

CERTAIN 2013 - 2014 MODEL YEAR C-MAX HYBRID AND FUSION HYBRID VEHICLES — TRANSMISSION INSPECTION AND REPAIR

OVERVIEW

Under certain driving conditions, the transfer shaft gear assembly bearing may fail prematurely. This can result in thumping, rubbing, or grinding noises from the transmission, and may be accompanied by the illumination of the powertrain fault indicator (wrench light) in the instrument cluster. Dealers are to disassemble and inspect the transmission for damage or excessive wear, then either repair or replace the transmission as needed.

SERVICE PROCEDURE

1. Remove the transmission assembly. Please follow the Workshop Manual (WSM) procedures in Section 307-01.
2. Flush transmission fluid cooling system. Please follow the WSM procedures in Section 307-02.
3. Follow the Transmission - Disassembly and Inspection Procedure starting on Page 2.
 - Is contact or wear present on damper housing or any of the gears or bearings?
 - No - Proceed to Transmission - Repair and Assembly Procedure starting on Page 4.
 - Yes - Install a *new* transmission assembly. Please follow the WSM procedures in Section 307-01.



Transmission - Disassembly and Inspection Procedure

1. Remove the bolts and the damper housing. See Figure 1.

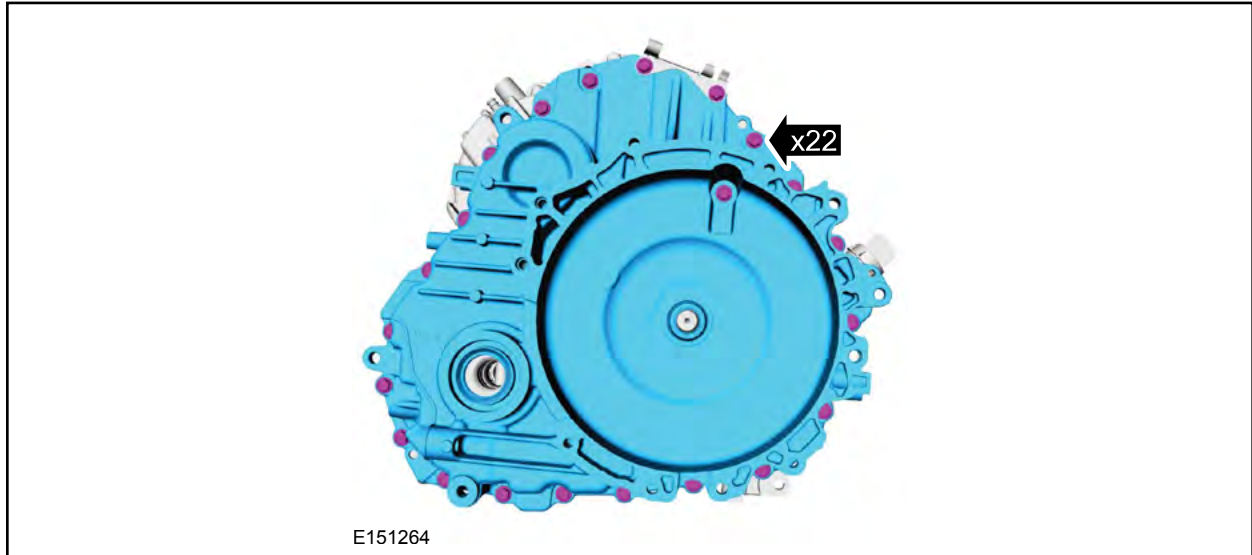


FIGURE 1

2. Remove the transfer shaft gear assembly, traction motor drive gear assembly, final drive input gear assembly, and the differential carrier gear assembly. See Figure 2.

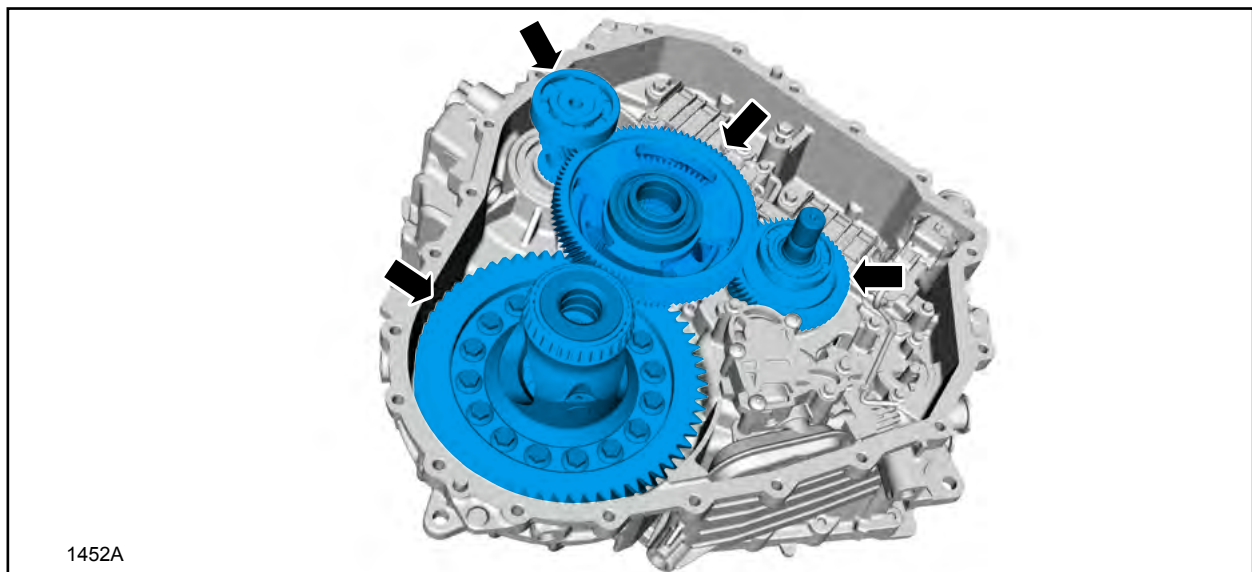


FIGURE 2



3. Inspect the damper housing for contact or wear from the transfer shaft gear assembly. See Figure 3. Also inspect all gears and bearings (removed in Step 2) for damage or excessive wear. Are any concerns present?

- No - Proceed to Transmission - Repair and Assembly Procedure starting on Page 4.
- Yes - Install a *new* transmission assembly. Please follow the WSM procedures in Section 307-01.

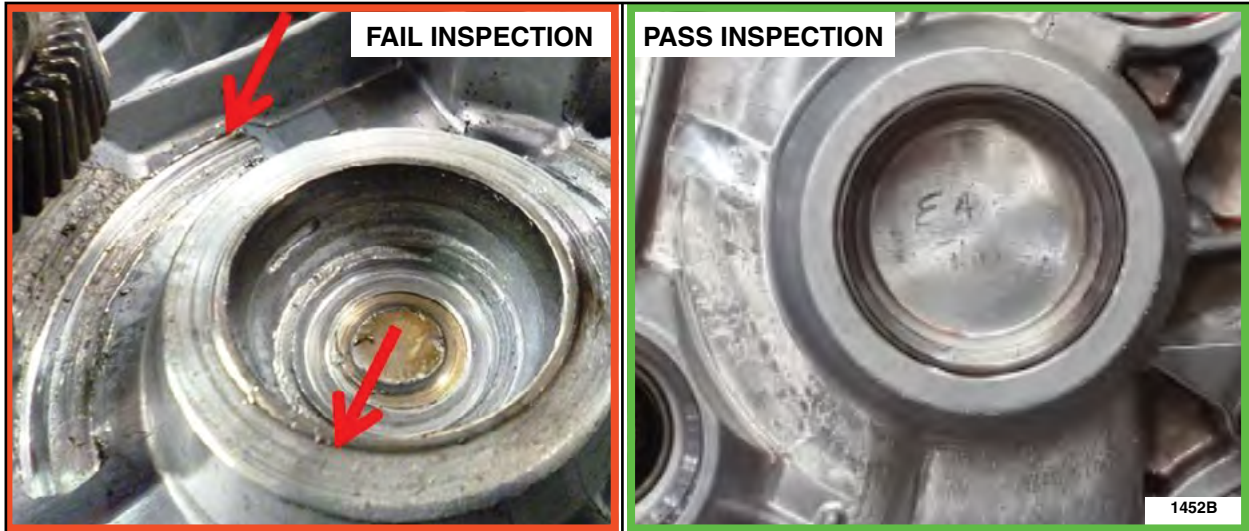



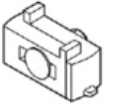

FIGURE 3



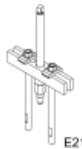

Transmission - Repair and Assembly Procedure

Special Tool(s) / General Equipment

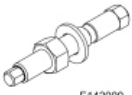

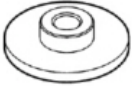






Disassembly

 307-163	307-163 (T86P-70043-A) Remover, Stator Case Bearing TKIT-1986-F TKIT-1986-LM
	307-586 Remover, Differential Bearing Cup TKIT-2006UF-FLM TKIT-2006UF-ROW
 E135106	308-001 (T58L-101-B) Remover, Pilot Bearing
Hydraulic Press	
Puller	
Punch	

Differential - Disassembly and Assembly

 E216580	204-069 (T81P-1104-C) Remover/Installer, Front Wheel Hub
	307-587 Installer and Guide, Differential Bearing TKIT-2006UF-FLM TKIT-2006UF-ROW
Hydraulic Press	
Puller	

Assembly

 E142000	204-029 Drawbar
 E133913	205-153 (T80T-4000-W) Handle
	307-541 Installer, Transfer Gear Bearing TKIT-2005D1-F
	307-576 Installer, Bearing Cup TKIT-2006UF-FLM TKIT-2006UF-ROW
	307-591 Shim Gauge, Differential/Transfer Gear Bearing TKIT-2006UF-FLM TKIT-2006UF-ROW
 E216426	307-626 Installer, Differential Seal TKIT-2008ET-FLM TKIT-2008ET-ROW
 E129543	307-672 Installer, Input Guide and Seal TKIT-2010D-FLM TKIT-2010D-ROW
 E152368	307-692 Tool, Transfer Gear Preload TKIT-2012C-FL TKIT-2012C-ROW TKIT-2012C-ROW2
 E152369	307-693 Installer, Transfer Gear Bearing Cup TKIT-2012C-FL TKIT-2012C-ROW TKIT-2012C-ROW2
Feeler Gauge	
Hydraulic Press	



1. Using the special tools, remove and discard the transmission side transfer gear bearing cup.
See Figure 4.

- Use Special Service Tools: 308-001 Remover, Pilot Bearing and 307-163 Remover, Stator Case Bearing.

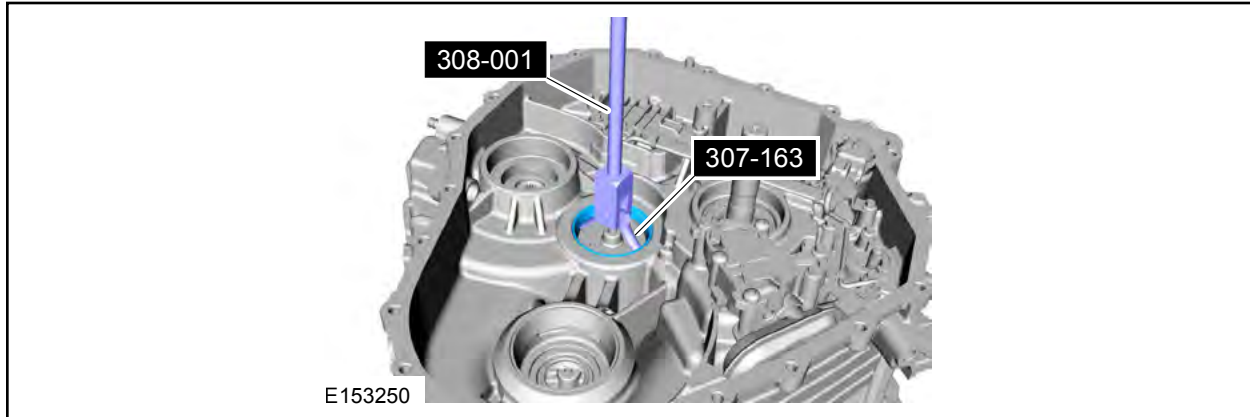


FIGURE 4

2. Remove and discard the LH halfshaft seal. See Figure 5.

- Use the General Equipment: Punch.

