

2014 GMC Acadia Denali

2014 TRANSMISSION Transfer Case - Getrag 790 - Acadia, Enclave And Traverse

2014 TRANSMISSION**Transfer Case - Getrag 790 - Acadia, Enclave And Traverse****SPECIFICATIONS****APPROXIMATE FLUID CAPACITIES****Approximate Fluid Capacities**

Application	Specification	
	Metric	English
Synthetic Lubricant - Transfer Case	1.0 liter	1.06 quart

FASTENER TIGHTENING SPECIFICATIONS**Fastener Tightening Specifications**

Application	Specification	
	Metric	English
Transfer Case Drain Plug	39 N.m	29 lb ft
Transfer Case Fill Plug	39 N.m	29 lb ft
Transfer Case Half Bolts (Qty: 11)	29 N.m	21 lb ft
Transfer Case Rear Output Drive Gear Nut (Qty: 1)	235 N.m	173 lb ft
Transfer Case Rear Output Drive Shaft Housing Bolts (Qty: 6)	29 N.m	21 lb ft

ADHESIVES, FLUIDS, LUBRICANTS AND SEALERS**Adhesives, Fluids, Lubricants and Sealers**

Application	Type of Material	GM Part Number	
		United States	Canada
Rear Output Shaft Nut	Threadlocker	12345382	10953489
Transfer Case Fill	SAE 75W-90 Synthetic	88900401	89021678

COMPONENT LOCATOR**TRANSFER CASE DISASSEMBLED VIEW**

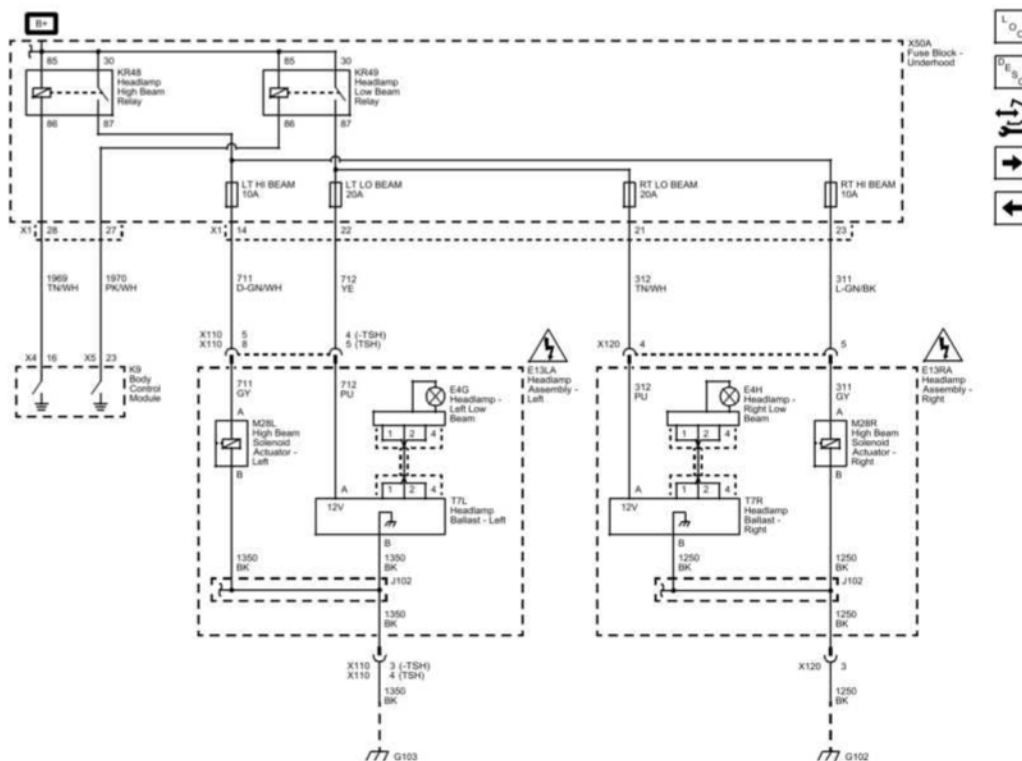


Fig. 1: Disassembled View Of Transfer Case
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Transfer Case Input Shaft Seal - Left
2	Transfer Case O-ring Seal
3	Transfer Case - Left
4	Transfer Case Half Locating Pin (Qty: 2)
5	Transfer Case Rear Output Drive Shaft
6	Transfer Case Input Shaft
7	Front Drive Axle Intermediate Shaft Seal Assembly
8	Transfer Case Input Shaft Seal - Right
9	Transfer Case Seal
10	Transfer Case Vent Assembly
11	Transfer Case - Right
12	Transfer Case Fill Plug
13	Transfer Case Drain Plug
14	Transfer Case Half Bolt (Qty: 11)
15	Half Shaft Retainer
16	Front Wheel Drive Retainer

17	O-ring
18	Front Wheel Drive Intermediate Shaft Bearing Retainer (Qty: 2)
19	Front Wheel Drive Intermediate Shaft Bearing Assembly
20	Front Wheel Drive Intermediate Shaft
21	Transfer Case Rear Output Shaft
22	Transfer Case Rear Output Shaft Bearing Assembly (Qty: 2)
23	Transfer Case Rear Output Shaft Bearing Spacer
24	Transfer Case Rear Output Shaft Housing Seal O-ring
25	Transfer Case Rear Output Shim
26	Transfer Case Rear Output Shaft Housing
27	Transfer Case Rear Output Shaft Housing Bolt (Qty: 6)
28	Transfer Case Rear Output Shaft Seal
29	Transfer Case Rear Output Shaft Oil Slinger
30	Transfer Case Rear Output Shaft Flange
31	Transfer Case Rear Output Shaft Nut

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

Noisy in Drive

Cause	Correction
Inspect for the proper transaxle and gear oil levels prior to performing system diagnosis. Refer to <u>Transfer Case Fluid Replacement</u> .	
Low gear oil level	Inspect the transfer case for leaks, repair as required. Refer to <u>Transfer Case Leak Diagnosis</u> and <u>Adhesives, Fluids, Lubricants and Sealers</u> .
Incorrect gear oil in the transfer case	Replace the gear oil. Refer to <u>Adhesives, Fluids, Lubricants and Sealers</u> .
Water or contamination within the lubricant	Replace the lubricant and flush the transfer case of the contaminated fluid.
Loose propeller shaft mounting bolts	Inspect the bolts and replace and tighten as required. Refer to <u>Propeller Shaft Replacement</u> .
Worn propeller shaft constant velocity joints	Replace propeller shaft assembly. Refer to <u>Propeller Shaft Replacement</u> .
Worn axle shaft constant velocity joints	Replace the constant velocity joints, as required.
Worn bearing in the driveline torque tube assembly	Replace the driveline torque tube assembly.
Loose driveline torque tube bracket or a worn bracket bushing	Tighten the bracket bolts or replace the driveline torque tube assembly as required.
Overheated rear drive axle clutch A chatter type noise during hard or heavy acceleration and/or low speed turns may be within the rear differential.	Rear drive axle clutch overheated or axle low on fluid. Refer to <u>Symptoms - Rear Differential Carrier</u> .
Worn bearing in the differential assembly	Repair or replace the assembly.
Bearing noise within the transfer case • A grinding noise that occurs at a specific engine speed, regardless of transmission gear,	1. Test drive the vehicle to verify the noise is transfer case or wheel bearing related. 2. Duplicate the noise with the vehicle fully

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.	assembled and on a hoist. 3. Using a stethoscope or CH-39570 chassis ears, determine if the source of the noise is within the transfer case. 4. Remove the right side axle shaft from the vehicle. Refer to <u>Front Wheel Drive Shaft Replacement</u> NOTE: The removal of the right side axle shaft will stop the front axle and both front wheels from spinning. 5. Run the vehicle on the hoist to confirm the noise is present. • If the noise is present, it is transfer case related. Replace as Required • If the noise is NOT present, the noise is wheel bearing related, repair 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. Test drive the vehicle to verify the noise is transfer case or wheel bearing related. 2. Duplicate the noise with the vehicle fully assembled and on a hoist. 3. Using a stethoscope or CH-39570 chassis ears, determine if the source of the noise is within the transfer case. 4. Remove the right side axle shaft from the vehicle. Refer to <u>Front Wheel Drive Shaft Replacement</u> NOTE: The removal of the right side axle shaft will stop the front axle and both front wheels from spinning. 5. Run the vehicle on the hoist to confirm the noise is present. • If the noise is present, it is transfer case related. Replace as Required • If the noise is NOT present, the noise is wheel bearing related, repair as required.

NOISY WHEN COASTING

Noisy When Coasting

Cause	Correction
Inspect for the proper transaxle and gear oil levels prior to performing system diagnosis. Refer to <u>Transfer Case Fluid Replacement</u> .	
Low gear oil level	Inspect the transfer case for leaks, repair as required. Refer to <u>Transfer Case Leak Diagnosis and Adhesives, Fluids, Lubricants and Sealers</u> .
Incorrect gear oil in the transfer case	Replace the gear oil. Refer to <u>Adhesives, Fluids, Lubricants and Sealers</u> .
Loose propeller shaft mounting bolts	Inspect the bolts and replace and tighten as required. Refer to <u>Propeller Shaft Replacement</u> .
Worn propeller shaft constant velocity joints	Replace propeller shaft assembly. Refer to <u>Propeller Shaft Replacement</u> .
Worn axle shaft constant velocity joints	Replace the constant velocity joints, as required.
Loose driveline torque tube bracket or a worn bracket bushing	Tighten the bracket bolts or replace the driveline torque tube assembly as required.
Overheated rear drive axle clutch A chatter type noise during hard or heavy acceleration and/or low speed turns may be within the rear differential.	Rear drive axle clutch overheated or axle low on fluid. Refer to <u>Symptoms - Rear Differential Carrier</u> .
Worn bearing in the differential assembly	Repair or replace the assembly as required.
Wheel bearing noise or 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.	- Test drive the vehicle to verify the noise is transfer case or wheel bearing related. - Duplicate the noise with the vehicle fully assembled and on a hoist. - Using a stethoscope or CH-39570 chassis ears, determine if the source of the noise is within the transfer case. - Remove the right side axle shaft from the vehicle. Refer to <u>Front Wheel Drive Shaft Replacement</u> NOTE: The removal of the right side axle shaft will stop the front axle and both front wheels from spinning. - Run the vehicle on the hoist to confirm the noise is present. - If the noise is present, it is transfer case related. Replace as Required - If the noise is NOT present, the noise is

	wheel bearing related, repair 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. Test drive the vehicle to verify the noise is transfer case or wheel bearing related. 2. Duplicate the noise with the vehicle fully assembled and on a hoist. 3. Using a stethoscope or CH-39570 chassis ears, determine if the source of the noise is within the transfer case. 4. Remove the right side axle shaft from the vehicle. Refer to Front Wheel Drive Shaft Replacement NOTE: The removal of the right side axle shaft will stop the front axle and both front wheels from spinning. 5. Run the vehicle on the hoist to confirm the noise is present. • If the noise is present, it is transfer case related. Replace as Required • If the noise is NOT present, the noise is wheel bearing related, repair as required.

