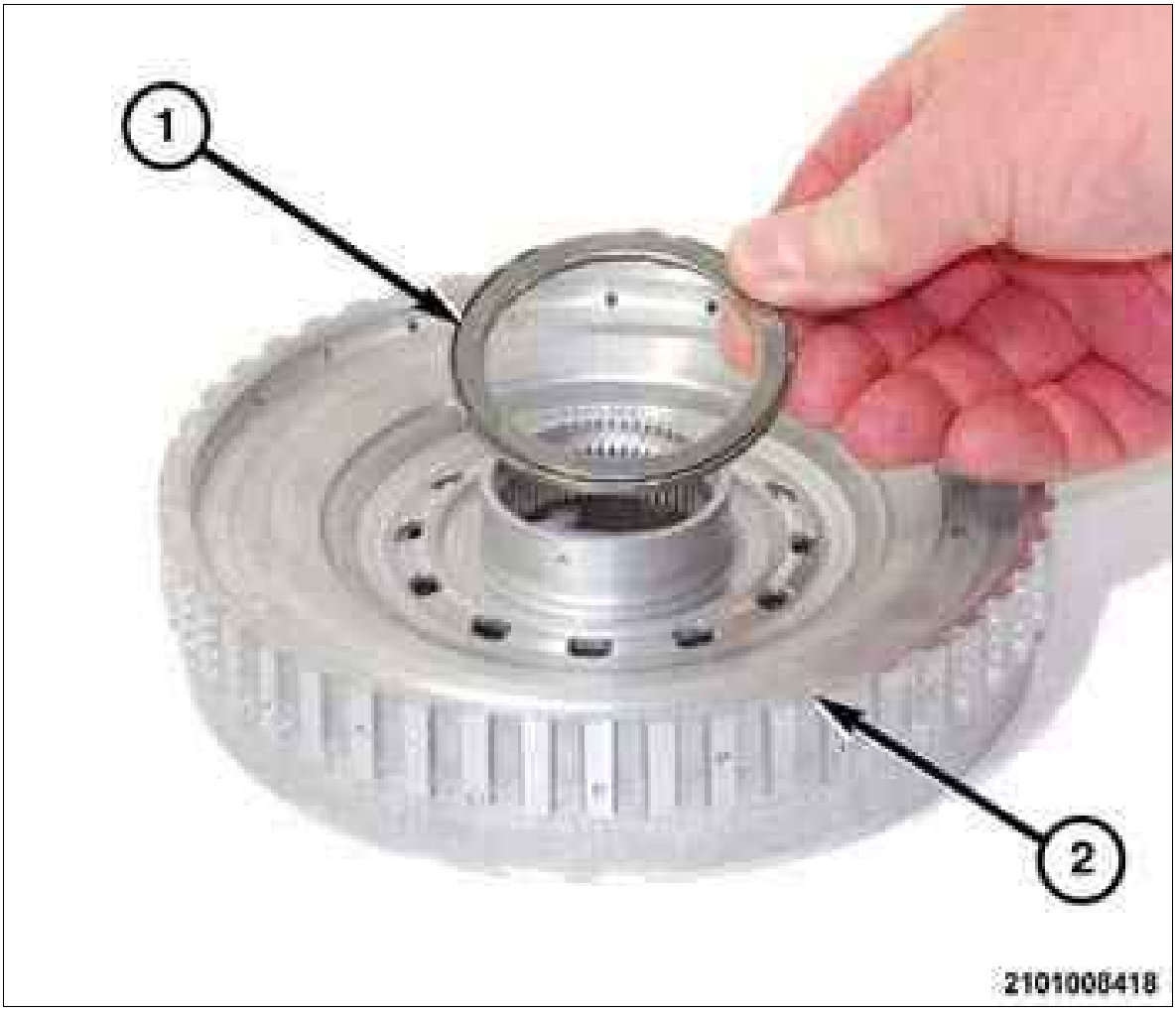
Fig 19: Thrust Bearing & C-Clutch Hub



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24. Place the thrust bearing (1) in position on the C-clutch hub (2).

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Fig 20: Annulus Gear 2, D-Clutch Hub & C-Clutch Hub/B-Clutch Retainer

Courtesy of CHRYSLER GROUP, LLC

25. Place the Annulus gear 2, D-clutch hub (1) in position on the C-clutch hub (2).

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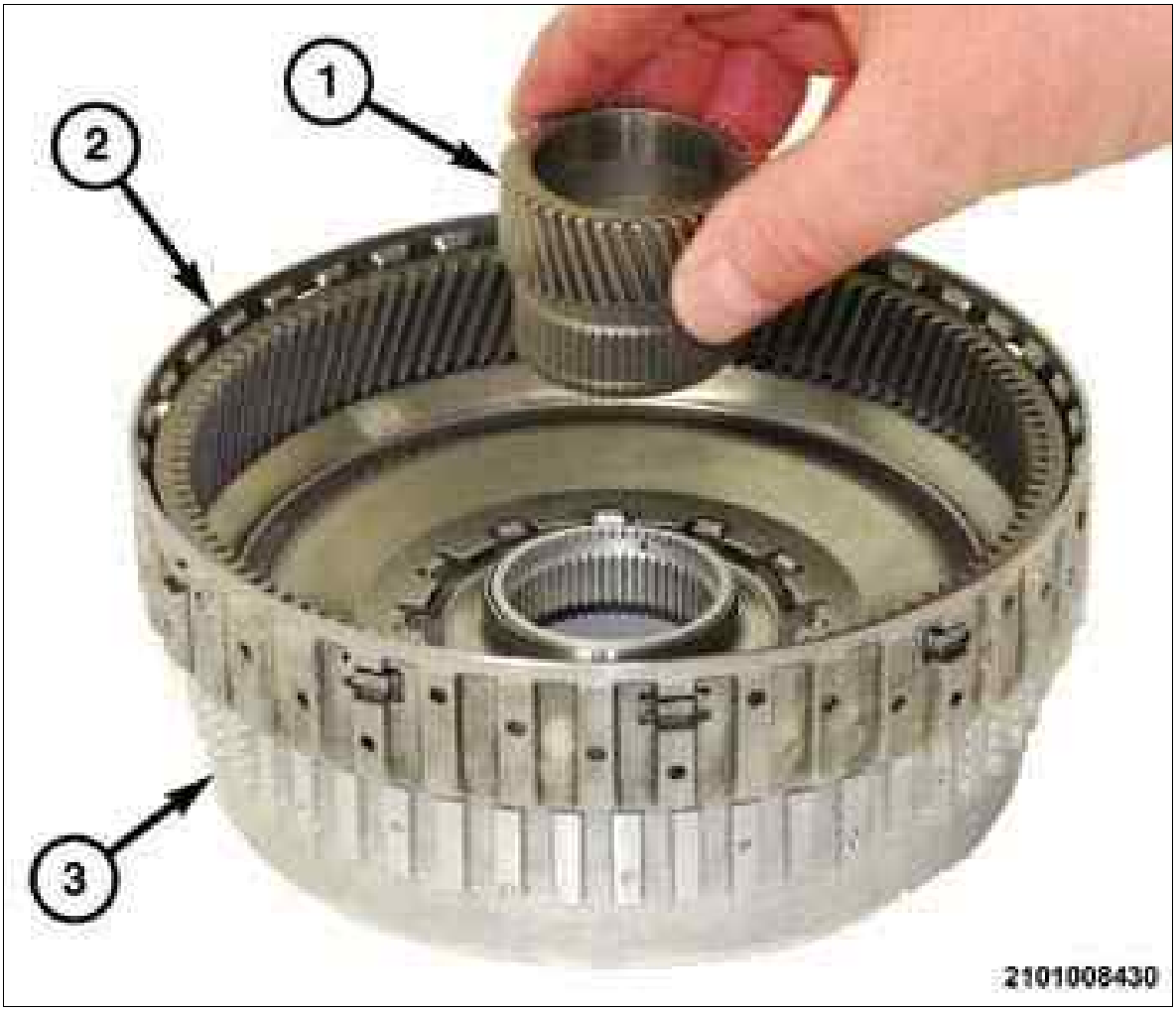
Fig 21: Annulus Gear 2, D And C-Clutch Hub & Sun Gear 1



Courtesy of CHRYSLER GROUP, LLC

26. Insert the sun gear 1 (1) into annulus gear 2 (2), D and C-clutch hub (3).

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Fig 22: Annulus Gear 2, D And C-Clutch Hub/B-Clutch Retainer

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27. Turn the annulus gear 2, D and C-clutch hub over and place it on tool (special tool #9611, Plug, Differential End) (2) to hold the sun gear in position.

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Fig 23: Remove/Install Snap-Ring & Pliers

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28. Using a suitable snap-ring pliers (1), install the snap-ring (2) to hold the sun gear 1 to the annulus gear 2, D and C-clutch hub.

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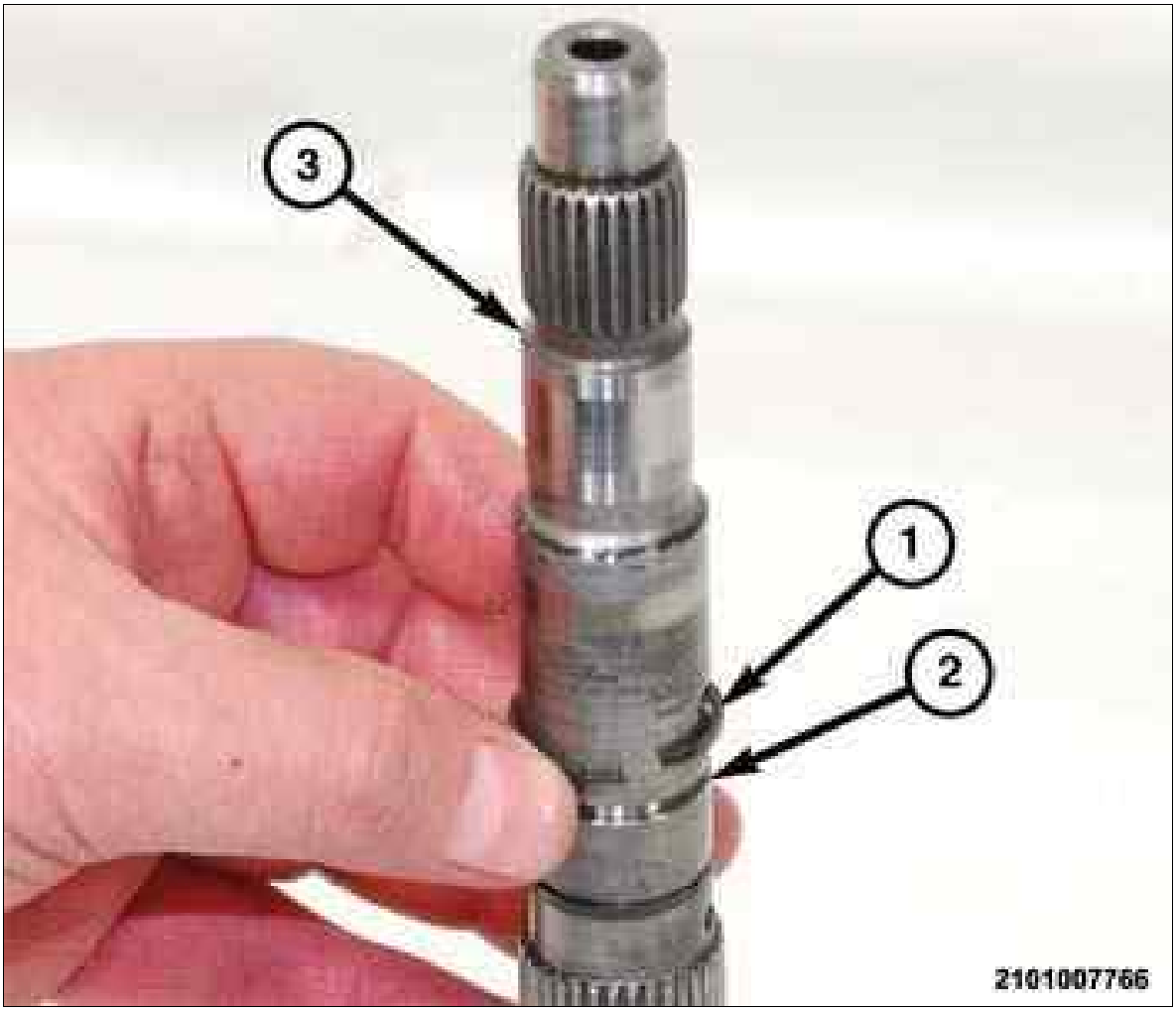
Fig 24: Input Shaft, Lands & Seal Rings



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29. Install NEW seal-rings (1) in the lands (2) on the input shaft (3).

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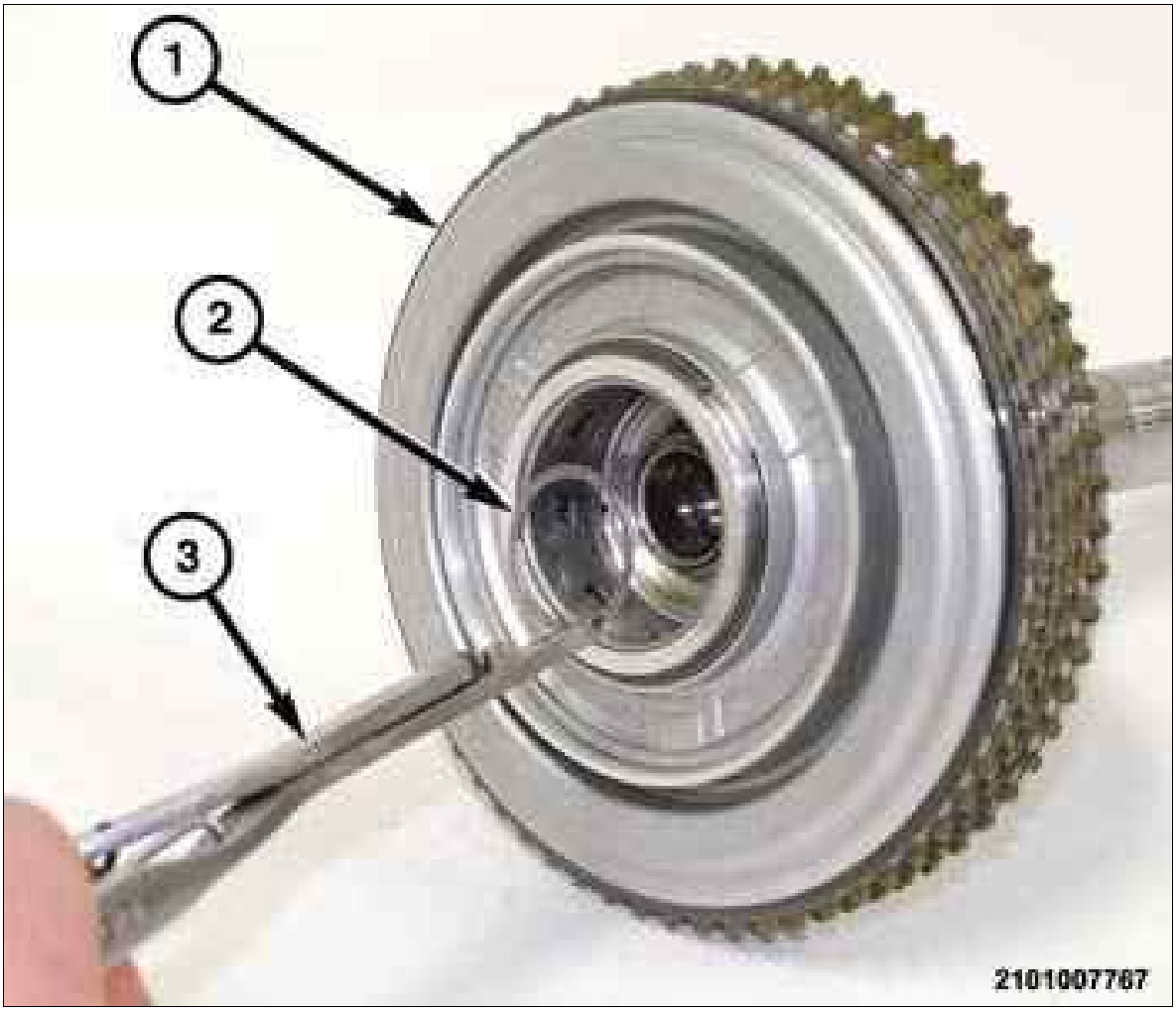
Fig 25: Input Shaft/Dog Clutch A, B-Clutch Hub & Snap-Ring



Courtesy of CHRYSLER GROUP, LLC

30. Insert the input shaft into the B-clutch hub (1).

31. Using a suitable snap-ring pliers (3), install the snap-ring (2) to hold the input shaft/dog clutch A to the B-clutch hub (1).

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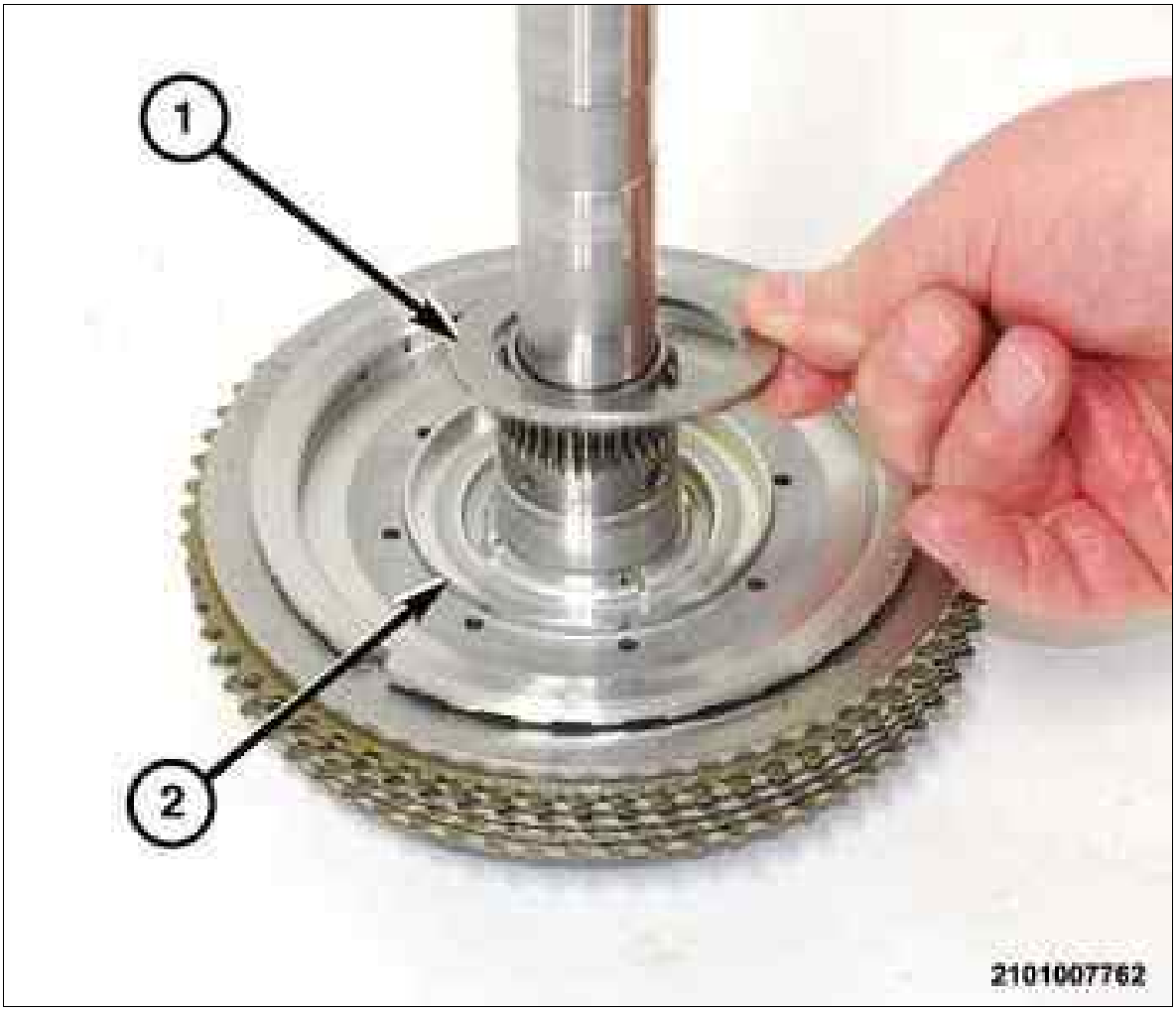
Fig 26: Thrust Bearing & B-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

32. Place the thrust bearing (1) on the B-clutch hub (2).

33. Install the annulus gear 2, D and C-clutch hub on the input shaft and B-clutch assembly.

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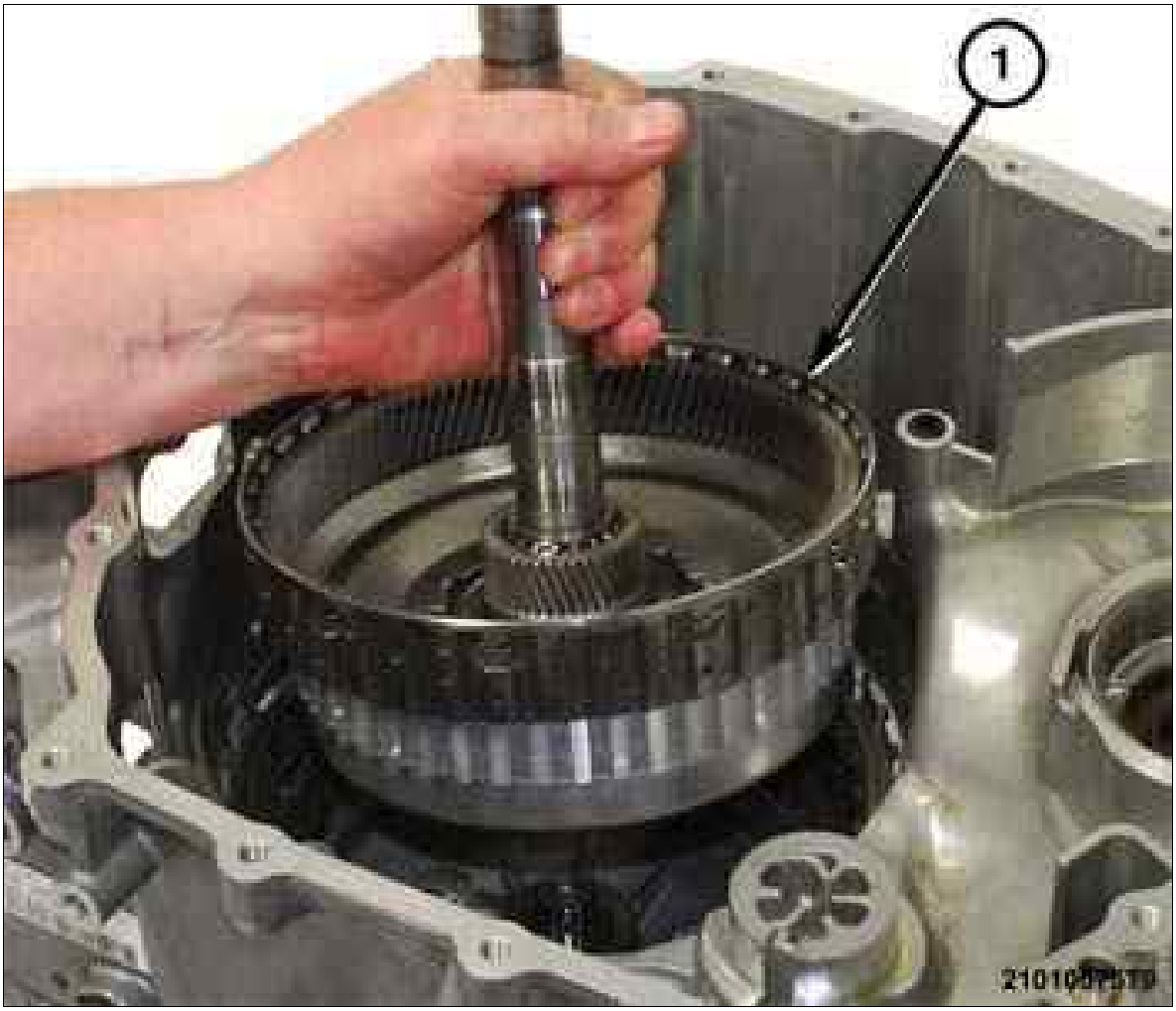
Fig 27: Annulus Gear 2, D & C-Clutch Hub And Input Shaft Assembly



Courtesy of CHRYSLER GROUP, LLC

34. While not allowing the input shaft to slip inward, wriggle the annulus gear 2, D and C-clutch hubs and input shaft assembly (1) until they engage the D and C-clutch discs. If the input shaft slips inward, the B-clutch will come out of its retainer impeding proper installation.

> *NOTE:*
>
> *A solid audible clunk will be heard if installed correctly.*

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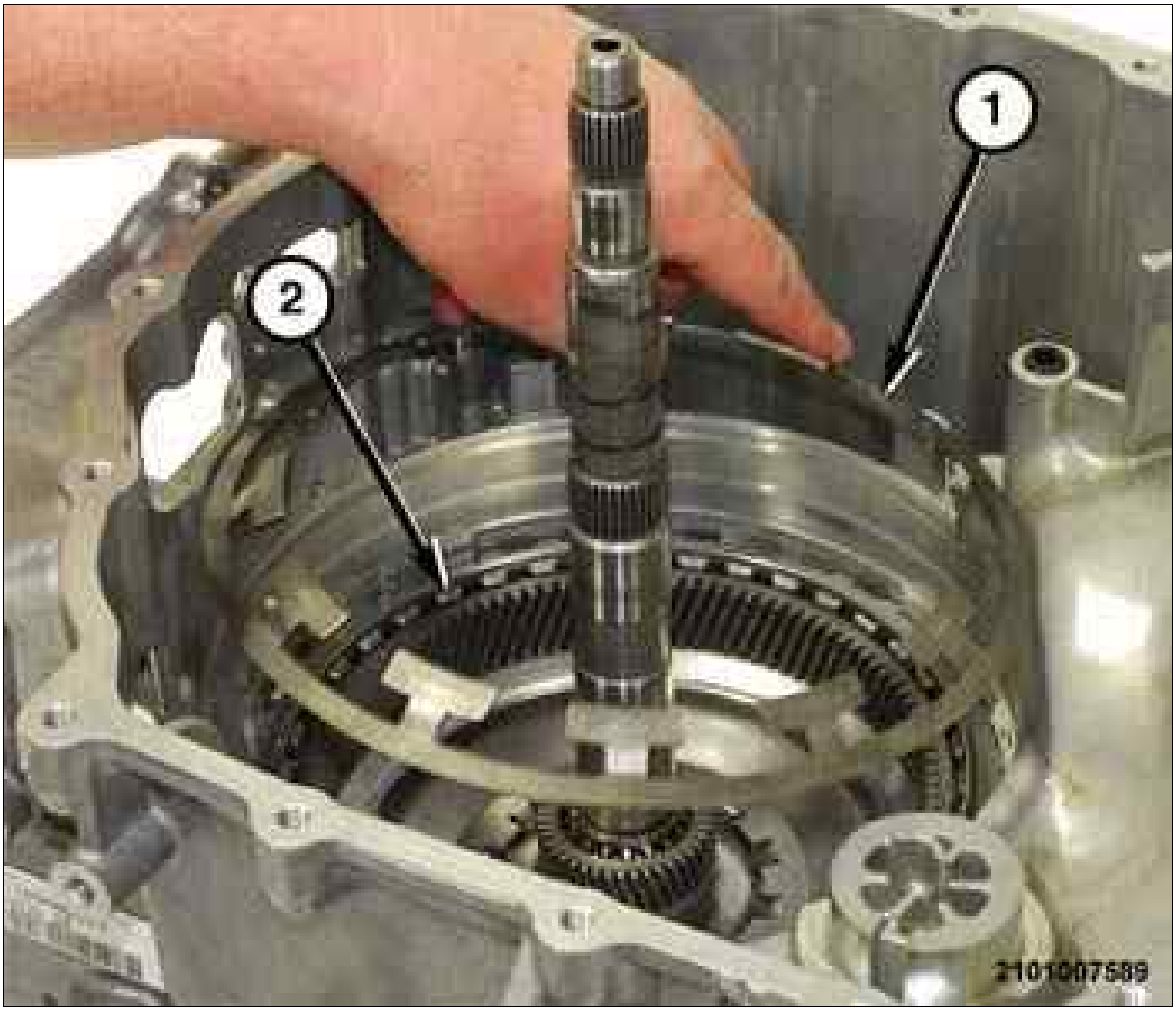
Fig 28: Bellville Spring & Transmission Housing



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35. Place the bellville spring (1) in position on the transmission housing (2).

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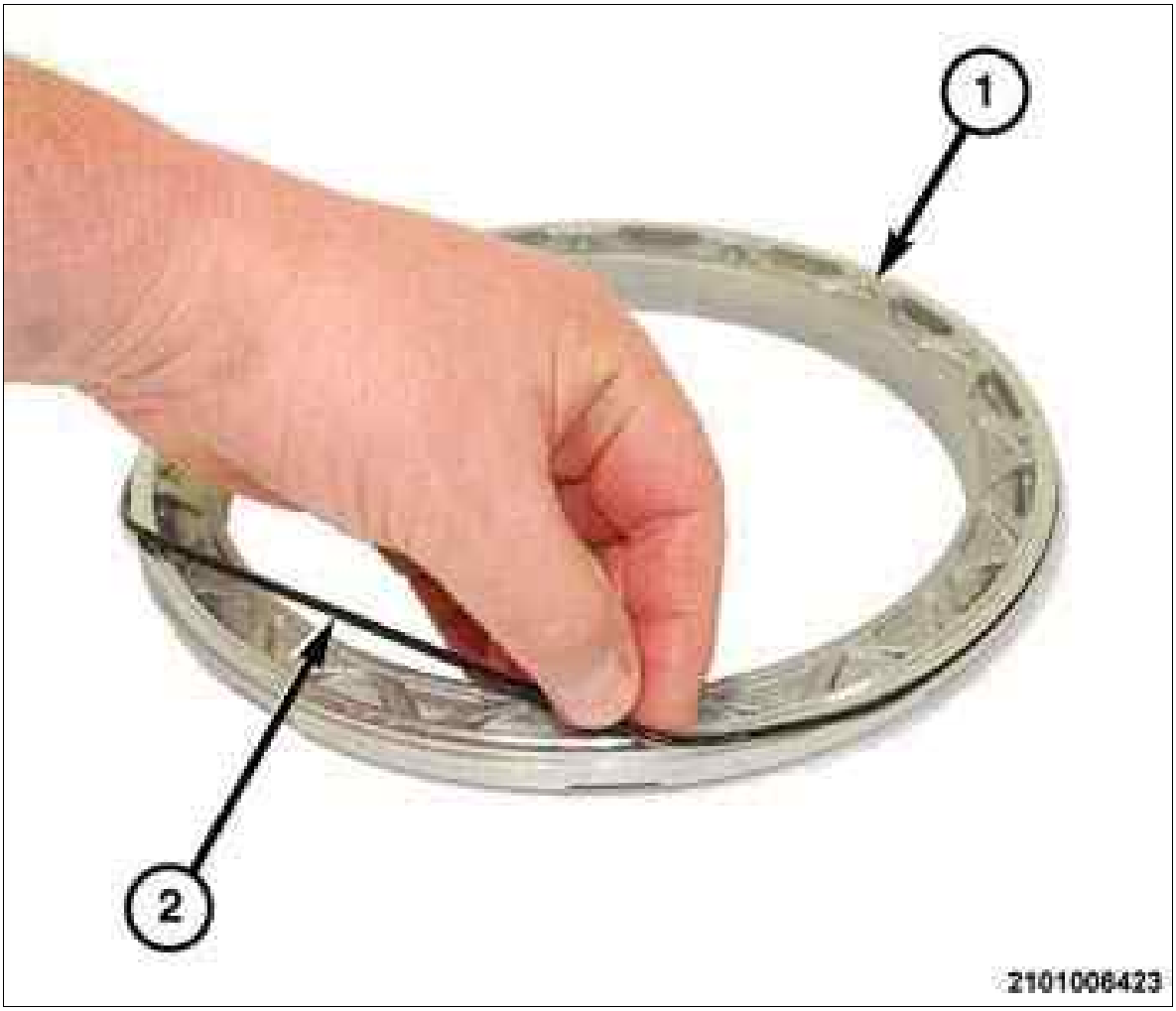
Fig 29: D-Clutch Piston Retainer & O-Ring Seal



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36. Install **NEW** O-ring seal (2) in the D-clutch piston retainer (1).

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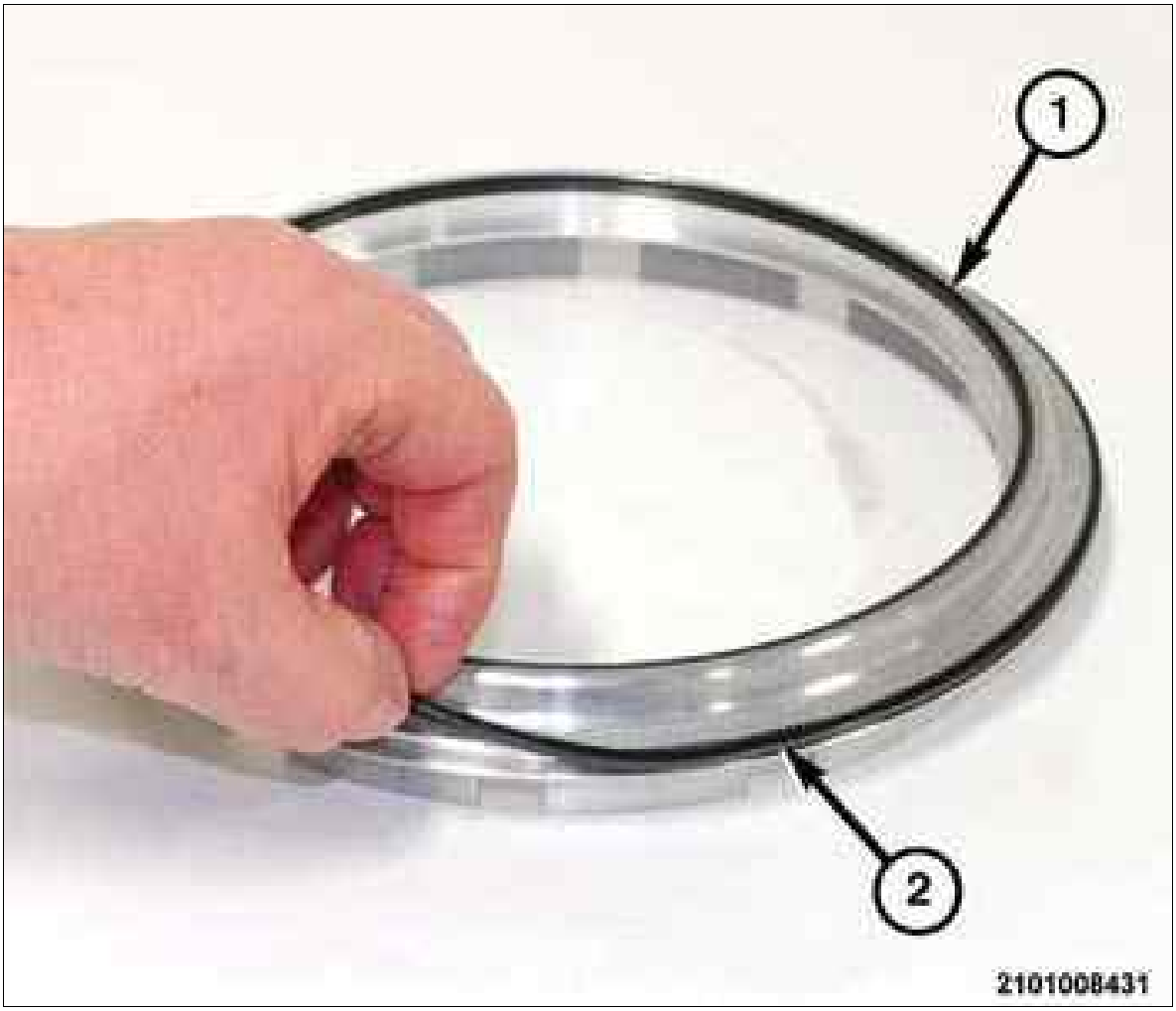
Fig 30: D-Clutch Piston & Outer Lip Seal Ring



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37. Install **NEW** outer lip seal (2) in the D-clutch piston (1).

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Fig 31: D-Clutch Piston & Inner Lip Seal Ring

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38. Install **NEW** inner lip seal (1) in the D-clutch piston (2).

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Fig 32: D-Clutch Piston & Retainer

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39. Install the D-clutch piston (2) in the retainer (1).

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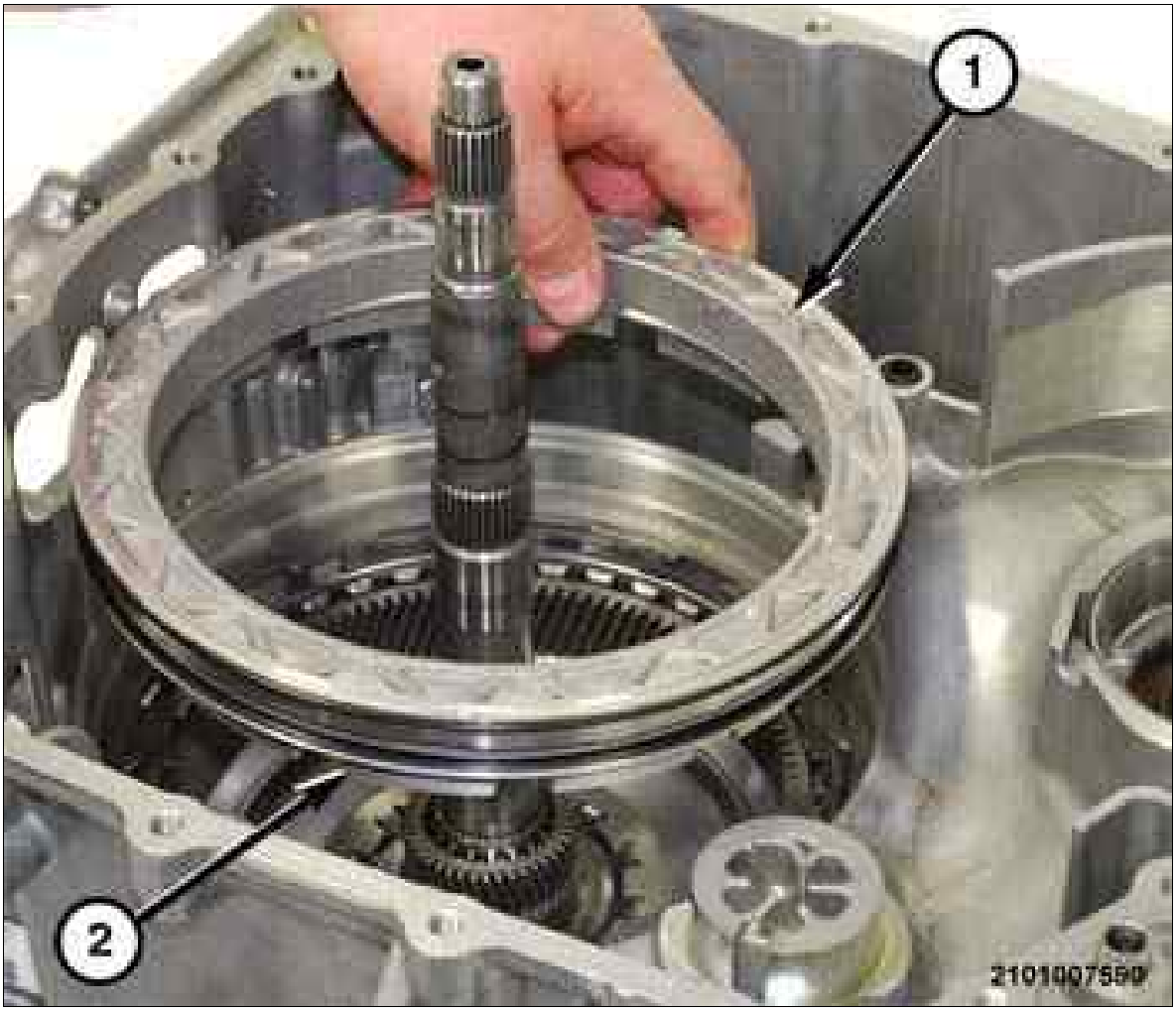
Fig 33: D-Clutch Piston Retainer



Courtesy of CHRYSLER GROUP, LLC

40. Place the D-clutch piston (2) and retainer (1) assembly in the transmission housing over the D-clutch bellville spring. The fingers on the D-clutch piston (2) rest against the D-clutch selective reaction plate.

41. Position the transmission housing on a suitable arbor pressure using wooden blocks for support.

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Fig 34: Snap Ring, D-clutch Piston Retainer, Transmission Housing & Special Tool

Courtesy of CHRYSLER GROUP, LLC

42. Using Tool (special tool #8901A, Pressing Tool) (with the pressure scale removed) (1) and legs (special tool #10428, Adapter, Pressing Tool), compress the bellville spring to gain access to the snap-ring groove (4) in the transmission housing.

43. Install the snap-ring (3) to hold the D-clutch piston retainer (2) into the transmission housing (4).

44. Remove the transmission housing from the arbor press and place the transmission housing on the clean work surface. Use wood blocks to stabilize the transmission.

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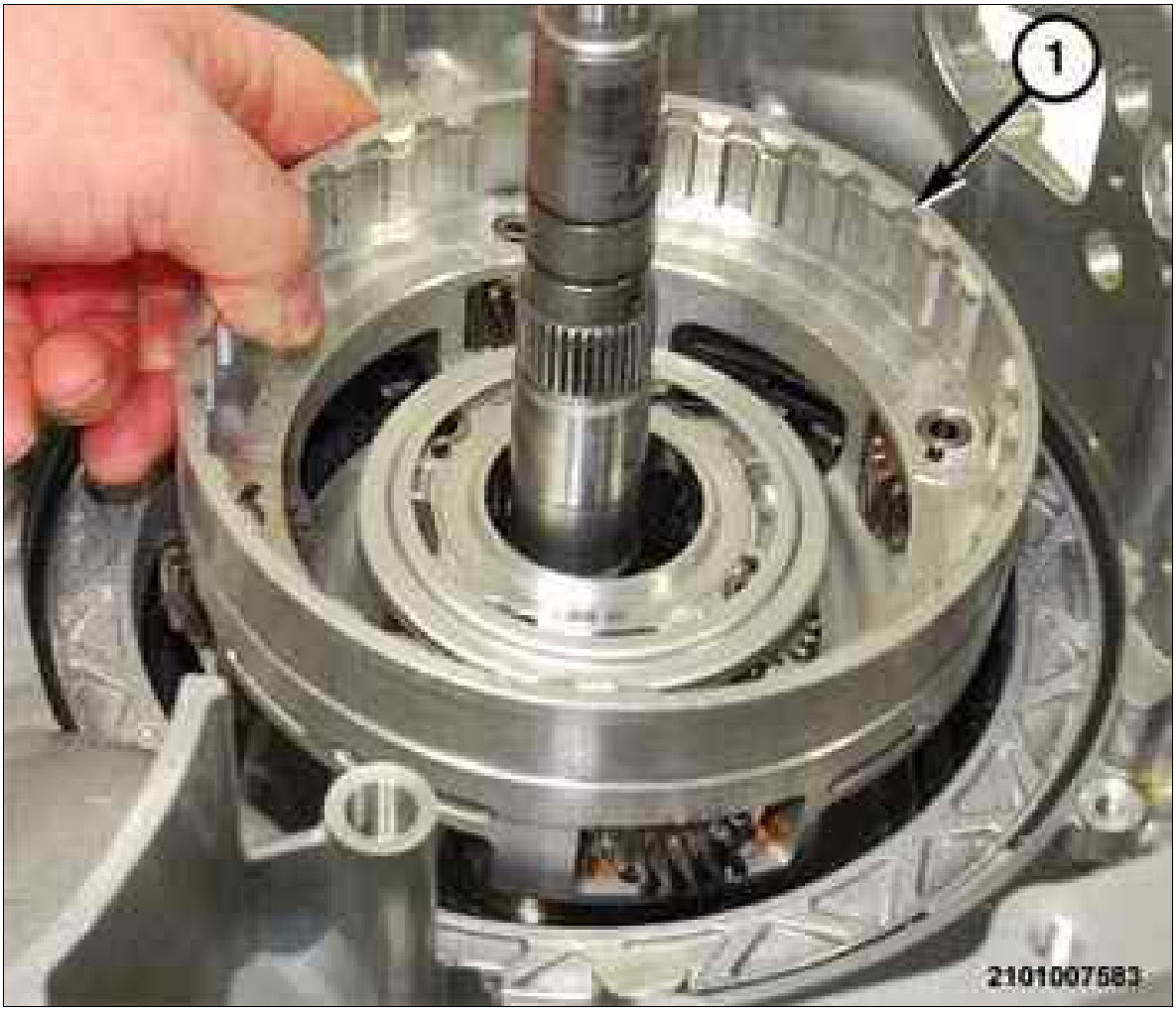
Fig 35: Carrier Gear, Annulus Gear & D-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

45. Insert the carrier gear 1 and 2 (1) annulus gear 2, D-clutch hub and input shaft assembly onto the annulus gear 2, D and C-clutch hub and input shaft assembly.

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Fig 36: Carrier Gear 1&2 & O-Ring Seal

Courtesy of CHRYSLER GROUP, LLC

46. Install the **NEW** O-ring seal (1) into the carrier gear 1 and 2.

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Fig 37: Annulus Gear 3 & Carrier Gear 1&2

Courtesy of CHRYSLER GROUP, LLC

47. Install the annulus gear 3 (1) into the carrier gear 1 and 2.

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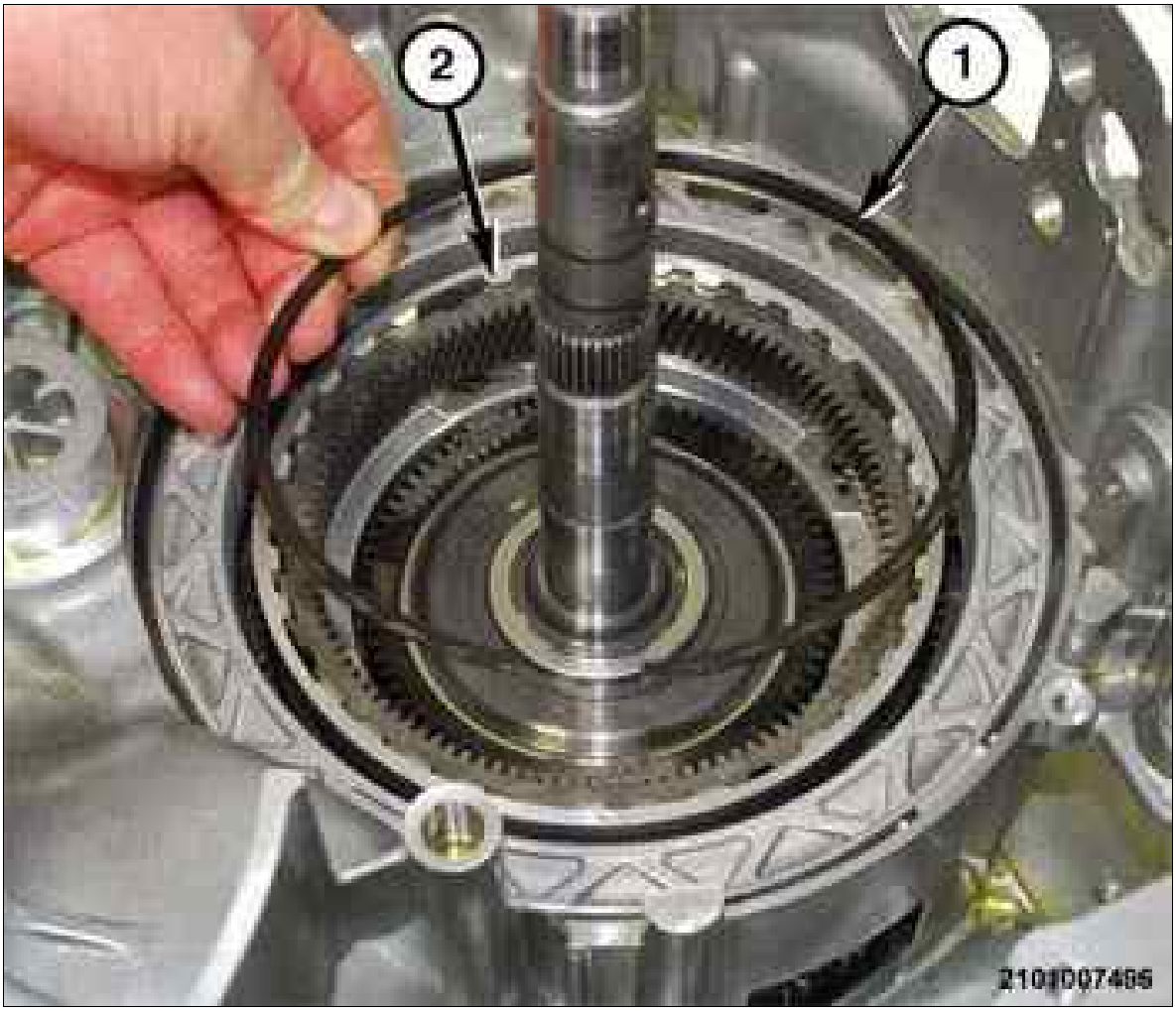
Fig 38: Snap-Ring & Annulus Gear 3



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48. Install the snap-ring (1) to hold the annulus gear 3 (2) in the carrier gear 1 and 2.

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Fig 39: Thrust Bearing & Annulus Gear 1 Planetary Hub

Courtesy of CHRYSLER GROUP, LLC

49. Place the thrust bearing (1) in position under the annulus gear 1 planetary hub (2).

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Fig 40: Annulus Gear 1 Planetary Hub, Carrier Gear 1 And 2

Courtesy of CHRYSLER GROUP, LLC

50. Install the annulus gear 1 planetary hub (1) into the carrier gear 1 and 2 (2).

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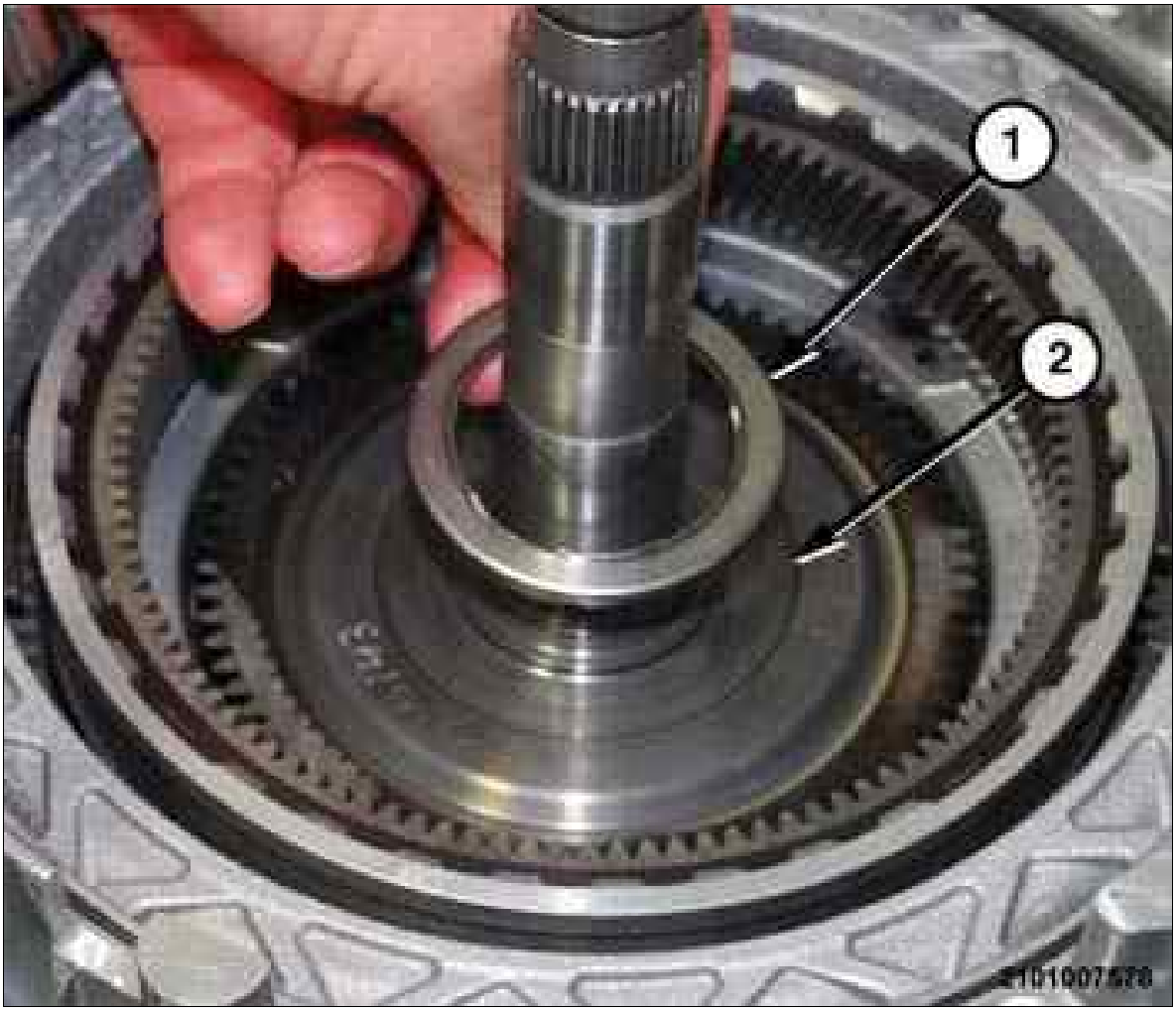
Fig 41: Thrust Bearing & Annulus Gear 1 Planetary Hub



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51. Place the trust bearing (1) onto the annulus gear 1 planetary hub (2).

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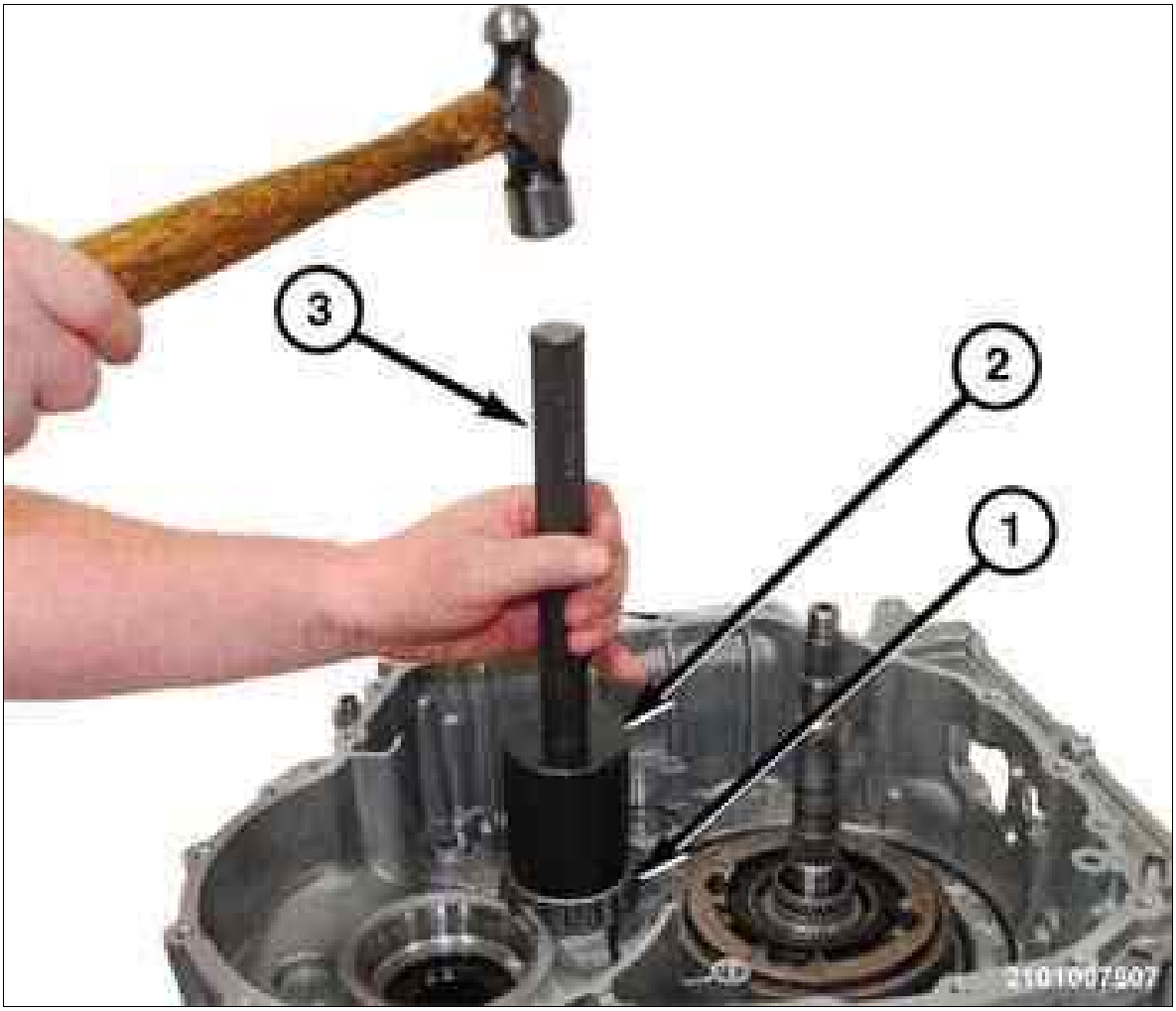
Fig 42: Installing Transfer Gear Bearing Cone Onto Transmission Housing



Courtesy of CHRYSLER GROUP, LLC

52. Using tool (special tool #6888, Installer, Seal) (2), and handle (special tool #C-4171, Driver Handle, Universal) (3) install the transfer gear bearing cone (1) onto the transmission housing.

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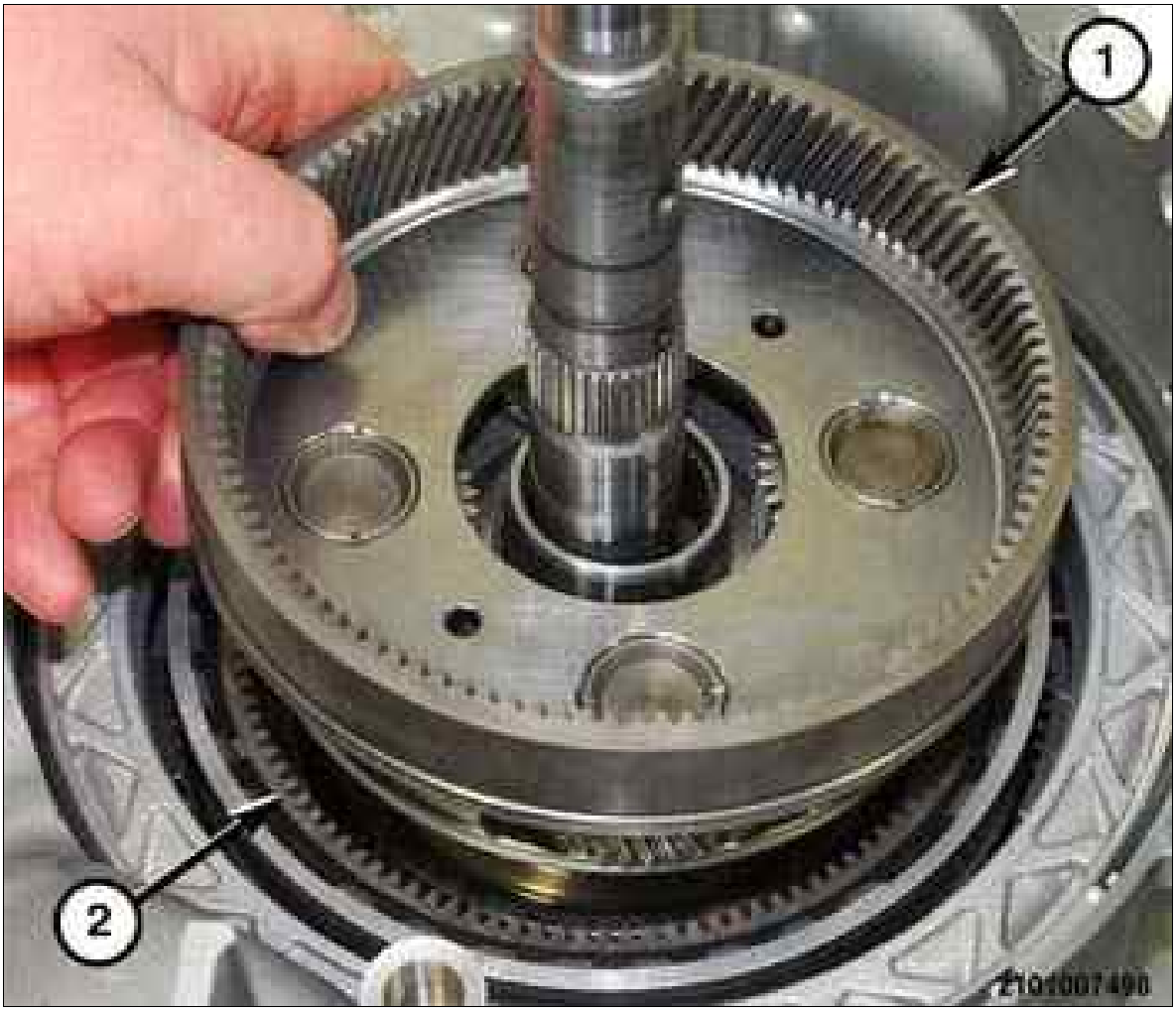
Fig 43: Annulus Gear 4 & Annulus Gear 3



Courtesy of CHRYSLER GROUP, LLC

53. Install the annulus gear 4 (1) in the annulus gear 3 (2).

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Fig 44: Thrust Spacer & Underside Of Gear 4 Planetary Pinion Carrier

Courtesy of CHRYSLER GROUP, LLC

54. Install a **NEW** thrust spacer (1) on the underside of the gear 4 planetary pinion carrier (2).

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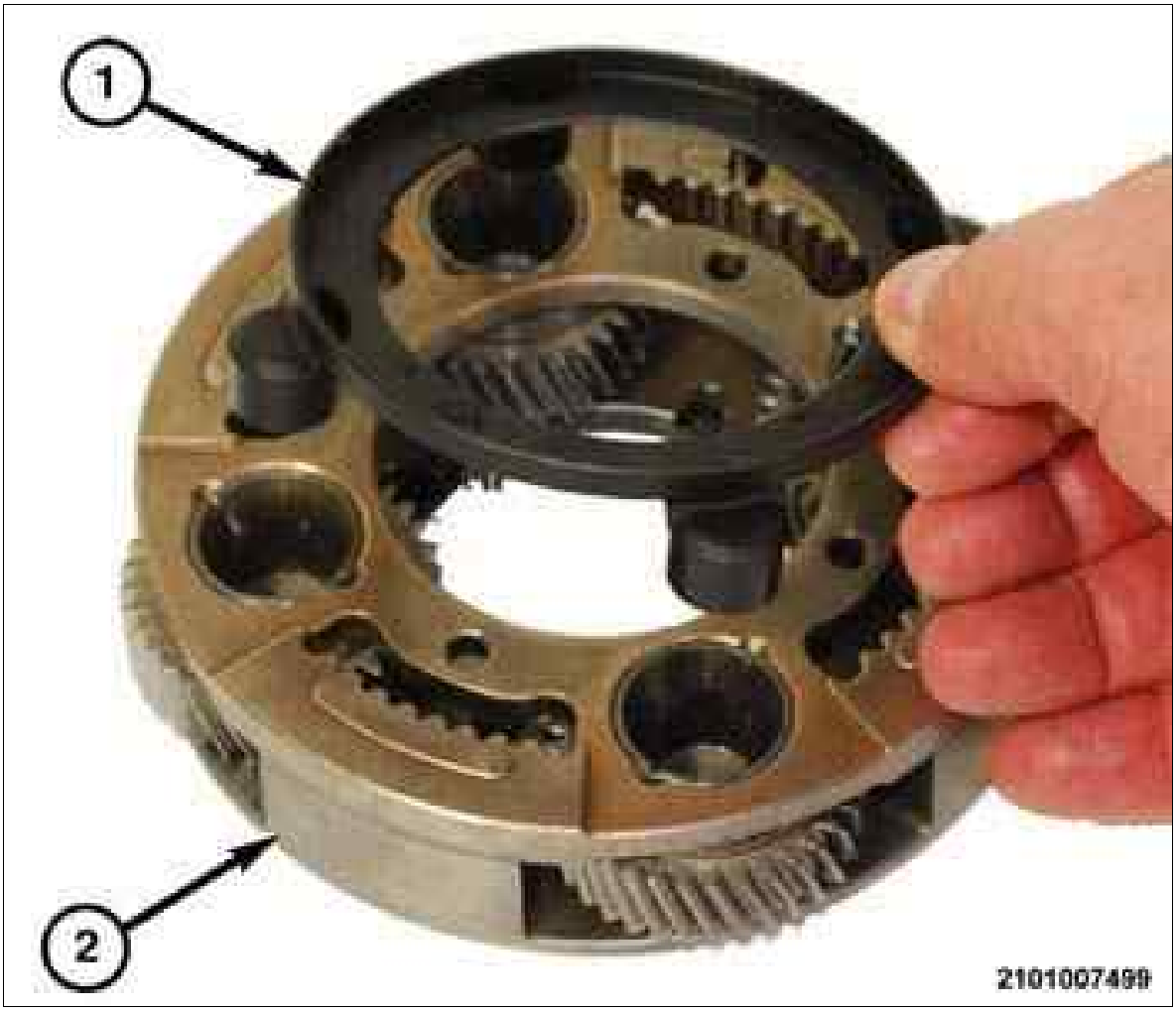
Fig 45: Thrust Spacer & Topside Of Gear 4 Planetary Pinion Carrier



Courtesy of CHRYSLER GROUP, LLC

55. Install a **NEW** thrust spacer (1) on the topside of the gear 4 planetary pinion carrier (2).

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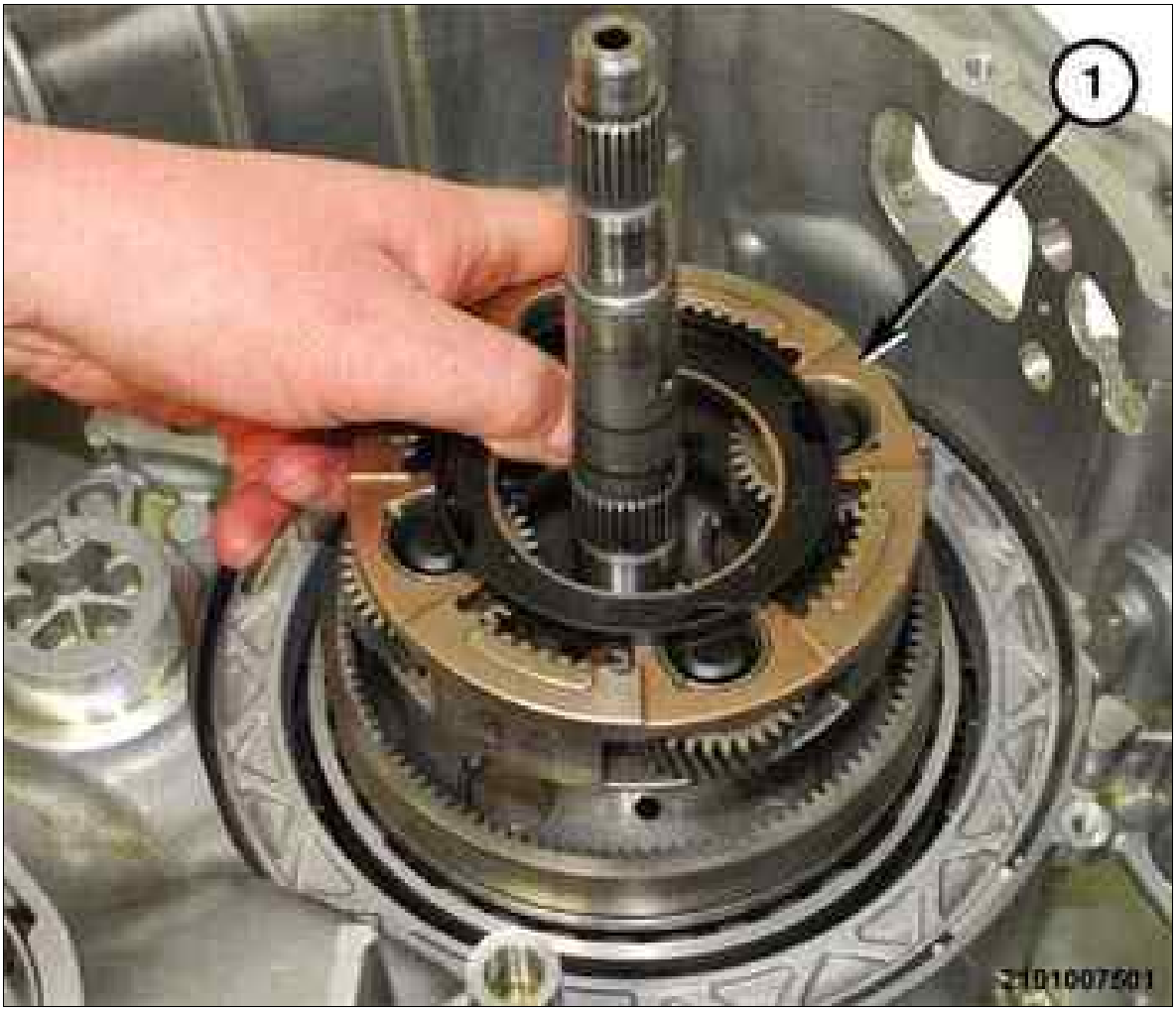
Fig 46: Gear 4 Planetary Pinion Carrier



Courtesy of CHRYSLER GROUP, LLC

56. Install the gear 4 planetary pinion carrier (1) into the annulus gear 4.

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Fig 47: Removing/Installing Sun Gear 3, 4 And Dog Clutch-F At Gear 4 Planetary Pinion Carrier

Courtesy of CHRYSLER GROUP, LLC

57. Install the sun gear 3 and 4 and Dog Clutch-F (1) in the gear 4 planetary pinion carrier.

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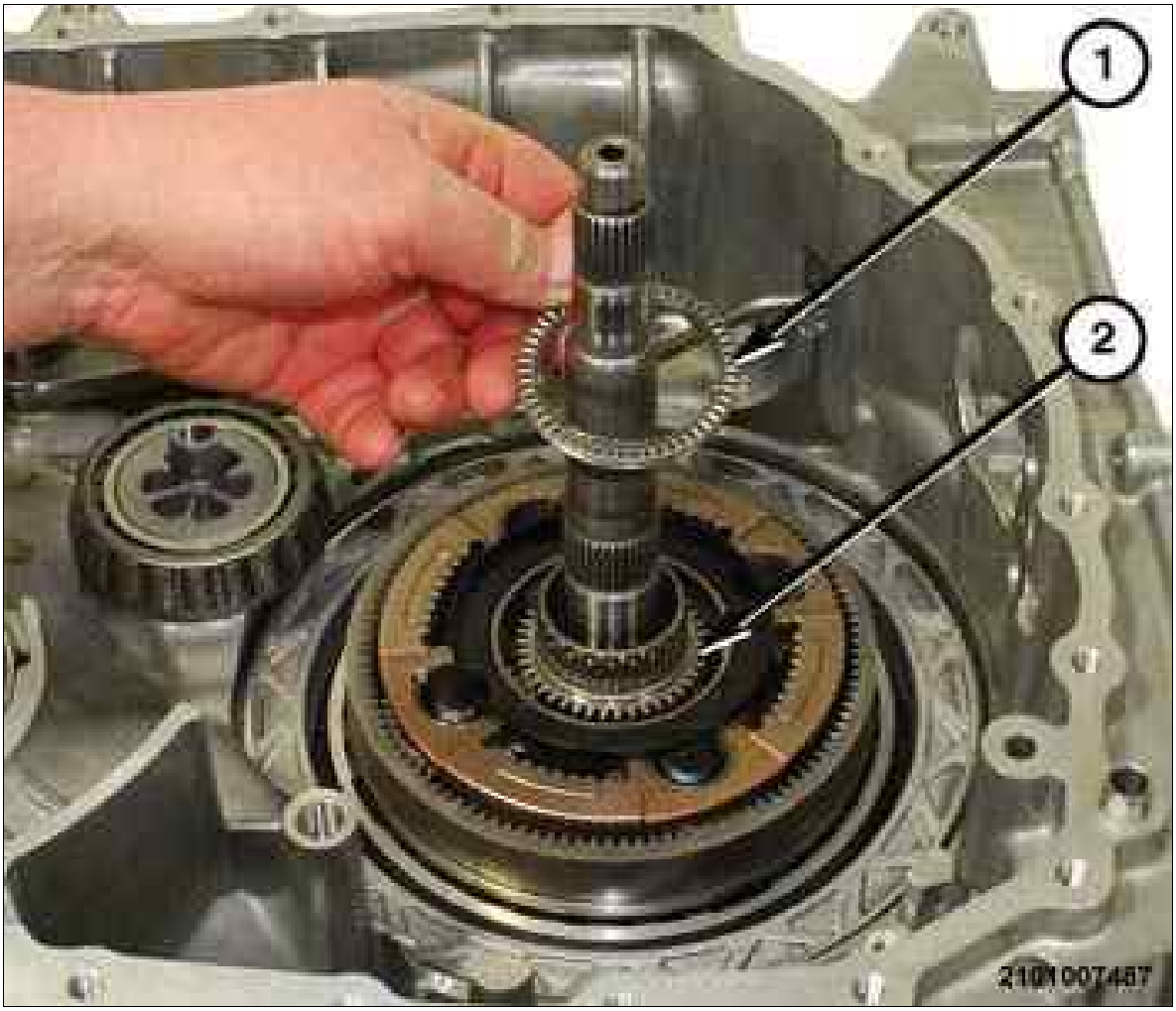
Fig 48: Roller Type Thrust Bearing, Sun Gear And Dog Clutch-F



Courtesy of CHRYSLER GROUP, LLC

58. Install the roller type thrust bearing (1) onto the sun gear 3 and 4 and Dog Clutch-F (2).

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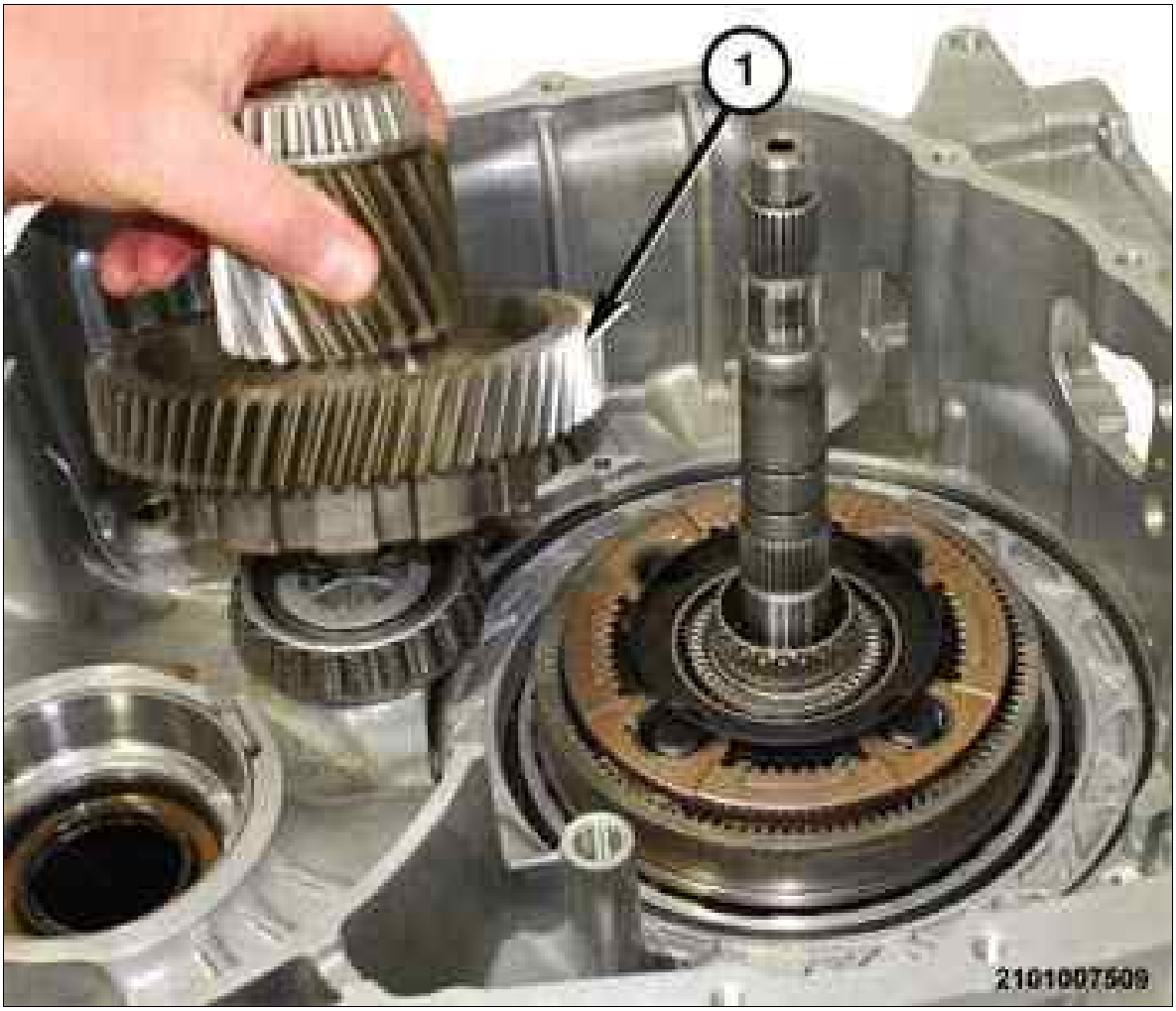
Fig 49: Removing/Installing Transfer Gear



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> *NOTE:*
>
> *If a new transfer gear (1) or transmission housing are being used, measurements must be performed to determine correct thickness for the bearing preload shims. Refer to STANDARD PROCEDURES . If the bearings and races are replaced the factory installed preload shims do not require replacement.*

59. If necessary, replace the bearings and races on the transfer gear (1).
60. Install the transfer gear (1) into the transmission housing.

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Fig 50: Output Gear Support & Planetary Pinion Carrier

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61. Install the output gear support (1) into the gear 4 planetary pinion carrier (2).

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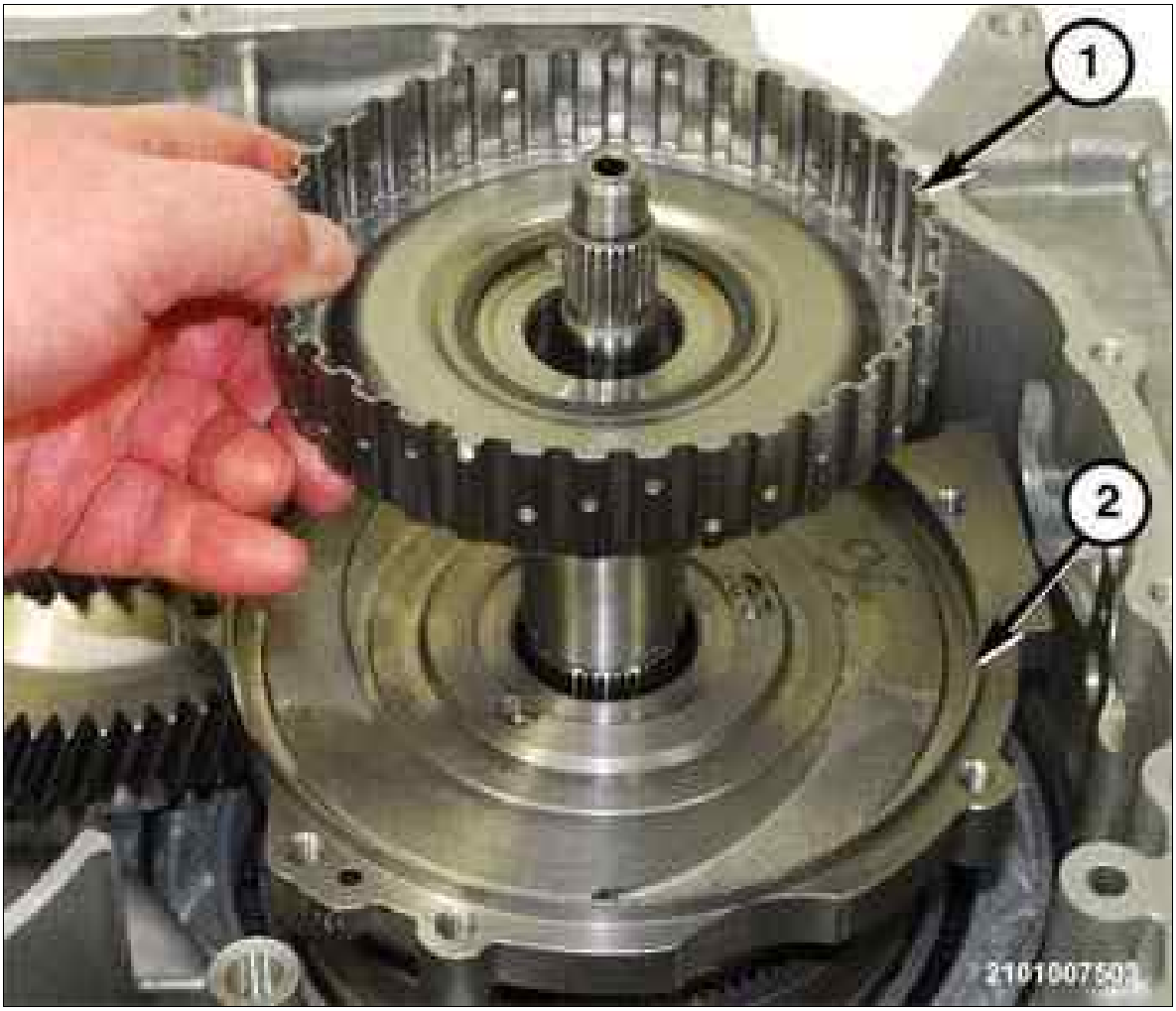
Fig 51: Output Gear Support, E-Clutch Hub & Shaft



Courtesy of CHRYSLER GROUP, LLC

62. Install the E-clutch hub and shaft (1) in the output gear support (2).

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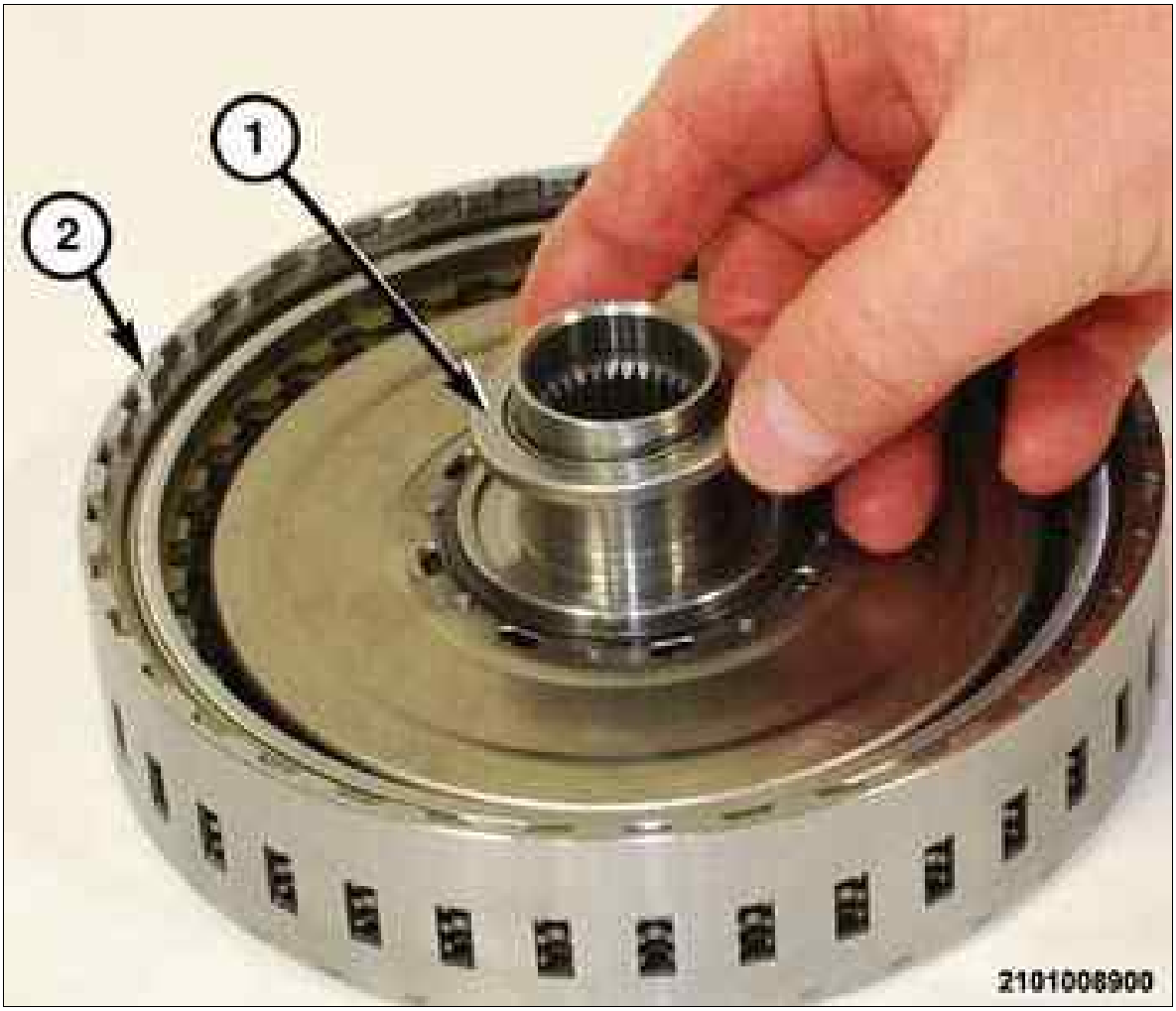
Fig 52: Removing/Installing Thrust Bearing At E-Clutch Hub



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63. Install the thrust bearing (1) on the E-clutch hub (2).

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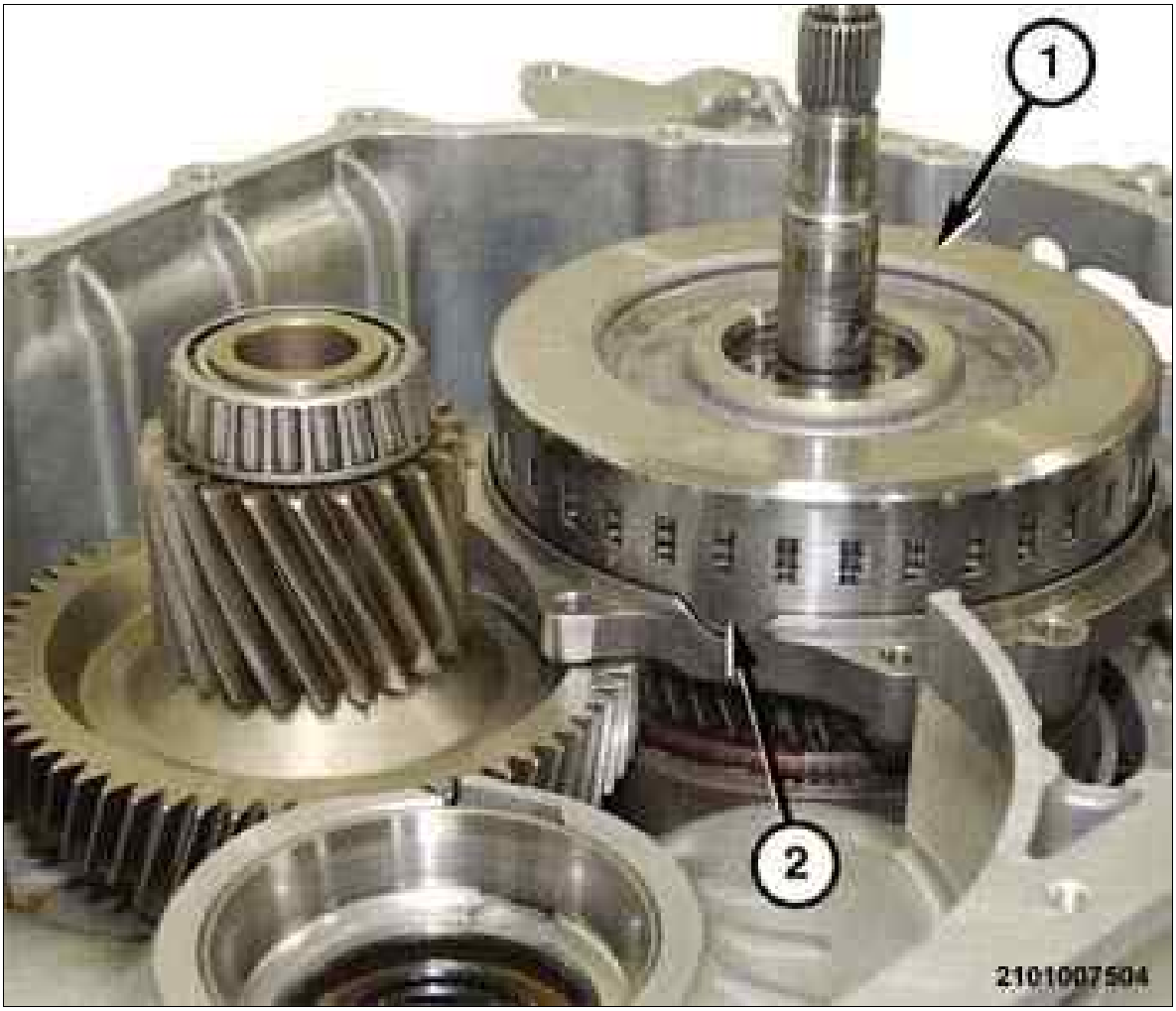
Fig 53: E-Clutch & Gap



Courtesy of CHRYSLER GROUP, LLC

> *NOTE:*
>
> *Before installing the E-clutch, use a suitable screwdriver to align the grooves in the friction discs.*

64. Wriggle the E-clutch (1) until all of the friction discs are fully engaged on the E-clutch hub and shaft.

> *NOTE:*
>
> *When the E-clutch (1) is fully seated the gap (2) will be very small between the E-clutch retainer and the output gear support.*

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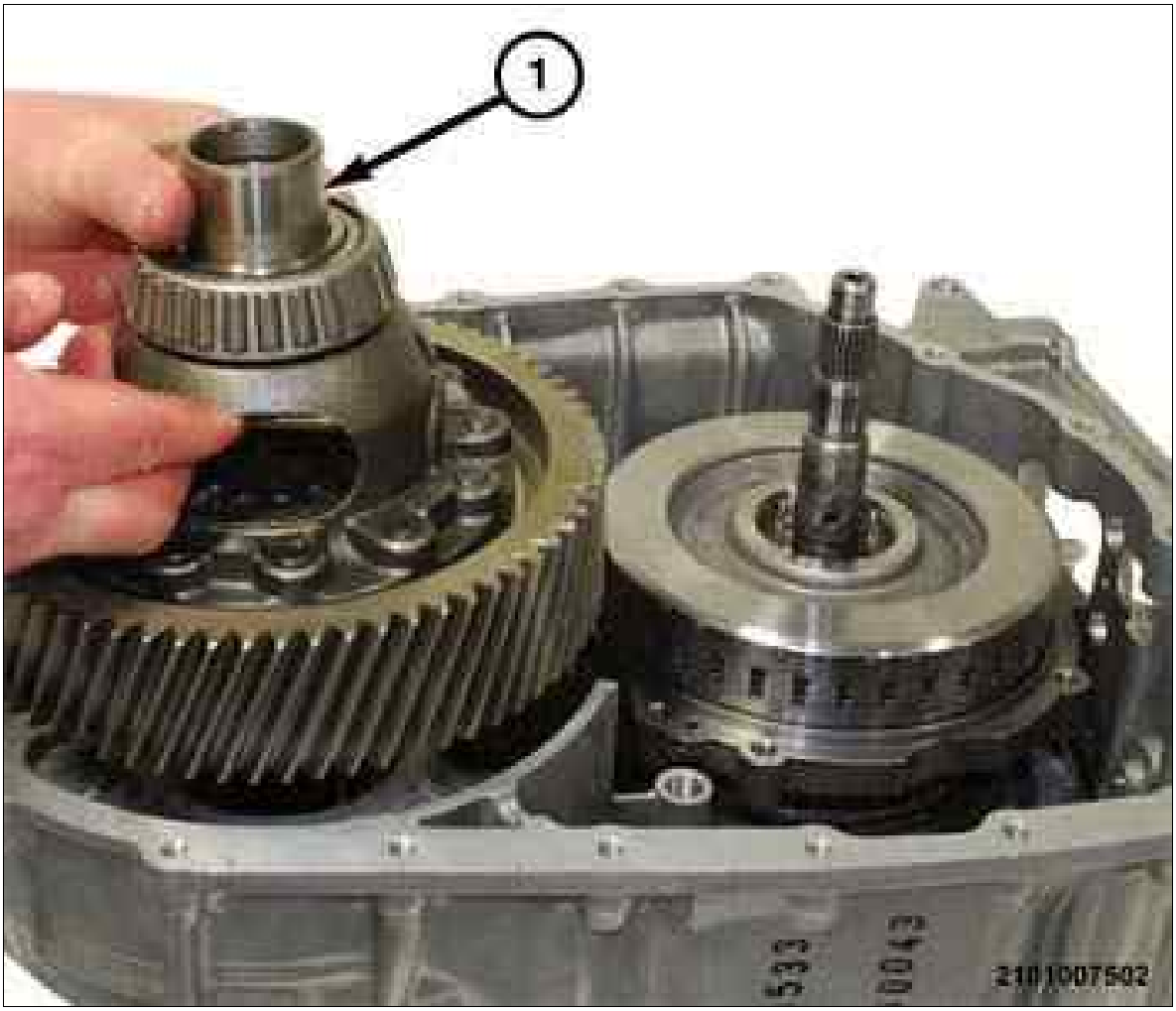
Fig 54: Differential Assembly



Courtesy of CHRYSLER GROUP, LLC

> *NOTE:*
>
> *If a new differential (1) or transmission housing are being used, measurements must be performed to determine correct thickness for the bearing preload shims. If the bearings and races are replaced the factory installed preload shims do not require replacement. Refer to STANDARD PROCEDURES .*

65. If necessary, replace the bearings and races on the differential (1).
66. Install the differential assembly (1) into the transmission housing.

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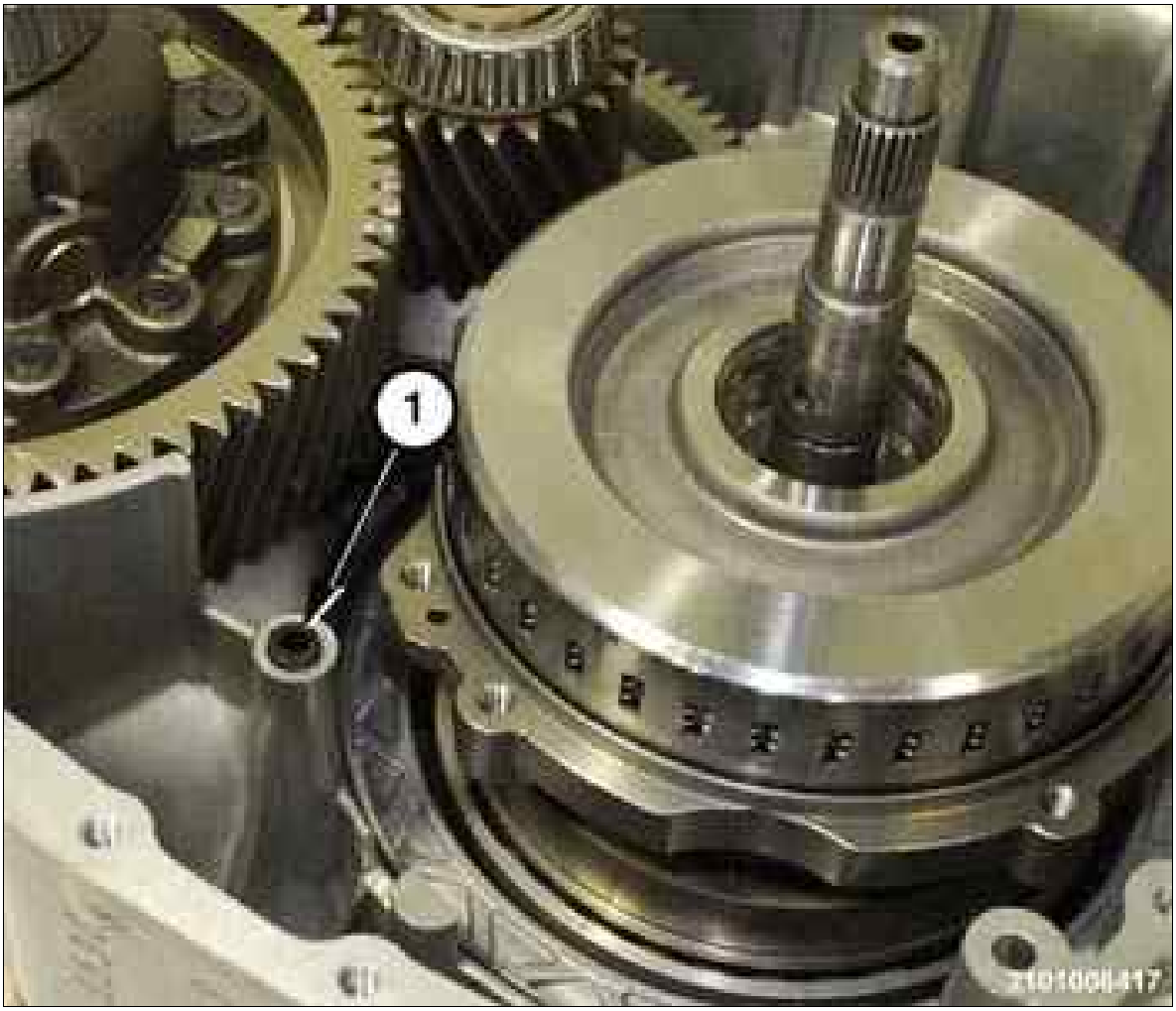
Fig 55: Port Seal



Courtesy of CHRYSLER GROUP, LLC

67. Install a **NEW** seal (1) in the port in the transmission housing.

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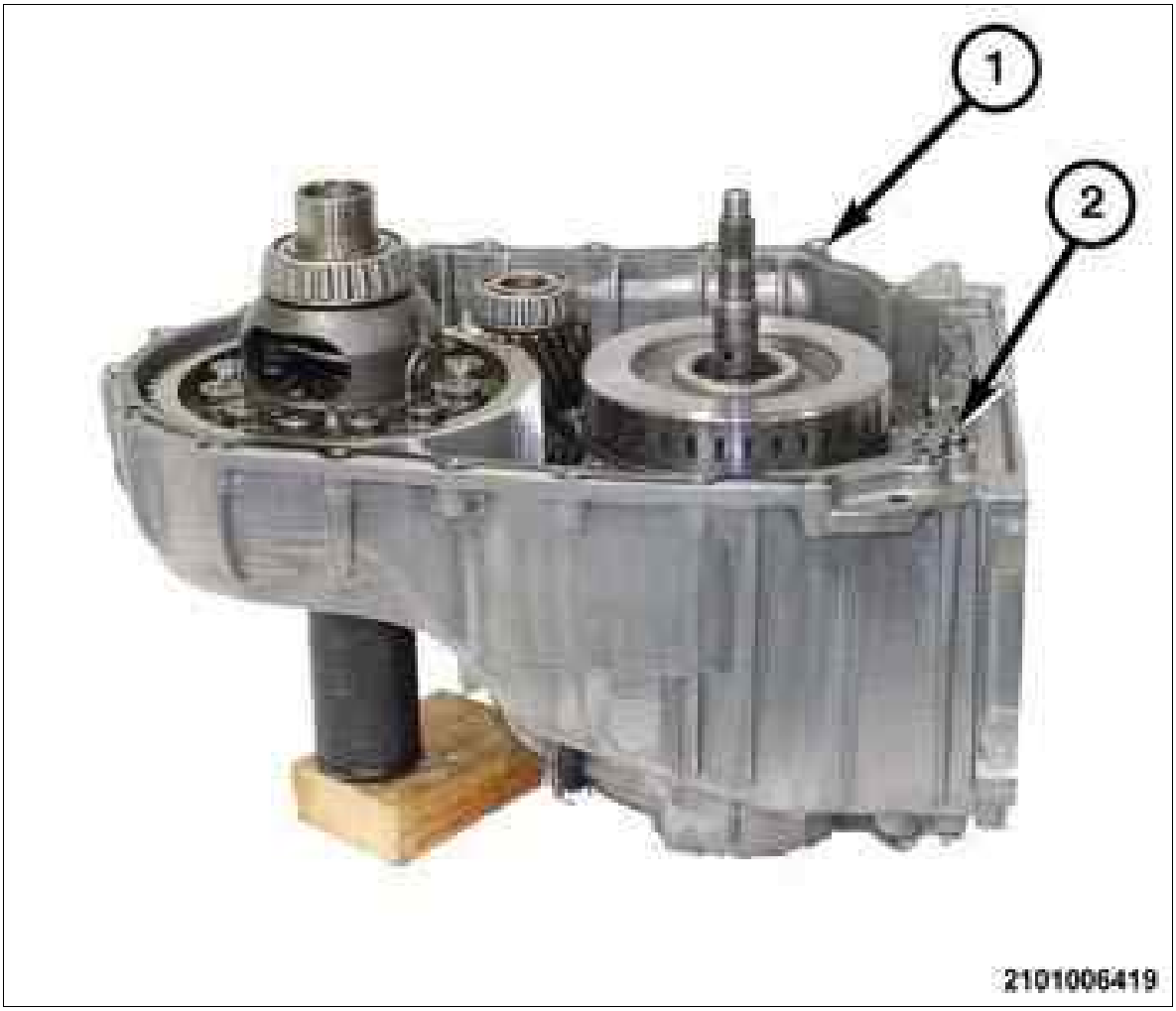
Fig 56: Gasket & Transmission Housing



Courtesy of CHRYSLER GROUP, LLC

68. Install a **NEW** gasket (1) on the sealing surface of the transmission housing (2).

69. If necessary, replace the output seal and the impeller hub seal.

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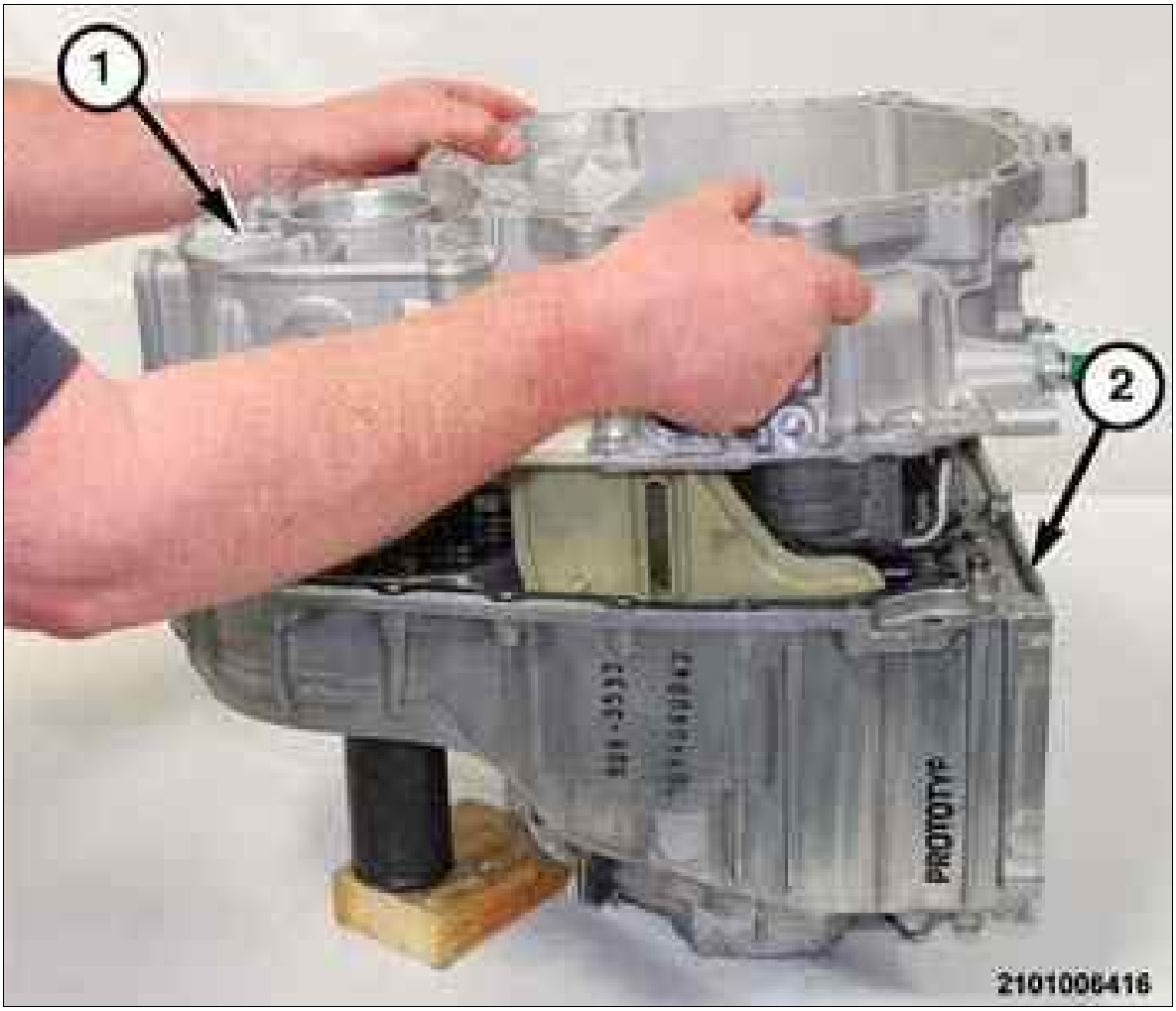
Fig 57: Removing/Installing Bellhousing At Transmission Housing



Courtesy of CHRYSLER GROUP, LLC

70. Guide the bellhousing (1) downward over the input and output shafts and onto the transmission housing (2).

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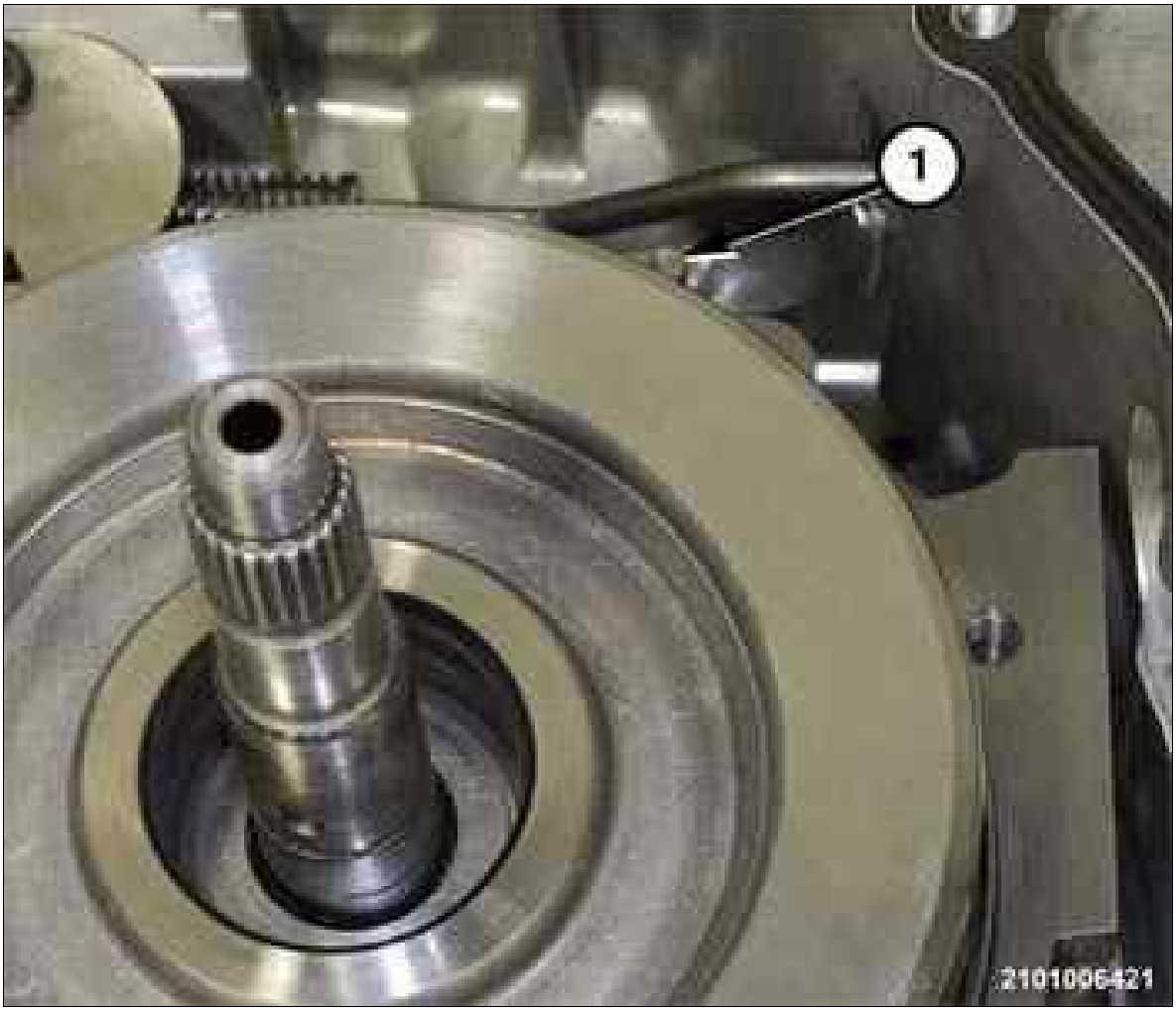
Fig 58: Checking Guide Pin Alignment



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71. Rotate the output gear clockwise to assure guide pin (1) alignment.

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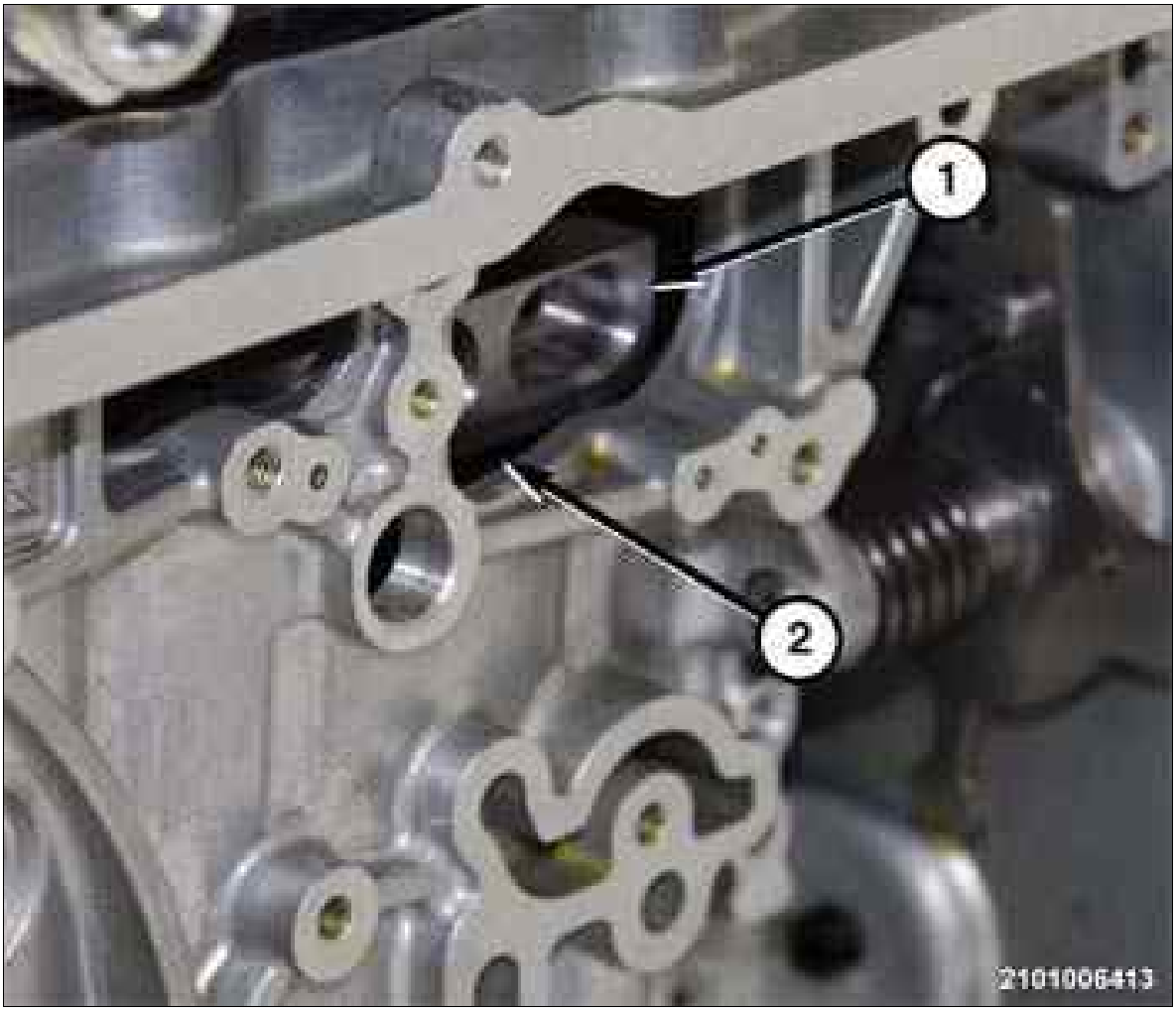
Fig 59: Output Gear Support & Window



Courtesy of CHRYSLER GROUP, LLC

72. Rotate the output gear support (1) through the window (2) behind the valve body until the guide pin engages the receptacle hole in the bellhousing.

73. Engage the guide pins in the transmission housing into the receptacle holes in the bellhousing to assure proper alignment.

74. Install several bolts to hold the bell housing to the transmission housing. Tighten the bolts hand tight.

75. Position the transmission on the bench with the bellhousing facing outward.

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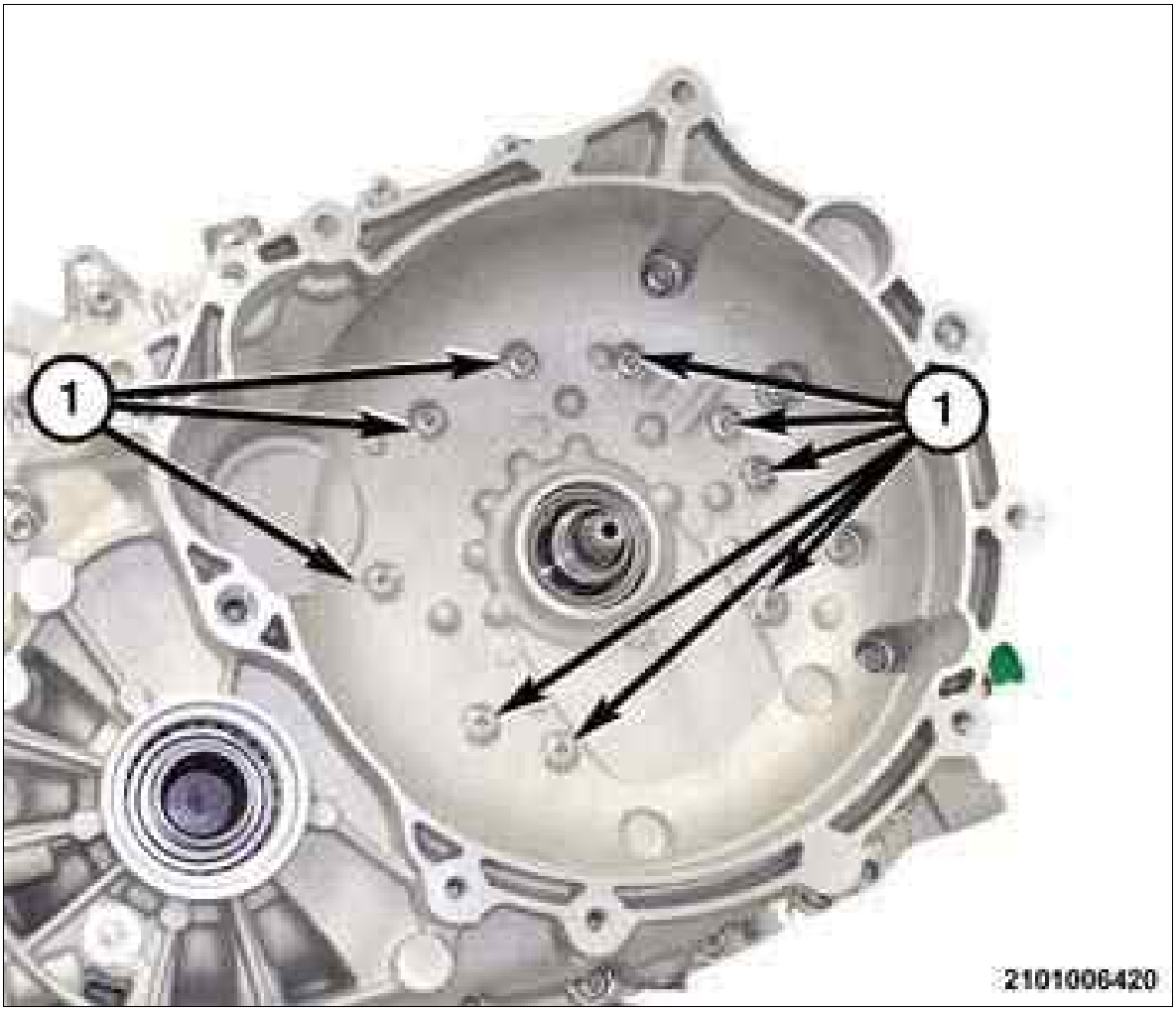
Fig 60: Bellhousing To Output Gear Support Bolts



Courtesy of CHRYSLER GROUP, LLC

76. Install the bolts (1) with **NEW** seal washers to hold the bellhousing to the output gear support and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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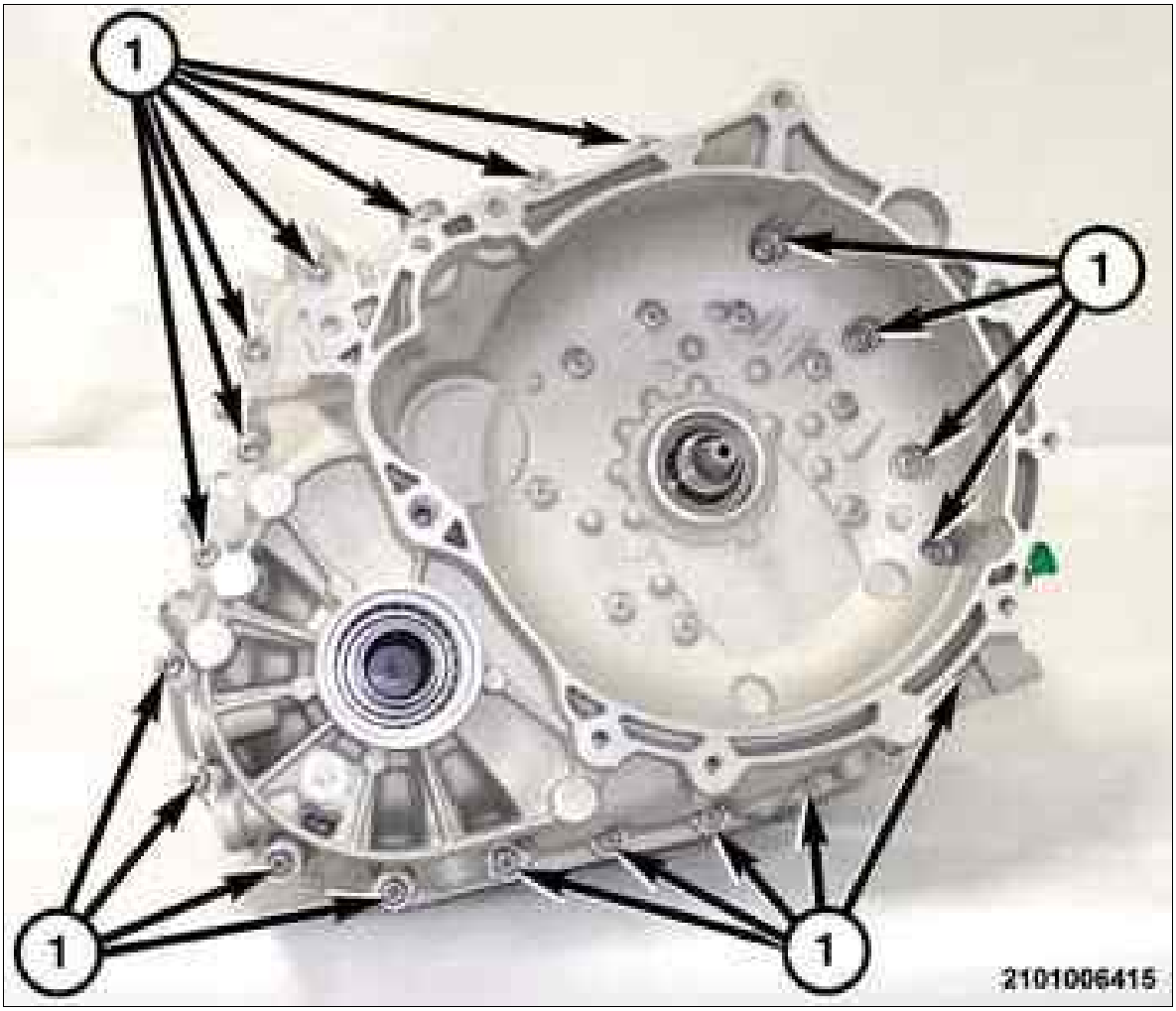
Fig 61: Bellhousing To Transmission Housing Bolts



Courtesy of CHRYSLER GROUP, LLC

77. Install the bolts (1) to hold the bellhousing to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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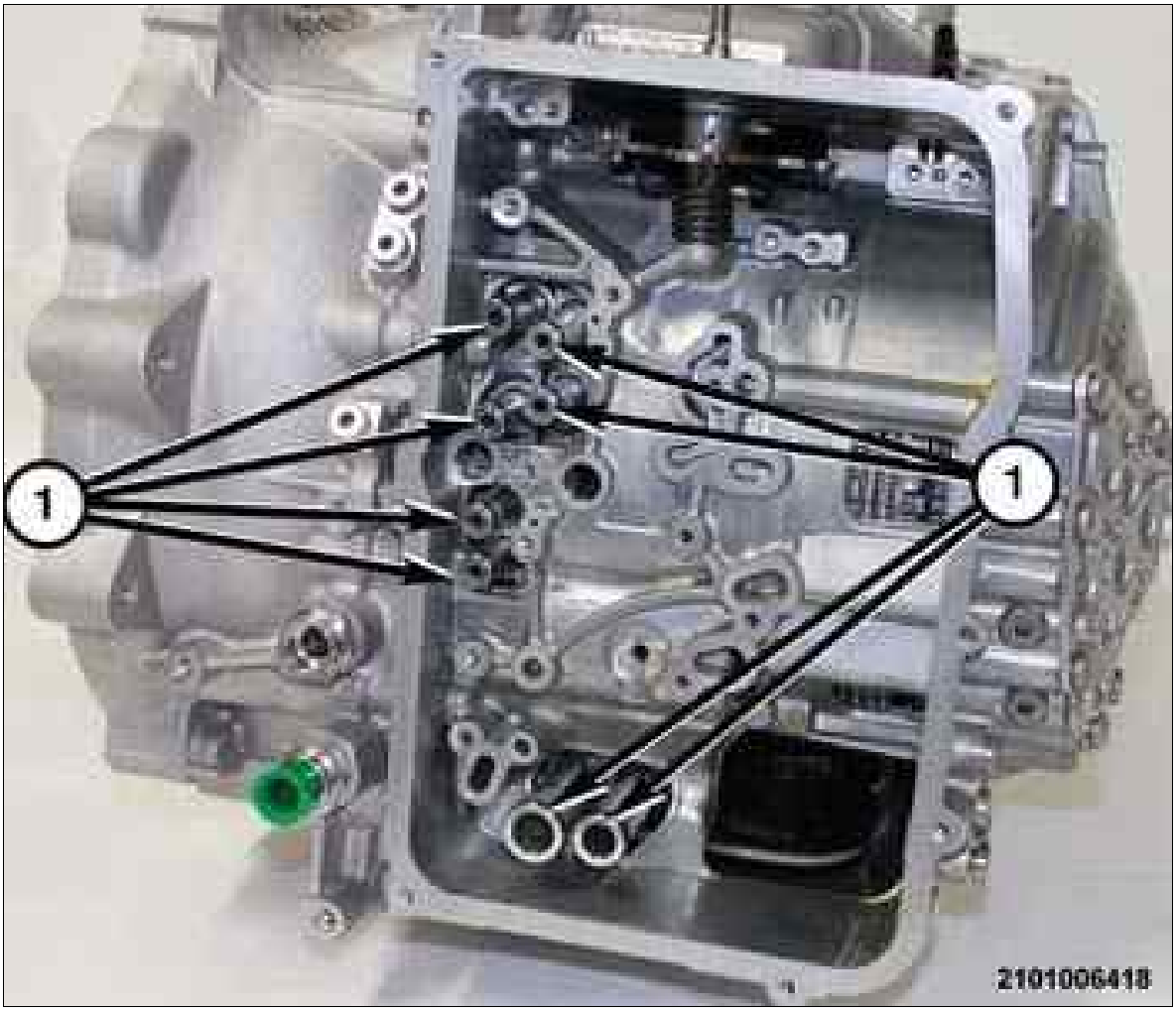
Fig 62: Fluid Adapter Tubes & O-Ring Seals



Courtesy of CHRYSLER GROUP, LLC

78. Install **NEW** O-rings on both ends of the fluid transfer tubes.

79. Install the fluid transfer tubes (1) in the transmission housing.

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Fig 63: Removing/Installing Speed Sensor

Courtesy of CHRYSLER GROUP, LLC

80. Insert the speed sensors (1) into the transmission with the wire harness connected.

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Fig 64: Removing/Installing Speed Sensor Screw

Courtesy of CHRYSLER GROUP, LLC

81. Install the speed sensor screw (1) to hold the speed sensors to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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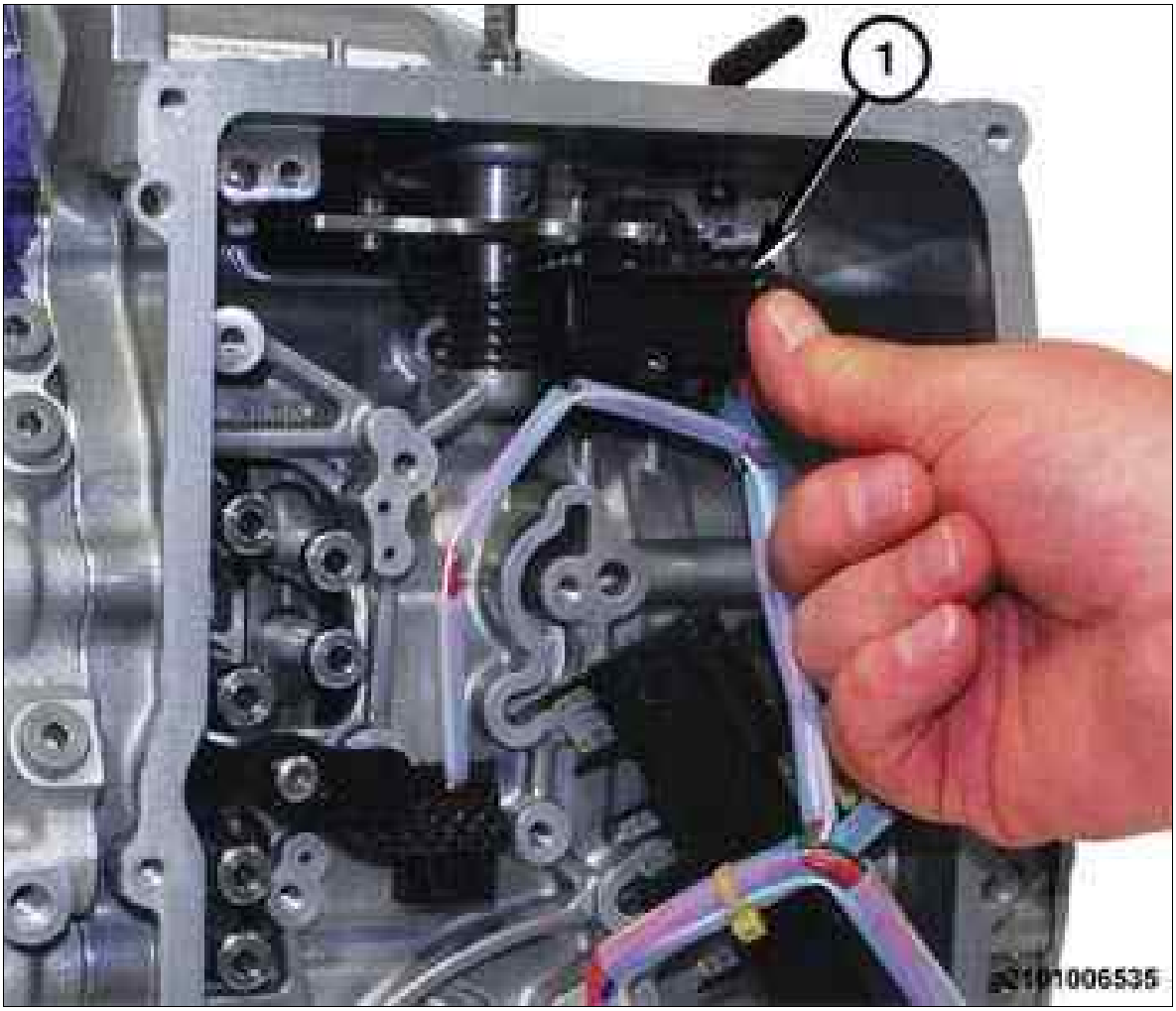
Fig 65: Removing/Installing Transmission Range Sensor



Courtesy of CHRYSLER GROUP, LLC

82. Place the Transmission Range Sensor (TRS) (1) in position on the transmission with the wire harness connected.

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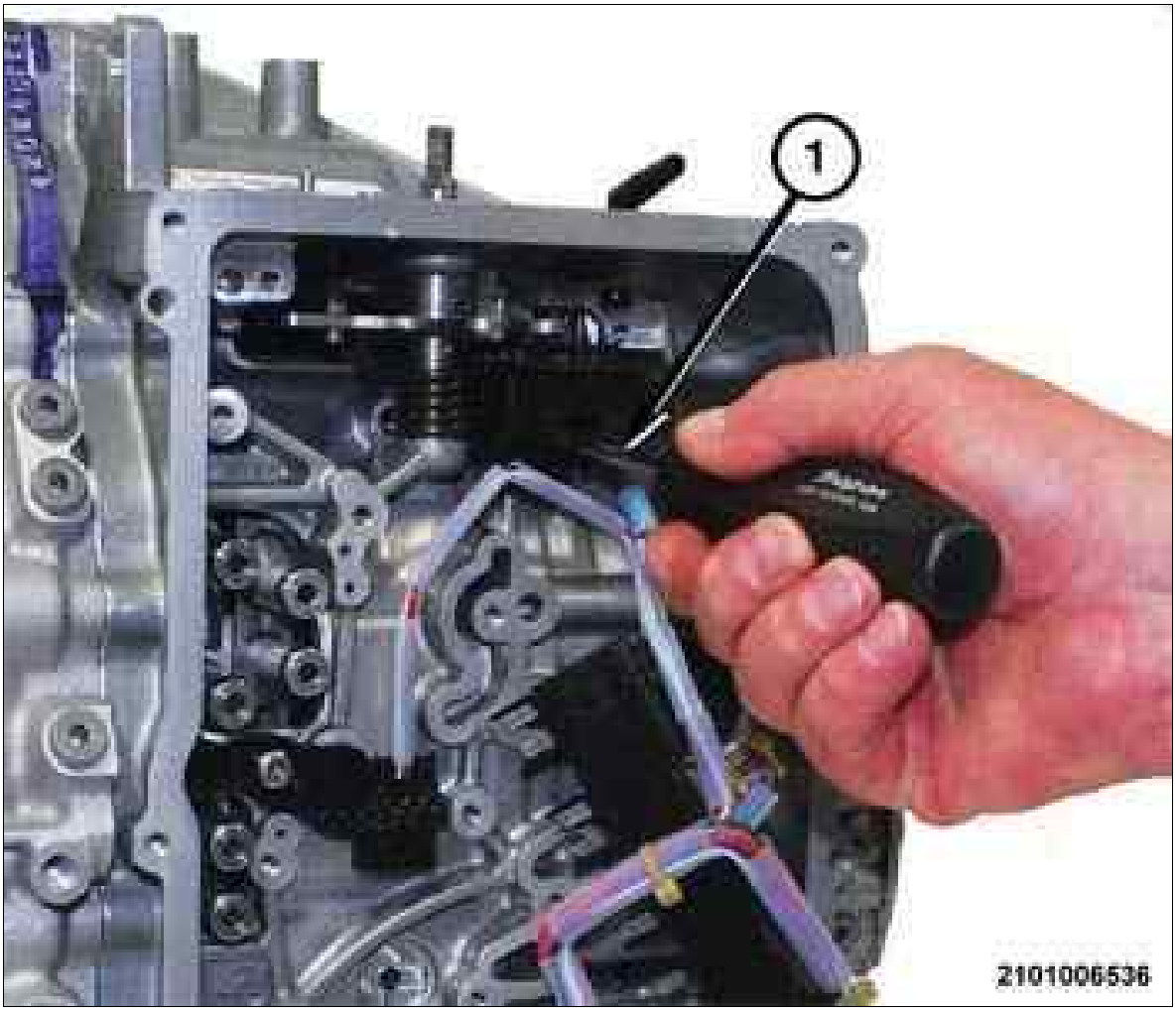
Fig 66: Removing/Installing Transmission Range Sensor (TRS) Screw



Courtesy of CHRYSLER GROUP, LLC

83. Install the TRS screw (1) to hold the TRS to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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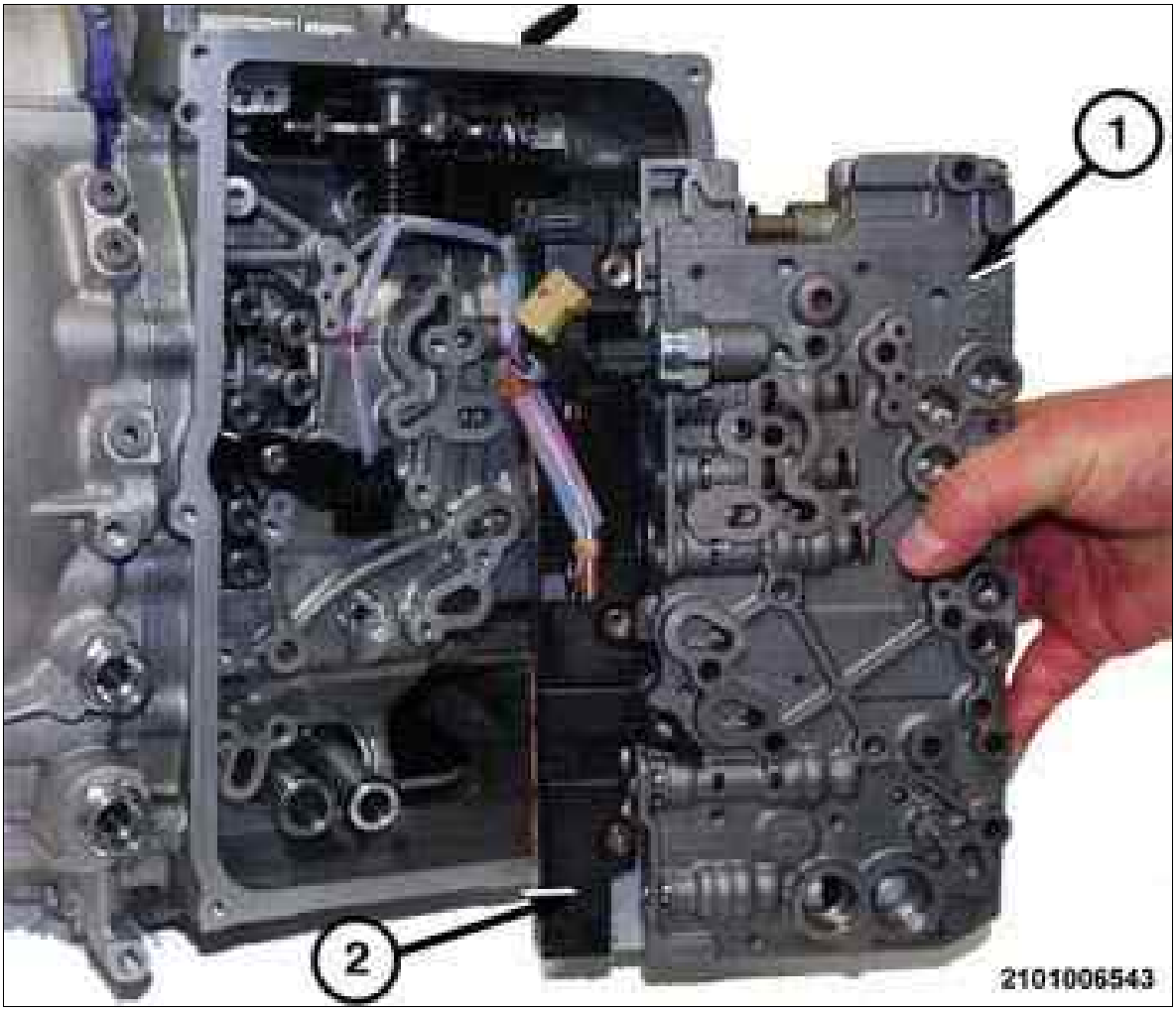
Fig 67: Valve Body & Solenoid Wire Harness Connector



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84. Place the valve body (1) in position on the transmission.

85. Place the transmission solenoid wire harness connector (2) in position on the solenoids.

86. Press the transmission solenoid wire harness connector (2) inward to engage the terminals on the solenoids.

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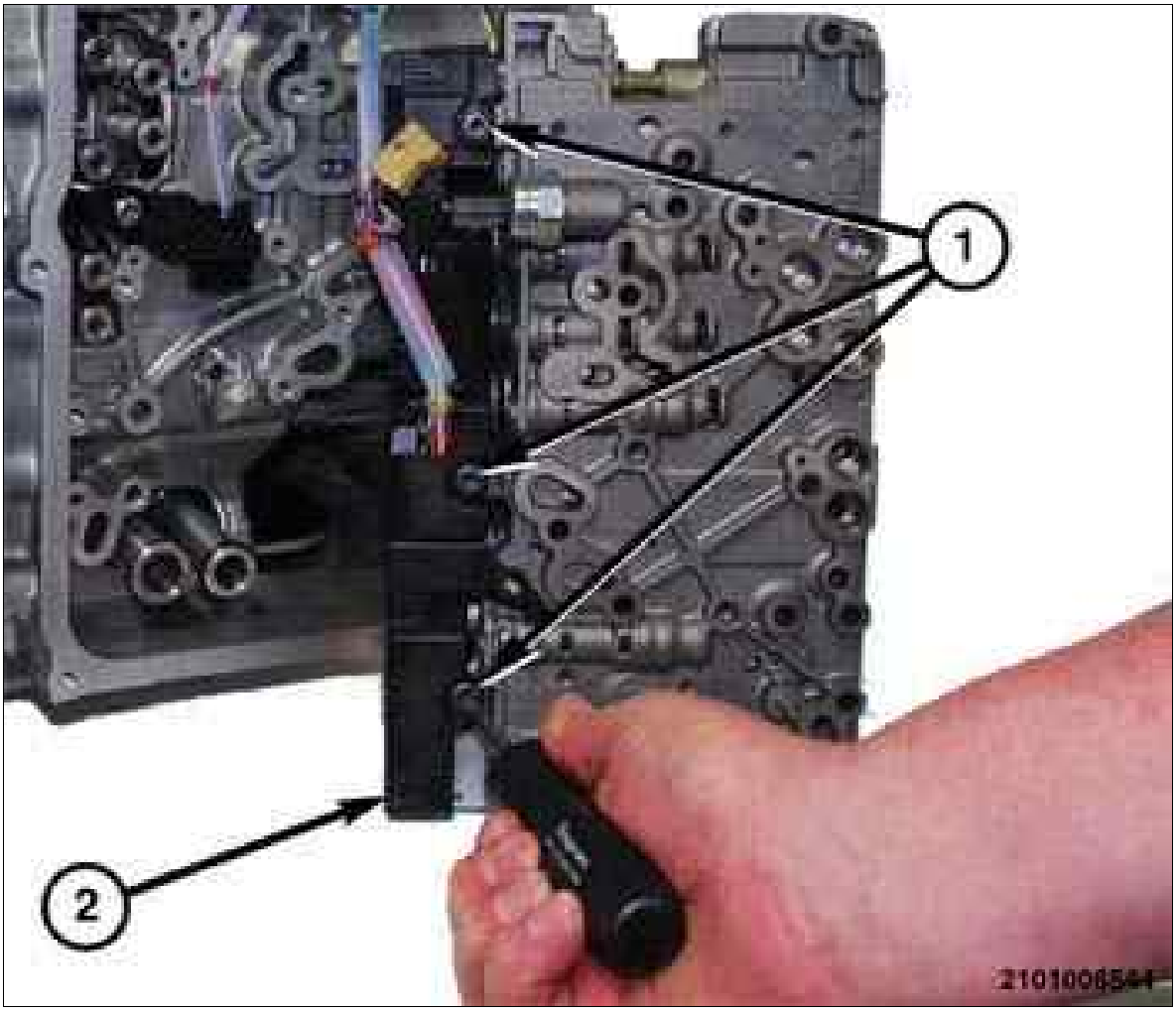
Fig 68: Removing/Installing Wire Harness Connector At Valve Body Solenoids



Courtesy of CHRYSLER GROUP, LLC

87. Install the screws (1) to hold the valve body wire harness connector (2) to the valve body and solenoids and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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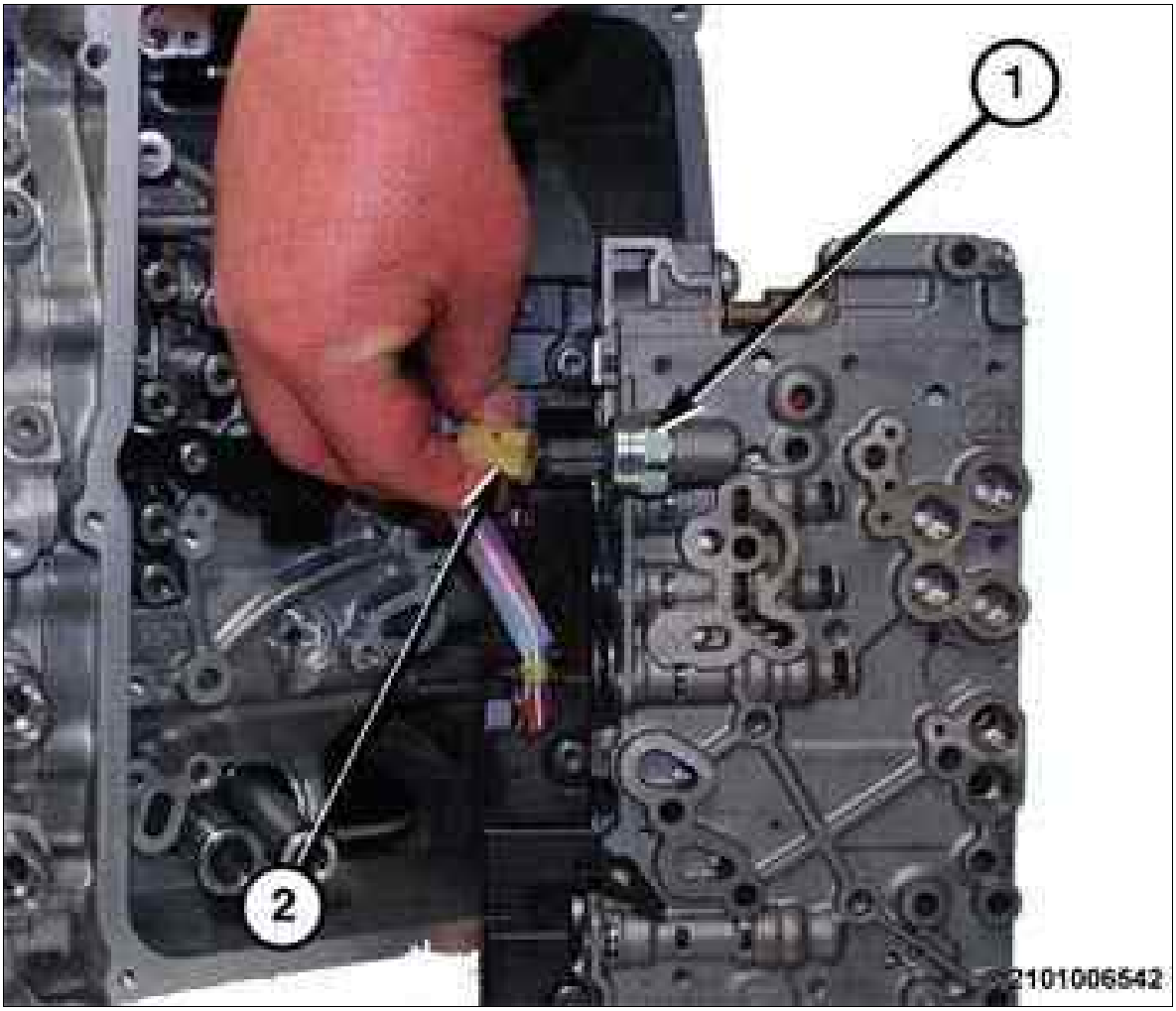
Fig 69: Fluid Pressure Sensor & Wire Harness Connector



Courtesy of CHRYSLER GROUP, LLC

88. Connect the wire harness connector (2) to the fluid pressure sensor (1).

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Fig 70: Aligning Valve Body To Fluid Transfer Tubes

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89. Turn the valve body (1) over and align with the fluid transfer tubes.

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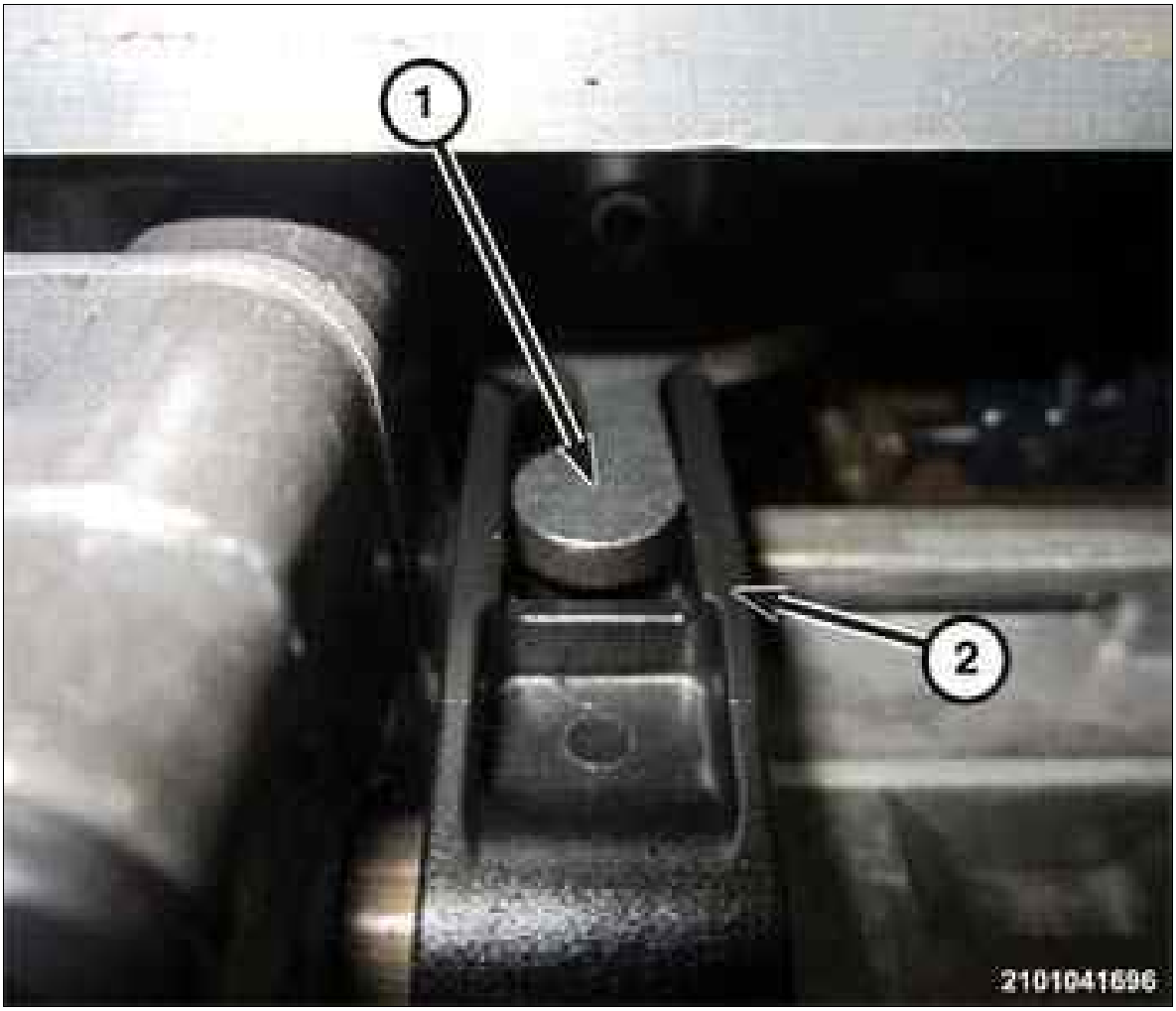
Fig 71: Manual Lever Cam & Manual Valve



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90. Guide the manual lever cam (1) into the slot on the manual valve (2).

91. Firmly press the valve body inward until the O-rings on the fluid transfer adapters engage into receptacle holes on the valve body.

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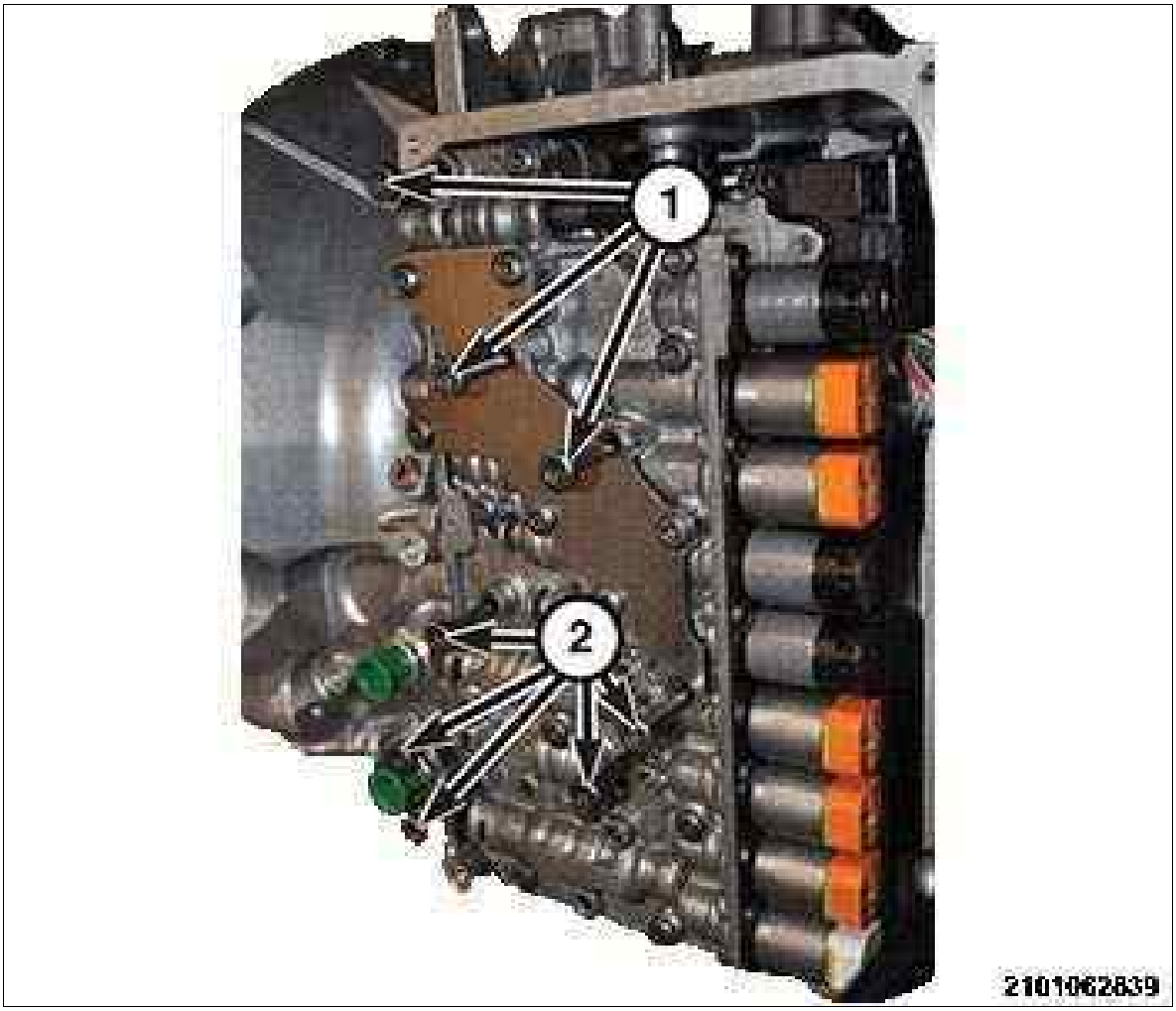
Fig 72: Upper & Lower Valve Body Bolts



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92. Install the 3 three upper valve body bolts (1) and five lower valve body bolts (2) to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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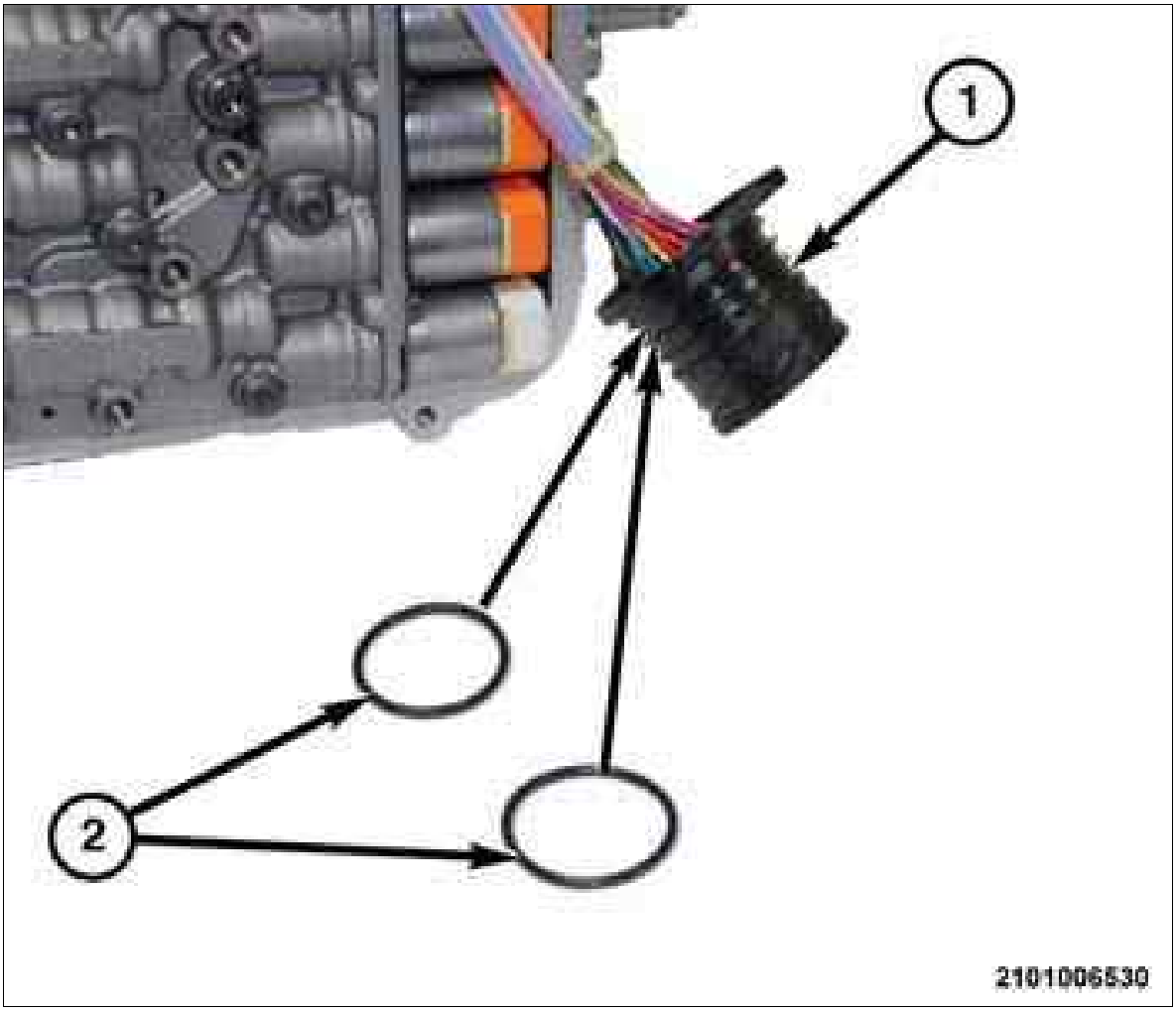
Fig 73: Valve Body Solenoid Wire Harness Connector Socket O-Ring Seals



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> *NOTE:*
>
> *A light coating of assembly lube can be applied to the O-ring seals (2) of the valve body wire harness connector to ease installation.*

93. Install **NEW** O-ring seals (2) on the valve body wire harness connector (1).

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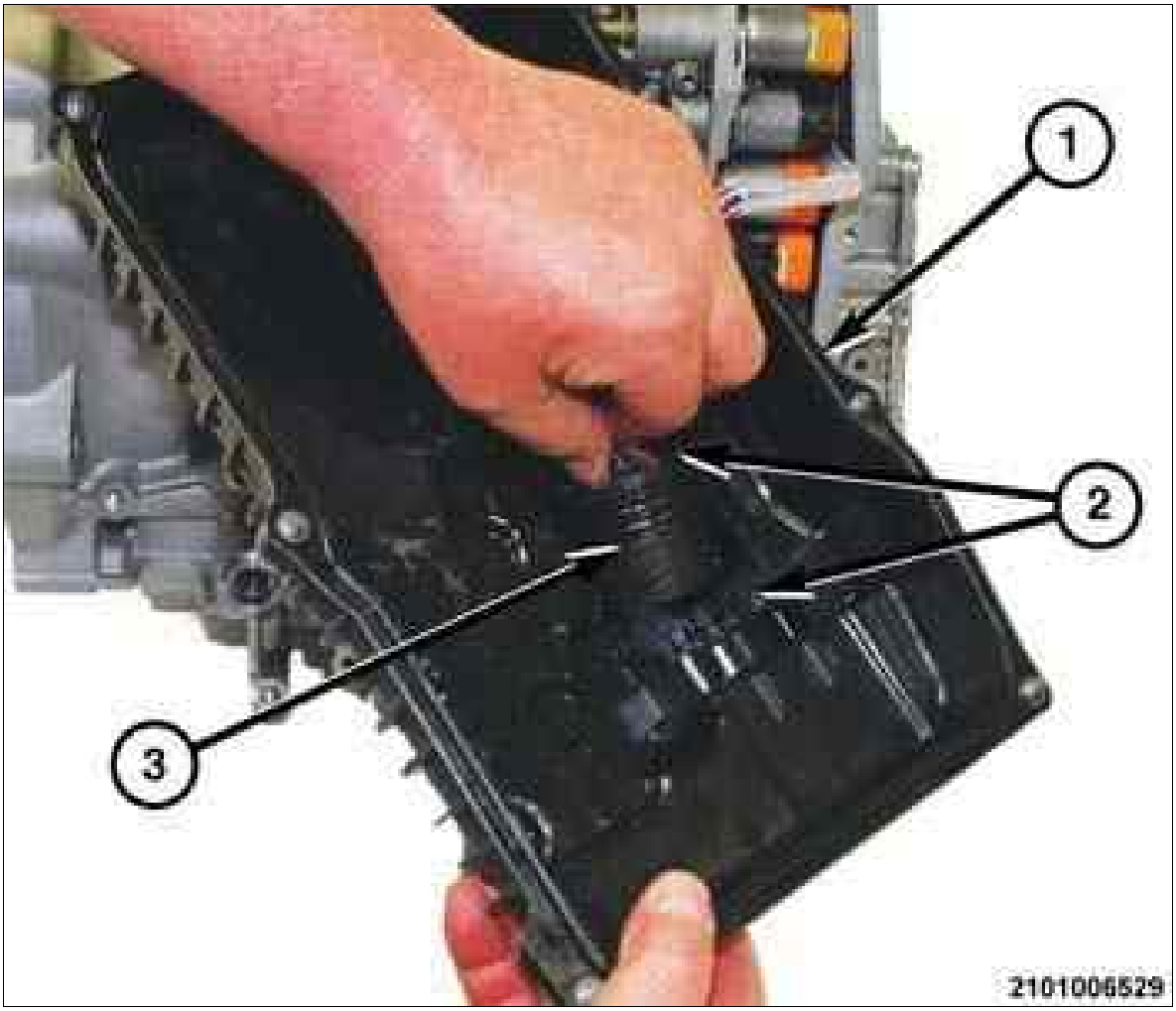
Fig 74: Valve Body Cover Pan & Wire Connector Socket



Courtesy of CHRYSLER GROUP, LLC

94. Place the valve body cover pan (1) in position on the transmission.

> *NOTE:*
>
> *Be certain that the flat side (2) on the valve body wire harness connector (3) is aligned with the flat spot on the valve body cover pan (1).*

95. Insert the valve body wire harness connector (3) into the opening on the inside of valve body cover pan (1).

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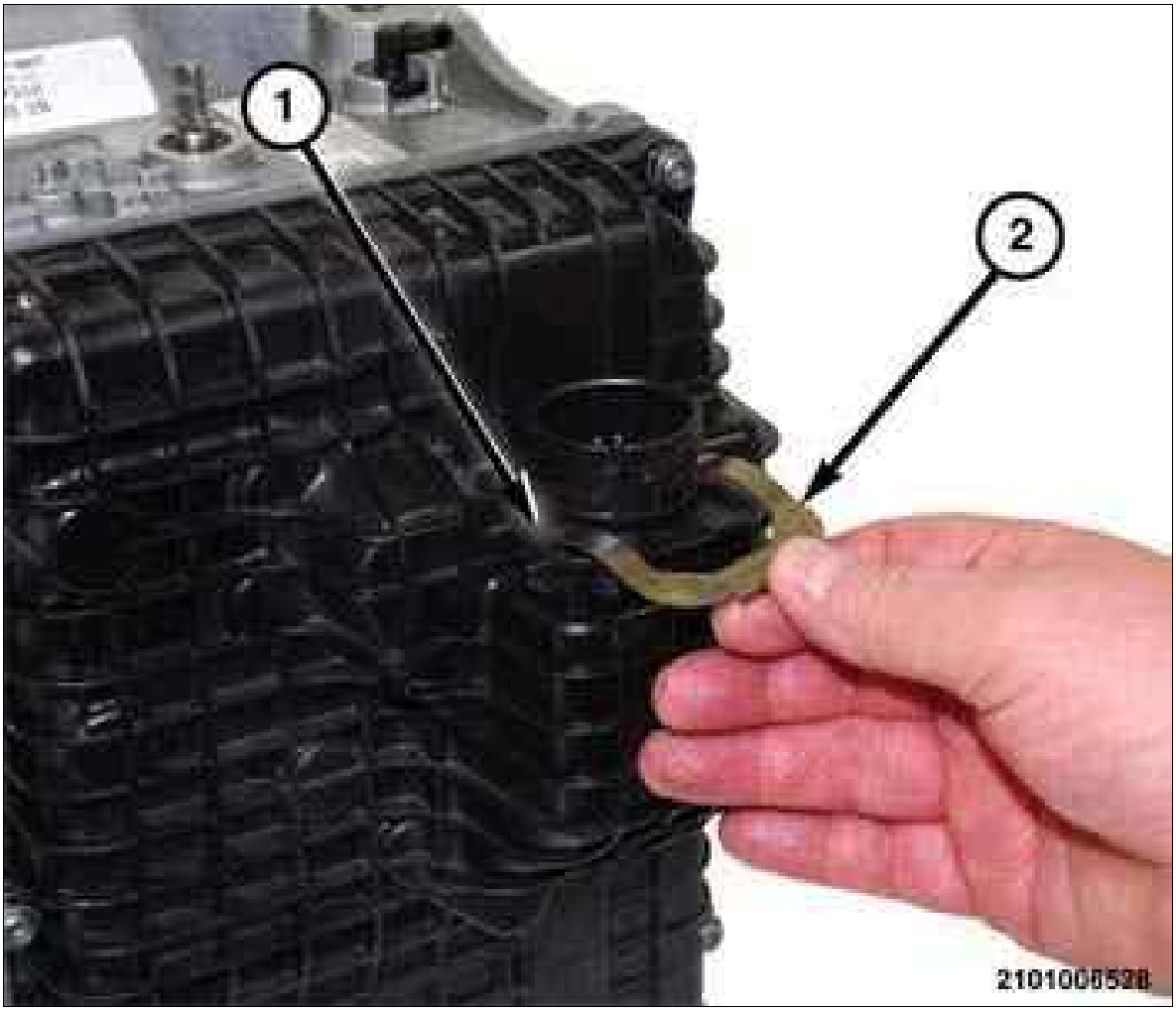
Fig 75: Transmission Solenoid Connector & Clip



Courtesy of CHRYSLER GROUP, LLC

96. Press the transmission solenoid connector inward until the retainer clip groove (1) is exposed on the outside of the valve body cover pan.

97. Install the clip (2) to hold the transmission solenoid connector in the valve body cover pan.

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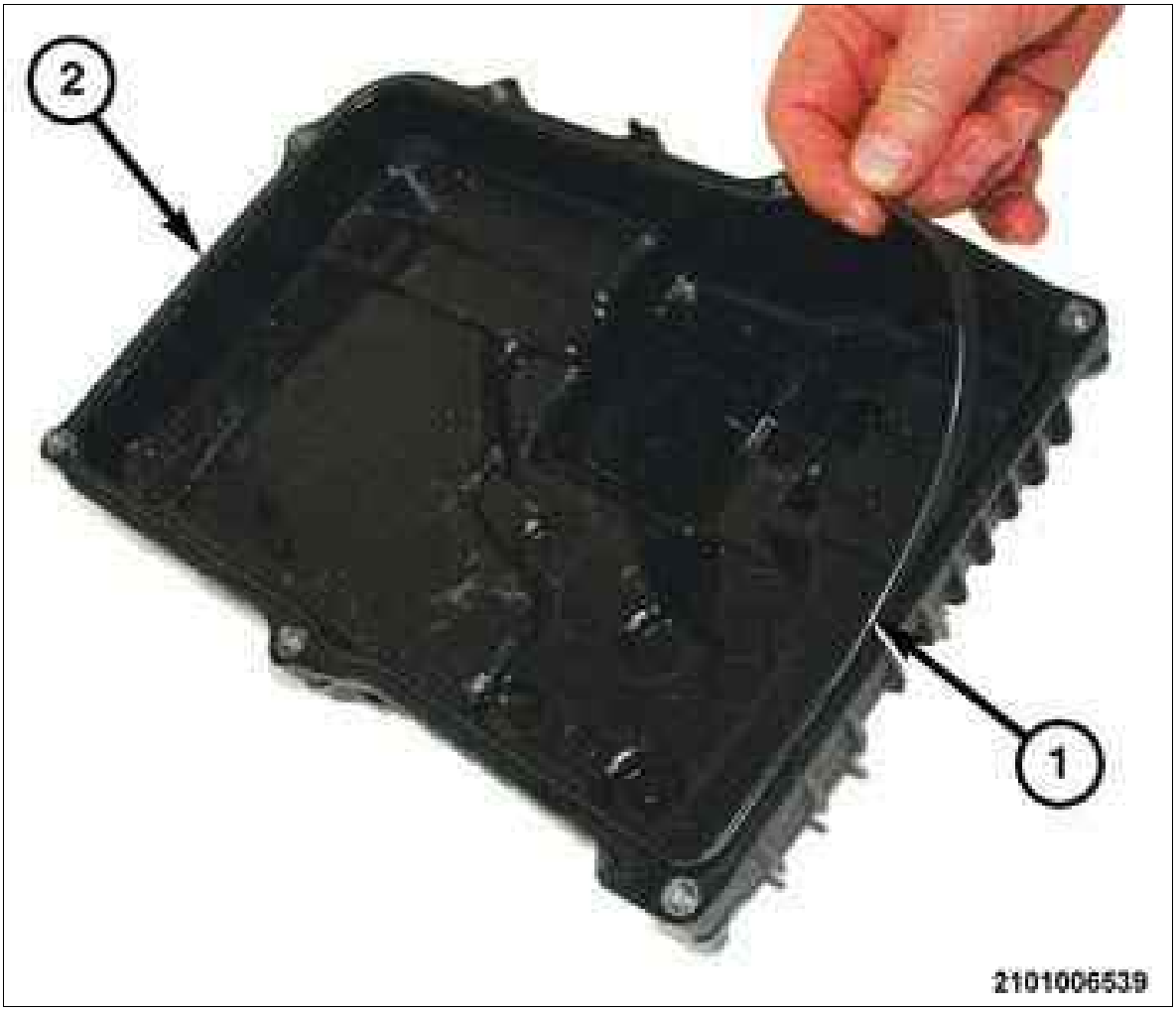
Fig 76: Valve Body Cover Pan & Gasket Seal



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98. Install a **NEW** gasket seal (1) in the groove around the sealing surface of the valve body cover pan (2).

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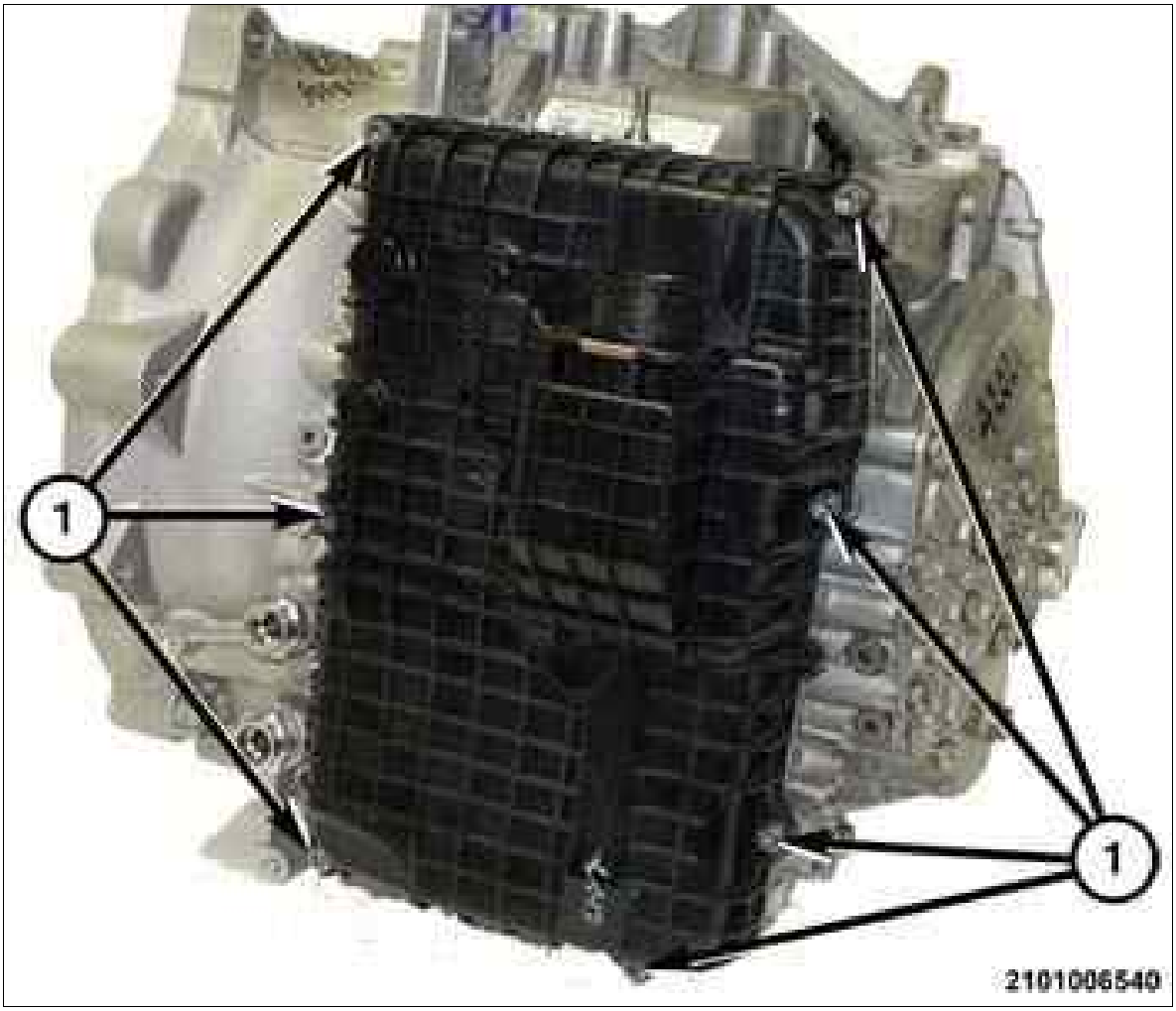
Fig 77: Valve Body Cover Pan Bolts



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99. Install the valve body cover pan and valve body cover pan bolts (1) to hold the valve body cover pan to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

BEARINGS, DIFFERENTIAL > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > DIFFERENTIAL BEARING REMOVAL

1. Remove the transmission from the vehicle. Refer to REMOVAL AND INSTALLATION .
2. Remove the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .

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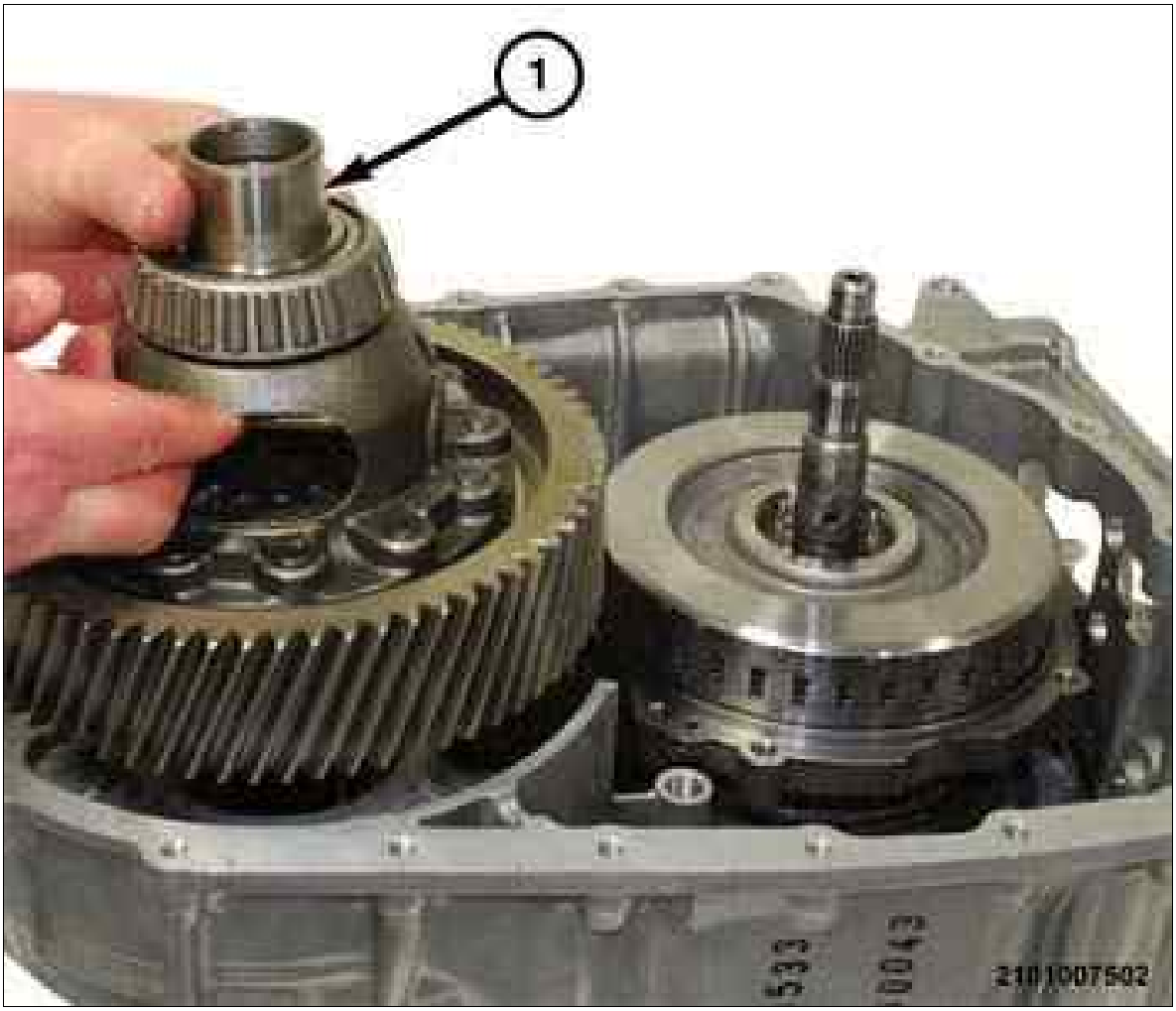
Fig 1: Differential Assembly



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3. Remove the differential assembly (1) from the transmission.
4. Clean the differential assembly with solvent and blow it dry with regulated 344 kPa (50 psi) shop air.

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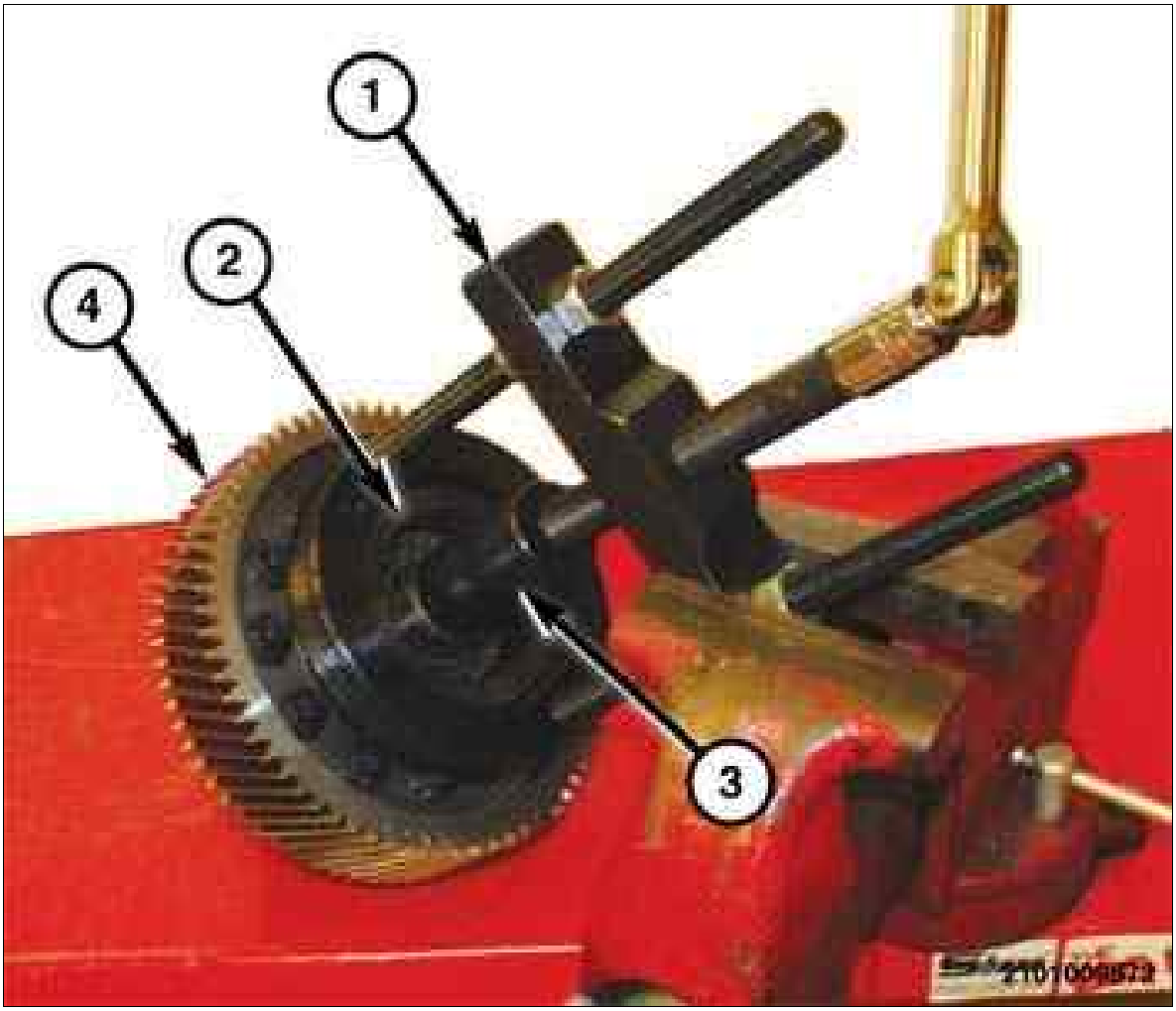
Fig 2: Removing Differential Side Bearings (Differential is Assembled)



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5. **If the differential is assembled** remove the bearings using tools (special tool #9738, Blocks, Adapter) (2), and (special tool #8513A, Insert, Crankshaft) (3), along with (special tool #C-293-PA, Puller, Press) (1).

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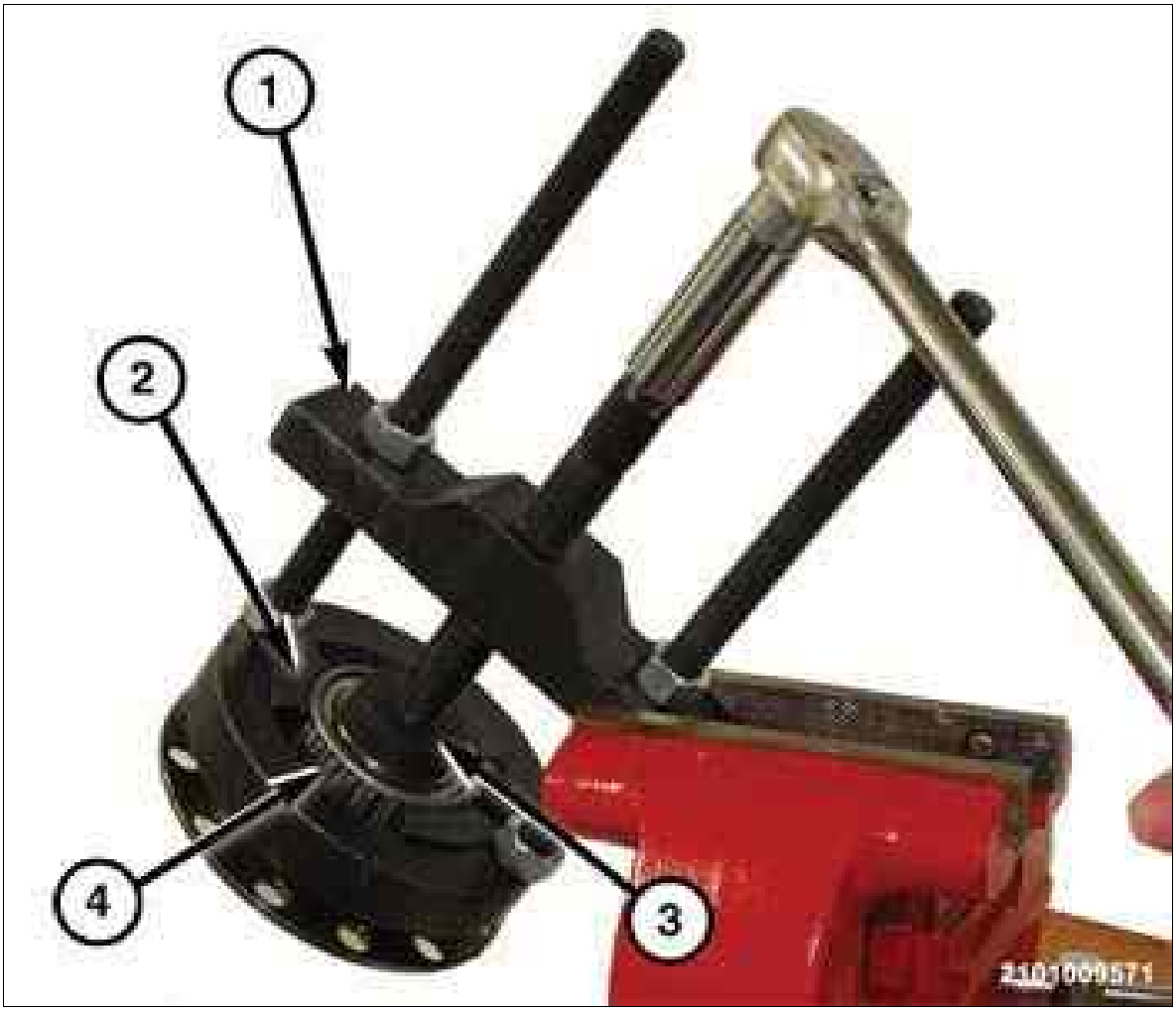
Fig 3: Removing Differential Side Bearings (Differential is Disassembled)



Courtesy of CHRYSLER GROUP, LLC

6. **If the differential is disassembled** remove the bearings using tools (special tool #C-293-37, Block Set, Puller) (2), and (special tool #9678, Press Plug) (3), along with (special tool #C-293-PA, Puller, Press) (1).