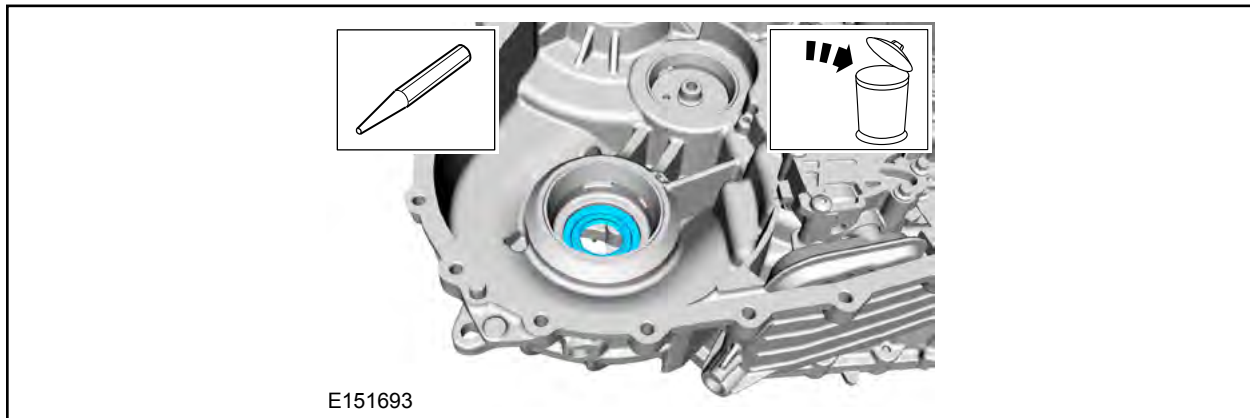


FIGURE 5



3. Remove the retainers and the transmission fluid oil sump baffle. See Figure 6.

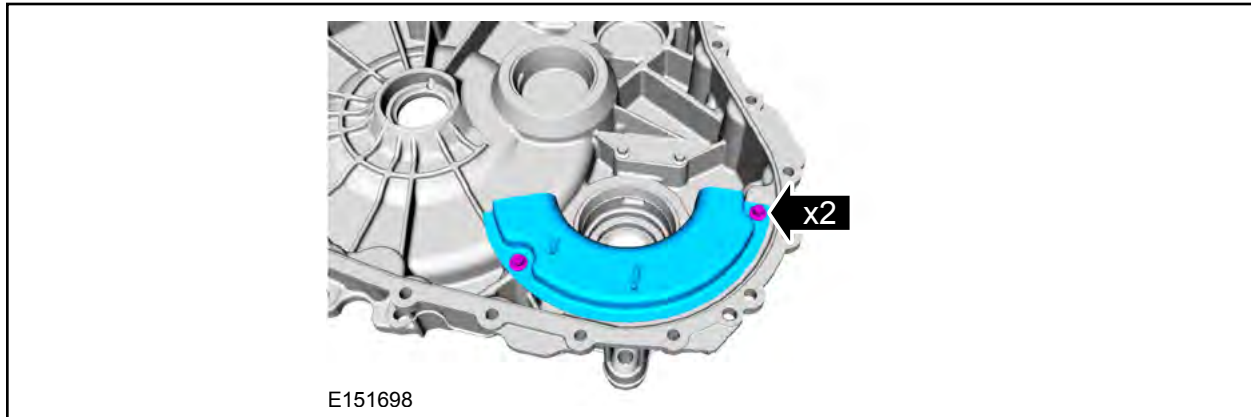


FIGURE 6

4. Remove and discard the RH halfshaft seal. See Figure 7.

- Use the General Equipment: Punch.

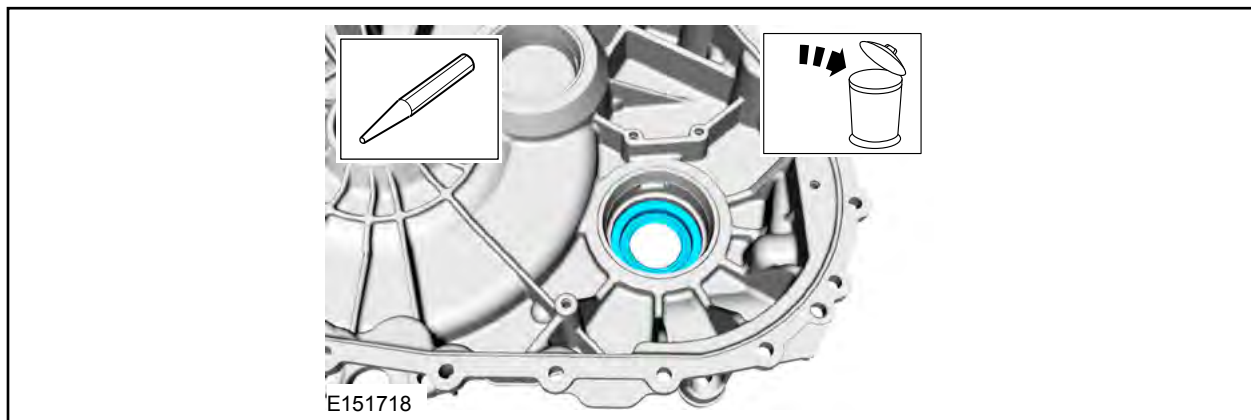


FIGURE 7

5. Remove and discard the input shaft oil seal. See Figure 8.

- Use the General Equipment: Punch.

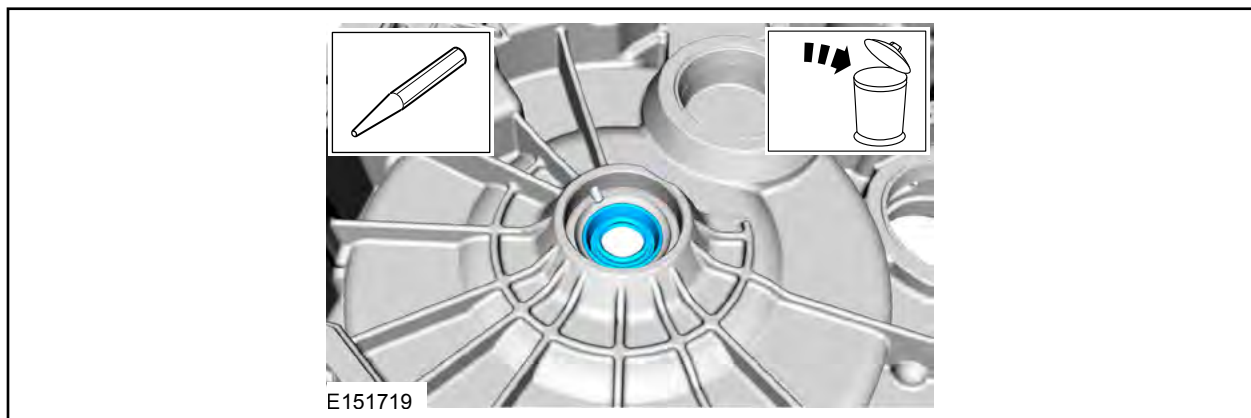


FIGURE 8



6. Remove and discard the damper housing side transfer gear bearing cup. See Figure 9.

- Use Special Service Tool: 308-001 Remover, Pilot Bearing and 307-163 Remover, Stator Case Bearing.

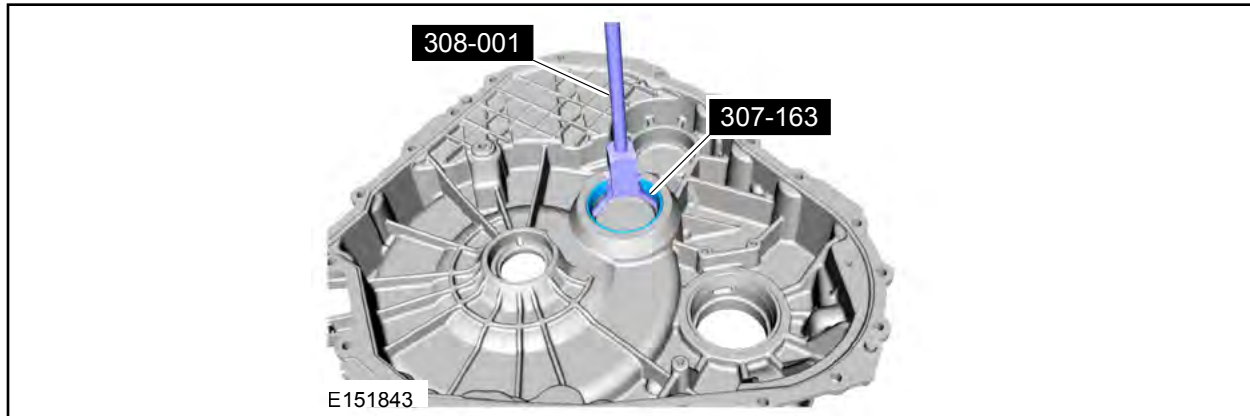


FIGURE 9

7. Remove and discard the transfer shaft preload shim. See Figure 10.

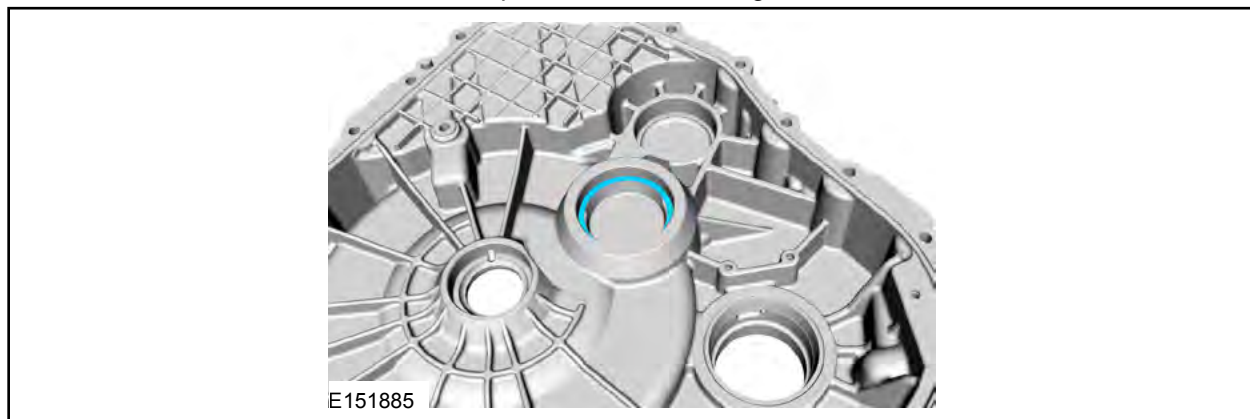


FIGURE 10



8. Install 307-586 Remover, Differential Bearing Cup onto the damper housing bearing cup.
See Figure 11.

1. Position the 307-586 Remover, Differential Bearing Cup in the damper housing with the tabs on the 307-586 Remover, Differential Bearing Cup aligned with the slots in the damper housing.
 - Use Special Service Tool: 307-586 Remover, Differential Bearing Cup.
2. Expand the 307-586 Remover, Differential Bearing Cup by hand.
3. While holding the 307-586 Remover, Differential Bearing Cup in the expanded position with the tabs in the slots of the damper housing, tighten the nut.

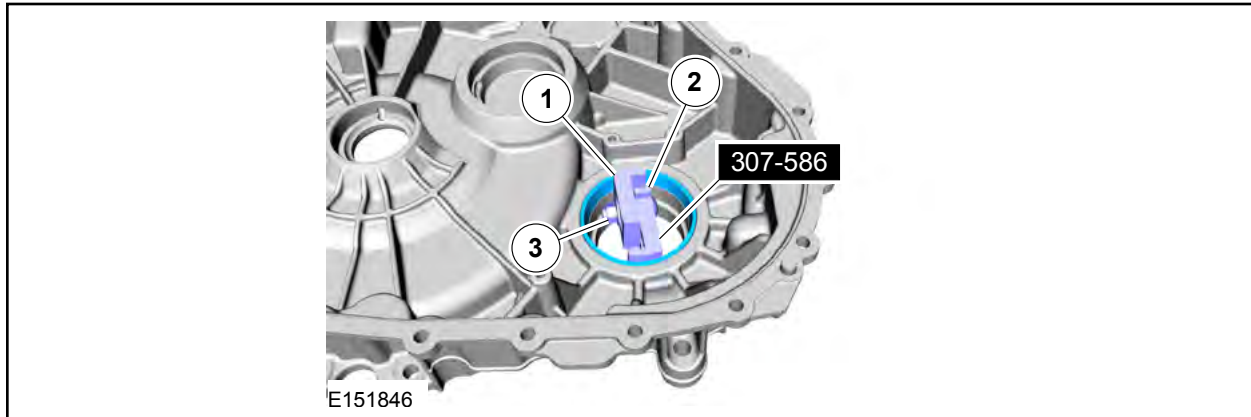


FIGURE 11

9. Remove and discard the damper housing side differential bearing cup. See Figure 12.

- Use Special Service Tool: 307-586 Remover, Differential Bearing Cup.
- Use the General Equipment: Hydraulic Press.

