



SERVICE BULLETIN

Classification: AT21-007A	Reference: NTB21-083A	Date: December 7, 2021
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DTC P17F0, P17F1, P0776, P2813 AND/OR P0841 STORED IN THE TCM

This bulletin has been amended. See AMENDMENT HISTORY on the last page.
Discard all previous versions of this bulletin.

APPLIED VEHICLES: 2019-2020 Altima (L34)
APPLIED ENGINE: PR25DD
APPLIED TRANSMISSION: RE0F10D

IF YOU CONFIRM

One or more of the following DTCs are stored:

P0776, P2813, P0841, P17F0, P17F1

HINT:

- If DTCs other than those listed above are stored, this bulletin **does not apply**.
- If the customer states the engine stalled while going from 'P' or 'N' range to 'R' or 'D' range, this bulletin **does not apply**.
- If DTC P17F0 and/or P17F1 are the only DTCs stored and there is no customer complaint of judder, this bulletin **does not apply**.

ACTION

See Repair Flow Chart on page 2 to confirm if this bulletin applies.

HINT: The following pages must be printed and attached to the Repair Order (RO):

1. Clutch Total End Play Calculation (step 93 on page 60)
2. Current Calibration Data (step 138 on page 80)
3. New Calibration Data (step 154 on page 81)

IMPORTANT: The purpose of ACTION (above) is to give you a quick idea of the work you will be performing. You **MUST** closely follow the entire SERVICE PROCEDURE as it contains information that is essential to successfully completing this repair.

Nissan Bulletins are intended for use by qualified technicians, not 'do-it-yourselfers'. Qualified technicians are properly trained individuals who have the equipment, tools, safety instruction, and know-how to do a job properly and safely. **NOTE:** If you believe that a described condition may apply to a particular vehicle, DO NOT assume that it does. See your Nissan dealer to determine if this applies to your vehicle.

Repair Flow Chart

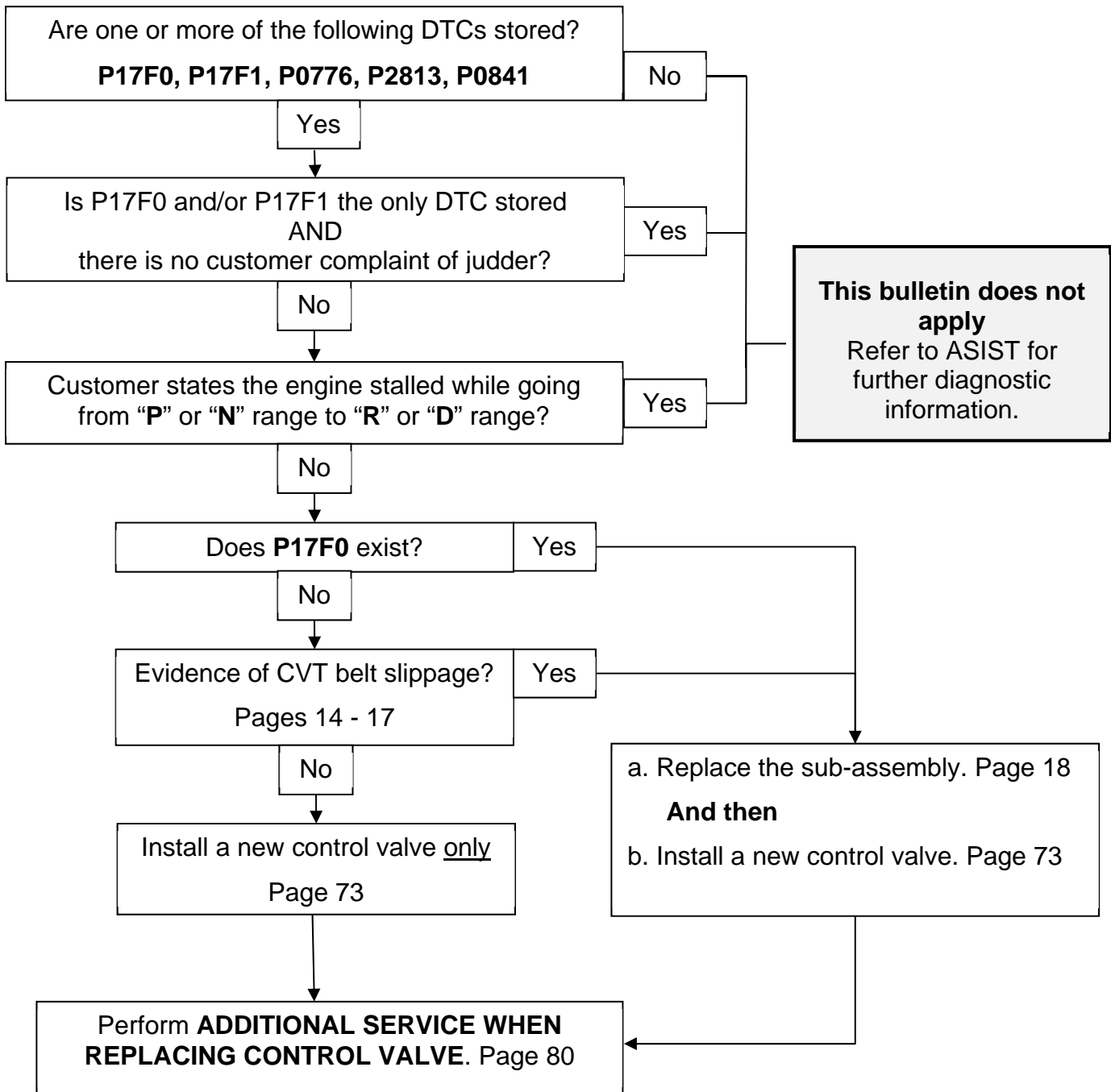


Table of Contents

• Required Tools / Materials.....	page 4
• Essential Tools.....	page 4
• Weights.....	page 6
• Precautions when Disassembling a CVT Assembly.....	page 7
• Control Valve Removal and CVT Belt Inspection.....	page 9
• CVT Assembly Removal.....	page 18
• Remove the Converter Housing, Oil Seals, Oil Pump Cover, Oil Pump and Oil Filter.....	page 21
• Clean the CVT Case Surfaces.....	page 29
• Clean the Oil Passages in the CVT Case, Oil Pump Cover, and CVT Filter Area.....	page 30
• New Oil Pump Installation.....	page 32
• Replace the Side Cover – Pulleys and Belt (sub-assembly).....	page 34
• Clutch Total Endplay Adjustment – Thrust Bearing Selection.....	page 57
• Clean the Converter Housing Passages.....	page 63
• CVT Reassembly.....	page 65
• Control Valve, Strainer and Pan Installation.....	page 73
• Install the CVT Assembly.....	page 79
• ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE.....	page 80
• PARTS INFORMATION.....	page 86
• CLAIMS INFORMATION.....	page 88

Required Tools / Materials

- Cherry picker / engine hoist / lifting arm (never handle replacement CVT sub-assembly by hand)
- Strap or chain to lift and lower CVT and sub-assembly
- Petroleum jelly or equivalent
- Extendable magnet
- Large clean surface / 1 to 2 work tables
- Vernier calipers
- Brake cleaner or equivalent solvent
- 90% Isopropyl alcohol
- Lens swab
- Plastic scraper

Essential Tools

Additional Essential Tools are available from Tech•Mate online: www.nissantechmate.com, or by phone: 1-800-662-2001.

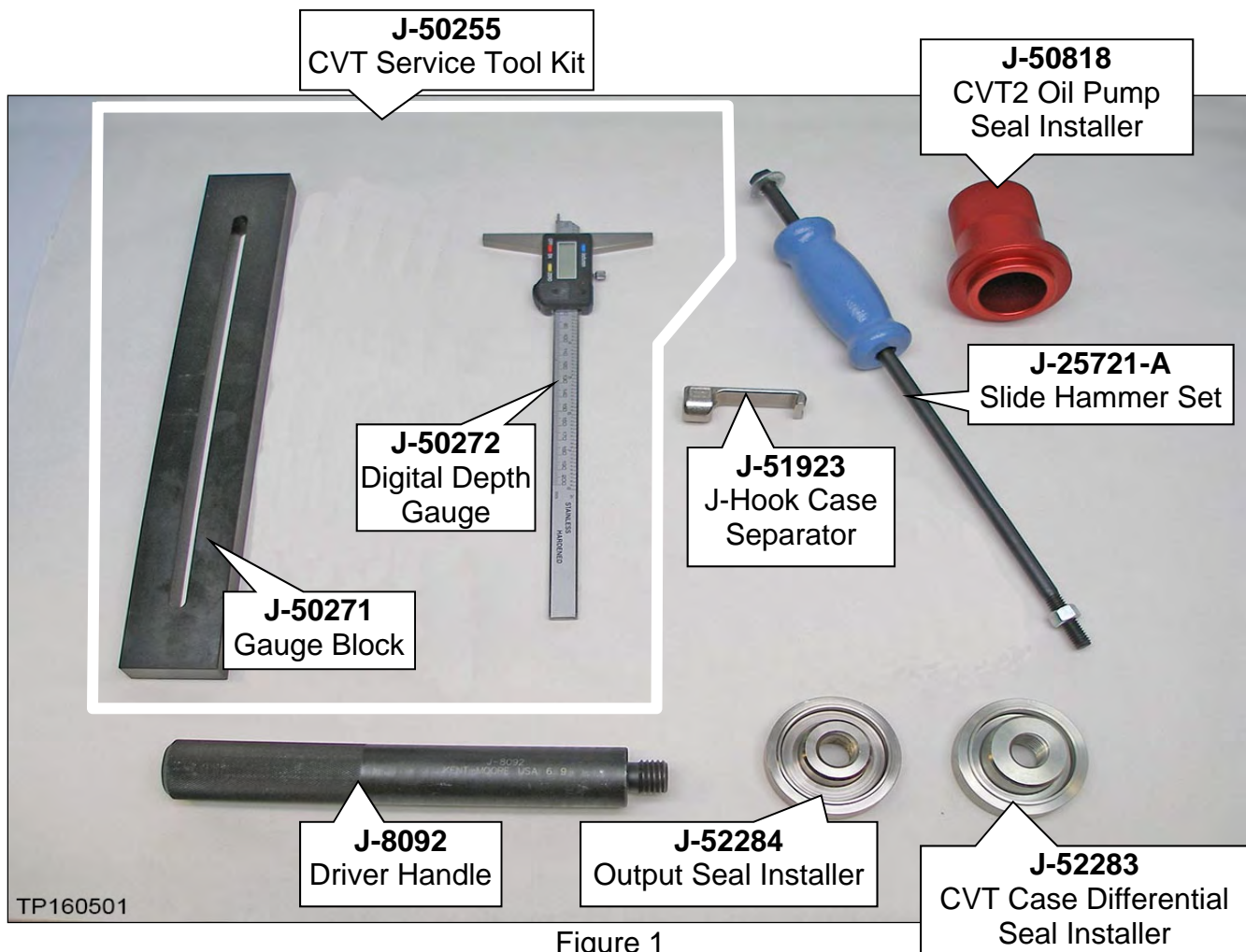


Figure 1

Essential Tools (continued)



Figure 2

J-51959
Guide Pins

CAUTION

To avoid personal injury or vehicle damage, always handle the CVT and component assemblies carefully and with the appropriate lifting tools.

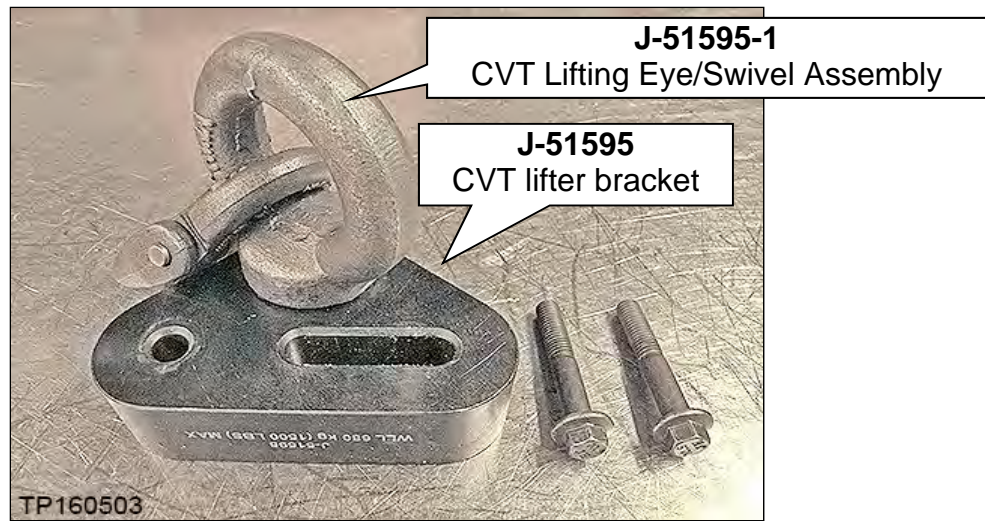


Figure 3

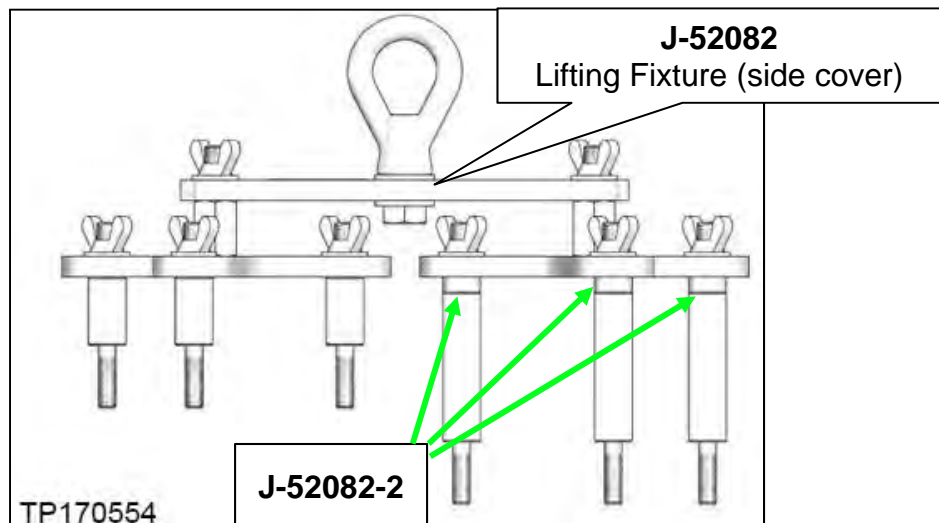


Figure 4

Tech Cam J-51951

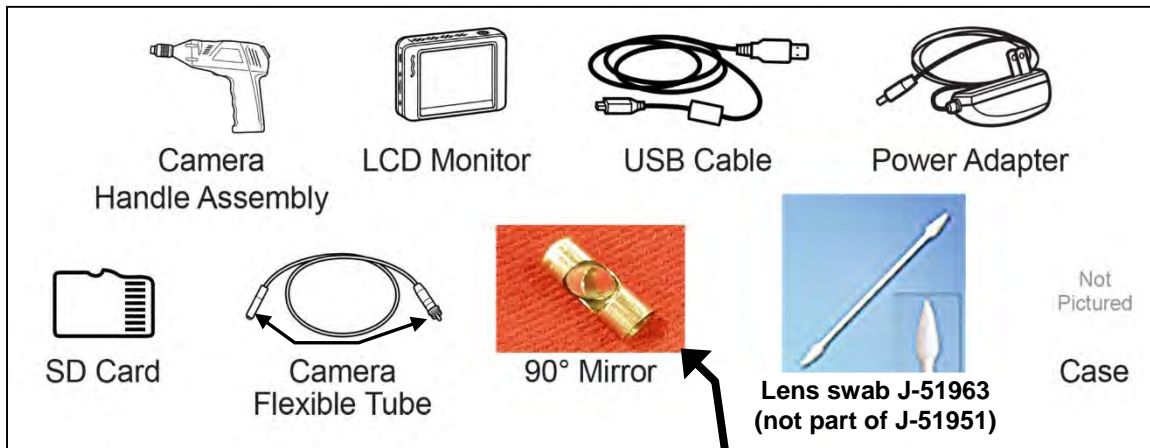


Figure 5

**Remove protective
film before first use**

- Additional Tech Cam J-51951 kits or components are available from Tech•Mate.

Weights

- CVT assembly: 300 lbs. approximately
- CVT sub-assembly: 65 lbs. approximately

SERVICE PROCEDURE

IMPORTANT: Repairs performed for this bulletin require CONSULT-III plus diagnostic result reporting function-setting to be ON and Diagnosis (All Systems) to be performed. If not done, it may result in a repair being non-warrantable.

Precautions when Disassembling a CVT Assembly

Transmissions are vulnerable to particles (dust, metal, lint, etc.).

When disassembling a CVT, make sure your work environment (shop, workbench, etc.), transmission area (sub-frame, oil pan, harness connector, etc.), and your hands are free of contamination.

NOTICE

To avoid damage to the CVT:

- Wash and clean the exterior of the CVT assembly prior to disassembling to prevent debris and contamination from entering.
- Cover all air breather and drive shaft holes to prevent water intrusion.
- Make sure all parts are clean prior to assembling / installing to prevent debris and contamination from entering.

HINT:

- Refrigerating oil seals may help in assembly (axle and T/C seals).
- Unpack service parts just before installation.
- Apply rust penetrant to locator / dowel pins on the torque converter housing and side cover of the CVT and allow to soak to help with disassembly.

- Store the related parts that have been removed separately to prevent being mixed up; small cups can be used.
 - Unpack service parts just before installation.



Figure 6

HINT: The CVT unit wiring harness connector will be reused during this procedure. The wiring harness can be disconnected from the control valve at the wiring harness connector and remain in the CVT.

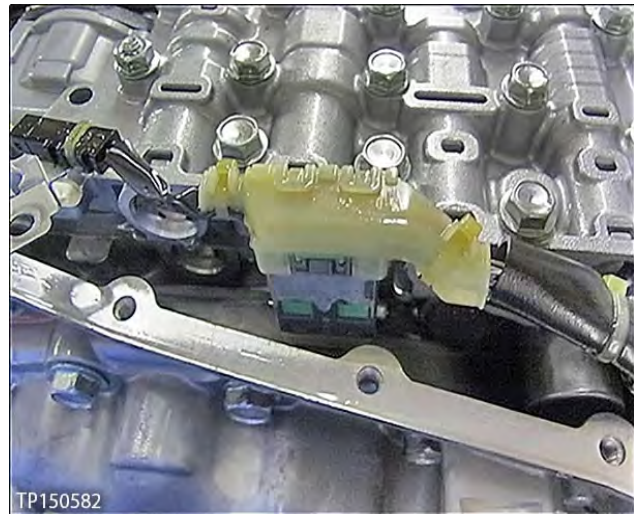


Figure 7

Control Valve Removal and CVT Belt Inspection

1. Write down all radio station presets.

Presets	1	2	3	4	5	6
AM						
FM 1						
FM 2						
SAT 1						
SAT 2/3						
Bass	Treble	Balance	Fade	Speed Sen. Vol.		

2. Disconnect both battery cables, negative cable first.
3. Remove the control valve.
 - Place the transmission gear selector in Neutral before lifting the vehicle.
 - Refer to the ESM: **TRANSMISSION & DRIVELINE - TRANSAXLE & TRANSMISSION - CVT: RE0F10D - REMOVAL AND INSTALLATION - CONTROL VALVE**

HINT: The number '7' is on the head of all bolts that need to be removed for control valve removal. Do not remove any bolt that does not have the number '7'.

NOTICE

To prevent damage to the CVT, never allow any chemicals or fluids other than NS-3 CVT fluid or equivalent to enter the CVT assembly. Never allow any foreign debris, dust, dirt, etc. to enter the CVT assembly.

- For additional information, see video # 544: "**CVT Belt Inspection**". This video is located under the **TECH TRAINING GARAGE VIDEOS** tab in Virtual Academy.

Exploded View

SEC. 311•317

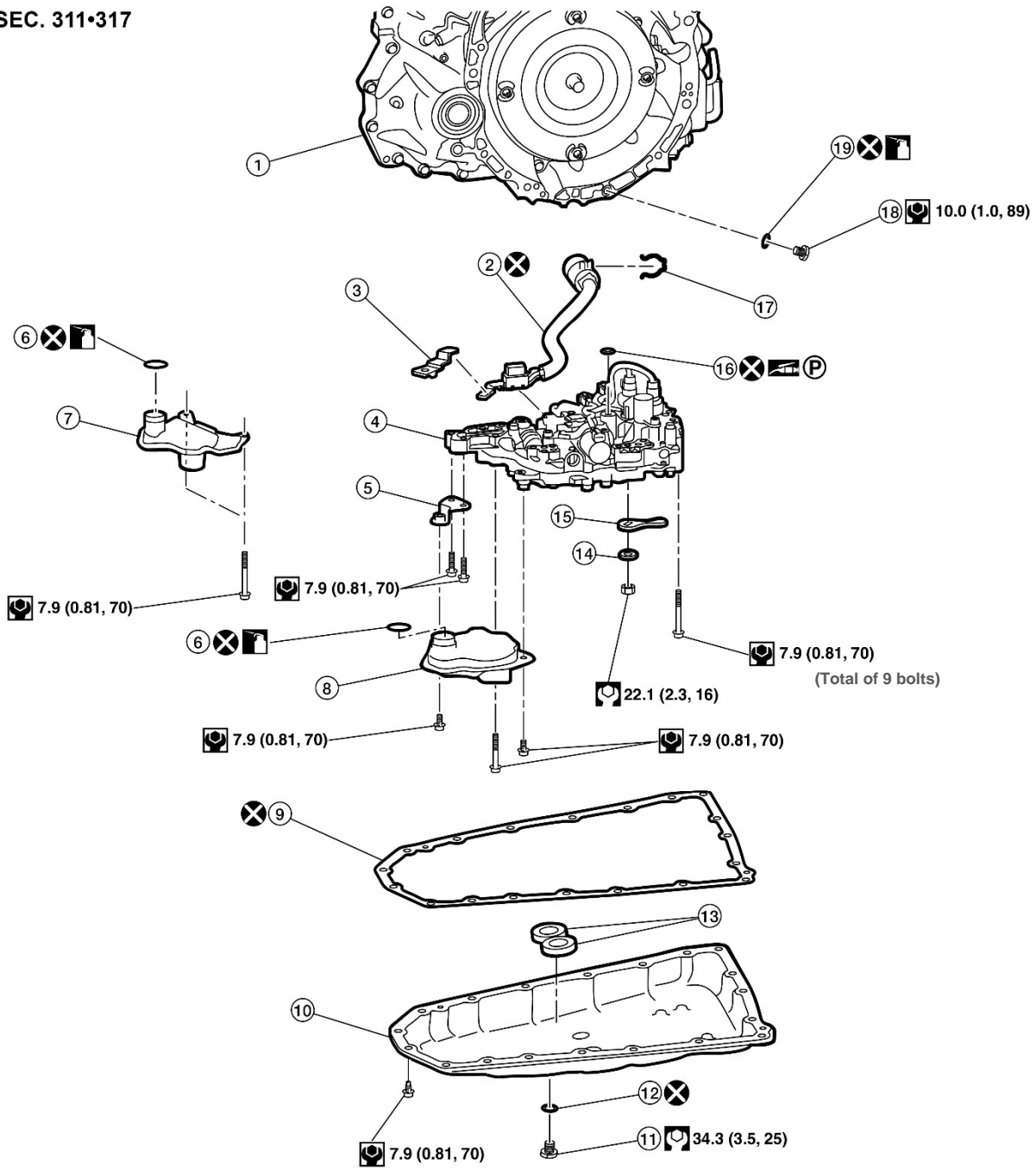


Figure 8

- | | | |
|------------------------------------|------------------------------------|---|
| 1. Transaxle assembly | 2. Terminal cord assembly | 3. CVT fluid temperature sensor bracket |
| 4. Control valve | 5. Bracket | 6. O-ring |
| 7. New-style oil strainer assembly | 8. Old-style oil strainer assembly | 9. Oil pan gasket |
| 10. Oil pan | 11. Drain plug | 12. Drain plug gasket |
| 13. Magnet | 14. Spring washer | 15. Manual plate |
| 16. Lip seal | 17. Snap ring | 18. Overflow plug |
| 19. O-ring | | |

⊠ : Always replace after every disassembly.

⊞ : N·m (kg-m, ft-lb)

⊞ : N·m (kg-m, in-lb)

4. Secure the passenger (RH) front tire with a suitable strap, so that it cannot rotate.
 - This will assist in making the belt turn.
5. Mark the driver (LH) tire with a suitable marking.
 - This will ensure all 360° of the belt are inspected.



Figure 9

6. Using borescope J-51951 with its mirror attachment, insert the camera lens between the CVT case and pulley (Figure 10 and Figure 11).
 - Insert the lens approximately seven (7) inches, and then view the side of the belt that contacts the pulley.

HINT:

- Clean the camera lens and mirror before each inspection. Use 90% isopropyl alcohol and a lens swab from Lens Swab packet J-51963 listed in the **PARTS INFORMATION** on page 85.
- Before inspecting, make sure the batteries in the camera handle and LCD monitor are charged.

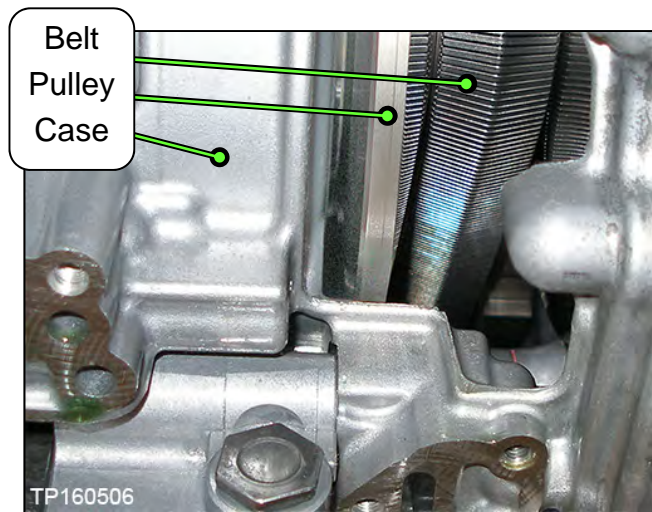


Figure 10

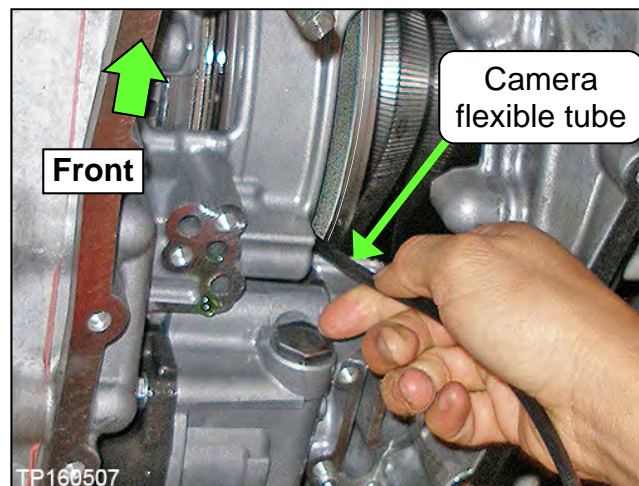


Figure 11

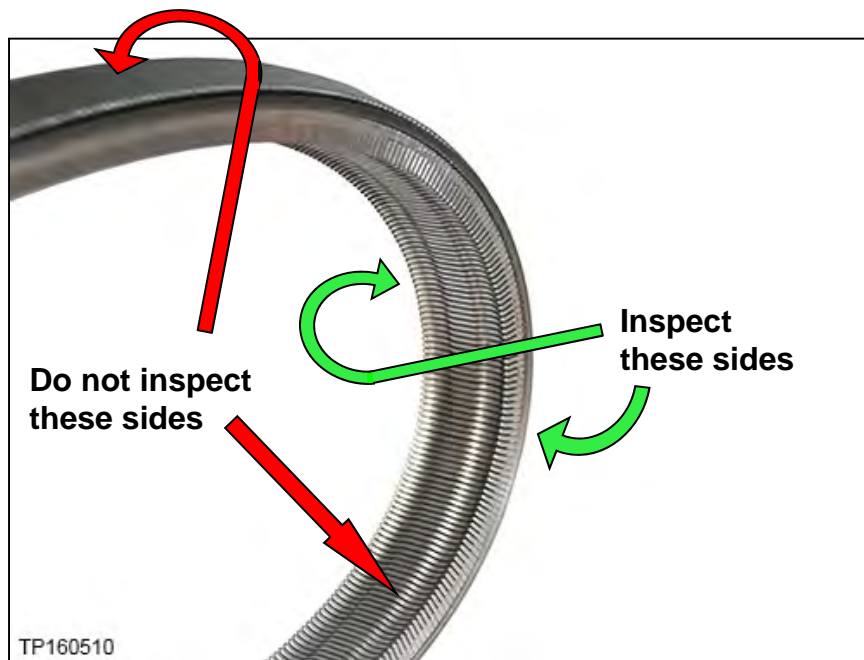


Figure 12

7. Inspect the entire side of the belt by, slowly and carefully, turning the driver front tire one full rotation in the forward direction.

- Holding the borescope with one hand allows for turning the tire with the other hand (Figure 13).
- Reference the Figures on pages 14 through 17 for a comparison of an **OK** and **NG** belt condition.



Figure 13

HINT: If the tire rotates in the rearward direction, the camera lens may be caught between the belt and pulley.

- If the inspection result is **OK**, inspect the other side of the belt in step 8 on page 13.
- If the inspection result is **NG**, replace the CVT sub-assembly (page 18) and control valve (page 73).

8. Insert the camera lens in the second location, where shown in Figure 14, and then perform step 7 again.

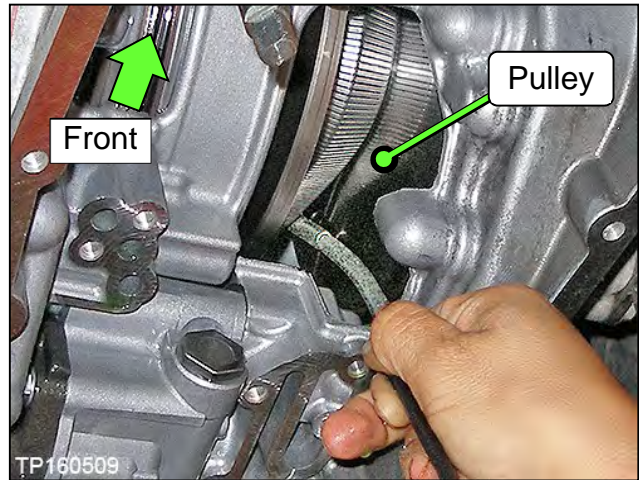


Figure 14

- If the inspection result is **OK** on both sides of the belt, replace the control valve (page 73).
- If the inspection result is **NG**, replace the CVT sub-assembly (page 18) and control valve (page 73).

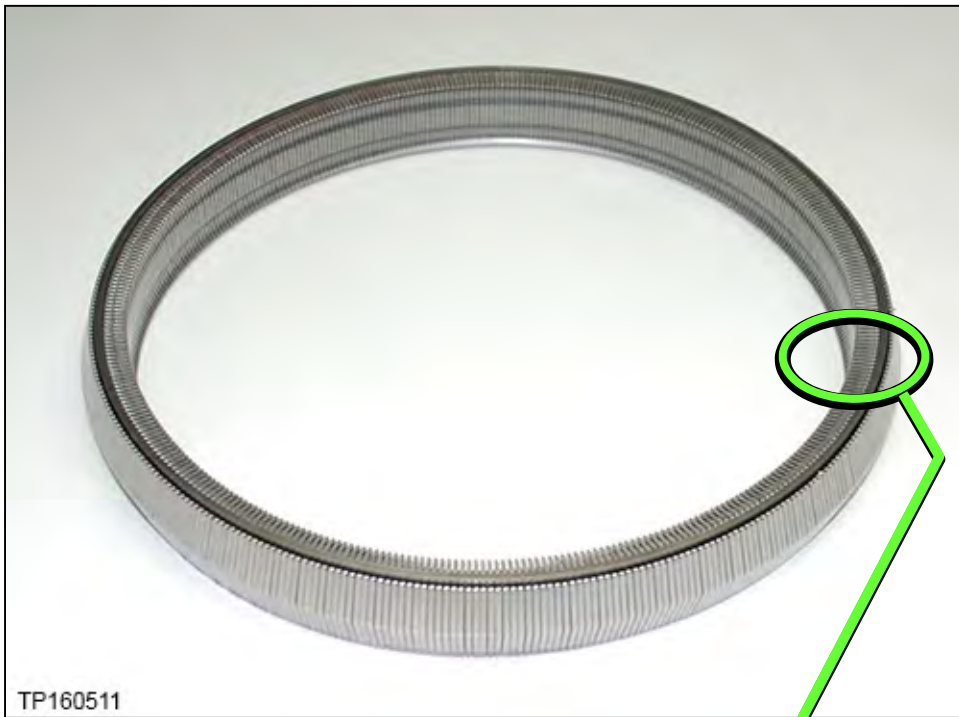


Figure 15: New belt

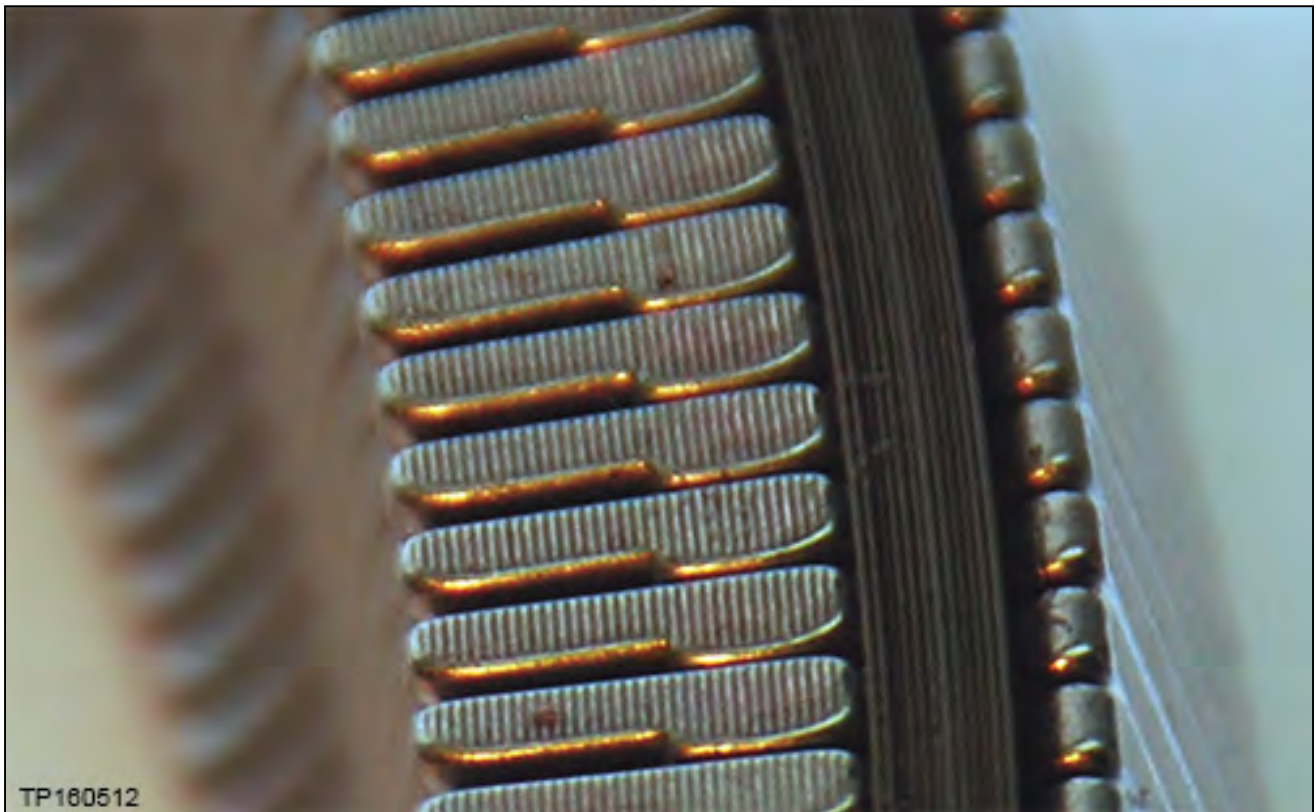


Figure 16: Close-up of section to be inspected

Pictures in Figure 17 and Figure 18 were taken with borescope J-51951.

