

2017 TRANSMISSION**Power Transfer Unit/Transfer Case - AAM****SPECIFICATIONS****FASTENER SPECIFICATIONS****Single Use Non-Threaded Fasteners/Components**

NOTE: <i>All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.</i>
Application
Front Wheel Drive Intermediate Shaft Retaining Ring
Transmission @ Transfer Case O-ring Seal
Transfer Case Input Shaft Bearing Retainer Front Seal
Transfer Case Input Shaft Bearing Retainer Rear Seal
Transfer Case Rear Extension Housing O-Ring Seal

Single Use Threaded Fastener/Component Tightening Specifications

NOTE:
All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.

Application	Specification
	Metric (English)
Transfer Case Drain Plug	40 N.m (30 lb ft)
Transfer Case Fill Plug	40 N.m (30 lb ft)
Transfer Case Rear Output Shaft Housing Bolt	40 N.m (30 lb ft)
Transfer Case Rear Output Flange Nut - Minimum torque - Tighten additional as required to obtain the correct rotating torque	100 N.m (74 lb ft)
Transfer Case Rear Output Flange - Rotating Torque	1.5 N.m (13 lb in) - 2.9 N.m (26 lb in)
Transfer Case Rear Extension Housing Bolt	
• First Pass:	28 N.m (21 lb ft)
• Final Pass:	90 degrees

Reusable Threaded Fastener Tightening Specifications

NOTE: <i>All fasteners listed in this table can be reused after removal.</i>	
Application	Specification
	Metric (English)
Front Wheel Drive Intermediate Shaft Housing Bolts	58 N.m (43 lb ft)
Transfer Case Adapter Plate @ Transmission Bolts (1) (for Automatic Transmission)	
• First Pass:	100 N.m (74 lb ft)

NOTE:

All fasteners listed in this table can be reused after removal.

Application	Specification
	Metric (English)
Final Pass:	30-40 degrees
Transfer Case Adapter Plate @ Transmission Bolts (2) (for Automatic Transmission)	
First Pass:	60 N.m (44 lb ft)
Final Pass:	60-75 degrees
Transfer Case Adapter Plate @ Transmission Bolts (1) (for Manual Transmission)	
First Pass:	100 N.m (74 lb ft)
Final Pass:	30-40 degrees
Transfer Case Vent	25 N.m (18 lb ft)

APPROXIMATE FLUID CAPACITIES

Application	Specification	
	Metric	English
AAM		
Transfer Case Oil	0.35 liters	0.36 quarts

ADHESIVES, FLUIDS, LUBRICANTS, AND SEALERS

Application	Type of Material	GM Part Number	
		United States	Canada
Transfer Case Oil	Lubricant	19256084/19351882	19256085/19351883
Intermediate Shaft Output Splines	Lubricant	1051344	00993037
Rear Extension Housing-to-Main Housing Bolts	Threadlocker	19332211	10953488
Rear Extension Housing Bolt Holes	Cleaner	88862650	88901247
Rear Output Shaft Housing-to-Main Housing Bolts	Threadlocker	19332211	10953488
Rear Output Flange Nut	Threadlocker	19332211	10953488
Rear Output Shaft Splines and Rear Output Flange Splines	Sealant	12346004	10953480
Vent Hose Connector Threads	Sealant	12346004	10953480

COMPONENT LOCATOR

TRANSFER CASE DISASSEMBLED VIEW

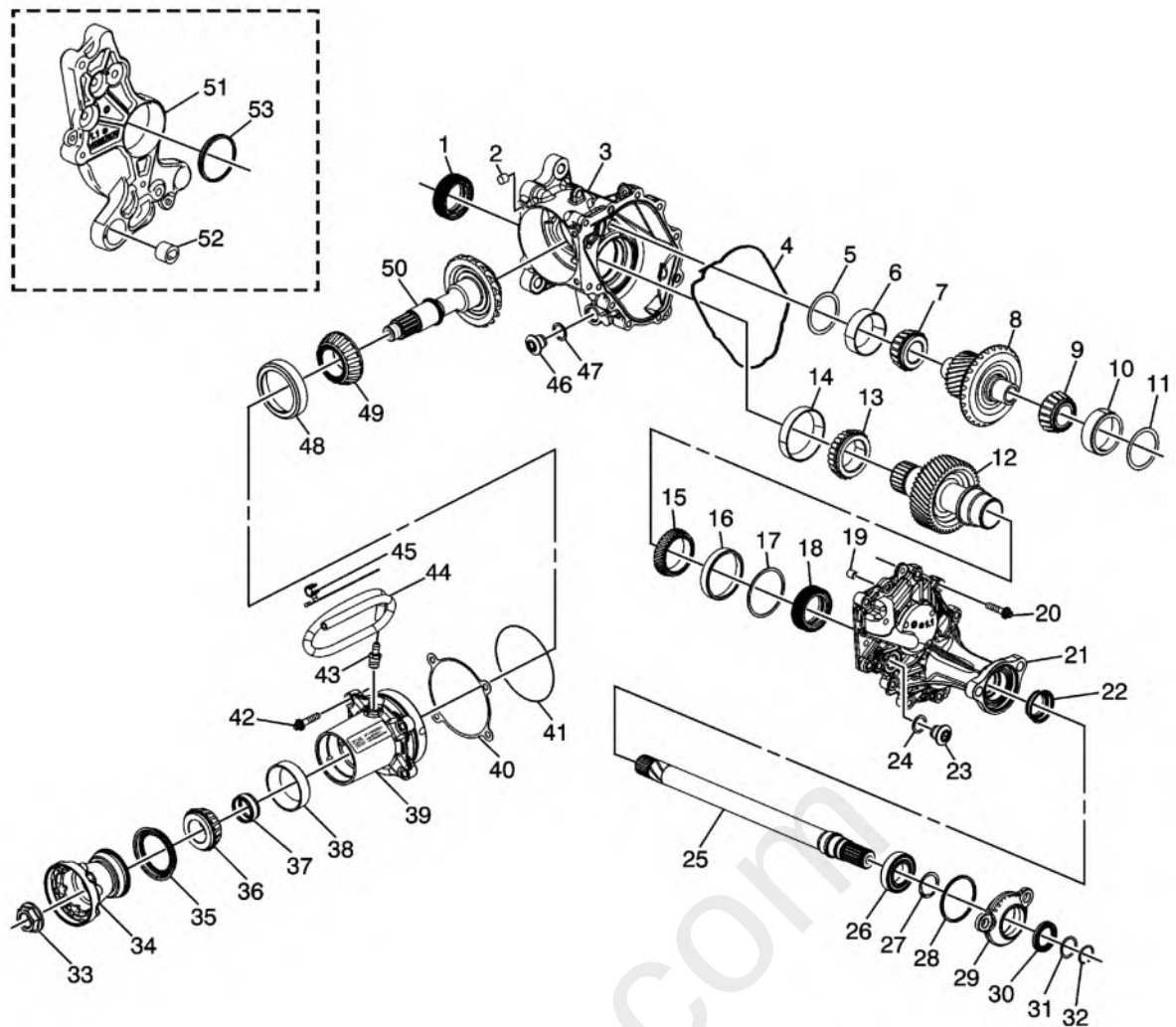


Fig. 1: Transfer Case Components

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Transfer Case Input Shaft Bearing Retainer Front Seal
2	Transfer Case Rear Output Shaft Housing Locating Pin
3	Transfer Case Housing
4	Transfer Case Rear Extension Housing O-Ring Seal
5	Idler Shaft Front Bearing Shim
6	Idler Shaft Front Bearing Race
7	Idler Shaft Front Bearing
8	Idler Shaft
9	Idler Shaft Rear Bearing
10	Idler Shaft Rear Bearing Race
11	Idler Shaft Rear Bearing Shim
12	Input Shaft
13	Input Shaft Front Bearing
14	Input Shaft Front Bearing Race
15	Input Shaft Rear Bearing
16	Input Shaft Rear Bearing Race
17	Input Shaft Rear Bearing Shim
18	Transfer Case Input Shaft Bearing Retainer Rear Seal
19	Transfer Case Rear Extension Housing Locating Pin
20	Transfer Case Rear Extension Housing Bolt
21	Transfer Case Rear Extension Housing
22	Front Wheel Drive Intermediate Shaft Seal
23	Transfer Case Oil Fill Plug
24	Transfer Case Oil Fill Plug Seal

Callout	Component Name
25	Front Wheel Drive Intermediate Shaft
26	Front Wheel Drive Intermediate Shaft Bearing
27	Front Wheel Drive Intermediate Shaft Bearing Retaining Ring
28	Front Wheel Drive Intermediate Shaft Housing Seal
29	Front Wheel Drive Intermediate Shaft Housing
30	Front Wheel Drive Intermediate Shaft Bearing Seal
31	Front Wheel Drive Intermediate Shaft CV Joint Seal
32	Front Wheel Drive Intermediate Shaft Retaining Ring
33	Transfer Case Propeller Shaft Flange Nut
34	Transfer Case Propeller Shaft Flange
35	Transfer Case Rear Output Shaft Seal
36	Transfer Case Rear Output Shaft Rear Bearing
37	Transfer Case Rear Output Shaft Bearing Spacer
38	Transfer Case Rear Output Shaft Rear Bearing Race
39	Transfer Case Rear Output Shaft Housing
40	Transfer Case Rear Output Shaft Housing Shim
41	Transfer Case Rear Output Shaft Housing O-Ring Seal
42	Transfer Case Rear Output Shaft Housing Bolt
43	Transfer Case Vent Hose Connector
44	Transfer Case Vent Hose
45	Transfer Case Vent Hose Clip
46	Transfer Case Oil Drain Plug
47	Transfer Case Oil Drain Plug Seal
48	Transfer Case Rear Output Shaft Front Bearing Race
49	Transfer Case Rear Output Shaft Front Bearing
50	Transfer Case Rear Output Shaft
51	Transfer Case Adapter
52	Transfer Case Adapter Bushing
53	Transmission-to-Transfer Case Adapter Seal

DIAGNOSTIC INFORMATION AND PROCEDURES

SYMPTOMS - TRANSFER CASE

Strategy Based Diagnostics

Review the system operations in order to familiarize yourself with the system functions. Refer to [Transfer Case Disassembled View](#), [Transfer Case Description and Operation](#), and [Rear Drive Axle Description and Operation](#). All diagnosis on a vehicle should follow a logical process. Strategy based diagnostics is a uniform approach for repairing all systems. The diagnostic flow may always be used in order to resolve a system condition. The diagnostic flow is the place to start when repairs are necessary. For a detailed explanation, refer to [Strategy Based Diagnosis](#).

Visual/Physical Inspection

- Inspect for aftermarket devices, which could affect the operation of the vehicle. Refer to [Checking Aftermarket Accessories](#).
- Inspect the easily accessible or visible system components for obvious damage or conditions, which could cause the symptom.
- Inspect for the correct lubricant levels and the proper viscosities.
- Verify the exact operating conditions under which the concern exists. Note factors such as vehicle speed, road conditions, ambient temperature, and other specifics.
- Compare the driving characteristics or sounds, if applicable, to a known good vehicle and ensure you are not trying to correct a normal condition.

Intermittent

Test the vehicle under the same conditions that the customer reported in order to verify the system is operating properly.

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- [Diagnostic System Check - Vehicle](#) .
- [Noisy in Drive](#).
- [Noisy When Coasting](#).
- [Intermittent Noise](#).
- [Constant Noise](#).
- [Transfer Case Leak Diagnosis](#).

NOISY IN DRIVE

Cause	Correction
Inspect for the proper transaxle and gear oil levels prior to performing system diagnosis.	
Low gear oil level	Inspect the transfer case for leaks, repair as required. Refer to Transfer Case Leak Diagnosis , and Adhesives, Fluids, Lubricants, and Sealers .
Incorrect gear oil in the transfer case	Replace the gear oil. Refer to Adhesives, Fluids, Lubricants, and Sealers .
Water or contamination within the transfer case oil	Replace the transfer case oil and flush the transfer case of the contaminated fluid.
Worn propeller shaft constant velocity joints	Replace propeller shaft assembly. Refer to Symptoms - Propeller Shaft .
Worn or noisy wheel bearings	Replace the wheel bearings as required. Refer to Wheel Bearings Diagnosis .
Worn wheel drive shaft constant velocity joints	Replace the constant velocity joints, as required. Refer to Symptoms - Wheel Drive Shafts .
Bearing noise within the transfer case • A grinding noise that occurs at a specific engine speed, regardless of transmission gear, is not within the transfer case. • A grinding noise that changes as a transmission shift occurs is not within the transfer case. • A grinding noise that changes as vehicle speed changes may be also caused by worn wheel bearings. • A grinding noise that changes as the vehicle turns may also be caused by worn wheel bearings and/or tires.	1. Inspect for the proper transfer case fluid level. Fill, as required. 2. Identify the location of the noise using the J 39570 Chassis Ears. 3. If the noise continues, inspect the internal components. If damage is present, replace the assembly as required.

Cause	Correction
Gear set whine noise within the transfer case - A whine noise that occurs at a specific engine speed, regardless of transmission gear, is not within the transfer case. - A whine noise that changes as a transmission shift occurs is not within the transfer case. - A whine noise that changes as vehicle speed changes may be also caused by worn wheel bearings. - A whine noise that changes as the vehicle turns may also be caused by worn wheel bearings and/or tires.	- Inspect for the proper transfer case fluid level. Fill, as required. - Identify the location of the noise using the J 39570 Chassis Ears. - If the noise continues, inspect the internal components. If damage is present, replace the assembly as required.

NOISY WHEN COASTING

Cause	Correction
Inspect for the proper transaxle and gear oil levels prior to performing system diagnosis.	
Low gear oil level	Inspect the transfer case for leaks, repair as required. Refer to Transfer Case Leak Diagnosis , and Adhesives, Fluids, Lubricants, and Sealers .
Incorrect gear oil in the transfer case	Replace the gear oil. Refer to Adhesives, Fluids, Lubricants, and Sealers .
Worn propeller shaft constant velocity joints	Replace propeller shaft assembly. Refer to Symptoms - Propeller Shaft .
Worn wheel drive shaft constant velocity joints	Replace the constant velocity joints, as required. Refer to Symptoms - Wheel Drive Shafts .
Bearing noise within the transfer case - A grinding noise that occurs at a specific engine speed, regardless of transmission gear, is not within the transfer case. - A grinding noise that changes as a transmission shift occurs is not within the transfer case. - A grinding noise that changes as vehicle speed changes may be also caused by worn wheel bearings. - A grinding noise that changes as the vehicle turns may also be caused by worn wheel bearings and/or tires.	- Inspect for the proper transfer case fluid level. Fill, as required. - Identify the location of the noise using the J 39570 Chassis Ears. - If the noise continues, inspect the internal components. If damage is present, replace the assembly as required.

Cause	Correction
Gear set whine noise within the transfer case - A whine noise that occurs at a specific engine speed, regardless of transmission gear, is not within the transfer case. A whine noise that changes as a transmission shift occurs is not within the transfer case. - A whine noise that changes as vehicle speed changes may be also caused by worn wheel bearings. - A whine noise that changes as the vehicle turns may also be caused by worn wheel bearings and/or tires.	- Inspect for the proper transfer case fluid level. Fill, as required. - Identify the location of the noise using the J 39570 Chassis Ears. - If the noise continues, inspect the internal components. If damage is present, replace the assembly as required.

INTERMITTENT NOISE

Cause	Correction
Inspect for the proper transaxle and gear oil levels prior to performing system diagnosis.	
Incorrect gear oil in the transfer case	Replace the gear oil. Refer to Adhesives, Fluids, Lubricants, and Sealers .
Transfer case bearing. A chatter or ratcheting type noise during hard acceleration on tight turns.	Confirm noise is coming from the transfer case. Repair as required.

CONSTANT NOISE

Cause	Correction
Inspect for the proper transaxle and gear oil levels prior to performing system diagnosis.	
Low gear oil level	Inspect the transfer case for leaks, repair as required. Refer to Transfer Case Leak Diagnosis , and Adhesives, Fluids, Lubricants, and Sealers .
Incorrect gear oil in the transfer case	Replace the gear oil. Refer to Adhesives, Fluids, Lubricants, and Sealers .
Worn propeller shaft constant velocity joints	Replace propeller shaft assembly. Refer to Symptoms - Propeller Shaft .

Cause	Correction
Bearing noise within the transfer case • A grinding noise that occurs at a specific engine speed, regardless of transmission gear, is not within the transfer case. • A grinding noise that changes as a transmission shift occurs is not within the transfer case. • A grinding noise that changes as vehicle speed changes may be also caused by worn wheel bearings. • A grinding noise that changes as the vehicle turns may also be caused by worn wheel bearings and/or tires.	1. Inspect for the proper transfer case fluid level. Fill, as required. 2. Identify the location of the noise using the J 39570 Chassis Ears. 3. If the noise continues, inspect the internal components. If damage is present, replace the assembly as required.
Gear set whine noise within the transfer case • A whine noise that occurs at a specific engine speed, regardless of transmission gear, is not within the transfer case. • A whine noise that changes as a transmission shift occurs is not within the transfer case. • A whine noise that changes as vehicle speed changes may be also caused by worn wheel bearings. • A whine noise that changes as the vehicle turns may also be caused by worn wheel bearings and/or tires.	1. Inspect for the proper transfer case fluid level. Fill, as required. 2. Identify the location of the noise using the J 39570 Chassis Ears. 3. If the noise continues, inspect the internal components. If damage is present, replace the assembly as required.

TRANSFER CASE LEAK DIAGNOSIS

Cause	Correction
DEFINITION: A visible indication of an external fluid leak from the transfer case. Review the Symptoms - Transfer Case and perform the necessary inspections. See below for suggested diagnostic method(s).	
Empty space for diagnostic methods	

Cause	Correction
Special Tools GE 28431-6 Fluorescent Oil Dye GE 28428-E High Intensity Black Light Kit For equivalent regional tools, refer to Special Tools. Fluorescent Dye Method 1. Add GE 28431-6 Fluorescent dye to the transmission or transfer case to determine the source of the leak. 2. Operate the vehicle. 3. Inspect for the presence of dye within the oil leak using the GE 28428-E High Intensity Black Light Kit. A presence or non-presence of dye within the oil leak will indicate which component is the source of the leak. Powder Method CAUTION: Do not clean using brake cleaner or other reactive solvents as these solvents can damage rubber gaskets, seals and bushings. 1. Thoroughly clean the suspected leak area using a rag. 2. Apply an aerosol type leak tracing powder to the suspected leak area. NOTE: Do not drive the vehicle on the freeway as this will splatter oil inhibiting leak diagnosis. 3. Operate the vehicle for 15-20 minutes under city driving conditions until normal operating temperatures are reached. 4. Shut OFF the engine. 5. Inspect the suspected leak area. 6. Trace the leak path through the powder in order to find the source of the leak.	
Drain plug or fill plug leak	1. Inspect for dirty, worn, scored sealing surfaces, or missing drain and/or fill plug sealing washers. 2. Replace as required.
Restricted or damaged ventilation hose assembly	Replace the ventilation hose assembly, as required.
Leaking ATF at the transaxle -to-transfer case interface	NOTE: An ATF leak at the transaxle-to-transfer case interface may be caused by the transfer case adapter seal or a damaged sealing surface. If the leak is transmission or O-ring related, do not replace the transfer case input shaft bearing retainer front seal. 1. Identify the location of the leak and type of fluid. 2. Replace the transfer case adapter seal as required. Refer to Transfer Case Replacement.

Cause	Correction
Leaking at the transfer case vent hole - main housing	NOTE: An ATF leak at the transaxle-to-transfer case interface may be caused by the transfer case adapter seal or a damaged sealing surface. If the leak is transmission or O-ring related, do not replace the transfer case input shaft bearing retainer front seal. An automatic transmission fluid (ATF) or transfer case gear oil leak at the transfer case vent hole is caused by the transfer case input shaft bearing retainer front seal. Replace components as required. Refer to Transfer Case Description and Operation, and Transfer Case Replacement.
Leaking at the transfer case vent hole - extension housing	NOTE: An automatic transmission fluid (ATF) or transfer case gear oil leak at the extension housing vent hole is caused by the input shaft bearing retainer seal located in the rear extension housing. Replace the transfer case input shaft bearing retainer rear seal. Refer to Transfer Case Description and Operation, and Transfer Case Replacement.
Leaking ATF at the intermediate shaft bearing location	NOTE: The front wheel drive intermediate shaft bearing seal is a dirt and debris seal only and not a fluid retaining seal and is not the source of a fluid leak. 1. Inspect the front wheel drive intermediate shaft (IDS) bearing for excessive wear. A worn IDS shaft bearing may cause excessive shaft runout and seal leakage. Replace the front wheel drive intermediate shaft bearing as required. 2. Replace the front wheel drive intermediate shaft seal and the front wheel drive intermediate shaft housing seal. Refer to Transfer Case Disassembled View, and Transfer Case Description and Operation.
Leaking at rear output shaft area	NOTE: A transfer case gear oil leak at rear output shaft area may be caused by either the rear output shaft seal, the rear output flange with damage to the seal surface, or a leaking rear output shaft housing O-ring seal. Replace the components as required. Refer to Transfer Case Description and Operation.
Case half seam leak AAM	Disassemble and replace the transfer case-to-rear extension housing O-ring seal.
Leaking through the case	• Inspect for a cracked case. • Inspect for case porosity. Replace the components as required.

REPAIR INSTRUCTIONS - ON VEHICLE

TRANSFER CASE FLUID REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Place a suitable drain pan under the transfer case.

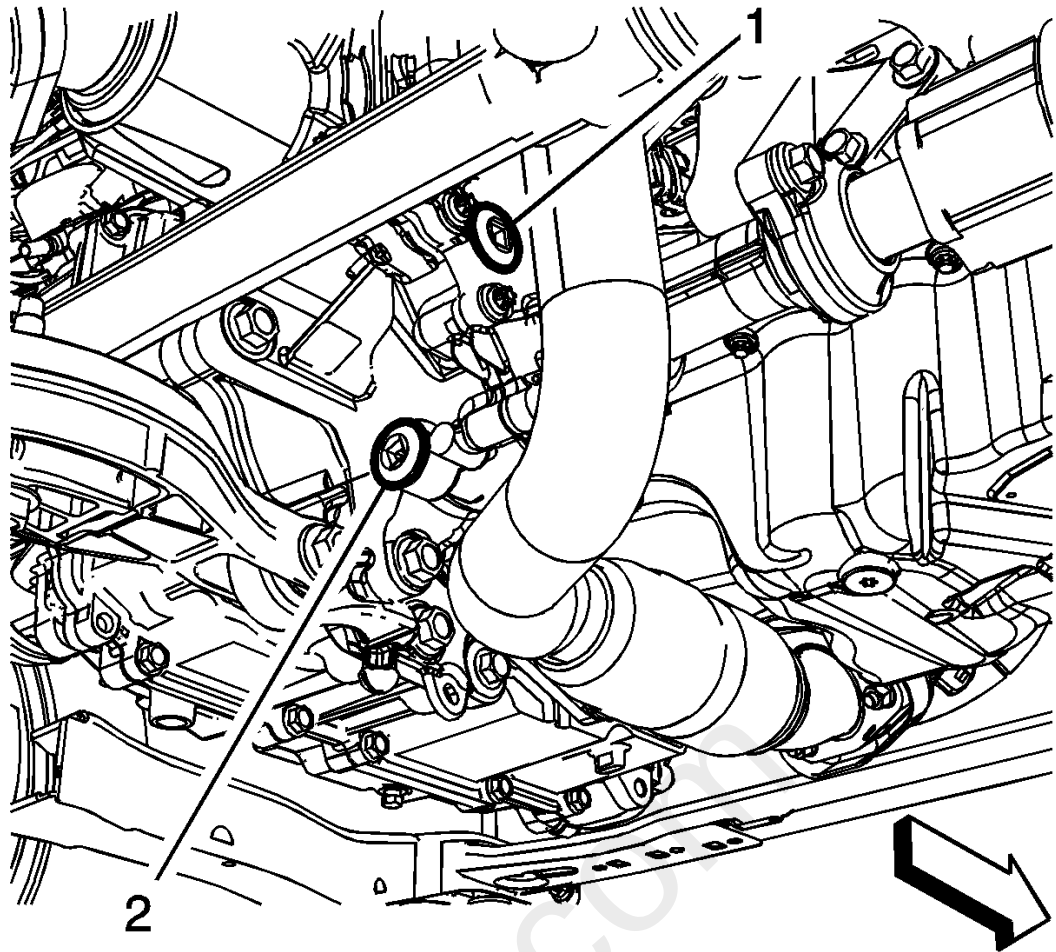


Fig. 2: Transfer Case Drain And Fill Plugs
Courtesy of GENERAL MOTORS COMPANY

NOTE: Both plugs are to be discarded if removed and NEW plugs installed.

3. Remove the drain plug (2) and discard.
4. Remove the fill plug (1) and discard.

Installation Procedure

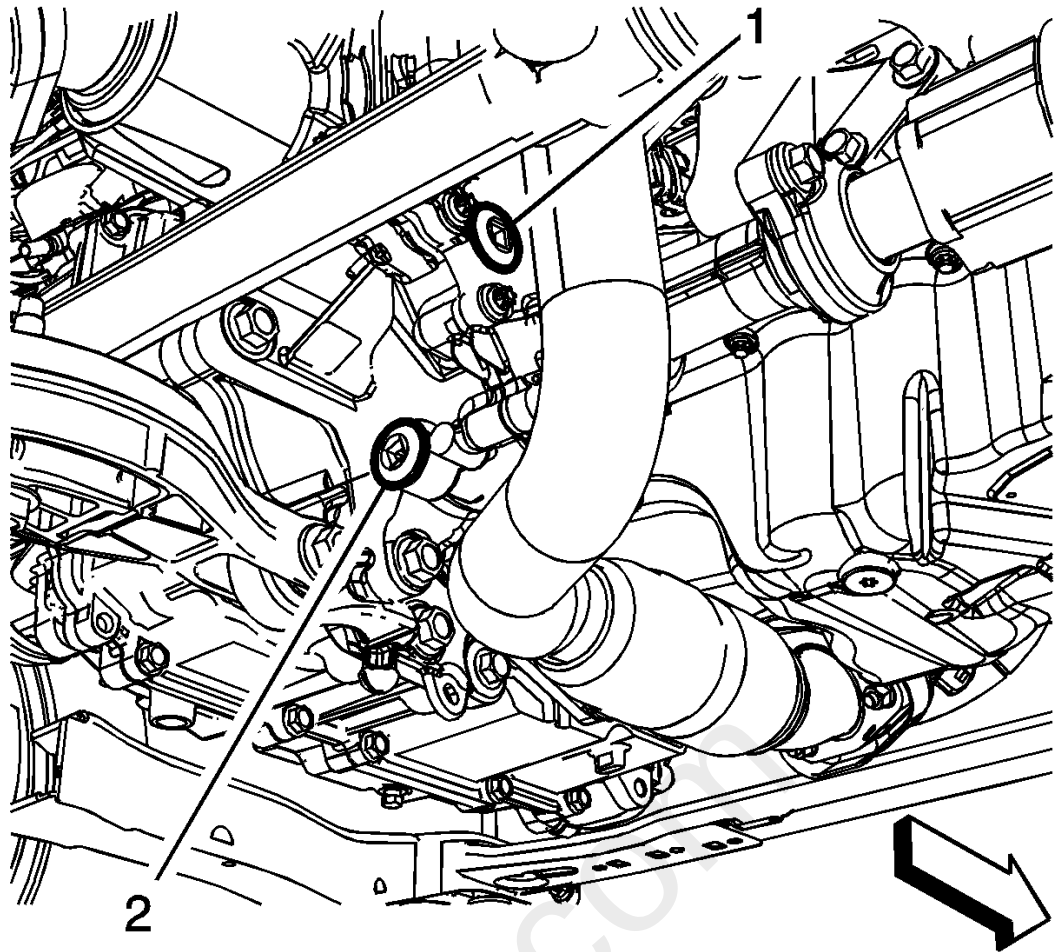


Fig. 3: Transfer Case Drain And Fill Plugs
Courtesy of GENERAL MOTORS COMPANY

1. Install the new drain plug.
2. Tighten the drain plug to 40 N.m (30 lb ft).
3. Fill the transfer case to the bottom of the fill plug hole. Refer to [Adhesives, Fluids, Lubricants, and Sealers](#)
4. Install a NEW fill plug and tighten to 40 N.m (30 lb ft).
5. Lower the vehicle.

DRAIN PLUG REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#) .

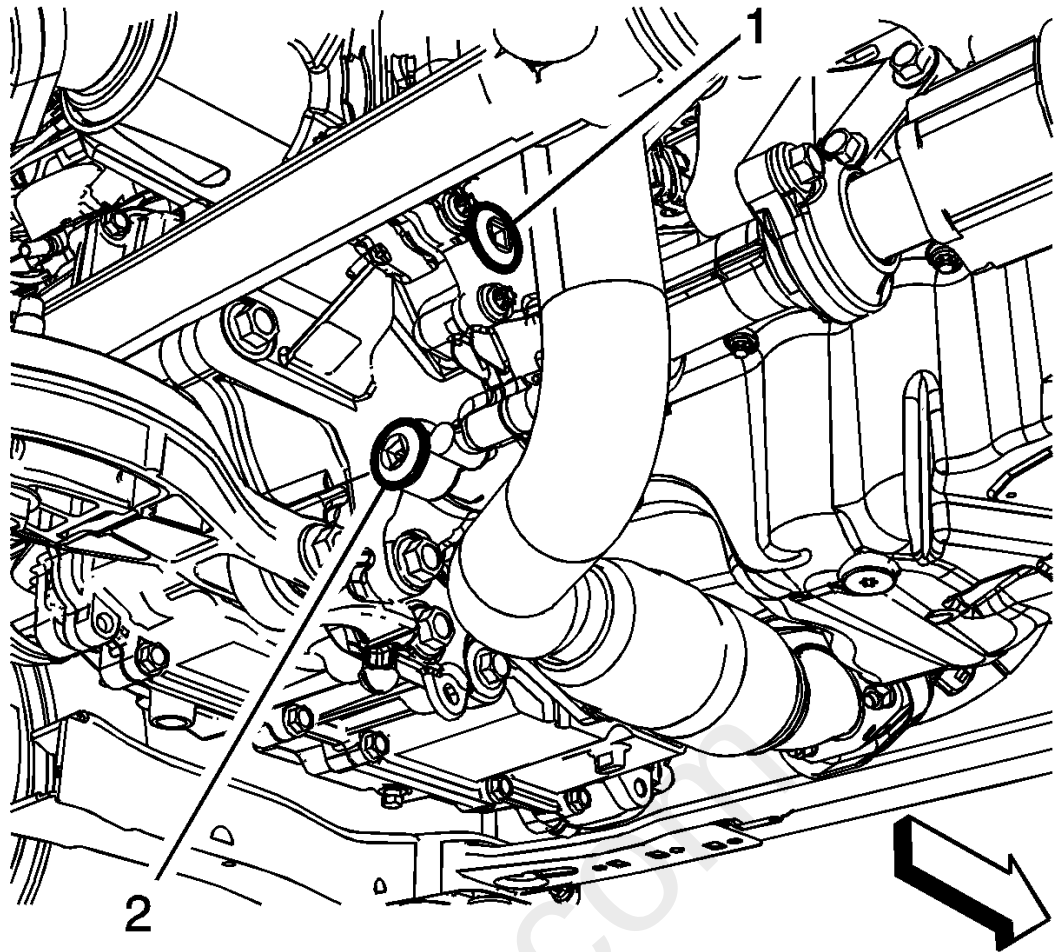


Fig. 4: Transfer Case Drain And Fill Plugs
Courtesy of GENERAL MOTORS COMPANY

NOTE: Both plugs are to be discarded if removed and NEW plugs installed.

2. Remove the drain plug (2) and discard.
3. Remove the fill plug (1) and discard.

Installation Procedure

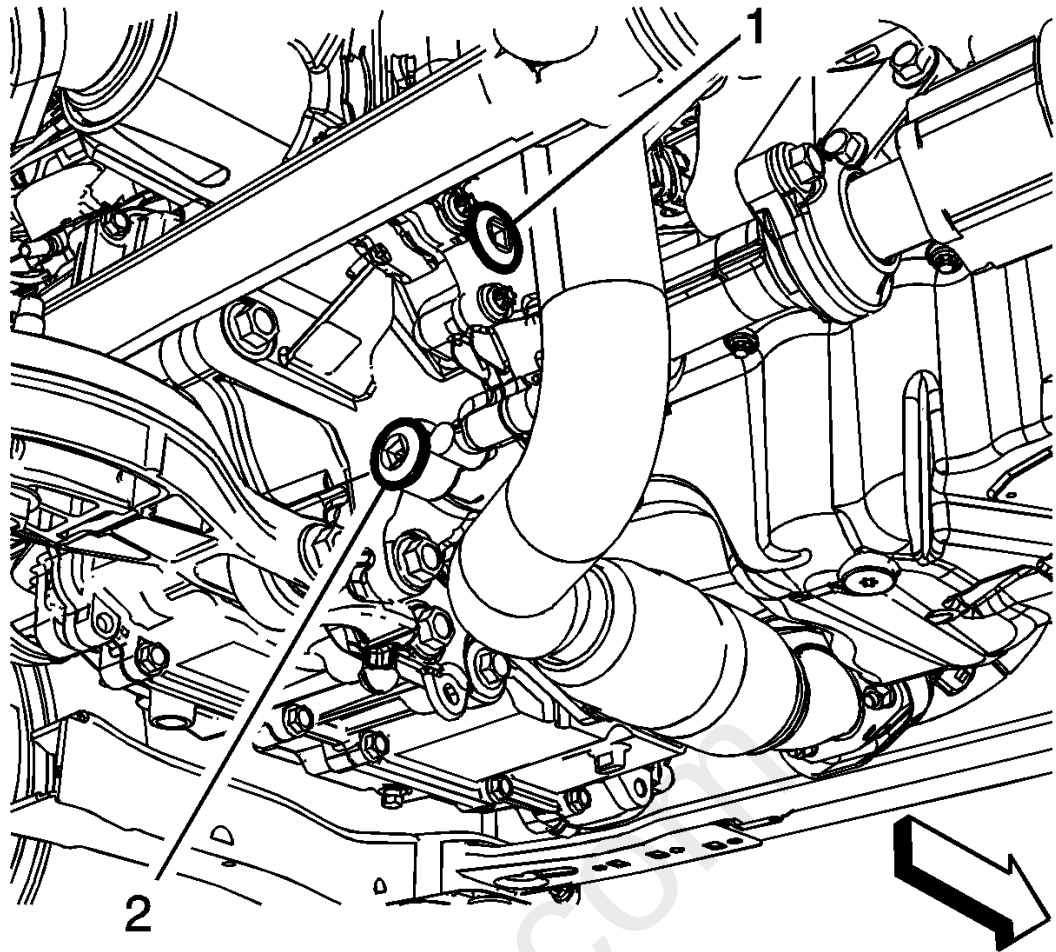


Fig. 5: Transfer Case Drain And Fill Plugs
Courtesy of GENERAL MOTORS COMPANY

1. Install the new drain plug.
2. Tighten the drain plug to 40 N.m (30 lb ft).
3. Fill the transfer case to the bottom of the fill plug hole.
4. Install a NEW fill plug and tighten to 40 N.m (30 lb ft).
5. Lower the vehicle.

FILL PLUG REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#) .