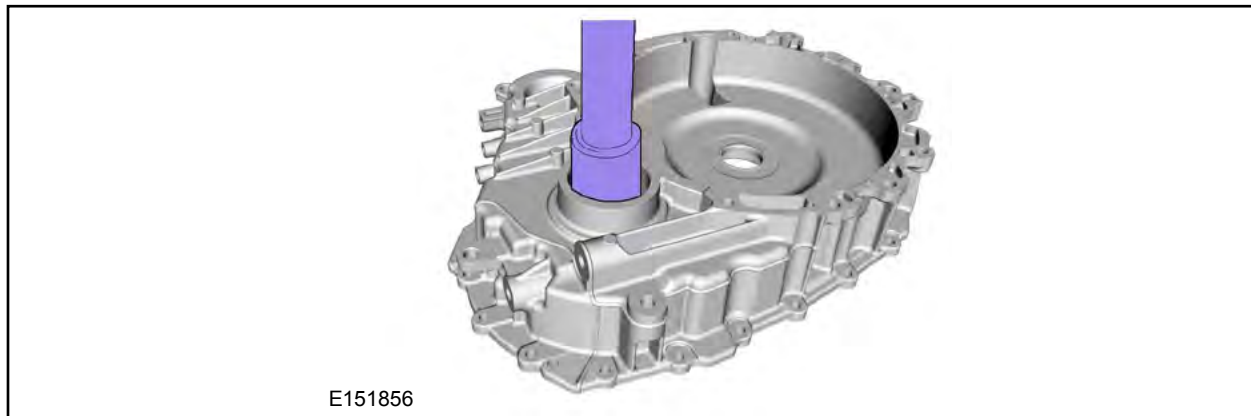


FIGURE 12



10. Remove and discard the differential preload shim. See Figure 13.

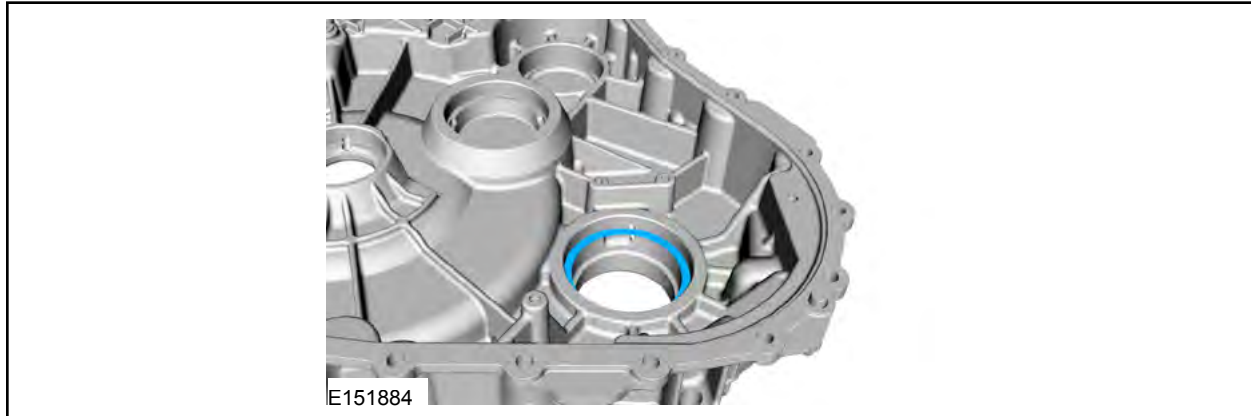


FIGURE 13

11. Remove and discard the upper differential bearing using a Bearing Puller and Step Plate. See Figure 14.

- Use Special Service Tool: 204-069 Remover/Installer, Front Wheel Hub.
- Use the General Equipment: Puller.

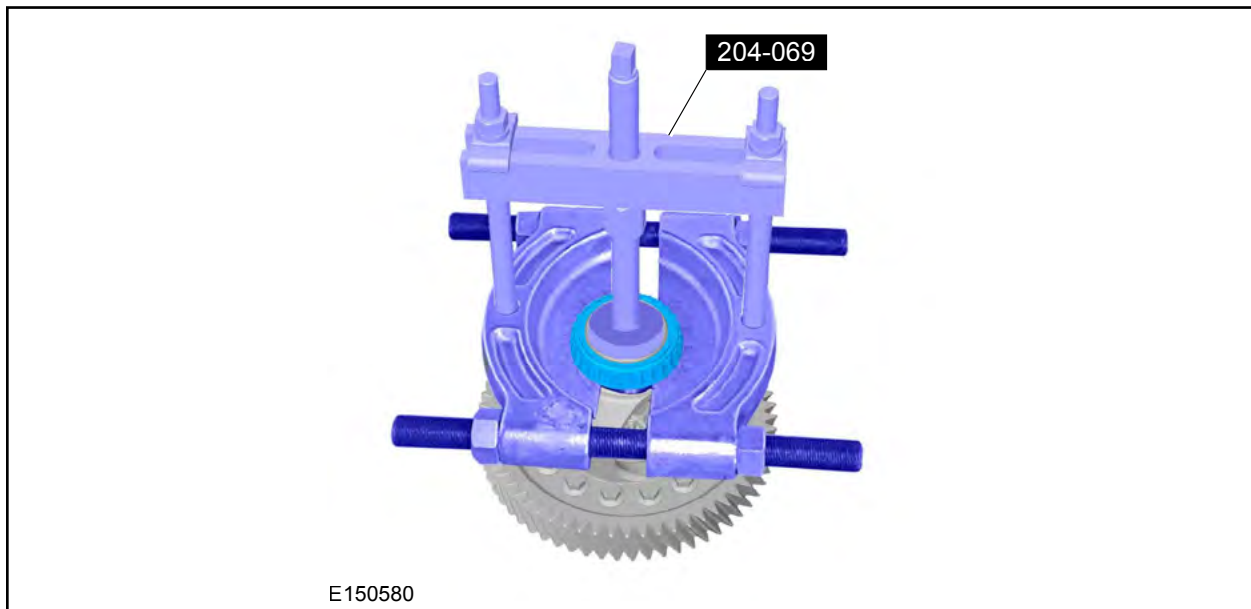


FIGURE 14



12. Install the *new* upper differential bearing. See Figure 15.

- Use Special Service Tool: 307-587 Installer and Guide, Differential Bearing.
- Use the General Equipment: Hydraulic Press.

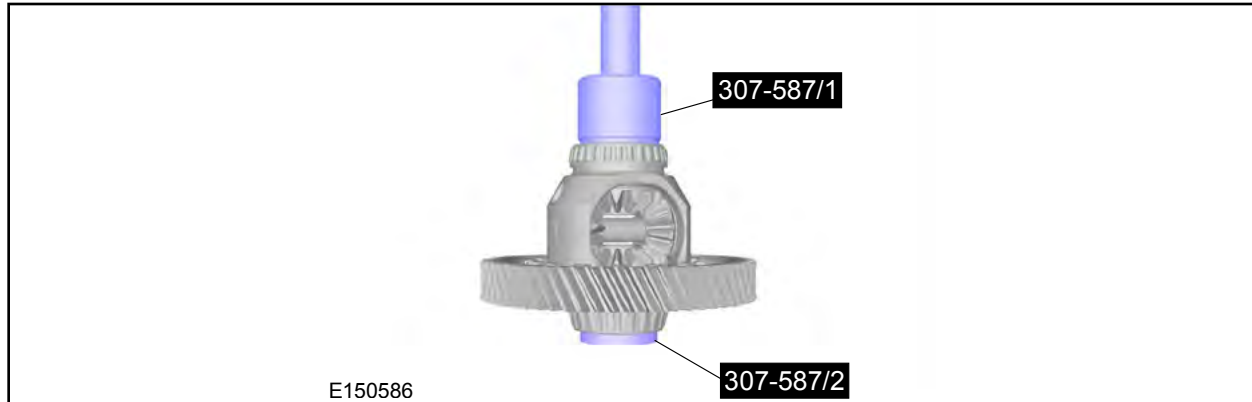


FIGURE 15

13. **NOTICE:** Do not use metal scrapers, wire brushes, power abrasive discs, or other abrasive means to clean sealing surfaces. These tools cause scratches and gouges which make leak paths.

Make sure that the transmission mating faces are clean and free of foreign material. Please follow RTV Sealing Surface Cleaning and Preparation in WSM Section 303-00 - Engine System - General Information, General Procedures. See Figures 16 and 17.

NOTE: Do not apply metal surface prep at this time. This should be applied just before the silicone sealant is applied, during assembly.

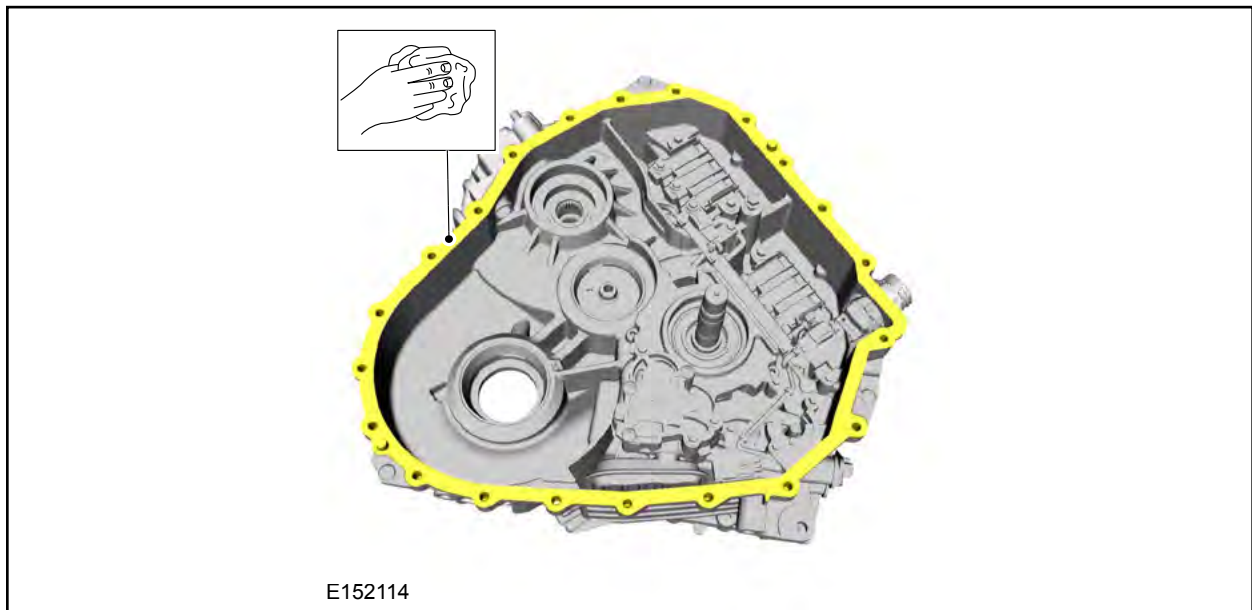


FIGURE 16



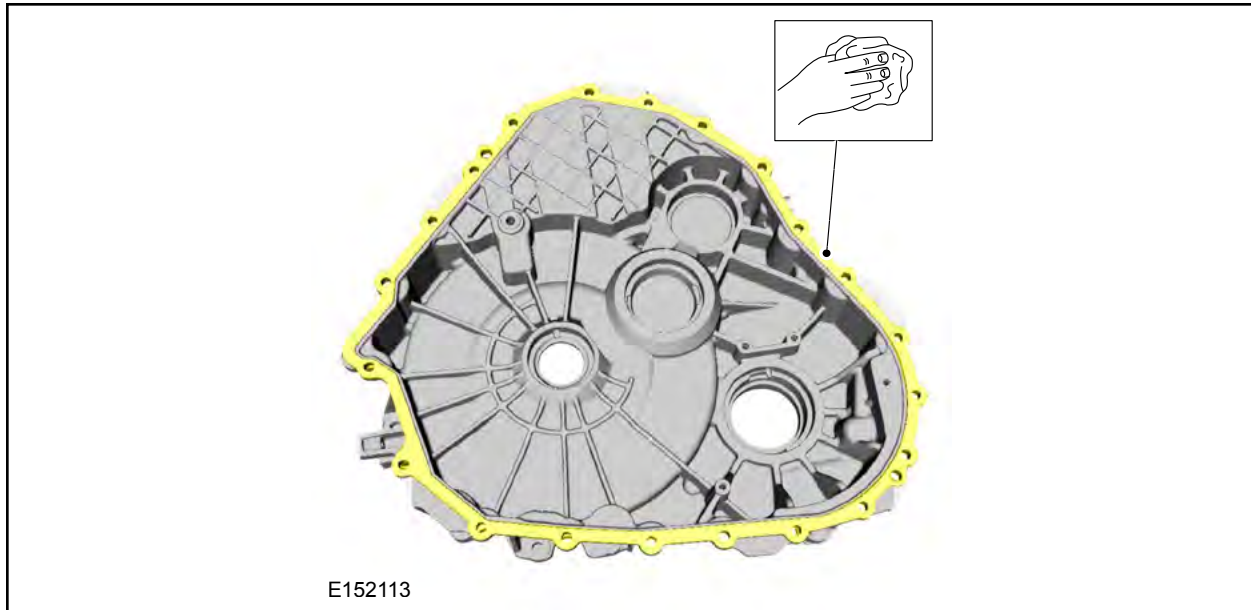


FIGURE 17

14. Install the *new* transmission case side transfer shaft bearing cup. See Figure 18.

- Use Special Service Tool: 205-153 Handle and 307-693 Installer, Transfer Gear Bearing Cup.

