SERVICE BULLETIN

Classification:	Reference:	Date:
AT20-007	NTB20-091	December 16, 2020

2015-2017 JUKE; DTC P17F0, P17F1, P0776, P2813, P1715 AND/OR P0841 STORED

APPLIED VEHICLES: 2015-2017 Juke (F15) – Excluding NISMO RS

APPLIED TRANSMISSION: RE0F10D

IF YOU CONFIRM

One or more of the following DTCs are stored:

P0776, P2813, P0841, P17F0, P17F1, P1715

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**.
- If DTC P1715 is the only DTC stored, 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 RO:
1. Clutch Total End Play Calculation (Step 94 on page 61)
2. CONSULT screen shot showing the TCM part numbers (Step 148 on page 87)
3. Current Calibration Data (Step 151 on page 88)
4. New Calibration Data (Step 167 on page 89)

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.

Repair Flow Chart

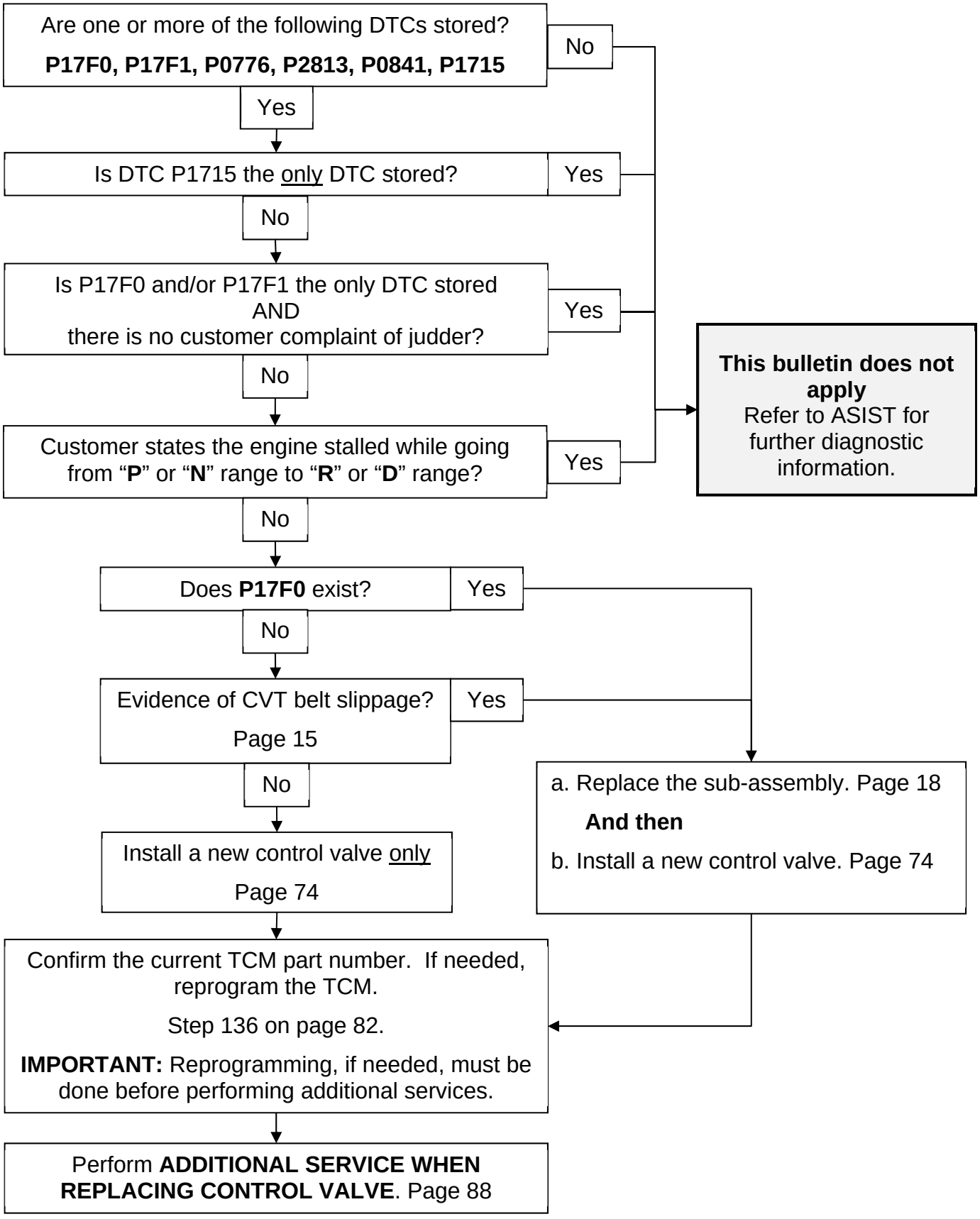


Table of Contents

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.

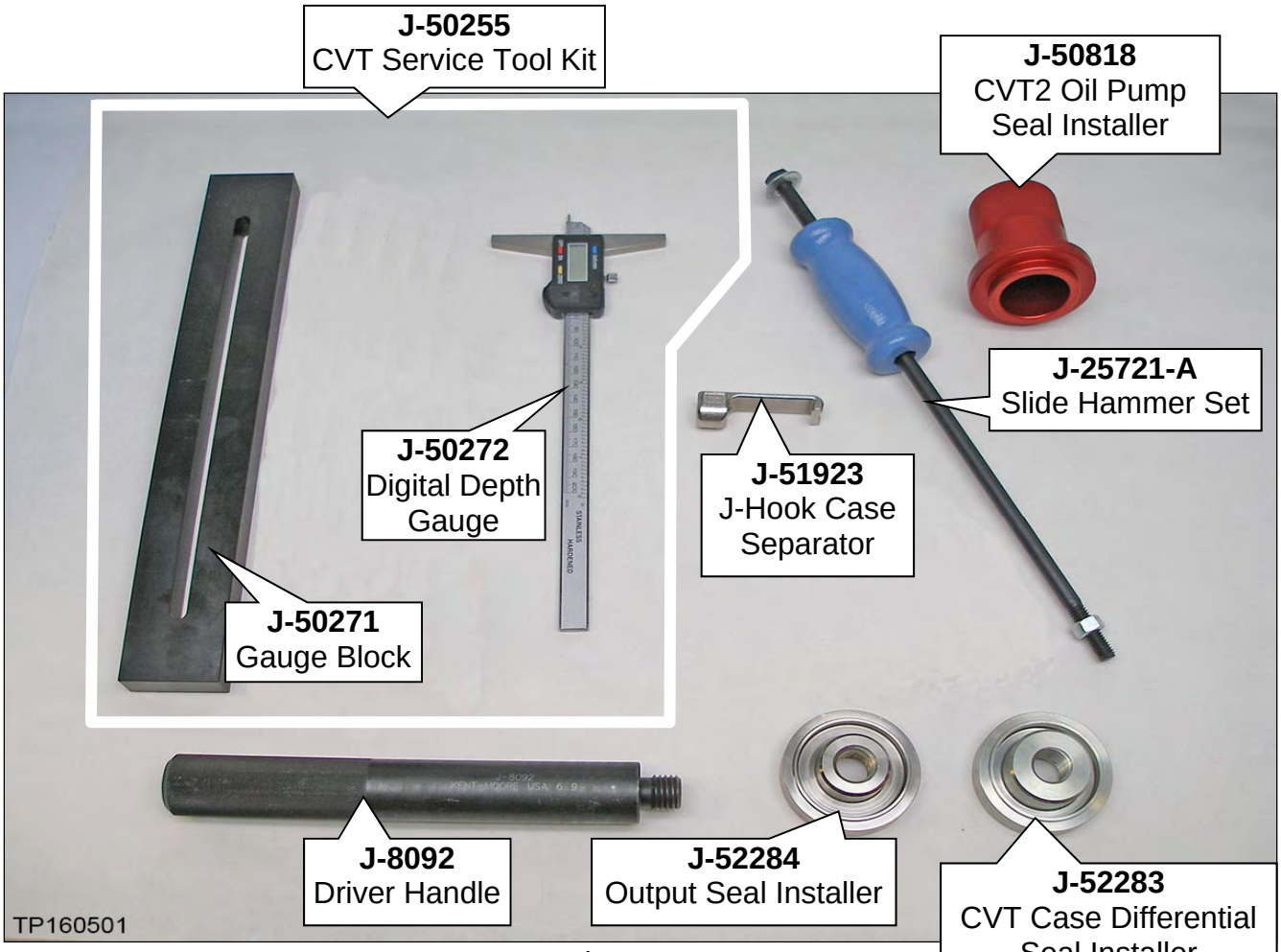


Figure 1

Essential Tools (continued)

Figure 2

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

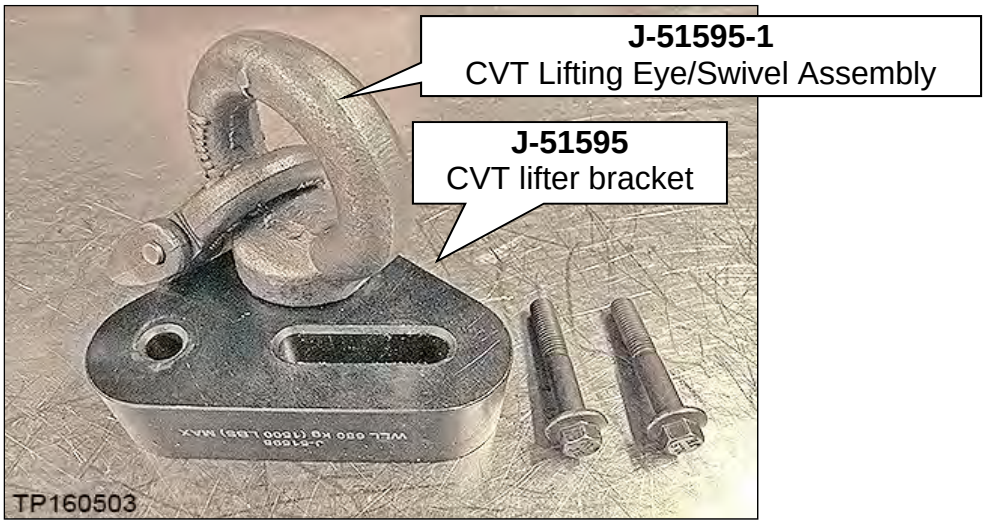


Figure 3

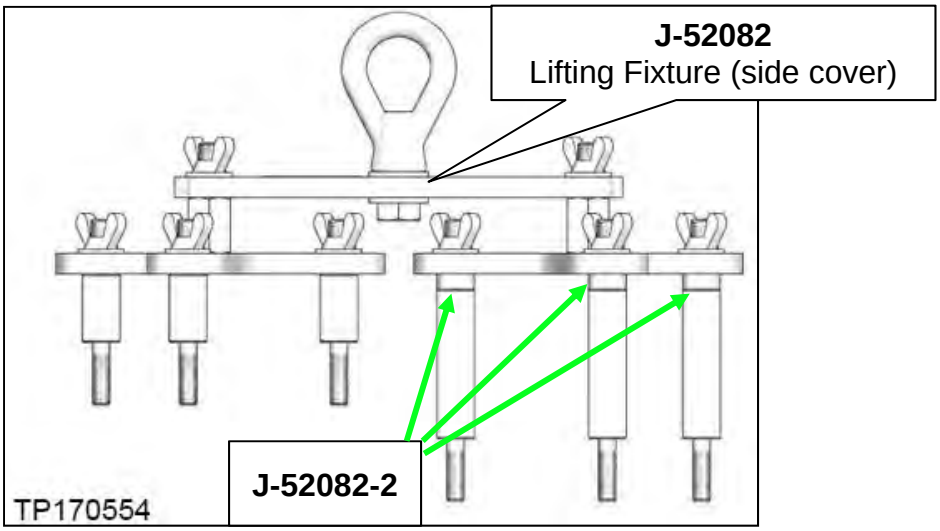


Figure 4

Tech Cam J-51951

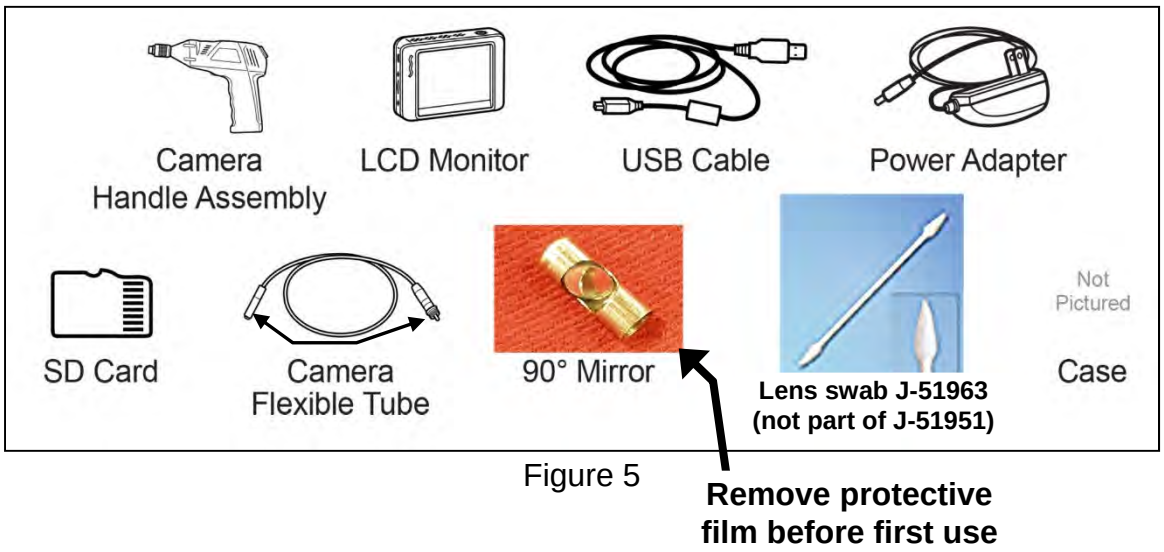


Figure 5

- 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.

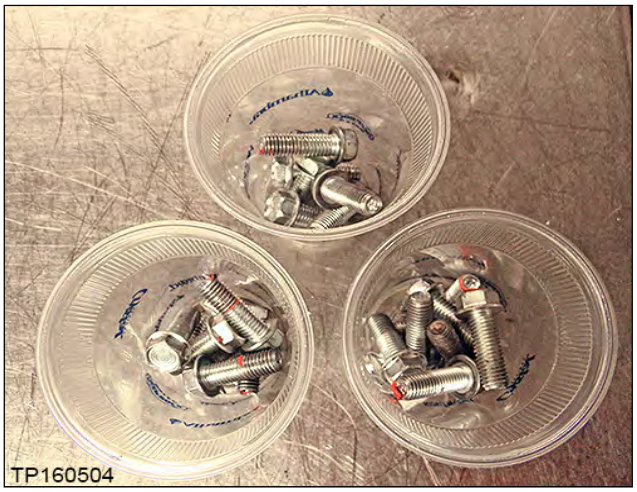


Figure 6

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.

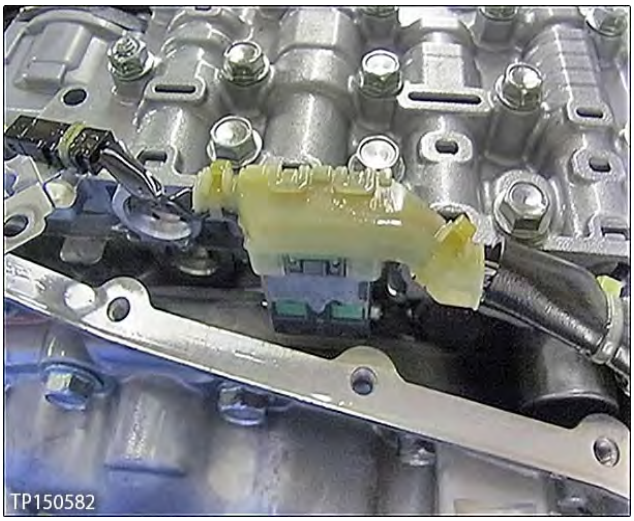


Figure 7

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.
- For control valve removal, refer to the ESM Section: **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

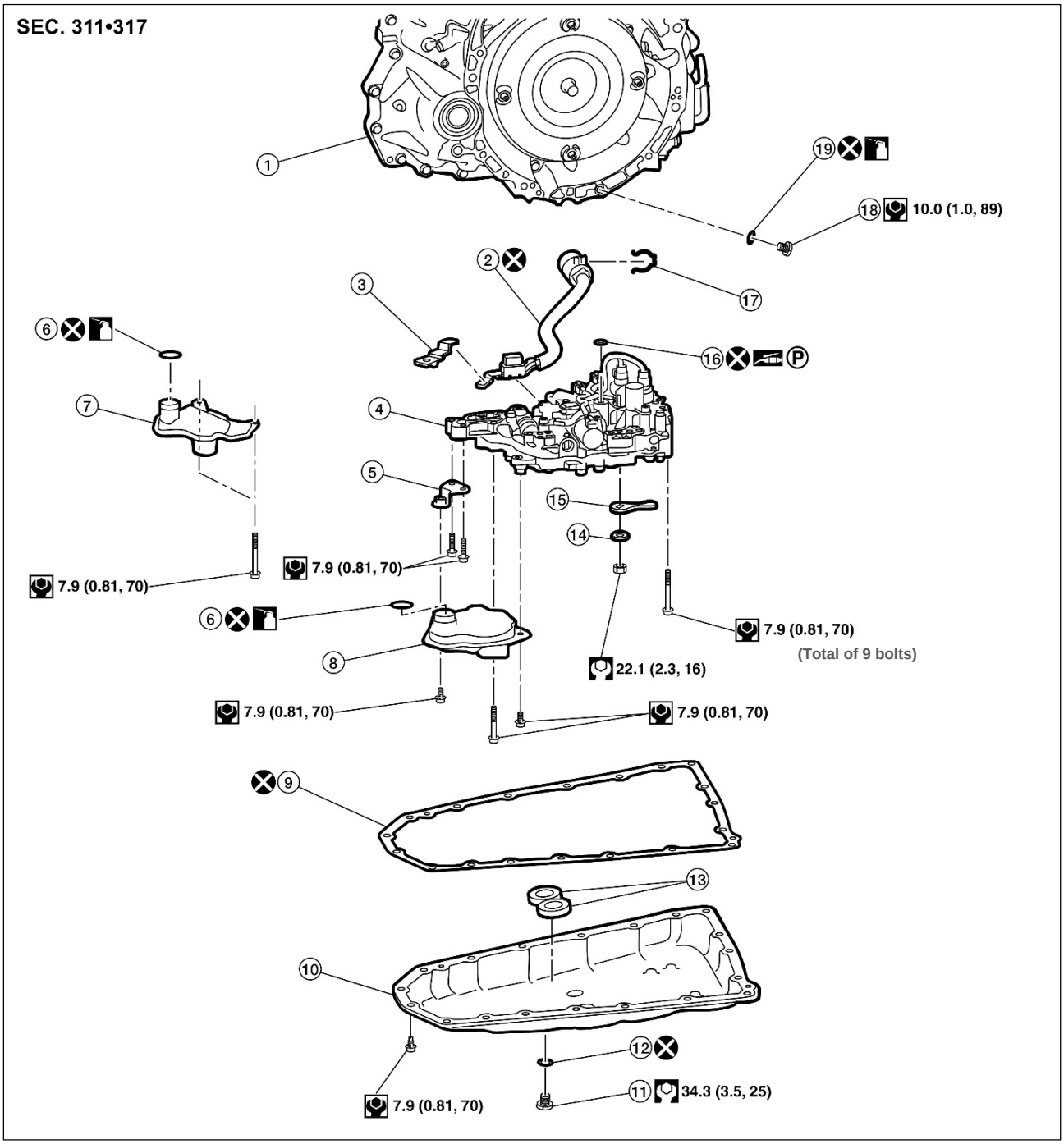


Figure 8

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 front right tire with a suitable strap, so that it cannot rotate.

   - This will assist in making the belt turn.

5. Mark the front left 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 where shown in 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 93.

- Before inspecting, make sure the batteries in the camera handle and LCD monitor are charged.

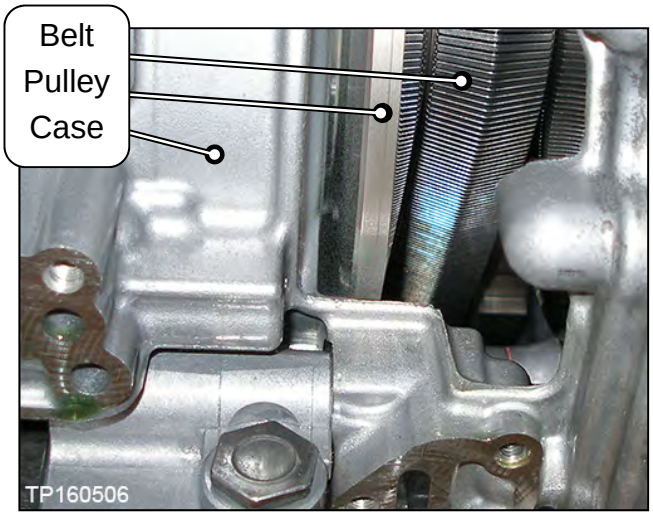


Figure 10

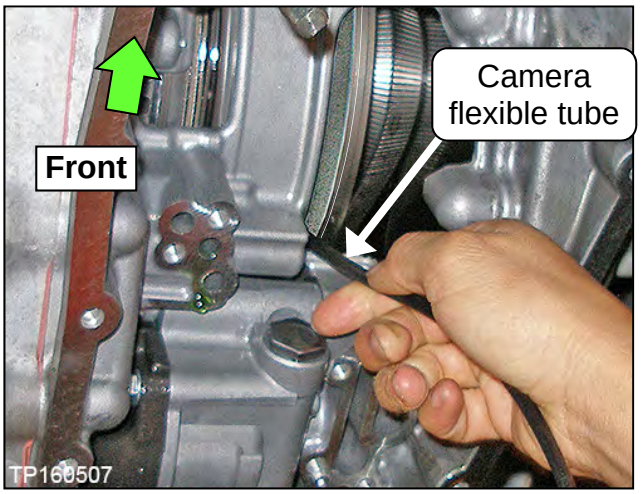


Figure 11

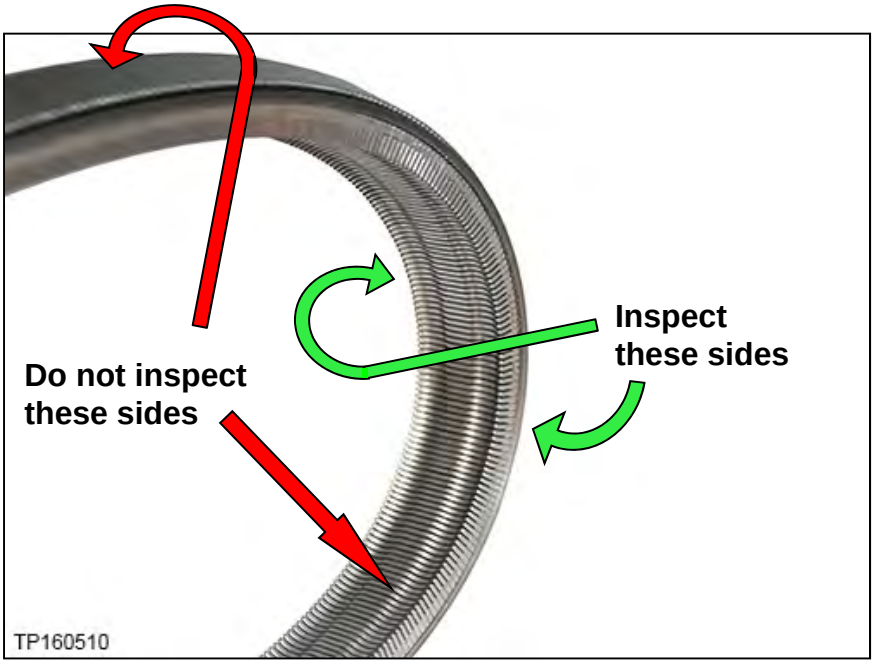


Figure 12

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

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

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

Figure 13

- If the inspection result is **OK**, inspect the other side of the belt in step 8.
- If the inspection result is **NG**, replace the CVT sub-assembly (page 18), control valve (page 74) and, if applicable, reprogram the TCM (page 81).

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

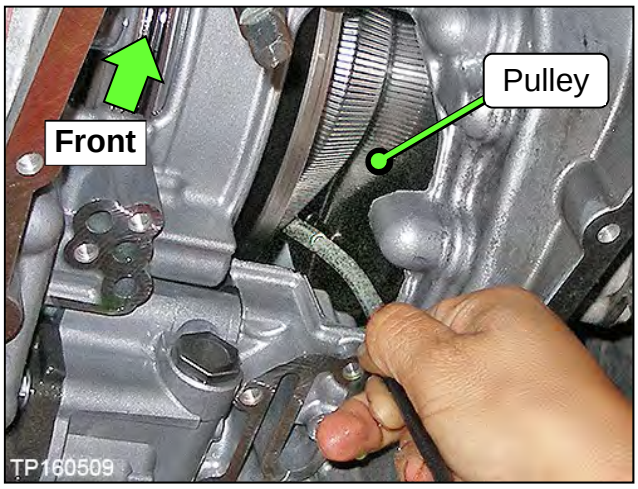


Figure 14

- If the inspection result is **OK** on both sides of the belt, replace the control valve (page 74) and, if applicable, reprogram the TCM (page 81).

- If the inspection result is **NG**, replace the CVT sub-assembly (page 18), control valve (page 74) and, if applicable, reprogram the TCM (page 81).