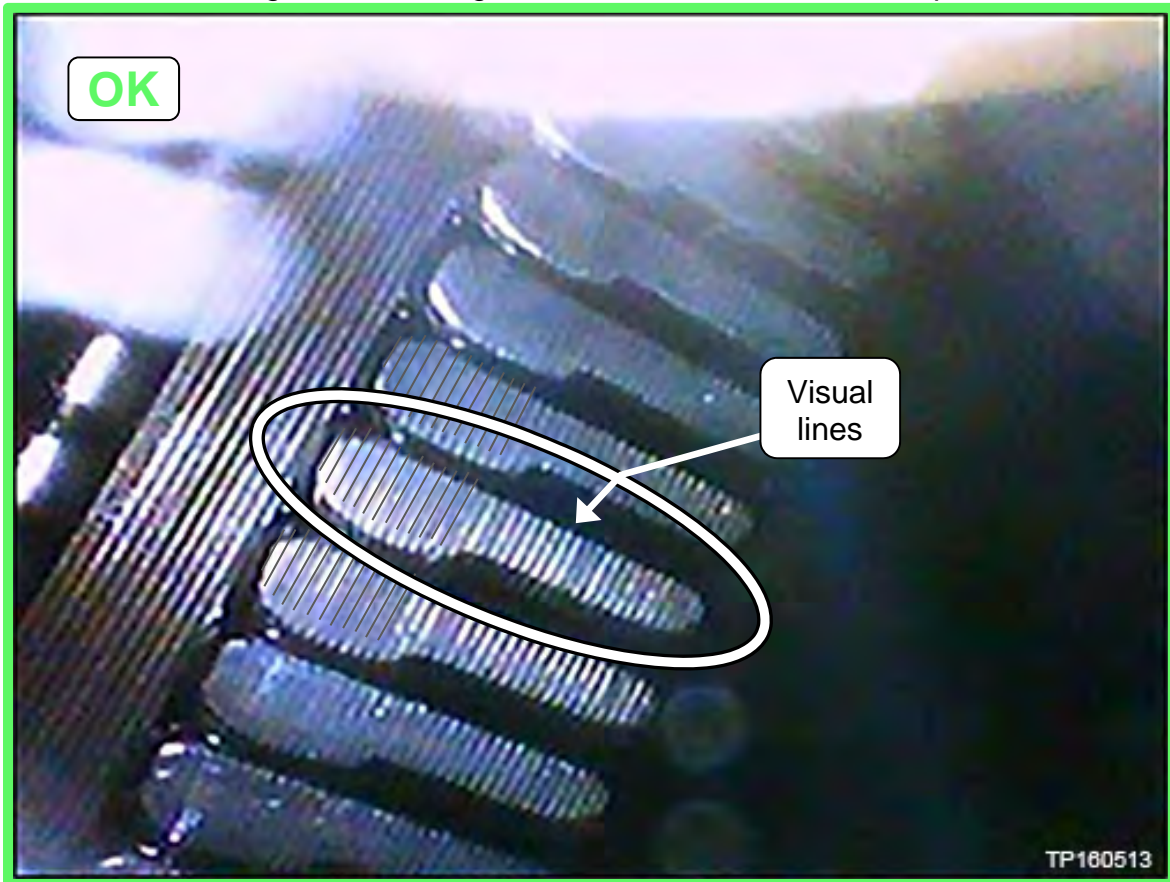


Figure 17: Belt is OK

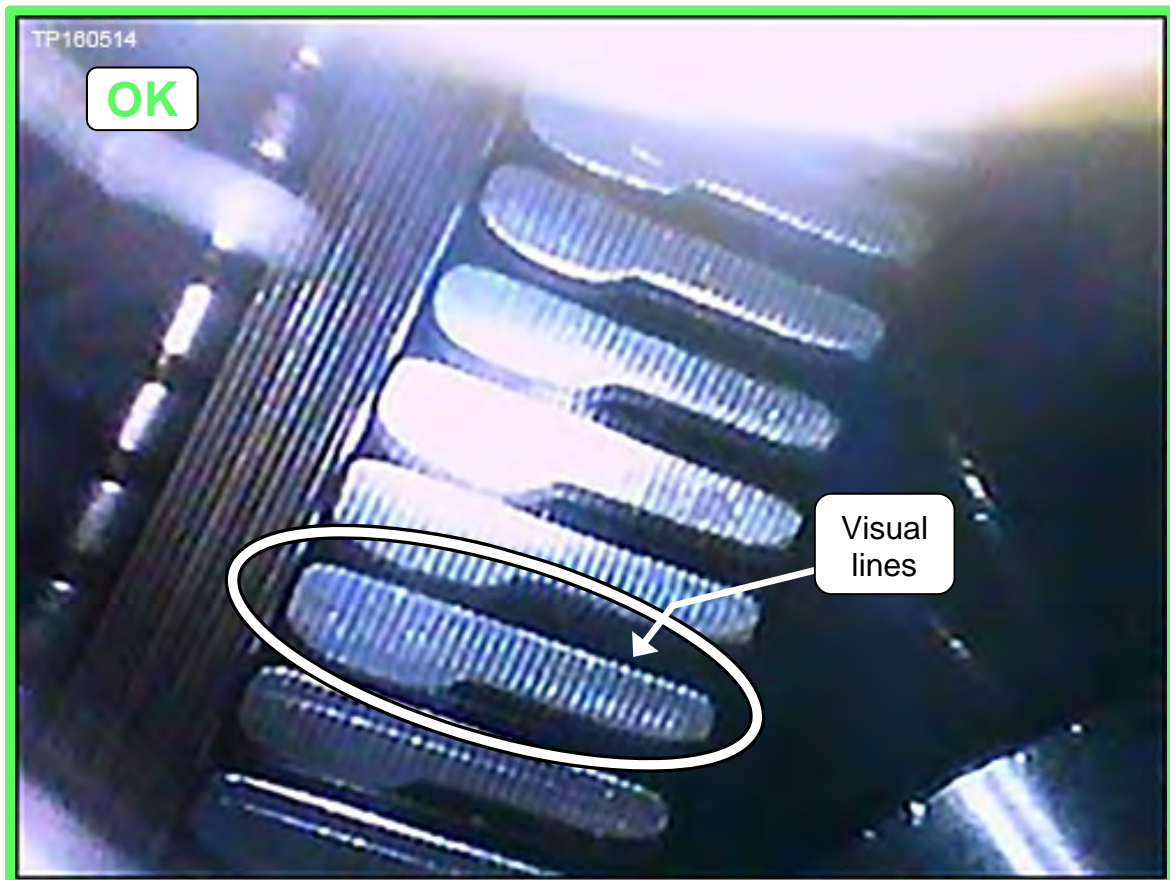


Figure 18: Belt is OK

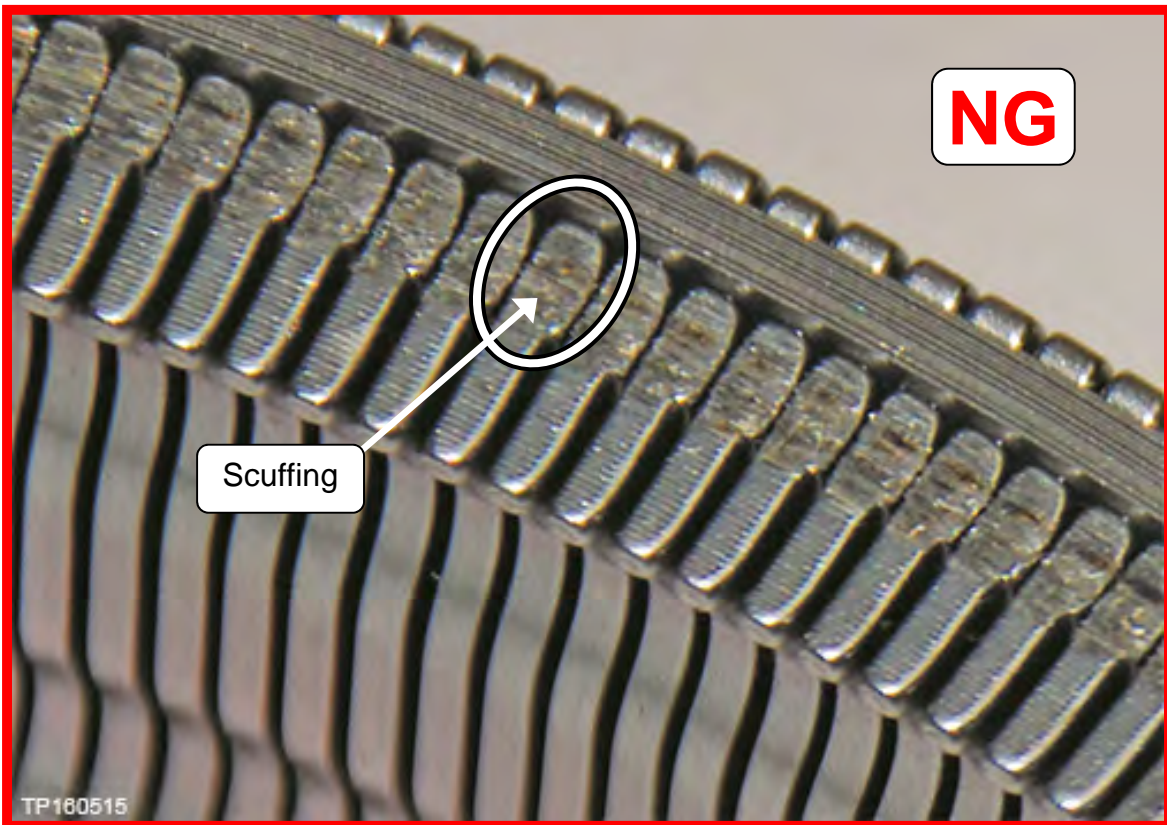


Figure 19: Example of NG belt

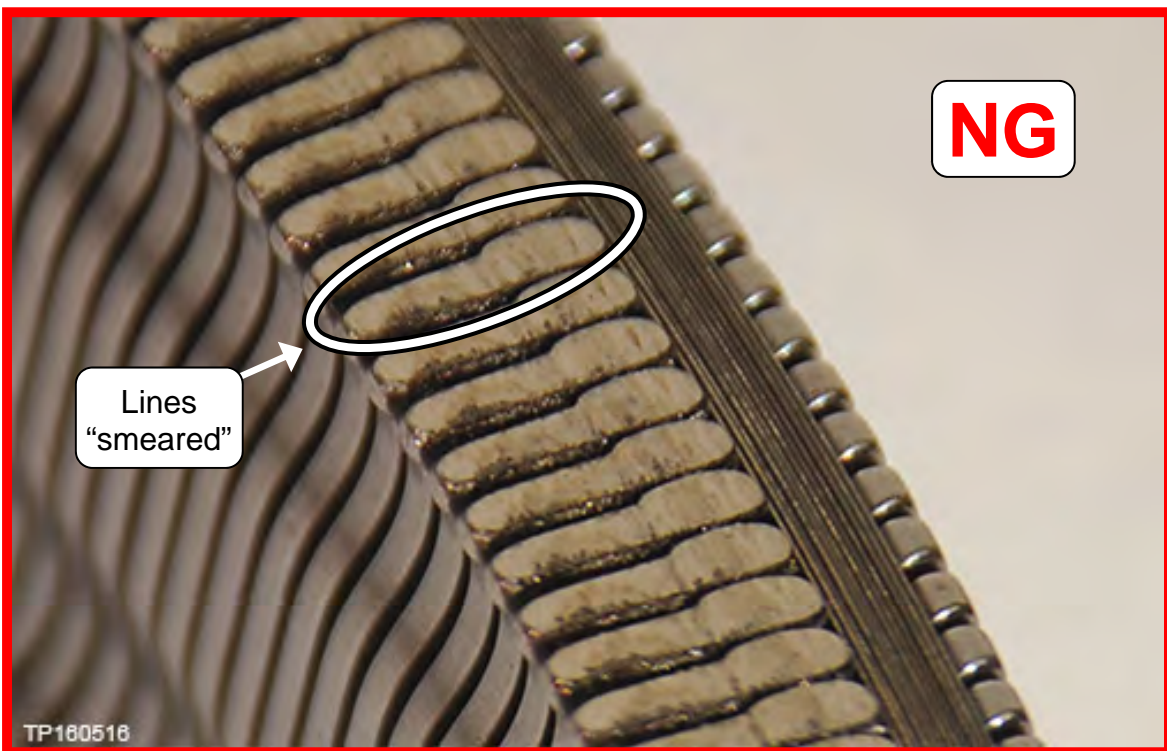


Figure 20: Example of NG belt

Pictures in Figure 21-Figure 23 were taken with borescope J-51951.



Figure 21: Example of NG belt



Figure 22: Example of NG belt



Figure 23: Example of NG belt

CVT Assembly Removal

Overview of Sub-assembly Repair

Steps 1-15 below are an overview of the CVT sub-assembly repair. The procedure for this bulletin continues on the next page with step 9.

1. Apply rust penetrant as necessary to the dowel pins on the converter housing side and sub-assembly side cover
2. Remove the CVT from the vehicle
3. Remove the Converter Housing, Oil Seals, Oil Pump Cover, Oil Pump and Oil Filter
4. Clean the CVT case surfaces
5. Clean the Oil Passages in the CVT Case, Oil Pump Cover, and CVT Filter Area
6. Check initial pulley movement characteristics
7. New Pump Installation
8. Replace the Side Cover – Pulleys and Belt
9. Confirm shift selector movement
10. Recheck new pulley movement characteristics matches that of the original assembly
11. Clutch Total Endplay Adjustment – Thrust Bearing Selection
12. Clean the Converter Housing Passages
13. CVT Reassembly
14. Control Valve, Strainer, and Pan Installation
15. Install the CVT Assembly

HINT: For additional information review video # 547: “**CVT Belt and Pulley Replacement**”.

- This video is located under the **TECH TRAINING GARAGE VIDEOS** tab in Virtual Academy.

9. Temporarily install the oil pan gasket and oil pan with four (4) oil pan bolts at the corners of the oil pan, hand tight (Figure 24).

HINT: It is not necessary for the control valve to be installed, a new one will be installed later in the service procedure.

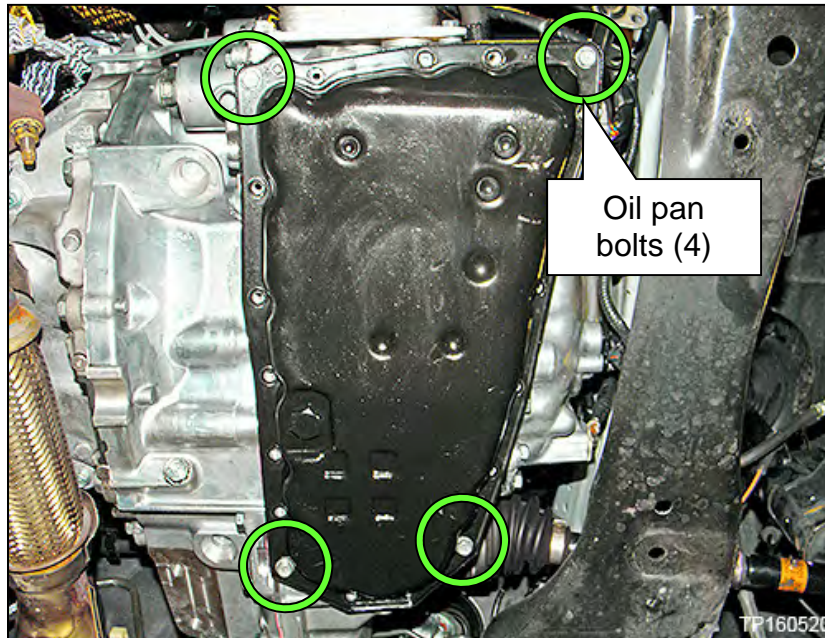


Figure 24

10. Remove the CVT from the vehicle.
 - On AWD models, refer to the **ESM: TRANSMISSION & DRIVELINE > CVT: RE0F10D > REMOVAL AND INSTALLATION > TRANSAXLE ASSEMBLY > AWD**
 - On FWD models, refer to the **ESM: TRANSMISSION & DRIVELINE > TRANSAXLE & TRANSMISSION > CVT: RE0F10D > UNIT REMOVAL AND INSTALLATION > TRANSAXLE ASSEMBLY**

NOTICE

To avoid seal damage or deformation on AWD vehicles, use extreme care when moving the axle in or out of the transfer case assembly. Properly support and guide the axle.

11. Place the CVT on a workbench with the oil pan side down.

NOTICE

To prevent deformation to the oil pan, use wood or plastic blocks to keep the CVT steady.

12. Remove the torque converter.

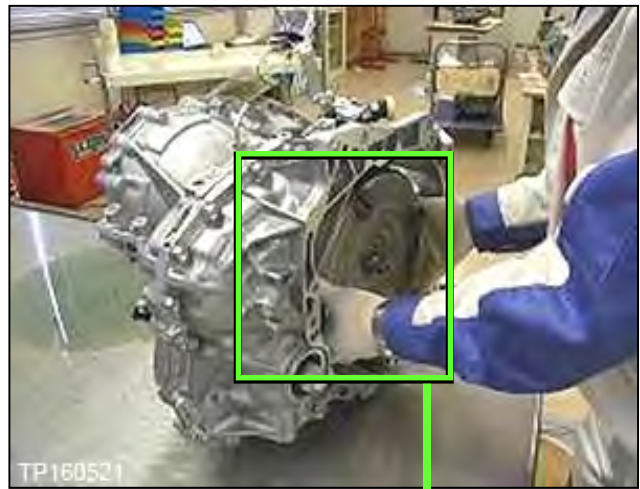


Figure 25

13. Drain the torque converter.



Figure 26

14. Remove the primary speed sensor.

HINT: The speed sensor will be reused.

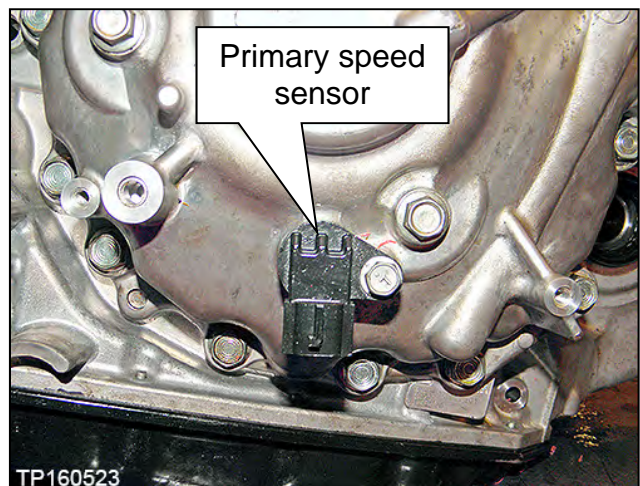



Figure 27

Remove the Converter Housing, Oil Seals, Oil Pump Cover, Oil Pump and Oil Filter

15. Remove all 23 converter housing mounting bolts (Figure 28).

HINT:

- These bolts will be replaced with new ones and will not be reused.
- Use a short socket on the bolts indicated by .
- Apply rust penetrant to the dowel pin if needed.

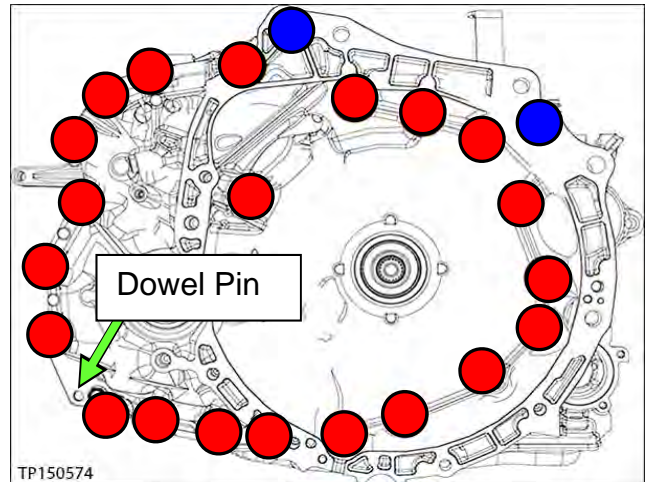


Figure 28

16. Separate and then remove the converter housing from the CVT case.

- Use Slide Hammer J-25721-A and Slide Hammer Bolt J-50255-UPD with J-Hook J-51923 at the cut-out areas similar to the one, as shown in Figure 29 and Figure 30.

NOTICE

To avoid damage to the vehicle DO NOT use a pry-bar, chisel, etc. to separate the converter housing from the CVT case.

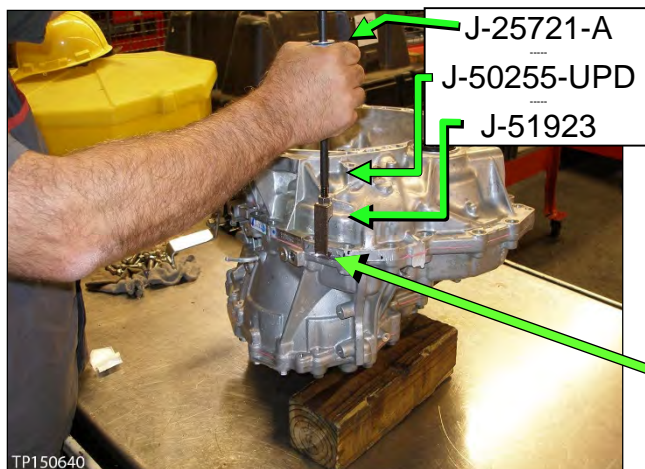


Figure 29

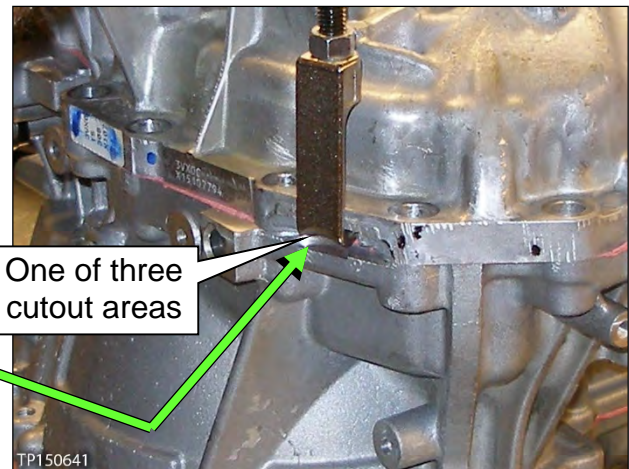


Figure 30

17. Note the location of the pin, as shown in Figure 31 and Figure 32.

HINT: This pin can slip out during movement of the CVT while the converter housing is removed.

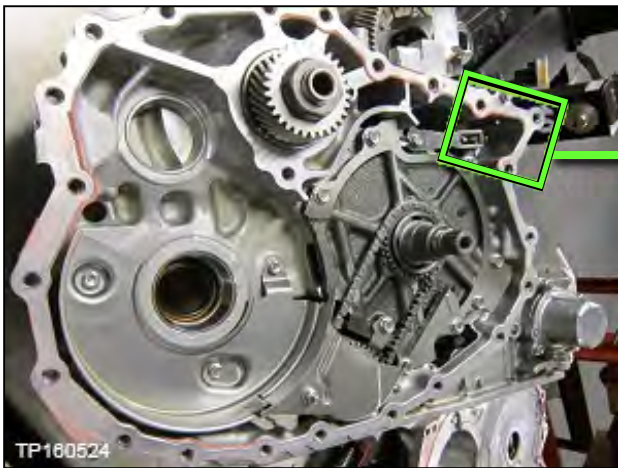


Figure 31

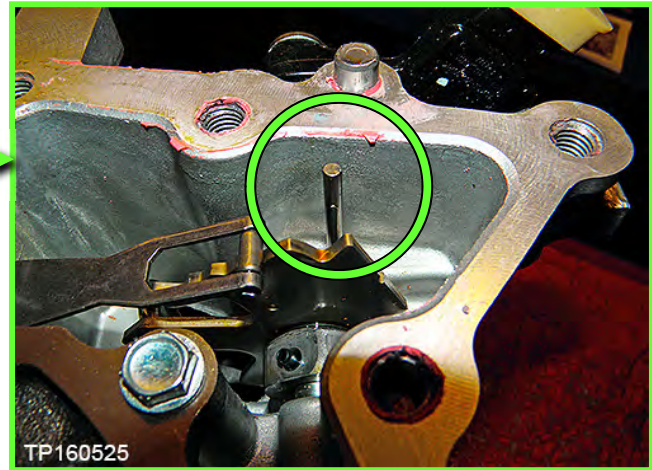


Figure 32

18. Remove the O-ring from the input shaft.

- This O-ring will be replaced with a new one.

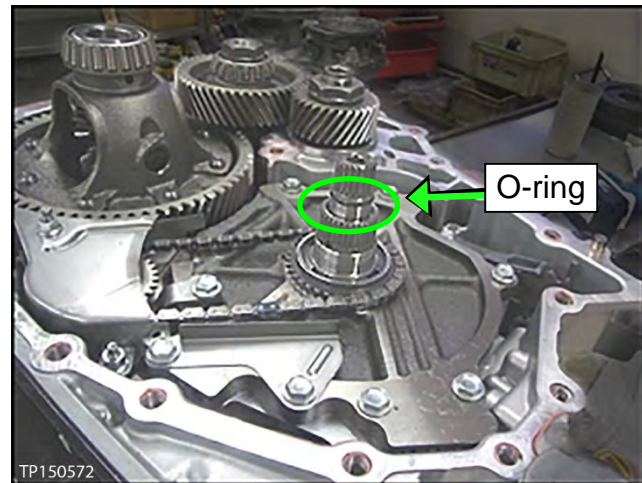


Figure 33

19. Carefully remove the reduction gear assembly (Figure 34).

20. Carefully remove the differential assembly (Figure 35).

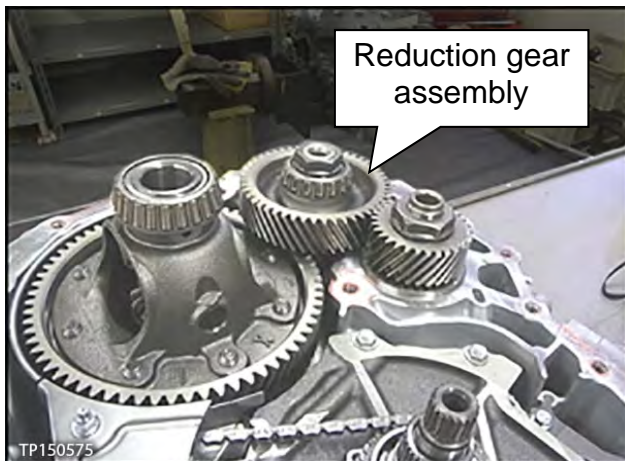


Figure 34

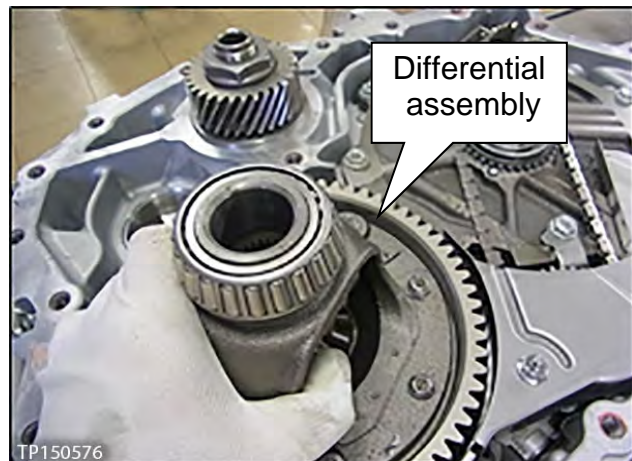


Figure 35

21. Remove the following oil seals using suitable tools:

NOTICE

To avoid damage to the seal bore surfaces, use care when removing the seals.

- a. CVT case differential side oil seal (drive shaft seal, Figure 36).

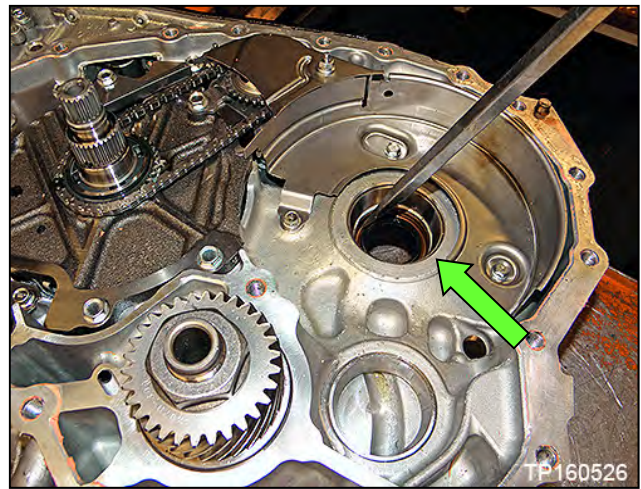


Figure 36

- b. Torque converter seal (Figure 37).

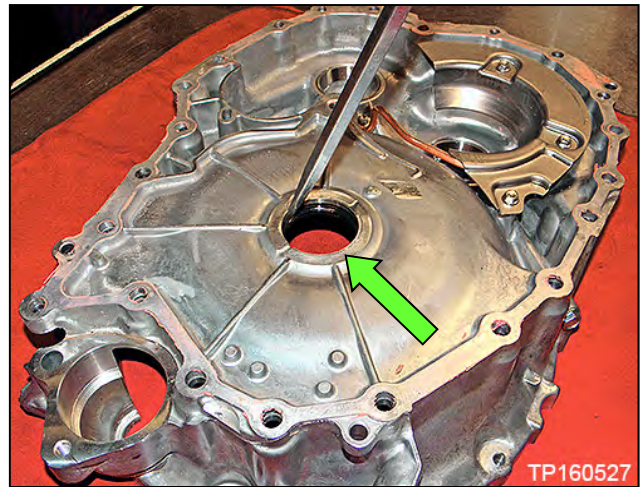


Figure 37

- c. Converter housing differential side oil seal (drive shaft seal, Figure 38).

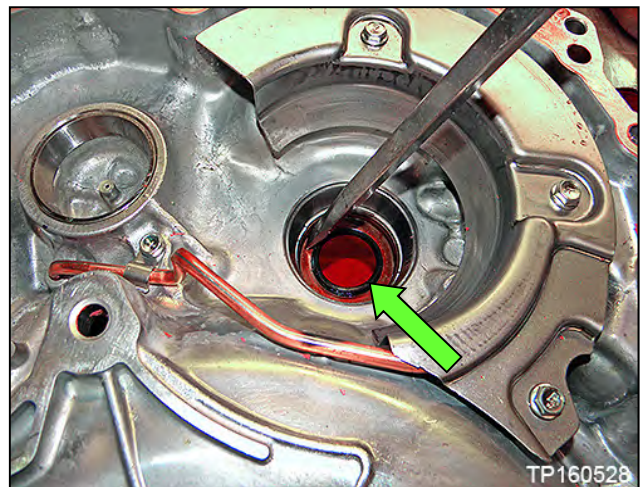


Figure 38

22. Remove the two (2) nuts from baffle plate A, and then remove baffle plate A (Figure 39).

NOTICE

To avoid damaging the nuts, use a 6-pt 10 mm socket.

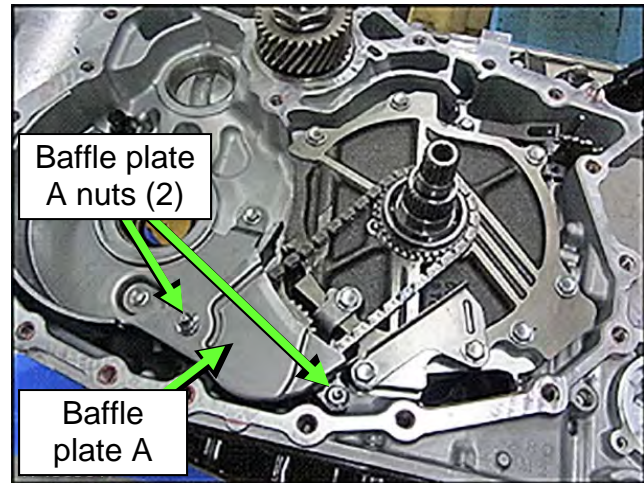


Figure 39

23. Remove the oil pump chain, driven sprocket and drive sprocket as one assembly (Figure 40).
- Spread the snap ring to remove the sprocket (Figure 41).

HINT: The drive sprocket has a specific top and bottom. Keep the sprockets and chain together after removal.

