

2010 Transmission

Automatic Transmission - 6T30/6T40/6T45 - Equinox & Terrain

REPAIR INSTRUCTIONS - OFF VEHICLE

LIFT PLATE AND HOLDING FIXTURE INSTALLATION

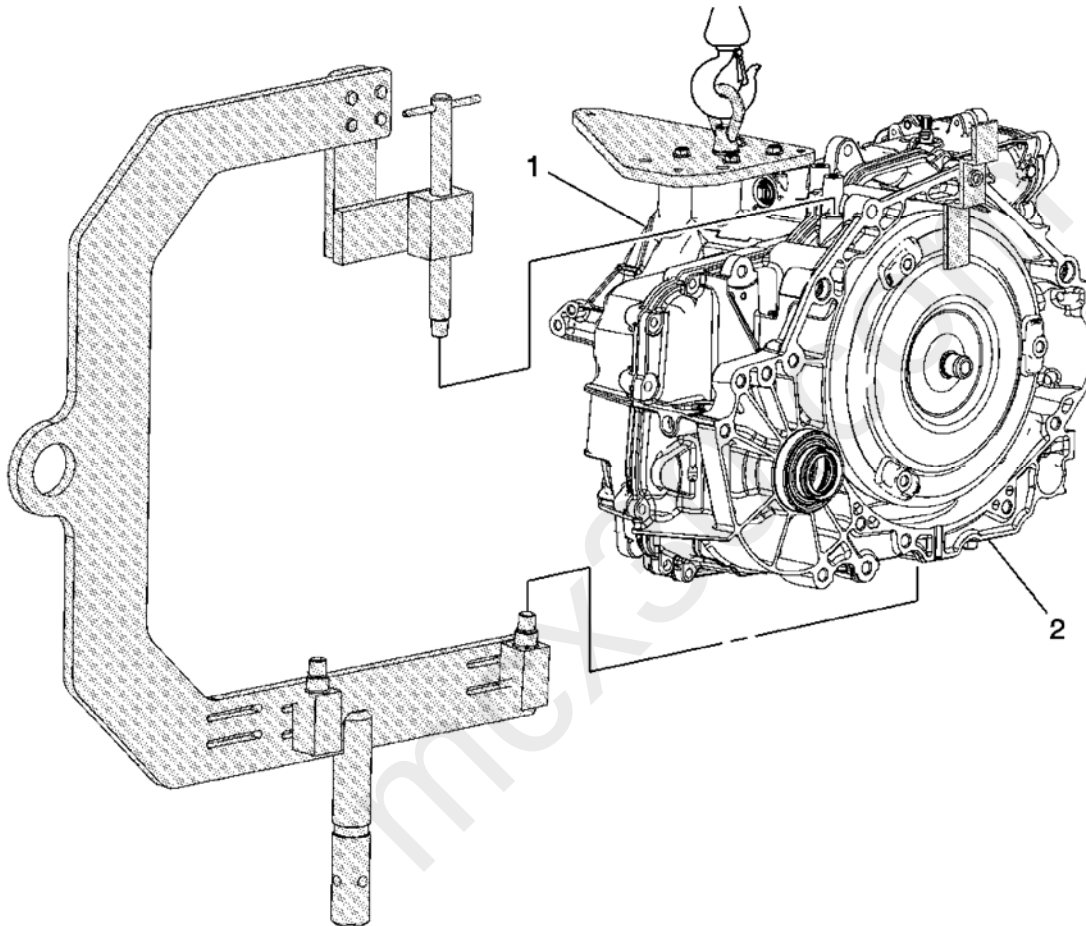


Fig. 1: Lift Plate & Holding Fixture

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
	A/Trans Case assembly WARNING: Handle with care, the transmission assembly weighs over 83 Kg (183 lbs). Bodily injury could occur if not handled properly.

1	CAUTION: Refer to <u>Fastener Caution</u> . Tip: After installation of lift plate, raise the transmission with an overhead hoist. Tighten: 12 N.m (106 lb in) Special Tools: DT-47811-A: Transmission Lift Plate
2	Torque Converter with Fluid Pump Housing Assembly Tip: Adjust mounting block on fixture to match bosses on case. Tighten: 13 N.m (10 lb ft). Special Tools • J-46625: Transmission Holding Fixture • J-46625-10: Holding Fixture Adapter

TORQUE CONVERTER REMOVAL

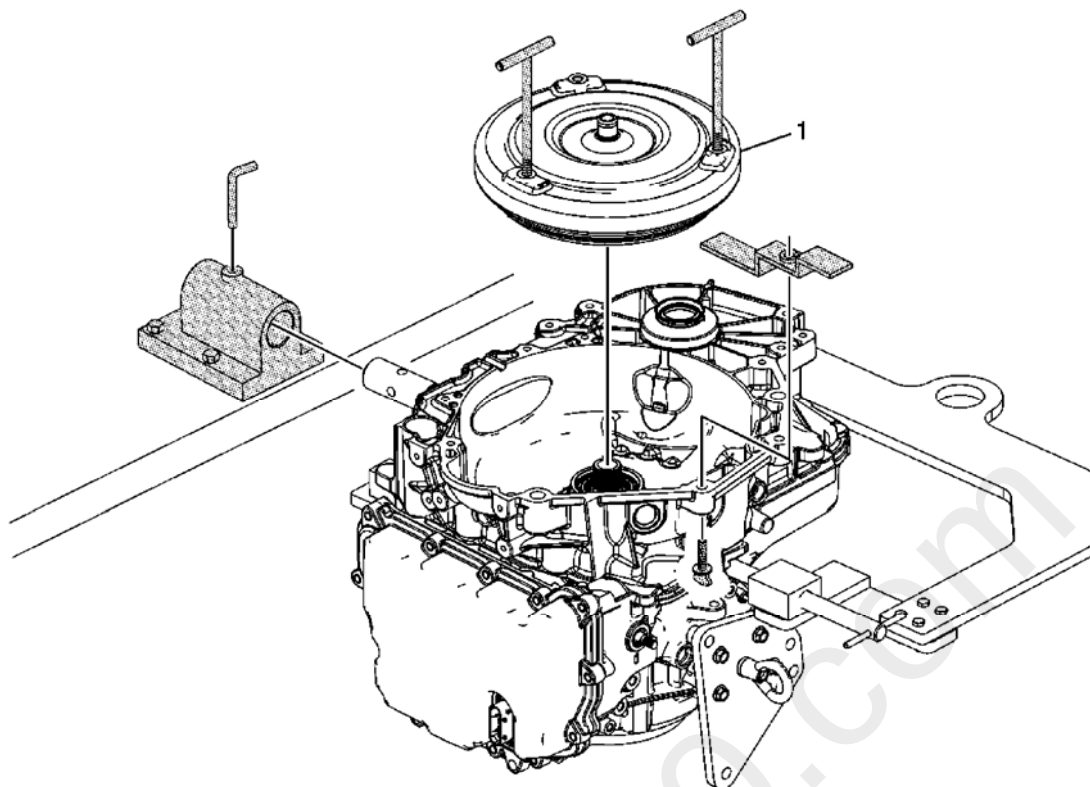


Fig. 2: Torque Converter

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Torque Converter Assembly WARNING: Lock pin must be secured into the bench fixture to hold the transmission and prevent bodily injury. 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. Tip: Ensure the J-3289-20: holding fixture is mounted to a bench that is properly supported and will support the weight of the transmission assembly without tipping. J-39890: holding fixture adapter and an engine stand can be used as an alternative method for supporting the transmission assembly during repairs. Tip: Failure to raise the torque converter straight up could damage the torque converter clutch lip seal inside the torque converter clutch assembly.

Special Tools

- **J-3289-20:** Holding Fixture
- **J-21366:** Torque Converter Holding Strap
- **J-39890:** Transmission Holding Fixture Adapter
- **J-46409:** Torque Converter Lifting Handles

CONTROL VALVE BODY ASSEMBLY REMOVAL

Control Valve Body Cover Removal

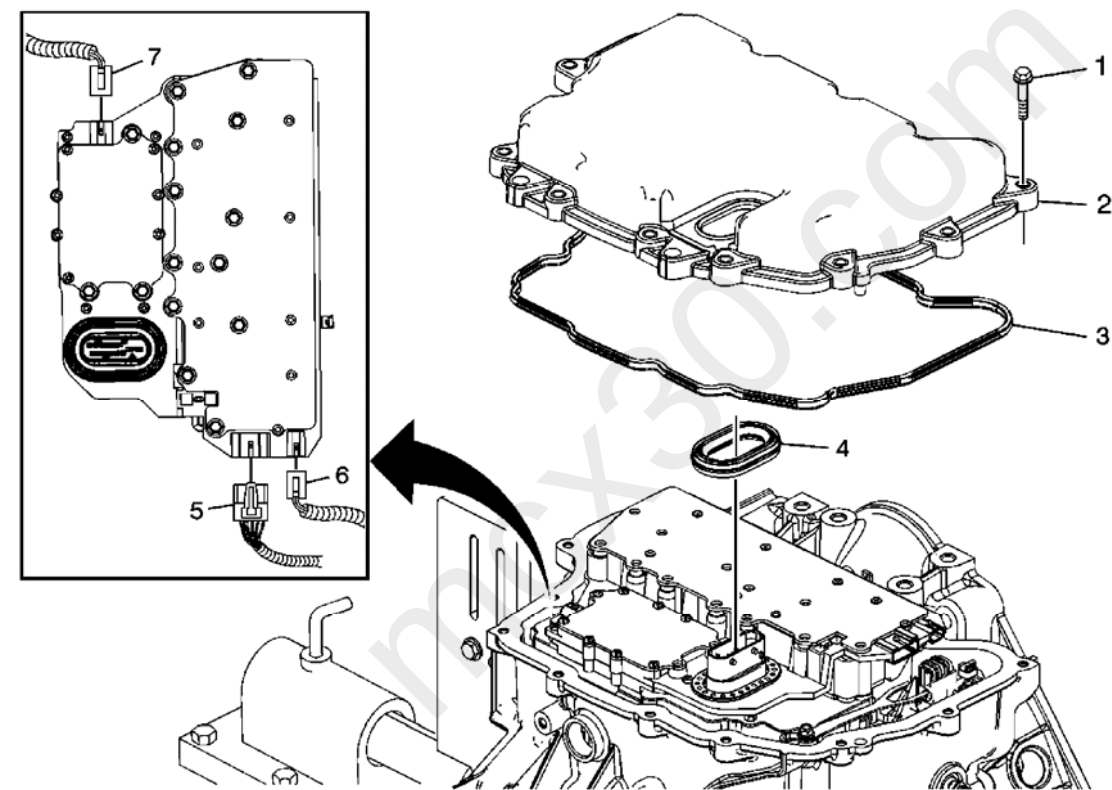


Fig. 3: Control Valve Body Cover
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Control Valve Body Cover Bolts M6 x 30 (Qty: 13)
2	Control Valve Body Cover
3	Control Valve Body Gasket Tip: Discard the seal. It is not reusable.
	Control Valve Body Cover Wiring Connector Hole Seal

4	CAUTION: Support the control solenoid valve assembly around the connector when removing the seal. Excessive pulling force can damage the internal electrical connections.
	Tip: 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

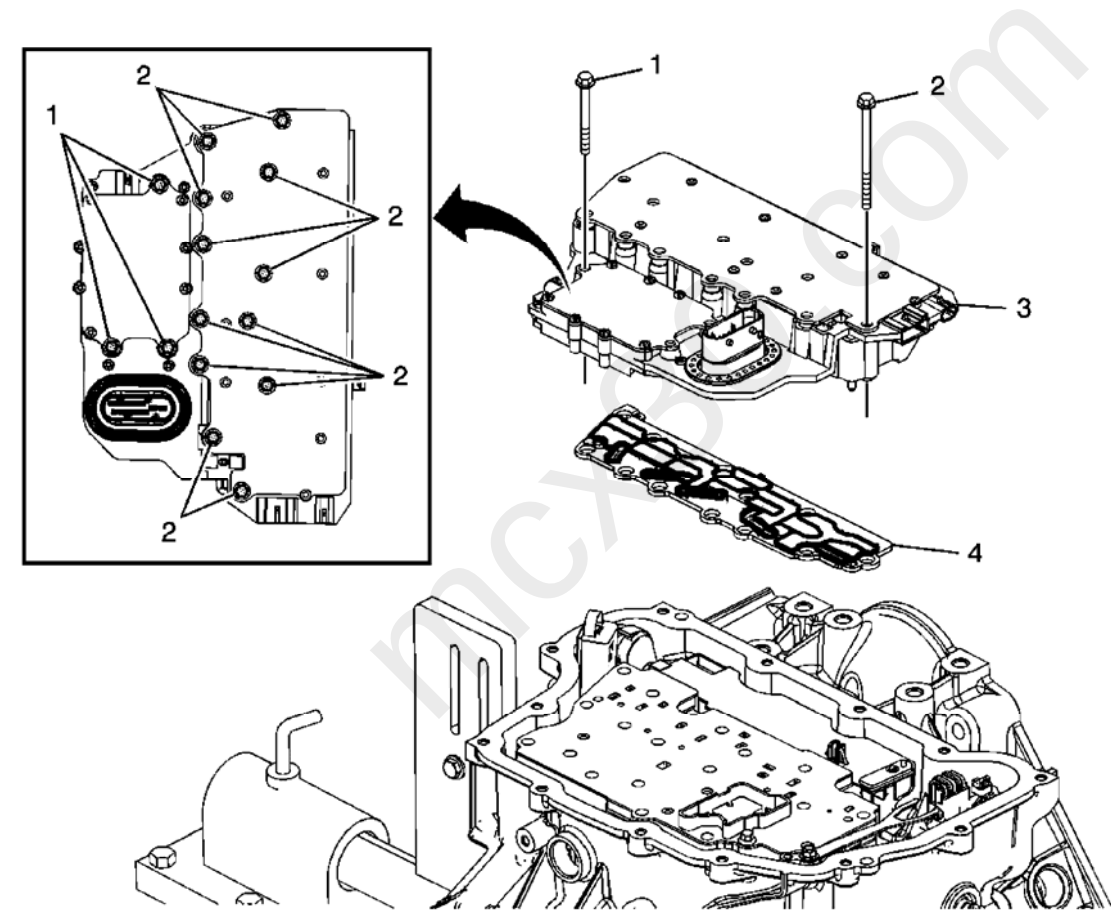


Fig. 4: Control Solenoid (W/Body & TCM) Valve Assembly
Courtesy of GENERAL MOTORS CORP.

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

Control Solenoid Valve Assembly Filter Plate

4

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.

Tip: Discard the filter plate. It is not reusable.

Control Valve Body Assembly Removal

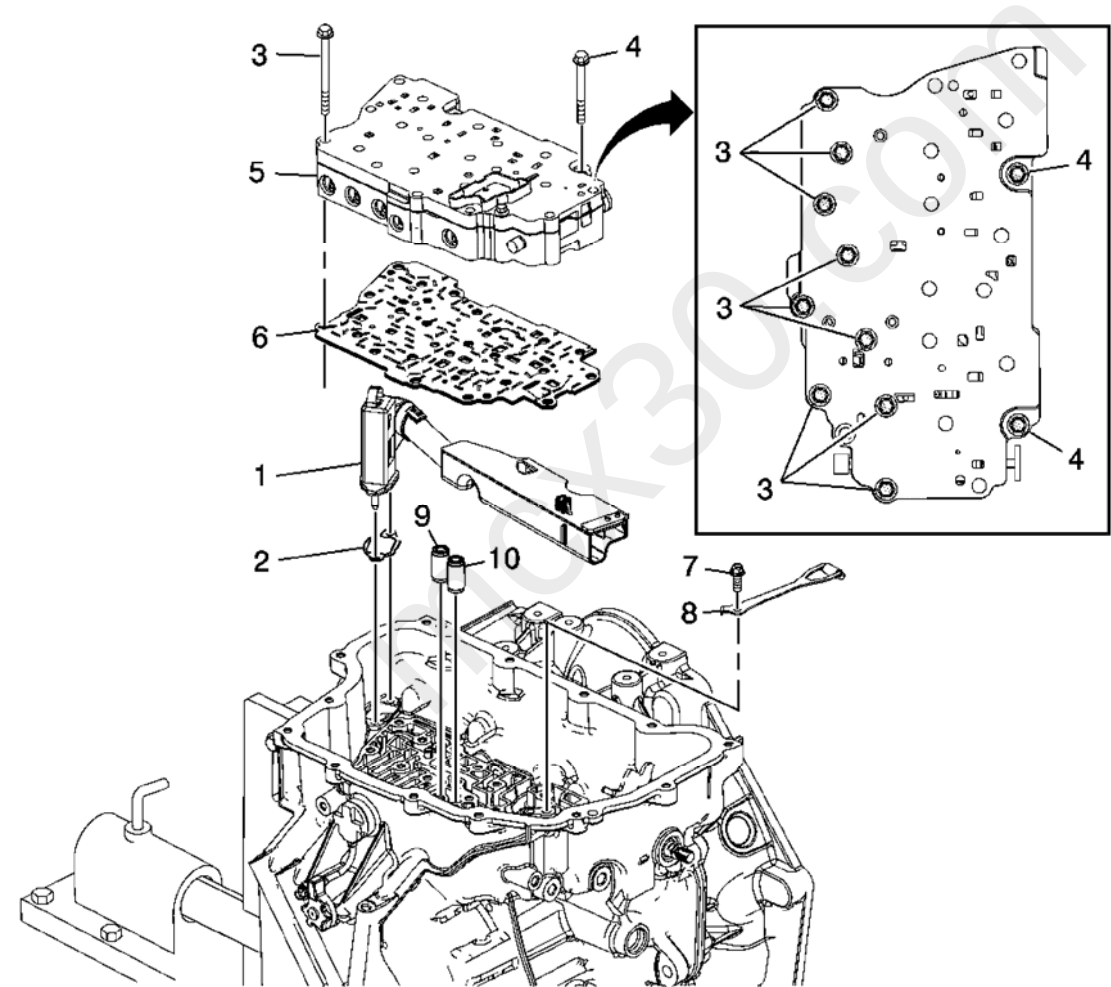


Fig. 5: Control Valve Body Assembly
Courtesy of GENERAL MOTORS CORP.

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 Tip: Discard the seal. It is not reusable.
10	Low/Reverse Clutch Fluid Passage Seal Tip: Discard the seal. It is not reusable.

INPUT AND OUTPUT SPEED SENSOR REMOVAL

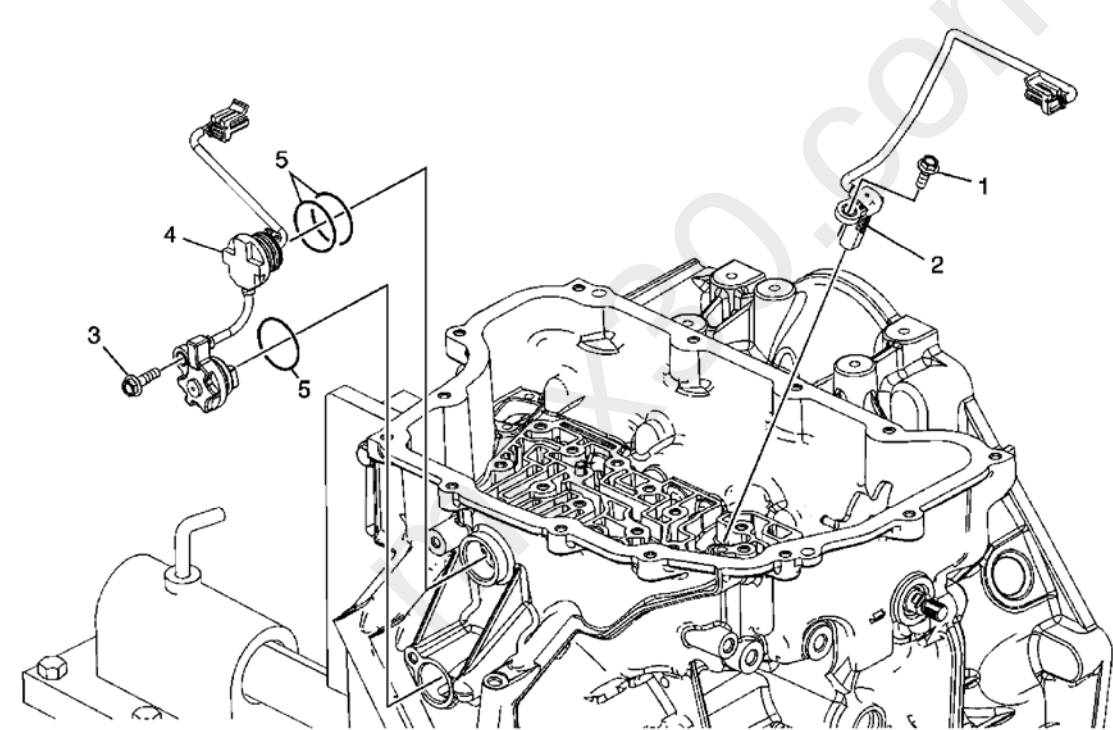


Fig. 6: Input & Output Speed Sensor
 Courtesy of GENERAL MOTORS CORP.

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 Tip: 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) Tip: Discard the seals. They are not reusable.

TORQUE CONVERTER HOUSING WITH FLUID PUMP ASSEMBLY REMOVAL

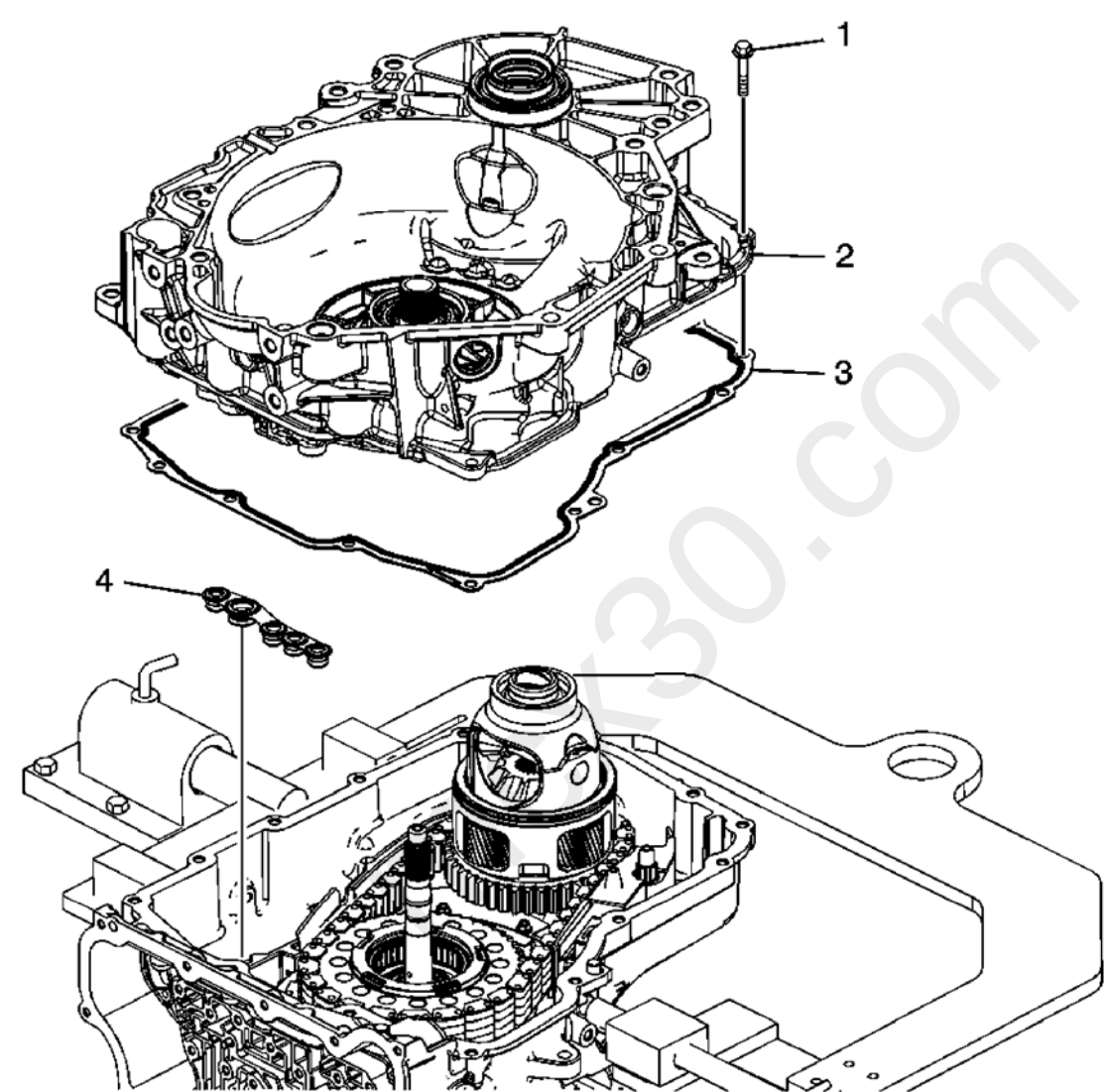


Fig. 7: Torque Converter Housing With Fluid Pump Assembly
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Torque Converter and Differential Housing Bolts M8 x 30 (Qty: 15)
2	Torque Converter with Fluid Pump Housing Assembly
3	Torque Converter Housing Gasket Tip: Discard the seal. It is not reusable.

FRONT DIFFERENTIAL CARRIER ASSEMBLY REMOVAL (6T40/45)

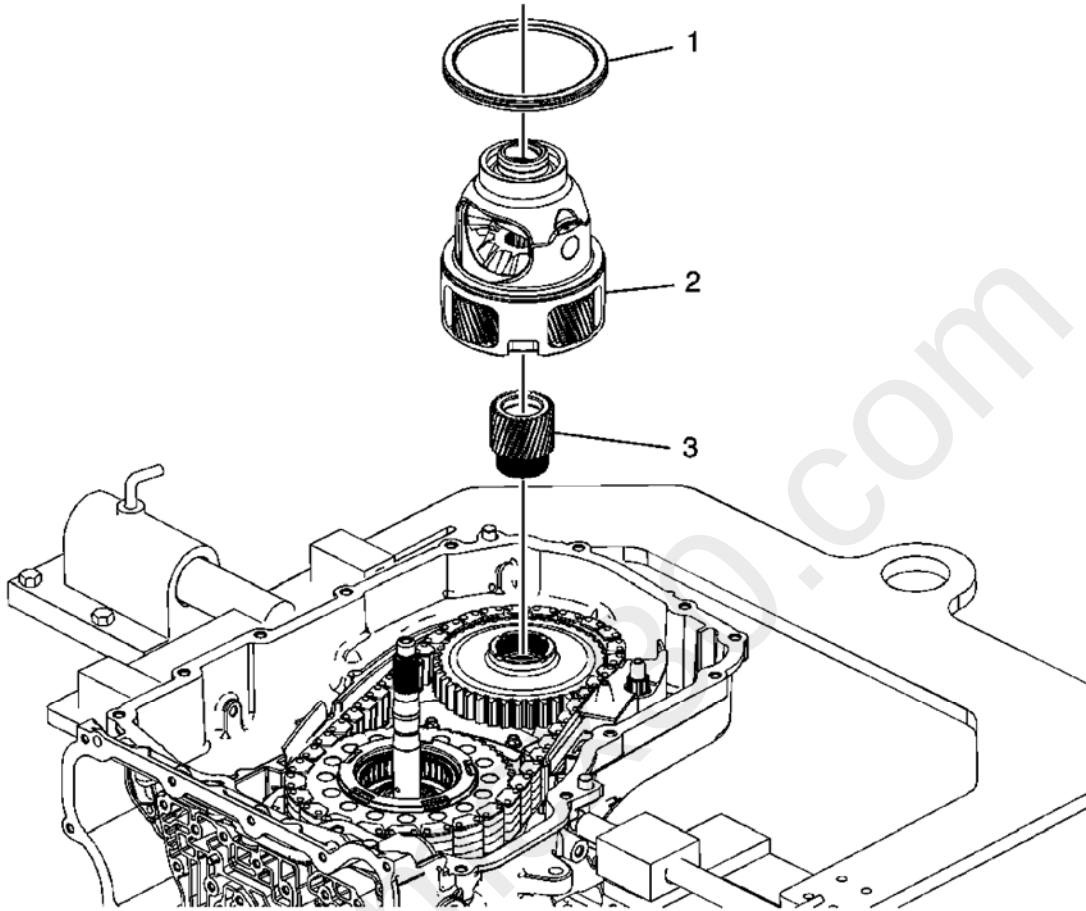


Fig. 8: Front Differential Carrier Assembly (6T40/45)
Courtesy of GENERAL MOTORS CORP.

