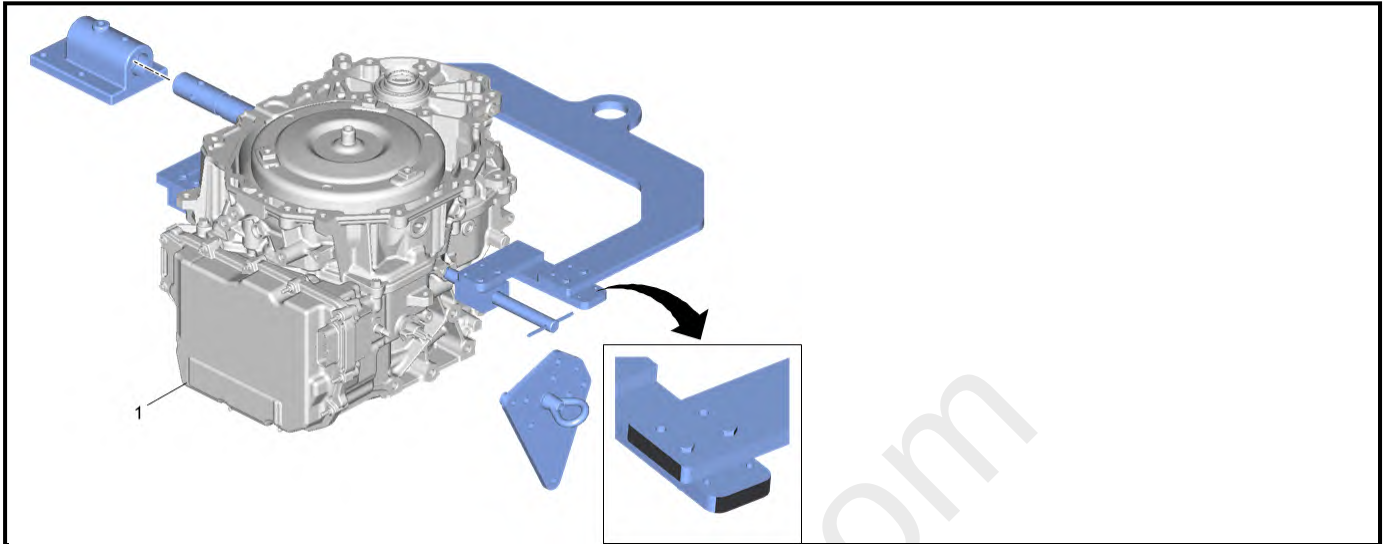


2018 TRANSMISSION

Automatic Transmission - 9T65 (M3V) - Repair Instructions - Off Vehicle - Traverse

REPAIR INSTRUCTIONS - OFF VEHICLE

LIFT PLATE AND HOLDING FIXTURE INSTALLATION

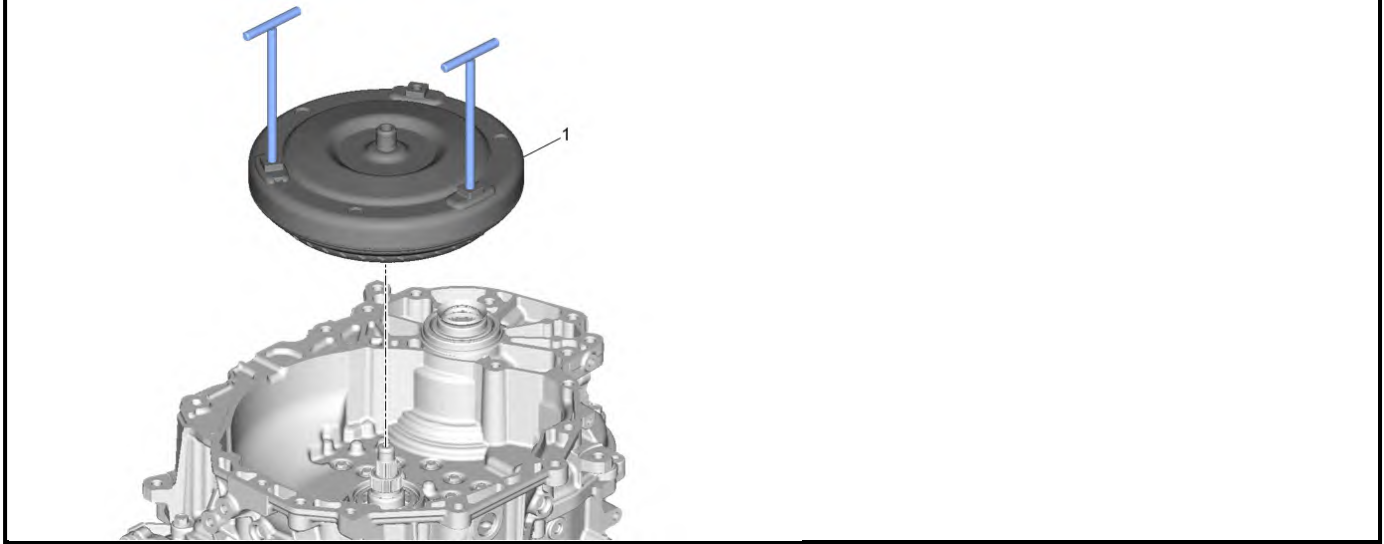


Callout	Component Name

Callout	Component Name
1	Transmission Case WARNING: Handle with care, the transmission assembly weighs over 90.7 kg (200 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 Lift Plate. 2. Tighten bolts and nut to 12 N.m (106 lb in). 3. Raise the transmission with an overhead hoist in order to install the holding fixture. 4. Adjust mounting block on DT-46625 Transmission Holding Fixture to match bosses on case, then tighten bolts to 13 N.m (10 lb ft). 5. 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 Transmission Holding Fixture Adapter and an engine stand can be used as an alternative method for supporting the transmission assembly during repairs. 6. 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 Lift Plate Equivalent regional tools: Special Tools .

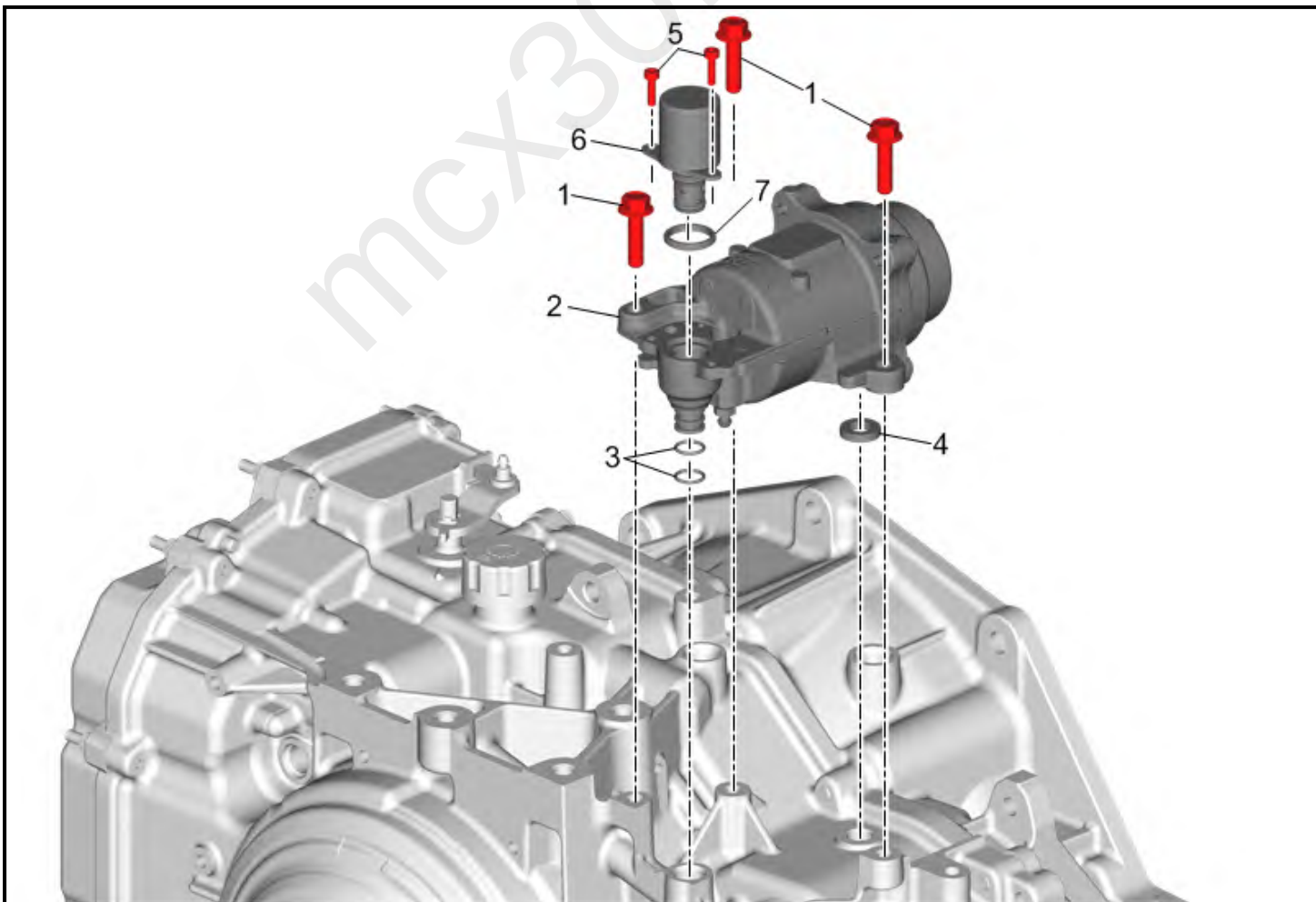
TORQUE CONVERTER REMOVAL





Callout	Component Name
1	Torque Converter 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. Special Tools DT - 46409 Torque Converter Lifting Handles Equivalent regional tools: Special Tools.

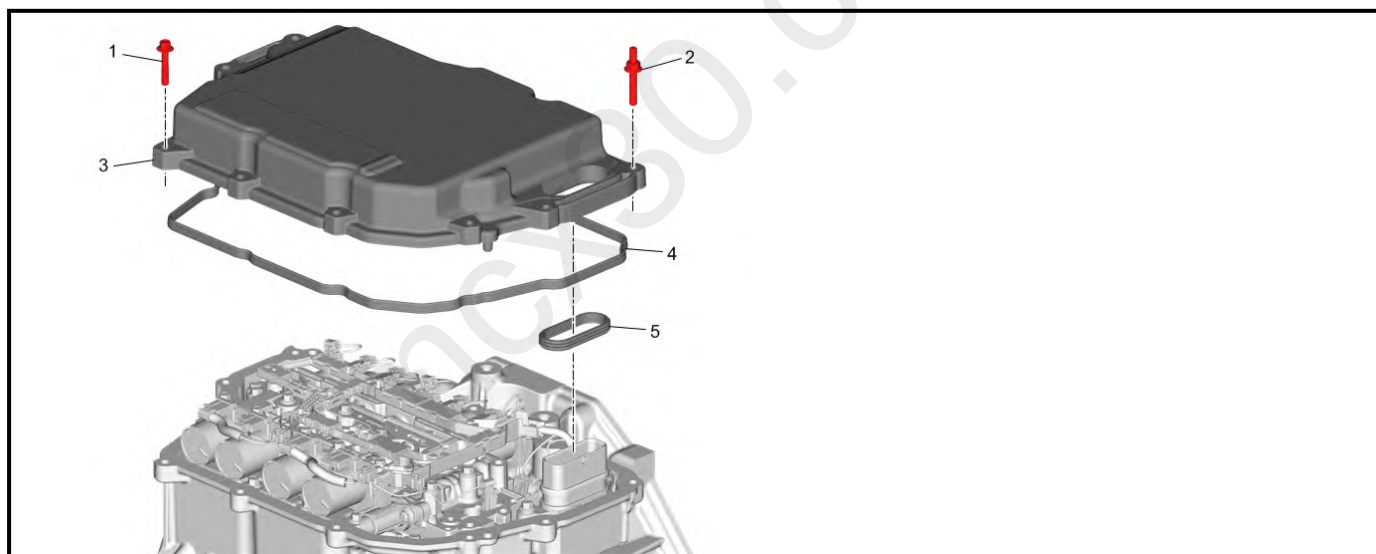
AUXILIARY FLUID ACCUMULATOR REMOVAL



Callout	Component Name
1	Automatic Transmission Auxiliary Fluid Accumulator Bolt [3x]

Callout	Component Name
2	Automatic Transmission Auxiliary Fluid Accumulator
3	Automatic Transmission Case Seal [2x] NOTE: Remove and DISCARD the O-ring seal.
4	Accumulator Bypass Valve Seal NOTE: Remove and DISCARD the seal.
5	Shift On/Off Solenoid Valve NOTE: Repair or replace as necessary.
6	Accumulator Valve Body Bolt [2x]
7	Accumulator Bypass Valve Seal NOTE: Remove and DISCARD the seal.

CONTROL VALVE BODY COVER REMOVAL

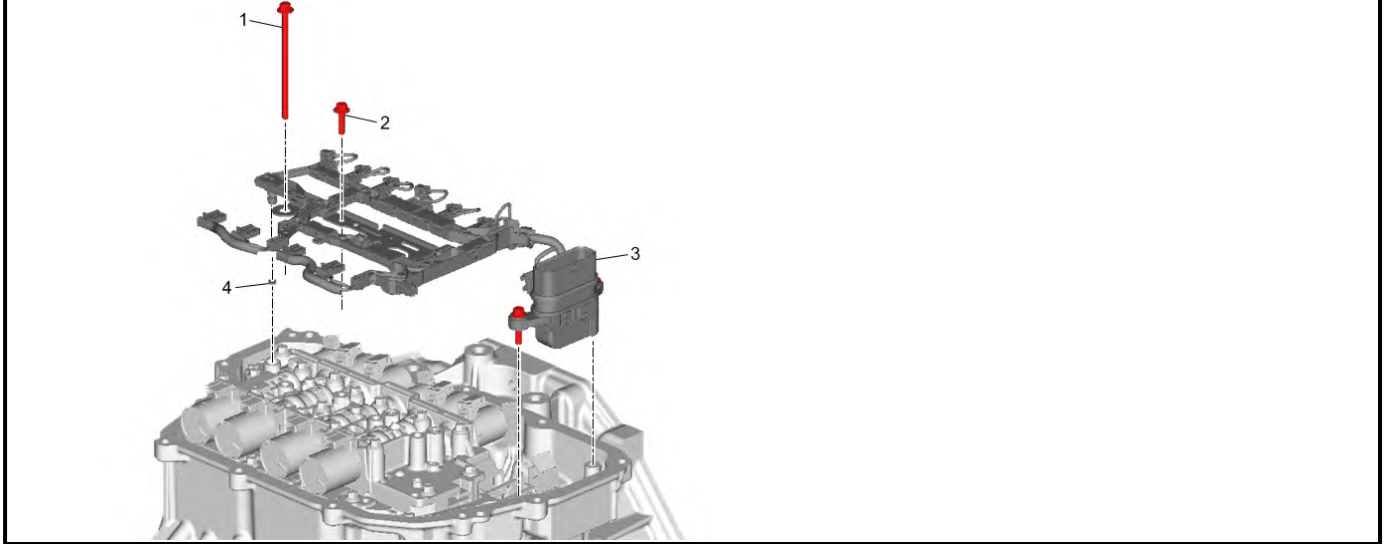


Callout	Component Name
1	Control Valve Body Cover Bolt [6x]
2	Control Valve Body Cover Stud [6x]
3	Control Valve Body Cover
4	Control Valve Body Cover Gasket
5	Body Side Wiring Harness Opening Seal NOTE: DISCARD the seal.

CONTROL VALVE BODY ASSEMBLY REMOVAL

Control Valve Solenoid Body Wiring Harness Removal

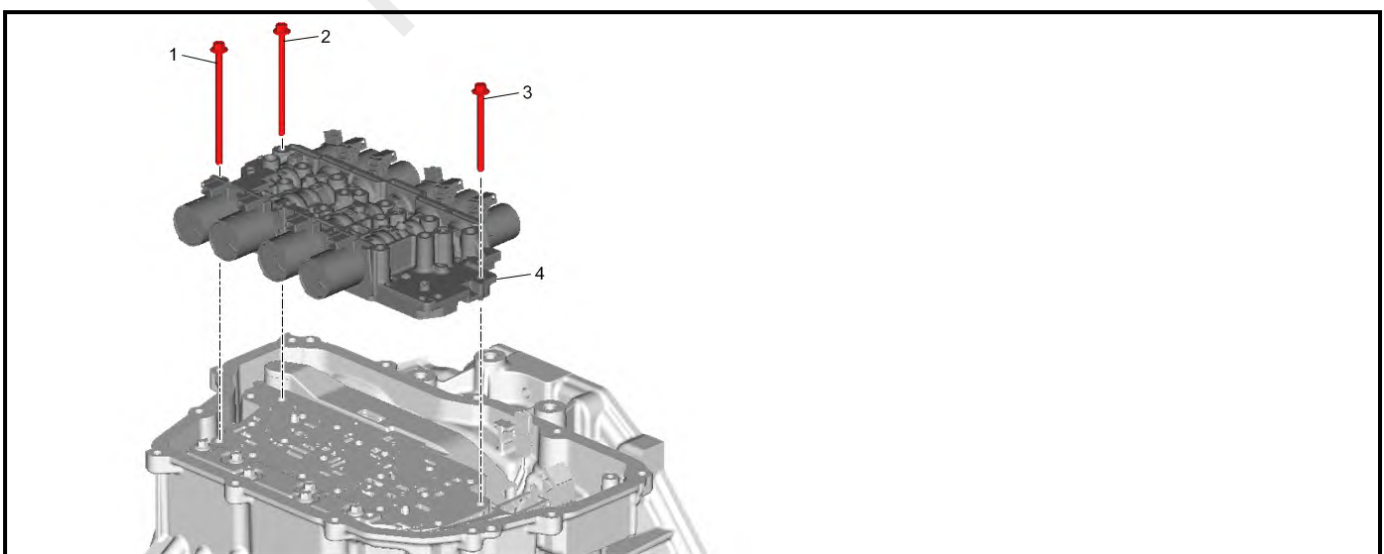




Control Valve Solenoid Body Wiring Harness Removal

Callout	Component Name
1	Control Valve Body Bolt [3x]
2	Control Valve Solenoid Body Bolt
3	Automatic Transmission Wiring Harness Procedure 1. Ensure you disconnect all the connectors from the valve body. 2. On-Vehicle the Variable Feed Solenoid Clutch Accumulator Piston and Spring may fall out. Control Valve Body Assembly Disassemble NOTE: The bolts are captured with harness.
4	Automatic Transmission Wiring Harness Seal NOTE: Remove and DISCARD the seal.

Control Valve Solenoid Body Removal



Control Valve Solenoid Body Removal

Callout	Component Name
1	Control Valve Body Bolt [5x]
2	Control Valve Body Bolt [9x]

Callout	Component Name
3	Control Valve Body Bolt [3x]
4	Control Valve Solenoid Body

Control Valve Body Removal

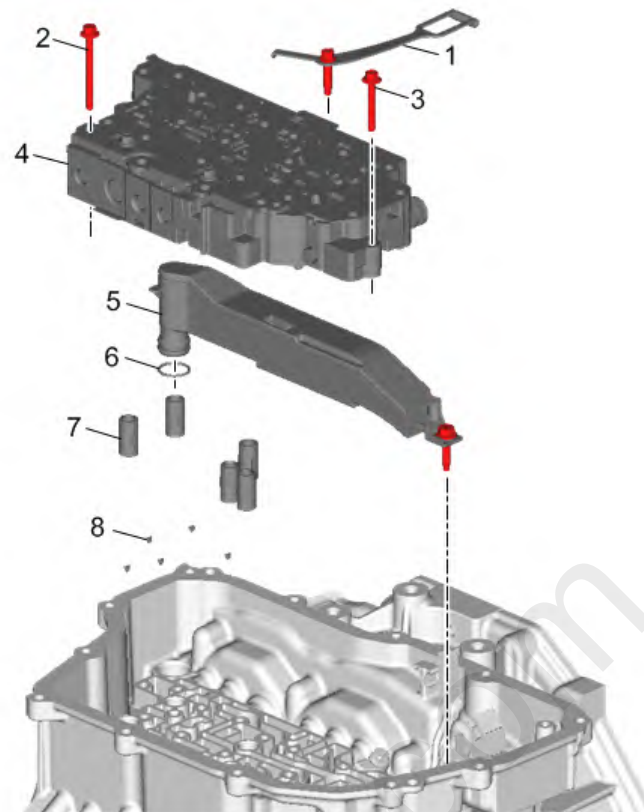


Fig. 1: Exploded View Of Control Valve Body Components

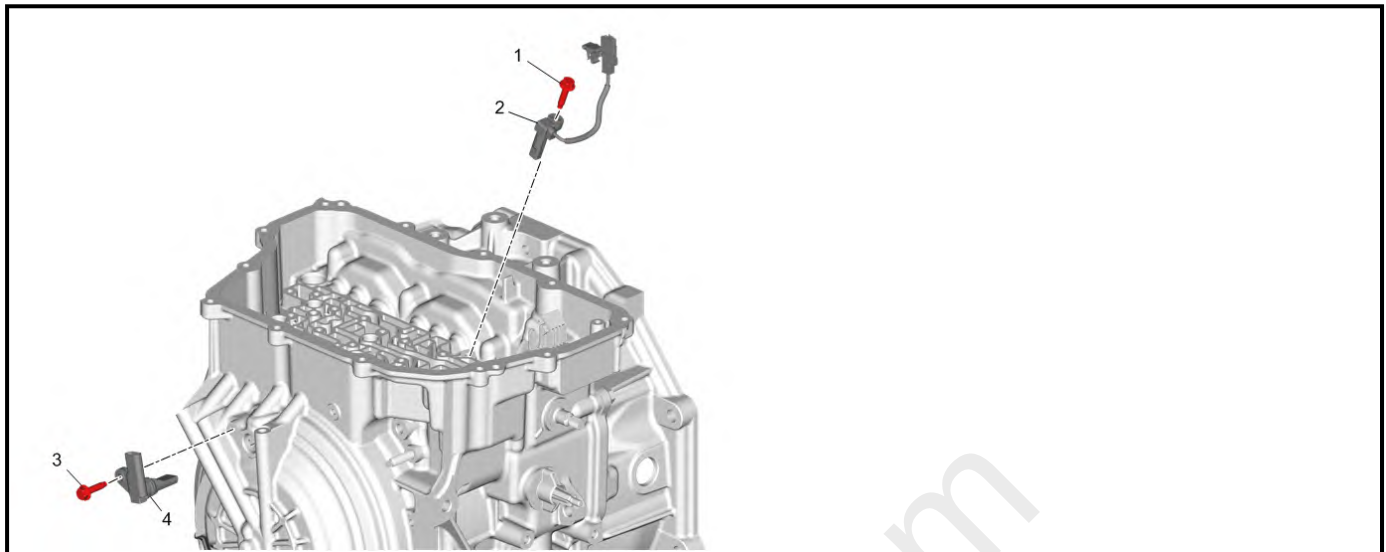
Courtesy of GENERAL MOTORS COMPANY

Control Valve Body Removal

Callout	Component Name
1	Manual Shift Detent Lever Spring NOTE: The bolt is captured with spring.
2	Control Valve Body Bolt [4x]
3	Control Valve Body Bolt
4	Control Valve Body
5	Fluid Transfer Pipe NOTE: The bolt is captured with pipe.
6	Fluid Transfer Pipe Seal NOTE: Remove and DISCARD the seal.
7	1-2-3-4 Low and Reverse Clutch Fluid Passage Seal [5x] NOTE: Remove and DISCARD the seal.

Callout	Component Name
8	Control Valve Body Ball Check Valve [5x] NOTE: On-Vehicle these may fall out.

INPUT AND OUTPUT SPEED SENSOR REMOVAL



Callout	Component Name
1	Automatic Transmission Output Speed Sensor Bolt
2	Automatic Transmission Output Speed Sensor
3	Automatic Transmission Input Speed Sensor Bolt
4	Automatic Transmission Input Speed Sensor

TORQUE CONVERTER HOUSING WITH FLUID PUMP ASSEMBLY REMOVAL

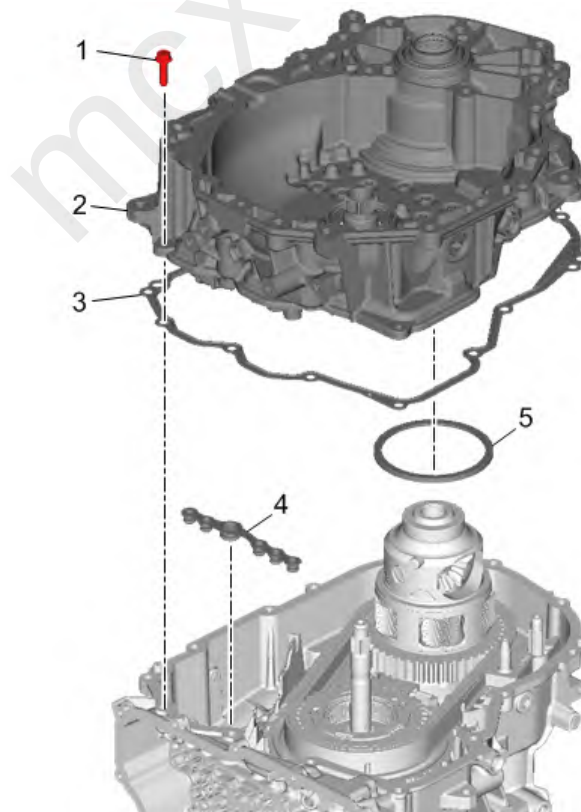
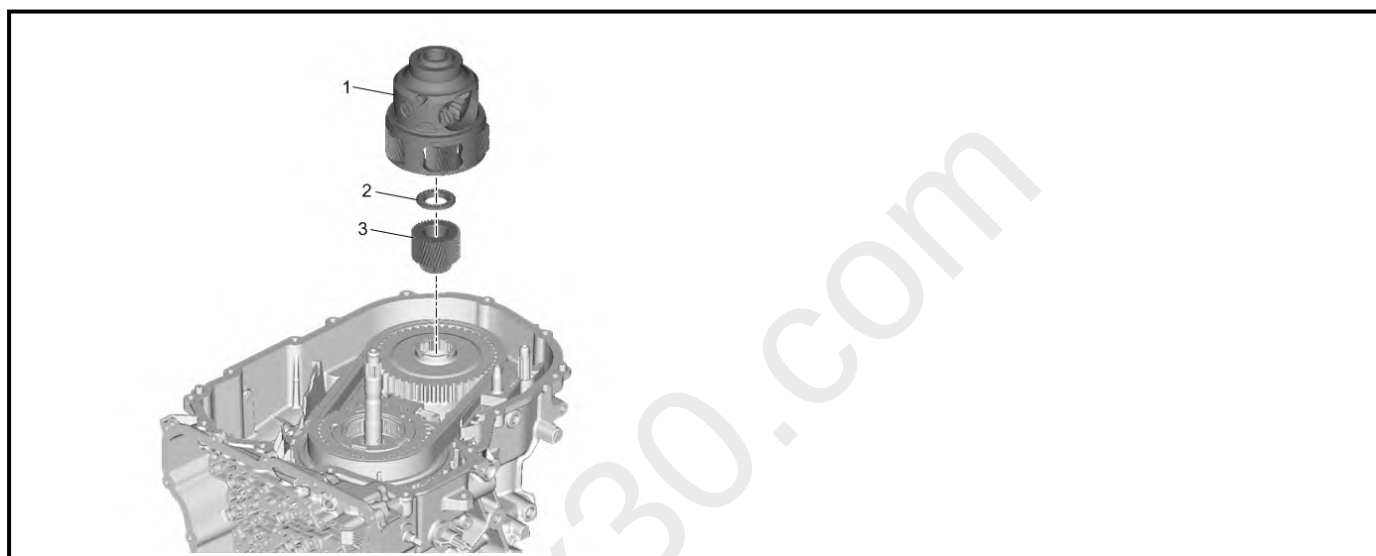


Fig. 2: Exploded View Of Torque Converter Housing With Fluid Pump Assembly Components
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
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Callout	Component Name
1	Torque Converter and Differential Housing Bolt [14x]
2	Torque Converter Housing
3	Torque Converter Housing Gasket NOTE: DISCARD the gasket.
4	Automatic Transmission Fluid Pump Seal NOTE: DISCARD the seal.
5	Front Differential Carrier Bearing

FRONT DIFFERENTIAL CARRIER REMOVAL



Callout	Component Name
1	Front Differential Carrier
2	Differential Carrier Sun Gear Thrust Bearing
3	Front Differential Carrier Sun Gear

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

Drive Sprocket, Driven Sprocket, and Drive Link Removal

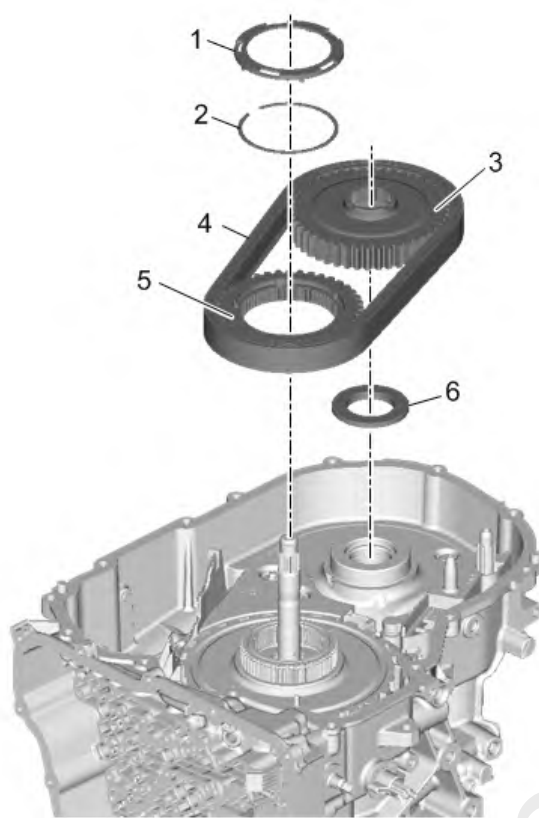


Fig. 3: Exploded View Of Drive Sprocket, Driven Sprocket And Drive Link Components
 Courtesy of GENERAL MOTORS COMPANY

Drive Sprocket, Driven Sprocket, and Drive Link Removal

Callout	Component Name
1	Drive Sprocket Thrust Washer
2	Drive Sprocket Retaining Ring
3	Driven Sprocket Procedure 1. The driven sprocket (3), drive sprocket (5), and drive link (4) must be removed at the same time. 2. The driven sprocket (3) ball bearing inner race has a slight interference fit with the case. Pull straight up to ease removal.
4	Drive Link
5	Drive Sprocket
6	Driven Sprocket Bearing NOTE: The driven sprocket (3) bearing may be stuck to the driven sprocket.

Park Gear and Output Carrier Hub Removal

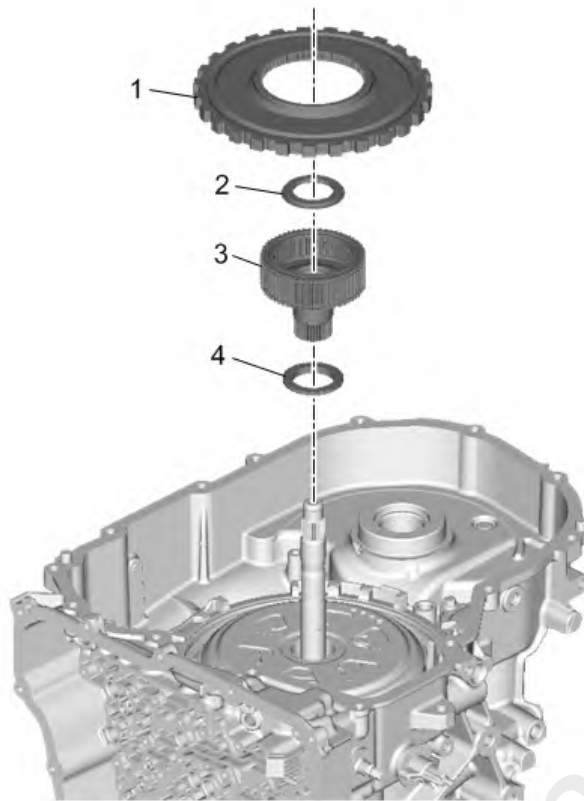


Fig. 4: Exploded View Of Park Gear And Output Carrier Hub Components
 Courtesy of GENERAL MOTORS COMPANY

Park Gear and Output Carrier Hub Removal

Callout	Component Name
1	Park Gear
2	Output Sun Gear Thrust Bearing
3	Output Carrier Transfer Drive Gear Hub
4	Output Sun Gear Thrust Bearing

Park Pawl and Front Differential Carrier Baffle Removal

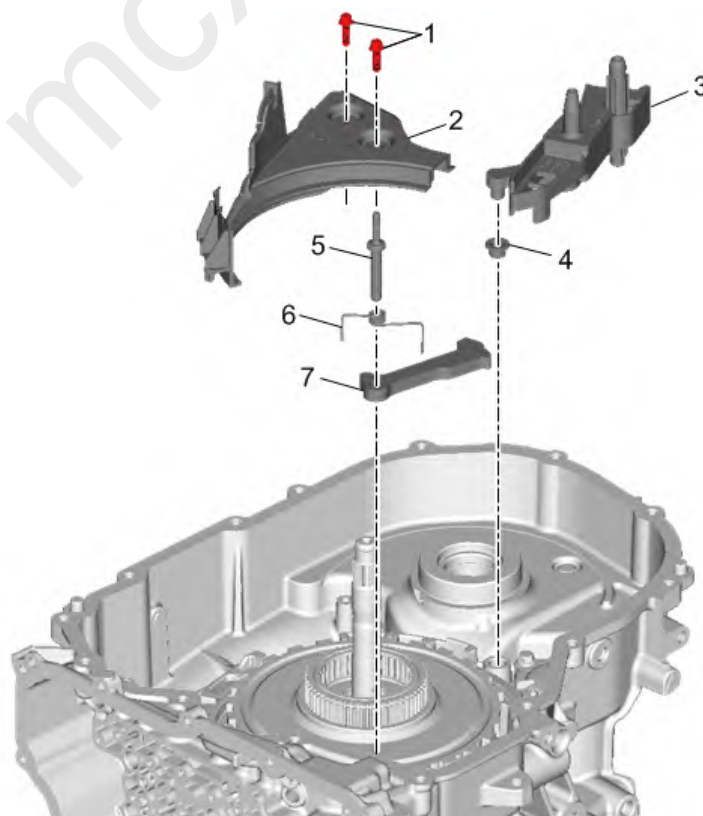


Fig. 5: Exploded View Of Park Pawl And Front Differential Carrier Baffle Components
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Differential Carrier Baffle Bolt [2x]
2	Front Differential Carrier Baffle
3	Drive Link Lubricant Scoop
4	Drive Link Lubricant Fluid Seal
5	Park Pawl Shaft
6	Park Pawl
7	Park Pawl Spring

Callout	Component Name

Callout	Component Name
1	1-2-3-4-5-6 Clutch Piston Housing Return 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. Procedure Remove one end of the retainer using DT-28585 snap ring remover or equivalent and work the retainer out of the case groove. Special Tools DT-28585 Snap Ring Remover or equivalent Equivalent regional tools: Special Tools
2	Output Sun Gear
3	1-Reverse and 1-2-3-4-5-6 Clutch Piston Housing NOTE: The 1 - Reverse Clutch Retaining Ring should not be removed from bottom. There are no serviceable parts.

