

2017 TRANSMISSION

Automatic Transmission - 6T40 (MNH MNK) - Repair Instructions - Off Vehicle - Encore, Trax

REPAIR INSTRUCTIONS - OFF VEHICLE

LIFT PLATE AND HOLDING FIXTURE INSTALLATION

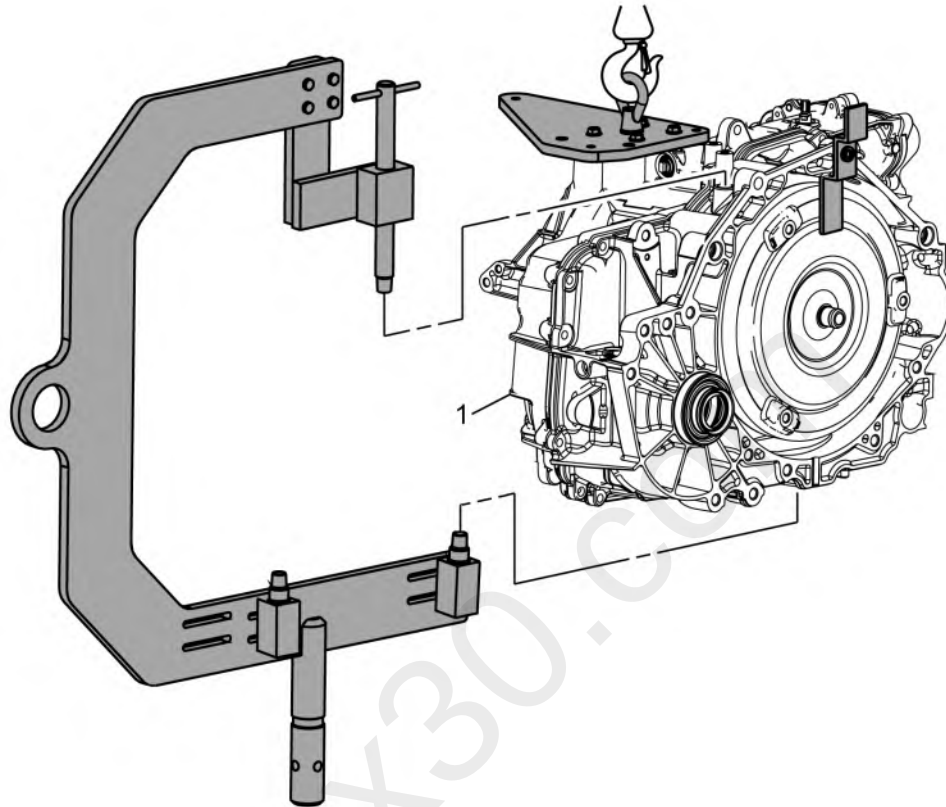


Fig. 1: Identifying Lift Plate & Holding Fixture
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

Callout	Component Name
1	Â WARNING: Handle with care, the transmission assembly weighs over 83 Kg (183 lbs). Bodily injury could occur if not handled properly. WARNING: Lock pin must be secured into the bench fixture to hold the transmission and prevent bodily injury. CAUTION: Refer to Fastener Caution . Procedure 1. Install DT-47811-A Transmission Lift Plate 2. Tighten bolts and nut to 12 N.m (106 lb in). 3. Raise the transmission with an overhead hoist. 4. Install DT-46625 Transmission Holding Fixture. 5. Adjust mounting block on fixture to match bosses on case, then tighten bolts to 13 N.m (10 lb ft). 6. Ensure the DT-46625 Transmission Holding Fixture is mounted to a bench that is properly supported and will support the weight of the transmission assembly without tipping. 7. Install lock pin for DT-3289-20 Holding Fixture. NOTE: Only 2 bolt holes on the lift plate will align with the bosses on the transmission case. This is sufficient for lifting the transmission to install the holding fixture. Special Tools • DT-3289-20 Holding Fixture • DT-46625 Transmission Holding Fixture • DT-46625-10 Transmission Holding Fixture Adapter • DT-47811-A Transmission Lift Plate For equivalent regional tools, refer to Special Tools .

TORQUE CONVERTER REMOVAL

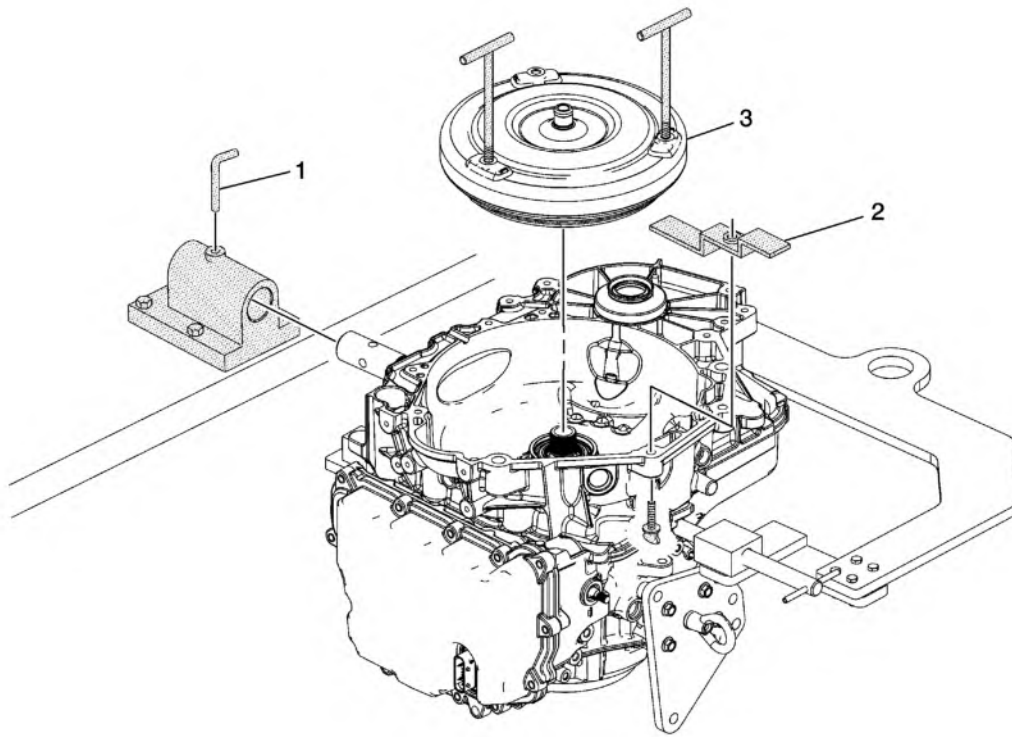


Fig. 2: Torque Converter, Holding Strap & Lock Pin
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Lock Pin WARNING: Lock pin must be secured into the bench fixture to hold the transmission and prevent bodily injury. NOTE: Ensure the DT-3289-20 holding fixture is mounted to a bench that is properly supported and will support the weight of the transmission assembly without tipping. DT-39890 holding fixture adapter and an engine stand can be used as an alternative method for supporting the transmission assembly during repairs. Special Tools • DT-3289-20 Holding Fixture • DT-39890 Transmission Holding Fixture Adapter For equivalent regional tools, refer to Special Tools .
2	DT-21366 Torque Converter Holding Strap

Callout	Component Name
3	Torque Converter Assembly CAUTION: Only install the lift assist handles until it stops. Do not tighten. Over tightening the lift assist handles can cause damage to the torque converter. NOTE: Failure to raise the torque converter straight up could damage the torque converter clutch lip seal inside the torque converter clutch assembly. Special Tool DT-46409 Torque Converter Lifting Handles For equivalent regional tools, refer to Special Tools .

AUXILIARY FLUID PUMP REMOVAL

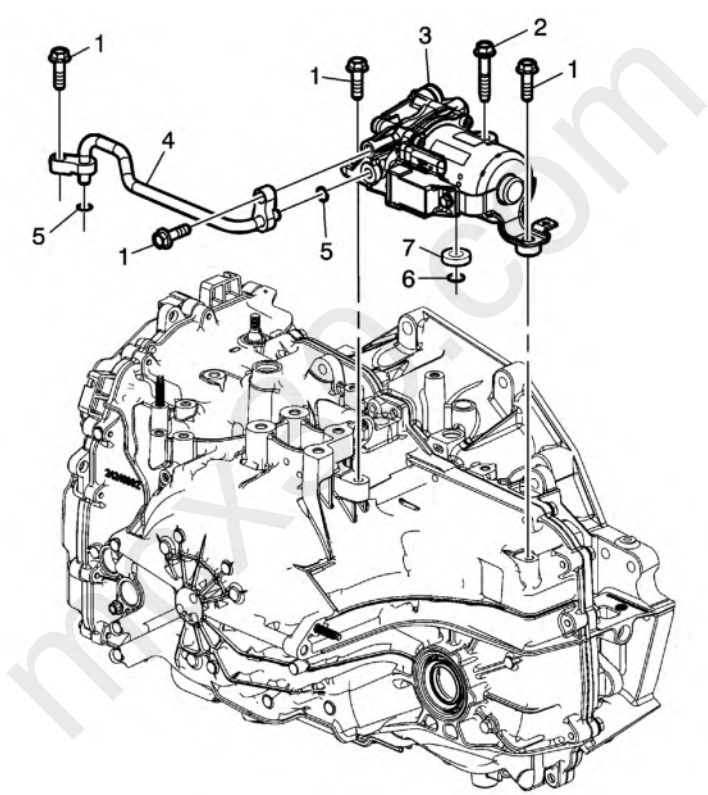


Fig. 3: Auxiliary Fluid Pump
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	A/Trans Auxiliary Fluid Pump Outlet Bolt (Qty: 4)
2	A/Trans Auxiliary Fluid Pump Bolt
3	A/Trans Auxiliary Fluid Pump Assembly
4	A/Trans Auxiliary Fluid Pump Outlet Pipe
5	A/Trans Auxiliary Fluid Pump Outlet Pipe Seal (Qty: 2)
6	A/Trans Auxiliary Fluid Pump Seal
7	A/Trans Auxiliary Fluid Pump Gasket

CONTROL VALVE BODY ASSEMBLY REMOVAL

Control Valve Body Cover Removal

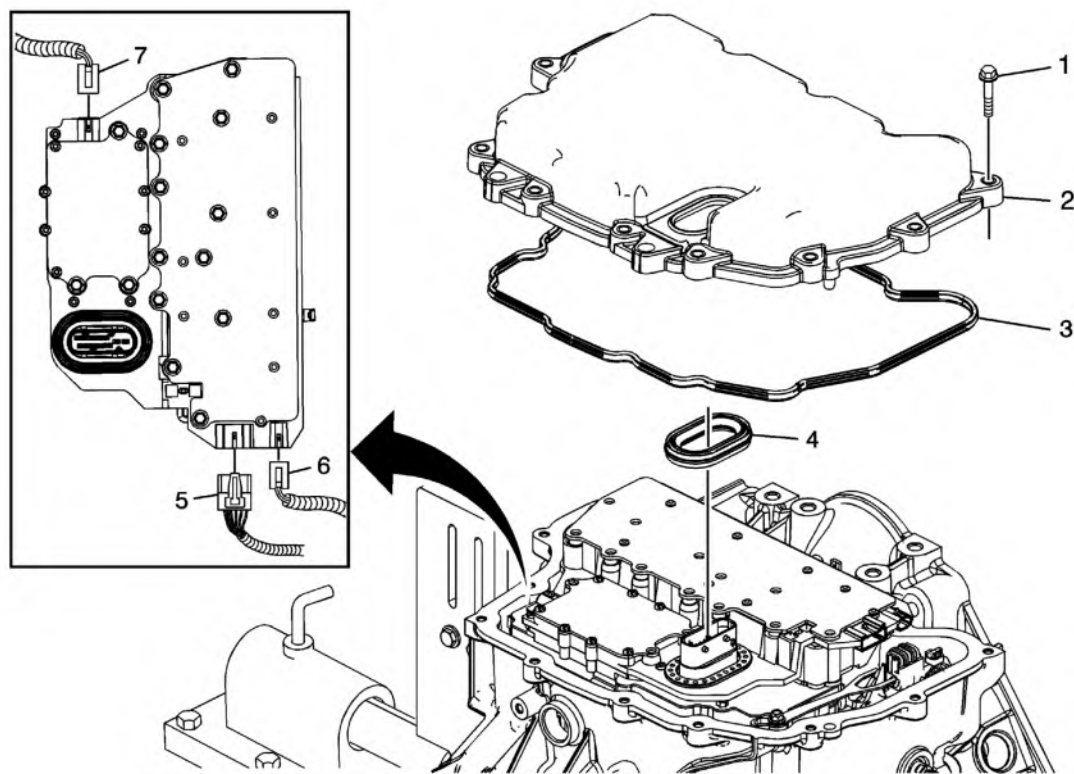


Fig. 4: View Of Control Valve Body Cover
Courtesy of GENERAL MOTORS COMPANY

Control Valve Body Cover Removal

Callout	Component Name
1	Control Valve Body Cover Bolts M6 x 30 (Qty: 13)
2	Control Valve Body Cover
3	Control Valve Body Gasket NOTE: Discard the seal. It is not reusable.
4	Control Valve Body Cover Wiring Connector Hole Seal CAUTION: Support the control solenoid valve assembly around the connector when removing the seal. Excessive pulling force can damage the internal electrical connections. NOTE: Discard the seal. It is not reusable.
5	Shift Position Switch Connector
6	Output Speed Sensor Connector
7	Input Speed Sensor Connector

Control Solenoid (With Body and TCM) Valve Assembly Removal

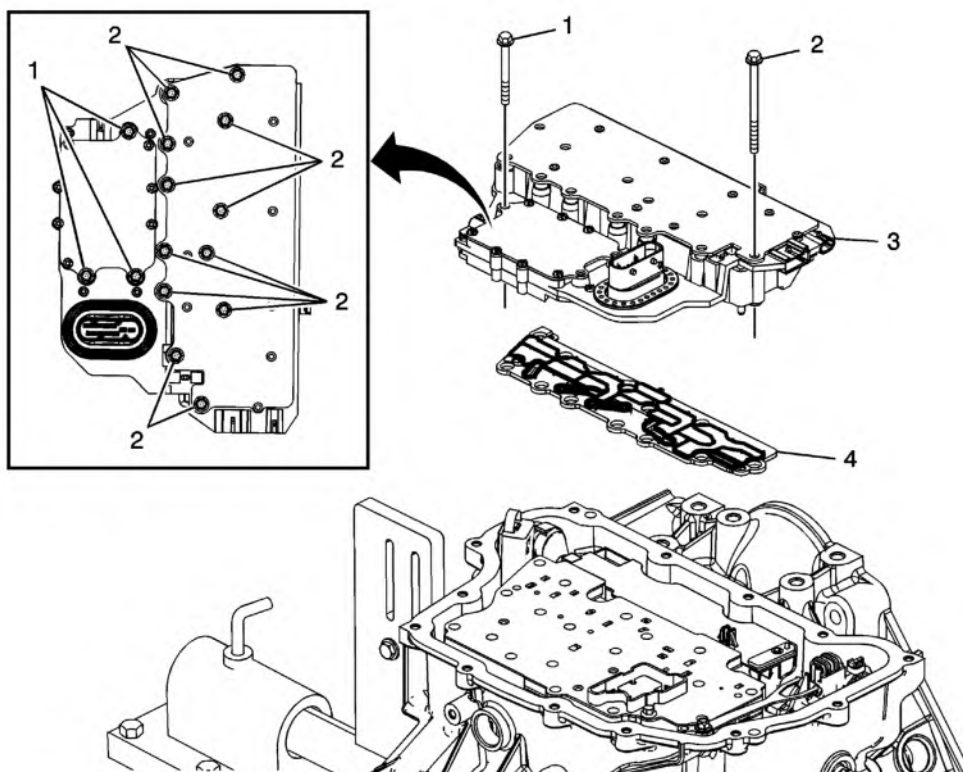


Fig. 5: View Of Control Solenoid (w/Body & TCM) Valve Assembly.
 Courtesy of GENERAL MOTORS COMPANY

Control Solenoid (With Body and TCM) Valve Assembly Removal

Callout	Component Name
1	Control Valve Body M5 x 40.5 (Qty: 3)
2	Control Valve Body Bolt M6 x 30 (Qty: 12)
3	Control Solenoid (with Body and TCM) Valve Assembly
4	Control Solenoid Valve Assembly Filter Plate CAUTION: Use care when removing or installing the filter plate assembly. A broken or missing retaining tab may not adequately secure the filter plate to the control solenoid valve assembly, resulting in possible damage or contamination. NOTE: Discard the filter plate. It is not reusable.

Control Valve Body Assembly Removal

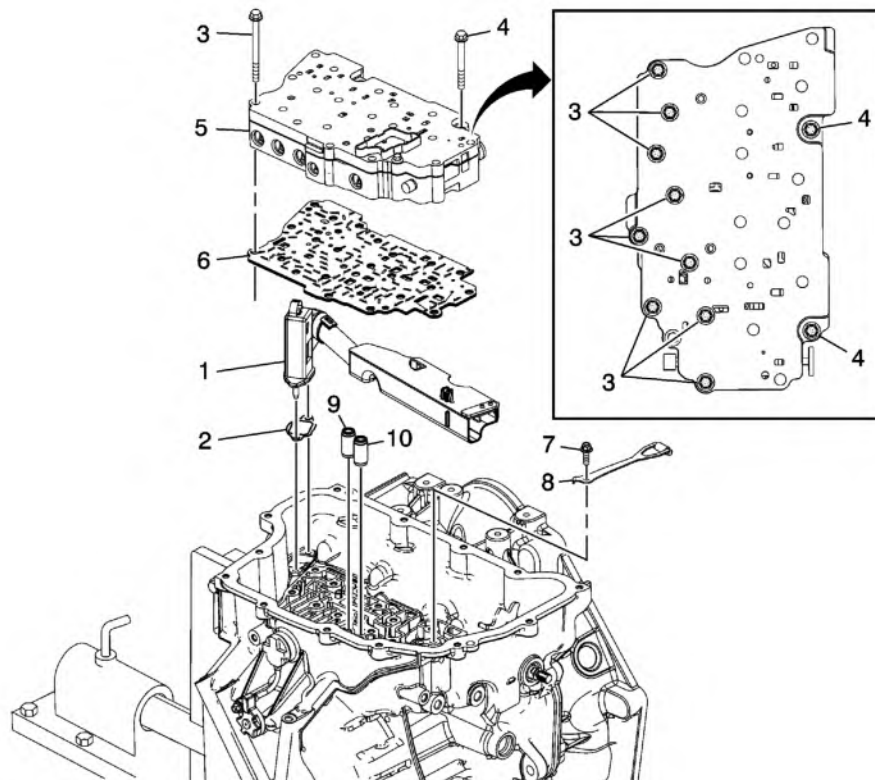


Fig. 6: View Of Control Valve Body Assembly.
Courtesy of GENERAL MOTORS COMPANY

Control Valve Body Assembly Removal

Callout	Component Name
1	Fluid Level Control Valve
2	Fluid Level Control Valve Gasket
3	Control Valve Body Bolt M6 x 60 (Qty: 9)
4	Control Valve Body Bolt M6 x 53 (Qty: 2)
5	Control Valve Body Assembly
6	Control Valve Body Spacer Plate Assembly
7	Manual Shaft Detent Spring Bolt M6 x 16 (Qty: 1)
8	Manual Shaft Detent Lever Spring Assembly
9	1-2-3-4 Clutch Fluid Passage Seal NOTE: Discard the seal. It is not reusable.
10	Low/Reverse Clutch Fluid Passage Seal NOTE: Discard the seal. It is not reusable.

INPUT AND OUTPUT SPEED SENSOR REMOVAL

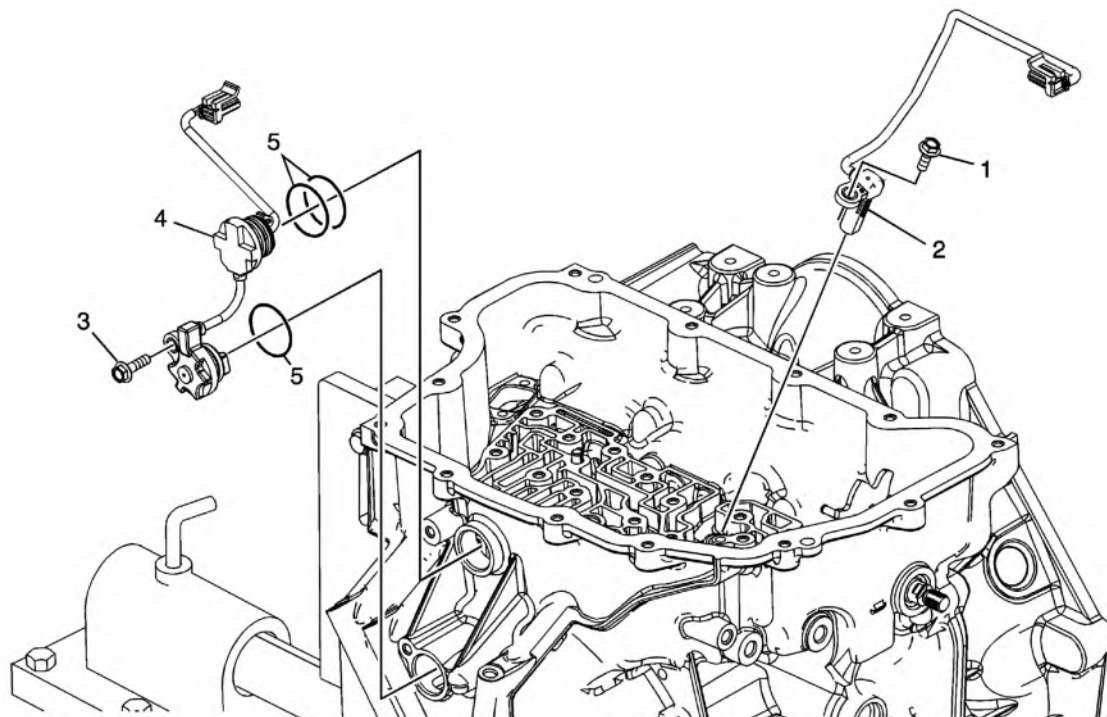


Fig. 7: View Of Input & Output Speed Sensor
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	A/Trans Output Speed Sensor Bolt M6 x 18 (Qty: 1)
2	A/Trans Output Speed Sensor Assembly
3	Input Speed Sensor Bolt M6 x 23 (Qty: 1)
4	Input Speed Sensor Assembly NOTE: Compress the locking tabs on the plug to release it from the case and to avoid damaging the retainers.
5	Input Speed Sensor Assembly Seals (Qty: 3) NOTE: Discard the seals. They are not reusable.

TORQUE CONVERTER HOUSING WITH FLUID PUMP ASSEMBLY REMOVAL

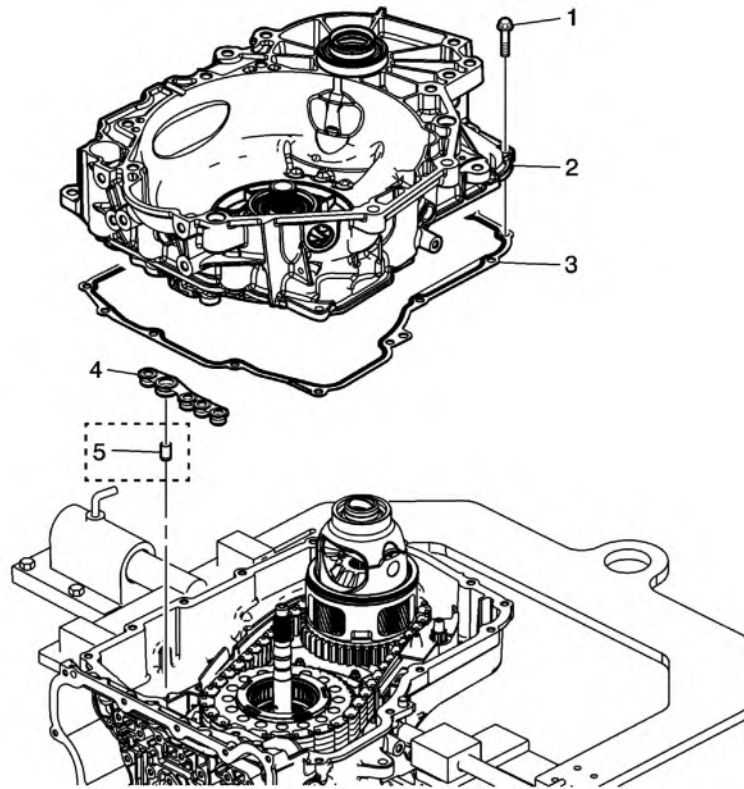


Fig. 8: Torque Converter Housing with Fluid Pump Assembly.
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Torque Converter and Differential Housing Bolt (Qty: 15)
2	Torque Converter with Fluid Pump Housing Assembly
3	Torque Converter Housing Gasket NOTE: DISCARD the gasket.
4	Automatic Transmission Fluid Pump Seal NOTE: Discard the seal.
5	Automatic Transmission Fluid Trough Check Ball - Hybrid Models

DIFFERENTIAL CARRIER REMOVAL

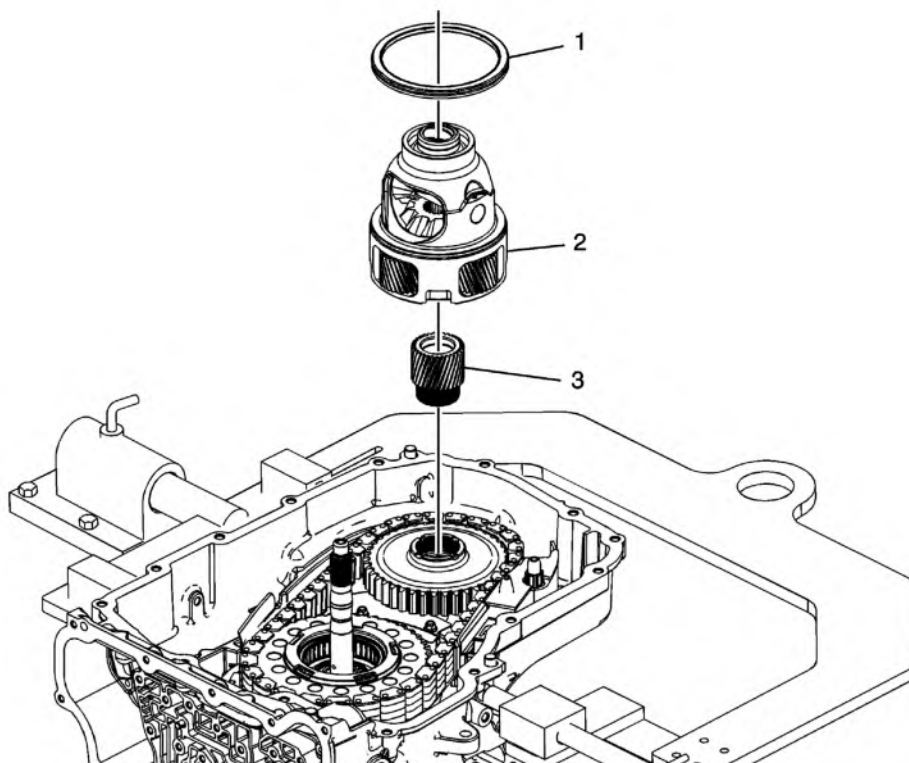


Fig. 9: View Of Front Differential Carrier Assembly.
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Differential Carrier Bearing Assembly
2	Differential Carrier Assembly
3	Final Drive Sun Gear

DRIVE AND DRIVEN SPROCKET, DRIVE LINK, AND PARK PAWL REMOVAL

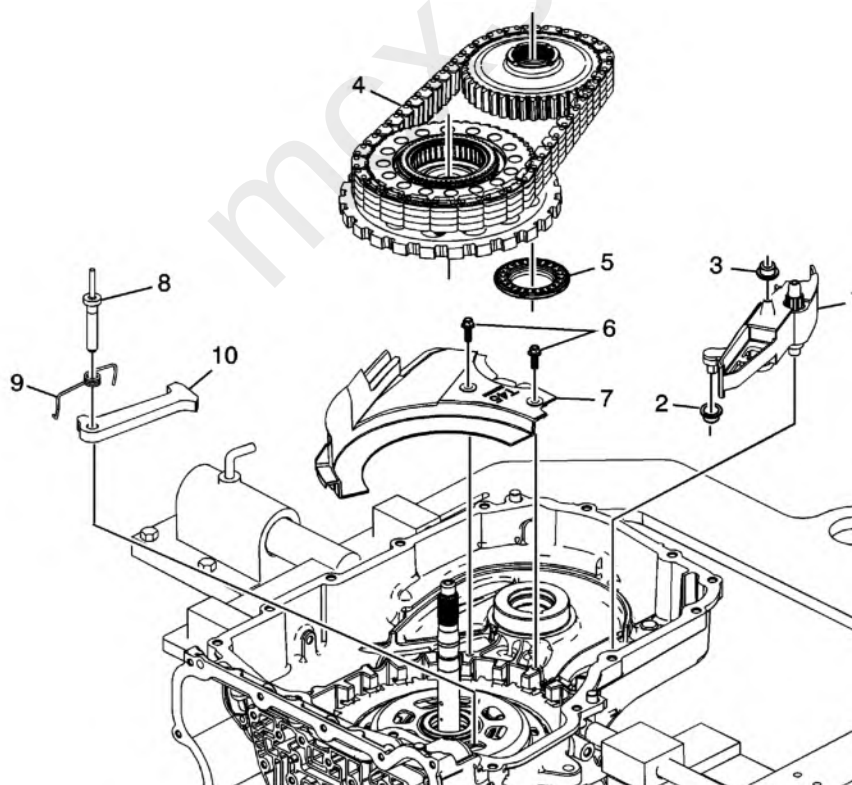


Fig.10: View Of Drive and Driven Sprocket, Drive Link & Park Pawl
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Drive Link Lube Scoop

Callout	Component Name
1	1-2-3-4 Clutch Backing Plate Retainer Ring WARNING: The retainer is under tension. Use care when removing or installing the retainer. Personal injury could result. CAUTION: Use caution during removal or installation of the retainer ring to avoid damage to the case machined surface in the park pawl area. Burrs or raised edges on the case machined surface can cause the park pawl to bind and prohibit it from engaging the park gear. NOTE: Remove one end of the retainer using DT-28585 snap ring remover or equivalent and work the retainer out of the case groove. Special Tool DT-28585 Snap Ring Remover or equivalent For equivalent regional tools, refer to Special Tools.
2	3-5 Reverse and 4-5-6 Clutch Housing Assembly, Gearset, Low-Reverse Clutch Assembly and Low-Reverse and 1-2-3-4 Clutch Housing NOTE: This unit is heavy - weighs 40 lbs. (18 Kg).
3	2-6 Clutch Plate (Qty: 1)
4	2-6 Clutch Apply Plate (Waved)
5	35R and 456 Clutch Housing Thrust Bearing Assembly

2-6 CLUTCH PISTON REMOVAL

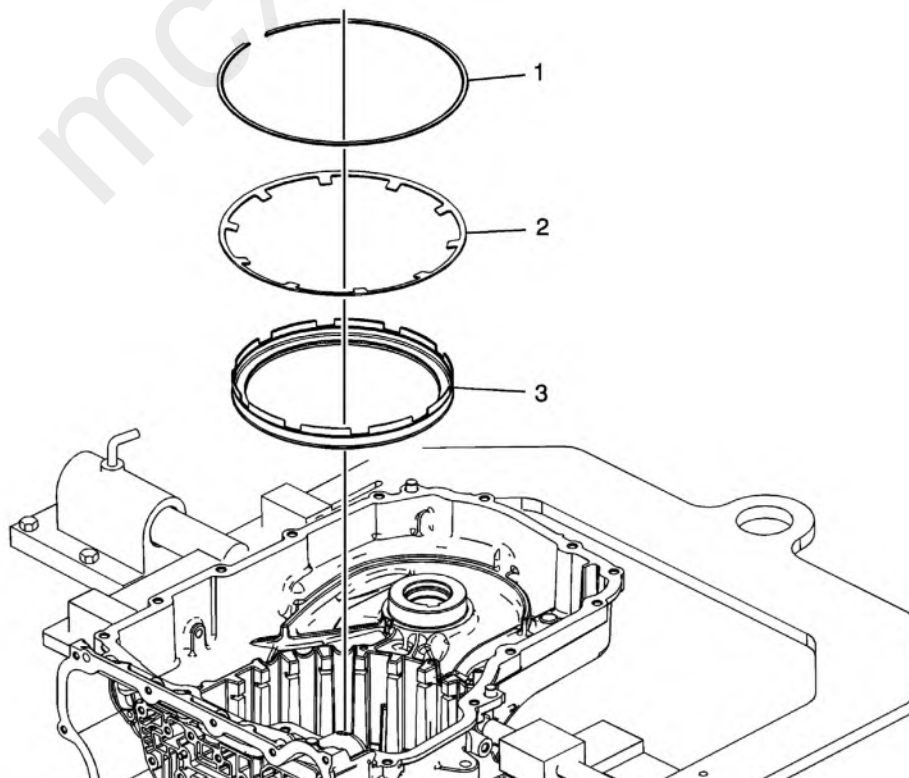


Fig. 12: View Of 2-6 Clutch Piston & Attached Components
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	2-6 Clutch Spring Retainer Special Tool DT-28585 Snap Ring Remover or equivalent For equivalent regional tools, refer to Special Tools .
2	2-6 Clutch Spring
3	2-6 Clutch Piston Assembly NOTE: • Use pliers to remove the piston. • Inspect the piston seals for damage and/or wear. The piston is reusable.