INTERMITTENT NOISE

Intermittent Noise

Cause	Correction
Inspect for the proper transaxle and gear oil levels prior to performing system diagnosis. Refer to Transfer Case Fluid Replacement .	
Incorrect gear oil in the transfer case case.	Replace the gear oil. Refer to Adhesives, Fluids, Lubricants and Sealers .
Loose driveline torque tube bracket or a worn bracket bushing	Tighten the bracket bolts or replace the driveline torque tube assembly as required.
Overheated rear drive axle clutch A chatter type noise during hard or heavy acceleration and/or low speed turns may be within the rear differential.	Rear drive axle clutch overheated or axle low on fluid. Refer to Symptoms - Rear Differential Carrier .
Loose propeller shaft mounting bolts	Inspect the bolts and replace and tighten as required. Refer to Propeller Shaft Replacement .
	Confirm noise is coming from the transfer case or the rear drive axle clutch module. Repair as required Refer

Transfer case, wheel bearing or rear drive axle clutch module
A chatter or ratcheting type noise during hard acceleration on tight turns.

to **Symptoms - Rear Differential Carrier**.

1. Test drive the vehicle to verify the noise is transfer case or wheel bearing related.
2. Duplicate the noise with the vehicle fully assembled and on a hoist.
3. Using a stethoscope or **CH-39570** chassis ears, determine if the source of the noise is within the transfer case.
4. Remove the right side axle shaft from the vehicle. Refer to **Front Wheel Drive Shaft Replacement**

NOTE:

The removal of the right side axle shaft will stop the front axle and both front wheels from spinning.

5. Run the vehicle on the hoist to confirm the noise is present.
 - If the noise is present, it is transfer case related. Replace as Required
 - If the noise is NOT present, the noise is wheel bearing related, repair as required.

CONSTANT NOISE

Constant Noise

Cause	Correction
Inspect for the proper transaxle and gear oil levels prior to performing system diagnosis. Refer to Transfer Case Fluid Replacement .	
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 Propeller Shaft Replacement .
Worn bearing in the differential assembly	Repair or replace the assembly as required.
Loose driveline torque tube bracket or a worn bracket bushing	Tighten the bracket bolts or replace the driveline torque tube assembly as required.
Overheated rear drive axle clutch A chatter type noise during hard or heavy acceleration and/or low speed turns may be within	Rear drive axle clutch overheated or axle low on fluid. Refer to Symptoms - Rear Differential Carrier .

the rear differential.

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 fluid level. Fill, as required.
2. Identify the location of the noise using the **CH-39570** Chassis Ears.
3. If the noise continues, repair or replace components, 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 fluid level. Fill, as required.
2. Identify the location of the noise using the **CH-39570** Chassis Ears.
3. If the noise continues, repair or replace components, as required.

TRANSFER CASE LEAK DIAGNOSIS

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). 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

1. Thoroughly clean the suspected leak area using a rag.

CAUTION:

Do not clean using brake cleaner or other reactive solvents as these solvents can damage rubber gaskets, seals and bushings.

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 worn, scored or missing drain and/or fill plug sealing washers. 2. Replace as required. Refer to <u>Transfer Case Fluid Replacement</u>.
Restricted or damaged ventilation assembly	Replace the ventilation assembly, as required.
Leaking at the transfer case left side weep hole • A transmission oil leak at the transmission-to-transfer case interface or weep hole area may be caused by the transmission to transfer case O-ring seal or transmission right side drive shaft seal. • A gear oil leak at the transmission-to-transfer case interface or weep hole area is caused by the transfer case input seal.	Replace components as required. Refer to <u>Transfer Case Disassemble</u> and <u>Transfer Case Assemble</u> . If the leak is transmission or O-ring related, do not replace the transfer case input seal.
Leaking at the transfer case right side weep hole • A transmission oil leak at the transfer case right side weep hole is caused by the	1. Identify the type of oil leak. 2. Replace components as required.

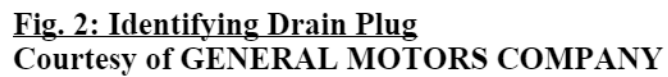
intermediate drive shaft seal. • A gear oil leak at the transfer case right side weep hole is caused by the right side input seal.	
Leaking at rear output shaft area A leak at rear output shaft area is caused by either the rear output shaft seal or the rear output shaft housing O-ring seal.	Inspect and replace the O-ring or rear output shaft seal as required.
Leaking at transaxle assembly-to-transfer case interface A transmission oil leak at the transmission-to-transfer case interface may be caused by the transmission to transfer case O-ring seal or the transmission right side drive shaft seal.	1. Identify the type of oil leak. NOTE: If the leak is transmission or O-ring related, do not replace the transfer case input seal. 2. Replace components as required.
Case half seam leak	Disassemble and replace the transfer case seal. Refer to <u>Transfer Case Disassemble</u> and <u>Transfer Case Assemble</u>.
Leaking through case	• Inspect for a cracked case. • Inspect for case porosity. • Replace the transfer case.

REPAIR INSTRUCTIONS - ON VEHICLE

TRANSFER CASE FLUID REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle**.
2. Remove the drain plug.



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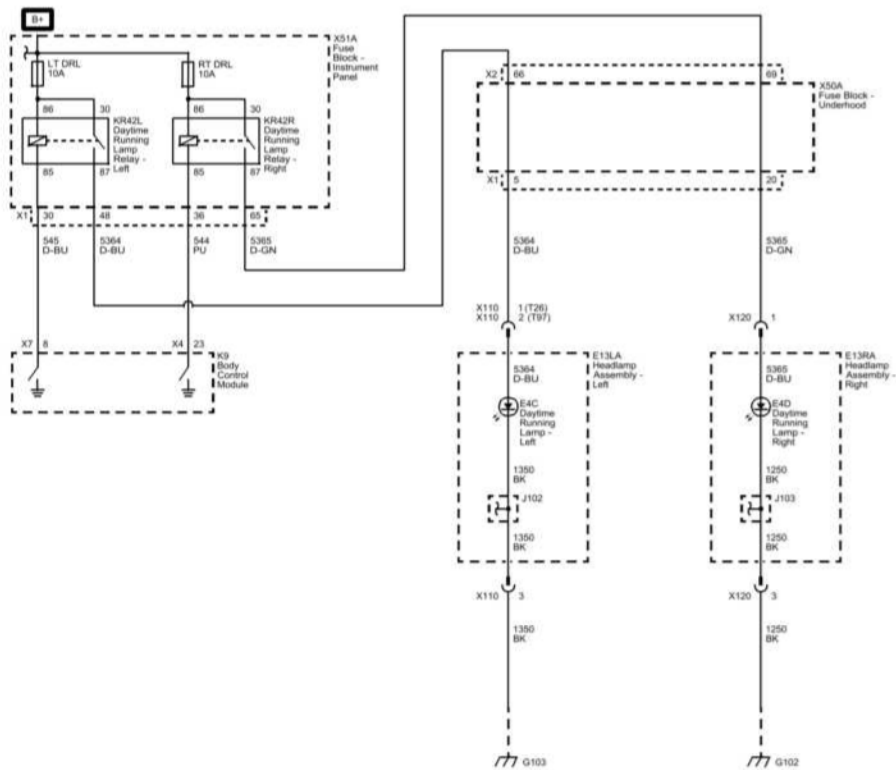