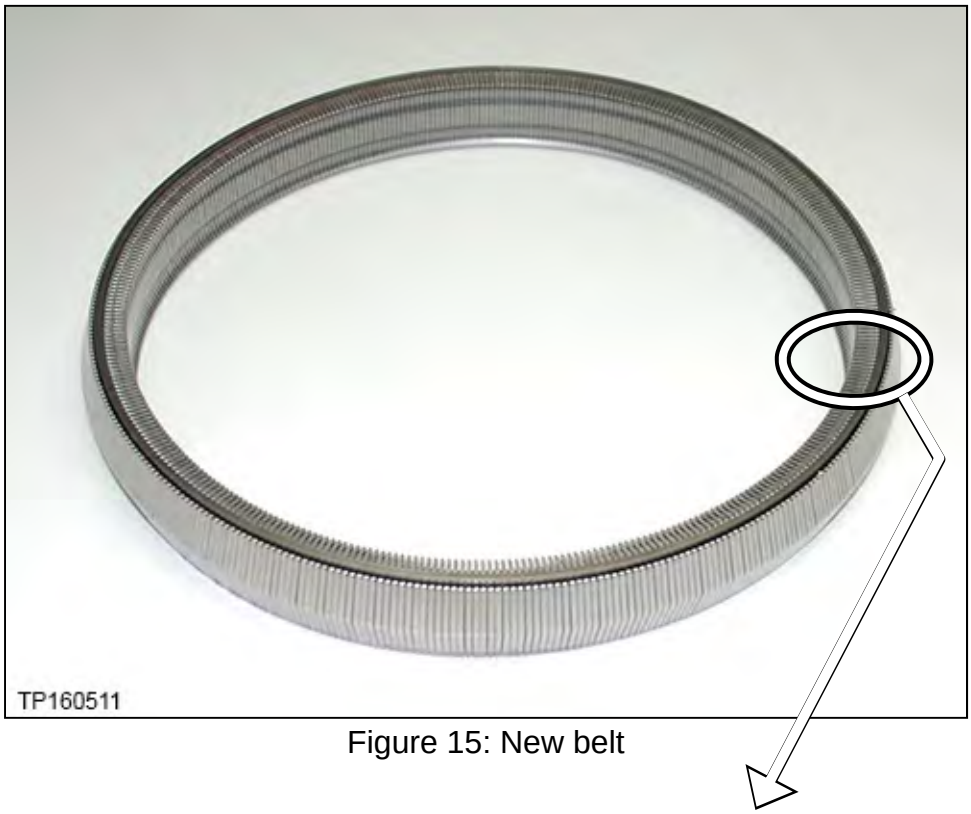


Figure 15: New belt

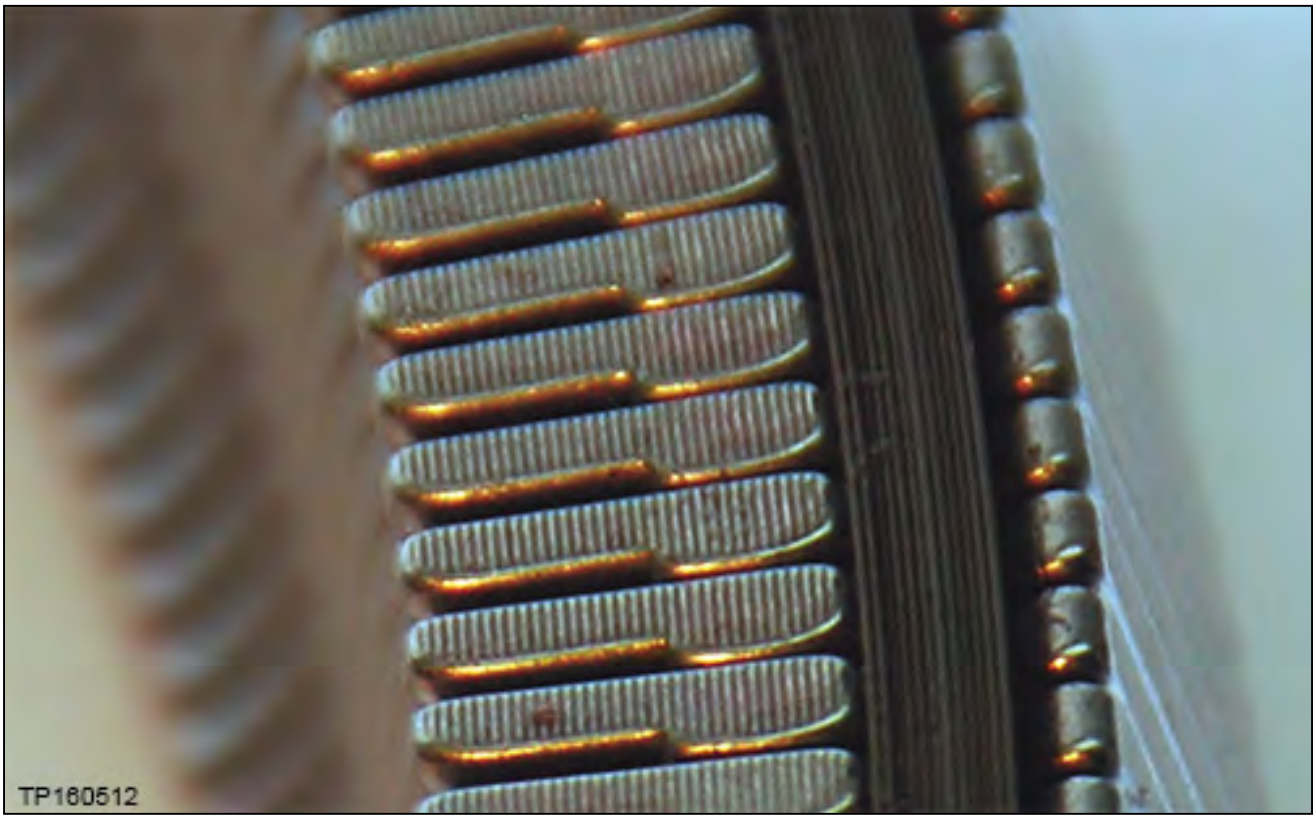


Figure 16: Close-up of section to be inspected

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

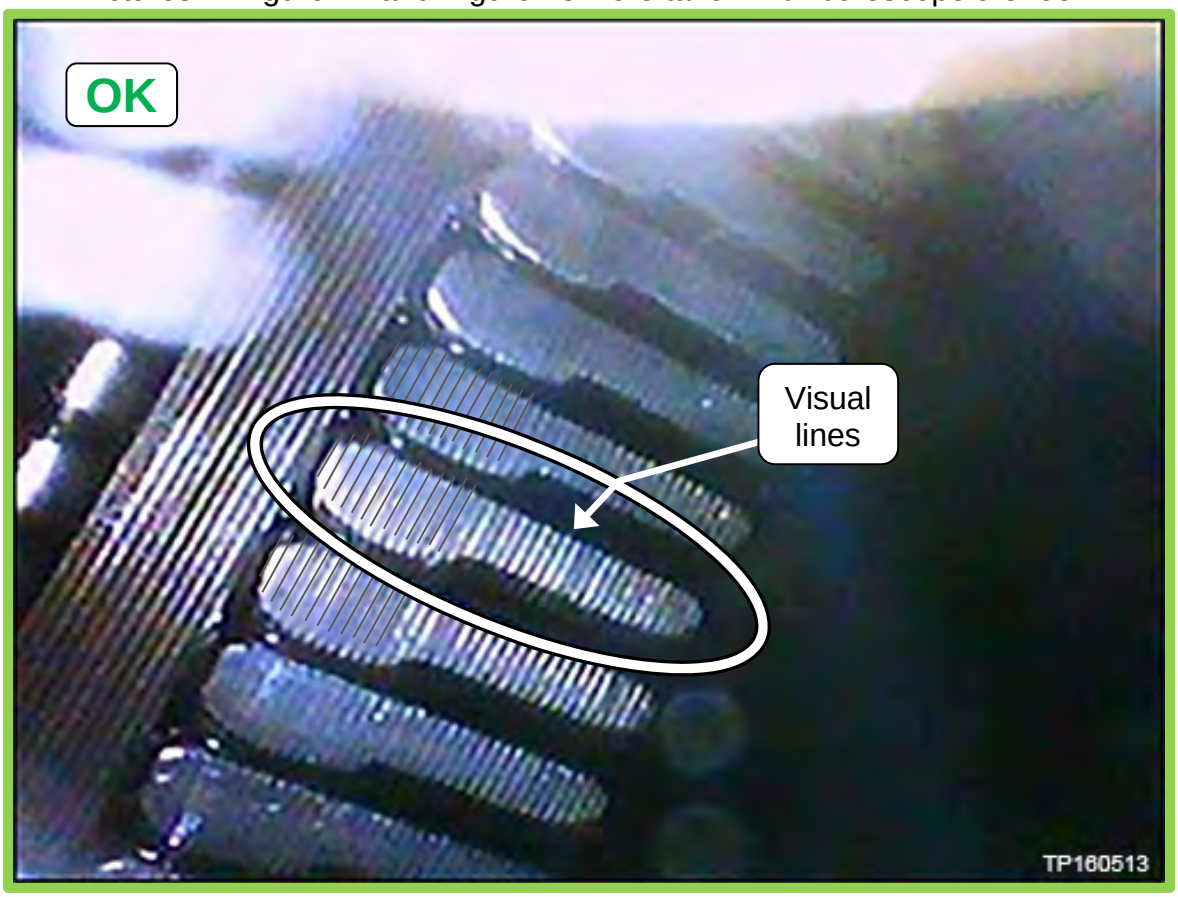


Figure 17: Belt is OK

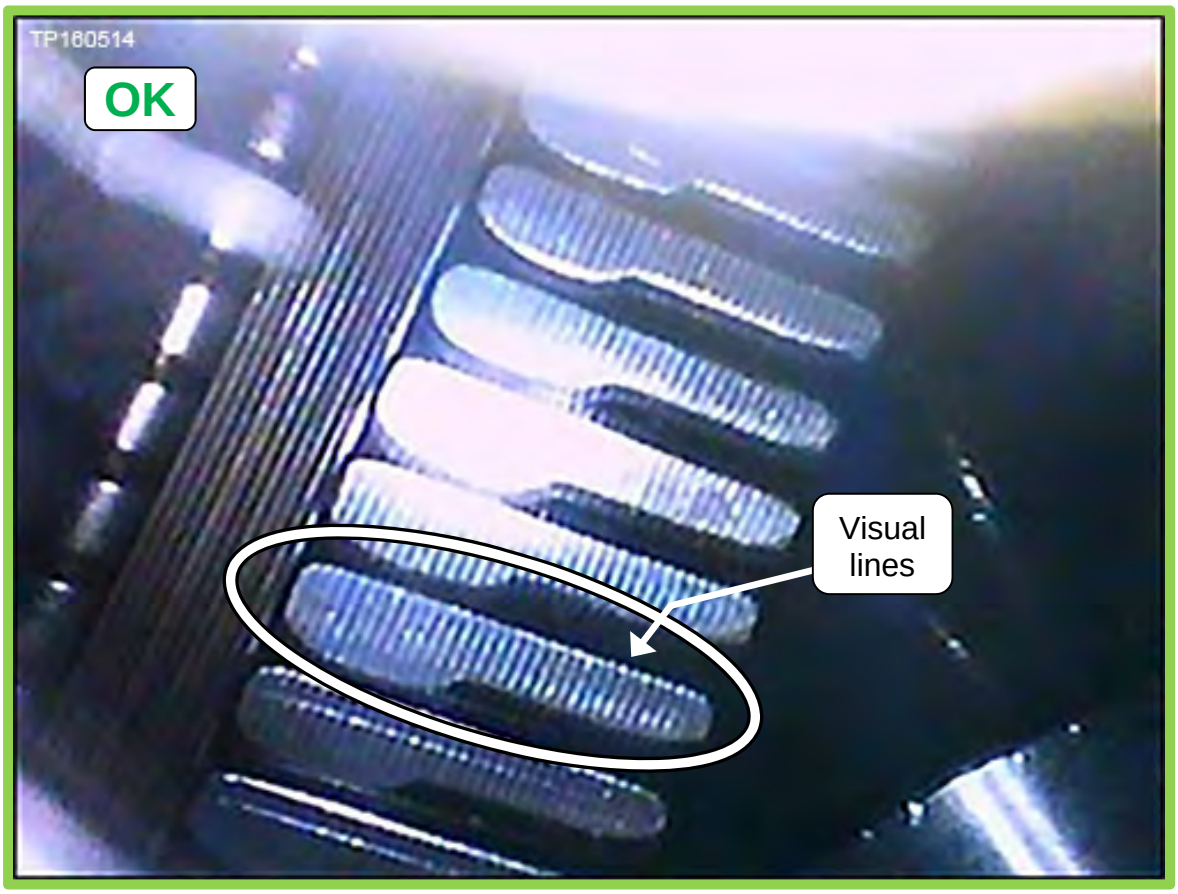


Figure 18: Belt is OK

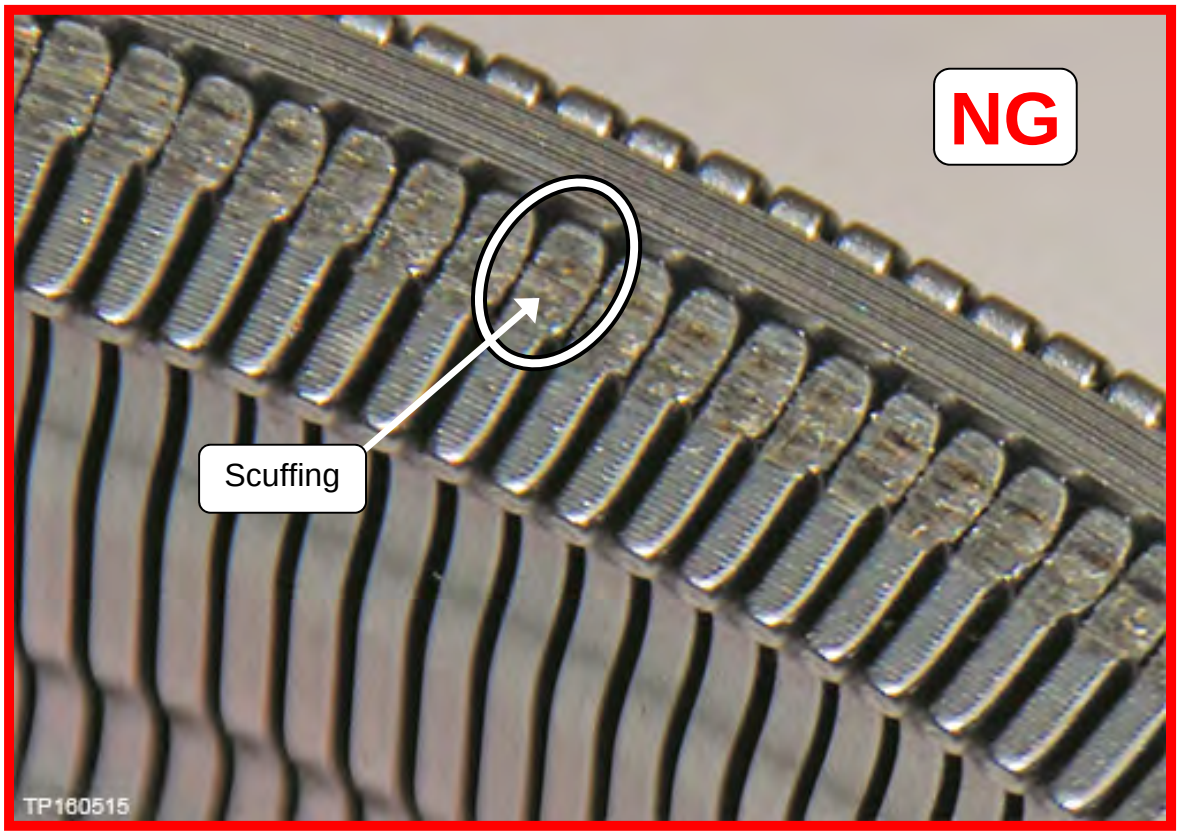


Figure 19: Example of NG belt

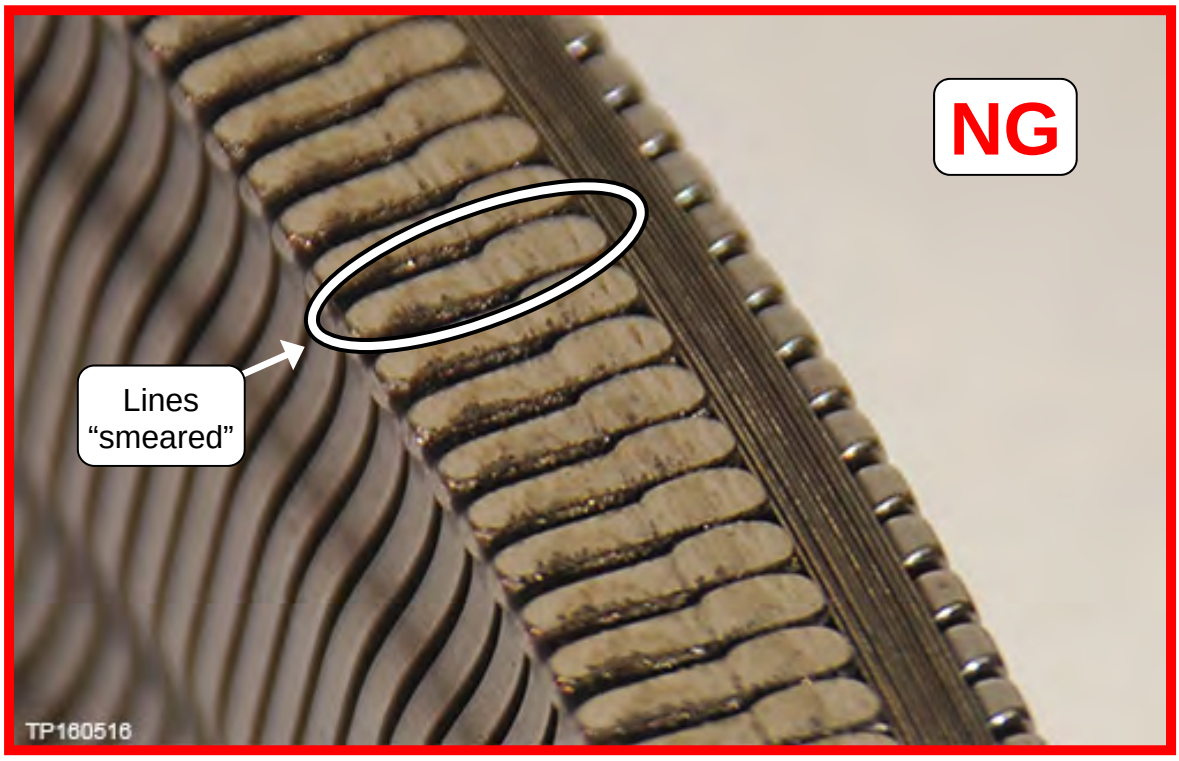


Figure 20: Example of NG belt

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 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.

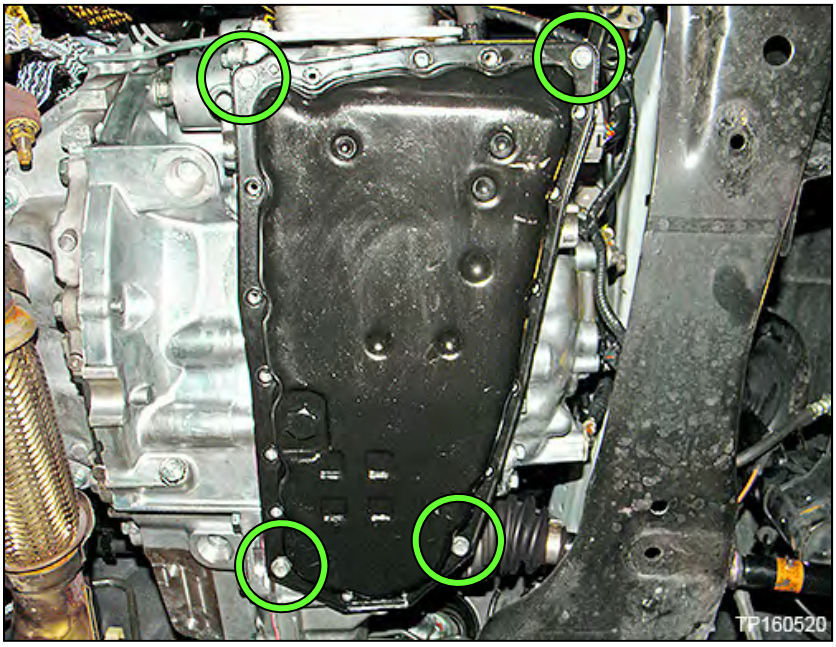


Figure 24

10. Remove the CVT from the vehicle.

    - For CVT removal, refer to the ESM: section **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

Use wood or plastic blocks to keep the CVT steady and to prevent deformation to the oil pan.

12. Remove the torque converter.

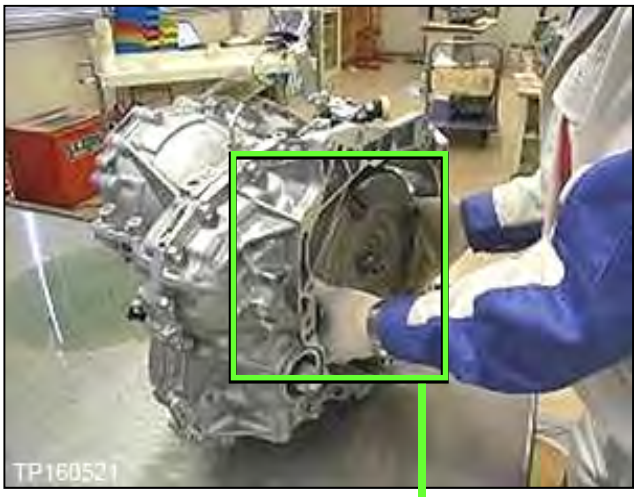


Figure 25

13. Drain the torque converter.

Figure 26

14. Remove the primary speed sensor.

HINT: The speed sensor <u>will be</u> reused.

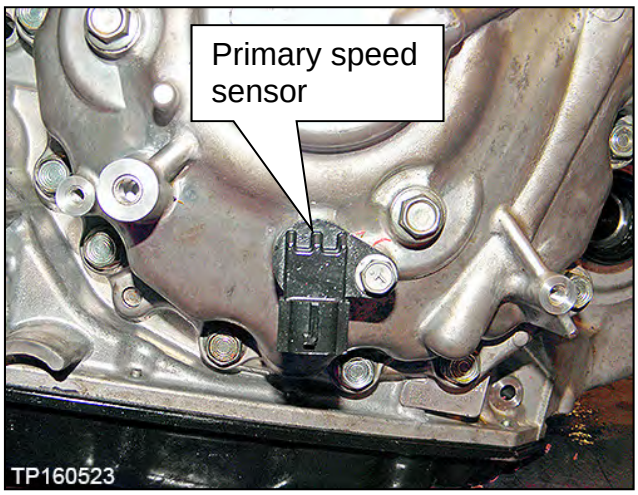


Figure 27

15. Remove all 23 converter housing mounting bolts (see 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.

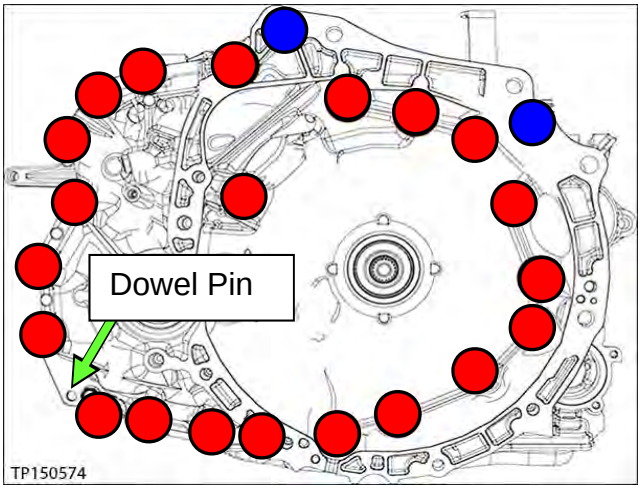


Figure 28

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 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.

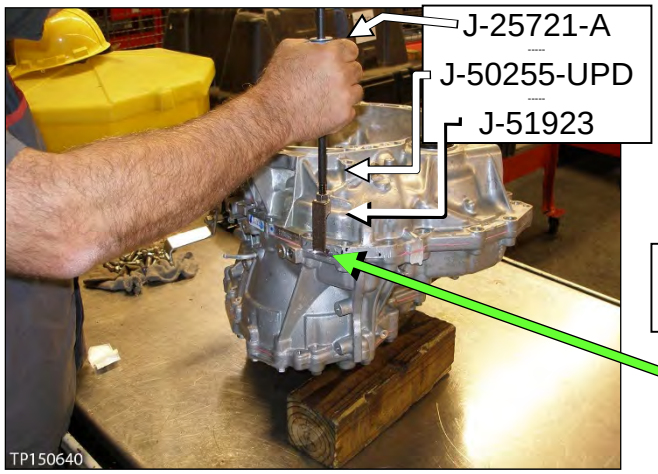


Figure 29

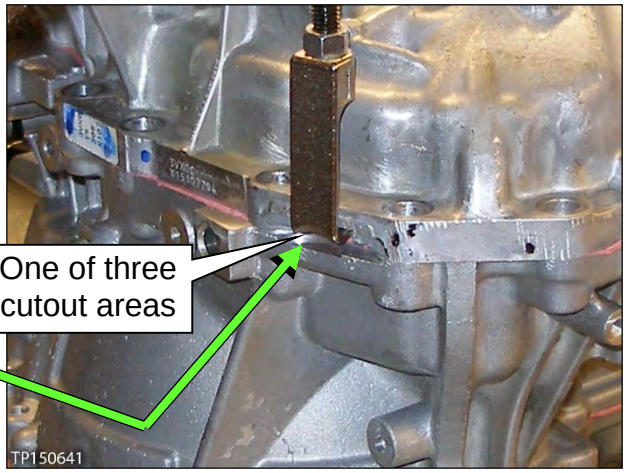


Figure 30

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

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

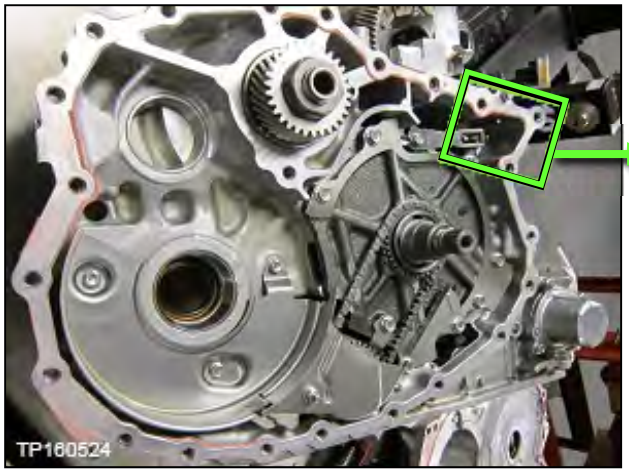


Figure 31

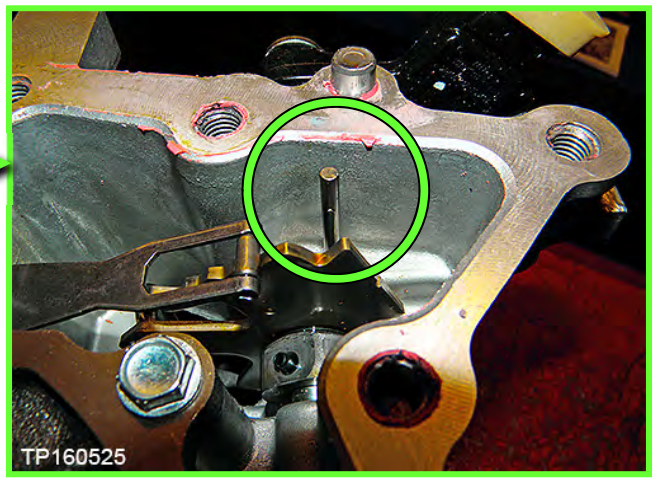


Figure 32

18. Remove the O-ring from the input shaft.
    - This O-ring will be replaced with a new one.

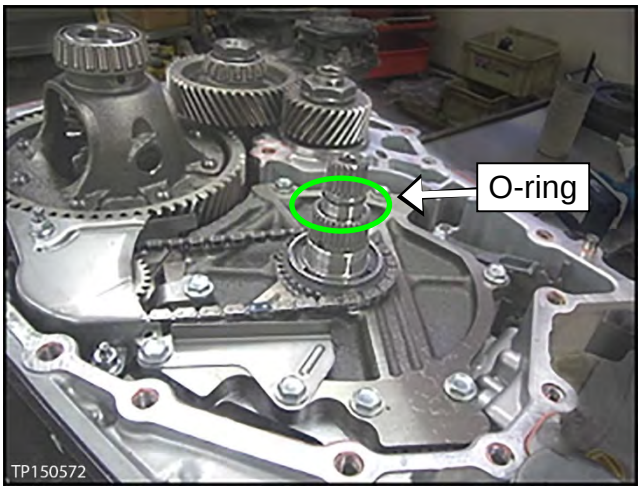


Figure 33

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

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

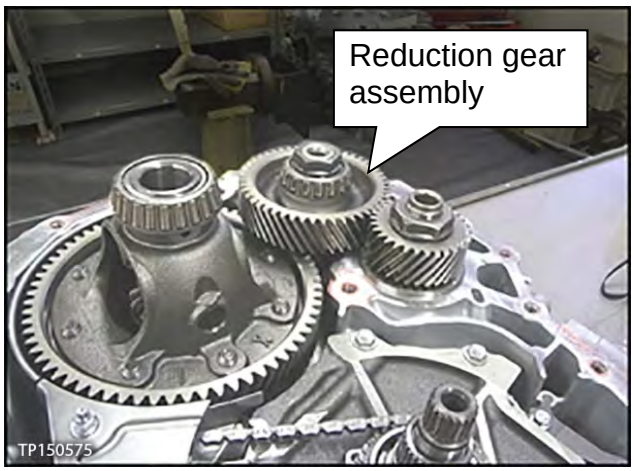


Figure 34

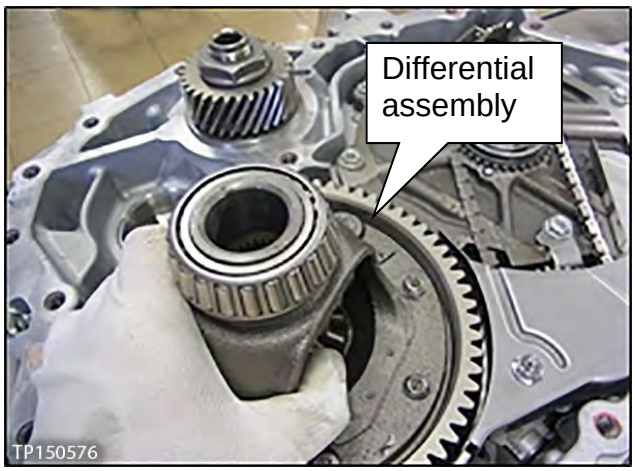


Figure 35

21. Remove the following oil seals using suitable tools:

NOTICE

Be careful not to damage any of the seal bore surfaces.

a. CVT case differential side oil seal (drive shaft seal).

- See Figure 36.

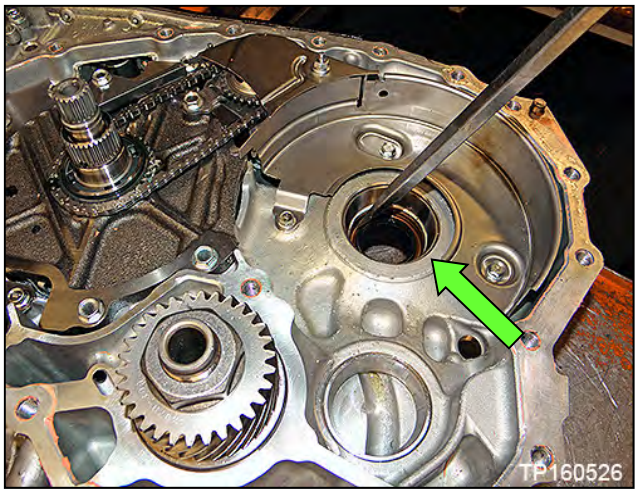


Figure 36

b. Torque converter seal (Figure 37).

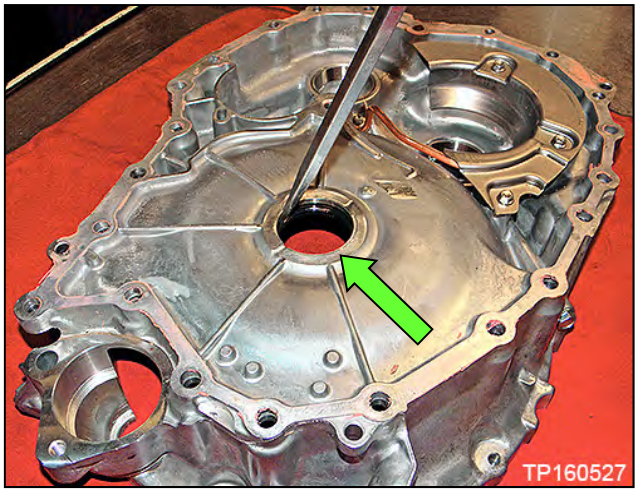


Figure 37

c. Converter housing differential side oil seal (drive shaft seal).

- See Figure 38.

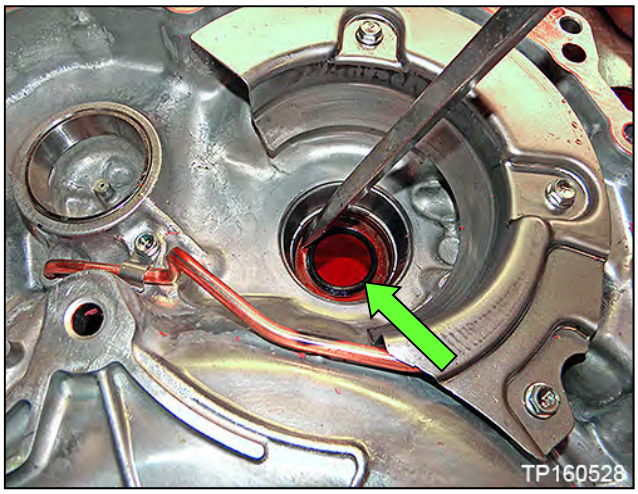


Figure 38

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

NOTICE

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

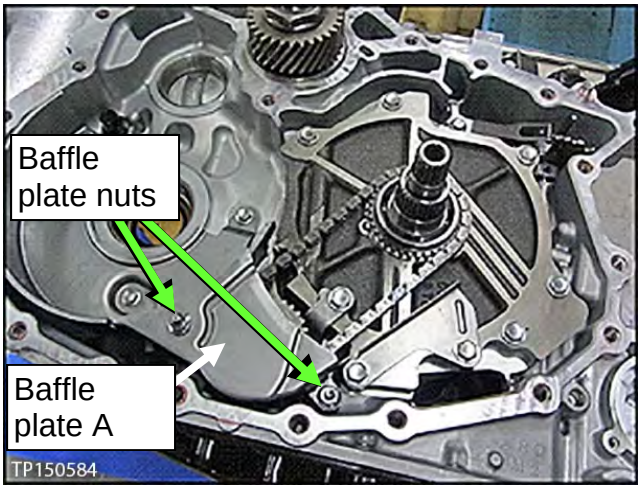


Figure 39

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.

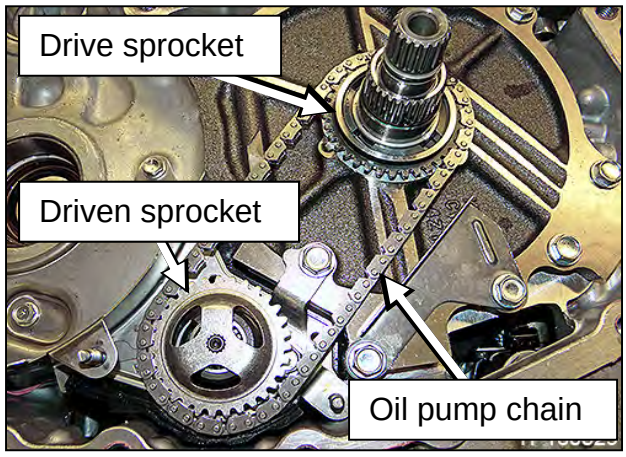


Figure 40

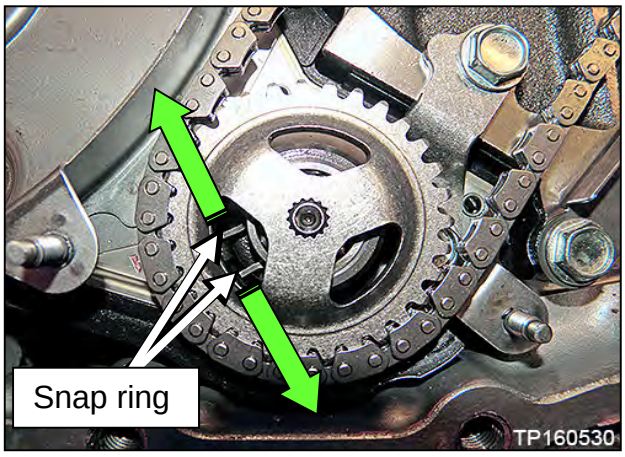


Figure 41

24. Remove the pump cover (dummy cover) thrust washer (Figure 42).

- This thrust washer <u>will be</u> reused.

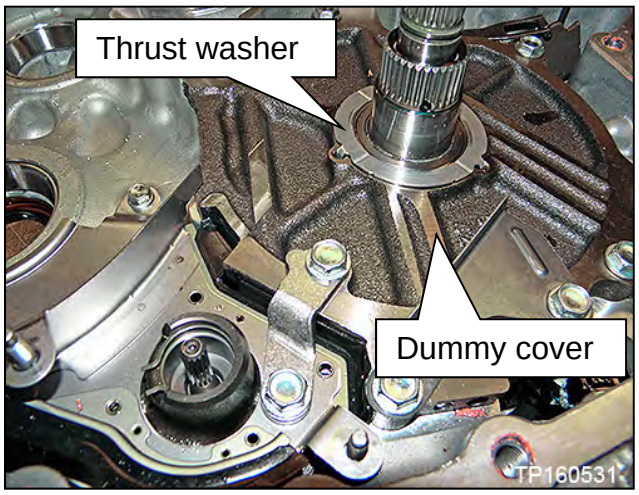


Figure 42

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.

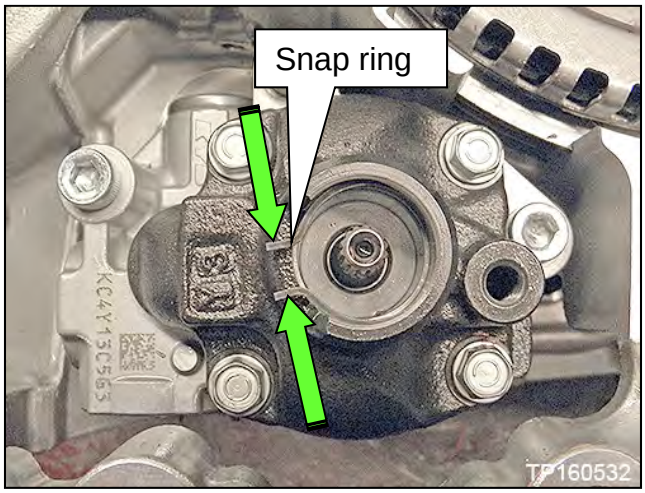


Figure 43

26. Remove the oil pump bracket (Figure 44).

- Retained by two (2) bolts.

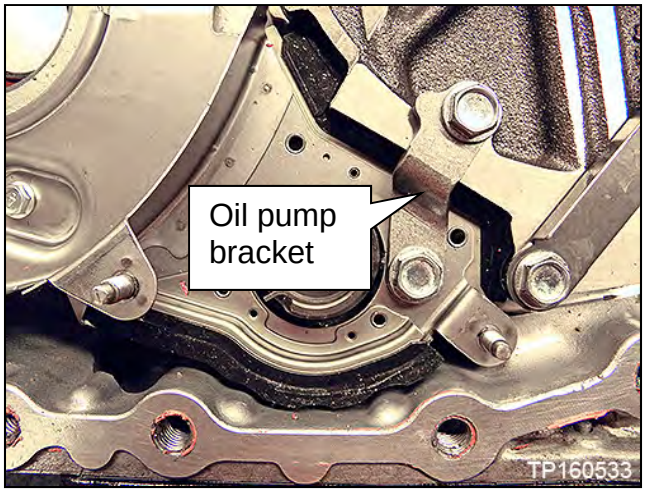


Figure 44

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

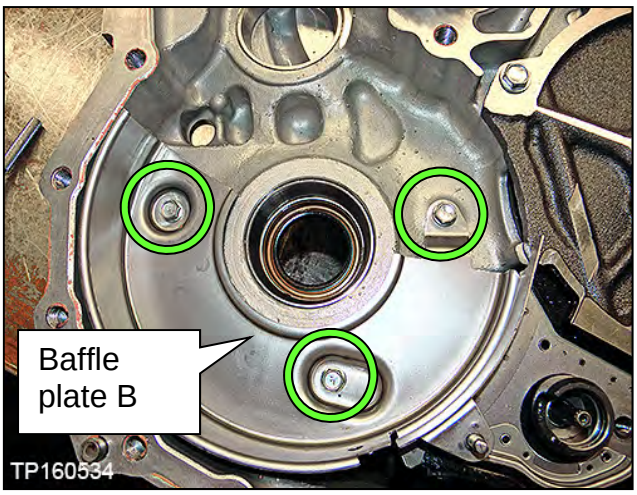


Figure 45

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

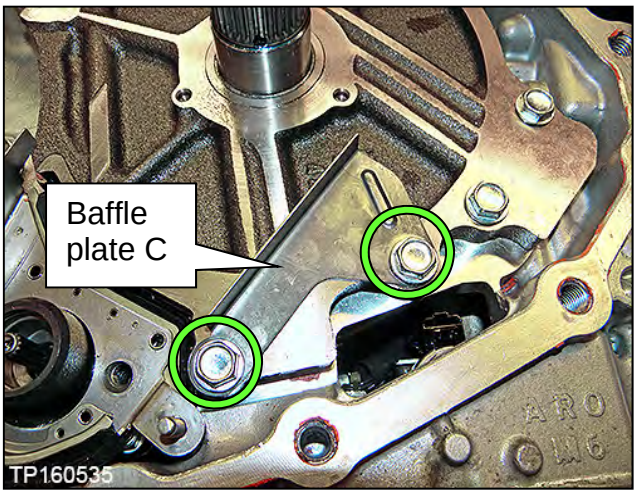


Figure 46

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

HINT:

- These bolts <u>will be</u> reused.
- Lift the dummy cover from the sides **ONLY**. Do <u>NOT</u> lift from the input shaft (Figure 47). This can lift the clutch pack out.
- Do <u>NOT</u> 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**.