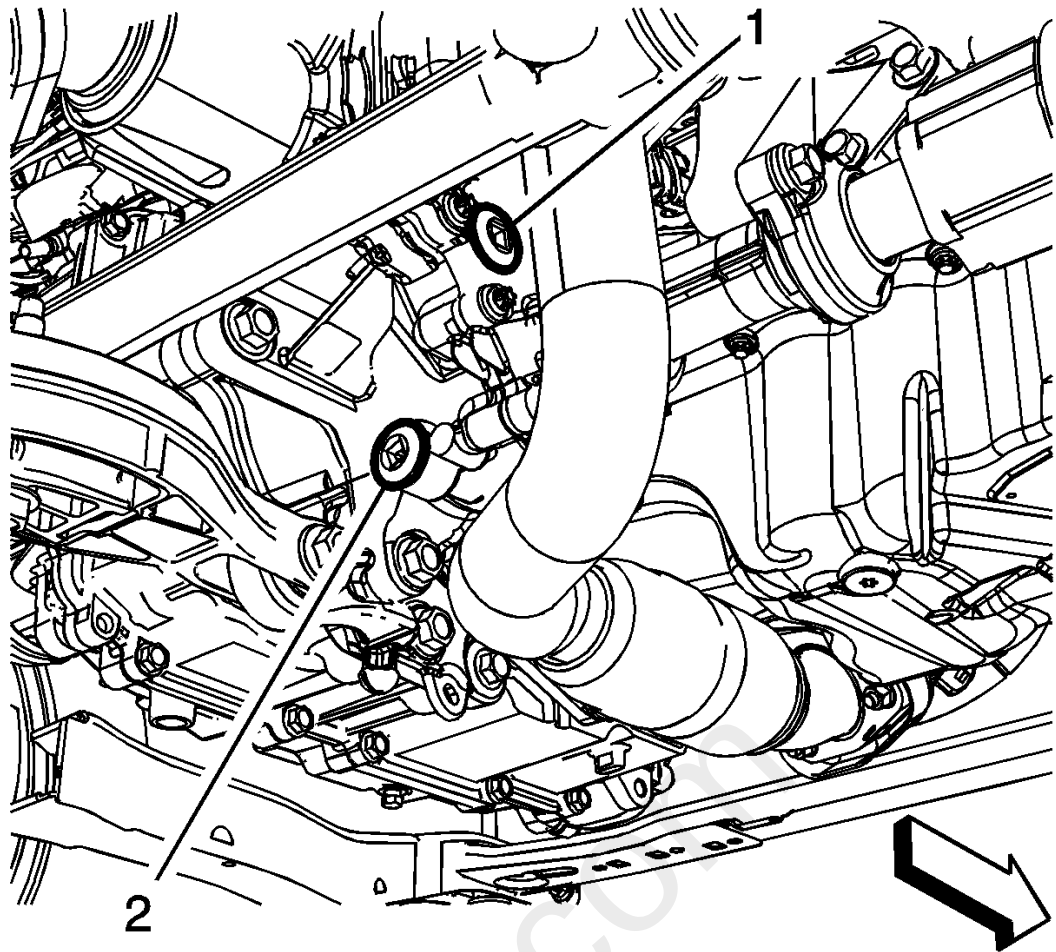


Fig. 6: Transfer Case Drain And Fill Plugs
Courtesy of GENERAL MOTORS COMPANY

2. Remove the fill plug (1) and discard.

Installation Procedure

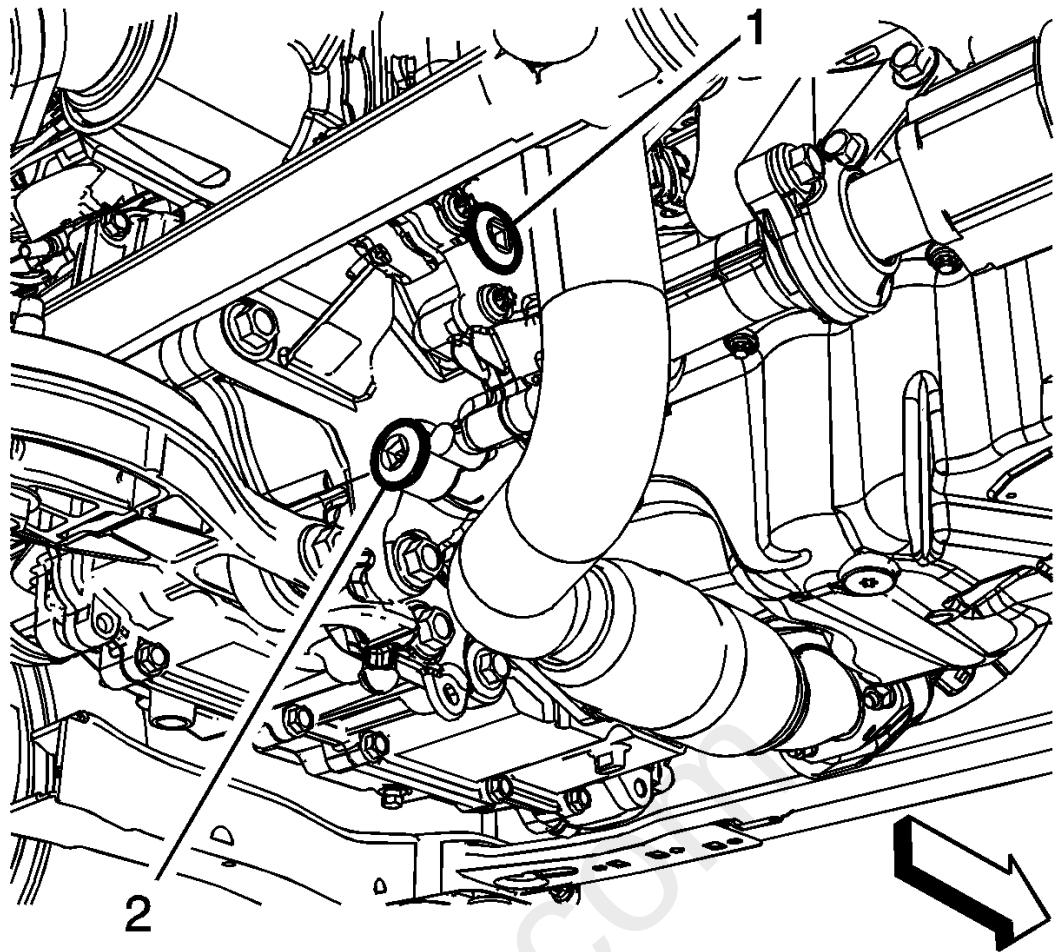


Fig. 7: Transfer Case Drain And Fill Plugs
Courtesy of GENERAL MOTORS COMPANY

1. Install a NEW fill plug.
2. Tighten the fill plug to 40 N.m (30 lb ft).
3. Lower the vehicle.

TRANSFER CASE VENT HOSE REPLACEMENT

Removal Procedure

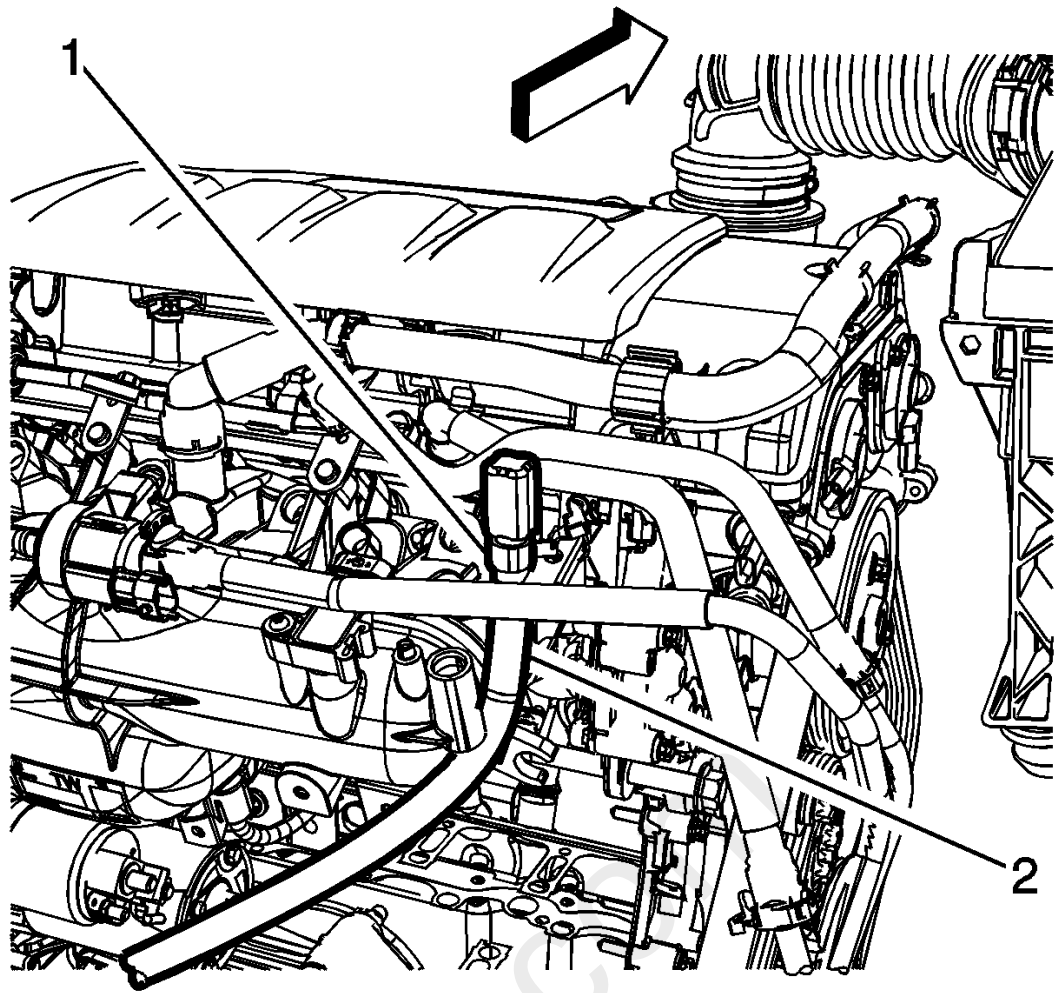


Fig. 8: Vent Hose And Retaining Clip

Courtesy of GENERAL MOTORS COMPANY

1. Unclip the upper portion of the vent hose (2) from the retaining clip (1).
2. Raise the vehicle on a hoist. Refer to [Lifting and Jacking the Vehicle](#) .

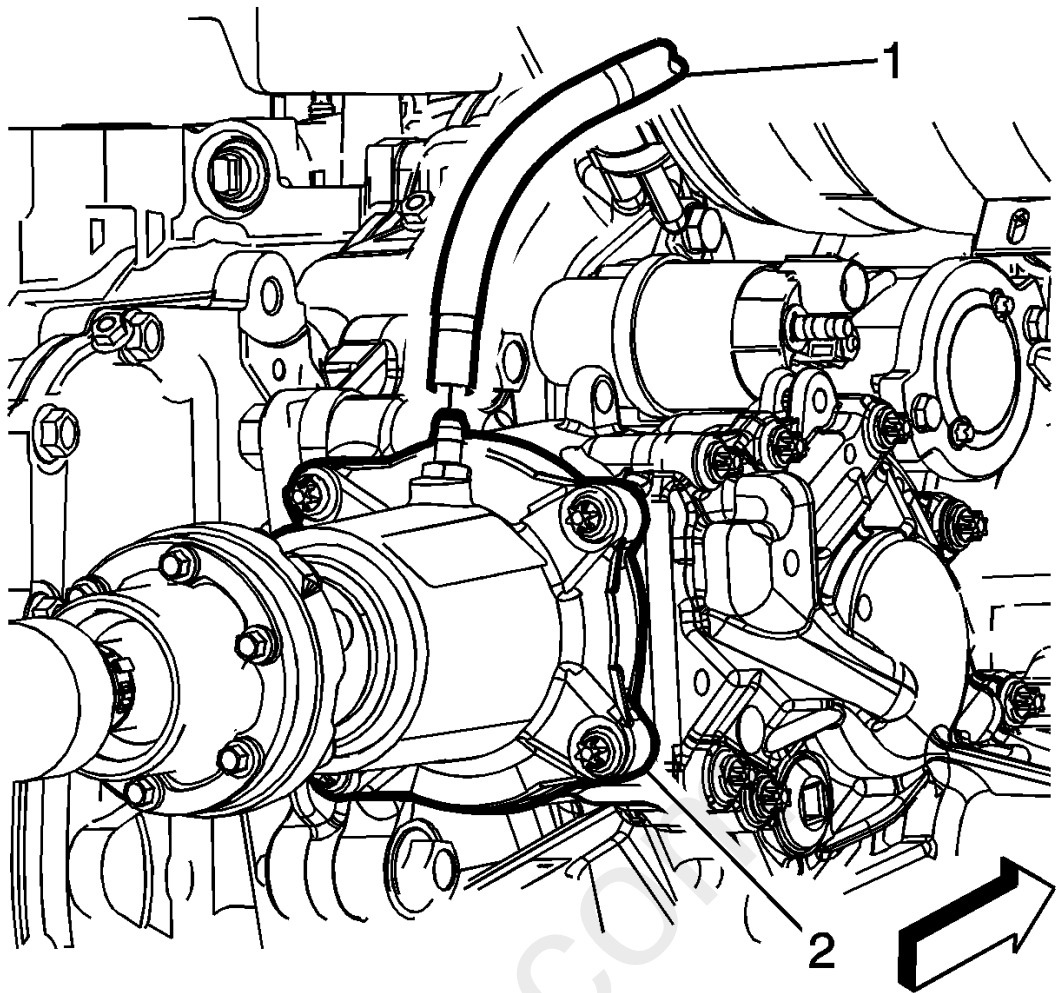


Fig. 9: Transfer Case And Vent Hose

Courtesy of GENERAL MOTORS COMPANY

3. Disconnect the vent hose (1) from the transfer case (2).
4. Remove the vent hose from the vehicle.

Installation Procedure

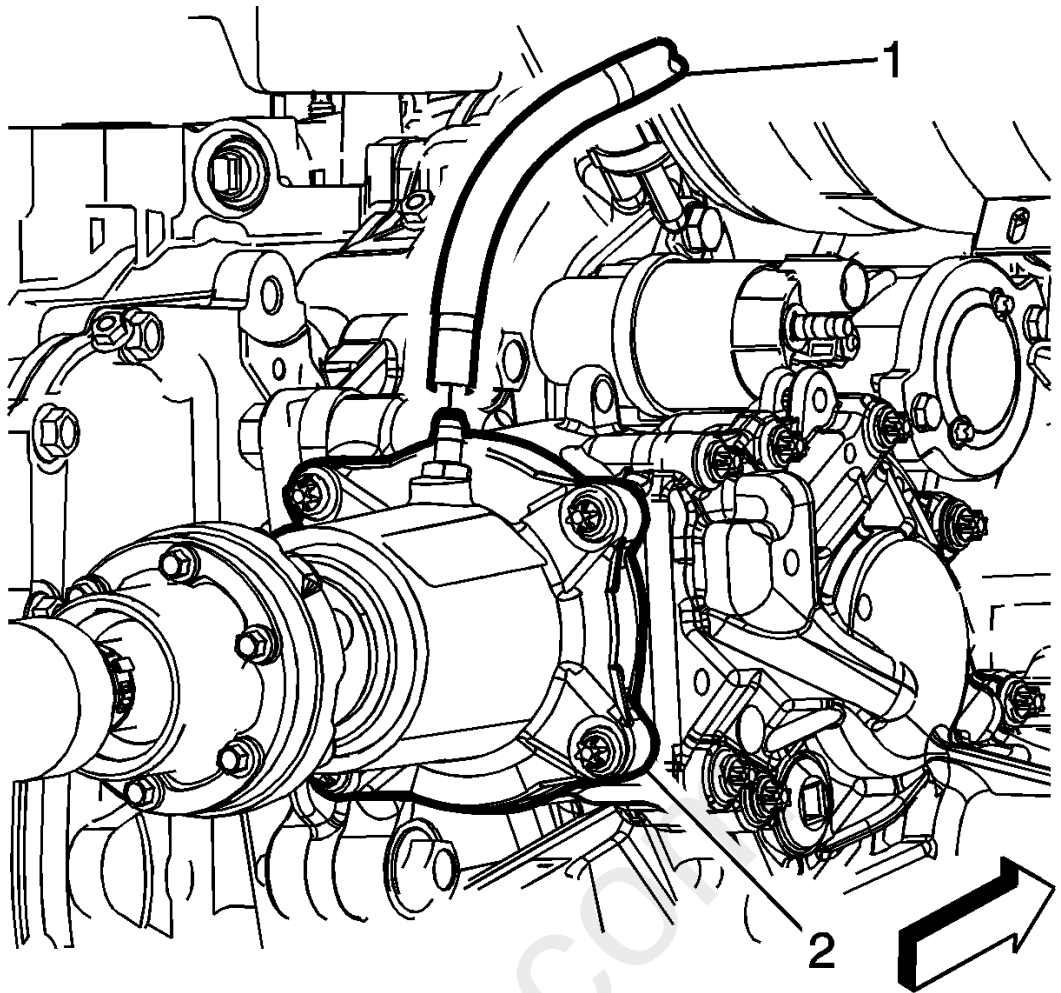


Fig. 10: Transfer Case And Vent Hose

Courtesy of GENERAL MOTORS COMPANY

1. Connect the vent hose (1) to the transfer case (2).
2. Lower the vehicle.

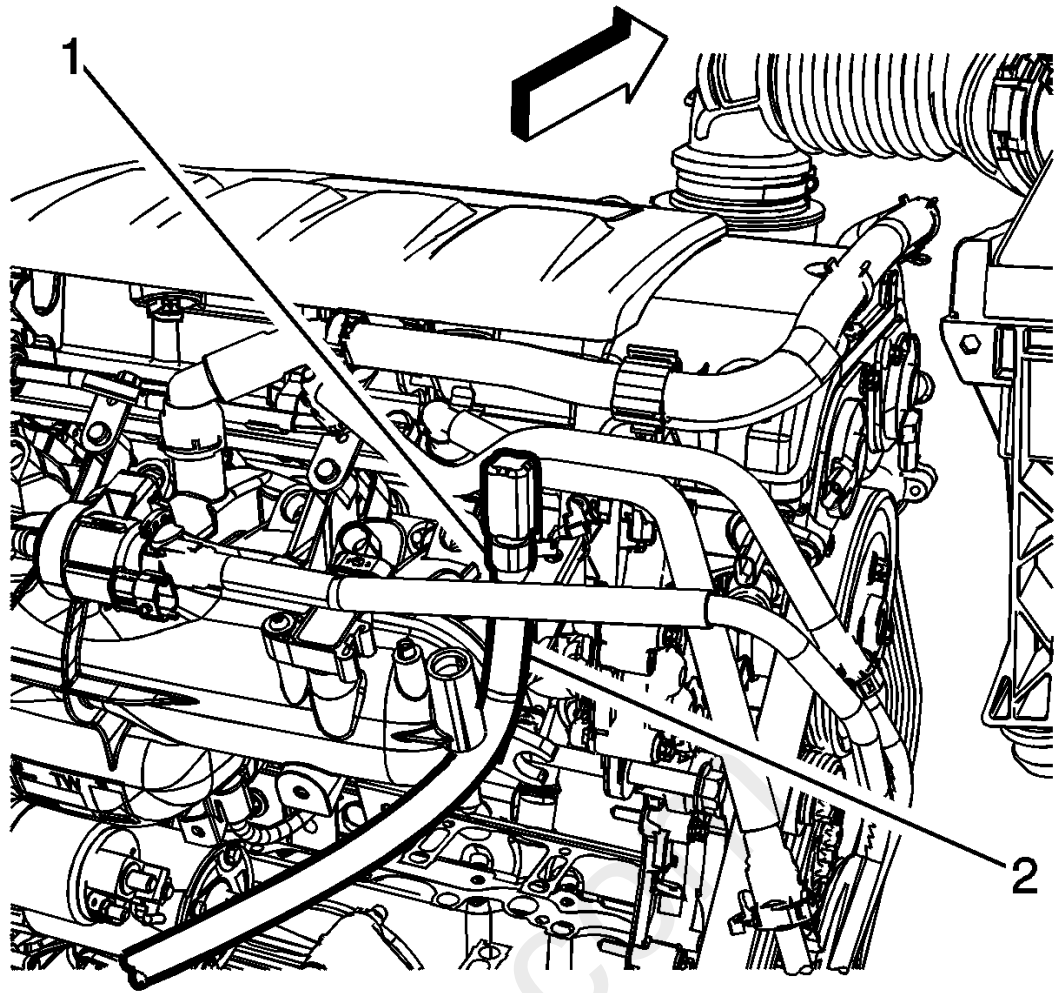


Fig. 11: Vent Hose And Retaining Clip

Courtesy of GENERAL MOTORS COMPANY

3. Clip the upper portion of the vent hose (2) to the retaining clip (1).

FRONT WHEEL DRIVE INTERMEDIATE SHAFT REPLACEMENT

Special Tools

- **J-41819** Input Shaft Seal Installer
- **DT-50937** Seal Protector

For equivalent regional tools, refer to [**Special Tools**](#).

Removal Procedure

1. Remove the right drive shaft. Refer to [**Front Wheel Drive Shaft Replacement - Right Side**](#) .

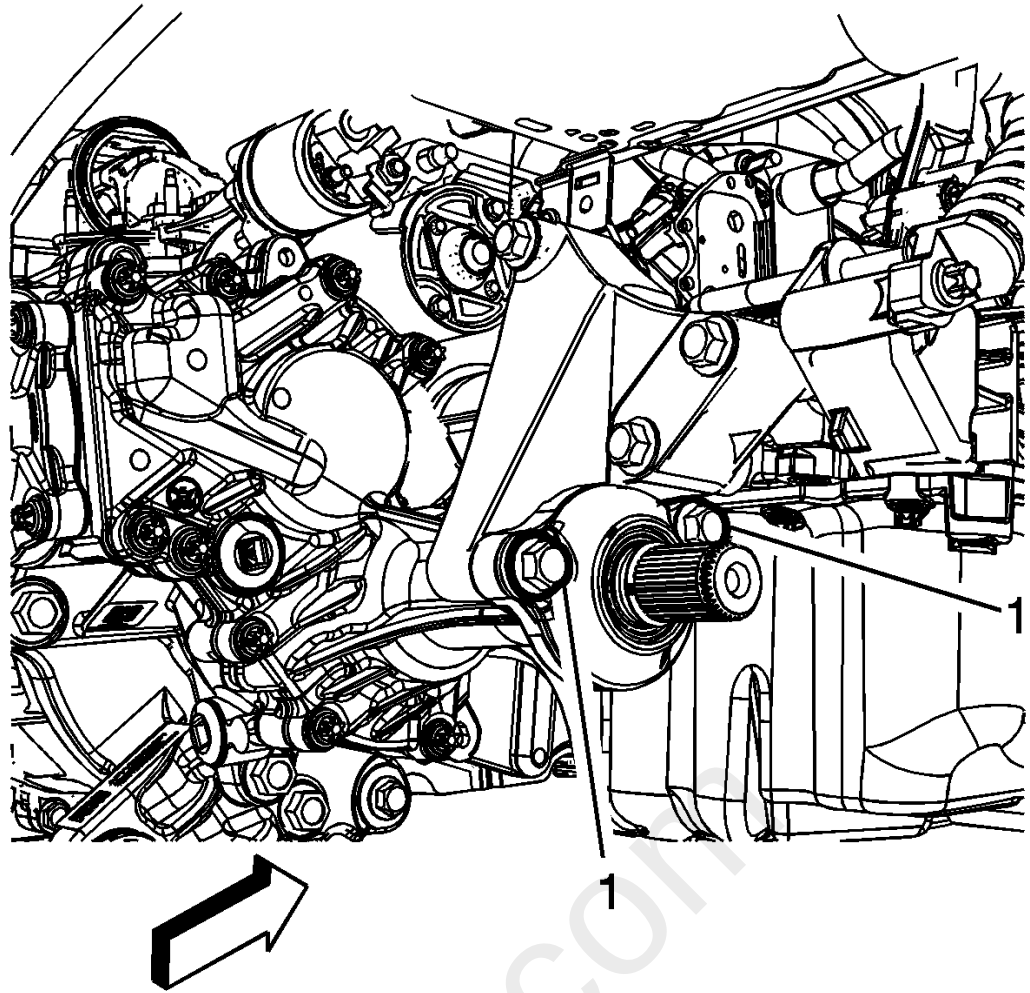


Fig. 12: Front Wheel Drive Intermediate Shaft Housing Fasteners
Courtesy of GENERAL MOTORS COMPANY

2. Remove the front wheel drive intermediate shaft housing fasteners (1).

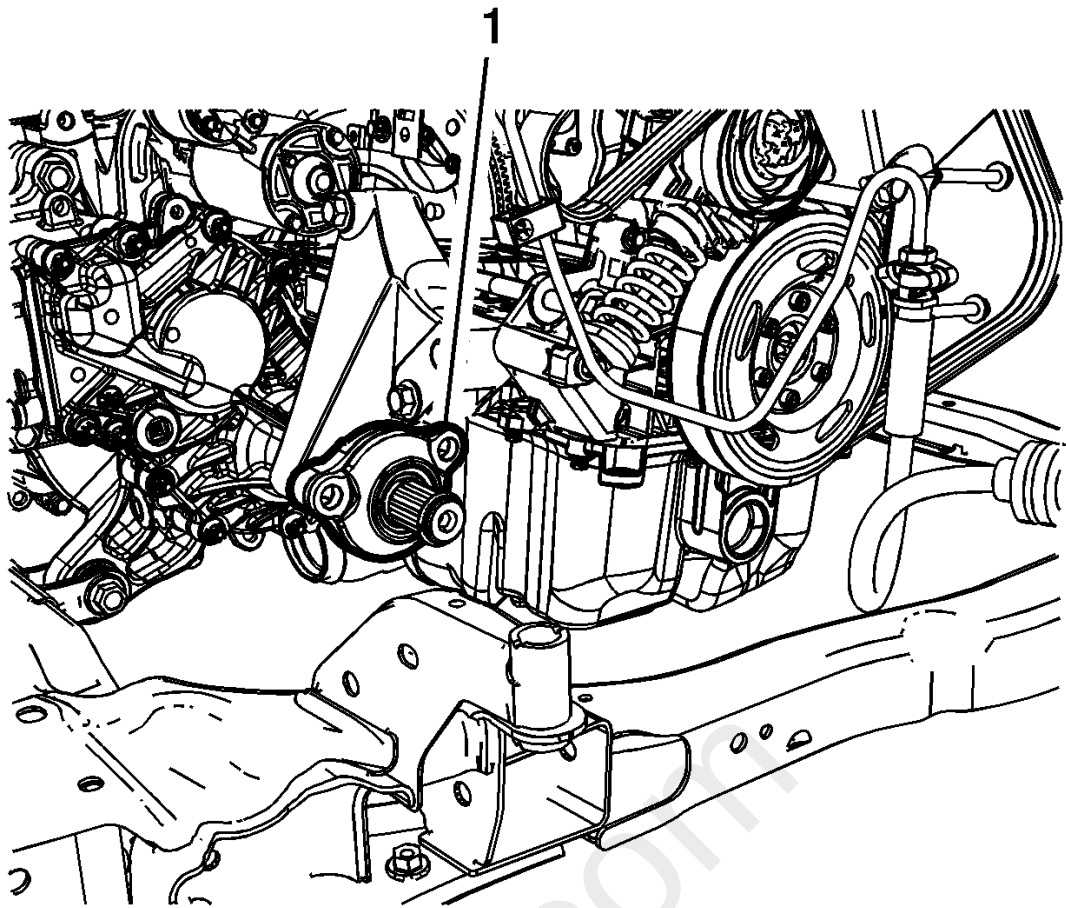


Fig. 13: Front Wheel Drive Intermediate Shaft Assembly
Courtesy of GENERAL MOTORS COMPANY

3. Remove the front wheel drive intermediate shaft assembly (1).
4. Inspect the bearing (1) and shaft (2) for wear or damage, if replacement is necessary, refer to Front Wheel Drive Intermediate shaft component disassembly in [Transfer Case Disassemble](#), and [Transfer Case Assemble](#) for assembly.

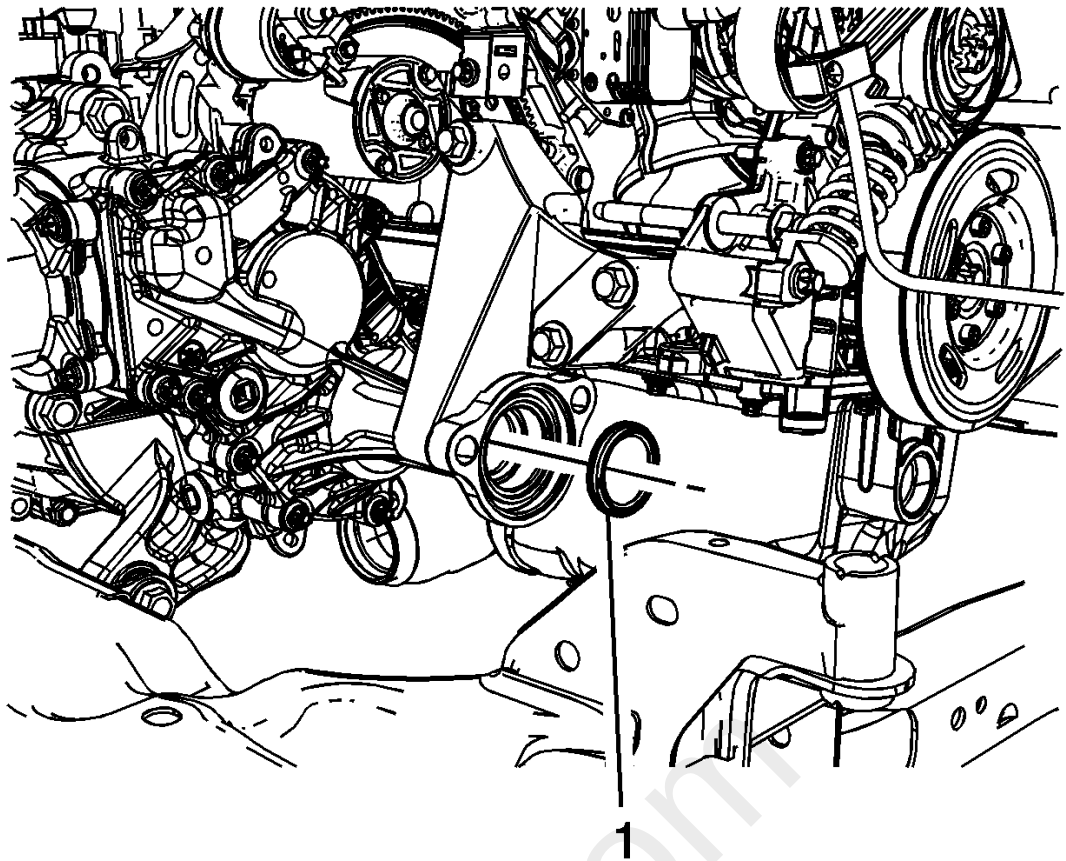


Fig. 14: Front Wheel Drive Intermediate Shaft Seal
Courtesy of GENERAL MOTORS COMPANY

5. Remove and DISCARD the front wheel drive intermediate shaft seal (1).

Installation Procedure

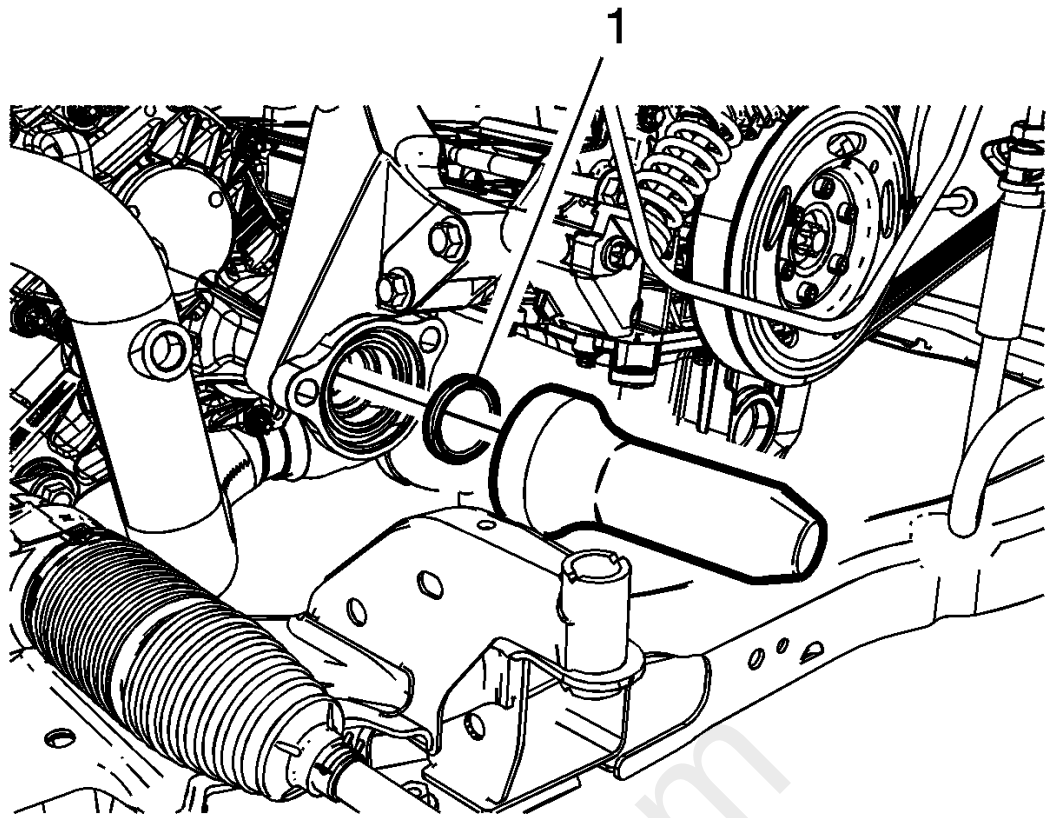


Fig. 15: Front Wheel Drive Intermediate Shaft Seal And Installer
Courtesy of GENERAL MOTORS COMPANY

1. Using J-41819 Input Shaft Seal Installer install the NEW front wheel drive intermediate shaft seal (1).

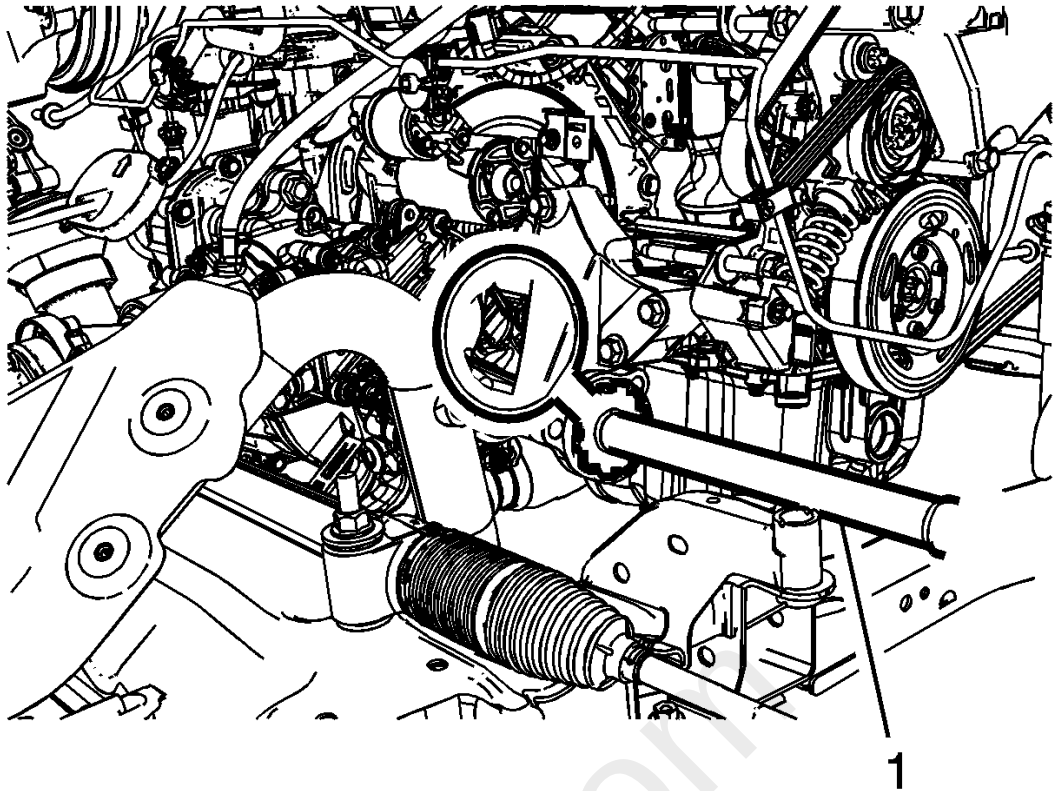


Fig. 16: Front Wheel Drive Intermediate Shaft Assembly
Courtesy of GENERAL MOTORS COMPANY

NOTE: The intermediate drive shaft is to be installed into the transfer case assembly after the transfer case assembly is installed into the vehicle. Prior to installation of the shaft into the assembly, seal protector DT-50937 must be installed to protect the front wheel drive intermediate shaft seal. Refer to [Transfer Case Description and Operation](#) - New Service Assembly for additional information.

2. Using **DT-50937** Seal Protector install the front wheel drive intermediate shaft assembly (1).

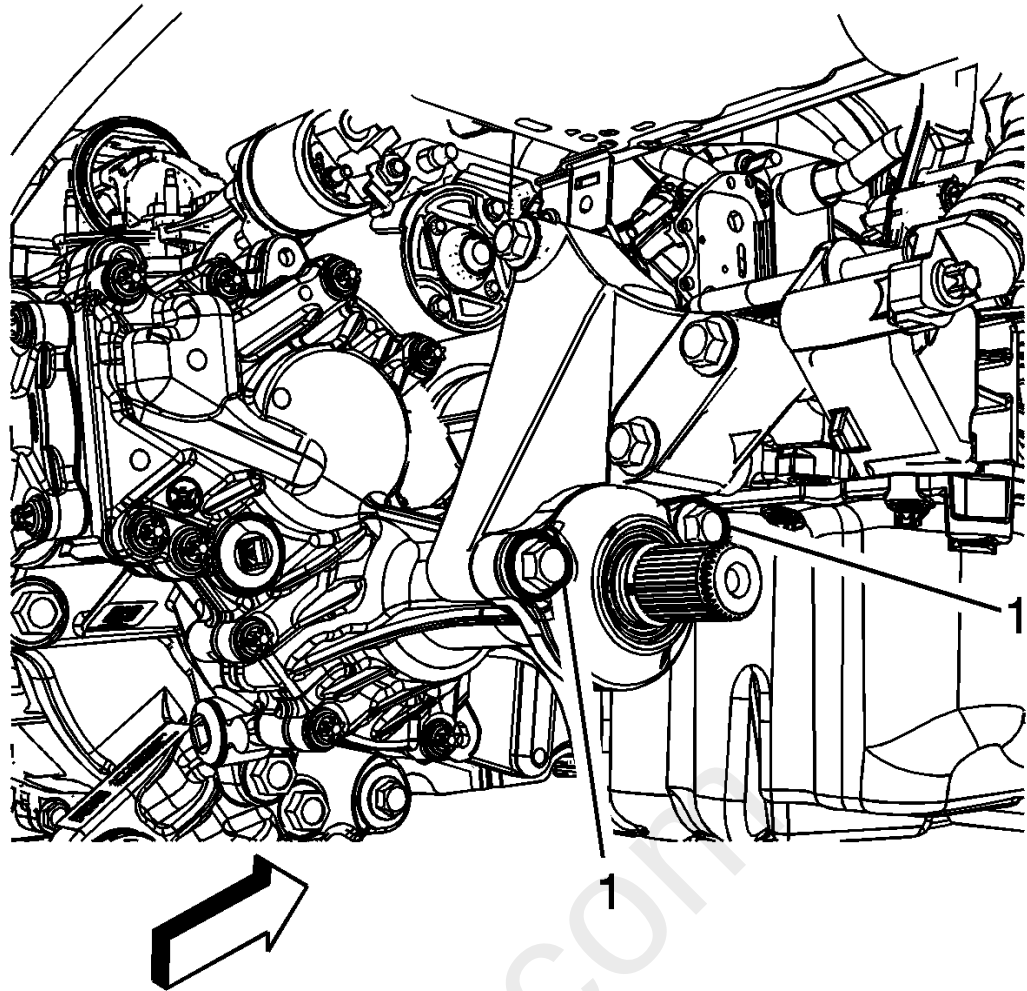


Fig. 17: Front Wheel Drive Intermediate Shaft Housing Fasteners
 Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to [Fastener Caution](#) .

3. Install the front wheel drive intermediate shaft housing fasteners (1) and tighten to 58 N.m (43 lb ft).
4. Install the right drive shaft. Refer to [Front Wheel Drive Shaft Replacement - Right Side](#) .