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 (6T40/45)

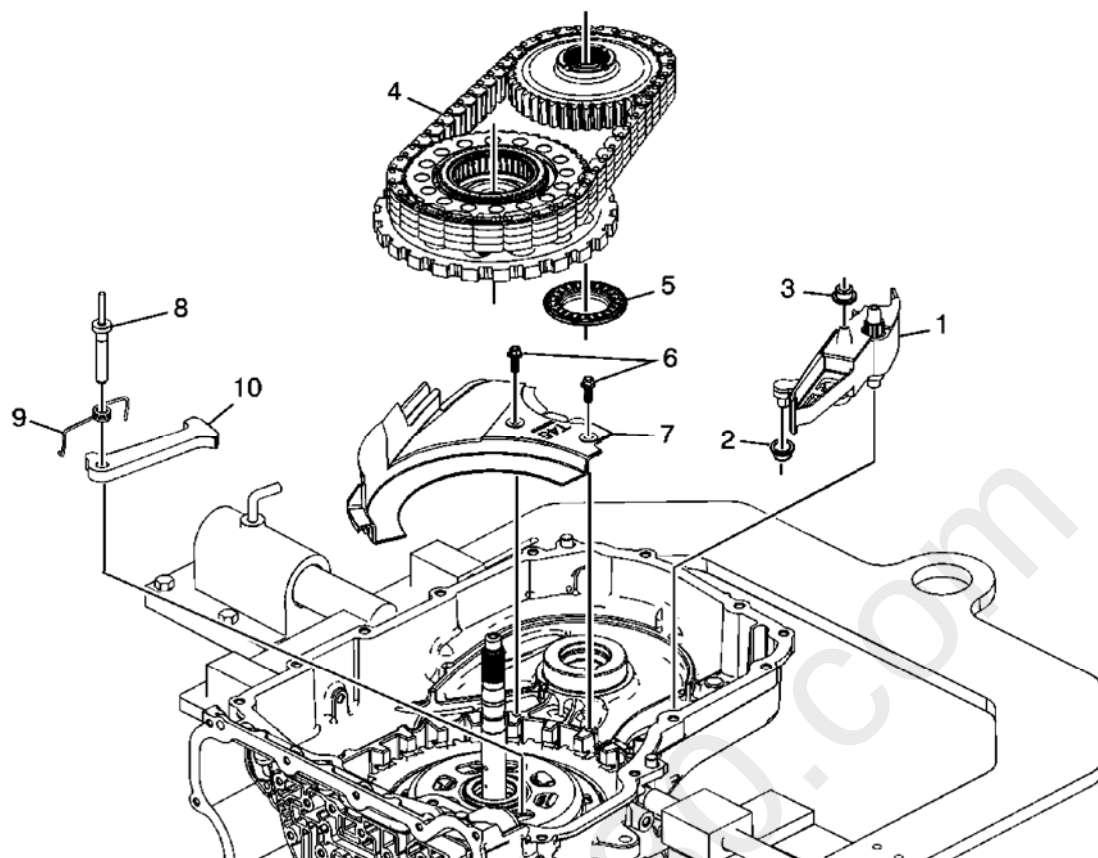


Fig. 9: Drive & Driven Sprocket, Drive Link & Park Pawl (6T40/45)
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Drive Link Lube Scoop
2	Drive Link Lube Scoop Seals
3	Drive Link Lube Fluid Seal
4	Driven Sprocket Assembly, Drive Sprocket and Park Gear Assembly and Drive Link Procedure 1. The drive link, drive and driven sprocket assemblies must be removed at the same time. 2. The driven sprocket ball bearing inner race has a slight interference fit with the case. Pull straight up to ease removal.
5	Driven Sprocket Bearing Assembly Tip: The driven sprocket bearing may be stuck to the driven sprocket.
6	Front Differential Carrier Baffle Bolts M6 x 16 (Qty: 2)
7	Front Differential Carrier Baffle

8	Park Pawl Shaft
9	Park Pawl Spring
10	Park Pawl

INTERNAL COMPONENTS REMOVAL

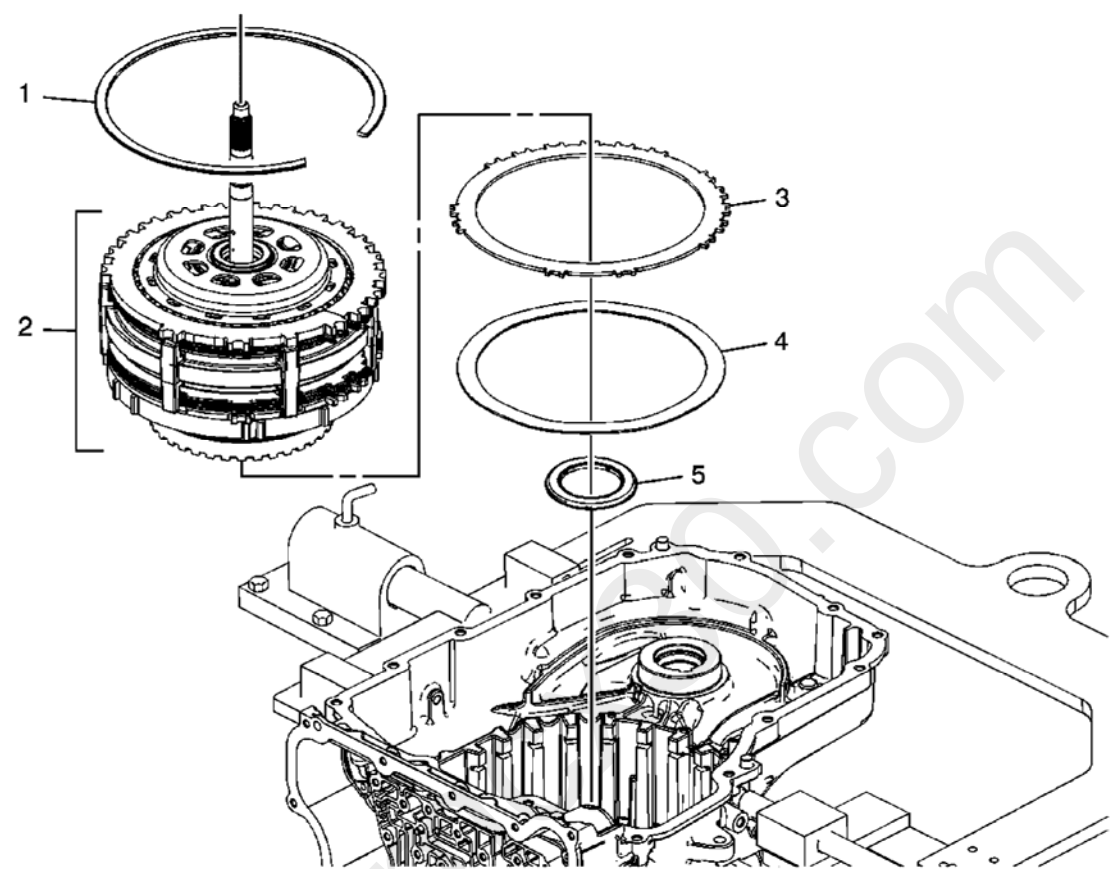


Fig. 10: Internal Components
 Courtesy of GENERAL MOTORS CORP.

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. Tip: Remove one end of the retainer using J-28585: remover or equivalent and work the retainer out of the case groove. Special Tools: J-28585: Snap Ring Remover or equivalent
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 Tip: 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

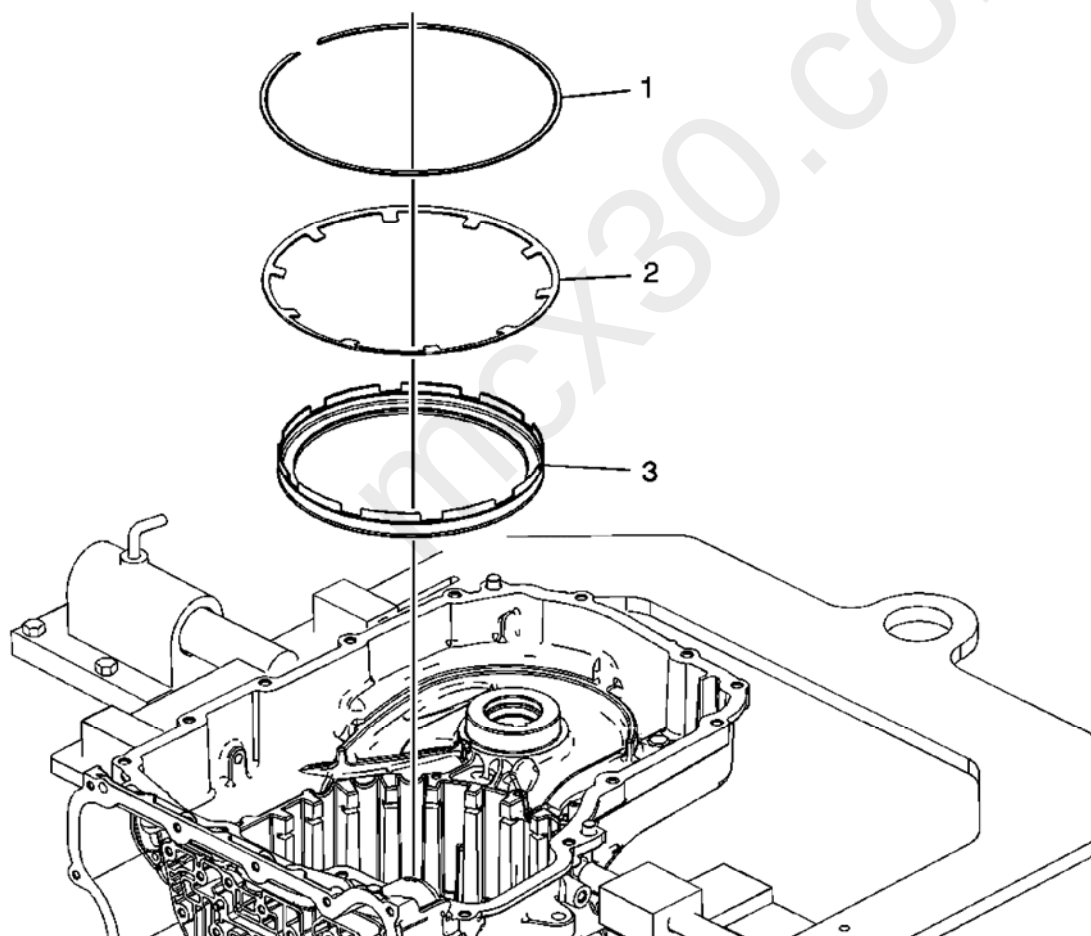


Fig. 11: 2-6 Clutch Piston

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	2-6 Clutch Spring Retainer Special Tool: J 28585: Snap Ring Remover or equivalent
2	2-6 Clutch Spring
3	2-6 Clutch Piston Assembly Tip: • 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

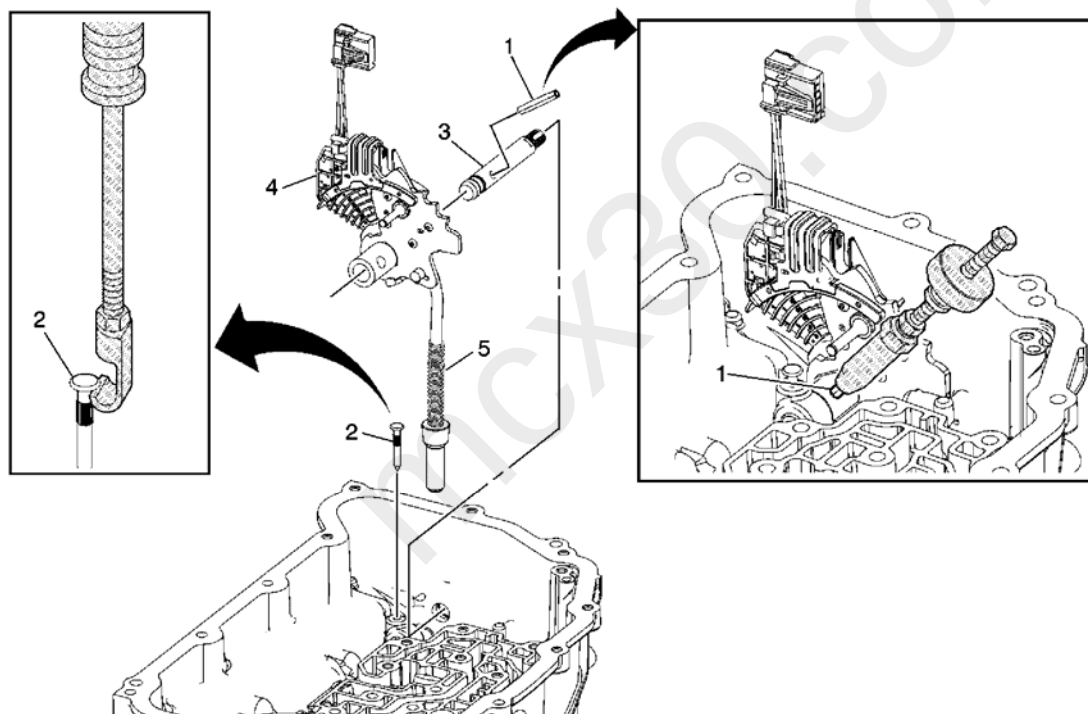


Fig. 12: Manual Shaft Detent (w/Shift Position Switch) Lever Assembly
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Manual Shaft Detent Lever Hub Pin Special Tool: DT-48550: Detent Lever Pin Remover
	Manual Shift Shaft Pin

	Tip: Discard the pin. It is not reusable. Special Tools • J 23129: Universal Seal Remover • J 6125-B: Slide Hammer
2	
3	Manual Shaft
4	Manual Shaft Detent (w/Shift Position Switch) Lever Assembly
5	Park Pawl Actuator Assembly

Park Pawl Actuator Guide Removal

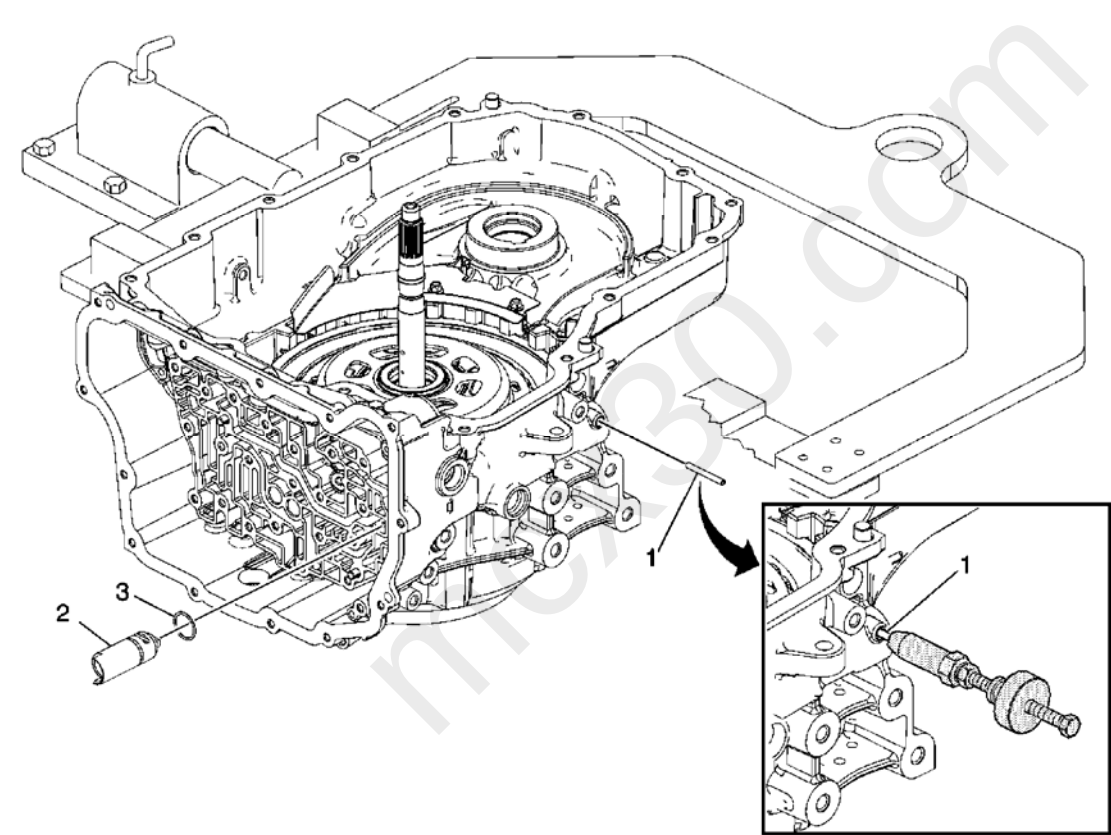


Fig. 13: Park Pawl Actuator Guide
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Park Pawl Actuator Guide Pin
2	Park Pawl Actuator Guide Assembly
3	Park Pawl Actuator Guide Assembly Seal Tip: Discard the seal. It is not reusable.

MANUAL SHIFT SHAFT SEAL REMOVAL

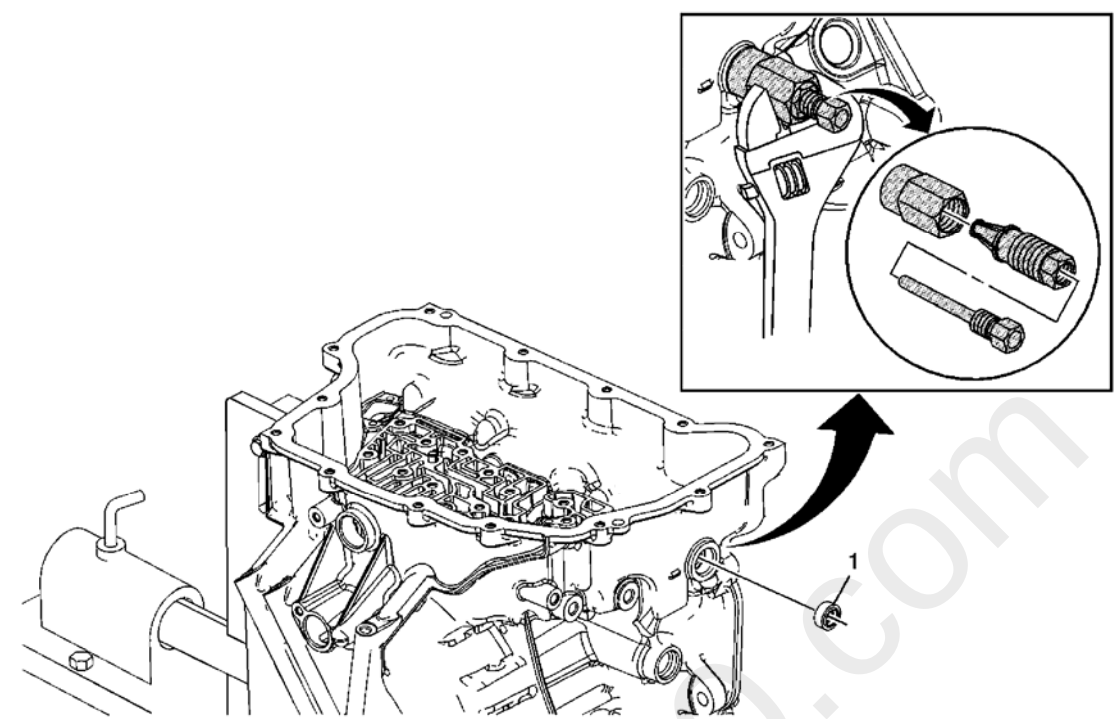


Fig. 14: Manual Shift Shaft Seal
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Manual Shift Shaft Seal Tip: Use the J 45201: seal remover to remove the seal to prevent damage to the case surface. Special Tools: J 45201: Seal Remover

INPUT SHAFT SUPPORT REPLACEMENT

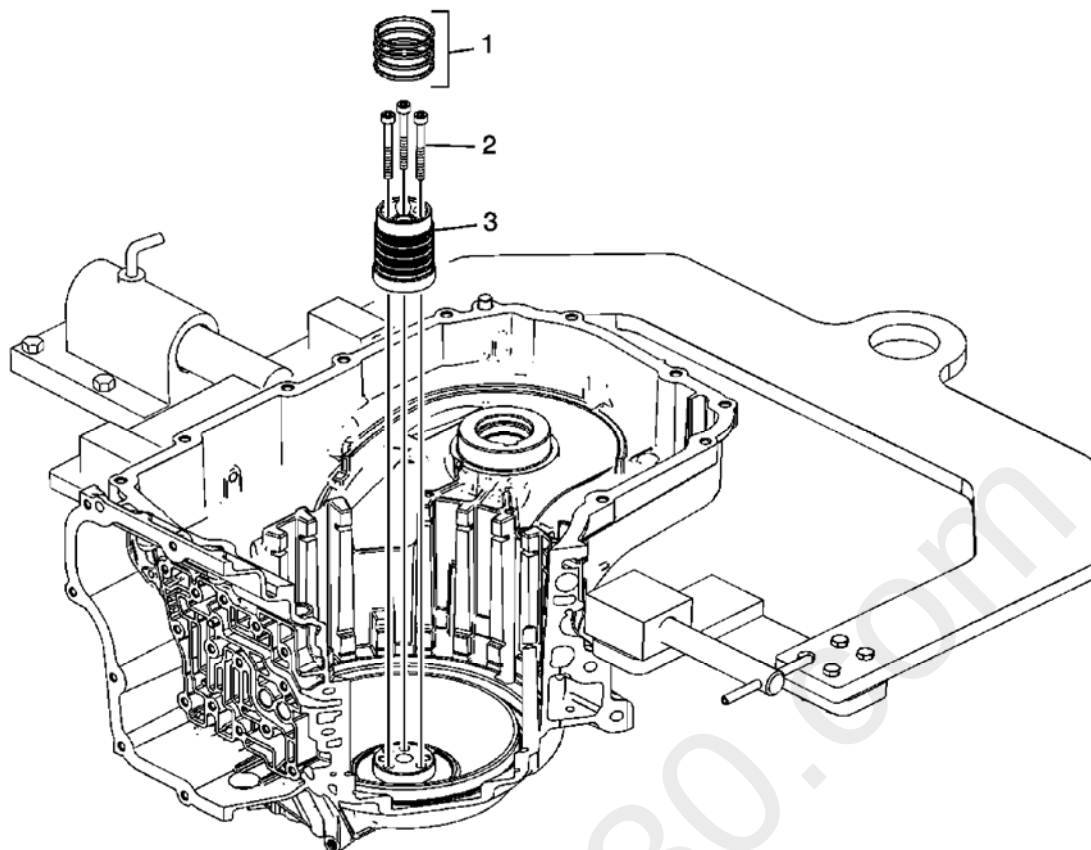


Fig. 15: Input Shaft Support
 Courtesy of GENERAL MOTORS CORP.

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

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

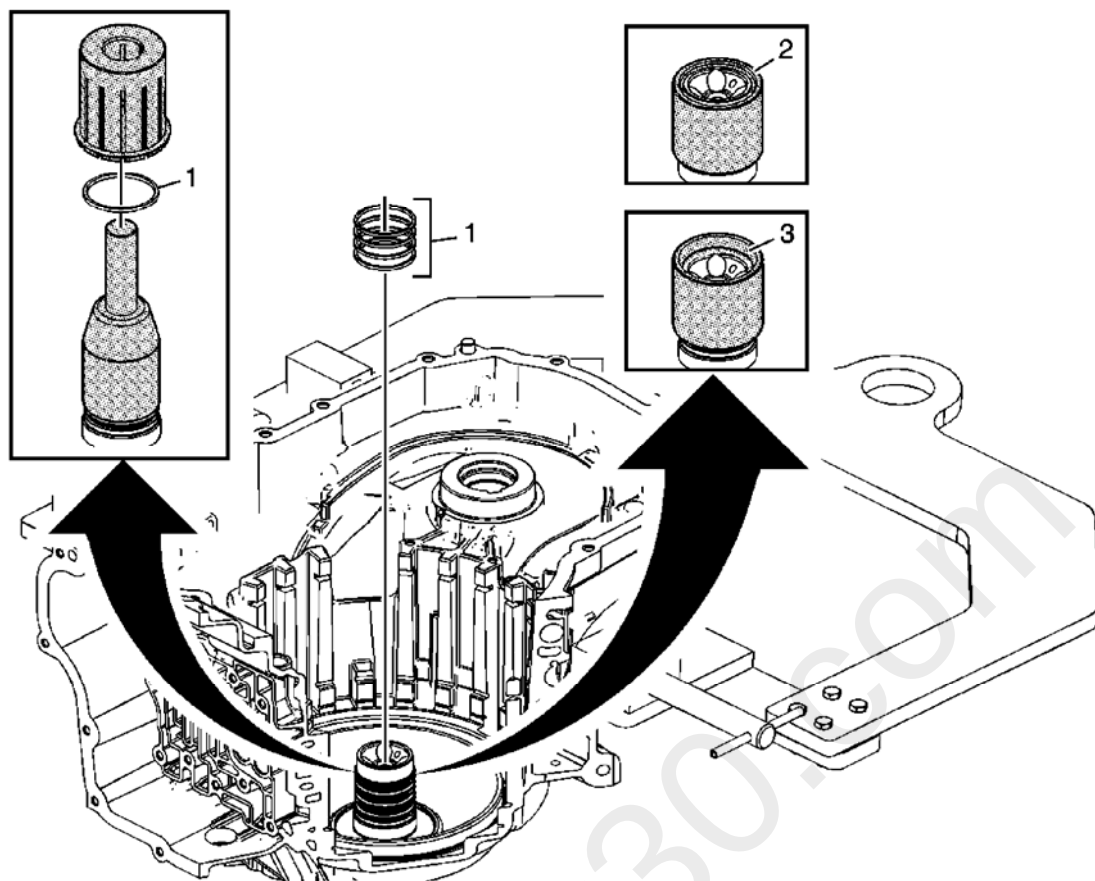


Fig. 16: 3-5-Reverse & 4-5-6 Clutch Fluid Seal Ring
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	3-5 Reverse and 4-5-6 Clutch Fluid Seals (Qty: 4)
	Procedure 1. Place J-46620-3 which is part of J-46620: 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 J-46620-3 which is part of J-46620: installer. 3. Use J-46620-2 which is part of J-46620: installer to push the fluid seal ring down over J-46620-3 which is part of J-46620: installer into the hub ring groove. 4. Repeat the above steps to install all 4 seal rings, adjusting J-46620-3 which is part of J-46620: installer to the appropriate ring groove. Special Tools:

	J-46620: Seal Installer
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. Tip: Install J-46620-1 which is part of J-46620: installer with the large chamfer end down over the fluid seal rings and leave J-46620-1 which is part of J-46620: installer on the seals for at least 60 seconds. Special Tools: J-46620: Seal Installer
3	Large Chamfer Up Procedure 1. Install J-46620-1 which is part of J-46620: installer with the small chamfer end facing down for at least 60 seconds. This will properly size the bottom seal ring. 2. Leaving J-46620-1 which is part of J-46620: 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. Special Tools: J-46620: Seal Installer

FRONT WHEEL DRIVE SHAFT SEAL REPLACEMENT - CASE SIDE

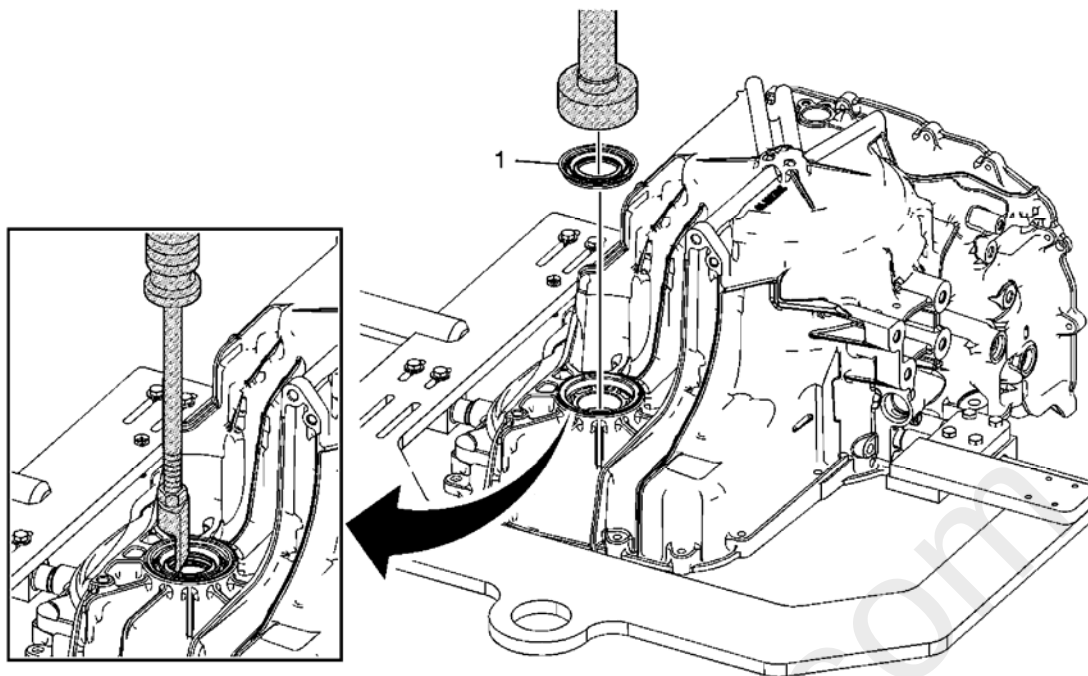


Fig. 17: Front Wheel Drive Shaft Seal - Case Side
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Front Wheel Drive Shaft Oil Seal Special Tools • DT-47790: Seal Installer • J 6125-B: Slide Hammer • J 8092: Driver Handle • J 23129: Universal Seal Remover

TRANSMISSION CASE CLEANING AND INSPECTION

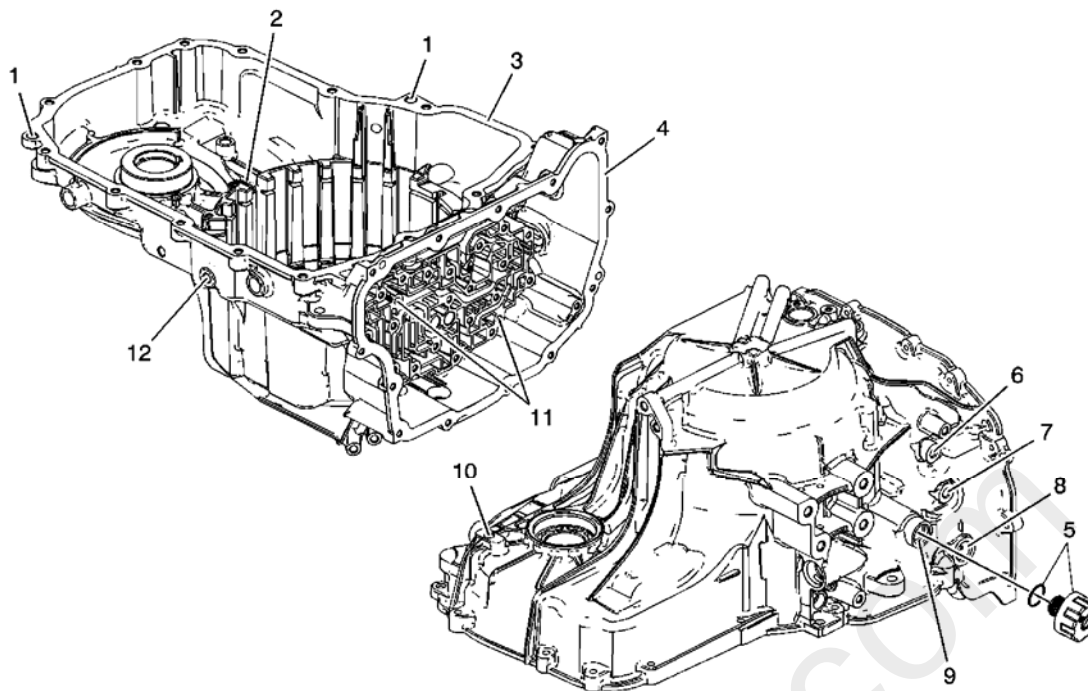


Fig. 18: Cleaning & Inspecting Transmission Case
 Courtesy of GENERAL MOTORS CORP.