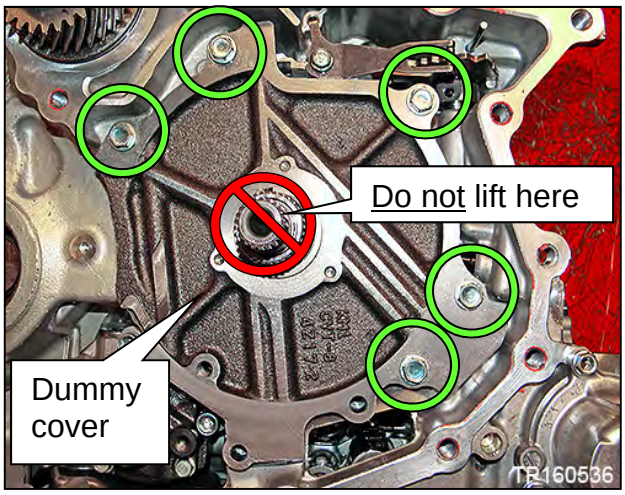


Figure 47

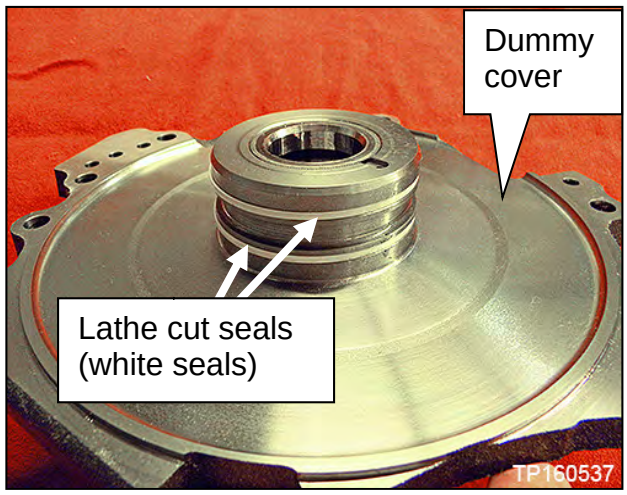


Figure 48

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.

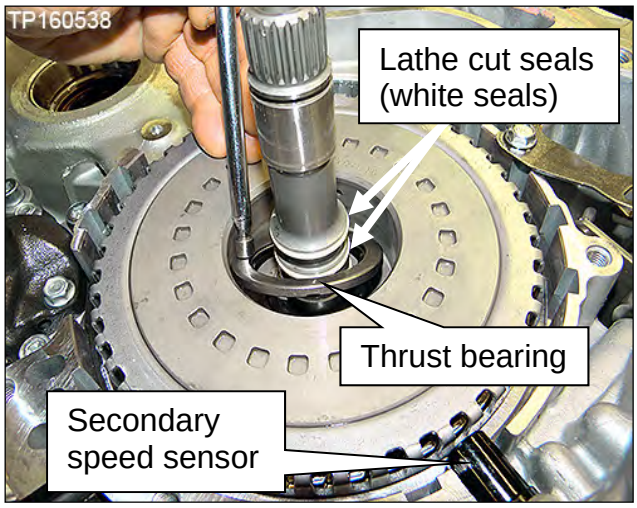


Figure 49

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).

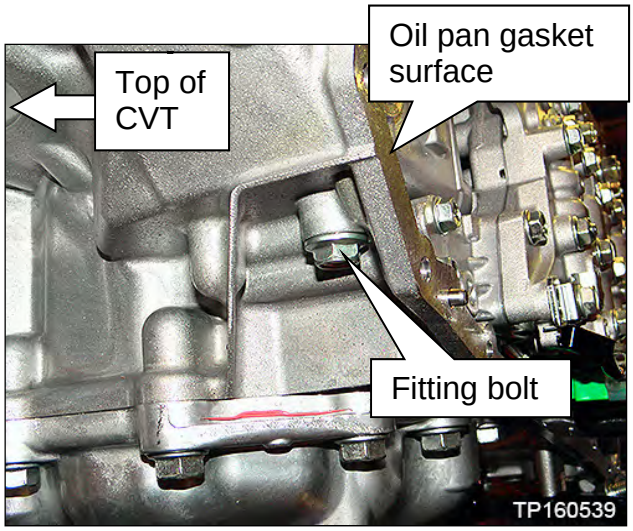


Figure 50

b. Remove the three (3) oil pump Allen®-head bolts, and remove the oil pump (Figure 51).

HINT:

- Do NOT discard the Allen®-head bolts. These bolts will be reused.
- A new oil pump will be installed later in this bulletin.

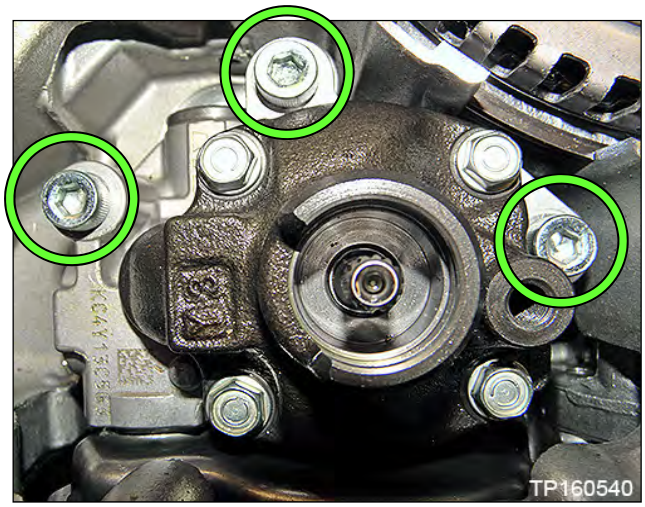


Figure 51

33. Remove the CVT fluid filter as follows:

a. Remove the four (4) bolts and then remove the CVT fluid filter cover (Figure 52).

HINT: These bolts will be reused.

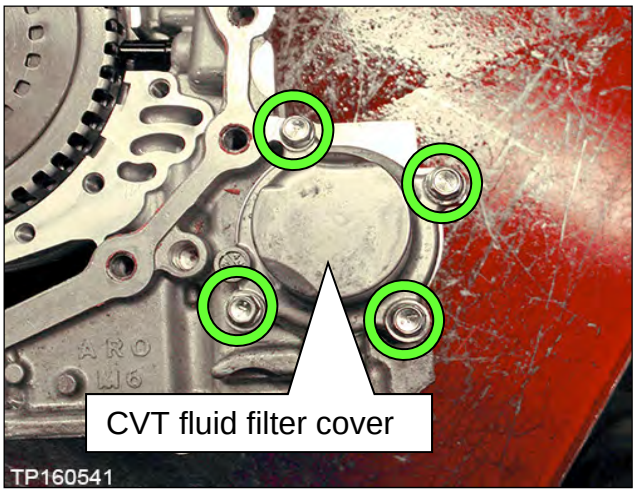


Figure 52

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).

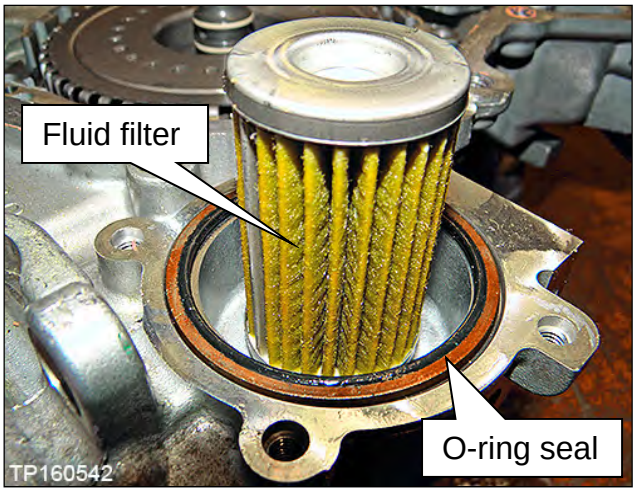


Figure 53

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).

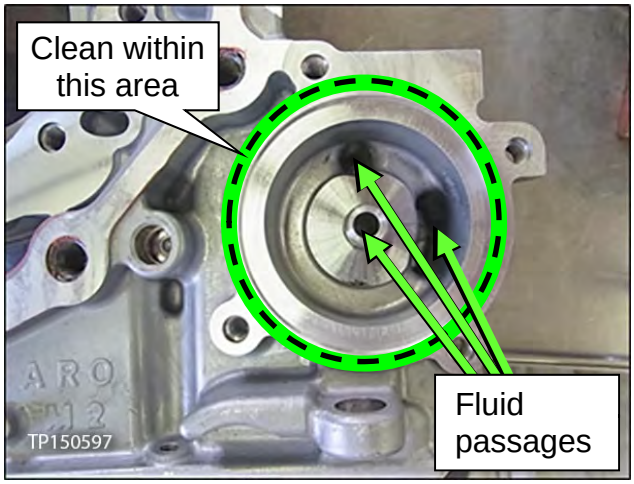


Figure 57

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.

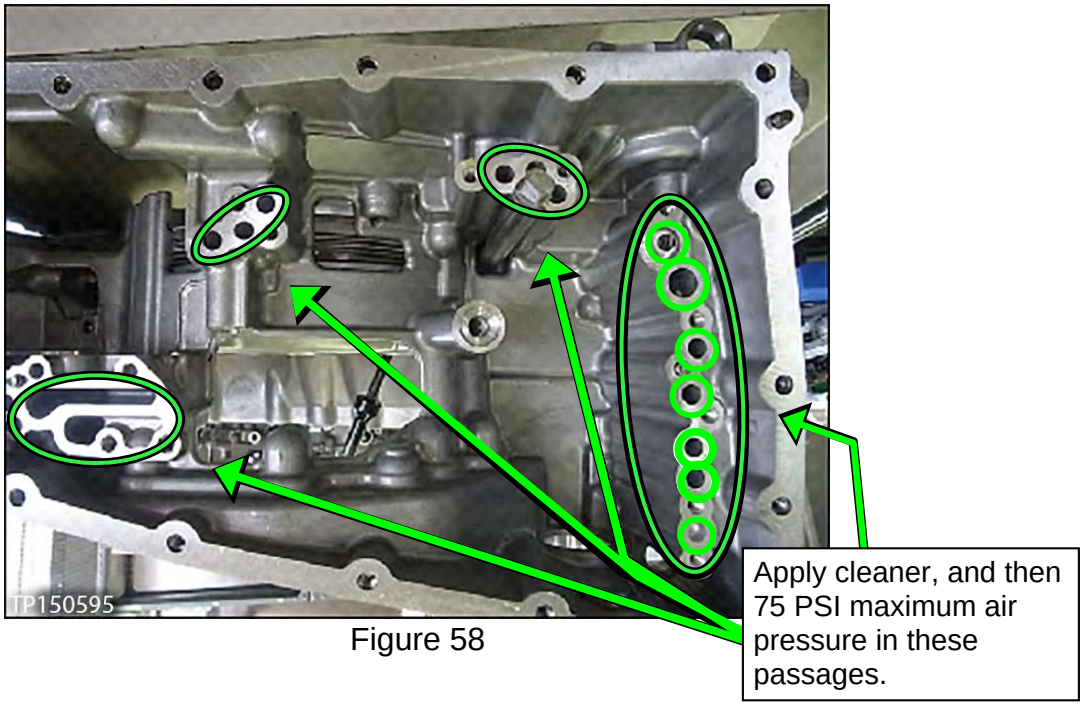


Figure 58

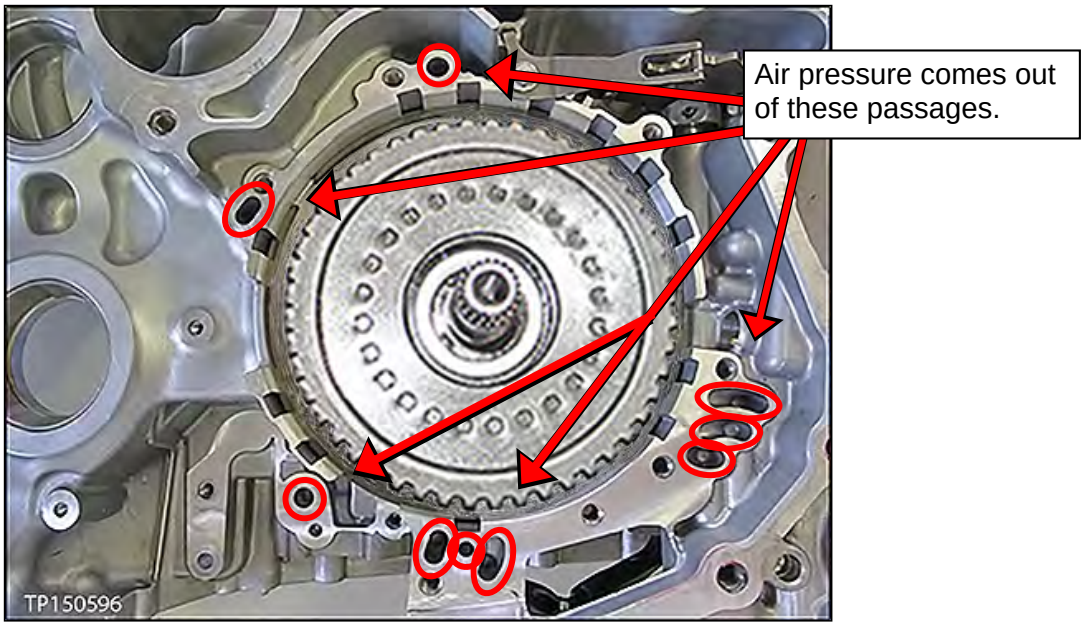


Figure 59

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).

    HINT:

    - Finger tighten the Allen®-head bolts at this time.
    - The oil pump kit includes a new oil pump, O-ring, and snap ring.

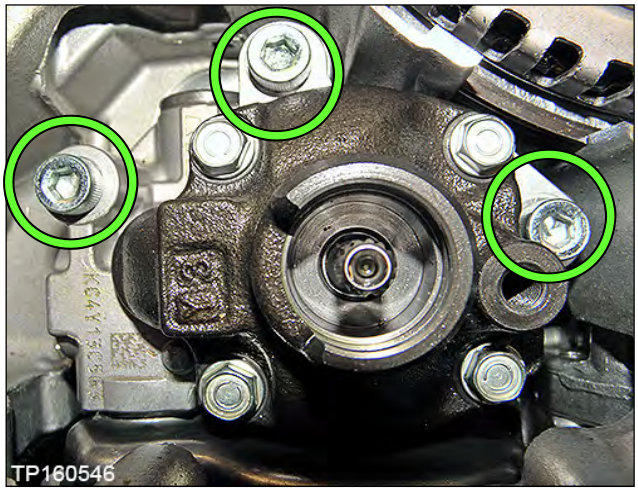


Figure 60

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

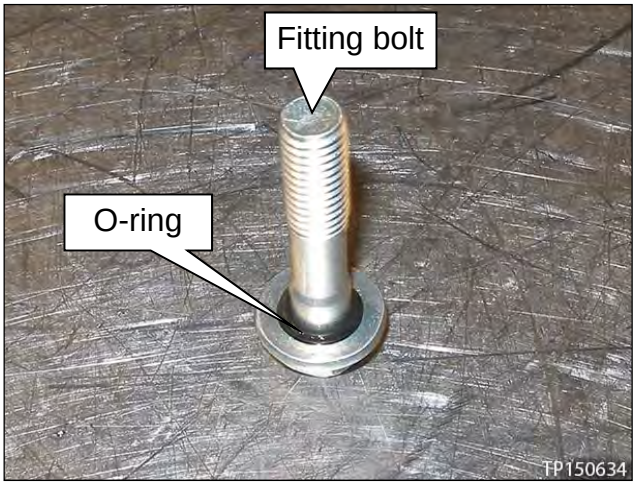


Figure 61

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

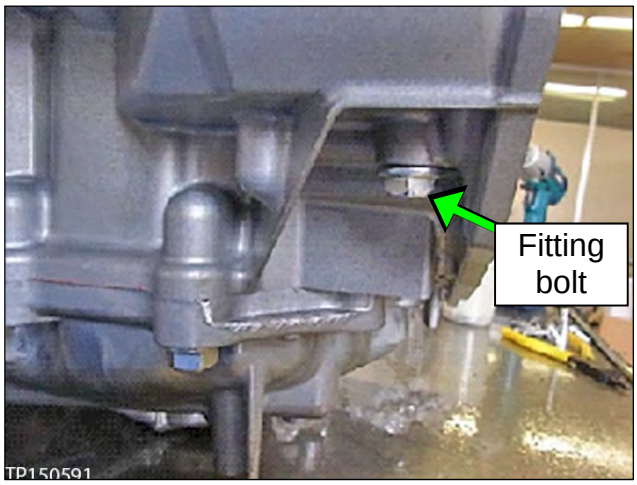


Figure 62

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, **13.0 – 15.2 ft-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).

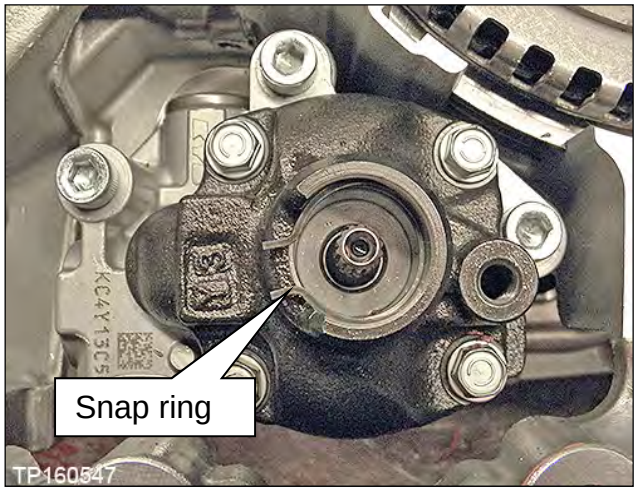


Figure 63

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.

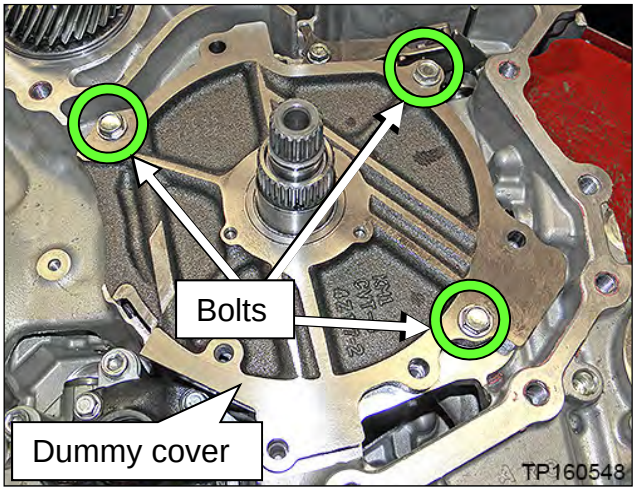


Figure 64

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 <u>below</u> the surface that the dummy cover bolts to.
- To fully seat the clutch pack, follow the instructions in steps 47-51.

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

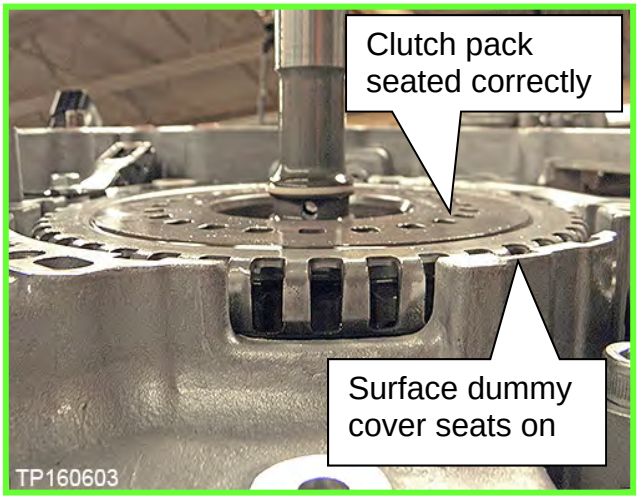


Figure 65

47. Remove the dummy cover.

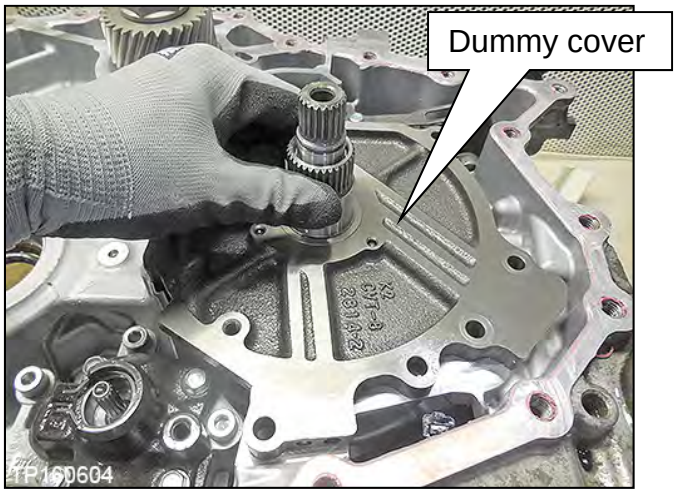


Figure 66

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.

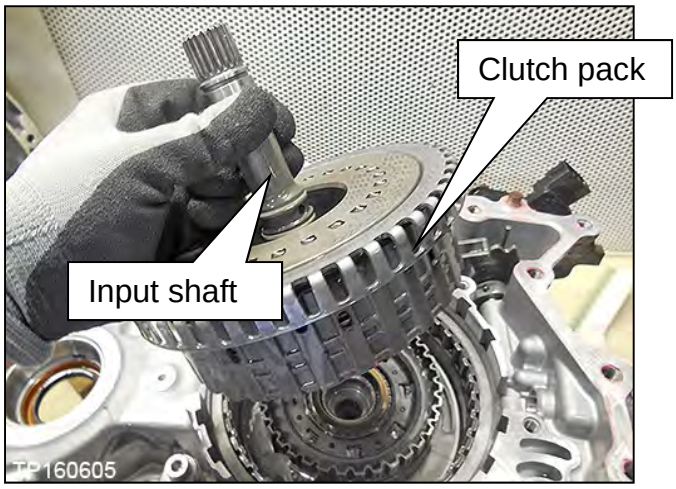


Figure 67

49. Using an appropriate tool, gently align the layers of the clutch pack.
    - The bottom of the clutch pack is shown in Figure 68.

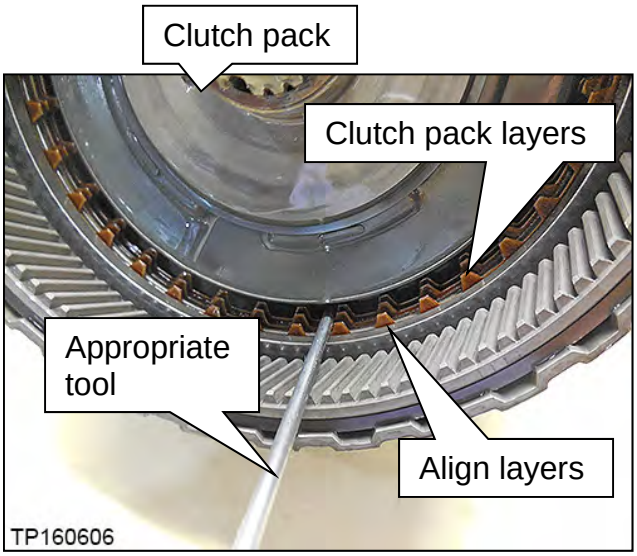


Figure 68

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.

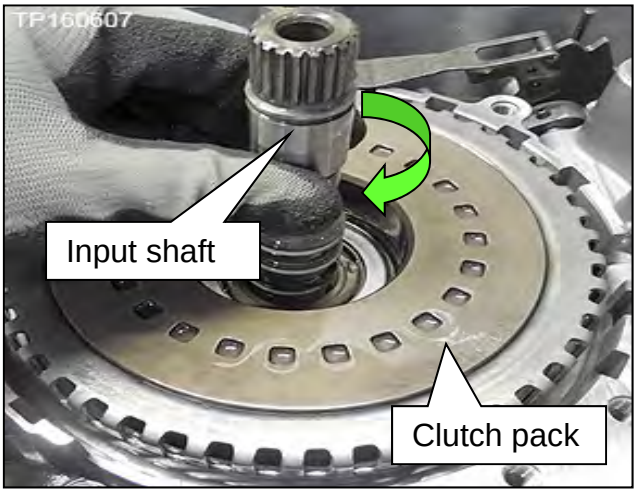


Figure 69

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.

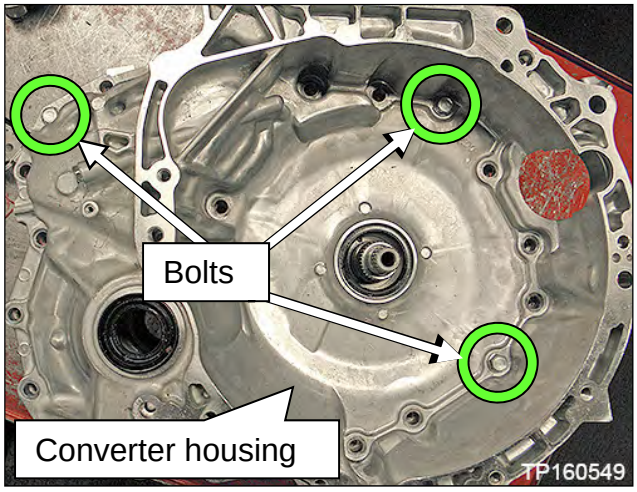


Figure 70

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. See Figure 72.

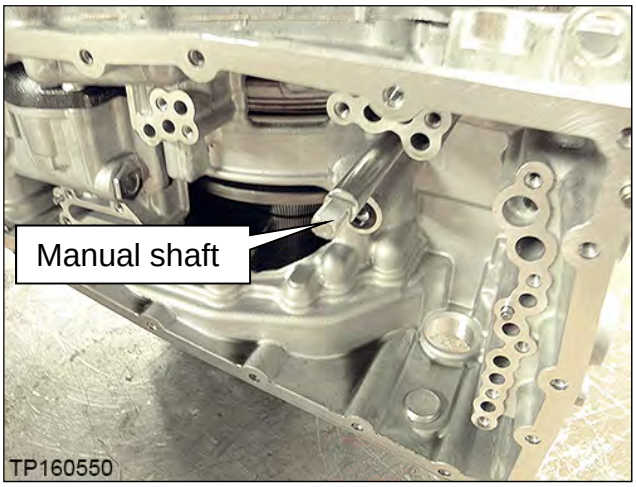


Figure 71

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.

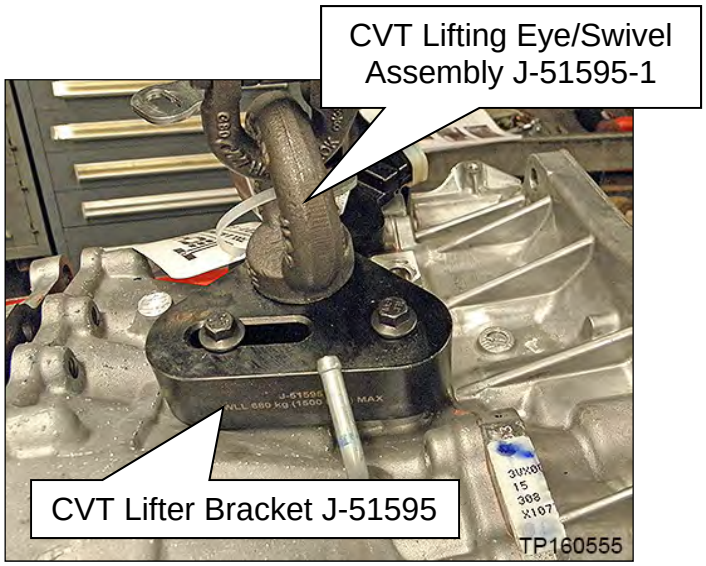


Figure 72

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.

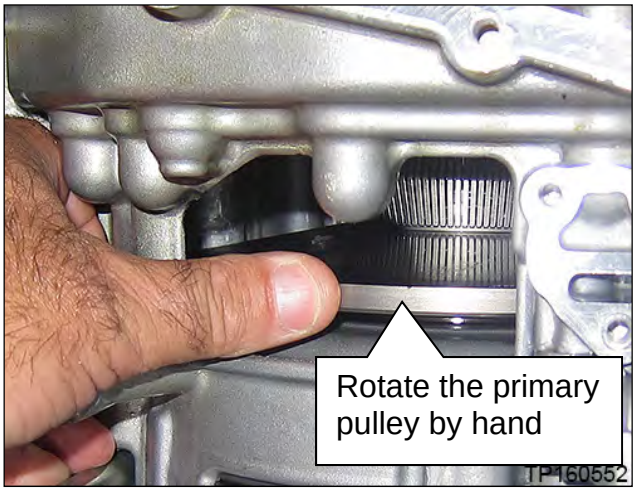


Figure 73

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

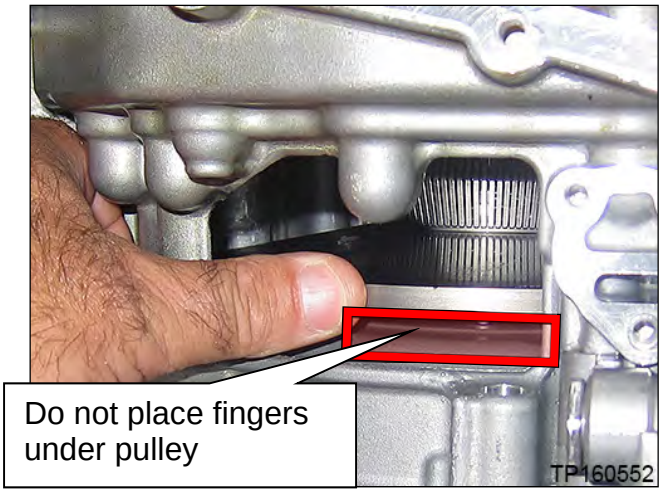


Figure 74

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

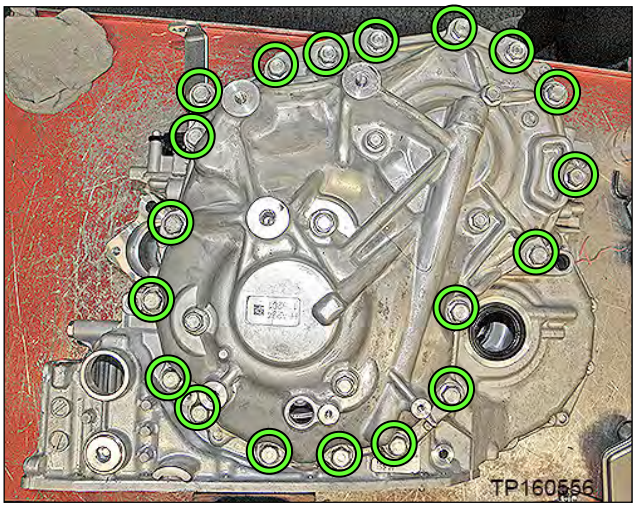


Figure 75

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. Attach the lifting fixture to the side cover (**Error! Reference source not found.** and **Error! Reference source not found.**).