Fig. 3: Identifying Fill Plug

Courtesy of GENERAL MOTORS COMPANY

Installation Procedure

1. Clean the drain plug.

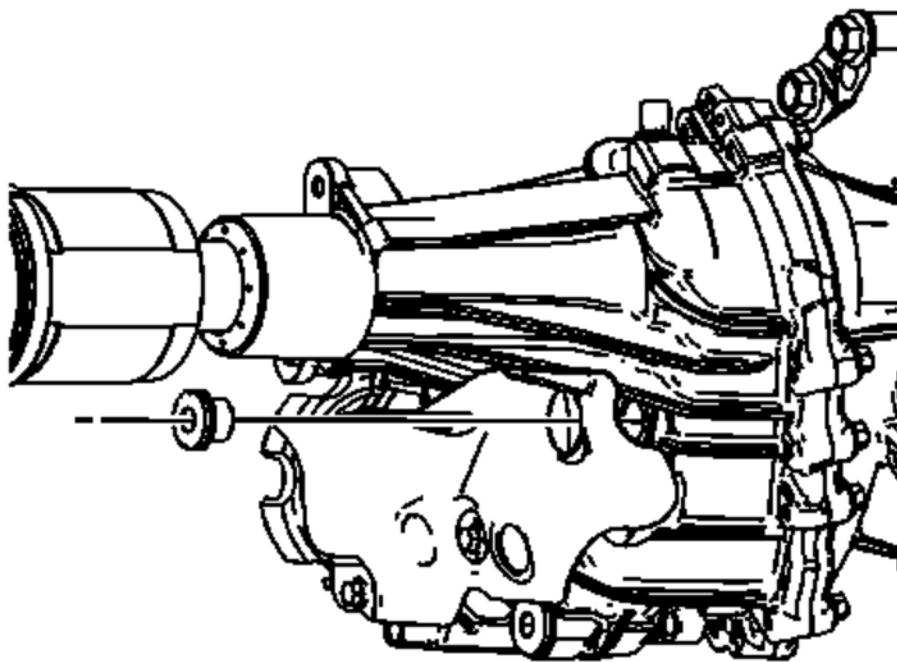


Fig. 5: Identifying Fill Plug

Courtesy of GENERAL MOTORS COMPANY

4. Clean the fill plug.
5. Install the fill plug and tighten to 39 (29 lb ft).
6. Lower the vehicle.

FILL PLUG REPLACEMENT

Removal Procedure

1. Remove the fill plug.

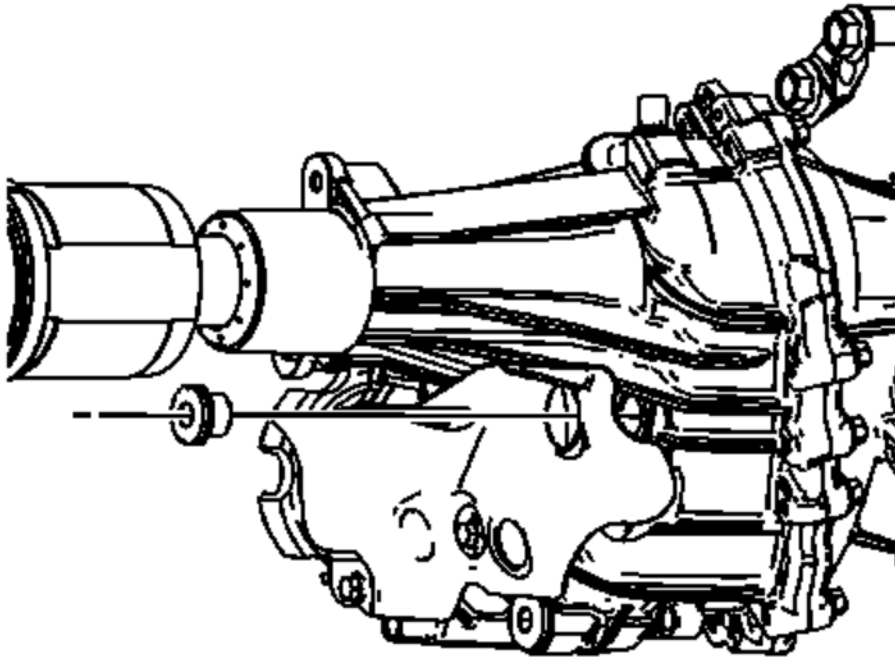


Fig. 6: Identifying Fill Plug

Courtesy of GENERAL MOTORS COMPANY

Installation Procedure

1. Install the fill plug and tighten to 39 (29 lb ft).

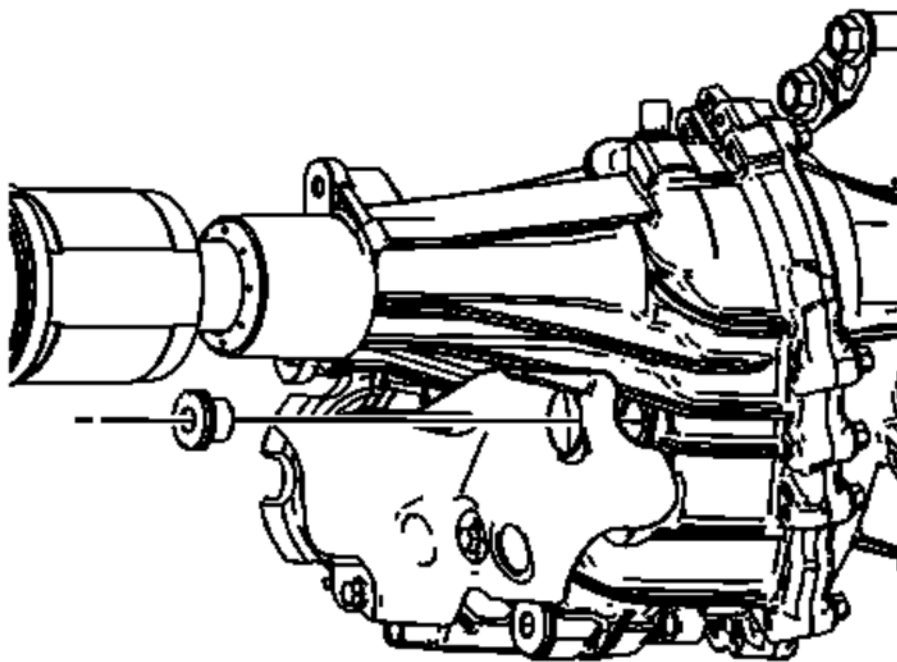


Fig. 7: Identifying Fill Plug

Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Component Fastener Tightening Caution .

TRANSFER CASE VENT HOSE REPLACEMENT

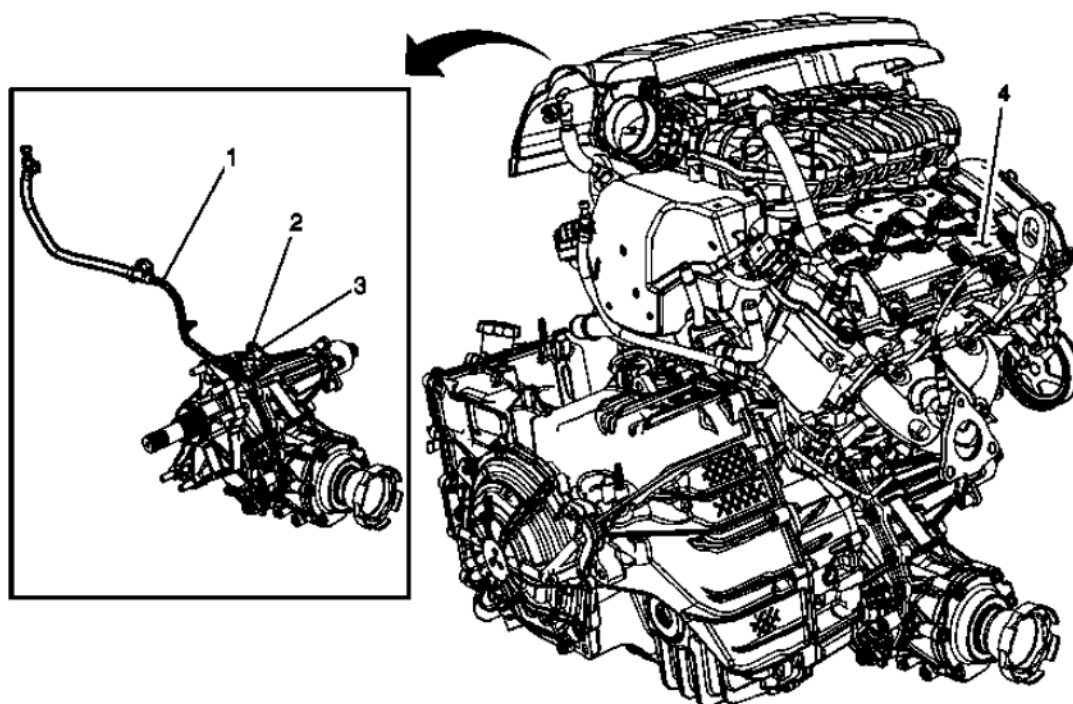


Fig. 8: Transfer Case Vent Hose
 Courtesy of GENERAL MOTORS COMPANY

Transfer Case Vent Hose Replacement

Callout	Component Name
1	Transfer Case Vent Hose
2	Transfer Case Vent Nipple
3	Hose Clamp
4	Engine Assembly
	Procedure
	1. Disconnect electrical connectors as necessary.
	2. Transfer components as necessary.

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 **Propeller Shaft Replacement**.
4. Remove the rear output shaft housing. Refer to Rear Output Shaft Housing Removal in **Transfer Case**

Disassemble.

5. Remove the transfer case rear output shaft flange and seal. Refer to Rear Output Shaft Housing Disassembly in **Transfer Case Disassemble**.

Installation Procedure

1. Install the transfer case rear output shaft seal. Refer to Rear Output Shaft Housing Assembly and Output Flange Installation in **Transfer Case Assemble**.
2. Install the rear output shaft housing. Refer to Rear Output Shaft Housing Installation in **Transfer Case Assemble**.
3. Install the rear propeller shaft. Refer to **Propeller Shaft Replacement** .
4. Fill the transfer case with fluid. Refer to **Transfer Case Fluid Replacement**.
5. Lower the vehicle.

REAR OUTPUT SHAFT FLANGE 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 **Propeller Shaft Replacement** .
4. Remove the rear output shaft housing. Refer to Rear Output Shaft Housing Removal in **Transfer Case Disassemble**.
5. Remove the transfer case rear output shaft flange. Refer to Rear Output Shaft Housing Disassembly in **Transfer Case Disassemble**.

Installation Procedure

1. Install the transfer case rear output shaft flange and slinger. Refer to Rear Output Shaft Housing Assembly and Output Flange Installation in **Transfer Case Assemble**.
2. Install the rear output shaft housing. Refer to Rear Output Shaft Housing Installation in **Transfer Case Assemble**.
3. Install the rear propeller shaft. Refer to **Propeller Shaft Replacement** .
4. Fill the transfer case with fluid. Refer to **Transfer Case Fluid Replacement**.
5. Lower the vehicle.

REAR OUTPUT FLANGE OIL SLINGER 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 **Propeller Shaft Replacement** .

