REPAIR INSTRUCTIONS - OFF VEHICLE

TORQUE CONVERTER REMOVAL AND HOLDING FIXTURE INSTALLATION

Special Tools

- **DT-03289-20** Holding Fixture Base Assembly
- **DT-48989** Holding Fixture

Equivalent regional tools: **Special Tools**

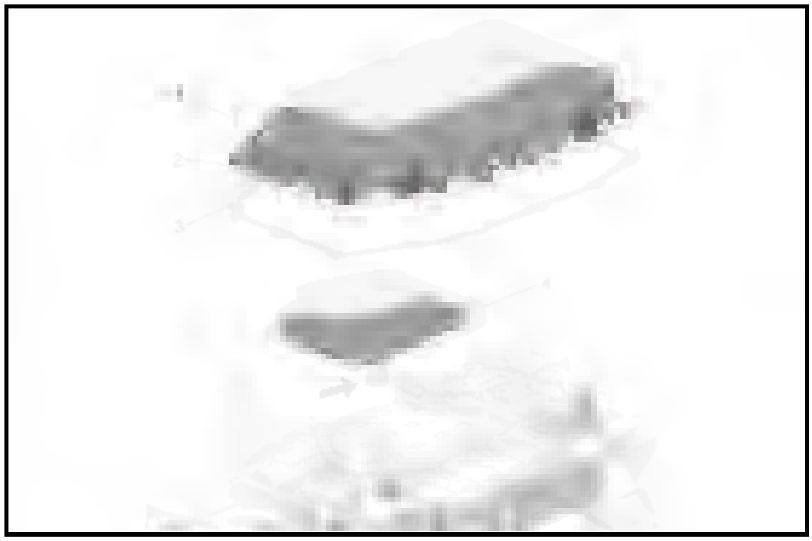
1. 

   Attach and secure **DT-48989** Holding Fixture (2) to the Automatic Transmission Case (4).

2. Support the transmission with an overhead hoist attached to **DT-48989** Holding Fixture (2).
3. Install **DT-48989** Holding Fixture (2) with the Automatic Transmission Case (4) into the **DT-03289-20** Holding Fixture Base Assembly (1)
4. Rotate the transmission so that the converter housing is up and secure with **DT-03289-20** Holding Fixture Base Assembly (1) locking pin.
5. Allow any remaining transmission fluid to drain from the case extension.
6. Torque Converter (3) - Remove

TRANSMISSION FLUID PAN AND FILTER ASSEMBLY REMOVAL

transmissionmanuals.com

1. 

   Automatic Transmission Fluid Pan Bolt (1) - Remove

2. Automatic Transmission Fluid Pan (2) - Remove
3. Automatic Transmission Fluid Pan Gasket (3) - Remove
4. The fluid pan gasket is reusable. Inspect the gasket to determine if it may be reused. If the gasket is stuck to the case or pan, it should be replaced.

CAUTION: **Pull the fluid filter assembly straight out to avoid damage. Do not bend or twist the filter neck.**

5. Automatic Transmission Fluid Filter (4) - Remove
6. The seal is not serviced separately. Inspect the fluid filter seal, if the seal is damaged, replace the Automatic Transmission Fluid Filter (4).

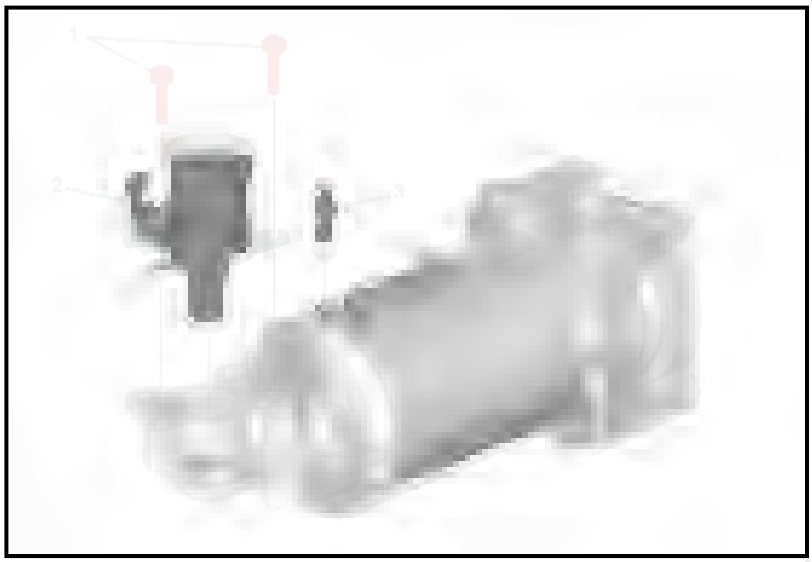
AUXILIARY FLUID ACCUMULATOR REMOVAL (WITH STOP/START)

1. 

WARNING: **The automatic transmission fluid accumulator may be pressurized greater than 120 psi (827 kPa) and fluid may be hot. When servicing accumulator, key must be OFF for a minimum of 10 minutes. Do not open bleeder screw until instructed to do so or personal injury may result.**

2. Disconnect the electrical connector indicated by arrow.
3. Securely attach a hose from the automatic transmission auxiliary fluid accumulator bleeder valve (1) into an approved container.

transmissionmanuals.com

4. Slowly loosen automatic transmission auxiliary fluid accumulator bleeder valve (1) until pressure begins to release.
5. Allow all pressure and fluid to be released from the automatic transmission auxiliary fluid accumulator (2).
6. Control Valve Lower Body Bolt (3) - Remove [3x]
7. Automatic Transmission Auxiliary Fluid Accumulator (2) - Remove
8. 

   Automatic Transmission Auxiliary Fluid Accumulator Bolt (1) - Remove [2x]
9. Automatic Transmission Auxiliary Fluid Accumulator Solenoid (2) - Remove
10. Automatic Transmission Auxiliary Fluid Accumulator Bleeder Valve (3) - Remove

CONTROL VALVE ASSEMBLY AND TRANSMISSION WIRING HARNESS REMOVAL

Single Use Fasteners and Components

- Automatic Transmission Fluid Baffle Bolt [2x]
- Automatic Transmission Fluid Baffle Bolt [3x]
- Clutch Housing Fluid Passage Seal

Special Tools

DT-48285 Valve Body Torx Plus Socket

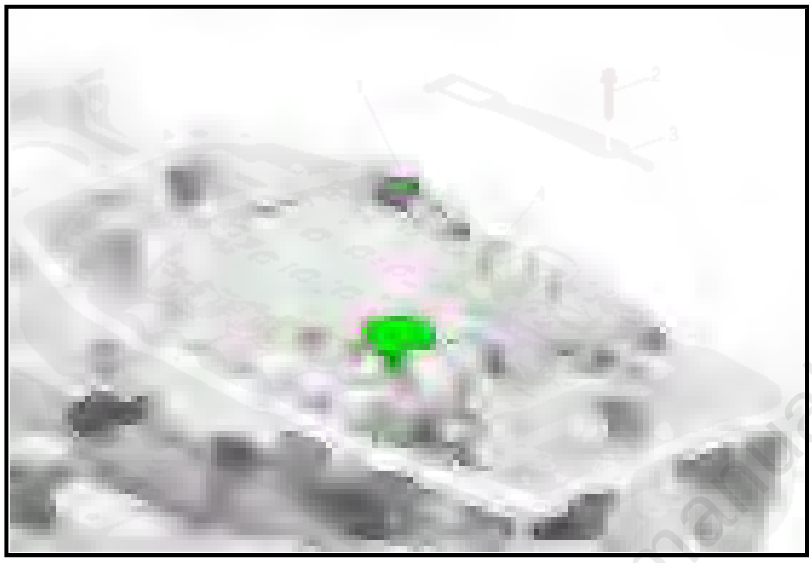
Equivalent regional tools: **Special Tools**

1. 

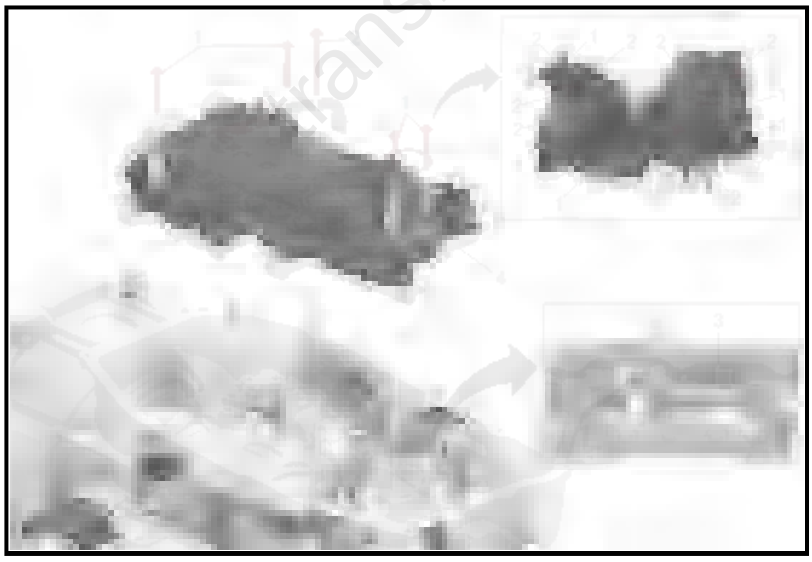
transmissionmanuals.com

CAUTION: **This vehicle is equipped with torque-to-yield or single use fasteners. Install a NEW torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.**

Automatic Transmission Fluid Baffle Bolt (1) - Remove and DISCARD [2x]

2. Automatic Transmission Fluid Baffle (2) - Remove
3. The driven sprocket (3) locking tab is located on the back of the sprocket.
4. Rotate the driven sprocket (3) as shown and simultaneously pull back and up on the tab indicated by arrow to release the retainer.
5. Remove the driven sprocket (3) from the oil pump shaft leaving the drive link loose in the case.
6. 

Electrical Connector @ Automatic Transmission Control Wiring Harness (1) - Disconnect

7. Manual Shift Detent Lever Spring Bolt (2) - Remove
8. Manual Shift Detent Lever Spring (3) - Remove
9. Electrical Connector @ Automatic Transmission Wiring Harness (4) - Disconnect
10. 

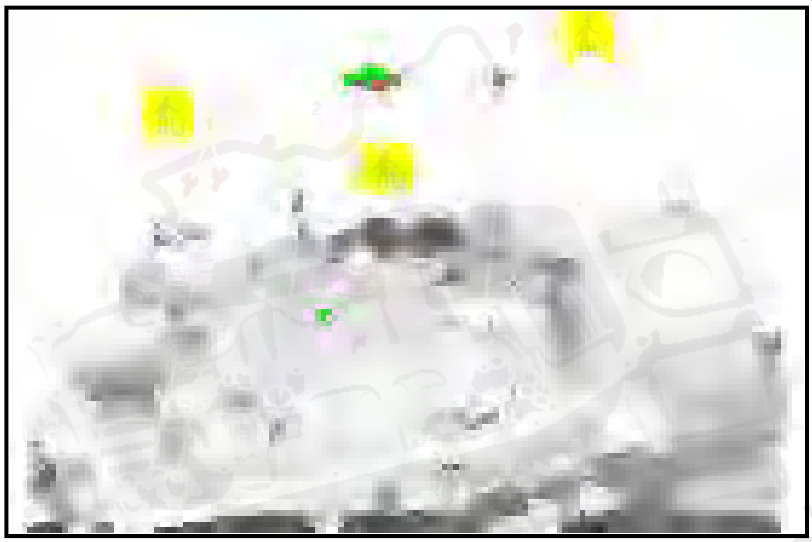
NOTE: **Do not remove all the bolts in the control valve body assembly. Remove only the bolts indicated.**

Use **DT-48285** Valve Body Torx Plus Socket to remove the control valve solenoid body bolts.

11. Control Valve Solenoid Body Bolt (1) - Remove [4x]

12. Control Valve Solenoid Body Bolt (2) - Remove [7x]
13. Manual Valve (3) - Disconnect

CAUTION: **Use care when handling the control valve body assembly. If dropped, damage to the control solenoid valve body assembly internal components may result.**

14. Control Valve Body Assembly (4) - Remove
15. 

CAUTION: **This vehicle is equipped with torque-to-yield or single use fasteners. Install a NEW torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.**

Use **DT-48285** Valve Body Torx Plus Socket to remove the automatic transmission fluid baffle bolts.

16. Automatic Transmission Fluid Baffle Bolt (1) - Remove and DISCARD [3x]
17. Automatic Transmission Output Speed Sensor Wiring Harness (2) - Remove
18. Clutch Housing Fluid Passage Seal (3) - Remove and DISCARD

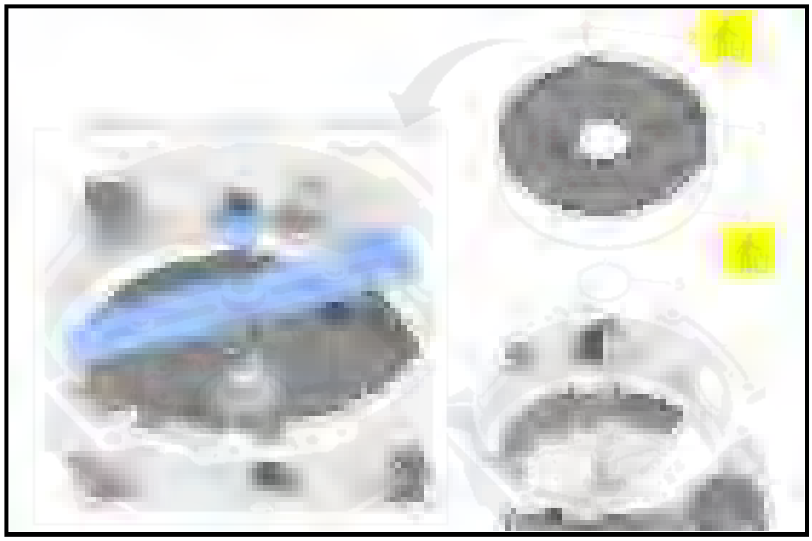
TRANSMISSION CASE FRONT COVER AND DRIVE LINK REMOVAL

Special Tools

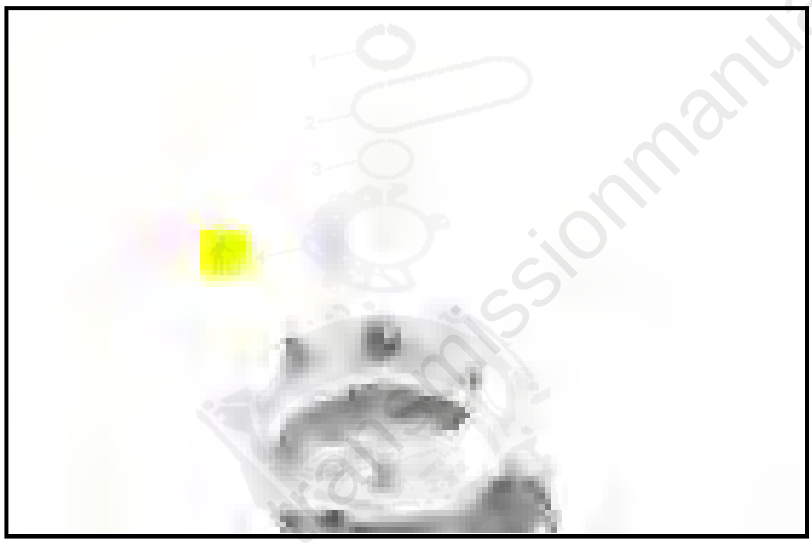
- **GE-8433** Puller Bar

Equivalent regional tools: **Special Tools**

transmissionmanuals.com

1. 

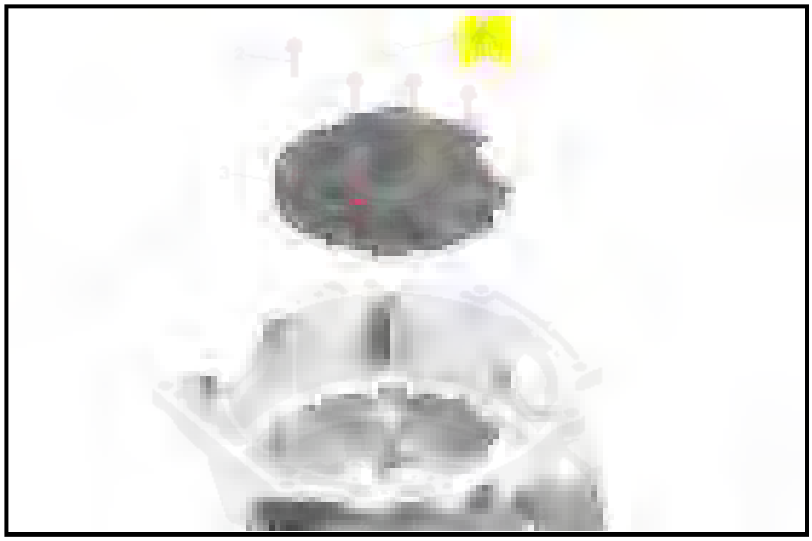
   Automatic Transmission Case Front Cover Bolt (2) - Remove and DISCARD

2. Use the **GE-8433** Puller Bar (1) and 2 bolts in the threaded holes of the automatic transmission front cover to remove it from the case.
3. Automatic Transmission Case Front Cover (3) - Remove
4. Automatic Transmission Case Front Cover Seal (4) - Remove and DISCARD
5. Drive Sprocket Thrust Washer- Front (5) - Remove
6. 

   Drive Sprocket (1) - Remove

7. Drive Link (2) - Remove
8. Drive Sprocket Thrust Washer- Rear (3) - Remove
9. Automatic Transmission Front Support Cover Gasket (4) - Remove and DISCARD

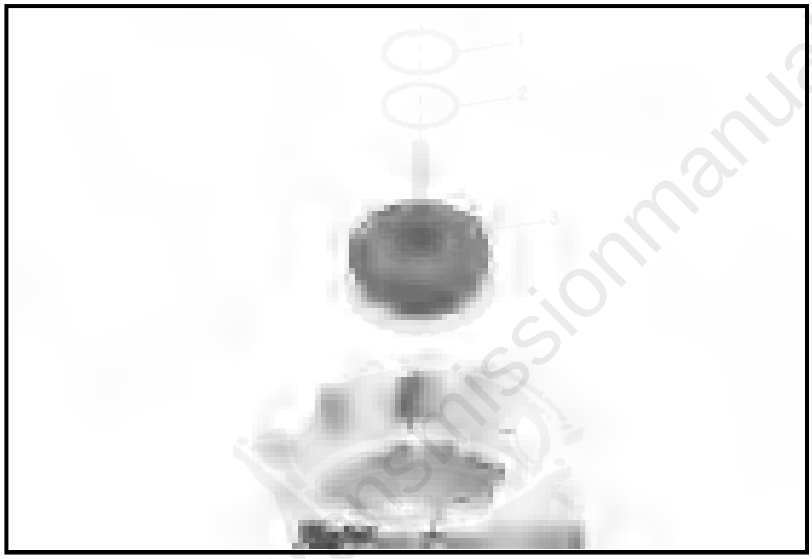
STATOR SHAFT SUPPORT REMOVAL

1. 

   Turbine Shaft Seal - O-Ring (1) - Remove and DISCARD

2. Stator Shaft Support Bolt (2) - Remove [9x]
3. Stator Shaft Support (3) - Remove

1-3-5-6-7 CLUTCH ASSEMBLY REMOVAL

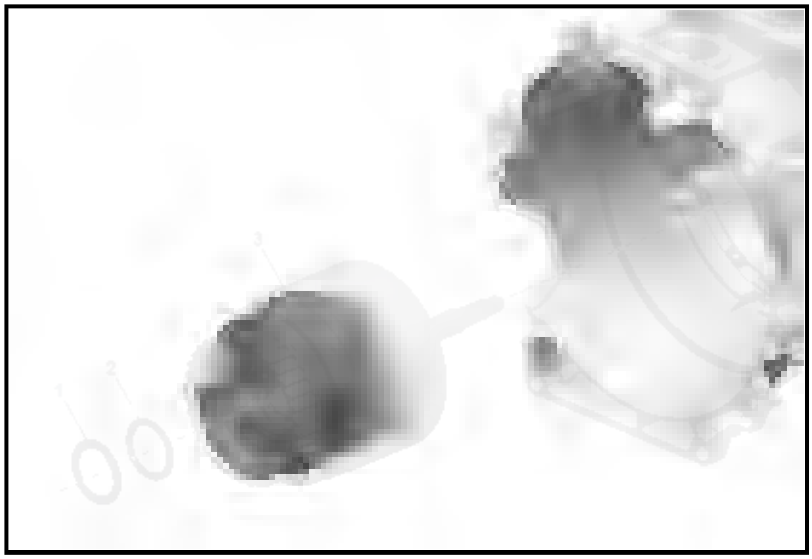
1. 

   1-3-5-6-7 Clutch Thrust Bearing (1) - Remove

2. 1-3-5-6-7 Clutch Thrust Bearing Washer (2) - Remove
3. 1-3-5-6-7 Clutch (3) - Remove

2-3-4-6-8 AND 4-5-6-7-8 REVERSE CLUTCH ASSEMBLY REMOVAL

transmissionmanuals.com

1. 

   2-3-4-6-8 and 4-5-6-7-8-Reverse Clutch Thrust Bearing (1) - Remove

2. 2-3-4-6-8 and 4-5-6-7-8-Reverse Clutch Thrust Bearing Washer (2) - Remove
3. Rotate the transmission horizontal to aid in removal of the 2-3-4-6-8 and 4-5-6-7-8 reverse clutch assembly.
4. 2-3-4-6-8 and 4-5-6-7-8-Reverse Clutch (3) - Remove

DIRECT OVERDRIVE INTERNAL GEAR, DIRECT OVERDRIVE CARRIER, INPUT INTERNAL GEAR, AND INPUT CARRIER ASSEMBLY REMOVAL

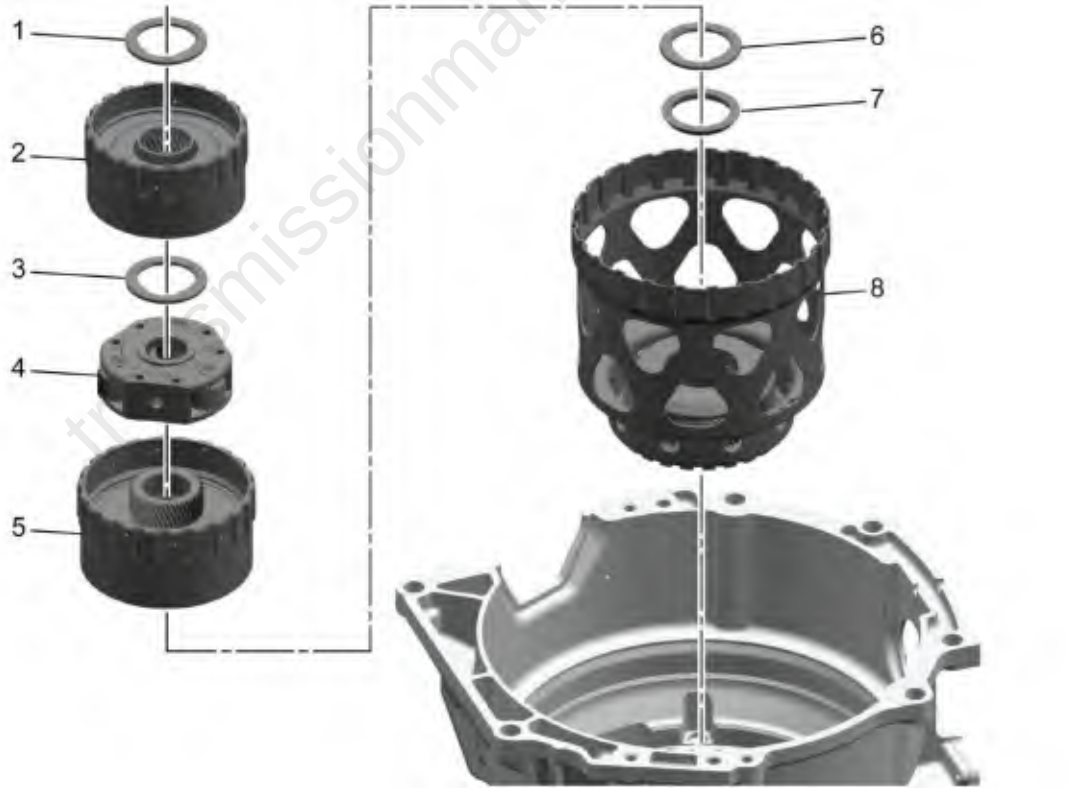
1. 

   Fig. 1: Exploded View Of Direct Overdrive Internal Gear, Direct Overdrive Carrier, Input Internal Gear And Input Carrier Assembly Components
   Courtesy of GENERAL MOTORS COMPANY

   4-5-6-7-8 Reverse Clutch and Direct Overdrive Internal Gear Hub Thrust Bearing (1) - Remove

2. Direct Overdrive Internal Gear (2) - Remove
3. Direct Overdrive Sun Gear Thrust Bearing (3) - Remove

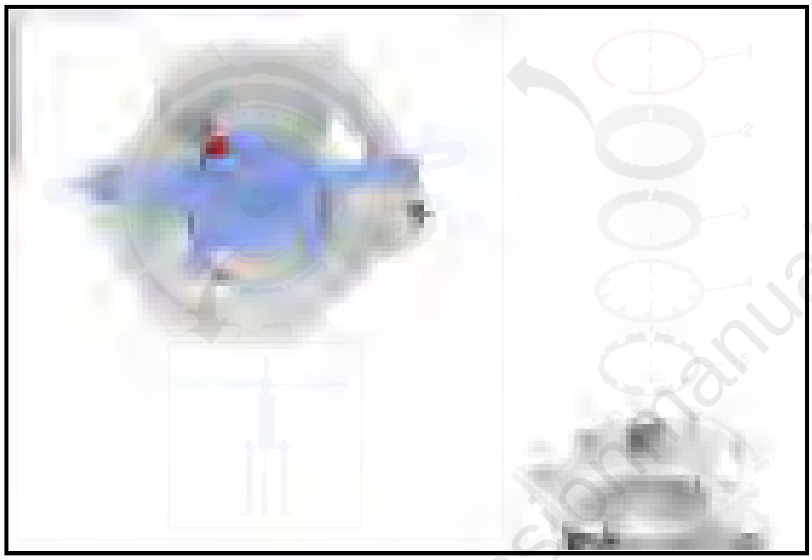
4. Direct Overdrive Carrier (4) - Remove
5. Input Internal Gear (5) - Remove
6. Input Sun Gear Thrust Bearing (6) - Remove
7. Input Sun Gear Spacer (7) - Remove
8. Input Carrier (8) - Remove

1-2-7-8 REVERSE CLUTCH PISTON REMOVAL

Special Tools

- **DT-35512** Bearing Installer
- **DT-48056** Spring Compressor Bridge
- **DT-50902** Adjustable Clutch Spring Compressor

Equivalent regional tools: **Special Tools**

1. 

   Assemble all the special tools as shown to remove the 1 - 2 - 7 - 8 - Reverse clutch piston housing retaining ring.

2. 1-2-7-8-Reverse Clutch Piston Housing Retaining Ring (1) - Remove
3. 1-2-7-8-Reverse Clutch Piston Housing (2) - Remove
4. 1-2-7-8-Reverse Clutch Piston (3) - Remove
5. 1-2-7-8-Reverse Clutch Return Spring (4) - Remove
6. 1-2-7-8-Reverse Clutch Apply Ring (5) - Remove

1-2-7-8 REVERSE CLUTCH PLATE ASSEMBLY AND INPUT SUN GEAR ASSEMBLY REMOVAL

transmissionmanuals.com

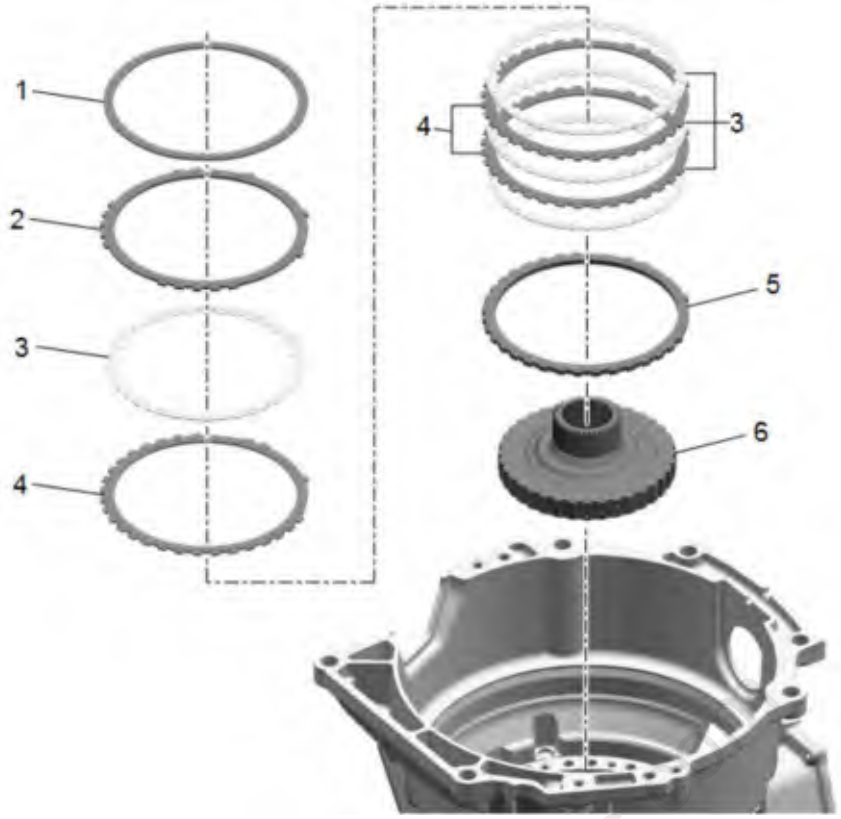
1. 