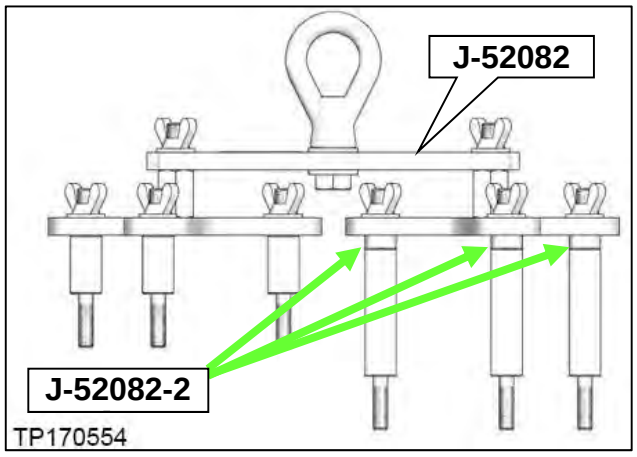


Figure 76

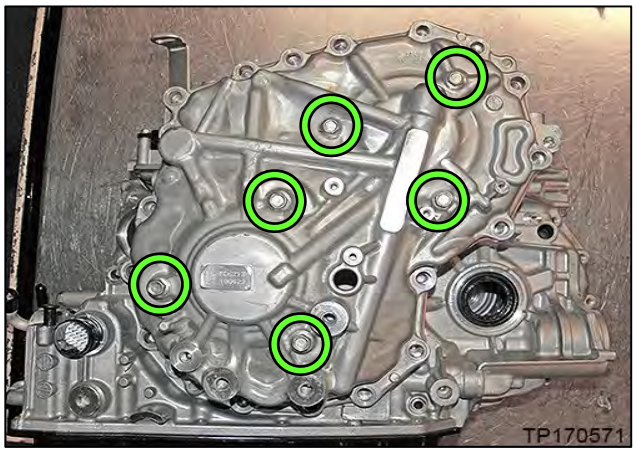


Figure 77

Sub-assembly Lifting Fixture Procedure

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

59. Attach universal Lifting Fixture J-52082 with spacers J-52082-2 to the side cover as shown in Figure 79.

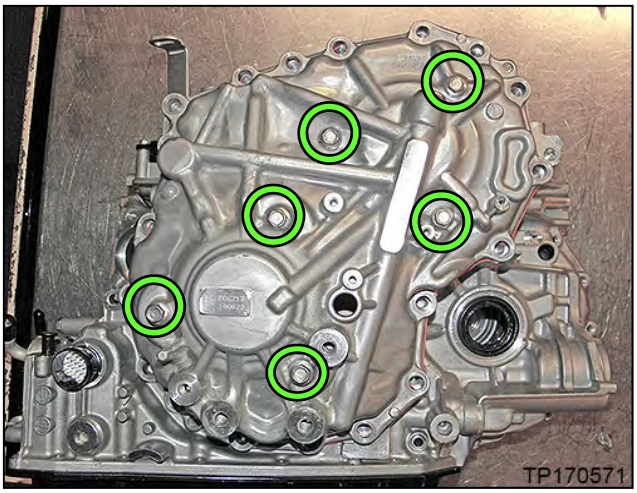


Figure 78

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 79.
c. Install the Lifting Fixture to the CVT case at the six (6) bolt holes shown in Figure 78.
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 two (2) wing-nut bolts, and then proceed to step 60 on the next page.

NOTICE

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

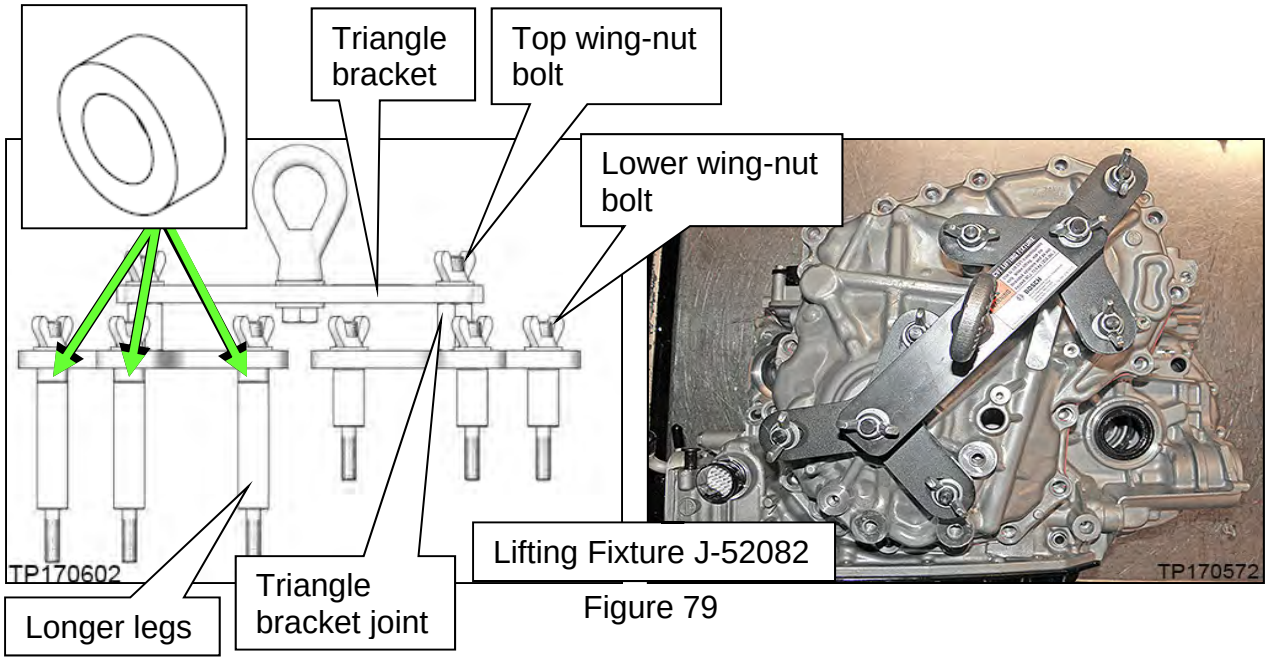


Figure 79

60. Install the two CVT Assembly Guide Pins (J-51959 - Guide Pins) as shown in Figure 80 and Figure 81.
    - The Guide Pins must be located next to the dowel pins.

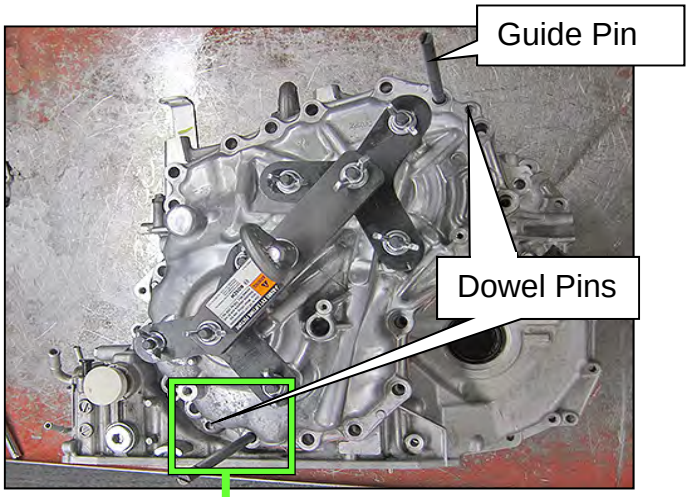


Figure 80

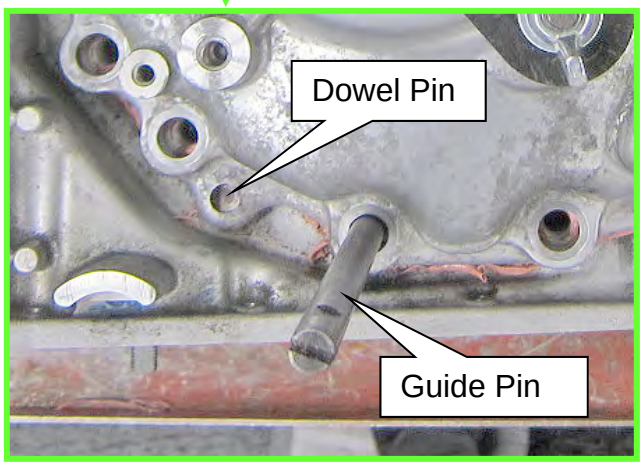


Figure 81

61. 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.

62. Loosen the side cover with a slide hammer at the three points (tool location marks) shown in Figure 82.
    - 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 dowel pins as needed.

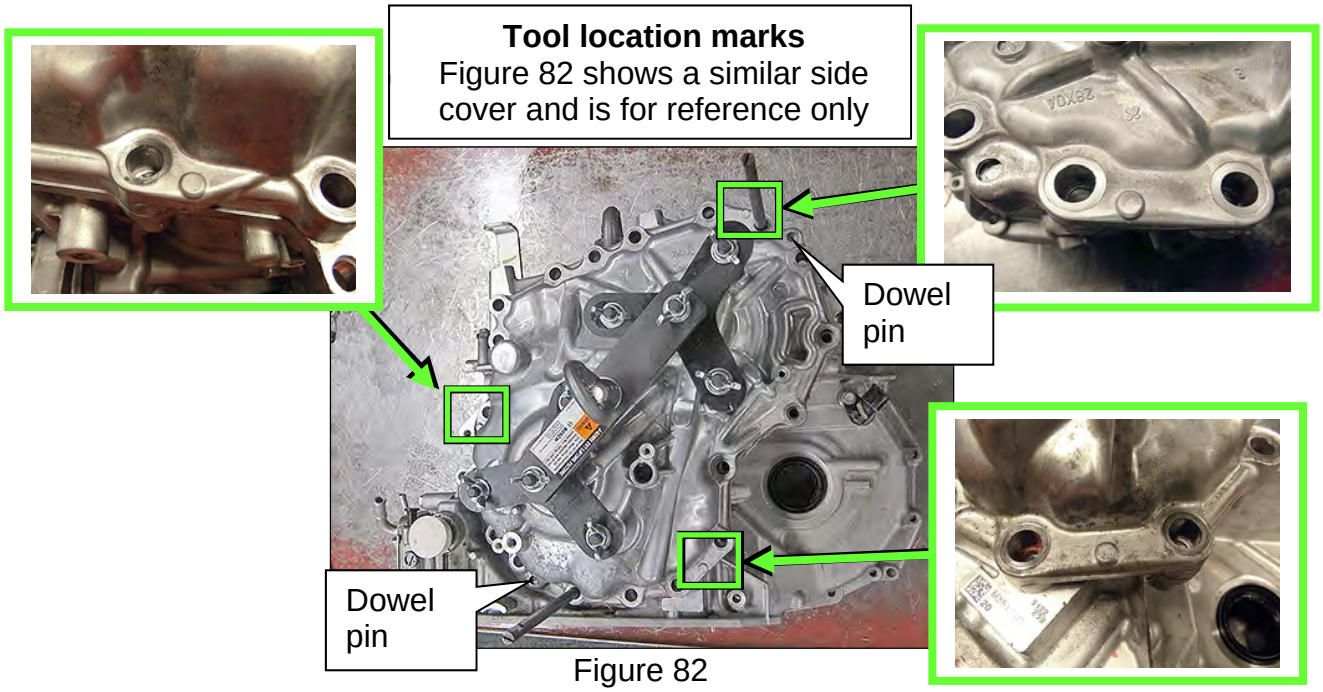


Figure 82

63. Raise the Lifting Fixture to remove the “side cover with pulleys and belt assembly” (sub-assembly) from the CVT case (Figure 83).

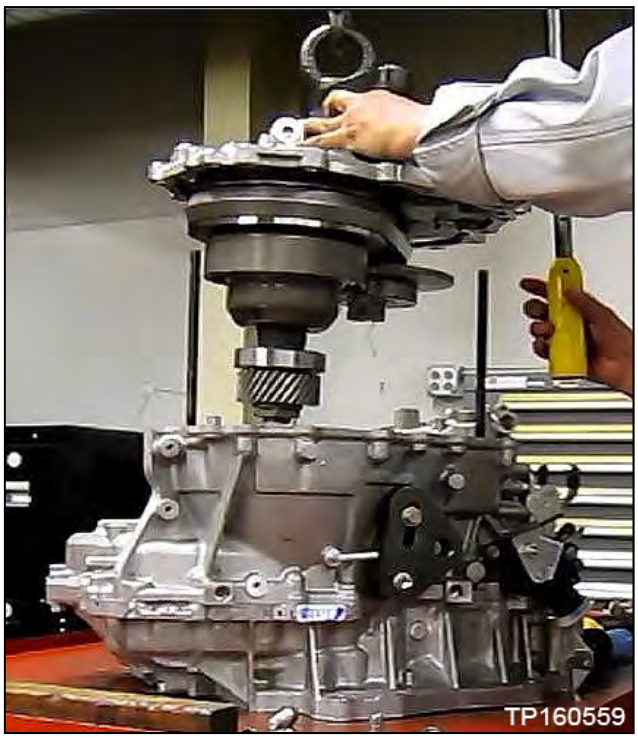


Figure 83

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.

64. Remove the lifting fixture from the sub-assembly.
    - Reinstall all six (6) original bolts into the old sub-assembly.
65. Thoroughly clean the mating surfaces of the CVT case (Figure 84) 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.

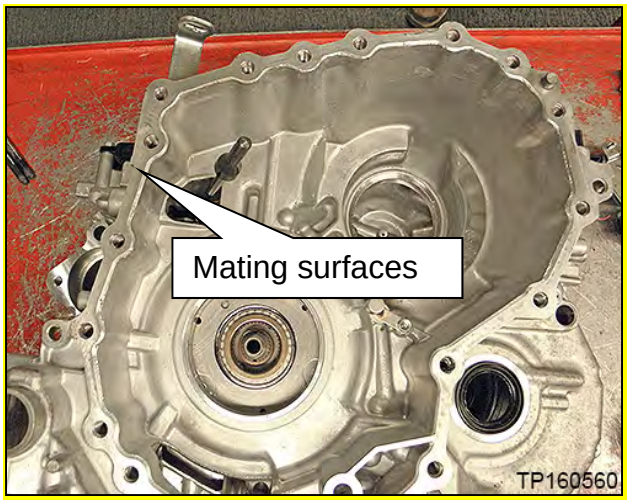


Figure 84

66. Replace the O-ring on the CVT case side with a new one.

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

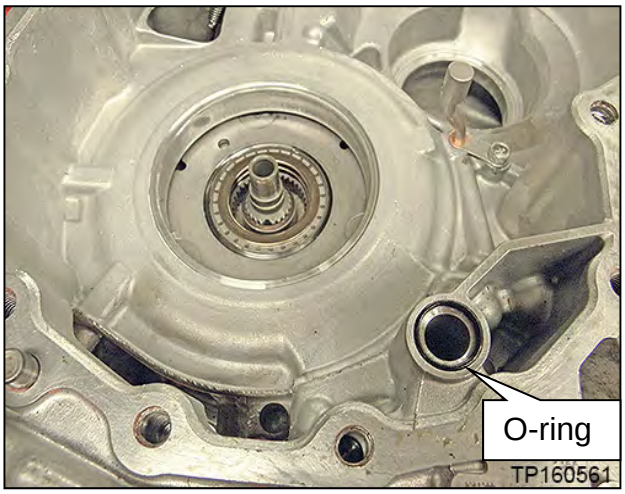


Figure 85

67. Remove the thrust bearing from the planetary carrier plate (Figure 86).

- **This thrust bearing will be reused. <u>DO NOT</u> discard.**

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

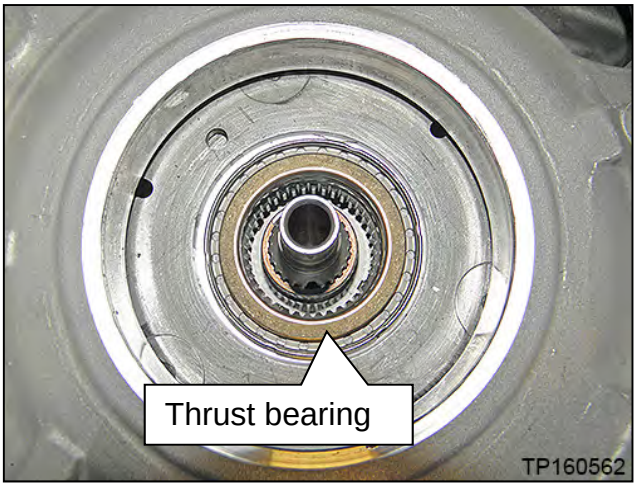


Figure 86

68. Rotate the shift select lever counterclockwise to the “L” range position (Figure 87), so that the parking pawl is at its lowest position (Figure 88).

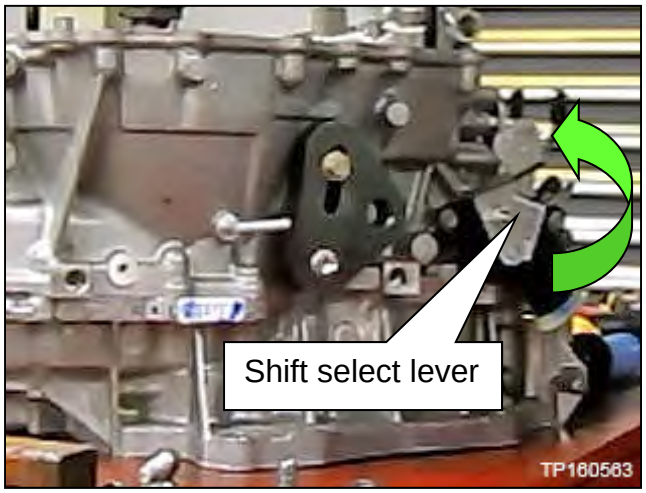


Figure 87

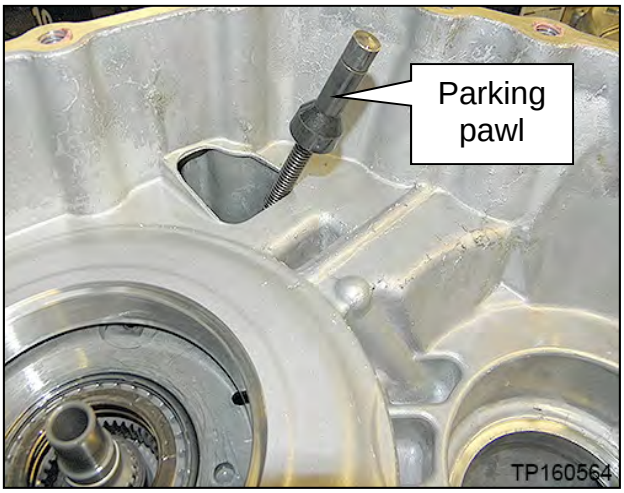


Figure 88

69. Attach the Lifting Fixture to the new sub-assembly, and then raise 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 Lifting Fixture.
  - ➢ These bolts will be reused.
  - ➢ These O-rings <u>will not</u> be reused.

NOTICE

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

- Refer to the Lifting Fixture procedure on page 40 for correct Lifting Fixture installation.

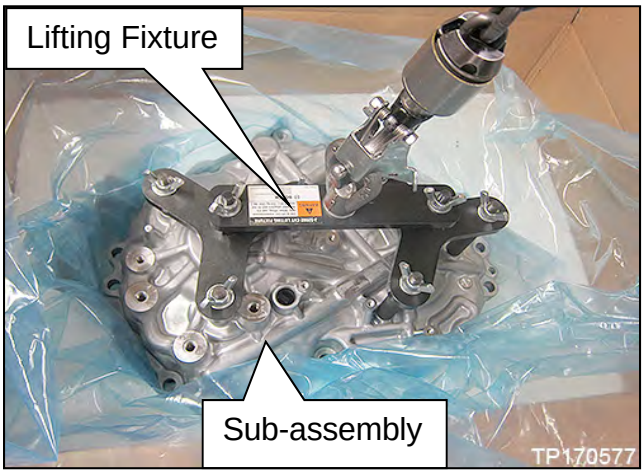


Figure 89

70. Apply one continuous 2.0 mm diameter bead of sealant along the center of the CVT case side mating surface (Figure 90).

Sealant:

- Loctite 5460 (see **PARTS INFORMATION** on page 93**Error! Bookmark not defined.**)
- 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 70.

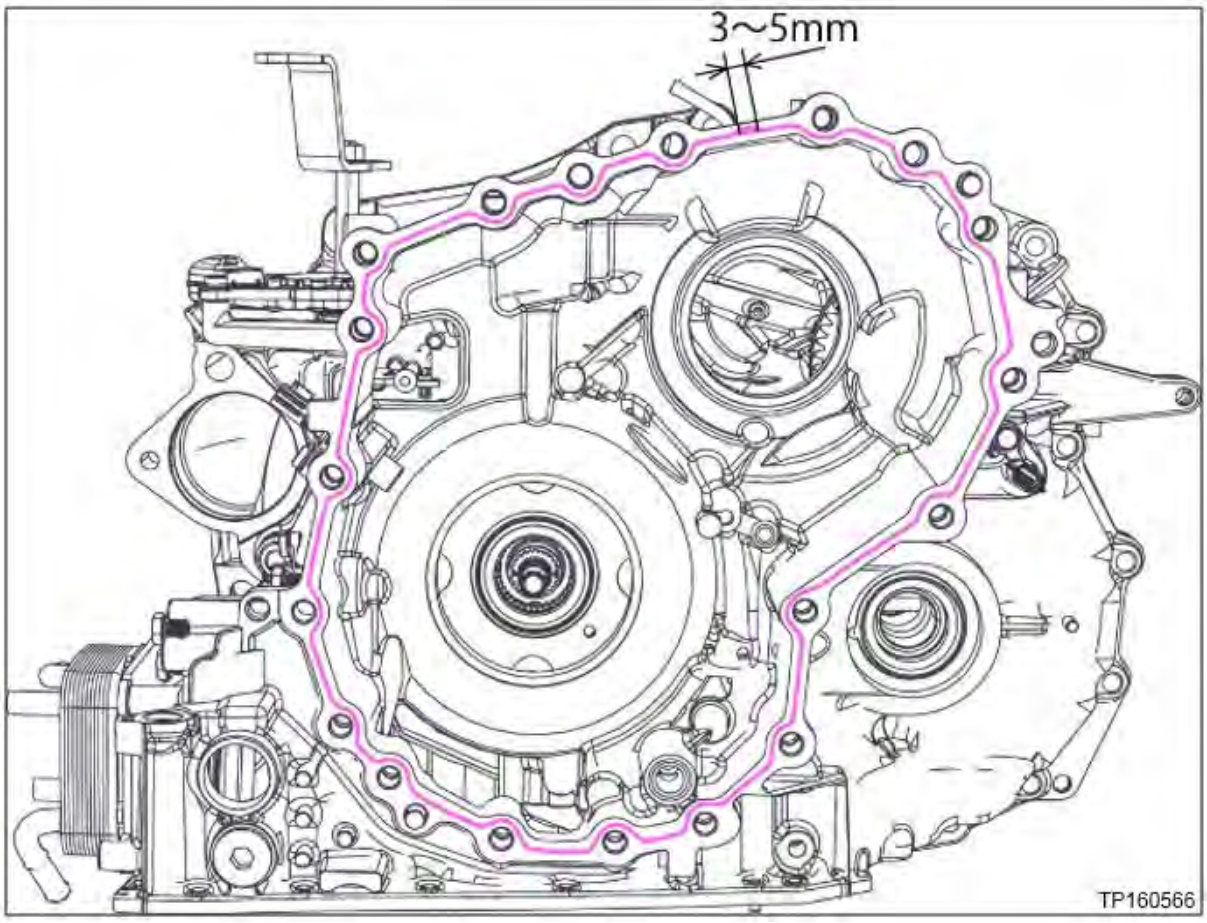


Figure 90

71. Install the original thrust bearing on the primary pulley of the new sub-assembly (Figure 91).

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 92 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.

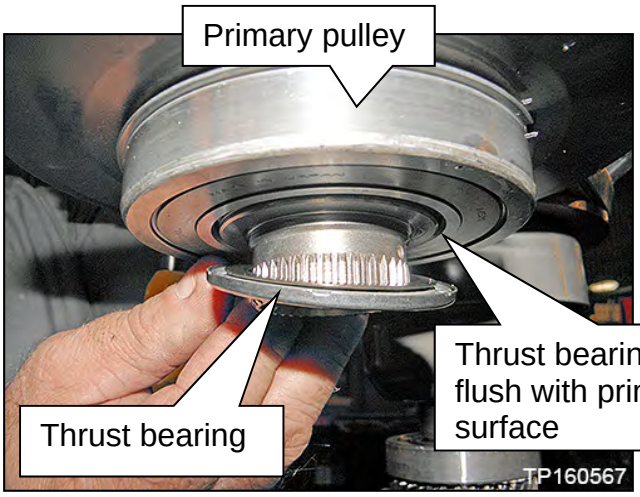


Figure 91

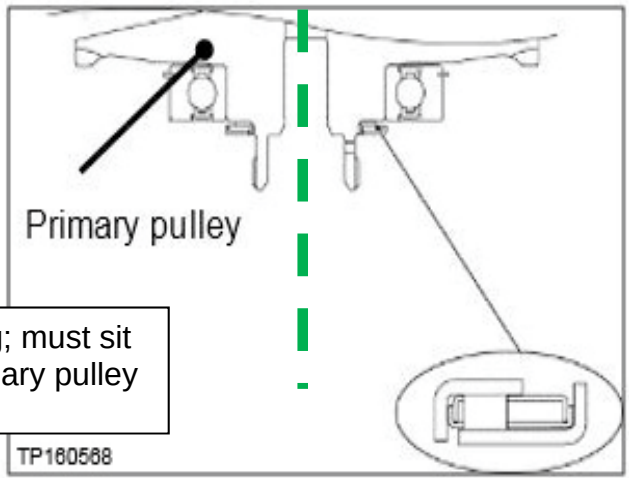


Figure 92

72. Coat the primary pulley bearing, secondary pulley gear teeth, and the secondary bearing with CVT fluid prior to installation (Figure 93 and Figure 94).

HINT: <u>DO NOT</u> drip any CVT fluid onto the sealant.

The following figures are for <u>reference only</u> 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.

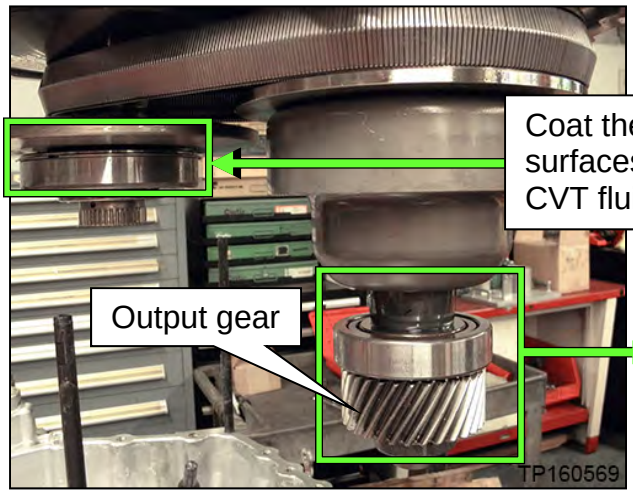


Figure 93

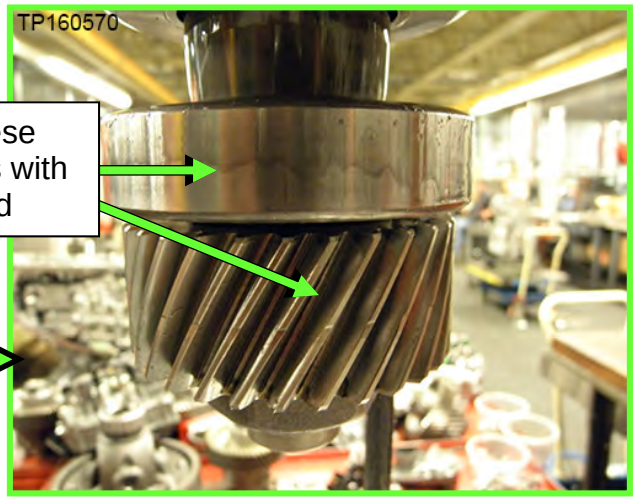


Figure 94

73. 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: <u>DO NOT</u> allow the output gear to contact the lubrication tube when the side cover is positioned over the guide pins (Figure 95 and Figure 96).

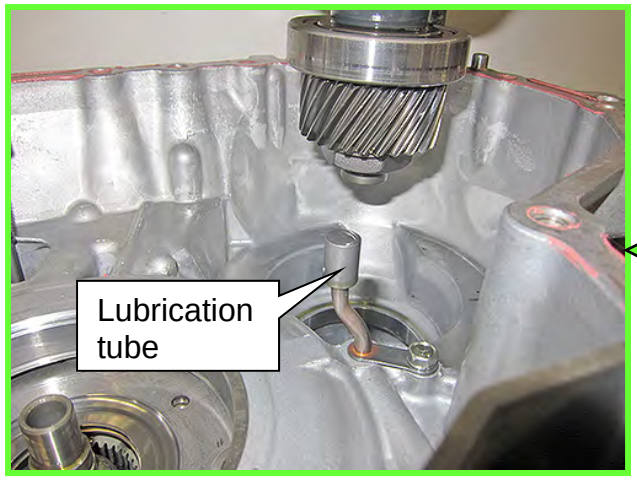


Figure 95

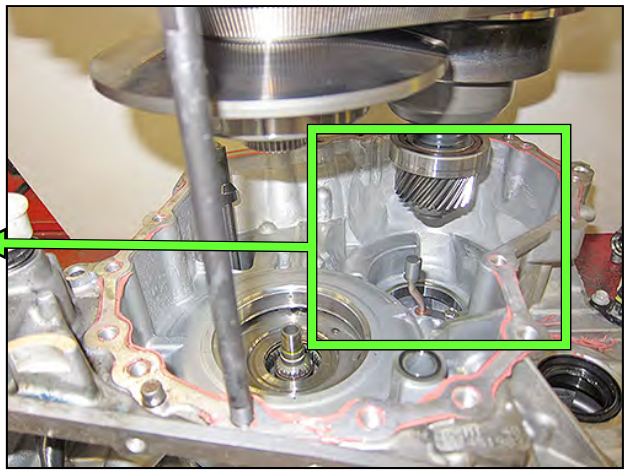


Figure 96

IMPORTANT:
Before continuing, it is recommended that you review and understand the instructions on pages 49 through 53.

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

IF THE SUB-ASSEMBLY DOES NOT LOWER COMPLETELY, STOP ! 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 97 and Figure 98), between the sub-assembly and the CVT case, to determine the cause of interference.

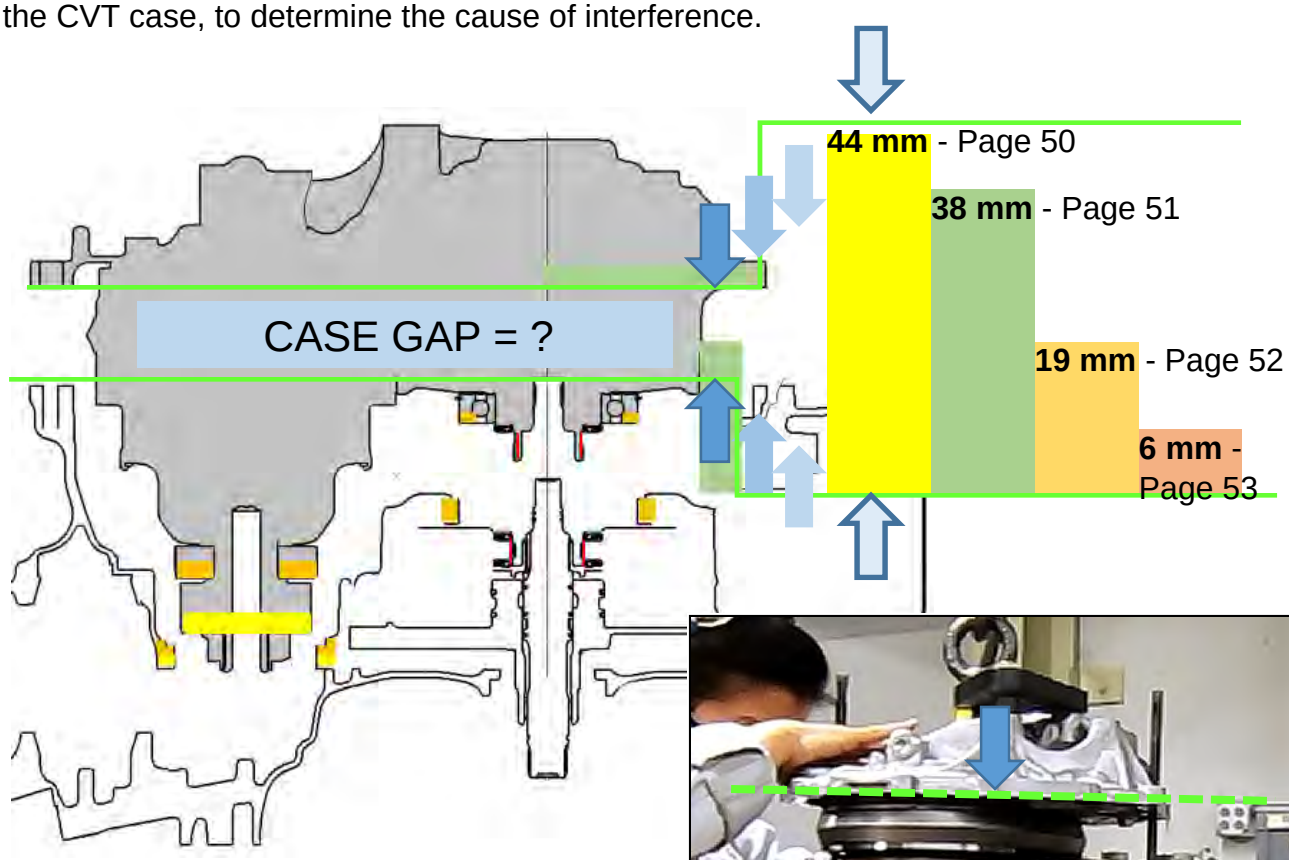


Figure 97

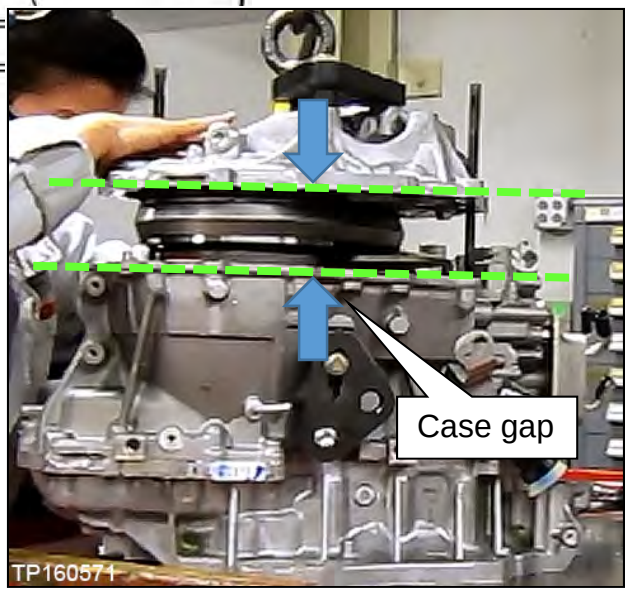


Figure 98

74. 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. See Figure 103 on page 51.

