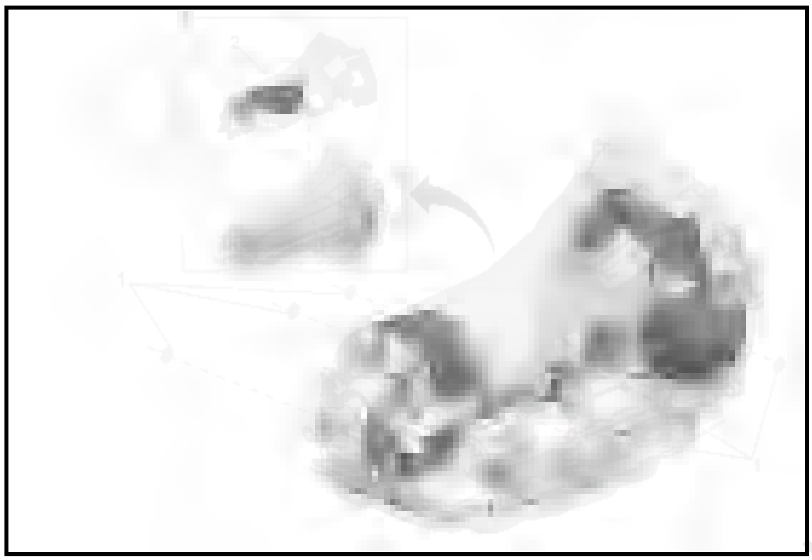
REPAIR INSTRUCTIONS - OFF VEHICLE

TRANSMISSION HOUSING SOUND INSULATOR REMOVAL

1. 

   Transmission Nut (1) - Remove [6x]

2. Transmission Housing Sound Insulator (2) - Remove

TORQUE CONVERTER REMOVAL AND HOLDING FIXTURE INSTALLATION

Special Tools

- **DT-03289-20** Holding Fixture Base Assembly
- **DT-46409** Torque Converter Lifting Handles
- **DT-48989** Holding Fixture

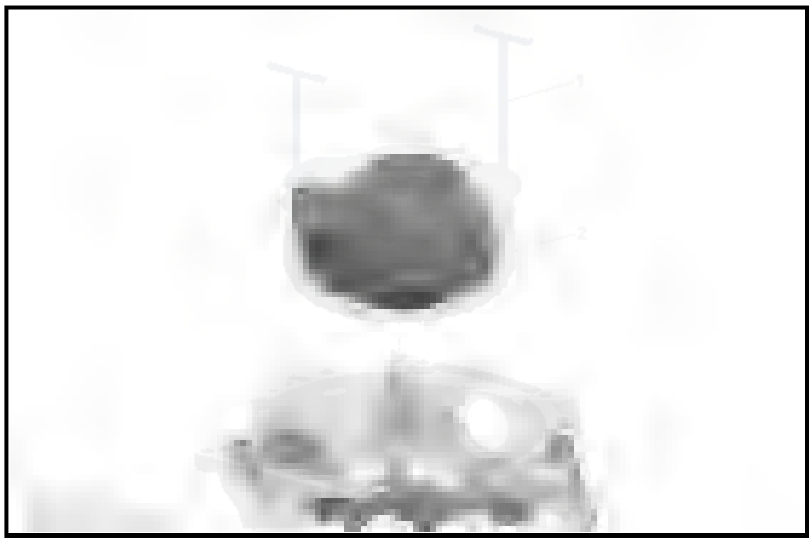
Equivalent regional tools: **Special Tools**

1. 

   Attach and secure **DT-48989** Holding Fixture (2) to the Automatic Transmission Case (3).

2. Support the transmission with an overhead hoist attached to **DT-48989** Holding Fixture (2).

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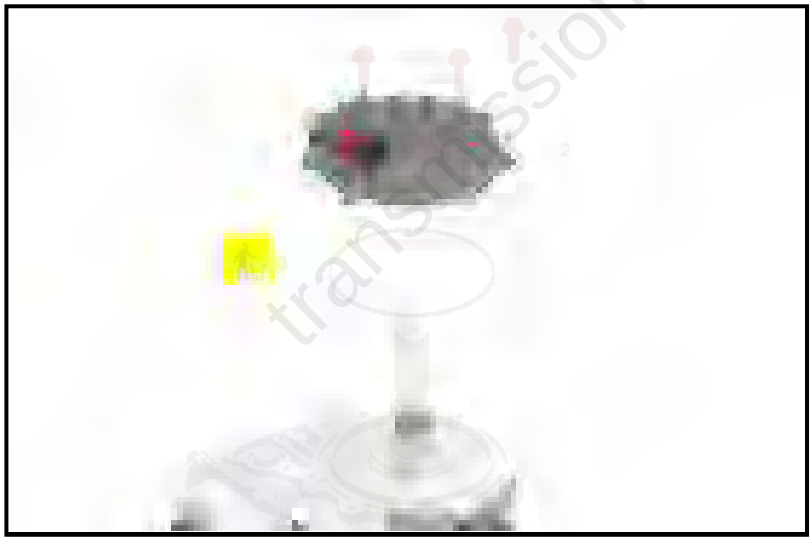
3. Install **DT-48989** Holding Fixture (2) with the Automatic Transmission Case (3) into the **DT-03289-20** Holding Fixture Base Assembly (1).
4. Rotate the transmission so that the converter housing is up. Secure with **DT-03289-20** Holding Fixture Base Assembly (1) locking pin.
5. 

   Install **DT-46409** Torque Converter Lifting Handles (1) to the Torque Converter (2).
6. Torque Converter (2) Remove

CASE EXTENSION ASSEMBLY REMOVAL (2WD)

Single Use Fasteners and Components

Automatic Transmission Case Extension Seal

1. 

CAUTION: **Before removing the automatic transmission case extension, place the transmission in a vertical position with the case extension facing up. Failure to do so may result in damage to the transmission output shaft bearing and/or sleeve.**

Automatic Transmission Case Extension Bolt (1) - Remove [6x]

2. Allow any remaining transmission fluid to drain from the case extension.
3. Automatic Transmission Case Extension (2) - Remove
4. Automatic Transmission Case Extension Seal (3) - Remove and DISCARD

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CASE EXTENSION ASSEMBLY REMOVAL (AWD)

Single Use Fasteners and Components

Automatic Transmission Case Extension Seal

1. 

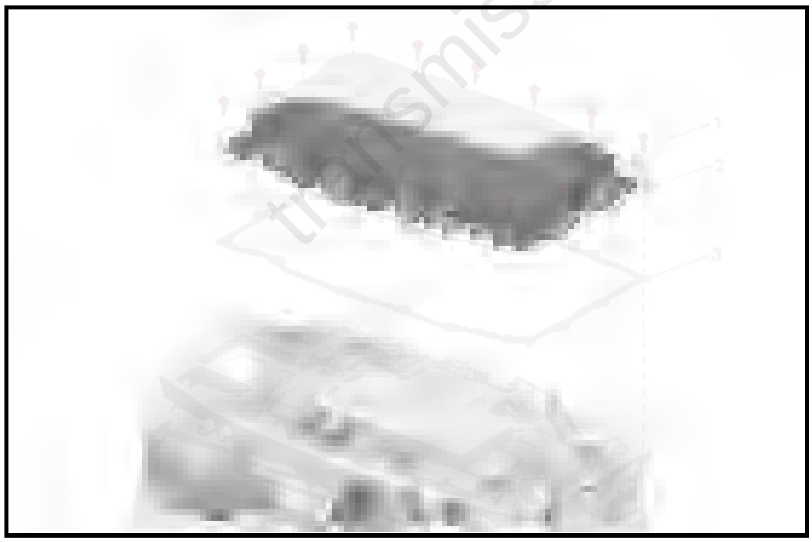
   Automatic Transmission Case Extension Bolt (1) - Remove [6x]

2. Allow any remaining transmission fluid to drain from the case extension.
3. Automatic Transmission Case Extension (2) - Remove
4. Automatic Transmission Case Extension Seal (3) - Remove and DISCARD

TRANSMISSION FLUID PAN AND FILTER ASSEMBLY REMOVAL

Single Use Fasteners and Components

Automatic Transmission Fluid Filter Bolt [2x]

1. 

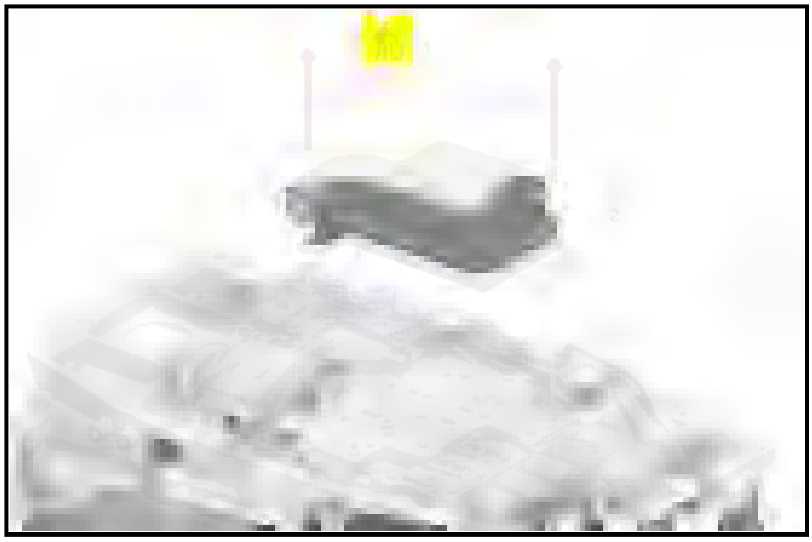
   Rotate transmission horizontal with pan facing upwards. Loosen the bolts partially, then rotate transmission vertically to allow fluid to drain from pan and transmission case gap.

2. Rotate transmission horizontal with pan facing upwards.
3. Automatic Transmission Fluid Pan Bolt (1) - Remove [16x]
4. Automatic Transmission Fluid Pan (2) - Remove

NOTE: **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.**

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5. Automatic Transmission Fluid Pan Gasket (3) - Remove

1. 

NOTE: **This bolt is unique, it must go back into the same hole. It is not able to go into other valve body bolt holes.**

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

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

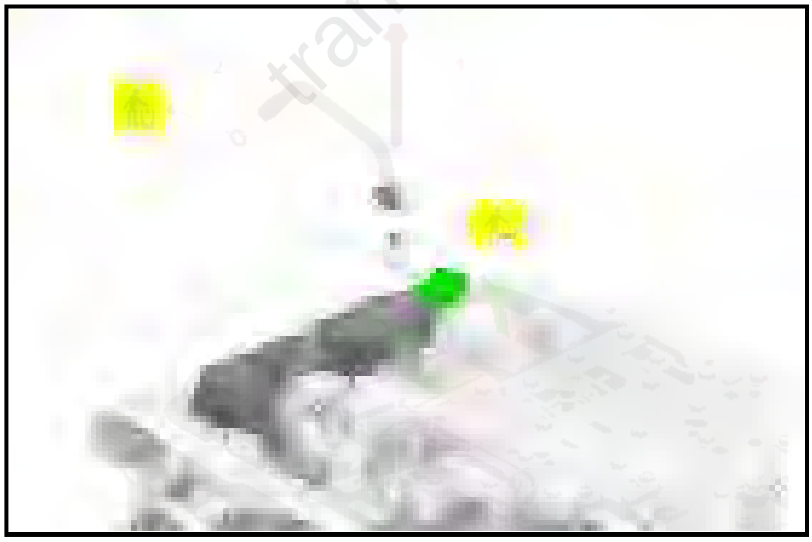
NOTE: **The seal should stay with the pump assembly.**

3. Automatic Transmission Fluid Filter (2) - Remove

AUXILIARY FLUID PUMP REMOVAL

Single Use Fasteners and Components

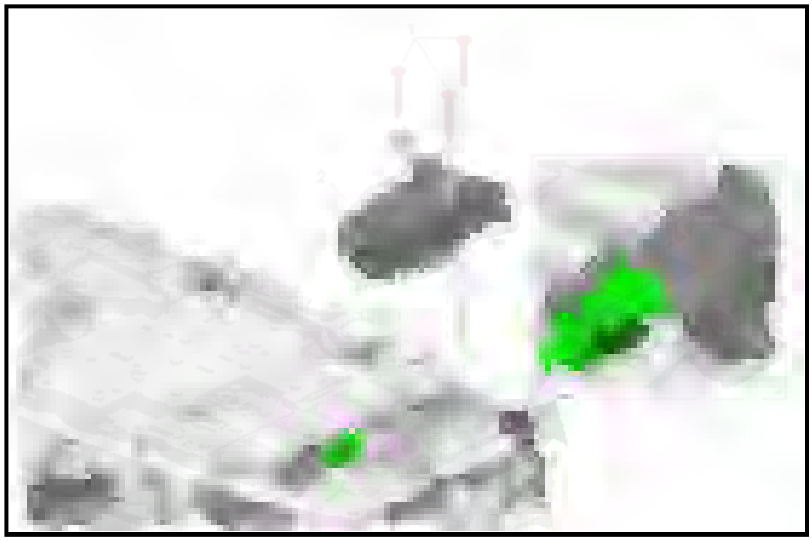
- Automatic Transmission Auxiliary Fluid Pump Outlet Pipe Seal
- Automatic Transmission Auxiliary Fluid Pump Seal

1. 

Control Valve Upper Body Bolt (1) - Remove

2. Automatic Transmission Auxiliary Fluid Pump Outlet Pipe (2) - Remove
3. Automatic Transmission Auxiliary Fluid Pump Seal (3) - Remove and DISCARD
4. Automatic Transmission Auxiliary Fluid Pump Outlet Pipe Seal (4) - Remove and DISCARD

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1. 

   Automatic Transmission Auxiliary Fluid Pump Bolt (1) - Remove [3x]

2. Disconnect the electrical connector.
3. Automatic Transmission Auxiliary Fluid Pump (2) - Remove

CONTROL VALVE ASSEMBLY AND TRANSMISSION WIRING HARNESS REMOVAL

Single Use Fasteners and Components

- Automatic Transmission Control Wiring Harness Retainer - Push Nut [2x]
- Automatic Transmission Control Wiring Harness Retainer - Push Type [2x]
- Control Valve Solenoid Body Bolt [3x]
- Wiring Harness Connector Seal - O-Ring [2x]

Special Tools

DT-52089 Wiring Harness Pass Through Connector Removal Tool

Equivalent regional tools: **Special Tools**

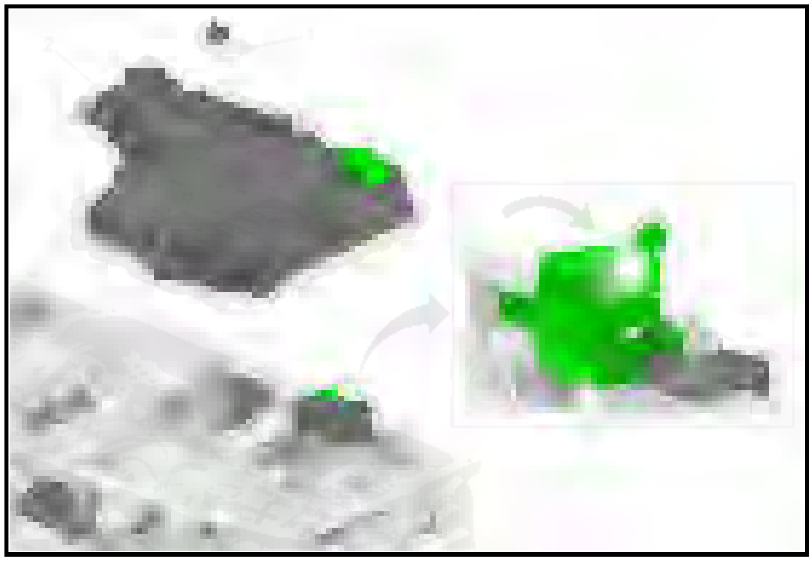
1. 

   NOTE: **The bolts are marked by arrows in the valve body casting.**

   Control Valve Body Bolt (1) - Remove [2x]

2. Control Valve Solenoid Body Bolt (2) - Remove and DISCARD [3x]
3. Control Valve Solenoid Body Bolt (3) - Remove [2x]

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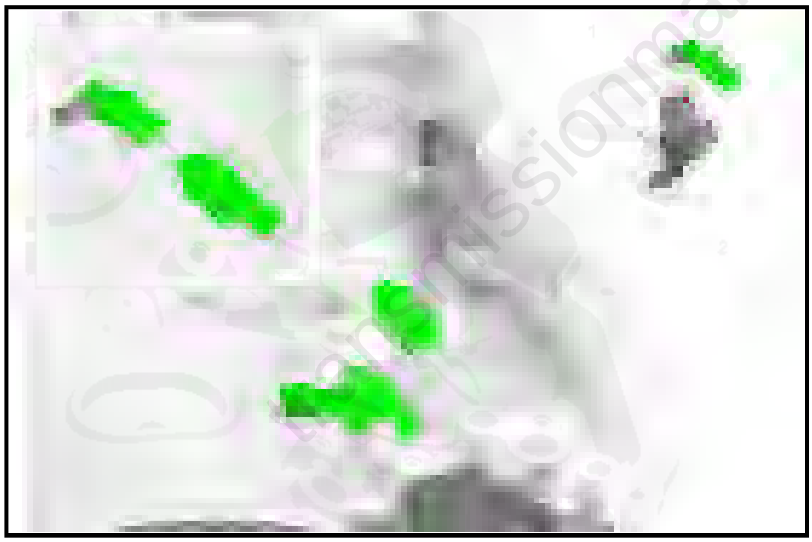
4. 

Park Inhibitor Solenoid (1) - Remove

5. Disconnect the main control wiring harness connector as shown.
6. Control Valve (2) - Remove

NOTE:

- **The automatic transmission fluid pump seal should stay with the control valve body assembly.**
- **Do not disassemble the control valve body assembly. The internal parts are NOT serviceable.**

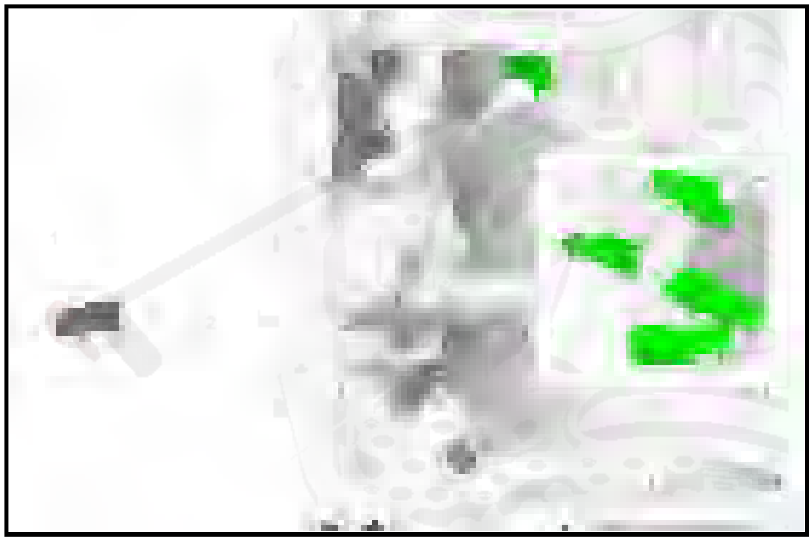
7. 

Disconnect the electrical connector as shown.

8. Automatic Transmission Speed Sensor Bolt (1) - Loosen

NOTE: **The bolt is retained in the sensor.**

9. Automatic Transmission Speed Sensor Bolt (1) and Automatic Transmission Turbine Speed Sensor (2) - Remove

10. 

Disconnect the electrical connector as shown.

11. Automatic Transmission Speed Sensor Bolt (1) - Loosen

NOTE: **The bolt is retained in the sensor.**

12. Automatic Transmission Speed Sensor Bolt (1) and Automatic Transmission Intermediate Speed Sensor - A (2) - Remove

13. 

Disconnect the electrical connector as shown.

14. Automatic Transmission Speed Sensor Bolt (1) - Loosen

NOTE: **The bolt is retained in the sensor.**

15. Automatic Transmission Speed Sensor Bolt (1) and Automatic Transmission Intermediate Speed Sensor - B (2) - Remove

16. 

    Disconnect the electrical connector as shown.

17. Automatic Transmission Speed Sensor Bolt (1) - Loosen

    NOTE: The bolt is retained in the sensor.

18. Automatic Transmission Speed Sensor Bolt (1) and Automatic Transmission Output Speed Sensor (2) - Remove

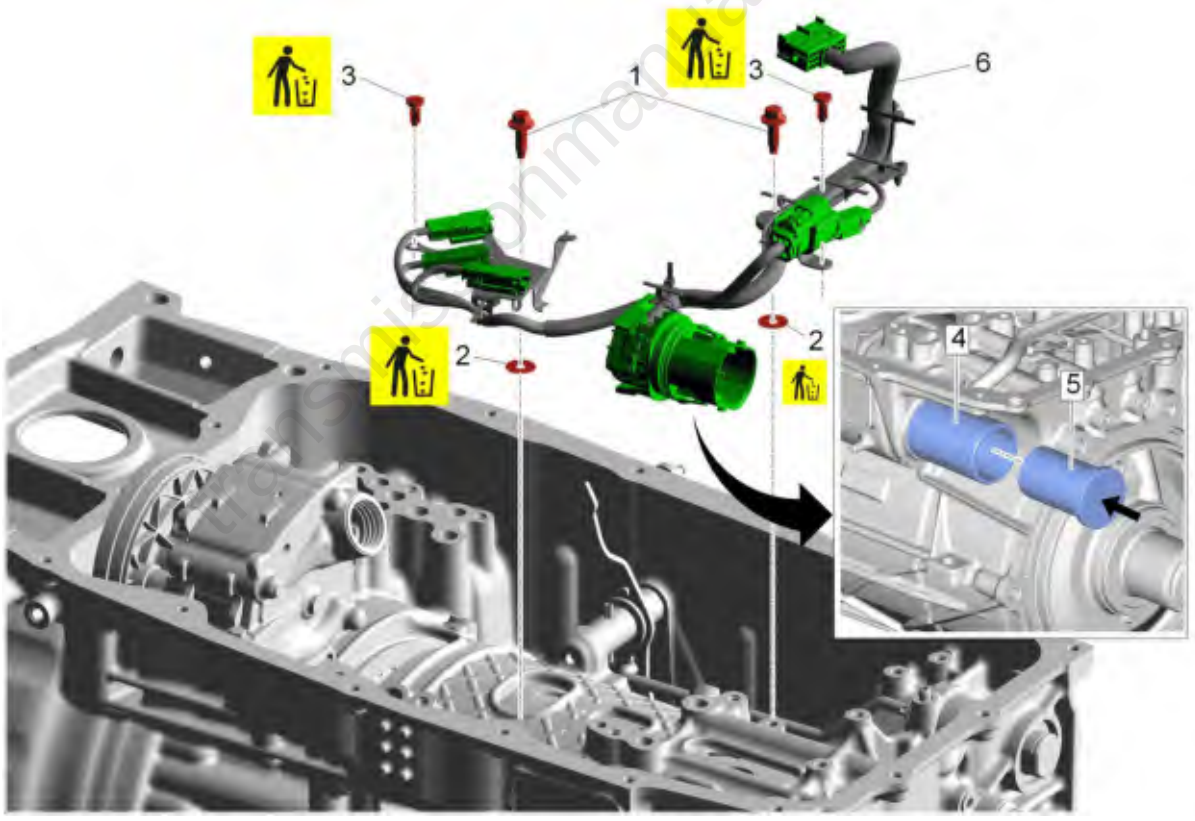
19. 

    Fig. 1: Exploded View Of Automatic Transmission Control Wiring Harness Components
    Courtesy of GENERAL MOTORS COMPANY

    Automatic Transmission Control Wiring Harness Clip Bracket Bolt (1) - Remove [2x]

20. Automatic Transmission Control Wiring Harness Retainer - Push Nut (2) - Remove and DISCARD [2x]
21. Automatic Transmission Control Wiring Harness Retainer - Push Type (3) - Remove and DISCARD [2x]
22. Install the **DT-52089-1** Wiring Harness Pass Through Connector Removal Tool (4) onto the bulkhead connector. Ensure that the **DT-52089-1** Wiring Harness Pass Through Connector Removal Tool (4) is

pushed all the way on and flush with the transmission case.

23. Push the **DT-52089-2** Wiring Harness Pass Through Connector Removal Tool (5) into the **DT-52089-1** Wiring Harness Pass Through Connector Removal Tool (4) and remove the bulkhead connector from the case.

NOTE: **Ensure the connector is free of debris and dirt.**

24. Automatic Transmission Wiring Harness - Pass Through (6) - Remove

25. 

Wiring Harness Connector Seal - O-Ring (1) - Remove and DISCARD [2x]

TRANSMISSION FLUID PUMP REMOVAL

Single Use Fasteners and Components

Automatic Transmission Fluid Pump Seal - Pump

1. 

Automatic Transmission Fluid Pump Bolt (1) - Remove [3x]

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

AUTOMATIC TRANSMISSION CASE FRONT COVER REMOVAL

CAUTION: **The automatic transmission fluid pump MUST be removed before installing the automatic transmission case front cover. Failure to do so may result in damage to the fluid pump driven gear and case front cover idler gear**

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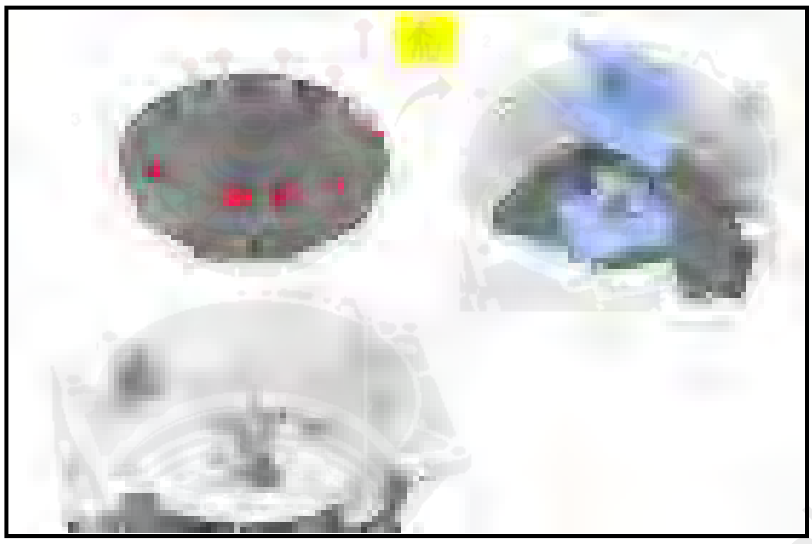
Single Use Fasteners and Components

Input Shaft Support Bolt [12x]

Special Tools

DT-45053 Universal Clamp Press

Equivalent regional tools: **Special Tools**

1. 

   Input Shaft Support Bolt (1) - Remove and DISCARD [12x]

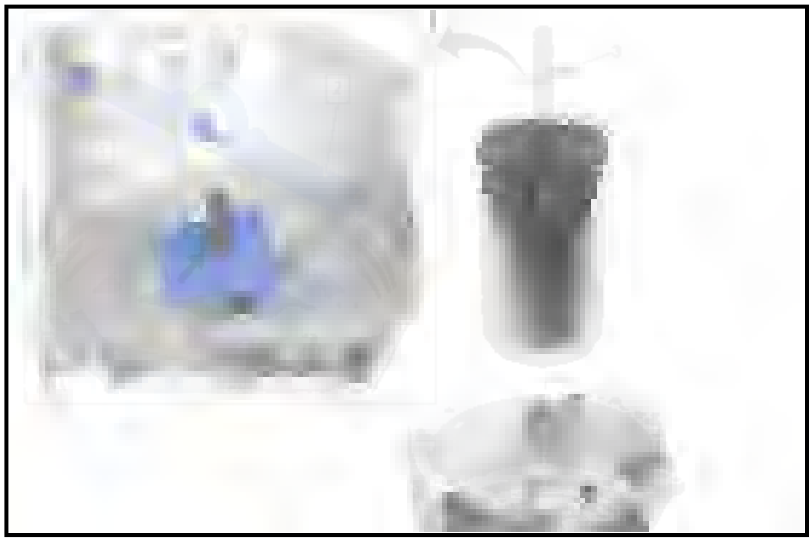
2. Install **DT-45053** Universal Clamp Press (2) to the Stator Shaft Support (3).
3. Using a paint pen, mark the Automatic Transmission Case Cover and Transmission Case for orientation during installation.
4. Automatic Transmission Case Cover (3) - Remove

ROTATING CLUTCH, GEAR, AND SHAFT SHELL ASSEMBLY REMOVAL

Special Tools

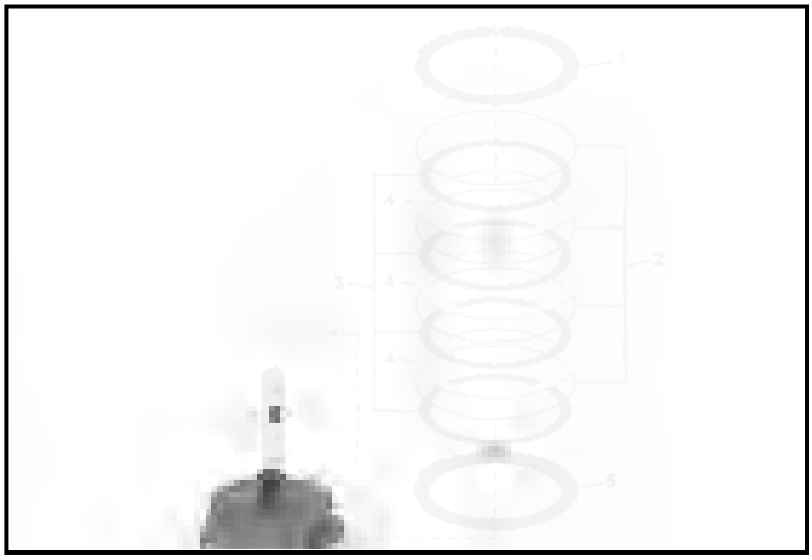
- **DT-45053** Universal Clamp Press
- **DT-52090** Lifting Bar

Equivalent regional tools: **Special Tools**

1. 

   Attach the **DT-45053** Universal Clamp Press (1) to the Rotating Clutch, Gear, and Shaft Shell (3).

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2. Ensure that the **DT-45053** Universal Clamp Press (1) is under the boss on the input shaft shown by arrow.
3. Attach **DT-52090** Lifting Bar (2) to the **DT-45053** Universal Clamp Press (1).
4. Use a hoist or chainfall to lift Rotating Clutch, Gear, and Shaft Shell (3) from case.
5. 