REAR OUTPUT SHAFT SEAL REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#) .
2. Drain the transfer case fluid. Refer to [Transfer Case Fluid Replacement](#).
3. Remove the rear propeller shaft. Refer to [Two-Piece Propeller Shaft Replacement](#) .
4. Remove the rear output shaft housing. Refer to Transfer Case Rear Output Shaft Housing Removal in [Transfer Case Disassemble](#).
5. Remove the transfer case rear output shaft flange. Refer to Transfer Case Propeller Shaft Flange Removal in [Transfer Case Disassemble](#).
6. Remove the transfer case rear output shaft seal. Refer to Transfer Case Rear Output Shaft Removal in [Transfer Case Disassemble](#).

Installation Procedure

1. Install the transfer case rear output shaft seal. Refer to Transfer Case Rear Output Shaft Installation in [Transfer Case Assemble](#).
2. Install the transfer case propeller shaft flange. Refer to Transfer Case Propeller Shaft Flange in [Transfer Case Assemble](#).
3. Install the rear output shaft housing. Refer to Transfer Case Rear Output Shaft Housing Installation in [Transfer Case Assemble](#).
4. Install the rear propeller shaft. Refer to [Two-Piece Propeller Shaft Replacement](#) .

5. Fill the transfer case with fluid. Refer to [Transfer Case Fluid Replacement](#).
6. Lower the vehicle.

TRANSFER CASE REPLACEMENT

Removal Procedure

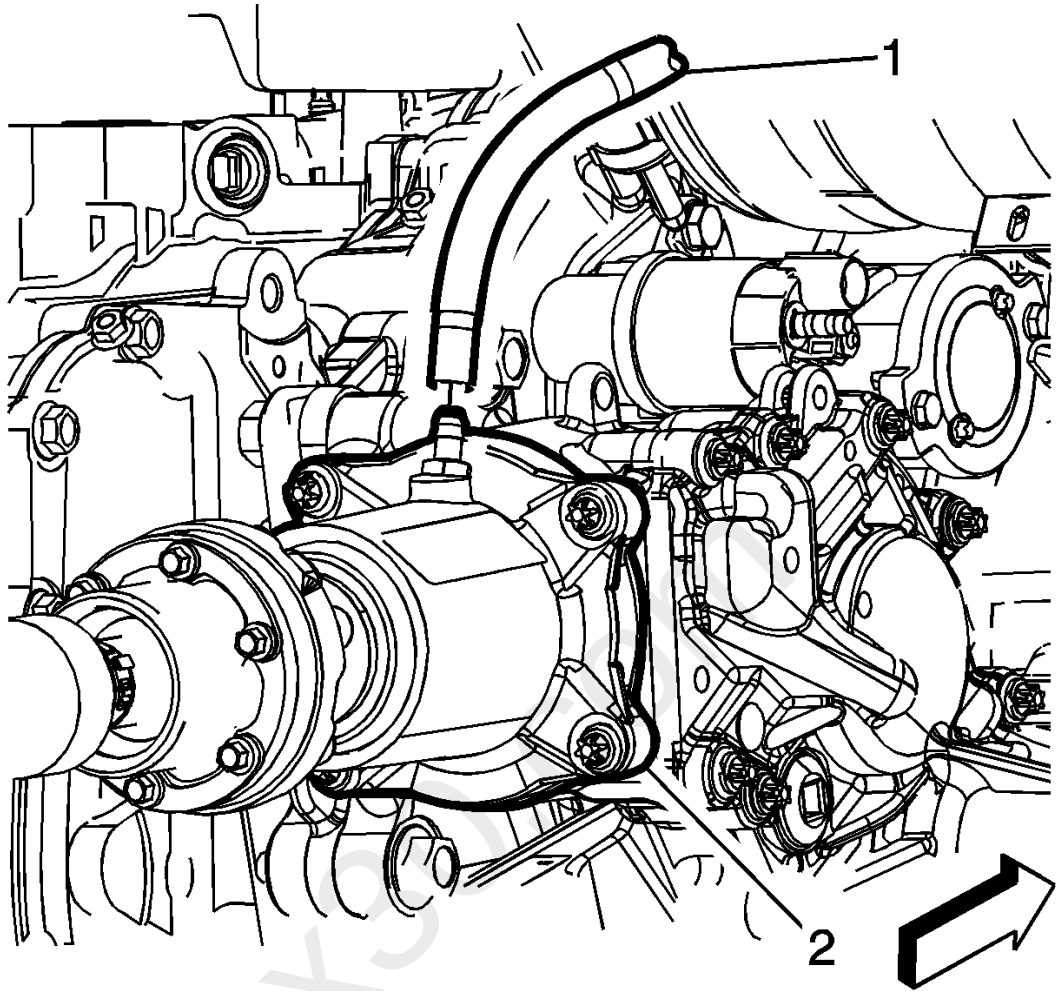


Fig. 18: Transfer Case And Vent Hose

Courtesy of GENERAL MOTORS COMPANY

1. Disconnect the transfer case vent hose (1) from the transfer case.
2. Drain the fluid from the transmission. Refer to [Transmission Fluid Drain and Fill](#).
3. Remove the right drive shaft. Refer to [Front Wheel Drive Shaft Replacement - Right Side](#).

NOTE: The intermediate drive shaft is to be removed from the transfer case assembly prior to the transfer case assembly being removed from the vehicle. Prior to removal of the shaft from the assembly, seal protector DT-50937 must be installed to protect the front wheel drive intermediate shaft seal.

4. Remove the intermediate drive shaft from the transfer case. Refer to [Front Wheel Drive Intermediate Shaft Replacement](#).
5. Remove the front exhaust pipe. Refer to [Exhaust Front Pipe Replacement \(LUV\)](#) [Exhaust Front Pipe Replacement \(2H0\)](#) [Exhaust Front Pipe Replacement \(LE2\)](#).
6. Remove the propeller shaft. Refer to [Two-Piece Propeller Shaft Replacement](#).
7. Support the transfer case (2) with a suitable jack, and secure with suitable straps.

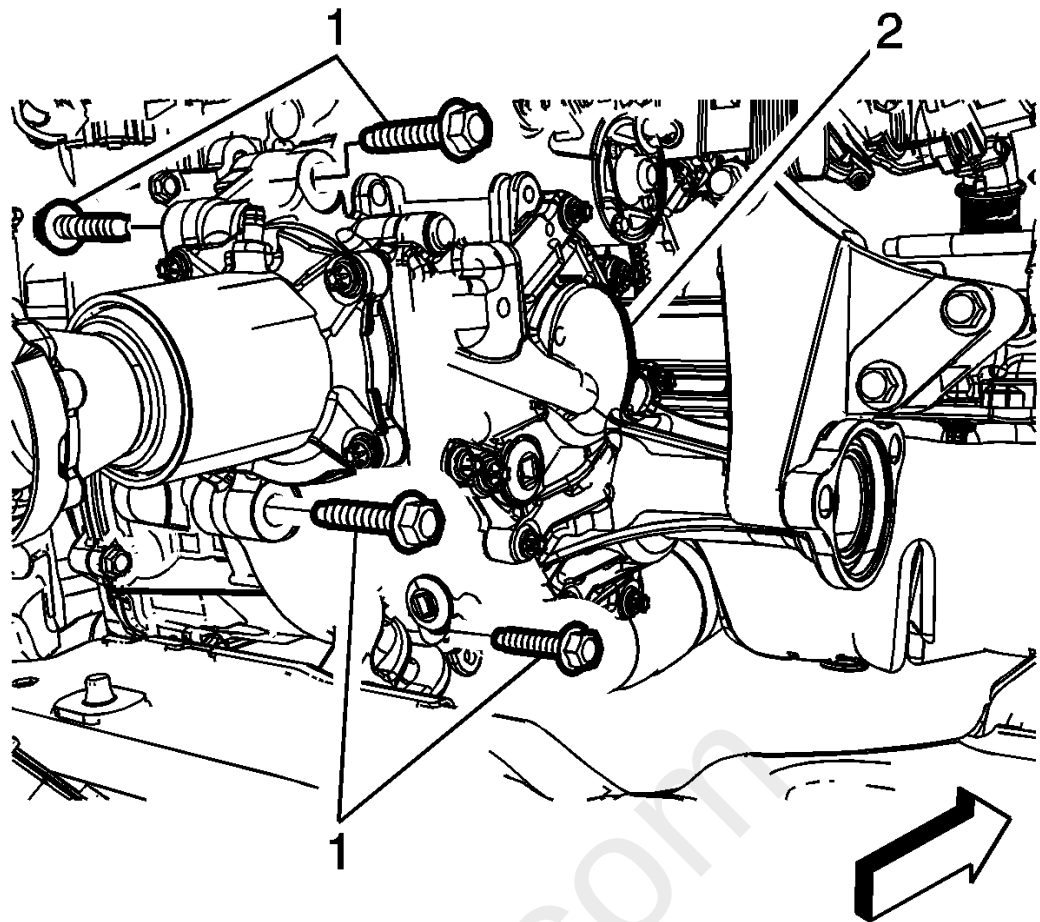


Fig. 19: Transfer Case And Bolts

Courtesy of GENERAL MOTORS COMPANY

8. Remove and DISCARD the four transfer case fasteners (1).
9. Separate the transfer case (2) from the transfer case adapter and remove the transfer case.

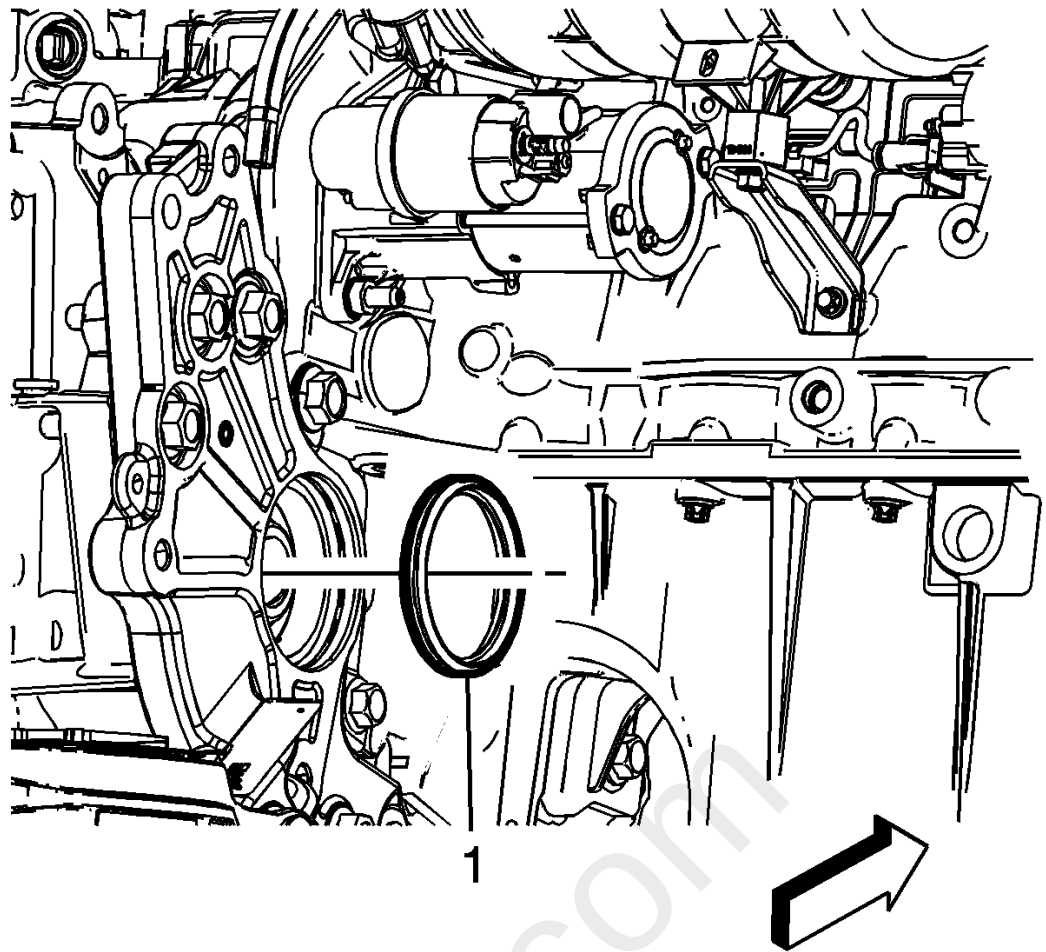


Fig. 20: Transfer Case Adapter Seal

Courtesy of GENERAL MOTORS COMPANY

10. Remove and DISCARD the transfer case adapter seal (1).

Installation Procedure

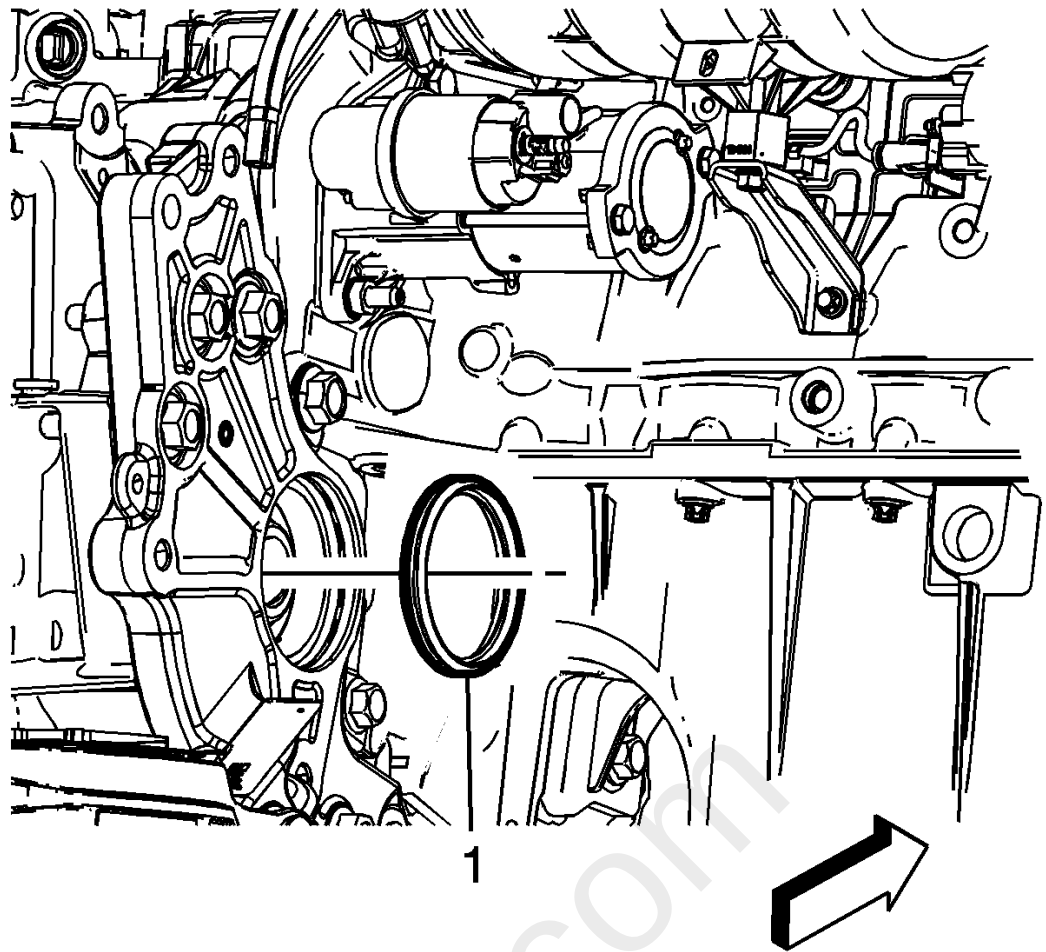


Fig. 21: Transfer Case Adapter Seal

Courtesy of GENERAL MOTORS COMPANY

1. Clean the contact surfaces of the transmission, transfer case adapter bracket, and PTU.
2. Lightly lubricate the adapter seal with transmission oil prior to installation.
3. Install a new transfer case adapter seal (1). Refer to [**Transfer Case Adapter Assemble \(MHB\)**](#)
4. Support the transfer case with a suitable jack, and secure with suitable straps.
5. Raise and align the transfer case in the correct position in relation to the transmission.

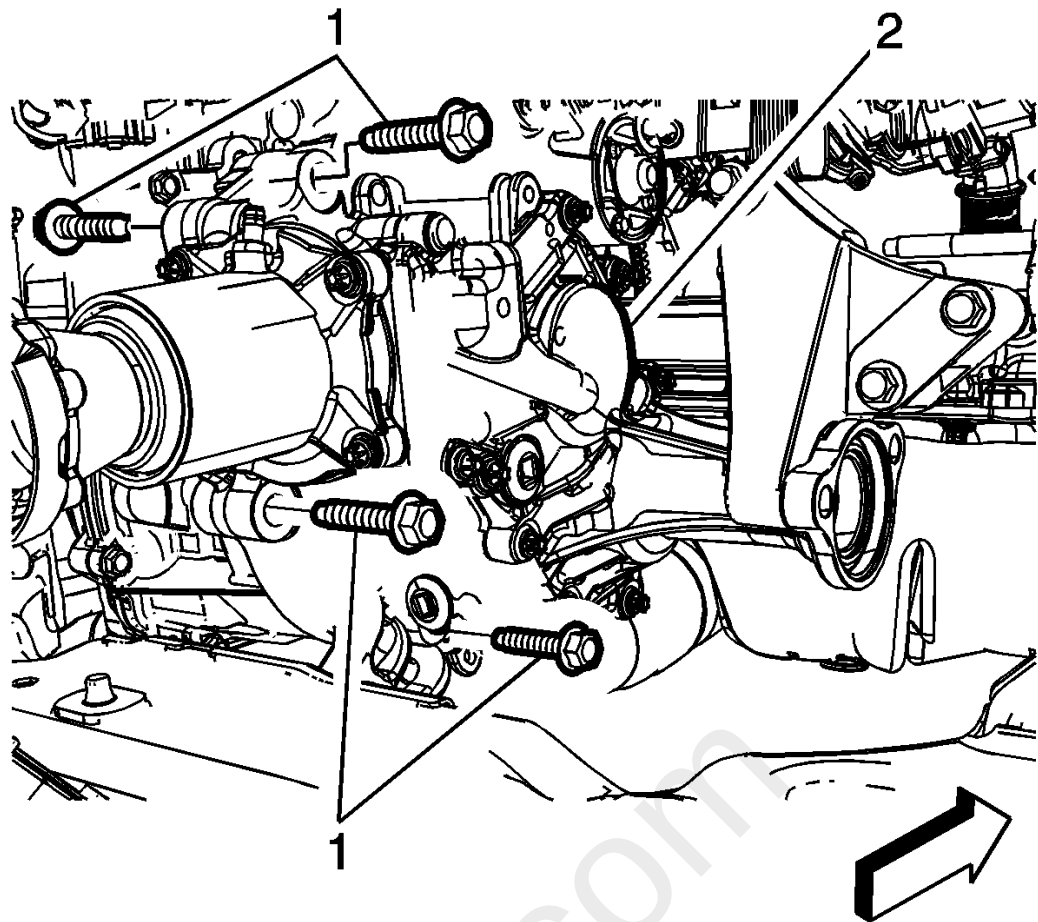


Fig. 22: Transfer Case And Bolts

Courtesy of GENERAL MOTORS COMPANY

6. Install the transfer case (2) to the transfer case adapter.

CAUTION: Refer to [Fastener Caution](#) .

7. Install the NEW transfer case adapter fasteners (1) and tighten to 100 N.m (74 lb ft) plus 30-45 degrees.

NOTE: The intermediate drive shaft is to be installed into the transfer case assembly after the transfer case assembly is installed into the vehicle. Prior to installation of the shaft into the assembly, seal protector DT-50937 must be installed to protect the front wheel drive intermediate shaft seal.

8. Install the intermediate drive shaft into the transfer case. Refer to [Front Wheel Drive Intermediate Shaft Replacement](#).
9. Install the right drive shaft. Refer to [Front Wheel Drive Shaft Replacement - Right Side](#) .
10. Install the propeller shaft. Refer to [Two-Piece Propeller Shaft Replacement](#) .

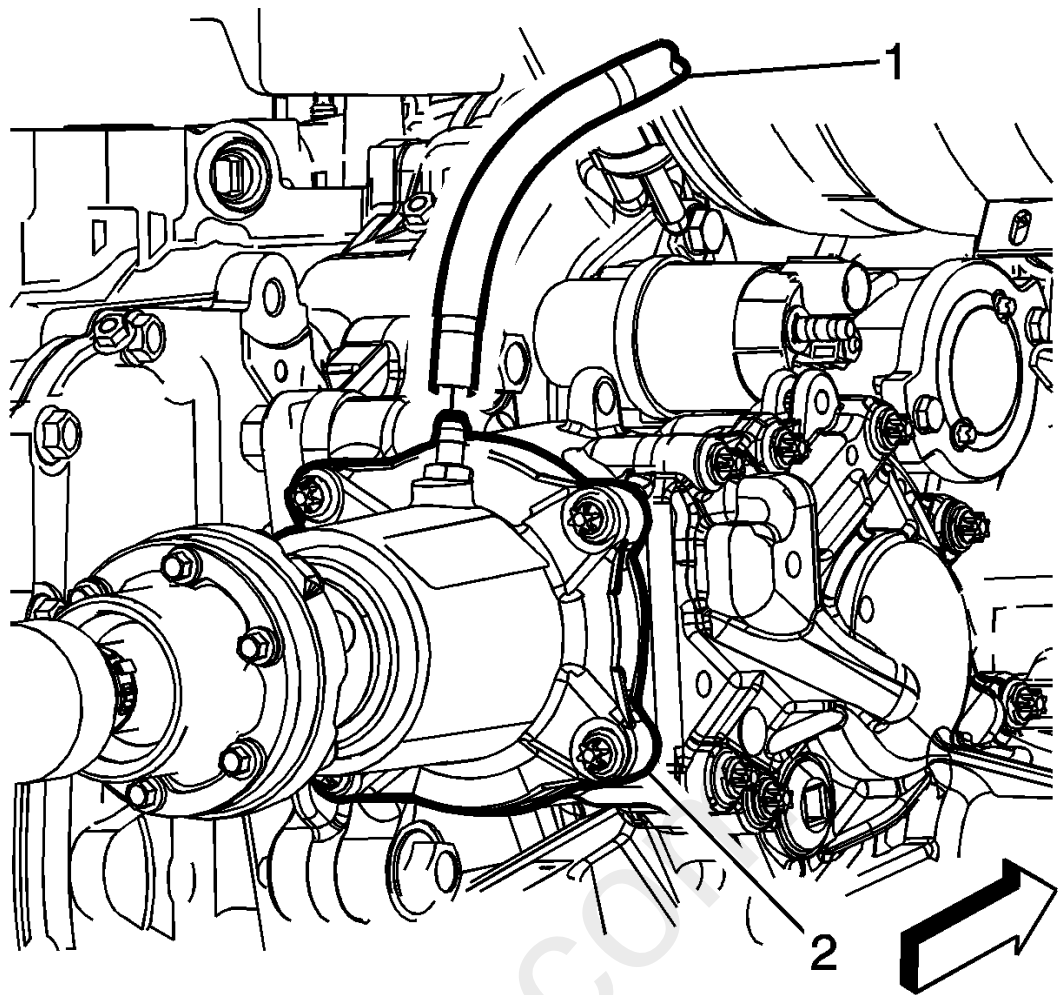


Fig. 23: Transfer Case And Vent Hose

Courtesy of GENERAL MOTORS COMPANY

11. Connect the transfer case vent hose (1) to the transfer case.
12. Install the front exhaust pipe. Refer to [Exhaust Front Pipe Replacement \(LUV\)](#), [Exhaust Front Pipe Replacement \(2H0\)](#), [Exhaust Front Pipe Replacement \(LE2\)](#) .
13. Fill the transmission with fluid. Refer to [Transmission Fluid Drain and Fill](#) .
14. Check the transfer case fluid. Refer to [Approximate Fluid Capacities](#).

TRANSMISSION BRACE REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#)

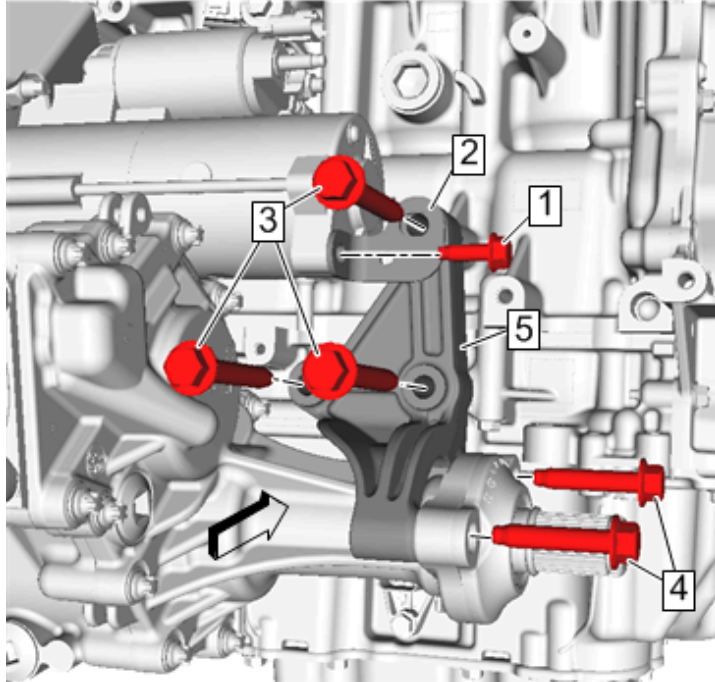


Fig. 24: Transfer Case Brace, Starter Bracket And Bolts
Courtesy of GENERAL MOTORS COMPANY

2. Remove the transfer case brace bolts (4).
3. Remove the transfer case brace to engine bolts (3).
4. Remove the starter bracket (2) and bolt (1).
5. Properly tilt and remove the brace (5) from the vehicle.

Installation Procedure

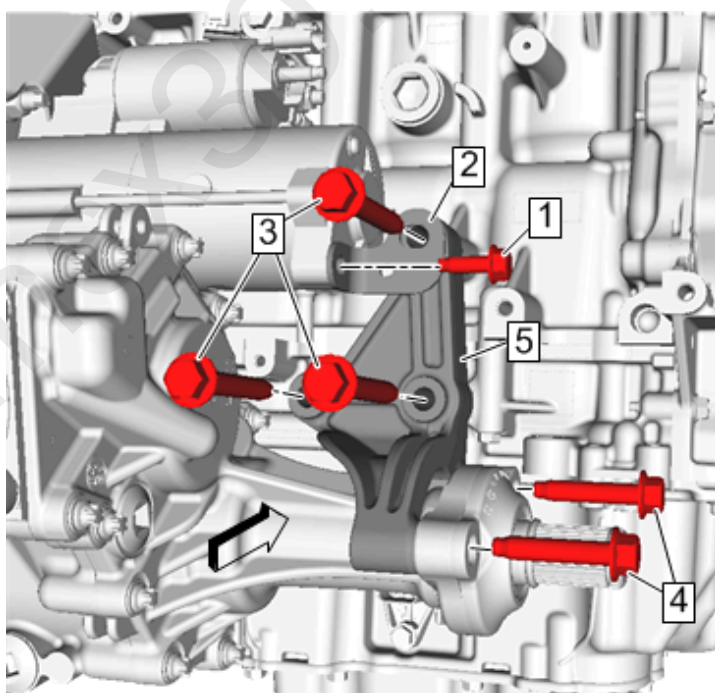


Fig. 25: Transfer Case Brace, Starter Bracket And Bolts
Courtesy of GENERAL MOTORS COMPANY

1. Position the transfer case brace (5) to the engine.

CAUTION: Refer to **Fastener Caution** .

2. Install the starter bracket (2) and bolt (1) and tighten to 22 N.m (16 lb ft).
3. Install the transfer case brace to engine bolts (3) and tighten to 58 N.m (43 lb ft).
4. Install the transfer case brace bolts (4) and tighten to 58 N.m (43 lb ft).

TRANSMISSION BRACE REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#)

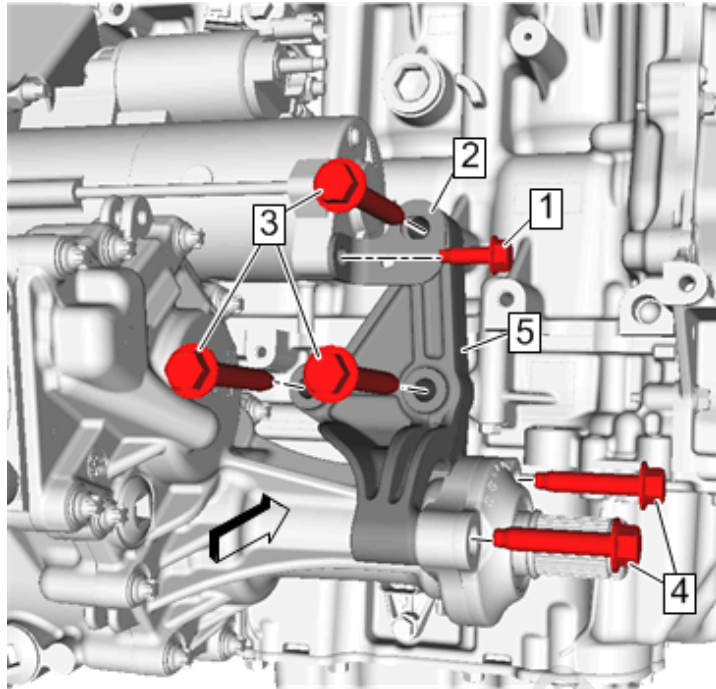


Fig. 26: Transfer Case Brace, Starter Bracket And Bolts
Courtesy of GENERAL MOTORS COMPANY

2. Remove the transfer case brace bolts (4).
3. Remove the transfer case brace to engine bolts (3).
4. Remove the starter bracket (2) and bolt (1).
5. Properly tilt and remove the brace (5) from the vehicle.

Installation Procedure

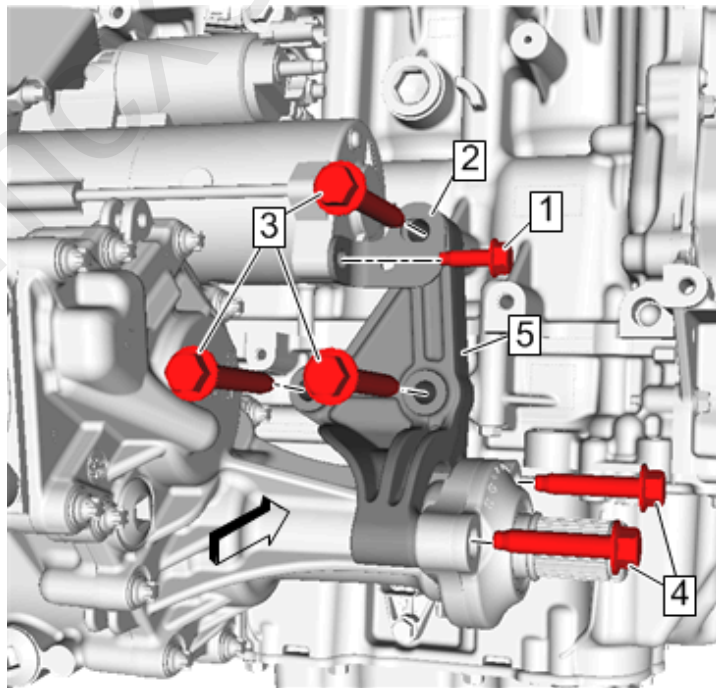


Fig. 27: Transfer Case Brace, Starter Bracket And Bolts
Courtesy of GENERAL MOTORS COMPANY

1. Position the transfer case brace (5) to the engine.

CAUTION: Refer to [Fastener Caution](#) .

2. Install the starter bracket (2) and bolt (1) and tighten to 22 N.m (16 lb ft).

3. Install the transfer case brace to engine bolts (3) and tighten to 58 N.m (43 lb ft).
4. Install the transfer case brace bolts (4) and tighten to 58 N.m (43 lb ft).

TRANSFER CASE ADAPTER REPLACEMENT

Removal Procedure

1. Remove the transfer case. Refer to [Transfer Case Replacement](#).

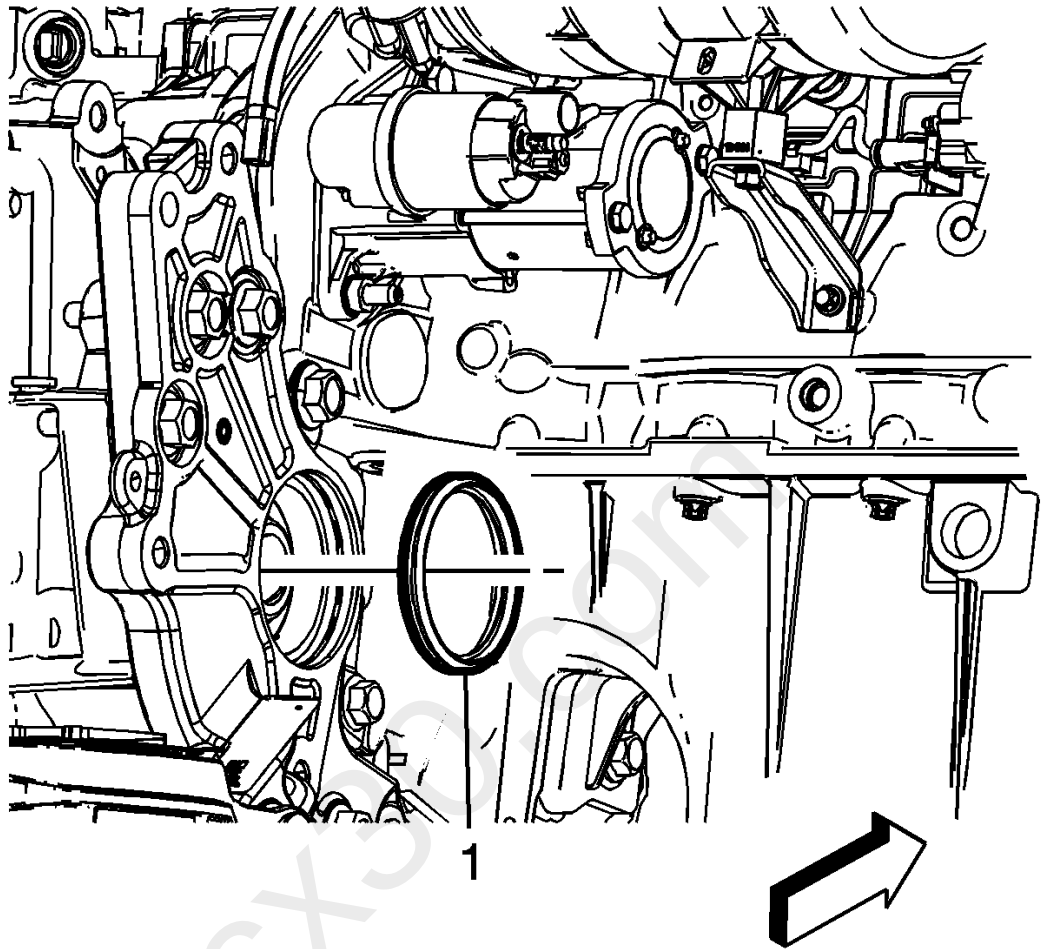


Fig. 28: Transfer Case Adapter Seal

Courtesy of GENERAL MOTORS COMPANY

2. Remove and DISCARD the transfer case adapter seal from the transfer case adapter.

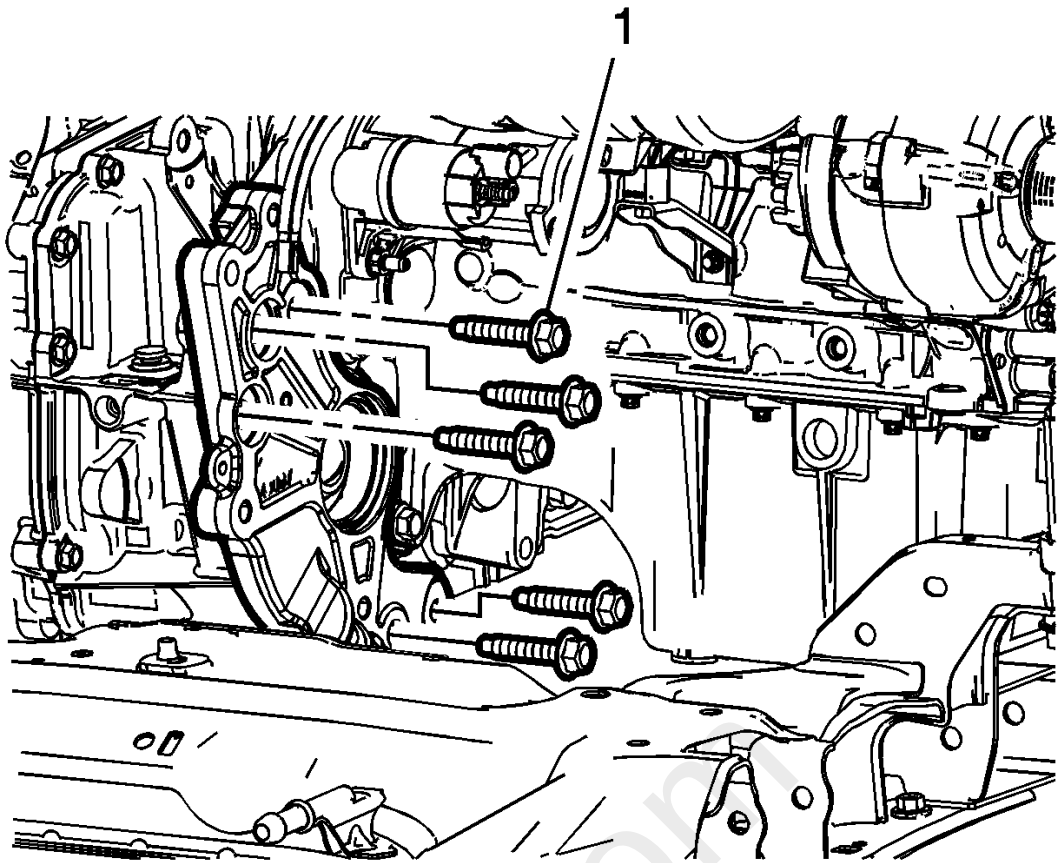


Fig. 29: Transfer Case Adapter Bolts

Courtesy of GENERAL MOTORS COMPANY

3. Remove and DISCARD the five transfer case adapter fasteners (1).

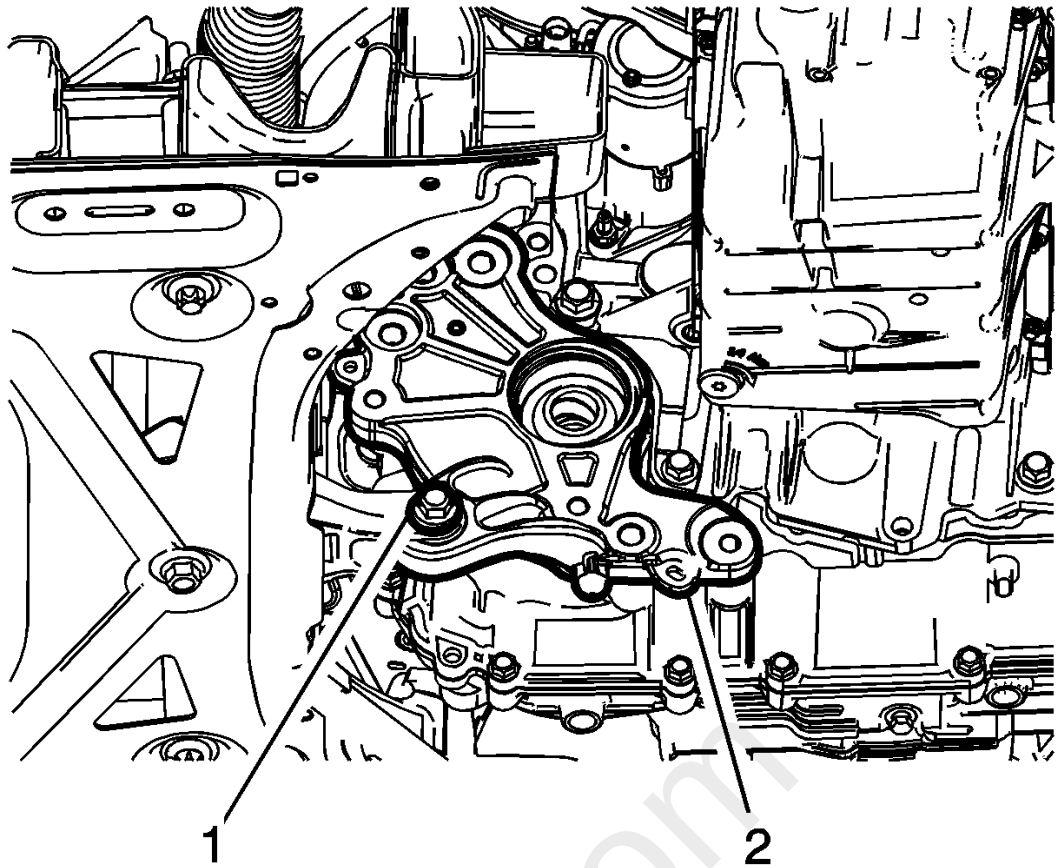


Fig. 30: Rear Transmission Mount Through Bolt And Transfer Case Adapter
Courtesy of GENERAL MOTORS COMPANY

4. Remove and DISCARD the rear transmission mount through bolt (1).
5. Remove the transfer case adapter (2) from the transmission.