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.	
	Torque Converter Housing Locating Pin Procedure:

1	Inspect the torque converter housing locating pins. Specification: The locating pins installed height is 7.4 mm (0.29 in).
2	Fluid Trough Check Ball Specification: 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 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 Plug Tighten: 12 N.m (106 lb in)
11	Valve Body Locating Pin Procedure: Inspect the valve body locating pins. Specification: 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

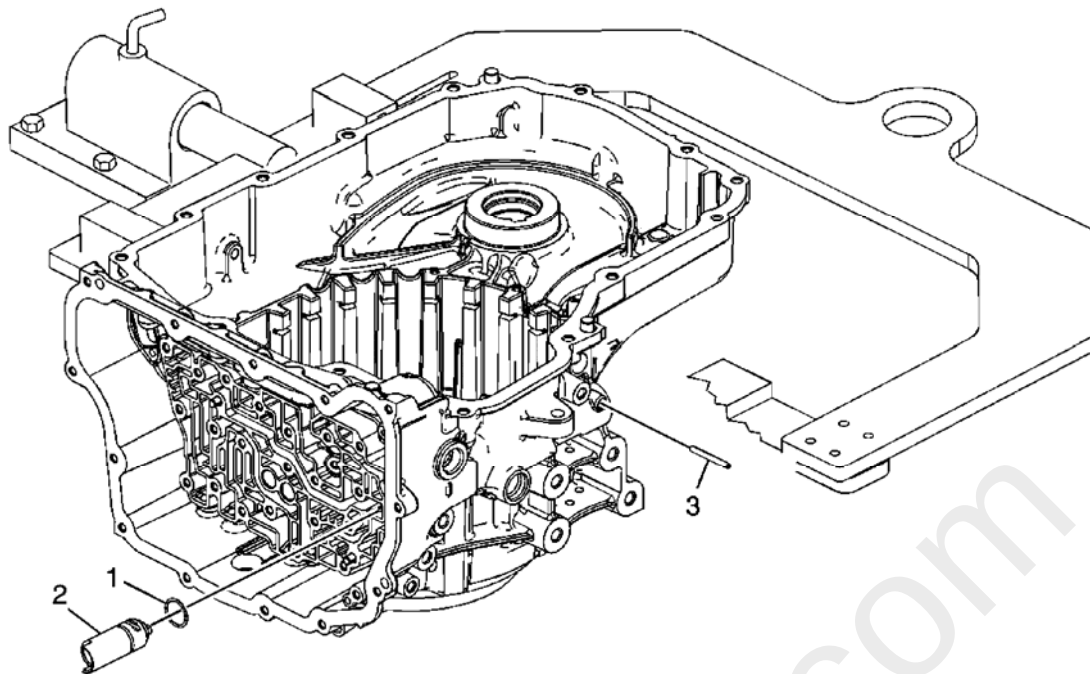


Fig. 19: Park Pawl Actuator Guide
 Courtesy of GENERAL MOTORS CORP.

Park Pawl and 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 Procedure: Install the park pawl actuator guide pin. Specification: The park pawl actuator guide pin installed height is 7.2 mm (0.28 in).

Park Pawl Actuator Assembly Installation

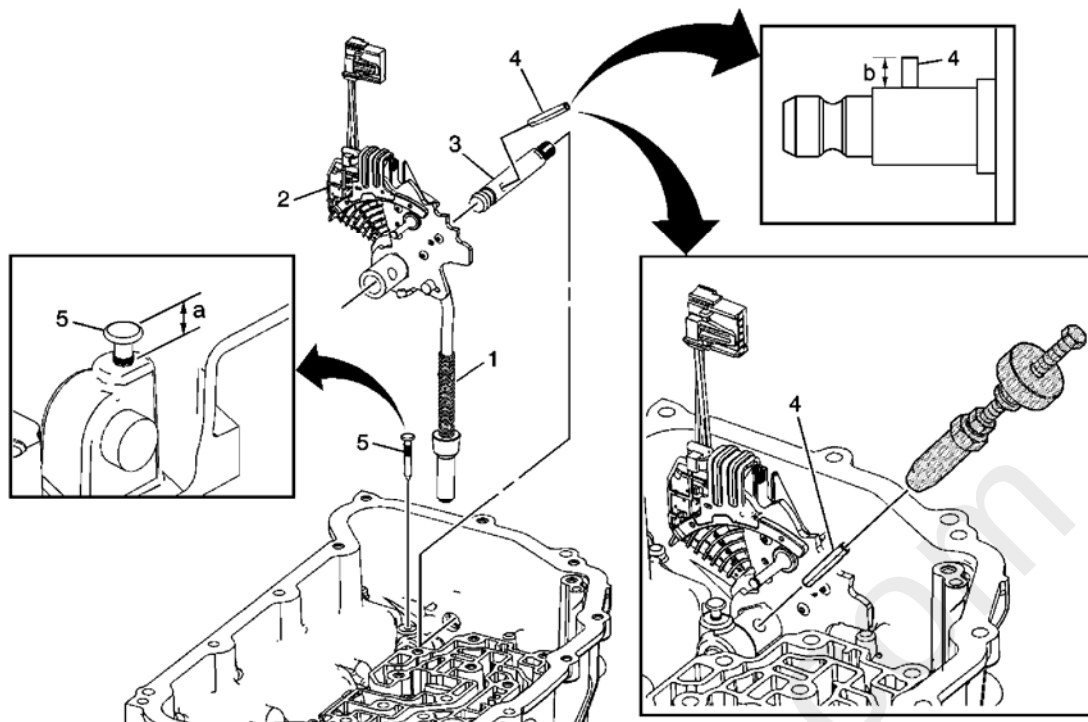


Fig. 20: Identifying Manual Shift Detent Lever with Shaft Position Switch Assembly & Park Pawl Actuator
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Park Pawl Actuator Assembly
2	Manual Shift Detent (with Shaft Position Switch) Lever Assembly
3	Manual Shaft Tip: Lubricate the shaft with ATF to prevent damage to the manual shift shaft seal during installation.
4	Manual Shaft Detent Lever Hub Pin Procedure: Use a NEW pin to ensure proper engagement with the shaft. DT-48550: remover can also be used to install the pin. Install the manual shift detent lever hub pin. Specification: The manual shaft detent lever hub pin installed height is (b) 7.9 mm (0.38 in). Special Tools: DT-48550: Detent Lever Pin Remover
	Manual Shift Shaft Pin

5

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:

Use a NEW pin to ensure proper engagement with the case. Inspect pin height.

Specification: The manual shift shaft pin installed height is within (a) 7.2-8.2 mm (0.28-0.32 in).

Special Tools:

J-41229: Manual Shaft Pin Installer

MANUAL SHIFT SHAFT SEAL INSTALLATION

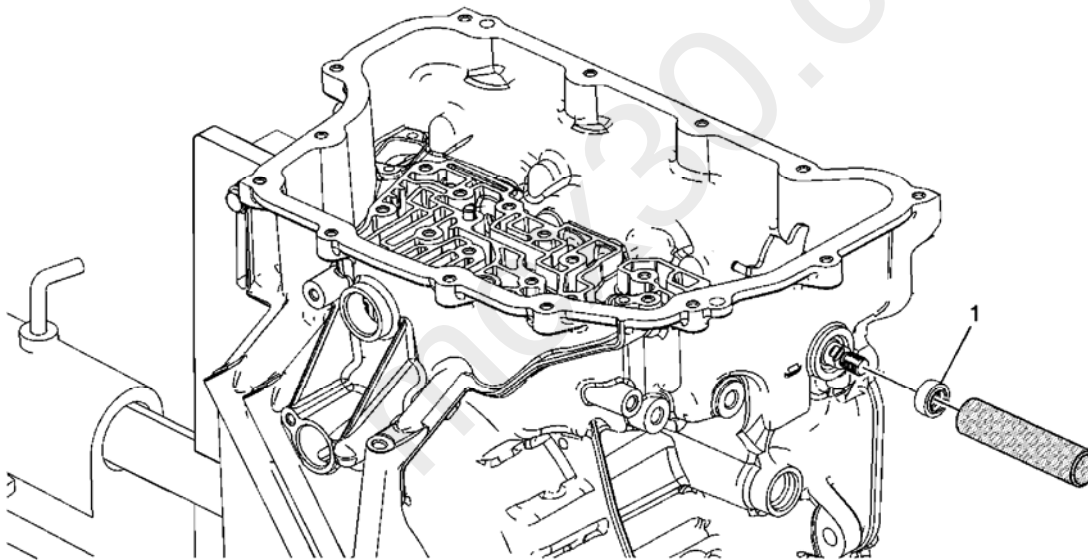


Fig. 21: Manual Shift Shaft Seal

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Manual Shift Shaft Seal Special Tool: DT-49101: Seal Installer

2-6 CLUTCH PISTON INSTALLATION

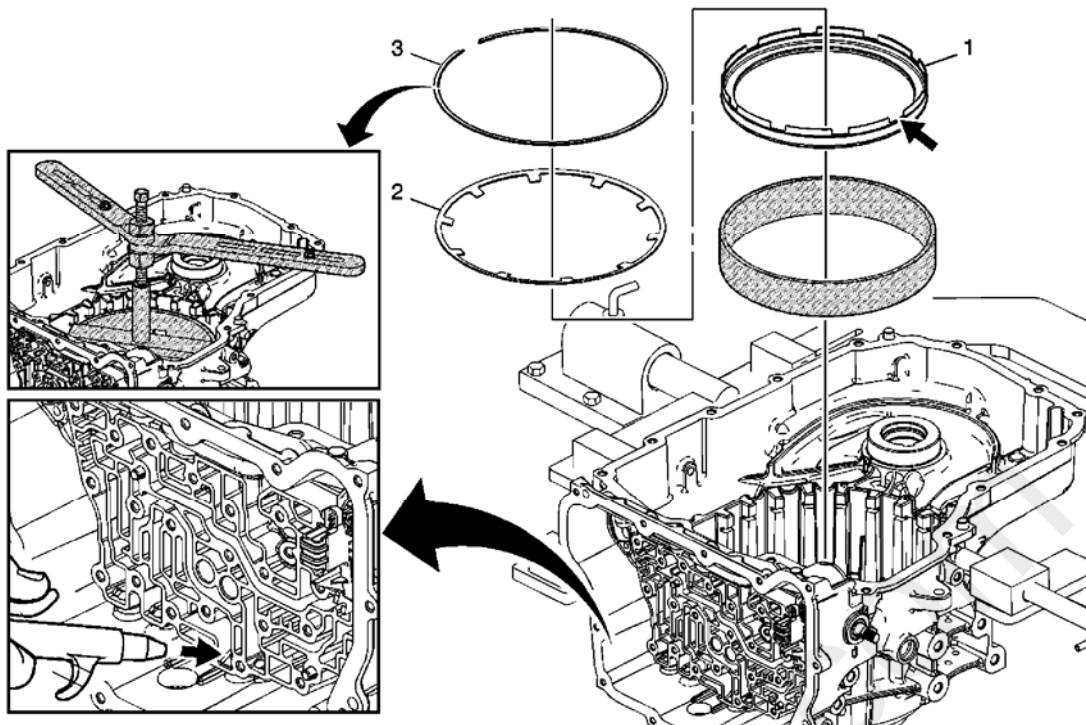


Fig. 22: 2-6 Clutch Piston

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	2-6 Clutch Piston Assembly Tip: • 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
2	2-6 Clutch Spring
	2-6 Clutch Spring Retainer CAUTION: Regulate the air pressure to 40 psi maximum. High pressure could cause the piston to over travel and damage the piston seals.

3

Tip:

- 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

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

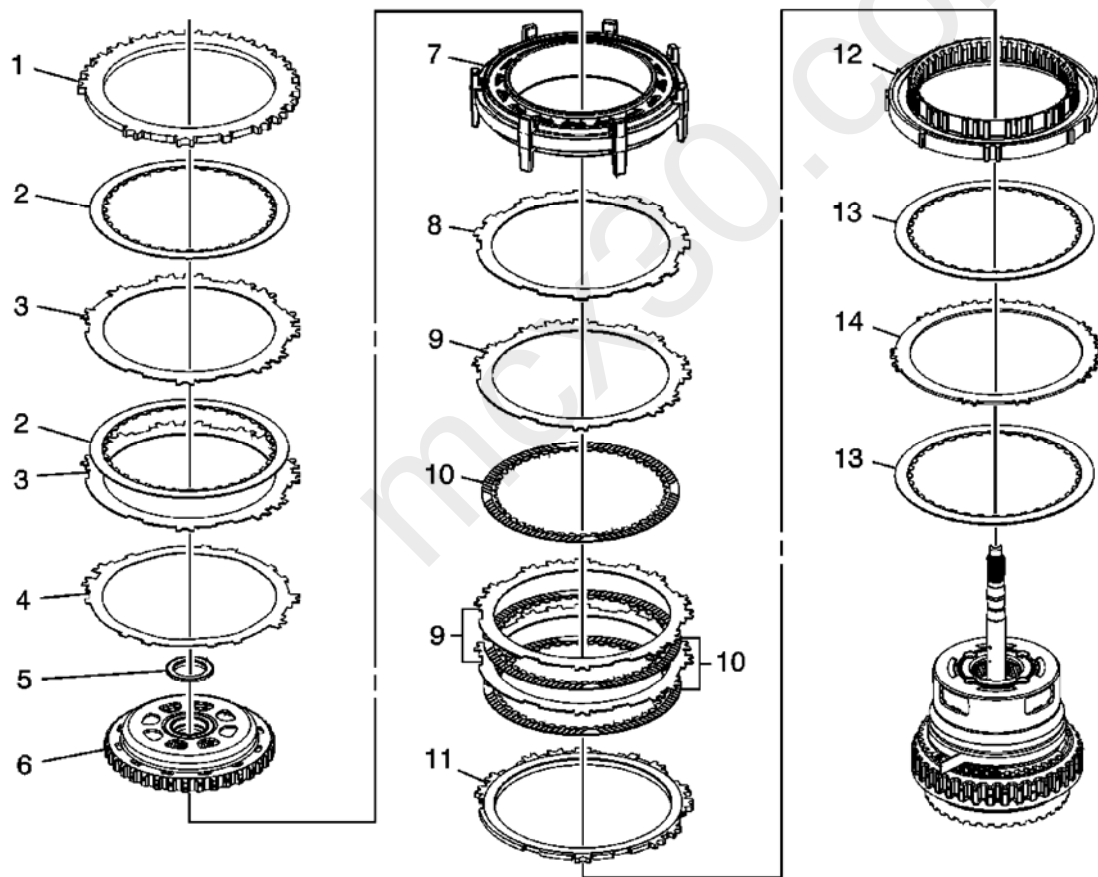


Fig. 23: Low & Reverse & 1-2-3-4 Clutch Housing, Low & Reverse Clutch Assembly, Output Sun Gear, & 2-6 Clutch Plate

Courtesy of GENERAL MOTORS CORP.

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
5	Output Sun Gear Thrust Bearing Assembly Tip: 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)
14	2-6 Clutch Plate (Qty: 1)

INPUT, REACTION, AND OUTPUT CARRIER DISASSEMBLE

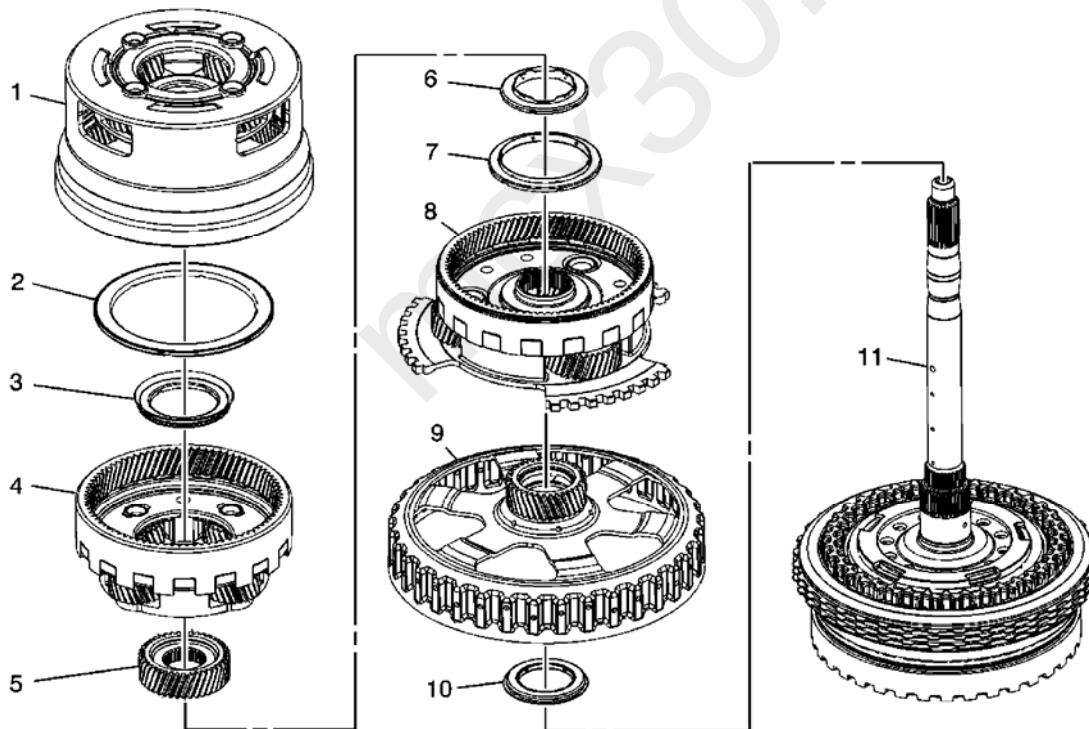


Fig. 24: Input, Reaction & Output Carrier
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Output Carrier Assembly Tip: • The 6T30 and 6T40 have 4 pinions. • The 6T45 and 6T50 have 5 pinions.
2	Output Carrier Thrust Bearing Assembly
3	Input Sun Gear Thrust Bearing Assembly
4	Input Carrier Assembly Tip: • 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 Tip: • The 6T30 and 6T40 have 3 pinions. • The 6T45 and 6T50 have 4 pinions.
9	Reaction Carrier Sun Gear Assembly
10	Reaction Carrier Sun Gear Thrust Bearing Tip: 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

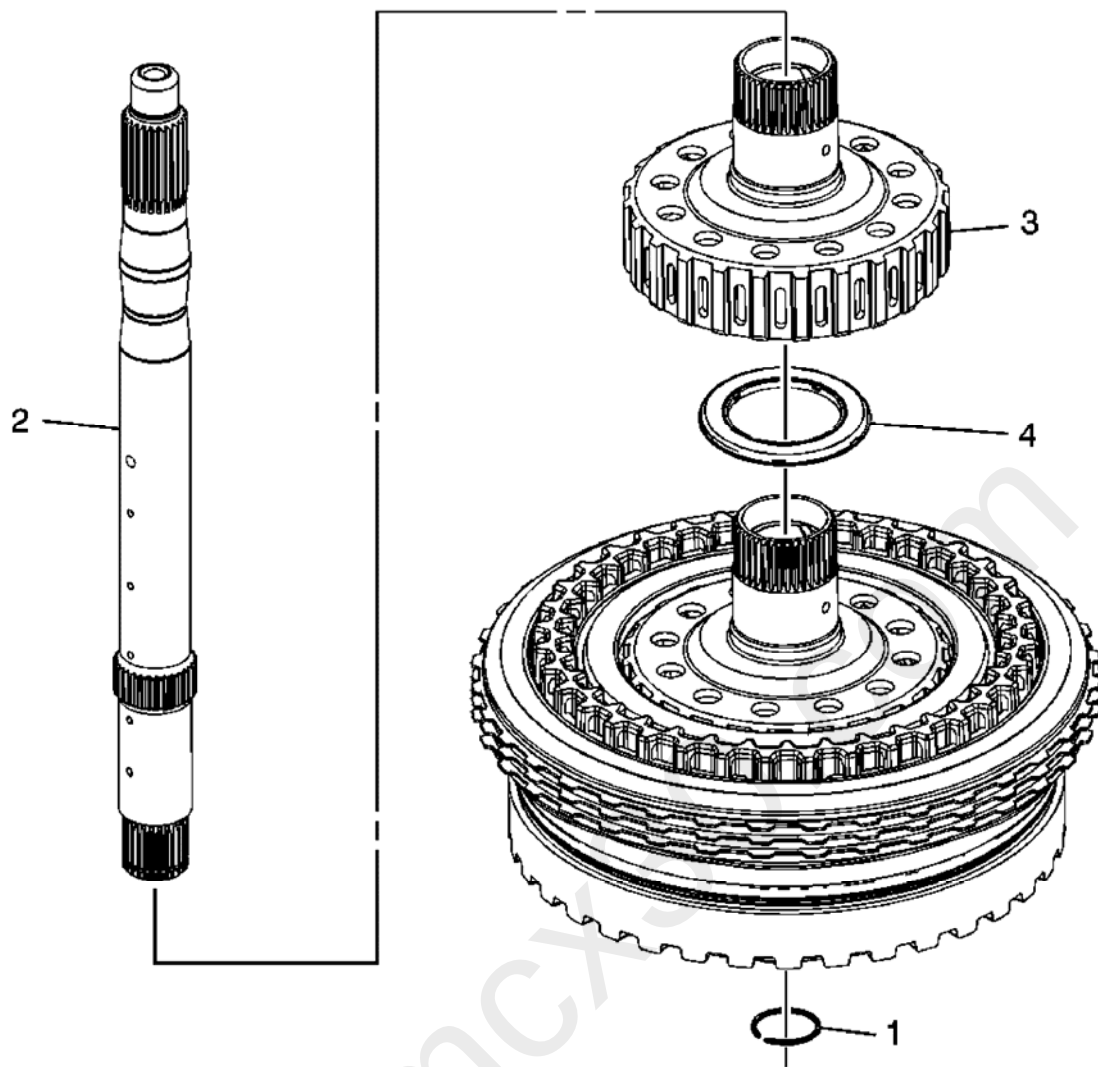


Fig. 25: Turbine Shaft, Reluctor Wheel & Piston
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Turbine Shaft Retainer Ring Tip: Discard the retainer ring. It is not re-usable. Special Tools: J-5586-A: Snap Ring Pliers or equivalent
2	Turbine Shaft
3	Reaction Carrier Hub Assembly
4	Reaction Carrier Hub Thrust Bearing Assembly

4-5-6 Clutch Plate Removal

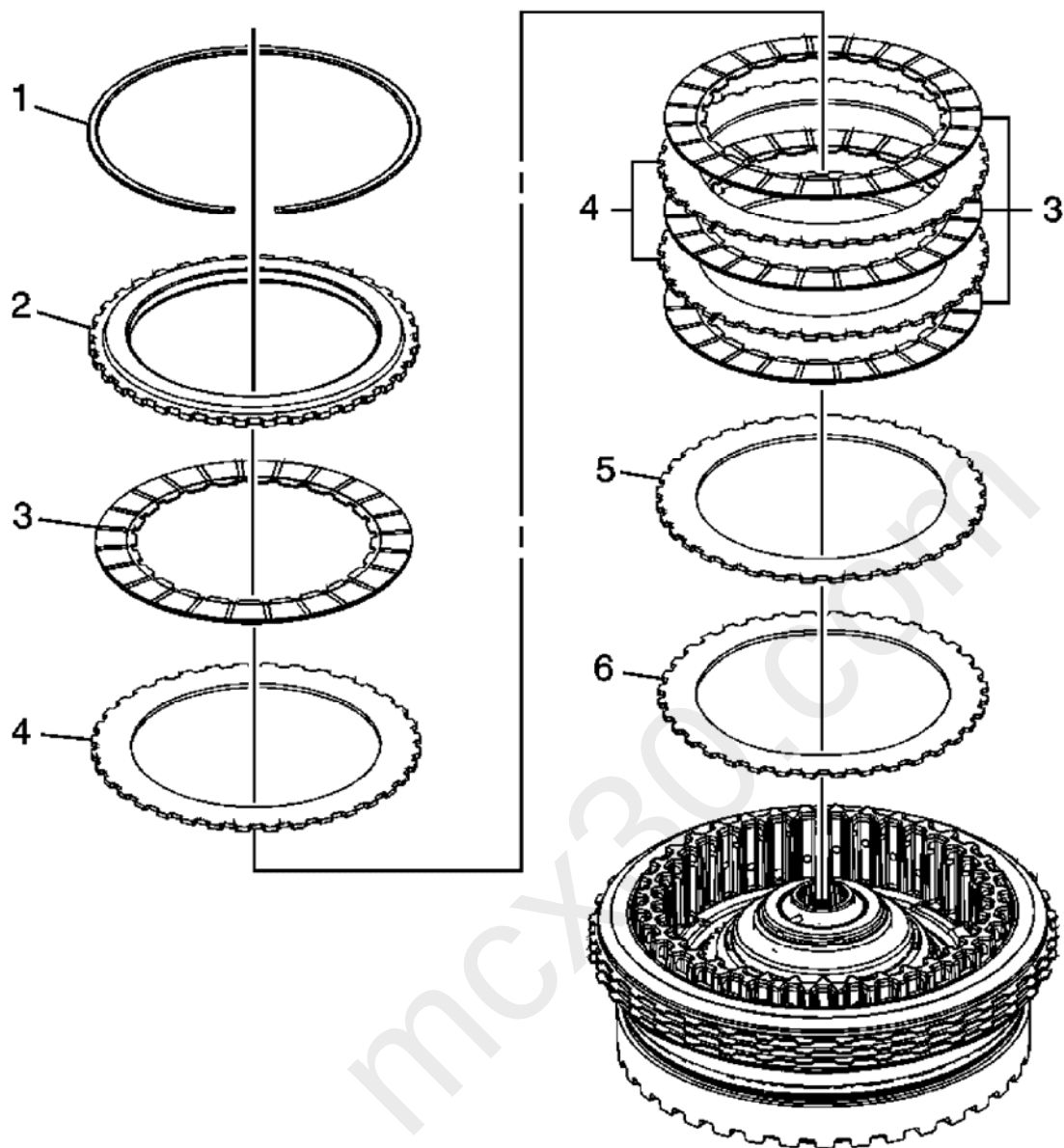


Fig. 26: 4-5-6 Clutch Plate
 Courtesy of GENERAL MOTORS CORP.

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: 4)
4	4-5-6 Clutch Plate (Qty: 3)
5	4-5-6 Clutch Apply Plate
6	4-5-6 Clutch Wave Plate

4-5-6 Clutch Piston Removal

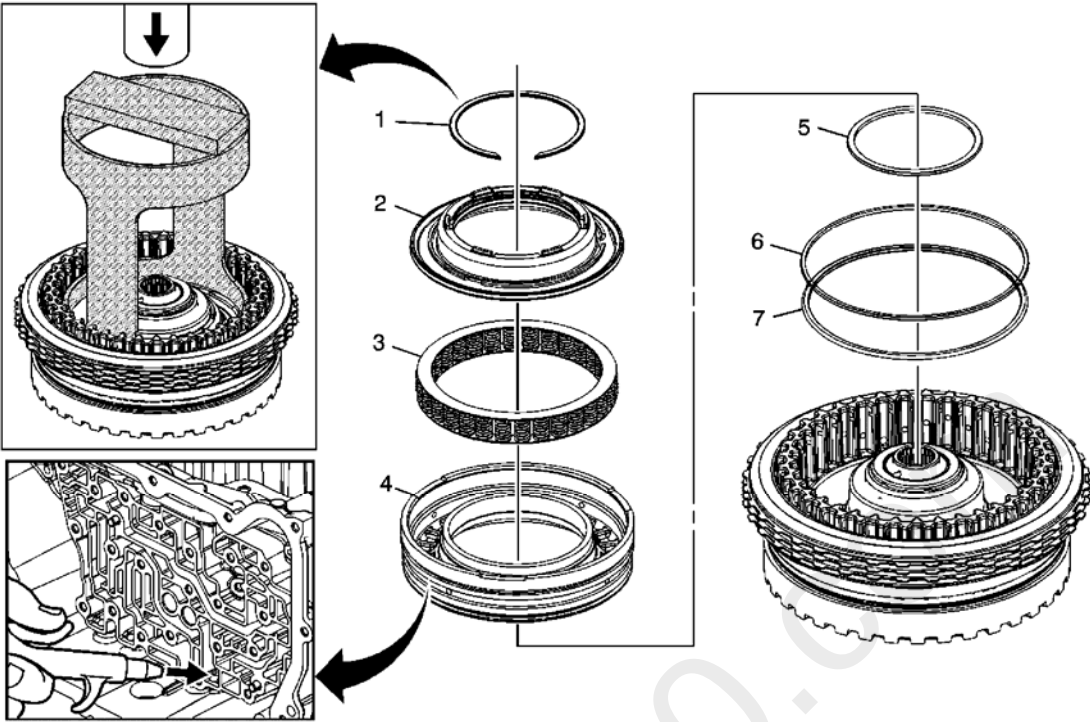


Fig. 27: 4-5-6 Clutch Piston
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	4-5-6 Clutch Dam Retaining Ring Tip: The 4-5-6 clutch dam retaining ring is not reusable. Special Tools • DT-47951-2: Spring Compressor • J-5586-A: Snap Ring Pliers or equivalent
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
	4-5-6 Clutch Piston

4	Tip: 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)

Reluctor Wheel and Piston Removal

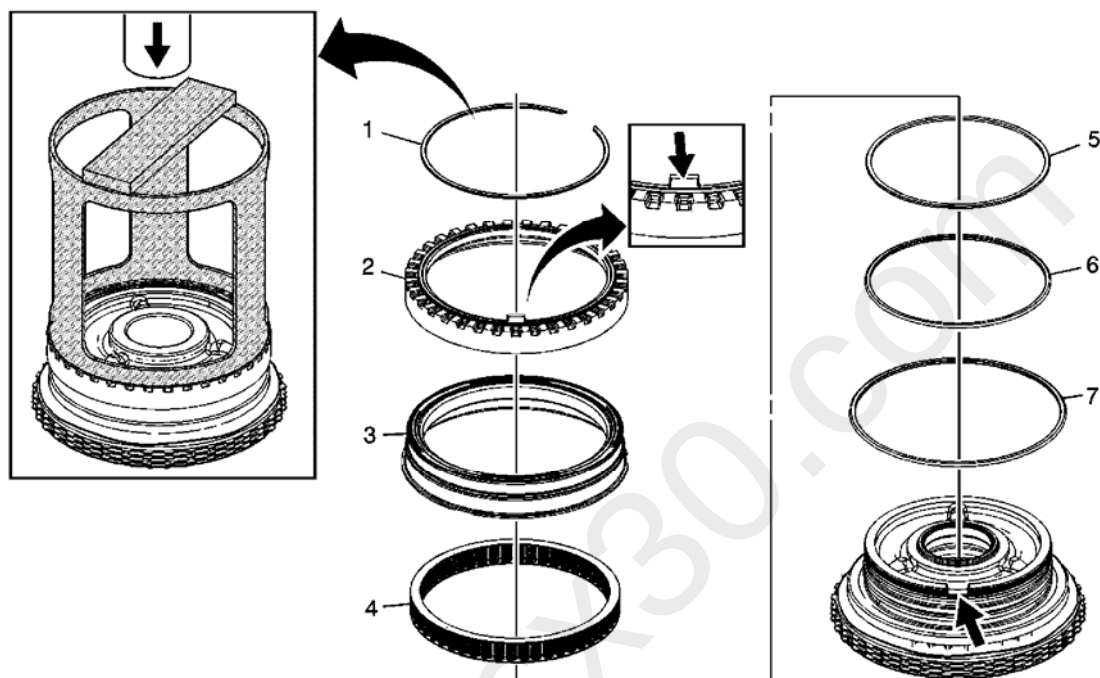


Fig. 28: Reluctor Wheel & Piston

Courtesy of GENERAL MOTORS CORP.