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

Manual Shaft Detent (w/Shift Position Switch) Lever Assembly Removal

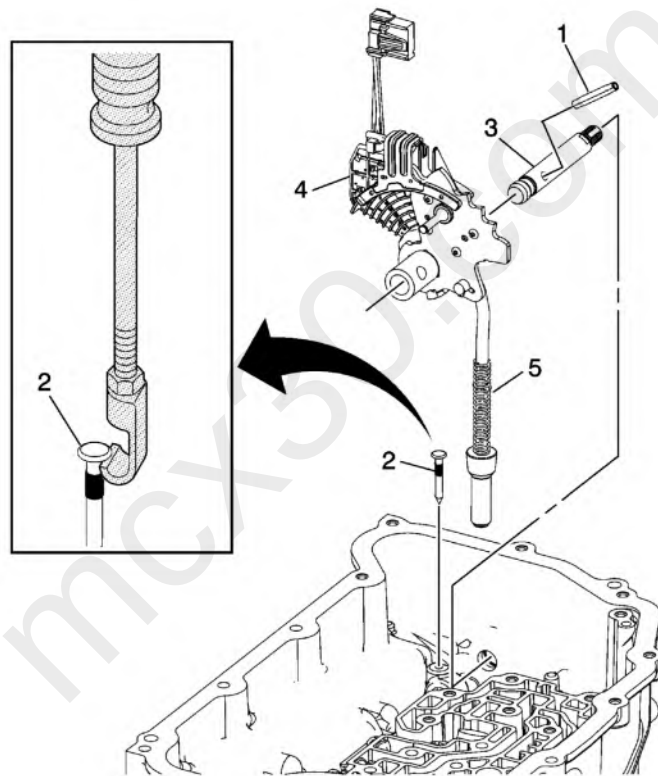


Fig. 13: Identifying Manual Shaft Detent Lever Assembly.

Courtesy of GENERAL MOTORS COMPANY

Manual Shaft Detent (w/Shift Position Switch) Lever Assembly Removal

Callout	Component Name
1	Manual Shaft Detent Lever Hub Pin NOTE: Use side cutter to remove the pin (1) and discard.

Callout	Component Name
	Manual Shift Shaft Pin
2	NOTE: Discard the pin. It is not reusable. Special Tools • DT-23129 Universal Seal Remover • GE-6125-1B Slide Hammer For equivalent regional tools, refer to Special Tools .
3	Manual Shaft
4	Manual Shaft Detent (w/Shift Position Switch) Lever Assembly
5	Park Pawl Actuator Assembly

Park Pawl Actuator Guide Removal

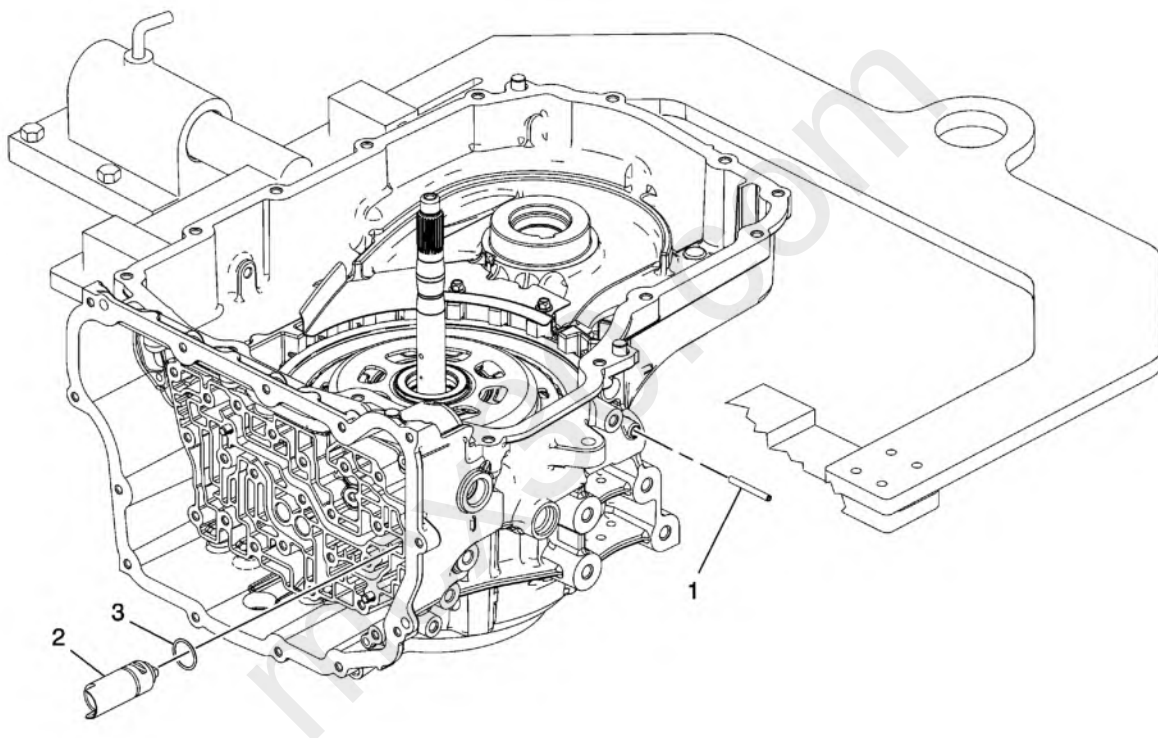


Fig. 14: Identifying Park Pawl Actuator Guide Components

Courtesy of GENERAL MOTORS COMPANY

Park Pawl Actuator Guide Removal

Callout	Component Name
1	Park Pawl Actuator Guide Pin NOTE: Use side cutter to remove the pin (1) and discard.
2	Park Pawl Actuator Guide Assembly
3	Park Pawl Actuator Guide Assembly Seal NOTE: Discard the seal. It is not reusable.

MANUAL SHIFT SHAFT SEAL REMOVAL

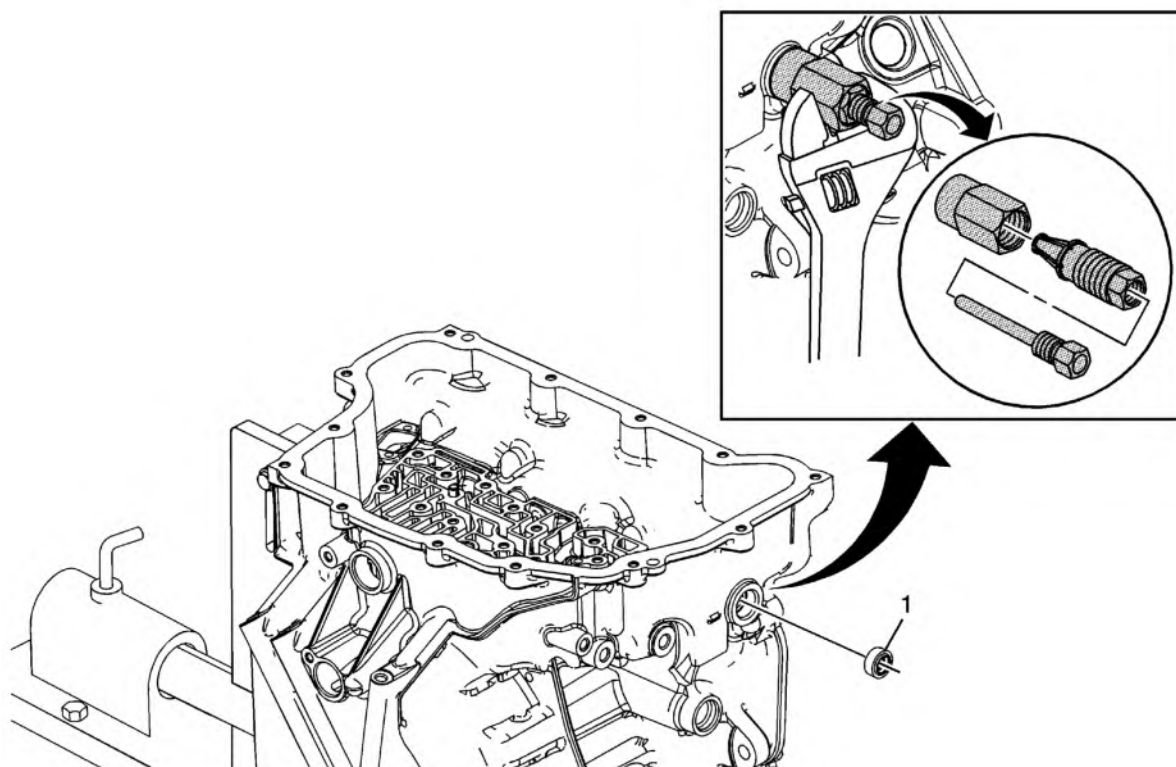


Fig. 15: Manual Shift Shaft Seal

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Manual Shift Shaft Seal NOTE: Use the DT-45201 seal remover to remove the seal to prevent damage to the case surface. Special Tools DT-45201 Seal Remover For equivalent regional tools, refer to Special Tools .

INPUT SHAFT SUPPORT REPLACEMENT

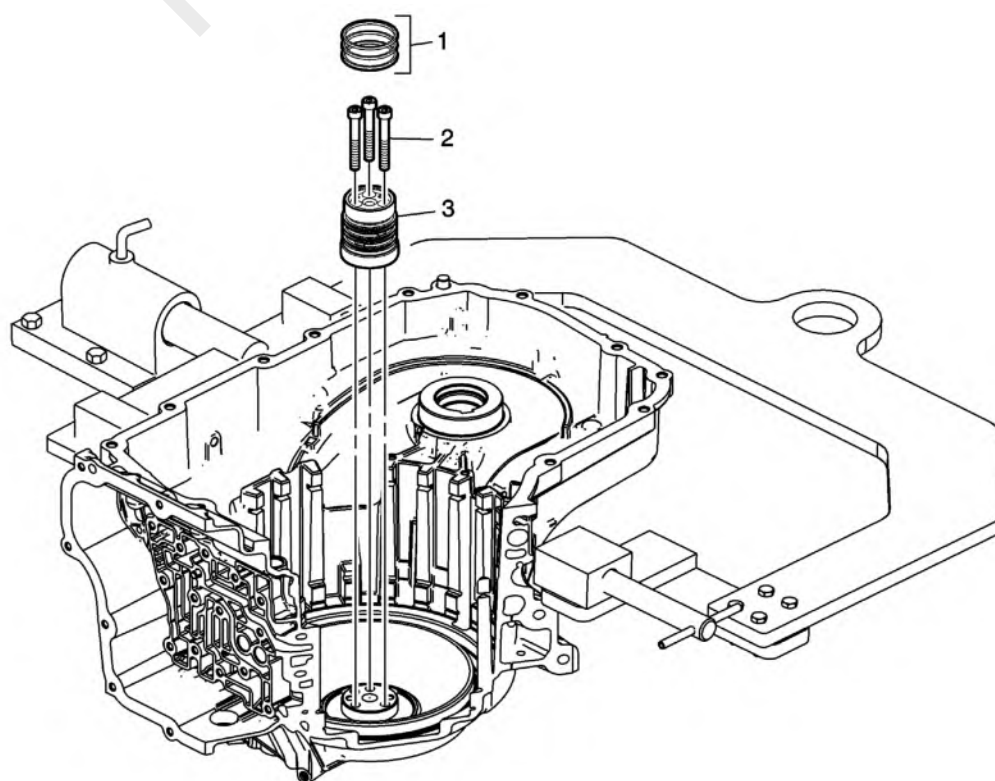


Fig. 16: Input Shaft Support (Gen 2)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	3-5 Reverse and 4-5-6 Clutch Fluid Seals (Qty: 3) NOTE: • Discard the fluid seals. They are not reusable. • Refer to 3-5-Reverse and 4-5-6 Clutch Fluid Seal Ring Replacement.
2	Input Shaft Support Bolts M6 x 50 (Qty: 3) CAUTION: Refer to Fastener Caution . Tighten 12 N.m (106 lb in)
3	Input Shaft Support NOTE: Inspect the support for wear, damage or porosity.

3-5-REVERSE AND 4-5-6 CLUTCH FLUID SEAL RING REPLACEMENT

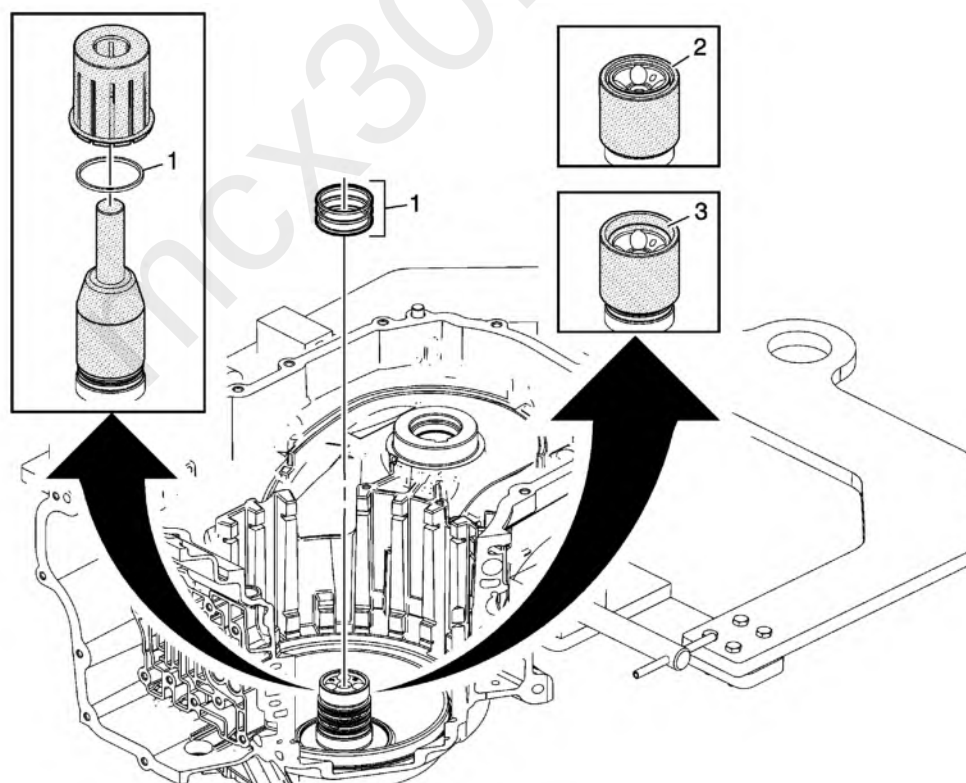


Fig. 17: 3-5-Reverse and 4-5-6 Clutch Fluid Seal Ring
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Special Tools DT-46620 Seal Installer For equivalent regional tools, refer to Special Tools .	

Callout	Component Name
1	3-5 Reverse and 4-5-6 Clutch Fluid Seals (Qty: 3) Procedure 1. Place DT-46620-3 which is part of DT-46620 seal installer over the case hub and adjust it so that only the bottom seal ring is exposed. 2. Place a NEW fluid seal ring onto DT-46620-3 which is part of DT-46620 seal installer. 3. Use DT-46620-2 which is part of DT-46620 seal installer to push the fluid seal ring down over DT-46620-3 which is part of DT-46620 seal installer into the hub ring groove. 4. Repeat the above steps to install all 3 seal rings, adjusting DT-46620-3 which is part of DT-46620 seal installer to the appropriate ring groove.
2	Small Chamfer Up CAUTION: Do not force the seal installer down over the seals as this will roll and damage the seals. The large chamfer is designed to fit over the over stretched seal. Use a hand to help shrink the seal if the seal installer is difficult to install over the seal rings. Procedure Install DT-46620-1 which is part of DT-46620 seal installer with the large chamfer end down over the fluid seal rings and leave DT-46620-1 which is part of DT-46620 seal installer on the seals for at least 60 seconds.
3	Large Chamfer Up Procedure 1. Install DT-46620-1 which is part of DT-46620 seal installer with the small chamfer end facing down for at least 60 seconds. This will properly size the bottom seal ring. 2. Leaving DT-46620-1 which is part of DT-46620 seal installer on the fluid seal rings for an extended period of time could cause a fluid leak on the initial clutch piston circuit until the seal rings warm up and expand to the proper dimension.

FRONT WHEEL DRIVE SHAFT SEAL REPLACEMENT - CASE SIDE

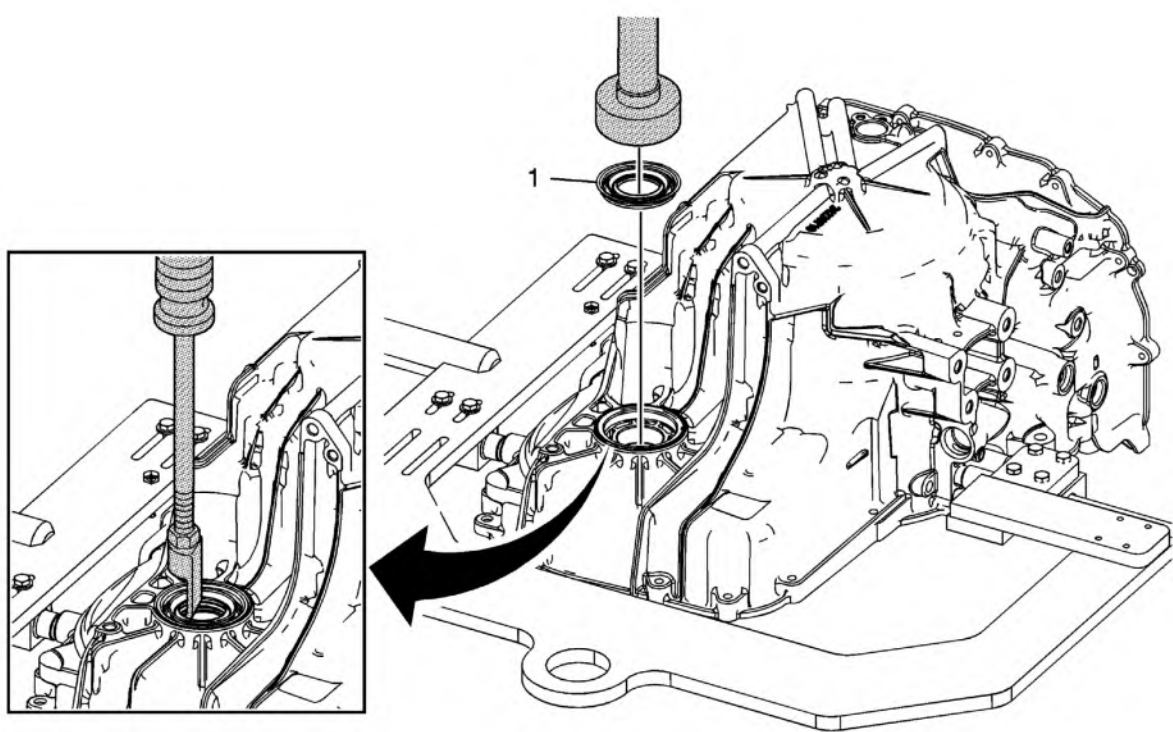


Fig. 18: View Of Case Side Front Wheel Drive Shaft Seal
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Wheel Drive Shaft Oil Seal Special Tools • DT-23129 Universal Seal Remover • DT-47790 Seal Installer • GE-6125-1B Slide Hammer • GE-8092 Driver Handle For equivalent regional tools, refer to Special Tools .

TRANSMISSION CASE CLEANING AND INSPECTION

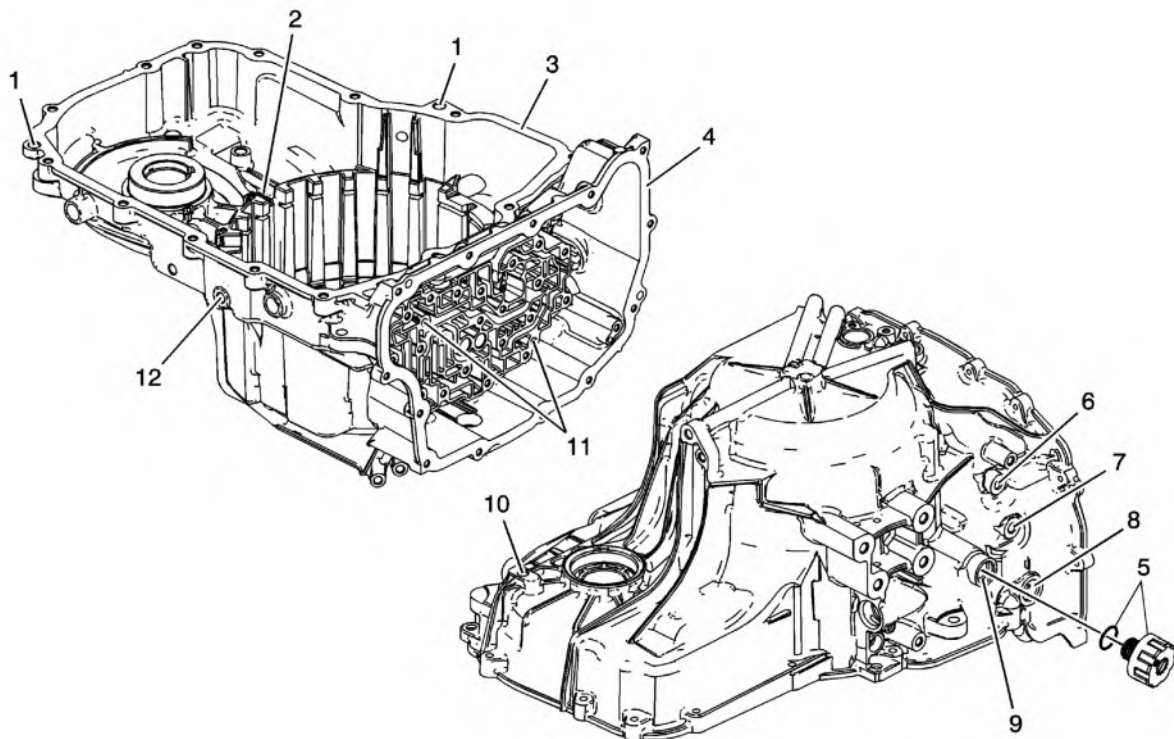


Fig. 19: Cleaning & Inspecting Transmission Case
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
CAUTION: Do not use abrasive pads or bristle devices to clean the sealing surfaces. Abrasive pads produce a fine grit that can effect transmission function. Abrasive pads can also remove enough metal to create oil leaks. 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. Preliminary Procedures 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	Torque Converter Housing Locating Pin Procedure Inspect the torque converter housing locating pins. NOTE: The locating pins installed height is 7.4 mm (0.29 in).

Callout	Component Name
2	Fluid Trough Check Ball NOTE: The check ball installed depth is 11 mm (0.43 in).
3	Converter Housing Sealing Surface
4	Control Valve Body Cover Sealing Surface
5	Fill Cap Seal
6	Transmission Fluid Cooler Pipe Sealing Surface
7	Fluid Pressure Test Hole Plug CAUTION: Refer to <u>Fastener Caution</u> . Tighten 12 N.m (106 lb in)
8	Manual Shift Shaft Seal Surface
9	Fluid Fill Cap Sealing Surface
10	Fluid Level Hole Plug Tighten 12 N.m (106 lb in)
11	Valve Body Locating Pin Procedure Inspect the valve body locating pins. NOTE: The locating pins installed height is 5.8 mm (0.22 in).
12	Drain Plug Tighten 12 N.m (106 lb in)

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

Park Pawl Actuator Guide Installation

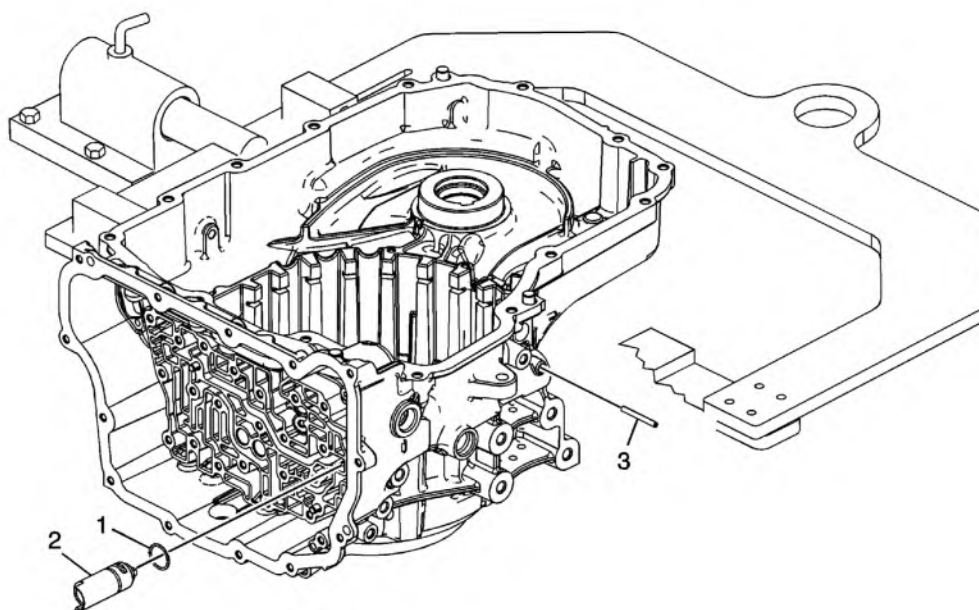


Fig. 20: View Of Park Pawl Actuator Guide & Seal
Courtesy of GENERAL MOTORS COMPANY

Park Pawl Actuator Guide Installation

Callout	Component Name
1	Park Pawl Actuator Guide Assembly Seal
2	Park Pawl Actuator Guide Assembly
3	Park Pawl Actuator Guide Pin CAUTION: Refer to Fastener Caution . Procedure Install the park pawl actuator guide pin to correct height. Tighten 7.2 mm (0.28 in)

Park Pawl Actuator Installation

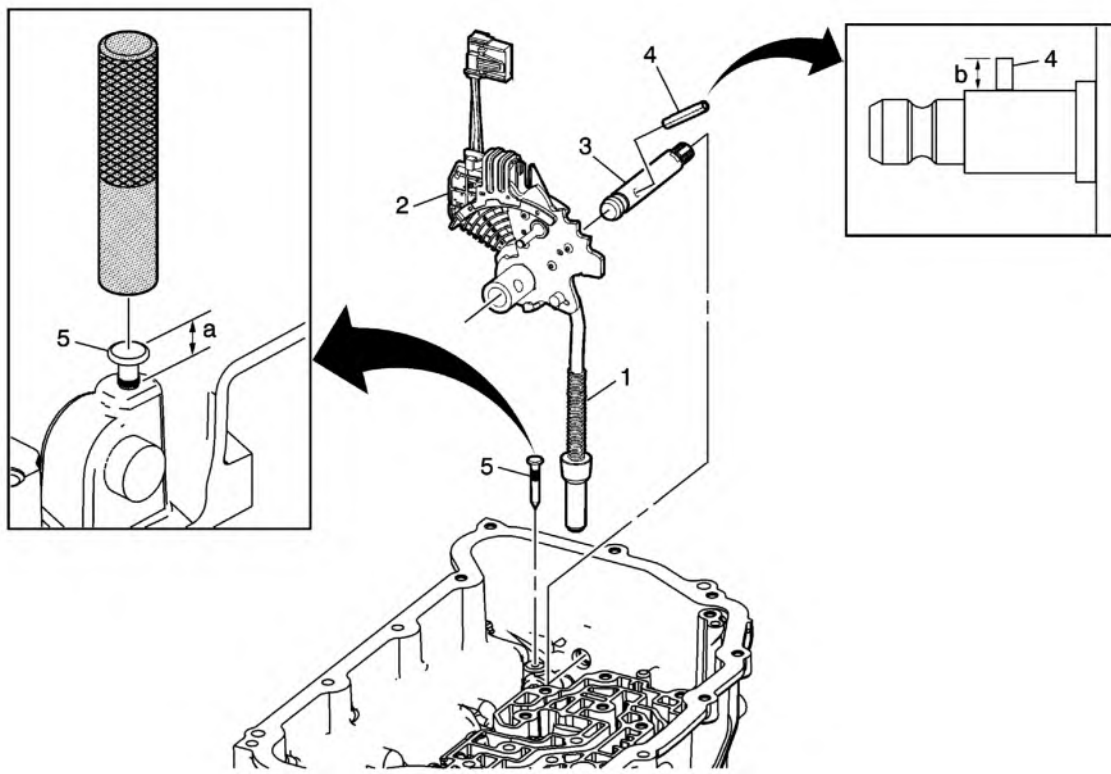


Fig. 21: Identifying Manual Shift Detent Lever with Shaft Position Switch Assembly & Park Pawl Actuator

Courtesy of GENERAL MOTORS COMPANY

Park Pawl Actuator Installation

Callout	Component Name
1	Park Pawl Actuator Assembly
2	Manual Shift Detent (w/Shaft Position Switch) Lever Assembly
3	Manual Shaft NOTE: Lubricate the shaft with ATF to prevent damage to the manual shift shaft seal during installation.
4	Manual Shaft Detent Lever Hub Pin CAUTION: Refer to Fastener Caution . Procedure Install the manual shaft detent lever hub pin to correct height. NOTE: Use a NEW pin to ensure proper engagement with the shaft. Specification 7.9 mm (0.38 in) (b) Special Tools DT-48550 Detent Lever Pin Remover For equivalent regional tools, refer to Special Tools .