- Look into the bearing bore to confirm the output gear is centered (Figure 100).
- 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 99).

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

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

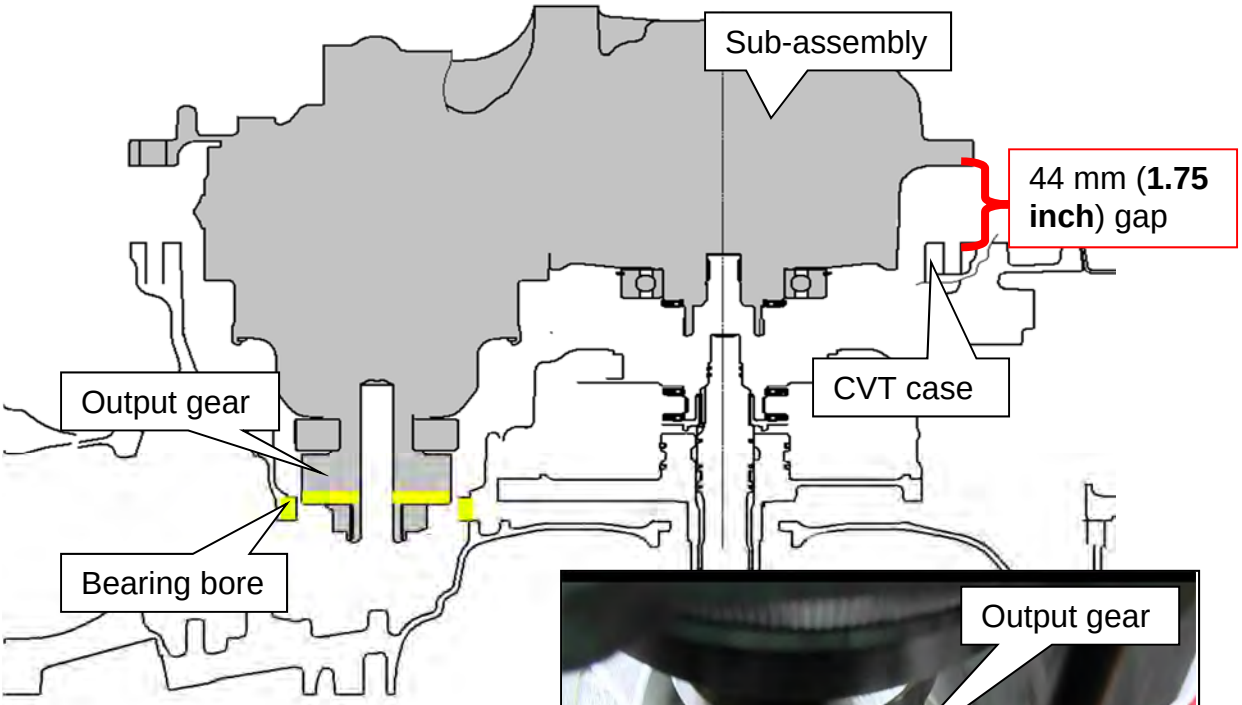


Figure 99

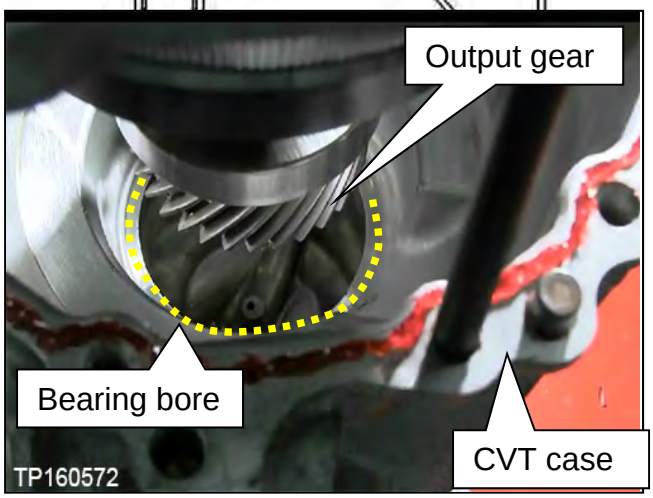


Figure 100

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 70 on page 46.

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

IMPORTANT: Perform step 75 while there is a **38 mm (1.5 inch)** gap between the sub-assembly and CVT case (Figure 103).

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 102) with the opening in the parking pawl (◯ in Figure 101) 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.

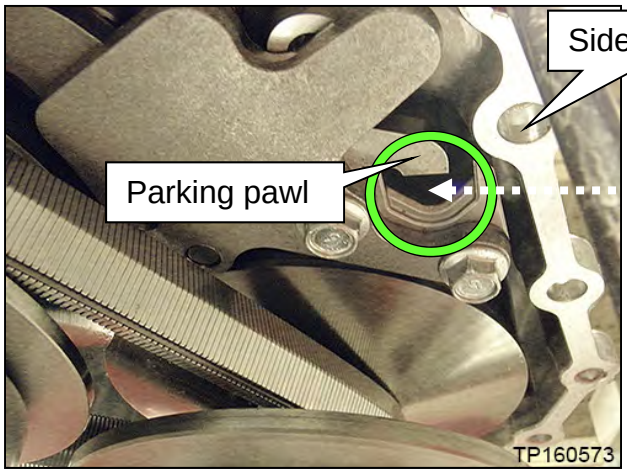


Figure 101

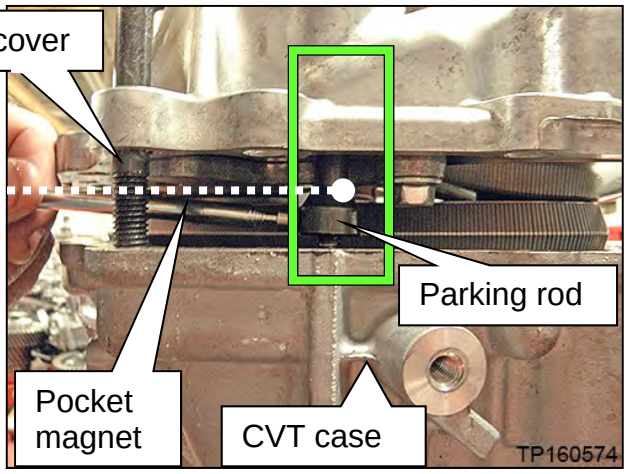


Figure 102

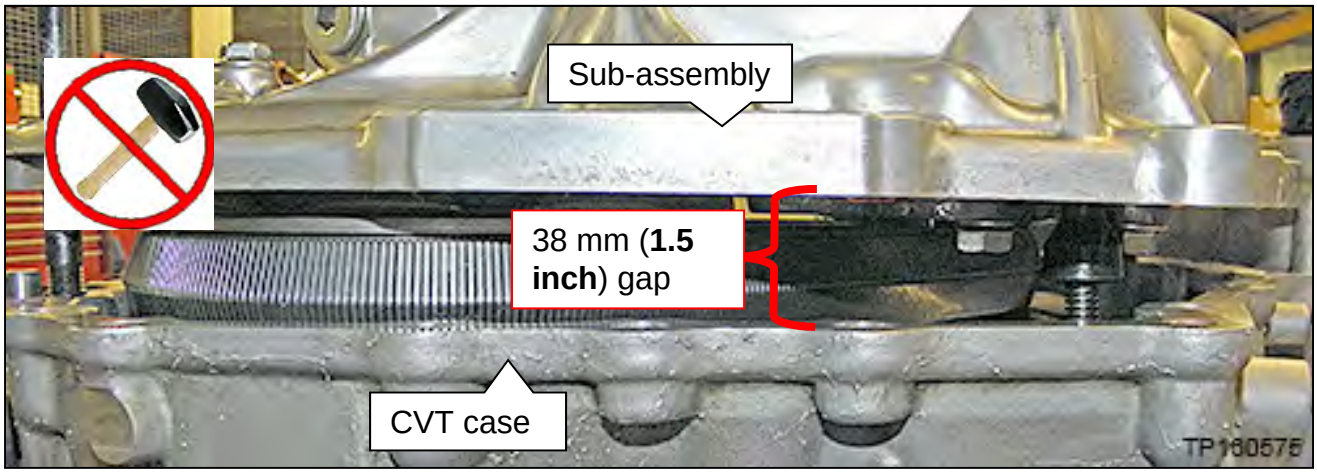


Figure 103

76. 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 104) 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.

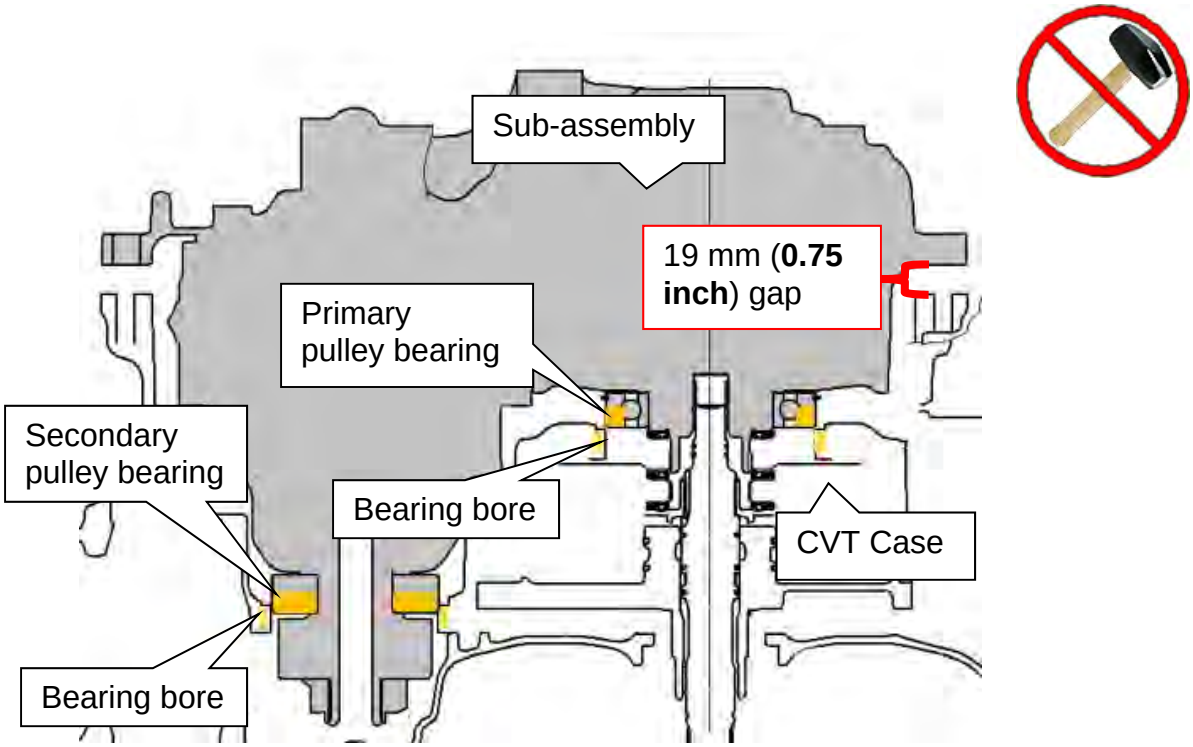


Figure 104

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.**

77. 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.

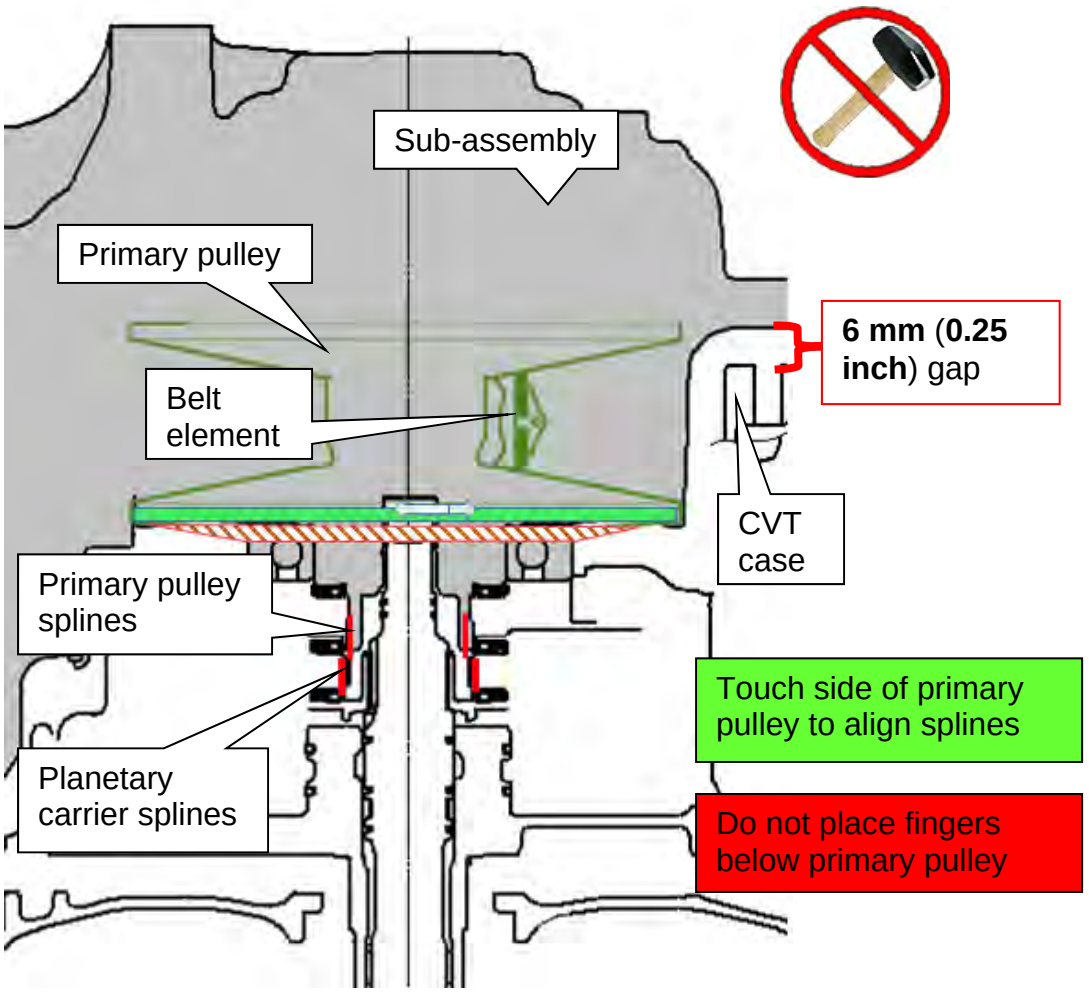


Figure 105

78. Confirm the parking rod operation as follows:

a. Rotate the shift select lever counterclockwise and confirm that all detents for each of the P-R-N-D are felt.

b. Rotate the lever clockwise to return the rod back to the **P** position.

c. Are all of the detents felt?

- **YES:** Proceed to step 79.
- **NO:** If the lever does not rotate or if all detents are not felt:

    1) Raise the sub-assembly and remove all sealant.
    2) Restart from step 70 on page 46.

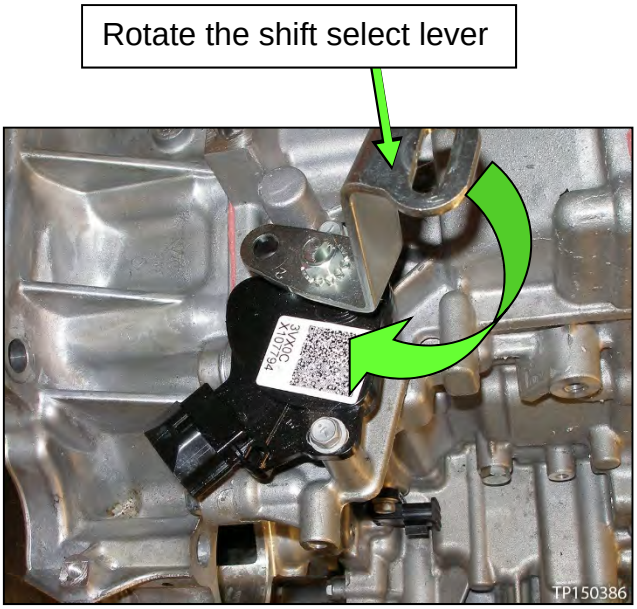


Figure 106

79. Remove the guide pins.

80. Install the new side cover bolts (Figure 107).

- Torque the first eight (8) bolts marked as ● in the sequence numbered in Figure 107 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.

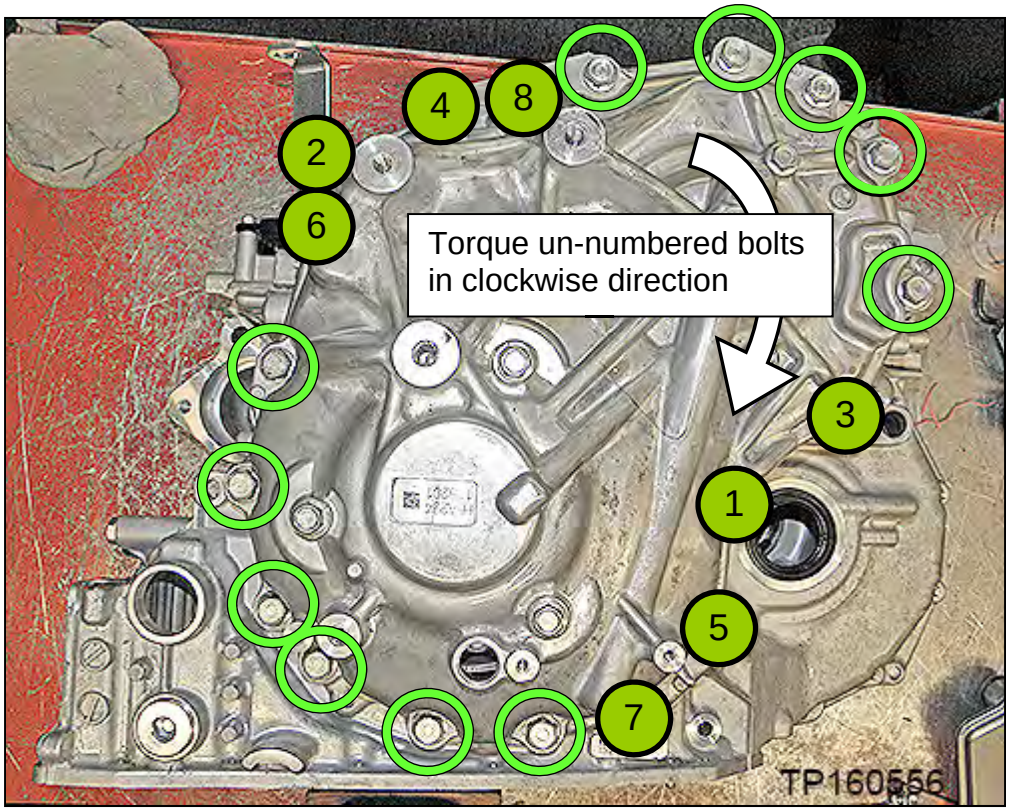


Figure 107

81. Remove the Lifting Fixture.

82. 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 69 on page 45.

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

- Do not use tools to install.

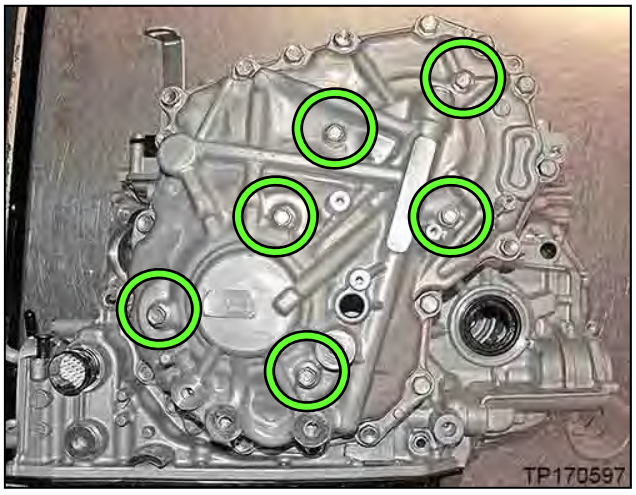


Figure 108

84. 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 85.

        - 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 70 on page 46.

85. Torque all six (6) bolts.

    - Bolt torque: 28 N•m (2.8 kg-m, **20 ft-lbs**).

Figure 109

86. Install the CVT case side axle seal (Figure 110).

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

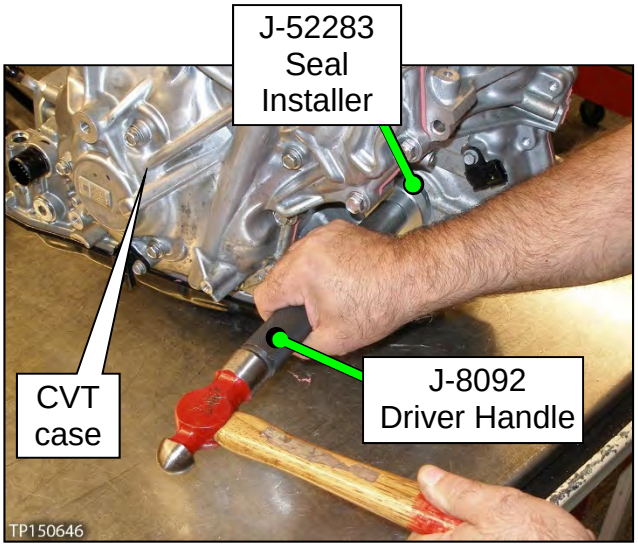


Figure 110

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

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

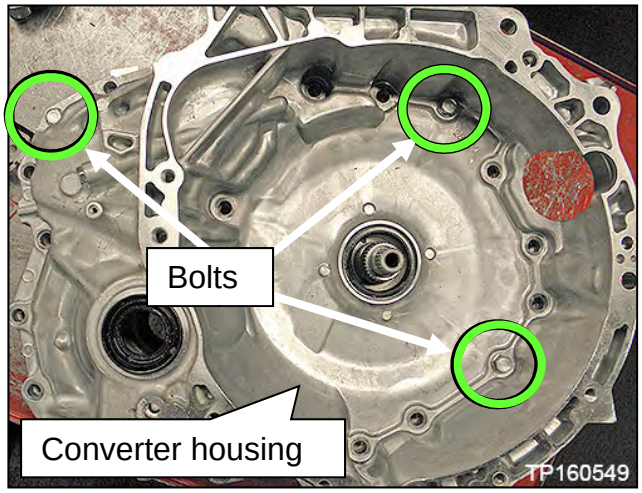


Figure 111

Clutch Total Endplay Adjustment – Thrust Bearing Selection

IMPORTANT: Using thrust bearings, the clutch total endplay (Figure 112) 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.

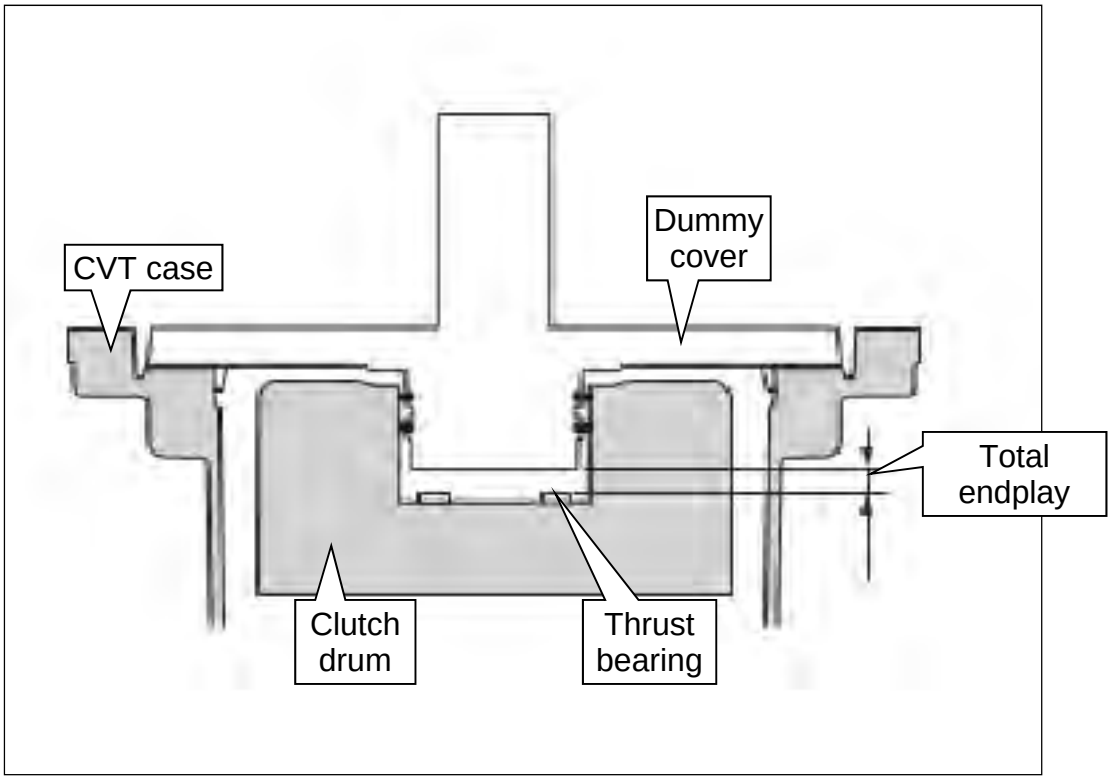


Figure 112

89. Clean and then zero the Digital Depth Gauge (part #: J-50272).
    - Set the Digital Depth Gauge to millimeters.

90. Clean Gauge Block J-50271.

91. Confirm the mating surfaces of the CVT case are clean.

92. Calculate the average clutch assembly bore depth (**D**) (Figure 113) as follows:

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

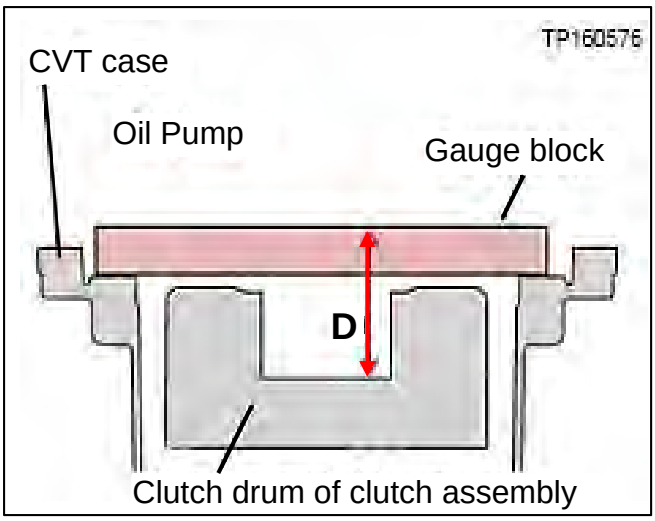


Figure 113

a. Place the Gauge Block on the surface where the dummy cover seats and over the clutch assembly bore (Figure 114).

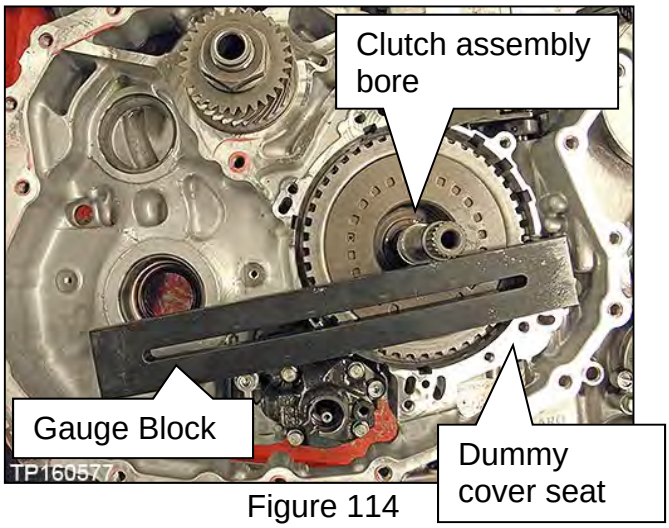


Figure 114

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 115).

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.

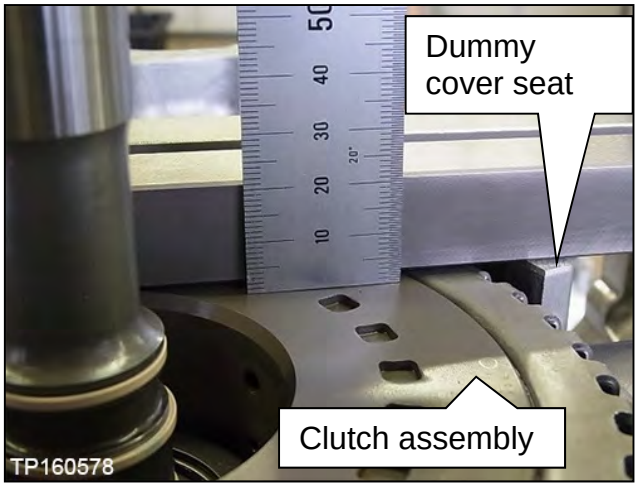


Figure 115

c. Position the Depth Gauge on the Gauge Block (Figure 116).

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

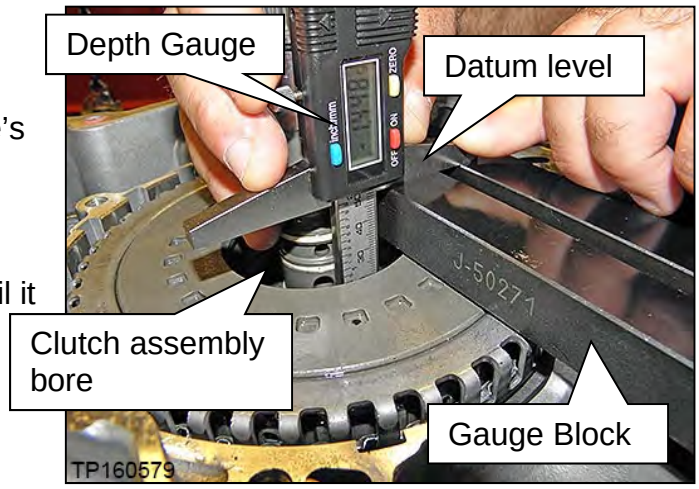


Figure 116

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 117).

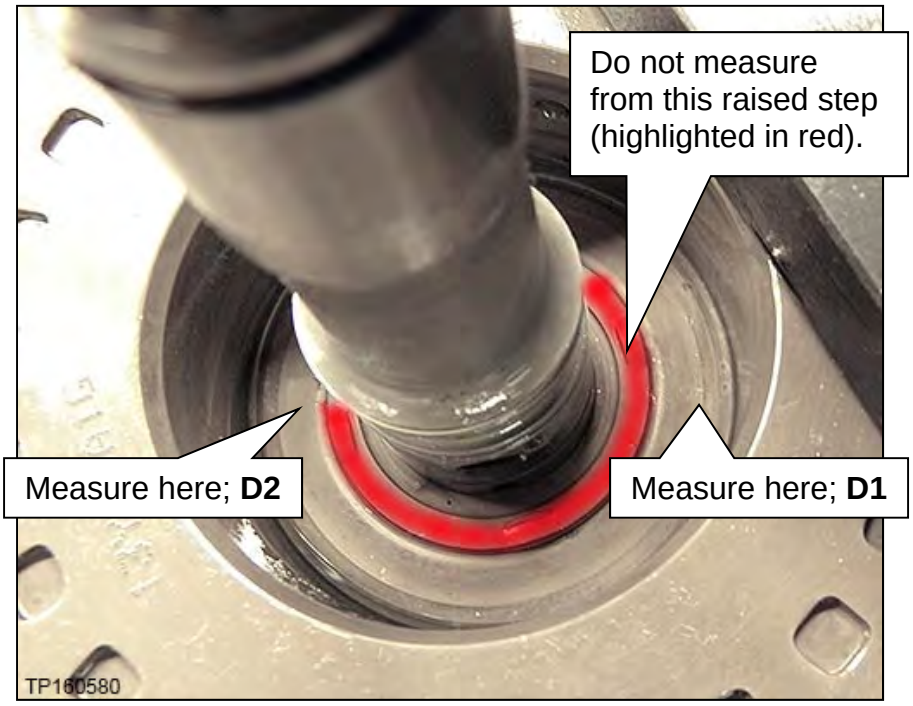


Figure 117

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

93. Measure the average dummy cover height (**H**) (Figure 119) as follows:

a. Clean the dummy cover surfaces that contact the CVT case and thrust bearing (Figure 118).