2 - 9 and 4 Clutch Piston Housing and 2 - 9 Clutch Plates Removal

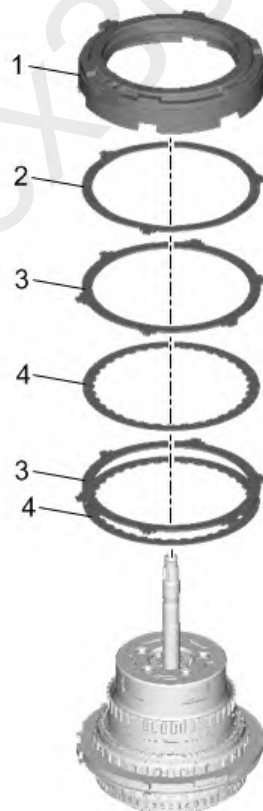


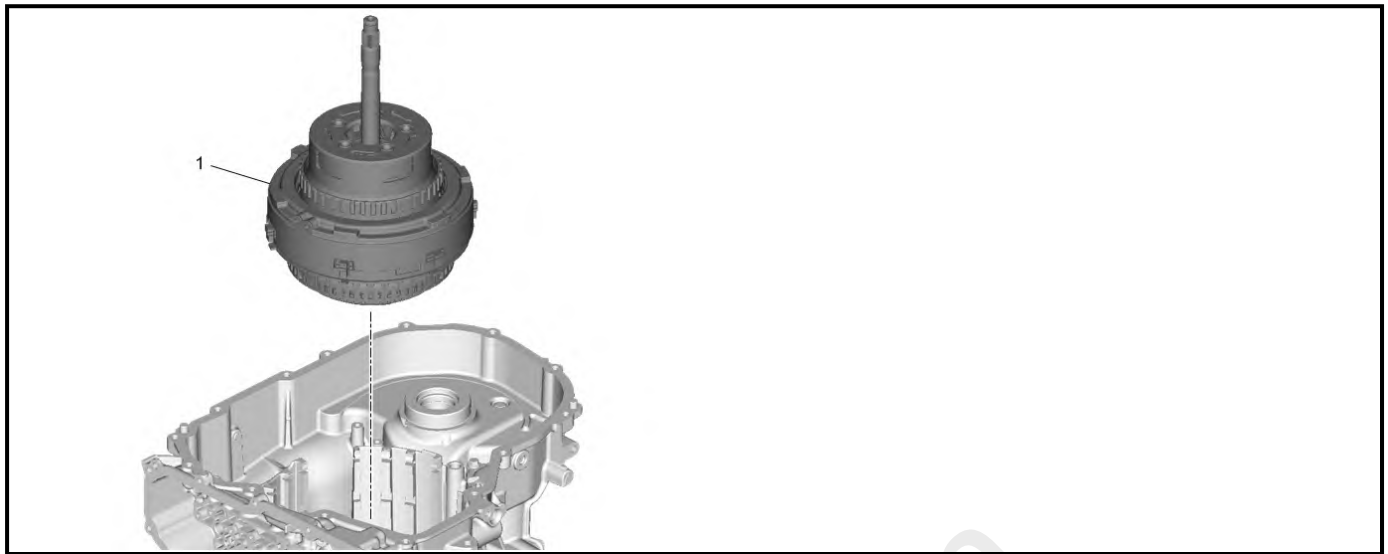
Fig. 7: Exploded View Of 2 - 9 And 4 Clutch Piston Housing And 2-9 Clutch Plates
Courtesy of GENERAL MOTORS COMPANY

2 - 9 and 4 Clutch Piston Housing and 2 - 9 Clutch Plates Removal

Callout	Component Name
1	2-9 and 4 Clutch Piston Housing

Callout	Component Name
2	2-9 Clutch Plate - Wave
3	2-9 Clutch Plate [2x]
4	2-9 Clutch Plate - Friction [2x]

5-7-Reverse and 6-7-8-9 Clutch Housing Removal



5-7-Reverse and 6-7-8-9 Clutch Housing Removal

Callout	Component Name
1	5-7-Reverse and 6-7-8-9 Clutch Housing

3-8 CLUTCH PLATE REMOVAL

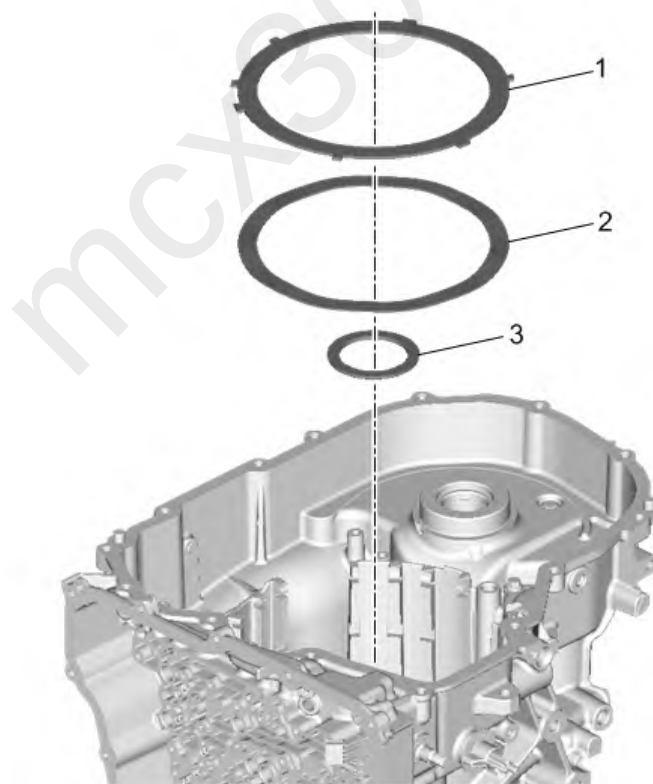


Fig. 8: Exploded View Of 3-8 Clutch Plate Components

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	3-8 Clutch Plate
2	3-8 Clutch Plate - Wave
3	6-7-8-9 and 5-7-Reverse Clutch Housing Thrust Bearing

3-8 CLUTCH PISTON REMOVAL

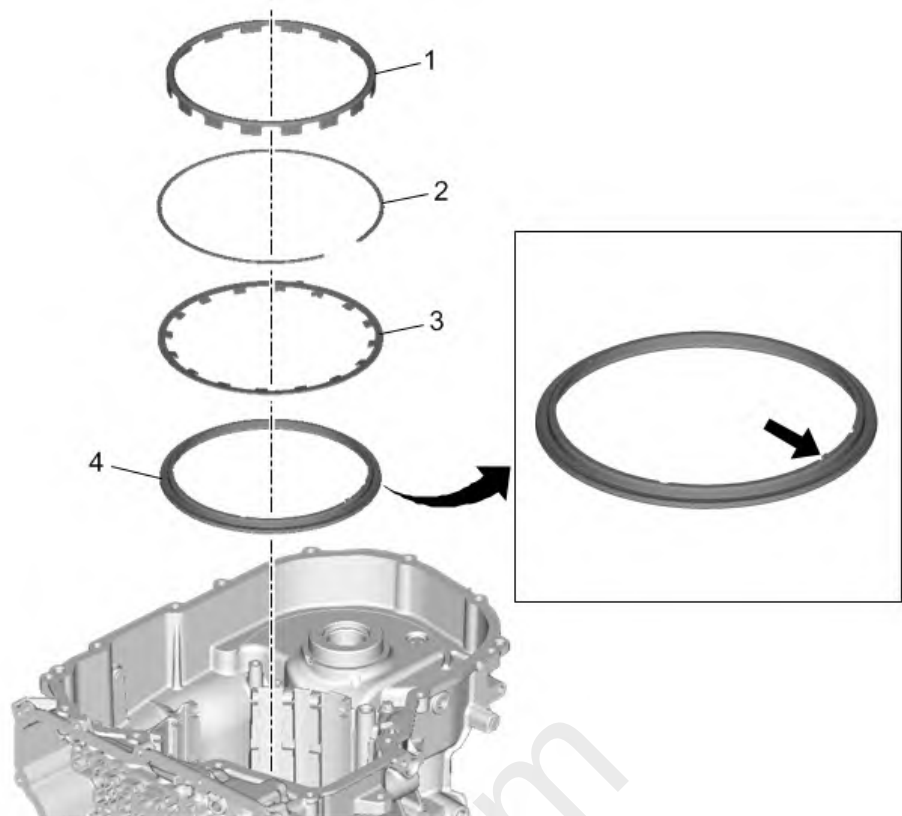


Fig. 9: Exploded View Of 3-8 Clutch Piston Components

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	3-8 Clutch Apply Ring
2	3-8 Clutch Spring Retaining Ring
3	3-8 Clutch Spring
4	3-8 Clutch Piston
	NOTE: Use thin tip screwdriver at the tab of the piston to remove.

TRANSMISSION FLUID FILTER ASSEMBLY REMOVAL

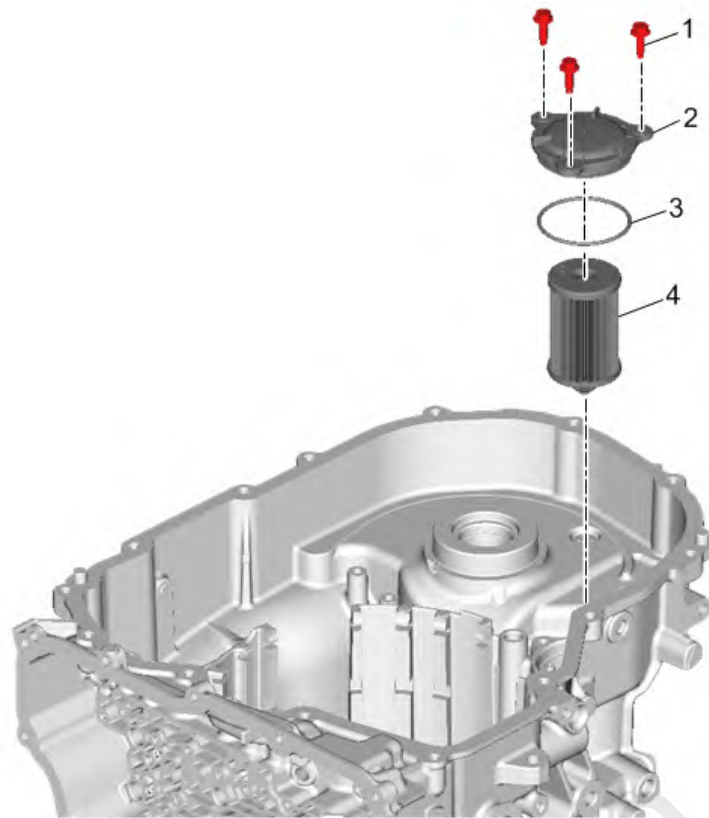
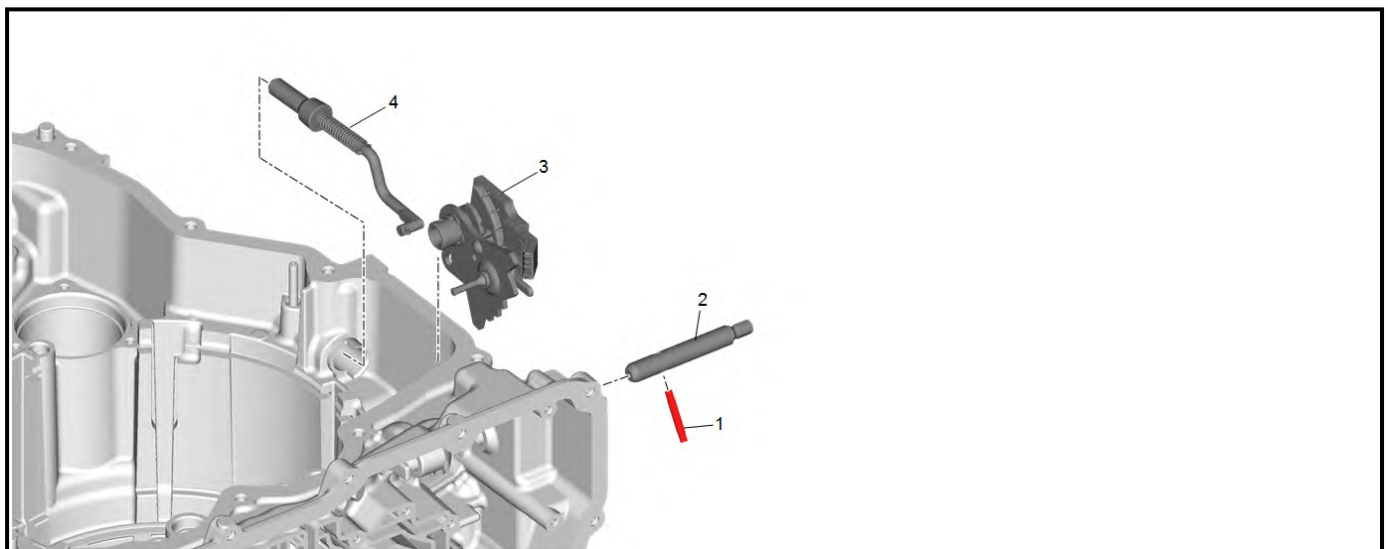


Fig. 10: Exploded View Of Transmission Fluid Filter Assembly Components
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Automatic Transmission Fluid Filter Cover Bolt
2	Automatic Transmission Fluid Filter Cover
3	Automatic Transmission Fluid Filter Seal NOTE: Remove and DISCARD the seal.
4	Automatic Transmission Fluid Filter NOTE: Remove and DISCARD the filter.

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

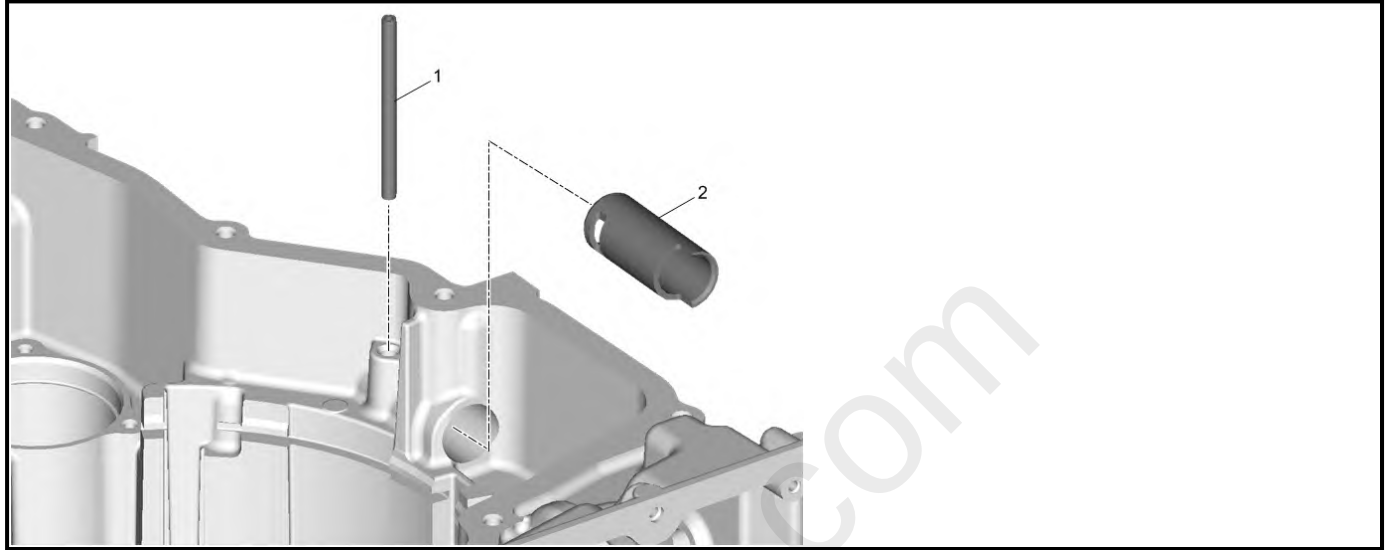
Manual Shaft Detent (w/Shift Position Switch) Lever Assembly Removal



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

Callout	Component Name
1	Manual Shaft Detent Lever Hub Pin NOTE: Use a punch from the top to remove the pin (1) and discard.
2	Manual Shaft
3	Manual Shaft Detent Lever Assembly
4	Park Pawl Actuator

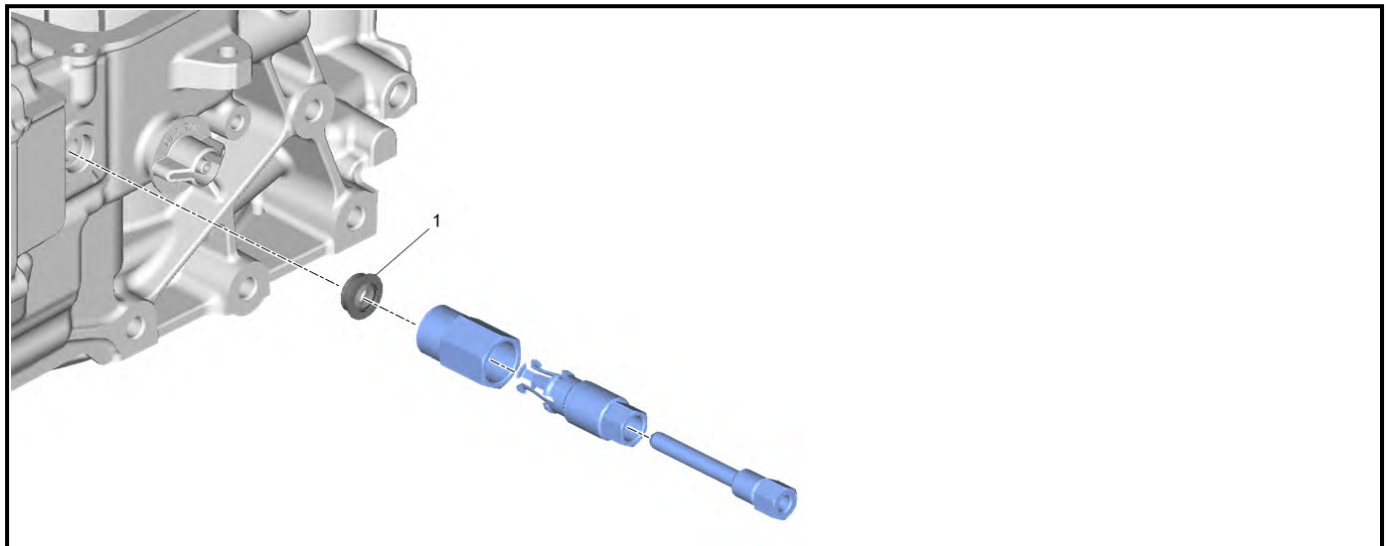
Park Pawl Actuator Guide Removal



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

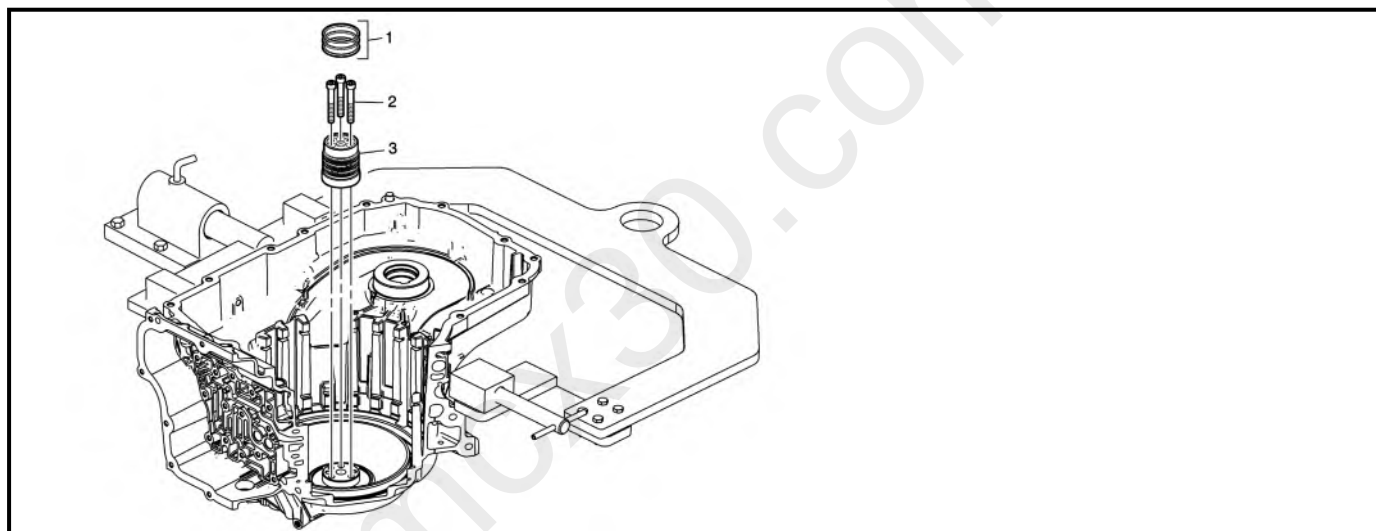
MANUAL SHIFT SHAFT SEAL REMOVAL



Callout	Component Name

Callout	Component Name
1	Manual Shift Shaft Seal CAUTION: Do not damage the case bore during removal of the manual shift shaft seal. CAUTION: Refer to Seal Reuse Caution . NOTE: • Use the DT-45201 seal remover to remove the seal to prevent damage to the case surface. • Remove and DISCARD the seal. Special Tools DT-45201 Seal Remover Equivalent regional tools: Special Tools .

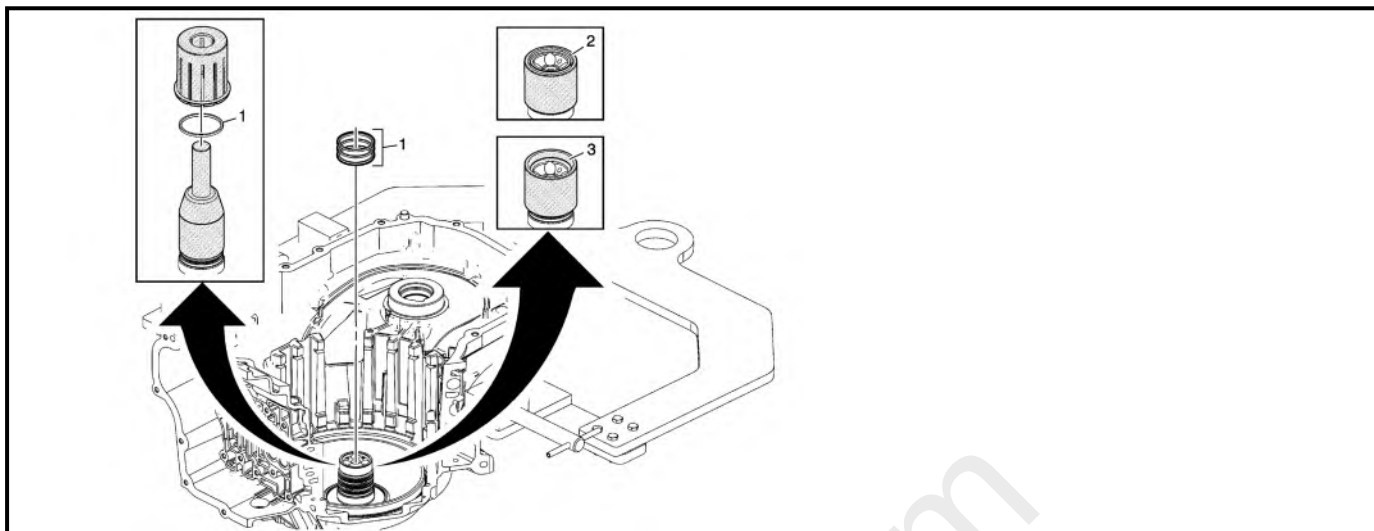
INPUT SHAFT SUPPORT OVERHAUL



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 Overhaul.
2	Input Shaft Support Bolts M6 x 50 (Qty: 3) CAUTION: Refer to Fastener Caution . Tighten 12 N.m (106 lb in)

Callout	Component Name
3	Input Shaft Support NOTE: Inspect the support for wear, damage or porosity.

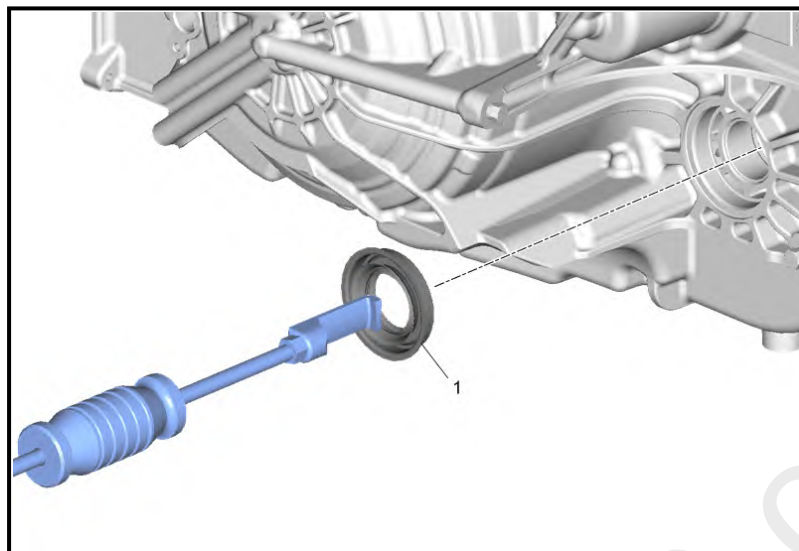
3-5-REVERSE AND 4-5-6 CLUTCH FLUID SEAL RING OVERHAUL



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

Callout	Component Name
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 REMOVAL - CASE SIDE

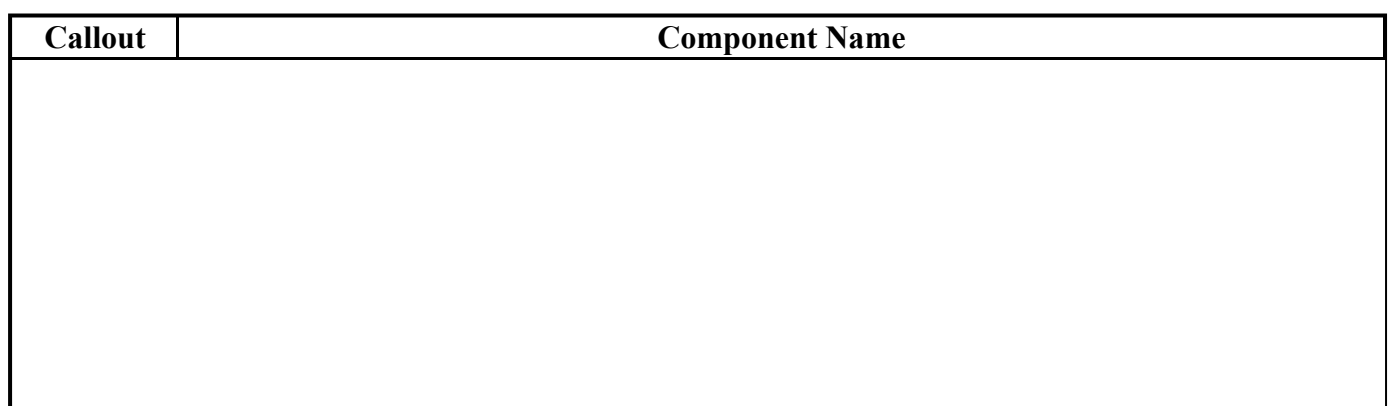


Callout	Component Name
1	Front Wheel Drive Shaft Oil Seal NOTE: Remove and DISCARD the seal. Special Tools • DT-23129 Universal Seal Remover • GE-6125-1B Slide Hammer Equivalent regional tools: <u>Special Tools</u>

4TH CLUTCH ACCUMULATOR PISTON REMOVAL



TRANSMISSION CASE CLEANING AND INSPECTION



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).
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 Fastener Caution . 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).

4TH CLUTCH ACCUMULATOR PISTON INSTALLATION

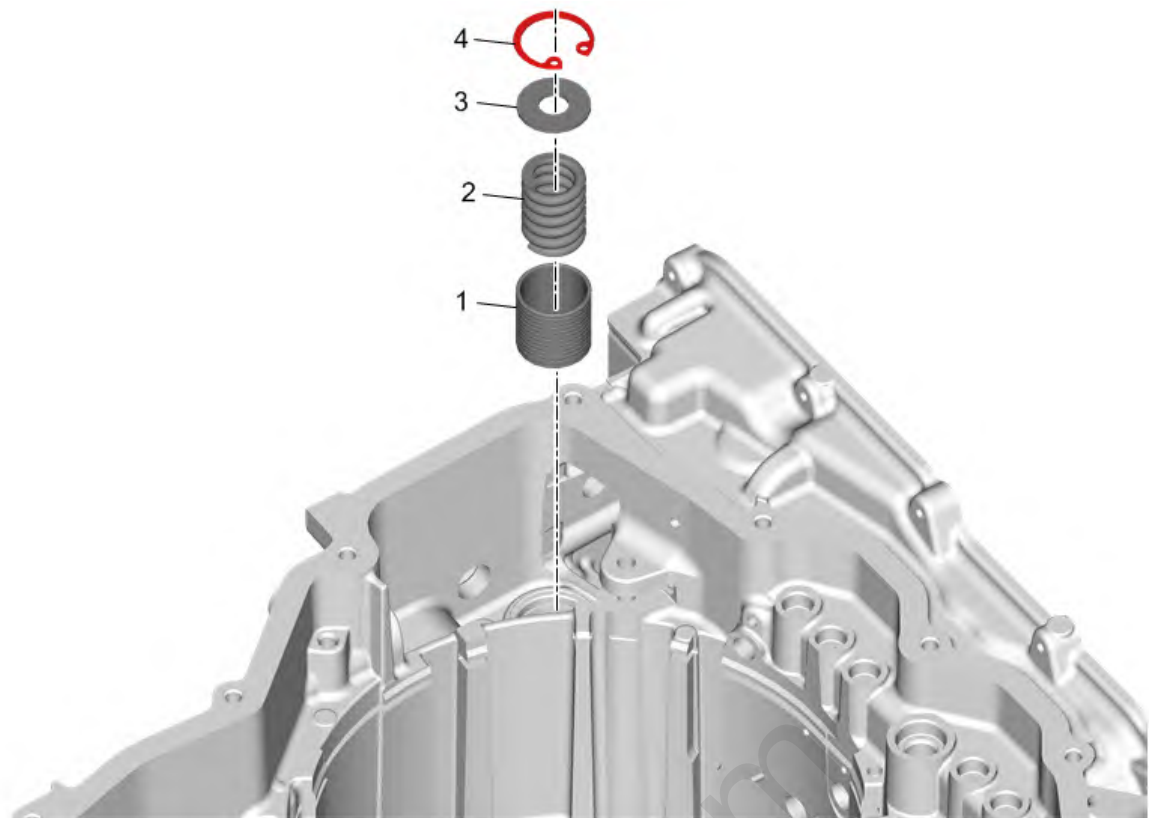
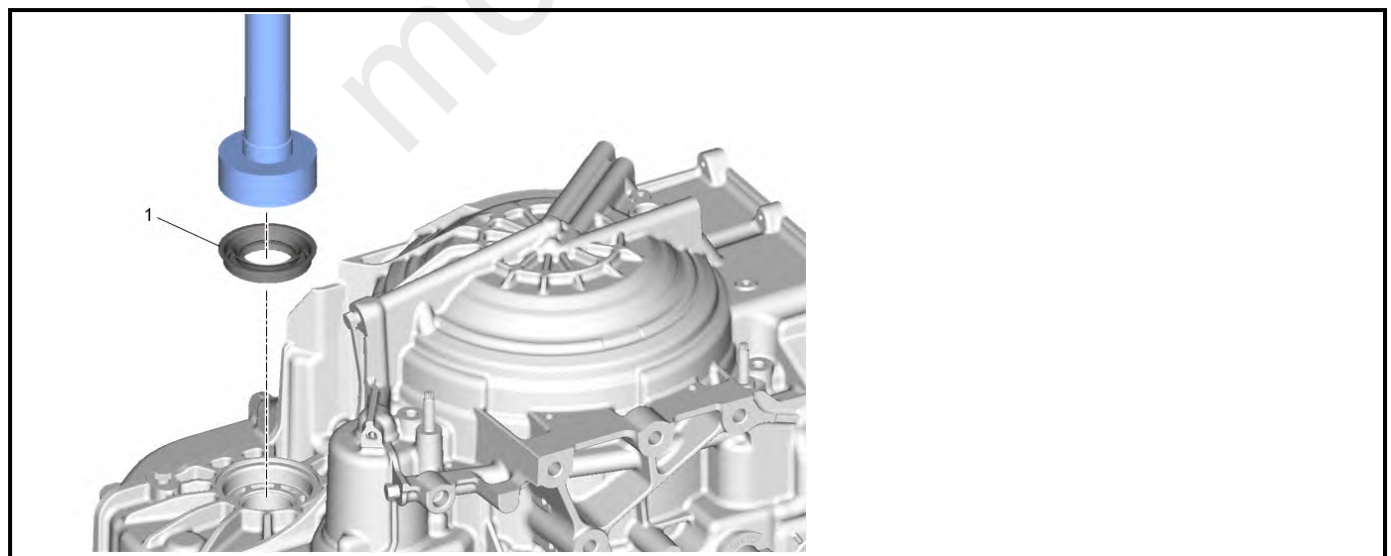


Fig. 12: Exploded View Of 4th Clutch Accumulator Piston Components

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	4th Clutch Accumulator Piston
2	4th Clutch Accumulator Piston Spring
3	4th Clutch Accumulator Piston Spring Washer
4	4th Clutch Accumulator Piston Retaining Ring

FRONT WHEEL DRIVE SHAFT SEAL INSTALLATION - CASE SIDE

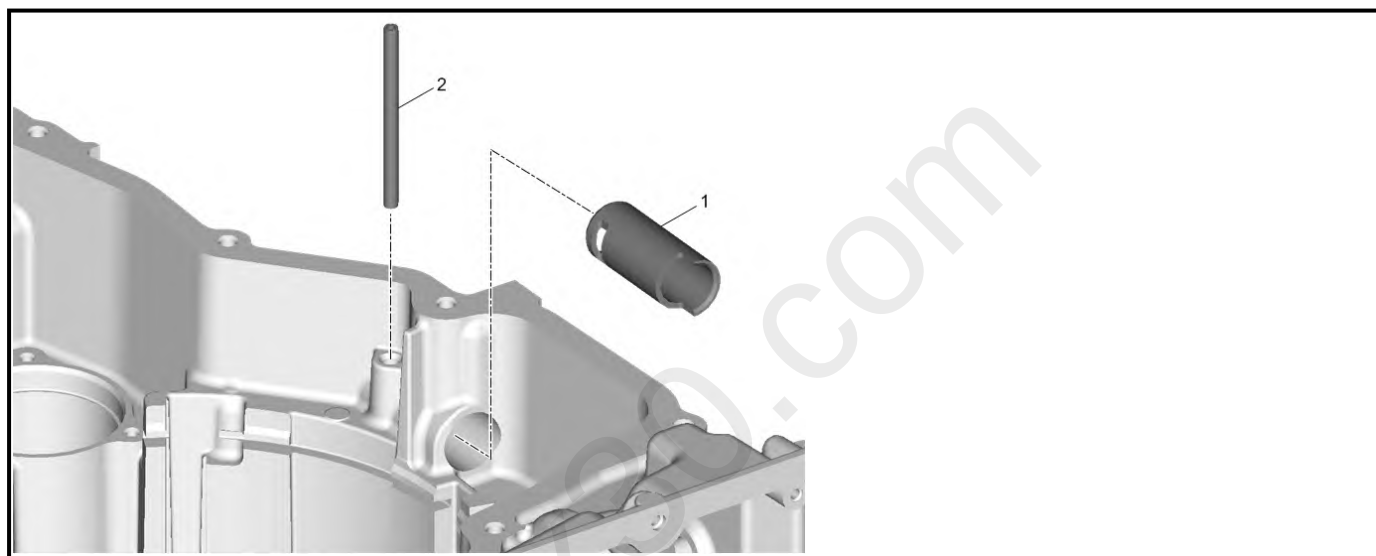


Callout	Component Name

Callout	Component Name
1	Front Wheel Drive Shaft Oil Seal NOTE: Install a NEW seal. Do NOT reuse the old seal. Special Tools • DT-47790 Seal Installer • GE-8092 Driver Handle Equivalent regional tools: Special Tools

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

Park Pawl Actuator Guide Installation

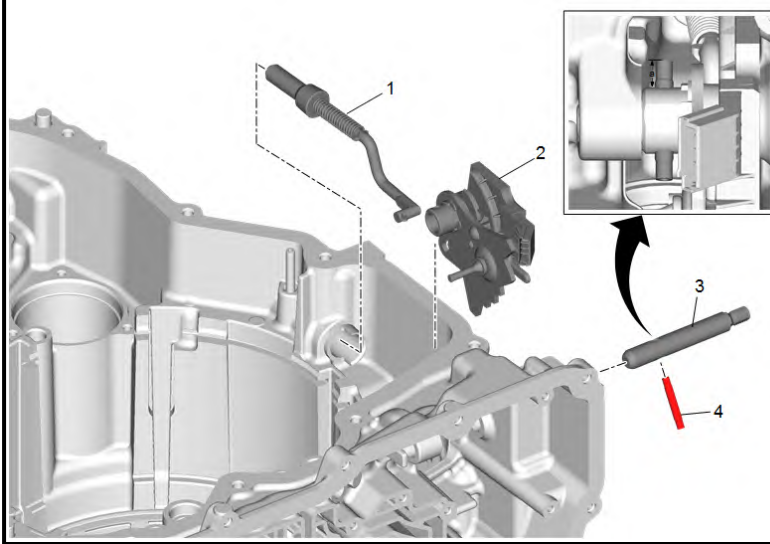


Park Pawl Actuator Guide Installation

Callout	Component Name
1	Park Pawl Actuator Guide NOTE: Install park pawl actuator guide in proper orientation to allow pin to be fully installed. Failure to install properly can cause damage to guide or allow vehicle to not fully engage in park.
2	Park Pawl Actuator Guide Pin Procedure 1. Install a NEW park pawl actuator guide pin. 2. Install the park pawl actuator guide pin till bottoms out.