Callout	Component Name
5	Manual Shift Shaft Pin CAUTION: Use the manual shaft pin installer to install the pin at the correct height in order to properly secure the manual shaft. If you install the pin too deep, the case bore may crack. Procedure Inspect pin installed height is within specifications. NOTE: Use a NEW pin to ensure proper engagement with the case. Specification 7.2-8.2 mm (0.28-0.32 in) (a) Special Tools DT-41229 Manual Shaft Pin Installer For equivalent regional tools, refer to Special Tools.

MANUAL SHIFT SHAFT SEAL INSTALLATION

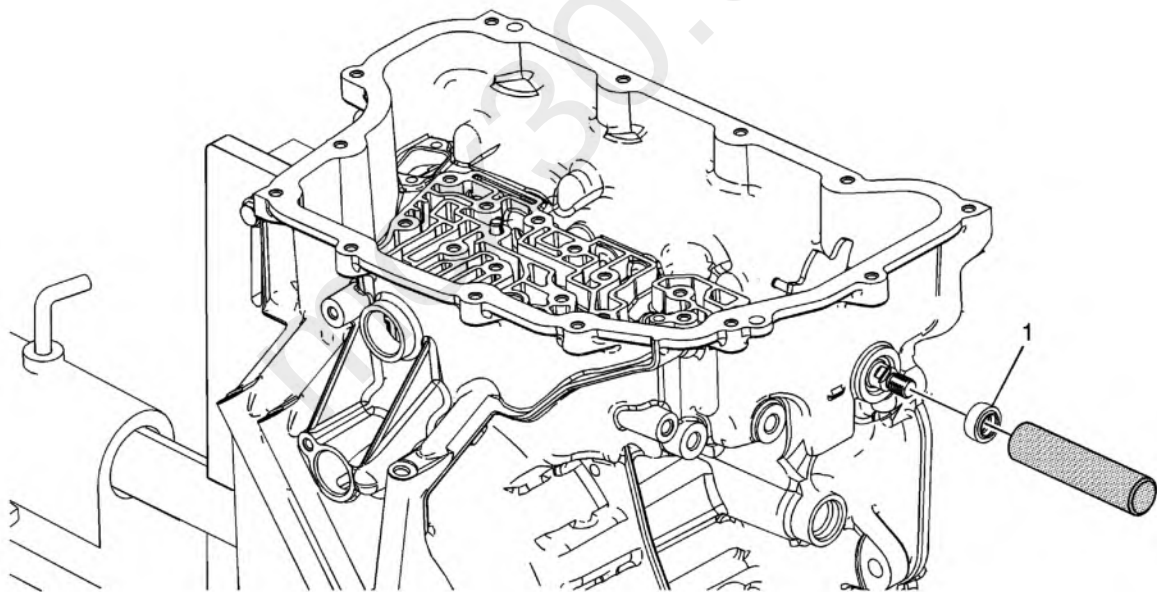


Fig. 22: Identifying Manual Shift Shaft Seal
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Manual Shift Shaft Seal Special Tool DT-49101 Seal Installer For equivalent regional tools, refer to Special Tools.

2-6 CLUTCH PISTON INSTALLATION

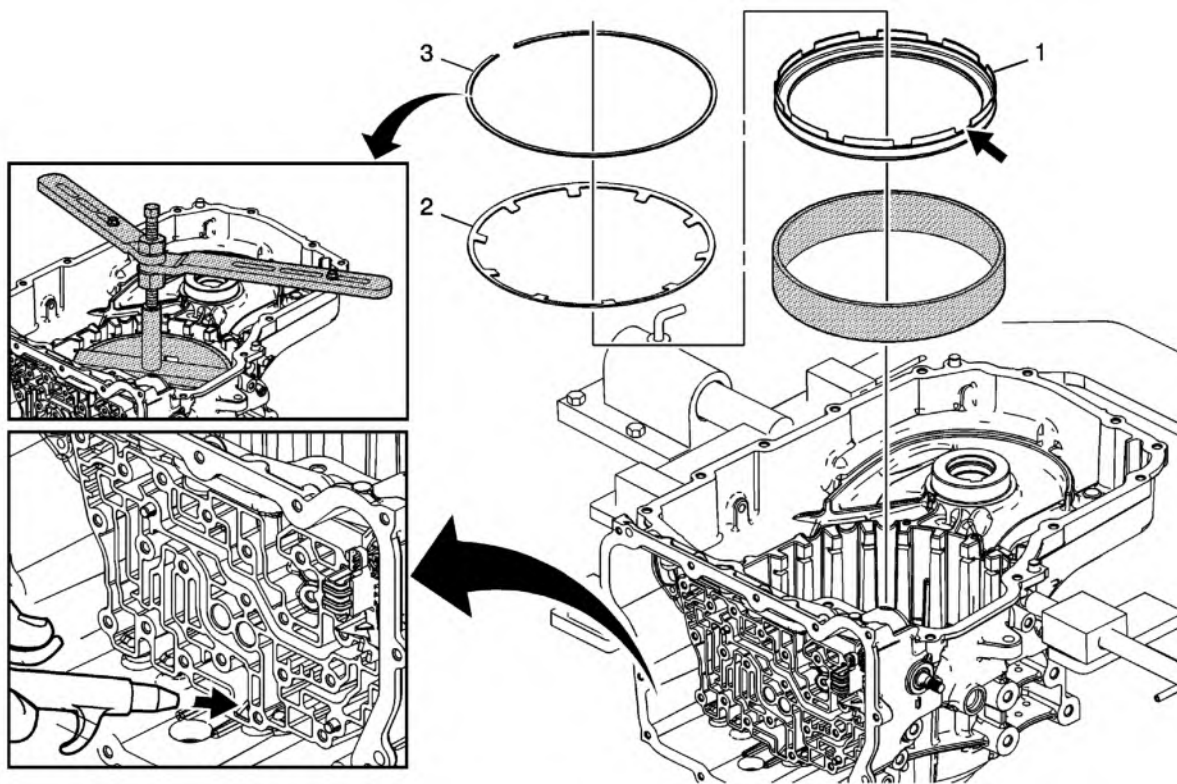


Fig. 23: 2-6 Clutch Piston

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	2-6 Clutch Piston Assembly NOTE: • Position the 2-6 piston air bleed and large slot toward the top of the case. • DT-47796 seal protector prevents the piston seal lip from damage during installation. Apply a thin coat of ATF to the I.D. of the DT-47796 seal protector to ease installation of the piston. Special Tool DT-47796 Seal Protector For equivalent regional tools, refer to Special Tools .
2	2-6 Clutch Spring

Callout	Component Name
3	2-6 Clutch Spring Retainer CAUTION: Regulate the air pressure to 276 kPa (40 psi) maximum. High pressure could cause the piston to over travel and damage the piston seals. NOTE: - Place the retainer on the 2-6 clutch spring and align the retainer opening with the largest gap in the case splines toward the bottom of the case. The retainer opening should be supported by a spline tooth of the case. - Apply shop air to the clutch fluid feed hole in the case to verify proper piston operation. Special Tools - DT-47797 Spring Installer - DT-48056 Spring Compressor Bridge For equivalent regional tools, refer to Special Tools .

LOW AND REVERSE AND 1-2-3-4 CLUTCH HOUSING, LOW AND REVERSE CLUTCH ASSEMBLY, OUTPUT SUN GEAR, AND 2-6 CLUTCH PLATE DISASSEMBLE

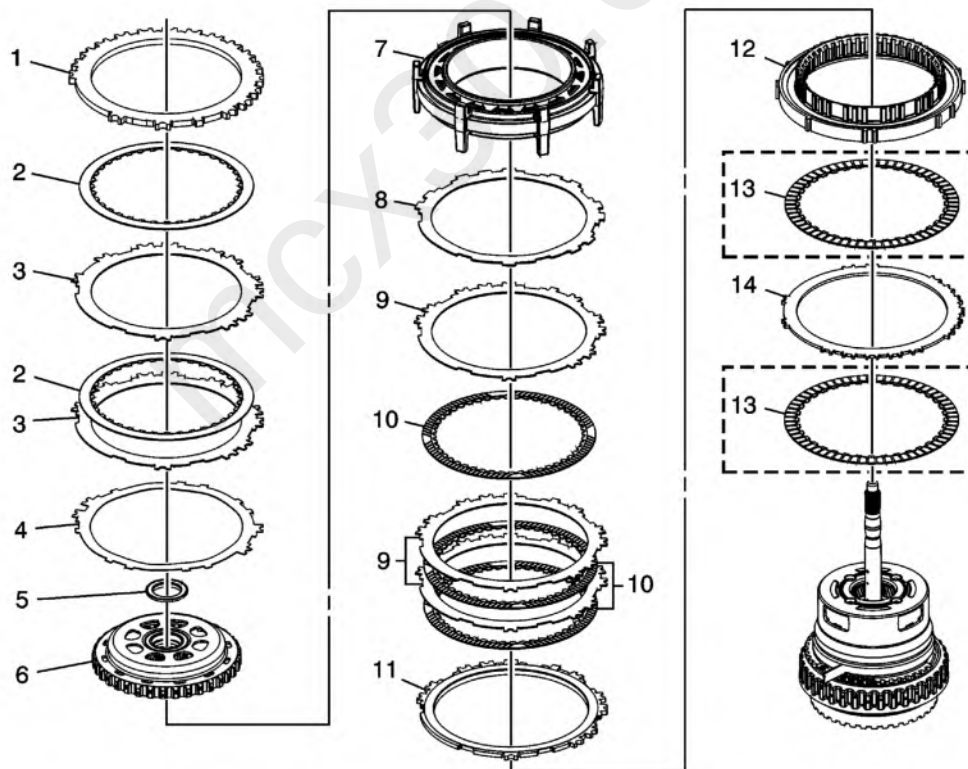


Fig. 24: 1-2-3-4 Clutch Housing And Clutch Assembly.
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	1-2-3-4 Clutch Backing Plate
2	1-2-3-4 Clutch Plate Assembly (Qty: 2)
3	1-2-3-4 Clutch Plate (Qty: 2)
4	1-2-3-4 Clutch Waved Plate

Callout	Component Name
5	Output Sun Gear Thrust Bearing Assembly NOTE: The sun gear thrust bearing may be stuck to the driven sprocket hub.
6	Output Sun Gear Assembly
7	Low-Reverse and 1-2-3-4 Clutch Housing Assembly
8	Low and Reverse Clutch Apply Plate
9	Low and Reverse Clutch Plate (Qty: 3)
10	Low and Reverse Clutch Plate Assembly (Qty: 3)
11	Low and Reverse Clutch Backing Plate
12	Low and Reverse Clutch Assembly (OWC)
13	2-6 Clutch Plate Assembly (Qty: 2) - Model Dependent NOTE: The number of grooves in the clutch plate friction material varies depending on model.
14	2-6 Clutch Plate (Qty: 1)

INPUT, REACTION, AND OUTPUT CARRIER DISASSEMBLE

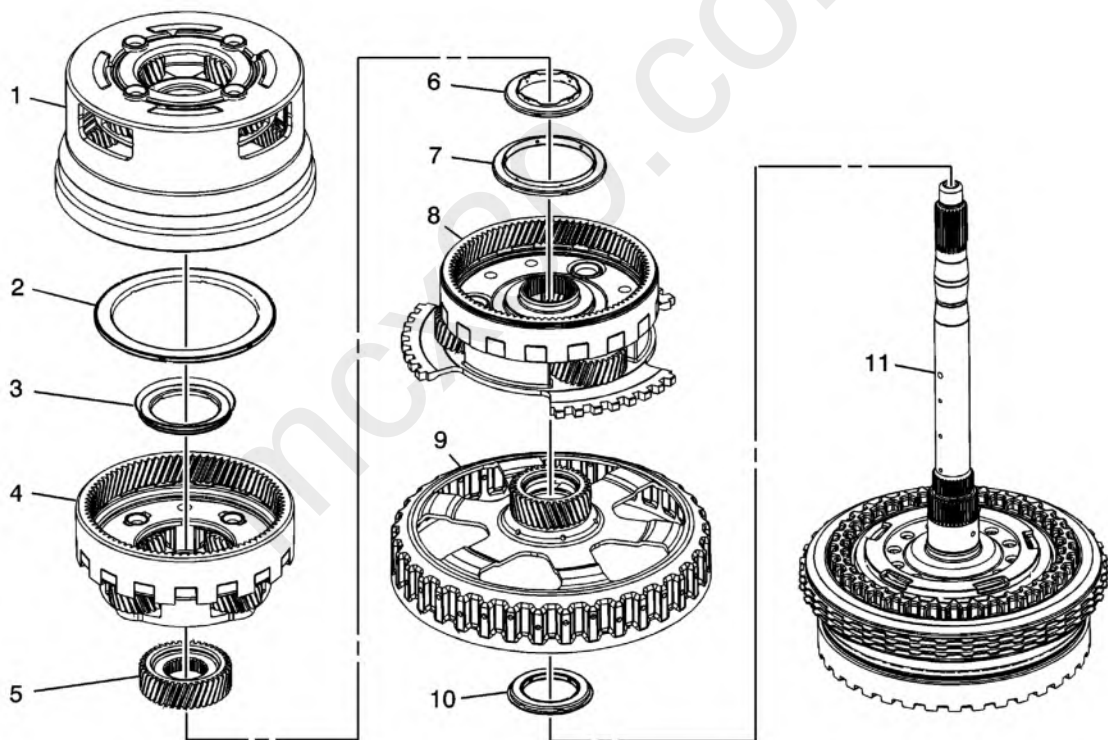


Fig. 25: Disassembled View Of Input, Reaction & Output Carrier
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Output Carrier Assembly NOTE: - The 6T30 and 6T40 have 4 pinions. - The 6T45 and 6T50 have 5 pinions.
2	Output Carrier Thrust Bearing Assembly

Callout	Component Name
3	Input Sun Gear Thrust Bearing Assembly
4	Input Carrier Assembly NOTE: • The 6T30 and 6T40 have 4 pinions. • The 6T45 and 6T50 have 5 pinions.
5	Input Sun Gear
6	Input Sun Gear Thrust Bearing Assembly
7	Input Carrier Thrust Bearing Assembly
8	Reaction Carrier Assembly NOTE: Starting in 2012, all 6T30/40/45/50 models have 3 pinion reaction carriers. The 3 pinion reaction carriers are back serviceable for all models. Original Configuration: • The 6T30 and 6T40 had 3 pinions. • The 6T45 and 6T50 had 4 pinions.
9	Reaction Carrier Sun Gear Assembly
10	Reaction Carrier Sun Gear Thrust Bearing NOTE: The sun gear thrust bearing may be stuck to the sun gear.
11	3-5 Reverse and 4-5-6 Clutch Housing Assembly

3-5-REVERSE AND 4-5-6 CLUTCH HOUSING DISASSEMBLE

Turbine Shaft, Reluctor Wheel and Piston Removal

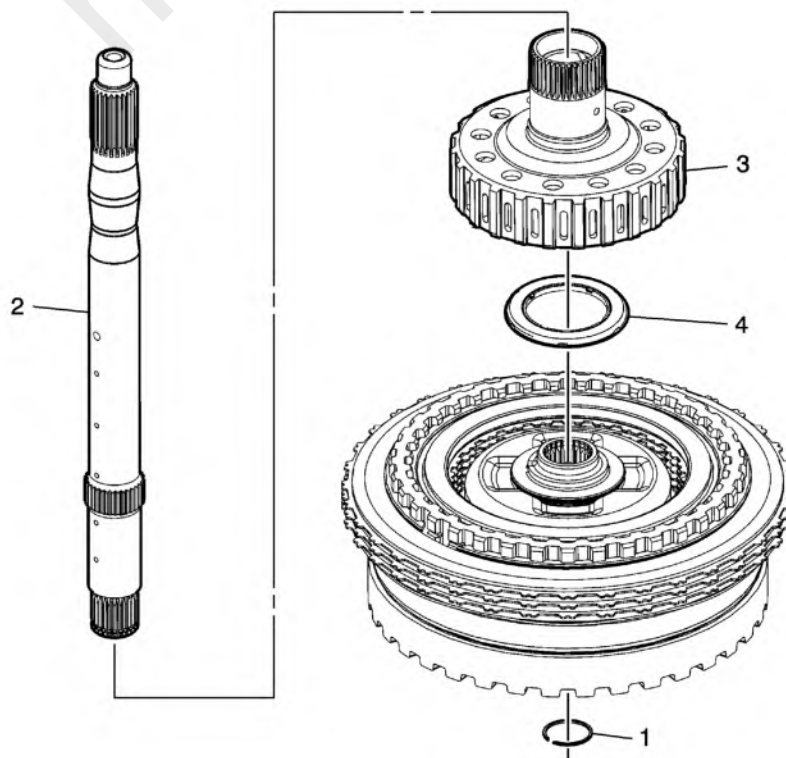


Fig. 26: Turbine Shaft, Reluctor Wheel And Piston
 Courtesy of GENERAL MOTORS COMPANY

Turbine Shaft, Reluctor Wheel and Piston Removal

Callout	Component Name
1	Turbine Shaft Retainer Ring NOTE: Discard the retainer ring. It is not re-usable. Special Tools GE 5586-A Snap Ring Pliers or equivalent For equivalent regional tools, refer to Special Tools .
2	Turbine Shaft
3	Reaction Carrier Hub Assembly
4	Reaction Carrier Hub Thrust Bearing Assembly

4-5-6 Clutch Plate Removal

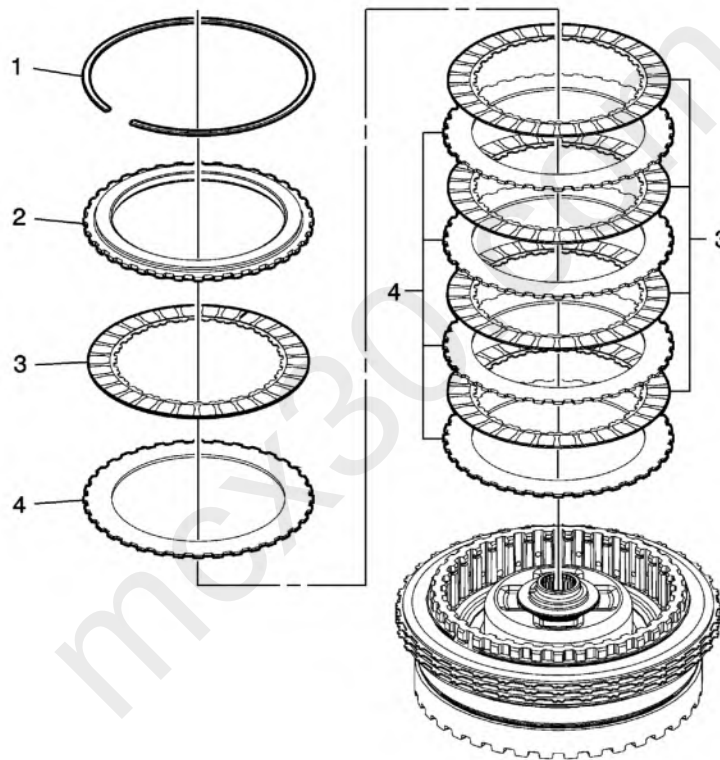


Fig. 27: 4--5--6 Clutch Plate Components
 Courtesy of GENERAL MOTORS COMPANY

4-5-6 Clutch Plate Removal

Callout	Component Name
1	4-5-6 Clutch Backing Plate Retaining Ring
2	4-5-6 Clutch Backing Plate
3	4-5-6 Clutch Plate Assembly (Qty: 5)
4	4-5-6 Clutch Plate (Gen 2 - Qty: 5)

4-5-6 Clutch Piston Removal

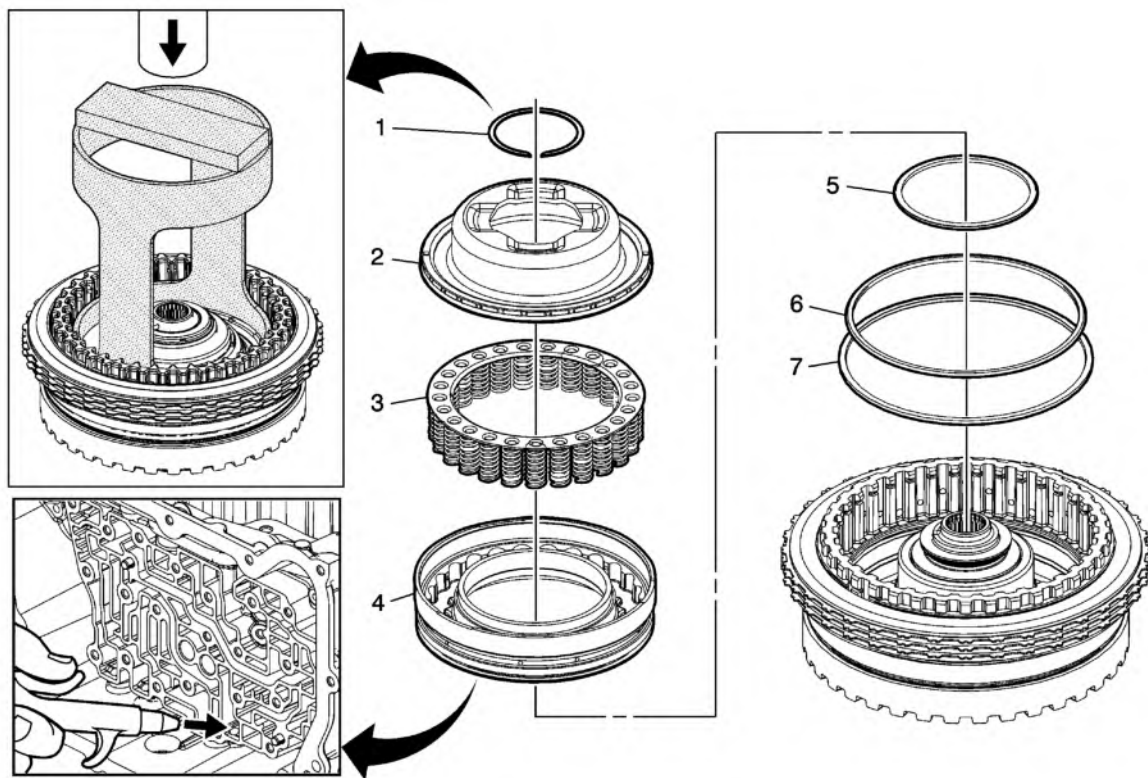


Fig. 28: 4--5--6 Clutch Piston & Components
 Courtesy of GENERAL MOTORS COMPANY

4-5-6 Clutch Piston Removal

Callout	Component Name
1	4-5-6 Clutch Dam Retaining Ring NOTE: The 4-5-6 clutch dam retaining ring is not reusable. Special Tools • DT-47951-2 Spring Compressor • GE 5586-A Snap Ring Pliers or equivalent For equivalent regional tools, refer to Special Tools .
2	4-5-6 Clutch Piston Fluid Dam Assembly Procedure 1. Place the 3-5 reverse and 4-5-6 clutch housing onto the support hub in the case. 2. Apply shop air to the 4-5-6 clutch feed hole using a rubber tipped air gun to dislodge the dam piston and the 4-5-6 clutch piston from the clutch housing.
3	4-5-6 Clutch Piston Return Spring Assembly
4	4-5-6 Clutch Piston NOTE: Apply shop air to the 4-5-6 clutch feed hole using a rubber tipped air gun to dislodge the clutch piston.
5	4-5-6 Clutch Piston Inner Seal
6	4-5-6 Clutch Piston Outer Seal (Dark Blue) (Stepped)
7	4-5-6 Clutch Piston Outer Seal (Large) (Rounded)

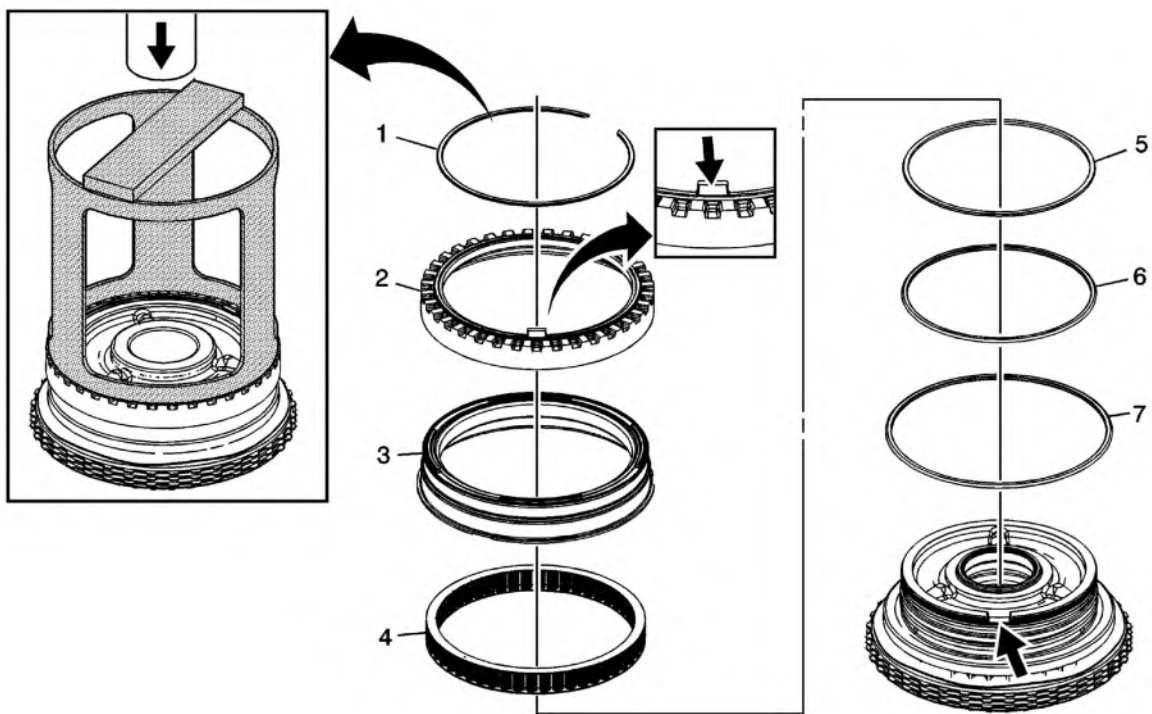


Fig. 29: Disassembled View Of Reluctor Wheel & Piston
 Courtesy of GENERAL MOTORS COMPANY

Reluctor Wheel and Piston Removal

Callout	Component Name
1	Input Shaft Speed Sensor Reluctor Ring Retainer Ring CAUTION: Compress the reluctor wheel just enough to clear the retainer. Over compressing the reluctor wheel will break the alignment tab and the clutch housing. Special Tool DT-47694 Piston Spring Compressor For equivalent regional tools, refer to Special Tools .
2	Input Shaft Speed Sensor Reluctor Wheel
3	3-5 Reverse Clutch Piston
4	3-5 Reverse Clutch Piston Return Spring Assembly
5	3-5 Reverse Clutch Piston Inner (Reluctor) Seal (Orange)
6	3-5 Reverse Clutch Piston Inner Seal
7	3-5 Reverse Clutch Piston Dam Seal (Black)

3-5 Reverse Clutch Plate Removal

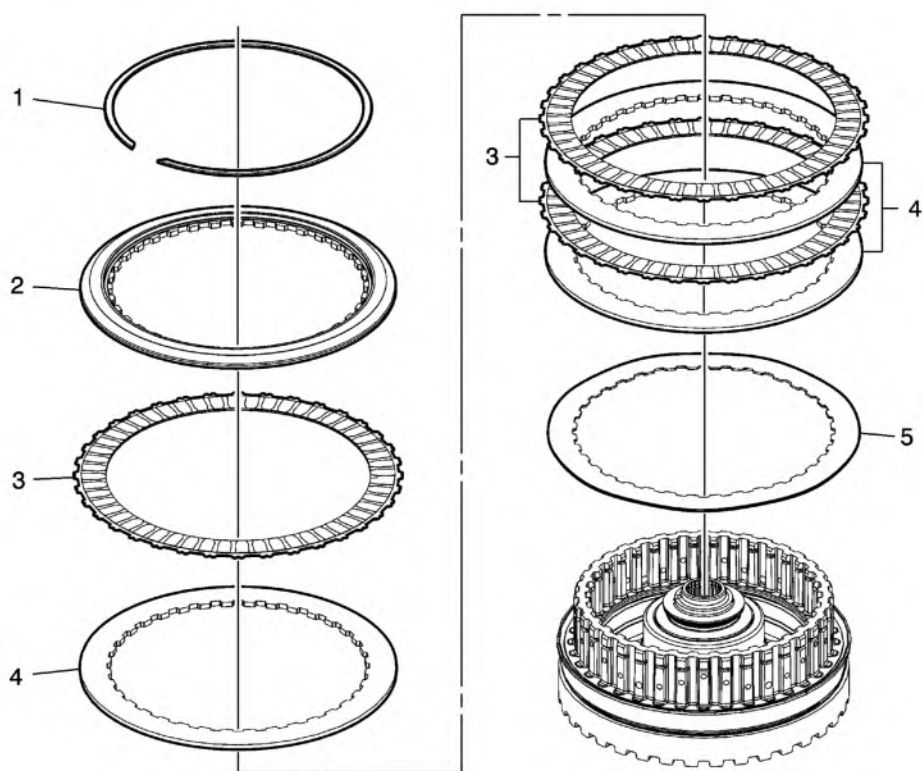


Fig. 30: 3--5 Reverse Clutch Plate Components
 Courtesy of GENERAL MOTORS COMPANY

3-5 Reverse Clutch Plate Removal

Callout	Component Name
1	3-5 Reverse Clutch Backing Plate Ring Retainer Ring NOTE: Gently push down on the backing plate to get enough clearance between the backing plate and retainer.
2	3-5 Reverse Clutch Backing Plate
3	3-5 Reverse Clutch Plate Assembly (Qty: 3)
4	3-5 Reverse Clutch Plate (Qty: 3)
5	3-5 Reverse Clutch Apply Plate (Waved)

3-5-REVERSE AND 4-5-6 CLUTCH HOUSING ASSEMBLE

4-5-6 Clutch Piston Installation

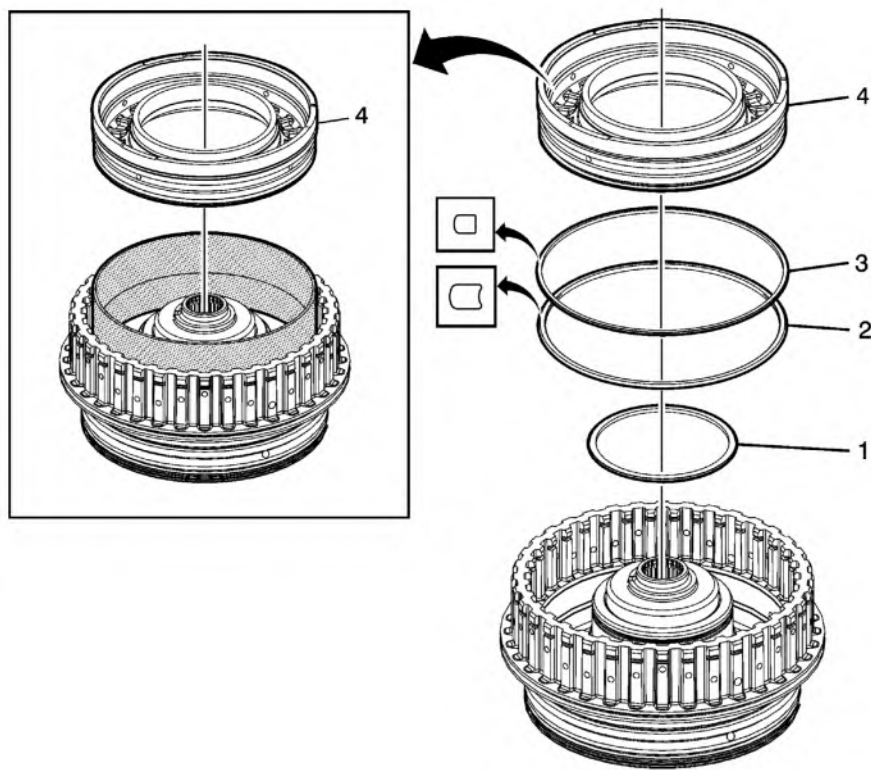


Fig. 31: 4-5-6 Clutch Piston

Courtesy of GENERAL MOTORS COMPANY

4-5-6 Clutch Piston Installation

Callout	Component Name
1	4-5-6 Clutch Piston Inner Seal
2	4-5-6 Clutch Piston Outer Seal (Large) (Rounded)
3	4-5-6 Clutch Piston Outer Seal (Dark Blue) (Stepped)
4	4-5-6 Clutch Piston NOTE: • DT-47805 seal protector prevents the piston seal lip from damage during installation. Apply a thin coat of ATF to the I.D. of DT-47805 seal protector to ease the installation of the piston. • DT-47951-2 spring compressor can be used as a pusher if necessary. Special Tools • DT-47805 Seal Protector • DT-47951-2 Spring Compressor For equivalent regional tools, refer to Special Tools .