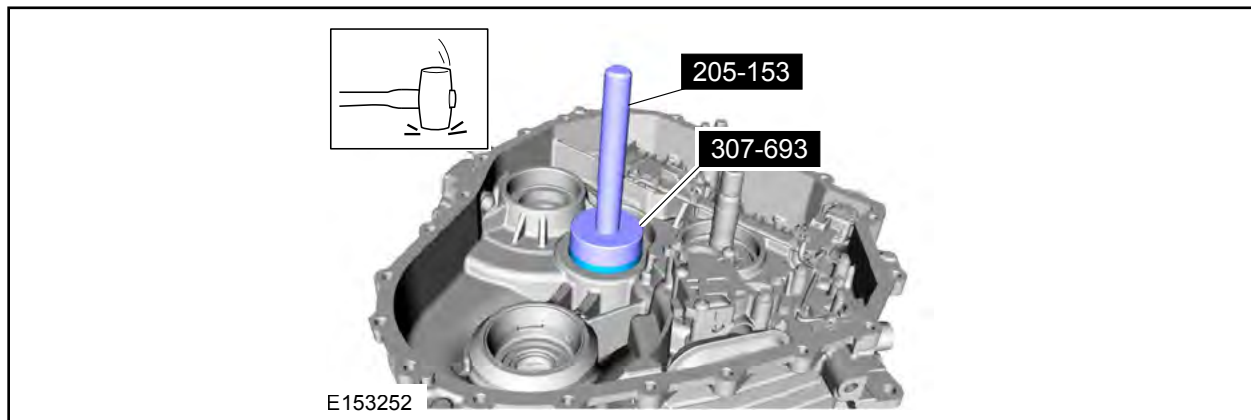


FIGURE 18



15. Install the *new* transfer shaft gear assembly and the differential carrier gear assembly. See Figure 19.

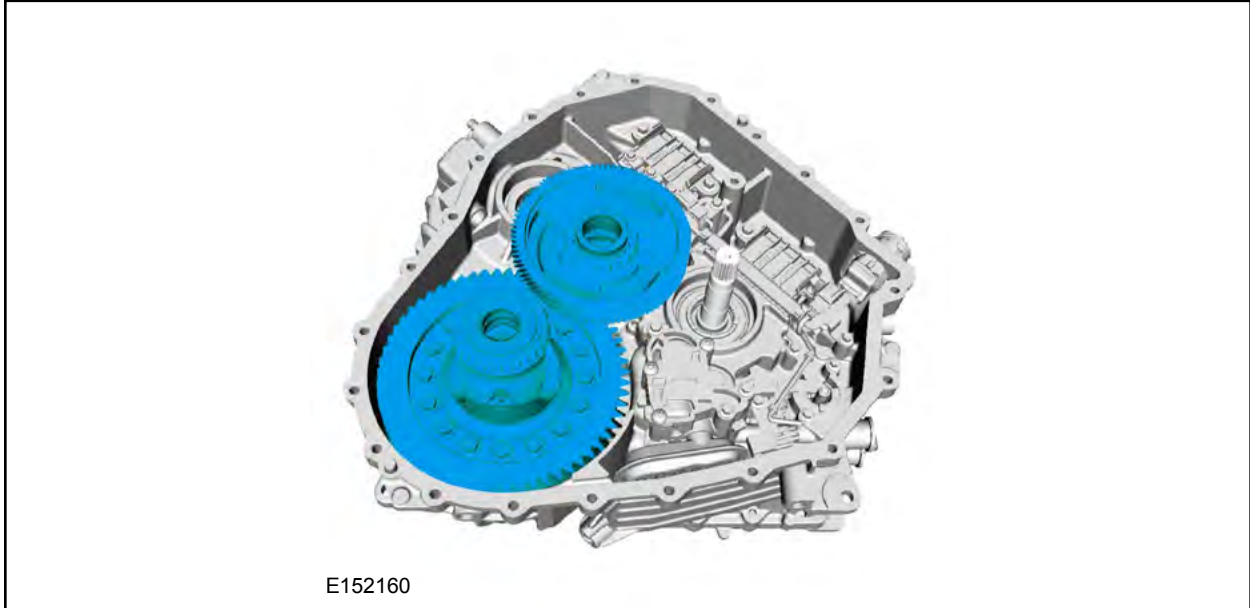


FIGURE 19

16. Place the *new* differential bearing cup and the *new* transfer shaft bearing cup on the bearings. See Figure 20.

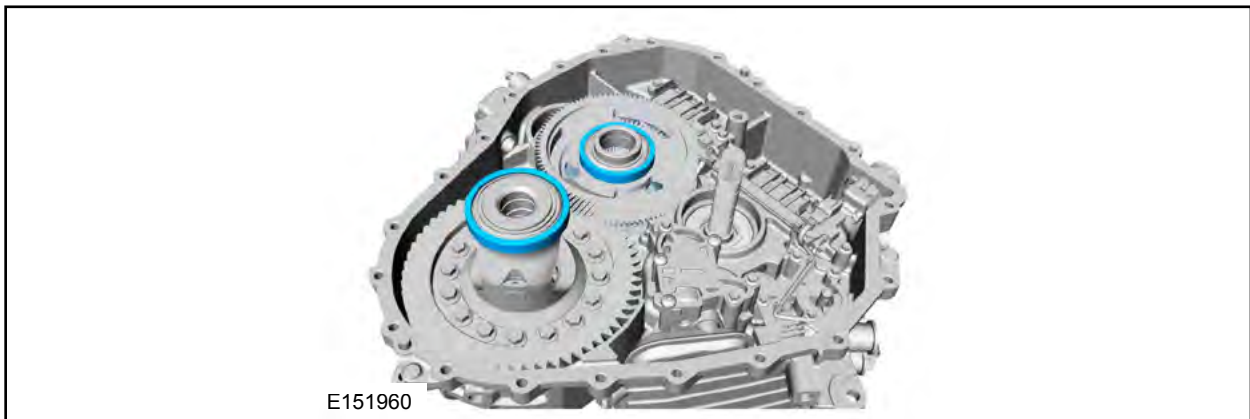


FIGURE 20



17. Install the special tools on top of the bearing cups. See Figure 21.

- Use Special Service Tool: 307-591 Shim Gauge, Differential/Transfer Gear Bearing and 307-692 Tool, Transfer Gear Preload.

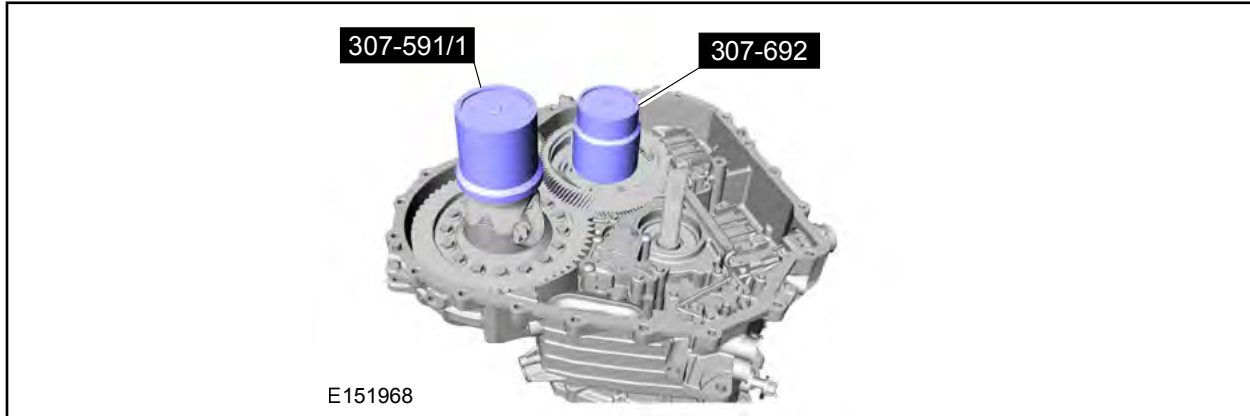


FIGURE 21

NOTE: Make sure that the silicone has been cleaned off the machined surface of the transmission case and the damper housing before installing the 307-591/3 Shim Gauge, Differential/Transfer Gear Bearing (4 spacers) or the preload measurement may be inaccurate.

18. Install the special tools, placing the spacers on the studs. See Figures 22 and 23.

- Use Special Service Tool: 307-591 Shim Gauge, Differential/Transfer Gear Bearing.

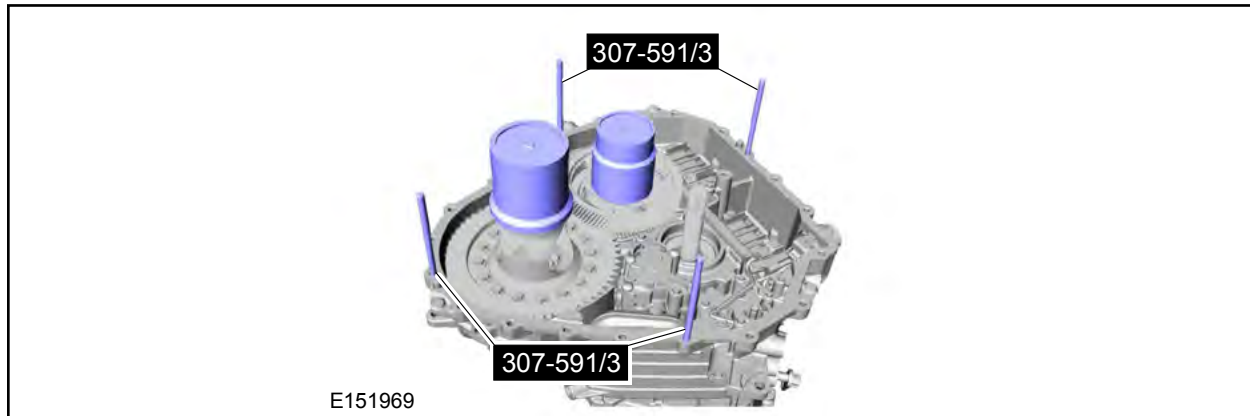


FIGURE 22



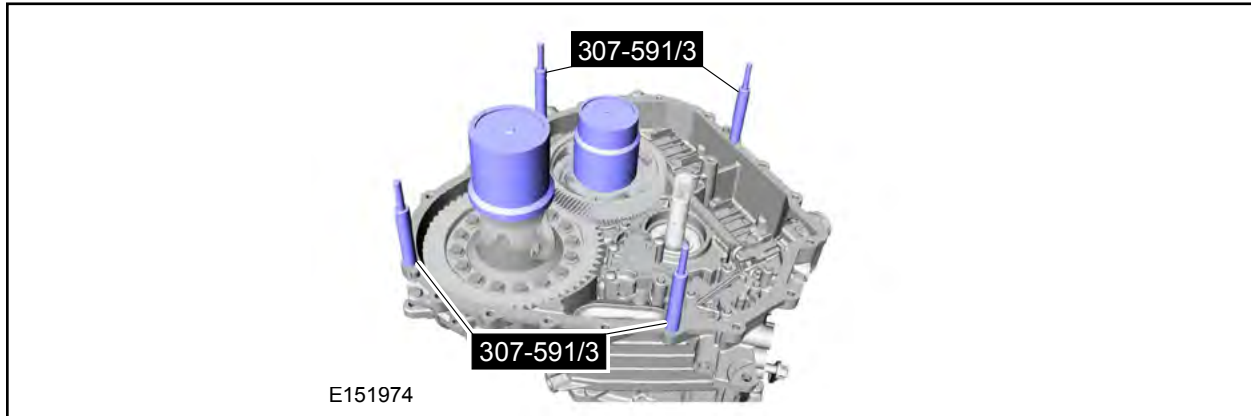


FIGURE 23

19. Install the damper housing on the special tools. See Figure 24.

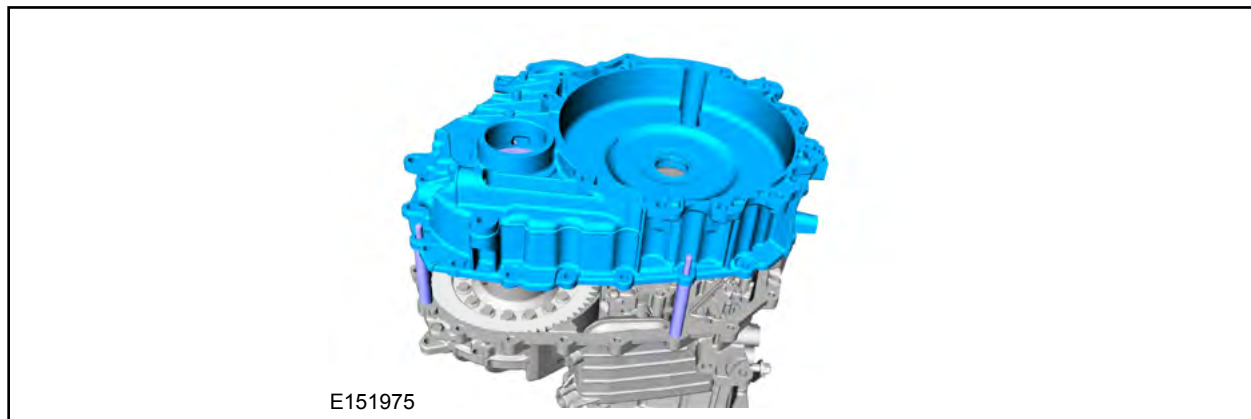


FIGURE 24

20. Install the nuts on the studs. See Figure 25.

- Use Special Service Tool: 307-591 Shim Gauge, Differential/Transfer Gear Bearing.
- Tighten to 18 lb.ft (24 Nm).