Installation Procedure

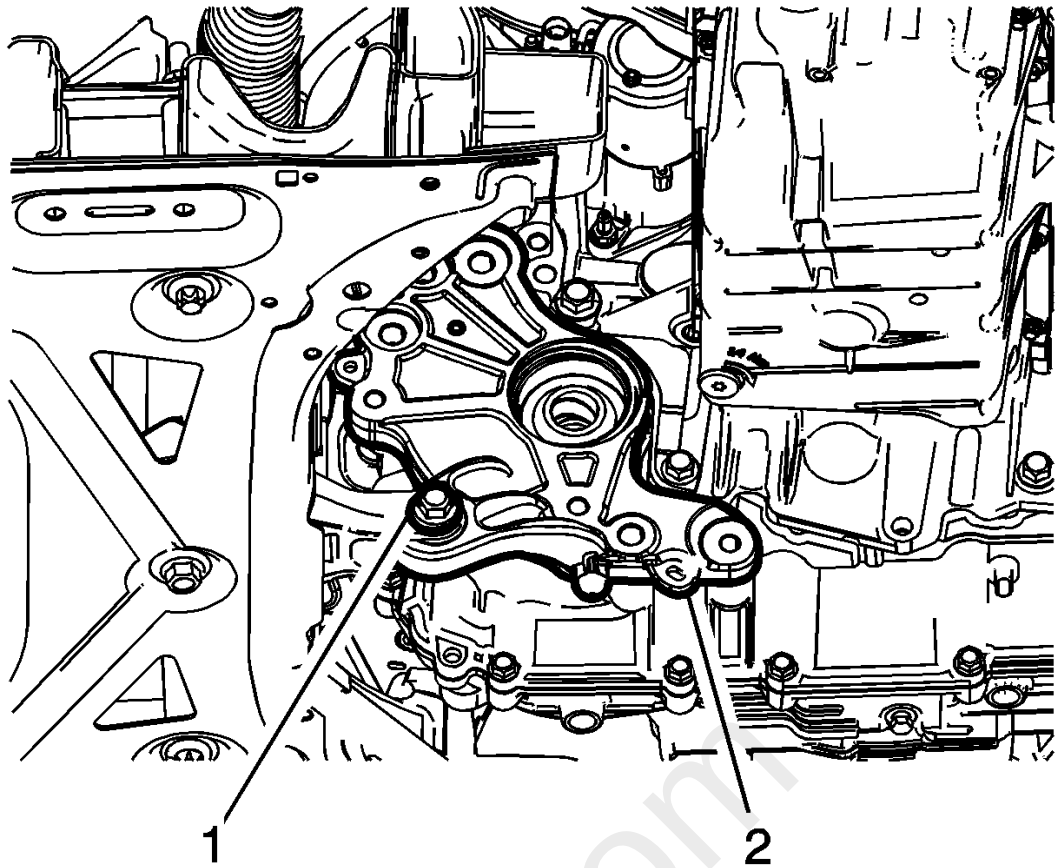


Fig. 31: Rear Transmission Mount Through Bolt And Transfer Case Adapter
Courtesy of GENERAL MOTORS COMPANY

1. Install the transfer case adapter (2) to the transmission.

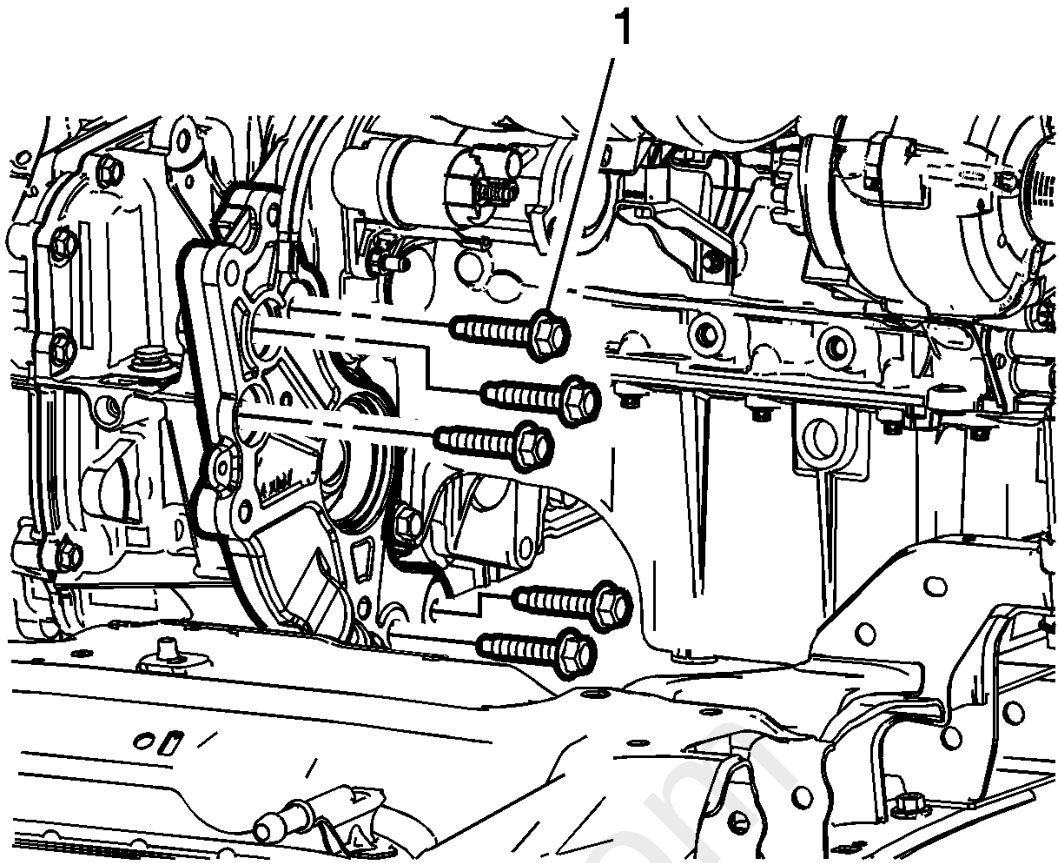


Fig. 32: Transfer Case Adapter Bolts

Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to **Fastener Caution** .

2. For manual transmission, install the NEW transfer case adapter to transmission fasteners (1) and tighten to 100 N.m (74 lb ft) plus 30-40 degrees.

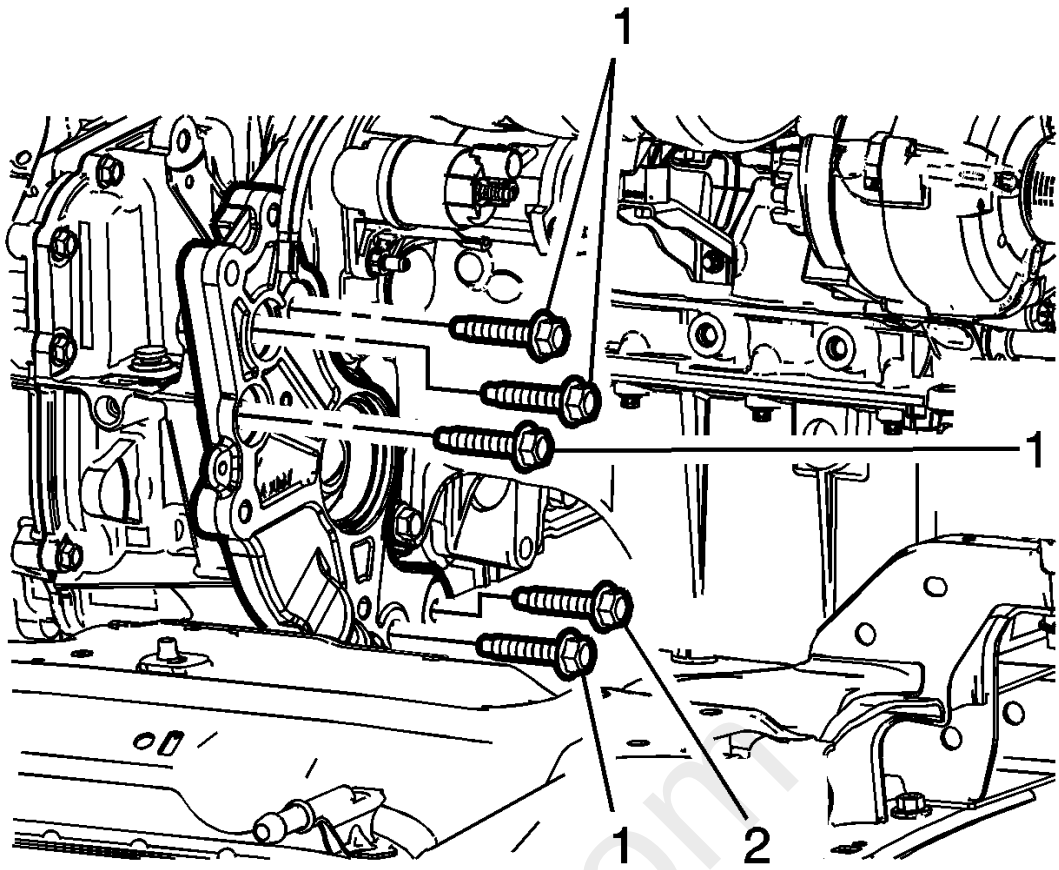


Fig. 33: Transfer Case Adapter Bolts

Courtesy of GENERAL MOTORS COMPANY

3. For automatic transmission, install the NEW transfer case adapter to transmission fasteners (1) and tighten to 100 N.m (74 lb ft) plus 30-40 degrees.
4. Install the NEW transfer case adapter to transmission fastener (2) and tighten to 60 N.m (44 lb ft) plus 60-75 degrees.

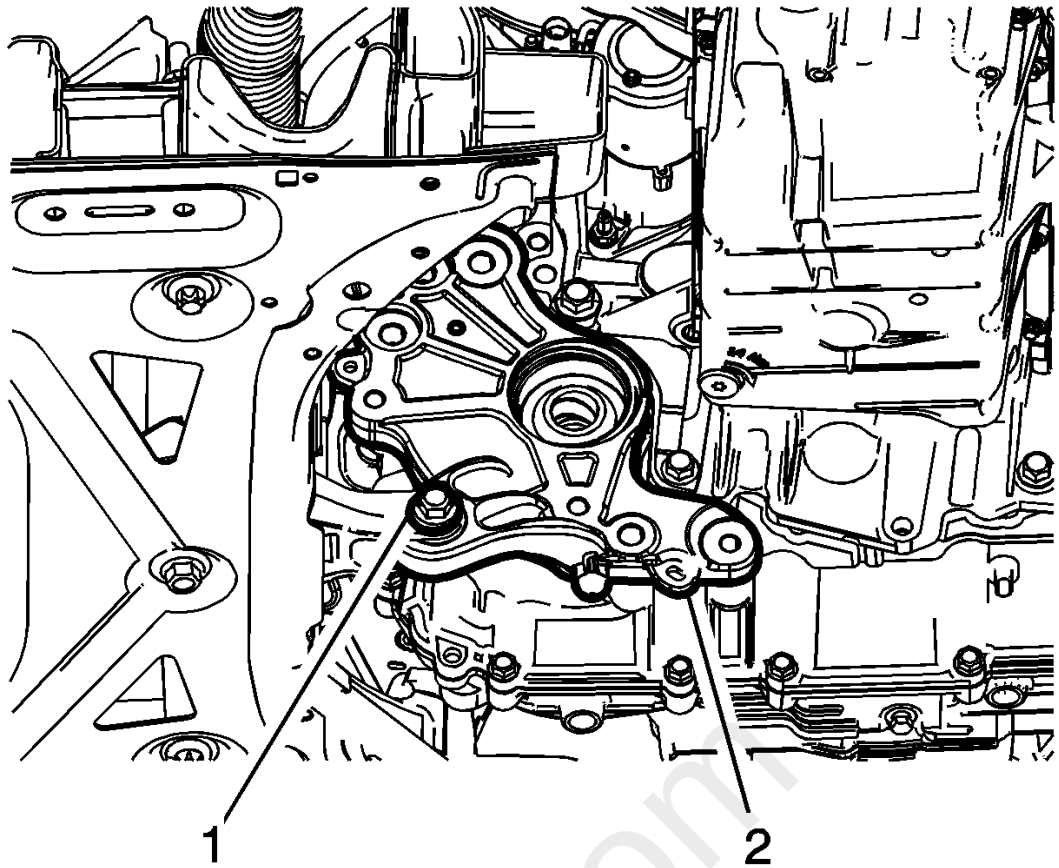


Fig. 34: Rear Transmission Mount Through Bolt And Transfer Case Adapter
Courtesy of GENERAL MOTORS COMPANY

5. Install the NEW rear transmission mount through bolt (1) and tighten to 80 N.m (59 lb ft) plus 45-60 degrees.

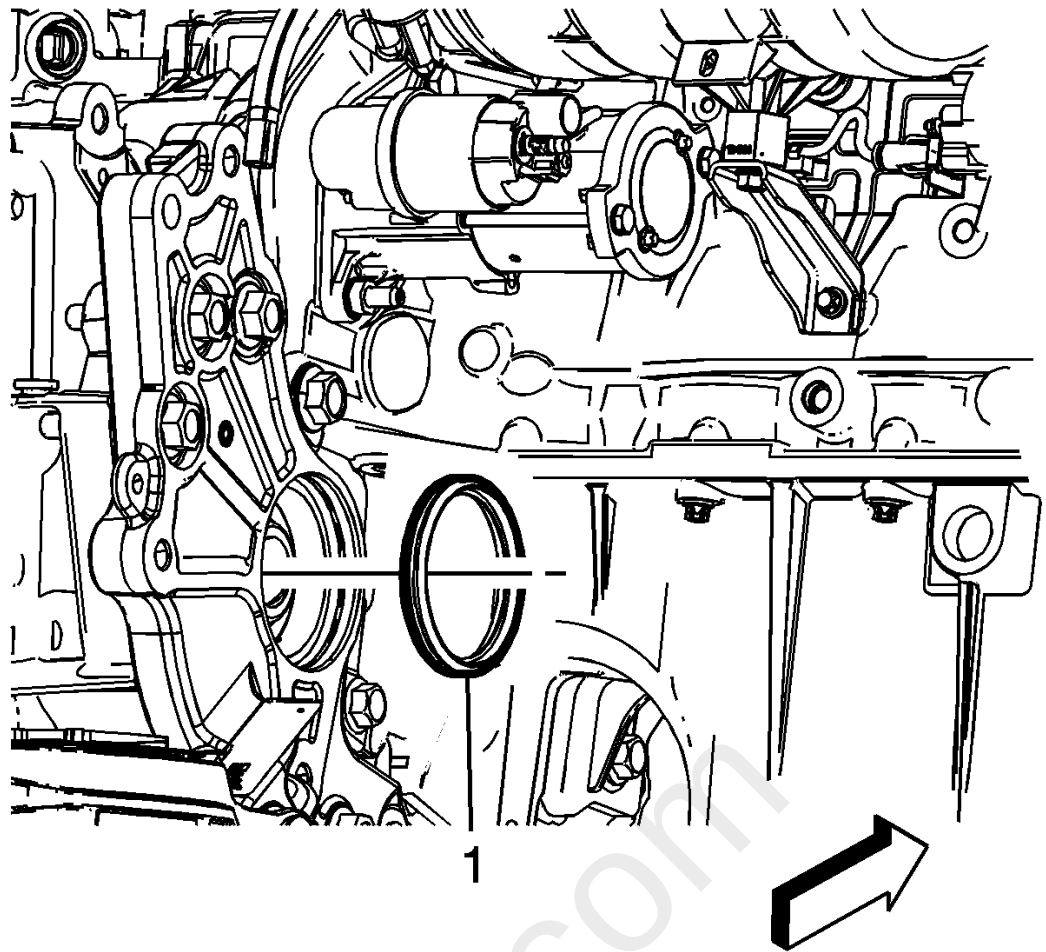


Fig. 35: Transfer Case Adapter Seal

Courtesy of GENERAL MOTORS COMPANY

6. Lightly lubricate the adapter seal (1) with transmission oil prior to installation.
7. Install the NEW transfer case adapter seal to the transfer case adapter. Refer to [Transfer Case Adapter Assemble \(MHB\)](#).
8. Install the transfer case. Refer to [Transfer Case Replacement](#).

TRANSFER CASE ADAPTER BUSHING REPLACEMENT

Removal Procedure

1. Remove the transfer case. Refer to [Transfer Case Replacement](#).

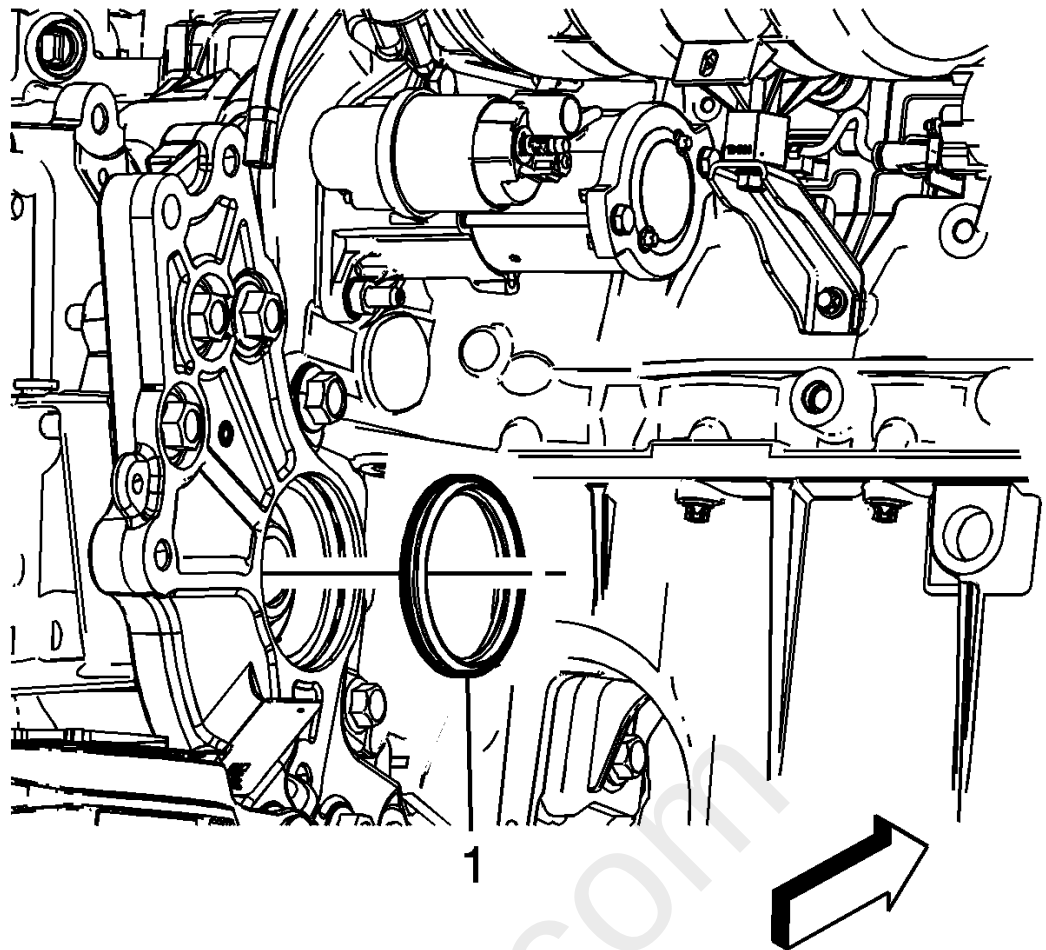


Fig. 36: Transfer Case Adapter Seal

Courtesy of GENERAL MOTORS COMPANY

2. Remove and DISCARD the transfer case adapter seal from the transmission adapter.

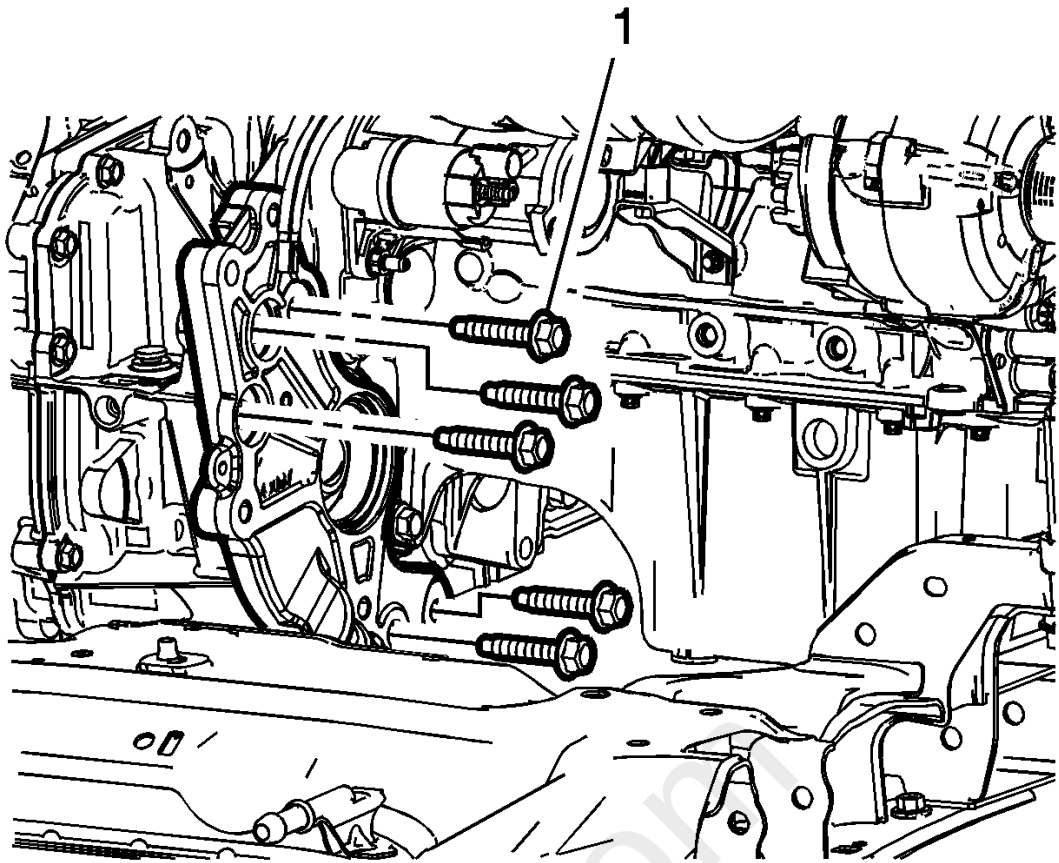


Fig. 37: Transfer Case Adapter Bolts

Courtesy of GENERAL MOTORS COMPANY

3. Remove and DISCARD the five transmission adapter fasteners (1).

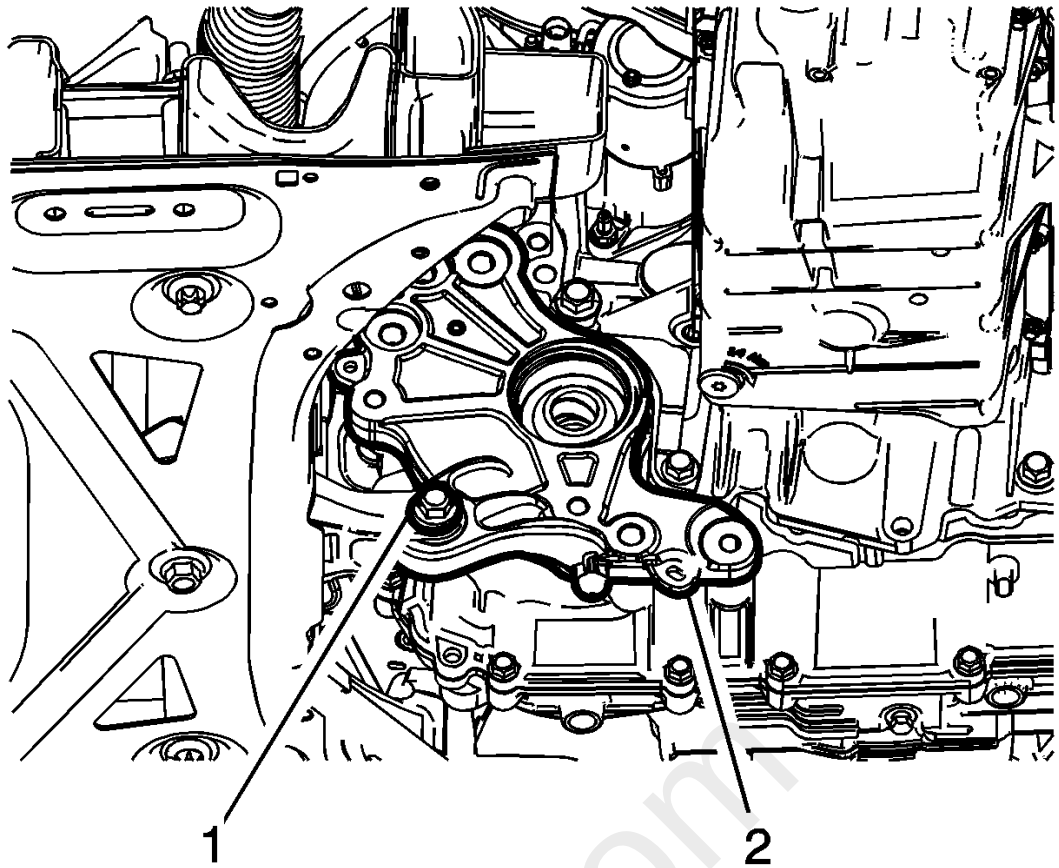


Fig. 38: Rear Transmission Mount Through Bolt And Transfer Case Adapter
Courtesy of GENERAL MOTORS COMPANY

4. Remove and DISCARD the rear transmission mount through bolt (1).
5. Remove the transmission adapter (2) from the transmission.
6. Inspect the rear mount bushing the transmission adapter for wear or damage. Refer to [Transfer Case Adapter Disassemble](#).

Installation Procedure

1. Install the rear mount bushing to the transmission adapter. Refer to [Transfer Case Adapter Assemble \(MHB\)](#).

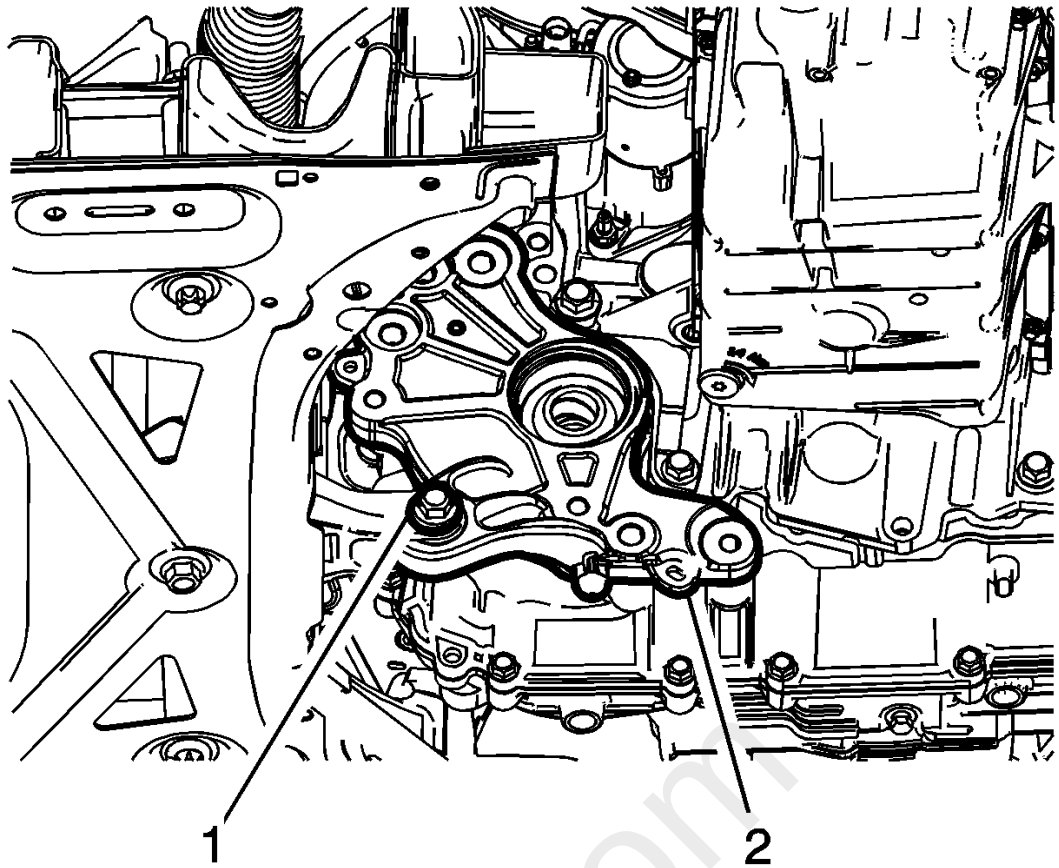


Fig. 39: Rear Transmission Mount Through Bolt And Transfer Case Adapter
Courtesy of GENERAL MOTORS COMPANY

2. Install the transmission adapter (2) to the transmission.

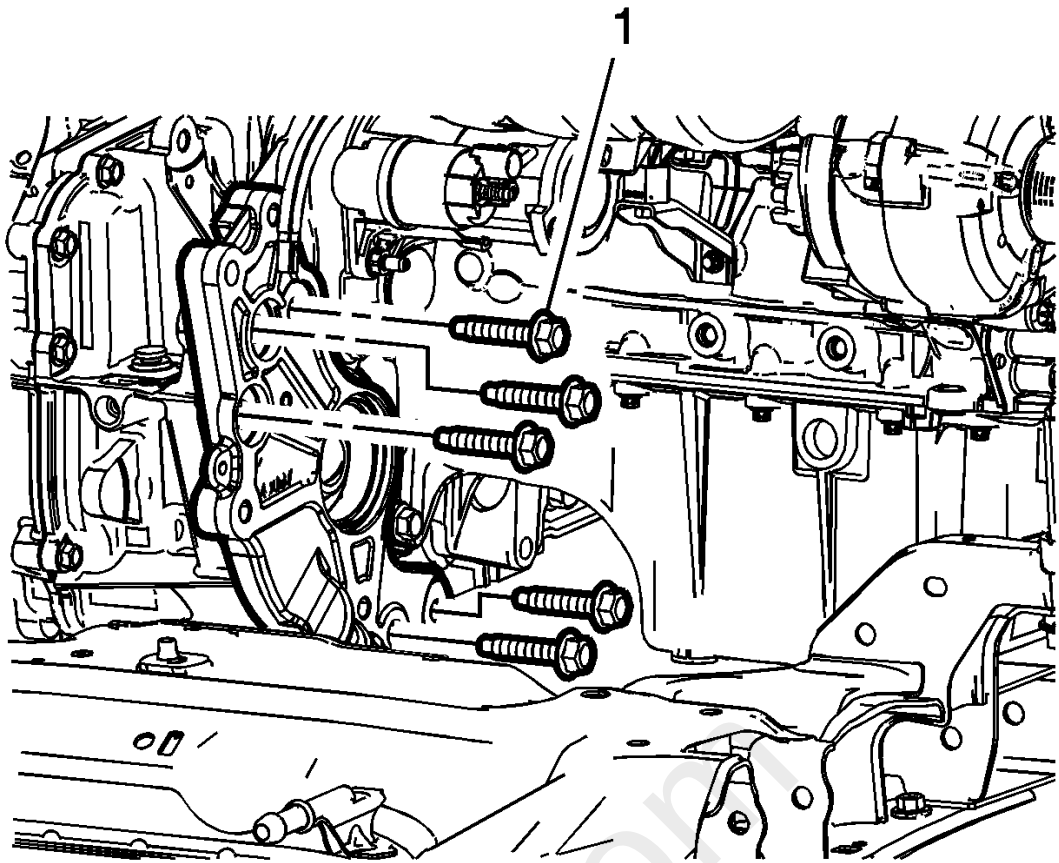


Fig. 40: Transfer Case Adapter Bolts

Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to **Fastener Caution** .

3. For manual transmission, install the NEW transmission adapter to transmission fasteners (1) and tighten to 100 N.m (74 lb ft) plus 30-40 degrees.

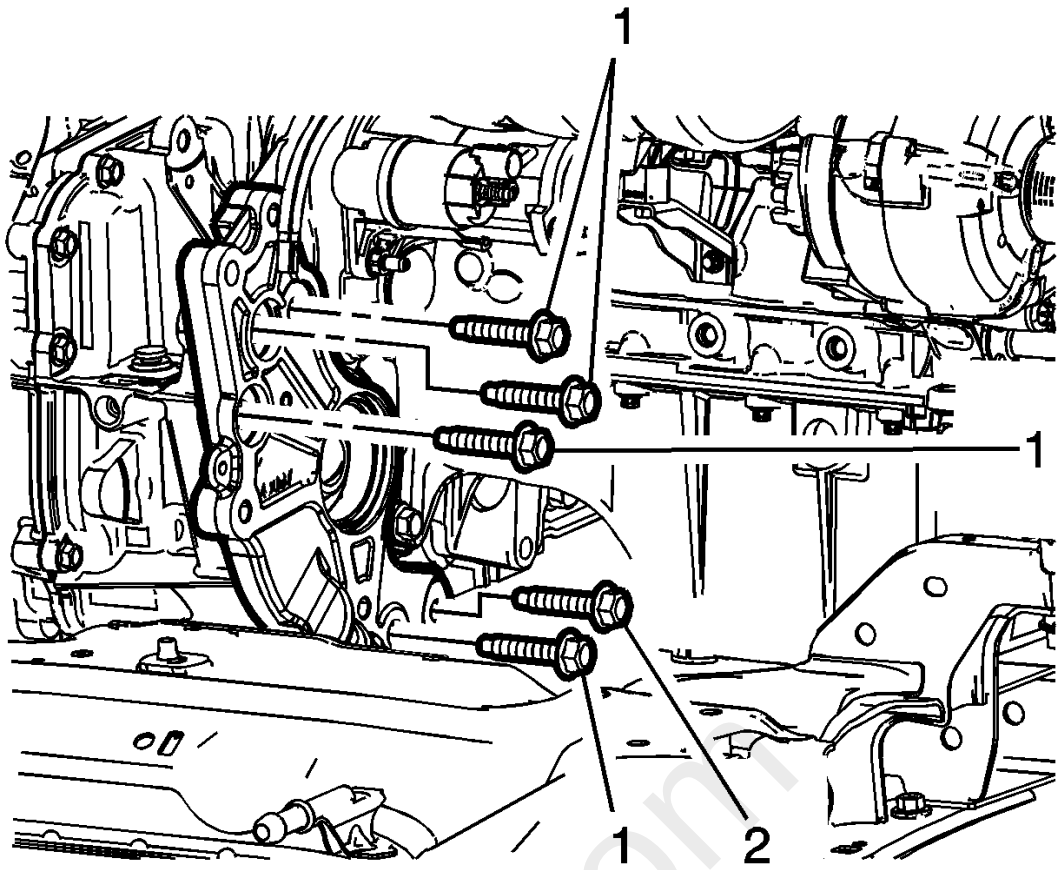


Fig. 41: Transfer Case Adapter Bolts

Courtesy of GENERAL MOTORS COMPANY

4. For automatic transmission, install the NEW transmission adapter to transmission fasteners (1) and tighten to 100 N.m (74 lb ft) plus 30-40 degrees.
5. Install the NEW transmission adapter to transmission fastener (2) and tighten to 60 N.m (44 lb ft) plus 60-75 degrees.