4-5-6 Clutch Fluid Dam Installation

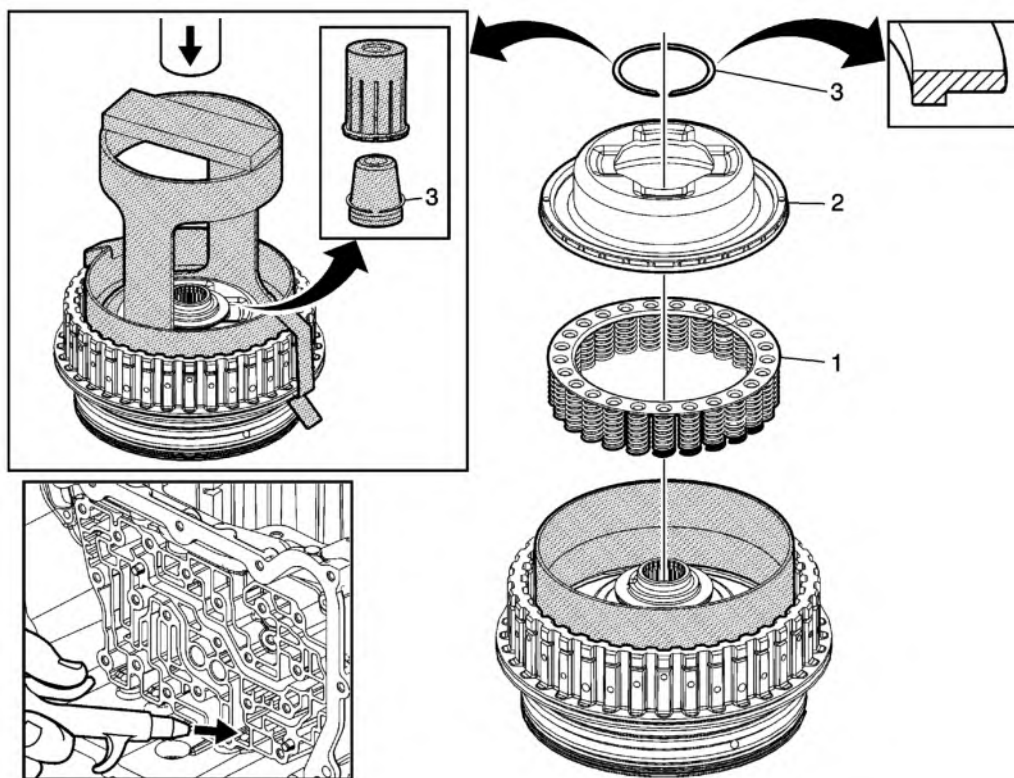


Fig. 32: 4-5-6 Clutch Fluid Dam

Courtesy of GENERAL MOTORS COMPANY

4-5-6 Clutch Fluid Dam Installation

Callout	Component Name
1	4-5-6 Clutch Piston Return Spring Assembly
2	4-5-6 Clutch Piston Fluid Dam Assembly NOTE: The seal protector prevents the dam seal lip from damage during installation. Apply a thin coat of ATF to the I.D. of the seal protector to ease the installation of the dam. Special Tools • DT-47951-1 Seal Protector for 6T40/45 applications • DT-50117 Seal Protector for 6T50 applications For equivalent regional tools, refer to Special Tools .

Callout	Component Name
3	4-5-6 Clutch Dam Retaining Ring CAUTION: Regulate the air pressure to 276 kPa (40 psi) maximum. High pressure could cause the piston to over travel and damage the piston seals. Procedure 1. Leave the seal protector on the clutch housing while installing the retaining ring. Install the dam retainer clips DT 50117-1 seal protector to hold the seal protector in place. 2. Use DT 46620-2 retaining clips and DT 50573 ring guide to install a NEW 4-5-6 clutch dam retaining ring. Assemble the ring "L" leg facing down, DT 50573 and DT 46620 and insert as an assembly onto the clutch hub to install the ring. 3. Place the housing assembly onto the input shaft support inside the case. Apply shop air to the clutch fluid feed hole in the case to verify proper piston operation. Special Tools • DT-47951-2 Spring Compressor • DT 46620 Seal Installer • DT 50117-1 Seal Protector • DT 50117-2 Seal Protector Retaining Clips • DT 50573 Retaining Ring Installer For equivalent regional tools, refer to Special Tools .

3-5 Reverse Clutch Plates Installation

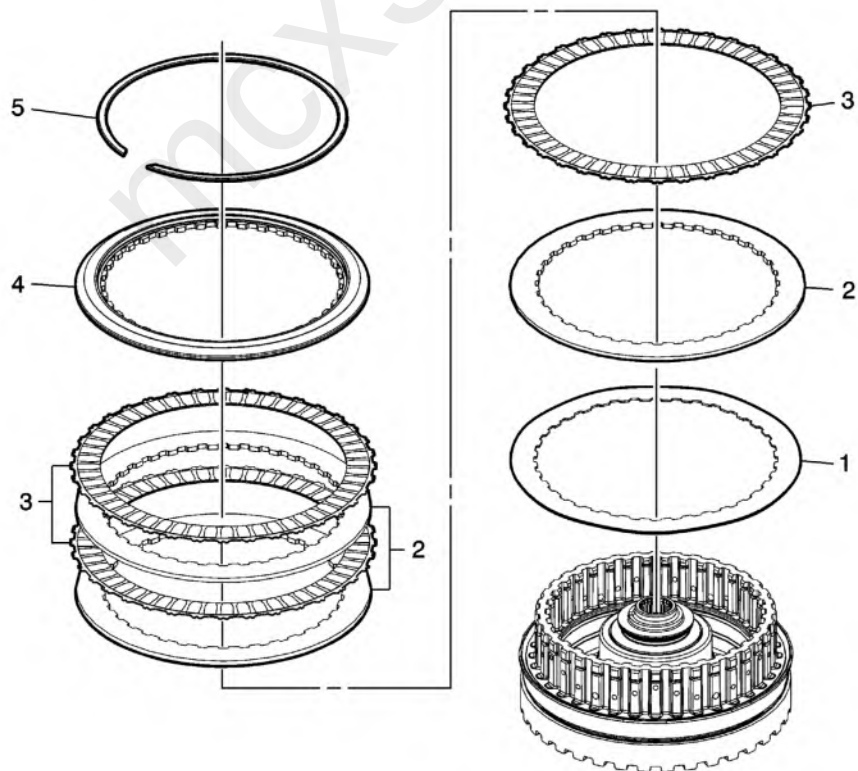


Fig. 33: 3--5 Reverse Clutch Plates & Components
Courtesy of GENERAL MOTORS COMPANY

3-5 Reverse Clutch Plates Installation

Callout	Component Name

Callout	Component Name
1	3-5 Reverse Clutch Apply Plate (Waved)
2	3-5 Reverse Clutch Plate (Qty: 3)
3	3-5 Reverse Clutch Plate Assembly (Qty: 3)
4	3-5 Reverse Clutch Backing Plate
5	3-5 Reverse Clutch Backing Plate Ring Retainer Ring

Reluctor Wheel and Piston Installation

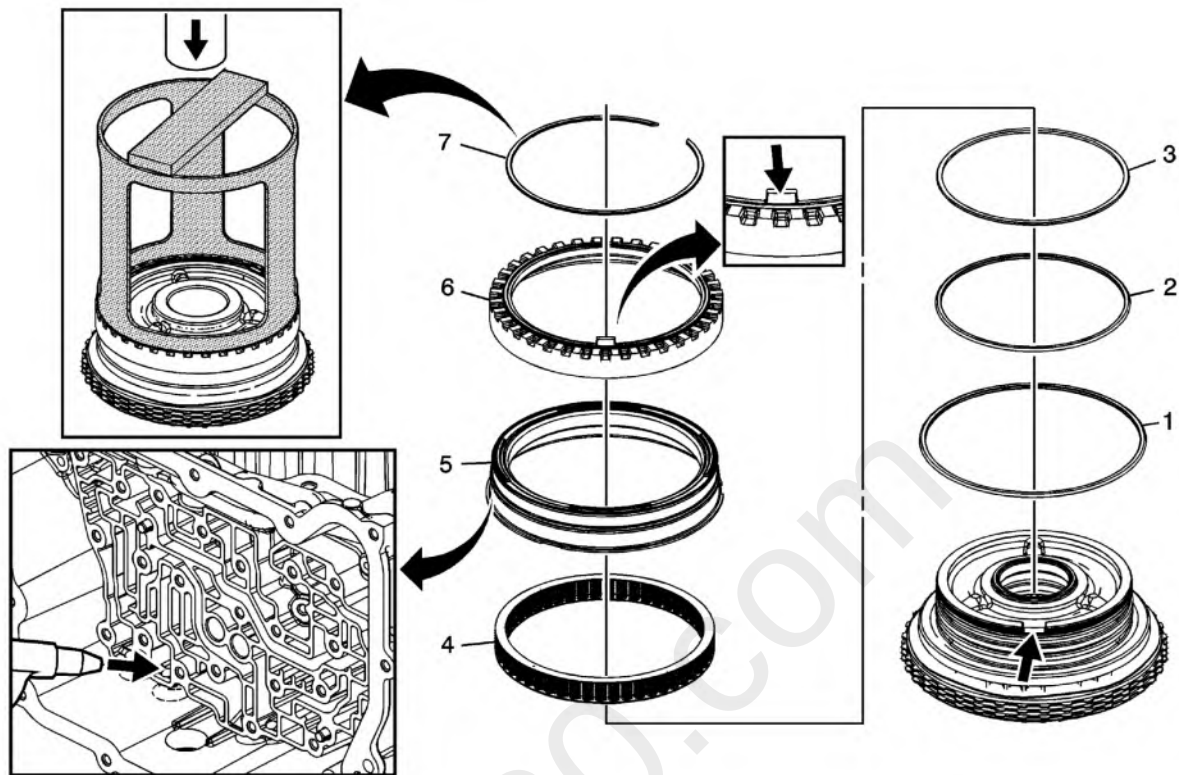


Fig. 34: Exploded View Of Reluctor Wheel & Piston
Courtesy of GENERAL MOTORS COMPANY

Reluctor Wheel and Piston Installation

Callout	Component Name
1	3-5 Reverse Clutch Piston Dam Seal (Black)
2	3-5 Reverse Clutch Piston Inner Seal
3	3-5 Reverse Clutch Piston Inner (Reluctor) Seal (Orange)
4	3-5 Reverse Clutch Piston Return Spring Assembly
5	3-5 Reverse Clutch Piston
6	Input Shaft Speed Sensor Reluctor Wheel

Callout	Component Name
7	Input Shaft Speed Sensor Reluctor Ring Retainer Ring CAUTION: Compress the reluctor wheel just enough to clear the retainer. Over compressing the reluctor wheel will break the alignment tab and the clutch housing. CAUTION: Regulate the air pressure to 276 kPa (40 psi) maximum. High pressure could cause the piston to over travel and damage the piston seals. Procedure Place the housing assembly onto the input shaft support inside the case. Apply shop air to the clutch fluid feed hole in the case to verify proper piston operation. Special Tools DT-47694 Piston Spring Compressor For equivalent regional tools, refer to Special Tools.

4-5-6 Clutch Plates Installation

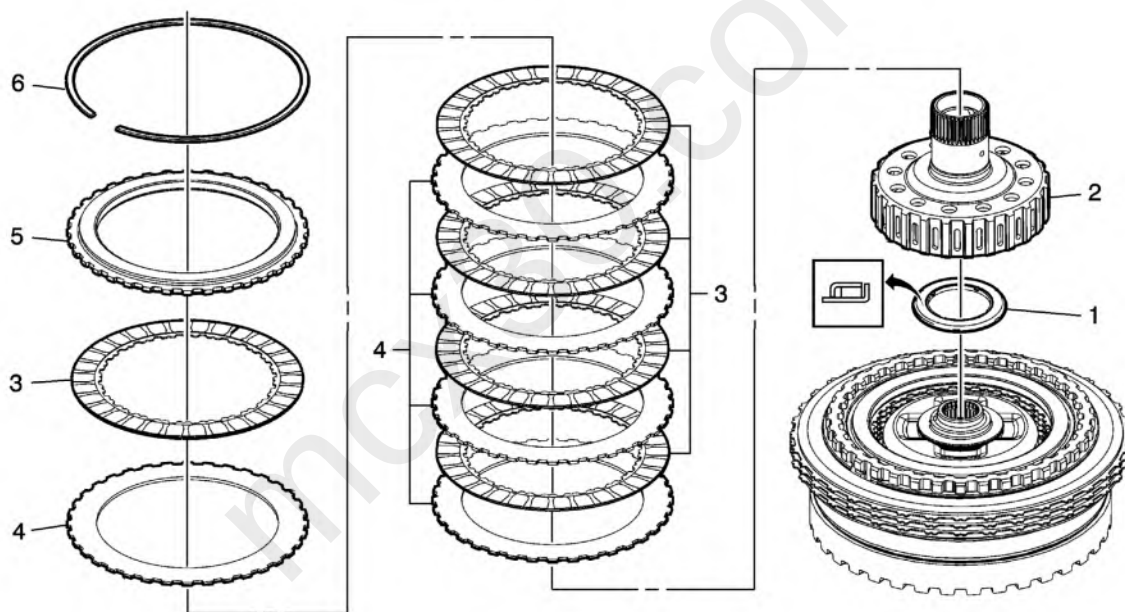


Fig. 35: 4--5--6 Clutch Plates & Components
Courtesy of GENERAL MOTORS COMPANY

4-5-6 Clutch Plates Installation

Callout	Component Name
1	Reaction Carrier Hub Thrust Bearing Assembly
2	Reaction Carrier Hub Assembly
3	4-5-6 Clutch Plate Assembly (Qty: 5)
4	4-5-6 Clutch Plate (Qty: 5)
5	4-5-6 Clutch Backing Plate
6	4-5-6 Clutch Backing Plate Retaining Ring

Turbine Shaft Installation

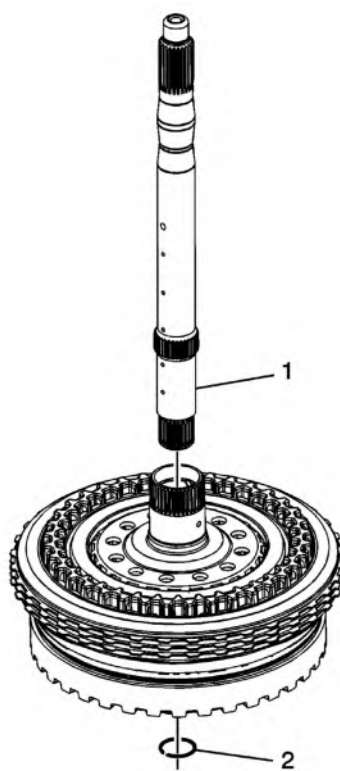


Fig. 36: View Of Turbine Shaft

Courtesy of GENERAL MOTORS COMPANY

Turbine Shaft Installation

Callout	Component Name
1	Turbine Shaft
2	Turbine Shaft Retainer Ring NOTE: Do not re-use the turbine shaft retainer ring. Special Tools GE 5586-A Snap Ring Pliers or equivalent For equivalent regional tools, refer to Special Tools .

INPUT, REACTION, AND OUTPUT CARRIER ASSEMBLE

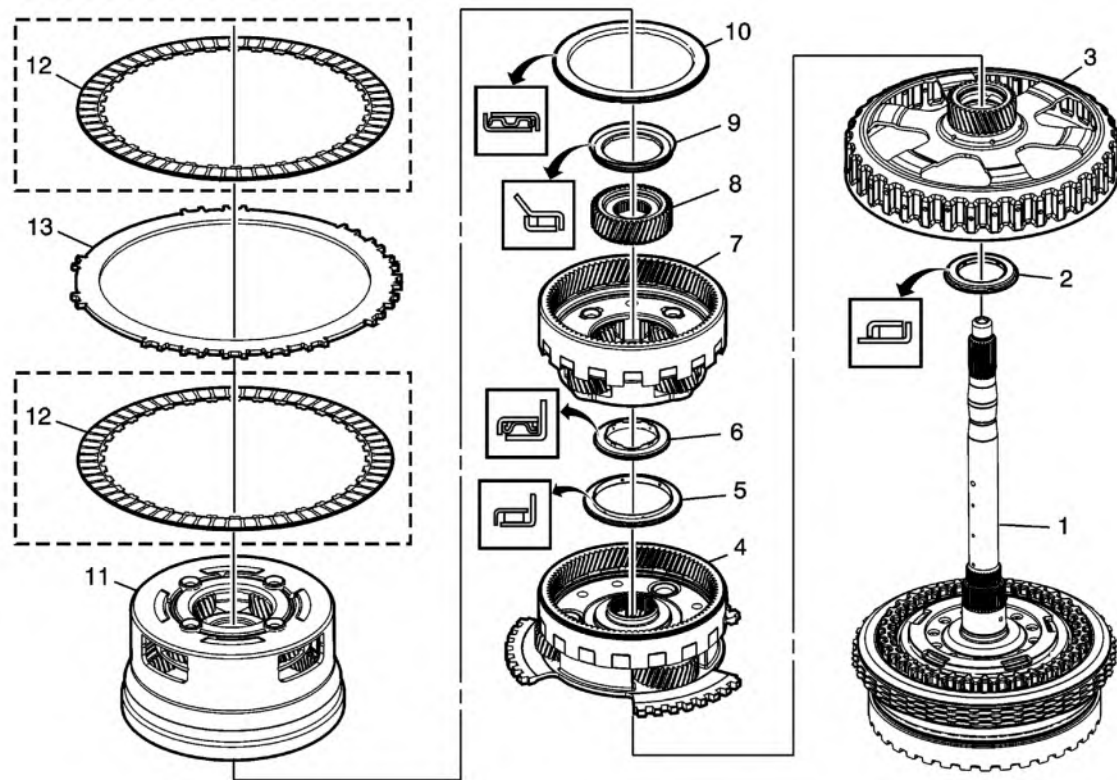


Fig. 37: Input, Reaction, and Output Carrier Assemble
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	3-5 Reverse and 4-5-6 Clutch Housing Assembly
2	Reaction Carrier Sun Gear Thrust Bearing
3	Reaction Carrier Sun Gear Assembly
4	Reaction Carrier Assembly NOTE: Starting in 2012, all 6T30/40/45/50 models have 3 pinion reaction carriers. The 3 pinion reaction carriers are back serviceable for all models. Original Configuration: • The 6T30 and 6T40 had 3 pinions. • The 6T45 and 6T50 had 4 pinions.
5	Input Carrier Thrust Bearing Assembly
6	Input Sun Gear Thrust Bearing Assembly
7	Input Carrier Assembly NOTE: • The 6T30 and 6T40 have 4 pinions. • The 6T45 and 6T50 have 5 pinions.
8	Input Sun Gear
9	Input Sun Gear Thrust Bearing Assembly
10	Output Carrier Thrust Bearing Assembly

Callout	Component Name
11	Output Carrier Assembly NOTE: • The 6T30 and 6T40 have 4 pinions. • The 6T45 and 6T50 have 5 pinions.
12	2-6 Clutch Plate Assembly (Qty: 2) - Model Dependent NOTE: • Begin with the clutch plate assembly and alternate with the clutch plate. • The number of grooves in the clutch plate friction material varies depending on model.
13	2-6 Clutch Plate (Qty: 1) NOTE: Only install one 2-6 Clutch Plate at this time. The remaining clutch plate is installed into the case.

3-5-REVERSE AND 4-5-6 CLUTCH HOUSING, AND INPUT, REACTION, AND OUTPUT CARRIER INSTALLATION

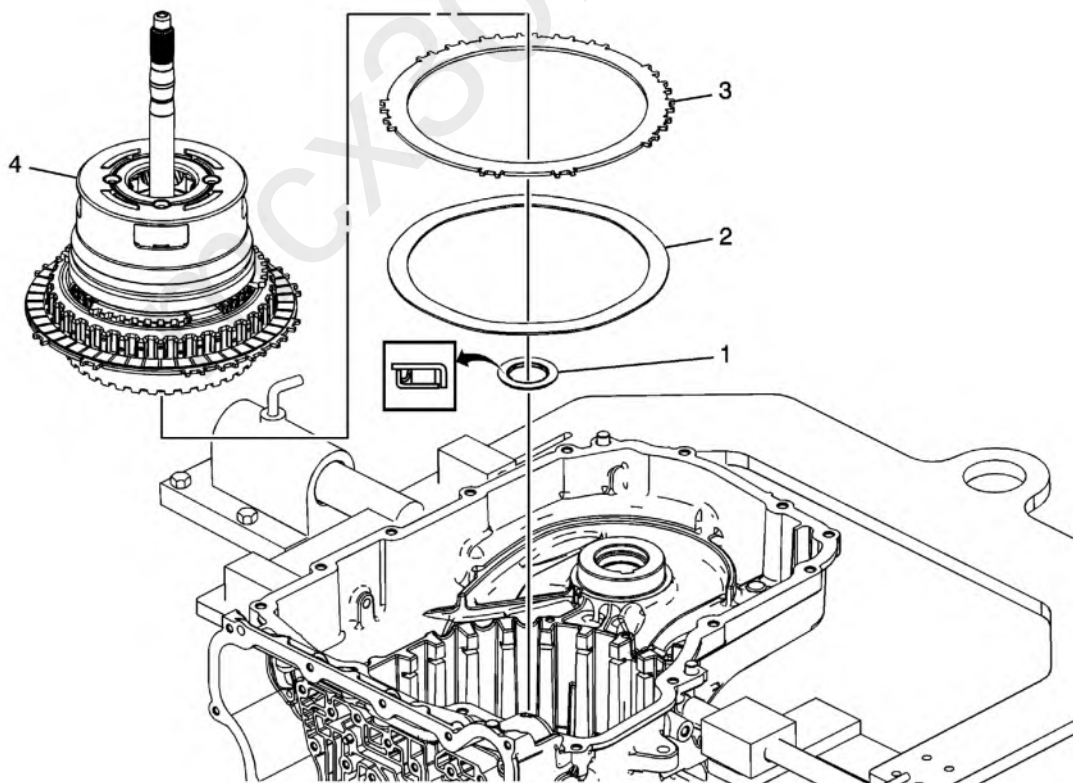


Fig. 38: View Of 3-5-Reverse, 4-5-6 Clutch Housing, Input, Reaction & Output Carrier Components

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	3-5 Reverse and 4-5-6 Clutch Housing Thrust Bearing
2	2-6 Clutch Apply Plate (Waved)

Callout	Component Name
3	2-6 Clutch Plate (Qty: 1) NOTE: • Only install one 2-6 Clutch Plate. The remaining clutch plate is installed with the gearset assembly. • Align the large flat areas with the valve body end of the case and the 2 tabs on the clutch plate that are close to each other with the slots at the bottom right corner of the case.
4	3-5 Reverse and 4-5-6 Clutch Housing Assembly and Gearset NOTE: Align the large flat areas of the 2-6 Clutch Plate with the valve body end of the case and the 2 tabs on the clutch plate that are close to each other with the slots at the bottom right corner of the case.

LOW AND REVERSE CLUTCH ASSEMBLY AND LOW AND REVERSE CLUTCH PLATE INSTALLATION

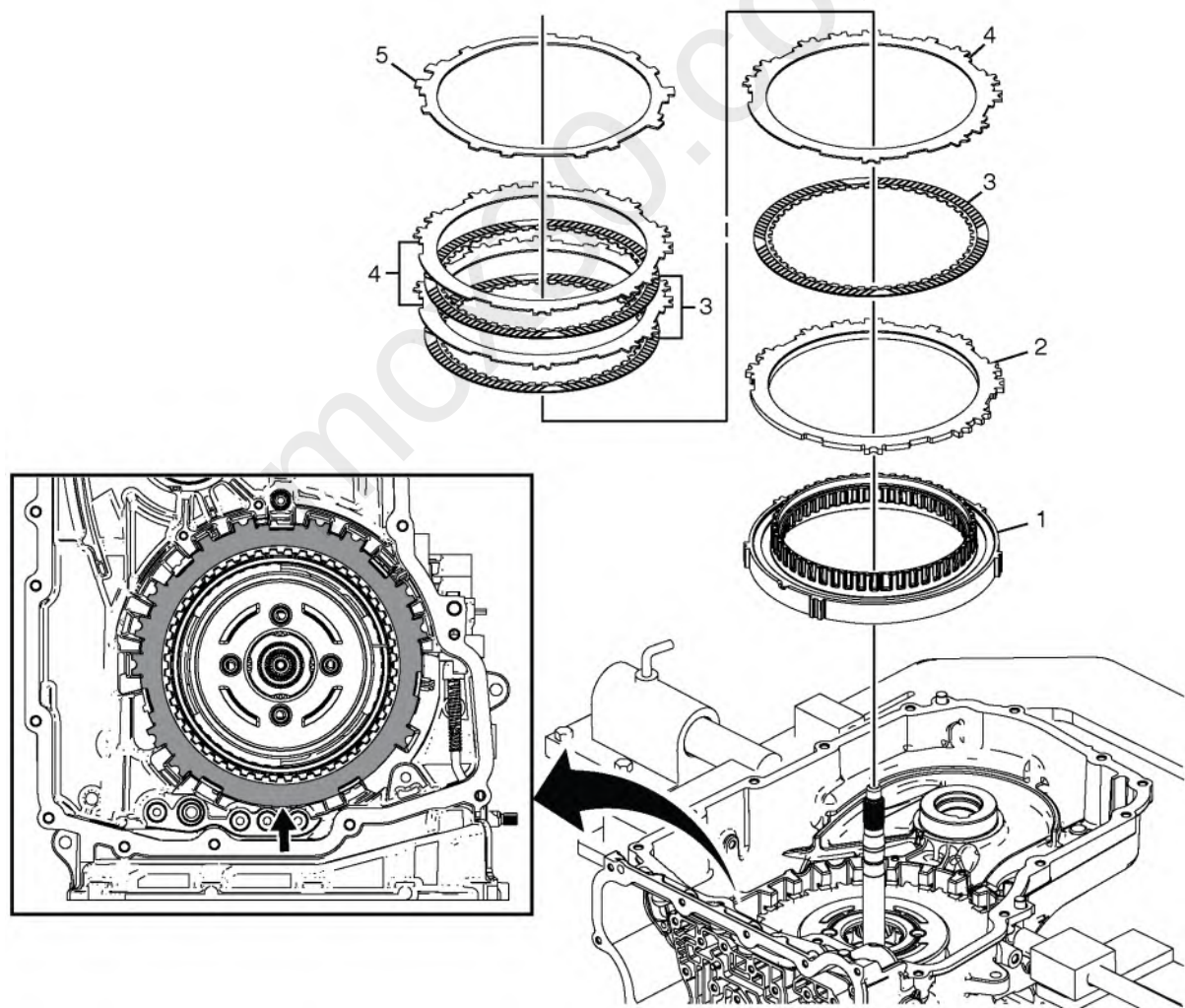


Fig. 39: View Of Low and Reverse Clutch Assembly.
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

Callout	Component Name
1	Low and Reverse Clutch Assembly (OWC) NOTE: • The low and reverse clutch assembly should rotate freely in one direction and lock in the opposite direction. Rotate the clutch assembly and listen/feel for the ratchet of the clutch in it's designed rotational direction. • With the valve body face at the 6 o'clock position, align the large flat areas of the low and reverse clutch assembly between the 2 o'clock and 5 o'clock position.
2	Low and Reverse Clutch Backing Plate
3	Low and Reverse Clutch Plate Assembly (Qty: 3)
4	Low and Reverse Clutch Plate (Qty: 3) NOTE: With the valve body face at the 6 o'clock position, align the large flat areas of the low and reverse clutch plate between the 2 o'clock and 5 o'clock position.
5	Low and Reverse Clutch Apply (Waved) Plate NOTE: • With the valve body face at the 6 o'clock position, align the large flat areas of the low and reverse clutch apply plate between the 2 o'clock and 5 o'clock position. • Ensure the correct waved plate is being installed. The 1-2-3-4 clutch and low and reverse clutch waved plates are visually similar, however the low and reverse clutch waved plate is thicker.