Park Pawl Actuator Installation

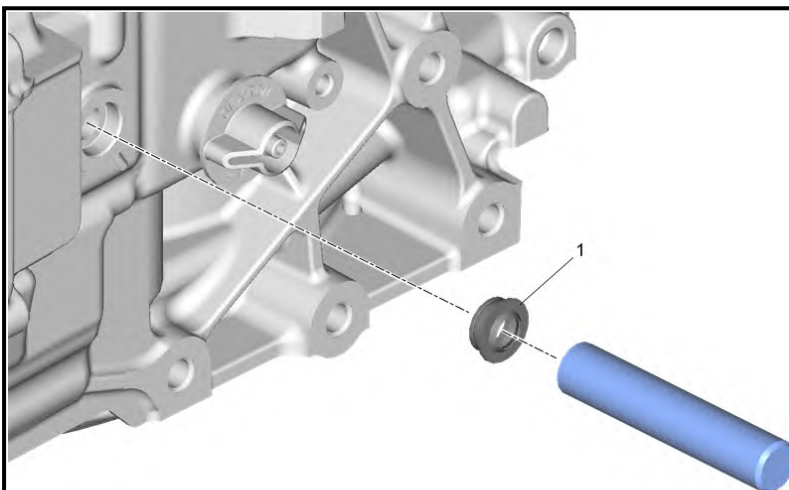




Park Pawl Actuator Installation

Callout	Component Name
1	Park Pawl Actuator
2	Manual Shaft Detent 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 1. Install a NEW manual shaft detent lever hub pin. 2. Install the manual shaft detent lever hub pin to correct height. Specification 7.9 mm (0.38 in) (a)

MANUAL SHIFT SHAFT SEAL INSTALLATION



Callout	Component Name

Callout	Component Name
1	Manual Shift Shaft Seal CAUTION: When installing the seal, ensure the seal lip is firmly seated against the case bore surface. Do not allow the seal lip to be crushed, or a leak may result. NOTE: Install a NEW seal. Do NOT reuse the old seal. Special Tool DT-49101 Seal Installer Equivalent regional tools: Special Tools .

TRANSMISSION FLUID FILTER ASSEMBLY INSTALLATION

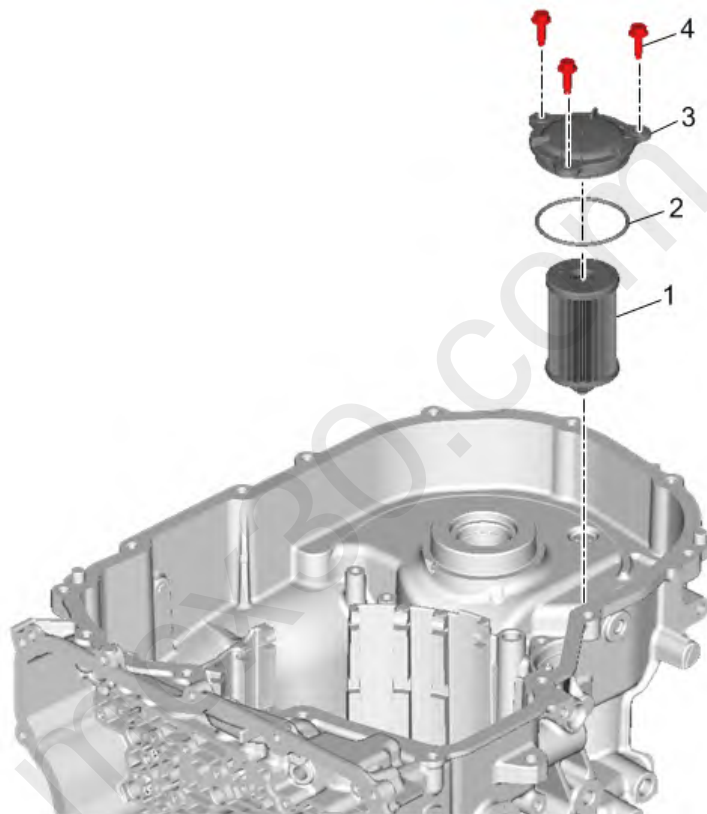


Fig. 13: Exploded View Of Transmission Fluid Filter Assembly Components
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Automatic Transmission Fluid Filter NOTE: Install a NEW filter. DO NOT reuse old filter.
2	Automatic Transmission Fluid Filter Seal NOTE: Install a NEW seal. Do NOT reuse the old seal.
3	Automatic Transmission Fluid Filter Cover

Callout	Component Name
4	Automatic Transmission Fluid Filter Cover Bolt CAUTION: Refer to Fastener Caution . Tighten 10 N.m (89 lb in)

3-8 CLUTCH PISTON INSTALLATION

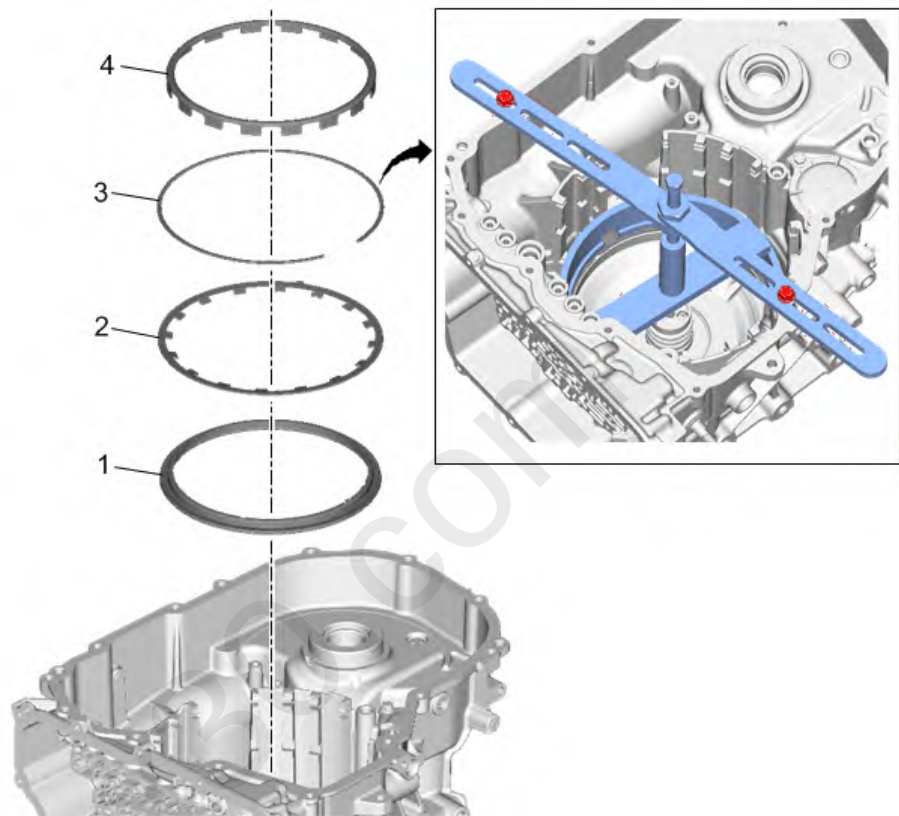


Fig. 14: Exploded View Of 3-8 Clutch Piston Components
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	3-8 Clutch Piston
2	3-8 Clutch Spring NOTE: Ensure spring is centered in housing.
3	3-8 Clutch Spring Retaining Ring NOTE: Ensure the retaining ring is engaged fully. Special Tools • DT-47797 Spring Installer • DT-48056 Spring Compressor Bridge Equivalent regional tools: Special Tools
4	3-8 Clutch Apply Ring

3-8 CLUTCH PLATE INSTALLATION

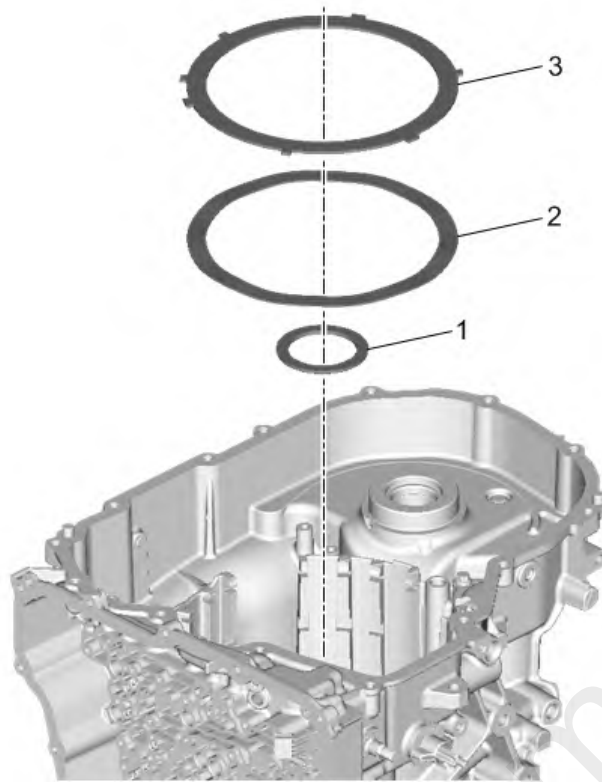


Fig. 15: Exploded View Of 3-8 Clutch Plate Components
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	6-7-8-9 and 5-7-Reverse Clutch Housing Thrust Bearing
2	3-8 Clutch Plate - Wave
3	3-8 Clutch Plate

INPUT, REACTION, AND OUTPUT CARRIER DISASSEMBLE

Input, Reaction, and Output Carrier Disassemble



Fig. 16: Exploded View Of Input, Reaction And Output Carrier Components
 Courtesy of GENERAL MOTORS COMPANY

Input, Reaction, and Output Carrier Disassemble

Callout	Component Name
1	Output Carrier
2	Output Carrier Thrust Bearing
3	Input Sun Gear Thrust Bearing
4	Input Carrier

O/D and Reaction Carrier Disassemble



Fig. 17: Exploded View Of O/D And Reaction Carrier Components
 Courtesy of GENERAL MOTORS COMPANY

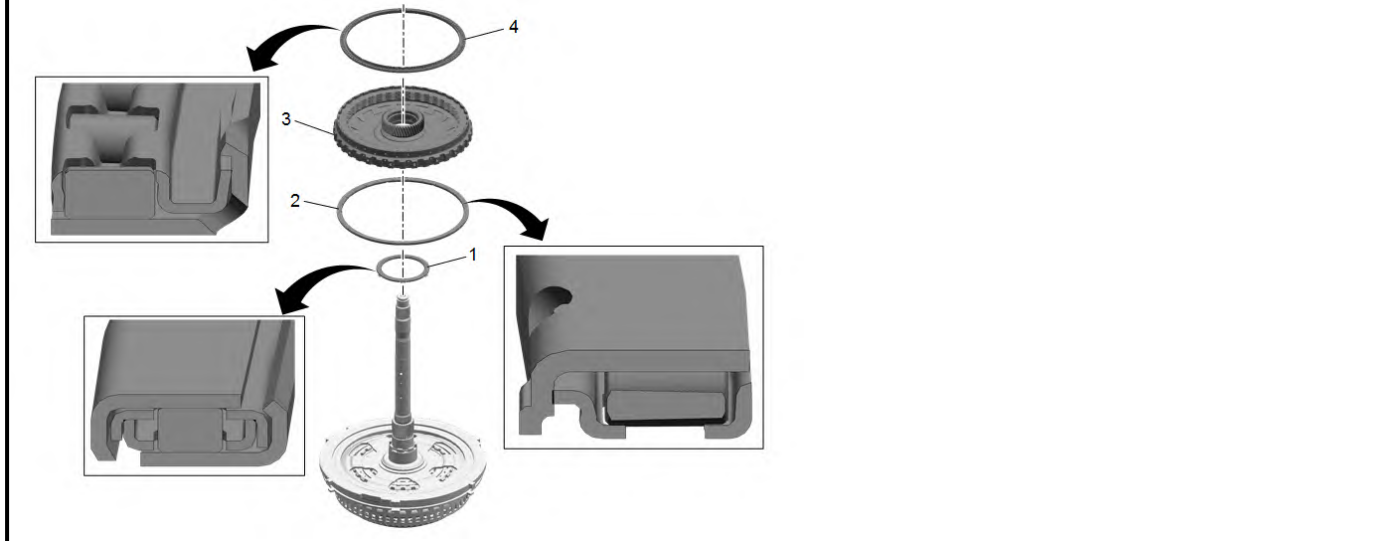
O/D and Reaction Carrier Disassemble

Callout	Component Name
1	Input Sun Gear
2	Input Sun Gear Thrust Bearing
3	Input Carrier Thrust Bearing
4	Overdrive Carrier
5	Reaction Sun Gear
6	Overdrive Sun Gear Thrust Bearing

2-9 AND 4 CLUTCH HUB DISASSEMBLE

2-9 and 4 Clutch Hub Removal





2-9 and 4 Clutch Hub Removal

Callout	Component Name
1	2-9 and 4 Clutch Hub Assembly

2-9 and 4 Clutch Hub Disassemble

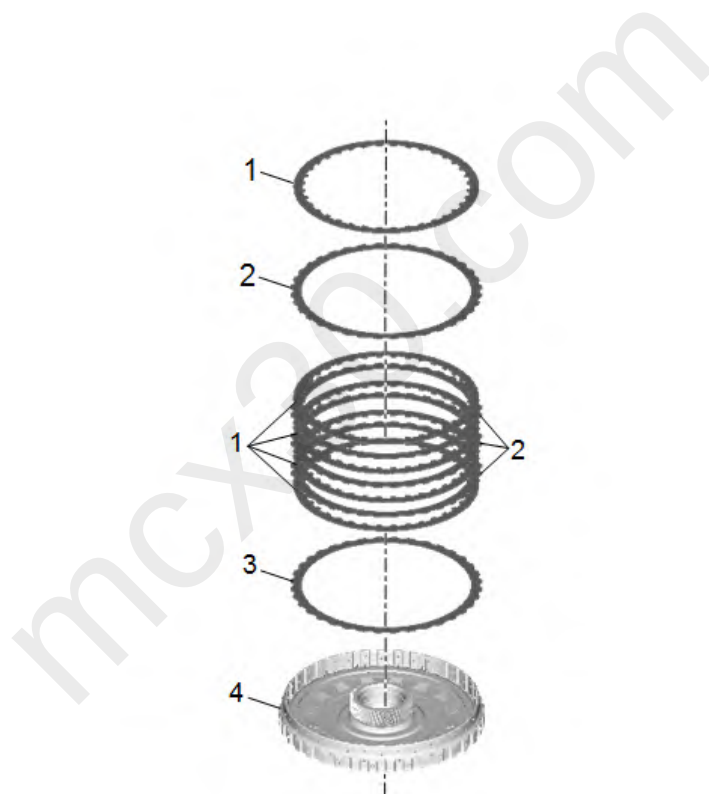


Fig. 18: Exploded View Of 2-9 And 4 Clutch Hub Components

Courtesy of GENERAL MOTORS COMPANY

2-9 and 4 Clutch Hub Disassemble

Callout	Component Name
1	4th Clutch Thrust Bearing
2	4th Clutch Plate - Friction [4x] (Internal Spline)
3	4th Clutch Plate - Friction [5x] (External Spline)
4	4th Clutch Plate
5	2-9 and 4 Clutch Hub
6	Reaction Sun Gear Thrust Bearing

5-7-REVERSE AND 6-7-8-9 CLUTCH HOUSING DISASSEMBLE

Turbine Shaft, 3-8 and 5-7 Reverse Clutch Hub, Reaction Carrier Hub and Plates Disassemble

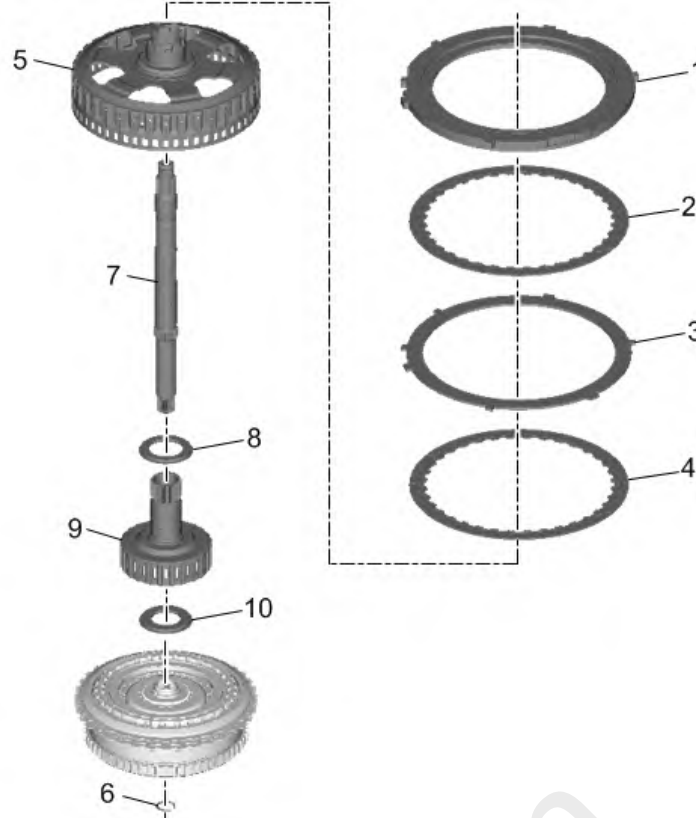


Fig. 19: Exploded View Of Turbine Shaft, 3-8 And 5-7 Reverse Clutch Hub, Reaction Carrier Hub And Plates Components

Courtesy of GENERAL MOTORS COMPANY

Turbine Shaft, 3-8 and 5-7 Reverse Clutch Hub, Relation Carrier Hub and Plates Disassemble

Callout	Component Name
1	2-9 Clutch Backing Plate
2	3-8 Clutch Plate - Friction
3	3-8 Clutch Plate
4	3-8 Clutch Plate - Friction
5	3-8 and 5-7-Reverse Clutch Hub
6	Turbine Shaft Retainer Ring NOTE: Remove and DISCARD the retainer.
7	Turbine Shaft
8	Reaction Carrier Sun Gear Thrust Bearing
9	Reaction Carrier Hub
10	Reaction Carrier Hub Bearing

Automatic Transmission Input Shaft Speed Sensor Reluctor Wheel, 3-5-Reverse Clutch Piston and Spring, and Seals Disassemble

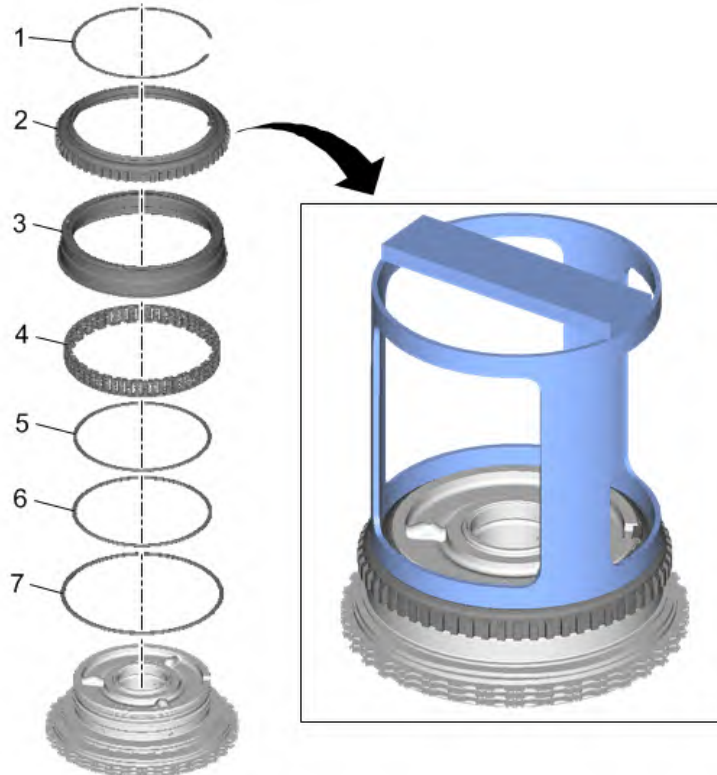


Fig. 20: Exploded View Of Automatic Transmission Input Shaft Speed Sensor Reluctor Wheel, 3-5-Reverse Clutch Piston And Spring And Seals Components
Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Input Shaft Speed Sensor Reluctor Wheel, 3-5-Reverse Clutch Piston and Spring, and Seals Disassemble

Callout	Component Name
1	Automatic Transmission Input Shaft Speed Sensor Reluctor Ring Retaining Ring
2	Automatic Transmission Input Shaft Speed Sensor Reluctor Wheel Special Tools DT-47694 Piston Spring Compressor Equivalent regional tools: Special Tools
3	3-5-Reverse Clutch Piston
4	5-7-Reverse Piston Retainer Spring
5	3-5-Reverse Clutch Piston Dam Seal NOTE: Remove and DISCARD the seal.
6	3-5-Reverse Clutch Piston Inner Seal NOTE: Remove and DISCARD the seal.
7	3-5-Reverse Clutch Piston Inner Seal NOTE: Remove and DISCARD the seal.

6 - 7 - 8 - 9 Plate Assembly Disassemble

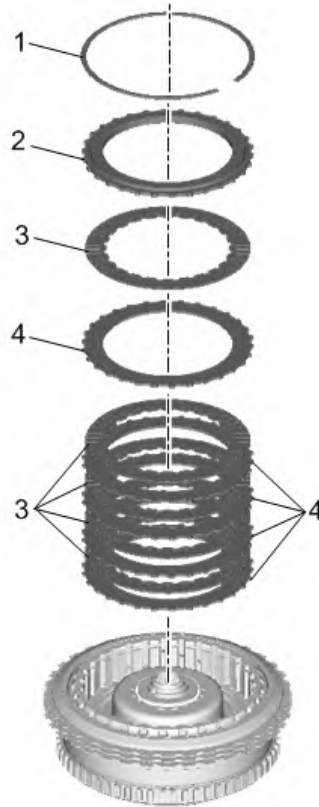


Fig. 21: Exploded View Of 6-7-8-9 Plate Assembly Components

Courtesy of GENERAL MOTORS COMPANY

6 - 7 - 8 - 9 Plate Assembly Disassemble

Callout	Component Name
1	6-7-8-9 Clutch Backing Plate Retaining Ring
2	6-7-8-9 Clutch Backing Plate
3	6-7-8-9 Clutch Plate - Friction
4	6-7-8-9 Clutch Plate

6-7-8-9 Clutch Plates, Dam, and Piston Disassemble

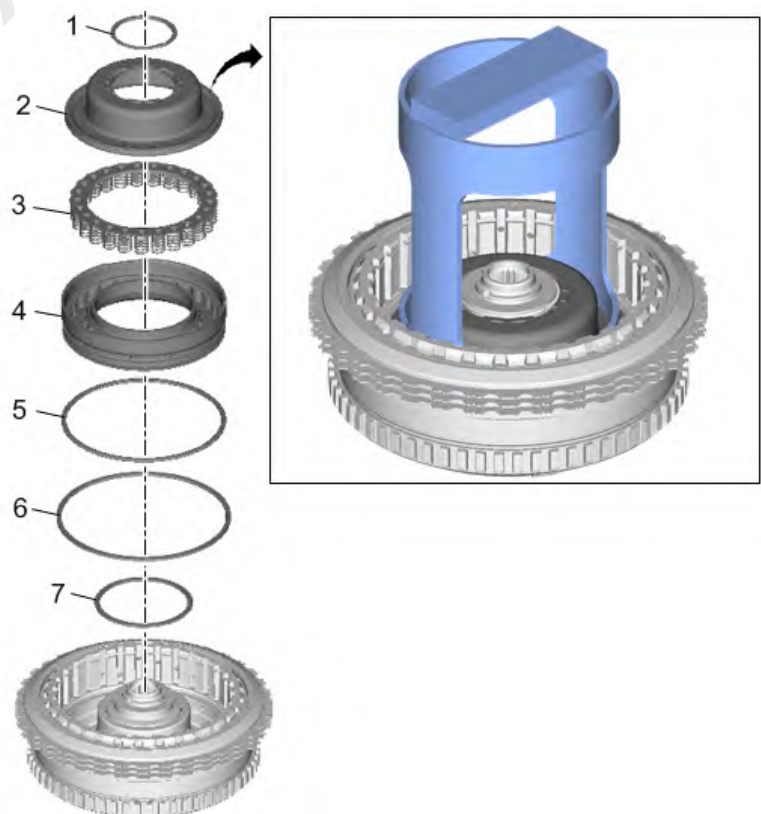


Fig. 22: Exploded View Of 6-7-8-9 Clutch Plates, Dam And Piston Components

Courtesy of GENERAL MOTORS COMPANY

6-7-8-9 Clutch Plates, Dam, and Piston Disassemble

Callout	Component Name
1	4-5-6 Clutch Dam Retaining Ring NOTE: Remove and DISCARD the retainer.
2	6-7-8-9 Clutch Piston Dam Special Tools DT-47951 - 2 Spring Compressor Equivalent regional tools: Special Tools
3	6-7-8-9 Clutch Piston Retainer Spring
4	6-7-8-9 Clutch Piston
5	4-5-6 Clutch Piston Outer Seal NOTE: Remove and DISCARD the seal.
6	4-5-6 Clutch Piston Dam Seal NOTE: Remove and DISCARD the seal.
7	4-5-6 Clutch Piston Inner Seal NOTE: Remove and DISCARD the seal.

5-7-Reverse Clutch Plates Disassemble

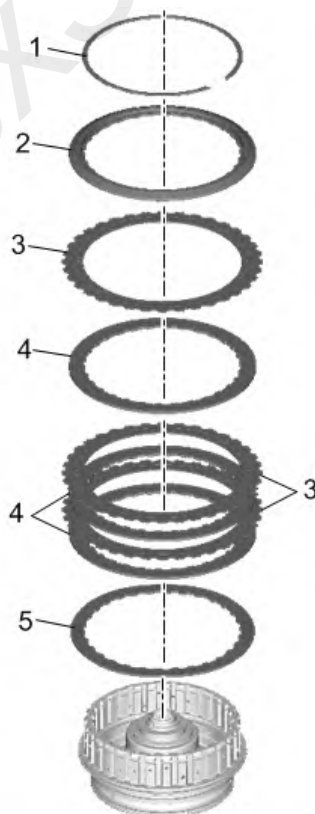


Fig. 23: Exploded View Of 5-7-Reverse Clutch Plates Components
Courtesy of GENERAL MOTORS COMPANY

5-7-Reverse Clutch Plates Disassemble

Callout	Component Name
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Callout	Component Name
1	5-7-Reverse Clutch Backing Plate Retaining Ring
2	5-7-Reverse Clutch Backing Plate
3	5-7-Reverse Clutch Plate - Friction
4	5-7-Reverse Clutch Plate
5	5-7-Reverse Clutch Apply Plate

5-7-REVERSE AND 6-7-8-9 CLUTCH HOUSING ASSEMBLE

5-7-Reverse Clutch Plates Assemble

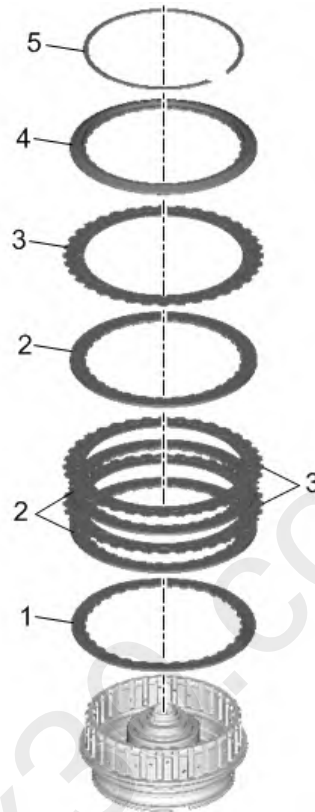


Fig. 24: Exploded View Of 5-7-Reverse Clutch Plates Components
Courtesy of GENERAL MOTORS COMPANY

5-7-Reverse Clutch Plates Assemble

Callout	Component Name
1	5-7-Reverse Clutch Apply Plate
2	5-7-Reverse Clutch Plate
3	5-7-Reverse Clutch Plate - Friction
4	5-7-Reverse Clutch Backing Plate
5	5-7-Reverse Clutch Backing Plate Retaining Ring

6-7-8-9 Clutch Plates, Dam, and Piston Assemble

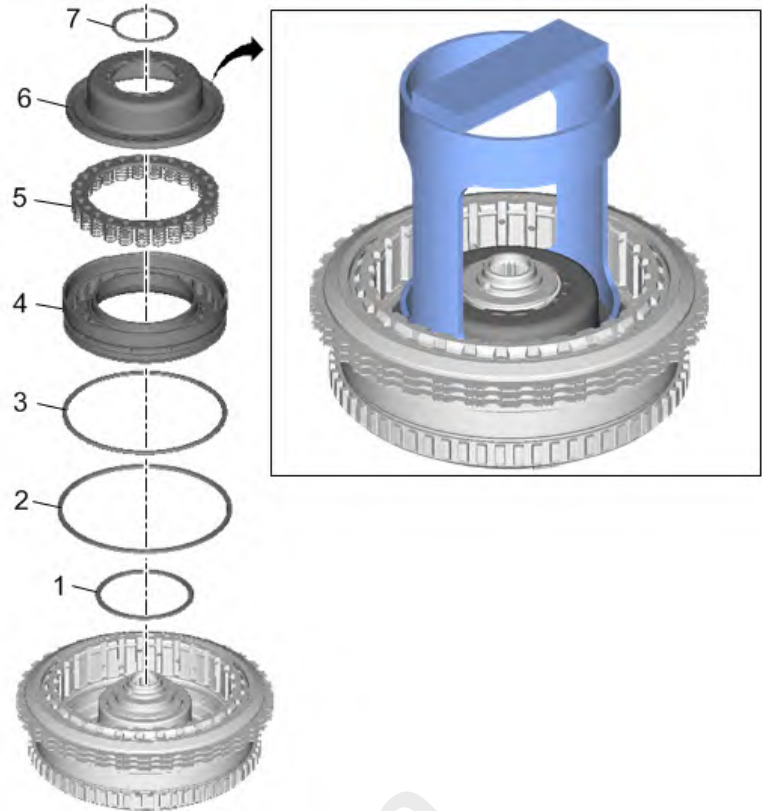


Fig. 25: Exploded View Of 6-7-8-9 Clutch Plates, Dam And Piston Components
 Courtesy of GENERAL MOTORS COMPANY

6-7-8-9 Clutch Plates, Dam, and Piston Assemble

Callout	Component Name
1	4-5-6 Clutch Piston Inner Seal NOTE: Install a NEW seal. Do NOT reuse the old seal.
2	4-5-6 Clutch Piston Dam Seal NOTE: Install a NEW seal. Do NOT reuse the old seal.
3	4-5-6 Clutch Piston Outer Seal NOTE: Install a NEW seal. Do NOT reuse the old seal.
4	6-7-8-9 Clutch Piston
5	6-7-8-9 Clutch Piston Retainer Spring
6	6-7-8-9 Clutch Piston Dam Special Tools DT-47951 - 2 Spring Compressor Equivalent regional tools: Special Tools
7	4-5-6 Clutch Dam Retaining Ring NOTE: Install a NEW retainer. Do NOT reuse the old retainer.