Fig. 2: Exploded View Of 1-2-7-8 Reverse Clutch Plate Assembly And Input Sun Gear Assembly Components
Courtesy of GENERAL MOTORS COMPANY

1-2-7-8-Reverse Clutch Plate (Waved) (1) - Remove
2. 1-2-7-8-Reverse Clutch Apply Plate (2) - Remove
3. 1-2-7-8-Reverse Clutch Plate (3) - Remove [4x]
4. 1-2-7-8-Reverse Clutch Plate (4) - Remove [3x]
5. 1-2-7-8-Reverse Clutch Backing Plate (5) - Remove
6. Input Sun Gear (6) - Remove

REACTION INTERNAL GEAR AND 1-2-3-4-5 REVERSE HUB AND 1-2-3-4-5 REVERSE CLUTCH PLATE ASSEMBLY REMOVAL

transmissionmanuals.com

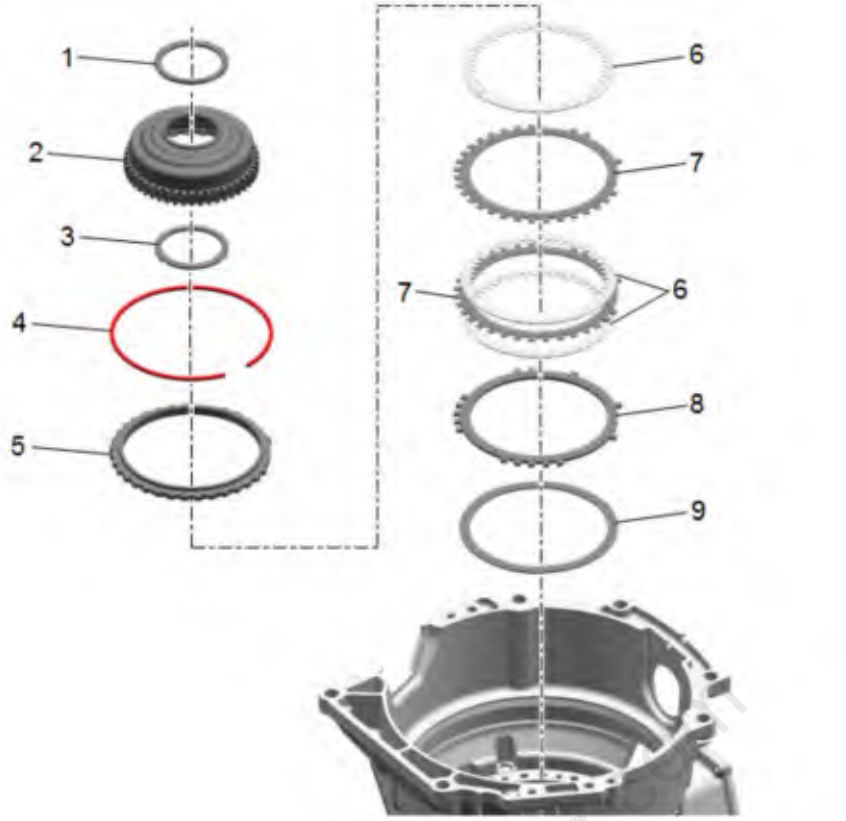
1. 

Fig. 3: Exploded View Of Reaction Internal Gear And 1-2-3-4-5 Reverse Hub And 1-2-3-4-5 Reverse Clutch Plate Assembly Components
Courtesy of GENERAL MOTORS COMPANY

1-2-3-4-5-Reverse Clutch Hub Thrust Bearing (1) - Remove
2. Reaction Internal Gear and 1-2-3-4-5-Reverse Hub (2) - Remove
3. Reaction Carrier Thrust Bearing (3) - Remove
4. 1-2-3-4-5-Reverse Clutch Backing Plate Retaining Ring (4) - Remove
5. 1-2-3-4-5-Reverse Clutch Backing Plate (5) - Remove
6. 1-2-3-4-5-Reverse Clutch Plate (6) - Remove [3x]
7. 1-2-3-4-5-Reverse Clutch Plate (7) - Remove [2x]
8. 1-2-3-4-5-Reverse Clutch Apply Plate (8) - Remove
9. 1-2-3-4-5-Reverse Clutch Plate (Waved) (9) - Remove

REACTION CARRIER ASSEMBLY, OUTPUT CARRIER, AND OUTPUT SHAFT REMOVAL

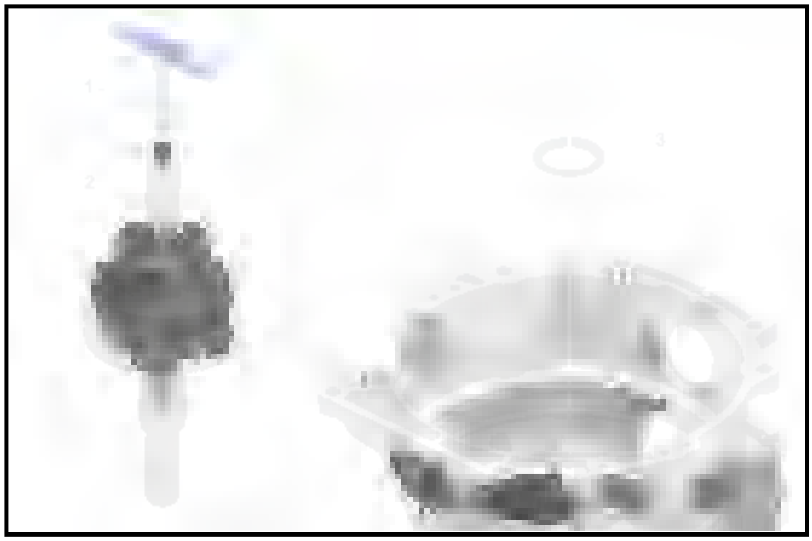
Single Use Fasteners and Components

- Output Shaft Seal - O-Ring

Special Tools

- **DT-50921** Output Carrier/Shaft Lifting Tool

Equivalent regional tools: **Special Tools**

1. 

   Install the **DT-50921** Output Carrier/Shaft Lifting Tool (1) into the Output Carrier (2).

2. Output Carrier (2) - Remove
3. Output Carrier Thrust Bearing (3) - Remove

4. 

Fig. 4: Exploded View Of Reaction Carrier Assembly, Output Carrier And Output Shaft Components
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Ensure the park pawl is not engaged.**

Reaction Carrier (1) - Remove

5. Output Carrier (2) - Remove
6. Output Sun Gear (3) - Remove
7. Output Carrier Thrust Bearing (4) - Remove
8. Output Shaft (5) - Remove

NOTE: **The output shaft seal is only present on All Wheel Drive (AWD) models.**

9. Output Shaft Seal - O-Ring (6) - Remove and DISCARD

CASE EXTENSION ASSEMBLY REMOVAL

1. 

   Automatic Transmission Case Extension Bolt (1) - Remove

CAUTION: **Before removing or installing the automatic transmission case extension, place the transmission in a holding fixture with the transmission in a vertical position and the case extension facing up. Failure to do so may result in transmission internal damage.**

NOTE: **Ensure the park pawl is not engaged.**

2. Automatic Transmission Case Extension (2) - Remove

NOTE: **The seal is reusable, inspect the seal and replace if damaged.**

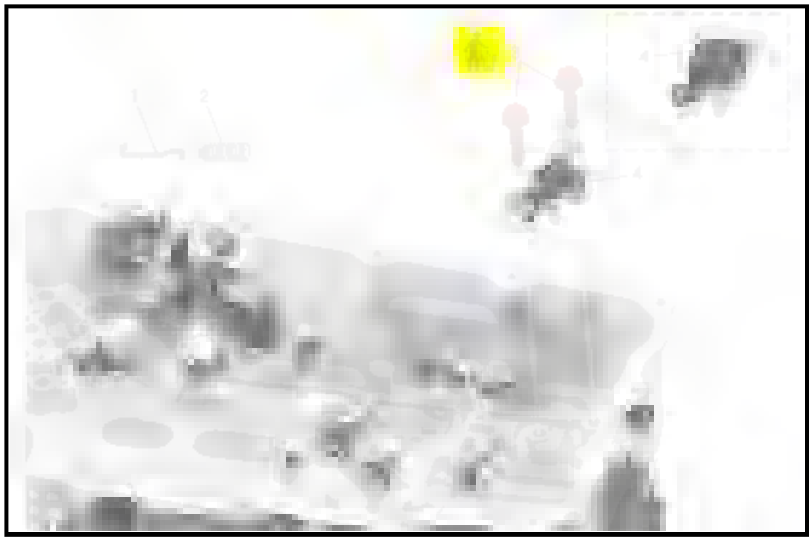
3. Automatic Transmission Case Extension Seal (3) - Remove

MANUAL SHIFT DETENT LEVER WITH SHAFT POSITION SWITCH ASSEMBLY AND PARK PAWL ACTUATOR REMOVAL

Single Use Fasteners and Components

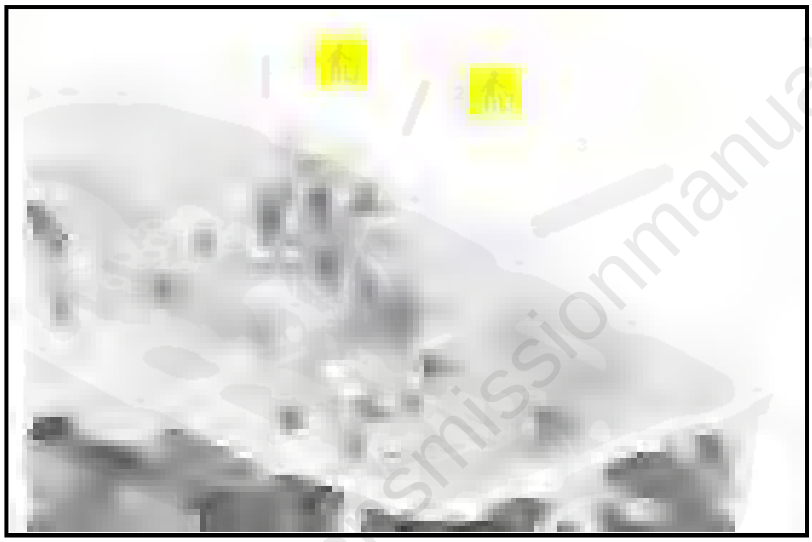
- Park Pawl Actuator Bracket Bolt [2x]
- Manual Shift Detent Lever Hub Pin
- Manual Shift Shaft Pin

transmissionmanuals.com

1. 

Manual Valve Link Spring (2) - Remove

2. Manual Valve Link (1) - Remove
3. Park Pawl Actuator Bracket Bolt (3) - Remove and DISCARD [2x]
4. Park Pawl Actuator Bracket (4) - Remove

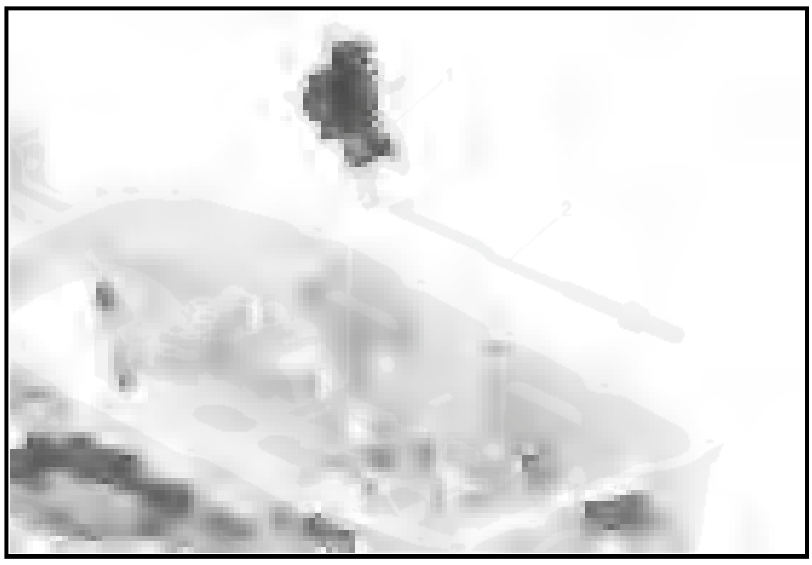
5. 

CAUTION: **Refer to Pin Reuse Caution .**

Manual Shift Detent Lever Hub Pin (1) - Remove and DISCARD

6. Manual Shift Shaft Pin (2) - Remove and DISCARD
7. Manual Shift Shaft (3) - Remove

transmissionmanuals.com

8. 

   Manual Shift Shaft Position Switch Assembly (1) - Remove

9. Park Pawl Actuator (2) - Remove

10. 

    Park Pawl Shaft (1) - Remove

11. Park Pawl (2) - Remove
12. Park Pawl Spring (3) - Remove

MANUAL SHIFT SHAFT SEAL REMOVAL

Single Use Fasteners and Components

Manual Shift Shaft Seal

Special Tools

DT-45201 Cooler Line Seal Remover

Equivalent regional tools: **Special Tools**

CAUTION: **Do not damage the case bore during removal of the manual shift shaft seal.**

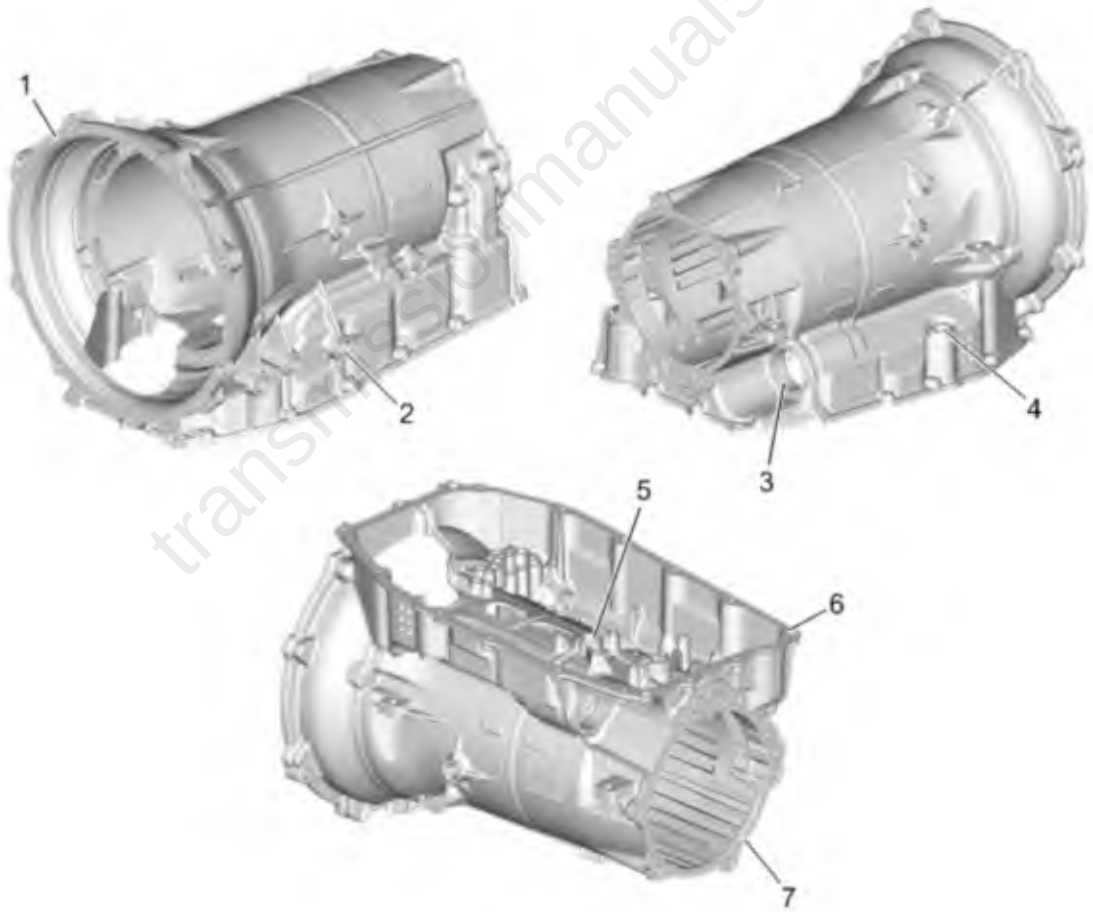
transmissionmanuals.com

1. 

   DT-45201 Cooler Line Seal Remover (1) - Install

2. Manual Shift Shaft Seal (2) - Remove and DISCARD

TRANSMISSION CASE CLEANING AND INSPECTION



1.

Fig. 5: Identifying Transmission Case Cleaning And Inspection Points
Courtesy of GENERAL MOTORS COMPANY

transmissionmanuals.com

CAUTION: **After cleaning the transmission components, allow to air dry. Do not use cloth or paper towels in order to dry any transmission components. Lint from the towels can cause component failure.**

CAUTION: **Do not reuse cleaning solvents. Previously used solvents may deposit sediment which may damage the component.**

Thoroughly clean the transmission case assembly, including case threads, with clean solvent.

2. Clean gasket sealing surfaces. Remove all residual gasket material.
3. Inspect all threaded holes. If necessary, repair any thread damage.
4. Automatic Transmission Case - Front Sealing Surface (1) - Clean and inspect
5. To service the manual shift shaft seal.
    - **Manual Shift Shaft Seal Removal**
    - **Manual Shift Shaft Seal Installation**
6. Manual Shift Shaft Seal (2) - Clean and inspect
7. Automatic Transmission Wiring Harness - Electrical Connector Passage Sleeve Bore (3) - Clean and inspect
8. Transmission Fluid Filler Tube Plug - Fill Tube Bore (4) - Clean and inspect
9. Clutch Housing Fluid Passage Seal - Surface (5) - Clean and inspect
10. Automatic Transmission Fluid Pan - Sealing Surface (6) - Clean and inspect
11. Automatic Transmission Case - Rear Sealing Surface (7) - Clean and inspect

MANUAL SHIFT SHAFT SEAL INSTALLATION

Single Use Fasteners and Components

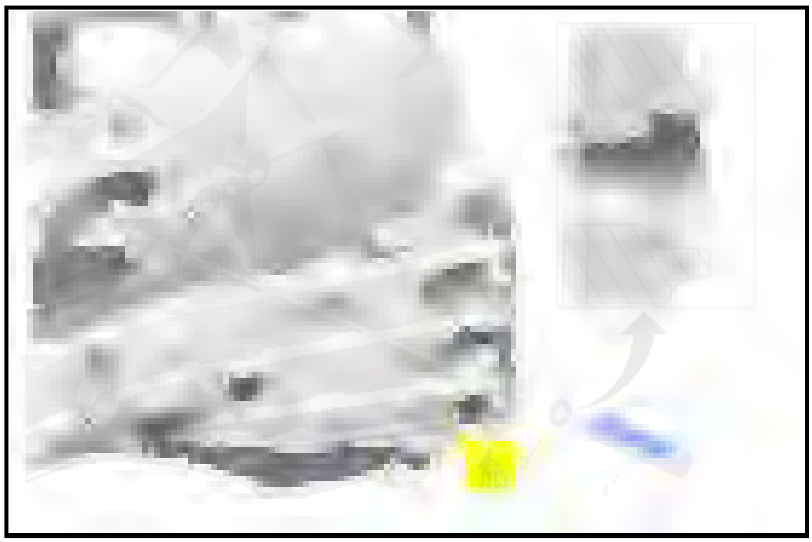
Manual Shift Shaft Seal

Special Tools

DT-47770 Seal Installer

Equivalent regional tools: **Special Tools**

CAUTION: **When installing the seal, ensure the seal lip is firmly seated against the case bore surface. Do not allow the seal lip to be crushed, or a leak may result.**

1. 

Use **DT-47770** Seal Installer (1) to install Manual Shift Shaft Seal (2)

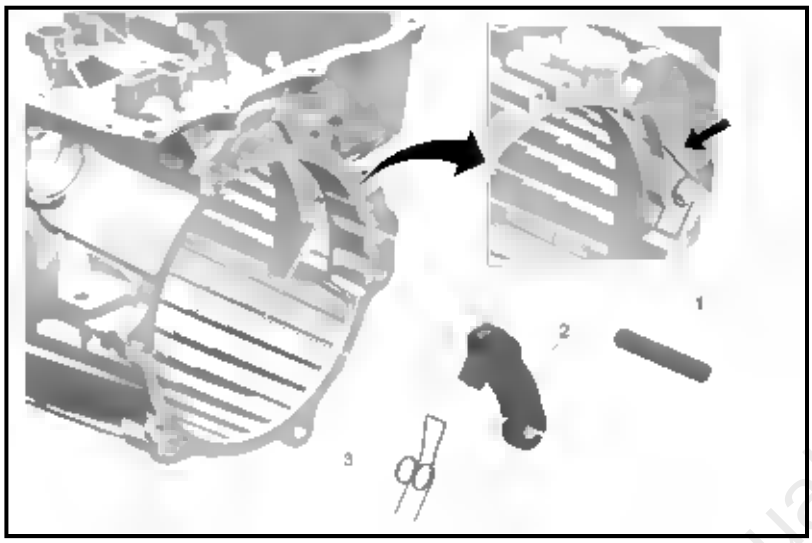
transmissionmanuals.com

2. Manual Shift Shaft Seal (2) - Install NEW

MANUAL SHIFT DETENT LEVER WITH SHAFT POSITION SWITCH ASSEMBLY AND PARK PAWL ACTUATOR INSTALLATION

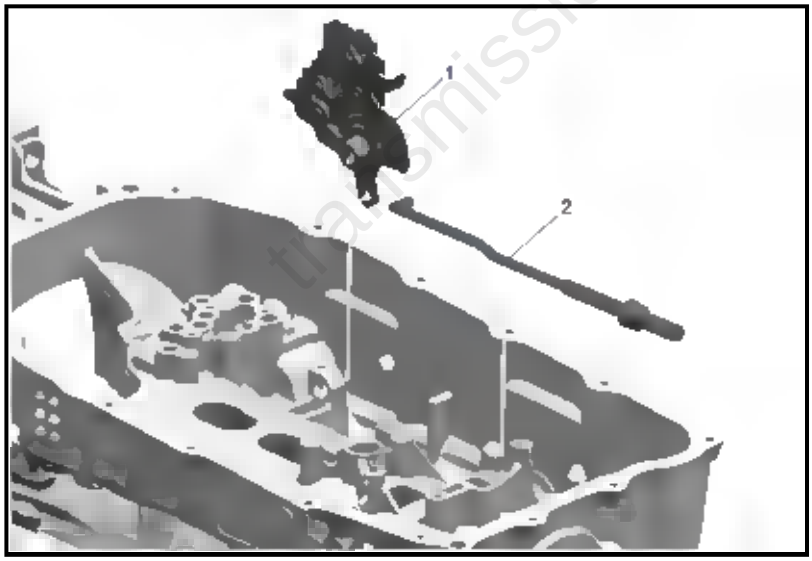
Single Use Fasteners and Components

- Manual Shift Shaft Pin
- Manual Shift Detent Lever Hub Pin
- Park Pawl Actuator Bracket Bolt [2x]

1. 

   Park Pawl Spring (3) - Install

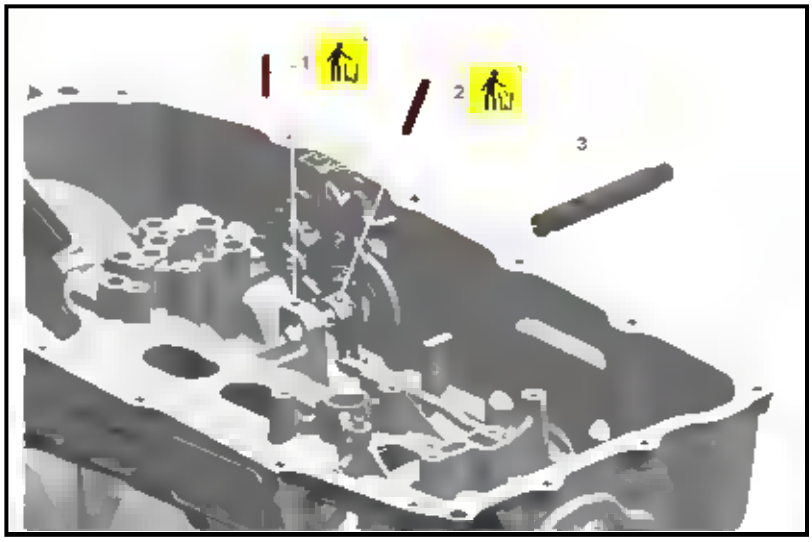
2. Park Pawl (2) - Install
3. Park Pawl Shaft (1) - Install

4. 

   Park Pawl Actuator (2) - Install

5. Manual Shift Shaft Position Switch Assembly (1) - Install

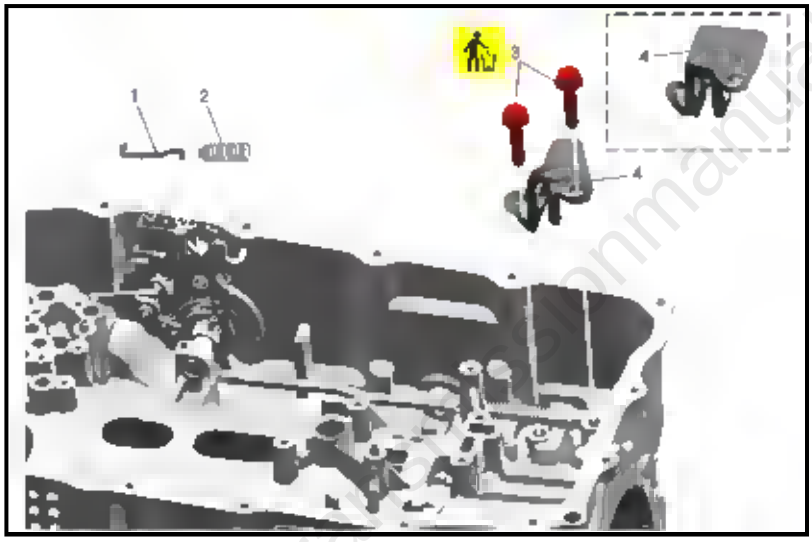
transmissionmanuals.com

6. 

Manual Shift Shaft (3) - Install

CAUTION: **Refer to Pin Reuse Caution .**

7. Manual Shift Shaft Pin (2) - Install NEW
8. Manual Shift Detent Lever Hub Pin (1) - Install NEW

9. 

Park Pawl Actuator Bracket (4) - Install

CAUTION: **Refer to Fastener Caution .**

10. Park Pawl Actuator Bracket Bolt (3) - Install NEW and tighten [2x] - **Fastener Specifications**
11. Manual Valve Link (1) - Install
12. Manual Valve Link Spring (2) - Install

CASE EXTENSION DISASSEMBLE

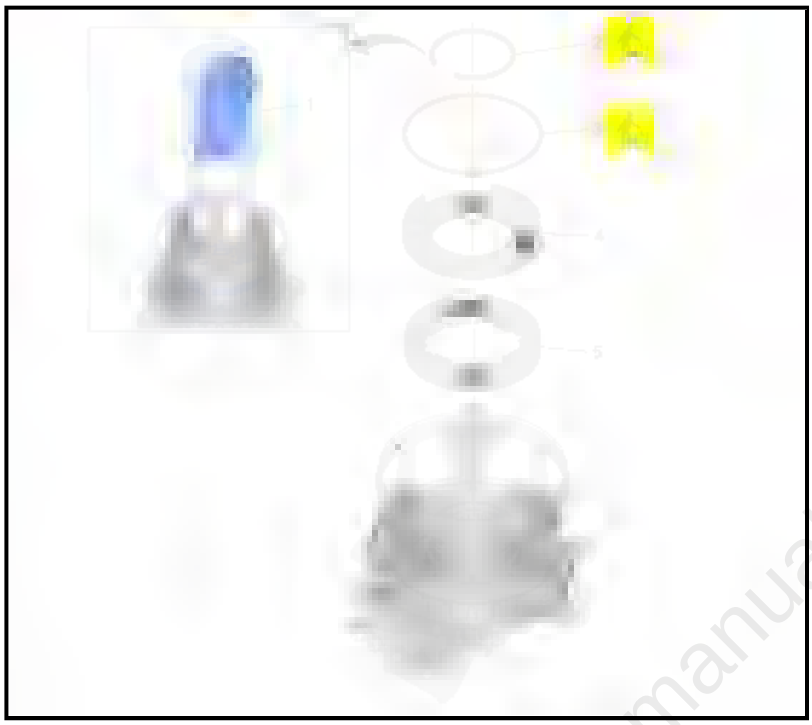
Single Use Fasteners and Components

- 1-2-3-4-5-Reverse Clutch Piston Dam Retaining Ring
- 1-2-3-4-5-Reverse Clutch Piston Dam Seal
- 1-2-3-4-5-Reverse Clutch Piston Outer Seal
- 1-2-3-4-5-Reverse Clutch Piston Inner Seal

Special Tools

- **DT-26941** Bushing and Bearing Remover
- **DT-45124** Removal Bridge
- **DT-45124-9** Puller Leg
- **DT-47693-2** Compressor
- **GE-8433** Puller Bar

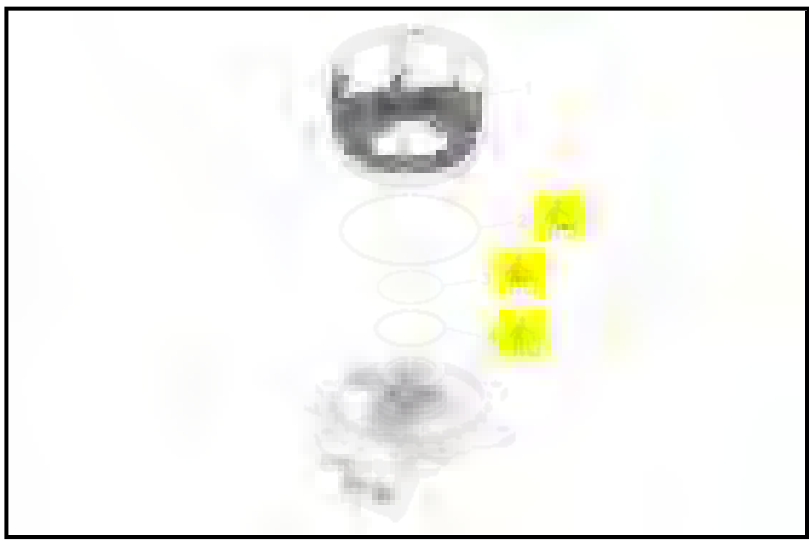
Equivalent regional tools: **Special Tools**

1. 