LOW AND REVERSE AND 1-2-3-4 CLUTCH HOUSING DISASSEMBLE

Low and Reverse Clutch Piston Removal

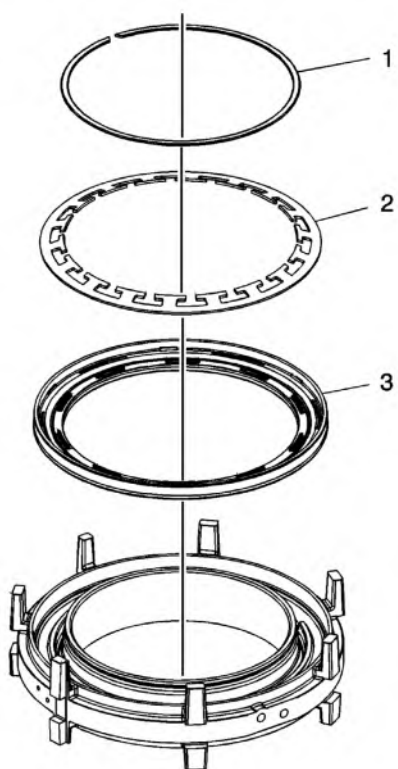


Fig. 40: View Of Low & Reverse Clutch Piston
 Courtesy of GENERAL MOTORS COMPANY

Low and Reverse Clutch Piston Removal

Callout	Component Name
1	Low and Reverse Clutch Spring Retainer Special Tool GE-8059 Snap Ring Pliers - Parallel Jaw For equivalent regional tools, refer to Special Tools .
2	Low and Reverse Clutch Spring
3	Low and Reverse Clutch Piston

1-2-3-4 Clutch Piston Removal

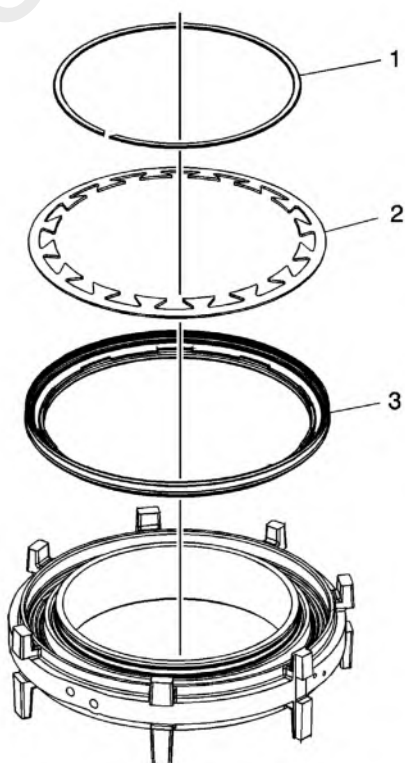


Fig. 41: View Of 1-2-3-4 Clutch Piston
 Courtesy of GENERAL MOTORS COMPANY

1-2-3-4 Clutch Piston Removal

Callout	Component Name
1	1-2-3-4 Clutch Spring Retainer Special Tool GE-8059 Snap Ring Pliers - Parallel Jaw For equivalent regional tools, refer to Special Tools .
2	1-2-3-4 Clutch Spring
3	1-2-3-4 Clutch Piston

LOW AND REVERSE AND 1-2-3-4 CLUTCH HOUSING CLEANING AND INSPECTION

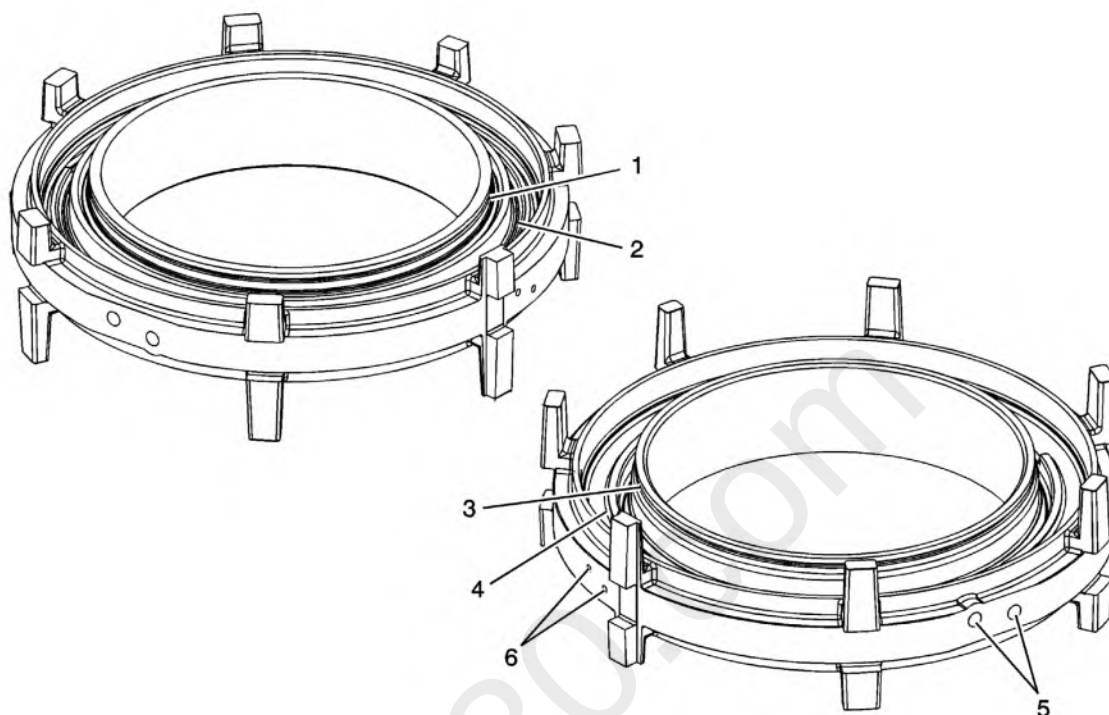


Fig. 42: Identifying Low and Reverse & 1-2-3-4 Clutch Housing

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
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.	
Preliminary Procedures 1. Thoroughly clean the housing with clean solvent. 2. Inspect the piston bores and retainer ring grooves for wear, damage or porosity.	
1	1-2-3-4 Clutch Spring Retainer Groove
2	1-2-3-4 Clutch Piston Bore
3	Low and Reverse Clutch Spring Retainer Groove
4	Low and Reverse Clutch Piston Bore
5	Clutch Oil Passages
6	Air Bleed Passages

1-2-3-4 Clutch Piston Installation

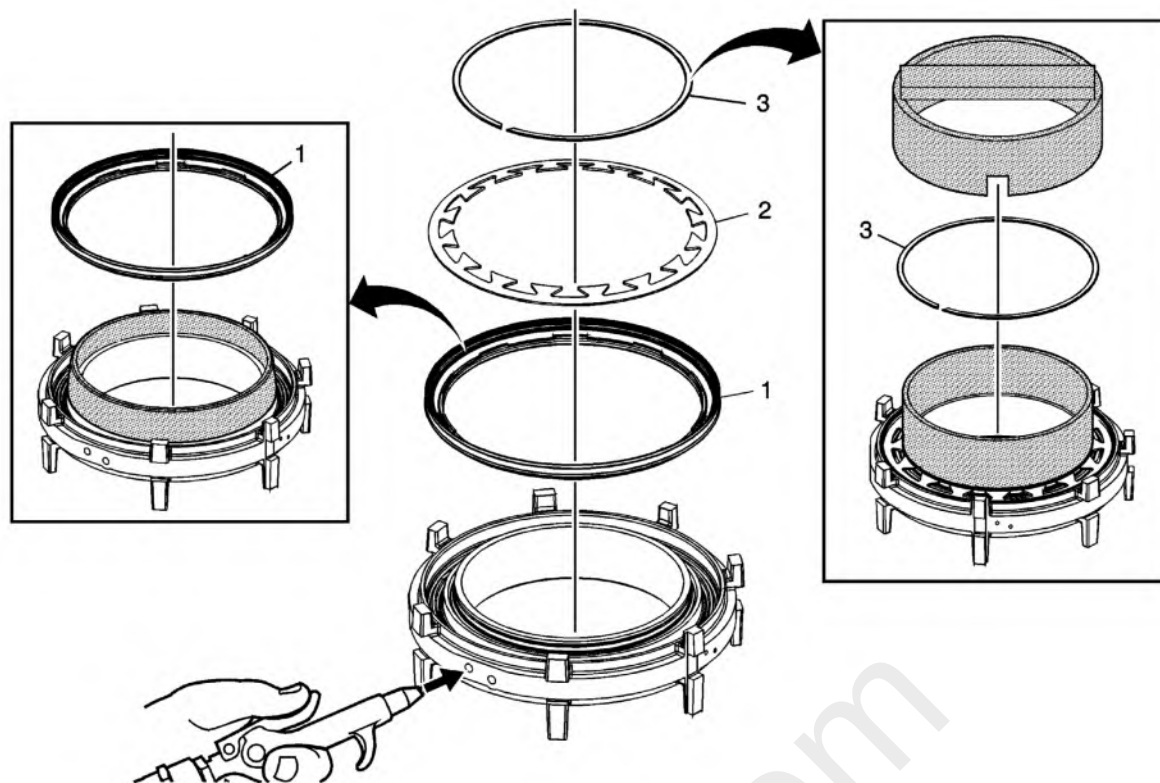


Fig. 43: View Of 1-2-3-4 Clutch Piston

Courtesy of GENERAL MOTORS COMPANY

1-2-3-4 Clutch Piston Installation

Callout	Component Name
1	1-2-3-4 Clutch Piston NOTE: DT-47798 protector prevents the piston seal lip from damage during installation. Apply a thin coat of ATF to the ID of DT-47798 protector to ease the installation of the piston. Special Tools DT-47798 Seal Protector
2	1-2-3-4 Clutch Spring 1-2-3-4 Clutch Spring Retainer CAUTION: Regulate the air pressure to 276 kPa (40 psi) maximum. High pressure could cause the piston to over travel and damage the piston seals. Procedure 1. Place the retainer onto DT-47799-1 which is part of DT-47799 compressor. Compressing the spring using DT-47799-2 which is part of DT-47799 compressor, will install the retainer into the retainer groove. 2. Apply shop air to the clutch fluid feed hole in the clutch housing to verify proper piston operation. Special Tools DT-47799 Clutch Piston Spring Compressor
3	

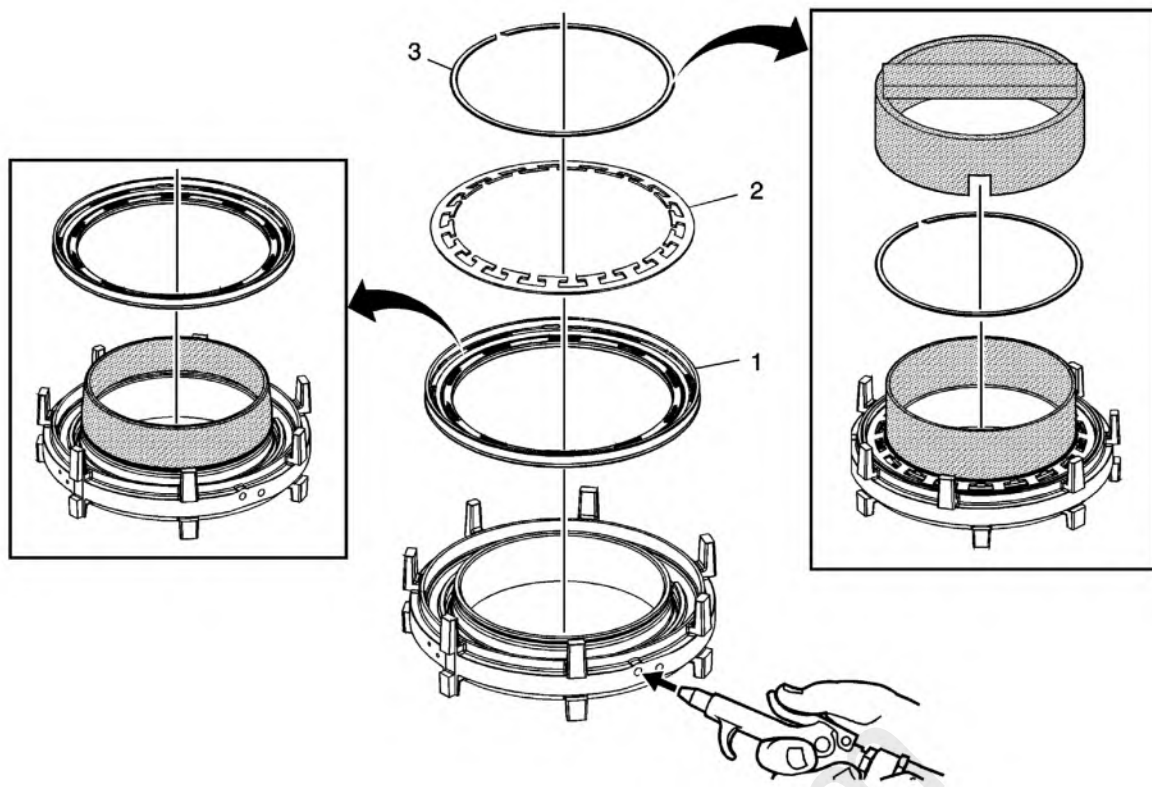


Fig. 44: View Of Low & Reverse Clutch Piston
Courtesy of GENERAL MOTORS COMPANY

Low and Reverse Clutch Piston Installation

Callout	Component Name
1	Low and Reverse Clutch Piston NOTE: DT-47807 protector prevents the piston seal lip from damage during installation. Apply a thin coat of ATF to the ID of DT-47807 protector to ease the installation of the piston. Special Tools DT-47807 Clutch Piston Seal Protector
2	Low and Reverse Clutch Spring Low and Reverse Clutch Spring Retainer
3	CAUTION: Regulate the air pressure to 276 kPa (40 psi) maximum. High pressure could cause the piston to over travel and damage the piston seals. Procedure 1. Place the retainer onto DT-47794-1 which is part of DT-47794 compressor. Compressing the spring using DT-47794-2 which is part of DT-47794 compressor, will install the retainer into the retainer groove. 2. Apply shop air to the clutch fluid feed hole in the clutch housing to verify proper piston operation. Special Tools DT-47794 Spring Compressor

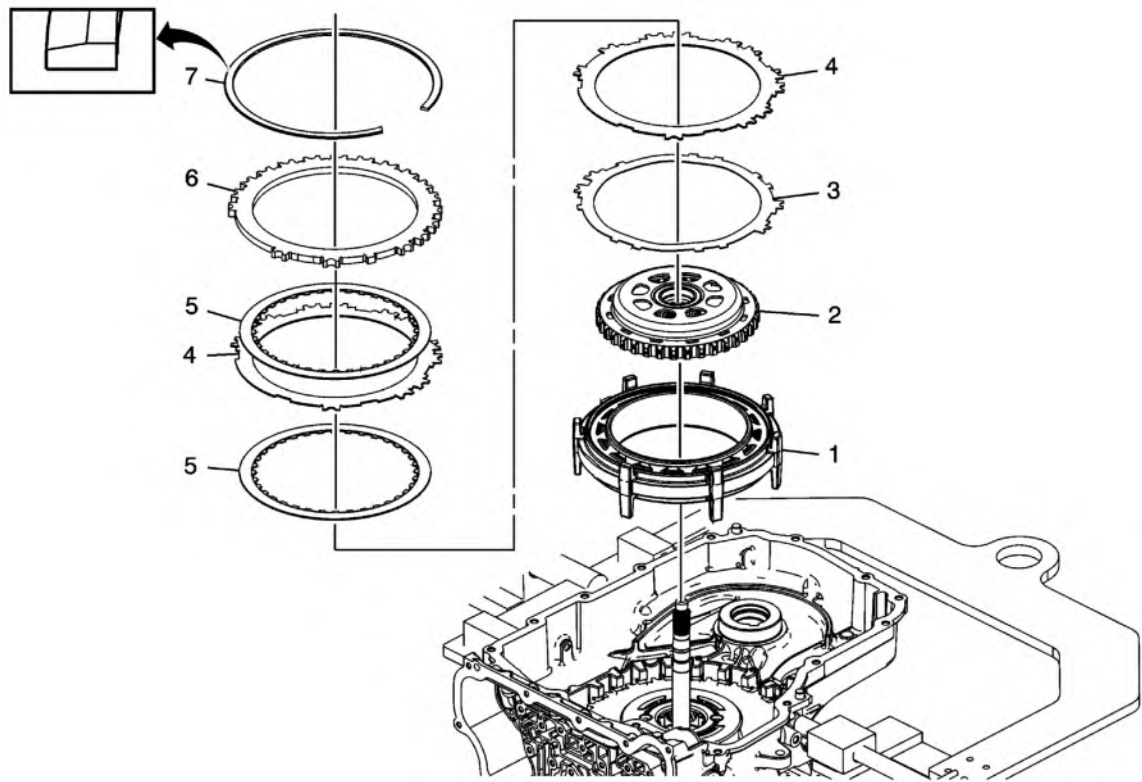


Fig. 45: View Of Low and Reverse & 1-2-3-4 Clutch Housing & Attached Components
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Low and Reverse and 1-2-3-4 Clutch Housing NOTE: The longer legs face the bottom of the case and the oil passages face the valve body end of the case.
2	Output Sun Gear Assembly
3	1-2-3-4 Clutch Waved Plate NOTE: - Align the single pair of tabs with the bottom valve body end of the case. - Ensure the correct waved plate is being installed. The 1-2-3-4 clutch and low and reverse clutch waved plates are visually similar, however the low and reverse clutch waved plate is thicker.
4	1-2-3-4 Clutch Plate (Qty: 2)
5	1-2-3-4 Clutch Plate Assembly (Qty: 2)
6	1-2-3-4 Clutch Backing Plate NOTE: Align the single skinny tab with the case spline facing the top of the case.

Callout	Component Name
7	1-2-3-4 Clutch Backing Plate Retainer Ring WARNING: The retainer is under tension. Use care when removing or installing the retainer. Personal injury could result. CAUTION: Use caution during removal or installation of the retainer ring to avoid damage to the case machined surface in the park pawl area. Burrs or raised edges on the case machined surface can cause the park pawl to bind and prohibit it from engaging the park gear. NOTE: • Install the retainer with the taper facing away from the backing plate. • Align the retainer opening with the largest gap in the case splines toward the bottom of the case. • Install one end of the retainer into the retainer ring groove. Use DT-28585 snap ring remover and work the retainer into the case groove. Use a screwdriver to hold the retainer away from the case while pushing down on the retainer with DT-28585 snap ring remover. Special Tool DT-28585 Snap Ring Remover or equivalent For equivalent regional tools, refer to Special Tools.

DRIVE SPROCKET, DRIVEN SPROCKET, AND DRIVE LINK CLEANING AND INSPECTION

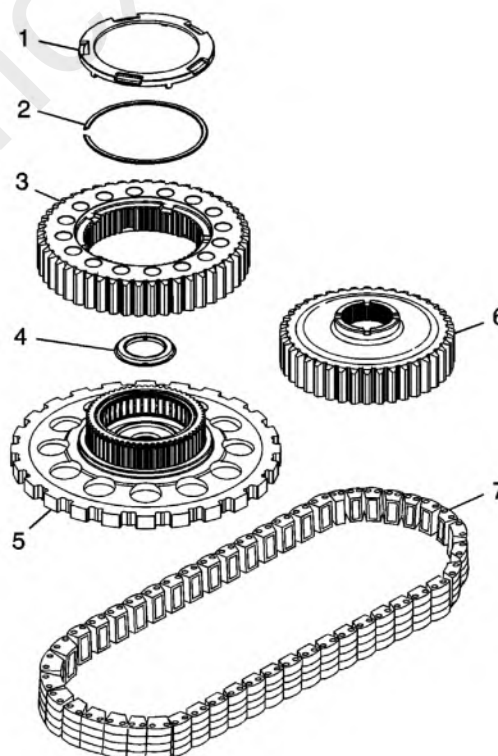


Fig. 46: View Of Drive Sprocket, Driven Sprocket & Drive Link

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Drive Sprocket Thrust Washer
2	Drive Sprocket Retainer Ring
3	Drive Sprocket
4	Drive Sprocket Bearing Assembly
5	Park Gear
6	Driven Sprocket
7	Drive Link Assembly

DRIVE AND DRIVEN SPROCKET, DRIVE LINK, AND PARK PAWL INSTALLATION

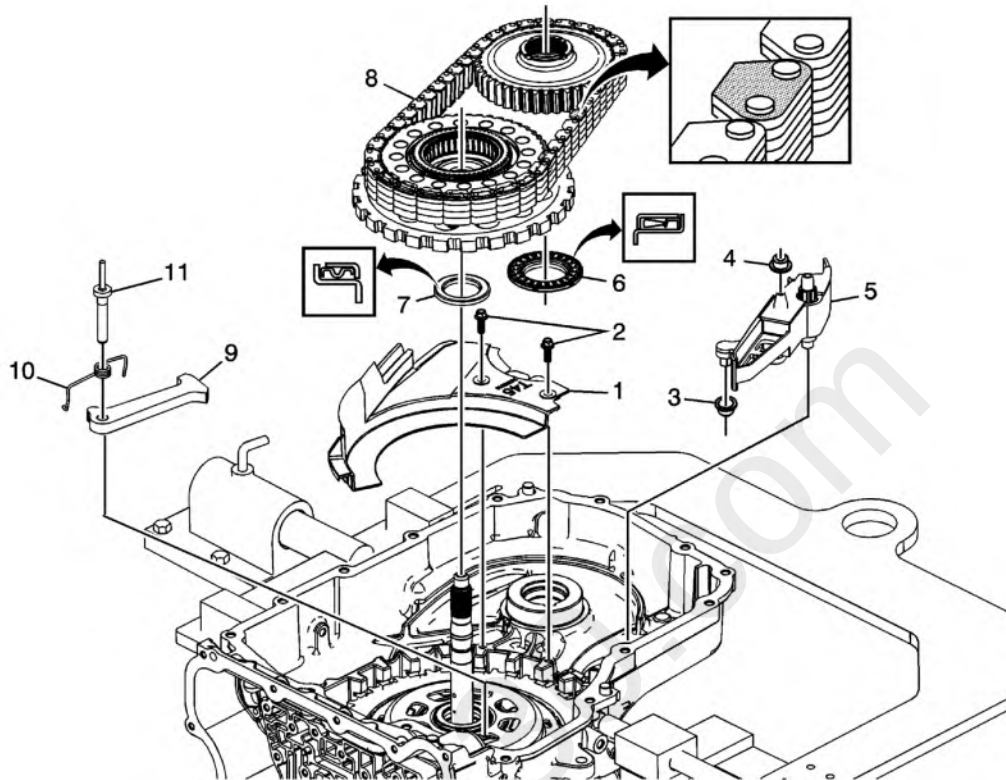


Fig. 47: View Of Drive Sprocket, Driven Sprocket & Park Paw
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Differential Carrier Baffle
2	Front Differential Carrier Baffle Bolt M6 x 16 (Qty: 2) CAUTION: Refer to Fastener Caution . Tighten 12 N.m (106 lb in)
3	Drive Link Lube Scoop Seal
4	Drive Link Lube Fluid Seal
5	Drive Link Lube Scoop
6	Driven Sprocket Bearing Assembly
7	Drive Sprocket Bearing Assembly

Callout	Component Name
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. CAUTION: Keep thrust washers with the gear it was matched to. The thrust washers are selective sizes and it is difficult to identify the proper washer thickness. Improper assembly can cause premature failure of the differential assembly. Preliminary Procedures Clean and inspect the differential assembly, pinion gears and thrust washers for scoring, wear or damage. NOTE: The differential assembly is only serviced as an assembly.	
1	Front Differential Pinion Gear Shaft Retainer
2	Front Differential Pinion Gear Pin
3	Sun Gear to Differential Housing Bearing Assembly
4	Front Differential Pinion Gear Washer
5	Front Differential Pinion Gear
6	Front Differential Planetary Pinion Gear Bearing Roller

FRONT DIFFERENTIAL CARRIER INSTALLATION

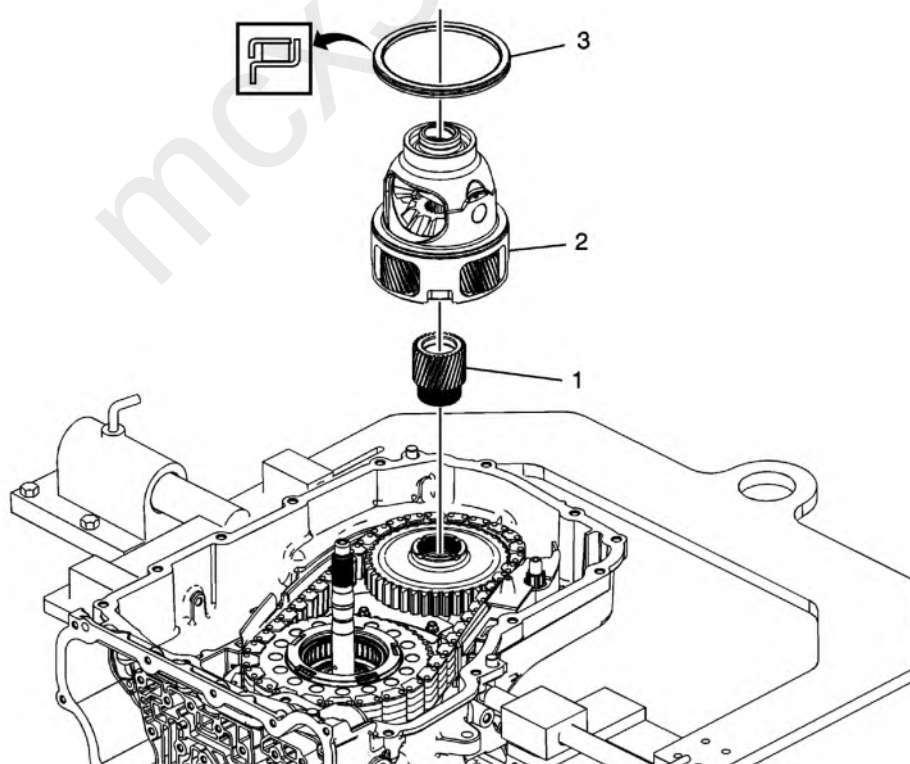


Fig. 49: View Of Front Differential Carrier Components
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Final Drive Sun Gear
2	Differential Carrier Assembly

Callout	Component Name
3	Front Differential Carrier Bearing Assembly

TRANSMISSION FLUID PUMP, FRONT DIFFERENTIAL CARRIER BAFFLE, AND FRONT DIFFERENTIAL RING GEAR REMOVAL (GEN 3)

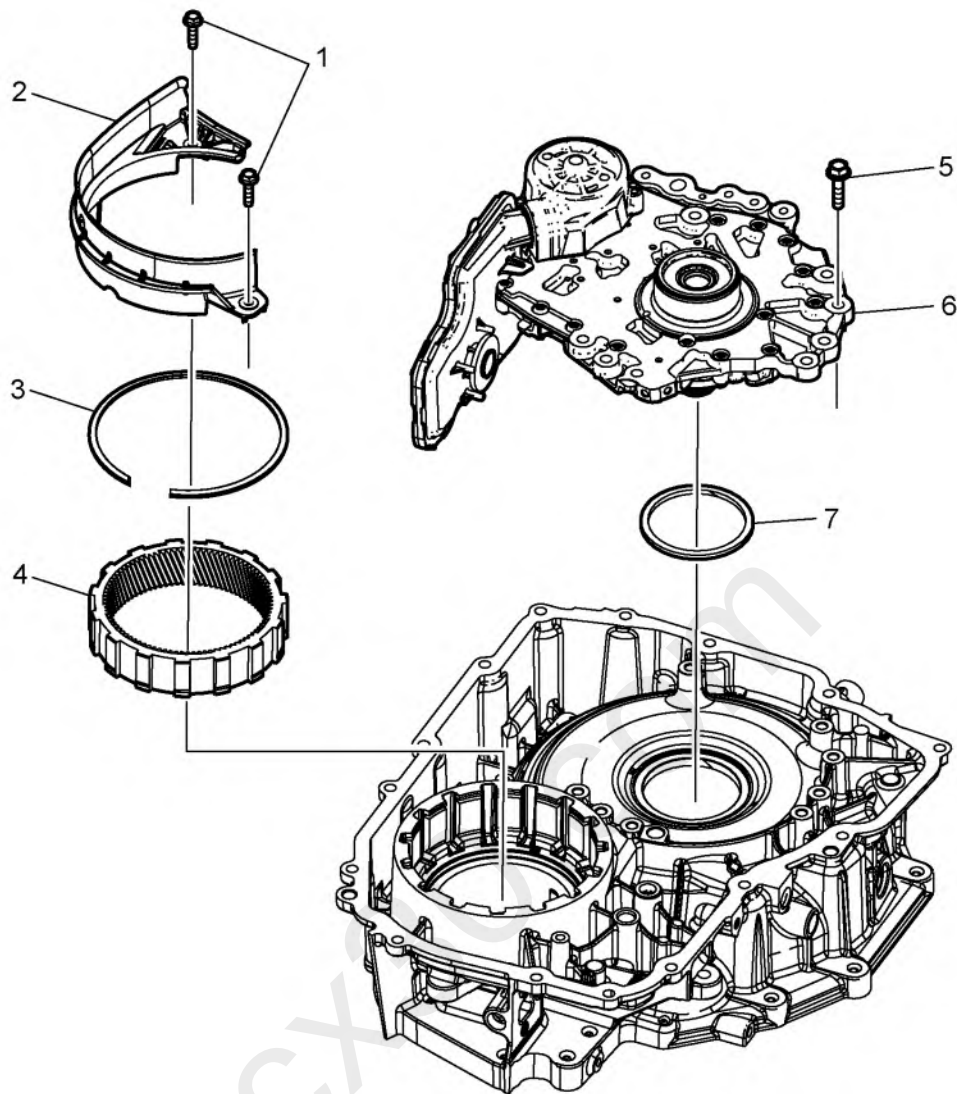


Fig. 50: Transmission Fluid Pump, Front Differential Carrier Baffle and Front Differential Ring Gear
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Differential Carrier Baffle Bolts M6 x 25 (Qty: 2)
2	Front Differential Carrier Baffle
3	Front Differential Ring Gear Retainer NOTE: Note the direction of the taper to ensure proper installation.
4	Front Differential Ring Gear
5	Automatic Transmission Fluid Pump Bolts M8 x 33 (Qty: 8)
6	Automatic Transmission Fluid Pump
7	Torque Converter and Differential Housing Seal

FRONT WHEEL DRIVE SHAFT SEAL REPLACEMENT - TORQUE CONVERTER HOUSING SIDE

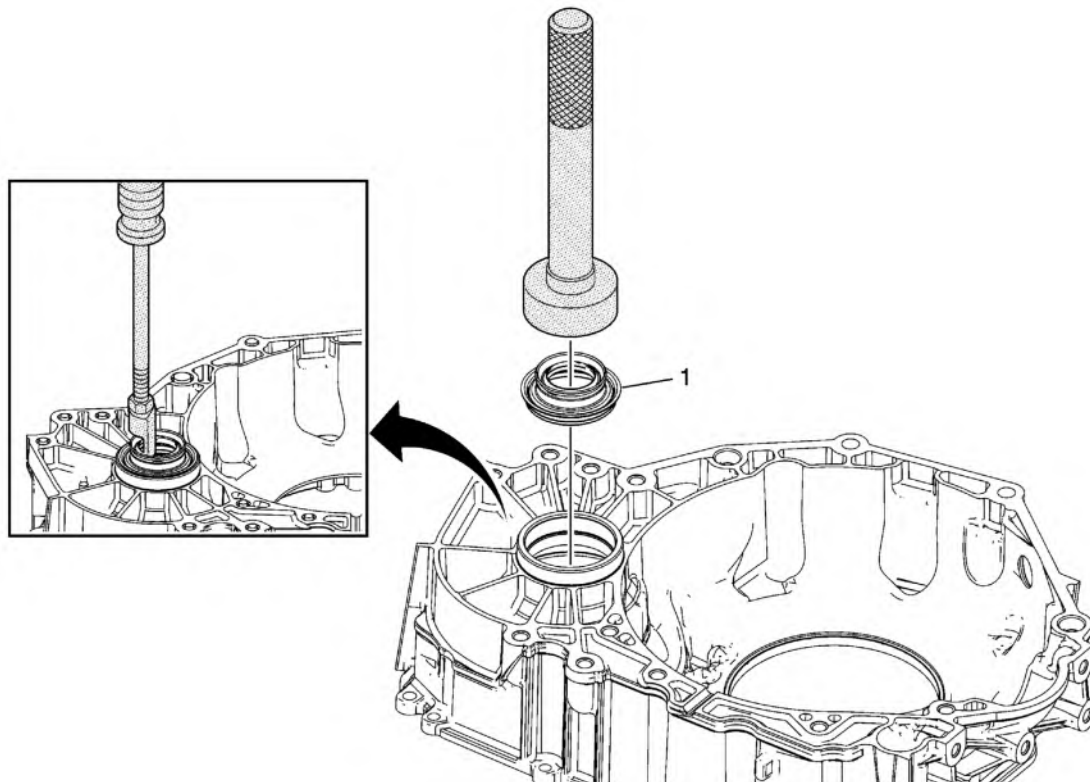


Fig. 51: View Of Front Wheel Drive Shaft Seal - Torque Converter Housing Side
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Wheel Drive Shaft Oil Seal Assembly Special Tools • DT-23129 Universal Seal Remover • DT-47790 Seal Installer • GE-6125-1B Slide Hammer • GE-8092 Driver Handle For equivalent regional tools, refer to Special Tools .