   1-2-3-4-5-6-Reverse Clutch Apply Plate-Selective (1) - Remove

6. 1-2-3-4-5-6-Reverse Clutch Piston Return Spring (2) - Remove [4x]
7. 1-2-3-4-5-6-Reverse Clutch Friction Plate (3) - Remove [4x]
8. 1-2-3-4-5-6-Reverse Clutch Steel Plate (4) - Remove [3x]
9. 1-2-3-4-5-6-Reverse Clutch Backing Plate (5) - Remove

OUTPUT CARRIER ASSEMBLY AND OUTPUT CARRIER THRUST BEARINGS REMOVAL (2WD)

Single Use Fasteners and Components

Output Shaft Seal [2x]

Special Tools

- **DT-50921** Output Carrier Lifter
- **J-26941** Bushing and Bearing Remover

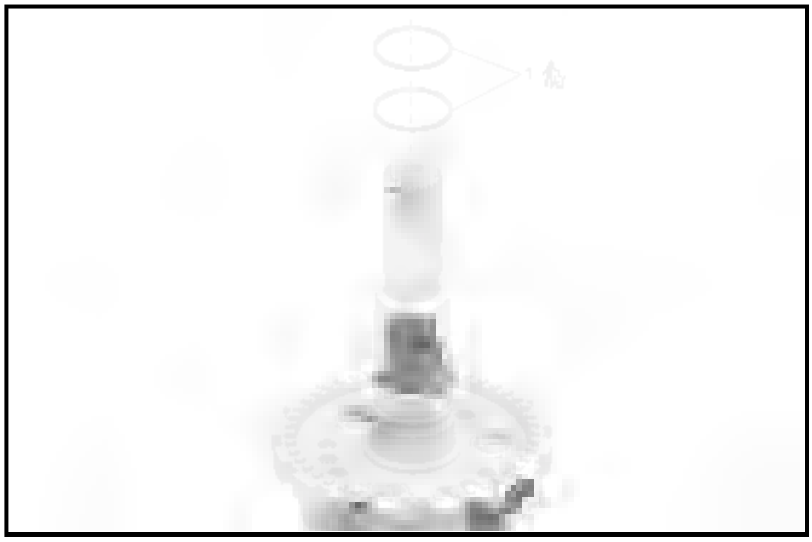
Equivalent regional tools: **Special Tools**

1. 

   Output Carrier Thrust Bearing Assembly (1) - Remove

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2. Install **DT-50921** Output Carrier Lifter (3) and **J-26941** Bushing and Bearing Remover (2) to the Output Carrier Assembly (4).
3. Output Carrier Assembly (4) - Remove
4. Output Carrier Thrust Bearing Assembly (5) - Remove

1. 

   Output Shaft Seal (1) - Remove and DISCARD [2x]

OUTPUT CARRIER ASSEMBLY AND OUTPUT CARRIER THRUST BEARINGS REMOVAL (AWD)

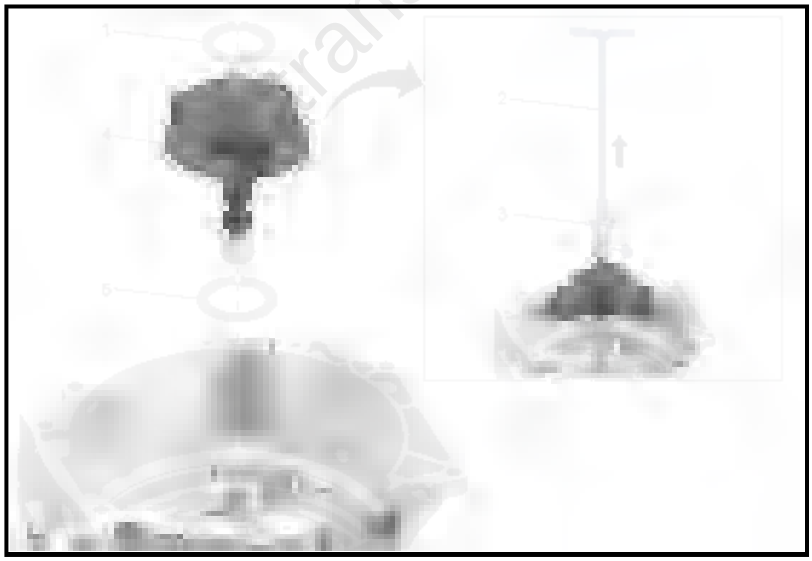
Single Use Fasteners and Components

- Output Shaft Seal
- Output Shaft Seal [2x]

Special Tools

- **DT-50921** Output Carrier Lifter
- **J-26941** Bushing and Bearing Remover

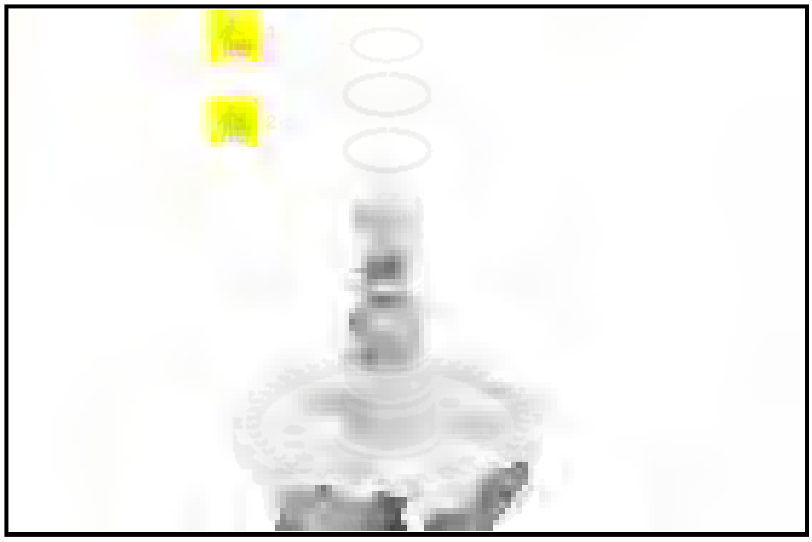
Equivalent regional tools: **Special Tools**

1. 

   Output Carrier Thrust Bearing Assembly (1) - Remove

2. Install **DT-50921** Output Carrier Lifter (2) and **J-26941** Bushing and Bearing Remover (3) to the Output Carrier Assembly (4).
3. Output Carrier Assembly (4) - Remove

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4. Output Carrier Thrust Bearing Assembly (5) - Remove
5. 

   Output Shaft Seal (1) - Remove and DISCARD

6. Output Shaft Seal (2) - Remove and DISCARD [2x]

PARK RELEASE LEVER AND PARK PAWL ACTUATOR REMOVAL

Single Use Fasteners and Components

- Manual Shift Shaft Pin
- Park Pawl Actuator Guide Pin
- Transmission Fluid Cooler Pipe Fitting Seal

Special Tools

J-45201-3 Cooler Line Seal Remover

Equivalent regional tools: **Special Tools**

1. 

   Manual Shift Shaft Pin (1) - Remove and DISCARD

2. Manual Shift Shaft (2) - Remove
3. Park Release Lever (3) - Remove
4. Park Pawl Actuator Assembly (4) - Remove

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1. 

   Park Pawl Actuator Guide Pin (1) - Remove and DISCARD

2. Push the park pawl away from the park pawl actuator guide to remove the Park Pawl Actuator Guide Assembly from the case.
3. Park Pawl Actuator Guide Assembly (2) - Remove

1. 

   Attach the **J-45201-3** Cooler Line Seal Remover (1) to the Transmission Fluid Cooler Pipe Fitting Seal (2).

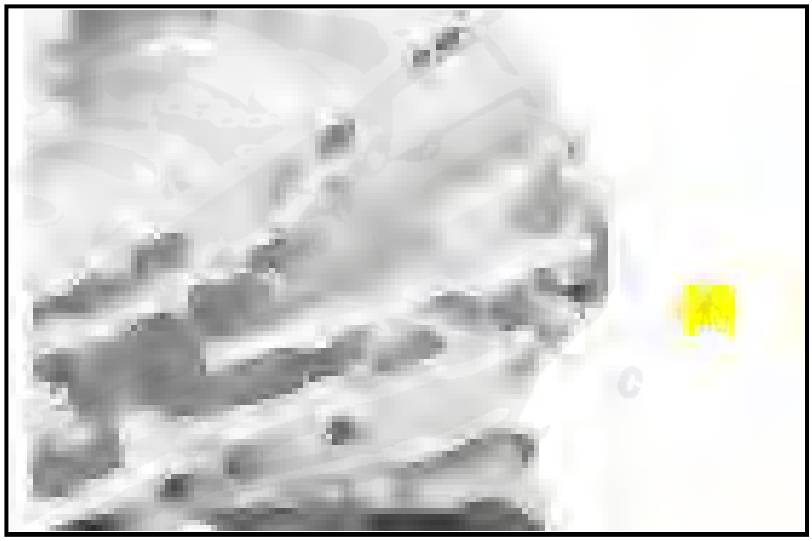
2. Transmission Fluid Cooler Pipe Fitting Seal (2) - Remove and DISCARD [2x]

MANUAL SHIFT SHAFT SEAL REMOVAL

Single Use Fasteners and Components

Manual Shift Shaft Seal

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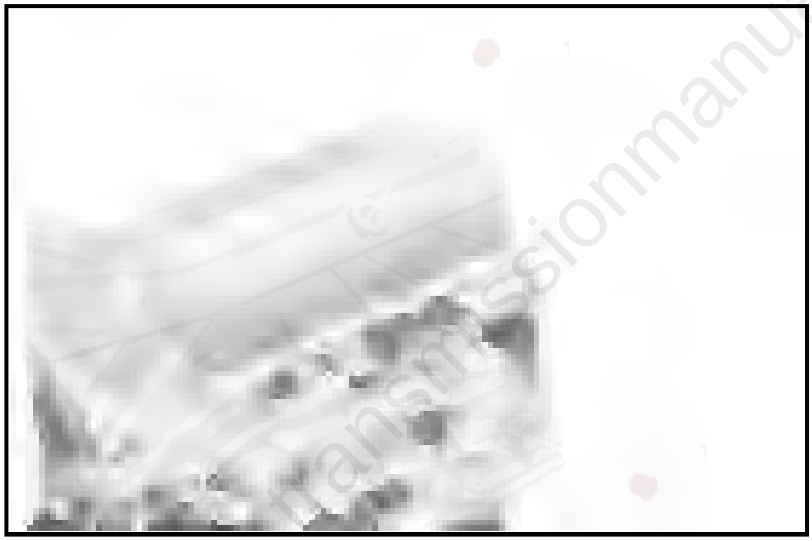
1. 

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

Using a appropriate tool, remove the Manual Shift Shaft Seal (1).

2. Manual Shift Shaft Seal (1) - Remove and DISCARD

AUTOMATIC TRANSMISSION CASE PLUG REMOVAL

1. 

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

TRANSMISSION CASE CLEANING AND INSPECTION

WARNING: **Refer to Safety Glasses Warning .**

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.**

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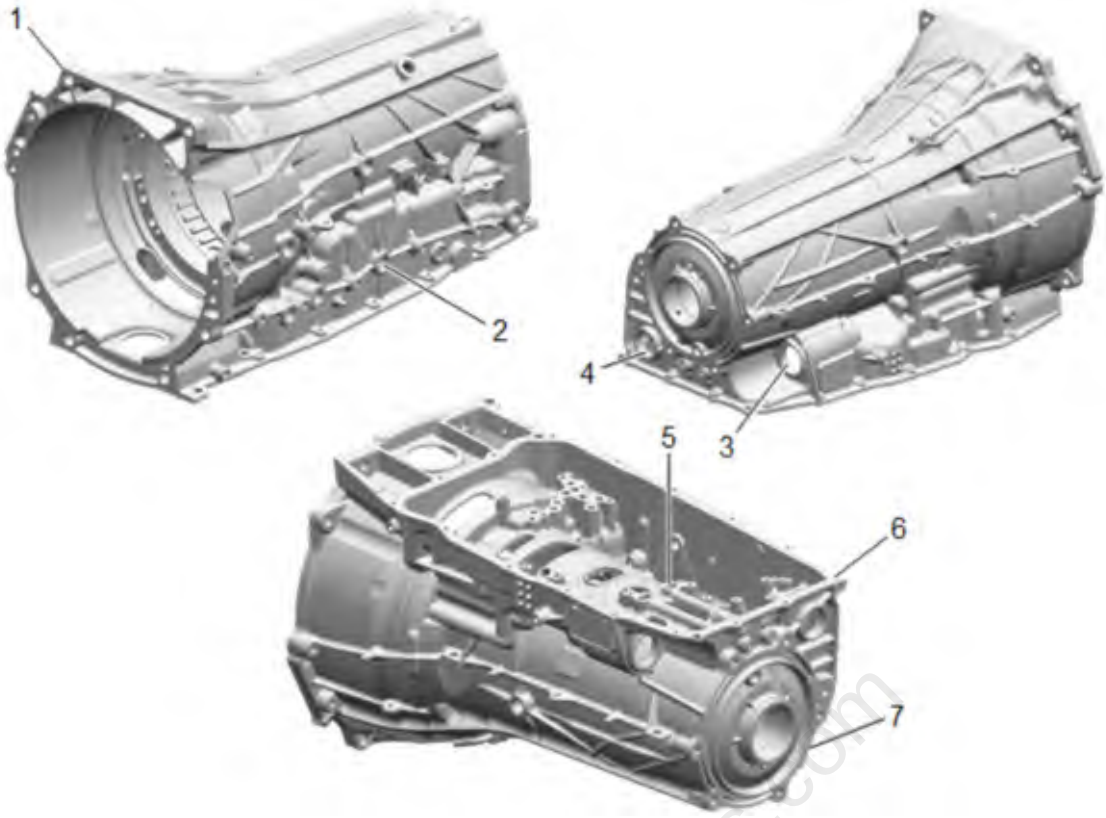


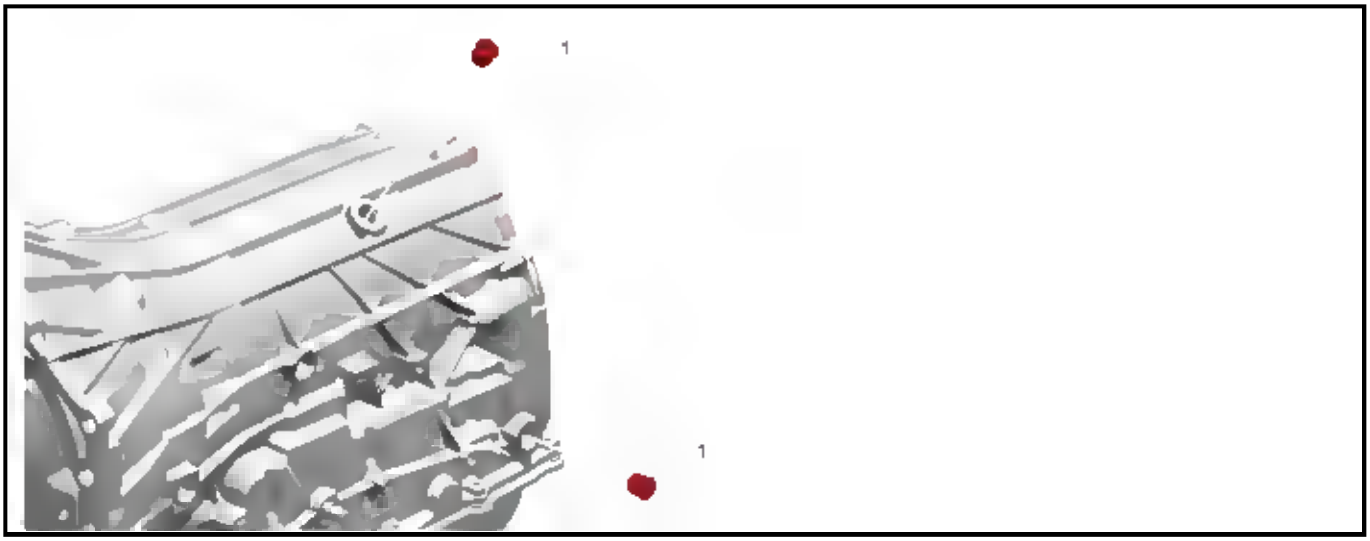
Fig. 2: Identifying Transmission Case Cleaning And Inspection Areas
Courtesy of GENERAL MOTORS COMPANY

1. 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.
    1. Front Case Sealing Surface (1)

NOTE: **To service the manual shift shaft seal, refer to Manual Shift Shaft Seal Removal, or Manual Shift Shaft Seal Installation.**

    2. Manual Shift Shaft Seal (2)
    3. Electrical Connector Passage Sleeve Bore (3)
    4. Park Pawl Actuator Guide Bore (4)
    5. Clutch Housing Fluid Passage Seal Surface (5)
    6. Fluid Pan Sealing Surface (6)
    7. Rear Case Sealing Surface (7)

AUTOMATIC TRANSMISSION CASE PLUG INSTALLATION



1. Prepare the Automatic Transmission Case Plug (1) for installation as follows:
    1. Remove all traces of the adhesive patch from the plug and the mating threads using the appropriate tools.
    2. Clean the threads of the plug and mating threads with denatured alcohol or equivalent and allow to dry.
    3. Apply thread locking adhesive to the plug. **Adhesives, Fluids, Lubricants, and Sealers**
    4. Ensure there are no gaps in the thread locking adhesive once applied to the plug.

CAUTION: **Refer to Component Fastener Tightening Caution .**

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

CASE EXTENSION DISASSEMBLE (AWD)

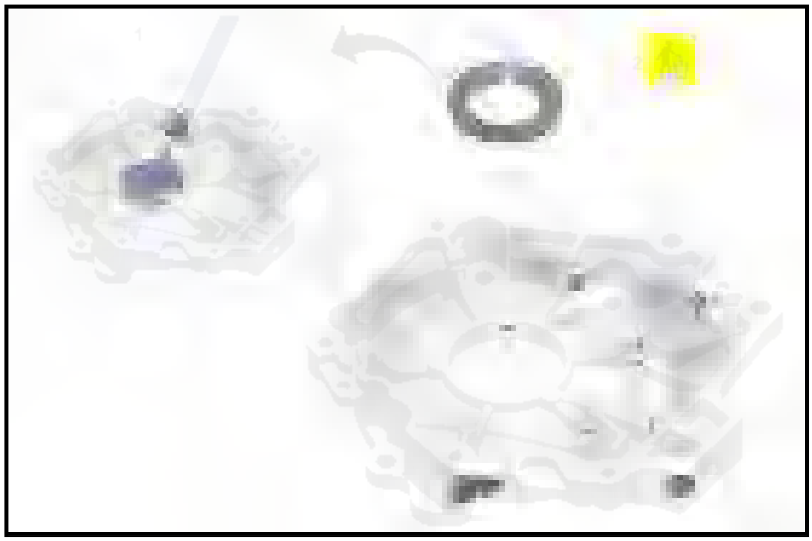
Single Use Fasteners and Components

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 the Propeller Shaft Transmission Flange Fluid Seal (2).

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

CASE EXTENSION DISASSEMBLE (2WD)

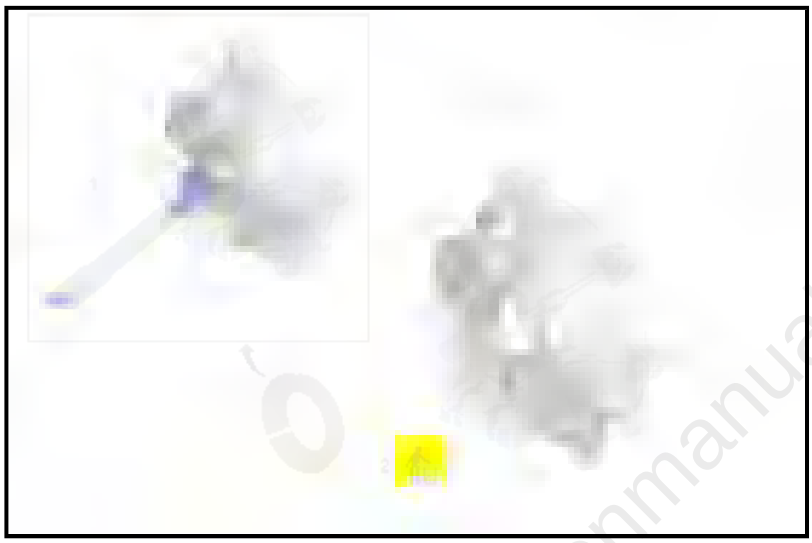
Single Use Fasteners and Components

Propeller Shaft Transmission Flange Fluid Seal

Special Tools

- **DT-26941** Bearing Remover
- **DT-45000** Seal Remover
- **DT-45124** Bridge

Equivalent regional tools: **Special Tools**

1. 

   Use the **DT-45000** Seal Remover (1) to remove the Propeller Shaft Transmission Flange Fluid Seal (2).

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

3. 

   Use the **DT-26941** Bearing Remover (2) and **DT-45124** Bridge (1) to remove the Output Shaft Bearing (3).

4. Output Shaft Bearing (3) - Remove

CASE EXTENSION ASSEMBLE (AWD)

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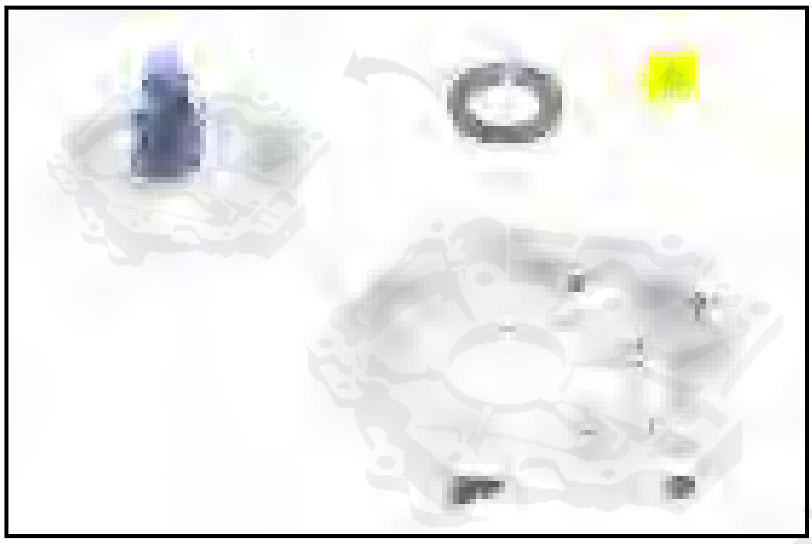
Single Use Fasteners and Components

Propeller Shaft Transmission Flange Fluid Seal

Special Tools

J-38869 Seal Installer

Equivalent regional tools: **Special Tools**

1. 

   Use the **J-38869** Seal Installer (1) to install the Propeller Shaft Transmission Flange Fluid Seal (2).

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

CASE EXTENSION ASSEMBLE (2WD)

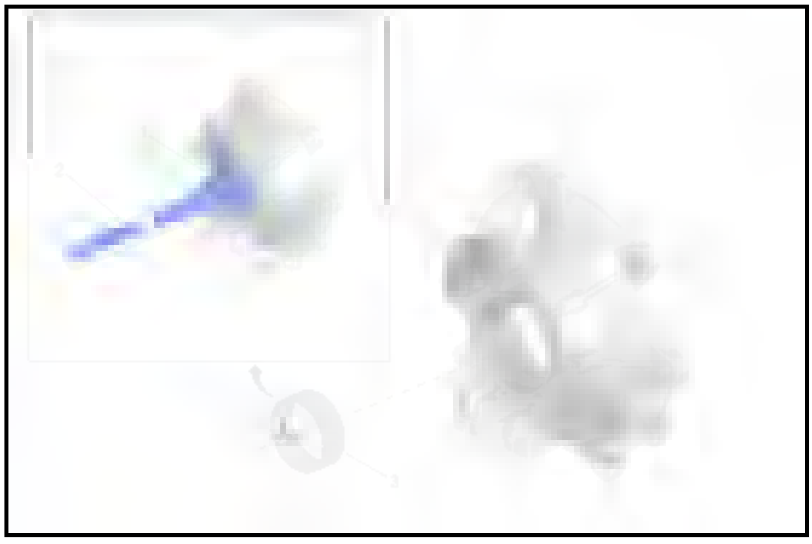
Single Use Fasteners and Components

Propeller Shaft Transmission Flange Fluid Seal

Special Tools

- **DT-50897** Bearing Installer
- **DT-8092** Driver Handle
- **J-38869** Seal Installer

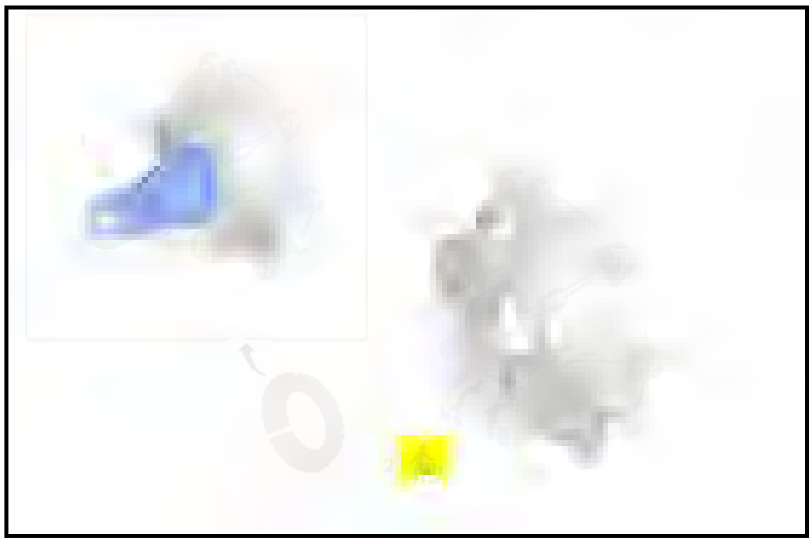
Equivalent regional tools: **Special Tools**

1. 

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Use the **DT-50897** Bearing Installer (1) and the **DT-8092** Driver Handle (2) to install the Output Shaft Bearing (3) with an arbor press.

2. Output Shaft Bearing (3) - Install

3. 

Use the **J-38869** Seal Installer (1) to install the Propeller Shaft Transmission Flange Fluid Seal (2).

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

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**

1. 

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.**

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

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

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PARK RELEASE LEVER AND PARK PAWL ACTUATOR INSTALLATION

Single Use Fasteners and Components

- Manual Shift Shaft Pin
- Park Pawl Actuator Guide Pin
- Transmission Fluid Cooler Pipe Fitting Seal [2x]

Special Tools

DT-47770 Seal Installer

Equivalent regional tools: **Special Tools**

1. 

   Park Pawl Actuator Assembly (1) - Install

2. Park Release Lever (2) - Install
3. Manual Shift Shaft (3) - Install

   NOTE: **Install the NEW pin so equal amounts stick out from either side of the manual shaft.**

4. Manual Shift Shaft Pin (4) - Install NEW

1. 

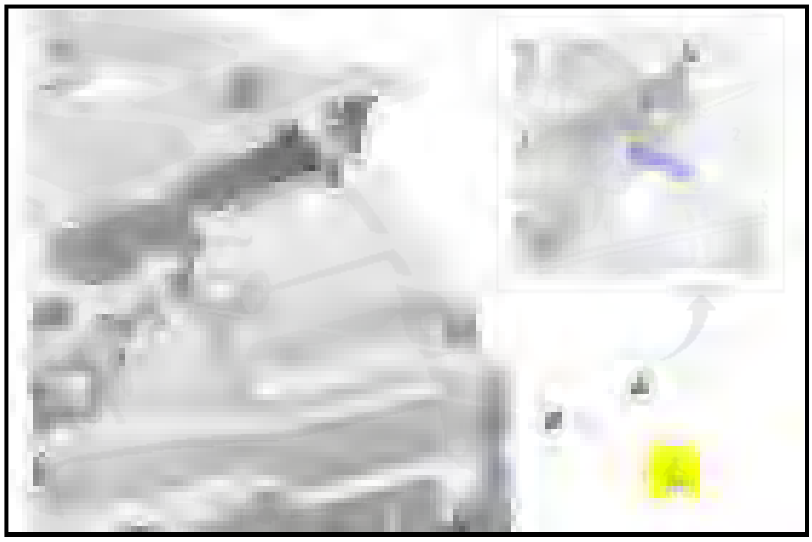
   Pull the park pawl away indicated by the arrow, then install the Park Pawl Actuator Guide Assembly (1) into the case.

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2. Park Pawl Actuator Guide Assembly (1) - Install

CAUTION: **Refer to Pin Reuse Caution**

3. Park Pawl Actuator Guide Pin (2) - Install NEW

1. 

   Use **DT-47770** Seal Installer (2) to install the Transmission Fluid Cooler Pipe Fitting Seal (1).

2. Transmission Fluid Cooler Pipe Fitting Seal (1) - Install NEW [2x]

OUTPUT CARRIER ASSEMBLY AND OUTPUT CARRIER THRUST BEARINGS INSTALLATION (AWD)

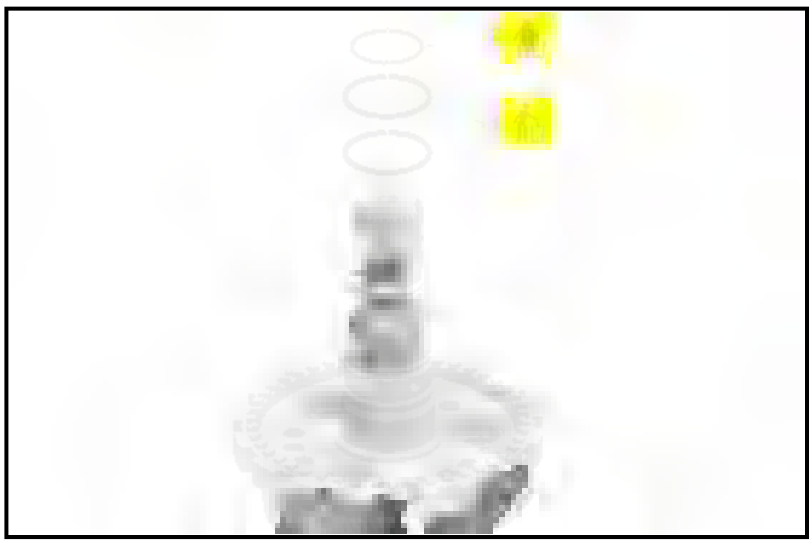
Single Use Fasteners and Components

- Output Shaft Seal
- Output Shaft Seal [2x]

Special Tools

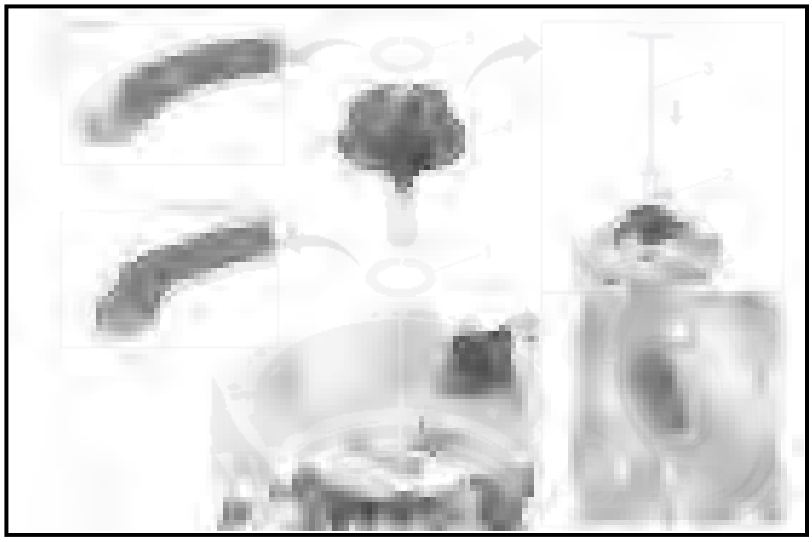
- **DT-36850** Transjel Lubricant
- **DT-50921** Output Carrier Lifter
- **J-26941** Bushing and Bearing Remover

Equivalent regional tools: **Special Tools**

1. 