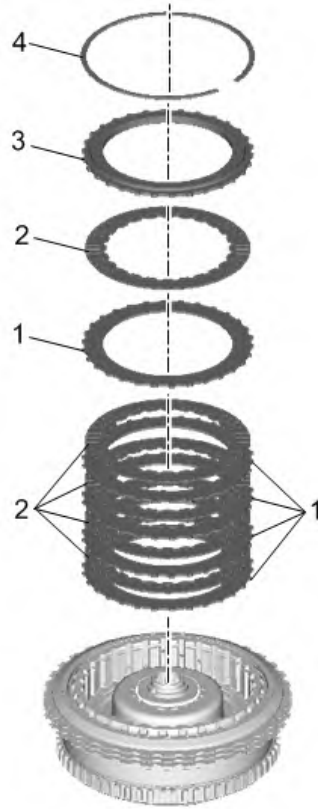


Fig. 26: Identifying 6-7-8-9 Plate Assembly Components
 Courtesy of GENERAL MOTORS COMPANY

6 - 7 - 8 - 9 Plate Assembly Assemble

Callout	Component Name
1	6-7-8-9 Clutch Plate
2	6-7-8-9 Clutch Plate - Friction
3	6-7-8-9 Clutch Backing Plate
4	6-7-8-9 Clutch Backing Plate Retaining Ring

Automatic Transmission Input Shaft Speed Sensor Reluctor Wheel, 3-5-Reverse Clutch Piston and Spring, and Seals Assemble

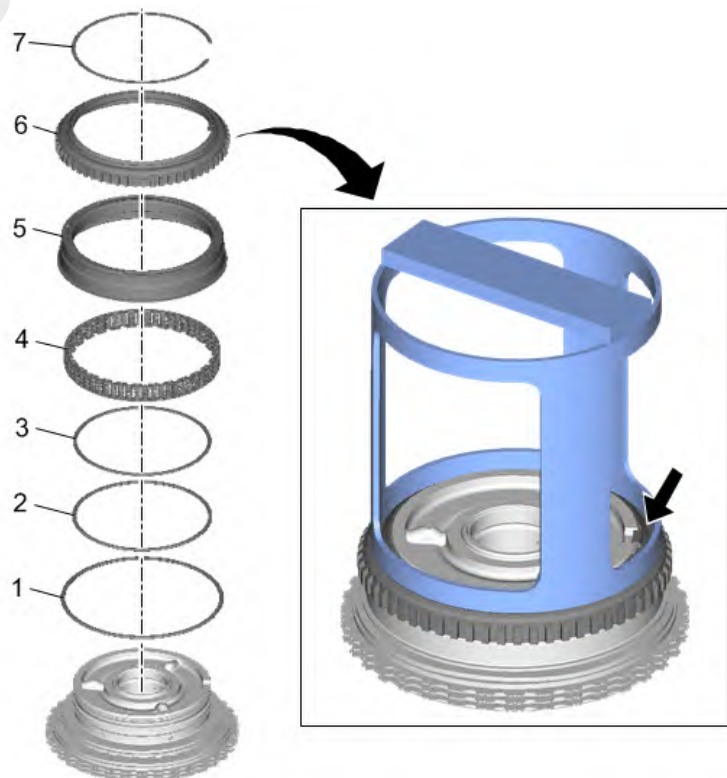


Fig. 27: Exploded View Of Automatic Transmission Input Shaft Speed Sensor Reluctor Wheel, 3-5-Reverse Clutch Piston And Spring And Seals Components

Automatic Transmission Input Shaft Speed Sensor Reluctor Wheel, 3-5-Reverse Clutch Piston and Spring, and Seals Assemble

Callout	Component Name
1	3-5-Reverse Clutch Piston Inner Seal NOTE: Install a NEW seal. Do NOT reuse the old seal.
2	3-5-Reverse Clutch Piston Inner Seal NOTE: Install a NEW seal. Do NOT reuse the old seal.
3	3-5-Reverse Clutch Piston Dam Seal NOTE: Install a NEW seal. Do NOT reuse the old seal.
4	5-7-Reverse Piston Retainer Spring
5	3-5-Reverse Clutch Piston
6	Automatic Transmission Input Shaft Speed Sensor Reluctor Wheel
7	Automatic Transmission Input Shaft Speed Sensor Reluctor Ring Retaining Ring Special Tools DT-47694 Piston Spring Compressor Equivalent regional tools: Special Tools

Turbine Shaft, 3-8 and 5-7 Reverse Clutch Hub, Reaction Carrier Hub and Plates Assemble

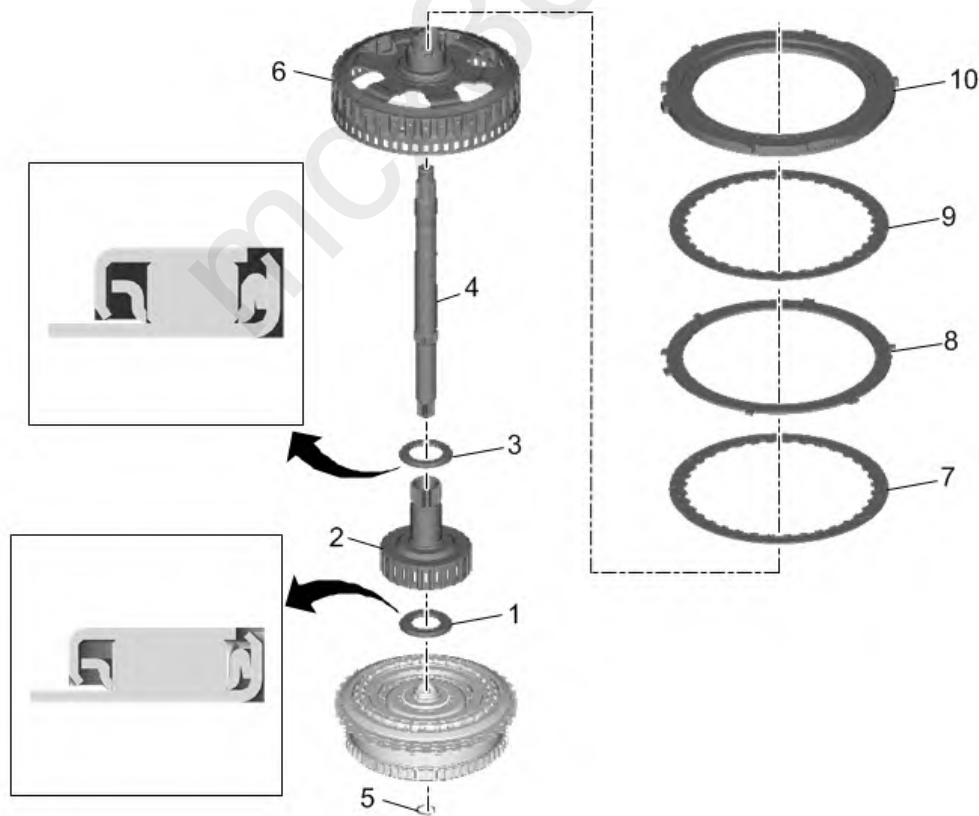


Fig. 28: Exploded View Of Turbine Shaft, 3-8 And 5-7 Reverse Clutch Hub, Reaction Carrier Hub And Plates Components

Courtesy of GENERAL MOTORS COMPANY

Turbine Shaft, 3-8 and 5-7 Reverse Clutch Hub, Reaction Carrier Hub and Plates Assemble

Callout	Component Name
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Callout	Component Name
1	Reaction Carrier Hub Bearing
2	Reaction Carrier Hub
3	Reaction Carrier Sun Gear Thrust Bearing
4	Turbine Shaft
5	Turbine Shaft Retainer Ring NOTE: Install a NEW retainer. Do NOT reuse the old retainer.
6	3-8 and 5-7-Reverse Clutch Hub
7	3-8 Clutch Plate - Friction
8	3-8 Clutch Plate
9	3-8 Clutch Plate - Friction
10	2-9 Clutch Backing Plate

2-9 AND 4 CLUTCH HUB ASSEMBLE

2-9 and 4 Clutch Hub Assemble

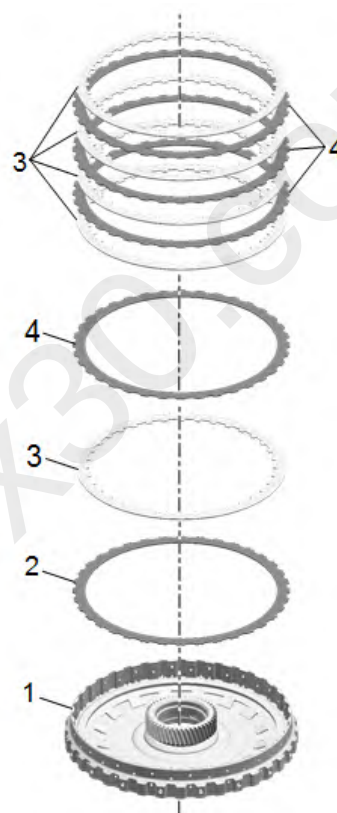


Fig. 29: Exploded View Of 2-9 And 4 Clutch Hub Components

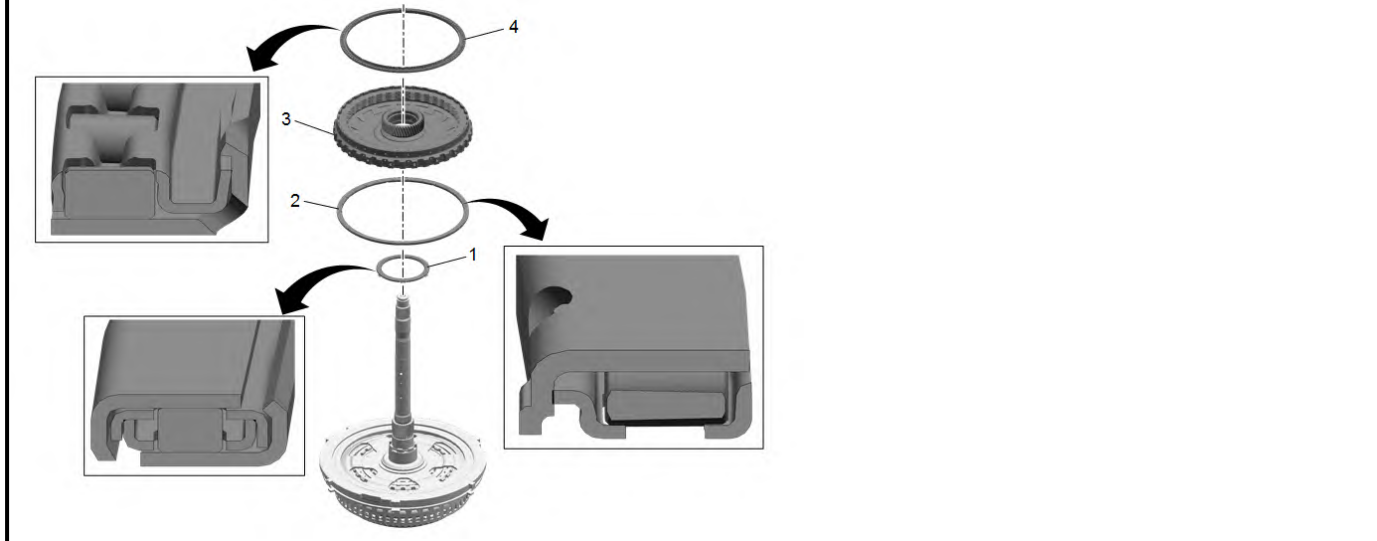
Courtesy of GENERAL MOTORS COMPANY

2-9 and 4 Clutch Hub Assemble

Callout	Component Name
1	2-9 and 4 Clutch Hub
2	4th Clutch Plate
3	4th Clutch Plate - Friction [5x] (External Spline)
4	4th Clutch Plate - Friction [4x] (Internal Spline)
5	4th Clutch Thrust Bearing
6	Reaction Sun Gear Thrust Bearing

2-9 and 4 Clutch Hub Installation

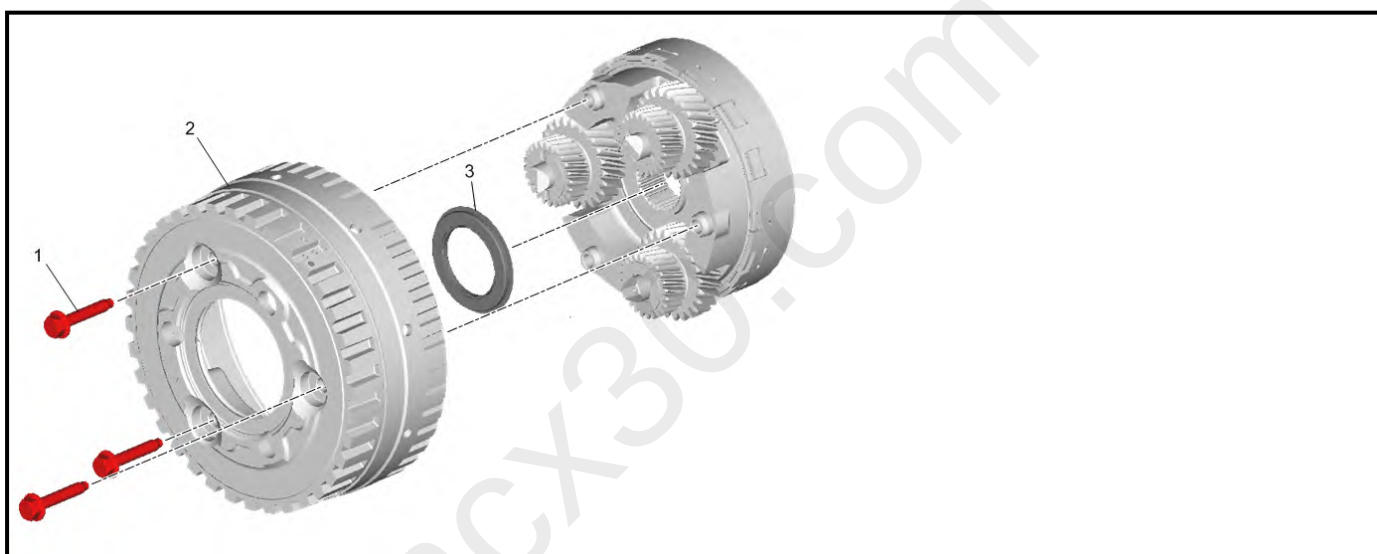




2-9 and 4 Clutch Hub Installation

Callout	Component Name
1	2-9 and 4 Clutch Hub Assembly

OVERDRIVE AND REACTION WITH INPUT INTERNAL GEAR CARRIER OVERHAUL



Callout	Component Name
1	Overdrive and Reaction Carrier Bolt [3x] Tighten 9 N.m (80 lb in)
2	Overdrive Carrier
3	Reaction Sun Gear Thrust Bearing NOTE: Bearing is only serviceable part.

INPUT, REACTION, AND OUTPUT CARRIER ASSEMBLY

O/D and Reaction Carrier Assemble

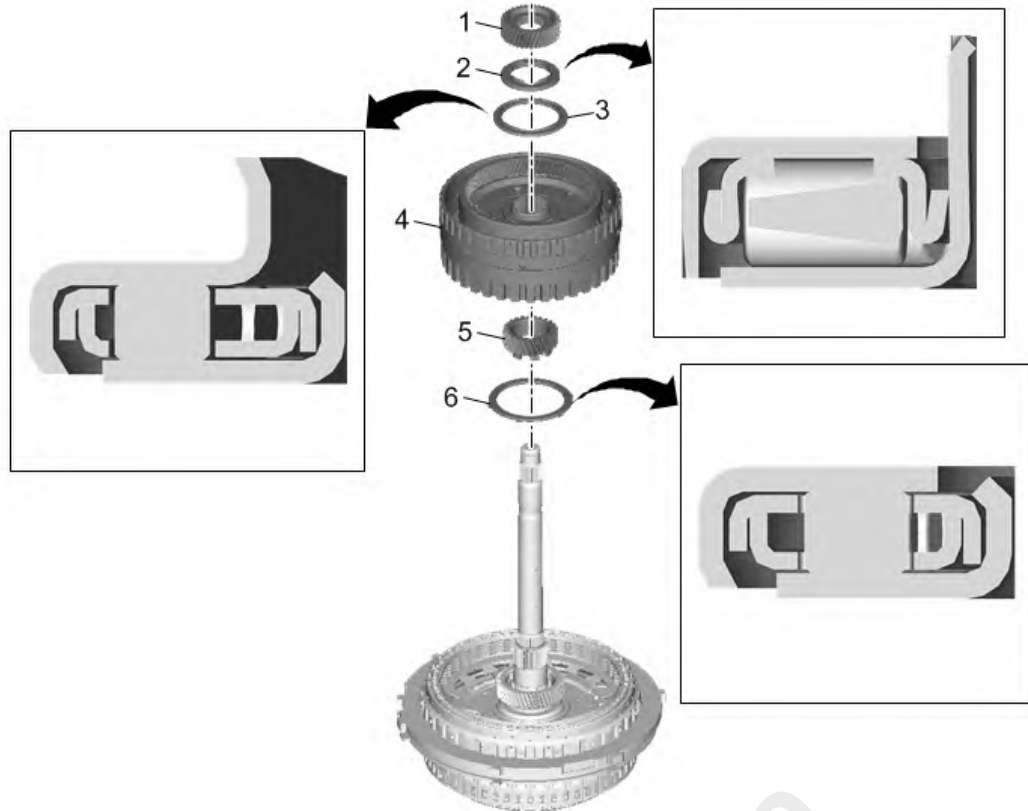


Fig. 30: Exploded View Of O/D And Reaction Carrier Components

Courtesy of GENERAL MOTORS COMPANY

O/D and Reaction Carrier Assemble

Callout	Component Name
1	Input Sun Gear
2	Input Sun Gear Thrust Bearing
3	Input Carrier Thrust Bearing NOTE: Ensure the carrier is seated properly.
4	Overdrive Carrier
5	Reaction Sun Gear
6	Overdrive Sun Gear Thrust Bearing

Input, Reaction, and Output Carrier Assemble

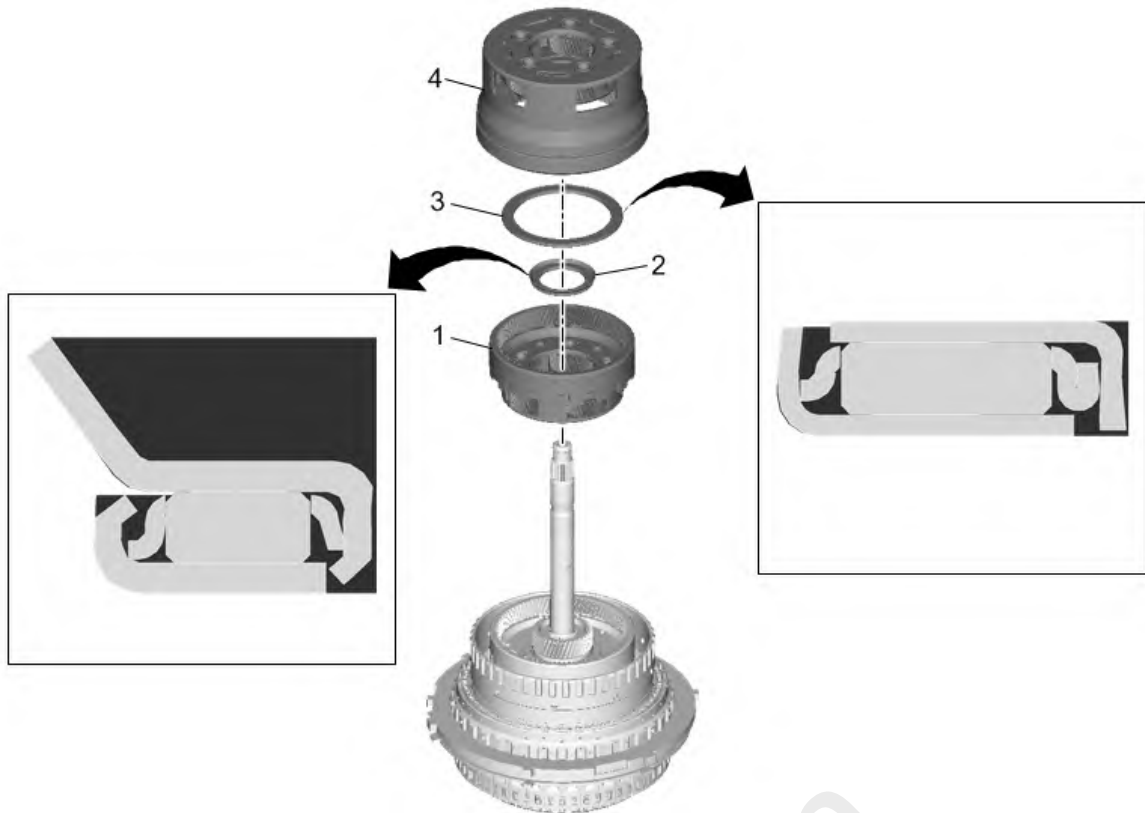


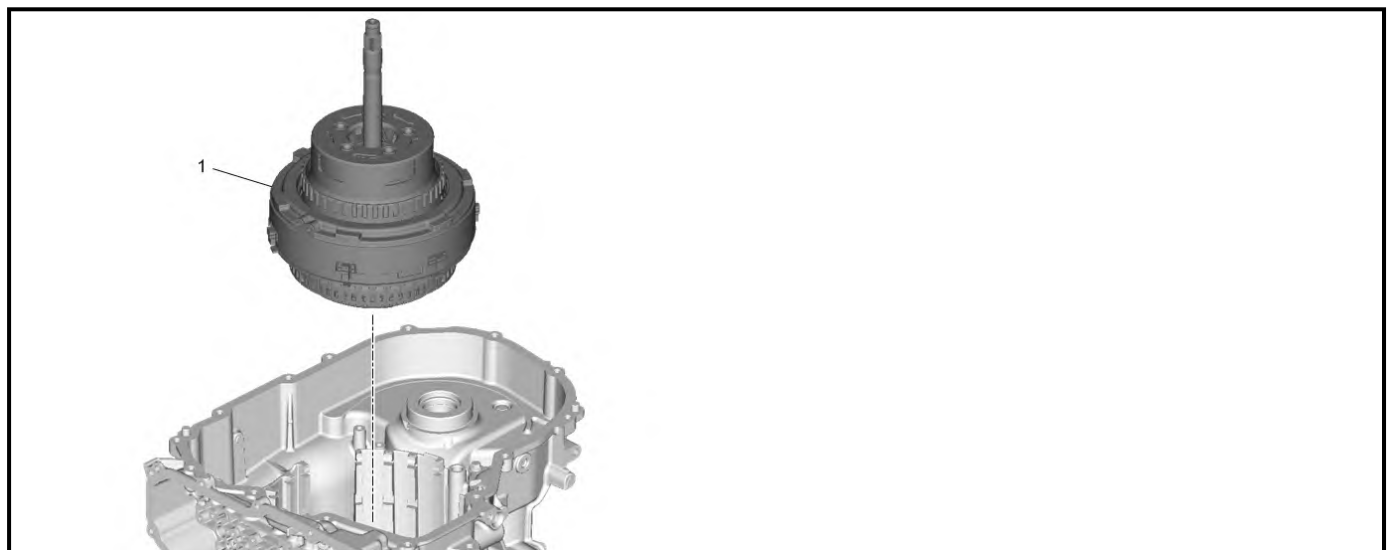
Fig. 31: Exploded View Of Input, Reaction And Output Carrier Components

Courtesy of GENERAL MOTORS COMPANY

Input, Reaction, and Output Carrier Assemble

Callout	Component Name
1	Input Carrier NOTE: Ensure the carrier is seated properly.
2	Input Sun Gear Thrust Bearing
3	Output Carrier Thrust Bearing
4	Output Carrier NOTE: Ensure the carrier is seated properly.

5-7-REVERSE AND 6-7-8-9 CLUTCH HOUSING INSTALLATION



Callout	Component Name
1	5-7-Reverse and 6-7-8-9 Clutch Housing NOTE: Line up all the smaller tabs on the plates.

2-9 CLUTCH PLATE INSTALLATION

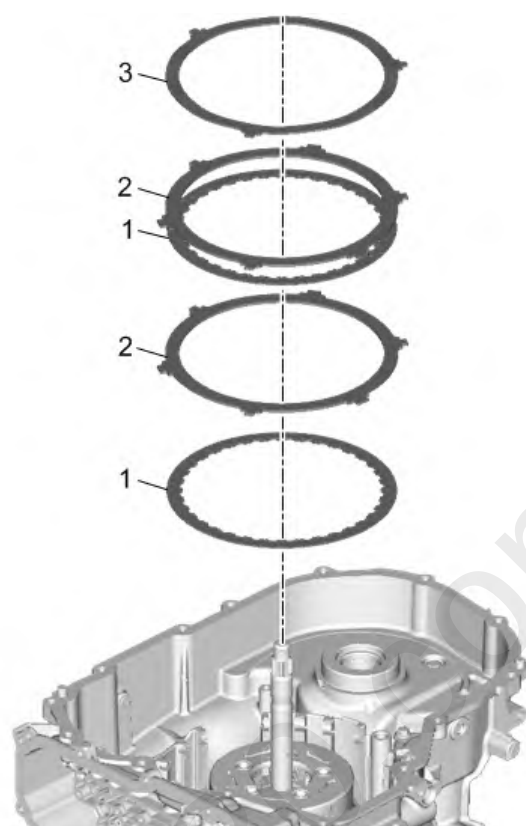


Fig. 32: Exploded View Of 2-9 Clutch Plate Components

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	2-9 Clutch Plate - Friction
2	2-9 Clutch Plate
3	2-9 Clutch Plate - Wave

2-9 AND 4 CLUTCH PISTON HOUSING DISASSEMBLE

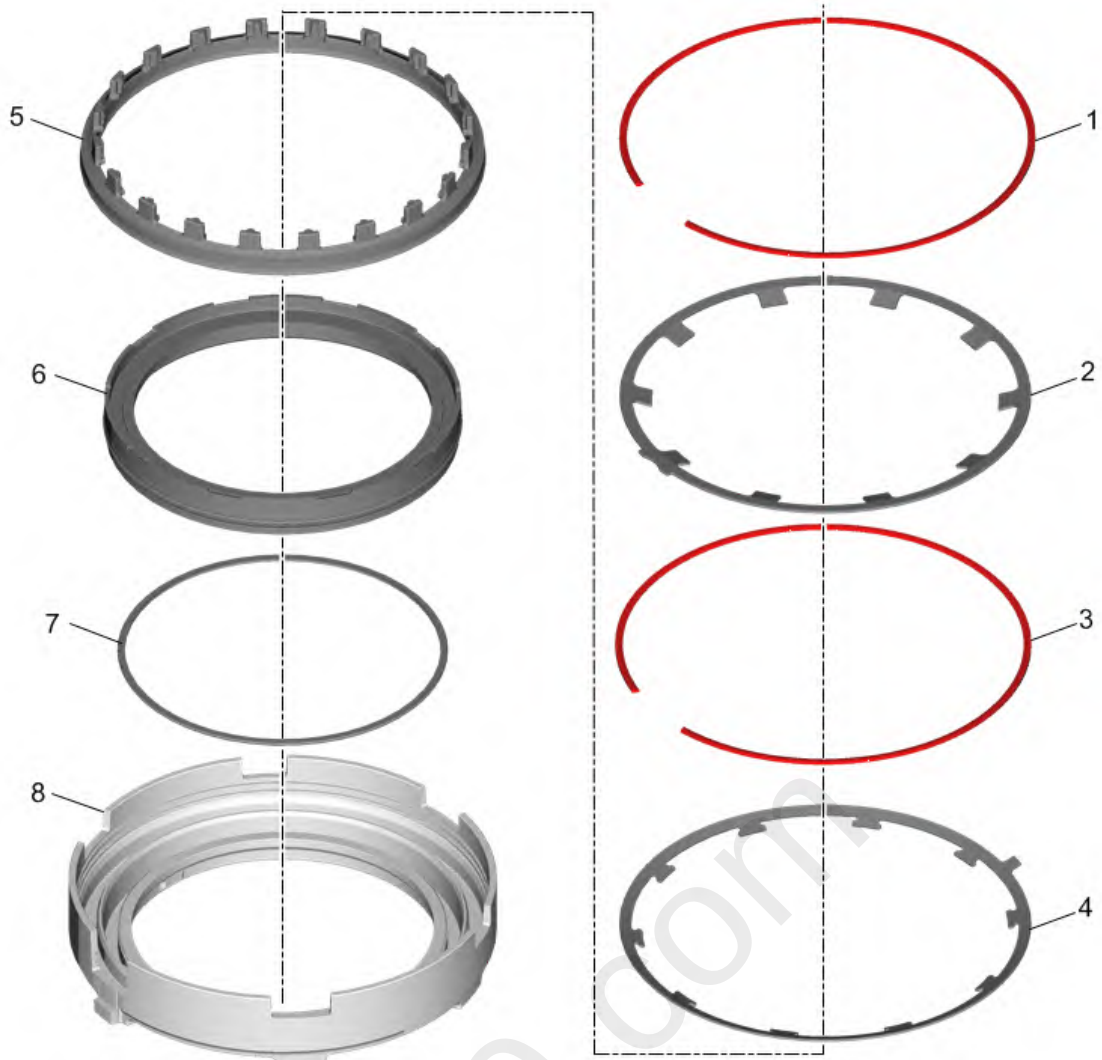


Fig. 33: Exploded View Of 2-9 And 4 Clutch Piston Housing Components
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	4th Clutch Piston Retaining Ring
2	4th Clutch Piston Return Spring
3	2 - 9 Clutch Piston Retaining Ring
4	2-9 Clutch Piston Return Spring
5	2-9 Clutch Piston
6	4th Clutch Piston
7	4th Clutch Piston Inner Seal NOTE: Remove and DISCARD the seal.
8	2-9 and 4 Clutch Piston Housing

2-9 AND 4 CLUTCH PISTON HOUSING ASSEMBLE

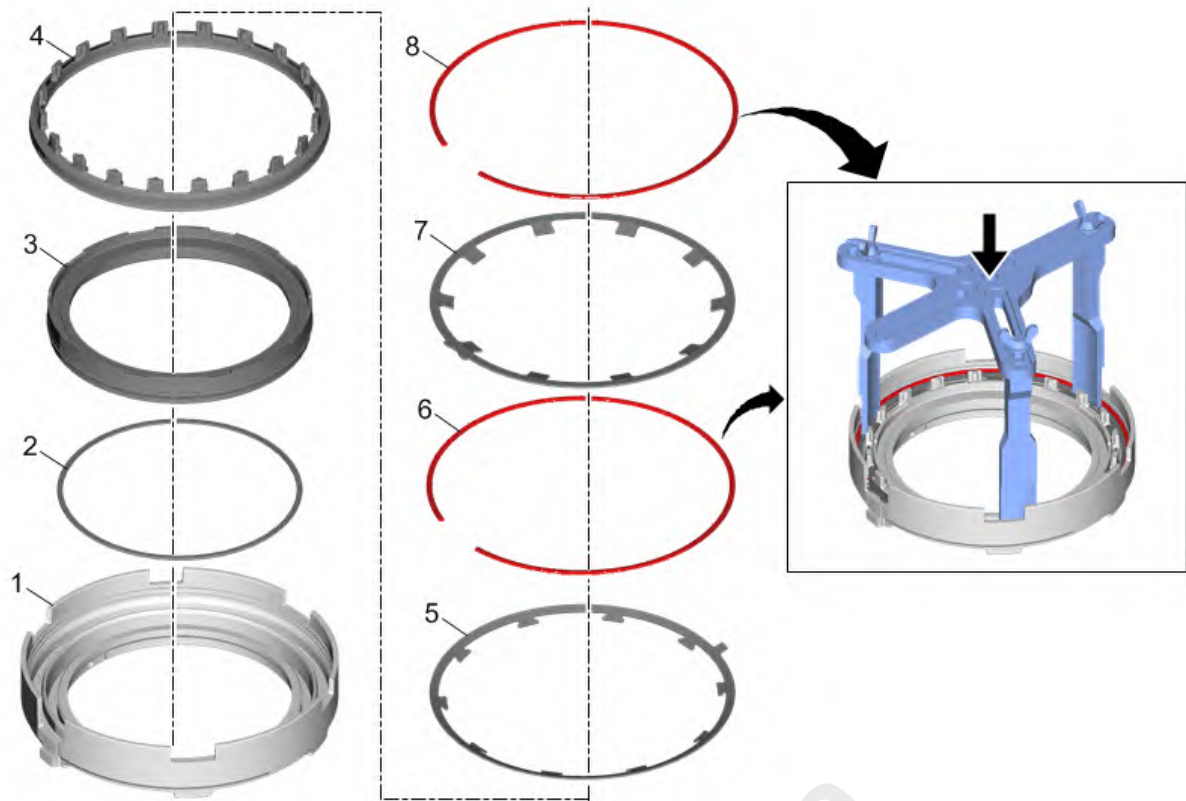


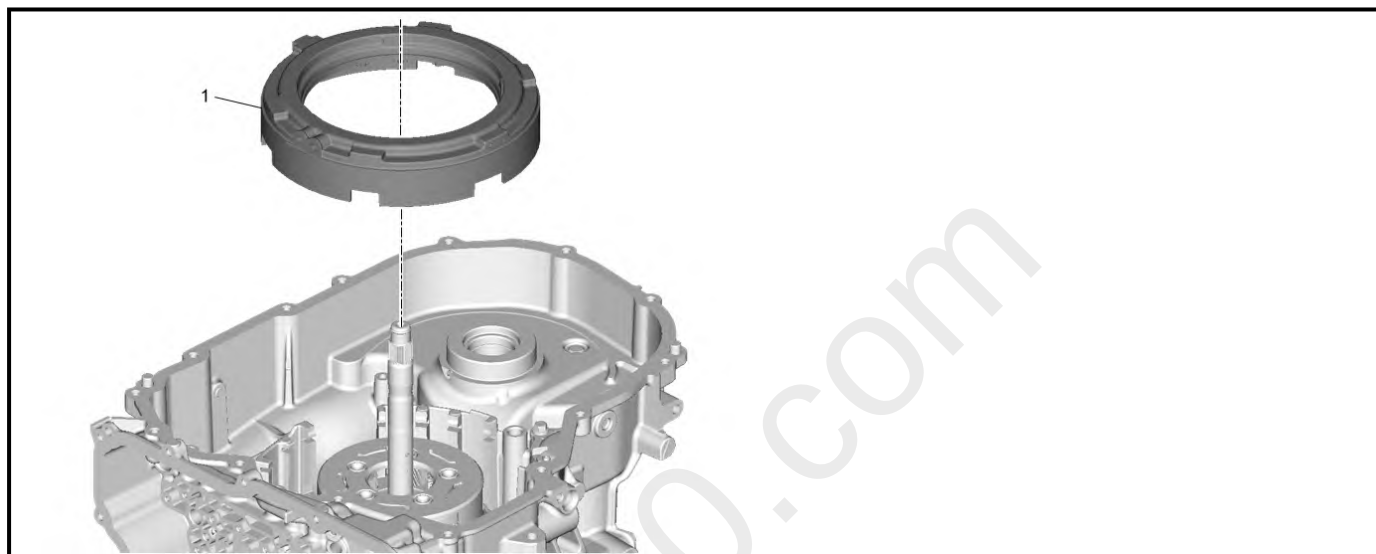
Fig. 34: Exploded View Of 2-9 And 4 Clutch Piston Housing Components

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	2-9 and 4 Clutch Piston Housing
2	4th Clutch Piston Inner Seal NOTE: Install a NEW seal. Do NOT reuse the old seal.
3	4th Clutch Piston
4	2-9 Clutch Piston
5	2-9 Clutch Piston Return Spring
6	2 - 9 Clutch Piston Retaining Ring Procedure 1. Install - DT-51892 Bridge Kit 2. Use a press to push down to install retaining ring. 3. Remove - DT-51892 Bridge Kit Special Tool DT-51892 Bridge Kit Equivalent regional tools: Special Tools
7	4th Clutch Piston Return Spring

Callout	Component Name
8	4th Clutch Piston Retaining Ring Procedure 1. Install - DT-51892 Bridge Kit 2. Use a press to push down to install retaining ring. 3. Remove - DT-51892 Bridge Kit Special Tool DT-51892 Bridge Kit Equivalent regional tools: Special Tools

2-9 AND 4 CLUTCH PISTON HOUSING INSTALLATION



Callout	Component Name
1	2-9 and 4 Clutch Piston Housing NOTE: Ensure the lube holes line up properly.

1-REVERSE AND 1-2-3-4-5-6 CLUTCH PISTON HOUSING DISASSEMBLE

1-Reverse and 1-2-3-4-5-6 Clutch Piston Housing (1 of 2) Disassemble

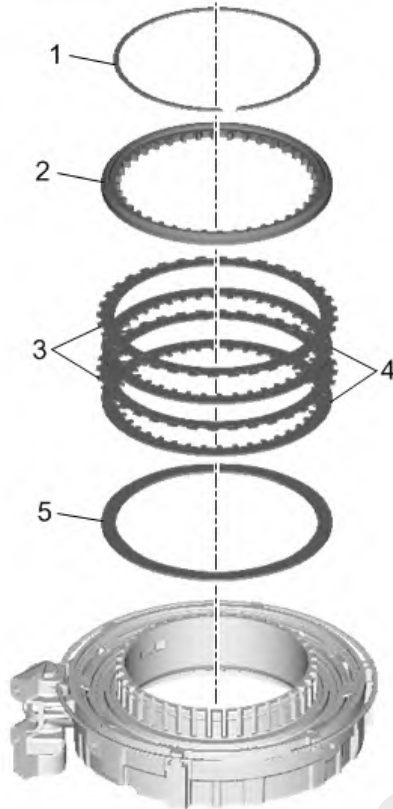


Fig. 35: Exploded View Of 1-Reverse And 1-2-3-4-5-6 Clutch Piston Housing Components.(1 of 2)
 Courtesy of GENERAL MOTORS COMPANY

1-Reverse and 1-2-3-4-5-6 Clutch Piston Housing (1 of 2) Disassemble

Callout	Component Name
1	1-2-3-4-5-6 Clutch Backing Plate Retaining Ring
2	1-2-3-4-5-6 Clutch Backing Plate
3	1-2-3-4-5-6 Clutch Plate - Friction [2x]
4	1-2-3-4-5-6 Clutch Plate [2x]
5	1-2-3-4-5-6 Clutch Plate - Wave NOTE: The 1 - Reverse Clutch Retaining Ring should not be removed from bottom. There are no serviceable parts.

1-Reverse and 1-2-3-4-5-6 Clutch Piston Housing (2 of 2) Disassemble

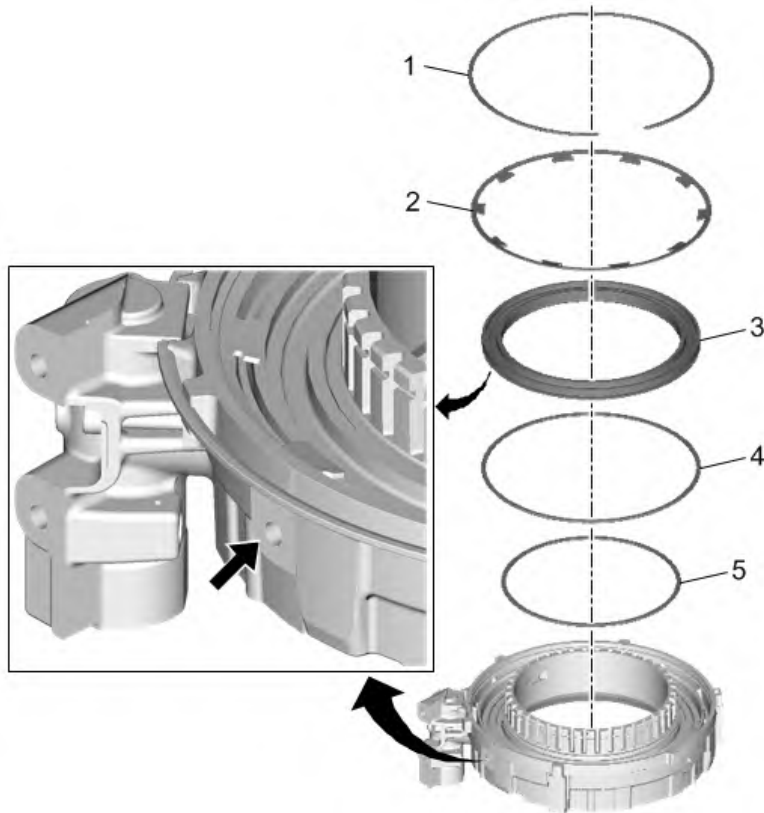


Fig. 36: Exploded View Of 1-Reverse And 1-2-3-4-5-6 Clutch Piston Housing Components (2 of 2).
 Courtesy of GENERAL MOTORS COMPANY

1-Reverse and 1-2-3-4-5-6 Clutch Piston Housing (2 of 2) Disassemble

Callout	Component Name
1	1-2-3-4-5-6 Clutch Spring Retaining Ring
2	1-2-3-4-5-6 Clutch Piston Return Spring
3	1-2-3-4-5-6 Clutch Piston Procedure Blow air in port to help release the piston from the housing.
4	1-2-3-4-5-6 Clutch Piston Inner Seal Procedure Remove and DISCARD the seal.
5	1-2-3-4-5-6 Clutch Piston Seal Procedure Remove and DISCARD the seal.