TORQUE CONVERTER HOUSING CLEANING AND INSPECTION

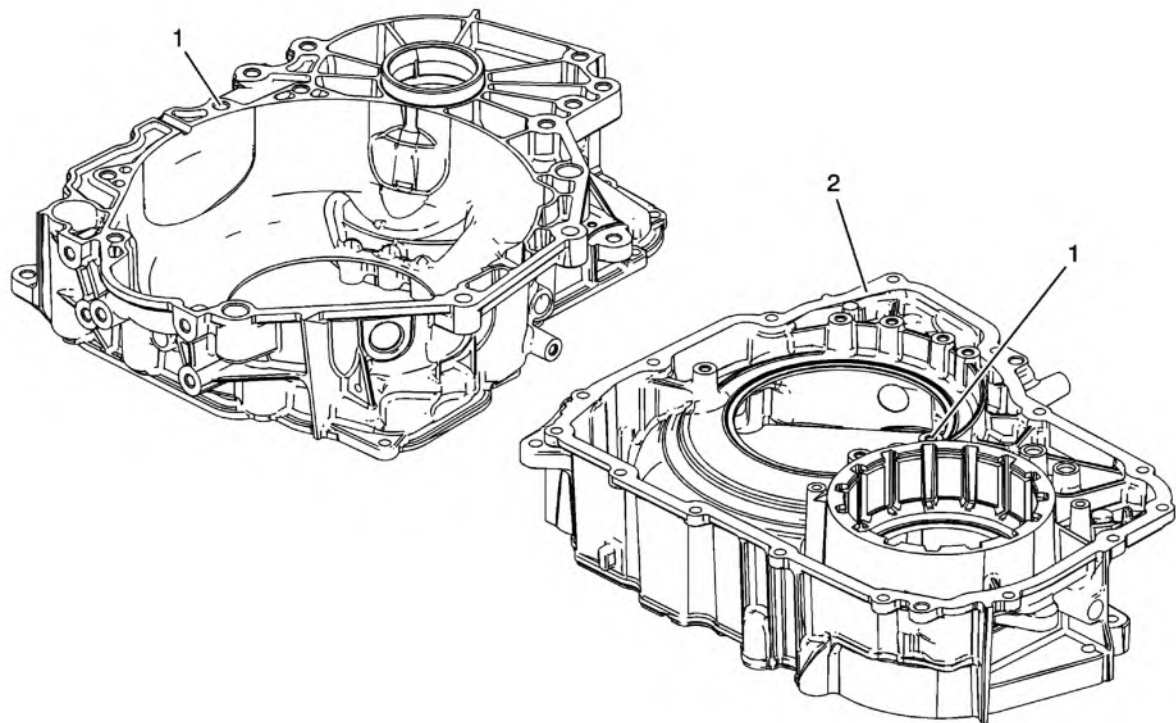


Fig. 52: Identifying Torque Converter Housing Inspection Areas

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
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.	
CAUTION: Do not use abrasive pads or bristle devices to clean the sealing surfaces. Abrasive pads produce a fine grit that can effect transmission function. Abrasive pads can also remove enough metal to create oil leaks.	
Preliminary Procedure Thoroughly clean the torque converter housing, including case threads with clean solvent.	
1	Threaded Hole
2	Gasket Sealing Surface

TRANSMISSION FLUID PUMP DISASSEMBLE (GEN 3)

Fluid Filter Assembly and Torque Converter Fluid Seal Disassemble

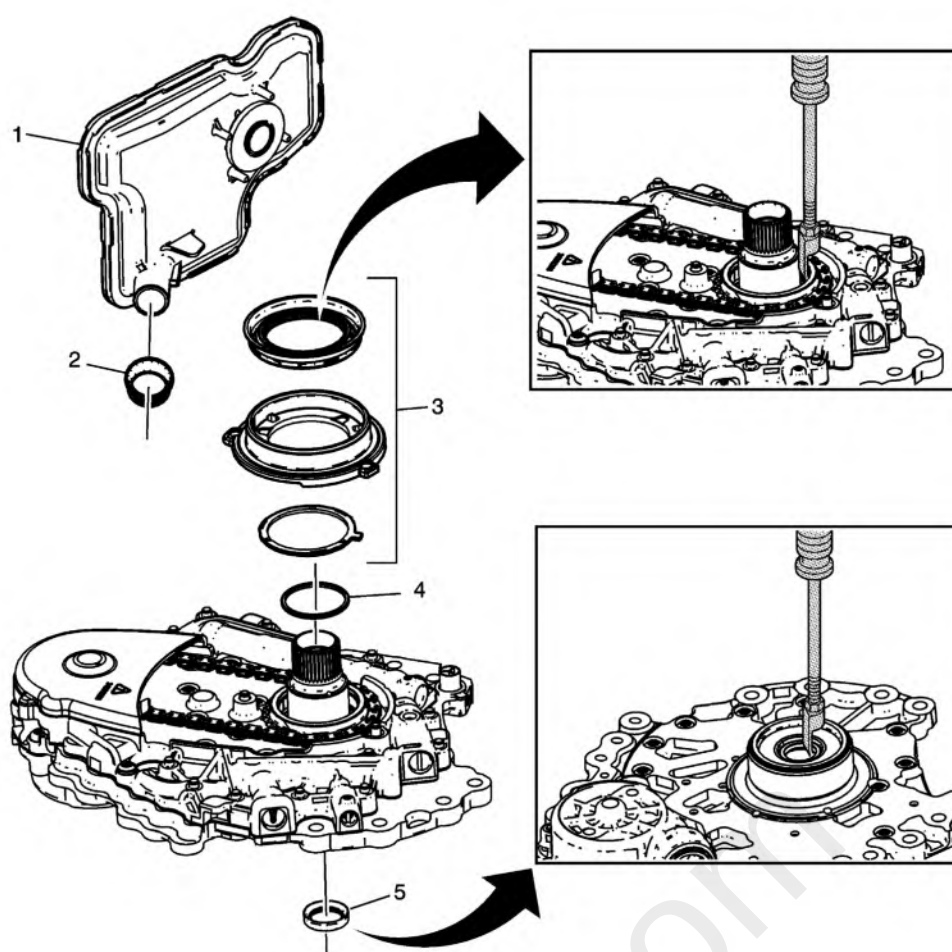


Fig. 53: Fluid Filter Assembly and Torque Converter Fluid Seal (Gen 3).
 Courtesy of GENERAL MOTORS COMPANY

Fluid Filter Assembly and Torque Converter Fluid Seal Disassemble

Callout	Component Name
1	Automatic Transmission Fluid Filter NOTE: DISCARD the fluid filter assembly. It is not reusable.
2	Automatic Transmission Fluid Filter Seal
3	Torque Converter Fluid Seal, Drive Sprocket Cover Assembly, and Drive Sprocket Thrust Washer Special Tools • DT-23129 Universal Seal Remover • GE-6125-1B Slide Hammer For equivalent regional tools, refer to Special Tools .
4	Torque Converter Fluid Seal Ring
5	Torque Converter Fluid Seal Assembly Special Tools • DT-23129 Universal Seal Remover • GE-6125-1B Slide Hammer For equivalent regional tools, refer to Special Tools .

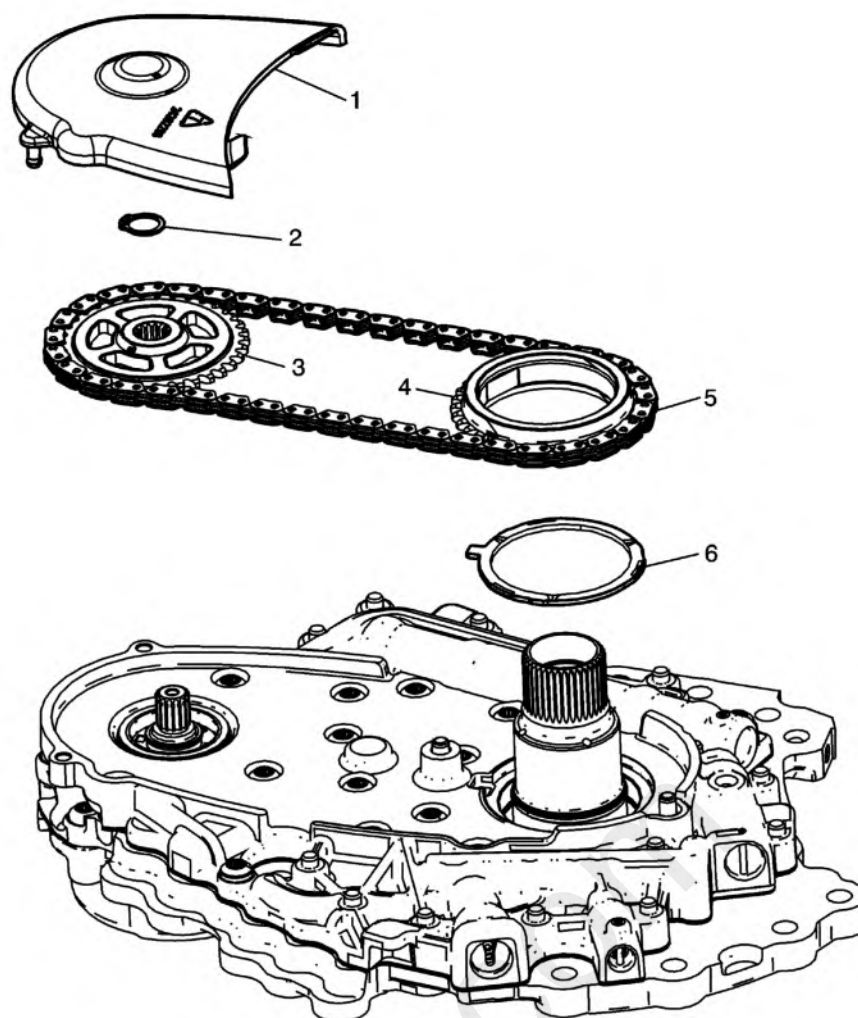


Fig. 54: Transmission Fluid Pump Drive Chain, Drive Sprocket and Driven Sprocket
 Courtesy of GENERAL MOTORS COMPANY

Drive Chain, Drive Sprocket, and Driven Sprocket Disassemble

Callout	Component Name
1	Transmission Fluid Baffle
2	Drive Sprocket Retaining Ring Retainer
3	Driven Sprocket NOTE: Remove the sprockets and chain at the same time.
4	Drive Sprocket
5	Drive Link
6	Drive Sprocket Thrust Washer

Automatic Transmission Fluid Pump Assembly Disassemble

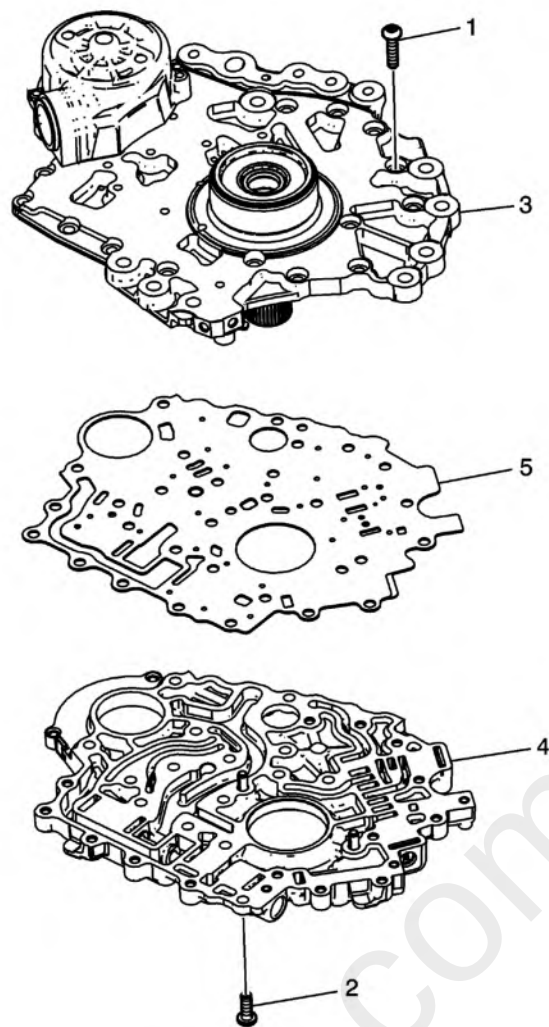


Fig. 55: Transmission Fluid Pump Components

Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Assembly Disassemble

Callout	Component Name
1	Automatic Transmission Fluid Pump Cover Bolts M6 x 25 (Qty: 14)
2	Automatic Transmission Fluid Pump Bolts M6 x 18 (Qty: 15)
3	Automatic Transmission Fluid Pump Cover
4	Automatic Transmission Fluid Pump Body
5	Automatic Transmission Fluid Pump Plate

Automatic Transmission Fluid Pump Cover Disassemble

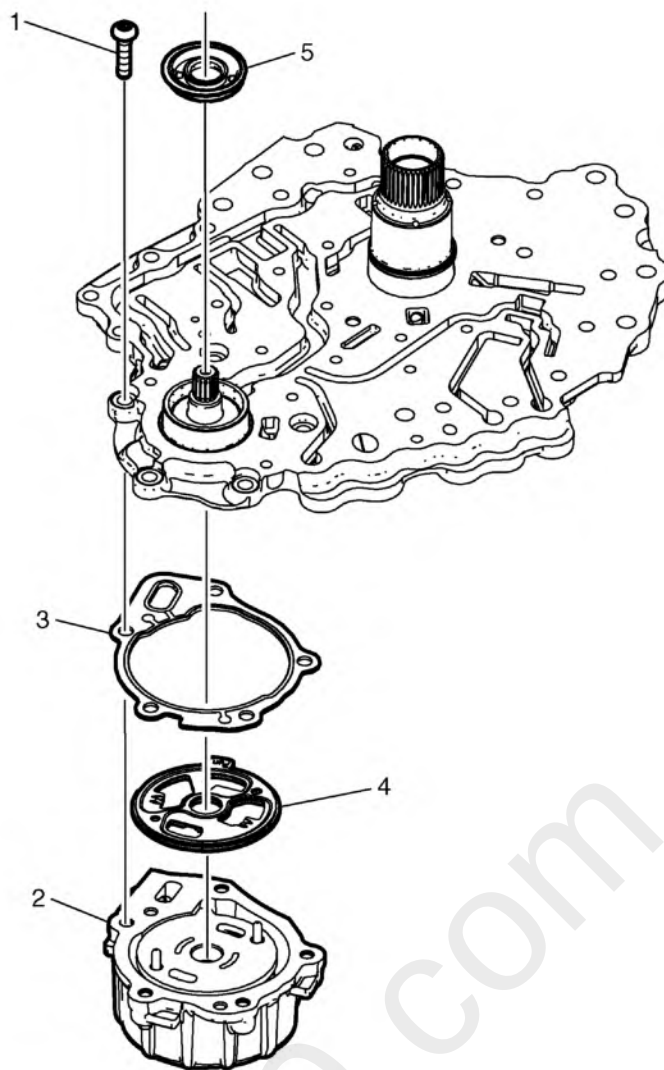


Fig. 56: Automatic Transmission Fluid Pump Cover
Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Cover Disassemble

Callout	Component Name
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.	
Preliminary Procedure Clean and inspect all components for wear and/or damage.	
1	Automatic Transmission Fluid Pump Cover Bolt M6 x 25 (Qty: 5)
2	Automatic Transmission Fluid Pump Assembly
3	Automatic Transmission Fluid Pump Gasket NOTE: DISCARD the gasket.
4	Automatic Transmission Fluid Pump Pressure Plate Seal NOTE: DISCARD the seal.
5	Automatic Transmission Fluid Pump Seal

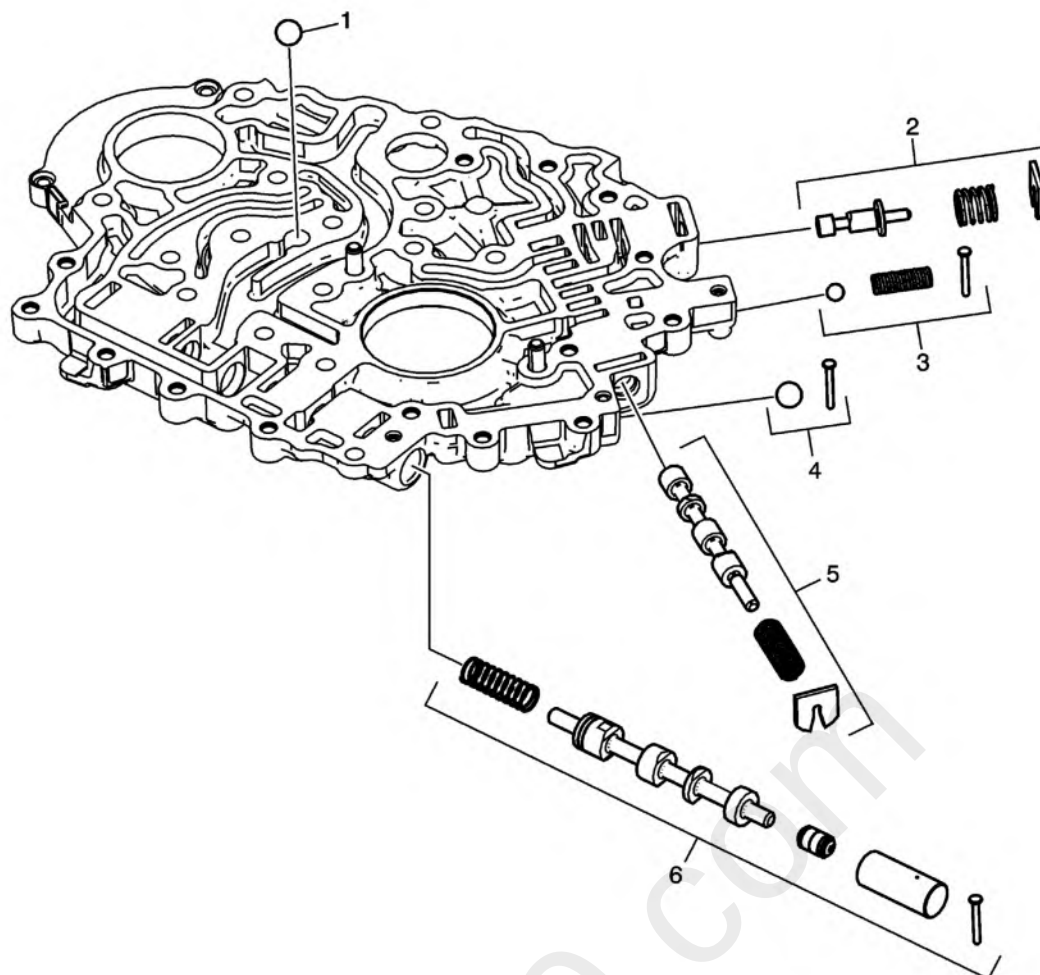


Fig. 57: Automatic Transmission Fluid Pump Body Components (Gen 3)

Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Body Disassemble

Callout	Component Name
WARNING: Valve springs can be tightly compressed. Use care when removing retainers and plugs. Personal injury could result.	
CAUTION: After cleaning the transmission components, allow to air dry. Do not use cloth or paper towels in order to dry any transmission components. Lint from the towels can cause component failure.	
CAUTION: Do not reuse cleaning solvents. Previously used solvents may deposit sediment which may damage the component.	
Preliminary Procedure Clean and inspect all valve components for wear and/or damage.	
1	Direct Clutch Exhaust Valve
2	Lube Boost Valve Train
3	Torque Converter Clutch Blow Off Ball Valve Train
4	Automatic Transmission Fluid Pump Blow Off Ball Valve Train
5	Torque Converter Clutch Control Valve Train
6	Pressure Regulator Valve Train

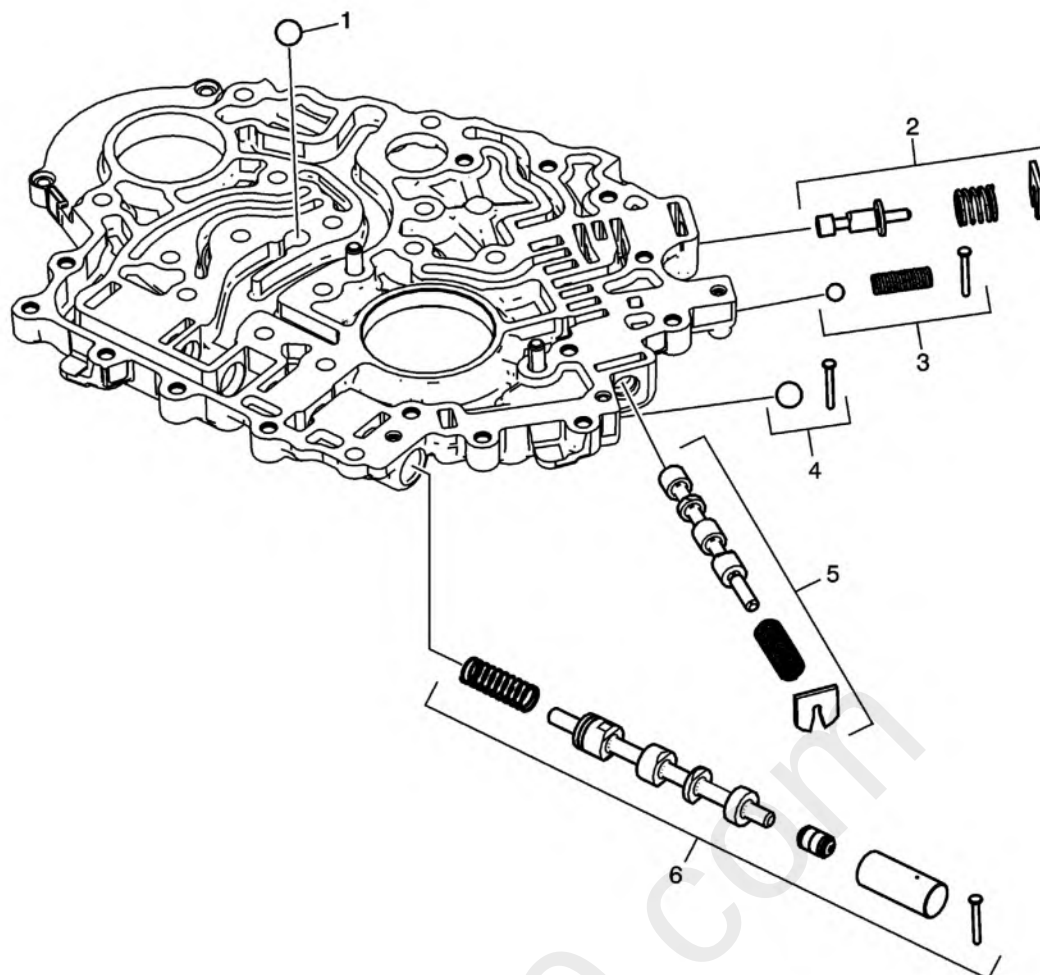


Fig. 58: Automatic Transmission Fluid Pump Body Components (Gen 3).
Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Body Assemble

Callout	Component Name
1	Direct Clutch Exhaust Valve
2	Lube Boost Valve Train
3	Torque Converter Clutch Blow Off Ball Valve Train
4	Automatic Transmission Fluid Pump Blow Off Ball Valve Train
5	Torque Converter Clutch Control Valve Train
6	Pressure Regulator Valve Train

Automatic Transmission Fluid Pump Cover Assemble

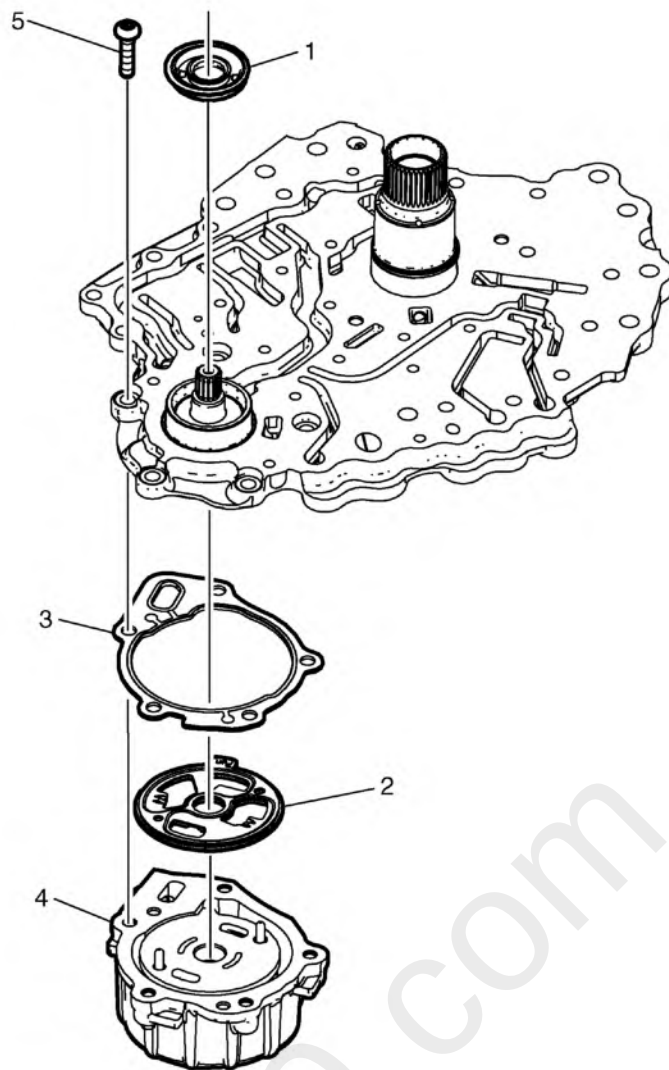


Fig. 59: Automatic Transmission Fluid Pump Cover Components
 Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Cover Assemble

Callout	Component Name
1	Automatic Transmission Fluid Pump Seal
2	Automatic Transmission Fluid Pump Pressure Plate Seal NOTE: • The 1st and 2nd design automatic transmission fluid pump pressure plate seals are not interchangeable. • Install a NEW seal.
3	Automatic Transmission Fluid Pump Gasket NOTE: Install a NEW gasket.
4	Automatic Transmission Fluid Pump Assembly

Callout	Component Name
5	Automatic Transmission Fluid Pump Cover Bolt M6 x 25 (Qty: 5) CAUTION: Refer to Fastener Caution . Tighten 10 N.m (89 lb in)

Automatic Transmission Fluid Pump Assembly Assemble

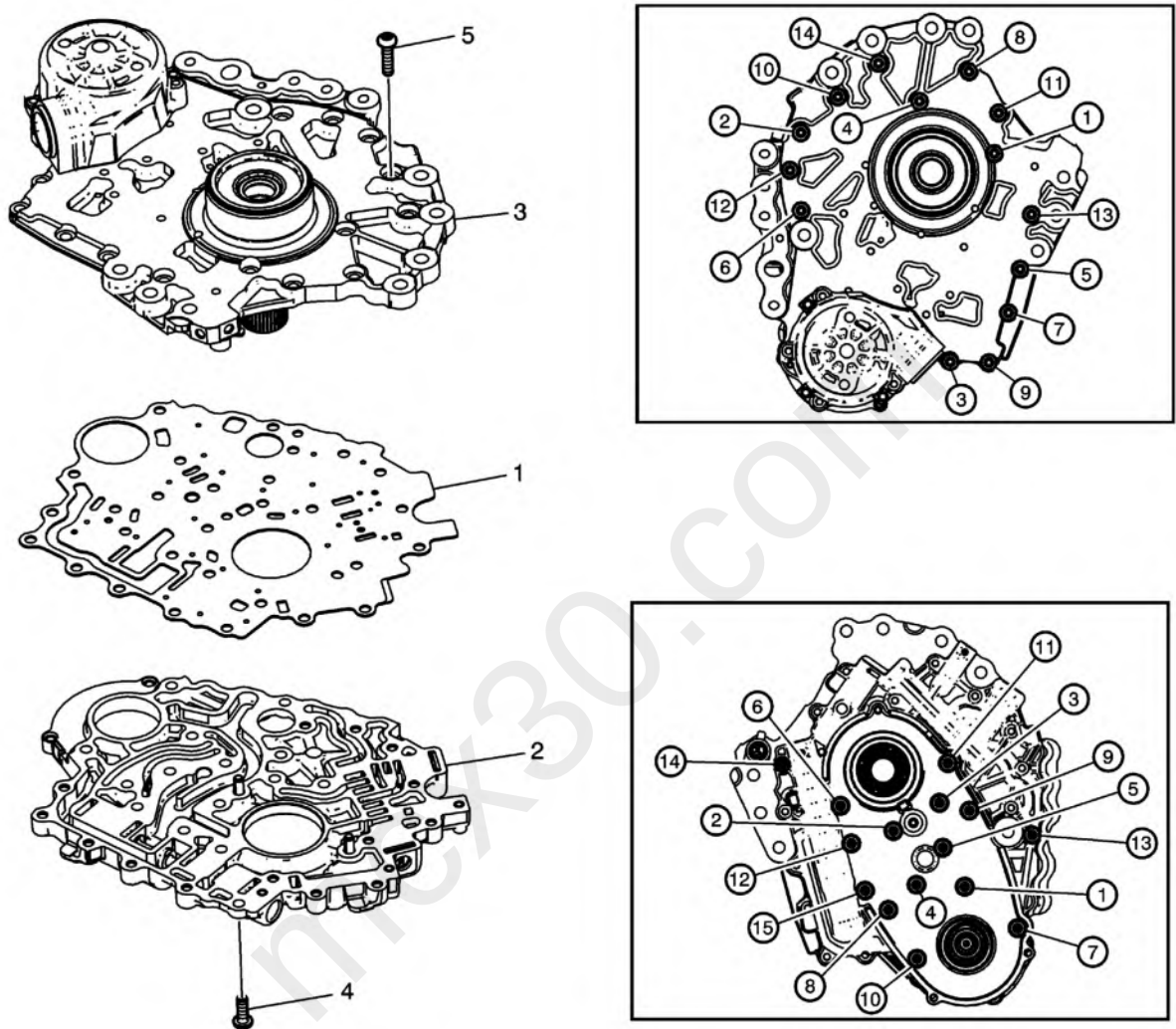


Fig. 60: Automatic Transmission Fluid Pump Assembly Components
Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Assembly Assemble