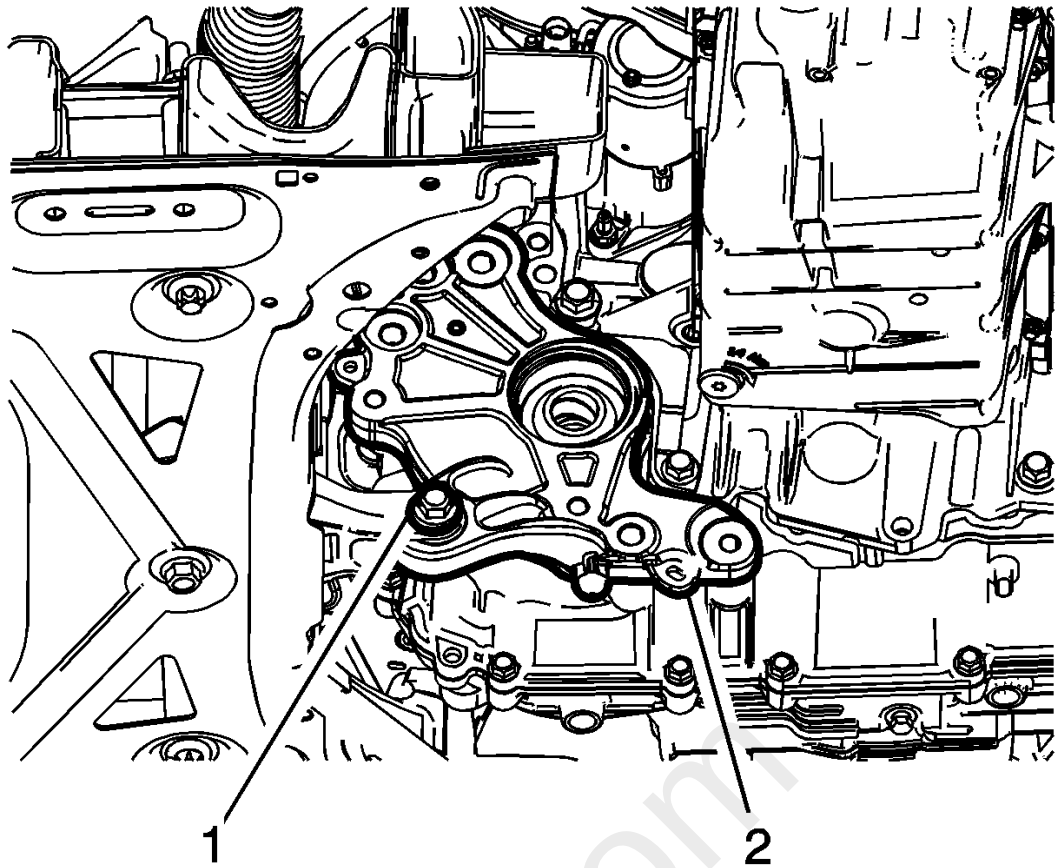


Fig. 42: Rear Transmission Mount Through Bolt And Transfer Case Adapter
Courtesy of GENERAL MOTORS COMPANY

6. Install the NEW rear transmission mount through bolt (1) and tighten to 80 N.m (59 lb ft) plus 45-60 degrees.

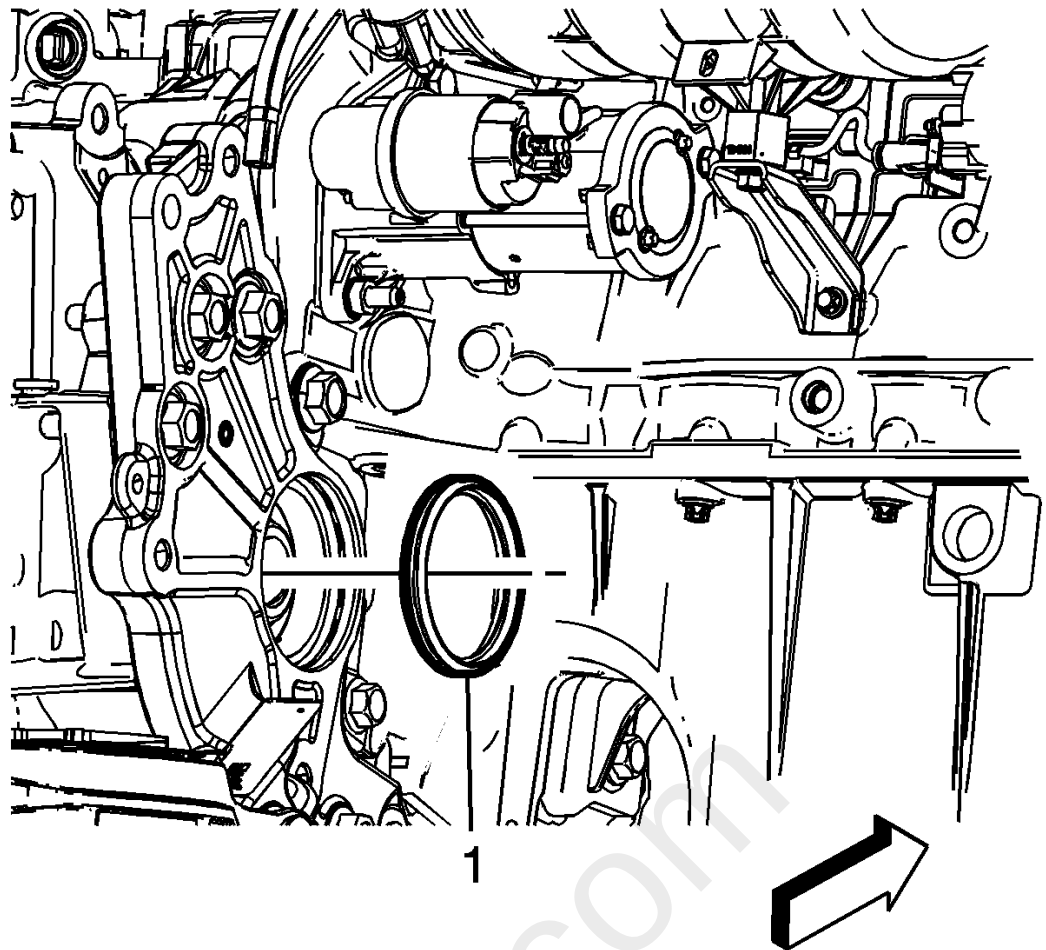


Fig. 43: Transfer Case Adapter Seal

Courtesy of GENERAL MOTORS COMPANY

7. Install the NEW transfer case adapter seal from the transmission adapter.
8. Install the transfer case. Refer to [Transfer Case Replacement](#).

REPAIR INSTRUCTIONS - OFF VEHICLE

TRANSFER CASE ADAPTER DISASSEMBLE

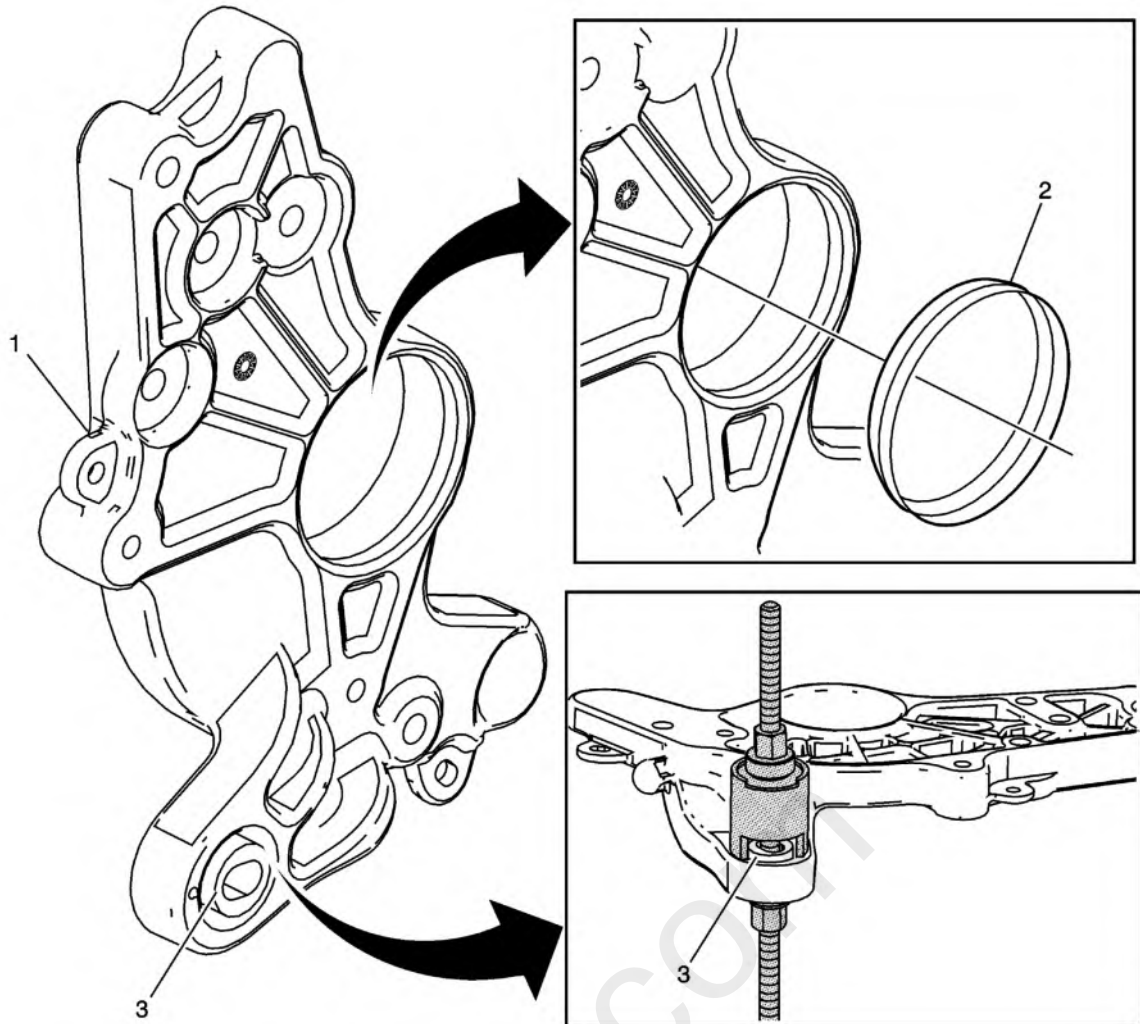


Fig. 44: Transfer Case Adapter

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Transfer Case Adapter
2	Transfer Case Adapter Seal
3	Transfer Case Adapter Bushing
Procedure 1. Install the DT 50839 onto the adapter and over the bushing. 2. Install the CH 50342 threaded rod through the bushing and DT 50839. 3. Install the CH 50342 washers, nuts, and bearing onto the rod. Install the bearing onto the rod at the end closest to the DT 50839. 4. Tighten the nuts until snug. 5. Hold the flat on the threaded rod and rotate the top nut to remove the bushing from the bore of the adapter. Special Tools • DT 50839 Transmission Adapter Plate Bushing Replacer • CH 50342 Hardware Kit For equivalent regional tools, refer to Special Tools.	

TRANSFER CASE DISASSEMBLE

Transfer Case Holding Fixture Installation

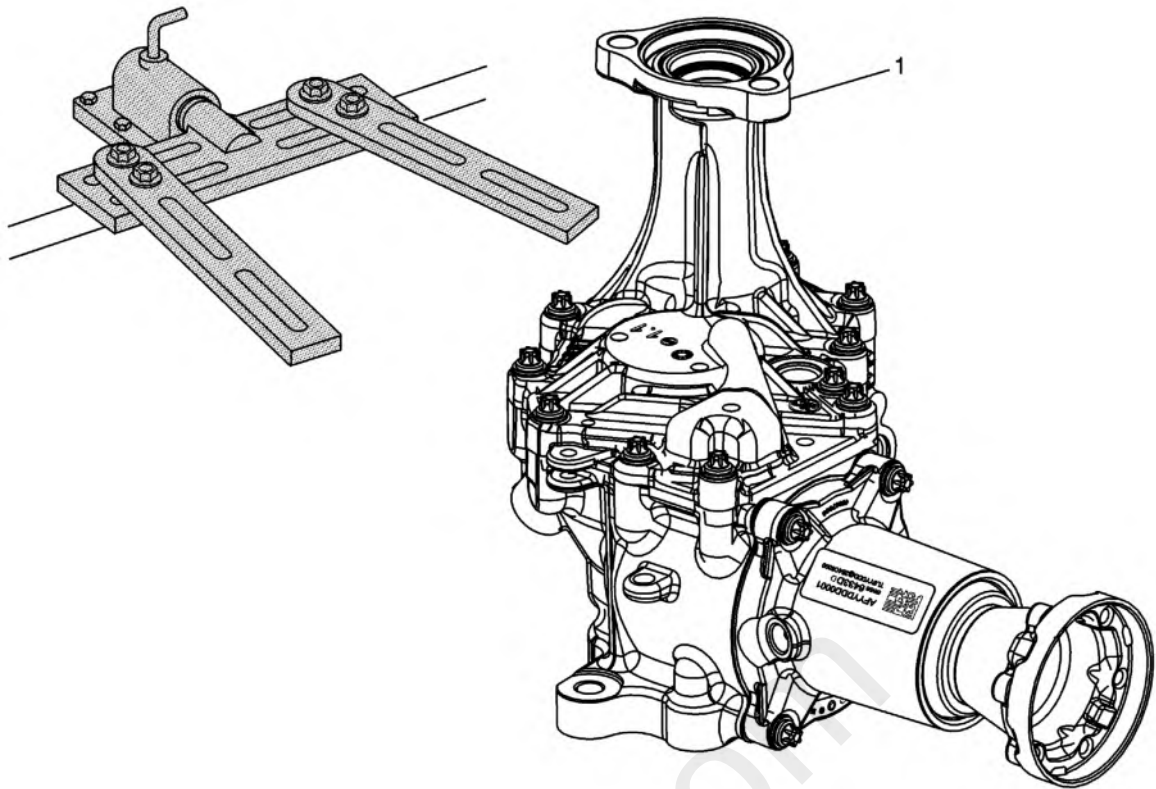


Fig. 45: Transfer Case Holding Fixture
Courtesy of GENERAL MOTORS COMPANY

Transfer Case Holding Fixture Installation

Callout	Component Name
1	Transfer Case NOTE: Always secure with the pivot pin after rotating. NOTE: The transfer case can be rotated 360 degrees to facilitate repair. Special Tools • DT-3289-20 Holding Fixture • DT-36842 Transaxle Holding Fixture For equivalent regional tools, refer to Special Tools.

Transfer Case Oil Fill Plug, Oil Drain Plug, and Vent Hose Connector Removal

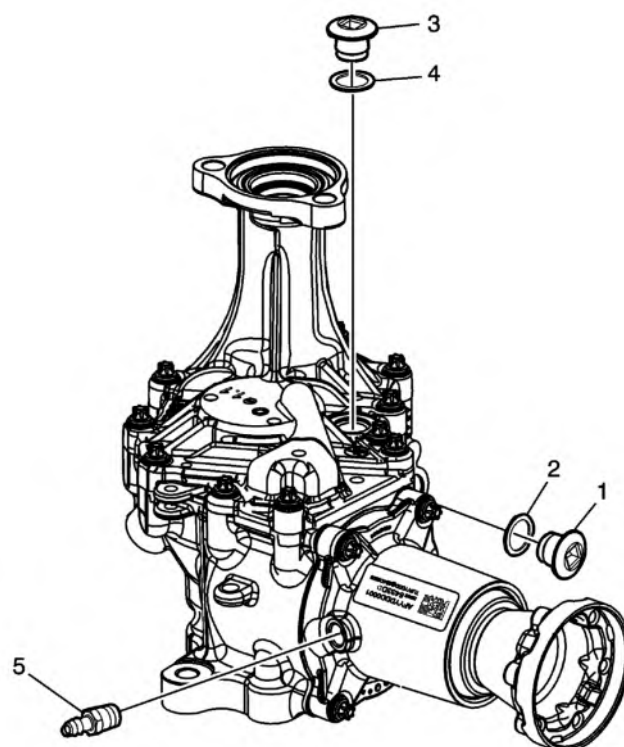


Fig. 46: Transfer Case Oil Fill Plug, Oil Drain Plug And Vent Hose Connector
 Courtesy of GENERAL MOTORS COMPANY

Transfer Case Oil Fill Plug, Oil Drain Plug, and Vent Hose Connector Removal

Callout	Component Name
1	Transfer Case Oil Drain Plug NOTE: The plug and seal are only available as an assembly. Install a NEW plug with seal during assembly.
2	Transfer Case Oil Drain Plug Seal NOTE: The plug and seal are only available as an assembly. Install a NEW plug with seal during assembly.
3	Transfer Case Oil Fill Plug NOTE: The plug and seal are only available as an assembly. Install a NEW plug with seal during assembly.
4	Transfer Case Oil Fill Plug Seal NOTE: The plug and seal are only available as an assembly. Install a NEW plug with seal during assembly.
5	Transfer Case Vent Hose Connector NOTE: Remove the vent hose connector only if replacement is required.

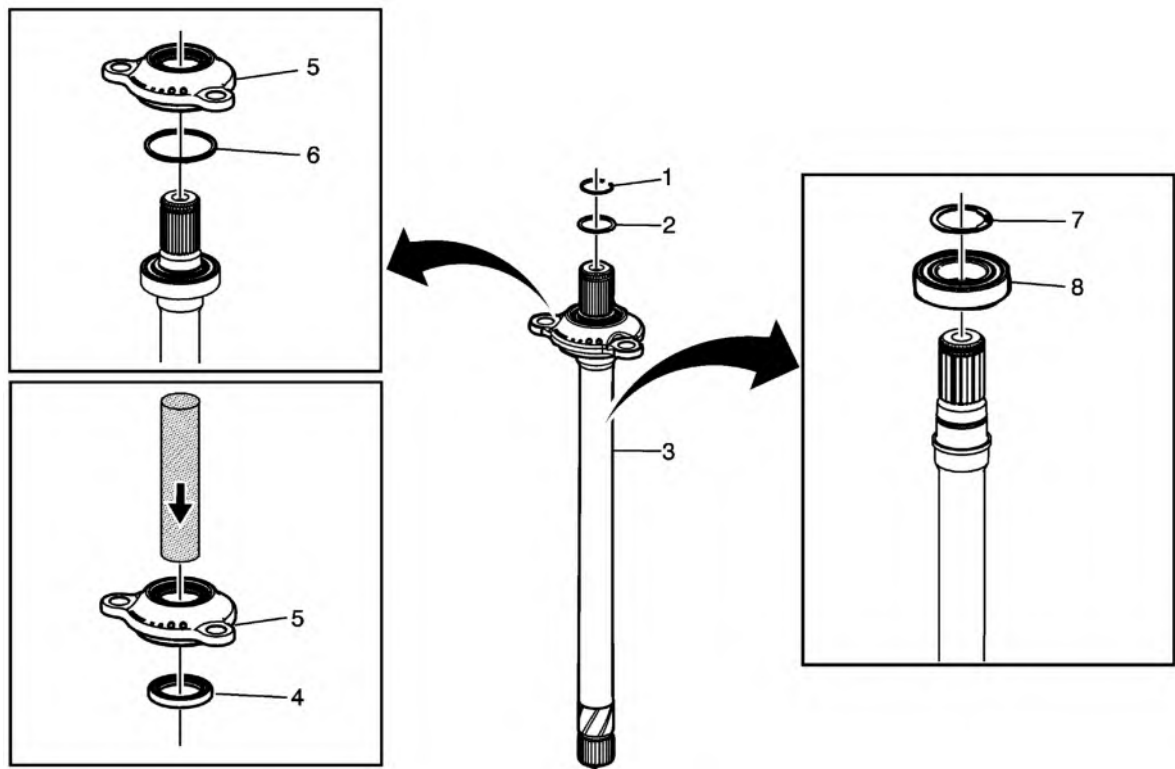


Fig. 47: Front Wheel Drive Intermediate Shaft Components

Courtesy of GENERAL MOTORS COMPANY

Front Wheel Drive Intermediate Shaft Components Removal

Callout	Component Name
NOTE: The intermediate drive shaft is to be removed from the transfer case assembly prior to the transfer case assembly being removed from the vehicle. Prior to removal of the shaft from the assembly, seal protector DT-50937 must be installed to avoid front wheel drive intermediate shaft seal damage. Refer to Transfer Case Description and Operation - New Service Assembly for additional information.	
1	Front Wheel Drive Intermediate Shaft CV Joint Retaining Ring
2	Front Wheel Drive Intermediate Shaft CV Joint Seal
3	Front Wheel Drive Intermediate Shaft Assembly
4	Front Wheel Drive Intermediate Shaft Bearing Seal NOTE: Use a press to remove the seal from the housing. Use care to prevent damage to the housing seal bore.
5	Front Wheel Drive Intermediate Shaft Housing NOTE: Use a press to remove the bearing from the housing.
6	Front Wheel Drive Intermediate Shaft Housing Seal
	Front Wheel Drive Intermediate Shaft Bearing Retaining Ring
7	CAUTION: Do not nick, scratch or damage the sealing surface. The sealing surface is a machined surface. Damage to the machined surface can cause leakage.

Callout	Component Name
8	Front Wheel Drive Intermediate Shaft Bearing NOTE: Use a press to remove the bearing from the shaft.

Transfer Case Rear Output Shaft Housing Removal

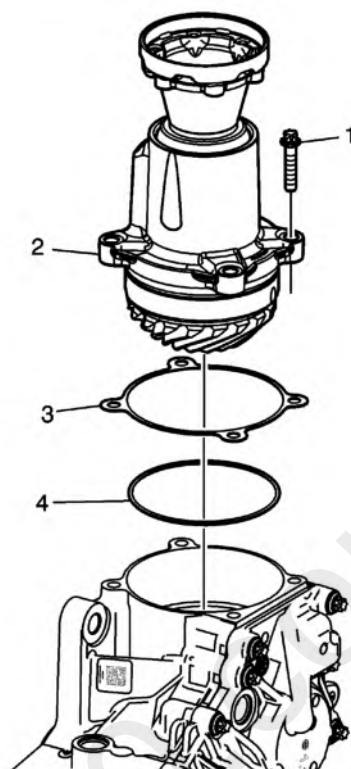


Fig. 48: Transfer Case Rear Output Shaft Housing
Courtesy of GENERAL MOTORS COMPANY

Transfer Case Rear Output Shaft Housing Removal

Callout	Component Name
1	Transfer Case Rear Output Shaft Housing Bolt (Qty: 4) NOTE: Remove and DISCARD the bolts.
2	Transfer Case Rear Output Shaft Housing Assembly
3	Transfer Case Rear Output Shaft Housing Shim
4	Transfer Case Rear Output Shaft Housing O-Ring Seal

Transfer Case Propeller Shaft Flange Removal

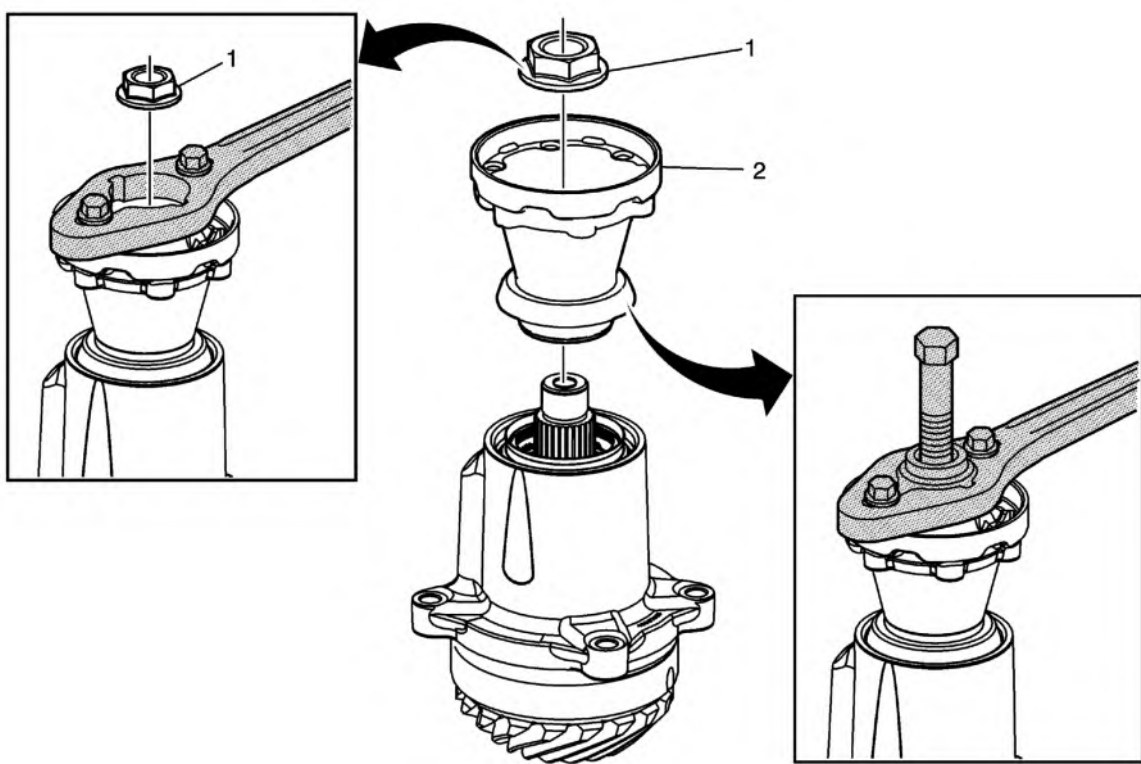


Fig. 49: Transfer Case Propeller Shaft Flange And Special Tools

Courtesy of GENERAL MOTORS COMPANY

Transfer Case Propeller Shaft Flange Removal

Callout	Component Name
1	Transfer Case Propeller Shaft Flange Nut NOTE: Remove and DISCARD Special Tools • J-08614-A Pinion Flange Holder and Remover • J-44873-2 Shoulder Bolts For equivalent regional tools, refer to Special Tools.
2	Transfer Case Propeller Shaft Flange Special Tools • J-08614-A Pinion Flange Holder and Remover • J-44873-2 Shoulder Bolts For equivalent regional tools, refer to Special Tools.

Transfer Case Rear Output Shaft Removal

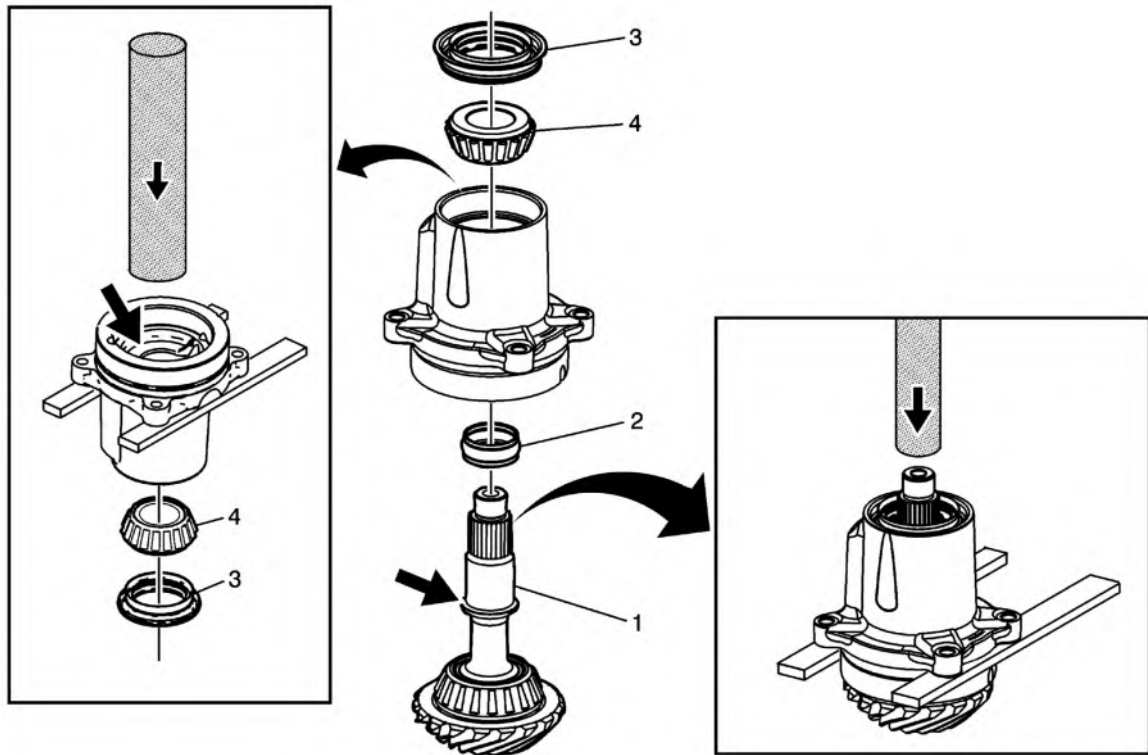


Fig. 50: Transfer Case Rear Output Shaft And Special Tools
 Courtesy of GENERAL MOTORS COMPANY

Transfer Case Rear Output Shaft Removal

Callout	Component Name
1	Transfer Case Rear Output Shaft Assembly Procedure 1. Use a press to remove the shaft and bearings from the housing. 2. Press the shaft downward only until separated from the rear bearing. 3. Once the shaft and bearing are separated, the shaft must be angled and removed by hand to avoid contact between the raised surface in the rear output shaft housing and the raised surface on the rear output shaft.
2	Transfer Case Rear Output Shaft Bearing Spacer NOTE: Discard the rear output shaft bearing spacer.
3	Transfer Case Rear Output Shaft Seal NOTE: Use a press to remove the seal and bearing from the housing.
4	Transfer Case Rear Output Shaft Rear Bearing NOTE: Use a press to remove the bearing and seal from the housing.

Transfer Case Rear Extension Housing Removal

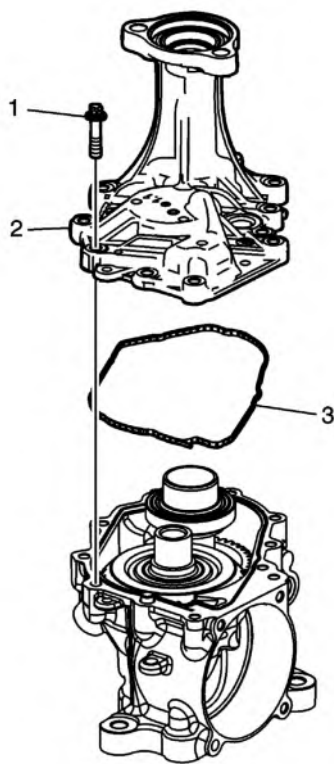


Fig. 51: Transfer Case Rear Extension Housing
Courtesy of GENERAL MOTORS COMPANY

Transfer Case Rear Extension Housing Removal

Callout	Component Name
1	Transfer Case Rear Extension Housing Bolt (Qty: 11) NOTE: Remove and DISCARD the bolts.
2	Transfer Case Rear Extension Housing Assembly
3	Transfer Case Rear Extension Housing O-Ring Seal

Transfer Case Input Shaft Bearing Retainer Rear Seal and Front Wheel Drive Intermediate Shaft Seal Removal

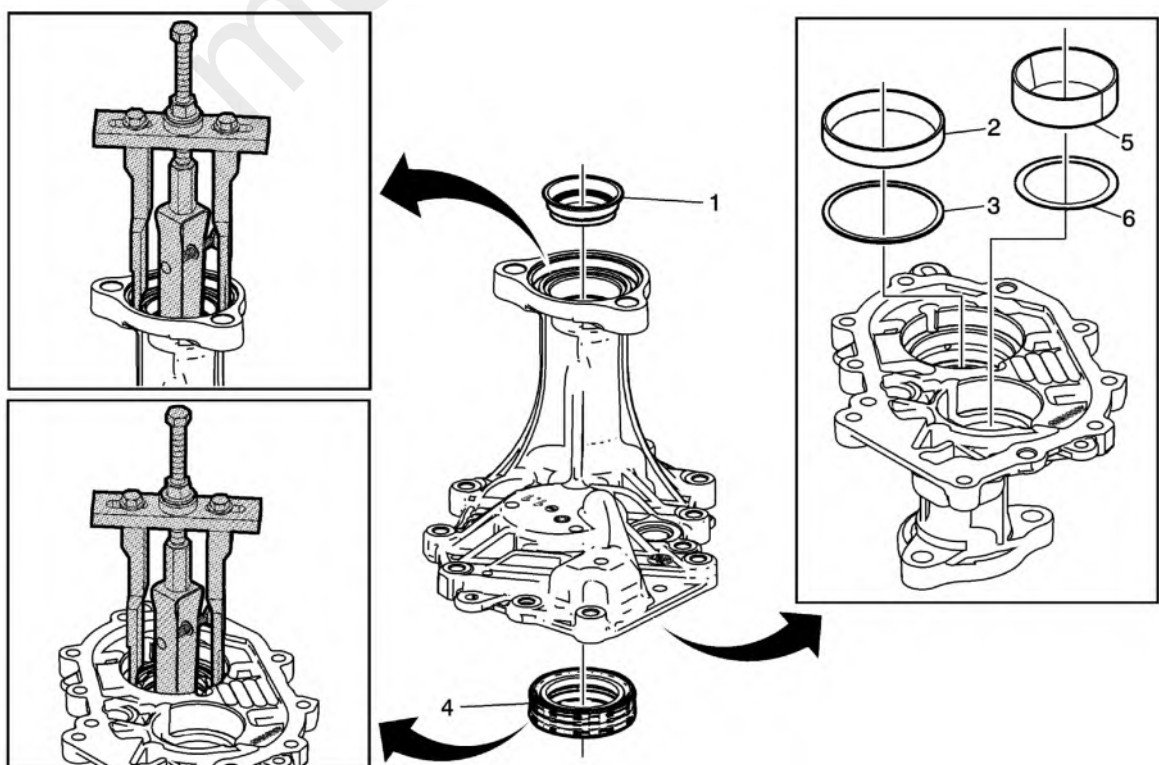


Fig. 52: Transfer Case Input Shaft Bearing Retainer Rear Seal And Front Wheel Drive Intermediate Shaft Seal

Transfer Case Input Shaft Bearing Retainer Rear Seal and Front Wheel Drive Intermediate Shaft Seal Removal

Callout	Component Name
1	Front Wheel Drive Intermediate Shaft Seal Special Tools • J-29369 Output Shaft Bearing Remover • J-45124 Removal Bridge For equivalent regional tools, refer to Special Tools.
2	Input Shaft Rear Bearing Race NOTE: The bearing races are not an interference fit to the housing bore.
3	Input Shaft Rear Shim NOTE: Note the position of the shim for assembly.
4	Transfer Case Input Shaft Bearing Retainer Rear Seal Special Tools • J-26941 Bushing and Bearing Remover • J-45124 Removal Bridge For equivalent regional tools, refer to Special Tools.
5	Idler Shaft Rear Bearing Race NOTE: The bearing races are not an interference fit to the housing bore.
6	Idler Shaft Rear Shim NOTE: Note the position of the shim for assembly.

Idler Shaft and Input Shaft Removal

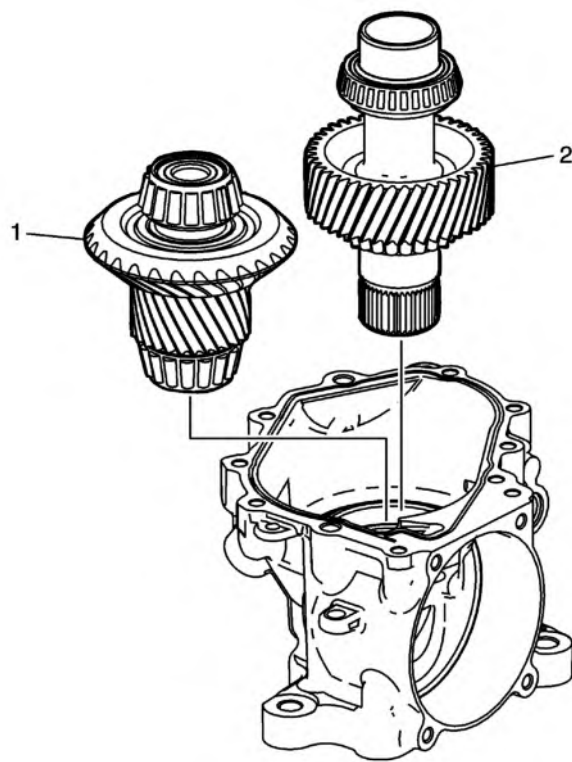


Fig. 53: Idler Shaft and Input Shaft
 Courtesy of GENERAL MOTORS COMPANY

Idler Shaft and Input Shaft Removal

Callout	Component Name
1	Idler Shaft Assembly
2	Input Shaft Assembly

Transfer Case Input Shaft Bearing Race and Idler Shaft Bearing Race Removal

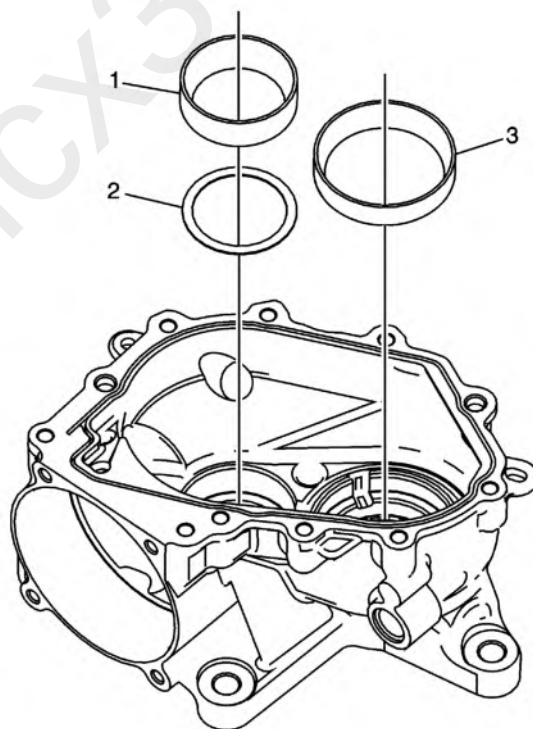


Fig. 54: Transfer Case Input Shaft Bearing Race And Idler Shaft Bearing Race
 Courtesy of GENERAL MOTORS COMPANY

Transfer Case Input Shaft Bearing Race and Idler Shaft Bearing Race Removal

Callout	Component Name

Callout	Component Name
1	Idler Shaft Bearing Race NOTE: The bearing race is not an interference fit to the housing bore.
2	Idler Shaft Bearing Race Shim NOTE: Note the position of the shim for assembly.
3	Input shaft bearing race NOTE: The bearing race is not an interference fit to the housing bore.