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 Tools: DT-47694: Piston Spring Compressor
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

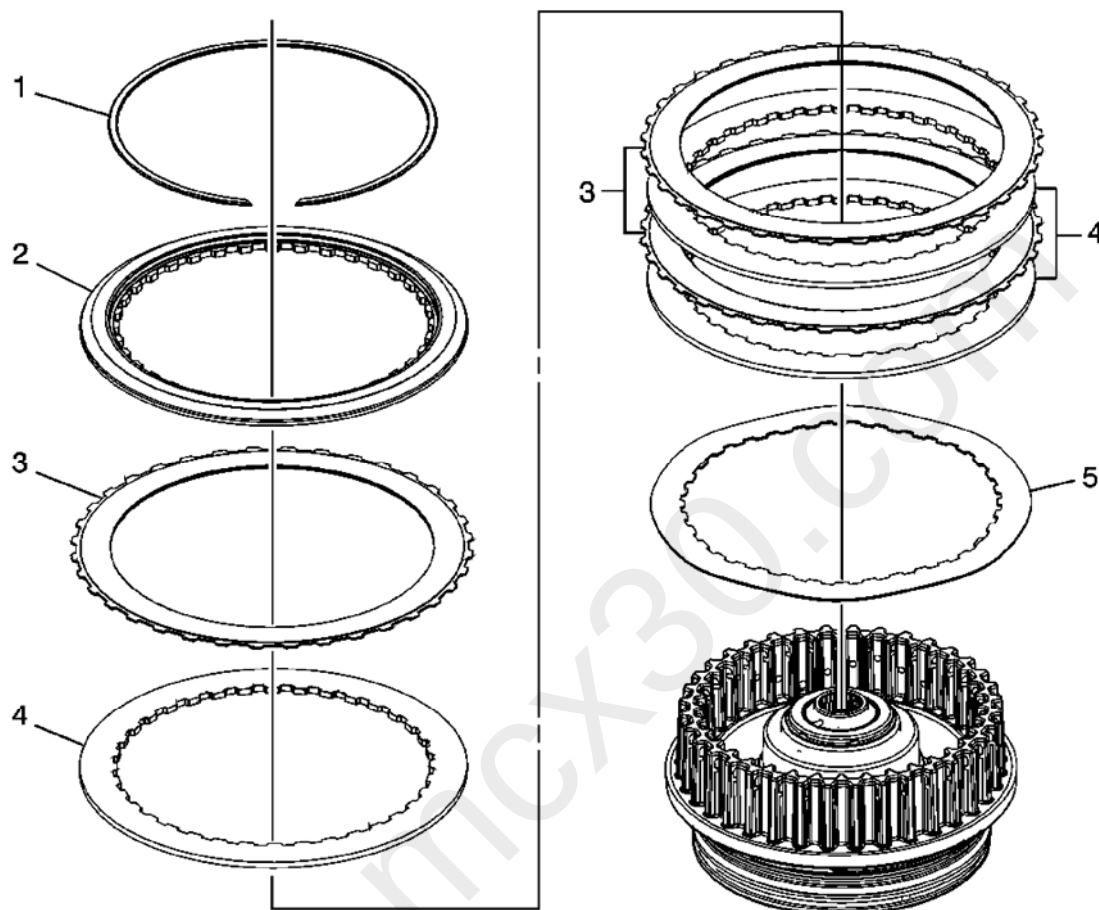


Fig. 29: 3-5 Reverse Clutch Plate
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	3-5 Reverse Clutch Backing Plate Ring Retainer Ring Tip: 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

3-5 Reverse Clutch Plates Installation

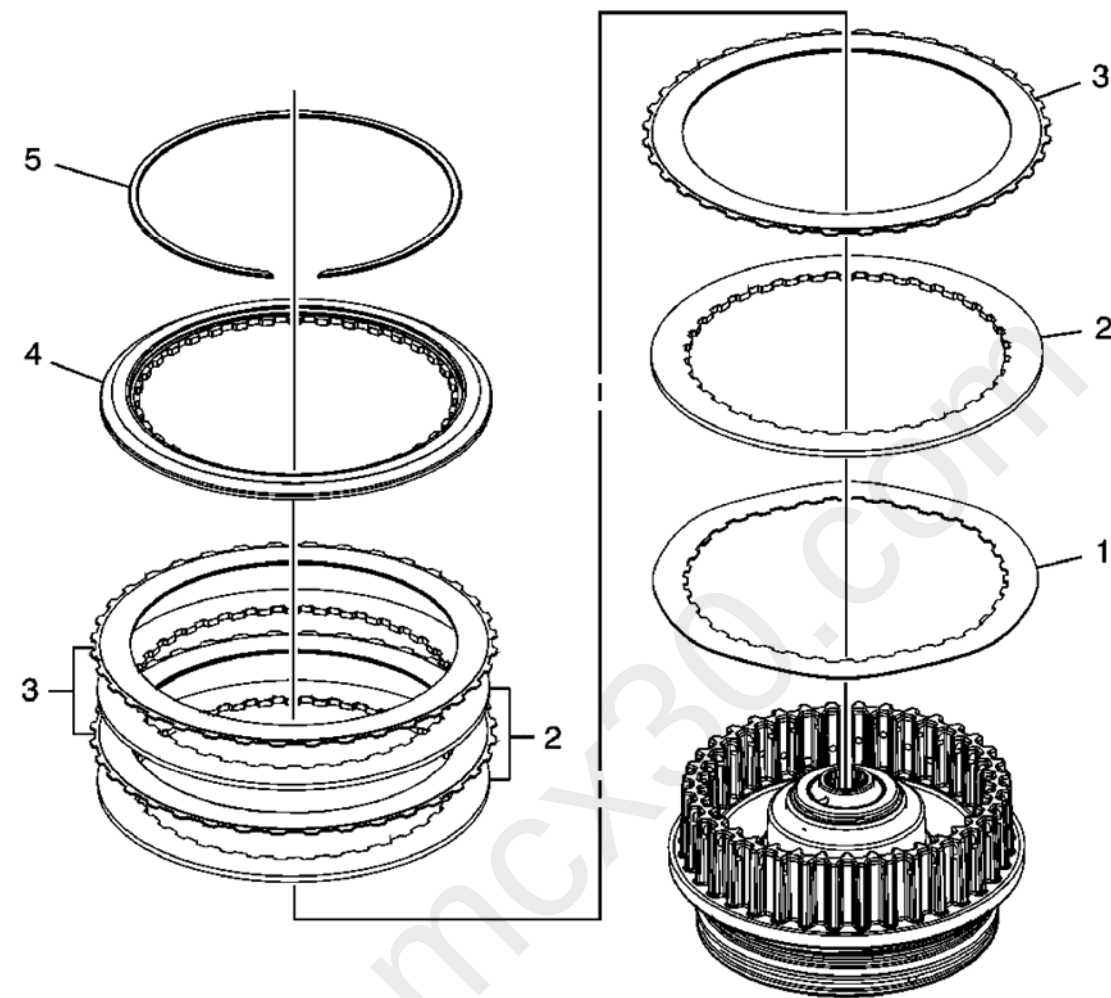


Fig. 30: 3-5 Reverse Clutch Plates
Courtesy of GENERAL MOTORS CORP.

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

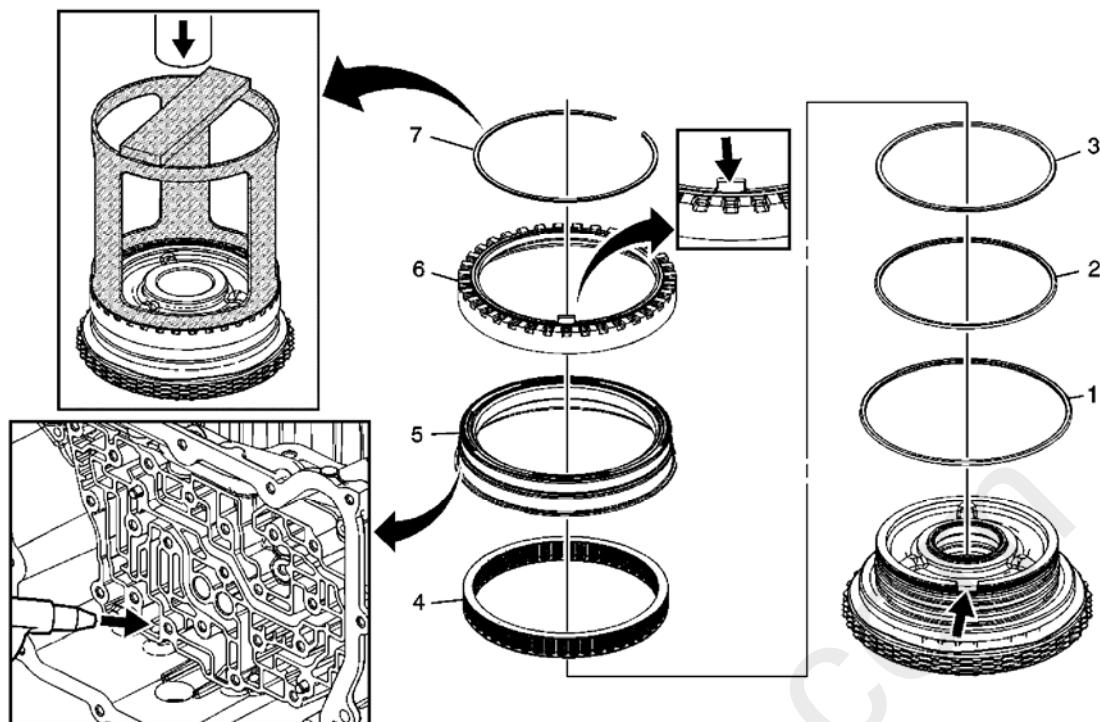


Fig. 31: Reluctor Wheel & Piston
 Courtesy of GENERAL MOTORS CORP.

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
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 40 psi maximum. High pressure could cause the piston to over travel and damage the piston seals. Tip: 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

4-5-6 Clutch Piston Installation

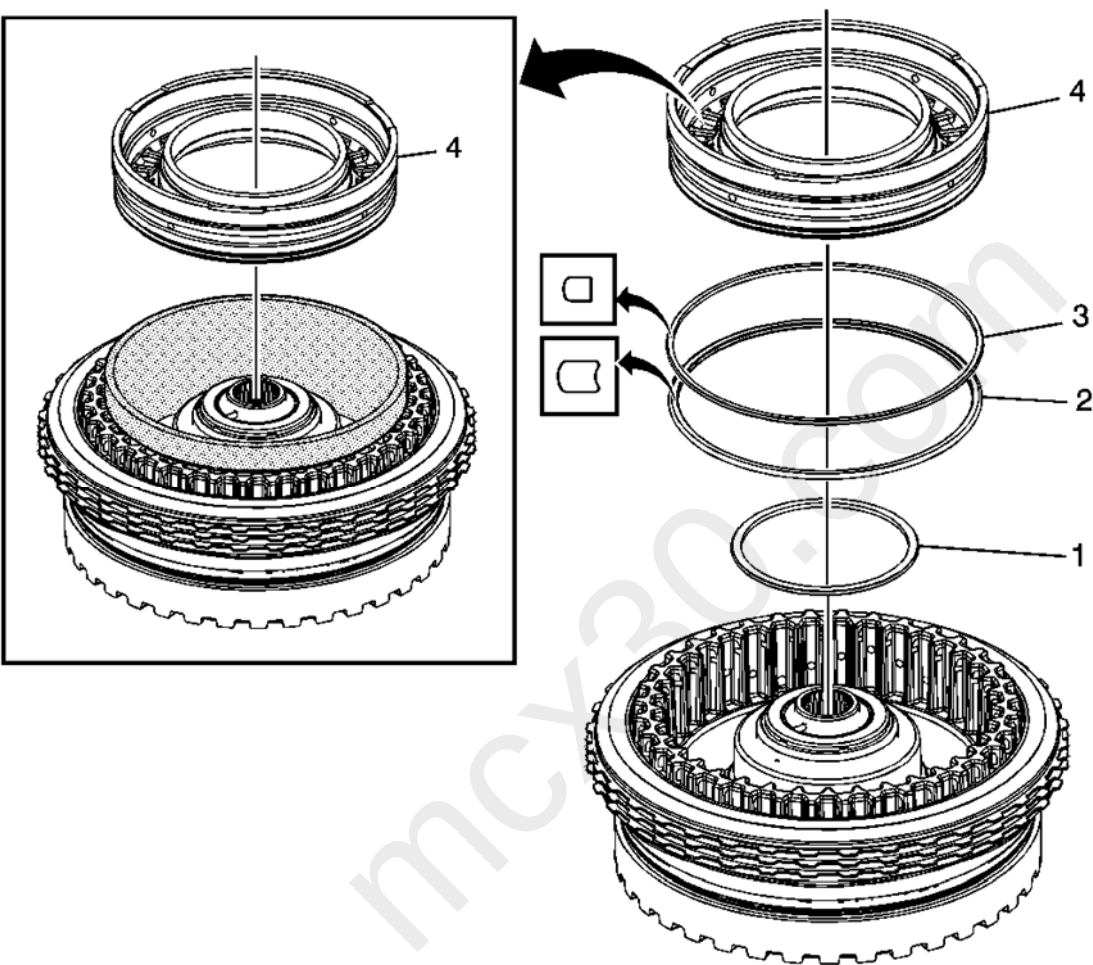


Fig. 32: 4-5-6 Clutch Piston
Courtesy of GENERAL MOTORS CORP.

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 (DK Blue) (Stepped)
	4-5-6 Clutch Piston
	Tip: • DT-47805: seal protector prevents the dam seal lip from damage during

4

installation. Apply a thin coat of ATF to the I.D. of **DT-47805:** 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

4-5-6 Clutch Fluid Dam Installation

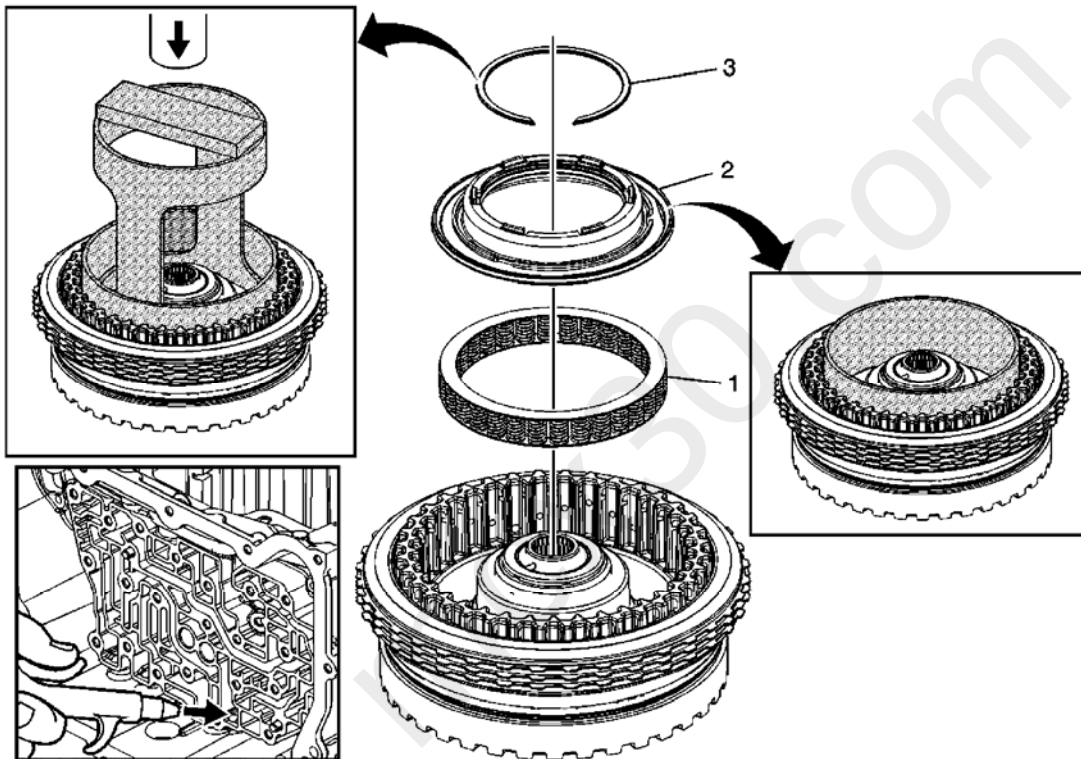


Fig. 33: 4-5-6 Clutch Fluid Dam

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	4-5-6 Clutch Piston Return Spring Assembly
2	4-5-6 Clutch Piston Fluid Dam Assembly Tip: DT-47951-1: seal protector prevents the dam seal lip from damage during installation. Apply a thin coat of ATF to the I.D. of DT-47951-1: protector to ease the installation of the dam. Special Tools: DT-47951-1: Seal Protector
	4-5-6 Clutch Dam Retaining Ring

CAUTION:

Regulate the air pressure to 40 psi maximum. High pressure could cause the piston to over travel and damage the piston seals.

Procedure

3

- The 4-5-6 clutch dam retaining ring is not reusable, install a NEW retaining ring.
- Leave **DT-47951-1**: seal protector in place while installing the retaining ring.
- 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

4-5-6 Clutch Plates Installation

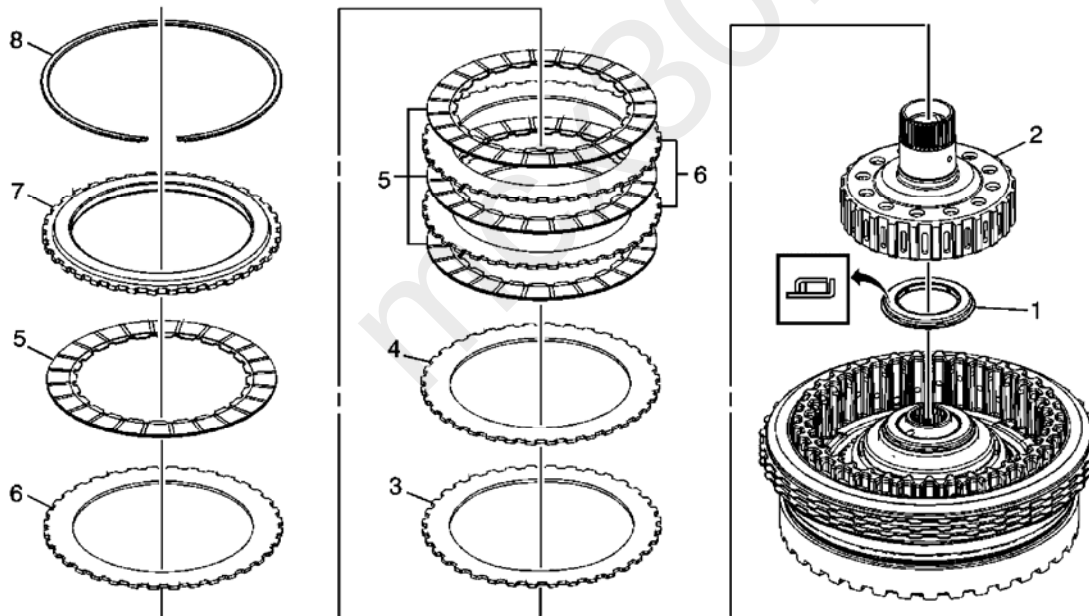


Fig. 34: 4-5-6 Clutch Plates

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Reaction Carrier Hub Thrust Bearing Assembly
2	Reaction Carrier Hub Assembly

3	4-5-6 Clutch Wave Plate
4	4-5-6 Clutch Apply Plate
5	4-5-6 Clutch Plate Assembly (Qty: 4)
6	4-5-6 Clutch Plate (Qty: 3)
7	4-5-6 Clutch Backing Plate
8	4-5- 6 Clutch Backing Plate Retaining Ring

Turbine Shaft Installation

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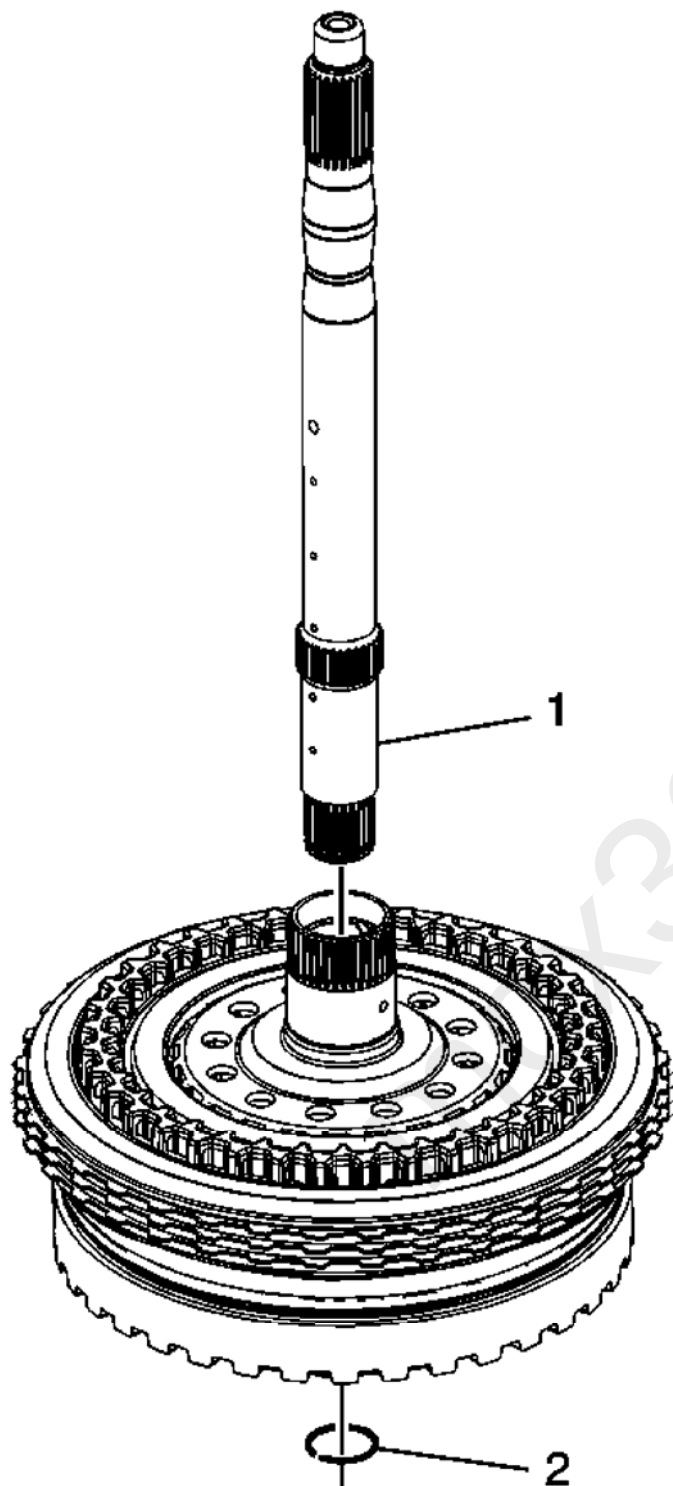


Fig. 35: Turbine Shaft
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name

1	Turbine Shaft
2	Turbine Shaft Retainer Ring Tip: Do not re-use the turbine shaft retainer ring. Special Tools: J-5586-A: Snap Ring Pliers or equivalent

INPUT, REACTION, AND OUTPUT CARRIER ASSEMBLY

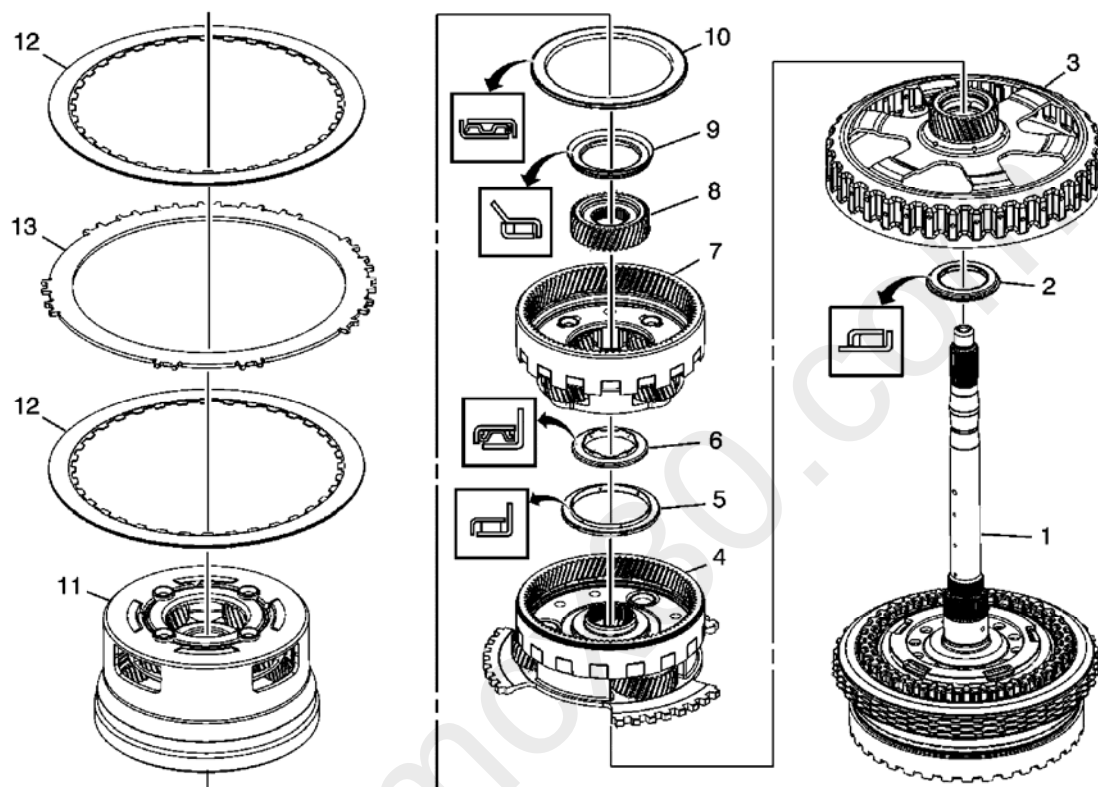


Fig. 36: Input, Reaction & Output Carrier
Courtesy of GENERAL MOTORS CORP.

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 Tip: - The 6T30 and 6T40 have 3 pinions. - The 6T45 and 6T50 have 4 pinions.
5	Input Carrier Thrust Bearing Assembly

6	Input Sun Gear Thrust Bearing Assembly
7	Input Carrier Assembly Tip: • 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
11	Output Carrier Assembly Tip: • The 6T30 and 6T40 have 4 pinions. • The 6T45 and 6T50 have 5 pinions.
12	2-6 Clutch Plate Assembly (Qty: 2) Tip: Begin with the clutch plate assembly and alternate with the clutch plate.
13	2-6 Clutch Plate (Qty: 1) Tip: 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

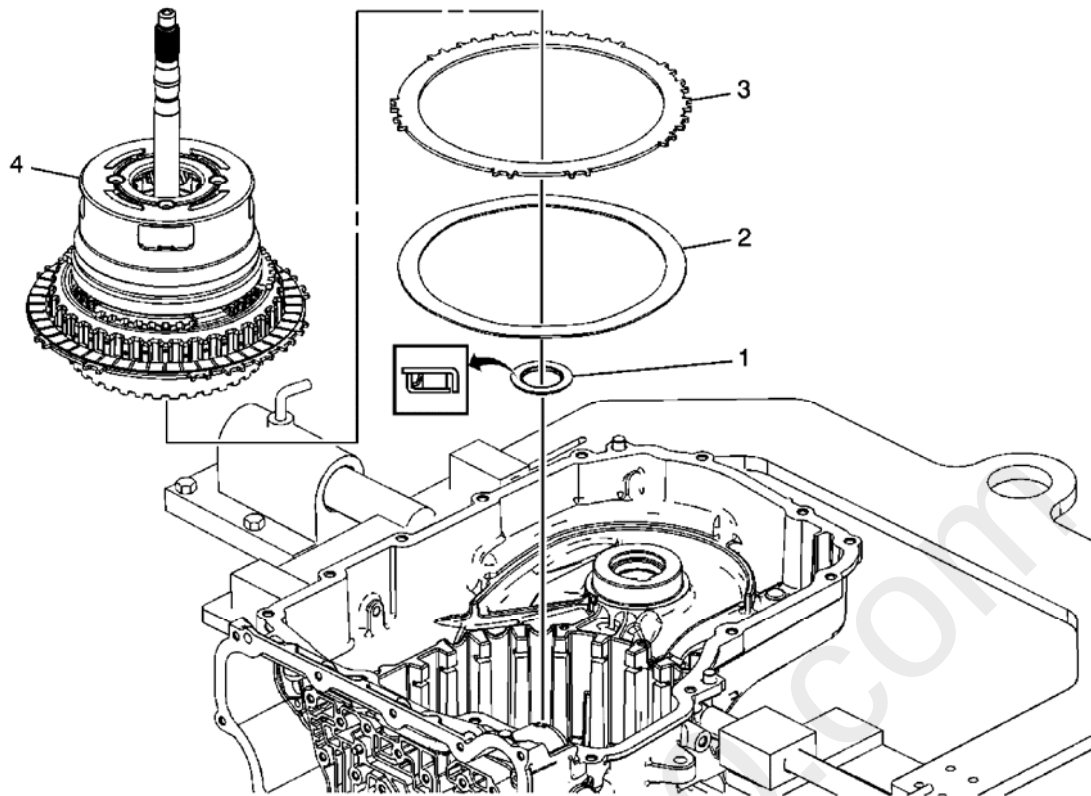


Fig. 37: 3-5-Reverse, 4-5-6 Clutch Housing, Input, Reaction & Output Carrier
Courtesy of GENERAL MOTORS CORP.