   Output Shaft Seal (1) - Install NEW [2x]

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2. Output Shaft Seal (2) - Install NEW
3. 

NOTE: **Ensure proper orientation.**

Output Carrier Thrust Bearing Assembly (1) - Install

4. Apply **DT-36850** Transjel Lubricant to the dog bone and bearing (a) before installing the carrier into the case.
5. Install **DT-50921** Output Carrier Lifter (3) and **J-26941** Bushing and Bearing Remover (2) to the Output Carrier Assembly (4).

NOTE: **Ensure transmission is NOT in Park, this will ease in installation.**

6. Output Carrier Assembly (4) - Install

NOTE: **Ensure proper orientation.**

7. Output Carrier Thrust Bearing Assembly (5) - Install

OUTPUT CARRIER ASSEMBLY AND OUTPUT CARRIER THRUST BEARINGS INSTALLATION (2WD)

Single Use Fasteners and Components

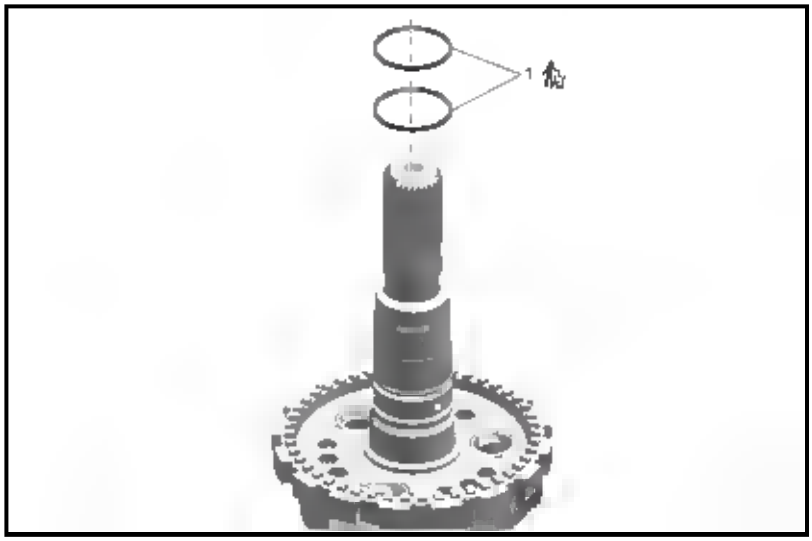
Output Shaft Seal [2x]

Special Tools

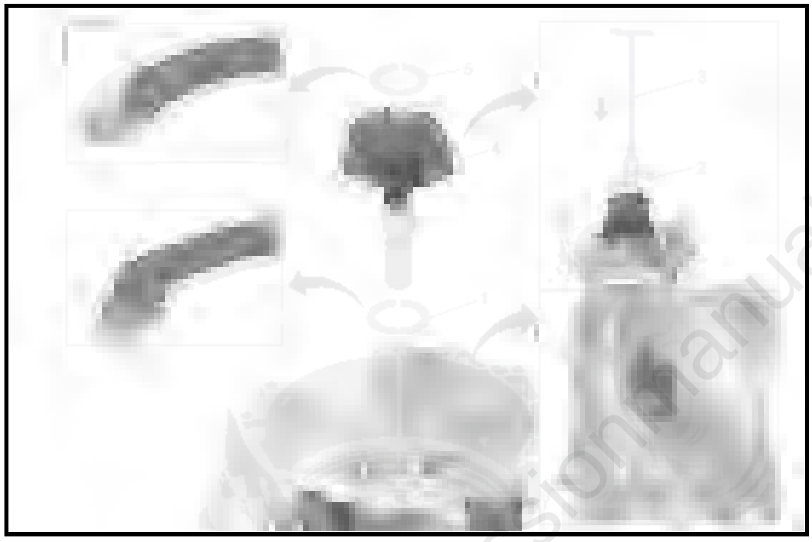
- **DT-36850** Transjel Lubricant
- **DT-50921** Output Carrier Lifter
- **J-26941** Bushing and Bearing Remover

Equivalent regional tools: **Special Tools**

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1. 

Output Shaft Seal (1) - Install NEW [2x]

1. 

NOTE: **Ensure proper orientation.**

Output Carrier Thrust Bearing Assembly (1) - Install

2. Apply **DT-36850** Transjel Lubricant to the dog bone and bearing (a) before installing the carrier into the case.
3. Install **DT-50921** Output Carrier Lifter (3) and **J-26941** Bushing and Bearing Remover (2) to the Output Carrier Assembly (4).

NOTE: **Ensure transmission is NOT in Park, this will ease in installation.**

4. Output Carrier Assembly (4) - Install

NOTE: **Ensure proper orientation.**

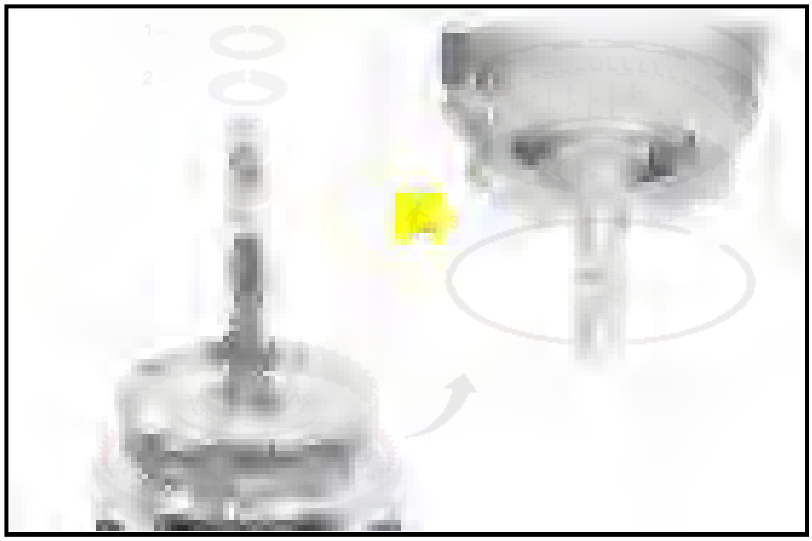
5. Output Carrier Thrust Bearing Assembly (5) - Install

ROTATING CLUTCH, GEAR, AND SHAFT SHELL ASSEMBLY DISASSEMBLE

Single Use Fasteners and Components

- Reaction Carrier Hub Retaining Ring
- Output Carrier Internal Gear Retaining Ring

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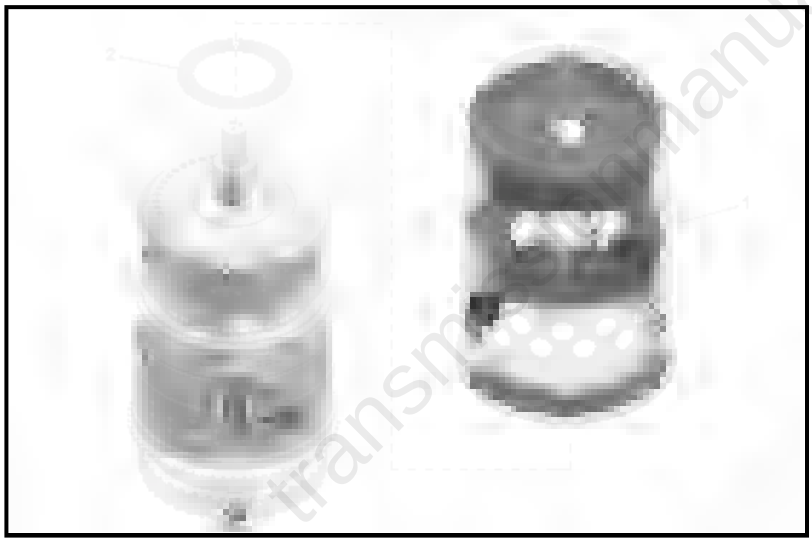
1. 

   Transmission Case Washer (1) - Remove

2. Reaction Sun Gear Thrust Bearing (2) - Remove
3. Flip the assembly over.

   NOTE: **Remove the retaining ring by pulling downward.**

4. Reaction Carrier Hub Retaining Ring (3) - Remove and DISCARD

5. 

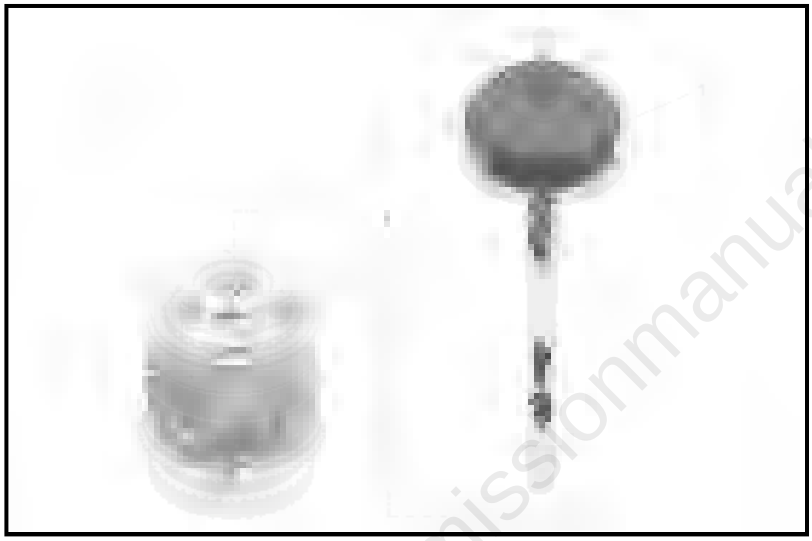
   Output Carrier Internal Gear Transfer Shell (1) - Remove

6. Output Carrier Thrust Bearing Assembly (2) - Remove

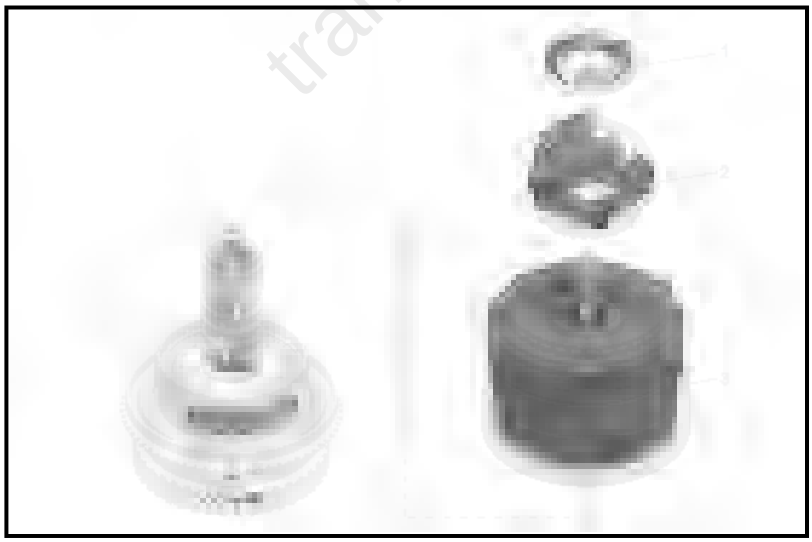
7. 

Output Carrier Internal Gear Retaining Ring (1) - Remove and DISCARD

8. Output Carrier Internal Gear (2) - Remove

9. 

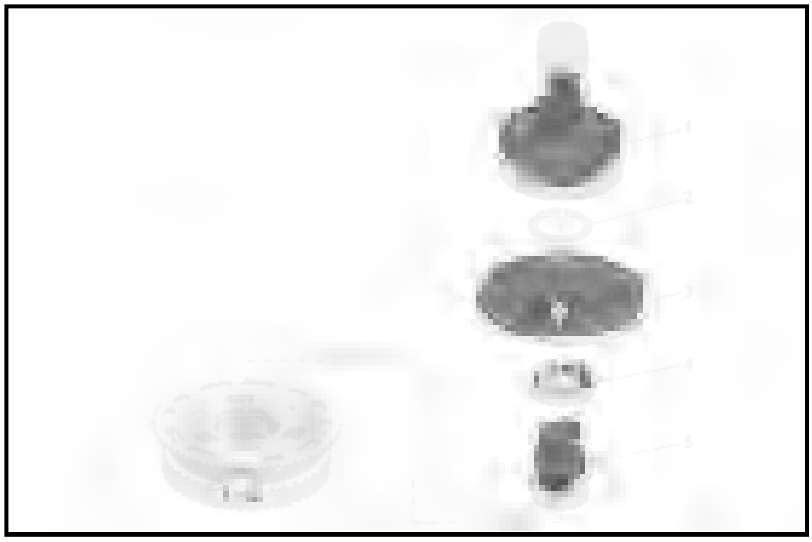
Main Shaft (1) - Remove

10. 

Direct Overdrive Sun Gear (1) - Remove

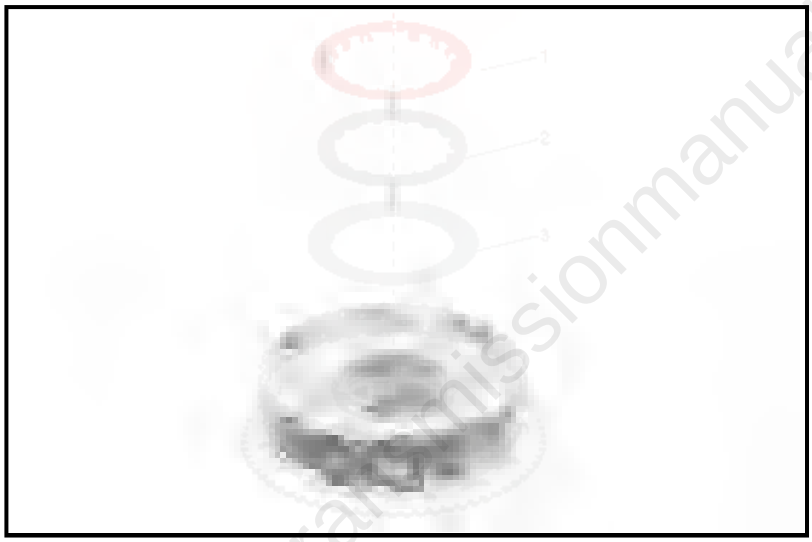
11. Direct Overdrive Carrier (2) - Remove
12. Triple Clutch Housing (3) - Remove

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13. 

    Direct Overdrive Sun Gear Shaft (1) - Remove

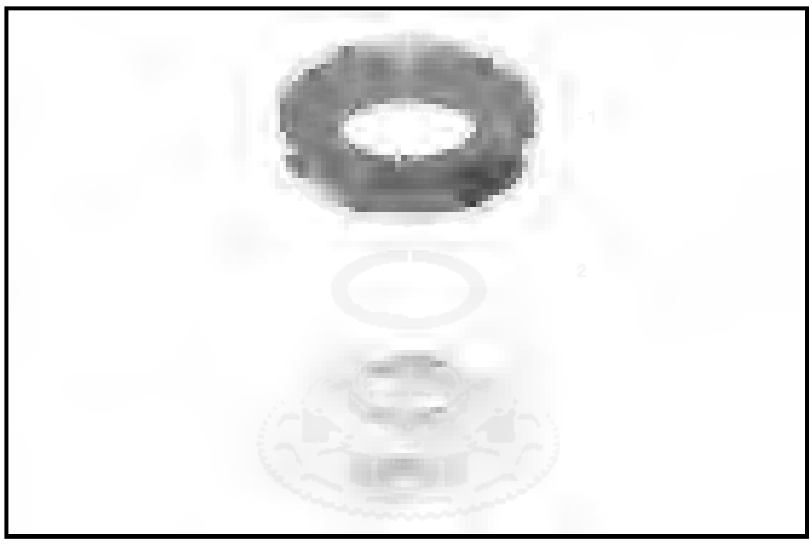
14. Input Sun Gear Thrust Bearing (2) - Remove
15. Input Carrier Assembly (3) - Remove
16. Input Sun Gear (4) - Remove
17. Reaction Sun Gear Assembly (5) - Remove

18. 

    Reaction Internal Gear Spacer Retainer (1) - Remove

19. Rotate the Reaction Internal Gear Spacer (2) clockwise, then remove.
20. Reaction Internal Gear Spacer (2) - Remove
21. Reaction Internal Gear Thrust Bearing (3) - Remove

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22. 

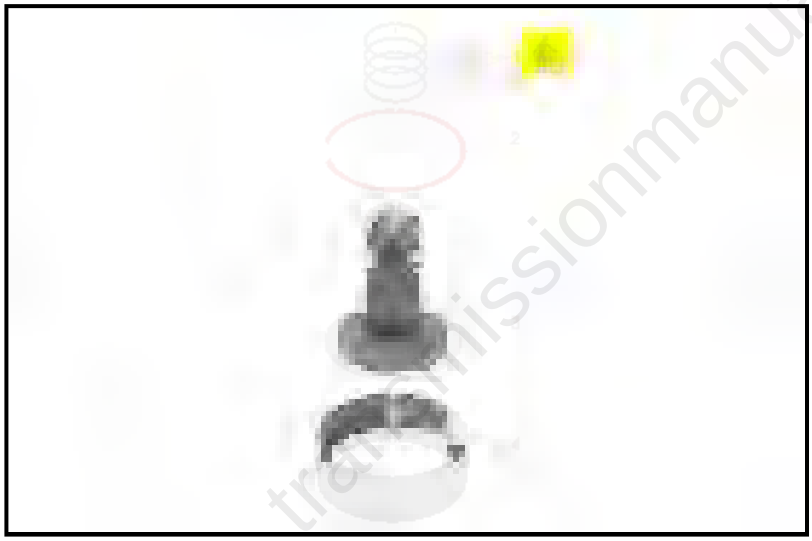
    Reaction Internal Gear (1) - Remove

23. Reaction Internal Gear Thrust Bearing (2) - Remove

DIRECT OVERDRIVE SUN GEAR SHAFT DISASSEMBLE

Single Use Fasteners and Components

Direct Overdrive Sun Gear Shaft Seal [4x]

1. 

    Direct Overdrive Sun Gear Shaft Seal (1) - Remove and DISCARD [4x]

2. Input Internal Gear Retaining Ring (2) - Remove
3. Direct Overdrive Sun Gear Shaft (3) - Remove
4. Input Internal Gear (4) - Remove

DIRECT OVERDRIVE SUN GEAR SHAFT ASSEMBLE

Single Use Fasteners and Components

Direct Overdrive Sun Gear Shaft Seal [4x]

Special Tools

DT-52703 Direct Overdrive Sun Gear Shaft Seal Installer Remove

Equivalent regional tools: **Special Tools**

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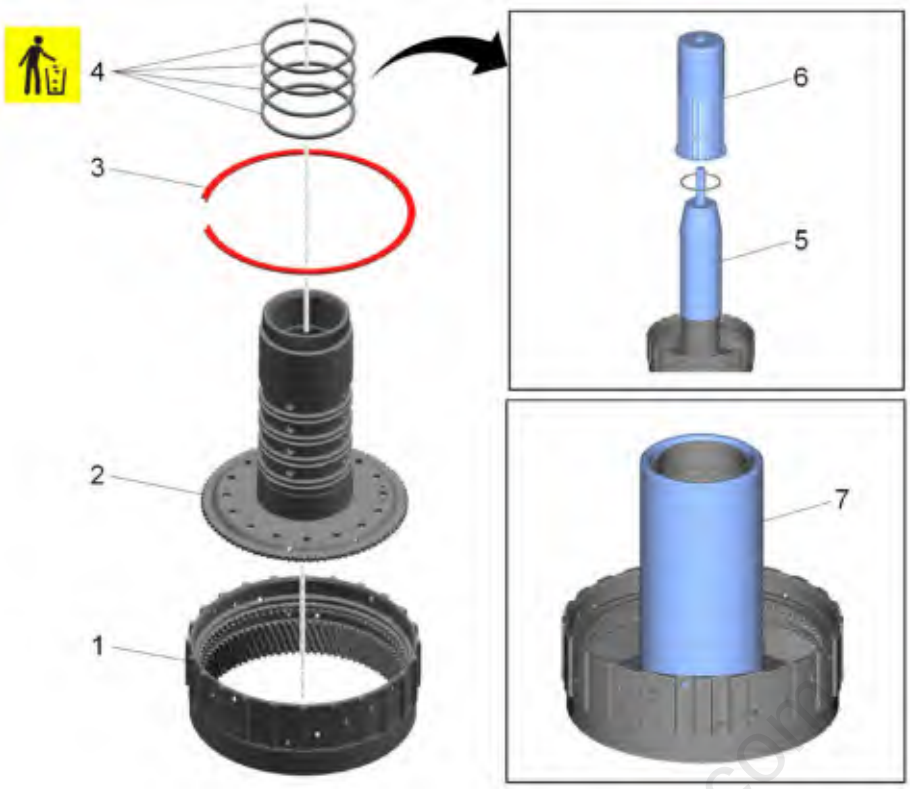
1. 

Fig. 3: Exploded View Of Direct Overdrive Sun Gear Shaft Components
Courtesy of GENERAL MOTORS COMPANY

Input Internal Gear Hub (1) - Install

2. Direct Overdrive Sun Gear Shaft (2) - Install
3. Input Internal Gear Retaining Ring (3) - Install

NOTE: **When installing the seals, movement of the seal pushing tool should be one continuous movement down the shaft, and should not last more than 2 seconds to prevent overstretching of the seals.**

4. Set the **DT-52703 - 3** seal installer (5) to the depth for each seal, then using **DT-52703 - 2** seal pusher (6), push the seal into position.
5. Direct Overdrive Sun Gear Shaft Seal (4) - Install NEW [4x]

NOTE: **Seal robustness may be improved if the sizer is left on until the shaft is installed in the Triple Clutch Housing.**

6. After all seals have been installed, install the **DT-52703 - 1** seal sizer (7) over all of the seals as shown. The **DT-52703 - 1** seal sizer (7) should stay installed for at least 5 minutes before removed.

TRIPLE CLUTCH HOUSING DISASSEMBLE

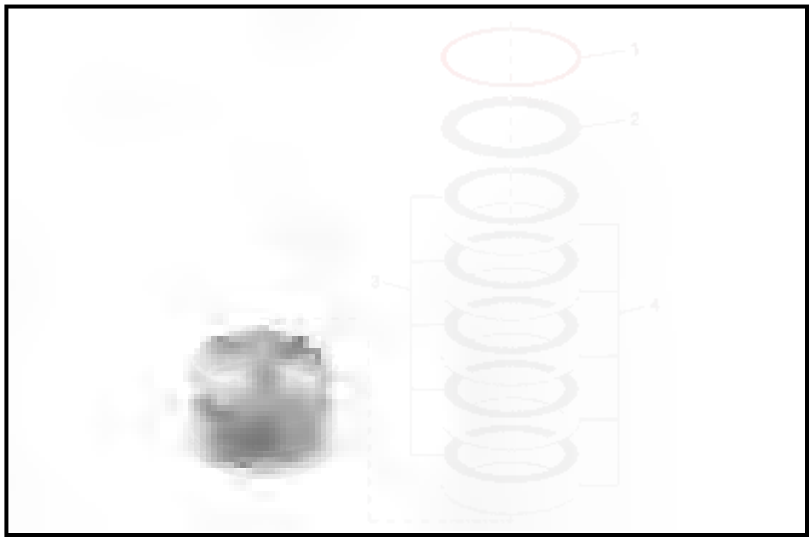
Single Use Fasteners and Components

- 1-2-3-4-6-7-8-10-Reverse Clutch Piston Seal - Inner [2x]
- 1-2-3-4-6-7-8-10-Reverse Clutch Piston Seal - Outer [2x]
- 2-3-4-5-7-9-10 Clutch Piston Dam Seal - Inner
- 2-3-4-5-7-9-10 Clutch Piston Seal - Inner [2x]
- 2-3-4-5-7-9-10 Clutch Piston Seal - Outer [2x]
- 4-5-6-7-8-9-10-Reverse Clutch Piston Seal - Inner [2x]
- 4-5-6-7-8-9-10-Reverse Clutch Piston Seal - Outer [2x]

Special Tools

DT-51892 Press Tool

Equivalent regional tools: **Special Tools**

1. 

   2-3-4-5-7-9-10 Clutch Backing Plate Retaining Ring-Selective (1) - Remove

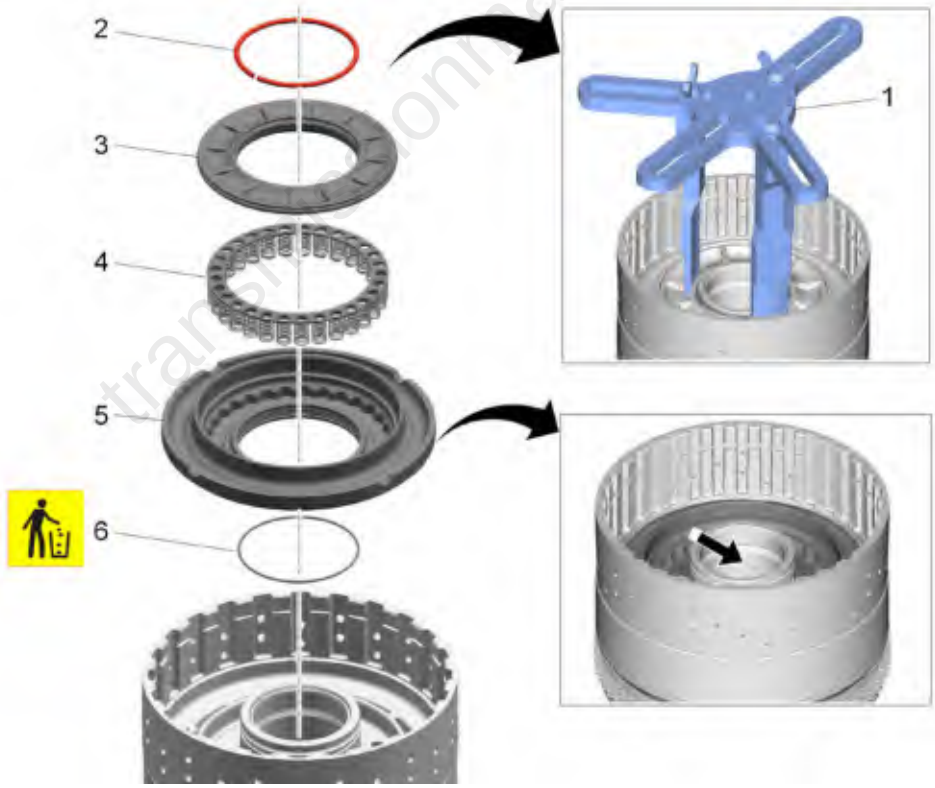
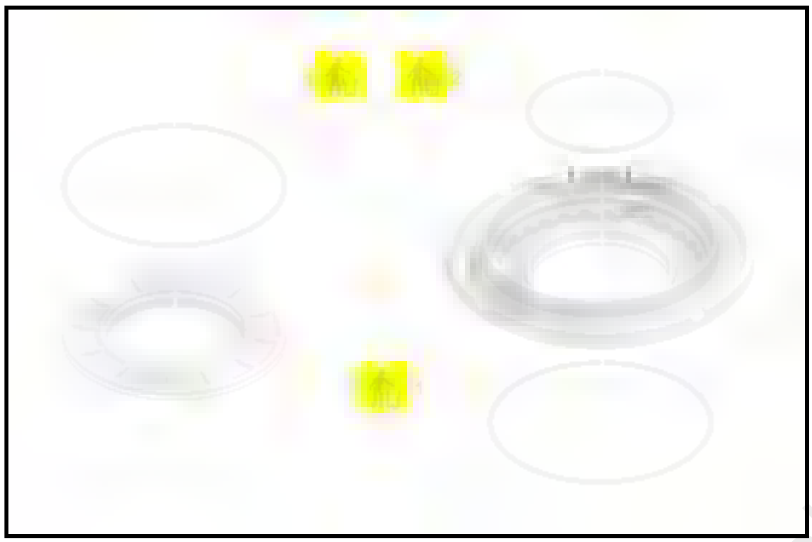
2. 2-3-4-5-7-9-10 Clutch Backing Plate (2) - Remove
3. 2-3-4-5-7-9-10 Fiber Clutch Plate (3) - Remove [5x]
4. 2-3-4-5-7-9-10 Steel Clutch Plate (4) - Remove [5x]
5. 

   Fig. 4: Exploded View Of 2-3-4-5-7-9-10 Clutch Piston Dam Components
   Courtesy of GENERAL MOTORS COMPANY

   Using the **DT-51892** press tool (1) and an arbor press, compress the piston just enough to remove the 2-3-4-5-7-9-10 Clutch Piston Dam Retaining Ring (2).

6. 2-3-4-5-7-9-10 Clutch Piston Dam Retaining Ring (2) - Remove

7. Turn assembly over and bang downward onto work bench to break components free.
8. 2-3-4-5-7-9-10 Clutch Piston Dam (3) - Remove
9. 2-3-4-5-7-9-10 Clutch Piston Return Spring (4) - Remove
10. Apply compressed air in first hole indicated by arrow while blocking opposite hole to break the 2-3-4-5-7-9-10 Clutch Piston free.
11. 2-3-4-5-7-9-10 Clutch Piston (5) - Remove
12. 2-3-4-5-7-9-10 Clutch Piston Dam Seal - Inner (6) - Remove and DISCARD
13. 

    2-3-4-5-7-9-10 Clutch Piston Seal - Outer (1) - Remove and DISCARD [2x]

14. 1-2-3-4-6-7-8-10-Reverse Clutch Piston Seal - Inner (2) - Remove and DISCARD
15. 