4. Remove the rear output shaft housing. Refer to Rear Output Shaft Housing Removal in **Transfer Case Disassemble**.
5. Remove the transfer case rear output shaft flange. Refer to Rear Output Shaft Housing Disassembly in **Transfer Case Disassemble**.
6. Remove the transfer case rear output shaft oil slinger from the transfer case rear output shaft flange.

Installation Procedure

1. Install the transfer case rear output shaft flange and slinger. Refer to Rear Output Shaft Housing Assembly and Output Flange Installation in **Transfer Case Assemble**.
2. Install the rear output shaft housing. Refer to Rear Output Shaft Housing Installation in **Transfer Case Assemble**.
3. Install the rear propeller shaft. Refer to **Propeller Shaft Replacement** .
4. Fill the transfer case with fluid. Refer to **Transfer Case Fluid Replacement**.
5. Lower the vehicle.

INTERMEDIATE DRIVE SHAFT 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 transfer case assembly (2). Refer to **Transfer Case Assembly Replacement**.

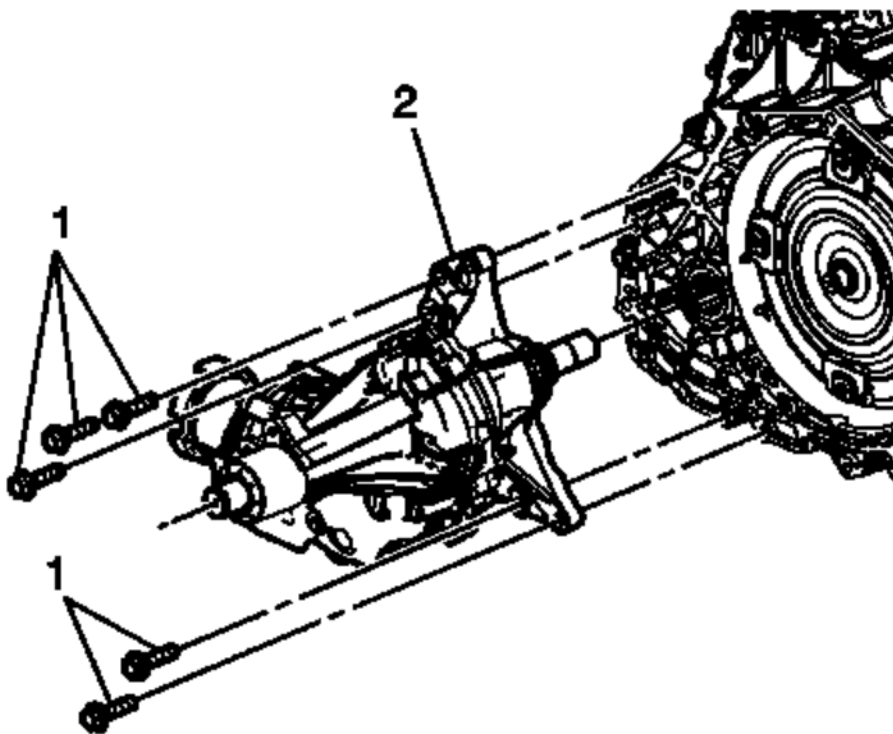


Fig. 9: Identifying Transfer Case & Bolts

Courtesy of GENERAL MOTORS COMPANY

4. Remove the intermediate shaft snap ring and intermediate drive shaft from the transfer case. Refer to Intermediate Drive Shaft Removal in **Transfer Case Disassemble**.
5. Remove the O-ring, half shaft retainer, intermediate shaft bearing retainer and bearing from the intermediate drive shaft. Refer to Intermediate Drive Shaft Disassembly in **Transfer Case Disassemble**.

Installation Procedure

1. Install the O-ring, half shaft retainer, intermediate shaft bearing retainer and bearing to the intermediate drive shaft. Refer to Intermediate Drive Shaft Assembly in **Transfer Case Assemble**.
2. Install the intermediate shaft and snap ring into the transfer case. Refer to Intermediate Drive Shaft Assembly in **Transfer Case Assemble**.

NOTE: Special tool DT-48094 must be used to install the intermediate shaft.

3. Install the transfer case assembly (2). Refer to **Transfer Case Assembly Replacement**.

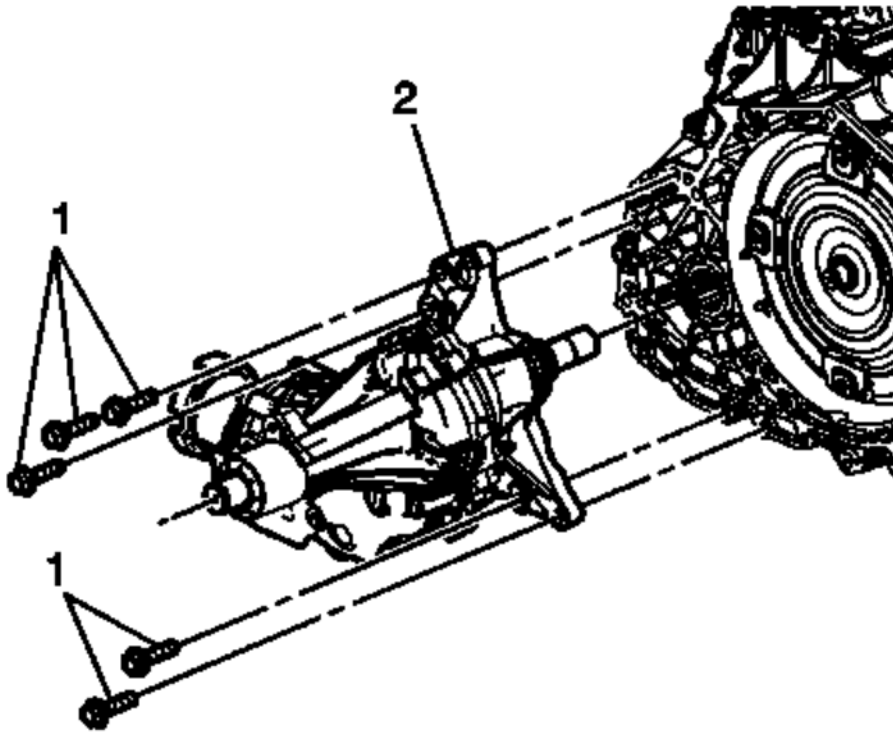


Fig. 10: Identifying Transfer Case & Bolts
Courtesy of GENERAL MOTORS COMPANY

4. Fill the transfer case with fluid. Refer to Transfer Case Fluid Replacement.
5. Lower the vehicle.

INTERMEDIATE DRIVE SHAFT BEARING 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 transfer case assembly (2). Refer to Transfer Case Assembly Replacement.

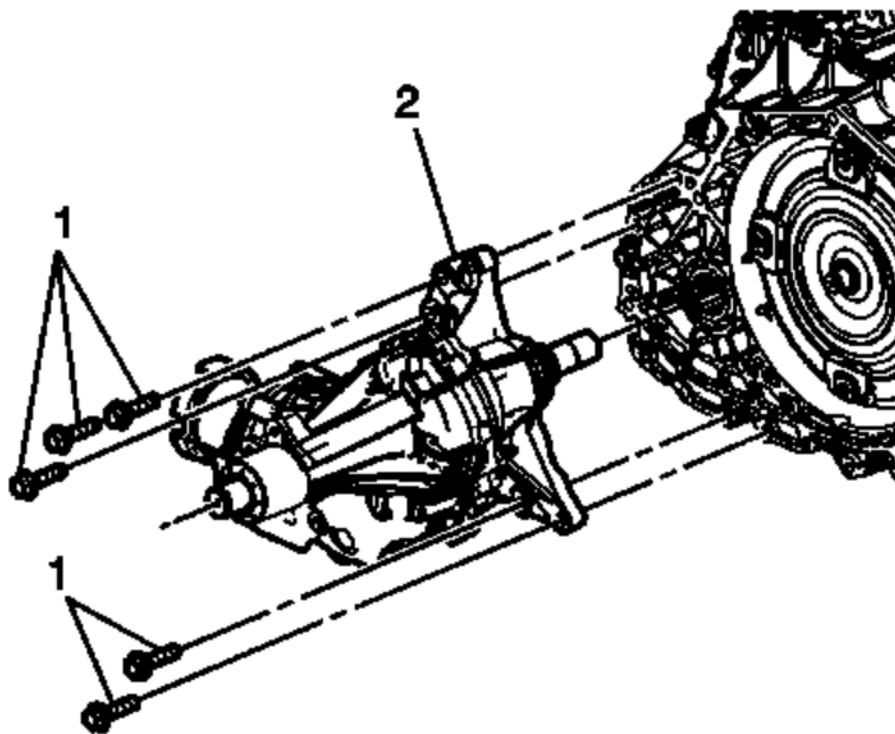


Fig. 11: Identifying Transfer Case & Bolts

Courtesy of GENERAL MOTORS COMPANY

4. Remove the intermediate shaft snap ring and intermediate drive shaft from the transfer case. Refer to Intermediate Drive Shaft Removal in **Transfer Case Disassemble**.
5. Remove the intermediate shaft bearing retainers and bearing from the intermediate drive shaft. Refer to Intermediate Drive Shaft Disassembly in **Transfer Case Disassemble**.

Installation Procedure

1. Install the intermediate shaft bearing and retainers to the intermediate drive shaft. Refer to Intermediate Drive Shaft Assembly in **Transfer Case Assemble**.
2. Install the intermediate shaft and snap ring into the transfer case. Refer to Intermediate Drive Shaft Assembly in **Transfer Case Assemble**.

NOTE: Special tool DT-48094 must be used to install the intermediate shaft.