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

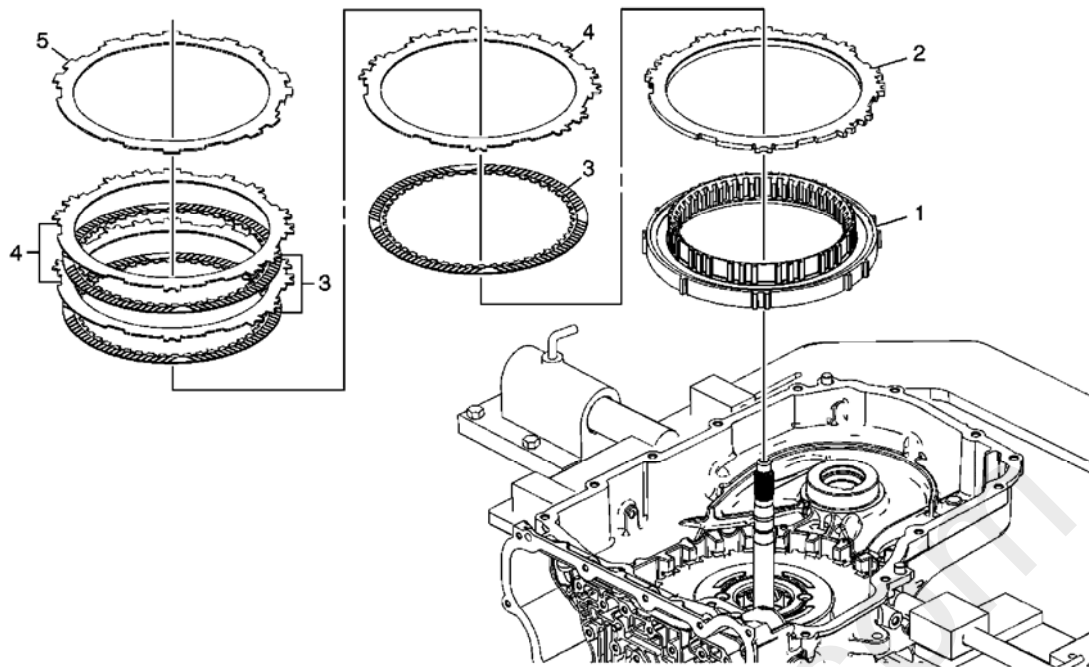


Fig. 38: Low & Reverse Clutch Assembly & Low & Reverse Clutch Plate
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Low and Reverse Clutch Assembly (OWC) Tip: - The Low and Reverse Clutch Assembly should rotate freely in one direction and lock in the opposite direction. - Align the large flat areas of the Low and Reverse Clutch Assembly with the valve body end of the case.
2	Low and Reverse Clutch Backing Plate
3	Low and Reverse Clutch Plate Assembly (Qty: 3)
4	Low and Reverse Clutch Plate (Qty: 3) Tip: Align the large flat areas of the Low and Reverse Clutch Plate with the valve body end of the case.
5	Low and Reverse Clutch Apply (Waved) Plate Tip: Align the large flat areas of the Low and Reverse Clutch Apply Plate with the valve body end of the case.

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

Low and Reverse Clutch Piston Removal

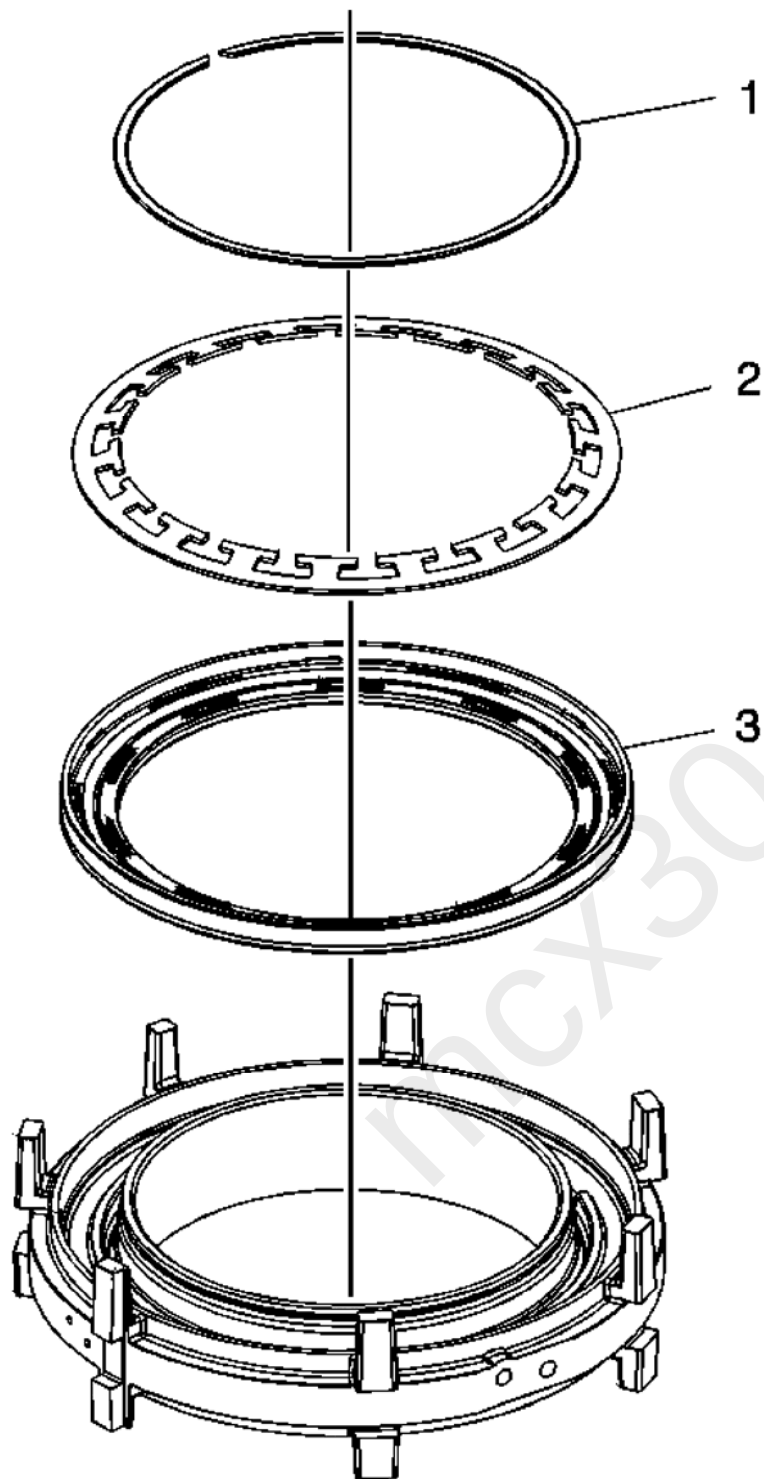


Fig. 39: Low & Reverse Clutch Piston
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name

1	Low and Reverse Clutch Spring Retainer Special Tools: J-8059: Snap Ring Pliers - Parallel Jaw
2	Low and Reverse Clutch Spring
3	Low and Reverse Clutch Piston

1-2-3-4 Clutch Piston Removal

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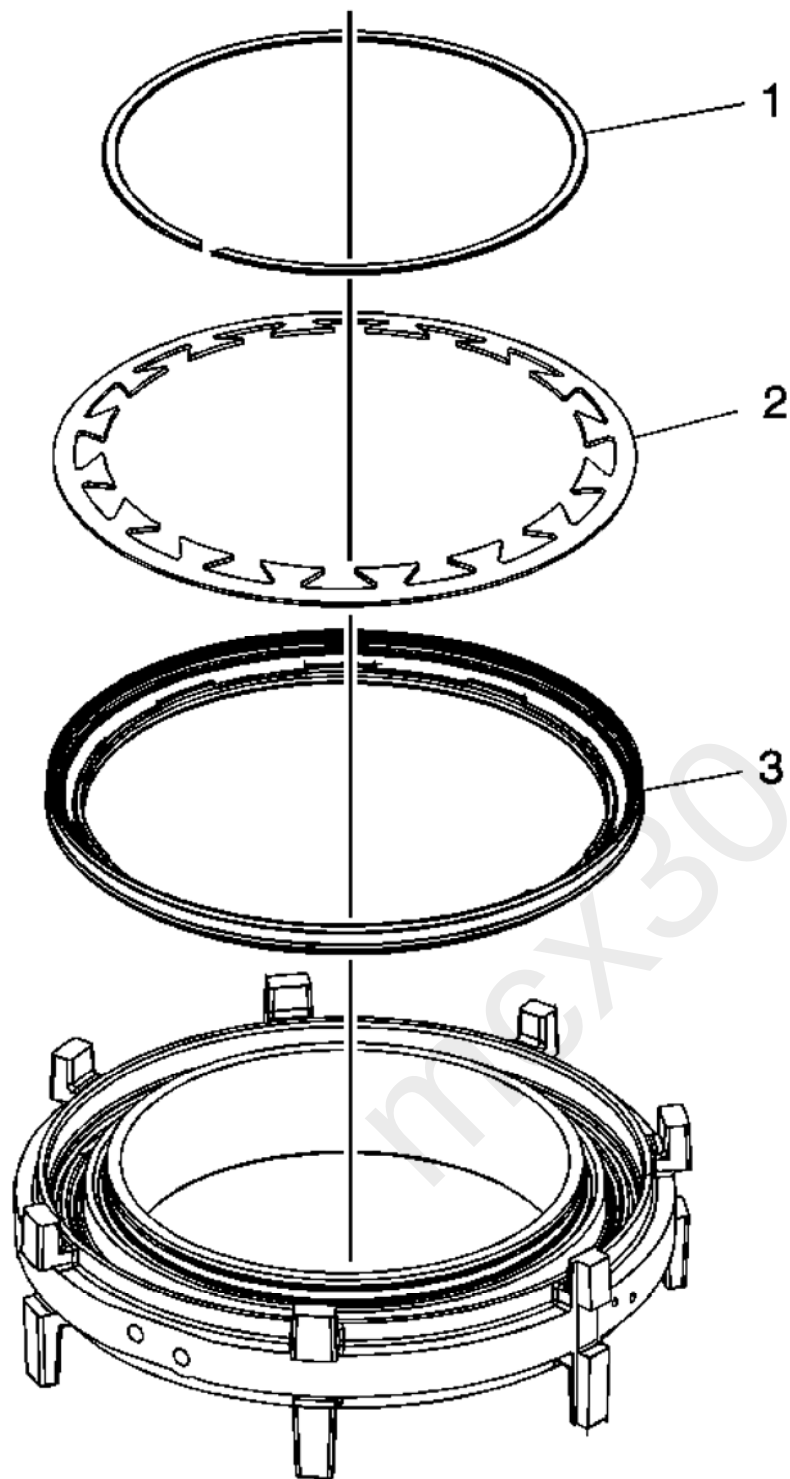


Fig. 40: 1-2-3-4 Clutch Piston
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name

1	1-2-3-4 Clutch Spring Retainer Special Tools: J-8059: Snap Ring Pliers - Parallel Jaw
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

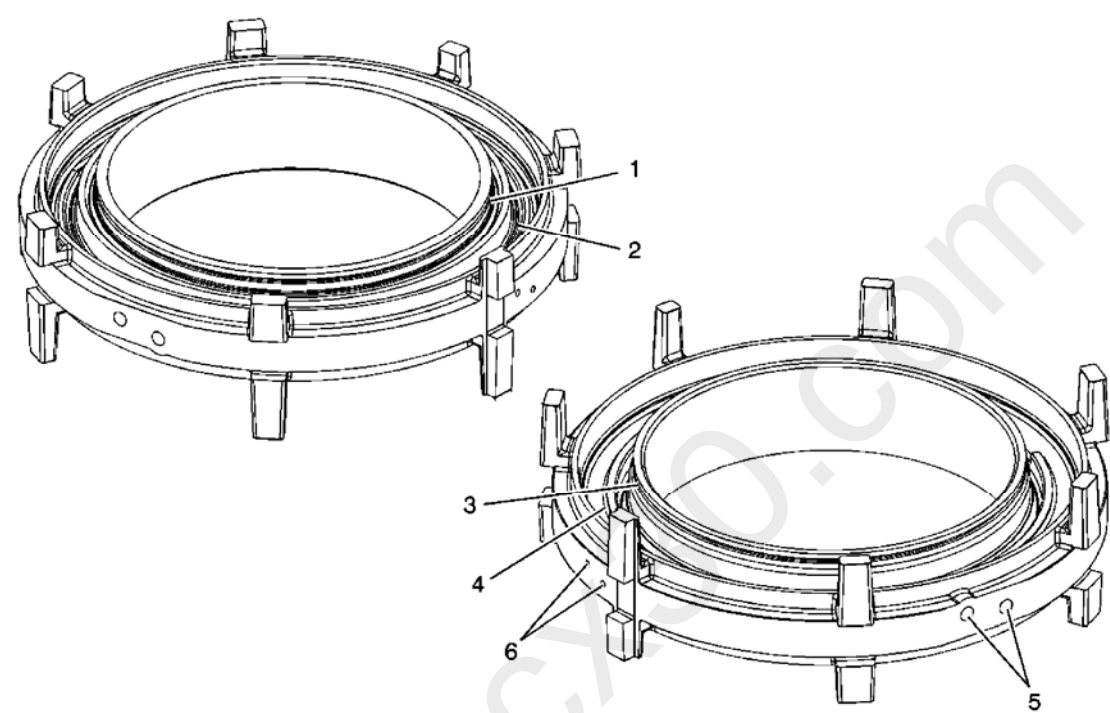


Fig. 41: Low & Reverse & 1-2-3-4 Clutch Housing
 Courtesy of GENERAL MOTORS CORP.

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

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

1-2-3-4 Clutch Piston Installation

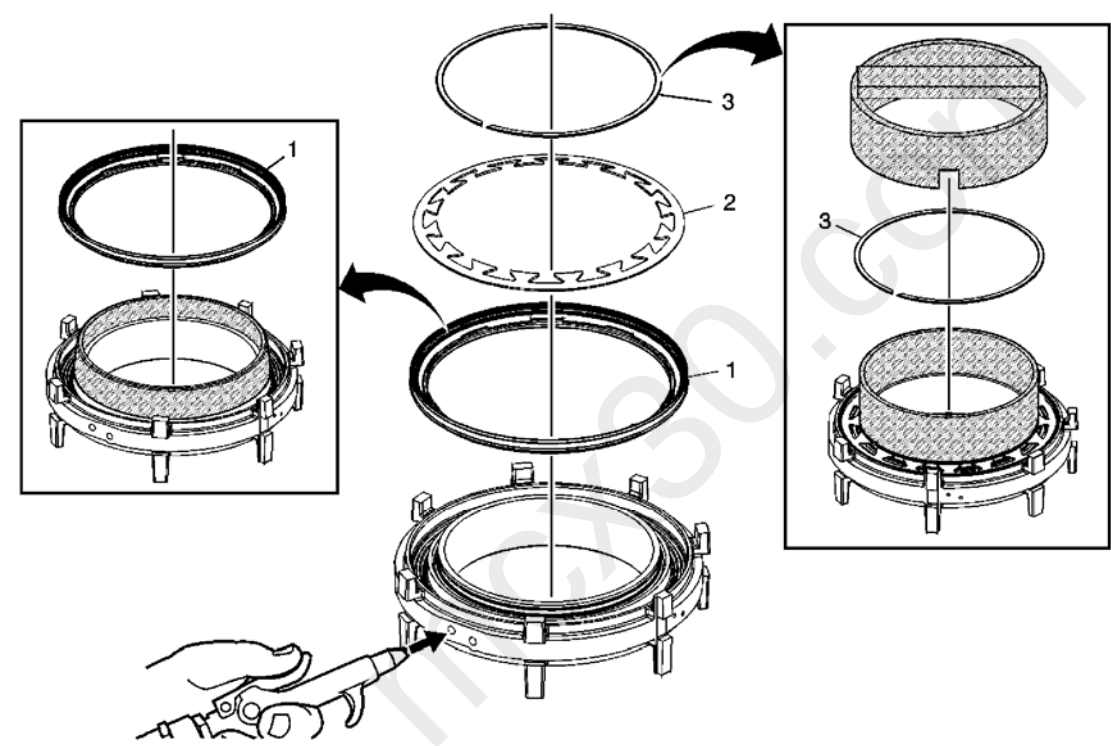


Fig. 42: 1-2-3-4 Clutch Piston
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	1-2-3-4 Clutch Piston Tip: 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 40 psi maximum. High pressure could cause the piston to over travel and damage the piston seals.

Procedure

3

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

Low and Reverse Clutch Piston Installation

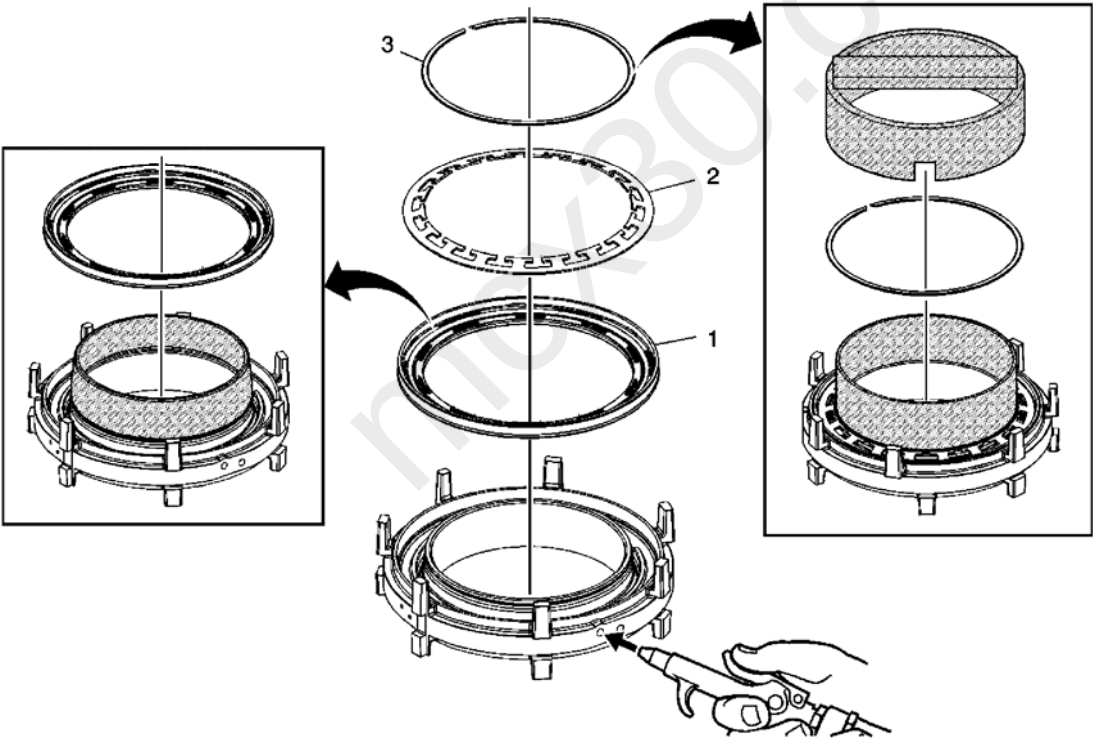


Fig. 43: Low & Reverse Clutch Piston
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
	Low and Reverse Clutch Piston

1	Tip: 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
3	Low and Reverse Clutch Spring Retainer CAUTION: Regulate the air pressure to 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

LOW AND REVERSE AND 1-2-3-4 CLUTCH HOUSING, AND 1-2-3-4 CLUTCH PLATE INSTALLATION

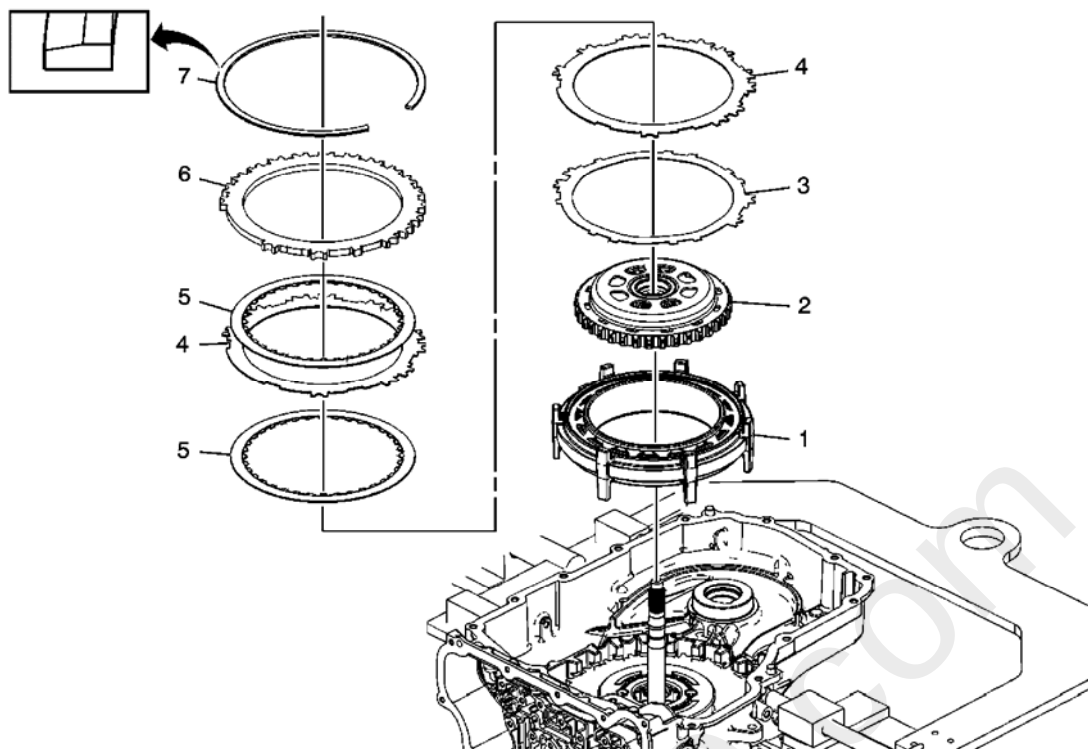


Fig. 44: Low & Reverse & 1-2-3-4 Clutch Housing, & 1-2-3-4 Clutch Plate
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Low and Reverse and 1-2-3-4 Clutch Housing Tip: 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 Tip: Align the single pair of tabs with the bottom valve body end of the case.
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 Tip: Align the single skinny tab with the case spline facing the top of the case.
	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.

Tip:

- 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 **J 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 **J 28585**: snap ring remover.

Special Tool:

J 28585: Snap Ring Remover or equivalent

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

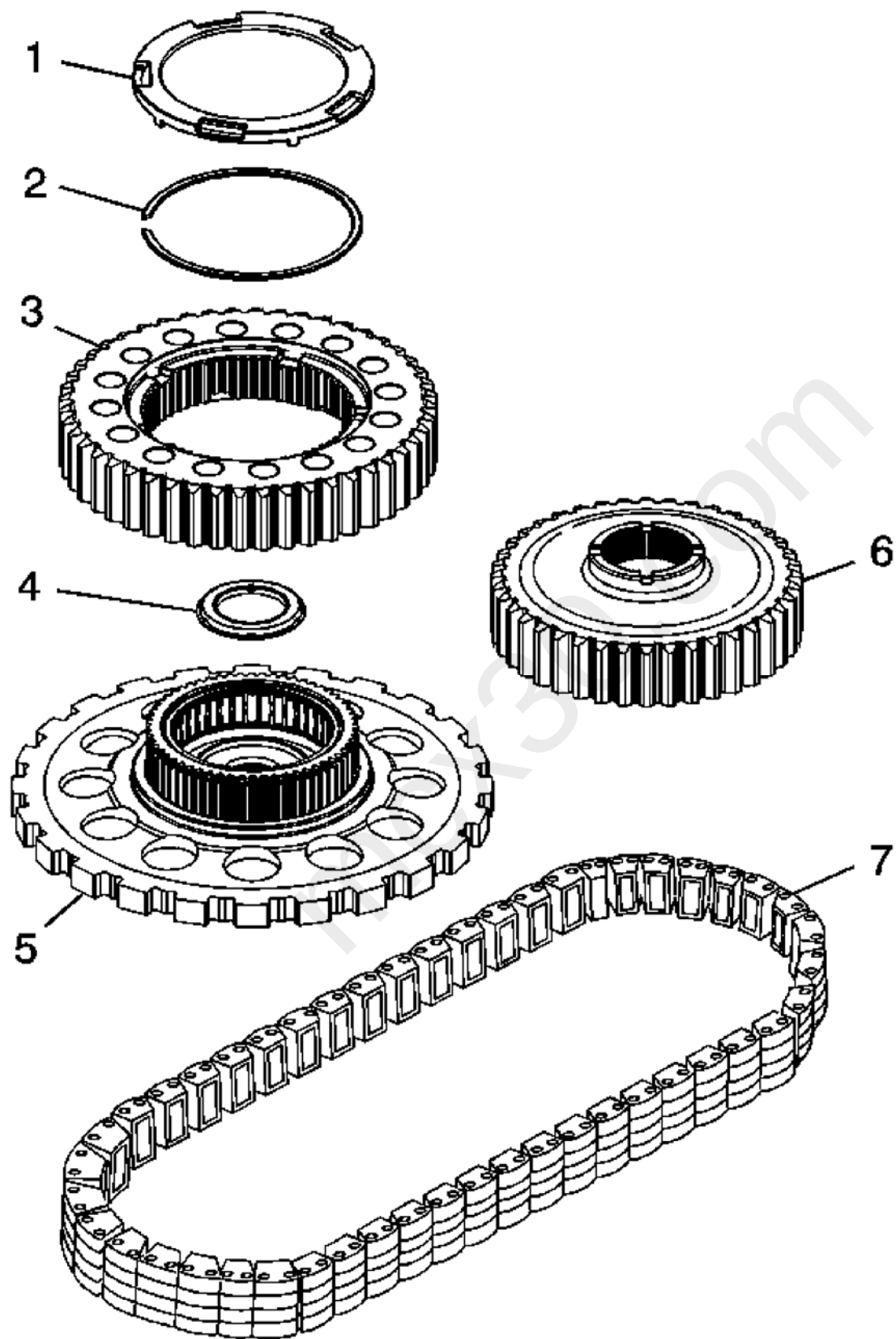


Fig. 45: Drive Sprocket, Driven Sprocket & Drive Link
Courtesy of GENERAL MOTORS CORP.

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 (6T40/45)

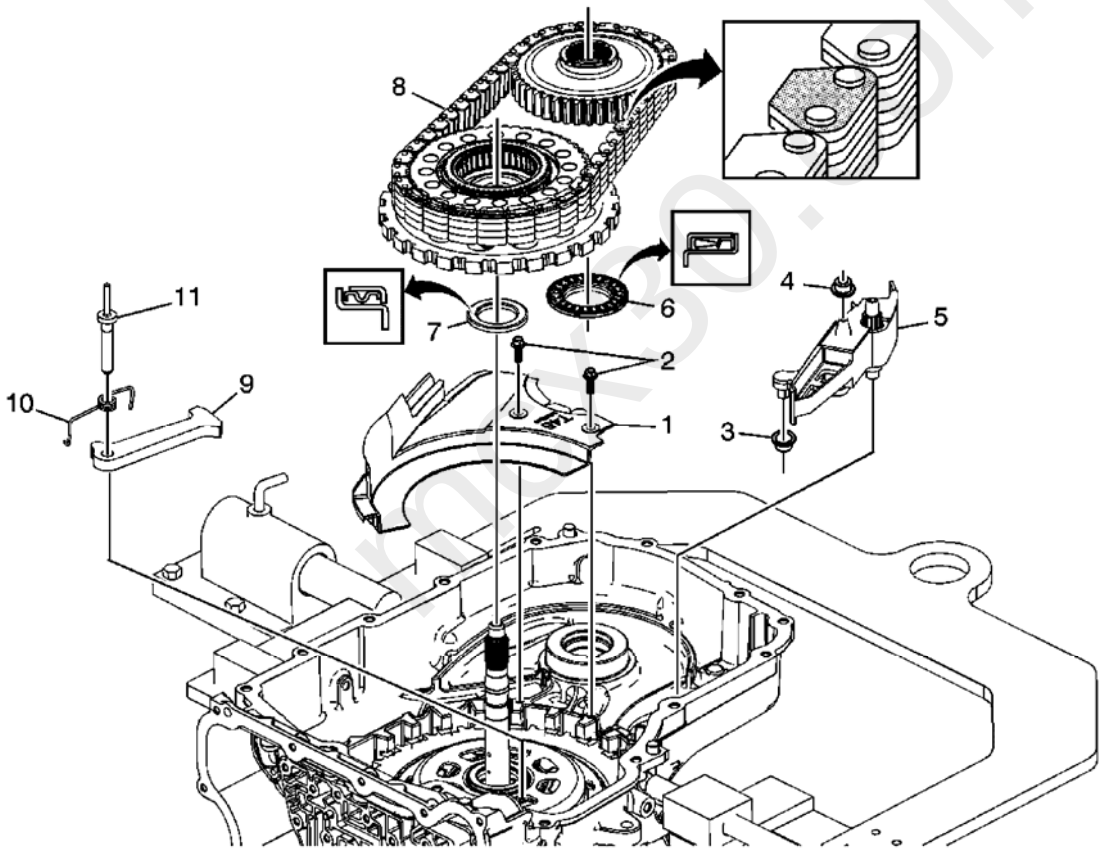


Fig. 46: Drive & Driven Sprocket, Drive Link, & Park Pawl (6T40/45)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Front Differential Carrier Baffle
	Front Differential Carrier Baffle Bolt M6 x 16 (Qty: 2)

2	CAUTION: Refer to <u>Fastener Caution</u> . 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
8	Driven Sprocket Assembly, Drive Sprocket Assembly and Drive Link Tip: • Install the drive link with the colored links and/or part number facing up. • The drive link, drive, and driven sprocket assemblies must be installed at the same time. • The ball bearing should spin freely and smoothly. • The driven sprocket ball bearing inner race has a slight interference fit with the case. Tap gently with the palm of a hand or a soft tip hammer to install.
9	Park Pawl
10	Park Pawl Spring
11	Park Pawl Shaft Tip: Check to ensure that the park pawl operates freely and is not binding.