    1-2-3-4-6-7-8-10-Reverse Clutch Backing Plate Retaining Ring-Selective (1) - Remove

16. 1-2-3-4-6-7-8-10-Reverse Clutch Backing Plate (2) - Remove
17. 1-2-3-4-6-7-8-10-Reverse Fiber Clutch Plate (3) - Remove [6x]
18. 1-2-3-4-6-7-8-10-Reverse Steel Clutch Plate (4) - Remove [6x]
19. 1-2-3-4-6-7-8-10-Reverse Clutch Apply Ring (5) - Remove

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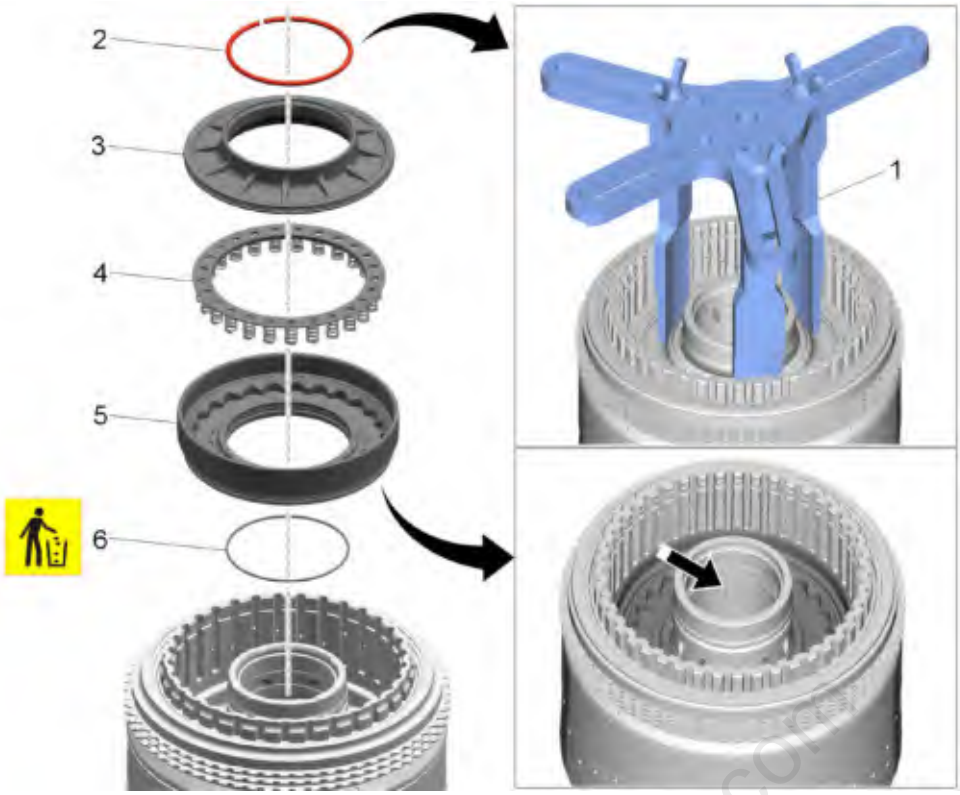
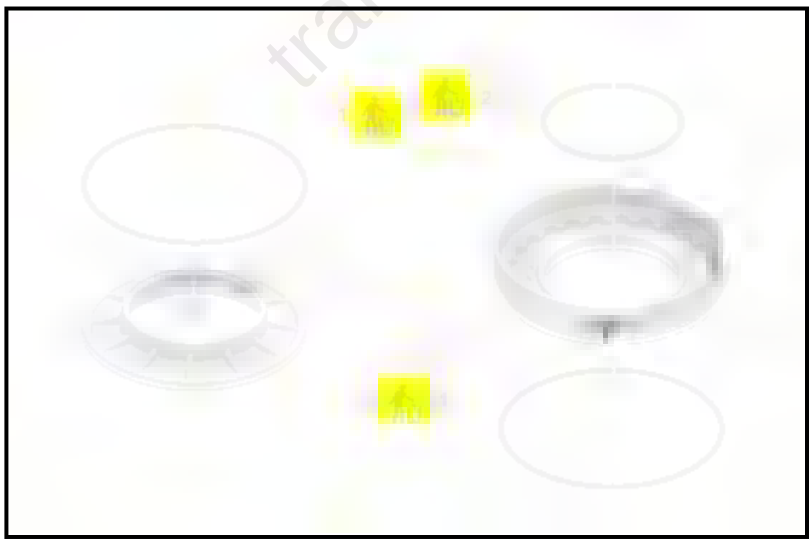
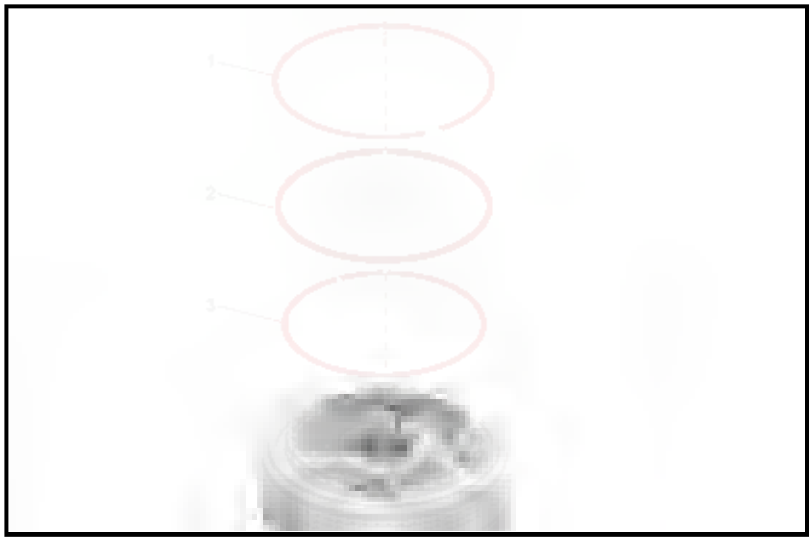
20. 

Fig. 5: Exploded View Of 1-2-3-4-6-7-8-10-Reverse Clutch Piston Components
Courtesy of GENERAL MOTORS COMPANY

Using the **DT-51892** press tool (1) and an arbor press, compress the piston just enough to remove the 2-3-4-5-7-9-10 Clutch Piston Dam Retaining Ring (2).

21. 2-3-4-5-7-9-10 Clutch Piston Dam Retaining Ring (2) - Remove
22. 1-2-3-4-6-7-8-10-Reverse Clutch Piston Dam (3) - Remove
23. 1-2-3-4-6-7-8-10-Reverse Clutch Piston Return Spring (4) - Remove
24. Apply compressed air in second hole indicated by arrow while blocking opposite hole to break the 1-2-3-4-6-7-8-10-Reverse Clutch Piston (5) free.
25. 1-2-3-4-6-7-8-10-Reverse Clutch Piston (5) - Remove
26. 2-3-4-5-7-9-10 Clutch Piston Seal - Inner (6) - Remove and DISCARD
27. 
28. 1-2-3-4-6-7-8-10-Reverse Clutch Piston Seal - Outer (1) - Remove and DISCARD [2x]
29. 1-2-3-4-6-7-8-10-Reverse Clutch Piston Seal - Inner (2) - Remove and DISCARD

30. 

NOTE: **Largest diameter ring.**

4-5-6-7-8-9-10-Reverse Clutch Backing Plate Retaining Ring Retaining Ring (1) - Remove

NOTE: **Middle diameter ring.**

31. 4-5-6-7-8-9-10-Reverse Clutch Retaining Ring Retainer (2) - Remove

NOTE: **Smallest diameter ring.**

32. 4-5-6-7-8-9-10-Reverse Clutch Backing Plate Retaining Ring-Selective (3) - Remove

33. 

4-5-6-7-8-9-10-Reverse Clutch Backing Plate (1) - Remove

34. 4-5-6-7-8-9-10-Reverse Fiber Clutch Plate (2) - Remove [3x]
35. 4-5-6-7-8-9-10-Reverse Steel Clutch Plate (3) - Remove [3x]
36. Use a plastic pry tool or non-marring tool to pry upwards to remove the 4-5-6-7-8-9-10-Reverse Clutch Apply Ring (4).
37. 4-5-6-7-8-9-10-Reverse Clutch Apply Ring (4) - Remove

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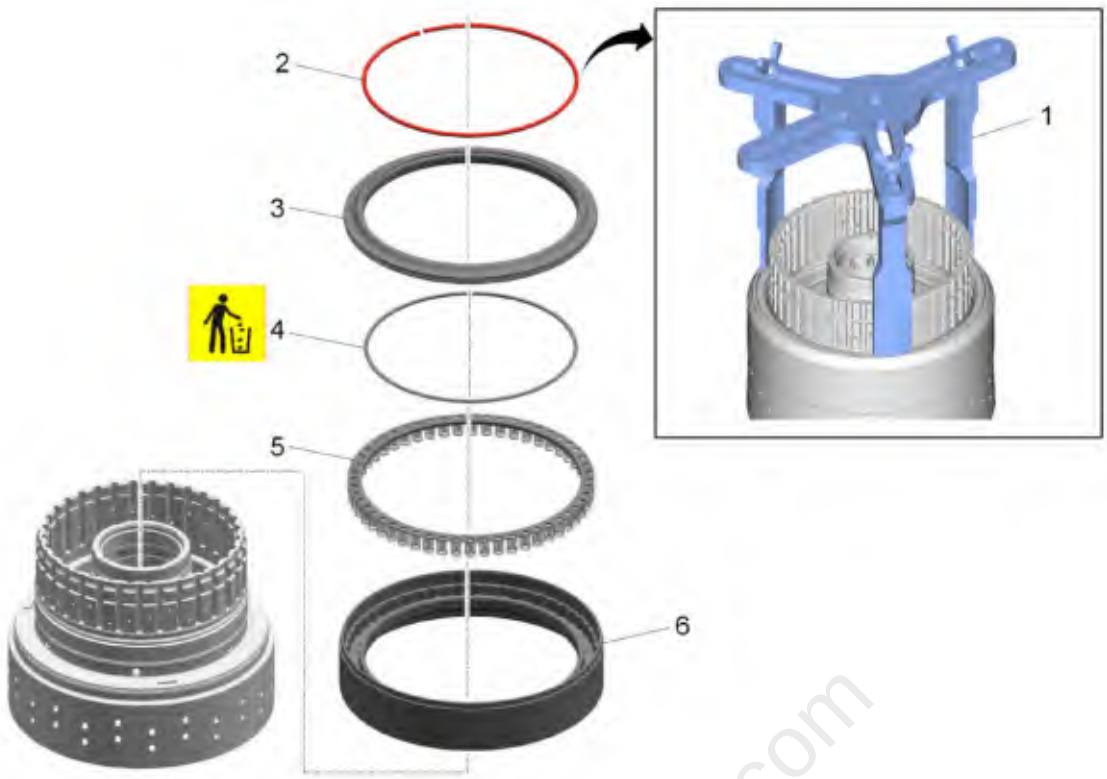
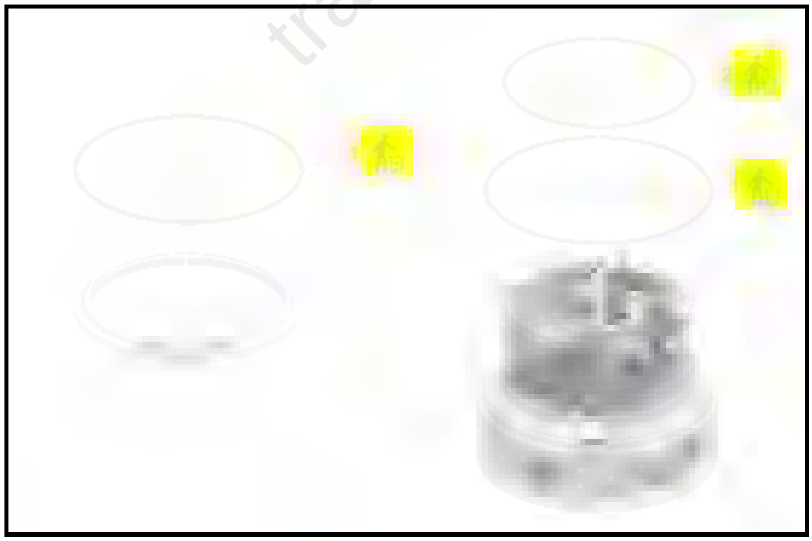
38. 

Fig. 6: Exploded View Of 4-5-6-7-8-9-10-Reverse Clutch Piston Components
Courtesy of GENERAL MOTORS COMPANY

Using the **DT-51892** press tool (1) and an arbor press, compress the piston just enough to remove the 4-5-6-7-8-9-10-Reverse Clutch Piston Dam Retaining Ring (2).

39. 4-5-6-7-8-9-10-Reverse Clutch Piston Dam Retaining Ring (2) - Remove
40. 4-5-6-7-8-9-10-Reverse Clutch Piston Dam (3) - Remove

NOTE: **Must remove this seal before the piston to ease piston removal.**

41. 4-5-6-7-8-9-10-Reverse Clutch Piston Seal - Inner (4) - Remove and DISCARD
42. 4-5-6-7-8-9-10-Reverse Clutch Piston Return Spring (5) - Remove
43. 4-5-6-7-8-9-10-Reverse Clutch Piston (6) - Remove
44. 

4-5-6-7-8-9-10-Reverse Clutch Piston Seal - Outer (1) - Remove and DISCARD [2x]

45. 4-5-6-7-8-9-10-Reverse Clutch Piston Seal - Inner (2) - Remove and DISCARD

TRIPLE CLUTCH HOUSING ASSEMBLE

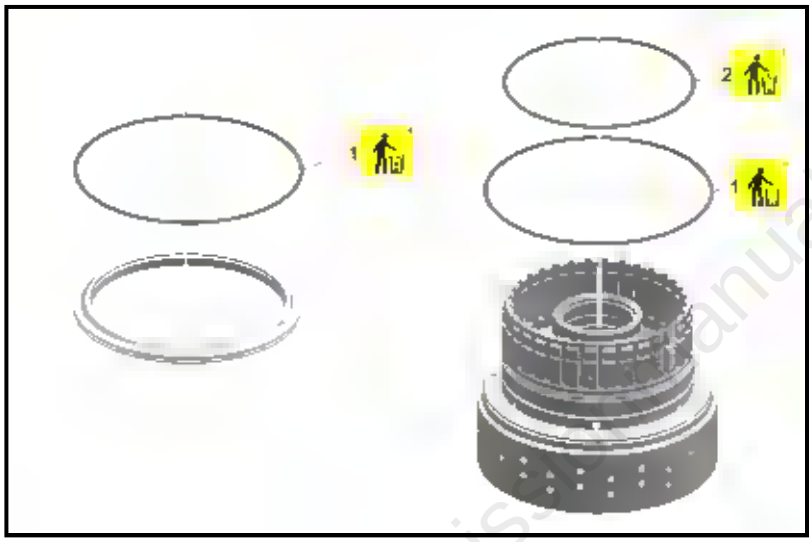
Single Use Fasteners and Components

- 1-2-3-4-6-7-8-10-Reverse Clutch Piston Seal - Inner [2x]
- 1-2-3-4-6-7-8-10-Reverse Clutch Piston Seal - Outer [2x]
- 2-3-4-5-7-9-10 Clutch Piston Dam Seal - Inner
- 2-3-4-5-7-9-10 Clutch Piston Seal - Inner [2x]
- 2-3-4-5-7-9-10 Clutch Piston Seal - Outer [2x]
- 4-5-6-7-8-9-10-Reverse Clutch Piston Seal - Inner [2x]
- 4-5-6-7-8-9-10-Reverse Clutch Piston Seal - Outer [2x]

Special Tools

DT-51892 Press Tool

Equivalent regional tools: **Special Tools**

1. 

   4-5-6-7-8-9-10-Reverse Clutch Piston Seal - Outer (1) - Install NEW [2x]

2. 4-5-6-7-8-9-10-Reverse Clutch Piston Seal - Inner (2) - Install NEW

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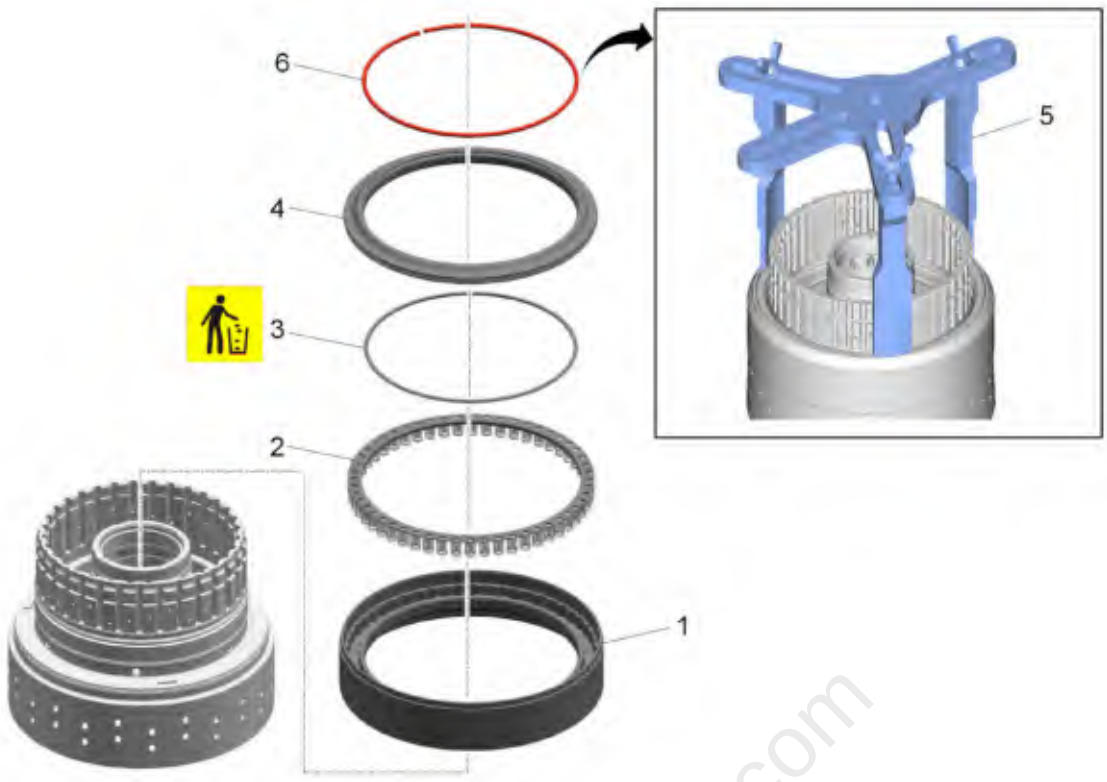
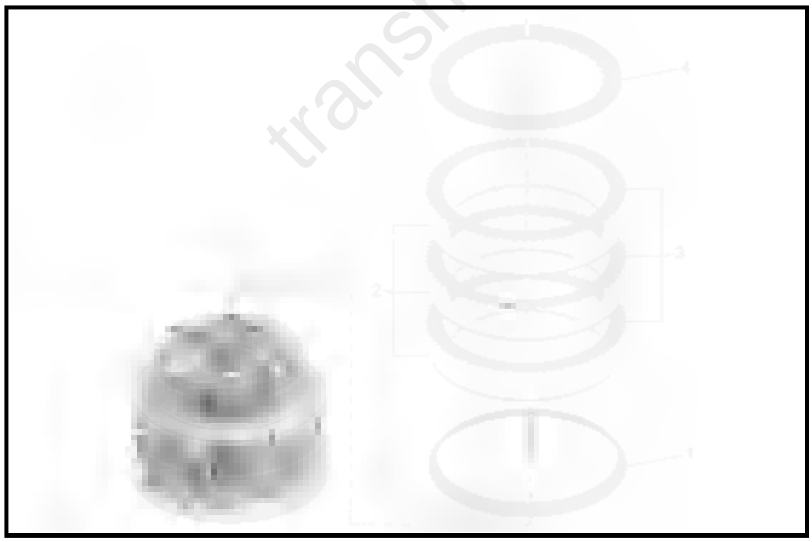
3. 

Fig. 7: Exploded View Of 4-5-6-7-8-9-10-Reverse Clutch Piston Components
Courtesy of GENERAL MOTORS COMPANY

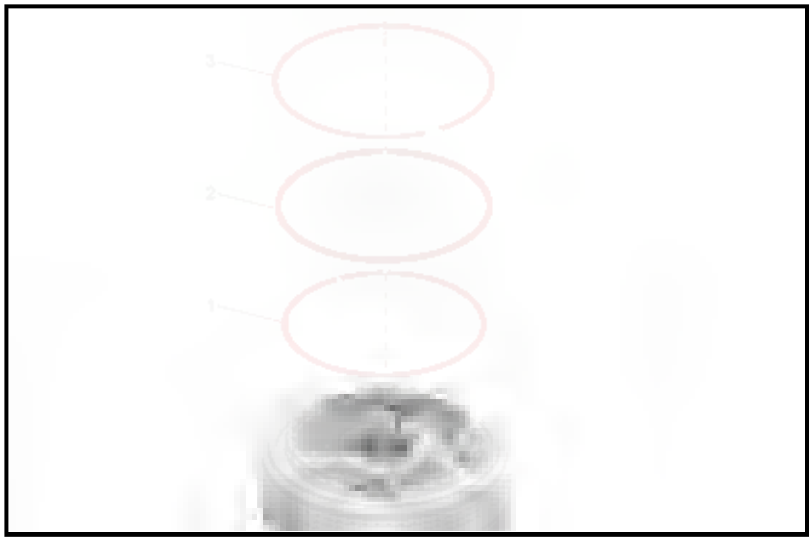
4-5-6-7-8-9-10-Reverse Clutch Piston (1) - Install

4. 4-5-6-7-8-9-10-Reverse Clutch Piston Return Spring (2) - Install
5. 4-5-6-7-8-9-10-Reverse Clutch Piston Seal - Inner (3) - Install NEW
6. 4-5-6-7-8-9-10-Reverse Clutch Piston Dam (4) - Install
7. Using the **DT-51892** press tool (5) and an arbor press, compress the piston just enough to install the 4-5-6-7-8-9-10-Reverse Clutch Piston Dam Retaining Ring (6).
8. 4-5-6-7-8-9-10-Reverse Clutch Piston Dam Retaining Ring (6) - Install
9. 

4-5-6-7-8-9-10-Reverse Clutch Apply Ring (1) - Install

10. 4-5-6-7-8-9-10-Reverse Steel Clutch Plate (2) - Install [3x]
11. 4-5-6-7-8-9-10-Reverse Fiber Clutch Plate (3) - Install [3x]
12. 4-5-6-7-8-9-10-Reverse Clutch Backing Plate (4) - Install

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13. 

    Select the proper backing plate retaining ring. **4-5-6-7-8-9-10-Reverse Clutch Backing Plate Retaining Ring Measurement**

    NOTE: Smallest diameter ring.

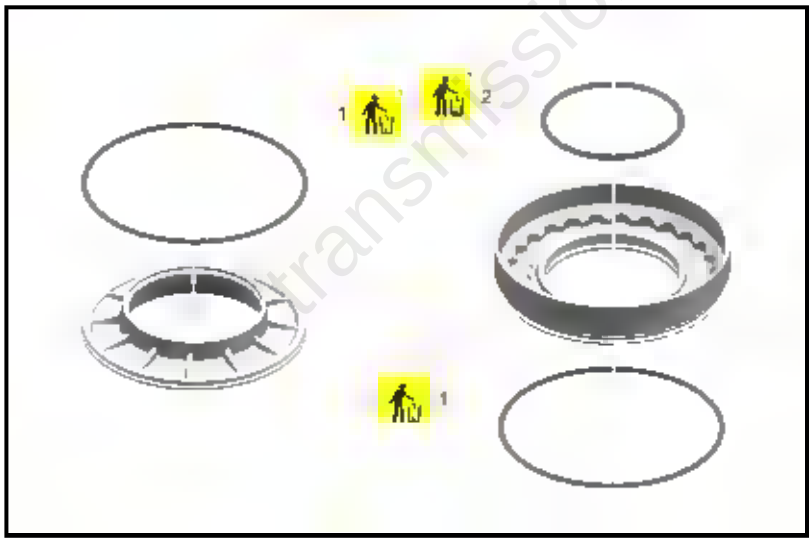
14. 4-5-6-7-8-9-10-Reverse Clutch Backing Plate Retaining Ring-Selective (1) - Install

    NOTE: Middle diameter ring.

15. 4-5-6-7-8-9-10-Reverse Clutch Retaining Ring Retainer (2) - Install

    NOTE: Largest diameter ring.

16. 4-5-6-7-8-9-10-Reverse Clutch Backing Plate Retaining Ring Retaining Ring (3) - Install

17. 

    1-2-3-4-6-7-8-10-Reverse Clutch Piston Seal - Outer (1) - Install NEW [2x]

18. 1-2-3-4-6-7-8-10-Reverse Clutch Piston Seal - Inner (2) - Install NEW

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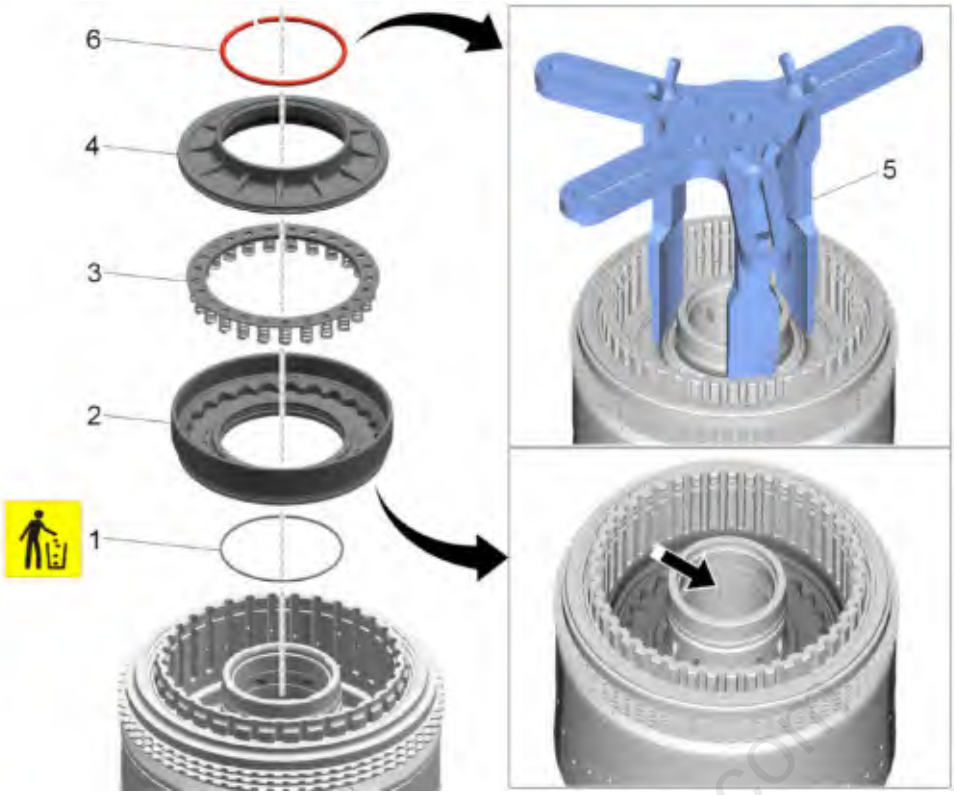
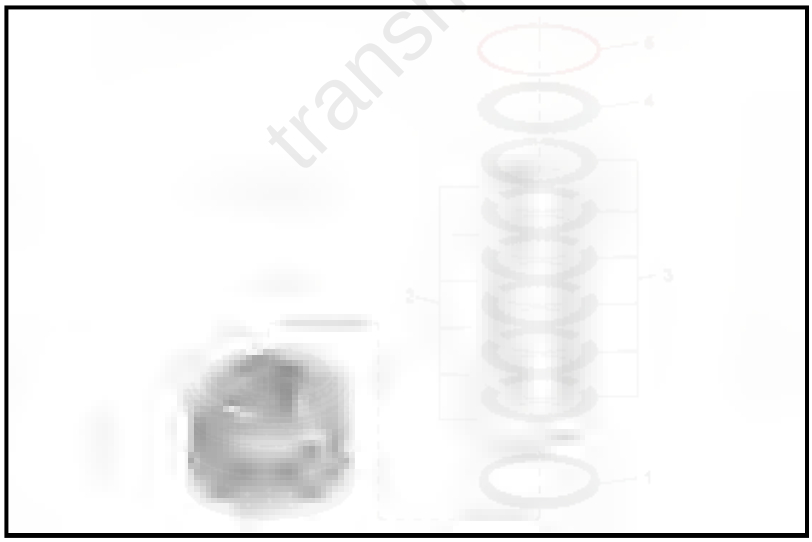
19. 

Fig. 8: Exploded View Of 1-2-3-4-6-7-8-10-Reverse Clutch Piston Components
Courtesy of GENERAL MOTORS COMPANY

2-3-4-5-7-9-10 Clutch Piston Seal - Inner (1) - Install NEW

20. 1-2-3-4-6-7-8-10-Reverse Clutch Piston (2) - Install
21. 1-2-3-4-6-7-8-10-Reverse Clutch Piston Return Spring (3) - Install
22. 1-2-3-4-6-7-8-10-Reverse Clutch Piston Dam (4) - Install
23. Using the **DT-51892** press tool (5) and an arbor press, compress the piston just enough to install the 2-3-4-5-7-9-10 Clutch Piston Dam Retaining Ring (6).
24. 2-3-4-5-7-9-10 Clutch Piston Dam Retaining Ring (6) - Install
25. 

1-2-3-4-6-7-8-10-Reverse Clutch Apply Ring (1) - Install

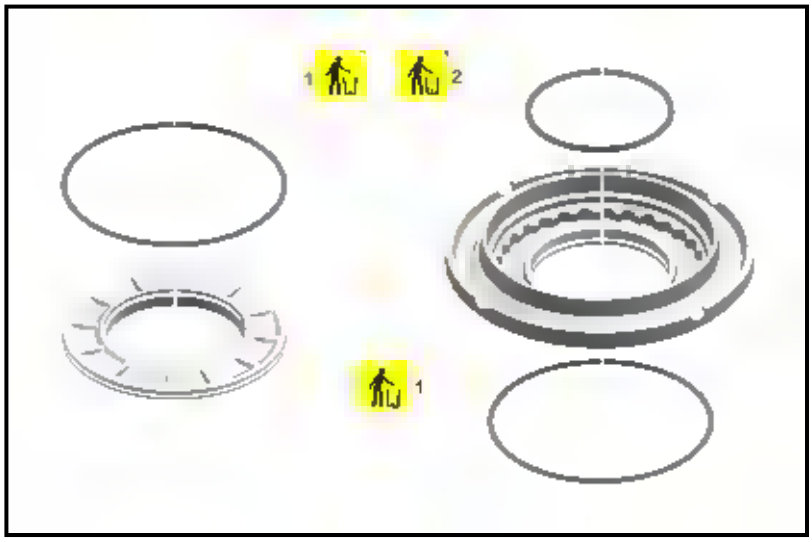
26. 1-2-3-4-6-7-8-10-Reverse Steel Clutch Plate (2) - Install [6x]
27. 1-2-3-4-6-7-8-10-Reverse Fiber Clutch Plate (3) - Install [6x]
28. 1-2-3-4-6-7-8-10-Reverse Clutch Backing Plate (4) - Install

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29. Select the proper backing plate retaining ring. **1-2-3-4-6-7-8-10-Reverse Clutch Backing Plate Retaining Ring Measurement**

NOTE: **Install the longer outside diameter side of the ring first.**

30. 1-2-3-4-6-7-8-10-Reverse Clutch Backing Plate Retaining Ring-Selective (5) - Install

31. 