   Use **DT-47693-2** Compressor (1) and an arbor press to remove the 1-2-3-4-5-Reverse Clutch Piston Dam Retaining Ring (2).

2. 1-2-3-4-5-Reverse Clutch Piston Dam Retaining Ring (2) - Remove and DISCARD
3. 1-2-3-4-5-Reverse Clutch Piston Dam (4) - Remove

   CAUTION: **Refer to Seal Reuse Caution .**

4. 1-2-3-4-5-Reverse Clutch Piston Dam Seal (3) - Remove and DISCARD
5. 1-2-3-4-5-Reverse Clutch Piston Return Spring (4) - Remove
6. 

   1-2-3-4-5-Reverse Clutch Piston (1) - Remove

transmissionmanuals.com

CAUTION: **Refer to Seal Reuse Caution .**

7. 1-2-3-4-5-Reverse Clutch Piston Outer Seal (2) - Remove and DISCARD
8. 1-2-3-4-5-Reverse Clutch Piston Inner Seal - O-Ring (3) - Remove and DISCARD
9. 1-2-3-4-5-Reverse Clutch Piston Inner Seal (4) - Remove and DISCARD
10. 

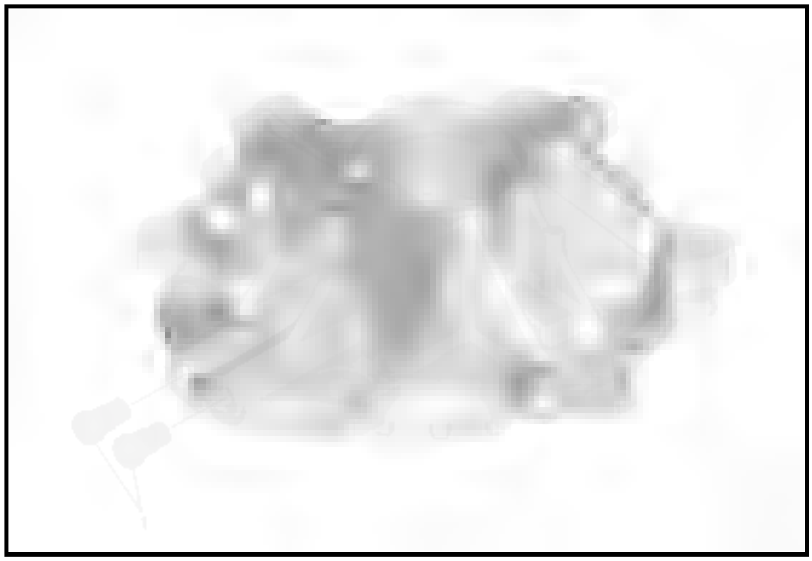
    Assemble the **DT-45124** Removal Bridge (1), **DT-45124-9** Puller Leg (2) and **DT-26941** Bushing and Bearing Remover (3).

11. Ensure the feet of **DT-26941** Bushing and Bearing Remover (3) are properly engaged with the Output Shaft Bearing (4).
12. Output Shaft Bearing (4) - Remove
13. 

    Assemble the **DT-26941** Bushing and Bearing Remover (3), **DT-45124-9** Puller Leg (2) and **GE-8433** Puller Bar (1). Use the **GE-8433** Puller Bar (1) with threaded rod, nut, washer and bearing from **DT-45124** Removal Bridge.

14. Ensure the feet of **DT-26941** Bushing and Bearing Remover (3) are properly engaged with the Output Shaft Bearing (4).
15. Output Shaft Bearing (4) - Remove

transmissionmanuals.com

16. 

Automatic Transmission Case Extension Hole Plug (1) - Remove [2x]

PROPELLER SHAFT TRANSMISSION FLANGE FLUID SEAL REMOVAL

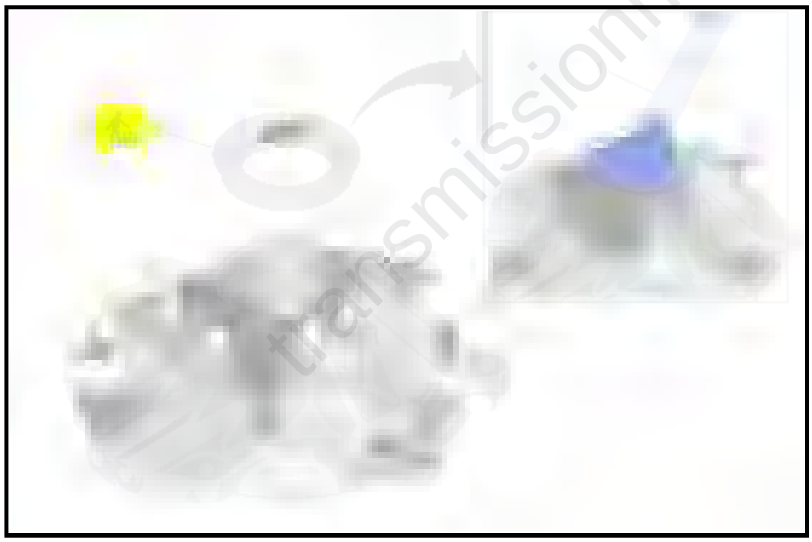
Single Use Fasteners and Components

- Propeller Shaft Transmission Flange Fluid Seal

Special Tools

- **DT-45000** Seal Remover

Equivalent regional tools: **Special Tools**

1. 

Use **DT-45000** Seal Remover (1) to remove seal.

CAUTION: **Refer to Seal Reuse Caution .**

2. Propeller Shaft Transmission Flange Fluid Seal (2) - Remove and DISCARD

PROPELLER SHAFT TRANSMISSION FLANGE FLUID SEAL INSTALLATION

Single Use Fasteners and Components

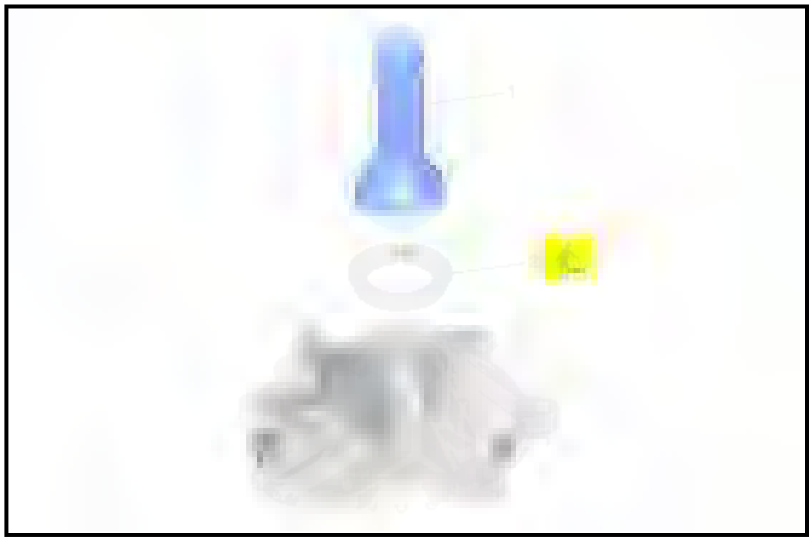
- Propeller Shaft Transmission Flange Fluid Seal

Special Tools

transmissionmanuals.com

- **DT-37212** Front Output Shaft Seal Installer

Equivalent regional tools: **Special Tools**

1. 

   Use **DT-37212** Front Output Shaft Seal Installer (1) to install Propeller Shaft Transmission Flange Fluid Seal (2).

   CAUTION: **Refer to Seal Reuse Caution .**

2. Propeller Shaft Transmission Flange Fluid Seal (2) - Install NEW

CASE EXTENSION ASSEMBLE

Single Use Fasteners and Components

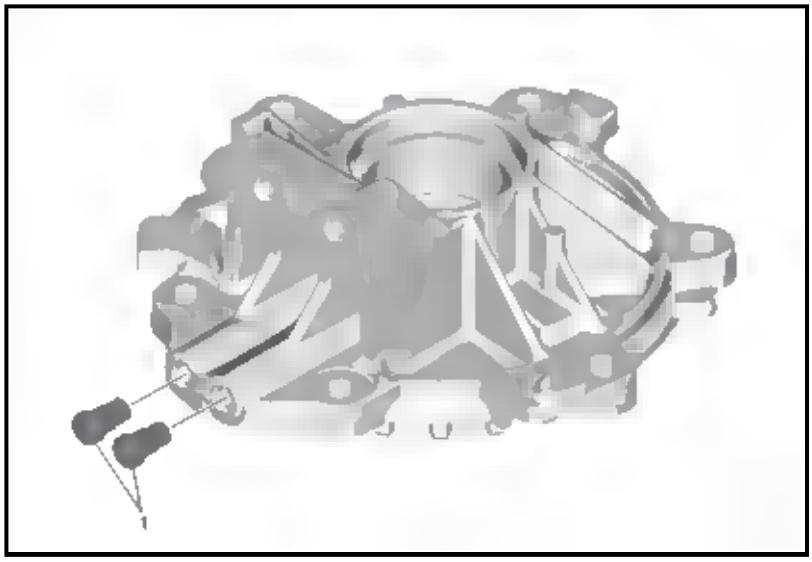
- 1-2-3-4-5-Reverse Clutch Piston Inner Seal - O-Ring
- 1-2-3-4-5-Reverse Clutch Piston Inner Seal
- 1-2-3-4-5-Reverse Clutch Piston Outer Seal
- 1-2-3-4-5-Reverse Clutch Piston Dam Seal
- 1-2-3-4-5-Reverse Clutch Piston Dam Retaining Ring

Special Tools

- **DT-47693-2** Compressor Adapter
- **DT-51087** Bearing Installer
- **GE-8092** Driver Handle

Equivalent regional tools: **Special Tools**

transmissionmanuals.com

1. 

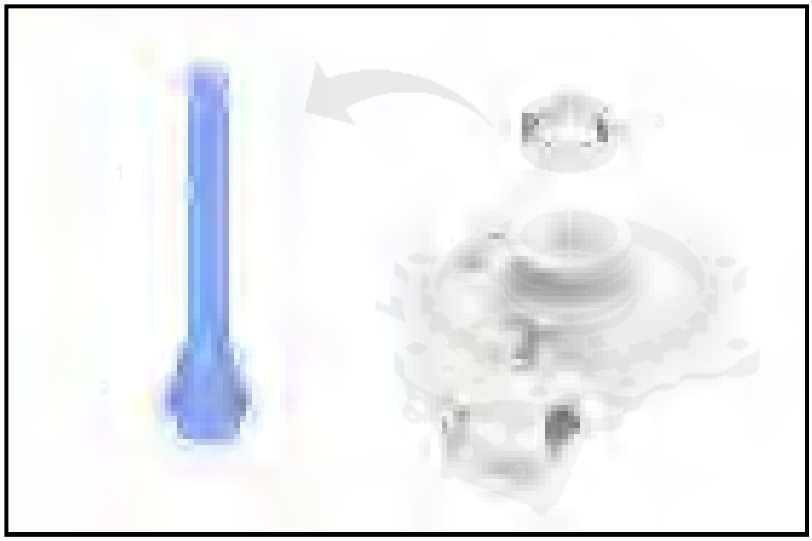
   Automatic Transmission Case Extension Hole Plug (1) - Install and tighten [2x] - **Fastener Specifications**

2. 

   Assemble the tools as shown. Use the **GE-8092** Driver Handle (1) with **DT-51087** Bearing Installer (2) to install Output Shaft Bearing (3).

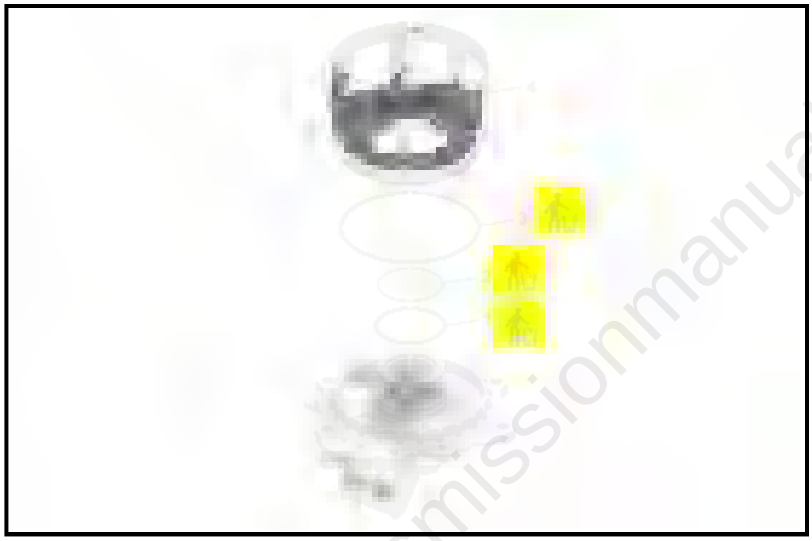
3. Output Shaft Bearing (3) - Install

transmissionmanuals.com

4. 

   Assemble the tools as shown. Use the **GE-8092** Driver Handle (1) with **DT-51087** Bearing Installer (2) to install Output Shaft Bearing (3).

5. Output Shaft Bearing (3) - Install

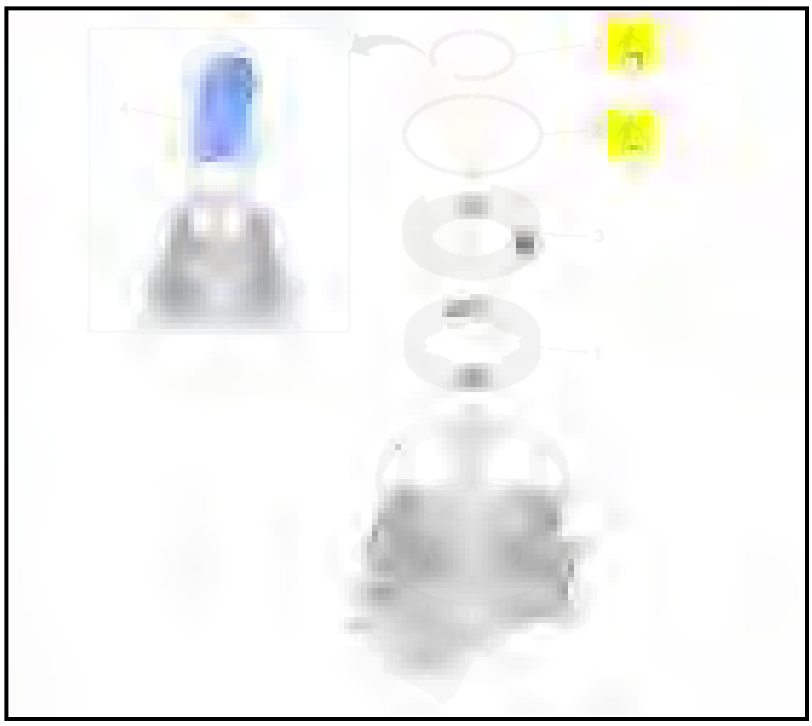
6. 

   CAUTION: **Refer to Seal Reuse Caution**

   1-2-3-4-5-Reverse Clutch Piston Inner Seal - O-Ring (1) - Install NEW

7. 1-2-3-4-5-Reverse Clutch Piston Inner Seal (2) - Install NEW
8. 1-2-3-4-5-Reverse Clutch Piston Outer Seal (3) - Install NEW
9. 1-2-3-4-5-Reverse Clutch Piston (4) - Install

transmissionmanuals.com

10. 

    1-2-3-4-5-Reverse Clutch Piston Return Spring (1) - Install

    CAUTION: **Refer to Seal Reuse Caution .**

11. 1-2-3-4-5-Reverse Clutch Piston Dam Seal (2) - Install NEW
12. 1-2-3-4-5-Reverse Clutch Piston Dam (3) - Install
13. Use **DT-47693-2** Compressor Adapter (4) and an arbor press to install the retaining ring (5).
14. 1-2-3-4-5-Reverse Clutch Piston Dam Retaining Ring (5) - Install NEW

CASE EXTENSION ASSEMBLY INSTALLATION

1. 

    The seal is reusable, inspect the seal and replace if damaged.

2. Automatic Transmission Case Extension Seal (1) - Install

    CAUTION: **Before removing or installing the automatic transmission case extension, place the transmission in a holding fixture with the transmission in a vertical position and the case extension facing up. Failure to do so may result in transmission internal damage.**

transmissionmanuals.com

NOTE: **Ensure the park pawl is not engaged.**

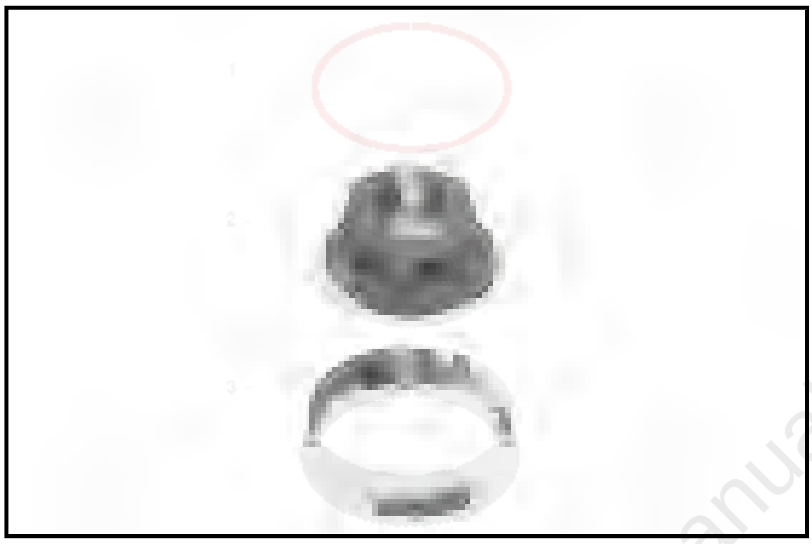
3. Automatic Transmission Case Extension (2) - Install

CAUTION: **Refer to Fastener Caution .**

4. Automatic Transmission Case Extension Bolt (3) - Install and tighten in sequence [6x] - **Fastener Specifications**

REACTION CARRIER OVERHAUL

Removal Procedure

1. 

   Output Carrier Internal Gear Retaining Ring (1) @ Output Carrier Internal Gear (3) - Remove

2. Reaction Carrier (2) @ Output Carrier Internal Gear (3) - Remove

Cleaning and Inspection Procedure

WARNING: **Refer to Safety Glasses and Compressed Air Warning**

1. Clean the components in solvent.
2. Dry the components with compressed air.
3. Inspect the components for excessive wear, galling, pitting, scoring, or embedded debris the components must be replaced.

Installation Procedure

transmissionmanuals.com

1. 

   Reaction Carrier (2) @ Output Carrier Internal Gear (3) - Install

2. Output Carrier Internal Gear Retaining Ring (1) @ Output Carrier Internal Gear (3) - Install

REACTION CARRIER ASSEMBLY, OUTPUT CARRIER, AND OUTPUT SHAFT INSTALLATION

Single Use Fasteners and Components

- Output Shaft Seal - O-Ring

Special Tools

- **DT-50921** Output Carrier/Shaft Lifting Tool

Equivalent regional tools: **Special Tools**

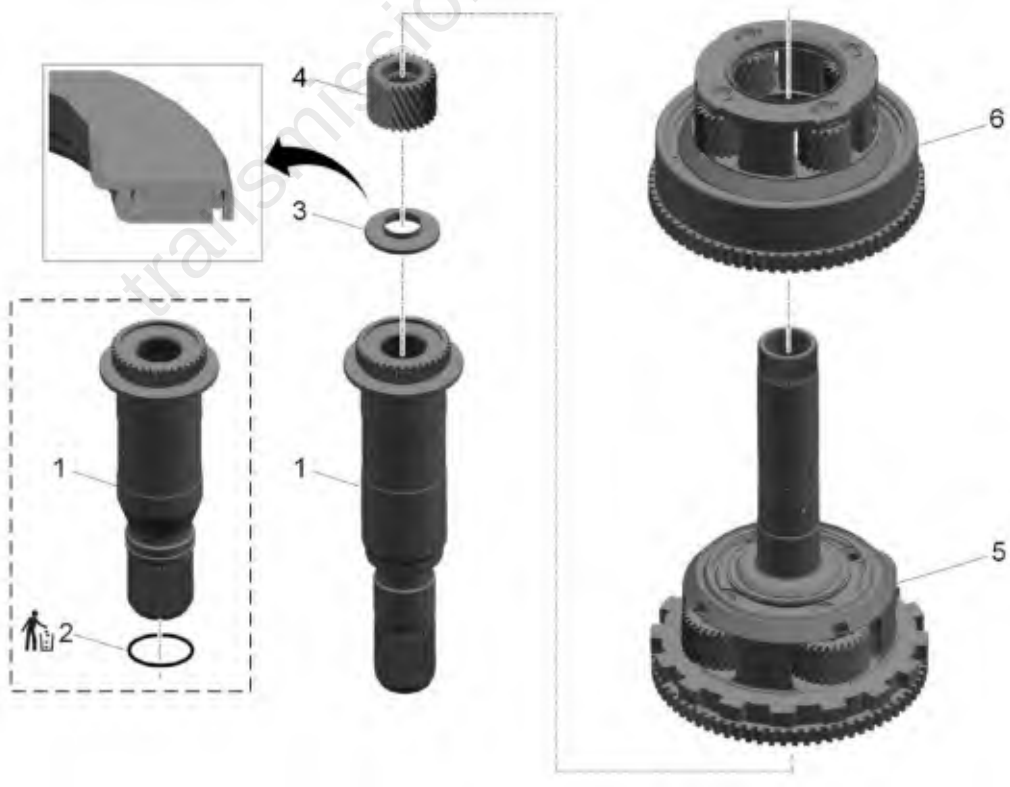
1. 

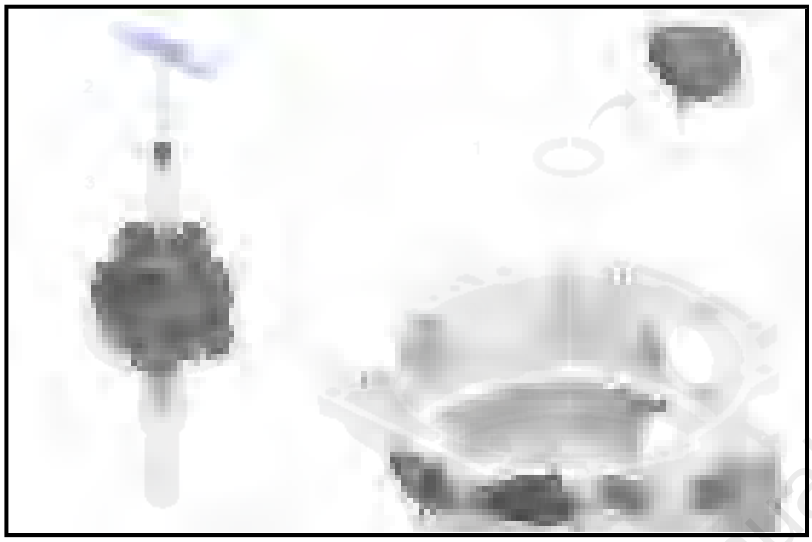
Fig. 6: Exploded View Of Reaction Carrier Assembly, Output Carrier And Output Shaft Components
Courtesy of GENERAL MOTORS COMPANY

transmissionmanuals.com

Output Shaft (1) - Install

2. Output Shaft Seal - O-Ring (2) - Install NEW

NOTE: **The output shaft seal is only present on All Wheel Drive (AWD) models.**

3. Output Carrier Thrust Bearing (3) - Install
4. Output Sun Gear (4) - Install
5. Output Carrier (5) - Install
6. Reaction Carrier (6) - Install
7. 

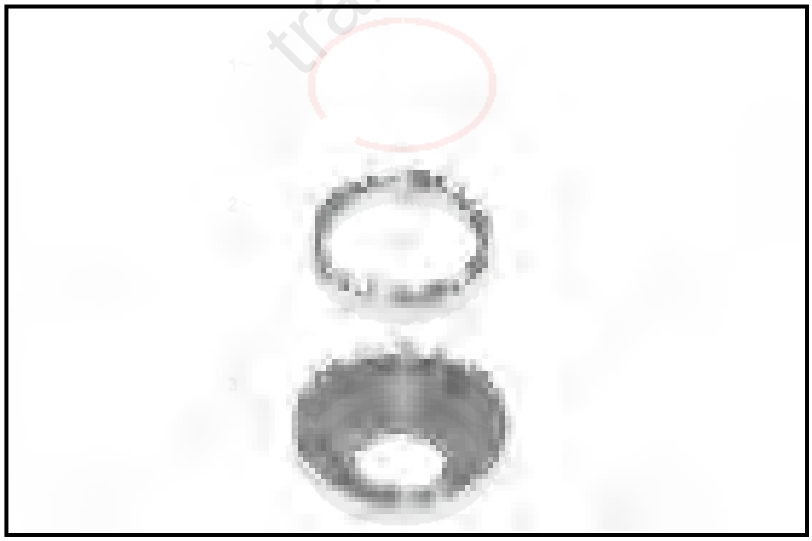
NOTE: **Ensure the park pawl is not engaged.**

Output Carrier Thrust Bearing (1) - Install

8. Using **DT-50921** Output Carrier/Shaft Lifting Tool (2), install to Reaction Carrier (3).
9. Reaction Carrier (3) - Install

REACTION INTERNAL GEAR AND 1-2-3-4-5 REVERSE HUB OVERHAUL

Removal Procedure

1. 

Reaction Internal Gear Retaining Ring (1) @ Reaction Internal Gear and 1-2-3-4-5-Reverse Hub (3) - Remove

2. Reaction Internal Gear (2) @ Reaction Internal Gear and 1-2-3-4-5-Reverse Hub (3) - Remove

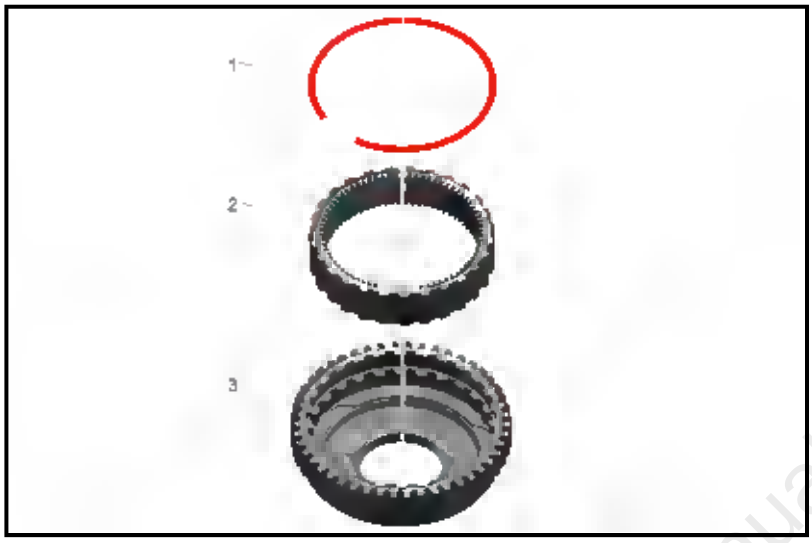
transmissionmanuals.com

Cleaning and Inspection Procedure

WARNING: Refer to Safety Glasses and Compressed Air Warning

1. Clean the components in solvent.
2. Dry the components with compressed air.
3. Inspect the components for excessive wear, galling, pitting, scoring, or embedded debris the components must be replaced.