3. Install the transfer case assembly (2). Refer to **Transfer Case Assembly Replacement**.

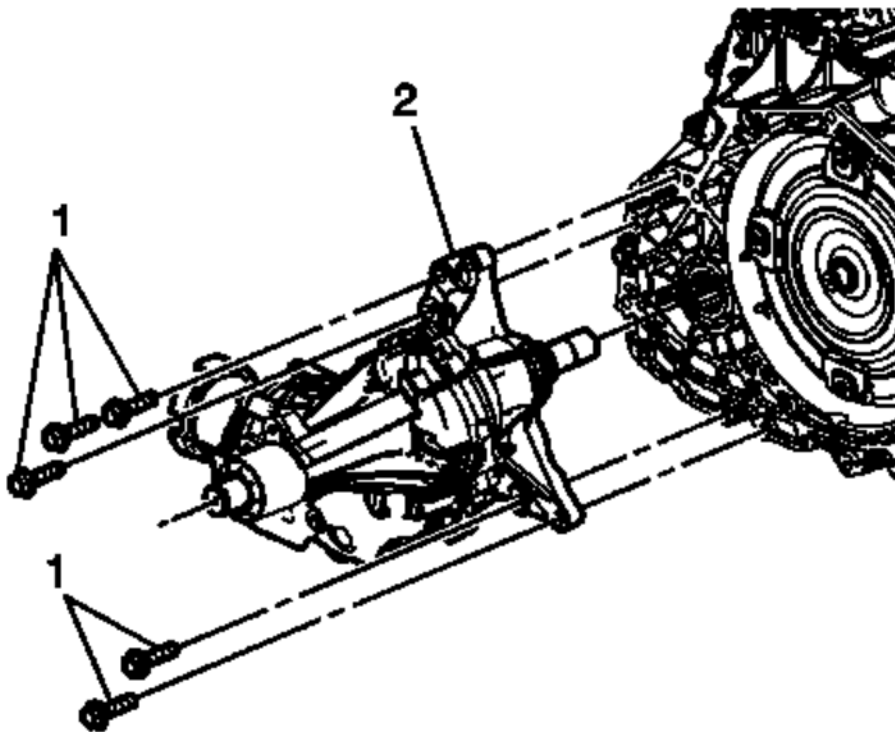


Fig. 12: Identifying Transfer Case & Bolts

Courtesy of GENERAL MOTORS COMPANY

4. Fill the transfer case with fluid. Refer to Transfer Case Fluid Replacement.
5. Lower the vehicle.

INTERMEDIATE DRIVE 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 transfer case assembly (2). Refer to Transfer Case Assembly Replacement.

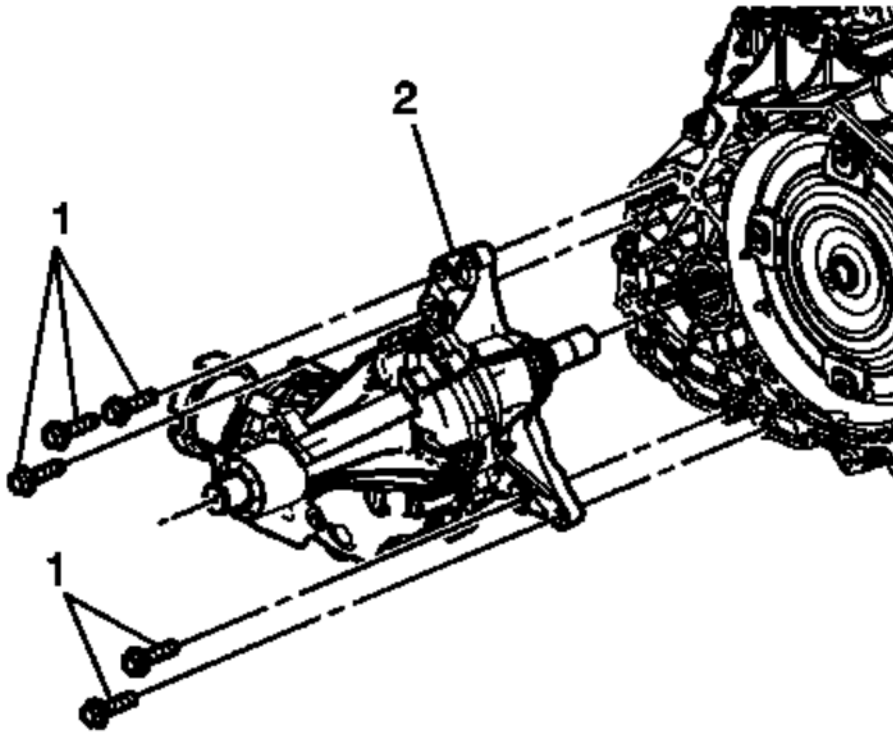


Fig. 13: Identifying Transfer Case & Bolts
Courtesy of GENERAL MOTORS COMPANY

4. Remove the intermediate shaft snap ring and intermediate drive shaft from the transfer case. Refer to Intermediate Drive Shaft Removal in **Transfer Case Disassemble**.
5. Remove the half shaft retainer and O-ring seal from the intermediate drive shaft. Refer to Intermediate Drive Shaft Disassembly in **Transfer Case Disassemble**.

Installation Procedure

1. Install the O-ring seal and half shaft retainer to the intermediate drive shaft. Refer to Intermediate Drive Shaft Assembly in **Transfer Case Assemble**.
2. Install the intermediate shaft and snap ring into the transfer case. Refer to Intermediate Drive Shaft Assembly in **Transfer Case Assemble**.

NOTE: Special tool DT-48094 must be used to install the intermediate shaft.

3. Install the transfer case assembly (2). Refer to **Transfer Case Assembly Replacement**.

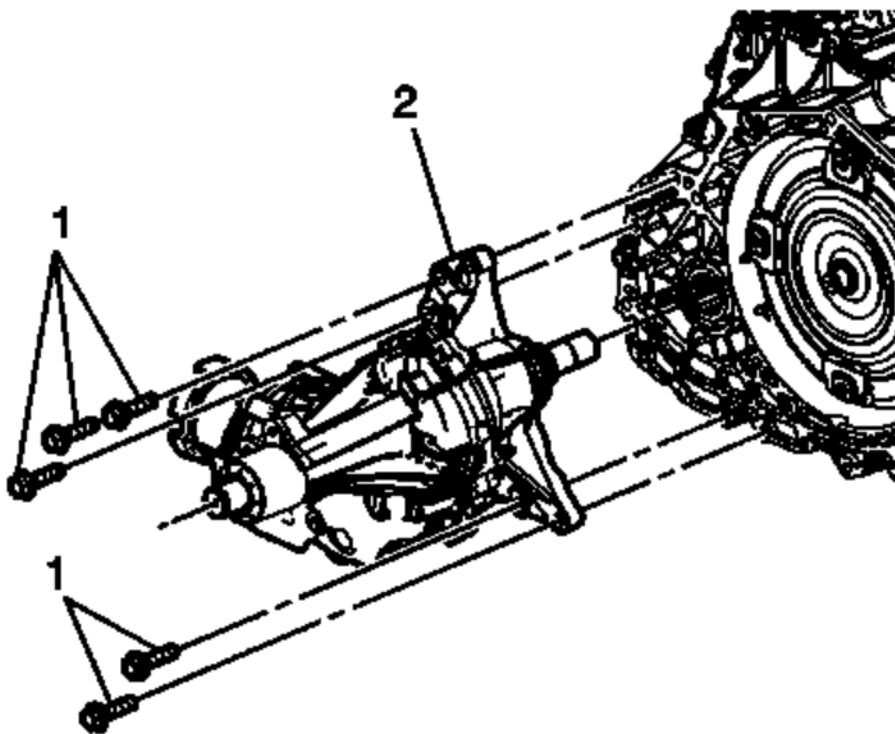


Fig. 14: Identifying Transfer Case & Bolts

Courtesy of GENERAL MOTORS COMPANY

4. Fill the transfer case with fluid. Refer to **Transfer Case Fluid Replacement**.
5. Lower the vehicle.

REAR OUTPUT SHAFT HOUSING O-RING 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 **Propeller Shaft Replacement**.
4. Remove the rear output shaft housing. Refer to Rear Output Shaft Housing Removal in **Transfer Case Disassemble**.
5. Remove the transfer case rear output shaft housing seal O-ring.

Installation Procedure

1. Install the transfer case rear output shaft housing seal O-ring.

2. Install the rear output shaft housing. Refer to Rear Output Shaft Housing Installation in **Transfer Case Assemble**.
3. Install the rear propeller shaft. Refer to **Propeller Shaft Replacement** .
4. Fill the transfer case with fluid. Refer to **Transfer Case Fluid Replacement**.
5. Lower the vehicle.

TRANSFER CASE ASSEMBLY 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. Drain the transmission fluid. Refer to **Transmission Fluid Drain and Fill** .
4. Remove the propeller shaft. Refer to **Propeller Shaft Replacement** .
5. Remove the right wheel drive shaft. Refer to **Front Wheel Drive Shaft Replacement** .
6. Remove the exhaust flexible pipe. Refer to **Exhaust Flexible Pipe Replacement** .
7. Support the transaxle with a jackstand.
8. Remove the engine rear mount bracket. Refer to **Engine Rear Mount Bracket Replacement (Front Wheel Drive)** and **Engine Rear Mount Bracket Replacement (All Wheel Drive)** .
9. Remove the transfer case bolts (1).