2-3-4-5-7-9-10 Clutch Piston Seal - Outer (1) - Install NEW [2x]

32. 1-2-3-4-6-7-8-10-Reverse Clutch Piston Seal - Inner (2) - Install NEW

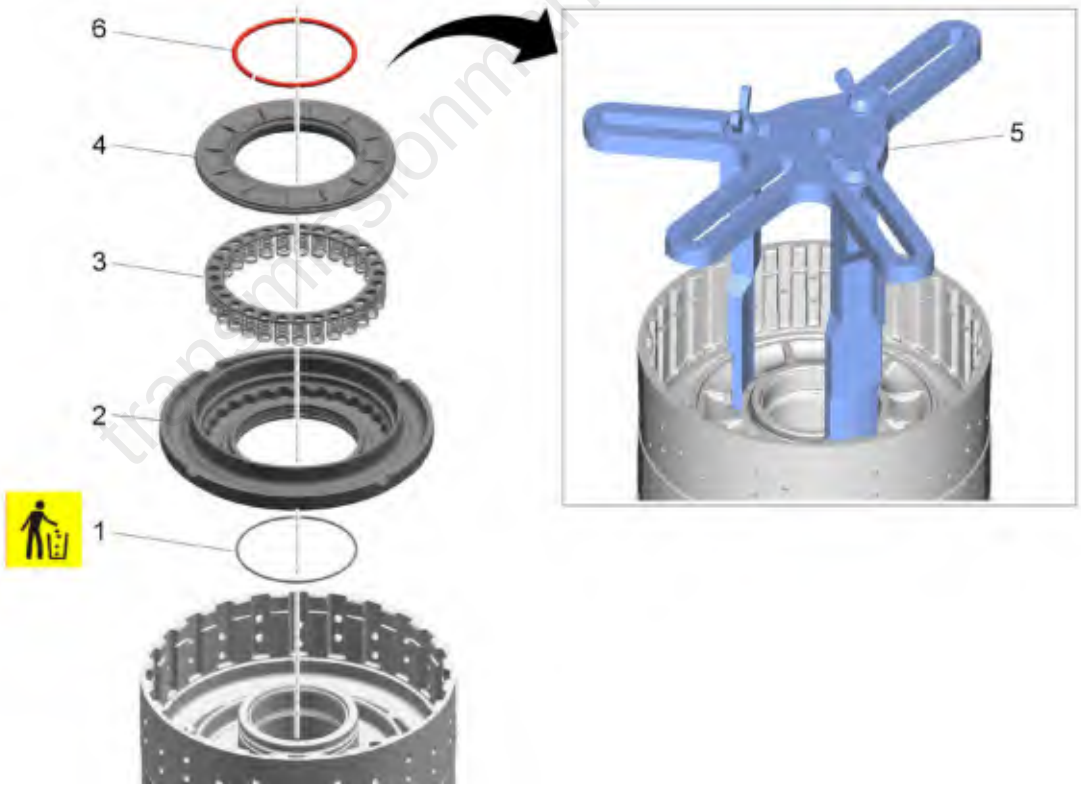
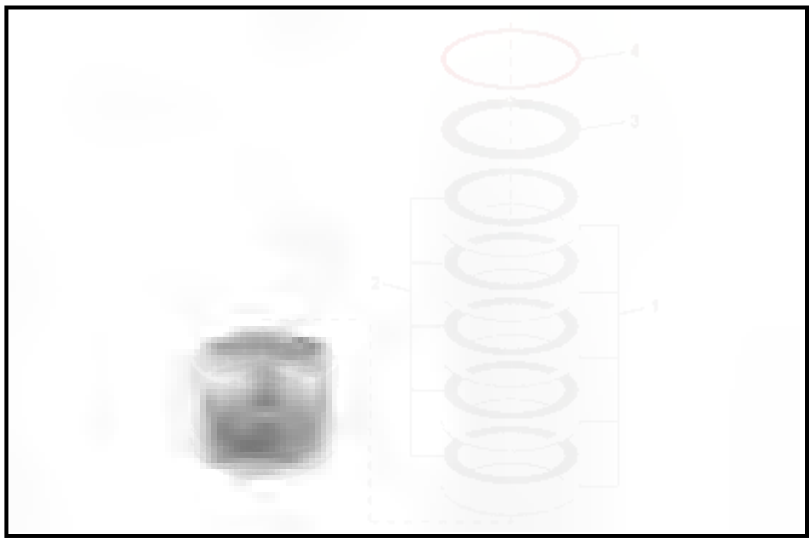
33. 

Fig. 9: Exploded View Of 2-3-4-5-7-9-10 Clutch Piston Components
Courtesy of GENERAL MOTORS COMPANY

2-3-4-5-7-9-10 Clutch Piston Dam Seal - Inner (1) - Install NEW

34. 2-3-4-5-7-9-10 Clutch Piston (2) - Install
35. 2-3-4-5-7-9-10 Clutch Piston Return Spring (3) - Install
36. 2-3-4-5-7-9-10 Clutch Piston Dam (4) - Install

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37. Using the **DT-51892** press tool (5) and an arbor press, compress the piston just enough to install the 2-3-4-5-7-9-10 Clutch Piston Dam Retaining Ring (6).
38. 2-3-4-5-7-9-10 Clutch Piston Dam Retaining Ring (6) - Install
39. 

    2-3-4-5-7-9-10 Steel Clutch Plate (1) - Install [5x]

40. 2-3-4-5-7-9-10 Fiber Clutch Plate (2) - Install [5x]
41. 2-3-4-5-7-9-10 Clutch Backing Plate (3) - Install
42. Select the proper 2-3-4-5-7-9-10 Clutch Backing Plate Retaining Ring. **2-3-4-5-7-9-10 Clutch Backing Plate Retaining Ring Measurement**
43. 2-3-4-5-7-9-10 Clutch Backing Plate Retaining Ring-Selective (4) - Install

2-3-4-5-7-9-10 CLUTCH BACKING PLATE RETAINING RING MEASUREMENT

Special Tools

DT-8001 Dial Indicator

Equivalent regional tools: **Special Tools**

1. 

    Using all of the clutch plates, set up the measurement as shown using **DT-8001** Dial Indicator (1).

2. 2-3-4-5-7-9-10 Clutch Backing Plate Retaining Ring (2) - Selective - Measure
3. Zero out the dial indicator, then lift the clutch plate stack upwards and record the measurement.
4. Repeat the measurement every 120 degrees from the measurement in step 3, completing 3 measurements.

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5. Find the average of these three measurements from step 3 and step 4. Record this as the clutch travel. Use this number to find the correct clutch backing plate. **Clutch Backing Plate Retaining Ring Specifications**

1-2-3-4-6-7-8-10-REVERSE CLUTCH BACKING PLATE RETAINING RING MEASUREMENT

Special Tools

DT-8001 Dial Indicator

Equivalent regional tools: **Special Tools**

1. 

   Using all of the clutch plates, set up the measurement as shown using **DT-8001** Dial Indicator (1).

2. 1-2-3-4-6-7-8-10-Reverse Clutch Backing Plate Retaining Ring (2) - Selective - Measure
3. Zero out the dial indicator, then lift the clutch plate stack upwards and record the measurement.
4. Repeat the measurement every 120 degrees from the measurement in step 3, completing 3 measurements.
5. Find the average of these three measurements from step 3 and step 4. Record this as the clutch travel. Use this number to find the correct clutch backing plate. **Clutch Backing Plate Retaining Ring Specifications**

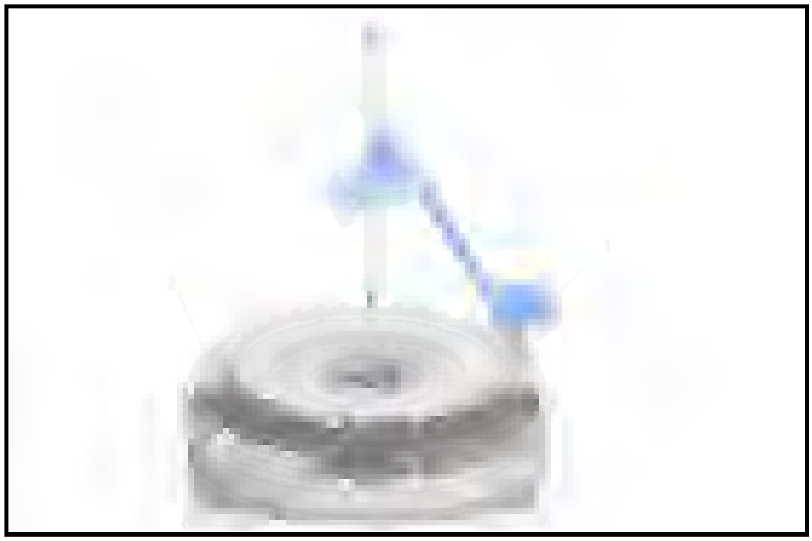
4-5-6-7-8-9-10-REVERSE CLUTCH BACKING PLATE RETAINING RING MEASUREMENT

Special Tools

DT-8001 Dial Indicator

Equivalent regional tools: **Special Tools**

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1. 

   Using all of the clutch plates, set up the measurement as shown using **DT-8001** Dial Indicator (1).

2. 4-5-6-7-8-9-10-Reverse Clutch Backing Plate Retaining Ring (2) - Selective - Measure
3. Zero out the dial indicator, then lift the clutch plate stack upwards and record the measurement.
4. Repeat the measurement every 120 degrees from the measurement in step 3, completing 3 measurements.
5. Find the average of these three measurements from step 3 and step 4. Record this as the clutch travel. Use this number to find the correct clutch backing plate. **Clutch Backing Plate Retaining Ring Specifications**

1-3-5-6-7-8-9 CLUTCH HUB AND OUTPUT SUN GEAR DISASSEMBLE

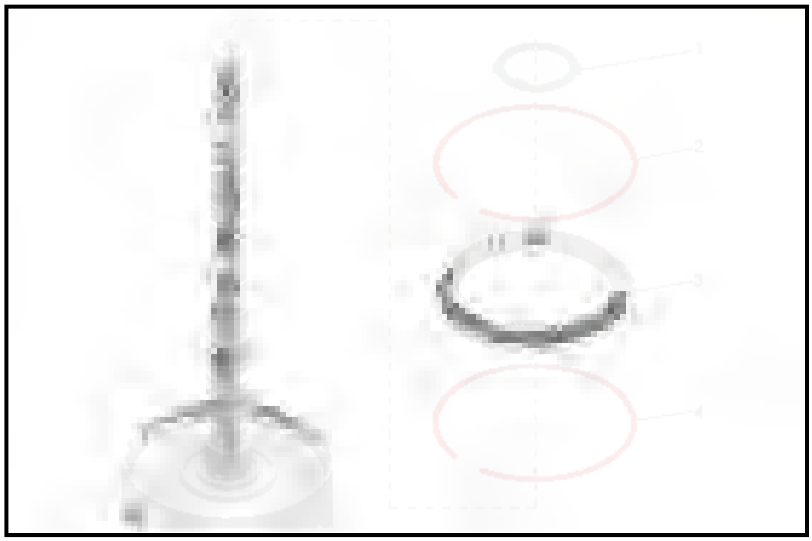
Single Use Fasteners and Components

- 1-3-5-6-7-8-9 Clutch Piston Dam Retaining Ring
- 1-3-5-6-7-8-9 Clutch Piston
- 1-3-5-6-7-8-9 Clutch Piston Dam Seal
- 1-3-5-6-7-8-9 Clutch Piston Dam Seal
- 1-3-5-6-7-8-9 Clutch Piston Seal

Special Tools

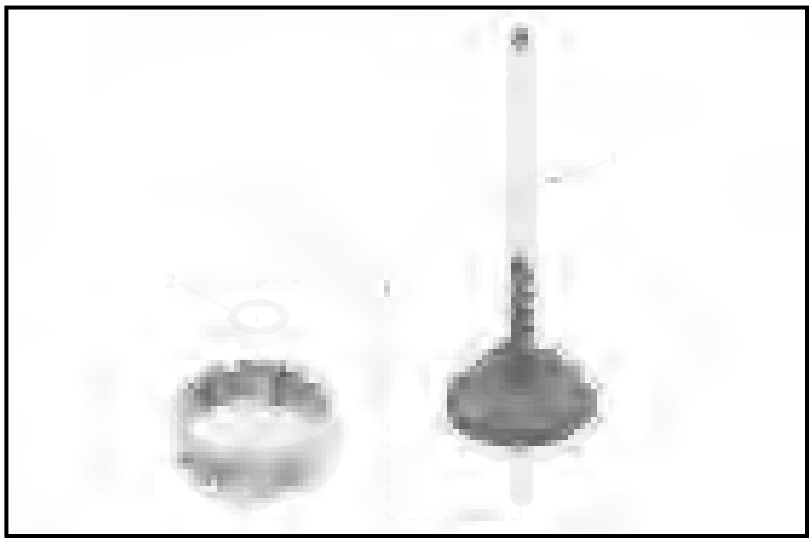
DT-51892 Press Tool

Equivalent regional tools: **Special Tools**

1. 

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Direct Overdrive Sun Gear Thrust Bearing (1) - Remove

2. Direct Overdrive Internal Gear Retaining Ring (2) - Remove
3. Direct Overdrive Internal Gear (3) - Remove
4. Direct Overdrive Internal Gear Retaining Ring (4) - Remove
5. 

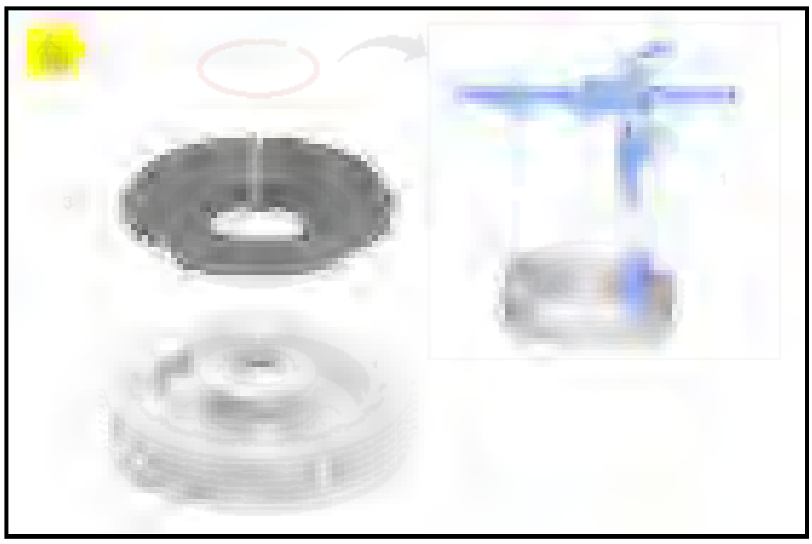
Turbine Shaft & 1-3-5-6-7-8-9 Clutch Assembly (1) - Remove

6. Output Sun Gear Thrust Bearing (2) - Remove
7. 

Turbine Shaft Retaining Ring (1) - Remove

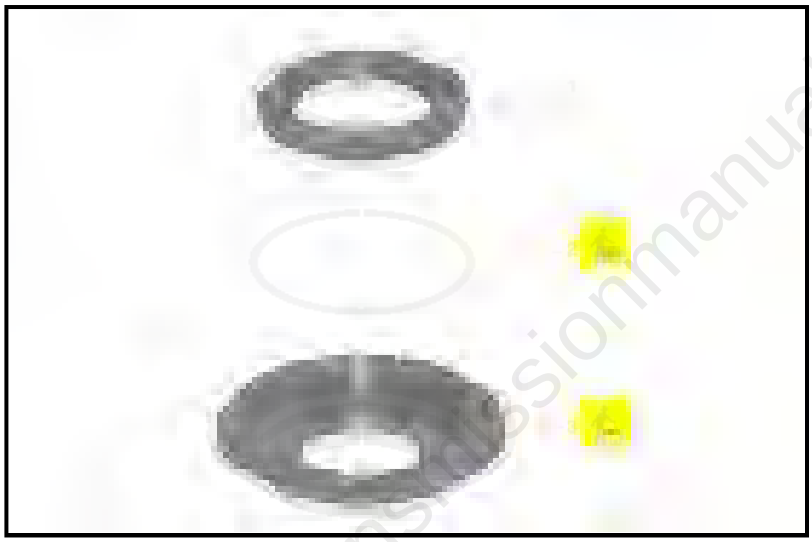
8. Turbine Shaft (2) - Remove

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9. 

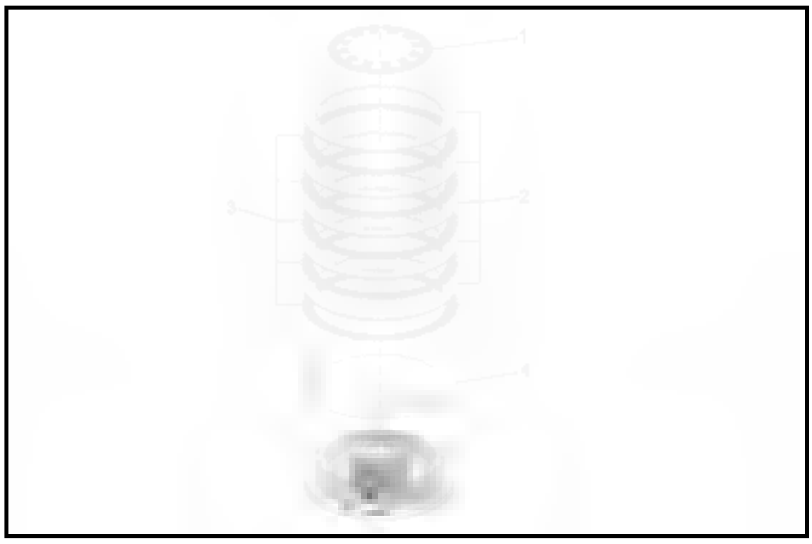
   Using the **DT-51892** Press Tool (1) and an arbor press, compress the piston just enough to remove the 1-3-5-6-7-8-9 Clutch Piston Dam Retaining Ring (2).

10. 1-3-5-6-7-8-9 Clutch Piston Dam Retaining Ring (2) - Remove and DISCARD
11. 1-3-5-6-7-8-9 Clutch Piston Dam & 1-3-5-6-7-8-9 Clutch Piston (3) - Remove

12. 

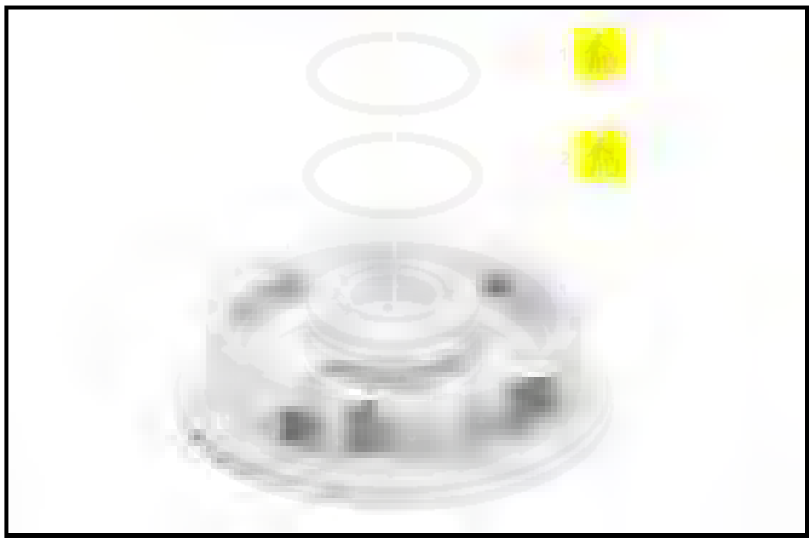
    1-3-5-6-7-8-9 Clutch Piston Dam (1) - Remove

13. 1-3-5-6-7-8-9 Clutch Piston Dam Seal (2) - Remove and DISCARD
14. 1-3-5-6-7-8-9 Clutch Piston (3) - Remove and DISCARD

15. 

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1-3-5-6-7-8-9 Clutch Piston Return Spring (1) - Remove

16. 1-3-5-6-7-8-9 Steel Clutch Plate (2) - Remove [5x]
17. 1-3-5-6-7-8-9 Fiber Clutch Plate (3) - Remove [5x]
18. 1-3-5-6-7-8-9 Clutch Backing Plate-Selective (4) - Remove
19. 

1-3-5-6-7-8-9 Clutch Piston Dam Seal (1) - Remove and DISCARD

20. 1-3-5-6-7-8-9 Clutch Piston Seal (2) - Remove and DISCARD

TURBINE SHAFT SEAL REMOVAL

Single Use Fasteners and Components

- Turbine Shaft Seal [5x]
- Turbine Shaft Seal [5x]
- Turbine Shaft Seal [3x]
- Turbine Shaft Seal

1. 

Turbine Shaft Seal (1) - Remove and DISCARD [5x]

2. Turbine Shaft Seal (2) - Remove and DISCARD [5x]
3. Turbine Shaft Seal (3) - Remove and DISCARD
4. Turbine Shaft Seal (4) - Remove and DISCARD [3x]

TURBINE SHAFT SEAL INSTALLATION

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Single Use Fasteners and Components

- Turbine Shaft Seal [5x]
- Turbine Shaft Seal [5x]
- Turbine Shaft Seal [3x]

Special Tools

- **DT-36850** Transjel Lubricant
- **DT-52701** Direct Overdrive Sun Gear Shaft Seal Installer and Sizer
- **DT-52702** Direct Overdrive Sun Gear Shaft Seal Installer and Sizer

Equivalent regional tools: **Special Tools**

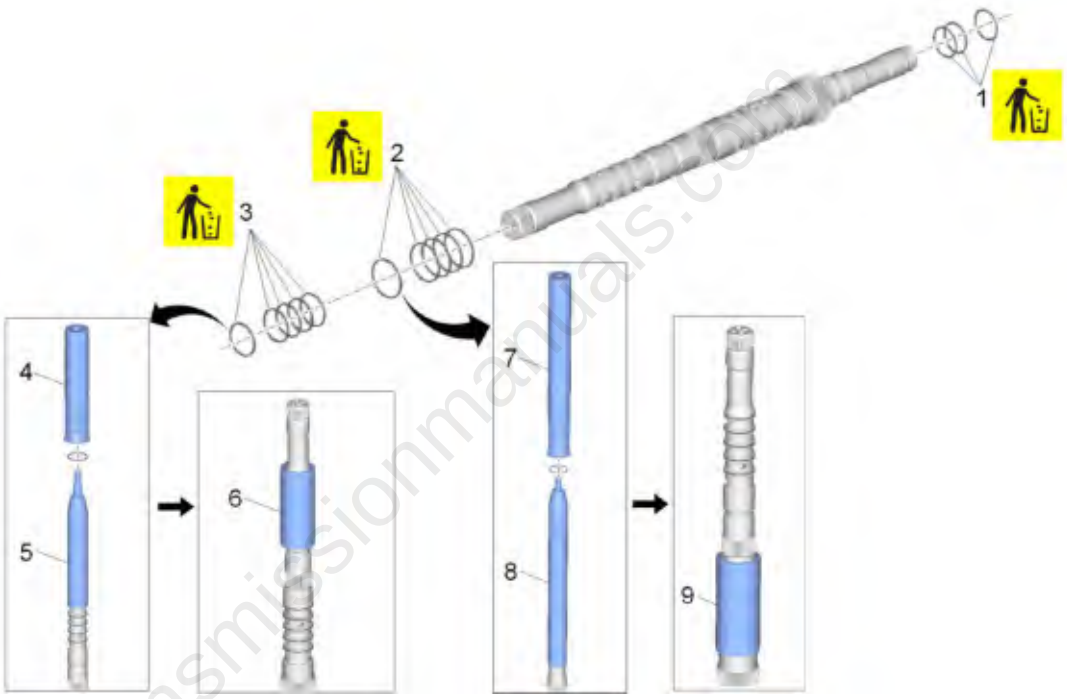
1. 

Fig. 10: Exploded View Of Turbine Shaft Seal Components
Courtesy of GENERAL MOTORS COMPANY

Turbine Shaft Seal (1) - Install NEW [3x]

2. Apply **DT-36850** Transjel Lubricant prior to installing seals.
3. When installing the seals, movement of the seal pushing tool should be one continuous movement down the shaft, and should not last more than 2 seconds to prevent overstretching of the seals.
4. Set the **DT-52701 - 1** seal installer (8) to the depth for each seal, then using **DT-52701 - 2** seal pusher (7), push the Turbine Shaft Seal into position.
5. Turbine Shaft Seal (2) - Install NEW [5x]

NOTE: **Seal robustness may be improved if the sizer is left on until the shaft is installed in the Triple Clutch Housing.**

6. After all seals have been installed, install the **DT-52701 - 3** seal sizer (9) over all of the seals as shown. Seal sizer should stay installed for at least 5 minutes before removed.
7. Apply **DT-36850** Transjel Lubricant prior to installing seals.

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8. When installing the seals, movement of the seal pushing tool should be one continuous movement down the shaft, and should not last more than 2 seconds to prevent overstretching of the seals.
9. Set the **DT-52702 - 1** seal installer (5) to the depth for each seal, then using **DT-52702 - 2** seal pusher (4) push the Turbine Shaft Seal into position.
10. Turbine Shaft Seal (3) - Install NEW [5x]

NOTE: **Seal robustness may be improved if the sizer is left on until the shaft is installed in the Triple Clutch Housing.**

11. After all seals have been installed, install the **DT-52702 - 3** seal sizer (6) over all of the seals as shown, Seal sizer should stay installed for at least 5 minutes before removed.

1-3-5-6-7-8-9 CLUTCH HUB AND OUTPUT SUN GEAR ASSEMBLE

Single Use Fasteners and Components

- 1-3-5-6-7-8-9 Clutch Piston Dam Retaining Ring
- 1-3-5-6-7-8-9 Clutch Piston
- 1-3-5-6-7-8-9 Clutch Piston Dam Seal
- 1-3-5-6-7-8-9 Clutch Piston Dam Seal
- 1-3-5-6-7-8-9 Clutch Piston Seal

Special Tools

DT-51892 Press Tool

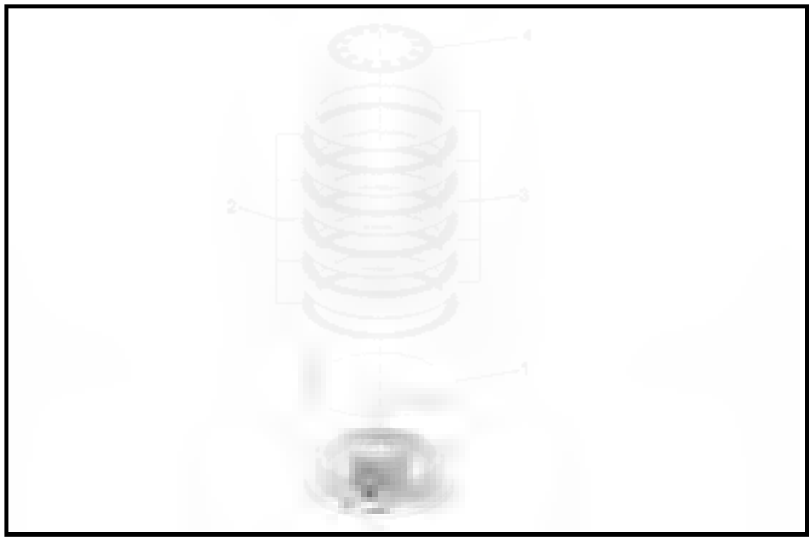
Equivalent regional tools: **Special Tools**

1. 

   1-3-5-6-7-8-9 Clutch Piston Seal (1) - Install NEW

2. 1-3-5-6-7-8-9 Clutch Piston Dam Seal (2) - Install NEW

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3. 

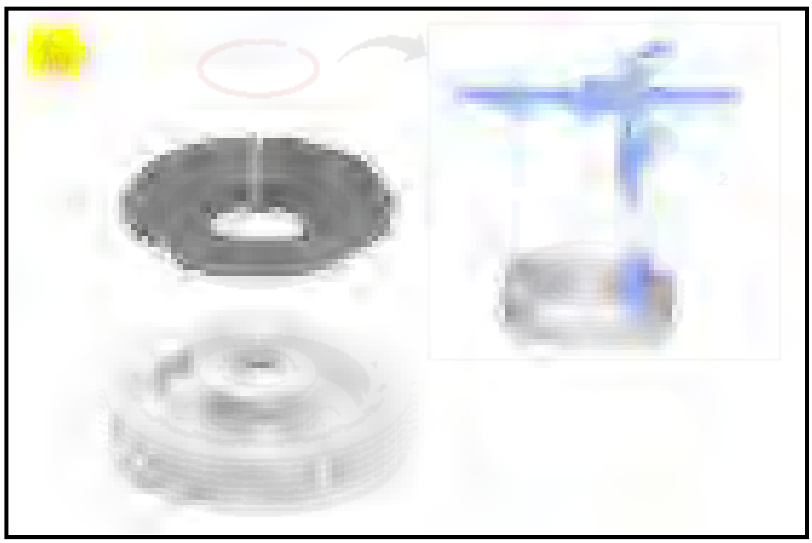
1-3-5-6-7-8-9 Clutch Backing Plate-Selective (1) - Install

4. 1-3-5-6-7-8-9 Fiber Clutch Plate (2) - Install [5x]
5. 1-3-5-6-7-8-9 Steel Clutch Plate (3) - Install [5x]
6. 1-3-5-6-7-8-9 Clutch Piston Return Spring (4) - Install

7. 

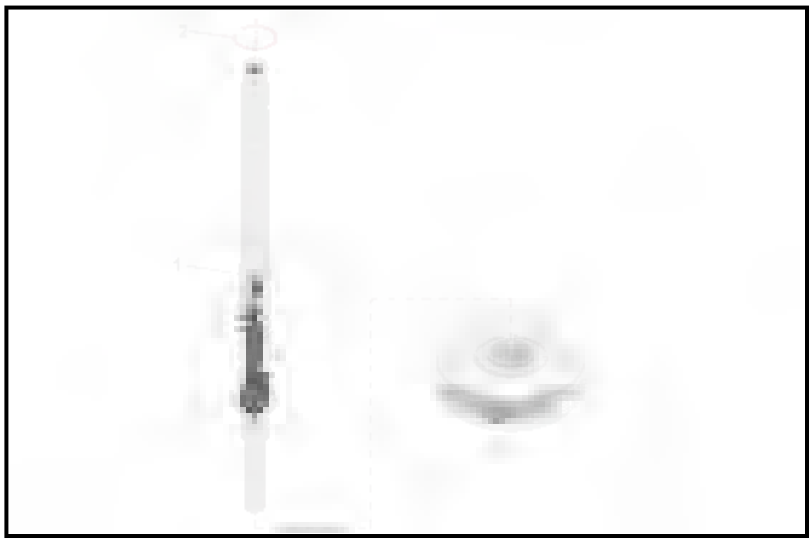
1-3-5-6-7-8-9 Clutch Piston Dam (1) - Install

8. 1-3-5-6-7-8-9 Clutch Piston Dam Seal (2) - Install NEW
9. 1-3-5-6-7-8-9 Clutch Piston (3) - Install NEW

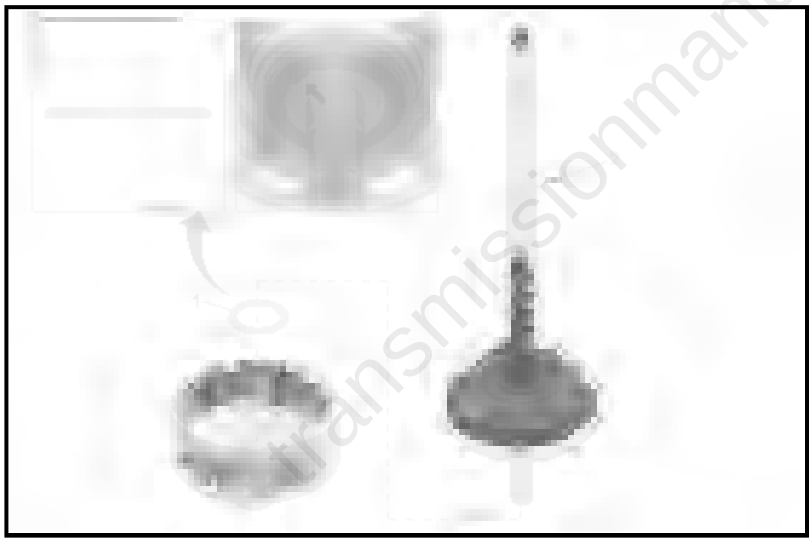
10. 