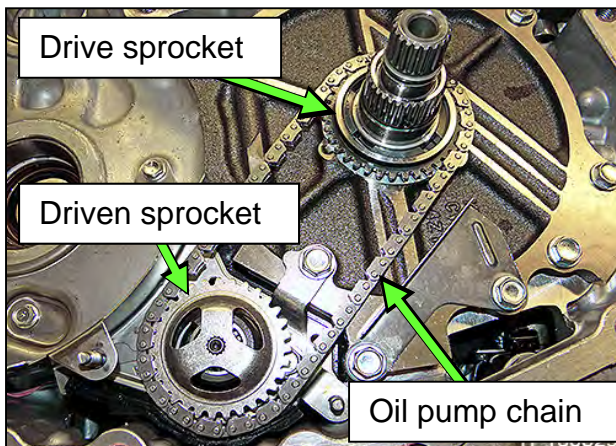


Figure 40

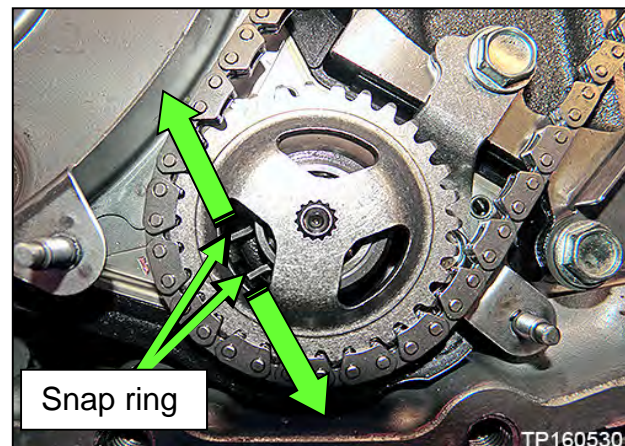


Figure 41

24. Remove the pump cover (dummy cover) thrust washer (Figure 42).
- This thrust washer will be reused.

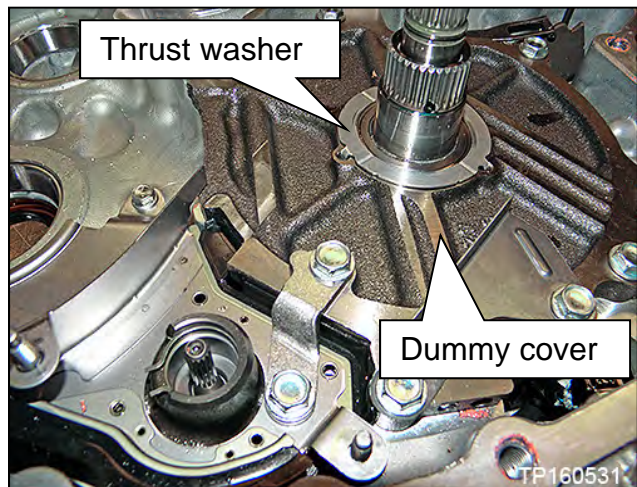


Figure 42

25. Remove the oil pump snap ring (Figure 43).
- Lightly push the ends of the snap ring together, rotate one side upwards while pulling the snap ring towards the pump opening.

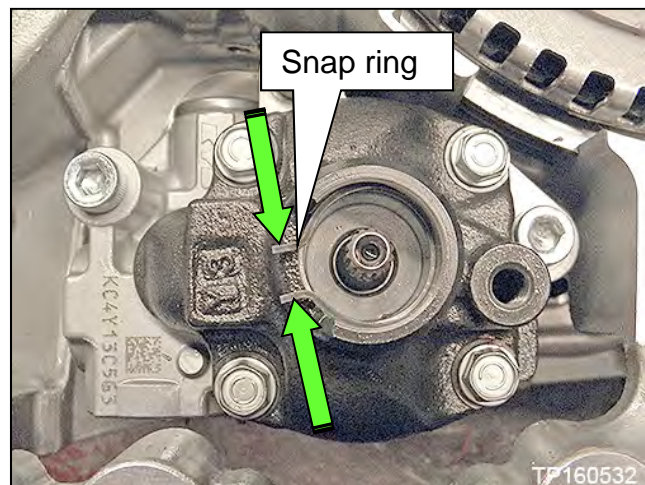


Figure 43

26. Remove the two (2) oil pump bracket bolts, and then remove the oil pump bracket (Figure 44).

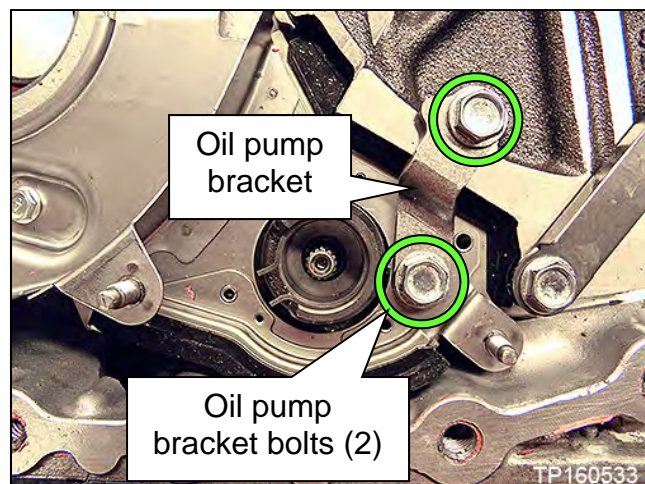


Figure 44

27. Remove the three (3) bolts from baffle plate B, and then remove baffle plate B (Figure 45).

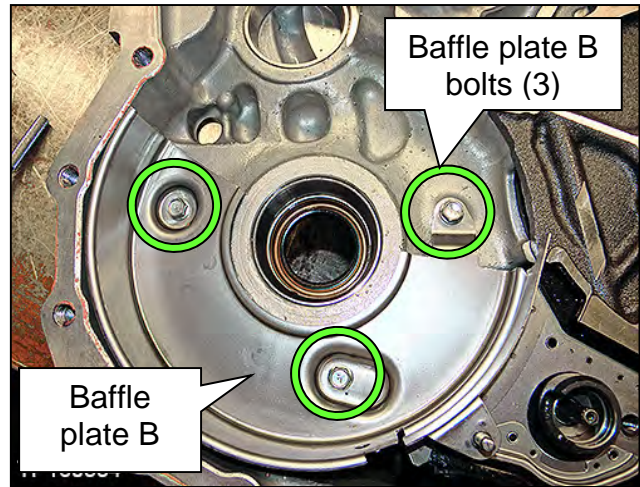


Figure 45

28. Remove the two (2) bolts from baffle plate C, and then remove baffle plate C (Figure 46).

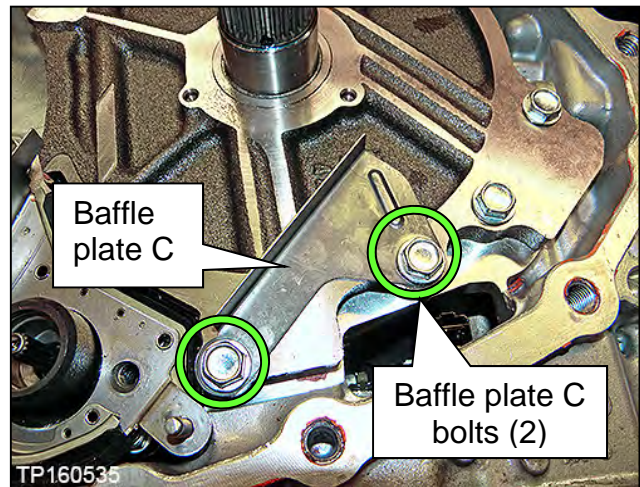


Figure 46

29. Remove the five (5) dummy cover bolts, and then remove the dummy cover (Figure 47).

HINT:

- These bolts will be reused.
- Lift the dummy cover from the sides **ONLY**. Do **NOT** lift from the input shaft (Figure 47). This can lift the clutch pack out.
- Do **NOT** remove the lathe cut seals (white seals in Figure 48) from the dummy cover. These seals will be reused.
- **Lathe cut seals must be in their correct positions during final assembly to prevent drivability issues.**

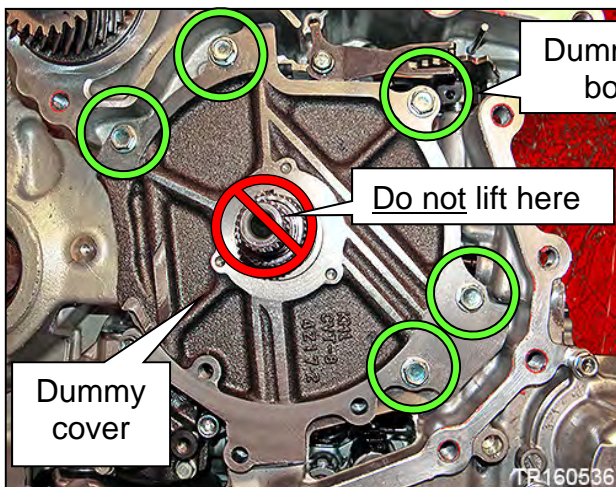


Figure 47

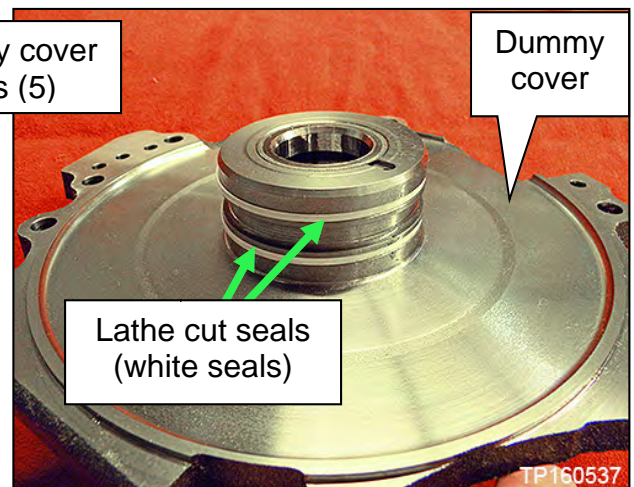


Figure 48

30. Remove the thrust bearing from the clutch assembly bore (Figure 49).

HINT:

- Take care when removing the thrust bearing so that the lathe cut seals are not knocked out of their grooves.
- The thrust bearing has two different sides. As the thrust bearing is removed, note the thrust bearing orientation so that the new bearing can be installed in the same orientation.
- This bearing will not be reused.

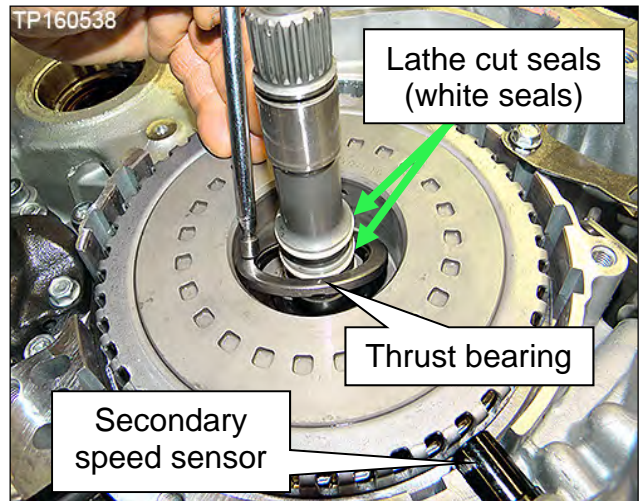


Figure 49

31. Wipe any metallic debris from the face of the secondary speed sensor (Figure 49).

32. Remove the oil pump as follows:
- a. Remove the fitting bolt located above the left rear corner of the oil pan gasket surface (Figure 50).

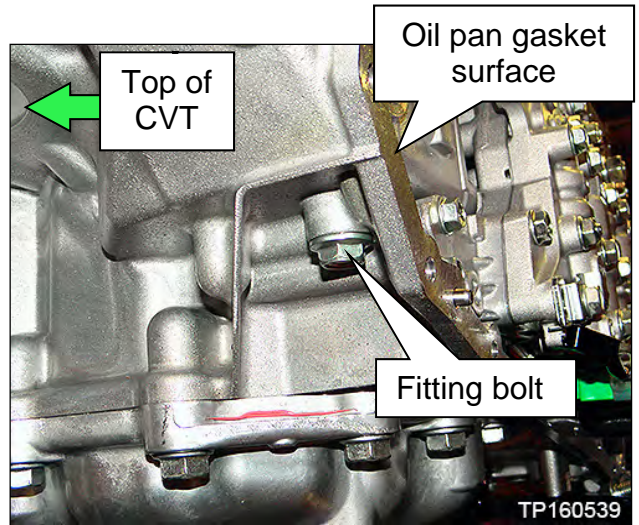


Figure 50

- b. Remove the three (3) oil pump Allen®-head bolts, and remove the oil pump (Figure 51).
 - Do NOT discard the Allen®-head bolts. These bolts will be reused.
 - A new oil pump will be installed later in this bulletin.

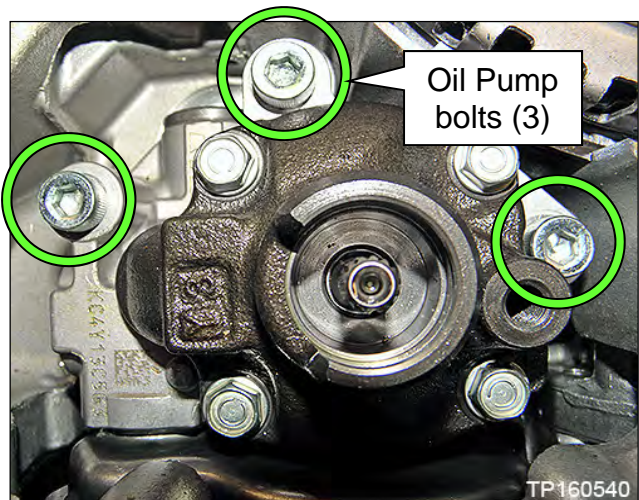


Figure 51

33. Remove the CVT fluid filter as follows:

- a. Remove the four (4) bolts and then remove the CVT fluid filter cover (Figure 52).
 - These bolts will be reused.

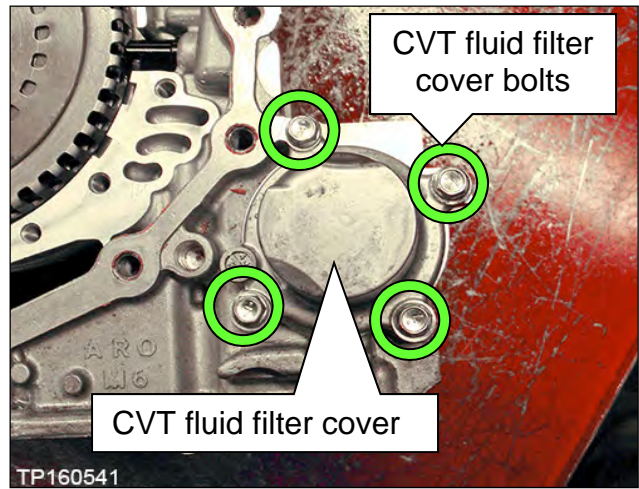


Figure 52

- b. Remove the CVT fluid filter with grommet seal and O-ring seal (Figure 53).
 - Do not reuse the oil filter and seal. They will be replaced later.
 - The grommet seal is fitted to the bottom end of the filter and is included with the replacement filter (Figure 54).

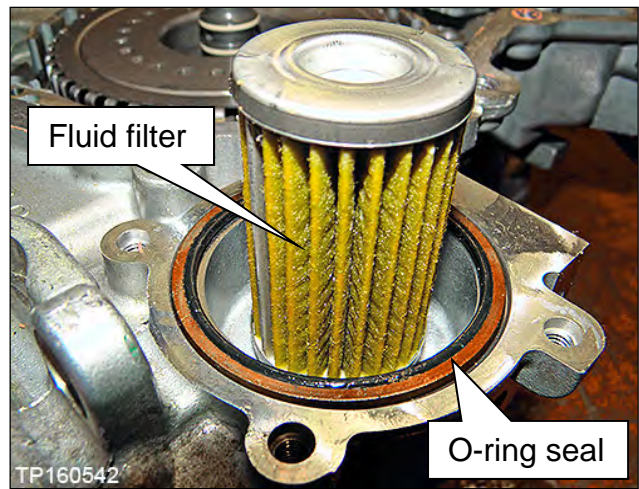


Figure 53



Figure 54

Clean the CVT Case Surfaces

34. Thoroughly clean the mating surfaces of the CVT case and torque converter housing.
- A plastic scraper can be used.

NOTICE

To prevent debris from entering the CVT and causing damage:

- DO NOT use sanding discs, similar abrasive tools, or metal blades.
 - Use brake cleaner or equivalent solvent and lint free towel only.
 - Make sure rust and debris have been cleaned off of dowel pins and receiving holes (Figure 55 and Figure 56).
35. Clean the dowel pins and dowel pin receiving holes of any rust and debris (Figure 55 and Figure 56).

HINT: Use a small wire brush or similar tool at the inside surface of the dowel pin holes. DO NOT SCRAPE THE CVT CASE mating surfaces.



Figure 55



Figure 56

Clean the Oil Passages in the CVT Case, Oil Pump Cover, and CVT Filter Area

In the following steps, brake cleaner or a suitable cleaning solvent and compressed air will be used to clean out the oil passages in the CVT assembly.

CAUTION

To prevent debris from entering your eyes and causing personal injury, wear eye / face protection when using compressed air and cleaning fluids, and regulate the air pressure up to a maximum of 75 PSI.

36. Clean the area where the CVT fluid filter fits (Figure 57).
 - Make sure the old filter grommet seal is removed (Figure 54).

37. Clean the fluid passages to and from the filter (Figure 57).

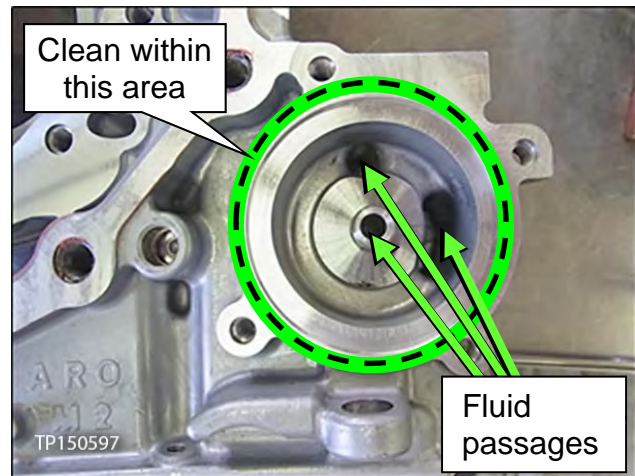
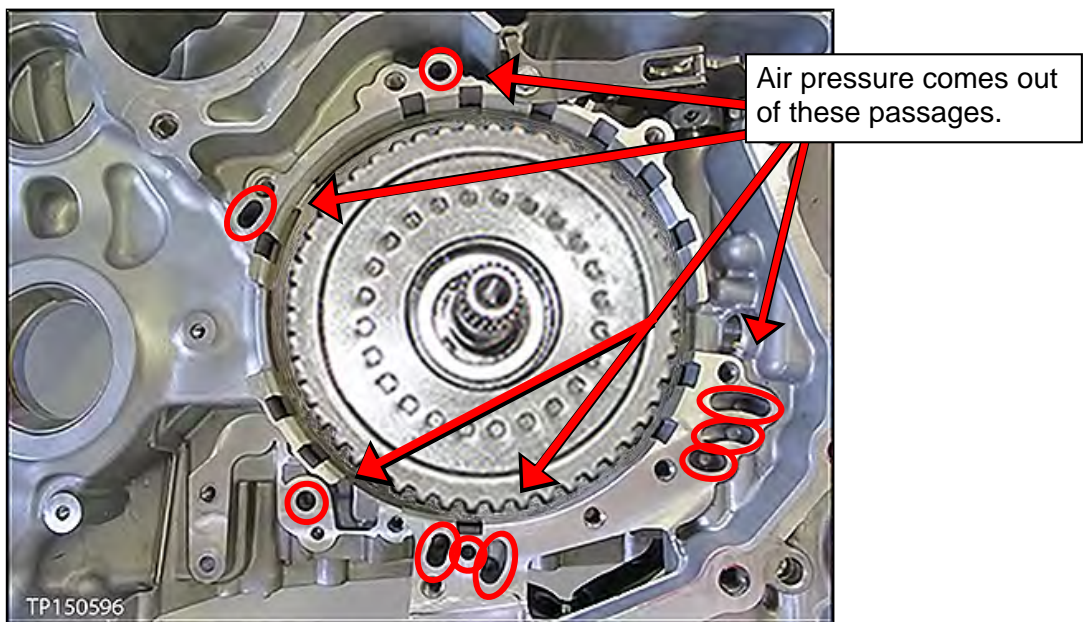
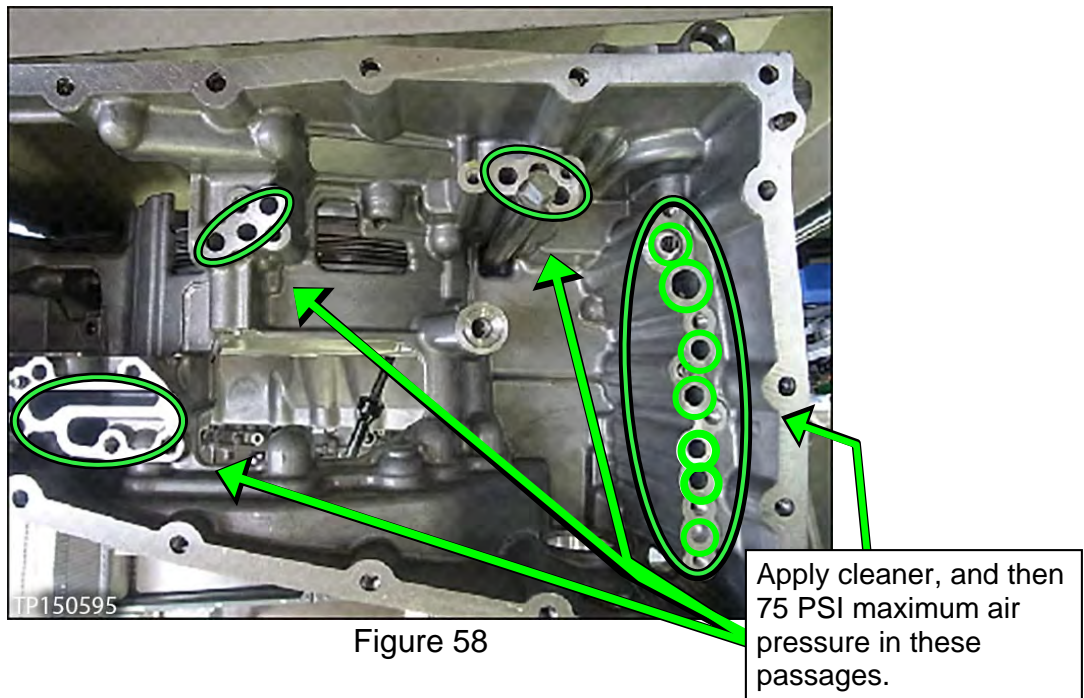


Figure 57

38. Use brake cleaner in all oil passages of the CVT case where shown in Figure 58.
 - Do not spray brake cleaner into the clutch pack.
39. Apply compressed air in the same passages.

CAUTION

To avoid being struck by debris, do not stand in front of the passages while using compressed air.



40. Temporarily install the fluid filter cover.

New Oil Pump Installation

41. Install the new oil pump using the three (3) original Allen®-head bolts (Figure 60).
- Finger tighten the Allen®-head bolts at this time.
 - The oil pump kit includes a new oil pump, O-ring, and snap ring.

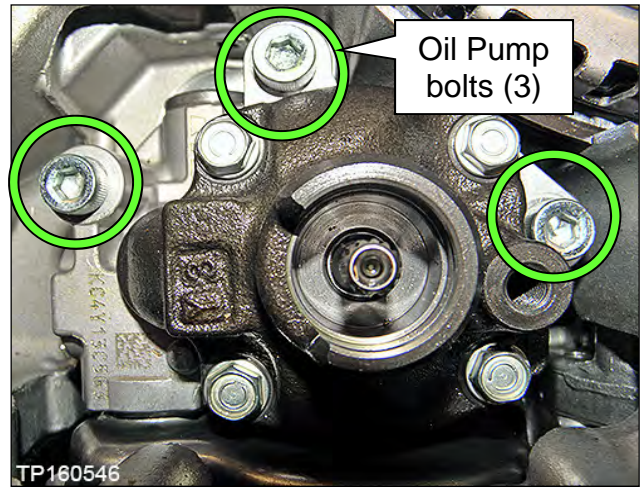


Figure 60

42. Place a new O-ring on the fitting bolt, and then coat the O-ring with CVT fluid (Figure 61).

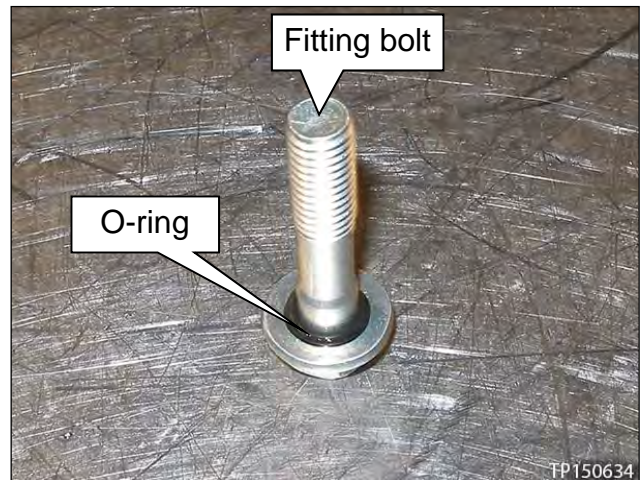


Figure 61

43. Install the fitting bolt finger tight (Figure 62).

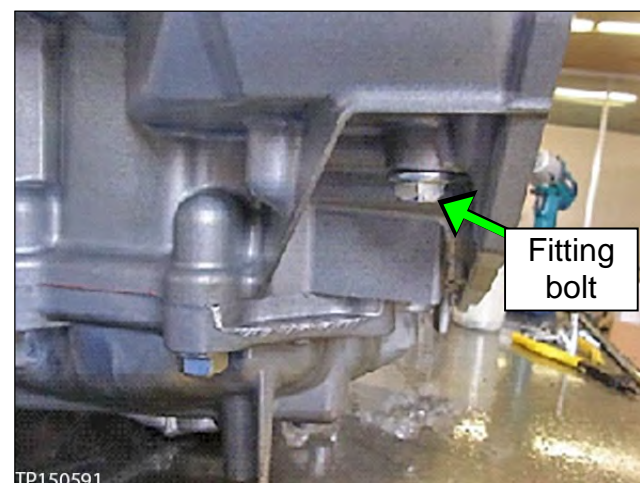


Figure 62

44. Torque the three (3) Allen®-head bolts and fitting bolt.
- Allen®-head bolt torque: 17.6 – 20.6 N•m (1.79 – 2.1 kg-m, **156 – 182.4 in-lb**)
 - Fitting bolt torque: 26.0 – 30.0 N•m (2.65 – 3.06 kg-m, **19.2 – 22.1 ft-lb**)

45. Install the new snap ring (Figure 63).

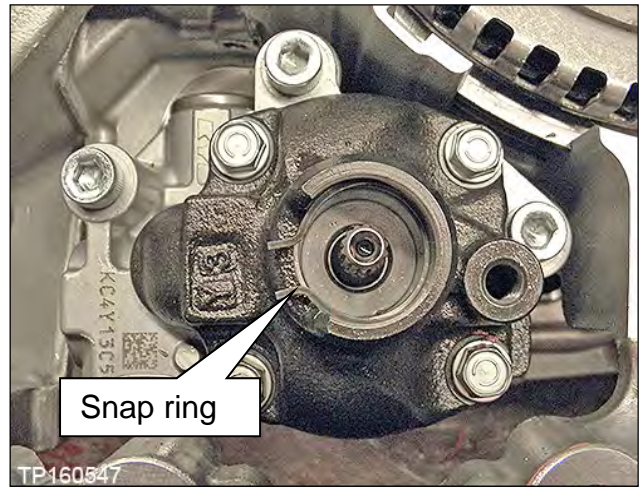


Figure 63

Replace the Side Cover – Pulleys and Belt (sub-assembly)

Review video # 547: “CVT Belt and Pulley Replacement” and fast forward to minute marker 3:14. This video is located under the **TECH TRAINING GARAGE VIDEOS** tab in Virtual Academy.

46. Temporarily install the dummy cover with three (3) bolts, finger tight (Figure 64).

IMPORTANT:

- Do not install the thrust bearing to the clutch assembly bore at this time.
- If the cover does not sit flush, continue to **Dummy Cover Troubleshooting**, below. Otherwise, skip to step 53 on page 36.

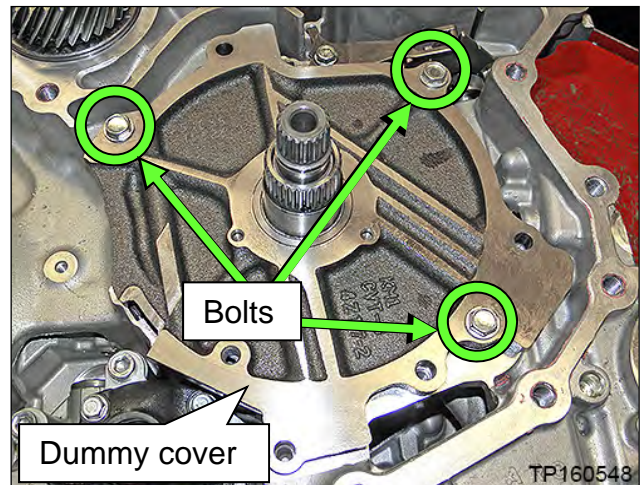


Figure 64

Dummy Cover Troubleshooting

- If the dummy cover does not sit flush, the clutch pack may not be fully seated.
- Figure 65 shows the clutch pack fully seated.
- The clutch pack is not fully seated if it is not below the surface that the dummy cover bolts to.
- To fully seat the clutch pack, follow the instructions in steps 47-51 on pages 35-36.

HINT: Always handle the clutch pack by the input shaft.

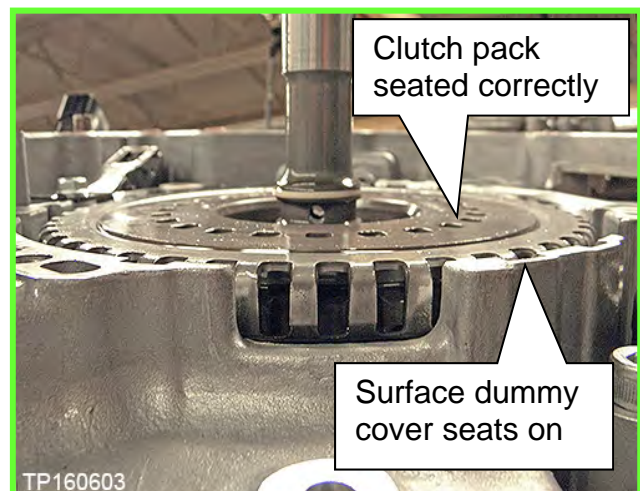


Figure 65

47. Remove the dummy cover.

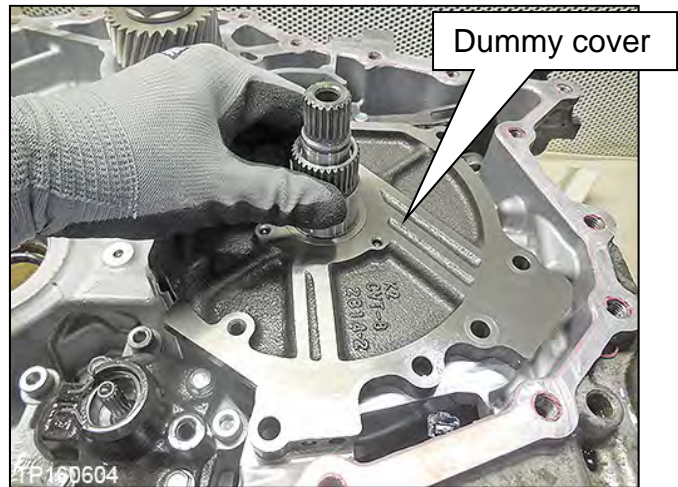


Figure 66

48. Pull the clutch pack by the input shaft to remove the entire clutch pack.

- Make sure the O-ring is not installed at this time, or it could be damaged during reassembly.

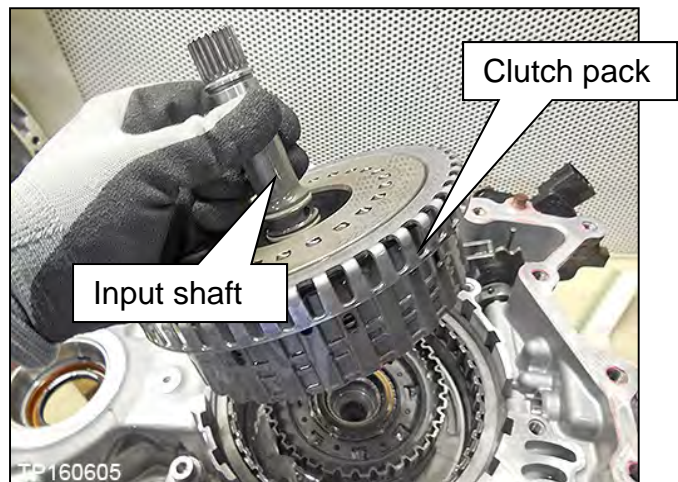


Figure 67

49. Using an appropriate tool, gently align the layers of the clutch pack.

- The bottom of the clutch pack is shown in Figure 68.

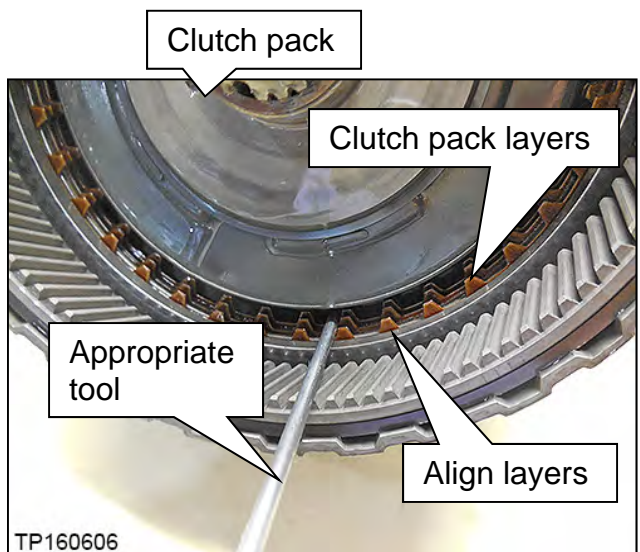


Figure 68

50. Reinsert the entire clutch pack while holding the input shaft.

51. Gently jiggle the input shaft until the clutch pack seats below the case lip.

- If the clutch pack does not seat, rotate back and forth from the input shaft and jiggle.
- If the clutch pack still does not seat, repeat from step 48 on page 35.