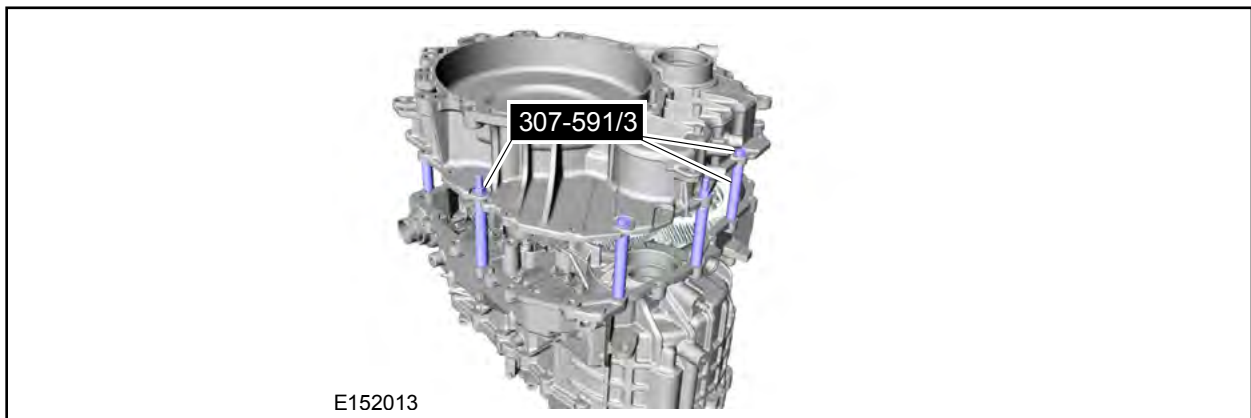


FIGURE 25



21. Rotate the transfer shaft and the differential several times to seat the bearing cups. See Figure 26.

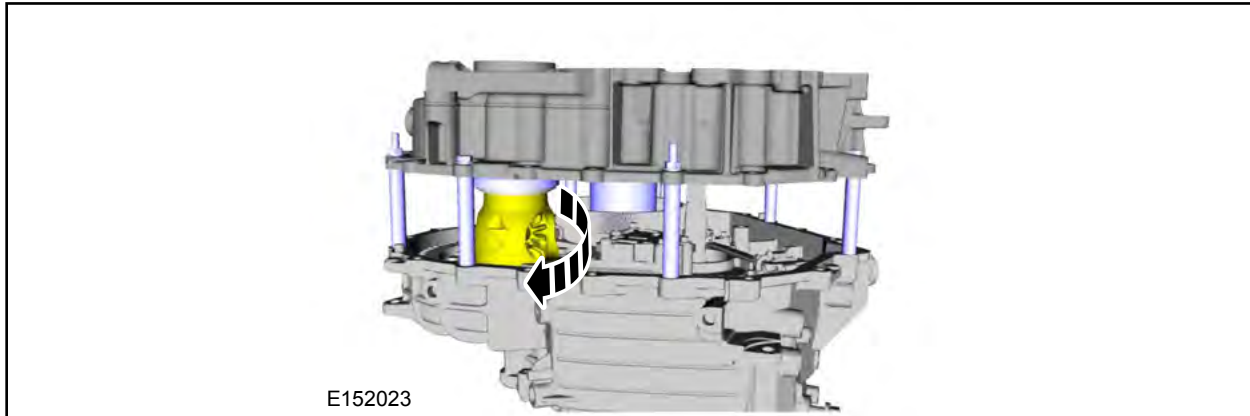


FIGURE 26

22. Using a feeler gauge, measure and record the smallest and largest preload gap on the 307-591/1 Shim Gauge, Differential/Transfer Gear Bearing. Average the two measurements to get the measurement needed when referring to the shim chart for proper shim selection. See Figure 27.

- Refer to the WSM Specifications chart for proper shim selection/part number, (307-01 Automatic Transmission - Automatic Transmission - HF35, Specifications).

NOTE: Measurements and shim thicknesses are not the same.

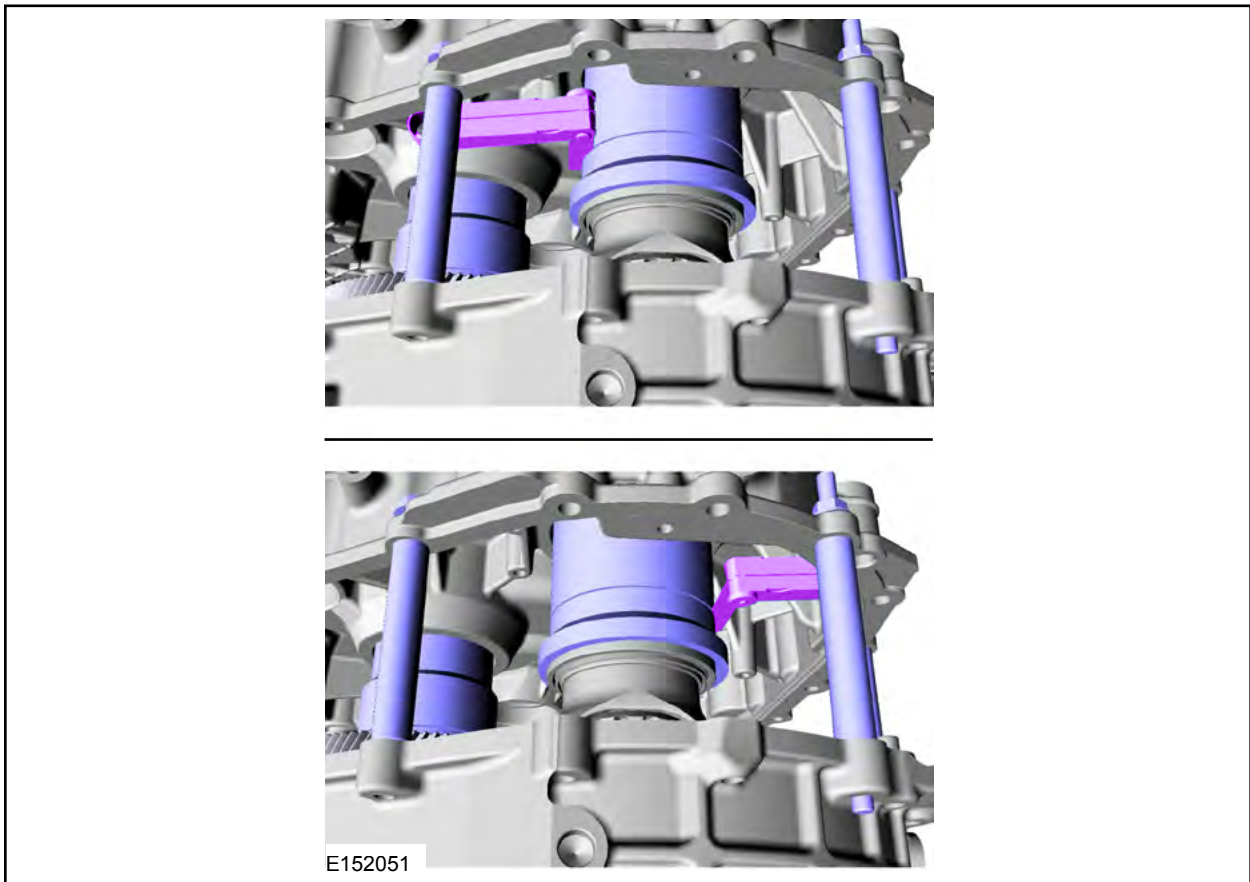


FIGURE 27



23. Using a feeler gauge measure and record the smallest and largest preload gap on the 307-692 Tool, Transfer Gear Preload. Average the two measurements to get the measurement needed when referring to the shim chart for proper shim selection. See Figure 28.

- Refer to the WSM Specifications chart for proper shim selection/part number, (307-01 Automatic Transmission - Automatic Transmission - HF35, Specifications).

NOTE: Measurements and shim thicknesses are not the same.

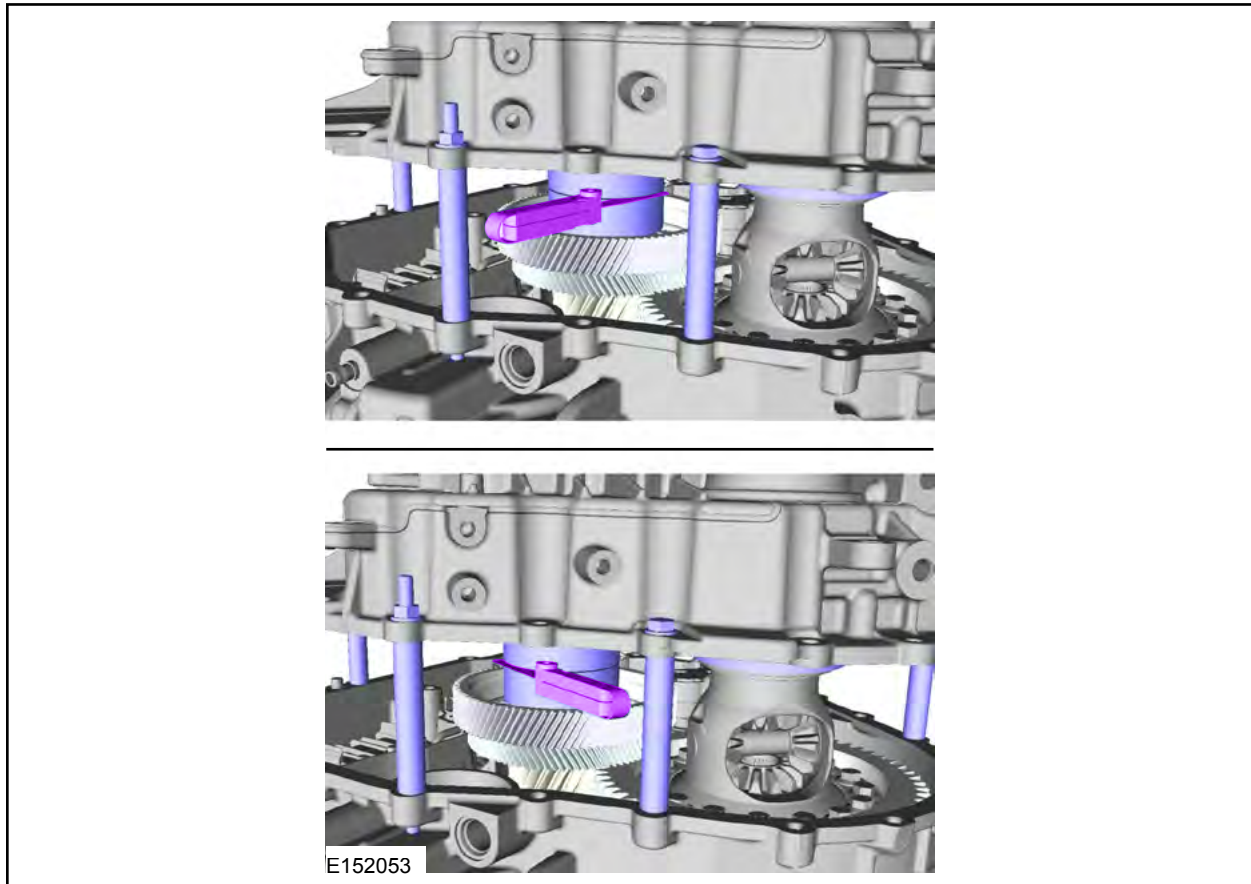


FIGURE 28

24. Install the *new* transfer shaft preload shim. See Figure 29.

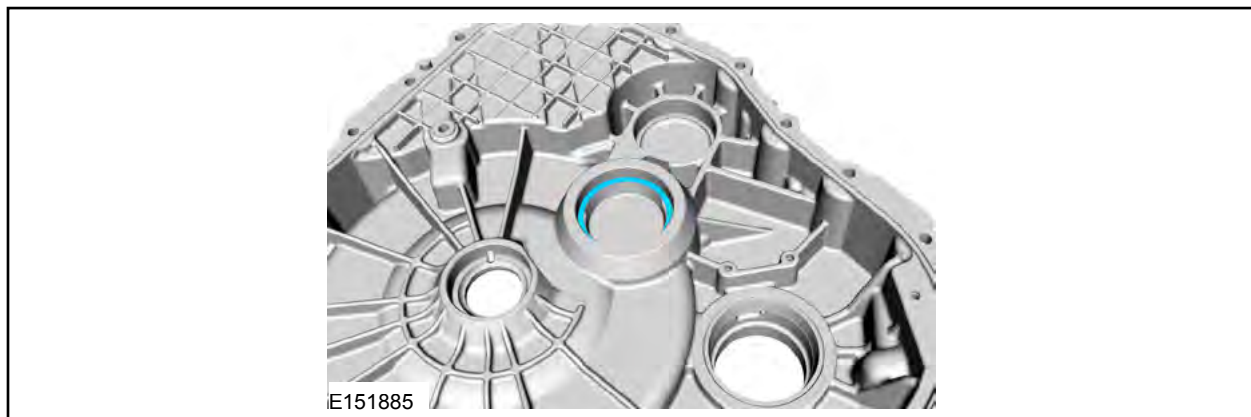


FIGURE 29



25. Using the special tools, install the *new* damper housing side transfer gear bearing cup.
See Figure 30.

- Use Special Service Tool: 205-153 Handle and 307-693 Installer, Transfer Gear Bearing Cup.

