

Installation Manual for: NWF EcoBox

Part 1 of 2

Disassembling 231 / 241 Transfer Case



SKU #: BBE00-3031-Z

Date: 05/16/2022

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Attention

The instructions contained in this document are provided for the benefit of experienced automotive mechanics. These products are not department of transport (DOT) certified, nor designed for road use. Customers assume all risks associated with the modification of their vehicle and the installation of this product.

Application

To build the EcoBox you will need to supply the following parts to build your EcoBox: Input Shaft with the correct spline count to match the transmission being mated to, 3 Pinion or 6 Pinion Planetary (6 Pinion Recommended), Ring Gear, 2x Plastic Thrust Washers, 1x Steel Thrust Washer, Planetary Snap Ring, Input Bearing with inner and outer snap rings, Input Bearing Retainer w/ Seal and a shift collar from a 231/241 Manual Shift transfer case. These components can be seen in Figure 1.

Part 1 of the instruction manual will cover extracting the components from a 241 transfer case.



Figure 1: Extracted Components

Supplies Needed for Disassembly

231/241 Manual Shift Transfer Case

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Tools Used in Disassembly

1. External Snap Ring Pliers

2. Ratchet

3. Ratchet Extension

4. 15mm Socket

5. 13mm Socket

6. 10mm Socket

7. Prybar

8. Hammer

9. Chisel

10. Angle Grinder

11. Safety Glasses

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Removal Instructions

PLEASE READ THROUGH ALL THE INSTRUCTIONS ONCE BEFORE BEGINNING

Prior to disassembly, it is recommended to drain all liquids.

1. Remove rear output tail housings

Locate and remove **(4) 15mm bolts** holding on the longer housing. Figure 2.

Using a hammer, the housing will release from the wider housing.



Figure 2: Rear Output Longer Tail Housing Bolts

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Remove the **snap ring** on the rear output that is between the two housings. Figure 3 in blue.

Locate and remove **(4) 13mm** on the shorter housing. Figure 3 in red.

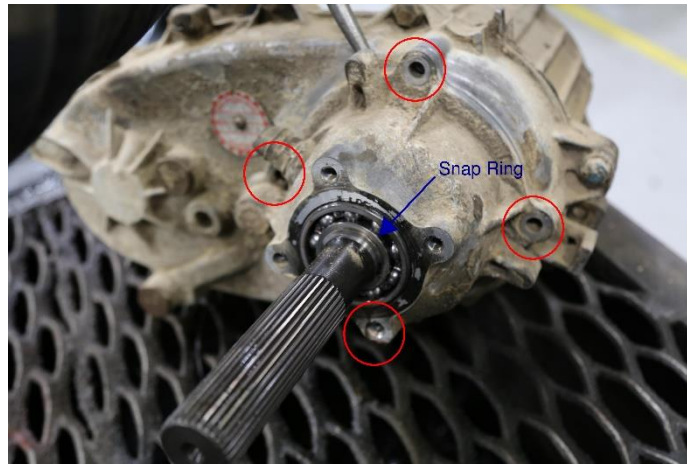


Figure 3: Rear Output Shaft Snap Ring and Shorter Housing

Using a prybar and or a hammer the housing will release.

Proceed to slide off the casing off the shaft.

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2. Remove input bearing retainer and snap ring
Locate and remove **(4) 10mm bolts** around the perimeter of the cover. Figure 4.

Note: Put the snap ring aside for assembling EcoBox.



Figure 4: Input shaft bearing retainer

Remove the **snap ring** beneath the input shaft cover.



Figure 5: Snap Ring under Bearing Retainer

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3. Splitting main cover

Locate and remove **(11) 15mm** bolts around the perimeter of the casing.

Using a prybar the two casings will release.