BEARINGS, DIFFERENTIAL > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > DIFFERENTIAL BEARING INSTALLATION

If only the bearing is being replaced the bearing preload does not require selecting a new select shim. If the transmission housing, bellhousing or differential is replaced, the proper thickness select shim will have to be determined. Refer to STANDARD PROCEDURES .

1. Clean the differential with solvent and blow it dry with regulated 344 kPa (50 psi) shop air.

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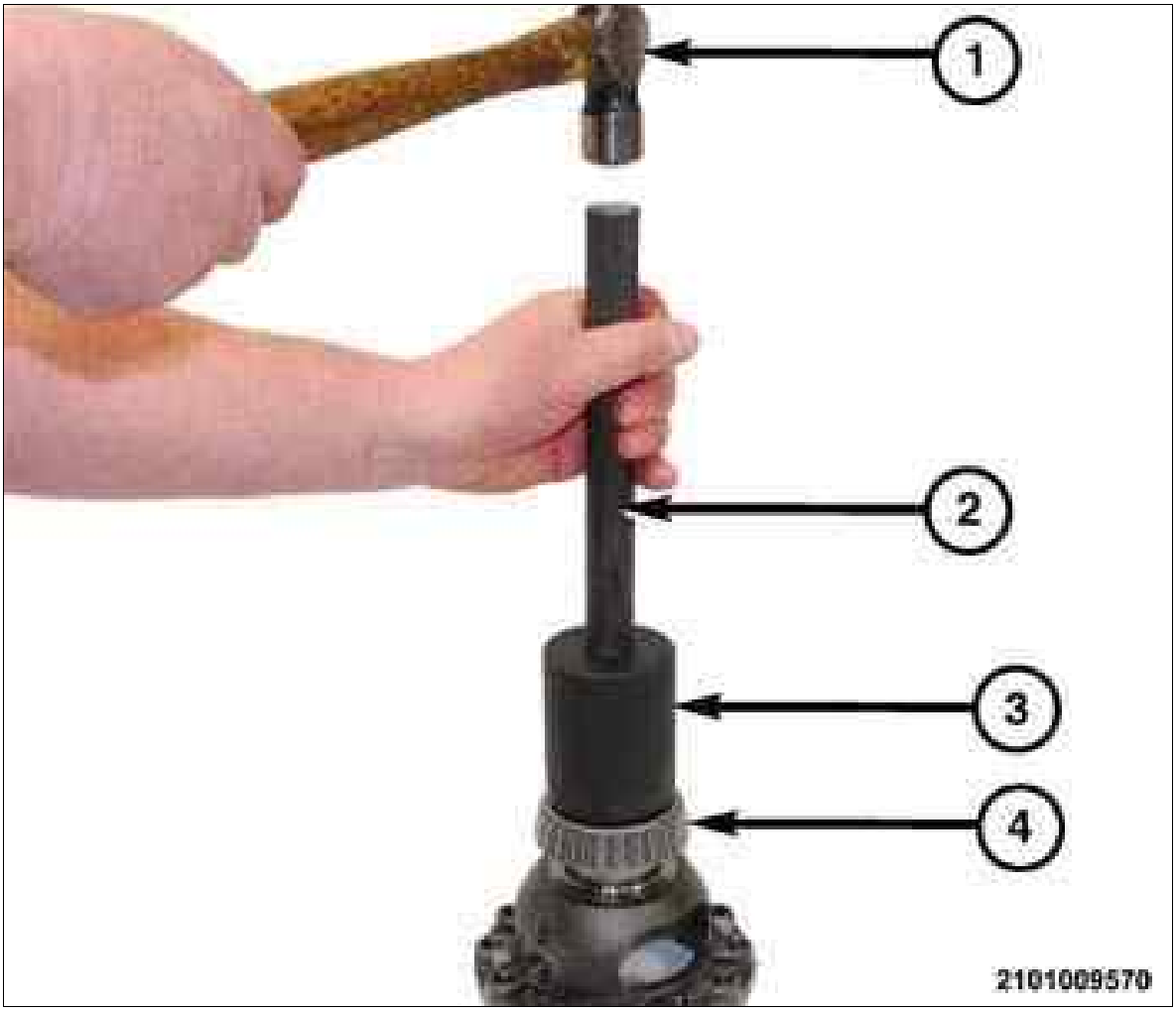
Fig 1: Installing Differential Side Bearing



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2. Using a suitable hammer (1), (special tool #6888, Installer, Seal) (3) and (special tool #C-4171, Driver Handle, Universal), install the side bearings.

3. If necessary, assemble the differential assembly. Refer to DIFFERENTIAL AND RING GEAR, DISASSEMBLY AND ASSEMBLY .

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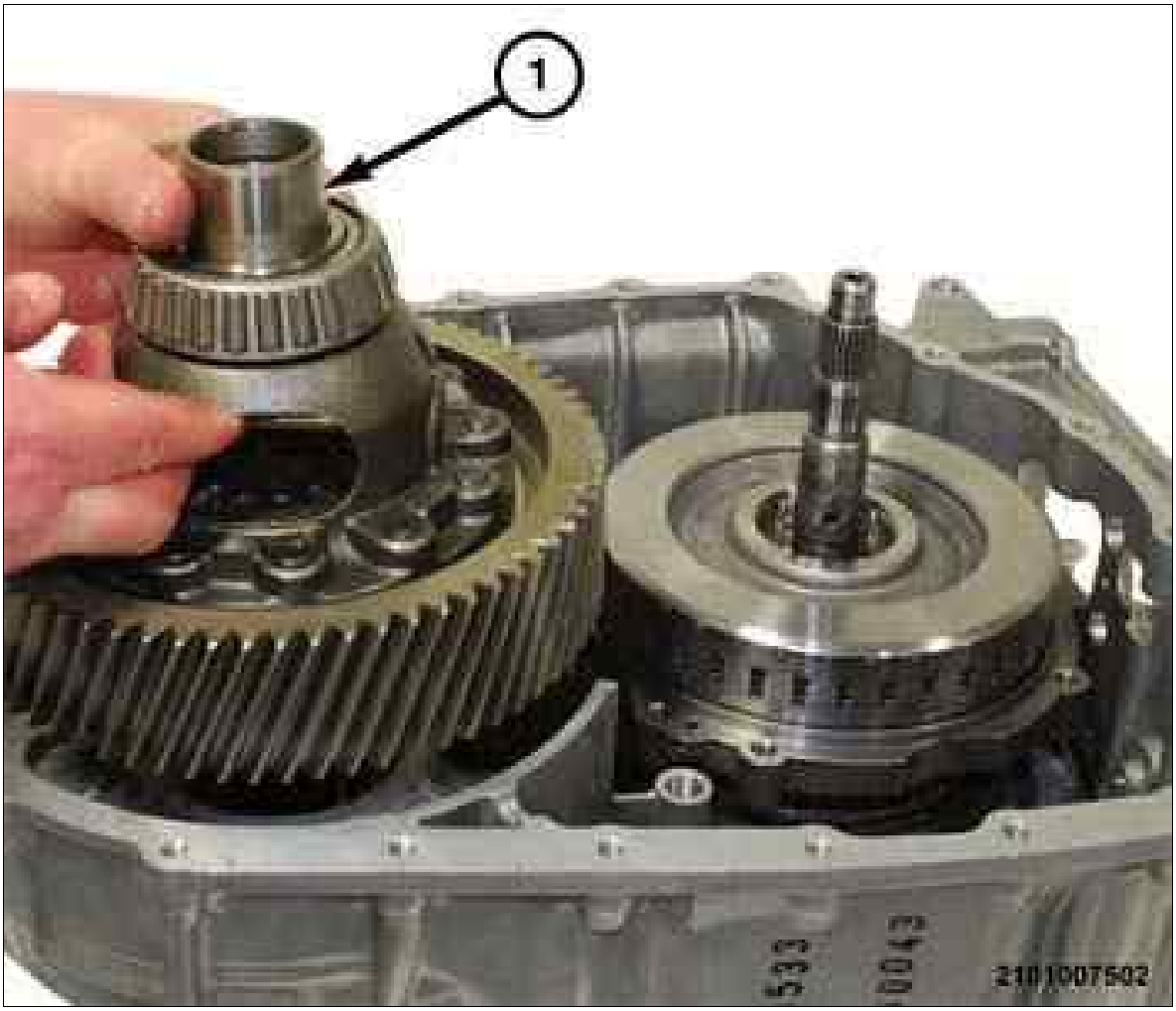
Fig 2: Differential Assembly



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4. Install the differential assembly (1) into the transmission housing.
5. Install the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .
6. Install the transmission. Refer to REMOVAL AND INSTALLATION .

BEARINGS, DIFFERENTIAL > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > DIFFERENTIAL BEARING RACE REMOVAL

1. Remove the transmission from the vehicle. Refer to REMOVAL AND INSTALLATION .
2. Remove the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .

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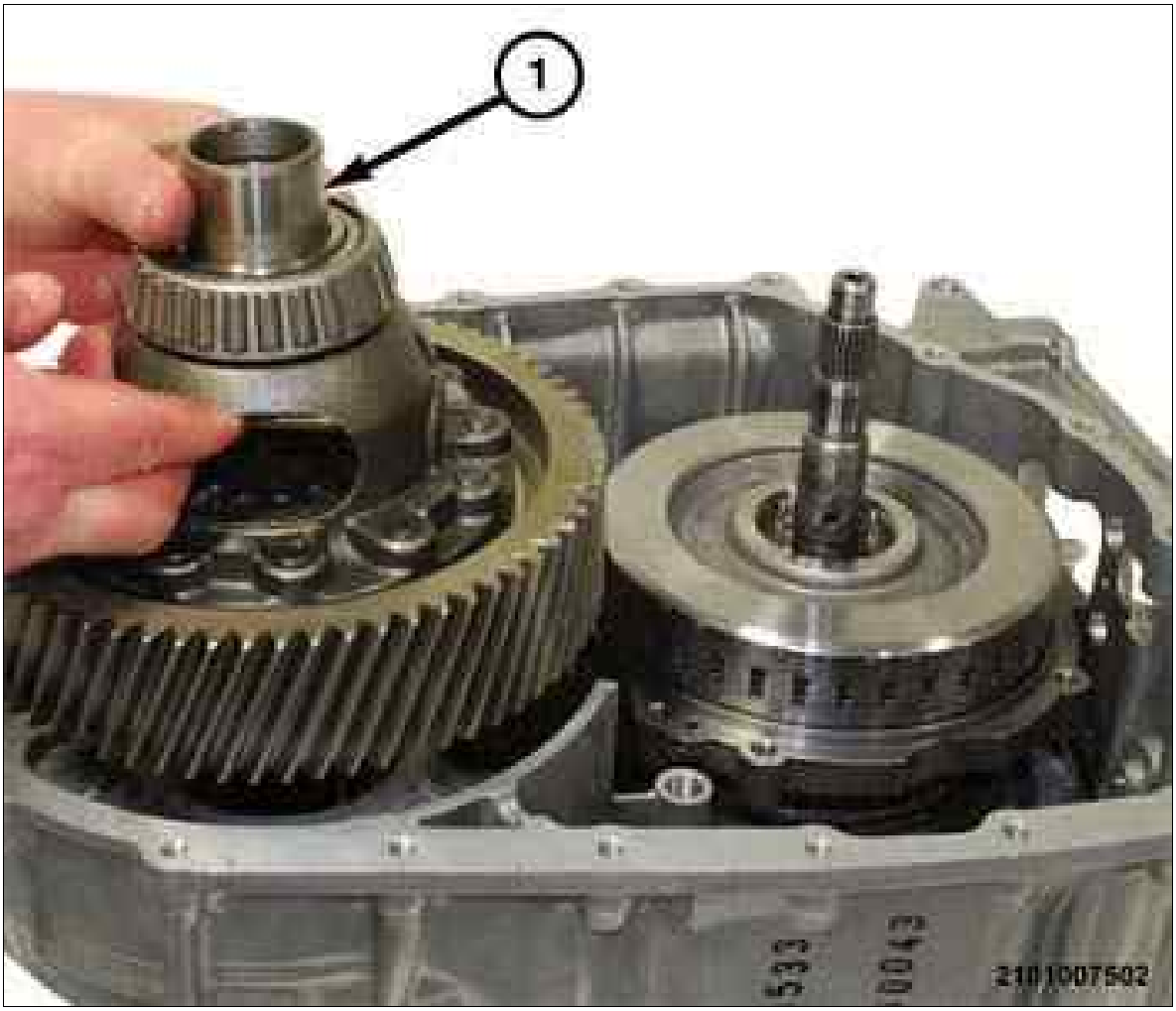
Fig 1: Differential Assembly



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3. Remove the differential assembly (1) from the transmission.

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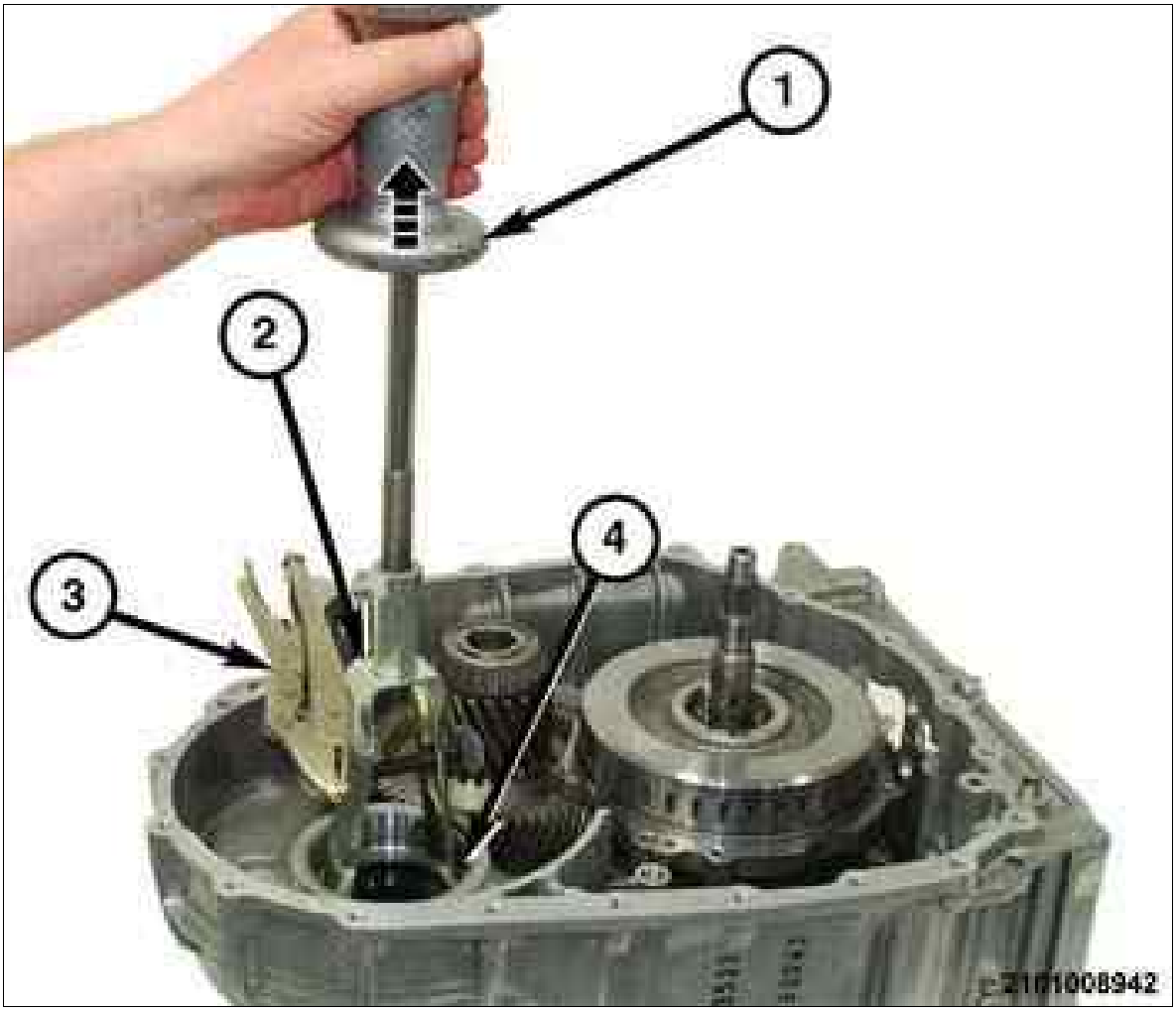
Fig 2: Removing Bearing Race From The Transmission Housing



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4. Using tool (special tool #9664, Remover, Bearing Cup) (2), (special tool #C-637, Slide Hammer, Universal) (1) and suitable vise-grip pliers (3) to hold the expansion screw in position, remove the bearing race (4) from the transmission housing.

BEARINGS, DIFFERENTIAL > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > DIFFERENTIAL BEARING RACE INSTALLATION

If only the bearing is being replaced the bearing preload does not require selecting a new select shim. If the transmission housing, bellhousing or differential is replaced, the proper thickness select shim will have to be determined. Refer to STANDARD PROCEDURES .

1. Wipe the bearing bores clean with a clean lint free cloth.
2. Inspect the bearing bores for damage or cracks in the casting.

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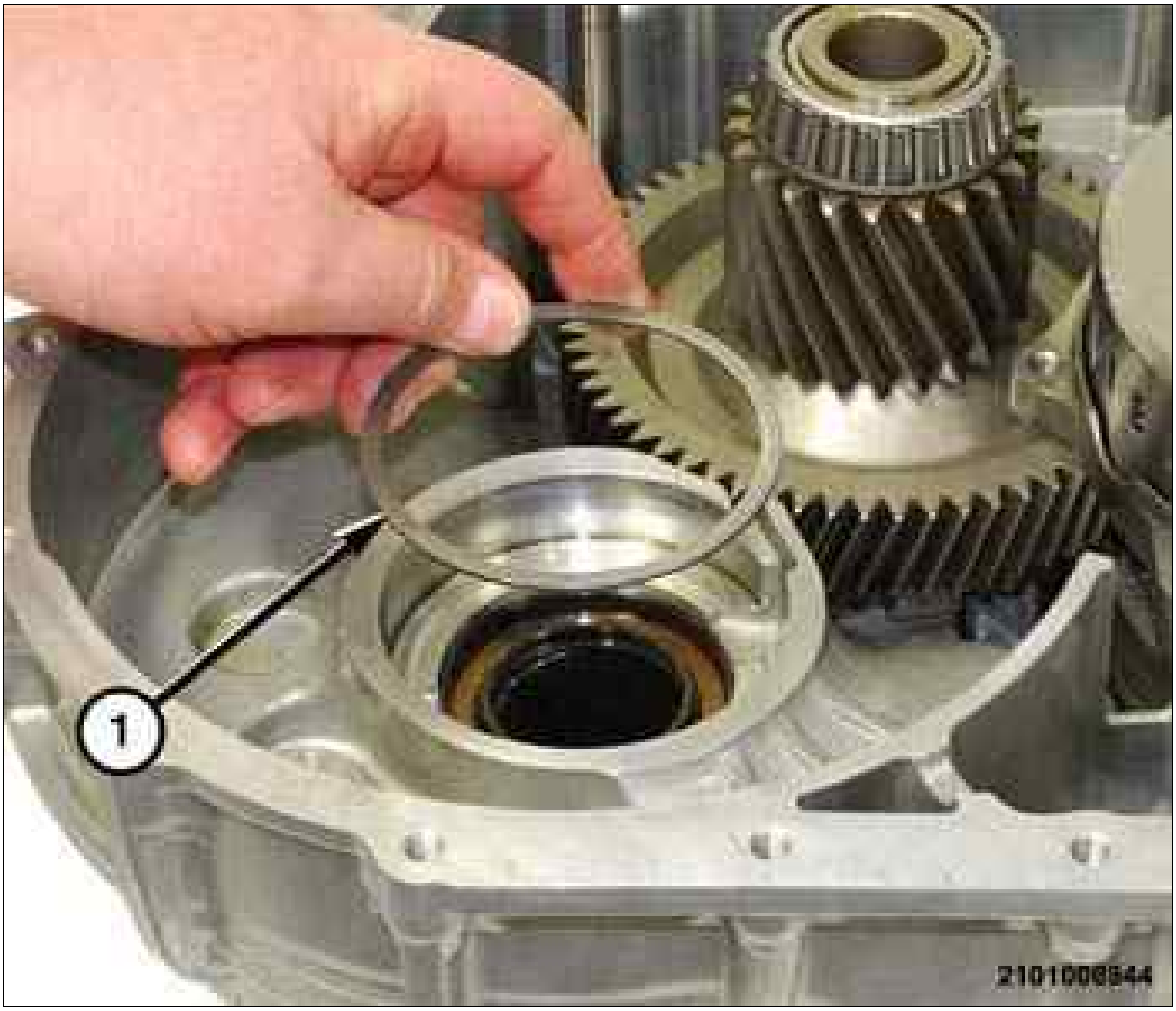
Fig 1: Install Bearing Bore Shim



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3. Install the original select shim in the bearing bore of the transmission housing.

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Fig 2: Bearing Race

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4. Place the **NEW** bearing race (1) in the bearing bore of the transmission housing.

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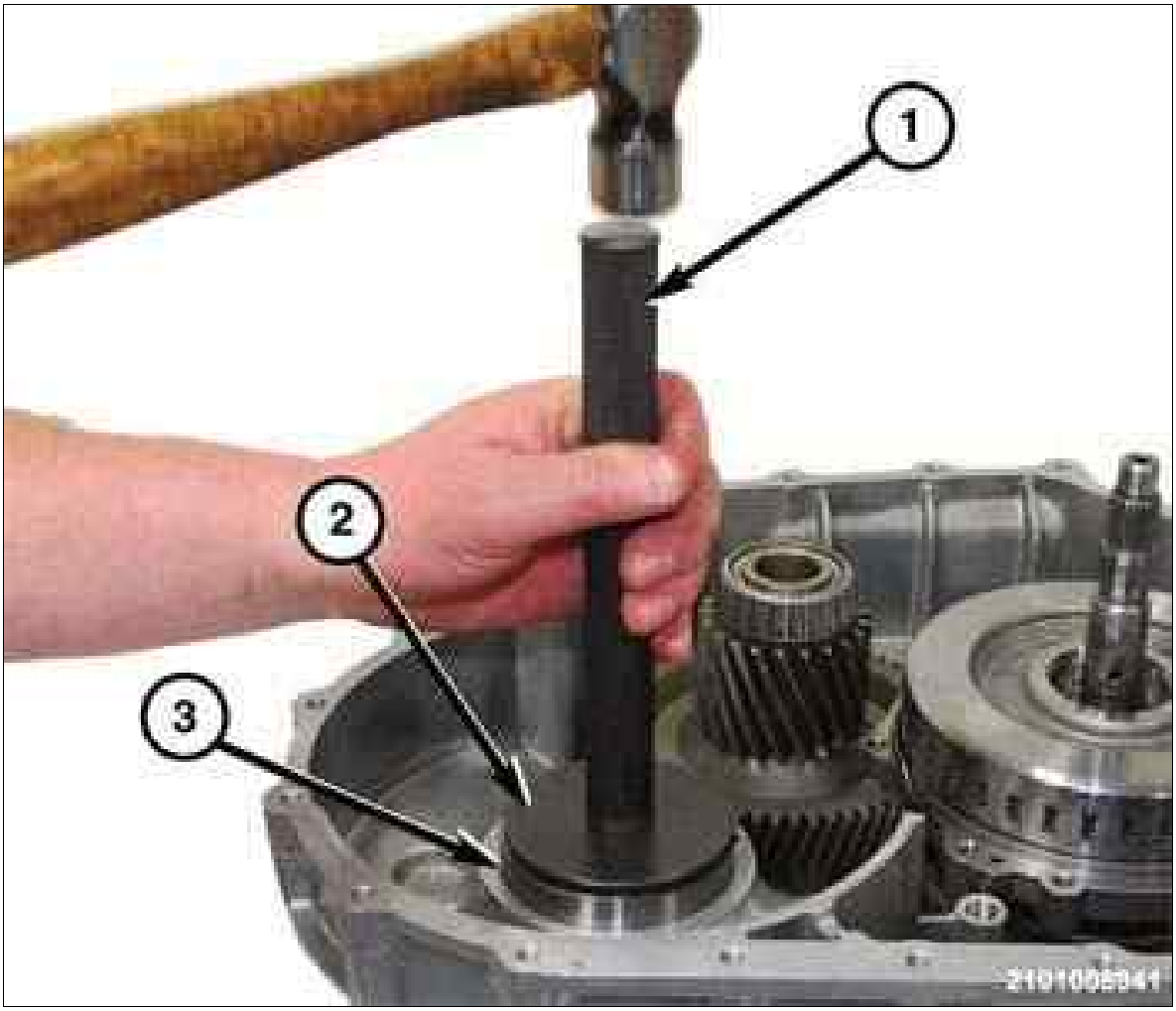
Fig 3: Installing Bearing Race



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5. Using tool (special tool #C-4310, Installer, Bearing) (2) and (special tool #C-4171, Driver Handle, Universal) (1) install the bearing race in the transmission housing.

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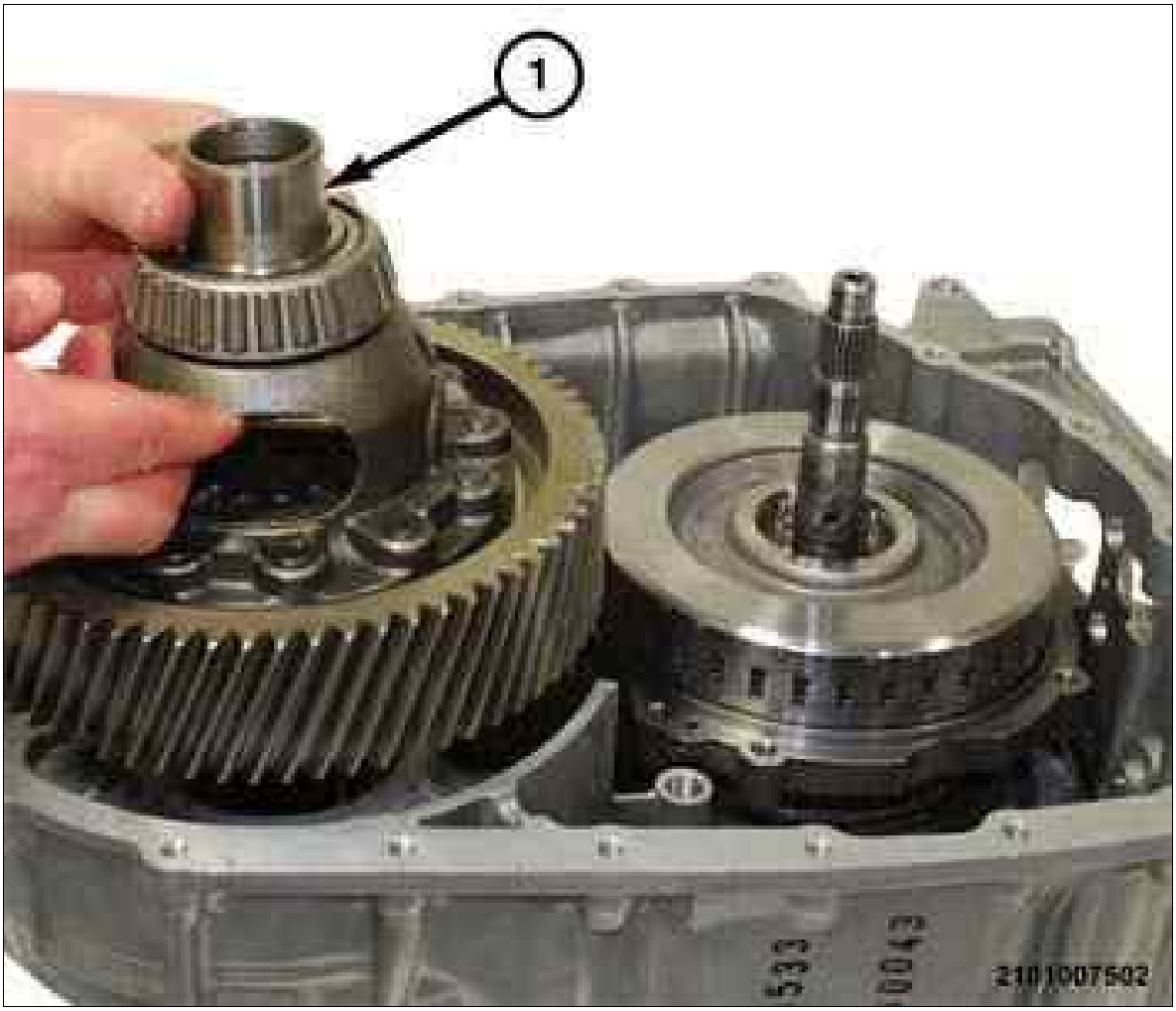
Fig 4: Differential Assembly



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6. Install the differential assembly (1) in the transmission housing.
7. Place the **NEW** bearing race in the bearing bore of the bellhousing.
8. Using tool (special tool #C-4310, Installer, Bearing) and (special tool #C-4171, Driver Handle, Universal) install the bearing race in the transmission bellhousing.
9. Install the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .
10. Install the transmission in the vehicle. Refer to REMOVAL AND INSTALLATION .

BEARINGS, TRANSFER GEAR > REMOVAL AND INSTALLATION > TRANSFER GEAR INNER BEARING > TRANSFER GEAR INNER BEARING REMOVAL

WARNING:

Always wear safety glasses when cleaning, disassembling and assembling the

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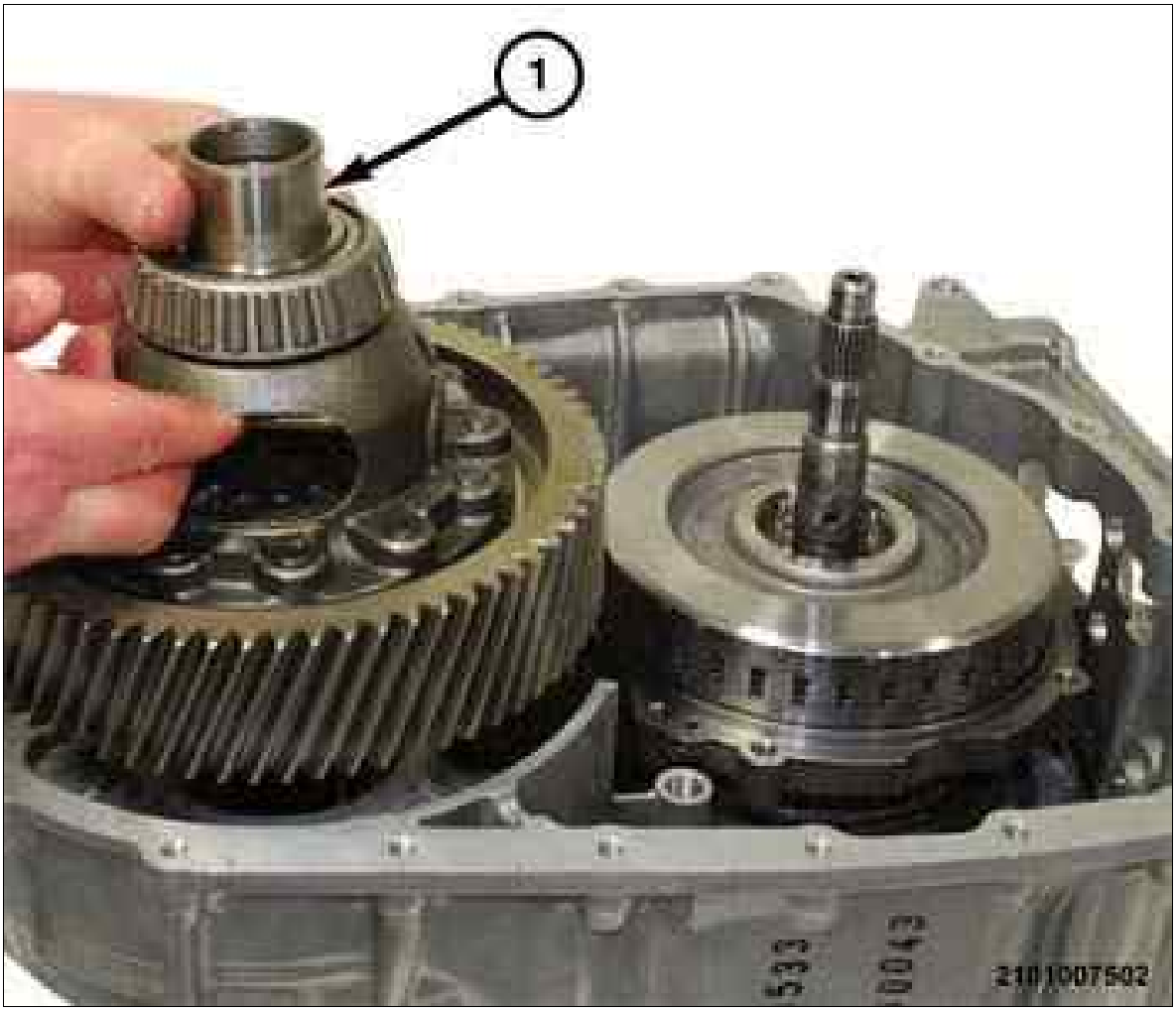
transmission/transaxle. Contents of the transmission/transaxle can become projectiles (e.g., springs, snap-rings, as well as metal and other debris). Failure to wear safety glasses may result in severe personal injury.

Before disassembling the transmission, remove oily grime and loose dirt. Place the transmission on a clean work surface with ample fluid drainage or absorbency.

1. Remove the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .

   Fig 1: Differential Assembly



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2. Remove the differential assembly (1) from the transmission housing.

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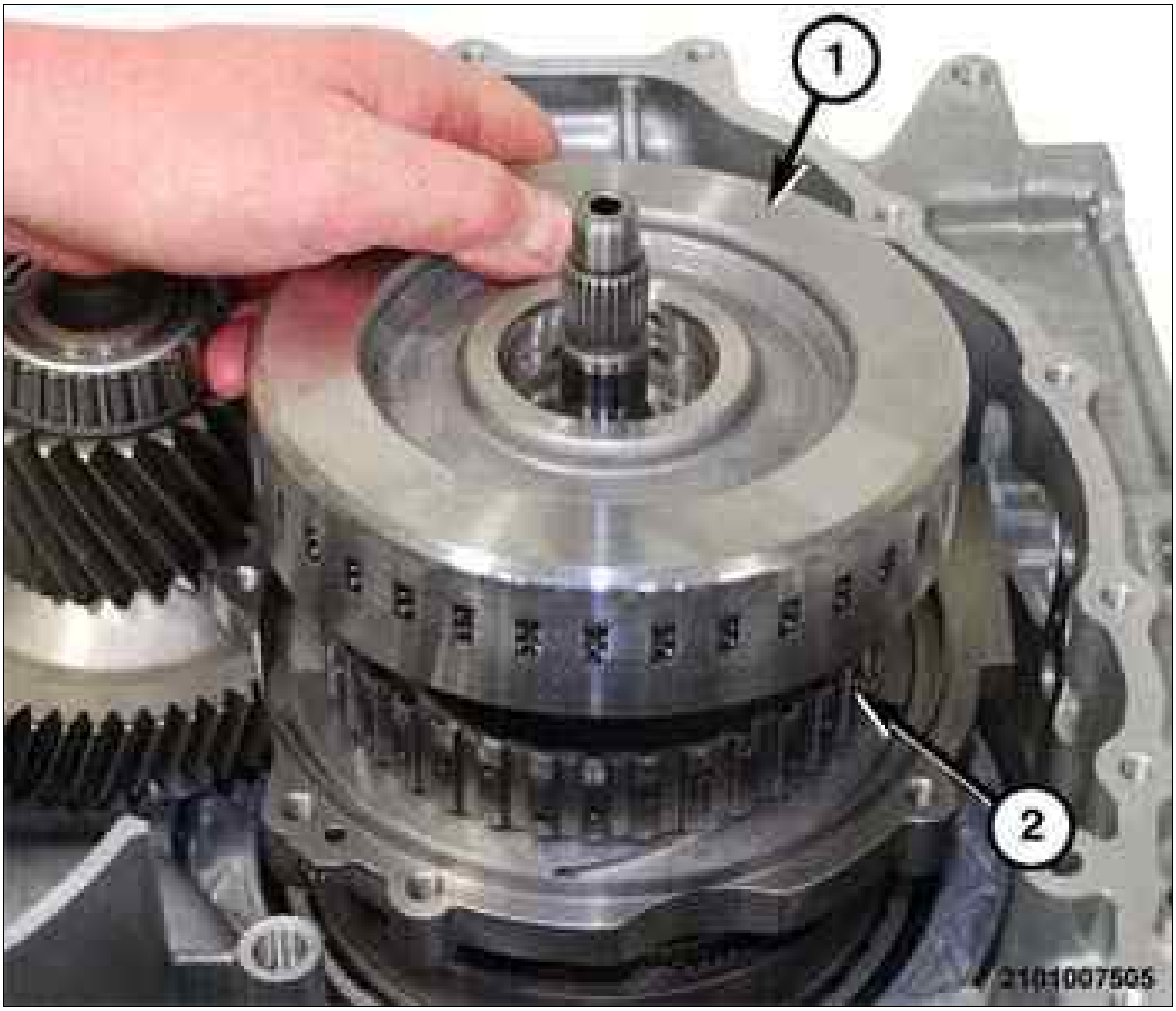
Fig 2: Removing/Installing E-Clutch At E-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

3. Separate the E-clutch drum (1) from the E-clutch hub (2).

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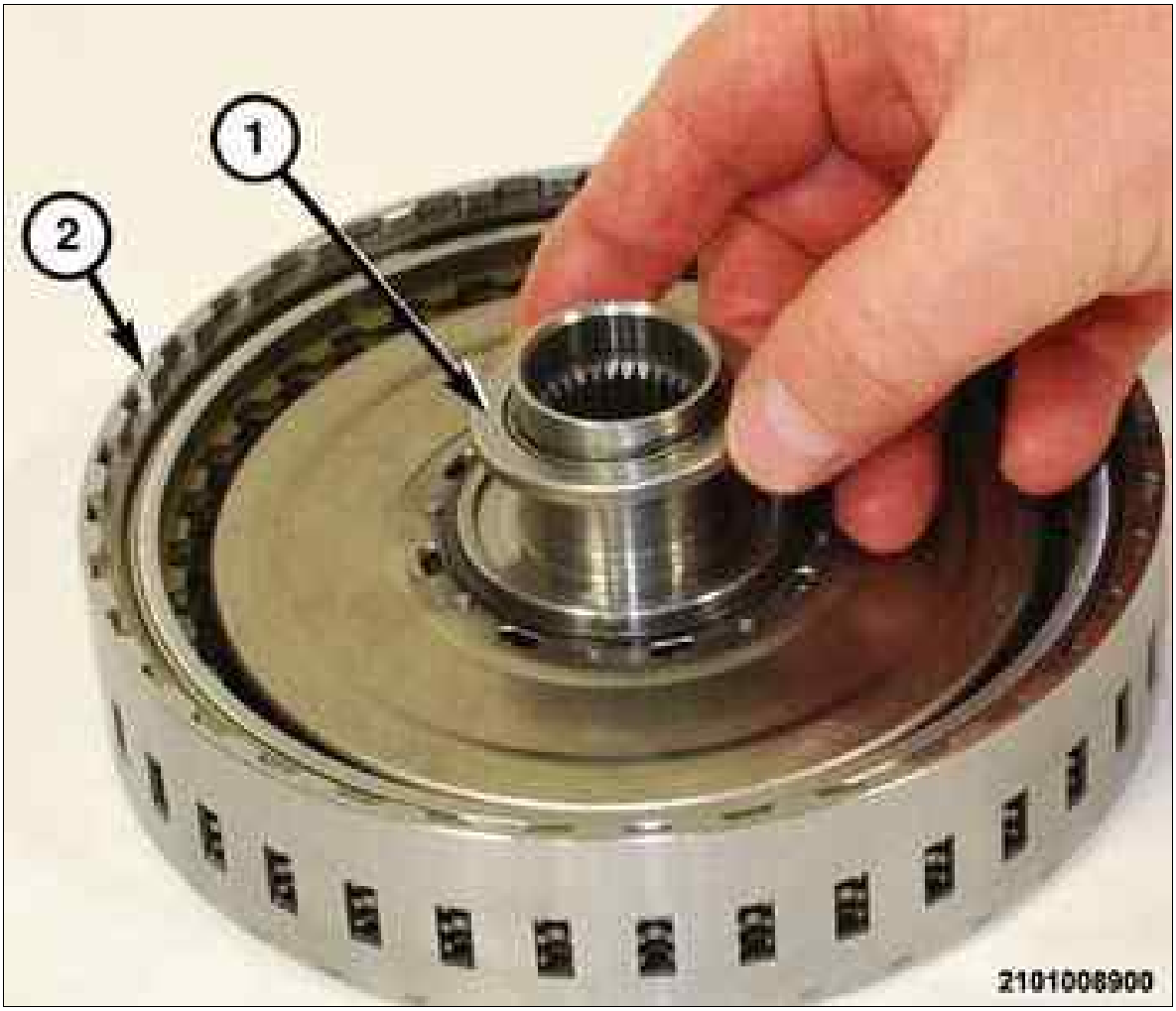
Fig 3: Removing/Installing Thrust Bearing At E-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

4. Separate the thrust bearing (1) from the E-clutch (2) hub.

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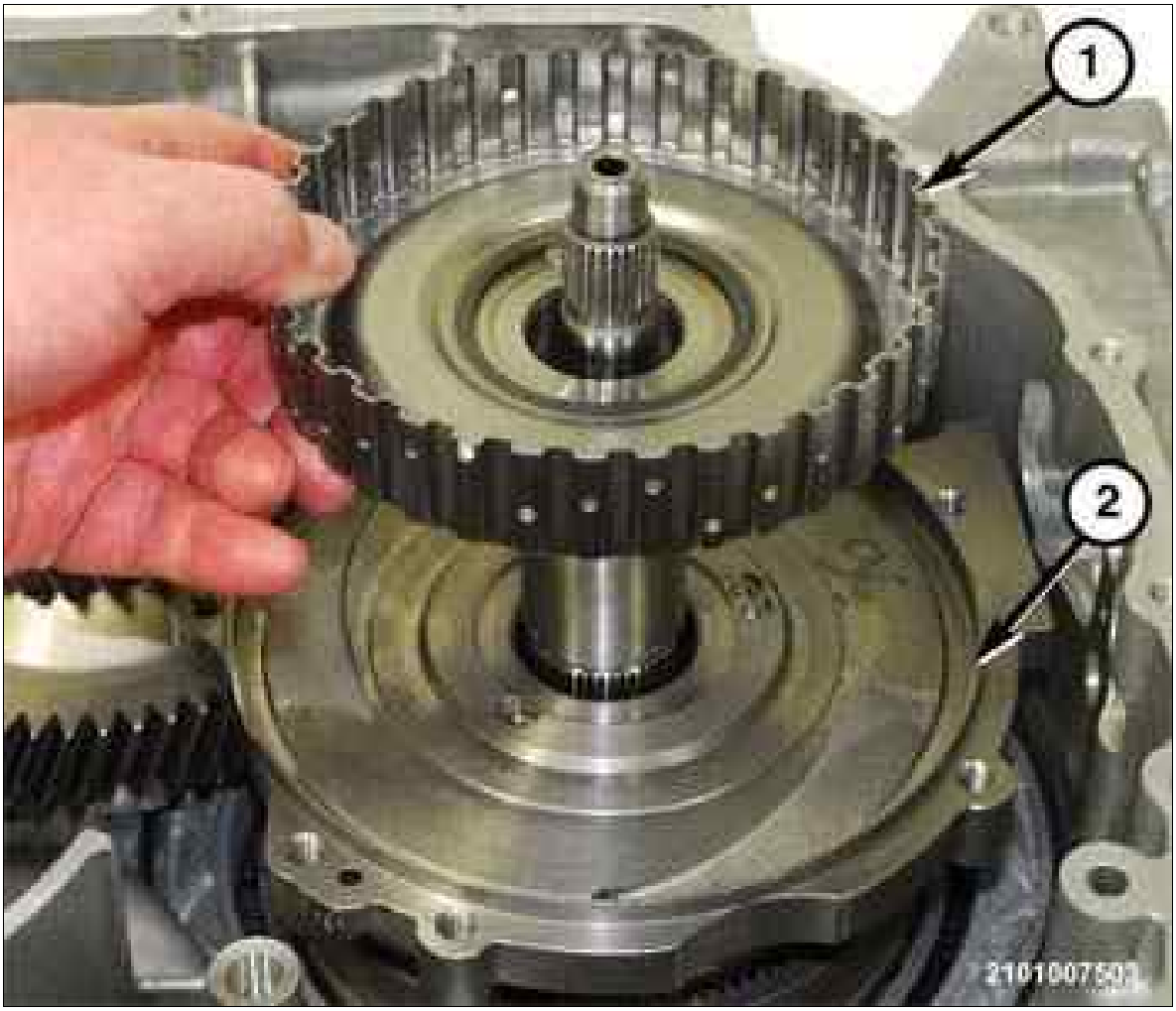
Fig 4: Output Gear Support, E-Clutch Hub & Shaft



Courtesy of CHRYSLER GROUP, LLC

5. Separate the E-clutch hub (1) from the output gear support (2).

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Fig 5: Output Gear Support & Planetary Pinion Carrier

Courtesy of CHRYSLER GROUP, LLC

6. Separate the output gear support (1) from the gear 4 planetary pinion carrier (2).

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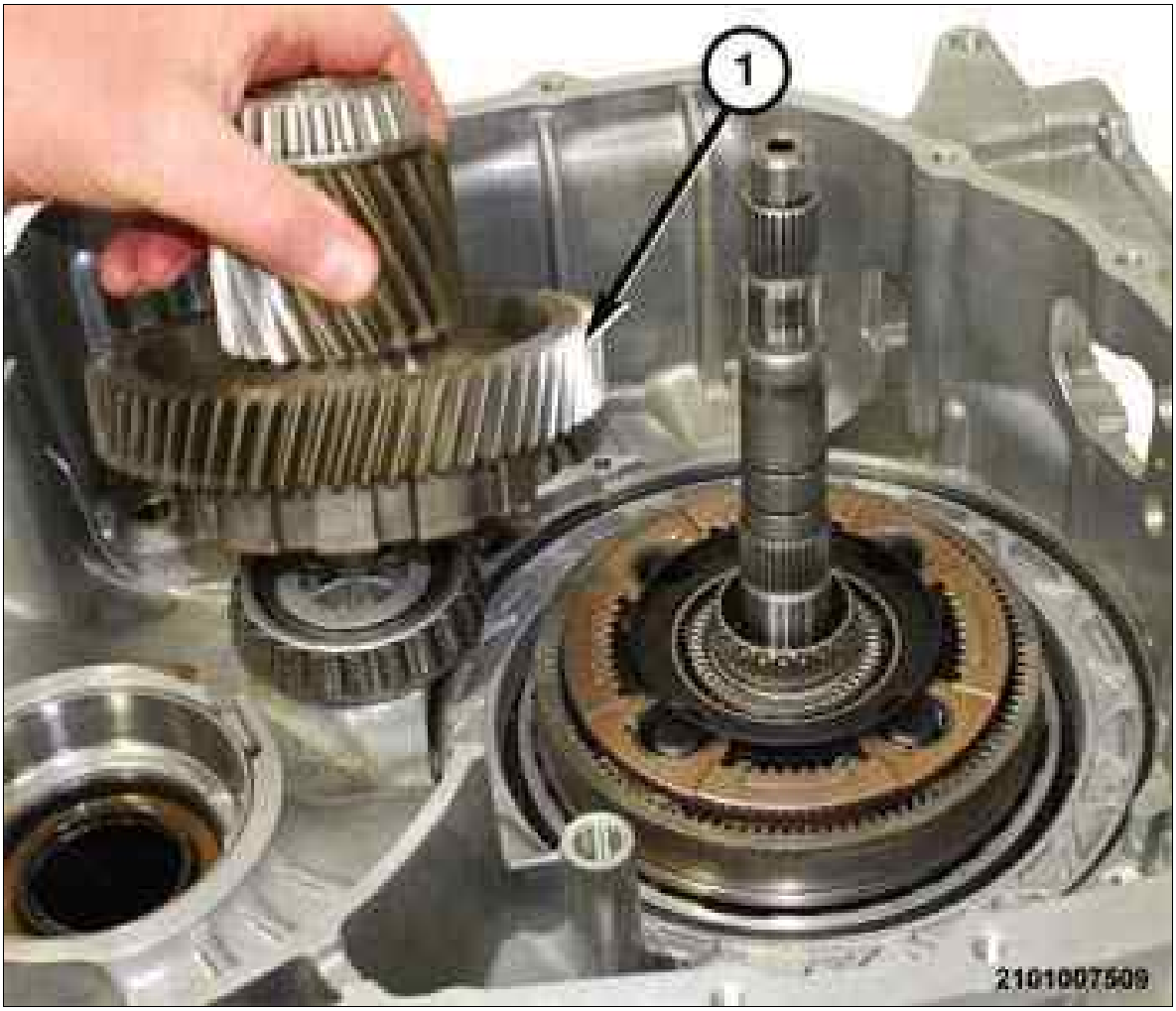
Fig 6: Removing/Installing Transfer Gear



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7. Remove the transfer gear (1) from the transmission housing.

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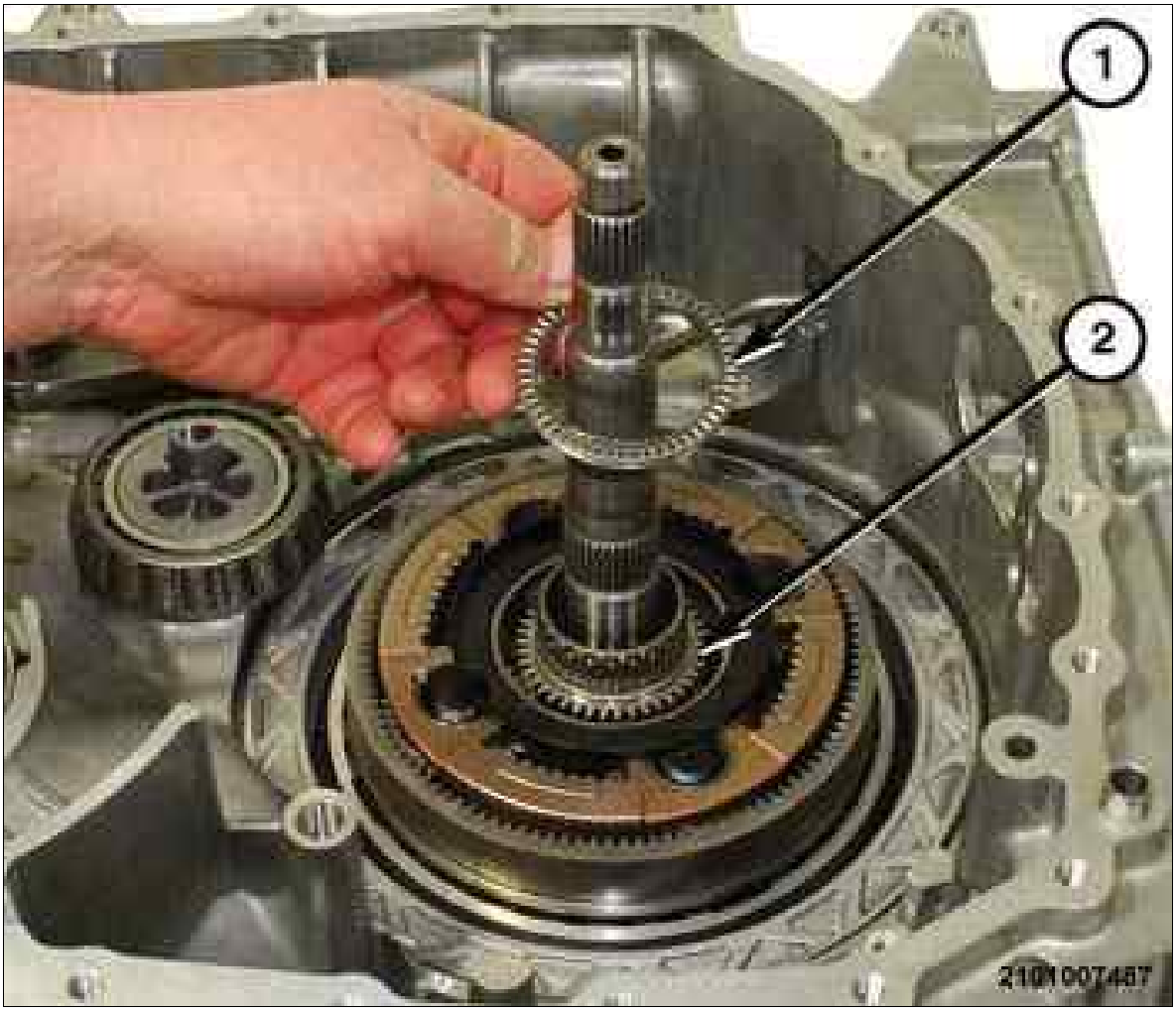
Fig 7: Roller Type Thrust Bearing, Sun Gear And Dog Clutch-F



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8. Separate the roller type thrust bearing (1) from the sun gear 3 and 4 and Dog Clutch-F (2).

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Fig 8: Removing/Installing Sun Gear 3, 4 And Dog Clutch-F At Gear 4 Planetary Pinion Carrier

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9. Separate the sun gear 3 and 4 and Dog Clutch-F (1) from the gear 4 planetary pinion carrier.

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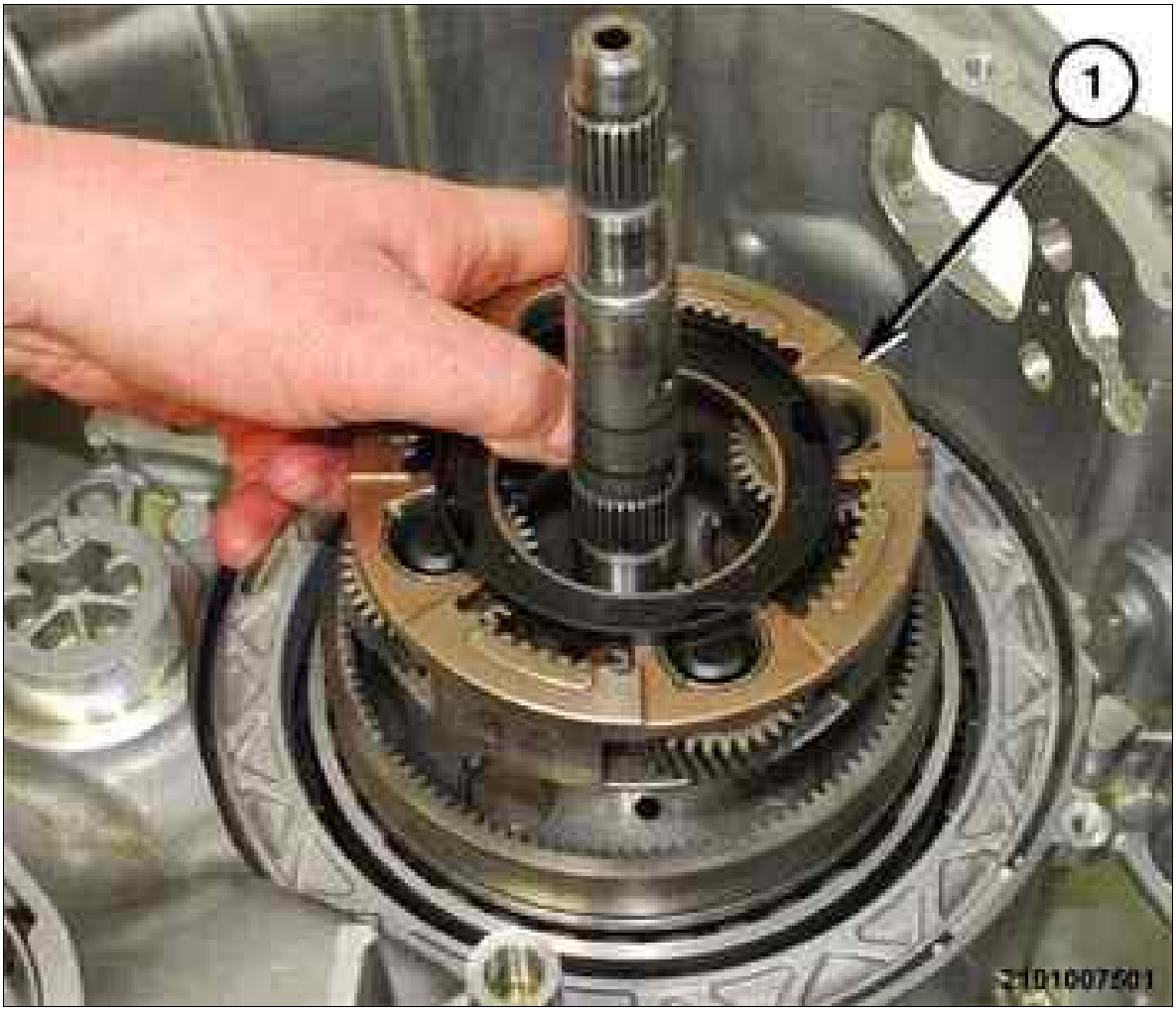
Fig 9: Gear 4 Planetary Pinion Carrier



Courtesy of CHRYSLER GROUP, LLC

10. Separate the gear 4 planetary pinion carrier (1) from the annulus gear 4.

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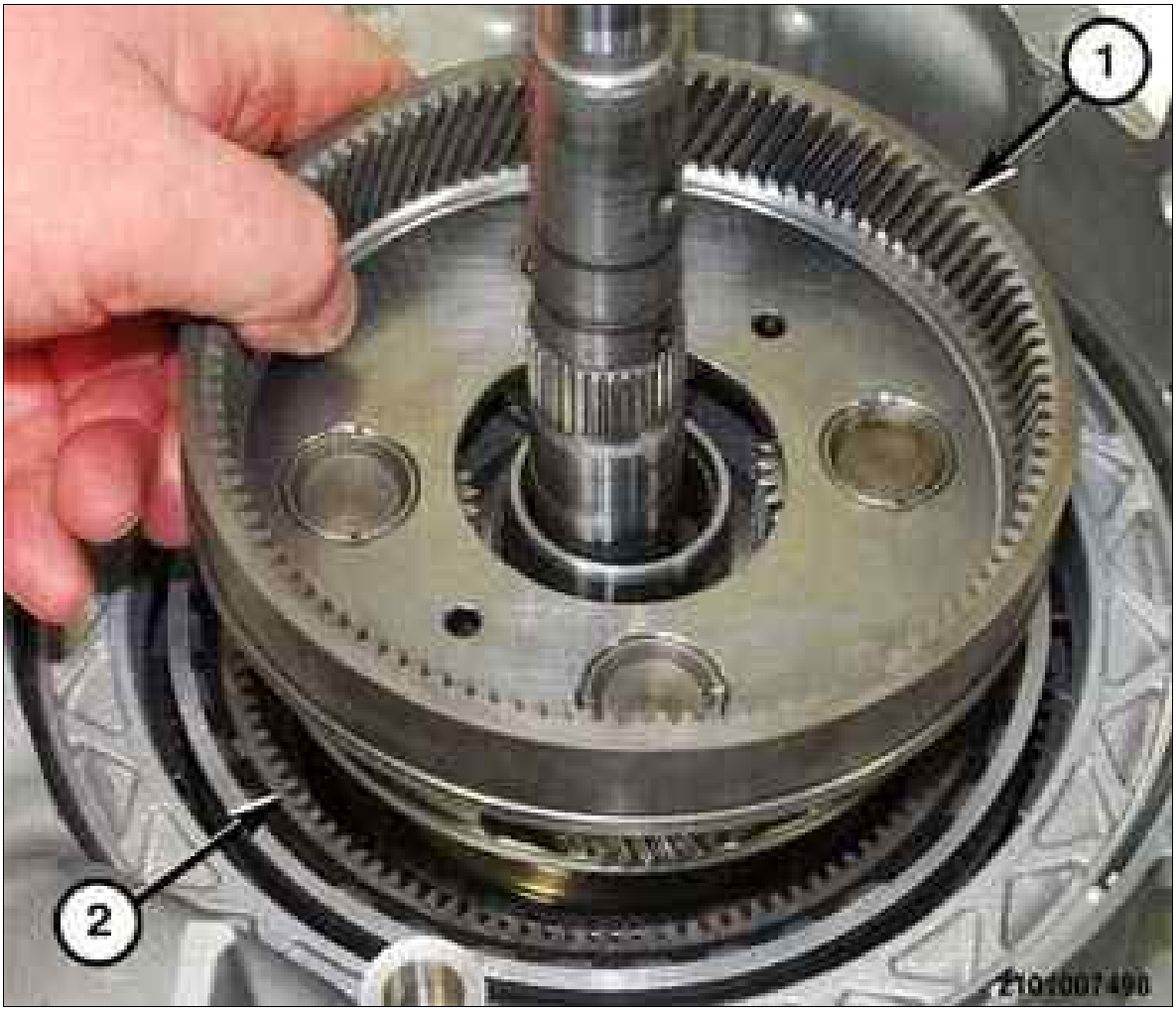
Fig 10: Annulus Gear 4 & Annulus Gear 3



Courtesy of CHRYSLER GROUP, LLC

11. Separate the annulus gear 4 (1) from the annulus gear 3 (2).

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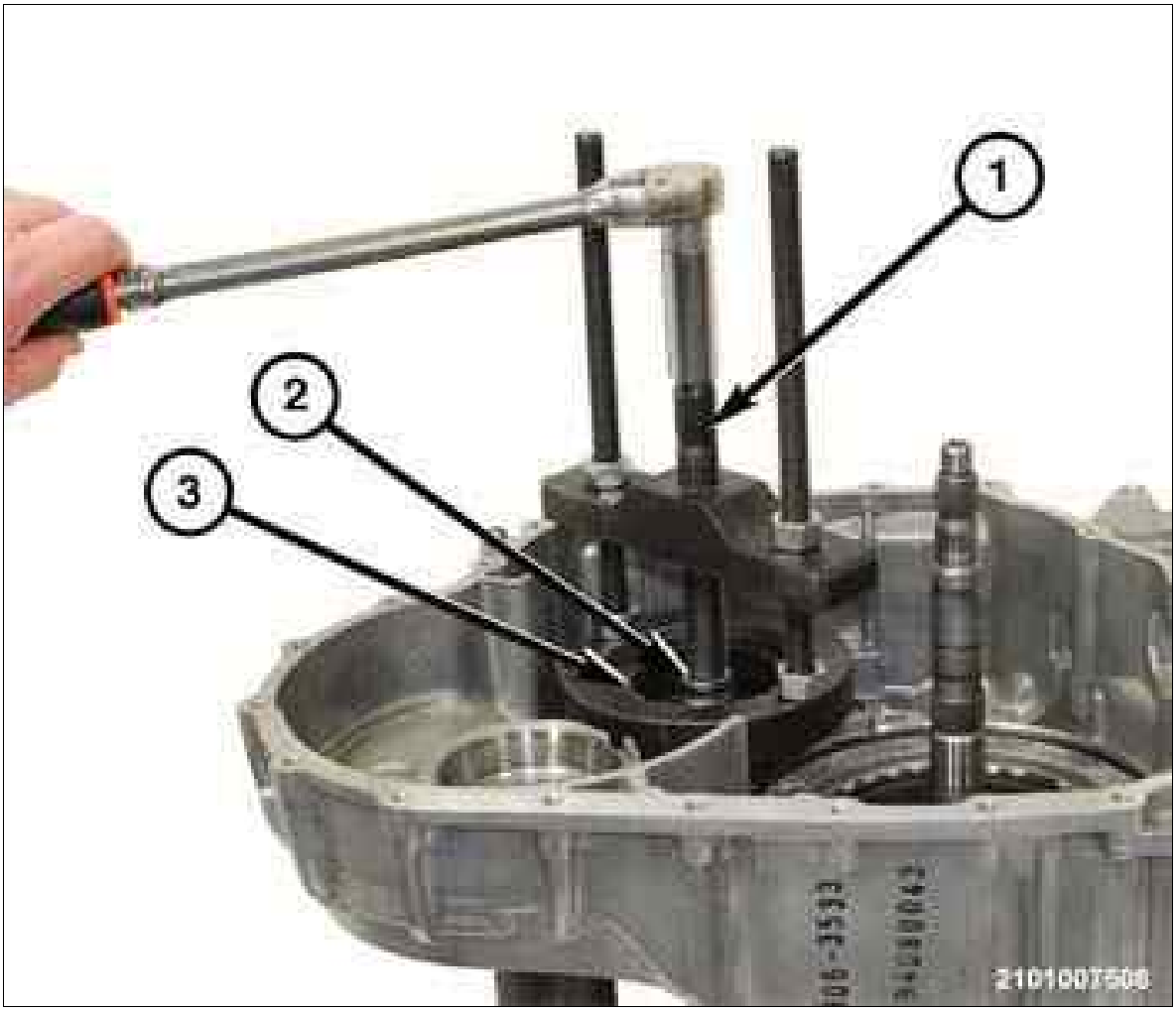
Fig 11: Removing Transfer Gear Bearing Cone



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12. Using the (special tool #C-293-PA, Puller, Press) (1), Adapter Blocks (special tool #9738, Blocks, Adapter) (3) and a suitable socket as a plug (2), remove the transfer gear bearing cone from the transmission housing.

BEARINGS, TRANSFER GEAR > REMOVAL AND INSTALLATION > TRANSFER GEAR INNER BEARING > TRANSFER GEAR INNER BEARING INSTALLATION

The work area, counter surfaces and tools must be thoroughly cleaned before attempting to assemble the 948TE transmission. All of the sub assemblies should be disassembled, cleaned, and assembled with new sealing components where applicable. The transmission housing should be clean and oil free before beginning this procedure. If the transmission was contaminated with metallic material, all of the thrust bearings and roller bearings should be replaced. The bearing in the output gear support assembly is not serviceable. The output gear support assembly should be replaced if metal debris is present.

WARNING:

Always wear safety glasses when cleaning, disassembling and assembling the

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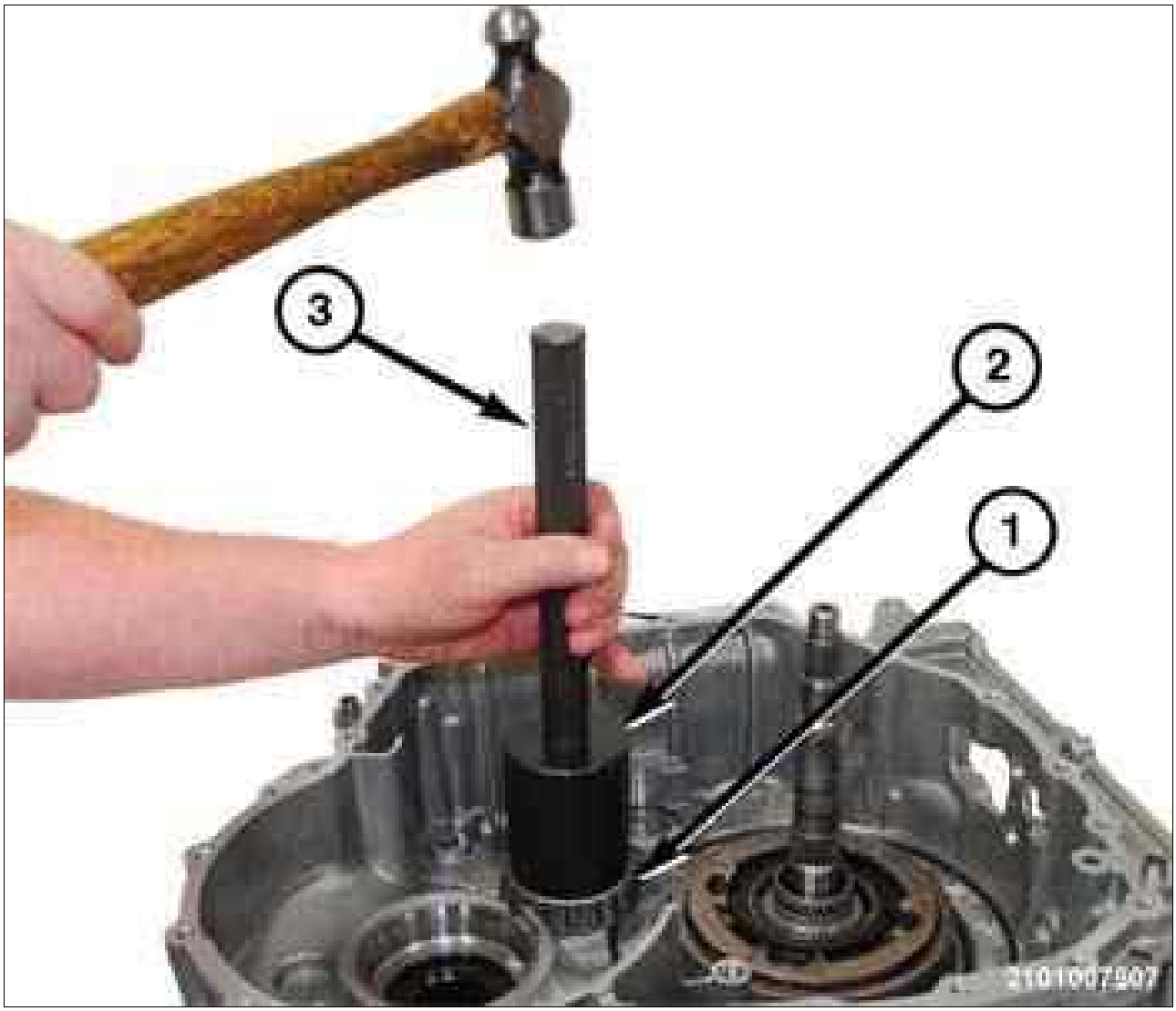
transmission/transaxle. Contents of the transmission/transaxle can become projectiles (e.g., springs, snap-rings, as well as metal and other debris). Failure to wear safety glasses may result in severe personal injury.

Fig 1: Installing Transfer Gear Bearing Cone Onto Transmission Housing



Courtesy of CHRYSLER GROUP, LLC

1. Using tool (special tool #6888, Installer, Seal) (2), and handle (special tool #C-4171, Driver Handle, Universal) (3) install the transfer gear bearing cone (1) onto the transmission housing.

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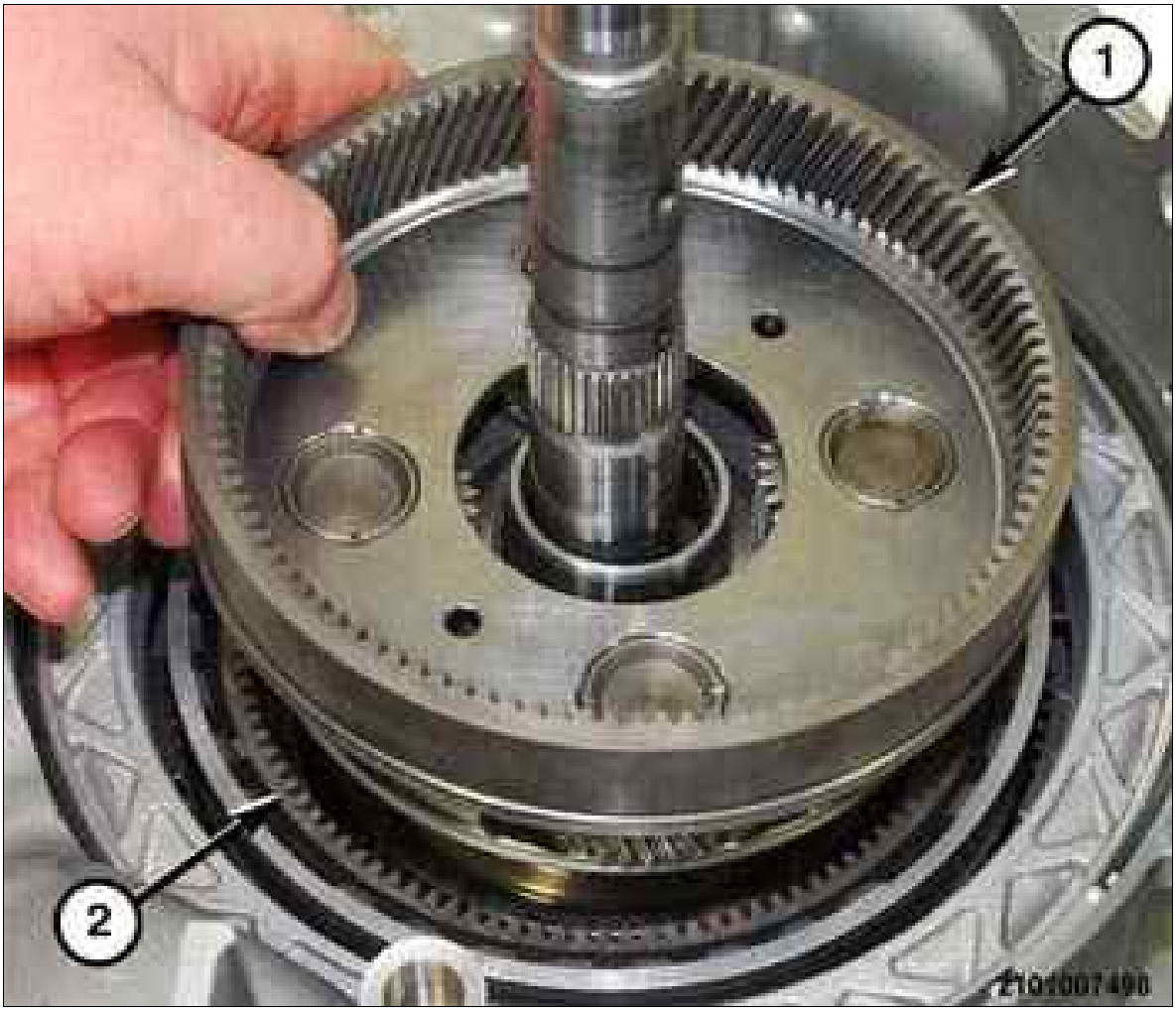
Fig 2: Annulus Gear 4 & Annulus Gear 3



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2. Install the annulus gear 4 (1) in the annulus gear 3 (2).

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Fig 3: Thrust Spacer & Underside Of Gear 4 Planetary Pinion Carrier

Courtesy of CHRYSLER GROUP, LLC

3. Install a **NEW** thrust spacer (1) on the underside of the gear 4 planetary pinion carrier (2).

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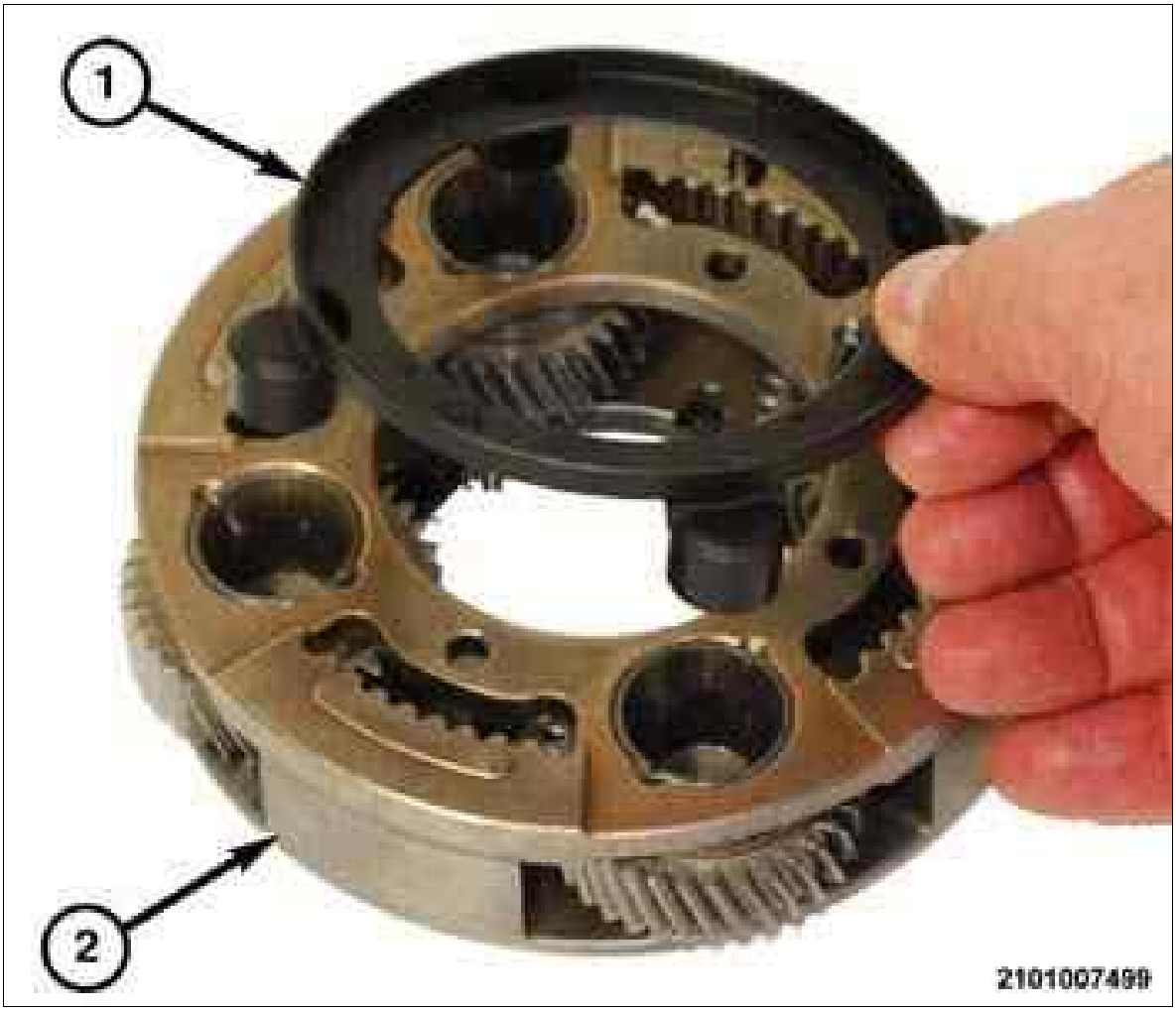
Fig 4: Thrust Spacer & Topside Of Gear 4 Planetary Pinion Carrier



Courtesy of CHRYSLER GROUP, LLC

4. Install a **NEW** thrust spacer (1) on the topside of the gear 4 planetary pinion carrier (2).

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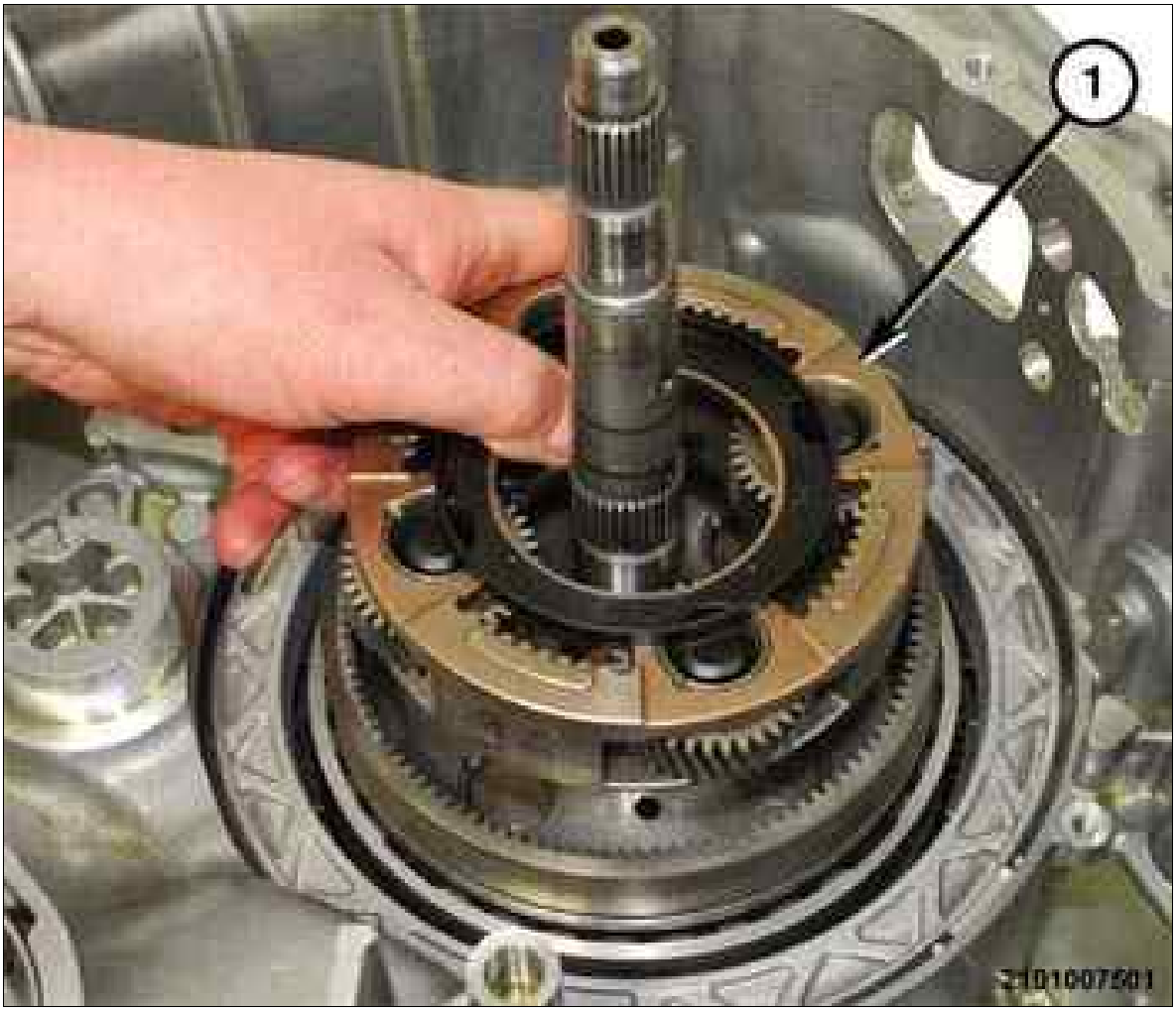
Fig 5: Gear 4 Planetary Pinion Carrier



Courtesy of CHRYSLER GROUP, LLC

5. Install the gear 4 planetary pinion carrier (1) into the annulus gear 4.

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Fig 6: Removing/Installing Sun Gear 3, 4 And Dog Clutch-F At Gear 4 Planetary Pinion Carrier

Courtesy of CHRYSLER GROUP, LLC

6. Install the sun gear 3 and 4 and Dog Clutch-F (1) in the gear 4 planetary pinion carrier.

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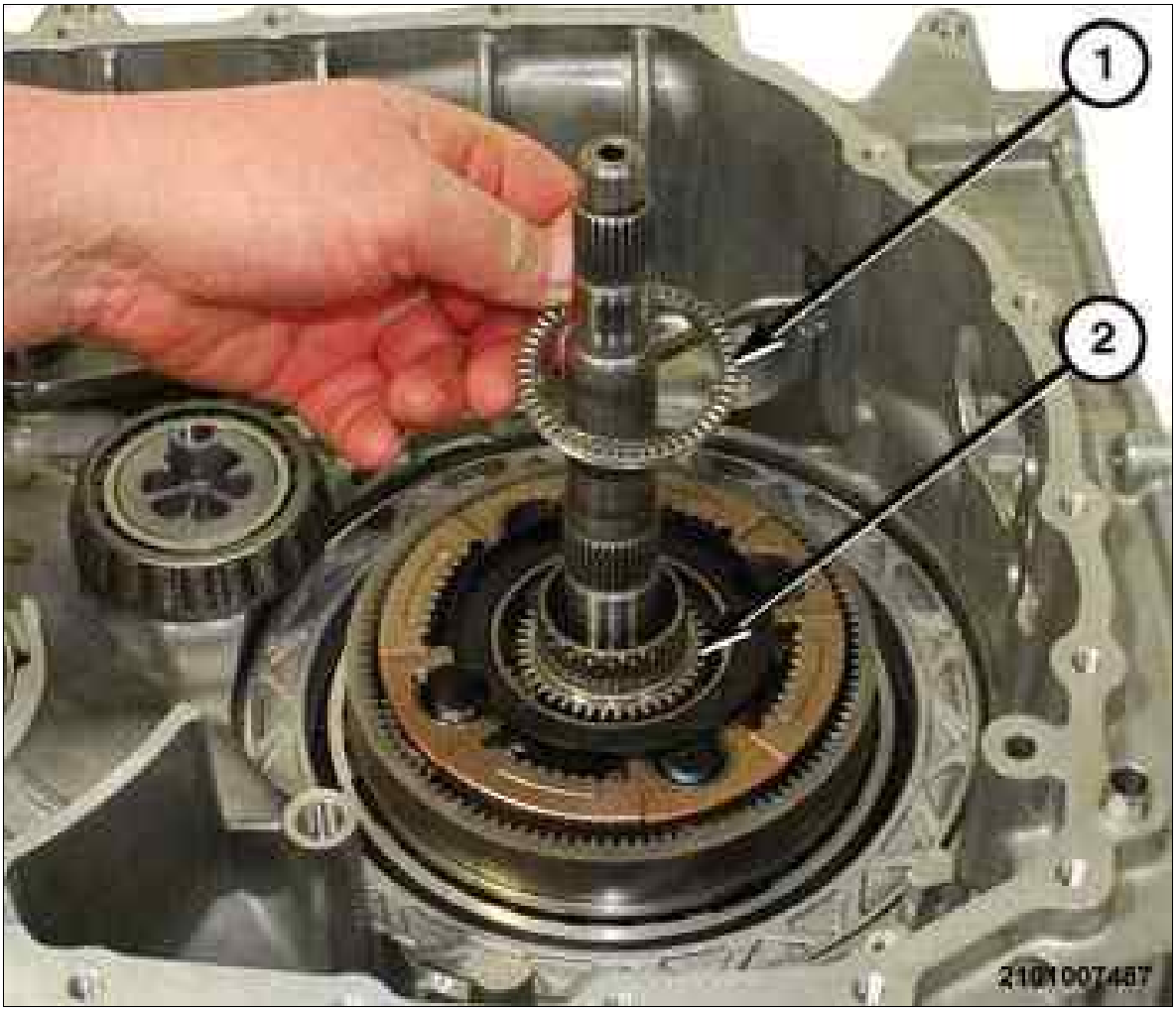
Fig 7: Roller Type Thrust Bearing, Sun Gear And Dog Clutch-F



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7. Install the roller type thrust bearing (1) onto the sun gear 3 and 4 and Dog Clutch-F (2).

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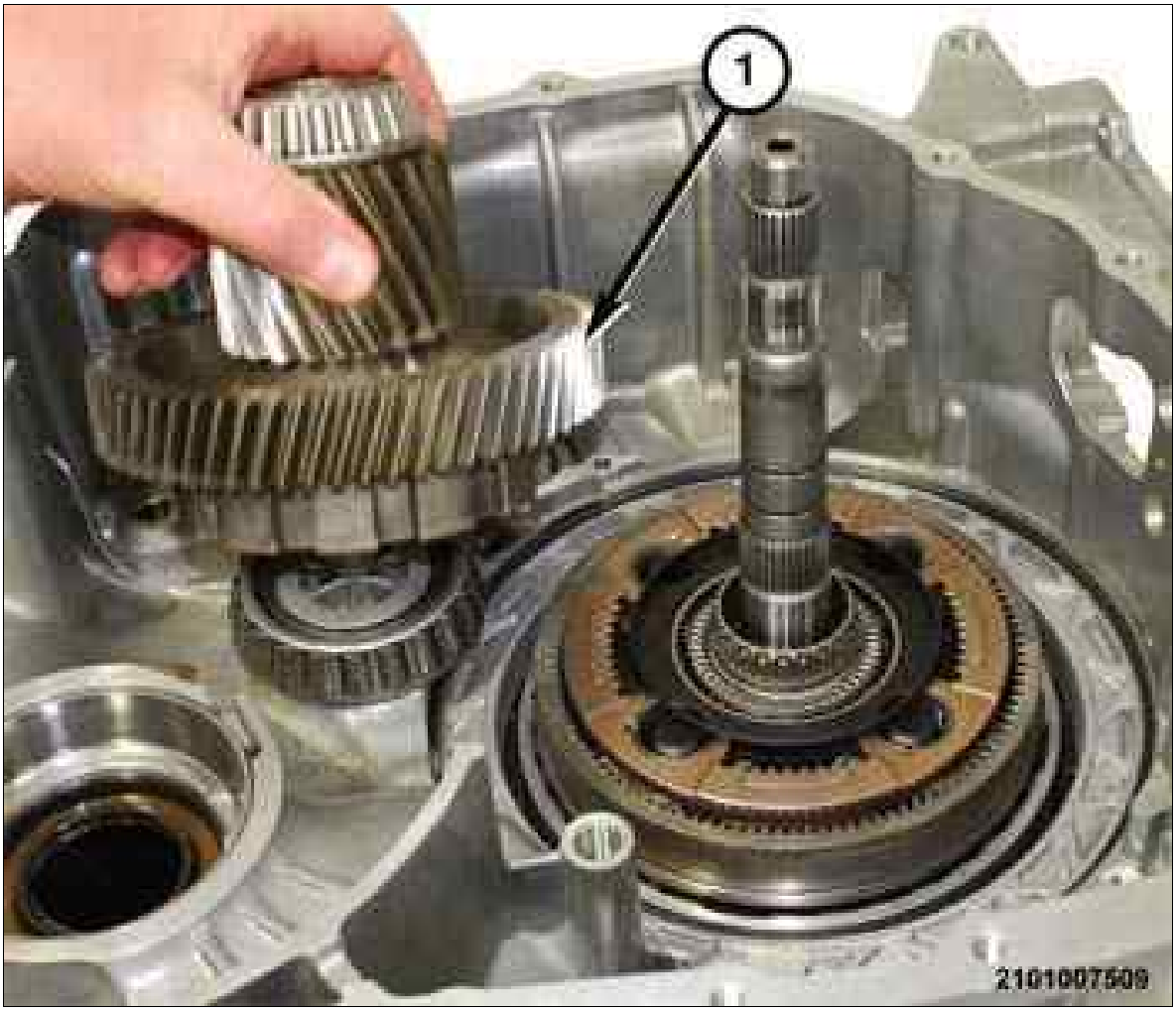
Fig 8: Removing/Installing Transfer Gear



Courtesy of CHRYSLER GROUP, LLC

> *NOTE:*
>
> *If a new transfer gear (1) or transmission housing are being used, measurements must be preformed to determine correct thickness for the bearing preload shims. Refer to STANDARD PROCEDURES . If the bearings and races are replaced the factory installed preload shims do not require replacement.*

8. If necessary, replace the bearings and races on the transfer gear (1).
9. Install the transfer gear (1) into the transmission housing.

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Fig 9: Output Gear Support & Planetary Pinion Carrier

Courtesy of CHRYSLER GROUP, LLC

10. Install the output gear support (1) into the gear 4 planetary pinion carrier (2).

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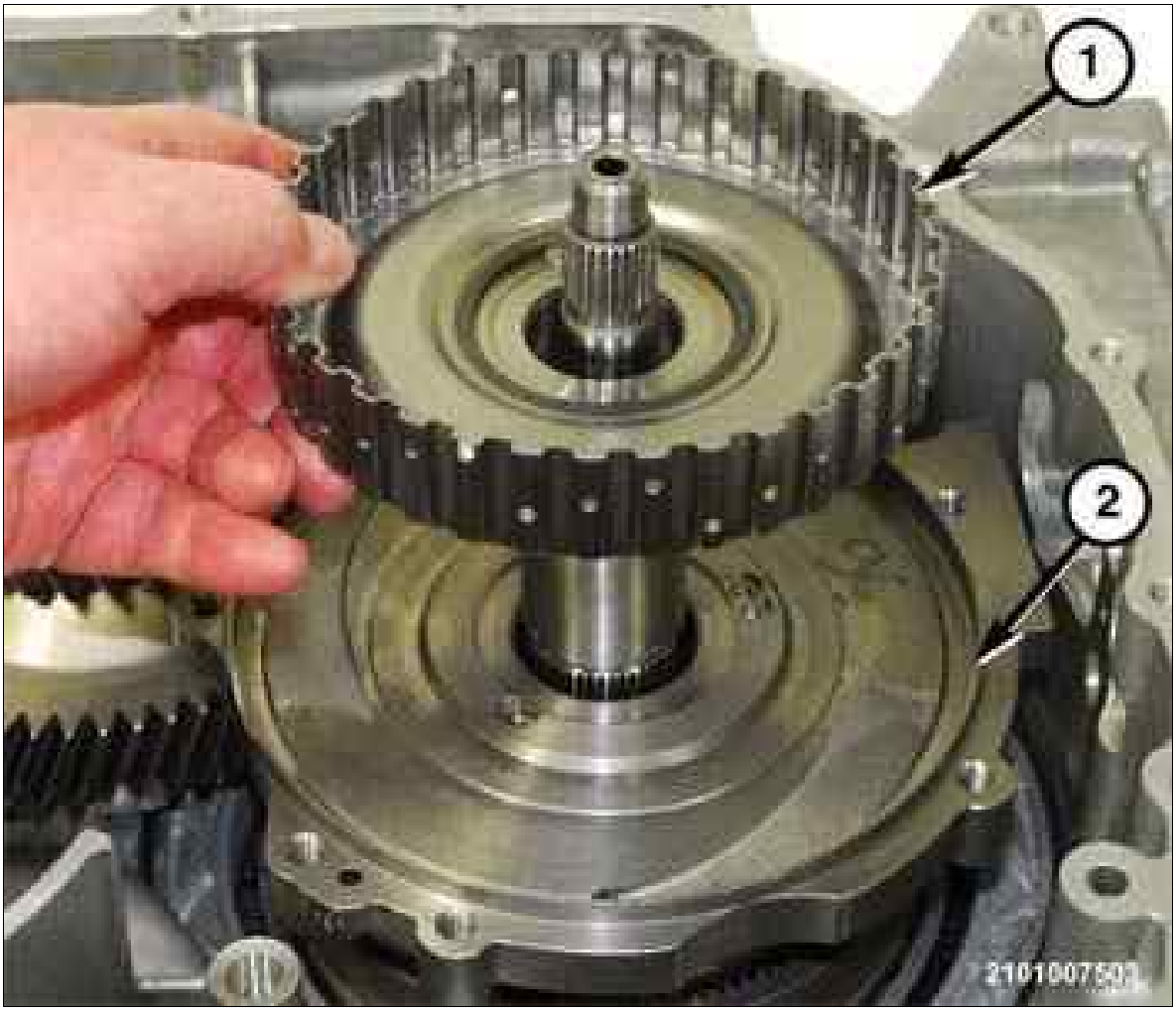
Fig 10: Output Gear Support, E-Clutch Hub & Shaft



Courtesy of CHRYSLER GROUP, LLC

11. Install the E-clutch hub and shaft (1) in the output gear support (2).

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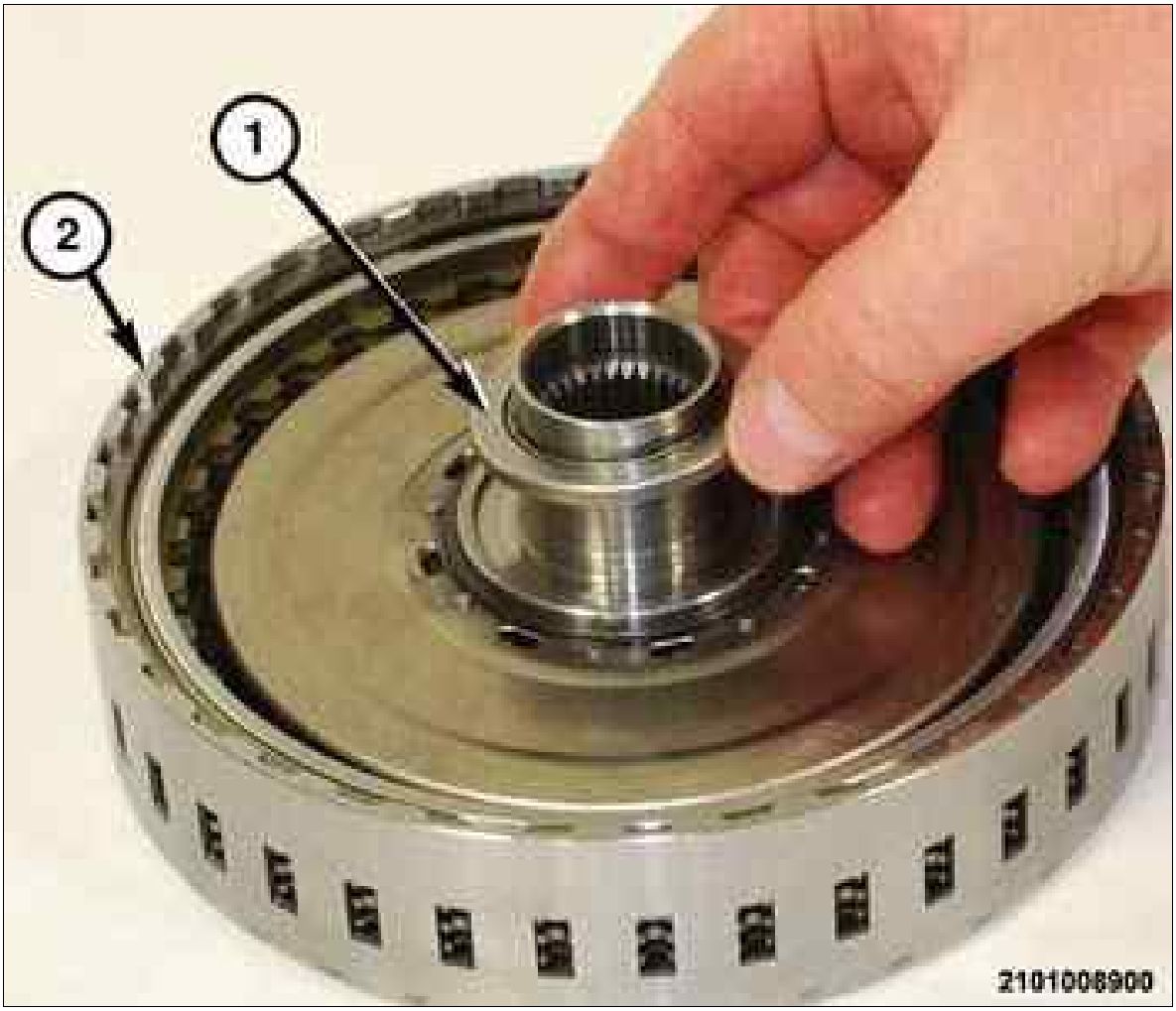
Fig 11: Removing/Installing Thrust Bearing At E-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

12. Install the thrust bearing (1) on the E-clutch (2) hub.

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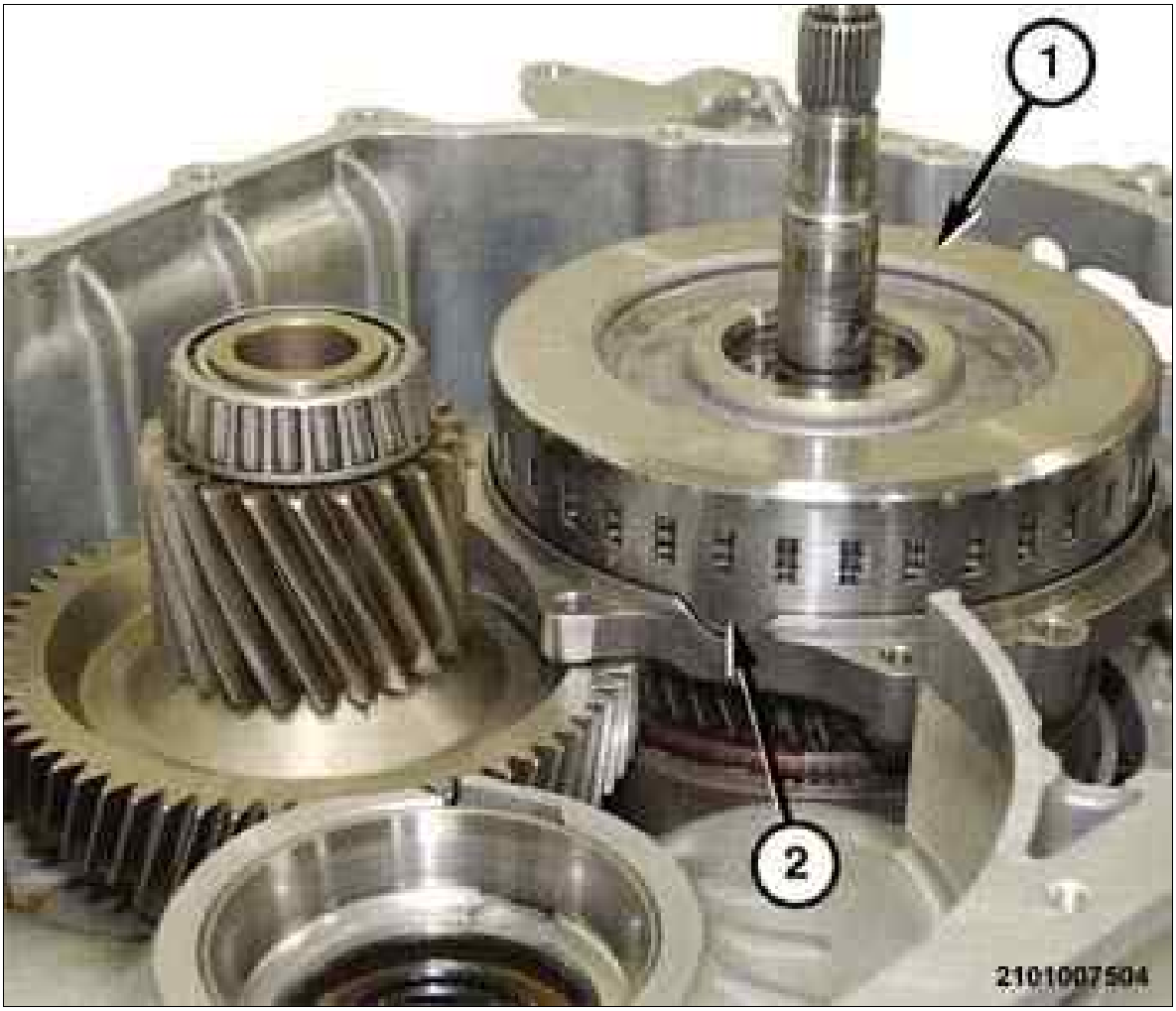
Fig 12: E-Clutch Hub And Shaft



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> *NOTE:*
>
> *Before installing the E-clutch, use a suitable screwdriver to align the grooves in the friction discs.*

13. Wriggle the E-clutch (1) until all of the friction discs are fully engaged on the E-clutch hub and shaft.

> *NOTE:*
>
> *When the E-clutch (1) is fully seated the gap (2) will be very small between the E-clutch retainer and the output gear support.*

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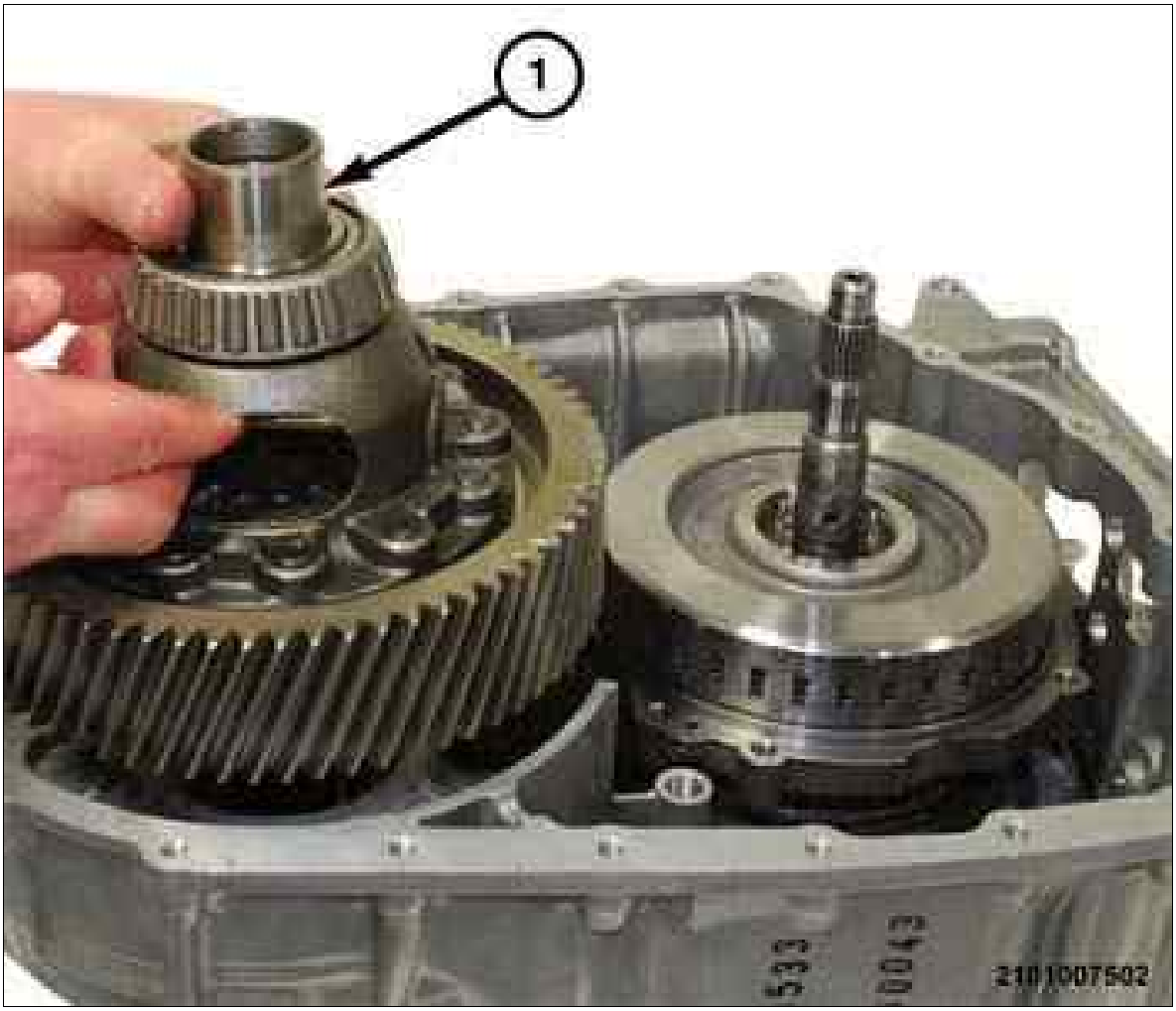
Fig 13: Differential Assembly



Courtesy of CHRYSLER GROUP, LLC

> *NOTE:*
>
> *If a new differential (1) or transmission housing are being used, measurements must be preformed to determine correct thickness for the bearing preload shims. If the bearings and races are replaced the factory installed preload shims do not require replacement. Refer to STANDARD PROCEDURES .*

14. If necessary, replace the bearings and races on the differential (1).
15. Install the differential assembly (1) into the transmission housing.
16. Install the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .
17. Install the transmission in the vehicle. Refer to REMOVAL AND INSTALLATION .
18. Road test the vehicle to verify the repair.

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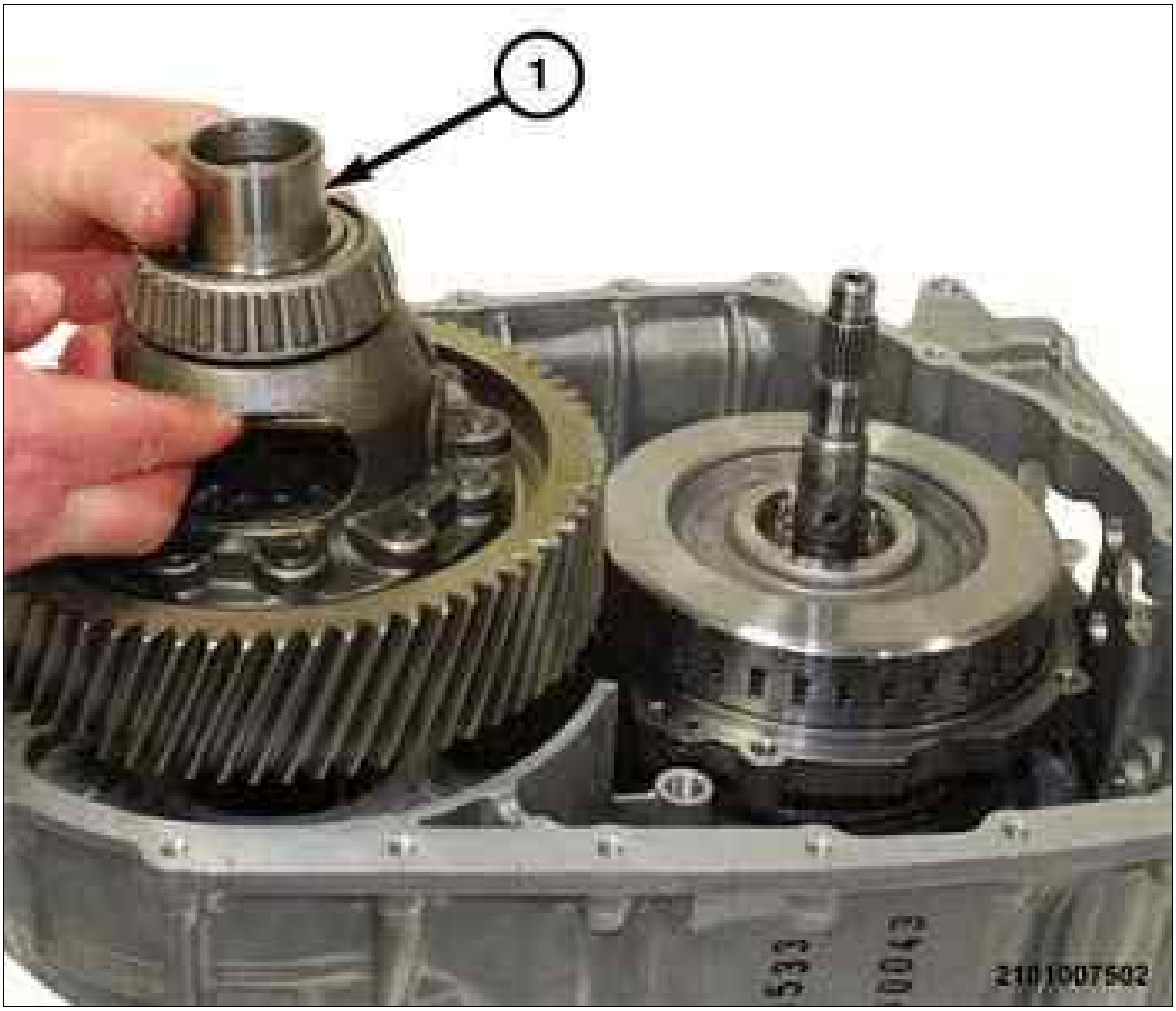
BEARINGS, TRANSFER GEAR > REMOVAL AND INSTALLATION > TRANSFER GEAR INNER BEARING RACE > TRANSFER GEAR INNER BEARING RACE REMOVAL

> *WARNING:*
>
> *Always wear safety glasses when cleaning, disassembling and assembling the transmission/transaxle. Contents of the transmission/transaxle can become projectiles (e.g., springs, snap-rings, as well as metal and other debris). Failure to wear safety glasses may result in severe personal injury.*

Before disassembling the transmission, remove oily grime and loose dirt. Place the transmission on a clean work surface with ample fluid drainage or absorbency.

1. Remove the transmission from the vehicle. Refer to REMOVAL AND INSTALLATION .
2. Remove the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .

   Fig 1: Differential Assembly



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3. Remove the differential assembly (1) from the transmission housing.

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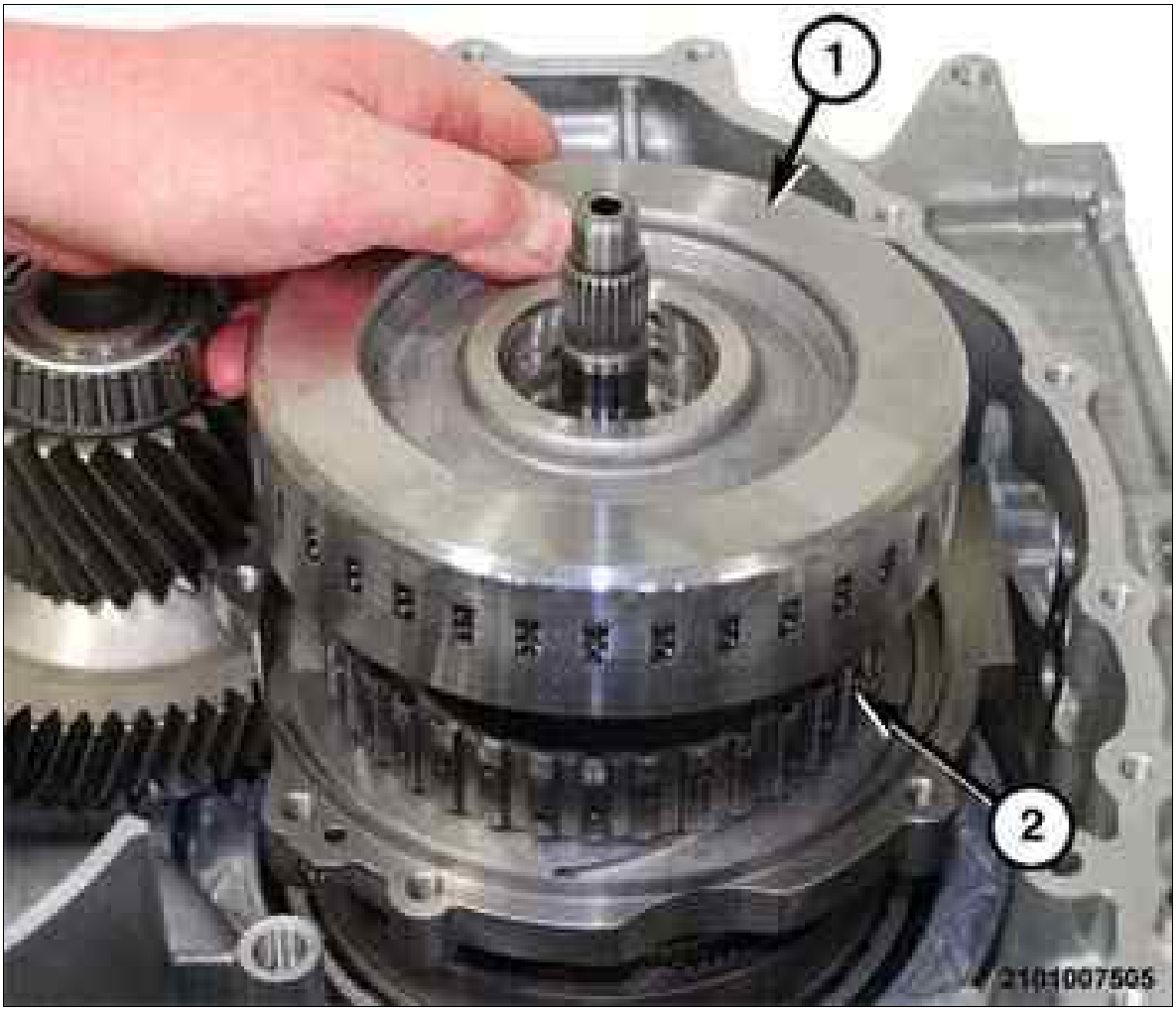
Fig 2: Removing/Installing E-Clutch At E-Clutch Hub



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4. Separate the E-clutch drum (1) from the E-clutch hub (2).

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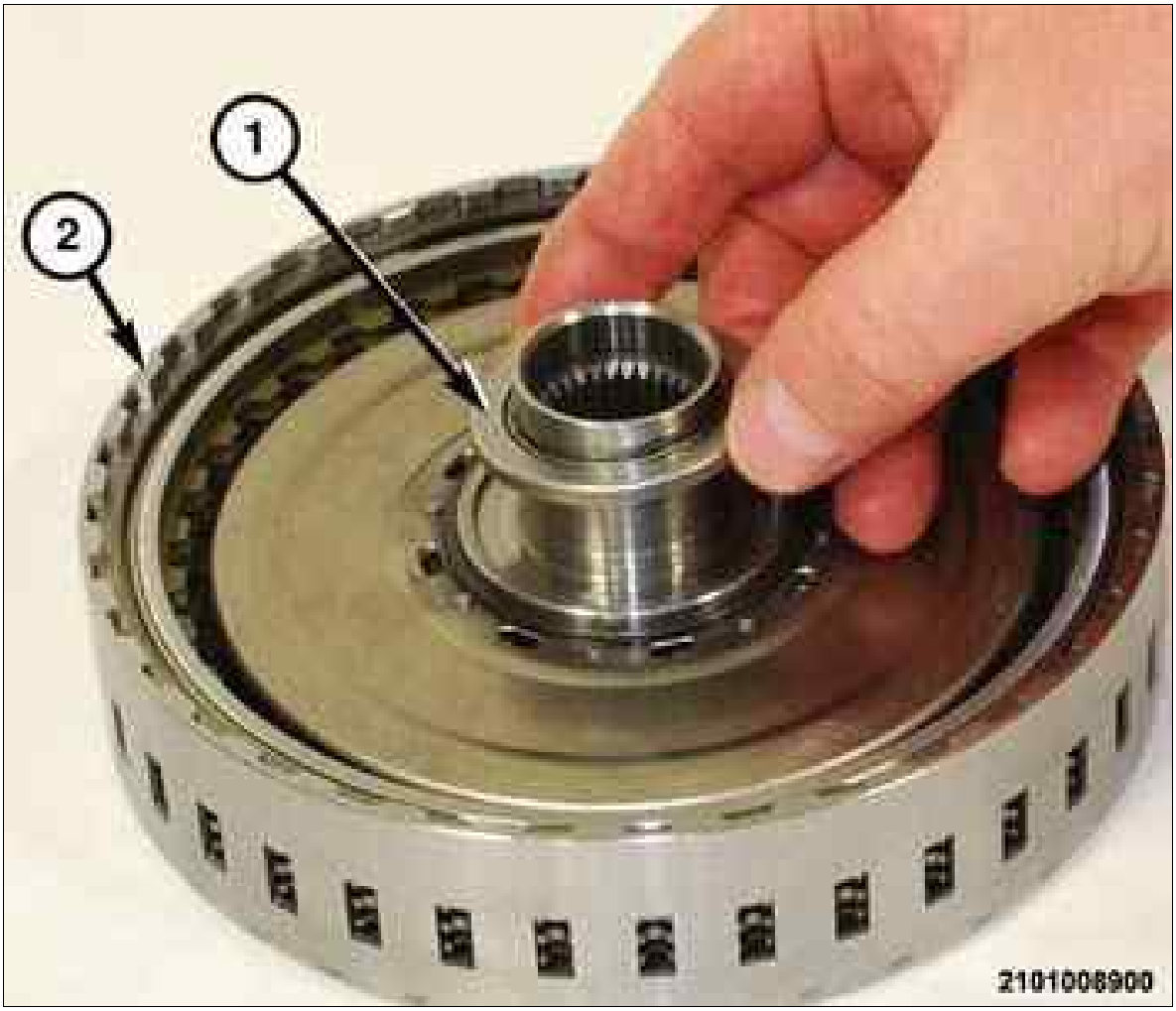
Fig 3: Removing/Installing Thrust Bearing At E-Clutch Hub



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5. Separate the thrust bearing (1) from the E-clutch (2) hub.

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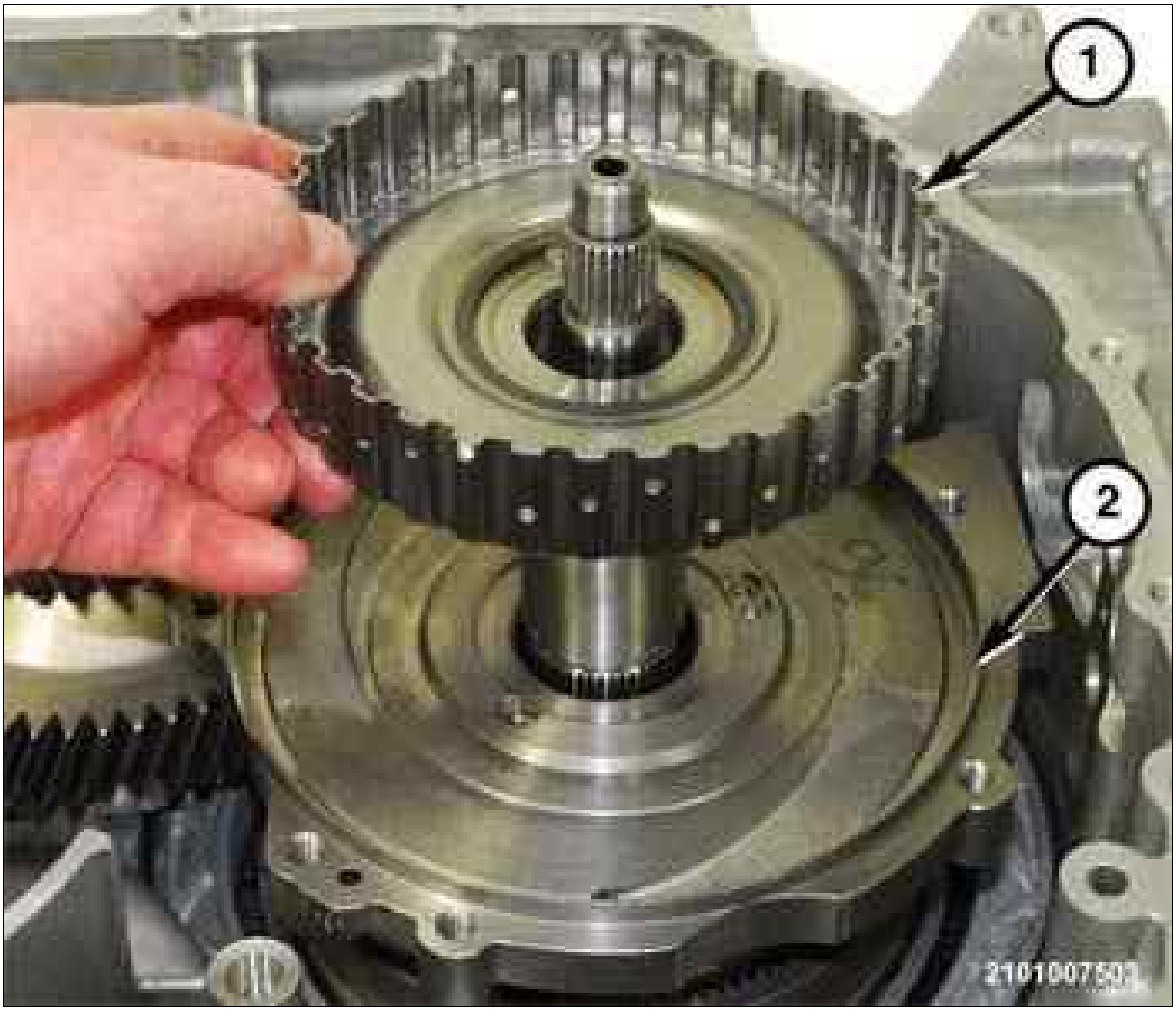
Fig 4: Output Gear Support, E-Clutch Hub & Shaft



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6. Separate the E-clutch hub (1) from the output gear support (2).

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Fig 5: Output Gear Support & Planetary Pinion Carrier

Courtesy of CHRYSLER GROUP, LLC

7. Separate the output gear support (1) from the gear 4 planetary pinion carrier (2).

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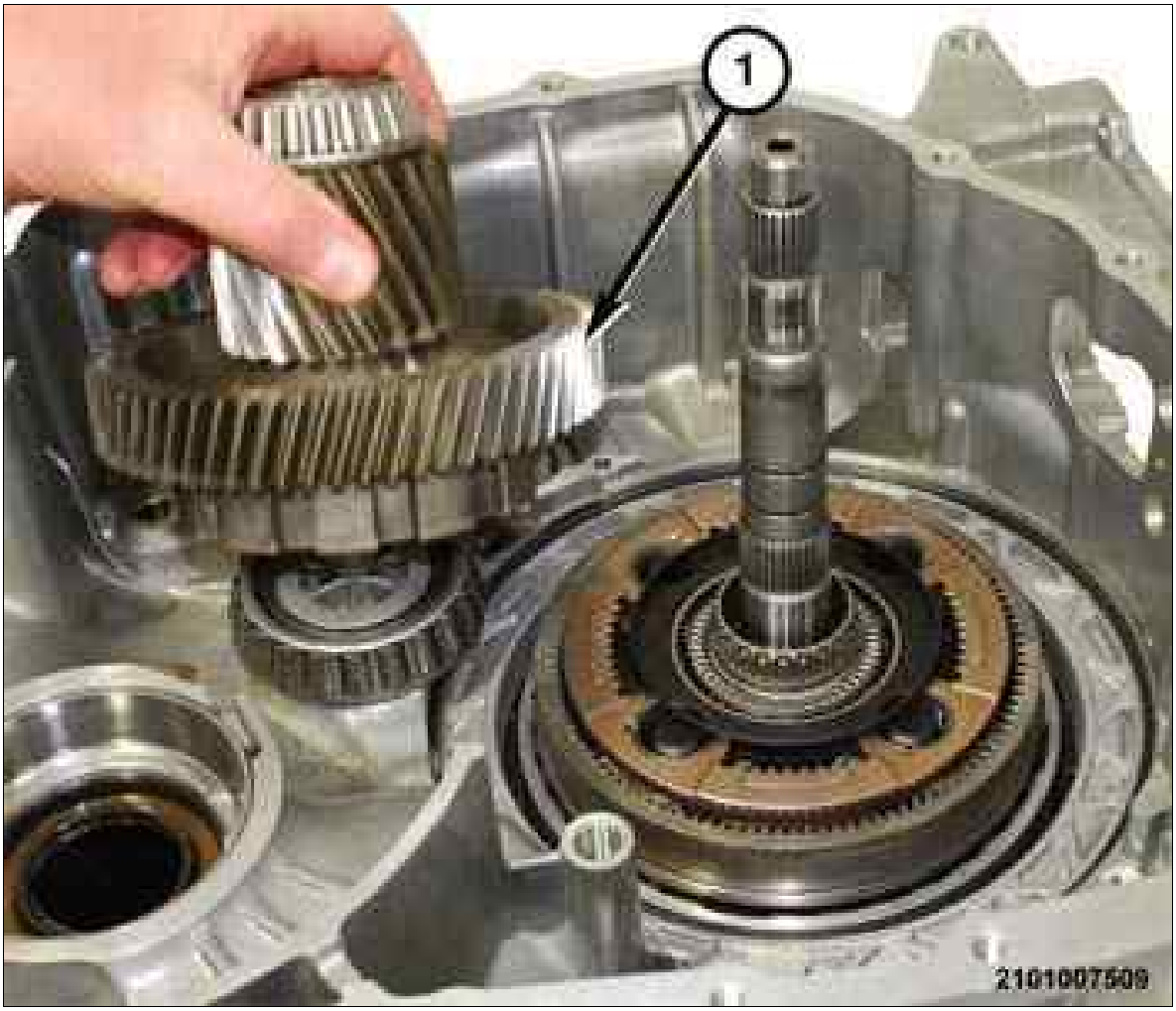
Fig 6: Removing/Installing Transfer Gear



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8. Remove the transfer gear (1) from the transmission housing.
9. Clean the transfer gear with solvent and blow it dry with regulated 344 kPa (50 psi) shop air.

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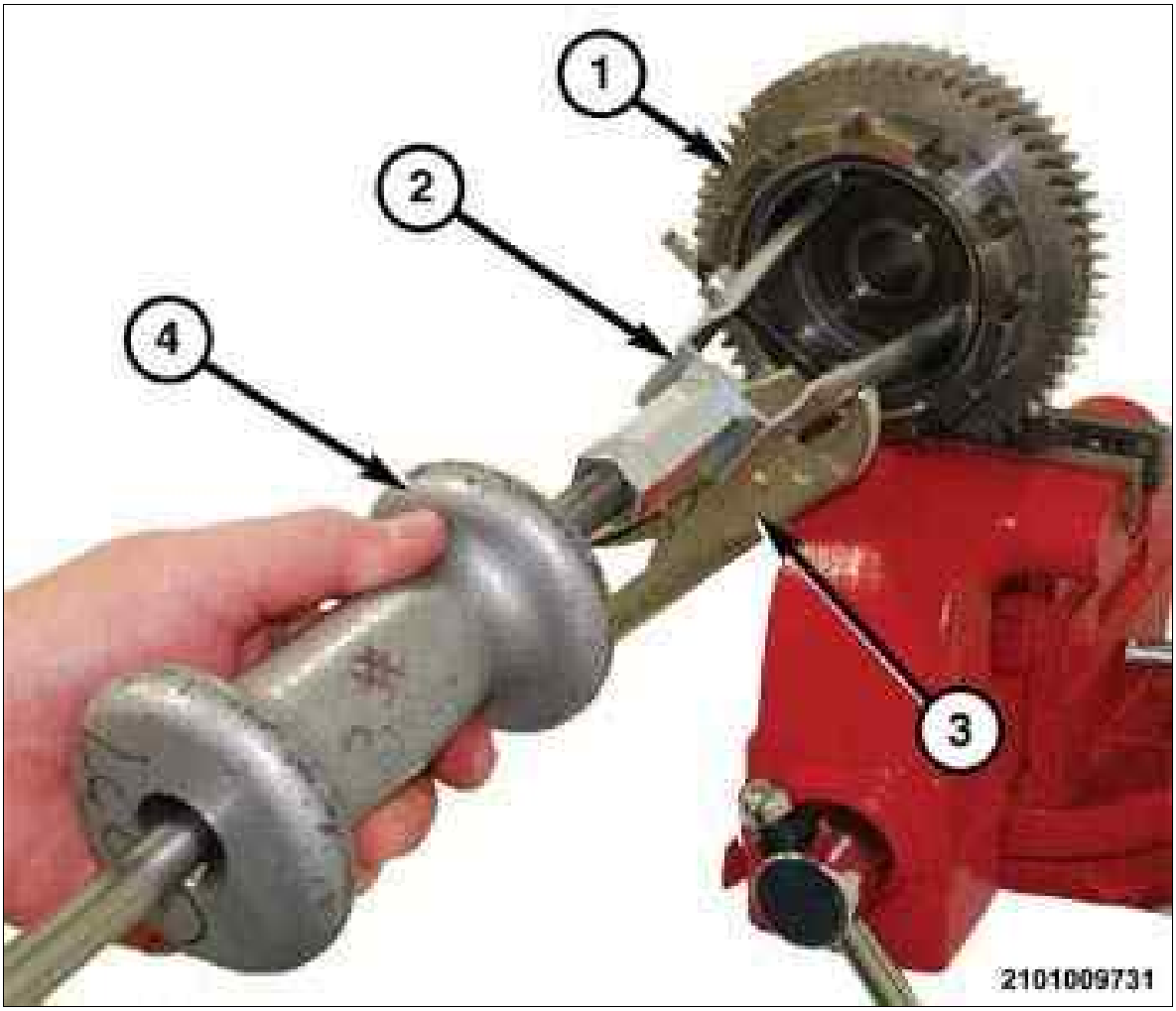
Fig 7: Transfer Gear, Vise Grips, Seal Remover & Slide Hammer



Courtesy of CHRYSLER GROUP, LLC

10. Clamp the transfer gear (1) in a suitable bench vise with protective jaws.

> *NOTE:*
>
> *It may be necessary to clamp vise grips (3) on the seal remover (2) to keep the expander screw in place.*

11. Using tool (special tool #C-637, Slide Hammer, Universal) (4) and (special tool #7794-A, Remover, Seal) (2) with the jaws expanded out under the inner edge on the bearing race.
12. Knock outward with the slide hammer (4) until the bearing race comes out of the transfer gear (1).

BEARINGS, TRANSFER GEAR > REMOVAL AND INSTALLATION > TRANSFER GEAR INNER BEARING RACE > TRANSFER GEAR INNER BEARING RACE INSTALLATION

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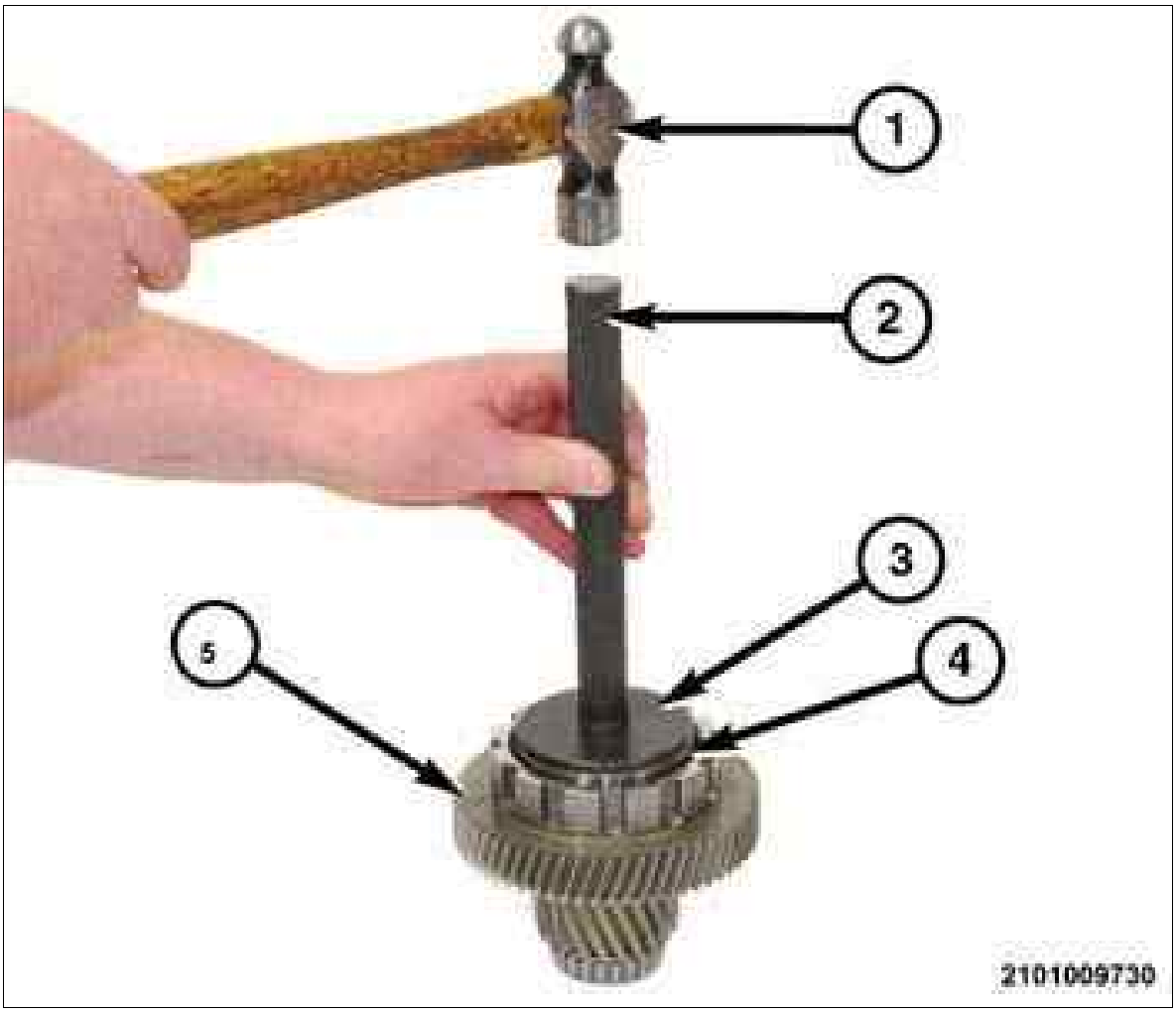
1. Using a clean lint free cloth, wipe the transfer gear bore clean. Inspect the bore for burrs or other damage. Use crocus cloth the dress down burrs.

2. Place the transfer gear on the stable, clean work surface.

   Fig 1: Installing Bearing Race Into Transfer Gear



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3. Place the **NEW** bearing race (4) in the transfer gear bore.

4. Using a suitable hammer (1) and tool (special tool #9588, Installer, Bearing Cup) (3) with (special tool #C-4171, Driver Handle, Universal) (2), drive the bearing race into the transfer gear until it is fully seated against the bottom surface.

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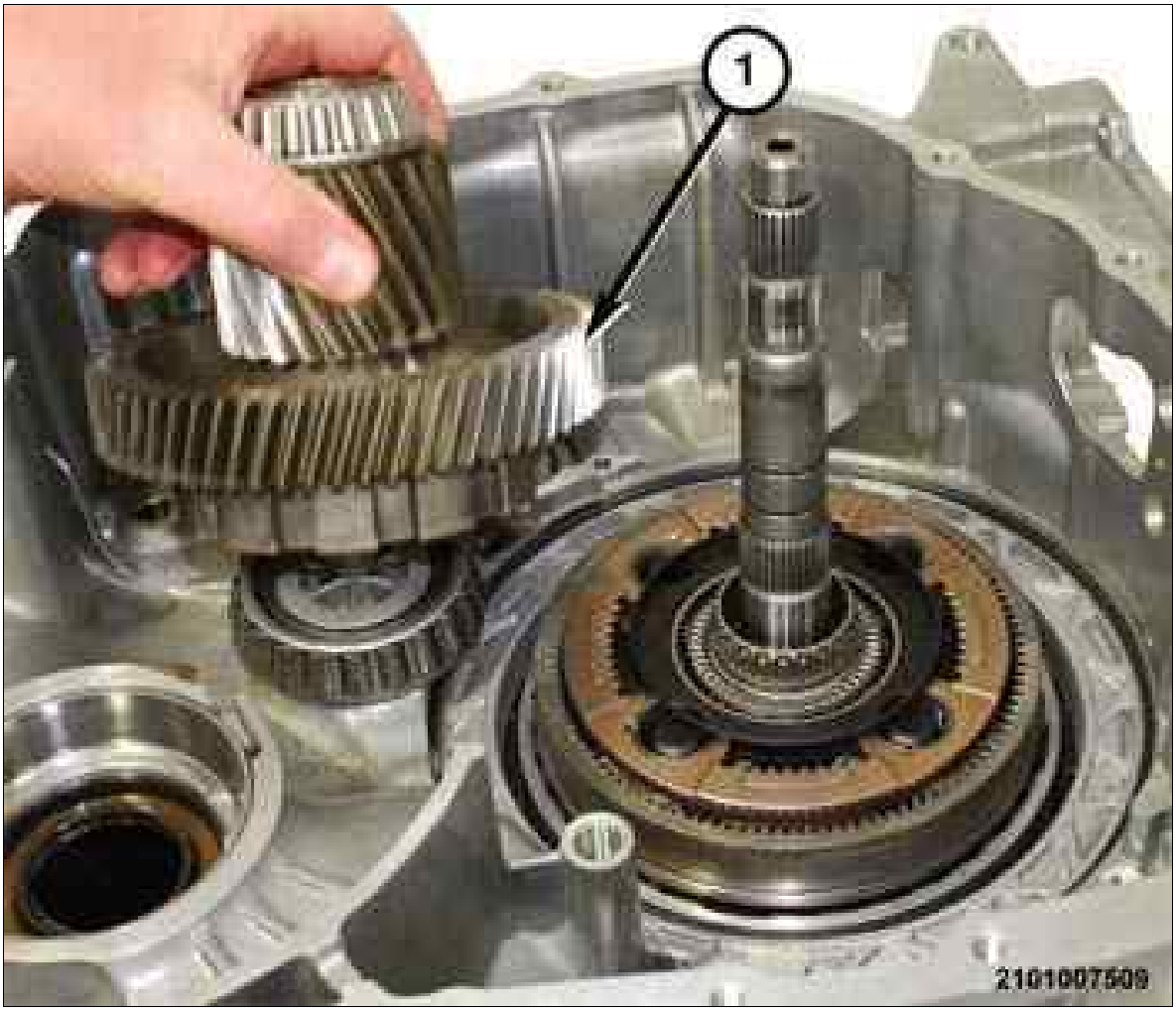
Fig 2: Removing/Installing Transfer Gear



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5. Install the transfer gear (1) into the transmission housing.

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Fig 3: Output Gear Support & Planetary Pinion Carrier

Courtesy of CHRYSLER GROUP, LLC

6. Install the output gear support (1) into the gear 4 planetary pinion carrier (2).

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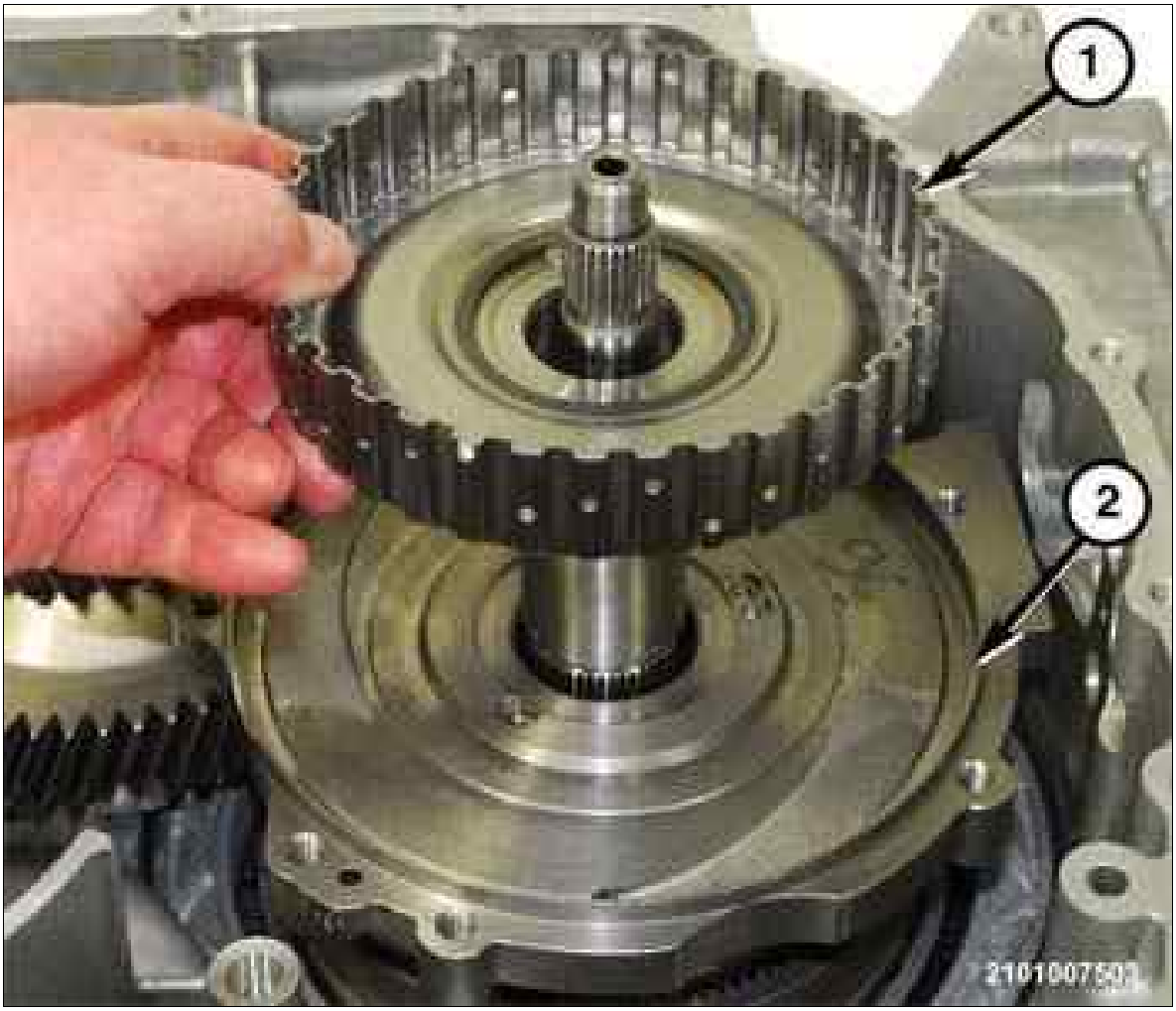
Fig 4: Output Gear Support, E-Clutch Hub & Shaft



Courtesy of CHRYSLER GROUP, LLC

7. Install the E-clutch hub and shaft (1) in the output gear support (2).

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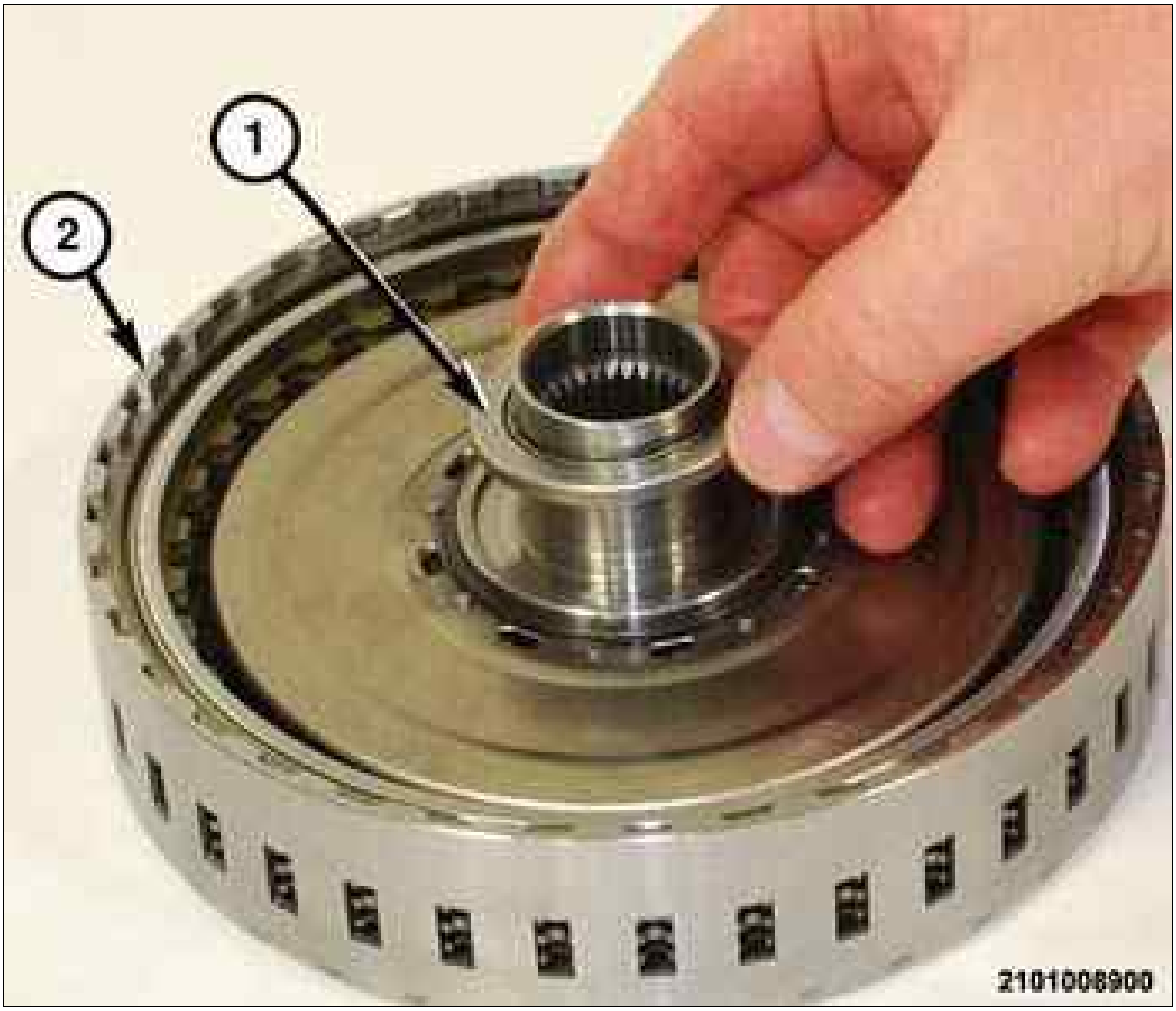
Fig 5: Removing/Installing Thrust Bearing At E-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

8. Install the thrust bearing (1) on the E-clutch (2) hub.

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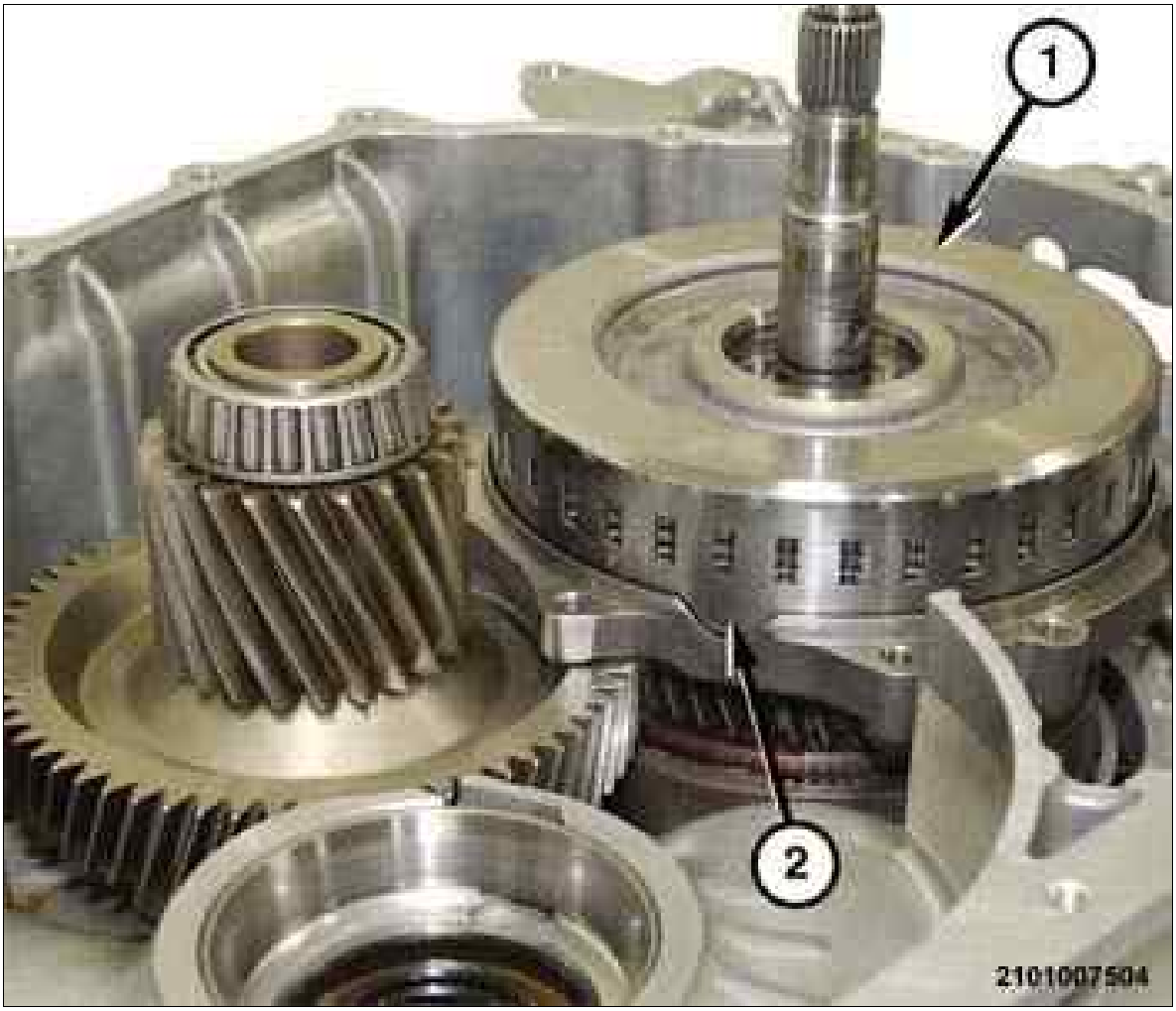
Fig 6: E-Clutch Hub And Shaft



Courtesy of CHRYSLER GROUP, LLC

> *NOTE:*
>
> *Before installing the E-clutch, use a suitable screwdriver to align the grooves in the friction discs.*

9. Wriggle the E-clutch (1) until all of the friction discs are fully engaged on the E-clutch hub and shaft.

> *NOTE:*
>
> *When the E-clutch (1) is fully seated the gap (2) will be very small between the E-clutch retainer and the output gear support.*

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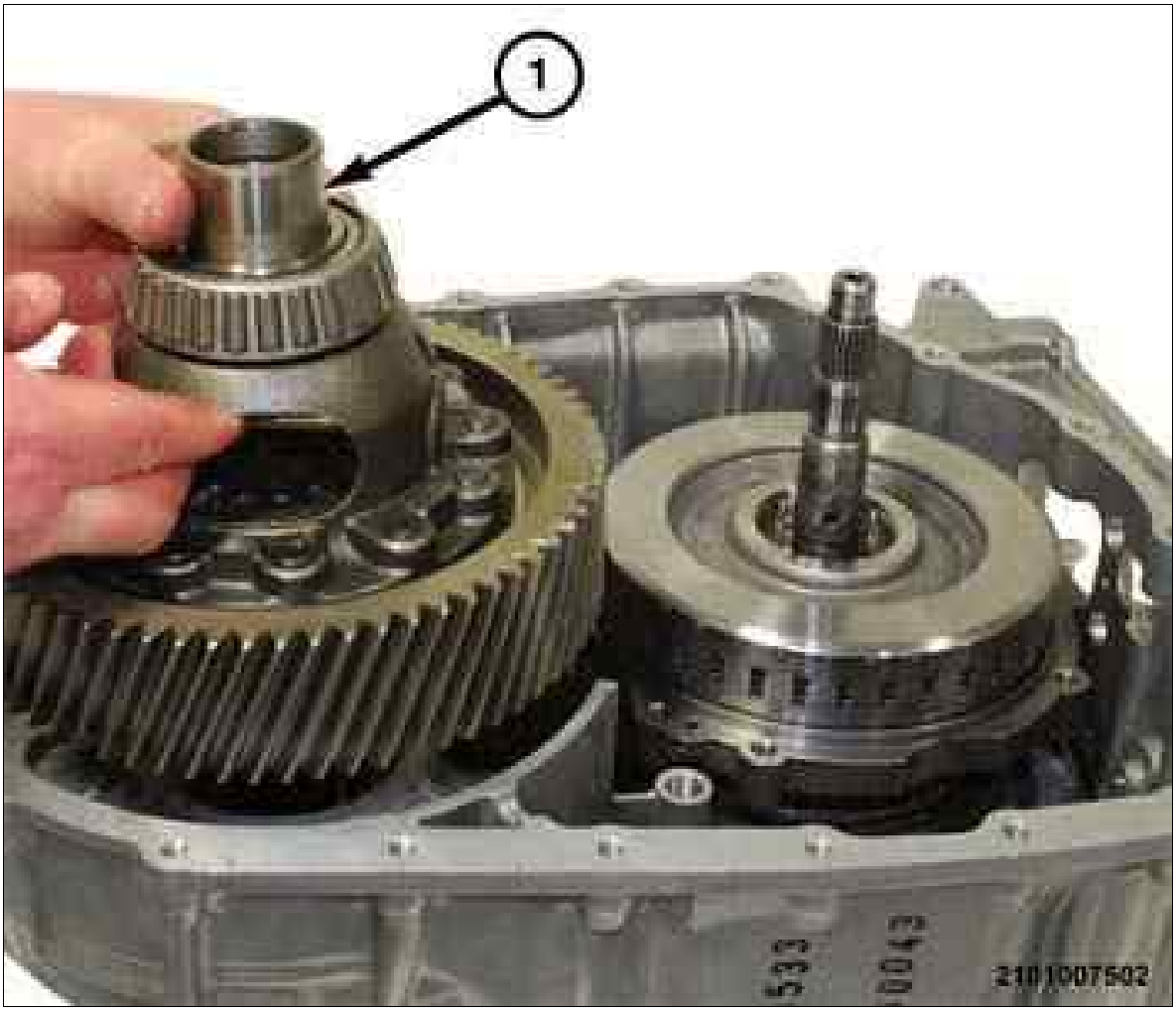
Fig 7: Differential Assembly



Courtesy of CHRYSLER GROUP, LLC

> *NOTE:*
>
> *If a new differential (1) or transmission housing are being used, measurements must be preformed to determine correct thickness for the bearing preload shims. If the bearings and races are replaced the factory installed preload shims do not require replacement. Refer to STANDARD PROCEDURES .*

10. If necessary, replace the bearings and races on the differential (1).
11. Install the differential assembly (1) into the transmission housing.
12. Install the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .
13. Install the transmission in the vehicle. Refer to REMOVAL AND INSTALLATION .
14. Road test the vehicle to verify the repair.

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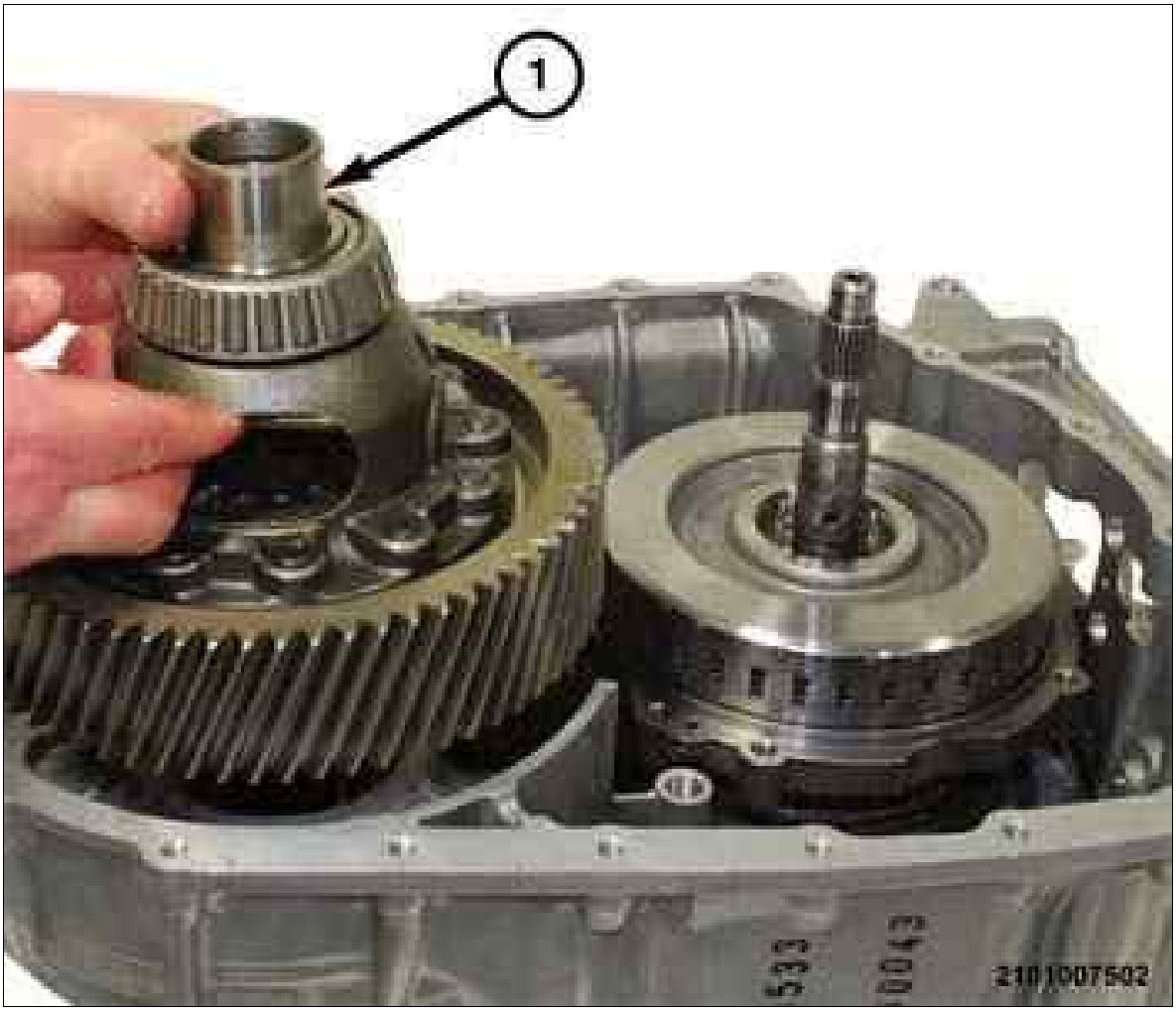
BEARINGS, TRANSFER GEAR > REMOVAL AND INSTALLATION > TRANSFER GEAR OUTER BEARING > TRANSFER GEAR OUTER BEARING REMOVAL

> *WARNING:*
>
> *Always wear safety glasses when cleaning, disassembling and assembling the transmission/transaxle. Contents of the transmission/transaxle can become projectiles (e.g., springs, snap-rings, as well as metal and other debris). Failure to wear safety glasses may result in severe personal injury.*

Before disassembling the transmission, remove oily grime and loose dirt. Place the transmission on a clean work surface with ample fluid drainage or absorbency.

1. Remove the transmission from the vehicle. Refer to REMOVAL AND INSTALLATION .
2. Remove the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .

   Fig 1: Differential Assembly



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3. Remove the differential assembly (1) from the transmission housing.

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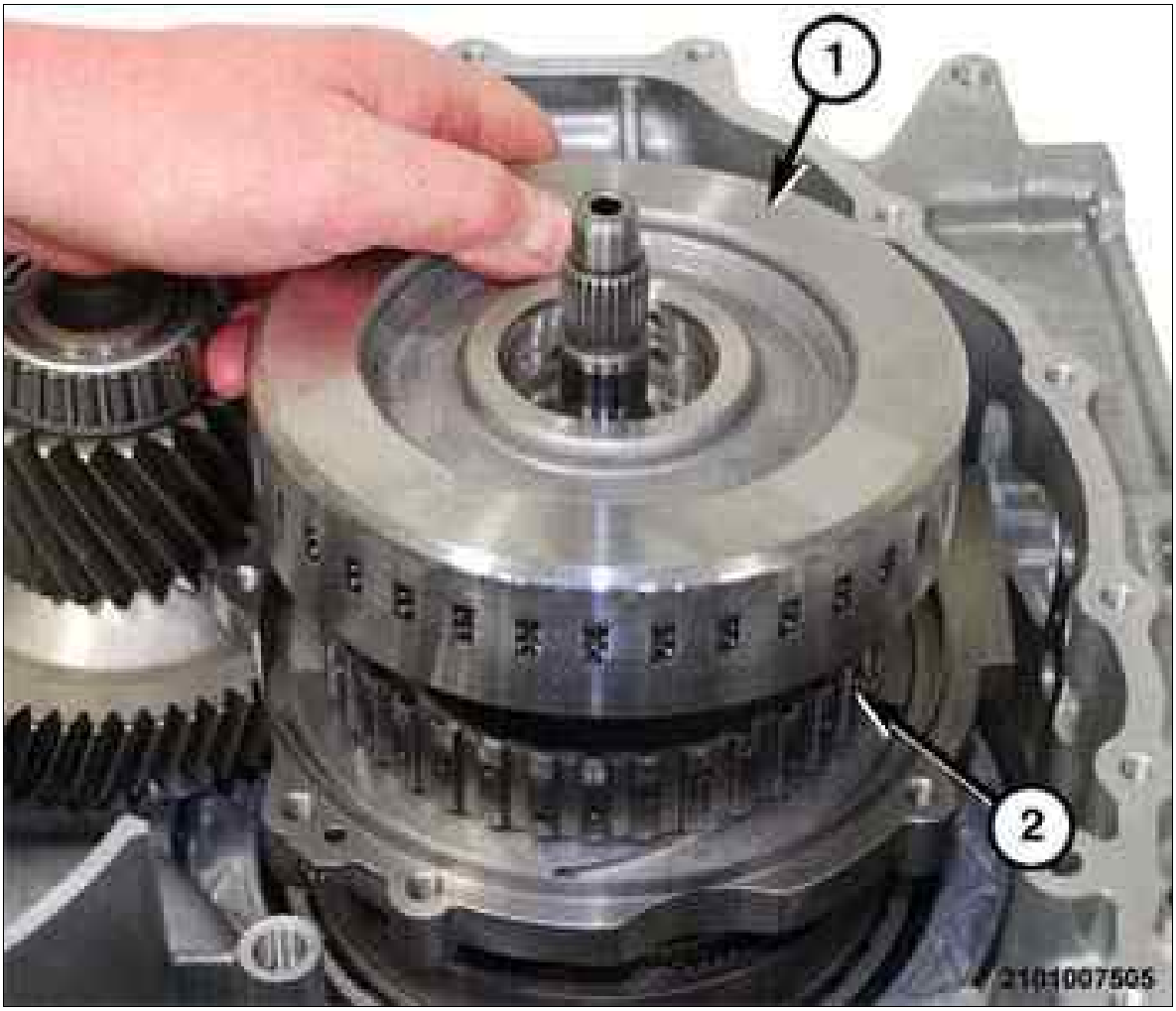
Fig 2: Removing/Installing E-Clutch At E-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

4. Separate the E-clutch drum (1) from the E-clutch hub (2).

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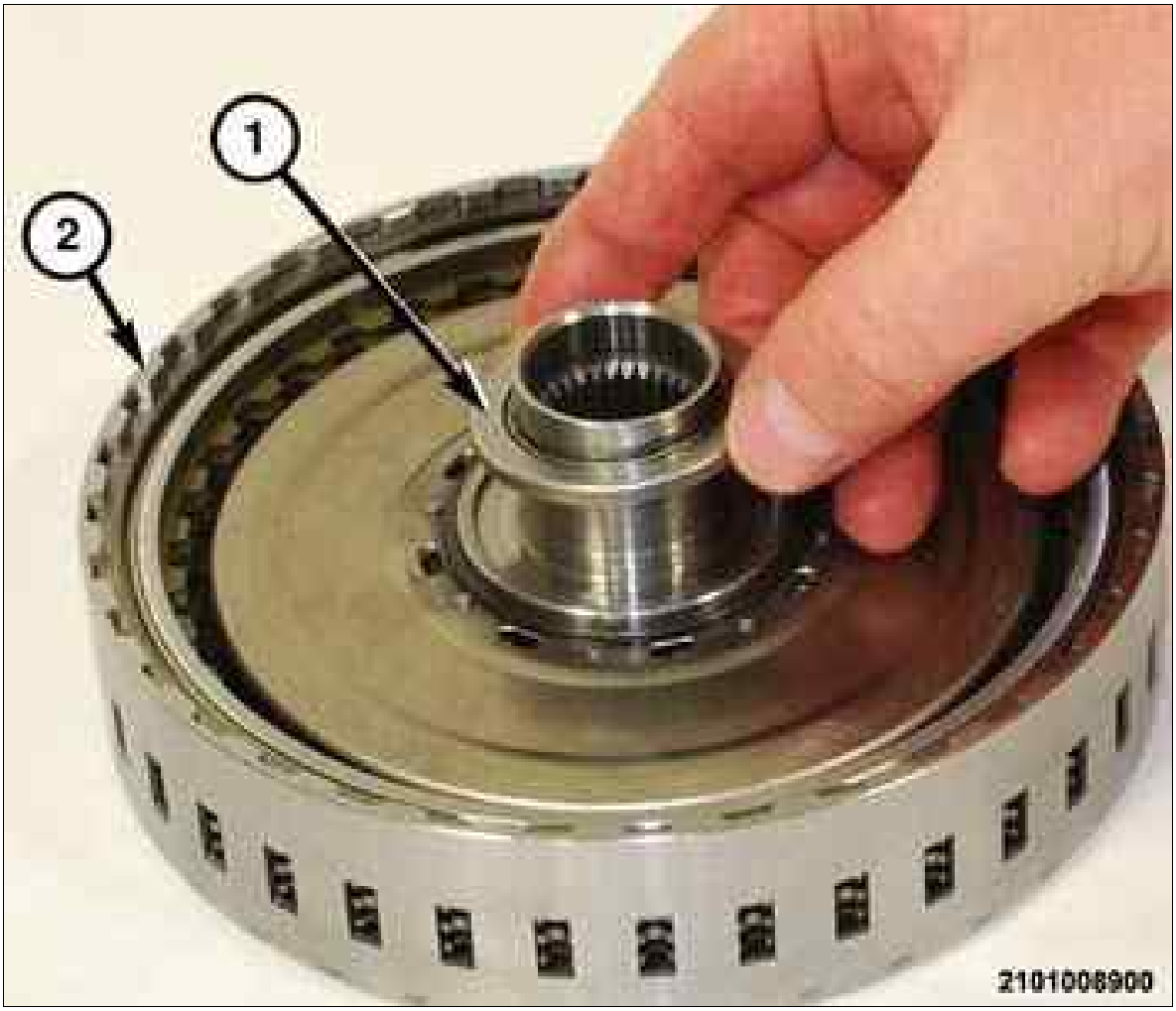
Fig 3: Removing/Installing Thrust Bearing At E-Clutch Hub



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5. Separate the thrust bearing (1) from the E-clutch (2) hub.

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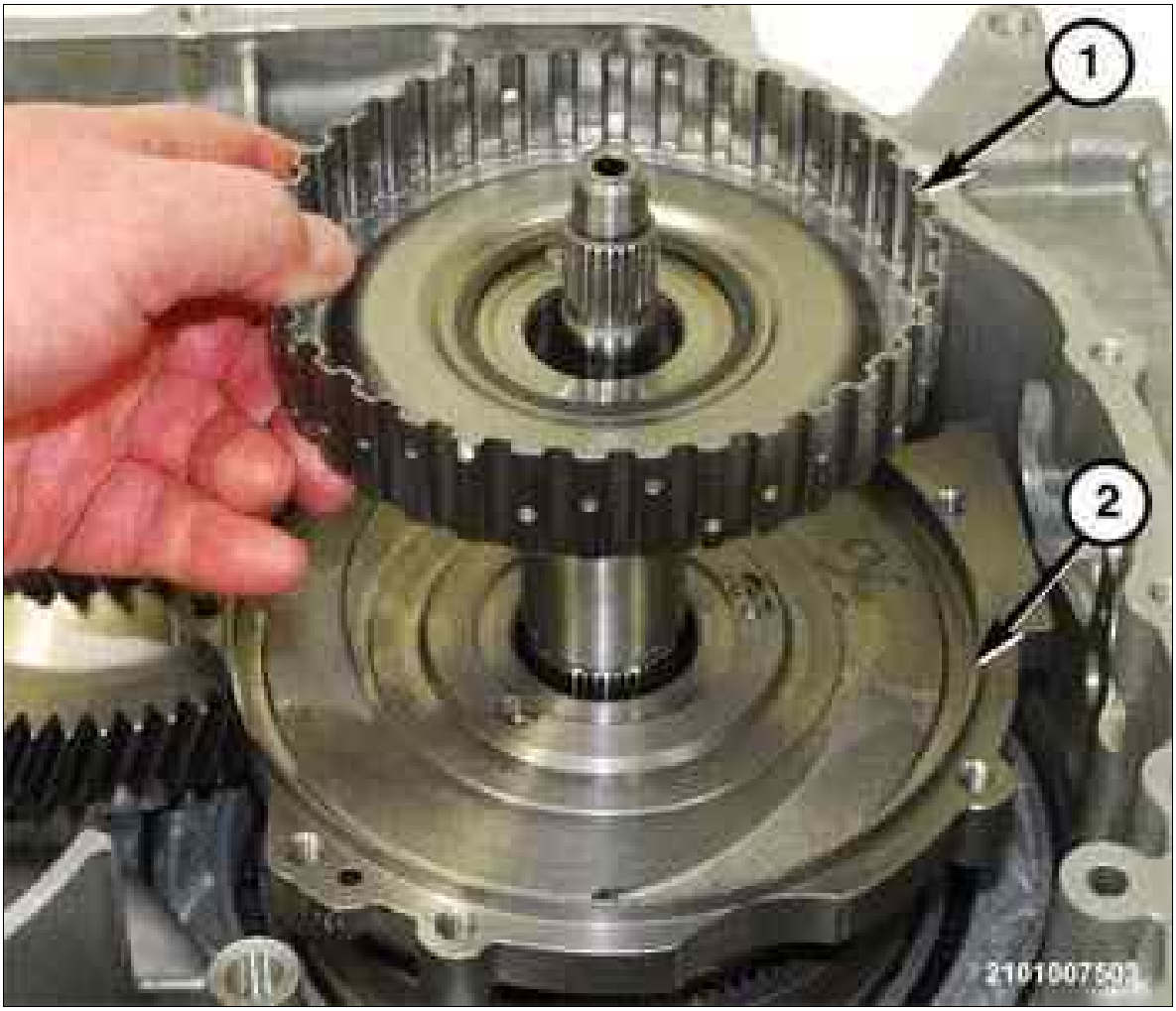
Fig 4: Output Gear Support, E-Clutch Hub & Shaft



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6. Separate the E-clutch hub (1) from the output gear support (2).

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Fig 5: Output Gear Support & Planetary Pinion Carrier

Courtesy of CHRYSLER GROUP, LLC

7. Separate the output gear support (1) from the gear 4 planetary pinion carrier (2).

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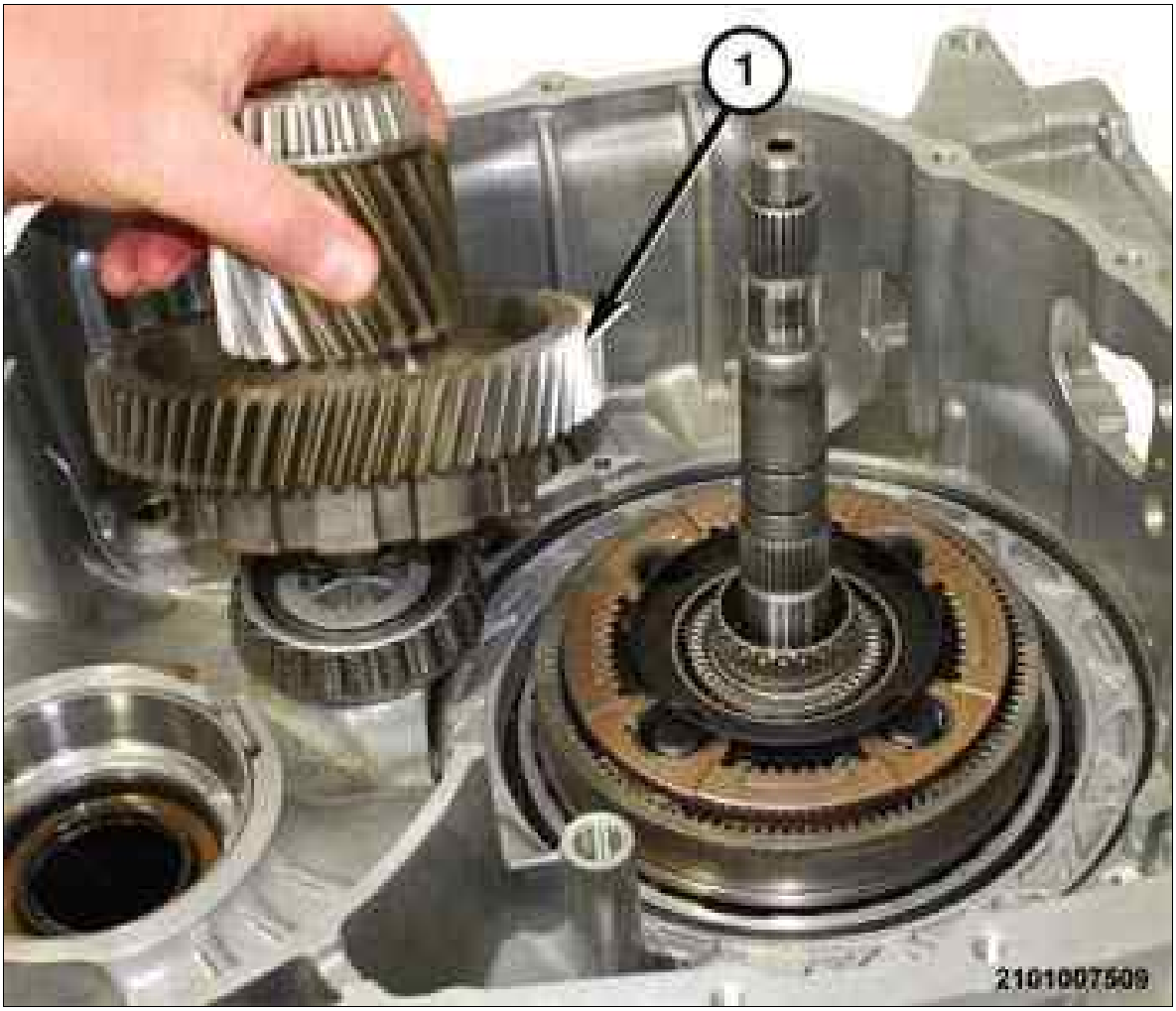
Fig 6: Removing/Installing Transfer Gear



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8. Remove the transfer gear (1) from the transmission housing.

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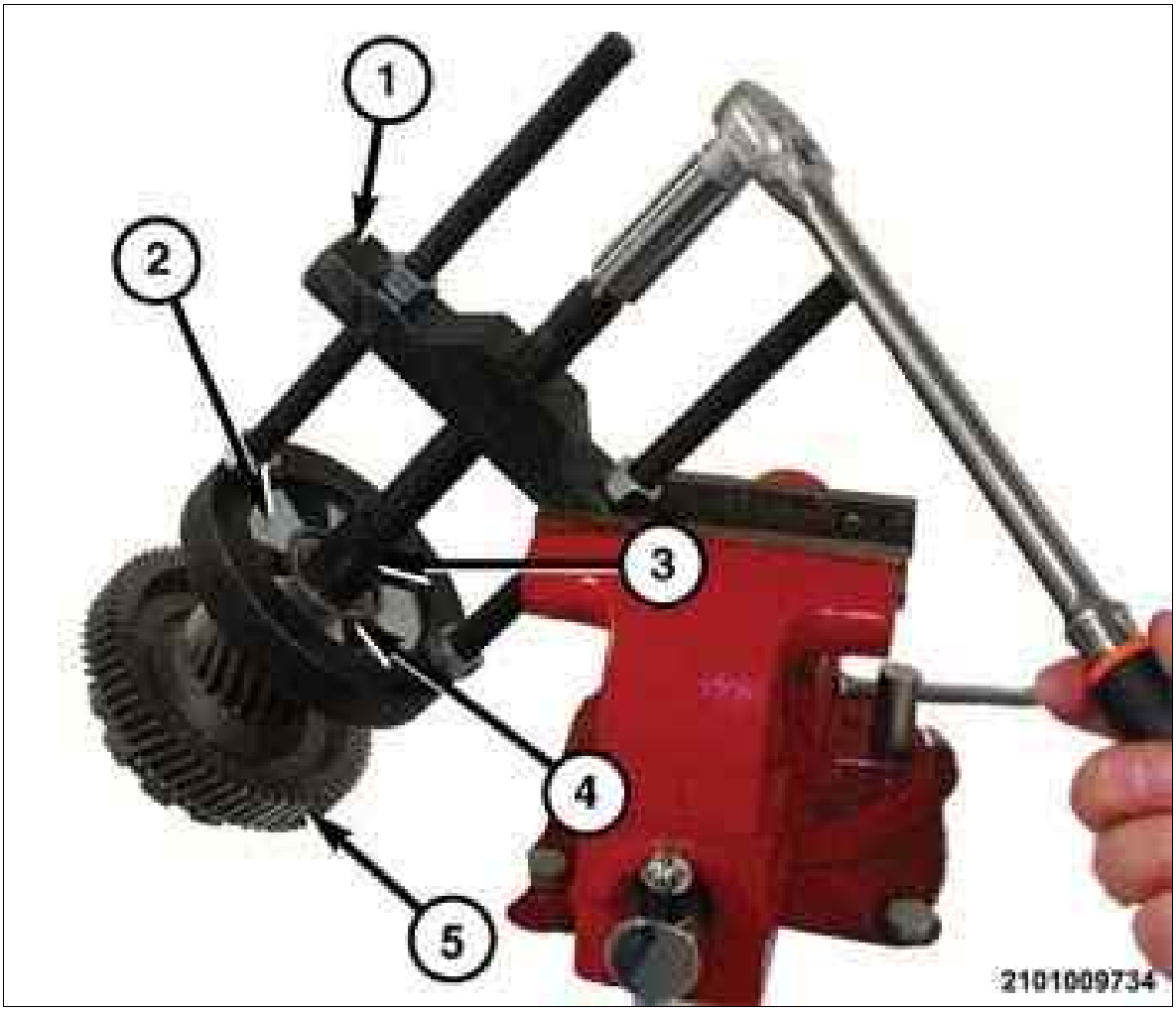
Fig 7: Removing Transfer Gear Outer Bearing



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9. Clamp tool (special tool #C-293-PA, Puller, Press) (1) in a suitable vise with the ram bolt head facing upward.
10. Using tool (special tool #C-293-40, Block Set, Puller) (2) with the transfer gear bearing inserted under the puller press and the blocks engaged evenly spaced around the bearing, insert tool (special tool #8513A, Insert, Crankshaft) (3) between the press ram and the transfer gear (5) and hand tighten the press (1) ram down to the insert.
11. While holding the transfer gear (5), use a suitable wrench to tighten the press (1) ram until the bearing (4) comes off the transfer gear.

BEARINGS, TRANSFER GEAR > REMOVAL AND INSTALLATION > TRANSFER GEAR OUTER BEARING > TRANSFER GEAR OUTER BEARING INSTALLATION

Clean the transfer gear with suitable solvent and blow it dry with 344 kPa (50psi) regulated shop air.

1. Place the transfer gear on a stable, clean work surface.

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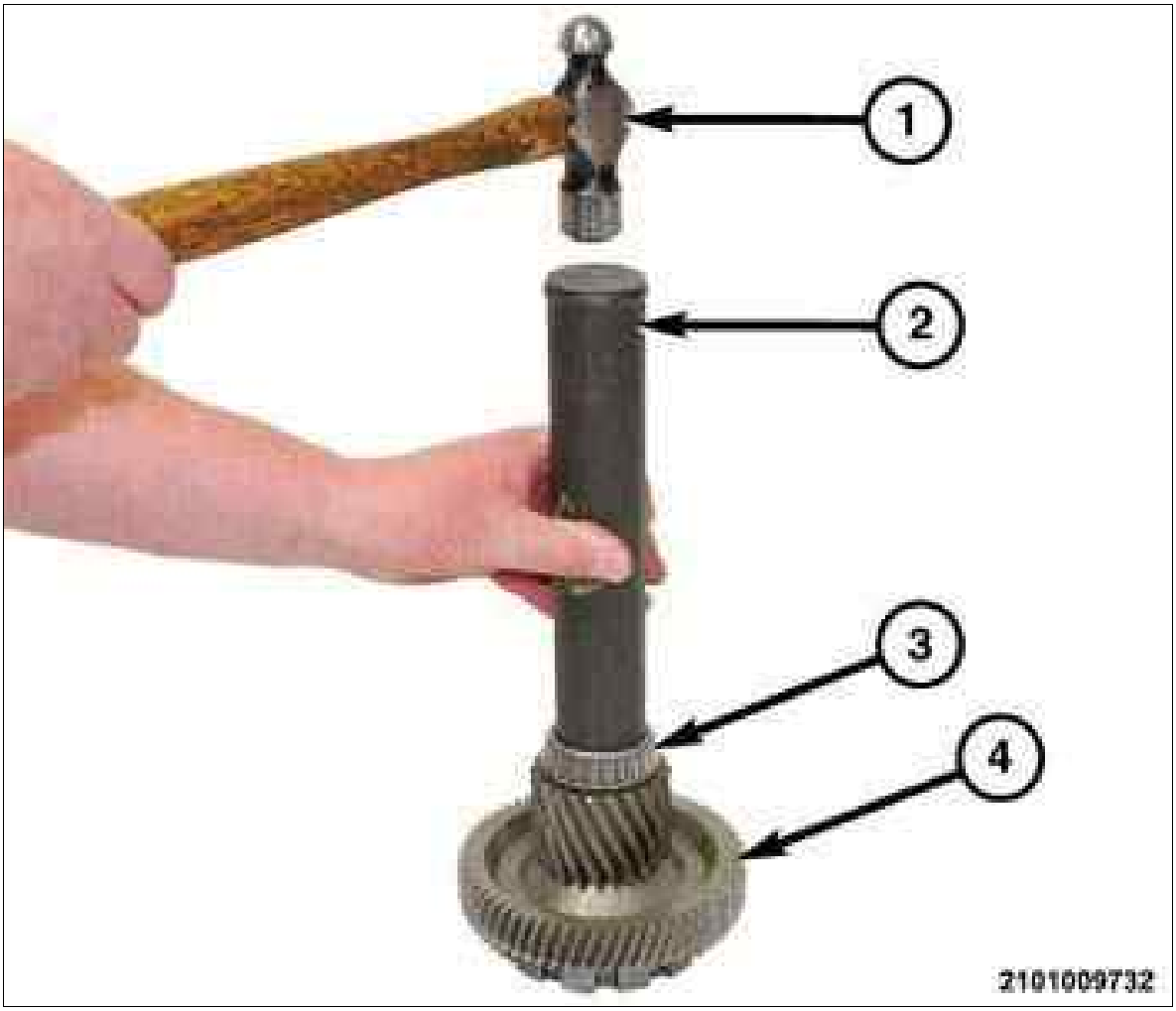
Fig 1: Installing Transfer Gear Bearing Onto Transfer Gear



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2. Place the **NEW** transfer gear bearing (3) on the transfer gear (4).
3. Using a suitable hammer (1) and tool (special tool #6052, Installer, Bearing/Seal) (2), drive the transfer gear bearing (3) onto the transfer gear (4).