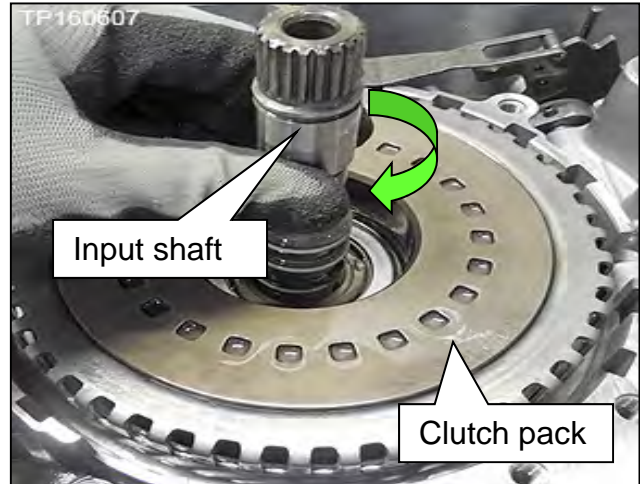


Figure 69

52. Temporarily install the dummy cover with three (3) bolts, finger tight.

53. Temporarily install the converter housing onto the CVT case with three (3) bolts finger tight (Figure 70).

NOTICE

To prevent CVT damage when fitting the CVT case surfaces, DO NOT use the bolts to draw in the case halves. Make sure the case surfaces are flush and have no gaps prior to installing the bolts.

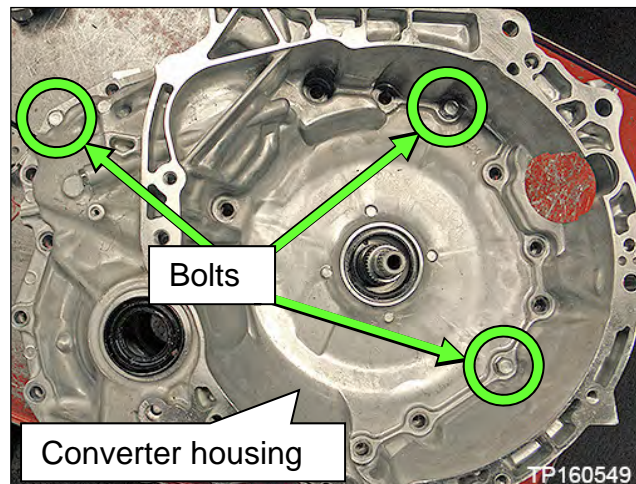


Figure 70

54. Rotate the CVT case so that the converter housing faces down and side-cover faces up.
- CVT lifter bracket J-51595 and CVT Lifting Eye/Swivel Assembly J-51595-1 can be used for this step (Figure 72).

NOTICE

- Use plastic or wood blocks to support the CVT while rotating to prevent contact with the manual shaft and damage to the CVT (Figure 71). The manual shaft is longer than the oil pan mating surface.
- To avoid damage to the CVT, note the location of the terminal connector harness so that the terminal connector harness does not become pinched between the CVT case and the work bench or supporting blocks.

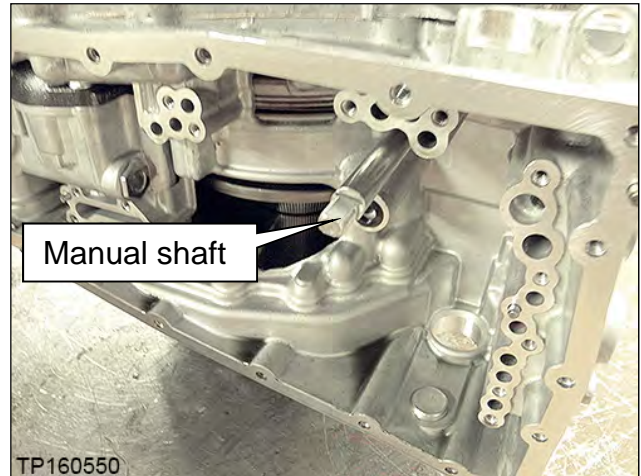


Figure 71

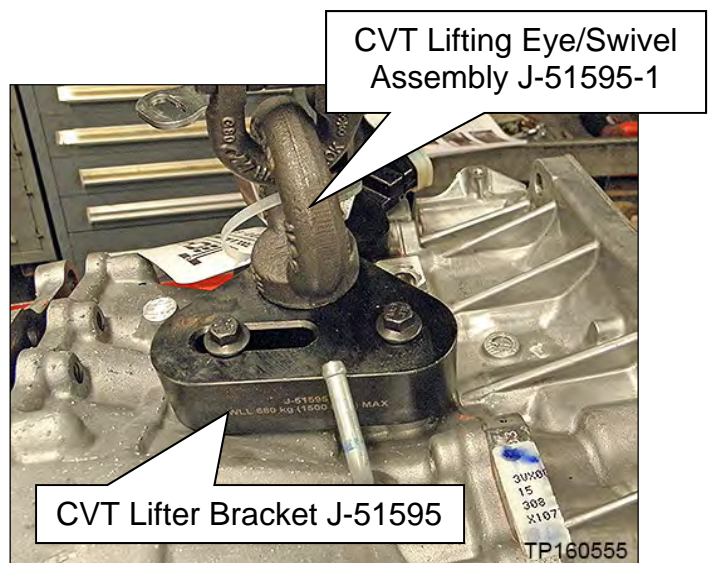


Figure 72

55. Rotate the primary pulley by hand to check the pulley's rotational characteristics.

IMPORTANT: Remember the pulley's rotational characteristics. This will be used as a reference after the new side cover pulleys and belt assembly (sub-assembly) have been installed.

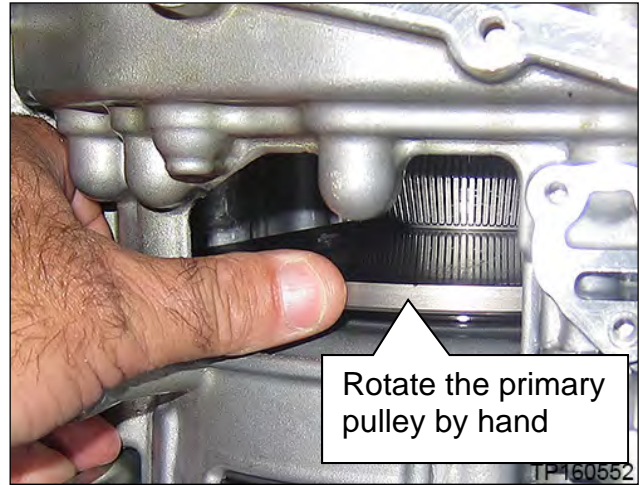


Figure 73

CAUTION

To avoid personal injury, do not place fingers between the pulley and the CVT case or they may become pinched.

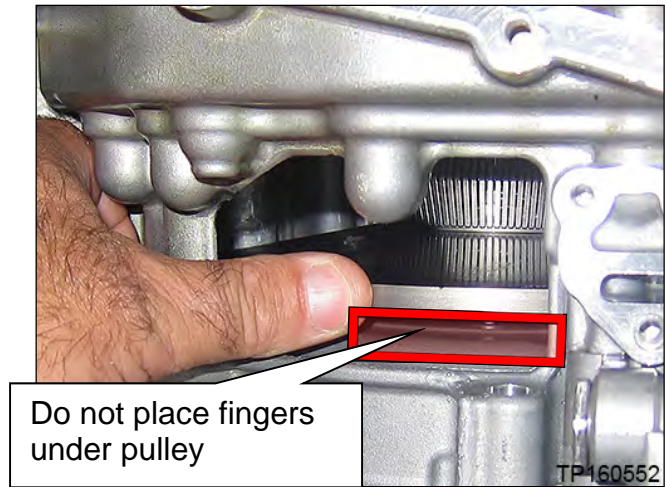


Figure 74

56. Remove the nineteen (19) side cover fixing bolts (Figure 75).
- These bolts will be replaced with new ones and will not be reused.

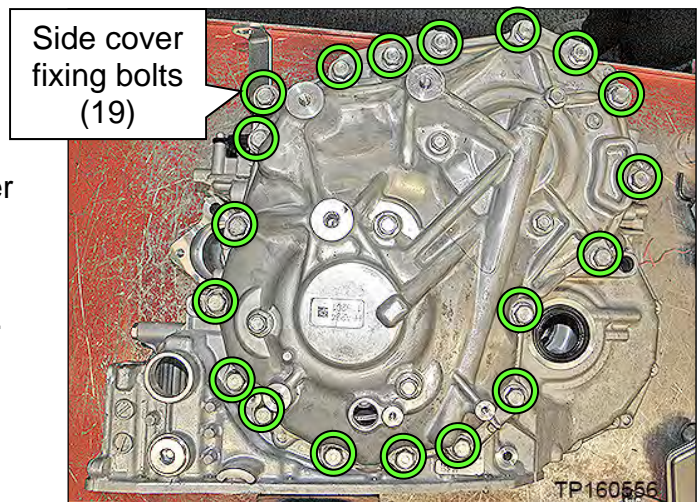


Figure 75

Sub-assembly Lifting Fixture Procedure

HINT: When working with the sub assembly install, uninstall, and bracket attachment, it is critical that the CVT and sub-assembly are level. If not level, the pulleys and bearings can sit slightly at an angle and will hinder installation.

57. Remove the six (6) pulley bracket bolts (Figure 76).
- These bolts will be reinstalled to the original pulley and belt sub-assembly.

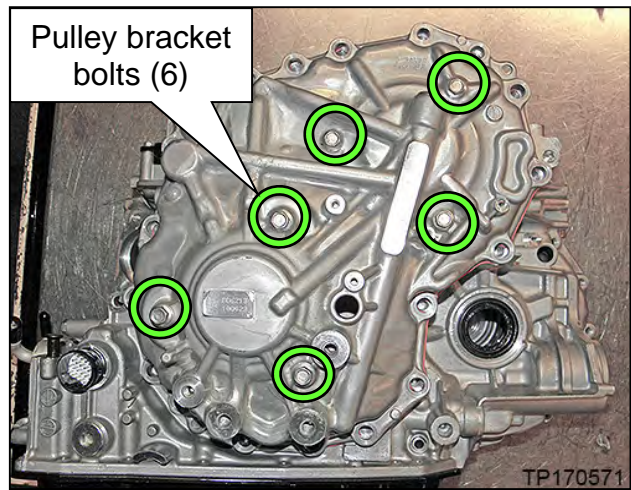


Figure 76

58. Attach universal Lifting Fixture J-52082 with spacers J-52082-2 to the side cover, as shown in Figure 77.
- a. Loosen all of the wing-nut bolts on the Lifting Fixture.
 - b. Confirm that three (3) spacers (# J-52082-2) are present between the longer legs and triangle bracket, as shown in Figure 77.
 - c. Install the Lifting Fixture to the CVT case at the 6 bolt holes shown in Figure 76.
 - d. Tighten the wing-nut bolts on the Lifting Fixture finger tight in the following order:
 1. Tighten the lower six (6) wing-nut bolts.
 2. Tighten the two (2) joint to triangle brackets.
 3. Tighten the top 2 wing-nut bolts, and then proceed to step 59 on page 40.

NOTICE

Use caution when attaching the side cover to avoid cross threading and damage to the lifting fixture.

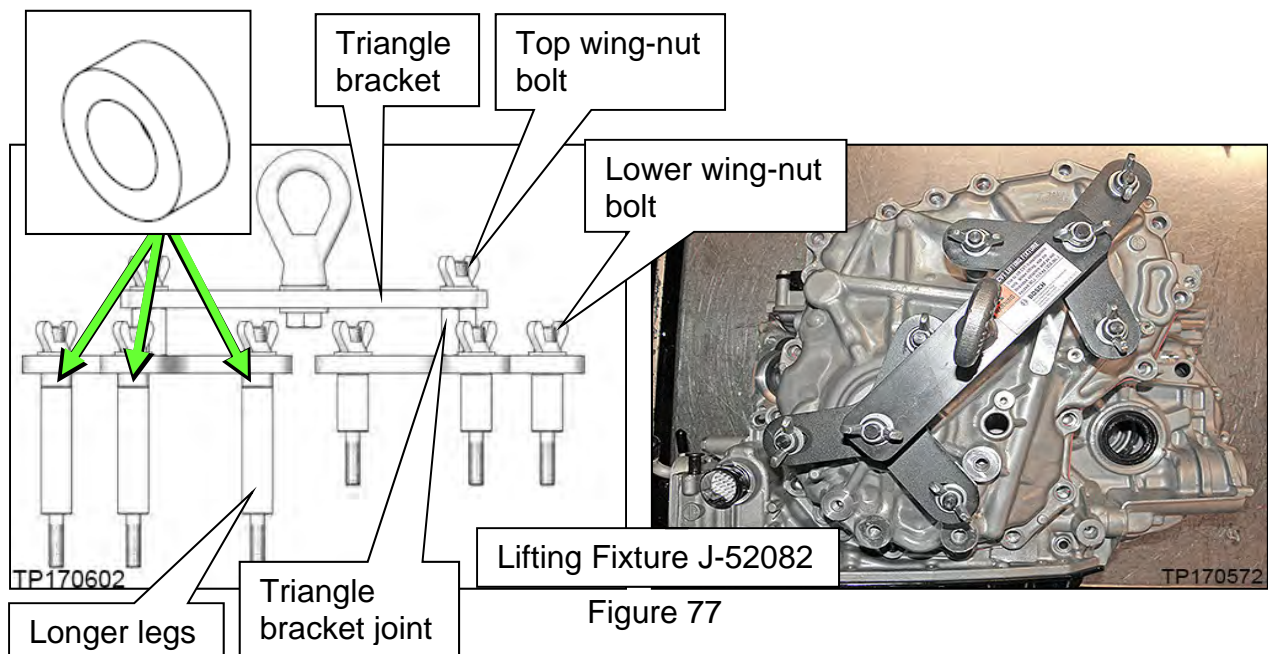


Figure 77

Sub-assembly Lifting Fixture Procedure (continued)

59. Install the two (2) CVT Assembly Guide Pins (J-51959 - Guide Pins) as shown in Figure 78 and Figure 79.
- The Guide Pins must be located next to the dowel pins.

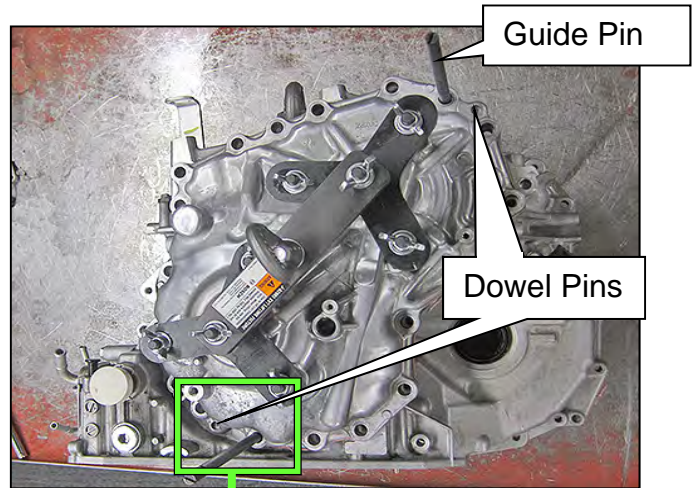


Figure 78

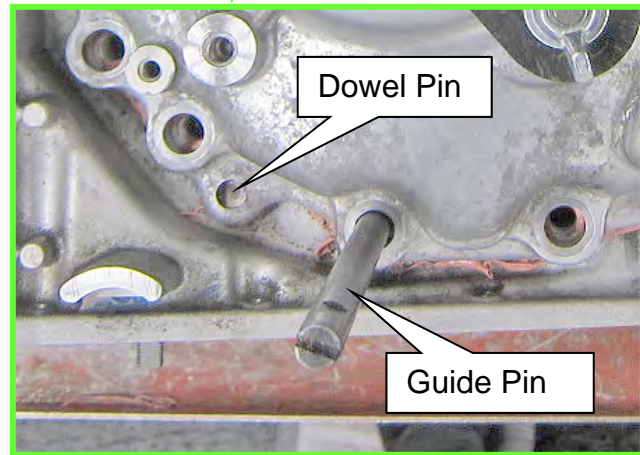


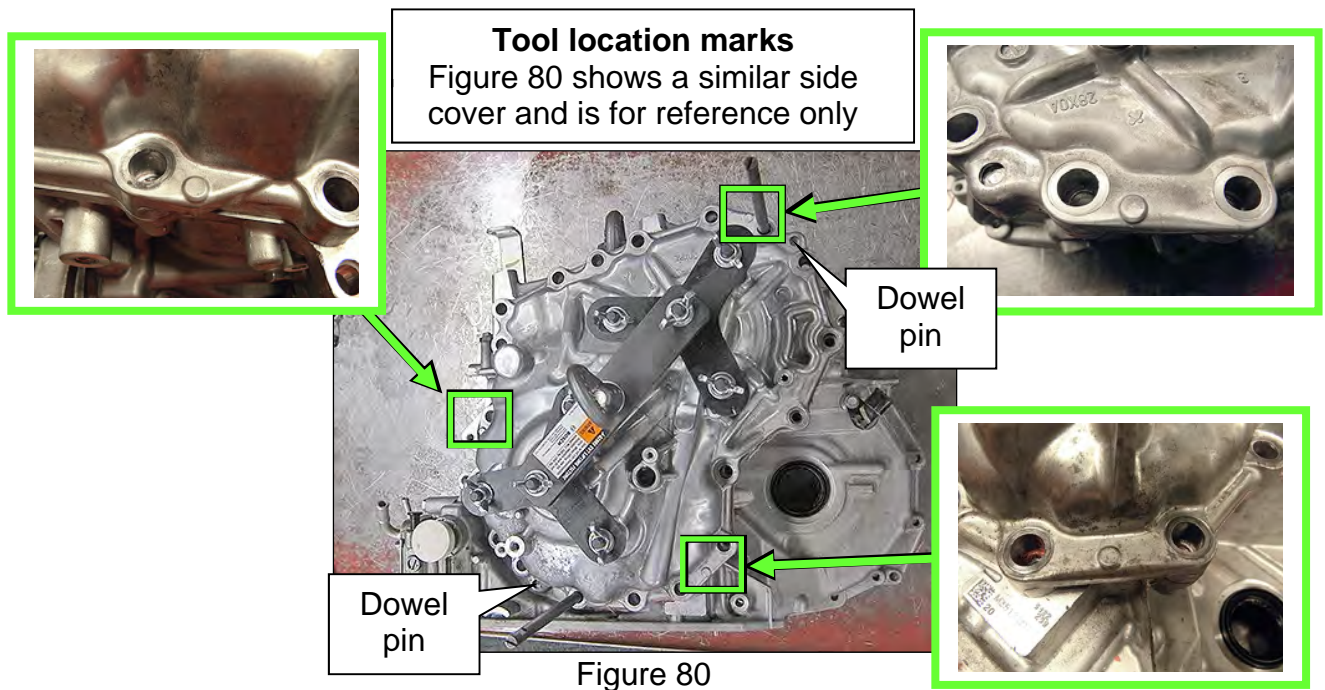
Figure 79

60. Raise the Lifting Fixture so that the CVT assembly weight is mostly supported by the Lifting Fixture and just slightly raised off of the work surface.
61. Loosen the side cover with a slide hammer at the three (3) locations (tool location marks) shown in Figure 80.
 - Rotate between the three (3) locations on the side cover until the CVT case separates from the sub-assembly. This can take more than one rotation to loosen the sealant.

NOTICE

To avoid damage to the CVT, DO NOT use a prybar, chisel, etc. to separate the side cover from the CVT case.

HINT: Apply rust penetrant to the two (2) dowel pins as needed.



62. Raise the Lifting Fixture to remove the “side cover with pulleys and belt assembly” (sub-assembly) from the CVT case (Figure 81).

NOTICE

To avoid damage to the primary speed sensor, make sure it is removed from the sub-assembly.

- The speed sensor **will** be reused.
- **DO NOT** discard the speed sensor.
- This sub-assembly **will not** be reused.

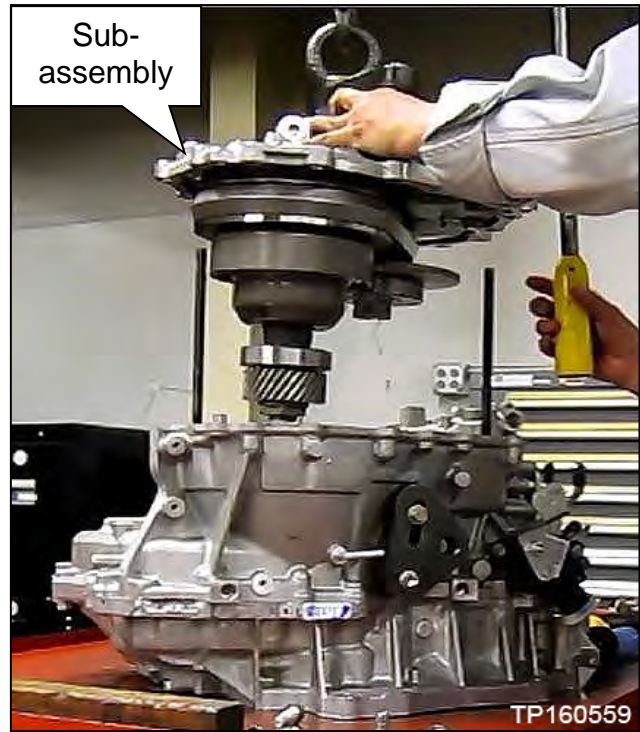


Figure 81

63. Remove the lifting fixture from the sub-assembly.
- Reinstall all six (6) original bolts into the old sub-assembly.
64. Thoroughly clean the mating surfaces of the CVT case (Figure 82) that the sub-assembly was just separated from (a plastic scraper can be used).
- Confirm that the dowel pins have remained in the CVT case. If not, remove them from the sub-assembly and reattach them back to the CVT case.

HINT: The Guide Pins can be temporarily removed for cleaning purposes.

NOTICE

To prevent debris from entering the CVT and causing damage:

- DO NOT use sanding discs, similar abrasive tools, or metal blades.
- Use brake cleaner or equivalent solvent and lint-free towels only.
- Make sure rust and debris have been removed from the dowel pins and receiving holes.



Figure 82

65. Replace the O-ring on the CVT case side with a new one (Figure 83).

- Coat the O-ring with CVT fluid before installing.

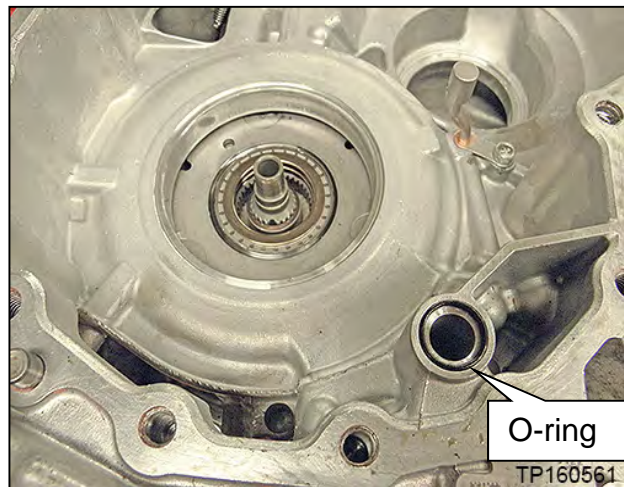


Figure 83

66. Remove the thrust bearing from the planetary carrier plate (Figure 84).

- **This thrust bearing will be reused. DO NOT discard.**

HINT: If not found on the planetary carrier plate, the thrust bearing may still be attached to the primary pulley.

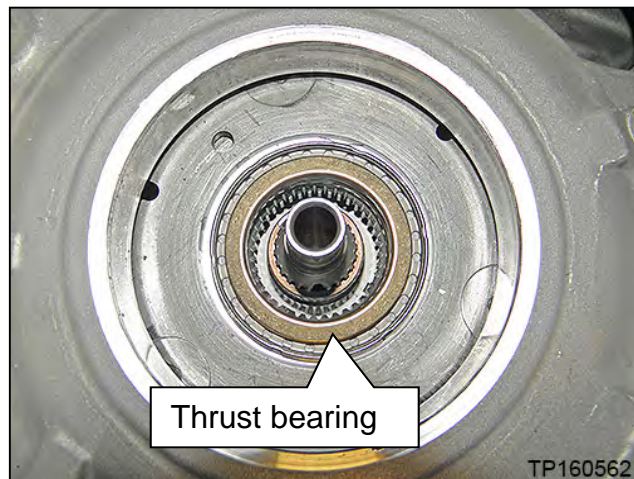


Figure 84

67. Rotate the shift select lever counterclockwise to the “L” range position (Figure 85), so that the parking pawl is at its lowest position (Figure 86).

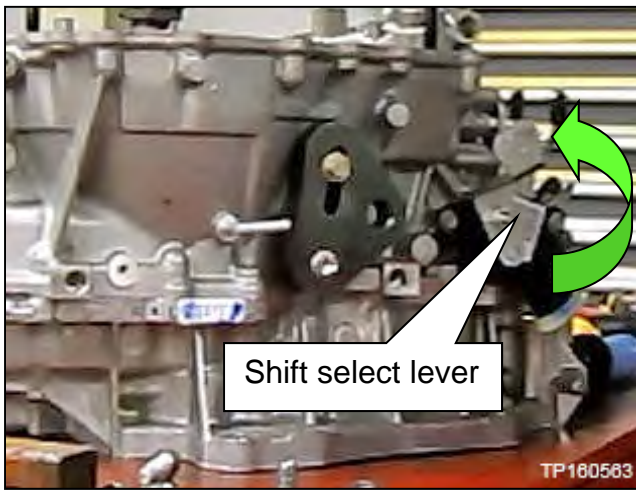


Figure 85

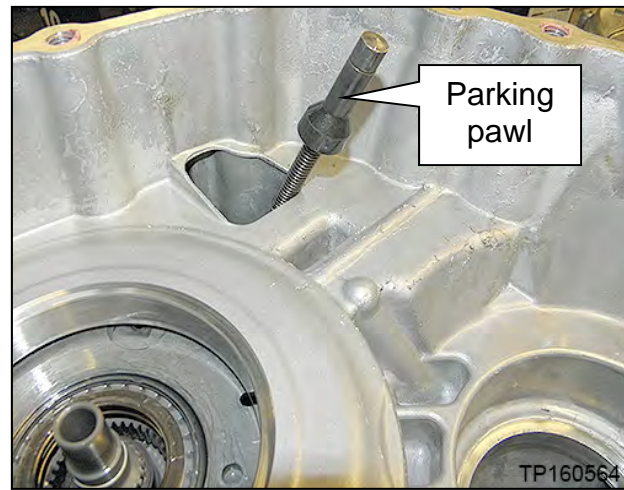


Figure 86

68. Attach the Lifting Fixture to the new sub-assembly, and then raise the sub-assembly out of the shipping box.
- First, remove the six (6) bolts from the new sub-assembly, and then remove their O-rings before installing the Lifting Fixture.
 - These bolts will be reused.
 - These O-rings will not be reused.

NOTICE

To avoid damage to the side cover, start the lifting fixture bolts by hand.

- Refer to the Sub-assembly Lifting Fixture procedure on page 39 for correct Lifting Fixture installation.

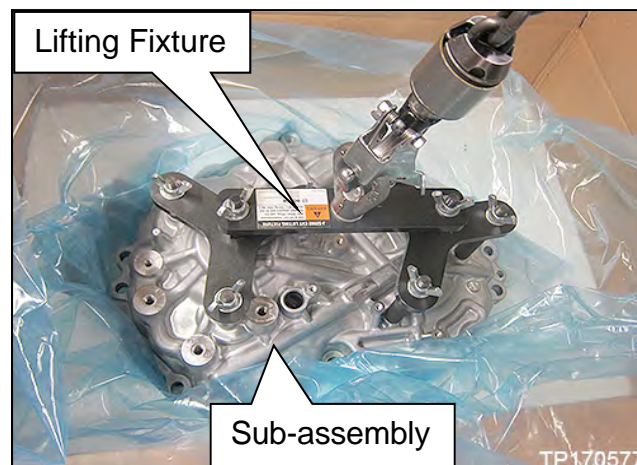


Figure 87

69. Apply one continuous 2.0 mm diameter bead of sealant along the center of the CVT case side mating surface (Figure 88).

Sealant:

- Loctite 5460 (see **PARTS INFORMATION** on page 86).
- Color: Pink

IMPORTANT:

- Confirm that the mating surfaces are clean before applying sealant.
- Make sure that the starting point and the ending point of the sealant is between two bolt holes. Overlap both ends of the bead by 3 – 5 mm.

NOTICE

To prevent possible leaks, be careful not to contact or contaminate the sealant. If the sealant has been disturbed or contaminated in any way before case assembly, thoroughly clean the mating surfaces of the CVT case and restart from step 69.

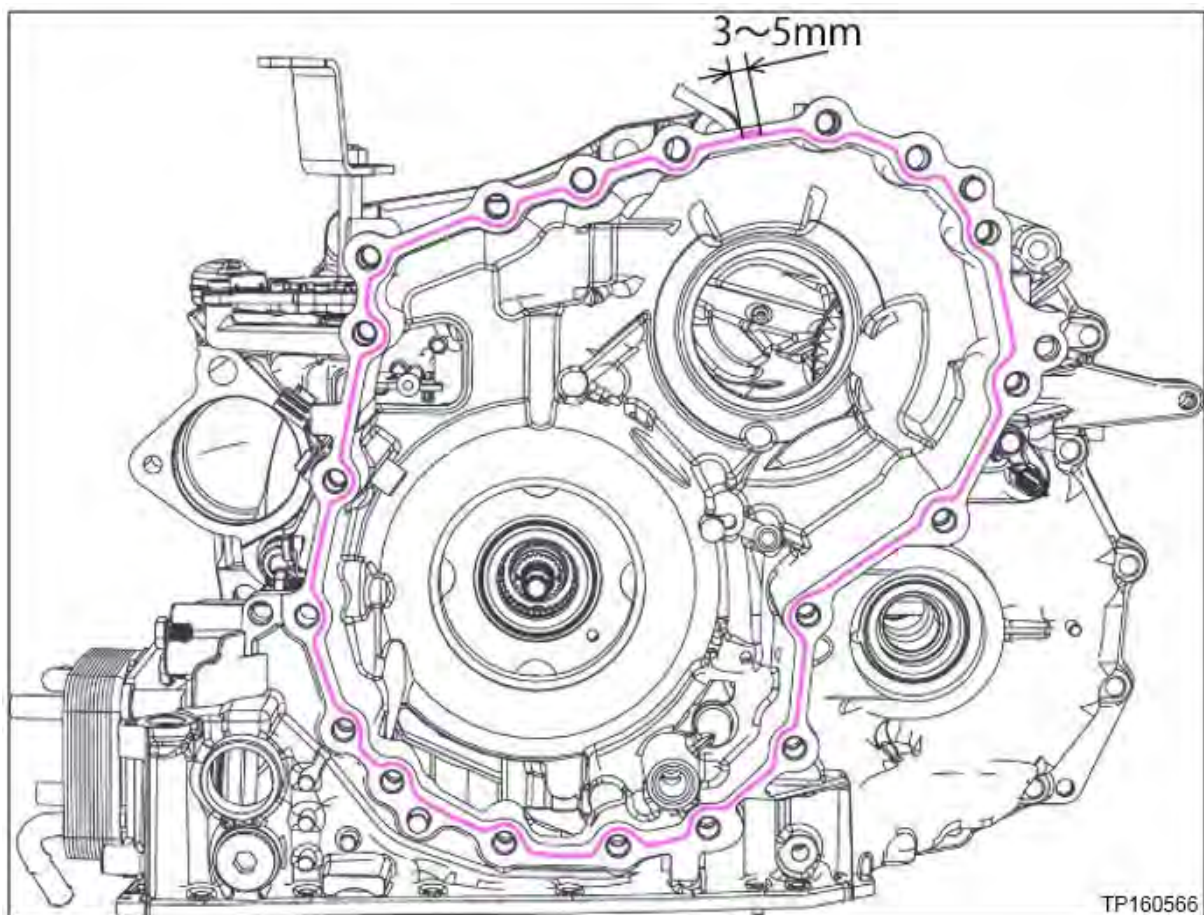


Figure 88

70. Install the original thrust bearing on the primary pulley of the new sub-assembly (Figure 89).

HINT:

- The thrust bearing surface must lay flush with the primary pulley. Any additional height will affect the total end play that is measured later in this procedure.
- The thrust bearing has two sides. Reference Figure 90 for bearing orientation.
- Apply a small amount of petroleum jelly or equivalent to the original thrust bearing to hold it in place on the primary pulley.

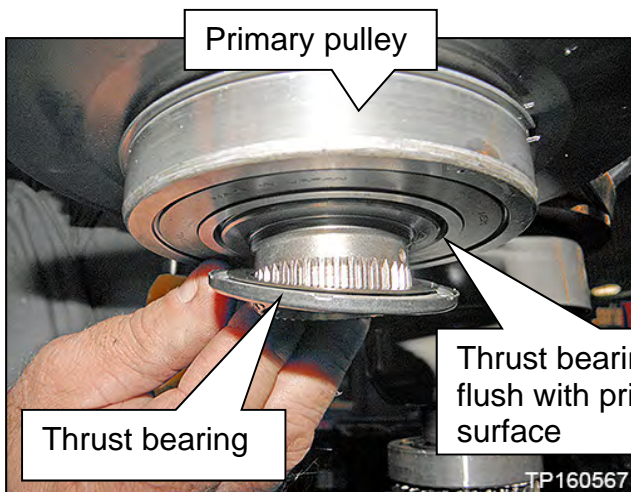


Figure 89

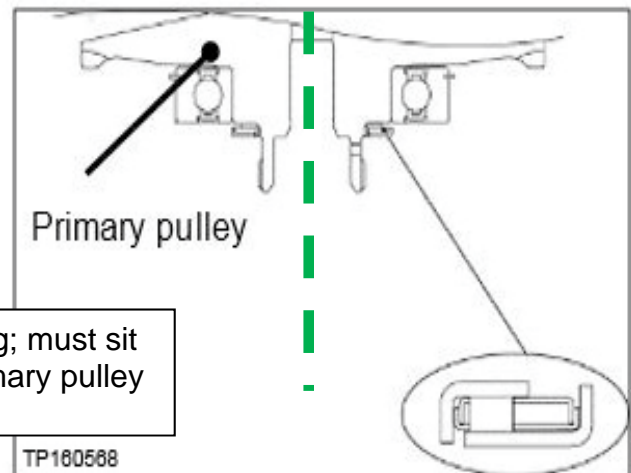


Figure 90

71. Coat the primary pulley bearing, secondary pulley gear teeth, and the secondary bearing with CVT fluid prior to installation (Figure 91 and Figure 92).