Transfer Case Input Shaft Bearing Retainer Front Seal and Rear Extension Locating Pin Removal

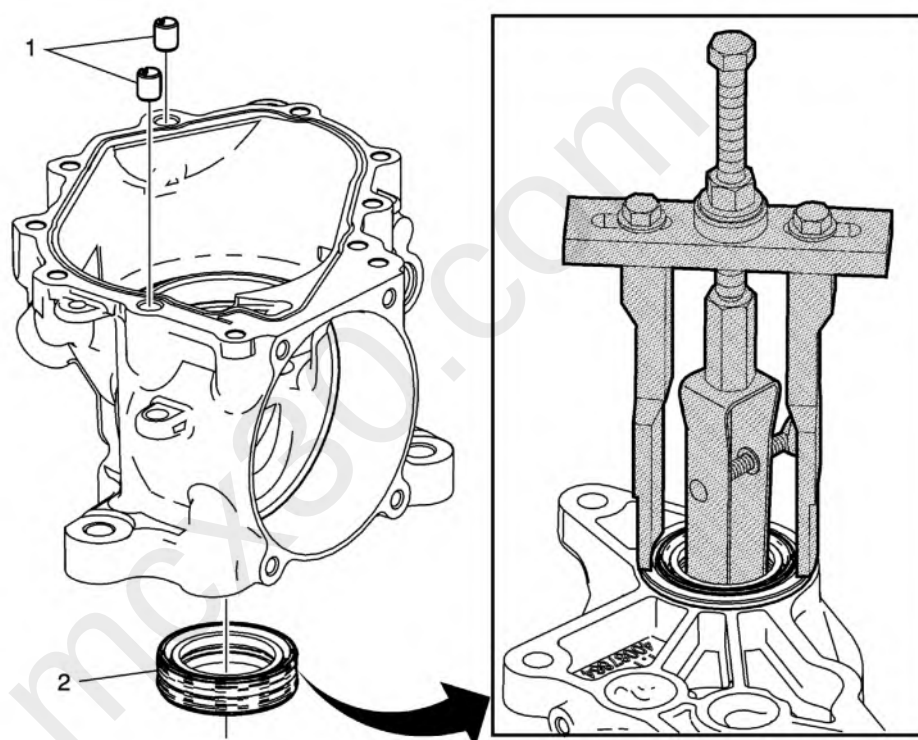


Fig. 55: Transfer Case Input Shaft Bearing Retainer Front Seal, Rear Extension Locating Pin And Remover
Courtesy of GENERAL MOTORS COMPANY

Transfer Case Input Shaft Bearing Retainer Front Seal and Rear Extension Locating Pin Removal

Callout	Component Name
1	Transfer Case Rear Extension Housing Locating Pin, as required (Qty: 2)
2	Transfer Case Input Shaft Bearing Retainer Front Seal Special Tools • J-26941 Bushing and Bearing Remover • J-45124 Removal Bridge For equivalent regional tools, refer to Special Tools .

TRANSFER CASE CLEANING AND INSPECTION

Transfer Case Housing Cleaning and Inspection

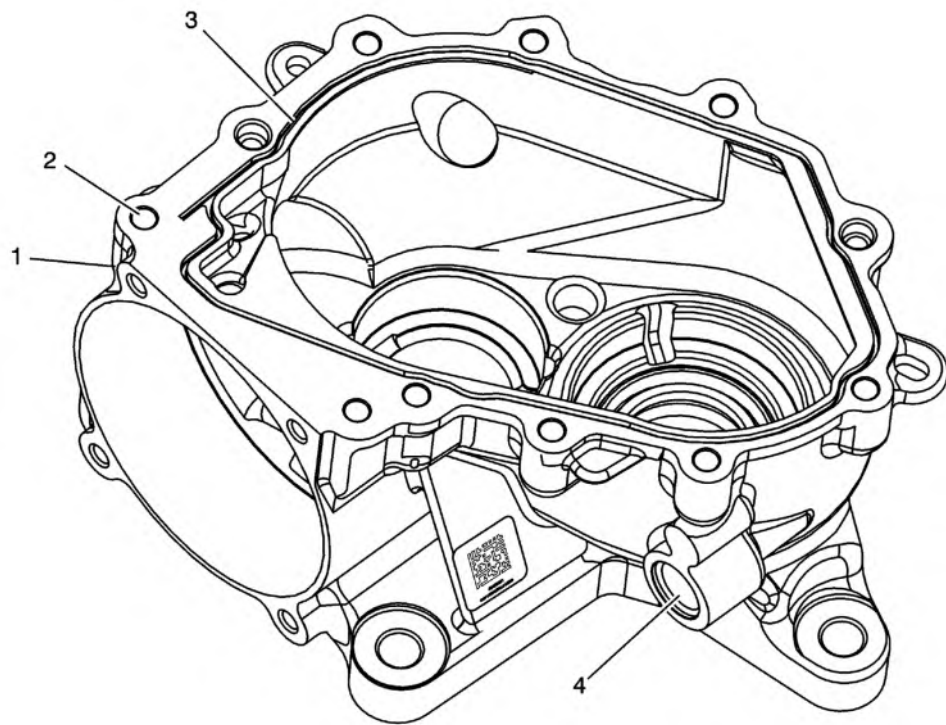


Fig. 56: Transfer Case Housing Cleaning And Inspection Points

Courtesy of GENERAL MOTORS COMPANY

Transfer Case Housing Cleaning and Inspection

Callout	Component Name
Preliminary Procedure • Clean the transfer case housing in cleaning solvent and air dry. • The case halves, internal gears and bearings are not serviceable components. If damage is present, the transfer case assembly must be replaced.	
1	Transfer Case Housing NOTE: Inspect for cracks, broken areas, porosity, or other damage. The transfer case assembly must be replaced if damage is found.
2	Transfer Case Housing Threaded Bolt Holes NOTE: Repair any damaged threads.
3	Transfer Case Housing Sealing Surfaces NOTE: Repair small scratches or nicks with a soft stone.
4	Drain Plug Hole NOTE: Inspect for damage to the threads or sealing surface.

Transfer Case Rear Extension Housing Cleaning and Inspection

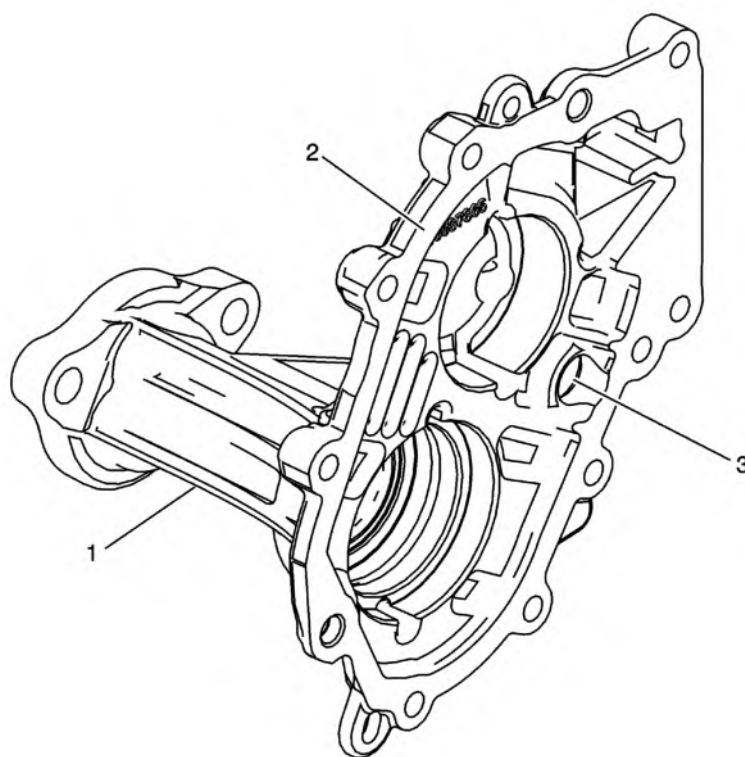


Fig. 57: Transfer Case Rear Extension Housing Cleaning And Inspection Areas
 Courtesy of GENERAL MOTORS COMPANY

Transfer Case Rear Extension Housing Cleaning and Inspection

Callout	Component Name
Preliminary Procedure • Clean the transfer case housing in cleaning solvent and air dry. • The case halves, internal gears and bearings are not serviceable components. If damage is present, the transfer case assembly must be replaced.	
1	Transfer Case Rear Extension Housing NOTE: Inspect for cracks, broken areas, porosity, or other damage. The transfer case assembly must be replaced if damage is found.
2	Transfer Case Rear Extension Housing Sealing Surfaces NOTE: Repair small scratches or nicks with a soft stone.
3	Fill Plug Hole NOTE: Inspect for damage to the threads or sealing surface.

Input Shaft Cleaning and Inspection

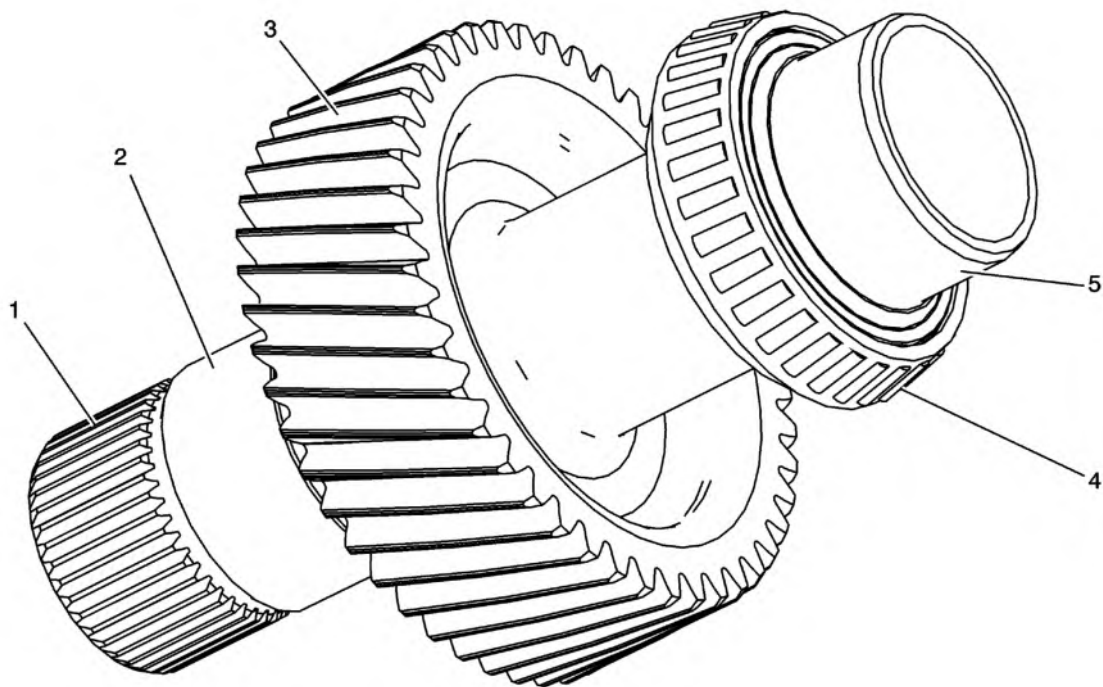


Fig. 58: Input Shaft Cleaning And Inspection Points

Courtesy of GENERAL MOTORS COMPANY

Input Shaft Cleaning and Inspection

Callout	Component Name
Preliminary Procedure • Clean the input shaft in cleaning solvent and air dry. • The case halves, internal gears and bearings are not serviceable components. If damage is present, the transfer case assembly must be replaced.	
1	Input Shaft Splines NOTE: Inspect for excessive wear or damage.
2	Input Shaft Front Seal Surface NOTE: Inspect for excessive grooves, rust, pitting, or damage.
3	Input Shaft Gear Teeth NOTE: Inspect for excessive wear or damage.
4	Input Shaft Bearing NOTE: Inspect for bearing wear or other damage
5	Input Shaft Rear Seal Surface NOTE: Inspect for excessive grooves, rust, pitting, or damage.

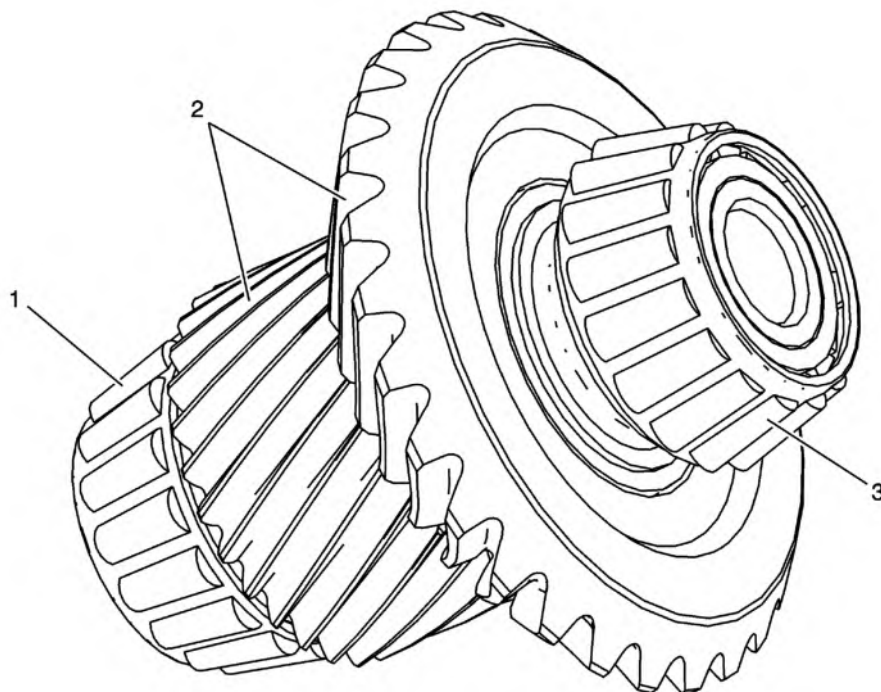


Fig. 59: Idler Shaft Cleaning And Inspection Points

Courtesy of GENERAL MOTORS COMPANY

Idler Shaft Cleaning and Inspection

Callout	Component Name
Preliminary Procedure • Clean the idler shaft in cleaning solvent and air dry. • The case halves, internal gears and bearings are not serviceable components. If damage is present, the transfer case assembly must be replaced.	
1	Idler Shaft Bearing NOTE: Inspect for bearing wear or other damage
2	Idler Shaft Gear Teeth NOTE: Inspect for excessive wear or damage.
3	Idler Shaft Bearing NOTE: Inspect for bearing wear or other damage

TRANSFER CASE ASSEMBLE

Transfer Case Rear Output Shaft Installation

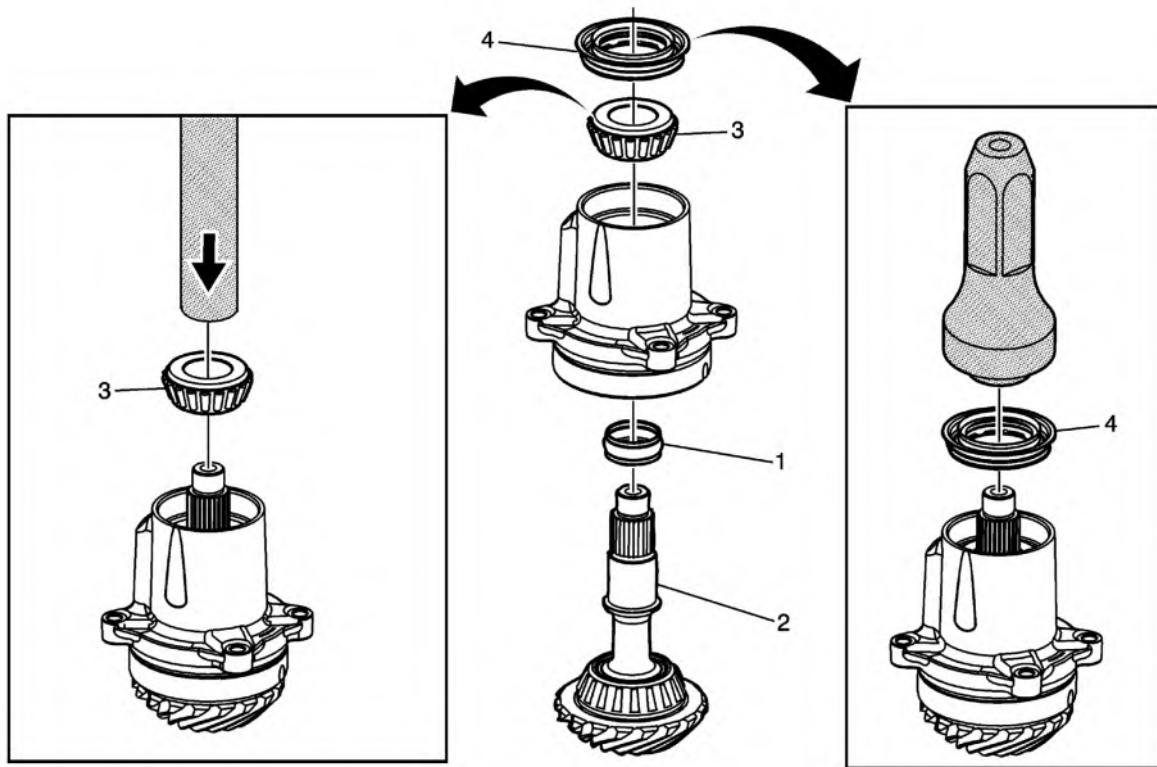


Fig. 60: Transfer Case Rear Output Shaft
Courtesy of GENERAL MOTORS COMPANY

Transfer Case Rear Output Shaft Installation

Callout	Component Name
1	Transfer Case Rear Output Shaft Bearing Spacer NOTE: Install a NEW rear output shaft bearing spacer.
2	Transfer Case Rear Output Shaft Assembly
3	Transfer Case Rear Output Shaft Rear Bearing NOTE: Use a press to install the rear bearing.
4	Transfer Case Rear Output Shaft Seal Special Tools DT-45756 Seal Installer For equivalent regional tools, refer to Special Tools .

Transfer Case Propeller Shaft Flange Installation

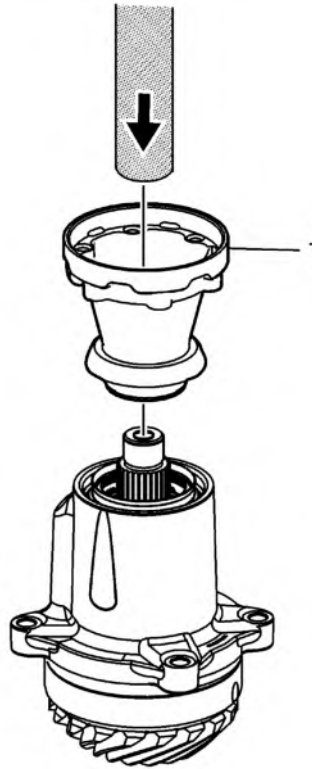
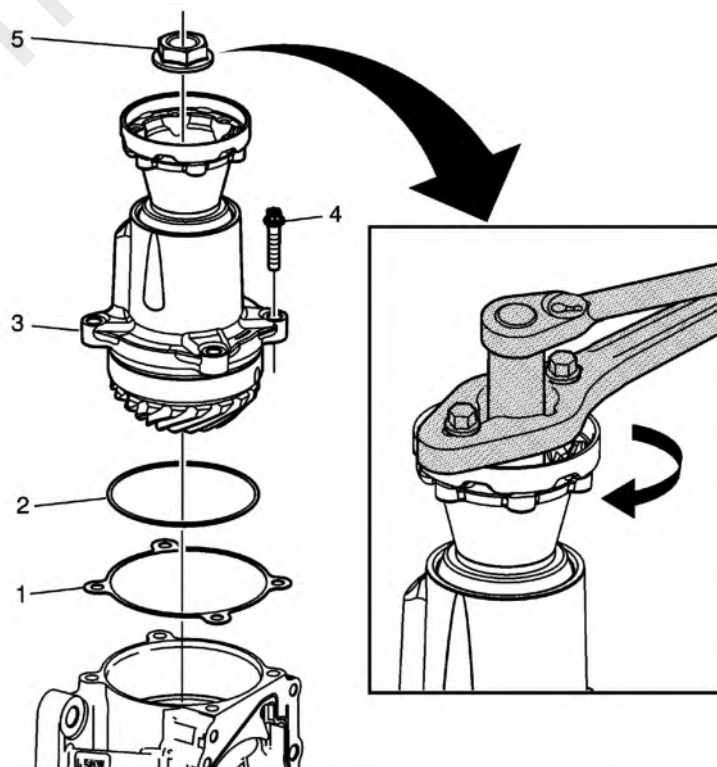


Fig. 61: Transfer Case Propeller Shaft Flange
 Courtesy of GENERAL MOTORS COMPANY

Transfer Case Propeller Shaft Flange Installation

Callout	Component Name
1	Transfer Case Propeller Shaft Flange Procedure Apply sealant to the ID splines of the flange. Refer to Adhesives, Fluids, Lubricants, and Sealers . NOTE: Use a press to install the propeller shaft flange.

Transfer Case Rear Output Shaft Housing Installation



Transfer Case Rear Output Shaft Housing Installation

Callout	Component Name
1	Transfer Case Rear Output Shaft Housing Shim NOTE: Use care to ensure the shim does not contact the O-ring seal.
2	Transfer Case Rear Output Shaft Housing O-ring Seal Procedure Lube the seal with transfer case fluid prior to installation. Refer to Adhesives, Fluids, Lubricants, and Sealers .
3	Transfer Case Rear Output Shaft Housing Assembly
4	Transfer Case Rear Output Shaft Housing Bolt (Qty: 4) Procedure Apply threadlocker to the threads of the NEW bolts. Refer to Adhesives, Fluids, Lubricants, and Sealers . NOTE: Do not reuse the rear output shaft housing bolts. Install NEW rear output shaft housing bolts during assembly. Tighten 40 N.m (30 lb ft)
5	Transfer Case Propeller Shaft Flange Nut Procedure Apply threadlocker to the threads of the nut. Refer to Adhesives, Fluids, Lubricants, and Sealers . NOTE: Do not reuse the propeller shaft flange nut. Install a NEW flange nut during assembly. Tighten 1. Tighten the nut a first pass to 100 N.m (74 lb ft). 2. Remove the tools. 3. Measure the rotating torque of the rear shaft and flange and reinstall the tools and tighten the nut as required to achieve the correct rotating torque of 1.5-2.9 N.m (13-26 lb in). Special Tools • DT-08614-A Pinion Flange Holder and Remover • DT-44873-2 Shoulder Bolts For equivalent regional tools, refer to Special Tools .

Transfer Case Input Shaft Bearing Race and Idler Shaft Bearing Race Installation

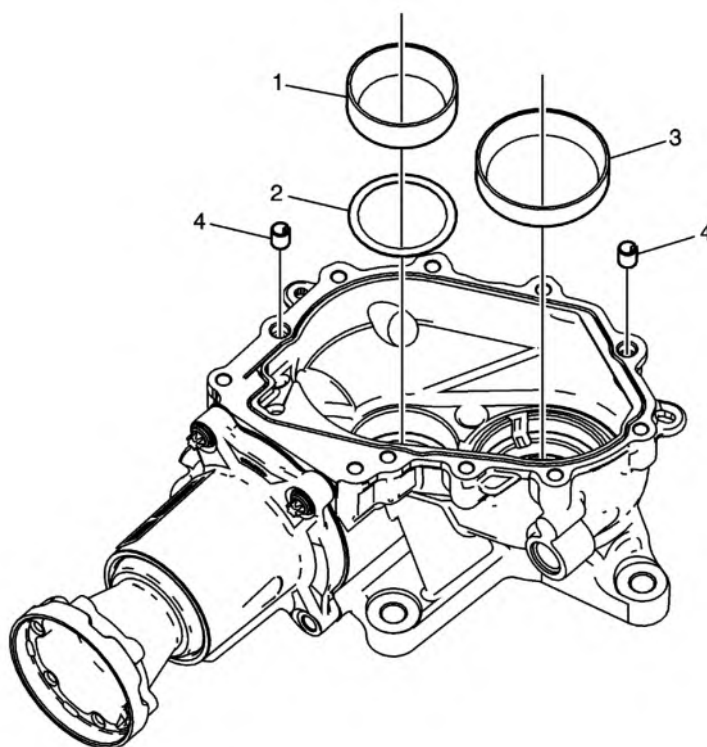


Fig. 63: Transfer Case Input Shaft Bearing Race And Idler Shaft Bearing Race
 Courtesy of GENERAL MOTORS COMPANY

Transfer Case Input Shaft Bearing Race and Idler Shaft Bearing Race Installation

Callout	Component Name
1	Idler Shaft Bearing Shim NOTE: Note the position of the shim for assembly.
2	Idler Shaft Bearing Race NOTE: • The bearing races are not an interference fit to the housing bore. • Apply a thin coating of assembly grease to the OD of the race to retain it in the housing.
3	Input Shaft Bearing Race NOTE: • The bearing races are not an interference fit to the housing bore. • Apply a thin coating of assembly grease to the OD of the race to retain it in the housing.
4	Transfer Case Rear Extension Housing Locating Pins (Qty: 2). NOTE: Install the locating pins as required.

Idler Shaft and Input Shaft Installation

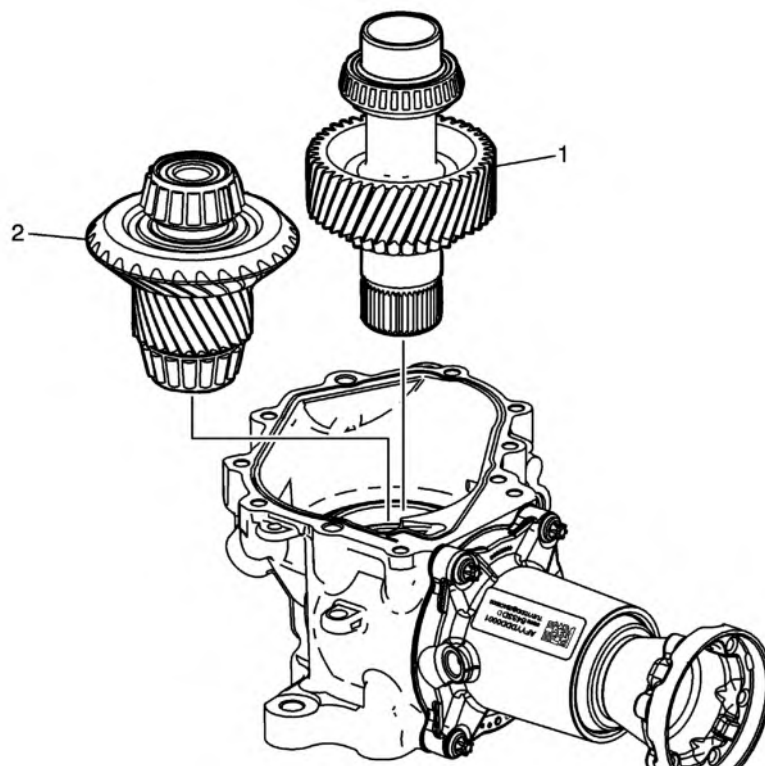


Fig. 64: Idler Shaft and Input Shaft
Courtesy of GENERAL MOTORS COMPANY

Idler Shaft and Input Shaft Installation

Callout	Component Name
1	Input Shaft Assembly
2	Idler Shaft Assembly

Transfer Case Input Shaft Bearing Retainer Rear Seal and Front Wheel Drive Intermediate Shaft Seal Installation

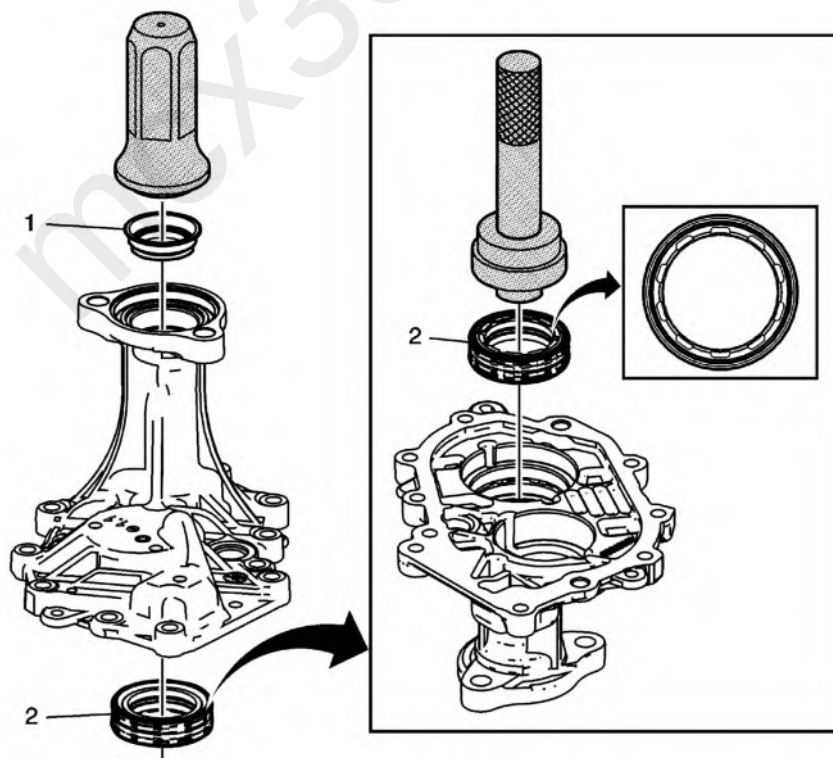


Fig. 65: Transfer Case Input Shaft Bearing Retainer Rear Seal And Front Wheel Drive Intermediate Shaft Seal

Courtesy of GENERAL MOTORS COMPANY

Transfer Case Input Shaft Bearing Retainer Rear Seal and Front Wheel Drive Intermediate Shaft Seal Installation

Callout	Component Name

Callout	Component Name
1	Front Wheel Drive Intermediate Shaft Seal Procedure 1. In order to retain the intermediate shaft seal to the DT-41819 Input Shaft Seal Installer, it may be necessary to apply a thin layer of transmission assembly grease DT-36850 Transjel Lubricant to the face of the tool. 2. Install the intermediate shaft seal (1), to the rear extension housing using the DT-41819 installer. 3. Clean any residual grease from the face of the seal. NOTE: Inspect the tool flange for scratches or scoring. If tool damage is present, seal lip damage may occur. Replace the tool as required. Special Tools • DT-36850 Transjel Lubricant • DT-41819 Input Shaft Seal Installer For equivalent regional tools, refer to Special Tools.
2	Transfer Case Input Shaft Bearing Retainer Rear Seal NOTE: • Inspect the tool flange for scratches or scoring. If tool damage is present, seal lip damage may occur. Replace the tool as required. • Use the small end of the tool to install the seal. • Install the NEW seal with the notched metal surface of the seal facing the installer tool. Special Tools • DT-8092 Driver Handle • DT-50840 Input Shaft Seal Installer For equivalent regional tools, refer to Special Tools.

Transfer Case Input Shaft Bearing Race and Idler Shaft Bearing Race Installation

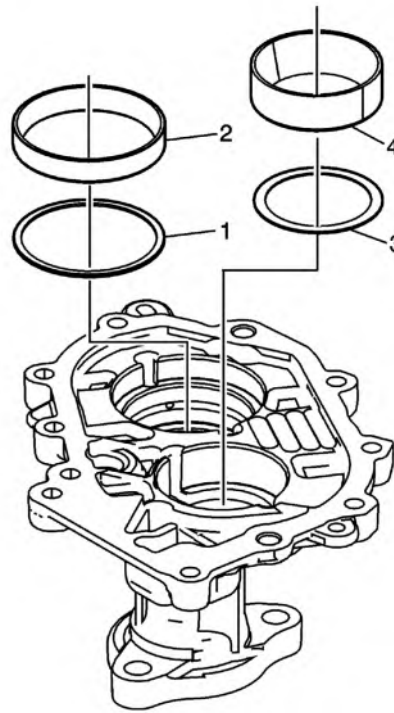


Fig. 66: Transfer Case Input Shaft Bearing Race and Idler Shaft Bearing Race
 Courtesy of GENERAL MOTORS COMPANY

Transfer Case Input Shaft Bearing Race and Idler Shaft Bearing Race Installation

Callout	Component Name
1	Input Shaft Rear Shim NOTE: Note the position of shims for assembly.
2	Input Shaft Rear Bearing Race NOTE: • The bearing races are not an interference fit to the housing bore. • Apply a thin coating of assembly grease to the OD of the race to retain it in the housing.
3	Idler Shaft Rear Shim NOTE: Note the position of shims for assembly.
4	Idler Shaft Rear Bearing Race NOTE: • The bearing races are not an interference fit to the housing bore. • Apply a thin coating of assembly grease to the OD of the race to retain it in the housing.

Transfer Case Rear Extension Housing Installation

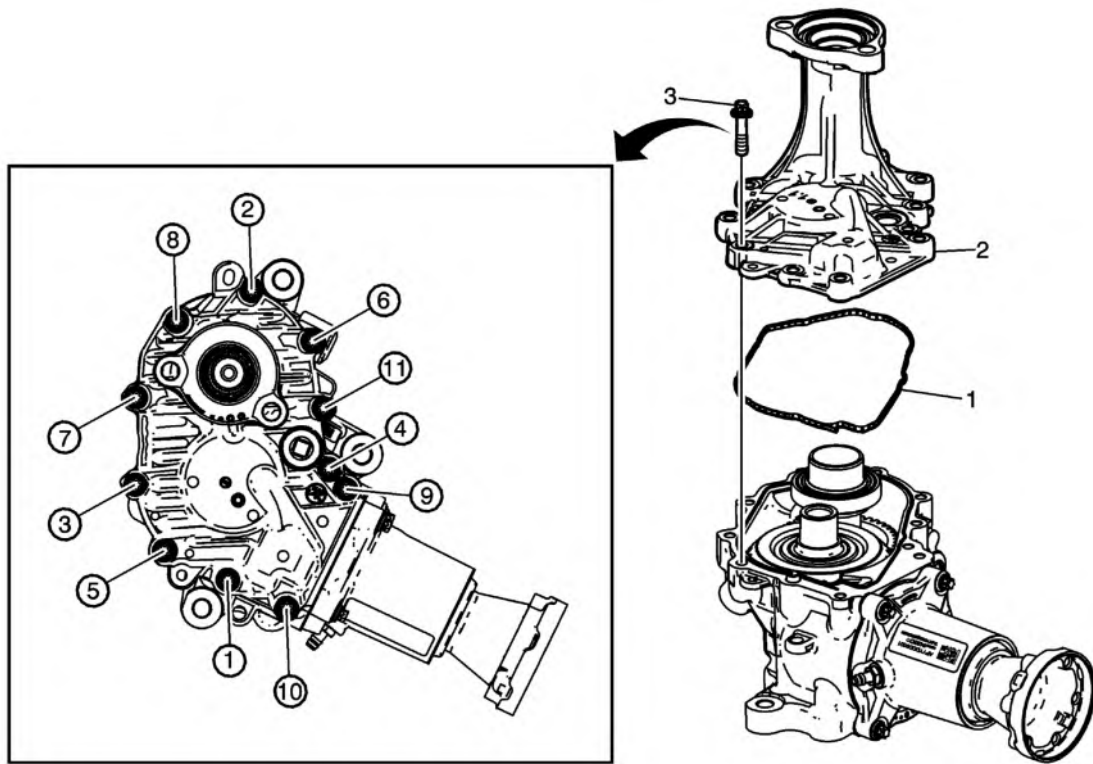


Fig. 67: Transfer Case Rear Extension Housing

Courtesy of GENERAL MOTORS COMPANY

Transfer Case Rear Extension Housing Installation

Callout	Component Name
1	Transfer Case Rear Extension Housing O-ring Seal NOTE: • Do not reuse the O-ring seal. Install a NEW O-ring seal during assembly. • Inspect the extension housing and main housing seal surfaces to ensure they are clean and free of damage prior to assembly.
2	Transfer Case Rear Extension Housing Assembly
3	Transfer Case Rear Extension Housing Bolt (Qty: 11) Procedure Apply threadlocker to the threads of the NEW bolts. Refer to Adhesives, Fluids, Lubricants, and Sealers . NOTE: Do not reuse the case half bolts. Install NEW rear extension housing bolts during assembly. Tighten • First pass to 28 N.m (21 lb ft) in sequence • Final pass 90 degrees in sequence

Transfer Case Input Shaft Bearing Retainer Front Seal Installation

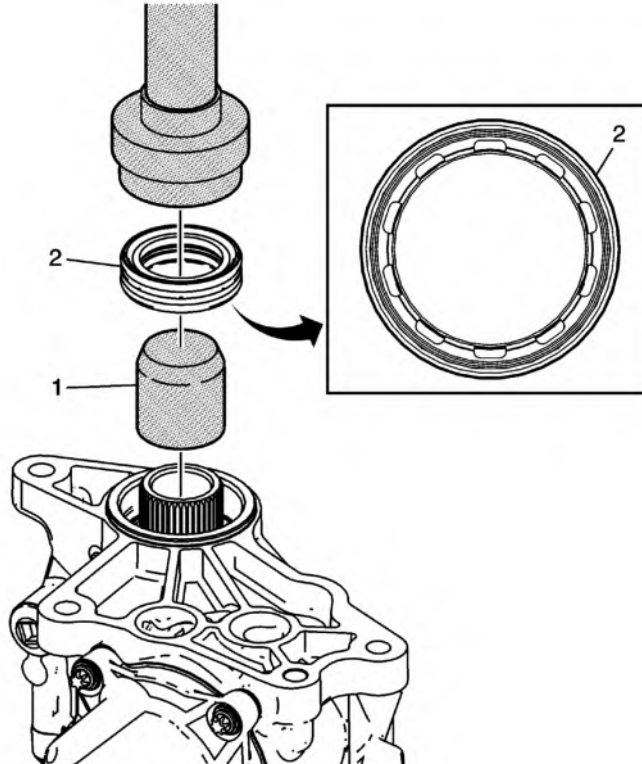


Fig. 68: Transfer Case Input Shaft Bearing Retainer Front Seal And Special Tools

Courtesy of GENERAL MOTORS COMPANY

Transfer Case Input Shaft Bearing Retainer Front Seal Installation

Callout	Component Name
1	Input Shaft Seal Protector CAUTION: When installing the input shaft seal into the main housing, use the seal protector to prevent input shaft seal damage. The seal protector is included as a part of the service seal parts kit.
2	Transfer Case Input Shaft Bearing Retainer Front Seal Procedure 1. Install the seal protector over the splines of the input shaft. 2. Remove the seal protector after the input shaft seal is installed into the housing. NOTE: • The seal protector is part of the service seal kit. • Use the large end of the DT-50840 to install the seal. • Install the NEW seal with the notched metal surface of the seal facing away from the installer tool and facing the inside of housing. Special Tools • DT-8092 Driver Handle • DT-50840 Input Shaft Seal Installer For equivalent regional tools, refer to Special Tools.