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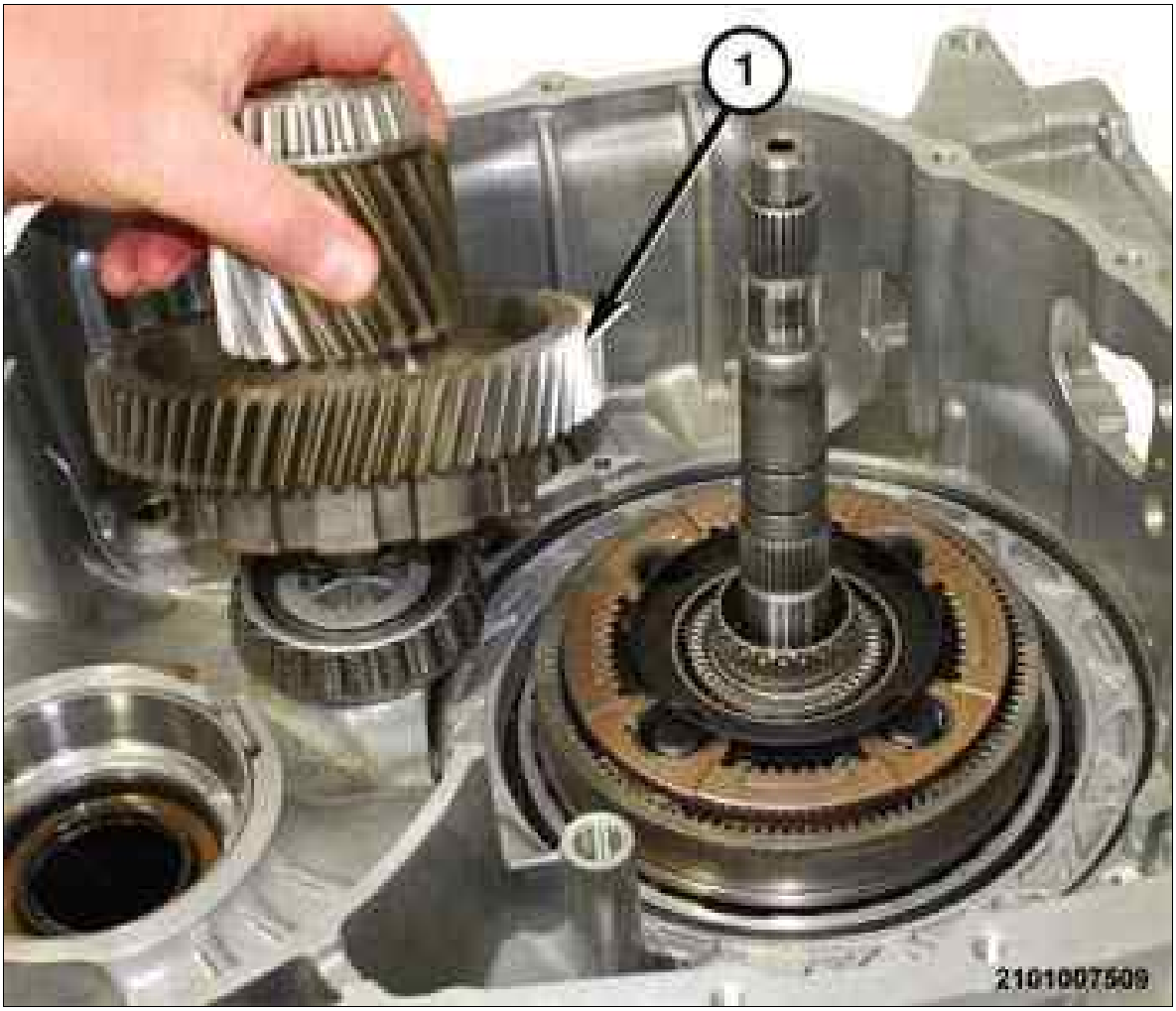
Fig 2: Removing/Installing Transfer Gear



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4. Install the transfer gear (1) into the transmission housing.

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Fig 3: Output Gear Support & Planetary Pinion Carrier

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5. Install the output gear support (1) into the gear 4 planetary pinion carrier (2).

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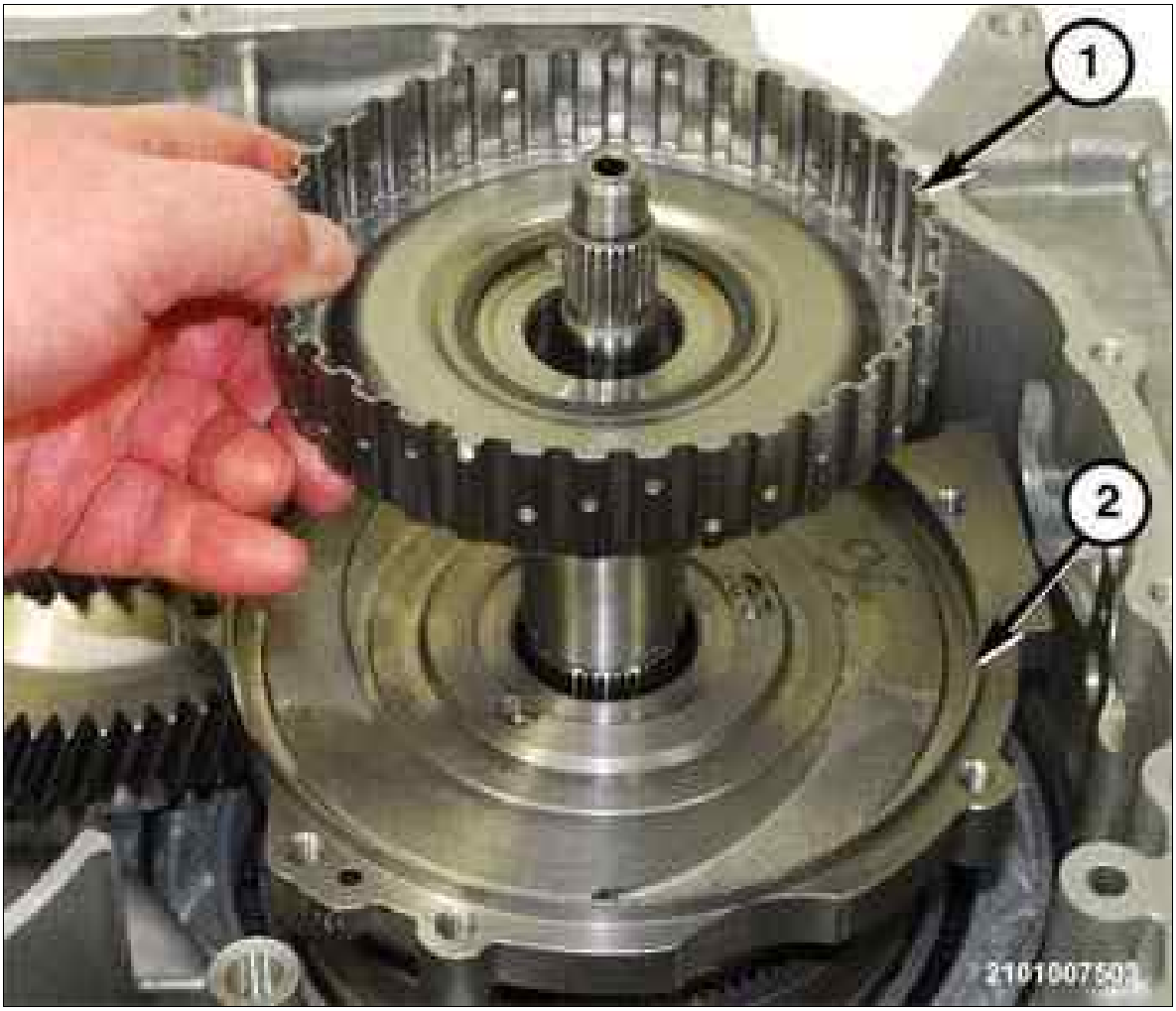
Fig 4: Output Gear Support, E-Clutch Hub & Shaft



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6. Install the E-clutch hub and shaft (1) in the output gear support (2).

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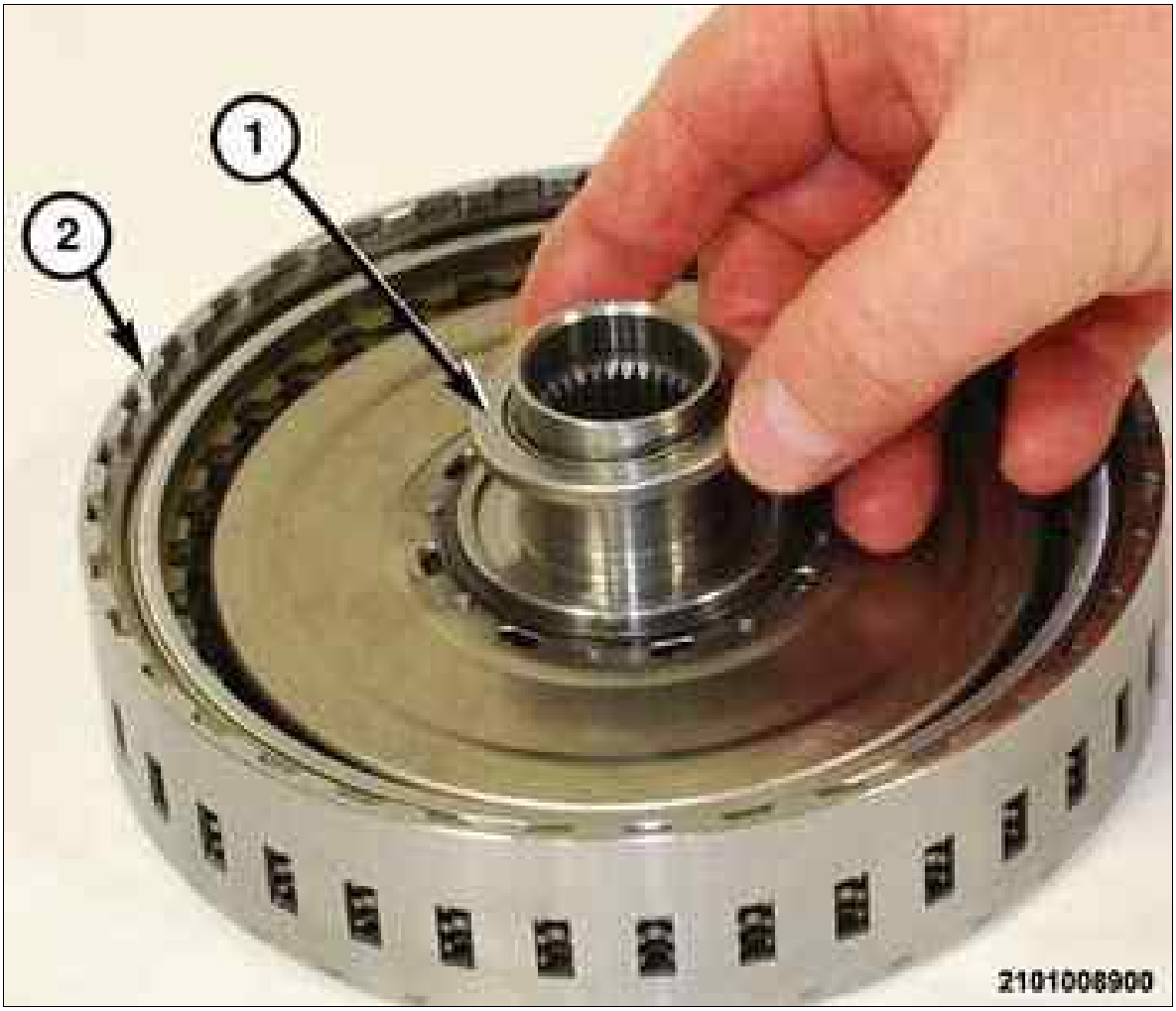
Fig 5: Removing/Installing Thrust Bearing At E-Clutch Hub



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7. Install the thrust bearing (1) on the E-clutch (2) hub.

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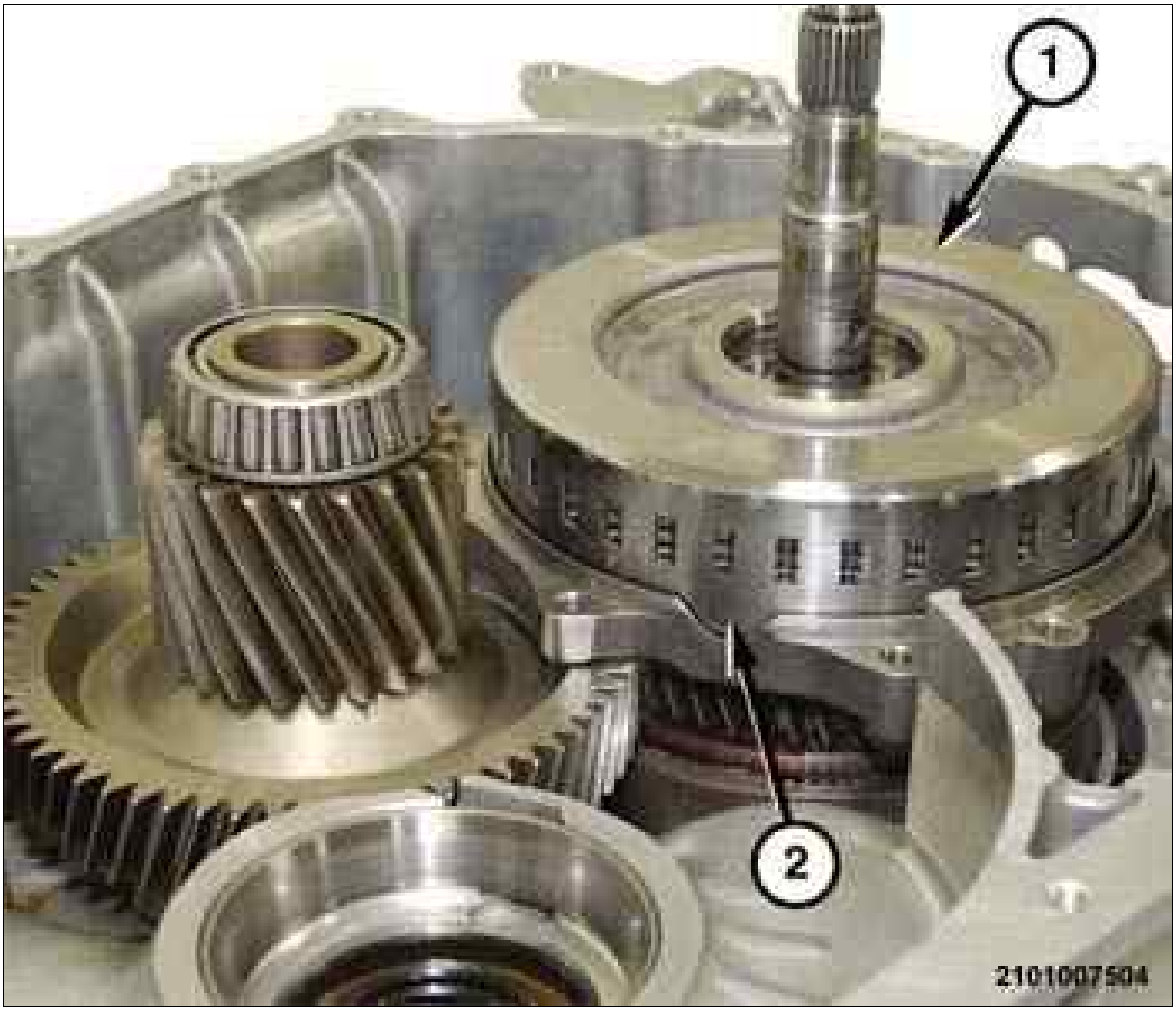
Fig 6: E-Clutch Hub And Shaft



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> *NOTE:*
>
> *Before installing the E-clutch, use a suitable screwdriver to align the grooves in the friction discs.*

8. Wriggle the E-clutch (1) until all of the friction discs are fully engaged on the E-clutch hub and shaft.

> *NOTE:*
>
> *When the E-clutch (1) is fully seated the gap (2) will be very small between the E-clutch retainer and the output gear support.*

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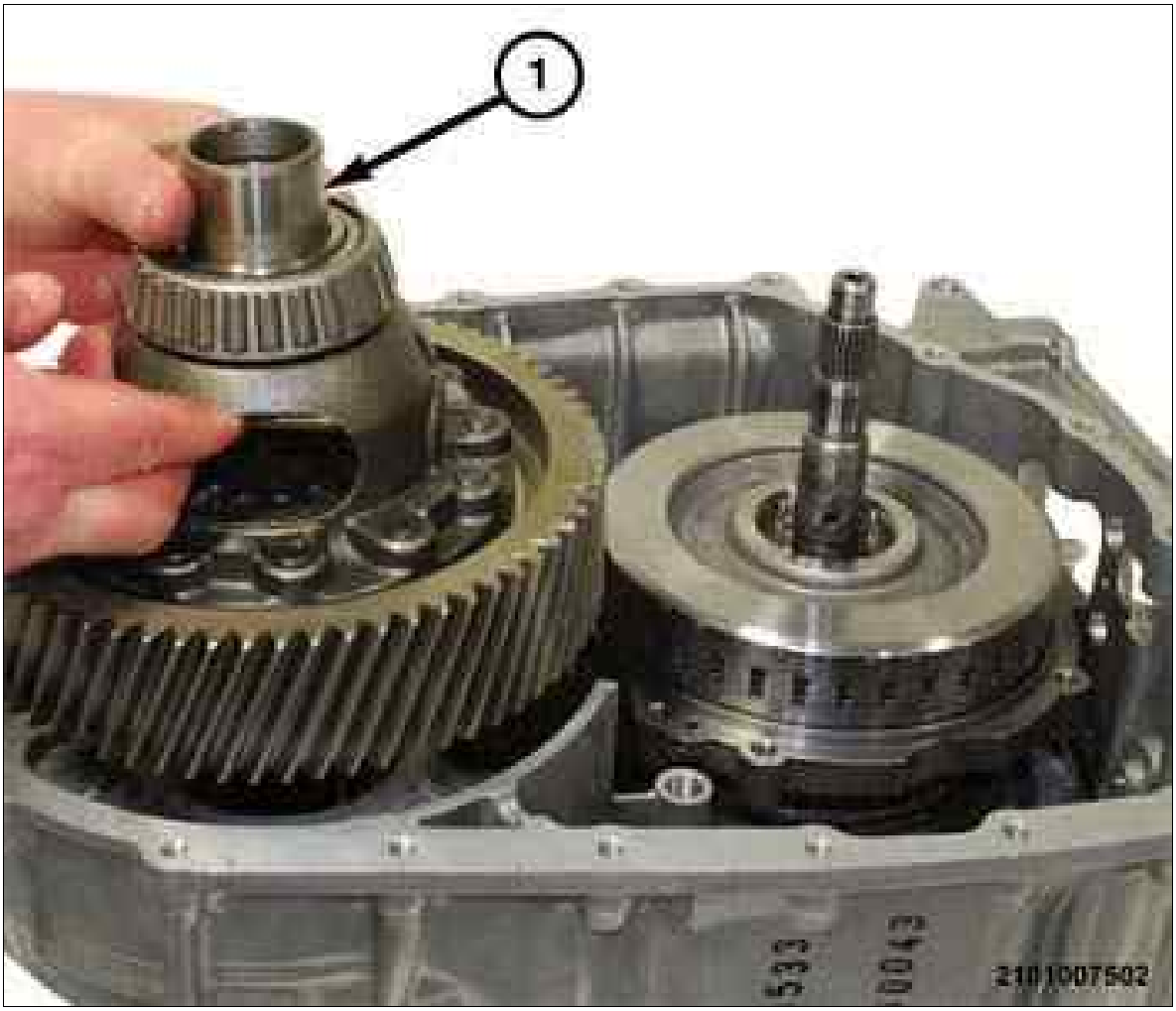
Fig 7: Differential Assembly



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> *NOTE:*
>
> *If a new differential (1) or transmission housing are being used, measurements must be preformed to determine correct thickness for the bearing preload shims. If the bearings and races are replaced the factory installed preload shims do not require replacement. Refer to STANDARD PROCEDURES .*

9. If necessary, replace the bearings and races on the differential (1).
10. Install the differential assembly (1) into the transmission housing.
11. Install the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .
12. Install the transmission in the vehicle. Refer to REMOVAL AND INSTALLATION .

BEARINGS, TRANSFER GEAR > REMOVAL AND INSTALLATION > TRANSFER GEAR

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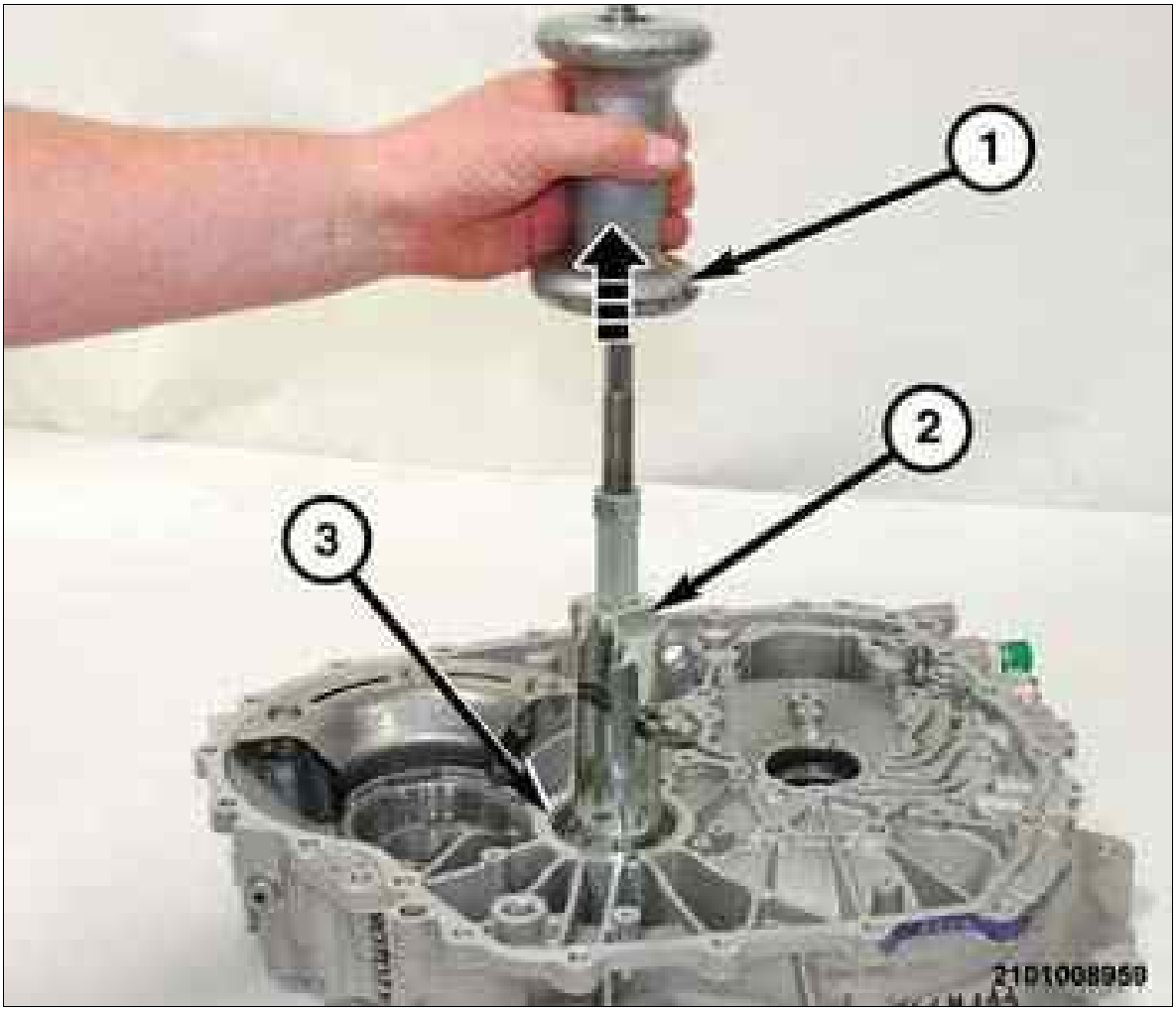
OUTER BEARING RACE > TRANSFER GEAR OUTER BEARING RACE REMOVAL

1. Remove the transmission. Refer to REMOVAL AND INSTALLATION .
2. Remove the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .
3. Position the bellhousing on a stable, clean work surface.

   Fig 1: Removing Transfer Gear Outer Bearing Race From Bellhousing



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4. Using tool (special tool #C-637, Slide Hammer, Universal) (1) and (special tool #9664, Remover, Bearing Cup) (2) with the tool fingers inserted in the channels behind the transfer gear outer bearing race (3), remove the transfer gear outer bearing race (3) from the bellhousing bore.

BEARINGS, TRANSFER GEAR > REMOVAL AND INSTALLATION > TRANSFER GEAR OUTER BEARING RACE > TRANSFER GEAR OUTER BEARING RACE INSTALLATION

Clean the bearing bore with a lint free cloth and inspect for damage to the bellhousing casting. If the bellhousing is damaged the transmission will require replacement.

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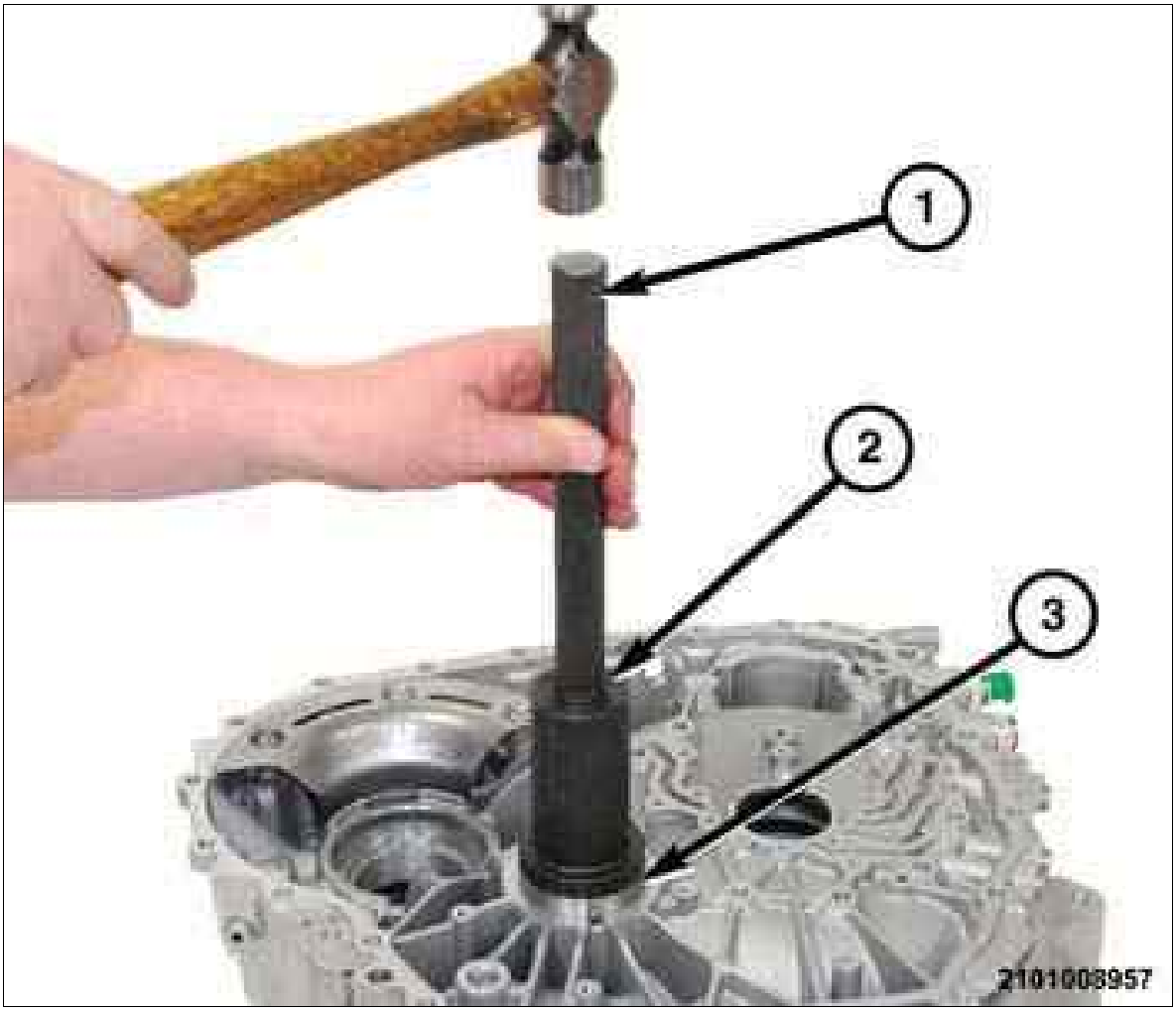
1. Place the **NEW** transfer gear outer bearing race in position in the bellhousing bore.

   Fig 1: Installing Transfer Gear Outer Bearing Race Into Bellhousing



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2. Using and suitable hammer and tool (special tool #10036, Installer, Bearing Cup) (1) with (special tool #C-4171, Driver Handle, Universal) (2), drive the transfer gear outer bearing race (3) into the bellhousing bore until it seats down to the bottom stop.

3. Install the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .

4. Install the transmission in the vehicle. Refer to REMOVAL AND INSTALLATION .

BELLHOUSING > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > BELLHOUSING REMOVAL

Before disassembling the transmission, remove any oily grime and loose dirt. Place the transmission on a clean work surface with ample fluid drainage or absorbency.

1. Place the transmission on a suitable, clean work surface.

2. Remove the torque converter.

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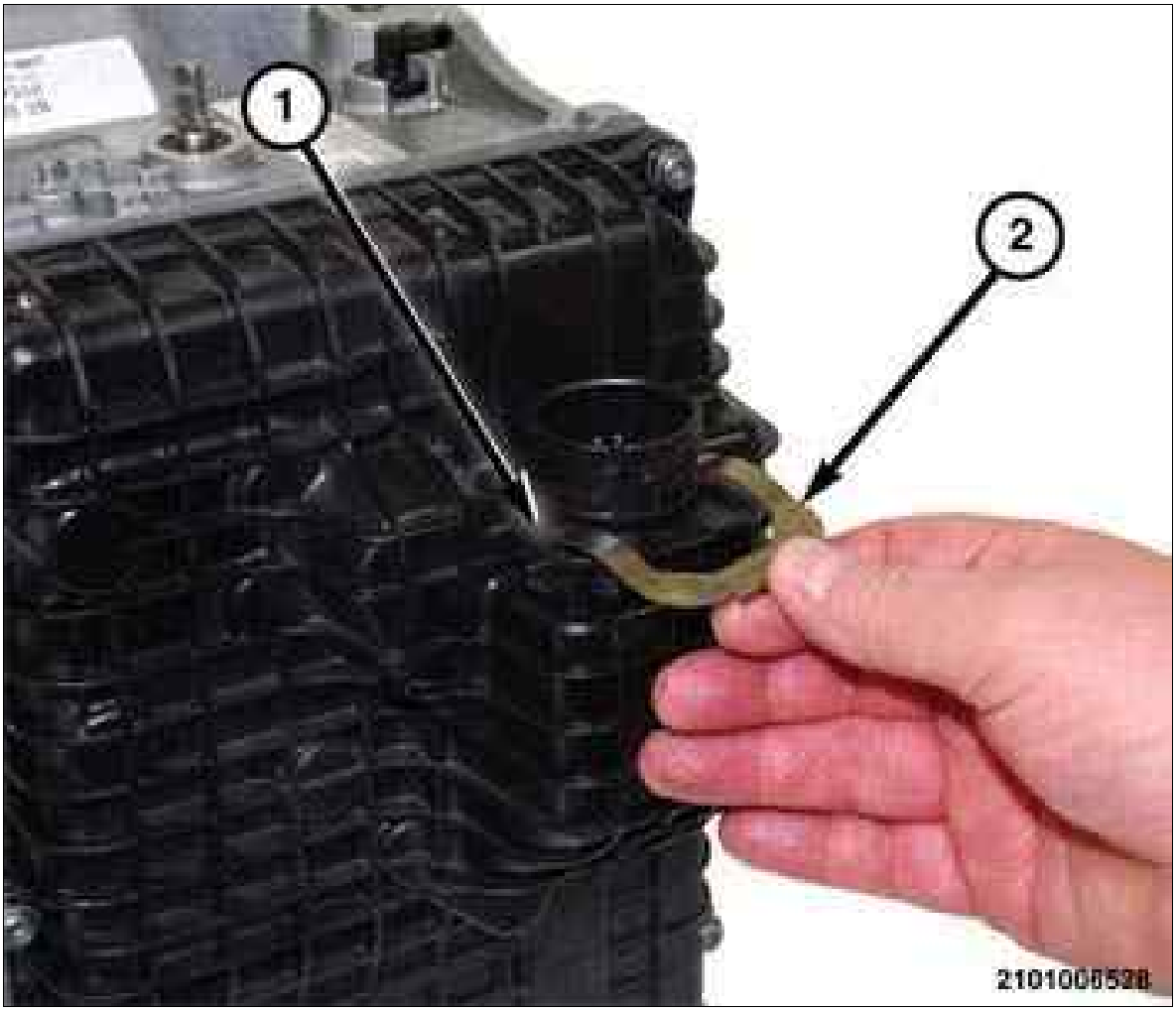
3. Measure the input shaft end-play. Refer to STANDARD PROCEDURES .

Fig 1: Transmission Solenoid Connector & Clip



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4. Remove the clip (2) holding the transmission solenoid connector (1) in the valve body cover pan.

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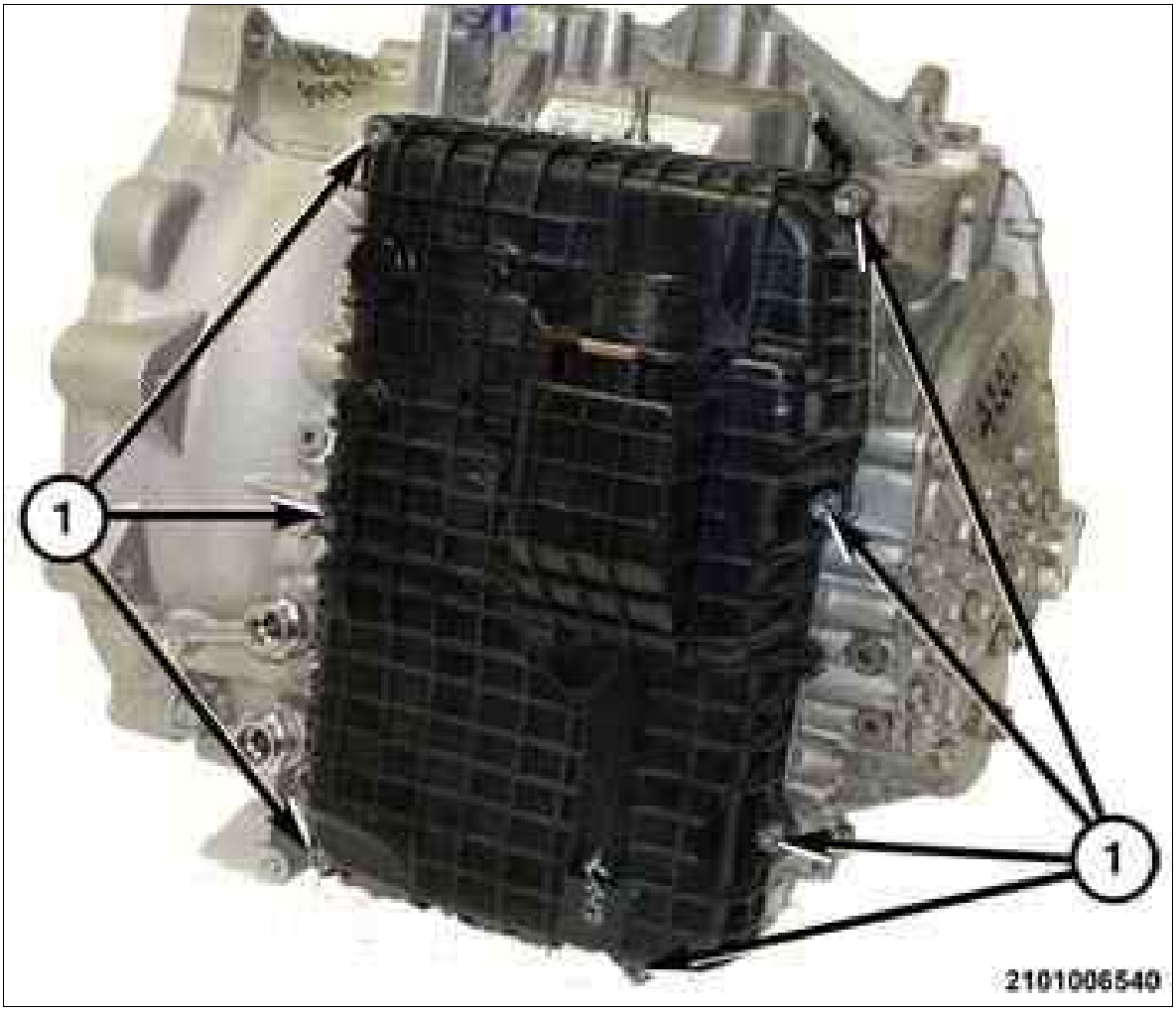
Fig 2: Valve Body Cover Pan Bolts



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5. Remove the valve body cover pan bolts (1) and the valve body cover pan.

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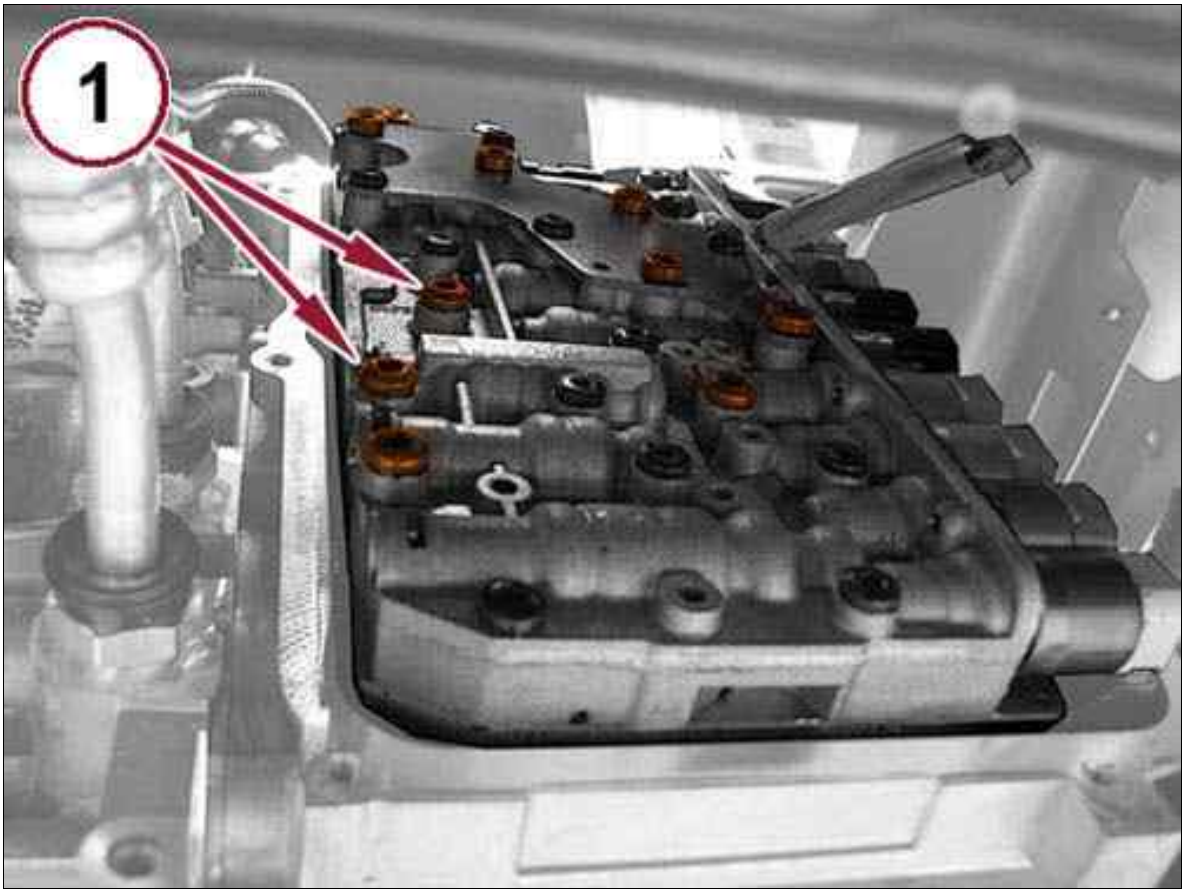
Fig 3: Valve Body & Bolts



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6. Remove the ten bolts (1) holding the valve body to the transmission housing.
7. Using a suitable prying tool, pry the valve body away from the adapter tubes.

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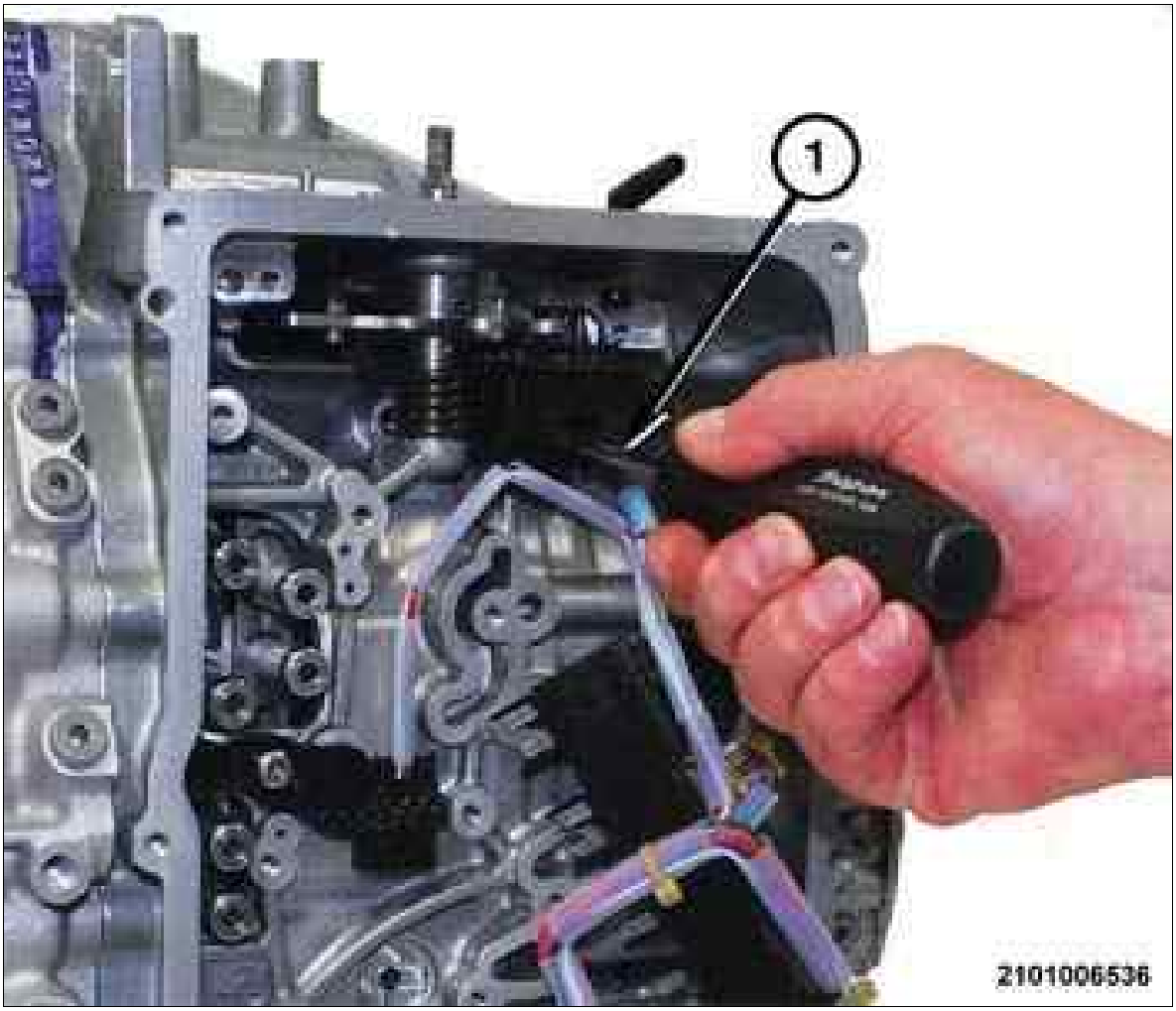
Fig 4: Removing/Installing Transmission Range Sensor (TRS) Screw



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8. Remove the Transmission Range Sensor (TRS) screw (1).

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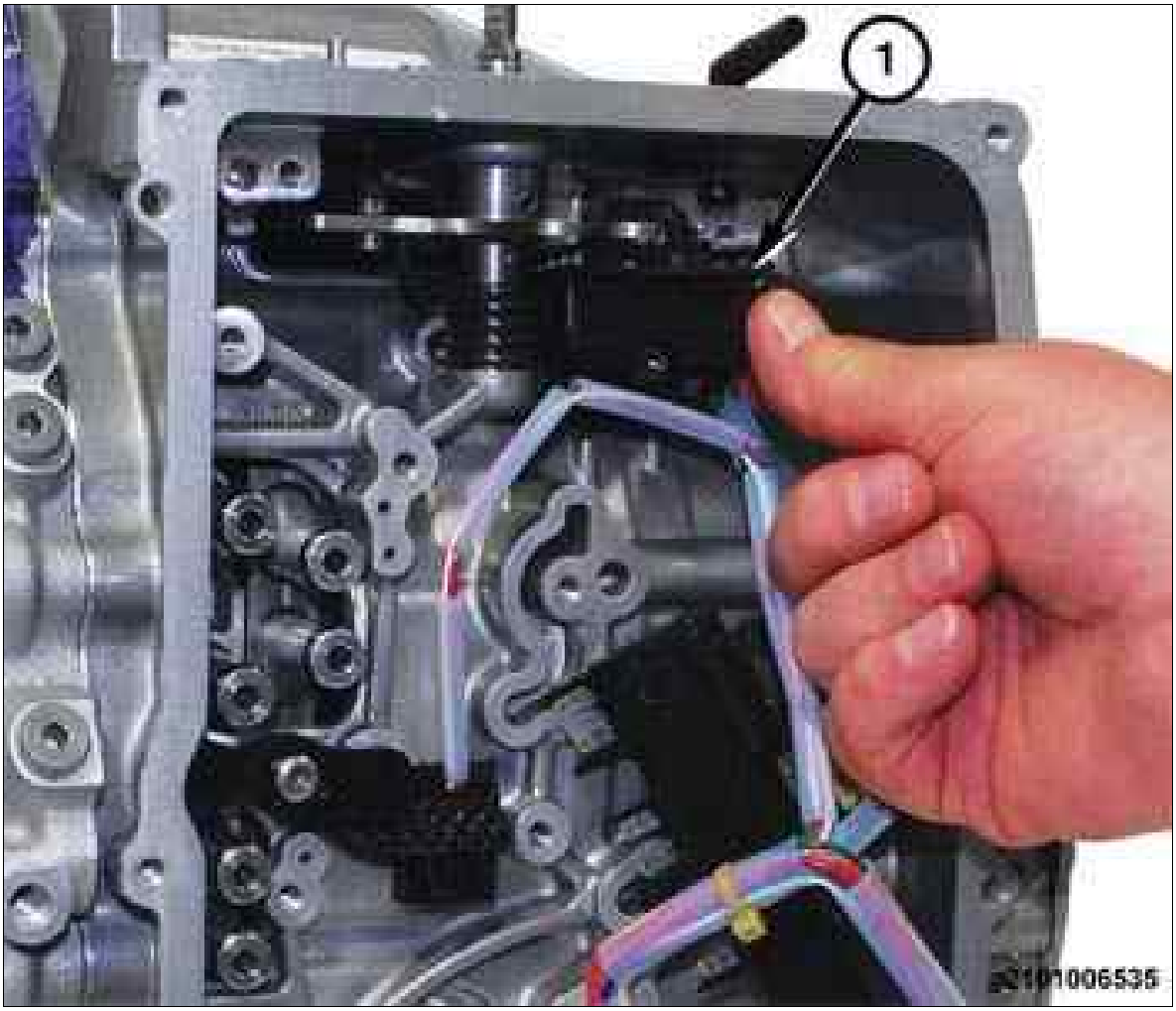
Fig 5: Removing/Installing Transmission Range Sensor



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9. Separate the TRS (1) from the transmission with the wire harness connected.

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Fig 6: Removing/Installing Speed Sensor Screw

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10. Remove the speed sensor screw (1).

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Fig 7: Removing/Installing Speed Sensor

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11. Separate the speed sensor (1) from the transmission with the wire harness connected.
12. Separate the valve body from the transmission.

> *NOTE:*
>
> *If the valve body is to be reused without disassembling it, store the valve body in a clean area until it is installed.*

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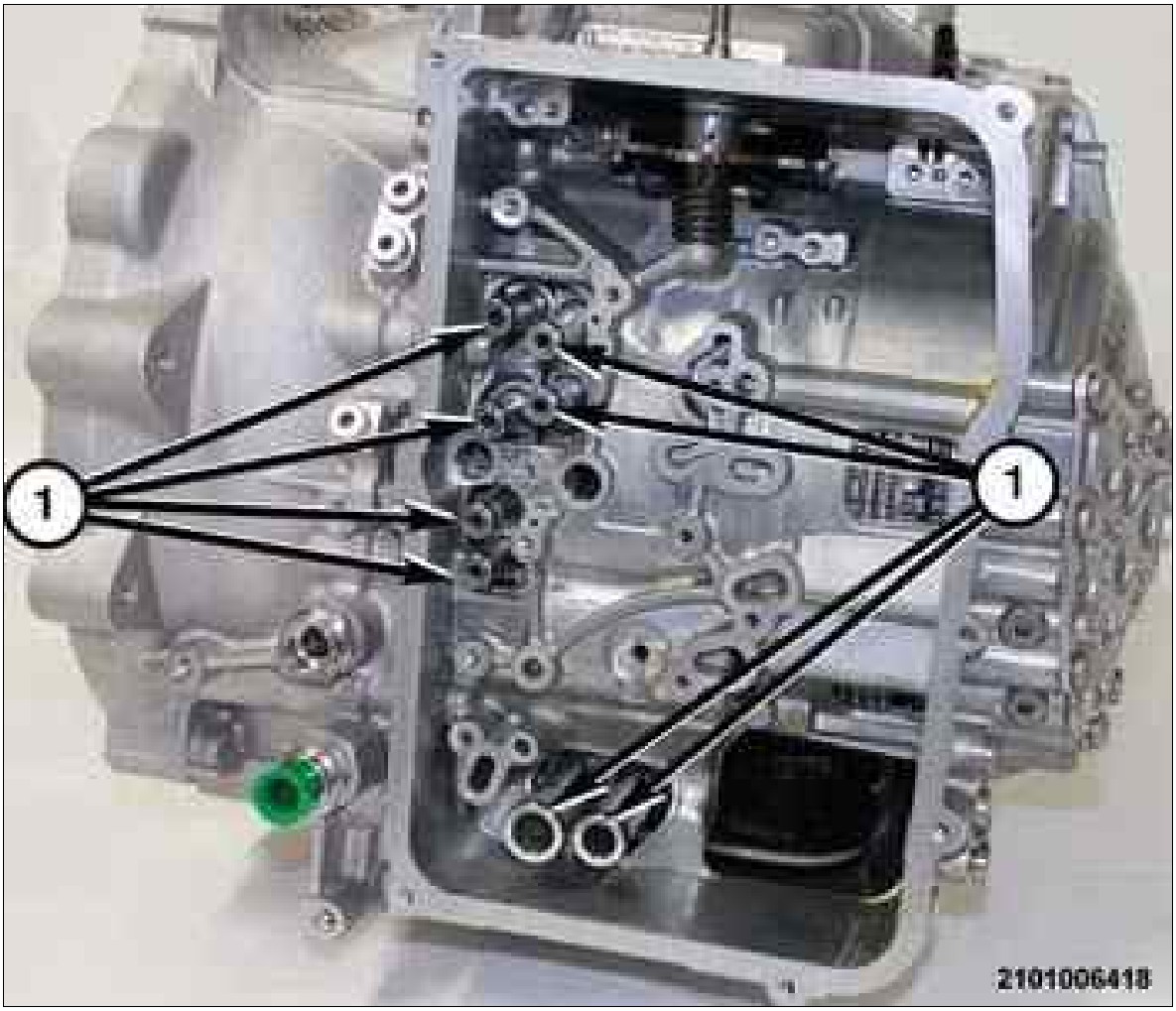
Fig 8: Fluid Adapter Tubes & O-Ring Seals



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13. Using suitable pliers, remove the fluid adapter tubes (1) from the transmission.

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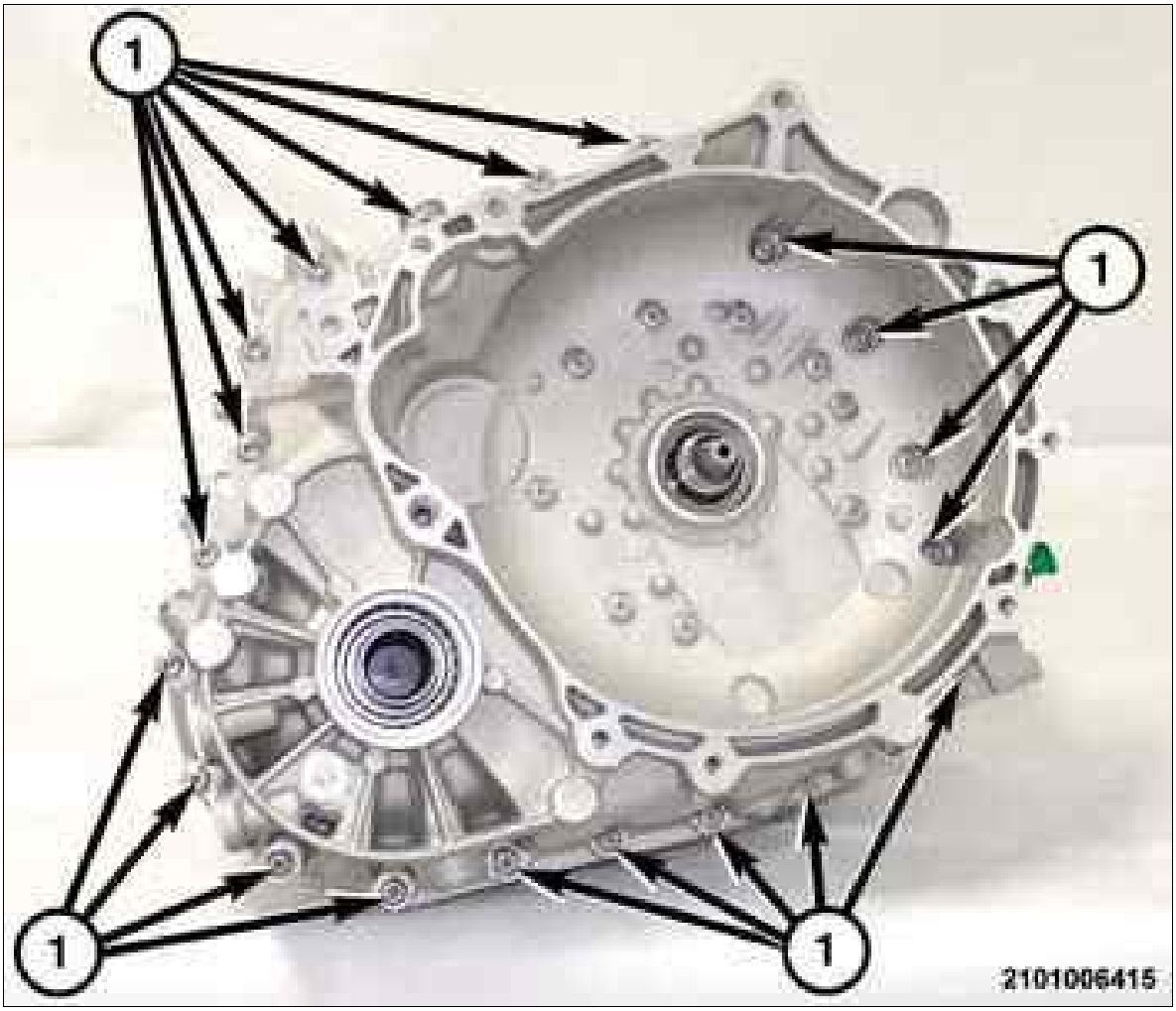
Fig 9: Bellhousing To Transmission Housing Bolts



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14. From around the perimeter of the transmission, remove the bellhousing bolts (1) holding the bellhousing to the transmission housing.

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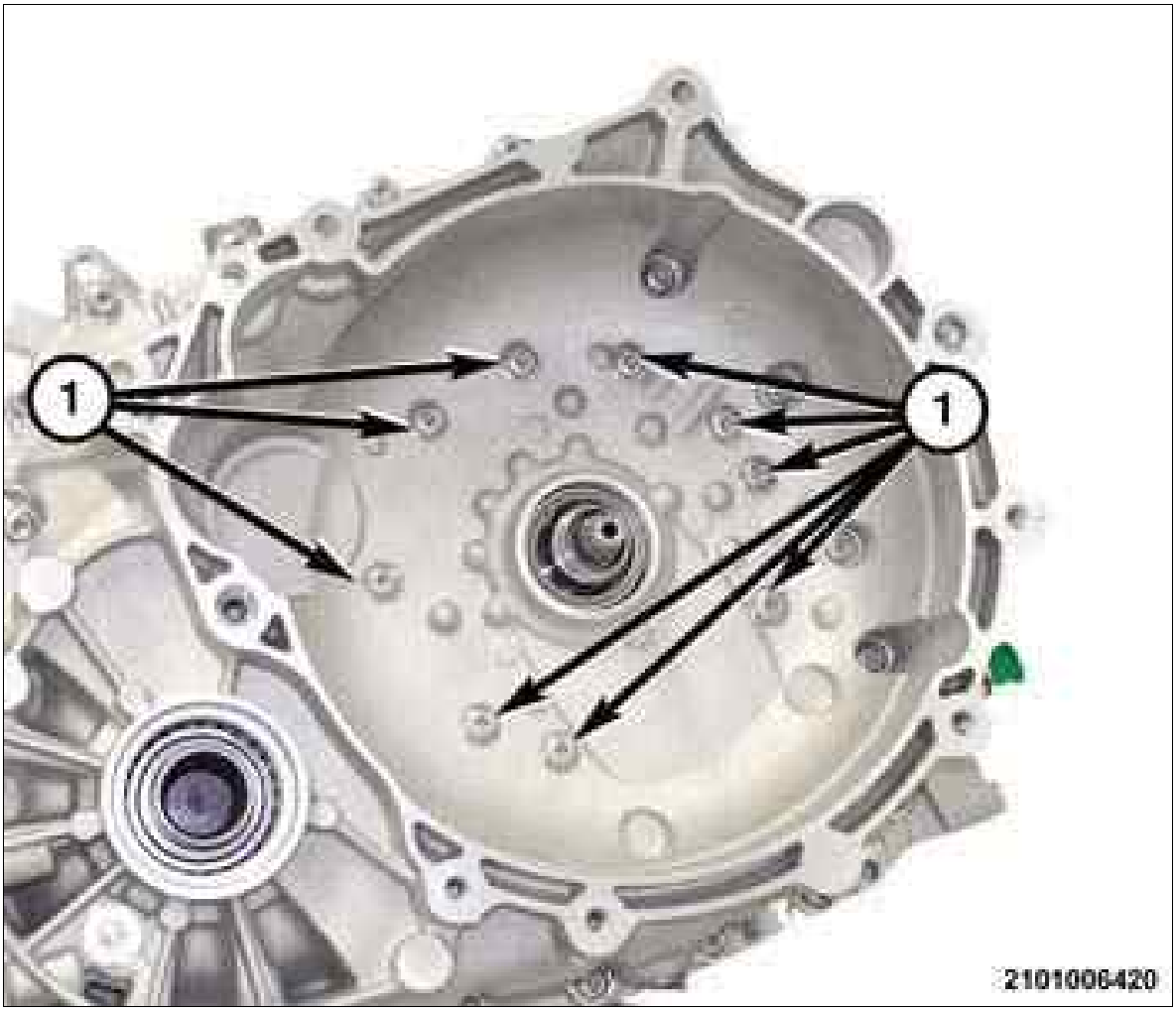
Fig 10: Bellhousing To Output Gear Support Bolts



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15. Remove the bellhousing bolts (1) holding the bellhousing to the output gear support.
16. Using wooden blocks to stabilize the transmission on the work surface, position the transmission on the bench with the bellhousing facing upward.
17. Using a suitable pry-bar in the pry point locations, pry upward to dislodge the bellhousing from the transmission housing.

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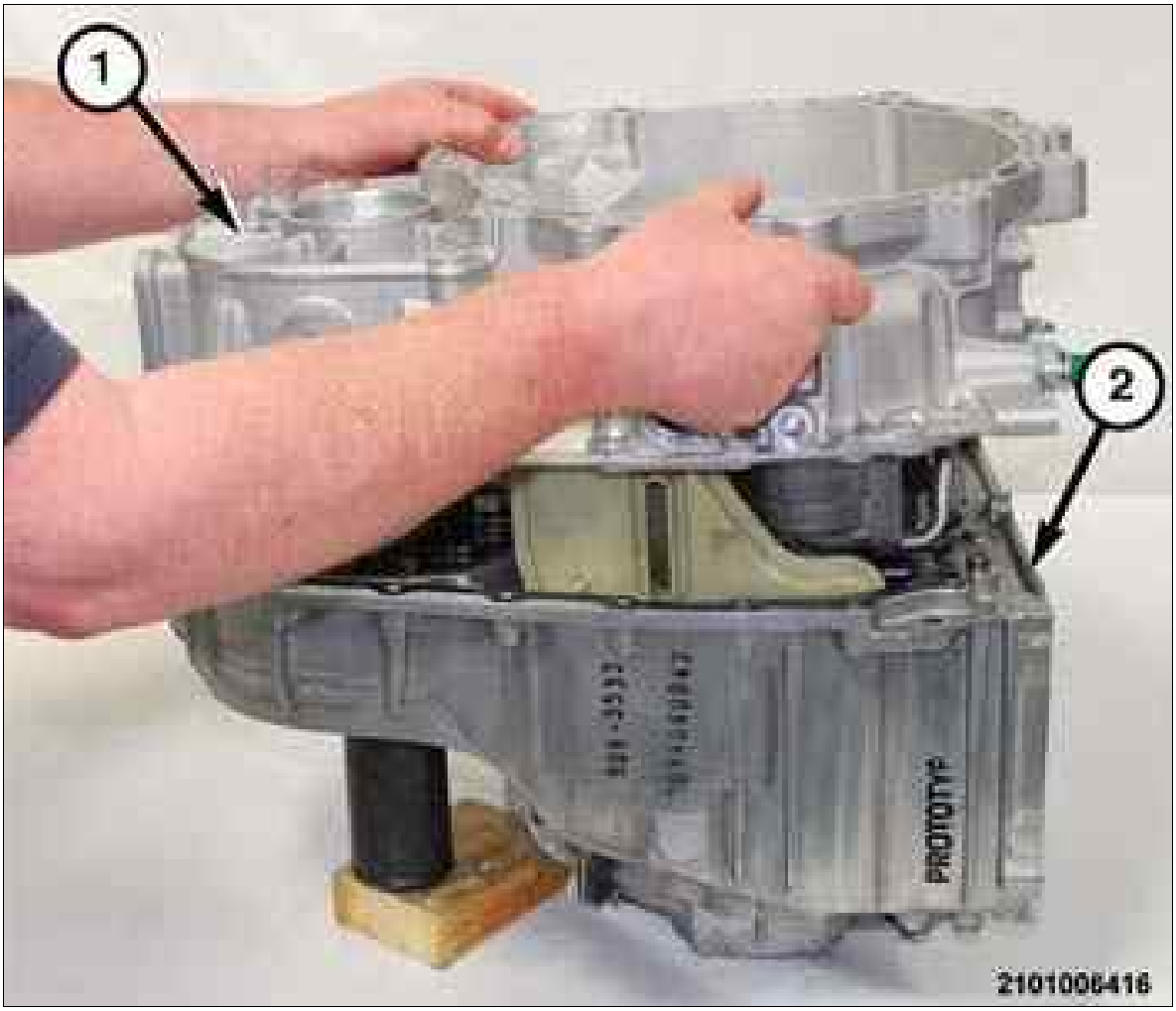
Fig 11: Removing/Installing Bellhousing At Transmission Housing



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18. Lift the bellhousing (1) upward and separate the assembly from the transmission housing (2).

BELLHOUSING > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > BELLHOUSING INSTALLATION

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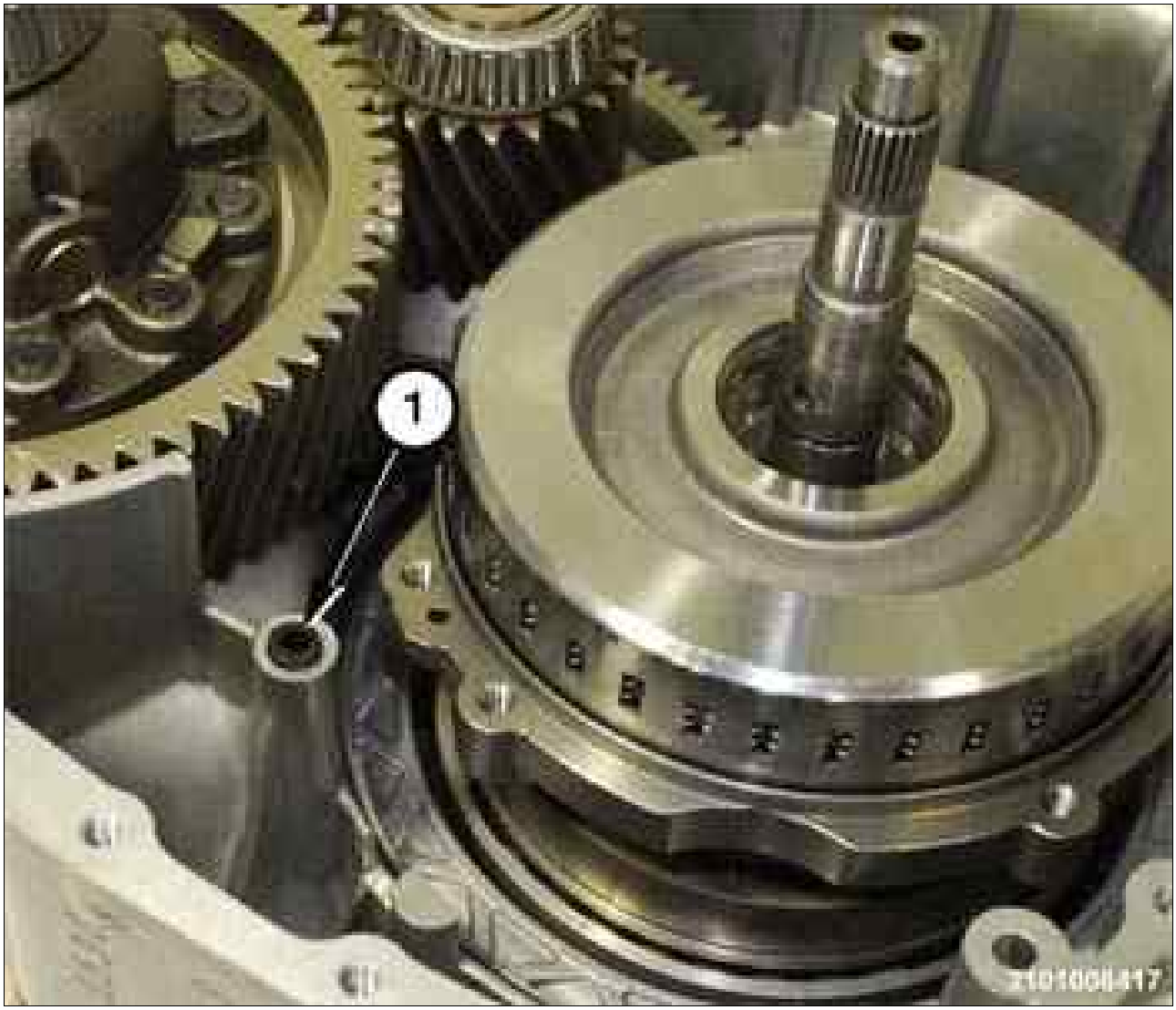
Fig 1: Port Seal



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1. Install a **NEW** seal (1) in the port in the transmission housing.

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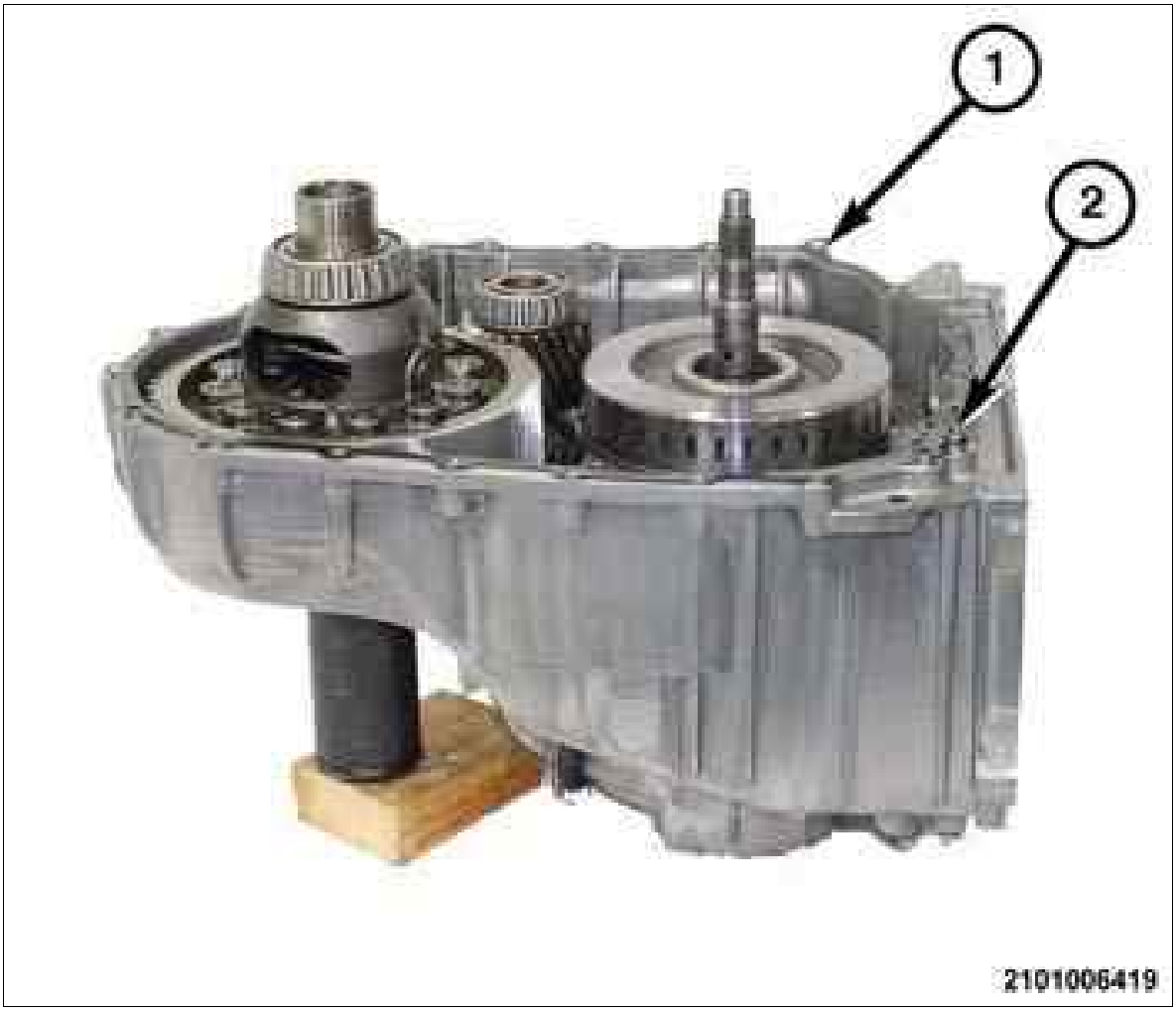
Fig 2: Gasket & Transmission Housing



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2. Install a **NEW** gasket (1) on the sealing surface of the transmission housing (2).
3. If necessary, replace the output seal and the impeller hub seal.

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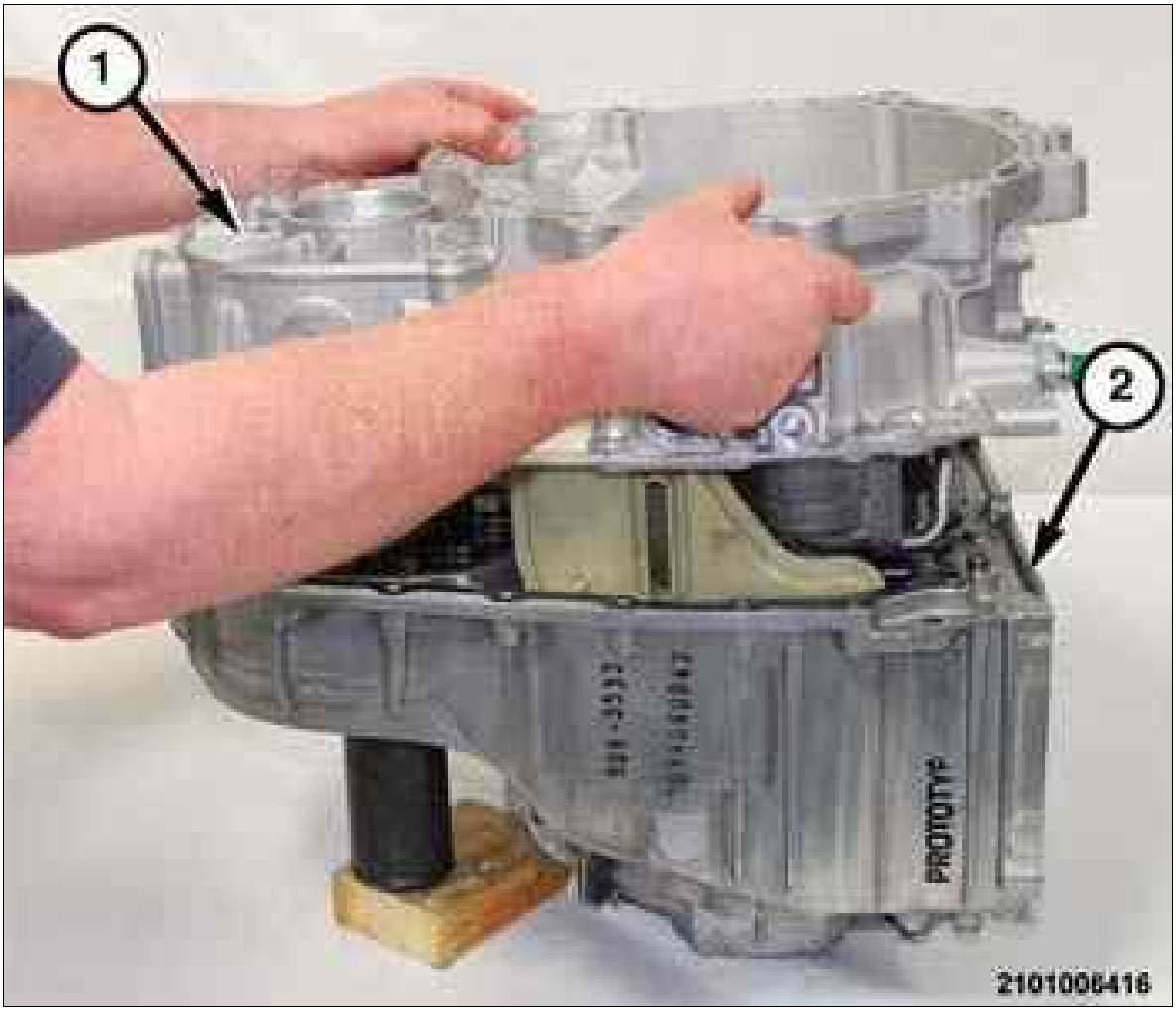
Fig 3: Removing/Installing Bellhousing At Transmission Housing



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4. Guide the bellhousing (1) downward over the input and output shafts and onto the transmission housing (2).

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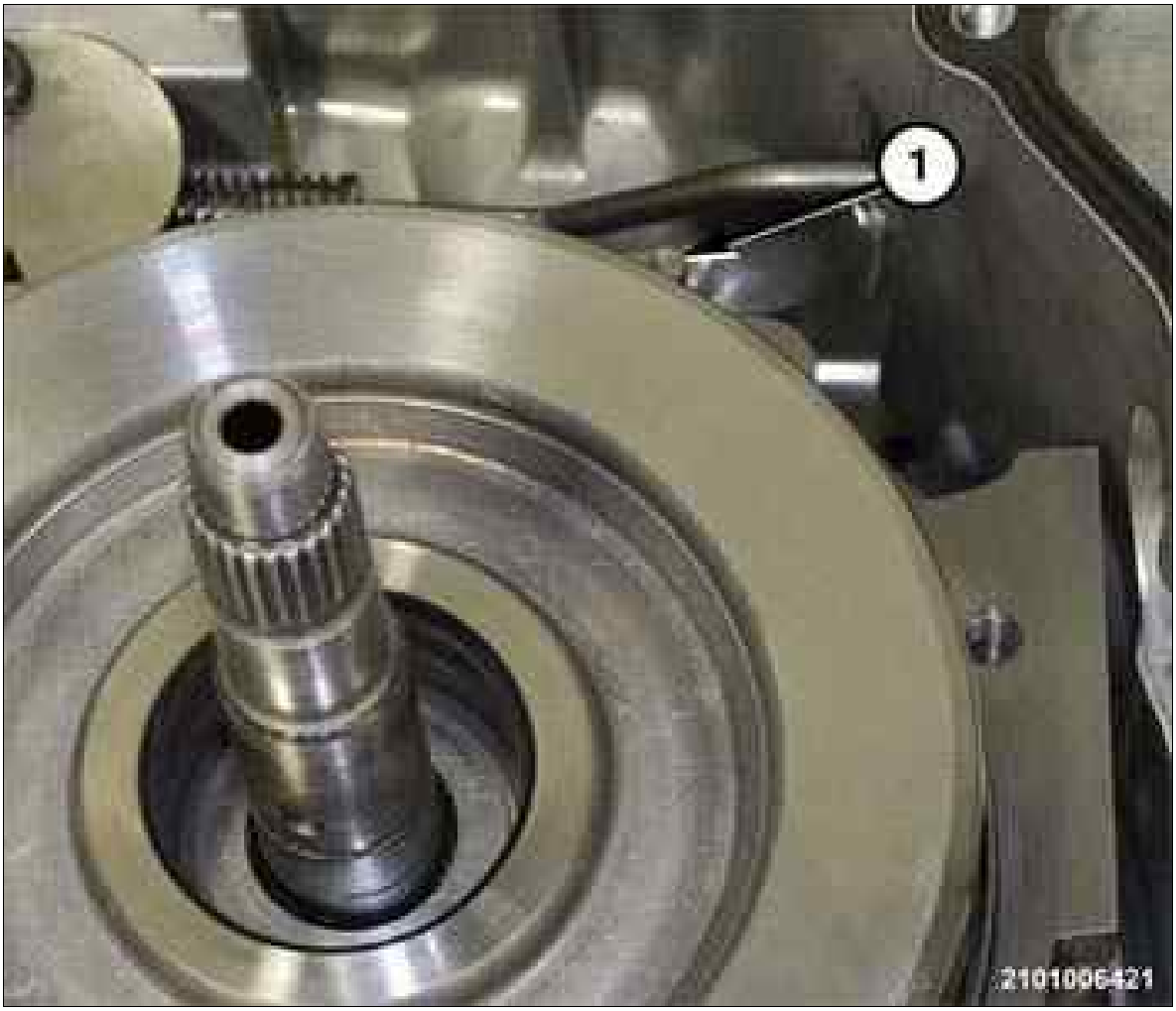
Fig 4: Checking Guide Pin Alignment



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5. Rotate the output gear clockwise to assure guide pin (1) alignment.

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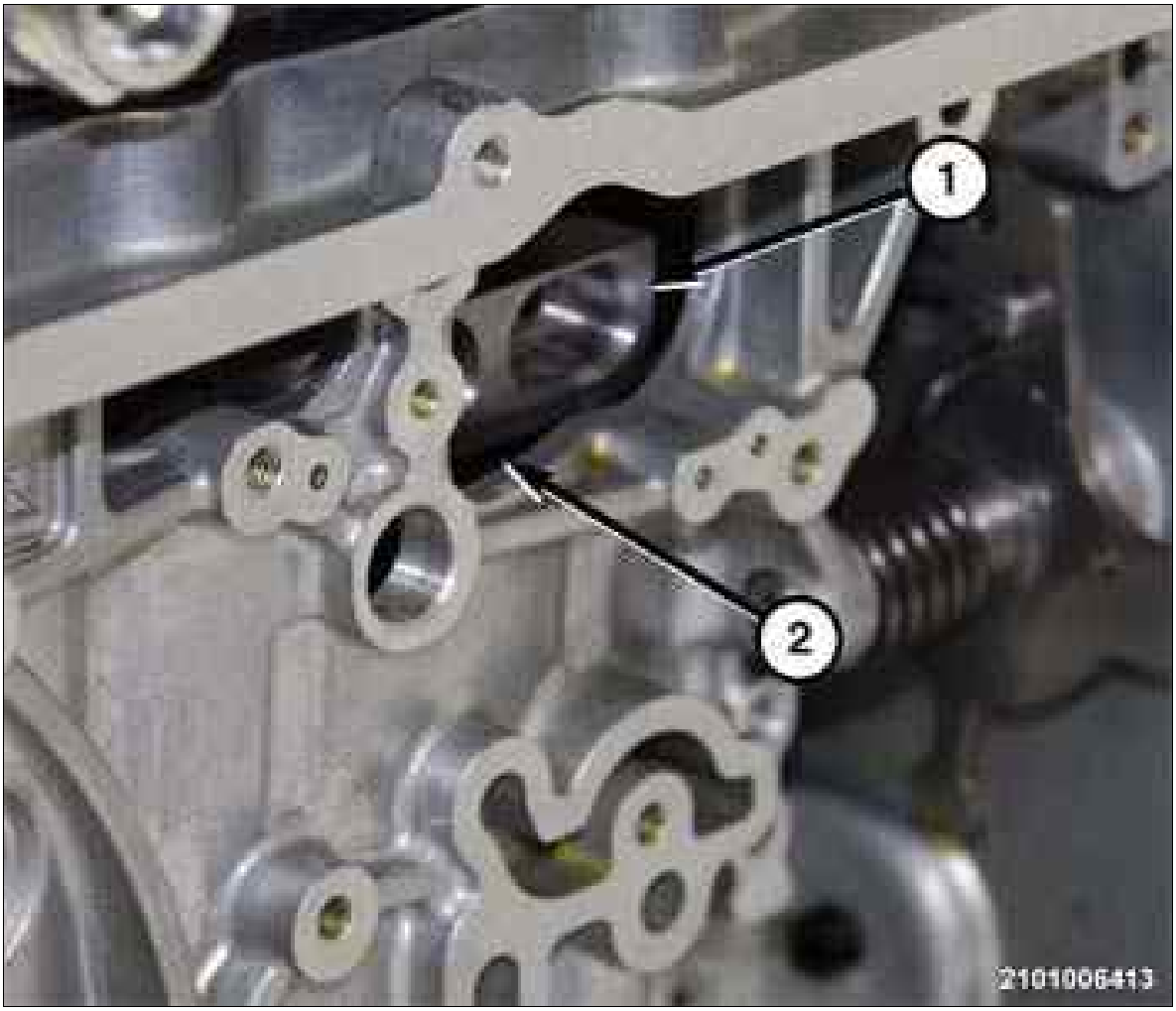
Fig 5: Output Gear Support & Window



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6. Rotate the output gear support (1) through the window (2) behind the valve body until the guide pin engages the receptacle hole in the bellhousing.
7. Engage the guide pins in the transmission housing into the receptacle holes in the bellhousing to assure proper alignment.
8. Install several bolts to hold the bell housing to the transmission housing. Tighten the bolts hand tight.
9. Position the transmission on the bench with the bellhousing facing outward.

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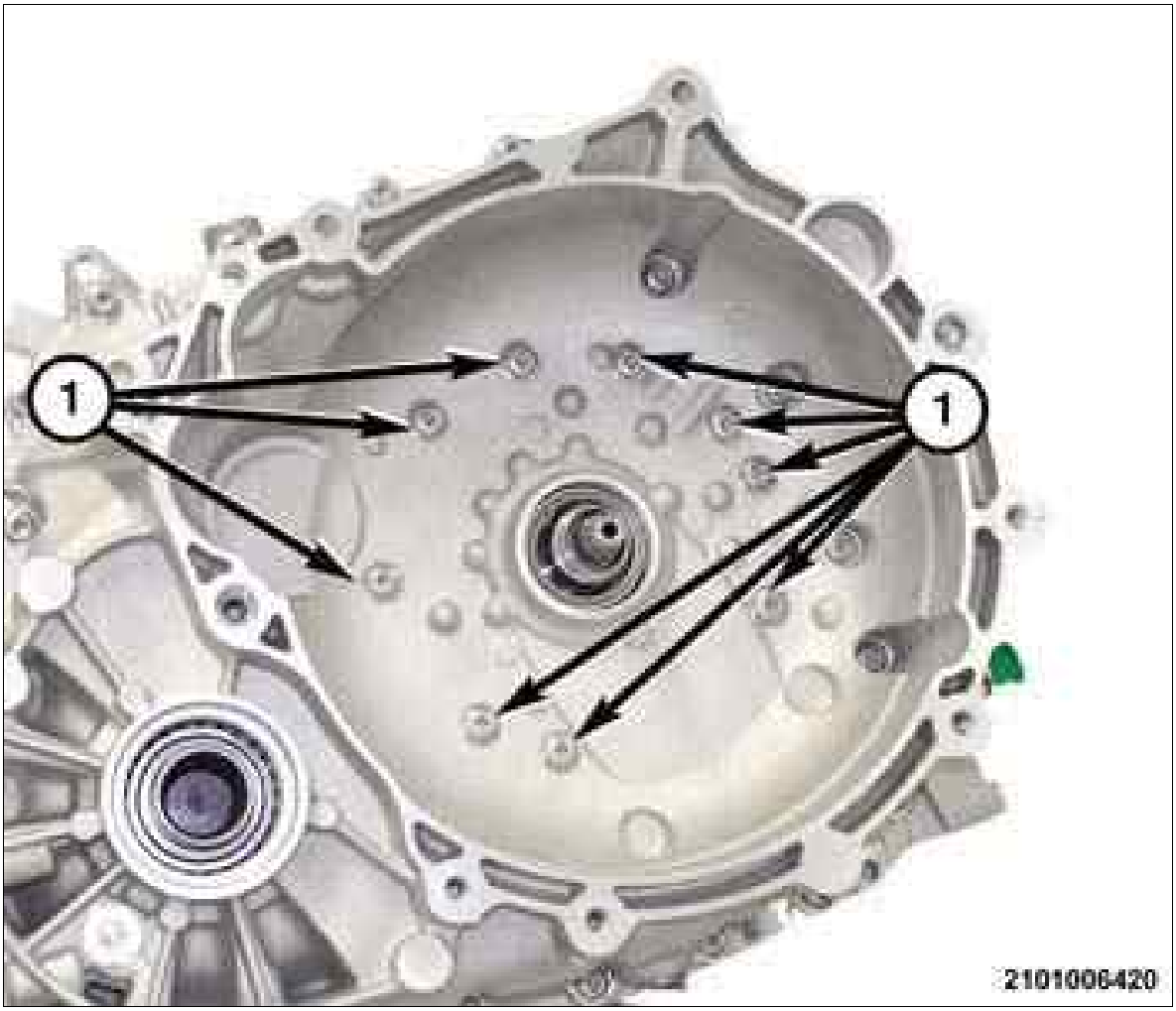
Fig 6: Bellhousing To Output Gear Support Bolts



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10. Install the bolts (1) with **NEW** seal washers to hold the bellhousing to the output gear support and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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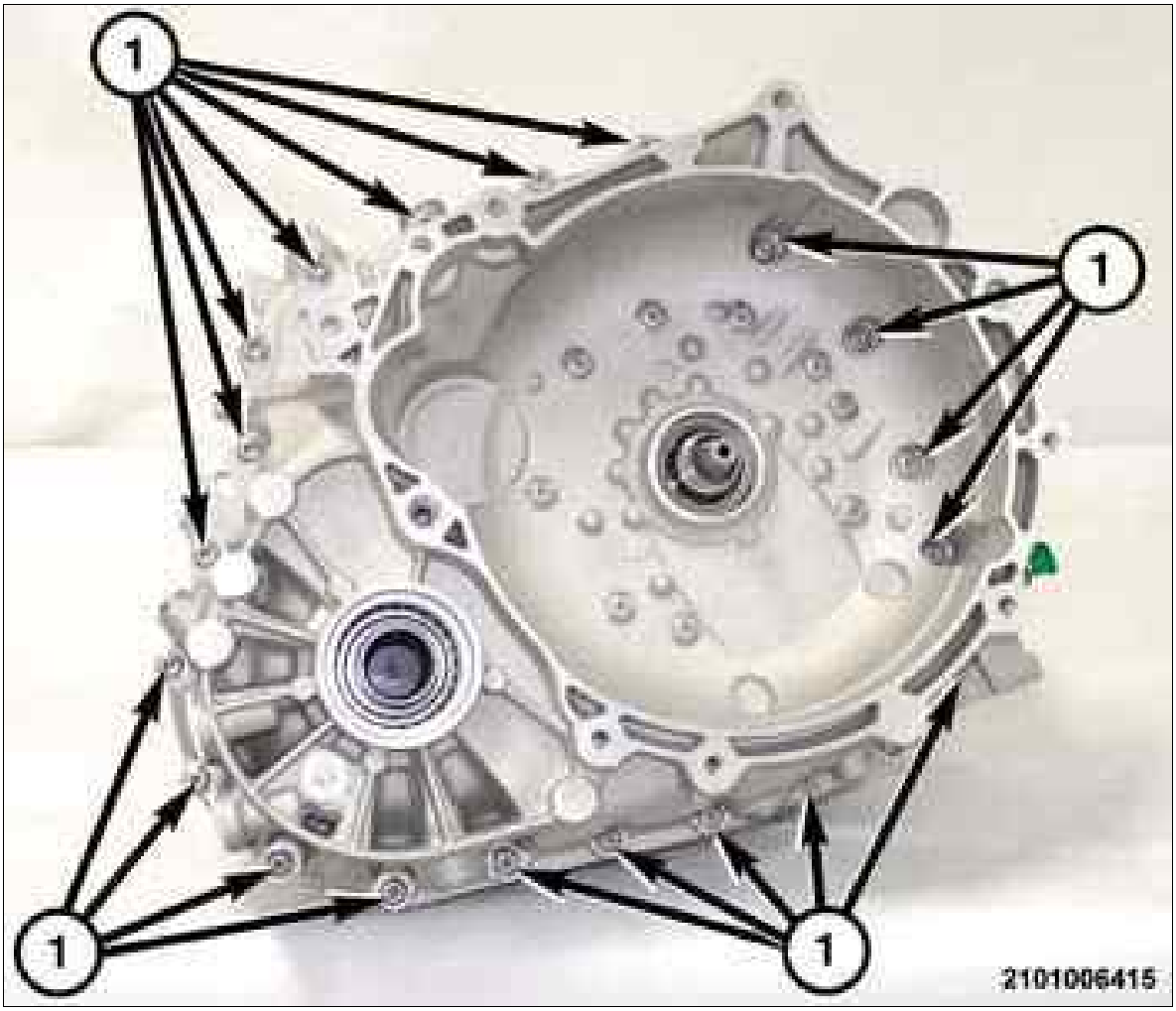
Fig 7: Bellhousing To Transmission Housing Bolts



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11. Install the bolts (1) to hold the bellhousing to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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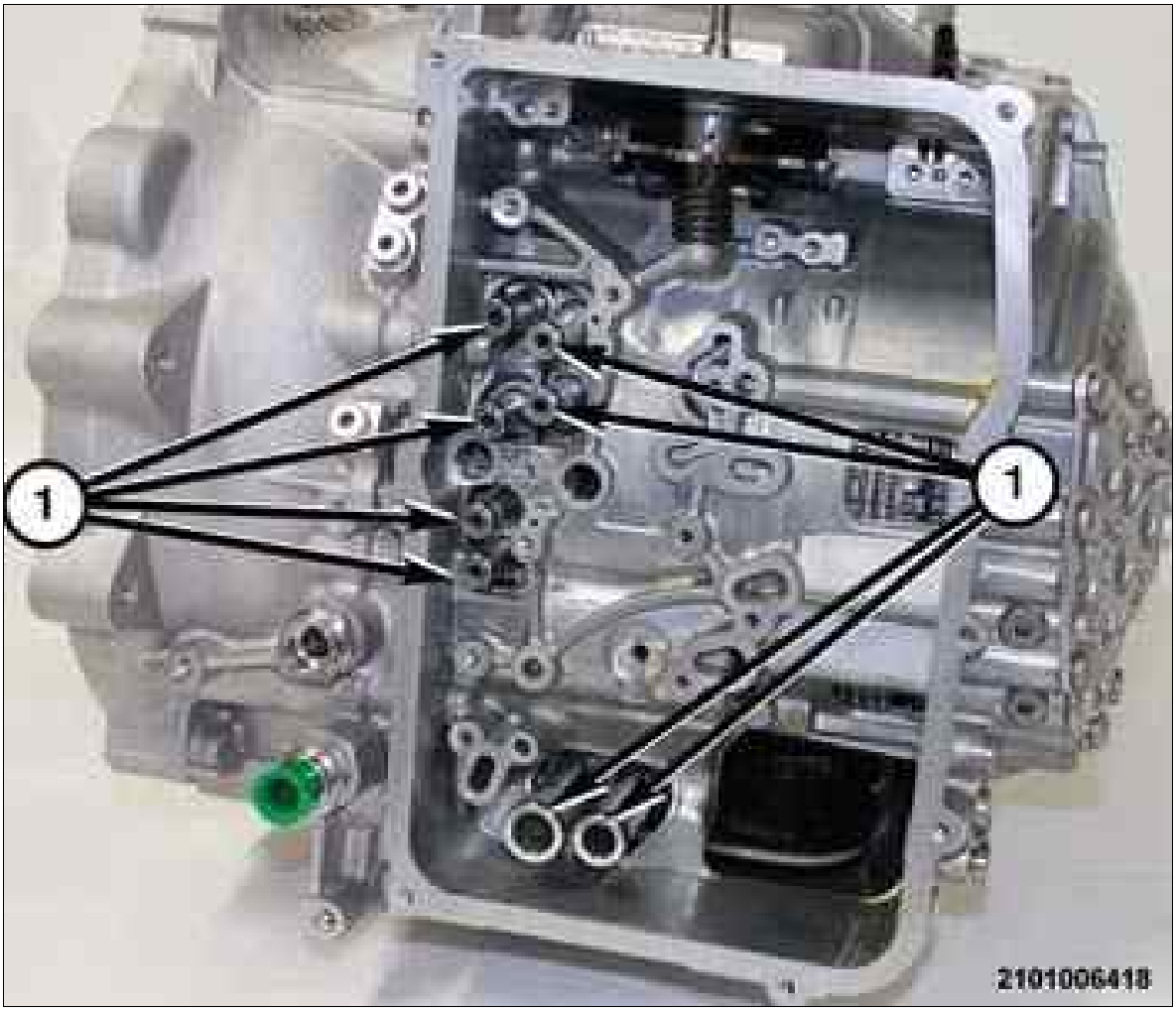
Fig 8: Fluid Adapter Tubes & O-Ring Seals



Courtesy of CHRYSLER GROUP, LLC

12. Install **NEW** O-rings on both ends of the fluid transfer tubes.
13. Install the fluid adapter tubes (1) in the transmission housing.
14. Place the valve body with the internal harness near the transmission.

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Fig 9: Removing/Installing Speed Sensor Screw

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15. Insert the speed sensors (1) into the transmission with the wire harness connected.
16. Install the speed sensor screw (1) to hold the speed sensors to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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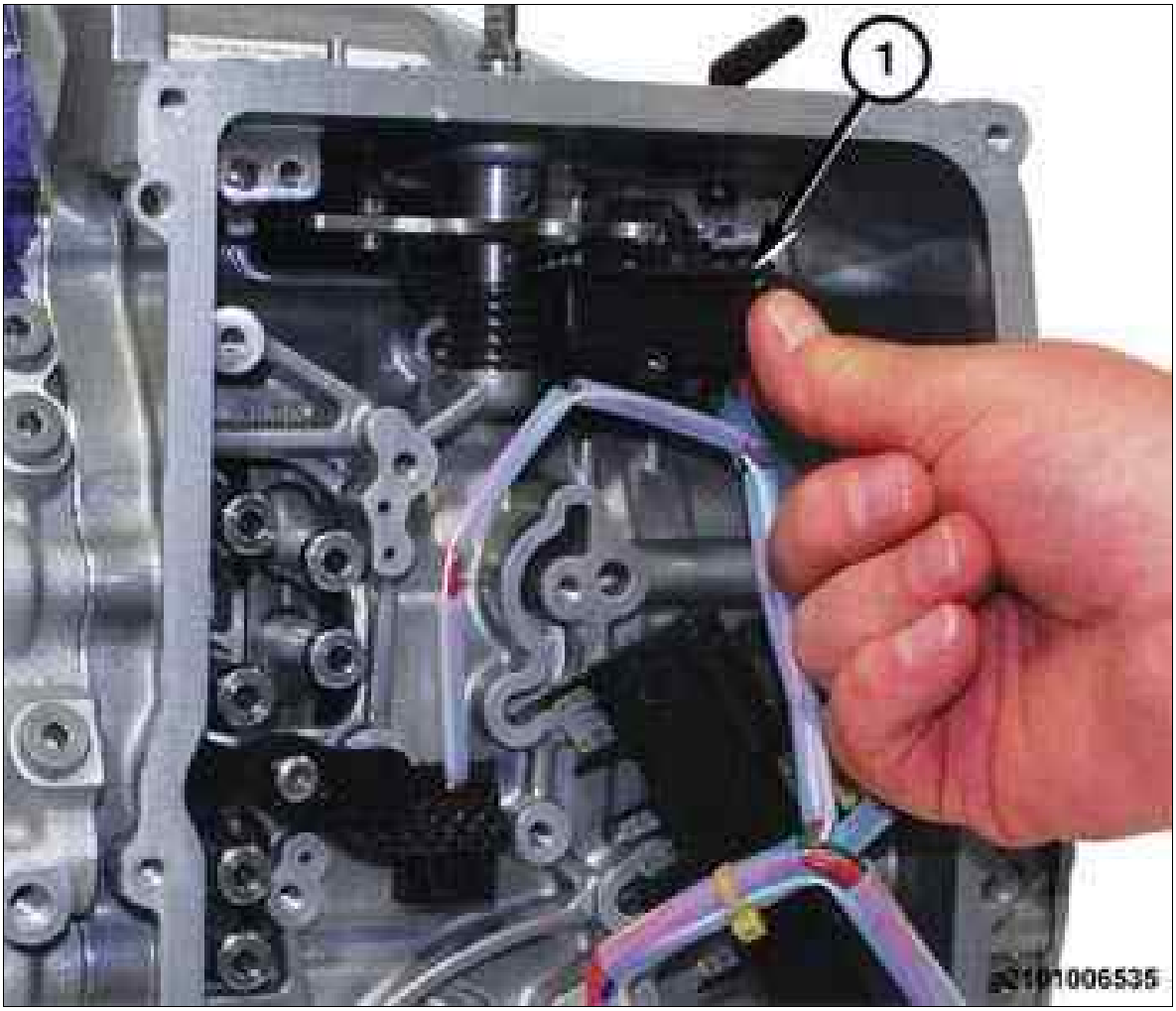
Fig 10: Removing/Installing Transmission Range Sensor



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17. Place the Transmission Range Sensor (TRS) (1) in position on the transmission with the wire harness connected.

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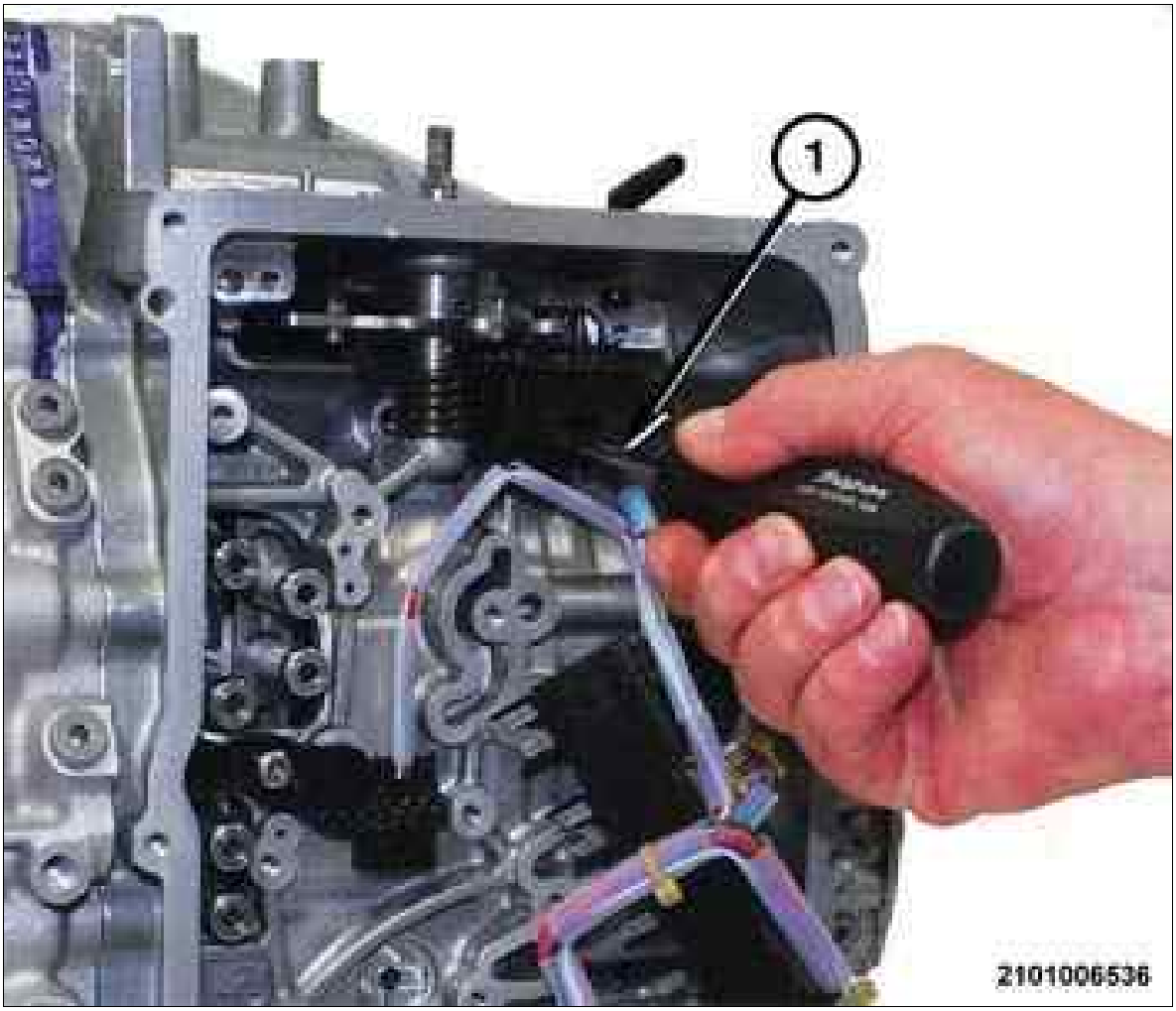
Fig 11: Removing/Installing Transmission Range Sensor (TRS) Screw



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18. Install the TRS screw (1) to hold the TRS to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

19. Align the valve body with the fluid transfer tubes.

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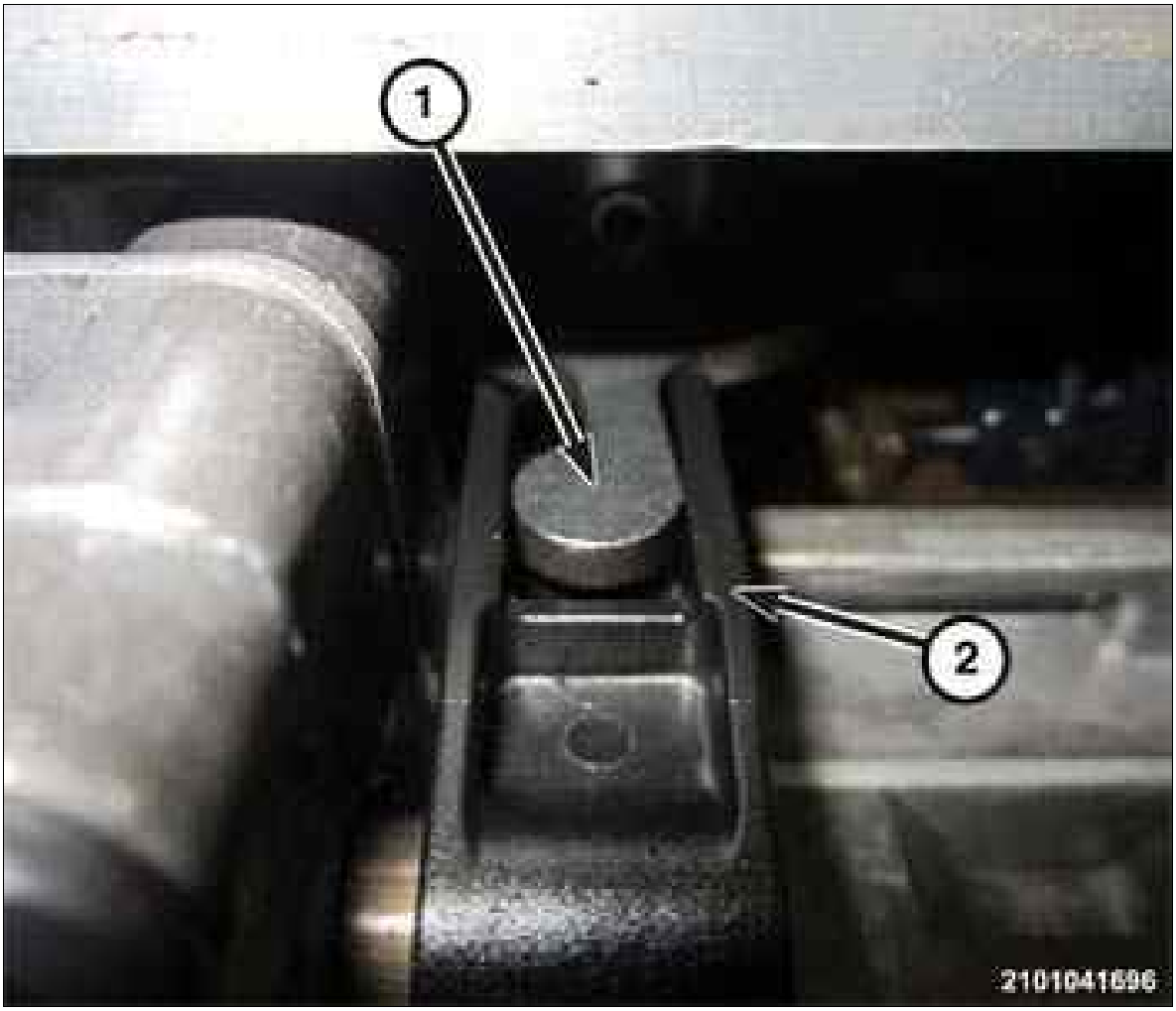
Fig 12: Manual Lever Cam & Manual Valve



Courtesy of CHRYSLER GROUP, LLC

20. Guide the manual lever cam (1) into the slot (2) on the manual valve.

21. Firmly press the valve body (1) inward until the O-rings on the fluid transfer adapters engage into receptacle holes on the valve body.

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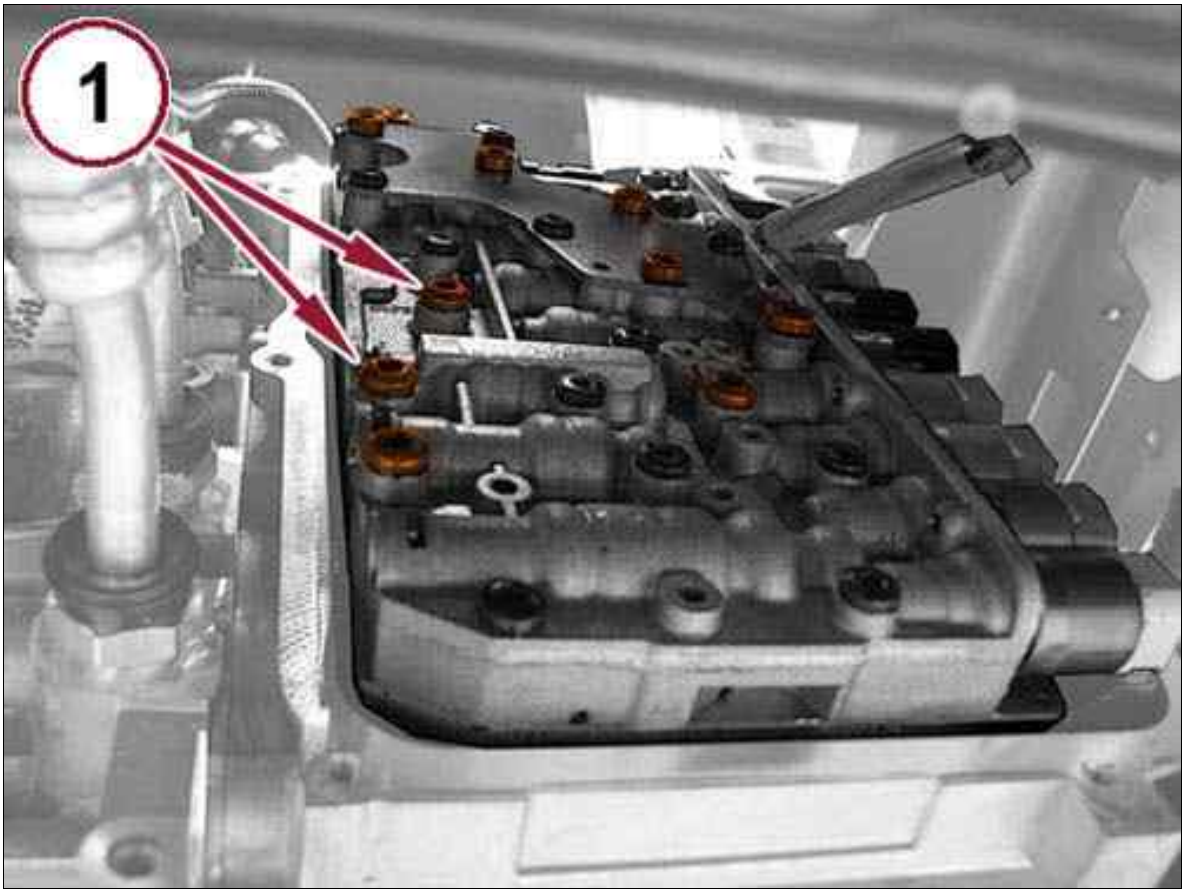
Fig 13: Valve Body & Bolts



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22. Install the valve body bolts (1) to hold the valve body to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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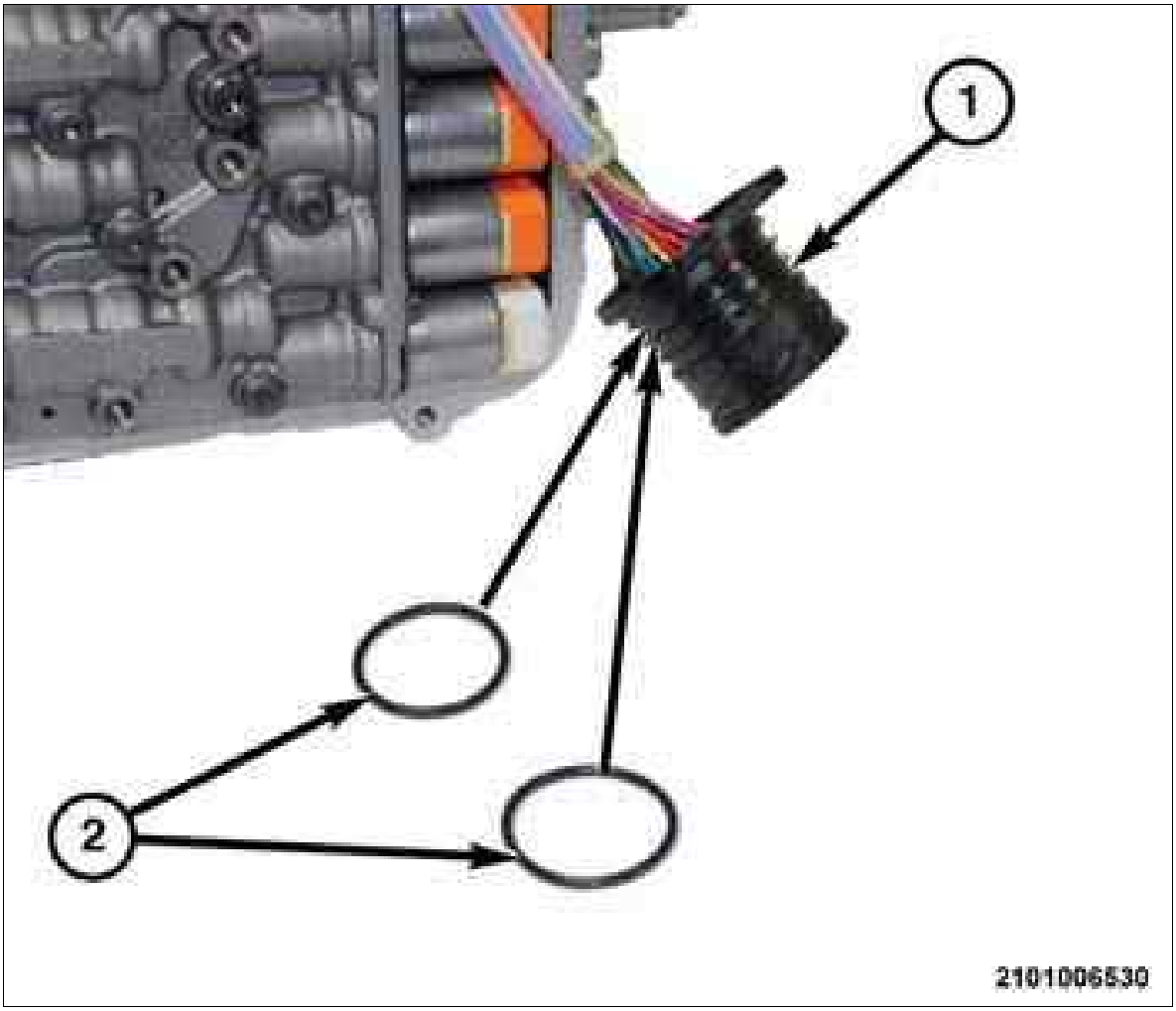
Fig 14: Valve Body Solenoid Wire Harness Connector Socket O-Ring Seals



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> *NOTE:*
>
> *A light coating of assembly lube can be applied to the O-ring seals (2) of the transmission solenoid connector to ease installation.*

23. Install **NEW** O-ring seals (2) on the transmission solenoid connector (1).

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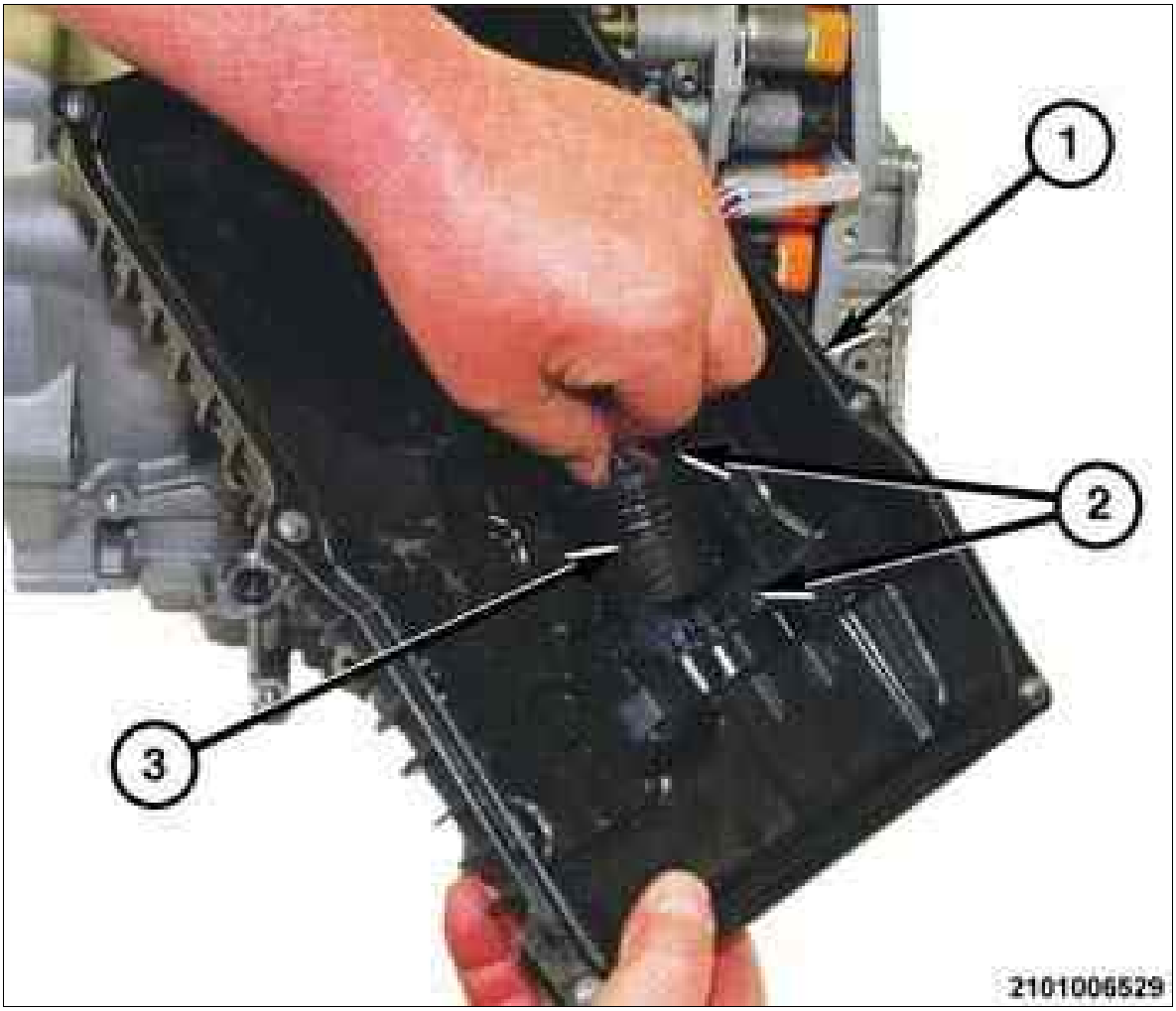
Fig 15: Valve Body Cover Pan & Wire Connector Socket



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24. Place the valve body cover pan (1) in position on the transmission.

> *NOTE:*
>
> *Be certain that the flat side (2) on the transmission solenoid connector (3) is aligned with the flat spot on the valve body cover pan (1).*

25. Insert the transmission solenoid connector (3) into the opening on the inside of valve body cover pan (1).

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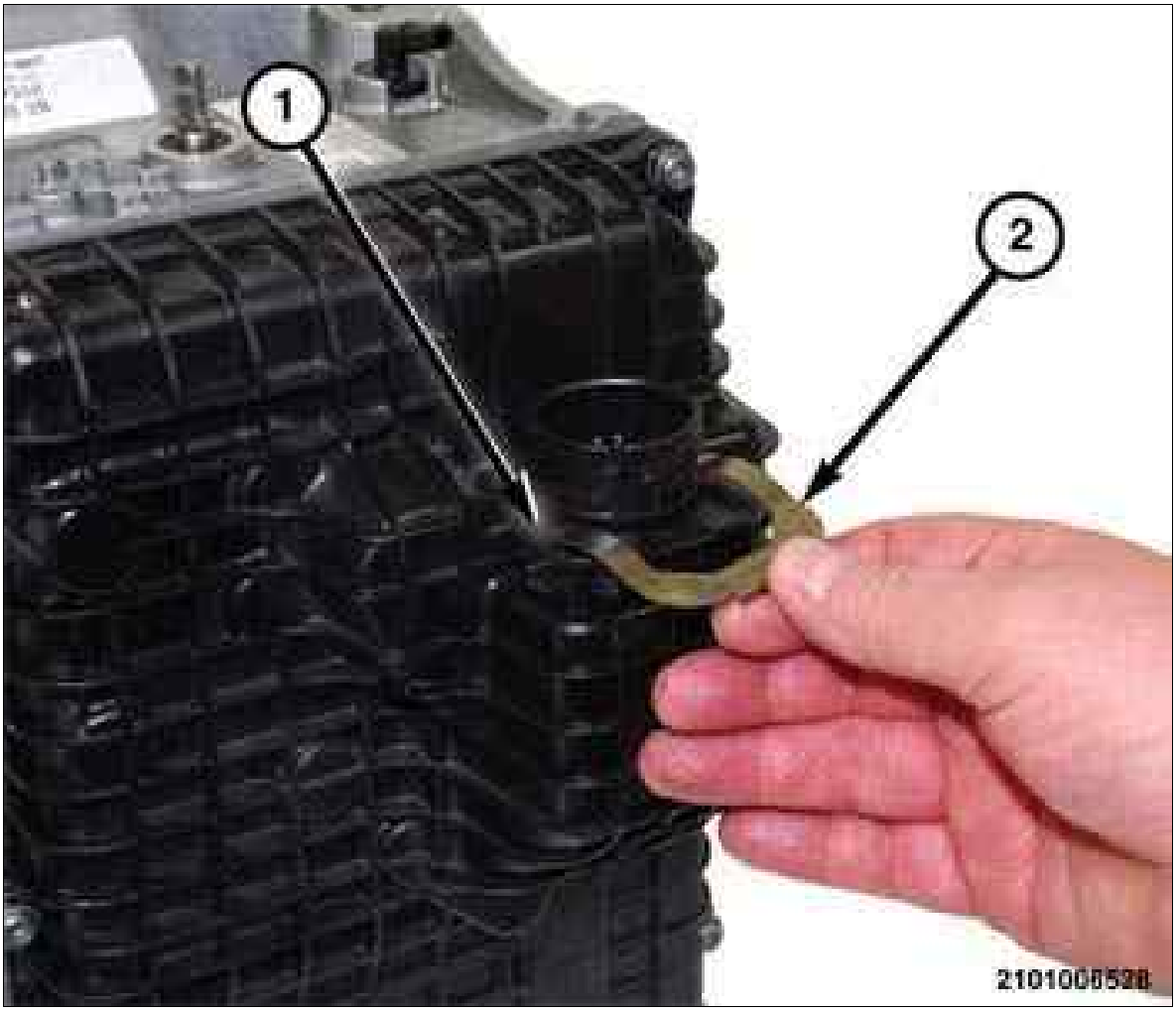
Fig 16: Transmission Solenoid Connector & Clip



Courtesy of CHRYSLER GROUP, LLC

26. Press the transmission solenoid connector inward until the retainer clip groove (1) is exposed on the outside of the valve body cover pan.

27. Install the clip (2) to hold the transmission solenoid connector in the valve body cover pan.

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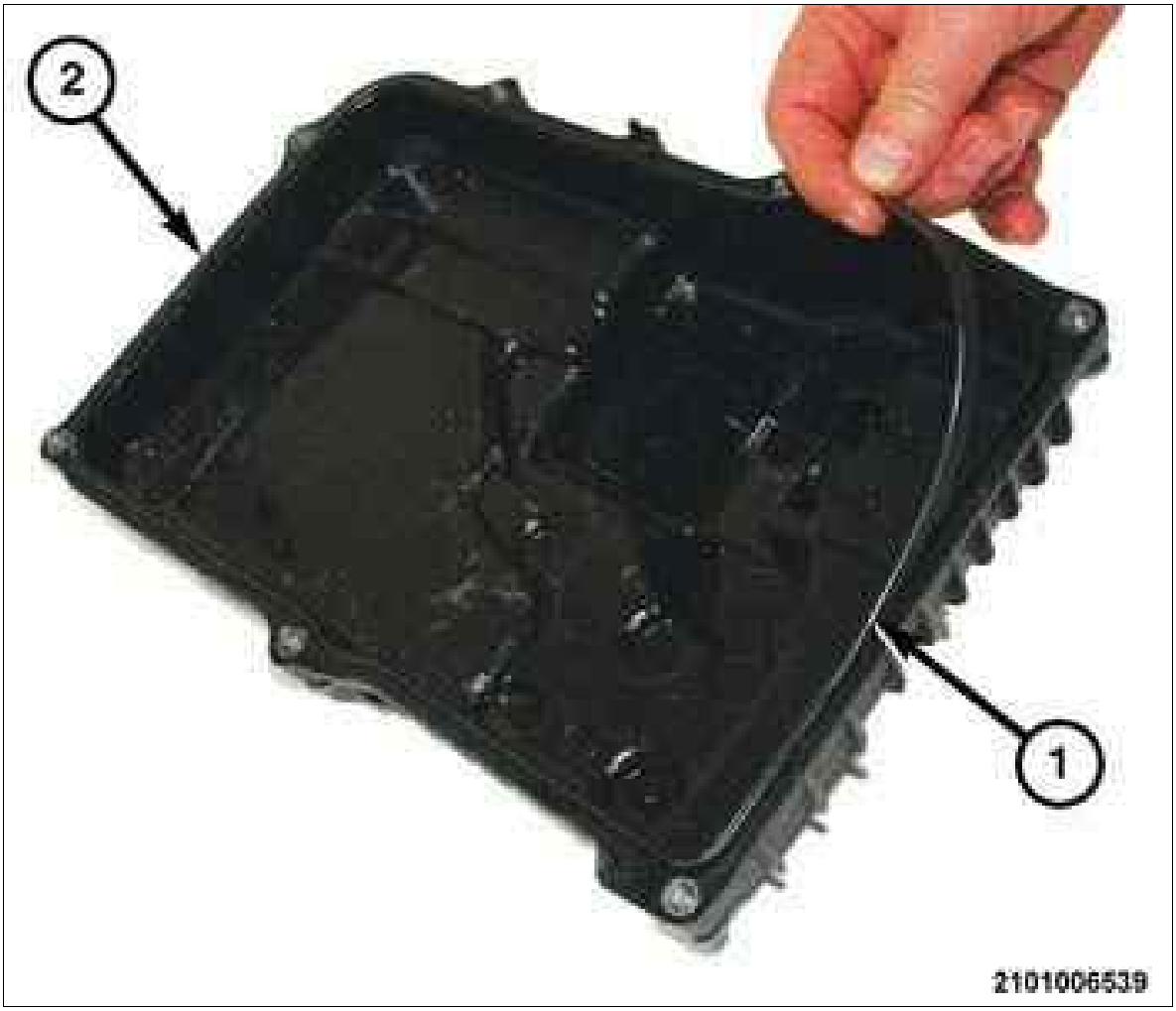
Fig 17: Valve Body Cover Pan & Gasket Seal



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28. Install a **NEW** gasket seal (1) in the groove around the sealing surface of the valve body cover pan (2).

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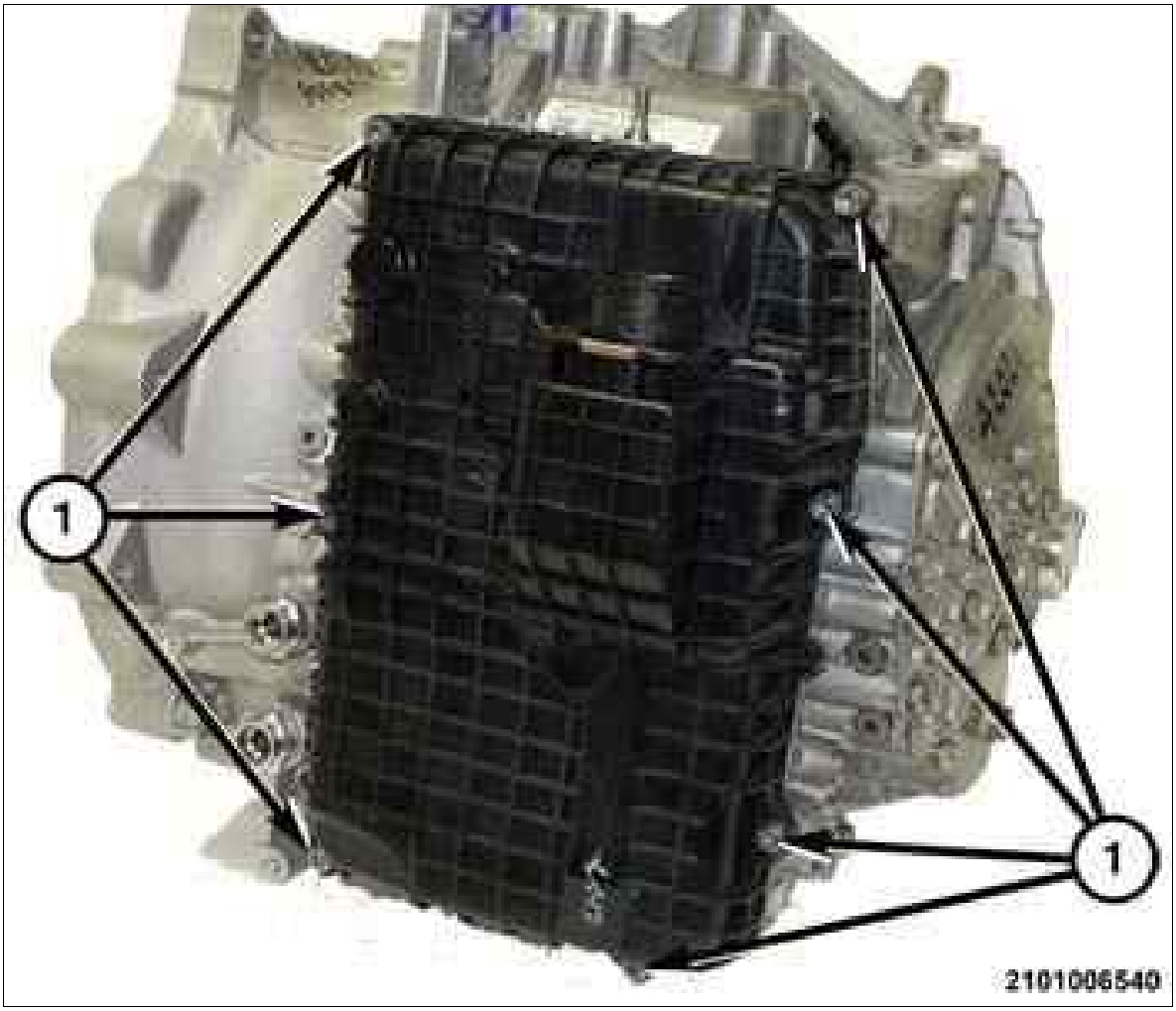
Fig 18: Valve Body Cover Pan Bolts



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29. Install the valve body cover pan and valve body cover pan bolts (1) to hold the valve body cover pan to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

CABLE, SHIFT > ADJUSTMENTS > ADJUSTMENTS > ADJUSTMENT

1. Place the gearshift lever in Park (P) and remove ignition key.
2. Remove the floor console. Refer to CONSOLE, FLOOR, REMOVAL AND INSTALLATION .

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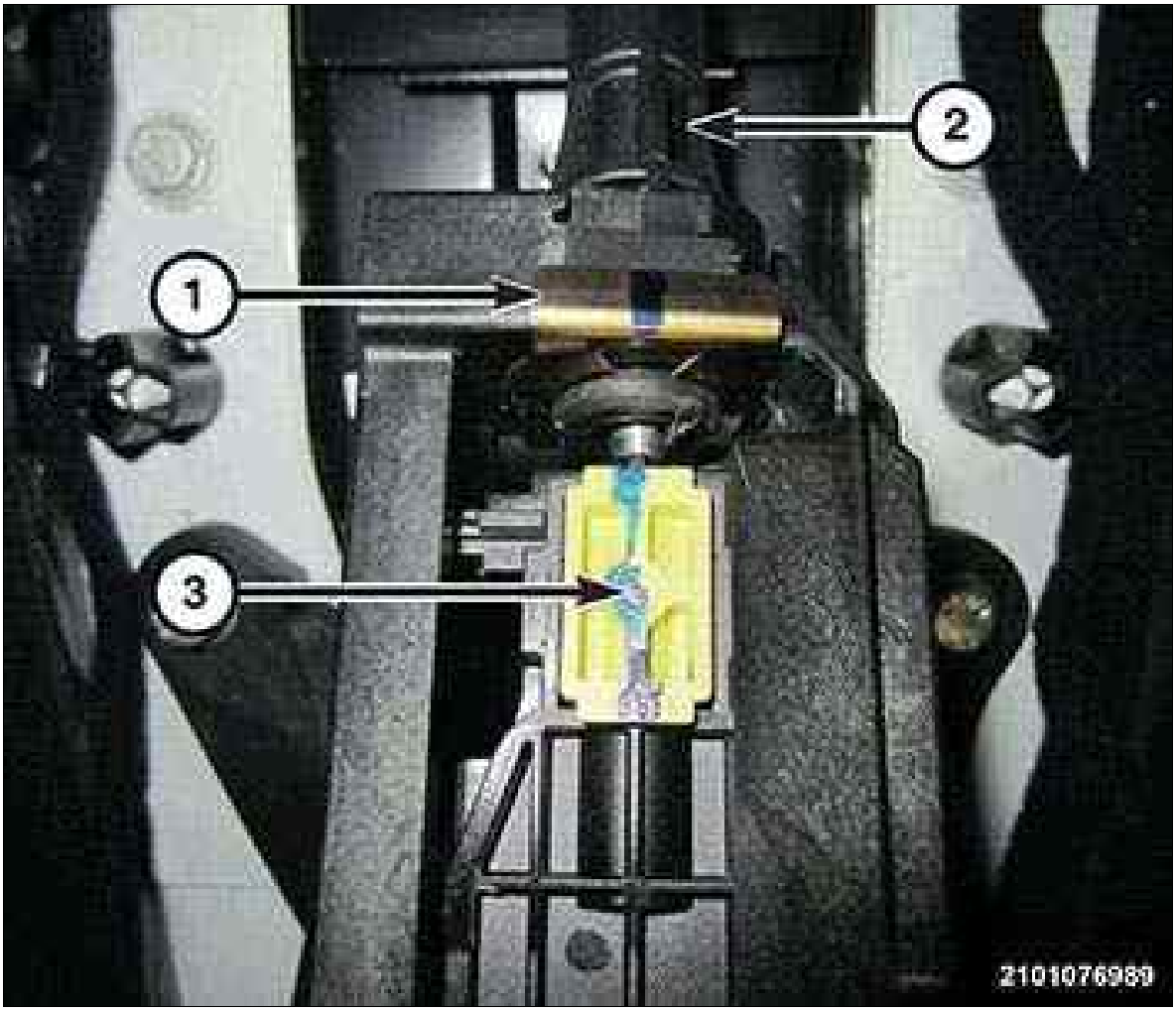
Fig 1: Shifter Cable, Retainer & Adjuster Lock



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3. Release the shift cable adjustment lock (3) using a suitable tool to lift it upward.

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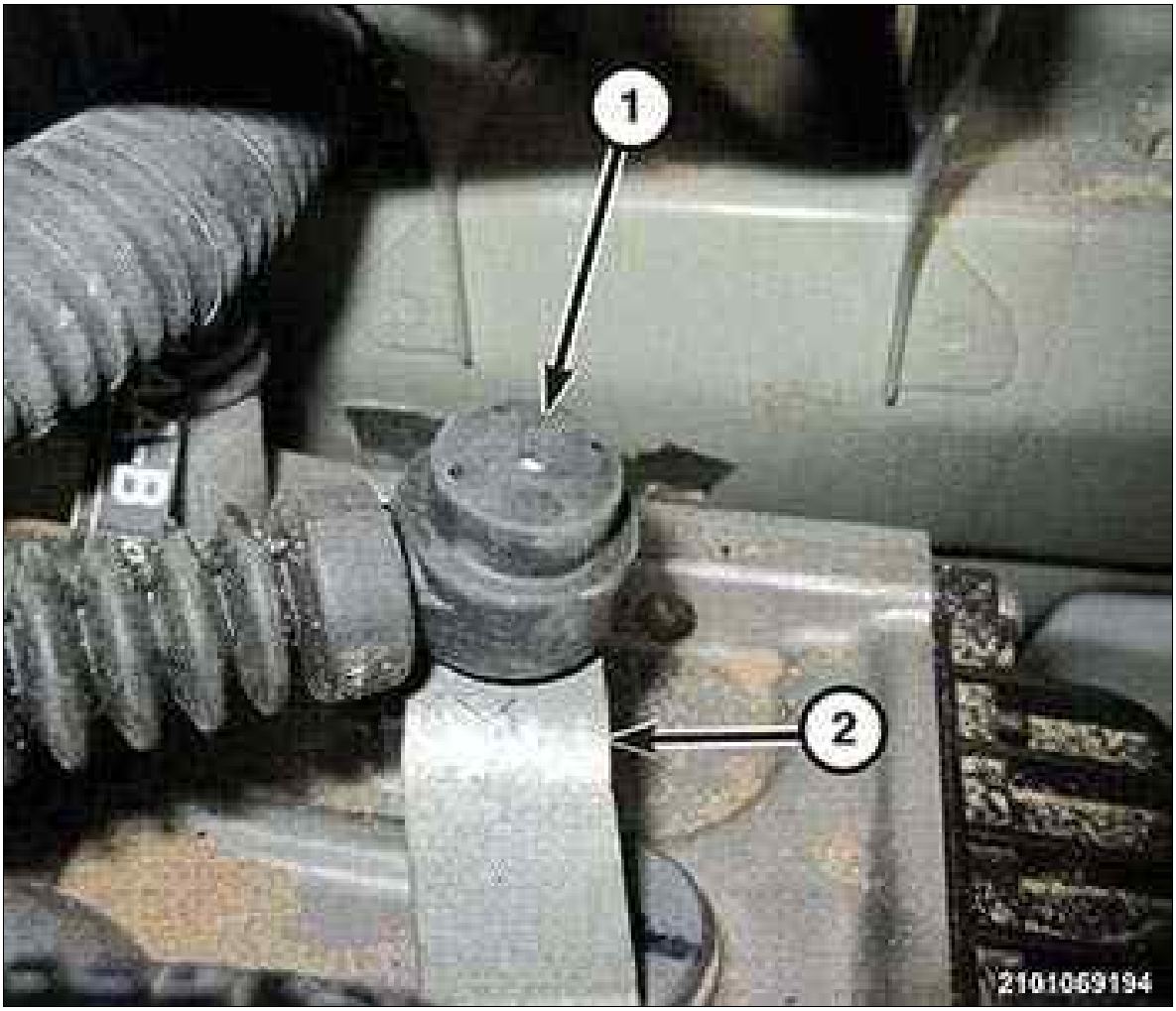
Fig 2: Shifter Cable & Manual Lever



Courtesy of CHRYSLER GROUP, LLC

4. Pull the manual lever (2) fully forward to the park detent position.

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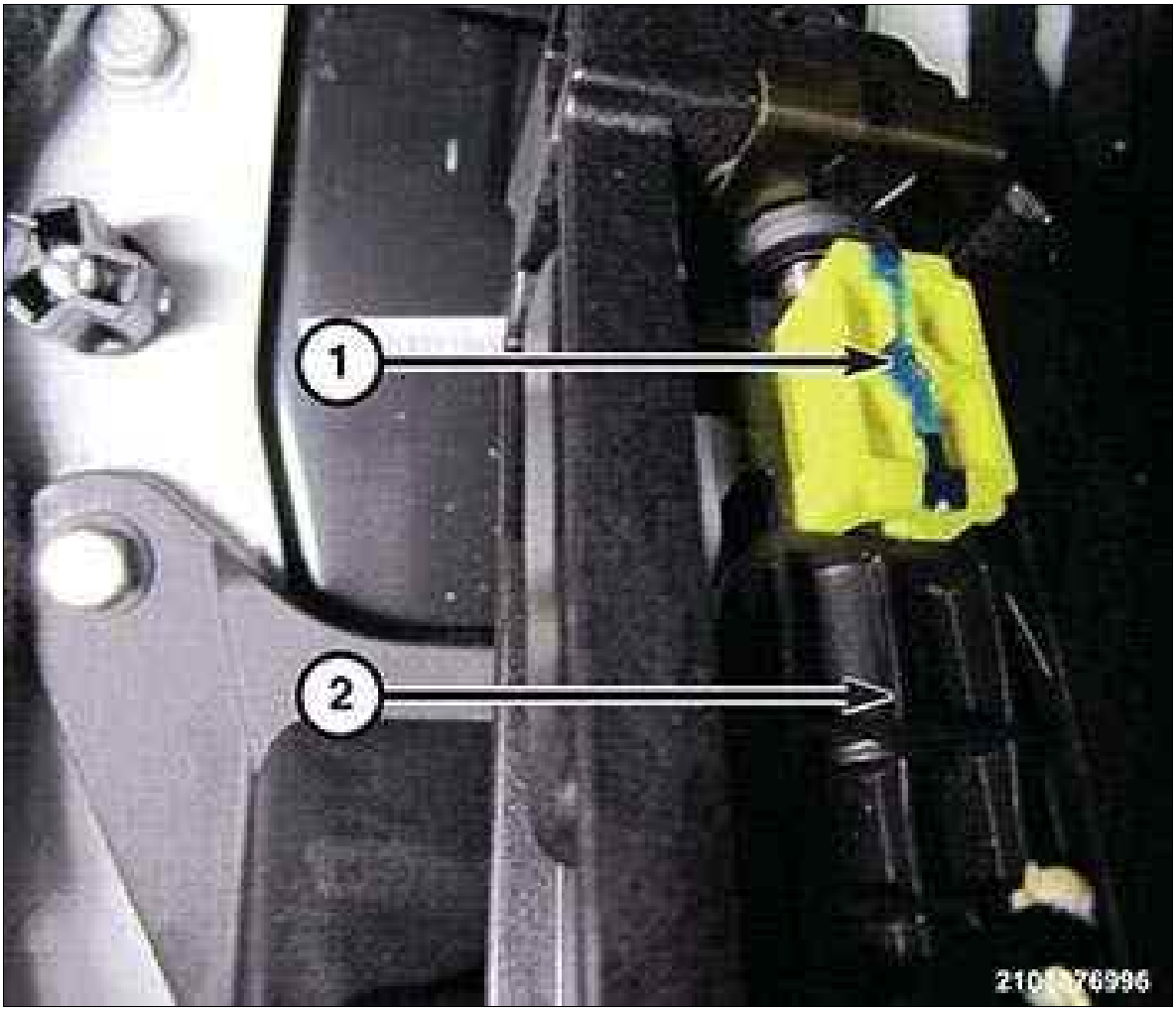
Fig 3: Locking Tab



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5. Lock the adjustment by pushing the locking tab (1) down onto the shift cable.
6. Verify the gear shift cable adjustment.
7. Install the floor console. Refer to CONSOLE, FLOOR, REMOVAL AND INSTALLATION .

CABLE, SHIFT > ADJUSTMENTS > ADJUSTMENTS > VERIFICATION

1. Place gearshift lever in Park (P).
2. Attempt to move vehicle by rocking back and forth on level ground. If vehicle does not move, attempt to start engine. If engine starts, the park position is correct.
3. Depress and hold the brake pedal.
4. Turn key to on/run and place gearshift lever in Neutral (N).
5. Attempt to start engine. If engine starts in both Neutral (N) or Park (P), gearshift cable is adjusted properly. No adjustment is required.

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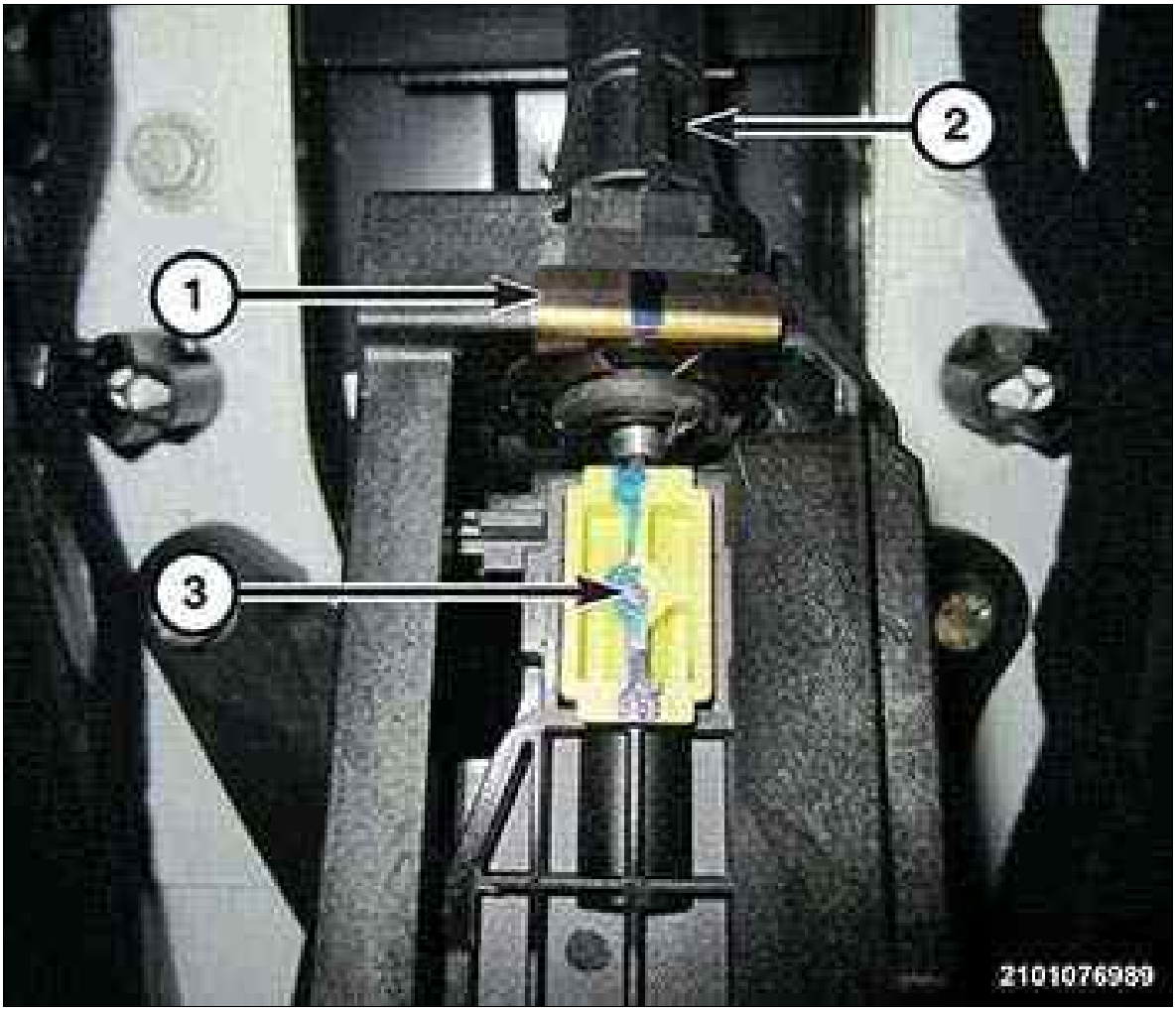
6. If engine does not start in either Park (P) or Neutral (N), perform adjustment procedure.

CABLE, SHIFT > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

1. Set the parking brake.
2. Disconnect and isolate the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector first before disconnecting the negative battery cable.
3. Remove the floor console. Refer to CONSOLE, FLOOR, REMOVAL AND INSTALLATION .

   Fig 1: Shifter Cable, Retainer & Adjuster Lock



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4. Using a suitable tool, release the shifter cable adjuster lock (3) at the shifter by prying it upward.
5. Remove the shifter cable retainer (1).
6. Pull the shifter cable (2) out of the shifter housing.

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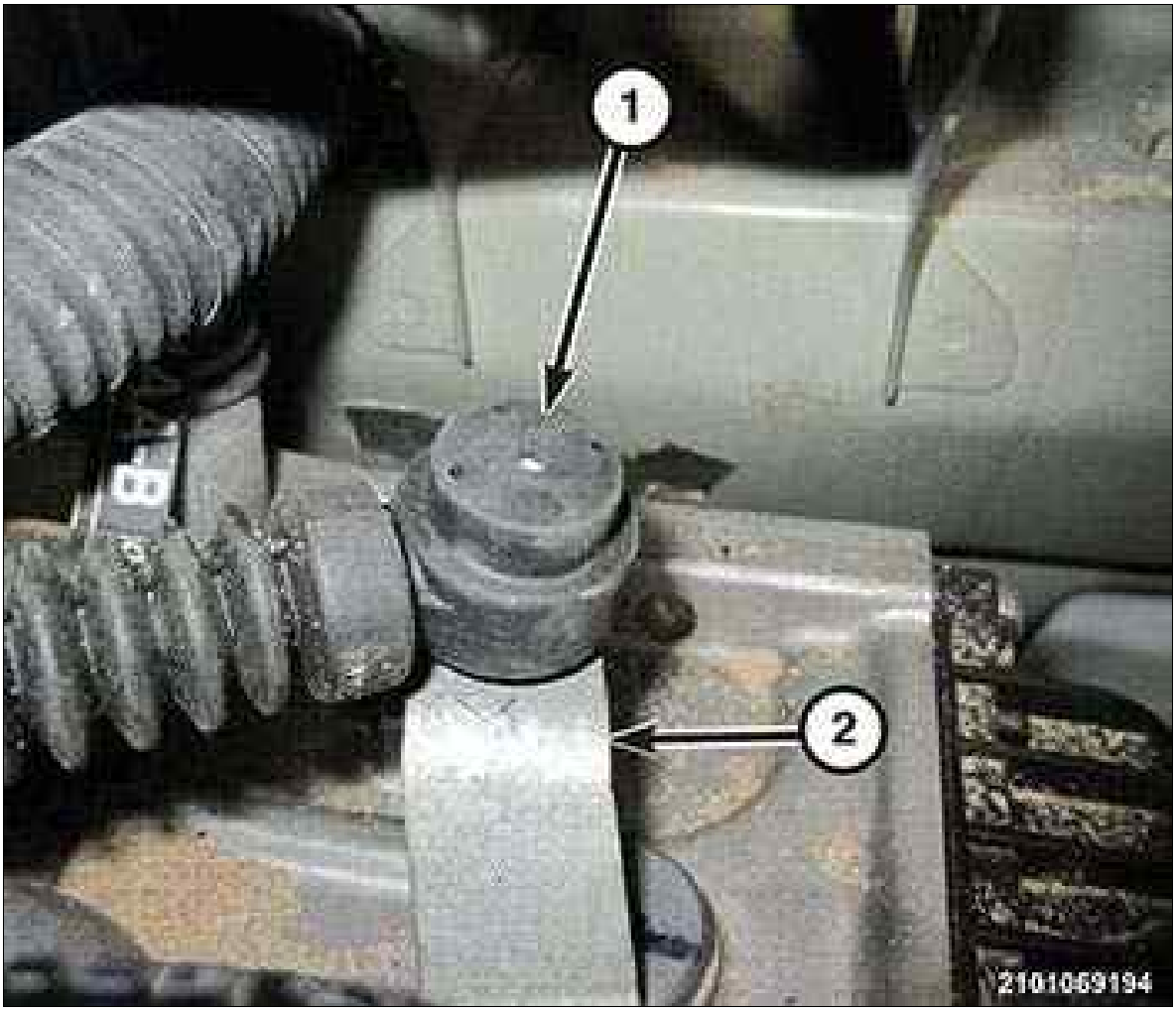
Fig 2: Shifter Cable & Manual Lever



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7. Remove the shifter cable (1) from the manual lever (2).

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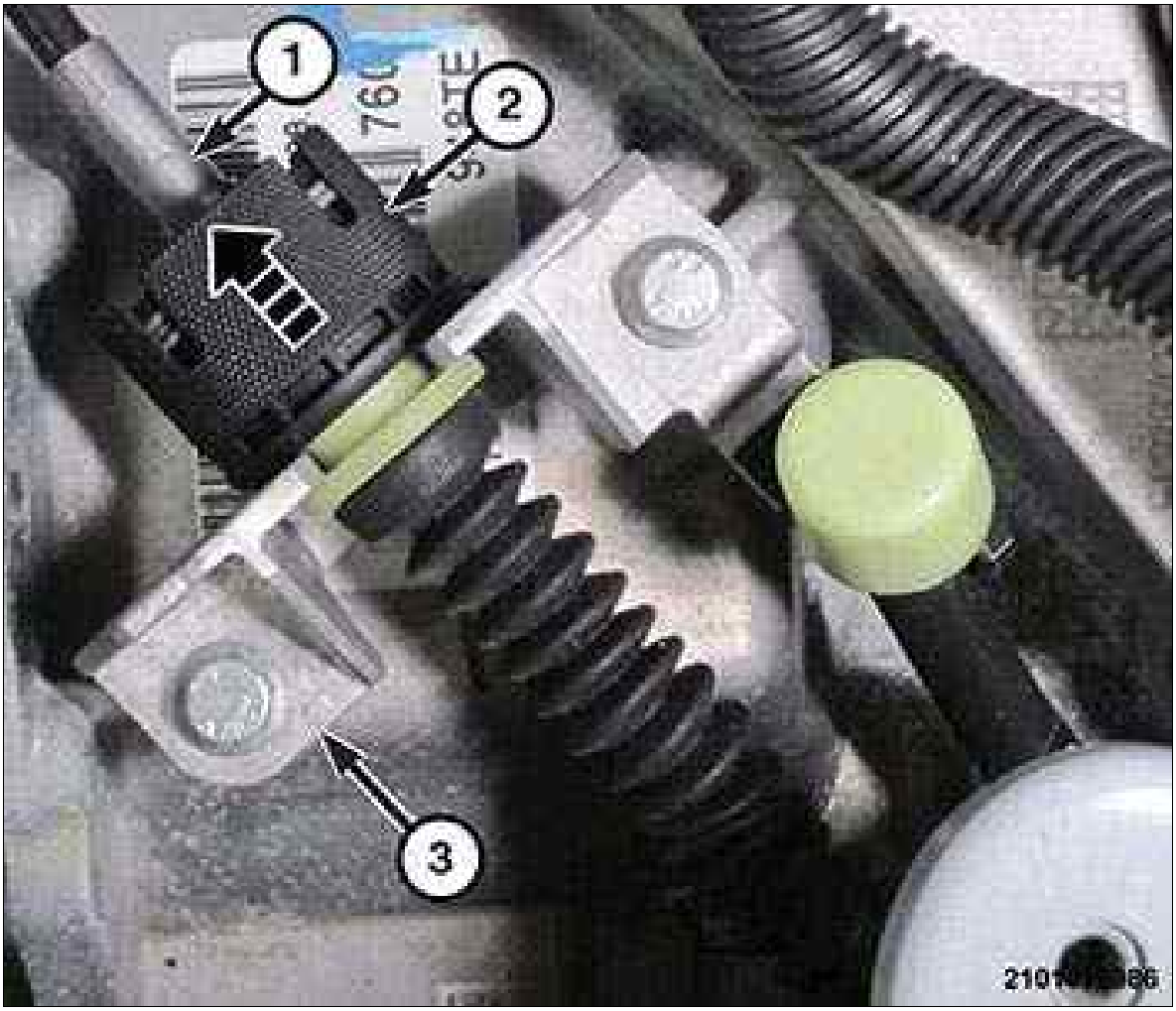
Fig 3: Locking Collar, Shifter Cable & Bracket



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8. Pull back on and hold the locking collar (2), then lift the shifter cable (1) out of the shifter cable bracket (3).

9. Raise and support the vehicle on a hoist. Refer to HOISTING, STANDARD PROCEDURE .

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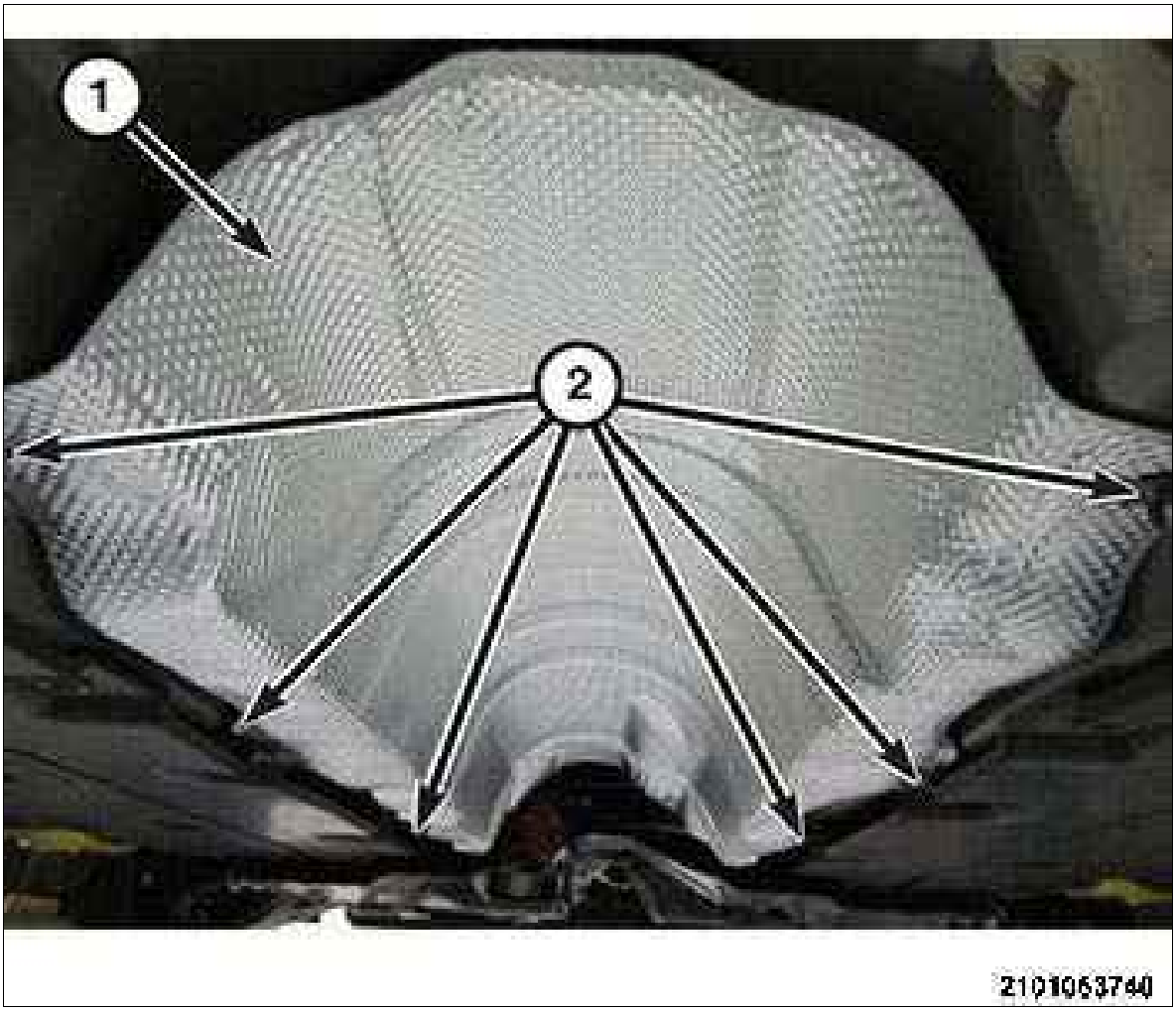
Fig 4: Exhaust Heat Shield & Nuts



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10. Remove the exhaust heat shield (1) nuts (2) and lower heat shield to gain access to the shifter cable and grommet.

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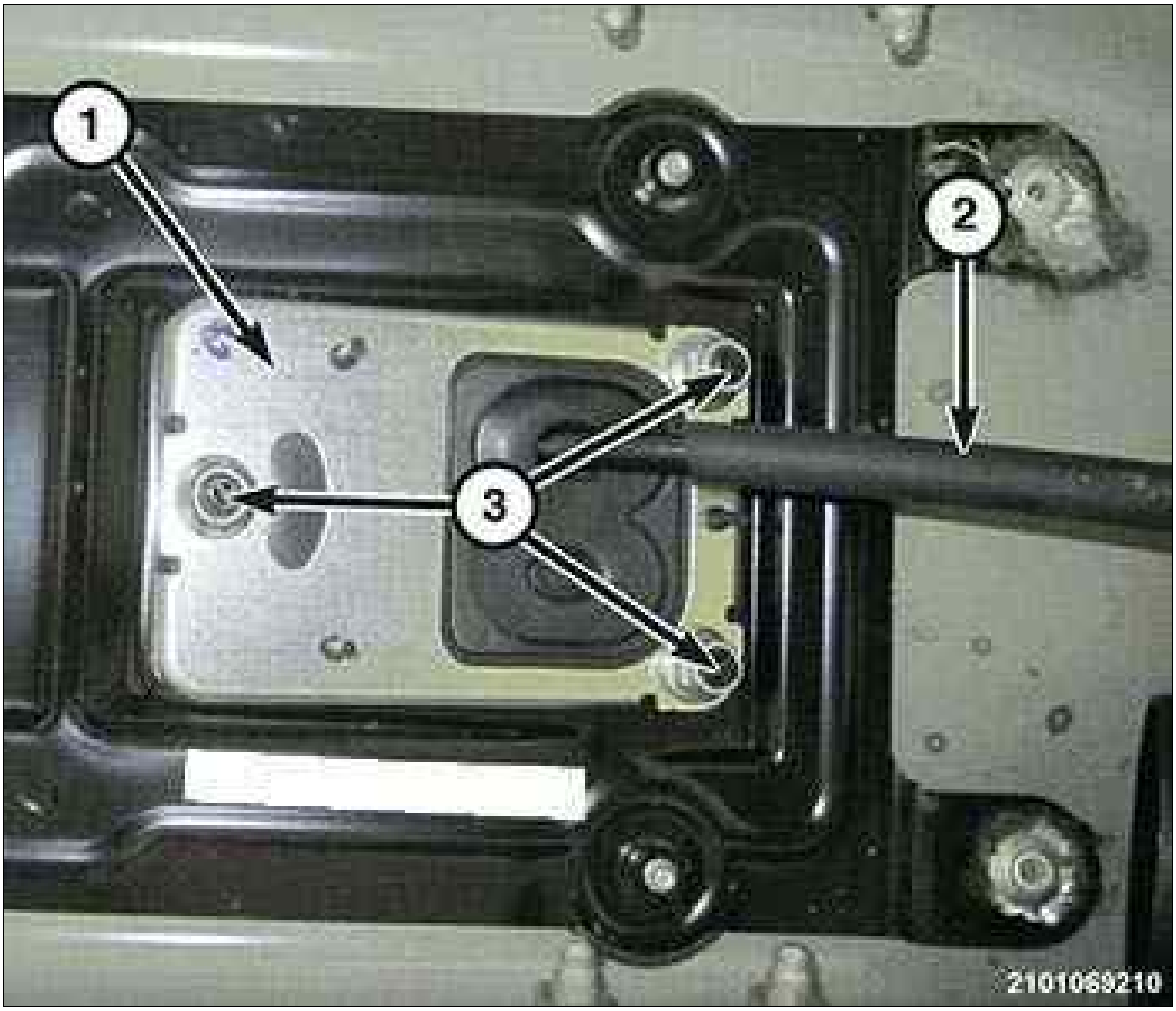
Fig 5: Shifter Cable, Nuts And Plate Assembly



Courtesy of CHRYSLER GROUP, LLC

> *NOTE:*
>
> *Shown with exhaust removed for clarity.*

11. Remove the nuts (3) for the shifter cable grommet and plate assembly (1).

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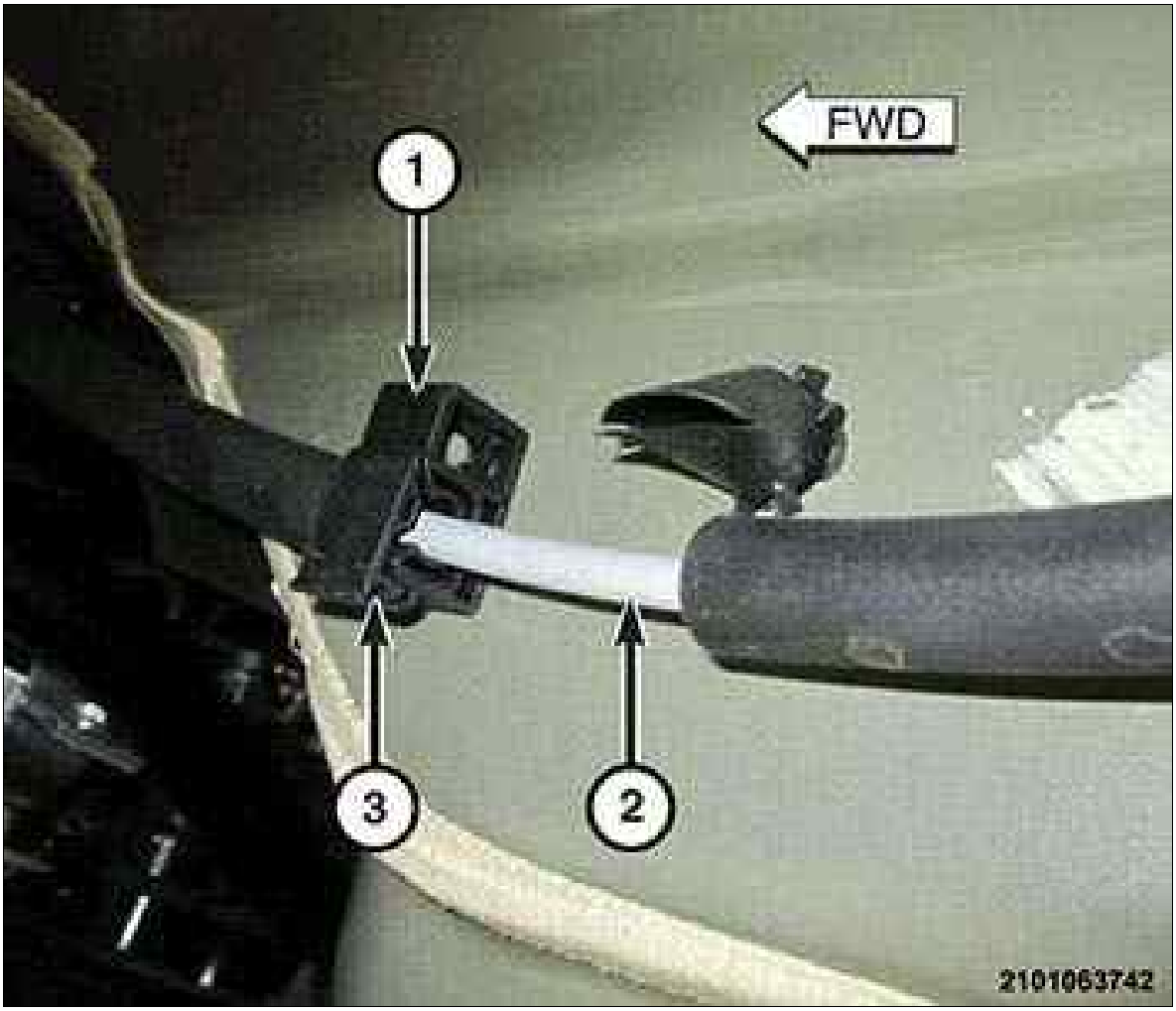
Fig 6: Shifter Cable & Clip



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12. Detach the shifter cable (2) from the clip (1) attached to the exhaust tunnel.

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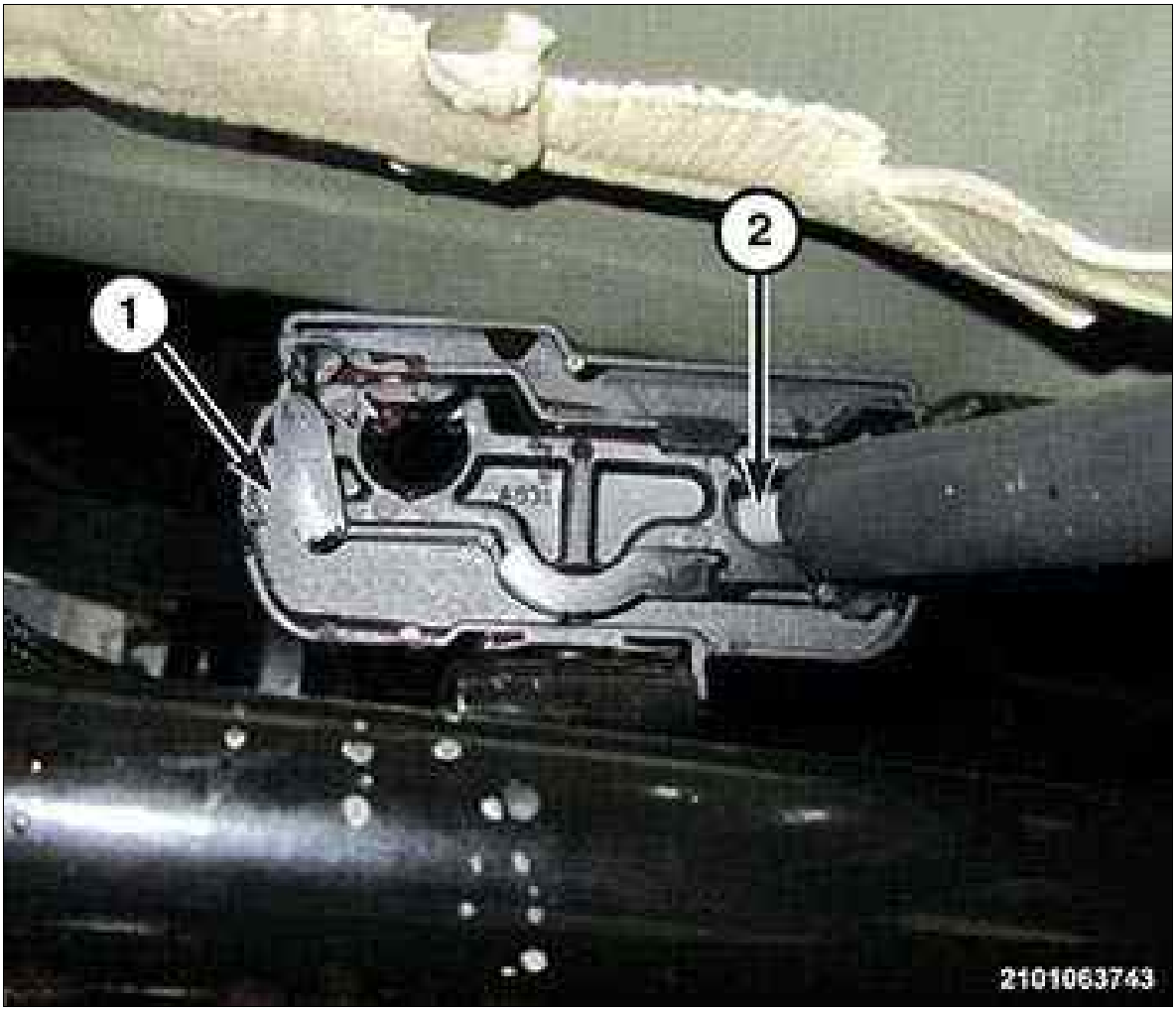
Fig 7: Shifter Cable & Clip Near The Stabilizer Bar



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13. Detach the shifter cable (2) from the clip (1) near the stabilizer bar.

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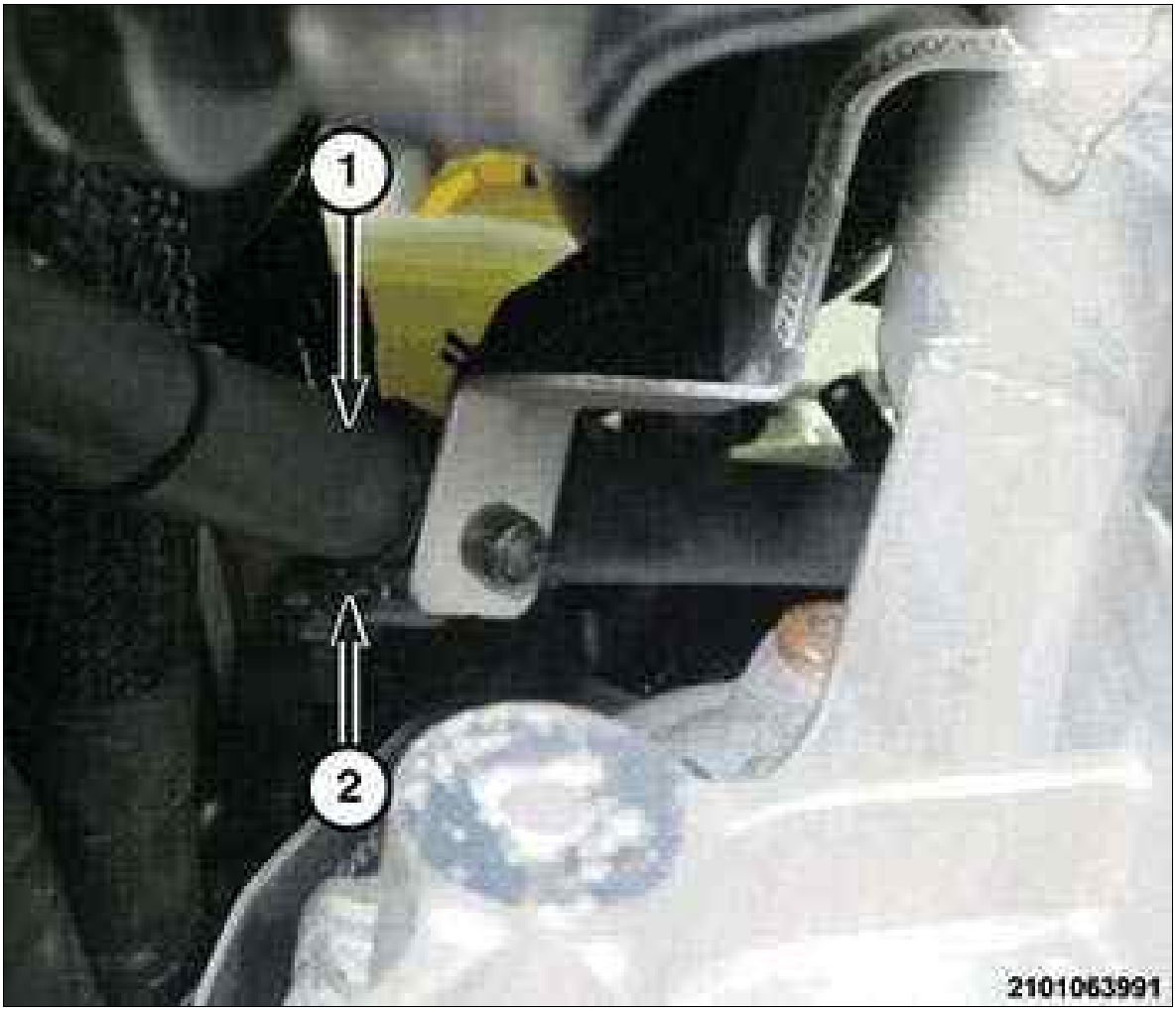
Fig 8: Shifter Cable & Clip Above Starter



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14. Detach the shifter cable (2) from the clip (1) above the starter.

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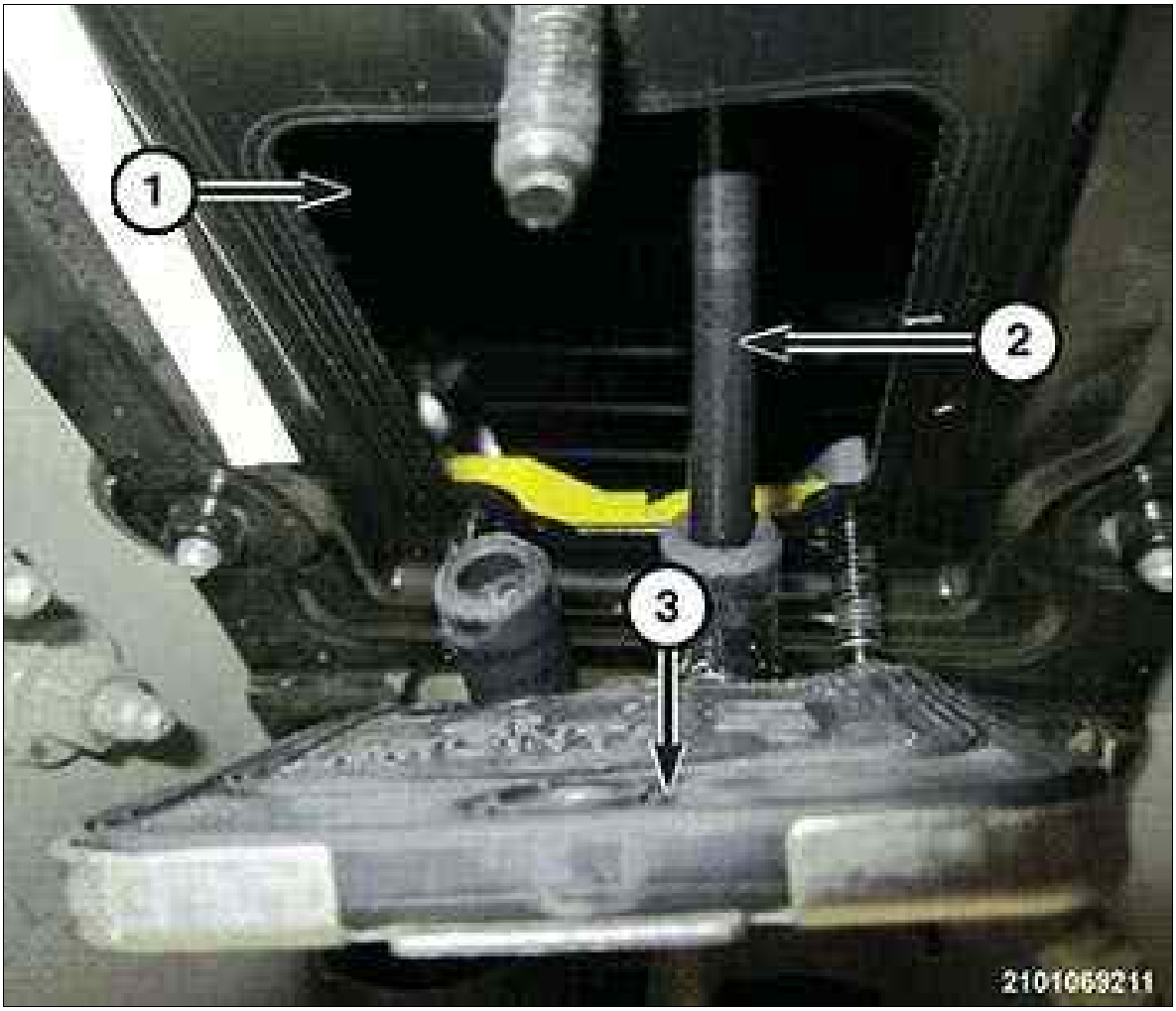
Fig 9: Shifter Cable, Plate Assembly & Floor Pan



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15. Pull the shifter cable (2) and plate assembly (3) through the opening in the floor pan (1).
16. Remove the shifter cable from the vehicle.

CABLE, SHIFT > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION

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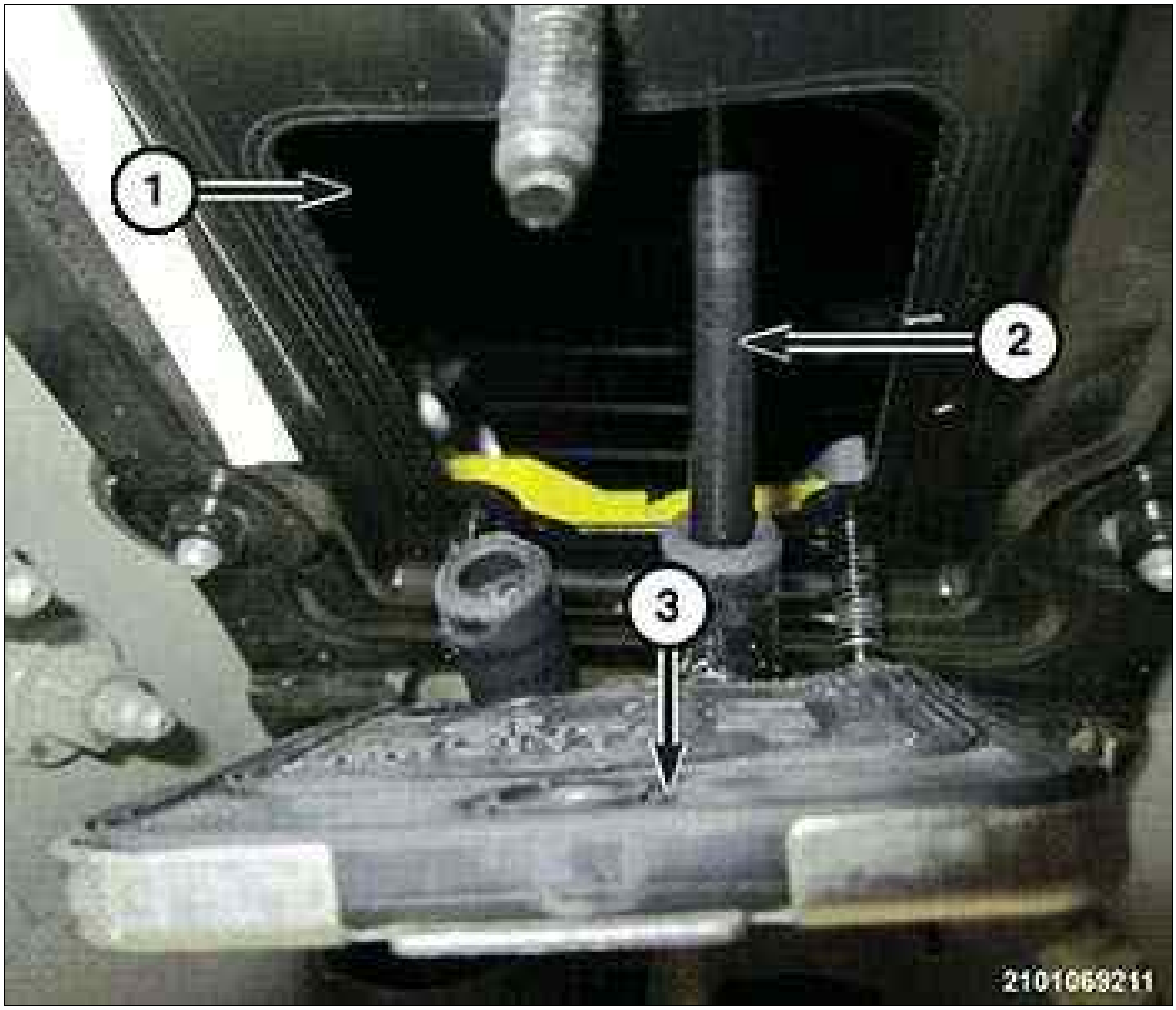
Fig 1: Shifter Cable, Plate Assembly & Floor Pan



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NOTE:

Shown with exhaust removed for clarity.

1. Push the shifter cable (2) up through the opening in the floor pan (1).

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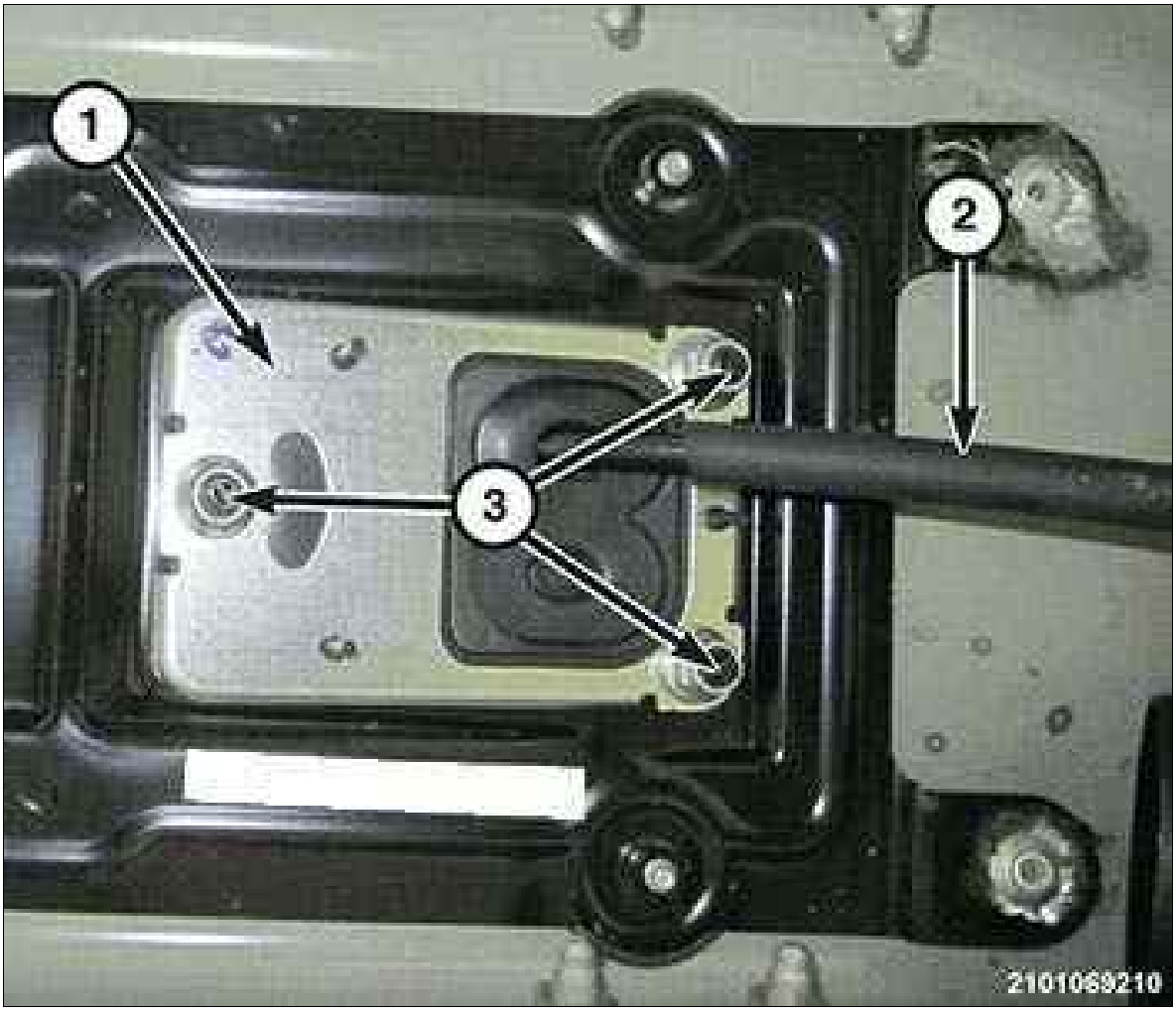
Fig 2: Shifter Cable, Nuts And Plate Assembly



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2. Install grommet and plate assembly nuts (3). Torque to the proper torque specification. Refer to SPECIFICATIONS .