HINT: DO NOT drip any CVT fluid onto the sealant.

The following figures are for **reference only** and may or may not have the sealant in place or have the old sealant removed. Clean the surfaces and apply sealant when and where instructed.

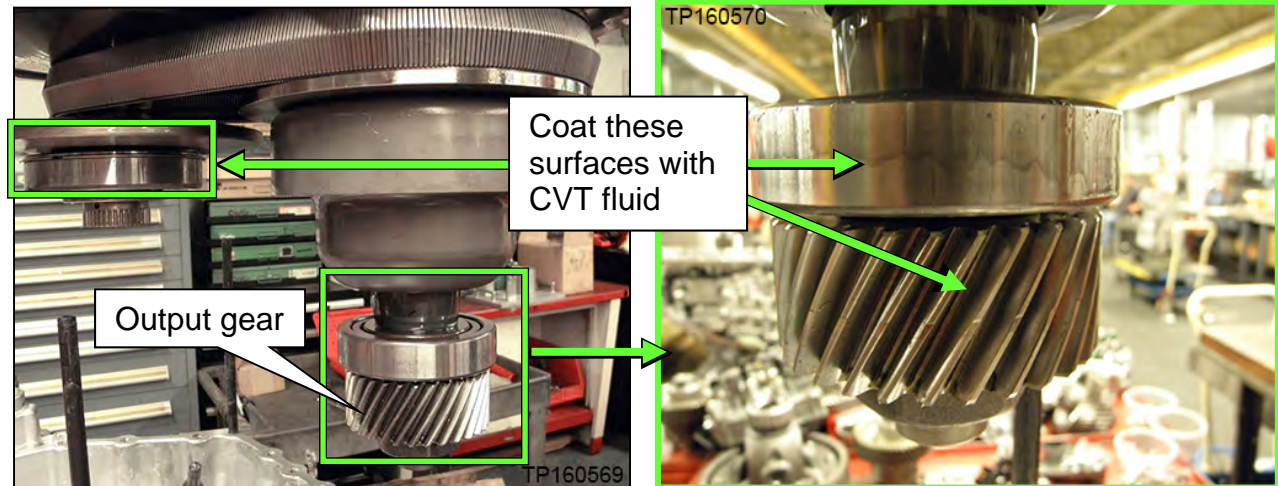


Figure 91

Figure 92

72. While lowering the sub-assembly, route the Guide Pins into the appropriate CVT bolt holes, one at a time (the Guide Pins are different lengths for easy assembly).

HINT: DO NOT allow the output gear to contact the lubrication tube when the side cover is positioned over the guide pins (Figure 93 and Figure 94).

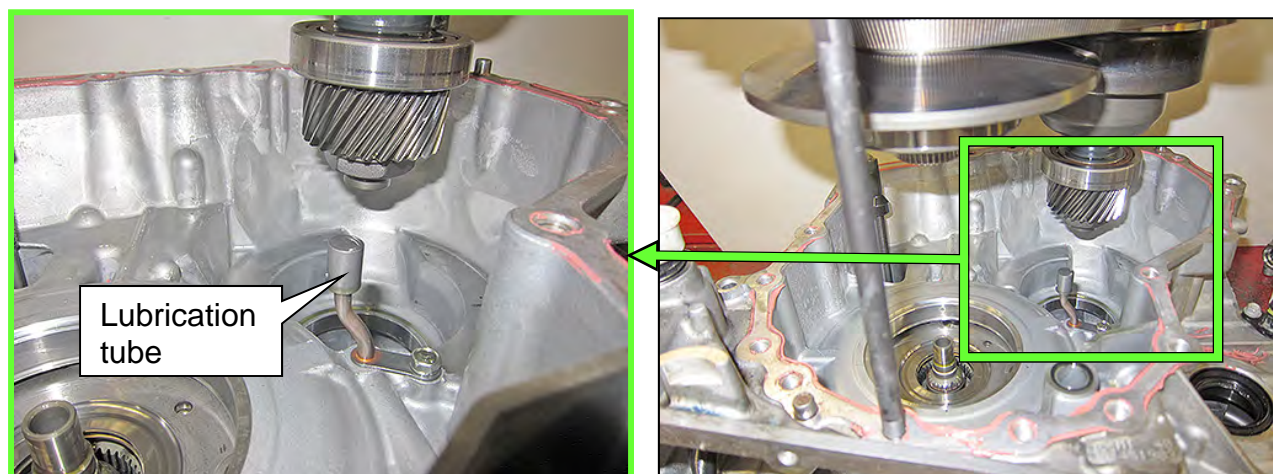


Figure 93

Figure 94

IMPORTANT:

Before continuing, it is recommended that you review and understand the instructions on pages 48 through 52.

The sub-assembly will lower into the CVT case without applying extra vertical force.

IF THE SUB-ASSEMBLY DOES NOT LOWER COMPLETELY,  PHYSICAL INTERFERENCE IS PRESENT.

Key Technique: Raise to remove weight on interference, adjust as necessary, and then lower again.

Use the “visual gap size” below (Figure 95 and Figure 96), between the sub-assembly and the CVT case, to determine the cause of interference.

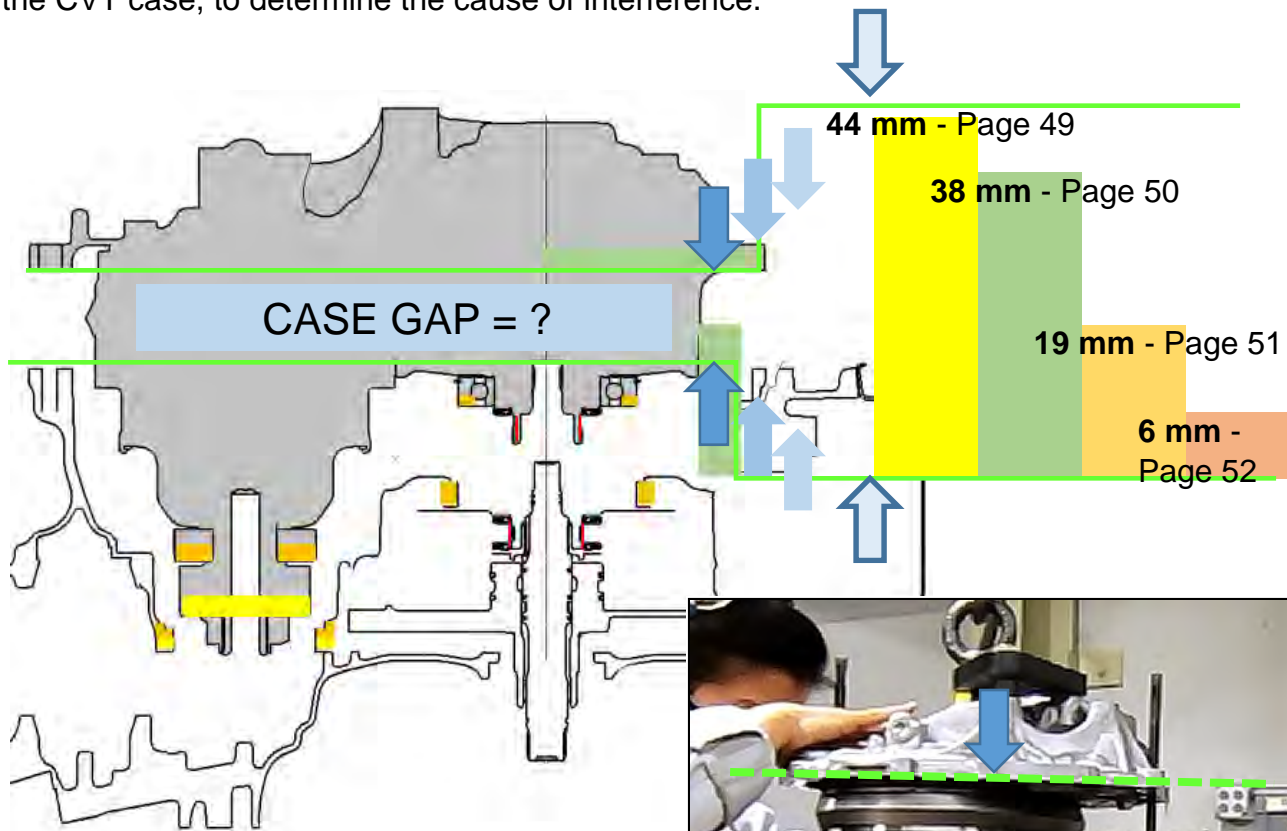


Figure 95

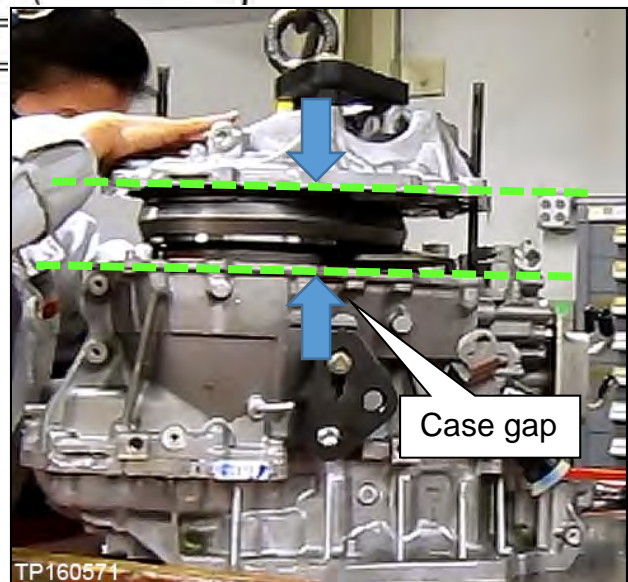


Figure 96

73. Carefully, lower the Lifting Fixture to install the sub-assembly into the CVT case until a **38 mm (1.5 inch)** gap is present between the sub-assembly and CVT case (Figure 101 on page 50).

- Look into the bearing bore to confirm the output gear is centered (Figure 98).
- Place hands on top of the sub-assembly to keep it level and guide it into the CVT case.
 - If the sub-assembly will not lower farther than 44 mm (1.75 inches) the output gear did not clear the bearing bore (Figure 97).

Sub-assembly will not lower past 44 mm (1.75 inches)?

- Interference is present between the output gear and bearing bore.

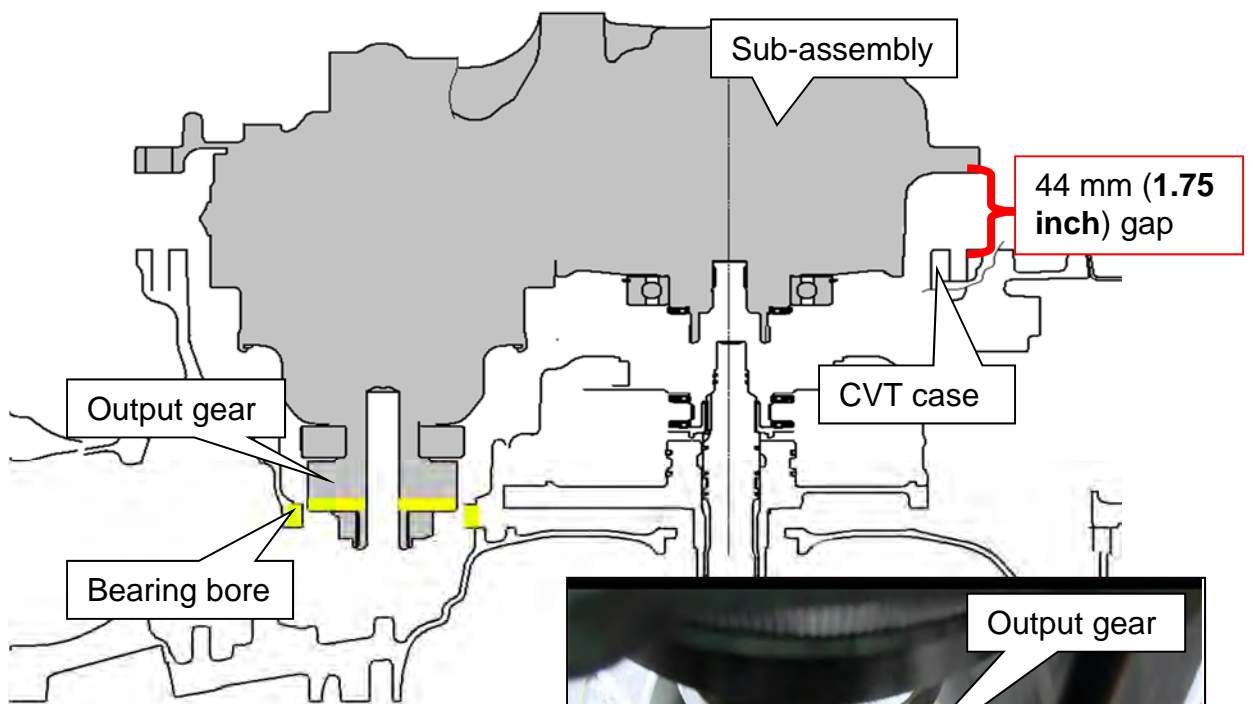


Figure 97

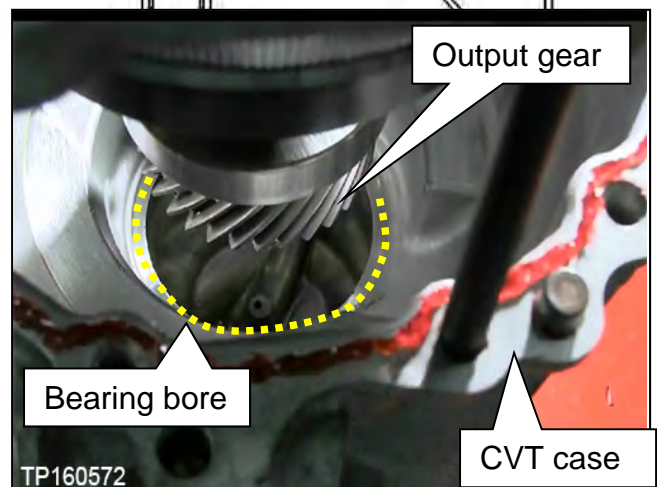


Figure 98

NOTICE

In the following steps be careful not to contact or contaminate the sealant or a leak may occur. If the sealant has been disturbed or contaminated in any way, remove the sealant completely and restart from step 69 on page 45.

74. Align the parking rod with the parking pawl as follows:

IMPORTANT: Perform step 74 while there is a **38 mm (1.5 inch)** gap between the sub-assembly and CVT case (Figure 101).

- a) Rotate the shift select lever clockwise on the side of the CVT to adjust the parking rod to the highest position.
- b) Use a magnet to align the parking rod in the CVT case (□ in Figure 100) with the opening in the parking pawl (○ in Figure 99) in the side cover.

HINT: If the parking rod is not located correctly it will keep the case from lowering.

The following figures are for reference only.

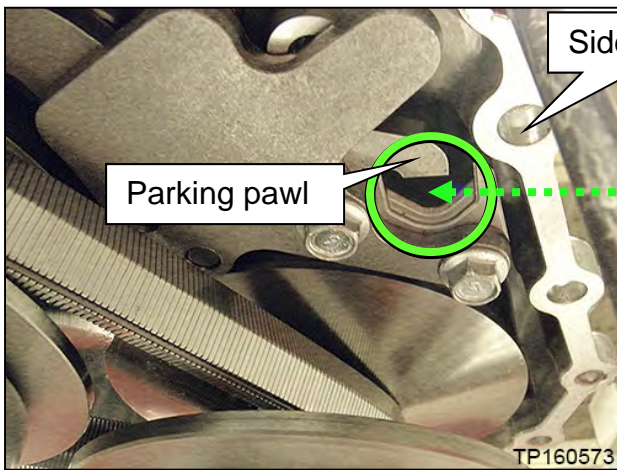


Figure 99

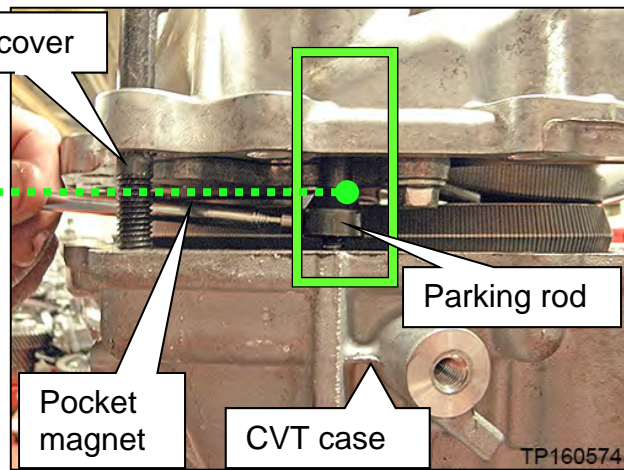


Figure 100

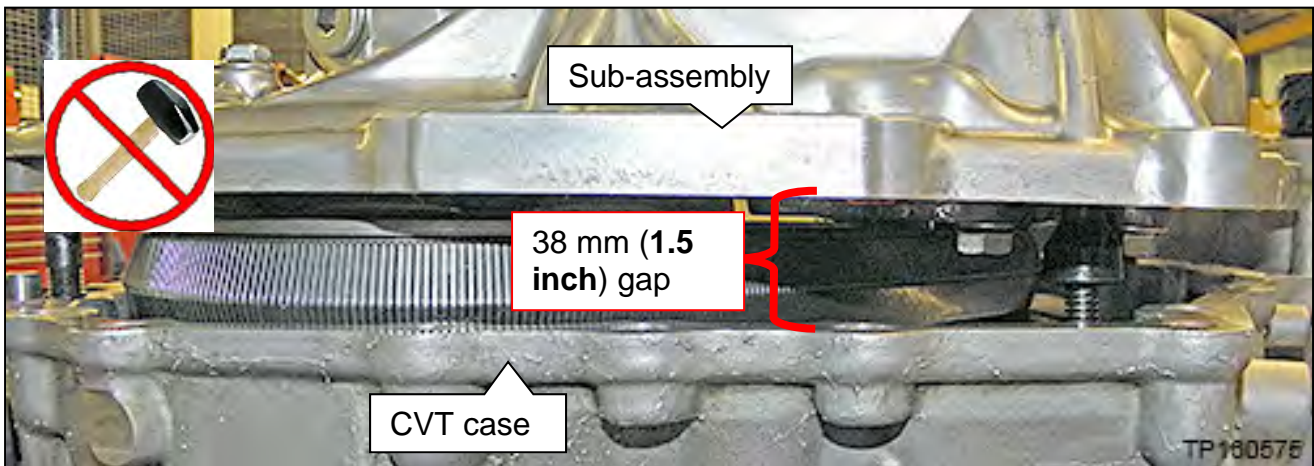


Figure 101

75. Continue to slowly lower the sub-assembly into the CVT case.

- If the primary and the secondary pulley bearings do not align properly with their bores (Figure 102) or are at an angle, a **gap of 19 mm (0.75 inches)** may be present.
 - As needed, level the sub-assembly as it is lowered into the CVT case to help the primary and the secondary pulley bearings align in their bores.
 - MINOR LEVELING ADJUSTMENTS with limited weight on the sub-assembly will help the installation. **Vertical force is not needed.**
 - Once the sub-assembly is LEVEL, the primary and the secondary pulley bearings will smoothly align while lowering.

Sub-assembly will not lower past 19 mm (0.75 inches)?

- If this occurs Do NOT force the sub-assembly into the case.
 - a. Raise the sub-assembly slightly.
 - b. Level the sub-assembly (visually check the gap between case and sub-assembly side cover and confirm that it is even all around).
 - c. Gently lower the sub-assembly.
 - d. Gently shake the sub-assembly horizontally, lower, raise and repeat as needed to help align.
 - e. Lower to engage the dowel pins and a **6 mm (0.25 inch)** gap is between the sub-assembly and CVT case.

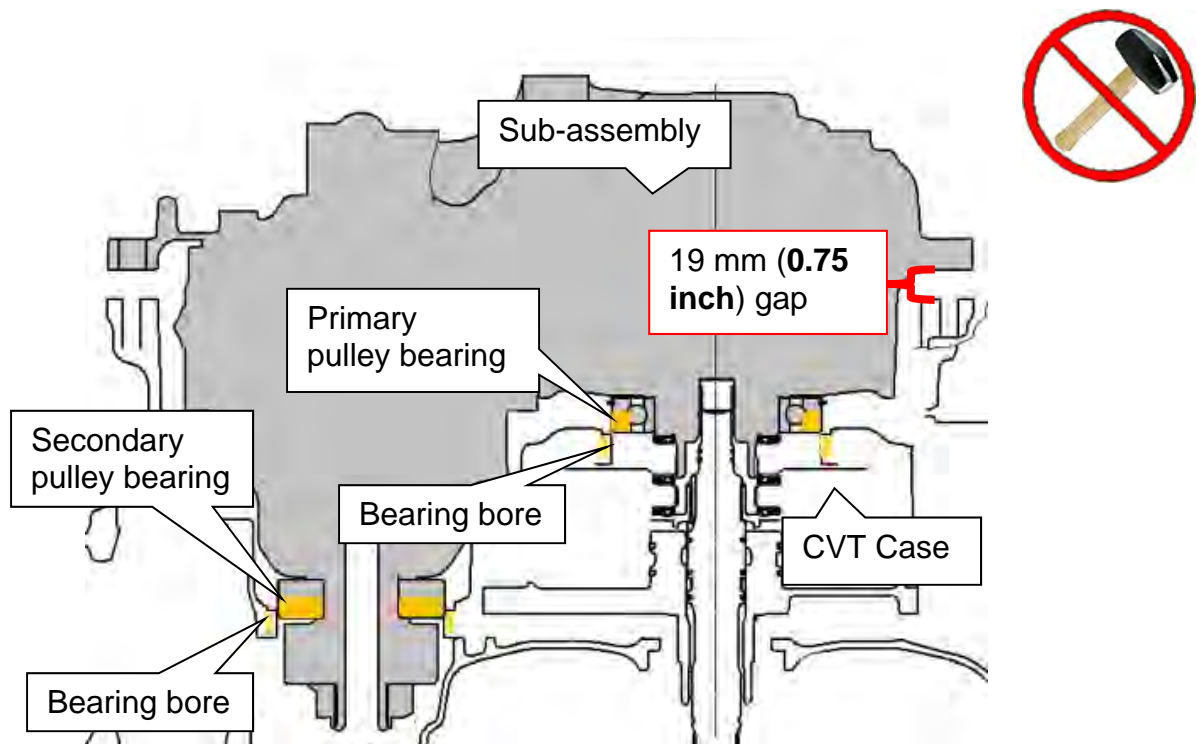


Figure 102

IMPORTANT: In the following steps the case halves must sit flush against each other without a gap before installing the bolts. The bolts CANNOT be used to draw the cases together. DO NOT APPLY VERTICAL FORCE.

76. Once the dowel pins are cleared, ease the sub-assembly down onto the CVT case until the case halves are flush.
- Confirm the dowel pins are clean and aligned and are not catching on the sub-assembly case cover.

CAUTION

To avoid personal injury, ensure your fingers are not between the CVT case and the sub-assembly. They may become pinched while seating the components together.

Sub-assembly will not lower past 6 mm (0.25 inches)?

If the sub-assembly will not lower past **6 mm (0.25 inches)**, the primary pulley splines are not aligned.

- If this occurs Do NOT force sub-assembly into the case.
 - a. Raise the sub-assembly slightly so the weight is not completely on the primary pulley splines.
 - b. Slightly rotate the primary pulley through the bottom of the CVT and then lower the sub-assembly.
 - c. Repeat as needed.

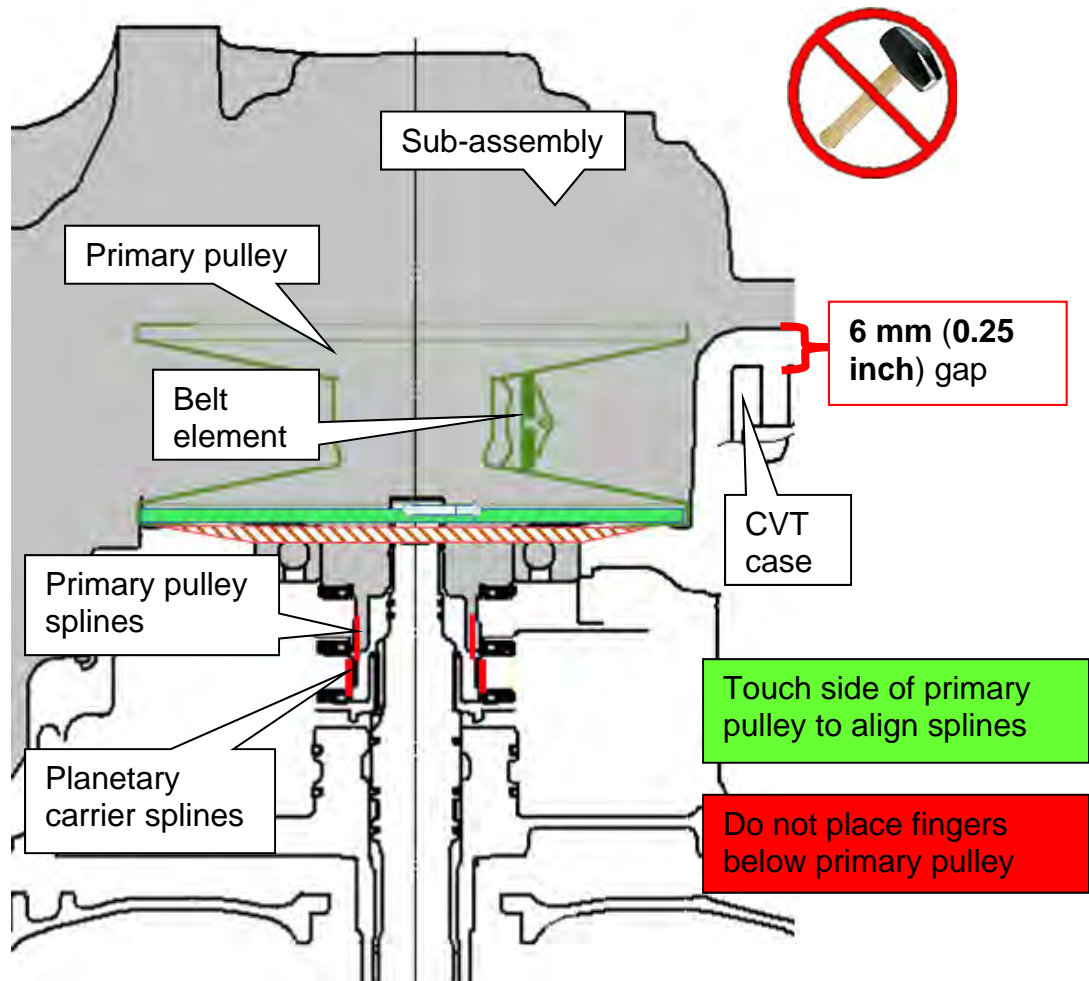


Figure 103

77. Confirm the parking rod operation as follows:
- Rotate the shift select lever counterclockwise and confirm that all detents for each of the **P-R-N-D** are felt.
 - Rotate the lever clockwise to return the rod back to the **P** position.
 - Are all of the detents felt?
 - **YES:** Proceed to step 78.
 - **NO:** If the lever does not rotate or if all detents are not felt:

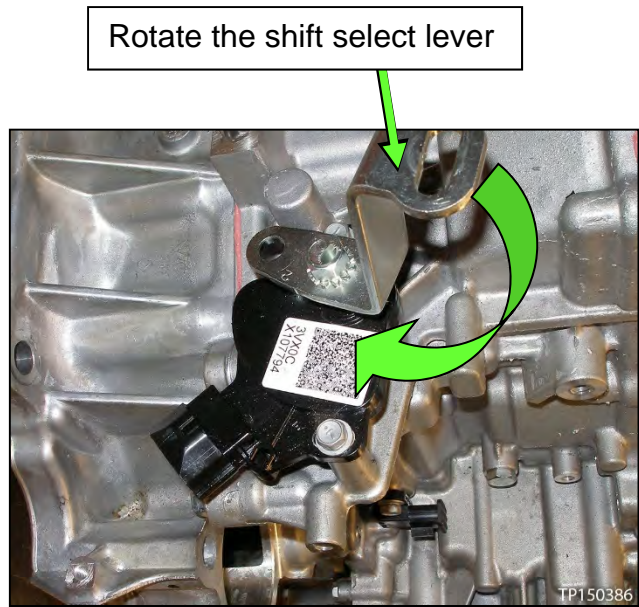


Figure 104

- 1) Raise the sub-assembly and remove all sealant.
- 2) Restart from step 69 on page 45.

78. Remove the guide pins.

79. Install the new side cover bolts (Figure 105).

- Torque the first eight (8) bolts marked as ● in the sequence numbered in Figure 105 below, and then torque the rest of the bolts in a clockwise direction.
 - Bolt torque: 45 N•m (4.6 kg-m, **33 ft-lb**) 19 pieces.

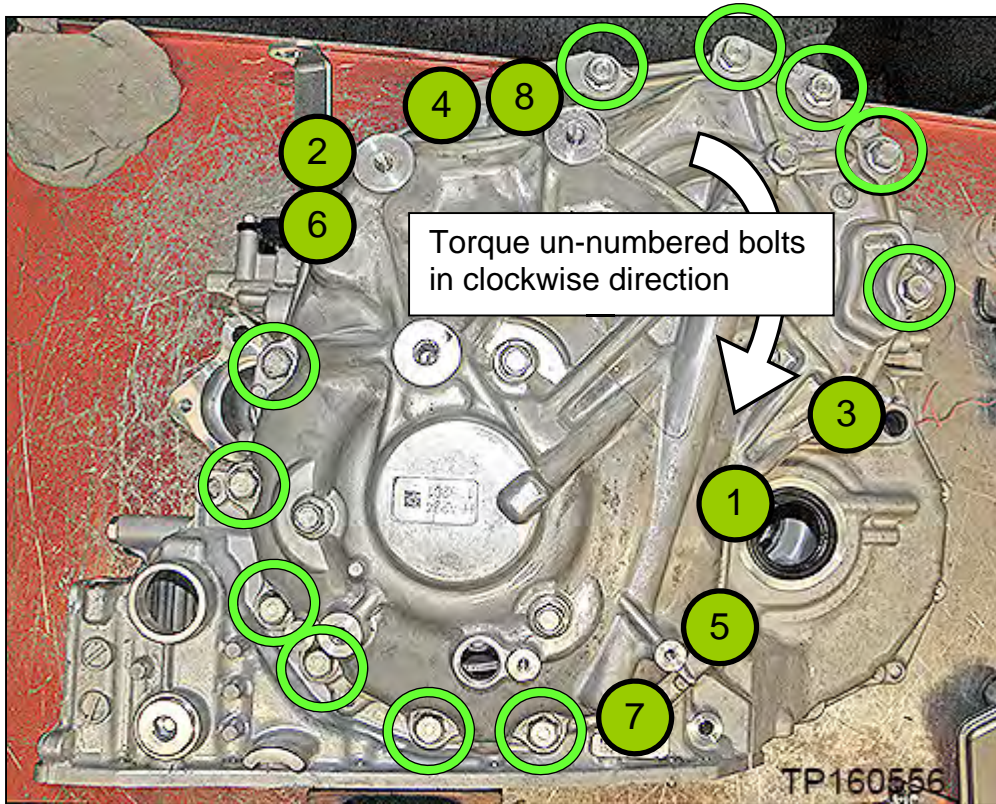


Figure 105

80. Remove the Lifting Fixture.

81. Install six (6) new O-rings to the six (6) new pulley bearing retainer bolts that were removed from the new sub-assembly in step 68 on page 44.

82. Install the six (6) new pulley bearing retainer bolts finger tight.

- Do not use tools to install.

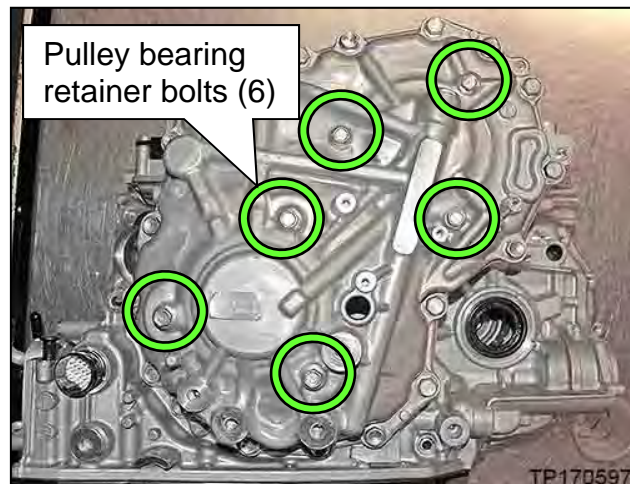


Figure 106

83. Confirm the rotational smoothness of the primary pulley as follows:
- a. With a clean hand, access the primary pulley from the bottom of the CVT.
 - b. Rotate the primary pulley by hand and confirm that the characteristic is the same as previously checked at step 55 on page 38, prior to removing the original sub-assembly.
 - If the rotational characteristic is the same or better, continue to step 84.
 - If the rotational characteristic is worse (stiffer):
 - 1) Remove the sub-assembly from the CVT case.
 - 2) Wipe and clean the sealant from the CVT case and side cover rim.
 - 3) Restart the procedure from step 69 on page 45.

84. Torque all six (6) bolts.
- Bolt torque: 28 N•m (2.8 kg-m, **20 ft-lb**)



Figure 107

85. Install the CVT case side axle seal (Figure 108).

- Use Seal Installer J-52283 and Driver Handle J-8092.
- Apply a light coat of CVT fluid to the seal lip surfaces.