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 119).

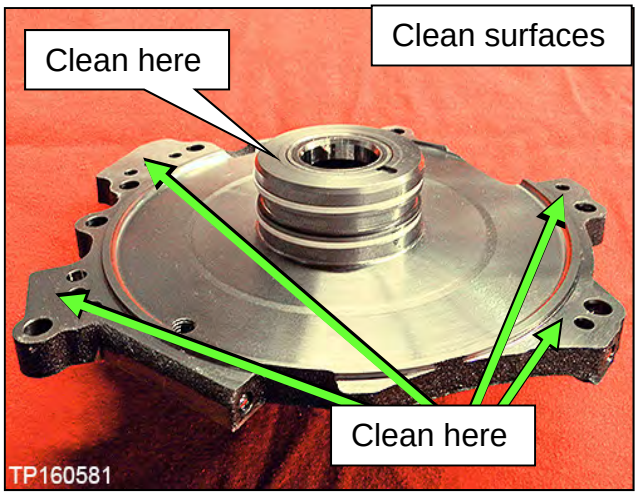


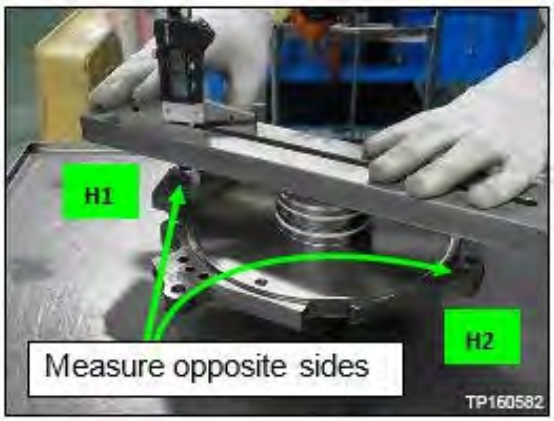
Figure 118

c. Position the Depth Gauge on the Gauge Block over an outer end of the dummy cover (Figure 119).

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 119).



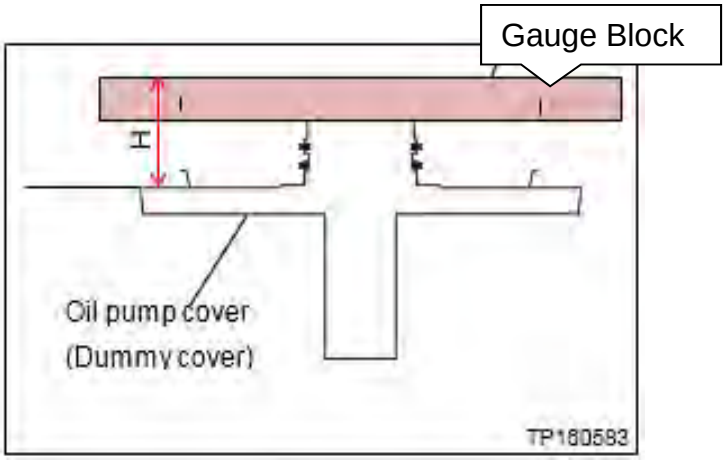


Figure 119

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

94. 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 60 and 61 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 98 for Thrust Bearing part numbers by thickness.

c. Measure and confirm that the selected thrust bearing is the correct thickness before installing (Figure 120).

d. Circle the thrust bearing part number that was selected in **Table A**.

Table A

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

Figure 120

95. Install the thrust bearing flush to the clutch assembly bore as shown in the Figures below.

- 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. See Figure 121 through Figure 124 for the correct orientation.

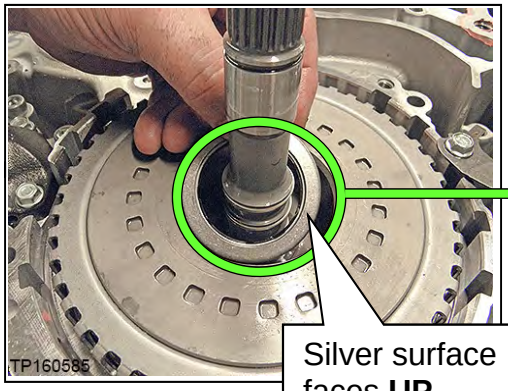


Figure 121

Figure 122

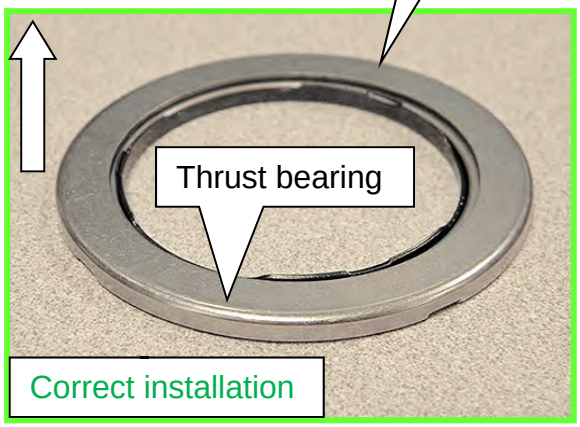


Figure 123

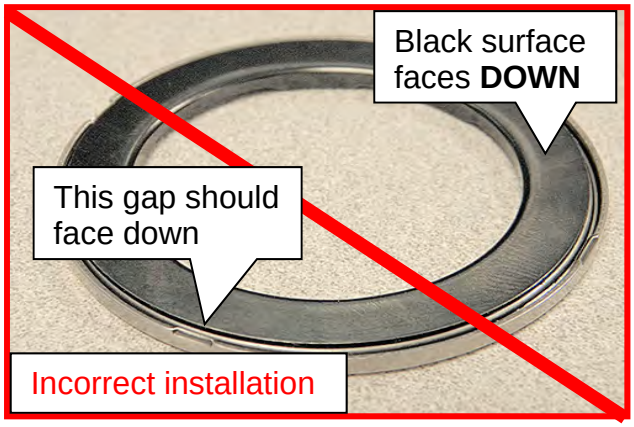


Figure 124

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.

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

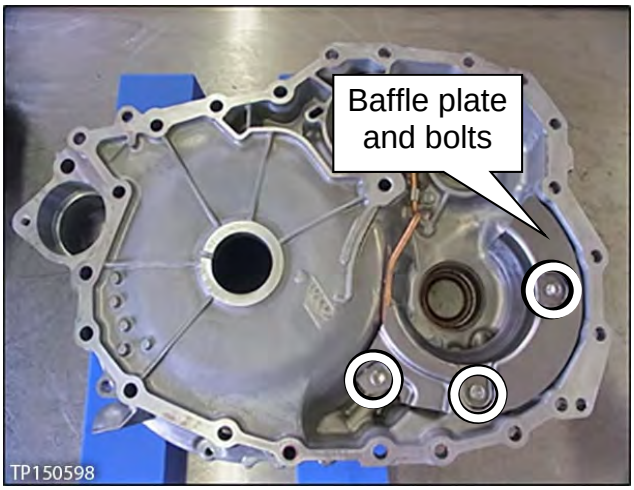


Figure 125

a. Remove the three (3) bolts, and then remove the baffle plate from the converter housing (Figure 125).

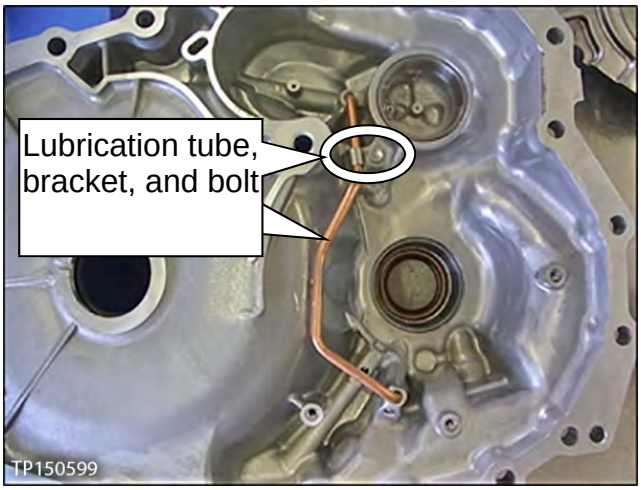


Figure 126

b. Remove the bolt and then remove the lubrication tube and its bracket (Figure 126).

97. Clean the oil passages of the converter housing, lubrication tube and dummy cover with brake cleaner (or equivalent) where shown in Figure 127 through Figure 130 below.

⚠CAUTION

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

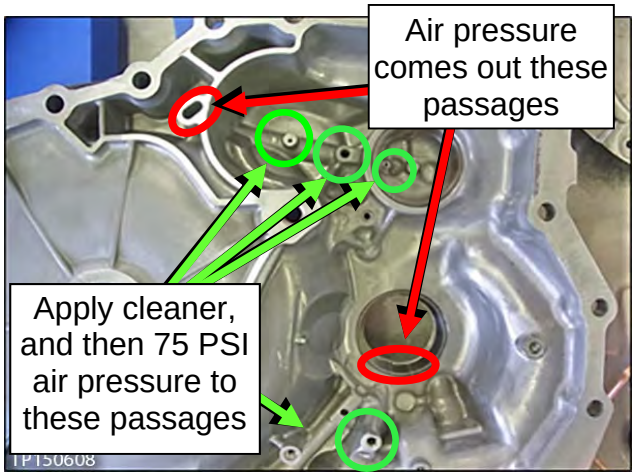


Figure 127

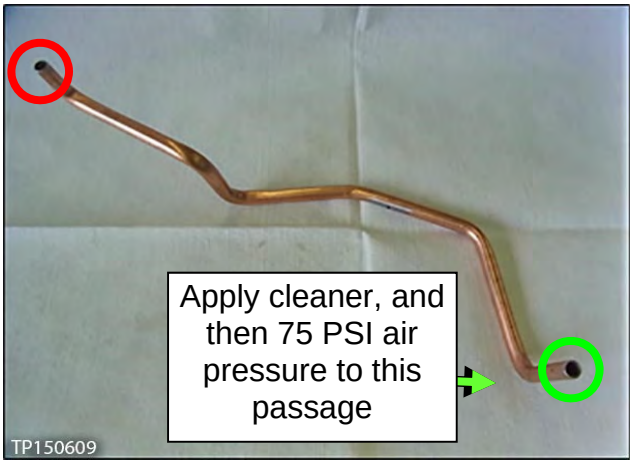


Figure 128

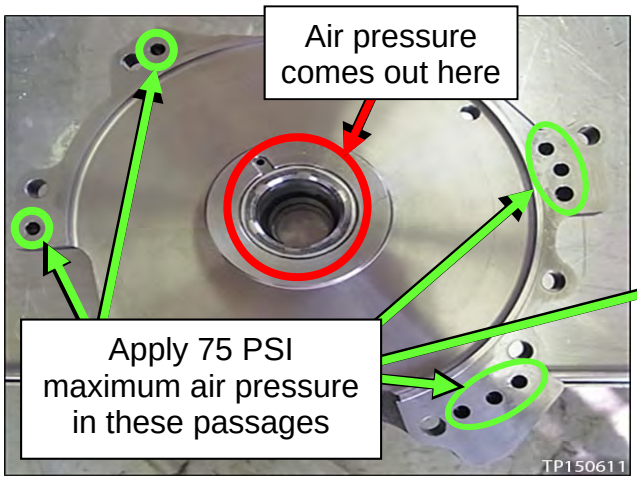


Figure 129

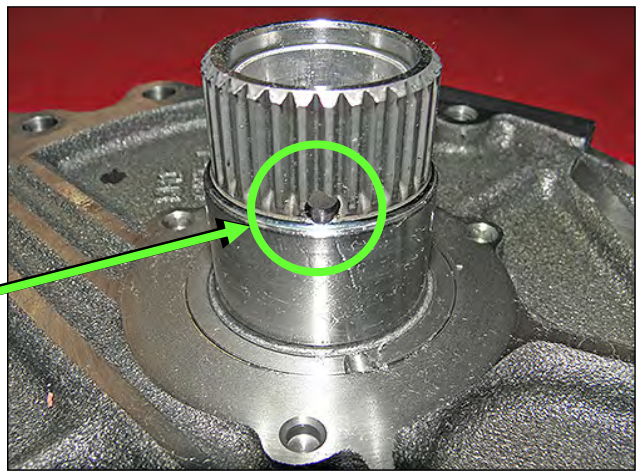


Figure 130

98. Install the lubrication tube, bracket and bolt, and then the baffle plate with three (bolts (Figure 131 and Figure 132).

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

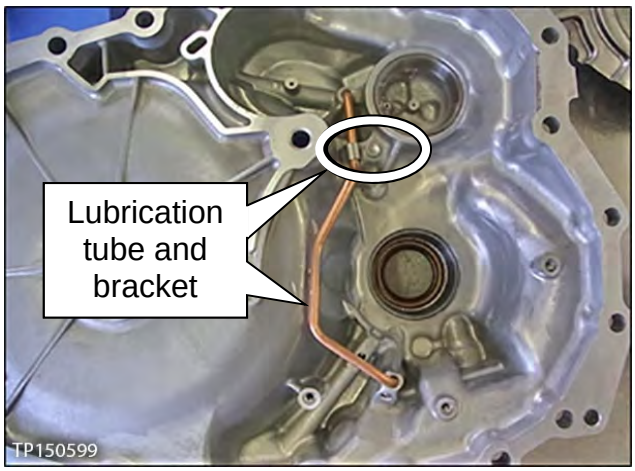


Figure 131

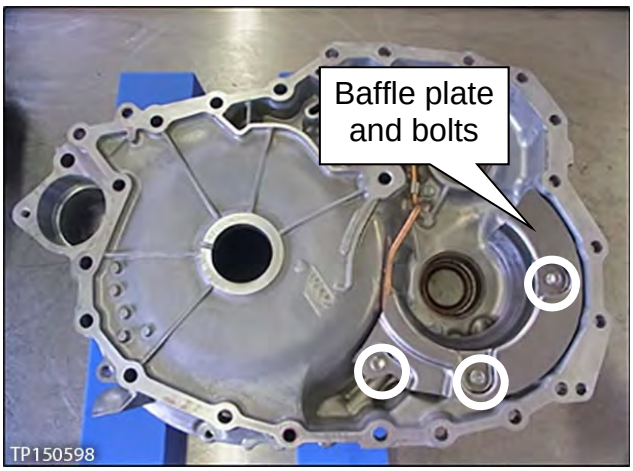


Figure 132

CVT Reassembly

99. Install the torque converter seal (Figure 133).
    - 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 133

100. Install the torque converter housing side axle seal (Figure 134).
    - For 2WD vehicles, use Seal Installer J-52284 and Driver Handle J-8092.
    - For AWD vehicles, use an appropriate drive for seal installation.
    - Apply a light coat of CVT fluid to the seal lip surfaces.

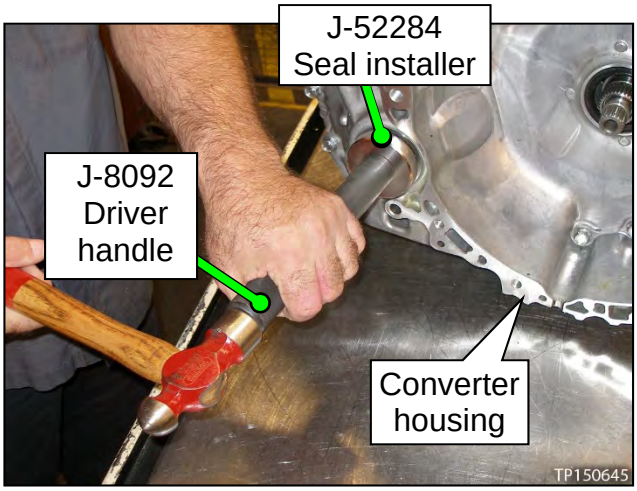


Figure 134

101. Apply petroleum jelly or equivalent to the dummy cover's lathe cut seals (Figure 135) 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.

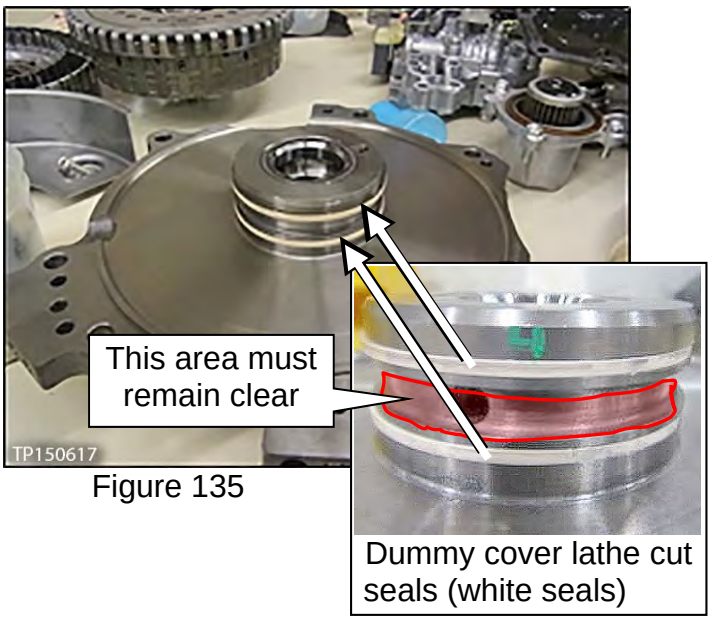


Figure 135

102. Confirm that the input shaft's lathe cut seals are in the correct position (Figure 136).

NOTICE

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

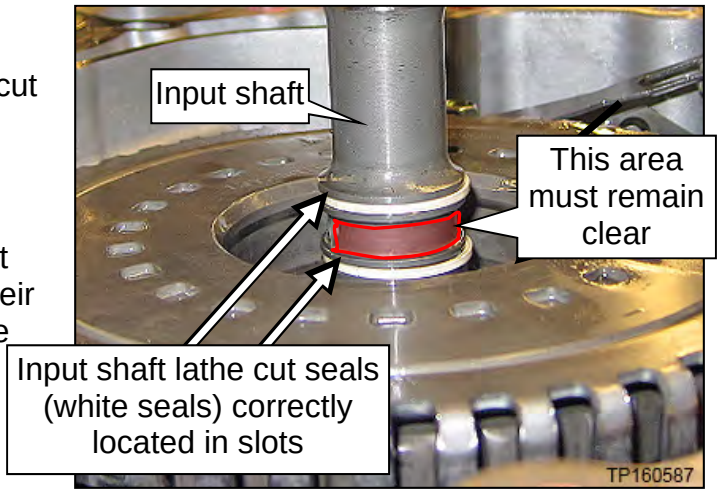


Figure 136

103. Install the dummy cover first, then baffle plate C, and then the related bolts finger tight (Figure 137).

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.

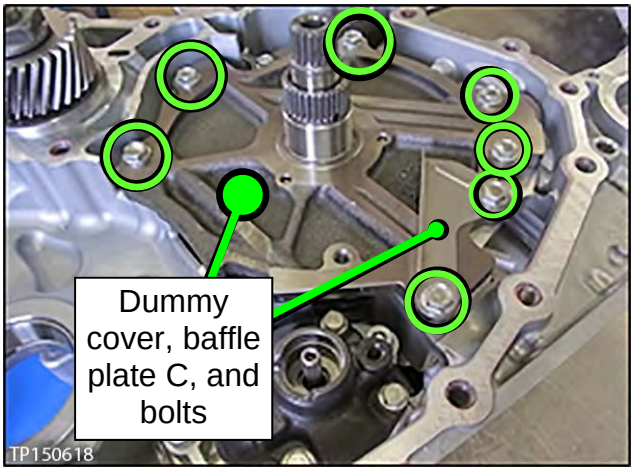


Figure 137

104. Install baffle plate B and "L" bracket with the related bolts finger tight (Figure 138).

105. Torque the bolts from steps 103 and 104 in the following order:

a. Baffle plate B bolts: 5.9 N•m (0.6 kg-m, **52.2 in-lb**.)

b. "L" bracket bolts: 25.5 N•m (2.6 kg-m, **19 ft- lb**). Torque (1) and then (2).

c. Dummy cover and baffle plate C bolts torque: 19.0 N•m (1.9 kg-m, **14 ft-lb.**)

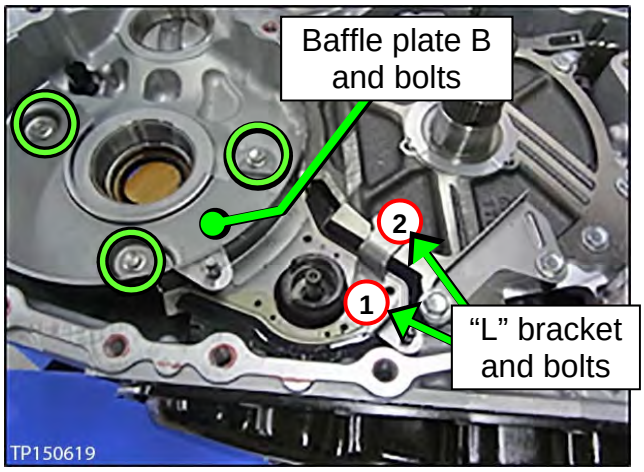


Figure 138

106. Install the thrust washer onto the dummy over (Figure 139).

- Use petroleum jelly or equivalent to hold the thrust washer in place.
- Make sure the tabs fit into the holes.

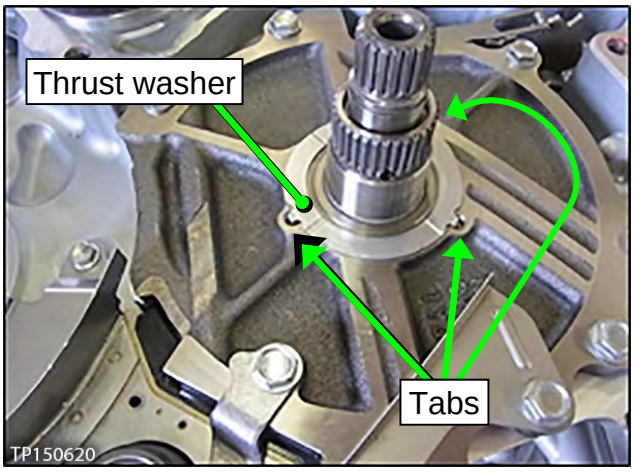


Figure 139

107. Install the drive sprocket, driven sprocket, and chain as an assembly (Figure 140).
    - Make sure the raised edge (wider edge) on the drive sprocket is facing up (Figure 141).

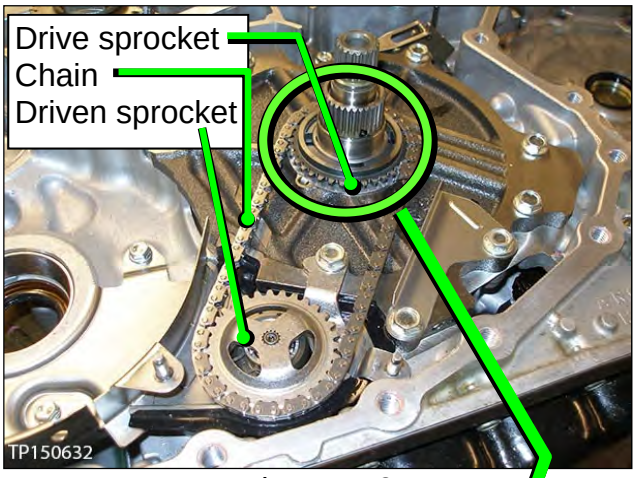


Figure 140

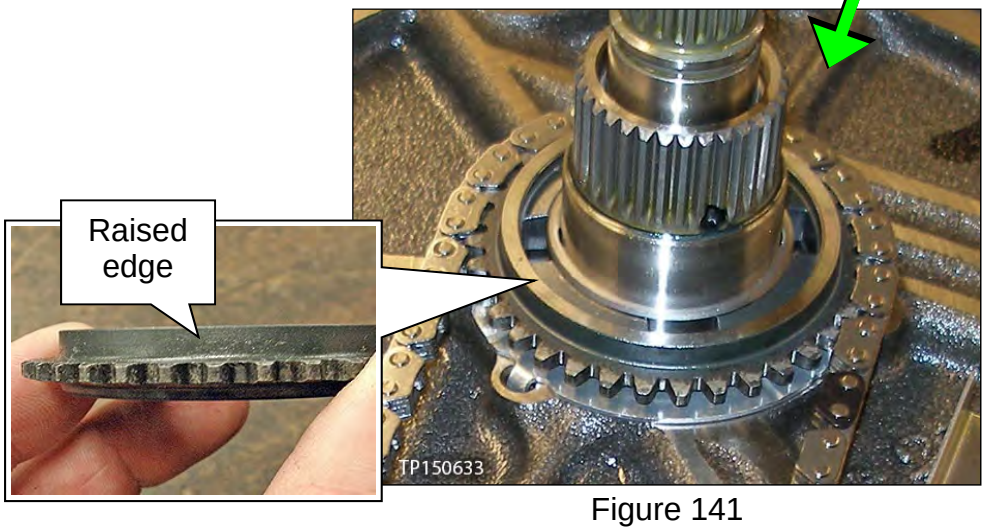


Figure 141

a. Expand the snap ring with a suitable tool, and then push down on the driven sprocket until it bottoms out (Figure 142).
b. 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.

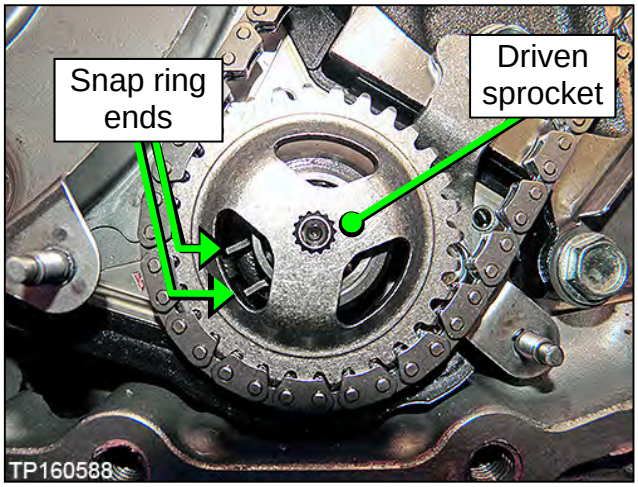


Figure 142

108. Install baffle plate A with two (2) nuts (Figure 143).

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

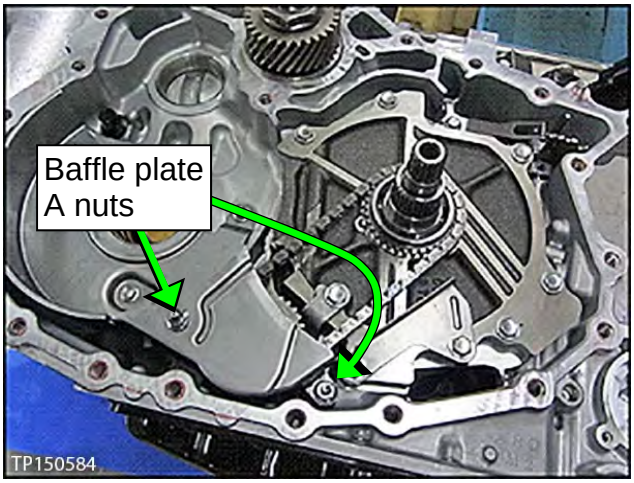


Figure 143

109. Install a new O-ring on the input shaft (Figure 144).

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

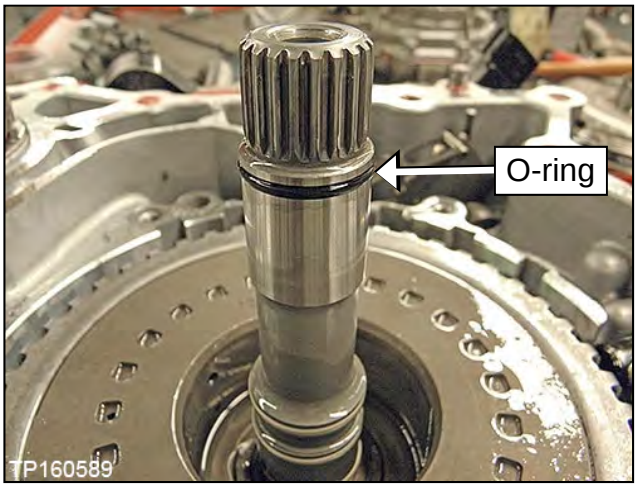


Figure 144

110. Install the differential assembly and the reduction gear assembly into the CVT case (Figure 145 and Figure 146).

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

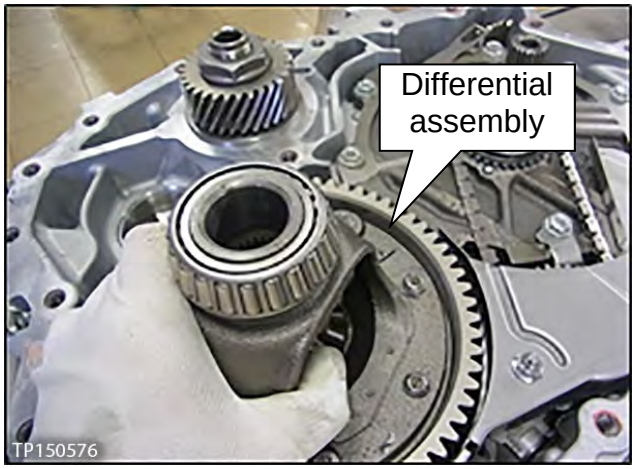


Figure 145

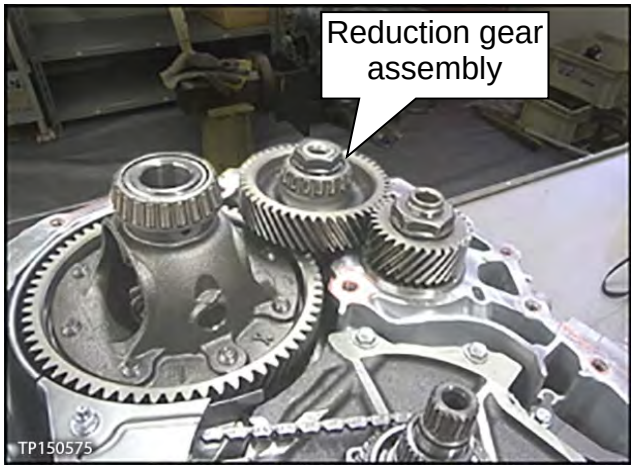


Figure 146

111. Install the CVT fluid filter and components (Figure 147 and Figure 148).

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.**)

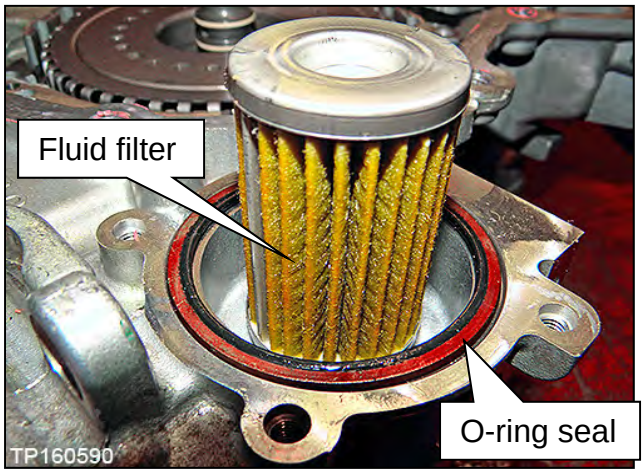


Figure 147

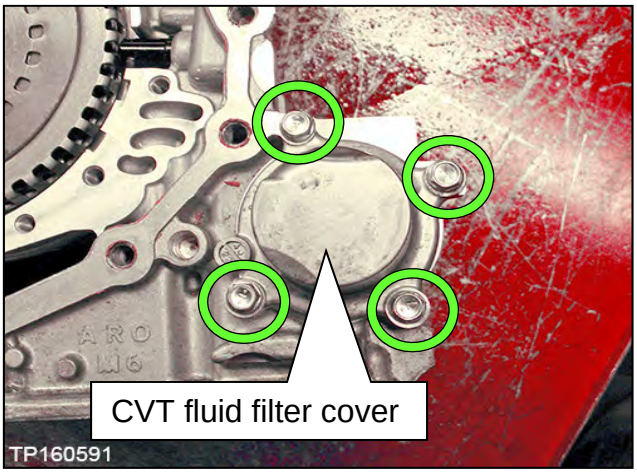


Figure 148

112. Confirm the pin (Figure 149) is located in the CVT case prior to installation of the converter housing.

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

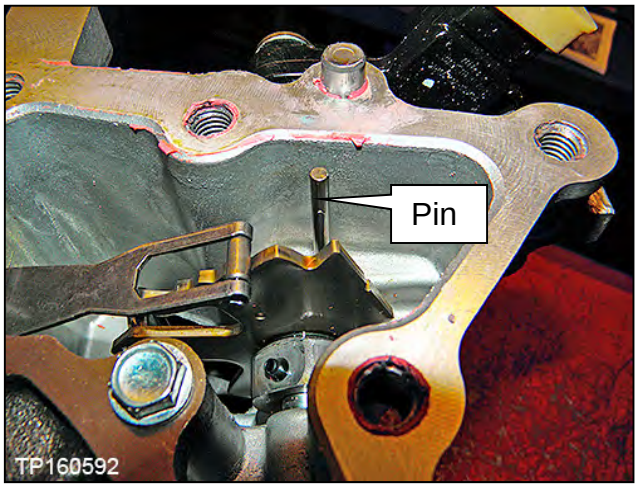


Figure 149

113. Apply one continuous, 2.0 mm (**0.8 inches**) diameter, bead (Figure 150) of pink colored Loctite 5460 Sealant (see **PARTS INFORMATION** on page 93).