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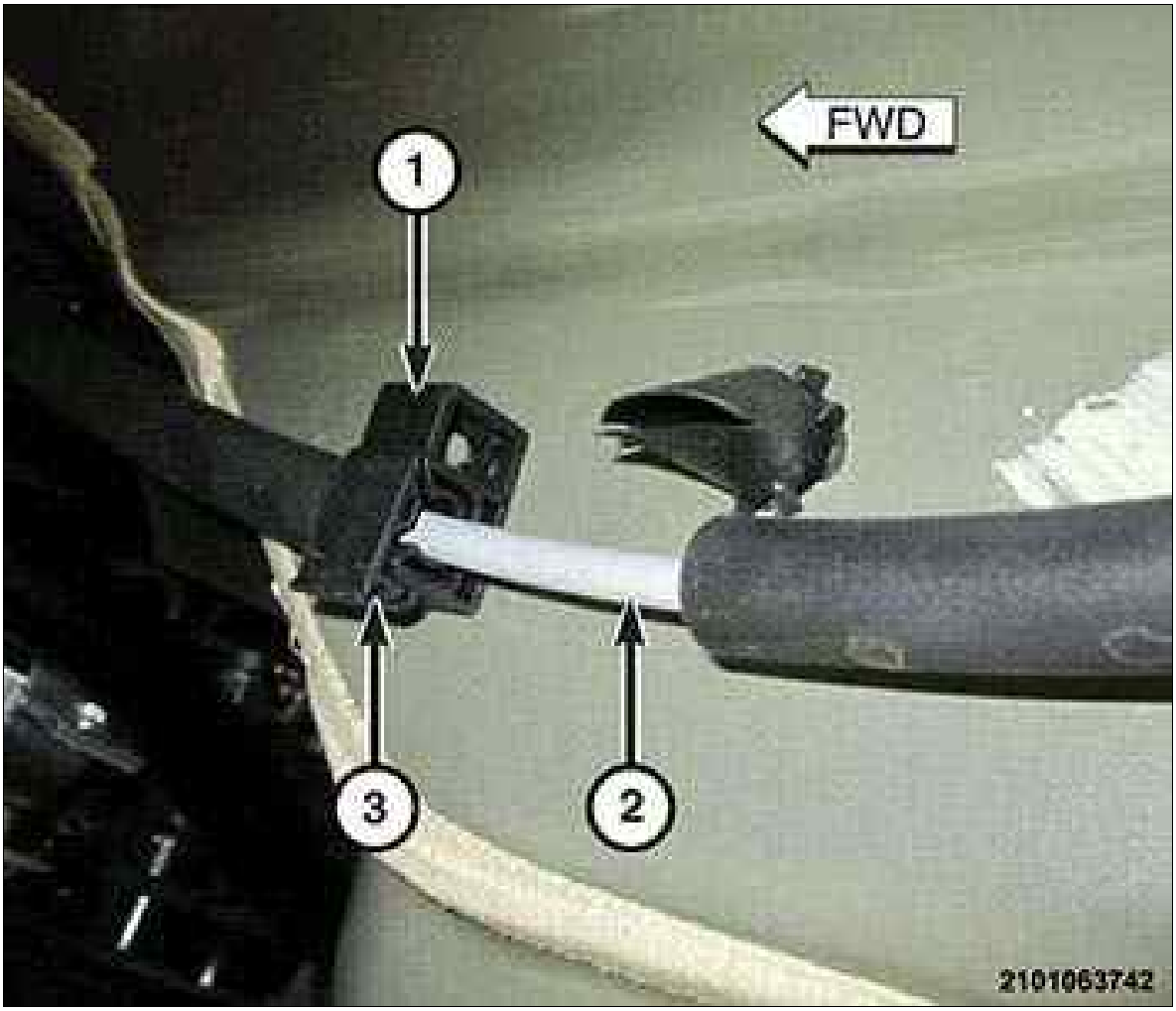
Fig 3: Shifter Cable & Clip



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3. Attach the shifter cable (2) to the clip (1) in the exhaust tunnel.

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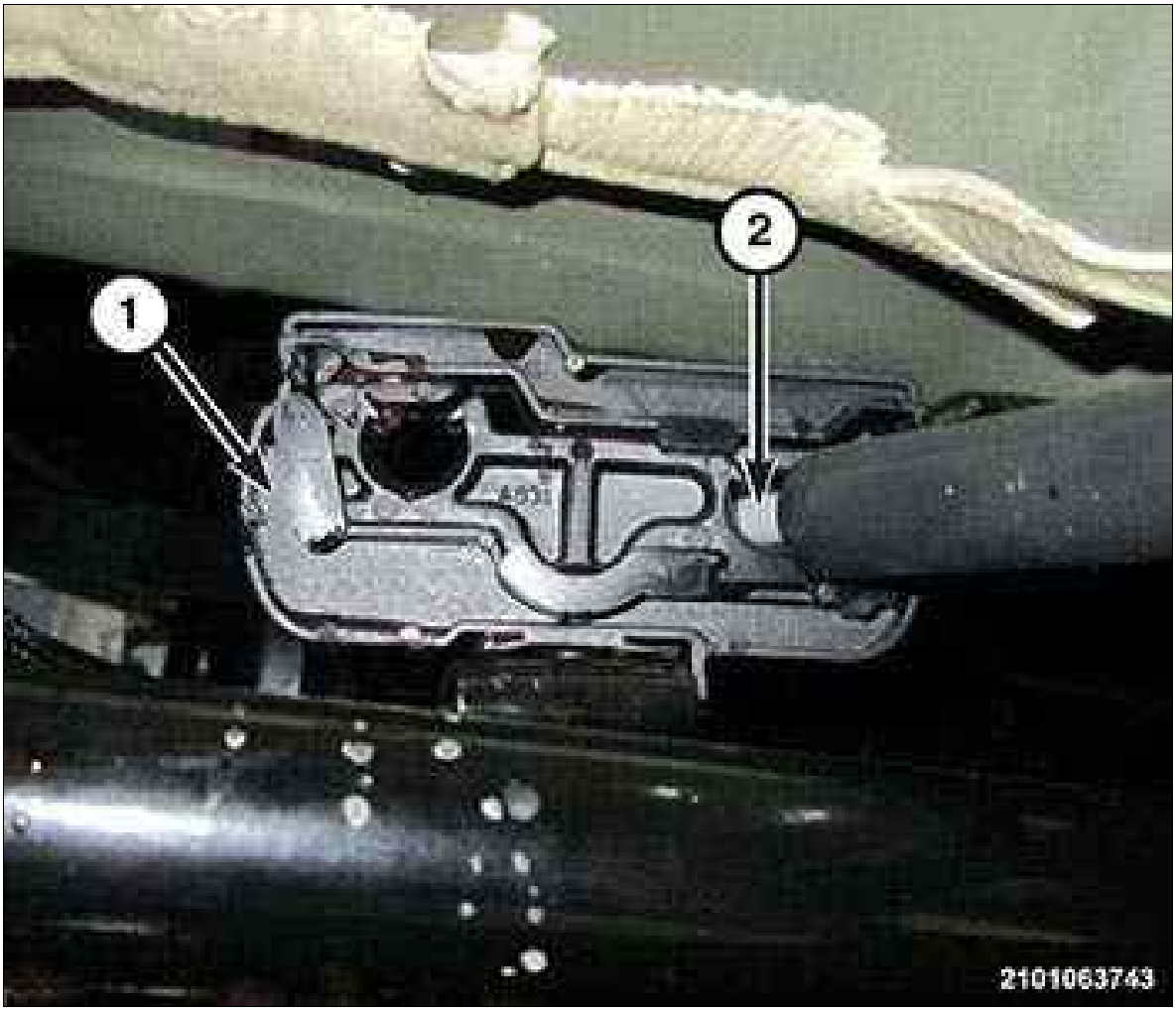
Fig 4: Shifter Cable & Clip Near The Stabilizer Bar



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4. Attach the shifter cable (2) to the routing clip (1) near the stabilizer bar.

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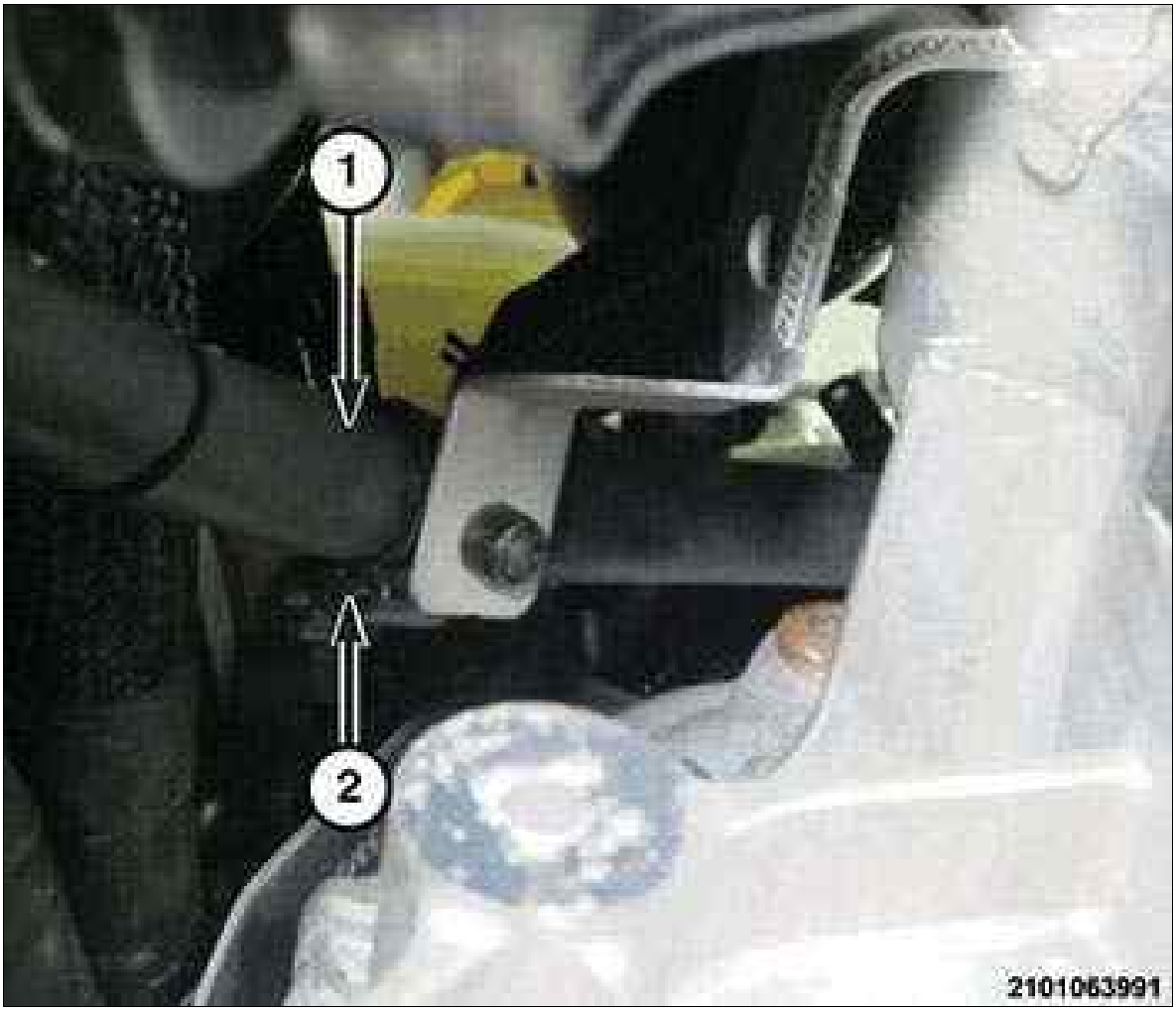
Fig 5: Shifter Cable & Clip Above Starter



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5. Attach the shifter cable (1) to the routing clip (2) above the starter.

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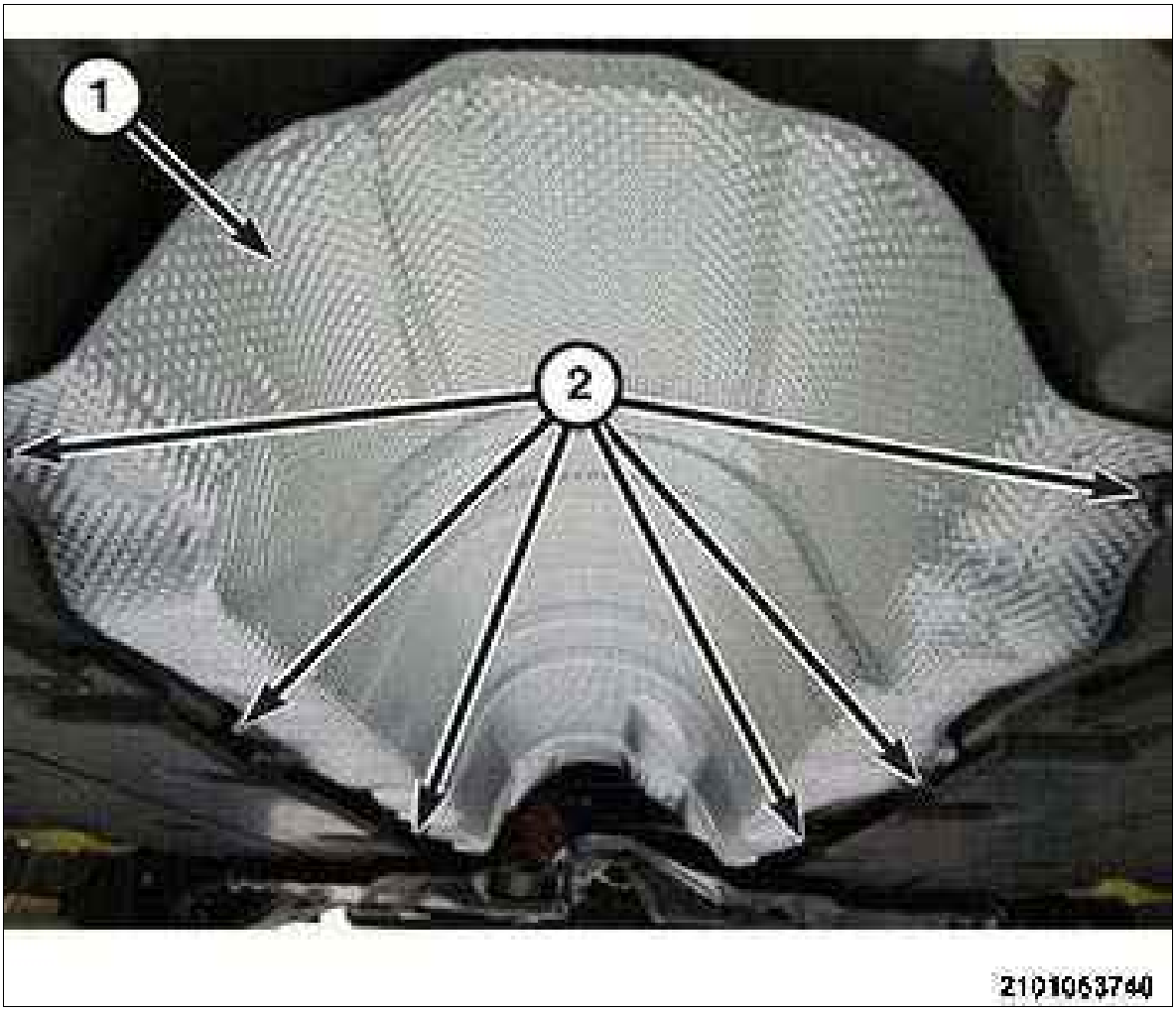
Fig 6: Exhaust Heat Shield & Nuts



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6. Position the heat shield (1) in place and install the heat shield nuts (2).
7. Lower the vehicle.

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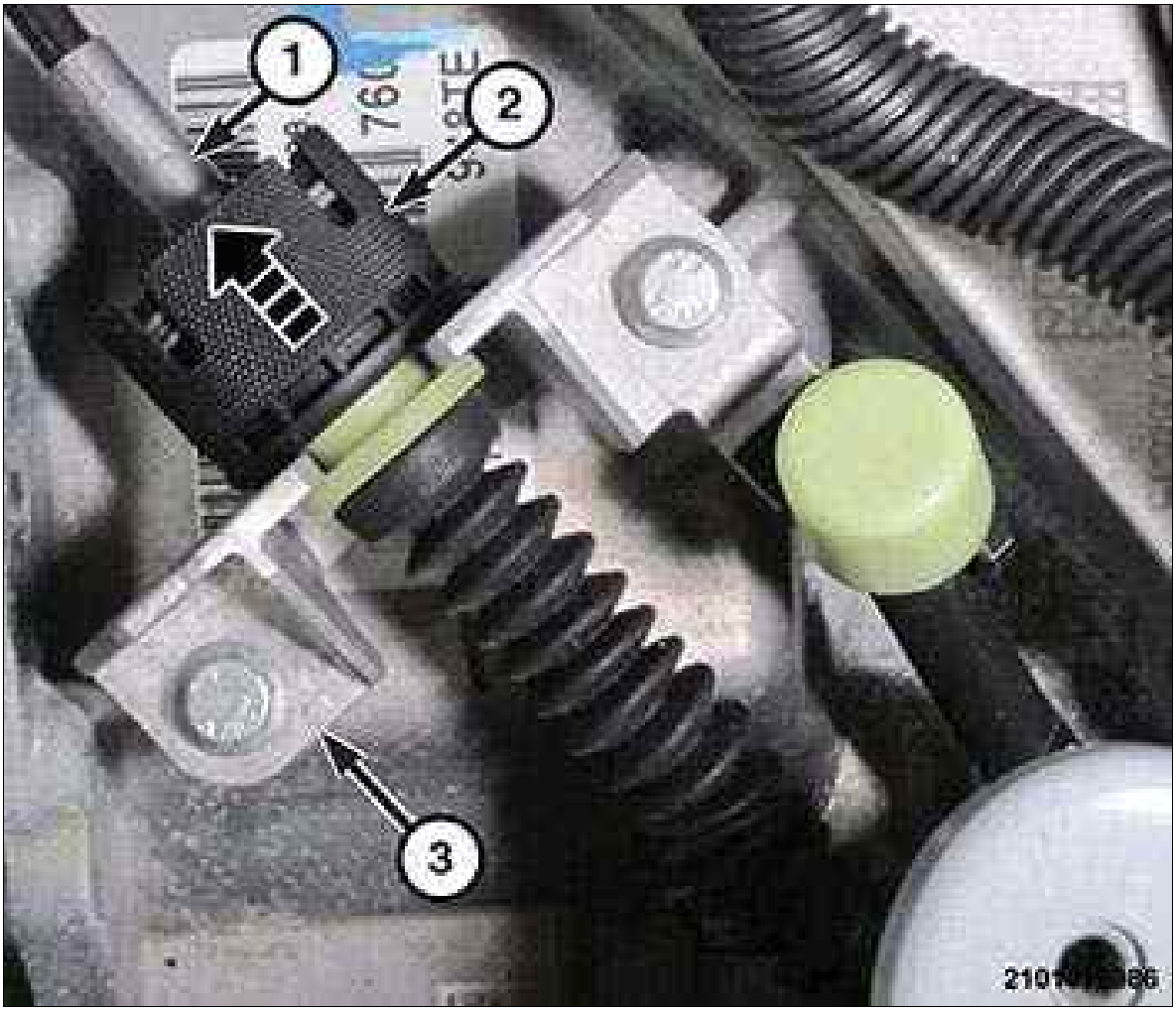
Fig 7: Locking Collar, Shifter Cable & Bracket



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8. Attach the shifter cable (1) in the shifter cable bracket (3) on the transmission.

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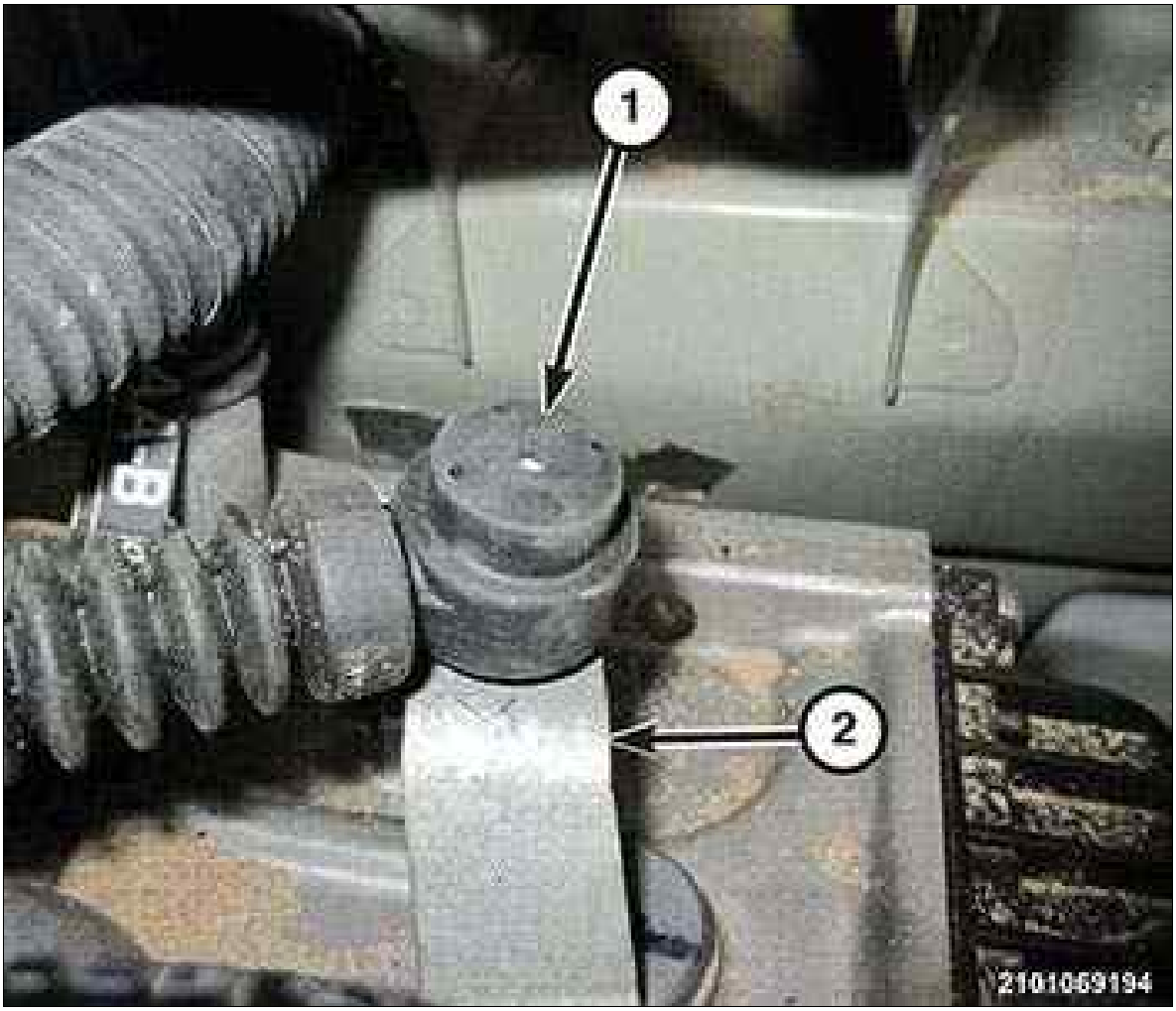
Fig 8: Shifter Cable & Manual Lever



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9. Attach the shifter cable end (1) to the manual lever (2).

> *NOTE:*
>
> *Make sure the transmission is in Park by rotating the manual lever to its forward most position.*

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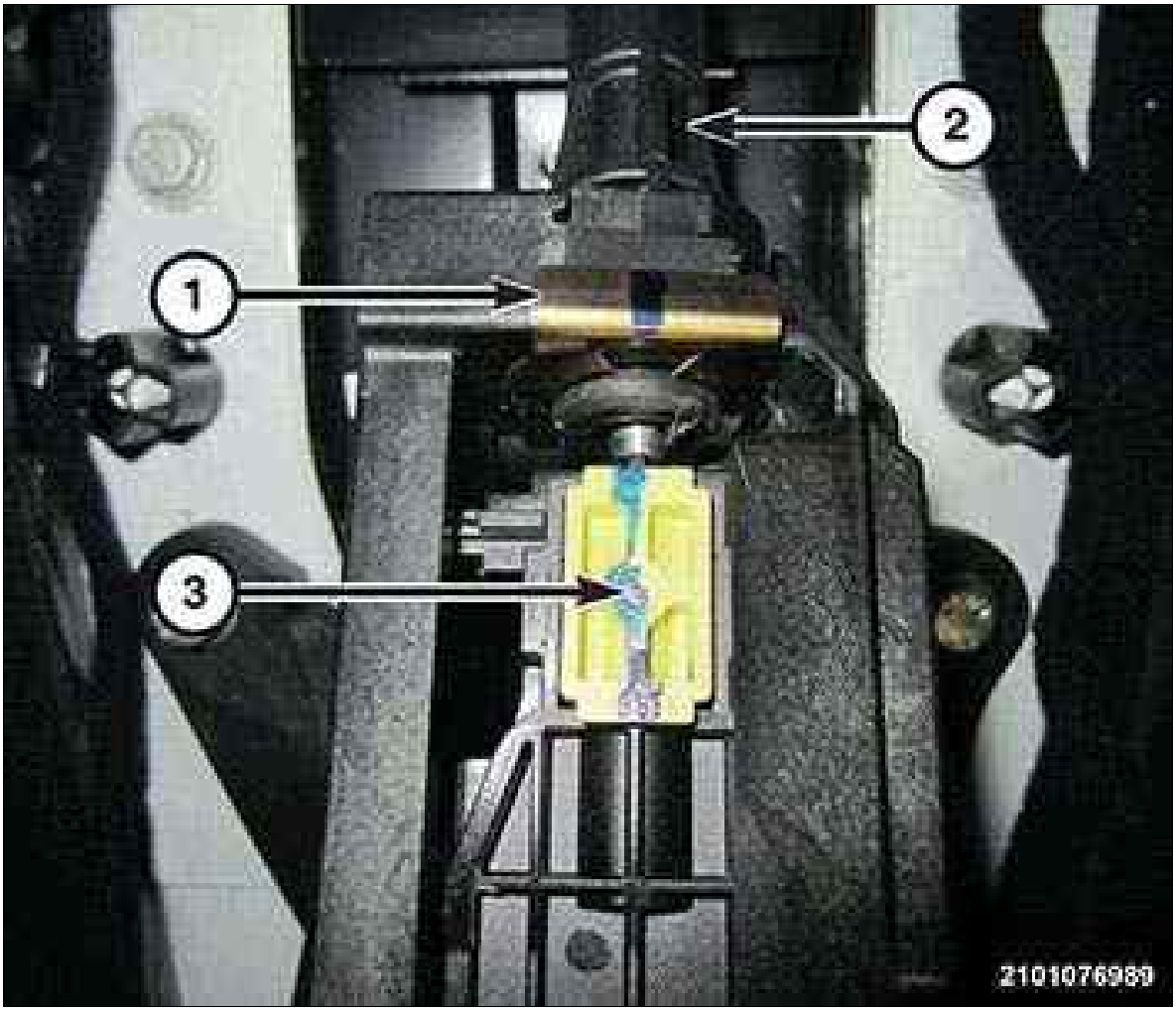
Fig 9: Shifter Cable, Retainer & Adjuster Lock



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10. Insert the gear shift cable (2) into the gear shift housing.
11. Install the gear shift cable retainer (1).

> *NOTE:*
>
> *Make sure the gear shift lever is in the Park position.*

12. Push the gear shift cable adjuster lock (3) down.
13. Connect the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), connect the IBS connector to the negative battery cable.
14. Verify the gear shift cable adjustment. Refer to CABLE, SHIFT, ADJUSTMENTS .
15. Install the floor console. Refer to CONSOLE, FLOOR, REMOVAL AND INSTALLATION .

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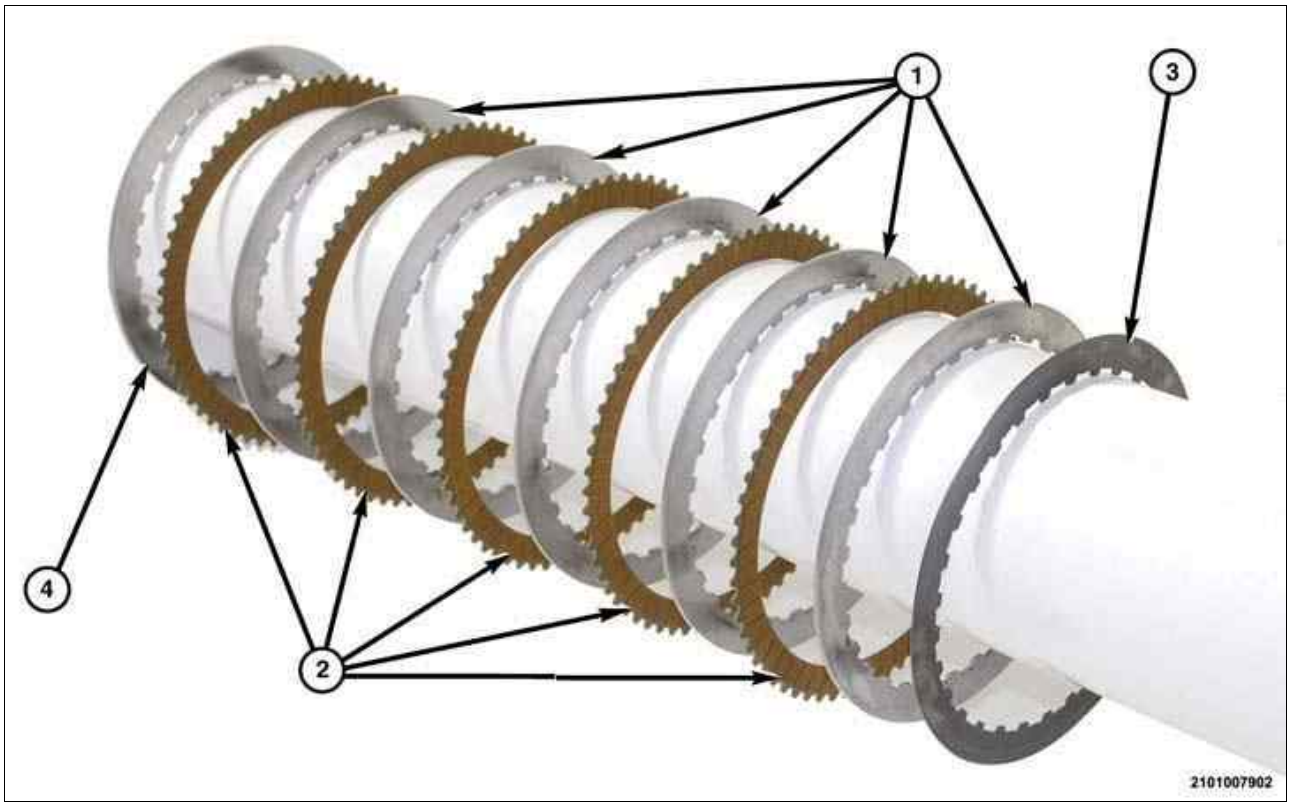
CLUTCH, B > ADJUSTMENTS > B-CLUTCH MEASUREMENT

After the B-clutch is cleaned and assembled the end play must be measured to verify that the correct select reaction plate has been installed.

Fig 1: Exploded View Of B-Clutch, Friction Discs & Steel Plates



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1. Position the B-clutch on a arbor press with the reaction plate (4) facing upward.

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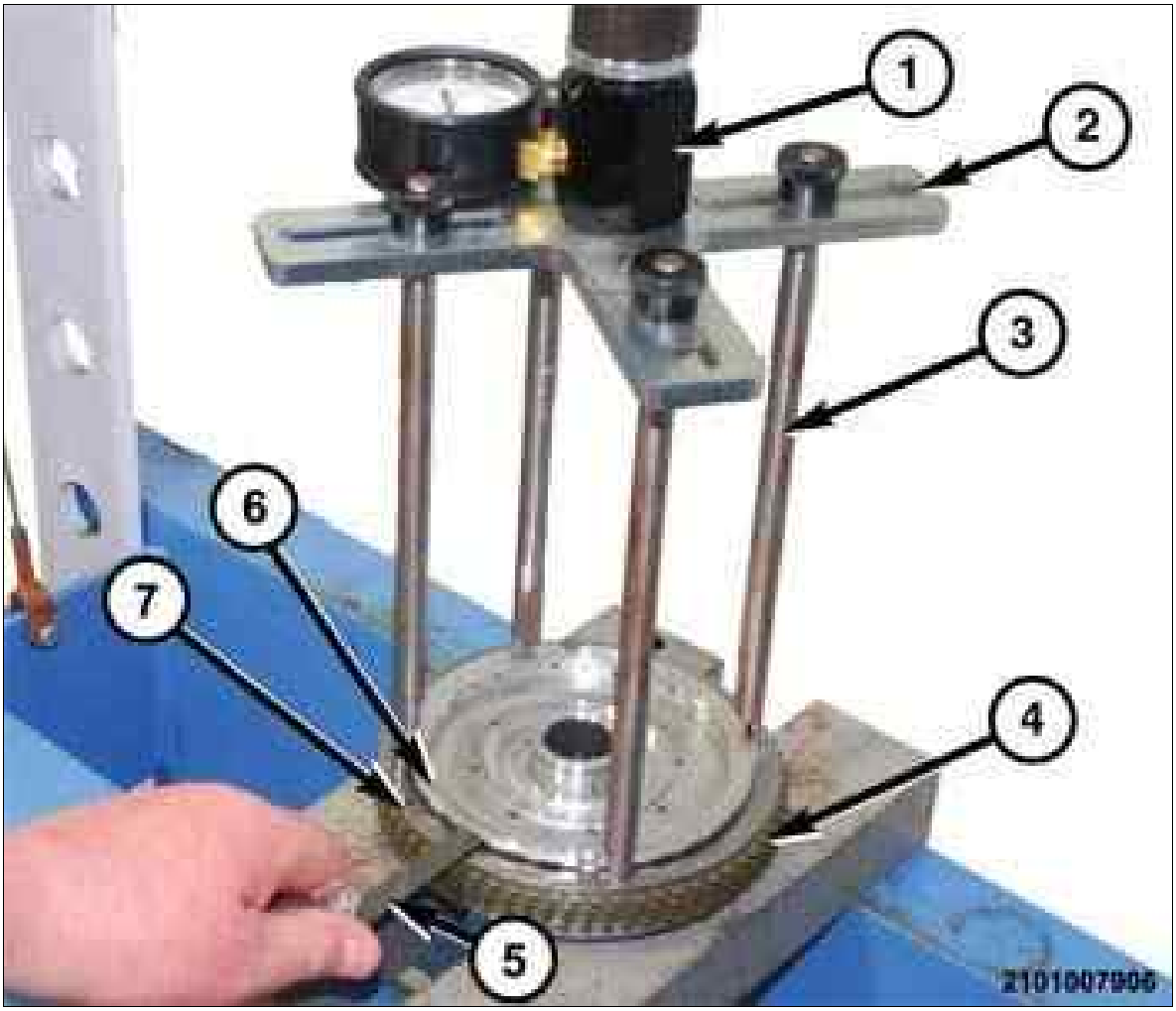
Fig 2: Compressing B-Clutch



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2. Using tool (special tool #10429, Gauge, Force) (1), Pressing Tool (special tool #8901A, Pressing Tool) (2) (with pressure scale removed) and legs (special tool #10428, Adapter, Pressing Tool) (3), compress the B-clutch (4) to collapse wave plate to 68 kgf (150 lb. force) (1).
3. Using a suitable feeler gauge (5), measure the gap between the B-clutch piston (6) and the reaction plate (7). Refer to SPECIFICATIONS .
4. If the measurement is not within specification, replace the reaction plate (7) with the correct plate.

CLUTCH, B > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > B-CLUTCH DISASSEMBLY

WARNING:

Always wear safety glasses when cleaning, disassembling and assembling the

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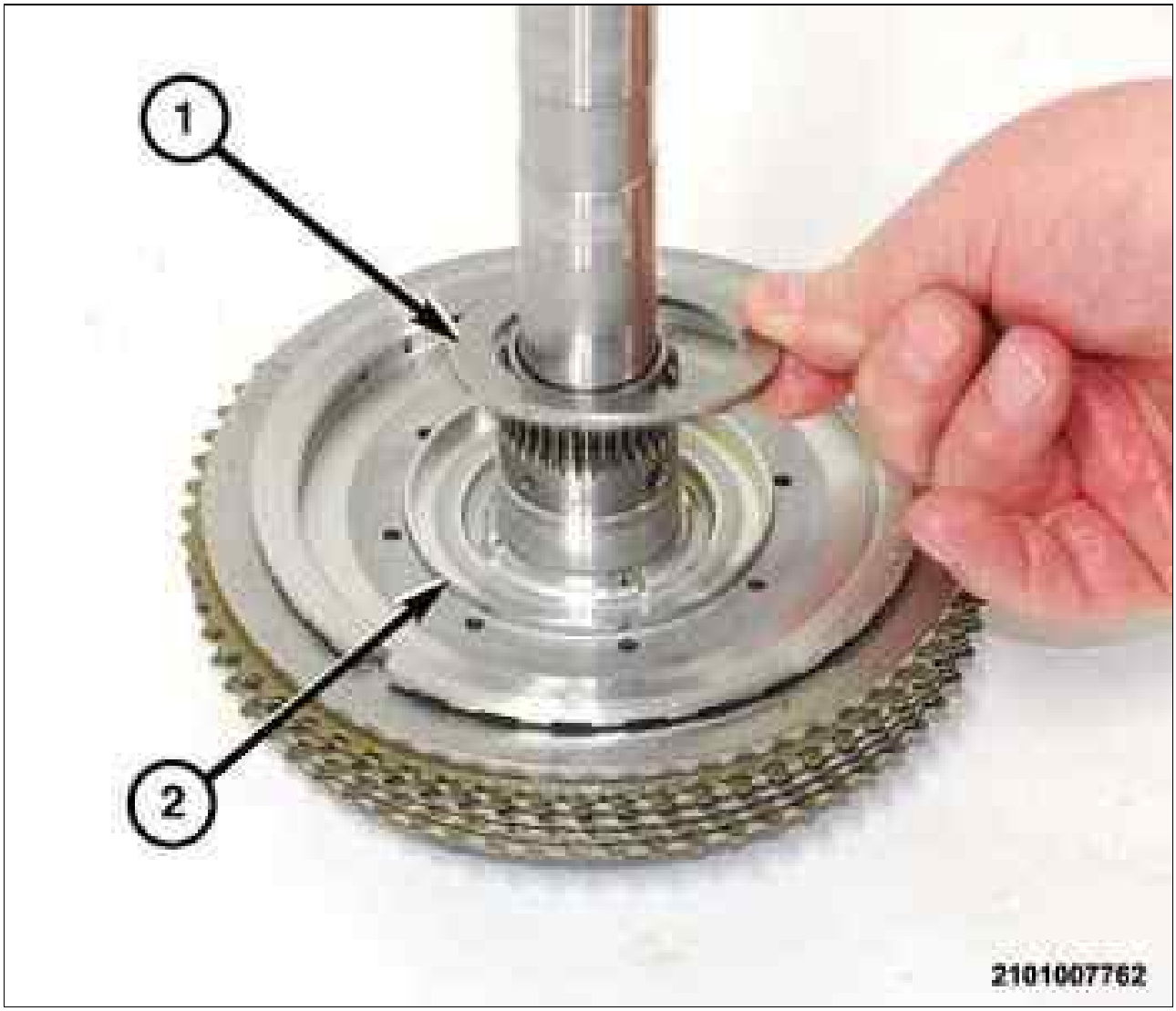
transmission/transaxle. Contents of the transmission/transaxle can become projectiles (e.g., springs, snap-rings, as well as metal and other debris). Failure to wear safety glasses may result in severe personal injury.

NOTE:

Clean the B-clutch components with suitable solvent and blow them dry with regulated 344 kPa (50 psi) shop air. Position all of the B-clutch components on a clean work surface in preparation for assembly.

Fig 1: Thrust Bearing & B-Clutch Hub



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1. Remove the thrust bearing (1) from B-clutch hub (2).

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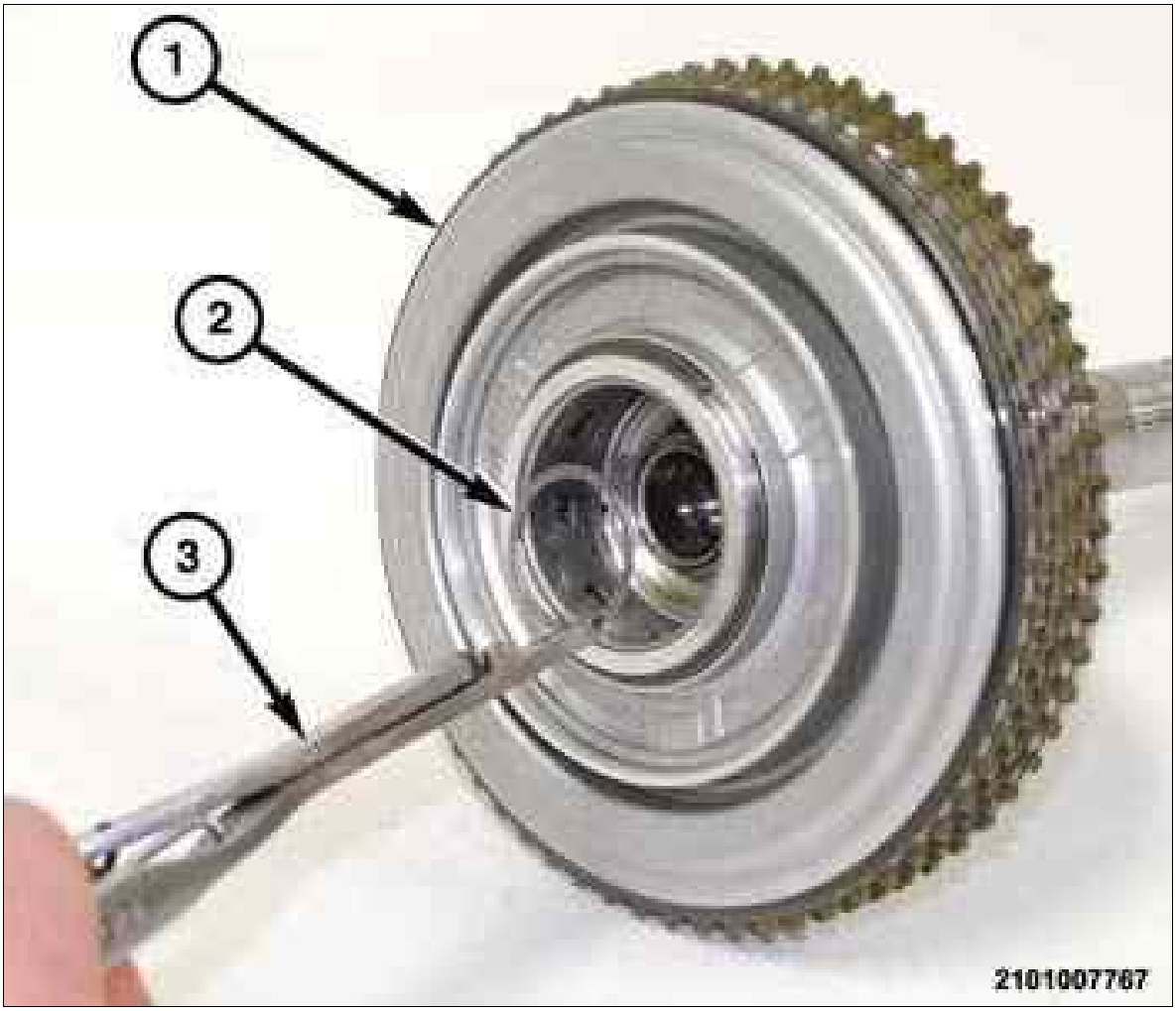
Fig 2: Input Shaft/Dog Clutch A, B-Clutch Hub & Snap-Ring



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2. Remove the snap-ring (2) holding the B-clutch hub (1) to the input shaft/Dog clutch A assembly.
3. Remove the input shaft from the B-clutch (1).

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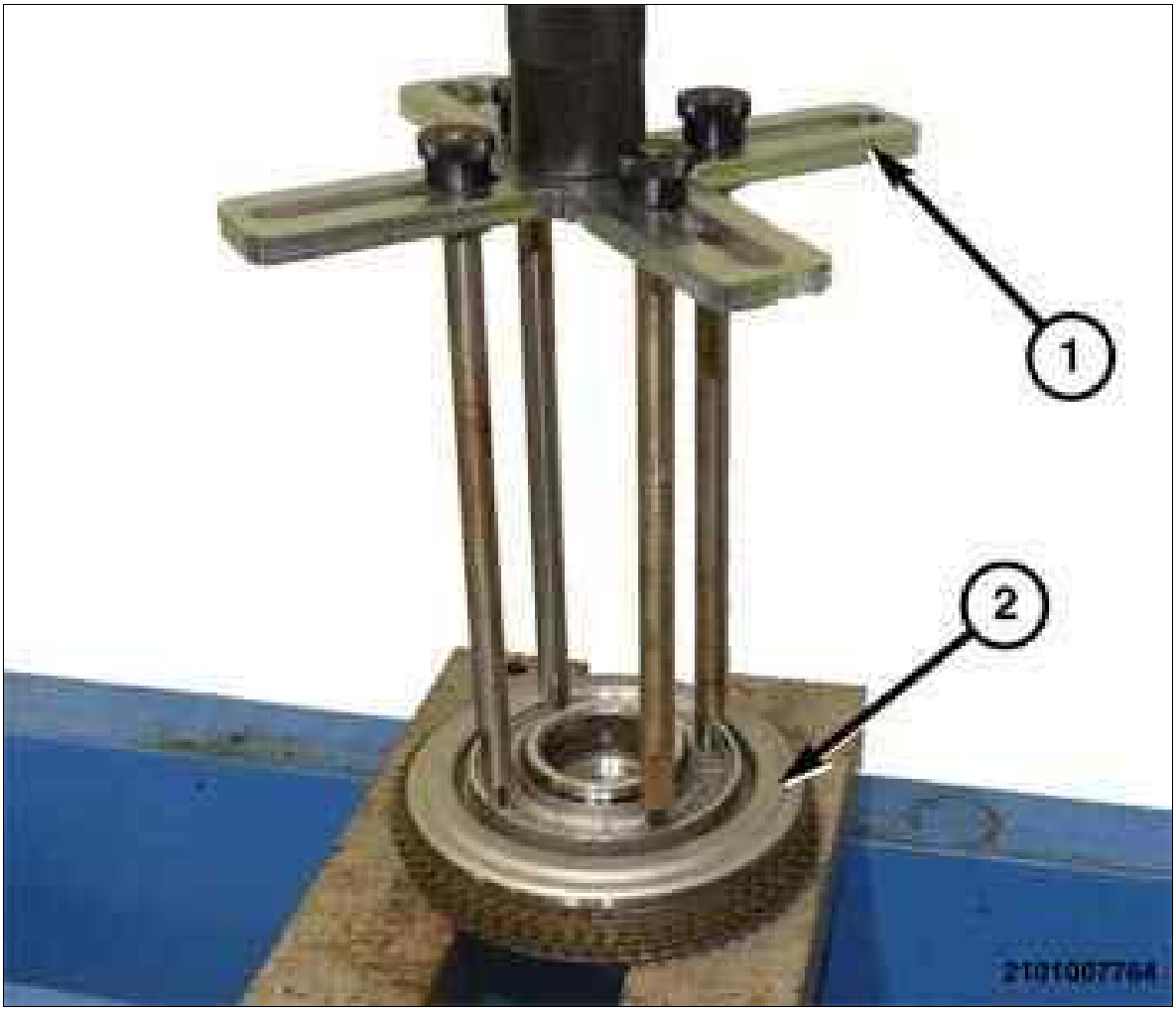
Fig 3: Compressing B-Clutch Piston To Gain Access To Snap-Ring



Courtesy of CHRYSLER GROUP, LLC

4. Place the B-clutch (2) with piston up on a suitable arbor press.
5. Using tool (special tool #8901A, Pressing Tool) (with pressure scale removed) (1) and legs (special tool #10428, Adapter, Pressing Tool), compress the B-clutch (2) piston to gain access to the snap-ring.

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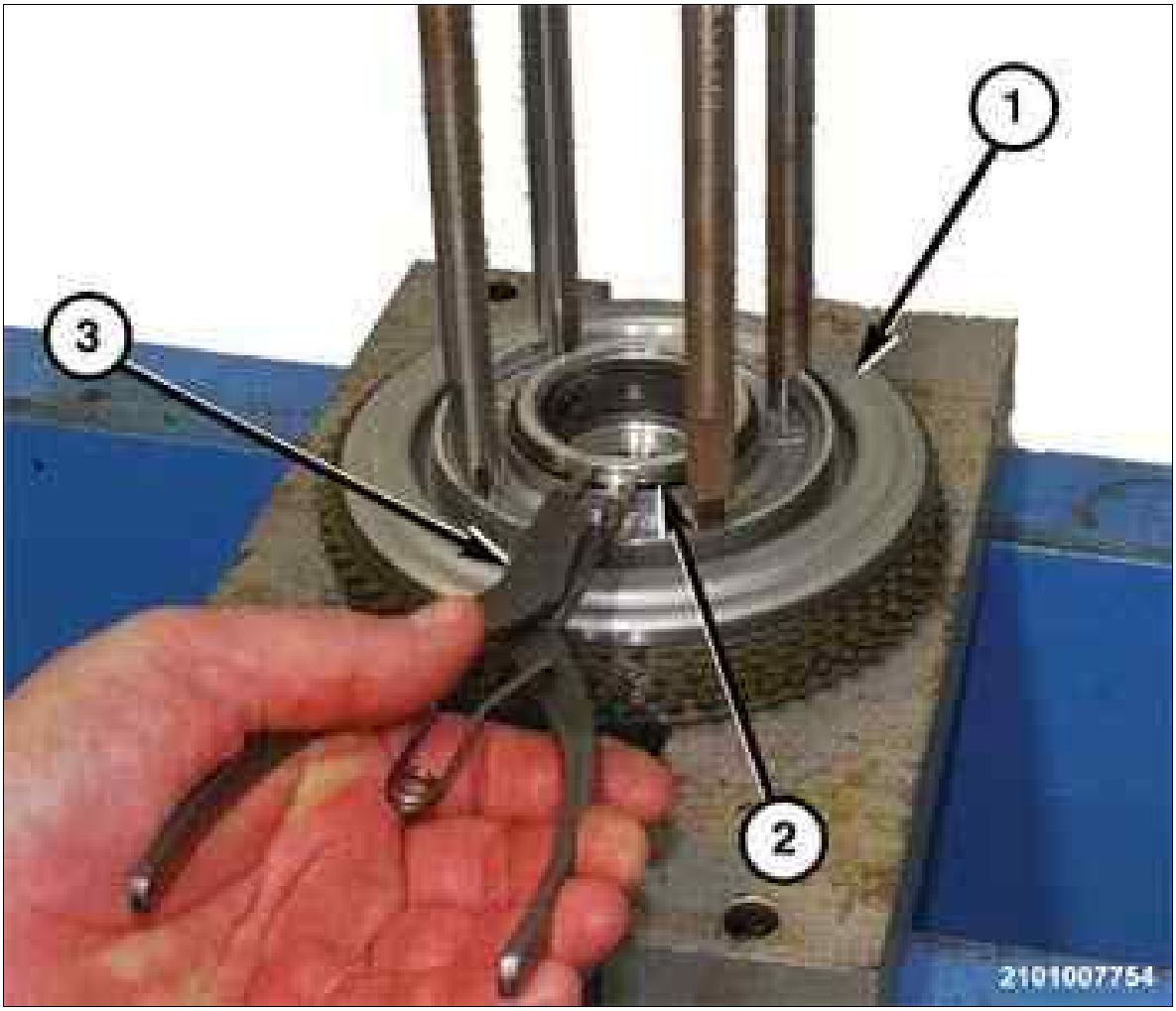
Fig 4: Snap-Ring, B-Clutch Piston & B-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

6. Using suitable snap-ring pliers (3), remove the snap-ring (2) holding the B-clutch piston in the B-clutch (1) hub.

7. Remove the B-clutch (1) from the arbor press.

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Fig 5: B-Clutch Piston & B-Clutch

Courtesy of CHRYSLER GROUP, LLC

8. Remove the B-clutch piston (1) from the B-clutch (2).

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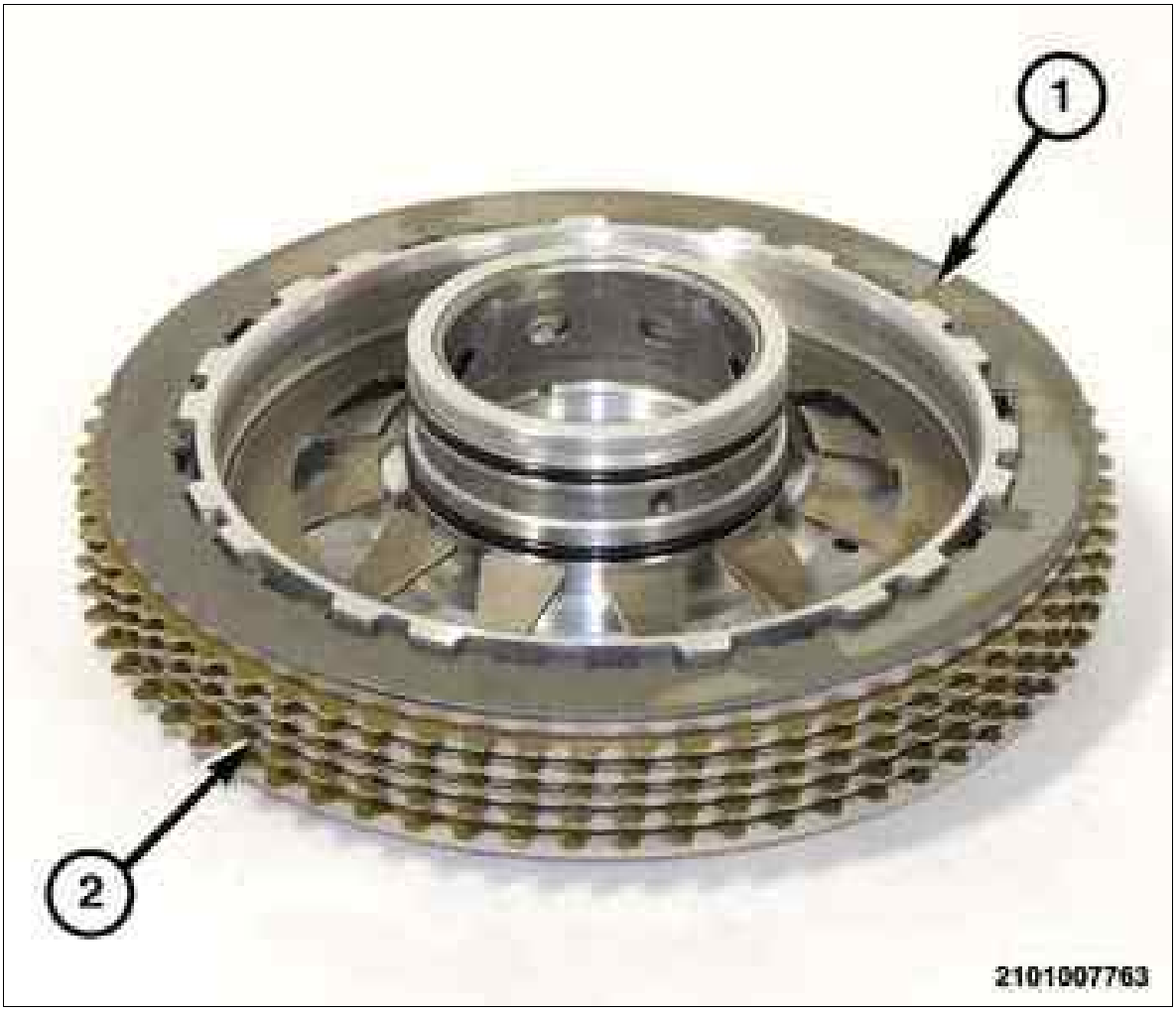
Fig 6: B-Clutch & B-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

9. Remove the B-clutch friction discs and steel plates (2) From the B-clutch hub (1).

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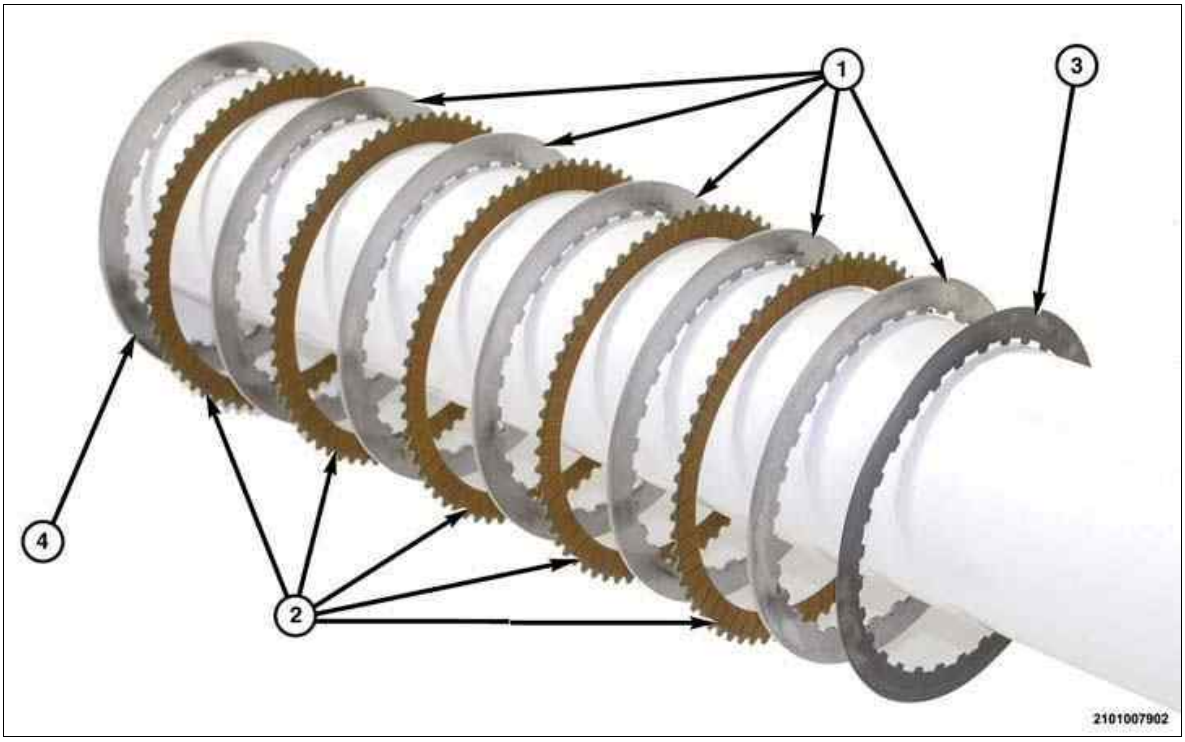
Fig 7: Exploded View Of B-Clutch, Friction Discs & Steel Plates



Courtesy of CHRYSLER GROUP, LLC

10. Separate the friction discs (2) from the steel plates (1).

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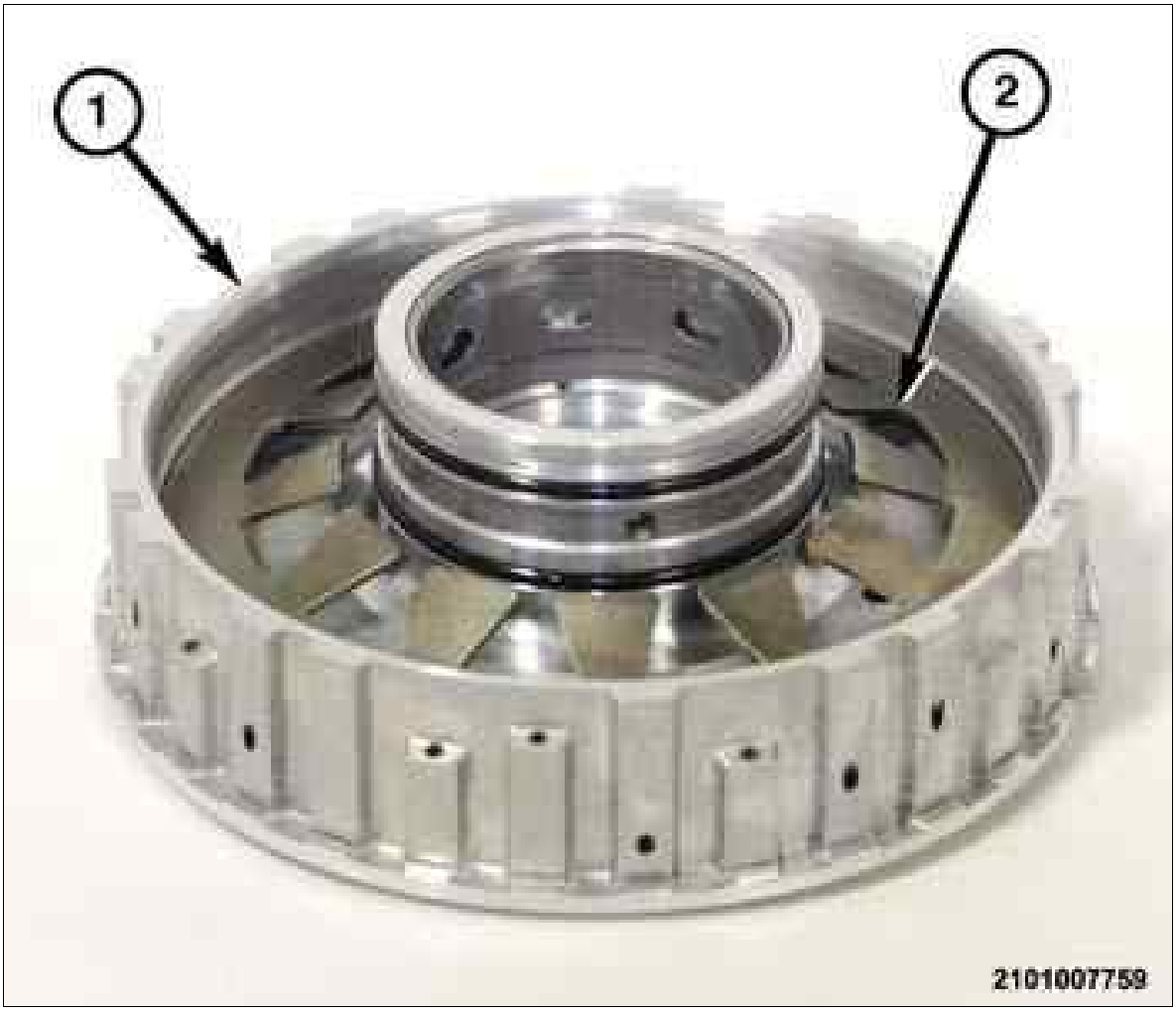
Fig 8: Belleville Spring & B-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

11. Remove the belleville spring (2) from the B-clutch hub (1).

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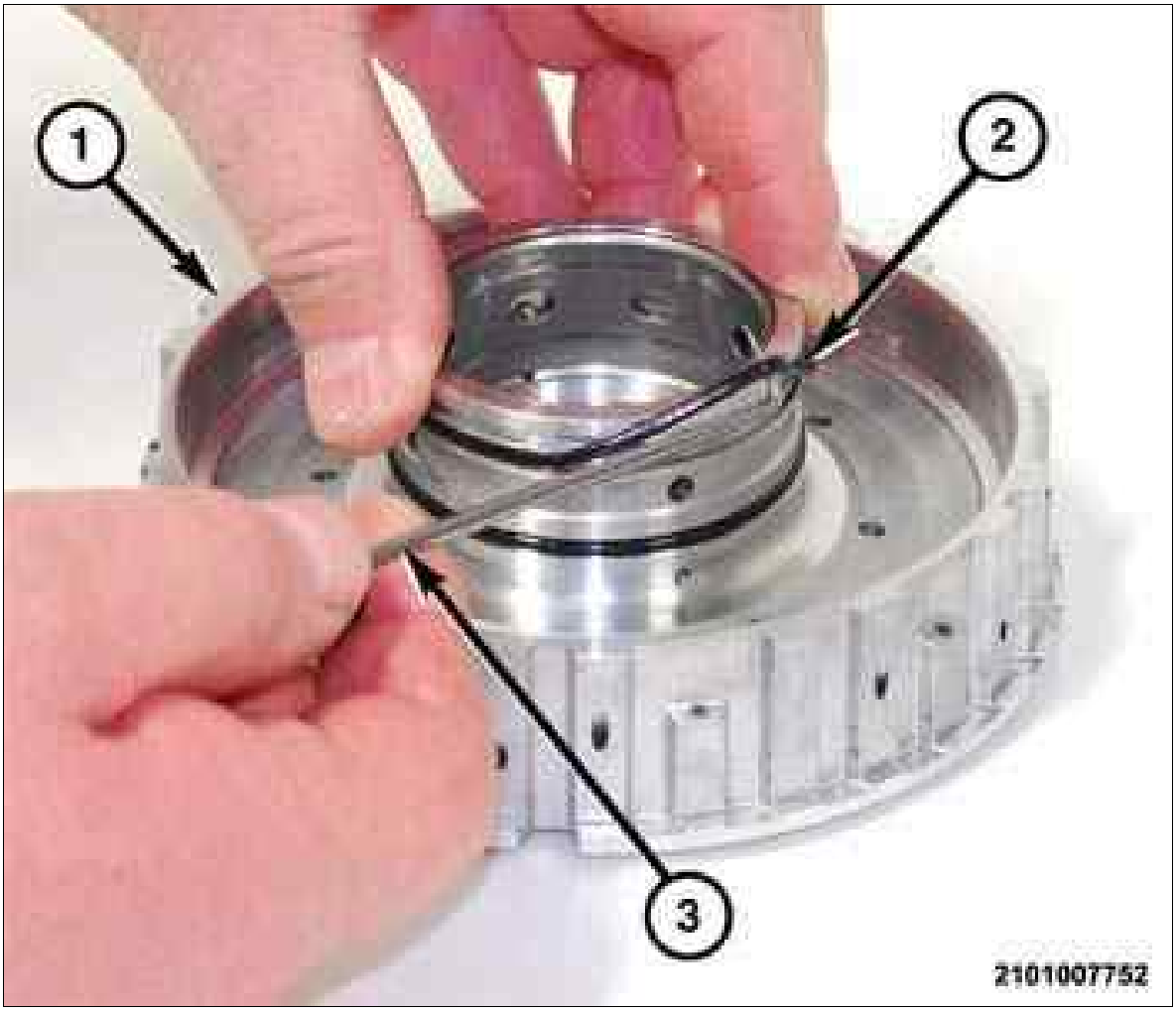
Fig 9: Removing O-Ring Seals From B-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

12. Using a suitable hook tool (3) remove the two O-ring seals (2) from the B-clutch hub (1).

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Fig 10: Remove/Install Balance Piston At B-Clutch Piston

Courtesy of CHRYSLER GROUP, LLC

13. Remove the balance piston (1) from the B-clutch piston (2).

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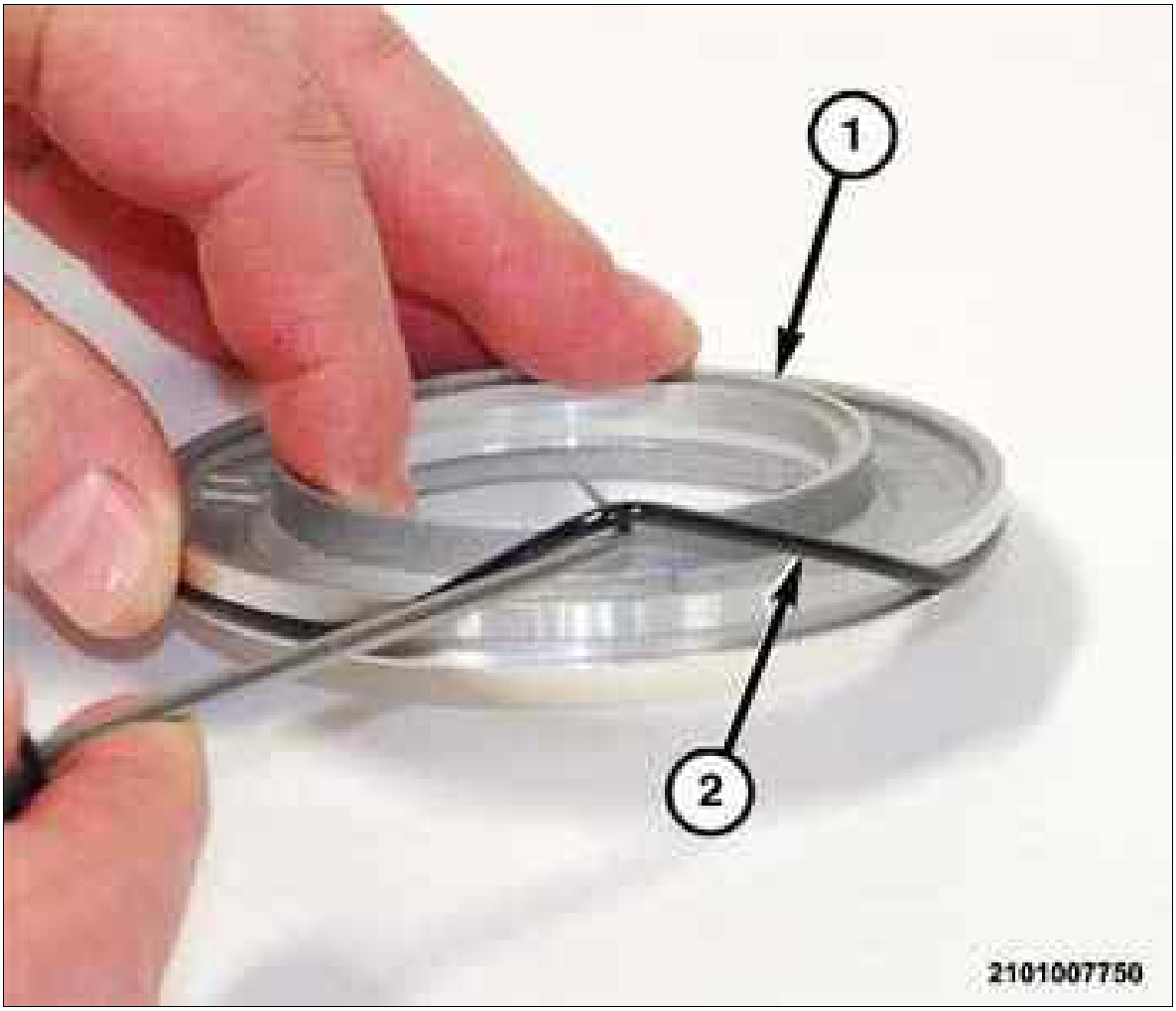
Fig 11: Removing Balance Piston O-Ring



Courtesy of CHRYSLER GROUP, LLC

14. Using a suitable hook tool, remove the O-ring (2) from the balance piston (1).

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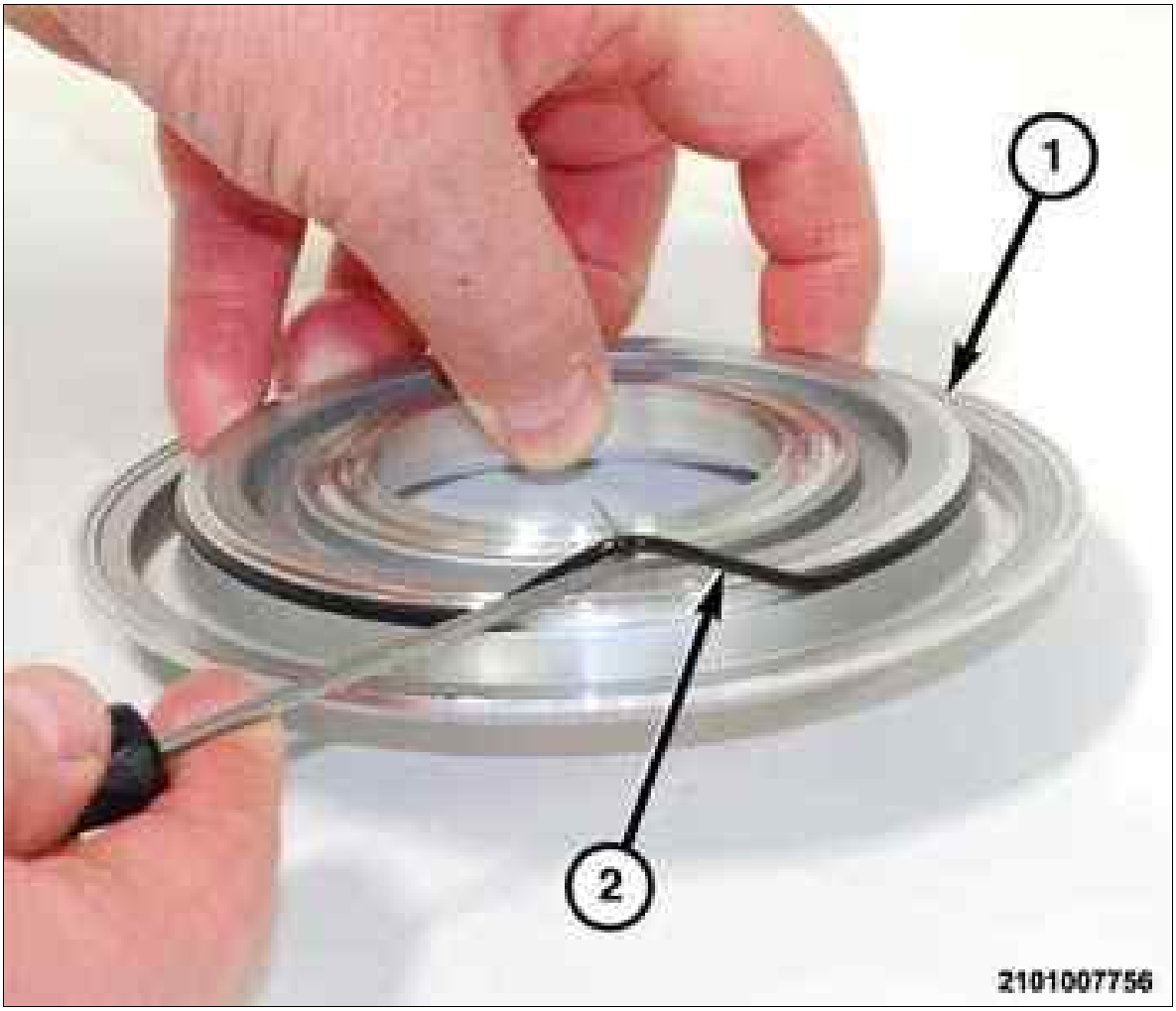
Fig 12: Removing B-Clutch Piston O-Ring



Courtesy of CHRYSLER GROUP, LLC

15. Using a suitable hook tool, remove the O-ring seal (2) from the B-clutch piston (1).

CLUTCH, B > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > B-CLUTCH ASSEMBLY

WARNING:

Always wear safety glasses when cleaning, disassembling and assembling the transmission/transaxle. Contents of the transmission/transaxle can become projectiles (e.g., springs, snap-rings, as well as metal and other debris). Failure to wear safety glasses may result in severe personal injury.

Clean the B-clutch components with suitable solvent and blow them dry with regulated 344 kPa (50 psi) shop air. Position all of the B-clutch components on a clean work surface in preparation for assembly.

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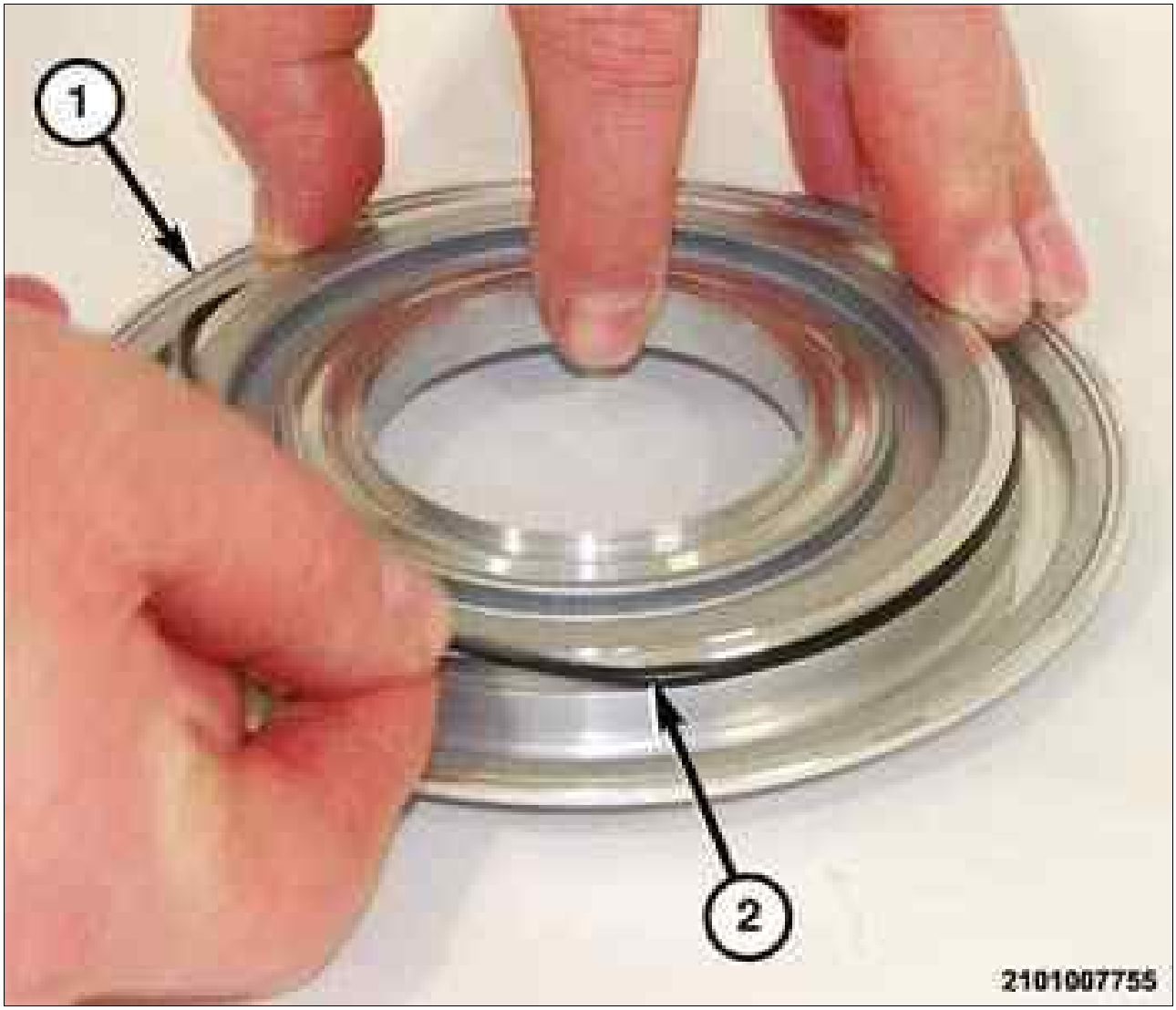
Fig 1: Installing B-Clutch Piston O-Ring



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1. Install the O-ring seal (2) on the B-clutch piston (1).

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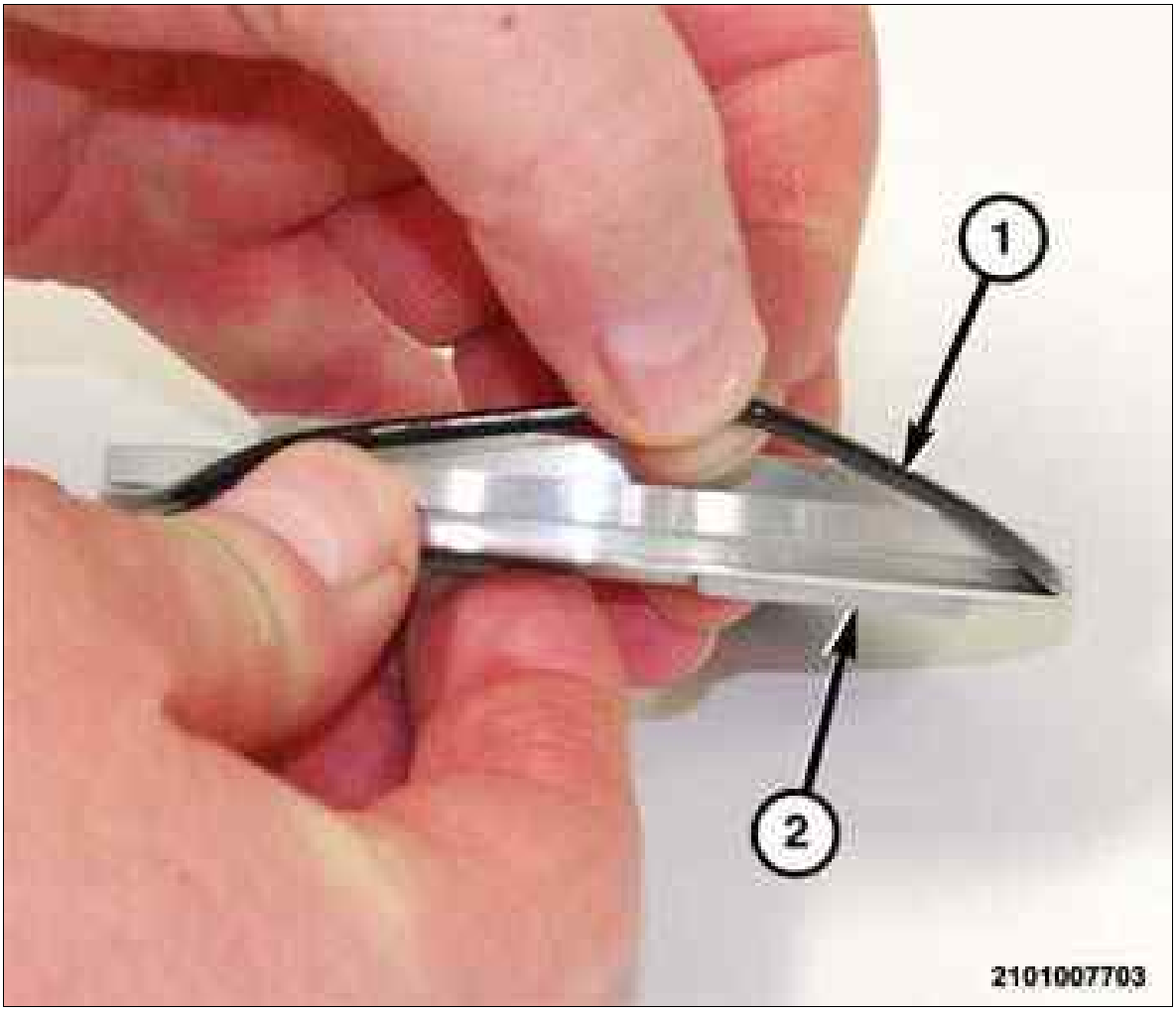
Fig 2: Installing B-Clutch Balance Piston O-Ring



Courtesy of CHRYSLER GROUP, LLC

2. Install the O-ring seal (1) on the B-clutch balance piston (2).

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Fig 3: Remove/Install Balance Piston At B-Clutch Piston

Courtesy of CHRYSLER GROUP, LLC

3. Install the balance piston (1) in the B-clutch piston (2).

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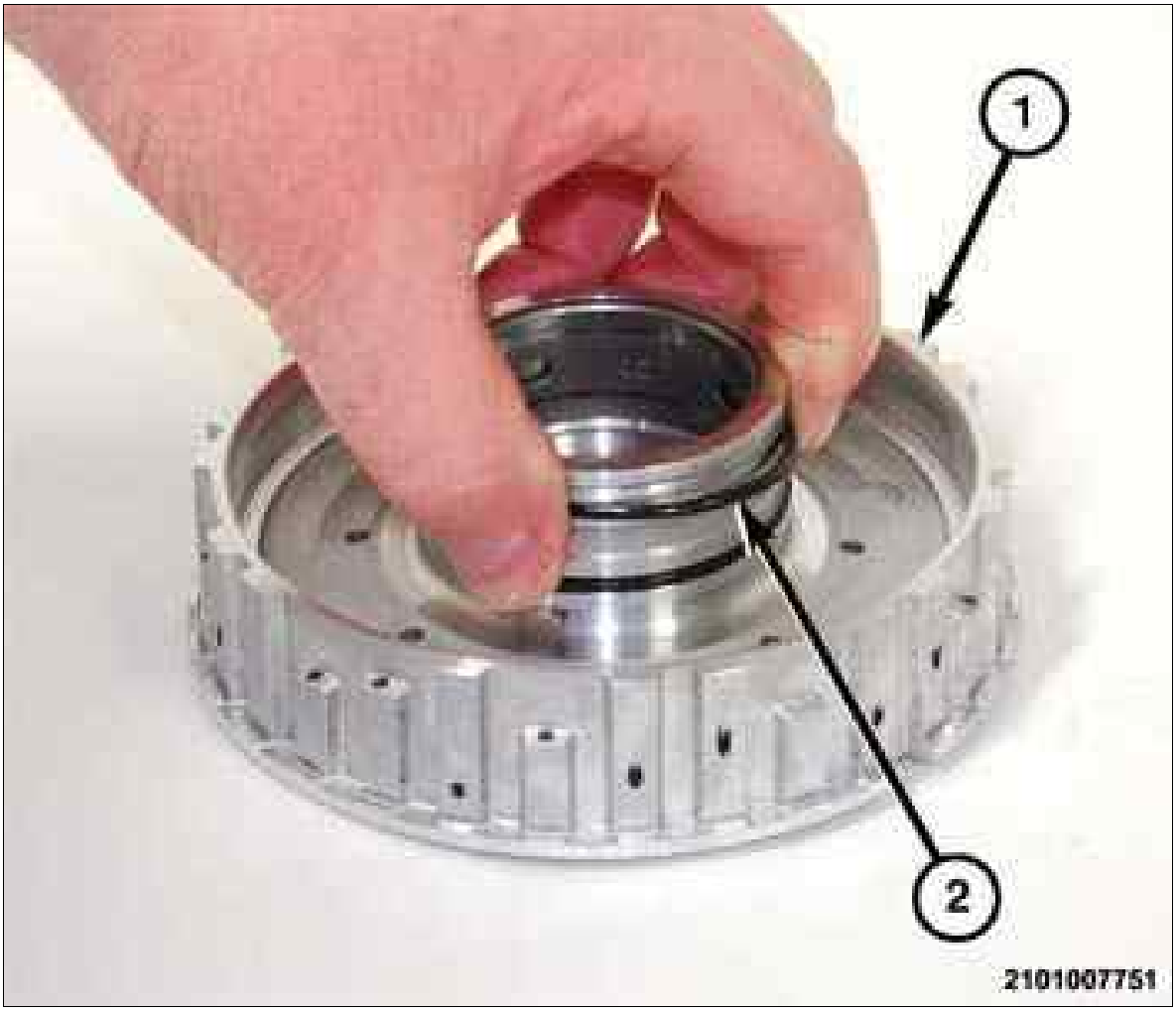
Fig 4: B-Clutch Hub & O-Ring Seals



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4. Install New O-ring seals (2) in the B-clutch hub (1).

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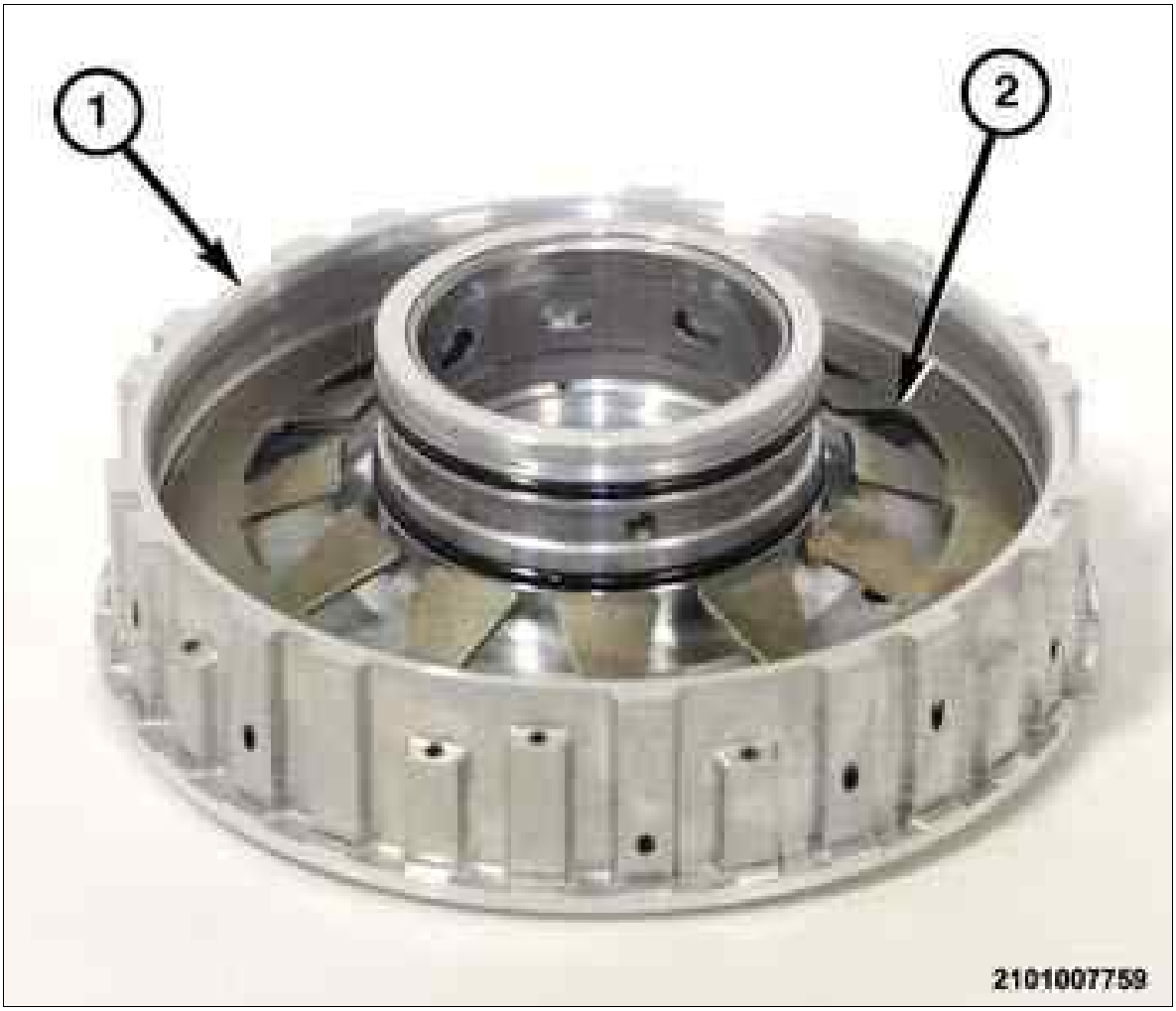
Fig 5: Belleville Spring & B-Clutch Hub



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5. Install the belleville spring (2) in the B-clutch hub (1).

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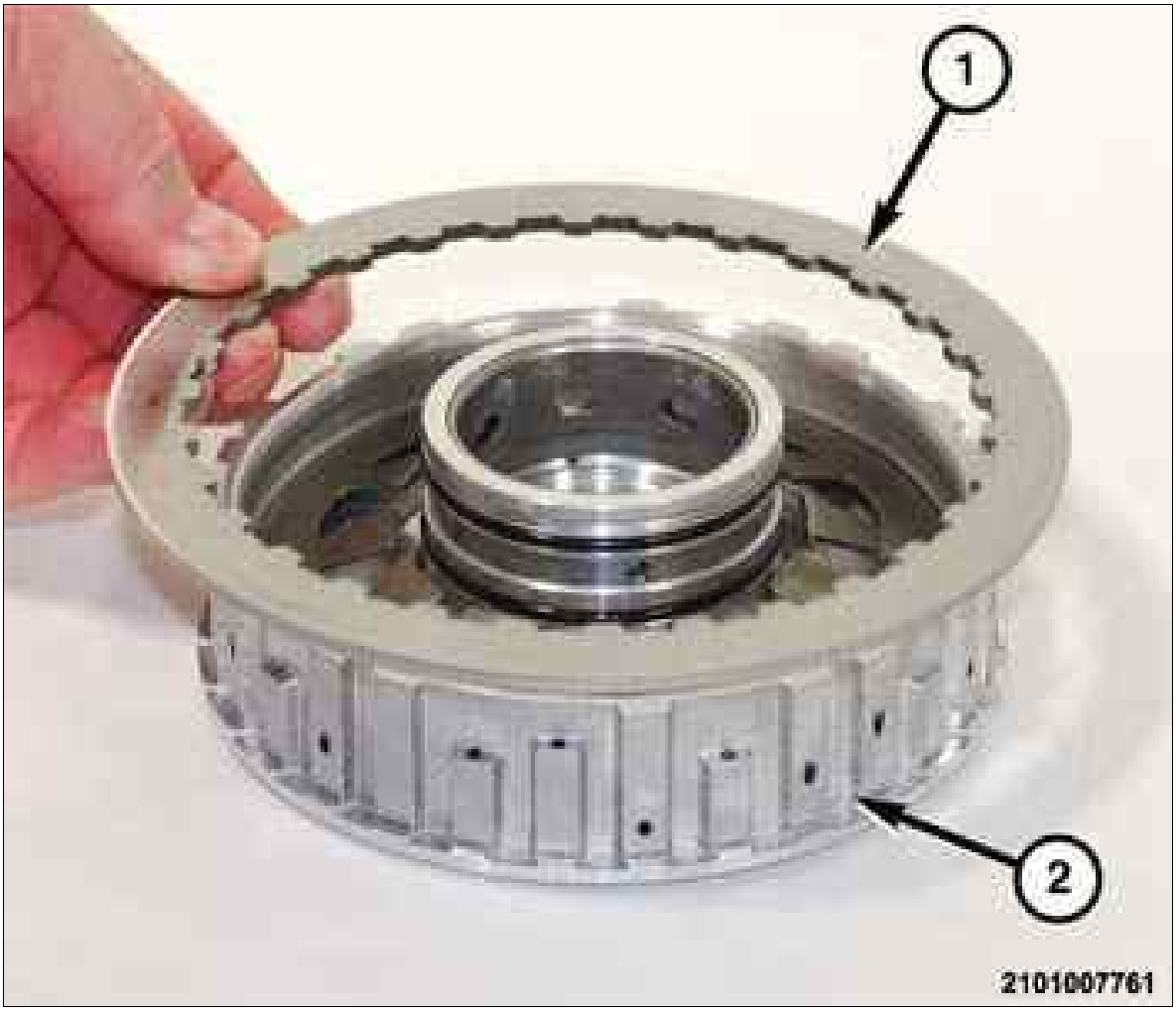
Fig 6: Reaction Plate & B-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

6. Install the reaction plate (1) on the B-clutch hub (2).

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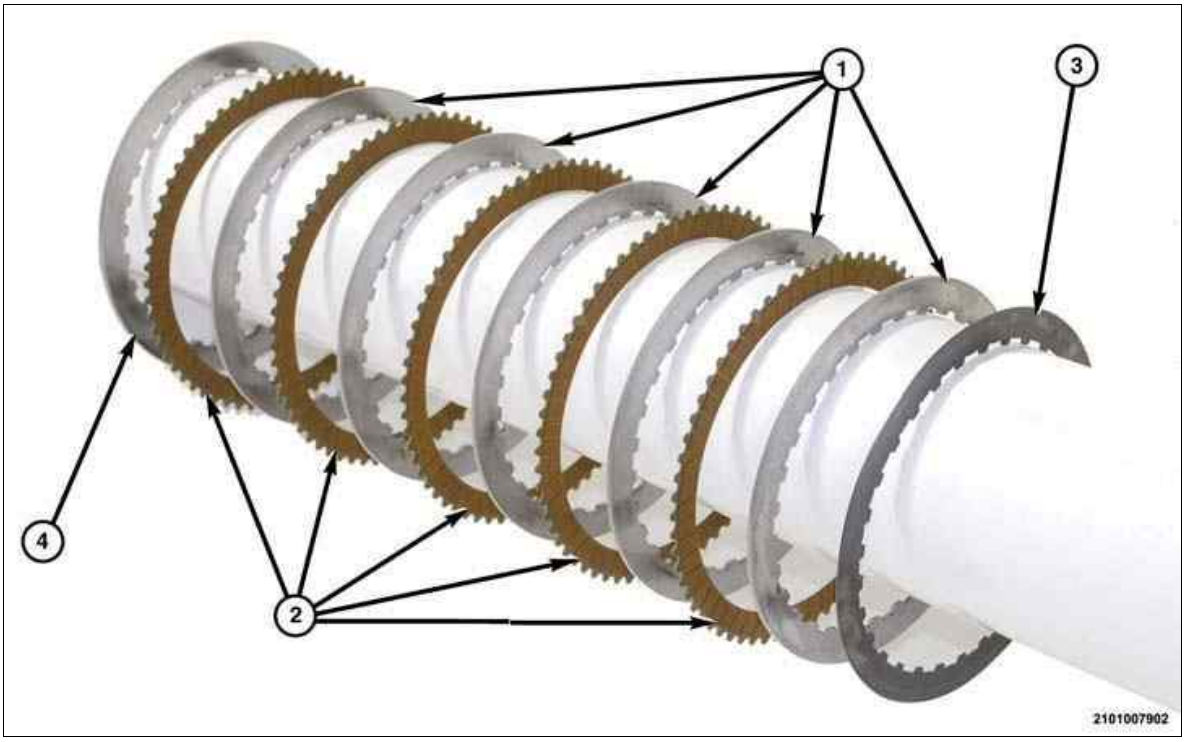
Fig 7: Exploded View Of B-Clutch, Friction Discs & Steel Plates



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7. In alternating sequence, Install the B-clutch friction plates (2) and steel plates (1) On the B-clutch hub.

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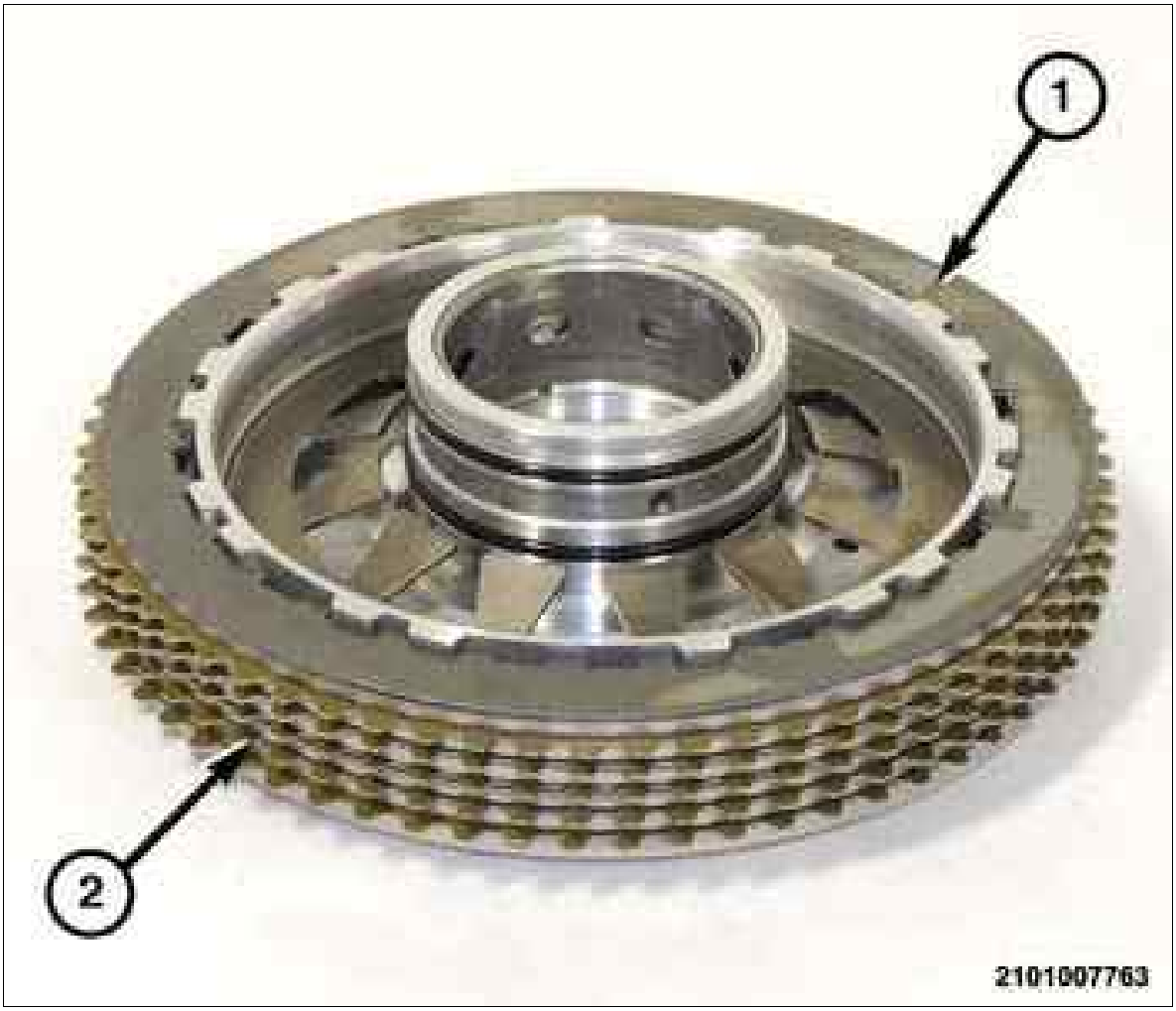
Fig 8: Wave Spring Plate & B-Clutch Hub



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8. Install the wave spring plate (1) on the B-clutch hub.

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Fig 9: B-Clutch Piston & B-Clutch

Courtesy of CHRYSLER GROUP, LLC

9. Install the piston (1) on the B-clutch (2).

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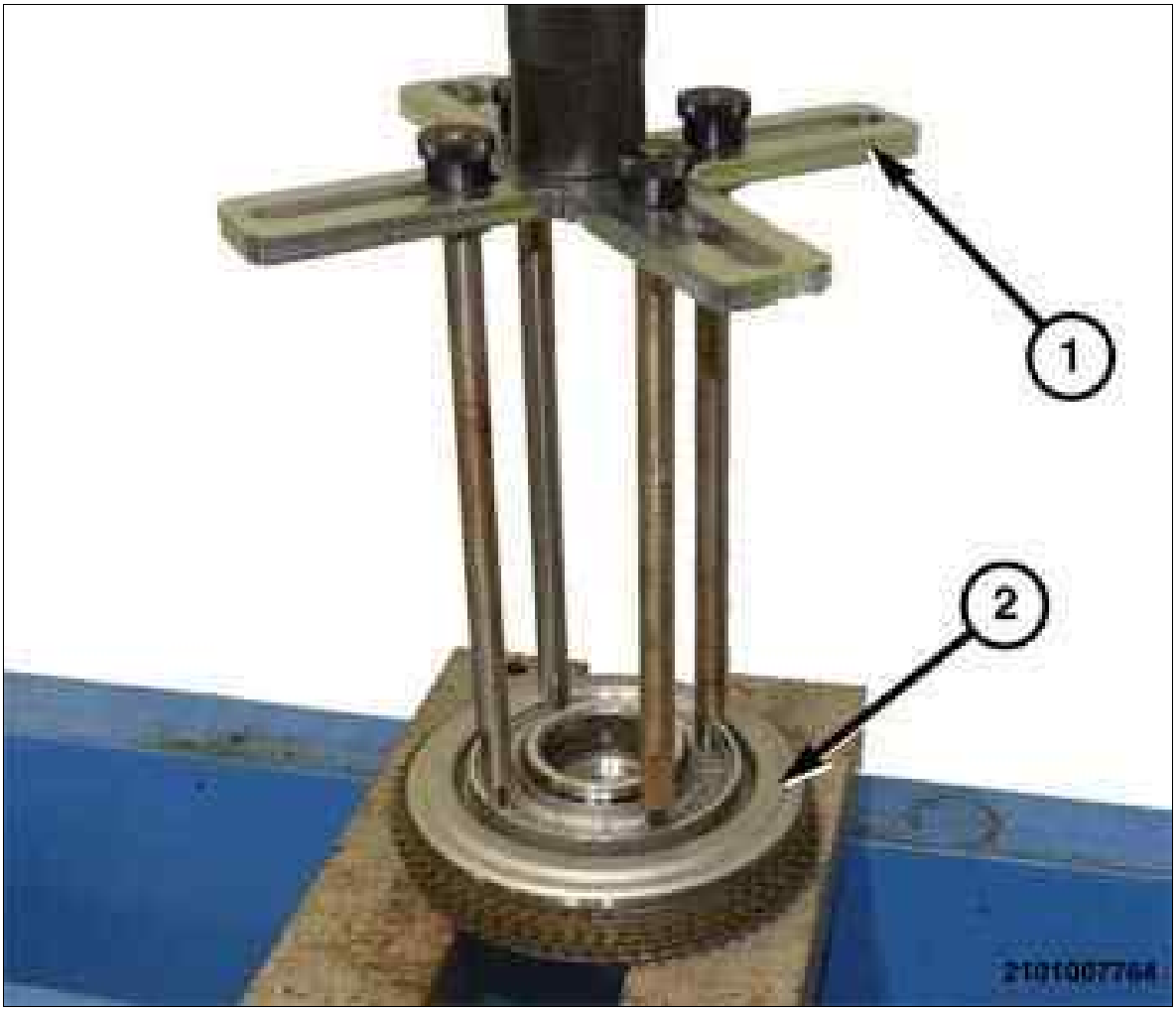
Fig 10: Compressing B-Clutch Piston To Gain Access To Snap-Ring



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10. Using tool (special tool #8901A, Pressing Tool) (with pressure scale removed) (1) and legs (special tool #10428, Adapter, Pressing Tool), compress the B-clutch (2) piston to gain access to the snap-ring.

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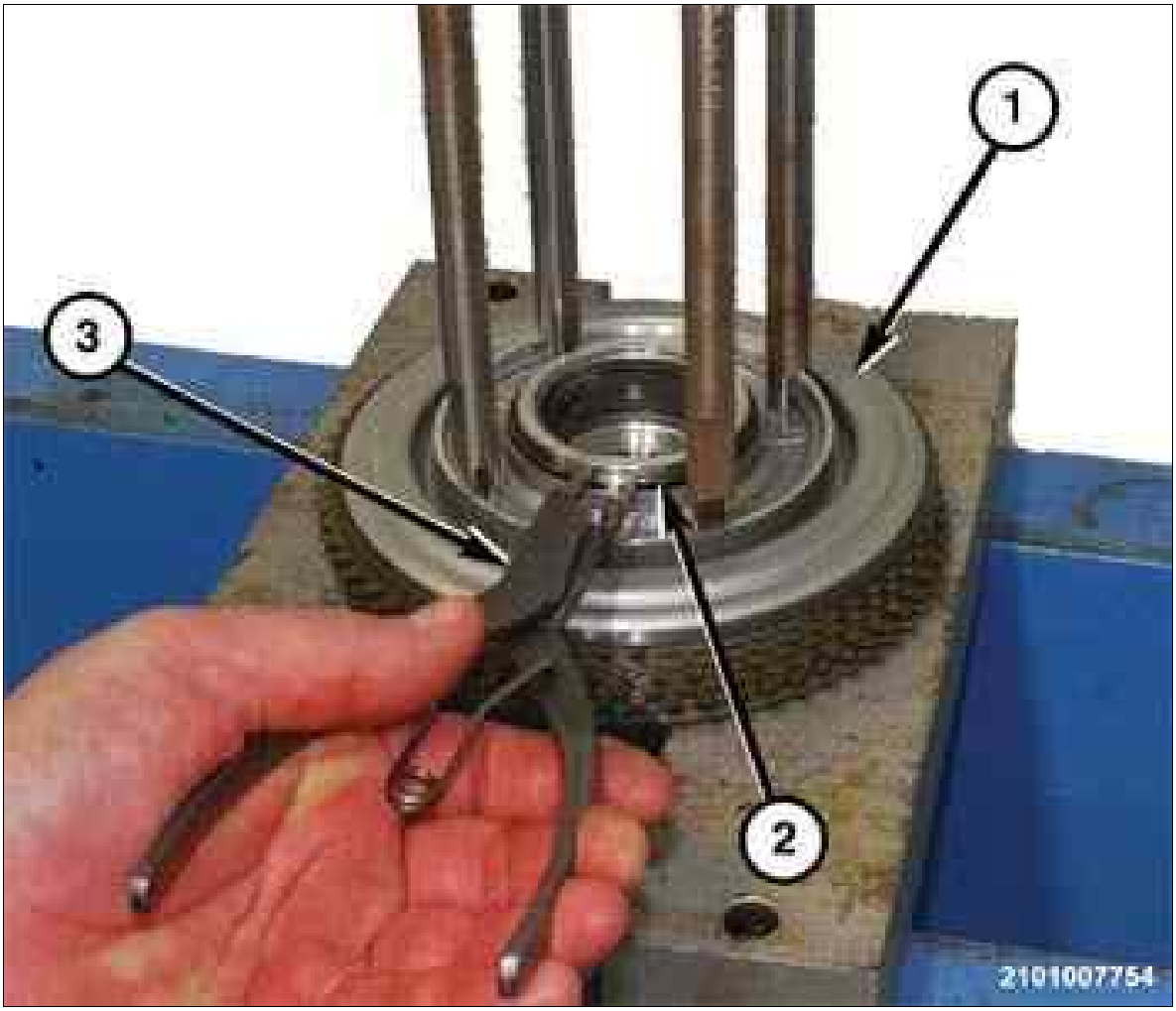
Fig 11: Snap-Ring, B-Clutch Piston & B-Clutch Hub



Courtesy of CHRYSLER GROUP, LLC

11. Using suitable snap-ring pliers (3), install the snap-ring (2) in the B-clutch (1) hub.

> *NOTE:*
>
> *Before installing the input shaft/dog A-clutch, measure the B-clutch to determine if the proper select reaction plate was installed. Refer to ADJUSTMENTS .*

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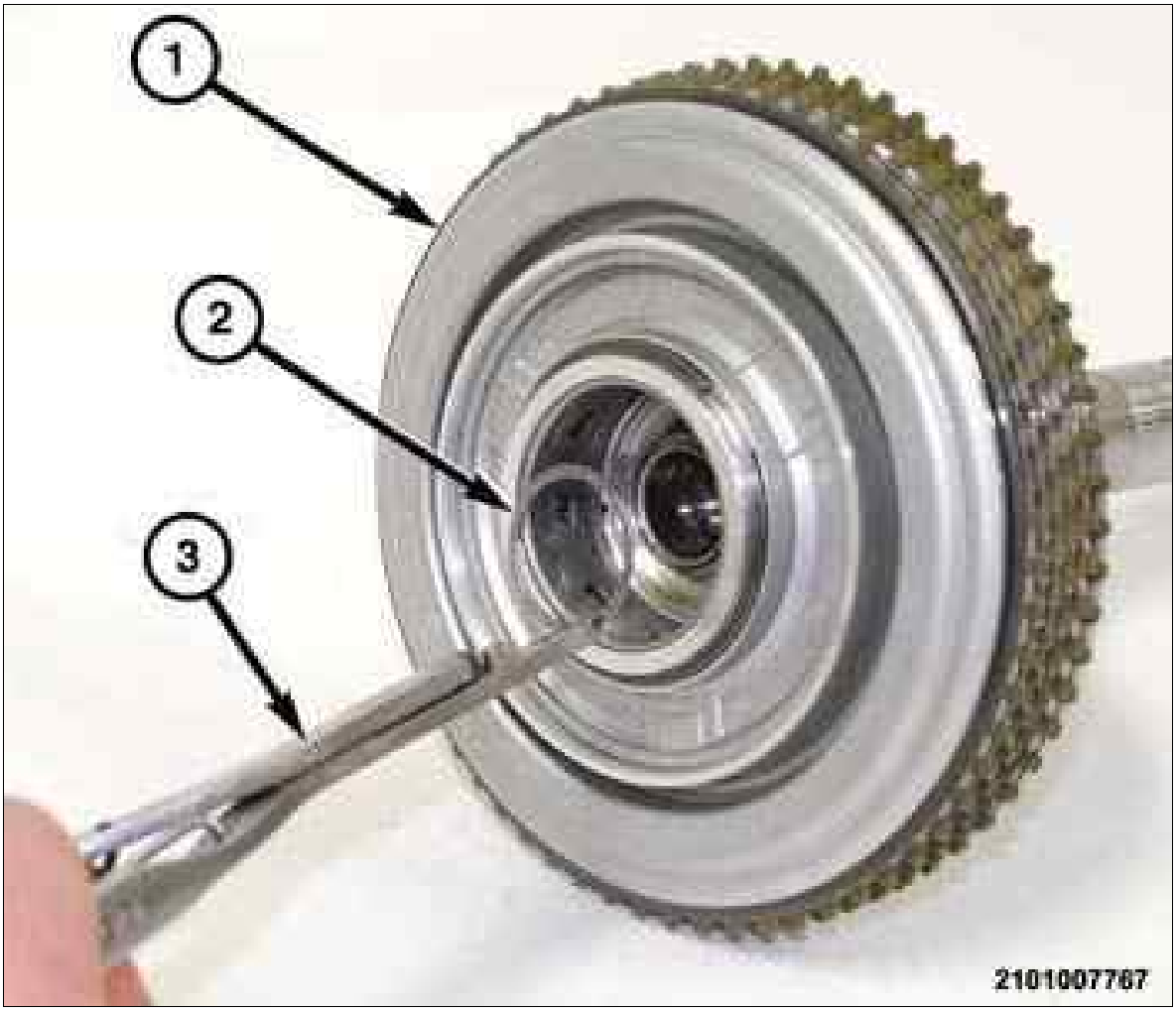
Fig 12: Input Shaft/Dog Clutch A, B-Clutch Hub & Snap-Ring



Courtesy of CHRYSLER GROUP, LLC

12. Insert the input shaft/dog A-clutch assembly into the B-clutch assembly (1).
13. Using suitable snap-ring pliers (3), install the snap-ring (2) to hold the input shaft in the B-clutch assembly (1).

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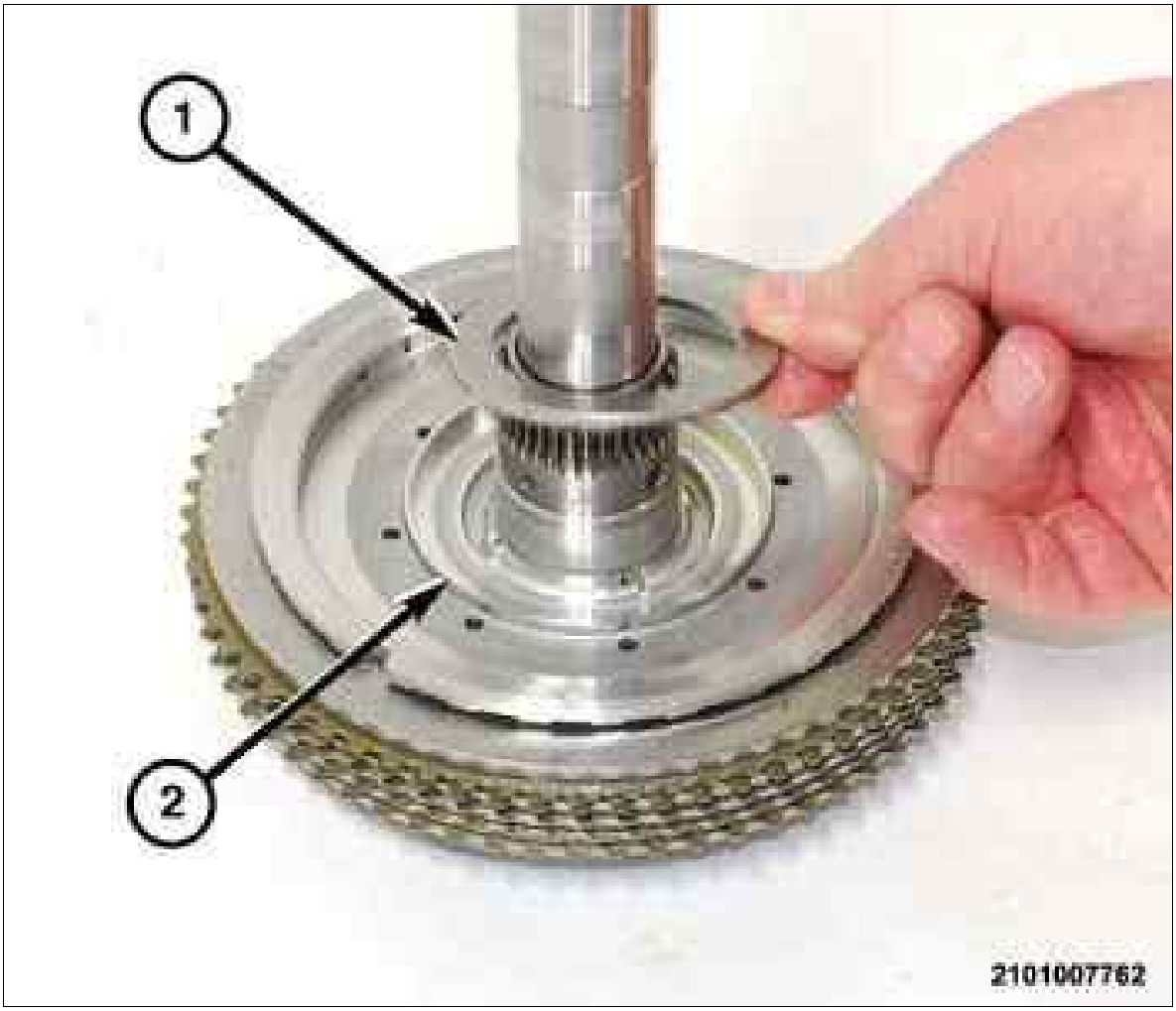
Fig 13: Thrust Bearing & B-Clutch Hub



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14. Install the thrust bearing (1) on the B-clutch hub (2).

CLUTCH, C > ADJUSTMENTS > C-CLUTCH MEASUREMENT

After the C-clutch is cleaned and assembled the end play must be measured to verify that the correct select reaction plate has been installed.

1. Position the transaxle housing on a suitable arbor press.

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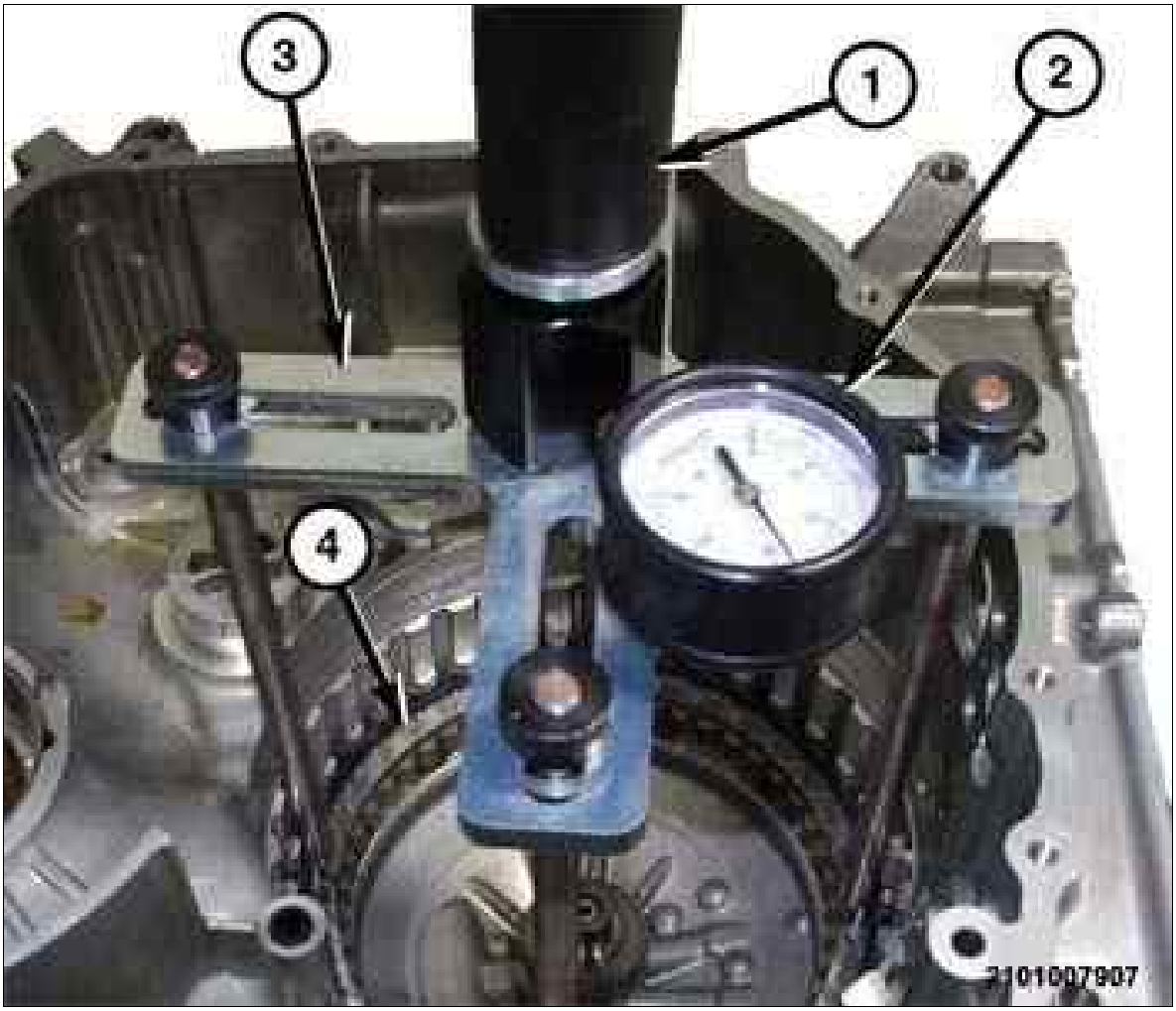
Fig 1: Compressing C-Clutch To Collapse Wave Plate



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2. Using tool (special tool #10429, Gauge, Force) (2), (special tool #8901A, Pressing Tool) (with pressure scale removed) (3), and legs (special tool #10428, Adapter, Pressing Tool), compress the C-clutch (4) to collapse wave plate (5 on Fig.3) to 68 kgf (150 lb. force).

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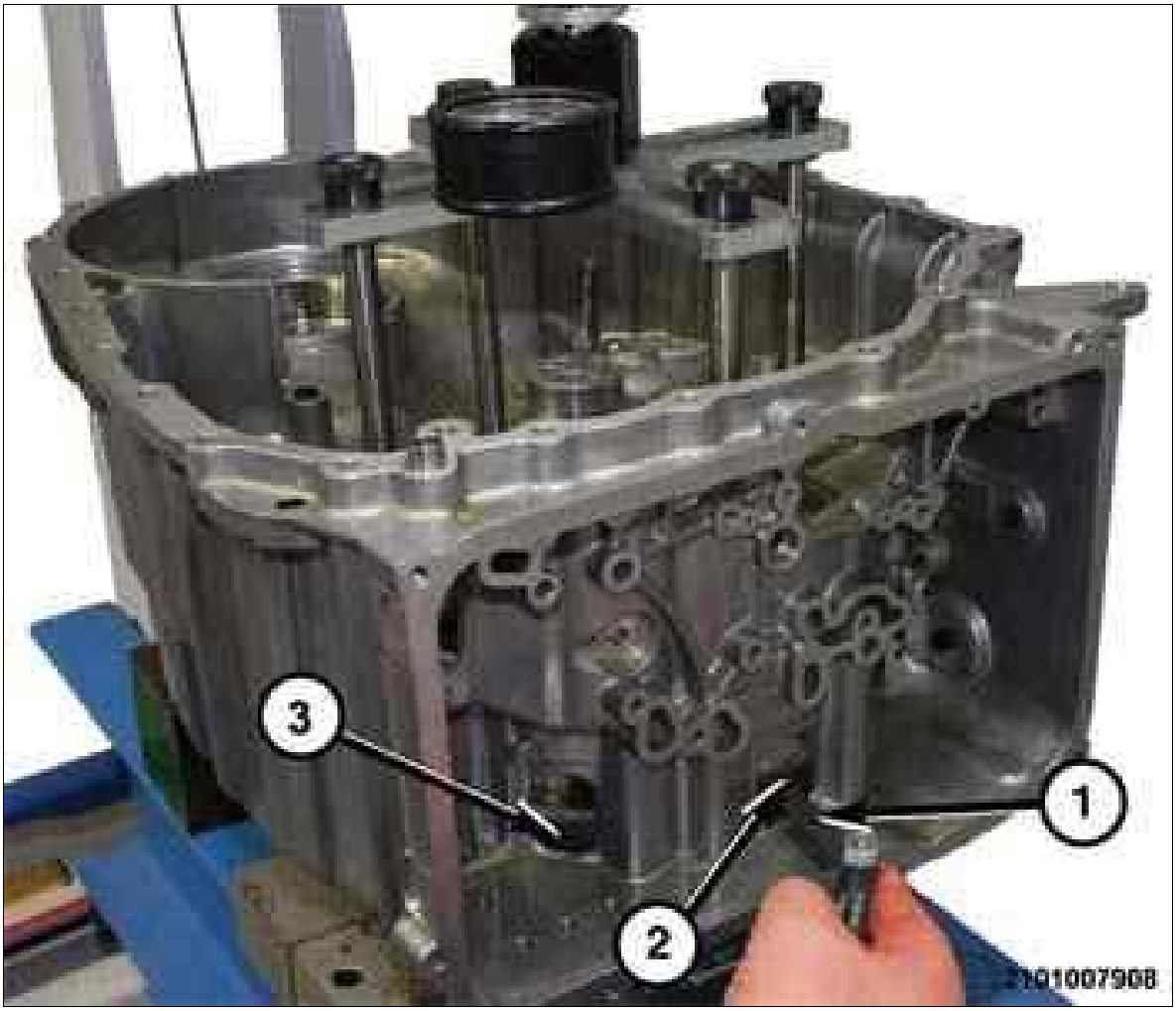
Fig 2: Measuring Gap Between C-Clutch Snap-Ring & Reaction Plate



Courtesy of CHRYSLER GROUP, LLC

3. Using a suitable feeler gauge (1), measure the gap (2) between the C-clutch snap-ring and the C-clutch select reaction plate. Refer to SPECIFICATIONS .

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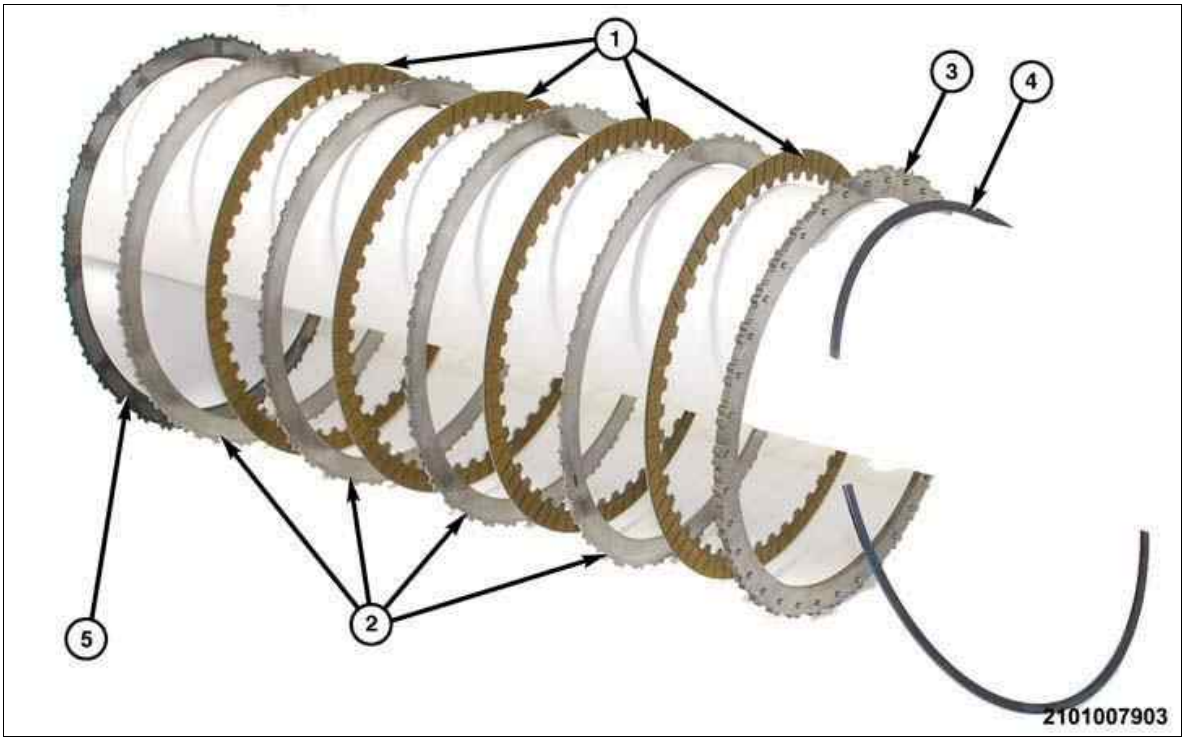
Fig 3: C-Clutch Wave Plate, Steel Plates, & Friction Discs



Courtesy of CHRYSLER GROUP, LLC

4. If measurement does not match the specifications, replace the C-clutch select reaction plate (3).

CLUTCH, D > ADJUSTMENTS > D-CLUTCH MEASUREMENT

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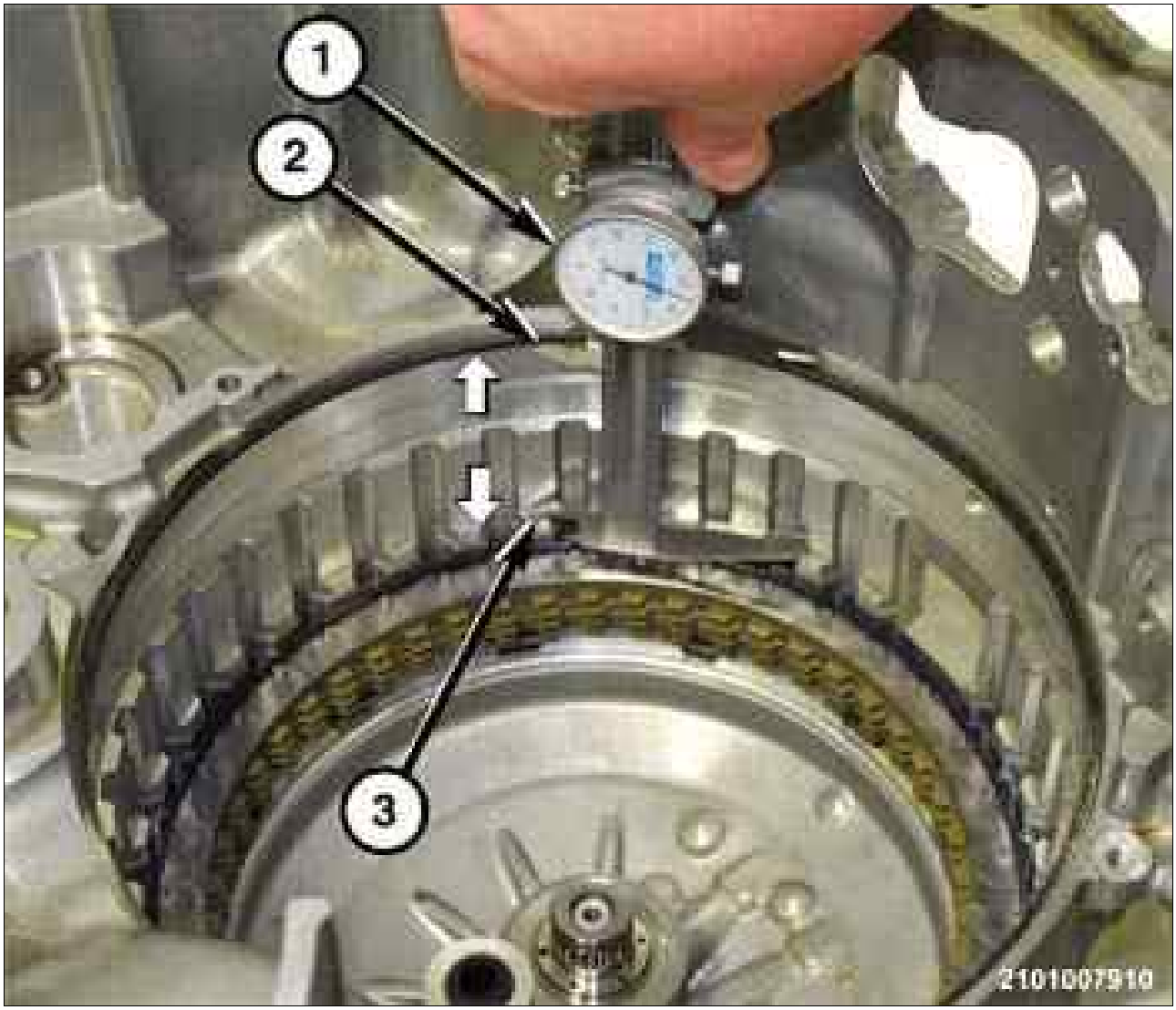
Fig 1: Measuring Distance From The Bottom Of D-Clutch Snap-Ring To D-Clutch Shoulder



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NOTE:

After the D-clutch is cleaned and assembled the endplay must be measured to verify that the correct D-clutch select reaction plate has been installed.

1. Install the D-clutch snap-ring (2) in the groove in the transaxle housing.
2. Using a suitable caliper (1), measure the distance from the bottom of the D-clutch snap-ring (2) to the D-clutch shoulder (3) in the transaxle housing. Record this number.

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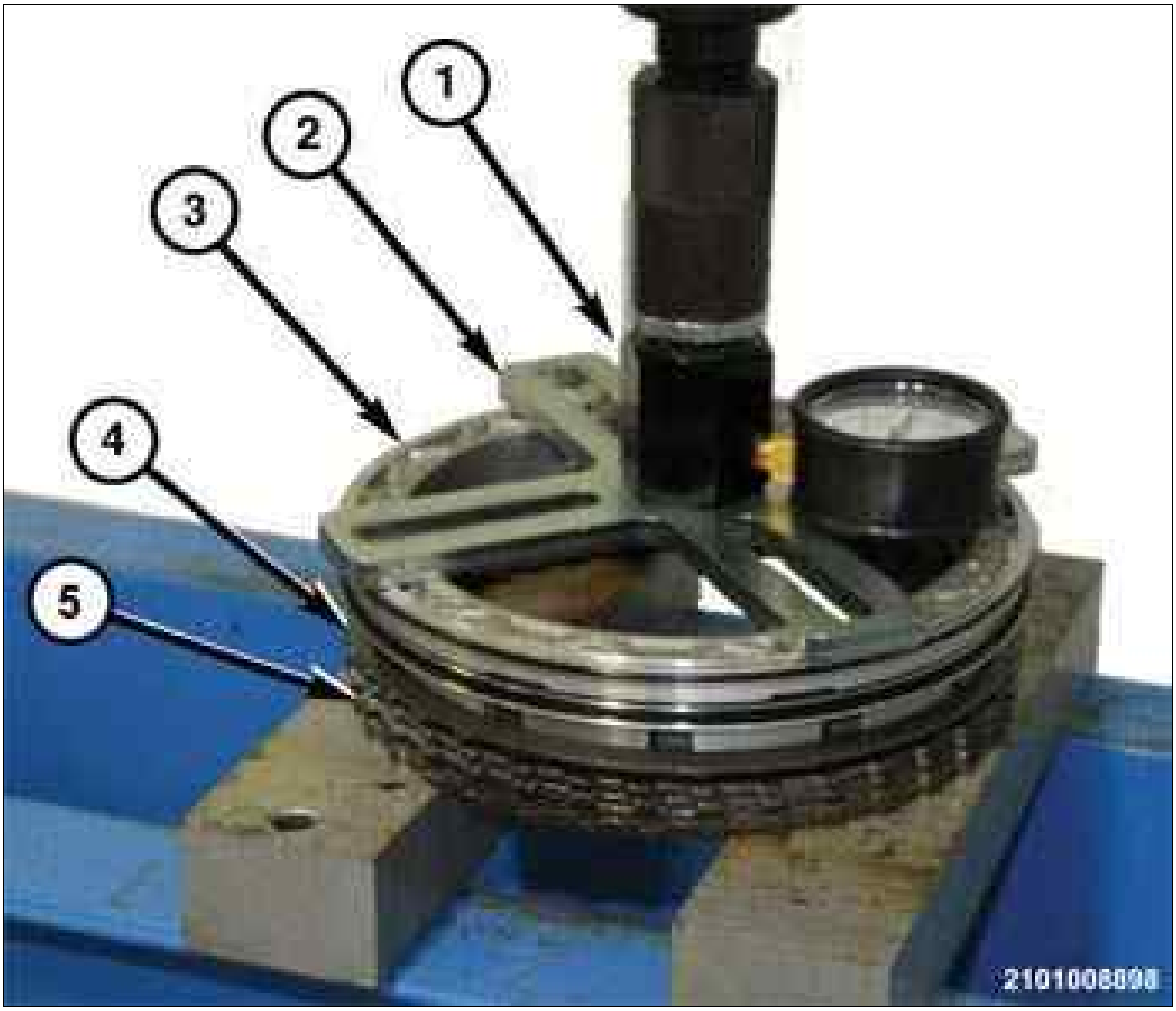
Fig 2: Positioning D-Clutch Piston Retainer/Piston Assembly, Belleville Spring, & Clutch Stack On Arbor Press



Courtesy of CHRYSLER GROUP, LLC

3. Place the D-clutch piston retainer/piston assembly (3), belleville spring (4), and clutch stack (5) on a suitable arbor press.

4. Using tool (special tool #10429, Gauge, Force) (1) and (special tool #8901A, Pressing Tool) (2) (with pressure scale and legs removed), compress the D-clutch assembly to 22.5 kgf (50 lb. force).

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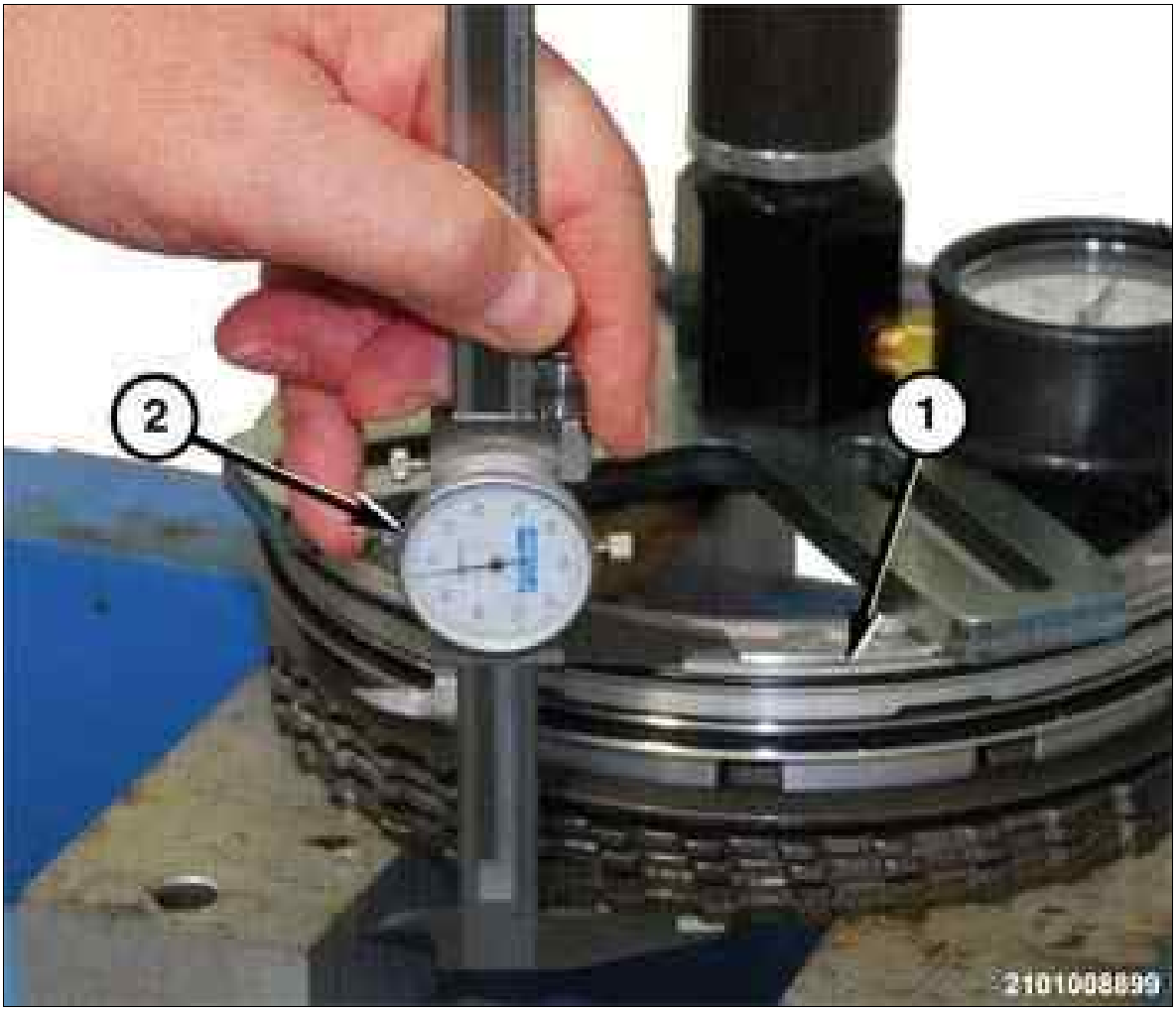
Fig 3: Measuring Thickness From Snap-Ring Step In D-Clutch Piston Retainer To Underside Of D-Clutch Reaction Plate Using Caliper



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5. Using a suitable caliper (2), measure the thickness from the snap-ring step (1) in the D-clutch piston retainer to the underside of the D-clutch reaction plate. Record this number.

6. Subtract the recorded value of step 5 from the recorded value of step 2. The difference is the amount of endplay in the D-clutch. Refer to SPECIFICATIONS .

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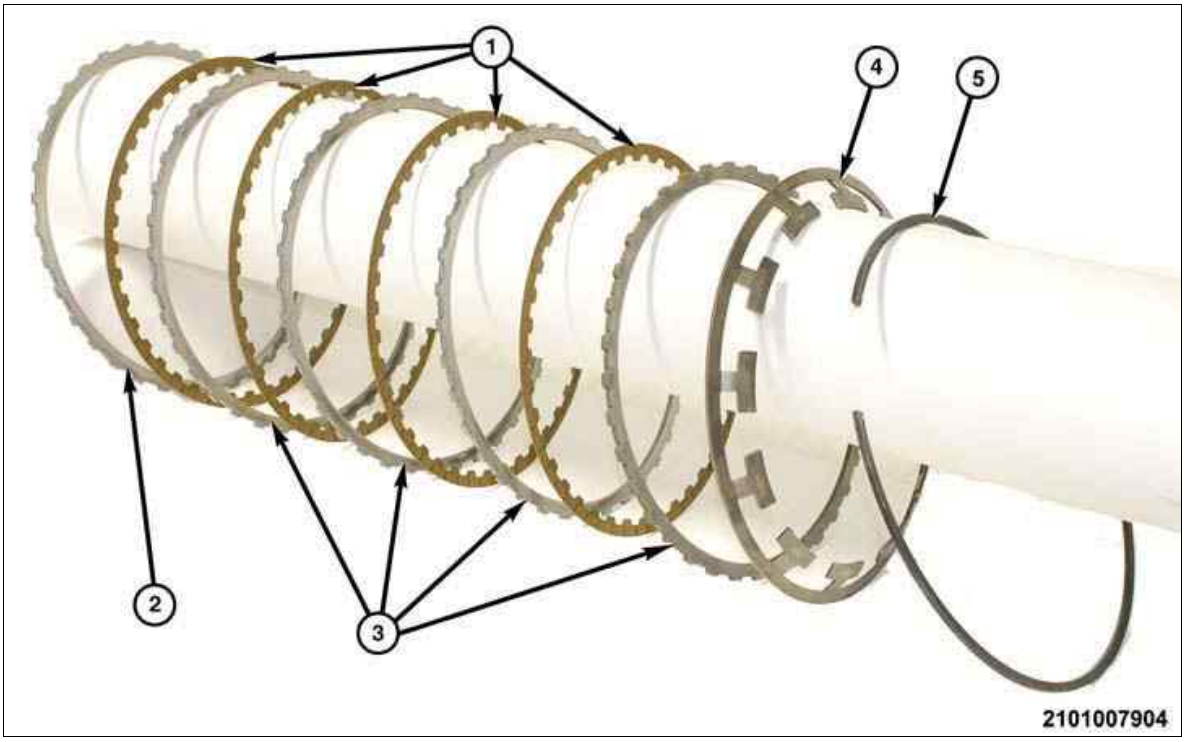
Fig 4: Exploded View Of D-Clutch, Select Plate, Friction Plate & Steel Plates



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7. If the remainder from step 6 does not match the specifications, replace the D-clutch select reaction plate (2).

CLUTCH, E > ADJUSTMENTS > E-CLUTCH MEASUREMENT

After the E-clutch is cleaned and assembled the end play must be measured to verify that the correct select snap-ring has been installed.

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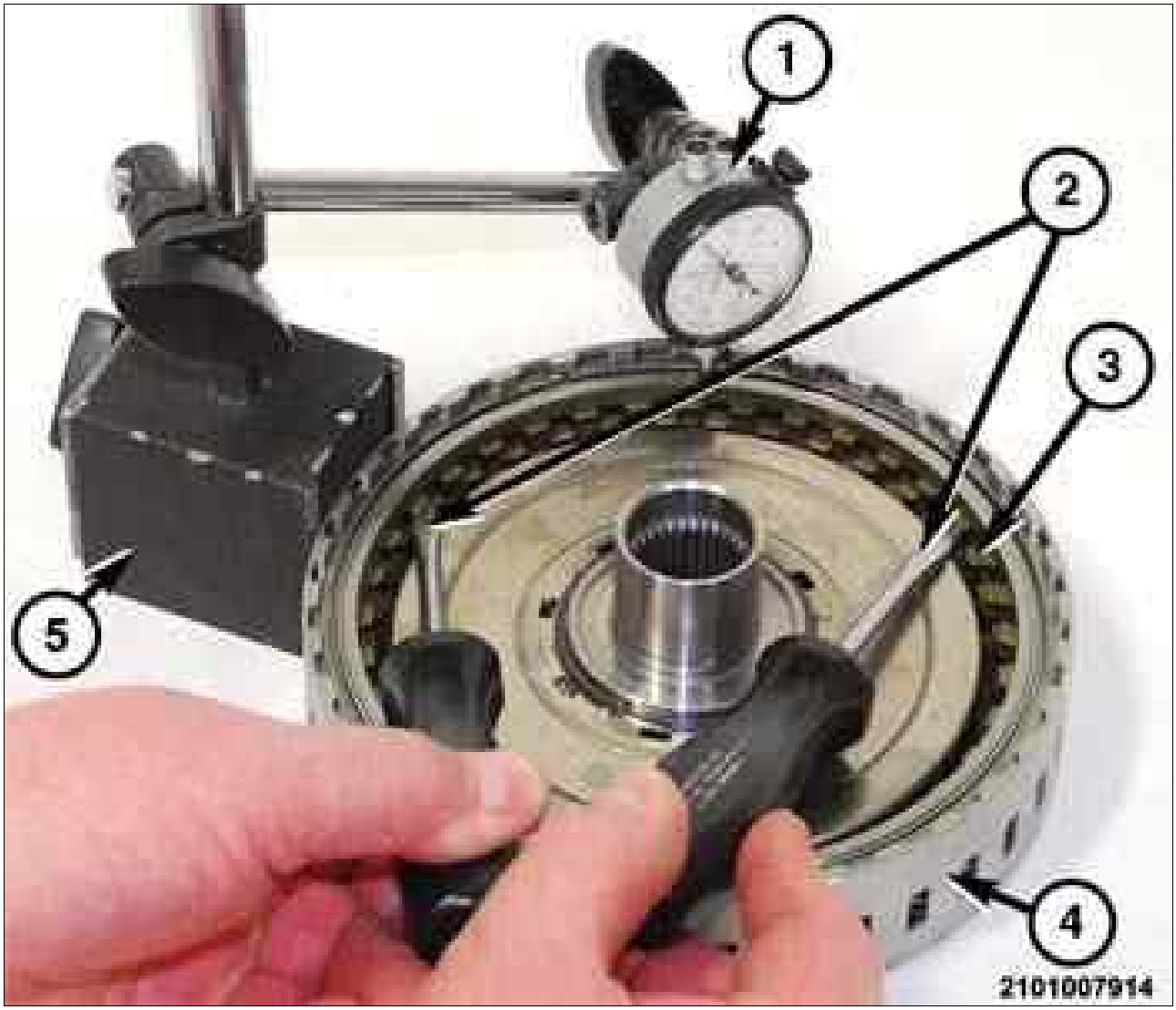
Fig 1: Dial Indicator, Magnetic Base, E-Clutch Retainer, Friction Plate & Screw Drivers



Courtesy of CHRYSLER GROUP, LLC

1. Use a dial indicator (1) and a magnetic base (5) attached to the E-clutch retainer (4) with the stylist tip resting on the reaction plate.

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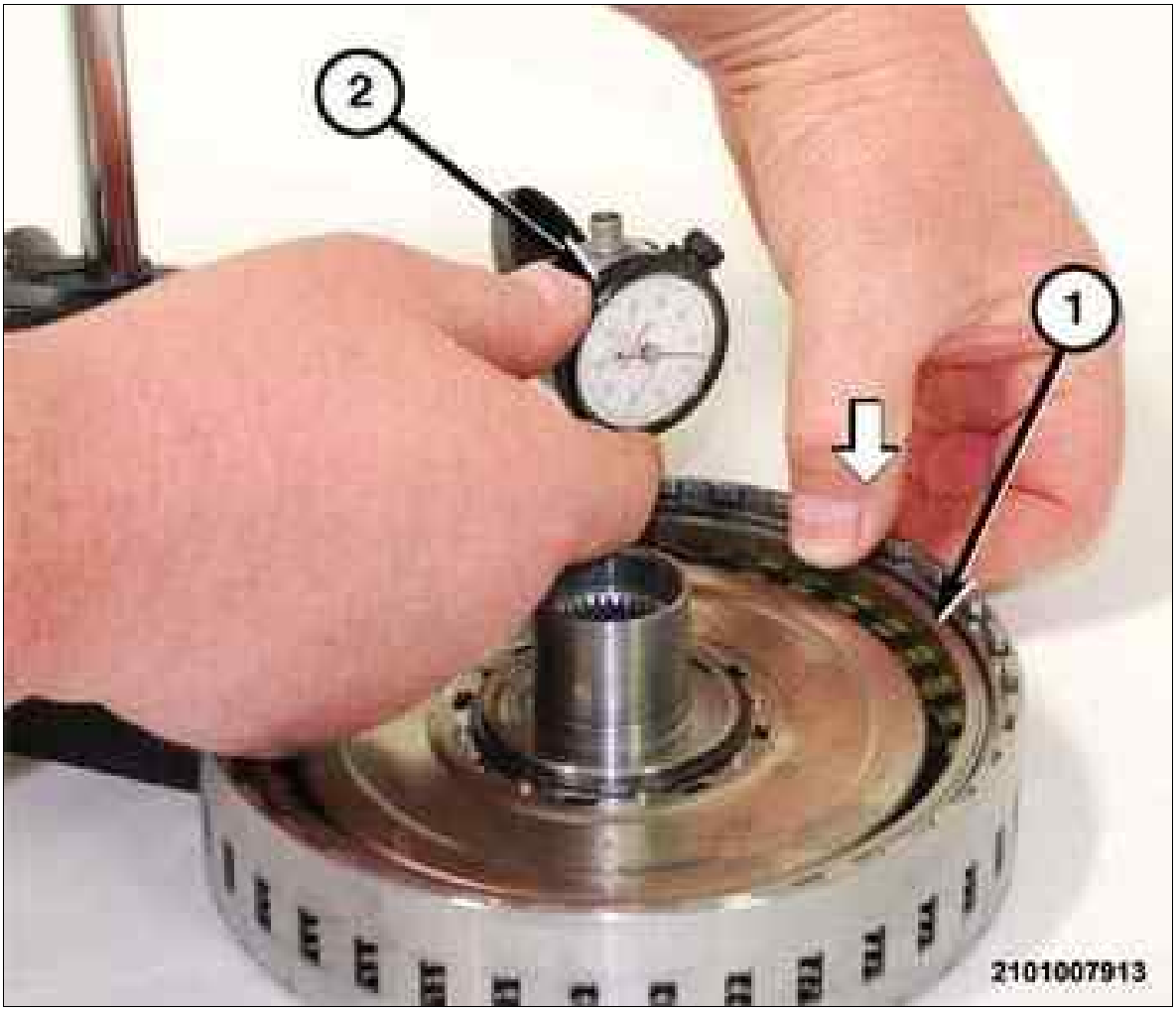
Fig 2: Pressing Downward On Reaction Plate



Courtesy of CHRYSLER GROUP, LLC

2. Press downward on the reaction plate (1) and zero the dial indicator face (2).

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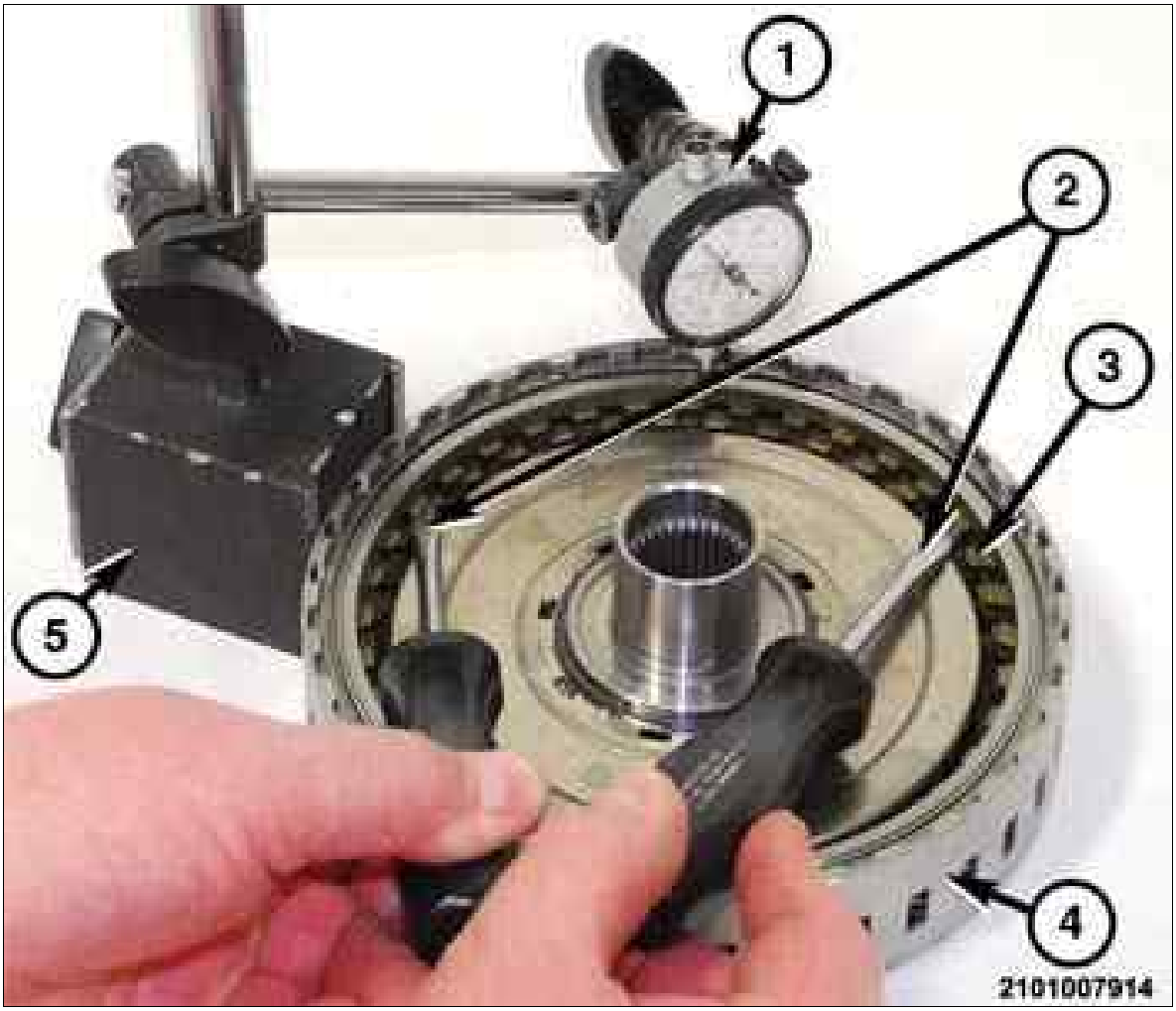
Fig 3: Dial Indicator, Magnetic Base, E-Clutch Retainer, Friction Plate & Screw Drivers



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3. Using two suitable screw drivers (2), gently pry the upper friction disc (3) upward while reading the dial indicator (1).

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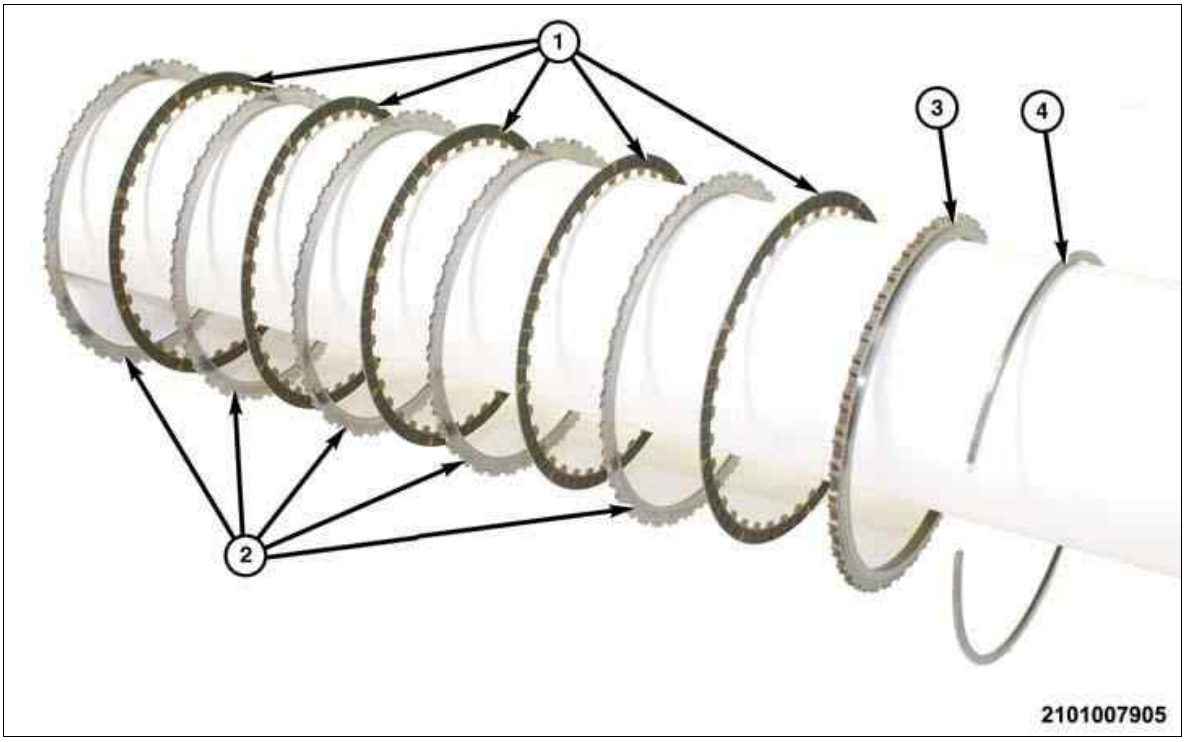
Fig 4: Exploded View Of E-Clutch Components



Courtesy of CHRYSLER GROUP, LLC

4. The reading should be within specification. Refer to SPECIFICATIONS . If not, install a thicker or thinner E-clutch select snap-ring (4).

CLUTCH, E > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > E-CLUTCH DISASSEMBLY

WARNING:

Always wear safety glasses when cleaning, disassembling and assembling the transmission/transaxle. Contents of the transmission/transaxle can become projectiles (e.g., springs, snap-rings, as well as metal and other debris). Failure to wear safety glasses may result in severe personal injury.

NOTE:

Clean the E-clutch components with suitable solvent and blow them dry with regulated 344 kPa (50 psi) shop air. The seals are integral to the piston.

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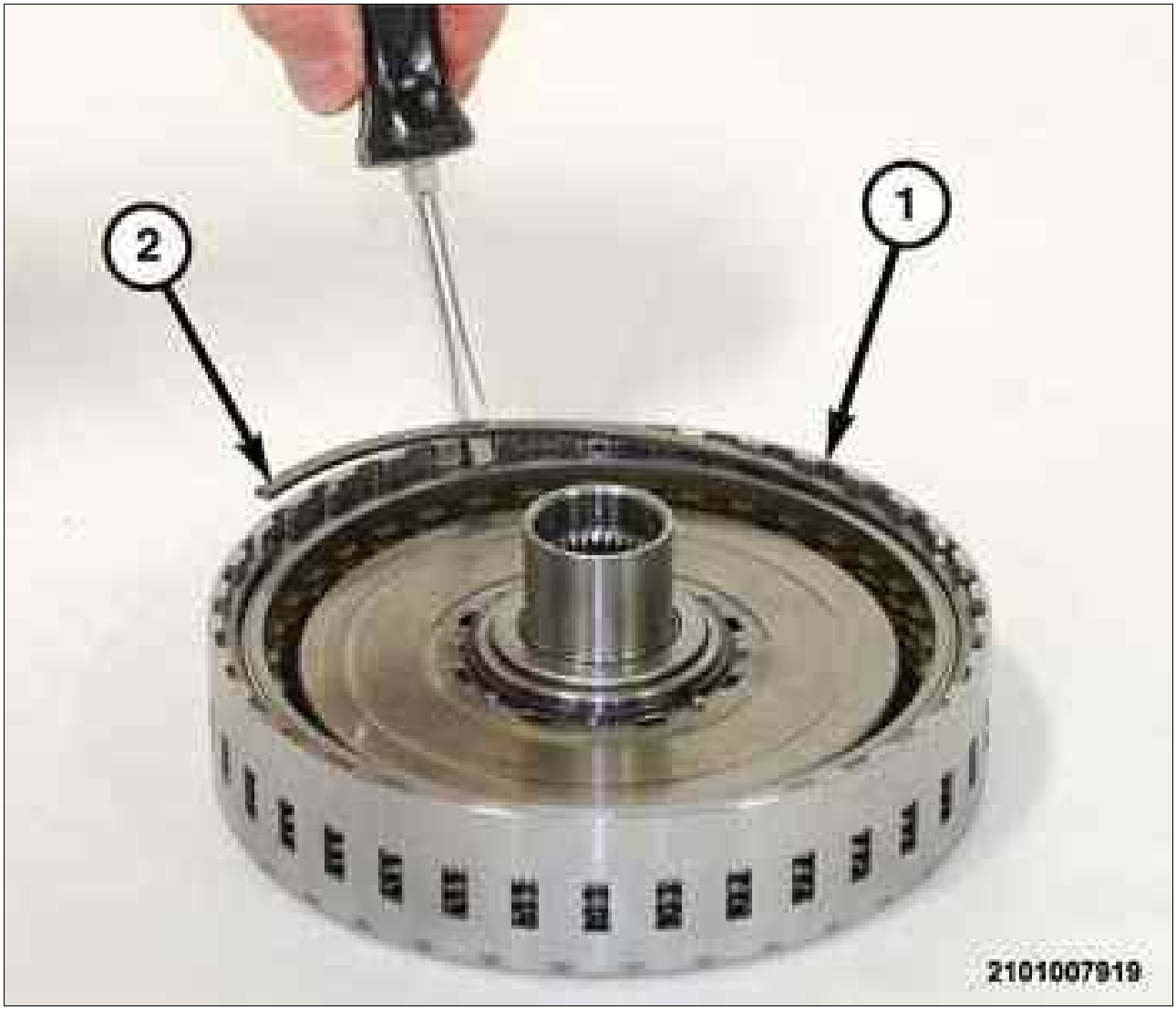
Fig 1: Snap-Ring & E-Clutch Retainer



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1. Using a suitable screw driver, remove the snap-ring (2) holding the E-clutch reaction plate in the E-clutch retainer (1).

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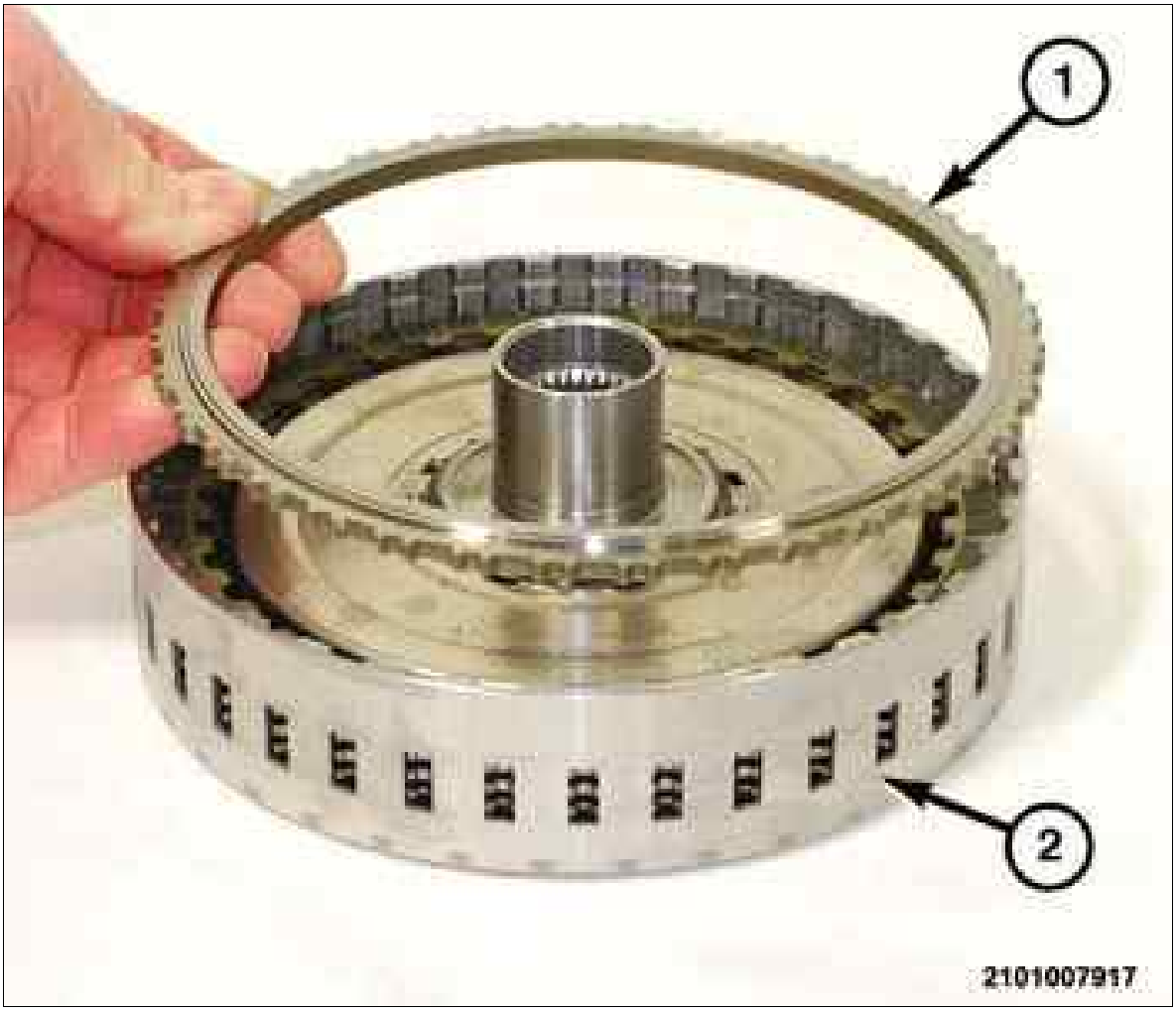
Fig 2: Thrust Plate & E-Clutch Retainer



Courtesy of CHRYSLER GROUP, LLC

2. Remove the reaction plate (1) from the E-clutch retainer (2).

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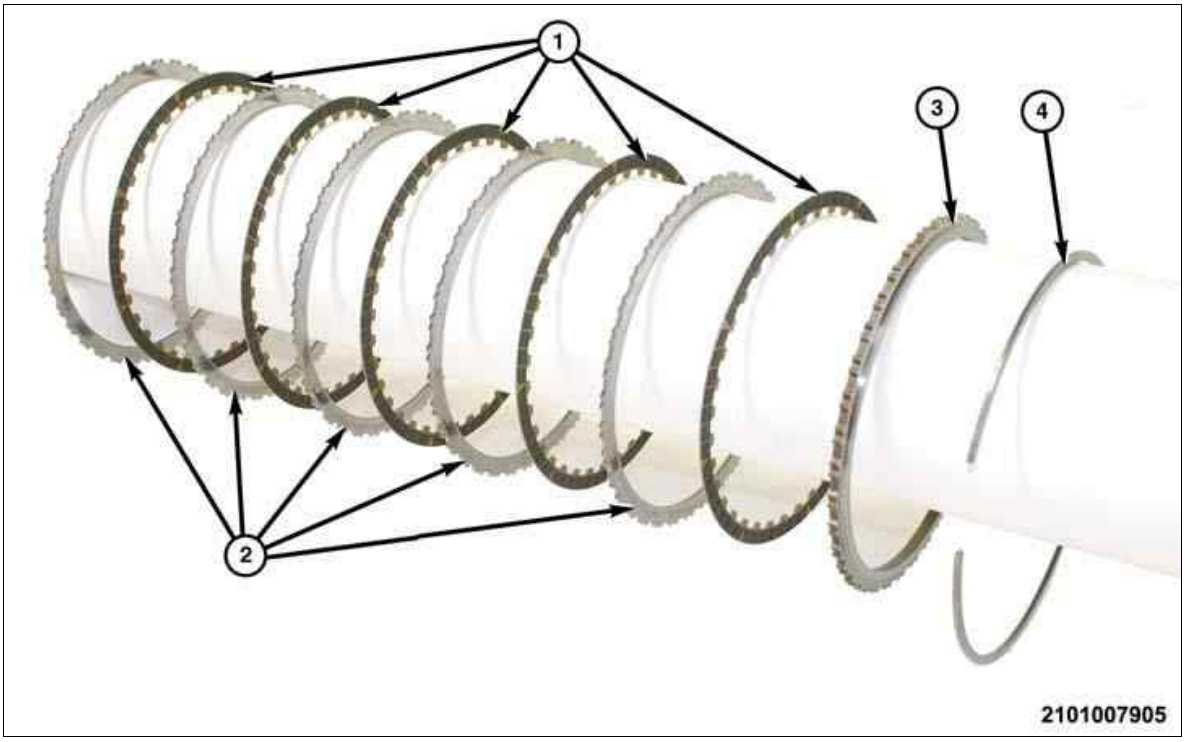
Fig 3: Exploded View Of E-Clutch Components



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3. Remove the E-clutch friction plates (1) and steel plates (2) from the E-clutch retainer.

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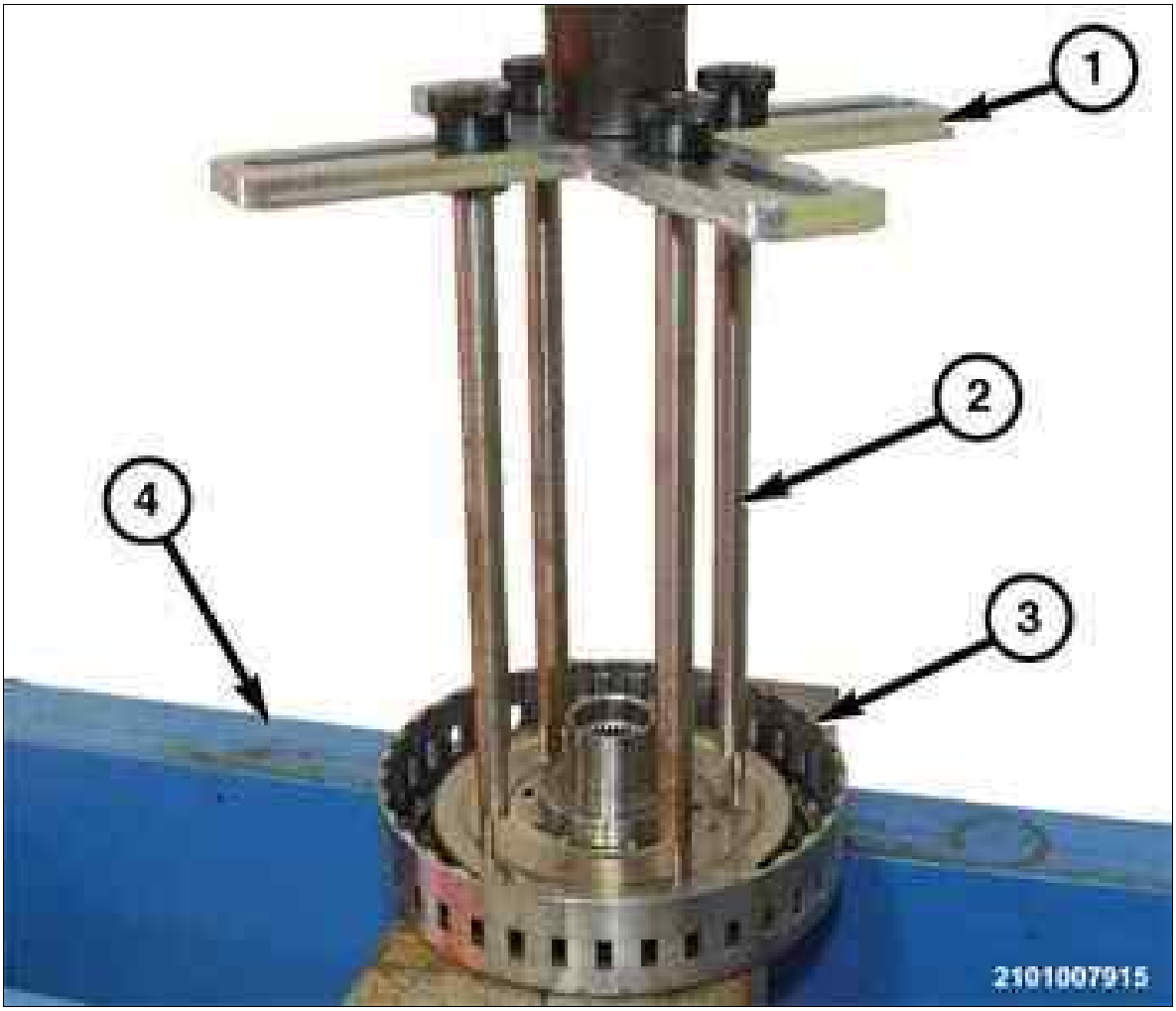
Fig 4: E-Clutch Retainer & Arbor Press



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4. Place the E-clutch retainer (3) on a suitable arbor press (4).
5. Using tool (special tool #8901A, Pressing Tool) (with pressure scale removed) (1) and legs (special tool #10428, Adapter, Pressing Tool) (2), compress the E-clutch spring retainer to gain access to the snap-ring.

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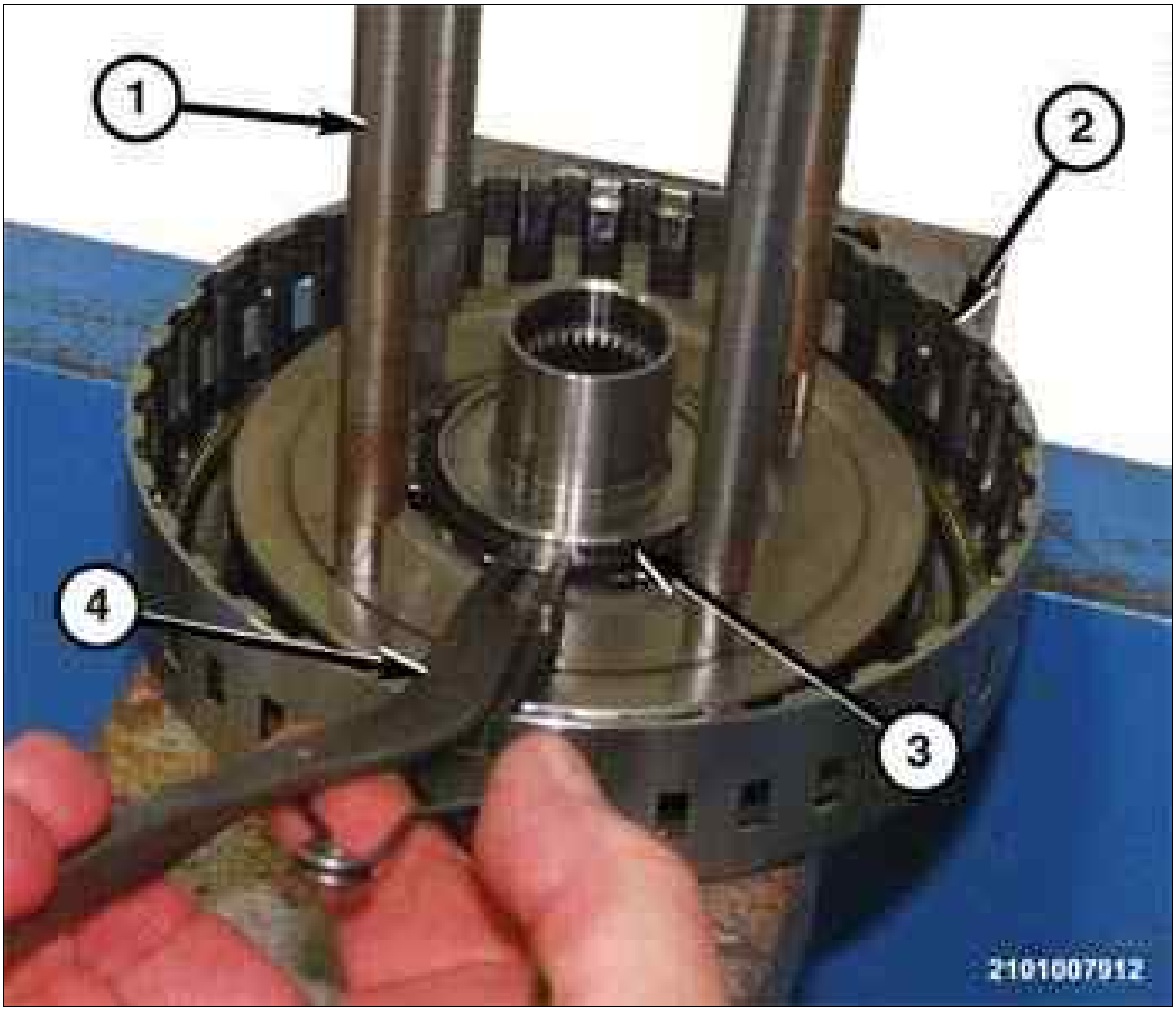
Fig 5: Snap-Ring Pliers, Snap Ring & E-Clutch Retainer



Courtesy of CHRYSLER GROUP, LLC

6. Using suitable snap-ring pliers (4), remove the snap-ring (3) holding the spring retainer to the E-clutch retainer (2).