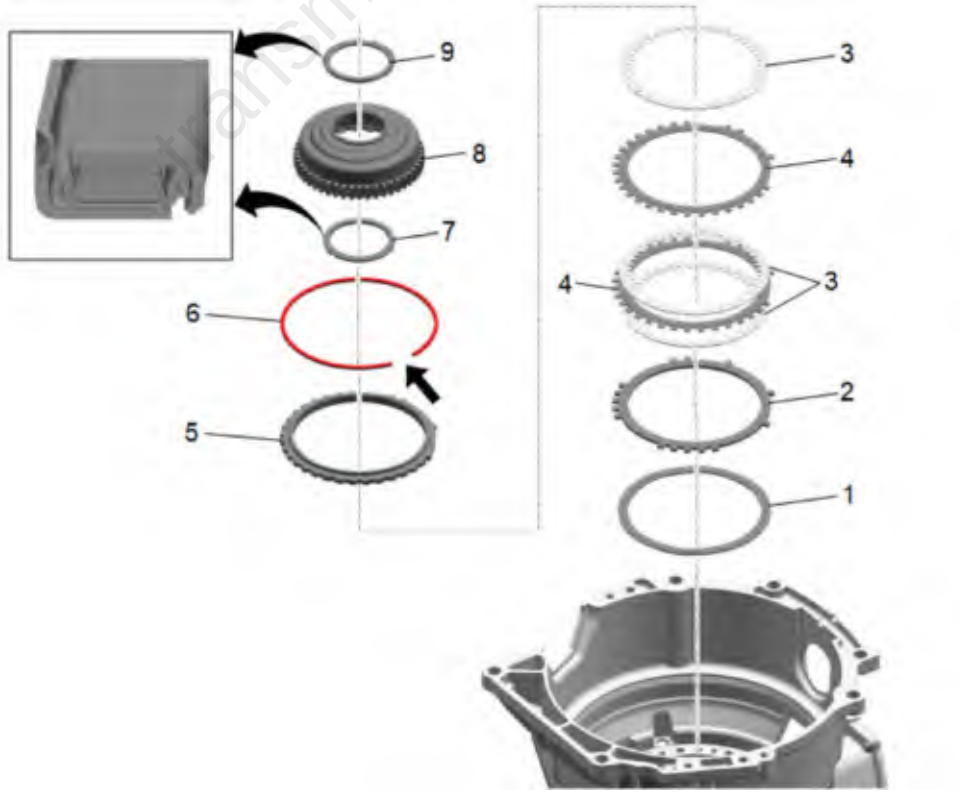
Installation Procedure

1. 

   Reaction Internal Gear (2) @ Reaction Internal Gear and 1-2-3-4-5-Reverse Hub (3) - Install

2. Reaction Internal Gear Retaining Ring (1) @ Reaction Internal Gear and 1-2-3-4-5-Reverse Hub (3) - Install

REACTION INTERNAL GEAR AND 1-2-3-4-5 REVERSE HUB AND 1-2-3-4-5 REVERSE CLUTCH PLATE ASSEMBLY INSTALLATION

1. 

transmissionmanuals.com

Fig. 7: Exploded View Of Reaction Internal Gear And 1-2-3-4-5 Reverse Hub And 1-2-3-4-5 Reverse Clutch Plate Assembly Components
Courtesy of GENERAL MOTORS COMPANY

1-2-3-4-5-Reverse Clutch Plate (Waved) (1) - Install
2. 1-2-3-4-5-Reverse Clutch Apply Plate (2) - Install
3. 1-2-3-4-5-Reverse Clutch Plate (3) - Install [3x]
4. 1-2-3-4-5-Reverse Clutch Plate (4) - Install [2x]
5. 1-2-3-4-5-Reverse Clutch Backing Plate (5) - Install
6. Select the correct retaining ring. Refer to **1-2-3-4-5 Reverse Clutch Backing Plate Retaining Ring Measurement**.

NOTE: **The opening of the retaining ring should be in the 9 o'clock position as indicated by the arrow.**

7. 1-2-3-4-5-Reverse Clutch Backing Plate Retaining Ring (6) - Install
8. Reaction Carrier Thrust Bearing (7) - Install
9. Reaction Internal Gear and 1-2-3-4-5-Reverse Hub (8) - Install
10. 1-2-3-4-5-Reverse Clutch Hub Thrust Bearing (9) - Install

1-2-3-4-5 REVERSE CLUTCH BACKING PLATE RETAINING RING MEASUREMENT

Special Tools

- **DT-48056** Spring Compressor Bridge
- **DT-50902** Adjustable Clutch Spring Compressor
- **DT-50903** Clutch Travel Load Gauge
- **DT-51328** Clutch Compressor and Air Travel Check Rod Extension
- **GE-8001** Dial Indicator Set

Equivalent regional tools: **Special Tools**

1. Install the case extension assembly. **Case Extension Assembly Installation**

NOTE: **For 8L45 models only, prior to performing the 1-2-3-4-5 Reverse Clutch Backing Plate Retaining Ring Measurement, ensure the Rear Output Shaft, Output Carrier, and Reaction Carrier are removed, if previously installed, to prevent interference with the measuring tools.**

2. Install the 1-2-3-4-5 reverse clutch plate assembly. **Reaction Internal Gear and 1-2-3-4-5 Reverse Hub and 1-2-3-4-5 Reverse Clutch Plate Assembly Installation**

transmissionmanuals.com

3. 

   Assemble the tools as shown and apply 80 pounds of pressure to the load gauge by turning the screw on the **DT-48056** Spring Compressor Bridge clockwise.

4. Zero out the dial indicator.
5. Remove the pressure on the load gauge by turning the screw on the **DT-48056** Spring Compressor Bridge one full turn counterclockwise.

   CAUTION: **Regulate the air pressure to 345 kPa (50 psi) maximum. High pressure could cause the piston to over travel and damage the piston seals.**

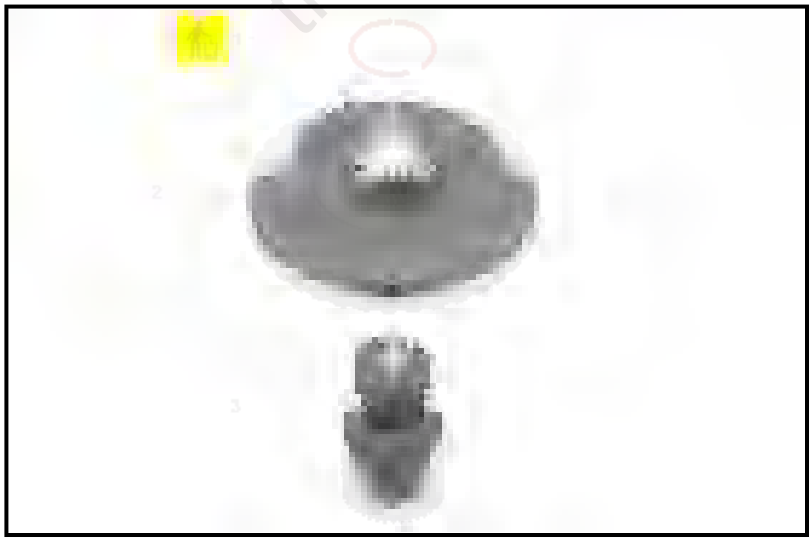
6. Apply 345 kPa (50 psi) of compressed air to the indicated case passage and simultaneously adjust the screw on the **DT-48056** Spring Compressor Bridge to apply 80 pounds of pressure to the load gauge.
7. Observe the dial indicator measurement. Refer to **Clutch Backing Plate Retaining Ring Specifications** to determine the correct 1-2-3-4-5 reverse clutch backing plate retaining ring.

INPUT SUN GEAR OVERHAUL

Single Use Fasteners and Components

Input Sun Gear Retaining Ring

Removal Procedure

1. 

   Input Sun Gear Retaining Ring (1) @ Reaction Sun Gear (3) - Remove and DISCARD

2. Input Sun Gear (2) @ Reaction Sun Gear (3) - Remove

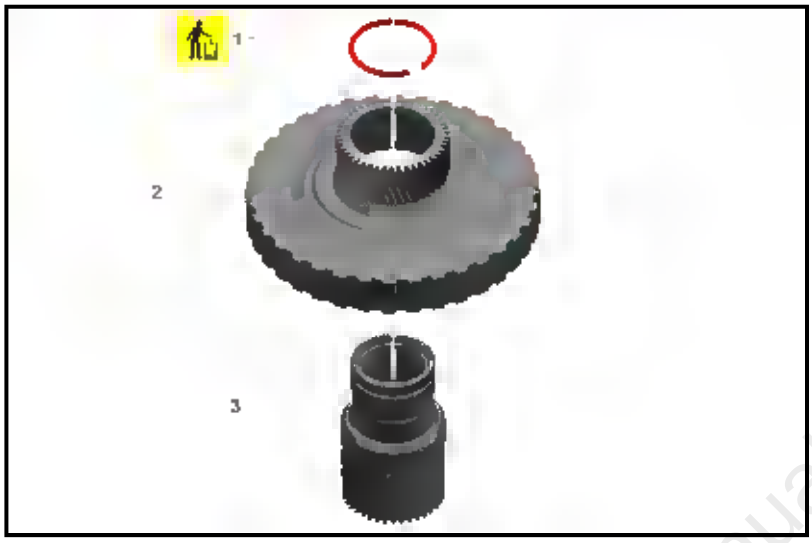
transmissionmanuals.com

Cleaning and Inspection Procedure

WARNING: Refer to Safety Glasses and Compressed Air Warning

1. Clean the components in solvent.
2. Dry the components with compressed air.
3. Inspect the components for excessive wear, galling, pitting, scoring, or embedded debris the components must be replaced.

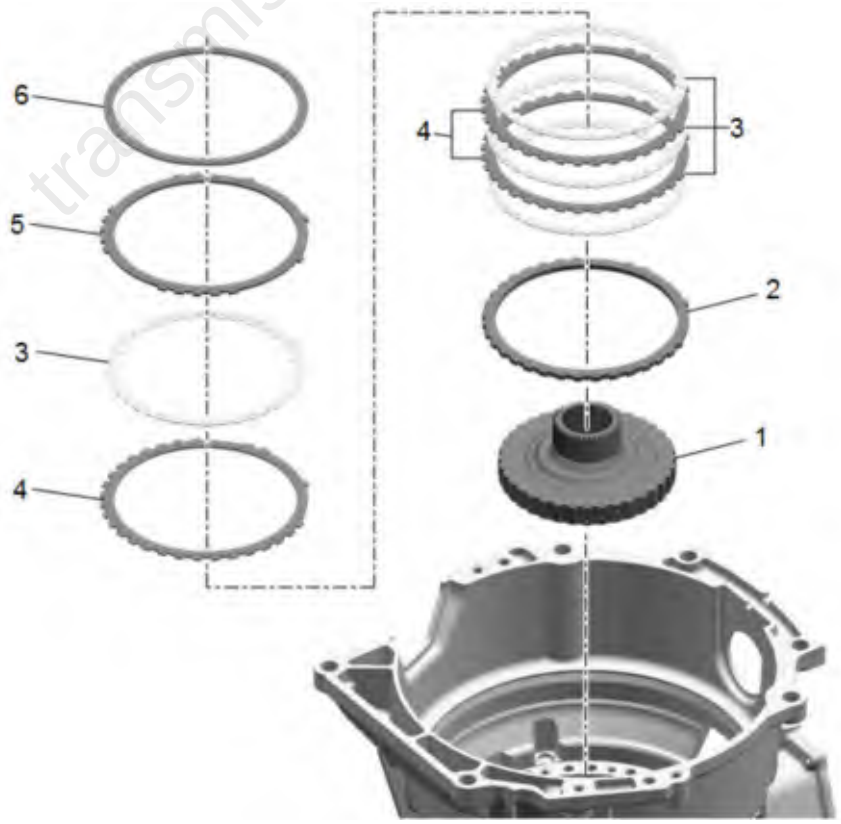
Installation Procedure

1. 

   Input Sun Gear (2) @ Reaction Sun Gear (3) - Install

2. Input Sun Gear Retaining Ring (1) @ Reaction Sun Gear (3) - Install NEW

1-2-7-8 REVERSE CLUTCH PLATE ASSEMBLY AND INPUT SUN GEAR ASSEMBLY INSTALLATION

1. 

transmissionmanuals.com

Fig. 8: Exploded View Of 1-2-7-8 Reverse Clutch Plate Assembly And Input Sun Gear Assembly Components
Courtesy of GENERAL MOTORS COMPANY

Input Sun Gear (1) - Install

2. 1-2-7-8-Reverse Clutch Backing Plate (2) - Install
3. 1-2-7-8-Reverse Clutch Plate (3) - Install [4x]
4. 1-2-7-8-Reverse Clutch Plate (4) - Install [3x]
5. 1-2-7-8-Reverse Clutch Apply Plate (5) - Install
6. 1-2-7-8-Reverse Clutch Plate (Waved) (6) - Install

1-2-7-8 REVERSE CLUTCH PISTON INSTALLATION

Special Tools

- **DT-35512** Bearing Installer
- **DT-48056** Spring Compressor Bridge
- **DT-50902** Adjustable Clutch Spring Compressor

Equivalent regional tools: **Special Tools**

1. 

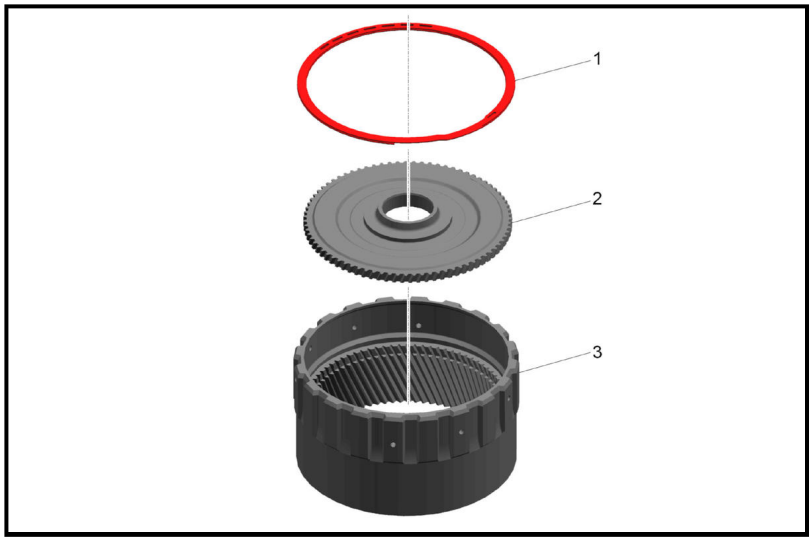
1-2-7-8-Reverse Clutch Apply Ring (1) - Install

2. 1-2-7-8-Reverse Clutch Return Spring (2) - Install
3. 1-2-7-8-Reverse Clutch Piston (3) - Install
4. 1-2-7-8-Reverse Clutch Piston Housing (4) - Install
5. The opening of the retaining ring should be in the 9 o'clock position as indicated by the arrow.
6. Assemble special tools as shown to install retaining ring.
7. 1-2-7-8-Reverse Clutch Piston Housing Retaining Ring (5) - Install

DIRECT OVERDRIVE INTERNAL GEAR OVERHAUL

Removal Procedure

transmissionmanuals.com

1. 

   Direct Overdrive Internal Gear Retaining Ring (1) @ Direct Overdrive Internal Gear (3) - Remove

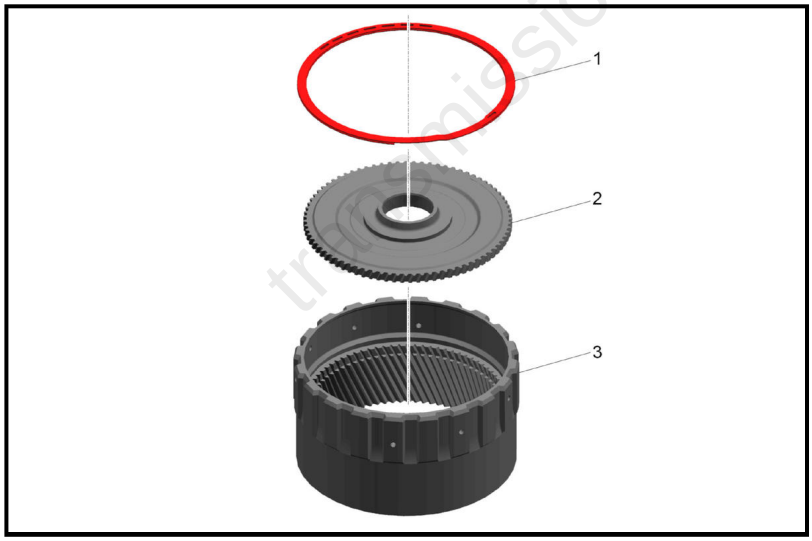
2. Direct Overdrive Internal Gear Flange (2) @ Direct Overdrive Internal Gear (3) - Remove

Cleaning and Inspection Procedure

WARNING: **Refer to Safety Glasses and Compressed Air Warning**

1. Clean the components in solvent.
2. Dry the components with compressed air.
3. Inspect the components for excessive wear, galling, pitting, scoring, or embedded debris the components must be replaced.

Installation Procedure

1. 

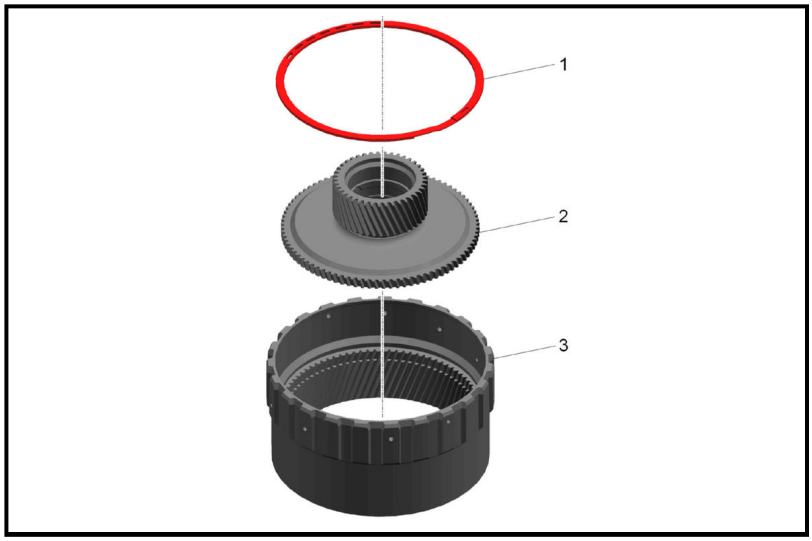
   Direct Overdrive Internal Gear Flange (2) @ Direct Overdrive Internal Gear (3) - Install

2. Direct Overdrive Internal Gear Retaining Ring (1) @ Direct Overdrive Internal Gear (3) - Install

INPUT INTERNAL GEAR OVERHAUL

Removal Procedure

transmissionmanuals.com

1. 

   Input Internal Gear Retaining Ring (1) @ Input Internal Gear (3) - Remove

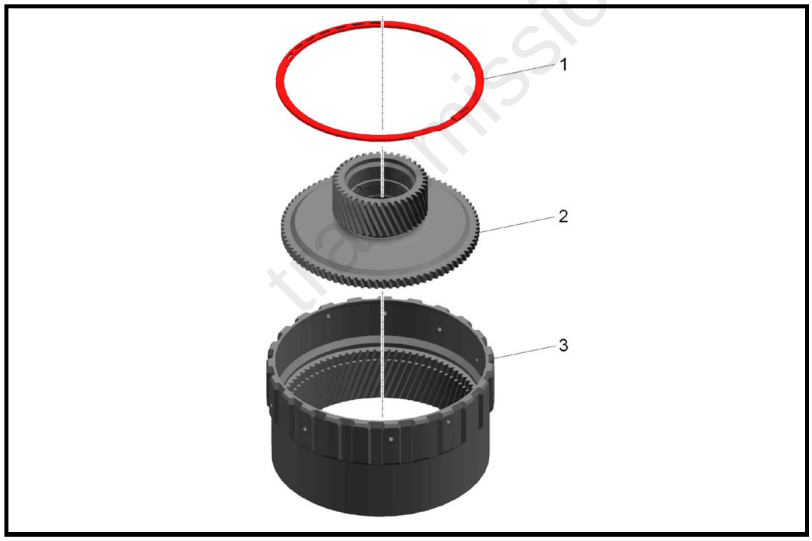
2. Direct Overdrive Sun Gear (2) @ Input Internal Gear (3) - Remove

Cleaning and Inspection Procedure

WARNING: **Refer to Safety Glasses and Compressed Air Warning**

1. Clean the components in solvent.
2. Dry the components with compressed air.
3. Inspect the components for excessive wear, galling, pitting, scoring, or embedded debris the components must be replaced.

Removal Procedure

1. 

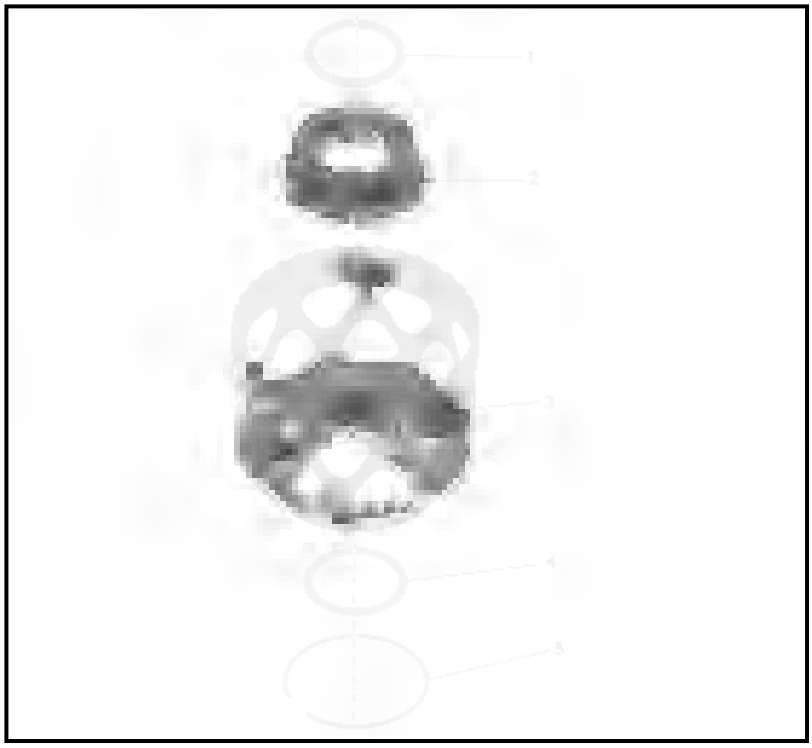
   Direct Overdrive Sun Gear (2) @ Input Internal Gear (3) - Install

2. Input Internal Gear Retaining Ring (1) @ Input Internal Gear (3) - Install

INPUT CARRIER OVERHAUL

Removal Procedure

transmissionmanuals.com

1. 

   Input Carrier Thrust Washer (1) - Remove

2. Input Carrier (2) - Remove
3. Input Carrier Shell (3) - Remove
4. Input Carrier Thrust Washer (4) - Remove
5. Input Carrier Shell Retaining Ring (5) - Remove

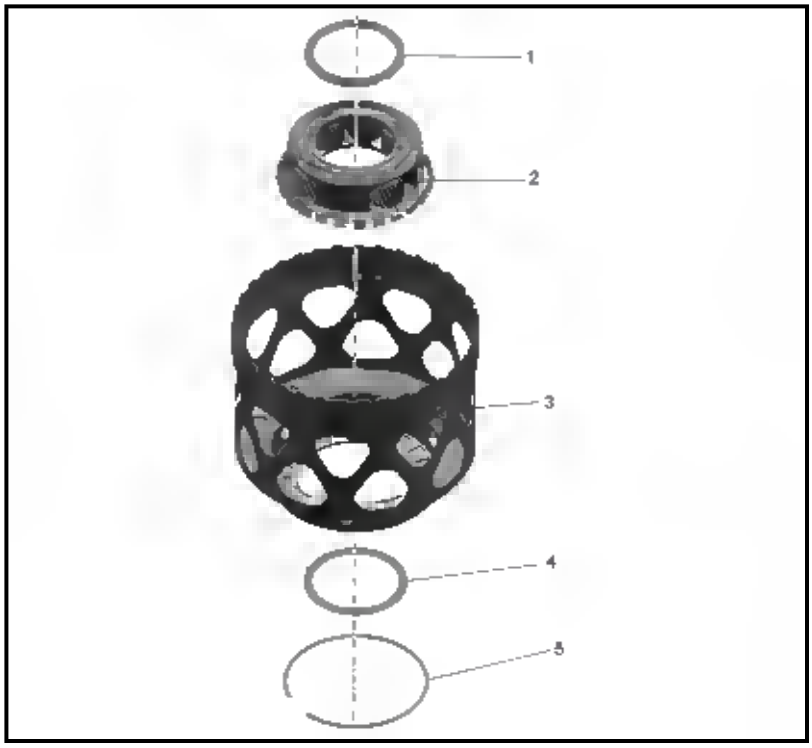
Cleaning and Inspection Procedure

WARNING: **Refer to Safety Glasses and Compressed Air Warning**

1. Clean the components in solvent.
2. Dry the components with compressed air.
3. Inspect the components for excessive wear, galling, pitting, scoring, or embedded debris the components must be replaced.

Removal Procedure

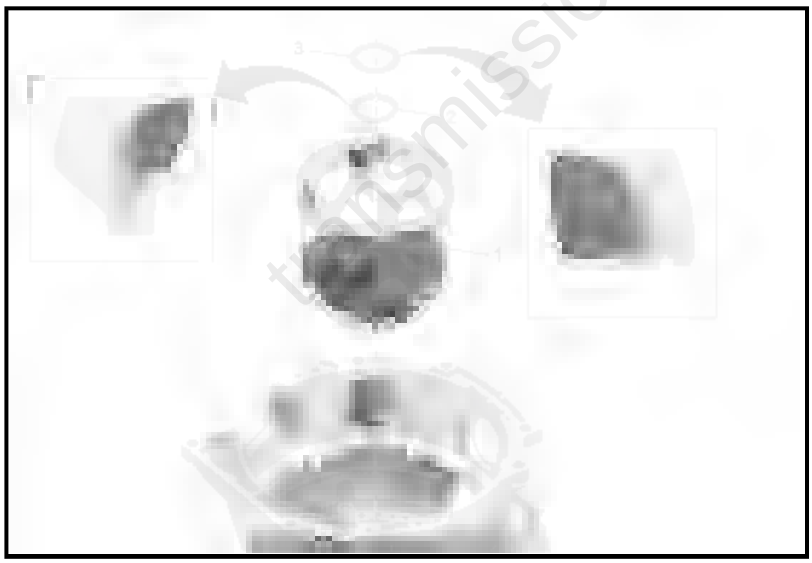
transmissionmanuals.com

1. 

   Input Carrier Shell (3) - Install

2. Input Carrier Thrust Washer (4) - Install
3. Input Carrier Shell Retaining Ring (5) - Install
4. Input Carrier (2) - Install
5. Input Carrier Thrust Washer (1) - Install

INPUT CARRIER ASSEMBLY INSTALLATION

1. 

   Input Carrier (1) - Install

2. Input Sun Gear Spacer (2) - Install
3. Input Sun Gear Thrust Bearing (3) - Install

2-3-4-6-8 AND 4-5-6-7-8 REVERSE CLUTCH DISASSEMBLE

Single Use Fasteners and Components

- 4-5-6-7-8-Reverse Clutch Piston Dam Retaining Ring

transmissionmanuals.com

- 4-5-6-7-8-Reverse Clutch Piston Seal
- 4-5-6-7-8-Reverse Clutch Piston Seal
- 2-3-4-6-8 Clutch Piston Dam Retaining Ring
- 2-3-4-6-8 Clutch Piston Seal - Outer
- 2-3-4-6-8 Clutch Piston Seal - Inner
- 2-3-4-6-8 Clutch Piston Seal
- 4-5-6-7-8-Reverse Clutch Piston Seal
- 4-5-6-7-8-Reverse Clutch Piston Stop Seal
- 2-3-4-6-8 Clutch Piston Dam Seal [2x]

Special Tools

- **DT-35512** Bearing Installer
- **DT-45124** Removal Bridge
- **DT-47865** Bearing Remover
- **DT-50900** Clutch Travel Support Fixture
- **DT-50902** Adjustable Clutch Spring Compressor
- **DT-50905** Clutch Air Travel Adapter

Equivalent regional tools: **Special Tools**

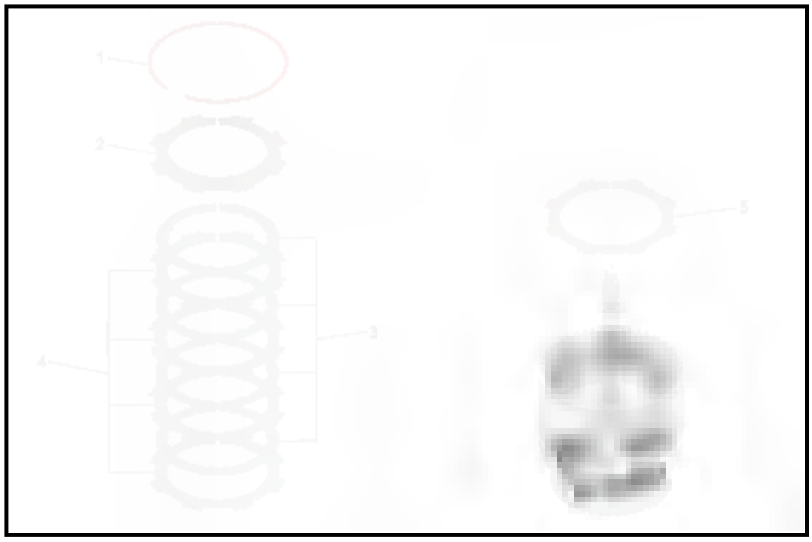


transmissionmanuals.com

1. **Fig. 9: Exploded View Of 2-3-4-6-8 Clutch Plate Components**
   Courtesy of GENERAL MOTORS COMPANY

   2-3-4-6-8 Clutch Backing Plate Retaining Ring (1) - Remove

2. 2-3-4-6-8 Clutch Backing Plate (2) - Remove
3. 2-3-4-6-8 Clutch Plate - Friction (3) - Remove [5x]
4. 2-3-4-6-8 Clutch Plate (4) - Remove [4x]
5. 2-3-4-6-8 Clutch Apply Plate (5) - Remove
6. 2-3-4-6-8 Clutch Plate - Waved (6) - Remove

7. 2-3-4-6-8 Clutch Apply Ring (7) - Remove
8. 