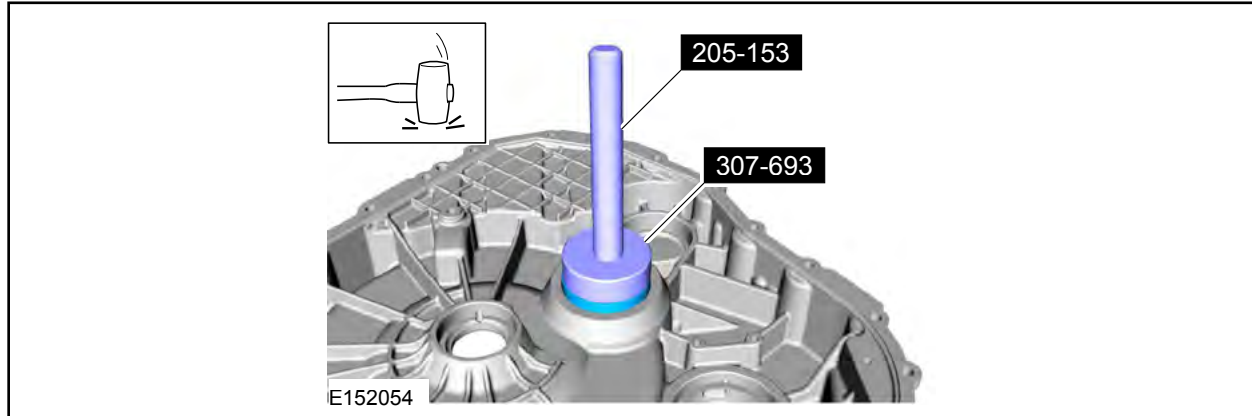


FIGURE 30

26. Install the *new* differential preload shim. See Figure 31.

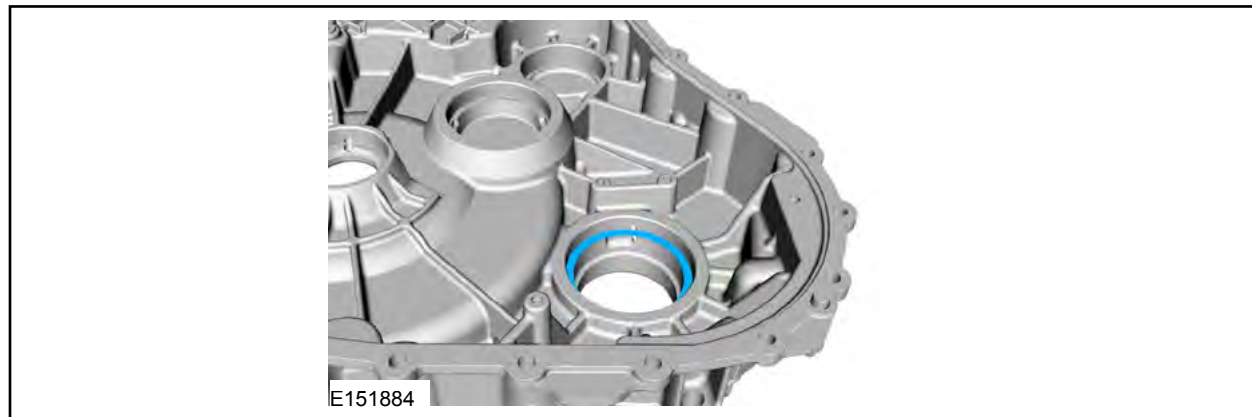


FIGURE 31



27. Using the special tools, install the *new* damper housing side differential bearing cup. See Figure 32.

- Use Special Service Tool: 204-029 Drawbar, 307-541 Installer, Transfer Gear Bearing and 307-576 Installer, Bearing Cup.

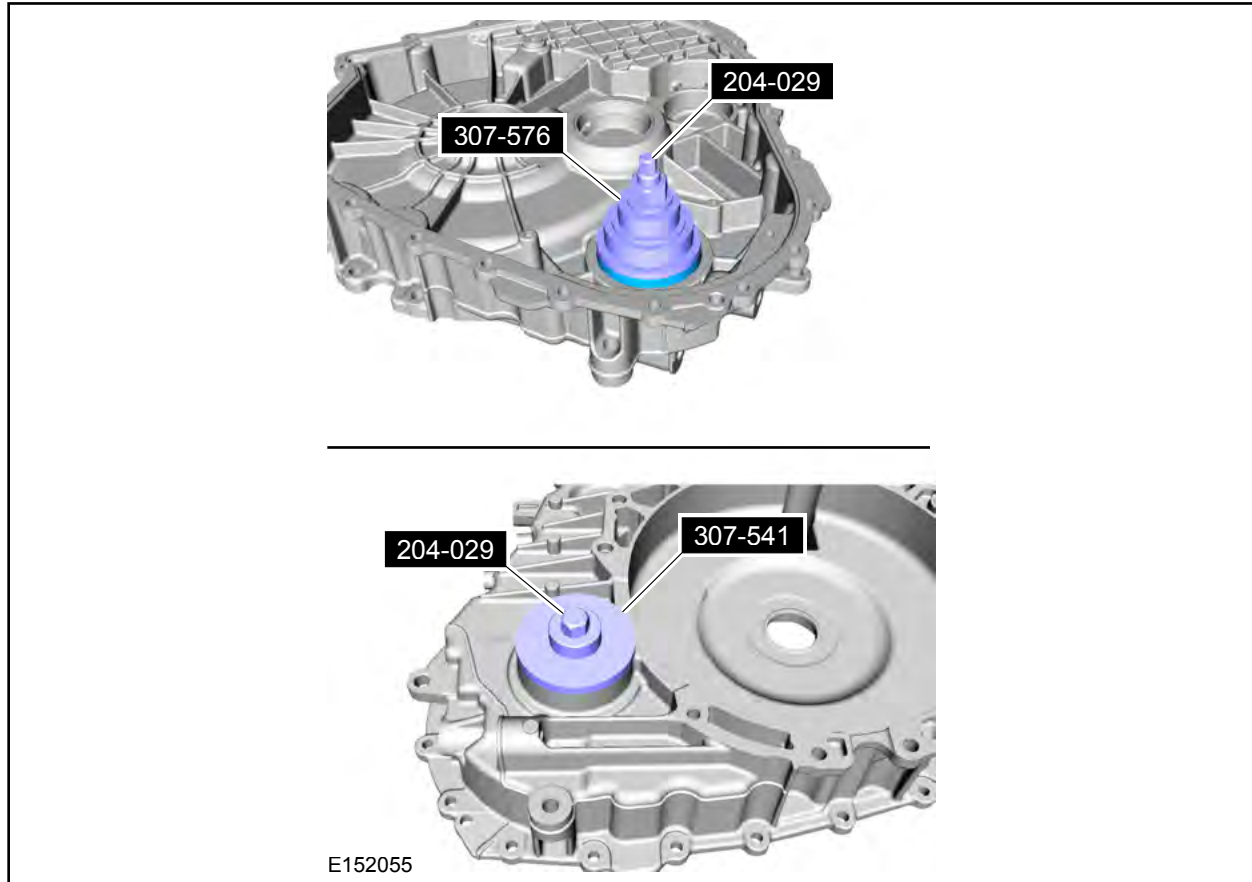


FIGURE 32



28. Using the special tool, install the *new* input shaft oil seal. See Figure 33.

- Use Special Service Tool: 307-672 Installer, Input Guide and Seal.

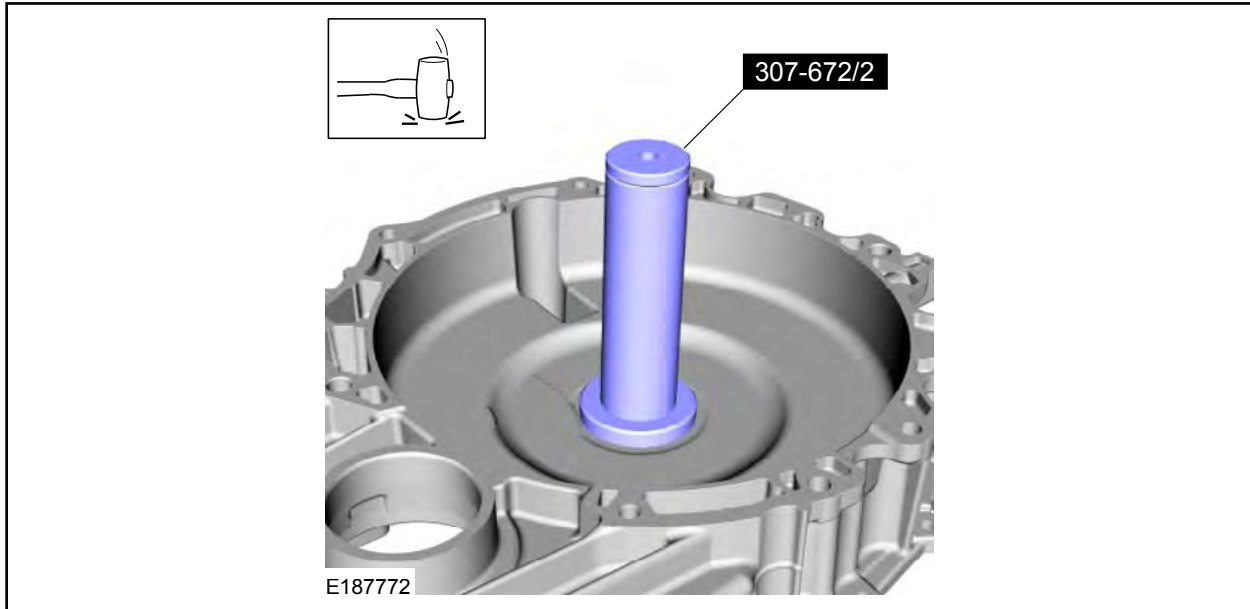


FIGURE 33

29. Using the special tool, install the *new* RH halfshaft seal. See Figure 34.

- Use Special Service Tool: 205-153 Handle and 307-626 Installer, Differential Seal.

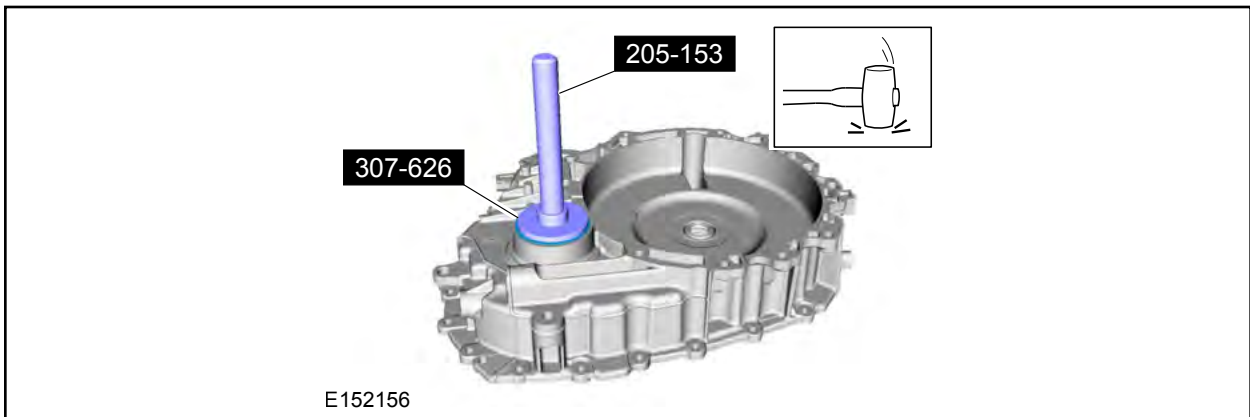


FIGURE 34



30. Install the transmission fluid oil sump baffle and the retainers. See Figure 35.

- Tighten to 97 lb.in (11 Nm).

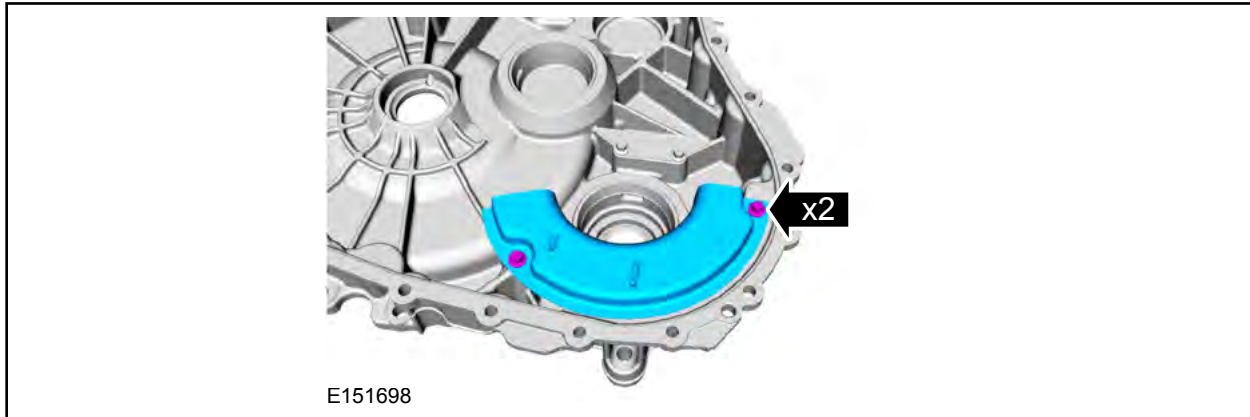


FIGURE 35

31. Using the special tool, install the *new* LH halfshaft seal. See Figure 36.

- Use Special Service Tool: 205-153 Handle and 307-626 Installer, Differential Seal.