7. Remove the tools 8904 and 10428 (1) from the E-clutch retainer.

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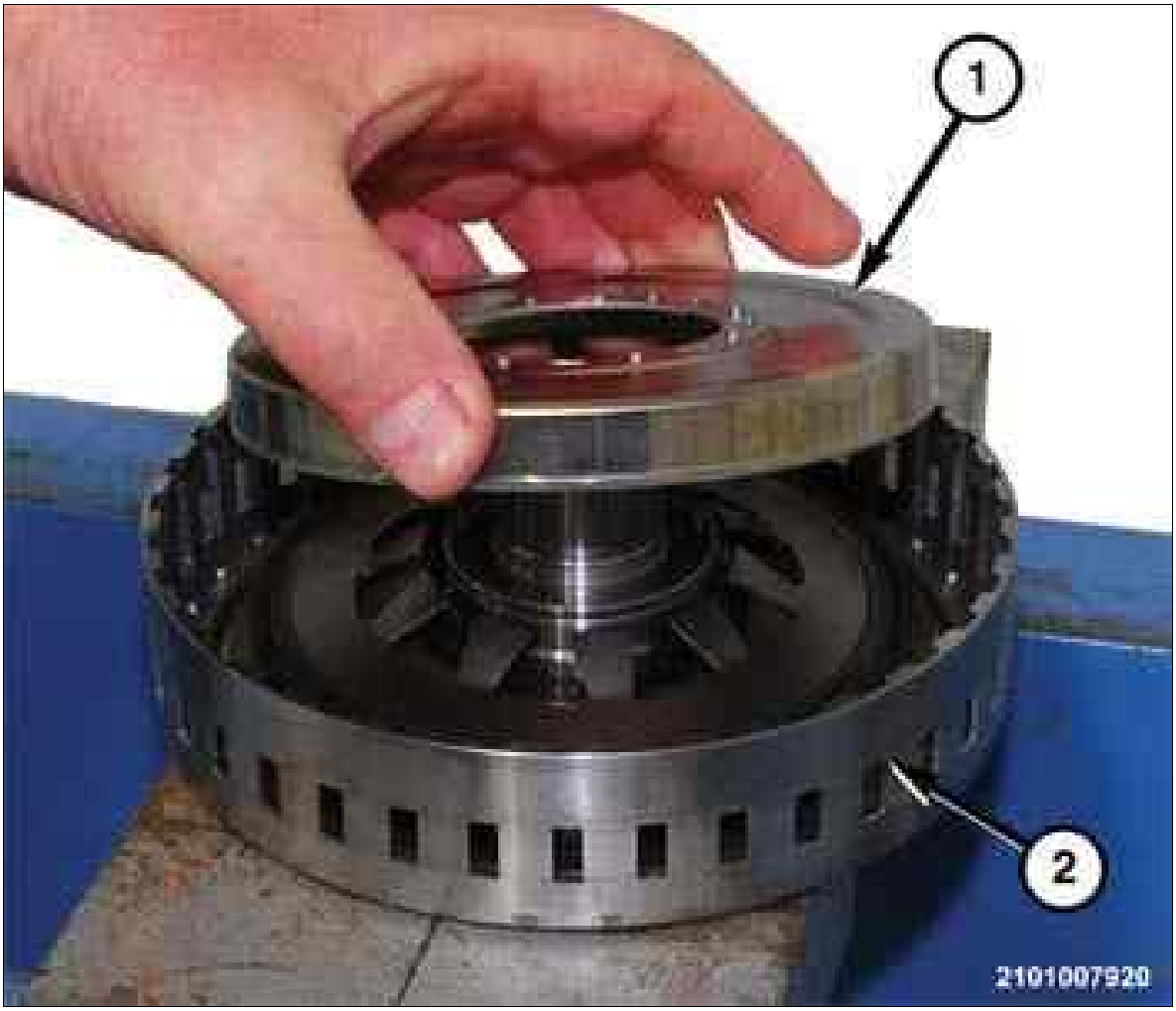
Fig 6: Belleville Spring Retainer & E-Clutch



Courtesy of CHRYSLER GROUP, LLC

8. Remove the E-clutch spring retainer (1) from the E-clutch retainer (2).

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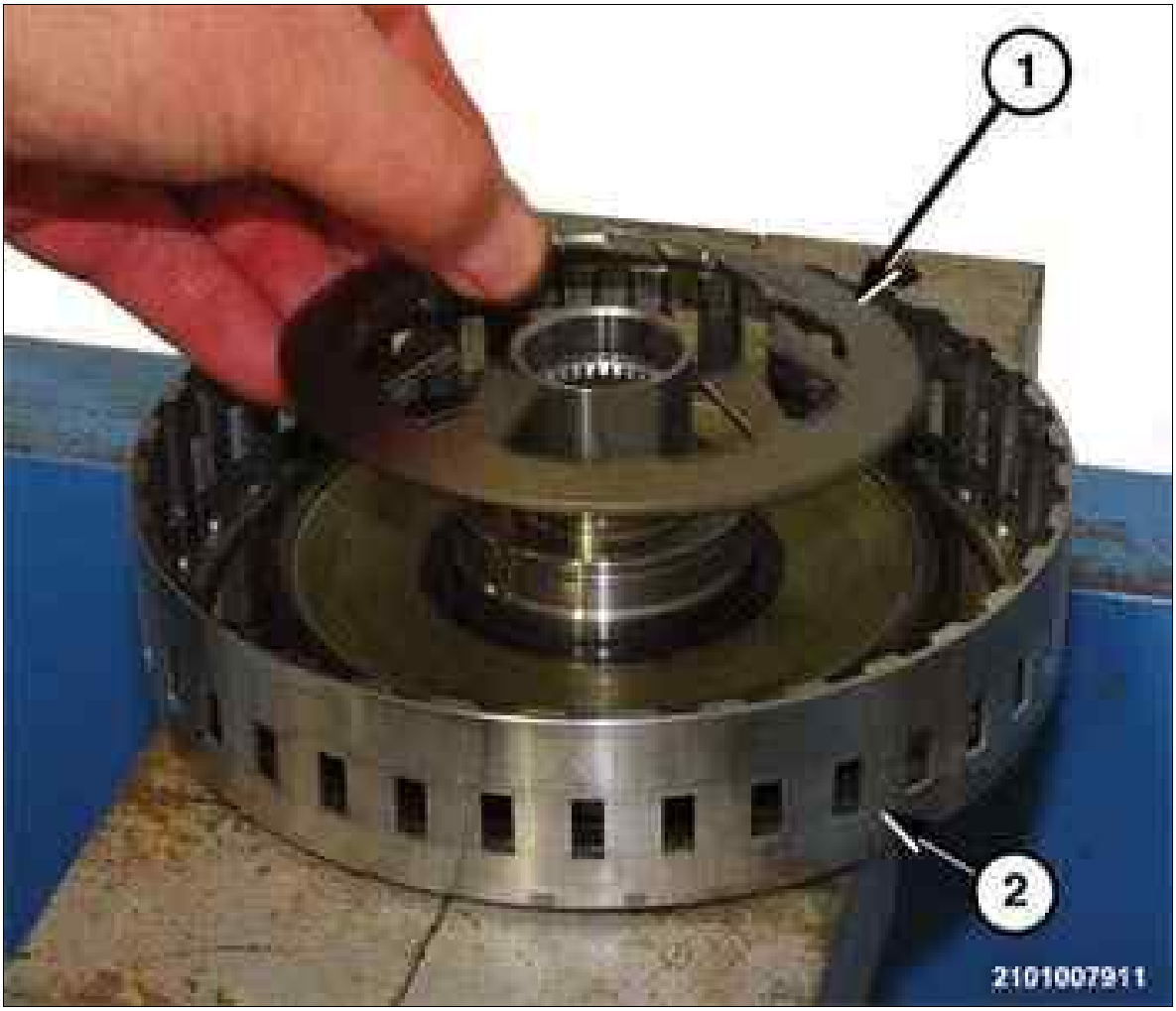
Fig 7: Belleville Spring & E-Clutch Retainer



Courtesy of CHRYSLER GROUP, LLC

9. Remove the belleville spring (1) from the E-clutch retainer (1).

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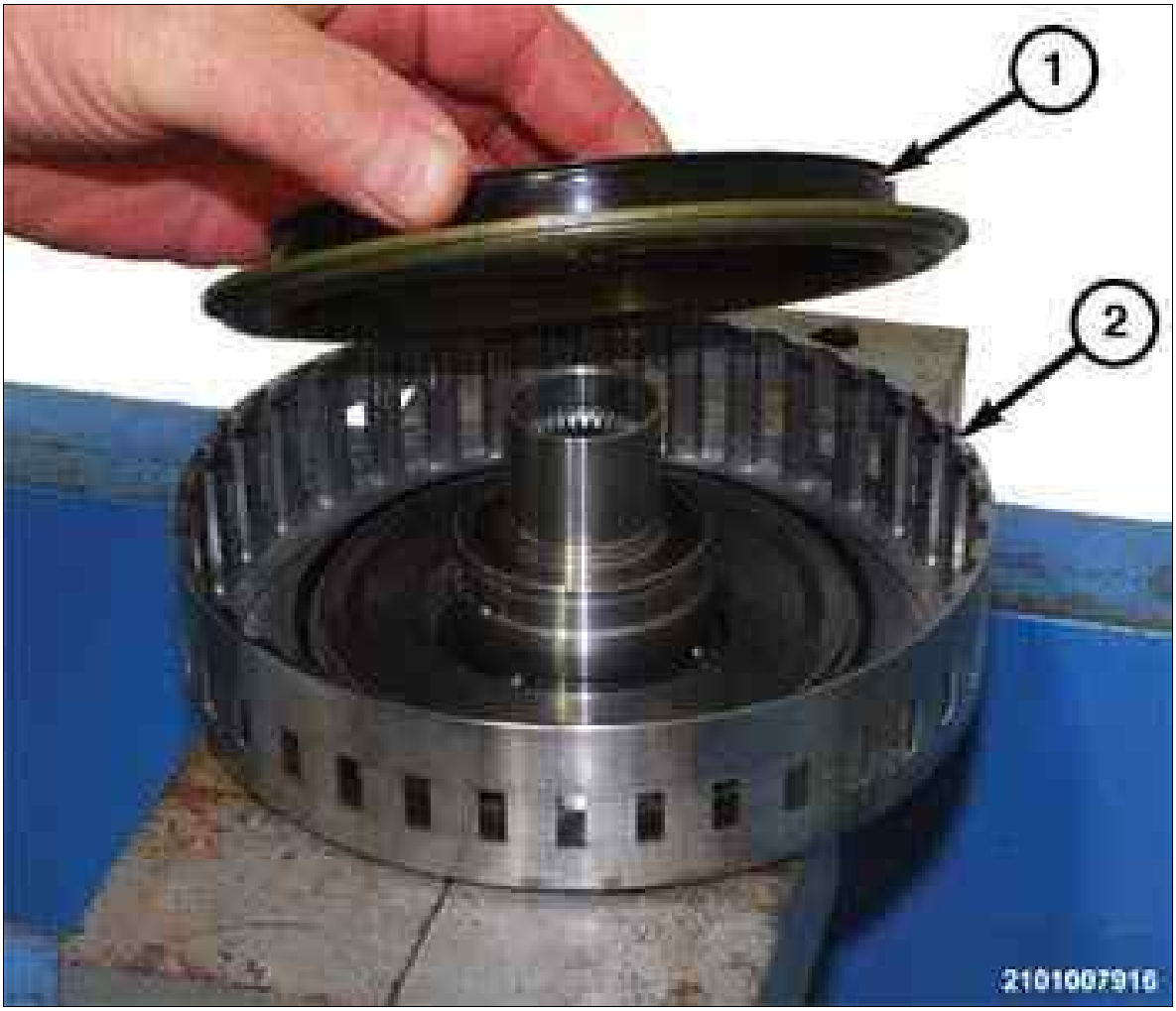
Fig 8: E-Clutch Retainer & Piston



Courtesy of CHRYSLER GROUP, LLC

10. Remove the piston (1) from the E-clutch retainer (2).

CLUTCH, E > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > E-CLUTCH ASSEMBLY

WARNING:

Always wear safety glasses when cleaning, disassembling and assembling the transmission/transaxle. Contents of the transmission/transaxle can become projectiles (e.g., springs, snap-rings, as well as metal and other debris). Failure to wear safety glasses may result in severe personal injury.

NOTE:

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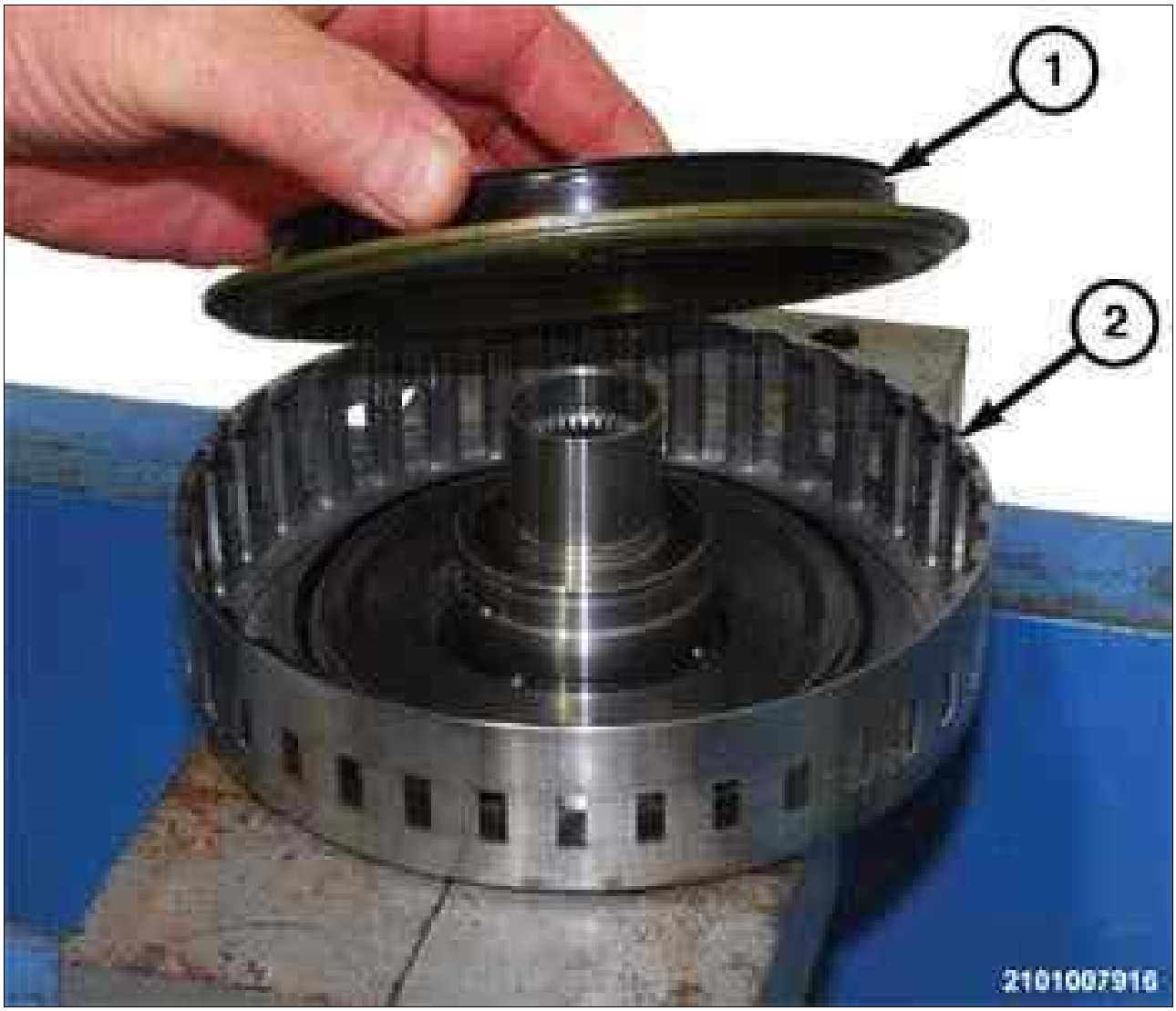
Clean the E-clutch components with suitable solvent and blow them dry with regulated 344 kPa (50 psi) shop air. Position all of the E-clutch components on a clean work surface in preparation for assembly. If the seals are damaged in any way clutch piston, retainer and belleville spring retainer will require replacement.

Fig 1: E-Clutch Retainer & Piston



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1. Install the piston (1) into the E-clutch retainer (2).

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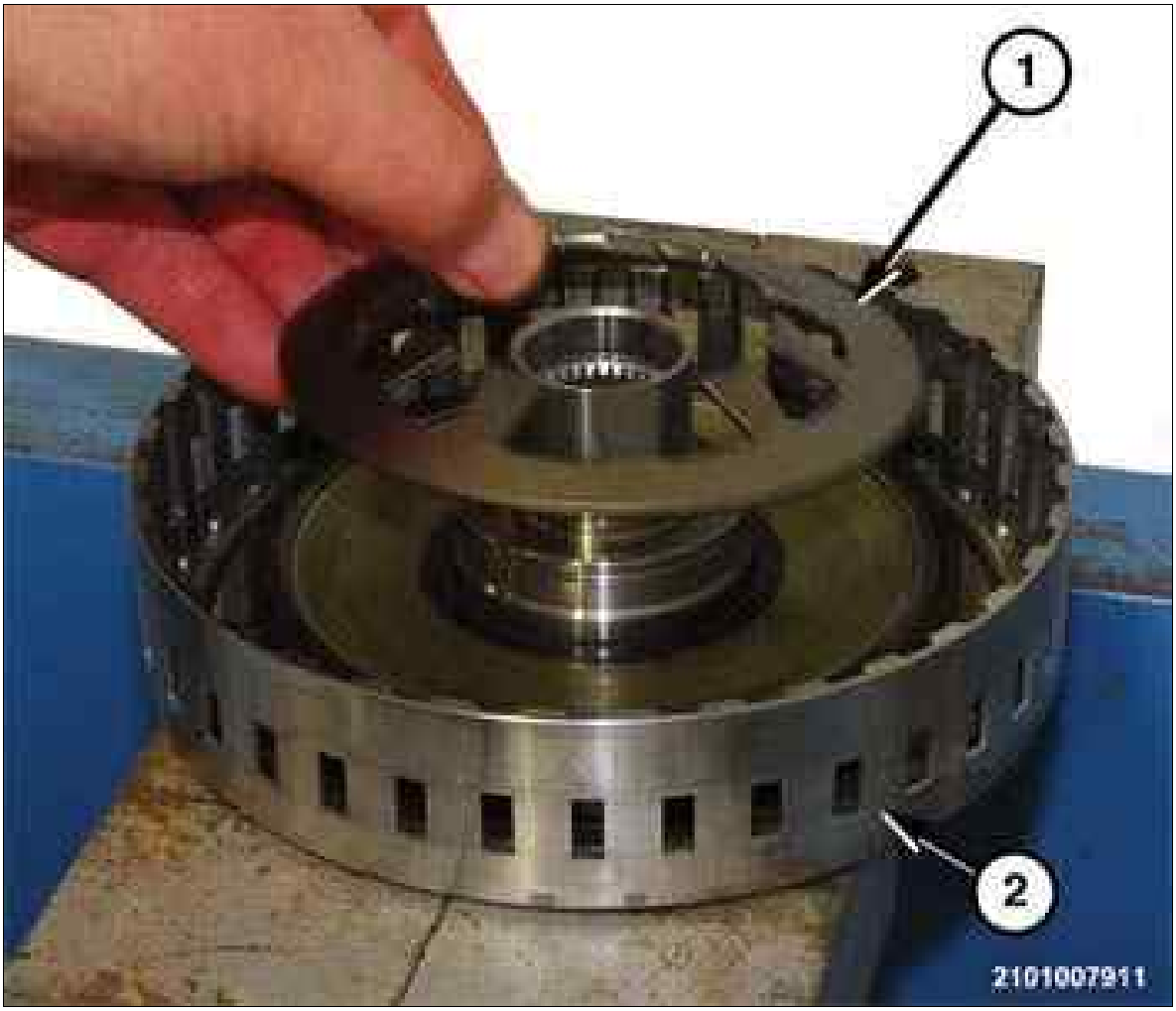
Fig 2: Belleville Spring & E-Clutch



Courtesy of CHRYSLER GROUP, LLC

2. Install the belleville spring (1) into the E-clutch retainer (1).

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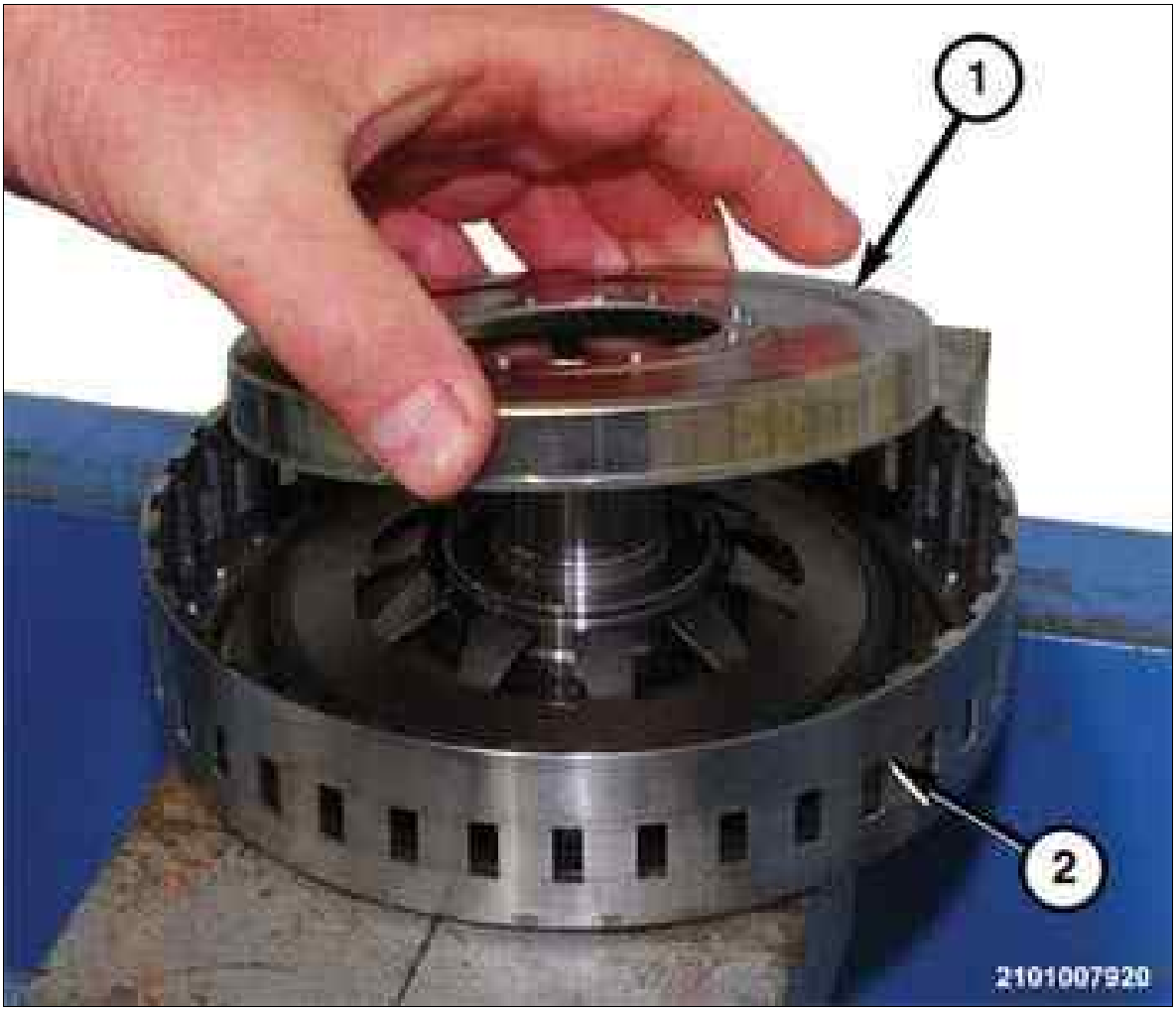
Fig 3: Belleville Spring Retainer & E-Clutch



Courtesy of CHRYSLER GROUP, LLC

3. Install the E-clutch spring retainer (1) into the E-clutch retainer (2).

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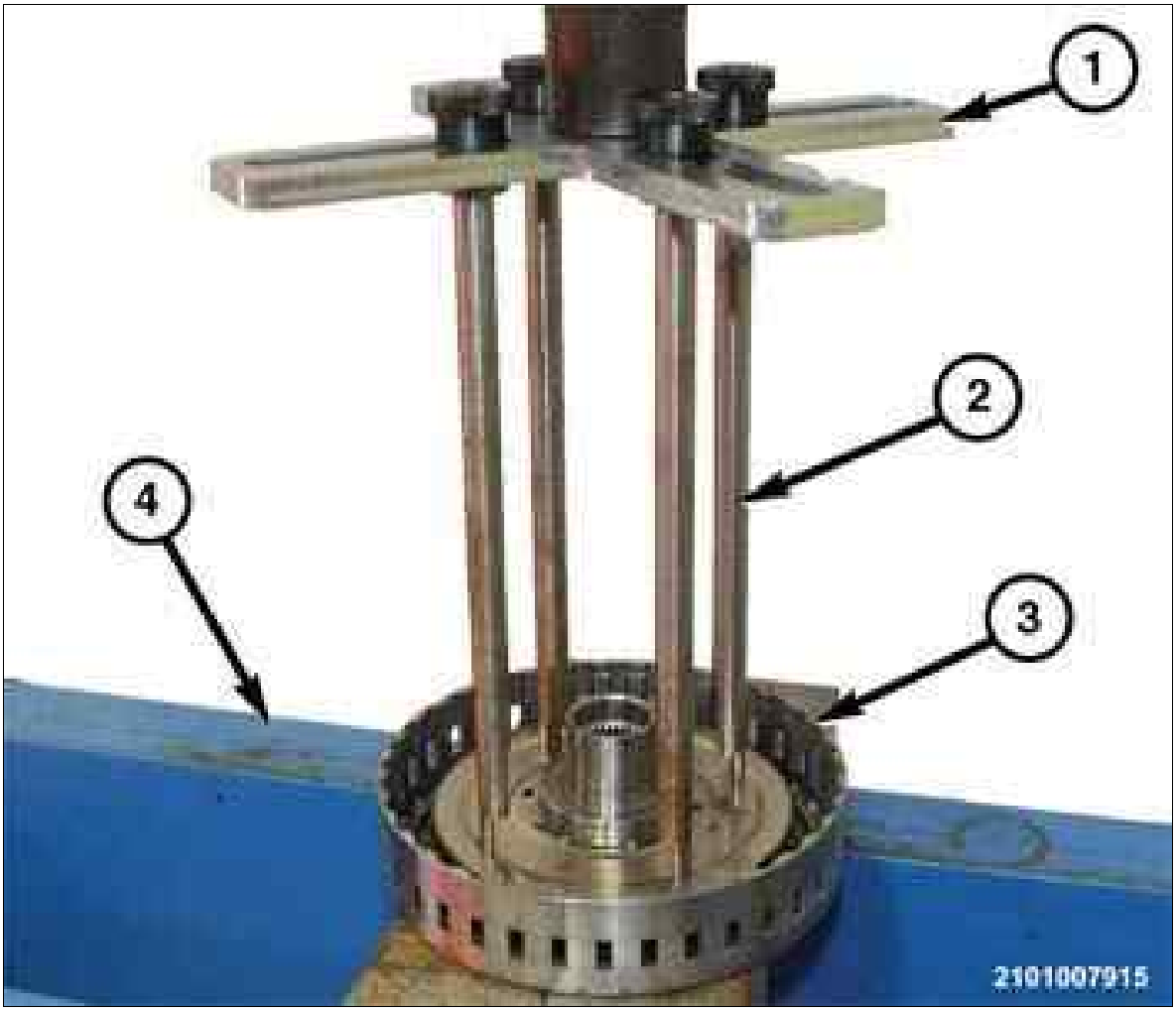
Fig 4: E-Clutch Retainer & Arbor Press



Courtesy of CHRYSLER GROUP, LLC

4. Using tool (special tool #8901A, Pressing Tool) (with pressure scale removed) (1) and legs (special tool #10428, Adapter, Pressing Tool) (2), compress the E-clutch spring retainer to until snap-ring groove is exposed.

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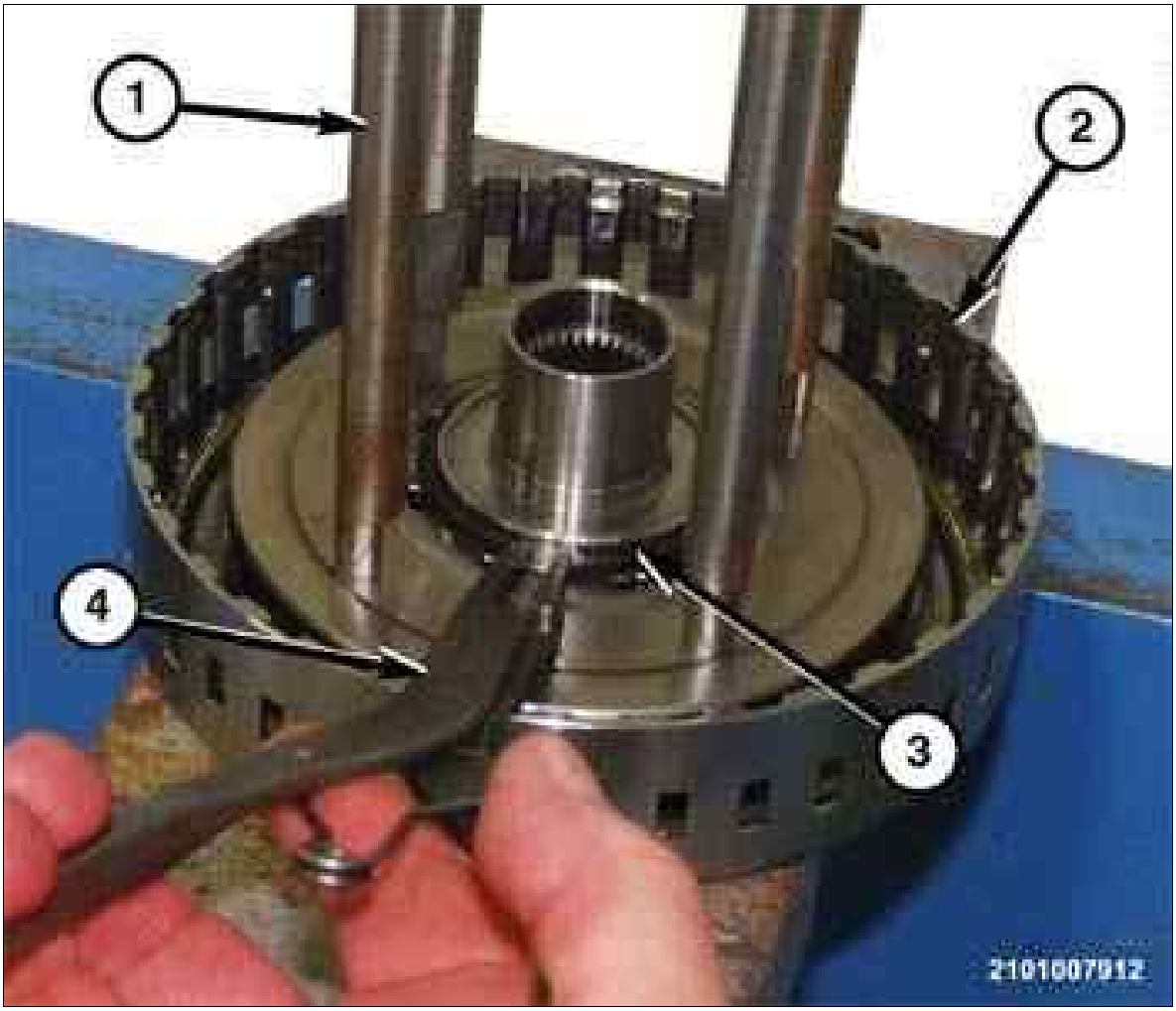
Fig 5: Snap-Ring Pliers, Snap Ring & E-Clutch Retainer



Courtesy of CHRYSLER GROUP, LLC

5. Using suitable snap-ring pliers (4), install the snap-ring (3) holding the E-clutch spring retainer to the E-clutch retainer (2).
6. Remove the tools 8904 and 10428 (1) from the E-clutch retainer (2).
7. Place the E-clutch retainer (2) on a suitable clean work surface.

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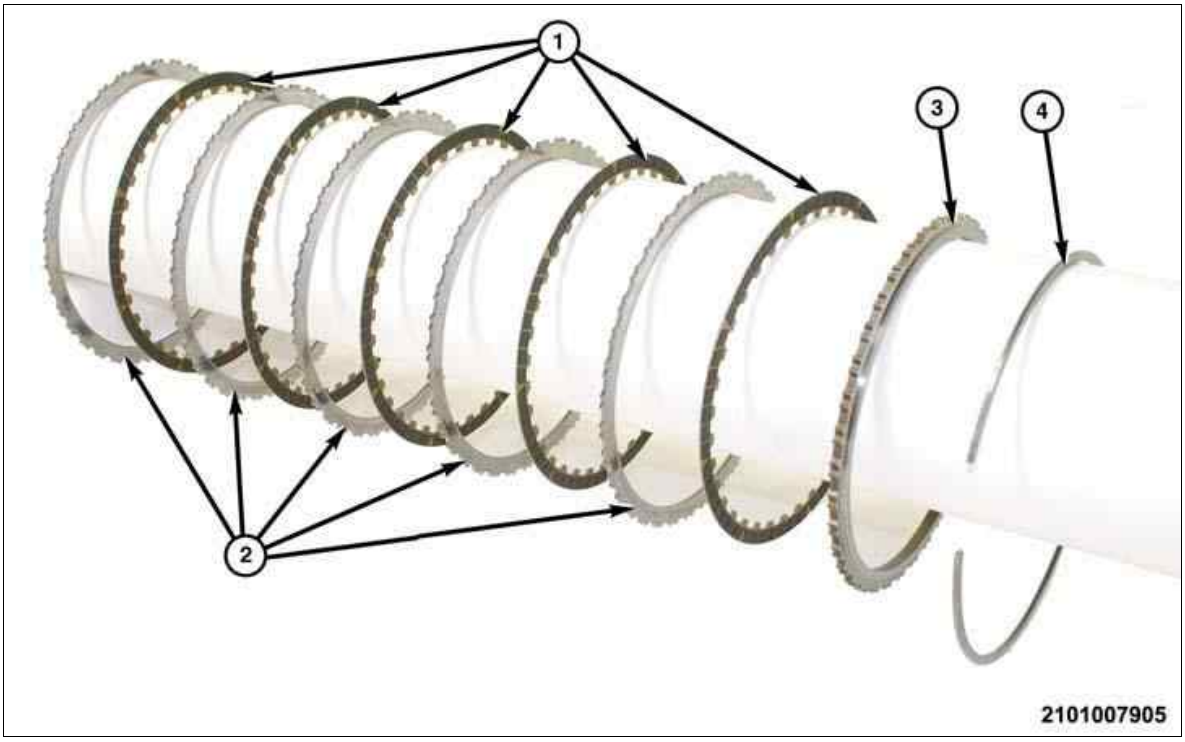
Fig 6: Exploded View Of E-Clutch Components



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8. In alternating sequence, Install the E-clutch friction plates (1) and steel plates (2) into the E-clutch retainer.

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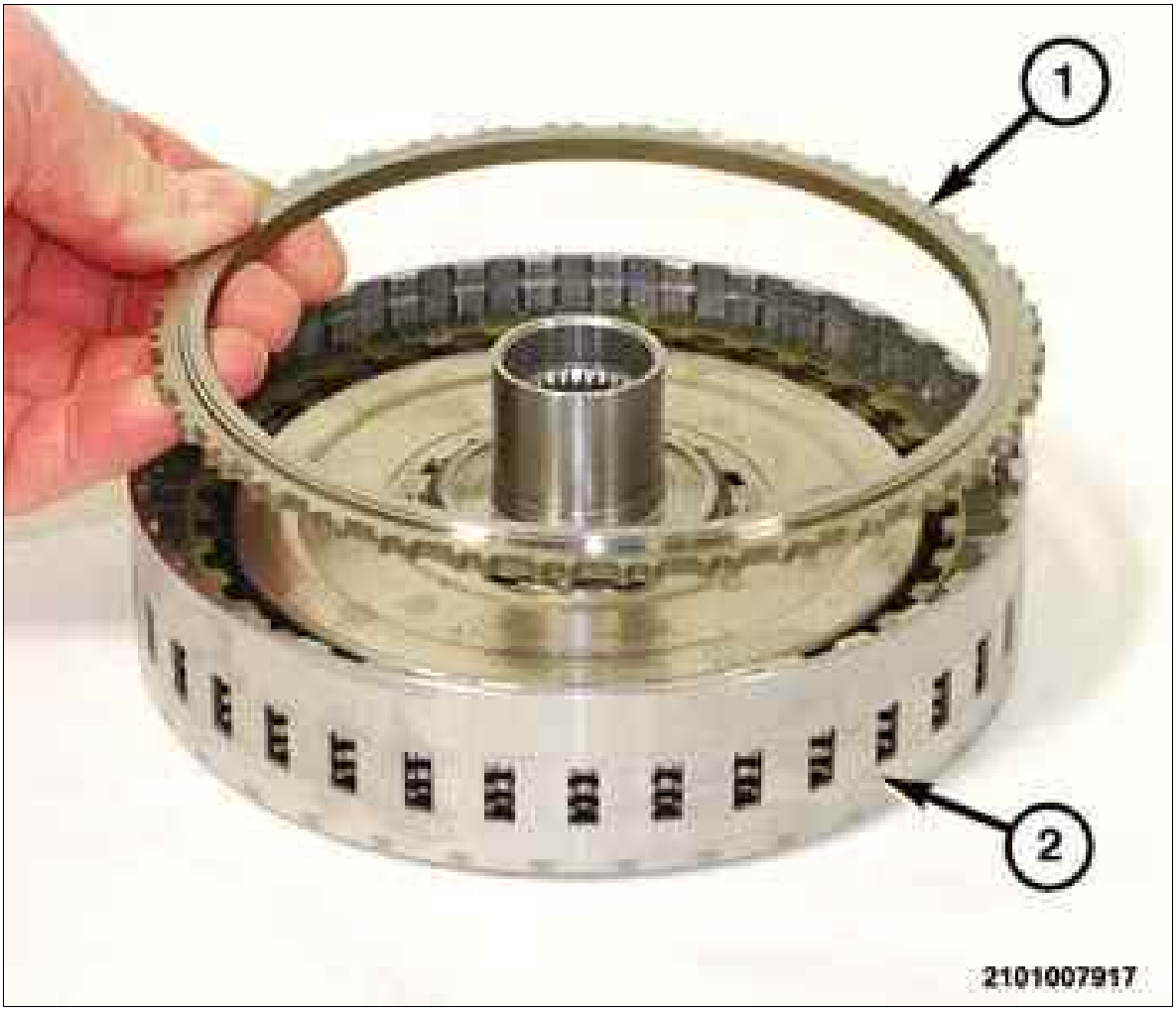
Fig 7: Thrust Plate & E-Clutch Retainer



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9. With stepped side up, install the reaction plate (1) into the E-clutch retainer (2).

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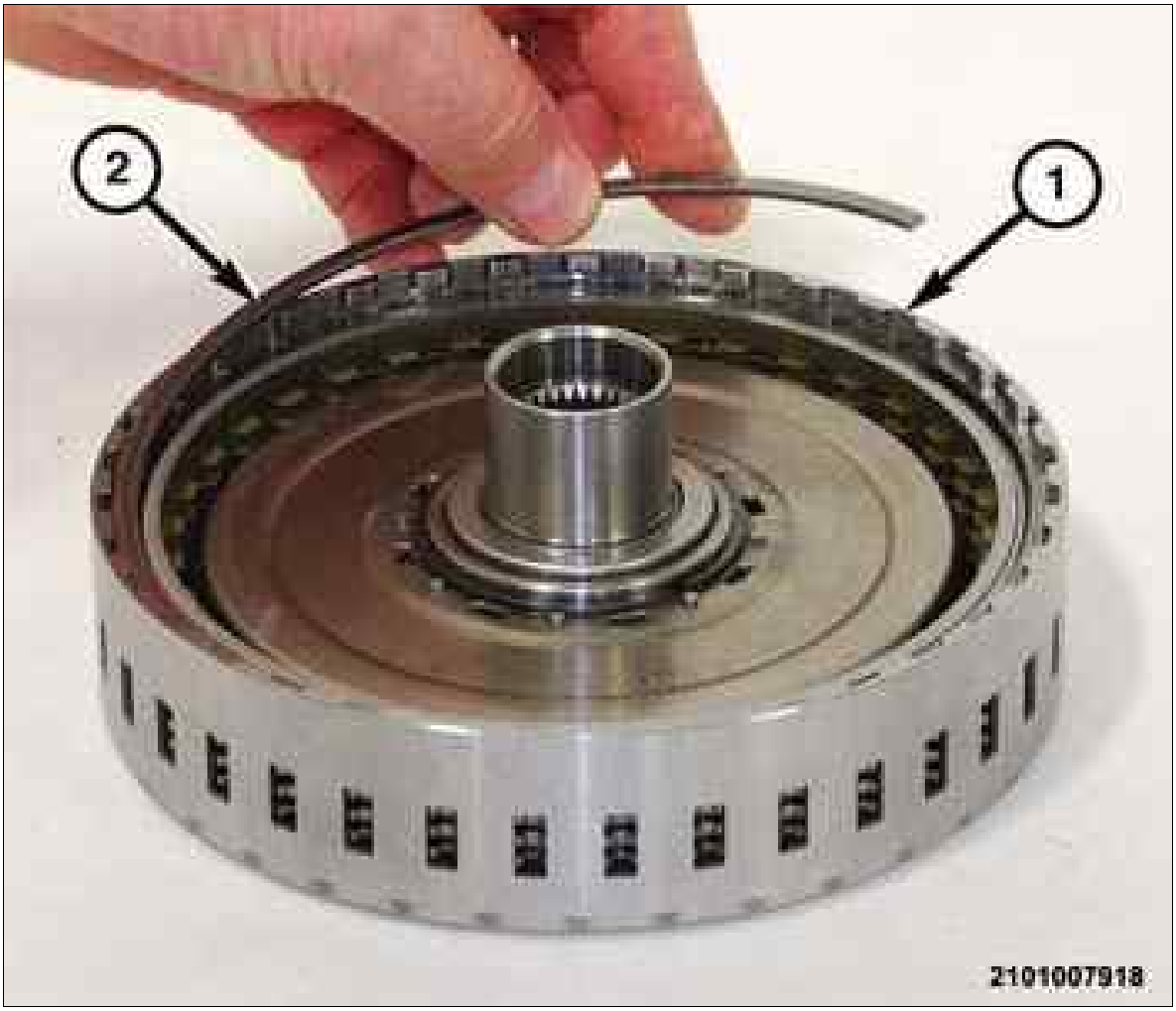
Fig 8: Snap-Ring & E-Clutch Retainer



Courtesy of CHRYSLER GROUP, LLC

10. Install the snap-ring (2) to hold the E-clutch reaction plate in the E-clutch retainer (1).
11. Measure the E-clutch end play. Refer to ADJUSTMENTS .

CLUTCH, F DOG > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > F-CLUTCH, DOG DISASSEMBLY

NOTE:

The Dog F-clutch is located in the output gear support.

1. Clamp the output gear support assembly in a suitable bench vise.

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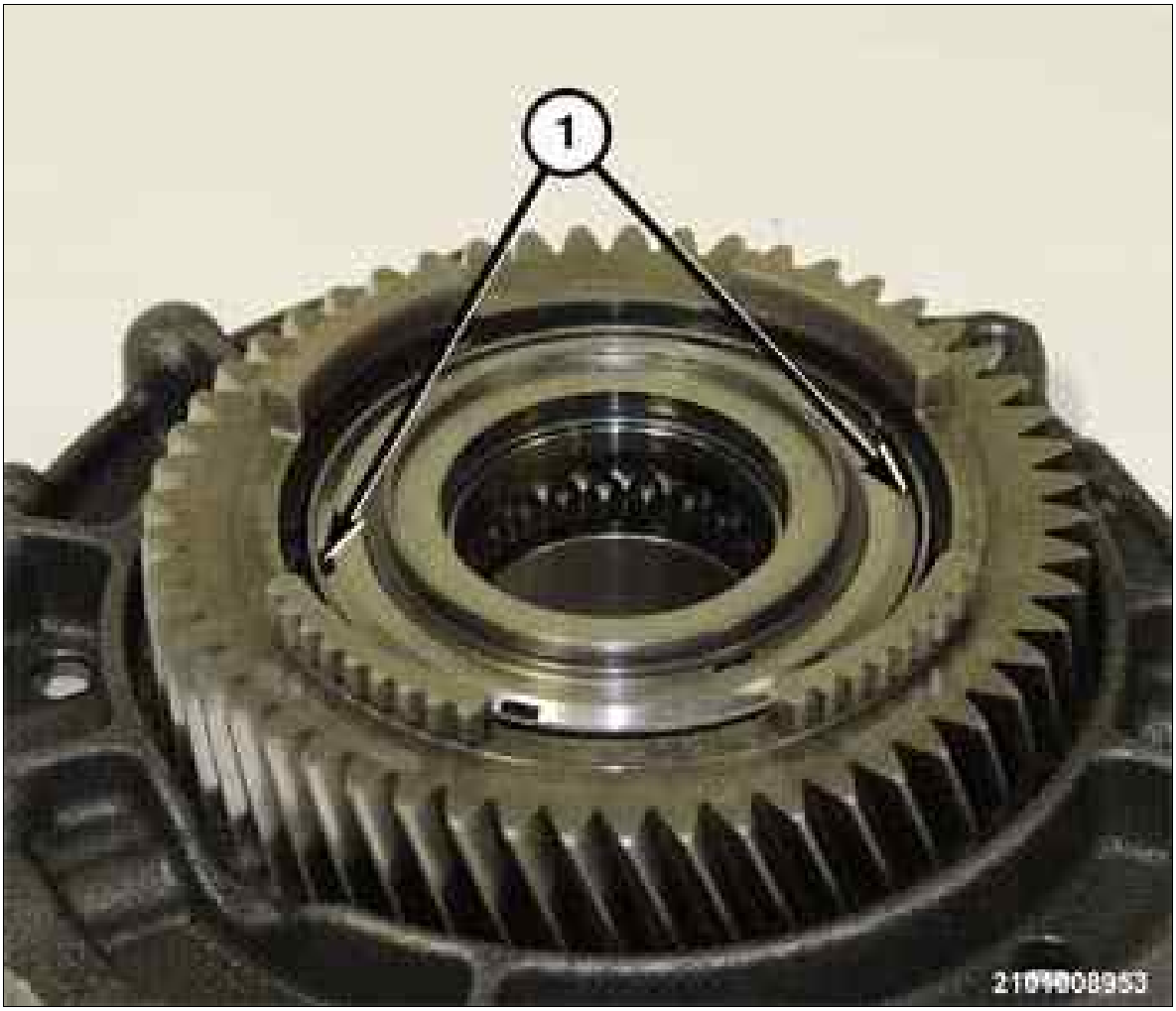
Fig 1: Locking Plate



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2. Using a suitable screw driver, pry the staking (1) in the locking plate outward to allow to stake nut to rotate.

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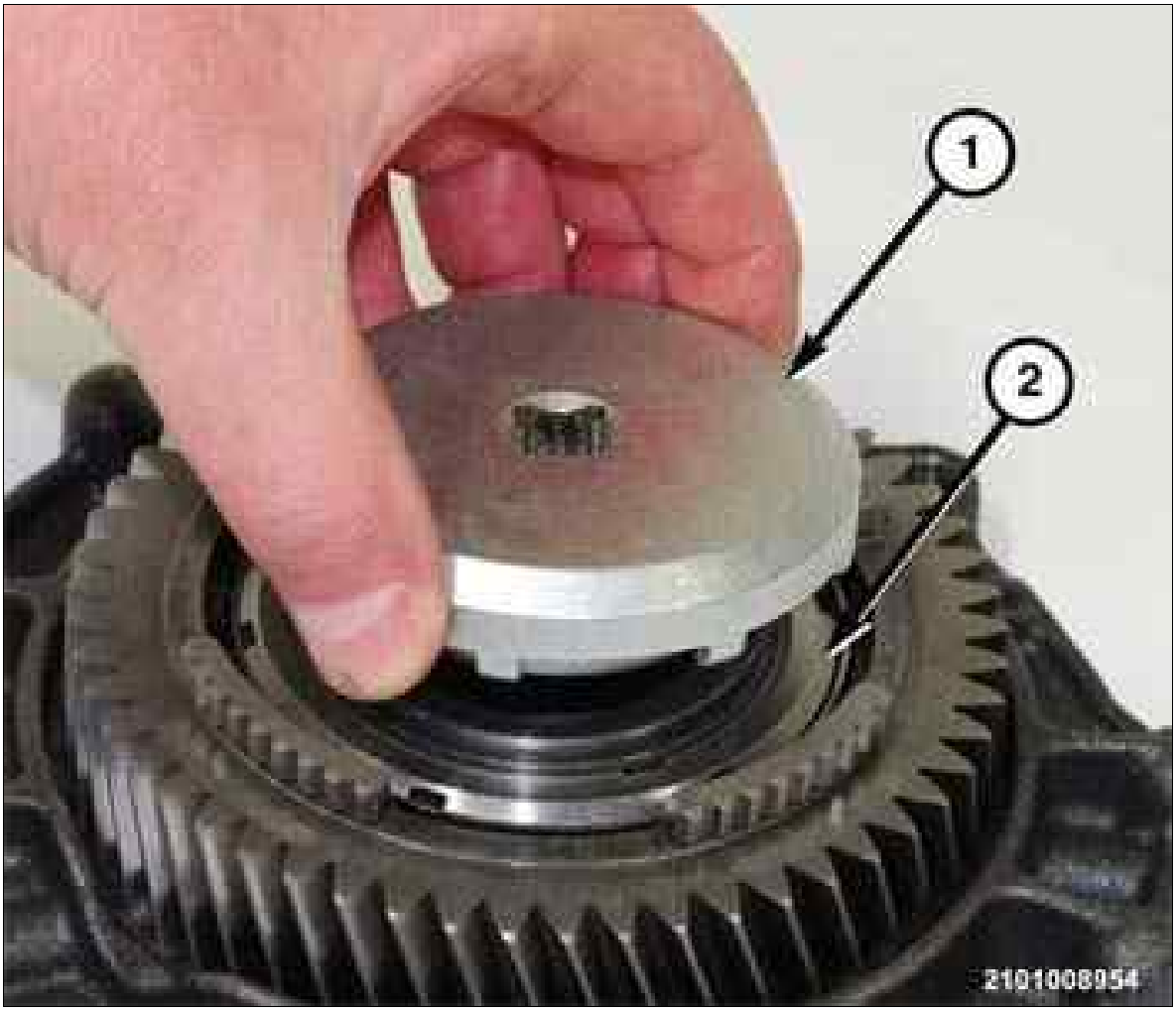
Fig 2: Removing/Installing Stake Nut



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3. Using tool (special tool #2012900210, Wrench, Spanner) (1), remove the stake nut (2) holding the output gear and bearing to the output gear support hub.

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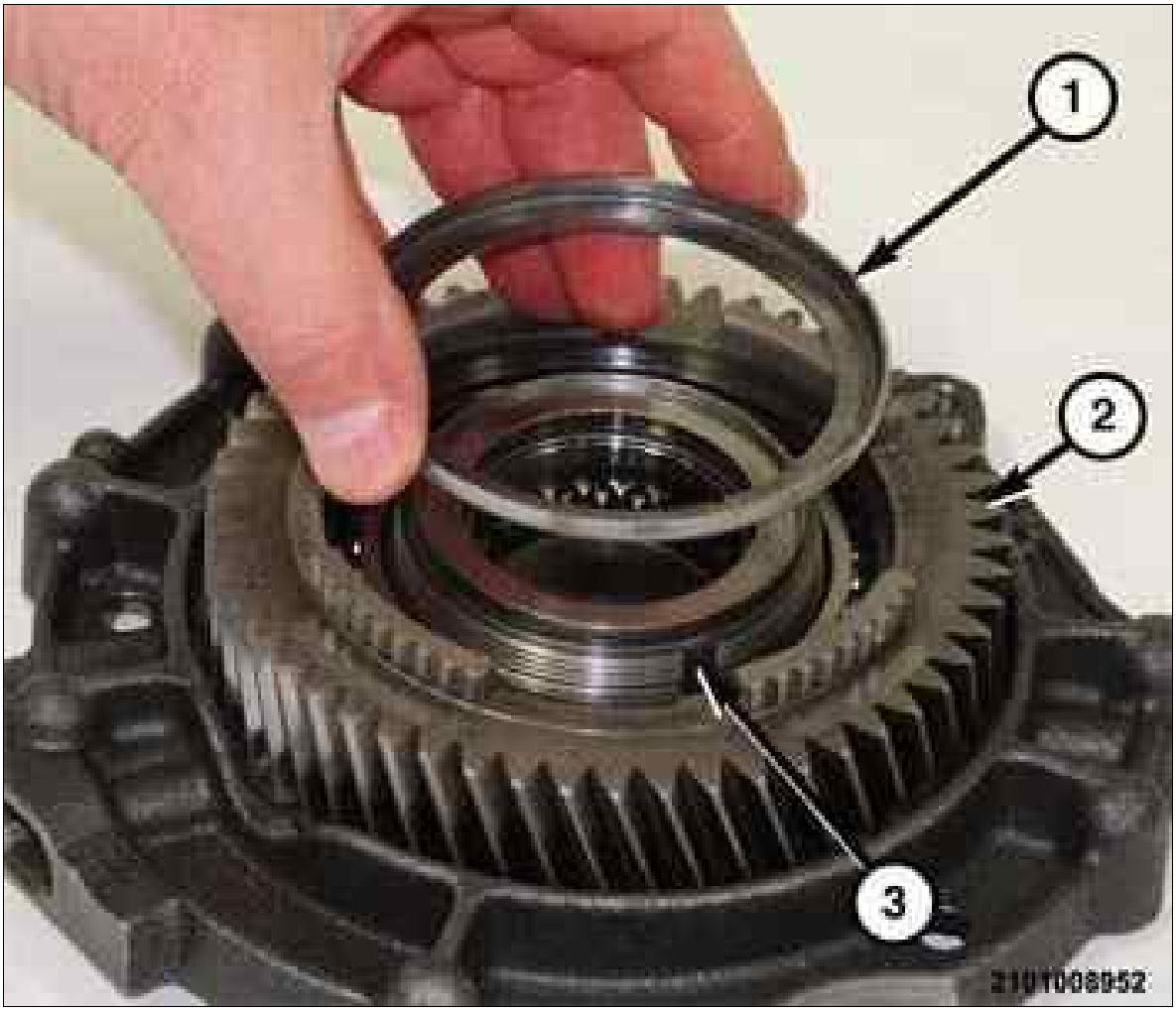
Fig 3: Lock Plate & Output Gear Support



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4. Remove the lock plate (1) from the output gear support (4).

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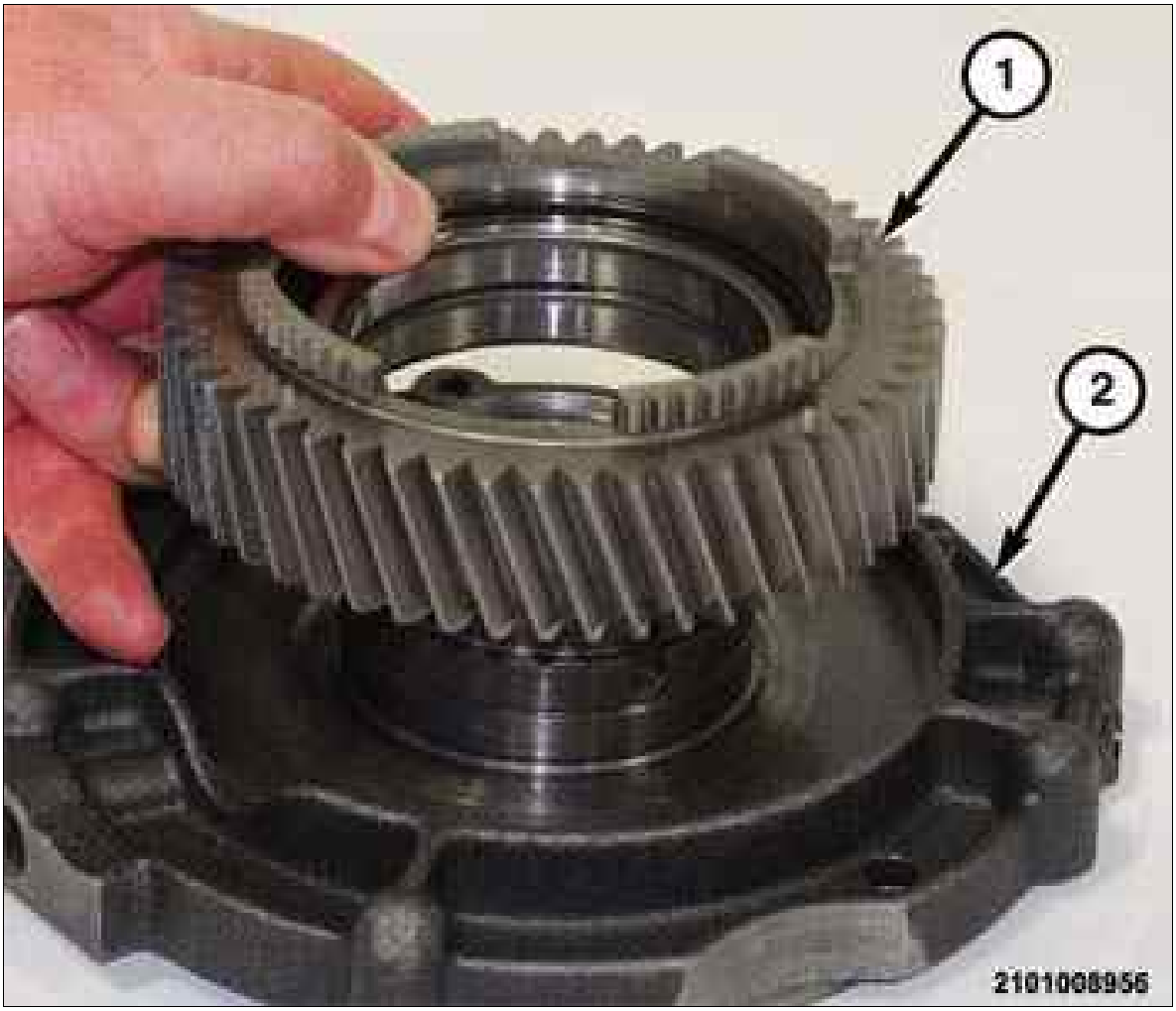
Fig 4: Output Gear & Output Gear Support



Courtesy of CHRYSLER GROUP, LLC

5. Remove the output gear (1) from the output gear support (2).

> *NOTE:*
>
> *The double roller bearing in the output gear cannot be removed. If the bearing is damaged, replace the output gear.*

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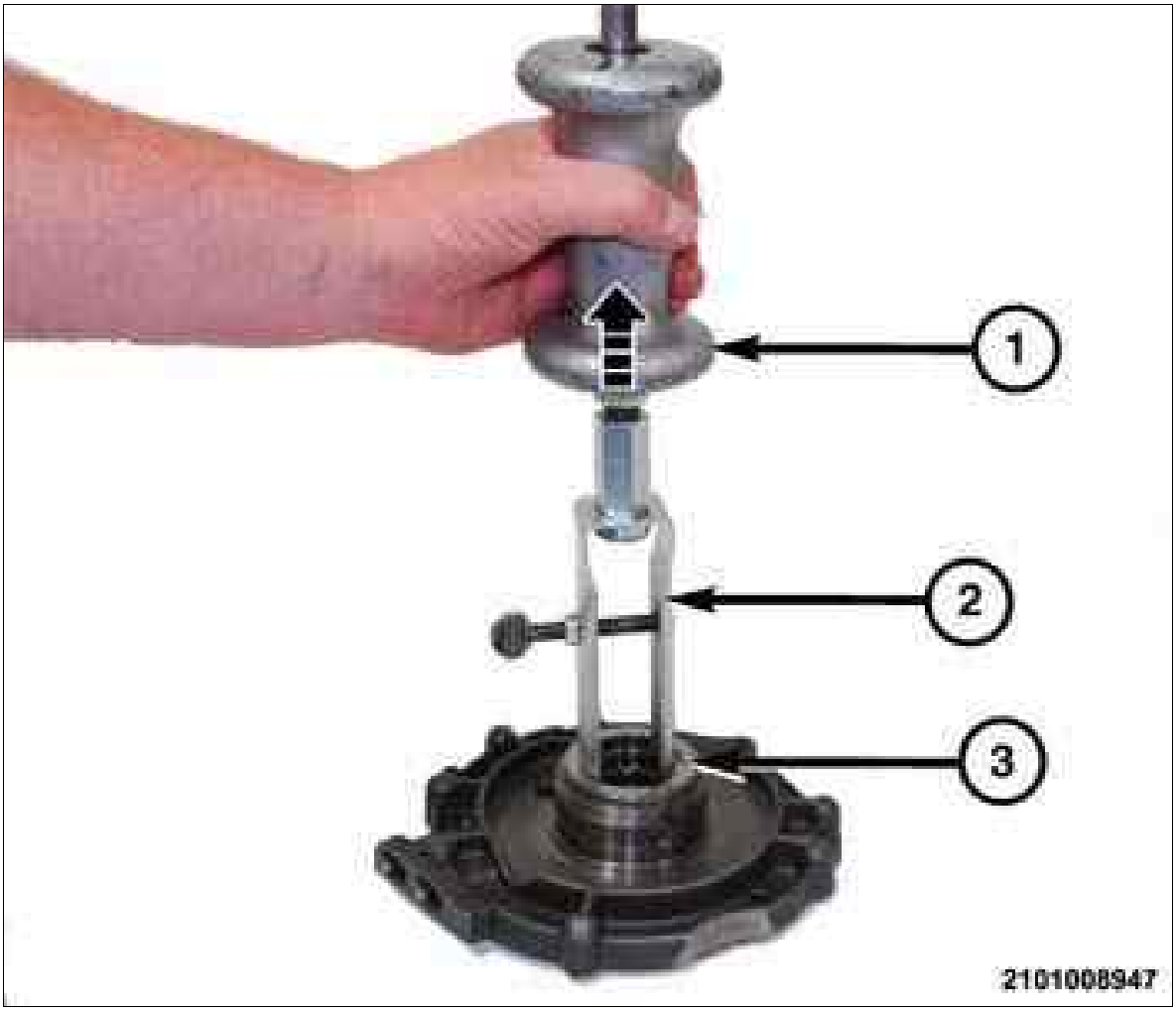
Fig 5: Removing Dog F-Clutch Thrust Plate



Courtesy of CHRYSLER GROUP, LLC

6. Using tool (special tool #C-637, Slide Hammer, Universal) (1) and (special tool #7794-A, Remover, Seal) (1), remove the F-clutch, dog thrust plate (3) from the output gear support hub.

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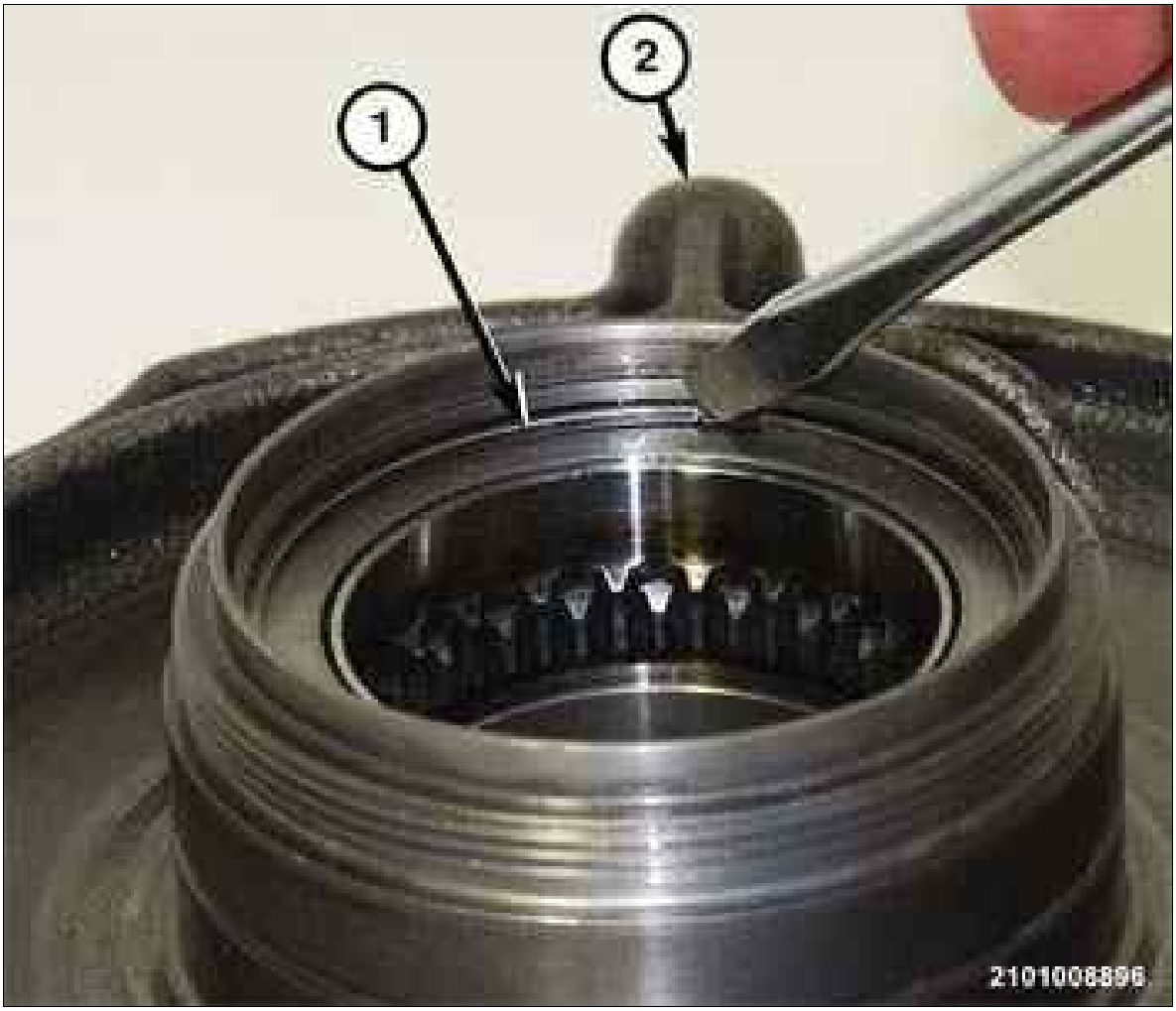
Fig 6: Removing Snap-Ring



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7. Using a suitable screw driver, remove the snap-ring (1) holding the F-clutch, dog plug and piston in the output gear support hub (2).

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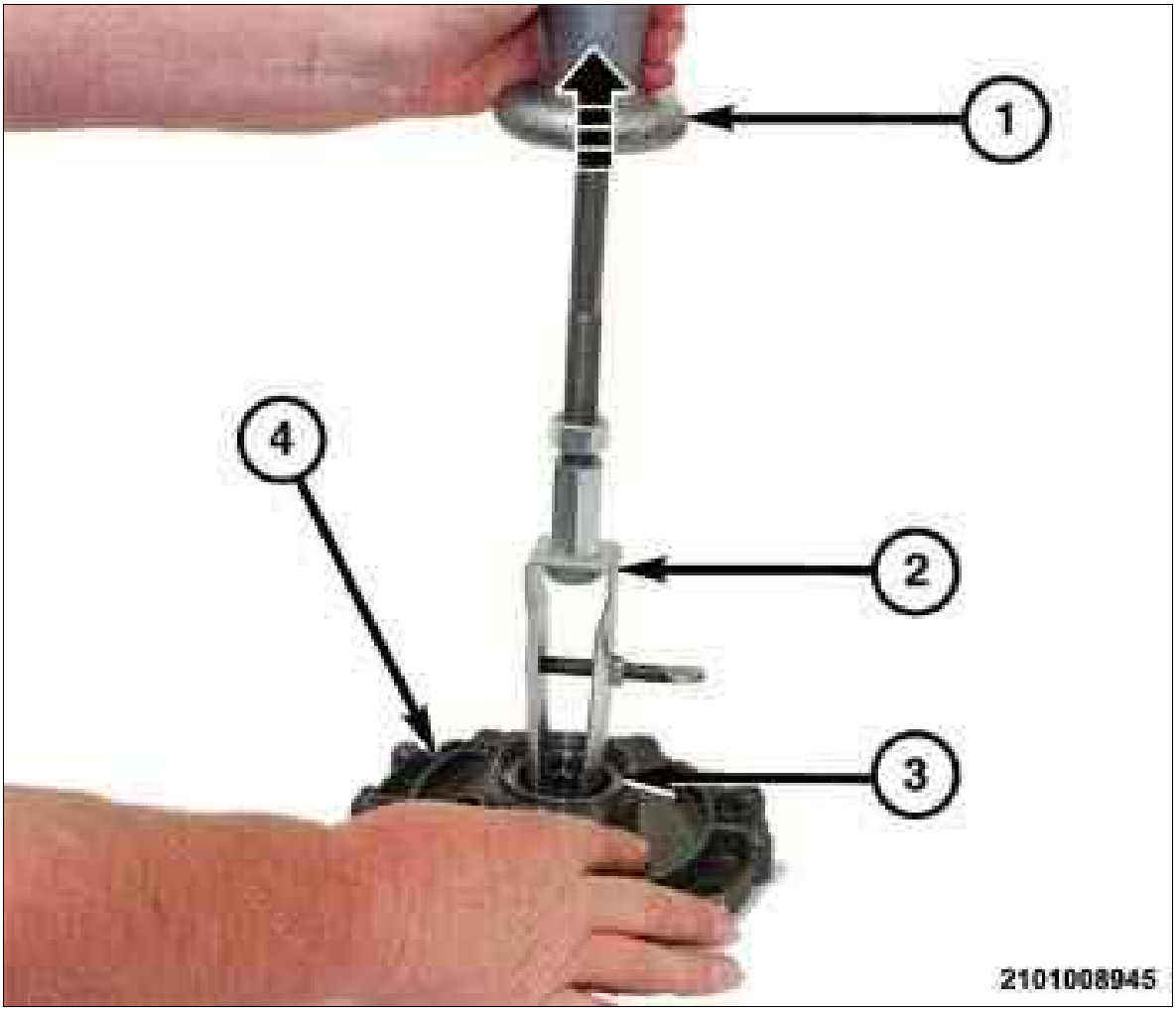
Fig 7: Removing Dog F-Clutch From Output Gear Support Hub



Courtesy of CHRYSLER GROUP, LLC

8. Using tool (special tool #C-637, Slide Hammer, Universal) (1) and (special tool #7794-A, Remover, Seal) (2), remove the dog F-clutch piston and plug (3) from the output gear support hub (4).

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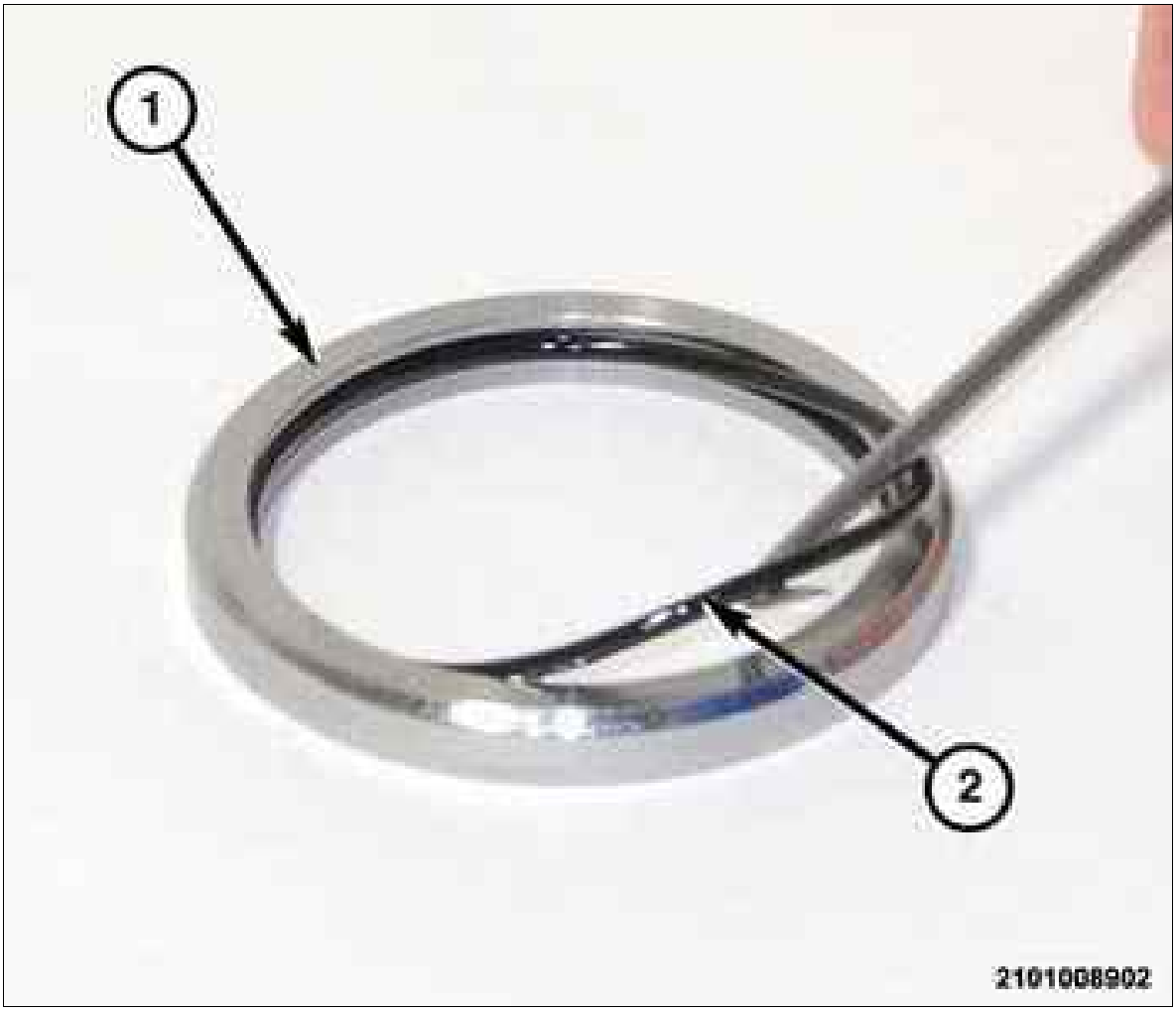
Fig 8: Dog F-Clutch Plug & O-Ring Seal



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9. Remove the F-clutch, dog plug from the F-clutch, dog piston.
10. Remove the O-ring seal (2) from the inside of the F-clutch, dog plug (1).

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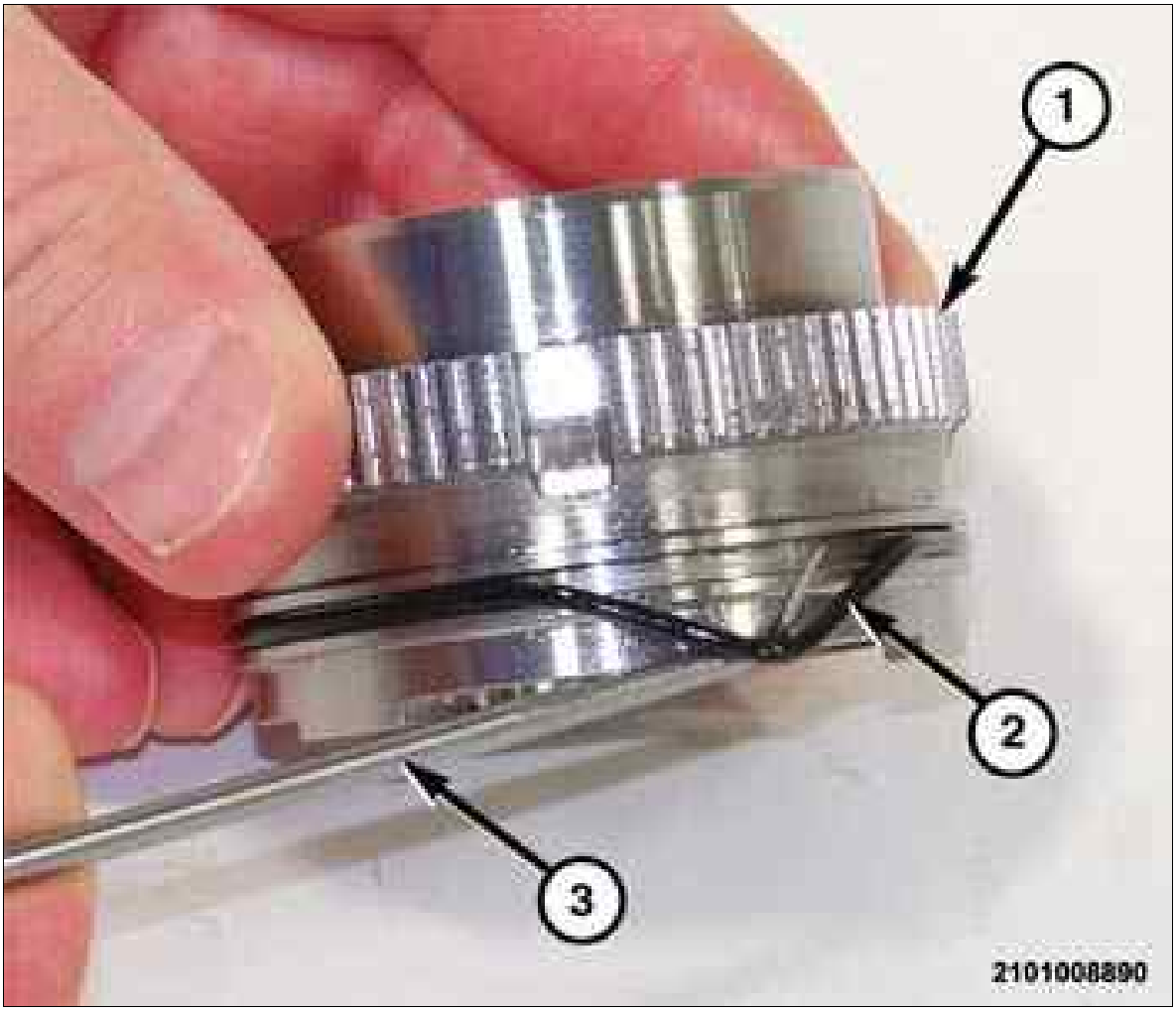
Fig 9: Dog F-Clutch Piston & O-Ring Seal



Courtesy of CHRYSLER GROUP, LLC

11. Remove the outer O-ring seal (2) from the F-clutch, dog piston (1).

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Fig 10: Dog F-Clutch Piston & Inner O-Ring Seal

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12. Remove the inner O-ring seal (1) from the F-clutch, dog piston (2).

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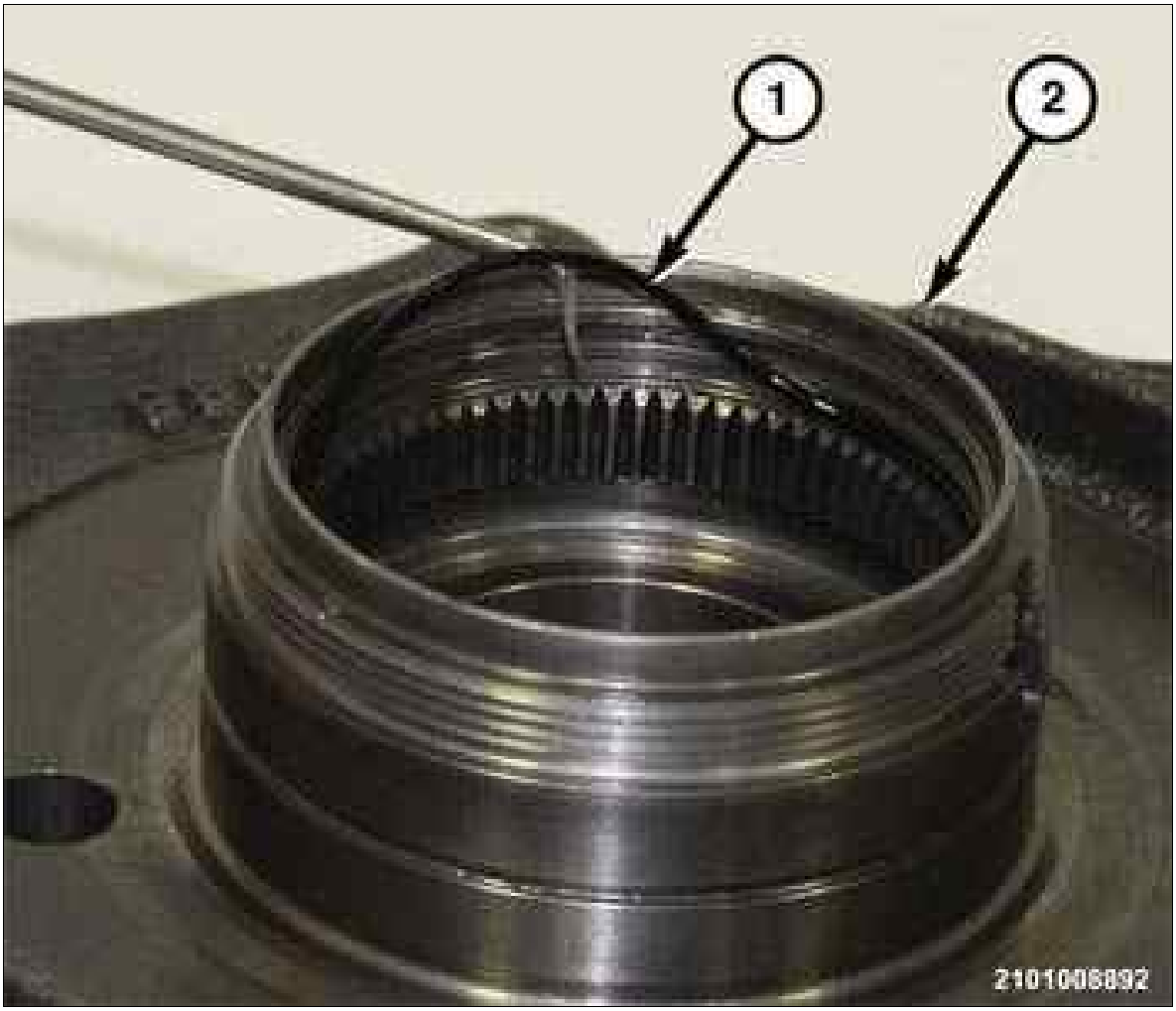
Fig 11: Output Gear Support Hub & Upper O-Ring Seal



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13. Remove the upper O-ring seal (1) from the land inside the output gear support hub (2).

CLUTCH, F DOG > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > F-CLUTCH, DOG ASSEMBLY

Clean the F-clutch, dog components with solvent and blow them dry with regulated 344 kPa (50 psi) shop air. Inspect the dog F-clutch components for damage or excessive wear. If F-clutch, dog components a damaged the entire output gear support assembly will require replacement. Only the O-ring seals can be replaced. Apply assembly lubricant to the O-ring seals to aid installation.

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Fig 1: Installing A New Upper O-Ring Seal To Inside Land Of Output Gear Support Hub

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1. Install a **NEW** upper O-ring seal (1) into the land inside the output gear support (2) hub.

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Fig 2: Installing New Inner O-Ring Seal Into The Dog F-Clutch Piston

Courtesy of CHRYSLER GROUP, LLC

2. Install a **NEW** inner O-ring seal (2) into the F-clutch, dog piston (1).

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Fig 3: Installing New Outer O-Ring Seal Into The Dog F-Clutch Piston

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3. Install a **NEW** outer O-ring seal (2) into the F-clutch, dog piston (1).

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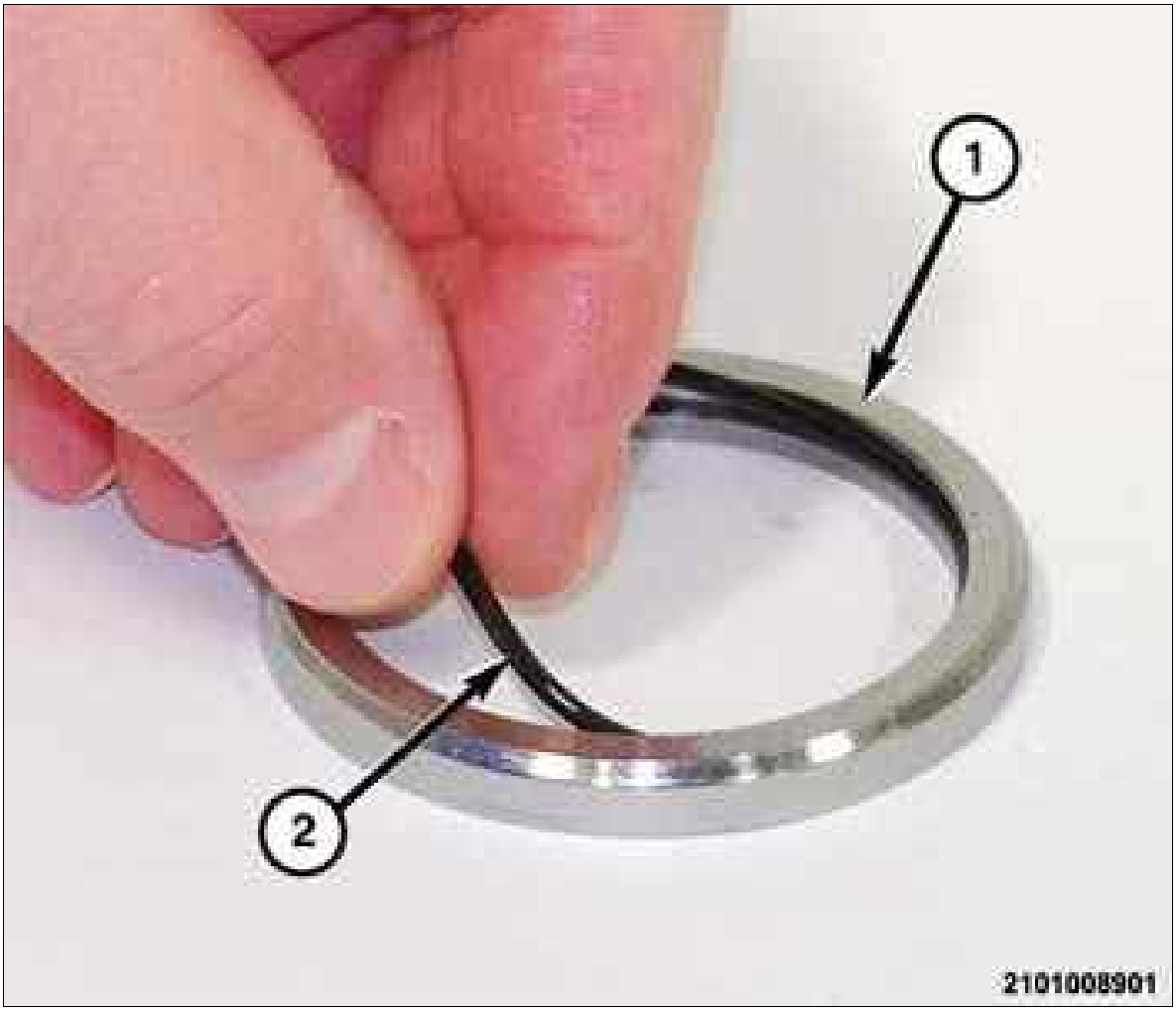
Fig 4: Installing New O-Ring Seal Into The Inside Of Dog F-Clutch Plug



Courtesy of CHRYSLER GROUP, LLC

4. Install a **NEW** O-ring seal (2) into the inside of the F-clutch, dog plug (1).

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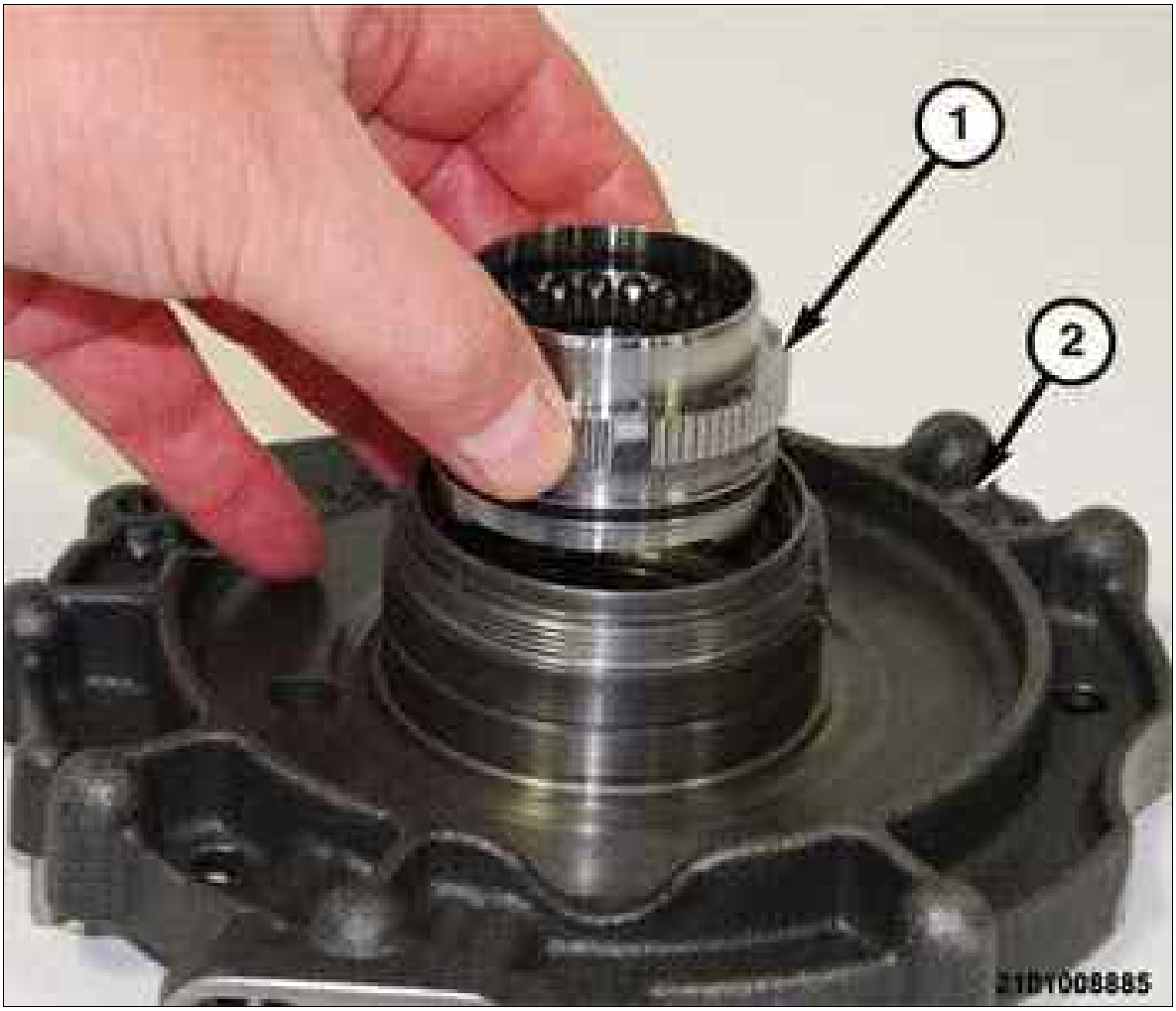
Fig 5: Installing Dog F-Clutch Piston Into The Output Gear Support Hub



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5. Install the dog F-clutch piston (1) into the output gear support hub (2).

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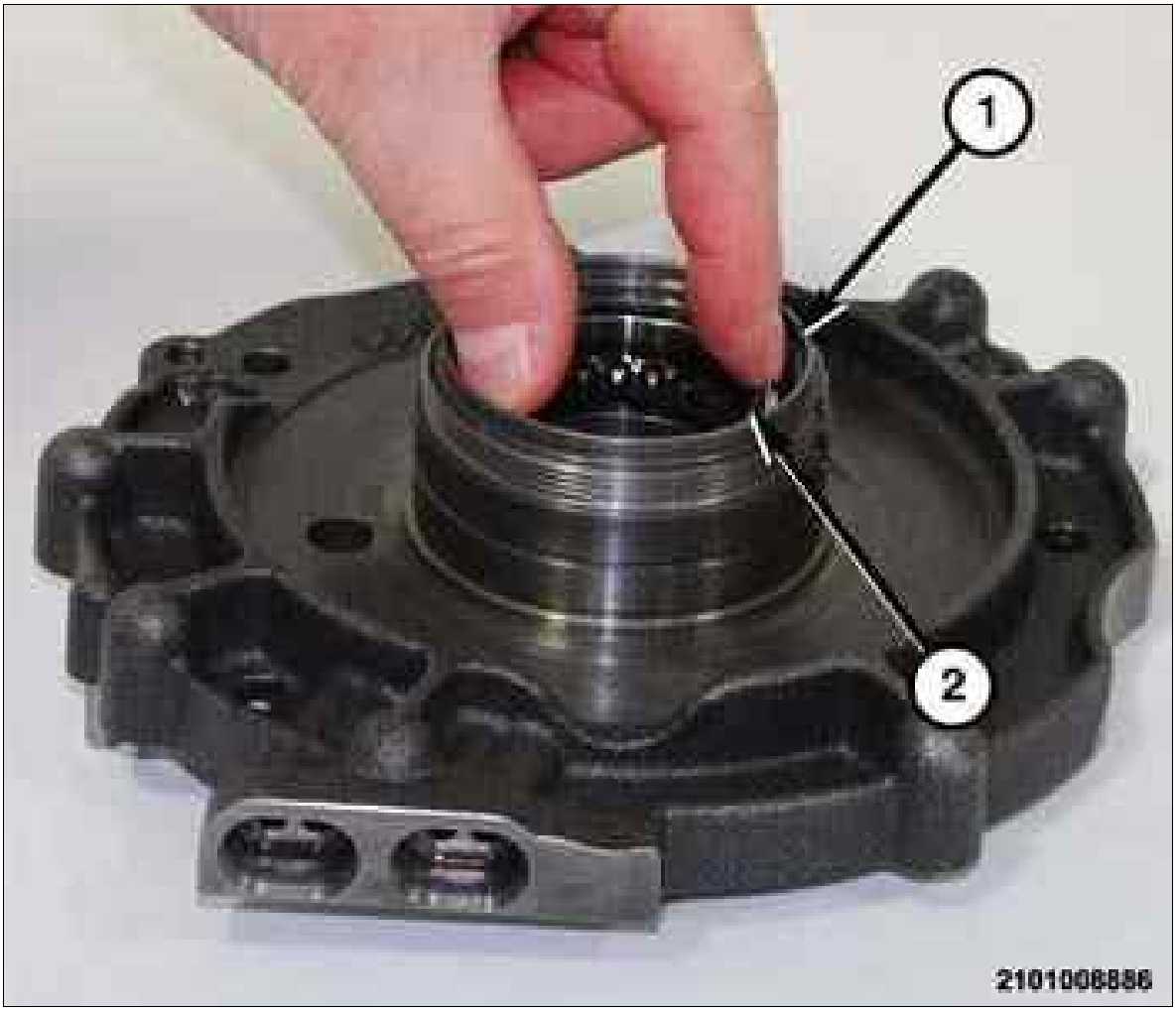
Fig 6: Pushing Dog F-Clutch Piston To Bottom Of Bore In The Output Gear Support Hub



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6. Push the F-clutch, dog piston (2) to the bottom of the bore in the output gear support hub (1).

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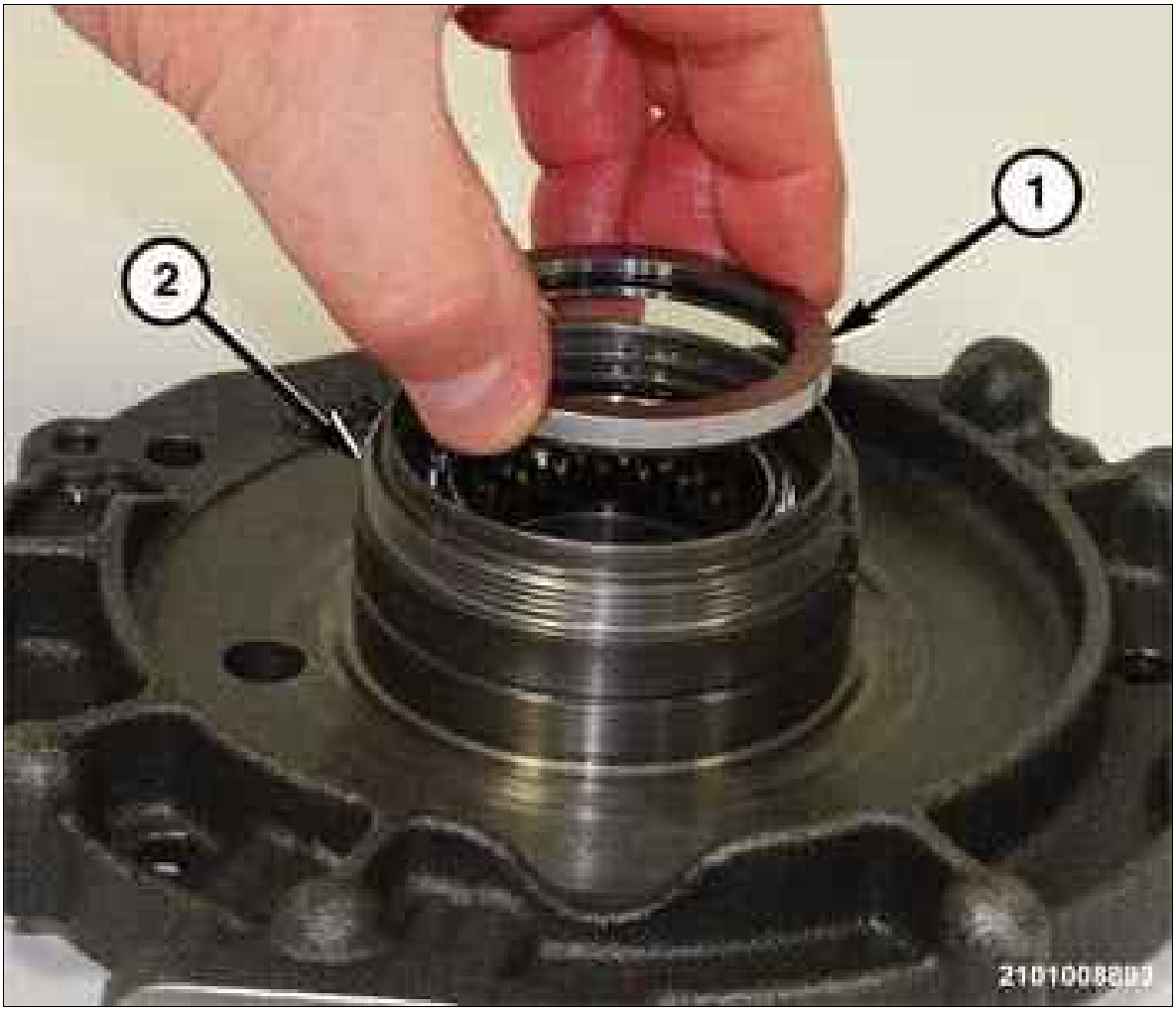
Fig 7: Installing Dog F-Clutch Plug



Courtesy of CHRYSLER GROUP, LLC

7. Install the F-clutch, dog plug (1) onto the F-clutch, dog piston in the output gear support hub (2).

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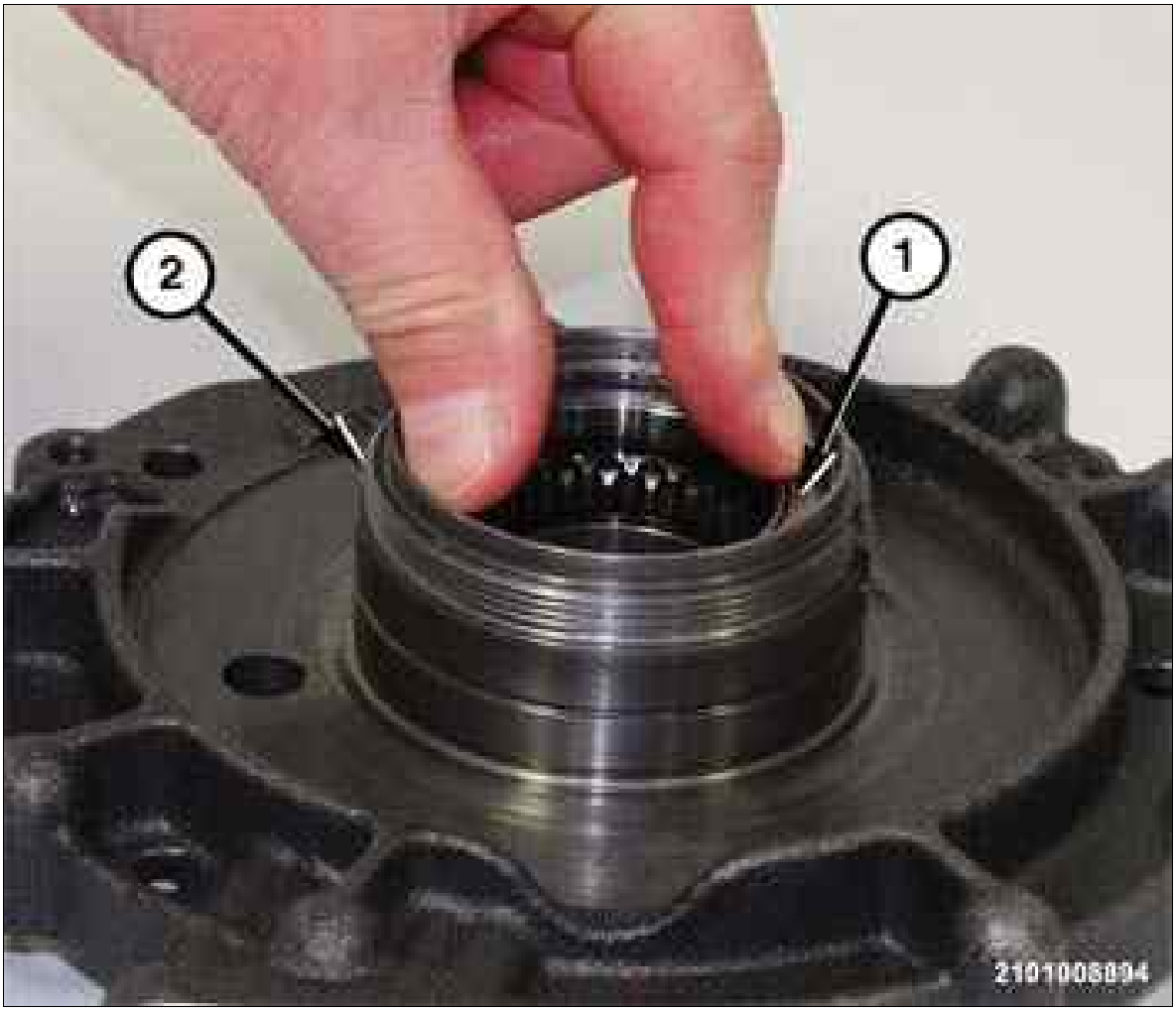
Fig 8: Pushing Dog F-Clutch Plug To Bottom Of Bore



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8. Push the F-clutch, dog plug (1) into the bore until it contacts the top of the piston in the output gear support hub (2).

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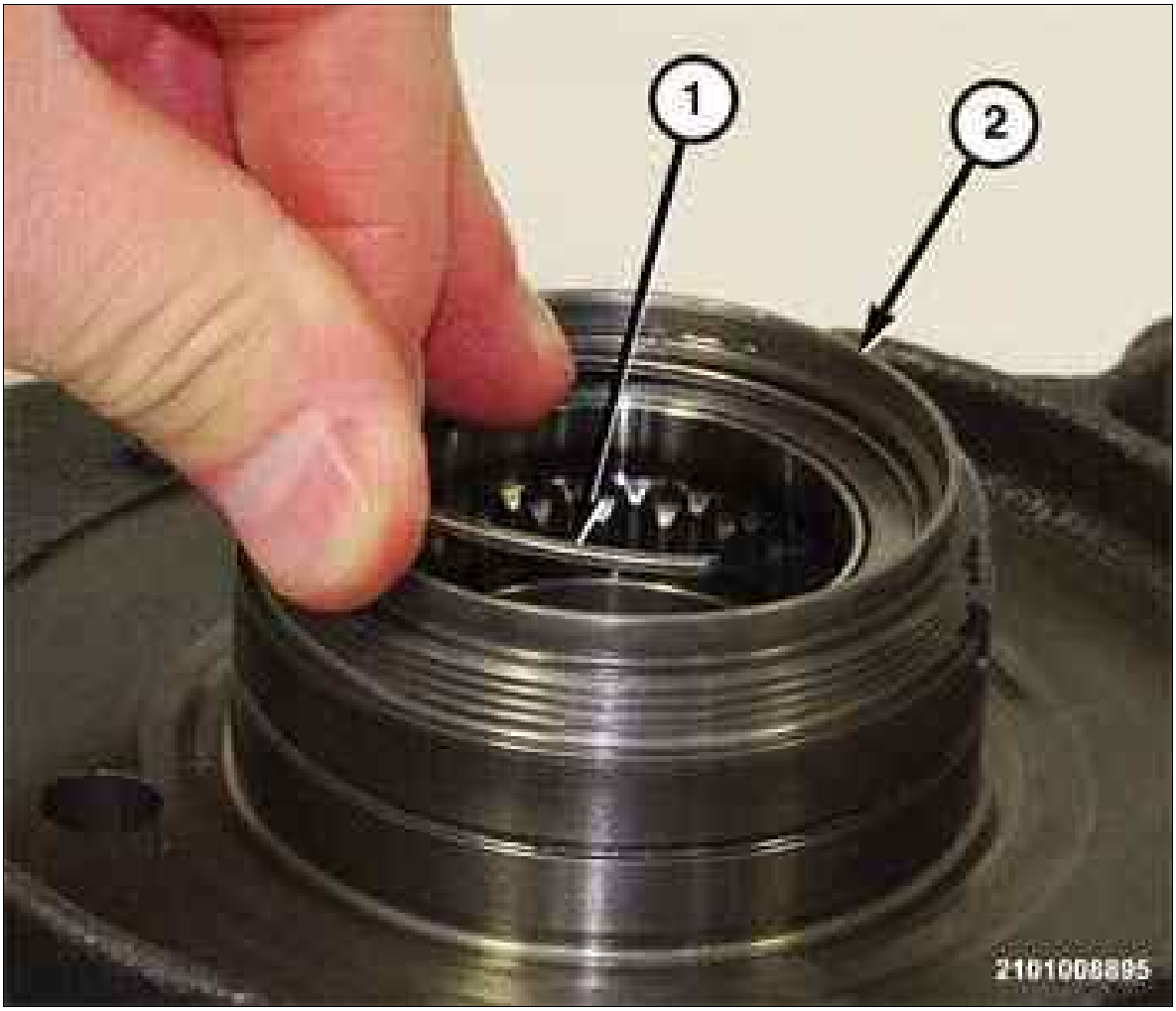
Fig 9: Installing Snap-Ring



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9. Install the snap-ring (1) to hold the F-clutch, dog plug and piston in the output gear support hub (2).

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Fig 10: Placing Dog F-Clutch Thrust Plate In Position On Output Gear Support Hub

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10. Place the F-clutch, dog thrust plate (1) in position on the output gear support hub (2).

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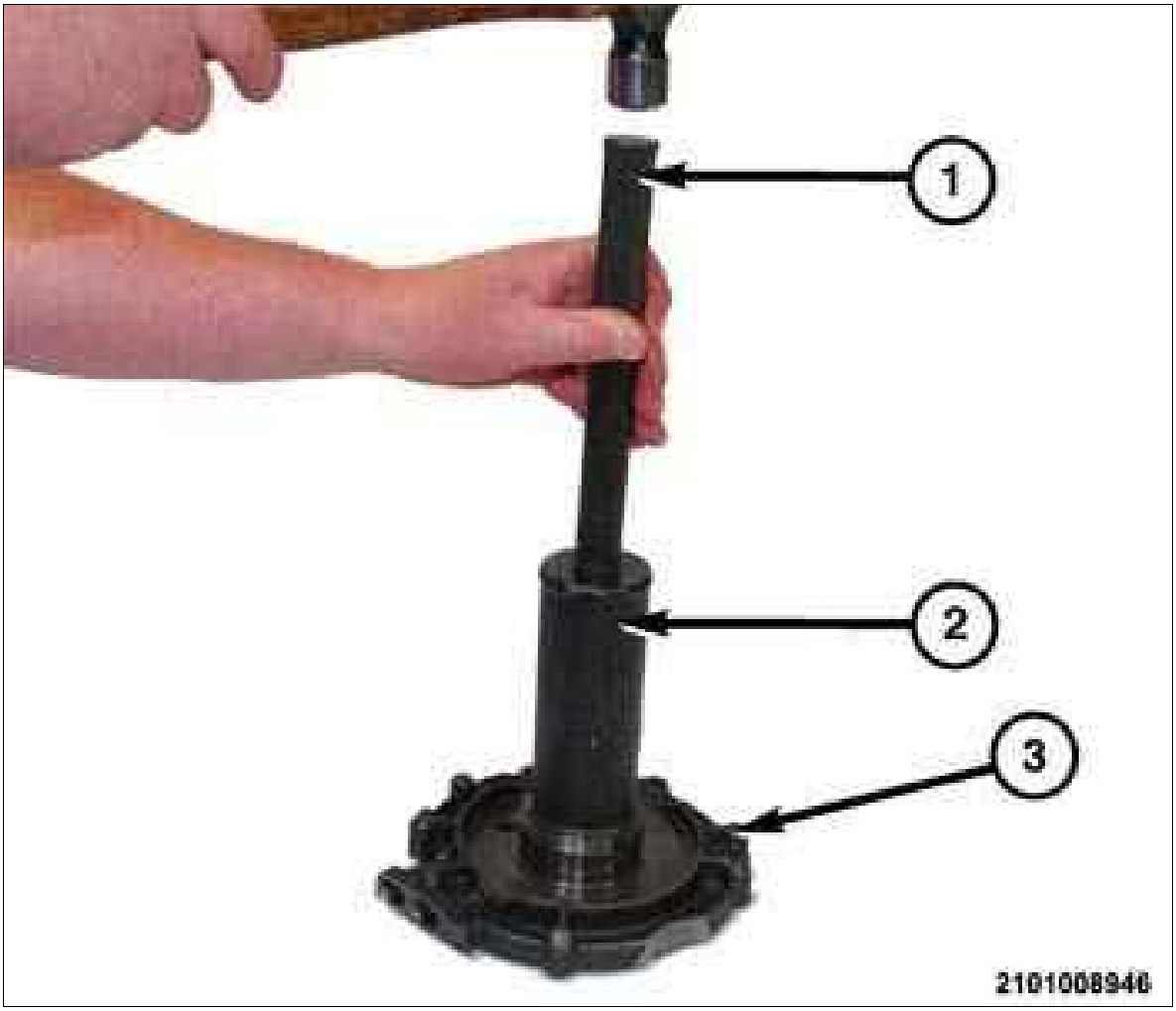
Fig 11: Installing Dog F-Clutch Thrust Plate Into Output Gear Support Hub



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11. Using tools (special tool #8148, Cup) (2) and (special tool #C-4171, Driver Handle, Universal) (1), install the F-clutch, dog thrust plate into the output gear support hub (3).

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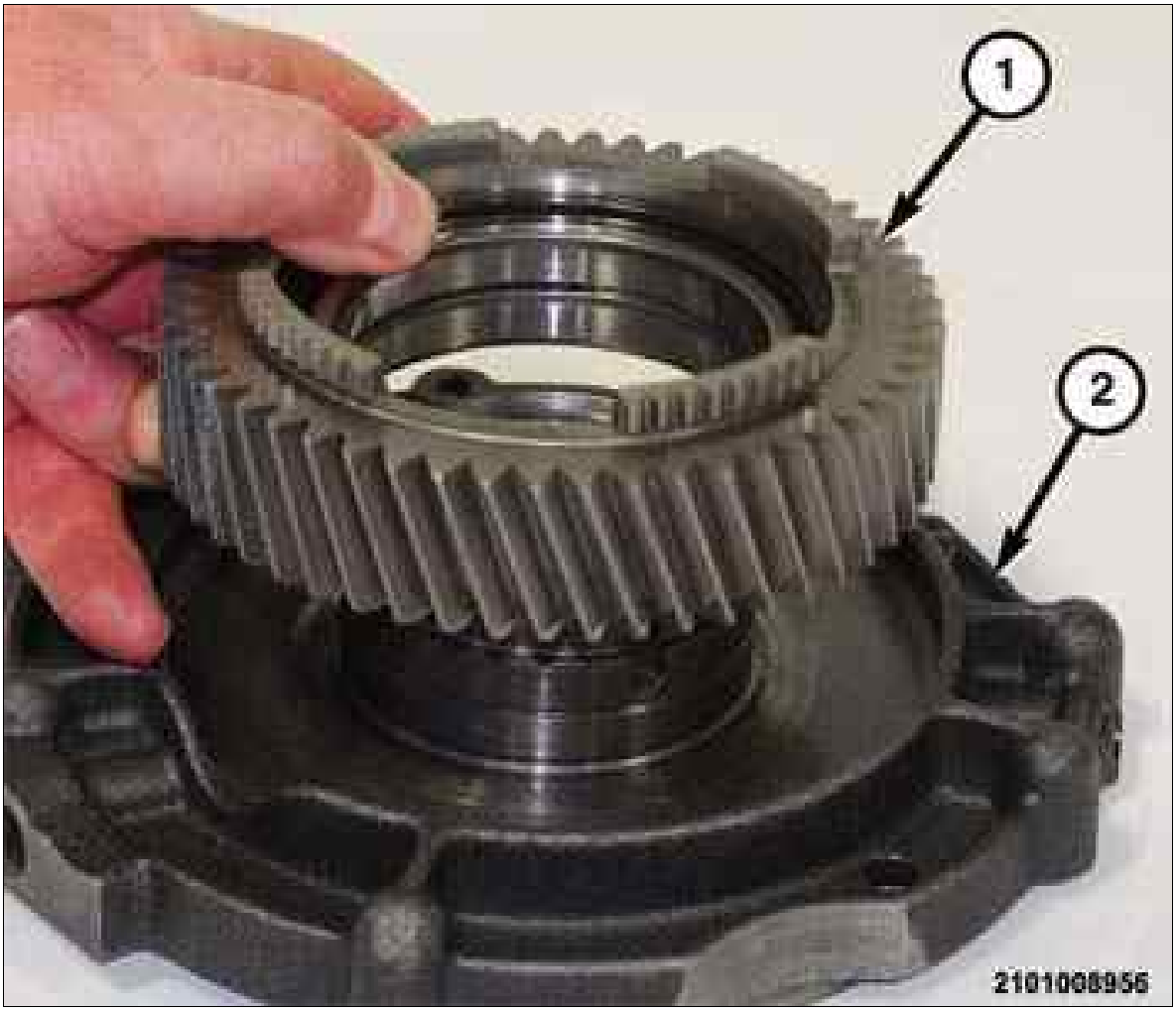
Fig 12: Output Gear & Output Gear Support



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12. Install the output gear (1) onto the output gear support (2).

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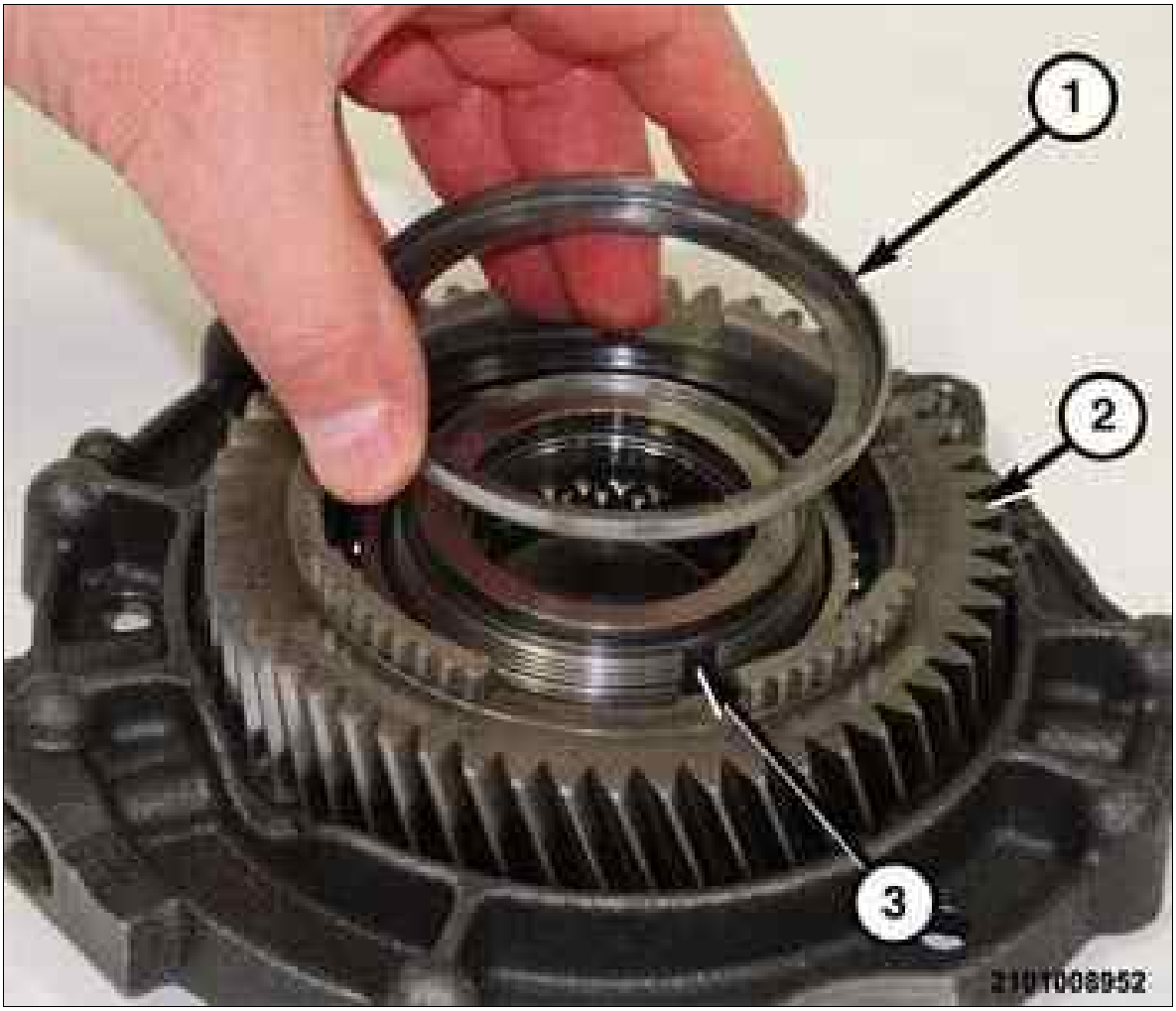
Fig 13: Lock Plate & Output Gear Support



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13. Align the tab on the lock plate (1) with the notch (4) on the output gear support hub and install the lock plate (1) onto the output gear support hub (2).

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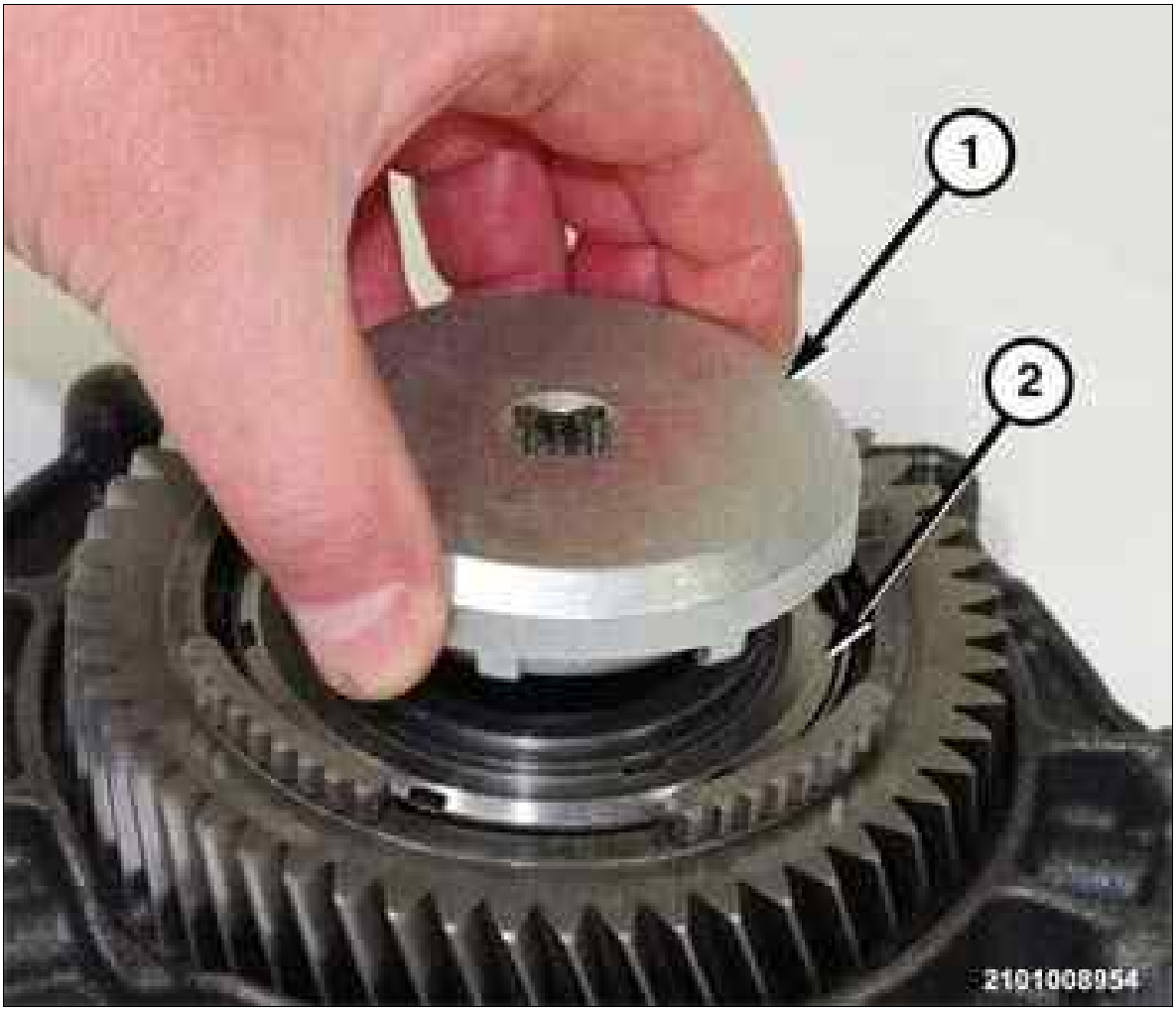
Fig 14: Removing/Installing Stake Nut



Courtesy of CHRYSLER GROUP, LLC

14. Using tool (special tool #2012900210, Wrench, Spanner), install the stake nut (2) to hold the output gear and bearing to the output gear support hub and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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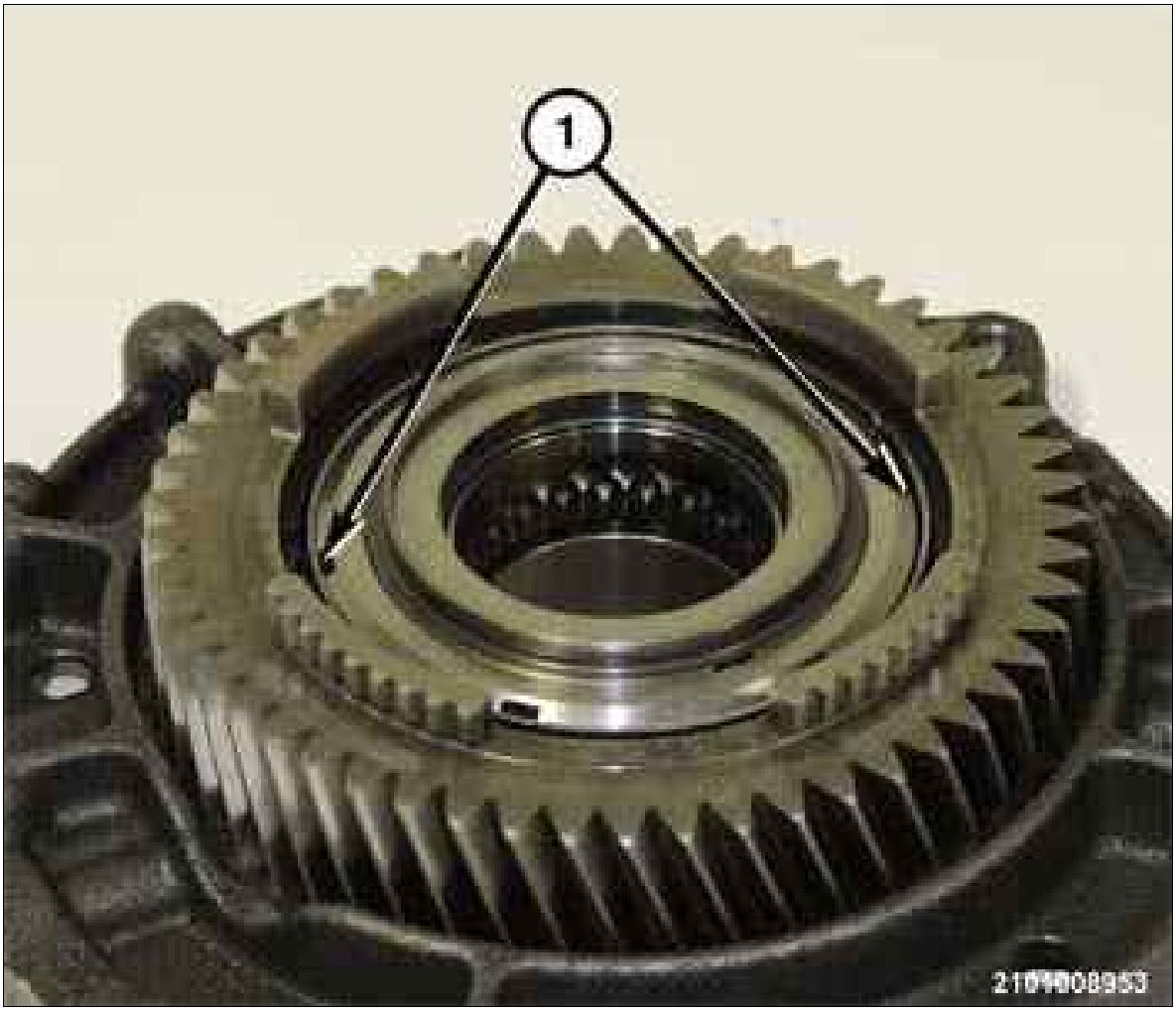
Fig 15: Locking Plate



Courtesy of CHRYSLER GROUP, LLC

15. Using a suitable punch, stake the locking plate (1) inward to lock the stake nut in position.
16. Install the output gear support in the transaxle.

DIFFERENTIAL AND RING GEAR > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY

NOTE:

The differential unit can be placed on tool (special tool #6888, Installer, Seal) as a stable holding fixture.

1. Remove the transmission from the vehicle. Refer to REMOVAL AND INSTALLATION .
2. Place the transmission on a suitable clean work surface.

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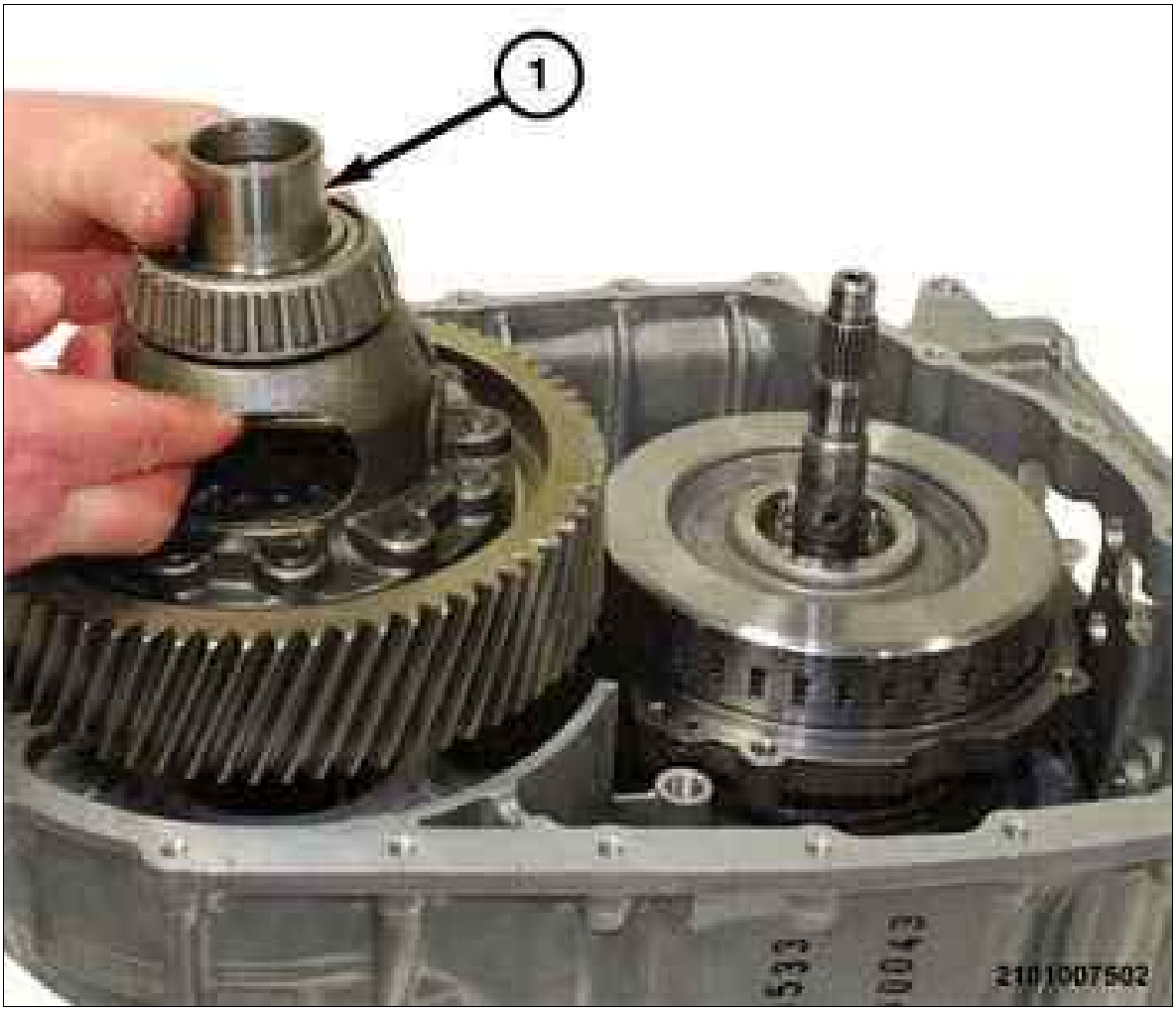
3. Remove the bellhousing from the transmission. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .

Fig 1: Differential Assembly



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4. Separate the differential unit (1) from the transmission.

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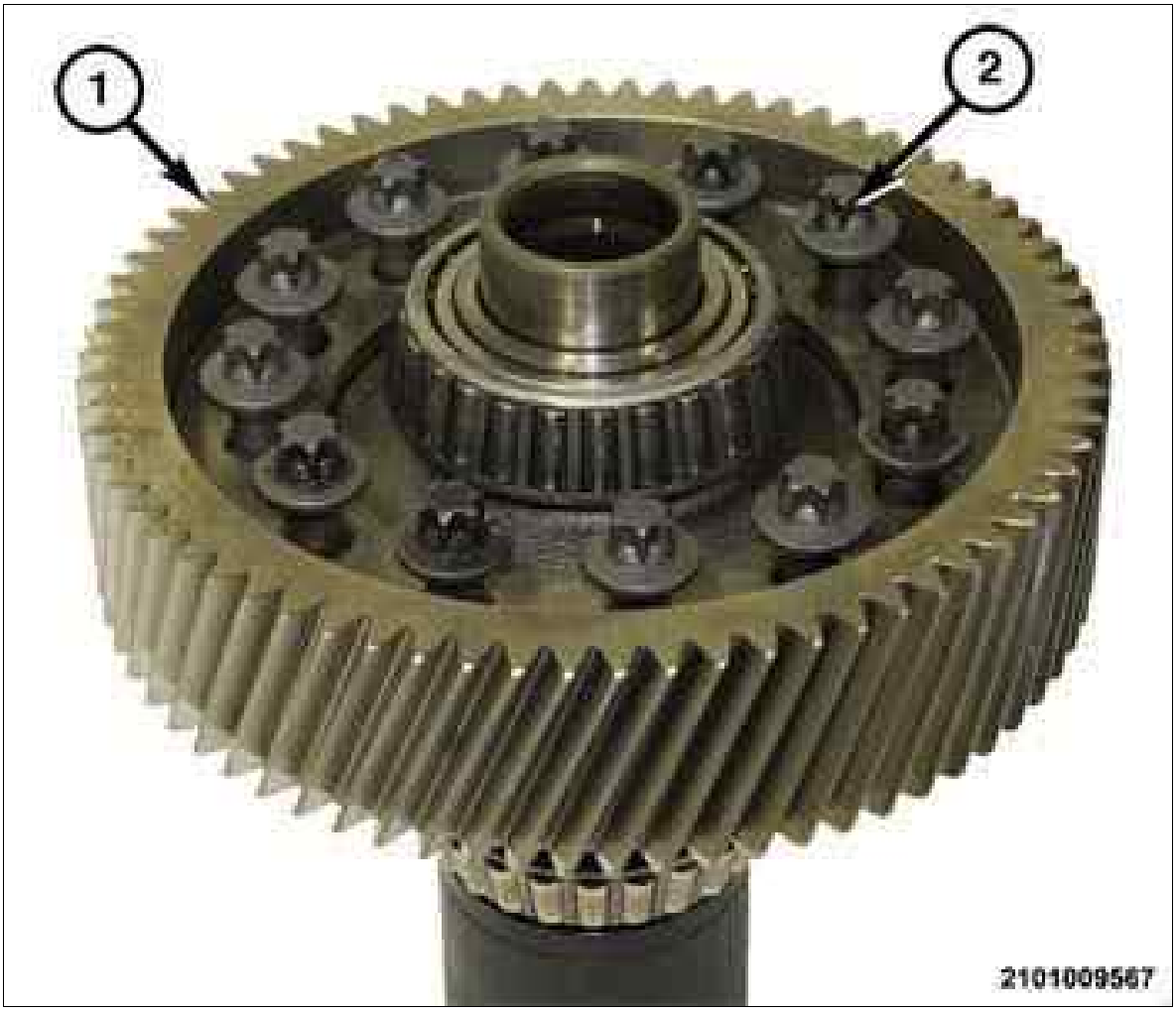
Fig 2: Ring Gear & Bolts



Courtesy of CHRYSLER GROUP, LLC

5. Remove the bolts (2) holding the ring gear (1) to the differential housing.

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Fig 3: Ring Gear & Differential Unit

Courtesy of CHRYSLER GROUP, LLC

6. Separate the ring gear (1) from the differential unit (2).

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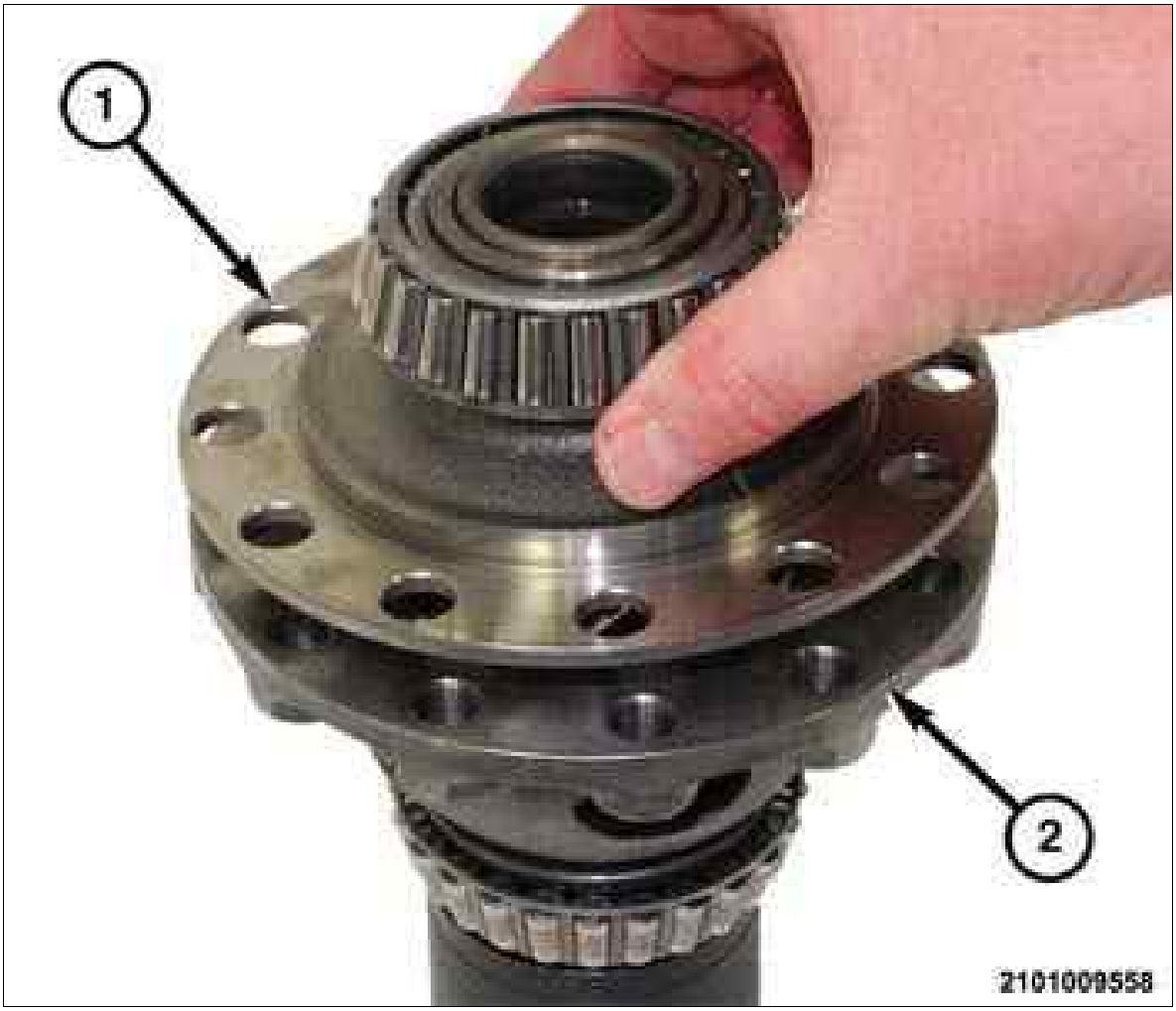
Fig 4: Upper Half Housing & Lower Differential Housing



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7. Separate the two halves (1) of the differential housing (2) to gain access to the pinion shaft.

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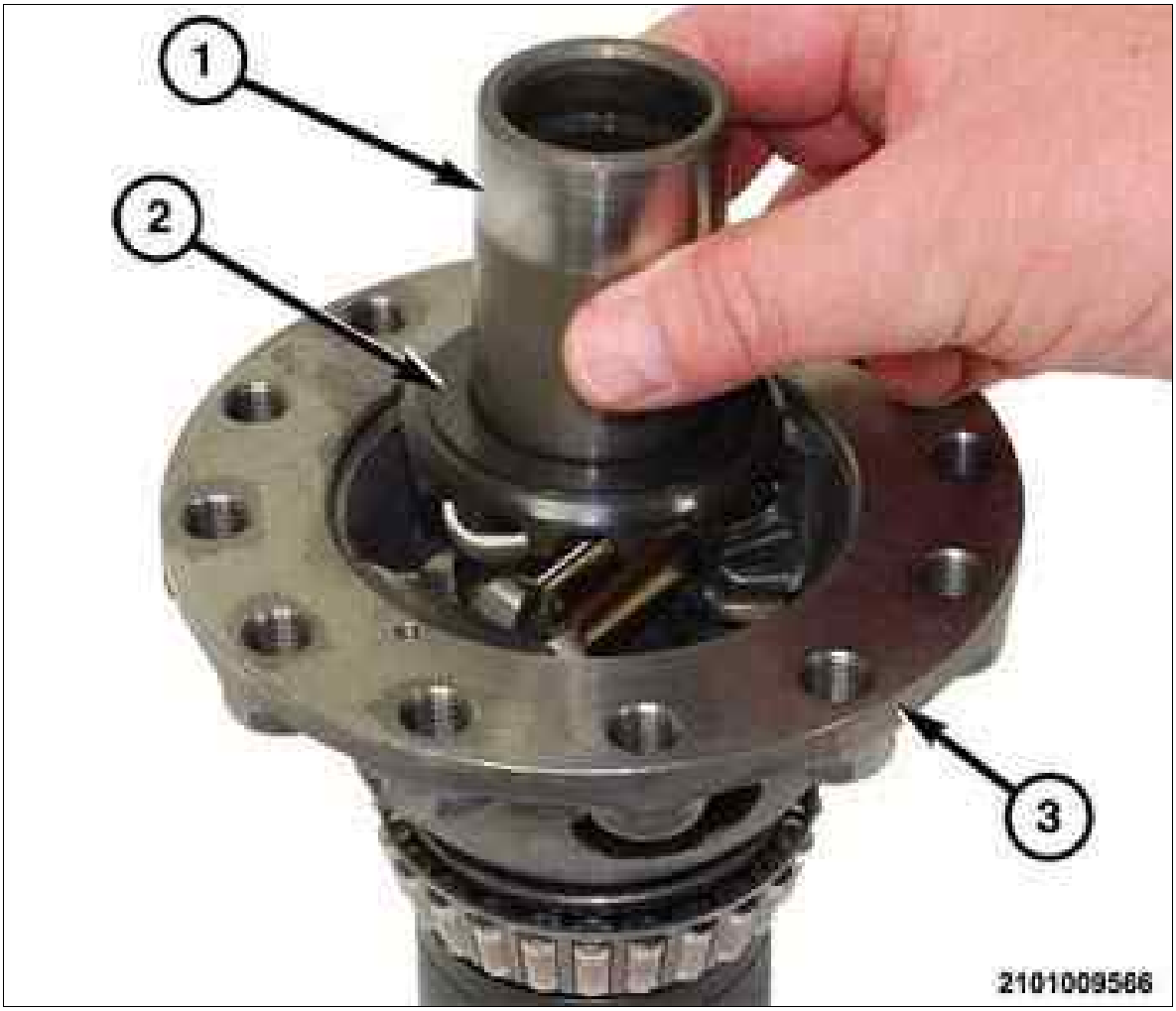
Fig 5: Differential Side Gear, Thrust Washer & Housing



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8. Remove the differential side gear (1) and thrust washer (2) from the differential housing (3).

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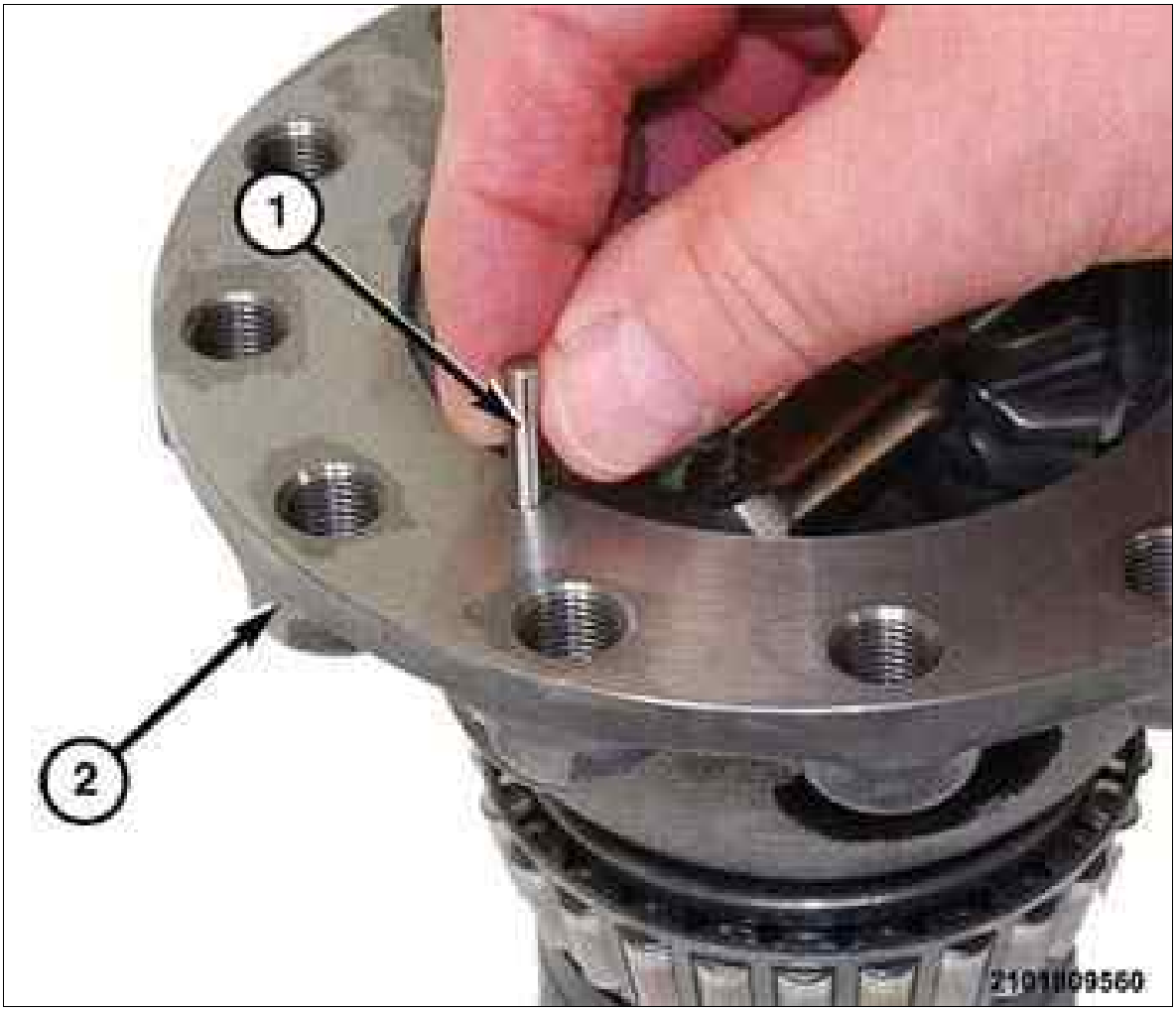
Fig 6: Removing/Installing Pinion Shaft Lock-Pin



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9. Using a suitable pencil magnet, remove the lock-pin (1) holding the pinion shaft in the differential housing (2).

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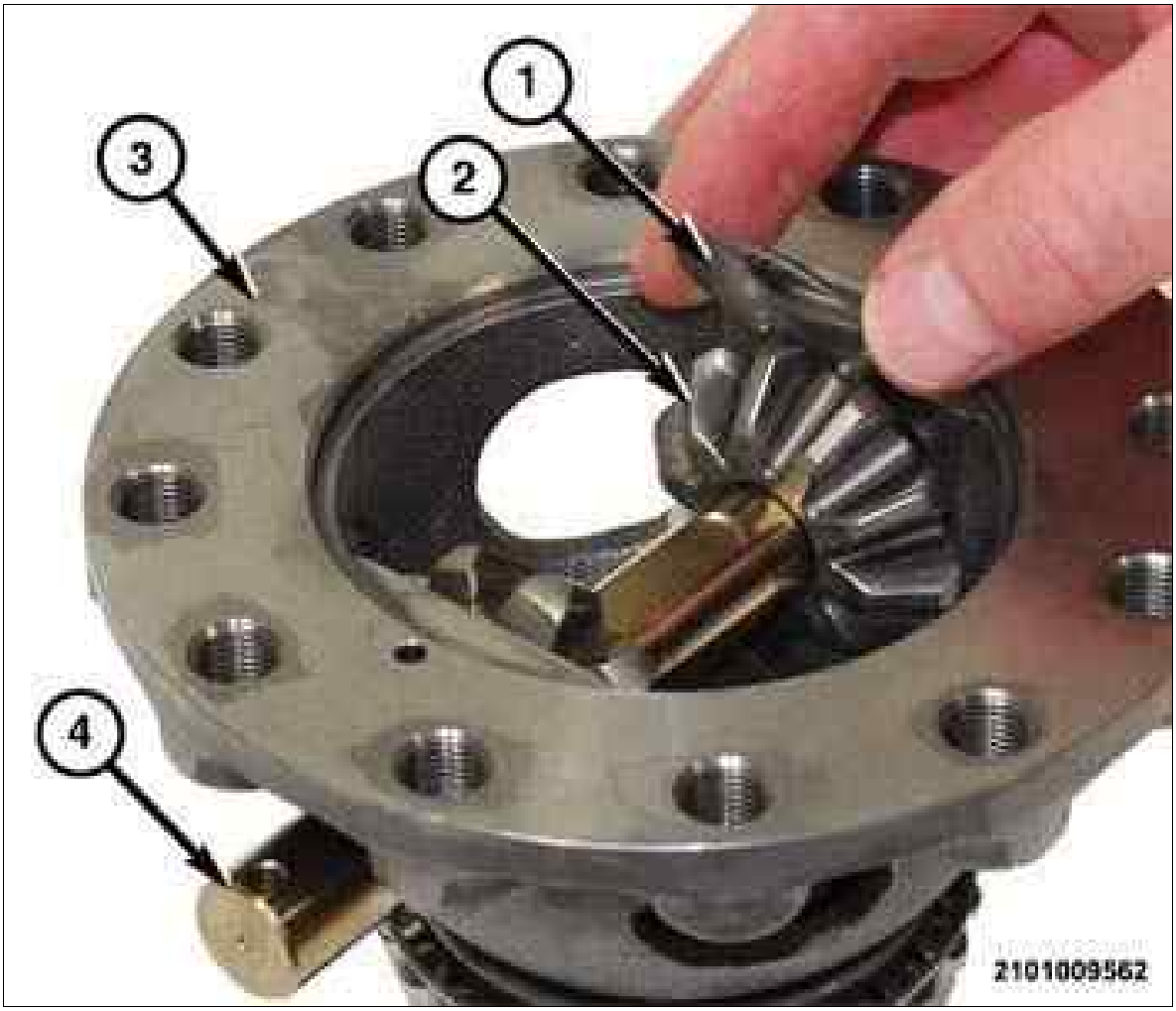
Fig 7: Removing/Installing Conical Thrust Washer



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10. Slide the pinion shaft (4) outward and remove the conical thrust washer (1) from behind the pinion gear (2).

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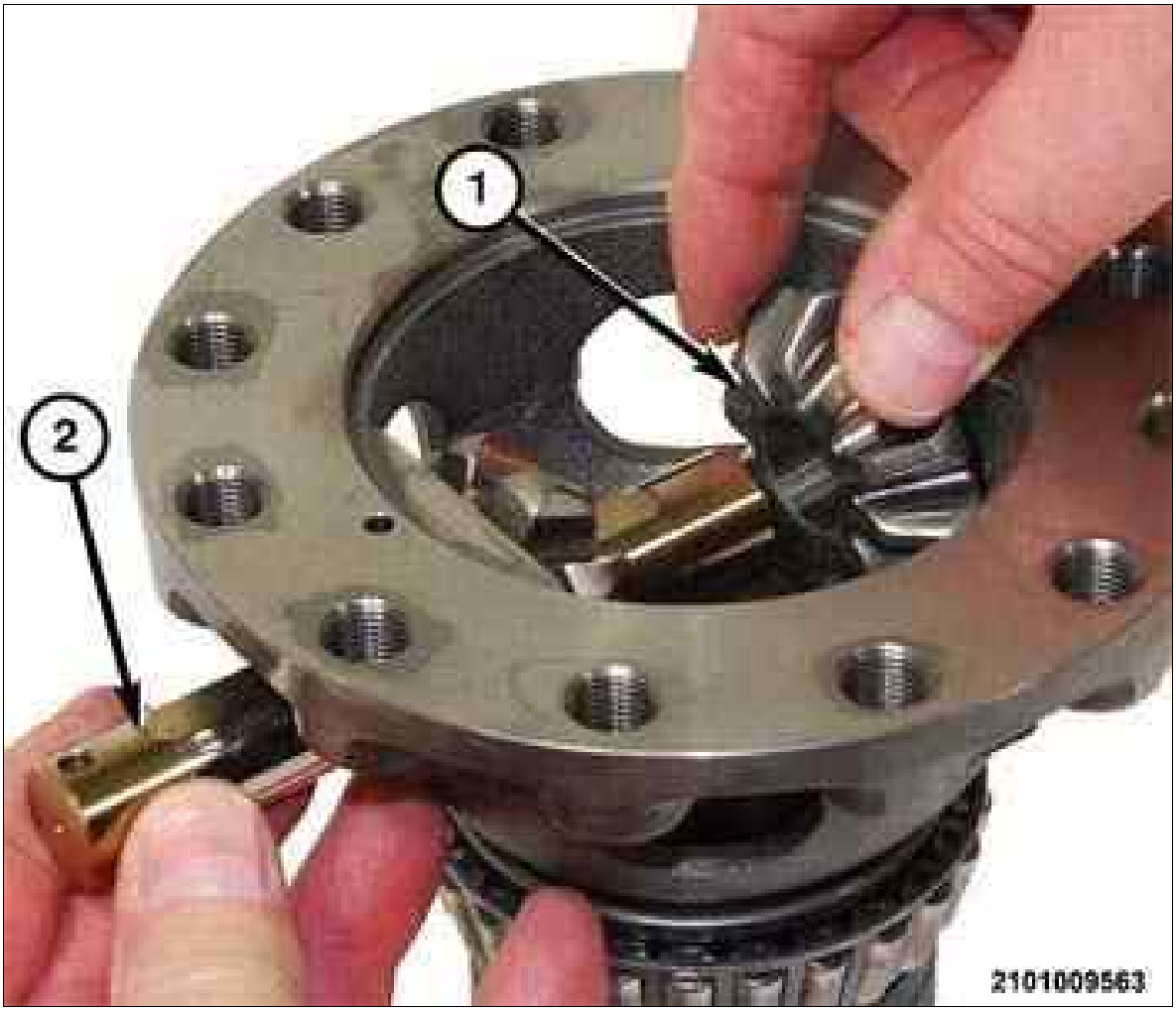
Fig 8: Removing/Installing Pinion Gear 1



Courtesy of CHRYSLER GROUP, LLC

11. Slide the pinion shaft (2) outward and remove the pinion gear 1 (1).

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Fig 9: Removing/Installing Pinion Shaft & Pinion Gear 2

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12. Slide the pinion shaft (2) outward and remove the pinion gear 2 (1).

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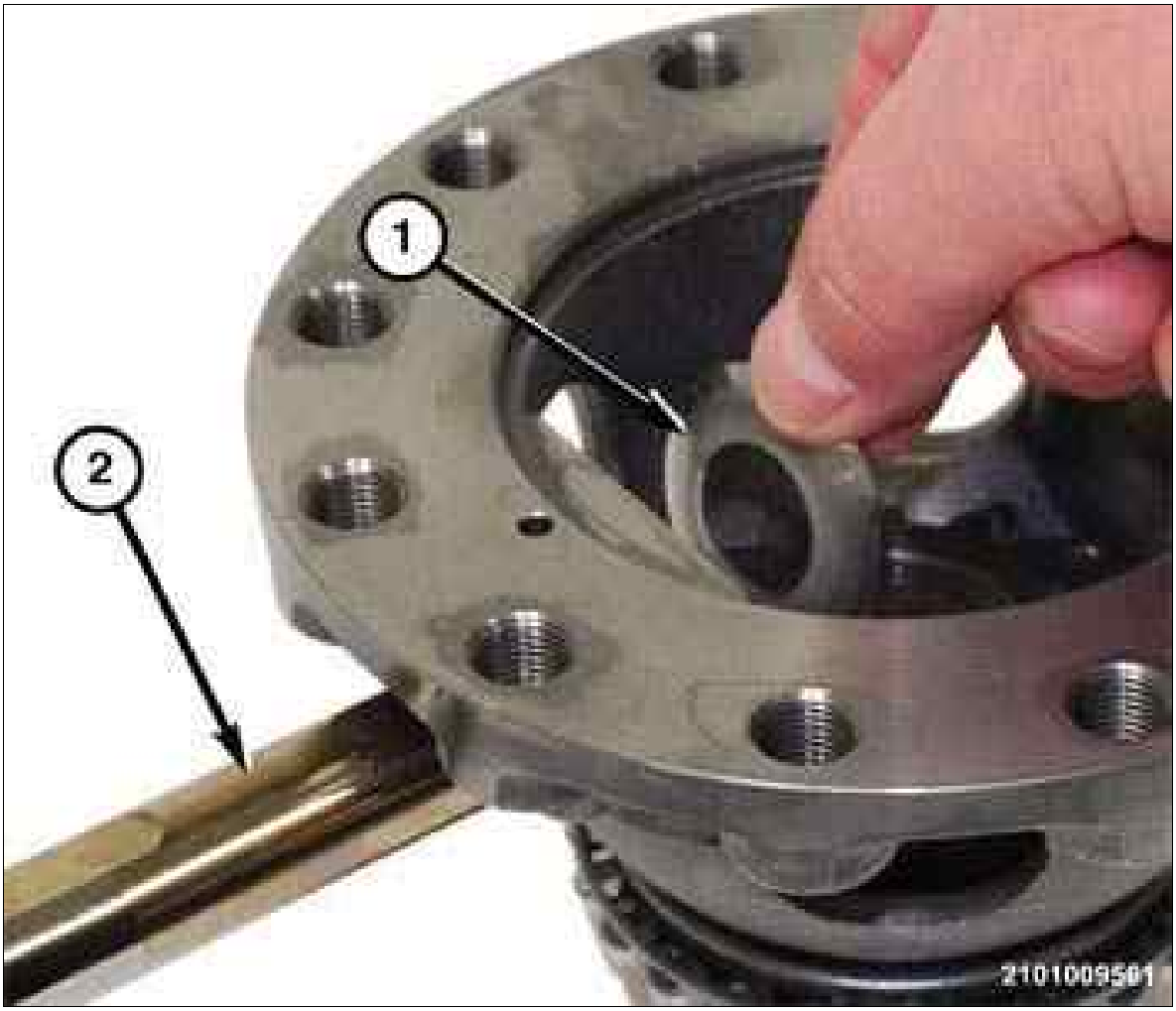
Fig 10: Removing/Installing Pinion Shaft & Conical Thrust Washer



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13. Slide the pinion shaft (2) outward and remove the conical thrust washer (1) from behind the pinion gear 2.

14. Remove the pinion shaft (2) from the differential housing.

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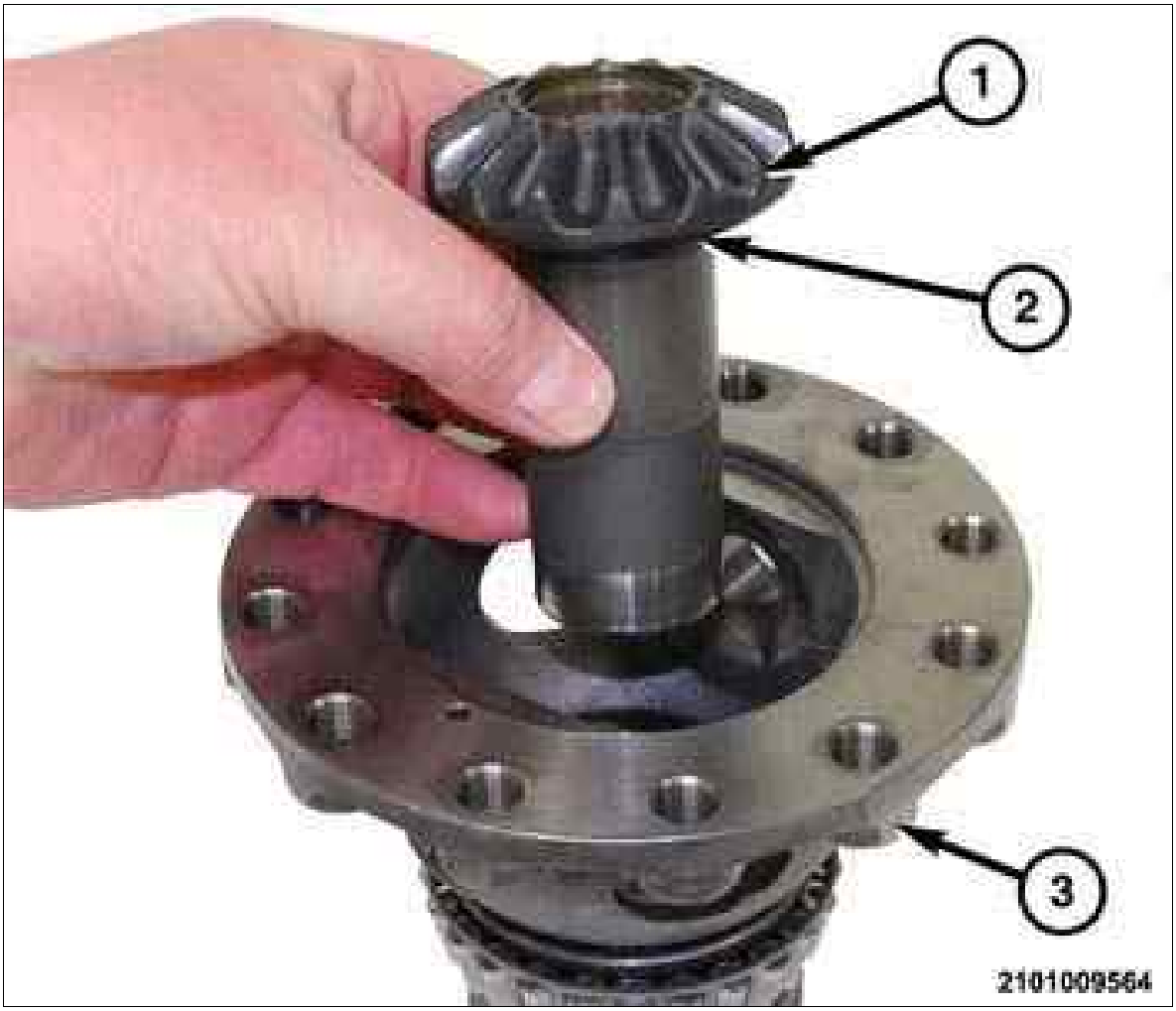
Fig 11: Differential Side Gear, Thrust Washer & Housing



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15. Remove the differential side gear (1) and thrust washer (2) from the differential housing (3).

DIFFERENTIAL AND RING GEAR > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > ASSEMBLY

The differential unit can be placed on tool (special tool #6888, Installer, Seal) as a stable holding fixture.

1. Clean the differential components with suitable solvent and blow then dry with 344 kPa (50 psi) shop air. Inspect the differential components for excess wear or damage. Replace the differential if damage is apparent.

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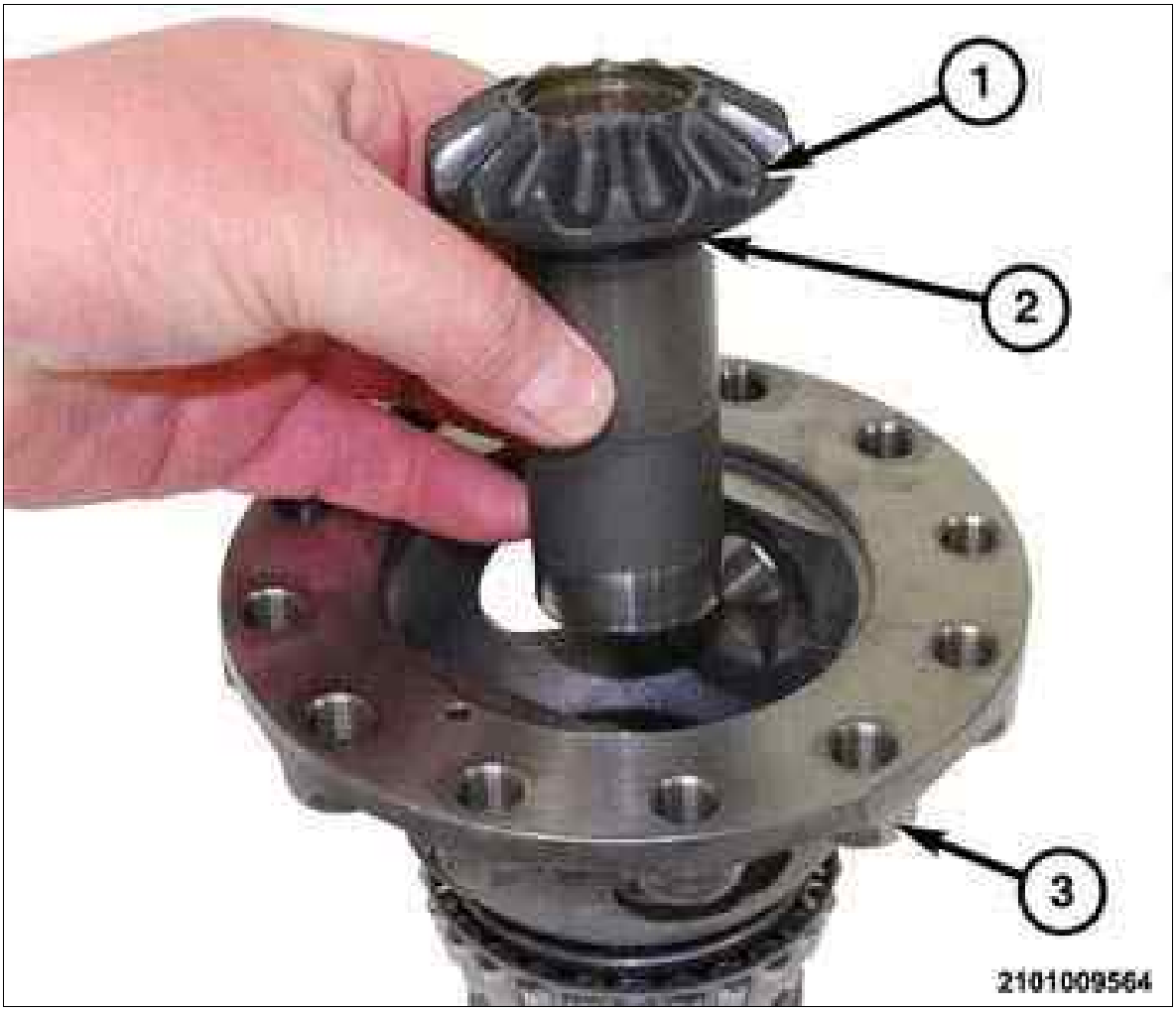
Fig 1: Differential Side Gear, Thrust Washer & Housing



Courtesy of CHRYSLER GROUP, LLC

2. Install the differential side gear (1) and thrust washer (2) into the differential housing (3).

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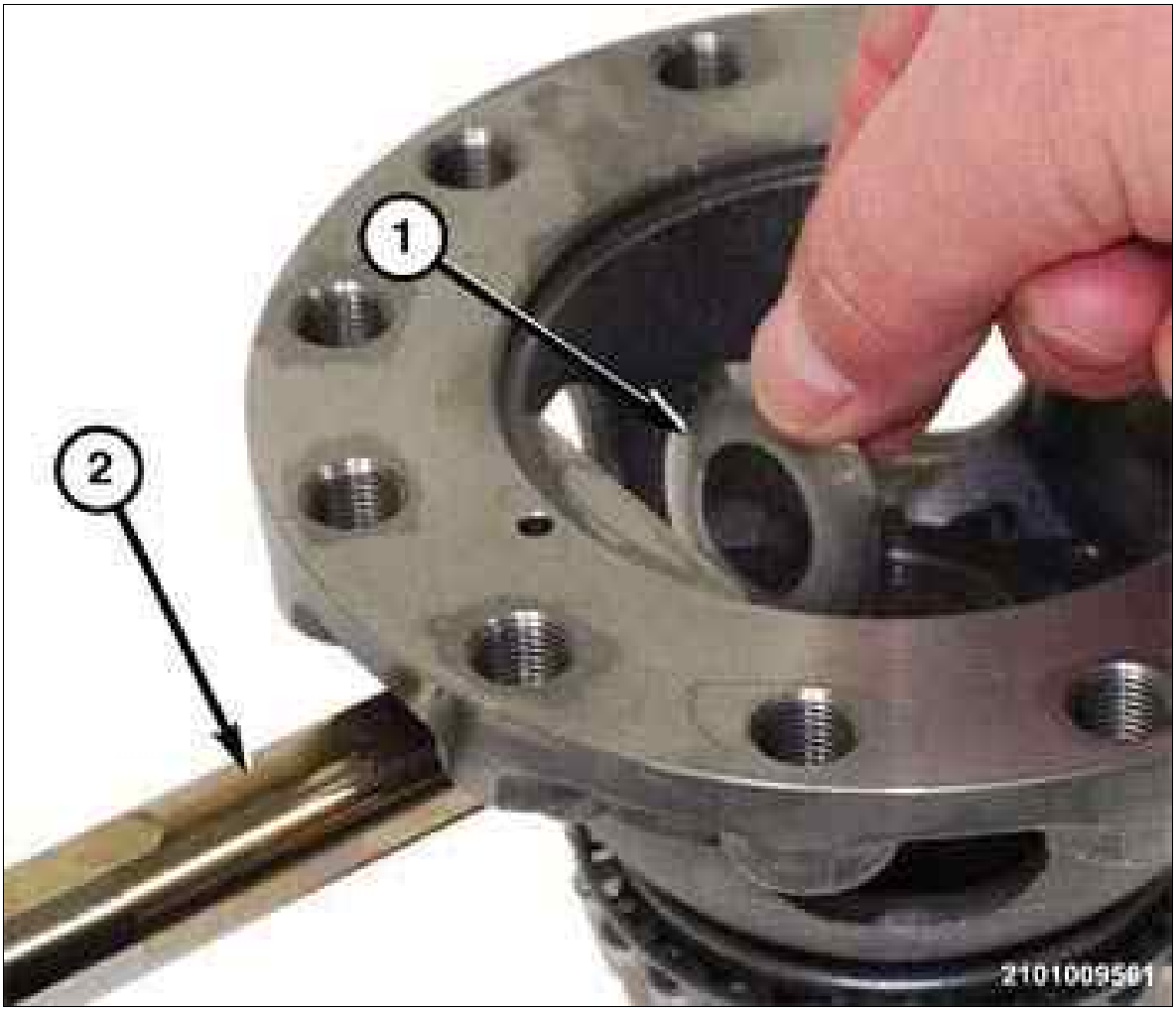
Fig 2: Removing/Installing Pinion Shaft & Conical Thrust Washer



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3. Install the pinion shaft (2) in the differential housing.
4. Slide the pinion shaft (2) inward and install the conical thrust washer (1).

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Fig 3: Removing/Installing Pinion Shaft & Pinion Gear 2

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5. Slide the pinion shaft (2) inward and install the pinion gear (1).

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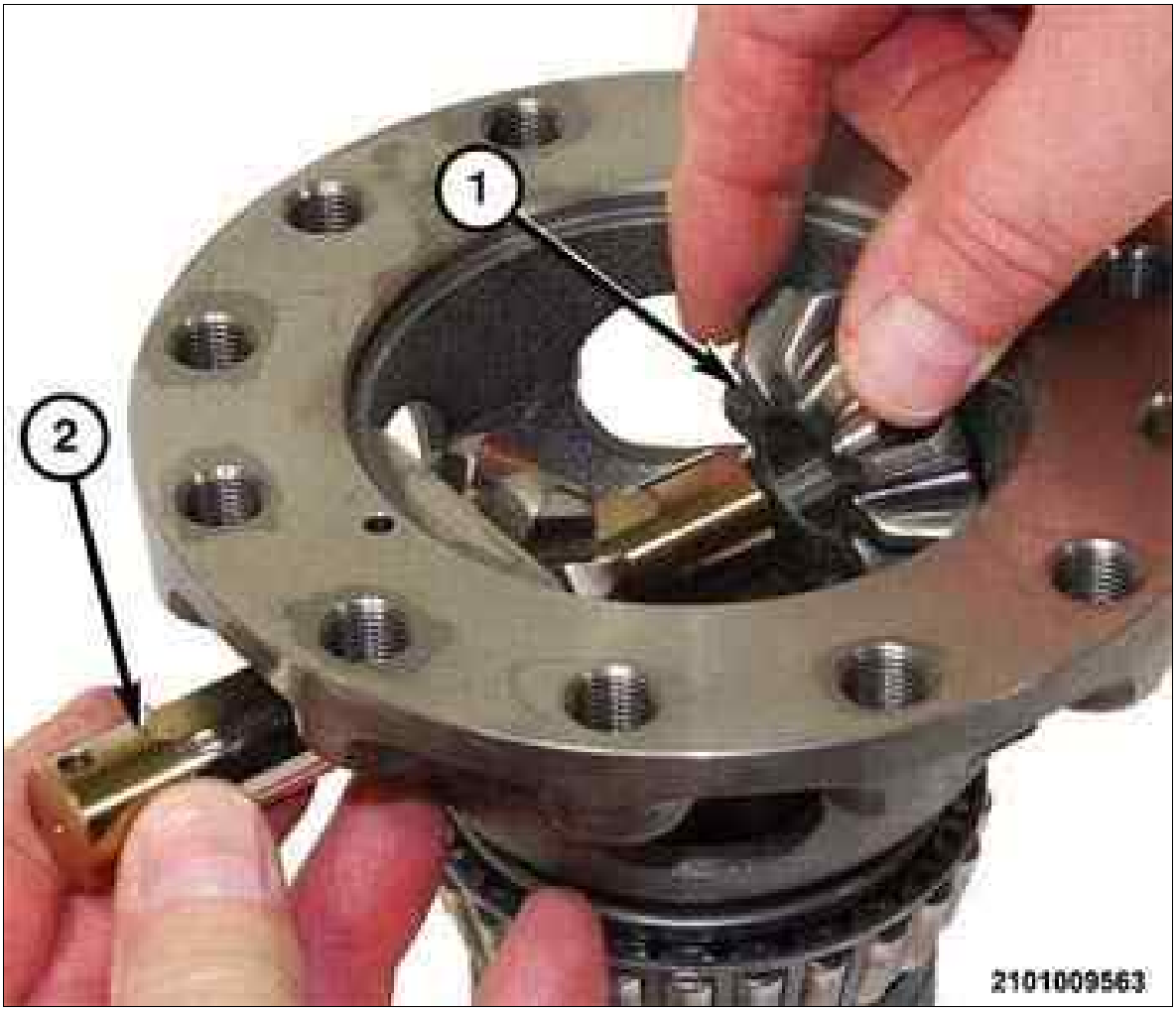
Fig 4: Removing/Installing Pinion Gear 1



Courtesy of CHRYSLER GROUP, LLC

6. Slide the pinion shaft (2) inward and install the pinion gear (1).

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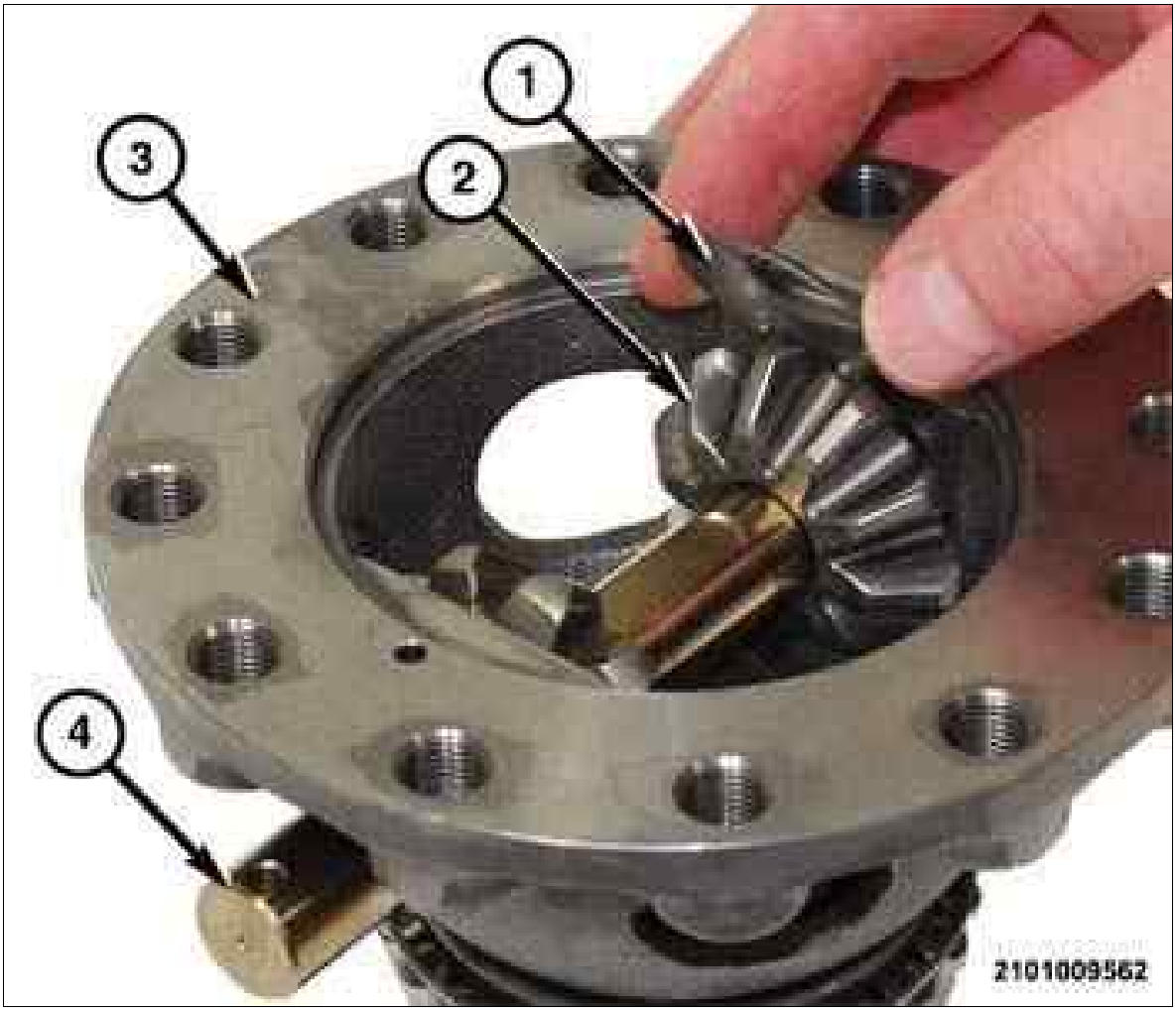
Fig 5: Removing/Installing Conical Thrust Washer



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7. Slide the pinion shaft (4) inward and install the conical thrust washer (1) behind the pinion gear (2).

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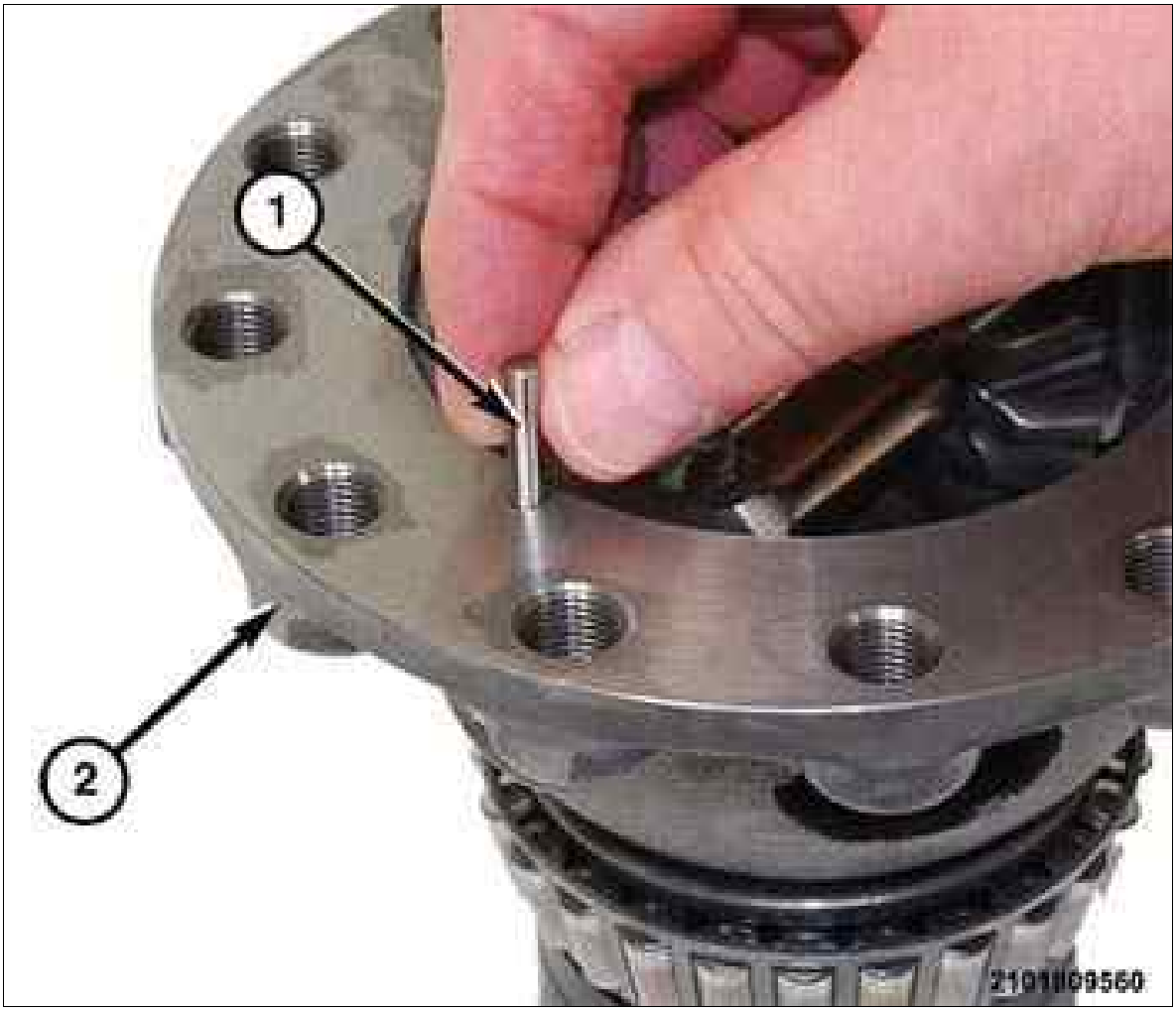
Fig 6: Removing/Installing Pinion Shaft Lock-Pin



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8. Align the hole in the pinion shaft with the hole in the differential housing (2) and install the lock-pin (1) to hold the pinion shaft in the differential housing.

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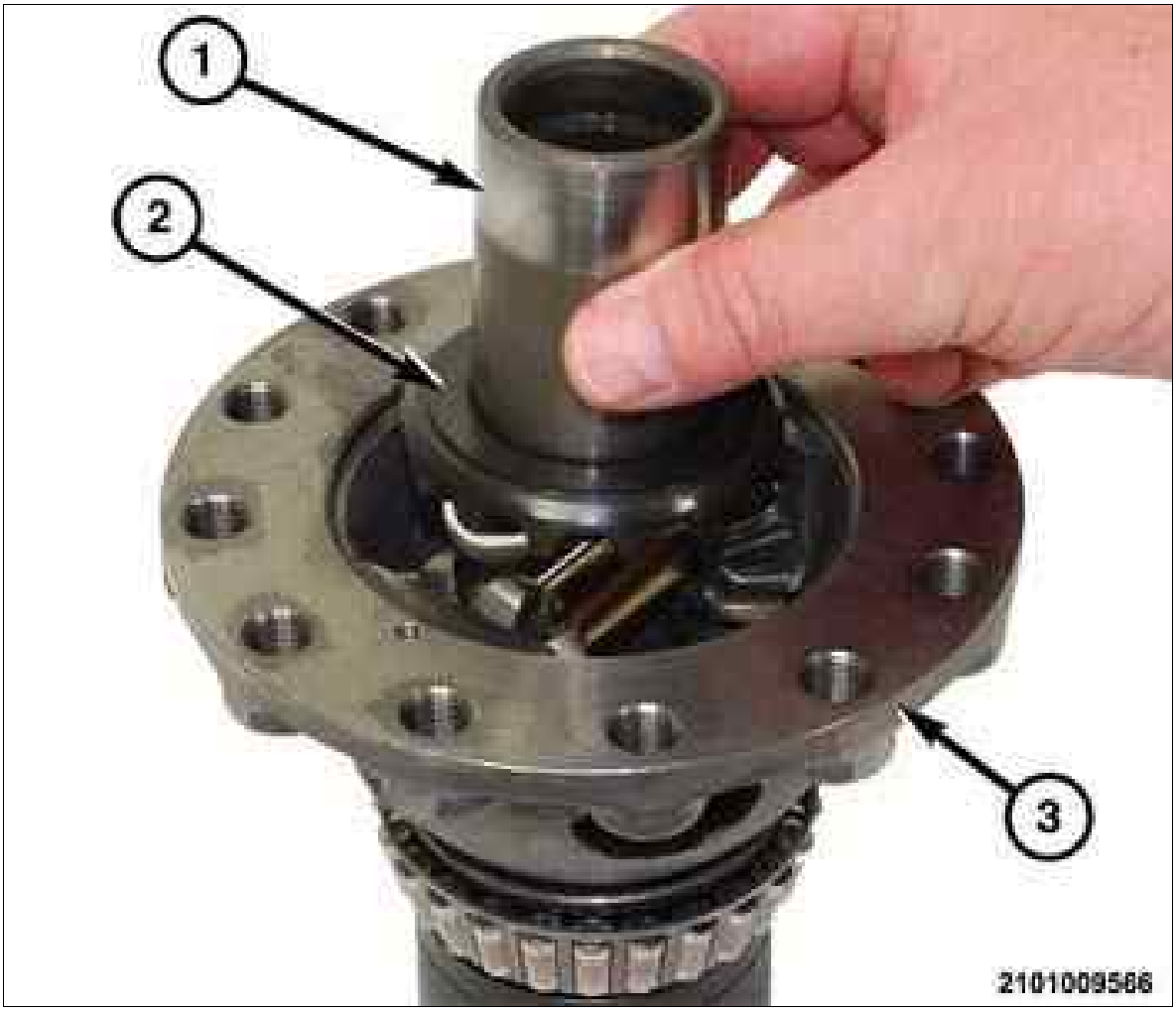
Fig 7: Differential Side Gear, Thrust Washer & Housing



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9. Install the differential side gear (1) and thrust washer (2) into the differential housing (3).

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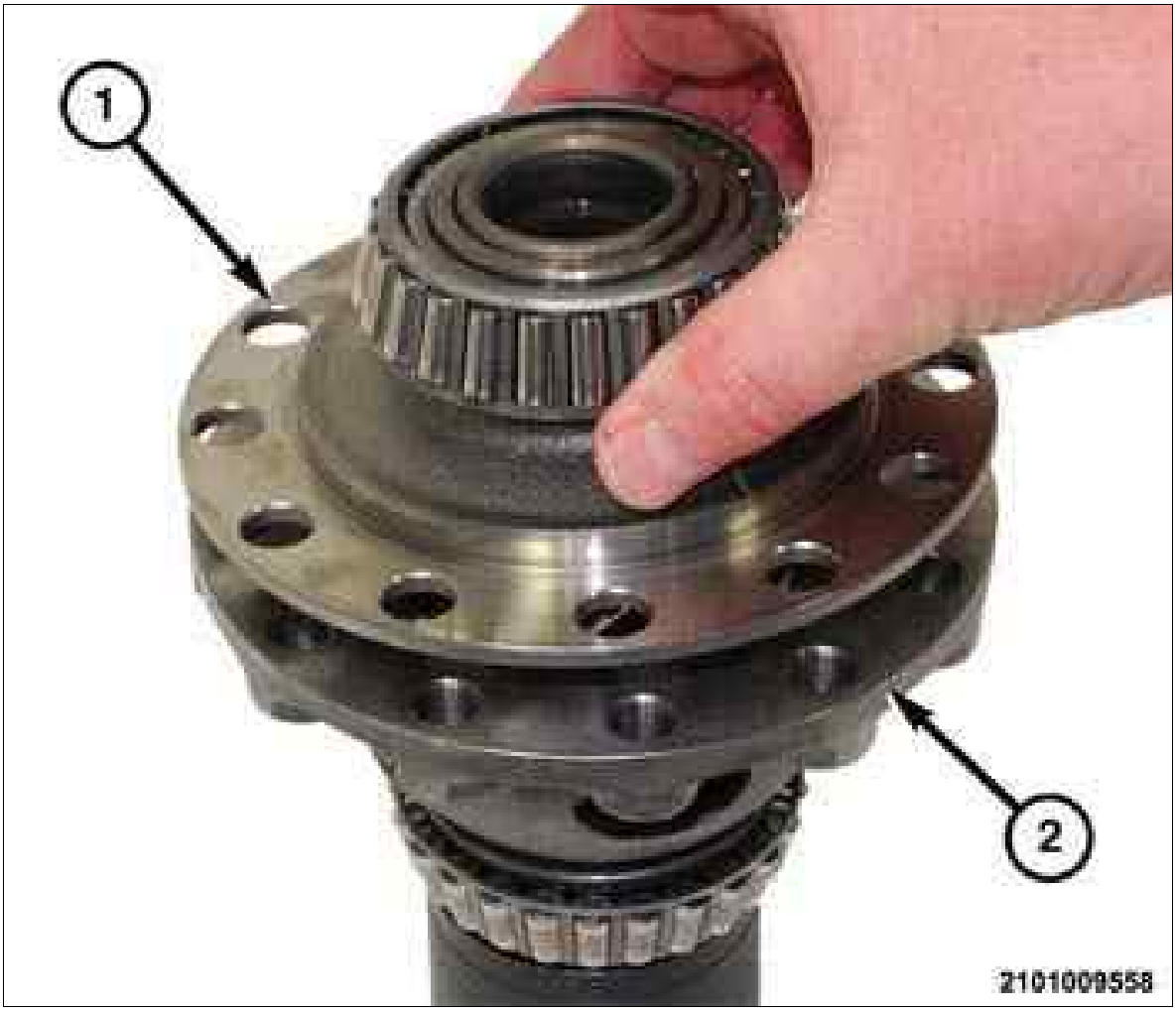
Fig 8: View Of Upper Half Housing & Lower Differential Housing



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10. Place the upper half (1) housing on the lower differential housing (2).