FRONT DIFFERENTIAL CARRIER CLEANING AND INSPECTION

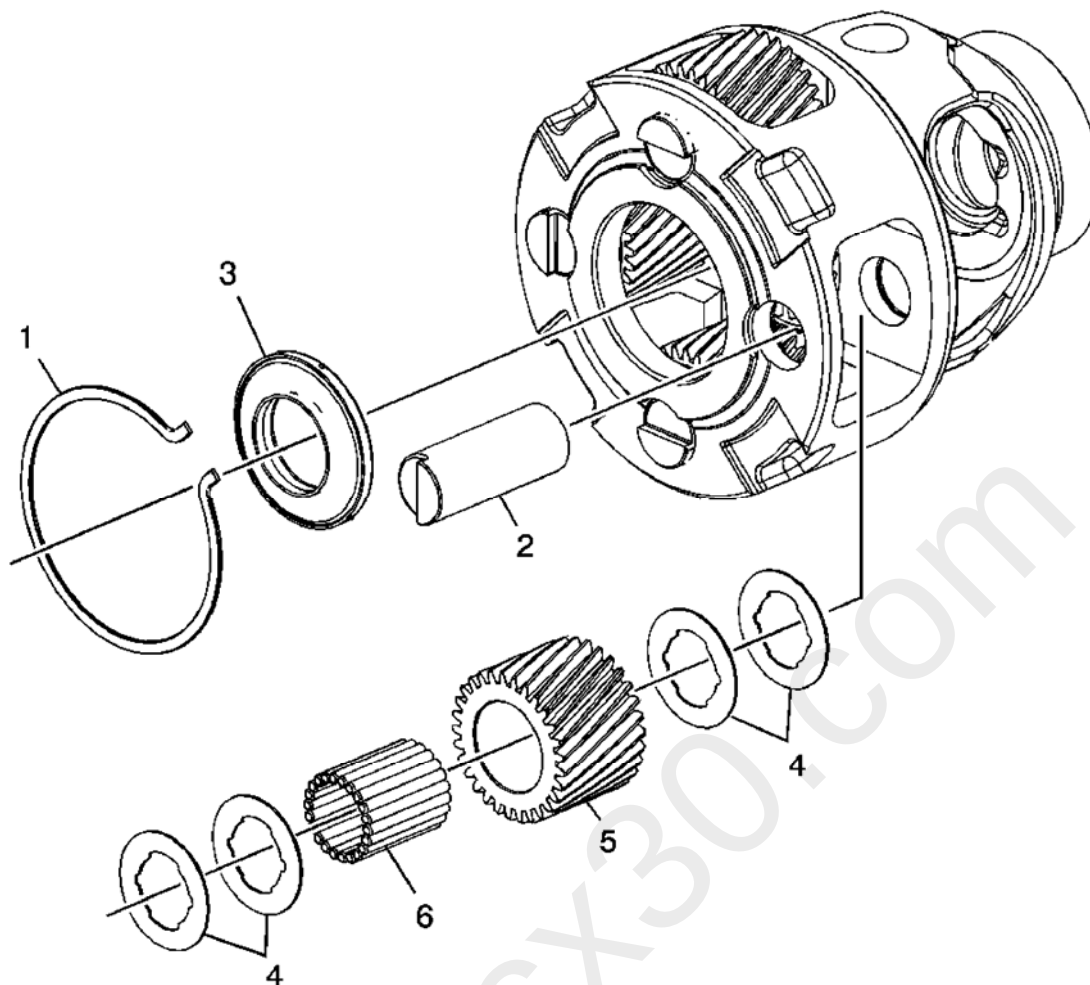


Fig. 47: Front Differential Carrier
 Courtesy of GENERAL MOTORS CORP.

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.
- 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 (6T40/45)

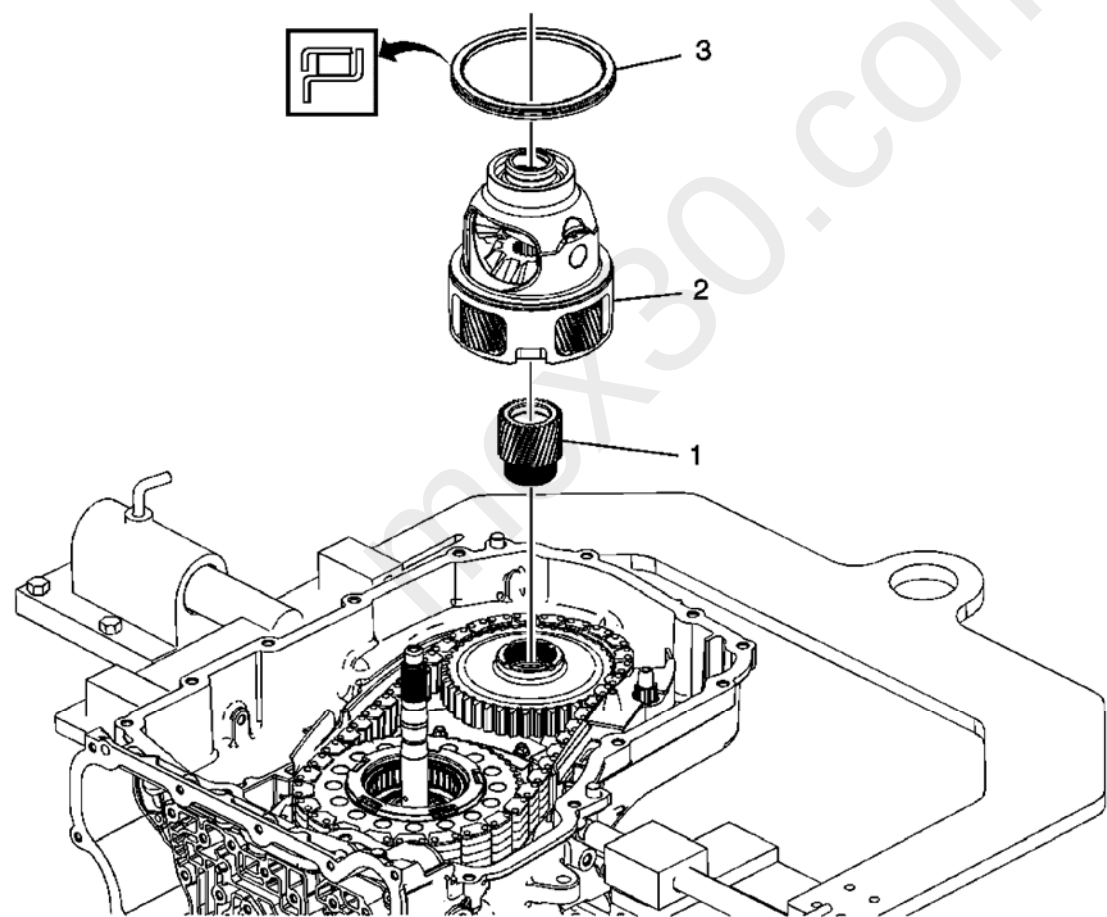


Fig. 48: Front Differential Carrier (6T40/45)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name

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

TRANSMISSION FLUID PUMP, FRONT DIFFERENTIAL CARRIER BAFFLE, AND FRONT DIFFERENTIAL RING GEAR REMOVAL (6T40/45)

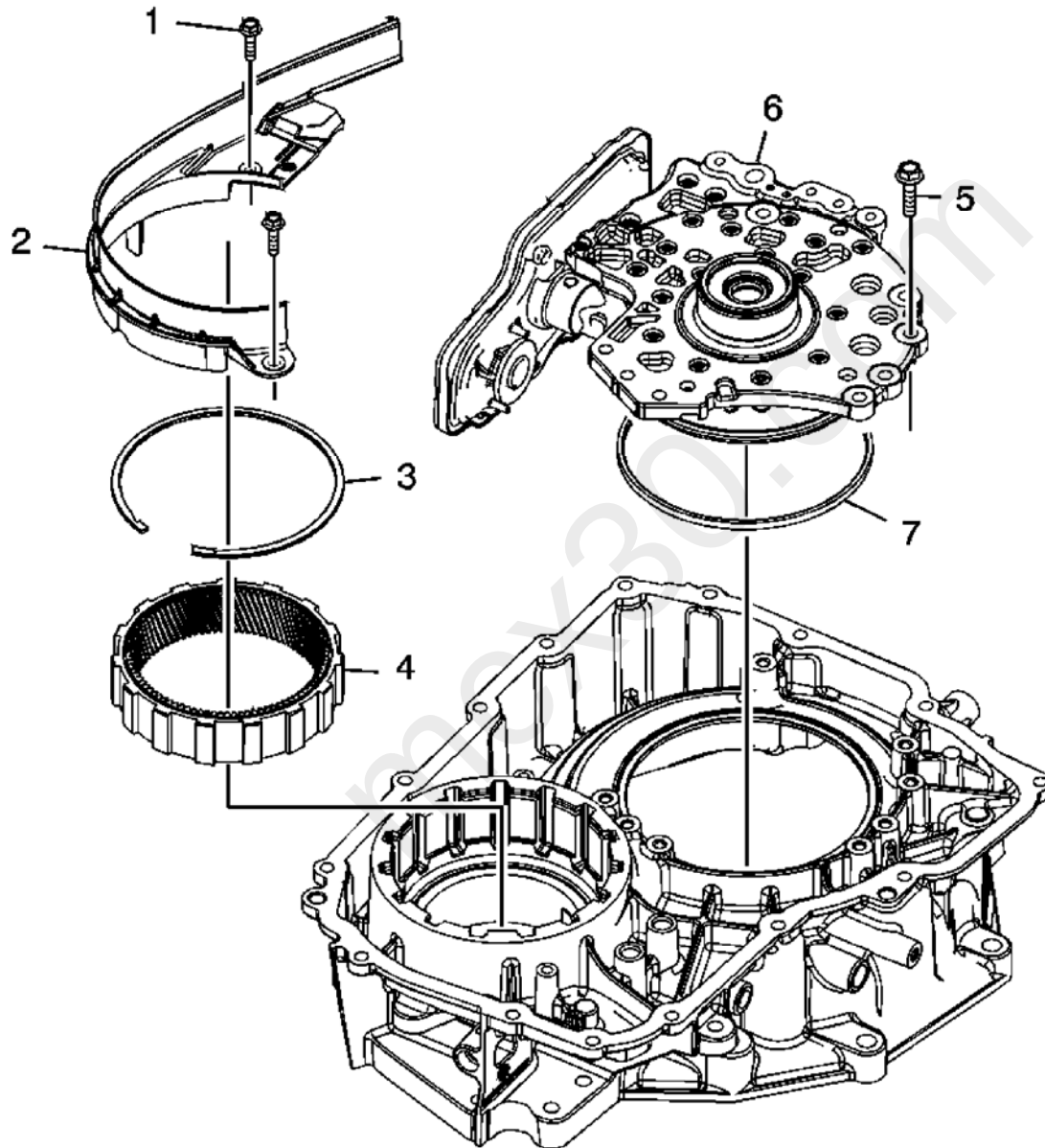


Fig. 49: View Of Transmission Fluid Pump, Front Differential Carrier Baffle & Front Differential Ring Gear (6T40/45)
Courtesy of GENERAL MOTORS CORP.

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 Tip: Note the direction of the taper to ensure proper installation.
4	Front Differential Ring Gear
5	Fluid Pump Bolts M8 x 33 (Qty: 8)
6	Fluid Pump Assembly
7	Torque Converter and Differential Housing Seal

FRONT WHEEL DRIVE SHAFT SEAL REMOVAL - TORQUE CONVERTER HOUSING SIDE

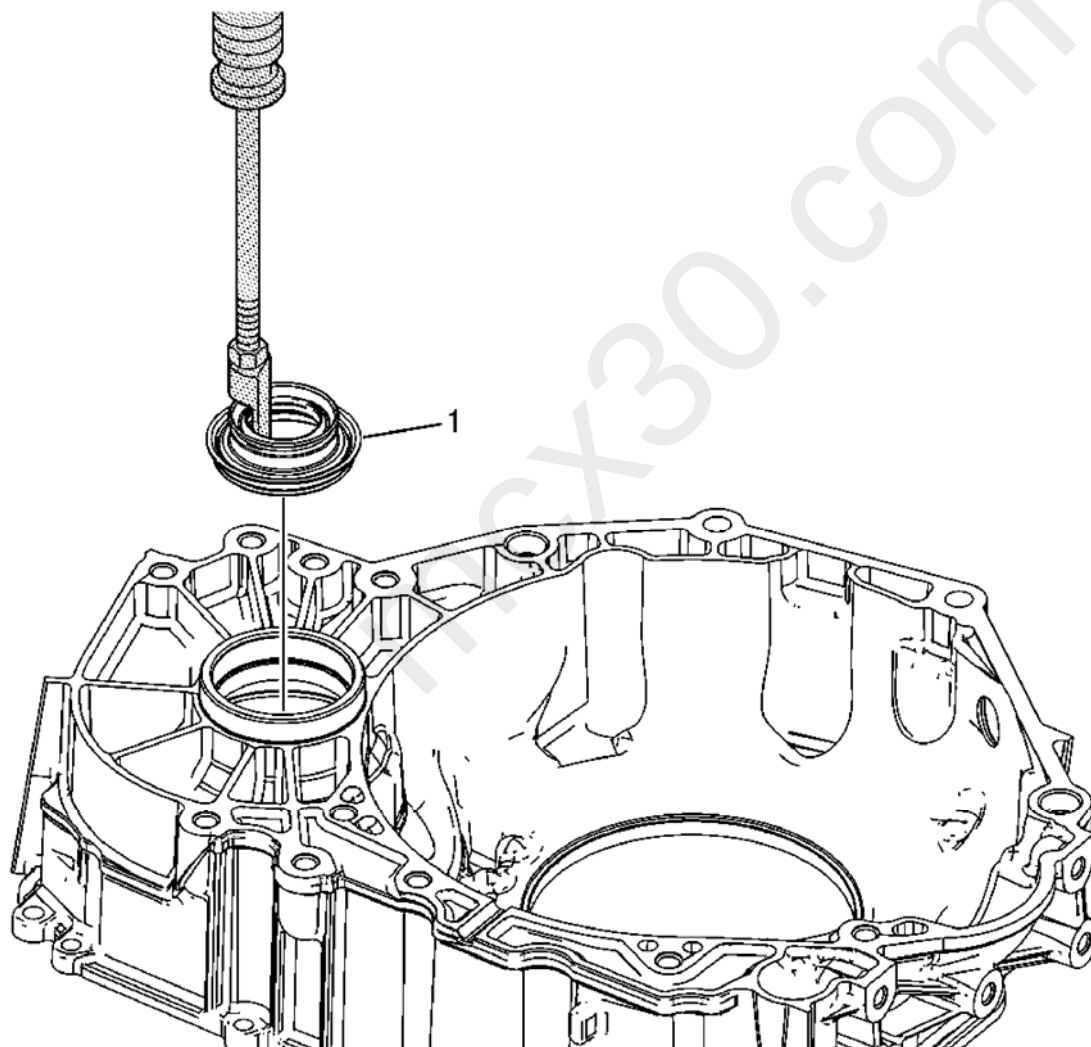


Fig. 50: Front Wheel Drive Shaft Seal - Torque Converter Housing Side
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Front Wheel Drive Shaft Oil Seal Assembly Special Tools • DT 23129: Universal Seal Remover • GE 6125-B: Slide Hammer

FRONT DIFFERENTIAL CARRIER BEARING REMOVAL (AWD)

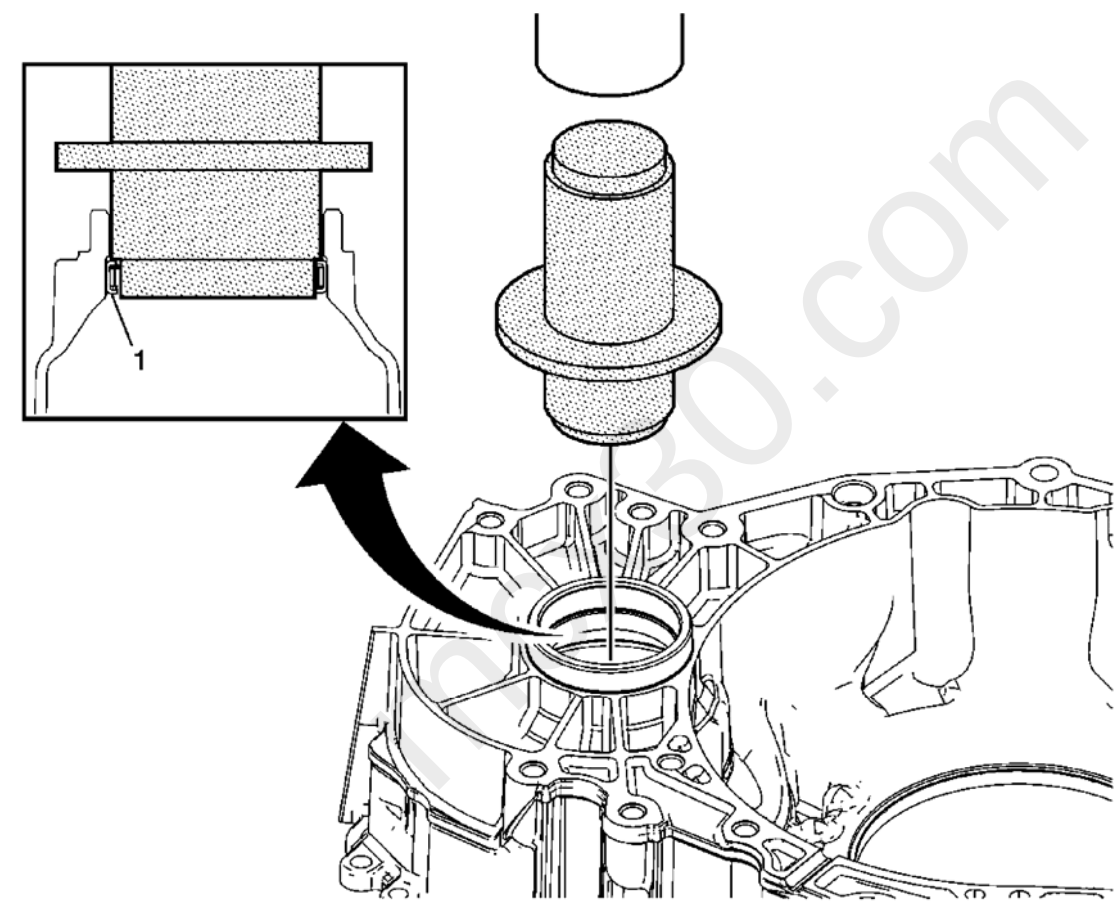


Fig. 51: Front Differential Carrier Bearing (AWD)
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Front Differential Carrier Bearing Special Tools • DT 49831: Differential Bearing Remover/Installer (2 Pinion Blue)

FRONT DIFFERENTIAL CARRIER BEARING INSTALLATION (AWD)

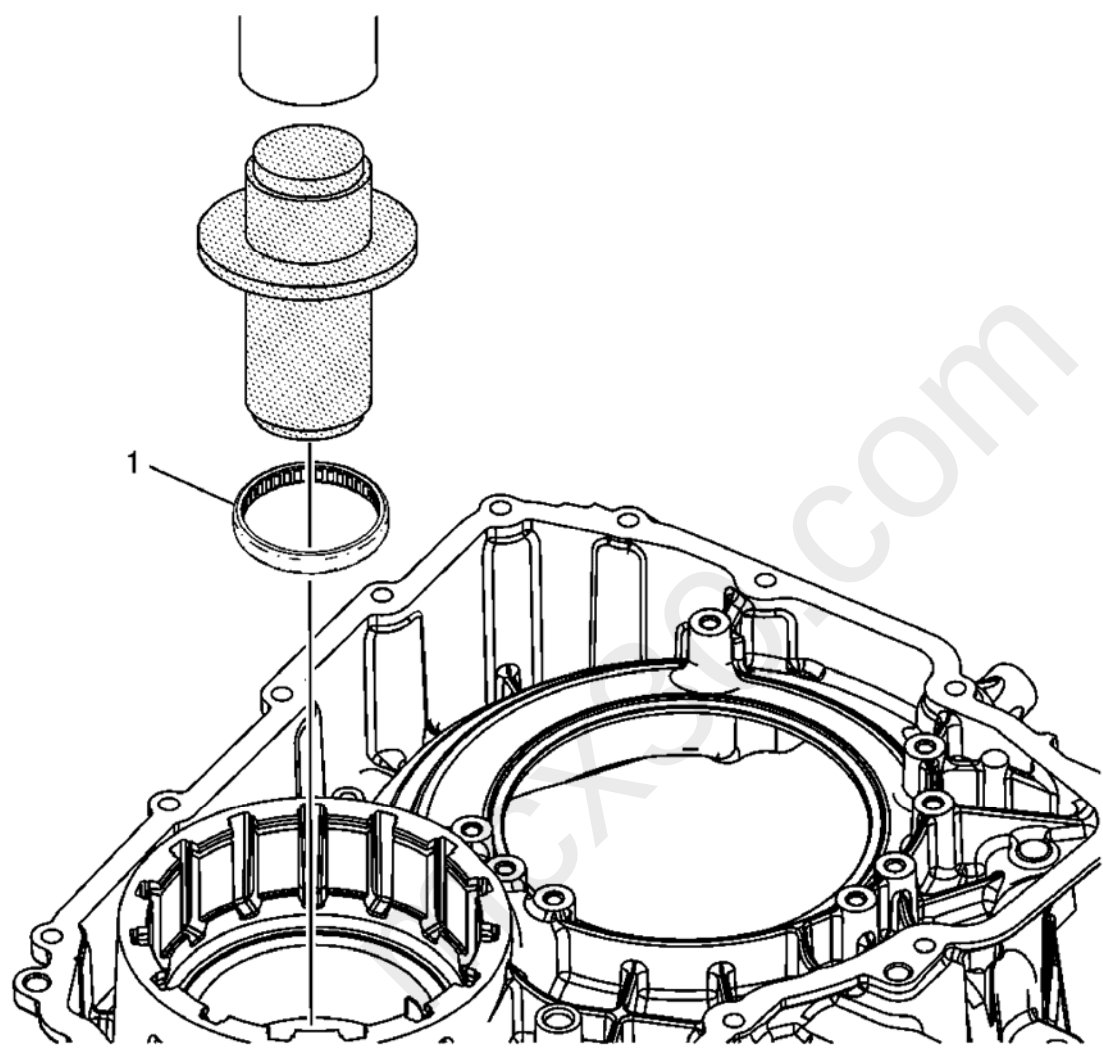


Fig. 52: Front Differential Carrier Bearing (AWD)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Front Differential Carrier Bearing Tip: Press the bearing until the tool stops against the housing to ensure the bearing is installed to the correct dimension. Special Tools • DT 49831: Differential Bearing Remover/Installer (2 Pinion Blue)

FRONT WHEEL DRIVE SHAFT SEAL INSTALLATION - TORQUE CONVERTER HOUSING SIDE

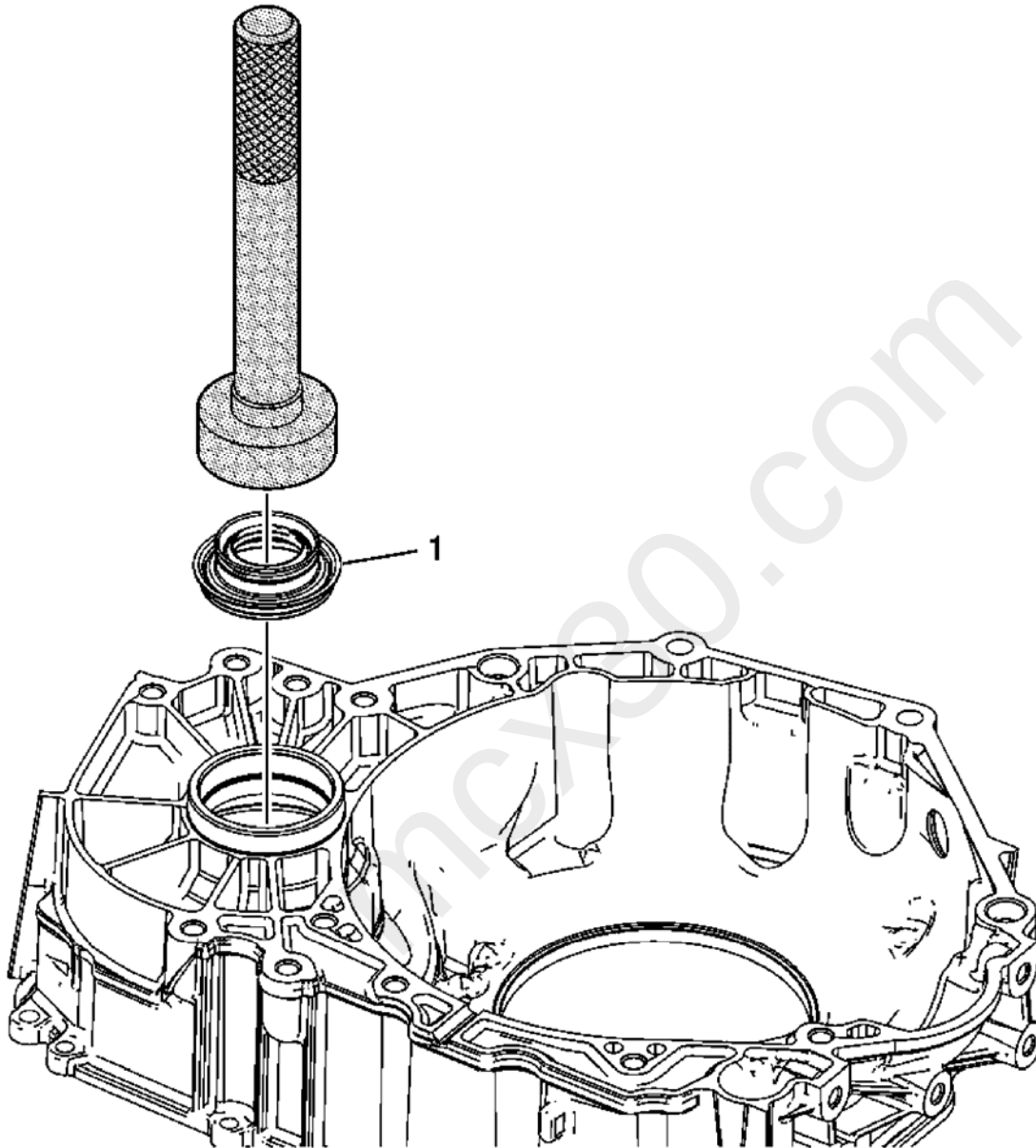


Fig. 53: Front Wheel Drive Shaft Seal - Torque Converter Housing Side
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
	Front Wheel Drive Shaft Oil Seal Assembly
	Special Tools

- DT-47790: Seal Installer
- GE 8092: Driver Handle

TORQUE CONVERTER HOUSING CLEANING AND INSPECTION

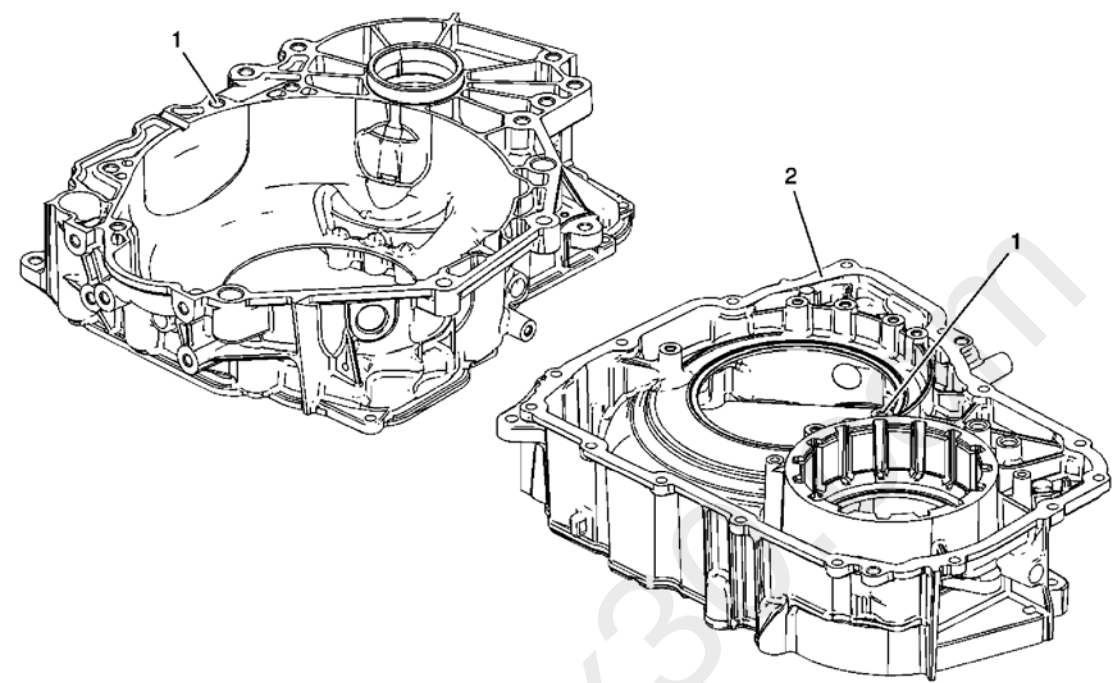


Fig. 54: Torque Converter Housing
 Courtesy of GENERAL MOTORS CORP.