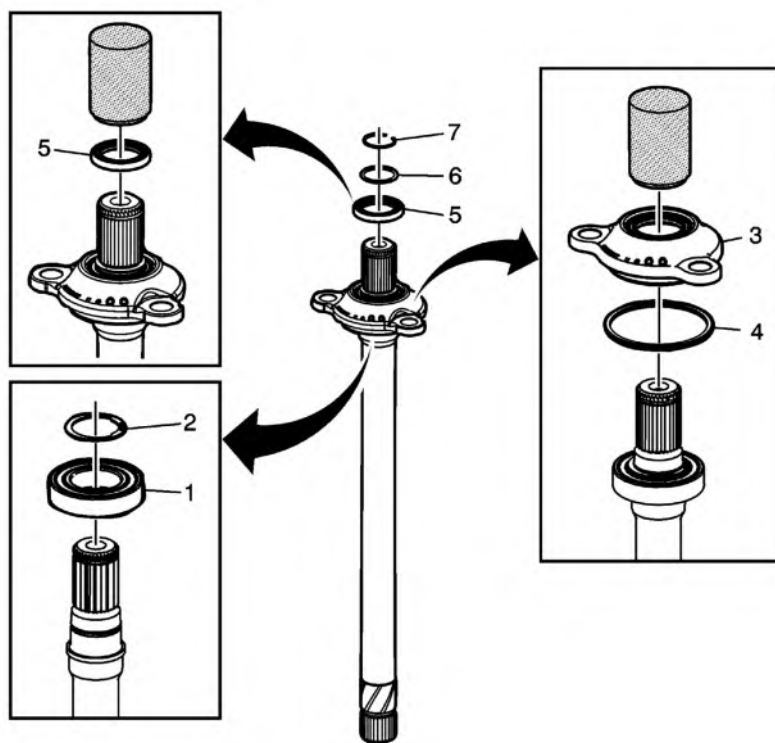


Fig. 69: Front Wheel Drive Intermediate Shaft Components

Courtesy of GENERAL MOTORS COMPANY

Front Wheel Drive Intermediate Shaft Components Installation

Callout	Component Name
Preliminary Procedure The intermediate drive shaft is to be installed into the transfer case assembly after the transfer case assembly is installed into the vehicle. Prior to installation of the shaft into the assembly, seal protector DT-50937 must be installed to avoid front wheel drive intermediate shaft seal damage. Refer to Transfer Case Description and Operation - New Service Assembly for additional information.	
1	Front Wheel Drive Intermediate Shaft Bearing NOTE: Use a press to install the bearing to the shaft. Special Tools DT-50985 Seal Installer For equivalent regional tools, refer to Special Tools .
2	Front Wheel Drive Intermediate Shaft Bearing Retaining Ring CAUTION: Do not nick, scratch or damage the sealing surface. The sealing surface is a machined surface. Damage to the machined surface can cause leakage.
3	Front Wheel Drive Intermediate Shaft Housing NOTE: Use a press to install the housing to the bearing. Special Tools DT-50985 Seal Installer For equivalent regional tools, refer to Special Tools .
4	Front Wheel Drive Intermediate Shaft Housing Seal

Callout	Component Name
5	Front Wheel Drive Intermediate Shaft Bearing Seal Special Tools DT-50985 Seal Installer For equivalent regional tools, refer to Special Tools .
6	Front Wheel Drive Intermediate Shaft CV Joint Seal
7	Front Wheel Drive Intermediate Shaft Retaining Ring CAUTION: When installing a new bearing retaining ring, open the ring only as far as necessary to fit the ring over the shaft. Opening the ring too far will damage it. NOTE: Do not reuse the intermediate shaft retaining ring. Install a NEW ring during assembly.

Transfer Case Fill Plug, Oil Drain Plug, and Vent Hose Connector Installation

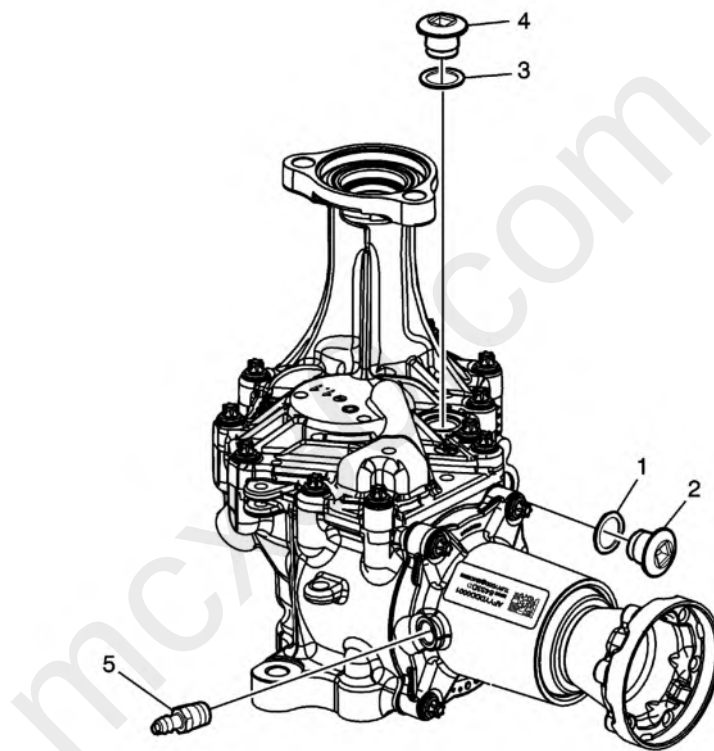


Fig. 70: Transfer Case Fill Plug, Oil Drain Plug And Vent Hose Connector
Courtesy of GENERAL MOTORS COMPANY

Transfer Case Fill Plug, Oil Drain Plug, and Vent Hose Connector Installation

Callout	Component Name
1	Transfer Case Oil Drain Plug Seal NOTE: The plug and seal are only available as an assembly. Install a NEW plug with seal during assembly.

Callout	Component Name
2	Transfer Case Oil Drain Plug NOTE: The plug and seal are only available as an assembly. Install a NEW plug with seal during assembly. Tighten 40 N.m (30 lb ft)
3	Transfer Case Oil Fill Plug Seal NOTE: The plug and seal are only available as an assembly. Install a NEW plug with seal during assembly.
4	Transfer Case Oil Fill Plug Procedure Tighten the oil fill plug only after the assembly has been filled with fluid. Refer to Adhesives, Fluids, Lubricants, and Sealers. NOTE: The plug and seal are only available as an assembly. Install a NEW plug with seal during assembly. Tighten 40 N.m (30 lb ft)
5	Transfer Case Vent Hose Connector Procedure Apply sealant to the threads of the connector. Refer to Adhesives, Fluids, Lubricants, and Sealers. Tighten 25 N.m (18 lb ft)

Transfer Case Holding Fixture Removal



Callout	Component Name
1	Transfer Case Special Tools • DT-3289-20 Holding Fixture • DT-36842 Transaxle Holding Fixture For equivalent regional tools, refer to <u>Special Tools</u>.

TRANSFER CASE ADAPTER ASSEMBLY (MHB)

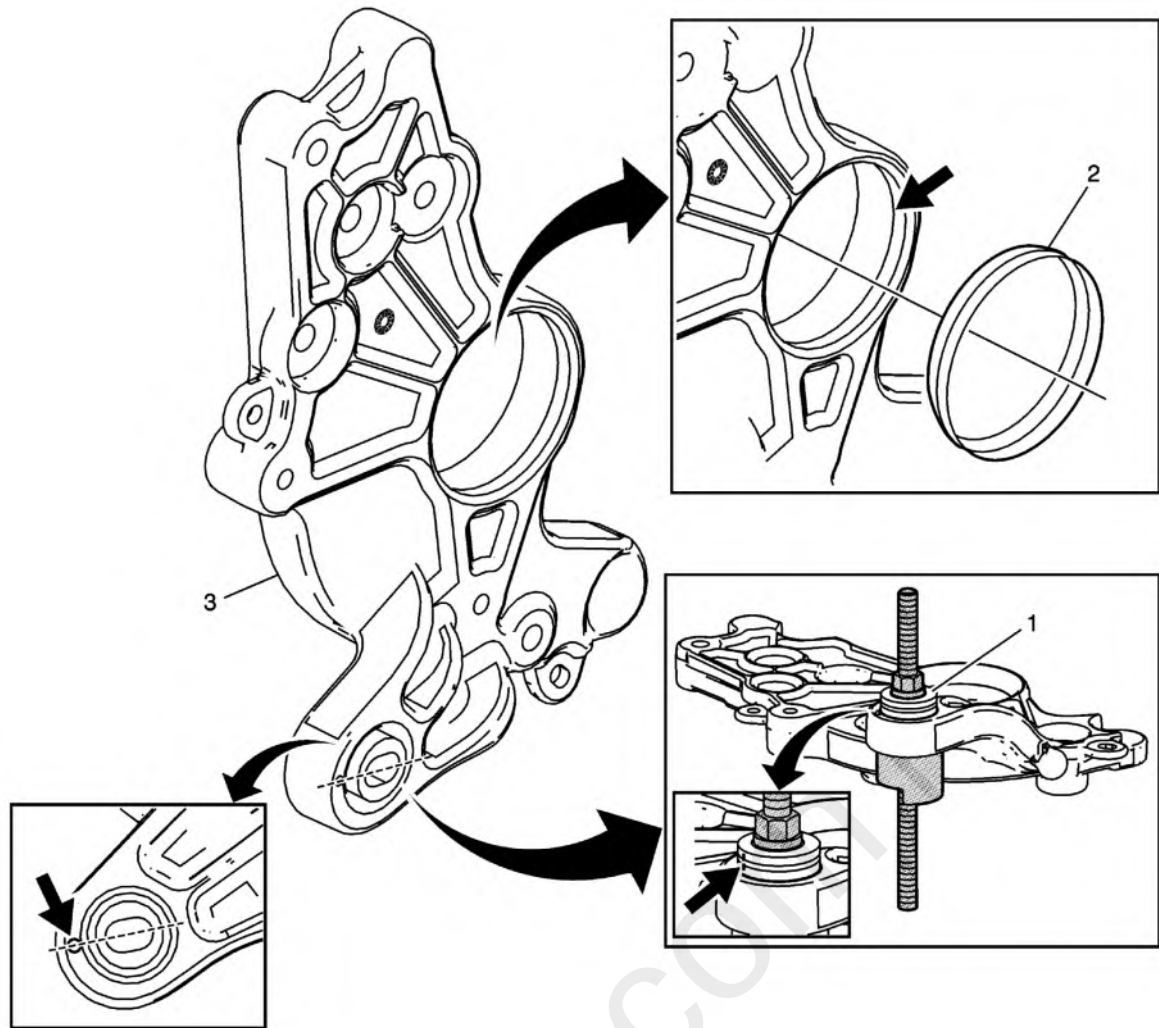


Fig. 72: Transfer Case Adapter

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Transfer Case Adapter Bushing Procedure 1. Position the bushing (1) to the bore of the adapter plate. 2. Align the opening of the bushing to the alignment mark on the face of the adapter. 3. Mark the side of the bushing for alignment. 4. Install the DT 50839 onto the adapter. 5. Install the CH-50342 threaded rod through the bushing and the DT 50839. 6. Install the CH-50342 washers, nuts, and bearing onto the rod. Install the bearing onto the rod at the end closest to the bushing. 7. Tighten the nuts until snug. 8. Hold the flat on the threaded rod and rotate the bottom nut in order to install the bushing into the bore of the adapter. Tighten until the bushing has contacted the face of the installer tool. 9. Inspect the bushing for proper installation. A properly installed bushing will be centered in the bore with 1.5-2.5 mm (0.06-0.10 in) of the bushing protruding from each side of the plate. Special Tools • DT 50839 Transmission Adapter Plate Bushing Replacer • CH-50342 Hardware Kit For equivalent regional tools, refer to Special Tools.

Callout	Component Name
2	Transfer Case Adapter-to-Transfer Case Seal NOTE: Install the OD groove of the seal onto the raised area in the adapter seal bore. A properly installed seal will be installed 2.66 mm (0.10 in) below the machined surface when measured from the PTU side of the adapter.
3	Transfer Case Adapter

DESCRIPTION AND OPERATION

TRANSFER CASE IDENTIFICATION

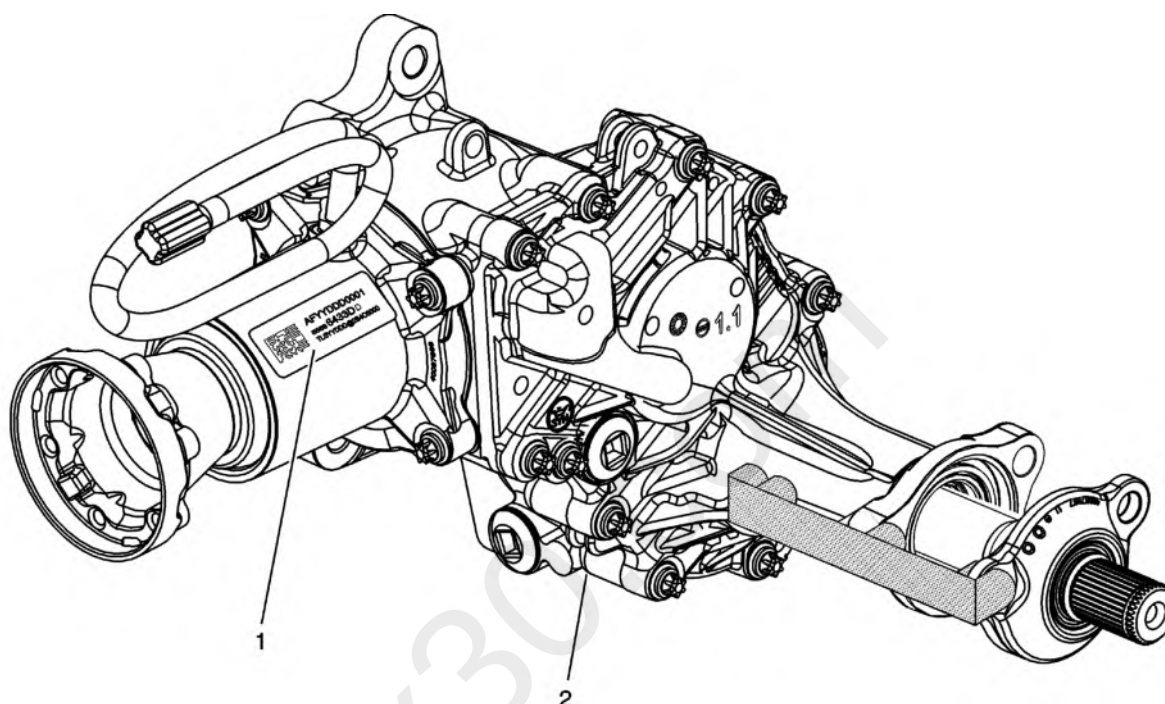


Fig. 73: Transfer Case Identification Label Locations

Courtesy of GENERAL MOTORS COMPANY

The transfer case primary identification label (1) is located on the rear extension housing. The transfer case secondary identification stamping (2) is located on the bottom of the main housing.

Transfer Case Primary Identification Label

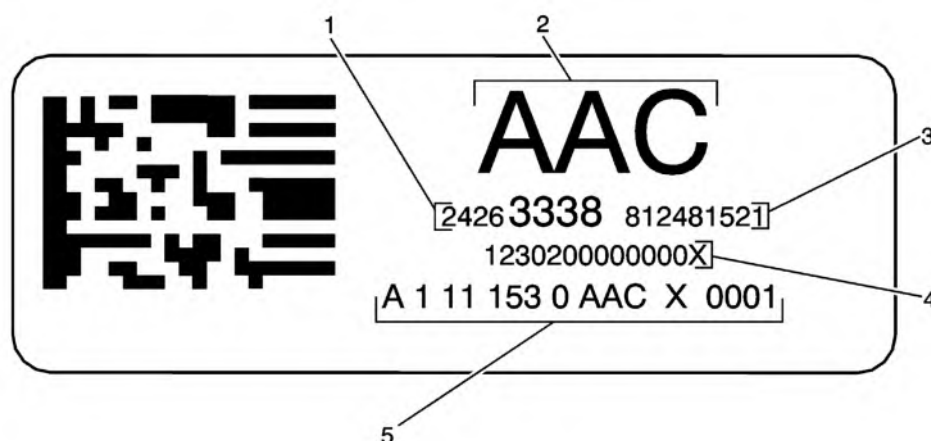


Fig. 74: Transfer Case Primary Identification Label Contents

Courtesy of GENERAL MOTORS COMPANY

1. GM Part Number
2. Broadcast Code
3. Supplier Manufacturing Location
4. VPPS
5. Broadcast Code/Trace Code

Transfer Case Secondary Identification Stamping

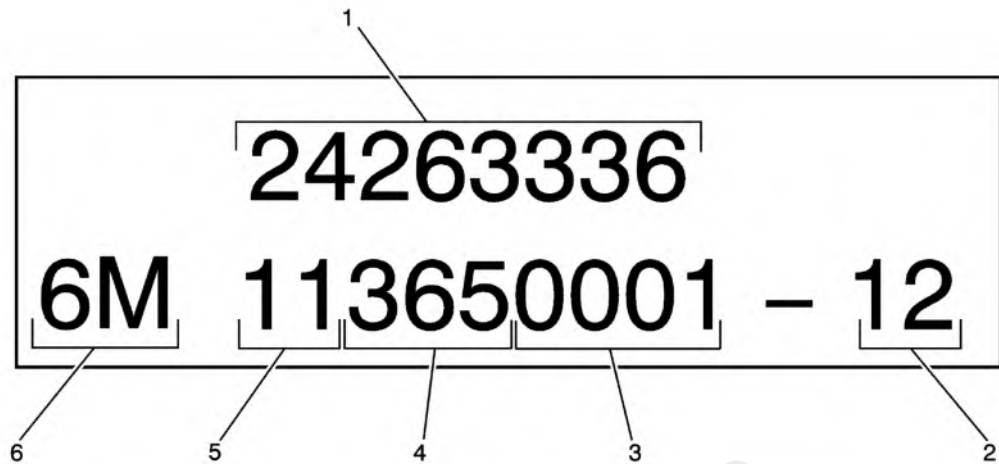


Fig. 75: Transfer Case Secondary Identification Stamping
Courtesy of GENERAL MOTORS COMPANY

1. GM Part Number
2. Build Hour
3. Daily Build Count
4. Day of the Year
5. Model Year
6. BOM Code

TRANSFER CASE DESCRIPTION AND OPERATION

General Description

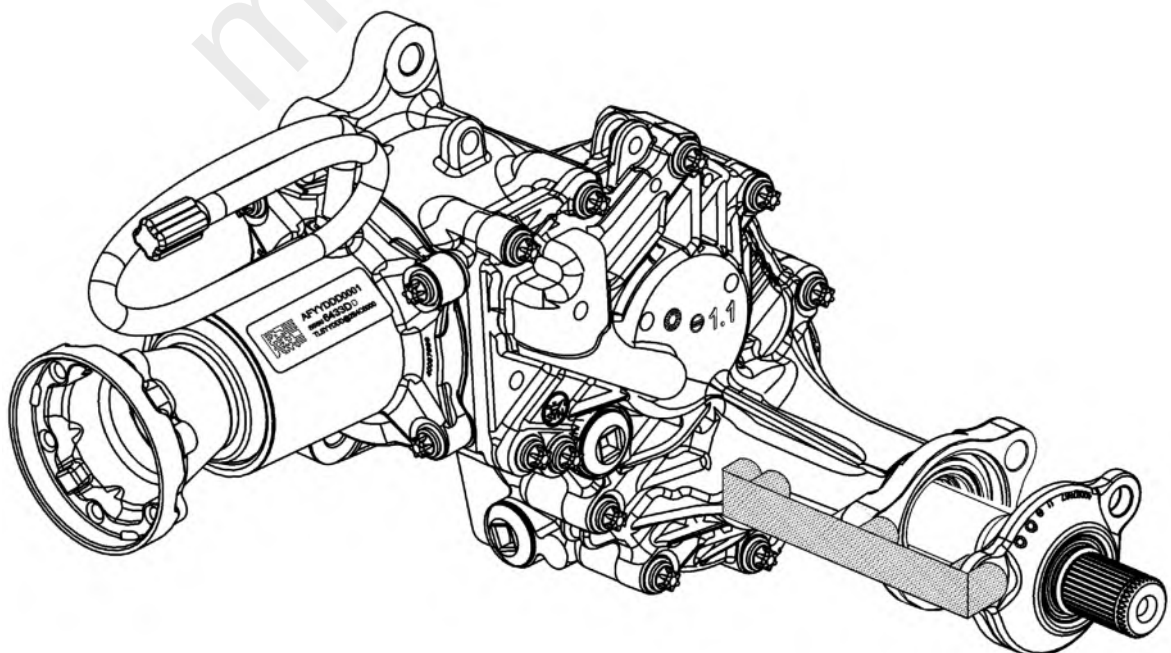


Fig. 76: Transfer Case
Courtesy of GENERAL MOTORS COMPANY

The transfer case is positioned in the right side of the vehicle and bolted to the transmission via an adapter plate. The primary function of the transfer case is to receive power from the transmission and transfer it using helical and hypoid gear sets through the propeller shaft to the rear differential. The transfer case housing, rear extension shaft housing, and rear output shaft housing are cast aluminum design.

External Components

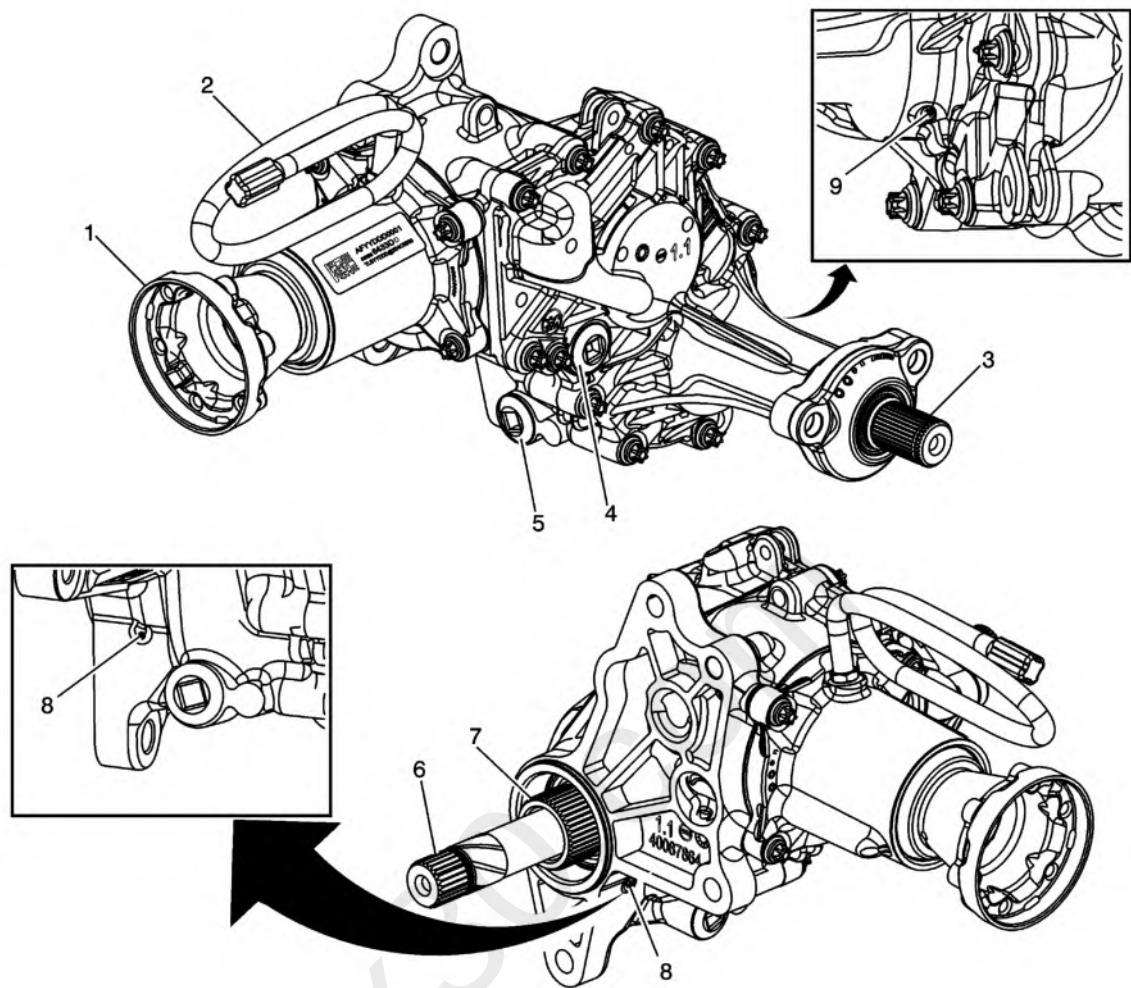


Fig. 77: Transfer Case External Components
Courtesy of GENERAL MOTORS COMPANY

1. Rear Output Flange
2. Vent House Assembly
3. Intermediate Drive Shaft - Right Axle Shaft
4. Oil Fill Plug
5. Oil Drain Plug
6. Intermediate Drive Shaft - Transmission Input
7. Input Shaft - Transmission Input
8. Vent Hole - Front wheel drive input shaft bearing retainer front seal
9. Vent Hole - Front wheel drive input shaft bearing retainer rear seal

Internal Components

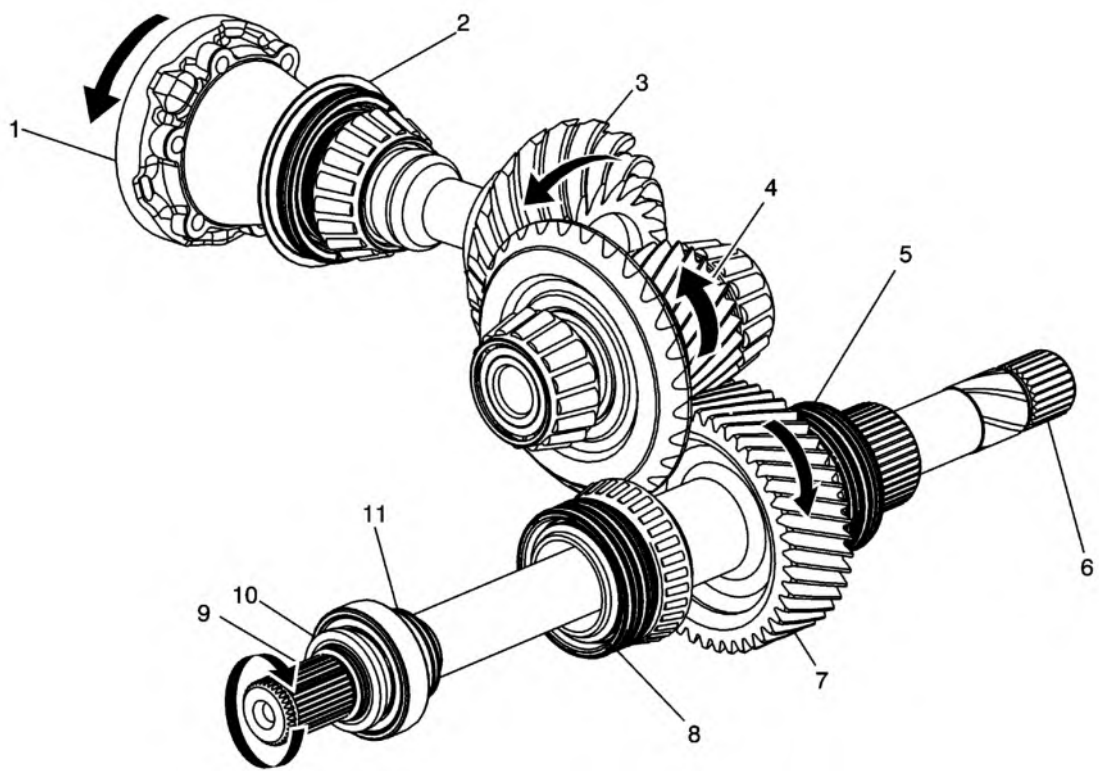


Fig. 78: Transfer Case Internal Components
Courtesy of GENERAL MOTORS COMPANY

The OD splines of the input shaft (7) are mated to the ID splines of the transmission output shaft. Power and torque are transferred from the input shaft (7) to the idler shaft (4) via a helical gear set. A second gear set, the hypoid gear set (3) transfers power and torque from the idler shaft to the rear output shaft and flange (1). The propeller shaft is mated to the rear output shaft flange providing power and torque to the rear drive axle. The OD splines of the intermediate drive shaft (6) mate to the ID splines of the transmission carrier assembly and provide power and torque to the right front axle shaft and wheel.

Gear tooth clearances and bearing preloads are maintained by shims located behind the bearing races. The housings, internal gears, and bearings are not serviceable components. If housing, gear set, or bearing damage occurs, the assembly must be replaced.

1. Rear Output Flange
2. Rear Output Shaft Seal
3. Rear Output Shaft
4. Idler Shaft
5. Front Wheel Drive Input Shaft Bearing Retainer Front Seal
6. Intermediate Drive Shaft-to-Transmission Splines
7. Input Shaft
8. Front Wheel Drive Input Shaft Bearing Retainer Rear Seal
9. Intermediate Drive Shaft
10. Front Wheel Drive Intermediate Drive Shaft Bearing Seal
11. Front Wheel Drive Intermediate Drive Shaft Seal

Transfer Case Service Assembly

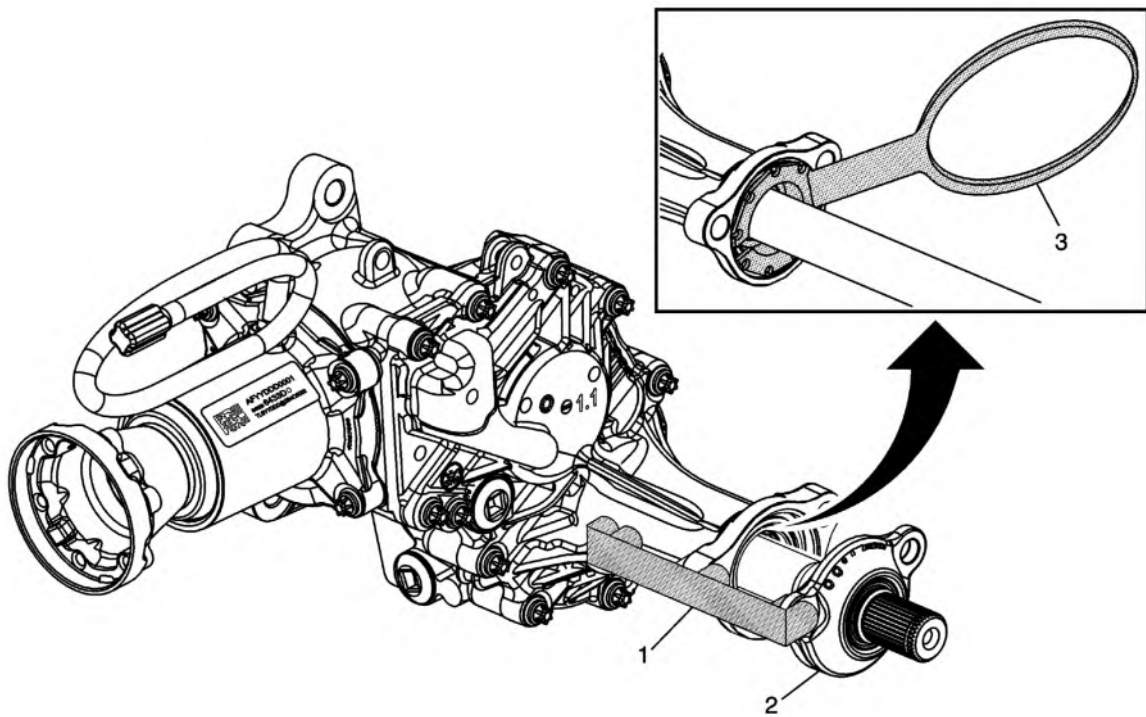


Fig. 79: Transfer Case Service Assembly

Courtesy of GENERAL MOTORS COMPANY

New transfer case assemblies are shipped with the intermediate drive shaft (IDS) assembly (2) partially installed and retained to the transfer case assembly by a shipping clip (1). The shipping clip is to be removed and discarded. Prior to removal or installation of the IDS shaft, seal protector DT-50937 (3) must be installed to avoid front wheel drive intermediate shaft seal damage.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number/Description

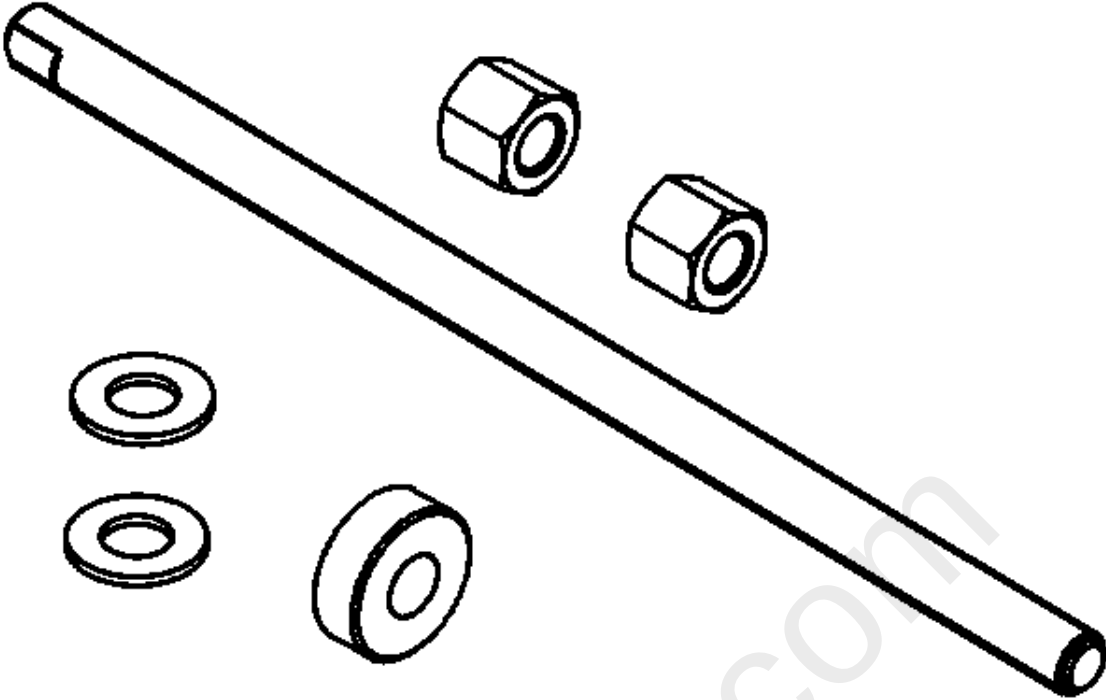
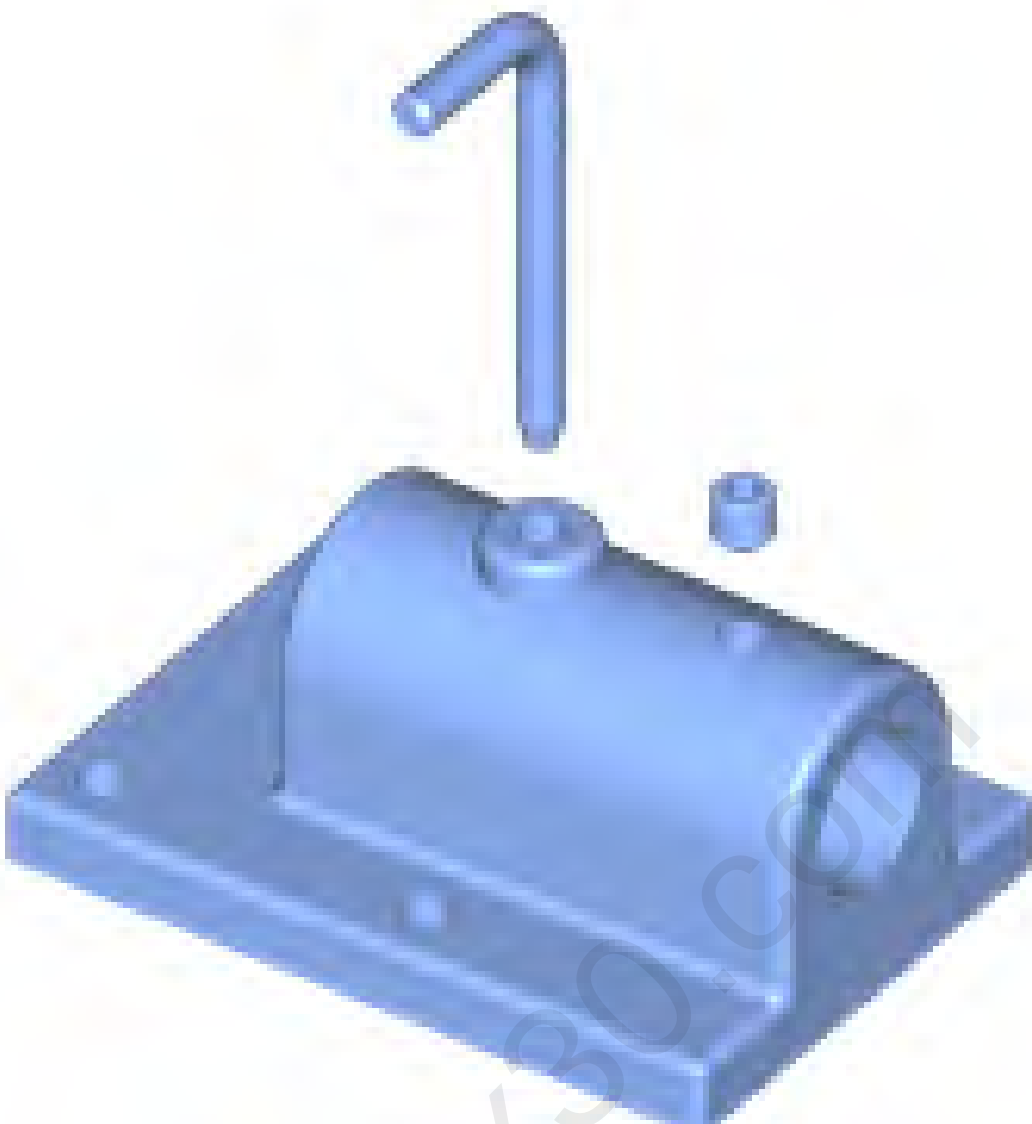
Illustration	Tool Number/Description
 A technical line drawing of a threaded rod assembly. The assembly consists of a long threaded rod with a hexagonal head at one end. Two hexagonal nuts are positioned above the rod, and three washers are positioned below it. A large, faint watermark 'mcx30.com' is visible diagonally across the entire page.	CH-50342 Threaded Rod