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Fig 9: Ring Gear & Differential Unit

Courtesy of CHRYSLER GROUP, LLC

11. Place the ring gear (1) in position on the differential housing (2).

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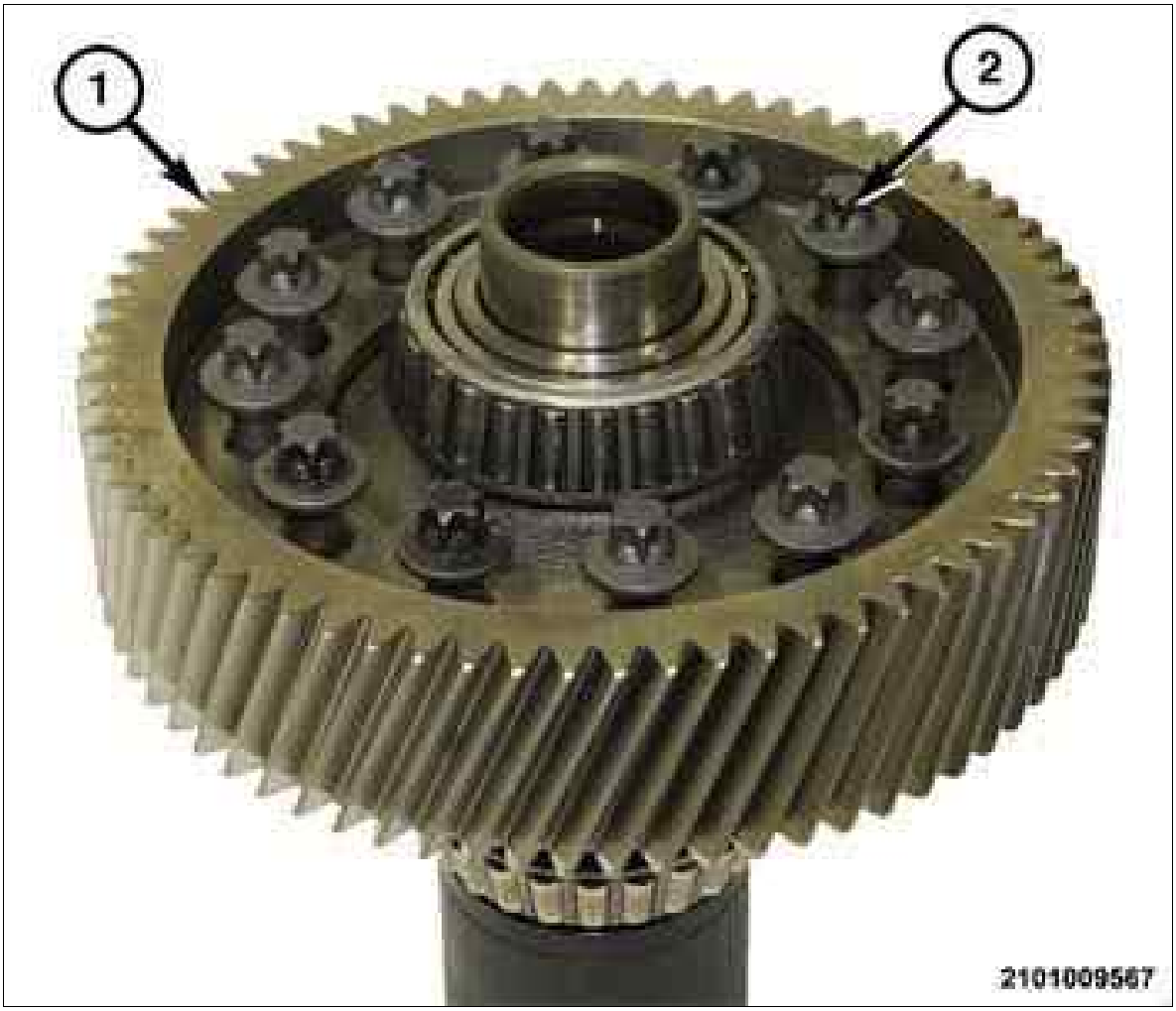
Fig 10: Ring Gear & Bolts



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12. Install the bolts (2) to hold the ring gear (1) to the differential housing.

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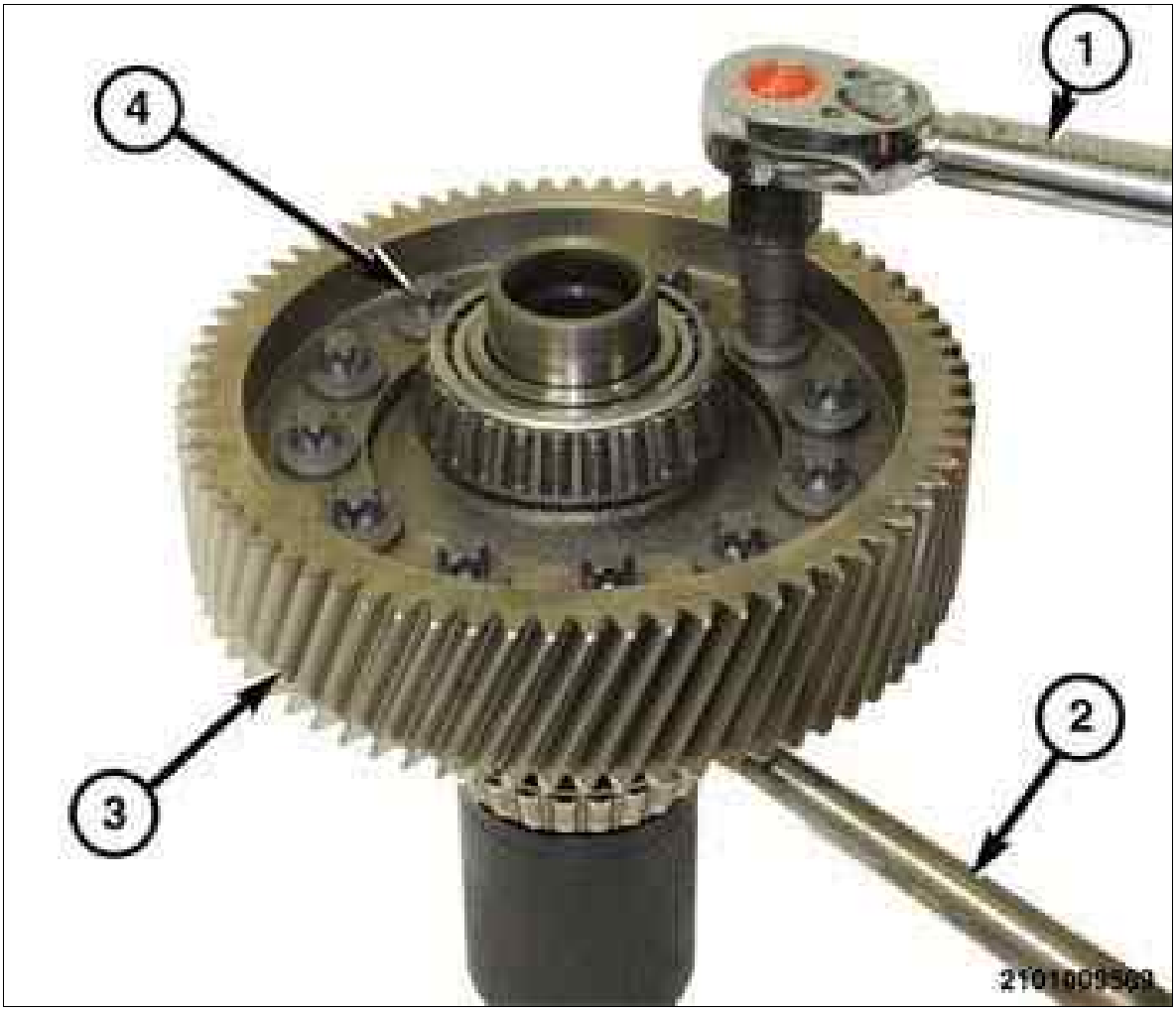
Fig 11: Tightening Ring Gear Bolts



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13. Tighten the ring gear bolts to the proper torque specification. Refer to SPECIFICATIONS .

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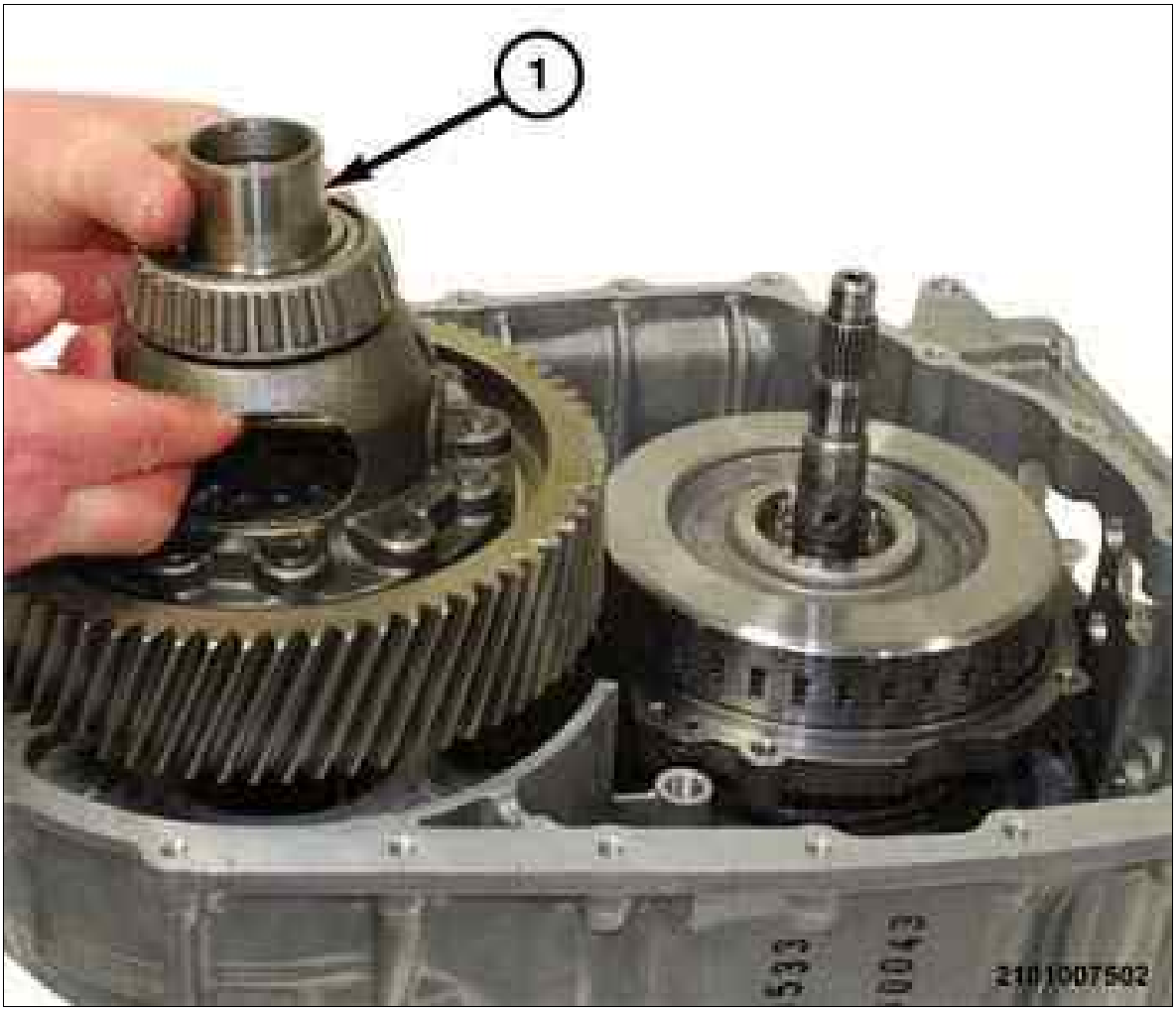
Fig 12: Differential Assembly



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14. Place the differential housing (1) in position in the transmission.
15. Install the bellhousing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .
16. Install the transmission in the vehicle. Refer to REMOVAL AND INSTALLATION .
17. Road test the vehicle to verify the repair.

FLUID AND FILTER > STANDARD PROCEDURE > FLUID LEVEL CHECK

1. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
2. Remove the left front tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .
3. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION or BELLY PAN, SIDE, REMOVAL AND INSTALLATION .
4. Connect a scan tool to the Diagnostic Connector.

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5. With the scan tool, view the Data Display and read the Transmission Fluid Temperature.
6. Start the engine and allow it to run at idle with the transmission in Park.
7. Verify that the fluid temperature is above 50 °C.

> *NOTE:*
>
> ***Vehicle must be level for accurate transmission fluid level readings.***

8. Turn the steering wheel to the full left position.
9. Remove the plug from the fluid level check port.

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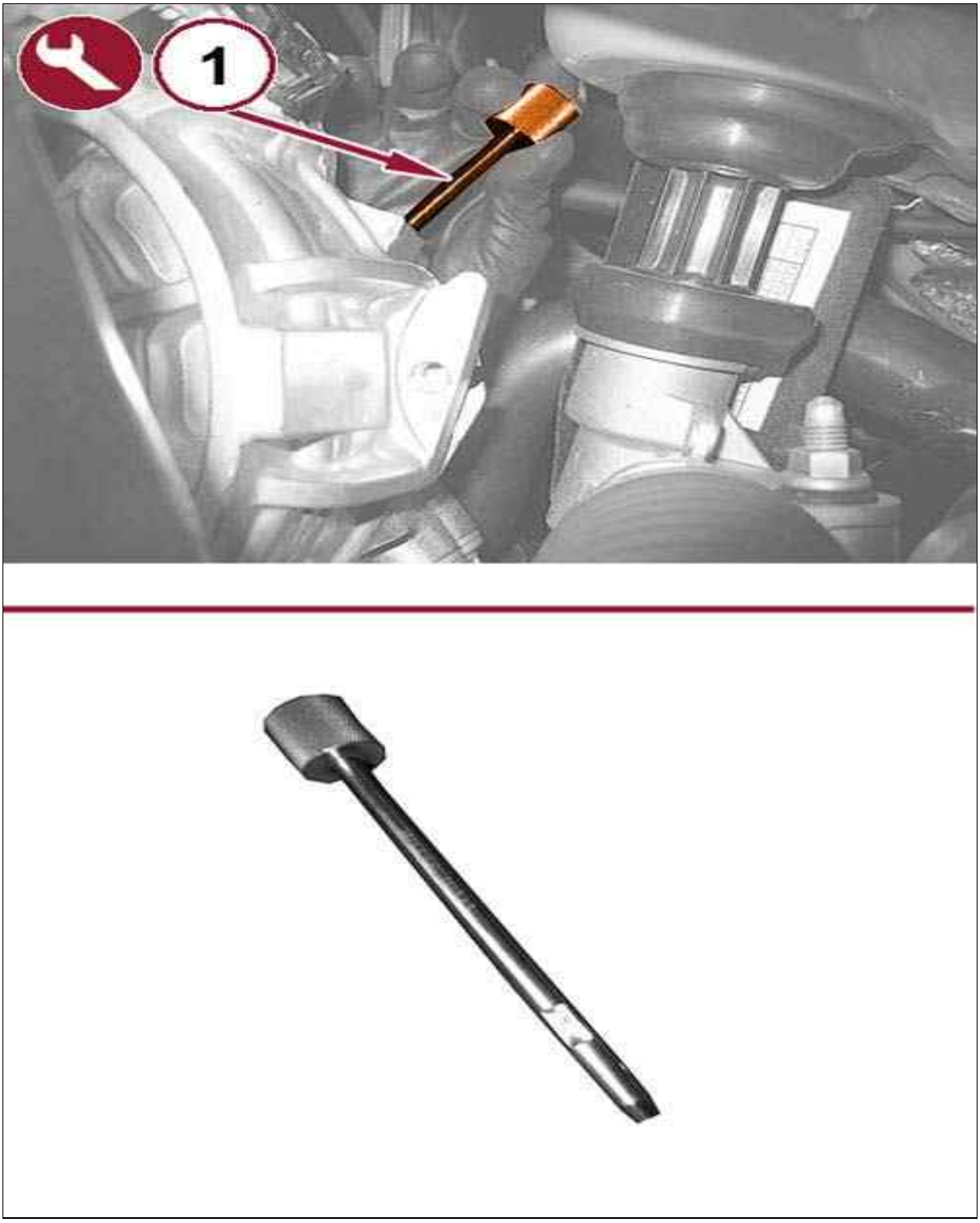
Fig 1: Inserting Special Tool Into The Fluid Level Check Port



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10. Insert tool 2000040963 (EMEA) or (special tool #10323A, Dipstick) (NAFTA) (1) into the fluid level check port and allow the handle of the tool to rest on the flat surface of the transmission housing around the check port.

11. Remove the 2000040963 (EMEA) or (special tool #10323A, Dipstick) (NAFTA) (1) from the check port, keeping the handle above the tip so the level reading remains accurate.

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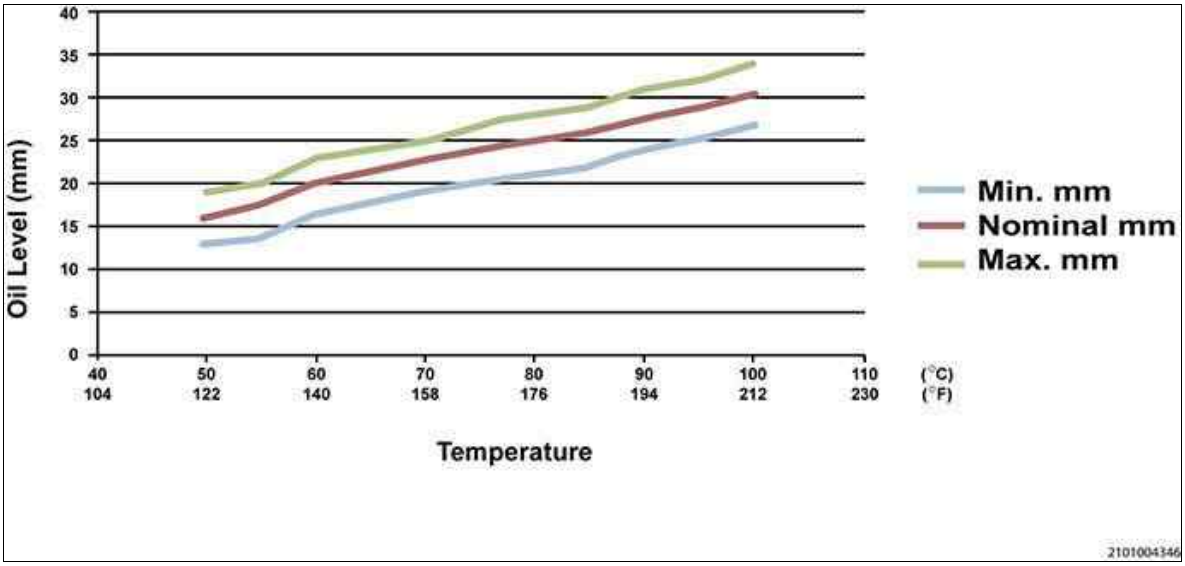
Fig 2: Transmission Fluid Temperature & Oil Level Graph



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12. If necessary, adjust the fluid level using the proper automatic transmission fluid. Refer to CAPACITIES AND RECOMMENDED FLUIDS, SPECIFICATIONS .
13. Install the plug into the fluid level check port and tighten.
14. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION or BELLY PAN, SIDE, REMOVAL AND INSTALLATION .
15. Install the left front tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .

FLUID AND FILTER > STANDARD PROCEDURE > FLUID AND FILTER SERVICE

The 948TE/9HP48 automatic transmission is a sealed for life design and does not require periodic service. The only time the transmission fluid needs to be checked is when abnormal shifts frequently occur or evidence of a transmission fluid leak is present. The fluid filter is mounted internally and requires that the transmission be removed from the vehicle and disassembled to replace the filter. The fluid filter has a plastic body filled with polyester filter fleece.

NOTE:

The fluid used in this automatic transmission is not compatible with other types of transmission fluid, use only Shell® L12108 Automatic Transmission Fluid or Mopar® equivalent after repairs have been completed. Refer to Star Parts for the part number.

Use of improper fluid will cause premature failure, poor shift quality and possible leaks.

FLUID AND FILTER > REMOVAL AND INSTALLATION > REMOVAL AND

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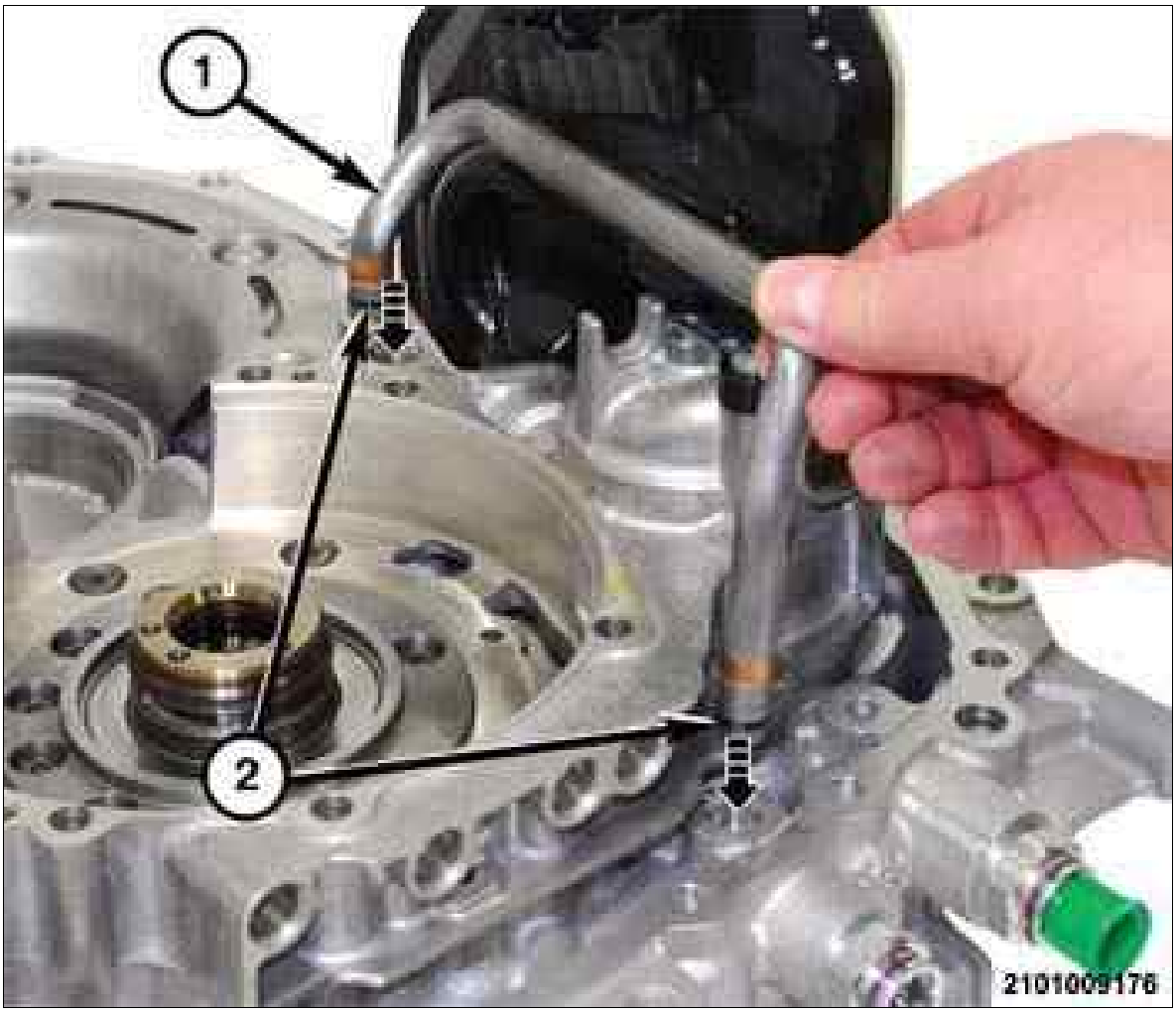
INSTALLATION > TRANSMISSION FLUID FILTER REMOVAL

NOTE:

The fluid filter does not require periodic replacement. It should only be replaced in conjunction with a major failure that caused excessive fluid contamination or during an overhaul.

1. Remove the transmission from the vehicle. Refer to REMOVAL AND INSTALLATION .
2. Drain the fluid from the transmission.
3. Remove the bellhousing from the transmission. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .

   Fig 1: Fluid Tube & O-Rings



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4. Remove the fluid tube (1) from the intermediate support plate and bellhousing.

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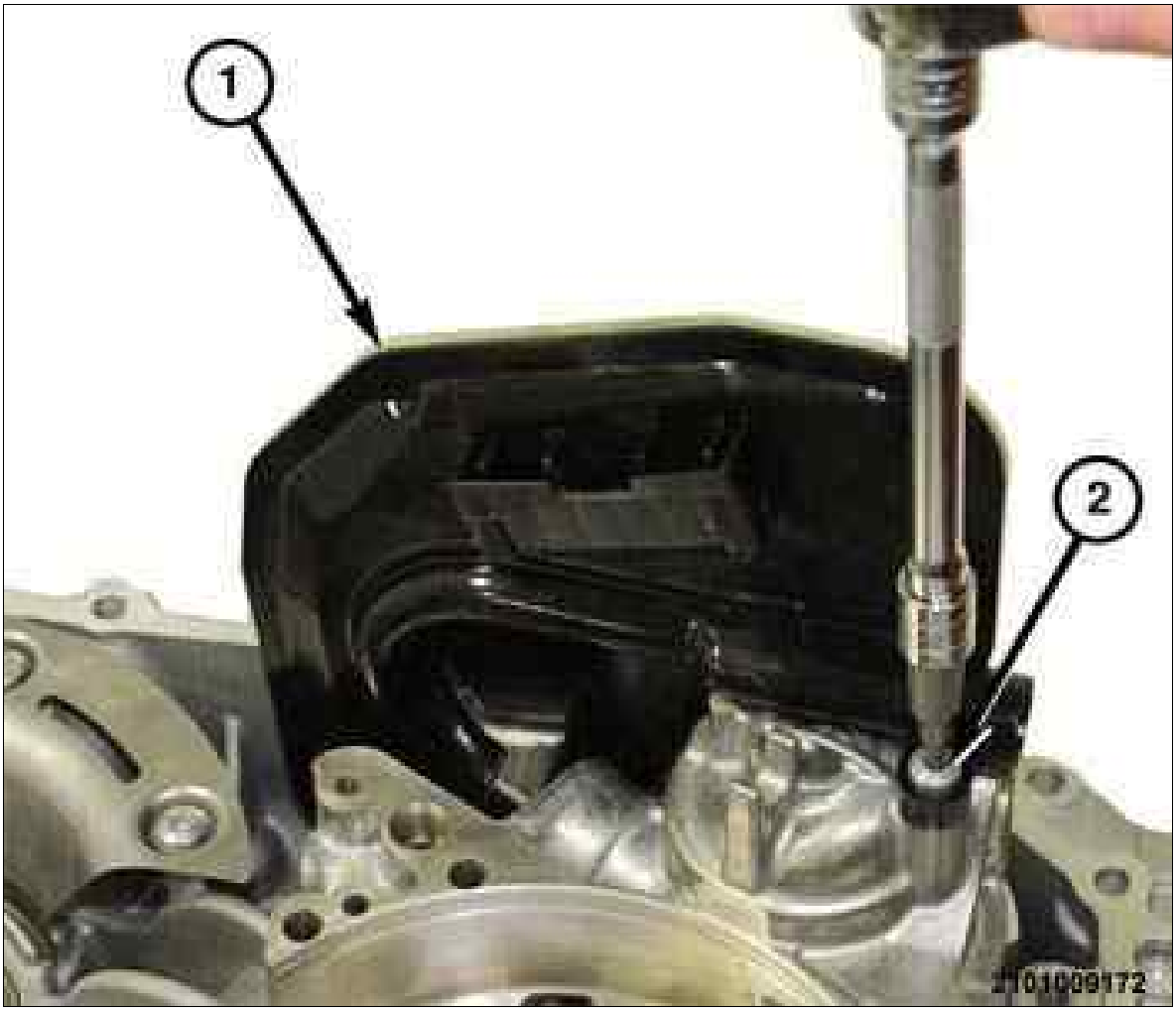
Fig 2: Oil Filter, Intermediate Support Plate & Fastener



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5. Remove the bolt (2) holding the fluid filter (1) to the intermediate support plate.

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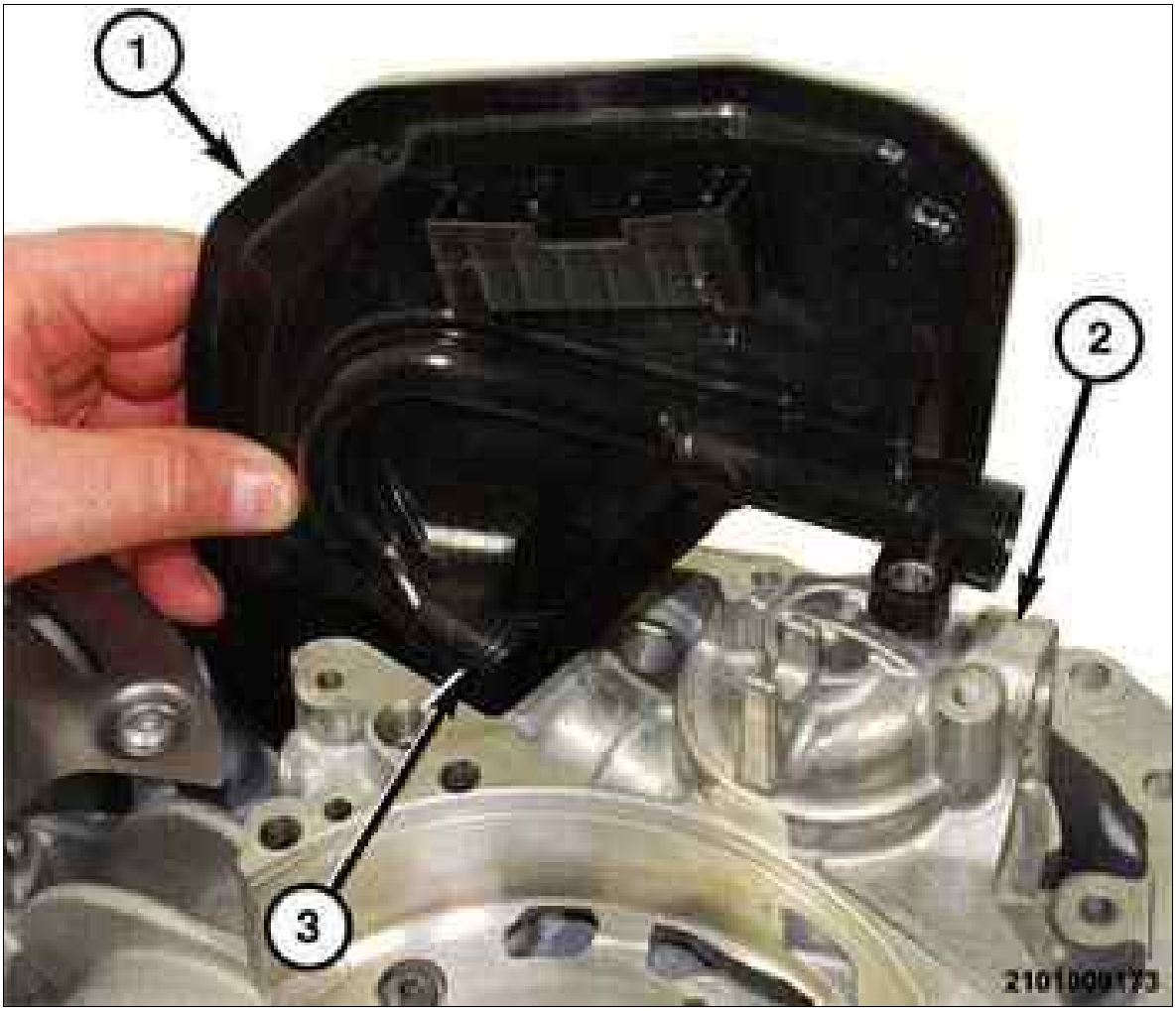
Fig 3: Fluid Filter & Intermediate Support Plate



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6. Separate the fluid filter (1) from the intermediate support plate (2).

FLUID AND FILTER > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > TRANSMISSION FLUID FILTER INSTALLATION

1. Clean the intermediate support plate in preparation for the **NEW** fluid filter.

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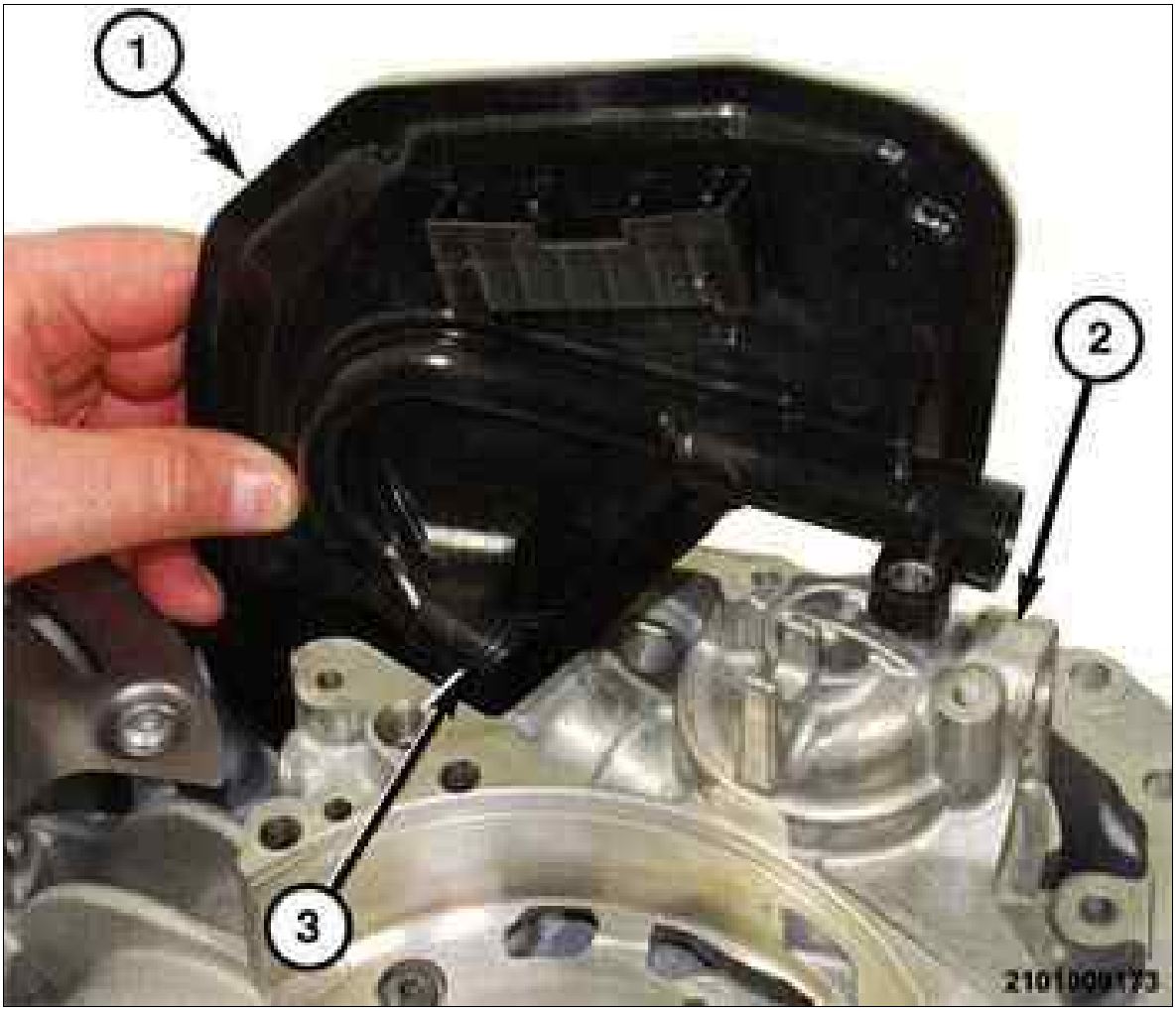
Fig 1: Removing/Installing Transmission Oil Filter



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2. Verify that the O-ring (3) is in good condition. Replace the O-ring (3) if damage is present.
3. Insert the oil filter neck (3) into the oil pump orifice and align the bolt hole with the bore in the intermediate support plate (2).

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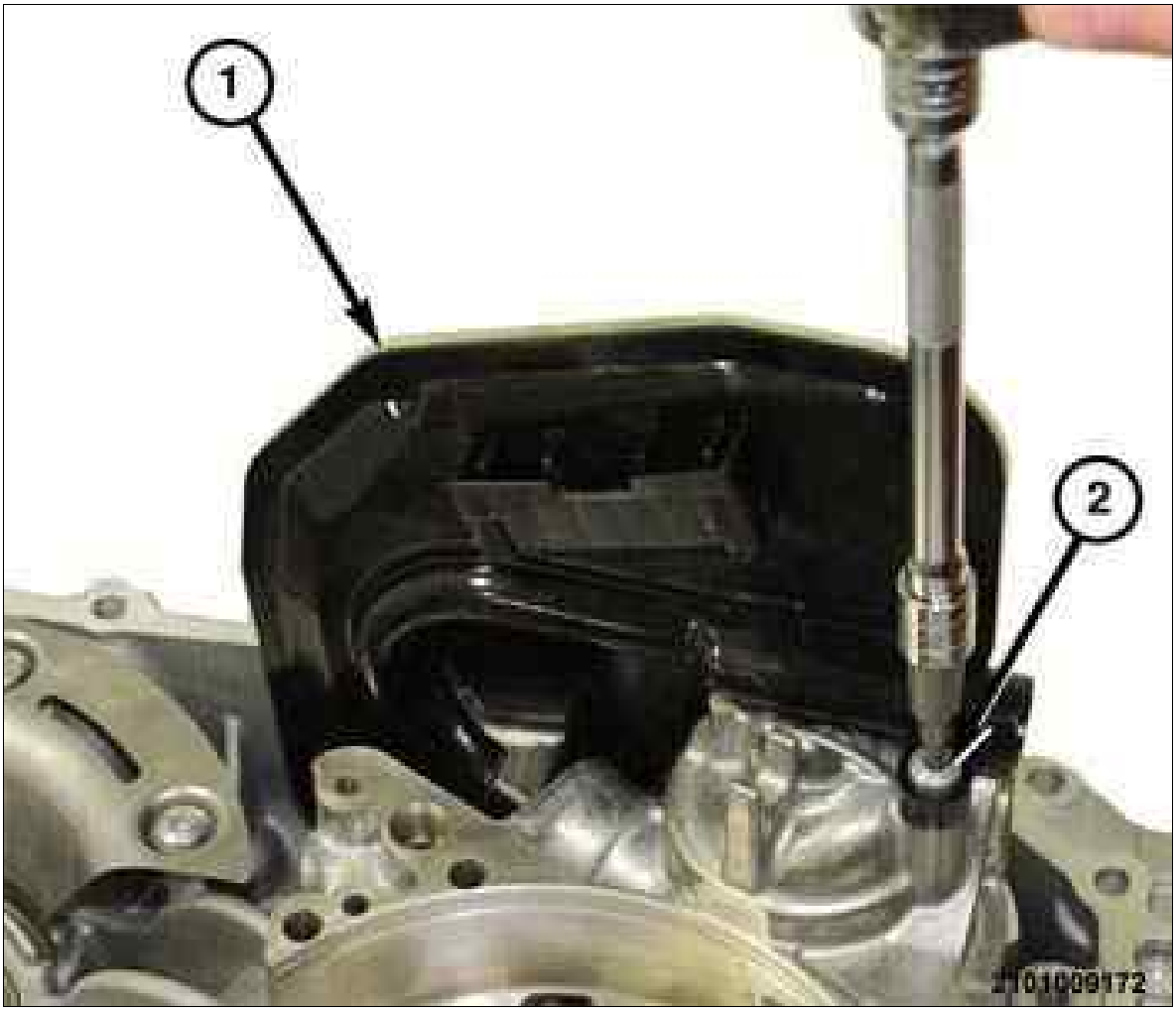
Fig 2: Oil Filter, Intermediate Support Plate & Fastener



Courtesy of CHRYSLER GROUP, LLC

4. Install the bolt (2) to hold the fluid filter (1) to the intermediate support plate and tighten to the proper torque specification. Refer to SPECIFICATIONS .
5. Install the bellhousing on the transmission. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .
6. Install the transmission in the vehicle. Refer to REMOVAL AND INSTALLATION .
7. Road test the vehicle to verify the repair.

MANUAL LEVER AND PARK ROD > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > PARK DETENT AND MANUAL SHAFT REMOVAL

The transmission does not require removal to complete the following procedure.

1. Remove the valve body from the transmission. Refer to VALVE BODY, REMOVAL AND INSTALLATION .

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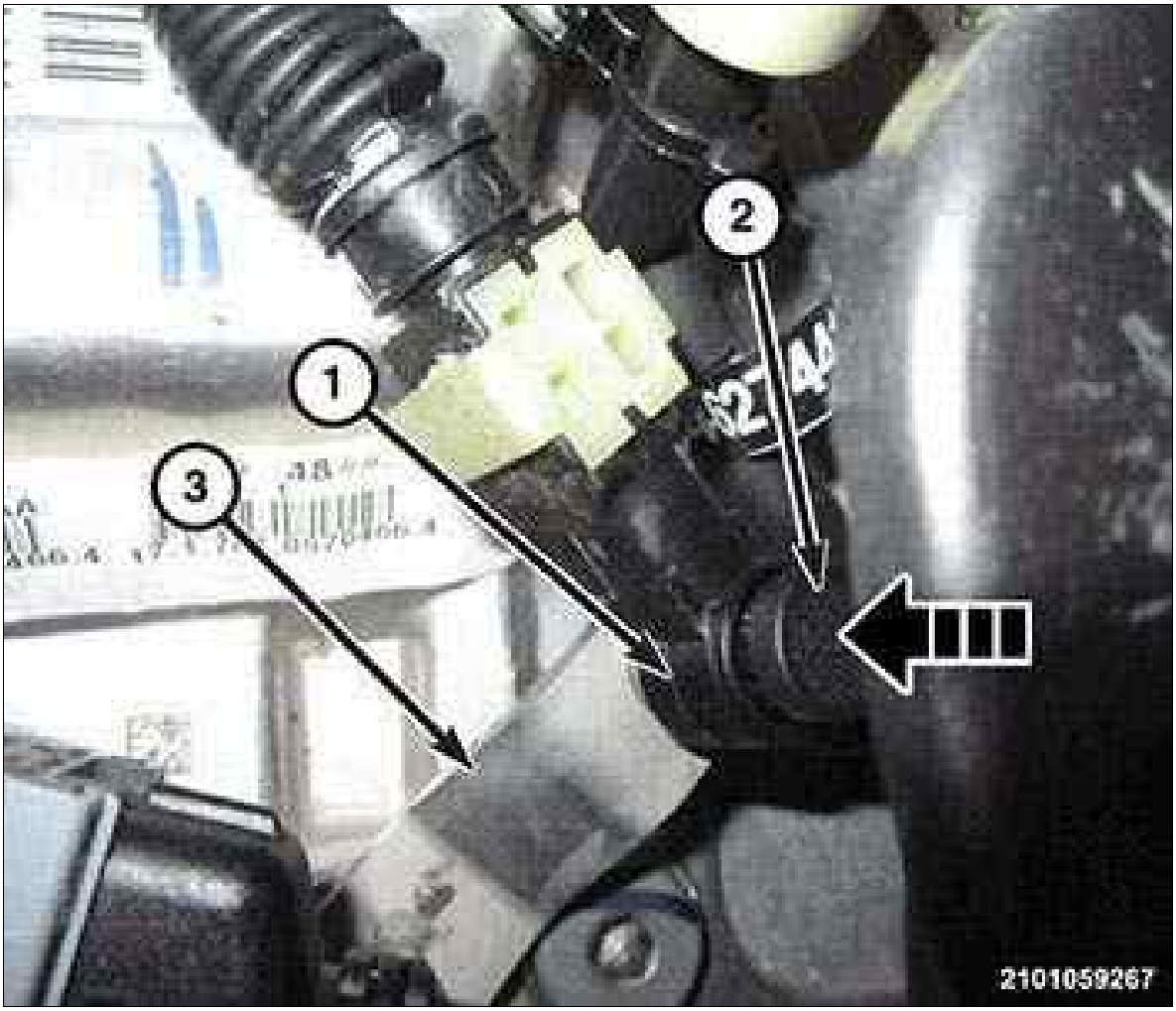
Fig 1: Cable End, Release Button & Manual Lever



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2. Pull upward on the cable end (1) while pushing down on release button (2) to remove the shifter cable from the manual lever (3).

3. Remove the nut holding the manual shift lever to the manual shaft.

4. Pry the manual shift lever upward and off the manual shaft.

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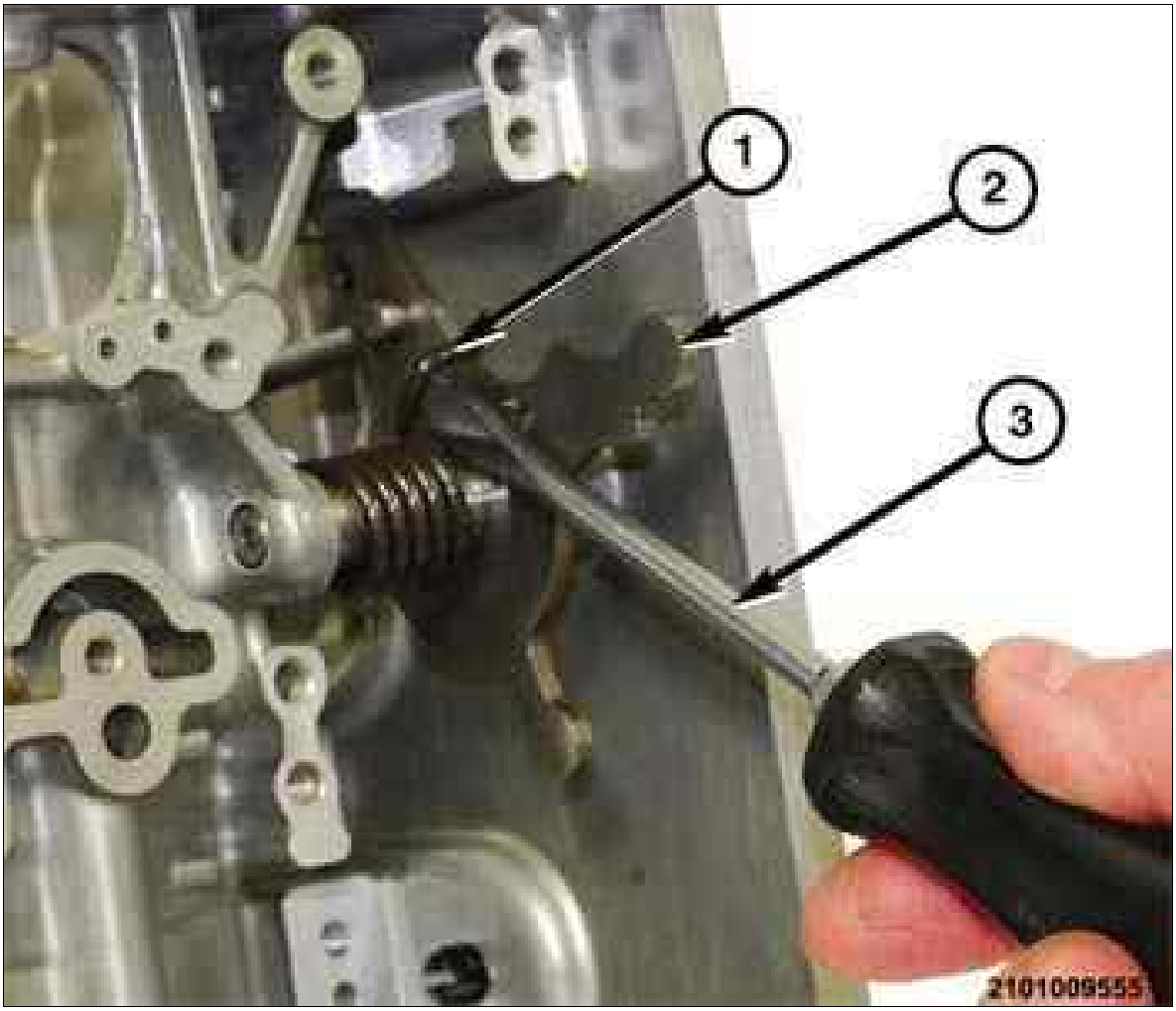
Fig 2: Screw Driver, Spring & Detent Hub



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5. Using a suitable screw driver (3), pry the spring (1) to the inside and off of the detent (2).

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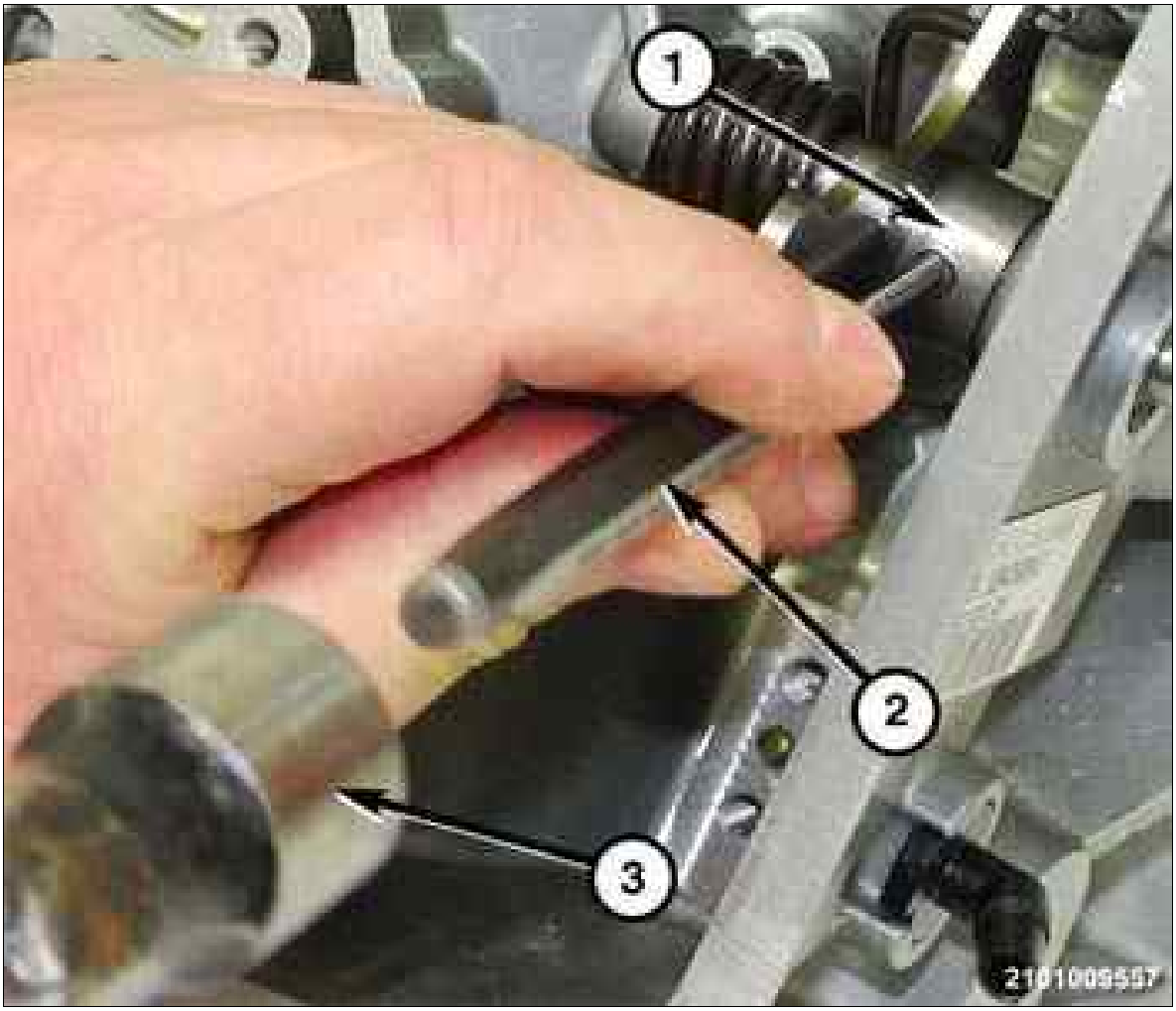
Fig 3: Hammer, Pin-Punch & Detent Hub



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6. Using a suitable hammer (3) and pin-punch (2), drive the roll-pin out of the detent hub (1).

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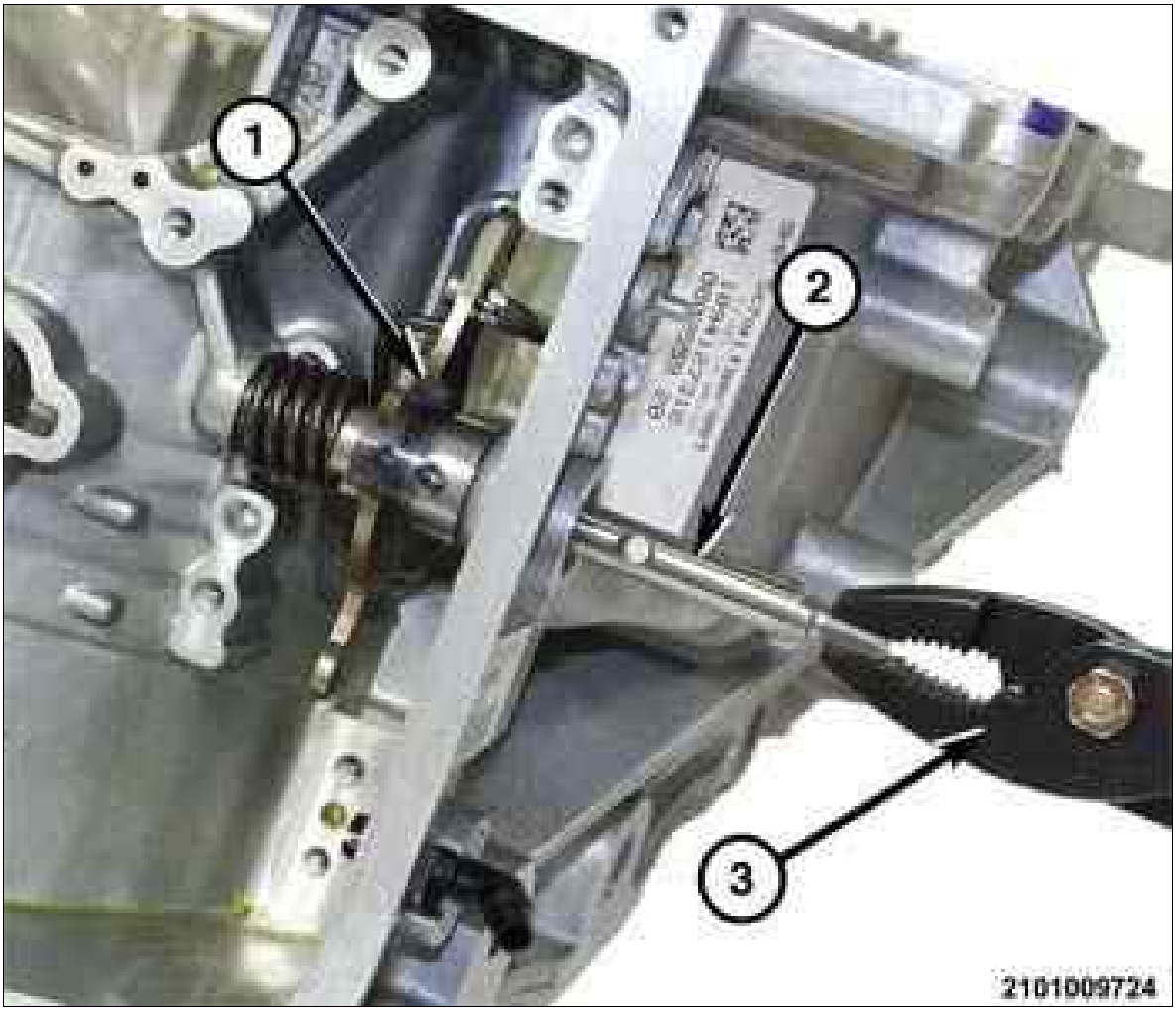
Fig 4: Manual Shaft, Pliers & Detent Hub



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7. Using suitable pliers (3), pull the manual shaft (2) out of the detent hub (1) and transmission housing.

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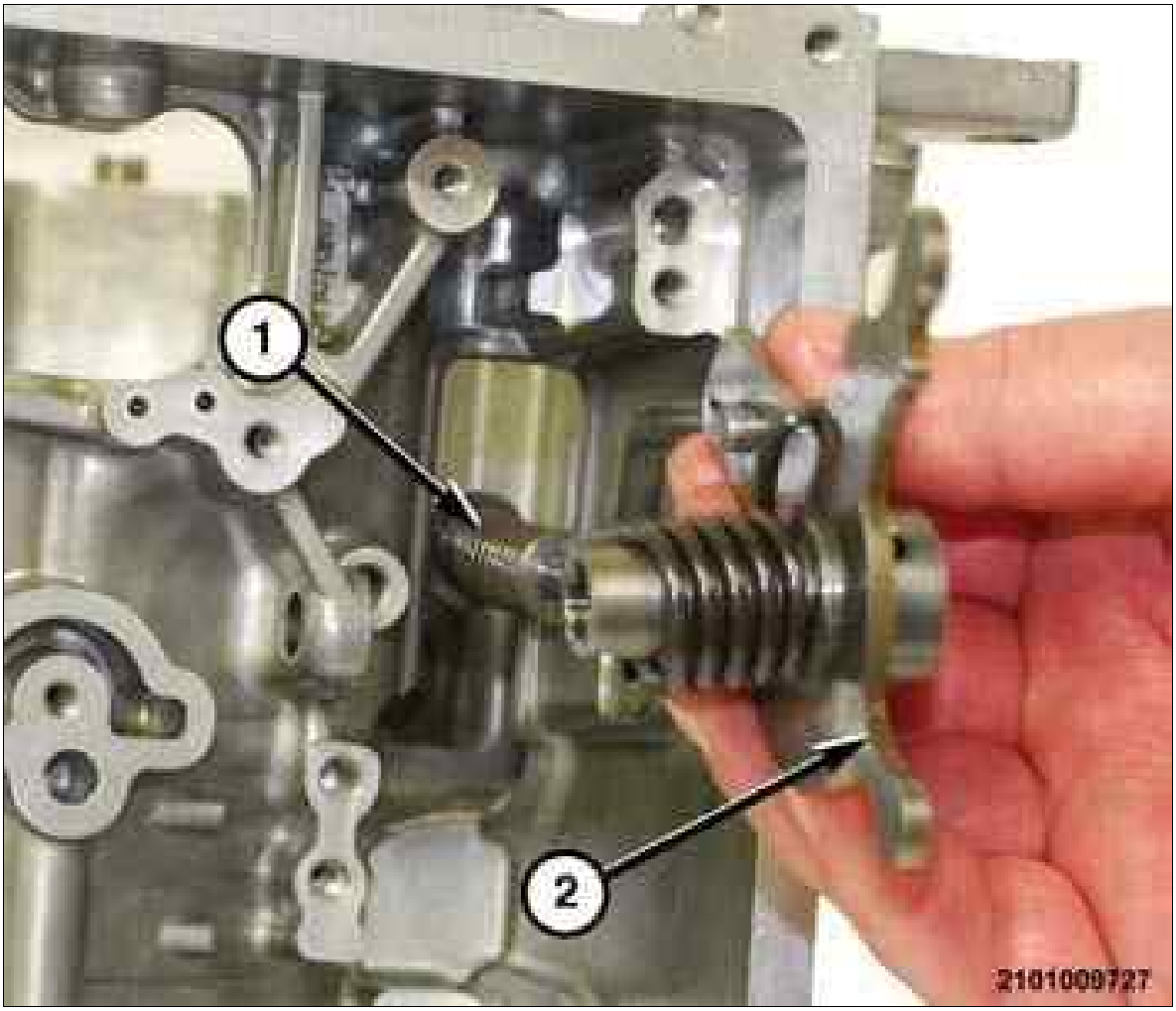
Fig 5: Park Rod & Detent Hub



Courtesy of CHRYSLER GROUP, LLC

8. Remove the detent hub (2) and park rod (1) from the transmission.

MANUAL LEVER AND PARK ROD > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > PARK DETENT AND MANUAL SHAFT INSTALLATION

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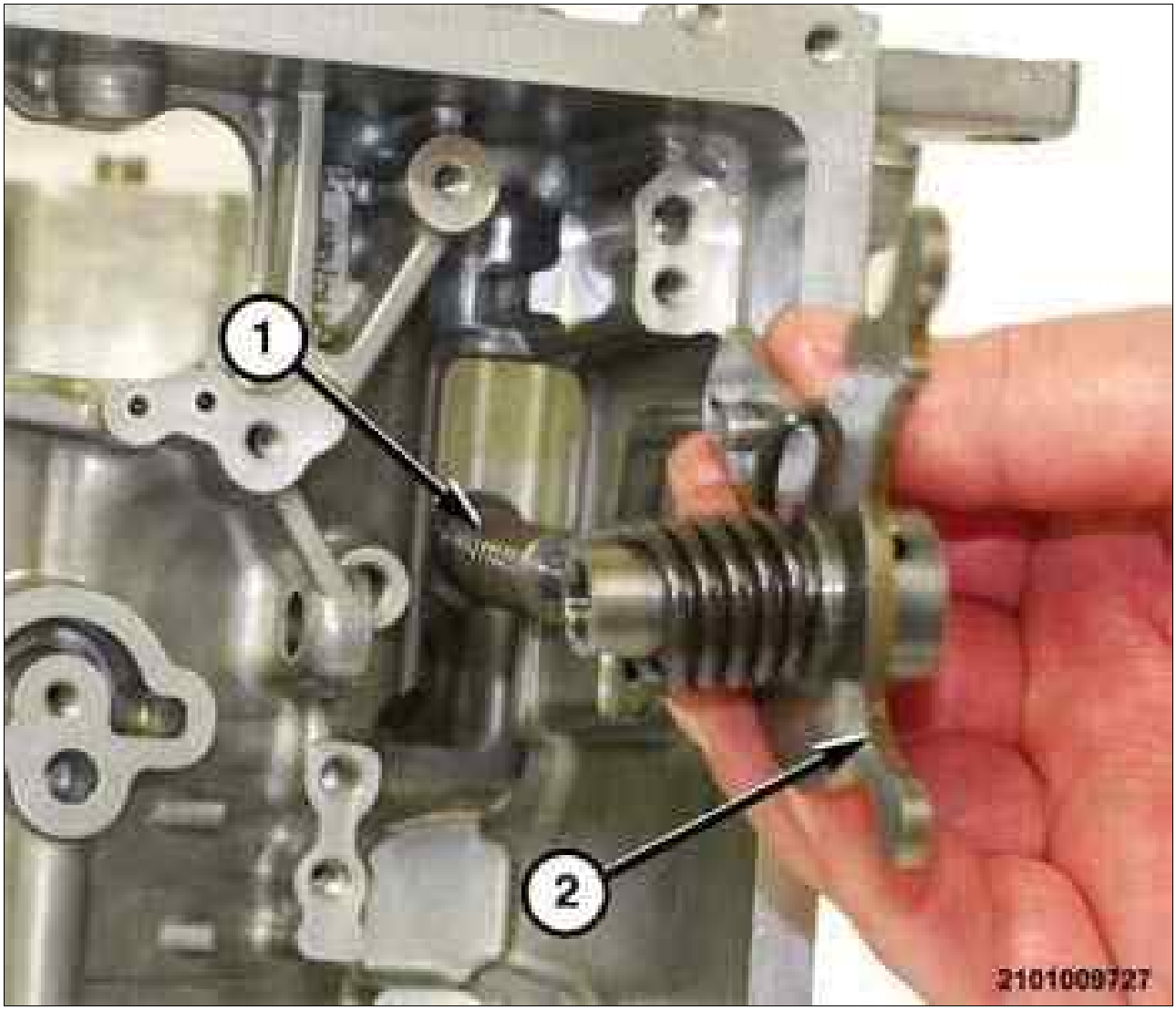
Fig 1: Park Rod & Detent Hub



Courtesy of CHRYSLER GROUP, LLC

1. Insert the and park rod (1) into the park rod guide and the detent hub (2) into the transmission.

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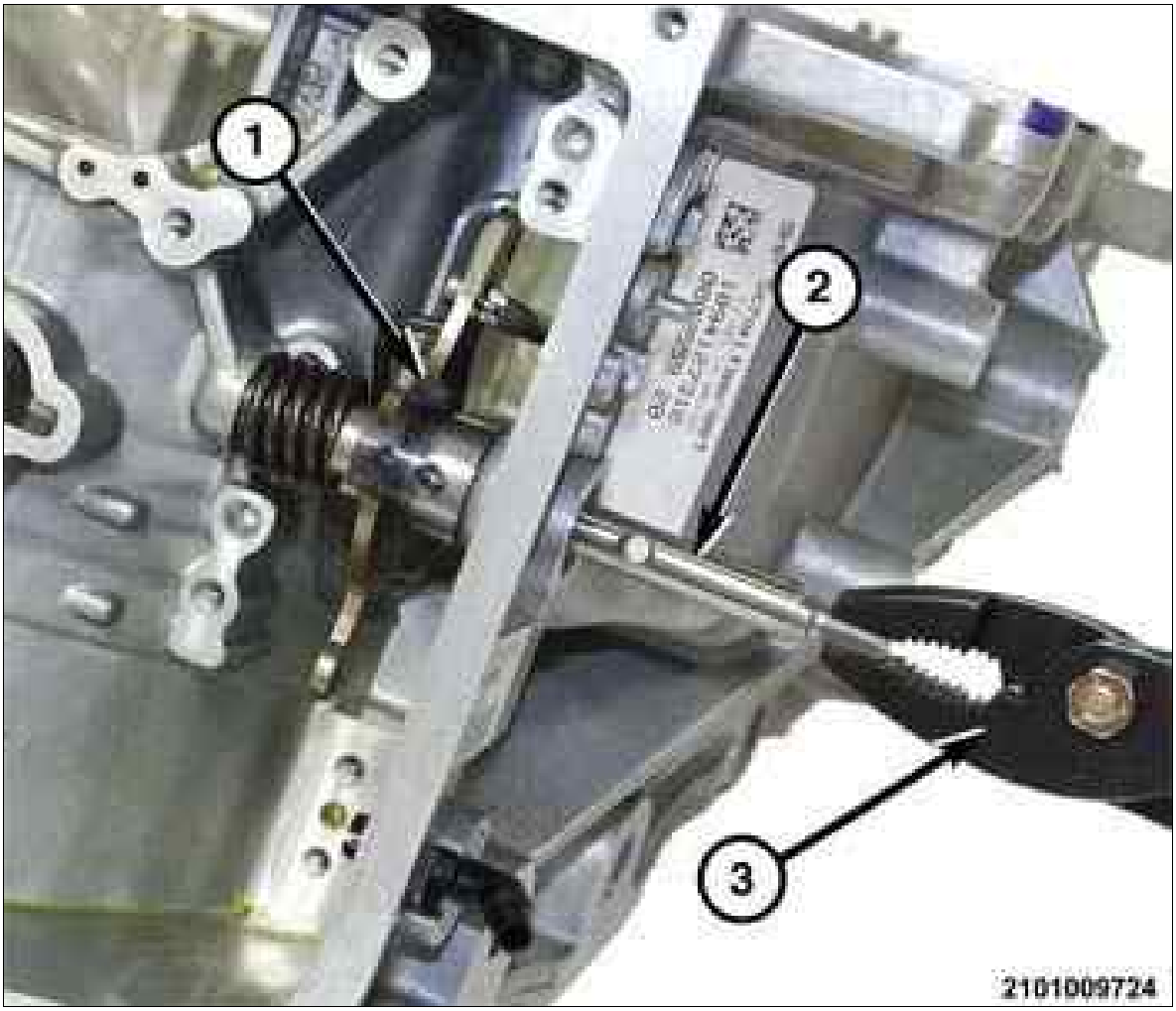
Fig 2: Manual Shaft, Pliers & Detent Hub



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2. Insert the manual shaft (2) into the detent hub (1) and transmission housing and align the holes in the detent hub and the manual shaft.

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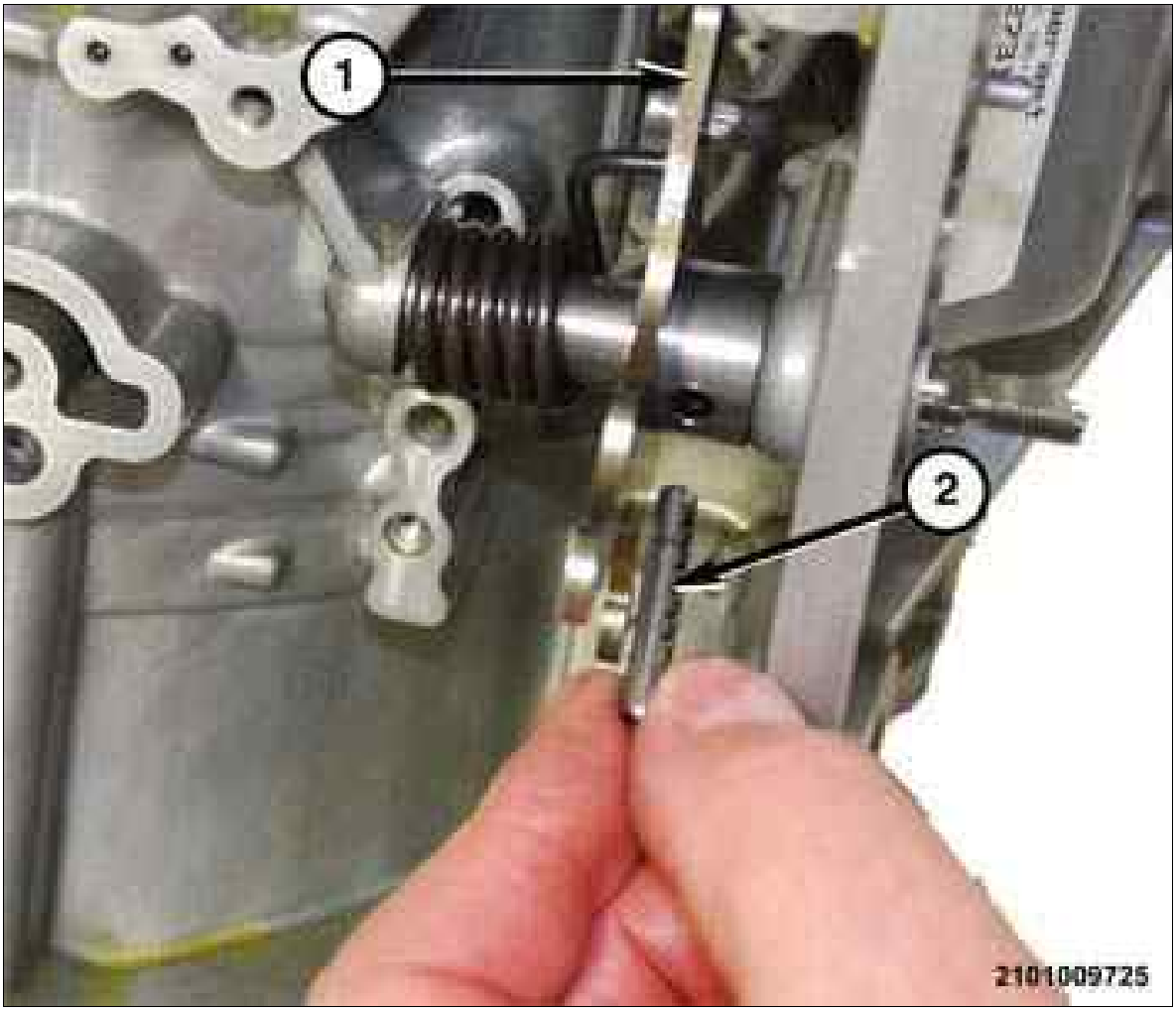
Fig 3: Detent Hub Roll-Pin



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3. Insert the tapered end of the roll-pin (2) into the hole in the detent hub (1).

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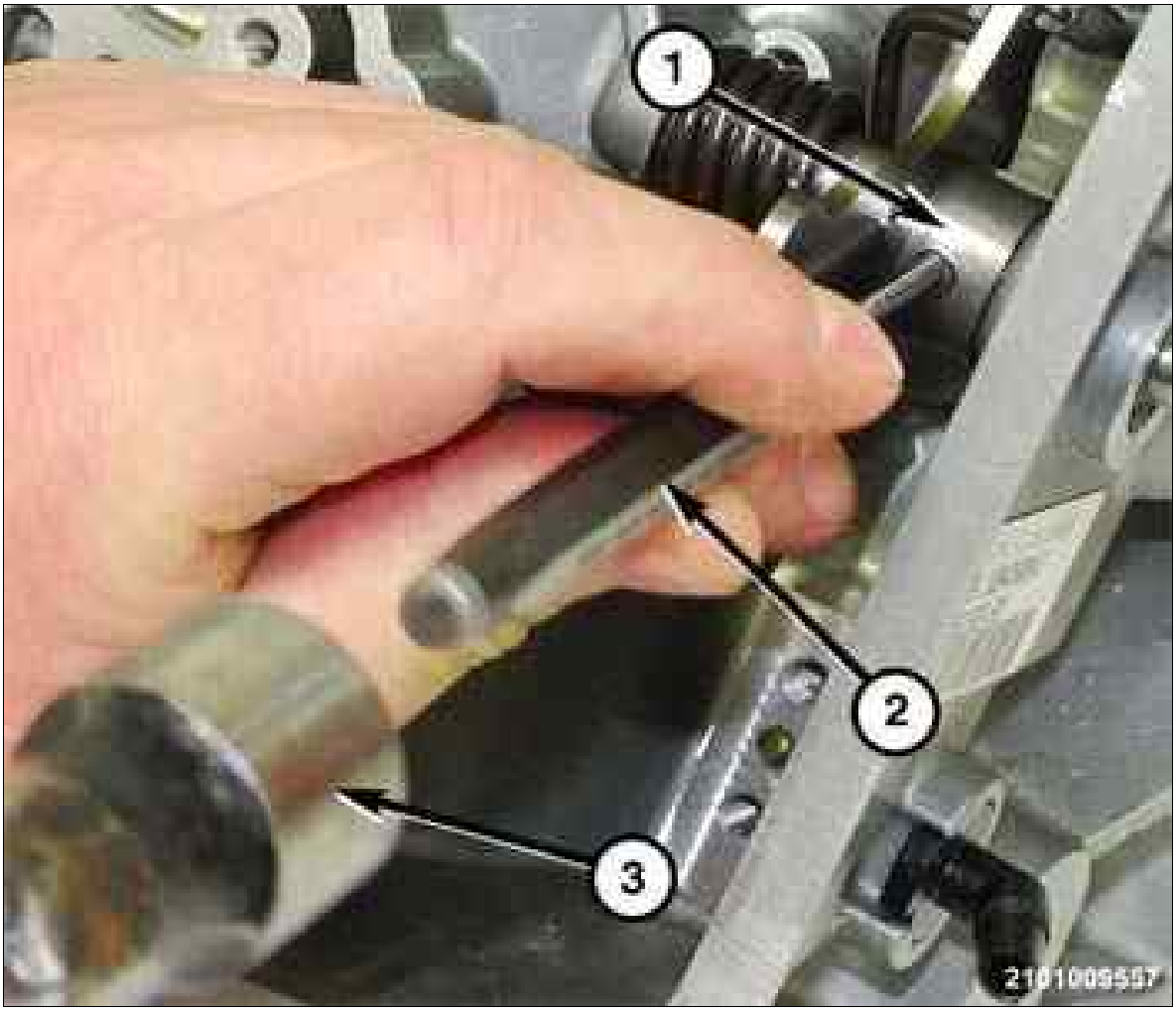
Fig 4: Hammer, Pin-Punch & Detent Hub



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4. Using a suitable hammer (3) and pin-punch (2), drive the roll-pin into of the detent hub (1) until the head is flush.

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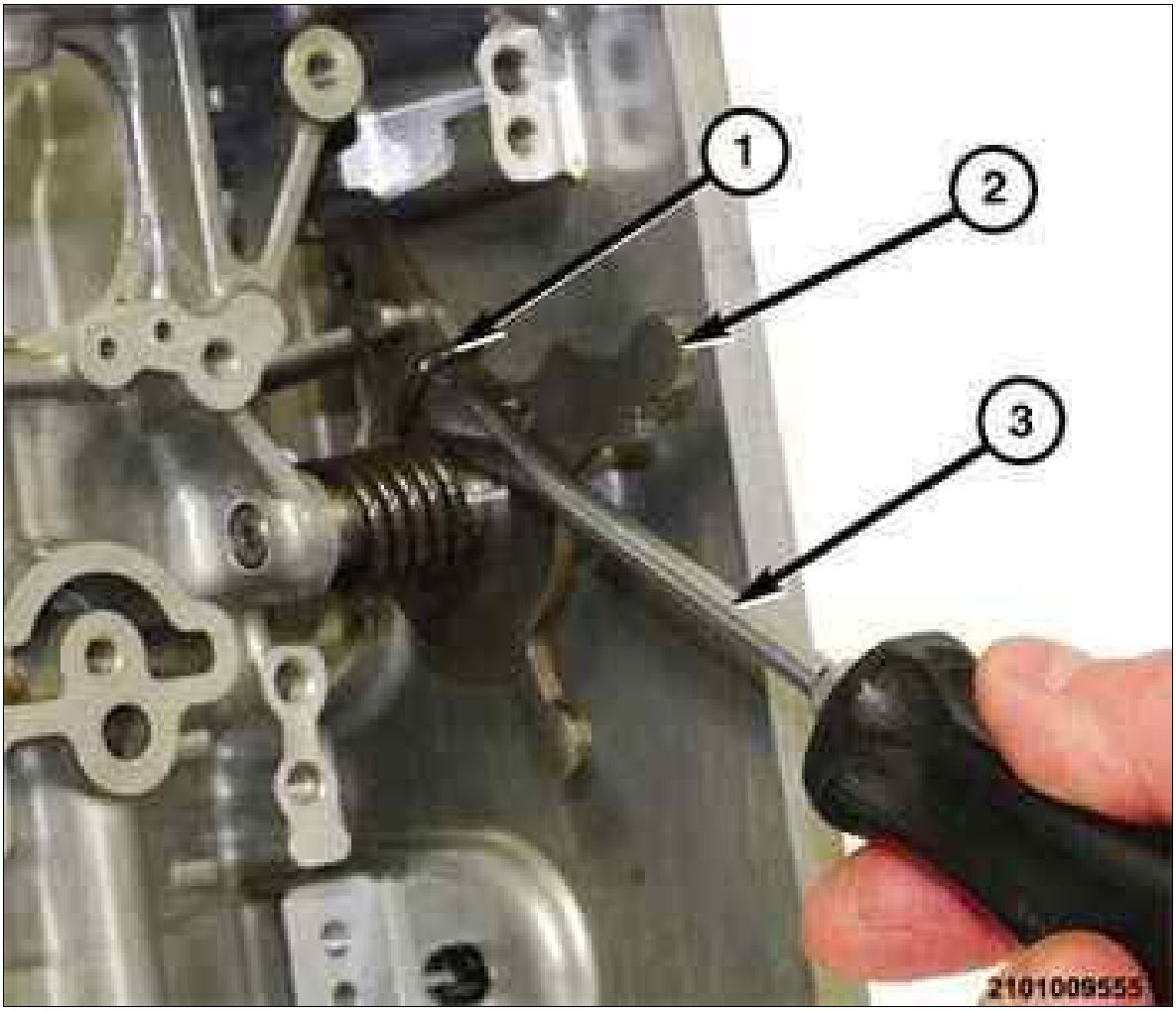
Fig 5: Screw Driver, Spring & Detent Hub



Courtesy of CHRYSLER GROUP, LLC

5. Using a suitable screw driver (3), pry the spring (1) over the top of the detent hub (2).
6. Place the manual lever in position on the manual shift lever.
7. Install the nut to hold the manual shift lever to the manual shaft to the manual shaft and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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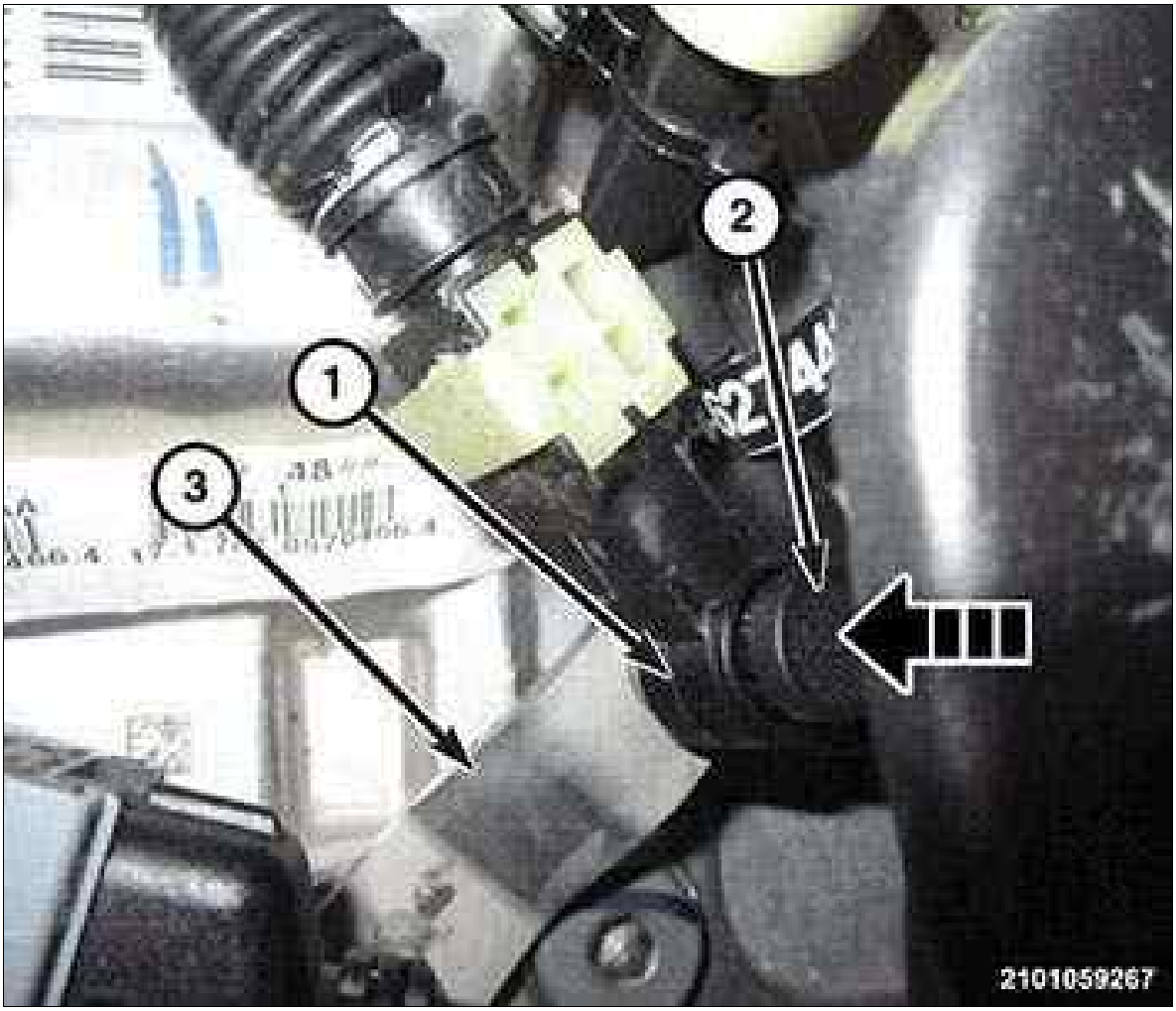
Fig 6: Cable End, Release Button & Manual Lever



Courtesy of CHRYSLER GROUP, LLC

8. Hold the release button down (3) down while attaching the shifter cable end (1) to the manual lever (3).
9. Install the valve body into the transmission. Refer to VALVE BODY, REMOVAL AND INSTALLATION .

NEEDLE BEARING, OIL PUMP SPROCKET > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > OIL PUMP SPROCKET NEEDLE BEARING REMOVAL

1. Remove the transmission from the vehicle. Refer to REMOVAL AND INSTALLATION .
2. Remove the bellhousing from the transmission. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .

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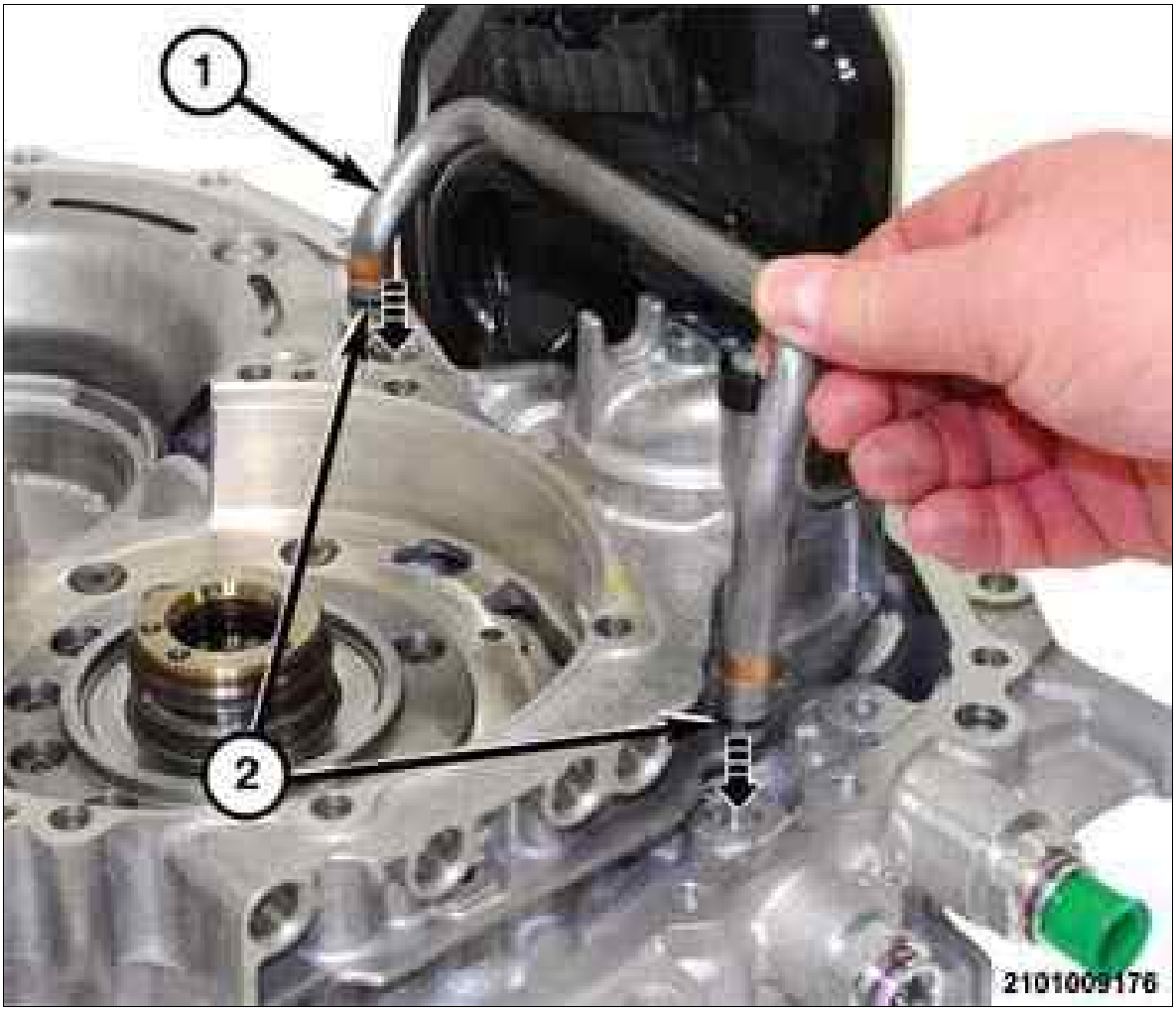
Fig 1: Fluid Tube & O-Rings



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3. Remove the fluid tube (1) from the bellhousing and discard the fluid tube O-rings (2).

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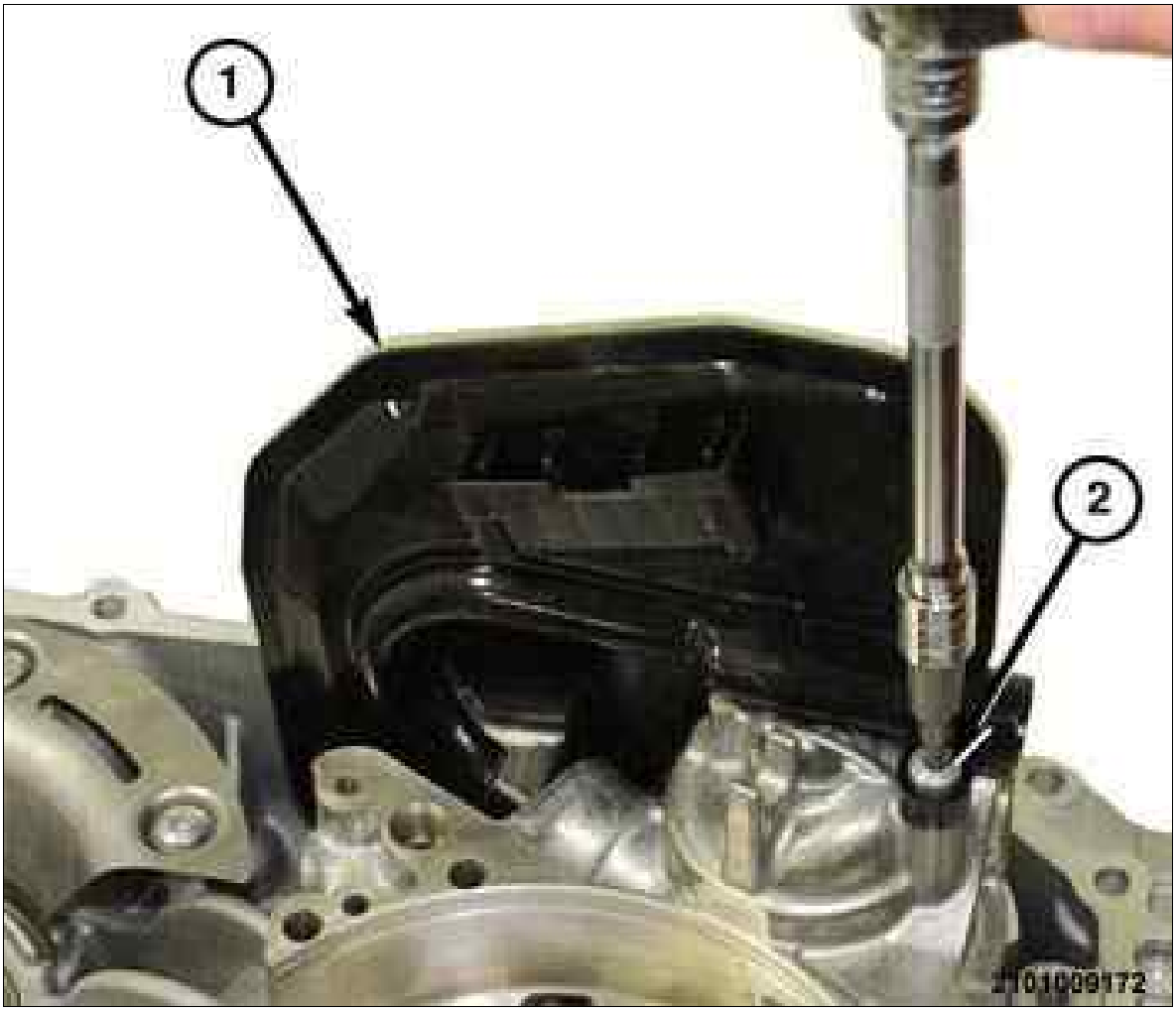
Fig 2: Oil Filter, Intermediate Support Plate & Fastener



Courtesy of CHRYSLER GROUP, LLC

4. Remove the bolt (2) holding the oil filter (1) to the bellhousing.

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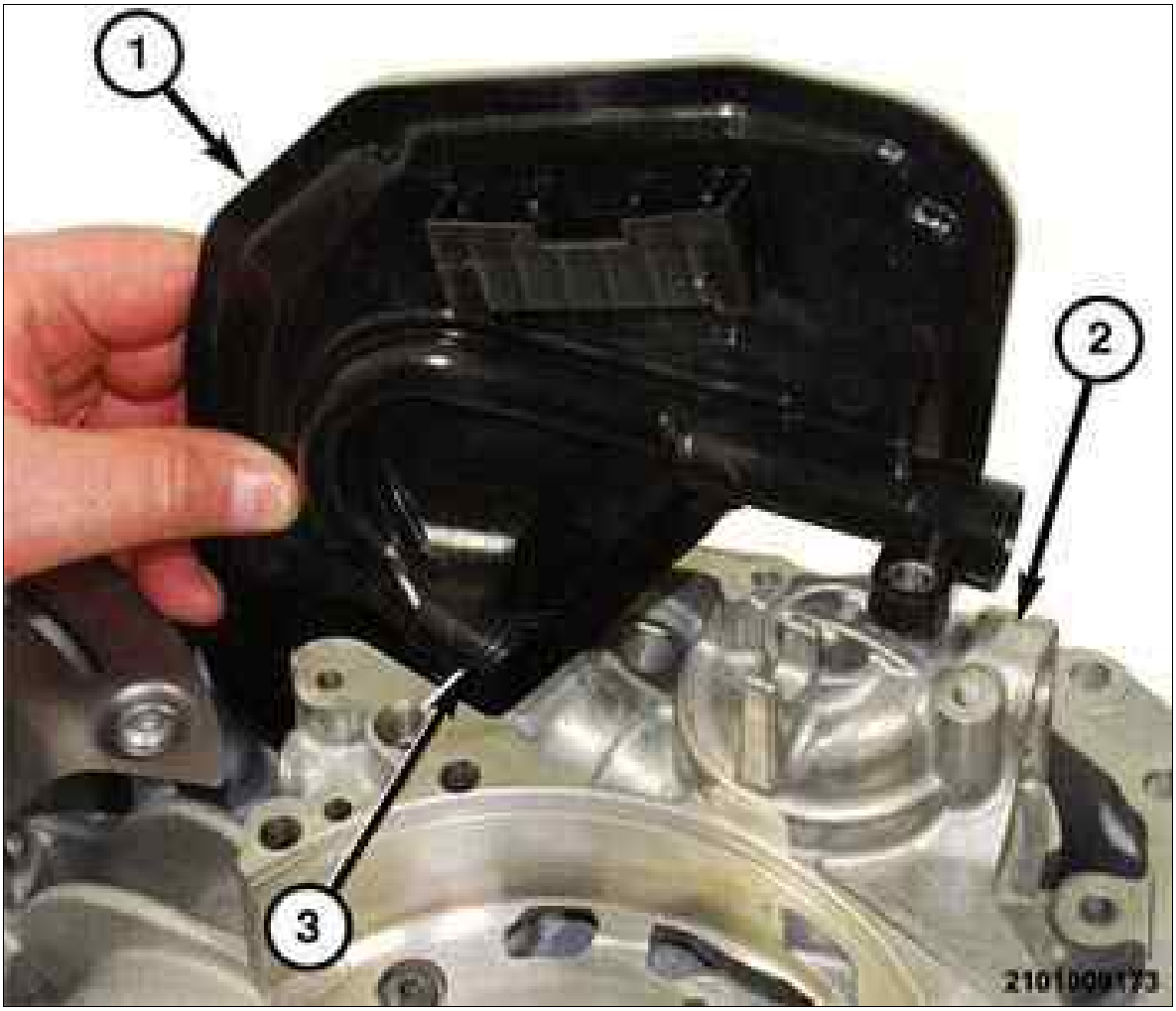
Fig 3: Removing/Installing Transmission Oil Filter



Courtesy of CHRYSLER GROUP, LLC

5. Separate the oil filter (1) from the bellhousing (2).

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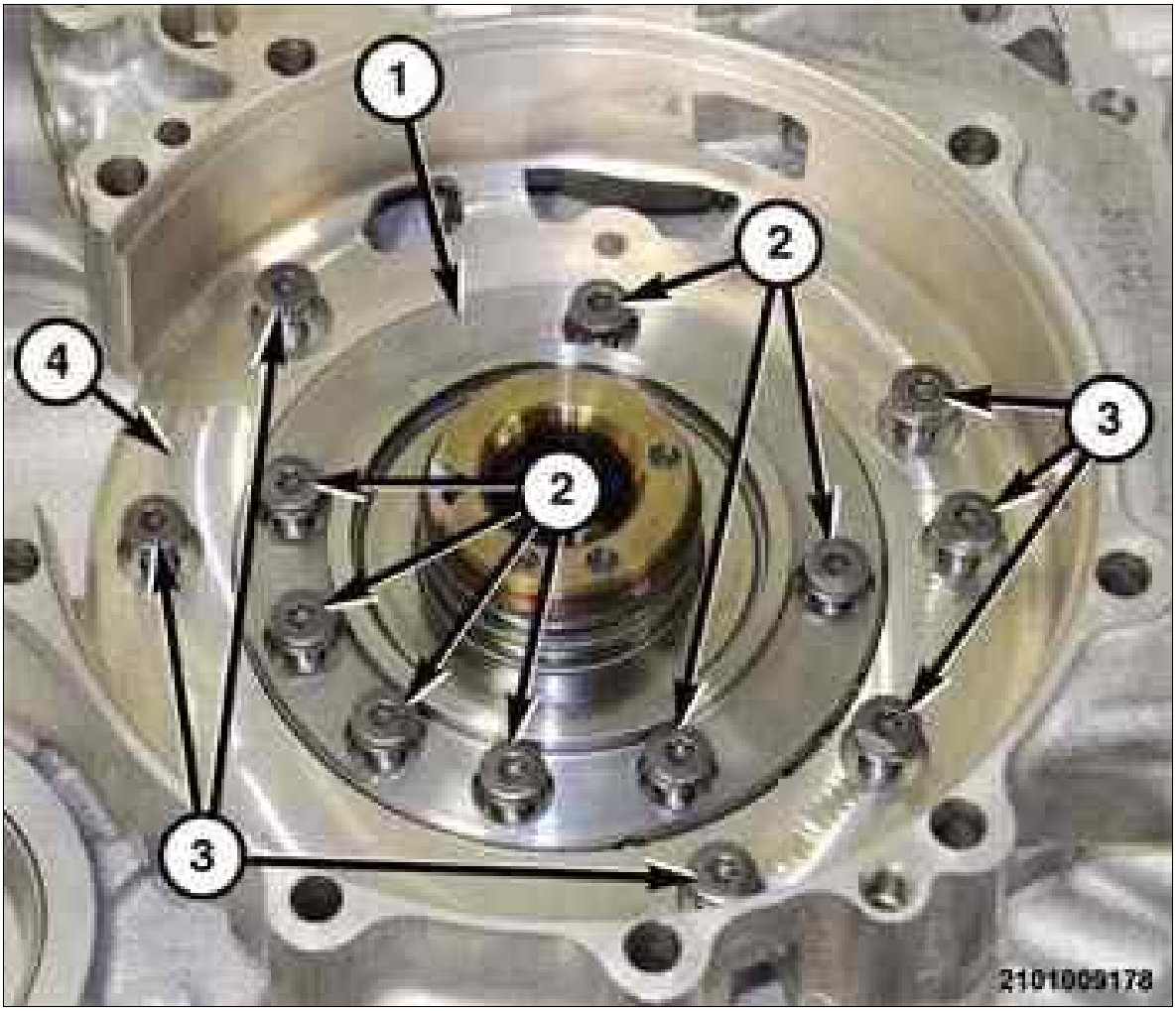
Fig 4: Removing/Installing Bolts At Reaction Shaft To Intermediate Support Plate



Courtesy of CHRYSLER GROUP, LLC

6. Remove the bolts (2) holding the reaction shaft (1) to the intermediate support plate (4).

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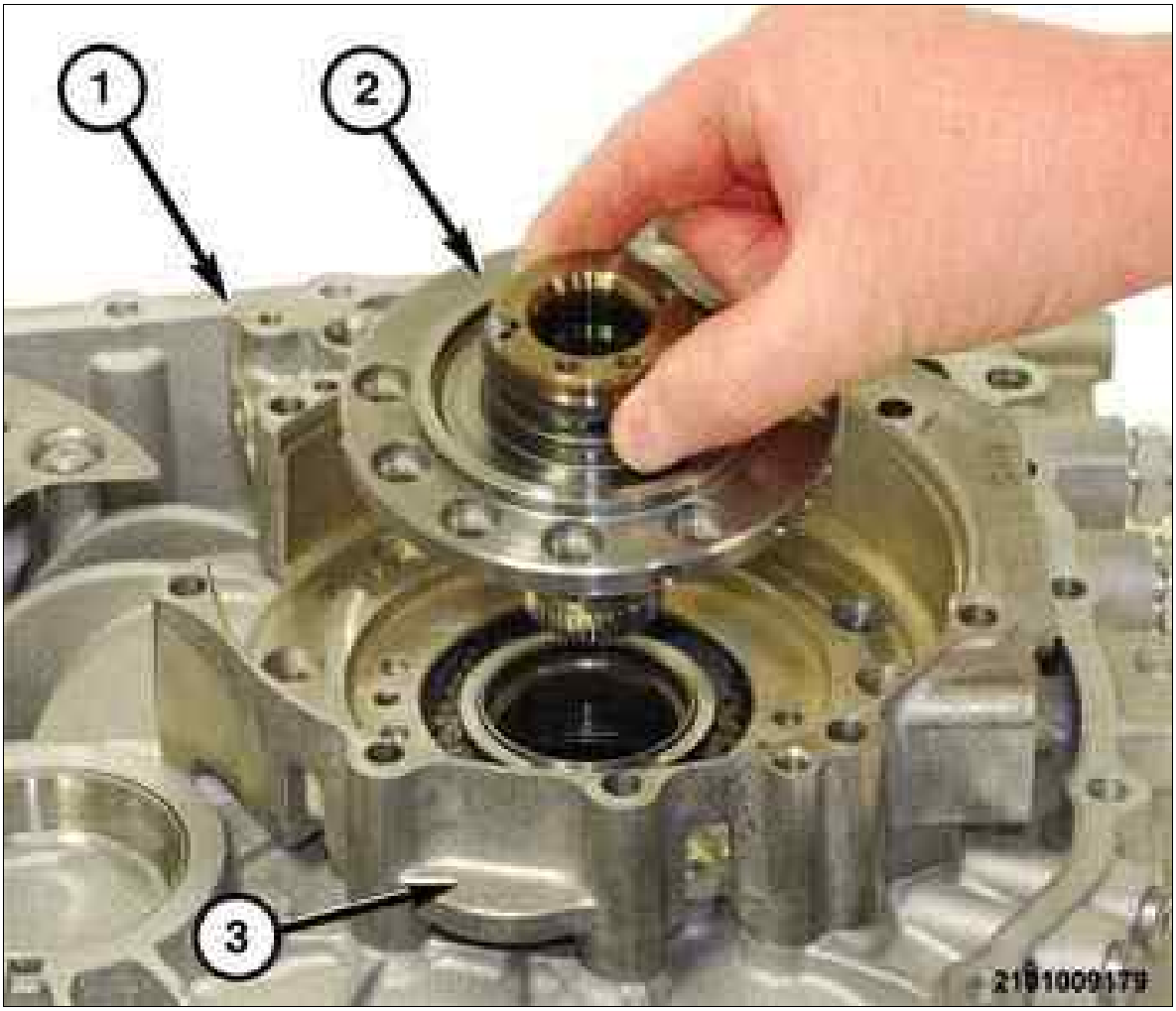
Fig 5: Removing/Installing Reaction Shaft At Intermediate Support Plate



Courtesy of CHRYSLER GROUP, LLC

7. Separate the reaction shaft (2) from the intermediate support plate (1).

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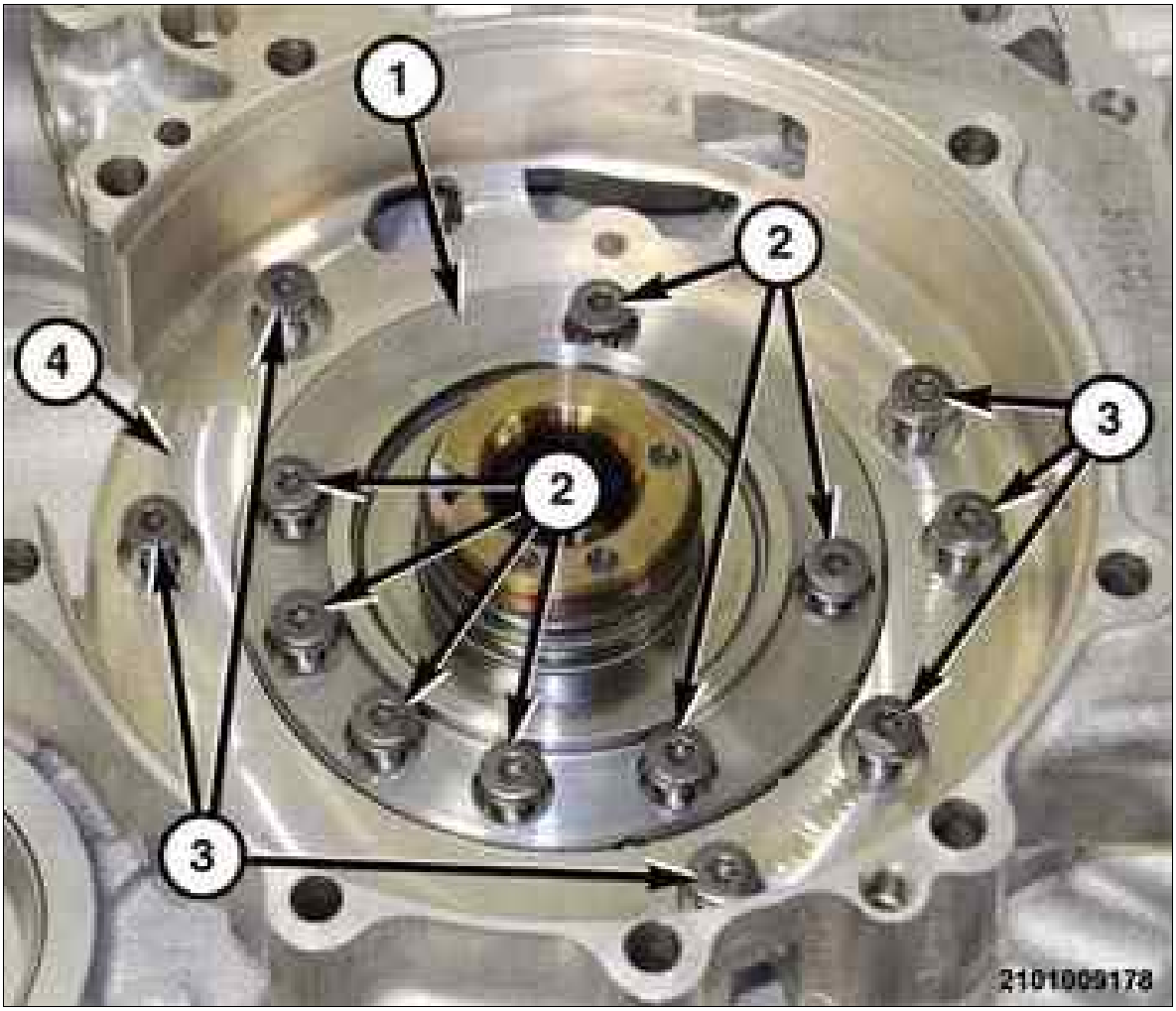
Fig 6: Removing/Installing Bolts At Reaction Shaft To Intermediate Support Plate



Courtesy of CHRYSLER GROUP, LLC

8. Remove the bolts (3) holding the intermediate support plate and oil pump (4) to the bellhousing.

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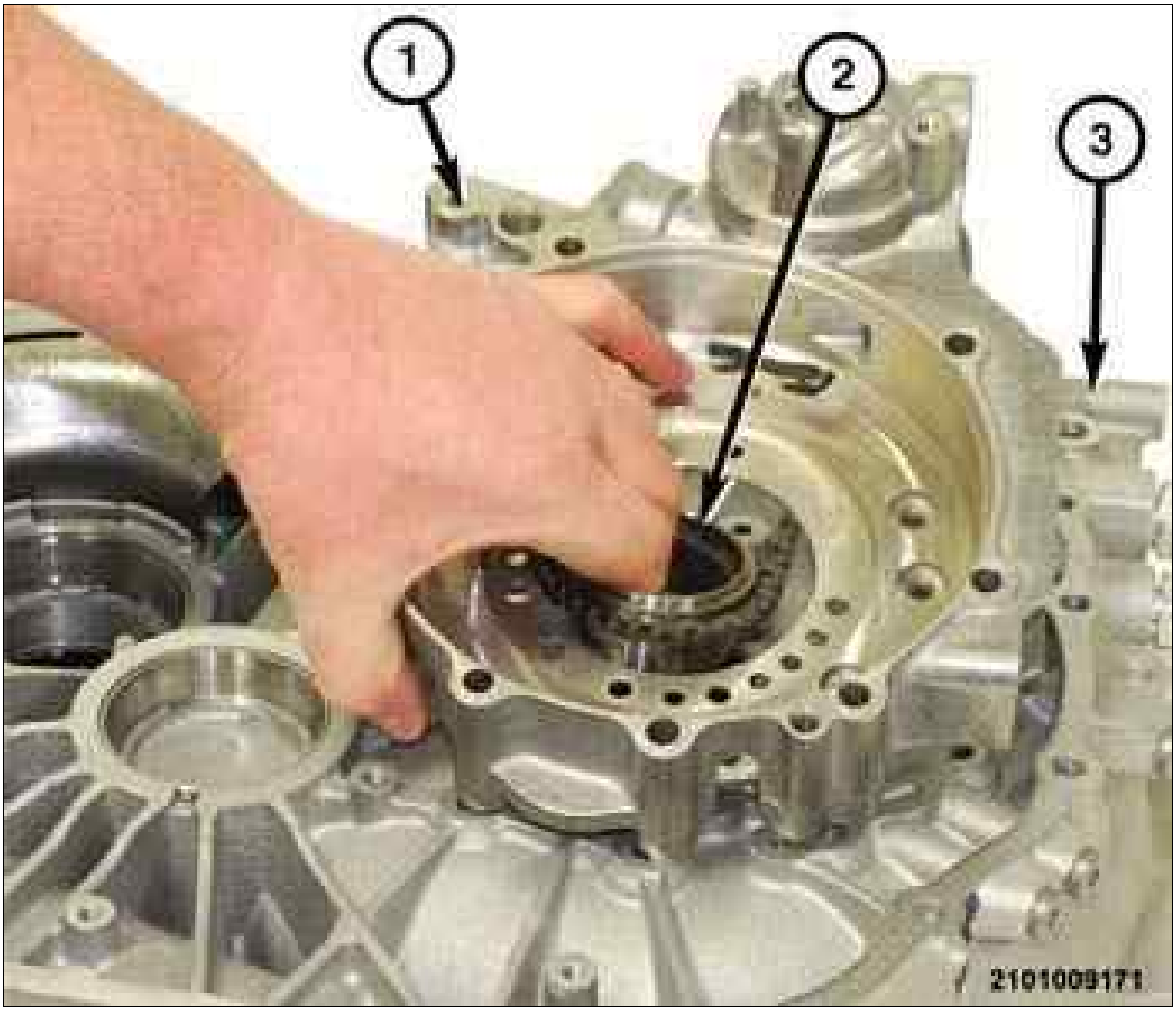
Fig 7: Removing/Installing Intermediate Support Plate And Oil Pump



Courtesy of CHRYSLER GROUP, LLC

9. Separate the intermediate support plate and oil pump (1) from the bellhousing (3).
10. Using a suitable screw driver, remove the input shaft seal from the bellhousing.

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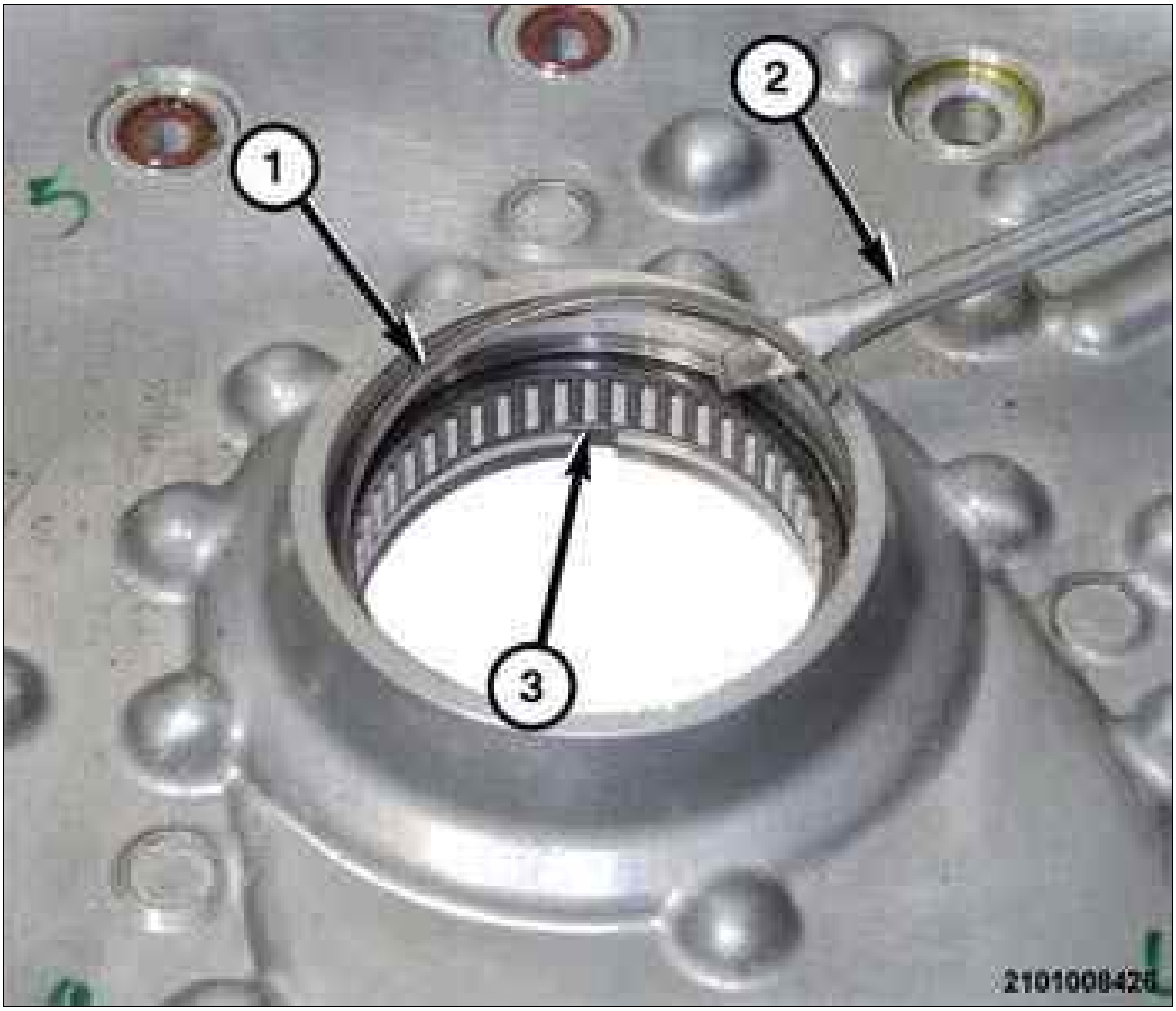
Fig 8: Screw Driver, Snap-Ring & Oil Pump Sprocket Needle Bearing



Courtesy of CHRYSLER GROUP, LLC

11. Using a suitable screw driver (2), remove the snap-ring (1) holding the oil pump sprocket needle bearing (3) in the bellhousing.

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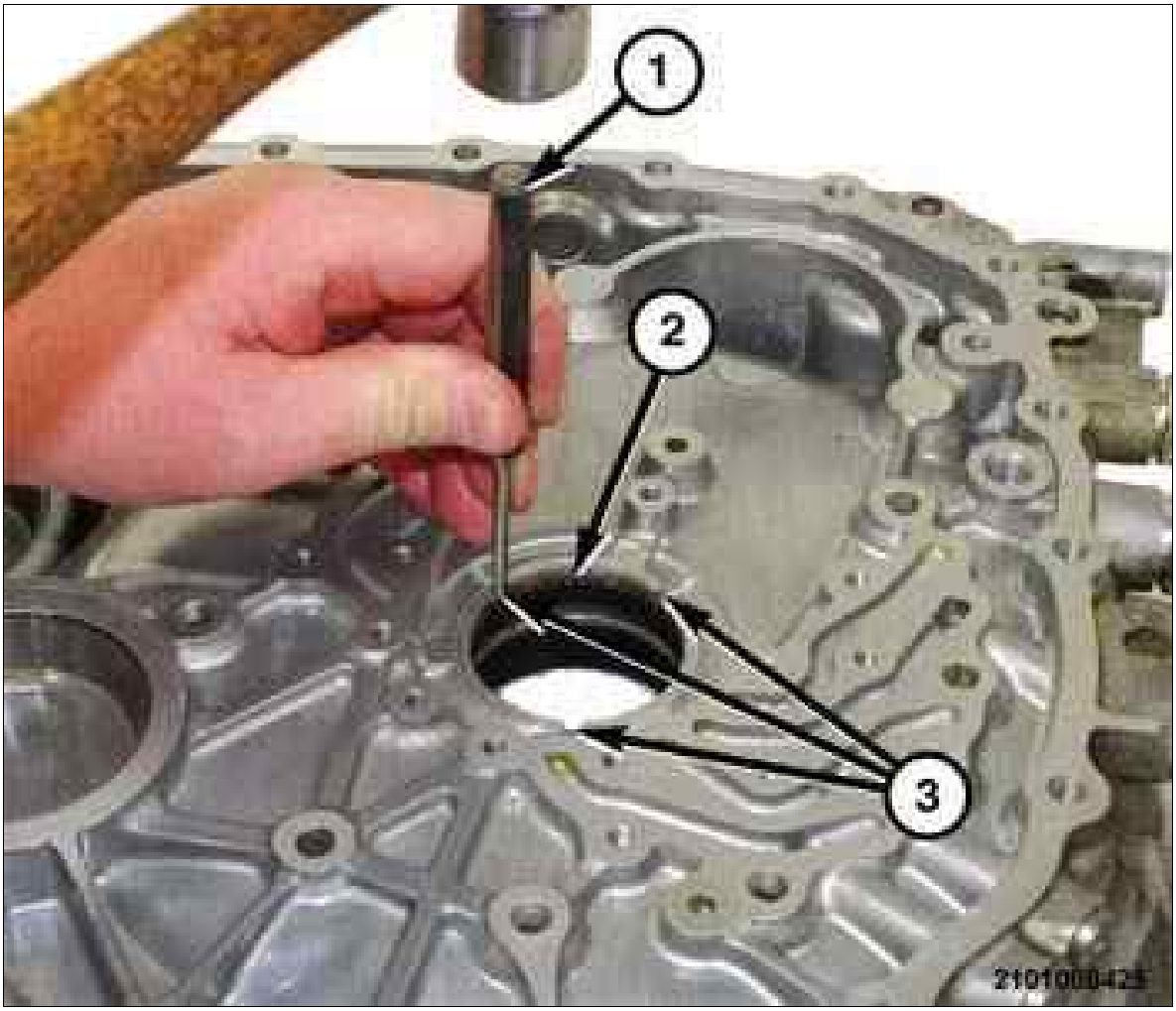
Fig 9: Oil Pump Sprocket Needle Bearing, Punch Tool & Three Notches In The Bellhousing Bore Flange



Courtesy of CHRYSLER GROUP, LLC

12. Using a suitable punch tool (1), remove the oil pump sprocket needle bearing (2) by tapping outward while alternating between the three notches (3) in the bellhousing bore flange.

NEEDLE BEARING, OIL PUMP SPROCKET > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > OIL PUMP SPROCKET NEEDLE BEARING INSTALLATION

1. Clean the oil pump sprocket needle bearing and input shaft seal bore.

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Fig 1: Installing Oil Pump Sprocket Needle Bearing Into Bellhousing

Courtesy of CHRYSLER GROUP, LLC

2. Place the oil pump sprocket needle bearing (1) in position into the bore in the center of the bellhousing.

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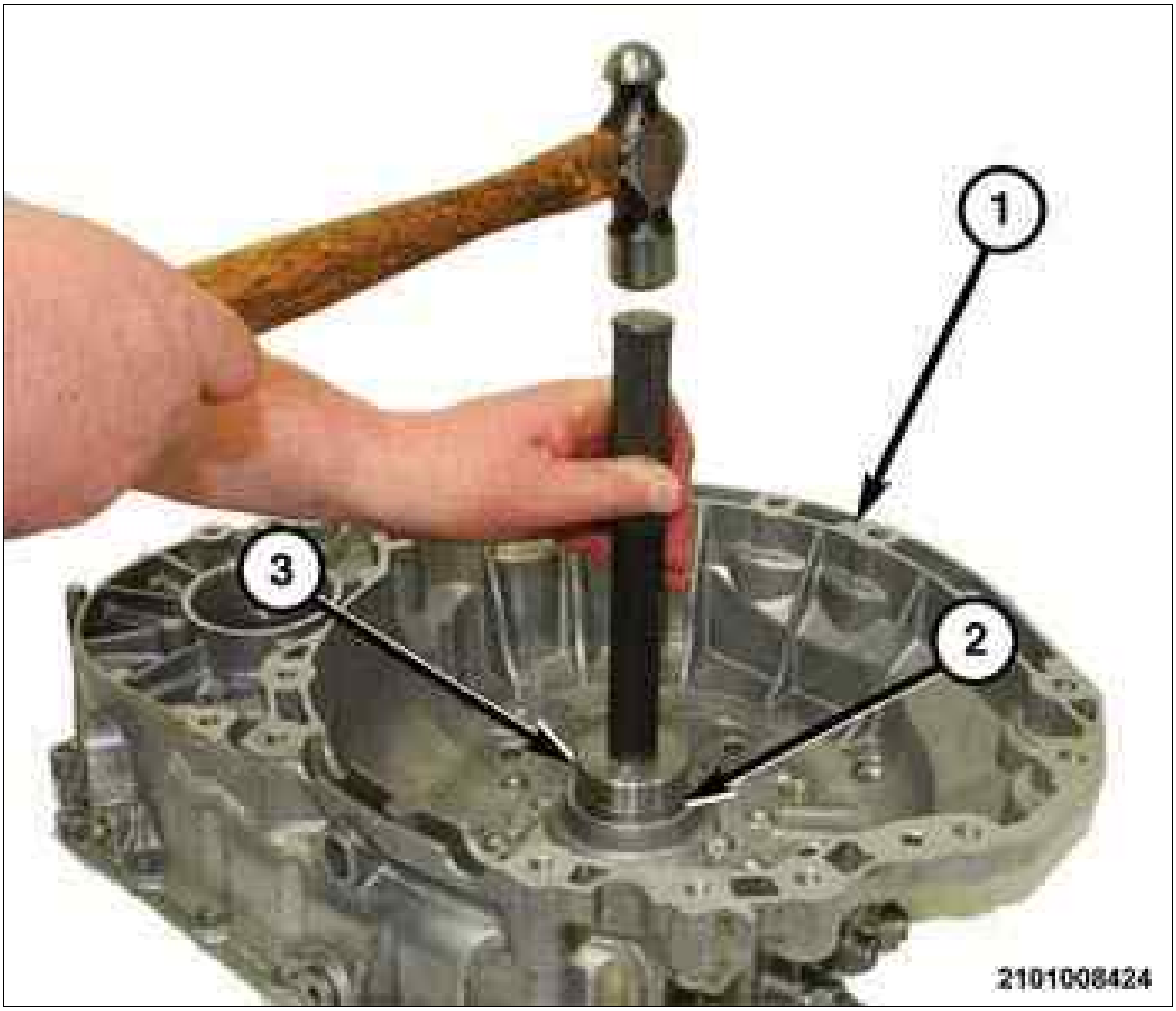
Fig 2: Seating Oil Pump Sprocket Needle Bearing Against Flange



Courtesy of CHRYSLER GROUP, LLC

3. Using tool (special tool #10503, Installer, Bearing) (3) and (special tool #C-4171, Driver Handle, Universal), install the oil pump sprocket needle bearing (2) in the bellhousing (1) bore until the bearing is seated against the flange.

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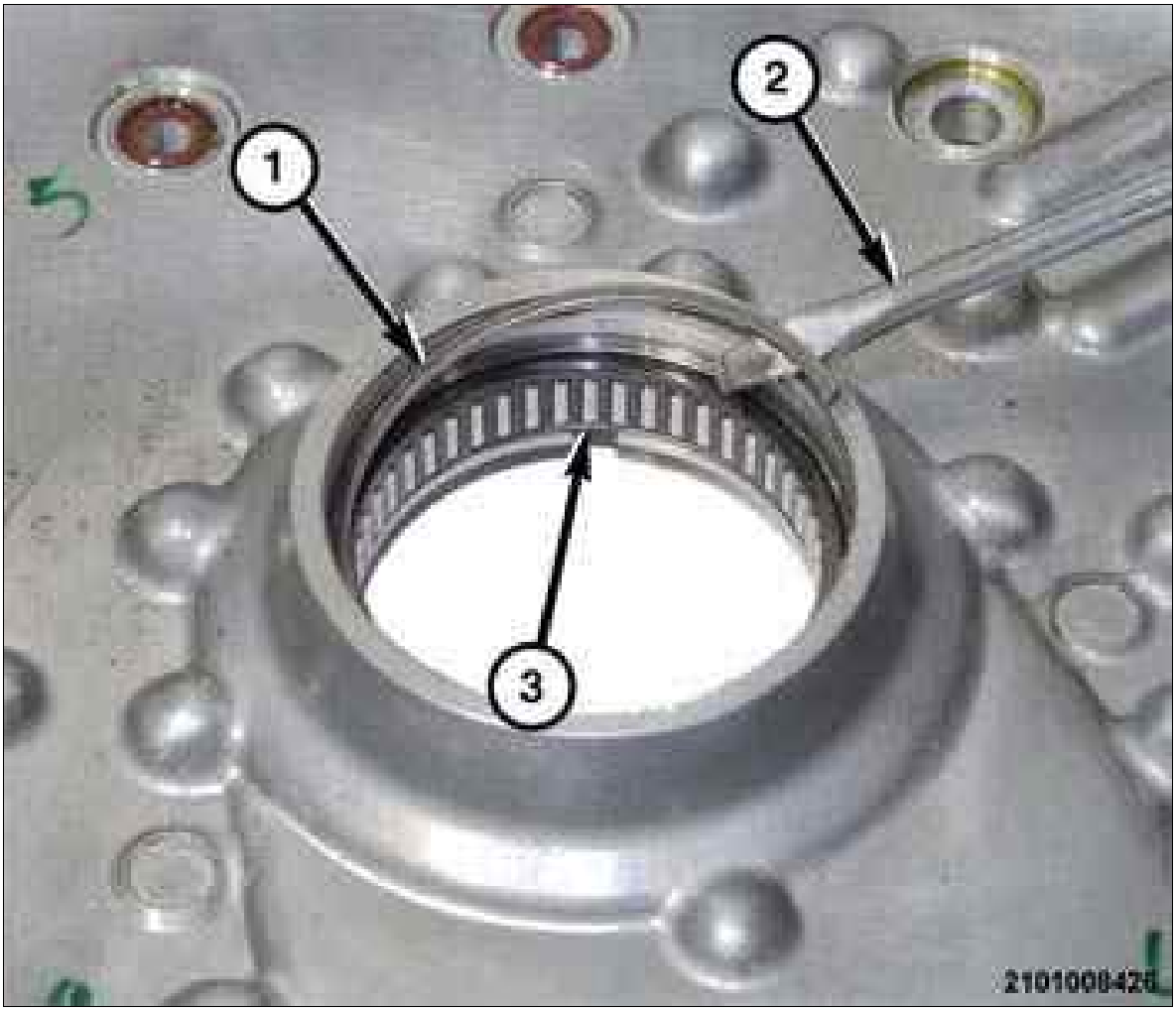
Fig 3: Screw Driver, Snap-Ring & Oil Pump Sprocket Needle Bearing



Courtesy of CHRYSLER GROUP, LLC

4. Install the snap-ring (1) to hold the oil pump sprocket needle bearing (3) in the bellhousing.
5. Apply assembly lube on the lip of the **NEW** seal.

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Fig 4: Installing Seal Into Bellhousing

Courtesy of CHRYSLER GROUP, LLC

6. Place the seal on tool (special tool #9677, Installer, Seal) (2), with the tension spring away from the tool, and insert the seal into the bore in the bellhousing and using a suitable hammer, drive the seal into the bore in the center of the bellhousing until the tool seats against the bellhousing.

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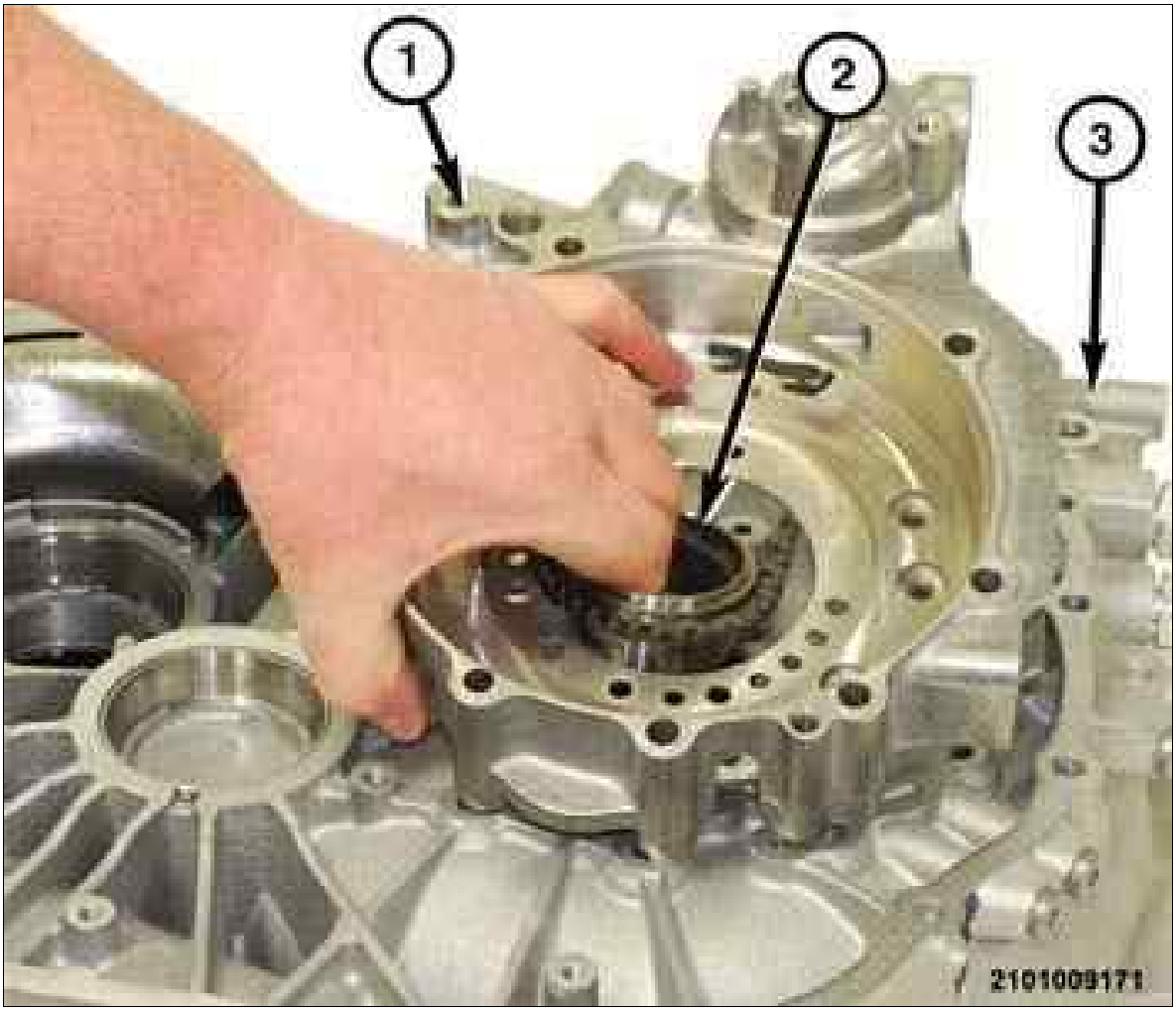
Fig 5: Removing/Installing Intermediate Support Plate And Oil Pump



Courtesy of CHRYSLER GROUP, LLC

7. Place the intermediate support plate and oil pump (1) in position on the bellhousing (3) while guiding the oil pump sprocket (2) into oil pump sprocket needle bearing.

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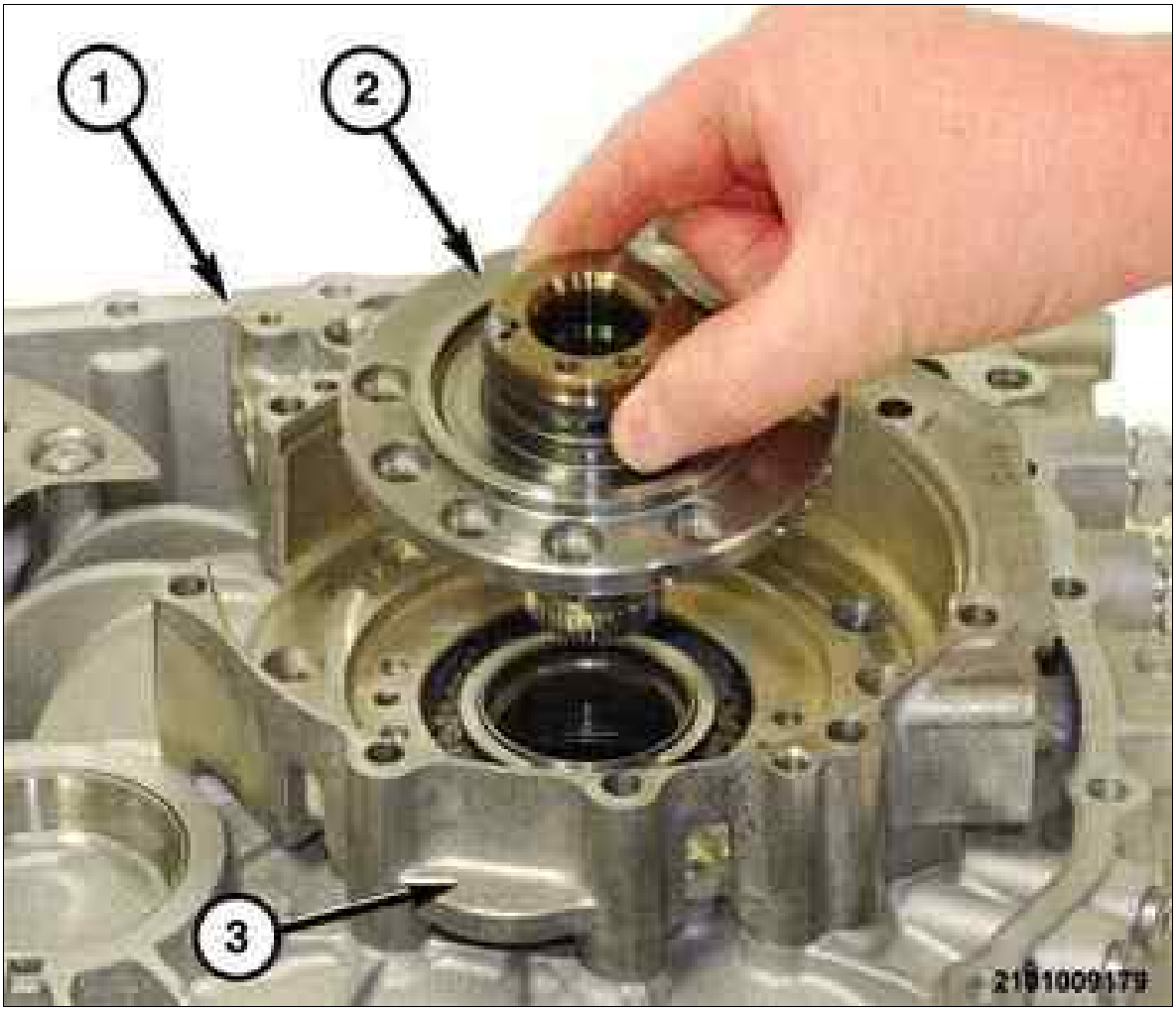
Fig 6: Removing/Installing Reaction Shaft At Intermediate Support Plate



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8. Place the reaction shaft (2) in position on the intermediate support plate (1).

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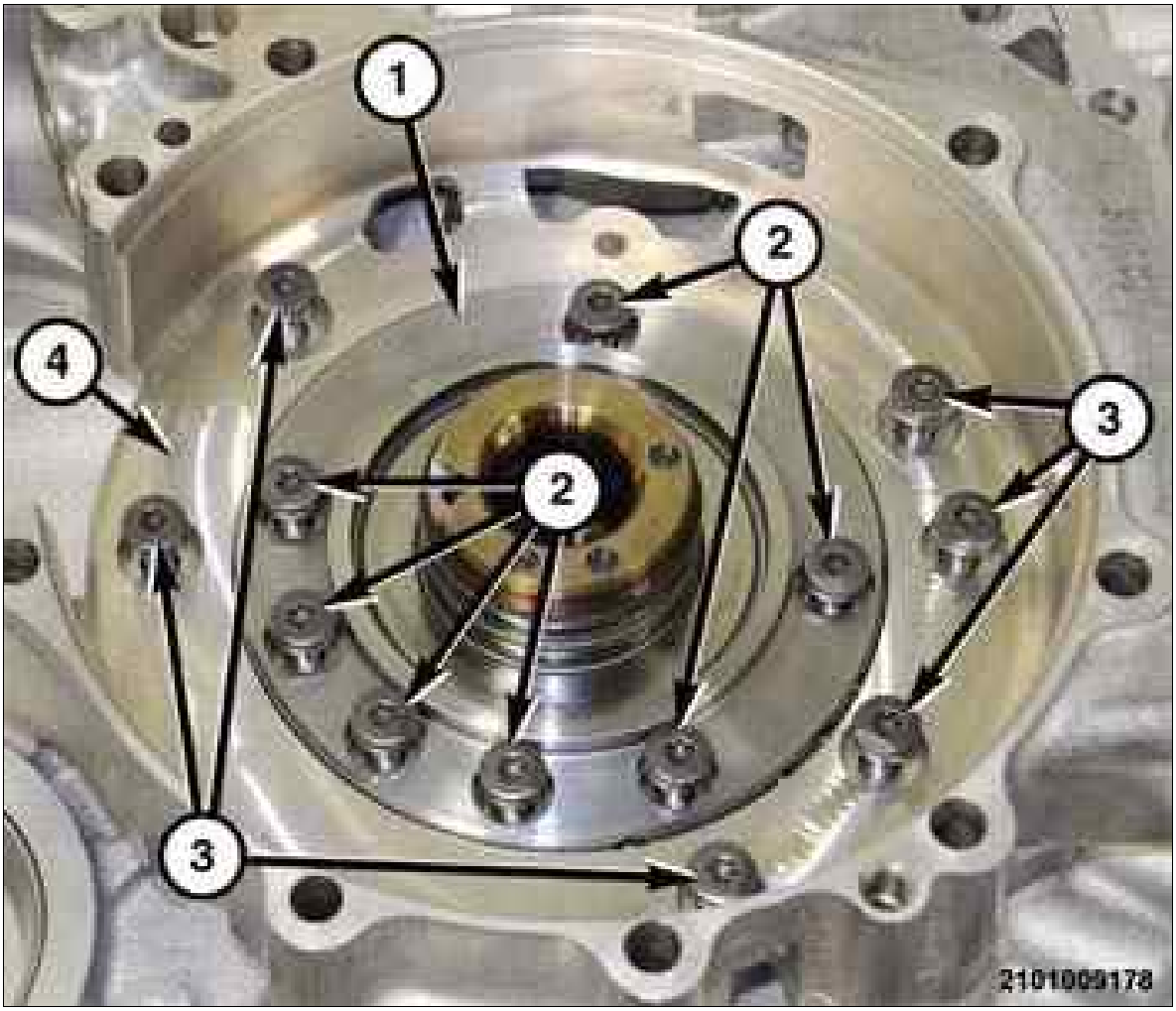
Fig 7: Removing/Installing Bolts At Reaction Shaft To Intermediate Support Plate



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9. Install the bolts (2) to hold the reaction shaft (1) to the intermediate support plate (4) and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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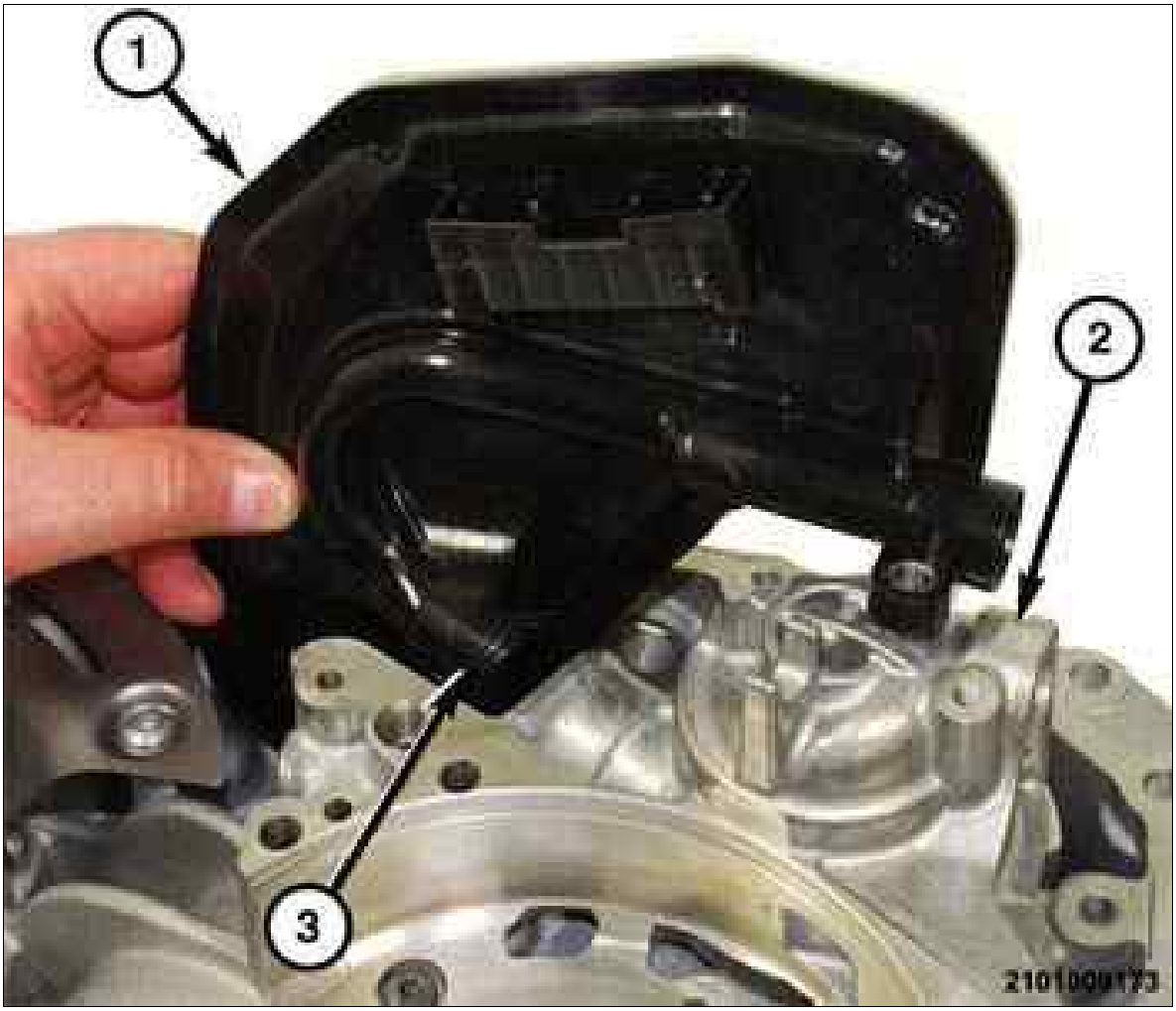
Fig 8: Removing/Installing Transmission Oil Filter



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10. Place the fluid filter (1) in position on the bellhousing (2) and insert feed tube into the oil pump.

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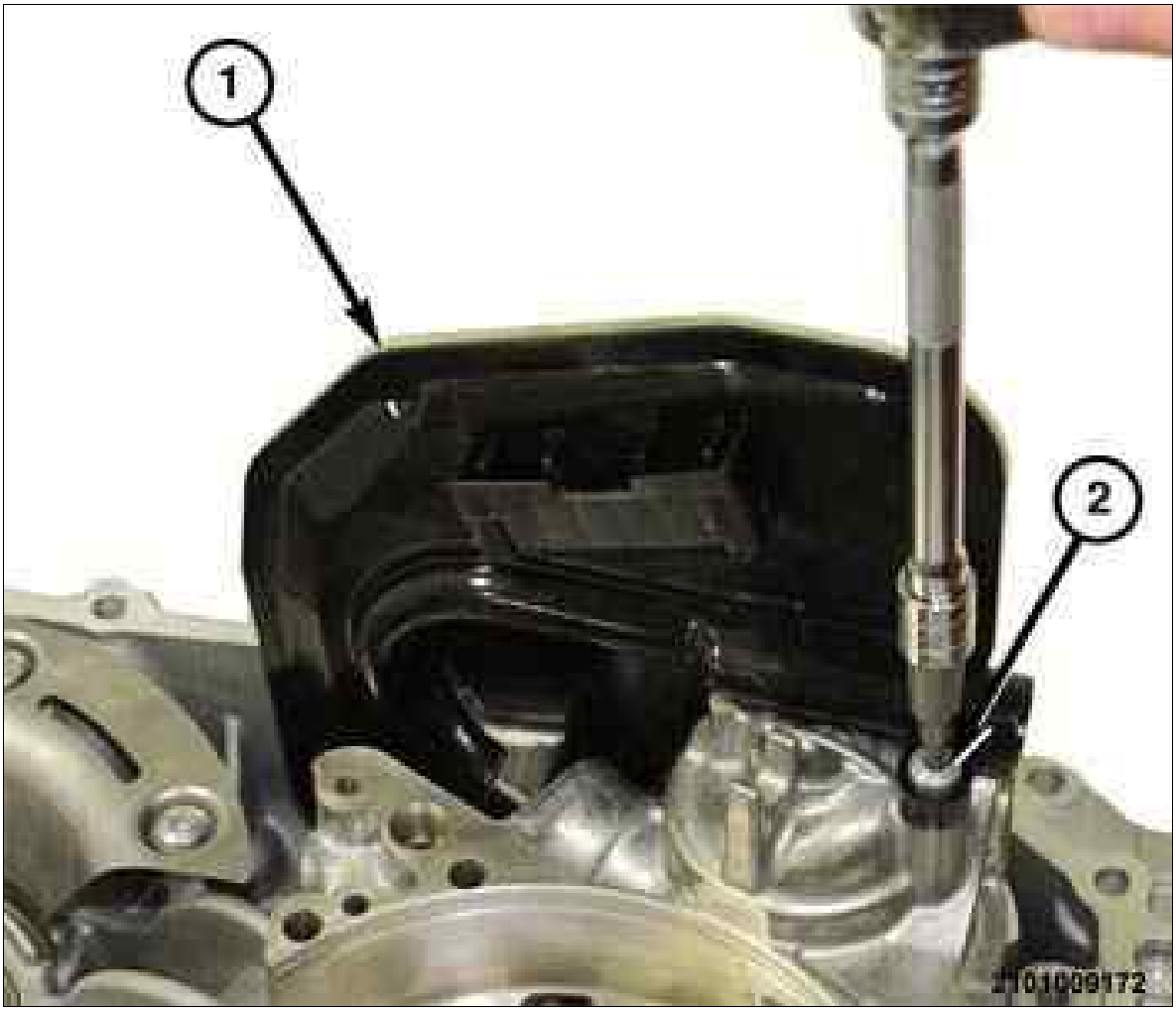
Fig 9: Oil Filter, Intermediate Support Plate & Fastener



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11. Install the bolt (2) to hold the fluid filter (1) to the bellhousing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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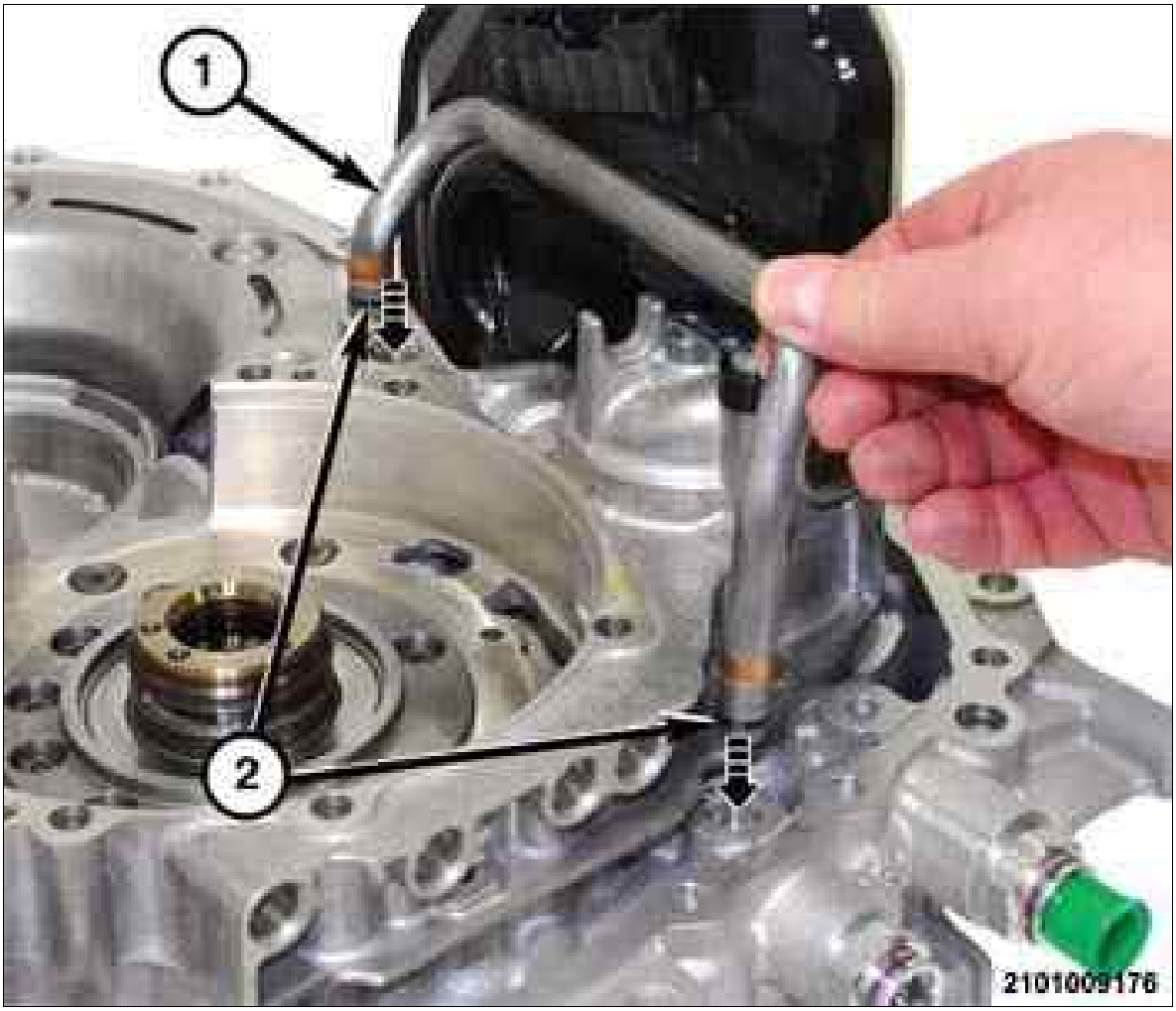
Fig 10: Fluid Tube & O-Rings



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12. Install **NEW** O-rings (2) on the fluid tube and install the fluid tube (1) in the bellhousing.
13. Install the bellhousing on the transmission. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .
14. Install the transmission in the vehicle. Refer to REMOVAL AND INSTALLATION .
15. Road test the vehicle to verify the repair.

PARKING SPRAG AND GUIDE > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > PARK ROD GUIDE AND PAWL REMOVAL

1. Remove the transmission from the vehicle. Refer to REMOVAL AND INSTALLATION .
2. Position the transmission on the clean, stable work surface.
3. Remove the bellhousing from the transmission housing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .

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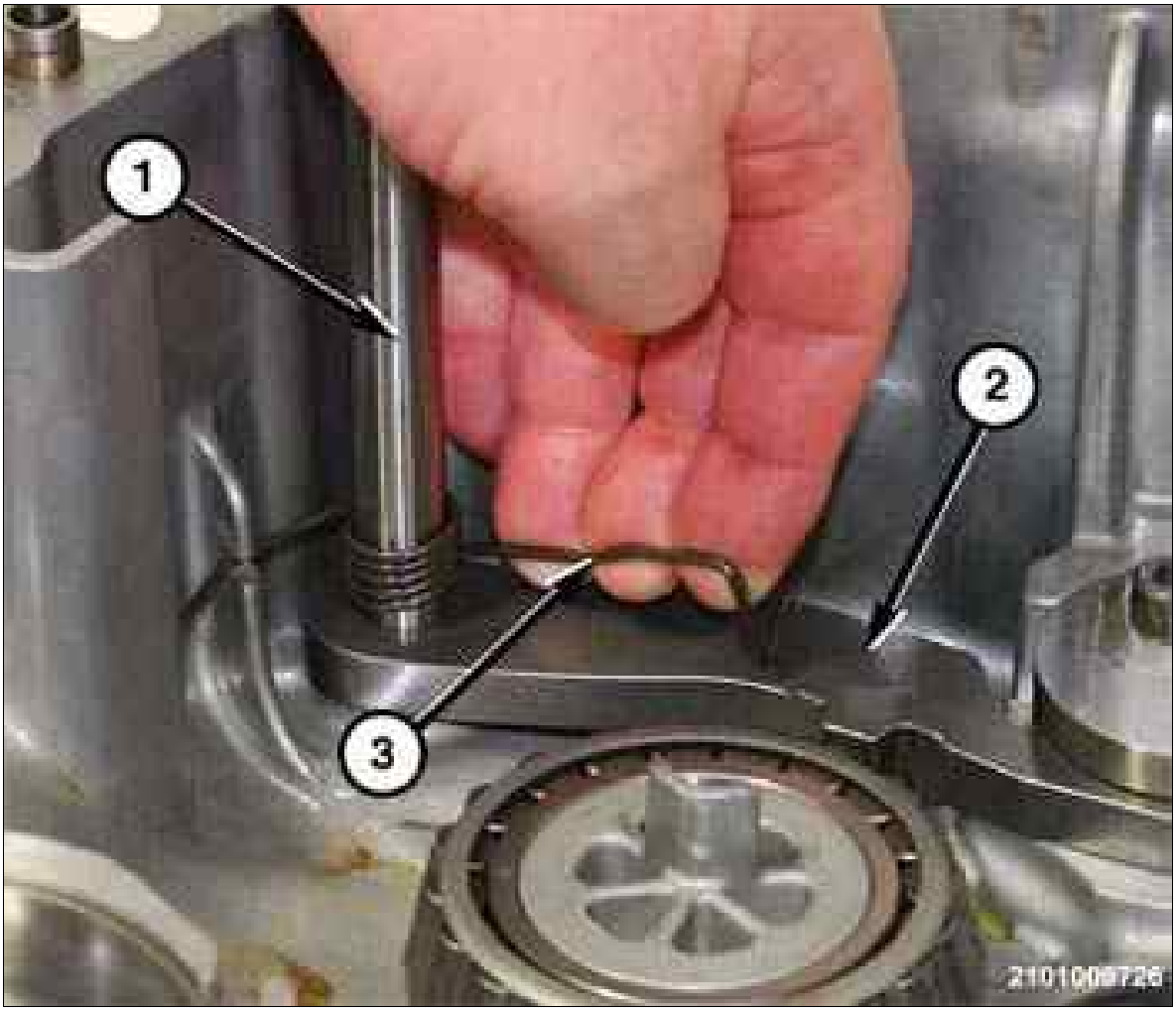
Fig 1: Park Pawl, Return Spring & Reaction Pin



Courtesy of CHRYSLER GROUP, LLC

4. Compress and release the park pawl (2) return spring (3).
5. Pull the reaction pin (1) from the park pawl (2).
6. Separate the park pawl (2) from the park rod guide.

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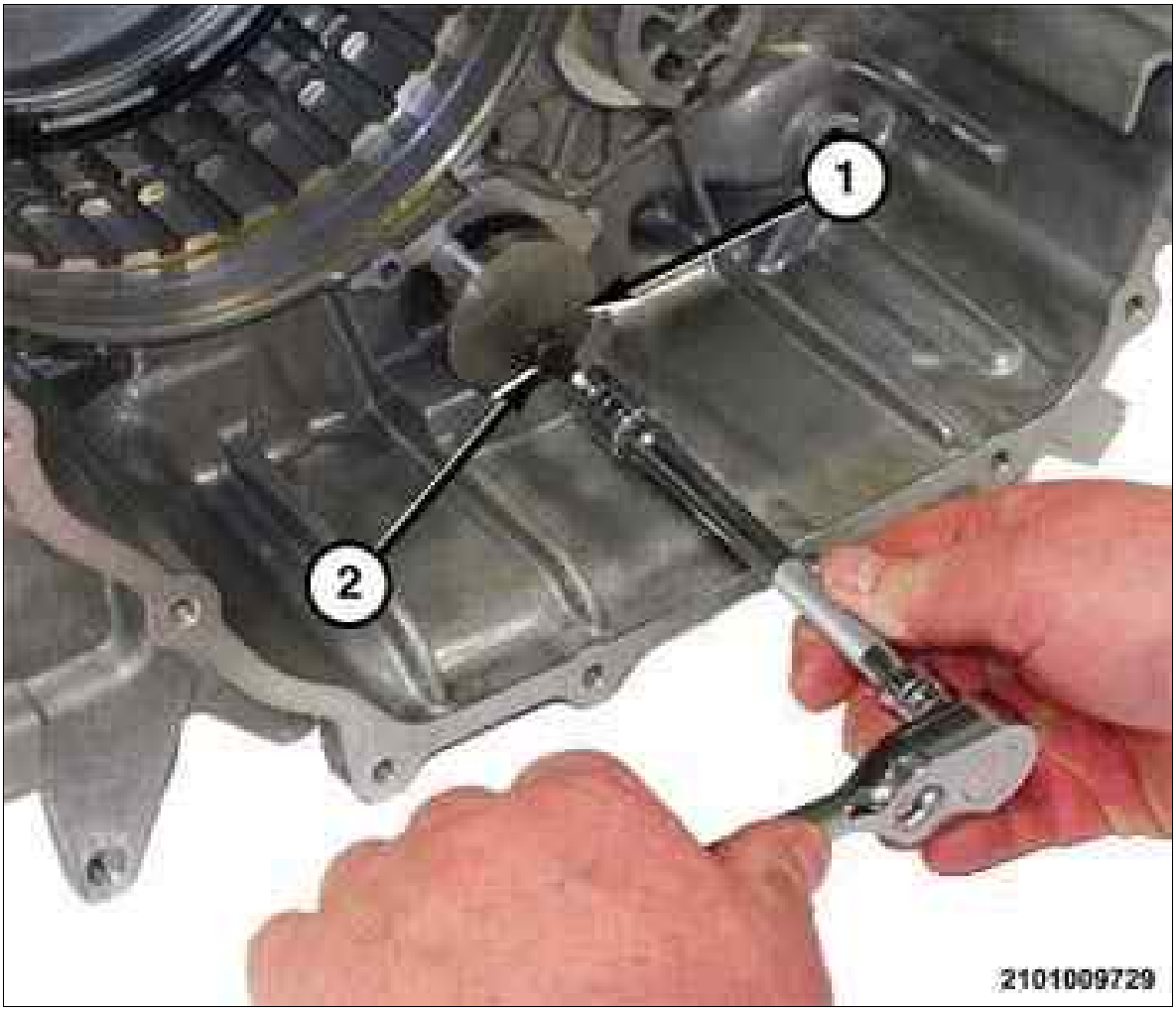
Fig 2: Park Rod Guide & Bolt



Courtesy of CHRYSLER GROUP, LLC

7. Remove the park rod guide bolt (2) and the park rod guide (1).

PARKING SPRAG AND GUIDE > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > PARK ROD GUIDE AND PAWL INSTALLATION

NOTE:

If the park pawl is damaged the transfer gear may also be damaged. Replace the transfer gear if damage if present. If the transfer gear is replaced the proper thickness bearing preload select shim will have to be established.

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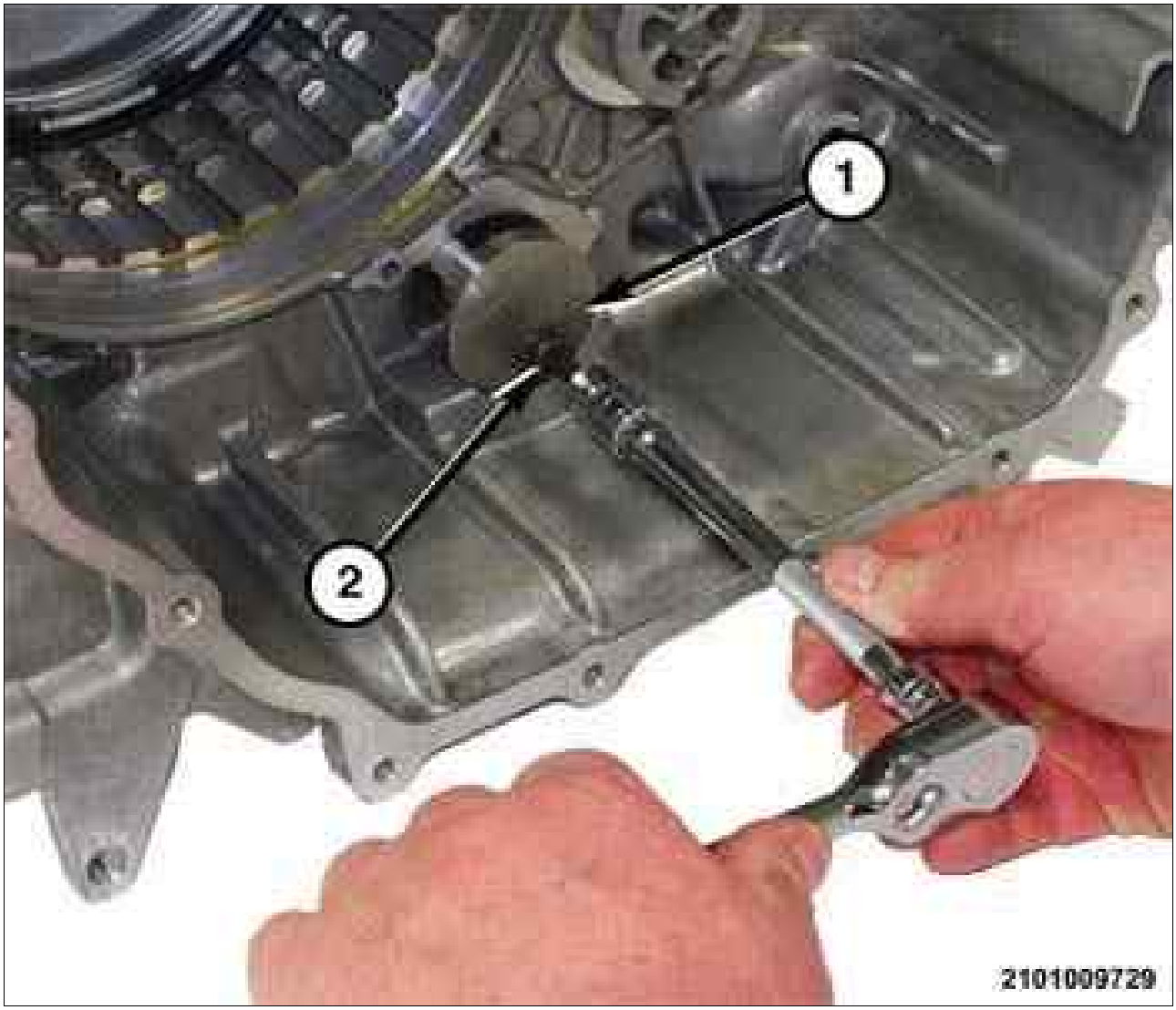
Fig 1: Park Rod Guide & Bolt



Courtesy of CHRYSLER GROUP, LLC

1. Install the park rod guide (1) and the park rod guide bolt (2) in the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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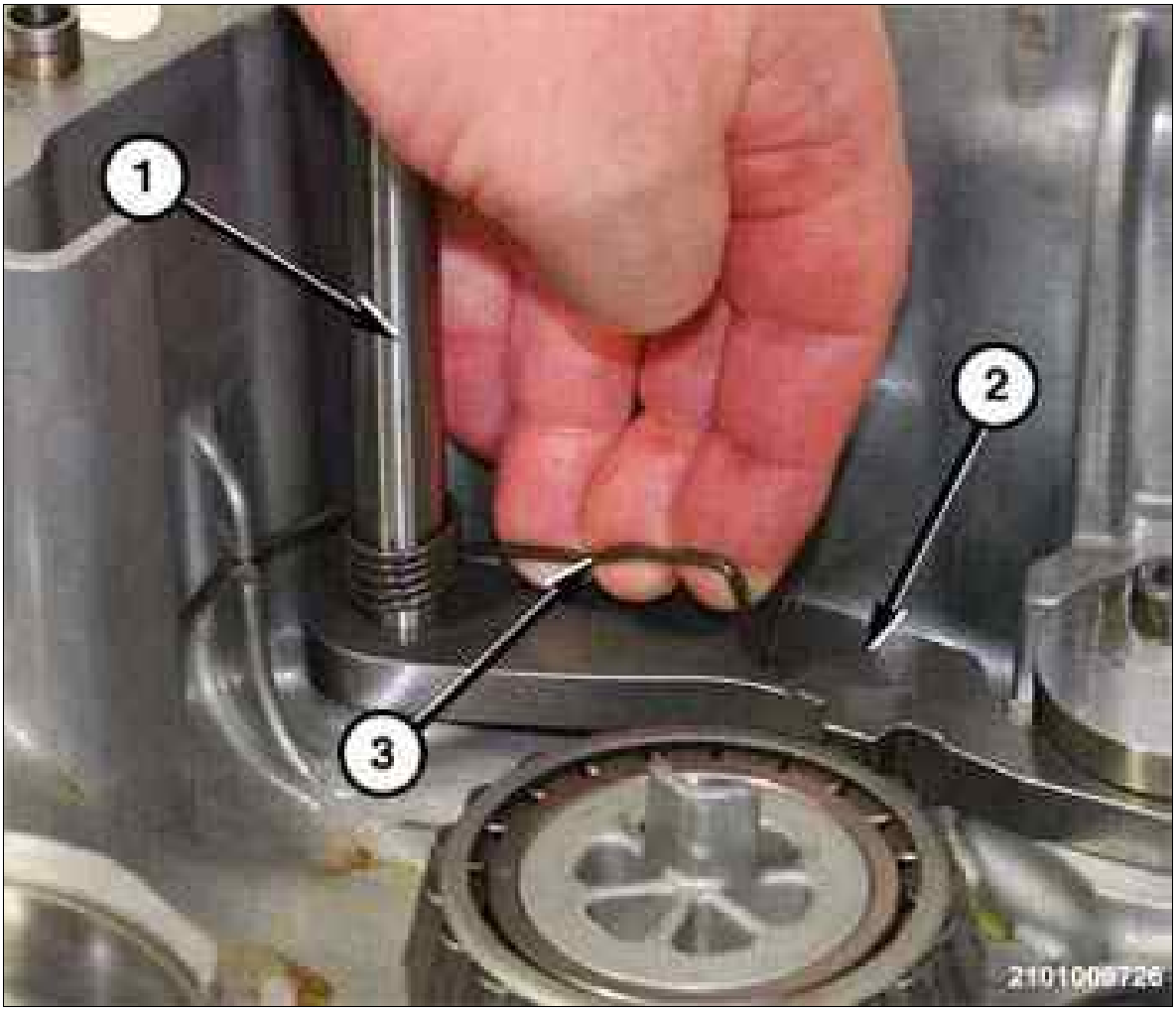
Fig 2: Park Pawl, Return Spring & Reaction Pin



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2. Install the park pawl (2) in position in park rod guide.
3. Insert the reaction pin (1) through the park pawl (2) and into the transmission housing.
4. Slide the park pawl return spring (3) over the reaction pin (1) and insert the tail of the spring into the notch in the transmission housing.
5. Wind the park pawl return spring (3) counterclockwise and hook the bent end of the spring over the park pawl (2).
6. Install the bellhousing into the transmission housing. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .
7. Install the transmission into the vehicle. Refer to REMOVAL AND INSTALLATION .
8. Road test the vehicle to verify the repair.

PUMP, FLUID > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > OIL PUMP REMOVAL

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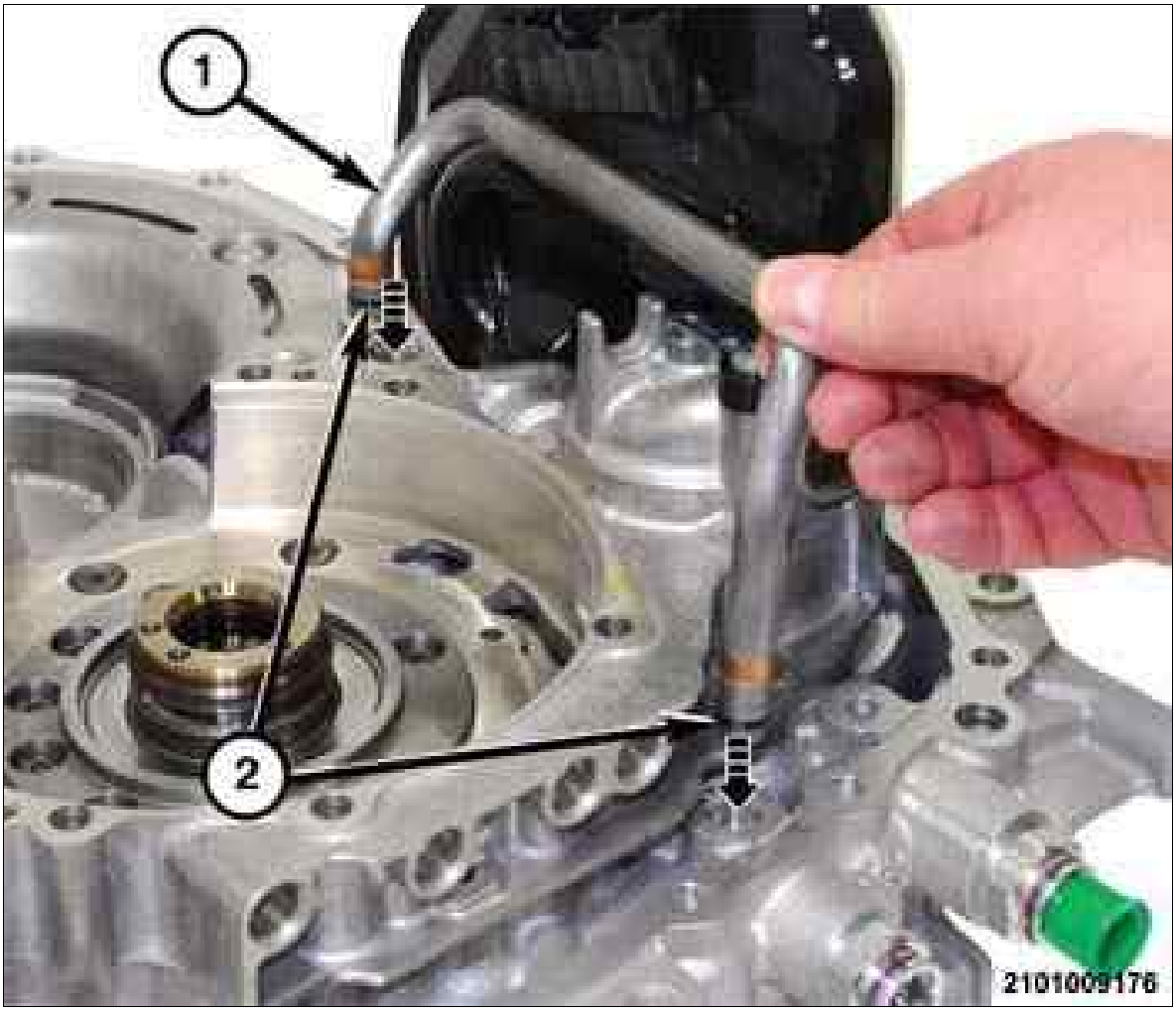
1. Remove the transmission from the vehicle. Refer to REMOVAL AND INSTALLATION .
2. Position the transmission on the clean, stable work surface.
3. Remove the bellhousing from the transmission. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .

   Fig 1: Fluid Tube & O-Rings



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4. Remove the fluid tube (1) from the intermediate support plate and bellhousing.

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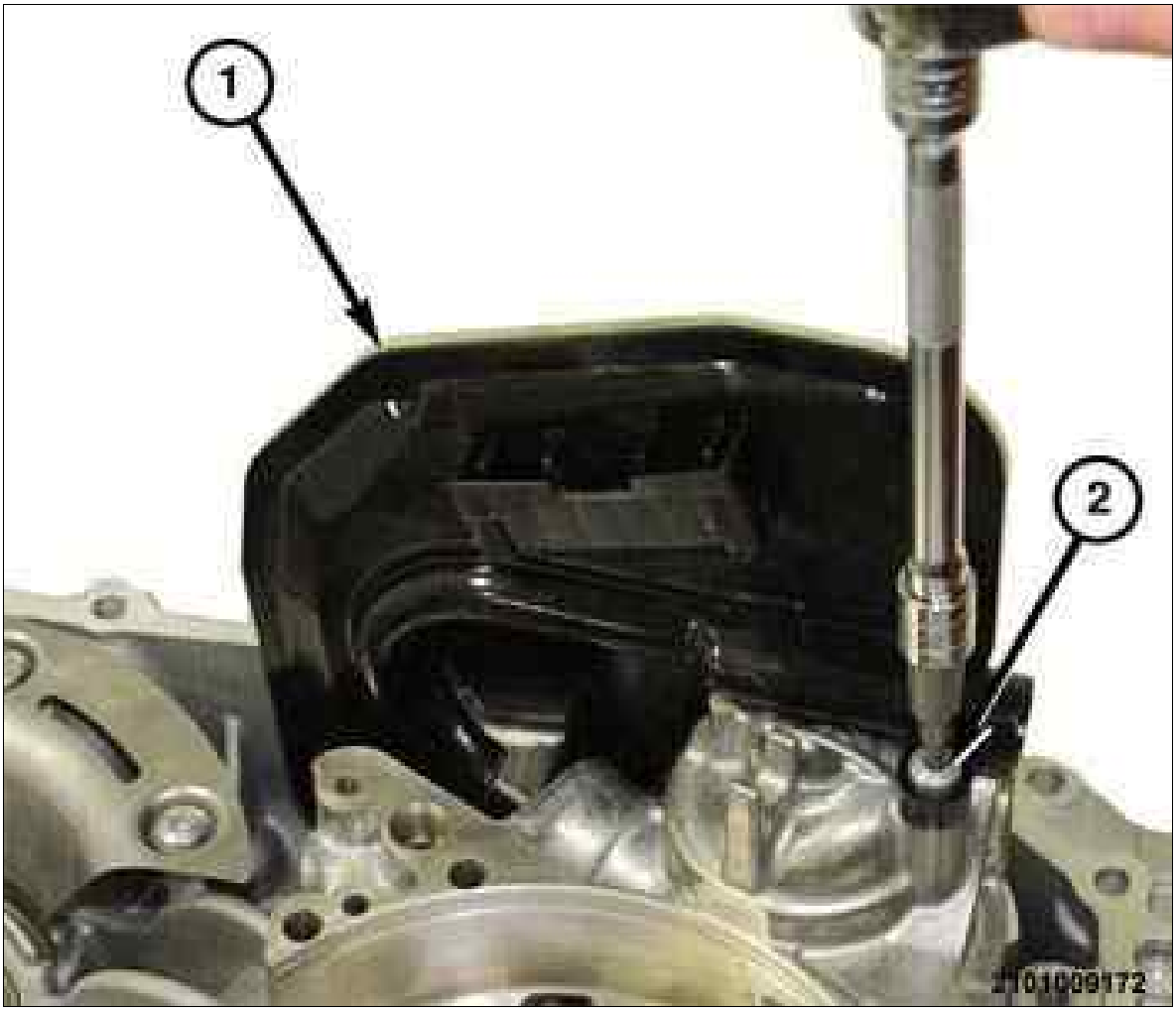
Fig 2: Oil Filter, Intermediate Support Plate & Fastener



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5. Remove the bolt (2) holding the fluid filter (1) to the intermediate support plate.

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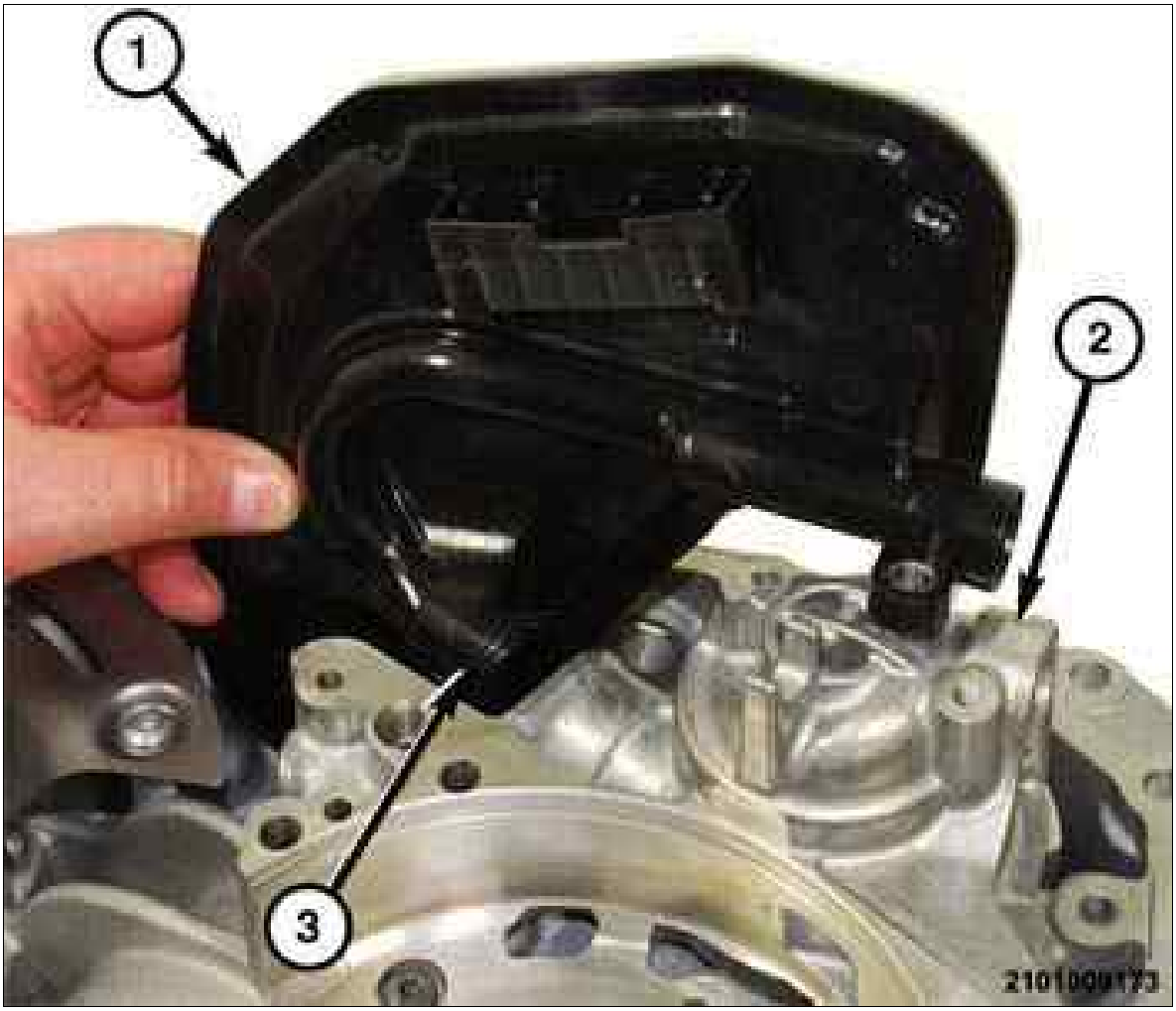
Fig 3: Removing/Installing Transmission Oil Filter



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6. Separate the fluid filter (1) from the intermediate support plate (2).

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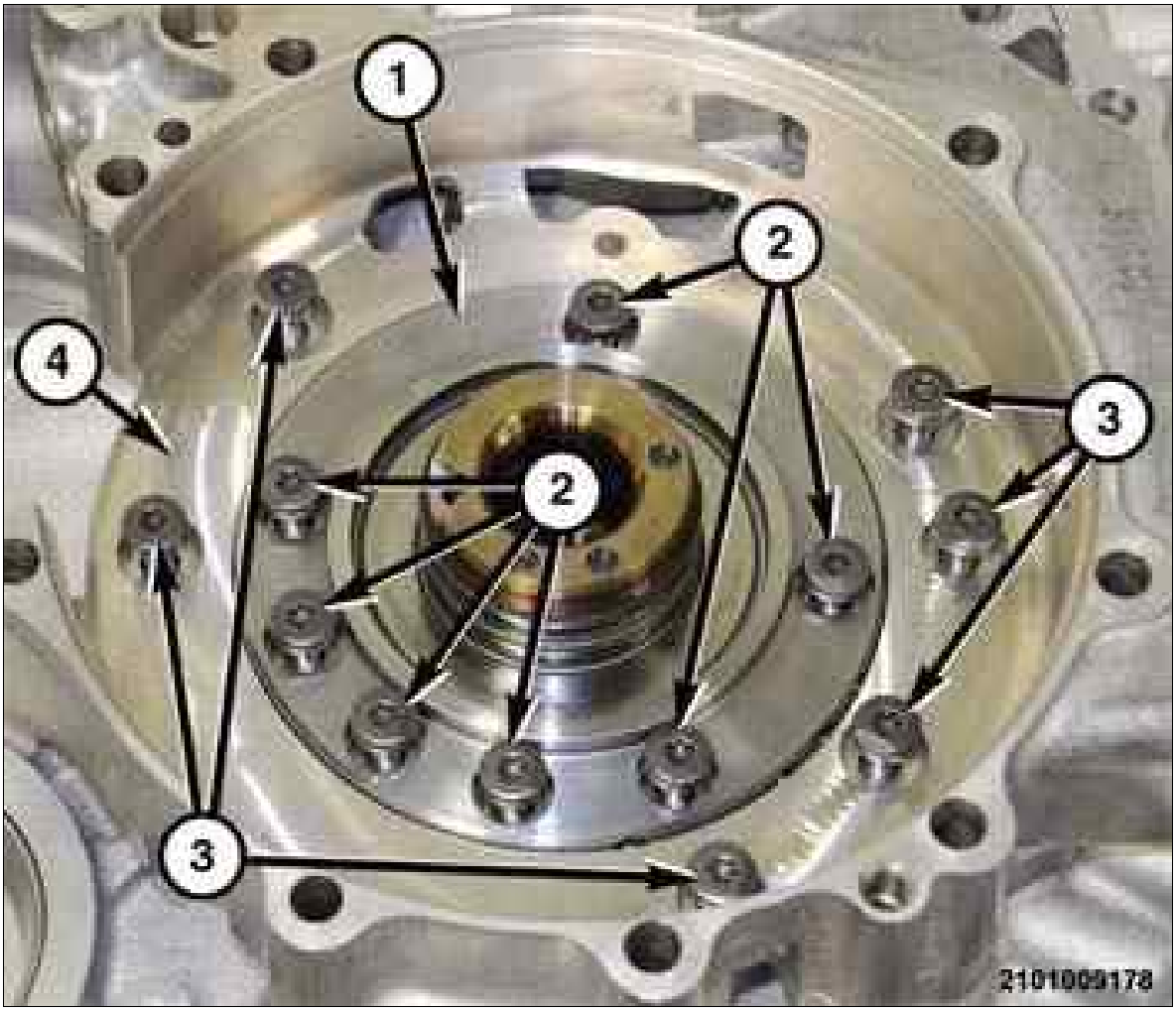
Fig 4: Removing/Installing Bolts At Reaction Shaft To Intermediate Support Plate



Courtesy of CHRYSLER GROUP, LLC

7. Remove the reaction shaft bolts (2) holding the reaction shaft (1) to the intermediate support plate (4).

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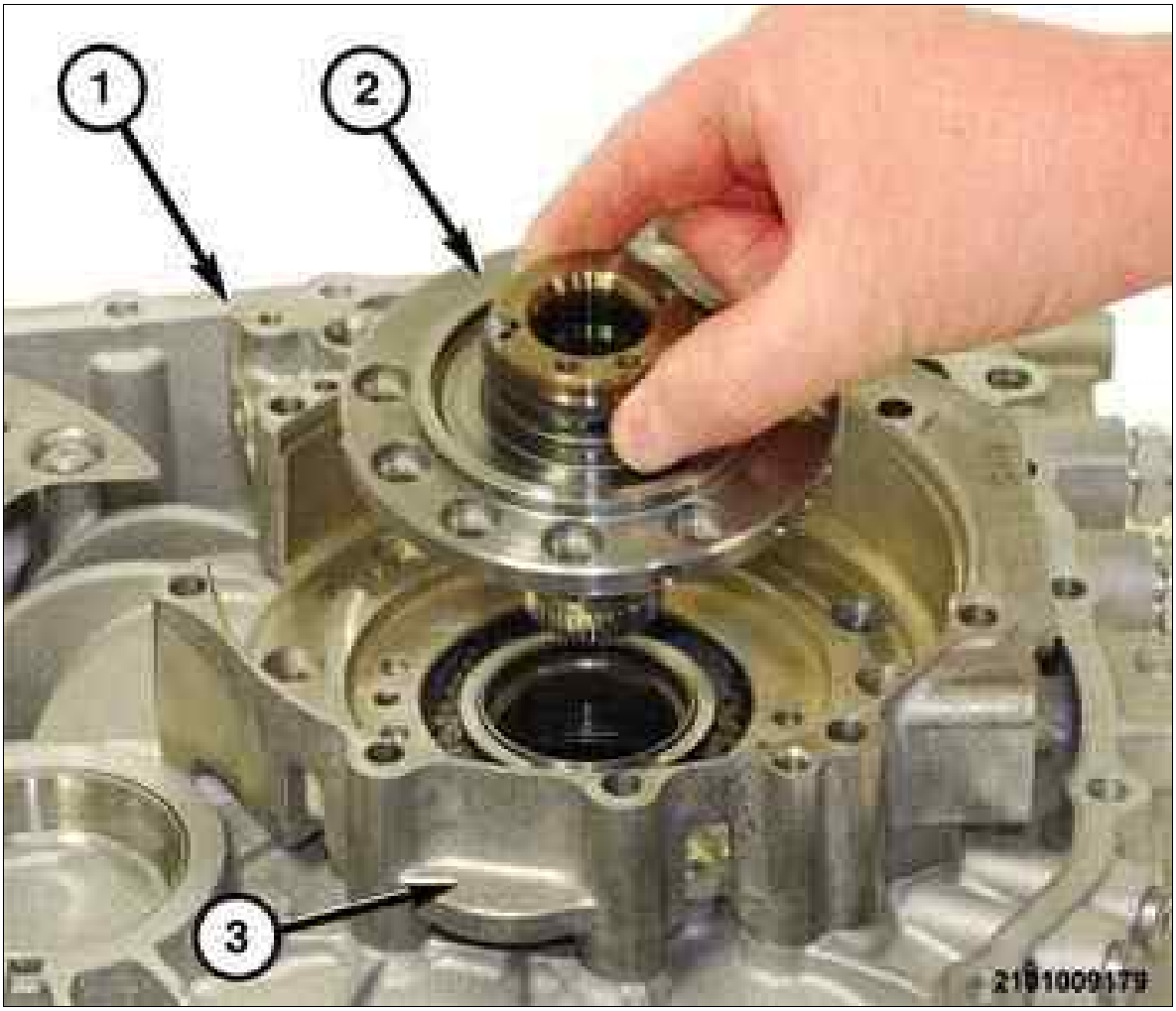
Fig 5: Removing/Installing Reaction Shaft At Intermediate Support Plate



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8. Separate the reaction shaft (2) from the intermediate support plate (1).