1-REVERSE AND 1-2-3-4-5-6 CLUTCH PISTON HOUSING ASSEMBLE

1-Reverse and 1-2-3-4-5-6 Clutch Piston Housing (1 of 2) Assemble

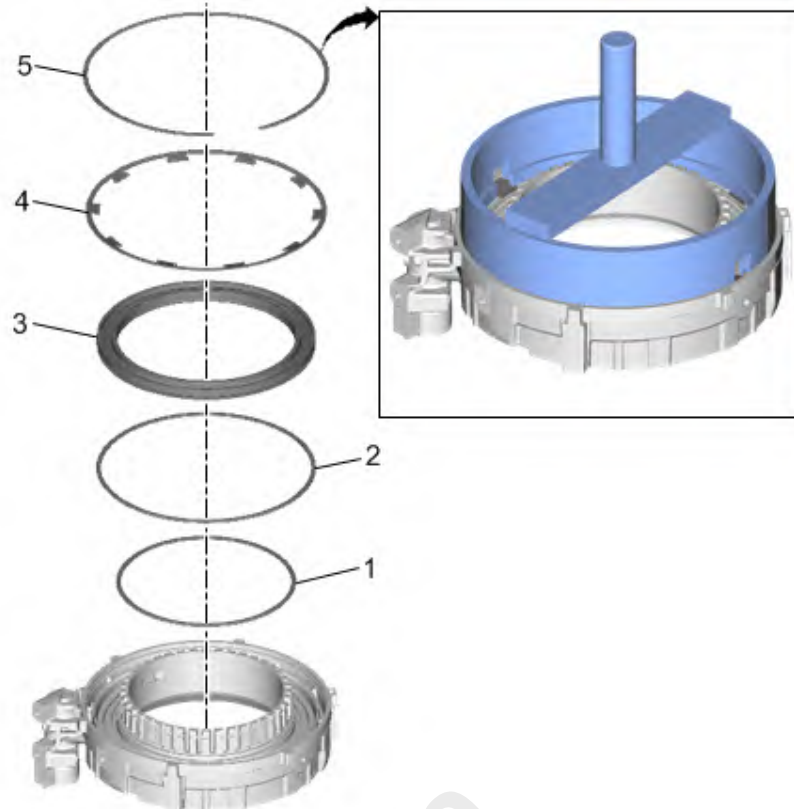
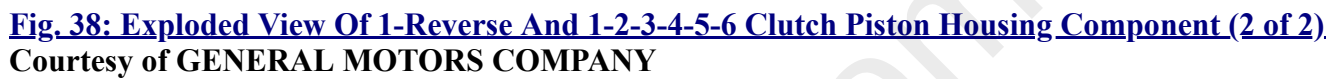


Fig. 37: Exploded View Of 1-Reverse And 1-2-3-4-5-6 Clutch Piston Housing Components.(1 of 2)
 Courtesy of GENERAL MOTORS COMPANY

1-Reverse and 1-2-3-4-5-6 Clutch Piston Housing (1 of 2) Assemble

Callout	Component Name
1	1-2-3-4-5-6 Clutch Piston Seal Procedure Install a NEW seal. Do NOT reuse the old seal. NOTE: The 1 - Reverse Clutch Retaining Ring should not be removed from bottom. There are no serviceable parts.
2	1-2-3-4-5-6 Clutch Piston Inner Seal Procedure Install a NEW seal. Do NOT reuse the old seal.
3	1-2-3-4-5-6 Clutch Piston
4	1-2-3-4-5-6 Clutch Piston Return Spring Procedure Ensure spring is centered.
5	1-2-3-4-5-6 Clutch Spring Retaining Ring Procedure Press on the DT-47797 Spring Installer until you hear the retaining ring snap into the groove. Special Tools DT-47797 Spring Installer Equivalent regional tools: Special Tools

1-Reverse and 1-2-3-4-5-6 Clutch Piston Housing (2 of 2) Assemble

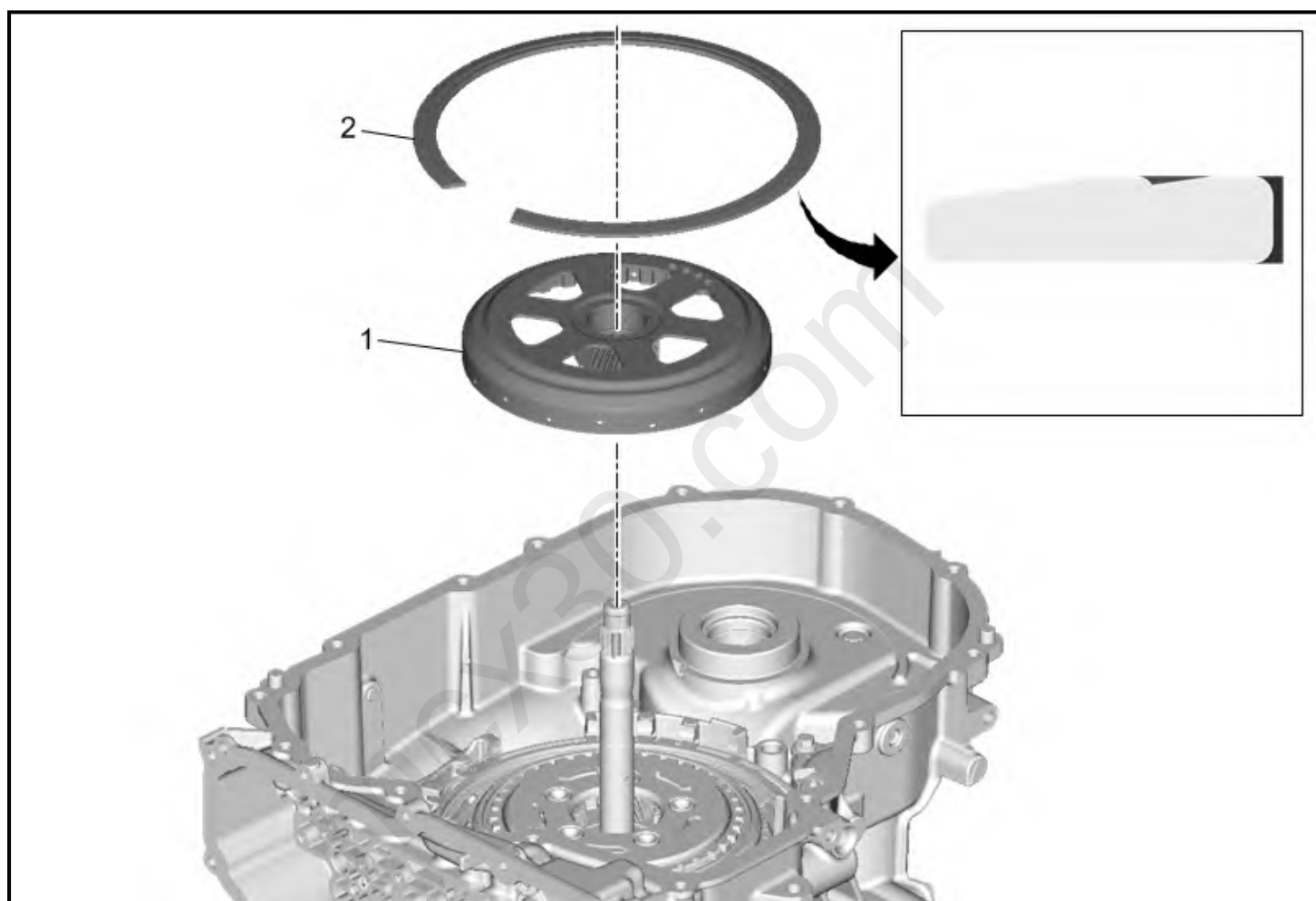


Callout	Component Name
1	1-2-3-4-5-6 Clutch Plate - Wave
2	1-2-3-4-5-6 Clutch Plate [2x]
3	1-2-3-4-5-6 Clutch Plate - Friction [2x]
4	1-2-3-4-5-6 Clutch Backing Plate
5	1-2-3-4-5-6 Clutch Backing Plate Retaining Ring

Callout	Component Name

Callout	Component Name
1	1 - Reverse and 1 - 2 - 3 - 4 - 5 - 6 Clutch Piston Housing Procedure Make sure lube holes line up properly. NOTE: Before Installing 1 - Reverse and 1 - 2 - 3 - 4 - 5 - 6 Clutch Piston Housing, check for proper operation. The 1 - Reverse Backing Plate should spin freely in one direction and lock in the other direction. A slight ratcheting noise may be heard when spinning in the free direction.

OUTPUT SUN GEAR INSTALLATION



Callout	Component Name
1	Output Sun Gear
2	1-2-3-4-5-6 Clutch Piston Housing Return 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.

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

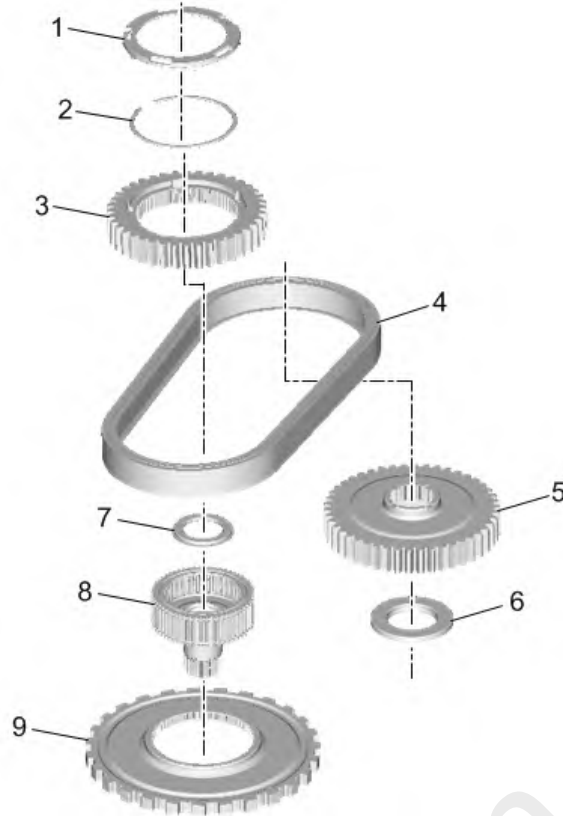


Fig. 39: Exploded View Of Drive Sprocket, Driven Sprocket And Drive Link Components
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Drive Sprocket Thrust Washer
2	Output Sun Gear Thrust Bearing
3	Drive Sprocket
4	Drive Link
5	Driven Sprocket
6	Driven Sprocket Bearing
7	Output Sun Gear Thrust Bearing
8	Output Carrier Transfer Drive Gear Hub Assembly
9	Park Gear

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

Park Pawl and Front Differential Carrier Baffle Installation

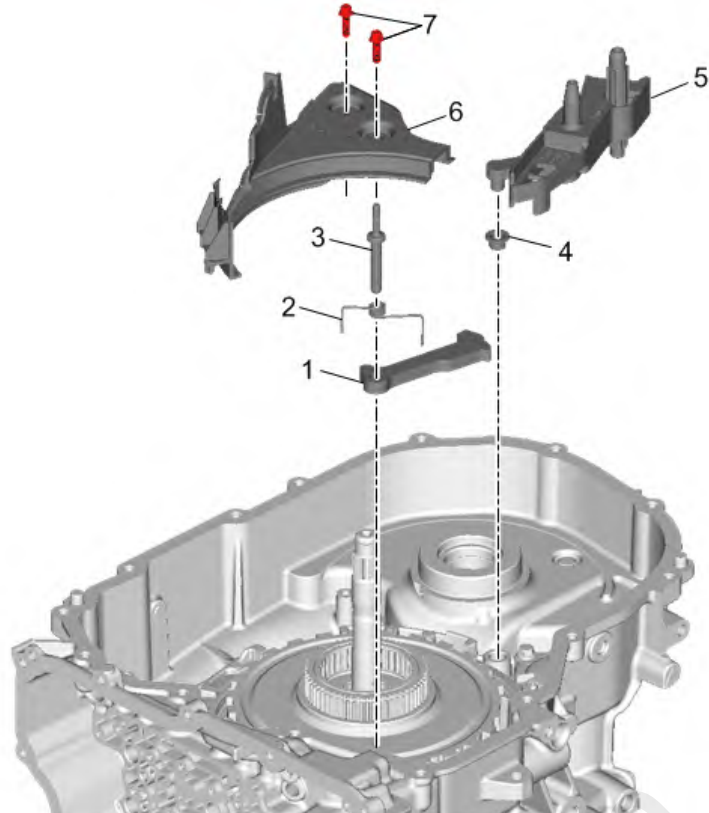


Fig. 40: Exploded View Of Park Pawl And Front Differential Carrier Baffle
 Courtesy of GENERAL MOTORS COMPANY

Park Pawl and Front Differential Carrier Baffle Installation

Callout	Component Name
1	Park Pawl
2	Park Pawl Spring
3	Park Pawl Shaft NOTE: Check to ensure that the park pawl operates freely and is not binding.
4	Drive Link Lubricant Fluid Seal NOTE: Install a NEW seal. Do NOT reuse the old seal.
5	Drive Link Lubricant Scoop
6	Front Differential Carrier Baffle
7	Front Differential Carrier Baffle Bolt [2x] CAUTION: Refer to Fastener Caution . Tighten 12 N.m (106 lb in)

Park Gear and Output Carrier Hub Installation

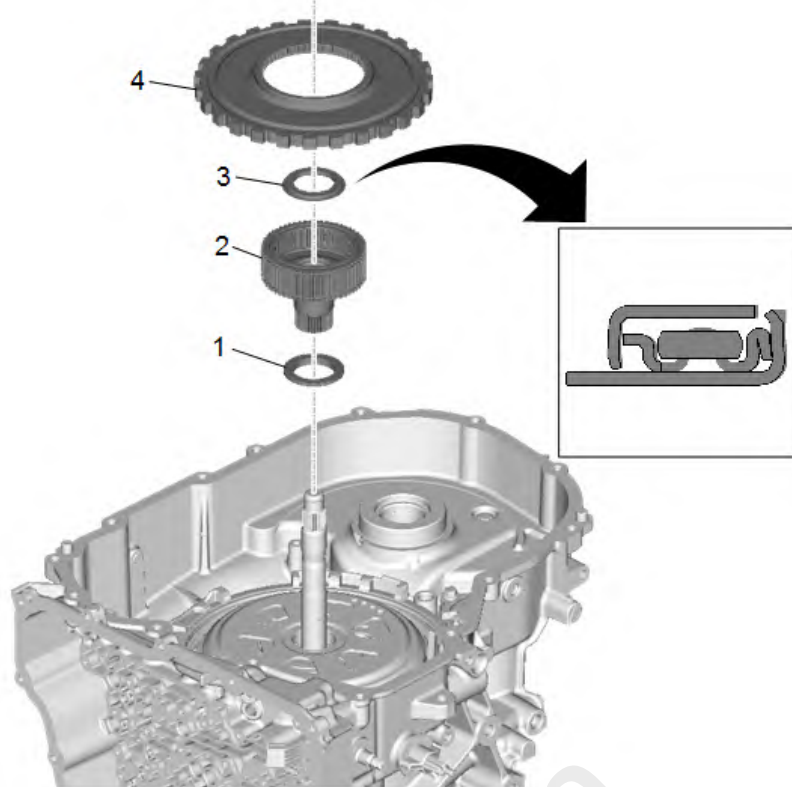


Fig. 41: Exploded View Of Park Gear And Output Carrier Hub Components
 Courtesy of GENERAL MOTORS COMPANY

Park Gear and Output Carrier Hub Installation

Callout	Component Name
1	Output Sun Gear Thrust Bearing
2	Output Carrier Transfer Drive Gear Hub
3	Output Sun Gear Thrust Bearing
4	Park Gear

Drive Sprocket, Driven Sprocket, and Drive Link Installation

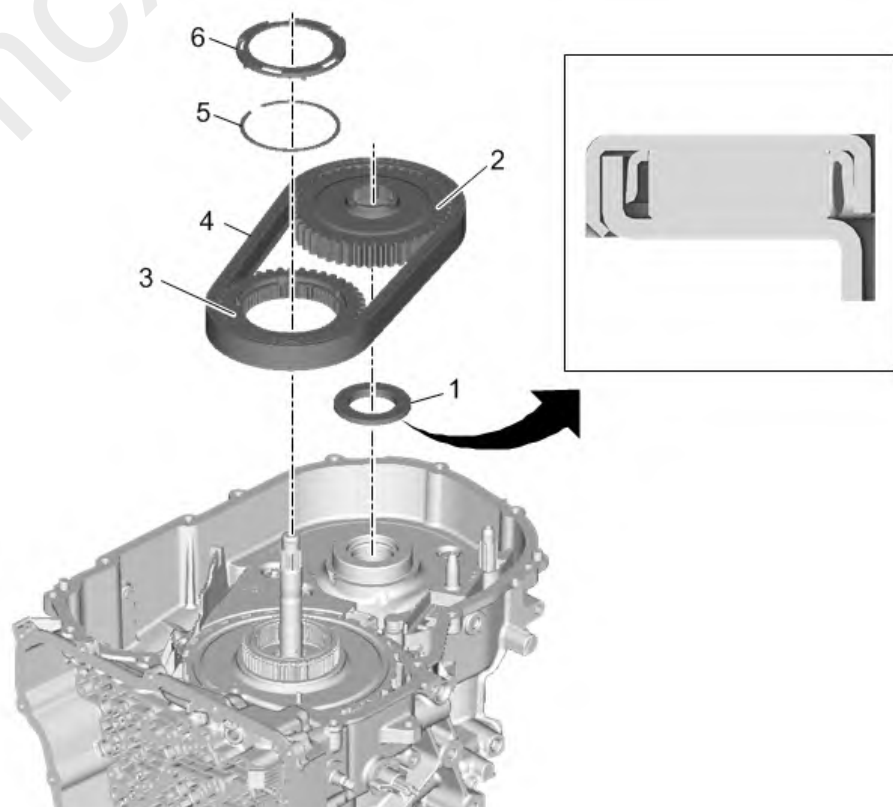


Fig. 42: Exploded View Of Drive Sprocket, Driven Sprocket And Drive Link Components
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Driven Sprocket Bearing
2	Driven Sprocket NOTE: • 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 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. • The ball bearing should spin freely and smoothly.
3	Drive Link
4	Drive Sprocket
5	Drive Sprocket Retaining Ring
6	Drive Sprocket Thrust Washer

This diagram illustrates the exploded view of a differential assembly. The components are numbered as follows:

- 1**: A large, C-shaped component, likely a housing or cover.
- 2**: A small, cylindrical component, possibly a pin or bush.
- 3**: A ring gear or flange.
- 4**: Two small, circular components, likely shims or washers.
- 5**: A large, beveled gear or pinion.
- 6**: A smaller, beveled gear or pinion.

The diagram shows the relative positions and assembly sequence of these parts, with lines indicating their alignment and fit.

Callout	Component Name

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

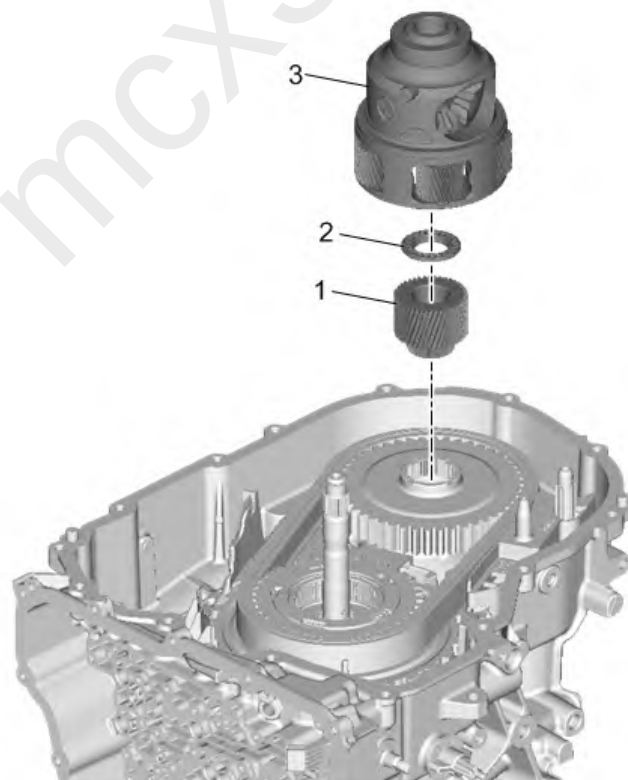


Fig. 44: Exploded View Of Front Differential Carrier Components
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Differential Carrier Sun Gear

Callout	Component Name
2	Differential Carrier Sun Gear Thrust Bearing
3	Front Differential Carrier

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

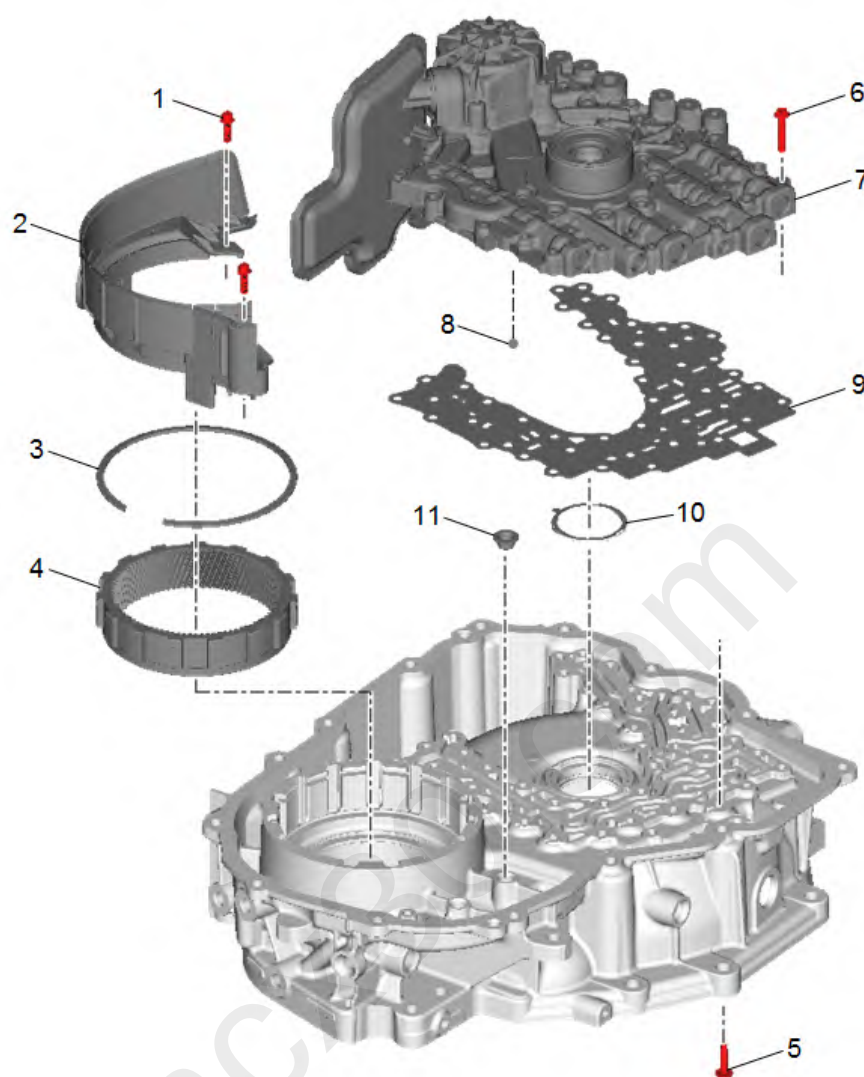


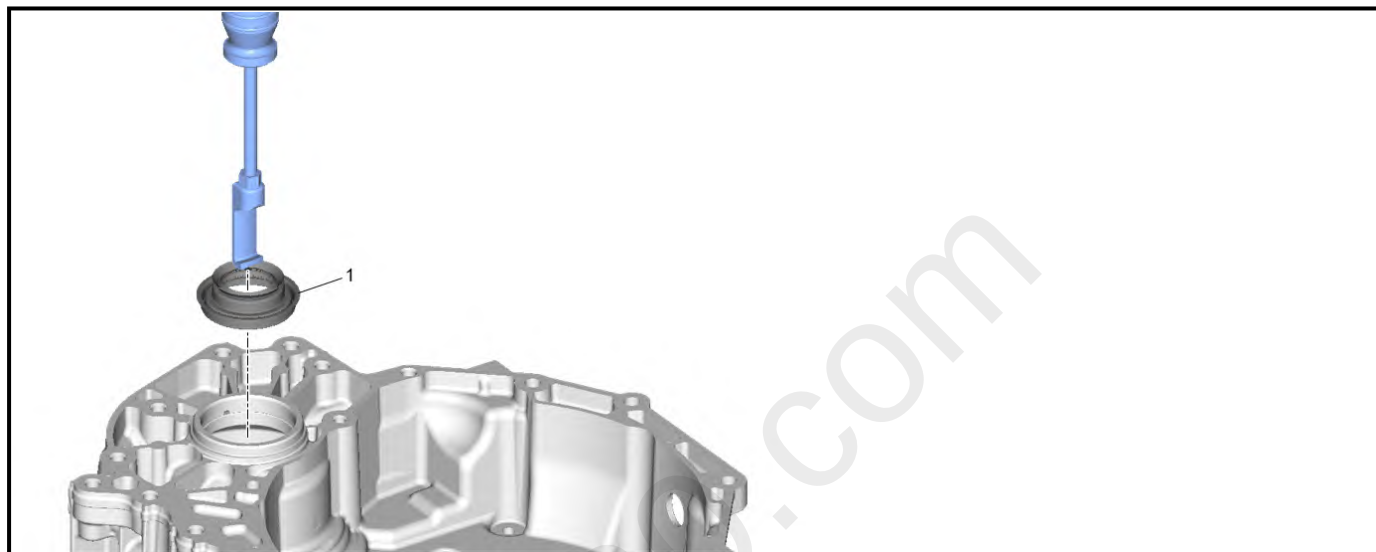
Fig. 45: Exploded View Of Transmission Fluid Pump, Front Differential Carrier Baffle And Front Differential Ring Gear Components

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Differential Carrier Baffle Bolt [2x]
2	Front Differential Carrier Baffle
3	Front Differential Rear Gear Retainer NOTE: Note the direction of the taper to ensure proper installation.
4	Front Differential Ring Gear
5	Automatic Transmission Fluid Pump Cover Bolt [19x] NOTE: Remove and DISCARD the bolts.
6	Automatic Transmission Fluid Pump Cover Bolt [22x]
7	Automatic Transmission Fluid Pump
8	Automatic Transmission Fluid Pump Ball Check Valve

Callout	Component Name
9	Auxiliary Control Valve Body Spacer Plate NOTE: Remove and DISCARD the plate.
10	Driven Sprocket Thrust Washer
11	Drive Link Lubricant Fluid Seal NOTE: Remove and DISCARD the seal.

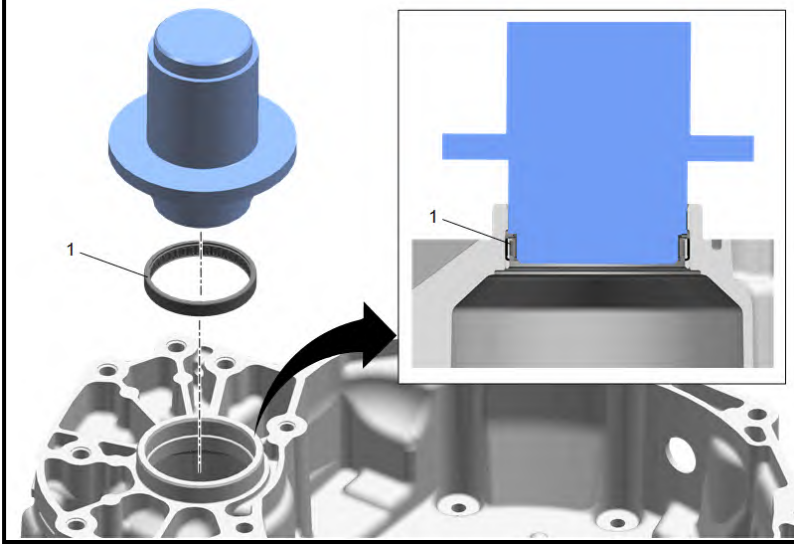
FRONT WHEEL DRIVE SHAFT SEAL REMOVAL - TORQUE CONVERTER HOUSING SIDE



Callout	Component Name
1	Front Wheel Drive Shaft Oil Seal NOTE: Remove and DISCARD the seal. Special Tools • DT-23129 Universal Seal Remover • GE-6125-1B Slide Hammer Equivalent regional tools: <u>Special Tools</u> .

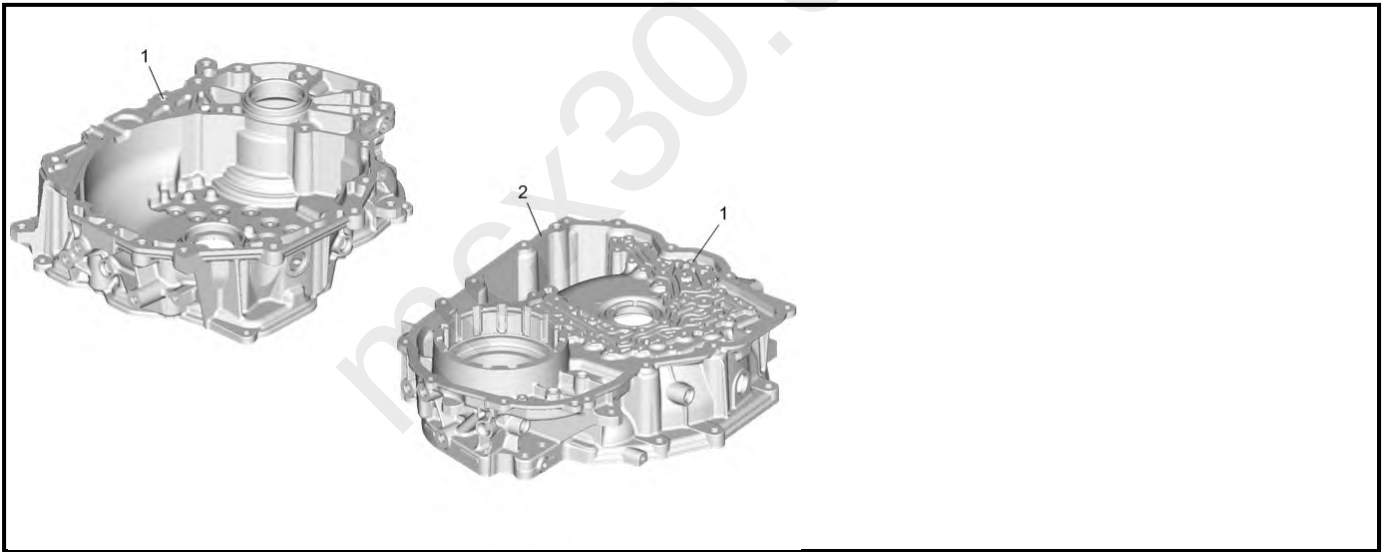
FRONT DIFFERENTIAL CARRIER BEARING REMOVAL





Callout	Component Name
1	Front Differential Carrier Bearing Procedure Press the tool into bearing until the bearing pops out of the housing. Special Tools • DT-49831 Differential Bearing Remover/Installer (2 Pinion Blue) • DT-50087 Differential Bearing Remover/Installer (4 Pinion Red)

TORQUE CONVERTER AND DIFFERENTIAL HOUSING CLEANING AND INSPECTION



Callout	Component Name

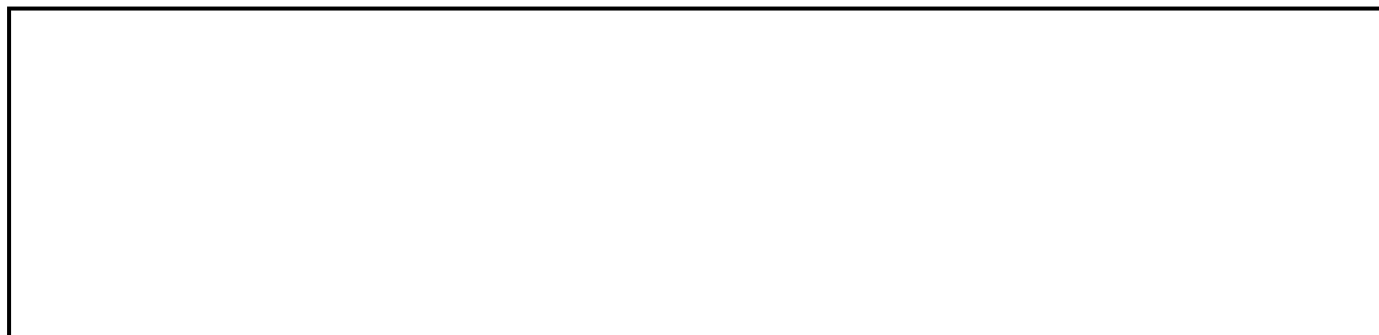
Callout	Component Name
CAUTION: After cleaning the transmission components, allow to air dry. Do not use cloth or paper towels in order to dry any transmission components. Lint from the towels can cause component failure.	
CAUTION: Do not reuse cleaning solvents. Previously used solvents may deposit 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

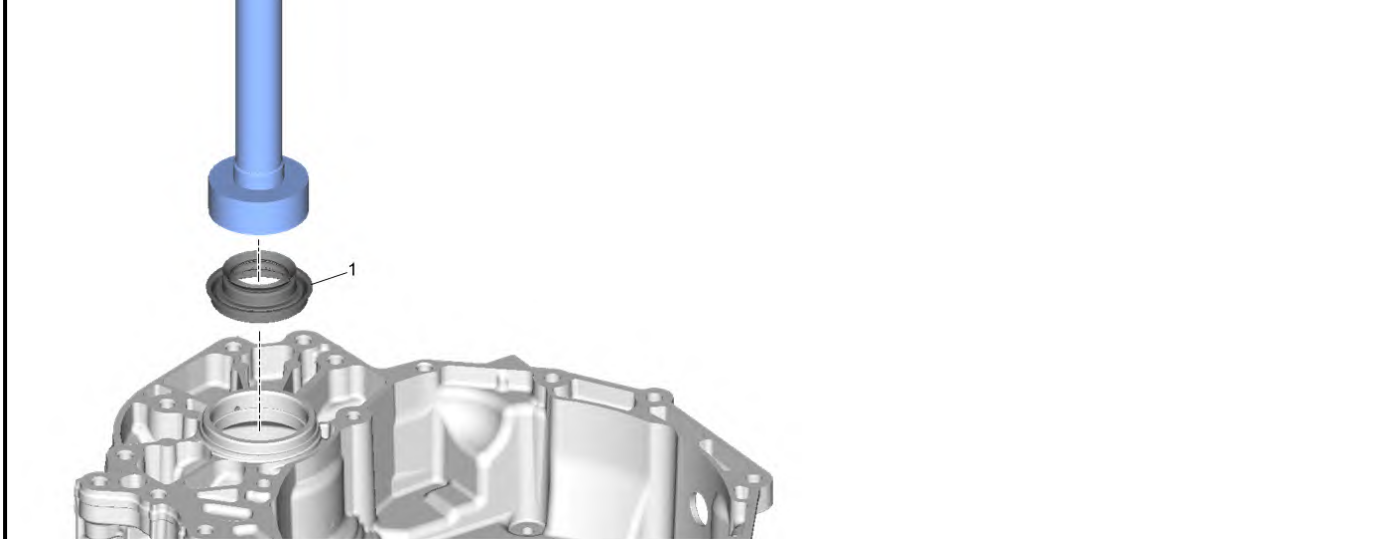
FRONT DIFFERENTIAL CARRIER BEARING INSTALLATION



Callout	Component Name
1	Front Differential Carrier Bearing
	Procedure Press the bearing until the bearing stops against the housing.
	Special Tools • DT-49831 Differential Bearing Remover/Installer (2 Pinion Blue) • DT-50087 Differential Bearing Remover/Installer (4 Pinion Red)

FRONT WHEEL DRIVE SHAFT SEAL INSTALLATION - TORQUE CONVERTER HOUSING SIDE





Callout	Component Name
1	Front Wheel Drive Shaft Oil Seal NOTE: Install a NEW seal. Do NOT reuse the old seal. Special Tools • DT-47790 Seal Installer • GE-8092 Driver Handle Equivalent regional tools: Special Tools .