Callout	Component Name
1	Automatic Transmission Fluid Pump Plate
2	Automatic Transmission Fluid Pump Body
3	Automatic Transmission Fluid Pump Cover
4	Automatic Transmission Fluid Pump Bolts M6 x 18 (Qty: 15) CAUTION: Refer to Fastener Caution . Procedure Tighten the bolts in the sequence shown. Tighten 10 N.m (89 lb in)

Callout	Component Name
5	Automatic Transmission Fluid Pump Cover Bolts M6 x 25 (Qty: 14) Procedure Tighten the bolts in the sequence shown. Tighten 10 N.m (89 lb in)

Drive Chain, Drive Sprocket, and Driven Sprocket Assemble

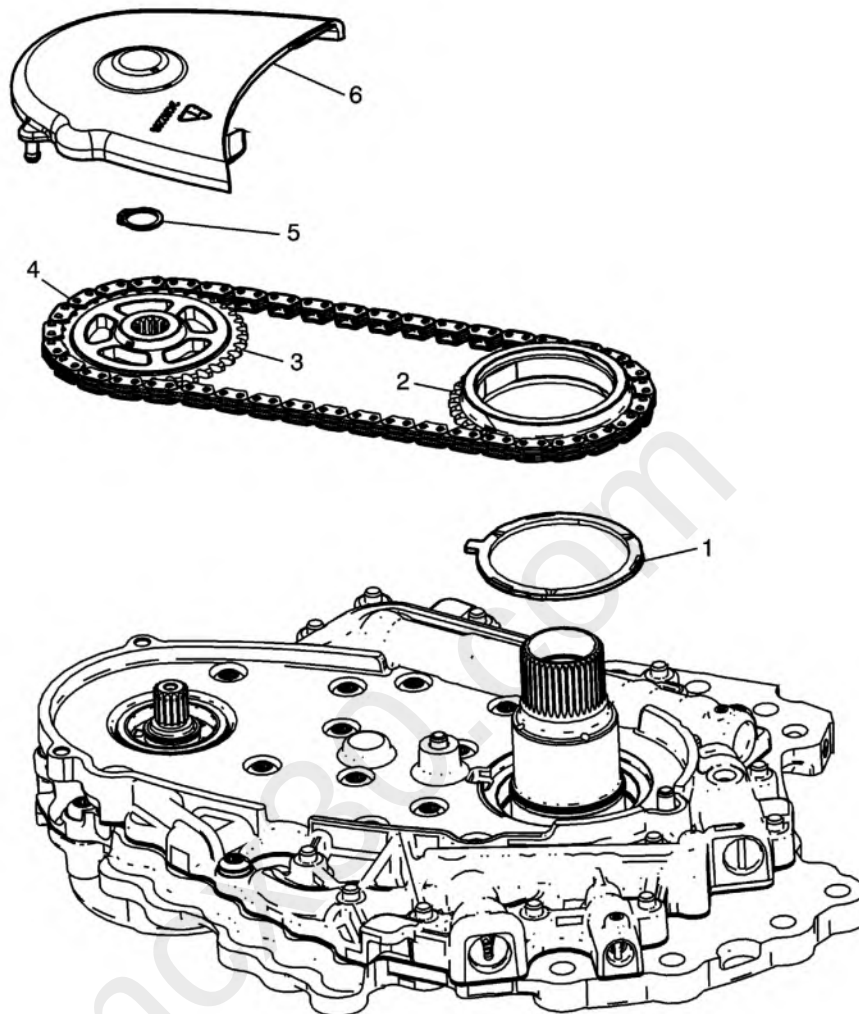


Fig. 61: Drive Chain, Drive Sprocket and Driven Sprocket
Courtesy of GENERAL MOTORS COMPANY

Drive Chain, Drive Sprocket, and Driven Sprocket Assemble

Callout	Component Name
1	Drive Sprocket Thrust Washer
2	Drive Sprocket NOTE: Install the sprockets and chain together as an assembly..
3	Driven Sprocket
4	Drive Link
5	Drive Sprocket Retaining Ring Retainer
6	Transmission Fluid Baffle

Fluid Filter Assembly and Torque Converter Fluid Seal Assemble

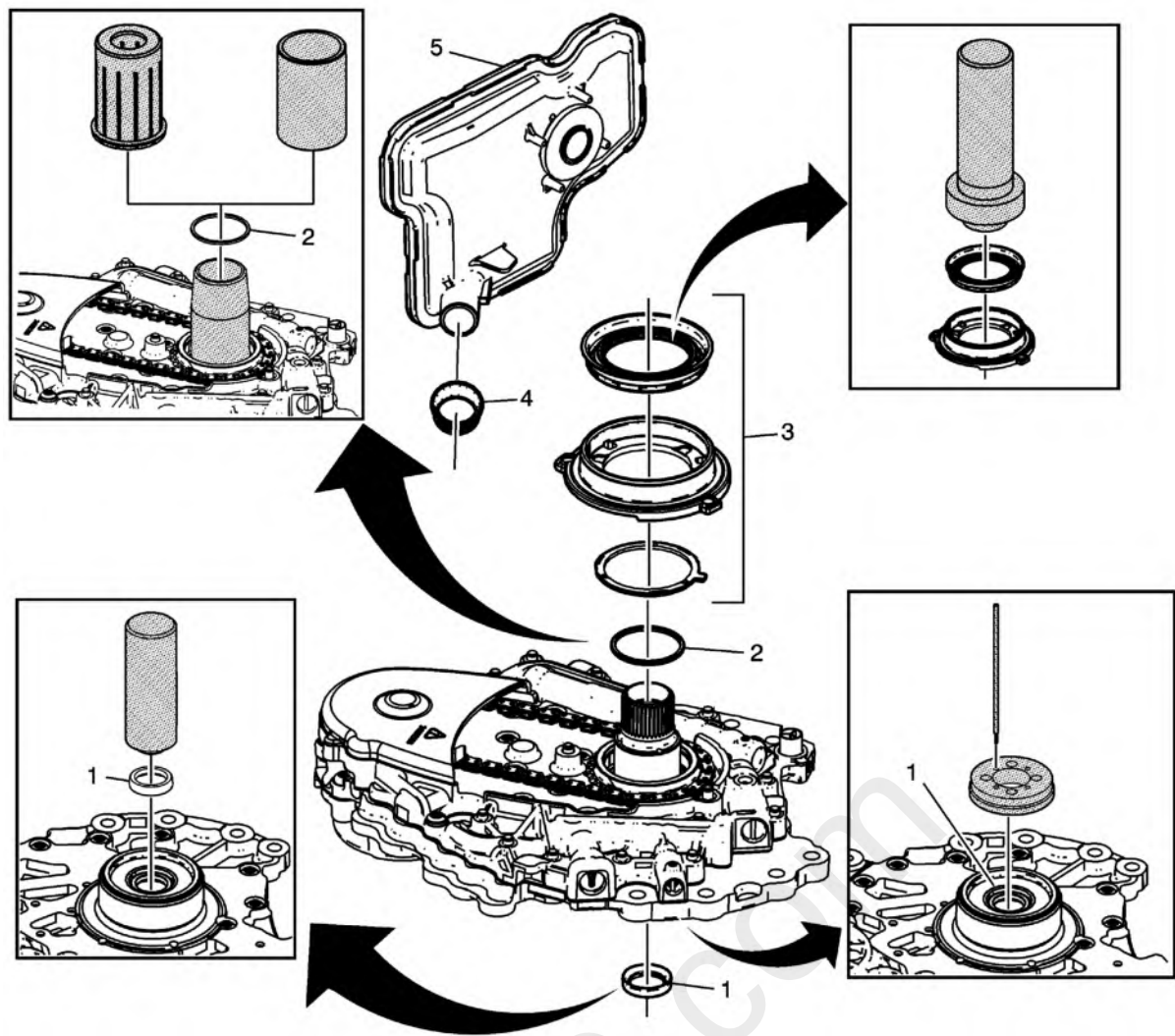


Fig. 62: Fluid Filter Assembly and Torque Converter Fluid Seal Components
 Courtesy of GENERAL MOTORS COMPANY

Fluid Filter Assembly and Torque Converter Fluid Seal Assemble

Callout	Component Name
1	Torque Converter Fluid Seal Assembly NOTE: The fluid seal assembly must be staked in place using DT-49131 seal staking tool to ensure proper seal retention. Special Tool • DT-47792 Seal Installer • DT-49131 Seal Staking Tool For equivalent regional tools, refer to Special Tools .
2	Torque Converter Fluid Seal Ring Special Tools DT-51191 Pump Seal Installer Set For equivalent regional tools, refer to Special Tools .

Callout	Component Name
3	Torque Converter Fluid Seal, Drive Sprocket Cover Assembly, and Drive Sprocket Thrust Washer Procedure 1. Install the torque converter fluid seal into the drive sprocket cover assembly using DT-24384-A seal installer and DT-5590 . 2. Install the drive sprocket thrust washer into the drive sprocket cover assembly. Special Tools • DT-5590 Bearing Installer • DT-24384-A Oil Seal Installer For equivalent regional tools, refer to Special Tools .
4	Automatic Transmission Fluid Filter Seal
5	Automatic Transmission Fluid Filter NOTE: Install a NEW fluid filter assembly. It is not reusable.

TRANSMISSION FLUID PUMP, FRONT DIFFERENTIAL CARRIER BAFFLE, AND FRONT DIFFERENTIAL RING GEAR INSTALLATION (GEN 3)

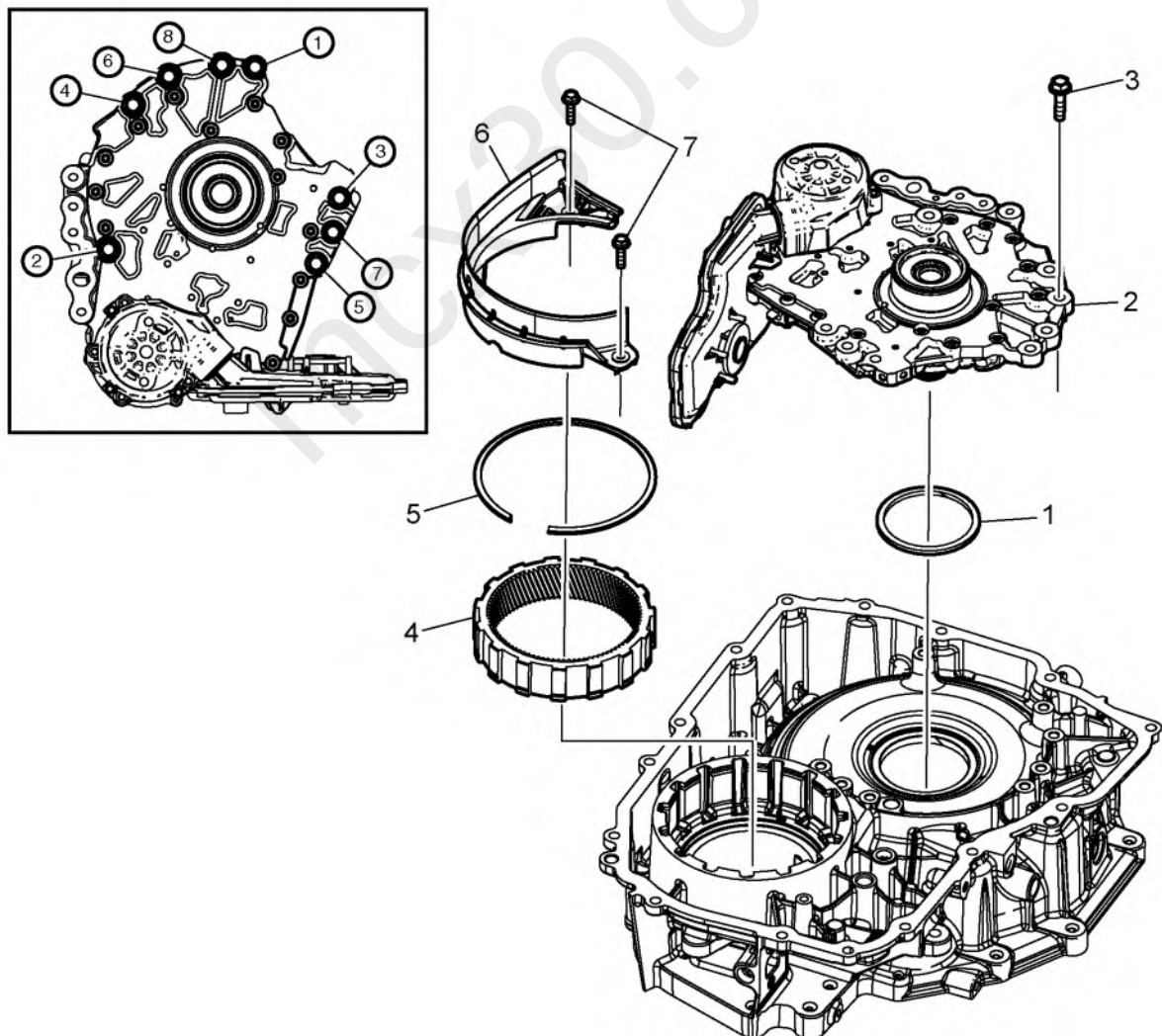


Fig. 63: Transmission Fluid Pump, Front Differential Carrier Baffle and Front Differential Ring Gear

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Torque Converter and Differential Housing Seal
2	Automatic Transmission Fluid Pump
3	Automatic Transmission Fluid Pump Bolts M8 x 33 (Qty: 8)
	CAUTION: Refer to Fastener Caution .
	Procedure Tighten the bolts in the sequence shown. 1. Tighten the bolts as first pass to 10 N.m (89 lb in). 2. Tighten the bolts a final pass an additional 45 degrees. Special Tool EN-45059 Angle Meter or equivalent For equivalent regional tools, refer to Special Tools .
4	Front Differential Ring Gear
5	Front Differential Ring Gear Retainer
	NOTE: Install the retainer with the taper facing away from the ring gear.
6	Front Differential Carrier Baffle
7	Front Differential Carrier Baffle Bolts M6 x 25 (Qty: 2)
	Tighten 12 N.m (106 lb in)

TORQUE CONVERTER HOUSING WITH FLUID PUMP ASSEMBLY INSTALLATION

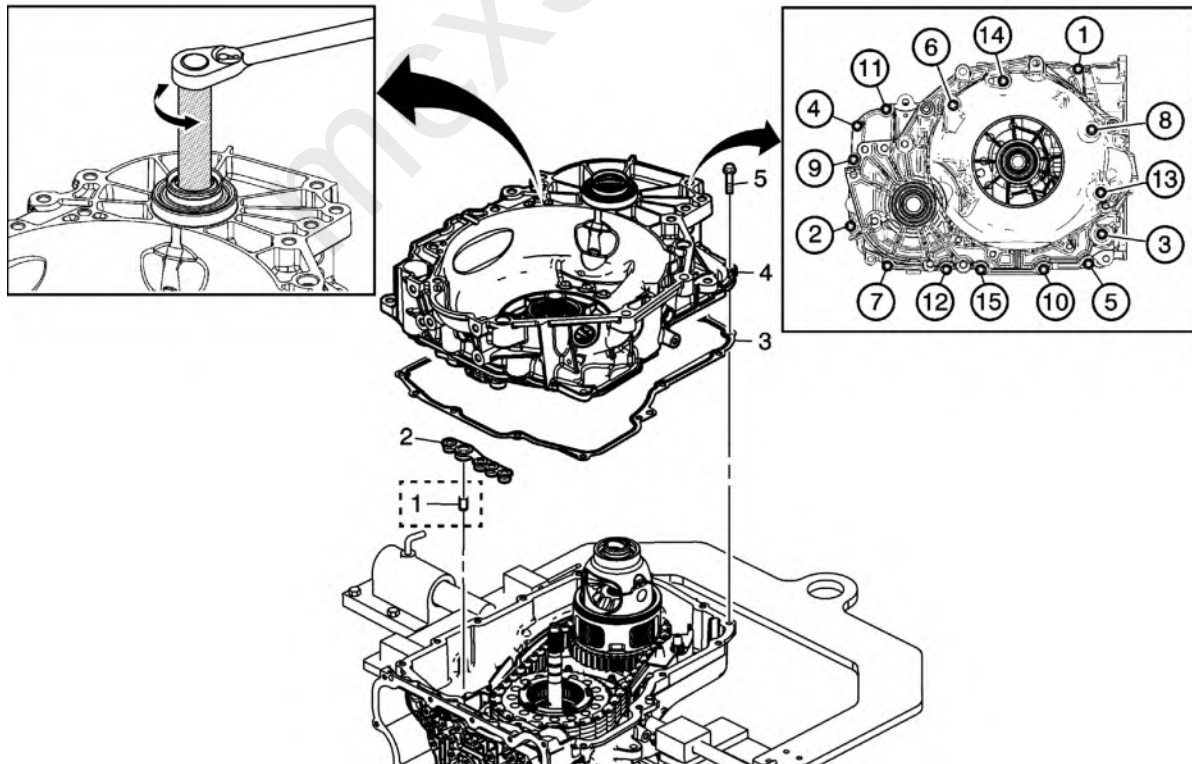


Fig. 64: Torque Converter Housing with Fluid Pump Assembly.
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	A/Trans Fluid Trough Check Ball - Hybrid Models

Callout	Component Name
2	Fluid Pump Seal Assembly
3	Torque Converter Housing Gasket
4	Torque Converter (w/Fluid Pump) Housing Assembly NOTE: Rotate the differential slightly in each direction using the rotating tool to align the Differential Pinion Gears with the Differential Ring Gear in the Torque Converter Housing. • DT-47793 Differential Rotating Tool for 6T40/45 applications • DT-49938 Differential Rotating Tool for 6T50 applications Special Tools • DT-47793 Differential Rotating Tool • DT-49938 Differential Rotating Tool For equivalent regional tools, refer to Special Tools .
5	Torque Converter and Differential Housing Bolts M8 x 30 (Qty: 15) CAUTION: Refer to Fastener Caution . Procedure Tighten the bolts in sequence shown. Tighten 10 N.m (89 lb in) then rotate the bolt an additional 50 degrees Special Tool EN-45059 Angle Meter or equivalent For equivalent regional tools, refer to Special Tools .

INPUT AND OUTPUT SPEED SENSOR INSTALLATION

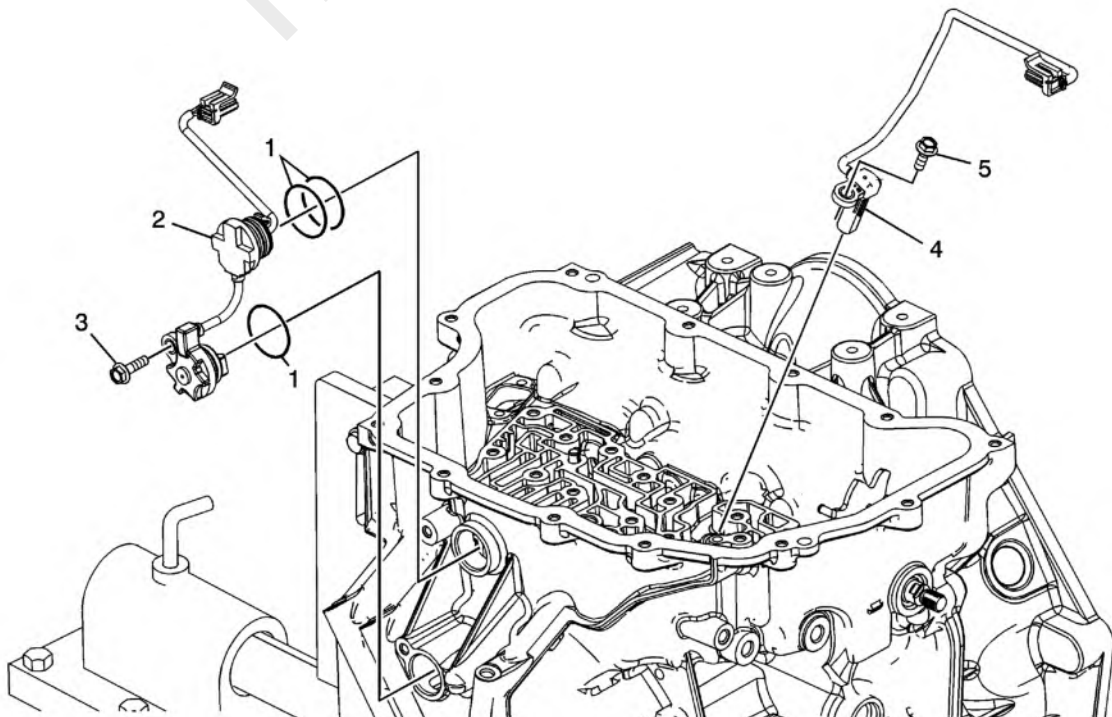


Fig. 65: Identifying Input & Output Speed Sensor
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Input Speed Sensor Assembly Seals
2	Input Speed Sensor Assembly
3	Input Speed Sensor Bolt M6 x 23 (Qty: 1) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 9 N.m (80 lb in)
4	A/Trans Output Speed Sensor Assembly
5	A/Trans Output Speed Sensor Bolt M6 x 18 (Qty: 1) Tighten 9 N.m (80 lb in)

CONTROL VALVE BODY ASSEMBLY DISASSEMBLE (GEN 3)

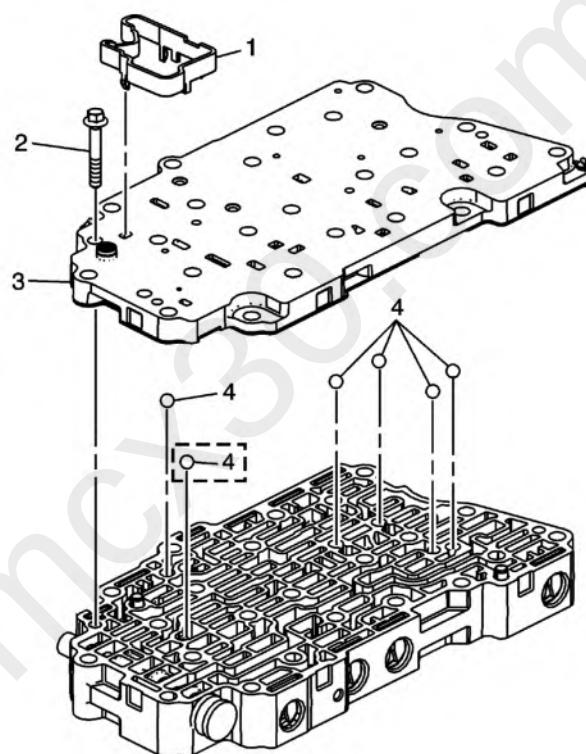


Fig. 66: Control Valve Body Assembly (Gen 3)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Control Solenoid Valve Support
2	Control Valve Body Bolt M5 x 40.5 (Qty: 1)
3	Valve Channel Plate NOTE: Inspect the channel plate bolt pass through holes for damage or brinelling. Any damage will cause incorrect pressure switch operation. Replace as necessary.
4	Valve Body Ball Check Valves - with S/S (Qty: 5), without S/S (Qty: 6)

CONTROL VALVE BODY CLEANING AND INSPECTION

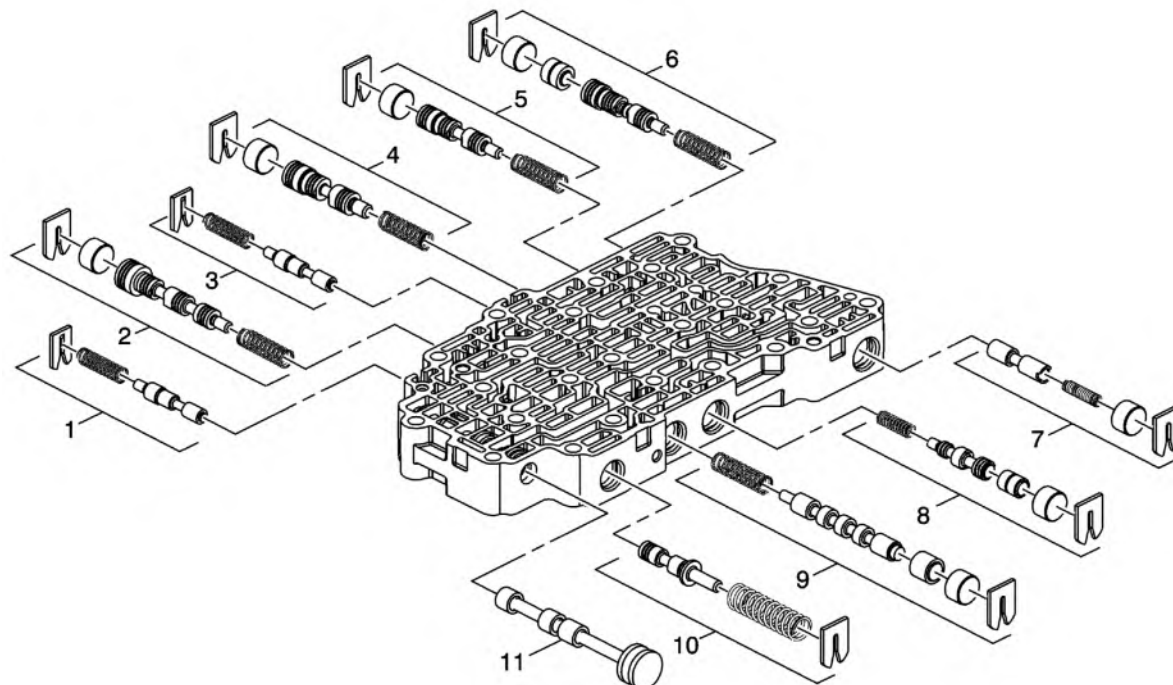


Fig. 67: Control Valve Body Cleaning and Inspection
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Valve springs can be tightly compressed. Use care when removing retainers and plugs. Personal injury could result.	
CAUTION: After cleaning the transmission components, allow to air dry. Do not use cloth or paper towels in order to dry any transmission components. Lint from the towels can cause component failure.	
CAUTION: Do not reuse cleaning solvents. Previously used solvents may deposit sediment which may damage the component.	
Preliminary Procedure Clean and inspect all valve components and the valve body. The control valve body assembly is only replaceable as an assembly.	
1	Low-Reverse and 4-5-6 Clutch Boost Valve Train
2	Low-Reverse and 4-5-6 Clutch Regulator Valve Train
3	1-2-3-4 Clutch Boost Valve Train
4	1-2-3-4 Clutch Regulator Valve Train
5	2-6 Clutch Regulator Valve Train
6	3-5 Reverse Clutch Regulator Valve Train
7	Default Override Valve Train
8	TCC Regulator Apply Valve Train
9	Clutch Select Valve Train
10	Actuator Feed Limit Valve Train
11	Manual Valve

CONTROL VALVE CHANNEL PLATE CLEANING AND INSPECTION

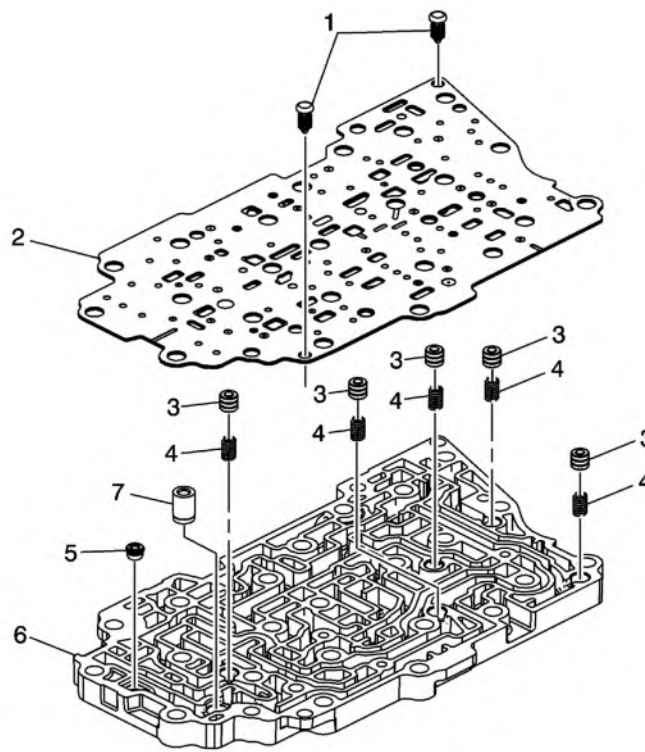


Fig. 68: Control Valve Channel Plate Cleaning and Inspection

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Control Valve Body Spacer Plate Retainer
2	Channel Plate to Valve Body Spacer Plate Assembly
3	Actuator Feed Accumulator Piston (Qty: 5)
4	Actuator Feed Accumulator Spring (Qty: 5)
5	Variable Hi and 2-3-4 Clutch Housing Valve Ball
6	Valve Channel Plate NOTE: Inspect the channel plate bolt pass through holes for damage or brinelling. Any damage will cause incorrect pressure switch operation. Replace as necessary.
7	Control Valve Channel Plate Ball Spring Assembly

CONTROL VALVE BODY ASSEMBLY ASSEMBLE (GEN 3)