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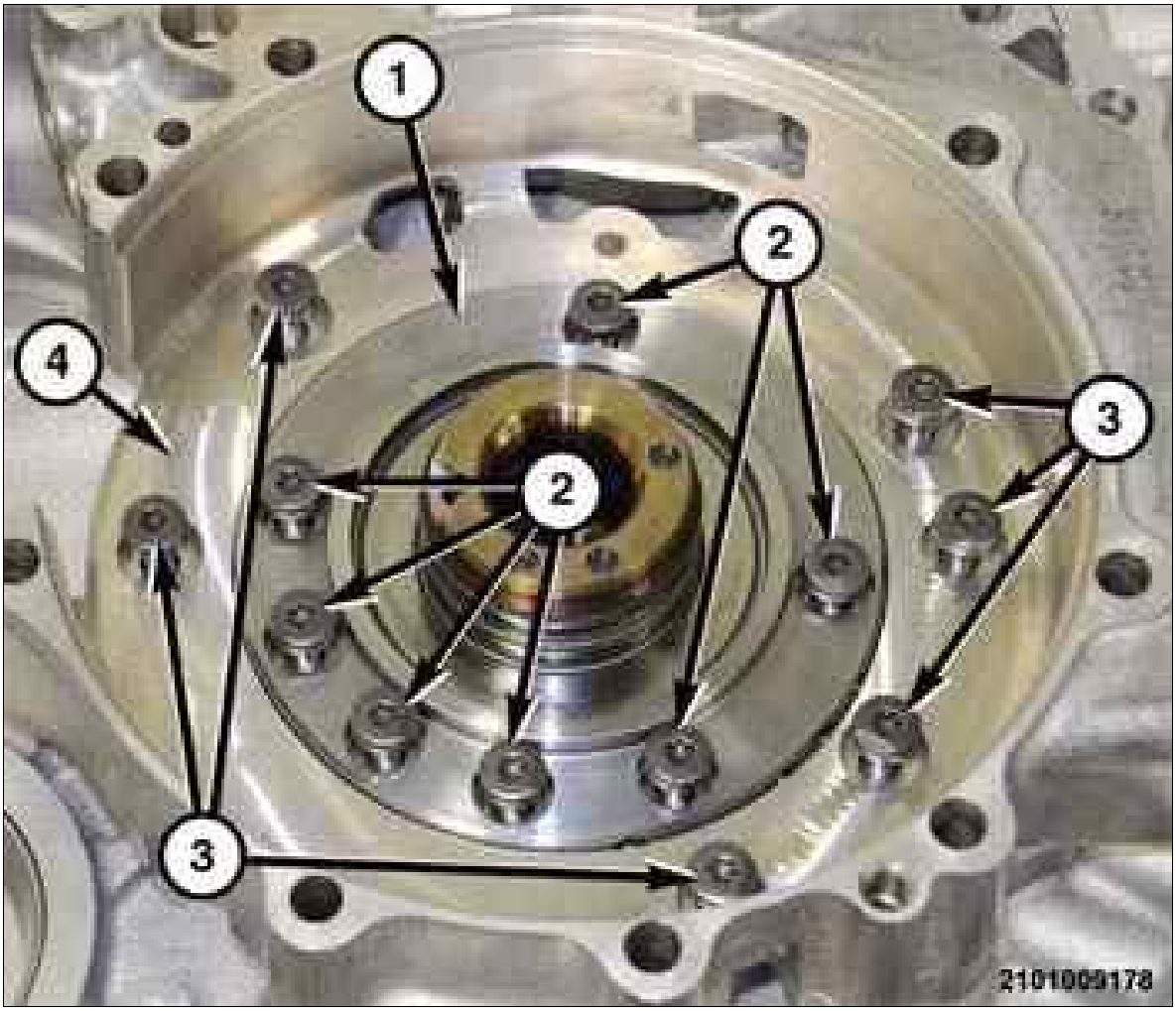
Fig 6: Removing/Installing Bolts At Reaction Shaft To Intermediate Support Plate



Courtesy of CHRYSLER GROUP, LLC

9. Remove the bolts (3) holding the intermediate support plate and oil pump (1) to the bellhousing.

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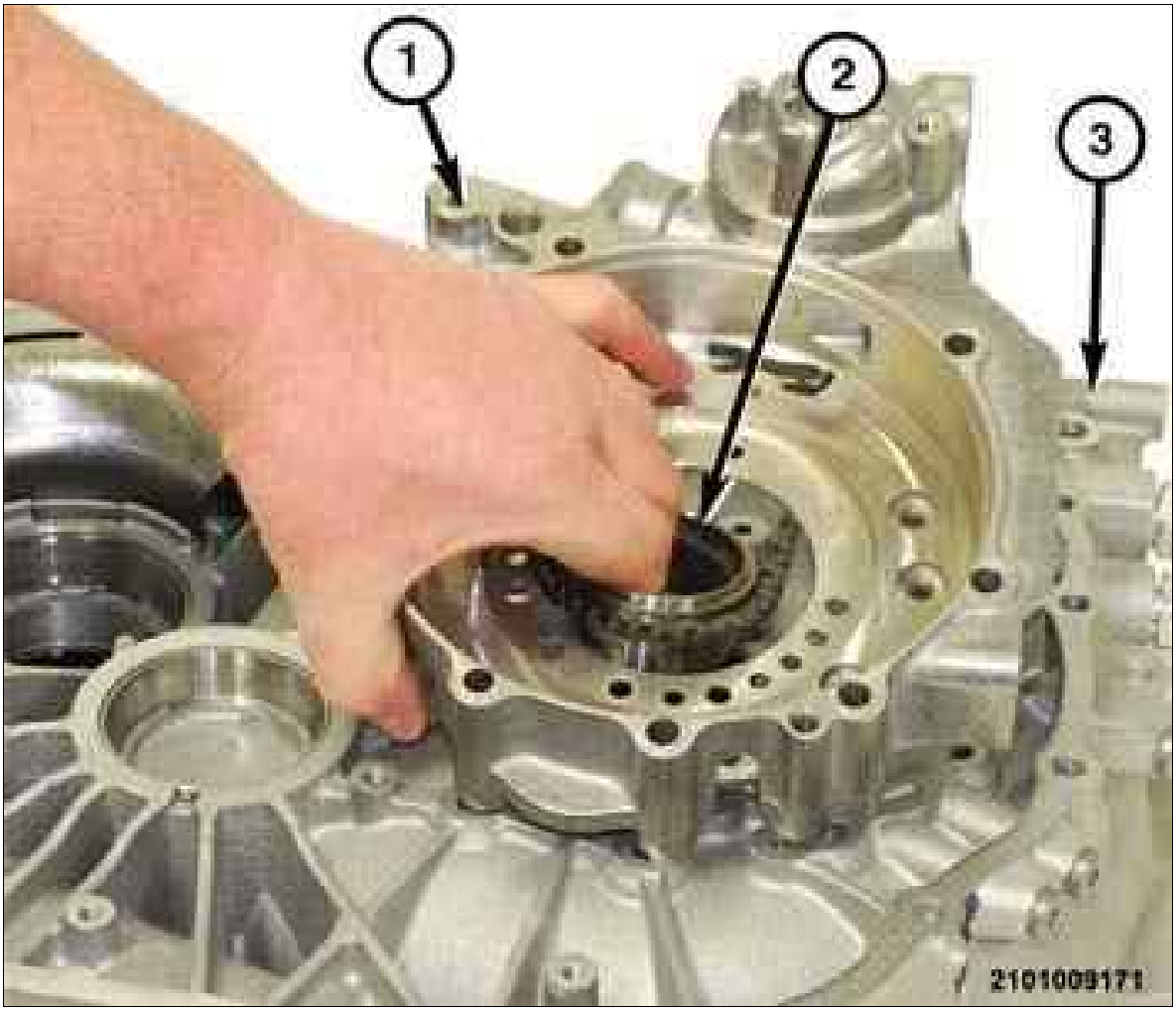
Fig 7: Removing/Installing Intermediate Support Plate And Oil Pump



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10. Separate the intermediate support plate and oil pump (1) from the bellhousing (3).
11. Turn the intermediate support plate and oil pump (1) outside up on the work surface.

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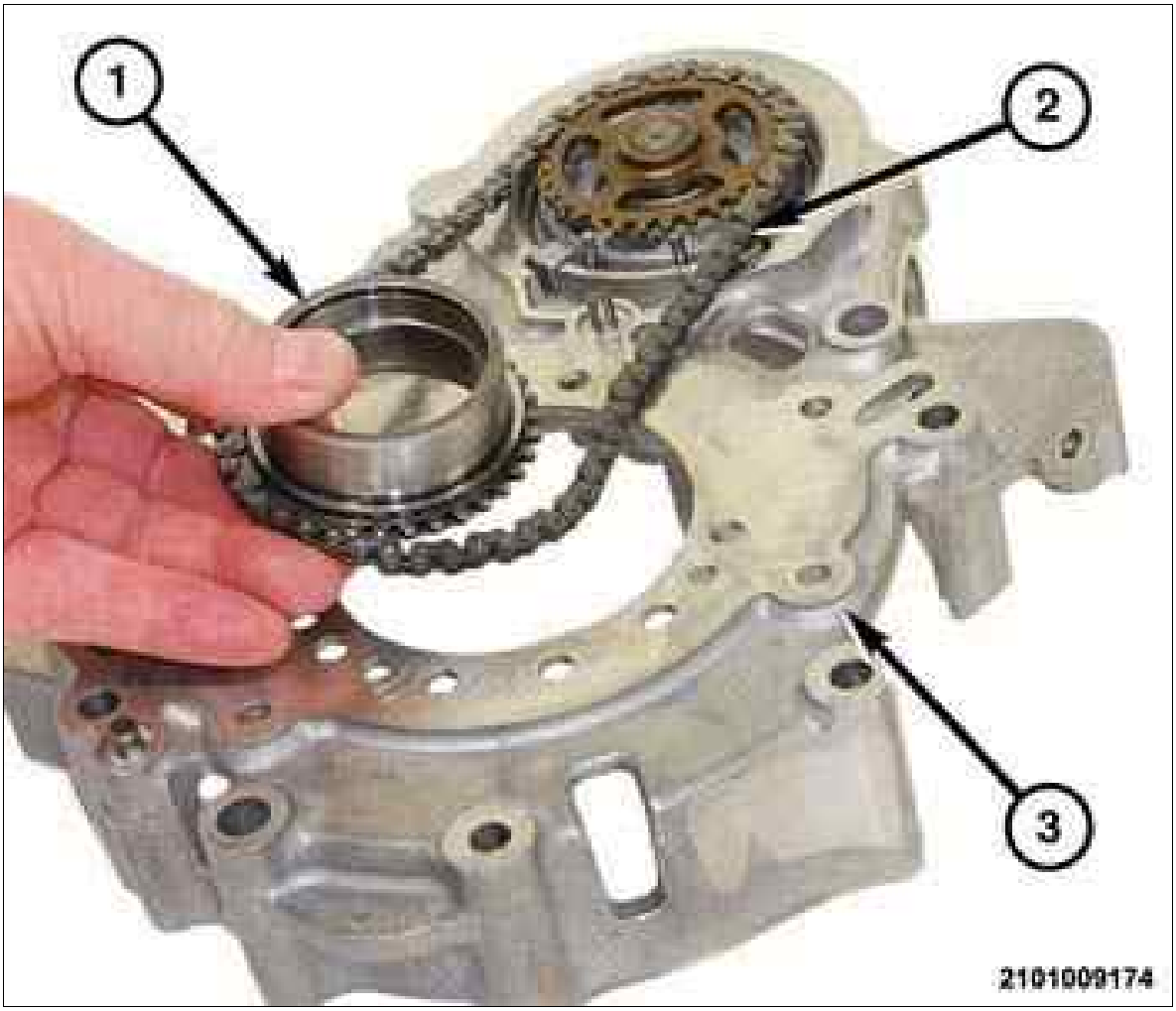
Fig 8: Oil Pump Drive Sprocket & Drive Chain



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12. Separate the oil pump drive sprocket (1) from the drive chain (2).

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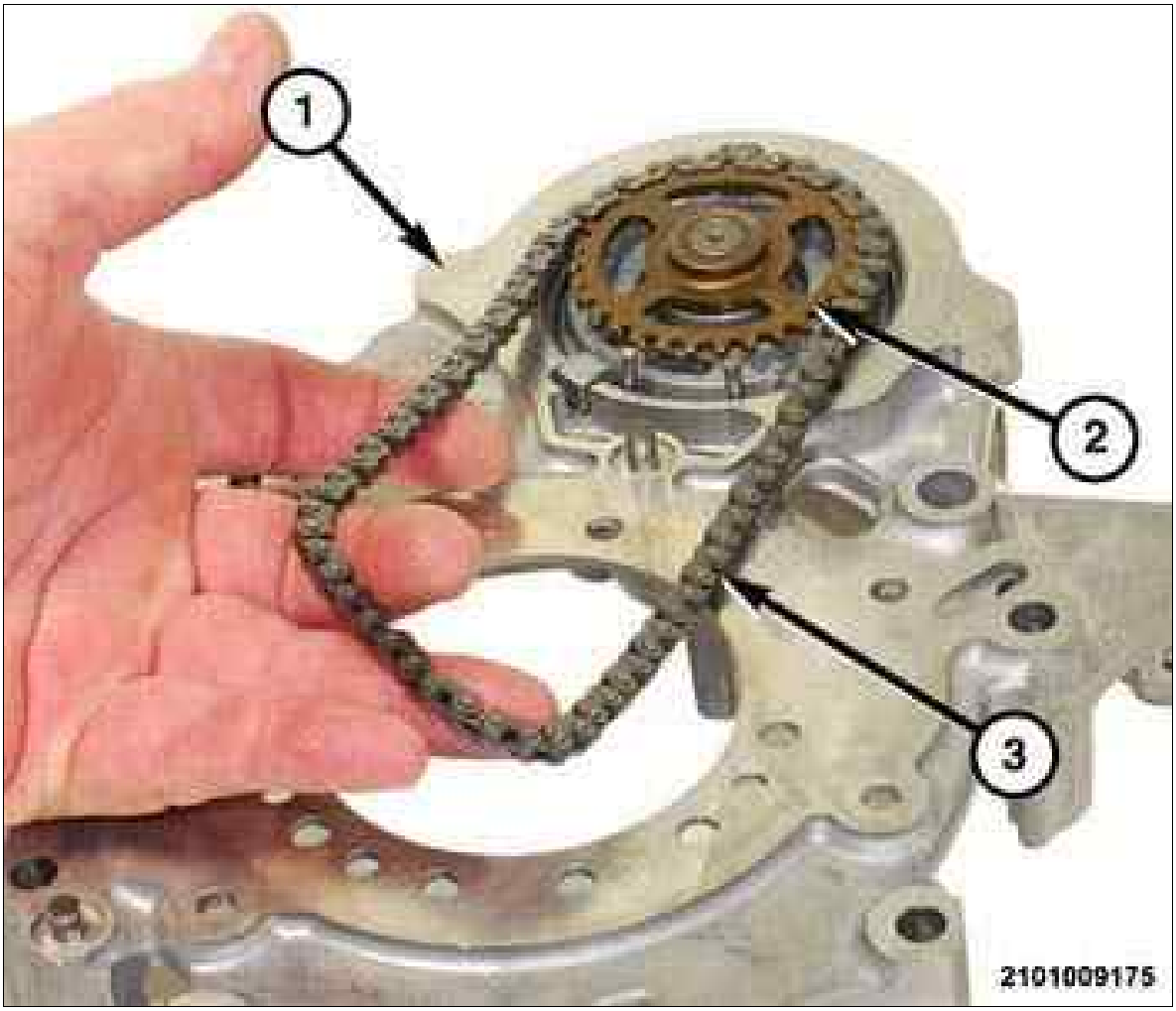
Fig 9: Oil Pump Drive Chain & Oil Pump Driven Sprocket



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13. Separate the oil pump drive chain (3) from the oil pump driven sprocket (2).

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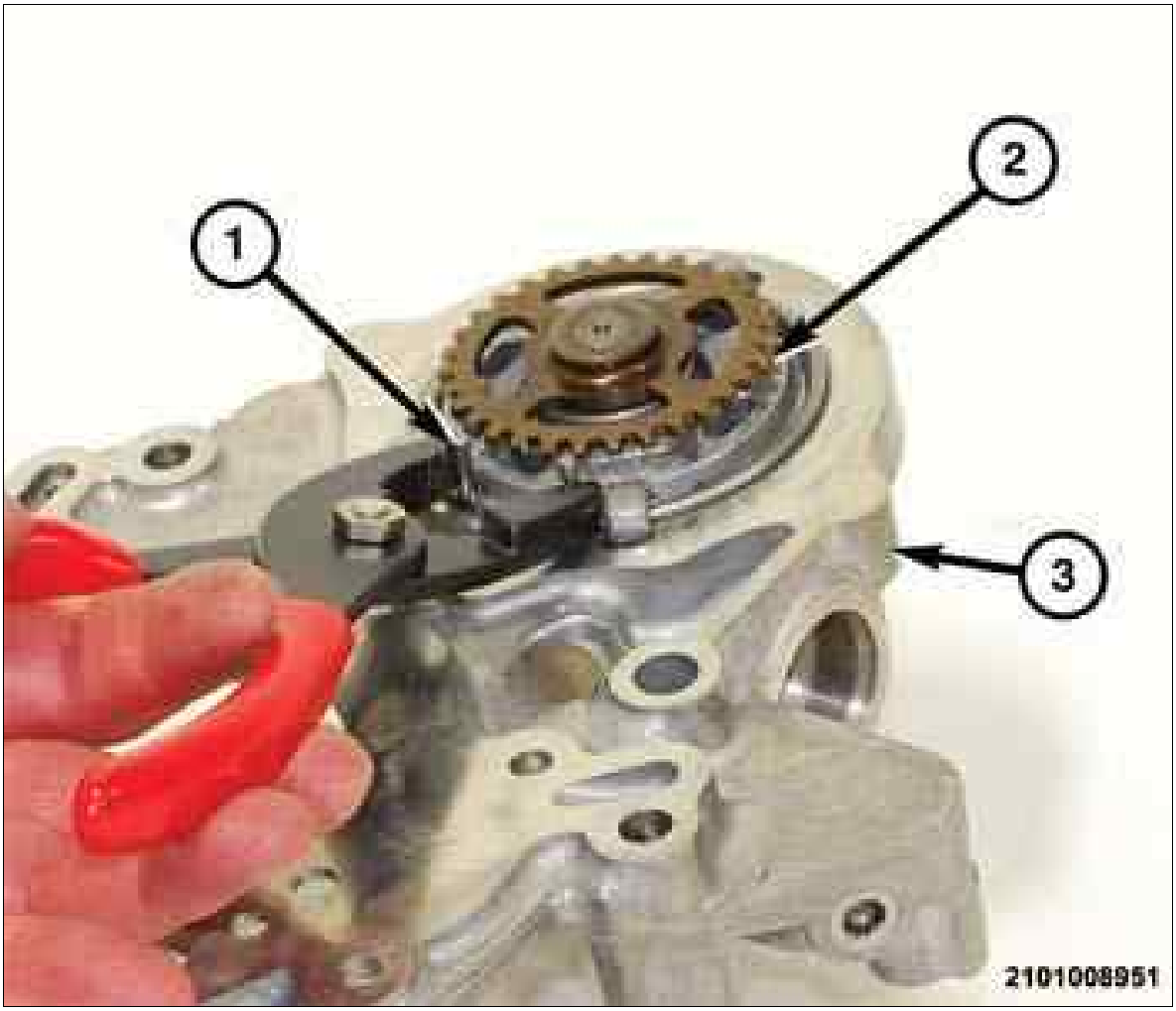
Fig 10: Compressing Snap-Ring At Oil Pump



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14. Using suitable pliers (1), compress the snap-ring holding the oil pump (2) into the intermediate support plate (3).

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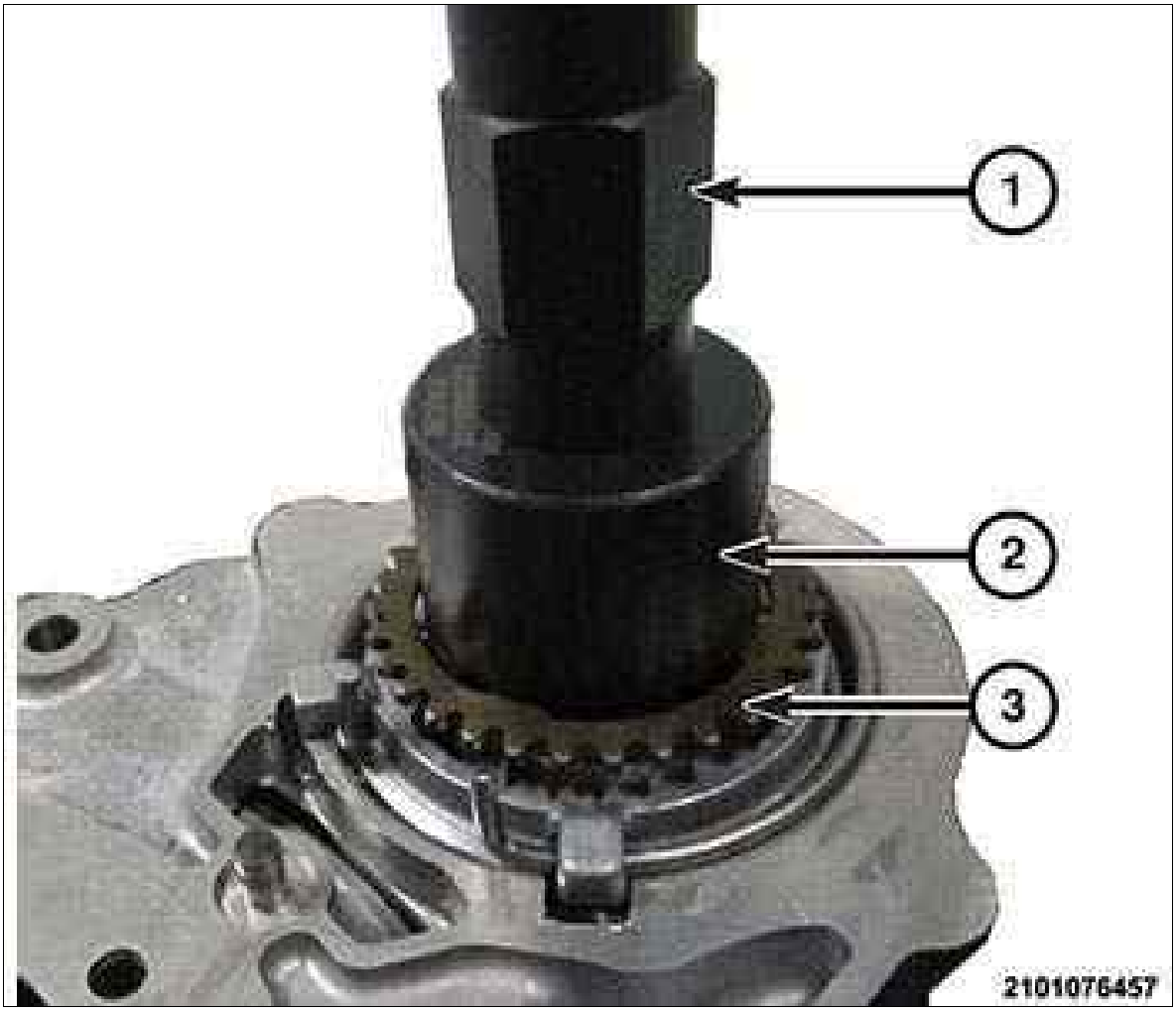
Fig 11: Slide Hammer, Transmission Pump Remover/Installer & Oil Pump



Courtesy of CHRYSLER GROUP, LLC

15. While holding compression on the snap-ring, use (special tool #2016200211, Remover-Installer, 948 TE Transmission Pump) (2) and (special tool #C-637, Slide Hammer, Universal) (1) to remove the oil pump (3) out of the bore in the intermediate support plate.

PUMP, FLUID > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > OIL PUMP INSTALLATION

1. Clean the intermediate support plate and oil pump with suitable solvent and blow them dry with regulated 344 kPa (50 psi) shop air.
2. Inspect the intermediate support plate and oil pump for apparent damage or ware. If the intermediate support plate is damaged, the transmission will require replacement. If the oil pump is damaged, replace the oil pump.

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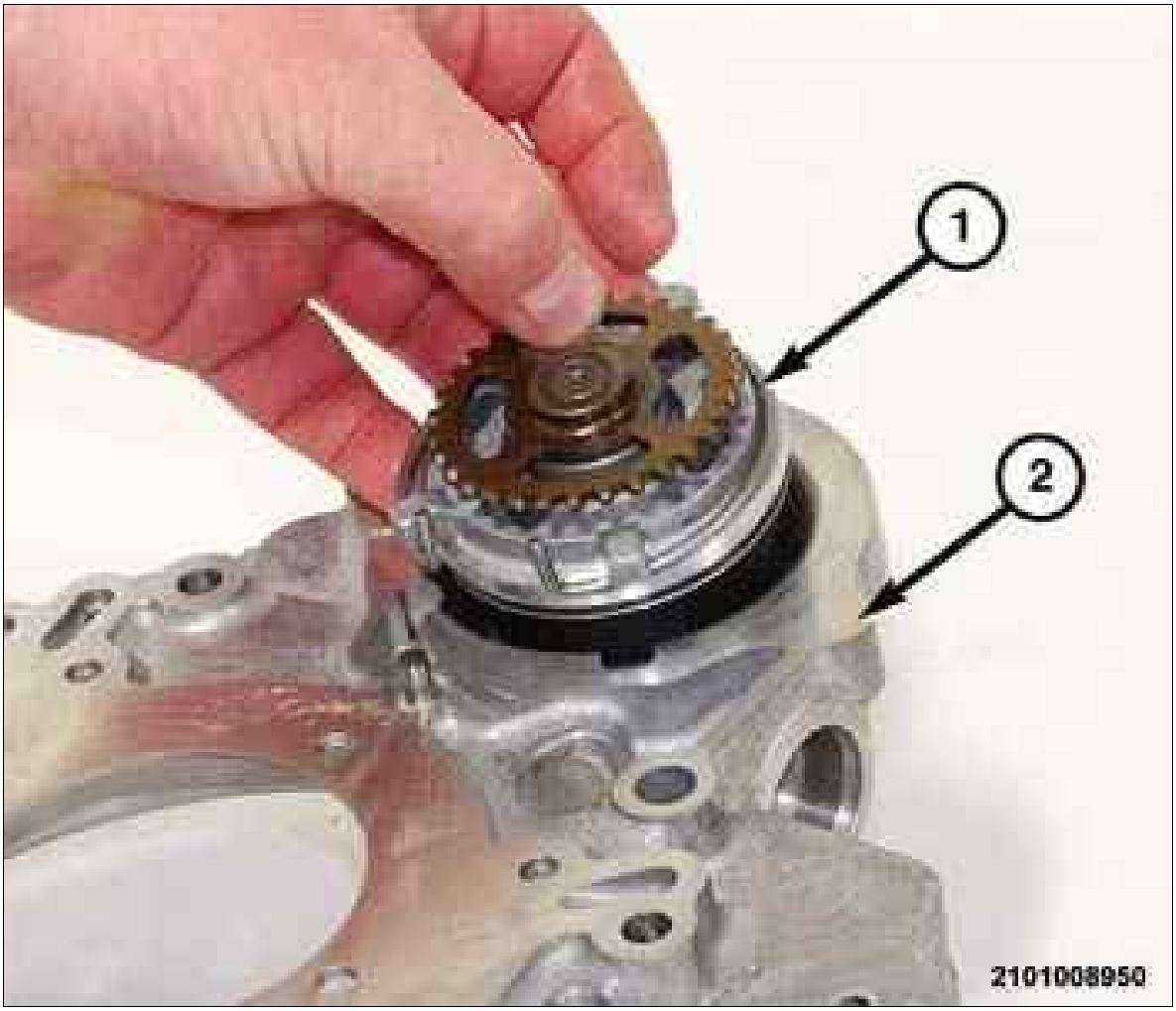
Fig 1: Oil Pump & Intermediate Support Plate



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3. Insert the oil pump (1) into the intermediate support plate (2). Align the tabs on the pump with the notches on the intermediate support plate.

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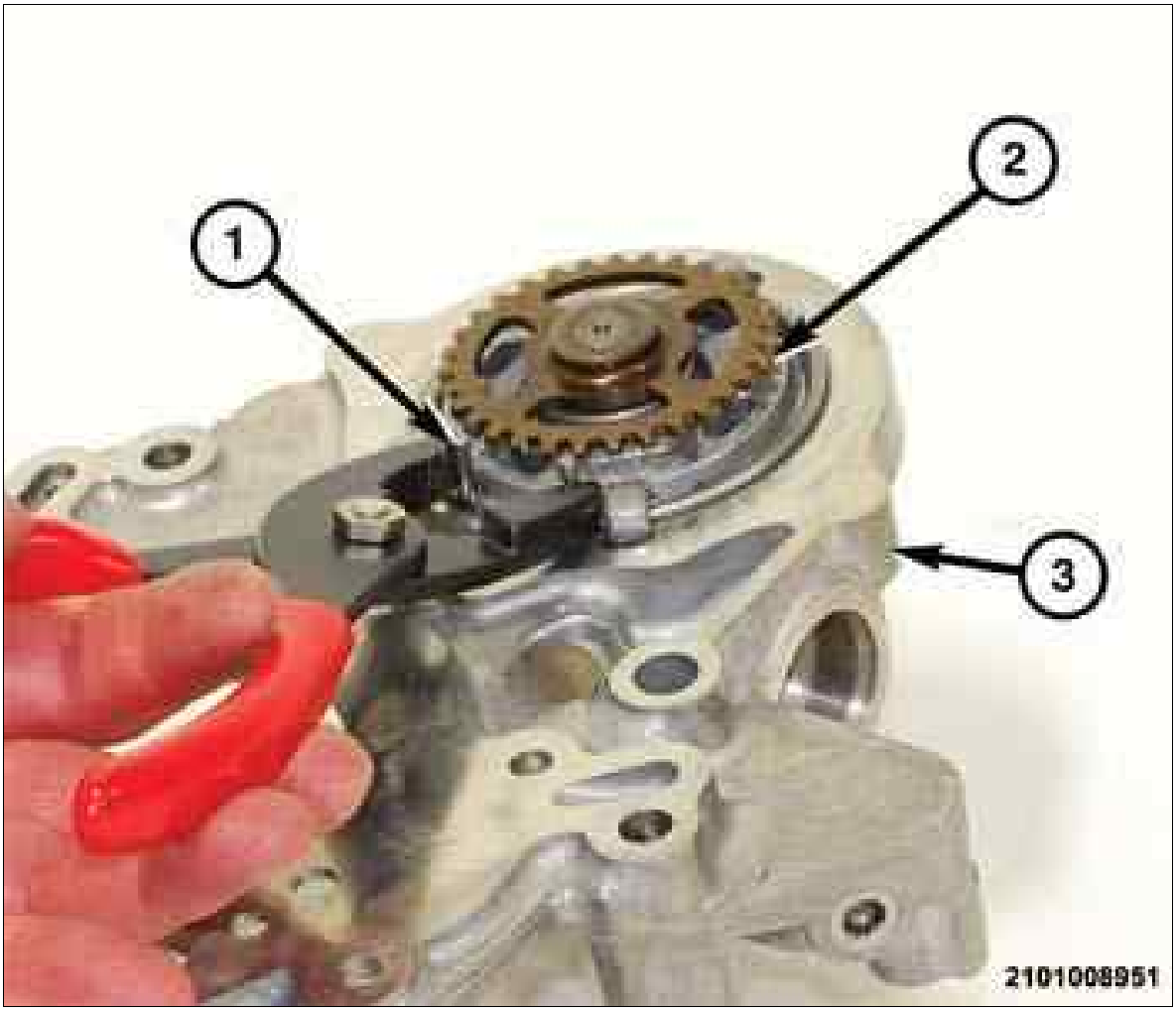
Fig 2: Compressing Snap-Ring At Oil Pump



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4. Using a suitable pliers (1), compress the snap-ring to hold the oil pump (2) into the intermediate support plate (3).

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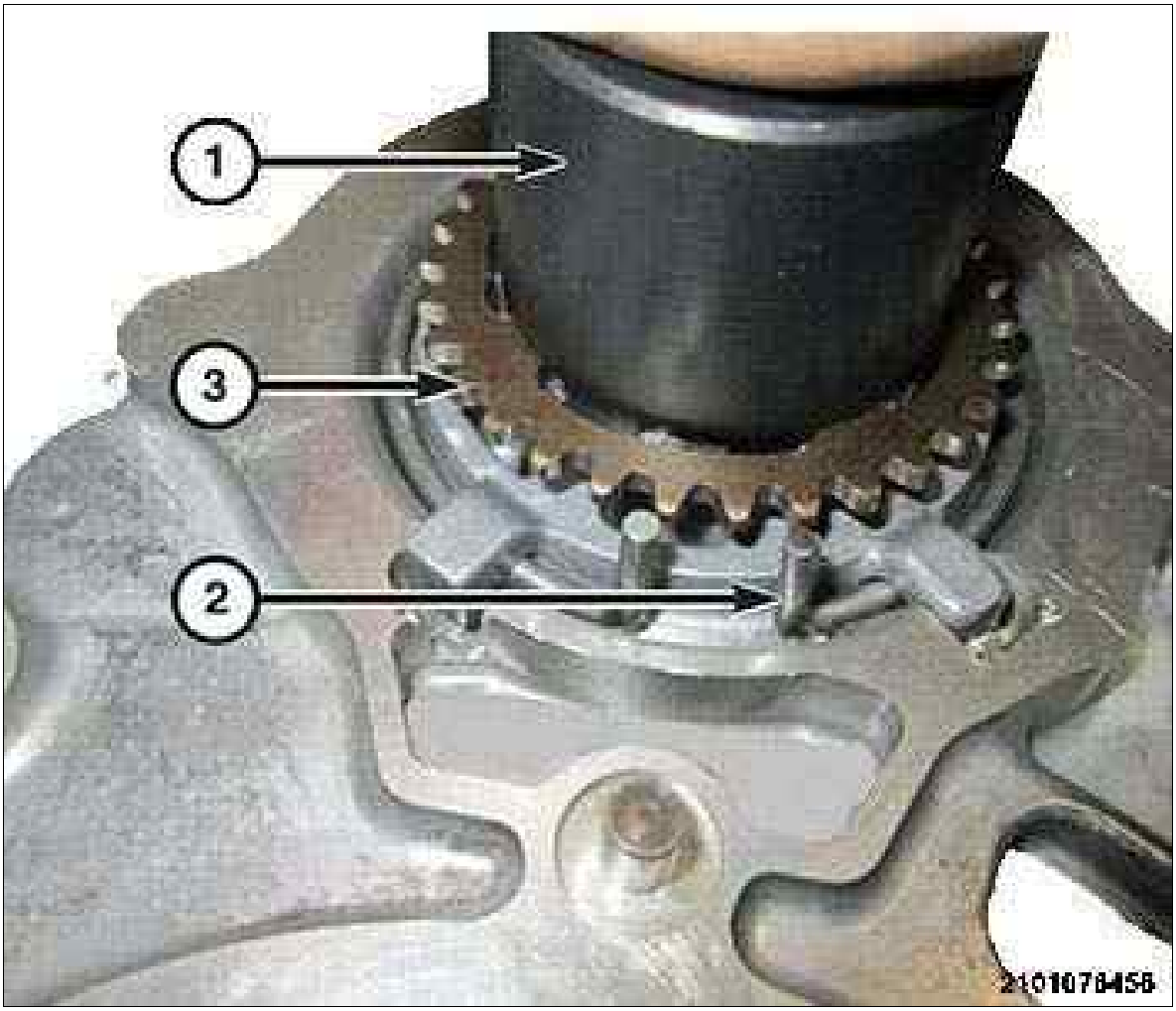
Fig 3: Transmission Pump Remover/Installer, Snap Ring & Oil Pump



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5. While holding compression on the snap-ring (2), use (special tool #2016200211, Remover-Installer, 948 TE Transmission Pump) (1) with a C-clamp to compress the spring on the bottom of the oil pump just enough to seat the snap-ring (2).

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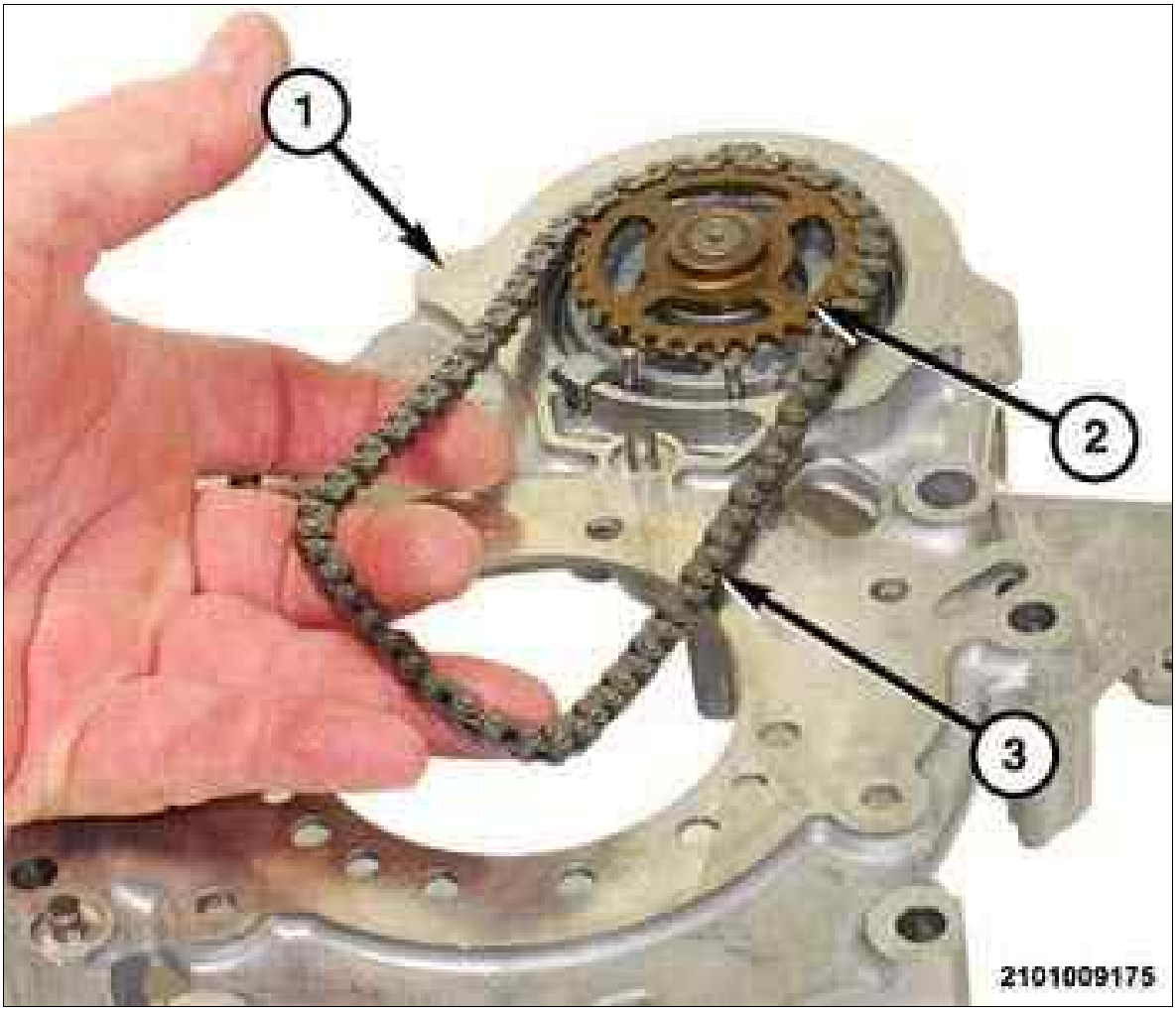
Fig 4: Oil Pump Drive Chain & Oil Pump Driven Sprocket



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6. Install the oil pump drive chain (3) onto the oil pump driven sprocket (2).

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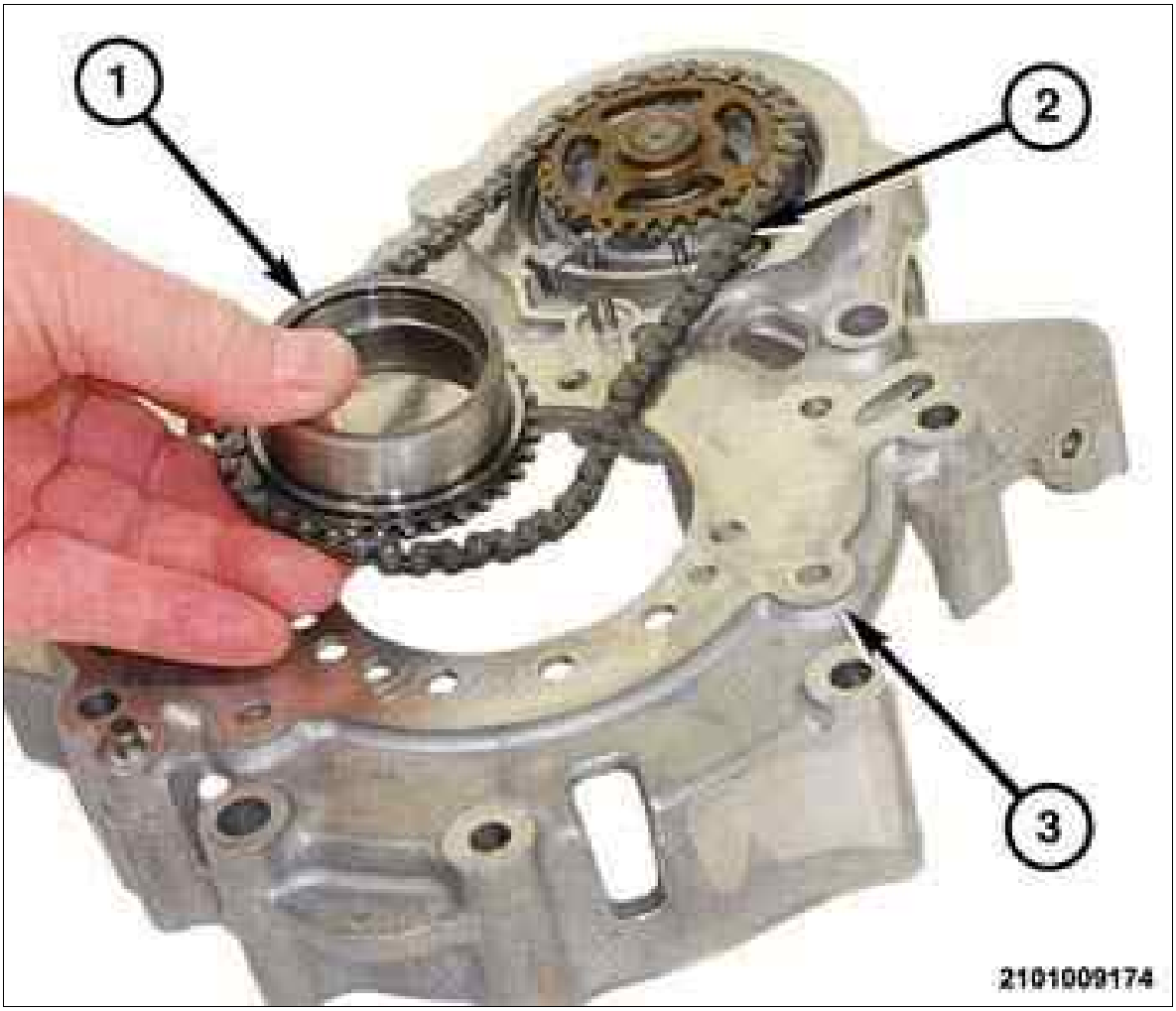
Fig 5: Oil Pump Drive Sprocket & Drive Chain



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7. Install the oil pump drive sprocket (1) onto the drive chain (2).
8. While holding the chain on the drive sprocket, turn the intermediate support plate and oil pump (1) inside up on the work surface.

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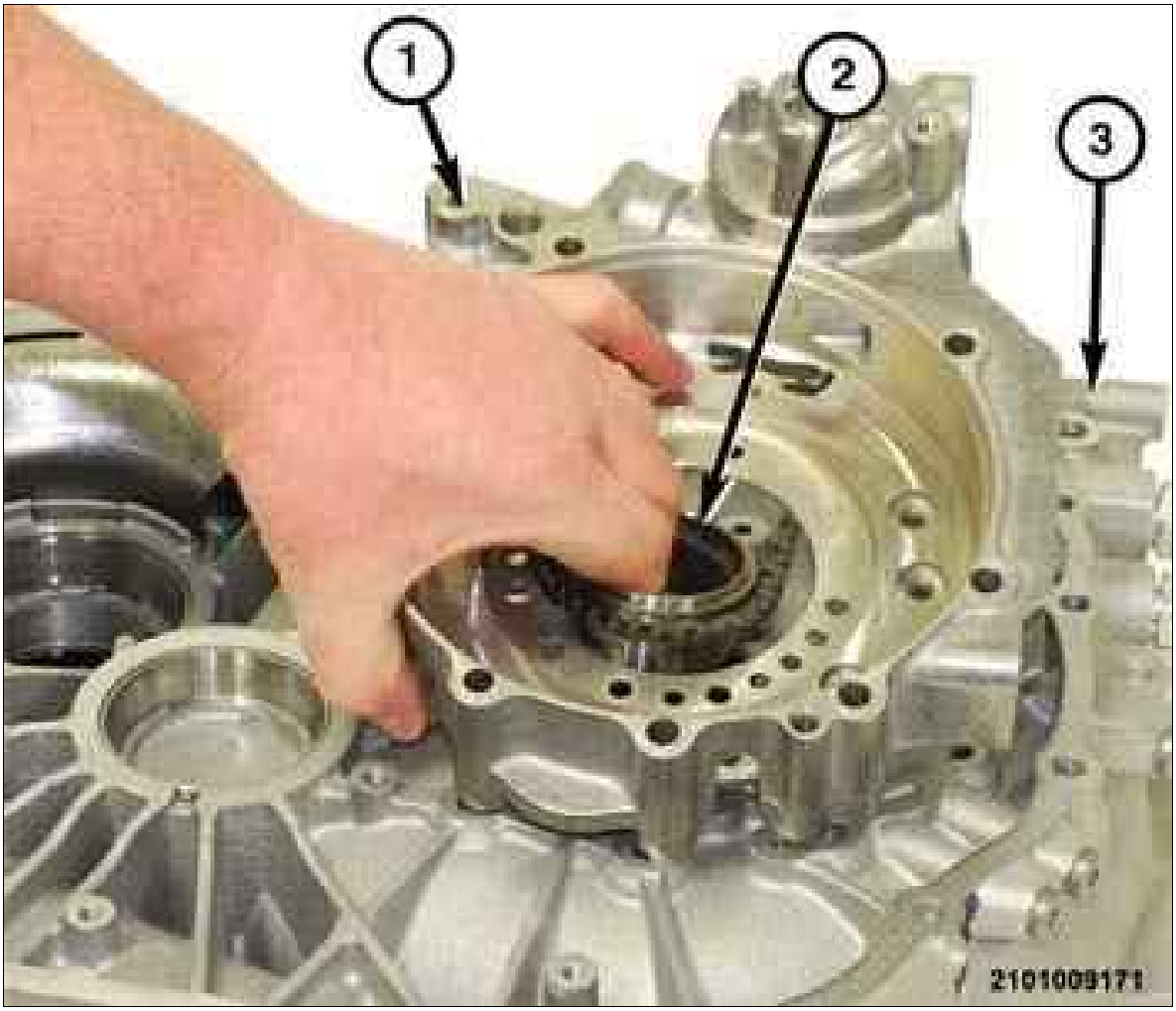
Fig 6: Removing/Installing Intermediate Support Plate And Oil Pump



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9. Place the intermediate support plate and oil pump (1) in position on the bellhousing (3).
10. Insert the oil pump drive sprocket into the oil pump sprocket needle bearing.

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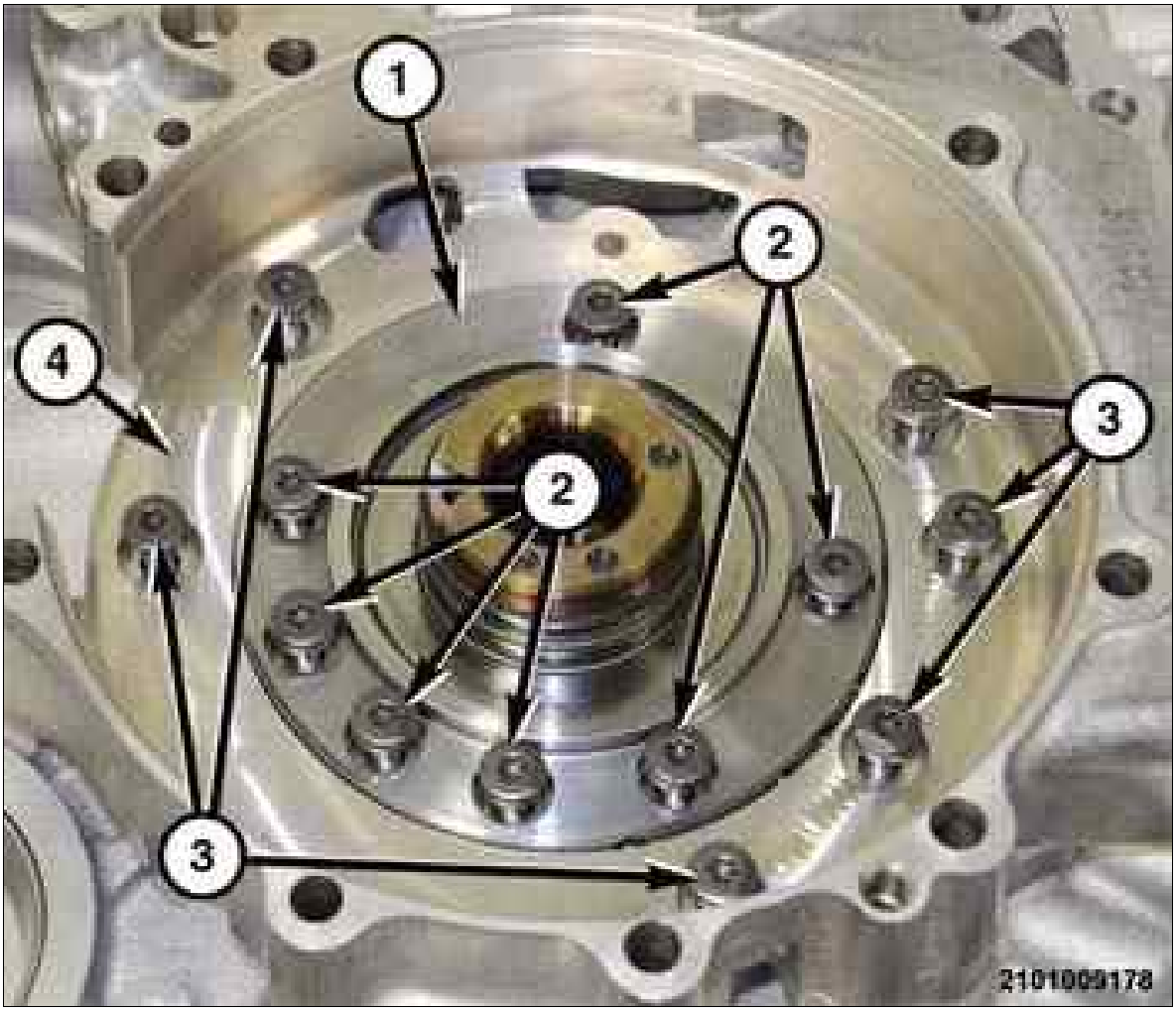
Fig 7: Removing/Installing Bolts At Reaction Shaft To Intermediate Support Plate



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11. Install the bolts (3) to hold the intermediate support plate and oil pump (1) to the bellhousing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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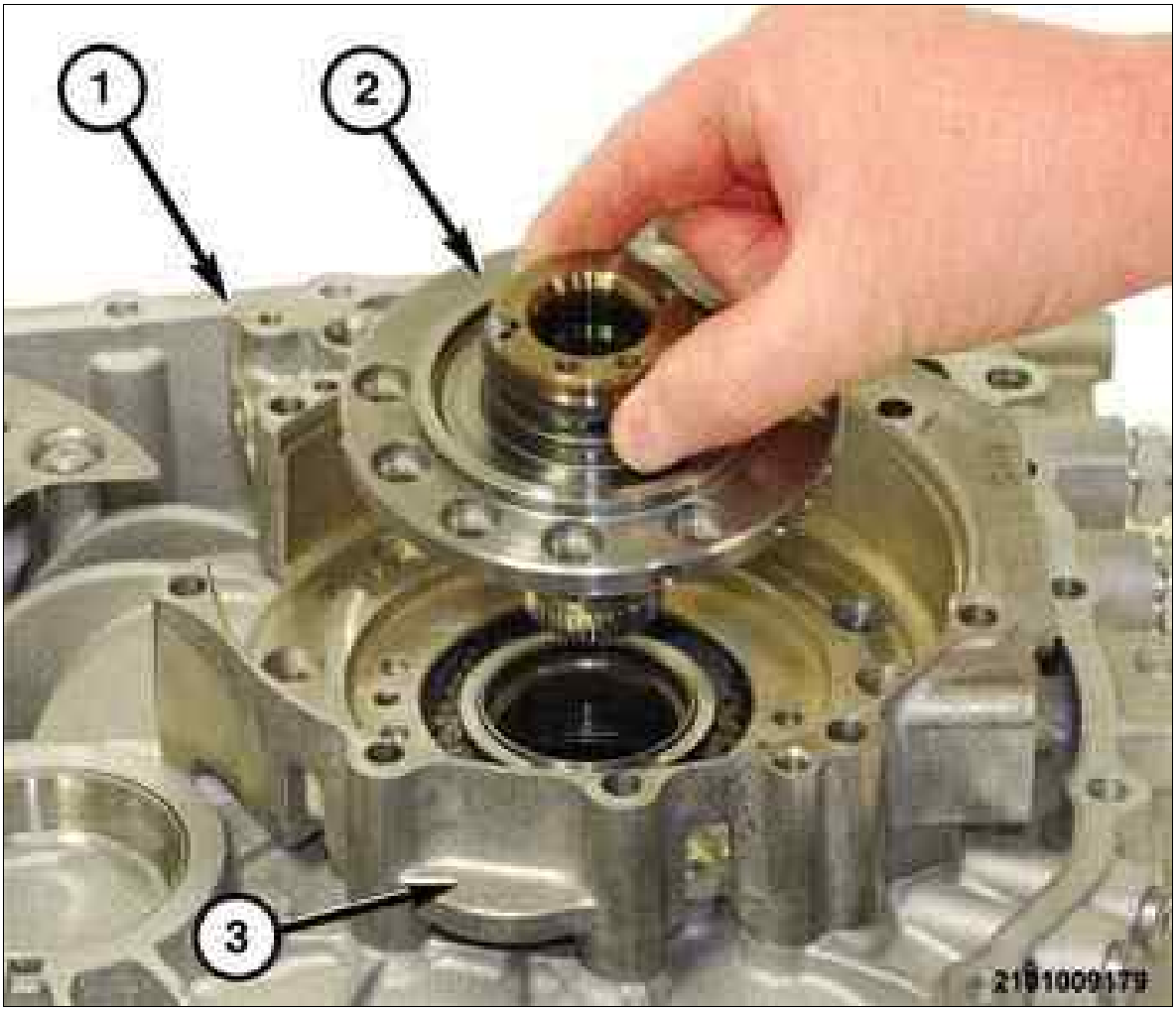
Fig 8: Removing/Installing Reaction Shaft At Intermediate Support Plate



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12. Place the reaction shaft (2) into the intermediate support plate (1).

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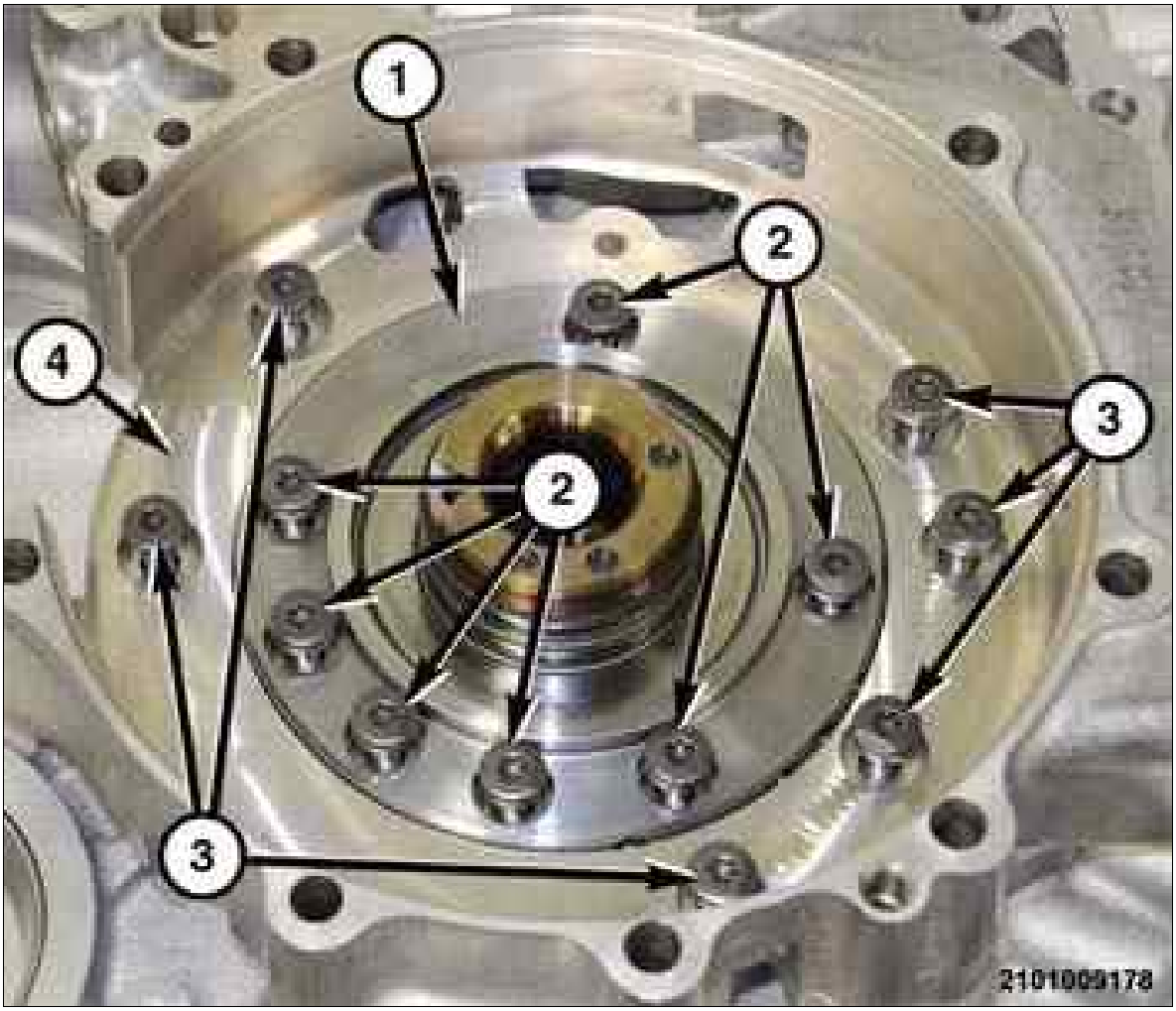
Fig 9: Removing/Installing Bolts At Reaction Shaft To Intermediate Support Plate



Courtesy of CHRYSLER GROUP, LLC

13. Install the bolts (2) to hold the reaction shaft (1) to the intermediate support plate (4) and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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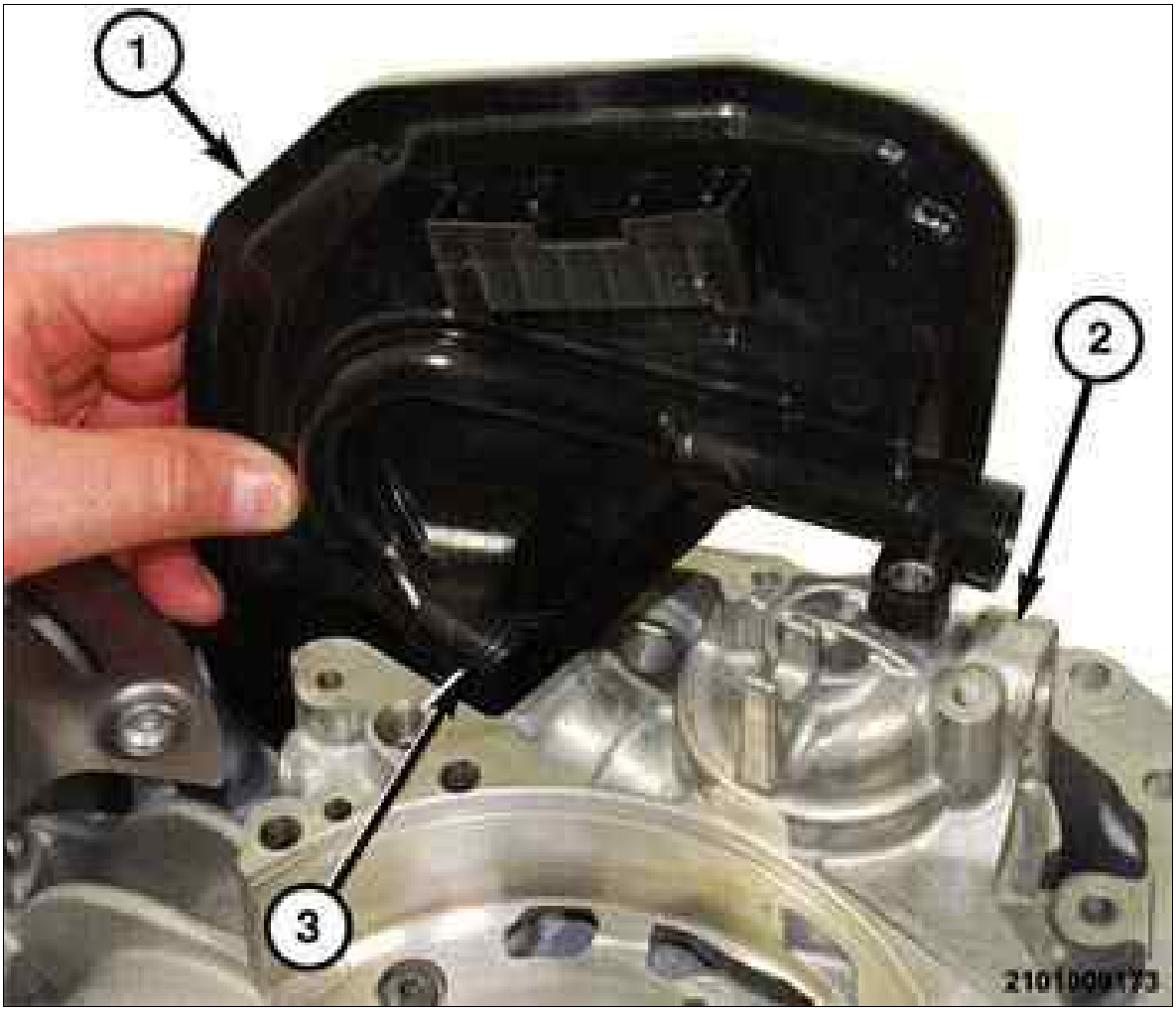
Fig 10: Removing/Installing Transmission Oil Filter



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14. Insert the oil filter neck (3) into the oil pump orifice and align the bolt hole with the bore in the intermediate support plate (2).

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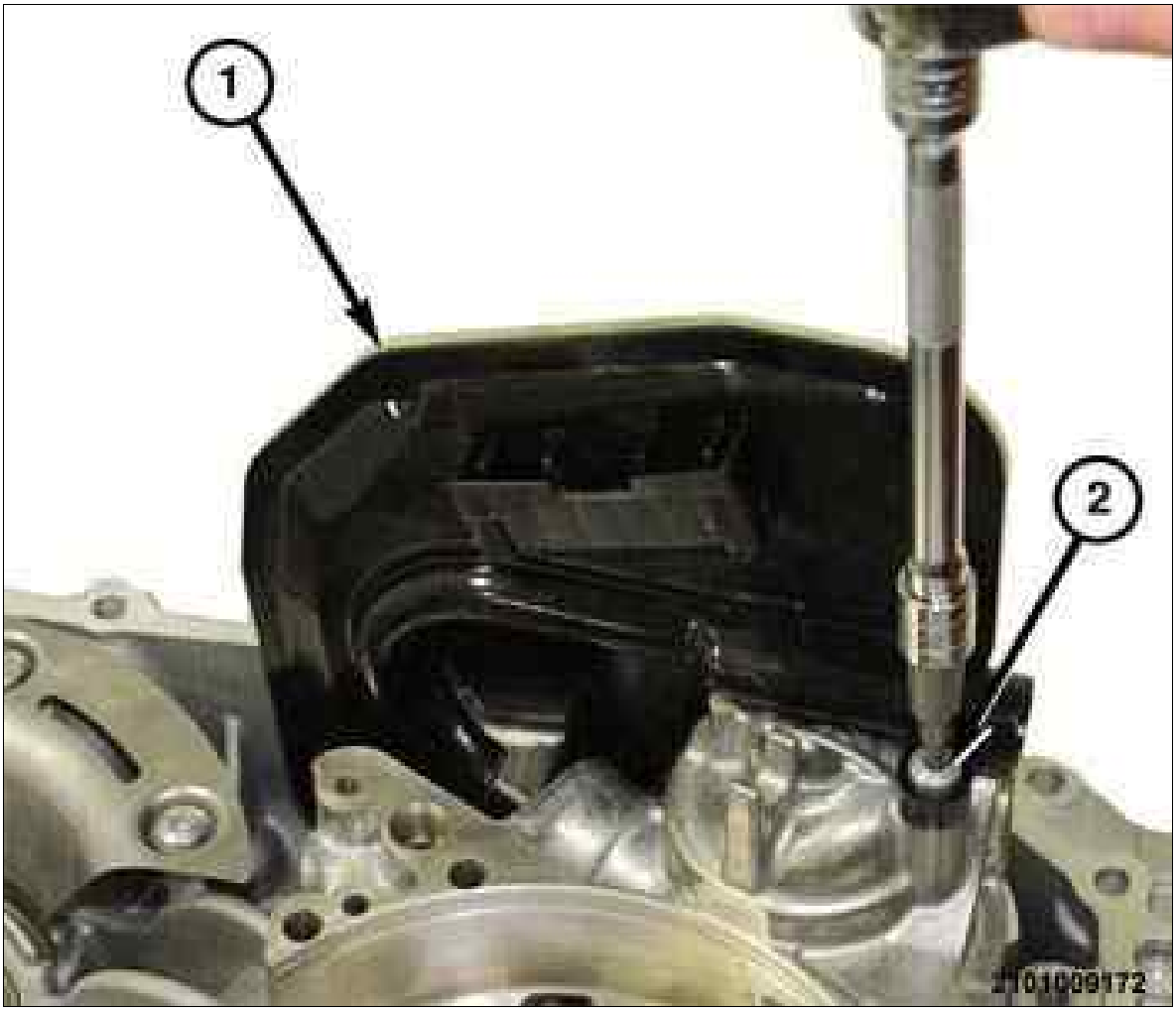
Fig 11: Oil Filter, Intermediate Support Plate & Fastener



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15. Install the bolt (2) to hold the oil filter (1) to the intermediate support plate and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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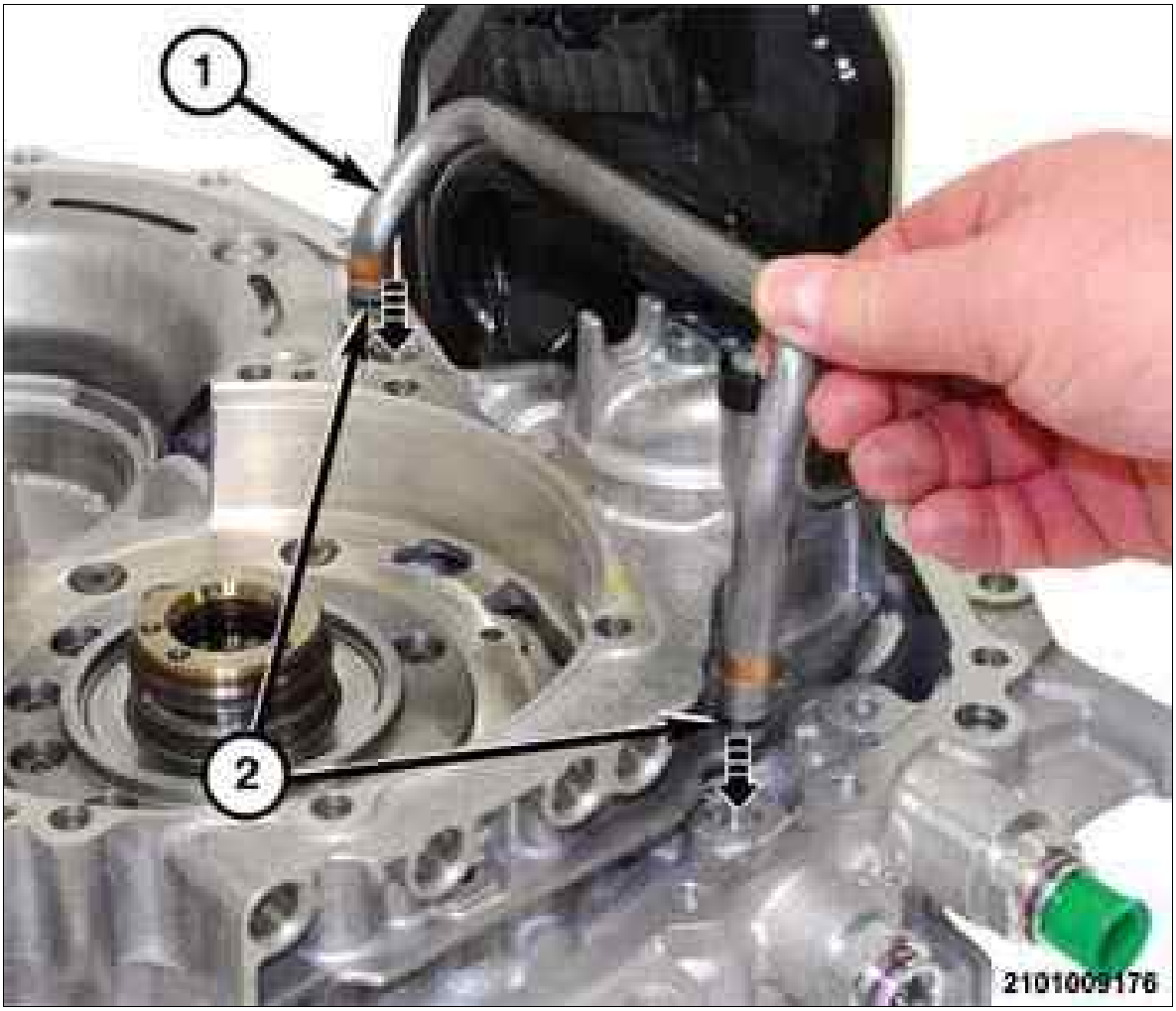
Fig 12: Fluid Tube & O-Rings



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16. Replace the O-ring seals (2) on the fluid tube (1).
17. Install the fluid tube (1) into the bellhousing and intermediate support plate.
18. Install the bellhousing on the transmission. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .
19. Install the transmission in the vehicle. Refer to REMOVAL AND INSTALLATION .
20. Road test the vehicle to verify the repair.

SENSOR, FLUID PRESSURE > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > FLUID PRESSURE SENSOR REMOVAL

1. Remove the valve body. Refer to VALVE BODY, REMOVAL AND INSTALLATION .

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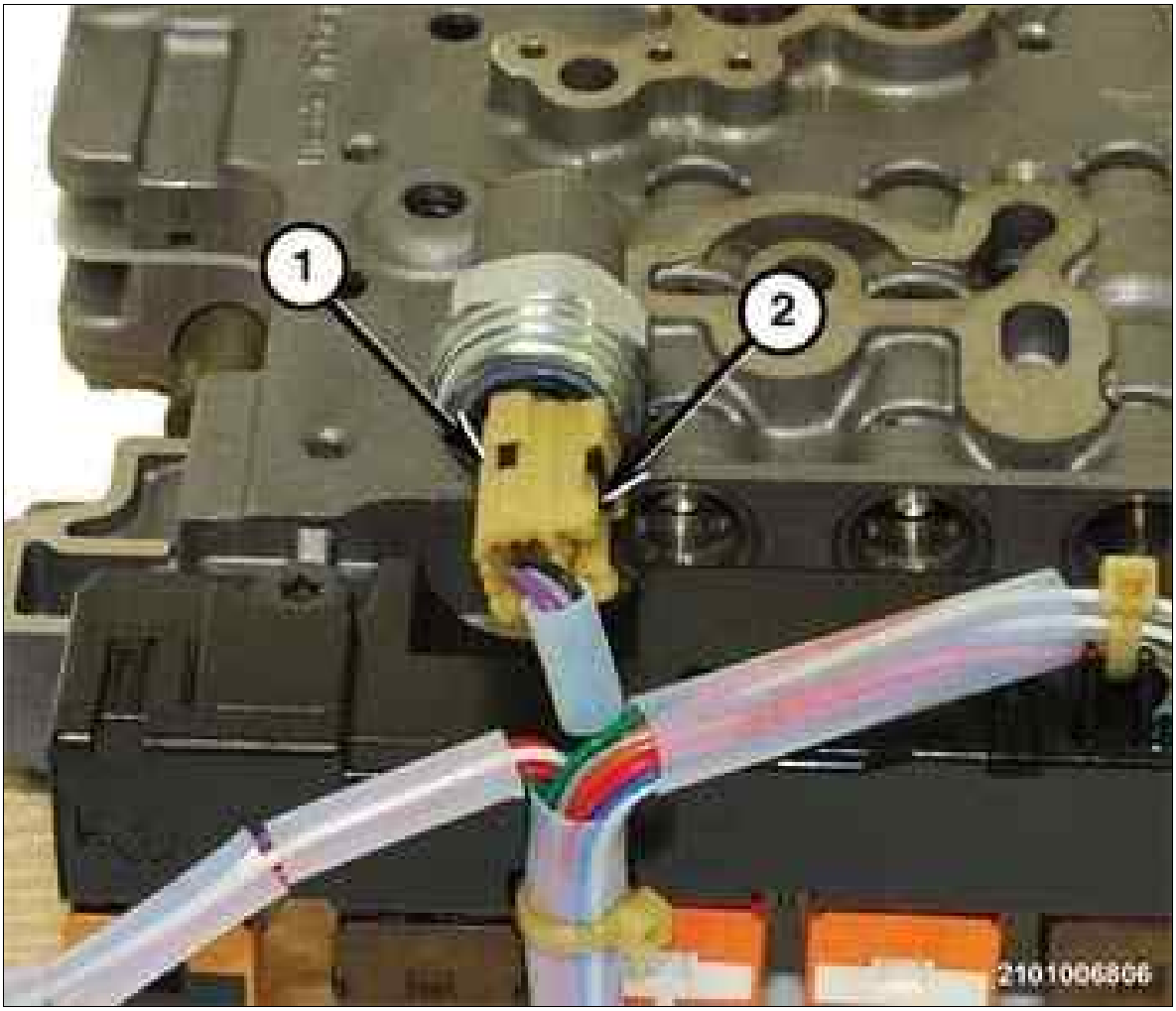
Fig 1: Fluid Pressure Sensor Wire Connector



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2. Release the lock (2) on the fluid pressure sensor wire harness connector (1).

3. Pull the wire harness connector (1) from the fluid pressure sensor.

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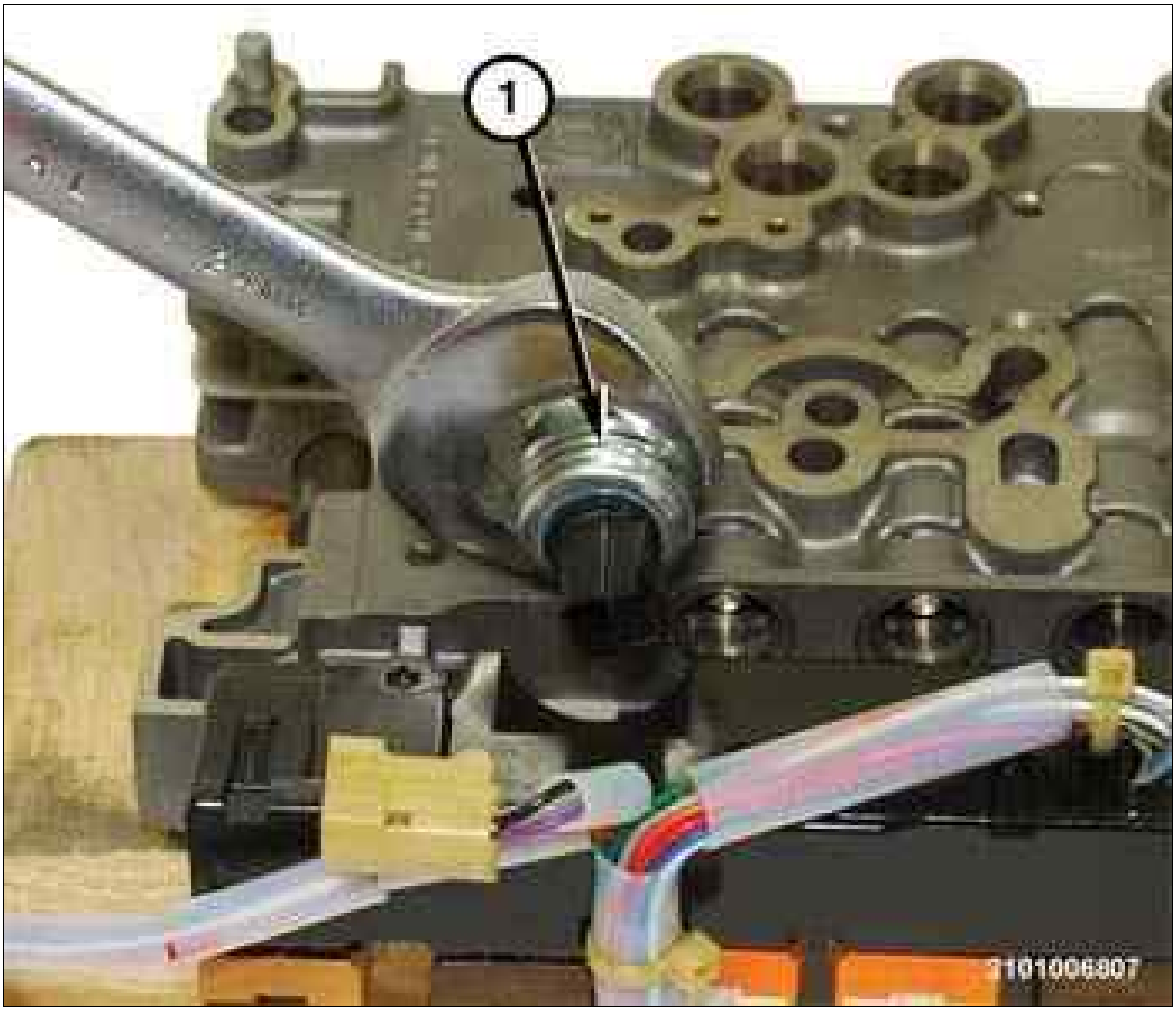
Fig 2: Loosening/Tightening Fluid Pressure Sensor



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4. Using a suitable wrench, loosen the fluid pressure sensor (1).

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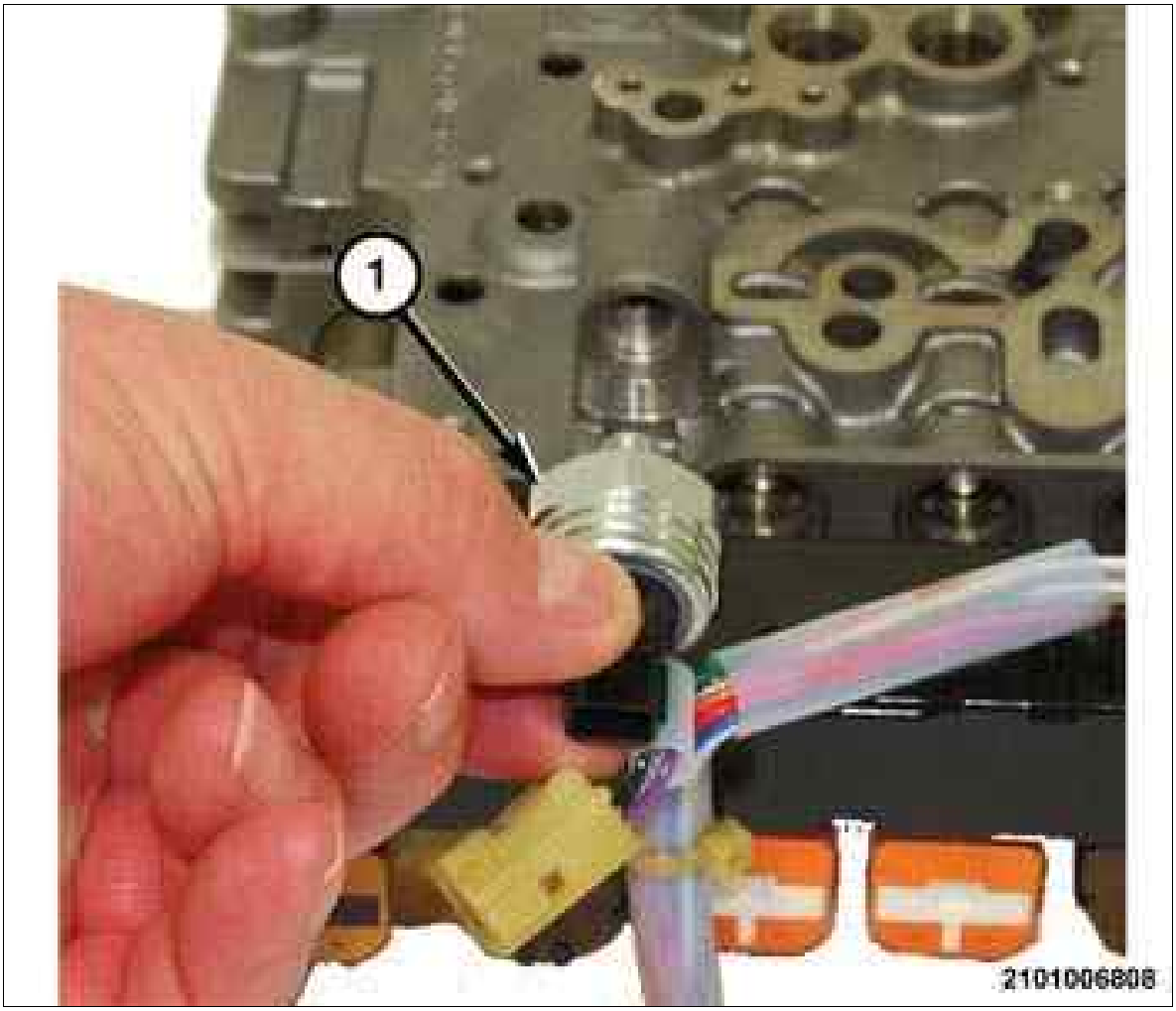
Fig 3: Removing/Installing Fluid Pressure Sensor



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5. Remove the fluid pressure sensor (1) from the valve body.

SENSOR, FLUID PRESSURE > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > FLUID PRESSURE SENSOR INSTALLATION

1. Remove and discard the old O-ring from the fluid pressure sensor if the old fluid pressure sensor is reused.

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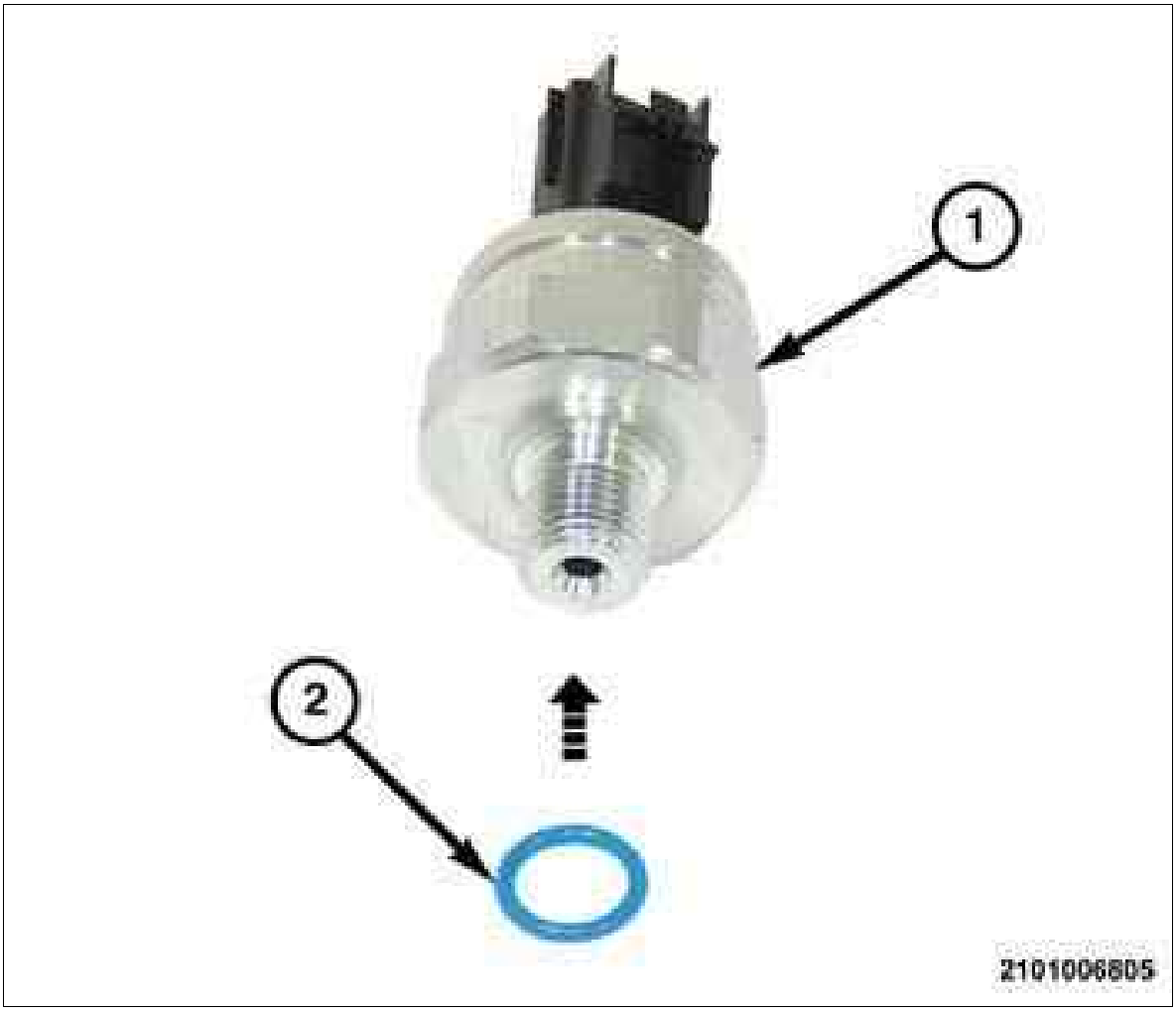
Fig 1: Fluid Pressure Sensor & O-Ring



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2. Install a **NEW** O-ring (2) on the fluid pressure sensor (1).

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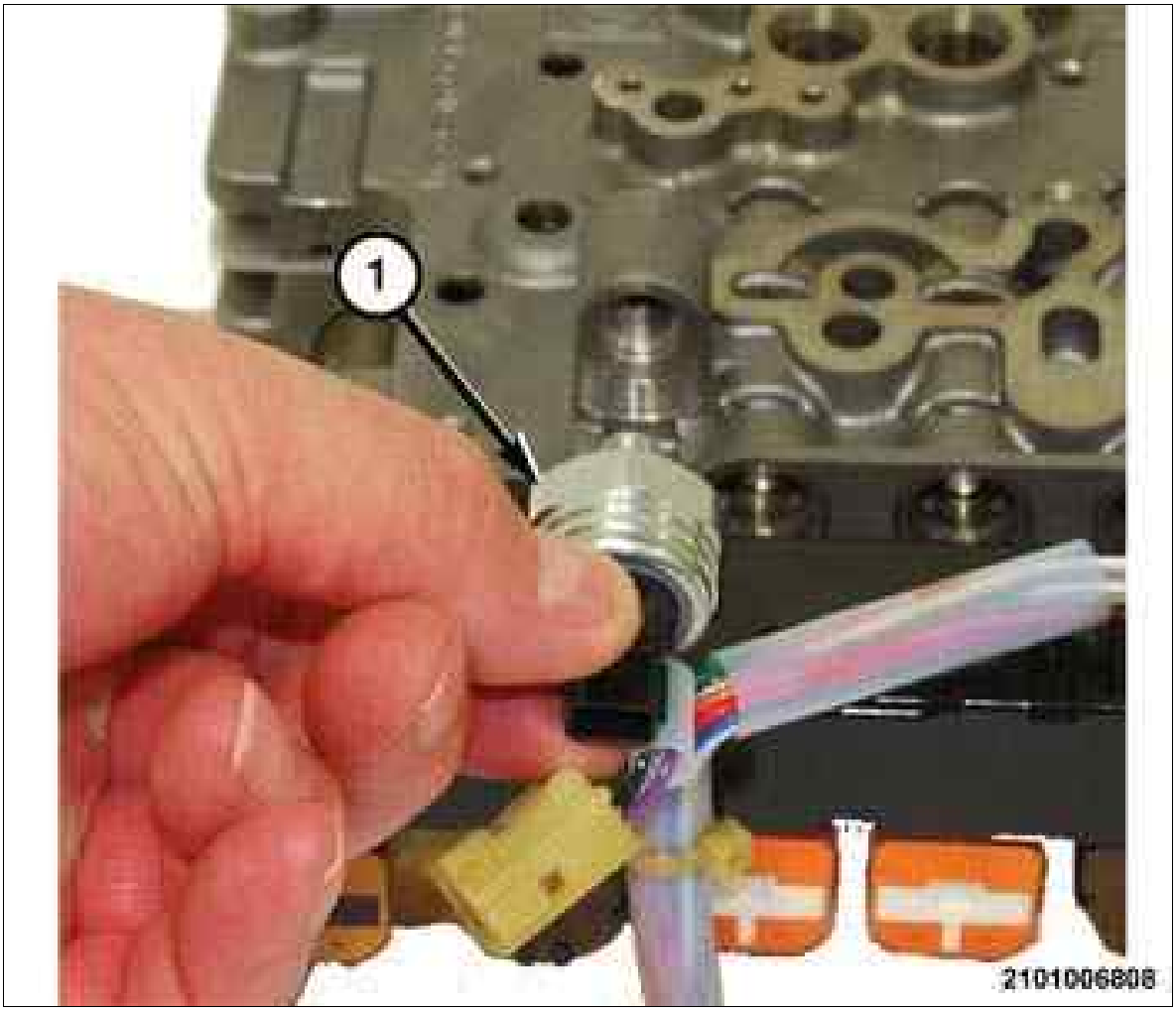
Fig 2: Removing/Installing Fluid Pressure Sensor



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3. Thread the fluid pressure sensor (1) into the valve body.

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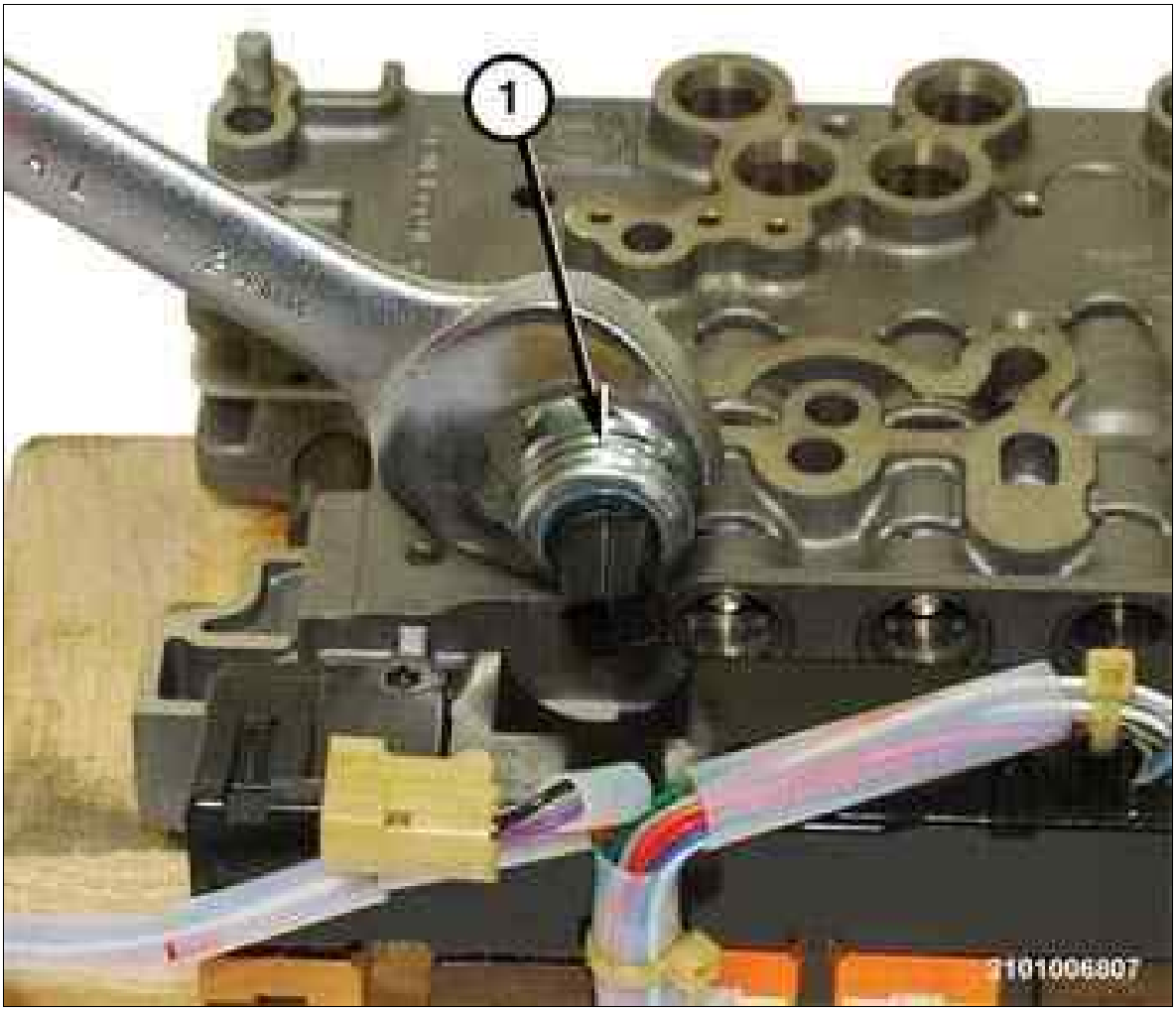
Fig 3: Loosening/Tightening Fluid Pressure Sensor



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4. Using a suitable wrench, tighten the fluid pressure sensor (1).

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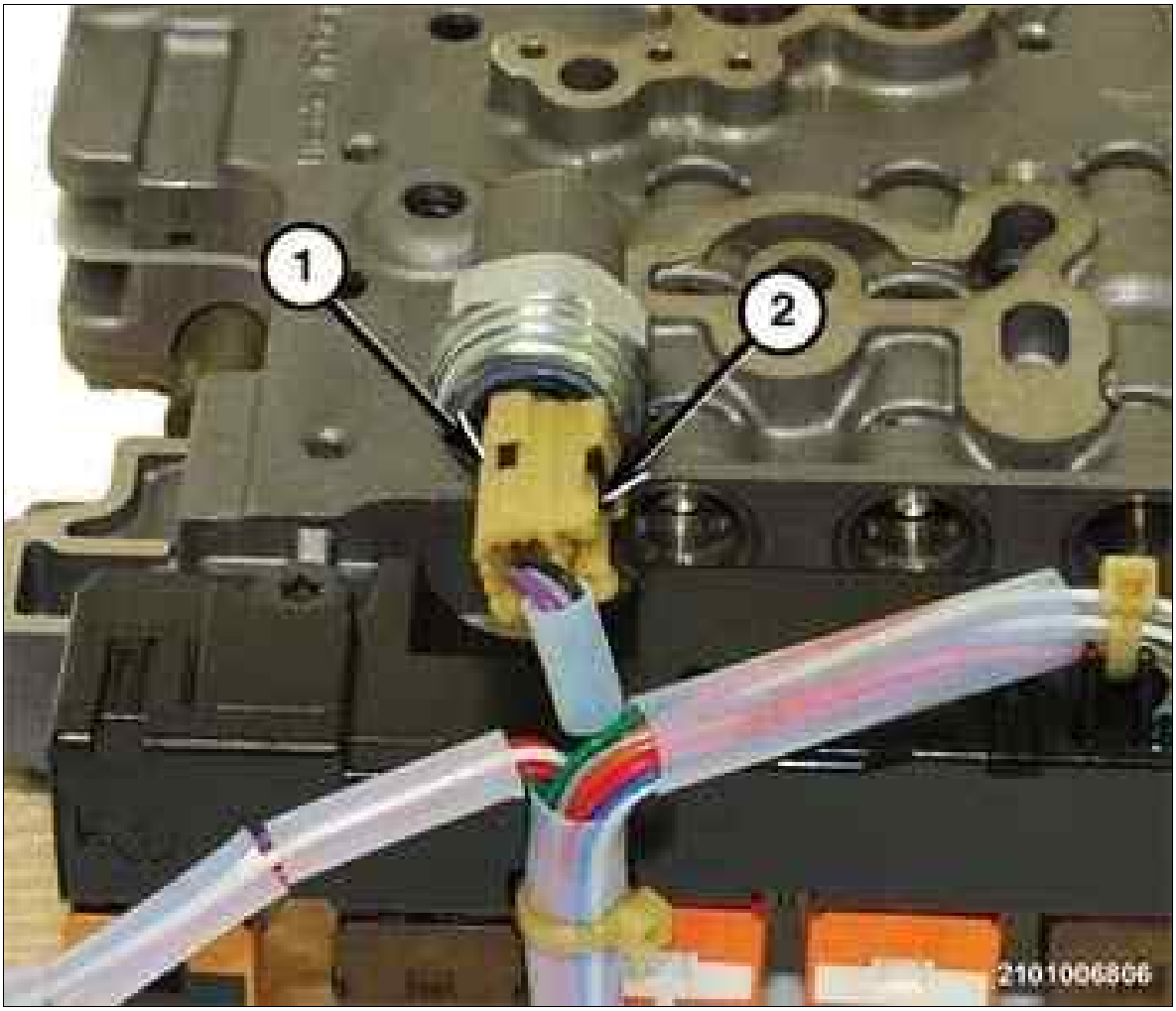
Fig 4: Fluid Pressure Sensor Wire Connector



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5. Connect the fluid pressure sensor wire harness connector (1) and make sure the wire harness connector lock (2), locks.
6. Install the valve body. Refer to VALVE BODY, REMOVAL AND INSTALLATION .
7. Road test the vehicle to verify the repair.

SEAL, AXLE > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > AXLE SEAL REMOVAL

1. Remove the halfshaft from the vehicle. Refer to REMOVAL AND INSTALLATION for front half shaft or REMOVAL AND INSTALLATION for rear half shaft.

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Fig 1: Punching Hole In Differential Seal

Courtesy of CHRYSLER GROUP, LLC

> *NOTE:*
>
> *Left side shown in the illustration, right side similar.*

> *NOTE:*
>
> *Keep the punch tool in the center of the seal to avoid damage to the transmission housing.*

2. Using a suitable punch tool (1) and hammer, punch a hole in the metal armature inside the seal (2).

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Fig 2: Slide Hammer & Differential Seal

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3. Thread the sheet metal screw of the dent puller (2) into the seal (1).
4. Tap outward on the slide hammer (2) until the seal (1) comes out of the seal bore.

SEAL, AXLE > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > AXLE SEAL INSTALLATION

NOTE:

Clean the seal bore in the transmission housing with a clean lint-free cloth.

1. Apply assembly lube on the lip of the **NEW** seal to avoid damage after installation.

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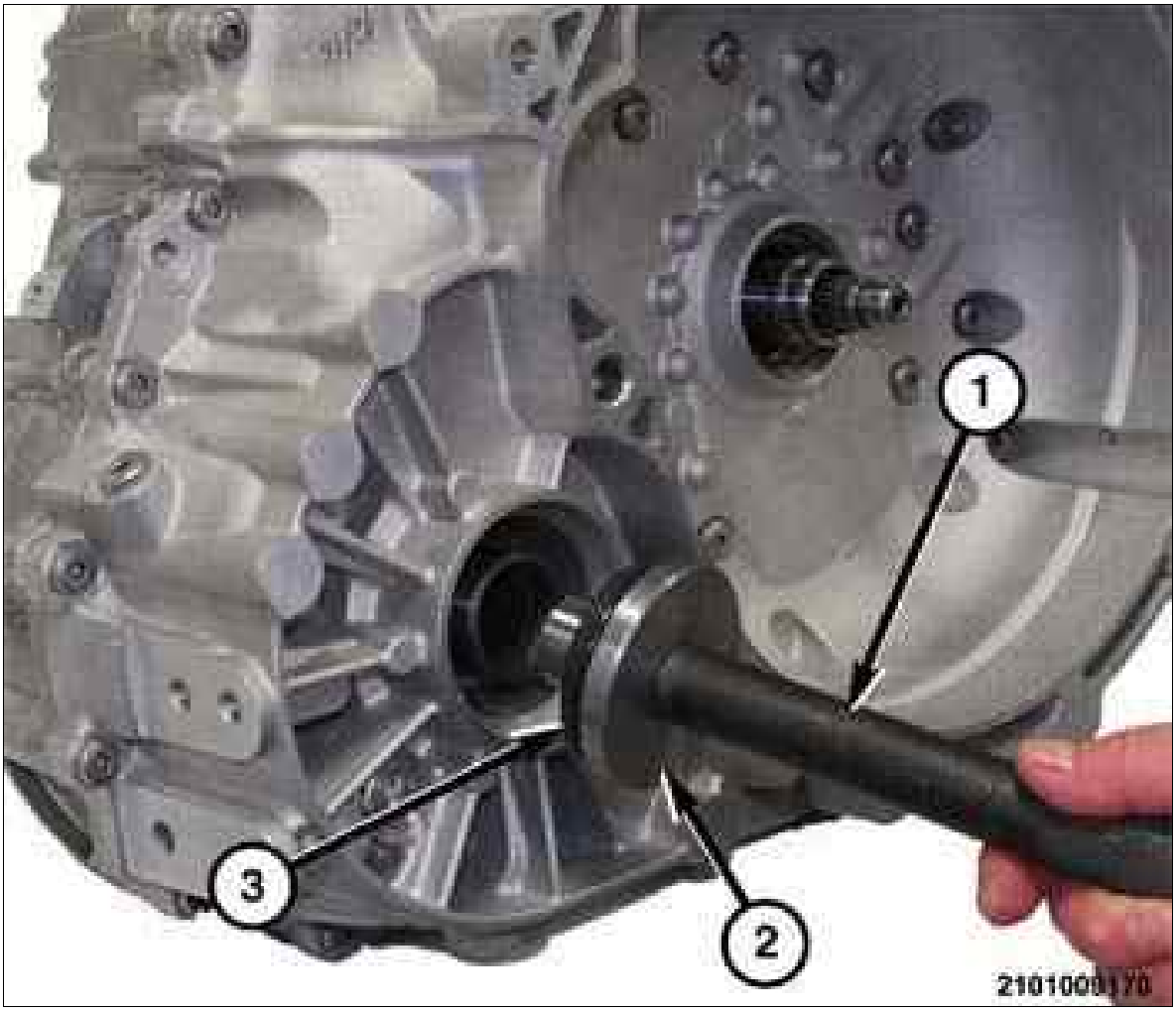
Fig 1: Inserting Seal Into Transmission Bore



Courtesy of CHRYSLER GROUP, LLC

> *NOTE:*
>
> *Right side shown in the illustration, left side similar.*

2. Using tool (special tool #10506, Installer, Oil Seal) 10506 (2) and (special tool #C-4171, Driver Handle, Universal) (1) with the seal (3) positioned on the installer, insert the seal in the transmission bore around the output shaft.

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Fig 2: Installing Seal Into Transmission

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3. Using a suitable hammer, drive the seal into the transmission until it is seated.
4. Install the halfshaft. Refer to REMOVAL AND INSTALLATION for front halfshaft or REMOVAL AND INSTALLATION for rear halfshaft.
5. Verify that the transmission fluid is at the proper level. Refer to FLUID AND FILTER, STANDARD PROCEDURE .

SEAL, INPUT SHAFT > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

1. Remove the transmission from the vehicle. Refer to REMOVAL AND INSTALLATION .
2. Drain the fluid from the transmission.

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Fig 1: Removing Seal From Center Of Bellhousing

Courtesy of CHRYSLER GROUP, LLC

3. Remove the torque converter from the transmission.
4. Using a suitable punch tool and hammer, punch a hole in the center of the metal armature of the seal.
5. Using a suitable dent puller (2) threaded into the hole in the seal, remove the seal (1) from the bore in the center of the bellhousing.

SEAL, INPUT SHAFT > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION

1. Clean the seal bore in the center of the bellhousing.
2. Apply assembly lube on the lip of the **NEW** seal.

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Fig 1: Installing Seal Into Bellhousing

Courtesy of CHRYSLER GROUP, LLC

3. Place the seal on tool (special tool #9677, Installer, Seal) (2), with the tension spring away from the tool, and insert the seal into the bore in the bellhousing.
4. Using a suitable hammer, drive the seal into the bore in the center of the bellhousing until the tool (2) seats against the bellhousing (1).
5. Install the torque converter.
6. Install the transmission in the vehicle. Refer to REMOVAL AND INSTALLATION .
7. Fill the transmission to the proper level with the specified fluid. Refer to STANDARD PROCEDURES .
8. Road test the vehicle to verify the repair.

SENSORS, SPEED > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

The input and output speed sensors are serviced as an assembly. The speed sensors can be replaced

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with the transmission in the vehicle.

1. Remove the valve body. Refer to VALVE BODY, REMOVAL AND INSTALLATION .

   Fig 1: Removing/Installing Speed Sensor Screw

Courtesy of CHRYSLER GROUP, LLC

2. Remove the screw (1) holding the speed sensor assembly to the transmission housing.

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Fig 2: Removing/Installing Speed Sensor

Courtesy of CHRYSLER GROUP, LLC

3. Separate the speed sensor assembly (1) from the transmission.
4. Release the lock on the wire harness connector.
5. Separate the wire harness connector from the speed sensor assembly.

SENSORS, SPEED > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION

The input and output speed sensors are serviced as an assembly.

1. Insert the wire harness connector into the speed sensor assembly.
2. Engage the lock on the wire harness connector.

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Fig 1: Removing/Installing Speed Sensor

Courtesy of CHRYSLER GROUP, LLC

3. Insert the speed sensor assembly (1) into the transmission housing.

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Fig 2: Removing/Installing Speed Sensor Screw

Courtesy of CHRYSLER GROUP, LLC

4. Install the screw (1) to hold the speed sensor assembly to the transmission housing.
5. Install the valve body. Refer to VALVE BODY, REMOVAL AND INSTALLATION .
6. Road test the vehicle to verify repair.

SHAFT, REACTION > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

1. Remove the transmission from the vehicle. Refer to REMOVAL AND INSTALLATION .
2. Remove the bellhousing from the transmission. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .

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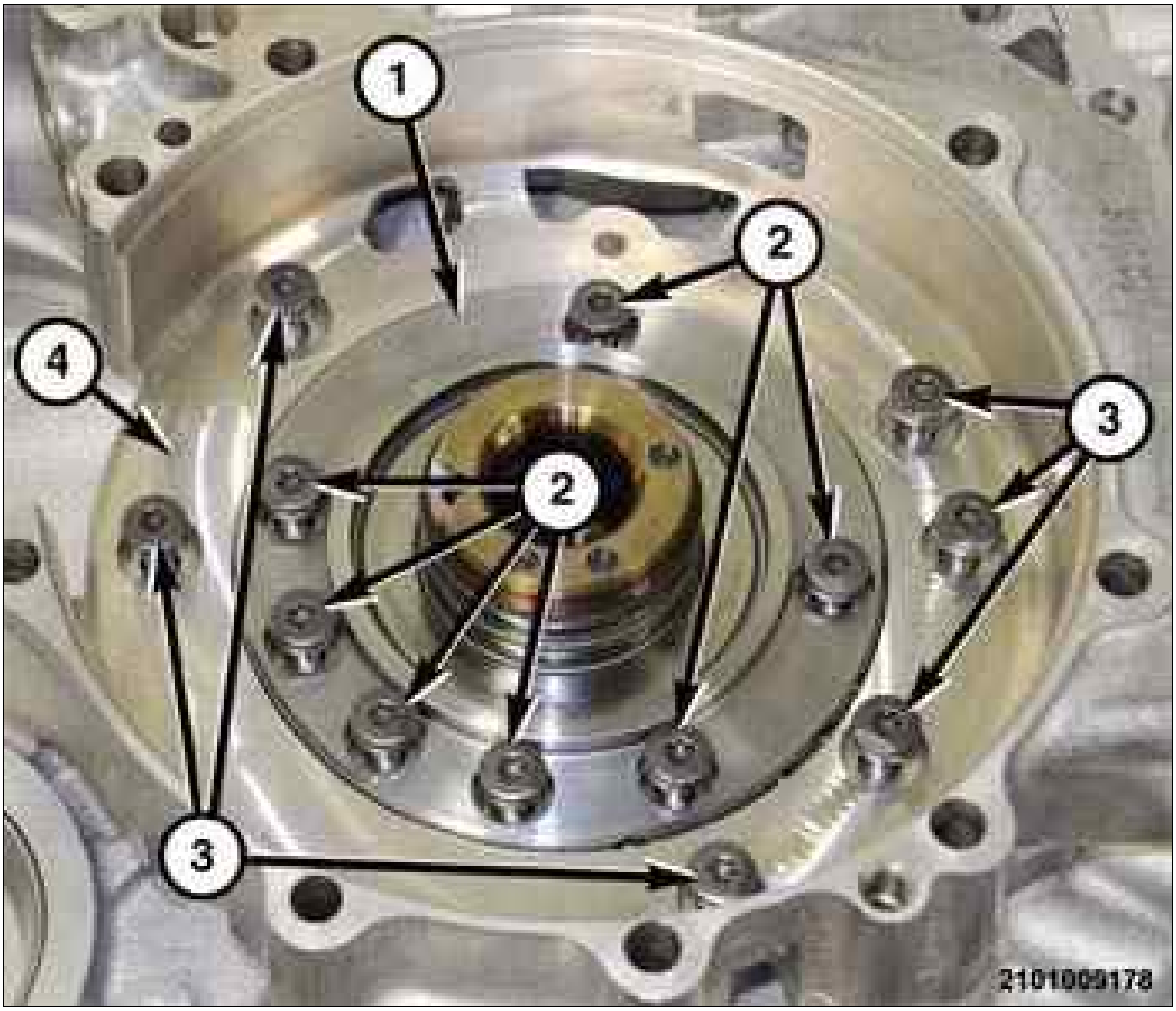
Fig 1: Removing/Installing Bolts At Reaction Shaft To Intermediate Support Plate



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3. Remove the bolts (2) holding the reaction shaft (1) to the intermediate support plate (4).

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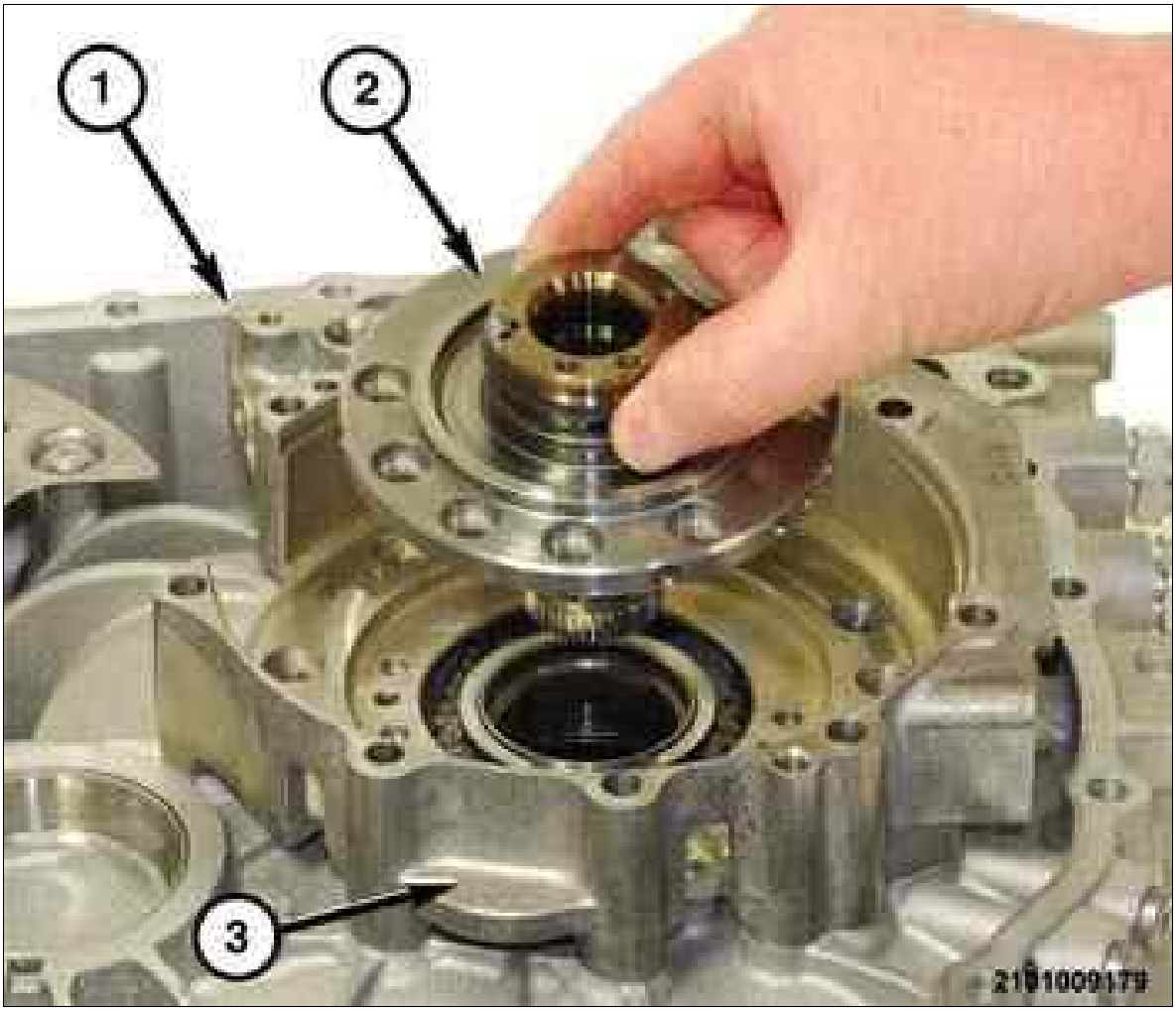
Fig 2: Removing/Installing Reaction Shaft At Intermediate Support Plate



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4. Separate the reaction shaft (2) from the intermediate support plate (1).

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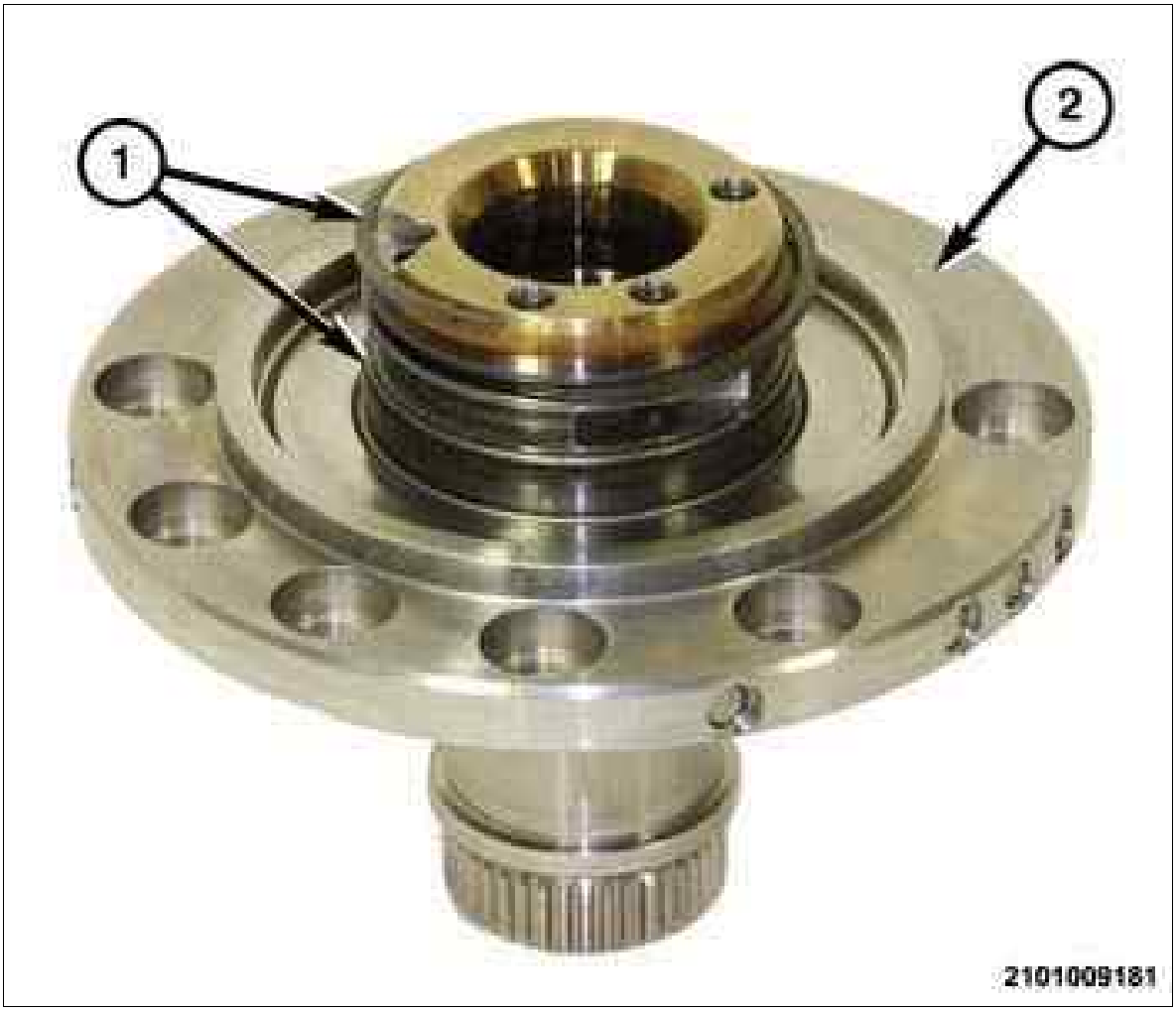
Fig 3: Removing/Installing Seal Rings At Ring Land In Inner Reaction Shaft Hub



Courtesy of CHRYSLER GROUP, LLC

5. Remove the seal rings (1) from the ring lands in the inner reaction shaft hub (2).

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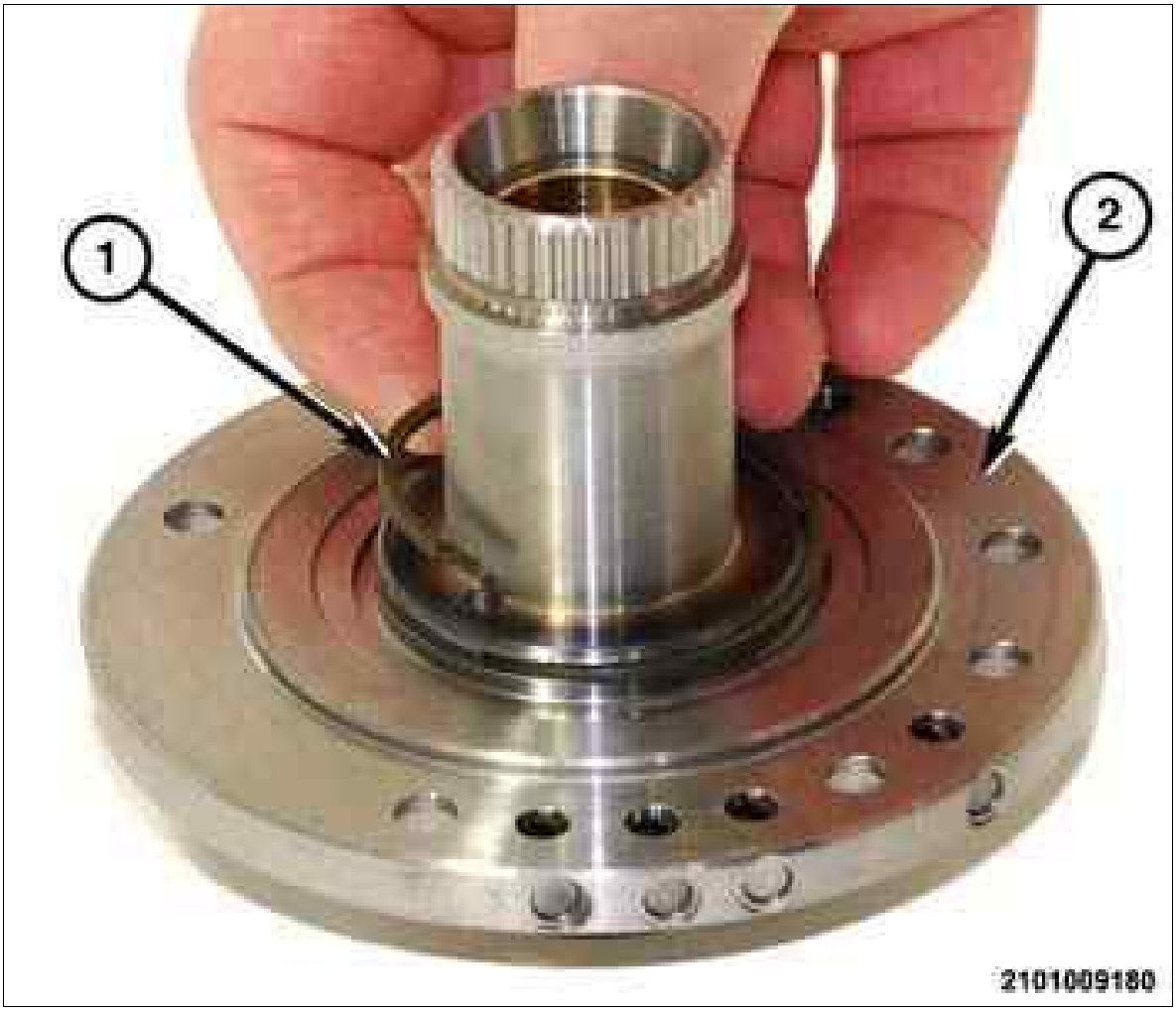
Fig 4: Removing/Installing Seal Ring At Ring Land In Outer Reaction Shaft Hub



Courtesy of CHRYSLER GROUP, LLC

6. Remove the seal ring (1) from the ring land in the outer reaction shaft hub (2).

SHAFT, REACTION > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION

1. Clean the reaction shaft with suitable solvent and blow it dry using regulated 344 kPa (50 psi) shop air.
2. Inspect the reaction shaft for excess damage or wear. Replace the reaction shaft if damage is present.

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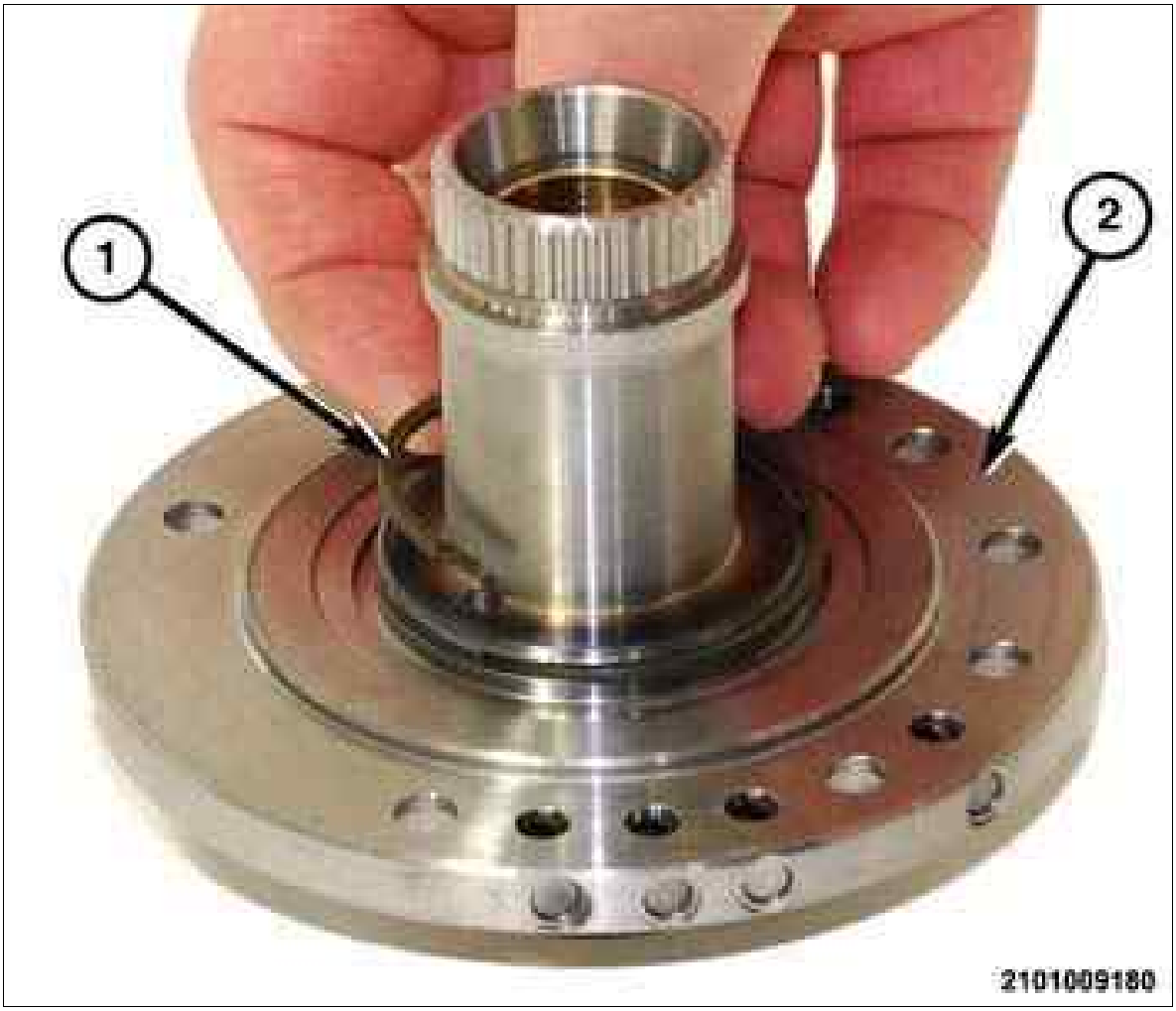
Fig 1: Removing/Installing Seal Ring At Ring Land In Outer Reaction Shaft Hub



Courtesy of CHRYSLER GROUP, LLC

3. Install a **NEW** seal ring (1) in the land of the outer reaction shaft hub (2).

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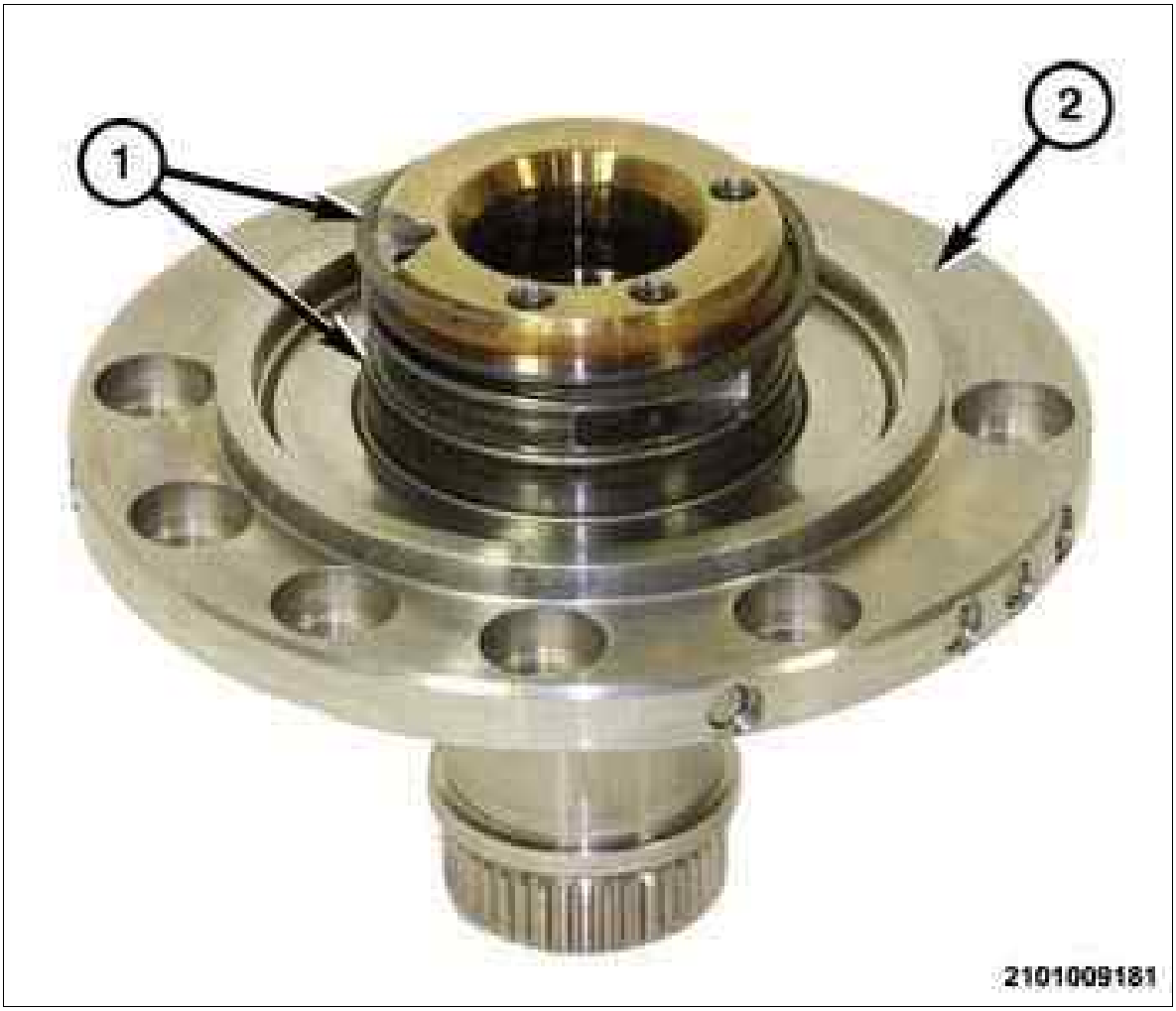
Fig 2: Removing/Installing Seal Rings At Ring Land In Inner Reaction Shaft Hub



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4. Install **NEW** seal rings (1) in the lands of the inner reaction shaft hub (2).

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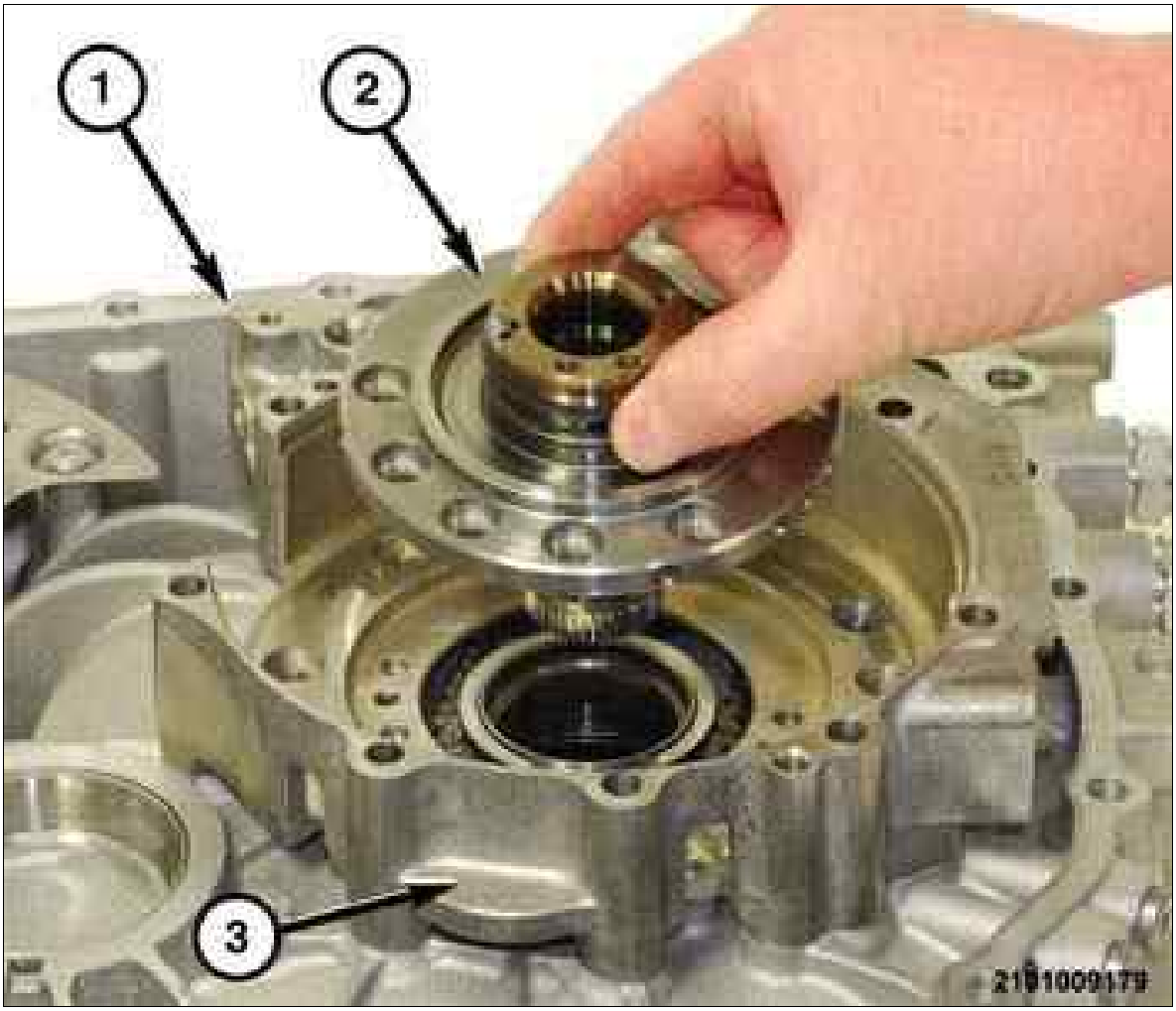
Fig 3: Removing/Installing Reaction Shaft At Intermediate Support Plate



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5. Place the reaction shaft (2) into the intermediate support plate (1).

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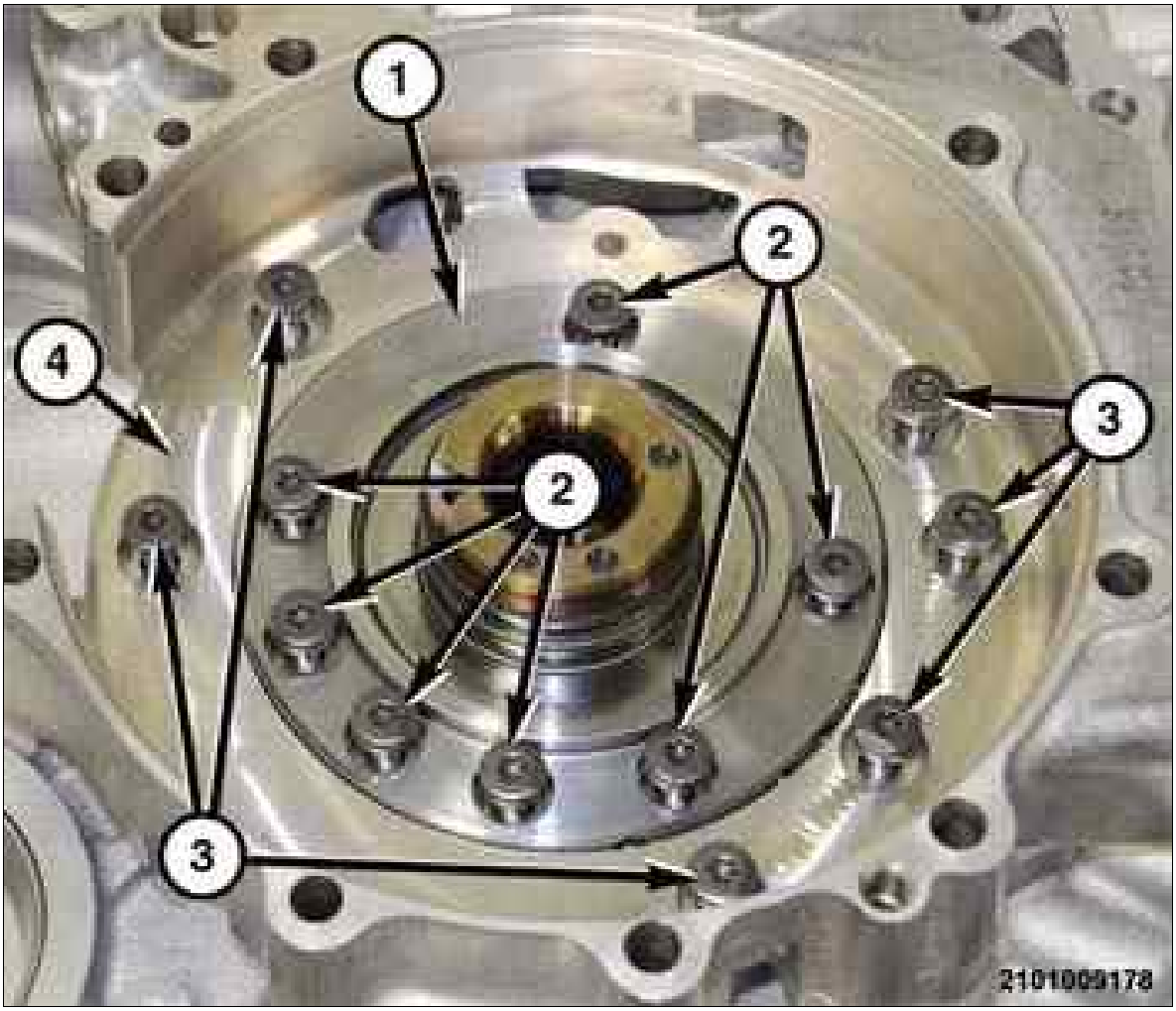
Fig 4: Removing/Installing Bolts At Reaction Shaft To Intermediate Support Plate



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6. Install the bolts (2) to hold the reaction shaft (1) to the intermediate support plate (4) and tighten to the proper torque specification. Refer to SPECIFICATIONS .
7. Install the bellhousing on the transmission. Refer to BELLHOUSING, REMOVAL AND INSTALLATION .
8. Install the transmission in the vehicle. Refer to REMOVAL AND INSTALLATION .
9. Fill the transmission to the proper level. Refer to FLUID AND FILTER, STANDARD PROCEDURE .
10. Road test the vehicle to verify the repair.

SHIFTER, FLOOR CONSOLE > REMOVAL AND INSTALLATION > SHIFTER BEZEL > REMOVAL

1. Disconnect and isolate the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector first before disconnecting the negative battery

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cable.

Fig 1: Clips, Boot & Retainers

Courtesy of CHRYSLER GROUP, LLC

2. Using a suitable tool to release the clips (1a) and lift the bezel with the boot (1b).

3. Release the clips (2a) and the retainers (2b) and lift the boot (2c).

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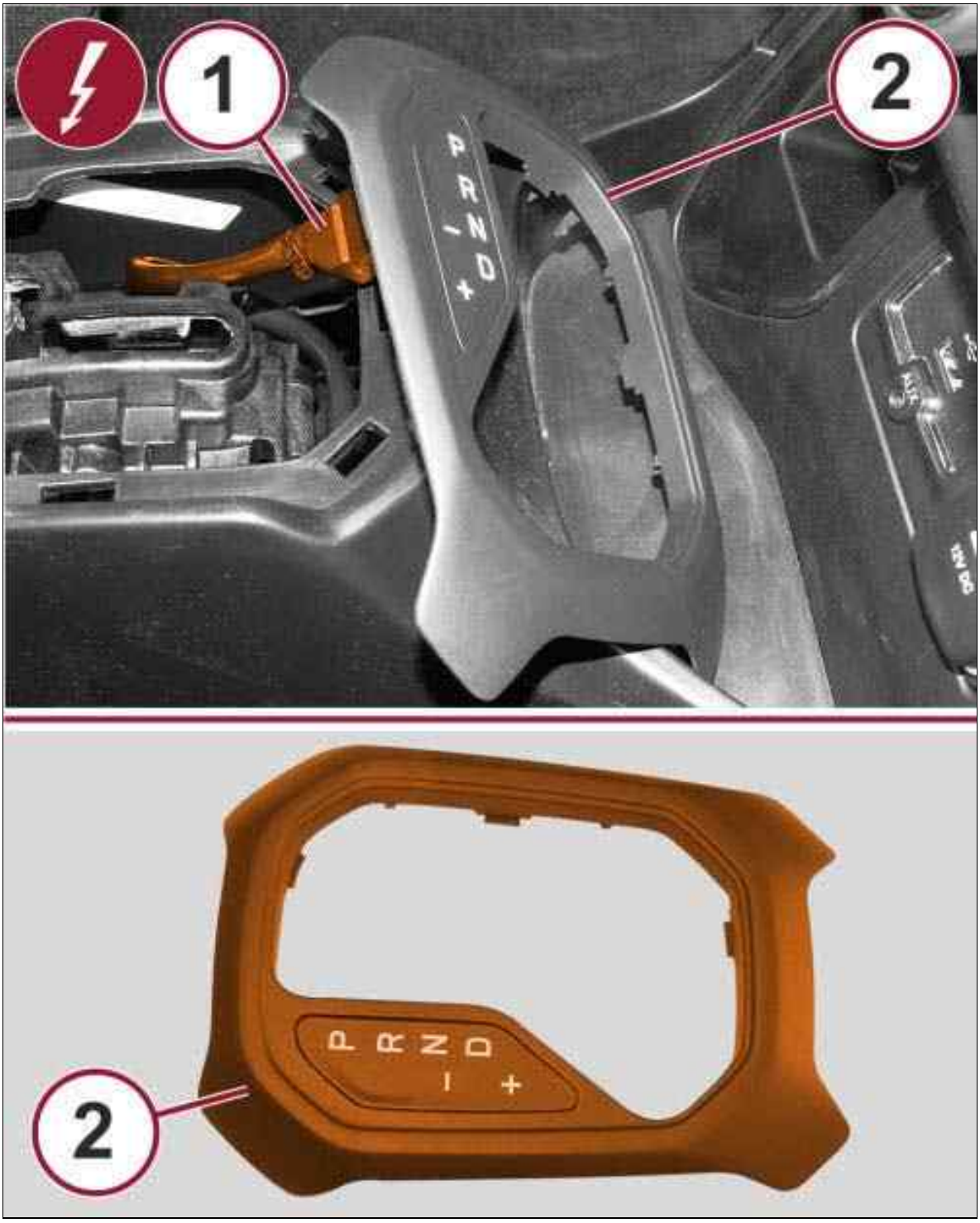
Fig 2: Shifter Bezel & Connector



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4. Disconnect the wire harness connector (1) from the shifter bezel (2).
5. Remove the shifter bezel (2) from the vehicle.

SHIFTER, FLOOR CONSOLE > REMOVAL AND INSTALLATION > SHIFTER BEZEL >

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INSTALLATION

1. Position the shifter bezel in the vehicle.
2. Connect the wiring harness connector to the shifter bezel.
3. Install the shifter boot to the shifter bezel.
4. Install the shifter bezel to the console.
5. Connect the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), connect the IBS connector to the negative battery cable.

SHIFTER, FLOOR CONSOLE > REMOVAL AND INSTALLATION > SHIFTER KNOB > REMOVAL

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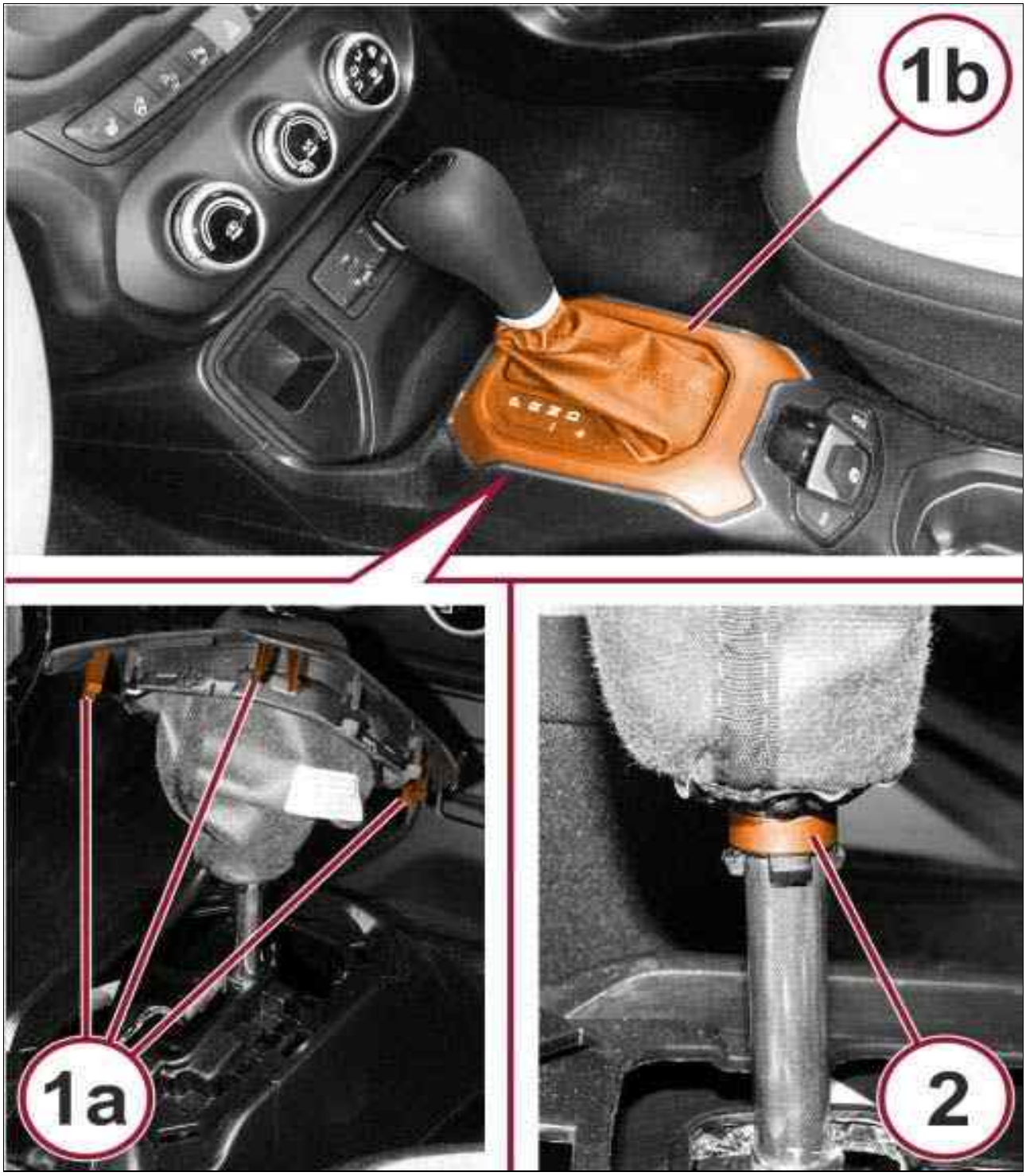
Fig 1: Clips, Retaining Clips & Boot



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1. Using a suitable tool to release the clips (1a) and lift the bezel with the boot (1b).
2. Using a suitable tool to remove the retaining clip (2).

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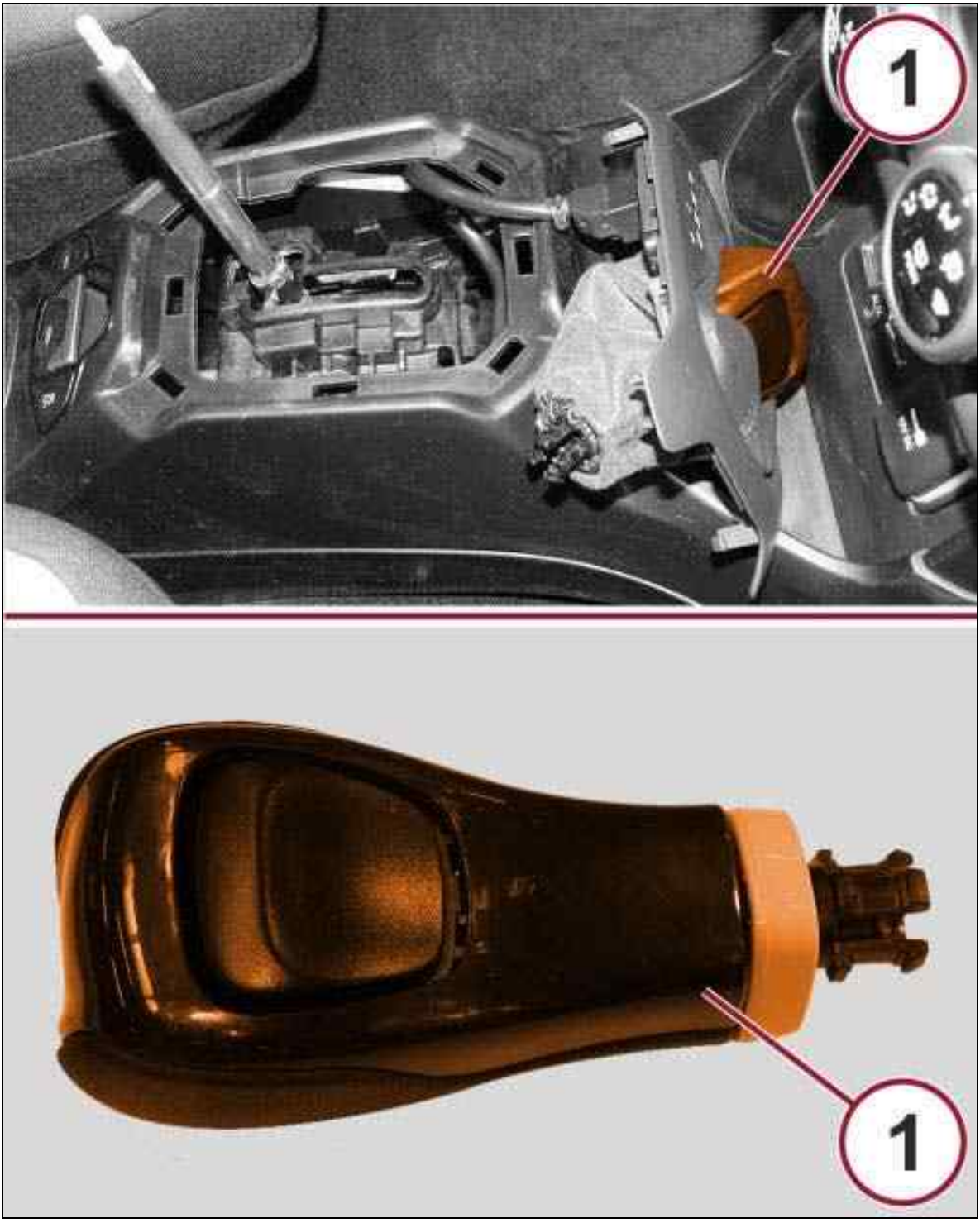
Fig 2: Shift Knob



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3. Remove the knob (1) separating it from the shifter boot.

SHIFTER, FLOOR CONSOLE > REMOVAL AND INSTALLATION > SHIFTER KNOB > INSTALLATION

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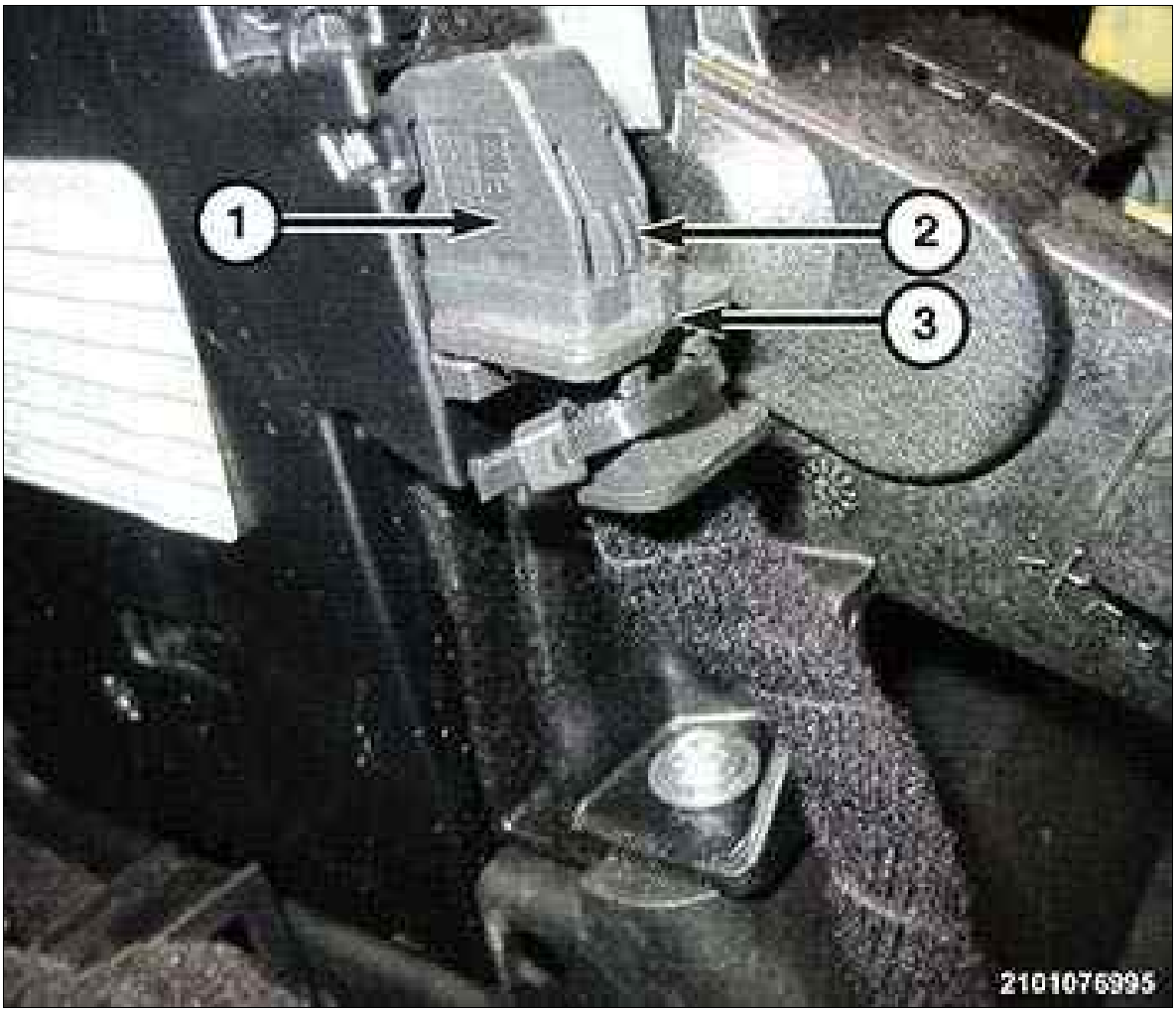
1. Insert the knob in the shifter boot.
2. Install the knob on the gear shift lever and secure it with a new retaining clip.
3. Install the shifter bezel engaging the clips in their retainers.

SHIFTER, FLOOR CONSOLE > REMOVAL AND INSTALLATION > GEAR SHIFTER > REMOVAL

1. Disconnect and isolate the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), disconnect the IBS connector first before disconnecting the negative battery cable.
2. Remove the floor console. Refer to CONSOLE, FLOOR, REMOVAL AND INSTALLATION .
3. Make sure the shifter is in the Park position.

   Fig 1: Wire Harness Connector, Release Tab & Bail



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4. Release the wire harness connector (1) from the shifter assembly by pressing the release tab (2) while opening the bail (3).

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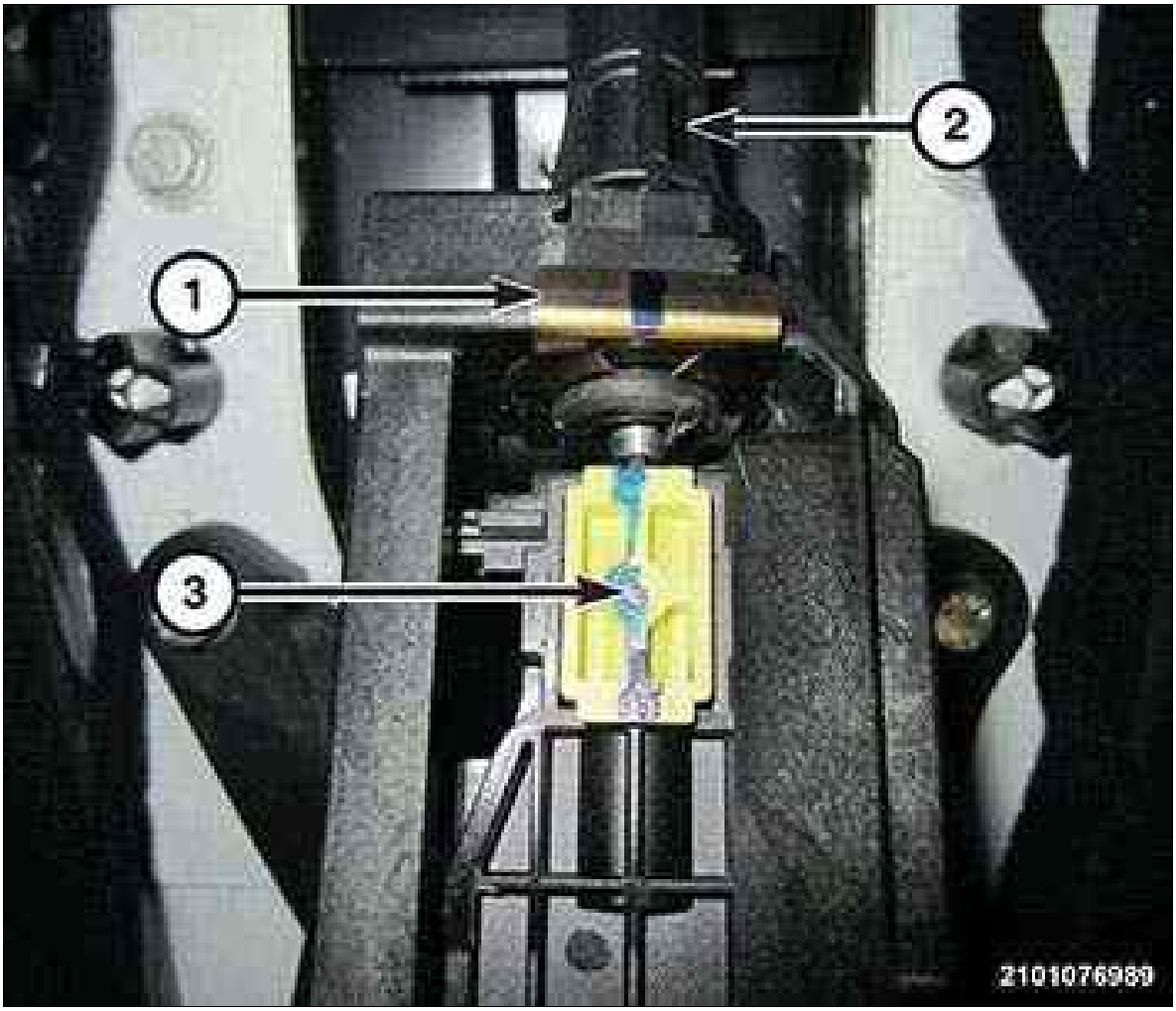
Fig 2: Shifter Cable, Retainer & Adjuster Lock



Courtesy of CHRYSLER GROUP, LLC

5. Release the shifter cable adjuster lock (3) by prying upward with a suitable tool.
6. Remove the shifter cable retaining clip (1).
7. Separate the shifter cable (2) out of the shifter.

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Fig 3: Right Side Retainer Wiring Harness & Right Side Shifter Mounting Bolts

Courtesy of CHRYSLER GROUP, LLC

8. Release the wire harness from right side retainer (2).
9. Remove the right side shifter mounting bolts (1).

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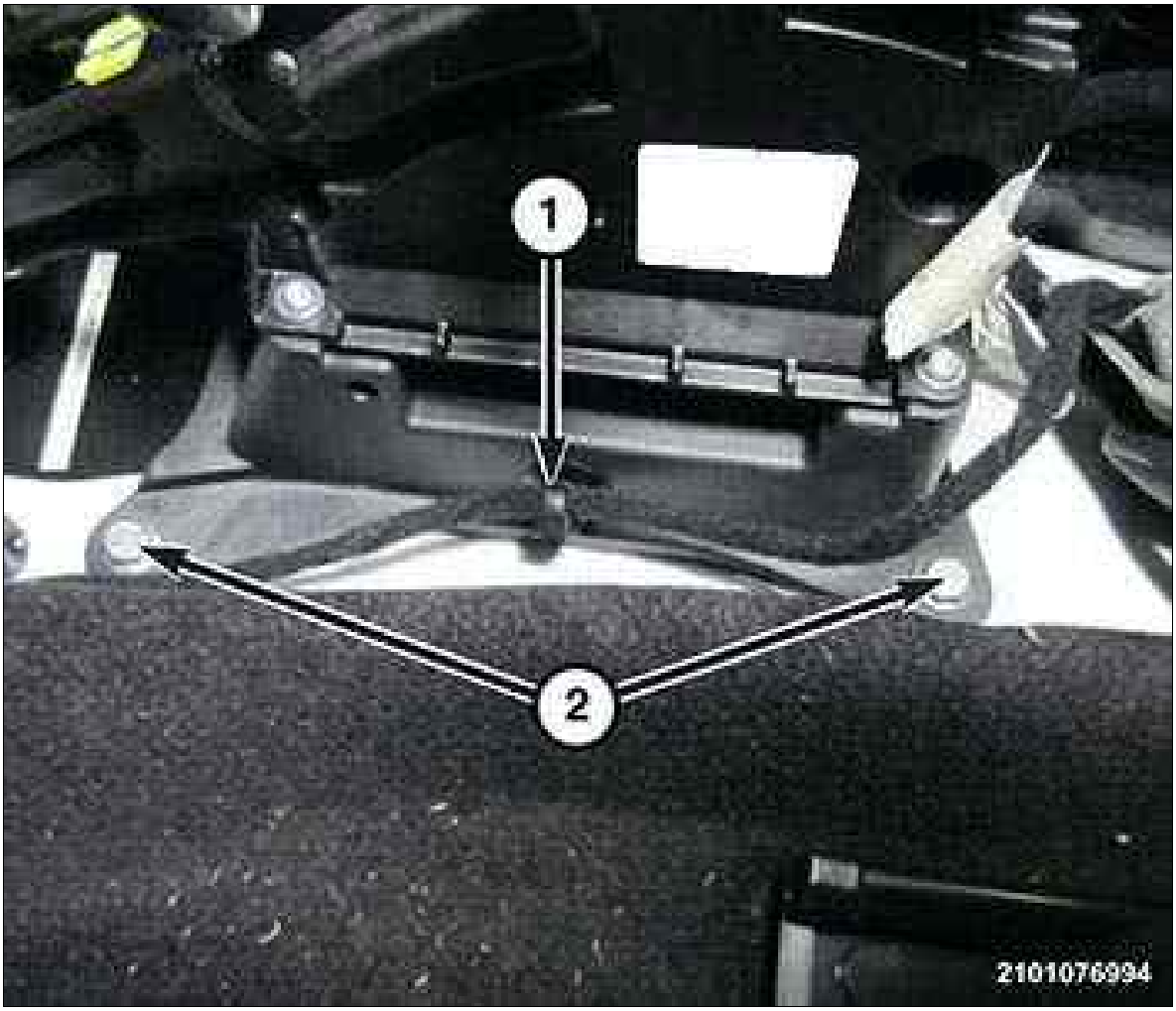
Fig 4: Wire Harness Retaining Clip & Left Side Shifter Mounting Bolts



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10. Detach the wire harness retaining clip (1) from the shifter.
11. Remove the left side shifter mounting bolts (2).
12. Remove the shifter from the vehicle.

SHIFTER, FLOOR CONSOLE > REMOVAL AND INSTALLATION > GEAR SHIFTER > INSTALLATION

1. Make sure the transmission is in the park position.
2. Position the shifter in the vehicle and hand start the bolts.

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Fig 1: Right Side Retainer Wiring Harness & Right Side Shifter Mounting Bolts

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3. Tighten the right side shifter mounting bolts to the proper torque specification. Refer to SPECIFICATIONS .

4. Secure the wiring harness to the right side harness retainer (2).

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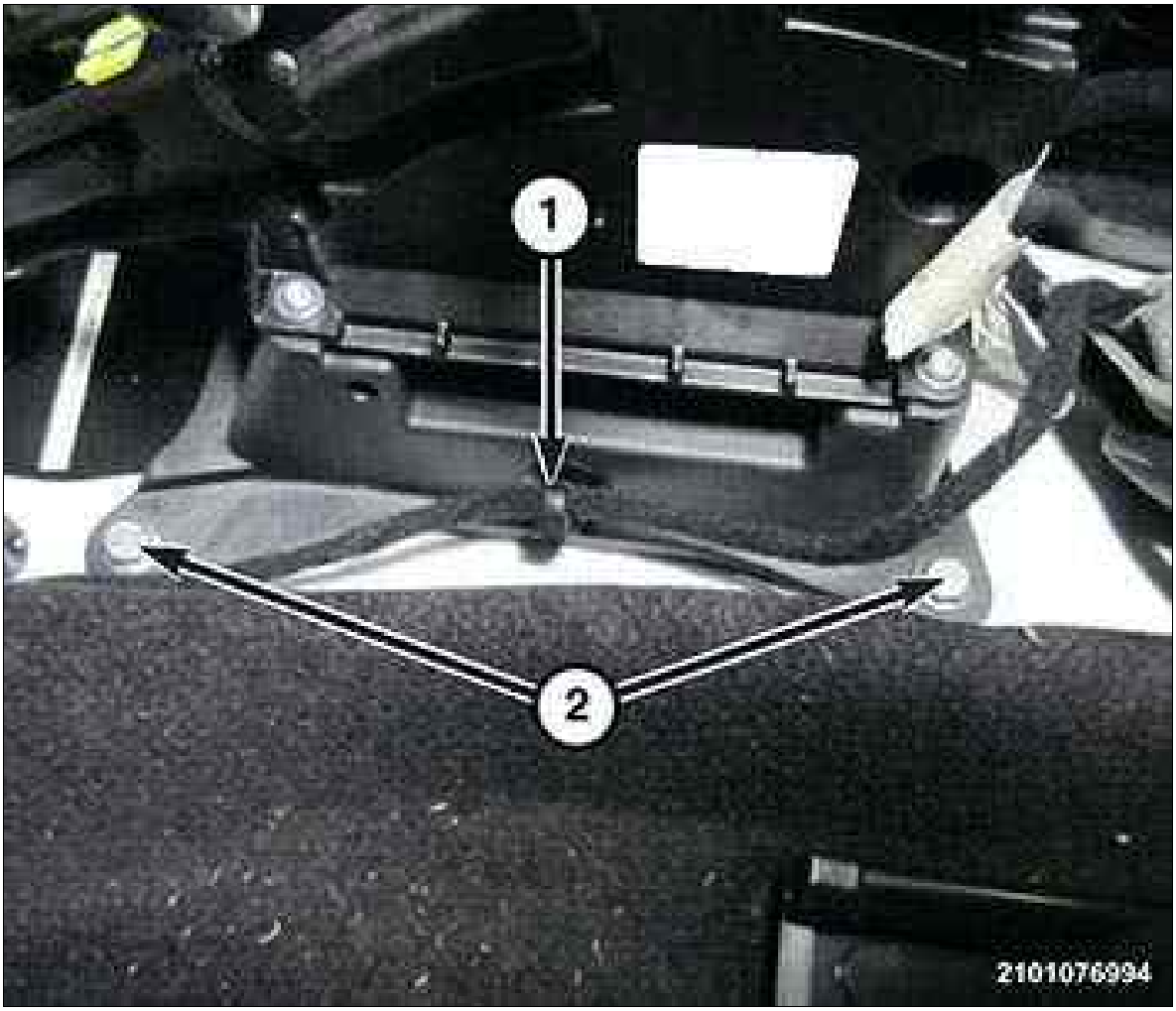
Fig 2: Wire Harness Retaining Clip & Left Side Shifter Mounting Bolts



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5. Tighten the left side shifter mounting bolts (2) to the proper torque specification. Refer to SPECIFICATIONS .

6. Connect the wire harness retainer (1) to the shifter assembly.

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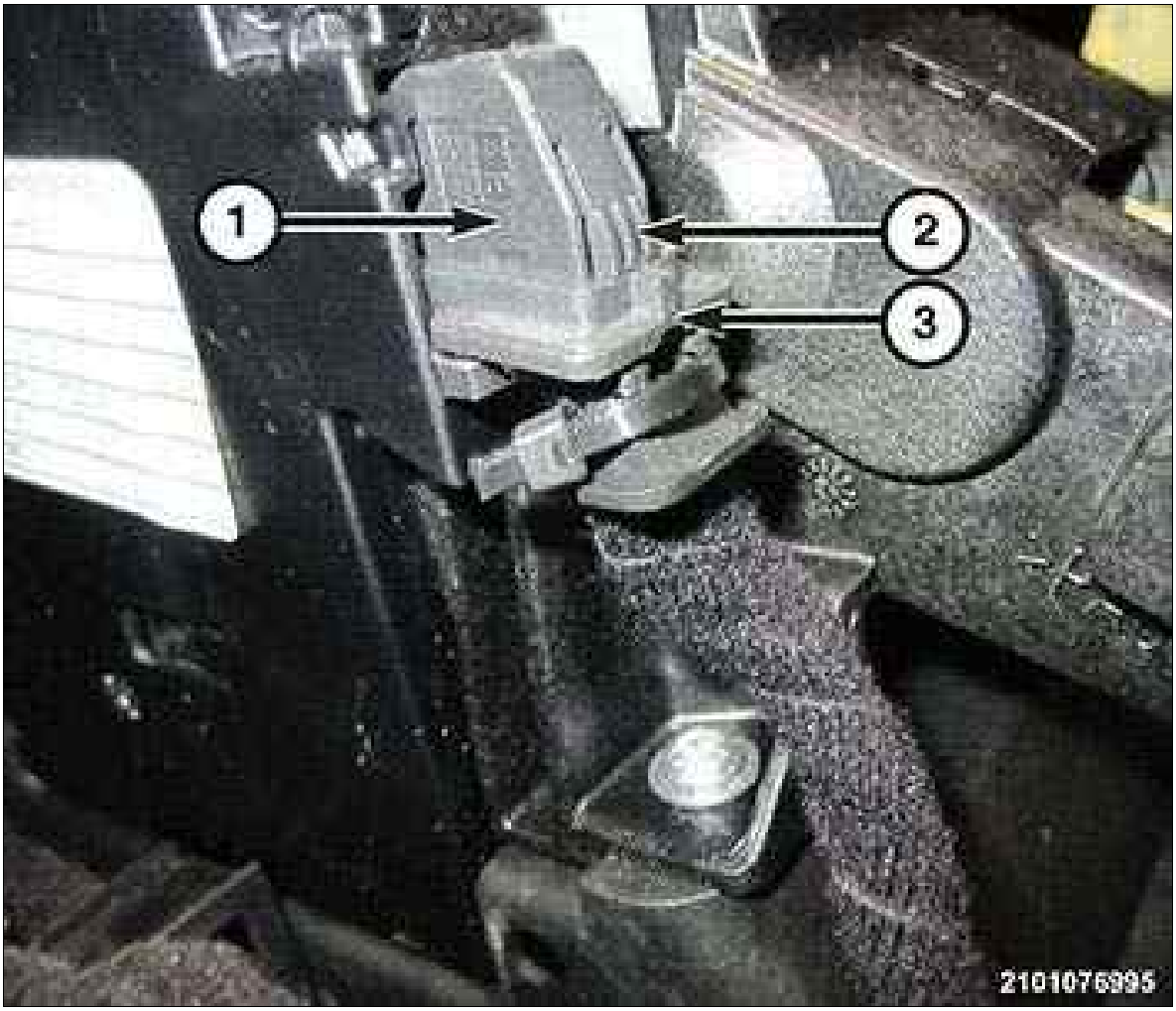
Fig 3: Wire Harness Connector, Release Tab & Bail



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7. Connect the shifter wire harness connector (1).
8. Position the shifter cable into the shifter housing.

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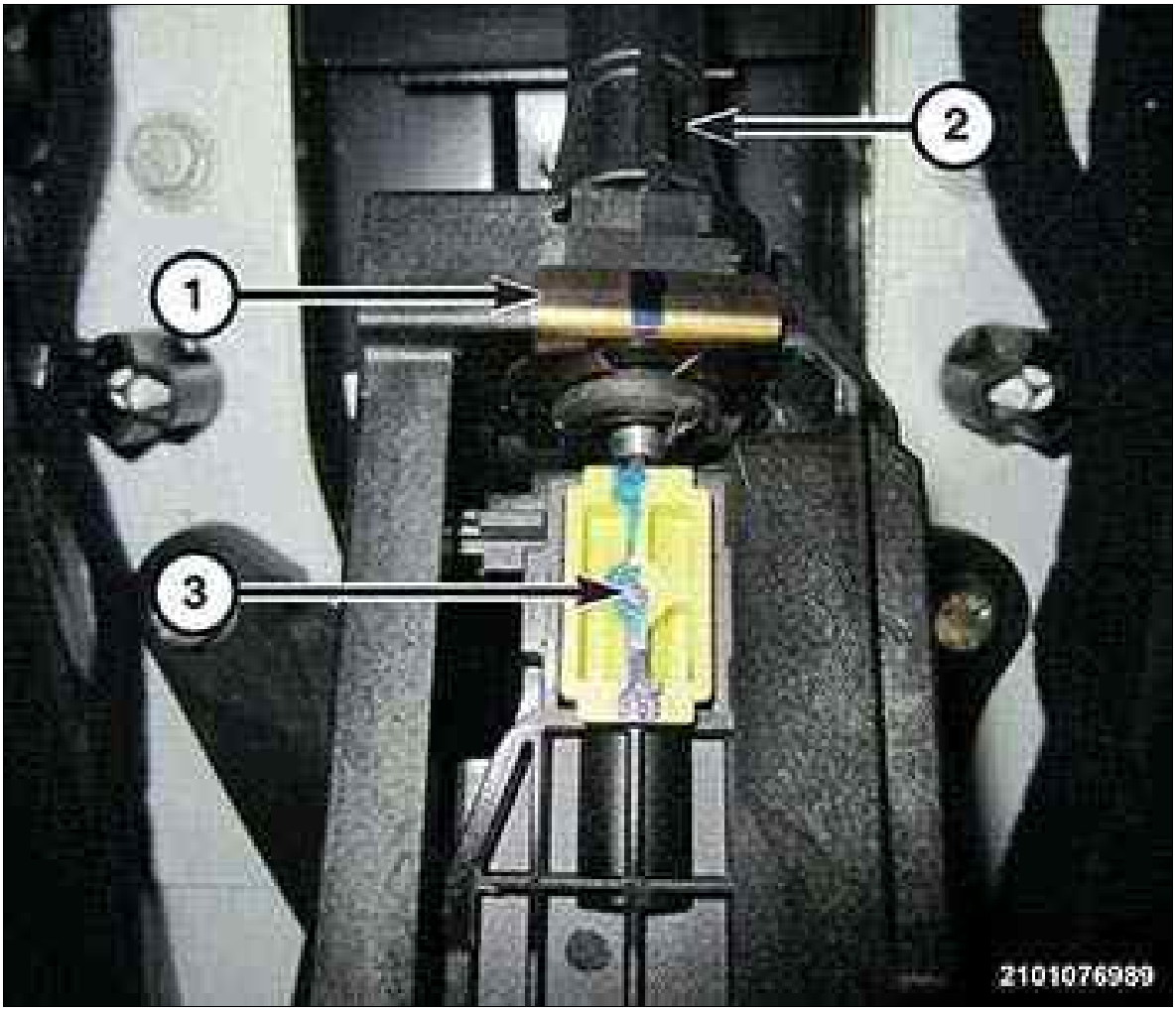
Fig 4: Shifter Cable, Retainer & Adjuster Lock



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9. Install the shifter cable retainer (1).
10. With the shifter in the Park position, push the shifter cable adjuster lock (3) down so that it is flush to the shifter housing as shown in the illustration.
11. Verify shifter operation, and if necessary, adjust the shifter cable. Refer to CABLE, SHIFT, ADJUSTMENTS .
12. Install the floor console. Refer to CONSOLE, FLOOR, REMOVAL AND INSTALLATION .
13. Connect the negative battery cable. If equipped with an Intelligent Battery Sensor (IBS), connect the IBS connector to the negative battery cable.

TUBE, OIL > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > REMOVAL

1. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
2. Remove the left front tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .

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Fig 1: Oil Supply Tube & Bolts

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3. Remove the oil supply tube bolts (1 and 3).
4. Remove the oil supply tube (2) from the transmission.

TUBE, OIL > REMOVAL AND INSTALLATION > REMOVAL AND INSTALLATION > INSTALLATION

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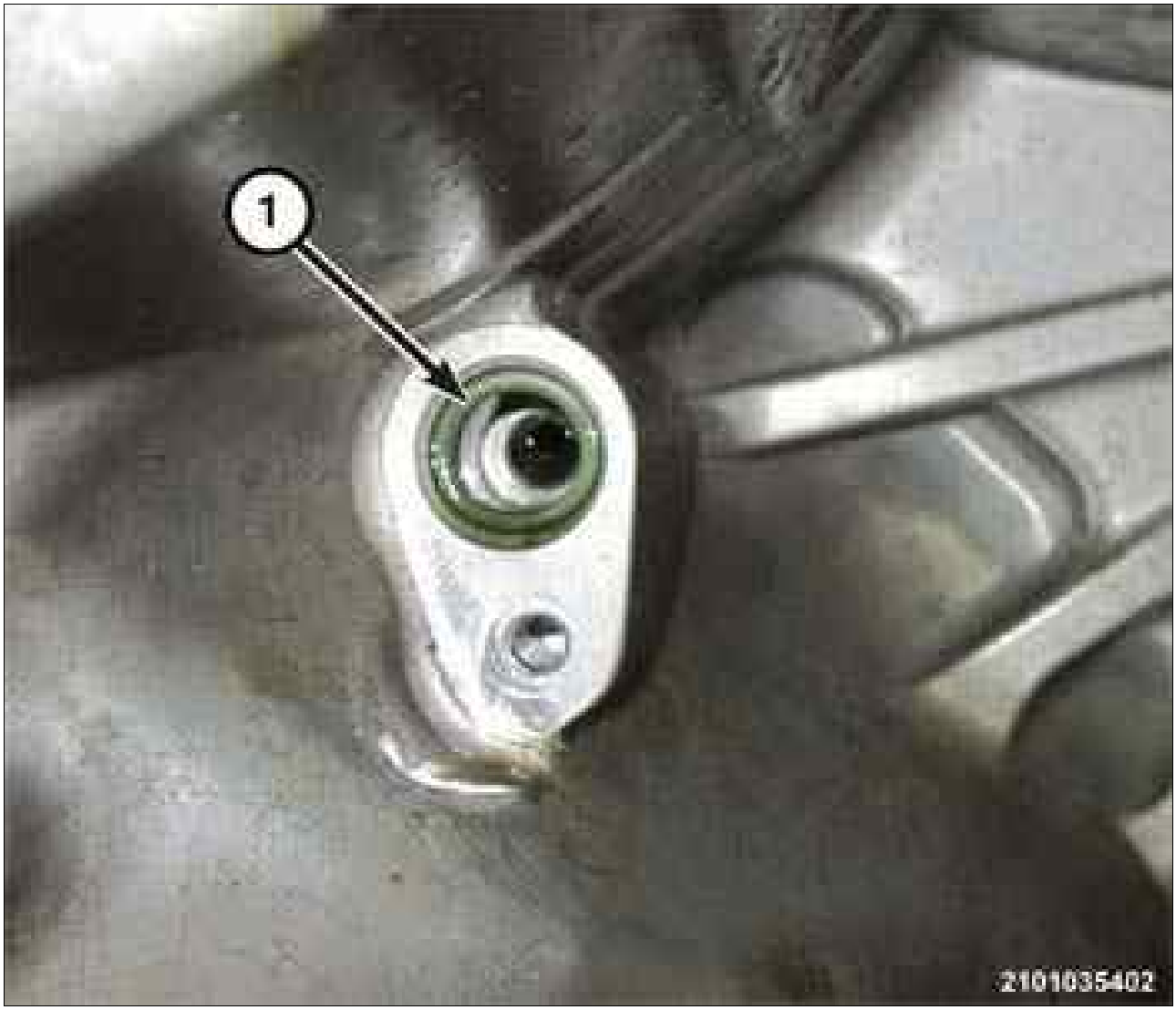
Fig 1: O-Ring Seal Near Differential End For Oil Supply Tube



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1. Replace the O-ring seal (1) near the differential end for the oil supply tube.