TRANSMISSION FLUID PUMP DISASSEMBLE

Fluid Filter Assembly and Torque Converter Fluid Seal Disassemble

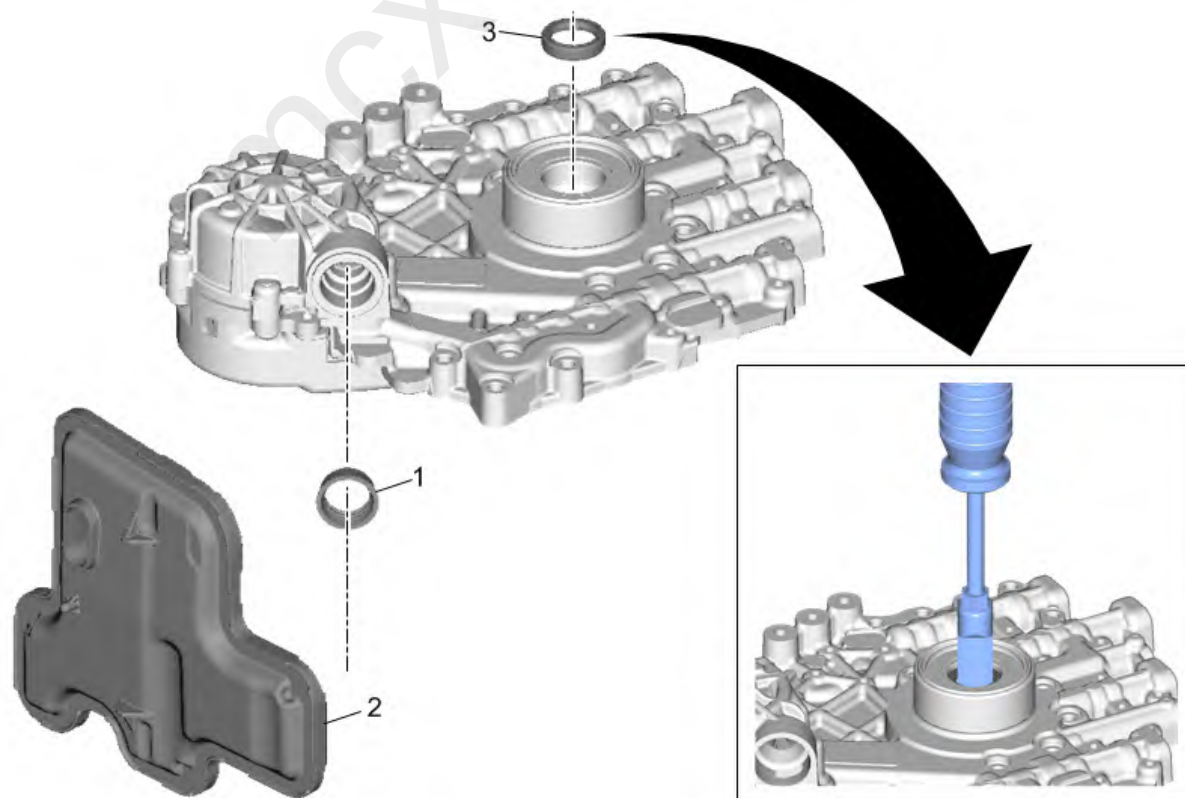


Fig. 46: Exploded View Of Fluid Filter Assembly And Torque Converter Fluid Seal Components
Courtesy of GENERAL MOTORS COMPANY

Fluid Filter Assembly and Torque Converter Fluid Seal Disassemble

Callout	Component Name
1	Automatic Transmission Fluid Filter Seal NOTE: Remove and DISCARD the seal.
2	Automatic Transmission Fluid Filter NOTE: Remove and DISCARD the filter.
3	Torque Converter Fluid Seal NOTE: Remove and DISCARD the seal. Special Tools • DT-23129 Universal Seal Remover • GE-6125-1B Slide Hammer Equivalent regional tools: Special Tools

Drive Chain, Drive Sprocket, and Driven Sprocket Disassemble

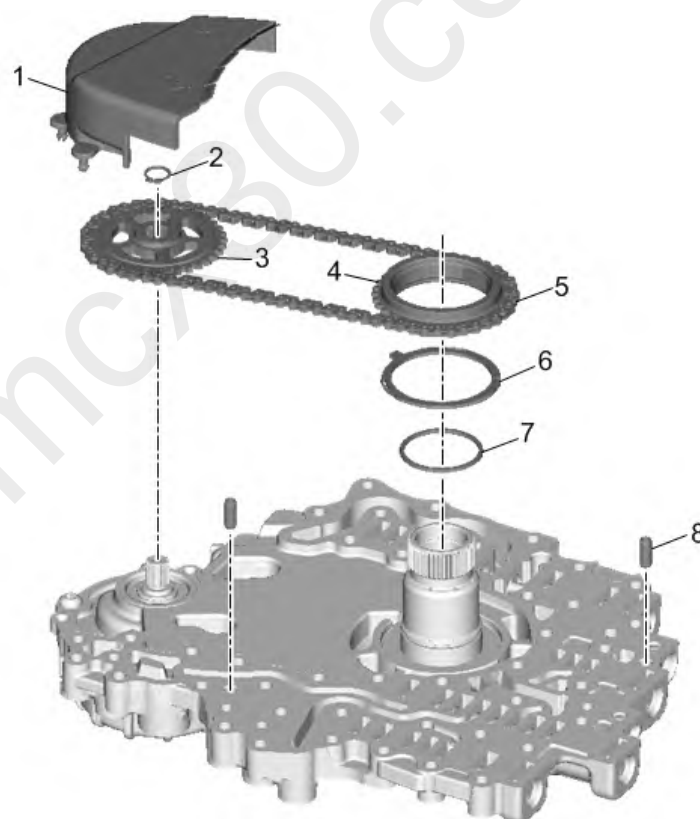


Fig. 47: Exploded View Of Drive Chain, Drive Sprocket And Driven Sprocket Components
Courtesy of GENERAL MOTORS COMPANY

Drive Chain, Drive Sprocket, and Driven Sprocket Disassemble

Callout	Component Name
1	Automatic Transmission Fluid Baffle
2	Drive Sprocket Retaining Ring

Callout	Component Name
3	Driven Sprocket NOTE: Remove the sprockets and chain at the same time.
4	Drive Sprocket
5	Drive Link
6	Driven Sprocket Thrust Washer
7	Torque Converter Fluid Seal Ring
8	Automatic Transmission Fluid Pump Locating Pin [2x]

Automatic Transmission Fluid Pump Disassemble

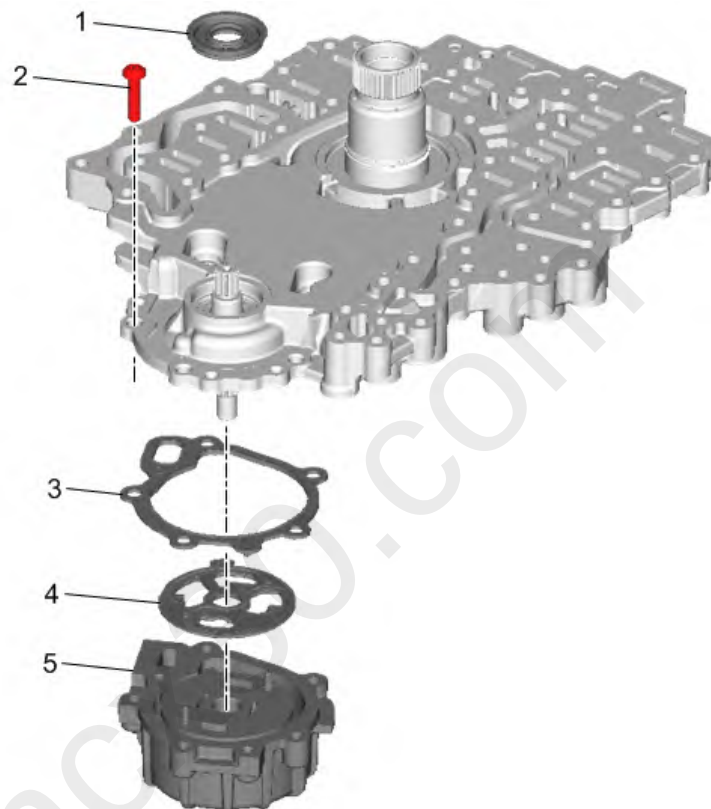


Fig. 48: Exploded View Of Automatic Transmission Fluid Pump Components
Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Disassemble

Callout	Component Name
1	Automatic Transmission Fluid Pump Shaft Seal NOTE: Remove and DISCARD the seal.
2	Automatic Transmission Fluid Pump Cover Bolt [5x]
3	Automatic Transmission Fluid Pump Gasket NOTE: Remove and DISCARD the gasket.
4	Automatic Transmission Fluid Pump Seal NOTE: Remove and DISCARD the seal.

Callout	Component Name
5	Automatic Transmission Fluid Pump

Automatic Transmission Fluid Pump Body Disassemble (1 of 2)

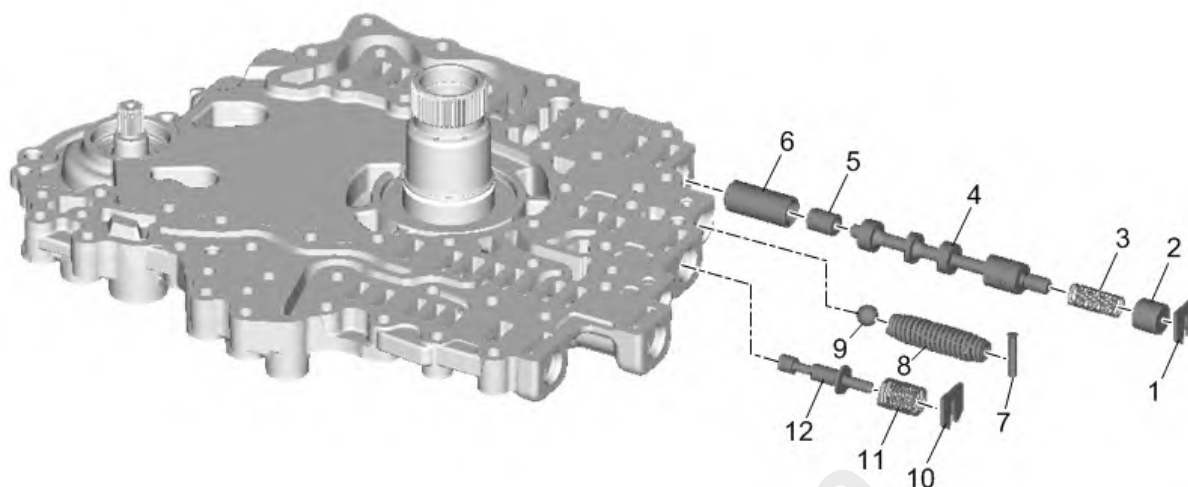


Fig. 49: Exploded View Of Automatic Transmission Fluid Pump Body Components (1 Of 2)

Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Body Disassemble (1 of 2)

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	Pressure Regulator Valve Bore Plug Retainer
2	Pressure Regulator Valve Plug
3	Pressure Regulator Valve Spring
4	Pressure Regulator Valve
5	Pressure Regulator Shuttle Valve
6	Pressure Regulator Valve Bore Bushing
7	Line Blowoff Ball Valve Spring Retainer
8	Automatic Transmission Fluid Pump Blowoff Ball Valve Spring
9	Automatic Transmission Fluid Pump Blowoff Ball Valve
10	Lube Regulator Valve Bore Plug Retainer
11	Lube Boost Valve Spring

Callout	Component Name
12	Lube Regulator Valve

Automatic Transmission Fluid Pump Body Disassemble (2 of 2)

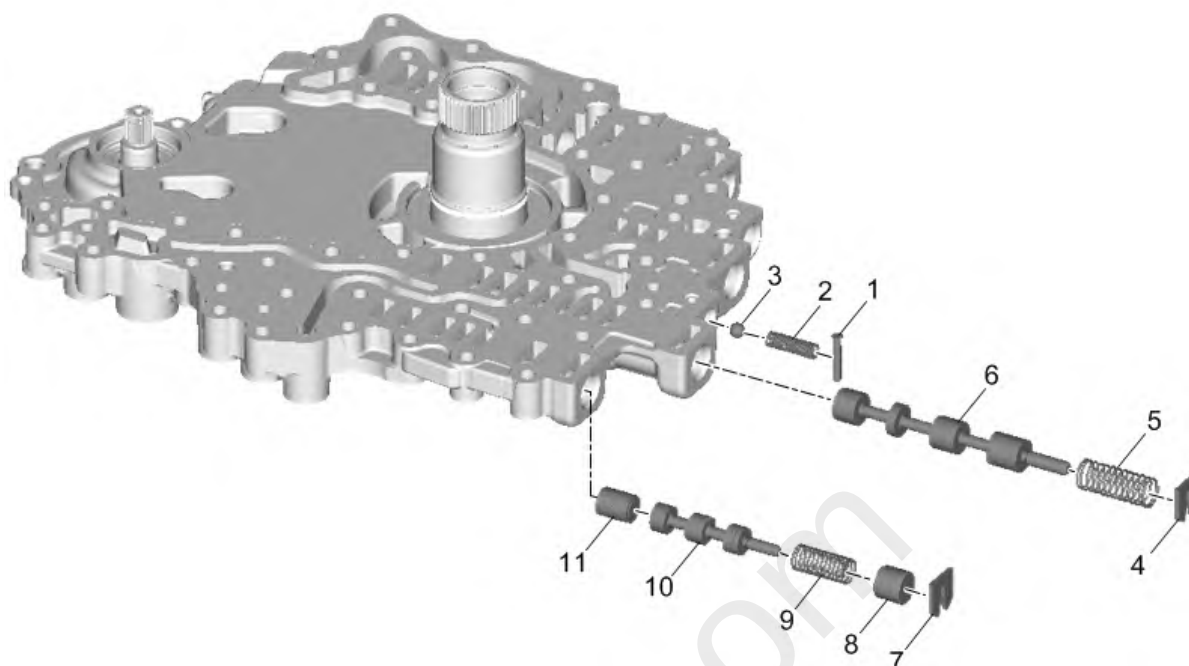


Fig. 50: Exploded View Of Automatic Transmission Fluid Pump Body Components (2 Of 2).

Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Body Disassemble (2 of 2)

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	Torque Converter Clutch Blowoff Ball Valve Retainer
2	Torque Converter Clutch Blowoff Ball Valve Spring
3	Torque Converter Clutch Blowoff Ball Valve
4	Torque Converter Clutch Control Valve Retainer
5	Torque Converter Clutch Control Valve Spring
6	Torque Converter Clutch Control Valve
7	Torque Converter Clutch Regulator Application Valve Bore Plug Retainer
8	Torque Converter Clutch Regulator Application Valve Bore Plug
9	Torque Converter Clutch Regulator Apply Valve Spring
10	Torque Converter Clutch Regulator Apply Valve
11	Torque Converter Clutch Regulator Application Shuttle Valve

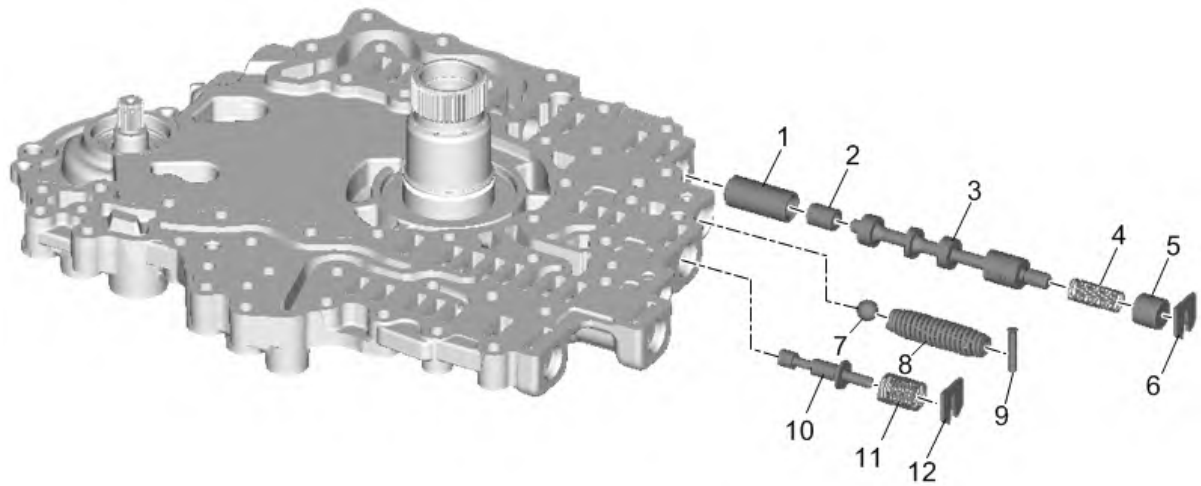


Fig. 51: Exploded View Of Automatic Transmission Fluid Pump Body Components (1 Of 2).

Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Body Assemble (1 of 2)

Callout	Component Name
1	Pressure Regulator Valve Bore Bushing
2	Pressure Regulator Shuttle Valve
3	Pressure Regulator Valve
4	Pressure Regulator Valve Spring
5	Pressure Regulator Valve Plug
6	Pressure Regulator Valve Bore Plug Retainer
7	Automatic Transmission Fluid Pump Blowoff Ball Valve
8	Automatic Transmission Fluid Pump Blowoff Ball Valve Spring
9	Line Blowoff Ball Valve Spring Retainer
10	Lube Regulator Valve
11	Lube Boost Valve Spring
12	Lube Regulator Valve Bore Plug Retainer

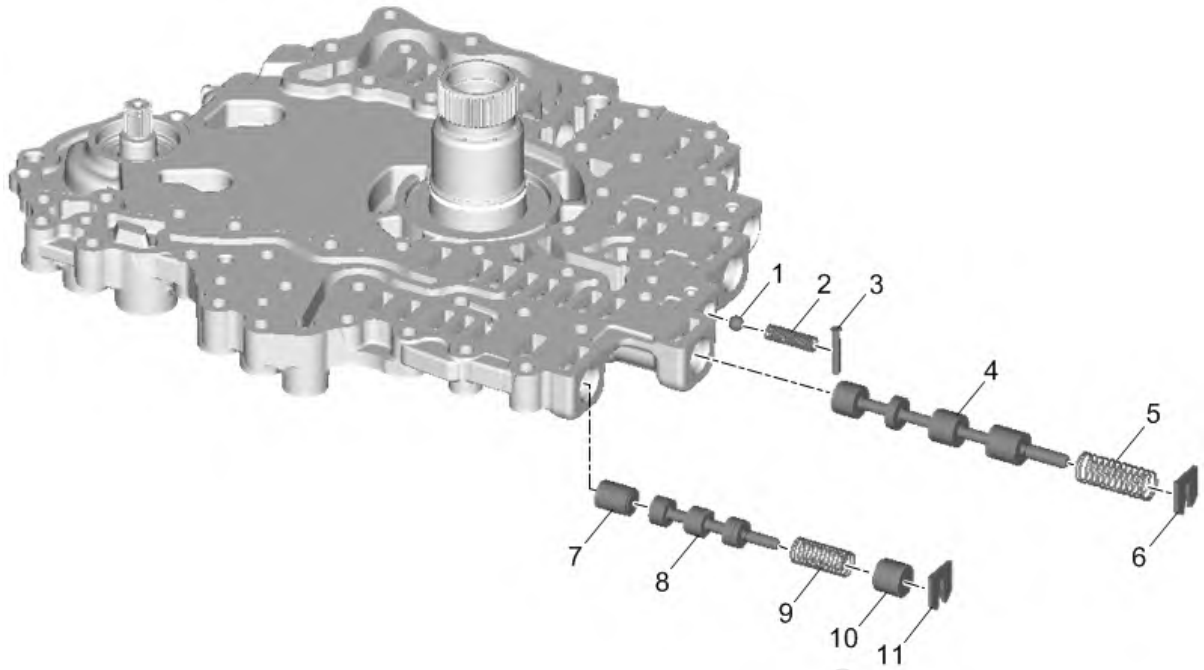


Fig. 52: Exploded View Of Automatic Transmission Fluid Pump Body Components (2 Of 2).
Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Body Assemble (2 of 2)

Callout	Component Name
1	Torque Converter Clutch Blowoff Ball Valve
2	Torque Converter Clutch Blowoff Ball Valve Spring
3	Torque Converter Clutch Blowoff Ball Valve Retainer
4	Torque Converter Clutch Control Valve
5	Torque Converter Clutch Control Valve Spring
6	Torque Converter Clutch Control Valve Retainer
7	Torque Converter Clutch Regulator Application Shuttle Valve
8	Torque Converter Clutch Regulator Apply Valve
9	Torque Converter Clutch Regulator Apply Valve Spring
10	Torque Converter Clutch Regulator Application Valve Bore Plug
11	Torque Converter Clutch Regulator Application Valve Bore Plug Retainer

Automatic Transmission Fluid Pump Assemble

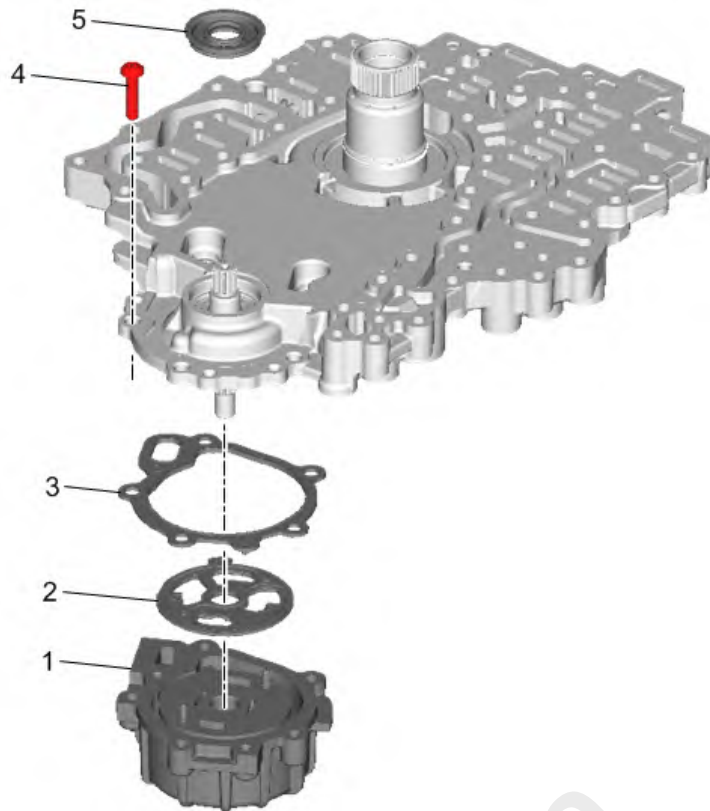


Fig. 53: Exploded View Of Automatic Transmission Fluid Pump Components

Courtesy of GENERAL MOTORS COMPANY

Automatic Transmission Fluid Pump Assemble

Callout	Component Name
1	Automatic Transmission Fluid Pump
2	Automatic Transmission Fluid Pump Seal Procedure Install a NEW seal. Do NOT reuse the old seal.
3	Automatic Transmission Fluid Pump Gasket Procedure Install NEW gaskets. Do NOT reuse old gaskets.
4	Automatic Transmission Fluid Pump Cover Bolt [5x] CAUTION: Refer to <u>Fastener Caution</u> . Tighten 9 N.m (80 lb in)
5	Automatic Transmission Fluid Pump Shaft Seal Procedure Install a NEW seal. Do NOT reuse the old seal.

Drive Chain, Drive Sprocket, and Driven Sprocket Assemble

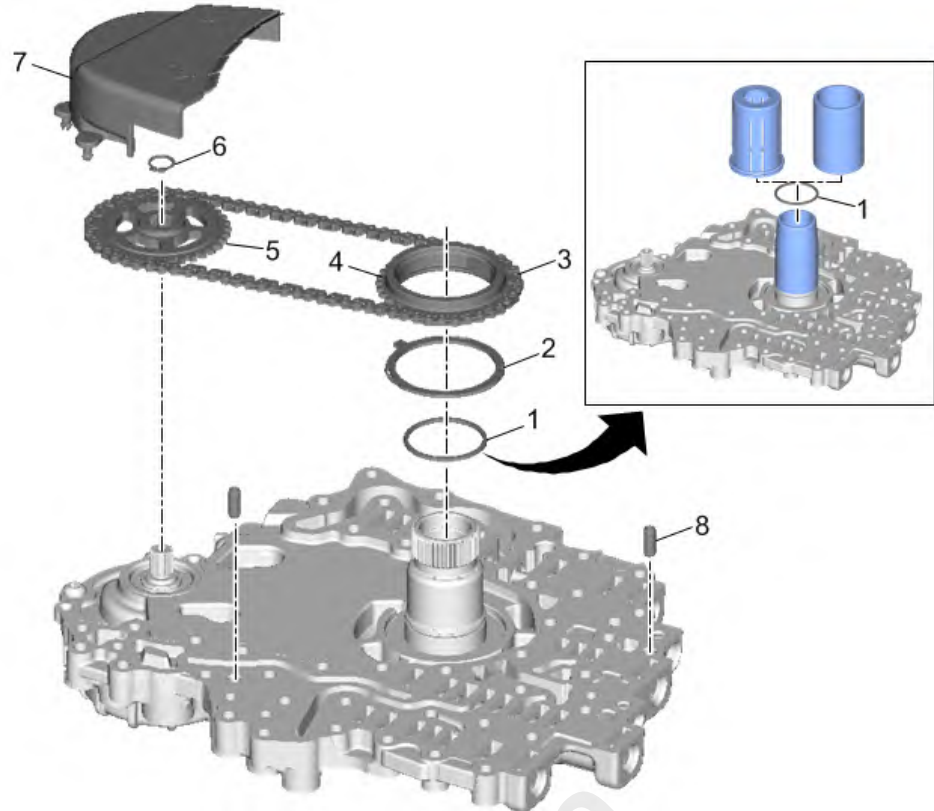


Fig. 54: Exploded View Of Drive Chain, Drive Sprocket And Driven Sprocket Components
 Courtesy of GENERAL MOTORS COMPANY

Drive Chain, Drive Sprocket, and Driven Sprocket Assemble

Callout	Component Name
1	Torque Converter Fluid Seal Ring Procedure 1. Place DT-51191 - 4 which is part of DT-51191 Pump Seal Installer Set over the Stator Support. 2. Place a NEW Torque Converter Fluid Seal Ring onto DT-51191 - 4. 3. Use DT-51191 - 2 to push the Torque Converter Fluid Seal Ring down over DT-51191 - 4 into the Seal groove. 4. Remove DT-51191 - 4 5. Install DT-51191 - 1 with the chamfer end down over the Torque Converter Fluid Seal Ring and leave on the Seal Ring for at least 60 seconds. Special Tools DT-51191 Pump Seal Installer Set Equivalent regional tools: Special Tools
2	Driven Sprocket Thrust Washer
3	Drive Link Procedure Install the sprockets and chain together as an assembly.
4	Drive Sprocket
5	Driven Sprocket
6	Drive Sprocket Retaining Ring
7	Automatic Transmission Fluid Baffle
8	Automatic Transmission Fluid Pump Locating Pin [2x]

Fluid Filter Assembly and Torque Converter Fluid Seal Assemble

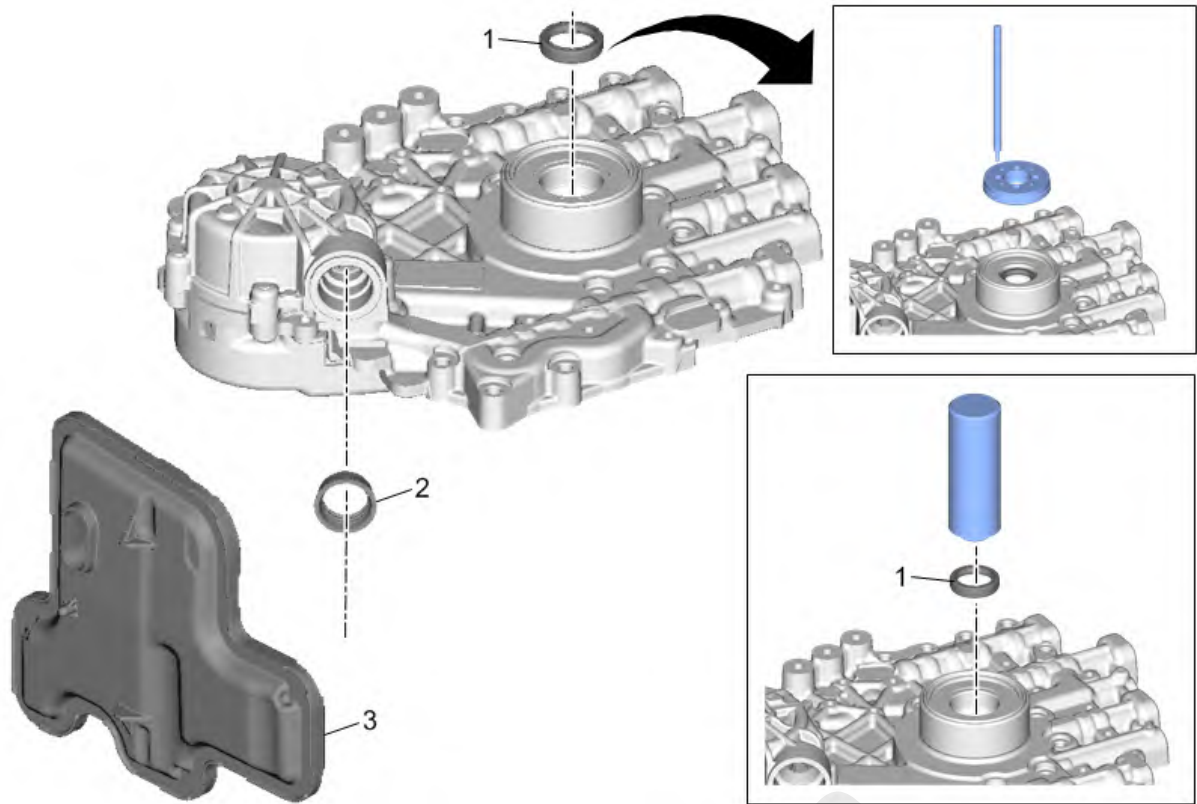


Fig. 55: Exploded View Of Fluid Filter Assembly And Torque Converter Fluid Seal Components
 Courtesy of GENERAL MOTORS COMPANY

Fluid Filter Assembly and Torque Converter Fluid Seal Assemble

Callout	Component Name
1	Torque Converter Fluid Seal Procedure 1. Install a NEW seal. Do NOT reuse the old seal. 2. The fluid seal assembly must be staked in place using DT-49131 seal staking tool or suitable center punch to ensure proper seal retention. Special Tools • DT-47792 Seal Installer • DT-49131 Seal Staking Tool Equivalent regional tools: Special Tools
2	Automatic Transmission Fluid Filter Seal Procedure Install a NEW seal. Do NOT reuse the old seal.
3	Automatic Transmission Fluid Filter Procedure Install a NEW filter. DO NOT reuse old filter.

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

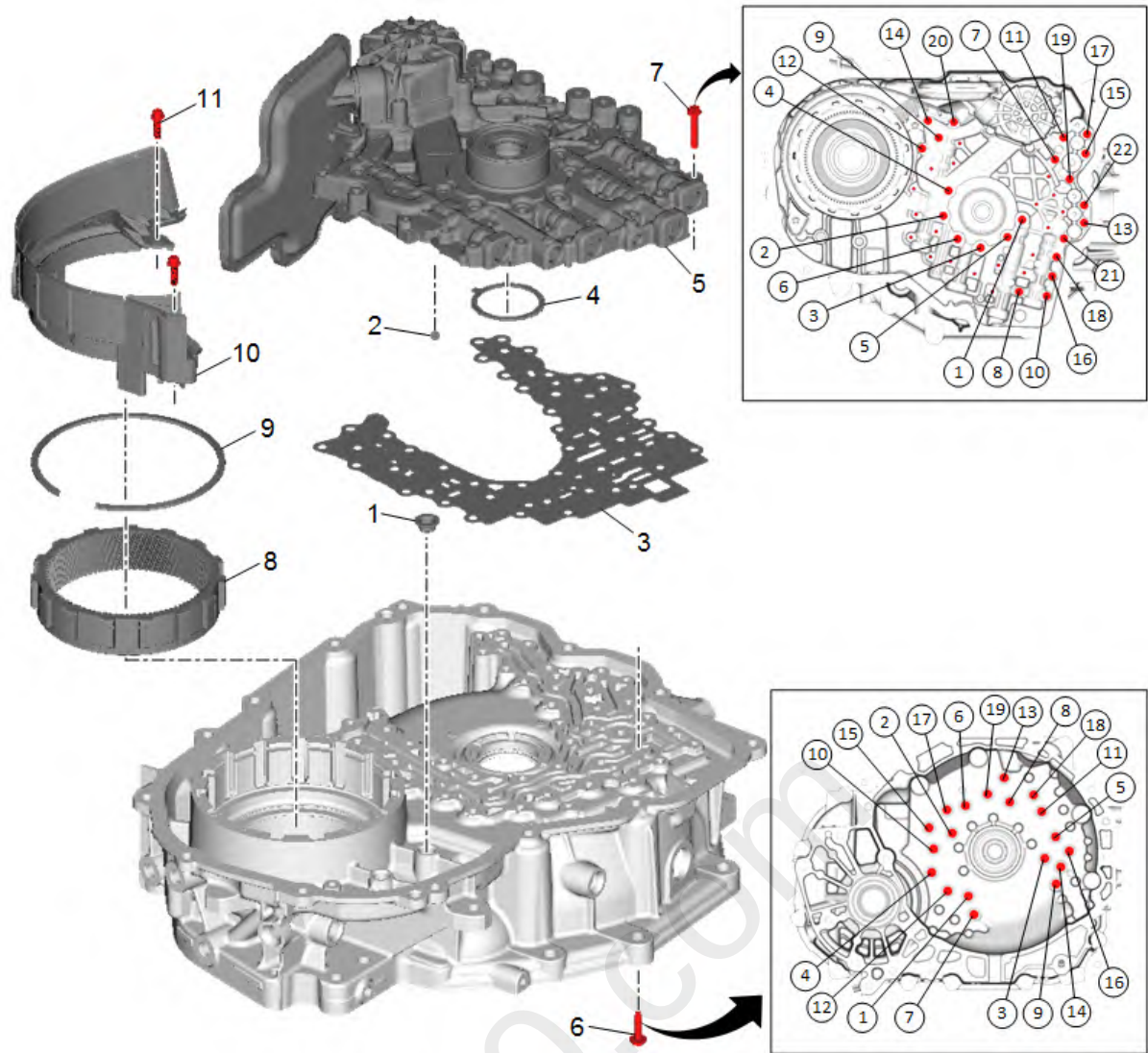


Fig. 56: Exploded View Of Transmission Fluid Pump, Front Differential Carrier Baffle And Front Differential Ring Gear Components With Tightening Sequences
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Drive Link Lubricant Fluid Seal NOTE: • Install a NEW seal. Do NOT reuse the old seal. • Ensure seal is installed with the correct orientation.
2	Automatic Transmission Fluid Pump Ball Check Valve
3	Auxiliary Control Valve Body Spacer Plate NOTE: Install a NEW plate. DO NOT reuse the old plate.
4	Driven Sprocket Thrust Washer
5	Automatic Transmission Fluid Pump

Callout	Component Name
6	Automatic Transmission Fluid Pump Cover Bolt [19x] CAUTION: Refer to Fastener Caution . CAUTION: Refer to Torque-to-Yield Fastener Caution . NOTE: Install NEW bolts. Do NOT reuse old bolts. Tighten in sequence 1. First Pass: 6 N.m (53 lb in) 2. Final Pass: 20 degrees
7	Automatic Transmission Fluid Pump Cover Bolt [22x] Tighten in sequence 1. First Pass: 6 N.m (53 lb in) 2. Final Pass: 20 degrees Special Tool EN-45059 Angle Meter or equivalent Equivalent regional tools: Special Tools
8	Front Differential Ring Gear
9	Front Differential Rear Gear Retainer NOTE: Install the retainer with the taper facing away from the ring gear.
10	Front Differential Carrier Baffle
11	Front Differential Carrier Baffle Bolt [2x] Tighten 9 N.m (80 lb in)