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1-3-5-6-7-8-9 Clutch Piston Dam & 1-3-5-6-7-8-9 Clutch Piston (1) - Install

11. Using the **DT-51892** Press Tool (2) and an arbor press, compress the piston just enough to install the 1-3-5-6-7-8-9 Clutch Piston Dam Retaining Ring (3).
12. 1-3-5-6-7-8-9 Clutch Piston Dam Retaining Ring (3) - Install NEW
13. Select the proper backing plate. **1-3-5-6-7-8-9 Clutch Backing Plate Measurement**
14. 

Turbine Shaft (1) - Install

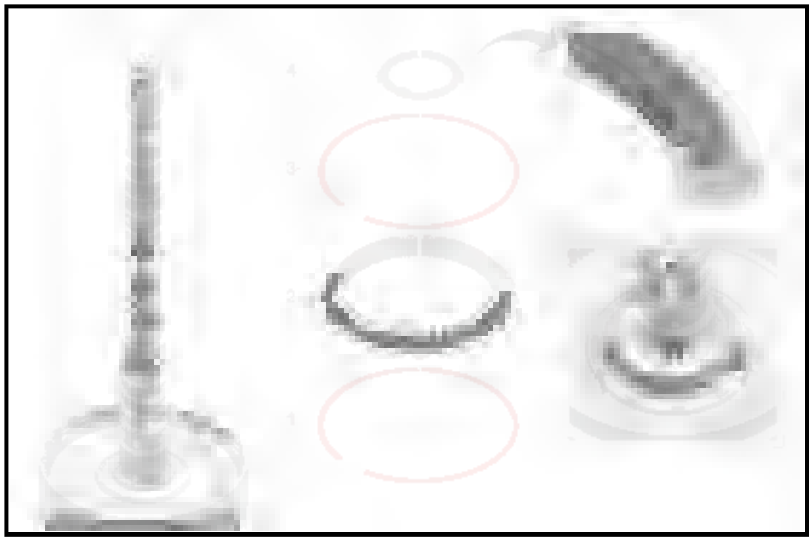
15. Turbine Shaft Retaining Ring (2) - Install
16. 

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

Output Sun Gear Thrust Bearing (1) - Install

17. Turbine Shaft & 1-3-5-6-7-8-9 Clutch Assembly (2) - Install

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18. 

    Direct Overdrive Internal Gear Retaining Ring (1) - Install

19. Direct Overdrive Internal Gear (2) - Install
20. Direct Overdrive Internal Gear Retaining Ring (3) - Install

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

21. Direct Overdrive Sun Gear Thrust Bearing (4) - Install

1-3-5-6-7-8-9 CLUTCH BACKING PLATE MEASUREMENT

Special Tools

DT-8001 Dial Indicator

Equivalent regional tools: **Special Tools**

1. 

    Using **DT-8001** Dial Indicator (1), set up the measurement as shown.

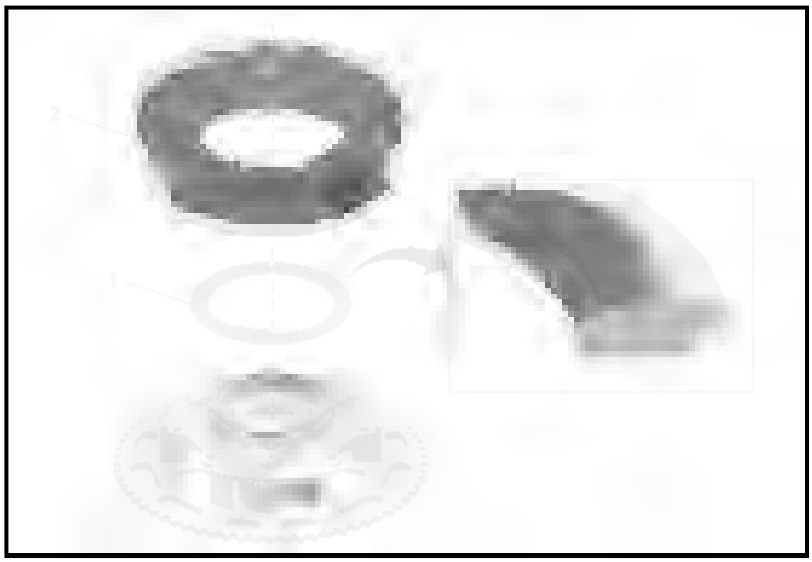
2. 1-3-5-6-7-8-9 Clutch Plate (2) - Selective - Measure
3. Zero out the **DT-8001** Dial Indicator (1), then lift the clutch plate stack upwards and record the measurement.
4. Repeat the measurement every 90 degrees from the measurement in step 3, completing 4 measurements.
5. Find the average of these four measurements from step 2 and step 3. Record this as the clutch travel. Use this number to find the correct clutch backing plate. **1-3-5-6-7-8-9 Clutch Backing Plate Specifications**

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ROTATING CLUTCH, GEAR, AND SHAFT SHELL ASSEMBLY ASSEMBLE

Single Use Fasteners and Components

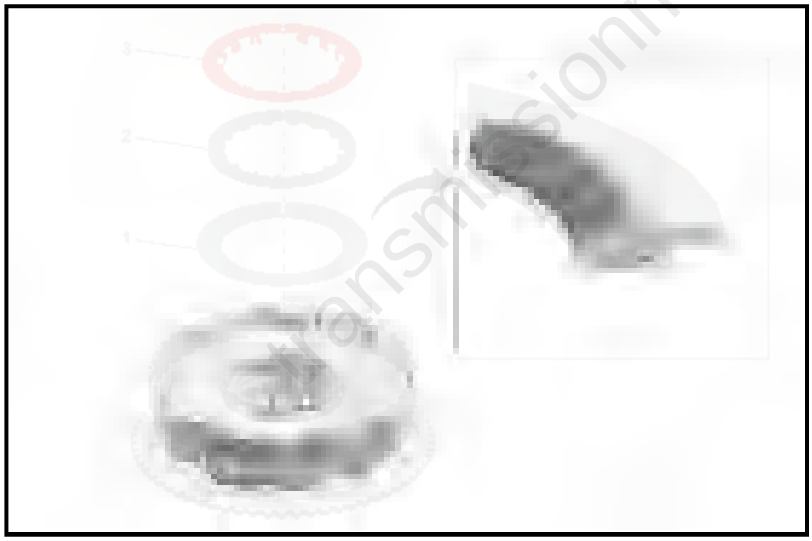
- Reaction Carrier Hub Retaining Ring
- Output Carrier Internal Gear Retaining Ring

1. 

NOTE: **Ensure proper bearing orientation.**

Reaction Internal Gear Thrust Bearing (1) - Install

2. Reaction Internal Gear (2) - Install

3. 

NOTE: **Ensure proper bearing orientation.**

Reaction Internal Gear Thrust Bearing (1) - Install

4. Reaction Internal Gear Spacer (2) - Install
5. Rotate the Reaction Internal Gear Spacer (2) counter clockwise to lock in position for Reaction Internal Gear Spacer Retainer (3).
6. Reaction Internal Gear Spacer Retainer (3) - Install

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7. 

Fig. 11: Exploded View Of Direct Overdrive Sun Gear Shaft And Input Carrier Assembly Components
Courtesy of GENERAL MOTORS COMPANY

Ensure triple clutch housing is over a hole in the table.

8. Remove the seal sizer from the Direct Overdrive Sun Gear Shaft (1) and ensure the seals are lubed before installing into the Triple Clutch Housing.
9. Direct Overdrive Sun Gear Shaft (1) - Install
10. Install onto the Input Carrier Assembly (3) with assembly gel for ease of installation and Input Sun Gear Thrust Bearing (2) centering.

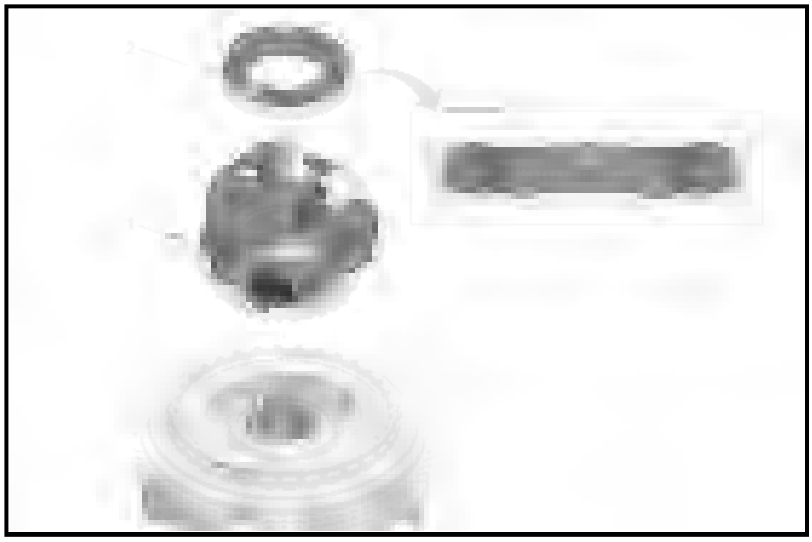
NOTE: **Ensure proper bearing orientation.**

11. Input Sun Gear Thrust Bearing (2) - Install
12. Input Carrier Assembly (3) - Install
13. Input Sun Gear (4) - Install

NOTE: **Install with the splined side downward.**

14. Reaction Sun Gear Assembly (5) - Install
15. Reaction Carrier (6) - Install

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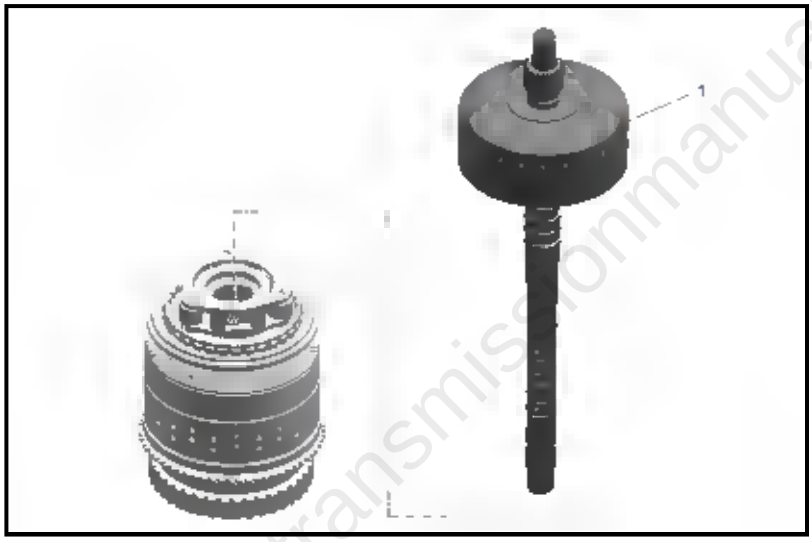
16. 

Flip the assembly over, then install the Direct Overdrive Carrier.

17. Direct Overdrive Carrier (1) - Install

NOTE: **Install gear with the flat side down.**

18. Direct Overdrive Sun Gear (2) - Install

19. 

Remove the seal sizers from the turbine shaft and ensure the seals are lubed before installing the Main Shaft (1).

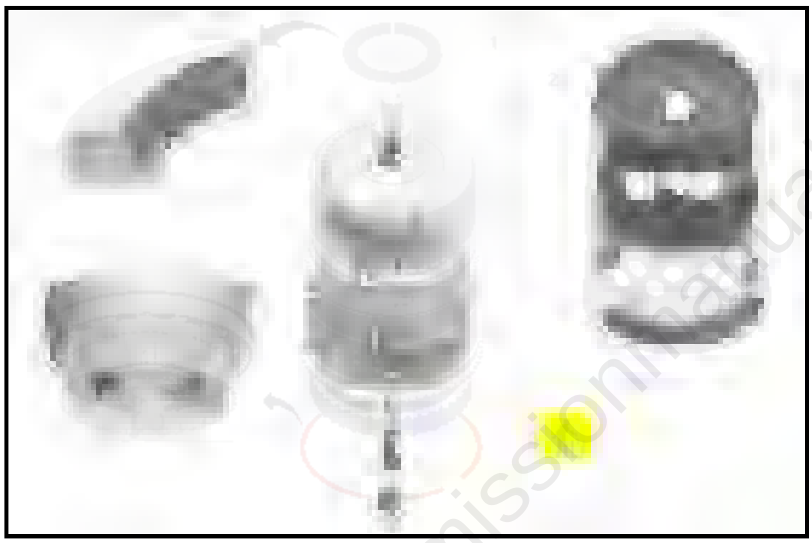
20. Main Shaft (1) - Install

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21. 

Output Carrier Internal Gear (1) - Install

22. Output Carrier Internal Gear Retaining Ring (2) - Install NEW

23. 

NOTE: **Ensure proper bearing orientation.**

Output Carrier Thrust Bearing Assembly (1) - Install

24. Output Carrier Internal Gear Transfer Shell (2) - Install

WARNING: **Ensure the reaction carrier hub retaining ring is fully seated before rotating the rotating clutch, gear, and shaft shell assembly. If the retaining ring is not fully seated, the assembly may separate as it is being rotated, which could result in component damage or bodily injury.**

25. Install the Reaction Carrier Hub Retaining Ring (3) from the bottom up, try to lift the shell upwards to ensure the ring is fully seated.
26. Reaction Carrier Hub Retaining Ring (3) - Install NEW
27. Rotate the assembly so the long shaft is pointing up, then ensure that the Reaction Carrier Hub Retaining Ring (3) is fully seated.

ROTATING CLUTCH, GEAR, AND SHAFT SHELL ASSEMBLY INSTALLATION

Single Use Fasteners and Components

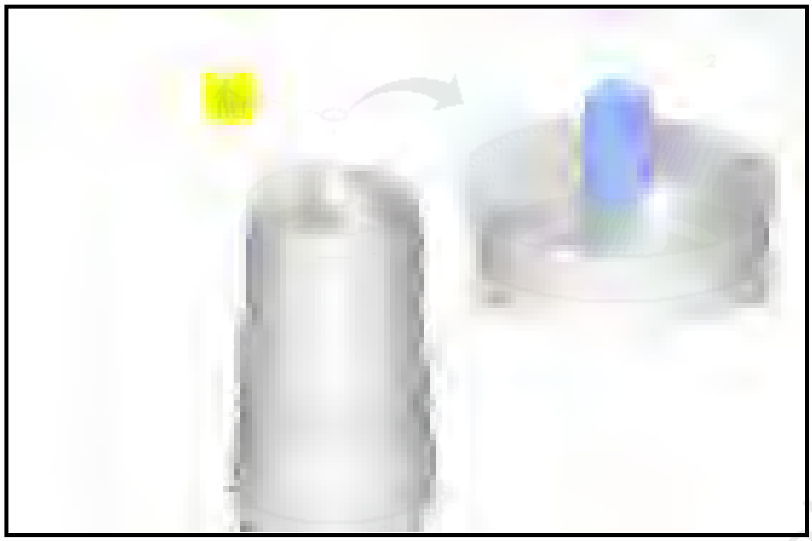
Turbine Shaft Seal

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Special Tools

- **DT-36850** Transjel Lubricant
- **DT-45053** Universal Clamp Press
- **DT-52090** Lifting Bar
- **DT-52699** Turbine Shaft Seal Sizer

Equivalent regional tools: **Special Tools**

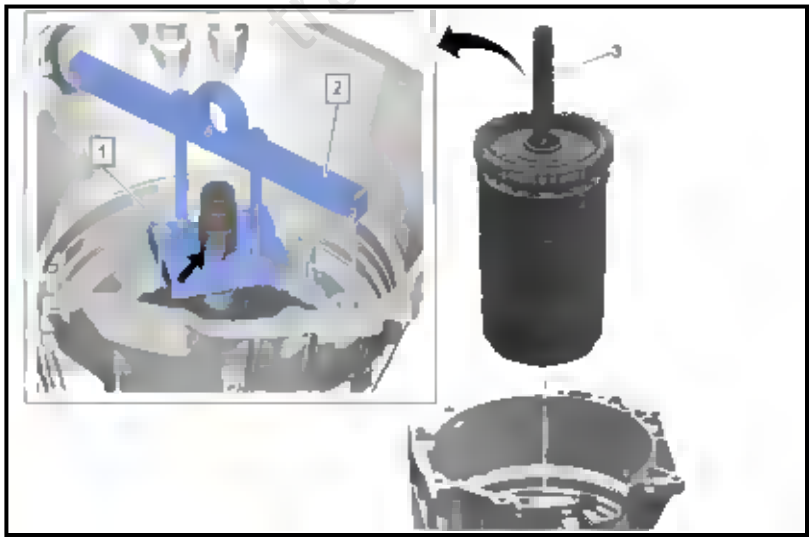
1. 

   Flip assembly over so the long shaft is pointing downward.

2. Apply **DT-36850** Transjel Lubricant to the Turbine Shaft Seal and then install the Turbine Shaft Seal (1) by hand slowly. Ensure the seal is not rolled upon installation.
3. Turbine Shaft Seal (1) - Install NEW

   NOTE: **Seal robustness may be improved if the sizer is left on until the shaft is installed in the Triple Clutch Housing.**

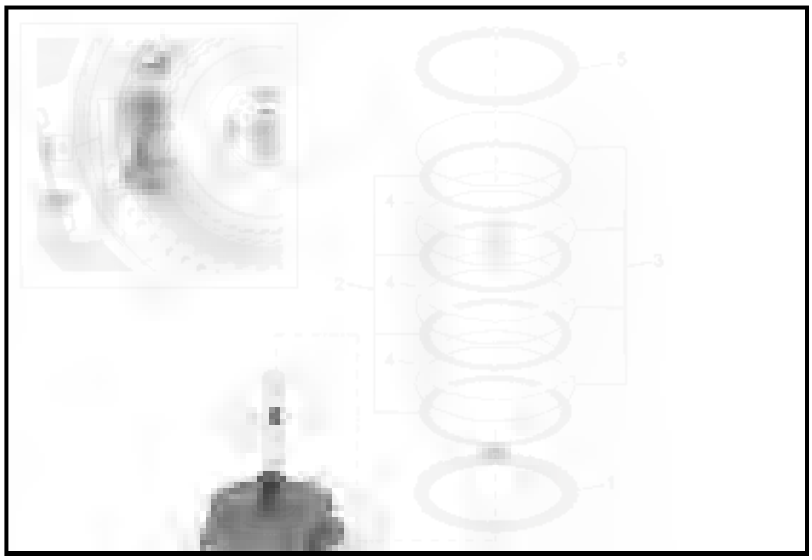
4. Install the **DT-52699** Turbine Shaft Seal Sizer (2) over the end of the turbine shaft and Turbine Shaft Seal (1). The **DT-52699** Turbine Shaft Seal Sizer (2) should stay installed for at least 5 minutes before removal.

5. 

   Ensure the park pawl is engaged.

6. Ensure that the **DT-45053** Universal Clamp Press (1) is under the boss on the input shaft shown by arrow.
7. Attach **DT-52090** Lifting Bar (2) to **DT-45053** Universal Clamp Press (1).

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8. Use a hoist or chainfall to install Rotating Clutch, Gear, and Shaft Shell (3) into case.
9. Rotating Clutch, Gear, and Shaft Shell (3) - Install
10. Rotate the turbine shaft clockwise until it drops and seats into the output carrier.
11. Once installed, the top speed sensor hole should show the reluctor wheel through it.
12. 

NOTE: **Notches on plates must be aligned between gap in bottom side of the case (a).**

1-2-3-4-5-6-Reverse Clutch Backing Plate (1) - Install

13. 1-2-3-4-5-6-Reverse Clutch Friction Plate (2) - Install [4x]
14. 1-2-3-4-5-6-Reverse Clutch Piston Return Spring (3) - Install [4x]

NOTE: **Notches on plates must be aligned between gap in case (a).**

15. 1-2-3-4-5-6-Reverse Clutch Steel Plate (4) - Install

[3x]

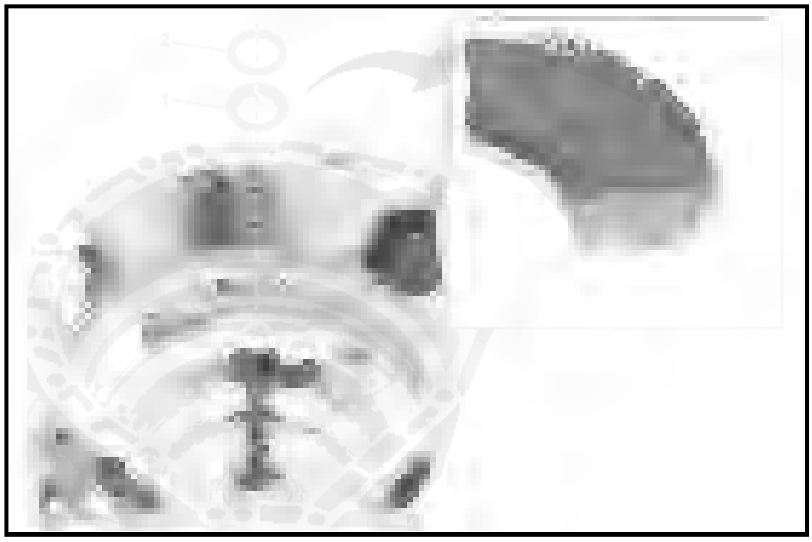
16. Select the correct 1-2-3-4-5-6-Reverse Clutch Apply Plate (5). **1-2-3-4-5-6-Reverse Clutch Apply Plate Measurement**

NOTE:

- **Notches on plates must be aligned between gap in case (a).**
- **This is the thickest flat steel plate in this clutch.**

17. 1-2-3-4-5-6-Reverse Clutch Apply Plate-Selective (5) - Install

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18. 

NOTE: **Ensure proper bearing orientation.**

Reaction Sun Gear Thrust Bearing (1) Install

19. Select the correct Transmission Case Washer (2). **Front End Play Check**
20. Transmission Case Washer (2) - Install

FRONT END PLAY CHECK

Special Tools

DT-52697 Clearance Gage Plate

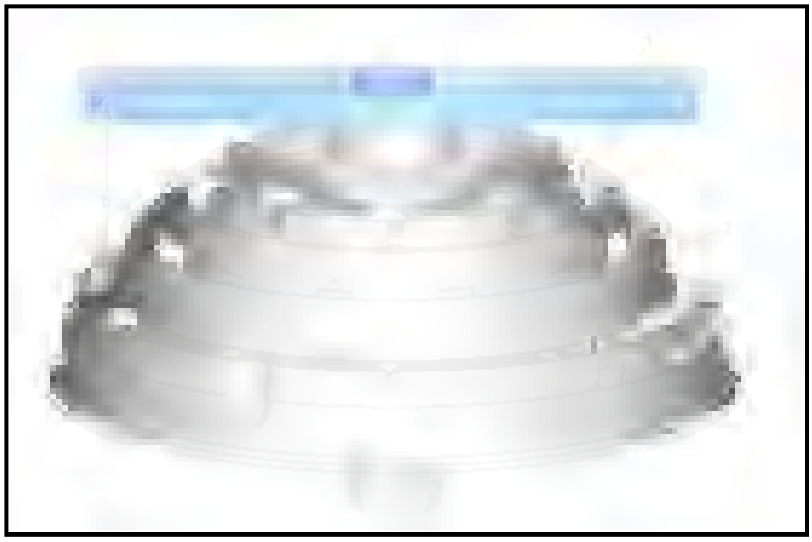
Equivalent regional tools: **Special Tools**

1. 

Using **DT-52697** Clearance Gage Plate (1), set up the measurement as shown.

2. Reaction Sun Gear Thrust Bearing (2) - Measure
3. Measure from the top of the Reaction Sun Gear Thrust Bearing (2) to the top of the **DT-52697** Clearance Gage Plate (1) as shown and record the measurement.
4. Repeat the measurement 180 degrees from the measurement in step 3.
5. Find the average of these two measurements from step 3 and step 4. Record this as dimension A.

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6. 

   Using **DT-52697** Clearance Gage Plate (1), set up the measurement as shown.

7. Stator Shaft Support (2) - Measure
8. Measure from the case mating surface to the top of the **DT-52697** Clearance Gage Plate (1) as shown and record the measurement.
9. Repeat the measurement 180 degrees from the measurement in step 8.
10. Find the average of these two measurements from step 8 and step 9. Record this as dimension B.
11. Subtract dimension B from dimension A to determine the correct Transmission Case Washer.
    Transmission Case Washer Specifications

1-2-3-4-5-6-REVERSE CLUTCH APPLY PLATE MEASUREMENT

Special Tools

DT-52697 Clearance Gage Plate

Equivalent regional tools: **Special Tools**

1. 

   Using **DT-52697** Clearance Gage Plate (1), set up the measurement as shown.

2. 1-2-3-4-5-6-Reverse Clutch Apply Plate (2) - Measure
3. Measure from the top of the 1-2-3-4-5-6-Reverse Clutch Apply Plate (2) to the top of the **DT-52697** Clearance Gage Plate (1) as shown and record the measurement.
4. Repeat the measurement 180 degrees from the measurement in step 3.
5. Find the average of these two measurements from step 3 and step 4. Record this as dimension A.

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6. 

   Using **DT-52697** Clearance Gage Plate (1), set up the measurement as shown.

7. 1-2-3-4-5-6-Reverse Clutch Piston Return Spring (2) - Measure
8. Zero to the 1-2-3-4-5-6-Reverse Clutch Piston Return Spring (2), then Measure to the case mating surface to the top of the **DT-52697** Clearance Gage Plate (1) as shown and record the measurement.
9. Repeat the measurement 180 degrees from the measurement in step 8.
10. Find the average of these two measurements from step 8 and step 9. Record this as dimension B.
11. Subtract dimension B from dimension A to determine the dimension C.
12. Subtract 1.211 from the dimension C to determine the clutch pack travel specification. **1-2-3-4-5-6-Reverse Clutch Apply Plate Specifications**

AUTOMATIC TRANSMISSION CASE FRONT COVER DISASSEMBLE

Single Use Fasteners and Components

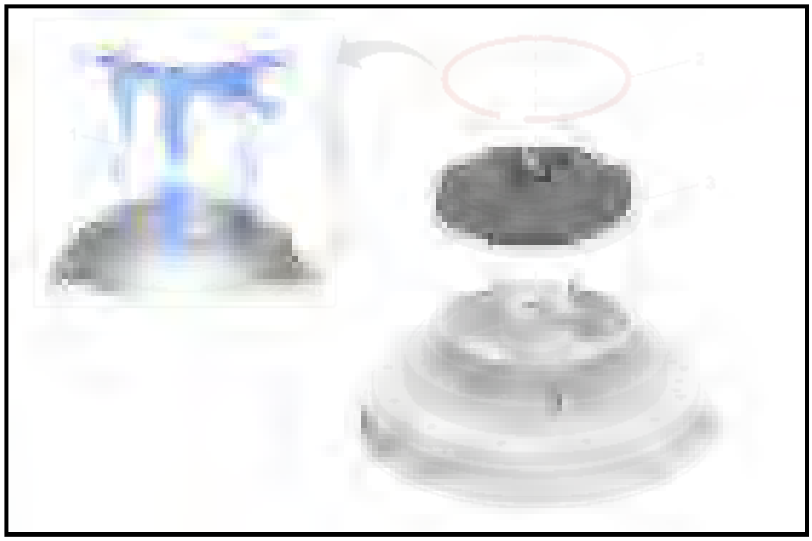
- 1-2-3-4-5-6 Clutch Piston Seal - Inner
- 1-2-3-4-5-6 Clutch Piston Seal - Outer
- 1-2-8-9-10-Reverse Clutch Piston
- Automatic Transmission Case Front Cover
- Stator Shaft Support Seal
- Torque Converter Fluid Seal

Special Tools

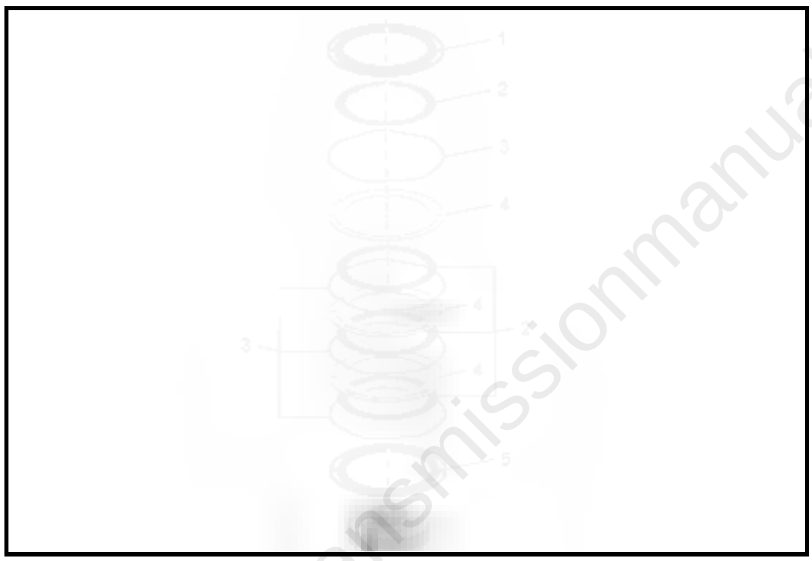
- **DT-51892** Press Tool
- **DT-52698** Press Ring

Equivalent regional tools: **Special Tools**

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1. 

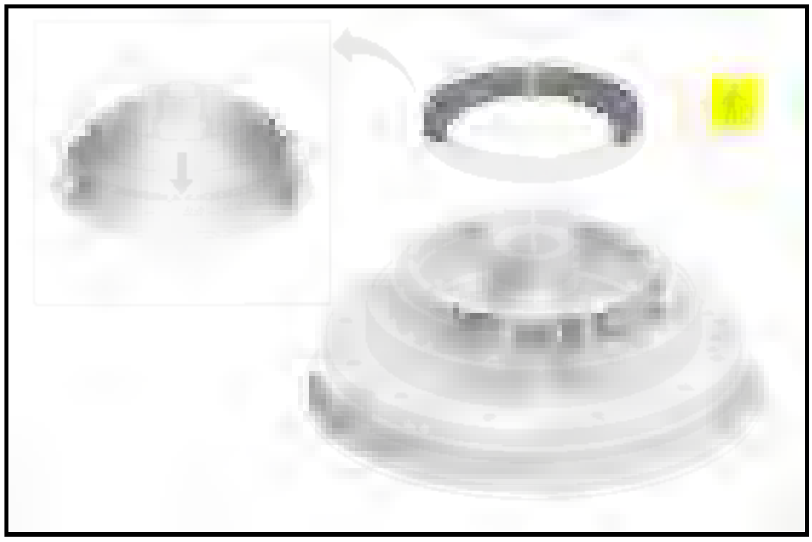
   Using the **DT-51892** Press Tool (1) with an arbor press, compress the piston just enough to remove the 1-2-8-9-10-Reverse Clutch Backing Plate Retaining Ring (2).

2. 1-2-8-9-10-Reverse Clutch Backing Plate Retaining Ring-Selective (2) - Remove
3. Low Clutch Roller & 1-2-8-9-10-Reverse Clutch (3) - Remove
4. 