   4-5-6-7-8-Reverse Clutch Backing Plate Retaining Ring (1) - Remove

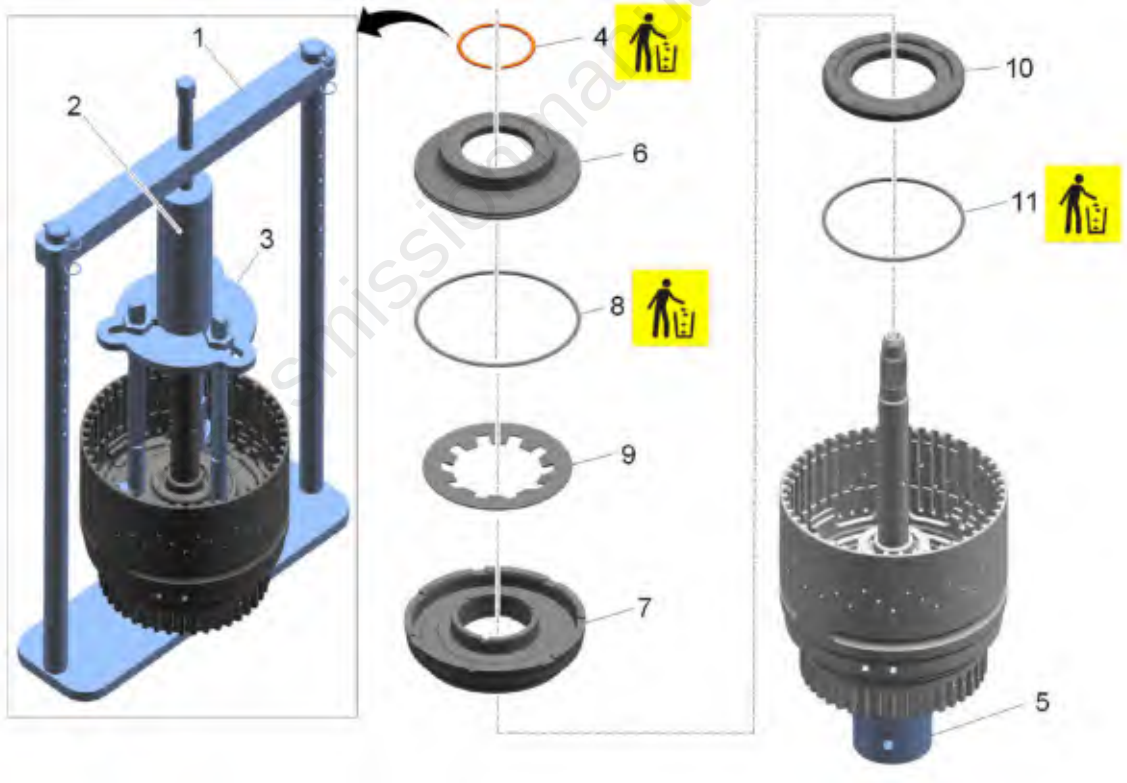
9. 4-5-6-7-8-Reverse Clutch Backing Plate (2) - Remove
10. 4-5-6-7-8-Reverse Clutch Plate - Friction (3) - Remove [4x]
11. 4-5-6-7-8-Reverse Clutch Plate (4) - Remove [4x]
12. 4-5-6-7-8-Reverse Clutch Plate - Waved (5) - Remove
13. 

Fig. 10: Removing 4-5-6-7-8-Reverse Clutch Piston Components Using Appropriate Tools
Courtesy of GENERAL MOTORS COMPANY

Using **DT-50900** Clutch Travel Support Fixture (1), **DT-35512** Bearing Installer (2), and **DT-50902** Adjustable Clutch Spring Compressor (3), remove and DISCARD the 4-5-6-7-8-reverse clutch piston dam retaining ring (4).

14. Use the **DT-50905** clutch air travel adapter (5) with compressed air to remove the 4-5-6-7-8-reverse clutch piston dam (6), and 4-5-6-7-8-reverse clutch piston (7) as an assembly.

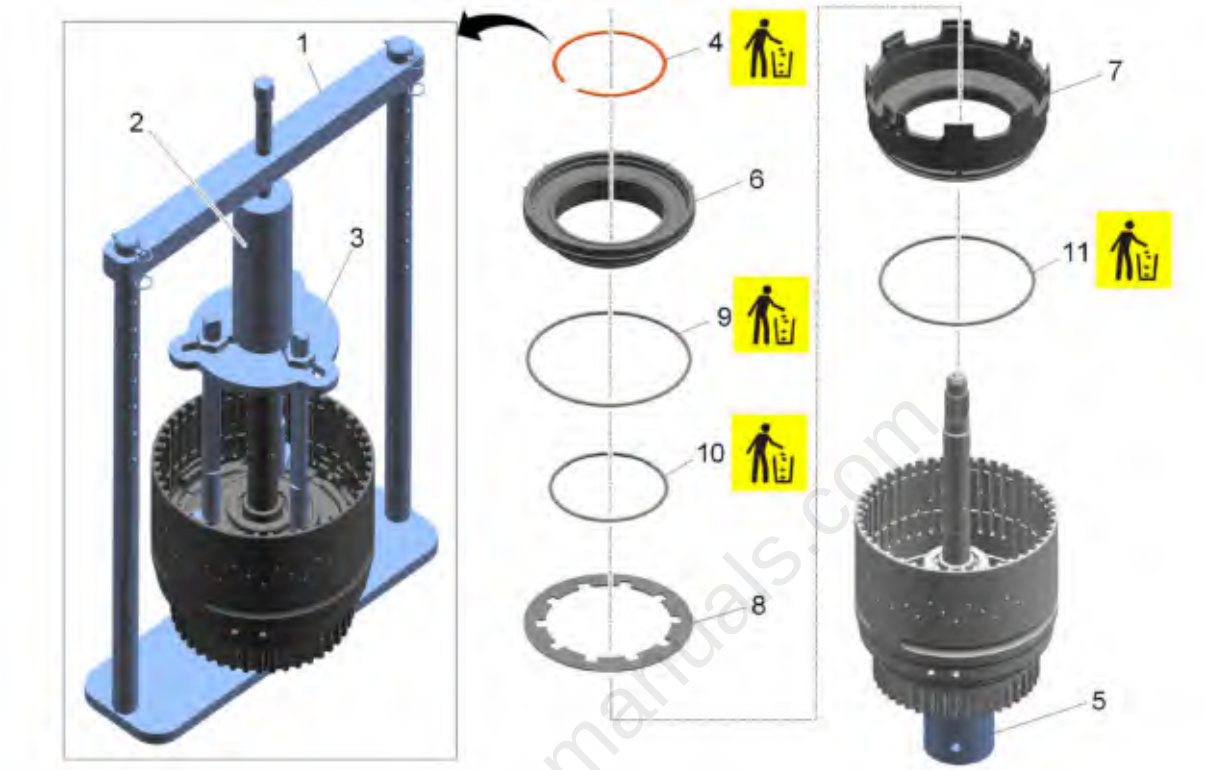
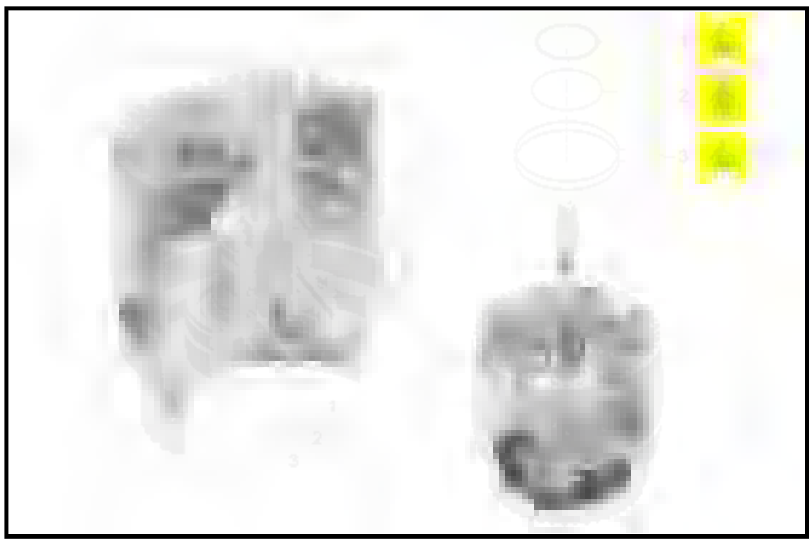
15. 4-5-6-7-8-Reverse Clutch Piston Seal (8) @ 4-5-6-7-8-Reverse Clutch Piston Dam (6) - Remove and DISCARD
16. 4-5-6-7-8-Reverse Clutch Piston Return Spring (9) - Remove
17. 4-5-6-7-8-Reverse Clutch Piston Stop (10) - Remove
18. 4-5-6-7-8-Reverse Clutch Piston Seal (11) @ 4-5-6-7-8-Reverse Clutch Piston Stop (10) - Remove and DISCARD
19. 

Fig. 11: Removing 2-3-4-6-8 Clutch Piston Components Using Appropriate Tools
Courtesy of GENERAL MOTORS COMPANY

Using **DT-50900** Clutch Travel Support Fixture (1), **DT-35512** Bearing Installer (2), and **DT-50902** Adjustable Clutch Spring Compressor (3), remove and DISCARD the 2-3-4-6-8 clutch piston dam retaining ring (4).

20. Use the **DT-50905** clutch air travel adapter (5) with compressed air to remove the 2-3-4-6-8 clutch piston (7), and 2-3-4-6-8 clutch piston dam (6) as an assembly.
21. 2-3-4-6-8 Clutch Piston Seal - Outer (9) @ 2-3-4-6-8 Clutch Piston Dam (6) - Remove and DISCARD
22. 2-3-4-6-8 Clutch Piston Seal - Inner (10) @ 2-3-4-6-8 Clutch Piston Dam (6) - Remove and DISCARD
23. 2-3-4-6-8 Clutch Piston Return Spring (8) - Remove
24. 2-3-4-6-8 Clutch Piston Seal (11) @ 2-3-4-6-8 Clutch Piston (7) - Remove and DISCARD

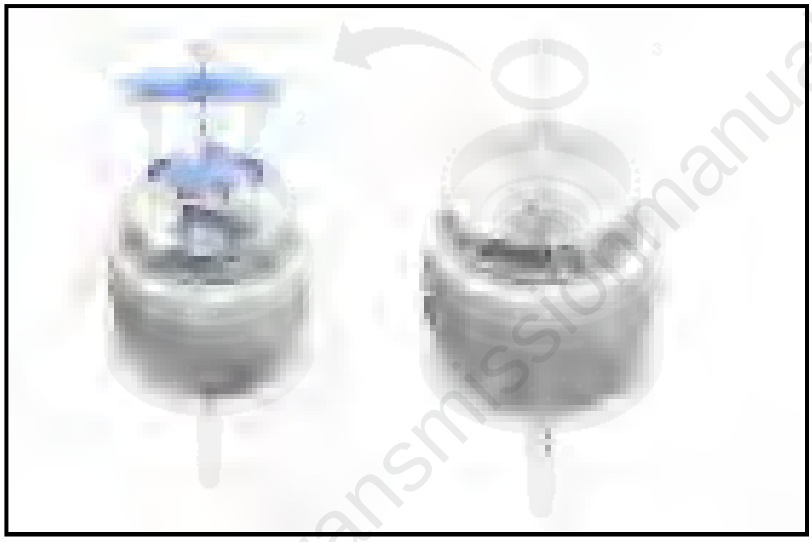
transmissionmanuals.com

25. 

CAUTION: **Refer to Seal Reuse Caution .**

4-5-6-7-8-Reverse Clutch Piston Seal (1) - Remove and DISCARD

26. 4-5-6-7-8-Reverse Clutch Piston Stop Seal (2) - Remove and DISCARD
27. 2-3-4-6-8 Clutch Piston Dam Seal (3) - Remove and DISCARD [2x]

28. 

Using **DT-45124** Removal Bridge (1) & **DT-47865** Bearing Remover (2), remove 2-3-4-6-8 and 4-5-6-7-8-reverse clutch housing bearing (3).

2-3-4-6-8 AND 4-5-6-7-8 REVERSE CLUTCH ASSEMBLE

Single Use Fasteners and Components

- 4-5-6-7-8-Reverse Clutch Piston Dam Retaining Ring
- 4-5-6-7-8-Reverse Clutch Piston Seal
- 4-5-6-7-8-Reverse Clutch Piston Seal
- 2-3-4-6-8 Clutch Piston Dam Retaining Ring
- 2-3-4-6-8 Clutch Piston Seal - Outer
- 2-3-4-6-8 Clutch Piston Seal - Inner
- 2-3-4-6-8 Clutch Piston Seal
- 4-5-6-7-8-Reverse Clutch Piston Seal
- 4-5-6-7-8-Reverse Clutch Piston Stop Seal
- 2-3-4-6-8 Clutch Piston Dam Seal [2x]

Special Tools

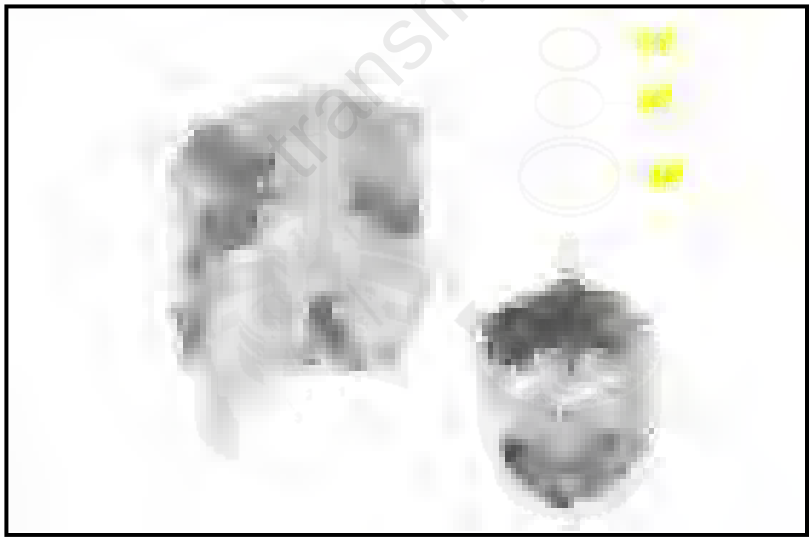
- **DT-35512** Bearing Installer
- **DT-50900** Clutch Travel Support Fixture
- **DT-50902** Adjustable Clutch Spring Compressor
- **DT-51089** Bearing Installer

Equivalent regional tools: **Special Tools**

1. 

   Use **DT-51089** installer and a press to install the bearing.

2. 2-3-4-6-8 and 4-5-6-7-8-Reverse Clutch Housing Bearing (1) - Install

3. 

   CAUTION: **Refer to Seal Reuse Caution .**

   2-3-4-6-8 Clutch Piston Dam Seal (1) - Install NEW [2x]

4. 4-5-6-7-8-Reverse Clutch Piston Stop Seal (2) - Install NEW
5. 4-5-6-7-8-Reverse Clutch Piston Seal (3) - Install NEW

transmissionmanuals.com

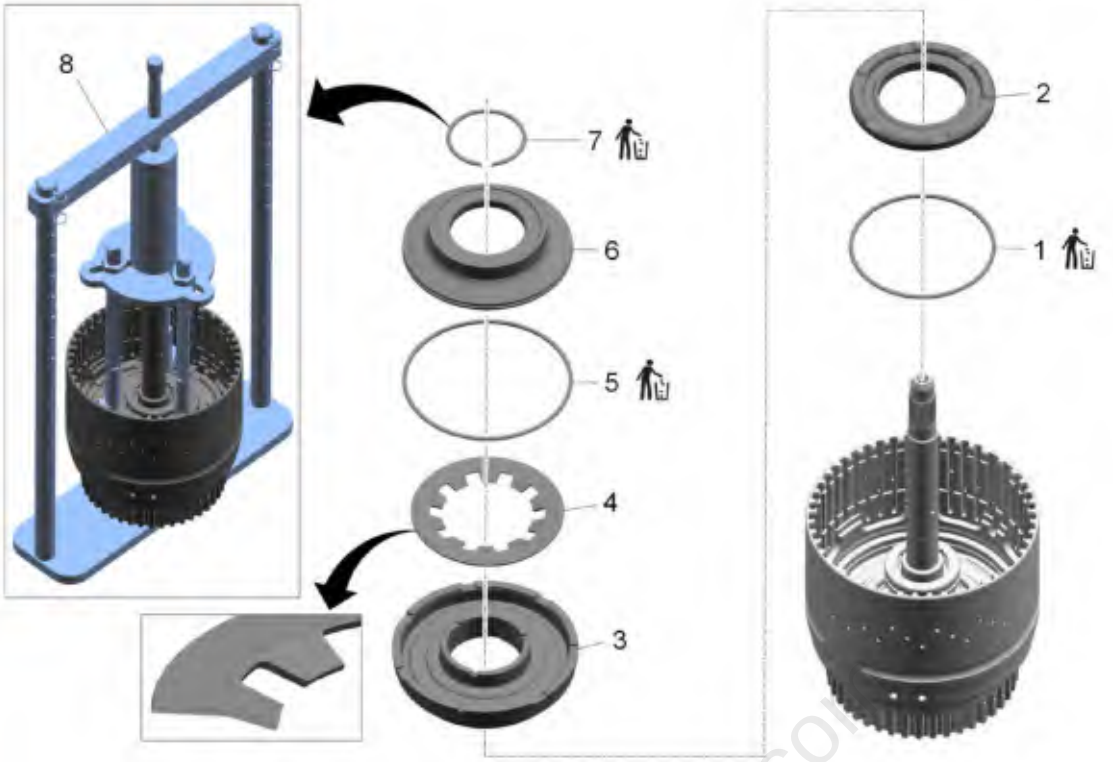
6. 

Fig. 12: Exploded View Of 2-3-4-6-8 Clutch Piston Components
Courtesy of GENERAL MOTORS COMPANY

CAUTION: **Refer to Seal Reuse Caution .**

2-3-4-6-8 Clutch Piston Seal (1) - Install NEW

7. 2-3-4-6-8 Clutch Piston (2) - Install

NOTE: **Position the spring in the orientation as observed during removal.**

8. 2-3-4-6-8 Clutch Piston Return Spring (3) - Install
9. 2-3-4-6-8 Clutch Piston Dam Seal - Inner (4) - Install NEW
10. 2-3-4-6-8 Clutch Piston Dam Seal - Outer (5) - Install NEW
11. 2-3-4-6-8 Clutch Piston Dam (6) - Install

NOTE: **It may be helpful to loosely install the retaining ring before installing the tool.**

12. 2-3-4-6-8 Clutch Piston Dam Retaining Ring (7) - Install NEW
13. Assemble special tools (8) as shown to install the retaining ring.

transmissionmanuals.com

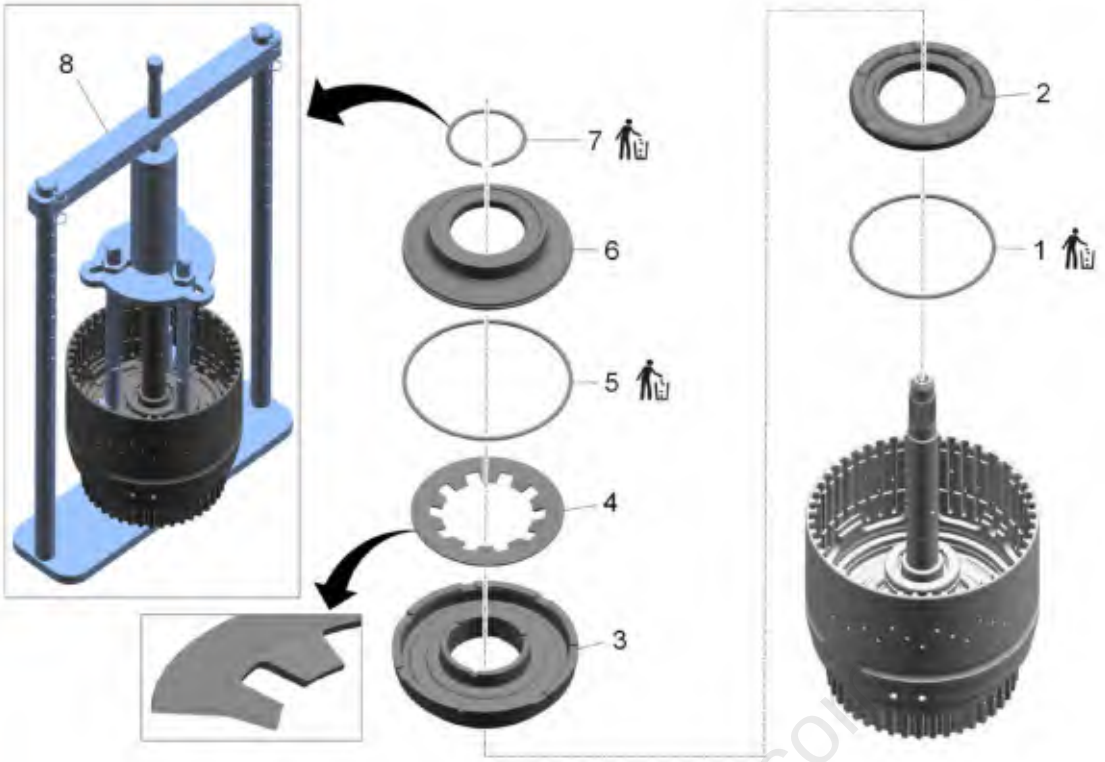
14. 

Fig. 13: Exploded View Of 4-5-6-7-8 Reverse Clutch Piston Components
Courtesy of GENERAL MOTORS COMPANY

CAUTION: **Refer to Seal Reuse Caution .**

4-5-6-7-8-Reverse Clutch Piston Seal (1) - Install NEW

NOTE: **Position the stop in the orientation observed during removal.**

15. 4-5-6-7-8-Reverse Clutch Piston Stop (2) - Install
16. 4-5-6-7-8-Reverse Clutch Piston (3) - Install

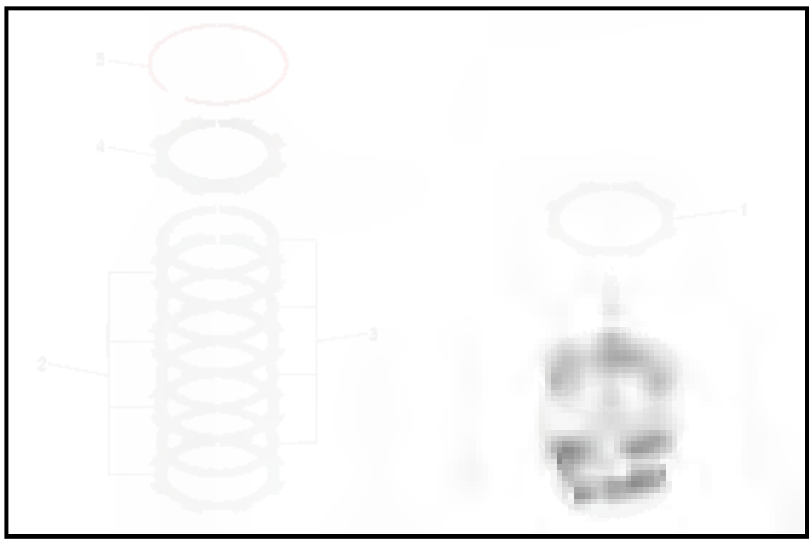
NOTE: **Position the spring in the orientation observed during removal.**

17. 4-5-6-7-8-Reverse Clutch Piston Return Spring (4) - Install
18. 4-5-6-7-8-Reverse Clutch Piston Seal (5) - Install NEW
19. 4-5-6-7-8-Reverse Clutch Piston Dam (6) - Install

NOTE: **It may be helpful to loosely install the retaining ring before installing the tool.**

20. 4-5-6-7-8-Reverse Clutch Piston Dam Retaining Ring (7) - Install NEW
21. Assemble special tools (8) as shown to install the retaining ring.

transmissionmanuals.com

22. 

NOTE: **The teeth on the clutch plate goes between notches on the piston.**

Align center tooth with notch on piston.

23. 4-5-6-7-8-Reverse Clutch Plate - Waved (1) - Install
24. 4-5-6-7-8-Reverse Clutch Plate (2) - Install [4x]
25. 4-5-6-7-8-Reverse Clutch Plate - Friction (3) - Install [4x]
26. 4-5-6-7-8-Reverse Clutch Backing Plate (4) - Install
27. Select the correct retaining ring. **4-5-6-7-8 Reverse Clutch Backing Plate Retaining Ring Measurement**

NOTE: **The retaining ring opening should be between the teeth on the clutch plates.**

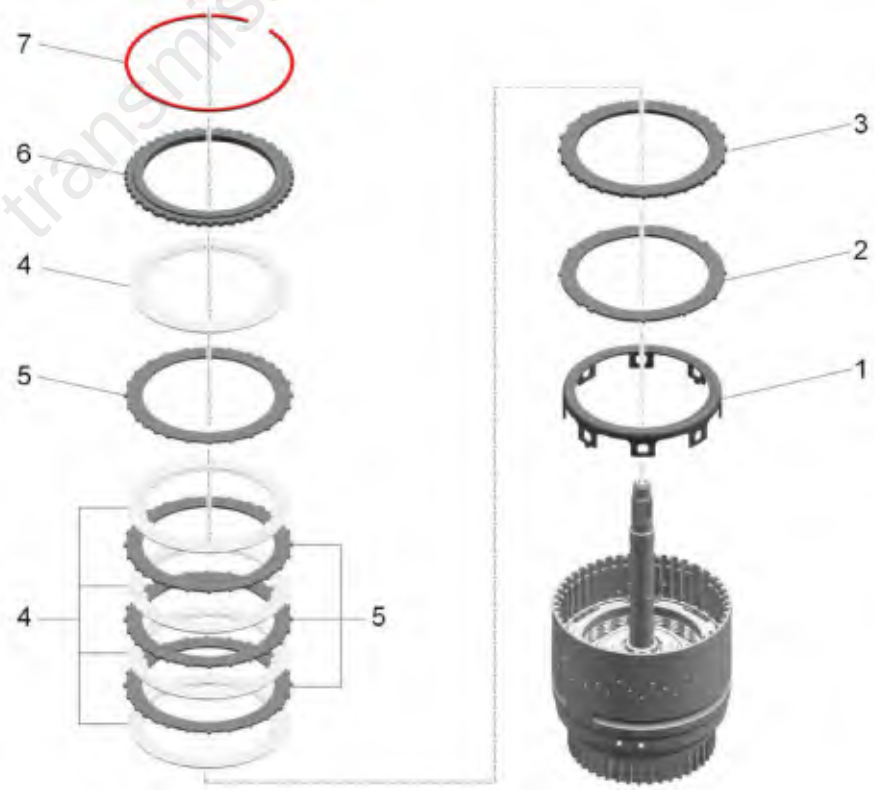
28. 4-5-6-7-8-Reverse Clutch Backing Plate Retaining Ring (5) - Install
29. 

Fig. 14: Exploded View Of 2-3-4-6-8 Clutch Plate Components
Courtesy of GENERAL MOTORS COMPANY

transmissionmanuals.com

Align tabs with notches in the piston.

30. 2-3-4-6-8 Clutch Apply Ring (1) - Install
31. Align the double tabs on the clutch plate with large notches in the housing.
32. 2-3-4-6-8 Clutch Plate - Waved (2) - Install
33. 2-3-4-6-8 Clutch Apply Plate (3) - Install
34. 2-3-4-6-8 Clutch Plate - Friction (4) - Install [5x]
35. 2-3-4-6-8 Clutch Plate (5) - Install [4x]
36. 2-3-4-6-8 Clutch Backing Plate (6) - Install
37. Select the correct retaining ring. **2-3-4-6-8 Clutch Backing Plate Retaining Ring Measurement**
38. Align The retaining ring opening with the backing plate tooth without a notch.
39. 2-3-4-6-8 Clutch Backing Plate Retaining Ring (7) - Install

2-3-4-6-8 CLUTCH BACKING PLATE RETAINING RING MEASUREMENT

Special Tools

- **DT-50900** Clutch Travel Support Fixture
- **DT-50902** Adjustable Clutch Spring Compressor
- **DT-50903** Clutch Travel Load Gauge
- **DT-50905** Clutch Air Travel Adapter
- **GE-8001** Dial Indicator Set

Equivalent regional tools: **Special Tools**

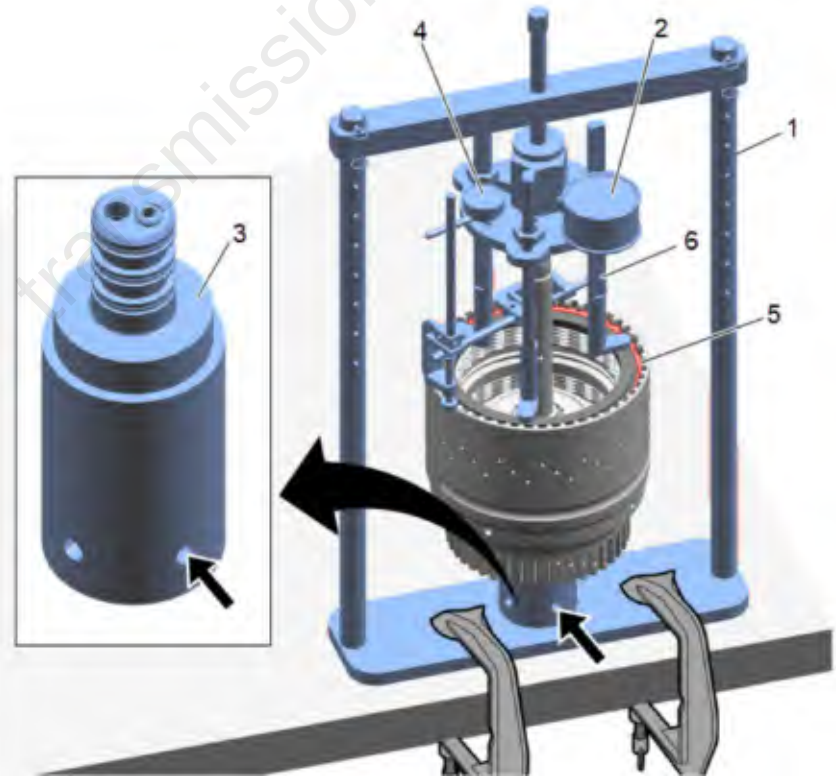
1. 2-3-4-6-8 and 4-5-6-7-8-Reverse Clutch - Assemble - **2-3-4-6-8 and 4-5-6-7-8 Reverse Clutch Assemble**
2. 