- Before sealant application, make sure the mating surfaces are clean from oil, dirt, old sealant, etc. (Figure 150).

  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.

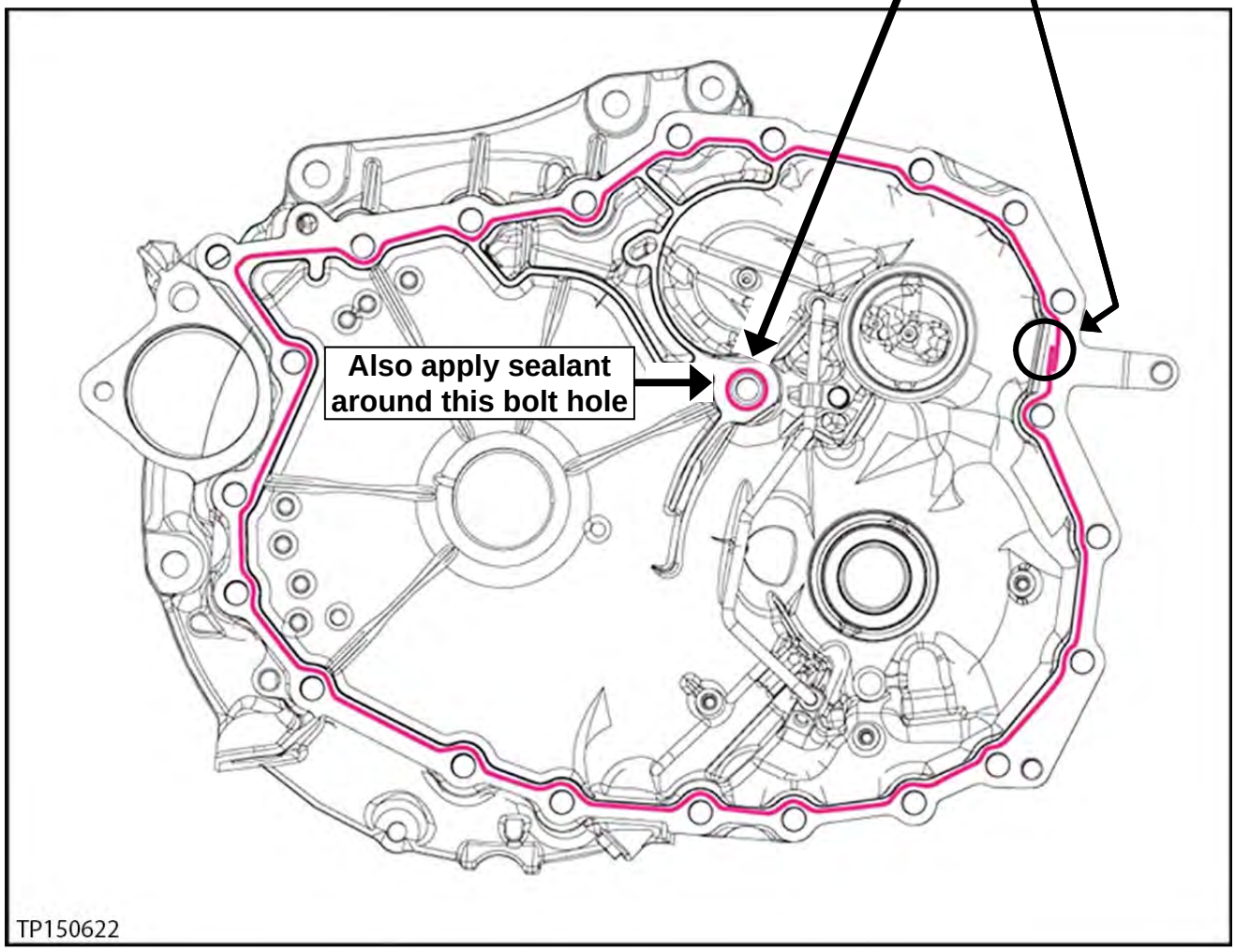


Figure 150

114. Install the converter housing onto the CVT case (see Figure 151 for torque sequence):

- Install the 23 new bolts.
  a. Torque the first six (6) bolts with symbol ● in numbered sequence (see below).
  b. Torque the remaining bolts with symbol ● in numbered sequence (see below).
     - ➢ 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.**).
       - o Make sure to torque the bolts in the sequence shown in (Figure 151), below.

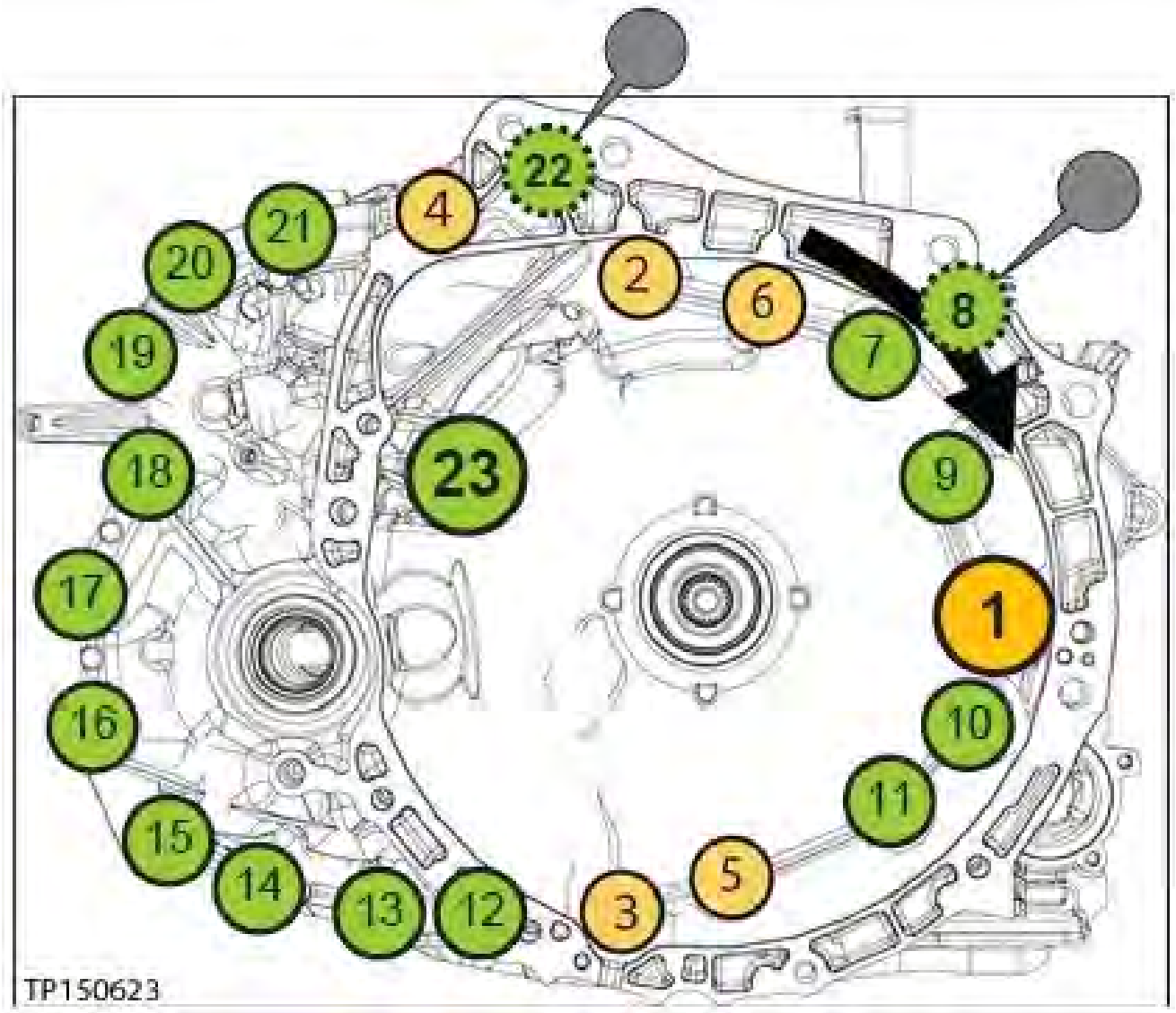


Figure 151

115. 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 <u>all match</u> 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 (Figure 152) will not be used with the new oil strainer.

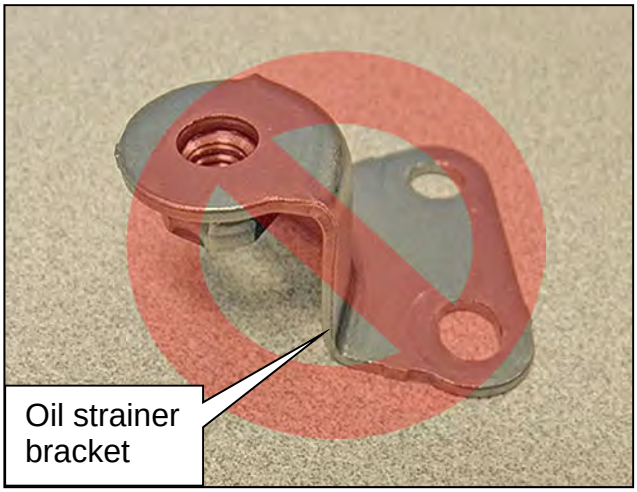


Figure 152

116. Install a new lip seal (Figure 153).
    - Do <u>NOT</u> 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.

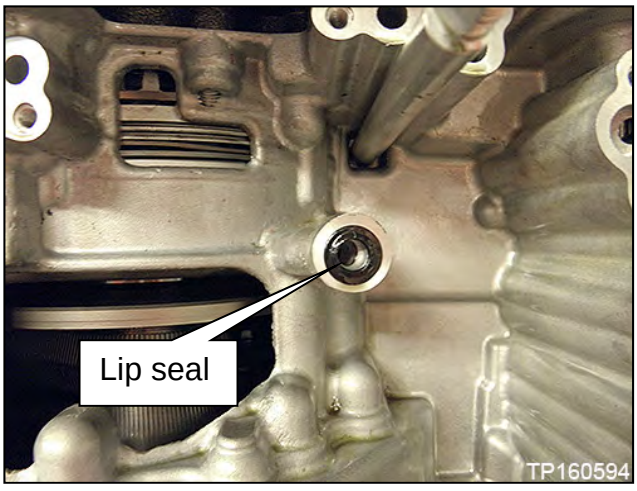


Figure 153

117. Install the Control Valve with eleven (11) mounting bolts (Figure 154).

IMPORTANT:

- Leave four (4) ✖ bolt holes empty at this step.
- Make sure the wiring harness is not pinched (see Figure 155 and Figure 156 for correct routing).
- 54 mm (**2.125 inches**) long bolt ●; 7 pieces
- 44 mm (**1.73 inch**) long bolt ●; 2 pieces
- 25 mm (**1 inch**) long bolt ●; 2 pieces

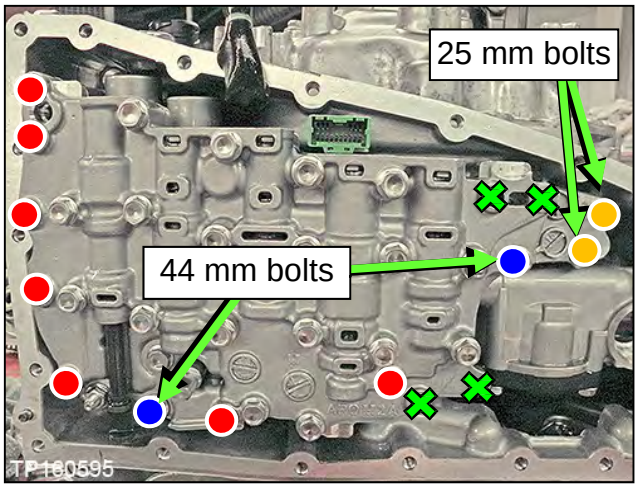


Figure 154

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.**)

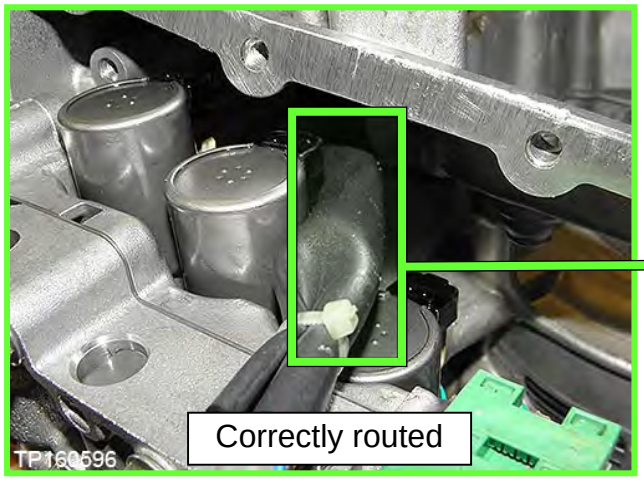


Figure 155

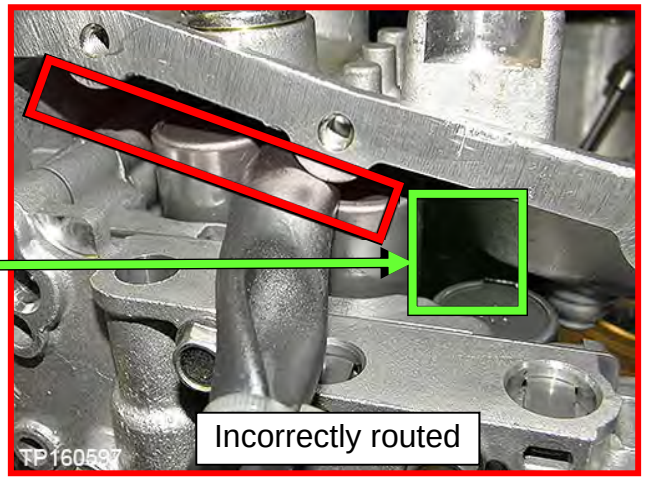


Figure 156

118. 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 157 and Figure 158).

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 93 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 157).
- Tighten the plastic zip tie so that it is oriented as shown in Figure 158.

c. Cut off the plastic zip tie excess.

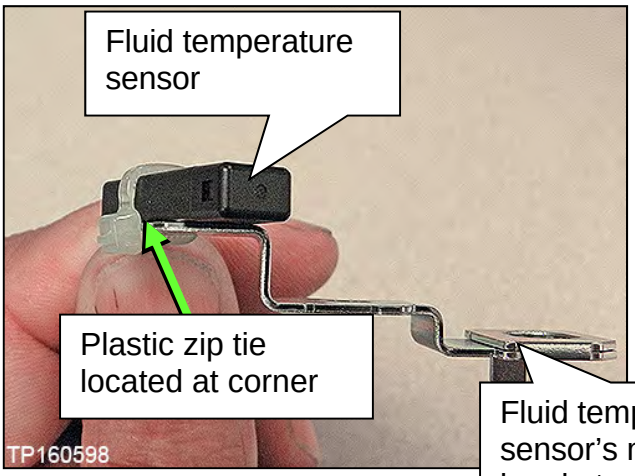


Figure 157

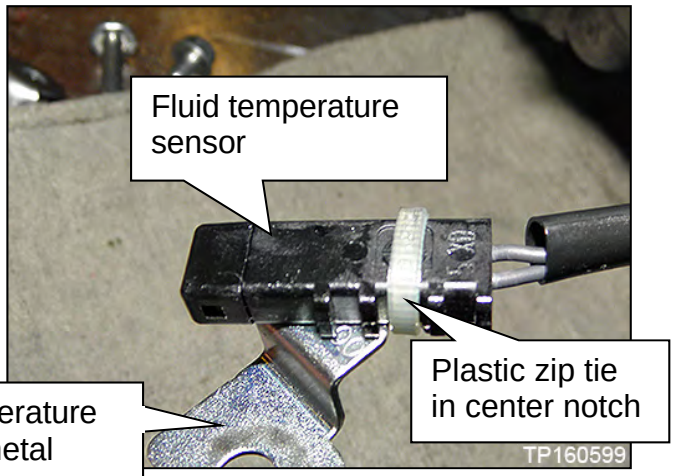


Figure 158

119. Connect the electrical harness connector (Figure 159).

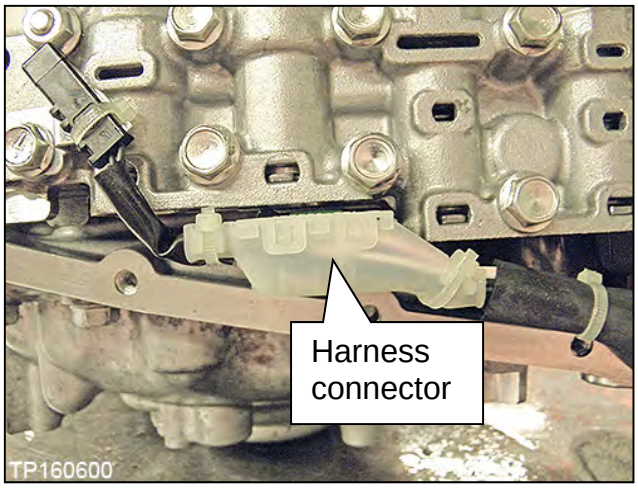


Figure 159

120. Install the CVT fluid temperature sensor bracket to the control valve with one (1) bolt (Figure 160).

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 inches**) long bolt.
  - ➢ Bolt torque: 7.9 N•m (0.81 kg-m, **70 in-lb.**)

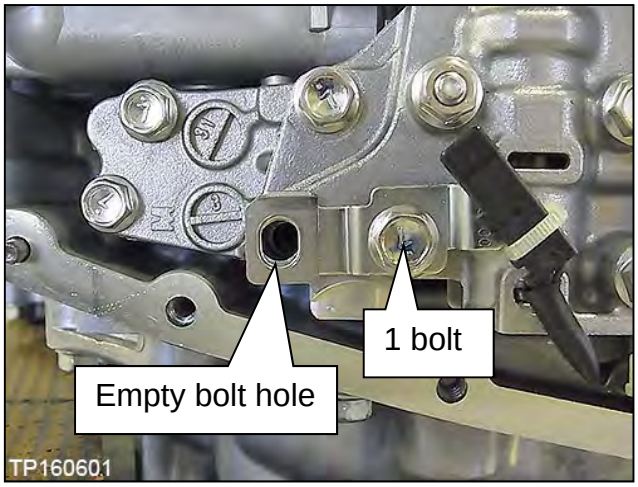


Figure 160

121. Install the new oil strainer with its new O-ring seal with two (2) bolts (Figure 161).

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

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

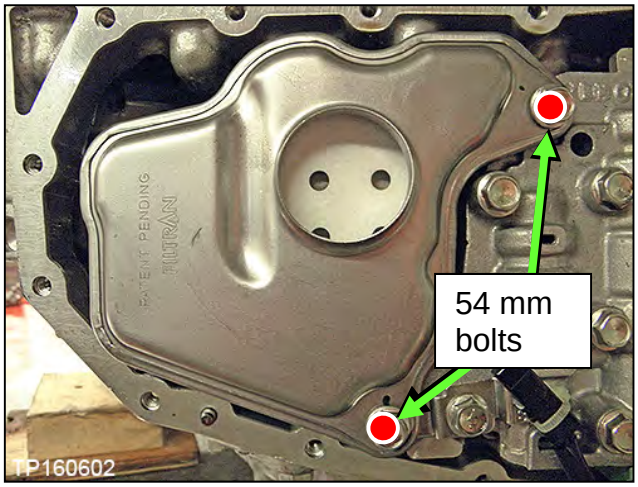


Figure 161

122. Install the manual plate, lock washer, and nut (Figure 162).

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, **16 ft-lb**.)

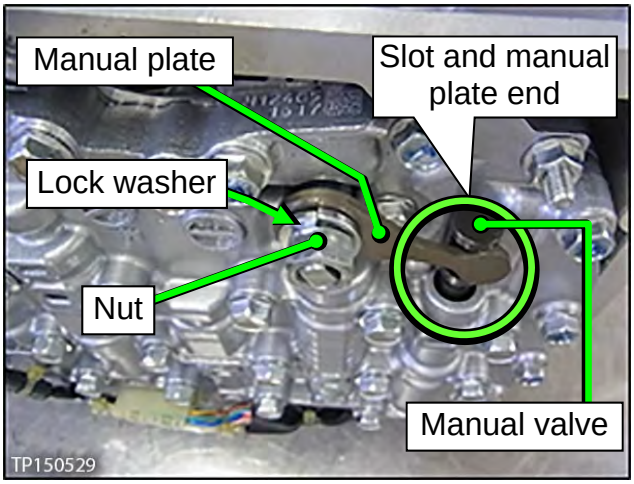


Figure 162

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

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

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

126. Install the oil pan bolts (see Figure 163).

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

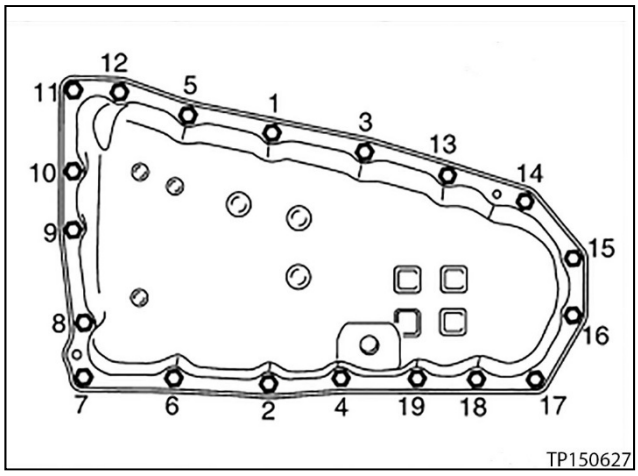


Figure 163

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

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

- For the procedure to fill CVT with NS-3 CVT fluid or equivalent, refer to the ESM, section **TRANSMISSION & DRIVELINE > TRANSAXLE & TRANSMISSION > CVT: RE0F10D >PERIODIC MAINTENANCE > CVT FLUID**.

129. 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.**)

130. Install the torque converter to the CVT assembly.

- Verify the torque converter is installed at the proper depth (see Figure 164).
- (A) = 14.4 mm

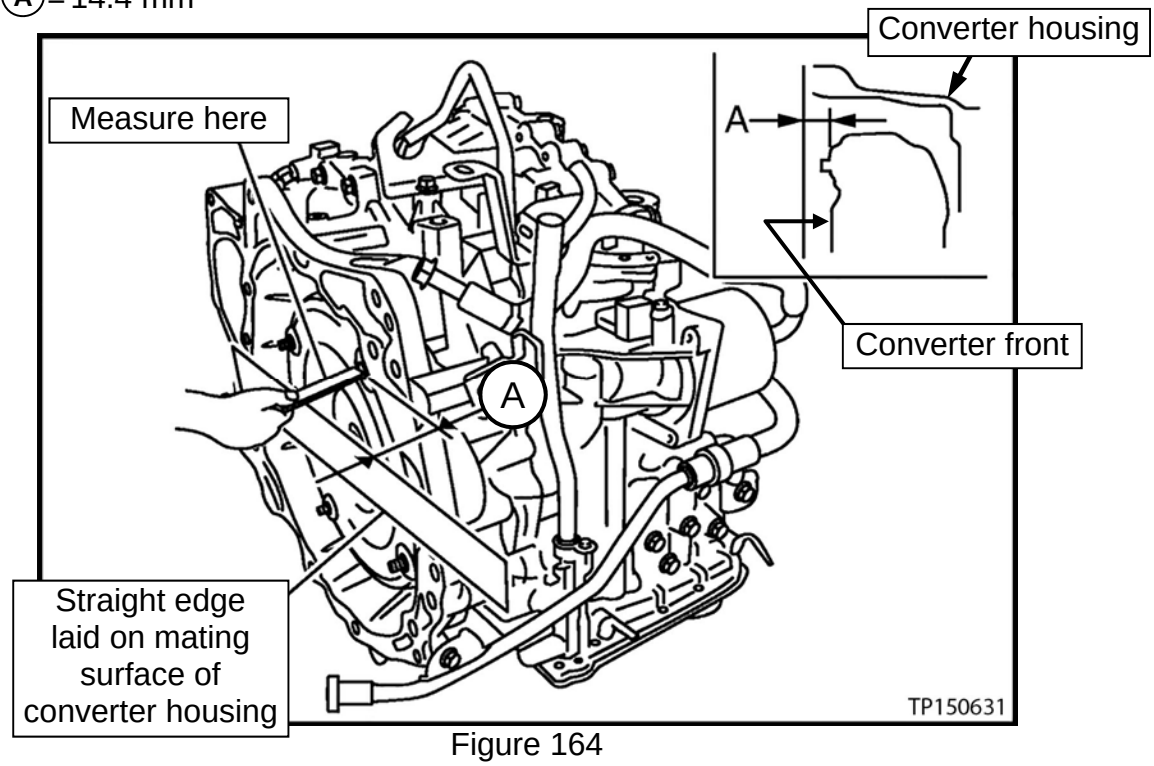


Figure 164

131. Attach the QR label (Figure 165) with the new calibration data onto the transmission range switch (inhibitor switch; Figure 166).

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

132. Confirm that the QR label and the CD-R part numbers are the same (Figure 165).

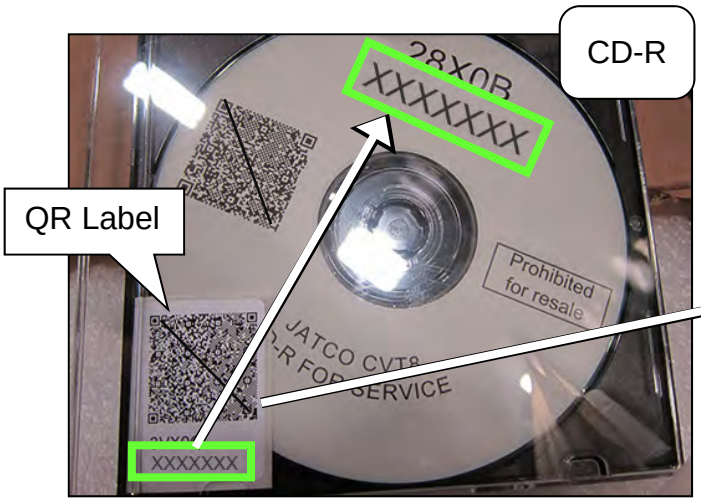


Figure 165

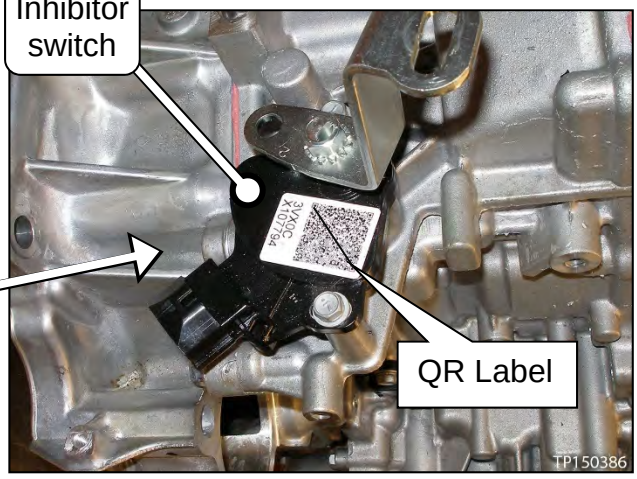


Figure 166

Install the CVT Assembly

133. Install the CVT assembly into the vehicle.

- For CVT installation, refer to the ESM, section **TRANSMISSION & DRIVELINE - TRANSAXLE & TRANSMISSION - CVT: RE0F10D - UNIT REMOVAL AND INSTALLATION - TRANSAXLE ASSEMBLY**

134. Install the transfer case into the vehicle.

- Refer to the ESM, section **Driveline**, for the transfer case assembly installation.
- Use extreme caution when installing the axle to the transfer case assembly to avoid seal damage or deformation.
- Properly support and guide the axle.

NOTE: On 2WD Juke, skip to step 135.

135. Connect both battery cables, negative cable last.

136. Reset/reinitialize systems as needed.

TCM Reprogramming

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

IMPORTANT: Before starting, make sure:

- ASIST on the CONSULT PC has been synchronized (updated) to the current date.
- All C-III plus software updates (if any) have been installed.
- The CONSULT PC is connected to the Internet (Wi-Fi or cable).

NOTE:

- Most instructions for reprogramming with C-III plus are displayed on the CONSULT PC screen.
- If you are not familiar with the reprogramming procedure, click here. This will link you to the "CONSULT- III plus (C-III plus) Reprogramming" general procedure.

NOTICE

- Connect a battery maintainer or smart charger set to reflash mode or a similar setting. If the vehicle battery voltage drops below 12.0V or rises above 15.5V during reprogramming, the TCM may be damaged.

- Be sure to turn OFF all vehicle electrical loads.
  If a vehicle electrical load remains ON, the TCM may be damaged.

- Be sure to connect the AC Adapter.
  If the CONSULT PC battery voltage drops during reprogramming, the process will be interrupted and the TCM may be damaged.

- Turn OFF all external Bluetooth® devices (e.g., cell phones, printers, etc.) within range of the CONSULT PC and the plus VI. If Bluetooth® signal waves are within range of the CONSULT PC or plus VI during reprogramming, reprogramming may be interrupted and the TCM may be damaged.

137. Connect the CONSULT PC to the vehicle.

138. Start C-III plus.

139. Wait for the VI to be recognized.

- The serial number will display when the VI is recognized.

140. Select **Re/programming, Configuration**.

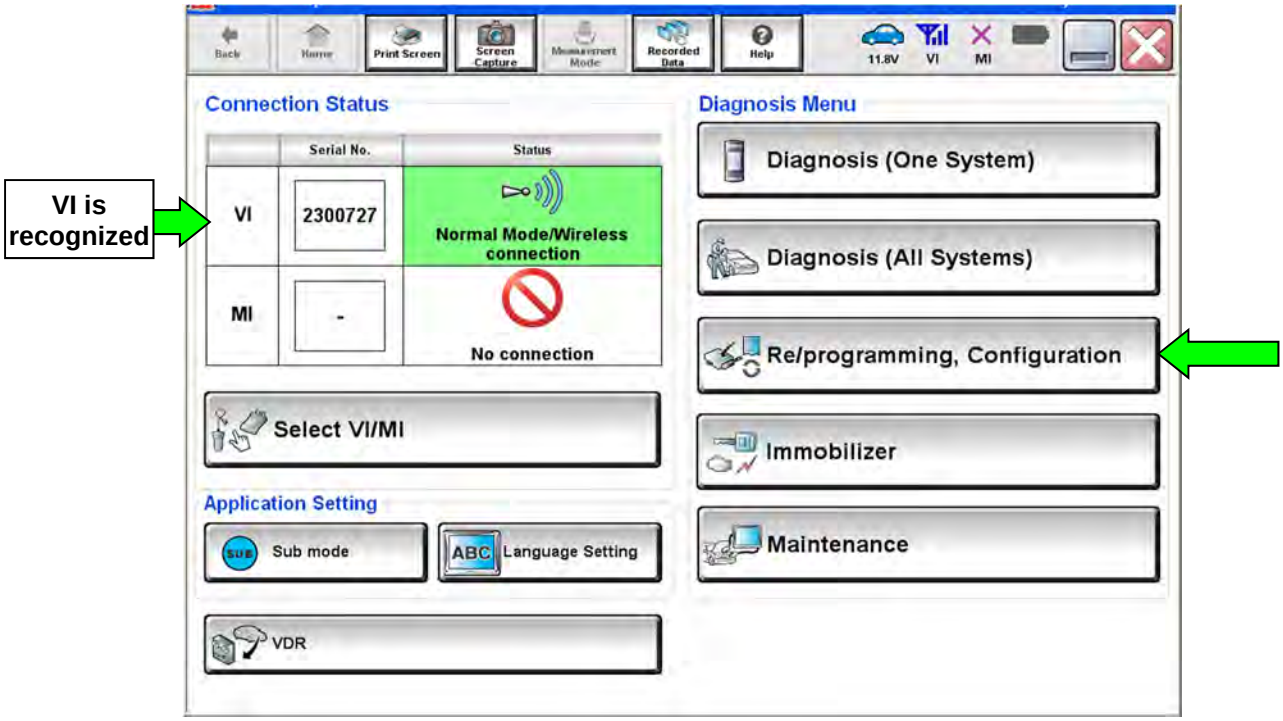


Figure 167

141. Follow the on-screen instructions and navigate the C-III plus to the screen shown in Figure 168 on the next page.

142. When you get to the screen shown in Figure 168, confirm reprogramming applies as follows.

A. Find the TCM **Part Number** and write it on the repair order.

HINT: This is the current TCM Part Number (P/N).