   1-2-8-9-10-Reverse Clutch Backing Plate (1) - Remove

5. 1-2-8-9-10-Reverse Fiber Clutch Plate (2) - Remove [4x]
6. 1-2-8-9-10-Reverse Clutch Piston Return Spring (3) - Remove [4x]
7. 1-2-8-9-10-Reverse Steel Clutch Plate (4) - Remove [3x]
8. 1-2-8-9-10-Reverse Clutch Apply Plate (5) - Remove

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9. 

   Apply compressed air to hole shown by arrow to remove the 1-2-8-9-10-Reverse Clutch Piston (1).

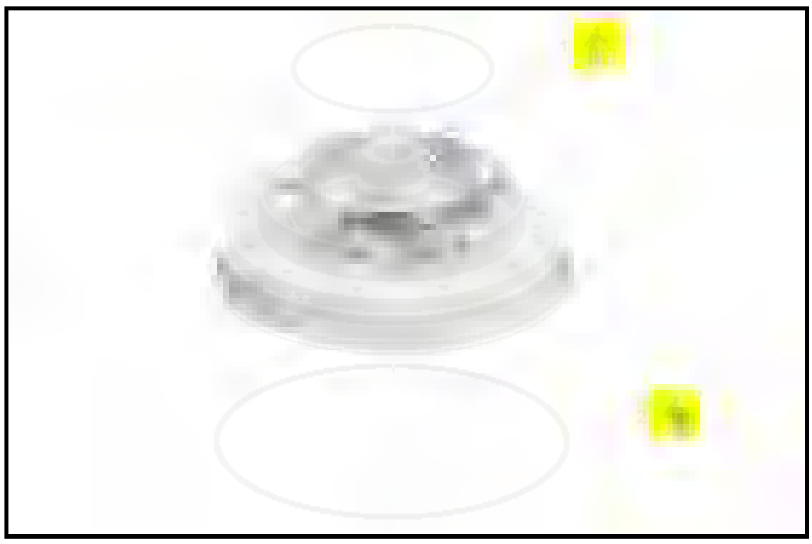
10. 1-2-8-9-10-Reverse Clutch Piston (1) - Remove and DISCARD

11. 

    Using the **DT-51892** Press Tool (2) and the **DT-52698** Press Ring (1) with an arbor press. Compress the piston just enough to remove the 1-2-3-4-5-6 Clutch Spring Retaining Ring (3).

12. 1-2-3-4-5-6 Clutch Spring Retaining Ring (3) - Remove
13. 1-2-3-4-5-6 Clutch Piston Return Spring (4) - Remove
14. Apply compressed air to hole shown by arrow to remove the clutch piston.
15. 1-2-3-4-5-6 Clutch Piston (5) - Remove

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16. 

    1-2-3-4-5-6 Clutch Piston Seal - Inner (1) - Remove and DISCARD

17. Stator Shaft Support Seal (2) - Remove and DISCARD

18. 

    1-2-3-4-5-6 Clutch Piston Seal - Outer (1) - Remove and DISCARD

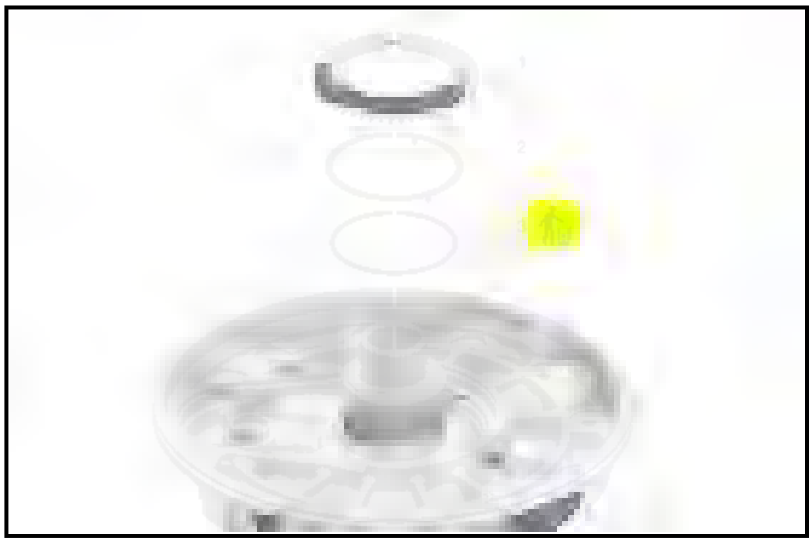
19. 

    Automatic Transmission Case Cover Retaining Ring (1) - Remove

20. Automatic Transmission Case Front Cover Bolt (2) - Remove
21. Use a large pair of channel locks to remove the Automatic Transmission Case Front Cover (3). Use the channel locks to grab onto the cover at the round torque converter seal outer area.

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NOTE: **Do NOT pry with a screwdriver around the sealing area of the front cover.**

22. Automatic Transmission Case Front Cover (3) - Remove and DISCARD
23. 

    Automatic Transmission Fluid Pump Drive Gear (1) - Remove
24. Center Support Thrust Washer (2) - Remove
25. Torque Converter Fluid Seal (3) - Remove and DISCARD

AUTOMATIC TRANSMISSION CASE FRONT COVER ASSEMBLE

Single Use Fasteners and Components

- 1-2-3-4-5-6 Clutch Piston Seal - Inner
- 1-2-3-4-5-6 Clutch Piston Seal - Outer
- 1-2-8-9-10-Reverse Clutch Piston
- Automatic Transmission Case Front Cover
- Stator Shaft Support Seal
- Torque Converter Fluid Seal

Special Tools

- **DT-36850** Transjel Lubricant
- **DT-51892** Press Tool
- **DT-52696** Clutch Roller Alignment Tool
- **DT-52698** Press Ring
- **DT-52704** Stator Shaft Seal Sizer

Equivalent regional tools: **Special Tools**

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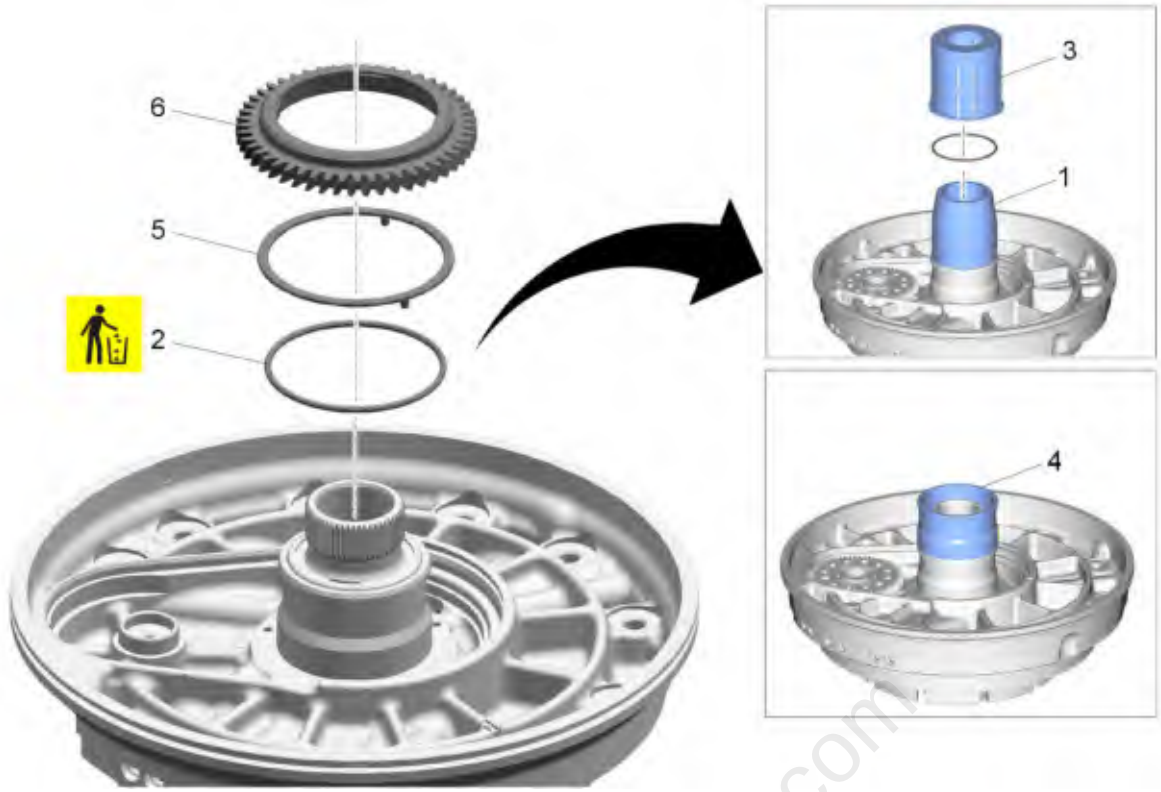
1. 

Fig. 12: Exploded View Of Torque Converter Fluid Seal Components
Courtesy of GENERAL MOTORS COMPANY

Apply **DT-36850** Transjel Lubricant prior to installing the Torque Converter Fluid Seal (2). When installing the Torque Converter Fluid Seal (2), movement of the seal pushing tool should be one continuous movement down the shaft, and should not last more than 2 seconds to prevent overstretching of the seal.

2. Set the **DT-52704-3** seal installer (1) onto the front support, then using the **DT-52704-2** seal installer (3) push the Torque Converter Fluid Seal (2) into position.
3. Torque Converter Fluid Seal (2) - Install NEW
4. After the Torque Converter Fluid Seal (2) has been installed, install the **DT-52704-1** seal sizer (4) over the Torque Converter Fluid Seal (2). The **DT-52704-1** seal sizer (4) should stay installed for at least 5 minutes, however, it can remain installed until the torque converter installation. Remove it prior to torque converter installation.
5. Center Support Thrust Washer (5) - Install

   NOTE: Install with the flat side down.

6. Automatic Transmission Fluid Pump Drive Gear (6) - Install

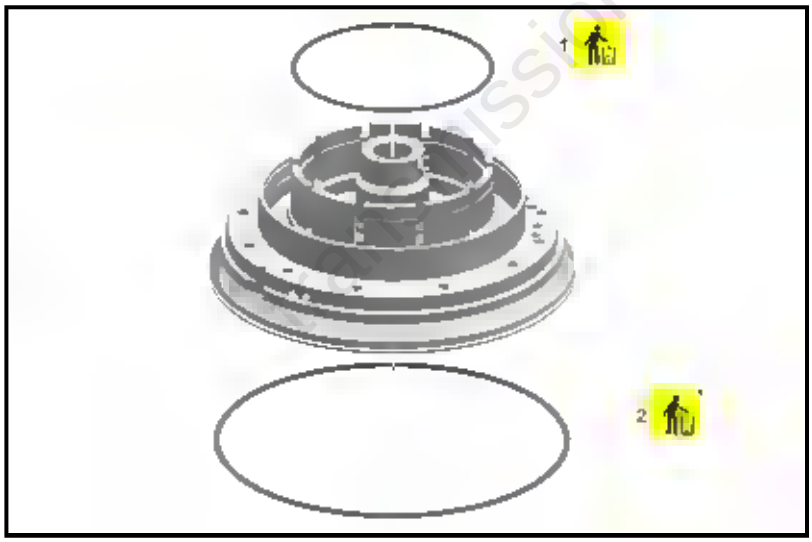
7. 

   Apply **DT-36850** Transjel Lubricant to the outer sealing area of the cover prior to installation.

   NOTE: **Press hard to install, may need to use a rubber or plastic hammer to seat before installing retaining ring.**

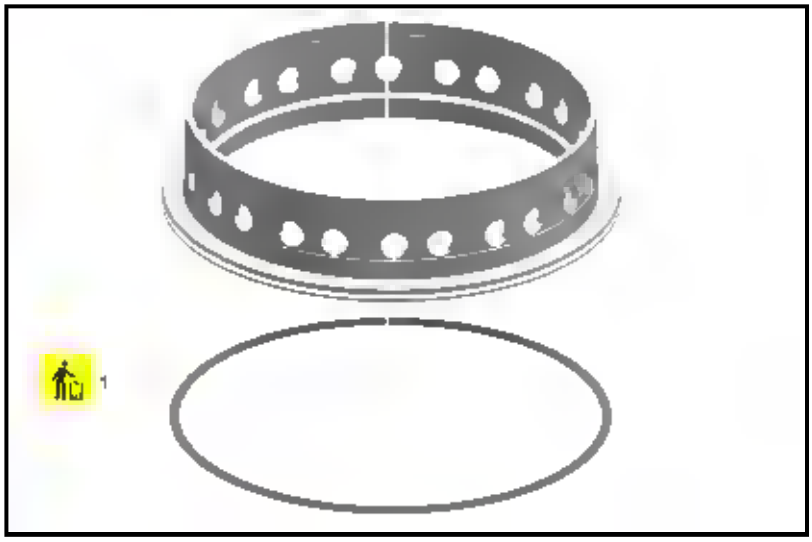
8. Automatic Transmission Case Front Cover (1) - Install NEW
9. The Automatic Transmission Case Front Cover (1) must be fully seated and flush with the casting around it before installing the Automatic Transmission Case Front Cover Bolt (2).

   CAUTION: **Refer to Fastener Caution .**

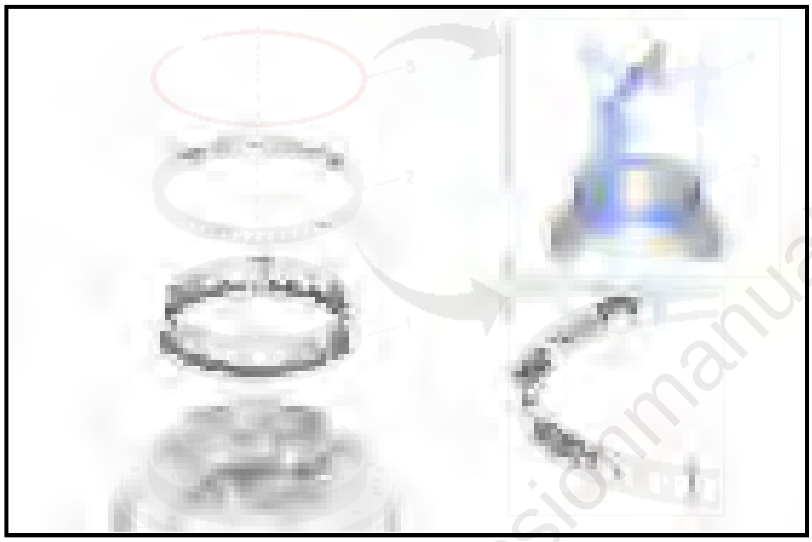
10. Automatic Transmission Case Front Cover Bolt (3) - Install and tighten - **Fastener Specifications**
11. Automatic Transmission Case Cover Retaining Ring (2) - Install
12. 

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

13. Stator Shaft Support Seal (2) - Install NEW

14. 

1-2-3-4-5-6 Clutch Piston Seal - Outer (1) - Install NEW

15. 

1-2-3-4-5-6 Clutch Piston (1) - Install

NOTE: **Install with the retaining ring tabs up as shown.**

16. 1-2-3-4-5-6 Clutch Piston Return Spring (2) - Install
17. Using the **DT-51892** Press Tool (4) and the **DT-52698** Press Ring (3) with an arbor press, compress the 1-2-3-4-5-6 Clutch Piston Return Spring (2) just enough to install the 1-2-3-4-5-6 Clutch Spring Retaining Ring (5).

NOTE: **Ensure the open end of the ring is not located at one of the retaining tab features of return spring.**

18. 1-2-3-4-5-6 Clutch Spring Retaining Ring (5) - Install

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19. 

1-2-8-9-10-Reverse Clutch Piston (1) - Install

20. 

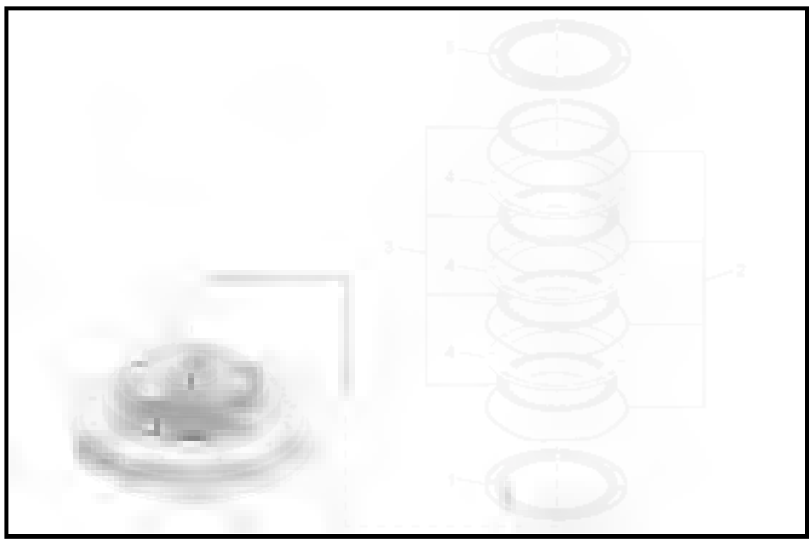
Install the **DT-52696** Clutch Roller Alignment Tool (1).

NOTE: **Do NOT apply downward pressure while spinning the low clutch roller to seat it.**

21.

22. Install the Low Clutch Roller (2) over the **DT-52696** Clutch Roller Alignment Tool (1) and rotate counter clockwise as shown until the Low Clutch Roller (2) drops into place. The Low Clutch Roller (2) should only spin counter clockwise once installed, it is a one way clutch component.

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23. 

NOTE: **This is the thickest clutch plate in this assembly.**

1-2-8-9-10-Reverse Clutch Apply Plate (1) - Install

24. 1-2-8-9-10-Reverse Clutch Piston Return Spring (2) - Install [4x]

NOTE: **Ensure the top fiber plate is aligned with the low clutch roller grooves before installing the backing plate retaining ring.**

25. 1-2-8-9-10-Reverse Fiber Clutch Plate (3) - Install [4x]
26. 1-2-8-9-10-Reverse Steel Clutch Plate (4) - Install [3x]

NOTE: **Install flat side down, the half moon side should face up.**

27. 1-2-8-9-10-Reverse Clutch Backing Plate (5) - Install

28. 

Select the proper 1-2-8-9-10-Reverse Clutch Backing Plate Retaining Ring (2). **1-2-8-9-10-Reverse Clutch Backing Plate Retaining Ring Measurement**

29. Using the **DT-51892** Press Tool (1) with an arbor press, compress the piston just enough to install the 1-2-8-9-10-Reverse Clutch Backing Plate Retaining Ring (2).

NOTE:

- **Ensure the retaining ring flat side facing up.**
- **Ensure the open end of the ring is not located at one of the half moon locations of the backing plate as shown by arrow.**

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30. 1-2-8-9-10-Reverse Clutch Backing Plate Retaining Ring-Selective (2) - Install

1-2-8-9-10-REVERSE CLUTCH BACKING PLATE RETAINING RING MEASUREMENT

Special Tools

GE-8001 Dial Indicator

Equivalent regional tools: **Special Tools**

1. 

   1-2-8-9-10-Reverse Clutch Backing Plate Retaining Ring-Selective (1) - Measure

2. Use all of the clutch plates except the clutch plate return springs. Using **GE-8001** Dial Indicator (2), set up the measurement as shown.

   NOTE: **Take readings 3 inches away from snap ring ends to ensure accurate readings.**

3. Zero out the **GE-8001** Dial Indicator (2), then lift the clutch plate stack upwards and record the measurement.
4. Repeat the measurement every 120 degrees from the measurement in step 3, completing 4 measurements.
5. Find the average of these three measurements from step 3 and step 4. Record this as the clutch travel. Use this number to find the correct 1-2-8-9-10-Reverse Clutch Backing Plate Retaining Ring (1). **Clutch Backing Plate Retaining Ring Specifications**

AUTOMATIC TRANSMISSION CASE FRONT COVER INSTALLATION

CAUTION: **The automatic transmission fluid pump MUST be removed before installing the automatic transmission case front cover. Failure to do so may result in damage to the fluid pump driven gear and case front cover idler gear**

Single Use Fasteners and Components

Input Shaft Support Bolt [12x]

Special Tools

- **DT-36850** Transjel Lubricant
- **DT-45053** Universal Clamp Press

Equivalent regional tools: **Special Tools**

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1. 

   Apply DT-36850 Transjel Lubricant onto the stator shaft support seal for ease of installation. Do not force the support into place.

2. Take the transmission out of park.
3. Install **DT-45053** Universal Clamp Press (1) to the Automatic Transmission Case Cover (2).
4. Automatic Transmission Case Cover (2) - Install
5. Rotate the input shaft back and forth to engage the reaction carrier assembly to the low clutch roller.

CAUTION: **Refer to Fastener Caution**

6. Input Shaft Support Bolt (3) - Install NEW and hand tighten [12x]
7. Input Shaft Support Bolt (3) - Tighten in sequence - **Fastener Specifications**

AUTOMATIC TRANSMISSION FLUID PUMP DRIVEN GEAR REMOVAL

Single Use Fasteners and Components

Automatic Transmission Fluid Pump Drive Shaft Retaining Ring

1. 

NOTE: **Unsnap the automatic transmission fluid pump driven gear baffle.**

Automatic Transmission Fluid Pump Driven Gear Baffle - Shroud (1) - Remove

2. Automatic Transmission Fluid Pump Drive Shaft Retaining Ring (2) - Remove and DISCARD
3. Automatic Transmission Fluid Pump Driven Gear (3) - Remove

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AUTOMATIC TRANSMISSION FLUID PUMP DRIVEN GEAR INSTALLATION

Single Use Fasteners and Components

Automatic Transmission Fluid Pump Drive Shaft Retaining Ring

1. 

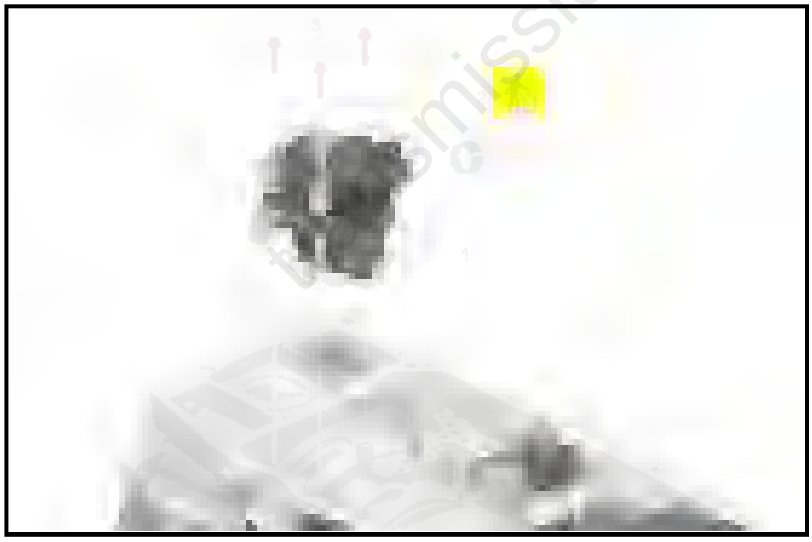
   Automatic Transmission Fluid Pump Driven Gear (1) - Install

2. Automatic Transmission Fluid Pump Drive Shaft Retaining Ring (2) - Install NEW
3. Automatic Transmission Fluid Pump Driven Gear Baffle - Shroud (3) - Install

AUTOMATIC TRANSMISSION FLUID PUMP INSTALLATION

Single Use Fasteners and Components

Automatic Transmission Fluid Pump Seal

1. 

   Automatic Transmission Fluid Pump (1) - Install

2. Automatic Transmission Fluid Pump Seal (2) - Install NEW

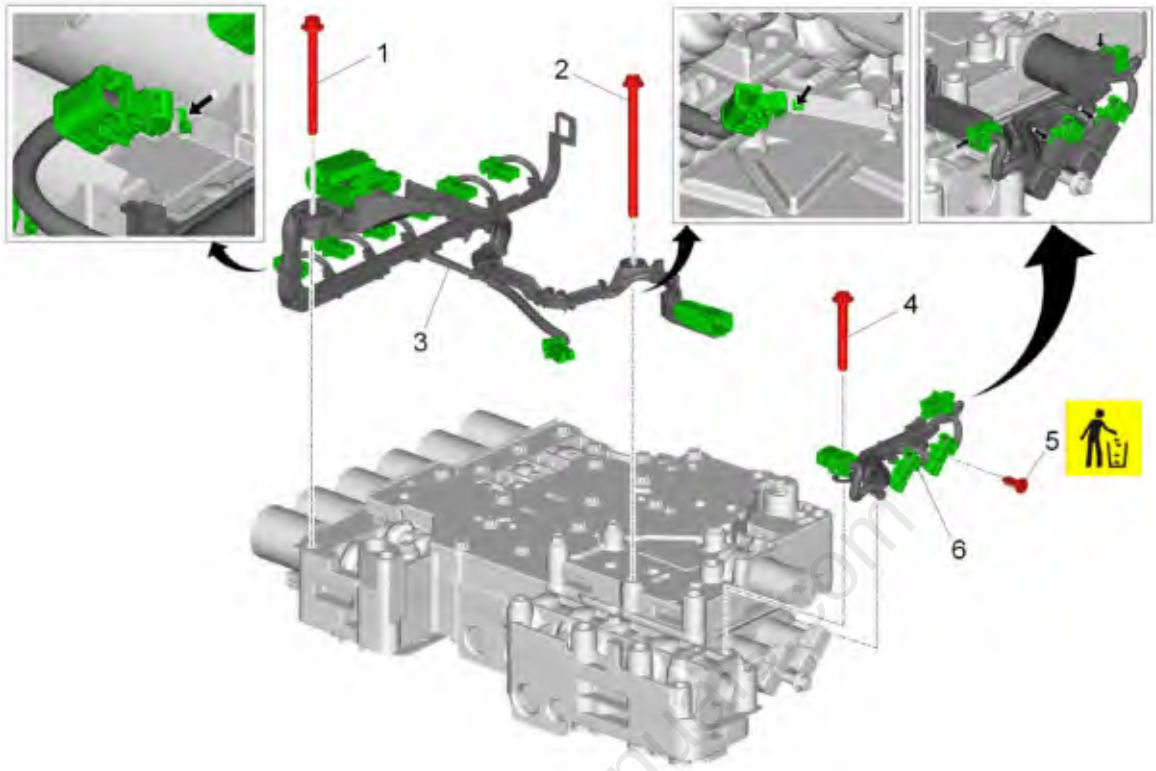
   CAUTION: **Refer to Fastener Caution .**

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

CONTROL VALVE ASSEMBLY DISASSEMBLE

Single Use Fasteners and Components

- Automatic Transmission Control Wiring Harness Retainer - Push Type
- Automatic Transmission Fluid Pump Seal - Valve Body



1.

Fig. 13: Exploded View Of Control Valve Assembly Components
Courtesy of GENERAL MOTORS COMPANY

Control Valve Solenoid Body Bolt (1) - Remove

2. Control Valve Upper Body Bolt (2) - Remove
3. Disconnect Automatic Transmission Wiring Harness connectors as shown.
4. Automatic Transmission Wiring Harness - Main/Solenoid (3) - Remove
5. Control Valve Upper Body Bolt (4) - Remove
6. Automatic Transmission Control Wiring Harness Retainer - Push Type (5) - Remove and DISCARD
7. Disconnect Automatic Transmission Wiring Harness connectors as shown.
8. Automatic Transmission Wiring Harness - Jumper (6) - Remove

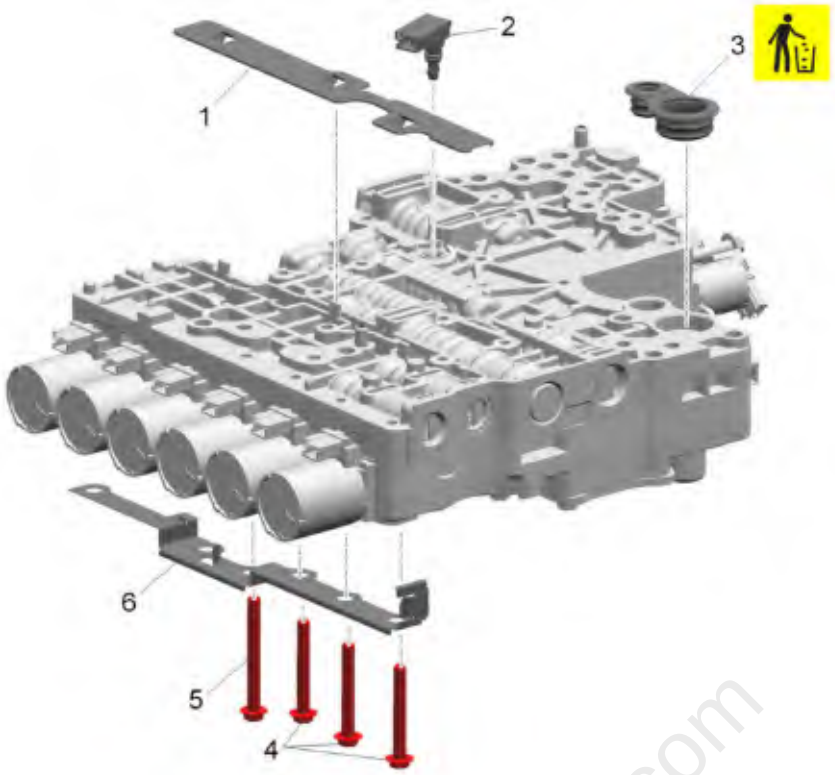
9. 

Fig. 14: Exploded View Of Control Valve Body Fluid Passage Cover Components
Courtesy of GENERAL MOTORS COMPANY

Control Valve Body Fluid Passage Cover (1) - Remove

NOTE: **Lift up locking tab and turn sensor counter clockwise, then remove.**

10. Automatic Transmission Fluid Temperature Sensor (2) - Remove
11. Automatic Transmission Fluid Pump Seal - Valve Body (3) - Remove and DISCARD
12. Control Valve Upper Body Bolt (4) - Remove [3x]
13. Control Valve Upper Body Bolt (5) - Remove
14. Control Valve Body Fluid Passage Cover (6) - Remove

CONTROL VALVE ASSEMBLY ASSEMBLE

Single Use Fasteners and Components

- Automatic Transmission Control Wiring Harness Retainer - Push Type
- Automatic Transmission Fluid Pump Seal - Valve Body

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1.