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

Fluid Filter Assembly and Torque Converter Fluid Seal Disassemble

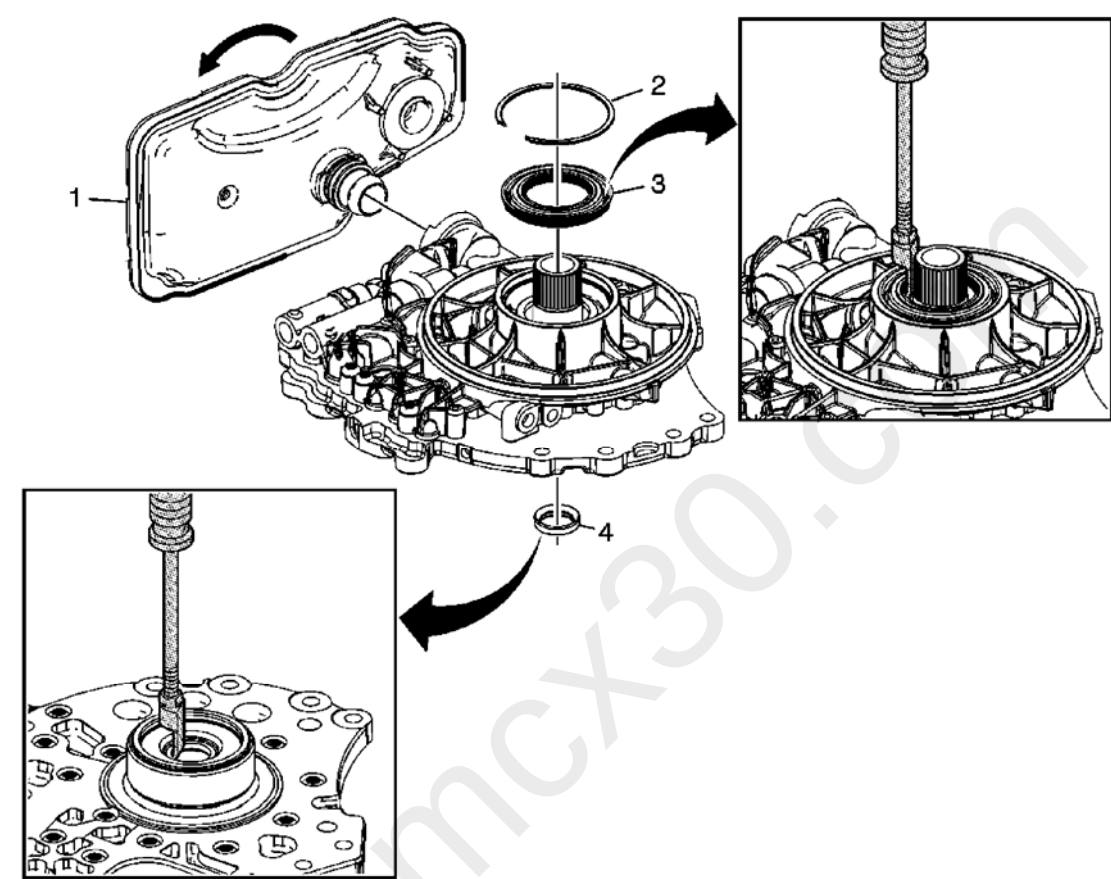


Fig. 55: Fluid Filter Assembly & Torque Converter Fluid Seal
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Fluid Filter Assembly Tip: Rotate filter 90 degrees to disengage locking tangs.
2	Torque Converter Fluid Seal Retainer
3	Torque Converter Fluid Seal Special Tools • J 6125-B: Slide Hammer • J 23129: Universal Seal Remover

Torque Converter Fluid Seal Assembly

4

Special Tools

- J 6125-B: Slide Hammer
- J 23129: Universal Seal Remover

Fluid Pump Disassemble

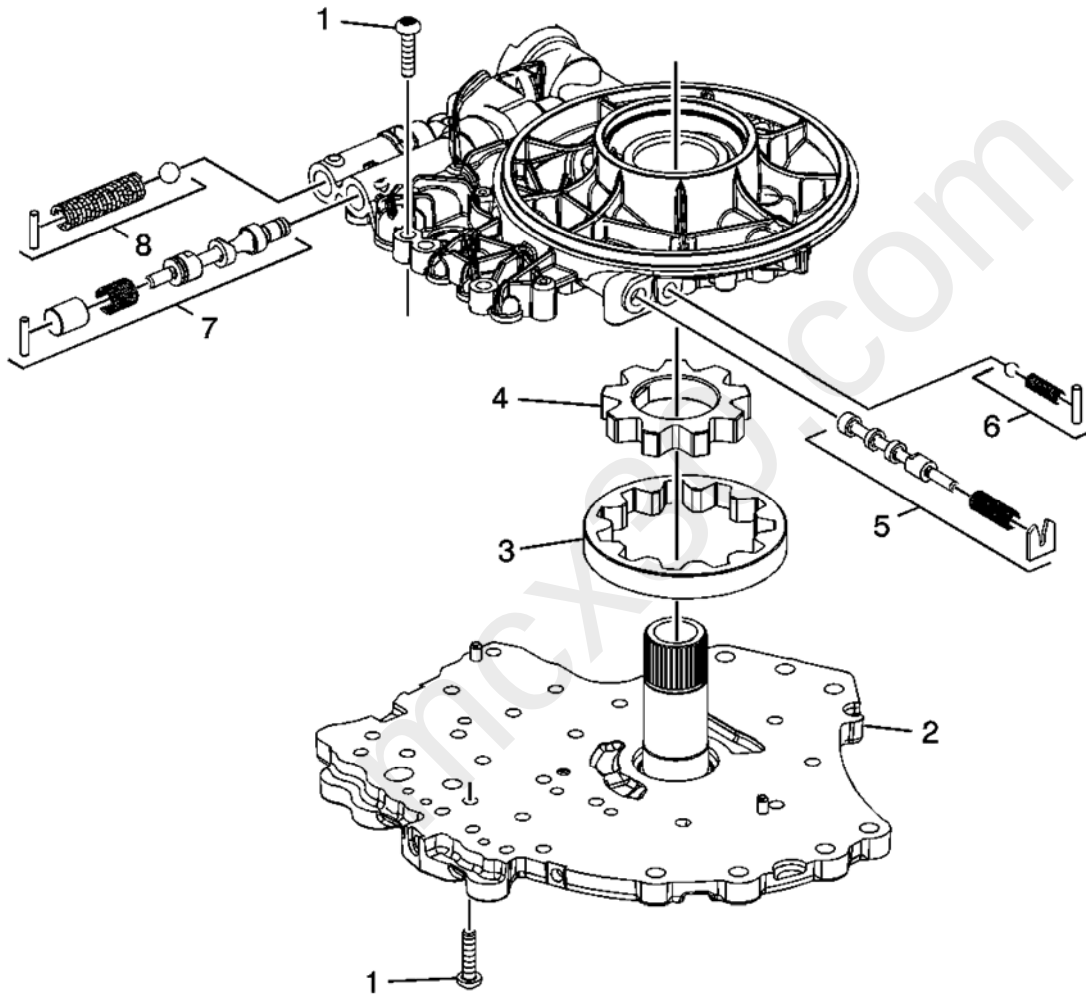


Fig. 56: Fluid Pump

Courtesy of GENERAL MOTORS CORP.

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 pump body for wear and/or damage.

1	Fluid Pump Cover Bolts M6 x 25 (Qty: 23) Tip: There are 3 bolts on the pump cover side and 20 bolts on the pump body side.
2	Fluid Pump Cover
3	Fluid Pump Driven Gear
4	Fluid Pump Drive Gear
5	TCC Control Valve Train
6	Fluid Pump Blow Off Ball Valve Train
7	Pressure Regulator Valve Train
8	TCC Blow Off Ball Valve Train

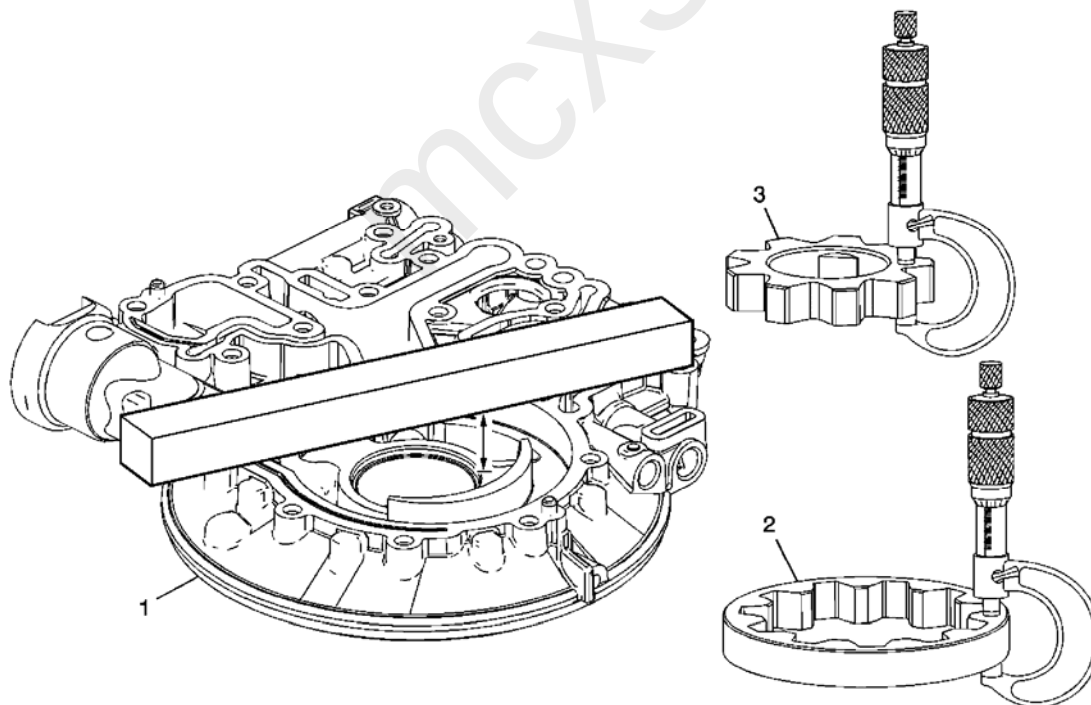
FLUID PUMP SELECTIVE MEASUREMENT

Fig. 57: Measuring Fluid Pump

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	A/Trans Fluid Pump Body Tip: Measure the distance from the bottom of the gauge bar to the bottom of the pump rotor cavity. Refer to <u>Fluid Pump Selective Specifications</u> . Special Tool: GE 34673: Flat Gauge Bar or equivalent
2	A/Trans Fluid Pump Driven Gear Tip: Refer to <u>Fluid Pump Selective Specifications</u> to select the correct gear.
3	A/Trans Fluid Pump Drive Gear Tip: Refer to <u>Fluid Pump Selective Specifications</u> to select the correct gear.

TRANSMISSION FLUID PUMP ASSEMBLE

Fluid Pump with Valve Trains Assemble

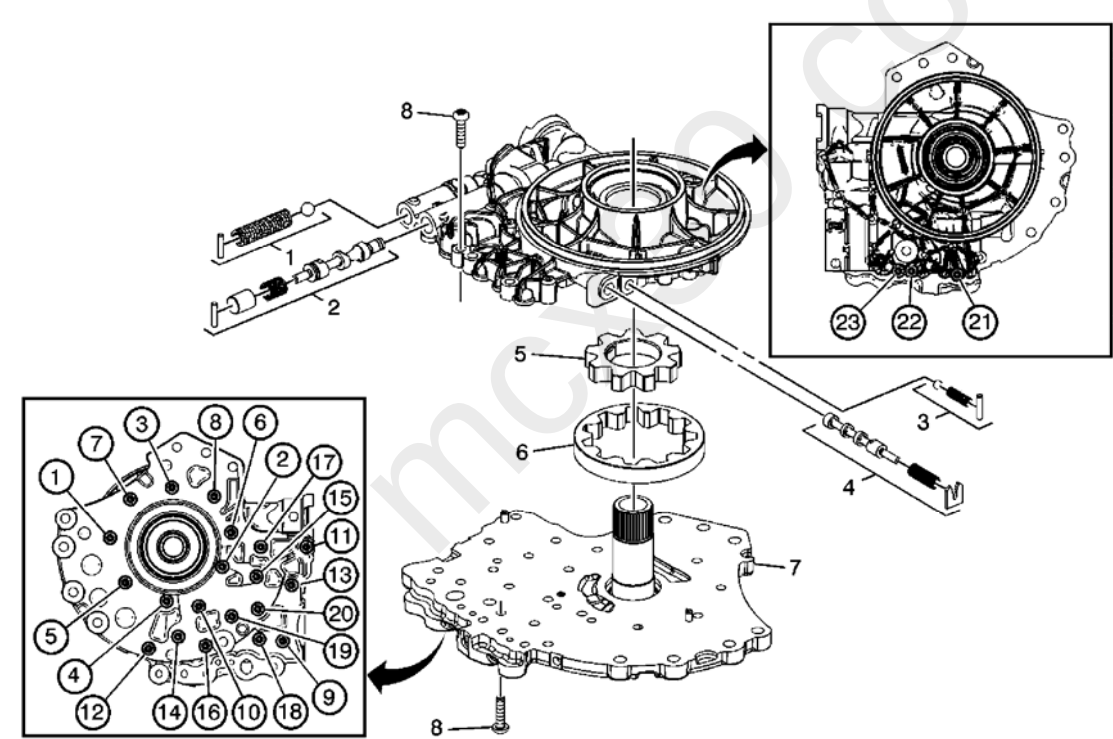


Fig. 58: Fluid Pump W/Valve Trains
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	TCC Blow Off Ball Valve Train
2	Pressure Regulator Valve Train
3	Fluid Pump Blow Off Ball Valve Train

4	TCC Control Valve Train
5	Fluid Pump Drive Gear Tip: The chamfer on the drive gear teeth face towards the pump body.
6	Fluid Pump Driven Gear Tip: The chamfer on the driven gear OD faces the pump body.
7	Fluid Pump Cover
8	Fluid Pump Cover Bolt M6 x 25 (Qty: 23) CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 12 N.m (106 lb in)

Torque Converter Fluid Seal and Fluid Filter Assembly Assemble

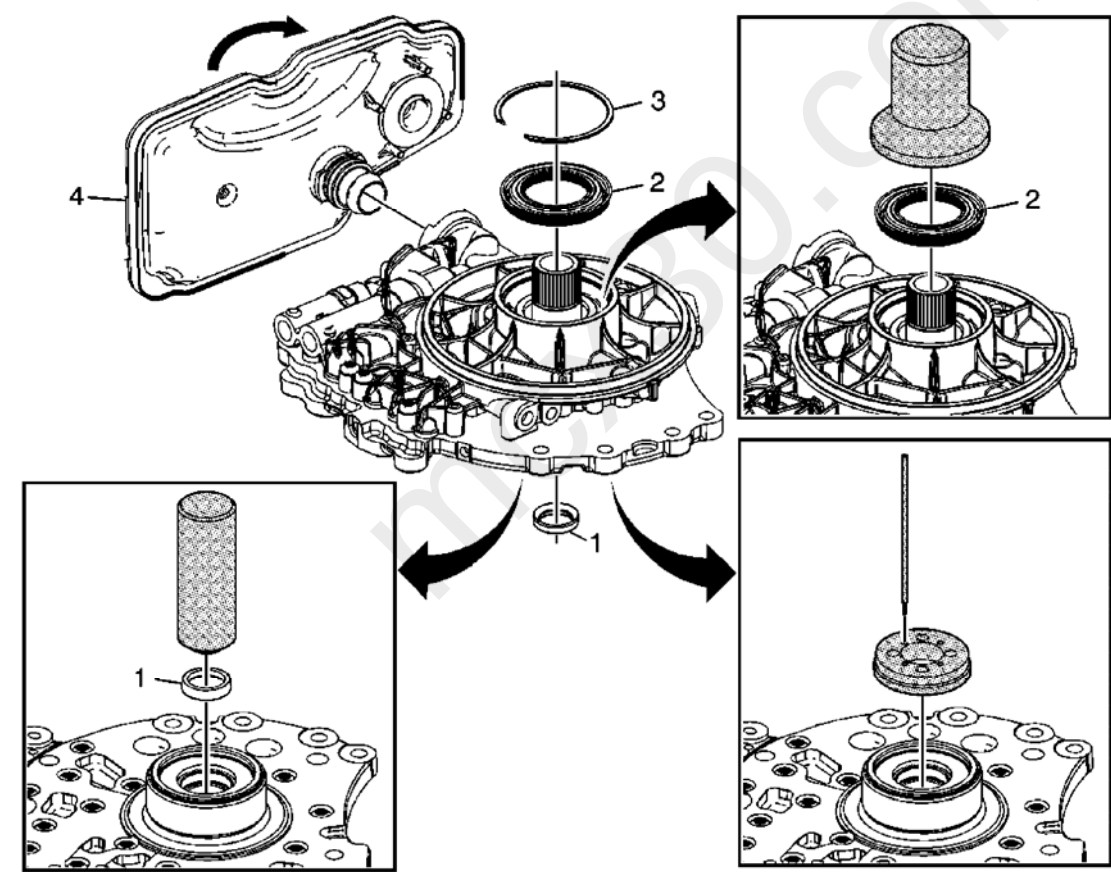


Fig. 59: Torque Converter Fluid Seal & Fluid Filter Assembly
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
	Torque Converter Fluid Seal Assembly

1	Tip: The fluid seal assembly must be staked in place using DT-49131: tool to ensure proper seal retention. Special Tools • DT-47792: Seal Installer • DT-49131: Seal Staking Tool
2	Torque Converter Fluid Seal Special Tools: DT-47791-A: Seal Installer
3	Torque Converter Fluid Seal Retainer
4	Fluid Filter Assembly Tip: Rotate filter 90 degrees to engage locking tangs.

TRANSMISSION FLUID PUMP, FRONT DIFFERENTIAL CARRIER BAFFLE, AND FRONT DIFFERENTIAL RING GEAR INSTALLATION

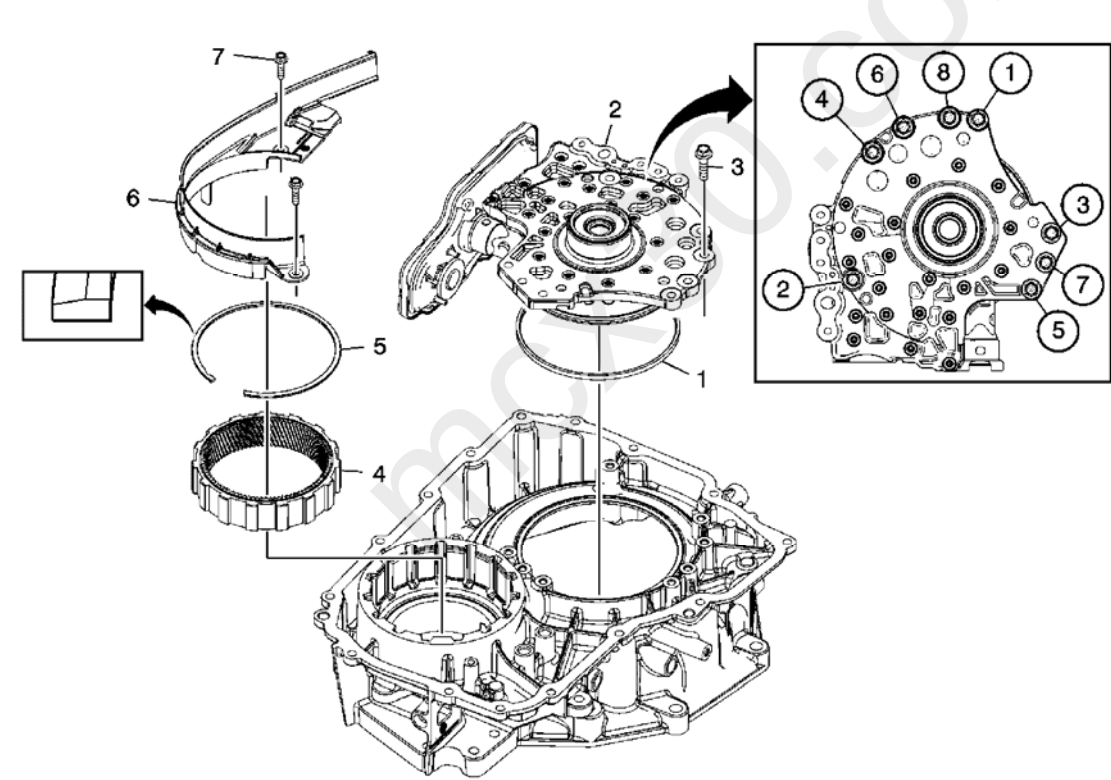


Fig. 60: Transmission Fluid Pump, Front Differential Carrier Baffle & Front Differential Ring Gear
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Torque Converter and Differential Housing Seal
2	Fluid Pump Assembly

	Fluid Pump Bolt M8 x 33 (Qty: 8)
	CAUTION: Refer to <u>Fastener Caution</u> .
3	Tighten: 10 N.m (89 lb in) then rotate the bolt an additional 45 degrees. Special Tools: J-45059: Angle Meter or equivalent
4	Front Differential Ring Gear
5	Front Differential Ring Gear Retainer Tip: Install the retainer with the taper facing away from the ring gear.
6	Front Differential Carrier Baffle
7	Front Differential Carrier Baffle Bolt M6 x 25 (Qty: 2) Tighten: 12 N.m (106.21 lb in)

TORQUE CONVERTER HOUSING WITH FLUID PUMP ASSEMBLY INSTALLATION (6T40/45/50)

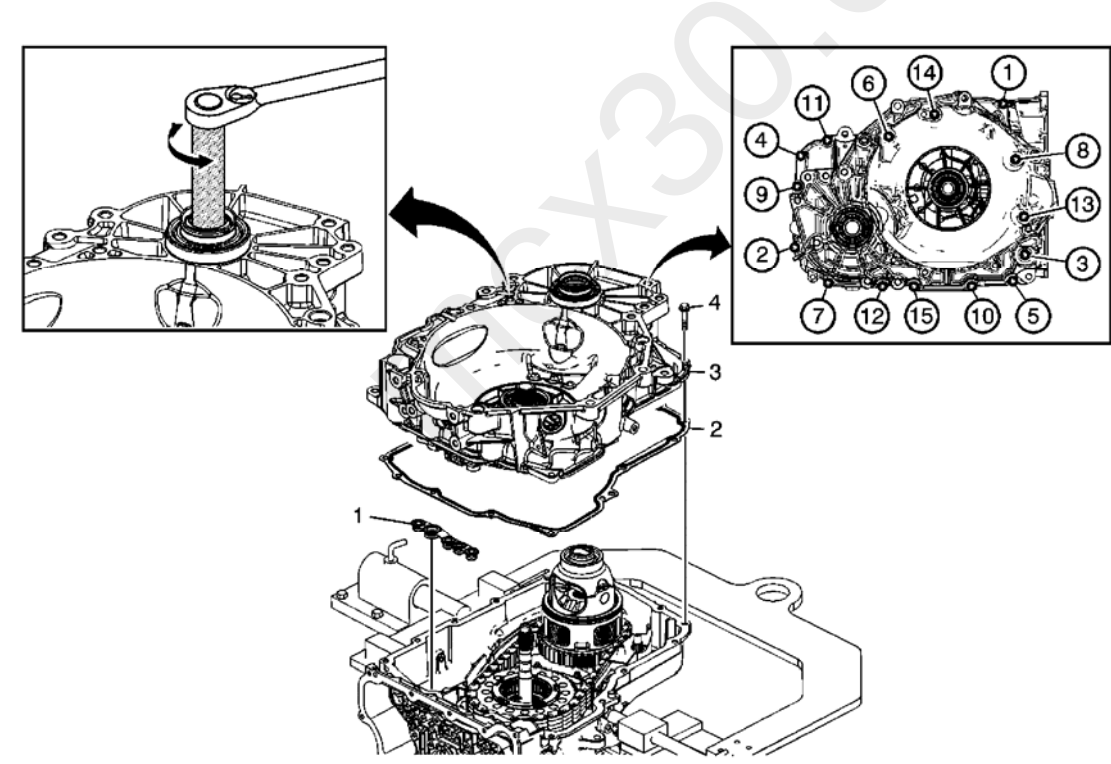


Fig. 61: Torque Converter Housing With Fluid Pump Assembly (6T40/45/50)
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
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1	Fluid Pump Seal Assembly
2	Torque Converter Housing Gasket
3	Torque Converter (w/Fluid Pump) Housing Assembly Tip: 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 <u>Special Tools</u> .
4	Torque Converter and Differential Housing Bolts M8 x 30 (Qty: 15) CAUTION: Refer to <u>Fastener Caution</u> . 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 <u>Special Tools</u> .

INPUT AND OUTPUT SPEED SENSOR INSTALLATION

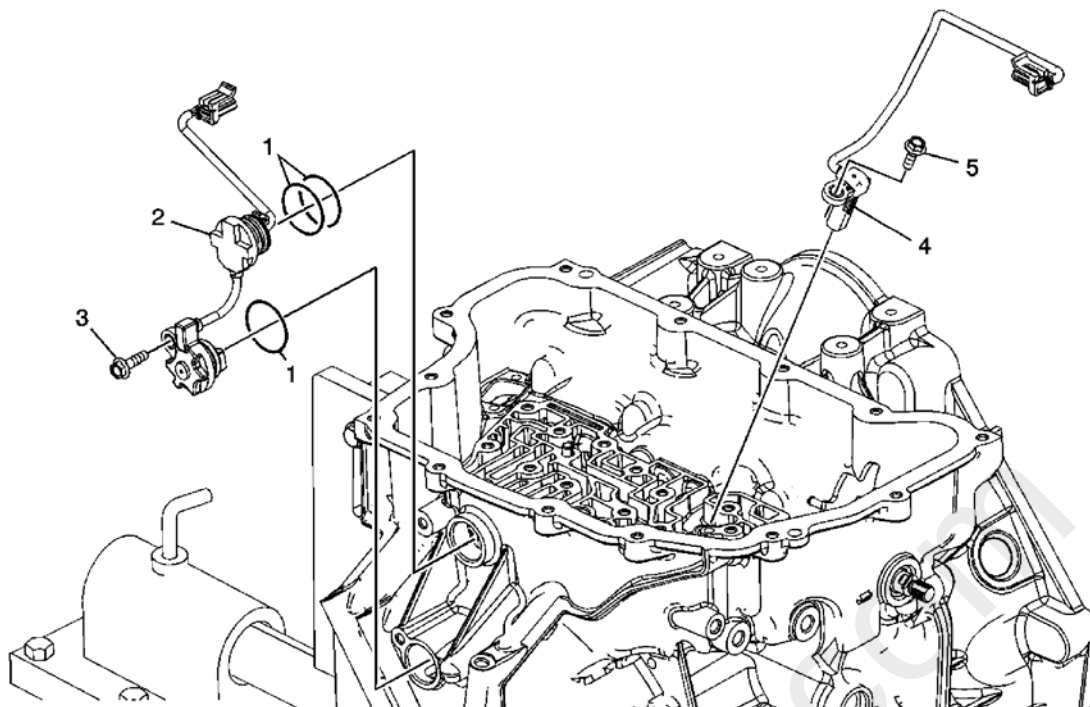


Fig. 62: Input & Output Speed Sensor
 Courtesy of GENERAL MOTORS CORP.

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

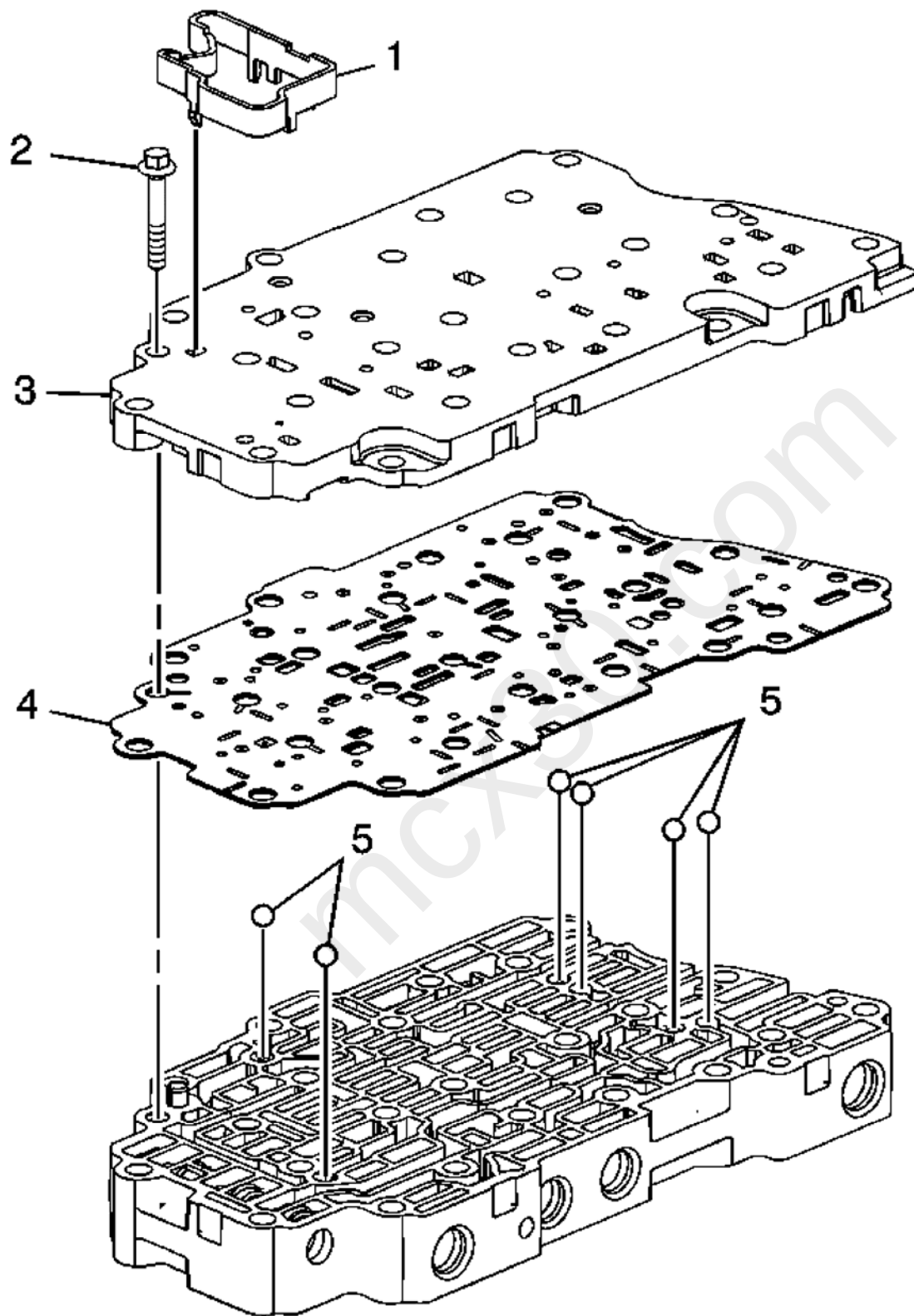


Fig. 63: Control Valve Body Assembly

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Control Solenoid Valve Support
2	Control Valve Body Bolt M5 x 40.5 (Qty: 1)
3	Valve Channel Plate Tip: Inspect the channel plate bolt pass through holes for damage or brinelling. Any damage will cause incorrect pressure switch operation. Replace as necessary.
4	Control Valve Channel Plate Spacer Plate Assembly
5	Valve Body Ball Check Valves (Qty: 6)

CONTROL VALVE BODY CLEANING AND INSPECTION

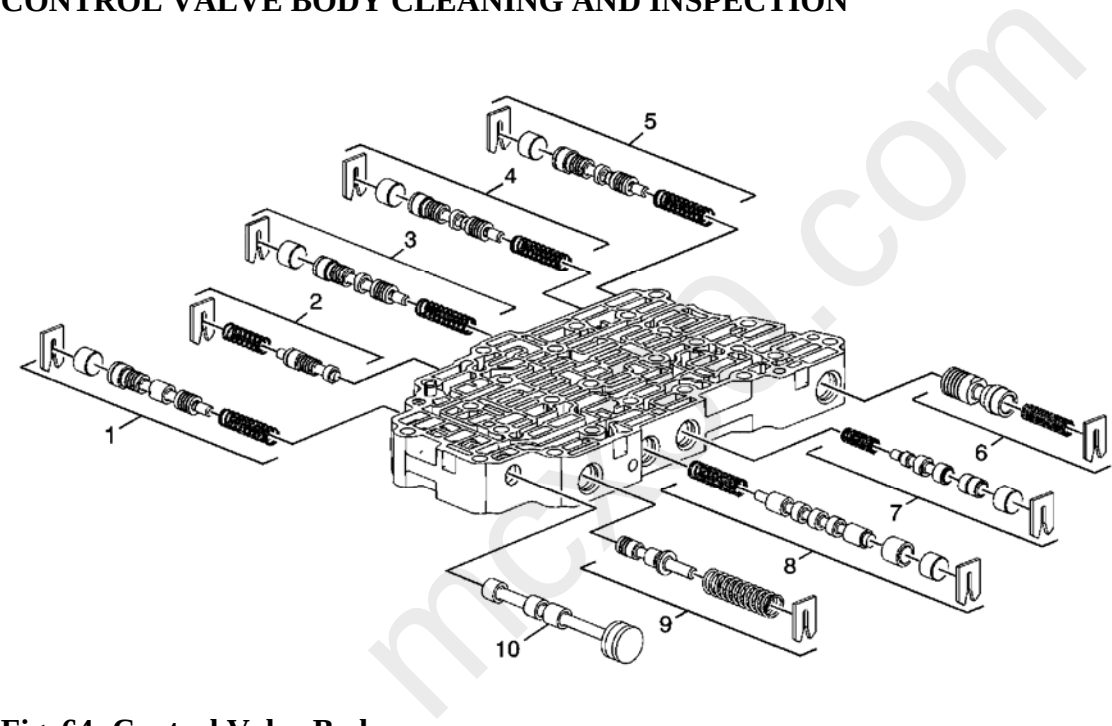


Fig. 64: Control Valve Body
Courtesy of GENERAL MOTORS CORP.