TORQUE CONVERTER HOUSING WITH FLUID PUMP ASSEMBLY INSTALLATION

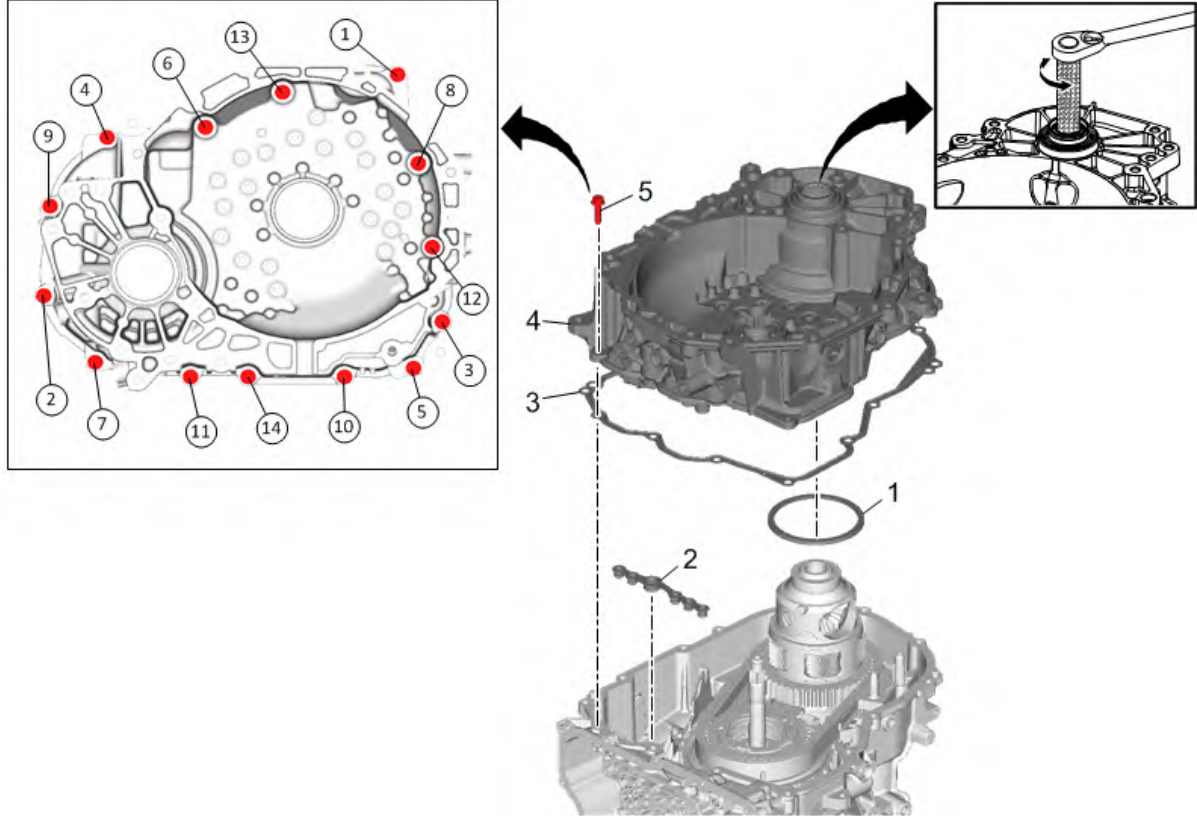
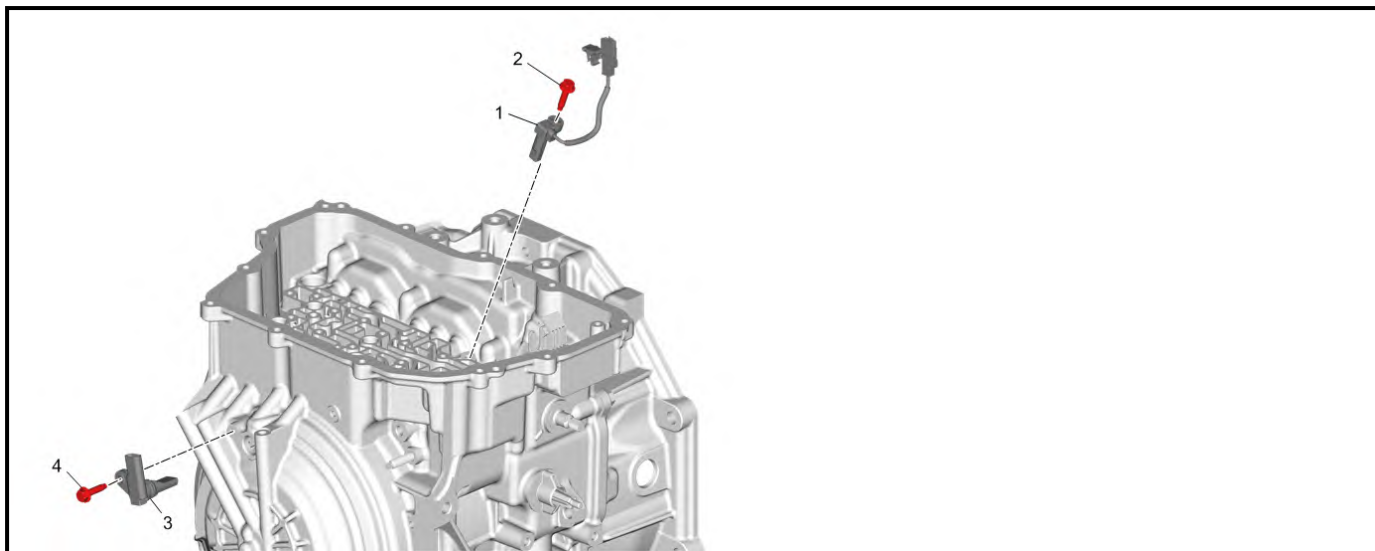


Fig. 57: Exploded View Of Torque Converter Housing With Fluid Pump Assembly Components With Tightening Sequence

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Differential Carrier Bearing
2	Automatic Transmission Fluid Pump Seal NOTE: Install a NEW seal. Do NOT reuse the old seal.
3	Torque Converter Housing Gasket NOTE: Install a NEW gasket. Do NOT reuse the old gasket.
4	Torque Converter Housing 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 Special Tools DT-47793 Differential Rotating Tool Equivalent regional tools: Special Tools
5	Torque Converter and Differential Housing Bolt [14x] CAUTION: Refer to Fastener Caution . Tighten in sequence 38 N.m (28 lb ft)

INPUT AND OUTPUT SPEED SENSOR INSTALLATION



Callout	Component Name
1	Automatic Transmission Output Speed Sensor
2	Automatic Transmission Output Speed Sensor Bolt CAUTION: Refer to Fastener Caution . Tighten 9 N.m (80 lb in)
3	Automatic Transmission Input Speed Sensor
4	Automatic Transmission Input Speed Sensor Bolt Tighten 9 N.m (80 lb in)

CONTROL VALVE BODY ASSEMBLY DISASSEMBLE

Control Valve Solenoid Body Disassemble

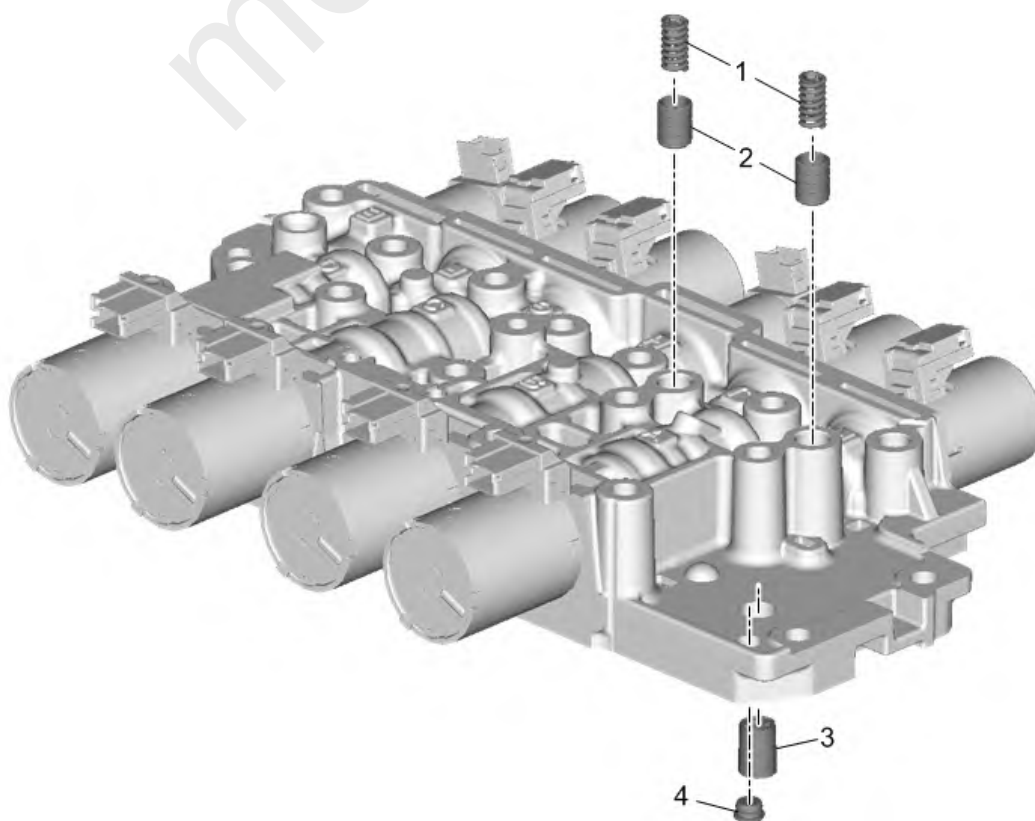


Fig. 58: Exploded View Of Control Valve Solenoid Body Components
 Courtesy of GENERAL MOTORS COMPANY

Control Valve Solenoid Body Disassemble

Callout	Component Name
1	Variable Feed Solenoid Clutch Accumulator Piston Spring [2x]
2	Variable Feed Solenoid Clutch Accumulator Piston [2x]
3	Control Valve Channel Plate Ball Check Valve Spring
4	Variable High and 2-3-4 Clutch Housing Valve

Control Valve Body Plate Disassemble

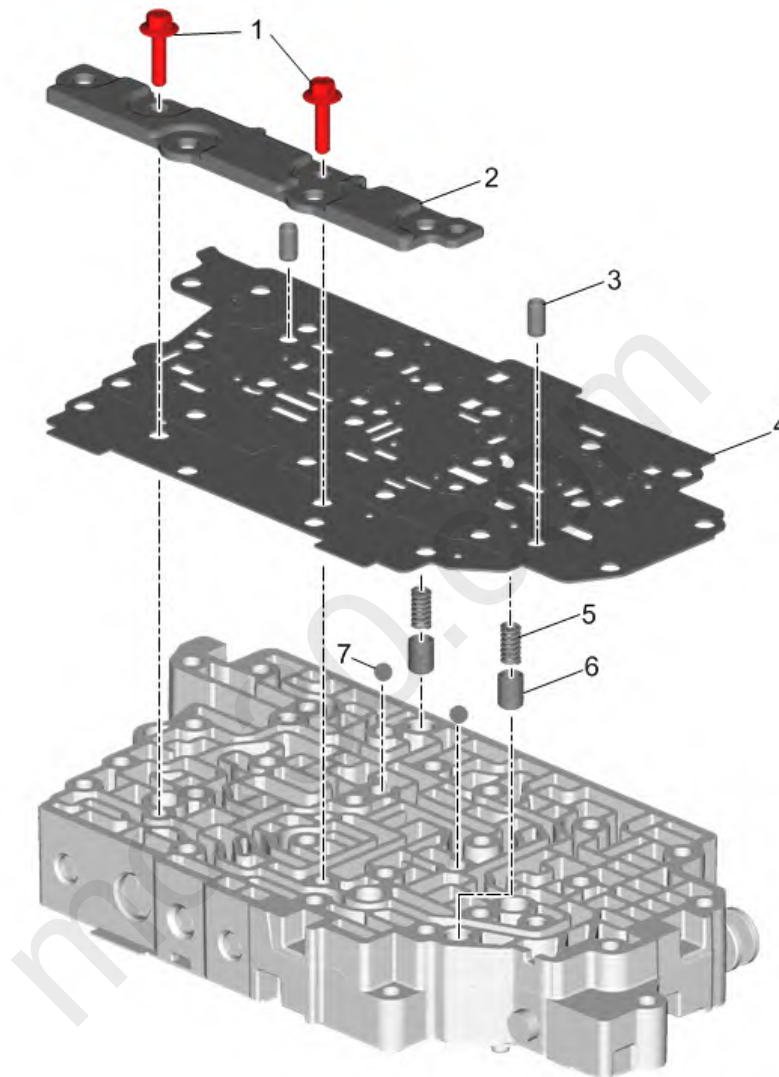


Fig. 59: Exploded View Of Control Valve Body Plate Components
 Courtesy of GENERAL MOTORS COMPANY

Control Valve Body Plate Disassemble

Callout	Component Name
1	Control Valve Solenoid Body Bolt [2x]
2	Oil Transfer Plate
3	Control Valve Body Locating Pin [2x]
4	Control Valve Body Spacer 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.
5	Variable Feed Solenoid Clutch Accumulator Piston Spring [2x]

Callout	Component Name
6	Variable Feed Solenoid Clutch Accumulator Piston [2x]
7	Control Valve Body Ball Check Valve [2x]

Control Valve Body Disassemble

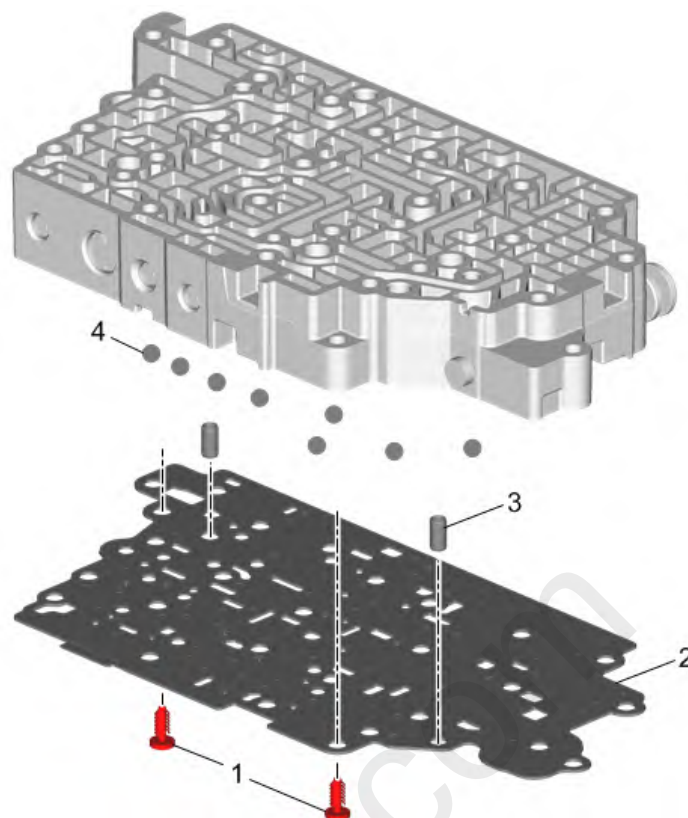


Fig. 60: Exploded View Of Control Valve Body Plate Components

Courtesy of GENERAL MOTORS COMPANY

Control Valve Body Disassemble

Callout	Component Name
1	Control Valve Body Spacer Plate Retainer [2x]
2	Control Valve Body Spacer 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.
3	Control Valve Body Locating Pin [2x]
4	Control Valve Body Ball Check Valve [6x]

CONTROL VALVE SOLENOID BODY CLEANING AND INSPECTION

Control Valve Solenoid Body (1 of 2)

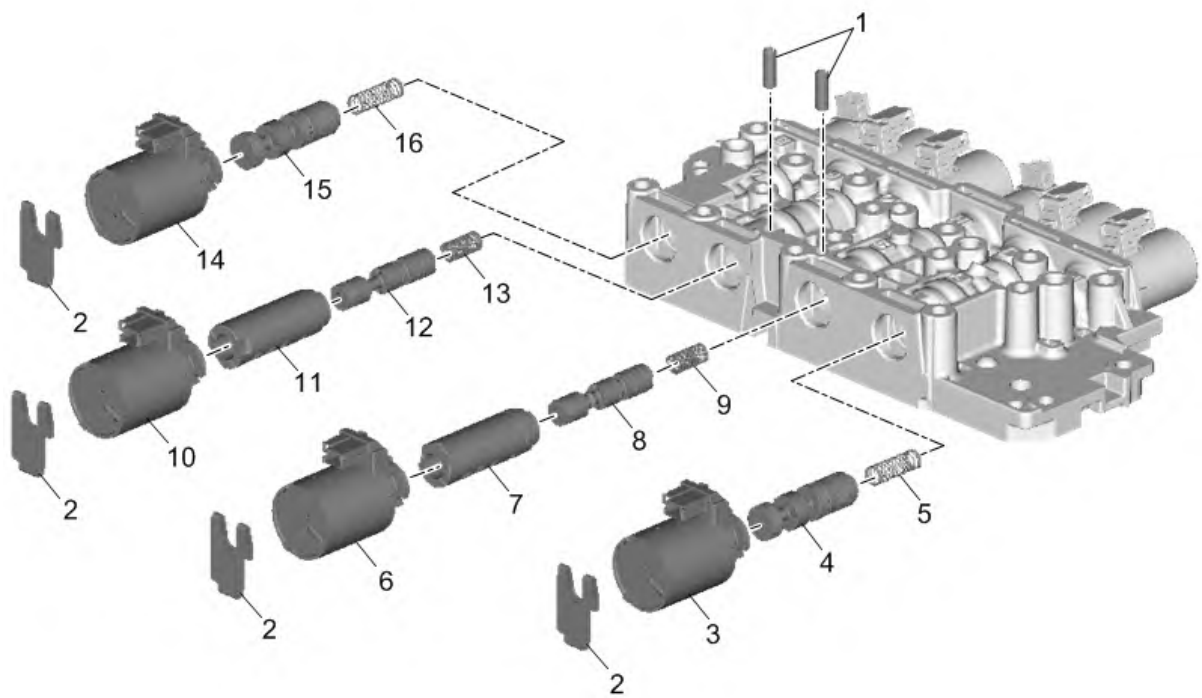


Fig. 61: Exploded View Of Control Valve Solenoid Body Components (1 Of 2).

Courtesy of GENERAL MOTORS COMPANY

Control Valve Solenoid Body (1 of 2)

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 solenoid body. The control valve solenoid body assembly is only replaceable as an assembly.	
1	Clutch Regulator Valve Sleeve Pin
2	Control Valve Solenoid Retainer Retainer
3	Shift Solenoid Valve
4	2-9 Clutch Regulator Valve
5	5-7-Reverse Clutch Regulator Valve Spring
6	Shift Solenoid Valve
7	1-Reverse and 6-7-8-9 Clutch Regulator Valve Sleeve
8	1-2-3-4-5-6 Clutch Regulator Valve
9	1-2-3-4-5-6 Clutch Regulator Spring
10	Shift Solenoid Valve
11	1-2-3-4-5-6 Clutch Regulator Valve Sleeve
12	1-Reverse and 6-7-8-9 Clutch Regulator Valve
13	1-2-3-4-5-6 Clutch Regulator Spring
14	Shift Solenoid Valve

Callout	Component Name
15	5-7-Reverse Clutch Regulator Valve
16	5-7-Reverse Clutch Regulator Valve Spring

Control Valve Solenoid Body (2 of 2)

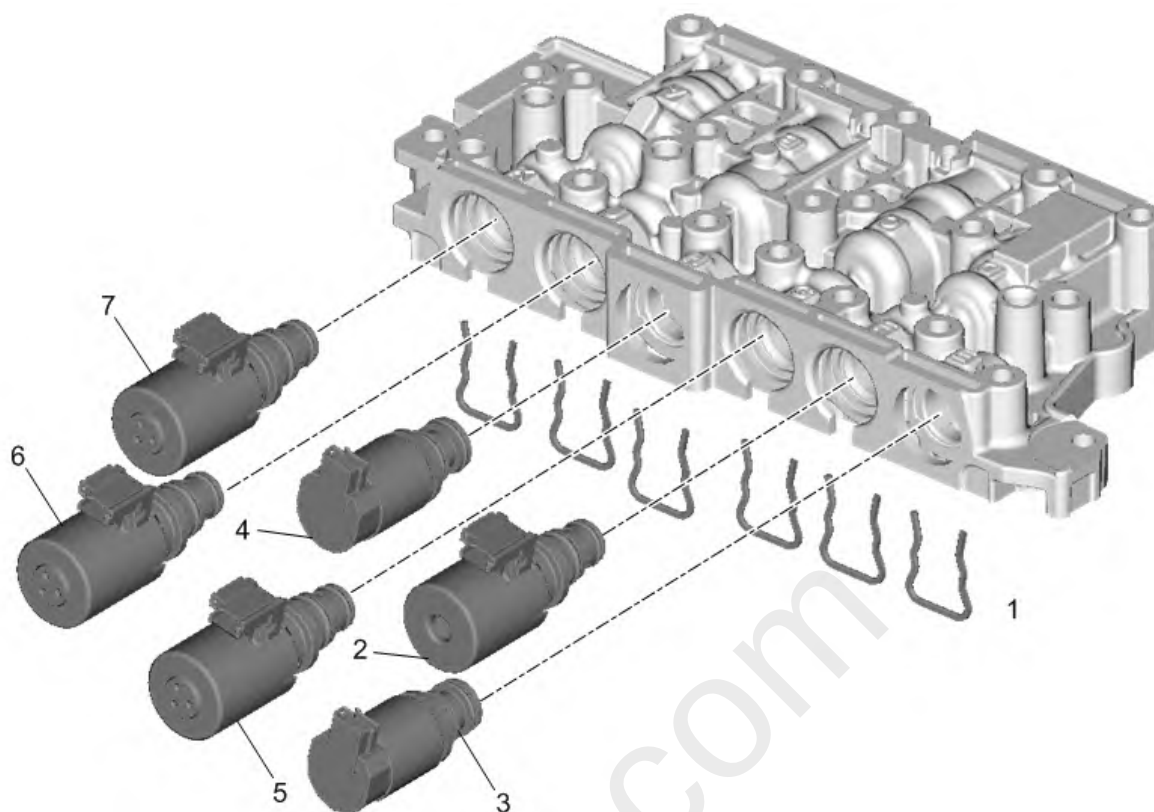


Fig. 62: Exploded View Of Control Valve Solenoid Body Components (2 Of 2).

Courtesy of GENERAL MOTORS COMPANY

Control Valve Solenoid Body (2 of 2)

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 solenoid body. The control valve solenoid body assembly is only replaceable as an assembly.	
1	Control Valve Solenoid Retainer Retainer [6x]
2	Shift Solenoid Valve
3	Shift Solenoid Valve
4	Shift Solenoid Valve
5	Shift Solenoid Valve
6	Shift Solenoid Valve
7	Shift Solenoid Valve

CONTROL VALVE BODY CLEANING AND INSPECTION (WITHOUT ETRS)

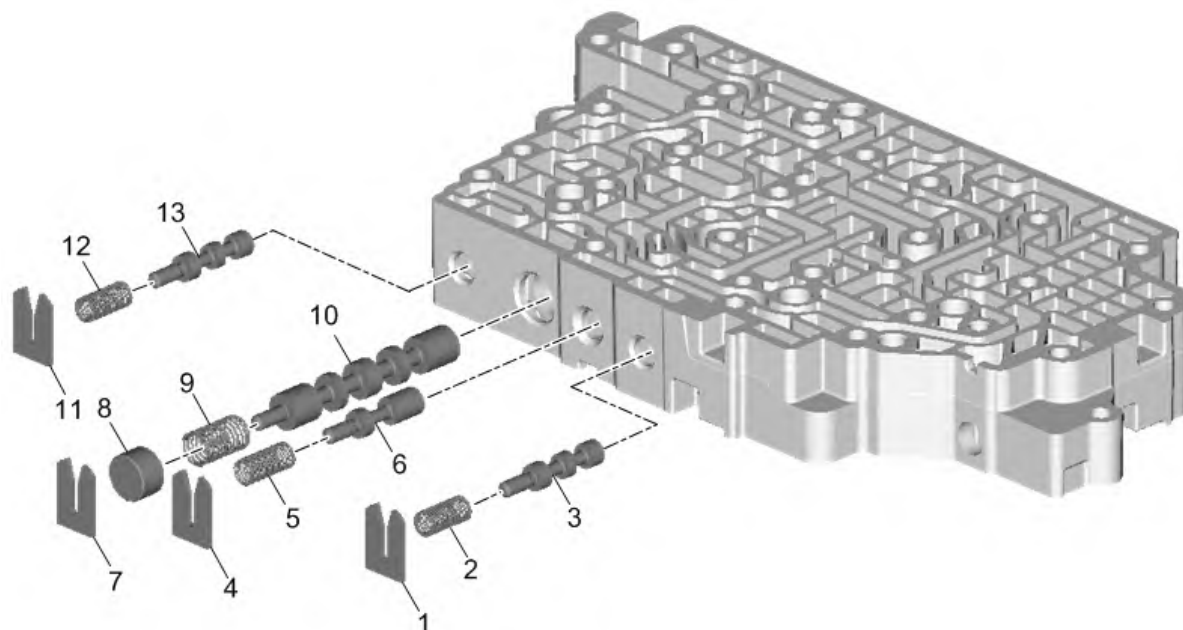


Fig. 63: Exploded View Of Control Valve Body Components (without ETRS)_(1 Of 2).

Courtesy of GENERAL MOTORS COMPANY

Control Valve Body (1 of 2)

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	1-2-3-4-5-6 Clutch Boost Valve Spring Retainer
2	1-2-3-4-5-6 Clutch Boost Valve Spring
3	1-2-3-4-5-6 Clutch Boost Valve
4	Latch Valve Spring Retainer
5	Latch Valve Spring
6	Latch Valve
7	Clutch Selector Valve Bore Plug Retainer
8	Clutch Selector Valve Bore Plug
9	Clutch Selector Valve Spring
10	Clutch Selector Valve
11	5-7-Reverse Clutch Boost Valve Spring Retainer
12	5-7-Reverse Clutch Boost Valve Spring
13	5-7-Reverse Clutch Boost Valve

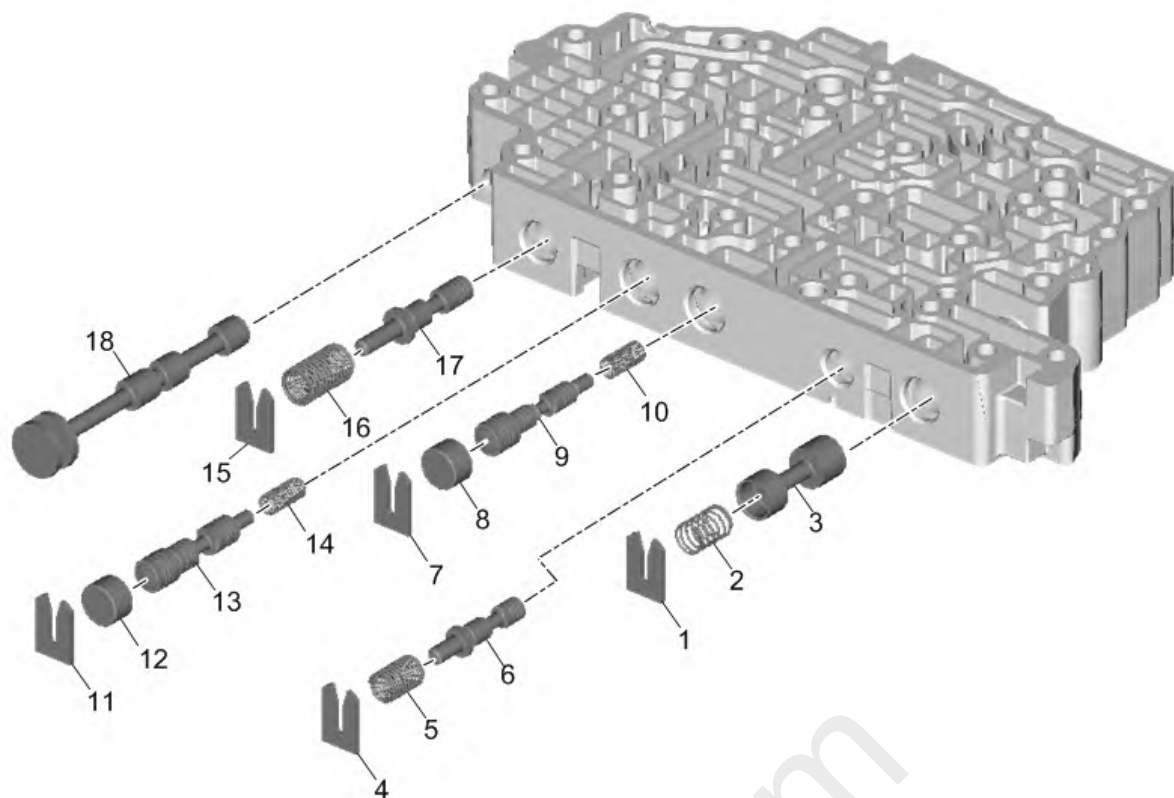


Fig. 64: Exploded View Of Control Valve Body Components (without ETRS)_(2 Of 2).

Courtesy of GENERAL MOTORS COMPANY

Control Valve Body (2 of 2)

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	Oil Level Control Valve Spring Retainer
2	Automatic Transmission Fluid Level Control Valve Spring
3	Automatic Transmission Fluid Level Control Valve
4	Feed Limit Valve Spring Retainer
5	Feed Limit Valve Spring
6	Feed Limit Valve
7	4th Clutch Regulator Valve Bore Plug Retainer
8	4th Clutch Regulator Valve Bore Plug
9	4th Clutch Regulator Valve
10	4th Clutch Regulator Valve Spring
11	3-8 Clutch Regulator Valve Bore Plug Retainer
12	3-8 Clutch Regulator Valve Bore Plug
13	3-8 Clutch Regulator Valve

Callout	Component Name
14	3-8 Clutch Regulator Valve Spring
15	Actuator Feed Limit Valve Spring Retainer
16	Actuator Feed Limit Valve Spring
17	Actuator Feed Limit Valve
18	Manual Valve

CONTROL VALVE BODY ASSEMBLY ASSEMBLE

Control Valve Body Assemble

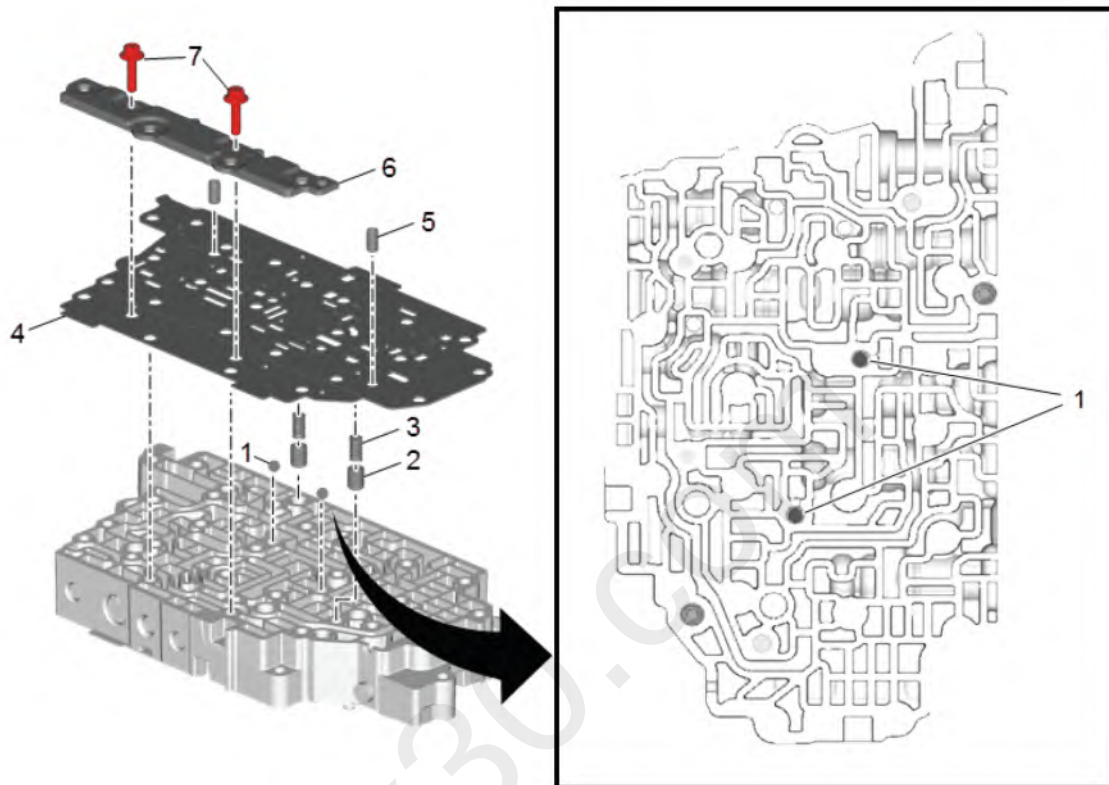


Fig. 65: Exploded View Of Control Valve Body Assemble Components

Courtesy of GENERAL MOTORS COMPANY

Control Valve Body Assemble

Callout	Component Name
1	Control Valve Body Ball Check Valve [2x]
2	Variable Feed Solenoid Clutch Accumulator Piston [2x]
3	Variable Feed Solenoid Clutch Accumulator Piston Spring [2x]
4	Control Valve Body Spacer 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.
5	Control Valve Body Locating Pin [2x]
6	Oil Transfer Plate
7	Control Valve Solenoid Body Bolt [2x] CAUTION: Refer to Fastener Caution . Tighten 9 N.m (80 lb in)

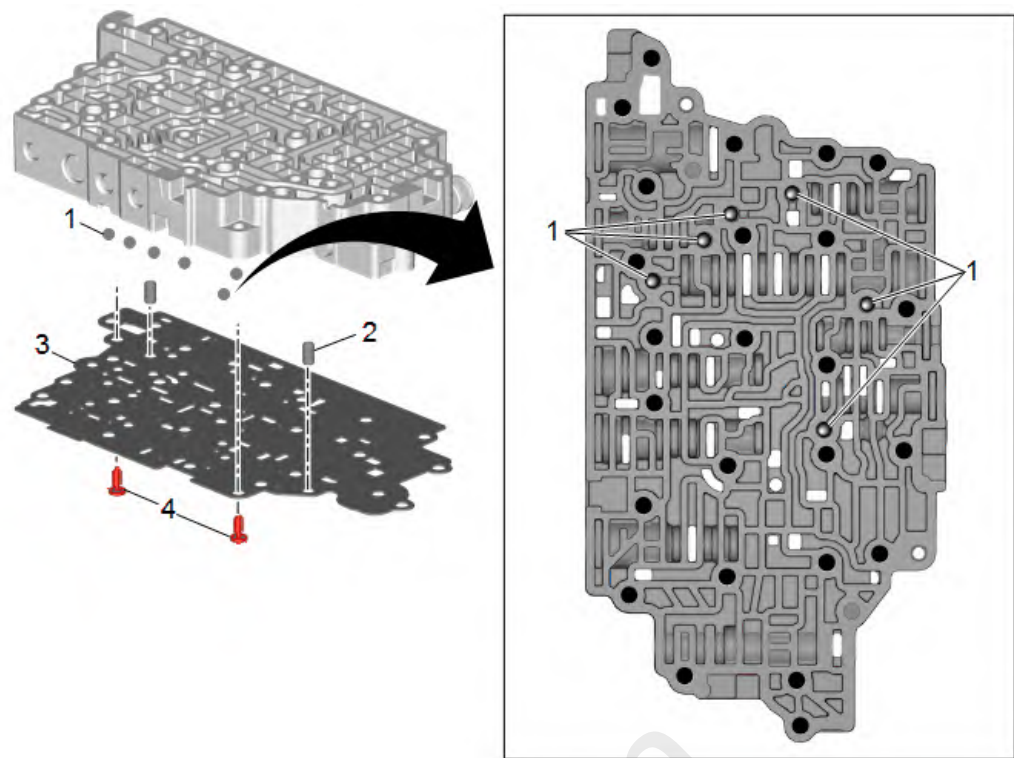


Fig. 66: Exploded View Of Control Valve Body Plate Assemble Components

Courtesy of GENERAL MOTORS COMPANY

Control Valve Body Plate Assemble

Callout	Component Name
1	Control Valve Body Ball Check Valve [6x]
2	Control Valve Body Locating Pin [2x]
3	Control Valve Body Spacer 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	Control Valve Body Spacer Plate Retainer [2x]