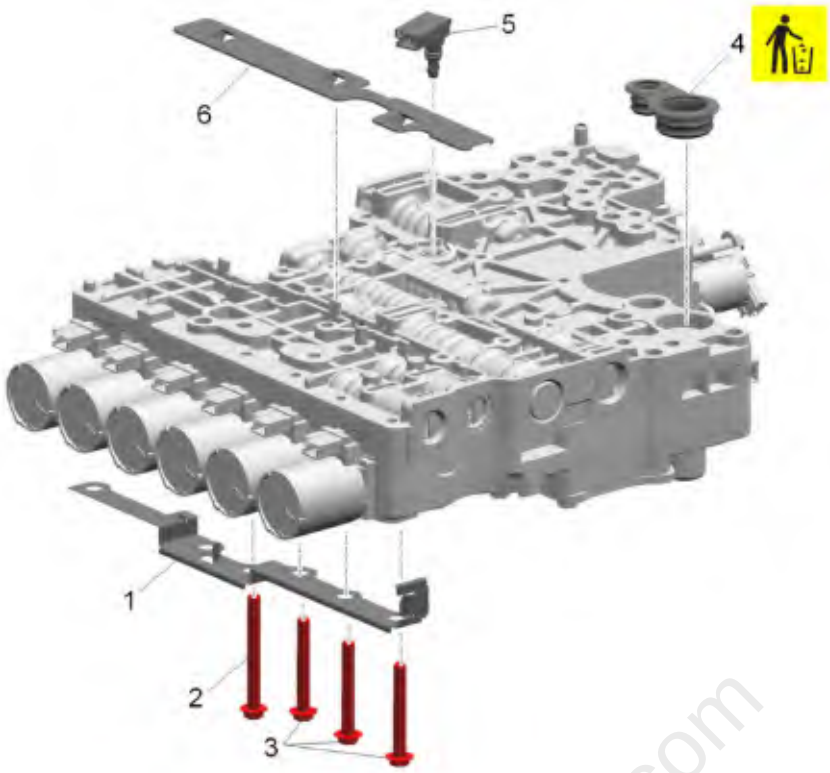


Fig. 15: Exploded View Of Control Valve Assembly Components (1 Of 2)
Courtesy of GENERAL MOTORS COMPANY

Control Valve Body Fluid Passage Cover (1) - Install

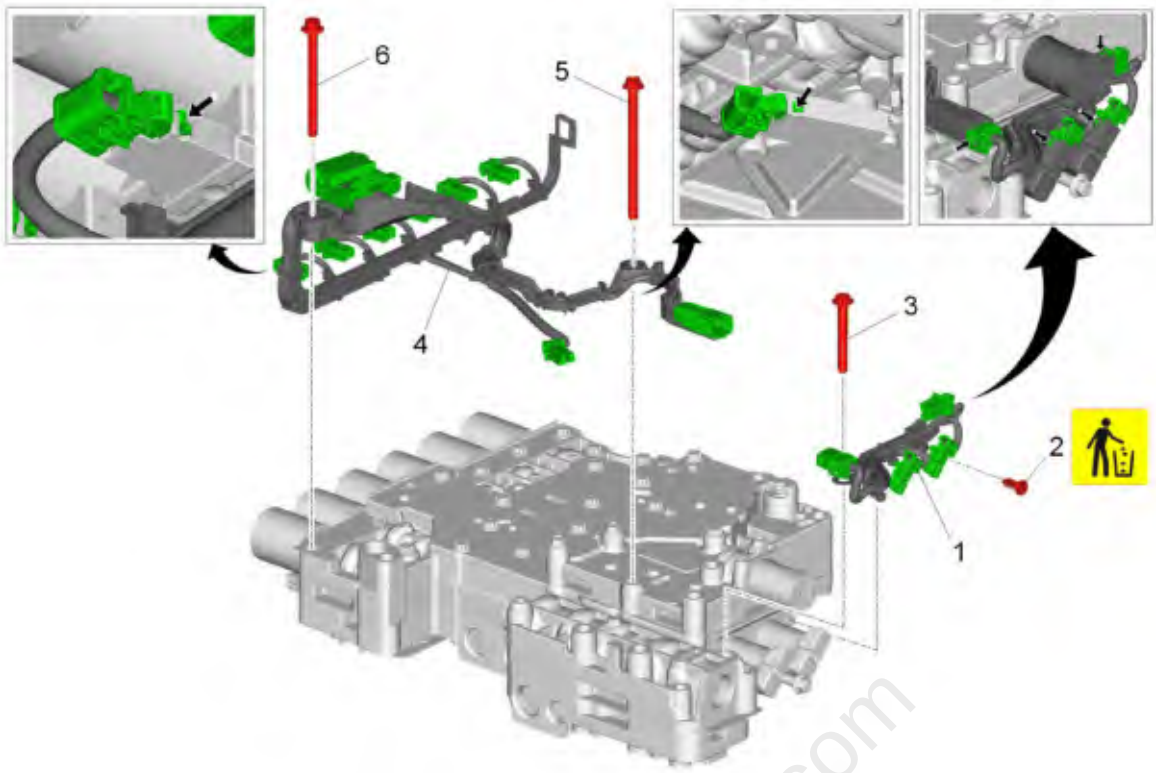
CAUTION: **Refer to Fastener Caution**

2. Control Valve Upper Body Bolt (2) - Install and tighten - **Fastener Specifications**
3. Control Valve Upper Body Bolt (3) - Install and tighten [3x] - **Fastener Specifications**
4. Automatic Transmission Fluid Pump Seal - Valve Body (4) - Install NEW

NOTE: **Push sensor in and turn clockwise to install.**

5. Automatic Transmission Fluid Temperature Sensor (5) - Install
6. Control Valve Body Fluid Passage Cover (6) - Install

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7.

Fig. 16: Exploded View Of Control Valve Assembly Components (2 Of 2)
Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Wiring Harness - Jumper (1) - Install

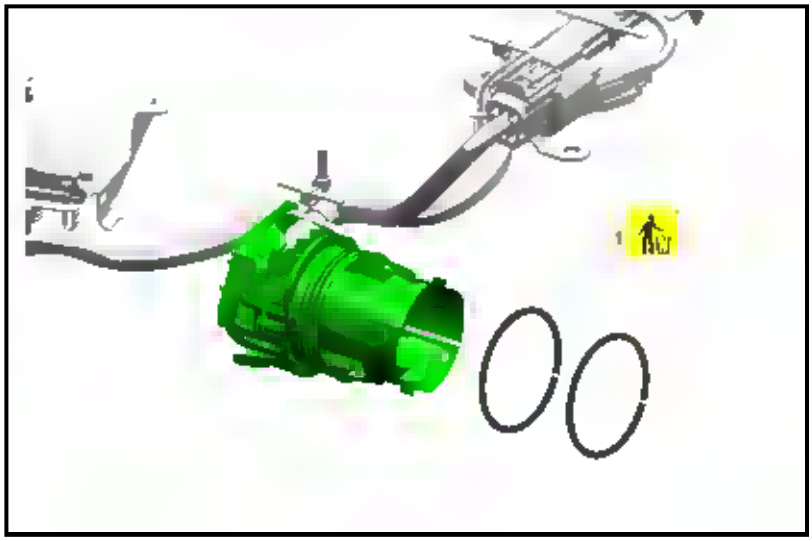
8. Connect Automatic Transmission Wiring Harness connectors as shown.
9. Automatic Transmission Control Wiring Harness Retainer - Push Type (2) - Install NEW
10. Control Valve Upper Body Bolt (3) - Install and tighten - **Fastener Specifications**
11. Automatic Transmission Wiring Harness - Main/Solenoid (4) - Install
12. Connect Automatic Transmission Wiring Harness connectors as shown.
13. Control Valve Upper Body Bolt (5) - Install and tighten - **Fastener Specifications**
14. Control Valve Solenoid Body Bolt (6) - Install and tighten - **Fastener Specifications**

CONTROL VALVE ASSEMBLY AND TRANSMISSION WIRING HARNESS INSTALLATION

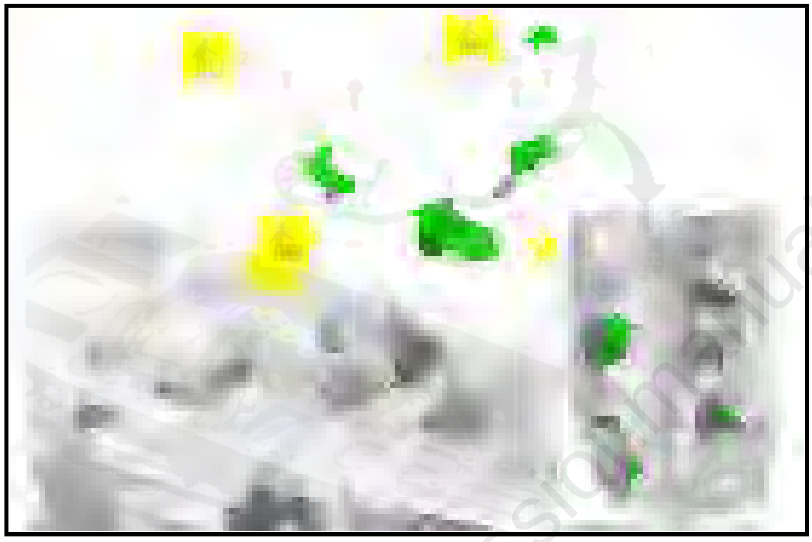
Single Use Fasteners and Components

- Automatic Transmission Control Wiring Harness Retainer-Push Nut [2x]
- Automatic Transmission Control Wiring Harness Retainer-Push Pin [2x]
- Control Valve Solenoid Body Bolt [3x]
- Wiring Harness Connector Seal-O-Ring [2x]

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1. 

   Wiring Harness Connector Seal - O-Ring (1) - Install NEW [2x]

2. 

   Automatic Transmission Wiring Harness (1) - Install

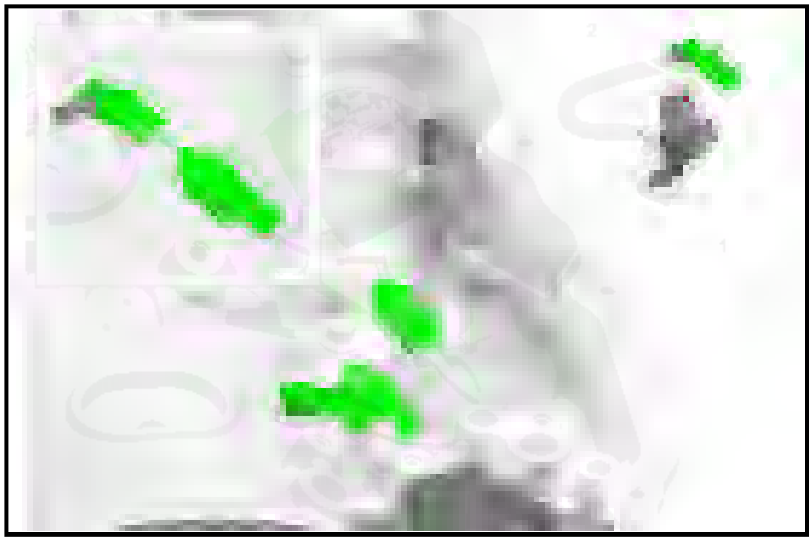
   NOTE: **Ensure the bulkhead connector is fully snapped into the case and seated flush.**

3. Automatic Transmission Control Wiring Harness Retainer-Push Nut (3) - Install NEW [2x]

   CAUTION: **Refer to Fastener Caution**

4. Automatic Transmission Control Wiring Harness Clip Bracket Bolt (4) - Install and tighten [2x] - **Fastener Specifications**
5. Tighten bolts after speed sensor installation. One of the speed sensor wires needs to be routed under a retainer tab on this harness.
6. Automatic Transmission Control Wiring Harness Retainer-Push Pin (2) - Install NEW [2x]

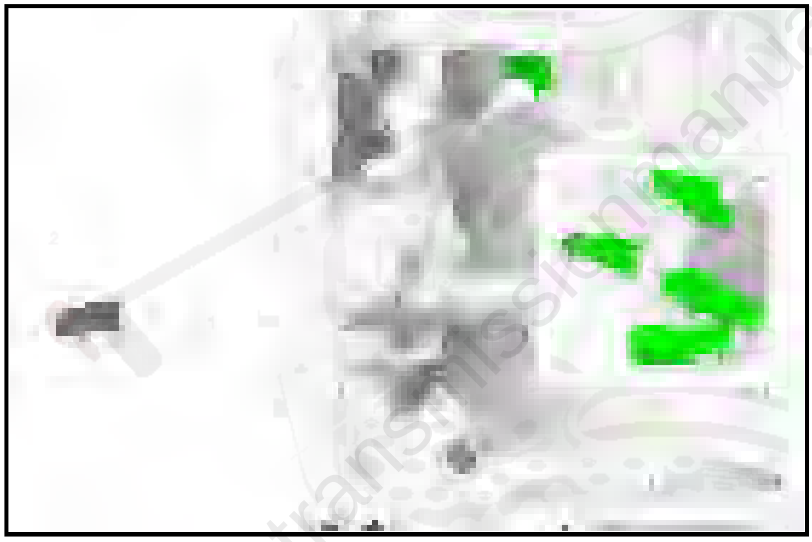
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7. 

   Automatic Transmission Turbine Speed Sensor (1), and Automatic Transmission Speed Sensor Bolt (2) - Install

   NOTE: The bolt is retained in the sensor.

8. Automatic Transmission Speed Sensor Bolt (2) - Tighten - **Fastener Specifications**
9. Connect the electrical connector as shown.

10. 

    Automatic Transmission Intermediate Speed Sensor-A (1), and Automatic Transmission Speed Sensor Bolt (2) - Install

    NOTE: The bolt is retained in the sensor.

11. Automatic Transmission Speed Sensor Bolt (2) - Tighten - **Fastener Specifications**
12. Connect the electrical connector as shown.

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13. 

Automatic Transmission Intermediate Speed Sensor-B (1), and Automatic Transmission Speed Sensor Bolt (2) - Install

NOTE: **The bolt is retained in the sensor.**

14. Automatic Transmission Speed Sensor Bolt (2) - Tighten - **Fastener Specifications**
15. Connect the electrical connector as shown.

16. 

Automatic Transmission Output Speed Sensor (1), and Automatic Transmission Speed Sensor Bolt (2) - Install

NOTE: **The bolt is retained in the sensor.**

17. Automatic Transmission Speed Sensor Bolt (2) - Tighten - **Fastener Specifications**
18. Connect the electrical connector as shown.

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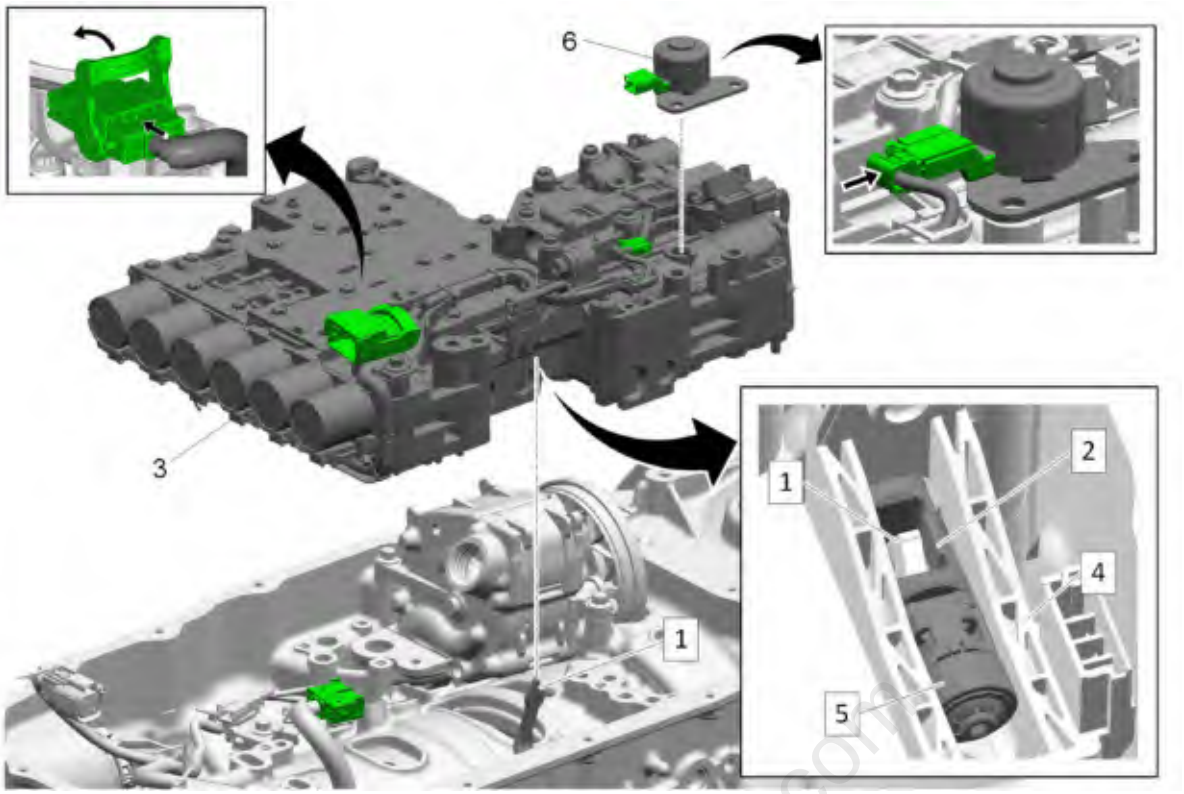
19. 

Fig. 17: Identifying Control Valve Assembly Installation Components
Courtesy of GENERAL MOTORS COMPANY

NOTE: **Ensure the automatic transmission fluid pump seal is in the control valve body.**

CAUTION: **The Park Pawl Actuator Lever must be in the park position, fully forward position, and aligned with the slot in the piston servo prior to lowering the Control Valve Assembly into place. Contact between the switch housing or magnet carrier and the end of the Park Pawl Actuator Lever during installation can damage these components and lead to failure. This damage may not be immediately apparent and may occur during subsequent vehicle operation.**

Place park pawl actuator lever (1) in the park position, fully forward position. The piston servo (2) opening must be positioned with the slot in the vertical position as shown. Use appropriate tool to reposition if necessary. Carefully place the control valve body (3) into the transmission while avoiding contact between the switch housing (4), magnet carrier (5), and the end of the park pawl actuator lever (1). Ensure the park pawl actuator lever (1) is aligned inside the piston servo (2) opening.

20. Control Valve (3) - Install

NOTE: **Ensure the wiring harness is not pinched anywhere after valve body installation.**

21. Connect the main control wiring harness connector as shown.
22. Park Inhibitor Solenoid (6) - Install
23. Connect the Park Inhibitor Solenoid (6) connector as shown.

24. 

    Clean the bolt holes and ensure they are free from any old sealant. Allow to dry before installing NEW bolts.

    NOTE: **The bolts are marked by arrows in the valve body casting.**

25. Control Valve Body Bolt (1) - Install and tighten in sequence [2x] - **Fastener Specifications**
26. Control Valve Solenoid Body Bolt (2) Install NEW and tighten in sequence [3x] - **Fastener Specifications**
27. Control Valve Solenoid Body Bolt (3) Install and tighten in sequence [2x] - **Fastener Specifications**

AUXILIARY FLUID PUMP INSTALLATION

Single Use Fasteners and Components

- Automatic Transmission Auxiliary Fluid Pump Seal
- Automatic Transmission Auxiliary Fluid Pump Outlet Pipe Seal

1. 

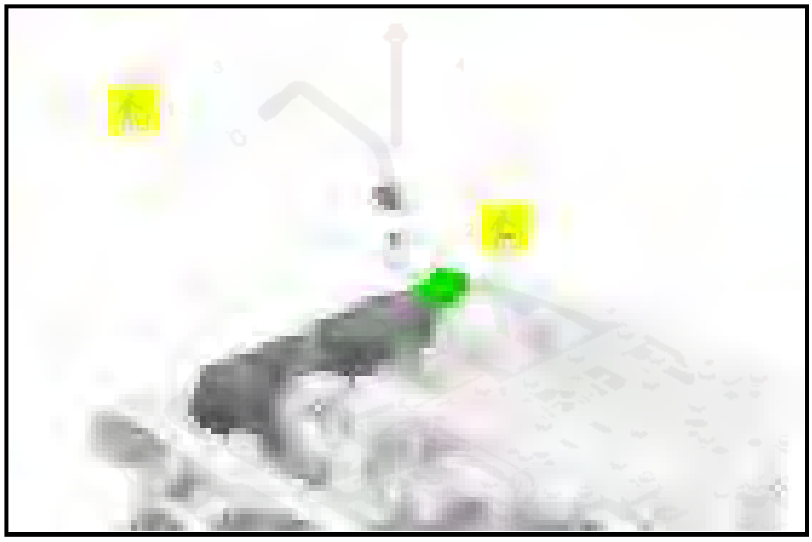
    Automatic Transmission Auxiliary Fluid Pump (1) - Install

2. Connect the electrical connector.

    CAUTION: **Refer to Fastener Caution**

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

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4. 

   Automatic Transmission Auxiliary Fluid Pump Outlet Pipe Seal (1) - Install NEW

5. Automatic Transmission Auxiliary Fluid Pump Seal (2) - Install NEW
6. Automatic Transmission Auxiliary Fluid Pump Outlet Pipe (3) - Install
7. Control Valve Upper Body Bolt (4) - Install and tighten - **Fastener Specifications**

TRANSMISSION FLUID PAN AND FILTER ASSEMBLY INSTALLATION

Single Use Fasteners and Components

Automatic Transmission Fluid Filter Bolt [2x]

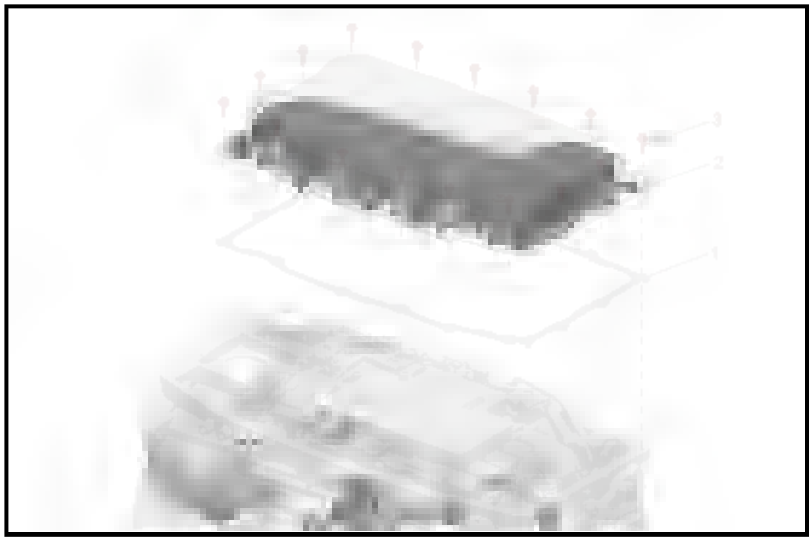
1. 

   Automatic Transmission Fluid Filter (1) - Install

   CAUTION: **Refer to Fastener Caution .**

   NOTE: **This has a nipple on the end of it that makes it unique. It is slightly longer than all of the valve body bolts, it is not able to go into other valve body bolt holes.**

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

3. 

NOTE: **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.**

Automatic Transmission Fluid Pan Gasket (1) - Install

4. Automatic Transmission Fluid Pan (2) - Install
5. Automatic Transmission Fluid Pan Bolt (3) - Install and tighten in sequence [16x] - **Fastener Specifications**

CASE EXTENSION ASSEMBLY INSTALLATION (AWD)

Single Use Fasteners and Components

Automatic Transmission Case Extension Seal

Special Tools

DT-36850 Transjel Lubricant

Equivalent regional tools: **Special Tools**

1. 

Automatic Transmission Case Extension Seal (1) - Install NEW

2. Apply **DT-36850** Transjel Lubricant to the inner part of the output shaft seal where the output shaft rides before installing the extension onto the transmission.

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CAUTION: **Before installing the transmission case extension to the transmission case, make certain all internal transmission components including the stator shaft support assembly and output carrier are in place. Failure to do so may result in damage to the transmission.**

3. Automatic Transmission Case Extension (2) - Install
4. Automatic Transmission Case Extension Bolt (3) - Install and hand tighten [6x]

CAUTION: **Refer to Fastener Caution .**

5. Automatic Transmission Case Extension Bolt (3) - Tighten in sequence - **Fastener Specifications**

CASE EXTENSION ASSEMBLY INSTALLATION (2WD)

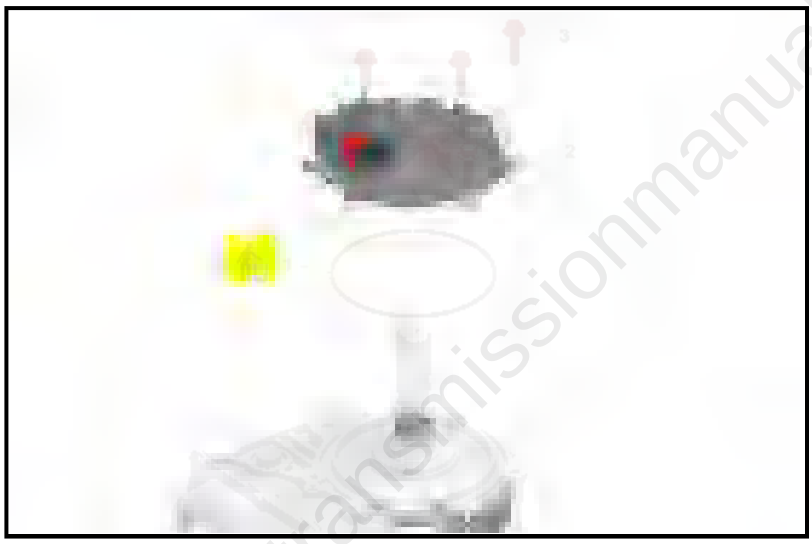
Single Use Fasteners and Components

Automatic Transmission Case Extension Seal

Special Tools

DT-36850 Transjel Lubricant

Equivalent regional tools: **Special Tools**

1. 

   Automatic Transmission Case Extension Seal (1) - Install NEW

2. Apply **DT-36850** Transjel Lubricant to the inner part of the output shaft seal where the output shaft rides before installing the extension onto the transmission.

CAUTION: **Before installing the transmission case extension to the transmission case, make certain all internal transmission components including the stator shaft support assembly and output carrier are in place. Failure to do so may result in damage to the transmission.**

3. Automatic Transmission Case Extension (2) - Install
4. Automatic Transmission Case Extension Bolt (3) - Install and hand tighten [6x]

CAUTION: **Refer to Fastener Caution**

5. Automatic Transmission Case Extension Bolt (3) - Tighten in sequence - **Fastener Specifications**

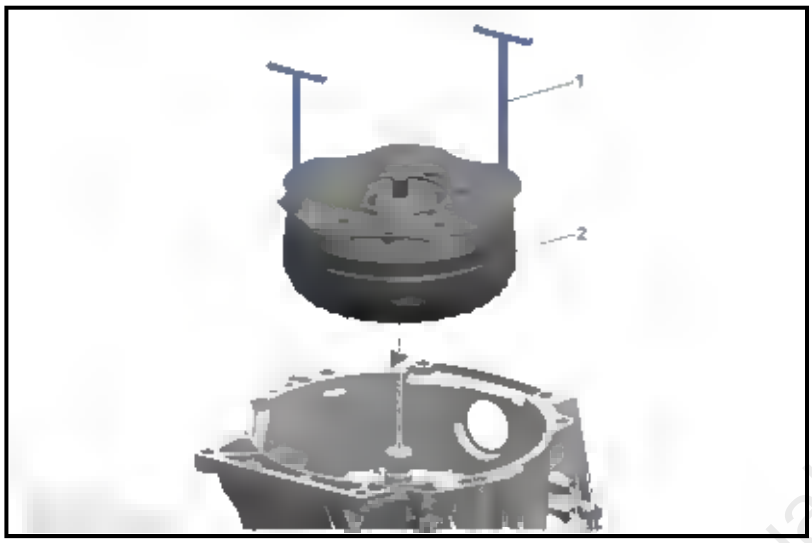
TORQUE CONVERTER INSTALLATION AND HOLDING FIXTURE REMOVAL

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Special Tools

- **DT-03289-20** Holding Fixture Base Assembly
- **DT-21366** Converter Holding Strap
- **DT-48989** Holding Fixture
- **DT-46409** Torque Converter Lifting Handles

Equivalent regional tools: **Special Tools**

1. 

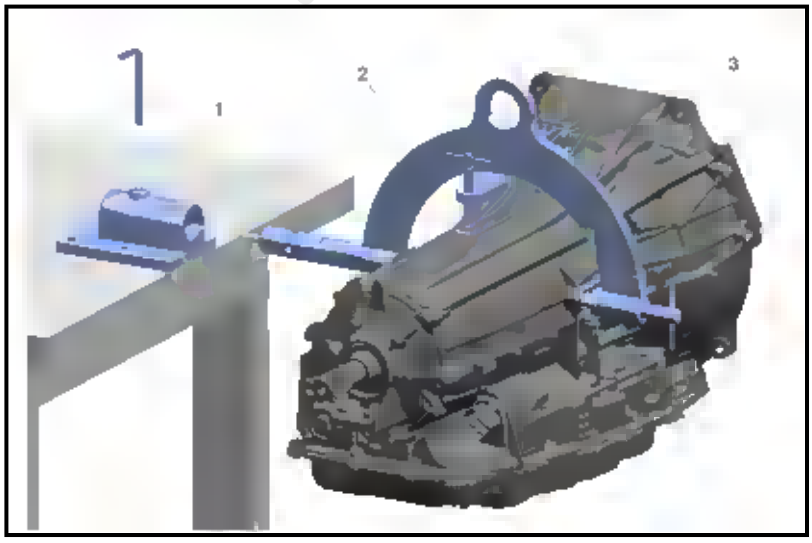
NOTE: **Rotate the transmission so that the converter housing is up and secure with locking pin.**

Install **DT-46409** Torque Converter Lifting Handles (1) to the Torque Converter (2).

2. Torque Converter (2) Install
3. After installing the Torque Converter (2), install the **DT-21366** Converter Holding Strap.

NOTE: **If the holding strap does not fit, then the converter is not fully installed.**

4. Rotate the transmission so the pan is facing down. Secure with **DT-03289-20** Holding Fixture Base Assembly (1) locking pin.

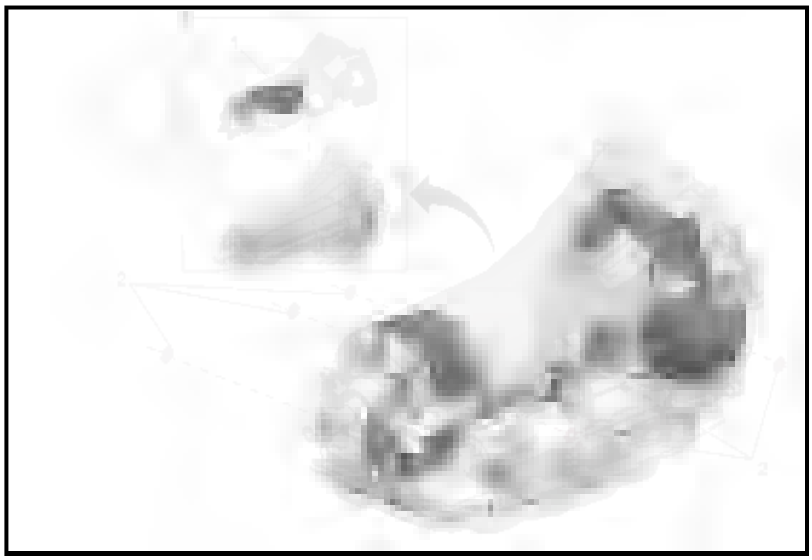
5. 

Support the transmission with a overhead hoist attached to **DT-48989** Holding Fixture (2), Then remove the **DT-03289-20** Holding Fixture Base Assembly (1) locking pin.

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6. Remove the **DT-48989** Holding Fixture (2) and the Automatic Transmission Case (3) from the **DT-03289-20** Holding Fixture Base Assembly (1).

TRANSMISSION HOUSING SOUND INSULATOR INSTALLATION

1. 

   Transmission Housing Sound Insulator (1) - Install

2. Transmission Nut (2) - Install [6x]

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