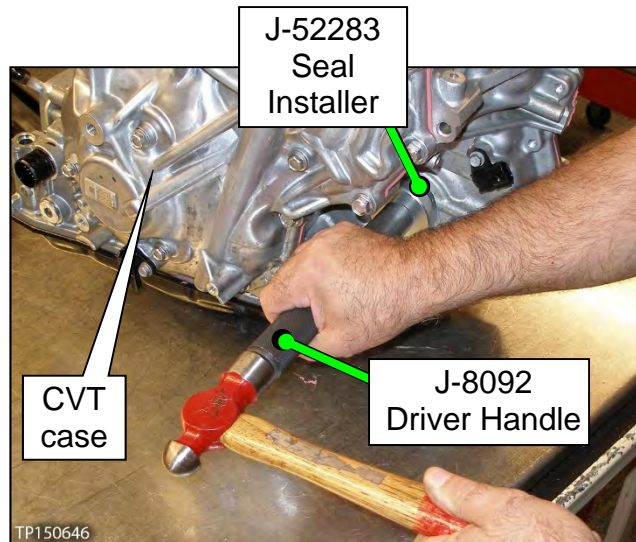


Figure 108

86. Place the CVT on the work bench with the side cover facing down on the bench.

87. Remove the converter housing, which was temporarily installed with three (3) bolts.

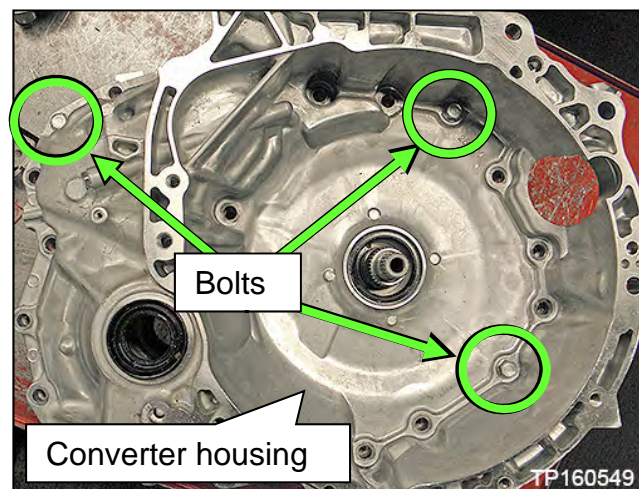


Figure 109

Clutch Total Endplay Adjustment – Thrust Bearing Selection

IMPORTANT: Using thrust bearings, the clutch total endplay (Figure 110) must always be adjusted between the clutch drum and the dummy cover when a new sub-assembly is installed.

There are eight (8) thicknesses of thrust bearings available for total endplay adjustment.

- For additional information, see video # 547: “**CVT Belt and Pulley Replacement**” and fast forward to minute marker 13:22. This video is located under the **TECH TRAINING GARAGE VIDEOS** tab in Virtual Academy.

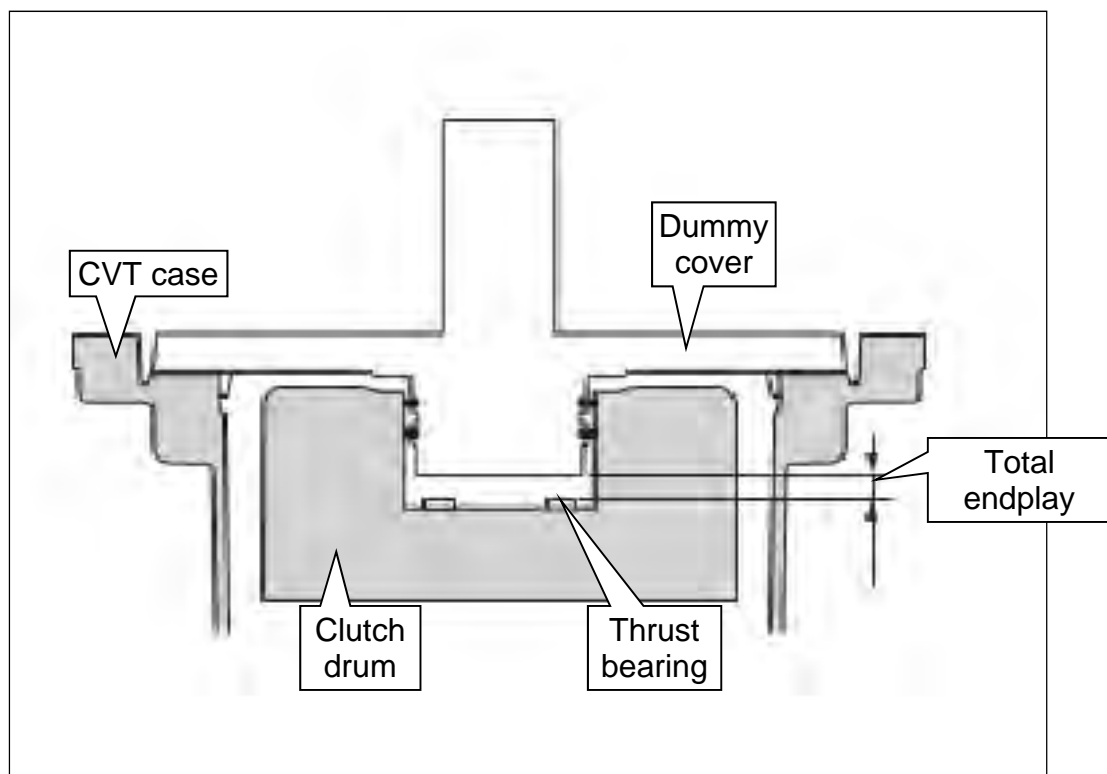


Figure 110

88. Clean and then zero the Digital Depth Gauge (part #: J-50272).
 - Set the Digital Depth Gauge to millimeters.
89. Clean Gauge Block J-50271.
90. Confirm the mating surfaces of the CVT case are clean.

91. Calculate the average clutch assembly bore depth (**D**) (Figure 111) as follows:

IMPORTANT: Measurements are required from two opposite ends to obtain the average.

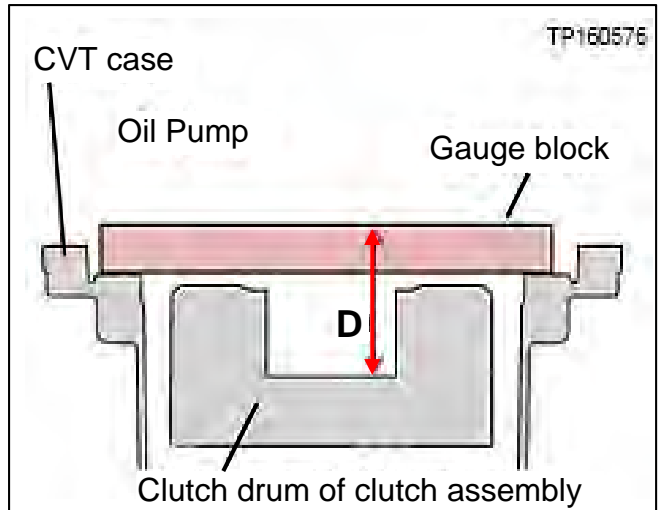


Figure 111

- a. Place the Gauge Block on the surface where the dummy cover seats and over the clutch assembly bore (Figure 112).

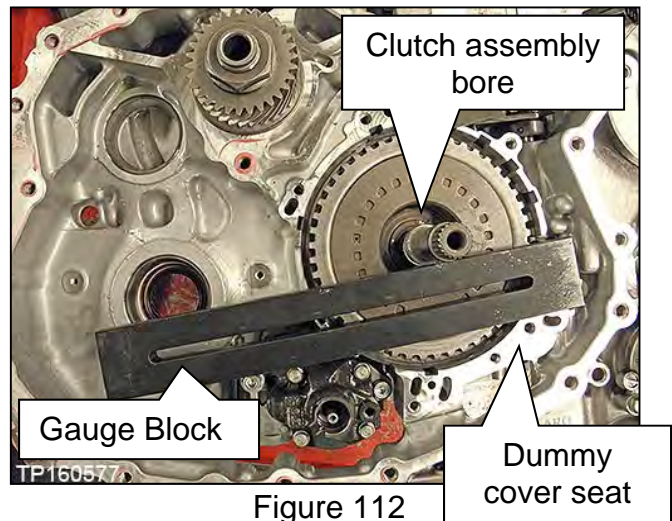


Figure 112

HINT:

- This surface is lower than the CVT case to torque converter housing surface.
- The clutch assembly should sit 2-3 mm lower than the dummy cover seat (Figure 113).

- b. Confirm the Gauge Block is not sitting on the clutch assembly or against the input shaft.

HINT: If the clutch assembly is sitting higher than the dummy cover surface, see **Dummy Cover Troubleshooting** on page 34.

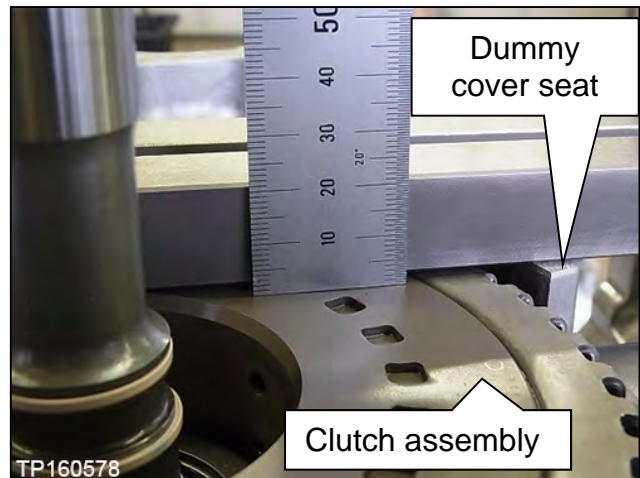


Figure 113

- c. Position the Depth Gauge on the Gauge Block (Figure 114).

HINT: Make sure the Depth Gauge's datum level is flush with the top of the Gauge Block.

- d. Carefully slide the gauge down until it bottoms out on the bottom of the clutch assembly bore. Write this measurement as **D1** (use millimeters).

HINT: Do not measure from the clutch assembly bore shown in red (Figure 115).

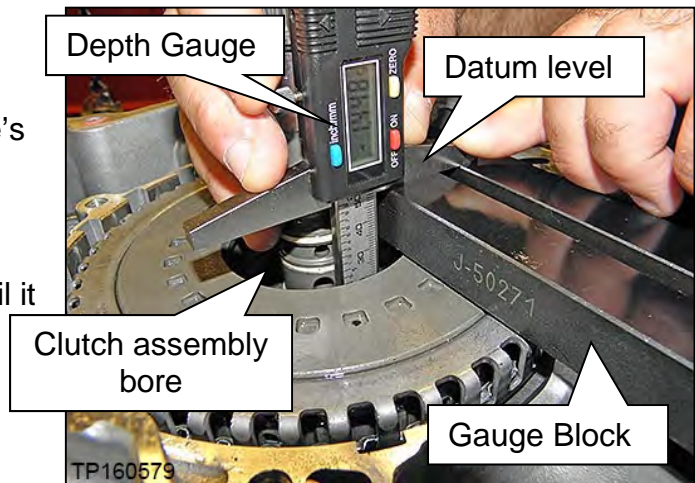


Figure 114

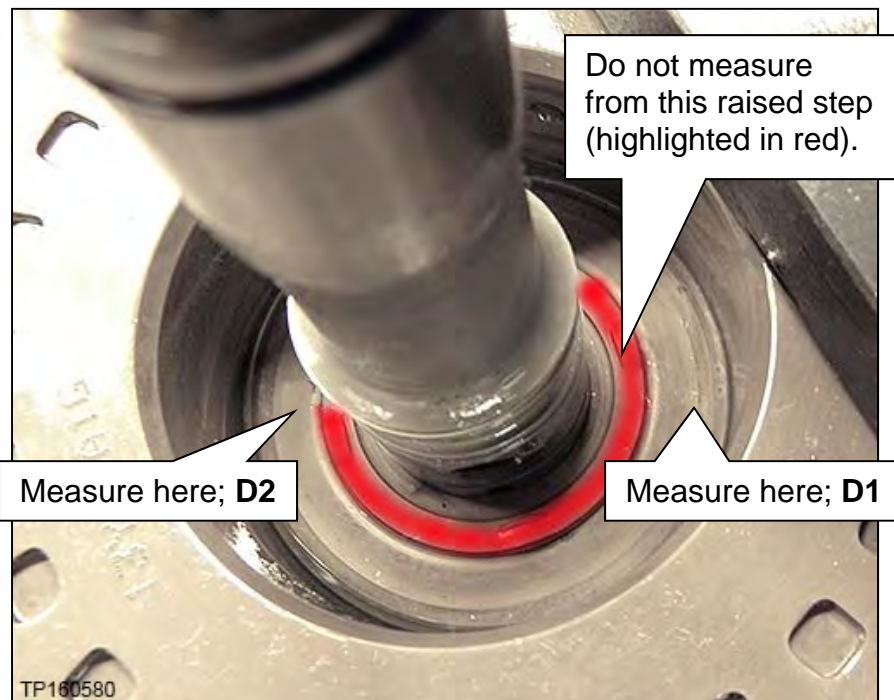


Figure 115

- e. Measure this same distance on the opposite side (180 degrees) of the clutch assembly bore and write it as **D2**.
- f. Using the formula below, calculate the average and write down the calculated value as **D**.

$$D = \frac{(D1 + D2)}{2}$$

Write the measurement for "D" here _____ mm

92. Measure the average dummy cover height (**H**) (Figure 117) as follows:

- a. Clean the dummy cover surfaces that contact the CVT case and thrust bearing (Figure 116).

IMPORTANT: Use brake cleaner (or equivalent) and a lint-free towel only. Make sure the brake cleaner or solvents used are compatible with local regulations.

- b. Place the dummy cover upside down on a work bench, and place the Gauge Block onto the thrust bearing surface (Figure 117).

- c. Position the Depth Gauge on the Gauge Block over an outer end of the dummy cover (Figure 117).

HINT: Make sure the Depth Gauge's datum level is flush with the top of the Gauge Block.

- d. Carefully slide the Depth Gauge down until it contacts the dummy cover surface that mates with the CVT case. Write this measurement as **H1** (use millimeters).

- e. Measure this same distance on the opposite side of the dummy cover and write it as **H2** (Figure 117).

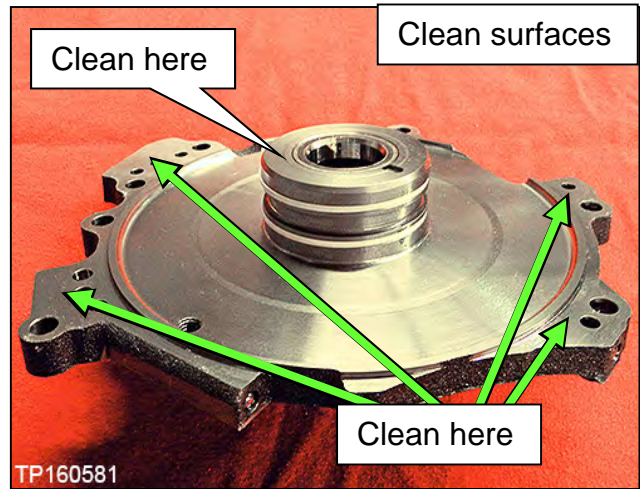


Figure 116

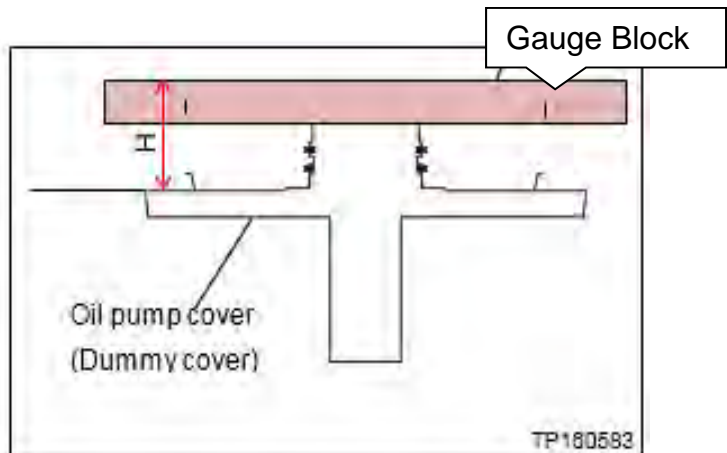
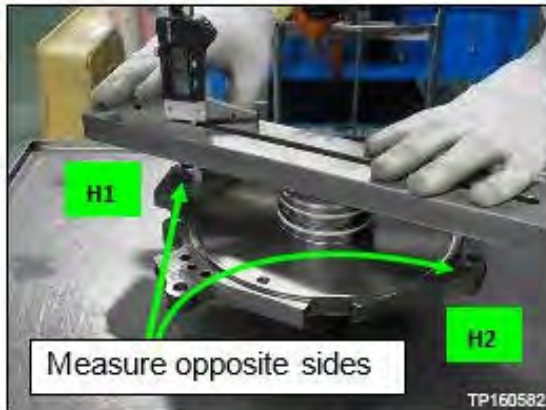


Figure 117

- f. Using the formula below, calculate the average and then write down the calculated value as **H**.

$$H = \frac{(H1 + H2)}{2}$$

Write the measurement for "H" here _____ mm

93. Choose the thrust bearing to adjust Clutch Total Endplay (**A**) as follows:

- a. Calculate **A** (Total Endplay):

Total Endplay A = D – H (This will be the thrust bearing thickness).

- Fill in the measurements below for "**D**" and "**H**" from pages 59 and 60 to calculate for "**A**".

D measurement _____ mm
– H measurement _____ mm
= A mm

Please print this page and attach it to the repair order.

- b. Choose the appropriate bearing from **Table A** below, based on the Total Endplay (A) calculated on the previous page (eight thicknesses of thrust bearings are available).
Example: If **A** = 4.3 mm, it falls between the lower and upper clearances for bearing thickness 3.93 mm.
- Refer to the **THRUST BEARINGS** table on page 90 for Thrust Bearing part numbers by thickness.
- c. Measure and confirm that the selected thrust bearing is the correct thickness before installing (Figure 118).
- d. Circle the thrust bearing part number that was selected in **Table A**.

Table A

PART #: 31407-	A = D - H CLEARANCE (A)	BEARING THICKNESS
1XZ0B or X270A	3.87 - 4.07 mm	3.57 mm
1XZ0C or X270B	4.08 - 4.23 mm	3.75 mm
1XZ0D or X270C	4.24 - 4.43 mm	3.93 mm
1XZ0E or X270D	4.44 - 4.58 mm	4.1 mm
1XZ1A or X270E	4.59 - 4.78 mm	4.28 mm
1XZ1B or X271A	4.79 - 4.94 mm	4.46 mm
1XZ1C or X271B	4.95 - 5.09 mm	4.61 mm
1XZ1D or X271C	5.10 - 5.29 mm	4.79 mm



Figure 118

94. Install the thrust bearing flush to the clutch assembly bore (Figure 119, Figure 120, and Figure 121).

- Install the thrust bearing in the area shown in green so that it is centered by the four tabs.

HINT: The thrust bearing has two sides. Ensure orientation is correct (Figure 119 through Figure 122).

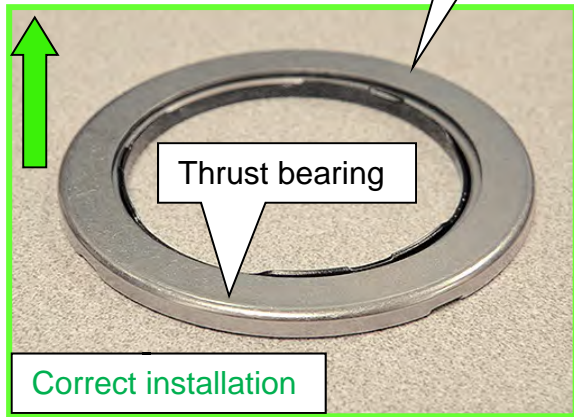
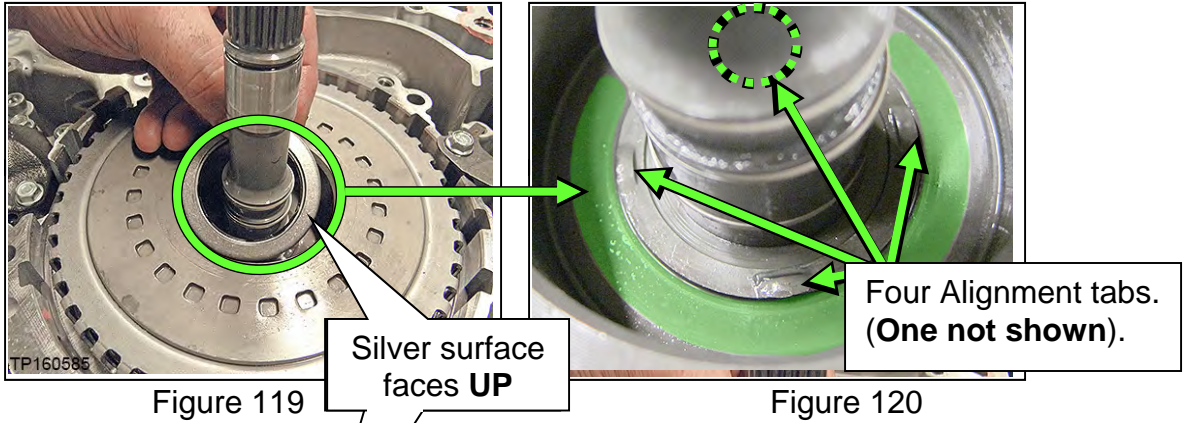


Figure 121

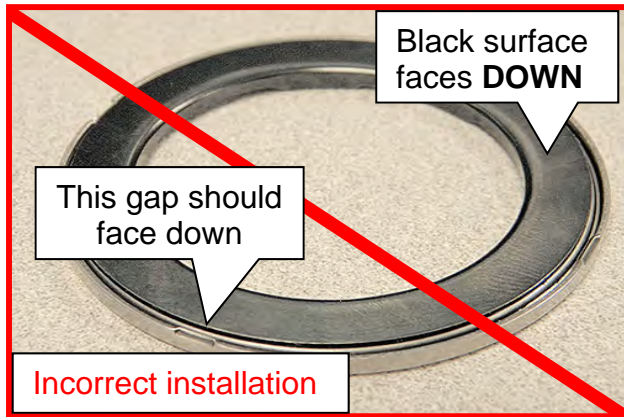


Figure 122

Clean the Converter Housing Passages

HINT: Remove as much of the CVT and cleaning fluids as possible and clean the related parts in the following steps.

95. Remove the baffle plate and lubrication tube as follows:

a. Remove the three (3) bolts, and then remove the baffle plate from the converter housing (Figure 123).

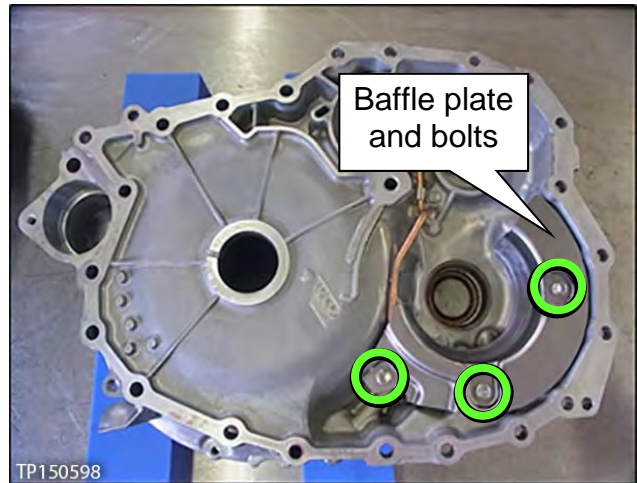


Figure 123

b. Remove the bolt and then remove the lubrication tube and its bracket (Figure 124).

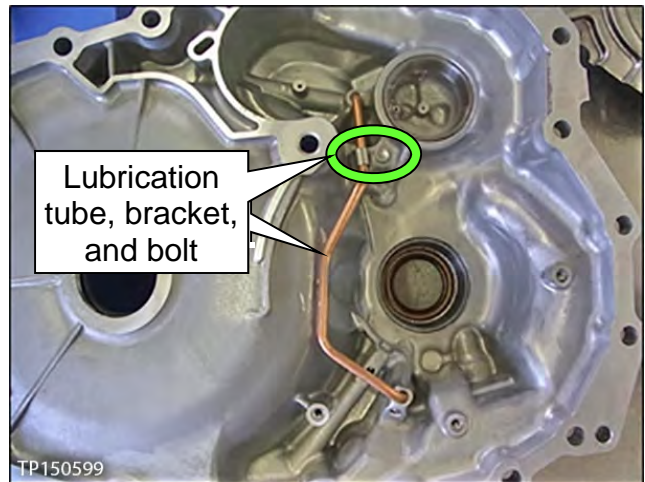


Figure 124

96. Clean the oil passages of the converter housing, lubrication tube and dummy cover with brake cleaner (or equivalent) where shown in Figure 125 through Figure 128 below.

CAUTION

To avoid being struck by debris, do not stand in front of the passages while using compressed air.

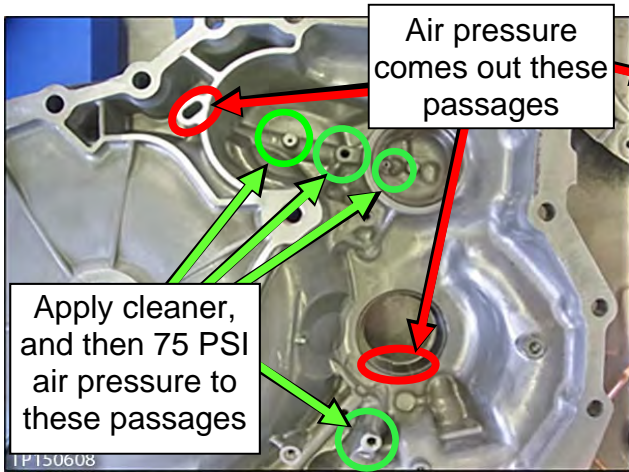


Figure 125

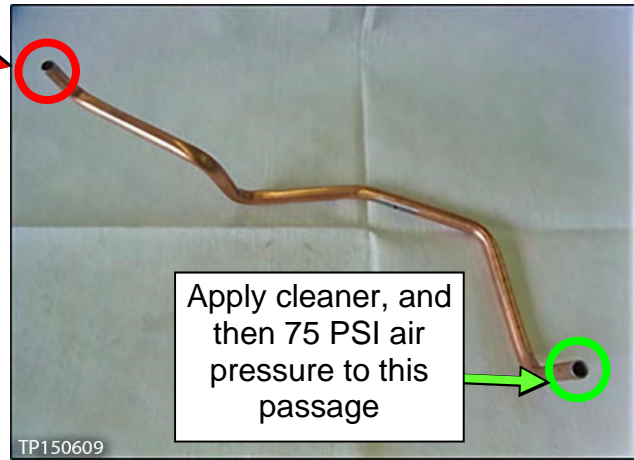


Figure 126

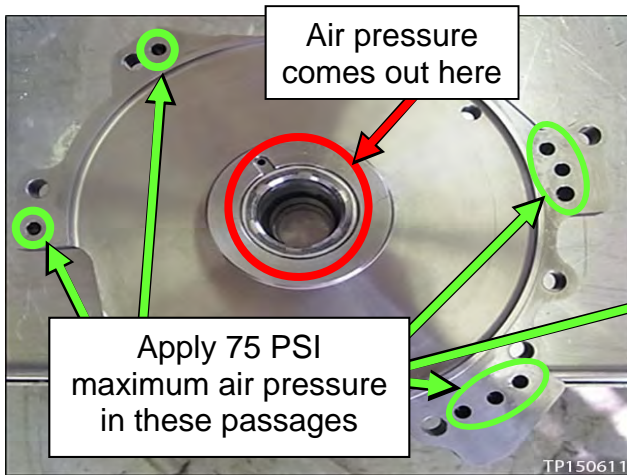


Figure 127

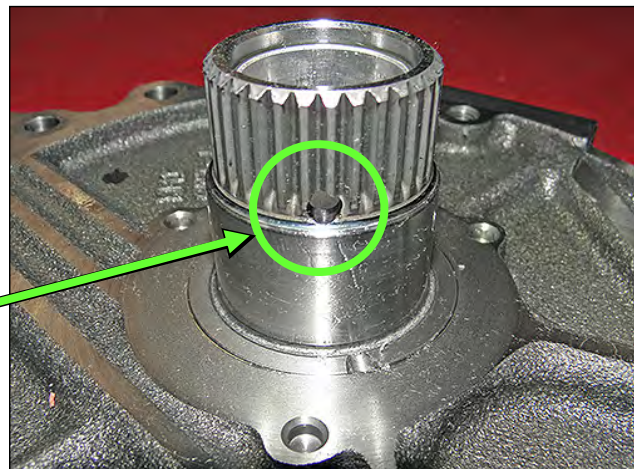


Figure 128

97. Install the lubrication tube, bracket and bolt, and then the baffle plate with three (3) bolts (Figure 129 and Figure 130).

- Bolt torque: 5.9 N•m (0.6kg-m, **52 in-lb**)

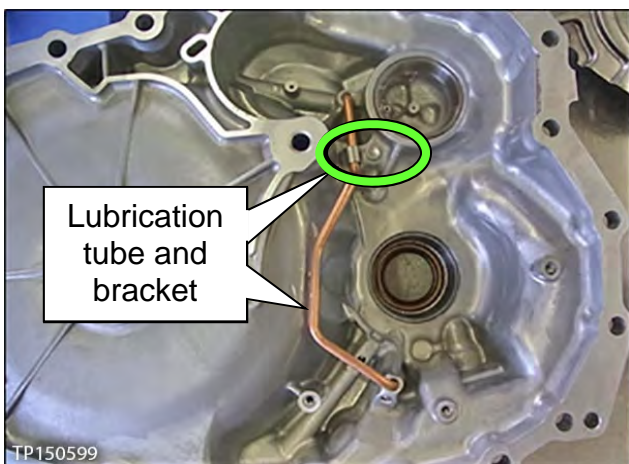


Figure 129

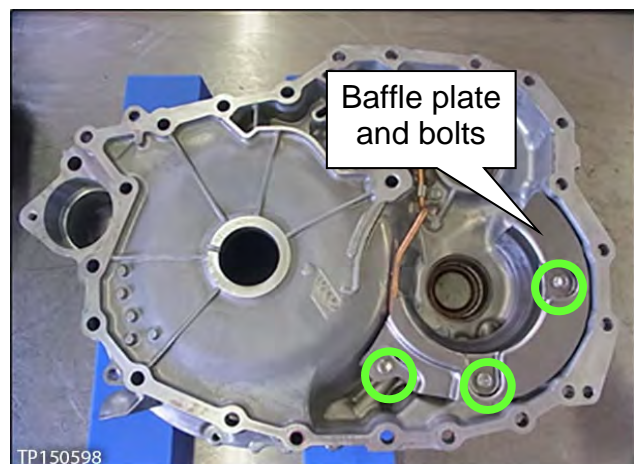


Figure 130

CVT Reassembly

98. Install the torque converter seal (Figure 131).

- Place the torque converter housing flat during installation.
- Apply a light coat of CVT fluid to the seal lip surfaces.
- The torque converter seal will be 0.5 mm (**0.020 inches**) below the bore's surface when the seal installer bottoms out.



Figure 131

99. On AWD models, skip to step 100. On 2WD vehicles, install the torque converter housing side axle seal (Figure 132).

- Use Seal Installer J-52284 and Driver Handle J-8092.
- Apply a light coat of CVT fluid to the seal lip surfaces.

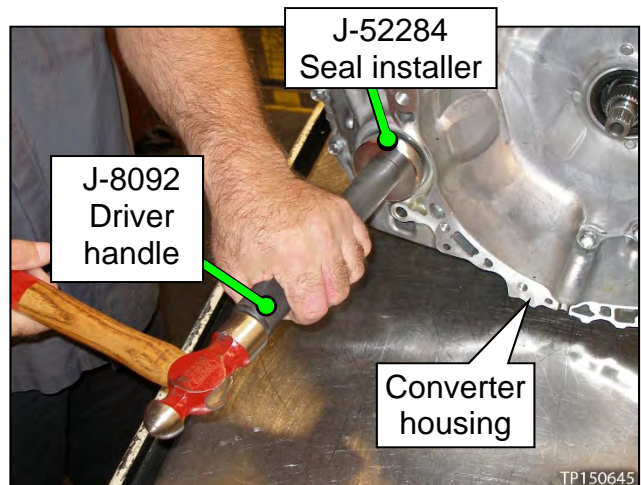


Figure 132

100. Apply petroleum jelly or equivalent to the dummy cover's lathe cut seals (Figure 133) before installing the dummy cover to the CVT case.

NOTICE

To prevent drivability issues, confirm that the lathe cut seals (white seals) are in their appropriate slots. Carefully reposition the seals as necessary.

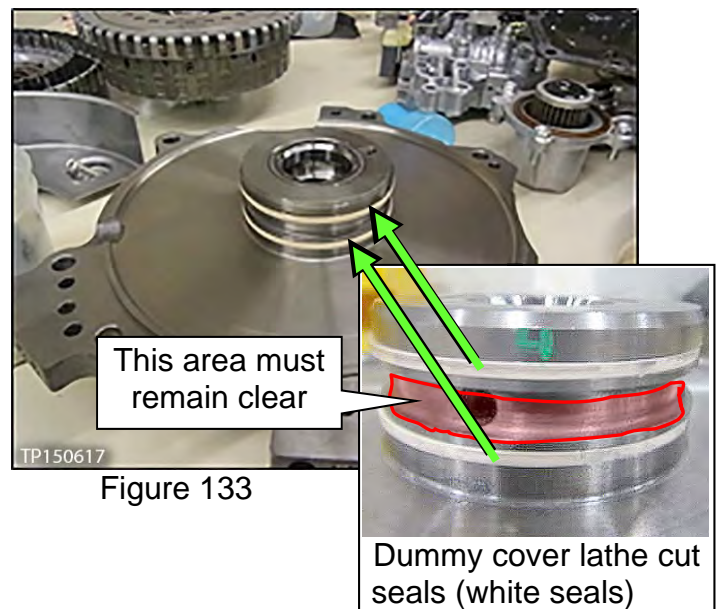


Figure 133

101. Confirm that the input shaft's lathe cut seals are in the correct position (Figure 134).

NOTICE

To prevent drivability issues, confirm that the lathe cut seals (white seals) are in their appropriate slots. Carefully reposition the seals as necessary.