Control Valve Solenoid Body Assemble

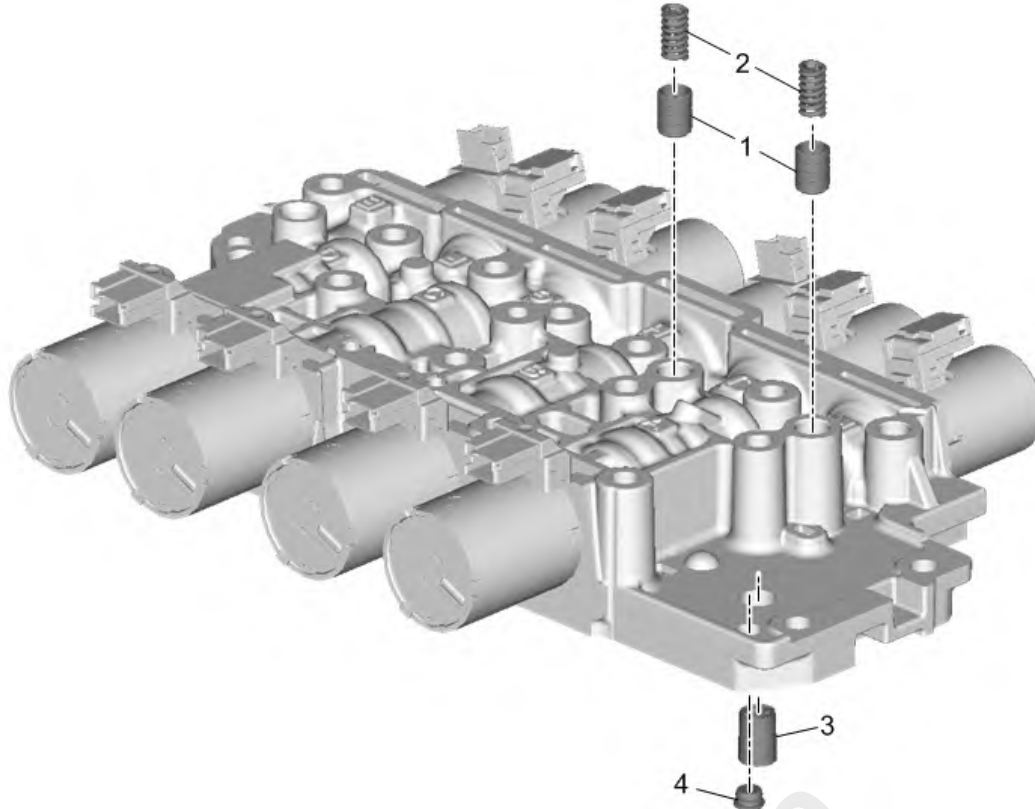


Fig. 67: Exploded View Of Control Valve Solenoid Body Assemble Components

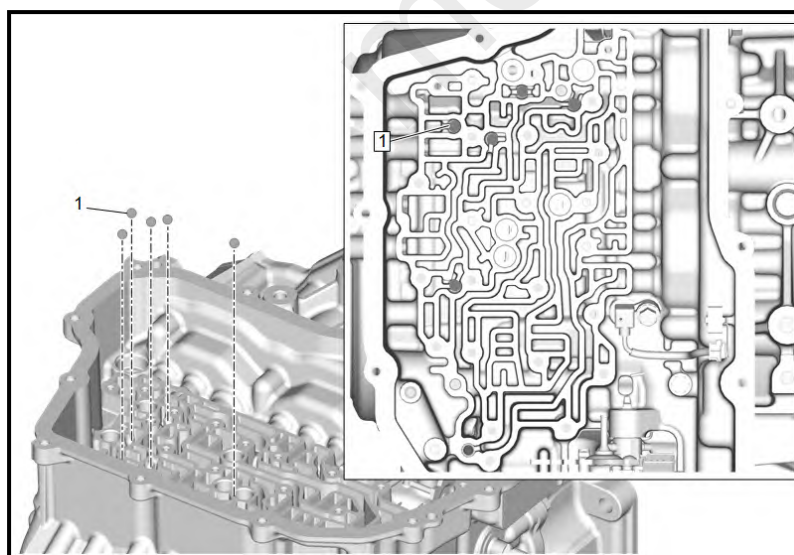
Courtesy of GENERAL MOTORS COMPANY

Control Valve Solenoid Body Assemble

Callout	Component Name
1	Variable Feed Solenoid Clutch Accumulator Piston [2x]
2	Variable Feed Solenoid Clutch Accumulator Piston Spring [2x]
3	Control Valve Channel Plate Ball Check Valve Spring
4	Variable High and 2-3-4 Clutch Housing Valve

CONTROL VALVE BODY ASSEMBLY INSTALLATION

Control Valve Body Ball Check Valve Installation



Control Valve Body Ball Check Valve Installation

Callout	Component Name
1	Control Valve Body Ball Check Valve [5x]

Control Valve Body Installation

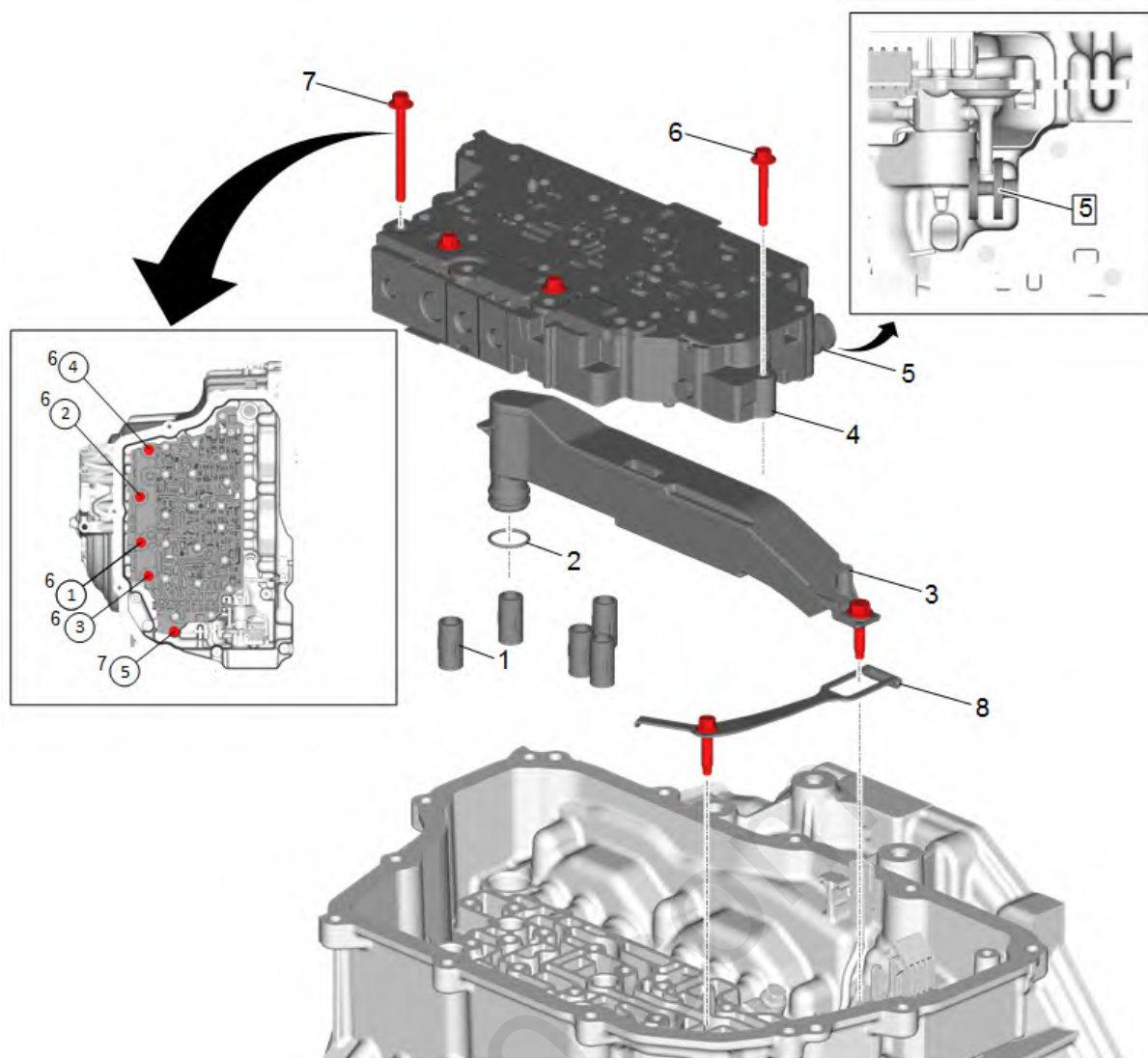


Fig. 68: Exploded View Of Control Valve Body Components With Tightening Sequence
 Courtesy of GENERAL MOTORS COMPANY

Control Valve Body Installation

Callout	Component Name
1	1-2-3-4 Low and Reverse Clutch Fluid Passage Seal [5x] NOTE: Install NEW seals. Do NOT reuse old seals.
2	Fluid Transfer Pipe Seal NOTE: Install a NEW seal. Do NOT reuse the old seal.
3	Fluid Transfer Pipe CAUTION: Refer to Fastener Caution . NOTE: The bolt is captured with pipe. Tighten 9 N.m (80 lb in)
4	Control Valve Body

Callout	Component Name
5	Manual Valve NOTE: Align the manual valve to the rod on the manual shift detent lever.
6	Control Valve Body Bolt Tighten in sequence 9 N.m (80 lb in)
7	Control Valve Body Bolt [4x] Tighten in sequence 8 N.m (71 lb in)
8	Manual Shift Detent Lever Spring NOTE: The bolt is captured with spring. Tighten 9 N.m (80 lb in)

Control Valve Solenoid Body Installation

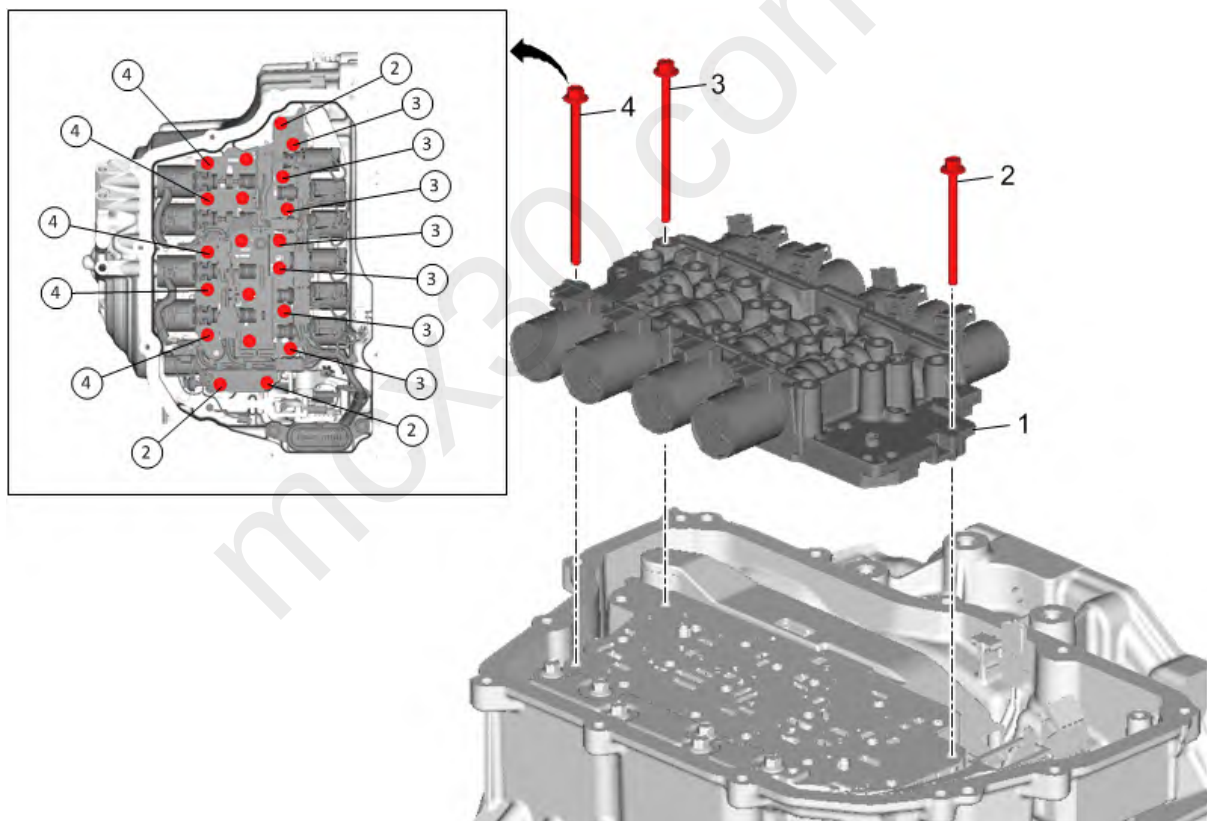


Fig. 69: Exploded View Of Control Valve Solenoid Body With Tightening Sequence
Courtesy of GENERAL MOTORS COMPANY

Control Valve Solenoid Body Installation

Callout	Component Name
1	Control Valve Solenoid Body
2	Control Valve Body Bolt [3x] NOTE: Hand tighten and follow torque sequence below.

Callout	Component Name
3	Control Valve Body Bolt [6x] NOTE: Hand tighten and follow torque sequence below.
4	Control Valve Body Bolt [5x] NOTE: Hand tighten and follow torque sequence below.

Control Valve Solenoid Body Wiring Harness Installation

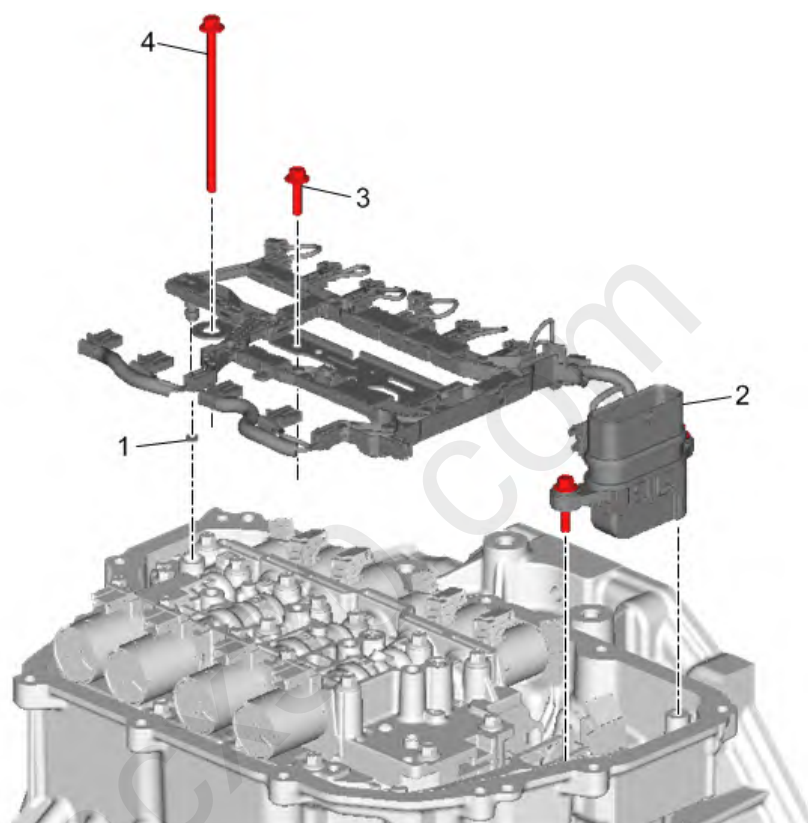


Fig. 70: Exploded View Of Control Valve Solenoid Body Wiring Harness Components
Courtesy of GENERAL MOTORS COMPANY

Control Valve Solenoid Body Wiring Harness Installation

Callout	Component Name
1	Automatic Transmission Fluid Temperature Sensor Seal NOTE: Install a NEW seal. Do NOT reuse the old seal.
2	Automatic Transmission Wiring Harness Procedure Ensure you connect all the connectors to the valve body. Tighten 8 N.m (71 lb in) NOTE: The bolts are captured with harness.
3	Control Valve Solenoid Body Bolt Tighten 9 N.m (80 lb in)

Callout	Component Name
4	Control Valve Body Bolt [3x] NOTE: Hand tighten and follow torque sequence below.

Control Valve Solenoid Body Torque Sequence

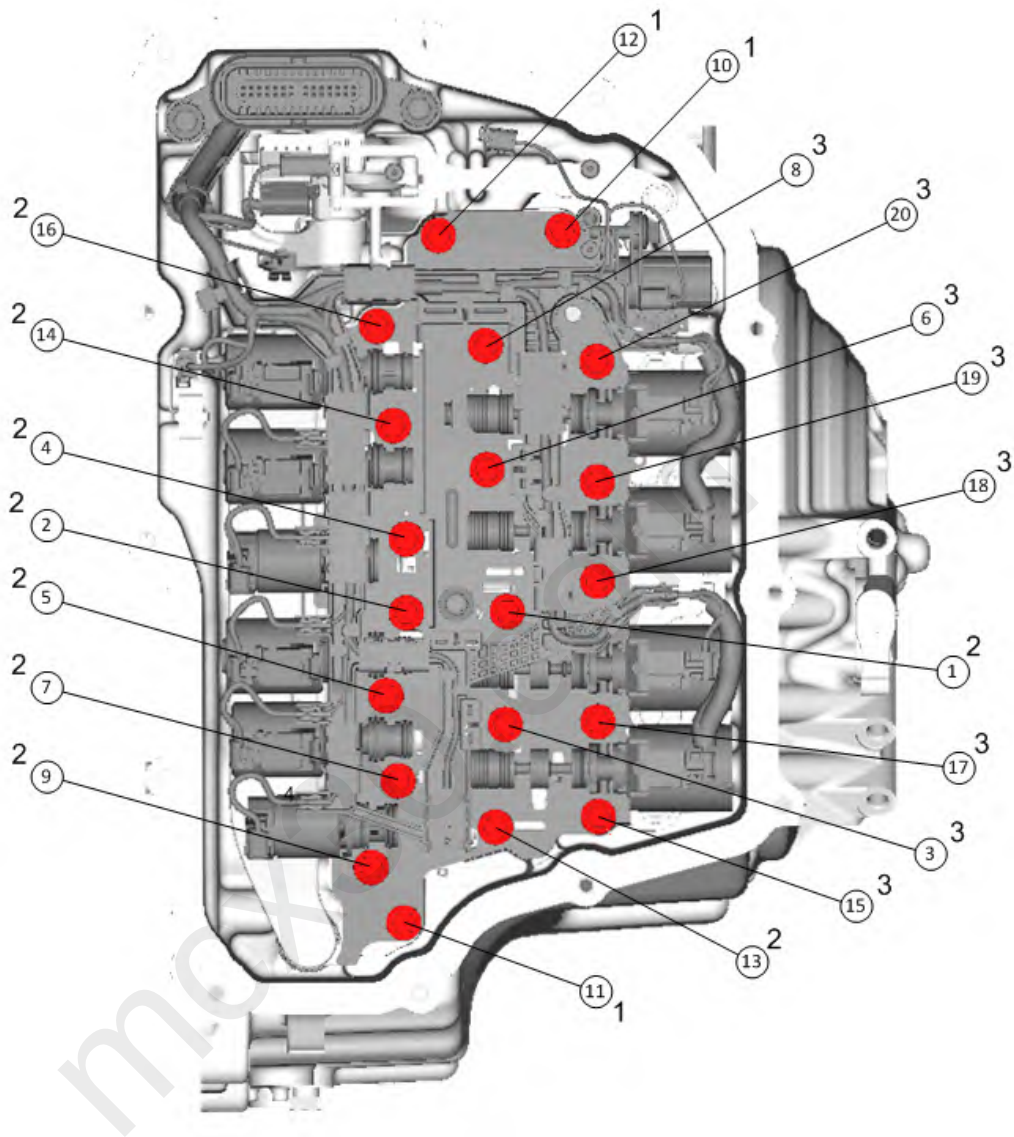


Fig. 71: Exploded View Of Control Valve Solenoid Body Torque Sequence
Courtesy of GENERAL MOTORS COMPANY

Control Valve Solenoid Body Torque Sequence

Callout	Component Name
1	Control Valve Body Bolt [3x] Tighten in sequence 8 N.m (71 lb in)
2	Control Valve Body Bolt [9x] Tighten in sequence 8 N.m (71 lb in)
3	Control Valve Body Bolt [8x] Tighten in sequence 8 N.m (71 lb in)

CONTROL VALVE BODY COVER INSTALLATION

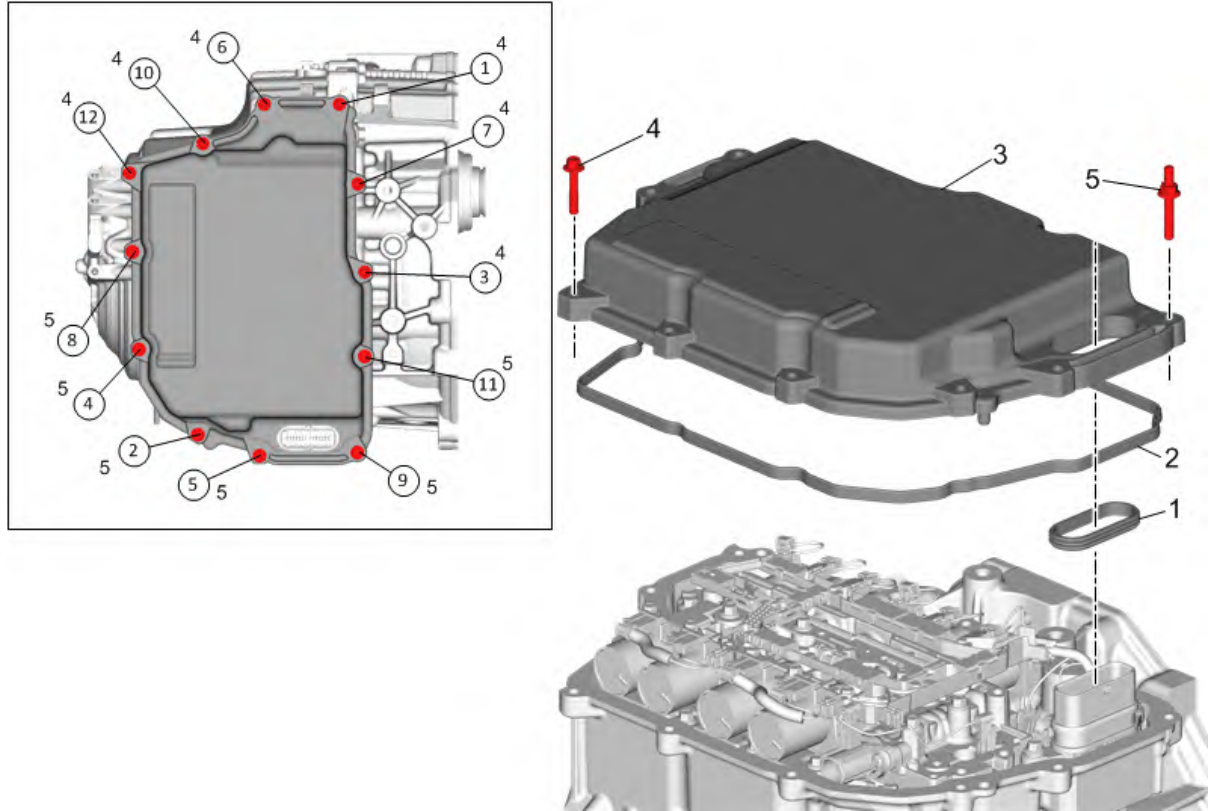


Fig. 72: Exploded View Of Control Valve Body Cover Components With Tightening Sequence
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Body Side Wiring Harness Opening Seal NOTE: Install a NEW seal.
2	Control Valve Body Cover Gasket
3	Control Valve Body Cover
4	Control Valve Body Cover Bolt [6x] CAUTION: Refer to <u>Fastener Caution</u> . Tighten in sequence 9 N.m (80 lb in)
5	Control Valve Body Cover Stud [6x] Tighten in sequence 9 N.m (80 lb in)

AUXILIARY FLUID ACCUMULATOR INSTALLATION

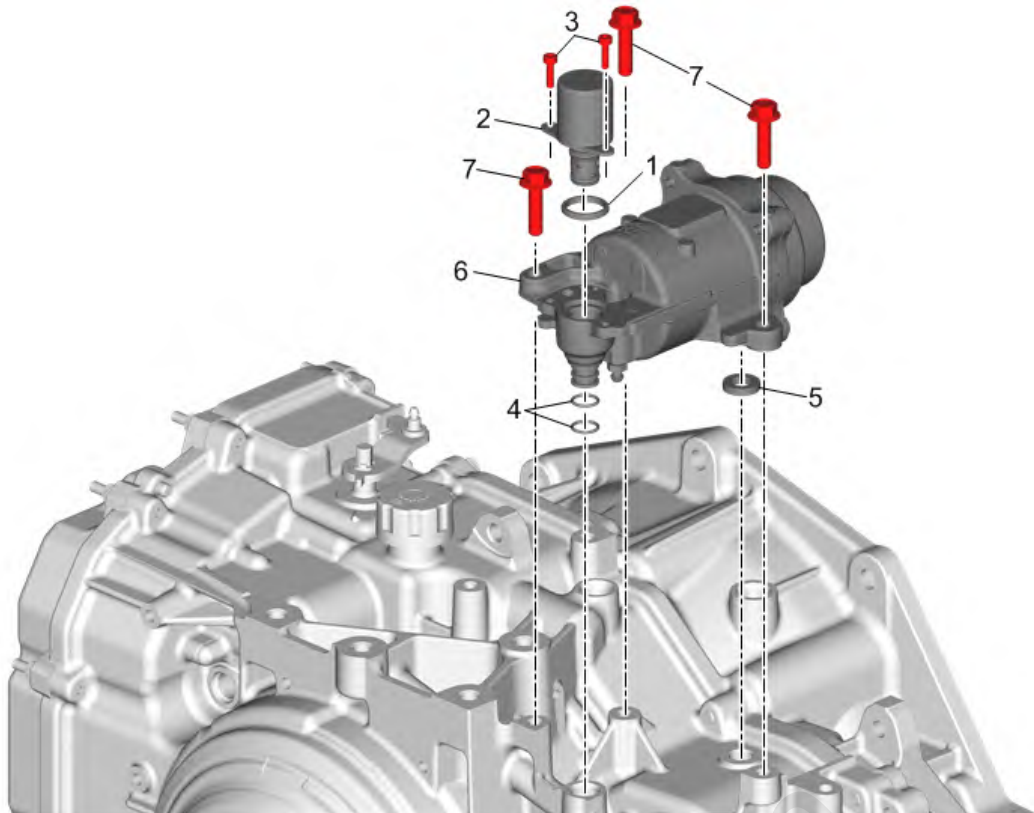


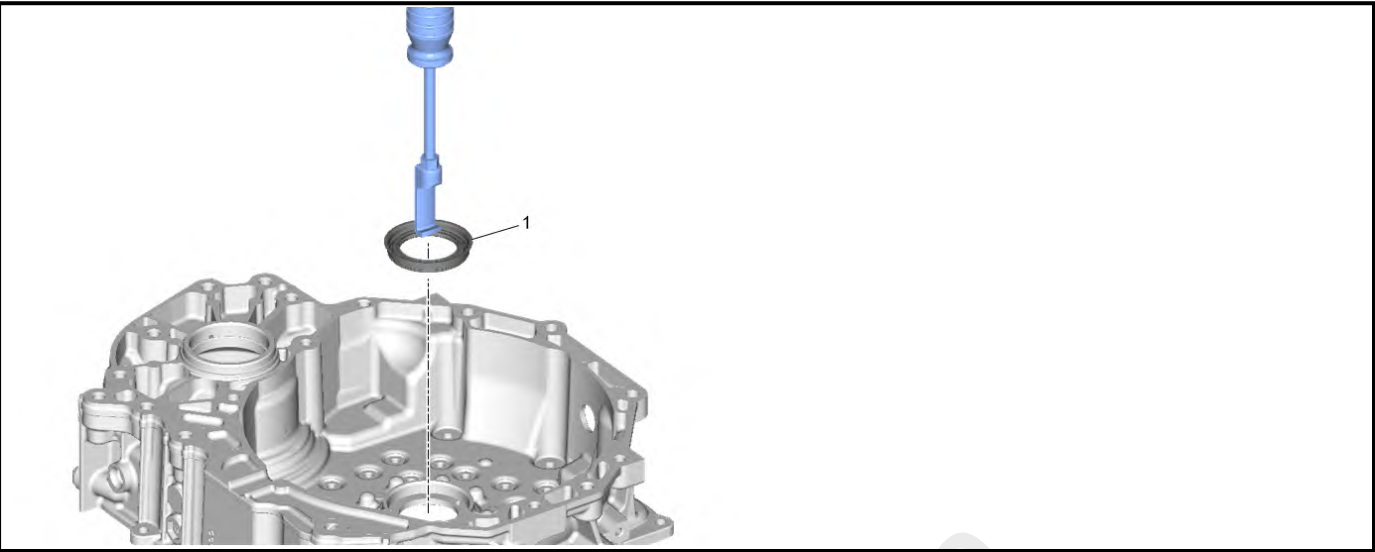
Fig. 73: Exploded View Of Auxiliary Fluid Accumulator Components

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Accumulator Bypass Valve Seal NOTE: Install a NEW seal.
2	Shift On/Off Solenoid Valve NOTE: Repair or replace as necessary.
3	Accumulator Valve Body Bolt [2x] CAUTION: Refer to Fastener Caution . Tighten 2.7 N.m (24 lb in)
4	Automatic Transmission Case Seal [2x] NOTE: Install a NEW seal.
5	Accumulator Bypass Valve Seal NOTE: Install a NEW seal.
6	Automatic Transmission Auxiliary Fluid Accumulator

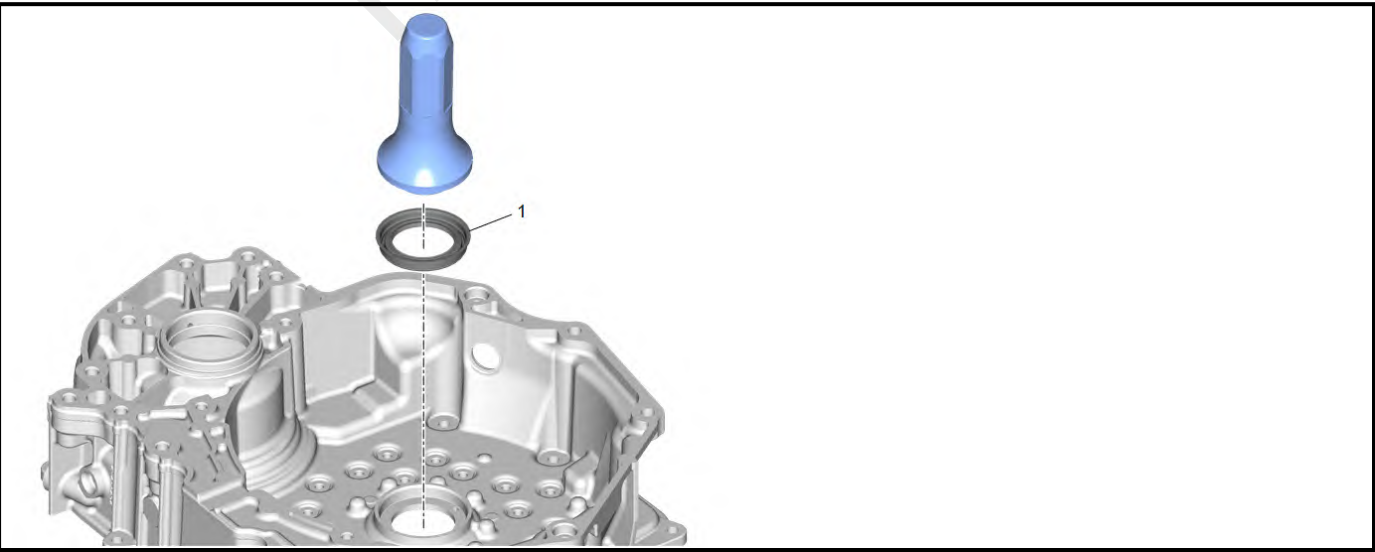
Callout	Component Name
7	Automatic Transmission Auxiliary Fluid Accumulator Bolt [3x] Tighten 8 N.m (71 lb in)

TORQUE CONVERTER FLUID SEAL REMOVAL



Callout	Component Name
1	Torque Converter Fluid Seal NOTE: Remove and DISCARD the seal. Special Tools • DT-6125-B Slide Hammer • EN-23129 Universal Seal Remover Equivalent regional tools: Special Tools .

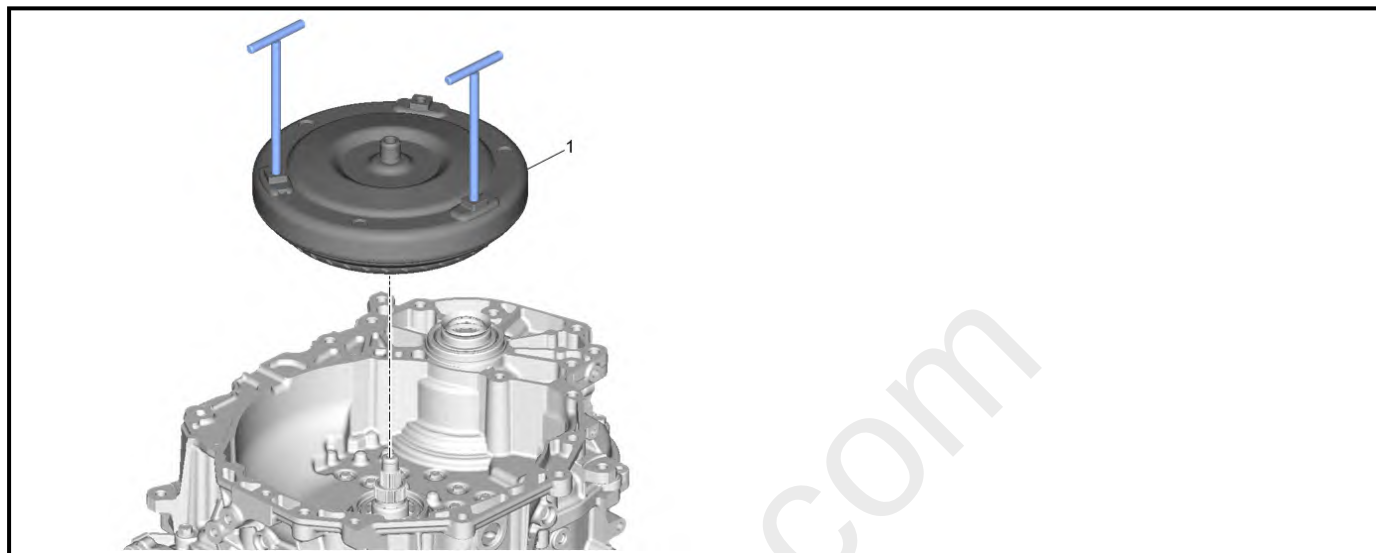
TORQUE CONVERTER FLUID SEAL INSTALLATION



Callout	Component Name

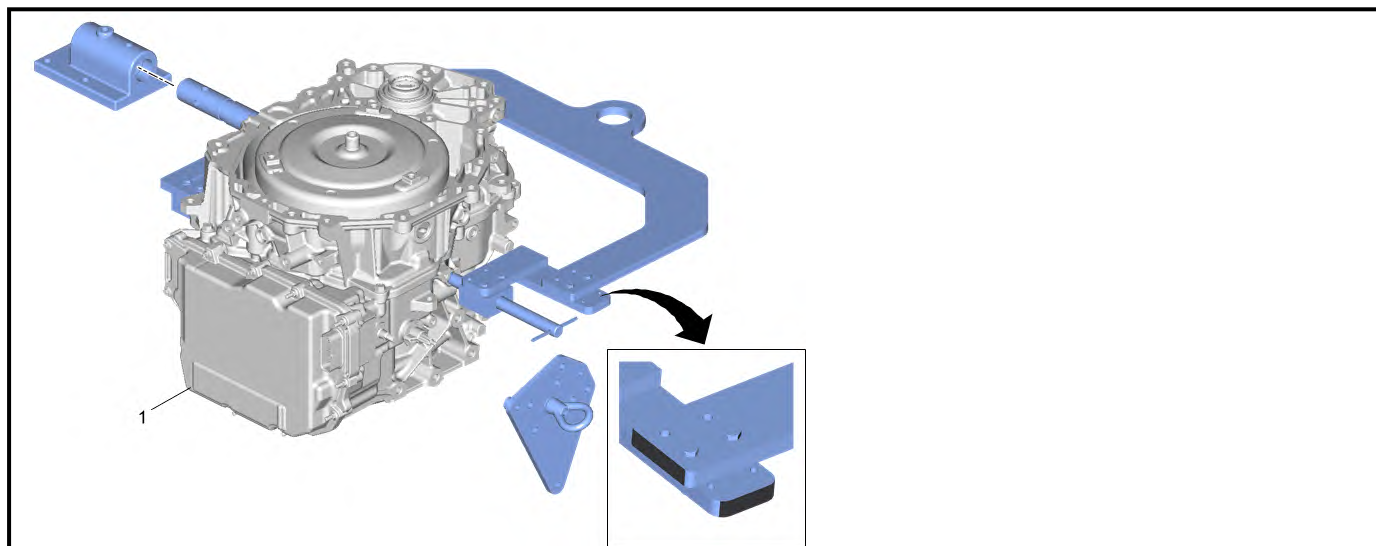
Callout	Component Name
1	Torque Converter Fluid Seal NOTE: Install a NEW seal. Do NOT reuse the old seal. Special Tools J-29162 Seal Installer Equivalent regional tools: Special Tools .

TORQUE CONVERTER INSTALLATION



Callout	Component Name
1	Torque Converter 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 Tools DT - 46409 Torque Converter Lifting Handles Equivalent regional tools: Special Tools .

LIFT PLATE AND HOLDING FIXTURE REMOVAL



Callout	Component Name
1	Transmission Case WARNING: Handle with care, the transmission assembly weighs over 90.7 kg (200 lbs). Bodily injury could occur if not handled properly. 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. CAUTION: Refer to Fastener Caution . Procedure 1. Install DT-47811-A Lift Plate. 2. Tighten bolts and nut to 12 N.m (106 lb in). 3. Install DT-3289-20 Holding Fixture 4. Remove lock pin from DT-3289-20 Holding Fixture. 5. Raise the transmission with an overhead hoist in order to remove the holding DT-46625 Transmission Holding Fixture. 6. Lower the transmission assembly onto the transmission jack in order to remove the DT-47811-A 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 Lift Plate Equivalent regional tools: Special Tools .