Fig. 15: 2-3-4-6-8 Clutch Backing Plate Retaining Ring Measurement (8L45)
Courtesy of GENERAL MOTORS COMPANY

Assemble the tools as shown and clamp the **DT-50900** Clutch Travel Support Fixture (1) to the bench.

transmissionmanuals.com

3. Apply 50 pounds of pressure to the **DT-50903** Clutch Travel Load Gauge (2) by turning the screw on the **DT-50900** Clutch Travel Support Fixture (1) clockwise.
4. Zero out the **GE-8001** Dial Indicator Set (4).
5. Remove the pressure on the **DT-50903** Clutch Travel Load Gauge (2) by turning the screw on the **DT-50900** Clutch Travel Support Fixture (1) one full turn counterclockwise.

CAUTION: **Regulate the air pressure to 345 kPa (50 psi) maximum. High pressure could cause the piston to over travel and damage the piston seals.**

6. Apply 345 kPa (50 psi) of compressed air to the indicated hole on the **DT-50905** Clutch Air Travel Adapter (3) and simultaneously adjust the screw on the **DT-50900** Clutch Travel Support Fixture (1) to apply 50 pounds of pressure to the **DT-50903** Clutch Travel Load Gauge (2).
7. Observe the dial indicator measurement. Refer to **Clutch Backing Plate Retaining Ring Specifications** to determine the correct 2-3-4-6-8 Clutch Backing Plate Retaining Ring (5).

4-5-6-7-8 REVERSE CLUTCH BACKING PLATE RETAINING RING MEASUREMENT

Special Tools

- **DT-50900** Clutch Travel Support Fixture
- **DT-50902** Adjustable Clutch Spring Compressor
- **DT-50903** Clutch Travel Load Gauge
- **DT-50905** Clutch Air Travel Adapter
- **GE-8001** Dial Indicator Set

Equivalent regional tools: **Special Tools**

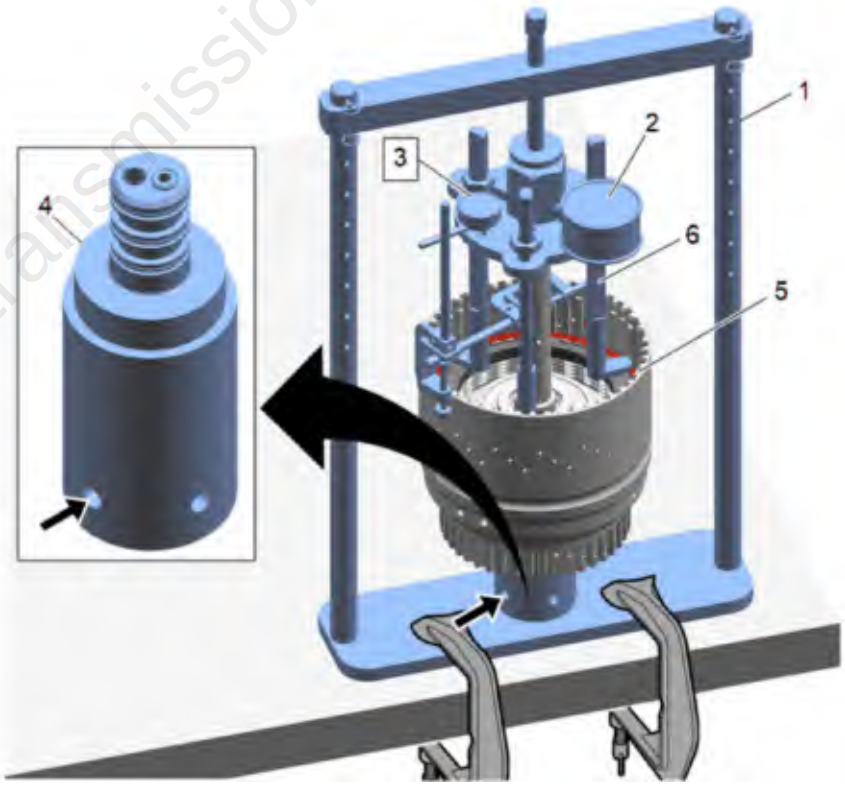
1. 4-5-6-7-8 - Reverse Clutch - Assemble - **2-3-4-6-8 and 4-5-6-7-8 Reverse Clutch Assemble**.
2. 

Fig. 16: 4-5-6-7-8 Reverse Clutch Backing Plate Retaining Ring Measurement (8L45)
Courtesy of GENERAL MOTORS COMPANY

Assemble the tools as shown and clamp the **DT-50900** Clutch Travel Support Fixture (1) to the bench.

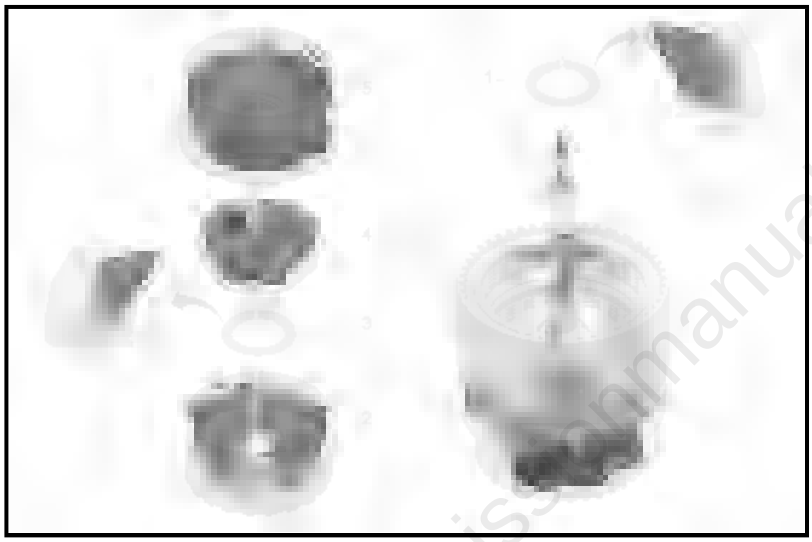
transmissionmanuals.com

3. Apply 56 pounds of pressure to the **DT-50903** Clutch Travel Load Gauge (2) by turning the screw on the **DT-50900** Clutch Travel Support Fixture (1) clockwise.
4. Zero out the **GE-8001** Dial Indicator Set (3).
5. Remove the pressure on the **DT-50903** Clutch Travel Load Gauge (2) by turning the screw on the **DT-50900** Clutch Travel Support Fixture (1) one full turn counterclockwise.

CAUTION: **Regulate the air pressure to 345 kPa (50 psi) maximum. High pressure could cause the piston to over travel and damage the piston seals.**

6. Apply 345 kPa (50 psi) of compressed air to the indicated hole on the **DT-50905** Clutch Air Travel Adapter (4) and simultaneously adjust the screw on the **DT-50900** Clutch Travel Support Fixture (1) to apply 56 pounds of pressure to the **DT-50903** Clutch Travel Load Gauge (2).
7. Observe the **GE-8001** Dial Indicator Set (3) measurement. Refer to **Clutch Backing Plate Retaining Ring Specifications** to determine the correct 4-5-6-7-8 reverse clutch backing plate retaining ring (5).

DIRECT OVERDRIVE CARRIER, INPUT INTERNAL GEAR, AND 2-3-4-6-8 AND 4-5-6-7-8 REVERSE CLUTCH ASSEMBLE

1. 

NOTE: **Ensure proper orientation of bearing.**

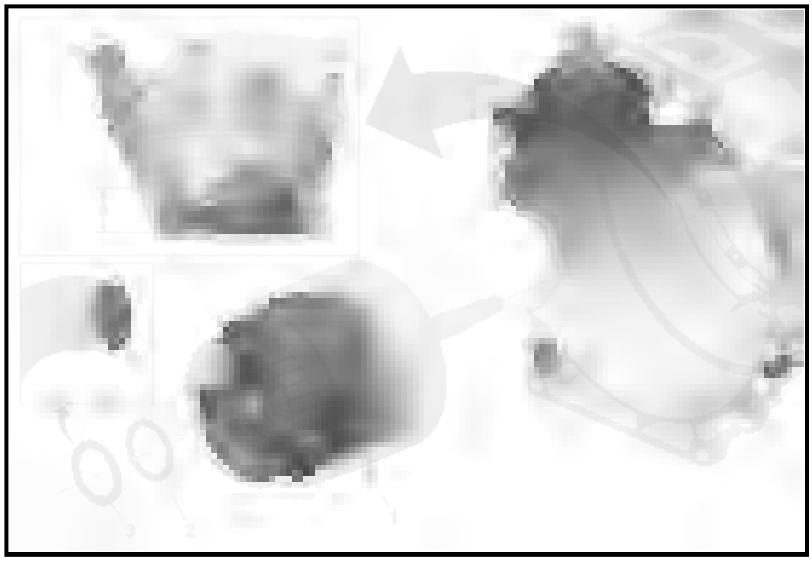
4-5-6-7-8 Reverse Clutch and Direct Overdrive Internal Gear Hub Thrust Bearing (1) - Install

2. Direct Overdrive Internal Gear (2) - Install

NOTE: **Ensure proper orientation of bearing.**

3. Direct Overdrive Carrier Thrust Bearing (3) - Install
4. Direct Overdrive Carrier (4) - Install
5. Input Internal Gear (5) - Install

2-3-4-6-8 AND 4-5-6-7-8 REVERSE CLUTCH ASSEMBLY INSTALLATION

1. 

   Rotate the transmission horizontal to aid in installation of the 2-3-4-6-8 and 4-5-6-7-8 reverse clutch assembly.

2. 2-3-4-6-8 and 4-5-6-7-8-Reverse Clutch (1) - Install
3. Verify proper installation of the 2-3-4-6-8 and 4-5-6-7-8 reverse clutch assembly by measuring as indicated (a). An approximate measurement of 62.78 mm (2.472 in) indicates correct installation.
4. 2-3-4-6-8 and 4-5-6-7-8-Reverse Clutch Thrust Bearing Washer (2) - Install

   NOTE: **Ensure proper orientation of bearing.**

5. 2-3-4-6-8 and 4-5-6-7-8-Reverse Clutch Thrust Bearing (3) - Install

1-3-5-6-7 CLUTCH DISASSEMBLE

Single Use Fasteners and Components

- Turbine Shaft Retaining Ring
- Turbine Shaft Seal
- Turbine Shaft Seal
- Turbine Shaft Fluid Seal Ring [4x]
- Turbine Shaft Fluid Seal Ring [3x]
- 1-3-5-6-7 Clutch Piston Dam Retaining Ring
- 1-3-5-6-7 Clutch Piston Dam Seal
- 1-3-5-6-7 Clutch Piston Seal - Inner
- 1-3-5-6-7 Clutch Piston Seal - Outer

Special Tools

- **DT-26941** Bushing and Bearing Remover
- **DT-38734** Intermediate Spring Compressor Adapter
- **DT-45124** Removal Bridge

Equivalent regional tools: **Special Tools**

transmissionmanuals.com

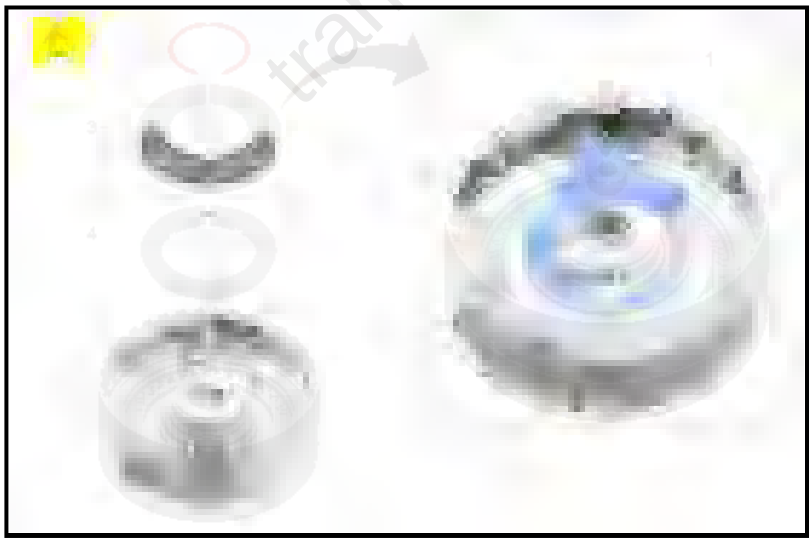
1. 

Fig. 17: Exploded View Of Turbine Shaft Components
Courtesy of GENERAL MOTORS COMPANY

Turbine Shaft Retaining Ring (1) - Remove and DISCARD

2. Turbine Shaft (2) - Remove

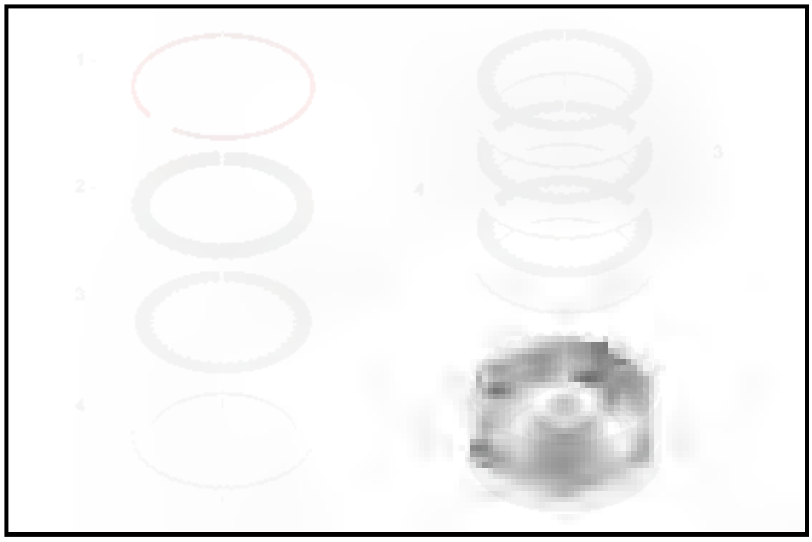
CAUTION: **Refer to Seal Reuse Caution .**

3. Turbine Shaft Seal (3) - Remove and DISCARD
4. Turbine Shaft Fluid Seal Ring (4) - Remove and DISCARD [4x]
5. Turbine Shaft Fluid Seal Ring (5) - Remove and DISCARD [3x]
6. Turbine Shaft Seal (6) - Remove and DISCARD
7. 

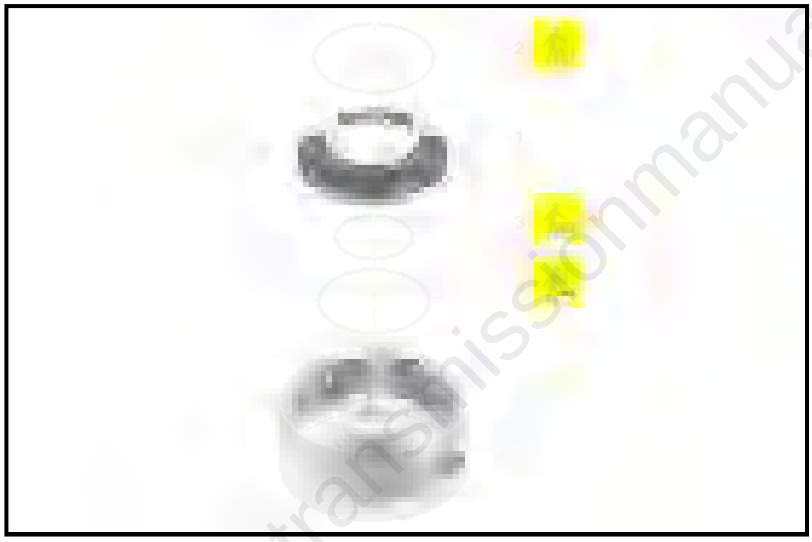
Use the **DT-38734** Intermediate Spring Compressor Adapter (1) and a press to remove the 1-3-5-6-7 Clutch Piston Dam Retaining Ring (2).

8. 1-3-5-6-7 Clutch Piston Dam Retaining Ring (2) - Remove and DISCARD
9. 1-3-5-6-7 Clutch Piston Dam (3) - Remove

transmissionmanuals.com

10. 1-3-5-6-7 Clutch Piston Return Spring (4) - Remove
11. 

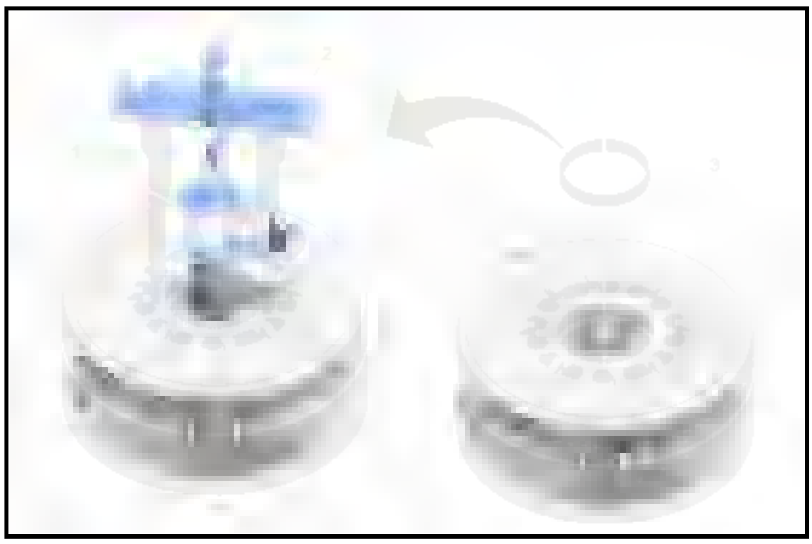
    1-3-5-6-7 Clutch Backing Plate Retaining Ring (1) - Remove

12. 1-3-5-6-7 Clutch Backing Plate (2) - Remove
13. 1-3-5-6-7 Clutch Plate - Friction (3) - Remove [4x]
14. 1-3-5-6-7 Clutch Plate (4) - Remove [4x]
15. 

    1-3-5-6-7 Clutch Piston (1) - Remove

16. 1-3-5-6-7 Clutch Piston Dam Seal (2) - Remove and DISCARD
17. 1-3-5-6-7 Clutch Piston Seal - Inner (3) - Remove and DISCARD
18. 1-3-5-6-7 Clutch Piston Seal - Outer (4) - Remove and DISCARD

transmissionmanuals.com

19. 

    Use the **DT-26941** Bushing and Bearing Remover (1) & **DT-45124** Removal Bridge (2) to remove the 1-3-5-6-7 Clutch Thrust Bearing (3).

20. 1-3-5-6-7 Clutch Thrust Bearing (3) - Remove

1-3-5-6-7 CLUTCH ASSEMBLE

Single Use Fasteners and Components

- Turbine Shaft Retaining Ring
- Turbine Shaft Seal
- Turbine Shaft Seal
- Turbine Shaft Fluid Seal Ring [4x]
- Turbine Shaft Fluid Seal Ring [3x]
- 1-3-5-6-7 Clutch Piston Dam Retaining Ring
- 1-3-5-6-7 Clutch Piston Dam Seal
- 1-3-5-6-7 Clutch Piston Seal - Inner
- 1-3-5-6-7 Clutch Piston Seal - Outer

Special Tools

- **DT-38734** Intermediate Spring Compressor Adapter
- **DT-45053** Universal Clamp Press
- **DT-50911** Seal Installer
- **DT-51089** Bearing Installer

Equivalent regional tools: **Special Tools**

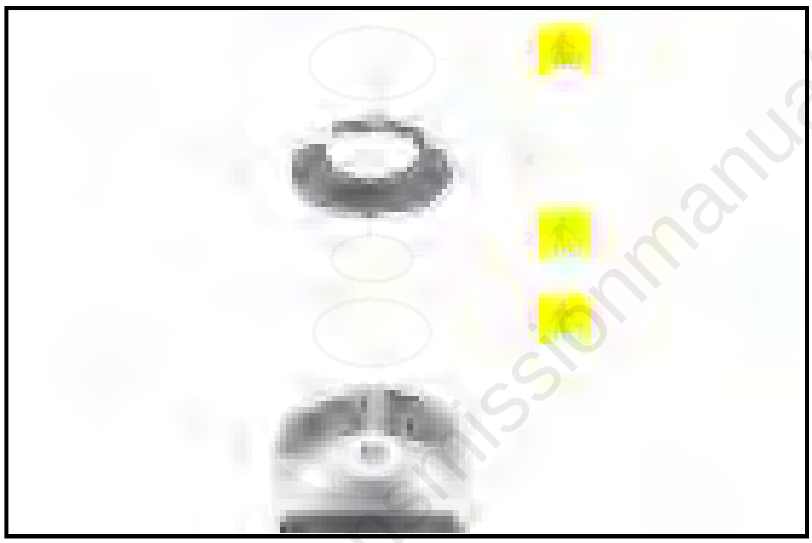
transmissionmanuals.com

1. 

Use **DT-51089** Bearing Installer (1) and a press to install the 1-3-5-6-7 Clutch Thrust Bearing (2).

NOTE: **Press on the marked side of the bearing.**

2. 1-3-5-6-7 Clutch Thrust Bearing (2) - Install

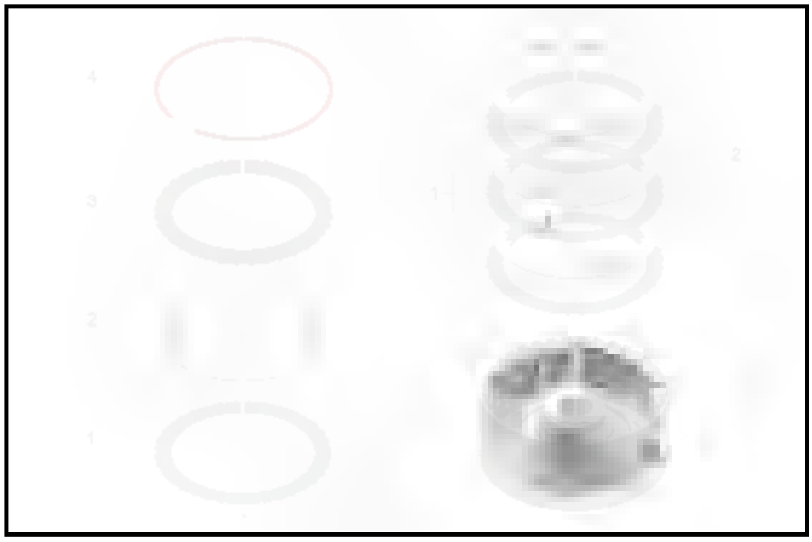
3. 

CAUTION: **Refer to Seal Reuse Caution**

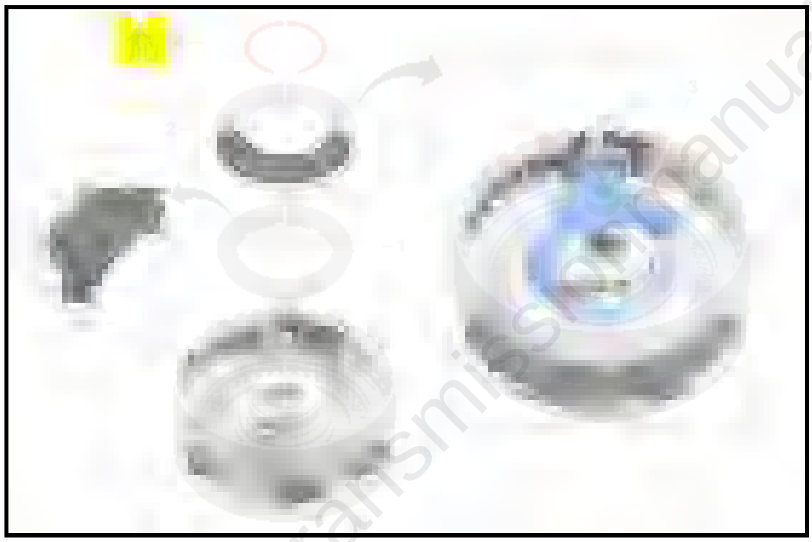
1-3-5-6-7 Clutch Piston Seal - Outer (1) - Install NEW

4. 1-3-5-6-7 Clutch Piston Seal - Inner (2) - Install NEW
5. 1-3-5-6-7 Clutch Piston Dam Seal (3) - Install NEW
6. 1-3-5-6-7 Clutch Piston (4) - Install

transmissionmanuals.com

7. 

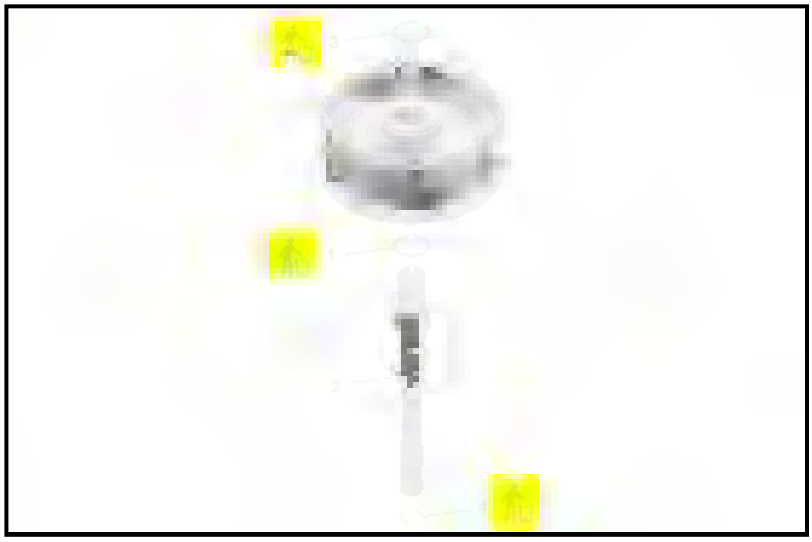
1-3-5-6-7 Clutch Plate (1) - Install [4x]

8. 1-3-5-6-7 Clutch Plate - Friction (2) - Install [4x]
9. 1-3-5-6-7 Clutch Backing Plate (3) - Install
10. Select the correct retaining ring. **1-3-5-6-7 Clutch Backing Plate Retaining Ring Measurement**
11. 1-3-5-6-7 Clutch Backing Plate Retaining Ring (4) - Install
12. 

1-3-5-6-7 Clutch Piston Return Spring (1) - Install

13. 1-3-5-6-7 Clutch Piston Dam (2) - Install
14. Use the **DT-38734** adapter (3) and a press to install the 1-3-5-6-7 Clutch Piston Dam Retaining Ring (4).
15. 1-3-5-6-7 Clutch Piston Dam Retaining Ring (4) - Install NEW

transmissionmanuals.com

16. 

CAUTION: **Refer to Seal Reuse Caution**

Turbine Shaft Seal (1) - Install NEW

17. Turbine Shaft (2) - Install
18. Turbine Shaft Retaining Ring (3) - Install NEW
19. Turbine Shaft Seal (4) - Install NEW

20. 

CAUTION: **Do not use old seal rings. Install NEW seal rings. Reusing old seal rings may cause internal transmission leaks and transmission damage.**

CAUTION: **Size the fluid seal rings for at least 5 minutes after installation to obtain proper seal ring size. Failure to do so may cause internal transmission leaks and transmission damage.**

Adjust the turn screw on **DT-51088-3** seal protector (1) and install the bottom seal ring first using **DT-51088-2** seal pusher (3).

21. Turbine Shaft Fluid Seal Ring (2) - Install NEW [4x]
22. Use the large taper side of **DT-51088-1** seal sizer (4) for initial seal sizing, then flip the tool over for final sizing.

transmissionmanuals.com

23. 

CAUTION: **Do not use old seal rings. Install NEW seal rings. Reusing old seal rings may cause internal transmission leaks and transmission damage.**

CAUTION: **Size the fluid seal rings for at least 5 minutes after installation to obtain proper seal ring size. Failure to do so may cause internal transmission leaks and transmission damage.**

Adjust the turn screw on **DT-50911-3** seal protector (1) and install the bottom seal ring first using **DT-50911-2** seal pusher (3).

24. Turbine Shaft Fluid Seal Ring (2) - Install NEW [3x]
25. Use the large taper side of **DT-50911-1** seal sizer (4) for initial seal sizing, then flip the tool over for final sizing.