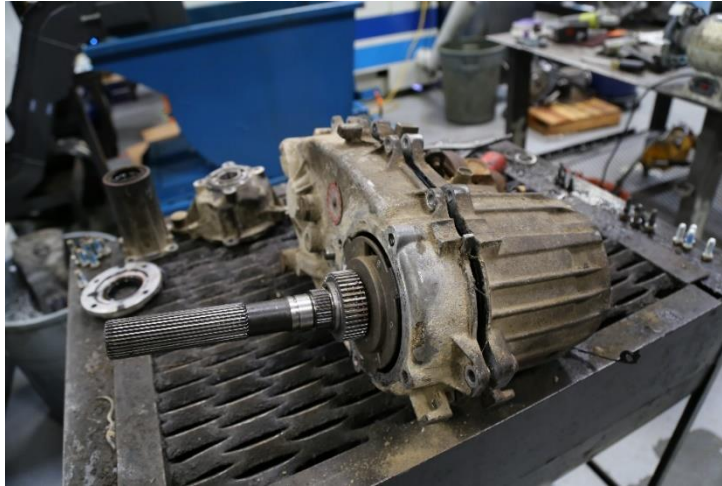


Figure 6: Releasing main cover

4. Removing oil pump and speed sensor wheel

Locate and remove **(2) snap rings** on either side of the wheel sensor. Seen in Figure 7.

Remove wheel sensor from shaft.



Figure 7: Snap rings around wheel sensor

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Pull out the filter tube out of the oil pump that is connected inside. See Figure 8.



Figure 8: Oil pump connection

Entire casing is now able to be removed.

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5. Removing chain drive

Remove **snap ring** on the front output shaft.

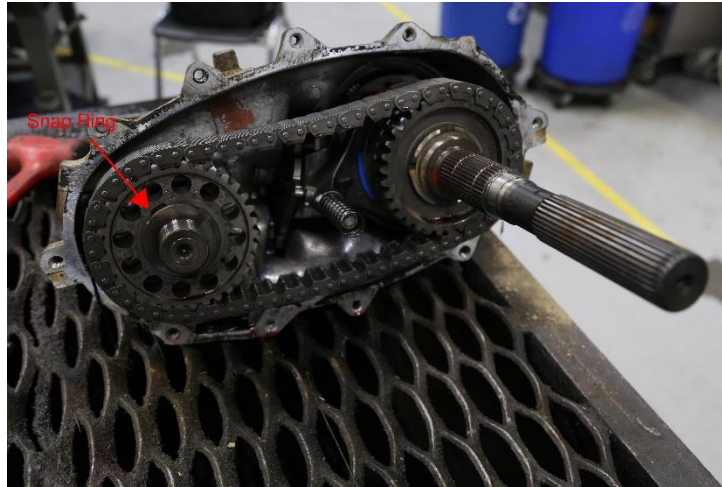


Figure 9: Chain drive assembly

Pull out rear output shaft and chain drive system as a unit.

Remove input shaft, input bearing, and planetary gears.

Note: Put the input shaft, input bearing, and planetary gears aside for assembling EcoBox.

Remove snap ring holding in the ring gear that is beneath the chain assembly on input side. See Figure 10.

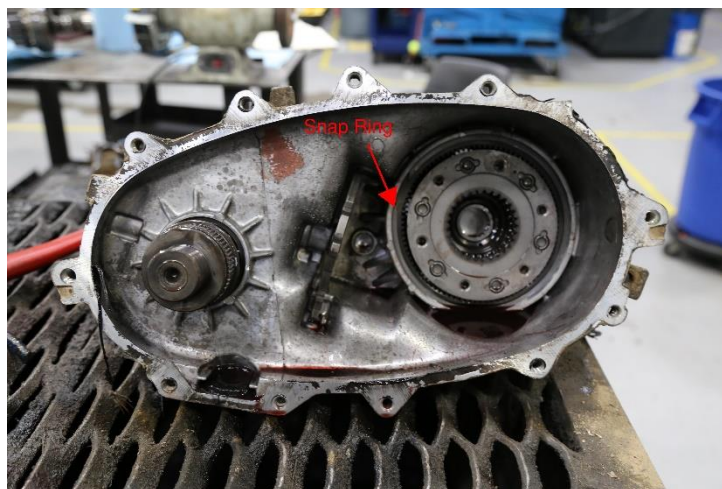


Figure 10: Chain drive assembly removed with highlighted snap ring

Clean the oil from the casing.