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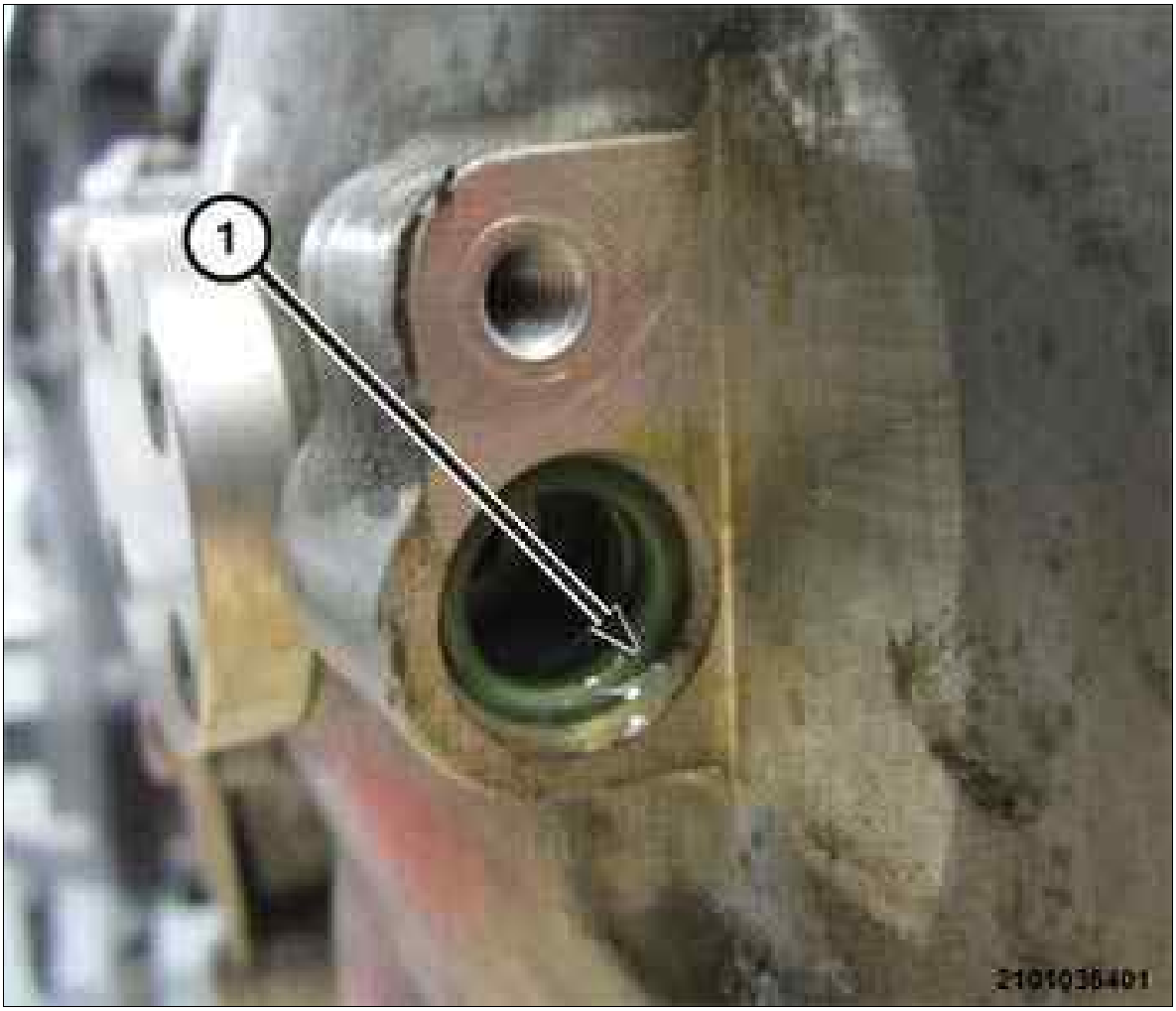
Fig 2: O-Ring Seal Near Transmission For Oil Supply Tube



Courtesy of CHRYSLER GROUP, LLC

2. Replace the O-ring seal (1) near the end of the transmission for the oil supply tube.

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Fig 3: Oil Supply Tube & Bolts

Courtesy of CHRYSLER GROUP, LLC

3. Install the oil supply tube (2) onto transmission.
4. Install the oil supply tube bolts (1 and 3) and tighten to the proper torque specification. Refer to SPECIFICATIONS .
5. Install the left front tire and wheel assembly. Refer to REMOVAL AND INSTALLATION .
6. Fill the transmission to the proper level with the correct fluid. Refer to FLUID AND FILTER, STANDARD PROCEDURE .

VALVE BODY > REMOVAL AND INSTALLATION > 2.0 TURBO DIESEL -170 HP > REMOVAL

1. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
2. Remove the battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
3. Raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .

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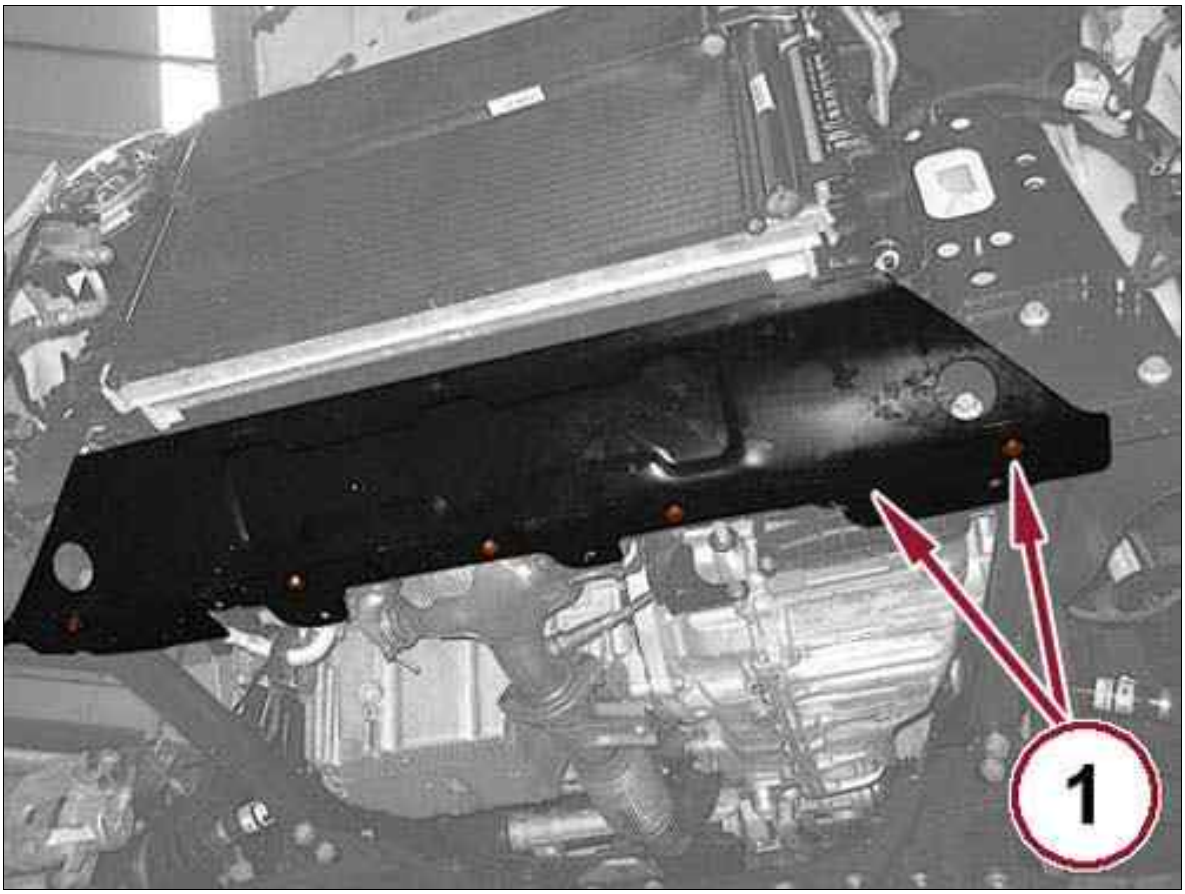
4. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION or BELLY PAN, SIDE, REMOVAL AND INSTALLATION .

5. Remove the front fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .

Fig 1: Lower Core Support Reinforcement Beam Screws



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6. Remove the screws (1) and remove the lower core support reinforcement beam.

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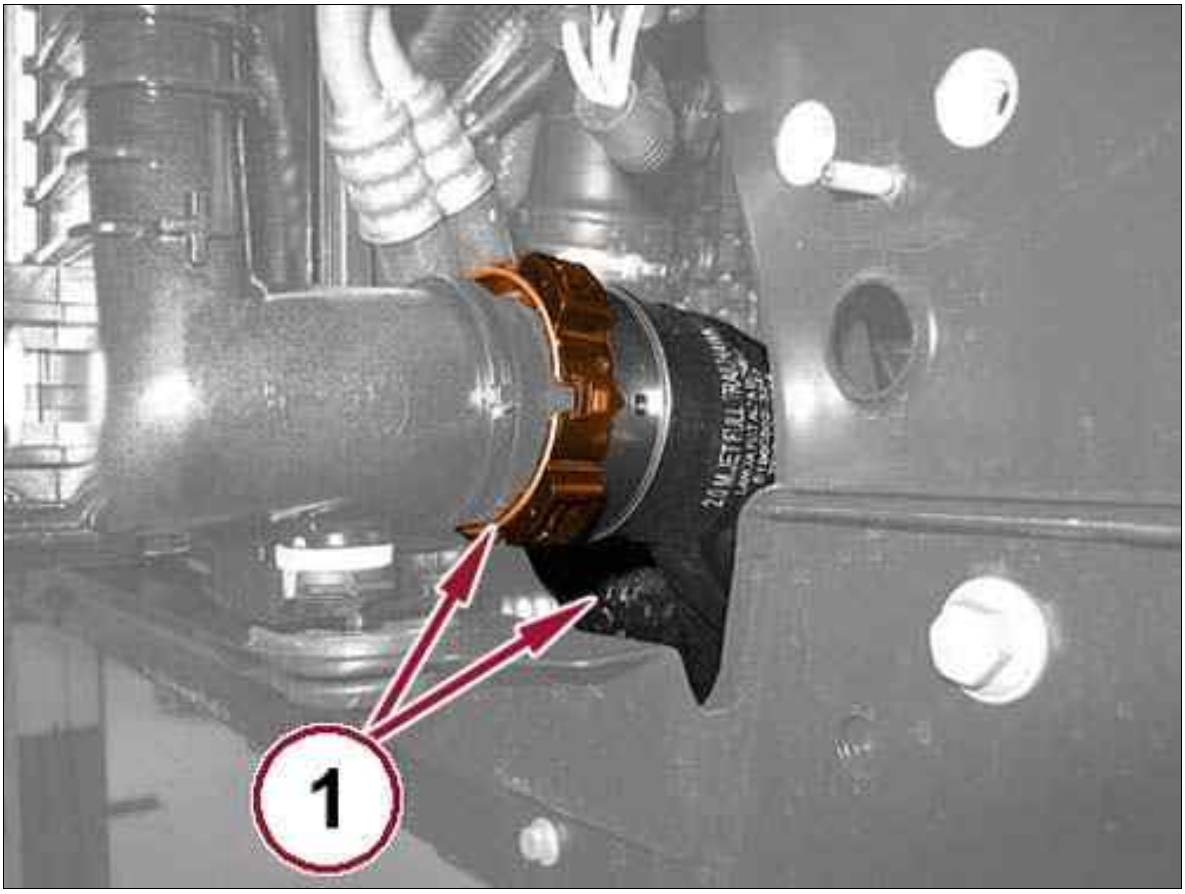
Fig 2: Charge Air Cooler Outlet Hose



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7. Disconnect the charge air cooler outlet hose (1) from the charge air cooler.

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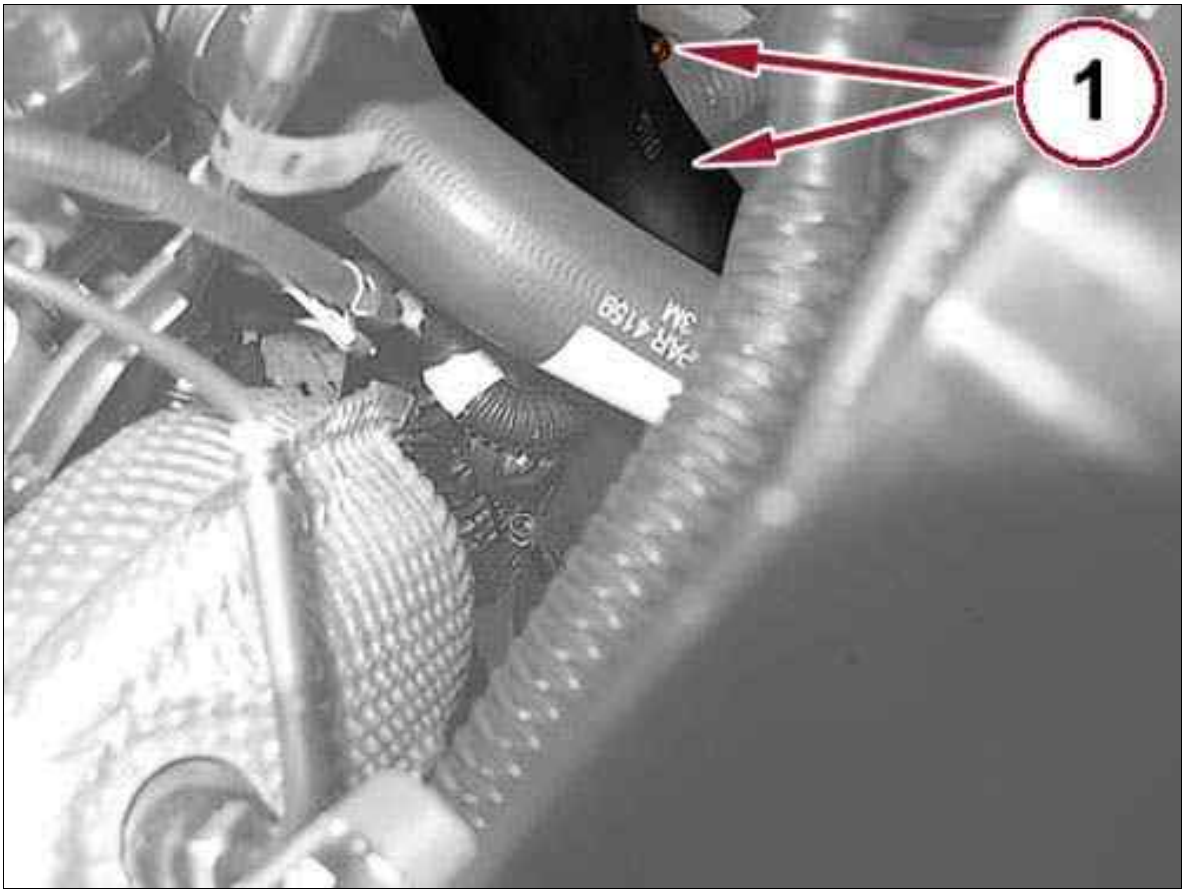
Fig 3: Throttle Body



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8. Remove the bolt securing the charge air cooler intermediate tube to the throttle body (1).

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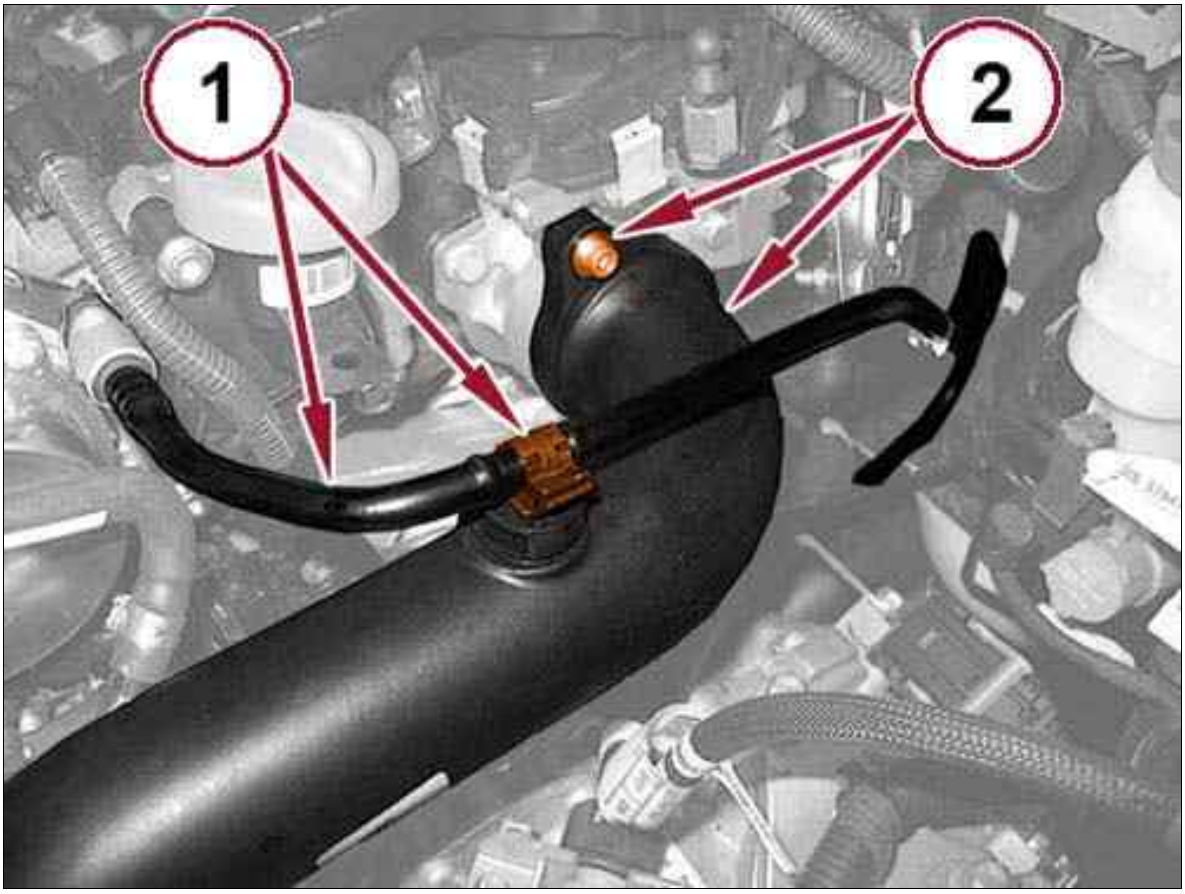
Fig 4: Throttle Body Bolts & Retaining Clips



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9. Release the power brake booster vacuum hose from the retaining clip (1).
10. Remove the charge air cooler tube to throttle body bolts (2) and remove the tube.

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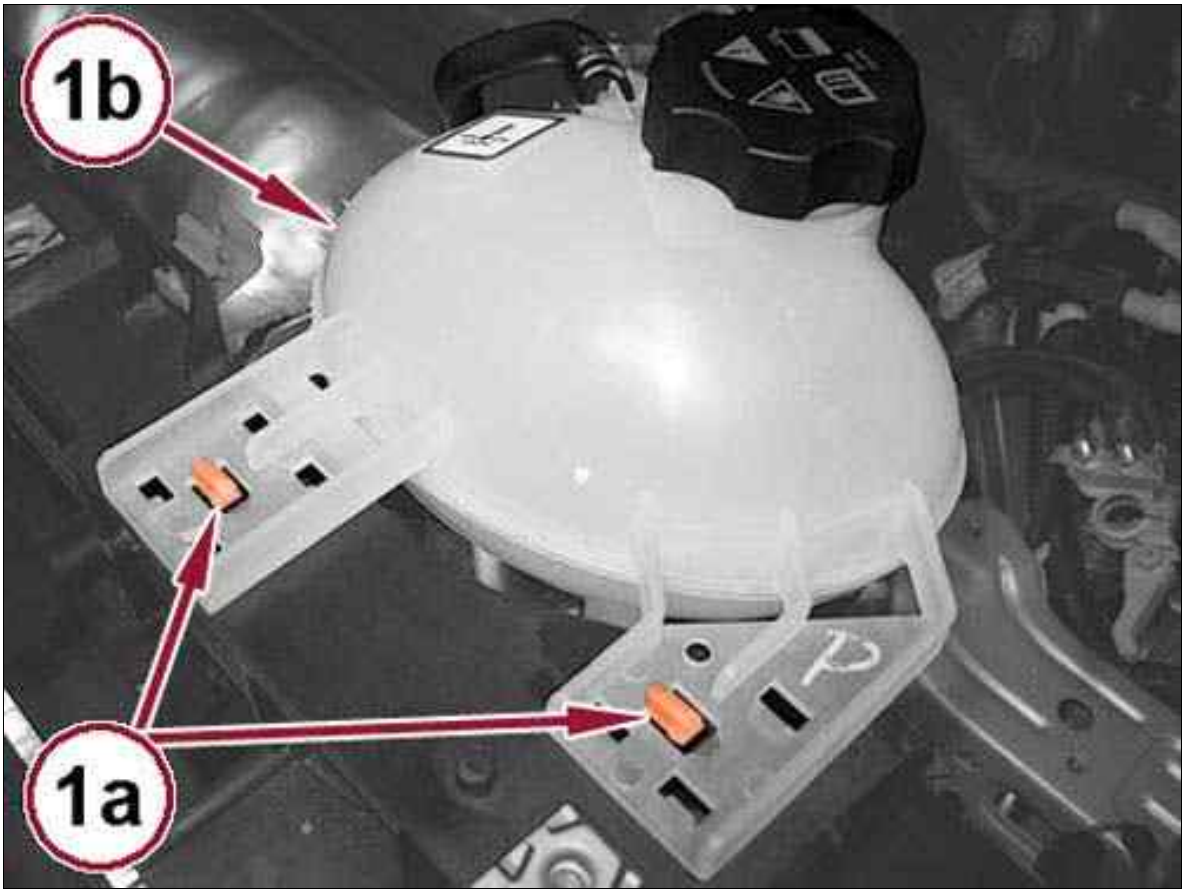
Fig 5: Coolant Reservoir & Tabs



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11. Press the release tabs (1a) to detach the coolant reservoir (1b) and position the reservoir aside.

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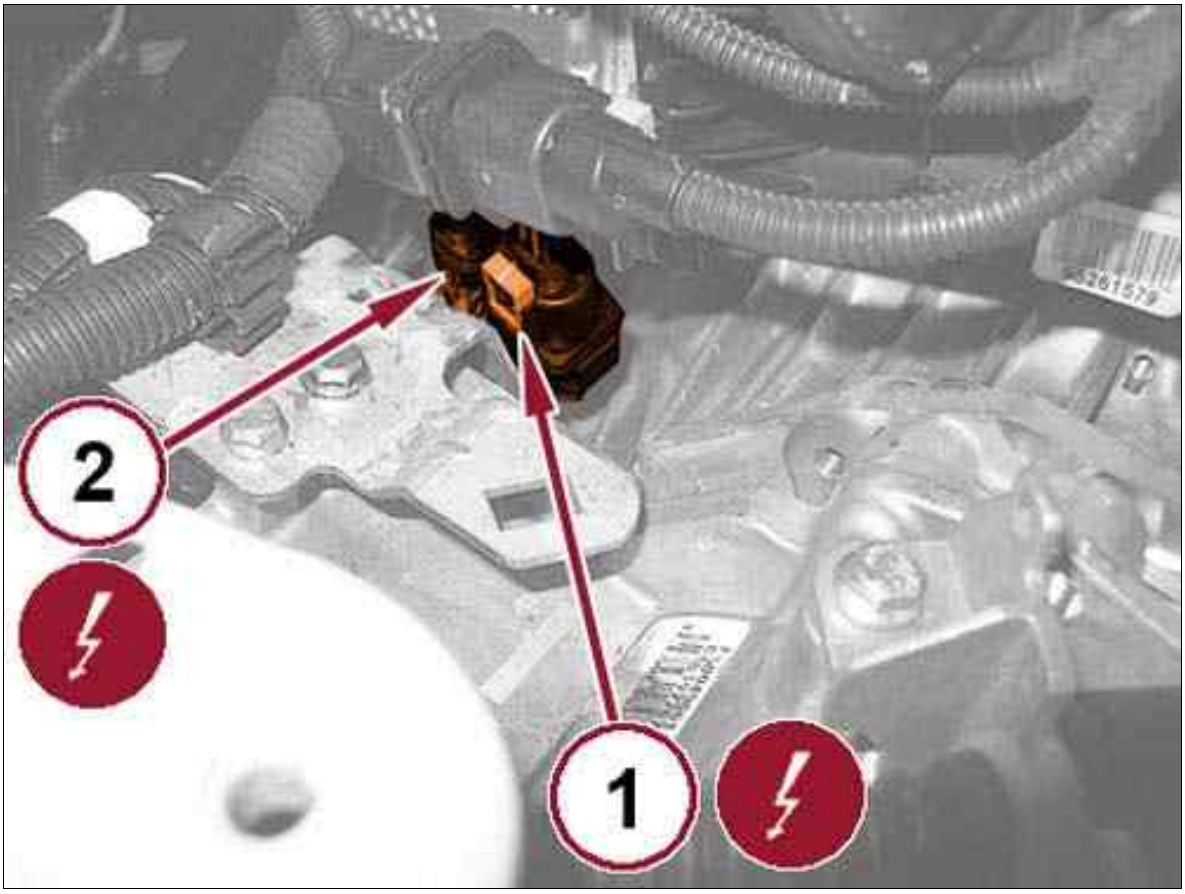
Fig 6: Downstream Oxygen Sensor & Temperature Sensor Wire Harness Connector



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12. Disconnect the downstream oxygen sensor wire harness connector (1).
13. Disconnect the Diesel Particulate Filter (DPF) downstream temperature sensor wire harness connector (2).

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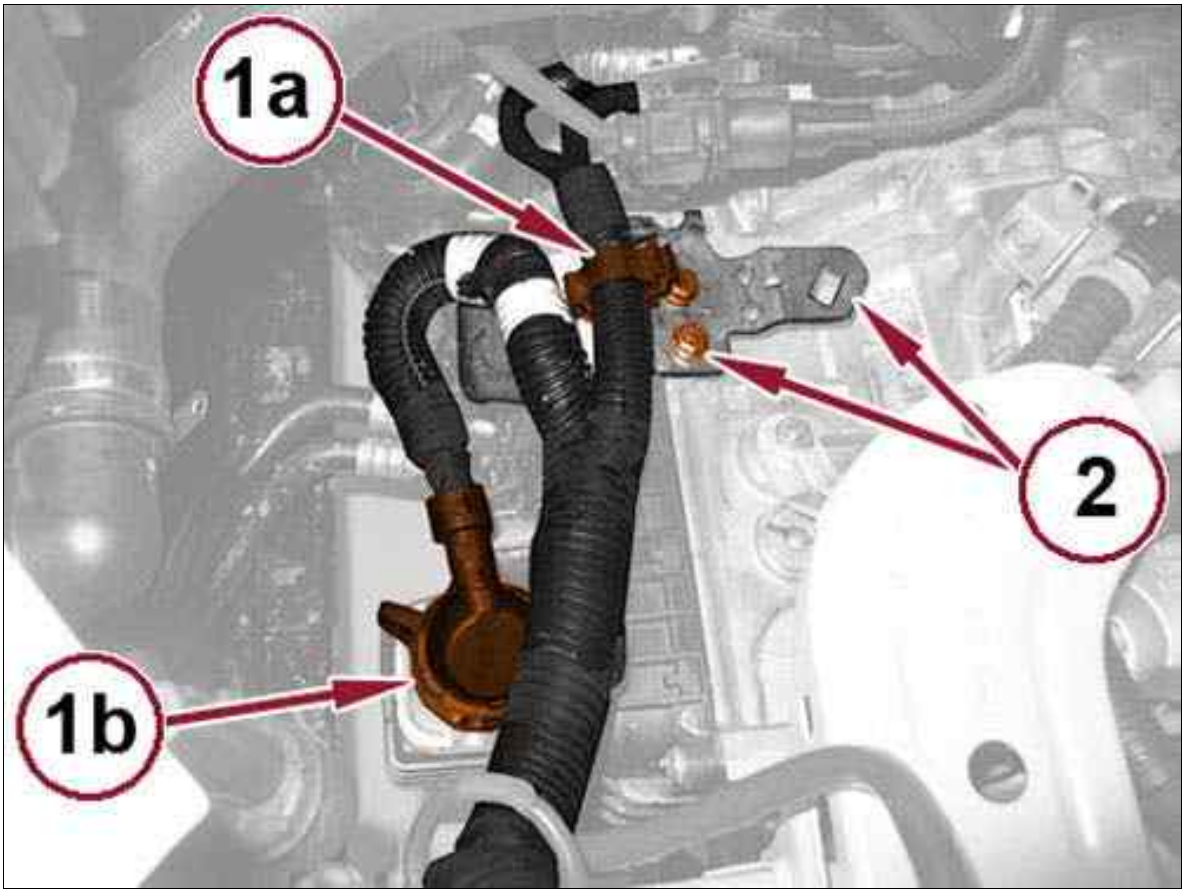
Fig 7: Wire Harness Retainer & Lock Lever



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14. Open the wire harness retainer (1a), rotate the lock lever (1b) counterclockwise and disconnect the wire harness connector from the socket on the transmission oil pan.

15. Remove the wire harness retainer (2).

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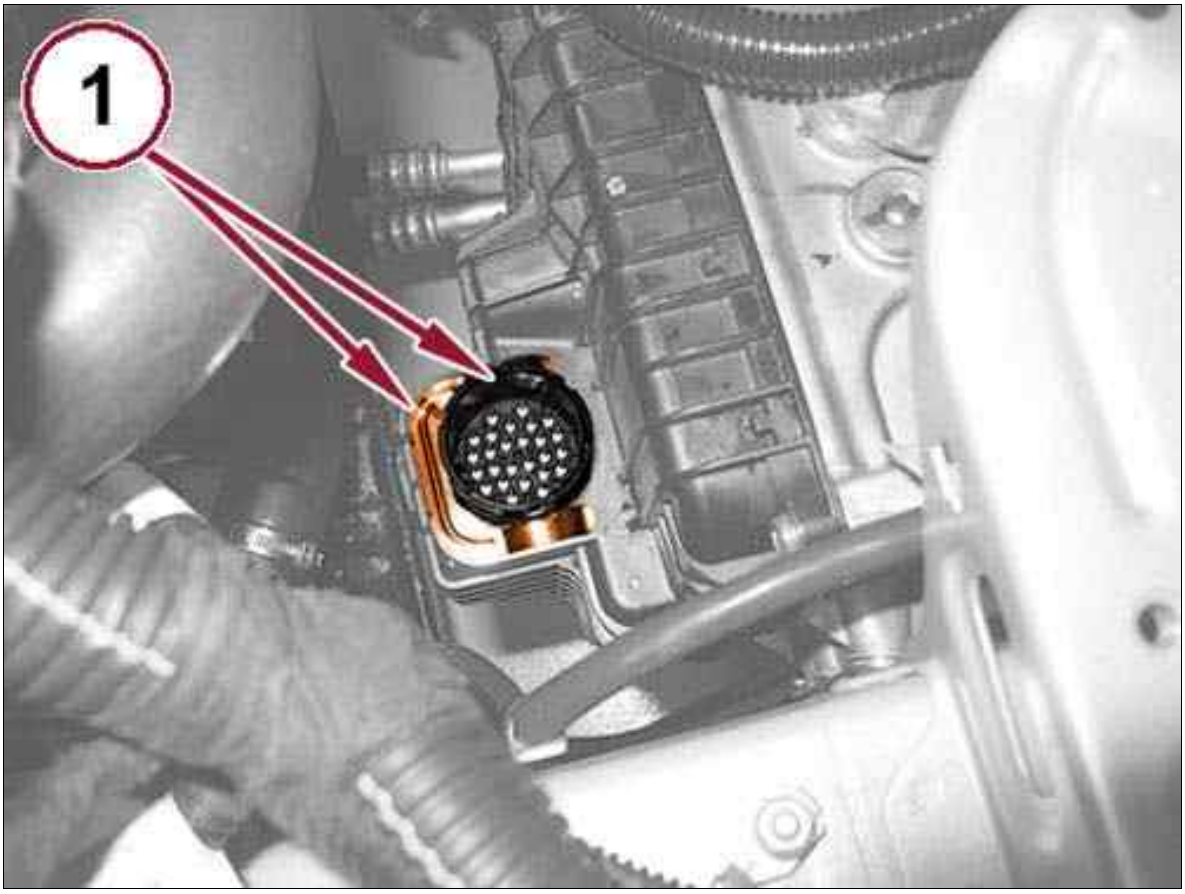
Fig 8: Transmission Wire Harness Retaining Clip, Connector & Valve Body Cover



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16. Remove the transmission wire harness retaining clip and push the connector into the valve body cover (1).

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Fig 9: Valve Body Cover Upper Bolts

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17. Remove the accessible upper bolts (1) from the valve body cover.

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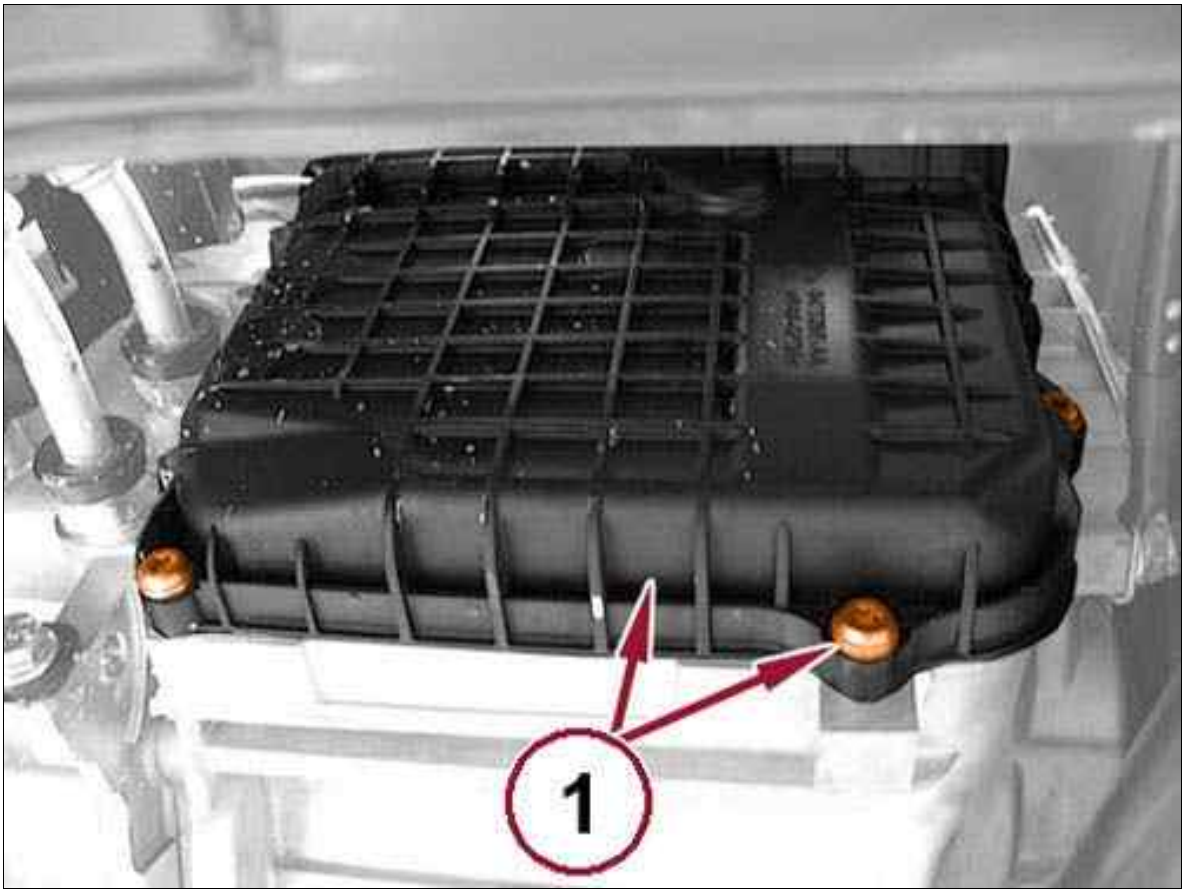
Fig 10: Lower Valve Body Cover Bolts



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18. Remove the remaining lower valve body cover bolts.

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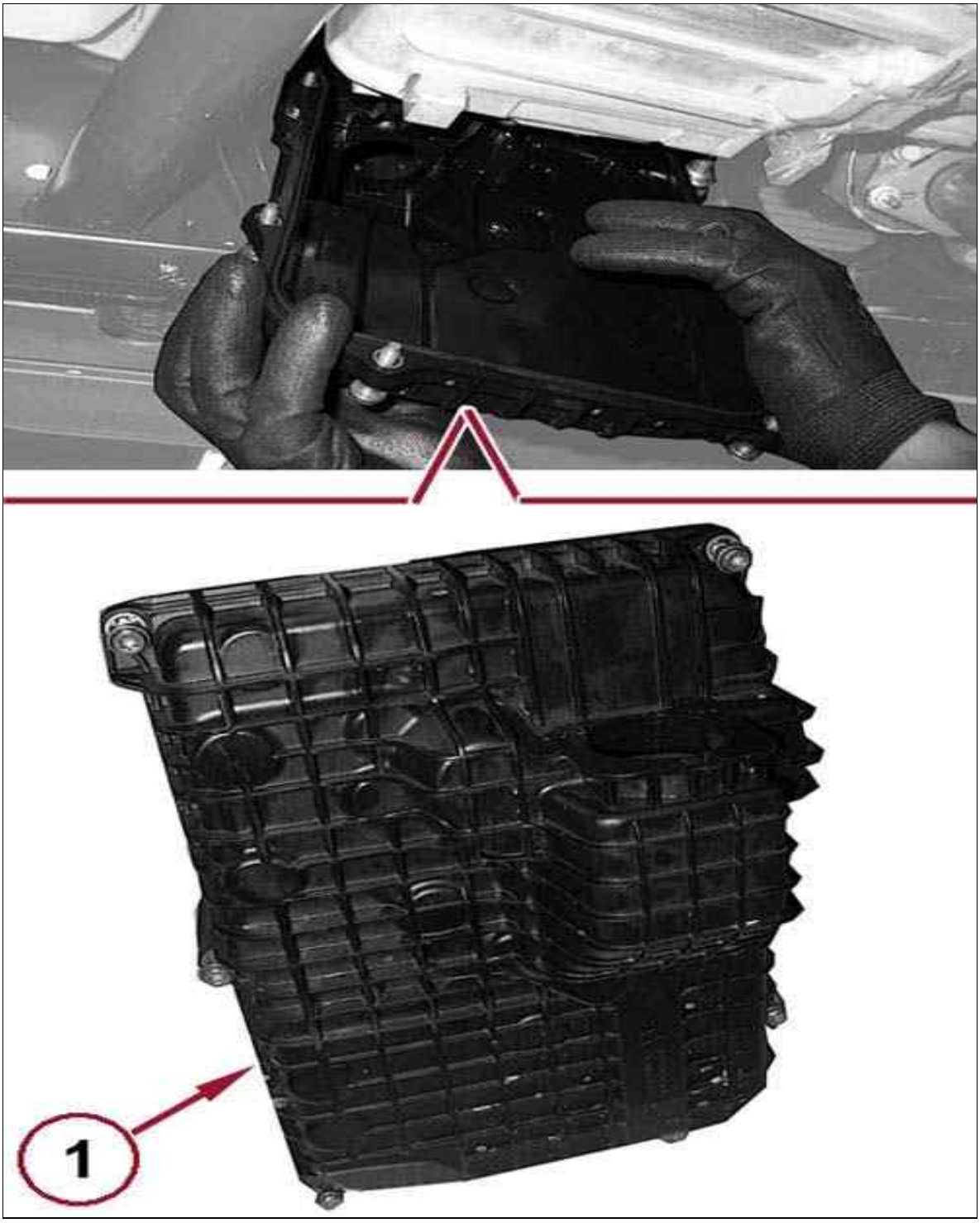
Fig 11: Valve Body Cover



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19. Remove the valve body cover (1).

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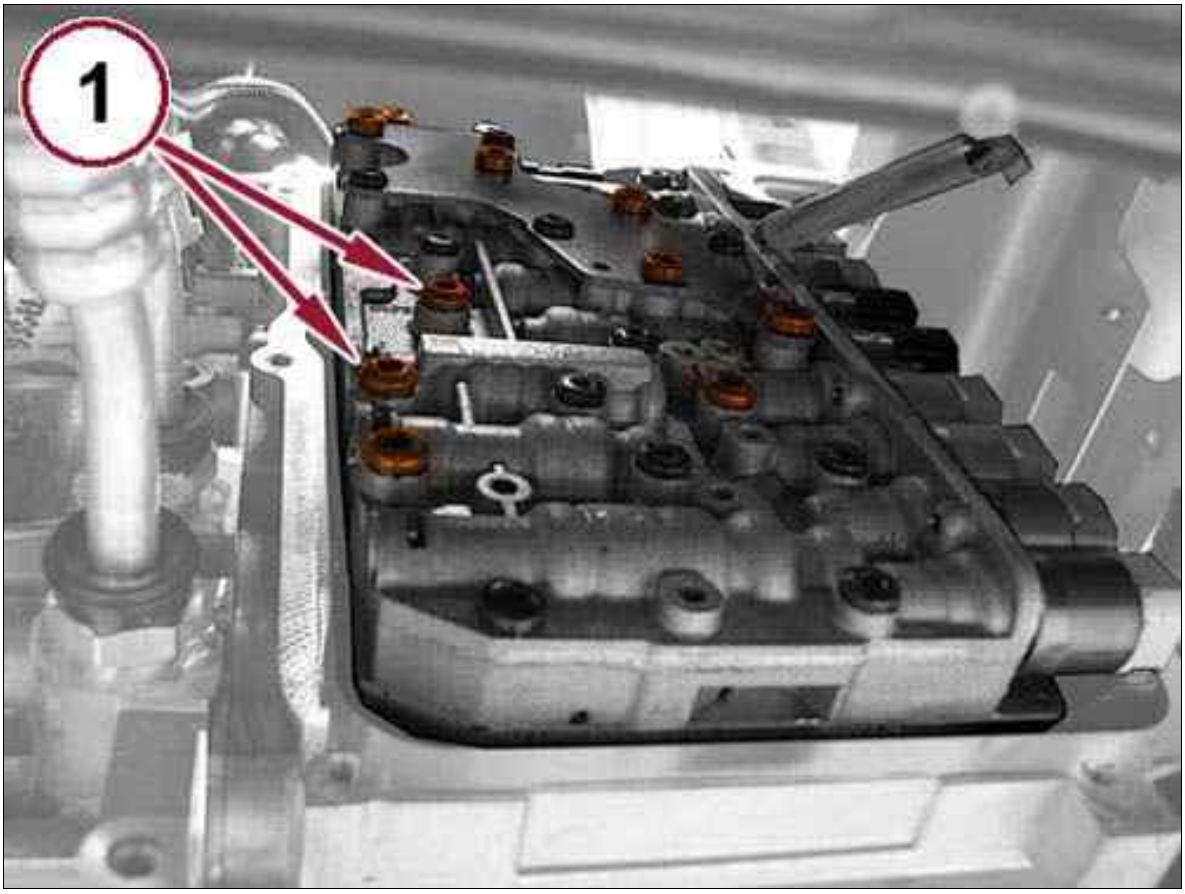
Fig 12: Valve Body & Bolts



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20. Remove the ten valve body to case bolts (1).

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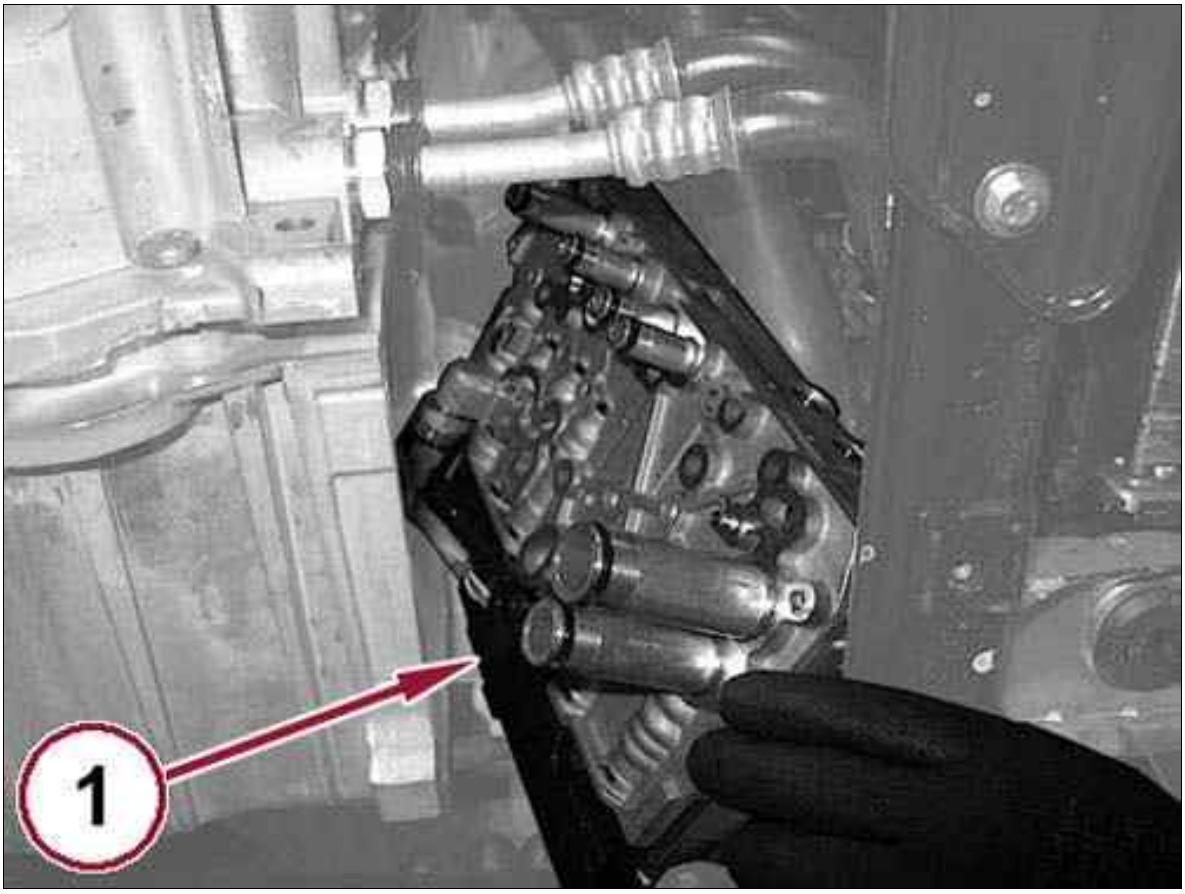
Fig 13: Separating The Valve Body From The Transmission



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> *NOTE:*
>
> *The fluid transfer tubes may come out with the valve body.*

21. Using a suitable prying tool, separate the valve body (1) from the transmission.

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Fig 14: Transmission Range Sensor Mounting Screw

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22. Remove the Transmission Range Sensor (TRS) mounting screw (1).

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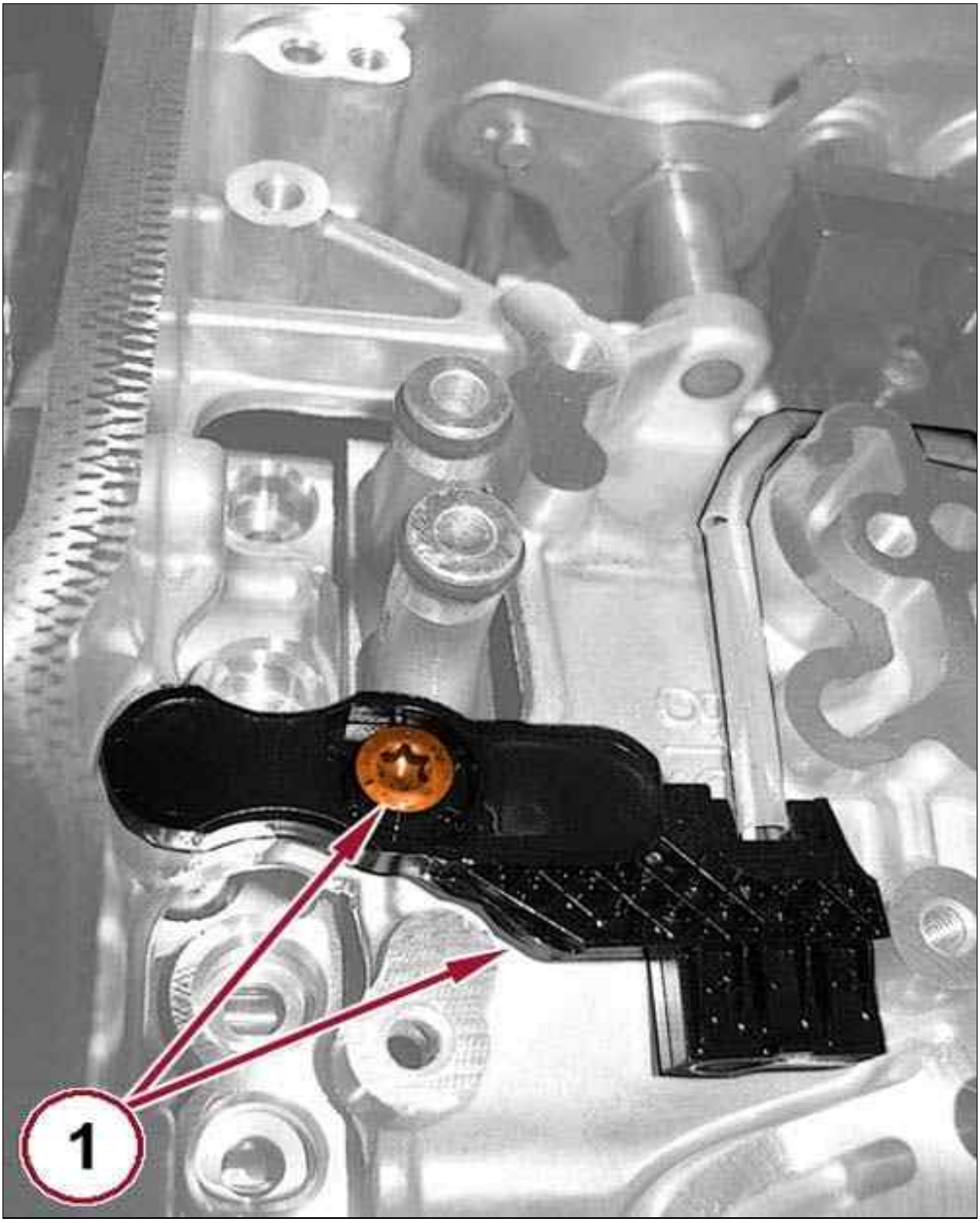
Fig 15: Transmission Speed Sensor, Screw & Case



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23. Remove the transmission speed sensor screw and pull the speed sensors from the case (1).

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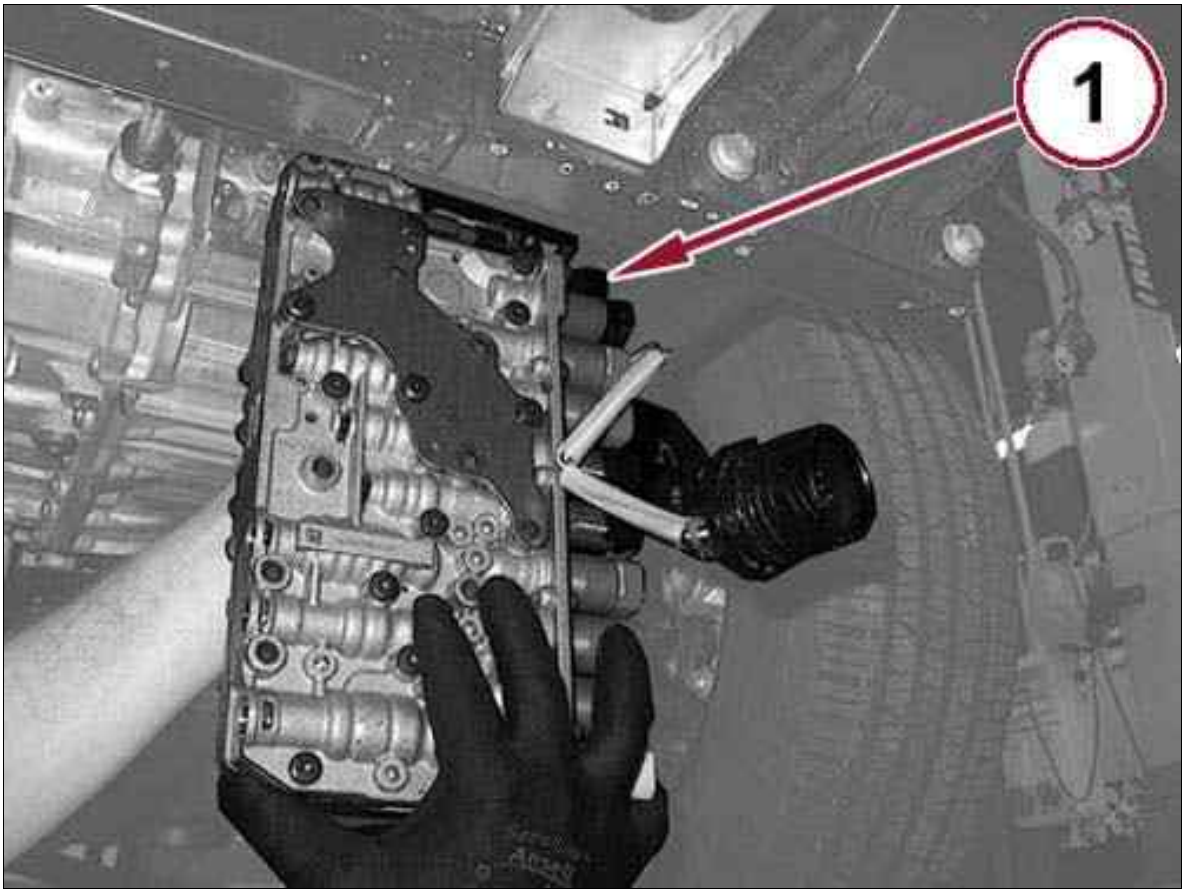
Fig 16: Valve Body With The Wire Harness



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24. Remove the valve body with the wire harness (1) from the vehicle.

> *NOTE:*
>
> *If the valve body is to be reused without disassembling it, store the valve body in a clean area until it is installed.*

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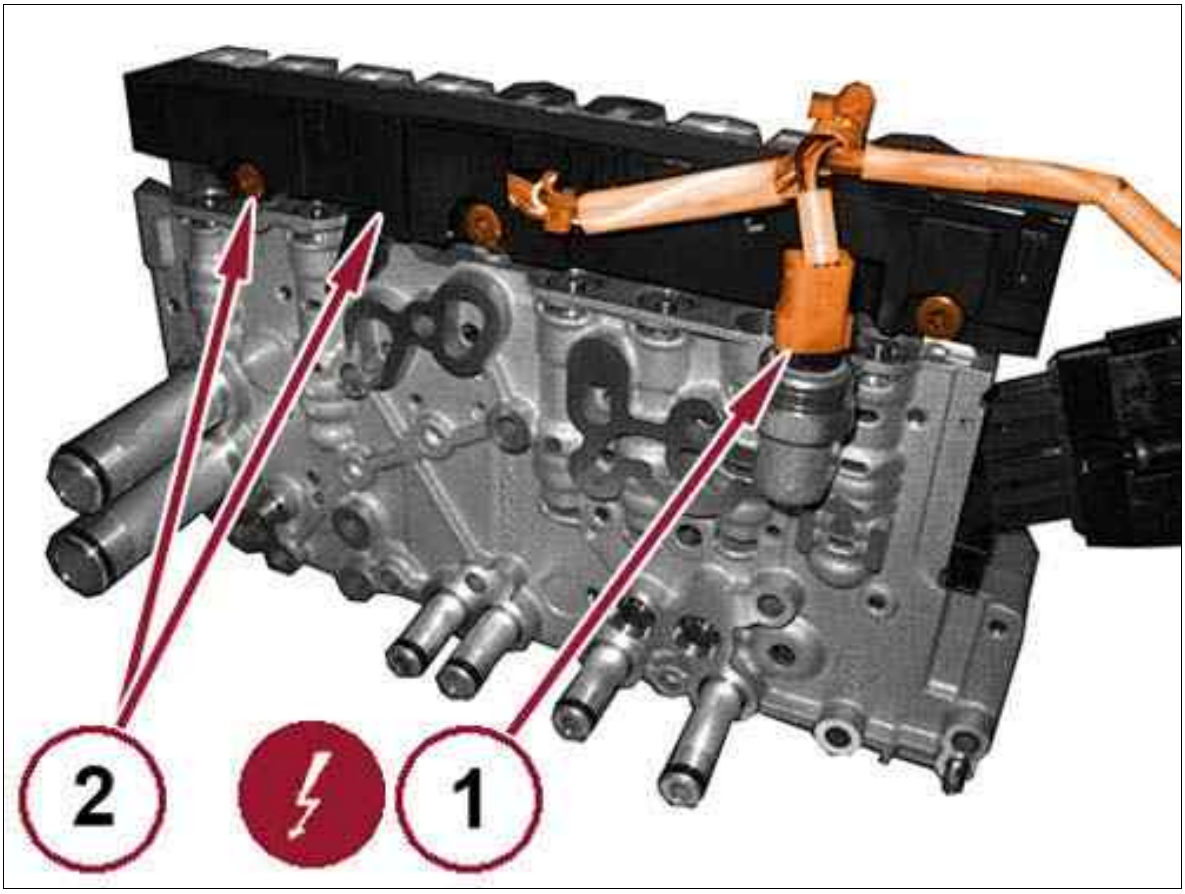
Fig 17: Transmission Fluid Pressure Transducer & Solenoid Connector Screws



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25. If necessary, disconnect the wiring harness from the transmission fluid pressure transducer (1).
26. To remove internal transmission harness, remove the screws from the solenoid connectors and lift the harness (2) from the valve body.

VALVE BODY > REMOVAL AND INSTALLATION > 2.0 TURBO DIESEL -170 HP > INSTALLATION

NOTE:

Before installing the valve body, replace the O-ring seals on the fluid transfer tubes. Apply a light coating of assembly lube on the O-rings to ease valve body installation.

1. If removed, position the internal transmission wire harness into position on the valve body.
2. Tighten the solenoid wire harness connector screws to the proper torque specification. Refer to SPECIFICATIONS .

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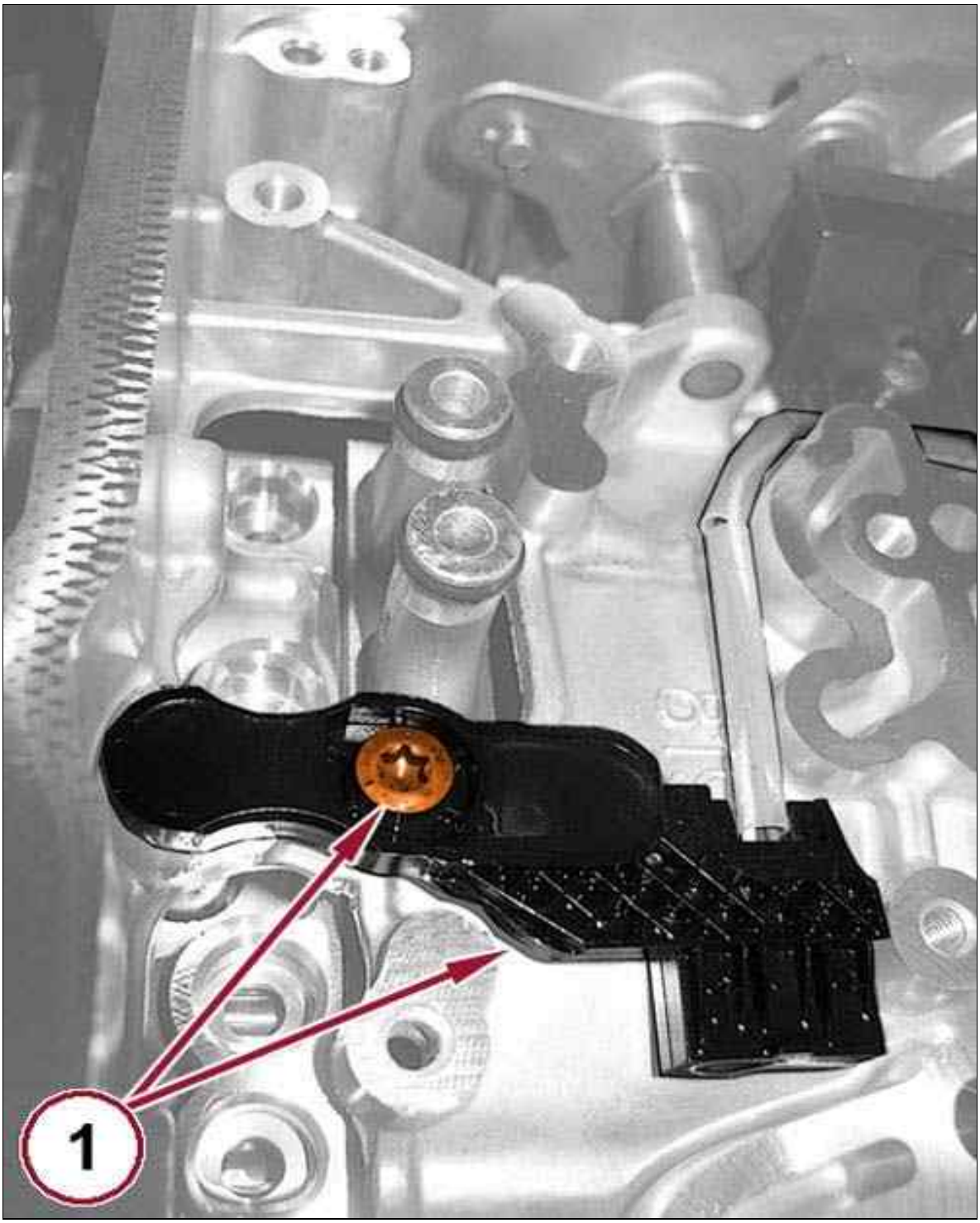
3. Connect the wire harness connector to the transmission fluid pressure transducer.

4. Clean the mating surfaces between the valve body and the transmission housing with a clean lint-free cloth.

   Fig 1: Transmission Speed Sensors & Screw



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5. install the transmission speed sensors and tighten the screw (1) to the proper torque specification. Refer to SPECIFICATIONS .

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Fig 2: Transmission Range Sensor & Screw

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6. Install the Transmission Range Sensor (TRS) and tighten the screw to the proper torque specification. Refer to SPECIFICATIONS .
7. Align the valve body with the fluid transfer tubes manual lever with the manual valve.
8. Install the ten bolts to hold the valve body to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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> *NOTE:*
>
> *A light coating of assembly lube can be applied to the O-ring seals (2) to ease installation.*

9. Insert the transmission wire harness connector into the valve body cover with the flat side (2) of the socket on the left and install the retaining clip.
10. Place the valve body cover in position and install the bolts to hold the valve body cover to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .
11. Engage the transmission wire connector into the socket on the valve body cover.
12. Install the wire harness retainer bracket to the transmission and tighten the screws.
13. Position the wire harness in the routing clip.
14. Connect the transmission wire harness connector and rotate the lock lever clockwise.
15. Connect the wire harness connector to the downstream oxygen sensor.
16. Connect the wire harness connector to the downstream Diesel particulate Filter (DPF) exhaust gas temperature sensor.
17. Snap the engine coolant reservoir into position.
18. Install the charge air cooler tube in position and tighten the bolts at the throttle body.
19. Attach the vacuum hose to the routing clip on the charge air cooler tube.
20. Connect the charge air cooler tube to the charge air cooler.
21. Install the lower core support reinforcement beam and tighten the bolts.
22. Install the front fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .
23. Install the battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
24. Fill the transmission. Refer to FLUID AND FILTER, STANDARD PROCEDURE .
25. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION or BELLY PAN, SIDE, REMOVAL AND INSTALLATION .
26. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
27. Perform the Valve Body Solenoid Learn procedure if the valve body and/or the TCM was replaced during a repair. Refer to MODULE PROGRAMMING .
28. Perform Transmission Verification Test-948TE. Refer to STANDARD PROCEDURE .

VALVE BODY > REMOVAL AND INSTALLATION > 2.4L MULTIAIR > REMOVAL

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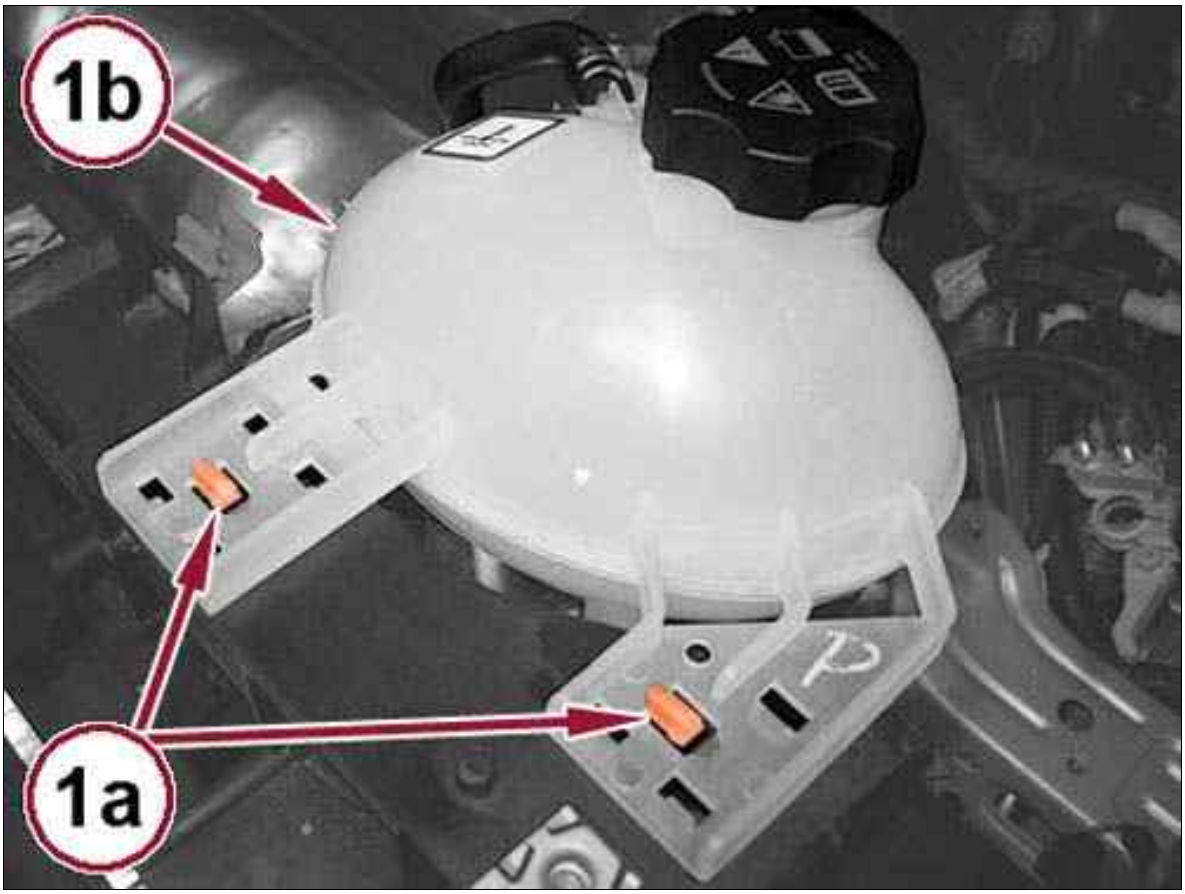
1. Remove the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
2. Remove the battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
3. Place the transmission in Neutral and raise and support the vehicle. Refer to HOISTING, STANDARD PROCEDURE .
4. Remove the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION or BELLY PAN, SIDE, REMOVAL AND INSTALLATION .
5. Remove the front fascia. Refer to FASCIA, FRONT, REMOVAL AND INSTALLATION .

   Fig 1: Coolant Reservoir & Tabs



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> *NOTE:*
>
> *It is not necessary to disconnect the coolant hoses from the coolant reservoir.*

6. Press the release tabs (1a) to detach the coolant reservoir (1b) and position the reservoir aside.

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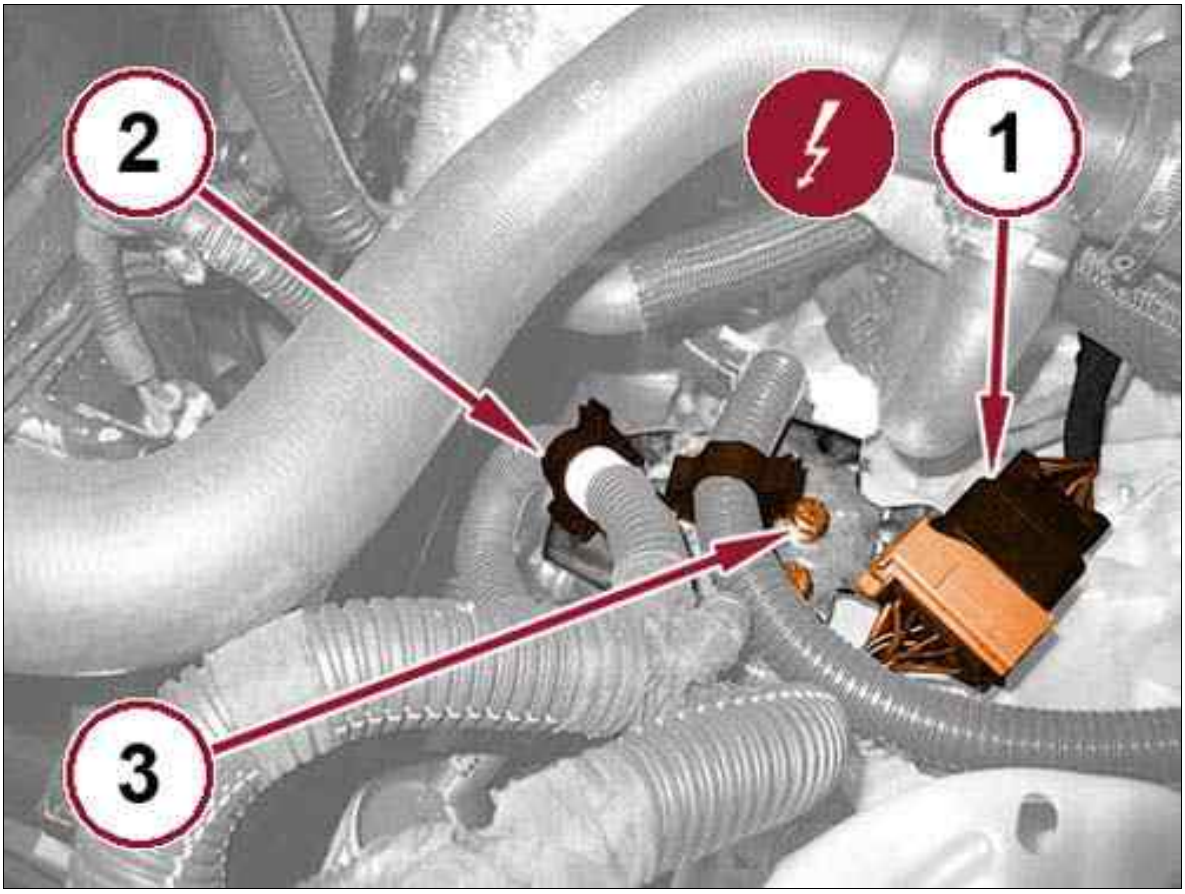
Fig 2: Wire Harness Retainer Bolts, Routing Clips & Connector



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7. Disconnect the wire harness connector (1).
8. Release the wire harness from the routing clips (2).
9. Remove the wire harness retainer bolts (3) and remove the bracket.

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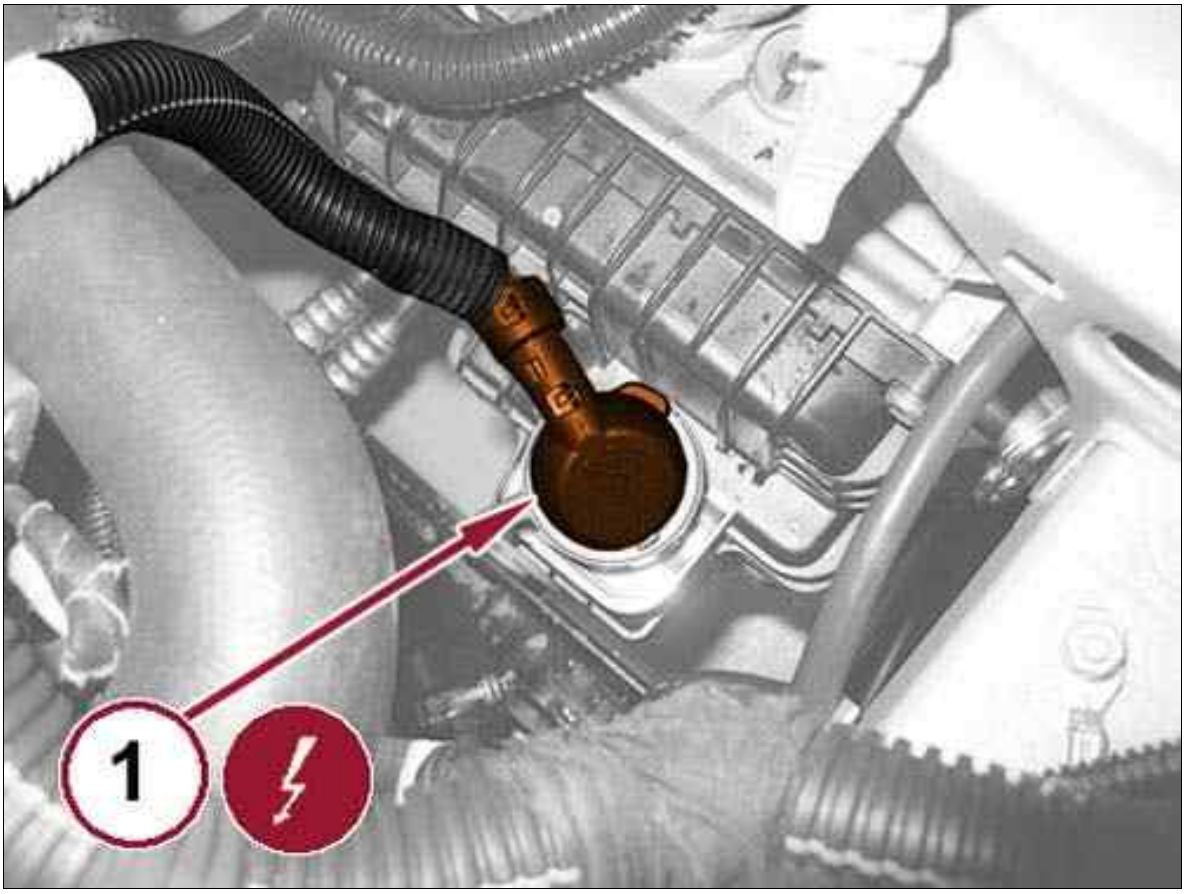
Fig 3: Lock Lever



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10. Rotate the lock lever (1) counterclockwise and disconnect the wire harness connector from the socket on the transmission oil pan.

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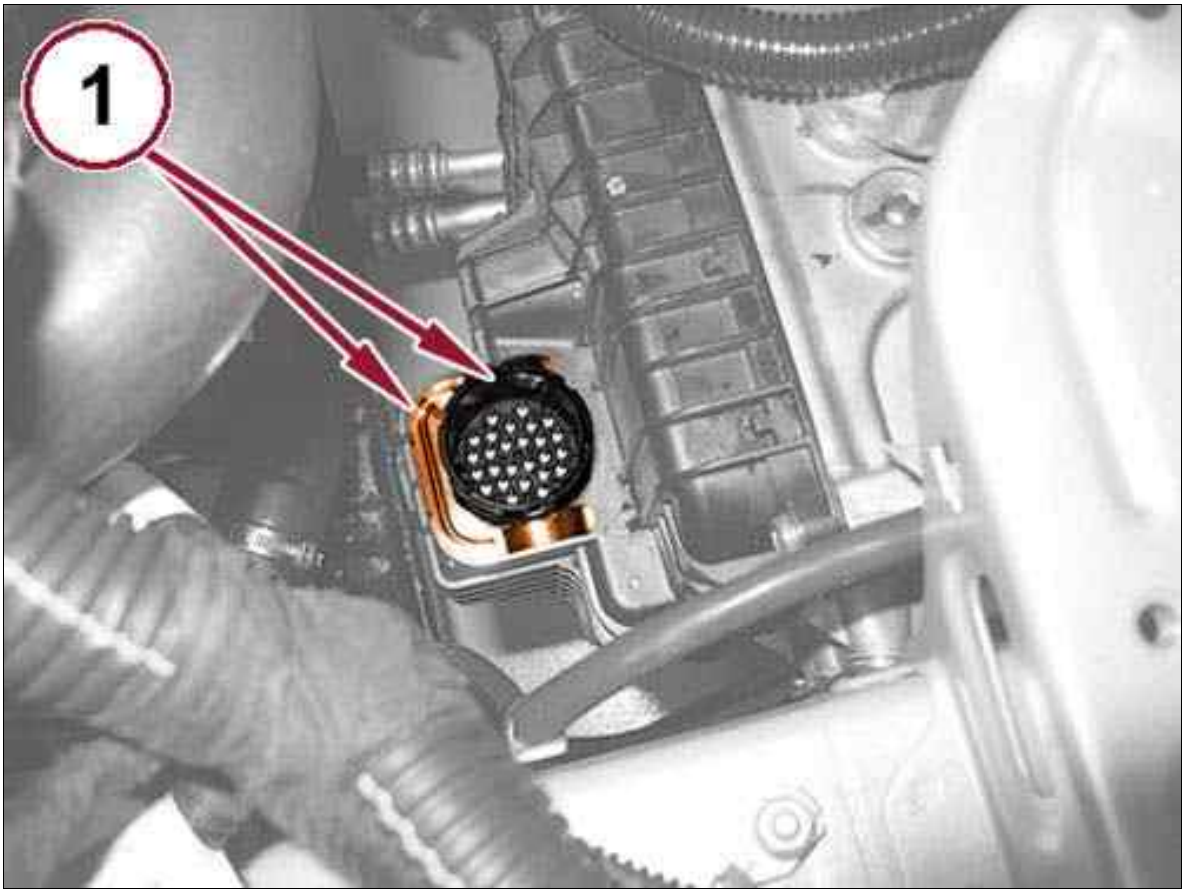
Fig 4: Transmission Wire Harness Retaining Clip, Connector & Valve Body Cover



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11.

12. Remove the transmission wire harness retaining clip and push the connector into the valve body cover (1).

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Fig 5: Valve Body Cover Upper Bolts

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13. Remove the accessible upper bolts (1) from the valve body cover.

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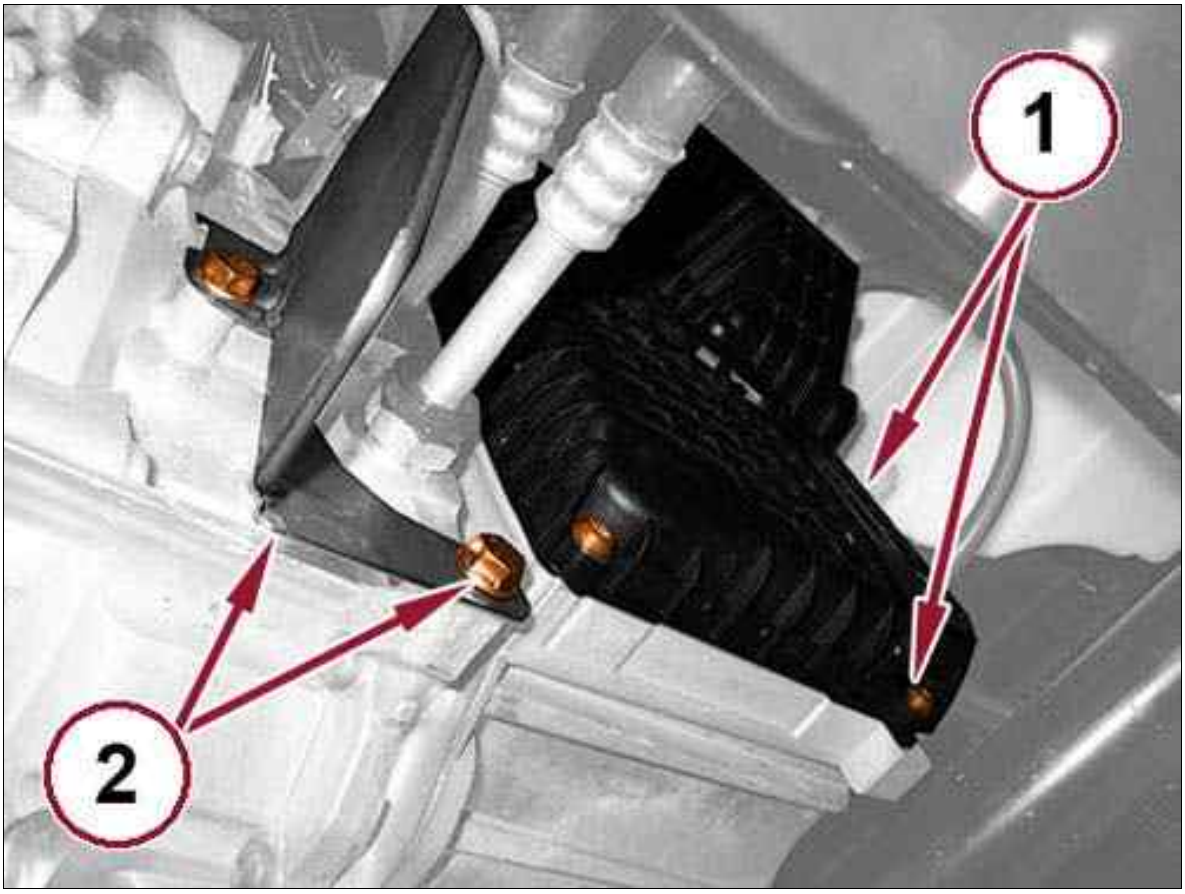
Fig 6: Transmission Oil Cooler Line Shield, Valve Body Cover & Bolts



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14. Remove the bolts and the transmission oil cooler line shield.
15. Remove the remaining lower valve body cover bolts (1).

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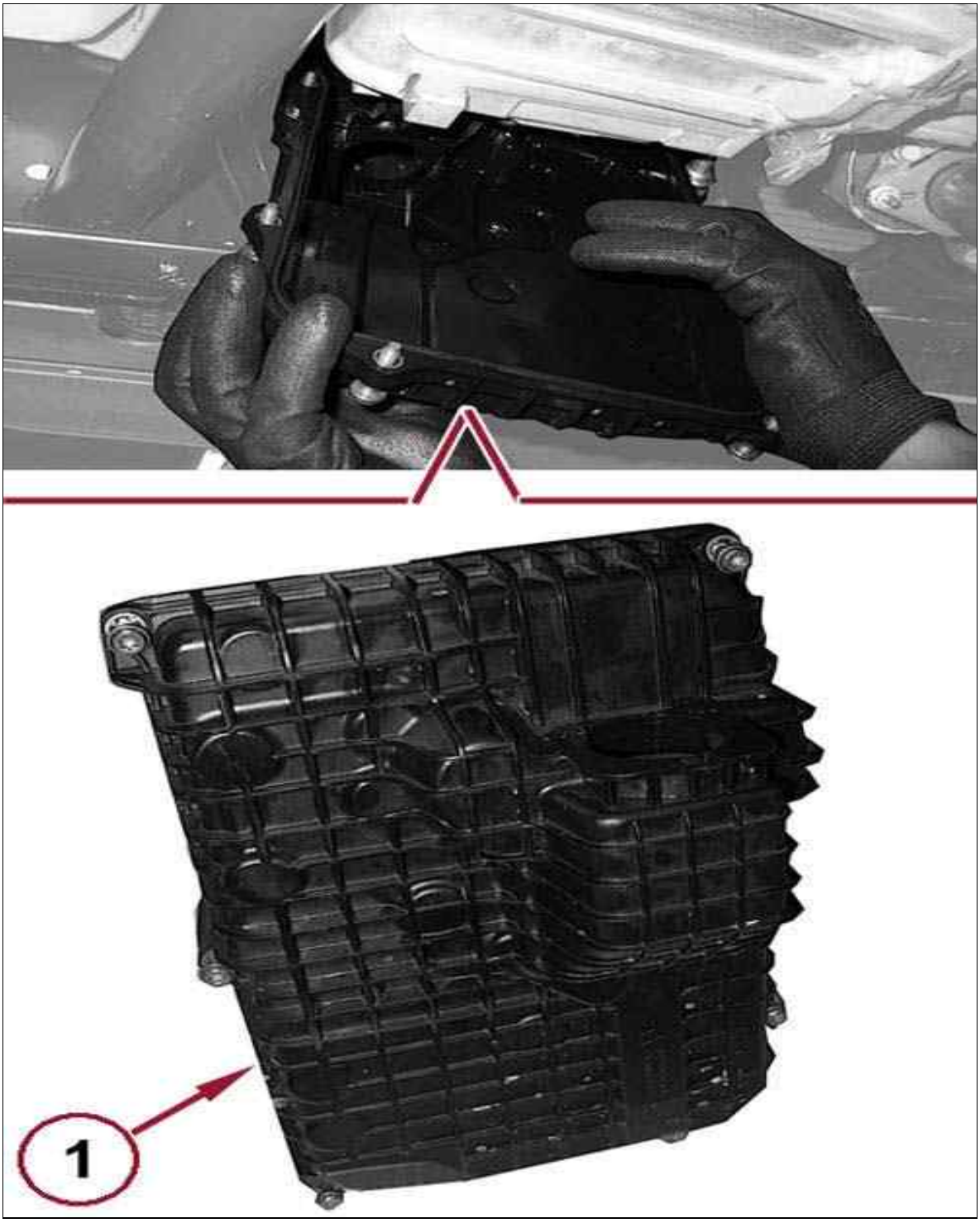
Fig 7: Valve Body Cover



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16. Remove the valve body cover (1).

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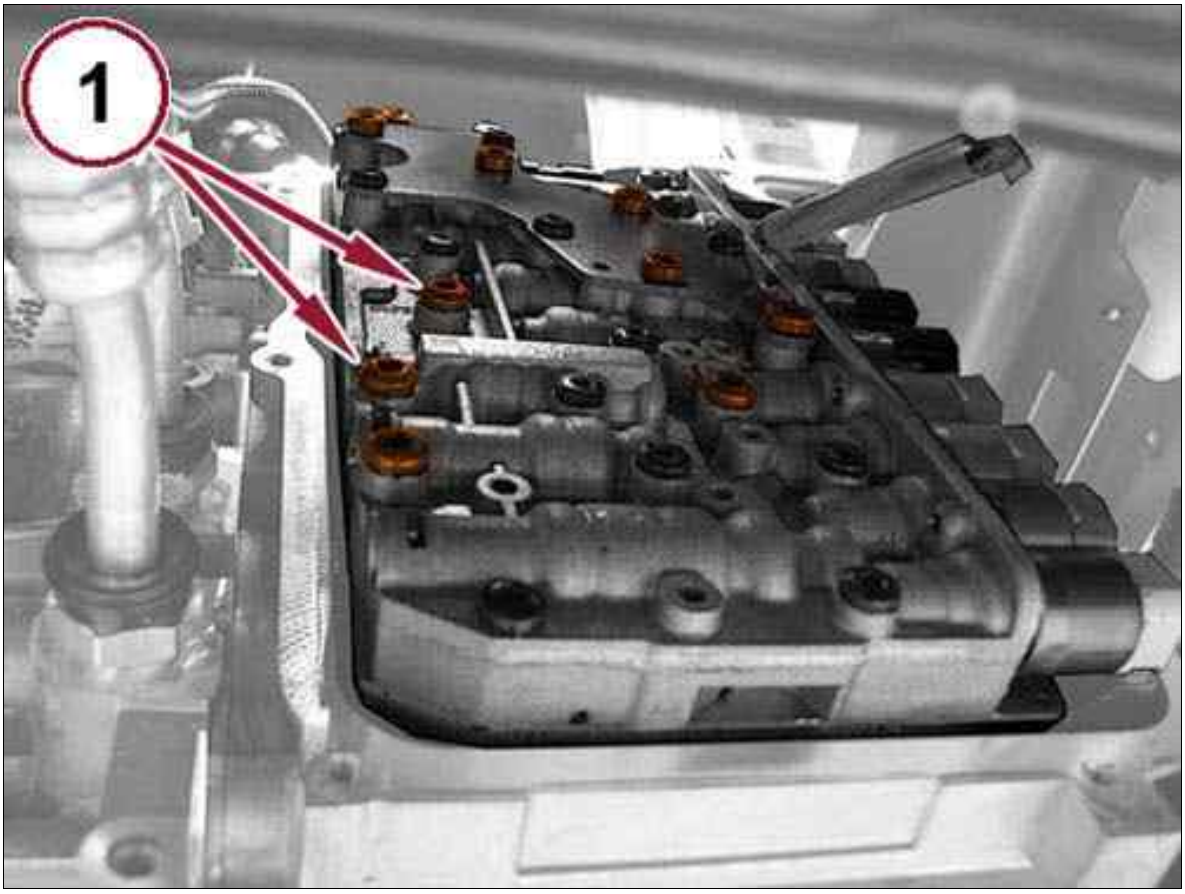
Fig 8: Valve Body & Bolts



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17. Remove the ten valve body to case bolts (1).

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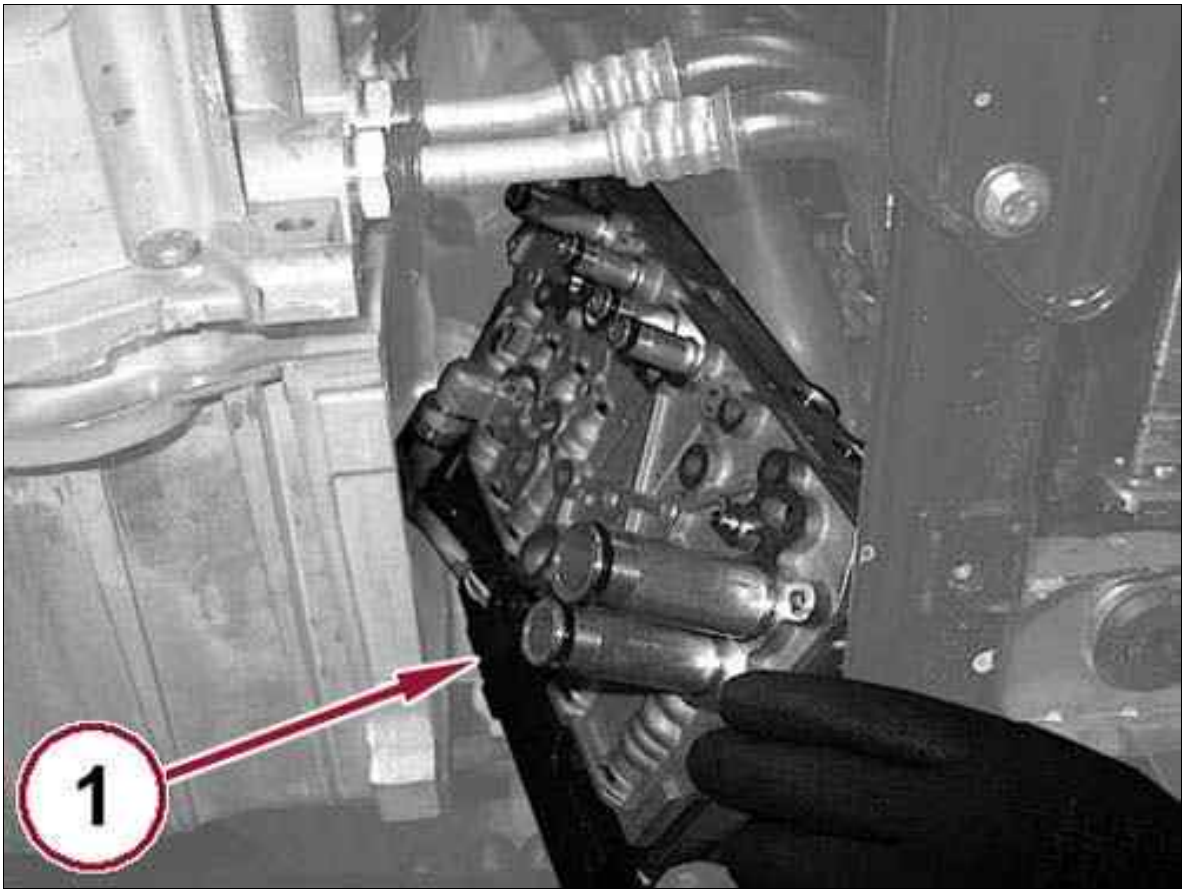
Fig 9: Separating The Valve Body From The Transmission



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> *NOTE:*
>
> *The fluid transfer tubes may come out with the valve body.*

18. Using a suitable prying tool, separate the valve body (1) from the transmission.

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Fig 10: Transmission Range Sensor Mounting Screw

Courtesy of CHRYSLER GROUP, LLC

19. Remove the Transmission Range Sensor (TRS) mounting screw (1).

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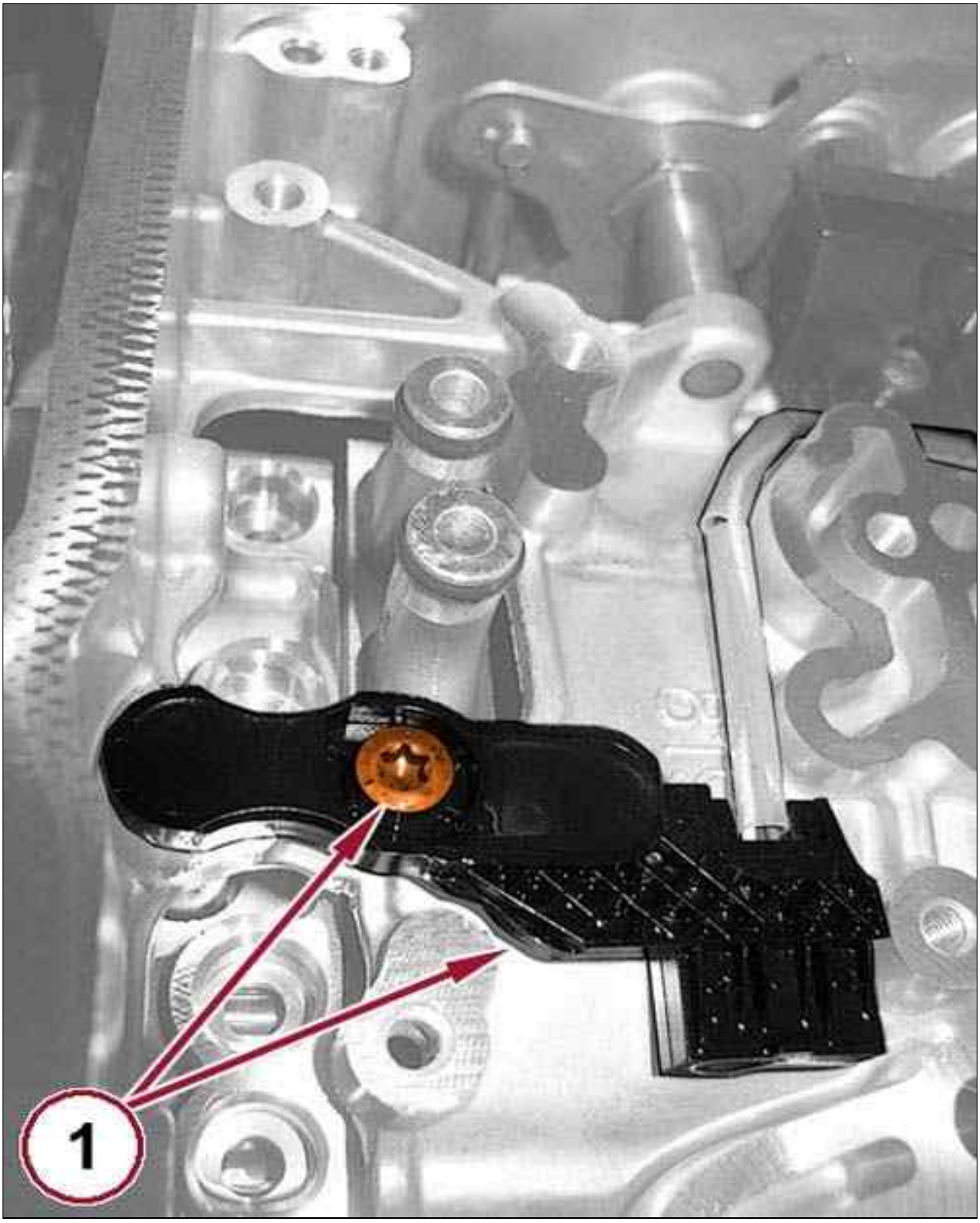
Fig 11: Transmission Speed Sensor, Screw & Case



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20. Remove the transmission speed sensor screw and pull the speed sensors from the case (1).

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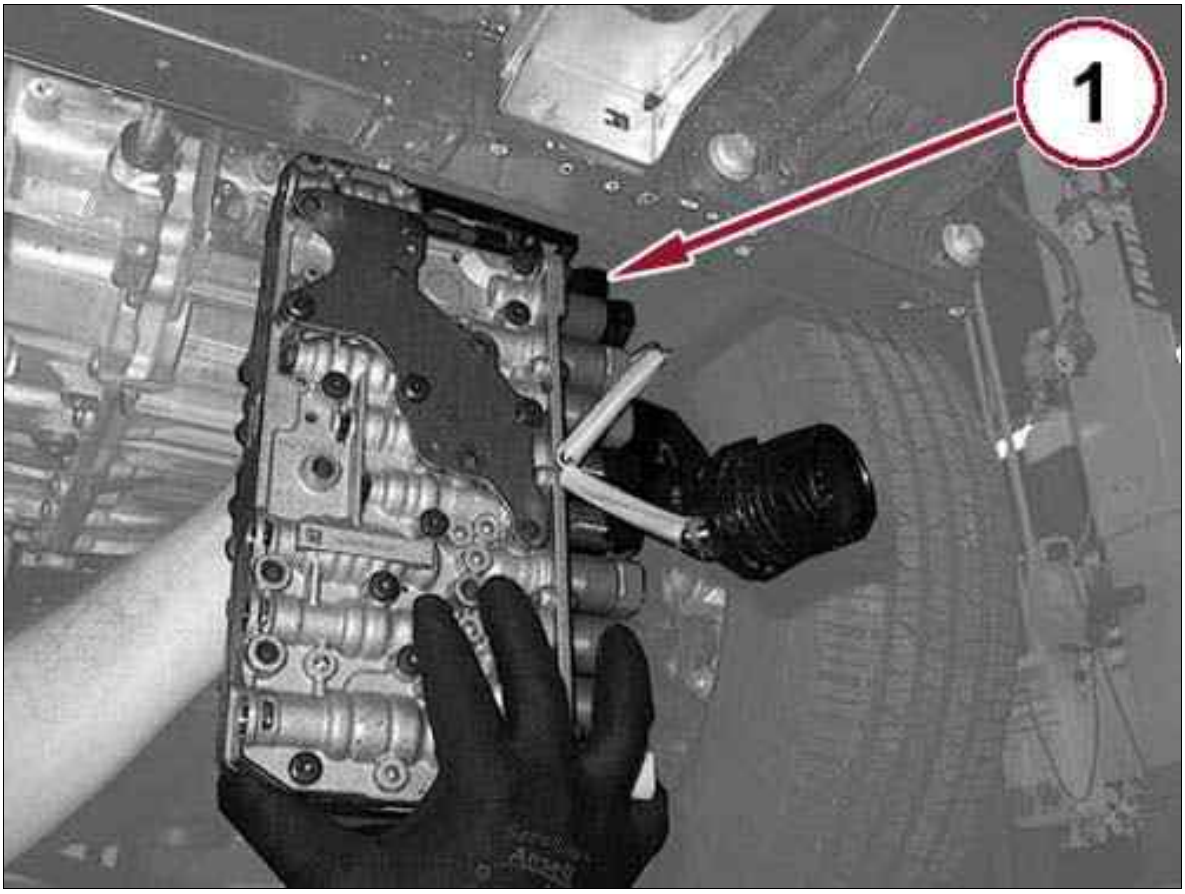
Fig 12: Valve Body With The Wire Harness



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21. Remove the valve body with the wire harness (1) from the vehicle.

> *NOTE:*
>
> *If the valve body is to be reused without disassembling it, store the valve body in a clean area until it is installed.*

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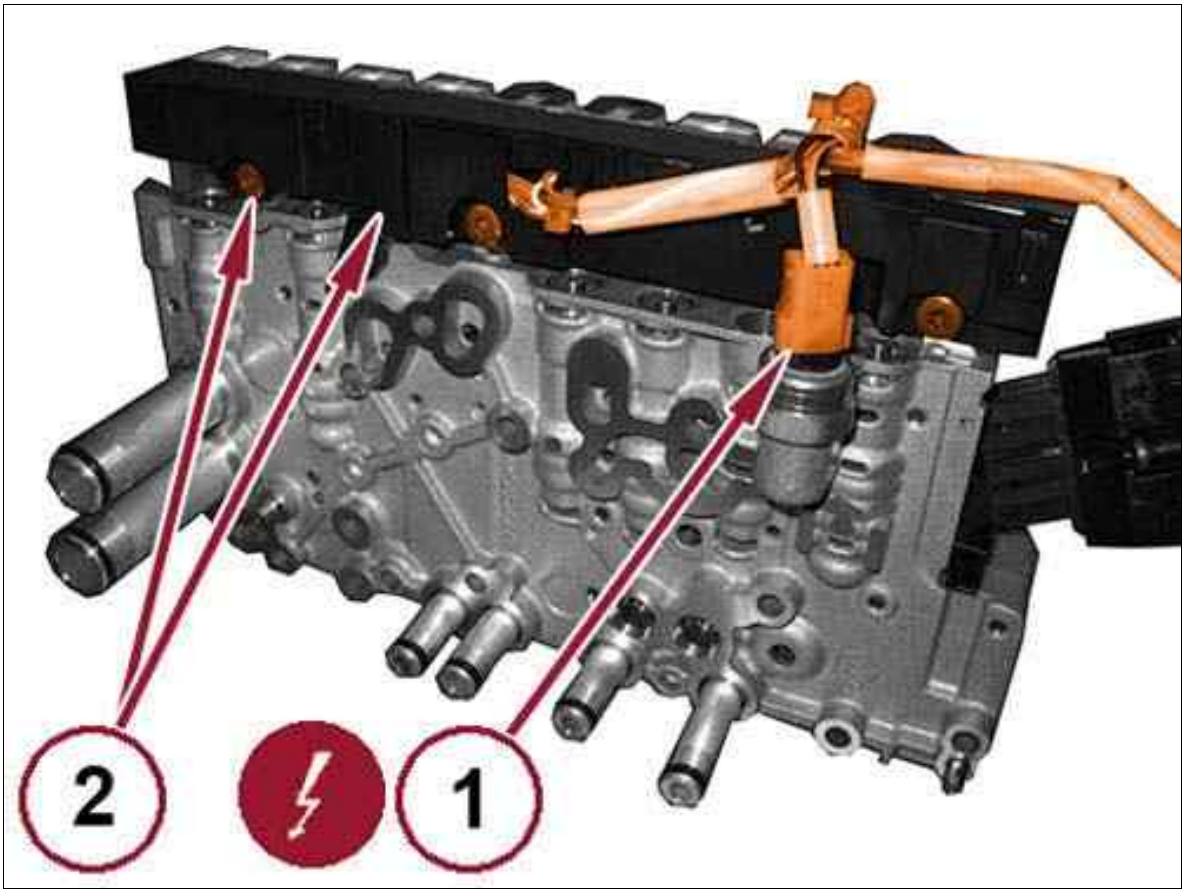
Fig 13: Transmission Fluid Pressure Transducer & Solenoid Connector Screws



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22. If necessary, disconnect the wiring harness from the transmission fluid pressure transducer (1).
23. To remove internal transmission harness, remove the screws from the solenoid connectors and lift the harness (2) from the valve body.

VALVE BODY > REMOVAL AND INSTALLATION > 2.4L MULTIAIR > INSTALLATION

NOTE:

Before installing the valve body, replace the O-ring seals on the fluid transfer tubes. Apply a light coating of assembly lube on the O-rings to ease valve body installation.

1. If removed, position the internal transmission wire harness into position on the valve body.
2. Tighten the solenoid wire harness connector screws to the proper torque specification. Refer to SPECIFICATIONS .
3. Connect the wire harness connector to the transmission fluid pressure transducer.

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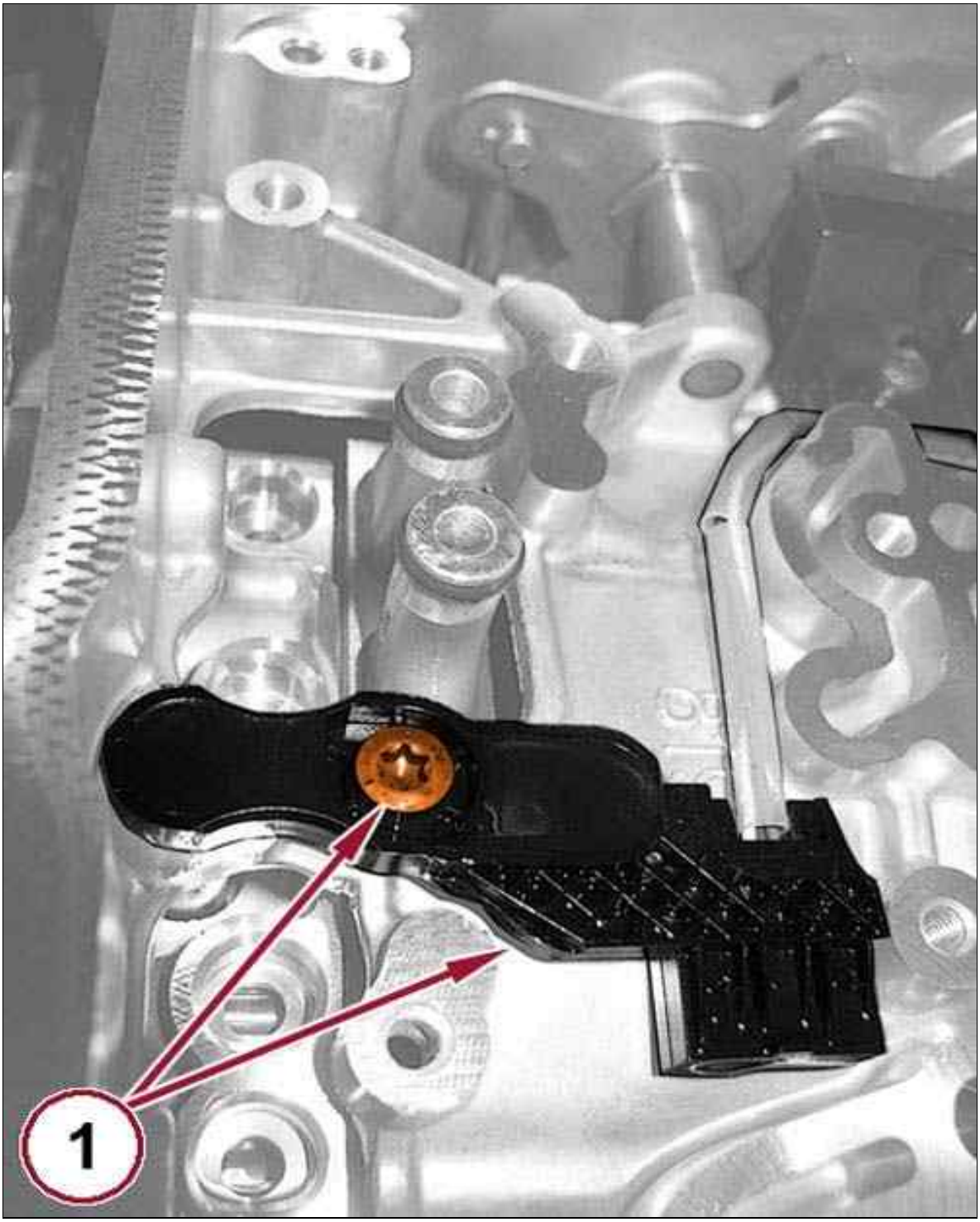
4. Clean the mating surfaces between the valve body and the transmission housing with a clean lint-free cloth.

Fig 1: Transmission Speed Sensors & Screw



Courtesy of CHRYSLER GROUP, LLC

5. install the transmission speed sensors and tighten the screw (1) to the proper torque specification. Refer to SPECIFICATIONS .

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Fig 2: Transmission Range Sensor & Screw

Courtesy of CHRYSLER GROUP, LLC

6. Install the Transmission Range Sensor (TRS) and tighten the screw to the proper torque specification. Refer to SPECIFICATIONS .
7. Align the valve body with the fluid transfer tubes manual lever with the manual valve.
8. Install the ten bolts to hold the valve body to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .

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9. Insert the transmission wire harness connector into the valve body cover with the flat side (2) of the socket on the left and install the retaining clip.
10. Place the valve body cover in position and install the bolts to hold the valve body cover to the transmission housing and tighten to the proper torque specification. Refer to SPECIFICATIONS .
11. Install the wire harness retainer bracket to the transmission and tighten the screws.
12. Position the wire harness in the routing clip.
13. Connect the transmission wire harness connector and rotate the lock lever clockwise.
14. Connect the wire harness connector near the retainer bracket.
15. Snap the engine coolant reservoir into position.
16. Install the battery tray. Refer to TRAY, BATTERY, REMOVAL AND INSTALLATION .
17. Fill the transmission. Refer to FLUID AND FILTER, STANDARD PROCEDURE .
18. Install the belly pan. Refer to BELLY PAN, REMOVAL AND INSTALLATION or BELLY PAN, SIDE, REMOVAL AND INSTALLATION .
19. Install the engine cover. Refer to COVER, ENGINE, REMOVAL AND INSTALLATION .
20. Perform the Valve Body Solenoid Learn procedure if the valve body and/or the TCM was replaced during a repair. Refer to MODULE PROGRAMMING .
21. Perform Transmission Verification Test-948TE. Refer to STANDARD PROCEDURE .

VALVE BODY > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY

Remove the valve body from the transmission and place the valve body on a clean oil absorbent work surface. Position wood blocks at each end of the valve body to provide a stable work fixture.

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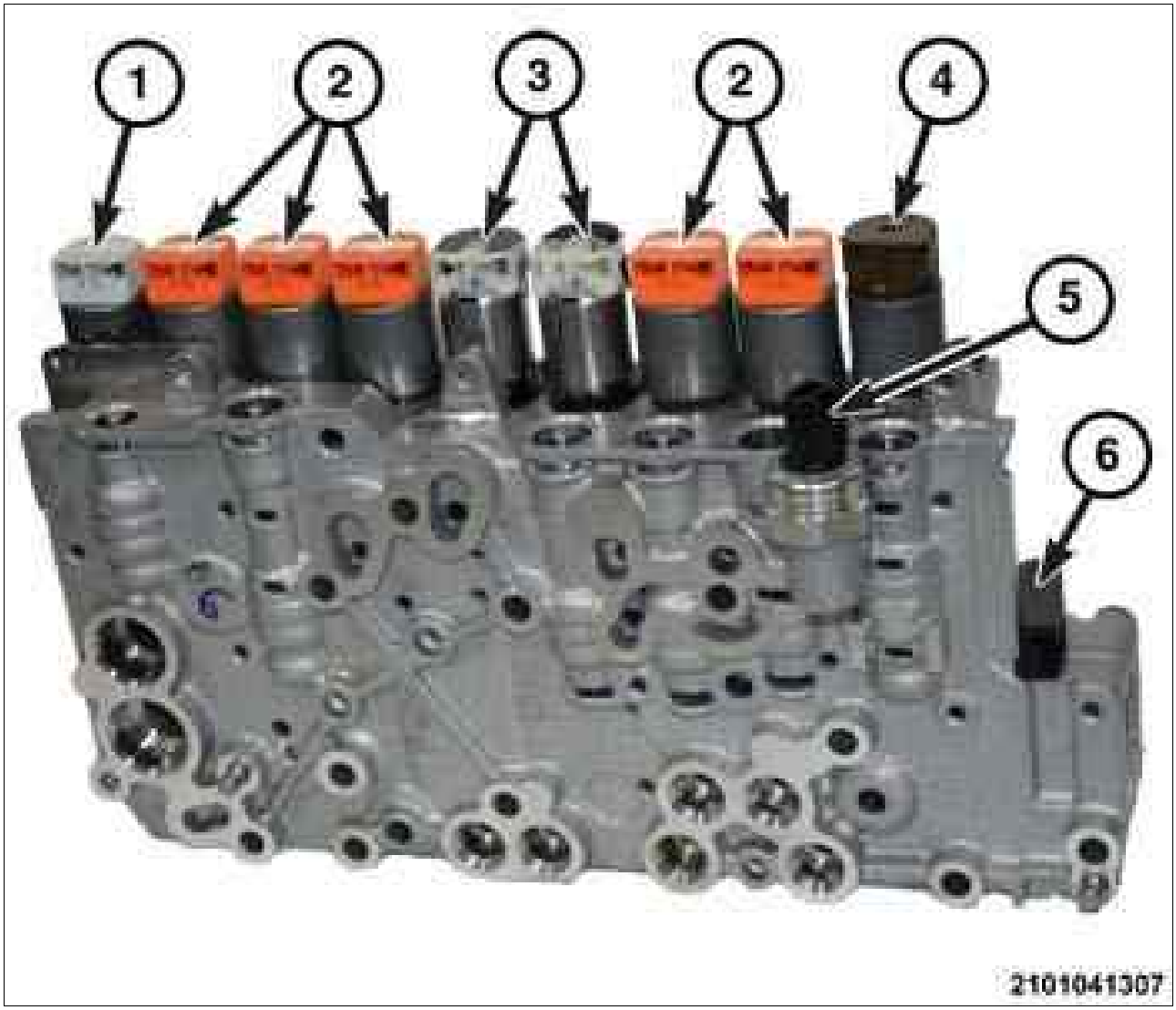
Fig 1: Valve Body Solenoids



Courtesy of CHRYSLER GROUP, LLC

1. Remove the solenoids (1 - 4) from the valve body.

> *NOTE:*
>
> *Each type solenoid has a unique color end cover.*

   1. 1 = System Pressure Regulator Solenoid
   2. 2 = Pressure Regulator Solenoids
   3. 3 = Dog Clutch Solenoids

2. Remove the pressure sensor from the valve body.
3. Position the valve body on the wooden blocks with outer side up.

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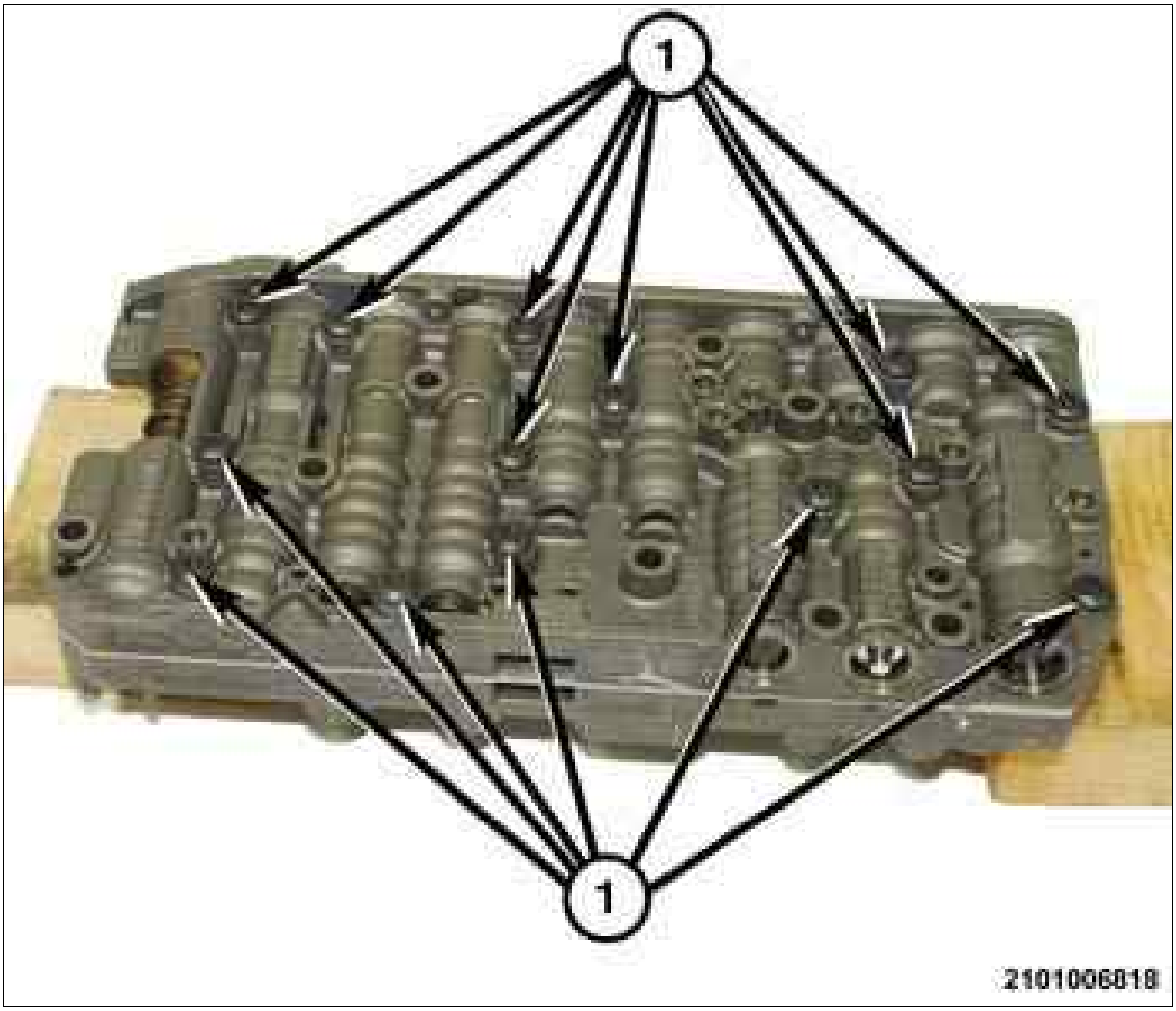
Fig 2: Valve Body & Screws



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4. Remove the screws (1) holding the valve body halves together.

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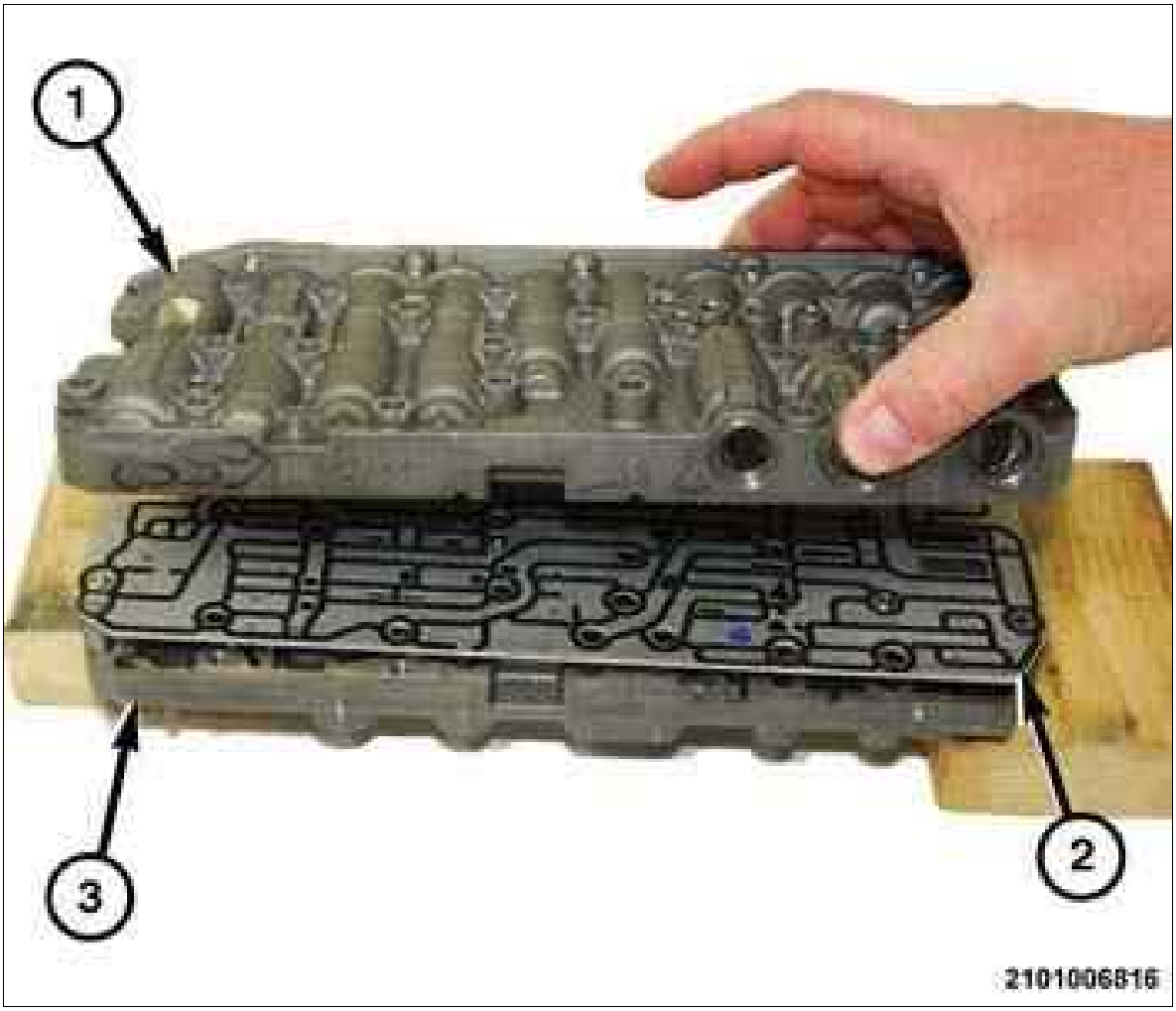
Fig 3: Outer Valve Body & Separator Plate



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5. Separate the outer valve body (1) from the separator plate (2).

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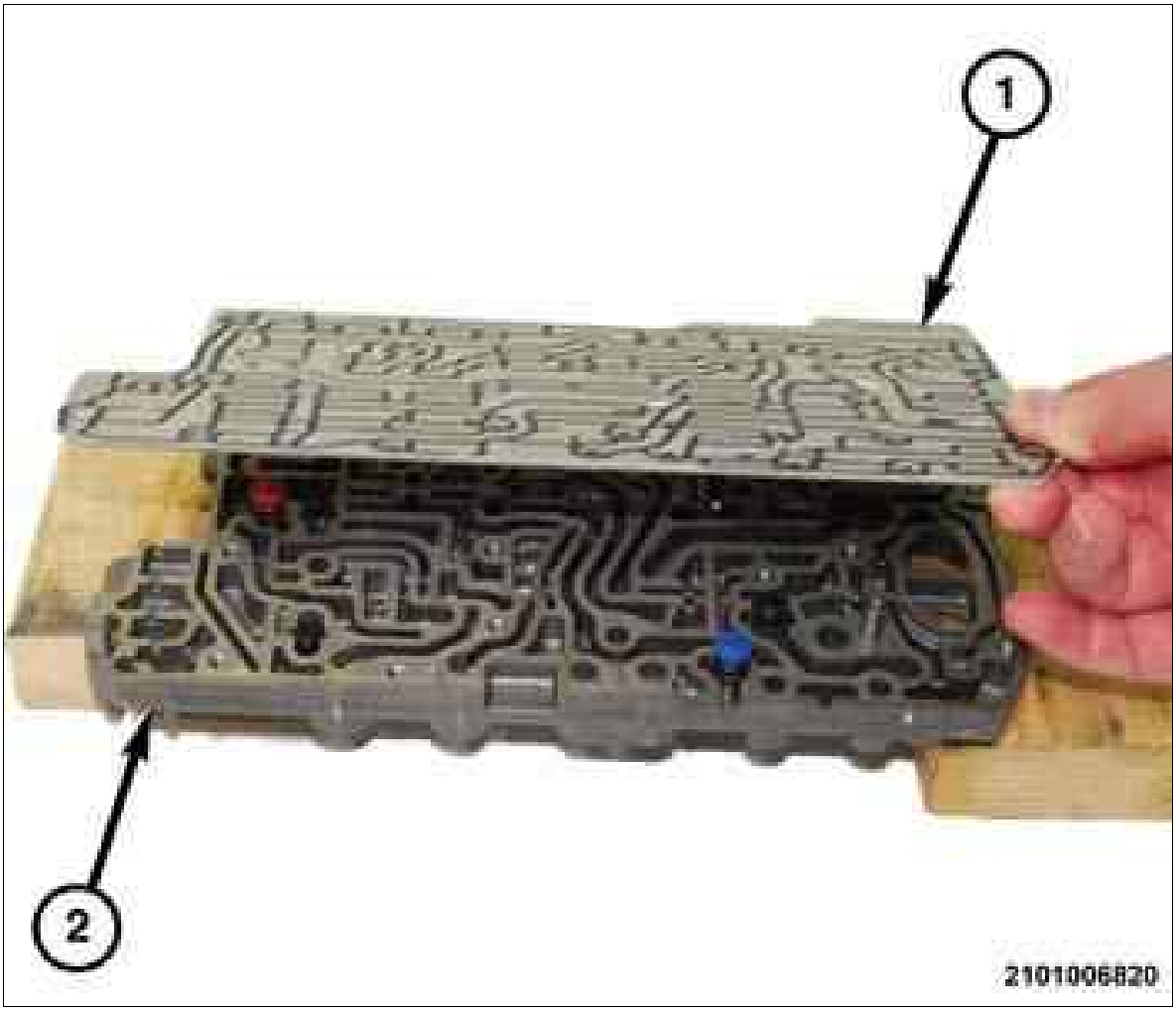
Fig 4: Lifting Separator Plate Off Of Inner Valve Body



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6. Lift the separator plate (1) upward and off of the inner valve body (2).

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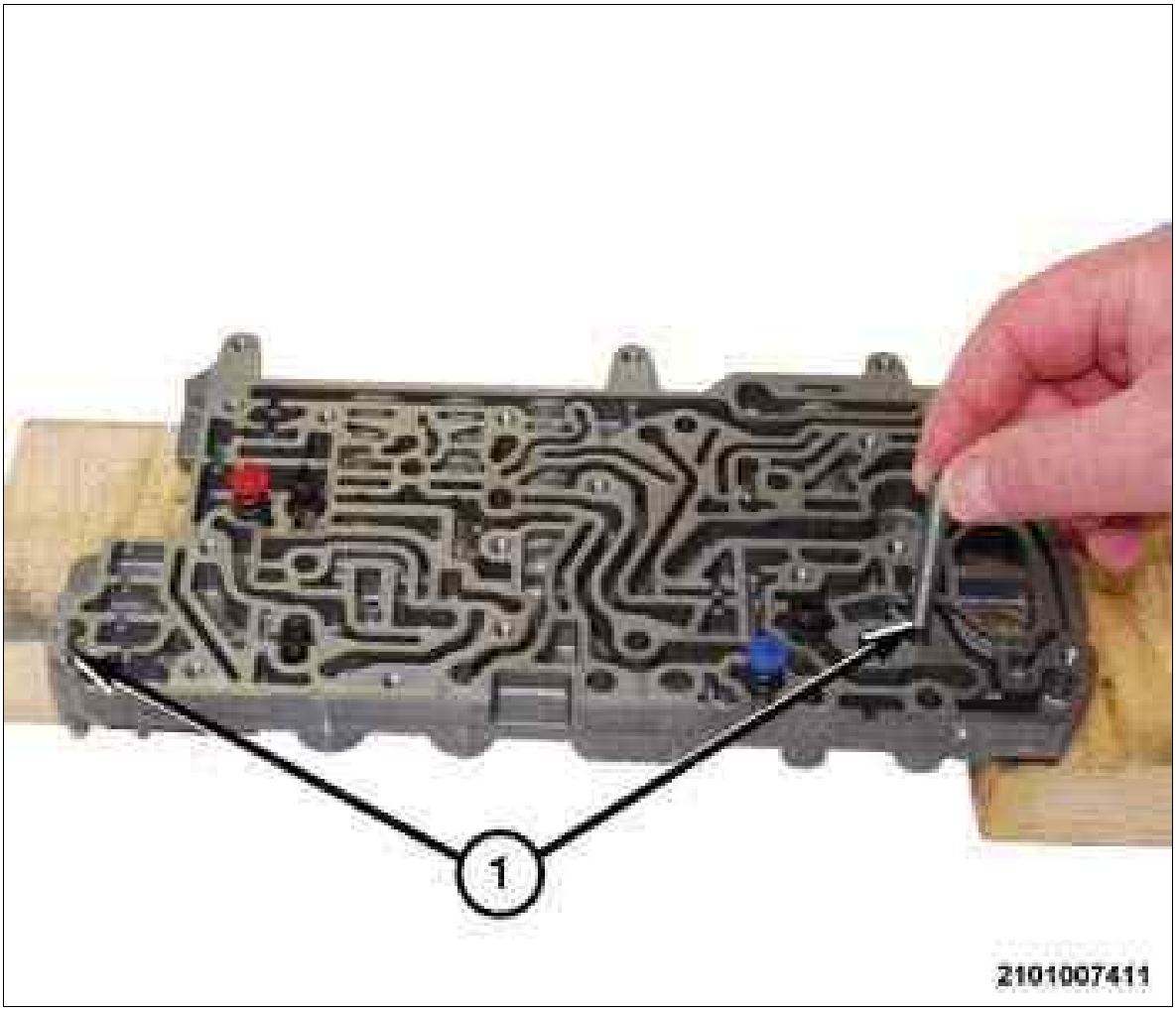
Fig 5: Inner Valve Body & Guide Pins



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7. Remove the guide pins (1) from the inner valve body.

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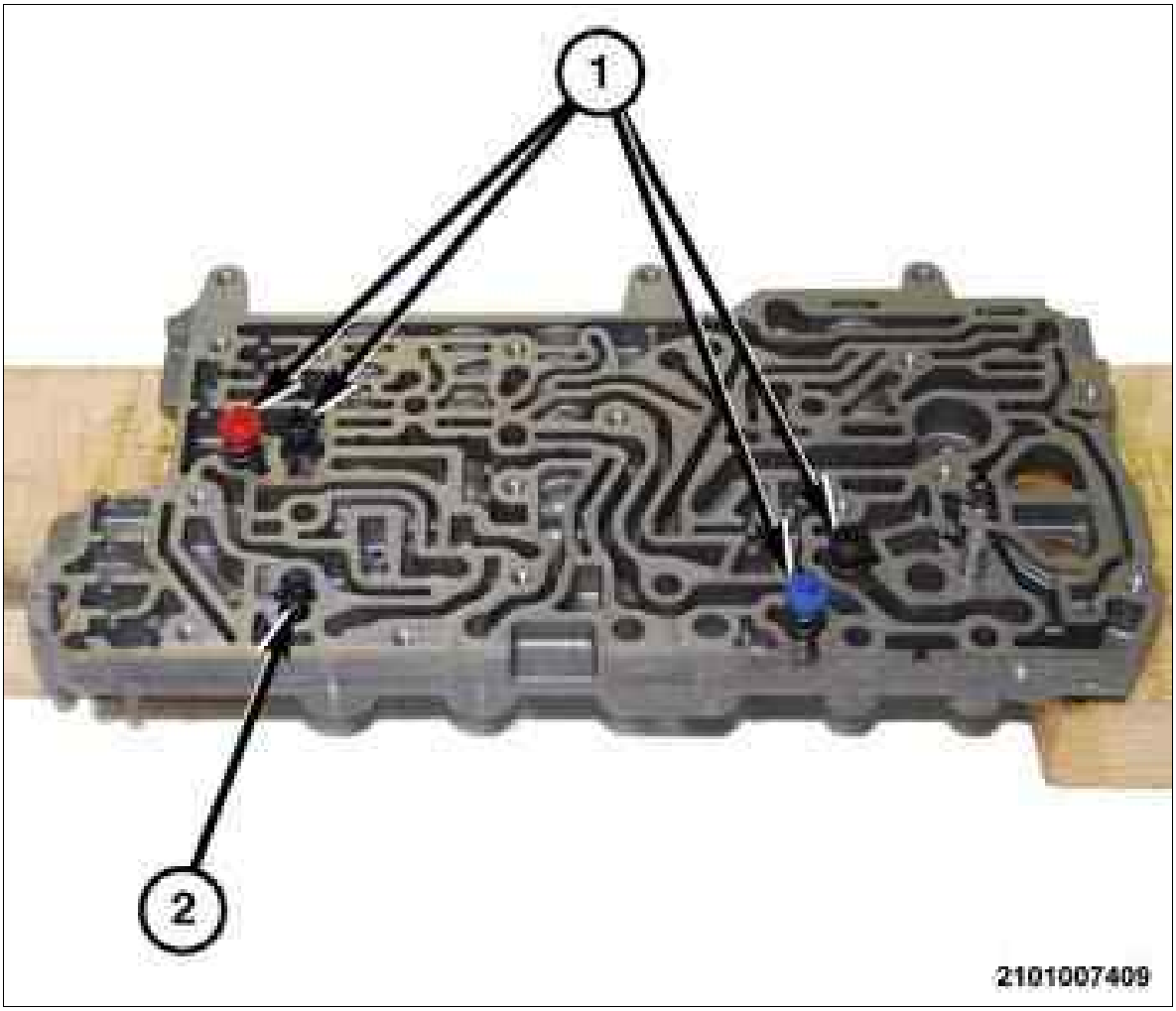
Fig 6: Inner Valve Body, Color Coded Check Valves & Check-Balls



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8. Remove the color coded check valves (1) from the inner valve body.
9. Remove the toggling, connected check-balls (2) from the inner valve body.
10. Position the outer valve body on the work surface inside up to gain access to the valve retaining spring clips.

> *NOTE:*
>
> *DO NOT damage the filter screen during removal.*

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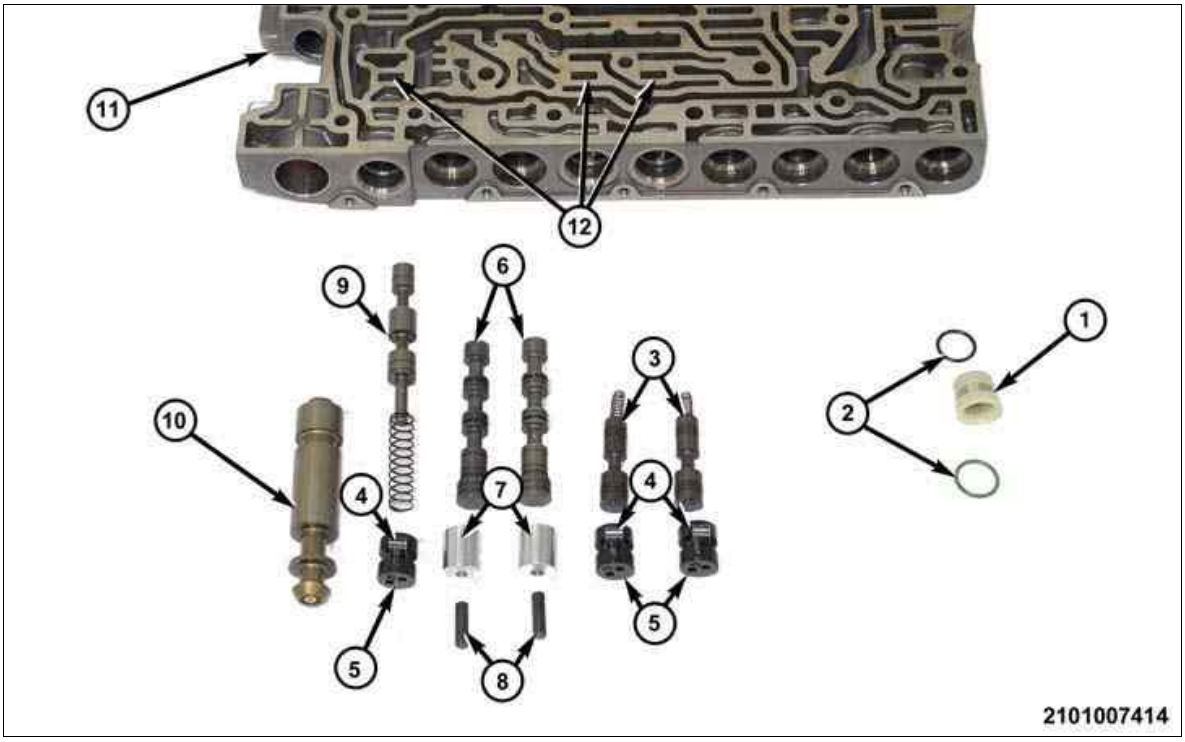
Fig 7: Outer Valve Body Components



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11. Using a suitable prying tool, remove the filter screen (1) from the bore in the outer valve body (11).
12. Remove the bullets (8), sleeves (7), and pressure regulator valves (6) from the bores in the outer valve body (11).
13. Remove the parking lock valve (10) from the bore in the outer valve body (11).
14. Using a suitable prying tool, remove the spring clips (12) holding the lubrication valve plugs in the bores in the outer valve body (11).
15. Remove the plugs (5), lubrication valves and springs (3) from the bores in the outer valve body (11).
16. Using a suitable prying tool, remove the spring clip (12) holding the MV park lock valve plug in the bore in the outer valve body (11).
17. Remove the spring and MV park lock valve (9) from the bore in the outer valve body (11).
18. Rotate the outer valve (11) body to gain access to the pressure and lubrication valves.

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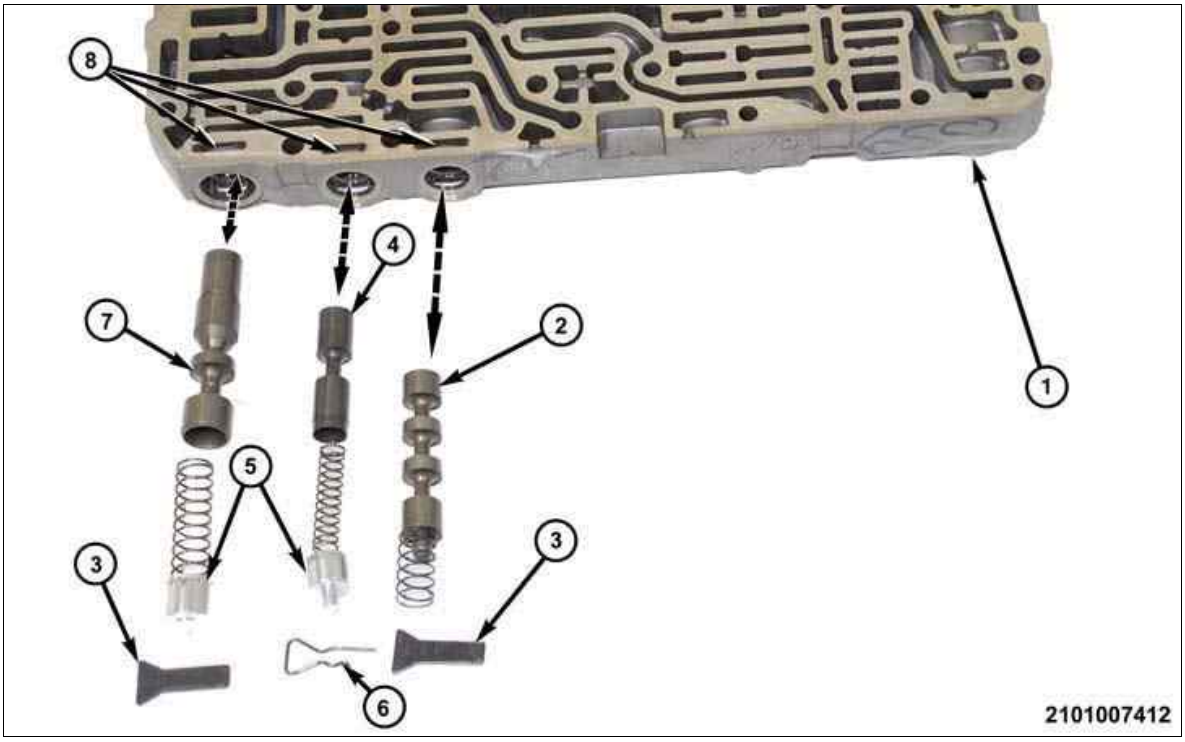
Fig 8: Outer Valve Body & Pressure Valve



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19. The support plates (3) and spring clip (6) are located in pockets (8) in the outer valve body (1).
20. Remove the support plate (3) holding the spring and converter pressure valve (2) in the bore in the outer valve body (1).
21. Remove the spring and converter pressure valve (2) from the bore in the outer valve body (1).
22. Remove the support plate (3) holding the plug (5), spring and system pressure valve (7) in the bore in the outer valve body (1).
23. Remove the plug (5), spring and system pressure valve (7) from the bore in the outer valve body (1).
24. Remove the spring clip (6) holding the plug (5), spring and lubrication valve (4) in the bore in the outer valve body (1).
25. Remove the plug (5), spring and lubrication valve (4) from the bore in the outer valve body (1).

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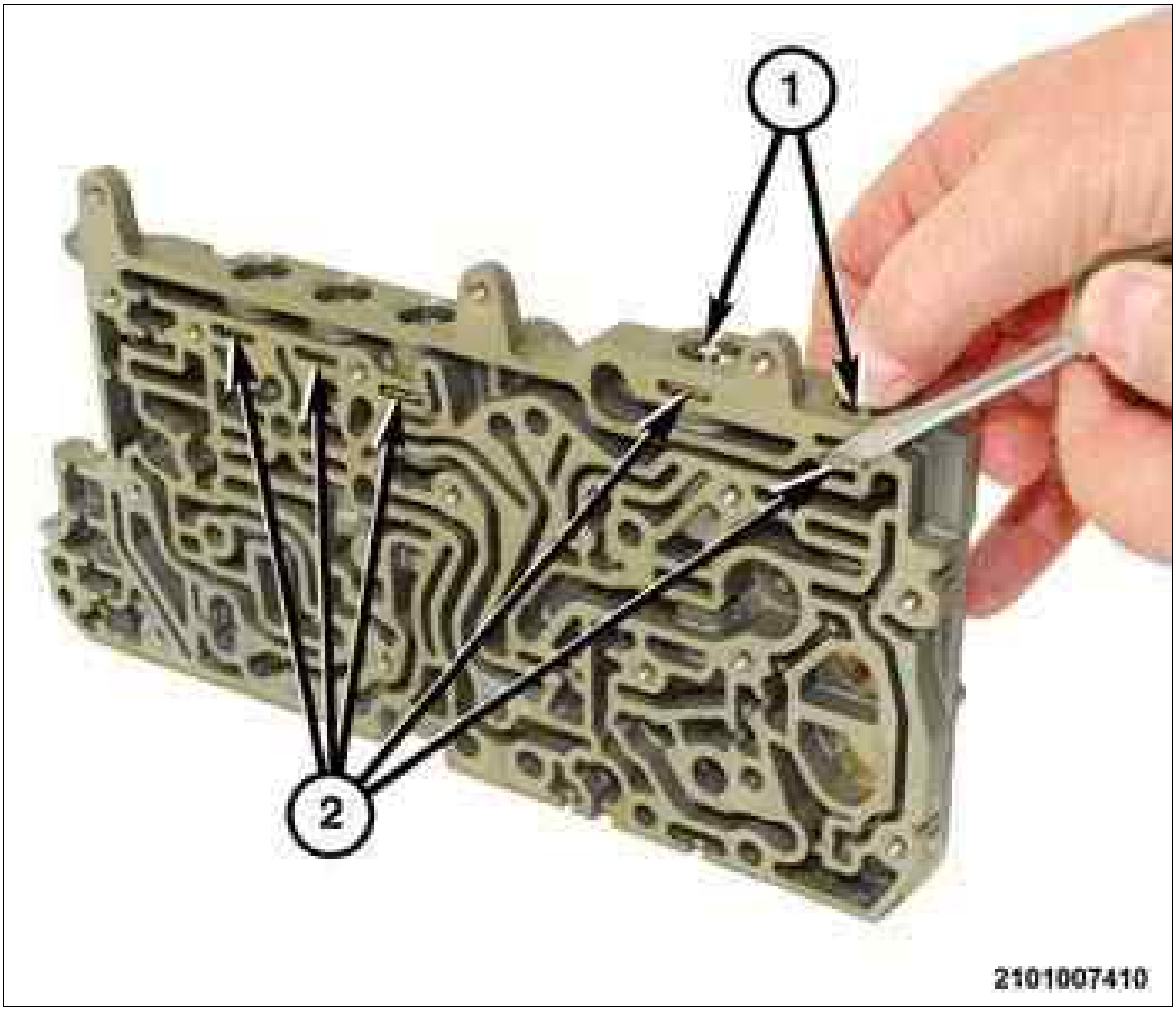
Fig 9: Inner Valve Body With The Valves Bores Facing Up



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26. Place the inner valve body on the clean work surface with the valves bores facing up.

> *NOTE:*
>
> *The spring clips holding (2) the plugs (1) in the inner valve are located in pockets (2) on the separator plate side of the inner valve body.*

27. Press each of the valve plugs (1) downward and remove the spring clips (2) holding the valves in the bores in the inner valve body.

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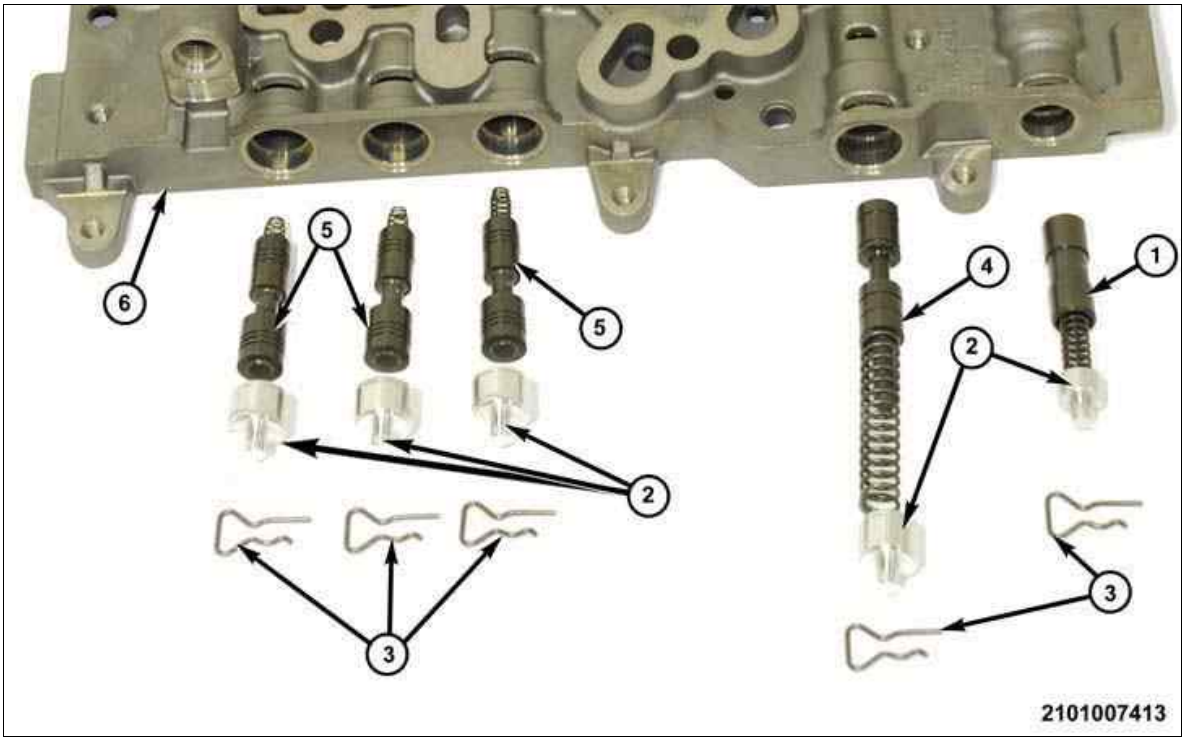
Fig 10: Inner Valve Body Components



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28. Remove the plug (2), spring and boost valve (1) from the bore in the inner valve body (6).
29. Remove the plug (2), spring and solenoid limit valve (4) from the bore in the inner valve body (6).
30. Remove the plugs (2), springs and PCV valves (5) from the bores in the inner valve body (6).
31. Perform the CLEANING AND INSPECTION procedures.

VALVE BODY > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > VALVE BODY CLEANING AND INSPECTION

Clean the valve body components with a suitable clean solvent. The valve body components can be blown dry with compressed regulated 344 kPa (50 psi) shop air.

Inspect the valve components and bores for excessive scoring, porosity, warping or other damage that may cause the valves to bind or leak excessively. If damage is evident the complete valve body must be replaced.

VALVE BODY > DISASSEMBLY AND ASSEMBLY > DISASSEMBLY AND ASSEMBLY > ASSEMBLY

Before assembling the valve body, thoroughly clean all of the components with a suitable solvent and blow them dry with 344 kPa (50 psi) **regulated** shop air. Clean the work surface and lay out a clean lint

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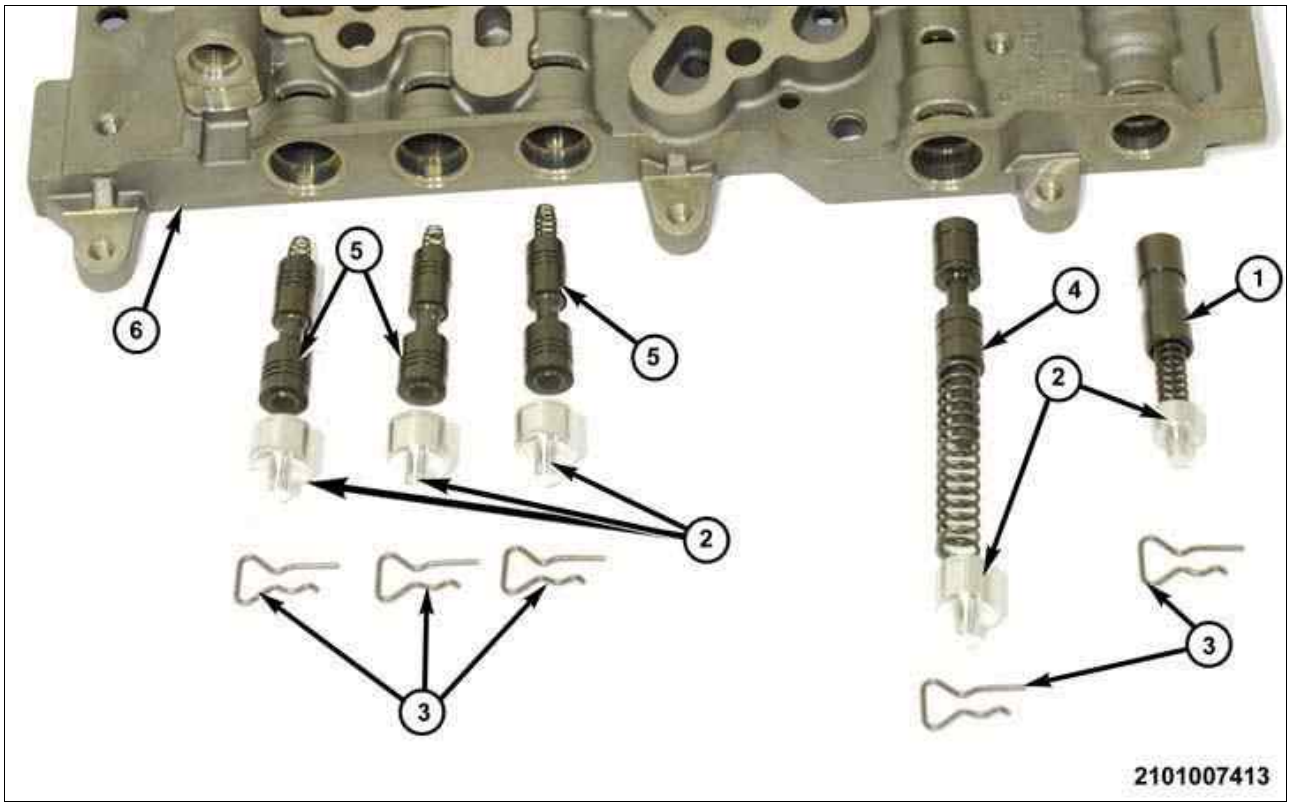
free cloth to avoid contaminating the clean valve body components. Lay the valve components out on the cloth in the order they will be installed in the valve body. The cloth will hold the valve components in place and keep them from rolling out of position. A light lubricating oil can be applied the each component as the valve body is assembled.

Fig 1: Inner Valve Body Components



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1. Install the springs, Pressure Control Valve (PCV) valves, and (5) plugs (2), from the bores in the inner valve body (6).
2. Install the solenoid limit valve (4), spring, and plug (2) into the bore in the inner valve body (6).
3. Install the boost valve (1), spring, and plug (2) into the bore in the inner valve body (6).

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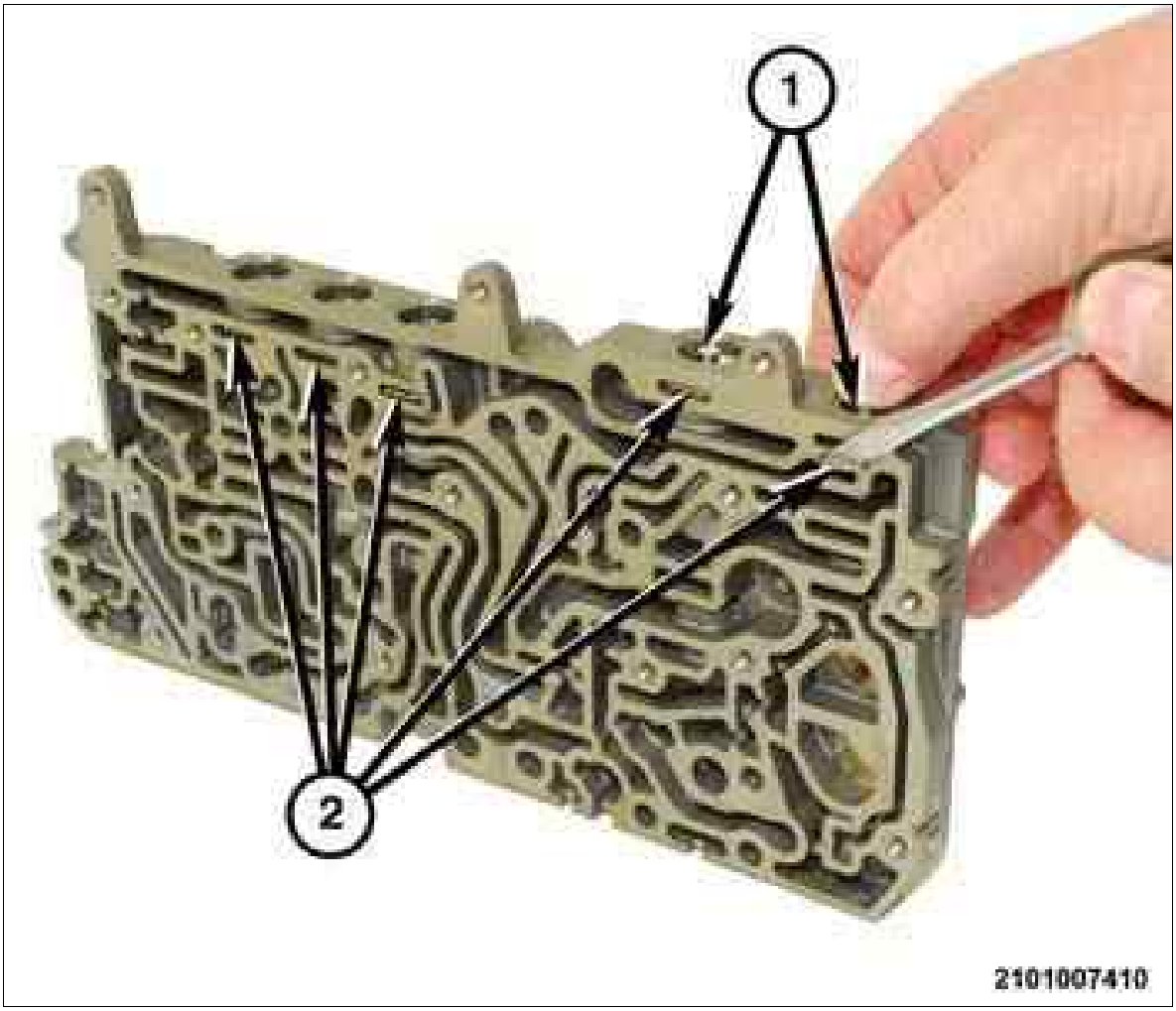
Fig 2: Inner Valve Body With The Valves Bores Facing Up



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4. Turn the inner valve body so the plugs (1) are facing upward.
5. While pressing downward on the plugs (1), install the spring clips (2) to hold the plugs in the inner valve body.

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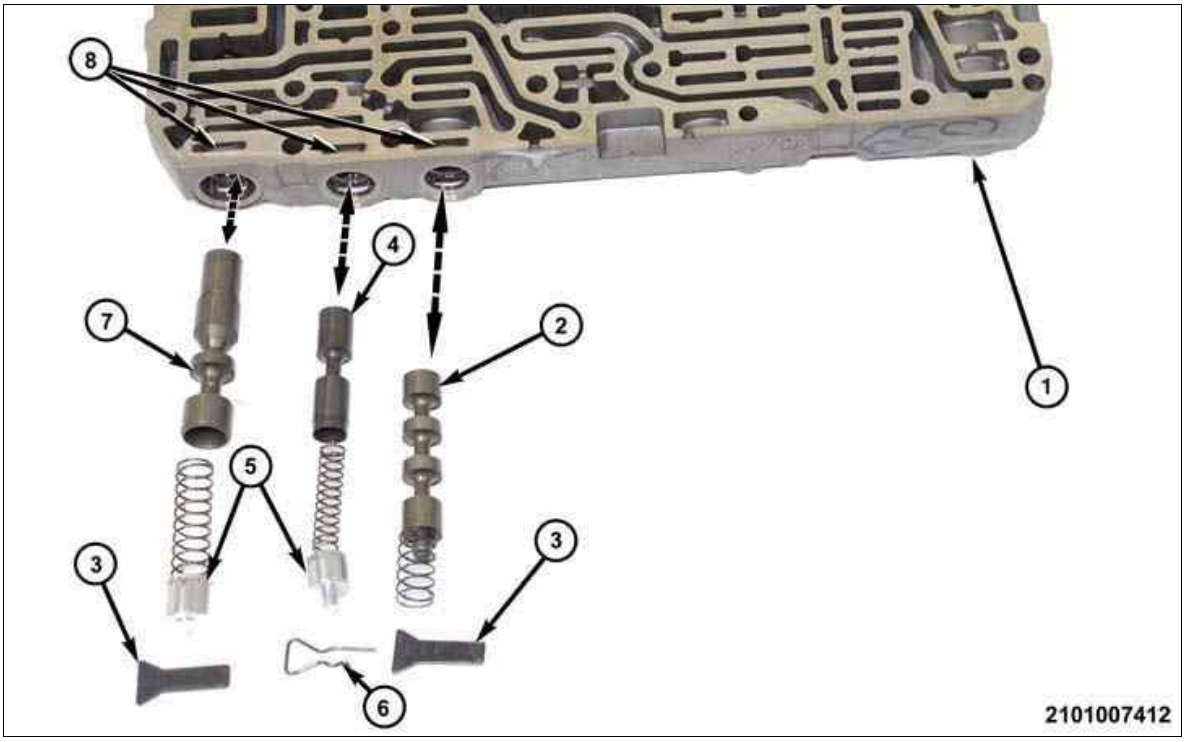
Fig 3: Outer Valve Body & Pressure Valve



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6. The support plates (3) and spring clip (6) go into pockets (8) in the outer valve body (1).
7. Install the lubrication valve (4), spring, and plug (5) into the bore in the outer valve body (1).
8. Install the spring clip (6) to hold the plug (5), spring and lubrication valve (4) in the bore in the outer valve body (1).
9. Install the system pressure valve (7), spring, and plug (5) in the bore in the outer valve body (1).
10. Install the support plate (3) to hold the plug (5), spring and system pressure valve (7) into the bore in the outer valve body (1).
11. Install the converter pressure valve (2) and spring into the bore in the outer valve body (1).
12. Install the support plate (3) to hold the spring and converter pressure valve (2) in the bore in the outer valve body (1).

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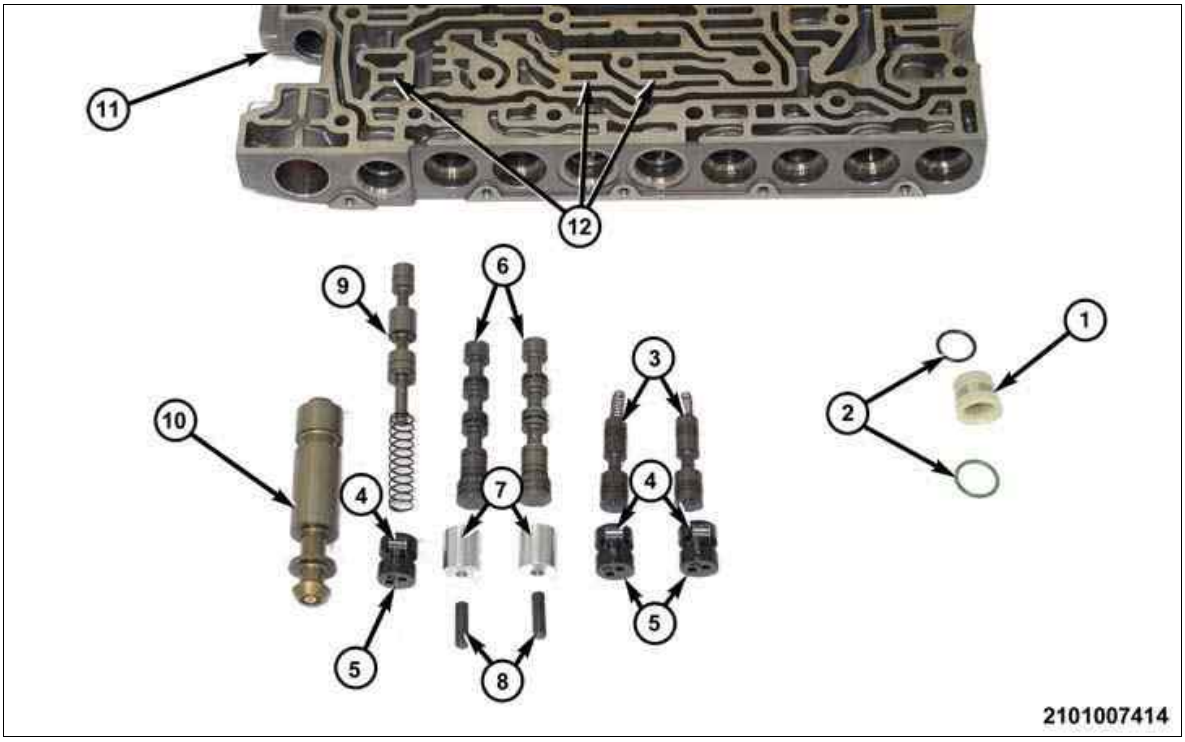
Fig 4: Outer Valve Body Components



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13. Position the outer valve body (11) on the work surface inside up to gain access to the valve retaining spring clips (12).
14. Install the MV park lock valve (9), spring, and plug into the bore in the outer valve body (11).
15. While pressing down on the plug to align the slot, install the spring clip (13) to hold the MV park lock valve and plug in the bore in the outer valve body (11).
16. Install the lubrication valves, springs (3), a plugs (5), into the bores in the outer valve body (11).
17. While pressing down on the plug to align the slot, install the spring clips (13) to hold the lubrication valve plugs in the bores in the outer valve body (11).
18. Install the parking lock valve (10) into the bore in the outer valve body (11).
19. Install the pressure regulator valves (6), sleeves (7), and bullets (8) into the bores in the outer valve body (11).
20. Install NEW O-rings (2) on the filter screen (1).
21. Install the filter screen (1) into the bore in the outer valve body (11).

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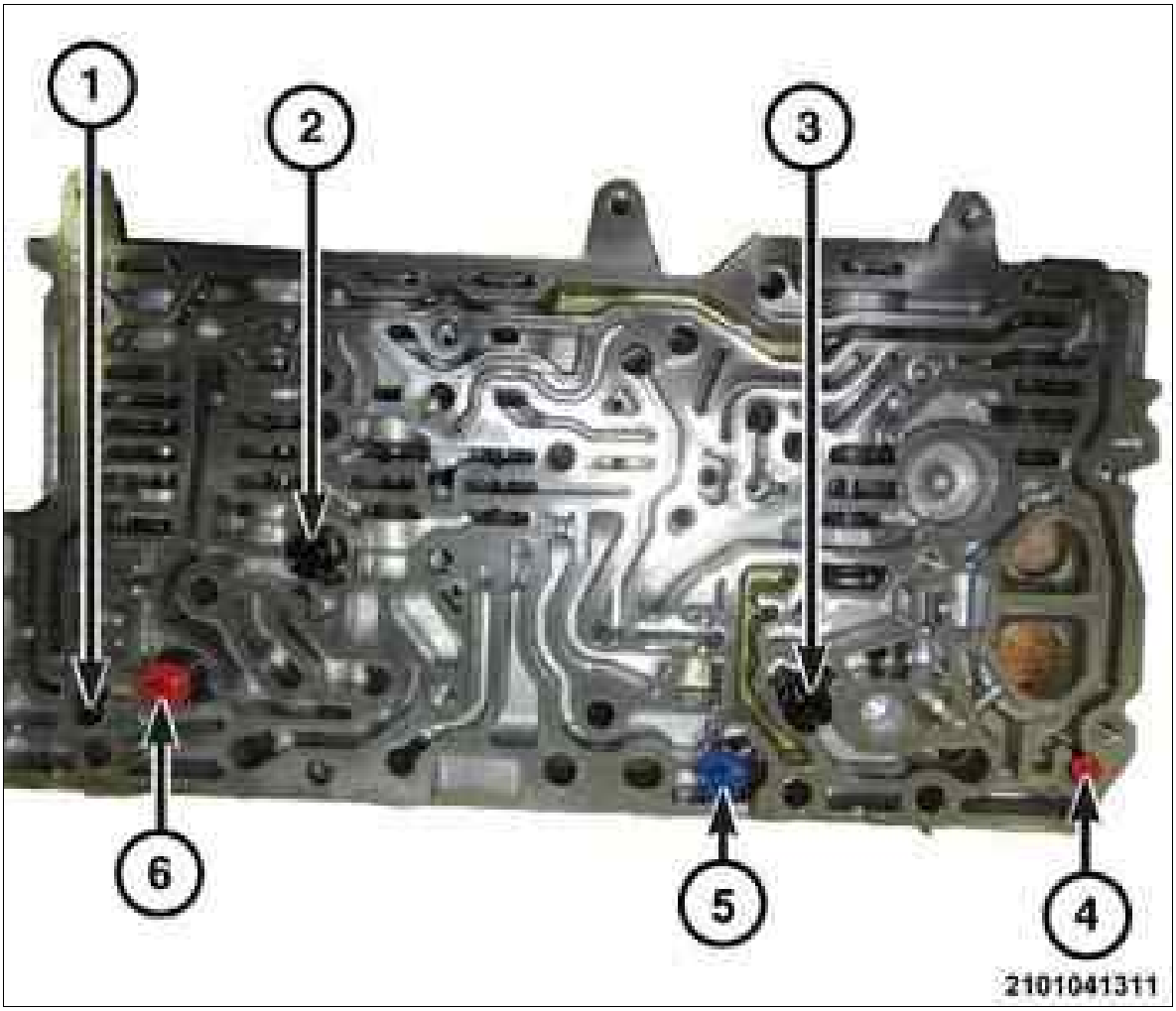
Fig 5: Check Ball & Check Valves



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22. Place the inner valve body on the work surface resting on wood blocks to elevate the center for clearance underneath.

23. Install the check-ball (1) into the inner valve body.

24. Install the black color coded check valves (2, 3) into the inner valve body as shown in the illustration.

25. Install the red color coded check valves (4, 6) into the valve body as shown in the illustration.

26. Install the blue color coded check valves (5) into the valve body as shown in the illustration.

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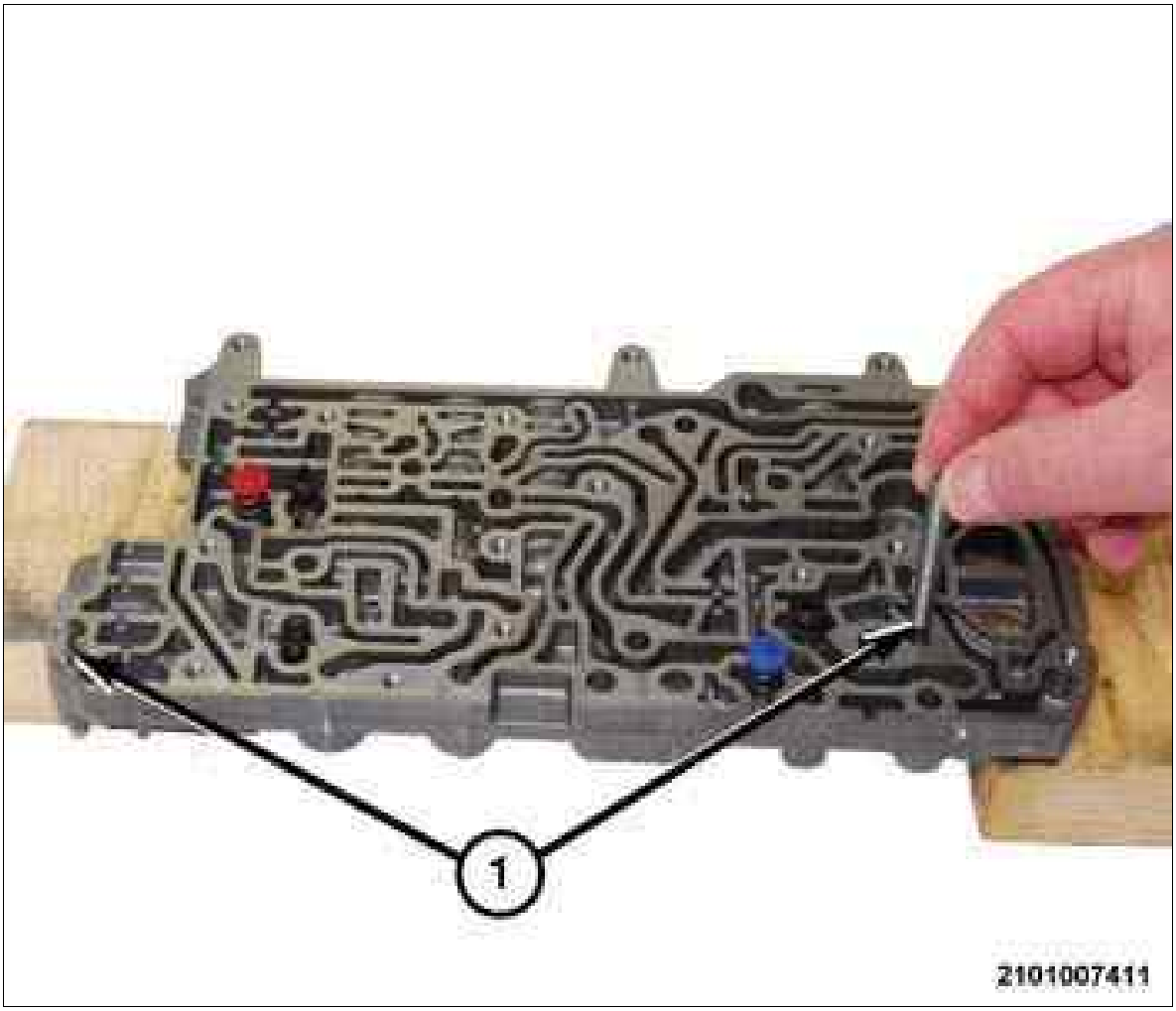
Fig 6: Inner Valve Body & Guide Pins



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27. With the smaller diameter end downward, install the guide pins (1) into the inner valve body.

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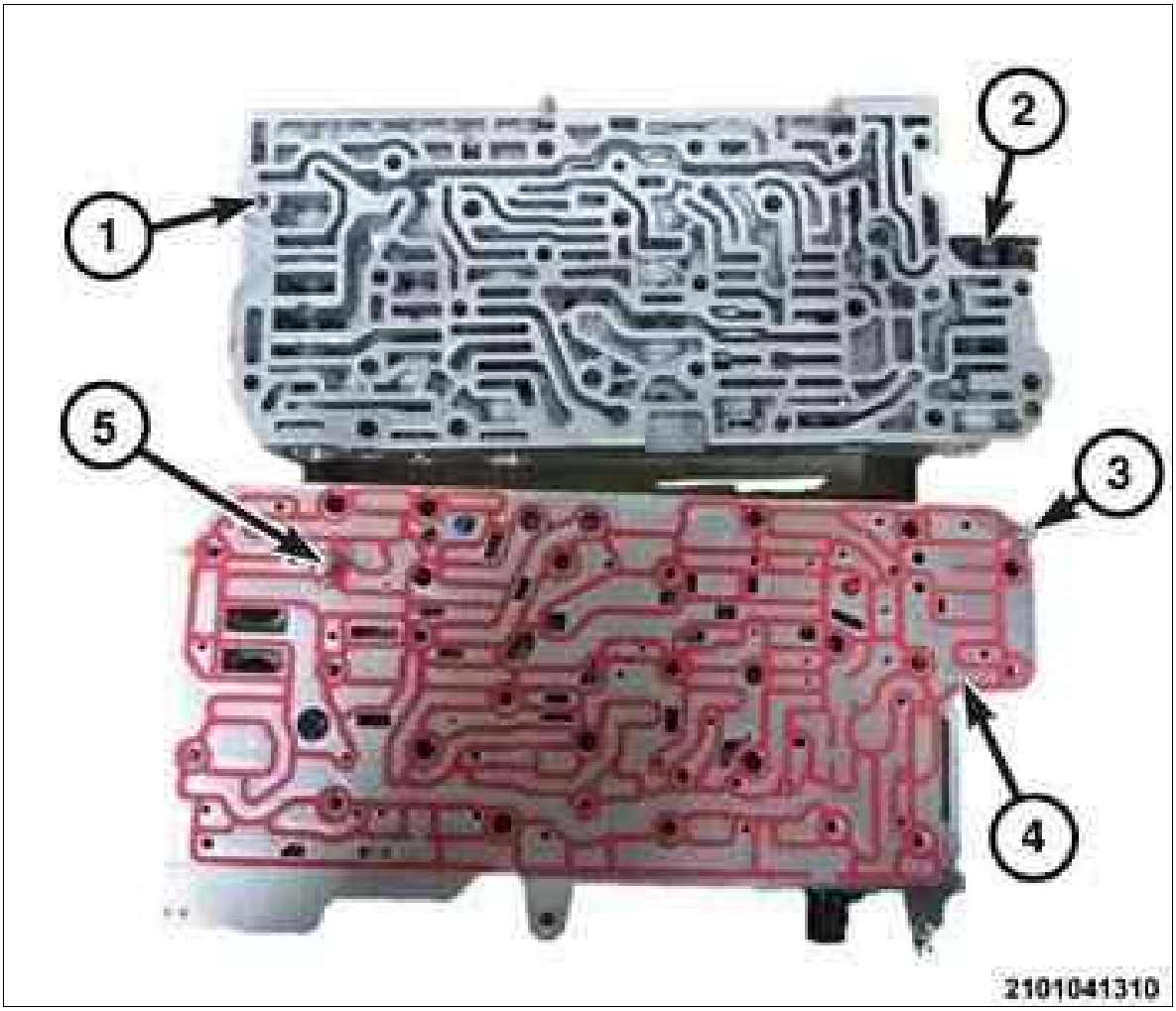
Fig 7: Outer Valve Body, Manual Valve, Guide Pins & Separator Plate



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28. Place the separator plate (4) in position on of the inner valve body over the guide pins (3, 5).
29. Install the manual valve (2).
30. Place the outer valve body (1) in position on the separator plate (4).

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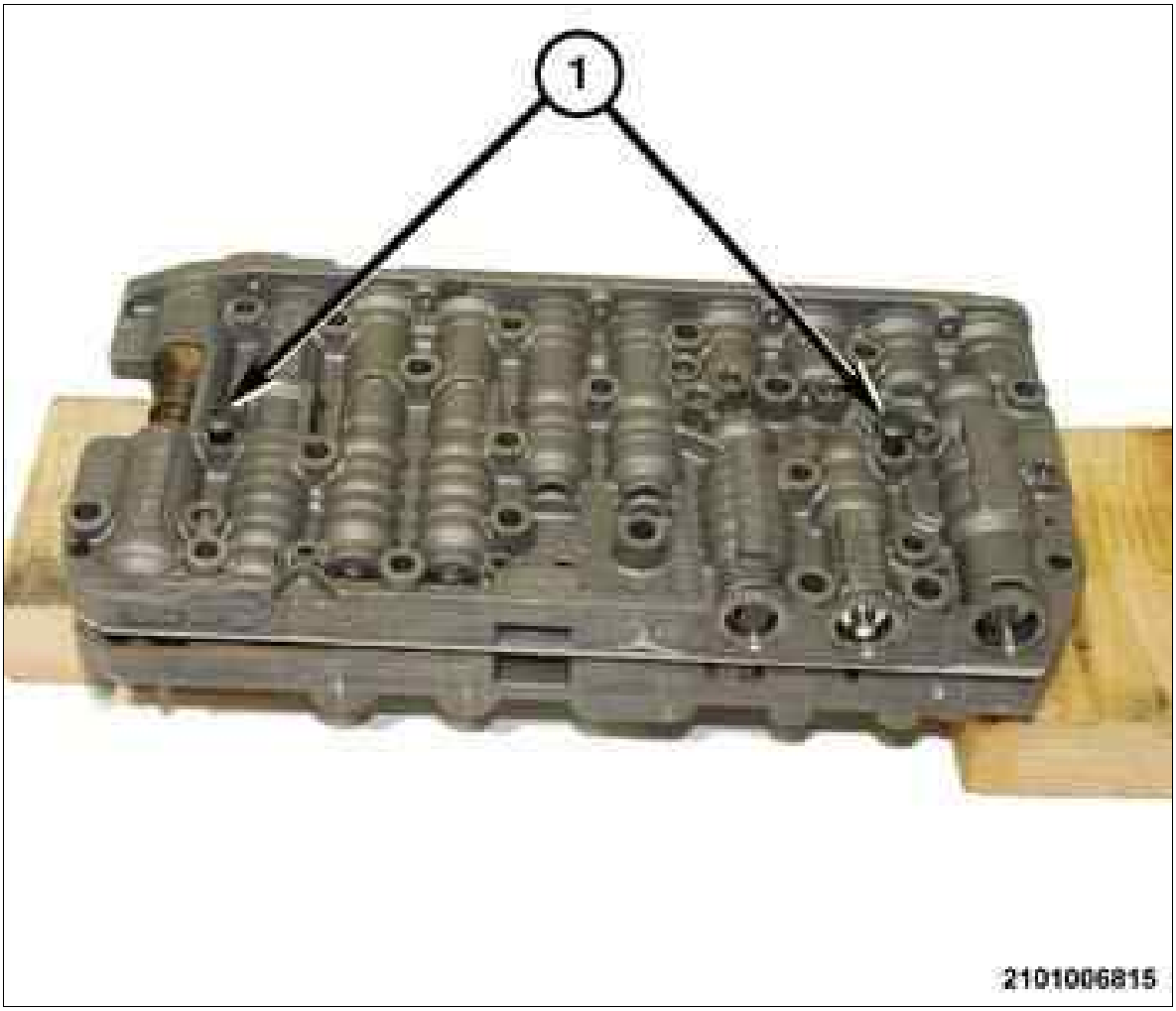
Fig 8: Valve Body & Screws



Courtesy of CHRYSLER GROUP, LLC

31. Install two screws (1) to hold the outer valve body to the inner valve body and separator plate. Tighten the screws snug with a suitable torx-drive screw driver.

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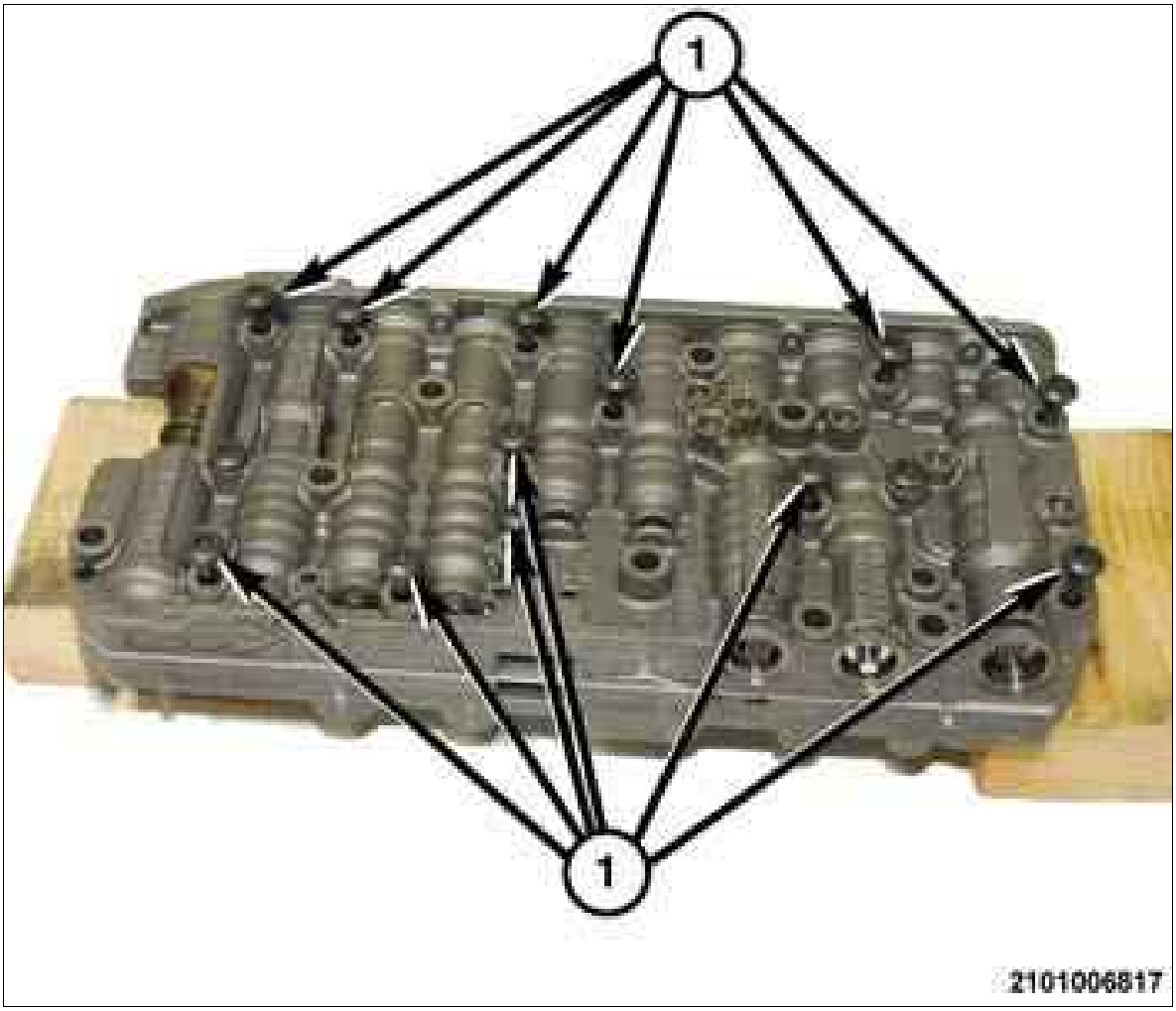
Fig 9: Valve Body & Screws



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32. Install the remaining screws (1) to hold the inner valve body to the outer valve body.
33. Install the pressure sensor in the valve body.

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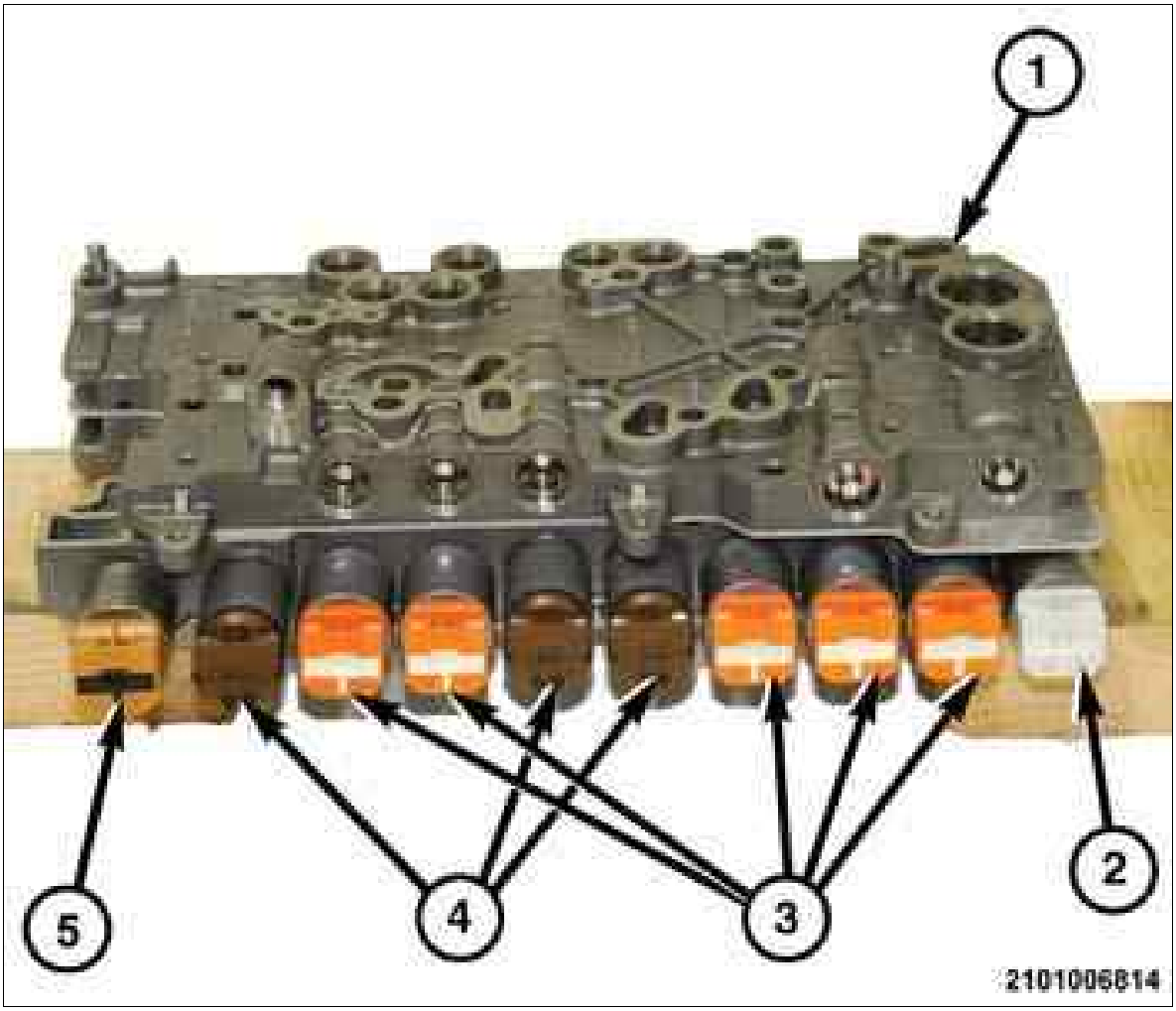
Fig 10: Valve Body & Solenoids



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34. Install the solenoids (2 - 5) in the valve body (1).

> *NOTE:*
>
> *Each type solenoid has a unique color end cover.*

1. 2 = System Pressure Regulator Solenoid
2. 3 = Pressure Regulator Solenoids
3. 4 = Dog Clutch Solenoids
4. 5 = Parking Lock Solenoid

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