1-3-5-6-7 CLUTCH BACKING PLATE RETAINING RING MEASUREMENT

Special Tools

- **DT-47868-4** Clutch Travel Weight Adapter (Only required on some 8L90 models)
- **DT-50900** Clutch Travel Support Fixture
- **DT-50902** Adjustable Clutch Spring Compressor
- **DT-50903** Clutch Travel Load Gauge
- **DT-50905** Clutch Air Travel Adapter
- **DT-50905-2** Clutch Air Travel Fixture Adapter (Required on 8L90 models)
- **DT-50905-3** Clutch Air Travel Fixture Adapter (Required on 8L45 models)
- **GE-8001** Dial Indicator Set

Equivalent regional tools: **Special Tools**

1. Install the 1-3-5-6-7 clutch piston and 1-3-5-6-7 clutch plates. **1-3-5-6-7 Clutch Assemble**

transmissionmanuals.com

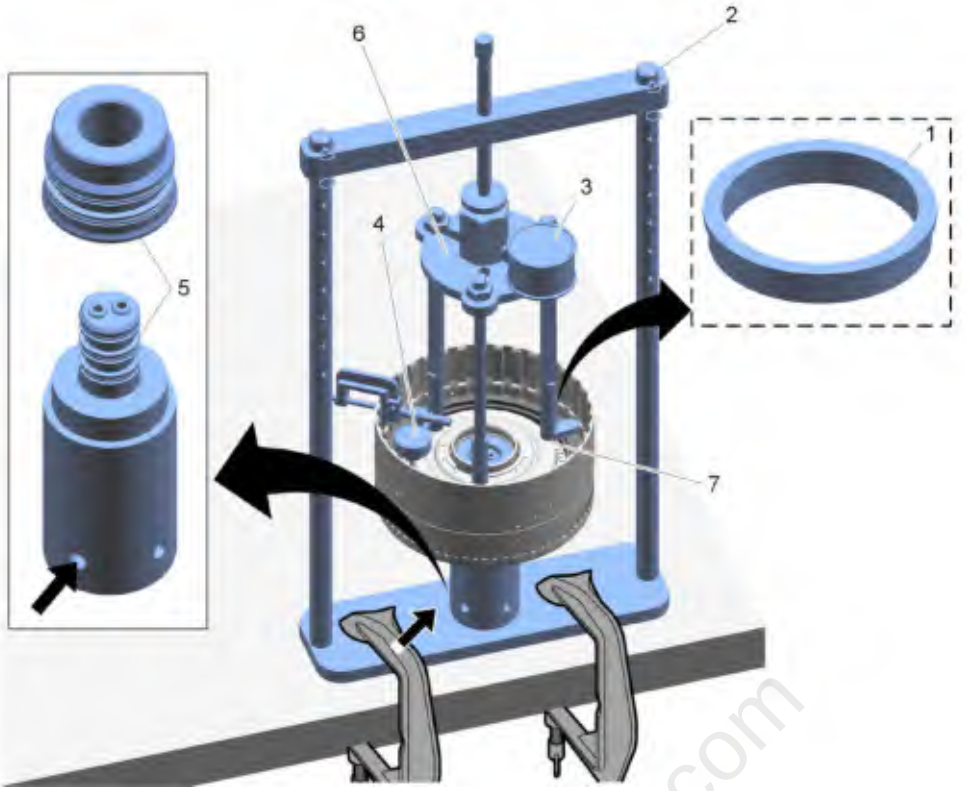
2. 

Fig. 18: 1-3-5-6-7 Clutch Backing Plate Retaining Ring Measurement
Courtesy of GENERAL MOTORS COMPANY

NOTE:

- **DT-47868-4 Clutch Travel Weight Adapter (1) is only required on some 8L90 models. It is not required on 8L45 models.**
- **Use DT-50905-2 Clutch Air Travel Fixture Adapter for 8L90, and DT-50905-3 Clutch Air Travel Fixture Adapter for 8L45.**

Assemble the tools as shown, and clamp the **DT-50900** Clutch Travel Support Fixture (2) to the bench.

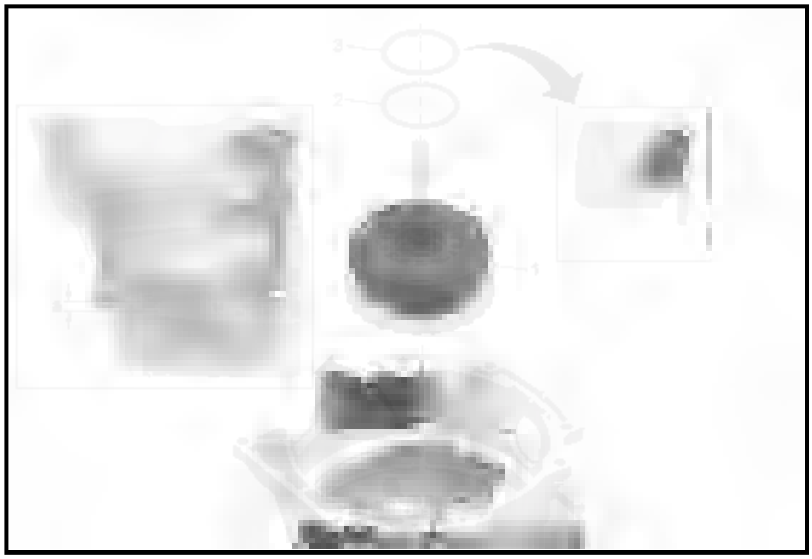
3. Apply 30 pounds of pressure to the **DT-50903** Clutch Travel Load Gauge (3) by turning the screw on the **DT-50900** Clutch Travel Support Fixture (2) clockwise.
4. Ensure the plunger of the **GE-8001** Dial Indicator Set (4) is located on the backing plate.
5. Zero out the **GE-8001** Dial Indicator Set (4).
6. Remove the pressure on the **DT-50903** Clutch Travel Load Gauge (3) by turning the screw on the **DT-50900** Clutch Travel Support Fixture (2) one full turn counterclockwise.

CAUTION: **Regulate the air pressure to 345 kPa (50 psi) maximum. High pressure could cause the piston to over travel and damage the piston seals.**

7. Apply 345 kPa (50 psi) of compressed air to the indicated hole on the **DT-50905** Clutch Air Travel Adapter (5), and simultaneously adjust the screw on the **DT-50900** Clutch Travel Support Fixture (2) to apply 30 pounds of pressure to the **DT-50903** Clutch Travel Load Gauge (3).
8. Observe the dial indicator measurement. Refer to **Clutch Backing Plate Retaining Ring Specifications** to determine the correct 1-3-5-6-7 clutch backing plate retaining ring (6).

1-3-5-6-7 CLUTCH ASSEMBLY INSTALLATION

transmissionmanuals.com

1. 

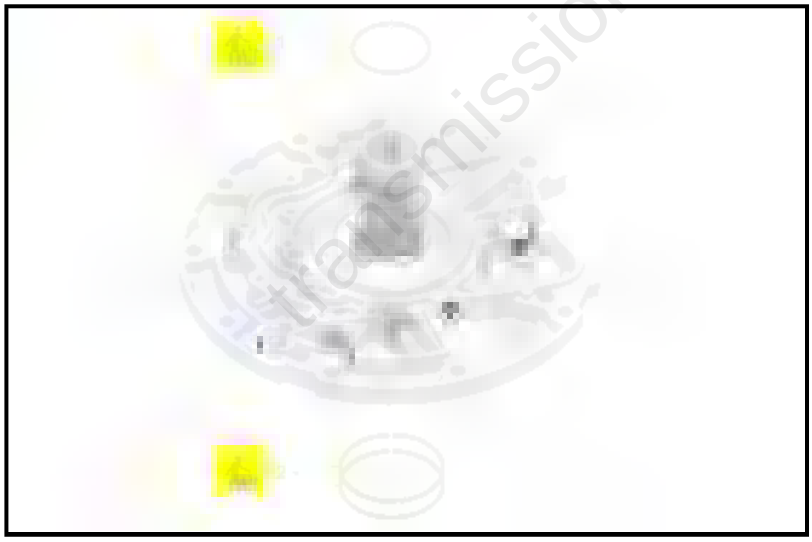
   1-3-5-6-7 Clutch (1) - Install

2. Verify proper installation of the 1 - 3 - 5 - 6 - 7 clutch assembly by measuring as indicated (a). An approximate measurement of 6.49 mm (0.256 in) indicates correct installation.
3. 1-3-5-6-7 Clutch Thrust Bearing Washer (2) - Install
4. 1-3-5-6-7 Clutch Thrust Bearing (3) - Install

STATOR SHAFT SUPPORT DISASSEMBLE

Single Use Fasteners and Components

- Torque Converter Fluid Seal
- 1-3-5-6-7 Clutch Fluid Seal Ring [2x]

1. 

   Torque Converter Fluid Seal (1) - Remove and DISCARD

2. 1-3-5-6-7 Clutch Fluid Seal Ring (2) - Remove and DISCARD [2x]

STATOR SHAFT SUPPORT ASSEMBLE

Single Use Fasteners and Components

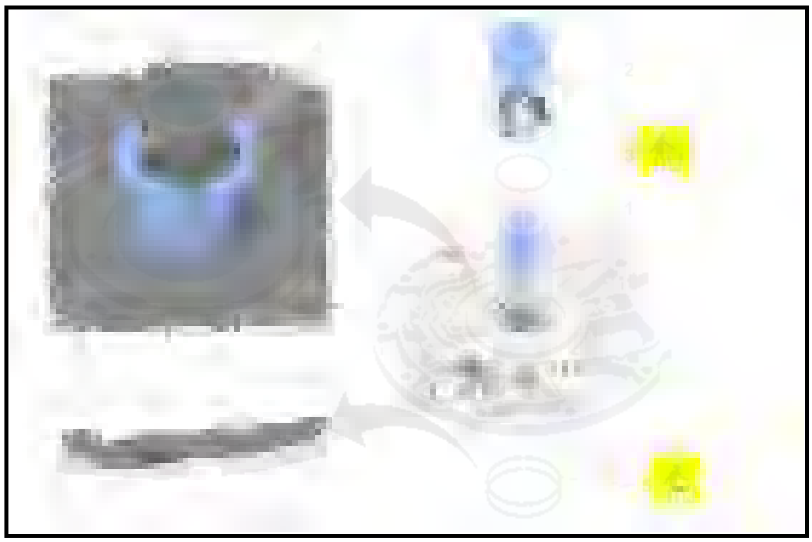
- 1-3-5-6-7 Clutch Fluid Seal Ring [2x]
- Torque Converter Fluid Seal

Special Tools

transmissionmanuals.com

DT-51196 Seal Installer

Equivalent regional tools: **Special Tools**

1. 

   Using **DT-51196-1** Seal Protector (1), and **DT-51196-2** Seal Pusher (2), install NEW torque converter fluid seal (3).

   CAUTION: **Size the fluid seal rings for at least 5 minutes after installation to obtain proper seal ring size. Failure to do so may cause internal transmission leaks and transmission damage.**

2. Use the large taper side of **DT-50912-1** Seal Sizer (4) for initial torque converter fluid seal (3) sizing, then flip the tool over for final sizing.

   NOTE: **Ensure fluid seal ring is installed properly as shown.**

3. 1-3-5-6-7 Clutch Fluid Seal Ring (5) - Install NEW [2x]

STATOR SHAFT SUPPORT INSTALLATION

Single Use Fasteners and Components

- Turbine Shaft Seal - O-Ring

1. 

   Align the bolt hole indicated by the arrow with the arrow that is cast into the case and push down to seat.

transmissionmanuals.com

2. Stator Shaft Support (1) - Install

CAUTION: **Refer to Fastener Caution .**

3. Stator Shaft Support Bolt (2) - Install and tighten [9x] - **Fastener Specifications**
4. Turbine Shaft Seal - O-Ring (3) - Install NEW

TRANSMISSION END PLAY CHECK

Special Tools

- **DT-45124** Removal Bridge
- **DT-48056** Spring Compressor Bridge
- **DT-50903** Clutch Travel Load Gauge
- **GE-8001** Dial Indicator Set
- **GE-8433-1** Puller Bar

Equivalent regional tools: **Special Tools**

1. 

Output Shaft (1) - Measure

NOTE: **There are a number of various output shaft lengths and extension housing configurations, which may require using different length threaded rods to be used with the GE-8433-1 Puller Bar. The illustration depicted only shows one such configuration.**

2. Install the **GE-8433-1** Puller Bar (2) and thrust bearing from **DT-45124** Removal Bridge (3) with two 16 in M10 x 1.5 threaded rods, nuts, and washers (4), as shown.
3. Loosely tighten the forcing screw on **GE-8433-1** Puller Bar (2).

transmissionmanuals.com

4. 

   Turbine Shaft (1) - Measure

5. Rotate the transmission so the turbine shaft is facing up.
6. Install the **DT-48056** Spring Compressor Bridge (2) with two 16 in 5/16 - 18 threaded rods, nuts and washers (3), as shown.
7. Install the **DT-50903** Clutch Travel Load Gauge (4) and secure with the **DT-48056** Spring Compressor Bridge (2) forcing screw.
8. Install the **GE-8001** Dial Indicator Set (5) in a suitable location.
9. 

   Turbine Shaft (1) - Measure

10. Ensure the foot of the **GE-8001** Dial Indicator Set (2) is flat with the **DT-50903** Clutch Travel Load Gauge (3) face.
11. Apply 50 psi of pressure to **DT-50903** Clutch Travel Load Gauge (3) and zero out the **GE-8001** Dial Indicator Set (2).
12. Using a torque wrench (4), tighten the forcing screw on **GE-8433-1** Puller Bar (5) to 10 N.m (90 lb in).
13. Observe the **GE-8001** Dial Indicator Set (2) measurement. Refer to **1-3-5-6-7 Clutch Thrust Bearing Washer Specifications** to determine the correct 1-3-5-6-7 clutch thrust bearing washer.

TORQUE CONVERTER FLUID SEAL REMOVAL

Single Use Fasteners and Components

Torque Converter Fluid Seal

Special Tools

DT-45000 Seal Remover

Equivalent regional tools: **Special Tools**

1. 

   Using **DT-45000** Seal Remover (1), remove and DISCARD torque converter fluid seal (2).

TORQUE CONVERTER FLUID SEAL INSTALLATION

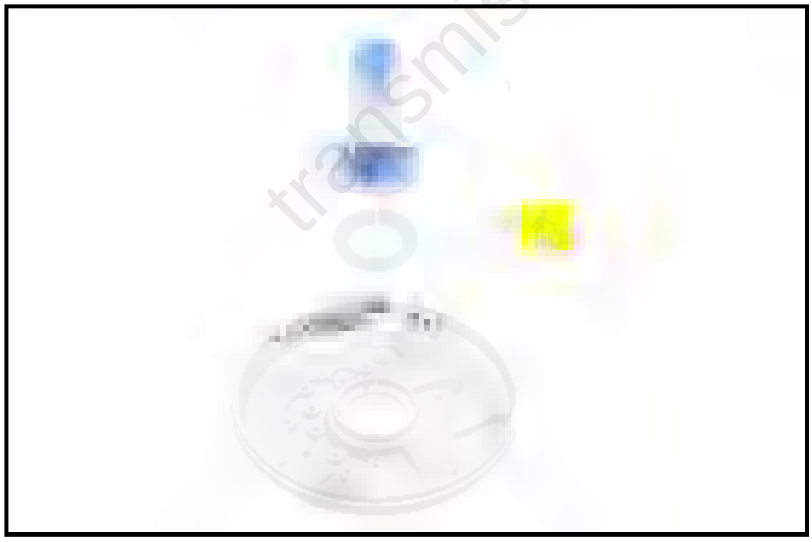
Single Use Fasteners and Components

Torque Converter Fluid Seal

Special Tools

DT-43772 Torque Converter Seal Installer

Equivalent regional tools: **Special Tools**

1. 

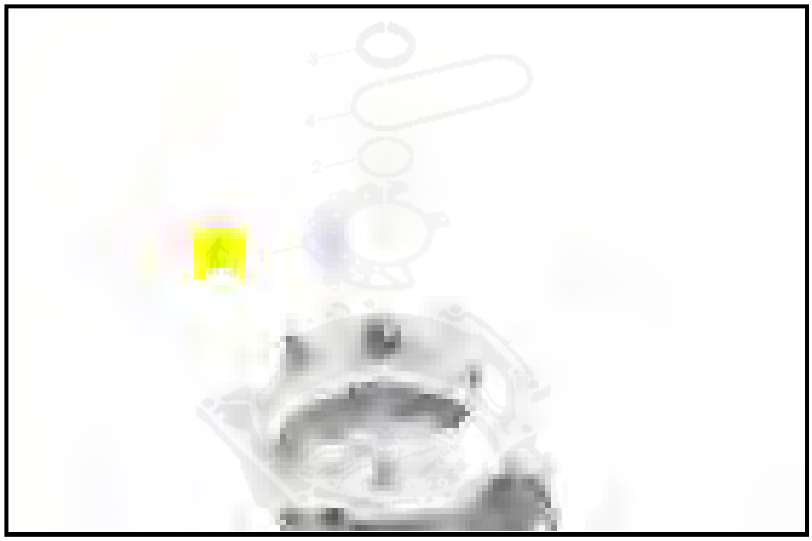
   Using **DT-43772** Torque Converter Seal Installer (1), install NEW torque converter fluid seal (2).

TRANSMISSION CASE FRONT COVER AND DRIVE LINK INSTALLATION

Single Use Fasteners and Components

- Automatic Transmission Front Support Cover Gasket
- Automatic Transmission Case Front Cover Seal
- Automatic Transmission Case Front Cover Bolt [11x]

transmissionmanuals.com

1. 

   Automatic Transmission Front Support Cover Gasket (1) - Install NEW

2. Drive Sprocket Thrust Washer- Rear (2) - Install
3. Drive Sprocket (3) - Install
4. Drive Link (4) - Install

5. 

   Drive Sprocket Thrust Washer- Front (1) - Install

6. Automatic Transmission Case Front Cover Seal (2) - Install NEW
7. Ensure the drive link assembly is not pinched by the front cover and moves freely on the drive sprocket.
8. Automatic Transmission Case Front Cover (3) - Install

   CAUTION: **Refer to Fastener Caution .**

9. Automatic Transmission Case Front Cover Bolt (4) - Install NEW and tighten in sequence [11x] - **Fastener Specifications**

CONTROL VALVE BODY ASSEMBLY DISASSEMBLE

Single Use Fasteners and Components

- Wiring Harness Retainer
- Control Valve Channel Plate Spacer Plate
- Control Valve Body Spacer Plate Retainer [2x]
- Automatic Transmission Fluid Pump Seal

- Automatic Transmission Fluid Pump Gasket

1. 

   Disconnect the wiring harness connectors.

2. Automatic Transmission Control Wiring Harness (1) - Remove
3. Remove and DISCARD the Wiring Harness Retainer (2), they are not reusable.

4. 

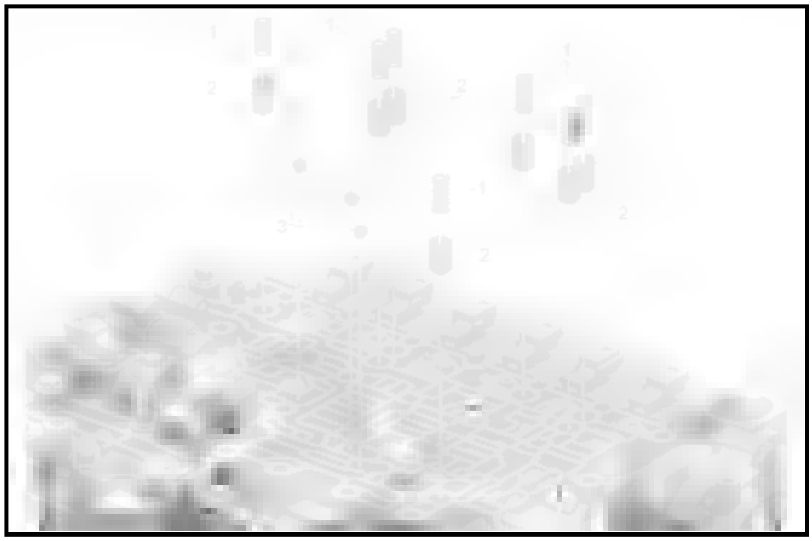
   Control Valve Channel Plate Bolt (1) - Remove [19x]

5. Control Valve Channel Plate (2) - Remove

   CAUTION: **Do not use the old spacer plate. Install a NEW spacer plate. Reusing an old spacer plate may cause internal transmission leaks and transmission damage.**

6. Control Valve Channel Plate Spacer Plate (3) - Remove and DISCARD

transmissionmanuals.com

7. 

   Signal Accumulator Piston Spring (1) - Remove [7x]

8. Signal Accumulator Piston (2) - Remove [7x]

   NOTE: **Observe the position of the ball check valves.**

9. Cooler Flow Blowoff Ball Valve (3) - Remove [3x]

10. 

    Valve Body Bolt (1) - Remove [8x]

11. Control Valve Solenoid Body (2) - Remove

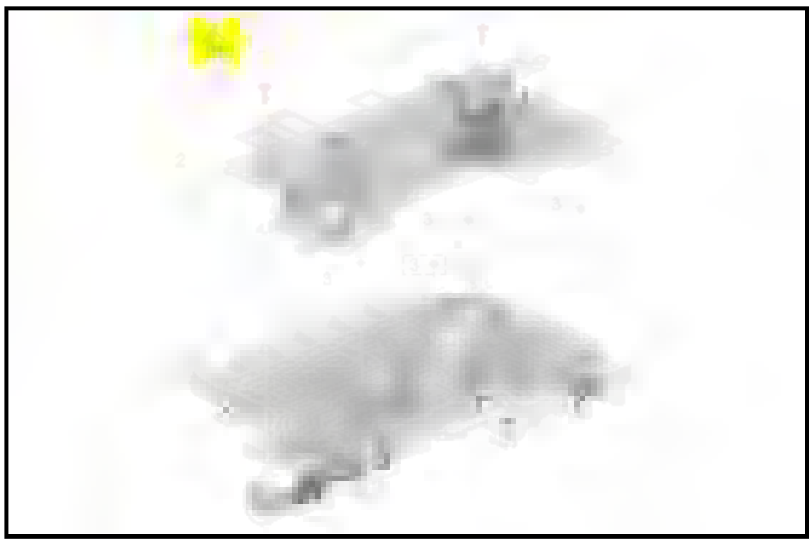
    NOTE: **Note the position of the ball check valve.**

12. Control Valve Body Ball Check Valve (3) Without Surge Accumulator: [1x] With Surge Accumulator: - Remove [3x]

    NOTE: **Note the position of the ball check valve.**

13. Cooler Flow Blowoff Ball Valve (4) - Remove

transmissionmanuals.com

14. 

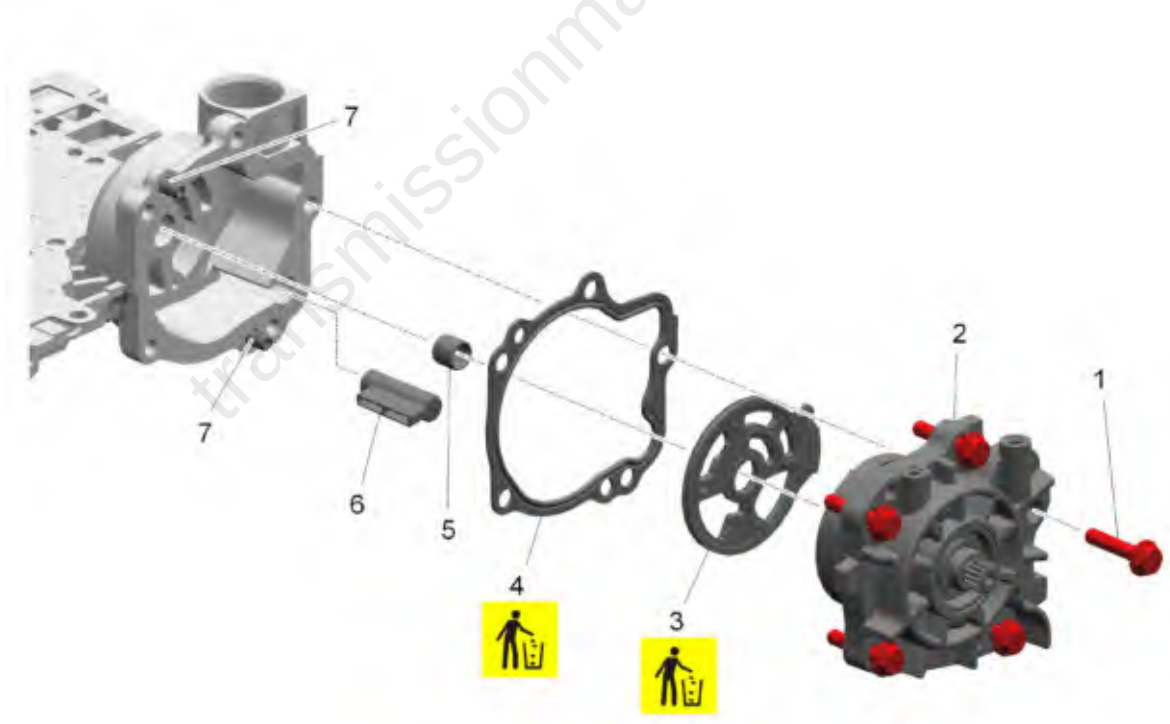
Control Valve Body Spacer Plate Retainer (1) - Remove and DISCARD [2x]

CAUTION: **Do not use the old spacer plate. Install a NEW spacer plate. Reusing an old spacer plate may cause internal transmission leaks and transmission damage.**

15. Control Valve Body Spacer Plate (2) - Remove

NOTE: **Note the position of the ball check valves.**

16. Cooler Flow Blowoff Ball Valve (3) - Remove [4 or 5x] - Model Dependent



17.

Fig. 19: Exploded View Of Automatic Transmission Fluid Pump Assembly Components
Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Bolt (1) - Remove [5x]

18. Automatic Transmission Fluid Pump (2) - Remove
19. Automatic Transmission Fluid Pump Seal (3) - Remove and DISCARD

transmissionmanuals.com

20. Automatic Transmission Fluid Pump Gasket (4) - Remove and DISCARD
21. Automatic Transmission Fluid Pump Drive Shaft Bushing (5) - Remove
22. Automatic Transmission Fluid Pump Passage Sleeve (6) - Remove

NOTE: **Only remove the locator pins if they need to be replaced.**

23. Automatic Transmission Fluid Pump Locating Pin (7) - Remove [2x]

CONTROL VALVE SOLENOID BODY CLEANING AND INSPECTION

Special Tools

DT-50914 Solenoid Valve Retainer Remover/Installer

Equivalent regional tools: **Special Tools**

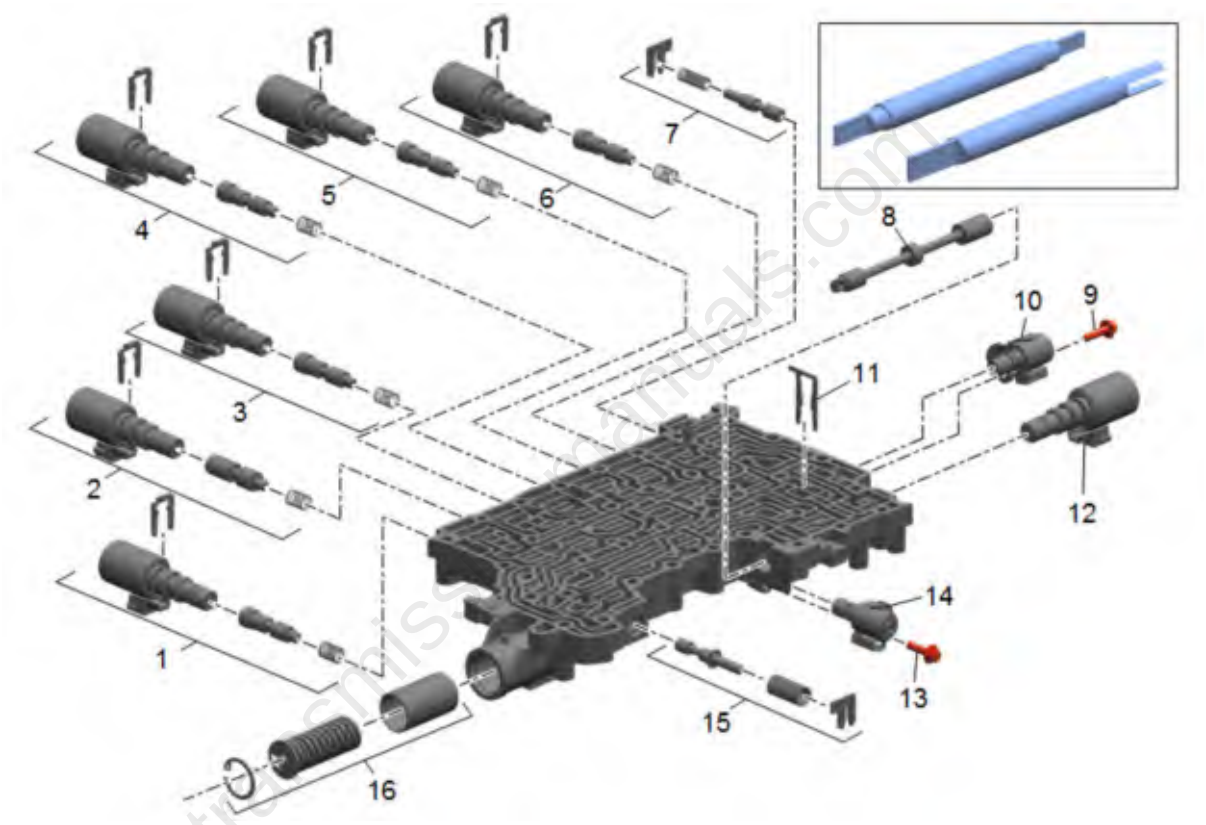
1. 