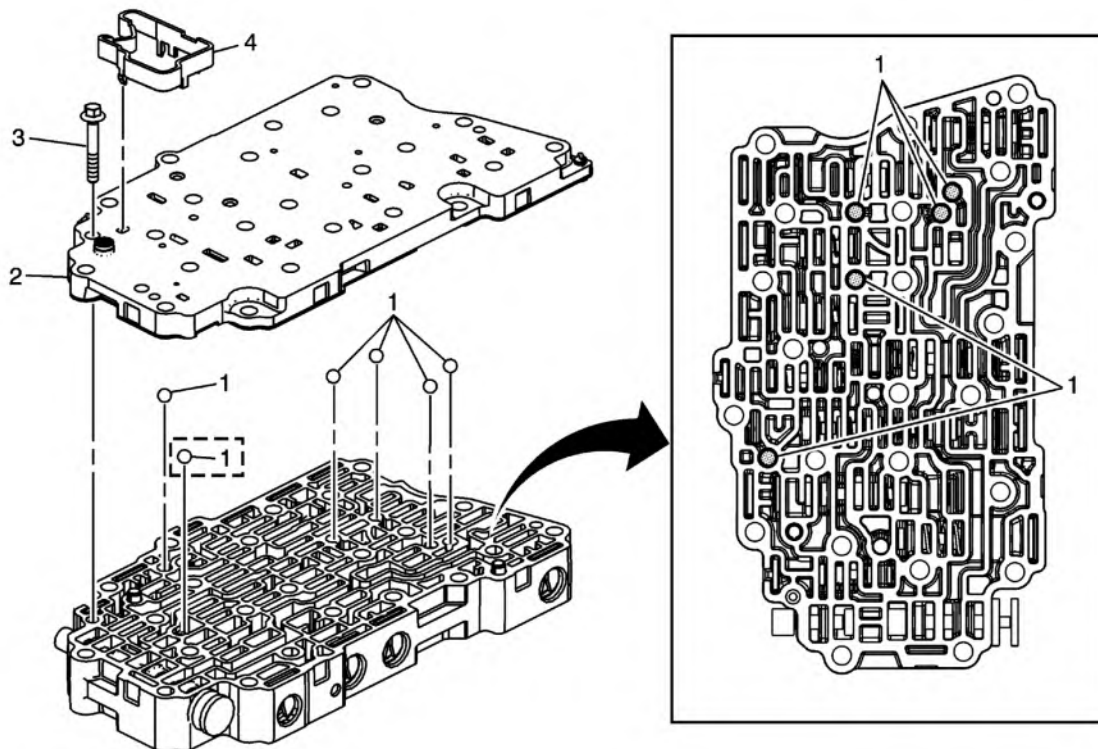


Fig. 69: Control Valve Body Assembly (Gen 3)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Valve Body Ball Check Valves NOTE: For application specific ball check valve location and quantity, refer to Ball Check Valve Locations (Gen 3) .
2	Valve Channel Plate
3	Control Valve Body Bolt M5 x 40.5 (Qty: 1) CAUTION: Refer to Fastener Caution . Tighten 7 N.m (62 lb in)
4	Control Solenoid Valve Support

CONTROL VALVE BODY ASSEMBLY INSTALLATION

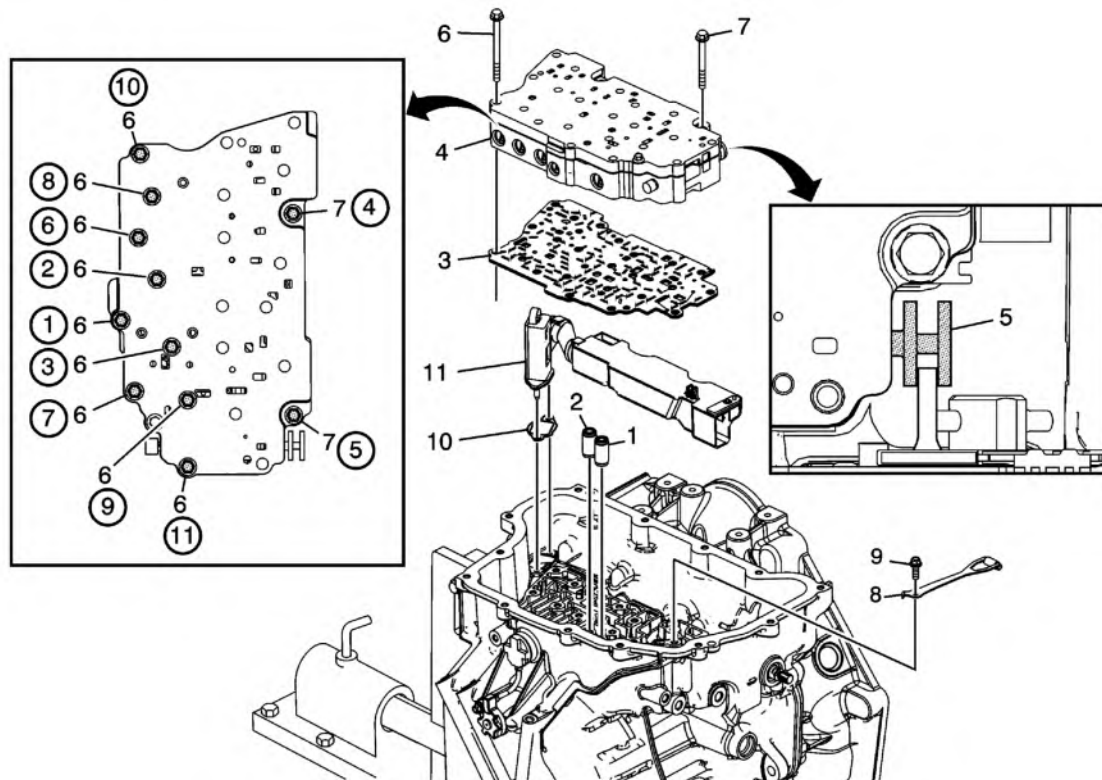


Fig. 70: View Of Control Valve Body Assembly Attachments
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Low and Reverse Clutch Fluid Passage Seal
2	1-2-3-4 Clutch Fluid Passage Seal
3	Control Valve Body Spacer Plate Assembly
4	Control Valve Body Assembly
5	Manual Valve NOTE: Align the manual valve to the rod on the manual shift detent lever.
6	Control Valve Body Bolt M6 x 60 (Qty: 9) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 11 N.m (97 lb in)
7	Control Valve Body Bolt M6 x 53 (Qty: 2) Tighten 11 N.m (97 lb in)
8	Manual Shaft Detent Lever Spring Assembly
9	Manual Shaft Detent Spring Bolt M6 x 16 (Qty: 1) Tighten 12 N.m (106 lb in)
10	Fluid Level Control Valve Gasket
11	Fluid Level Control Valve

CONTROL SOLENOID VALVE AND TRANSMISSION CONTROL MODULE ASSEMBLY INSTALLATION

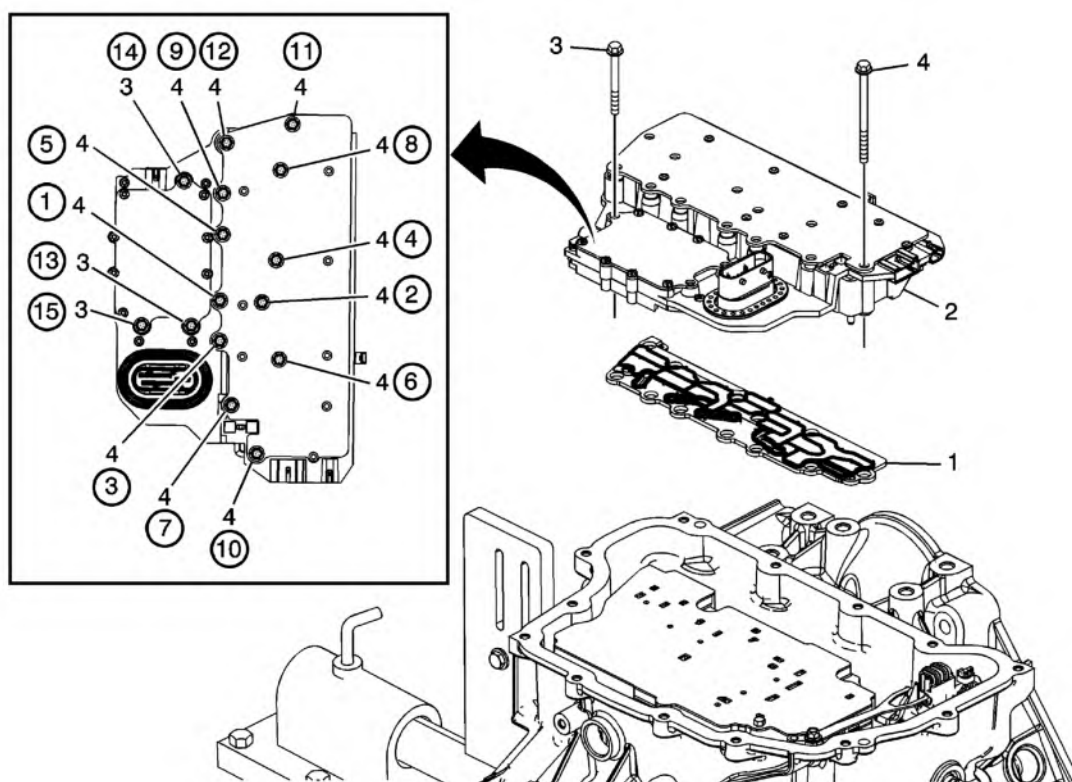


Fig. 71: Identifying Control Solenoid Valve & TCM Bolt Tightening Sequence
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Control Solenoid Valve Assembly Filter Plate CAUTION: Use care when removing or installing the filter plate assembly. A broken or missing retaining tab may not adequately secure the filter plate to the control solenoid valve assembly, resulting in possible damage or contamination. NOTE: Install a NEW filter plate to prevent fluid leaks past the fluid seals.
2	Control Solenoid (w/Body and TCM) Valve Assembly
3	Control Valve Body Bolt M5 x 40.5 (Qty: 3) CAUTION: Refer to Fastener Caution . Tighten 7 N.m (62 lb in)
4	Control Valve Body Bolt M6 x 97 (Qty: 12) Tighten 11 N.m (97 lb in)

CONTROL VALVE BODY COVER INSTALLATION

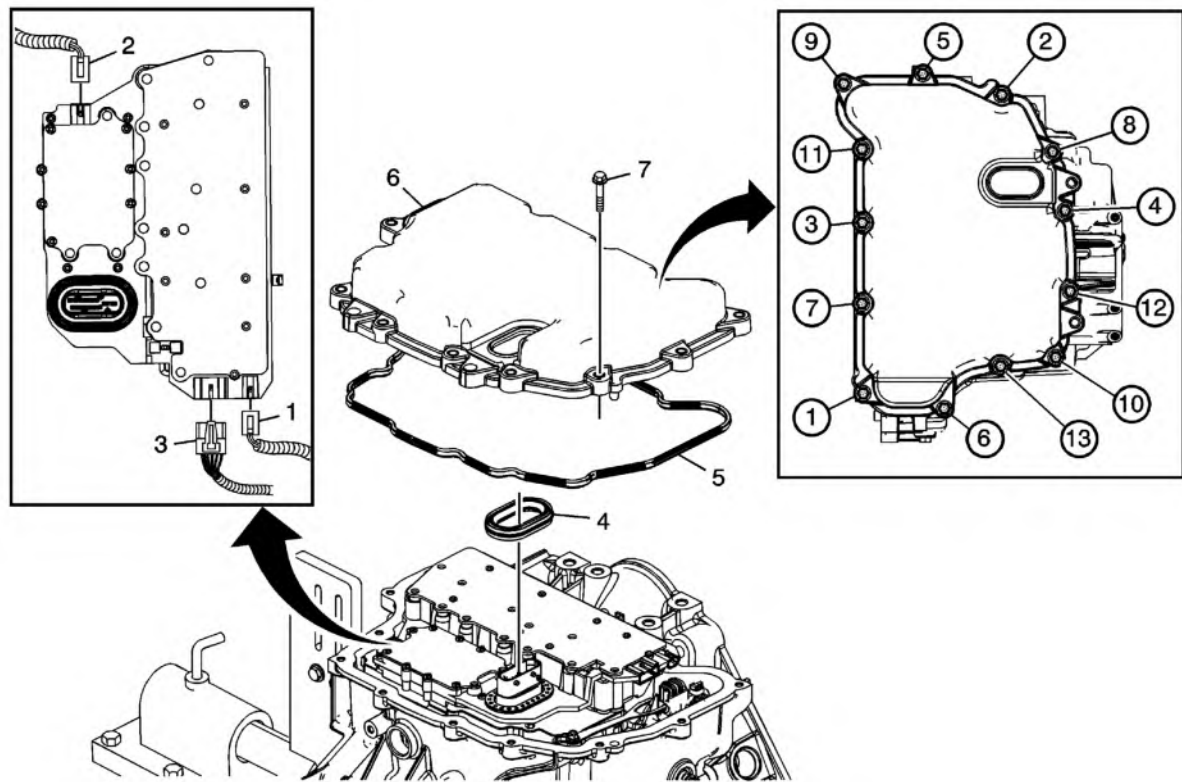


Fig. 72: Identifying Control Valve Body Cover Bolt Tightening Sequence
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Input Speed Sensor Connector
2	Output Speed Sensor Connector
3	Shift Position Switch Connector
4	Control Valve Body Cover Wiring Connector Hole Seal NOTE: Do not re-use the valve body cover wiring connector hole seal.
5	Control Valve Body Cover Gasket NOTE: Do not re-use the valve body cover gasket.
6	Control Valve Body Cover
7	Control Valve Body Cover Bolts M6 x 30 (Qty: 13) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 12 N.m (106 lb in)

AUXILIARY FLUID PUMP CLEANING AND INSPECTION

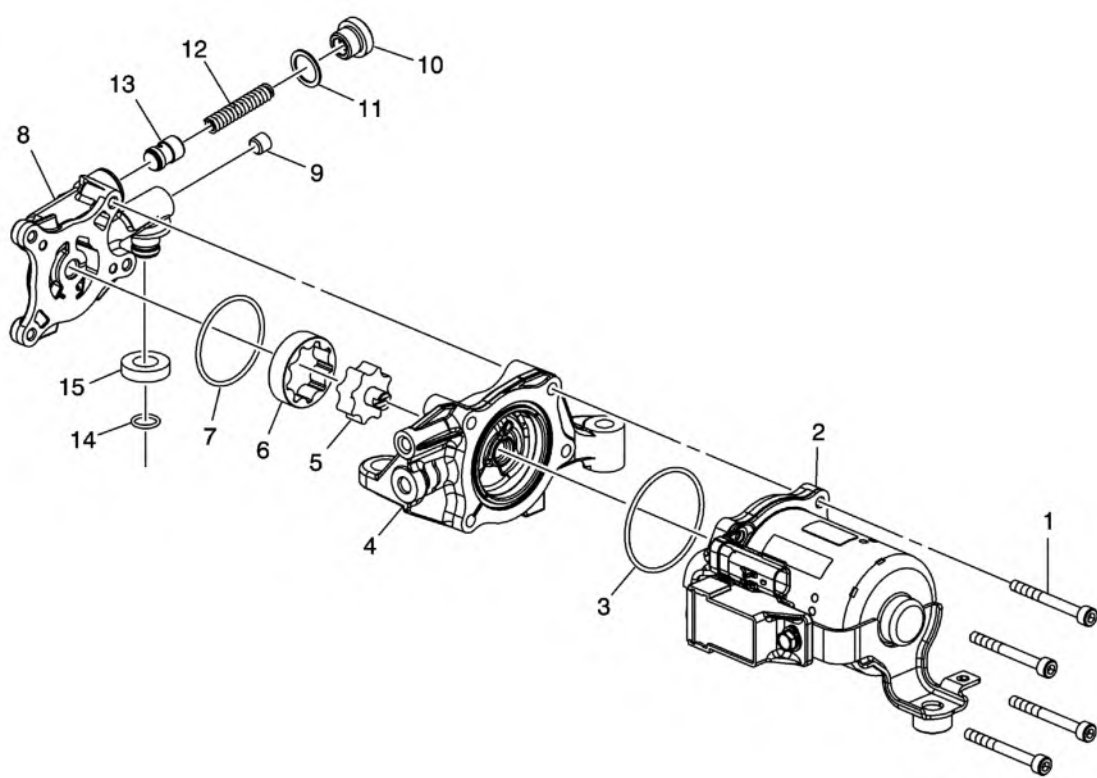


Fig. 73: Auxiliary Fluid Pump Cleaning and Inspection
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Clean and inspect only the auxiliary fluid pump components shown above. The only serviceable components are listed as serviceable below.	
1	A/Trans Auxiliary Fluid Pump (Pump to Motor) Bolt (Qty: 4) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 10-12 N.m (88-106 lb in)
2	A/Trans Auxiliary Fluid Pump Motor
3	A/Trans Auxiliary Fluid Pump Motor Cover Seal (O-ring) - serviceable
4	A/Trans Auxiliary Fluid Pump Body
5	A/Trans Auxiliary Fluid Pump Inner Rotor
6	A/Trans Auxiliary Fluid Pump Outer Rotor
7	A/Trans Auxiliary Fluid Pump Cover Seal - serviceable
8	A/Trans Auxiliary Fluid Pump Cover
9	A/Trans Auxiliary Fluid Pump Cover Hole Plug
10	Pressure Regulator Valve Spring Retainer
11	Pressure Regulator Valve Spring Spacer - serviceable
12	Pressure Regulator Valve Spring
13	Pressure Regulator Valve
14	A/Trans Auxiliary Fluid Pump Seal - serviceable
15	A/Trans Auxiliary Fluid Pump Gasket - serviceable

AUXILIARY FLUID PUMP INSTALLATION

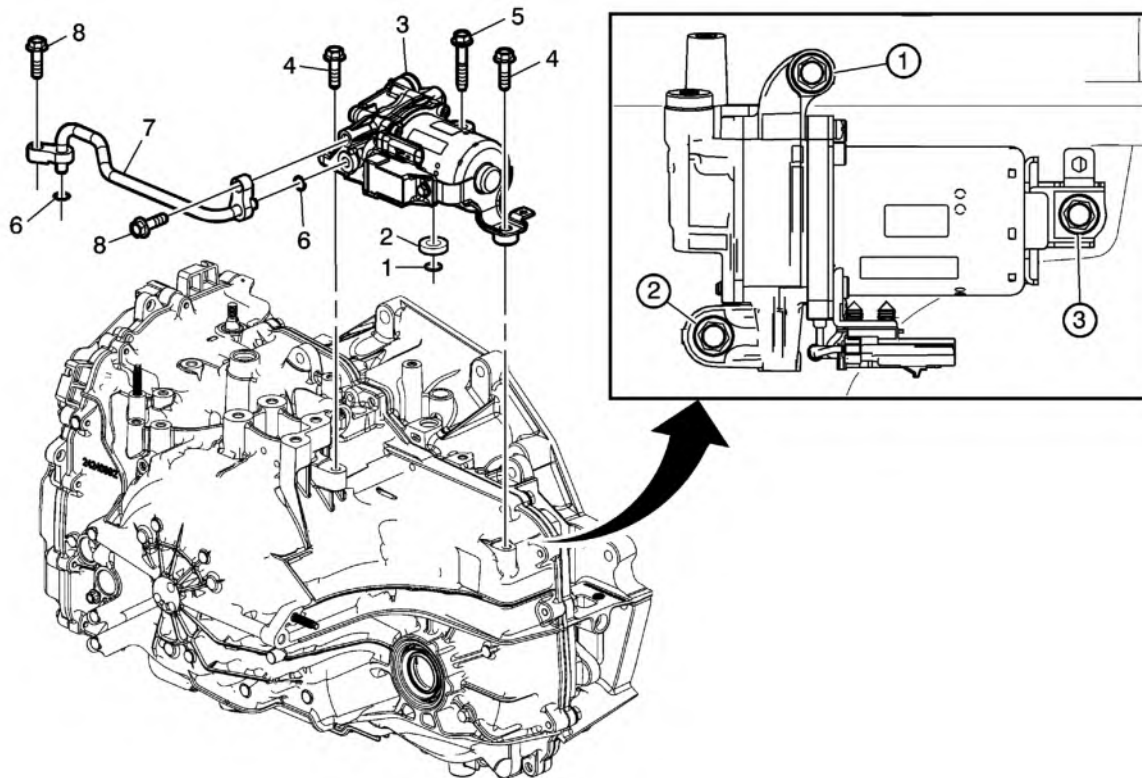


Fig. 74: Auxiliary Fluid Pump

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	A/Trans Auxiliary Fluid Pump Seal
2	A/Trans Auxiliary Fluid Pump Gasket
3	A/Trans Auxiliary Fluid Pump Assembly
4	A/Trans Auxiliary Fluid Pump Outlet Bolt (Qty: 2) CAUTION: Refer to Fastener Caution . Procedure Tighten in sequence shown. Tighten 22 N.m (16 lb ft)
5	A/Trans Auxiliary Fluid Pump Bolt Procedure Tighten in sequence shown. Tighten 22 N.m (16 lb ft)
6	Trans Auxiliary Fluid Pump Outlet Pipe Seal (Qty: 2)
7	A/Trans Auxiliary Fluid Pump Outlet Pipe Procedure 1. Fasten pipe to auxiliary pump and tighten bolt just enough to hold in place. 2. Align pipe to case and tighten bolt just enough to hold in place.
8	A/Trans Auxiliary Fluid Pump Outlet Bolt (Qty: 2) Tighten 22 N.m (16 lb ft)

TORQUE CONVERTER FLUID SEAL REPLACEMENT

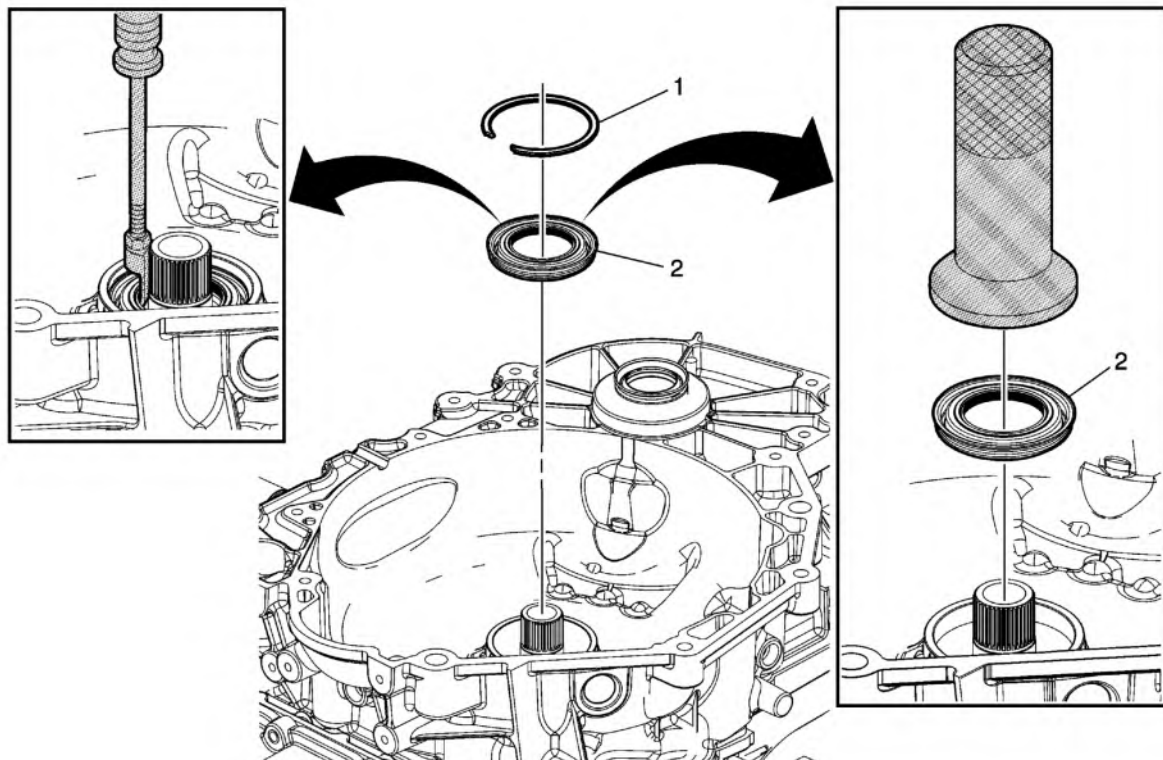


Fig. 75: Torque Converter Fluid Seal
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Torque Converter Fluid Seal Retainer
2	Torque Converter Fluid Seal Special Tools • DT-47791-B Seal Installer • DT-6125-B Slide Hammer • EN-23129 Universal Seal Remover For equivalent regional tools, refer to Special Tools .

TORQUE CONVERTER INSTALLATION

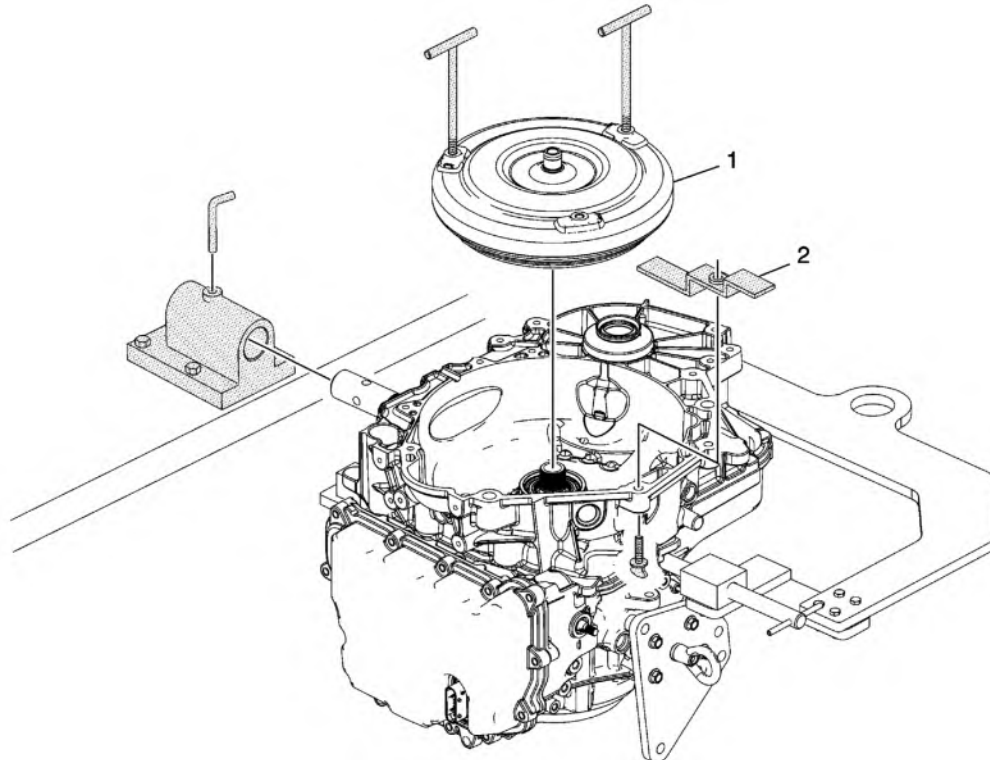


Fig. 76: View Of Torque Converter & Holding Strap
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Torque Converter Assembly CAUTION: Lower the torque converter straight down. Failure to lower the torque converter straight down could damage the torque converter clutch lip seal inside the torque converter clutch assembly. Special Tool DT-46409 Torque Converter Lifting Handles For equivalent regional tools, refer to Special Tools .
2	DT-21366 Converter Holding Strap WARNING: The torque converter must be held to the torque converter housing by a retaining device such as shipping brackets. Without the retaining device, the torque converter may slide forward, disengaging the oil pump, or may fall completely out of the transmission causing personal injury and/or property damage.

LIFT PLATE AND HOLDING FIXTURE REMOVAL

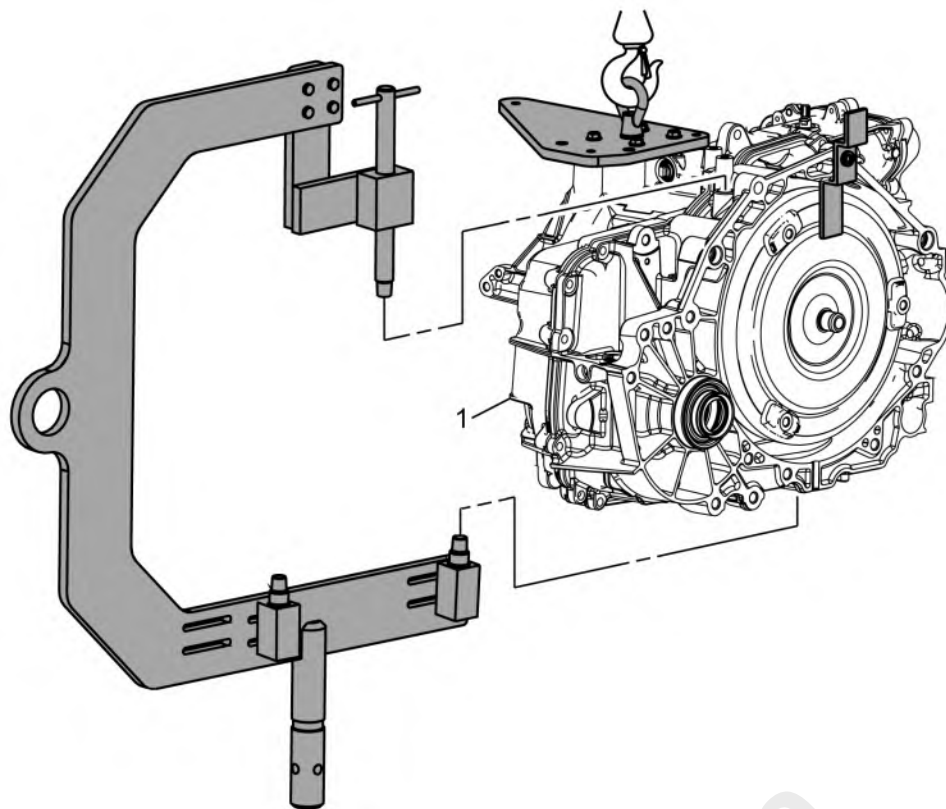


Fig. 77: Identifying Lift Plate & Holding Fixture
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

Callout	Component Name
1	Â WARNING: Handle with care, the transmission assembly weighs over 83 Kg (183 lbs). Bodily injury could occur if not handled properly. CAUTION: Refer to Fastener Caution . Procedure 1. Install DT-47811-A Transmission Lift Plate. 2. Tighten bolts and nut to 12 N.m (106 lb in). 3. Remove lock pin from DT-46625 Transmission Holding Fixture. 4. Raise the transmission with an overhead hoist in order to remove the DT-46625 Transmission Holding Fixture. 5. Lower the transmission assembly onto the transmission jack in order to remove the DT-47811-A Transmission Lift Plate. NOTE: Only 2 bolt holes on the lift plate will align with the bosses on the transmission case. This is sufficient for lifting the transmission to remove the holding fixture. Special Tools • DT-3289-20 Holding Fixture • DT-46625 Transmission Holding Fixture • DT-46625-10 Transmission Holding Fixture Adapter • DT-47811-A Transmission Lift Plate For equivalent regional tools, refer to Special Tools .