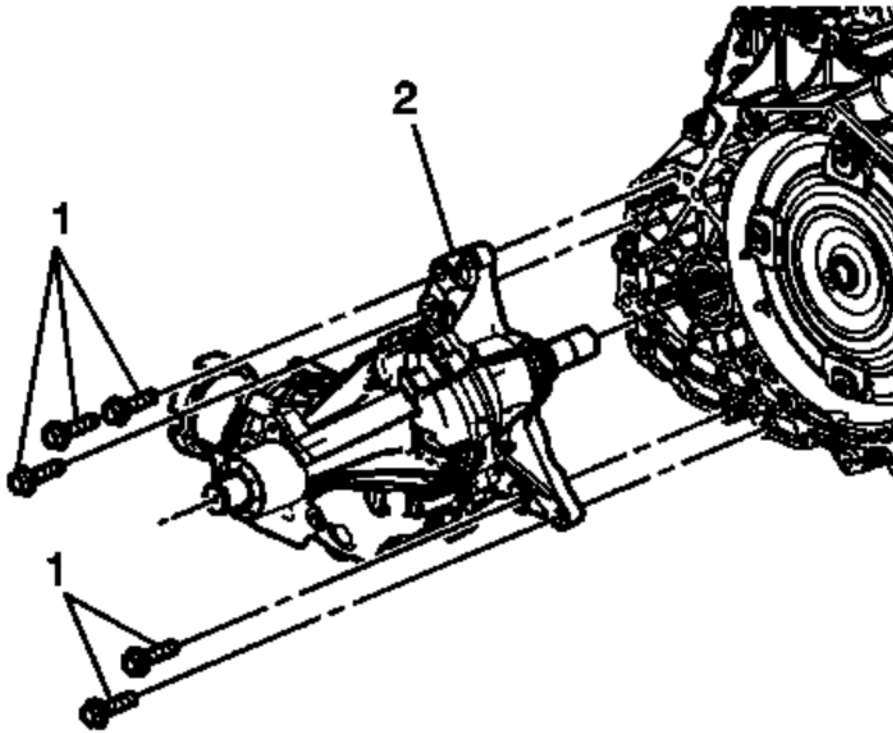


Fig. 15: Identifying Transfer Case & Bolts
Courtesy of GENERAL MOTORS COMPANY

10. Remove the transfer case (2).

Installation Procedure

1. Lubricate the O-rings (2, 3) with automatic transmission fluid.

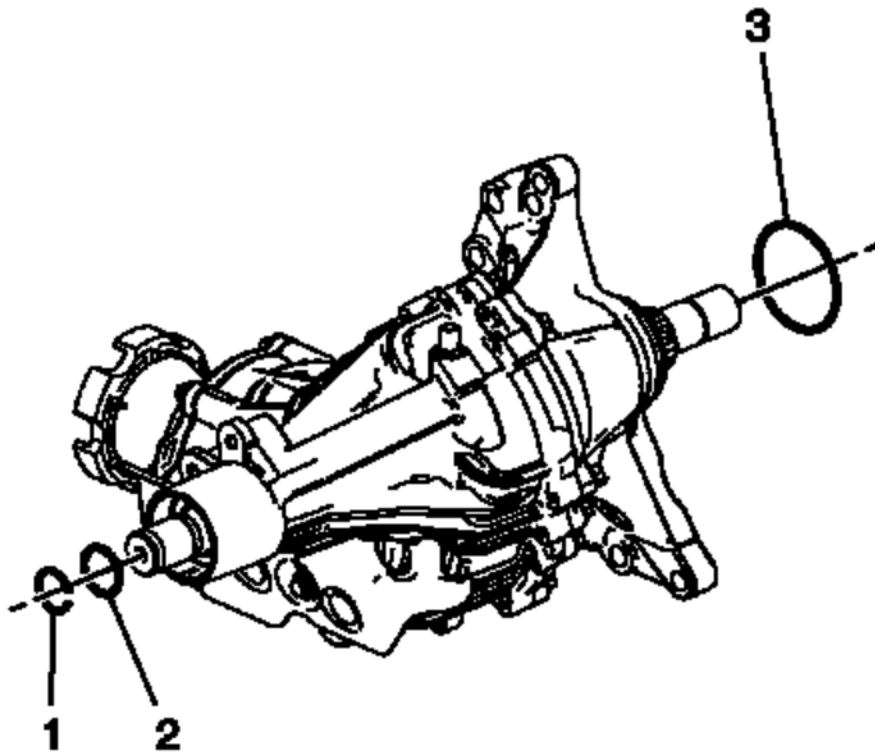


Fig. 16: Identifying Transfer Case O-Ring Seal, Half Shaft Retainer & Intermediate Shaft Seals
Courtesy of GENERAL MOTORS COMPANY

2. Install the NEW transfer case O-ring seal (3).
3. Carefully insert a clean soft cloth into the transmission torque converter housing differential bore to prevent debris from entering the transmission.

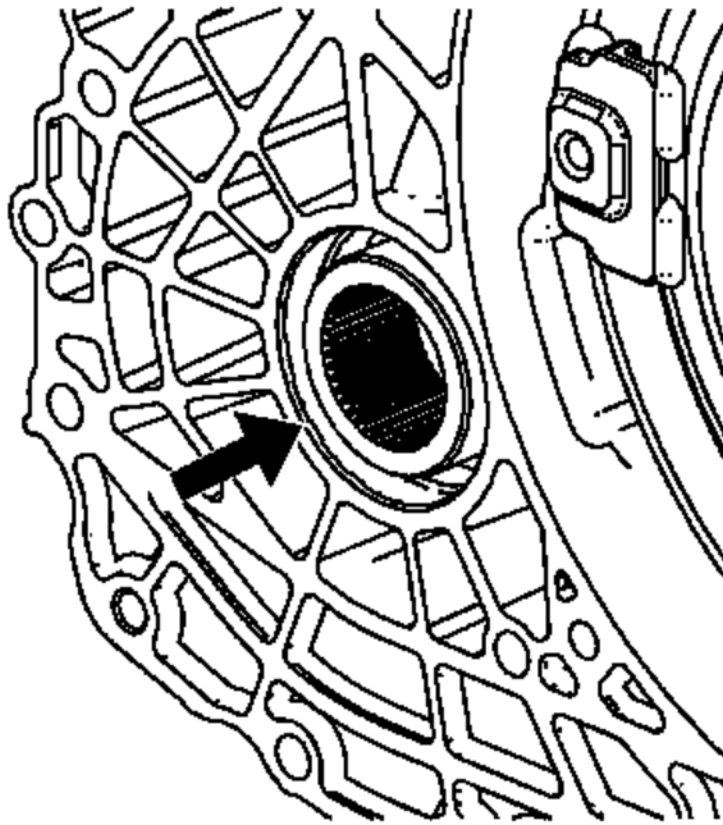


Fig. 17: View Of Torque Converter Housing Differential Bore
Courtesy of GENERAL MOTORS COMPANY

NOTE: Oxidation must be removed from the transmission torque converter housing bore before installation of the transfer case. A clean bore will prevent oxidation build up from scuffing or cutting the O-ring seal upon transfer case installation, resulting in a leak.

4. Clean the oxidation from the transmission torque converter housing differential bore surface using steel wool or crocus cloth.
5. Carefully remove any debris and the cloth from the transmission torque converter housing differential bore.
6. Fabricate 2 guide pins by cutting the heads off of 2 bolts M12x1.75x75. chamfer and remove burrs from the cut end of the bolt.

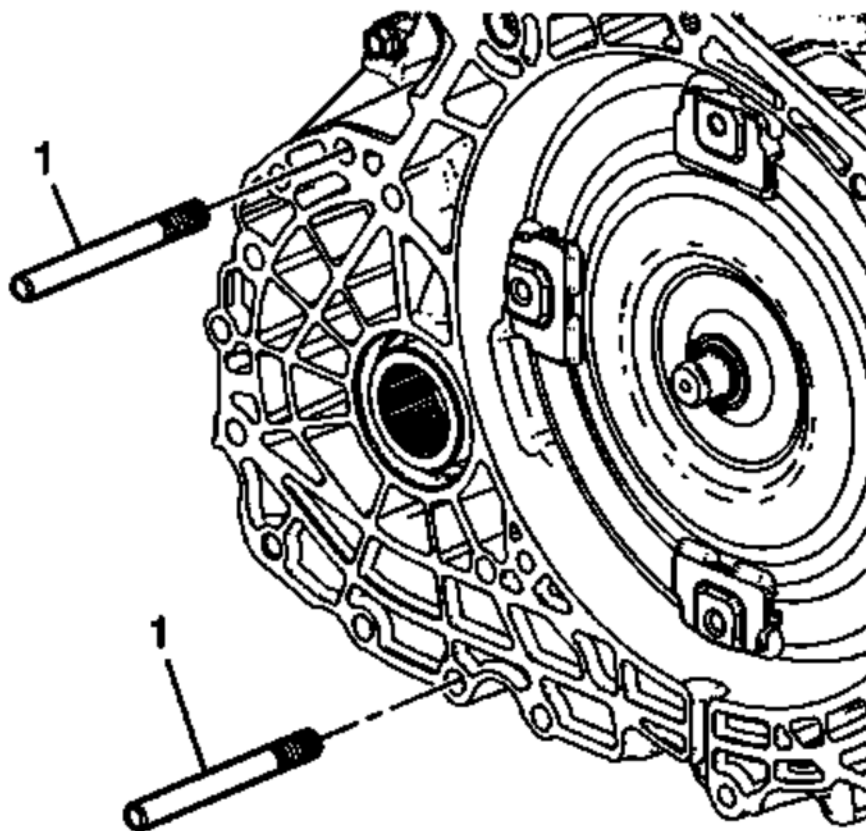


Fig. 18: Identifying Guide Pins

Courtesy of GENERAL MOTORS COMPANY

NOTE: Use guide pins to aid in alignment and installation of the transfer case to the transmission. Failure to use guide pins may result in cutting the transfer case O-ring seal during installation of the transfer case causing a fluid leak.

7. Hand thread the guide pins (1) into the transmission upper and lower transfer case mounting bolt holes.
8. Thoroughly clean the transmission bore and ribbing of fluid and debris immediately prior to installing the transfer case.

NOTE: Transmission fluid may creep from the transmission bore during installation.