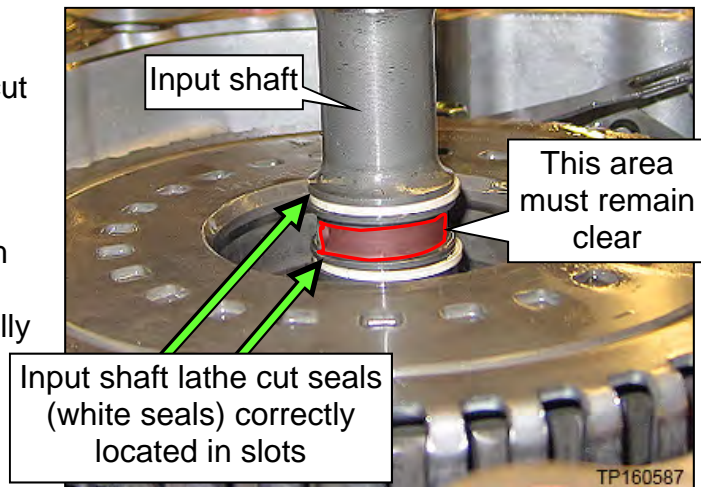


Figure 134

102. Install the dummy cover first, then baffle plate C, and then the related bolts finger tight (Figure 135).

IMPORTANT: Visually check that the dummy cover is fully seated on the CVT case. If it is not, refer to **Dummy Cover Troubleshooting** on page 34.

- Do not force the dummy cover into place.
- Make sure the dummy cover is fully seated before installing the bolts.
- Do not torque these bolts at this time.

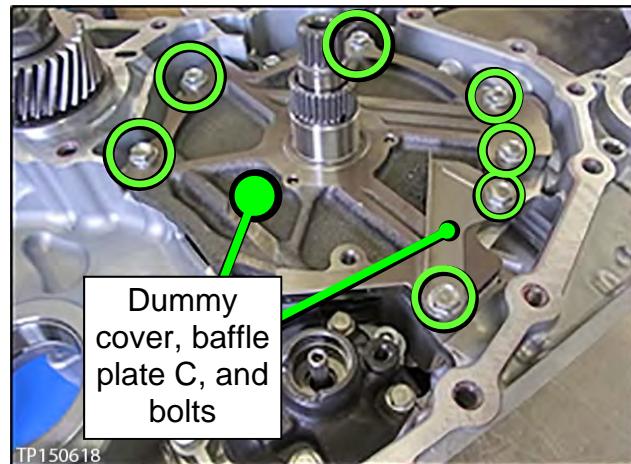


Figure 135

103. Install baffle plate B and "L" bracket with the related bolts finger tight (Figure 136).

104. Torque the bolts from steps 102 and 103 in the following order:
- Baffle plate B bolts: 5.9 N•m (0.6 kg-m, **52.2 in-lb**)
 - "L" bracket bolts: 25.5 N•m (2.6 kg-m, **228 in-lb**). Torque **1** and then **2**.
 - Dummy cover and baffle plate C bolts torque: 19.0 N•m (1.9 kg-m, **168 in-lb**)

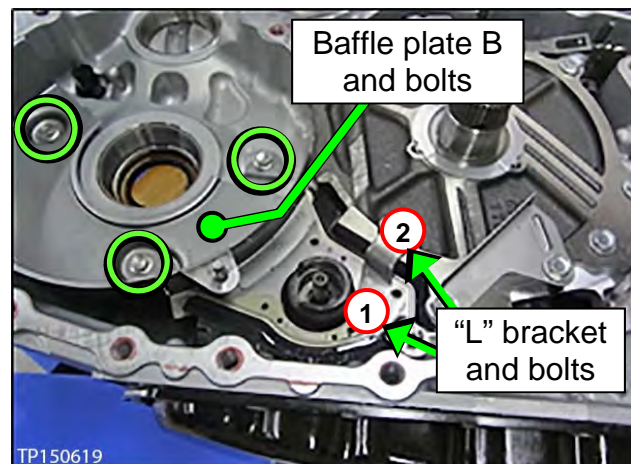


Figure 136

105. Install the thrust washer onto the dummy cover (Figure 137).
- Use petroleum jelly or equivalent to hold the thrust washer in place.
 - Make sure the tabs fit into the holes.

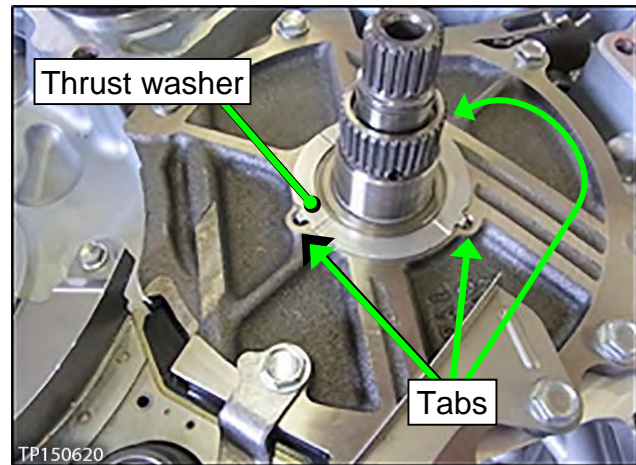


Figure 137

106. Install the drive sprocket, driven sprocket, and chain as an assembly (Figure 138).

- Make sure the raised edge (wider edge) on the drive sprocket is facing up (Figure 139).

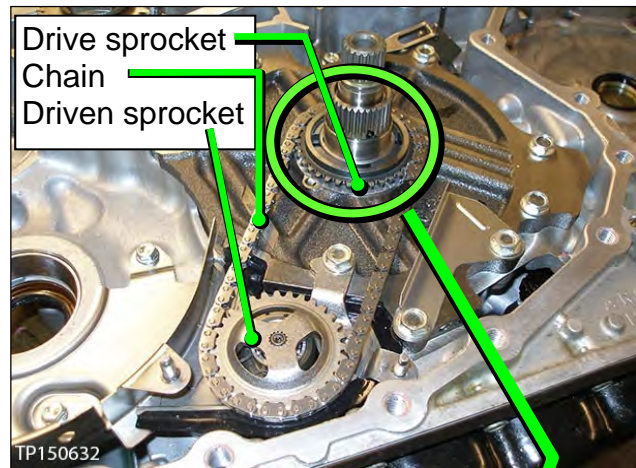


Figure 138

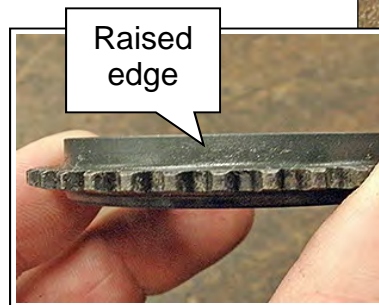
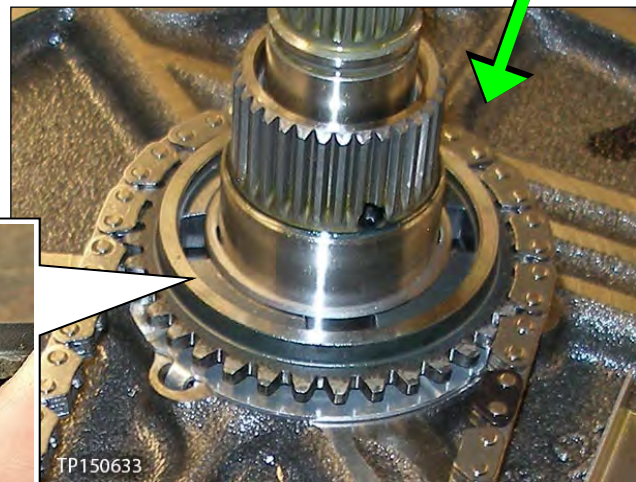


Figure 139



- Expand the snap ring with a suitable tool, and then push down on the driven sprocket until it bottoms out (Figure 140).
- Release the snap ring and then pull up on the driven sprocket until the snap ring locks into its groove.

HINT: A click sound is heard when the snap ring locks in place.

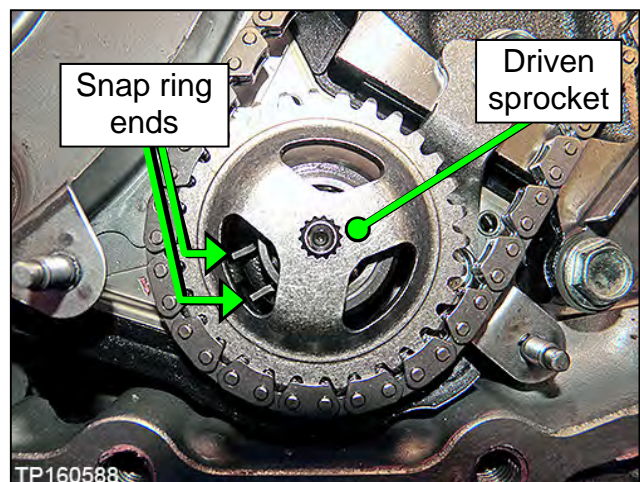


Figure 140

107. Install baffle plate A with two (2) nuts (Figure 141).

- Nut torque: 5.9 N•m (0.6 kg-m, **52.2 in-lb**)

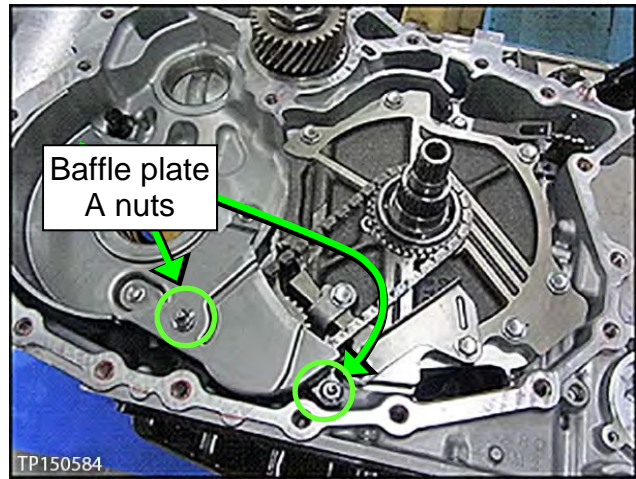


Figure 141

108. Install a new O-ring on the input shaft (Figure 142).

- Apply CVT fluid to the O-ring and O-ring groove before installing.

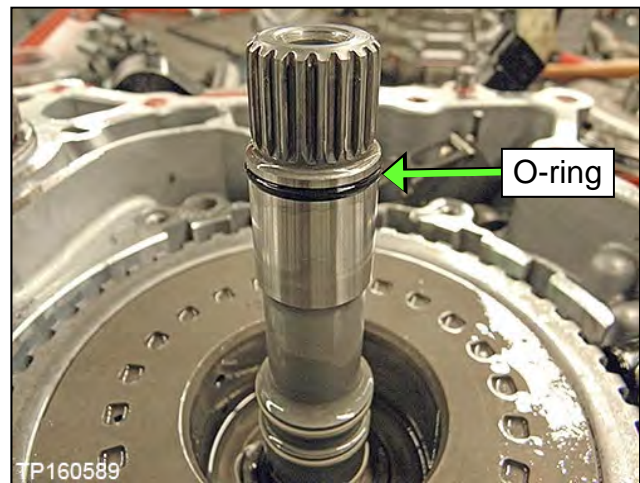


Figure 142

109. Install the differential assembly and the reduction gear assembly into the CVT case (Figure 143 and Figure 144).

- Thoroughly clean each assembly before installing.
- Apply CVT fluid to the bearings and gear teeth before installing.

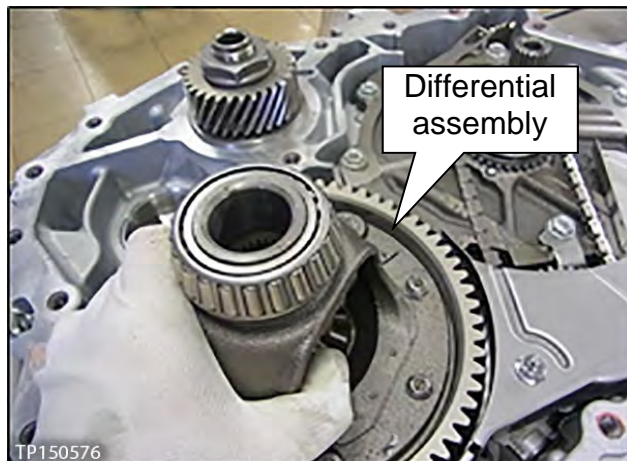


Figure 143



Figure 144

110. Install the CVT fluid filter and components (Figure 145 and Figure 146).

- a) Install a new filter with grommet (one part).
- b) Install a new O-ring.
- c) Confirm that all components and areas where components fit are thoroughly clean.
- d) Apply CVT fluid to the grommet seal and O-ring before installing.
- e) Install the filter cover.
 - Bolt torque 4.2 N•m (0.43 kg-m, **37.2 in-lb**)

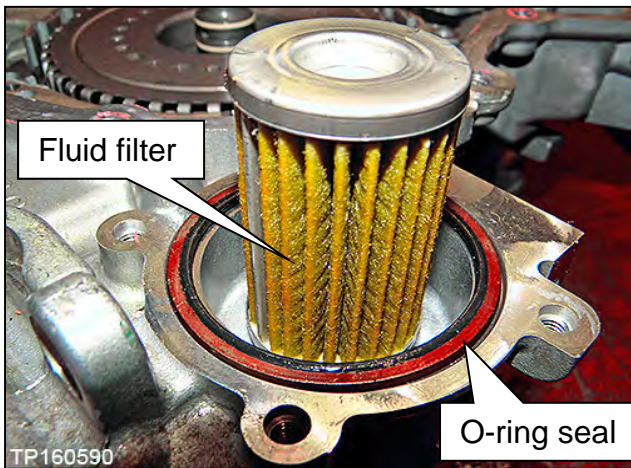


Figure 145

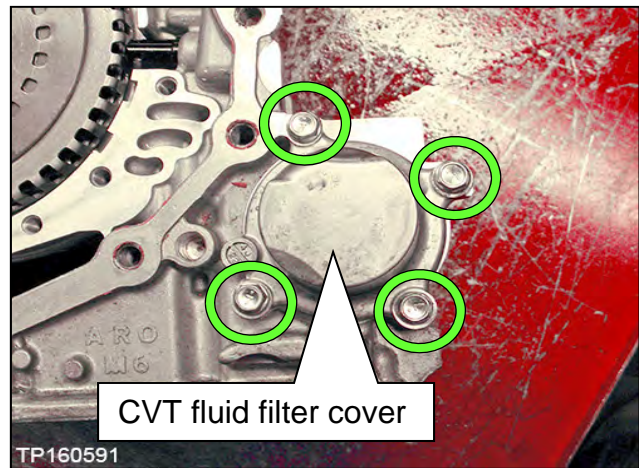


Figure 146

111. Confirm the pin is located in the CVT case prior to installation of the converter housing (Figure 147).

HINT: Apply petroleum jelly or equivalent to keep it in place if necessary.

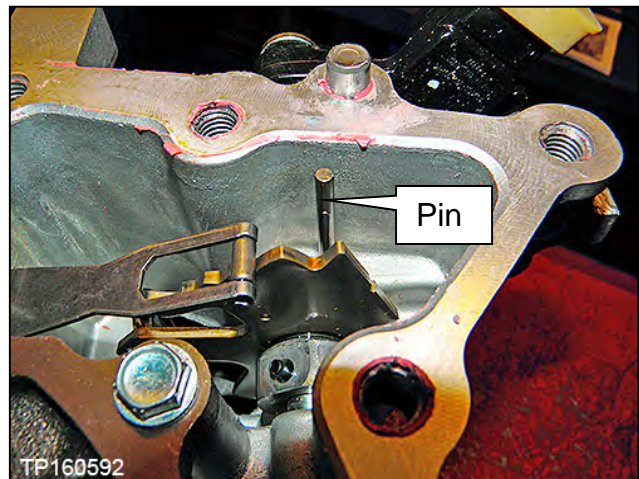


Figure 147

112. Apply one continuous, 2.0 mm (**0.8 inch**) diameter, bead of pink colored Loctite 5460 Sealant (Figure 148).

- Before sealant application, make sure the mating surfaces are clean from oil, dirt, old sealant, etc. (Figure 148).
- See **PARTS INFORMATION** on page 86.

HINT: Have the converter housing ready for installation prior to applying the sealant.

HINT:

- Start applying sealant where shown, making sure that the starting point and the ending point are between two bolt holes.
- Overlap both ends of the bead by 3-5 mm (**0.12-0.20 inches**).
- Make sure to apply sealant around the center bolt hole.

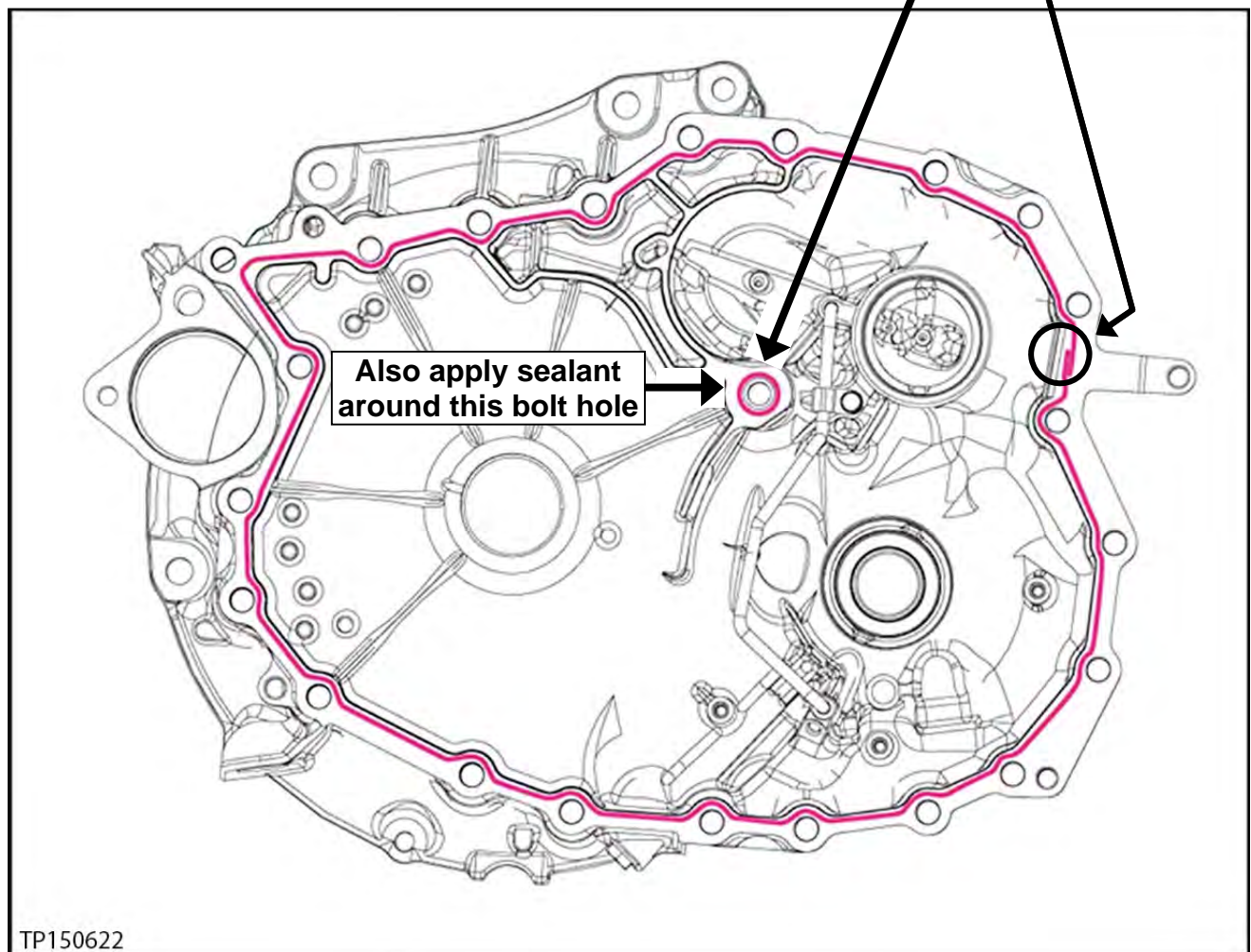





Figure 148

TP150622

113. Install the converter housing onto the CVT case.

- Install the twenty three (23) new bolts.
 - a. Torque the first six (6) bolts with symbol  in numbered sequence (Figure 149).
 - b. Torque the remaining bolts with symbol  in numbered sequence.
 - Use a short socket on the bolts indicated by this symbol: 
 - All bolts are 30 mm (1.2 inches) in length.
 - Bolt torque: 45.0 N•m (4.6 kg-m, 33.2 ft-lb).
 - Make sure to torque the bolts in sequence (Figure 149).

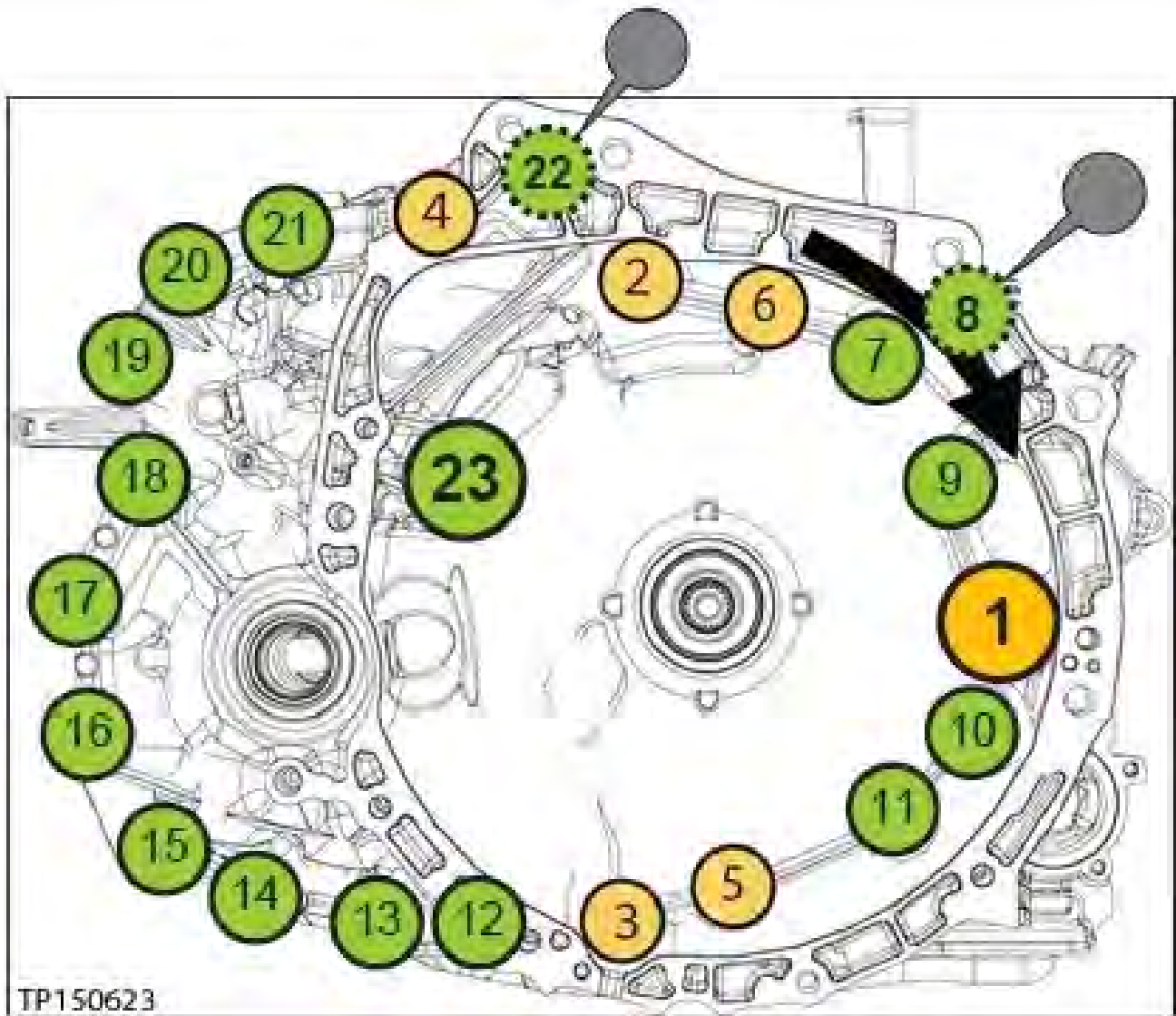


Figure 149

114. Clean off the excess sealant.

Control Valve, Strainer, and Pan Installation

HINT:

- Installation steps in this bulletin may contain different style parts than what were originally installed in the CVT. Pay careful attention, REASSEMBLY MAY NOT BE IDENTICAL TO DISASSEMBLY.
- **Confirm that the QR label, control valve, and CD part numbers all match before installing the control valve** (refer to NTB12-103).
- For additional information, see video # 547: “**CVT Belt and Pulley Replacement**” and fast forward to minute marker 20:09. This video is located under the **TECH TRAINING GARAGE VIDEOS** tab in Virtual Academy.

HINT: If an oil strainer bracket was removed, do not reinstall it. An oil strainer bracket will not be used with the new oil strainer (Figure 150).

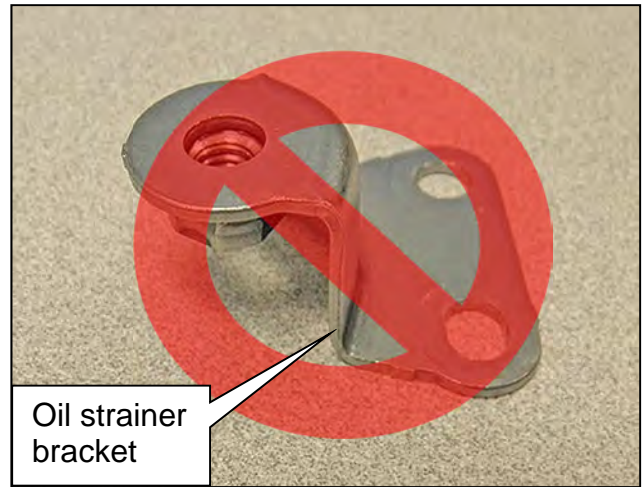


Figure 150

115. Install a new lip seal (Figure 151).

- Do NOT reuse the old lip seal.
- Apply a small amount of petroleum jelly or equivalent to the lip seal to keep it in place on the CVT.

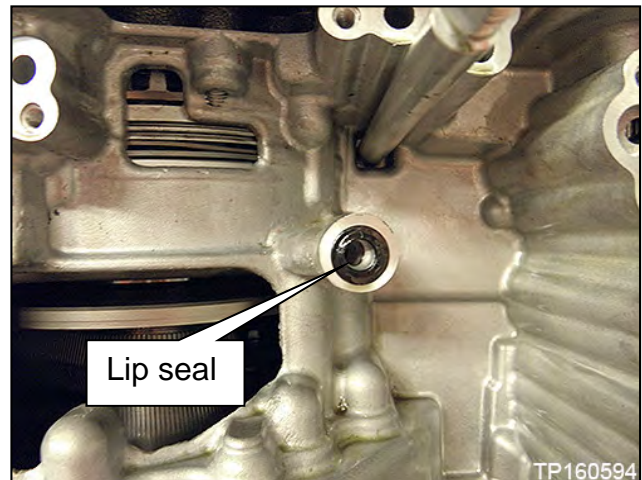


Figure 151

116. Install the Control Valve with eleven (11) mounting bolts (Figure 152).

IMPORTANT:

- Leave four (4) ✘ bolt holes empty at this step.
- Make sure the wiring harness is not pinched and routed correctly (Figure 153 and Figure 154).
- 54 mm (2.125 inch) long bolt ●; 7 pieces
- 44 mm (1.73 inch) long bolt ●; 2 pieces
- 25 mm (1 inch) long bolt ●; 2 pieces

HINT: The two (2) 25 mm bolts are installed **WITHOUT** the strainer bracket.

- Bolt torque: 7.9 N•m (0.81 kg-m, 70 in-lb)

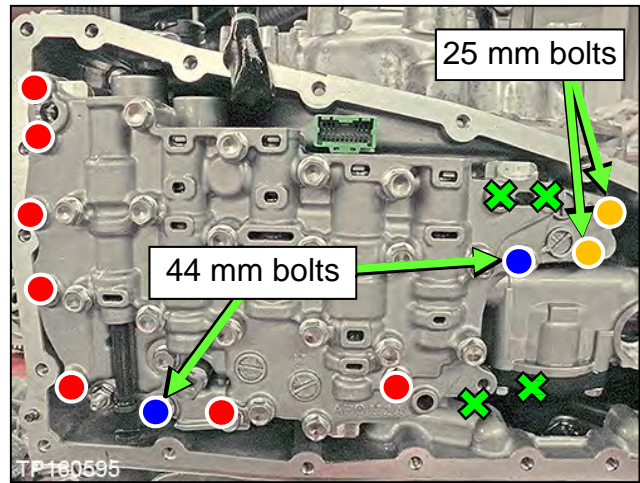


Figure 152

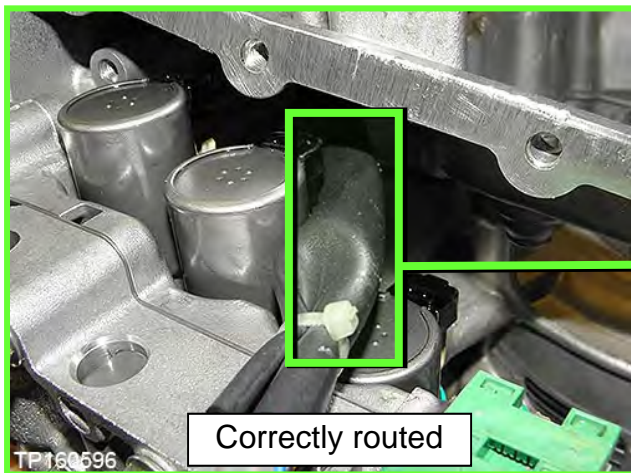


Figure 153

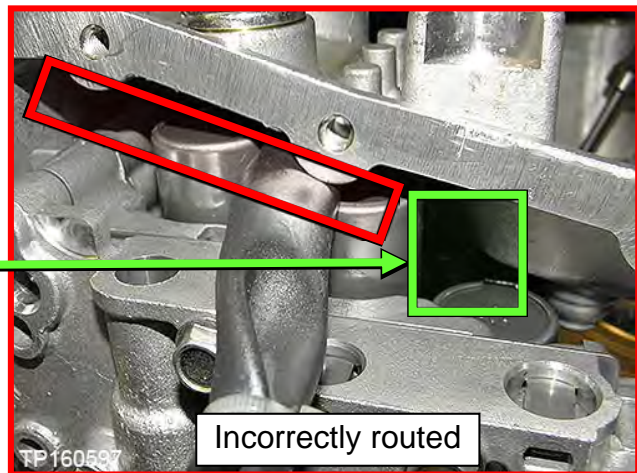


Figure 154

117. Replace the metal bracket of the fluid temperature sensor as follows:

HINT: The new bracket will be oriented the same way the old bracket was.

- a. Cut the old plastic zip tie with an appropriate tool to remove the fluid temperature sensor's metal bracket from the terminal harness assembly (Figure 155 and Figure 156).

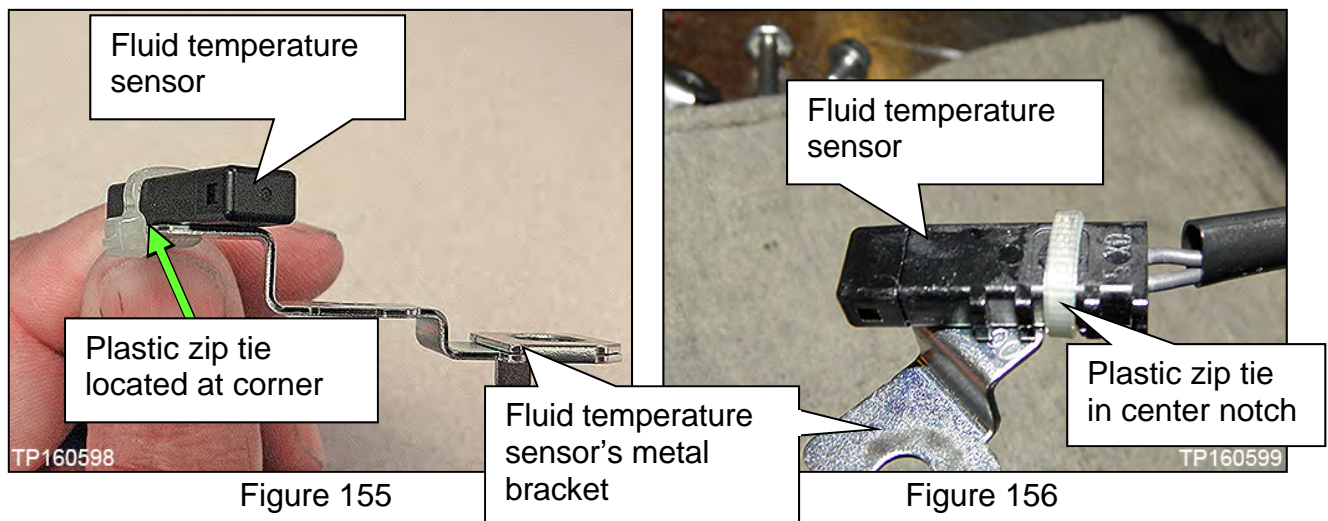
NOTICE

Cut the plastic zip tie over the metal bracket to avoid damage to the fluid temperature sensor.

- b. Use the new plastic zip tie from the **PARTS INFORMATION** on page 86 to attach the fluid temperature sensor of the terminal connector harness to the fluid temperature sensor's new metal bracket.

IMPORTANT:

- Secure the plastic zip tie at the center notch of three notches on the fluid temperature sensor (Figure 155 and Figure 156).
- Tighten the plastic zip tie.
- Cut off the plastic zip tie excess.