Fig. 20: Exploded View Of Control Valve Solenoid Body Components For Cleaning And Inspection
Courtesy of GENERAL MOTORS COMPANY

WARNING: **Valve Springs can be tightly compressed. Use care when removing retainers and plugs. Personal injury could result.**

CAUTION: **After cleaning the transmission components, allow to air dry. Do not use cloth or paper towels in order to dry any transmission components. Lint from the towels can cause component failure.**

CAUTION: **Do not reuse cleaning solvents. Previously used solvents may deposit sediment which may damage the component.**

Clean and inspect all valve components and the valve body. The control valve lower body is replaceable only as an assembly.

2. Torque Converter Clutch Control Solenoid Valve Train (1) - Clean and inspect

3. 2-3-4-6-8 Control Solenoid Valve Train (2) - Clean and inspect
4. 1-3-5-6-7 Control Solenoid Valve Train (3) - Clean and inspect
5. 4-5-6-7-8 Reverse Control Solenoid Valve Train (4) - Clean and inspect
6. 1-2-7-8 Reverse Control Solenoid Valve Train (5) - Clean and inspect
7. 1-2-3-4-5 Reverse Low Solenoid Valve Train (6) - Clean and inspect
8. 1-2-3-4-5 Reverse Clutch Boost Valve Train (7) - Clean and inspect
9. Manual Valve (8) - Clean and inspect
10. Control Valve Solenoid Body Bolt (9) - Remove
11. Default Control Solenoid Valve (10) - Clean and inspect
12. Control Solenoid Valve Retainer (11) - Clean and inspect
13. Line Pressure Control Solenoid Valve (12) - Clean and inspect
14. Control Valve Solenoid Body Bolt (13) - Remove
15. 1-2-3-4-5 Reverse Boost Solenoid Valve (14) - Clean and inspect
16. Converter Feed Limit Valve (15) - Clean and inspect
17. 1-3-5-6-7 Clutch Accumulator Piston (16) - Clean and inspect

CONTROL VALVE UPPER BODY ASSEMBLY CLEANING AND INSPECTION

Special Tools

DT-50914 Solenoid Valve Retainer Remover/Installer

Equivalent regional tools: **Special Tools**

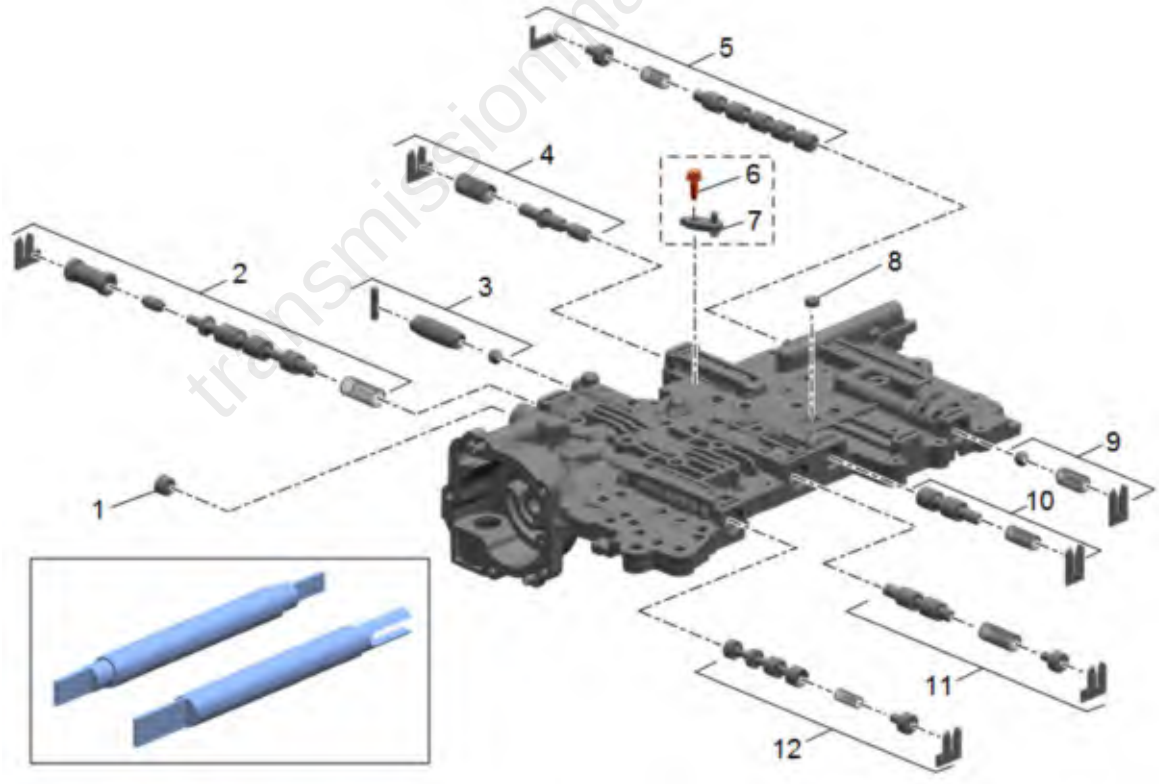
1. 

Fig. 21: Exploded View Of Control Valve Upper Body Assembly Components For Cleaning And Inspection
Courtesy of GENERAL MOTORS COMPANY

WARNING: **Valve Springs can be tightly compressed. Use care when removing retainers and plugs. Personal injury could result.**

transmissionmanuals.com

CAUTION: **After cleaning the transmission components, allow to air dry. Do not use cloth or paper towels in order to dry any transmission components. Lint from the towels can cause component failure.**

CAUTION: **Do not reuse cleaning solvents. Previously used solvents may deposit sediment which may damage the component.**

Clean and inspect all valve components and the valve body. The control valve lower body is replaceable only as an assembly.

2. Transmission Fluid Passage Plug (1) - Clean and inspect
3. Pressure Regulator Valve Train (2) - Clean and inspect
4. Pressure Relief Ball Valve Train (3) - Clean and inspect
5. Actuator Feed Limit Valve Train (4) - Clean and inspect
6. Default Override Valve Train (5) - Clean and inspect
7. Automatic Transmission Wiring Harness Bracket Bolt - Model Dependent (6) - Clean and inspect
8. Automatic Transmission Wiring Harness Bracket Bolt - Model Dependent (6) - Install and tighten - **Fastener Specifications**
9. Control Valve Plug - Model Dependent (7) - Clean and inspect
10. Control Valve Center Body Hole Plug (8) - Clean and inspect
11. Clutch Piston Exhaust Blowoff Ball Valve Train (9) - Clean and inspect
12. Torque Converter Clutch Valve Train (10) - Clean and inspect
13. Lube Regulator Valve Train (11) - Clean and inspect
14. Torque Converter Clutch Control Valve Train (12) - Clean and inspect

CONTROL VALVE BODY ASSEMBLY ASSEMBLE

Single Use Fasteners and Components

- Wiring Harness Retainer
- Control Valve Channel Plate Spacer Plate
- Control Valve Body Spacer Plate Retainer [2x]
- Automatic Transmission Fluid Pump Seal
- Automatic Transmission Fluid Pump Gasket

transmissionmanuals.com

1.

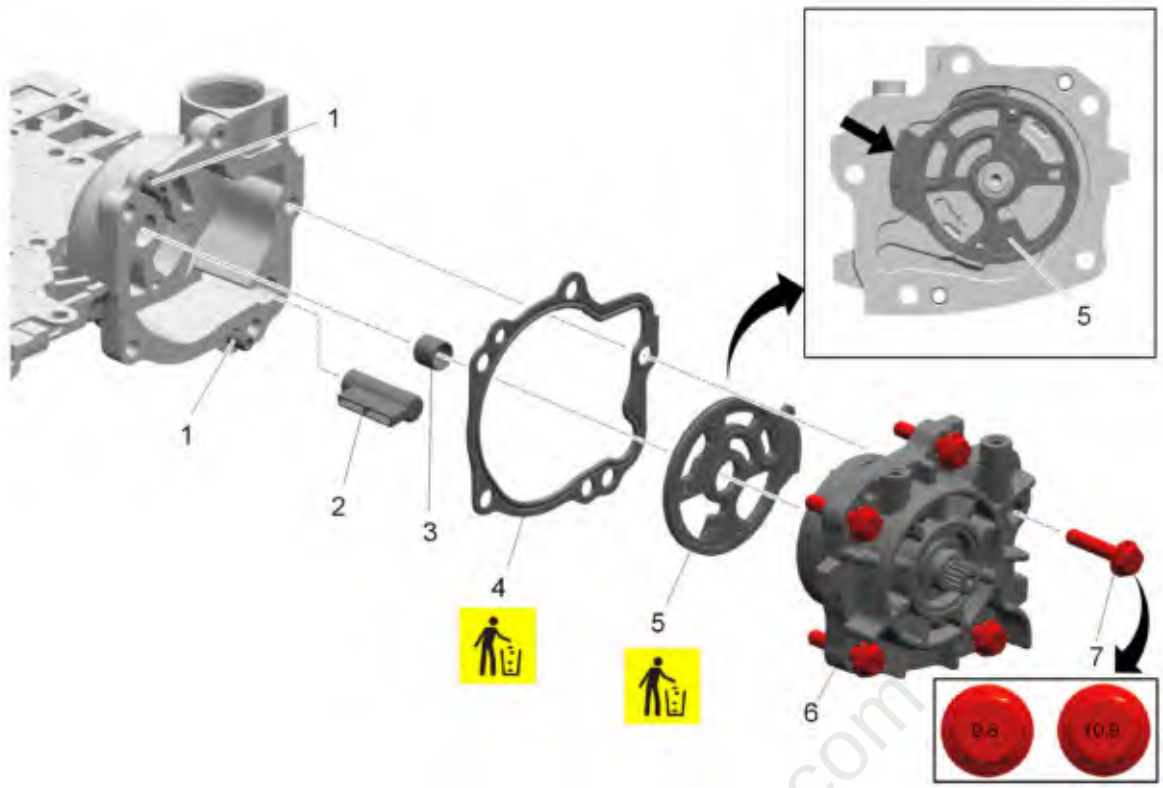


Fig. 22: Exploded View Of Automatic Transmission Fluid Pump Components
Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Locating Pin (1) - Install [2x]

2. Automatic Transmission Fluid Pump Passage Sleeve (2) - Install
3. Automatic Transmission Fluid Pump Drive Shaft Bushing (3) - Install
4. Automatic Transmission Fluid Pump Gasket (4) - Install NEW

NOTE: **Install the seal onto the pump as shown. "Side Up", indicated by the arrow, should face away from the pump assembly.**

5. Automatic Transmission Fluid Pump Seal (5) - Install NEW
6. Automatic Transmission Fluid Pump (6) - Install

CAUTION: **Refer to Fastener Caution .**

NOTE: **There are two different grade transmission fluid pump bolts. The bolt grade can be identified by looking at the top of the bolt head.**

7. Automatic Transmission Fluid Pump Bolt (7) - Install and tighten in sequence [5x] - **Fastener Specifications**

transmissionmanuals.com

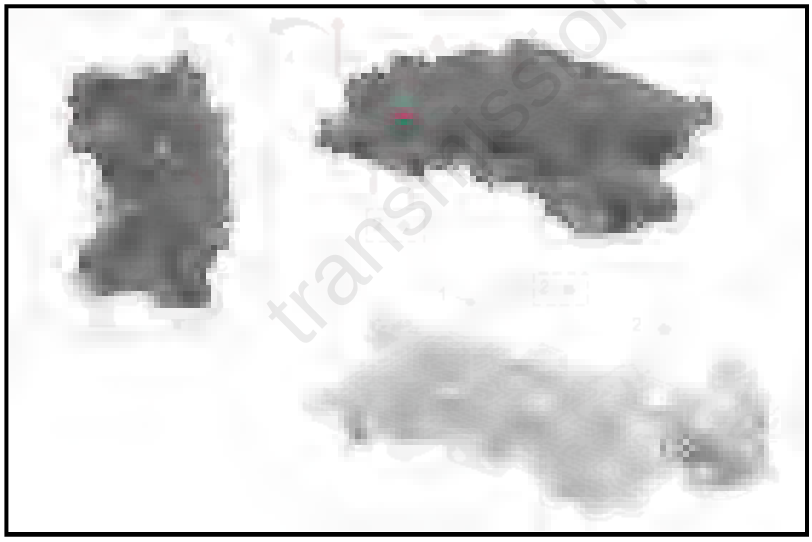
8. 

CAUTION: **Refer to Ball Check Valve Grease Caution .**

Install the ball check valves in the correct location in the control valve solenoid body. **Ball Check Valve Locations**

9. Cooler Flow Blowoff Ball Valve (1) - Install [4 or 5x] - Model Dependant

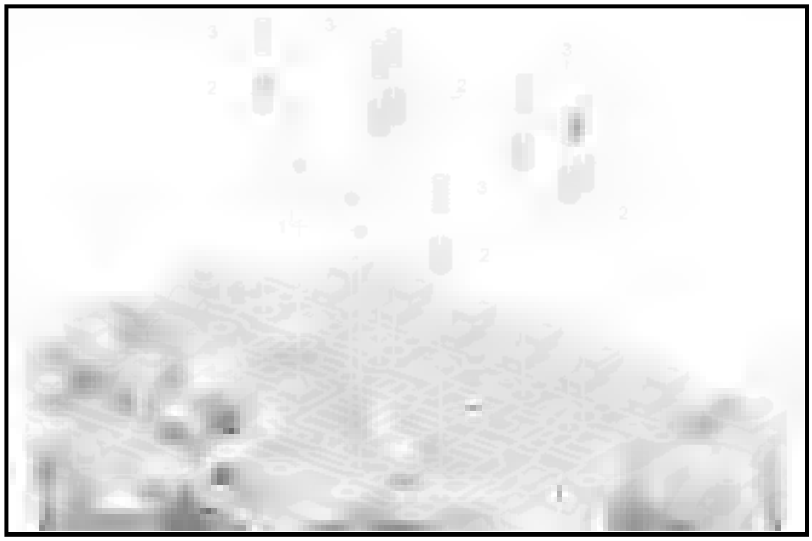
CAUTION: **Do not use the old spacer plate. Install a NEW spacer plate. Reusing an old spacer plate may cause internal transmission leaks and transmission damage.**

10. Control Valve Body Spacer Plate (2) - Install NEW
11. Control Valve Body Spacer Plate Retainer (3) - Install NEW [2x]
12. 

Cooler Flow Blowoff Ball Valve (1) - Install

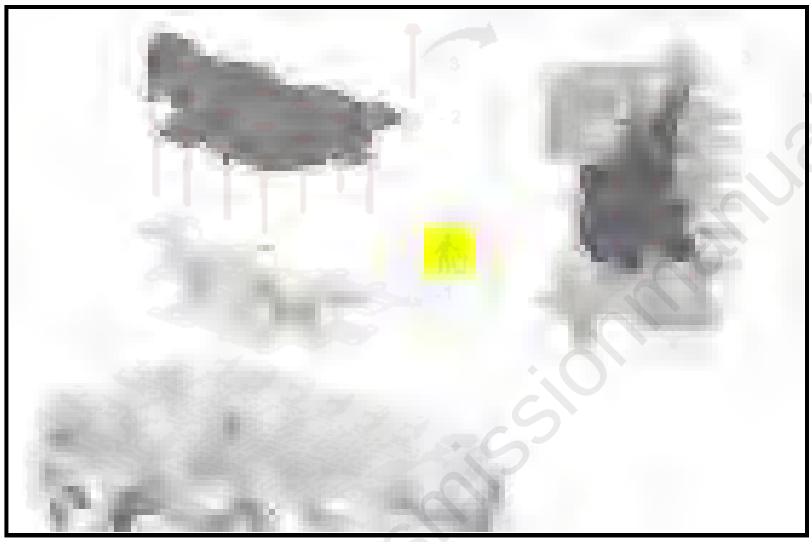
13. Control Valve Body Ball Check Valve (2) - Install Without Surge Accumulator: [1x] With Surge Accumulator: [3x]
14. Control Valve Solenoid Body (3) - Install
15. Valve Body Bolt (4) - Install and hand tighten [8x]

transmissionmanuals.com

16. 

Cooler Flow Blowoff Ball Valve (1) - Install [3x]

17. Signal Accumulator Piston (2) - Install [7x]
18. Signal Accumulator Piston Spring (3) - Install [7x]

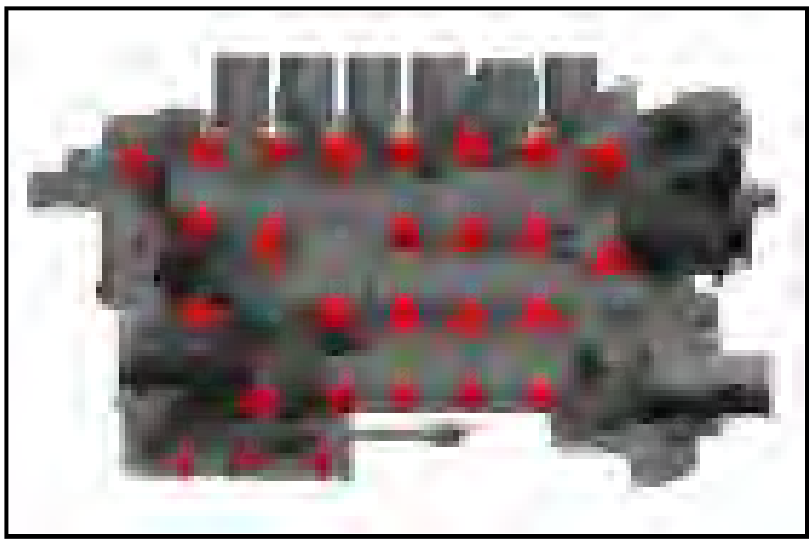
19. 

CAUTION: **Do not use the old spacer plate. Install a NEW spacer plate. Reusing an old spacer plate may cause internal transmission leaks and transmission damage.**

Control Valve Channel Plate Spacer Plate (1) - Install NEW

20. Control Valve Channel Plate (2) - Install
21. Control Valve Channel Plate Bolt (3) - Install and hand tighten [19x]

transmissionmanuals.com

22. 

CAUTION: **Bolt torque sequencing is critical to the proper function of the control solenoid valve assembly. Failure to follow the required sequencing may result in transmission malfunction.**

Valve Body Bolt (1) - Tighten in sequence [8x] - **Fastener Specifications**

23. Control Valve Channel Plate Bolt (2) - Tighten in sequence [19x] - **Fastener Specifications**

24. 

Wiring Harness Retainer (2) - Install NEW

25. Automatic Transmission Control Wiring Harness (1) - Install
26. Connect the wiring harness connectors.

CONTROL VALVE ASSEMBLY AND TRANSMISSION WIRING HARNESS INSTALLATION

Single Use Fasteners and Components

- Automatic Transmission Fluid Baffle Bolt [2x]
- Automatic Transmission Fluid Baffle Bolt [3x]
- Clutch Housing Fluid Passage Seal

Special Tools

- **DT-48285** Valve Body Torx Plus Socket

Equivalent regional tools: **Special Tools**

transmissionmanuals.com

1. 

Clutch Housing Fluid Passage Seal (1) - Install NEW

CAUTION: **The intermediate and output speed sensors must be installed in the correct location. Harsh shifting or transmission damage may occur if the speed sensors are not installed in the correct location.**

2. Install the automatic transmission output speed sensor wiring harness (2). Speed sensors must be in the positions indicated by arrow.
3. Use **DT-48285** Valve Body Torx Plus Socket to install the Automatic Transmission Fluid Baffle Bolts.

CAUTION: **This vehicle is equipped with torque-to-yield or single use fasteners. Install a NEW torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.**

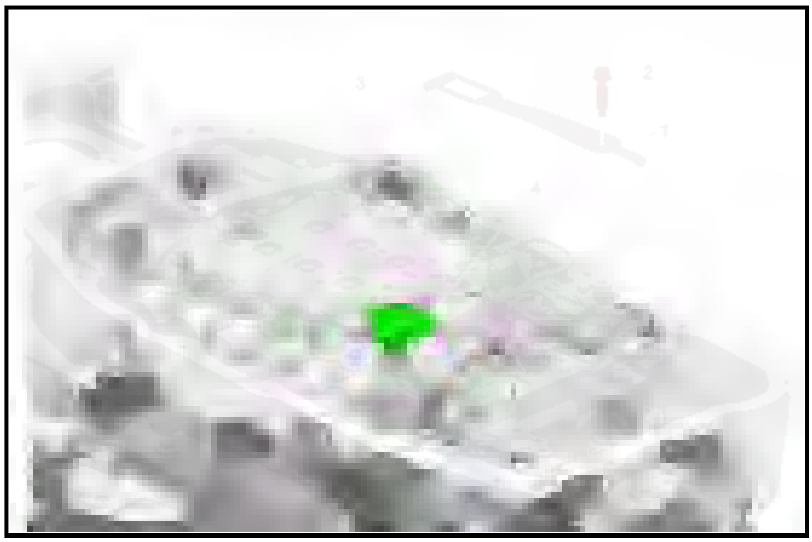
CAUTION: **Refer to Fastener Caution .**

4. Automatic Transmission Fluid Baffle Bolt (3) - Install NEW and tighten [3x] - **Fastener Specifications**

5. 

CAUTION: **Use care when handling the control valve body assembly. If dropped, damage to the control solenoid valve body assembly internal components may result.**

Control Valve Body Assembly (1) - Install

6. Use **DT-48285** Valve Body Torx Plus Socket to install the Control Valve Solenoid Body Bolts.
7. Control Valve Solenoid Body Bolt (2) - Install and tighten in sequence [7x] - **Fastener Specifications**
8. Control Valve Solenoid Body Bolt (3) - Install and tighten in sequence [4x] - **Fastener Specifications**
9. Manual Valve (4) - Connect
10. 

    Manual Shift Detent Lever Spring (1) - Install

11. Manual Shift Detent Lever Spring Bolt (2) - Install and tighten - **Fastener Specifications**
12. Electrical Connector @ Automatic Transmission Control Wiring Harness (3) - Connect
13. Electrical Connector @ Automatic Transmission Wiring Harness (4) - Connect
14. 

    NOTE: **Ensure the driven sprocket locking tab is in the unlocked position before installing the sprocket.**

    The driven sprocket (1) locking tab is located on the back of the sprocket and faces the pump indicated by arrow.

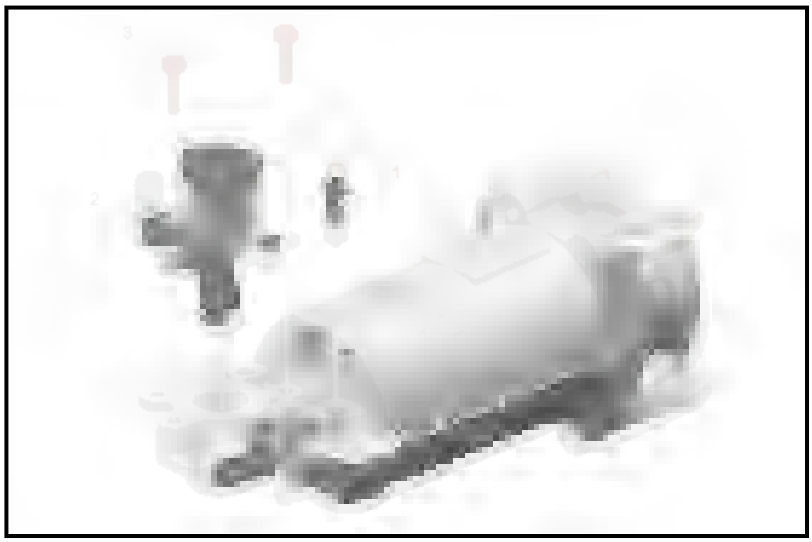
15. Install the drive link (chain) to the driven sprocket (1) and then install the driven sprocket (1) to the oil pump shaft.
16. Rotate the sprocket as shown and push down on the tab until it locks the driven sprocket (1) in place.
17. Automatic Transmission Fluid Baffle (2) - Install

    CAUTION: **This vehicle is equipped with torque-to-yield or single use fasteners. Install a NEW torque-to-yield or single use fastener when installing this**

component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.

18. Automatic Transmission Fluid Baffle Bolt (3) - Install NEW and tighten [2x] - **Fastener Specifications**

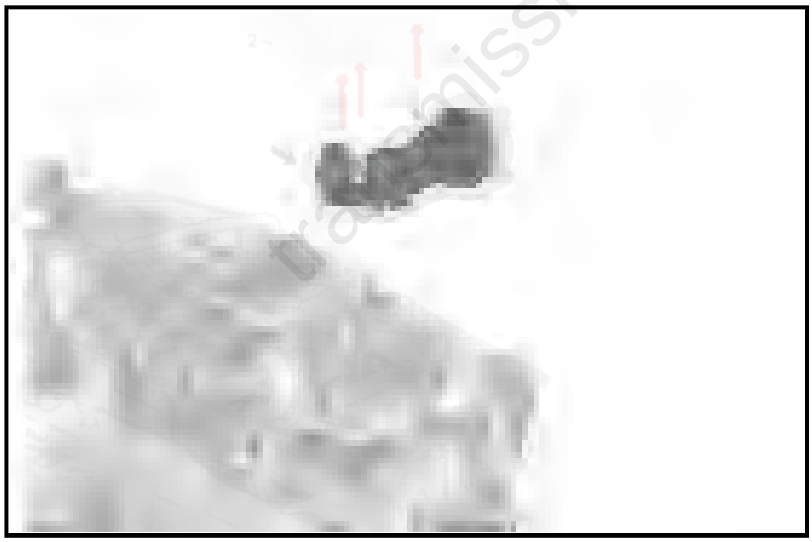
AUXILIARY FLUID ACCUMULATOR INSTALLATION

1. 

CAUTION: **Refer to Fastener Caution .**

Automatic Transmission Auxiliary Fluid Accumulator Bleeder Valve (1) - Install and tighten - **Fastener Specifications**

2. Automatic Transmission Auxiliary Fluid Accumulator Solenoid (2) - Install
3. Automatic Transmission Auxiliary Fluid Accumulator Bolt (3) - Install and tighten [2x] - **Fastener Specifications**

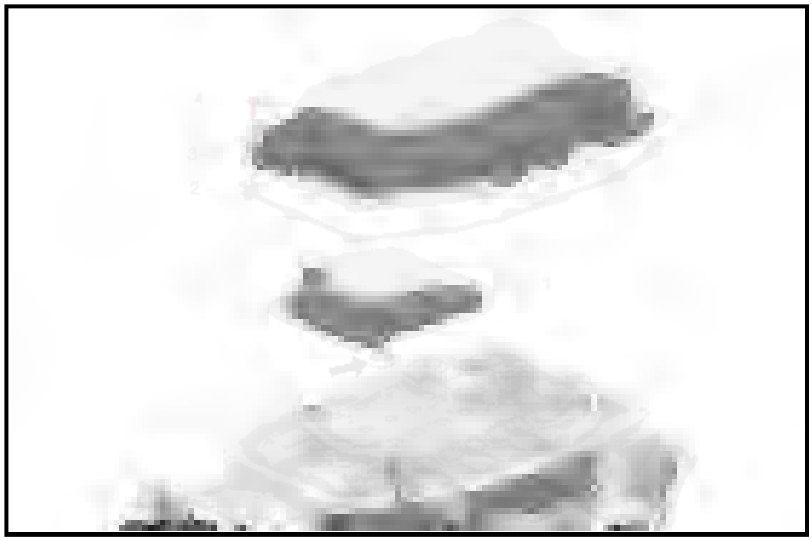
4. 

Automatic Transmission Auxiliary Fluid Accumulator (1) - Install

5. Control Valve Lower Body Bolt (2) - Install and tighten [3x] - **Fastener Specifications**
6. Connect the electrical connector indicated by arrow.

TRANSMISSION FLUID PAN AND FILTER ASSEMBLY INSTALLATION

transmissionmanuals.com

1. 

   The seal is not serviced separately. Inspect the fluid filter seal, if the seal is damaged, replace the filter.

2. Automatic Transmission Fluid Filter (1) - Install
3. The fluid pan gasket is reusable. Inspect the gasket to determine if it may be reused. If the gasket is stuck to the case or pan, it should be replaced.
4. Automatic Transmission Fluid Pan Gasket (2) - Install
5. Automatic Transmission Fluid Pan (3) - Install

   CAUTION: **Refer to Fastener Caution .**

6. Automatic Transmission Fluid Pan Bolt (4) - Install and tighten in sequence [15x] - **Fastener Specifications**

TORQUE CONVERTER INSTALLATION AND HOLDING FIXTURE REMOVAL

Special Tools

- **DT-03289-20** Holding Fixture Base Assembly
- **DT-48989** Holding Fixture

Equivalent regional tools: **Special Tools**

1. 

   Rotate the transmission so that the converter housing is up and secure with locking pin.

2. Torque Converter (1) - Install

transmissionmanuals.com

3. After installing the torque converter (1), install a holding strap to secure the torque convertor (1) before rotating back to remove special tools.
4. Support the transmission with an overhead hoist attached to **DT-48989** Holding Fixture (2).
5. Remove the **DT-48989** Holding Fixture (2) with the Automatic Transmission Case (3) from the **DT-03289-20** Holding Fixture Base Assembly (4)
6. Remove the **DT-48989** Holding Fixture (2) from the Automatic Transmission Case (3).

---

transmissionmanuals.com