9. Install the transfer case (1) to the transmission.

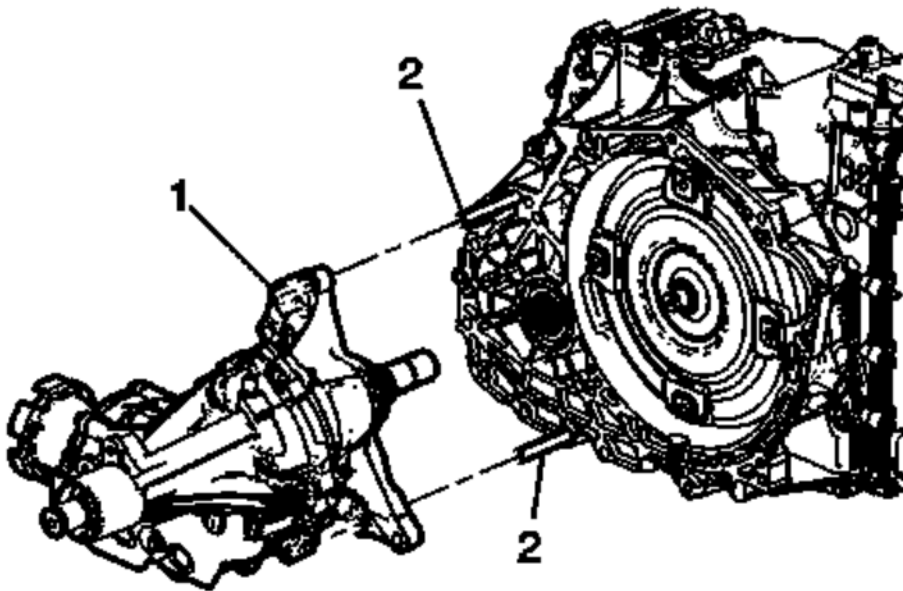


Fig. 19: View Of Transfer Case & Transmission
Courtesy of GENERAL MOTORS COMPANY

10. Remove the guide pins (2).
11. Install the transfer case to transmission bolts (1) and tighten to 50 N.m (37 lb ft).

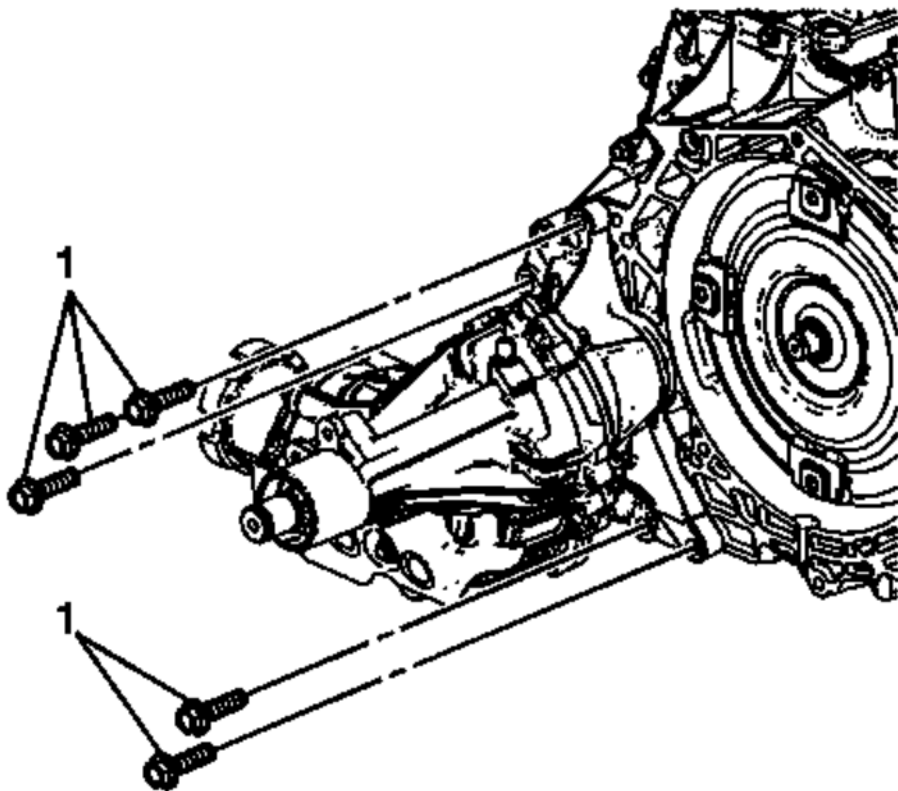


Fig. 20: View Of Transfer Case & Bolts
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

12. Install the engine rear mount bracket. Refer to Engine Rear Mount Bracket Replacement (Front Wheel Drive) , Engine Rear Mount Bracket Replacement (All Wheel Drive) .
13. Remove the jackstand from under the transaxle.
14. Install the exhaust flexible pipe. Refer to Exhaust Flexible Pipe Replacement .
15. Install the right wheel drive shaft. Refer to Front Wheel Drive Shaft Replacement .
16. Install the propeller shaft. Refer to Propeller Shaft Replacement .
17. Fill the transfer case with fluid. Refer to Transfer Case Fluid Replacement.
18. Fill the transmission fluid. Refer to Transmission Fluid Drain and Fill .
19. Lower the vehicle.

INPUT 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 propeller shaft. Refer to Propeller Shaft Replacement .
4. Remove the right wheel drive shaft. Refer to Front Wheel Drive Shaft Replacement .
5. Remove the exhaust flexible pipe. Refer to Exhaust Flexible Pipe Replacement .
6. Support the transaxle with a jackstand.
7. Remove the engine rear mount bracket. Refer to Engine Rear Mount Replacement .
8. Remove the transfer case bolts (1).

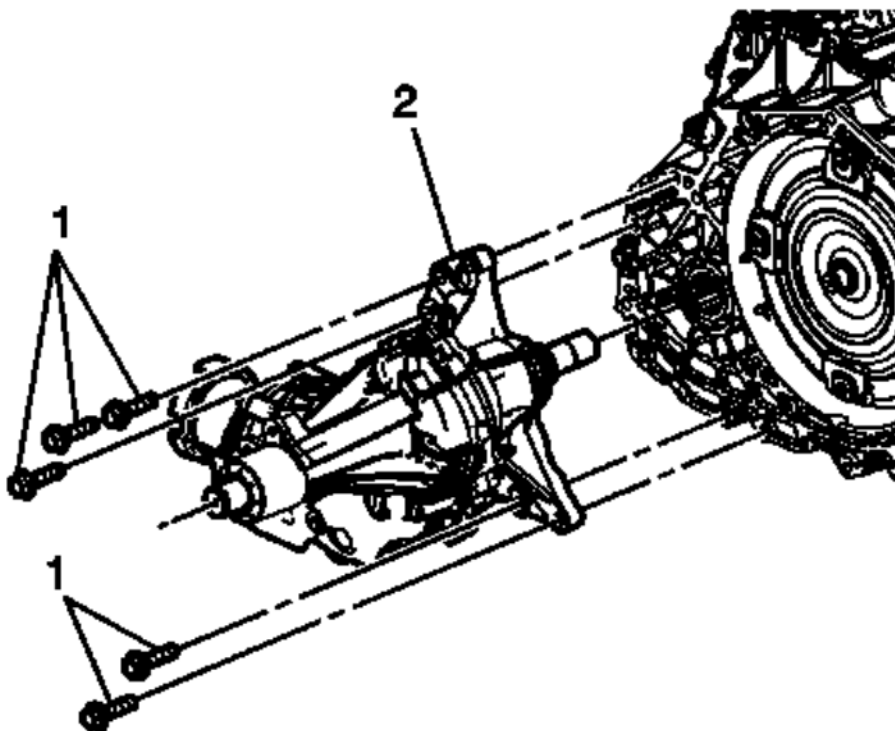


Fig. 21: Identifying Transfer Case & Bolts
Courtesy of GENERAL MOTORS COMPANY

9. Remove the transfer case (2).

Installation Procedure

1. Lubricate the O-rings (2, 3) with automatic transmission fluid.

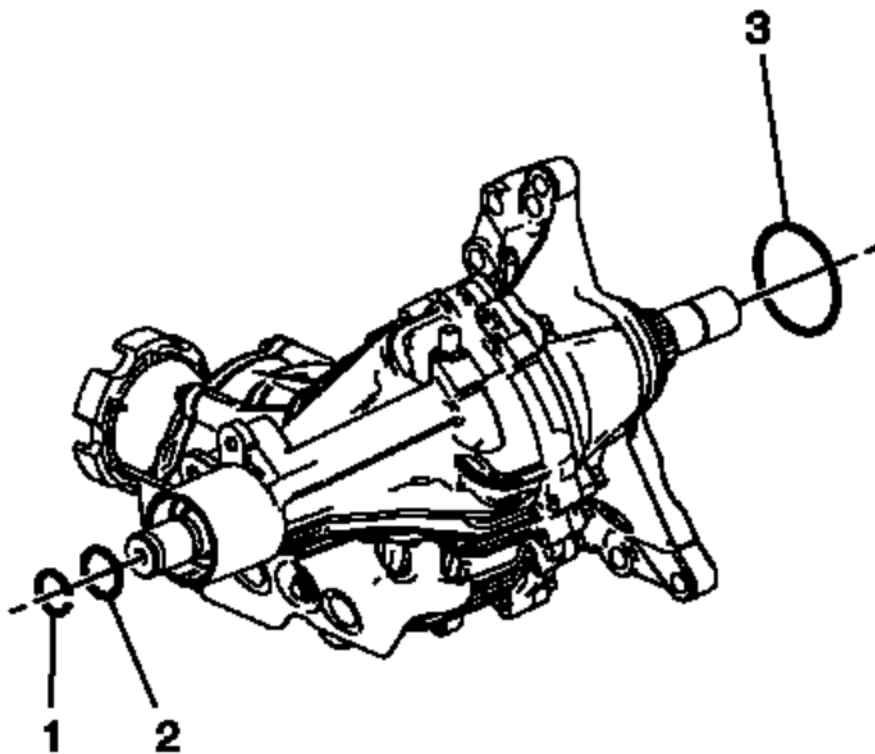


Fig. 22: Identifying Transfer Case O-Ring Seal, Half Shaft Retainer & Intermediate Shaft Seals
Courtesy of GENERAL MOTORS COMPANY

2. Install the NEW transfer case O-ring seal (3).
3. Carefully insert a clean soft cloth into the transmission torque converter housing differential bore to prevent debris from entering the transmission.