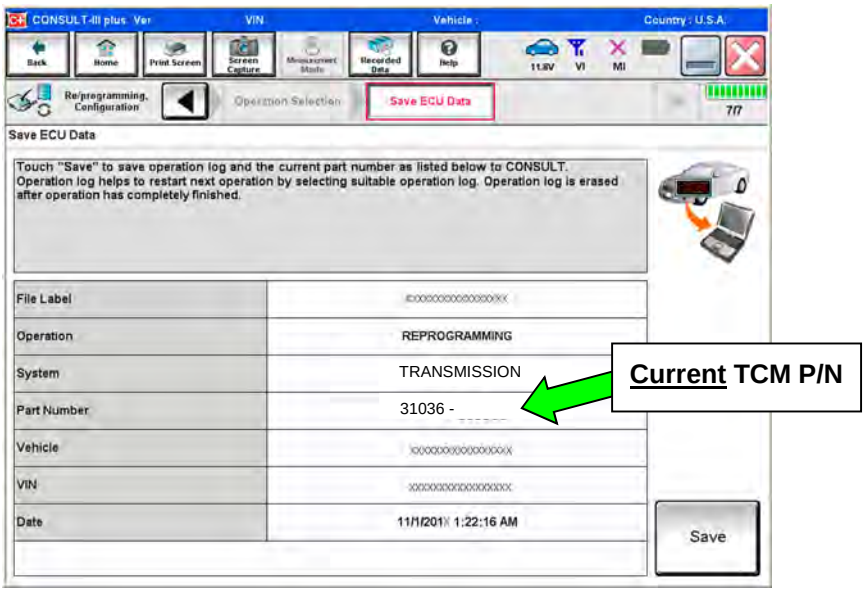


Figure 168

B. Compare the P/N you wrote down to the numbers in the **Current TCM Part Number** column in **Table B** below.

- If there is a match, continue with the reprogramming procedure; step 143.
- If there is not a match, reprogramming is not needed; skip to step 150 and perform **ADDITIONAL SERVICE WHEN REPLACING CONTROL VALVE**.

Table B

MODEL YEAR	CURRENT TCM PART NUMBER BEFORE REPROGRAMMING: 31036 -
2015, 2016	3PT0A, 3PT0B, 3PT0C 3PT2A, 3PT2B, 3PT2C 3PT8A, 3PT9A 4FT0A, 4FT0B BV93A, BV93B, BV94A
2017	3PU0A, 3PU0B, 3PU0C 3PU2A, 3PU2B, 3PU2C 3PU8A 3PU9A

143. Follow the on-screen instructions to navigate C-III plus and reprogram the TCM.

NOTE:

- In some cases, more than one new P/N for reprogramming is available.
  - ➢ If more than one new P/N is available, the screen in Figure 169 displays.
  - ➢ Select and use the reprogramming option that does **not** have the message "Caution! Use ONLY with NTBXX-XXX".
- If you get this screen and it is blank (no reprogramming listed), it means there is no reprogramming available for this vehicle.

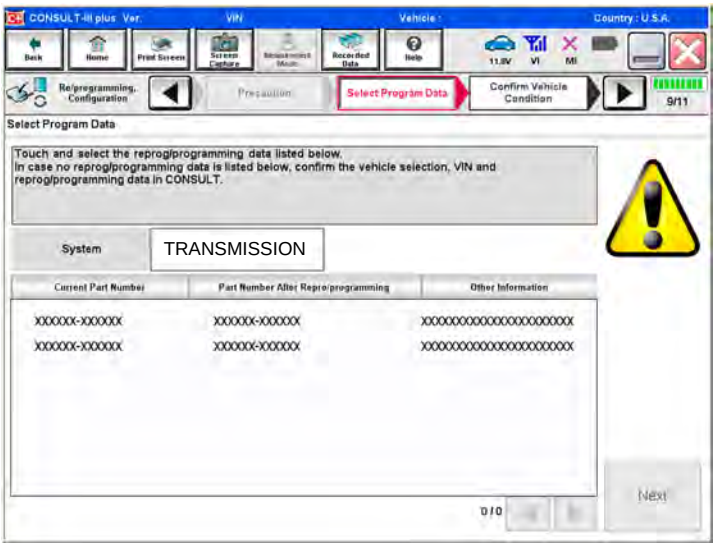


Figure 169

- Before reprogramming will start, you will be required to enter your User Name and Password.
  - ➢ The CONSULT PC must be connected to the Internet (Wi-Fi or cable).
  - ➢ If you do not know your User Name and Password, contact your service manager.

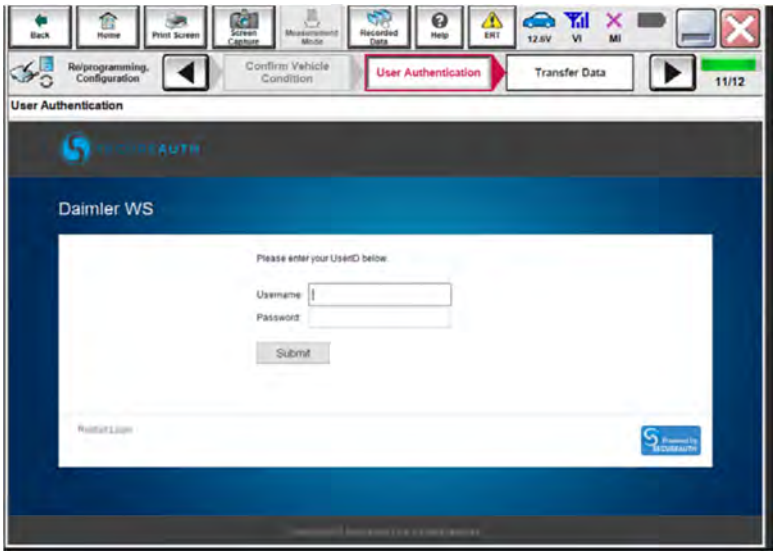


Figure 170

144. When the screen in Figure 171 displays, reprogramming is complete. Disconnect the battery maintainer/smart charger from the vehicle.

HINT: If the screen in Figure 171 does not display (indicating that reprogramming did not complete), refer to the information on the next page.

145. Select **Next**.

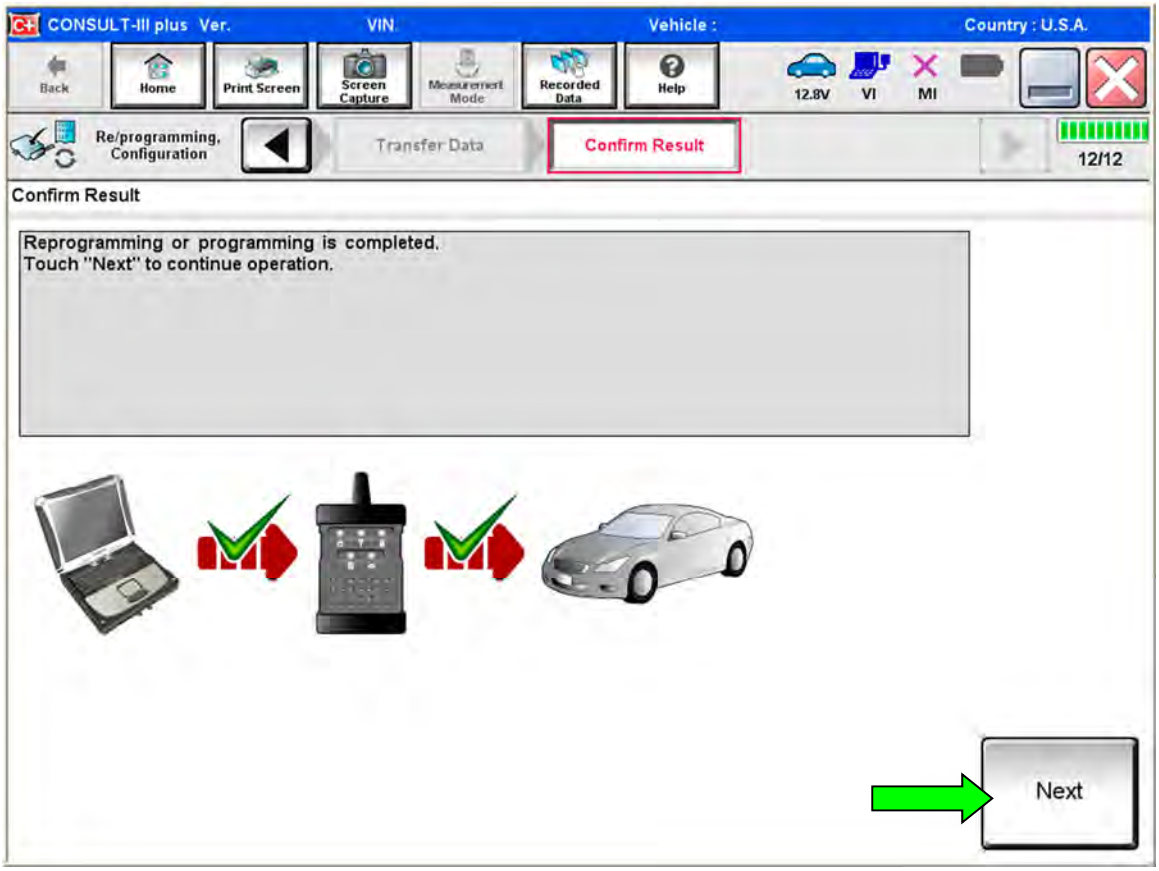


Figure 171

HINT:

- In the next step (page 87) you will perform **Erase All DTCs**.
- DTC erase is required before C-III plus will provide the final reprogramming confirmation report.

TCM Recovery:

<u>Do not disconnect the VI or shut down C-III plus if reprogramming does not complete.</u>

If reprogramming does <u>not</u> complete and the "!?" icon displays as shown in Figure 172:

- Check battery voltage (12.0–15.5 V).
- Ignition is ON, engine OFF.
- External Bluetooth® devices are OFF.
- All electrical loads are OFF.
- Select <u>retry</u> and follow the on screen instructions.
- <u>"Retry" may not go through on first attempt and can be selected more than once</u>.

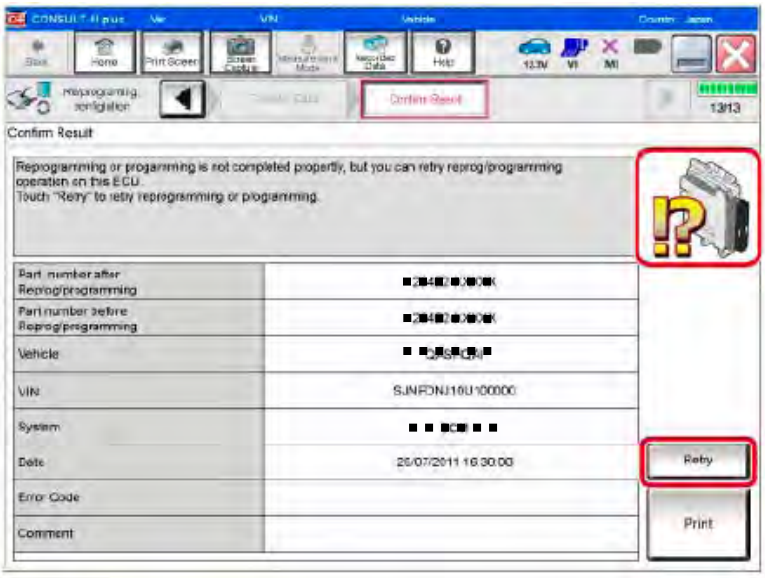


Figure 172

If reprogramming does <u>not</u> complete and the "X" icon displays as shown in Figure 173:

- Check battery voltage (12.0 – 15.5 V).
- CONSULT A/C adapter is plugged in.
- Ignition is ON, engine OFF.
- Transmission is in Park.
- All C-III plus / VI cables are securely connected.
- All C-III plus updates are installed.
- Select <u>Home</u>, and restart the reprogram procedure from the beginning.

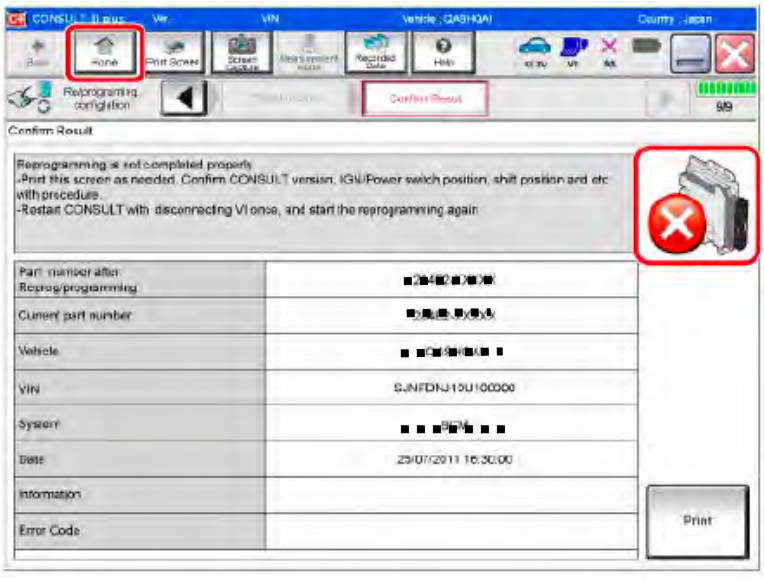


Figure 173

146. Follow the on-screen instructions to **Erase All DTCs**.

- When the entire reprogramming process is complete, the screen in Figure 174 will display.

147. Verify the before and after part numbers are different.

148. Print a copy of this screen (Figure 174) and attach it to the repair order for warranty documentation.

149. Select **Confirm**.

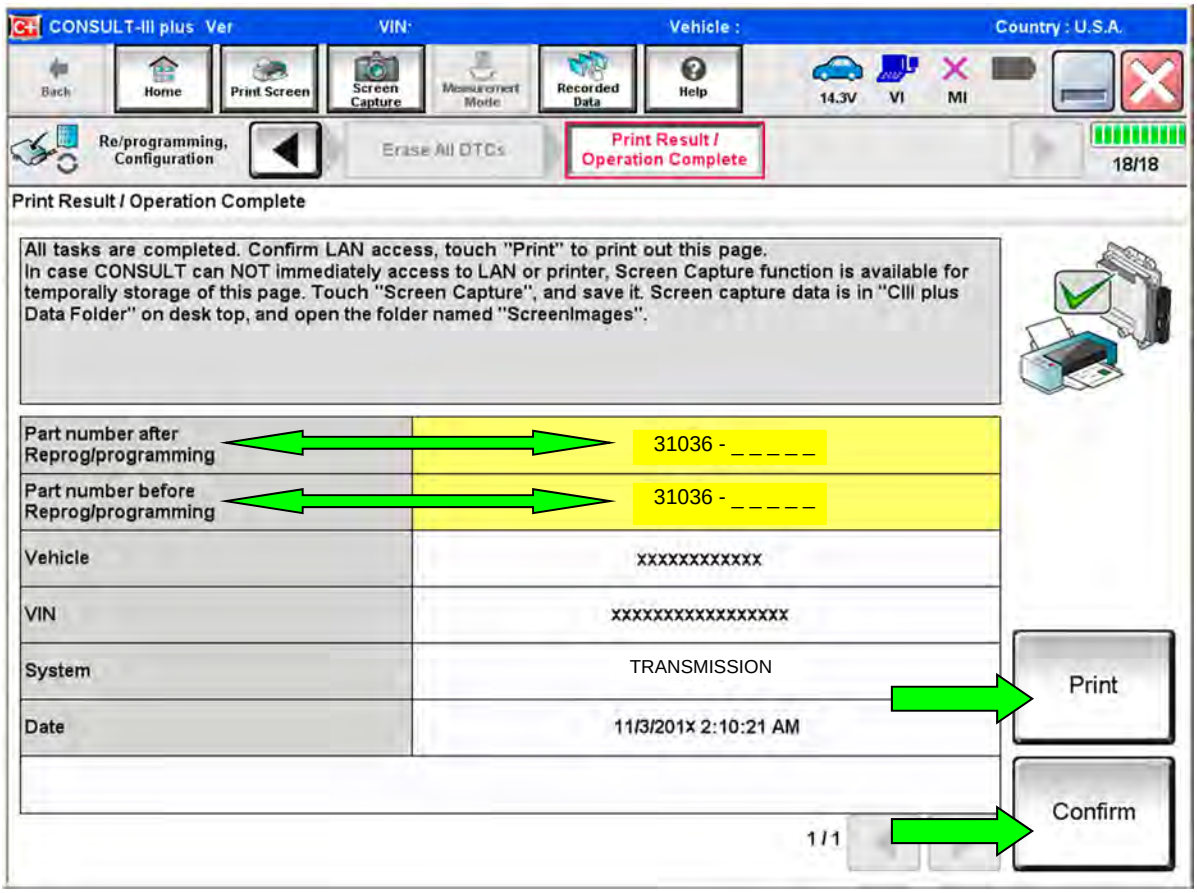


Figure 174

ADDITIONAL SERVICE WHEN REPLACING THE CONTROL VALVE

HINT: Steps 150-193 are additional services that must be performed after replacing the control valve.

Print Current Calibration Data

150. Select **CALIB DATA** in **TRANSMISSION**.

151. Print page 1 of 7 and attach it to the repair order.

Check the Serial Number

152. Write down the serial number (calibration file number) of the new control valve.

153. Compare the serial number (calibration file number) on the CD, QR code label, and new control valve. All numbers must match.

154. Insert the supplied CD into CONSULT.

155. Select **Work Support** in **TRANSMISSION**.

156. Select **WRITE IP CHARA - REPLACEMENT AT/CVT**.

157. Select **OK** on the Select IP characteristics data file window.

158. Open the calibration file located on the supplied CD.

159. 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.

160. Select **Next** on the **WRITE IP CHARA - REPLACEMENT AT/CVT** Work Support screen.

Write the Data (Write IP Chara)

161. With the ignition ON and the engine OFF, press the brake pedal.

162. Shift the selector lever to the R position.

163. Depress the throttle pedal half way and hold, then press **START** on the CONSULT screen.

164. 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”.

165. Select **End**.

Print New Calibration Data

166. Select **CALIB DATA** in **TRANSMISSION**.

167. Print page 1 of 7 and attach it to the repair order.

168. Return C-III plus to the Home screen.

FWD Clutch Point Learning

169. Apply the vehicle's parking brake.

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

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

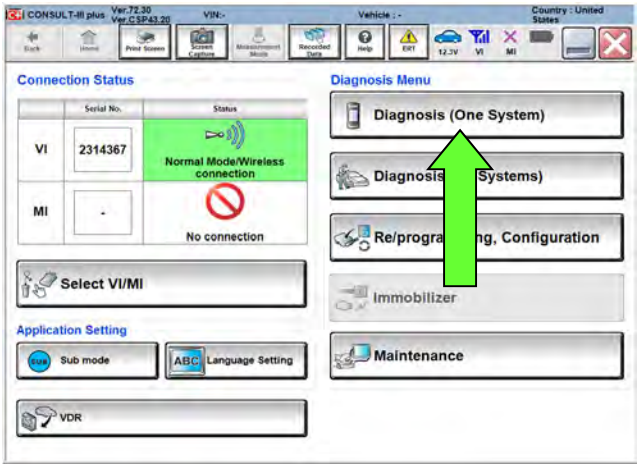


Figure 175

172. Select **Work Support** under **TRANSMISSION**.

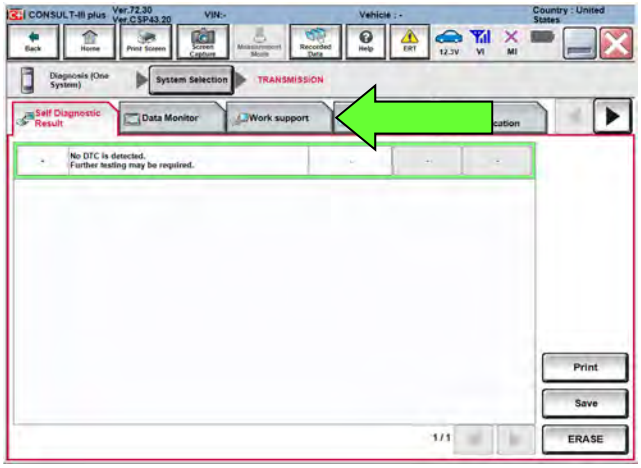


Figure 176

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

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

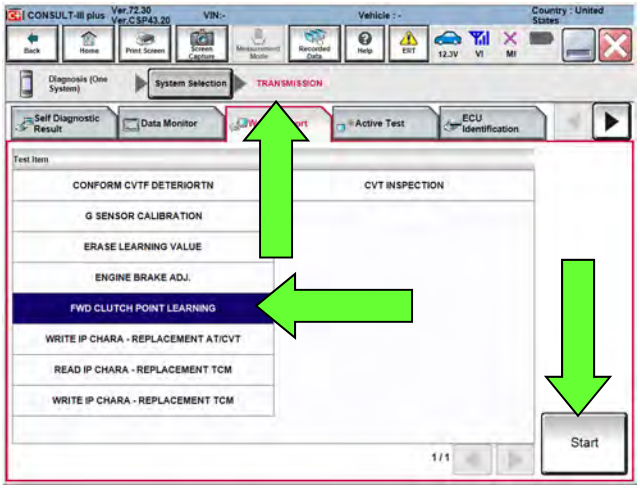


Figure 177

174. 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 178 are being met.

175. Select **Start**.

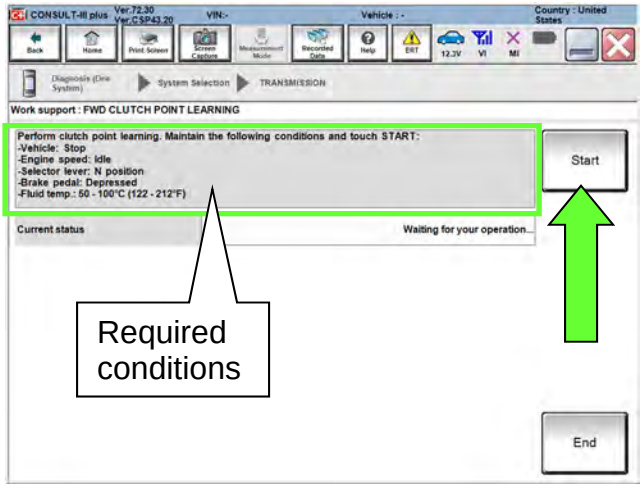


Figure 178

176. While maintaining all conditions shown in Figure 178 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.

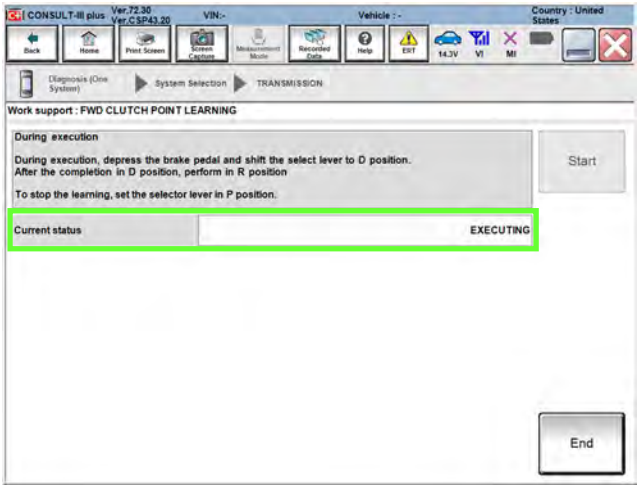


Figure 179

177. When the screen in Figure 180 is displayed, shift the CVT into **P,** and then select **End**.

178. Turn the engine OFF and then back ON.

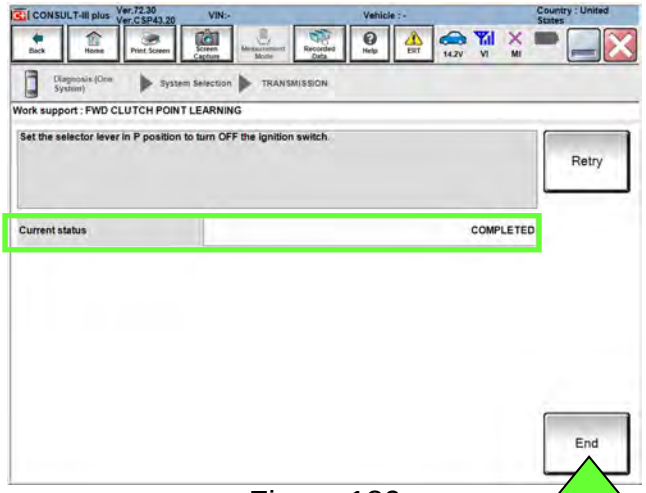


Figure 180

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

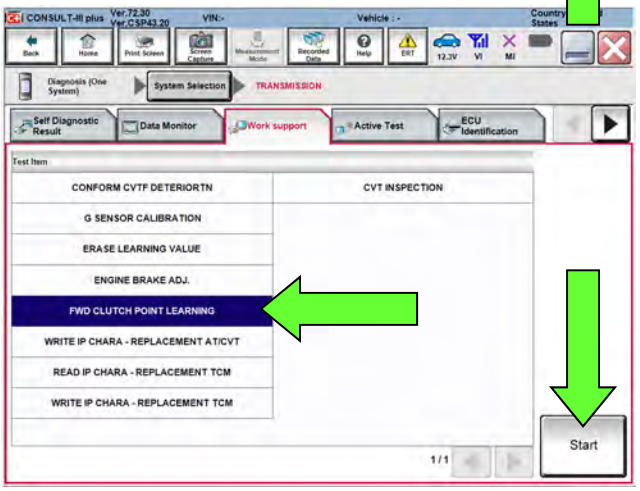


Figure 181

180. 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 182 are being met.

181. Select **Start**.

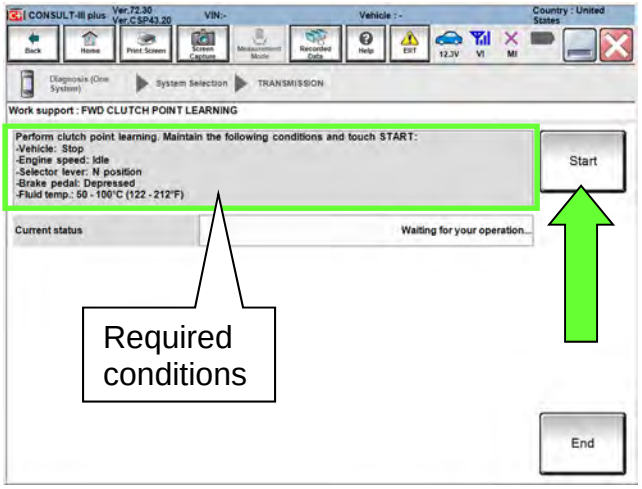


Figure 182

182. While maintaining <u>all conditions</u> shown in Figure 182 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.

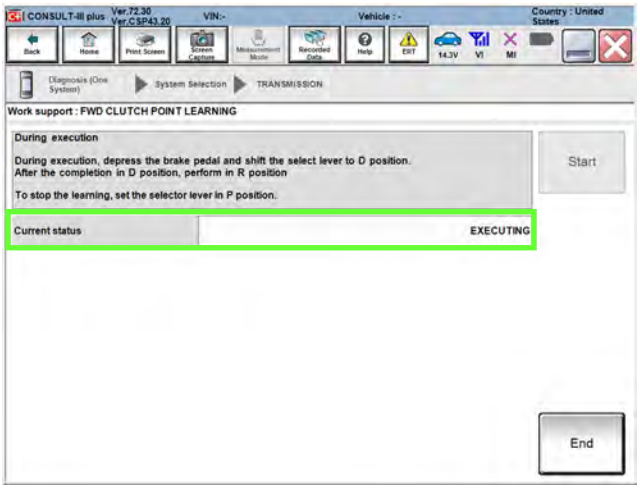


Figure 183

183. When the screen in Figure 184 is displayed select **End**, shift the CVT into **P,** and then turn the engine OFF.

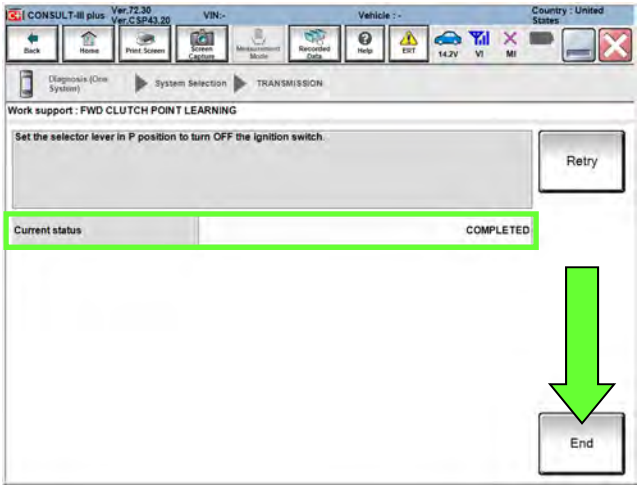


Figure 184

Perform Select Learning

184. Start the engine, and then wait five (5) seconds.

185. 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 engagement.

186. Repeat step 185 ten (10) times.

187. 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.

188. Repeat step 187 ten (10) times.

189. Move the shift selector to the **P** position, and then turn the ignition OFF.

Erase CVT Fluid Degradation Level Data

190. Select **Work Support** in **TRANSMISSION**.

191. Select **CONFORM CVTF DETERIORTN**.

192. Select **Clear**.

193. Clear any DTCs that may have set and then test drive the vehicle.

PARTS INFORMATION

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

DESCRIPTION		PART #	QUANTITY
BELT-PULLEY KIT		31214-28X7C	1
BELT-PULLEY KIT includes:			
PULLEY ASSY (Belt and Pulley "Sub-assembly")		31209-28X7C	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
	AWD	38342-3TX0A	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)	2WD	3170E-28X0B	1
	AWD	3170E-28X9D	1
Valve Assy Kit-Control includes:			
VALVE ASSEMBLY-CONTROL (1)		31705-28X2B	1
STRAINER ASSY-OIL, AUTO TRANS	2WD	31728-28X0A	1
	AWD	31728-29X0D	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**. <u>Do not include</u> 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.

*****Single use parts that are not included in the kits on page 93.*****

DESCRIPTION	PART # PREFIX	QUANTITY
CLIP-MOULDING (Front fillet moulding)	76882	6
CLIP (Breather hose)	24225	1
COCK - WATER DRAIN (Radiator drain plug)	21440	1
SEAL, O-RING (Oil charging pipe)	31084	1
CLAMP (Water hose)	16439	6
CLIP (Water hose)	24225	1
NUT (Front crash zone sensor)	12250	1
GASKET-EXHAUST (Front exh tube to manifold)	20695	1
NUT (Front exh tube to manifold)	01225	2
GASKET-EXHAUST (Front exh tube to center exh tube)	20695	1
BOLT (Rear prop shaft to transfer case) **(AWD Only)**	37120	4
NUT (Axle shaft to wheel hub)	40262	2
COTTER PIN (Axle shaft to wheel hub)	40073	2
NUT (Strut to steering knuckle)	54588	4
RETAINER, BEARING (Front bearing plate) **(2WD Only)**	39776	1
CIRCLIP (LH axle)	38225	1
WASHER - DRAIN PLUG (CVT drain plug)	11026	1
GASKET - FILLER PLUG (Transfer case filler plug) **(AWD Only)**	11026	1

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

DESCRIPTION		PART #	QUANTITY
VALVE ASSY KIT-CONTROL (Valve body)	2WD	3170E-28X0B	1
	AWD	3170E-28X9D	1
Valve Assy Kit-Control includes:			
VALVE ASSEMBLY-CONTROL (1)		31705-28X2B	1
STRAINER ASSY-OIL, AUTO TRANS	2WD	31728-28X0A	1
	AWD	31728-29X0D	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.

*****Single use parts that are not included in the above kit.*****

DESCRIPTION	PART # PREFIX	QUANTITY
WASHER – DRAIN PLUG (CVT drain plug)	11026	1

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)
		JD023A			
Replace CVT Sub-Assembly (includes control valve R & I) RPL		JX50AA			3.8
Reprogram TCM (when applicable)		JE99AA			(2)

(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

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

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
Reprogram TCM (when applicable)		JE99AA			(2)

(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.

NOTE: 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

<u>If Only Control Valve is replaced:</u>

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)
Reprogram TCM **(When Applicable)**		JE99AA			(2)

(1) Reference the Parts Information Table and use the VALVE ASSY KIT-CONTROL part number (31705-*****) 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	3.57	1 of each is included in the Pulley Kit. Select 1 for installation.
	1XZ0C	3.75	
	1XZ0D	3.93	
	1XZ0E	4.1	
	1XZ1A	4.28	
	1XZ1B	4.46	
	1XZ1C	4.61	
	1XZ1D	4.79	

PART KITS VISUAL REFERENCE

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

- KIT- CONTROL VALVE is not shown.

Figure 185 shows the assorted seals, O-rings, etc. in "BELT-PULLEY KIT"

Figure 185

PART KITS VISUAL REFERENCE - CONTINUED

PUMP ASSY-OIL parts

Figure 186

BRG ASSY-THRUST NEEDLE parts

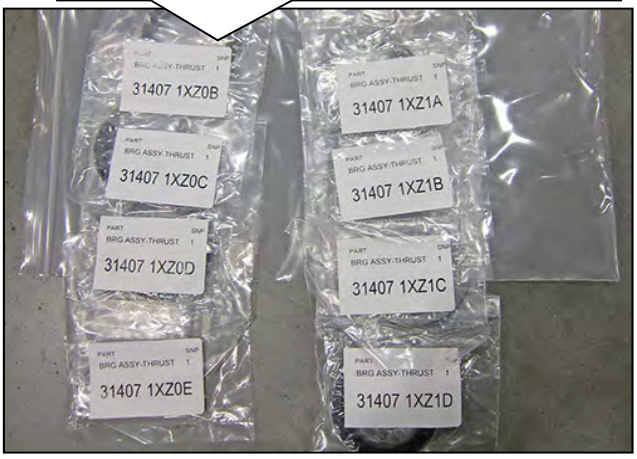


Figure 187

REMINDER! Attach the following to the repair order:

- Total End Play calculation (Page 61)
- C-III plus screen showing the TCM part number before and after the reprogramming (Step 148 on page 87)
- C-III plus screen showing the current calibration data (Step 151 on page 88)
- C-III plus screen showing the new calibration data (Step 167 on page 89)

AMENDMENT HISTORY

DATE	REFERENCE	DESCRIPTION
December 16, 2020	NTB20-091	Original bulletin published