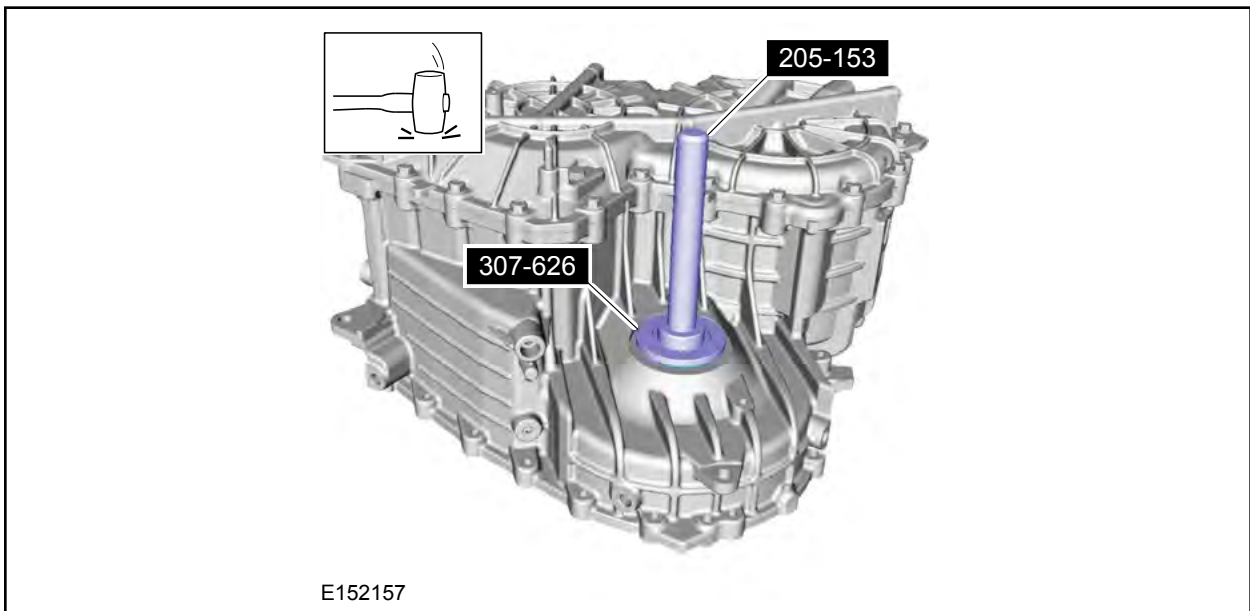


FIGURE 36



32. Install the differential carrier gear assembly. See Figure 37.

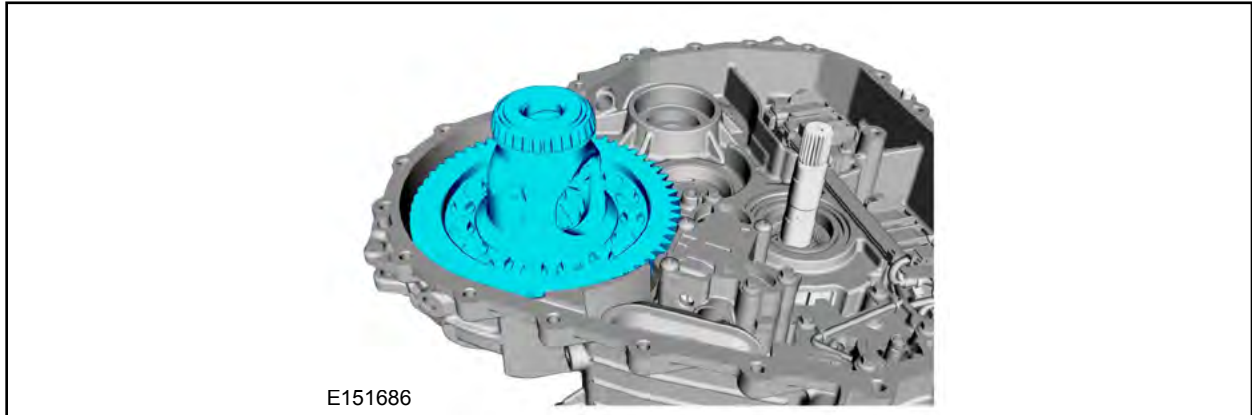


FIGURE 37

33. Install the final drive input gear assembly. See Figure 38.

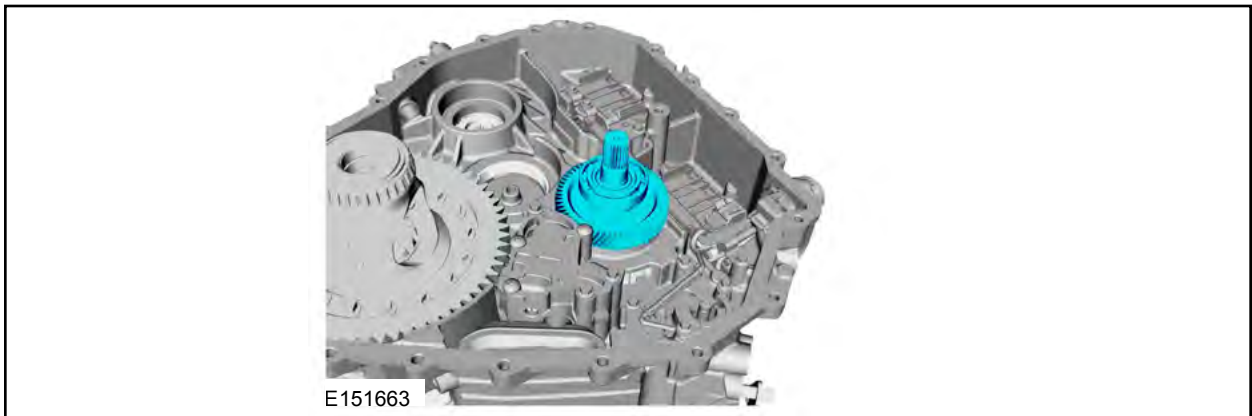


FIGURE 38

34. Install the *new* transfer shaft gear assembly and the traction motor drive gear assembly. See Figure 39.

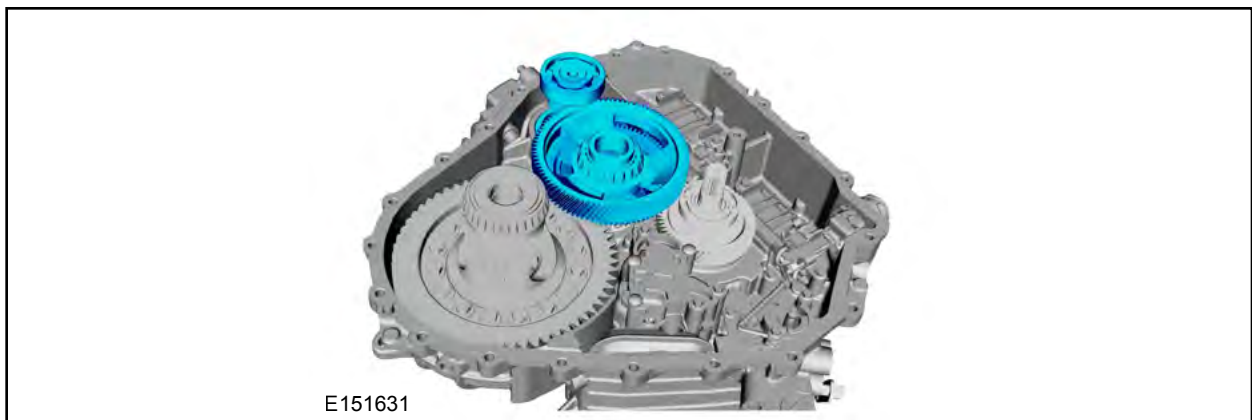


FIGURE 39



NOTE: Before applying silicone sealant, finish cleaning the transmission case mating surfaces and apply the metal surface prep. Follow the RTV Sealing Surface Cleaning and Preparation procedures in WSM Section 303-00 - Engine System - General Information, General Procedures.

35. **NOTE:** Make sure silicone is applied to the shoulder on the inner bolt hole.

Apply Ultra Silicone Sealant / TA-29 to the transmission case assembly. See Figure 40.

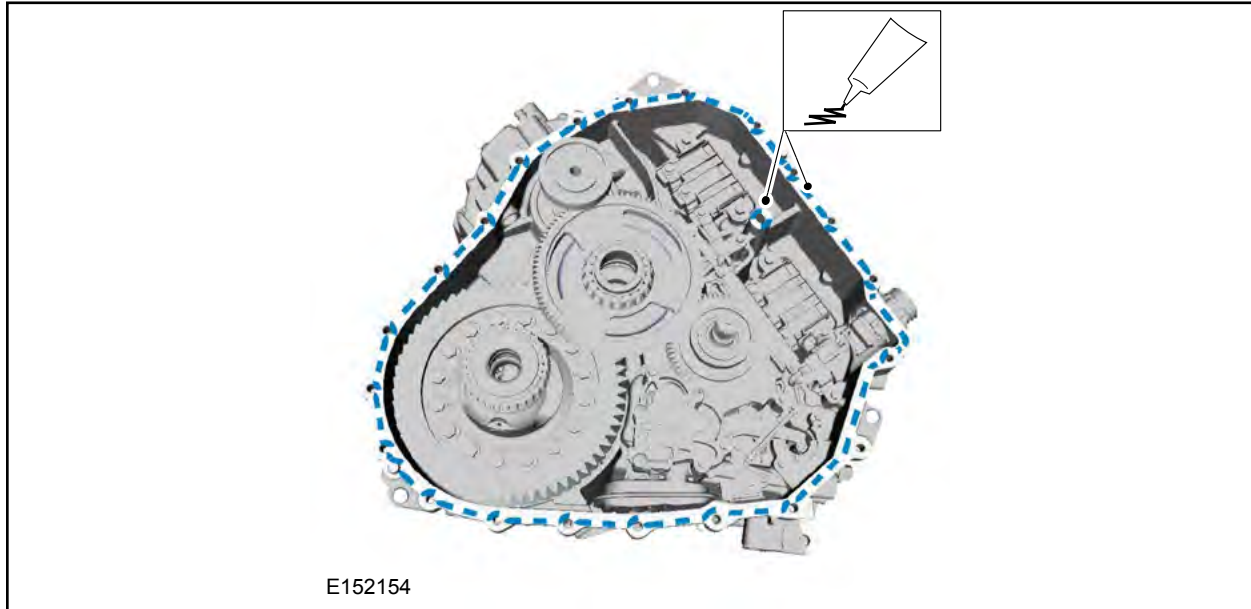


FIGURE 40

36. **NOTE:** Tighten in a crisscross pattern.

Install the damper housing and the bolts. See Figure 41.

- Tighten to 18 lb.ft (25 Nm).

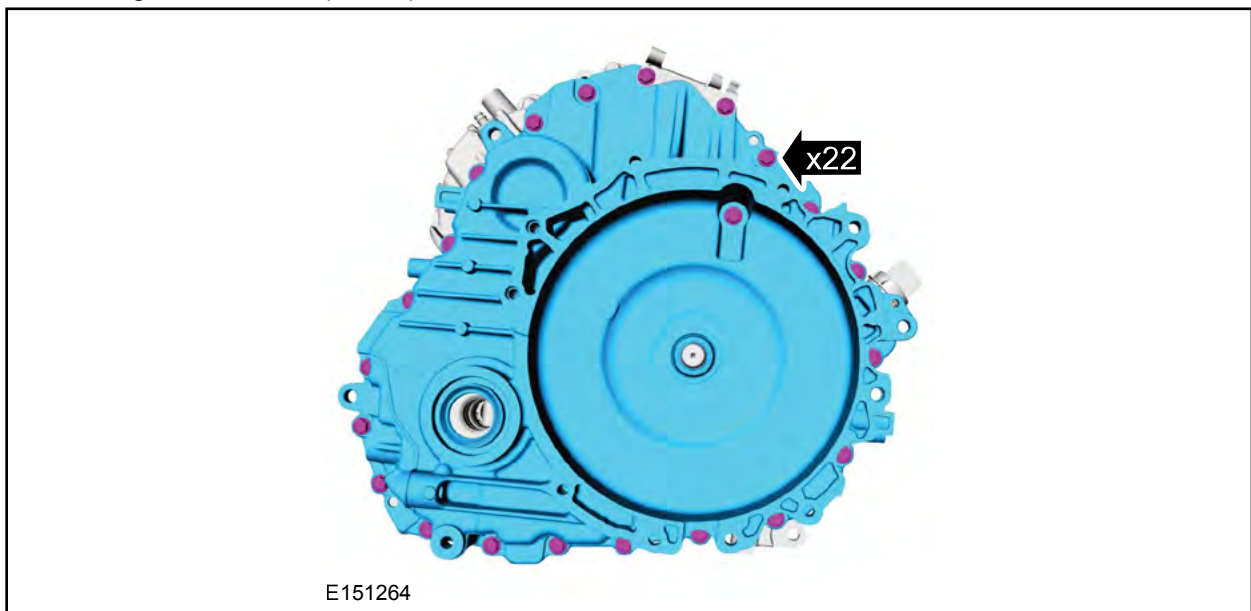


FIGURE 41



37. Place tape over transmission mount boss holes to prevent any debris lodged in the holes from falling into transmission during removal. See Figure 42.