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	First-Reverse and 4-5-6 Clutch Regulator Valve Train
2	1-2-3-4 Clutch Boost Valve Train
3	1-2-3-4 Clutch Regulator Valve Train
4	2-6 Clutch Regulator ValveTrain
5	3-5 Reverse Clutch Regulator Valve Train
6	Clutch Piston Dam Feed Regulator Valve Train
7	TCC Regulator Apply Valve Train
8	Clutch Select Valve Train
9	Actuator Feed Limit Valve Train
10	Manual Valve

CONTROL VALVE CHANNEL PLATE CLEANING AND INSPECTION (6T40/45)

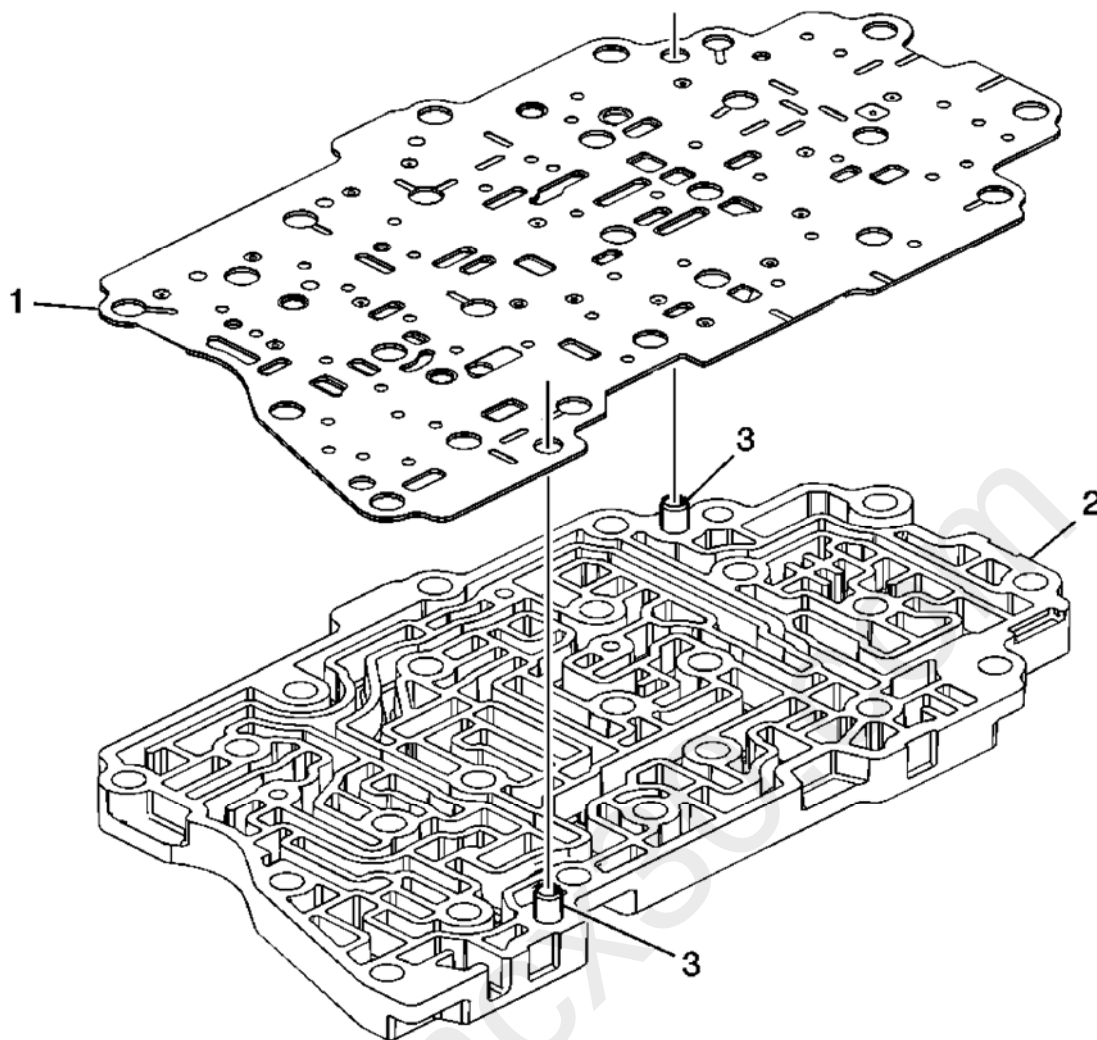


Fig. 65: Control Valve Channel Plate (6T40/45)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Channel Plate to Valve Body Spacer Plate Assembly
2	Valve Channel Plate Tip: Inspect the channel plate bolt pass through holes for damage or brinelling. Any damage will cause incorrect pressure switch operation. Replace as necessary.
3	Control Valve Body Guide Pins

CONTROL VALVE BODY ASSEMBLY ASSEMBLE

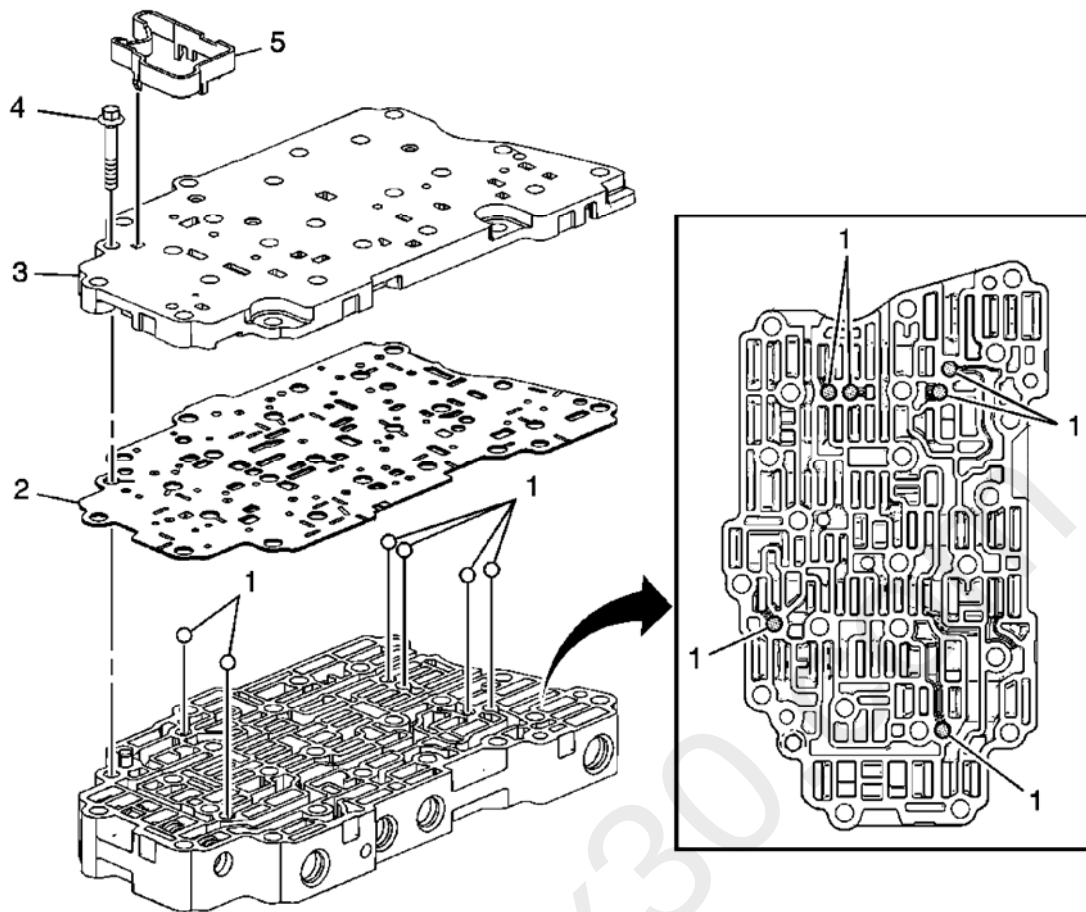


Fig. 66: Control Valve Body Assembly
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Valve Body Ball Check Valve (Qty: 6)
2	Control Valve Channel Plate Spacer Plate Assembly
3	Valve Channel Plate Tip: Inspect the channel plate bolt pass through holes for damage or brinelling. Any damage could cause leaking. Replace as necessary.
4	Control Valve Body Bolt M5 x 40.5 (Qty: 1) CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 7 N.m (62 lb in)
5	Control Solenoid Valve Support

CONTROL VALVE BODY ASSEMBLY INSTALLATION

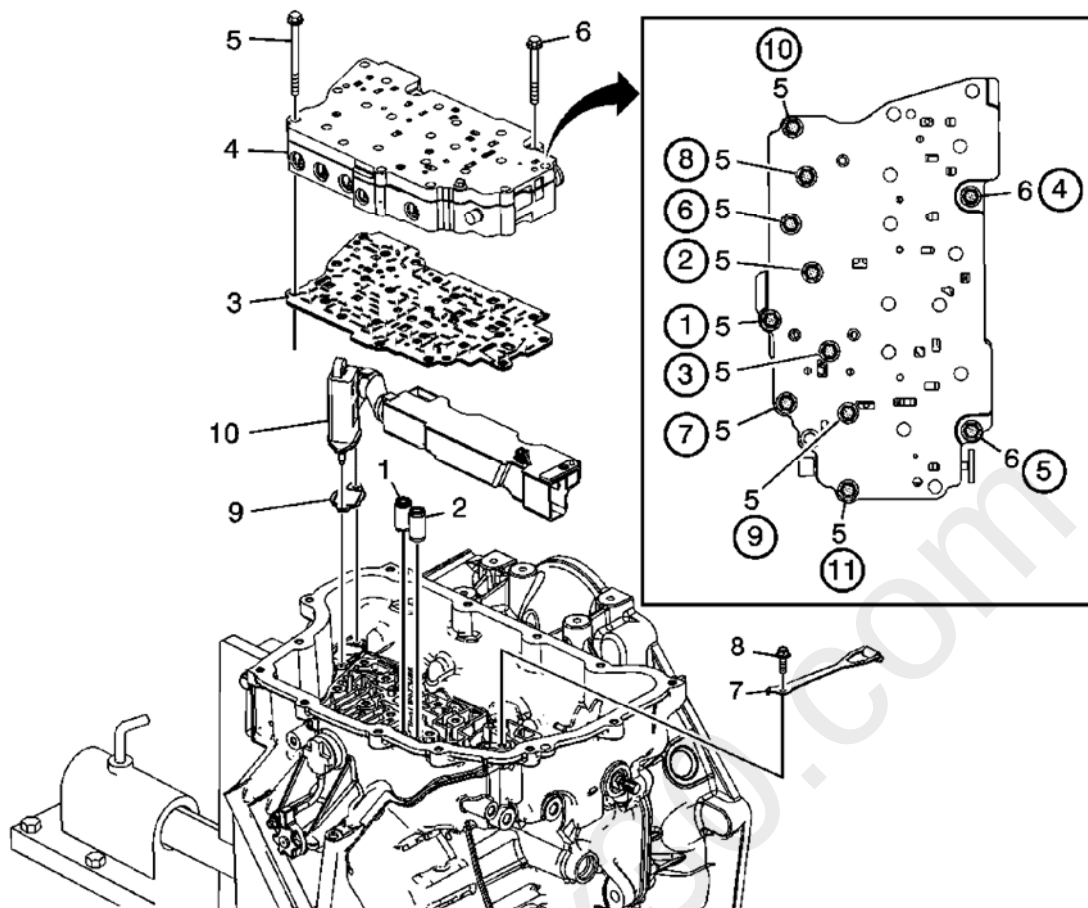


Fig. 67: Control Valve Body Assembly
 Courtesy of GENERAL MOTORS CORP.

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 Tip: Align the manual valve to the rod on the manual shaft.
5	Control Valve Body Bolt M6 x 60 (Qty: 9) CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 11 N.m (97 lb in)
6	Control Valve Body Bolt M6 x 53 (Qty: 2) Tighten: 11 N.m (97 lb in)

7	Manual Shaft Detent Lever Spring Assembly
8	Manual Shaft Detent Spring Bolt M6 x 16 (Qty: 1) Tighten: 12 N.m (106 lb in)
9	Fluid Level Control Valve Gasket
10	Fluid Level Control Valve

**CONTROL SOLENOID VALVE AND TRANSMISSION CONTROL MODULE ASSEMBLY
INSTALLATION**

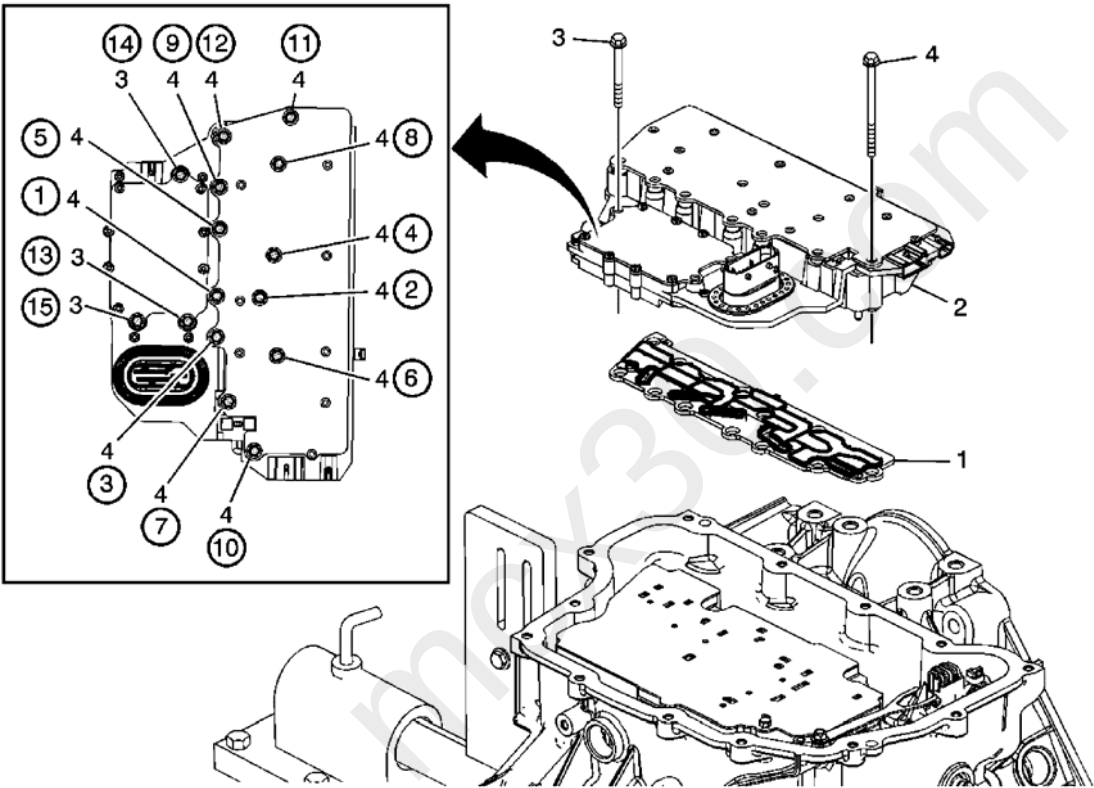


Fig. 68: Control Solenoid Valve & Transmission Control Module Assembly
 Courtesy of GENERAL MOTORS CORP.

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.

	Tip: 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 <u>Fastener Caution</u> . Tighten: 7 N.m (62 lb in)
4	Control Valve Body Bolt M6 x 97 (Qty: 12) Tighten: 10 N.m (89 lb in)

CONTROL VALVE BODY COVER INSTALLATION

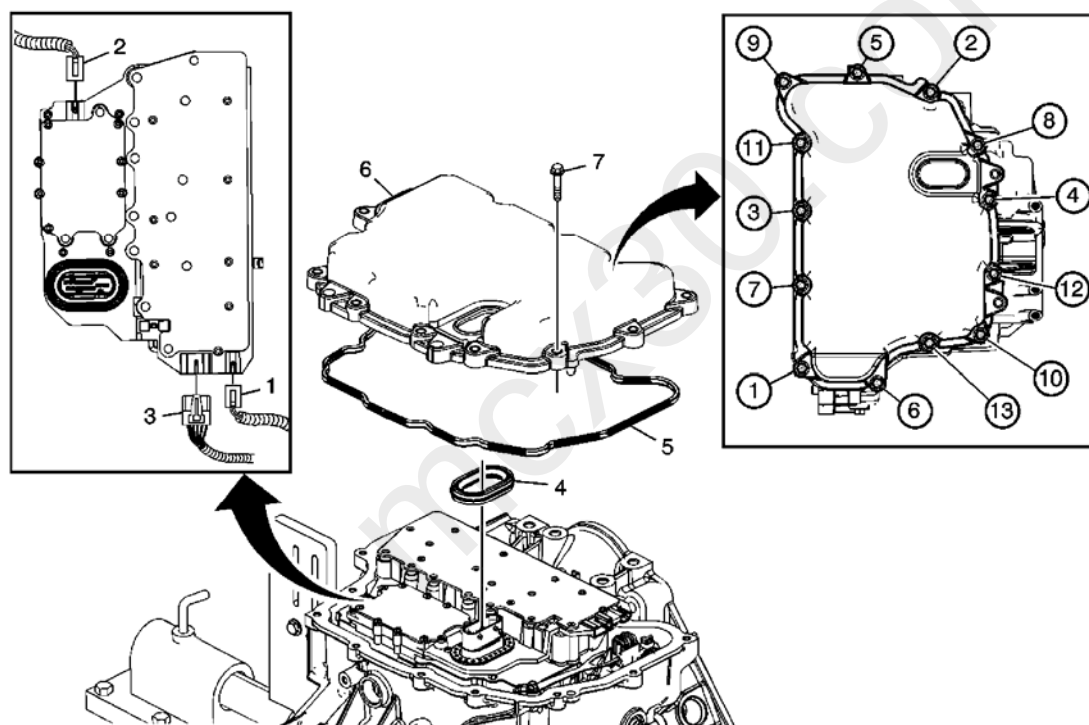


Fig. 69: Control Valve Body Cover

Courtesy of GENERAL MOTORS CORP.

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

	Tip: Do not re-use the valve body cover wiring connector hole seal.
5	Control Valve Body Cover Gasket Tip: 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)

TORQUE CONVERTER FLUID SEAL REPLACEMENT

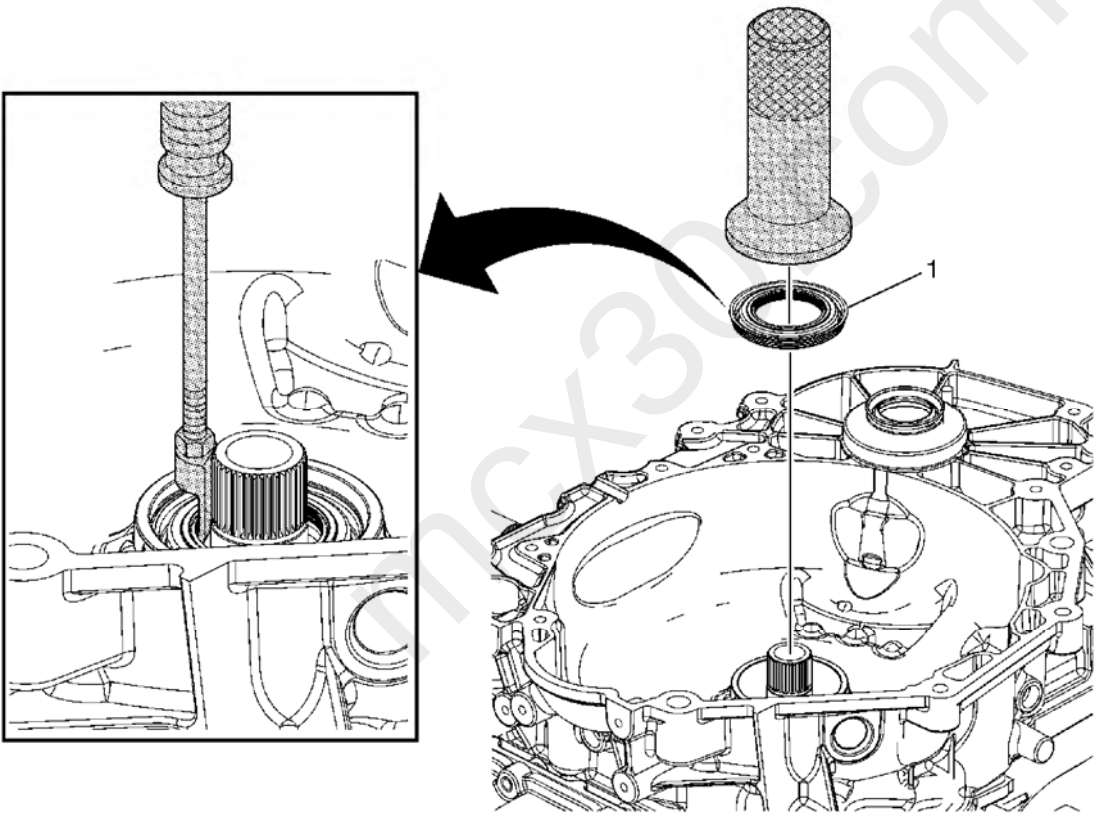


Fig. 70: Torque Converter Fluid Seal
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Torque Converter Fluid Seal Retainer
	Torque Converter Fluid Seal
	Special Tools

- **DT-47791-A:** Seal Installer
- **DT-6125-B:** Slide Hammer
- **EN-23129:** Universal Seal Remover

For equivalent regional tools, refer to **Special Tools** .

TORQUE CONVERTER INSTALLATION

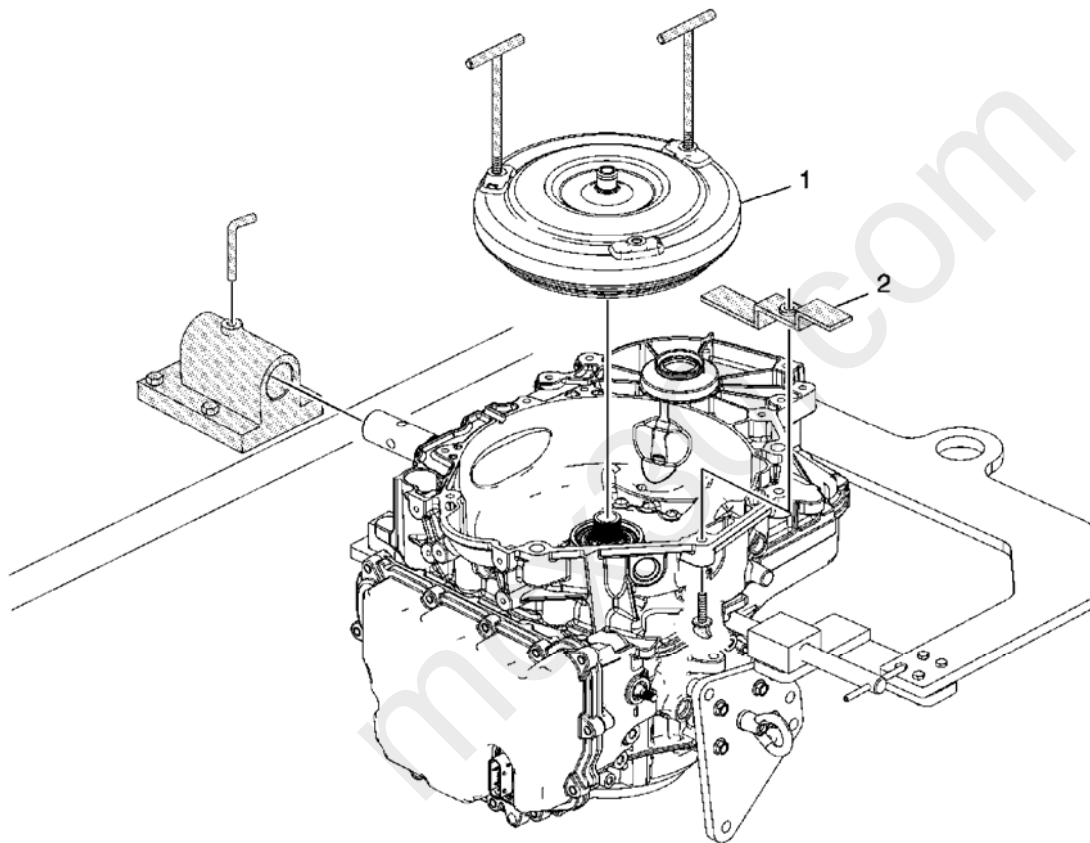


Fig. 71: Torque Converter

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Torque Converter Assembly Tip: Failure to lower the torque converter straight down could damage the torque converter clutch lip seal inside the torque converter clutch assembly. Special Tools: J-46409: Torque Converter Lifting Handles J-21366: Converter Holding Strap

2

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.

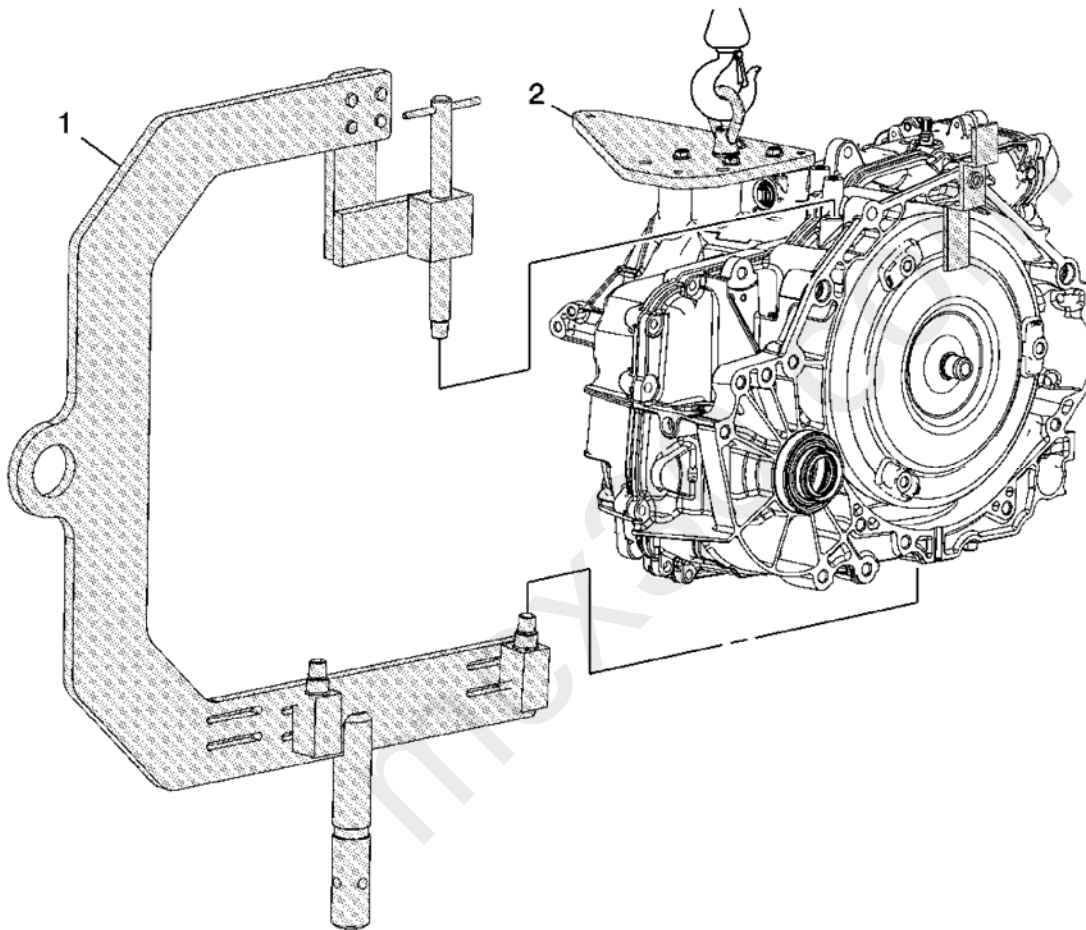
LIFT PLATE AND HOLDING FIXTURE REMOVAL

Fig. 72: Lift Plate & Holding Fixture
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	J-46625: Transmission Holding Fixture Tip: Raise the transmission in order to remove the holding fixture.
2	DT-47811-A: Transmission Lift Plate Tip: Lower the transmission assembly onto the transmission jack in order to remove the lift plate.