118. Connect the electrical harness connector (Figure 157).

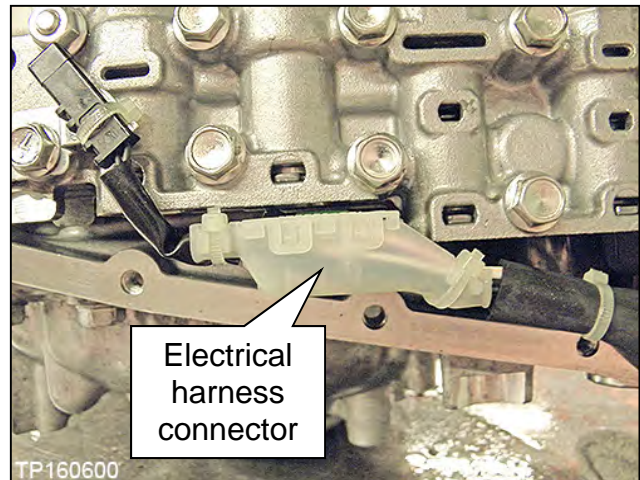


Figure 157

119. Install the CVT fluid temperature sensor bracket to the control valve with one (1) bolt (Figure 158).

HINT: Leave one (1) bolt hole empty as it will be used to secure the oil strainer at a later step.

- 54 mm (2.125 inch) long bolt.
 - Bolt torque: 7.9 N•m (0.81 kg-m, 70 in-lb)

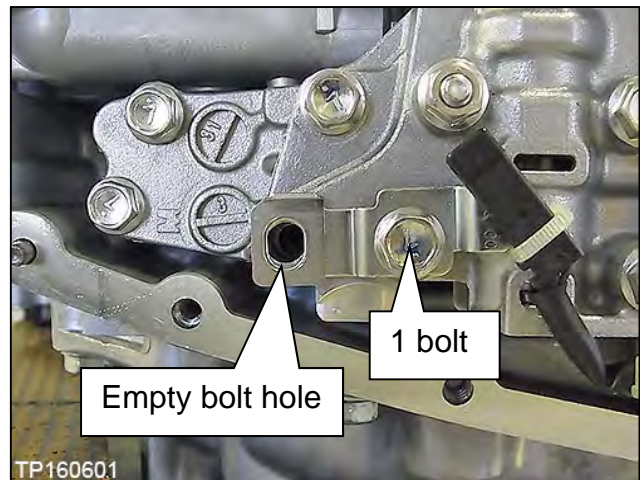



Figure 158

120. Install the new oil strainer with its new O-ring seal with two (2) bolts (Figure 159).

HINT: The replacement strainer may be a different shape than the original.

- 54 mm (2.125 inch) long bolt ; 2 pieces.
 - Bolt torque: 7.9 N•m (0.81 kg-m, 70 in-lb)

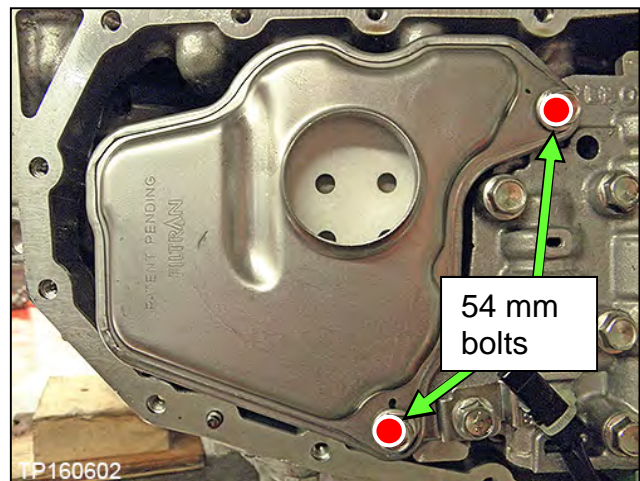


Figure 159

121. Install the manual plate, lock washer, and nut (Figure 160).

HINT: Make sure the manual plate fits into the slot of the manual valve before applying torque to the nut.

- Reuse the existing manual plate, lock washer, and nut.
 - Nut torque: 22.1 N•m (2.3 kg-m, **192 in-lb**)

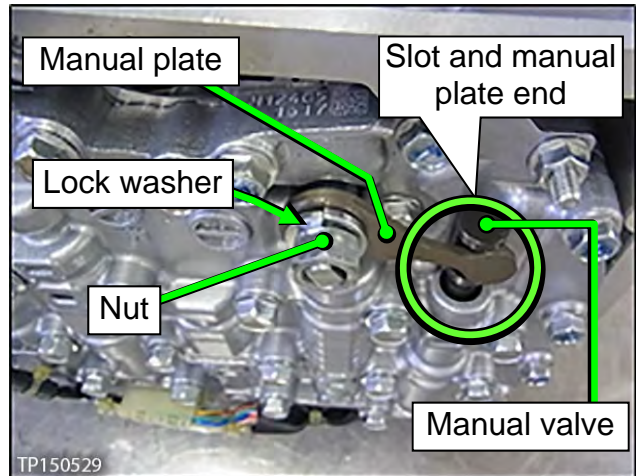


Figure 160

122. Clean the original oil pan and magnets with a suitable cleaner. Visible debris should not be present during reassembly.

123. Reassemble the original magnets to their original locations on the oil pan.

124. Install a new oil pan gasket to the oil pan.

125. Install the oil pan bolts (Figure 161).

- Reuse the existing oil pan bolts.
 - Oil pan bolt torque: 7.9 N•m (0.81 kg-m, **70 in-lb**)

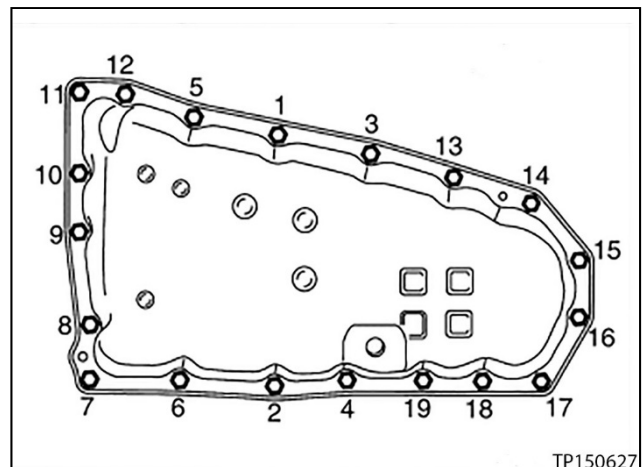


Figure 161

126. Install a new drain plug washer to the drain plug on the oil pan.

127. Fill the CVT assembly with NS-3 CVT fluid or equivalent.

- Refer to the ESM: **TRANSMISSION & DRIVELINE > TRANSAXLE & TRANSMISSION > CVT: RE0F10D > PERIODIC MAINTENANCE > CVT FLUID**

128. Install a new O-ring on the primary speed sensor, and then install the primary speed sensor to the CVT assembly.

- Bolt torque: 5.9 N•m (0.6 kg-m, **52 in-lb**)

129. Install the torque converter to the CVT assembly.

- Verify the torque converter is installed at the proper depth (Figure 162).
- **A** = 14.4 mm

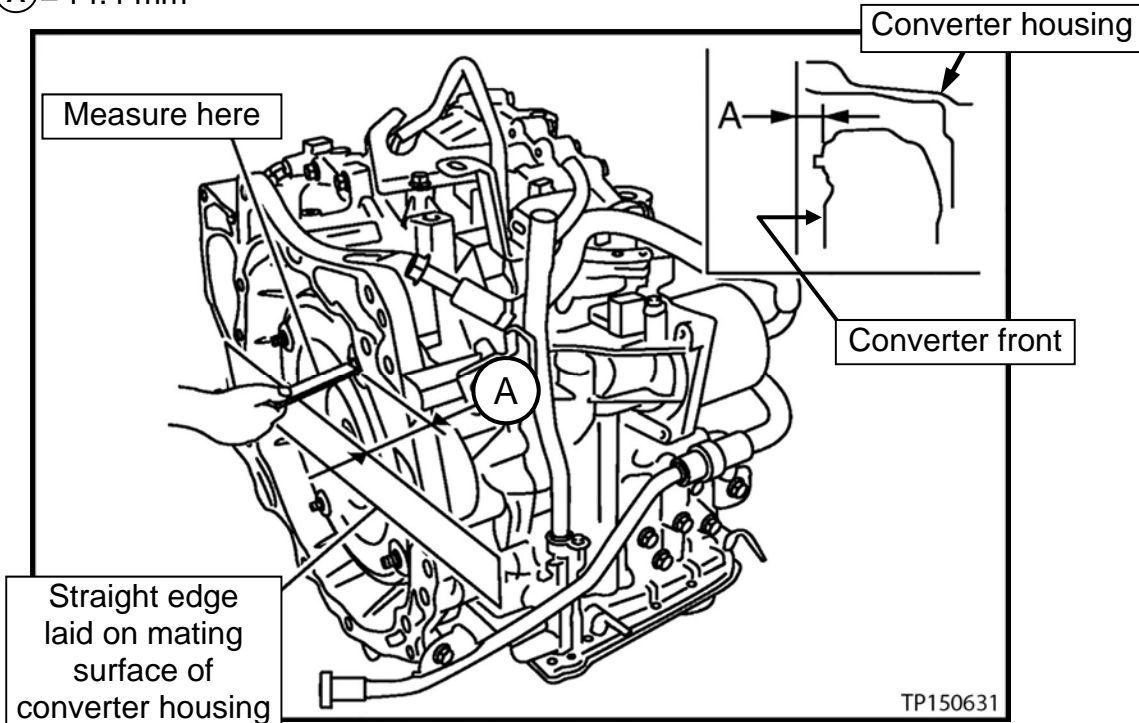


Figure 162

130. Attach the QR label with the new calibration data onto the transmission range switch (Figure 163 and Figure 164).

- A QR Label and CD-R are included with the new control valve.

131. Confirm that the QR label and the CD-R part numbers are the same (Figure 163).

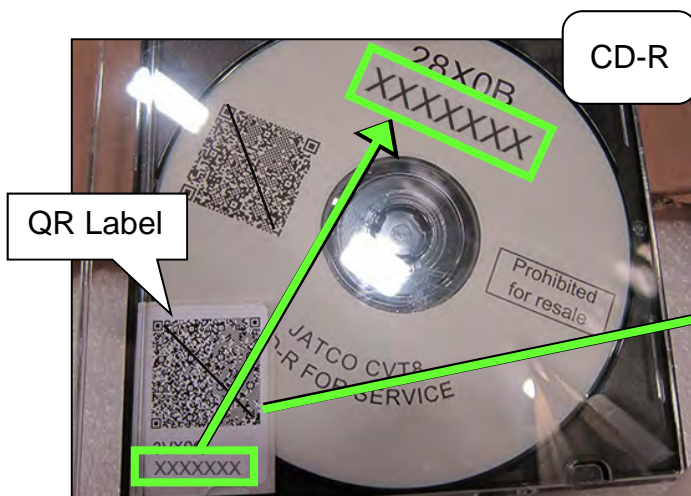


Figure 163

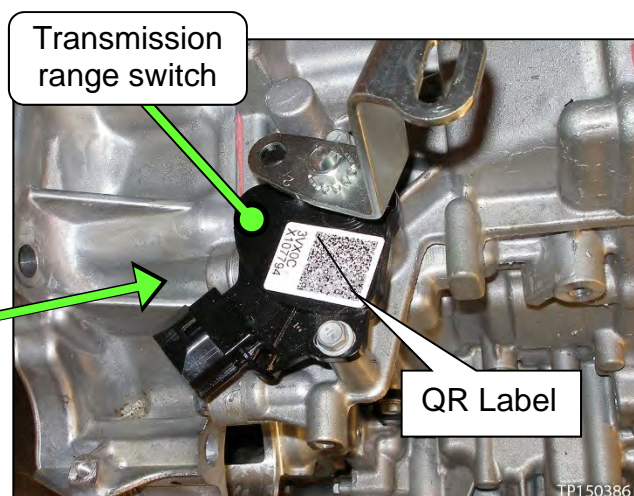


Figure 164

Install the CVT Assembly

132. Install the CVT assembly into the vehicle.

- On AWD models, refer to the ESM: **TRANSMISSION & DRIVELINE > CVT: RE0F10D > REMOVAL AND INSTALLATION > TRANSAXLE ASSEMBLY > AWD**
 - Use extreme caution and properly support and guide the axle during installation to the transfer case assembly to avoid seal damage or deformation.
- On FWD models, refer to the ESM: **TRANSMISSION & DRIVELINE > TRANSAXLE & TRANSMISSION > CVT: RE0F10D > UNIT REMOVAL AND INSTALLATION > TRANSAXLE ASSEMBLY**

133. Connect both battery cables, negative cable last.

134. Reset/reinitialize systems as needed.

ADDITIONAL SERVICE WHEN REPLACING THE CONTROL VALVE

HINT: Steps 135-181 are additional services that must be performed after replacing the control valve.

Print Current Calibration Data

135. Connect the CONSULT PC to the vehicle.
136. Start C-III plus.
137. Wait for the plus VI to be recognized.
 - The serial number will display when the plus VI is recognized.
138. Select **CALIB DATA** in **TRANSMISSION**.
139. Print page 1 of 7 on C-III plus and attach it to the repair order.

Check the Serial Number

140. Write down the serial number (calibration file number) of the new control valve.
141. Compare the serial number (calibration file number) on the CD, QR code label, and new control valve. All numbers must match.
142. Insert the supplied CD into CONSULT PC.
143. Select **Work support** in **TRANSMISSION**.
144. Select **WRITE IP CHARA - REPLACEMENT AT/CVT**.
145. Select **OK** on the Select IP characteristics data file window.
146. Open the calibration file located on the supplied CD.
147. Confirm that the serial number (calibration file number) displayed on the CONSULT screen matches the serial number (calibration file number) on the new control valve.
148. Select **Next** on the **WRITE IP CHARA - REPLACEMENT AT/CVT** Work Support screen.

Write the Data (Write IP Chara)

149. With the ignition ON and the engine OFF, press the brake pedal.
150. Shift the selector lever to the **R** position.
151. Depress the throttle pedal half way and hold, then press **START** on the CONSULT screen.
152. Write data to the TCM according to the instructions on the CONSULT screen.

HINT: When the calibration data has been written to the TCM, the current status will indicate "Complete".

153. Select **End**.

Print New Calibration Data

154. Select **CALIB DATA** in **TRANSMISSION**.
155. Print page 1 of 7 on C-III plus and attach it to the repair order.
156. Return C-III plus to the Home screen.

FWD Clutch Point Learning

157. Apply the vehicle's parking brake.

158. Start the engine and warm up to operating temperature (50-100° C [122-212° F]).

159. Select **Diagnosis (One System)**.

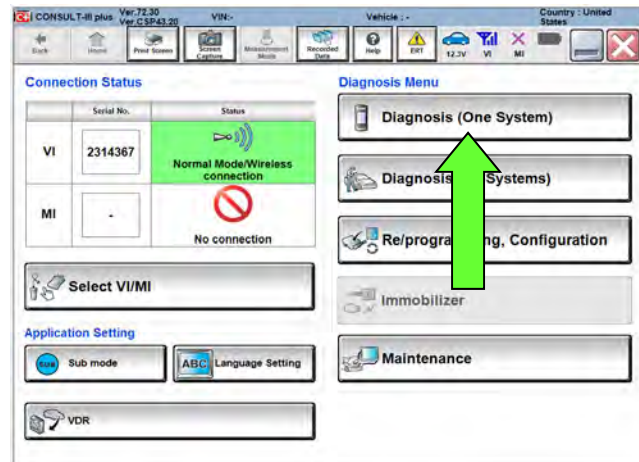


Figure 165

160. Select **Work support** under **TRANSMISSION**.

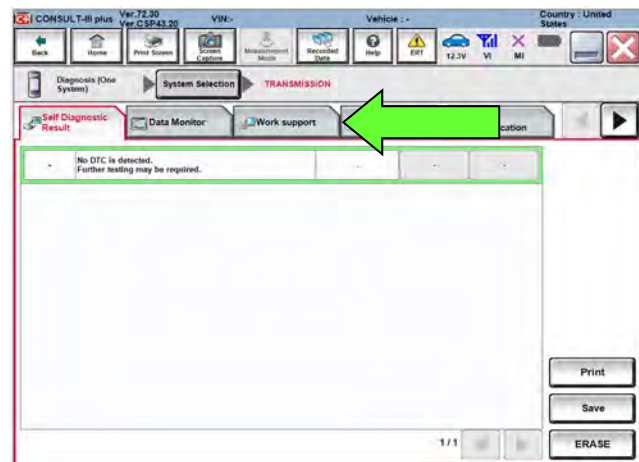


Figure 166

HINT: The following **FWD CLUTCH POINT LEARNING** will be performed twice; once in Drive (**D**) and once in Reverse (**R**).

161. Select **FWD CLUTCH POINT LEARNING** and then **Start**.

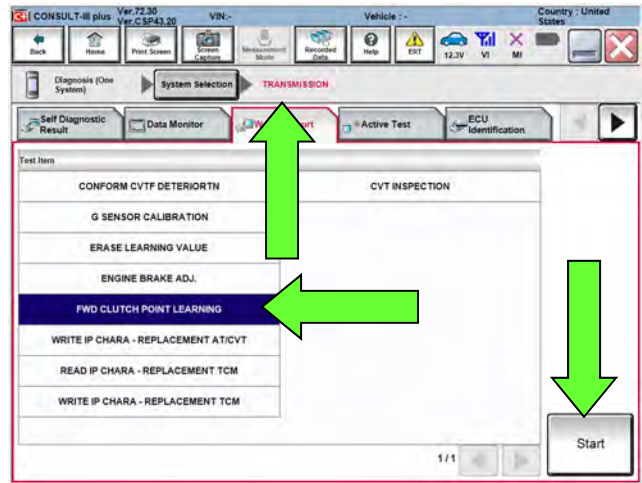


Figure 167

162. With the engine still running and at idle, depress the brake pedal and shift the CVT into neutral (**N**).

- Confirm that all of the required conditions indicated in Figure 168 are being met.

163. Select **Start**.

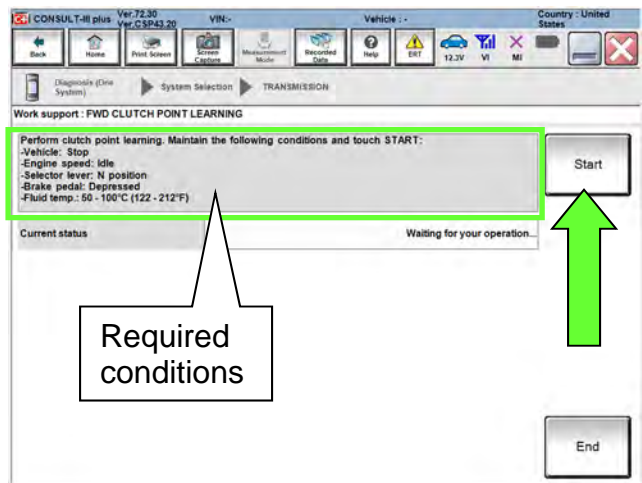


Figure 168

164. While maintaining all conditions shown in Figure 168 and the “Current status” indicates “EXECUTING”, shift the CVT into **D** and then wait until the “Current status” indicates “COMPLETED”.

HINT: This may take up to three (3) minutes to complete.

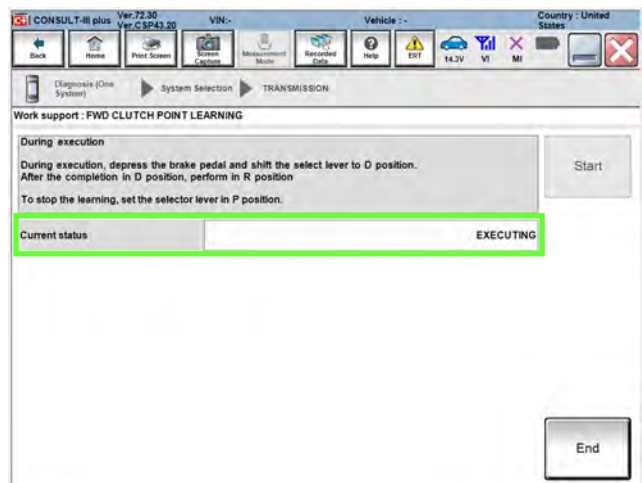


Figure 169

165. When the screen in Figure 170 is displayed, shift the CVT into **P**, and then select **End**.

166. Turn the engine OFF and then back ON.

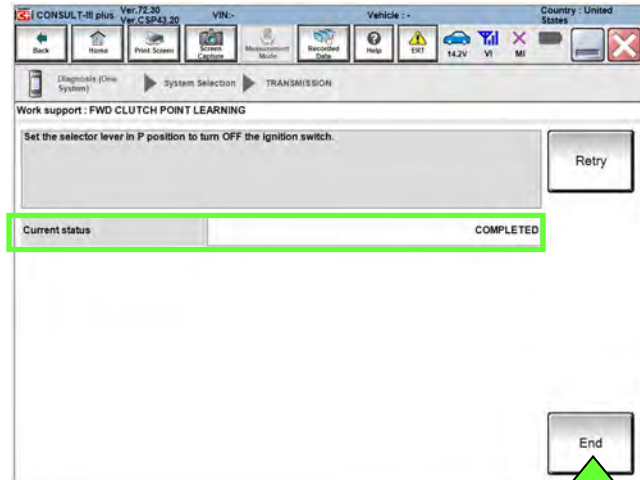


Figure 170

167. Select **FWD CLUTCH POINT LEARNING** and then **Start**.

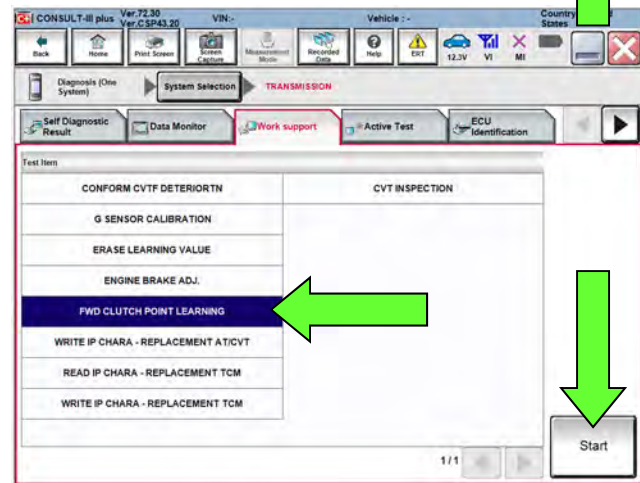


Figure 171

168. With the engine still running and at idle, depress the brake pedal and shift the CVT into neutral (**N**).

- Confirm that all of the conditions indicated in Figure 172 are being met.

169. Select **Start**.

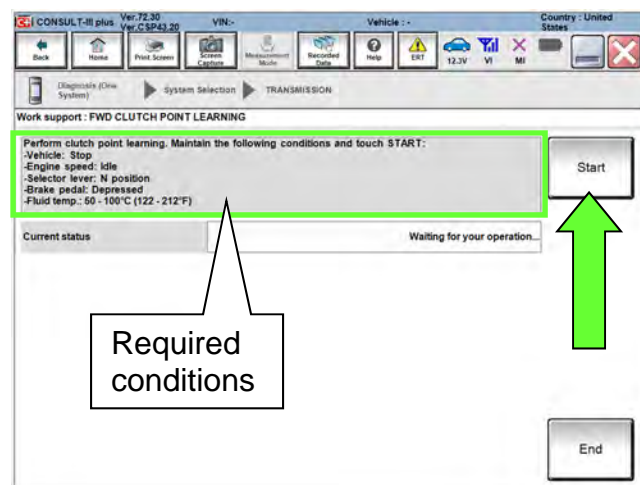


Figure 172

170. While maintaining all conditions shown in Figure 172 and the “Current status” indicates “EXECUTING”, shift the CVT into **R** and then wait until the “Current status” indicates “COMPLETED”.

HINT: This may take up to three (3) minutes to complete.

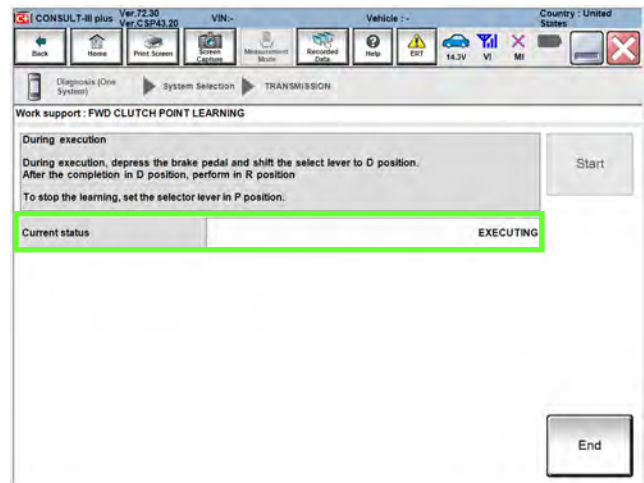


Figure 173

171. When the screen in Figure 174 is displayed select **End**, shift the CVT into **P**, and then turn the engine OFF.

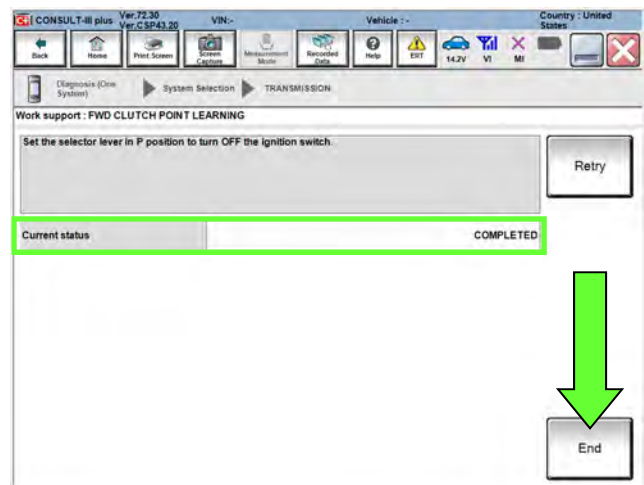


Figure 174

Perform Select Learning

172. Start the engine, and then wait five (5) seconds.
173. Move the shift selector to the **N** position and hold for more than two (2) seconds, and then move it to the **D** position and wait for transmission LEARNING engagement.
174. Repeat step 173 ten (10) times.
175. Move the shift selector to the **N** position and hold for more than two (2) seconds, and then move it to the **R** position and wait for the transmission engagement.
176. Repeat step 175 ten (10) times.
177. Move the shift selector to the **P** position, and then turn the ignition OFF.

Erase CVT Fluid Degradation Level Data

178. Select **Work support** in **TRANSMISSION**.
179. Select **CONFORM CVTF DETERIORTN**.
180. Select **Clear**.
181. Clear any DTCs that may have set and then test drive the vehicle.

PARTS INFORMATION

The following part kits are only to be used if the Sub-assembly is being replaced.

DESCRIPTION	PART #	QUANTITY
BELT-PULLEY KIT	31214-28X8A	1
BELT-PULLEY KIT includes:		
PULLEY ASSY (Belt and Pulley "Sub-assembly")	31209-28X8A	1
SEAL-O RING (Speed Sensor)	31526-1XG0C	1
BRG ASSY-THRUST NEEDLE (Thrust Bearing)	See page 98	1
FLTR ASSY-OIL,AUTO TRANS (CVT Fluid Filter)	31726-28X0A	1
SEAL-O RING (O-ring Between CVT Case and Side Cover)	31526-28X0A	1
SEAL ASSY-OIL (Torque Converter Oil Seal; Converter Housing)	31375-1XF00	1
BOLT (Side Cover and Case)	31377-1XZ0B or 31377-X425A	42
SEAL-O RING (Filter Cover)	31526-3VX0A	1
SEAL-O RING (Input Shaft)	31526-80X01	1
SEAL-OIL,DIFF (Differential Side Oil Seal; CVT Case Side)	38342 3VX0A	1
SEAL-OIL,DIFF (Differential Side Oil Seal; Converter Housing Side)	2WD 38342-3VX0B	1
SEAL-O RING (Pulley Retainer Bolts)	31526-28X0C	6
PUMP ASSY-OIL (Oil Pump Kit) (included with BELT-PULLEY KIT)	31340-28X8A	1
Oil Pump Kit includes:		
PUMP ASSY-OIL (Oil Pump)	31340-28X0A	1
SEAL-O RING (Fitting Bolt)	31526-28X0C	1
RING-SNAP (Oil Pump Sprocket)	31506-1XF12	1
VALVE ASSY KIT-CONTROL (Valve Body)	3170E-28X1C	1
Valve Assy Kit-Control includes:		
VALVE ASSEMBLY-CONTROL (1)	31705-28X2A	1
STRAINER ASSY-OIL, AUTO TRANS	31728-28X0A	1
BRACKET (Temperature sensor bracket)	31069-3VX0D	1
BAND (Zip tie for bracket)	24224-3VX0B	1
GSKT-OIL PAN	31397-1XF0D	1
SEAL-LIP (Between CVT and control valve)	31528-1XZ0A	1
SEAL - O RING (CVT fluid overflow plug)	31526-3VX0B	1
Loctite 5460 Sealant (2)	999MP-LT5460P	(3)

- (1) Includes QR label, CD-R, and control valve assembly.
- (2) Bill out Loctite 5460 Sealant under **expense code 008**. Do not include the Loctite 5460 Sealant part number on the claim.
- (3) One container of Loctite 5460 Sealant is good for approximately 5 repairs. This sealant is not included in any kit.

If only a Control Valve is being replaced, use the following parts.

DESCRIPTION	PART #	QUANTITY
VALVE ASSY KIT-CONTROL (Valve body)	3170E-28X1C	1
Valve Assy Kit-Control includes:		
VALVE ASSEMBLY-CONTROL (1)	31705-28X2A	1
STRAINER ASSY-OIL, AUTO TRANS	31728-28X0A	1
BRACKET (Temperature sensor bracket)	31069-3VX0D	1
BAND (Zip tie for bracket)	24224-3VX0B	1
GSKT-OIL PAN	31397-1XF0D	1
SEAL-LIP (Between CVT and control valve)	31528-1XZ0A	1
Seal, O-Ring (CVT fluid overflow plug gasket)	31526-3VX0B	1

(1) Includes QR label, CD-R, and control valve assembly.

REMINDER! When instructed to reference the ESM for a repair procedure, ensure one-time-use parts are replaced.

Parts required for both repairs.

DESCRIPTION	PART #	QUANTITY
Nissan NS-3 CVT Fluid (1) (2)	999MP-CV0NS3	As needed
Lens Swab packet	J-51963	As needed

- (1) For warranty repairs, Nissan NS-3 CVT Fluid must be used. For customer pay repairs, Nissan NS-3 CVT Fluid or an equivalent is recommended.
- (2) This item can be ordered through the Nissan Maintenance Advantage program:
Phone: 877-NIS-NMA1 (877-647-6621) or Website: Order via link on dealer portal www.NNAnet.com and click on the "Maintenance Advantage" link.

CLAIMS INFORMATION

If Belt Inspection is not Performed and Sub-Assembly is replaced

Submit a Primary Part (PP) type line claim using the following claims coding:

OPERATION	PFP	OP CODE	SYM	DIAG	FRT
CVT R&R	(1)	JD01AA	ZE	32	(2)
Replace CVT Sub-Assembly (includes control valve R & I) RPL		JD023A			3.8
		JX50AA			

- (1) Reference the Parts Information Table and use the BELT-PULLEY KIT Part Number 31214-***** as the Primary Failed Part.
- (2) Reference the current Nissan Warranty Flat Rate Manual and use the indicated Flat Rate Time.

HINT: FRT allows adequate time to access DTC codes. No other diagnostic procedures subsequently required. Do NOT claim any diagnostic OP Codes with this claim.

EXPENSE CODE

EXPENSE CODE	DESCRIPTION	MAX AMOUNT
008	5460 Sealant	\$12.46

CLAIMS INFORMATION continued on the next page.

CLAIMS INFORMATION continued.

OR

If Belt Inspection is Performed and Sub-Assembly is replaced (belt inspection shows signs of belt slip, NG)

Submit a Primary Part (PP) type line claim using the following claims coding:

OPERATION	PFP	OP CODE	SYM	DIAG	FRT
CVT R&R	(1)	JD01AA	ZE	32	(2)
		JD023A			
Inspect CVT Chain, Chain = NG (includes control valve R&I)		JX36AA			1.1
Replace CVT Sub-assembly		JX45AA			3.0

- (1) Reference the Parts Information Table and use the applicable BELT-PULLEY KIT Part Number 31214-***** as the Primary Failed Part.
- (2) Reference the current Nissan Warranty Flat Rate Manual and use the indicated Flat Rate Time.

HINT: FRT allows adequate time to access DTC codes. No other diagnostic procedures subsequently required. Do NOT claim any diagnostic OP Codes with this claim.

EXPENSE CODE

EXPENSE CODE	DESCRIPTION	MAX AMOUNT
008	5460 Sealant	\$12.46

OR

If Only Control Valve is replaced:

Submit a Primary Part (PP) type line claim using the following claims coding:

OPERATION	PFP	OP CODE	SYM	DIAG	FRT
Inspect CVT Chain, Chain = OK	(1)	JX37AA	ZE	32	0.4
Replace Control Valve		JD48AA			(2)

- (1) Reference the Parts Information Table and use the VALVE ASSY KIT-CONTROL part number (3170E-*****) as the Primary Failed Part.
- (2) Reference the current Nissan Warranty Flat Rate Manual and use the indicated Flat Rate Time.

HINT: FRT allows adequate time to access DTC codes. No other diagnostic procedures subsequently required. Do NOT claim any diagnostic OP Codes with this claim.

THRUST BEARINGS

DESCRIPTION	PART #: 31407-	BEARING THICKNESS	QTY
THRUST BEARING	1XZ0B or X270A	3.57 mm	1 of each is included in the Pulley Kit. Select 1 for installation.
	1XZ0C or X270B	3.75 mm	
	1XZ0D or X270C	3.93 mm	
	1XZ0E or X270D	4.1 mm	
	1XZ1A or X270E	4.28 mm	
	1XZ1B or X271A	4.46 mm	
	1XZ1C or X271B	4.61 mm	
	1XZ1D or X271C	4.79 mm	

PART KITS VISUAL REFERENCE

The following Figures show the smaller components of BELT-PULLEY KIT.

- KIT- CONTROL VALVE is not shown.



Figure 175

PART KITS VISUAL REFERENCE - CONTINUED



Figure 176



Figure 177

REMINDER! Attach the following to the repair order:

- Total End Play calculation (Page 60)
- C-III plus screen showing the current calibration data (Step 139 on page 80)
- C-III plus screen showing the new calibration data (Step 155 on page 81)

AMENDMENT HISTORY

DATE	REFERENCE	DESCRIPTION
September 16, 2021	NTB21-083	Original bulletin published
December 7, 2021	NTB21-083A	Thrust bearing part number options added to tables on pages 61 and 90