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6. Cutting the case

Draw a line on the top and bottom of the casing as shown in Figure 10 and 11.

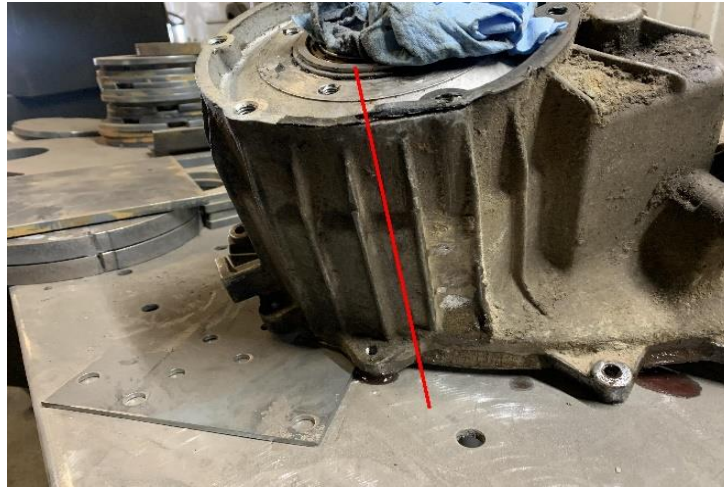


Figure 11: Bottom line to cut



Figure 12: Top line to cut

CAREFULLY cut the case along the lines to the point where the retaining gear meets the walls of the casing. See Figure 12 to see the cross-section of a good cut case.

Note: If you see sparks this indicates you are cutting into the ring gear.

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Using a hammer and chisel split the casings.

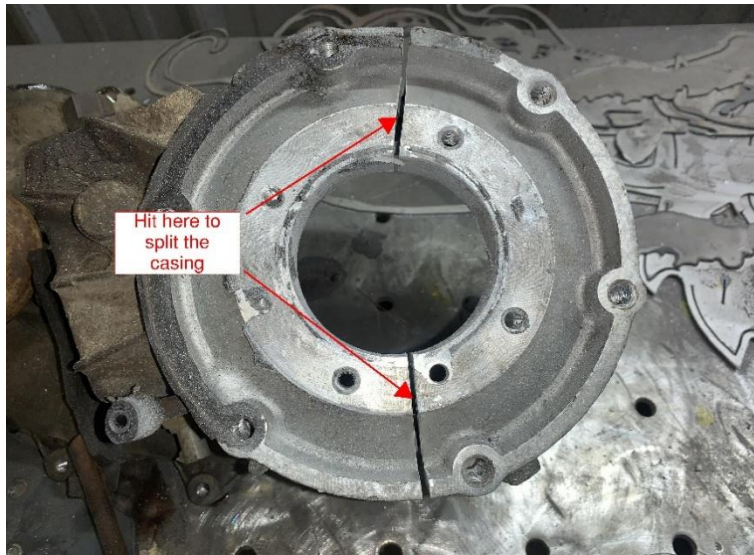


Figure 13: Top and bottom cuts side profile



Figure 14: Example of a good split case

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7. Components saved and extracted from 231 / 241 transfer case

- Input shaft
- 6 Pinion Planetary
- Planetary Snap Ring
- Ring Gear
- 2x Plastic Thrust Washers
- Steel Thrust Washer
- Input Bearing with inner and outer snap rings
- Input Bearing Retainer with Seal and Shift Collar



Figure 15: Extracted components

The components are now prepared to be installed into the EcoBox

End of part 1 of 2 of the Installation Manual

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