Illustration	Tool Number/Description
	DT-113-2-A J-03289-20 KM-113-2-A Holding Fixture

--

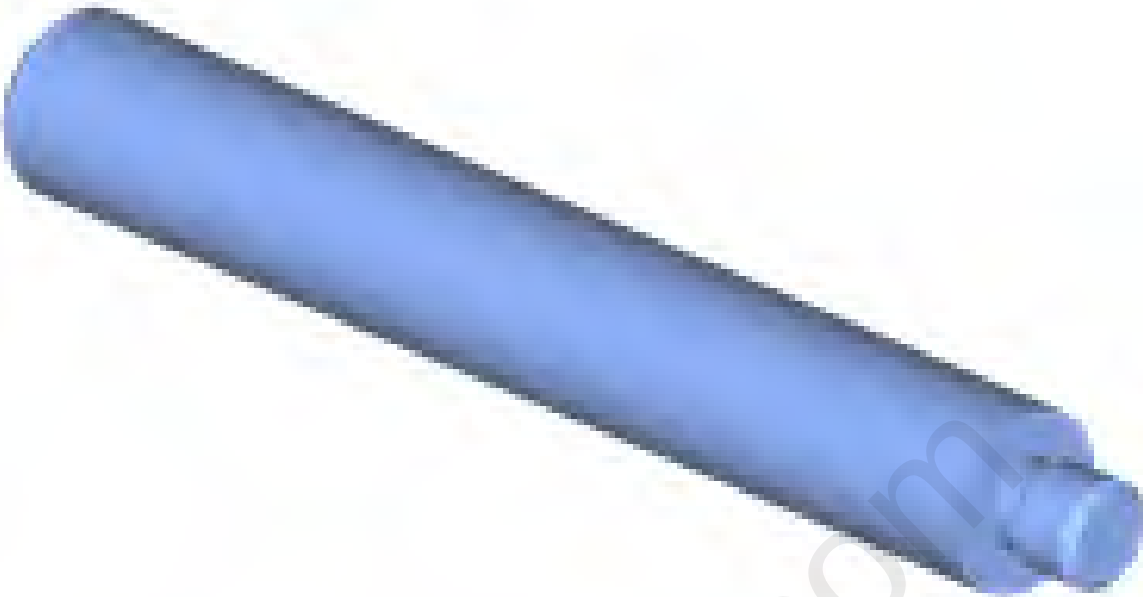
Illustration	Tool Number/Description
 A blue cylindrical driver handle tool, shown at an angle. The tool has a smooth, polished surface and a slightly wider base at one end. A large, diagonal watermark 'mcx30.com' is visible across the image.	DT-8092 DW340-010 GE-8092 J-8092 KM-J-8092 Driver Handle

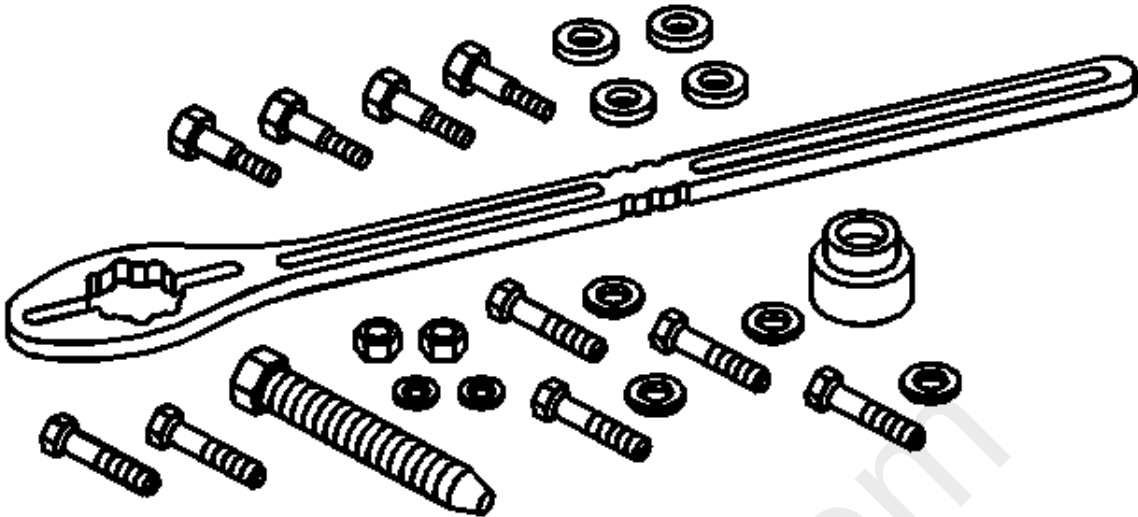
Illustration	Tool Number/Description
 A technical line drawing of a mechanical tool kit. The central component is a long-handled wrench with a gear-like end. Surrounding it are various bolts, washers, and a large cylindrical component. The tools are arranged in a scattered pattern. A large, faint watermark 'mcx30.com' is visible across the bottom half of the illustration.	DT-08614-A J-08614-A Pinion Flange Holder and Remover

Illustration	Tool Number/Description
	DT-26941 J-26941 Bushing and Bearing Remover - 3-4 in.

Illustration	Tool Number/Description
	DT-29369-1 J-29369-1 Bushings and Bearing Remover

Illustration	Tool Number/Description
	DT-36842 J-36842 Transaxle Holding Fixture

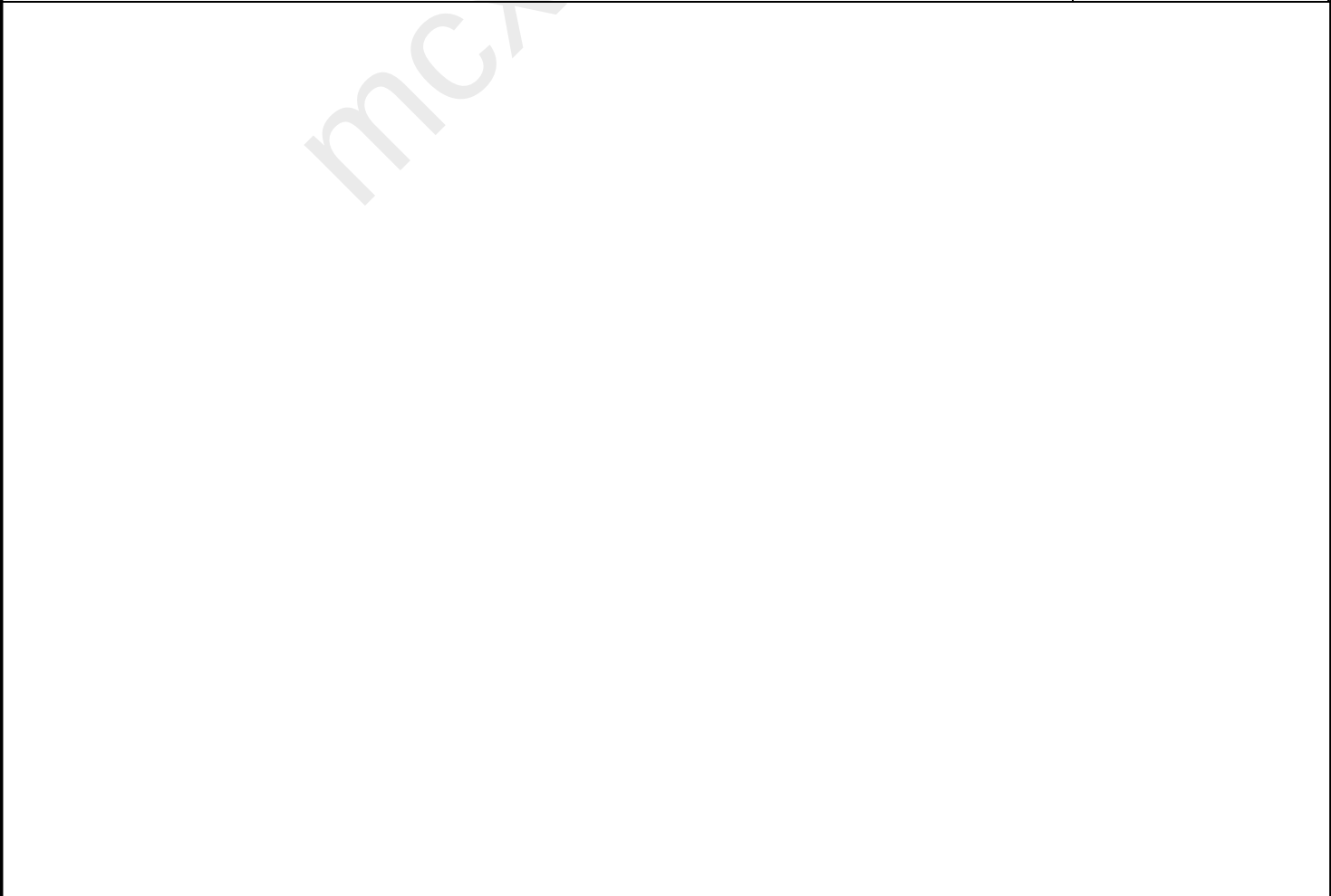


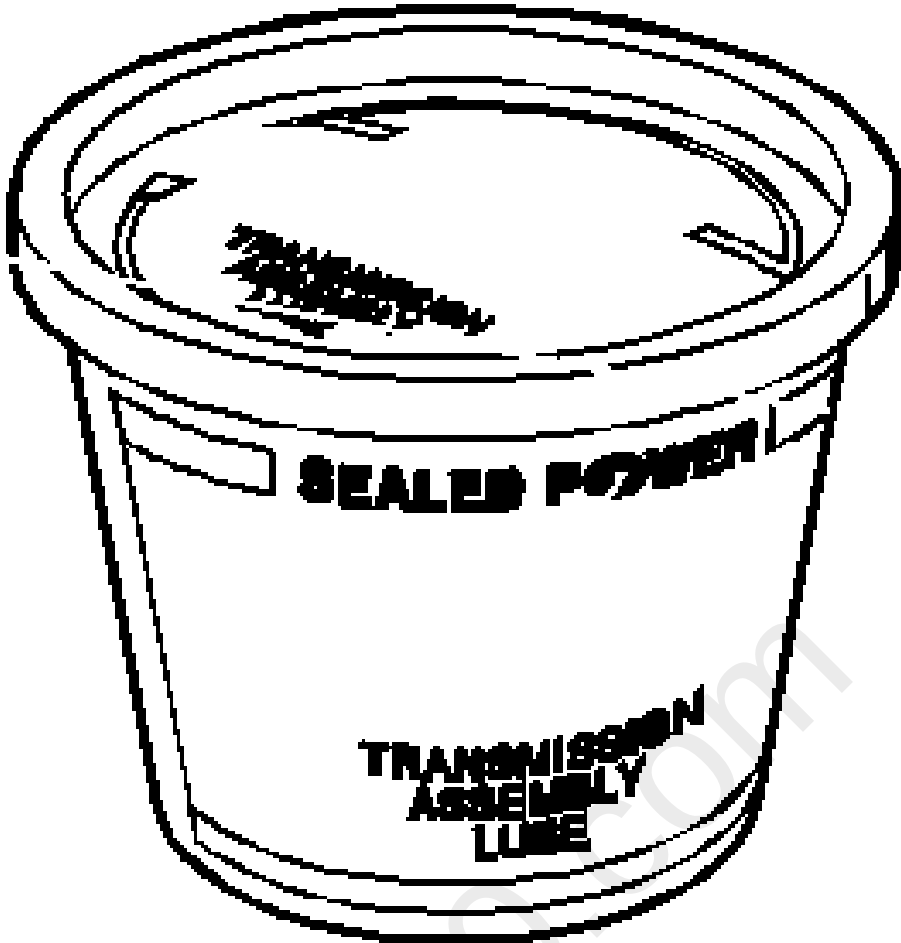
Illustration	Tool Number/Description
	DT-36850 J-36850 Transjel Lubricant
	DT-41819 J-41819 Input Shaft Seal Installer

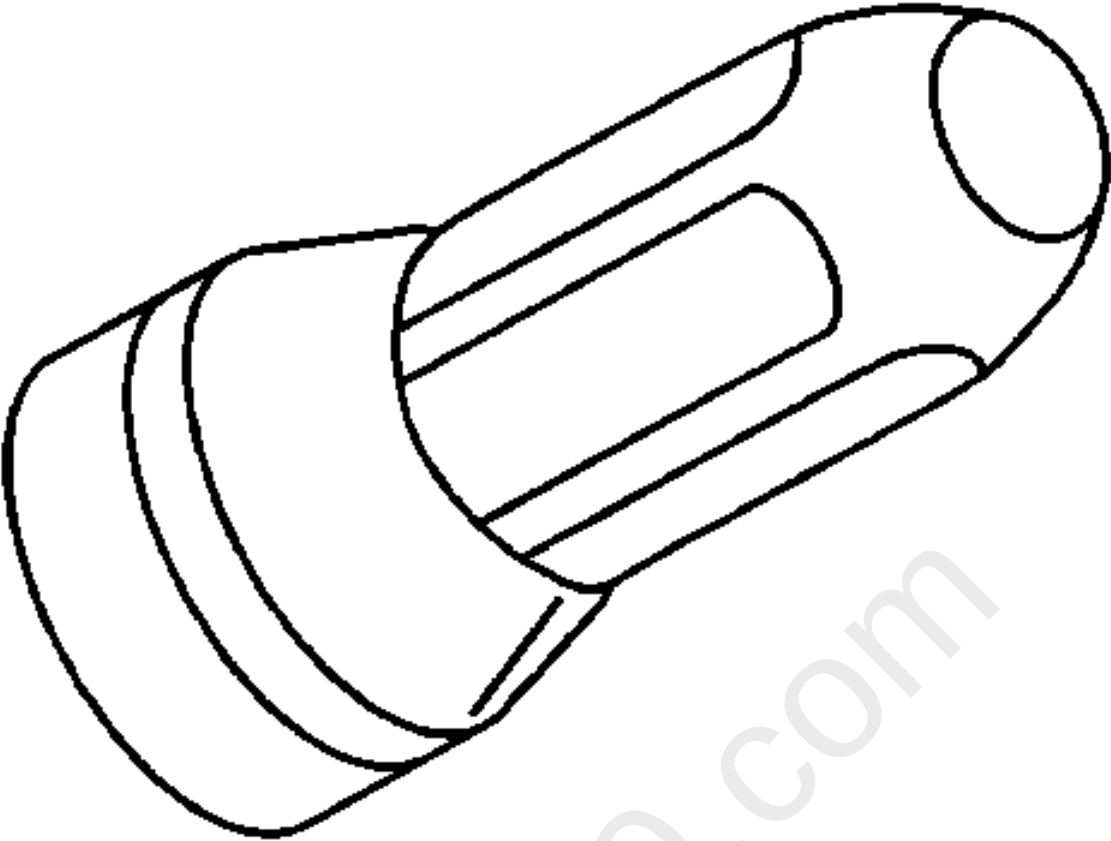
Illustration	Tool Number/Description
	

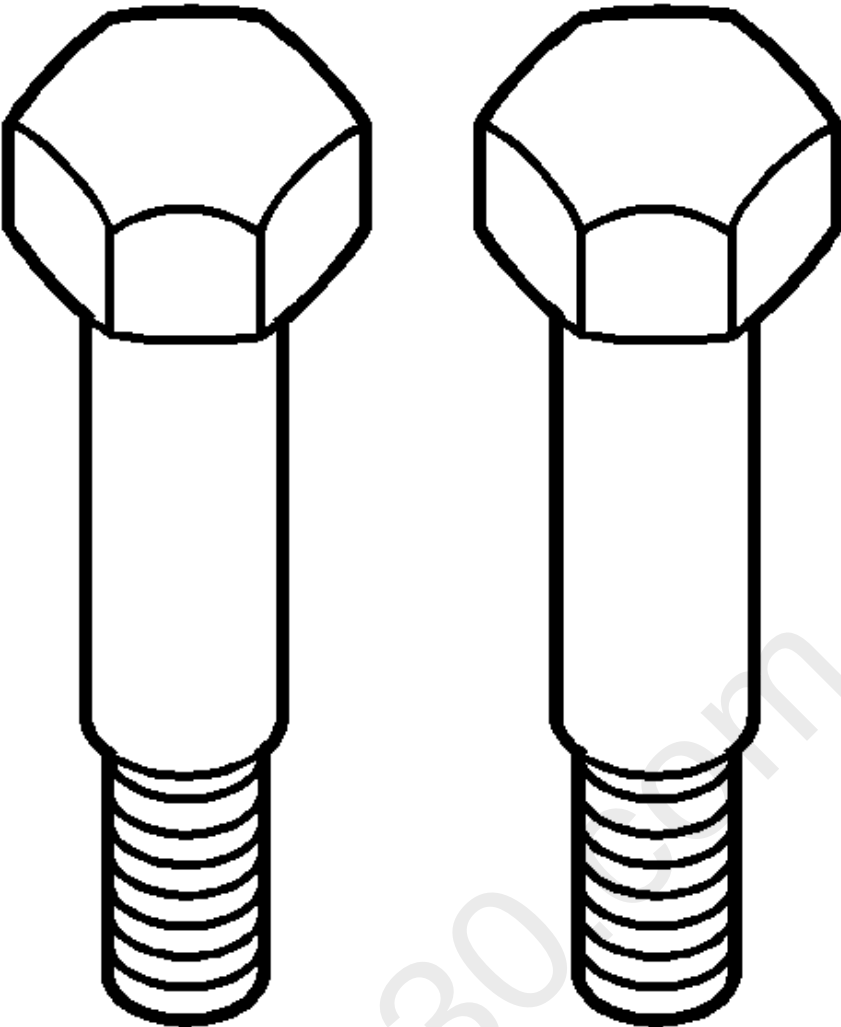
Illustration	Tool Number/Description
 A technical line drawing of two identical shoulder bolts positioned side-by-side. Each bolt consists of a hexagonal head at the top, followed by a smooth, cylindrical shoulder section, and a threaded shank at the bottom. The threads are represented by a series of parallel lines. A large, light gray watermark 'mcx30.com' is oriented diagonally across the lower half of the page, passing behind the bolts.	DT-44873-2 J-44873-2 Shoulder Bolts

Illustration	Tool Number/Description
	DT-45124 J-45124 Removal Bridge

Illustration	Tool Number/Description
	DT-45756 J-45756 Rear Output Shaft Seal Installer

mcx30.com

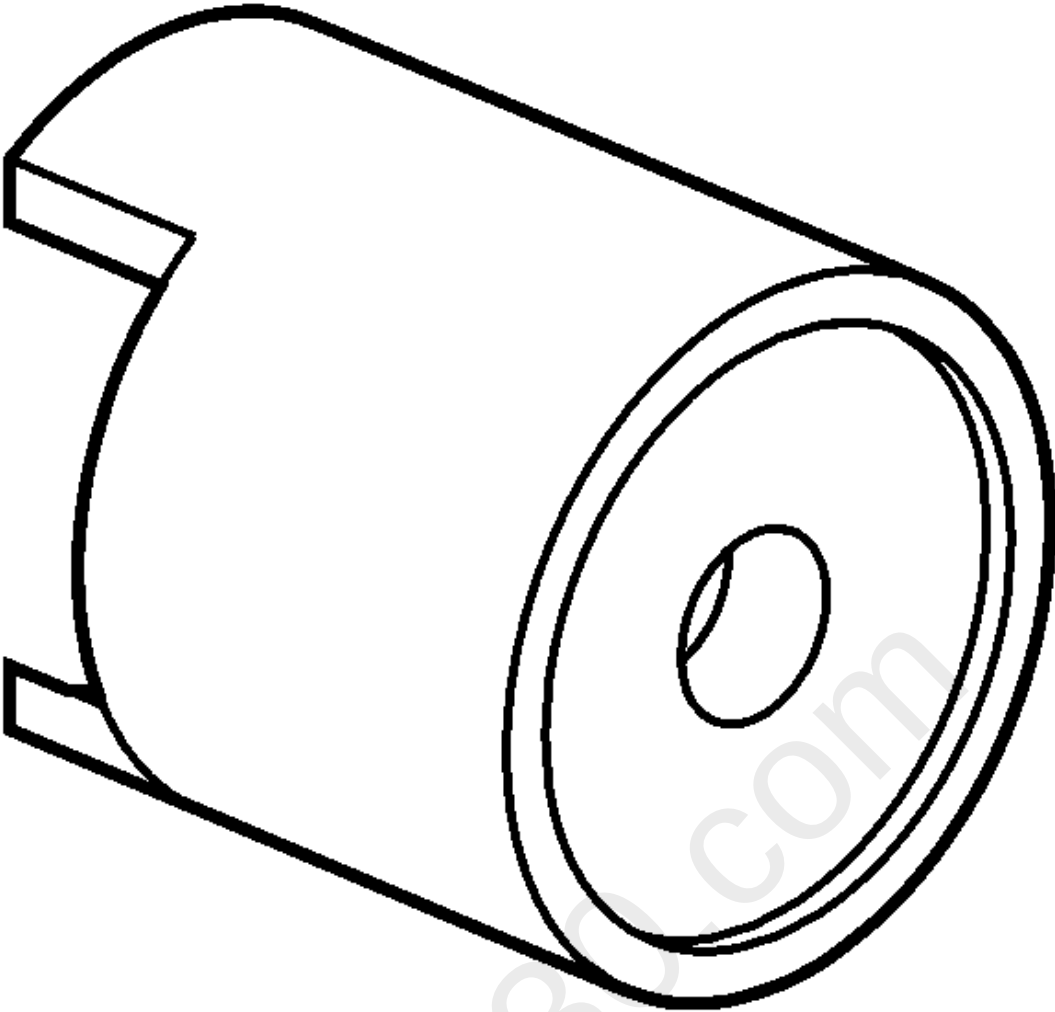
Illustration	Tool Number/Description
 A line drawing of a cylindrical tool, likely a bushing remover and installer. It features a central circular hole and two small rectangular tabs on one side. The drawing is oriented diagonally.	DT-50839 Adapter Plate Bushings Remover and Installer

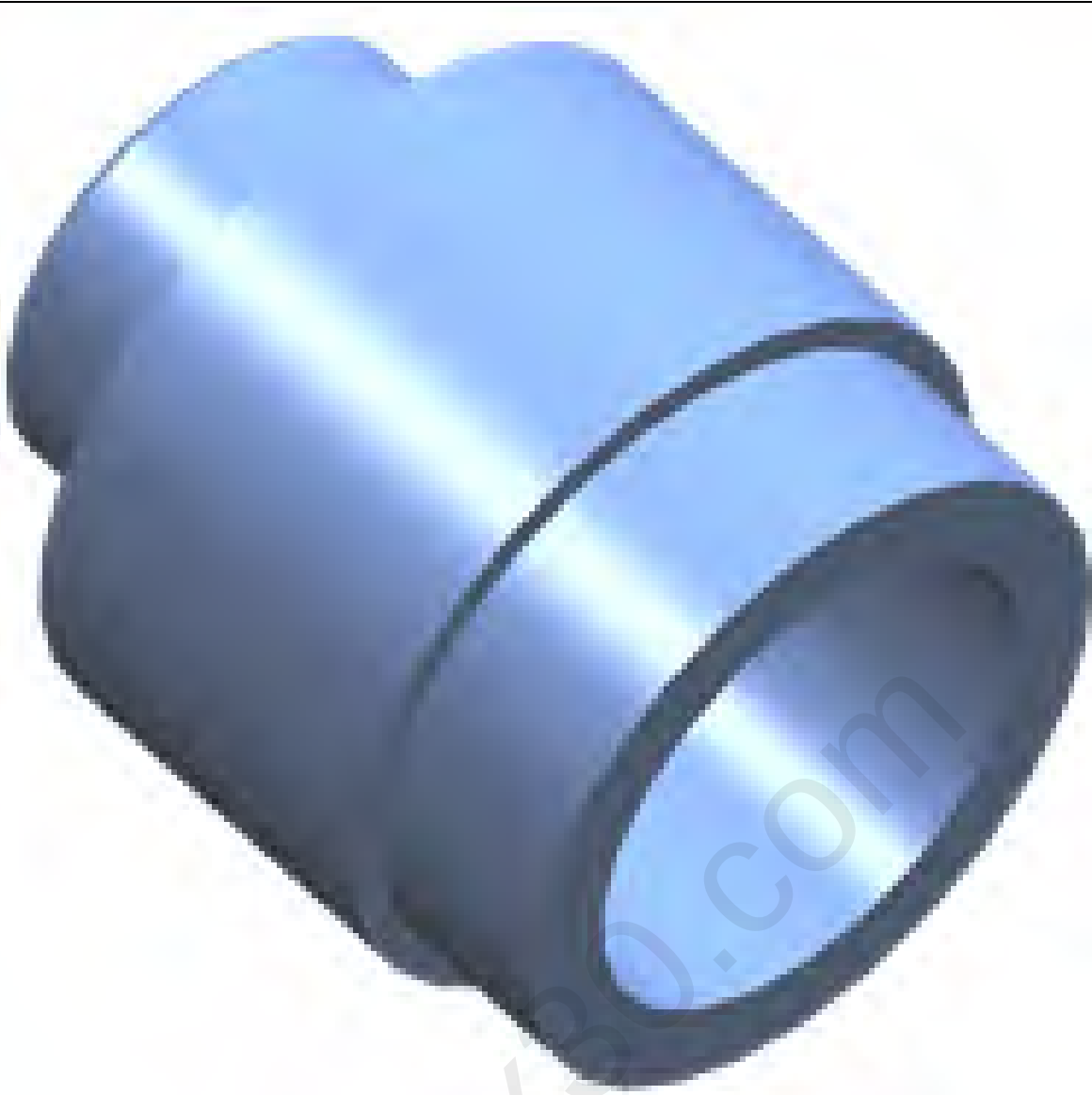
Illustration	Tool Number/Description
	DT-50840 Input Shaft Seal Installer

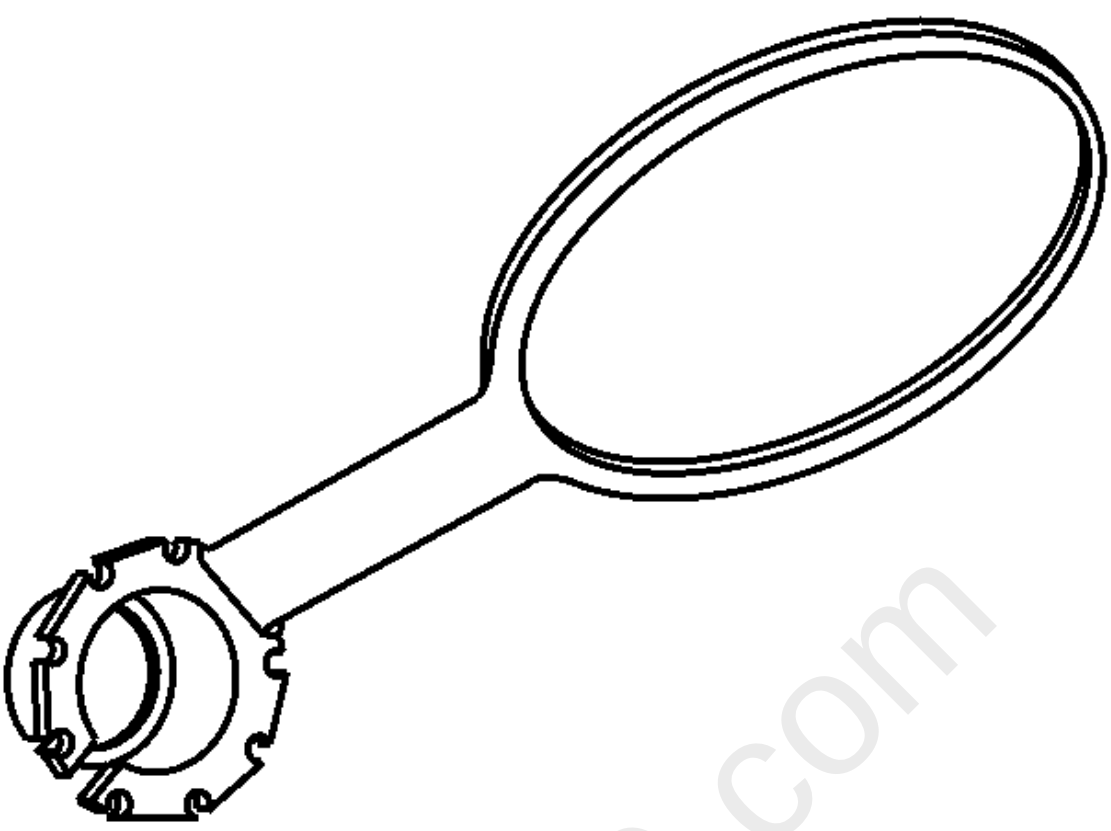
Illustration	Tool Number/Description
	DT-6332 DT-44394 DT-48877 Seal Protector

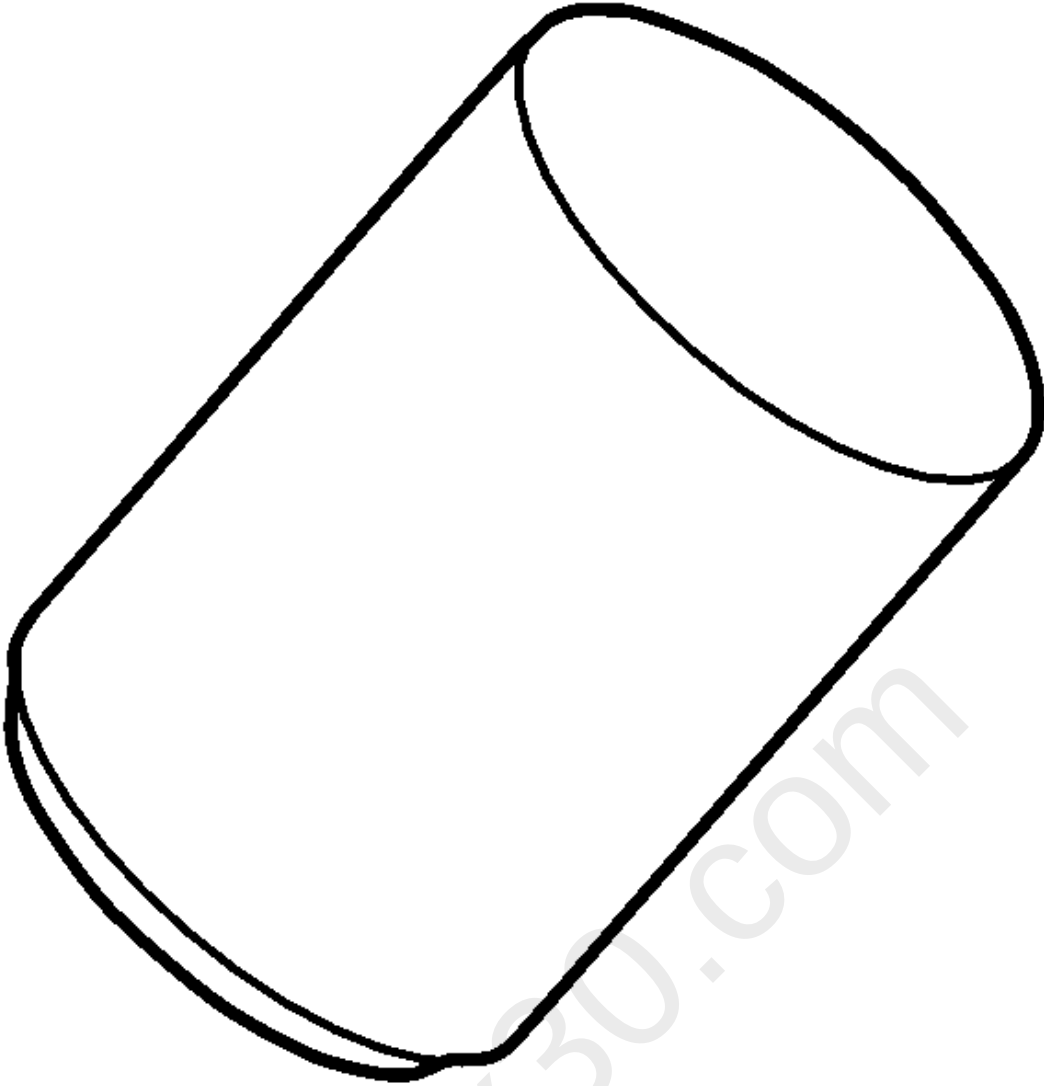
Illustration	Tool Number/Description
	DT-50985 Seal Installer
	GE- 28431-6 J-28431-6 Florescent Oil Dye - 6 1 oz.

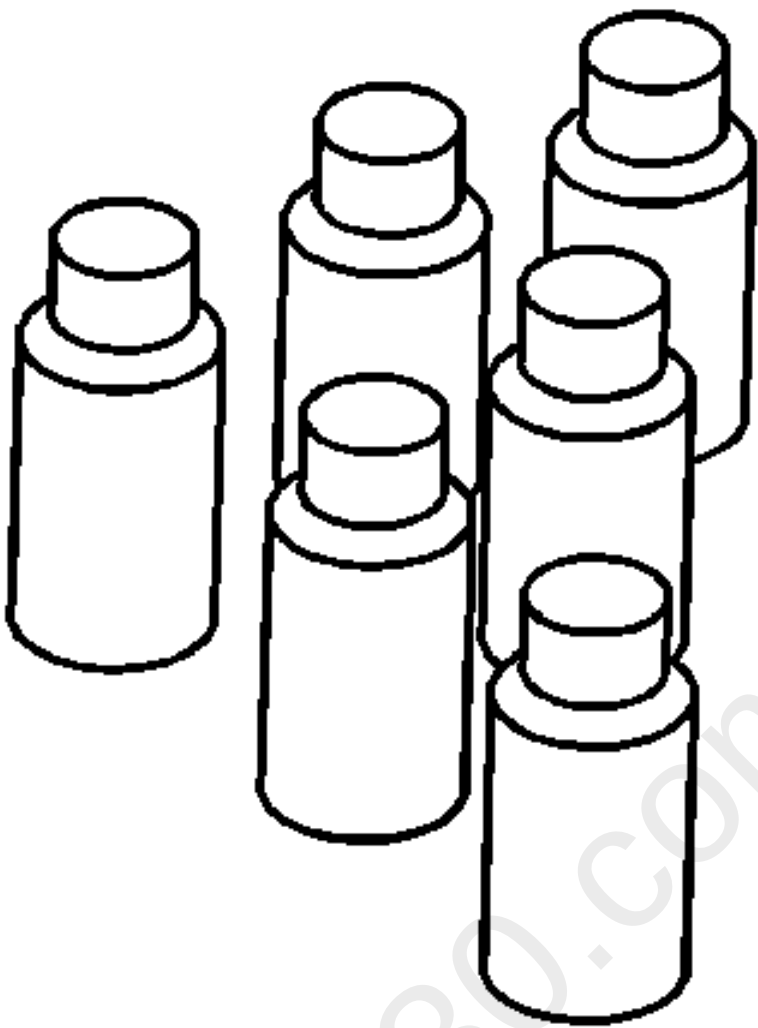
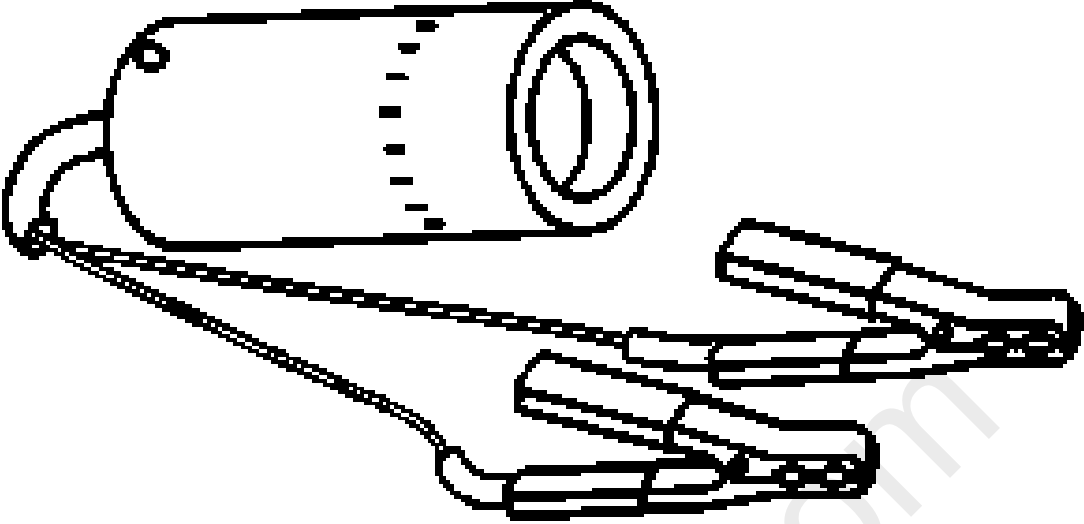
Illustration	Tool Number/Description
	

Illustration	Tool Number/Description
	GE-42220 J-42220 High-Intensity Black Light Kit