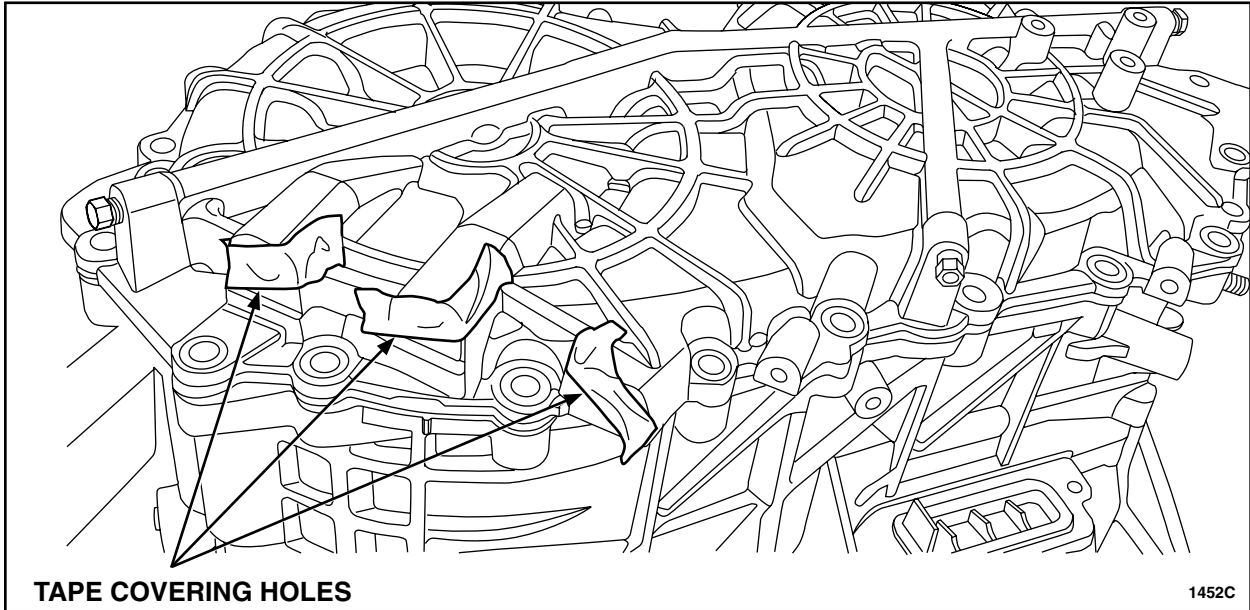


FIGURE 42

38. Remove the transmission case end cover bolts. Remove and discard the transmission case end cover assembly. See Figure 43.

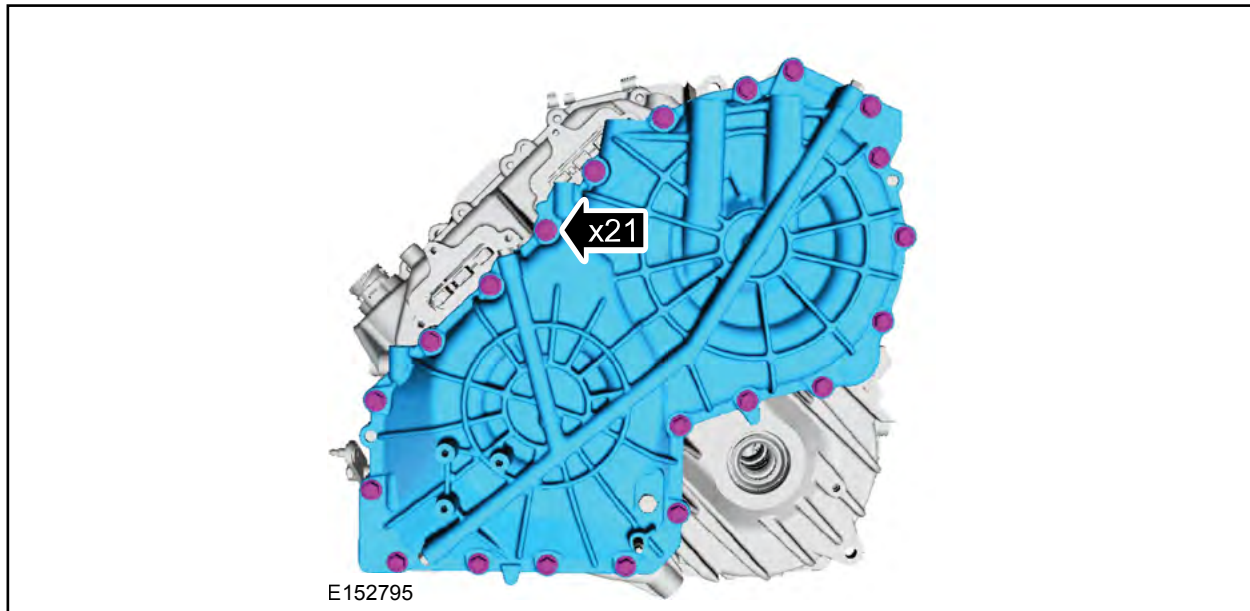


FIGURE 43



39. **NOTICE:** Do not use metal scrapers, wire brushes, power abrasive discs, or other abrasive means to clean sealing surfaces. These tools cause scratches and gouges which make leak paths.

Make sure that the transmission mating faces are clean and free of foreign material. Please follow RTV Sealing Surface Cleaning and Preparation in WSM Section 303-00 - Engine System - General Information, General Procedures. See Figure 44.

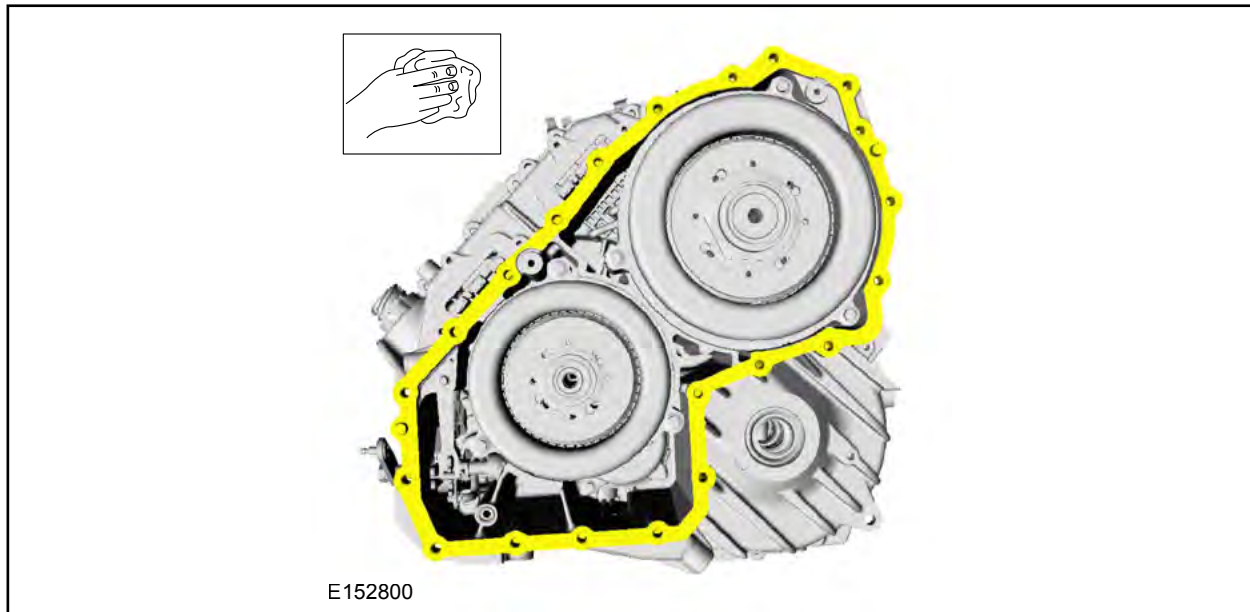


FIGURE 44

40. Apply Ultra Silicone Sealant / TA-29 to the transmission case assembly. See Figure 45.

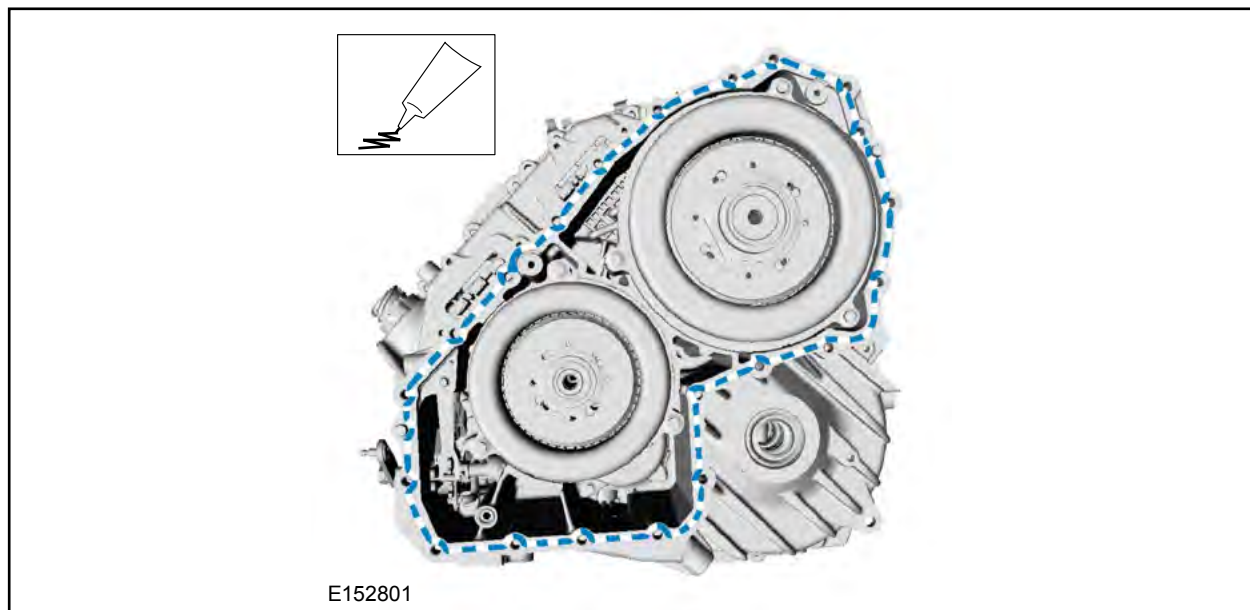


FIGURE 45



41. Install the *new* transmission case end cover assembly and the bolts. See Figure 46.

- Tighten to 18 lb.ft (25 Nm).

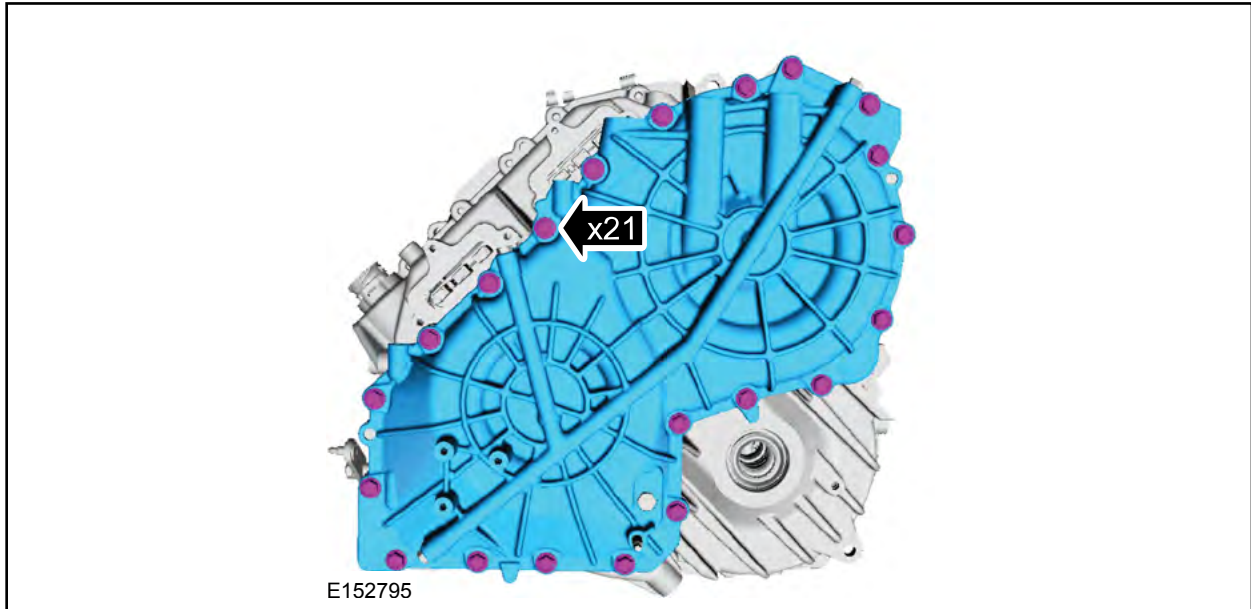


FIGURE 46