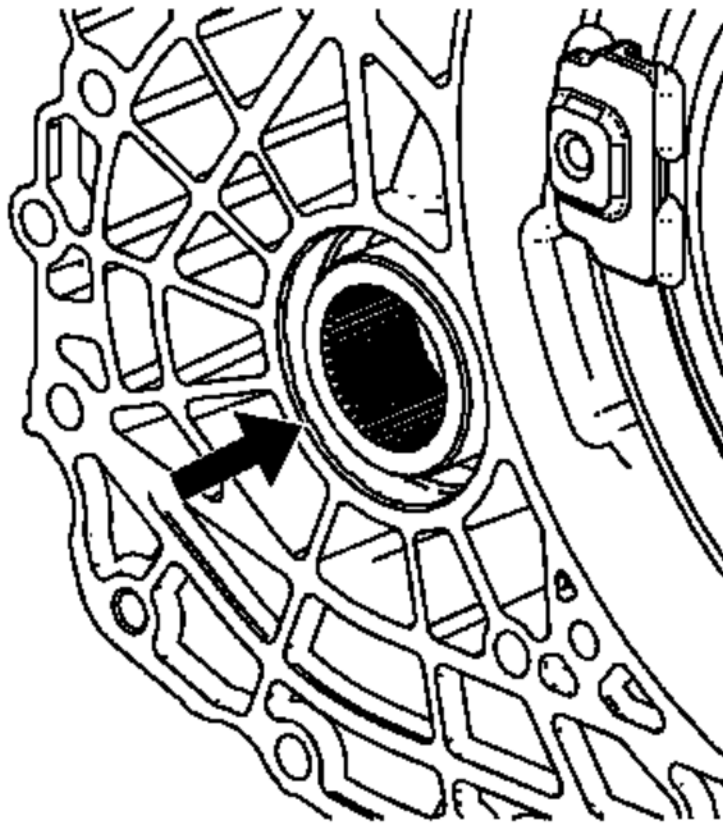


Fig. 23: View Of Torque Converter Housing Differential Bore
Courtesy of GENERAL MOTORS COMPANY

NOTE: Oxidation must be removed from the transmission torque converter housing bore before installation of the transfer case. A clean bore will prevent oxidation build up from scuffing or cutting the O-ring seal upon transfer case installation, resulting in a leak.

4. Clean the oxidation from the transmission torque converter housing differential bore surface using steel wool or crocus cloth.
5. Carefully remove any debris and the cloth from the transmission torque converter housing differential bore.
6. Fabricate 2 guide pins by cutting the heads off of 2 bolts M12x1.75x75. chamfer and remove burrs from the cut end of the bolt.

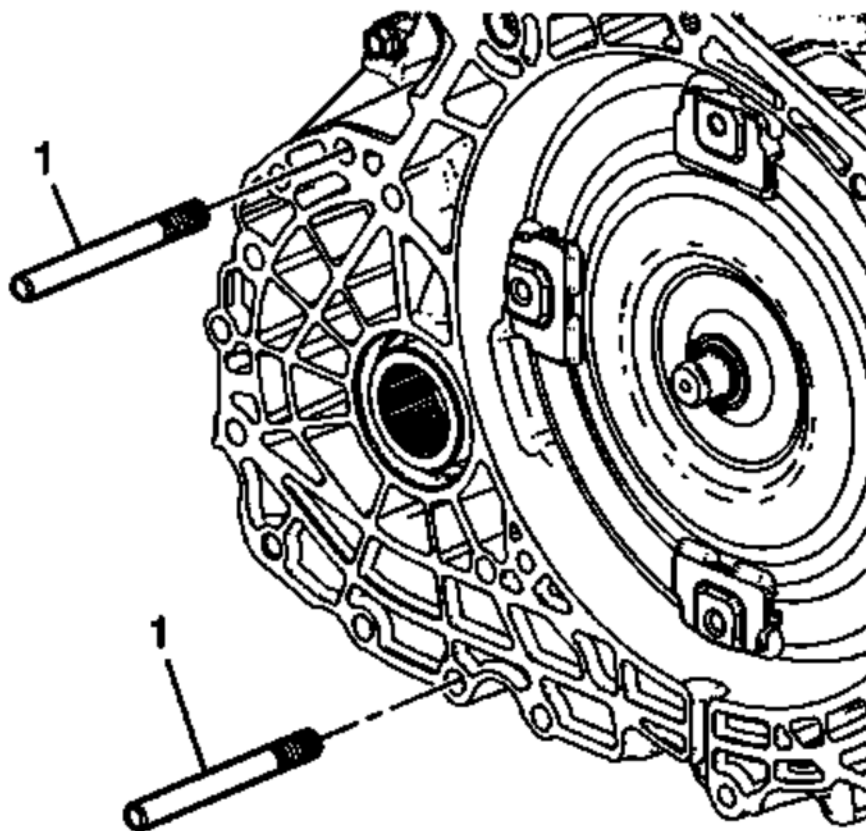


Fig. 24: Identifying Guide Pins

Courtesy of GENERAL MOTORS COMPANY

NOTE: Use guide pins to aid in alignment and installation of the transfer case to the transmission. Failure to use guide pins may result in cutting the transfer case O-ring seal during installation of the transfer case causing a fluid leak.

7. Hand thread the guide pins (1) into the transmission upper and lower transfer case mounting bolt holes.
8. Thoroughly clean the transmission bore and ribbing of fluid and debris immediately prior to installing the transfer case.

NOTE: Transmission fluid may creep from the transmission bore during installation.

9. Install the transfer case (1) to the transmission.

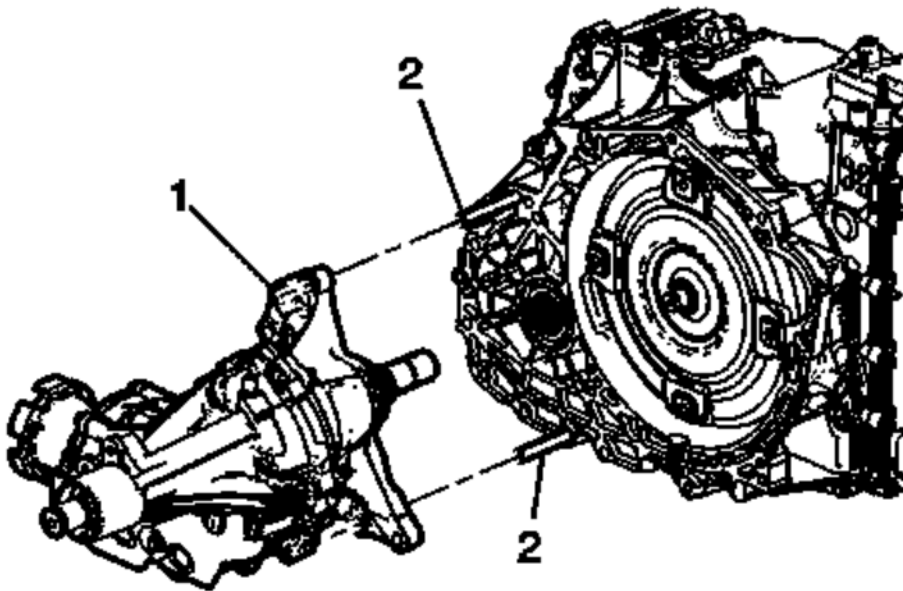


Fig. 25: View Of Transfer Case & Transmission
Courtesy of GENERAL MOTORS COMPANY

10. Remove the guide pins (2).
11. Install the transfer case to transmission bolts (1) and tighten to 50 N.m (37 lb ft).

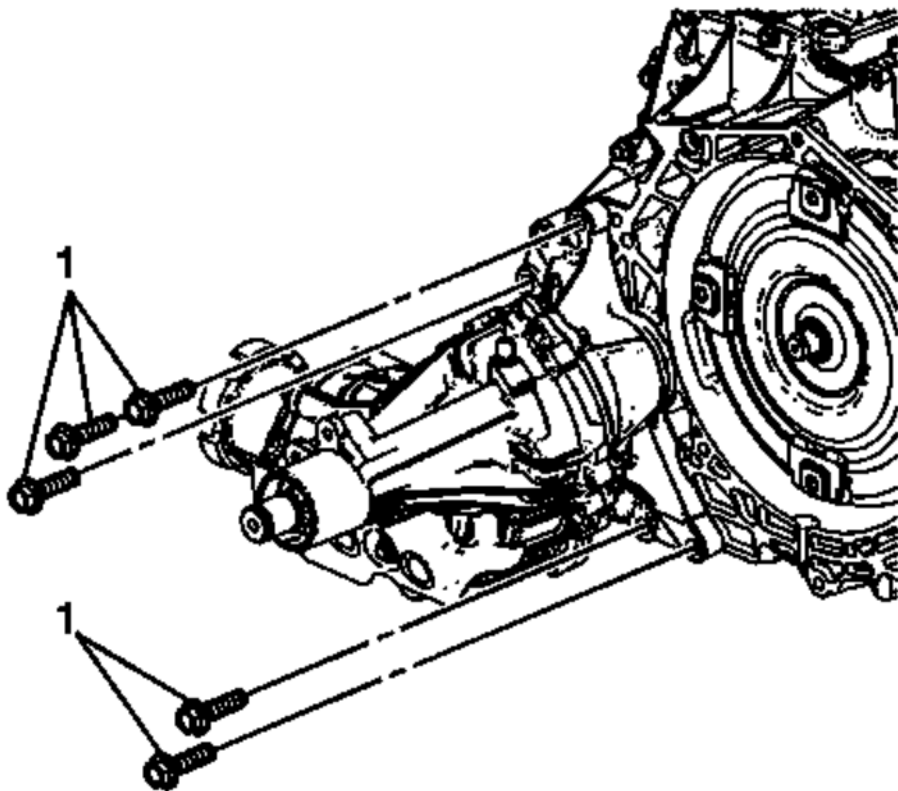


Fig. 26: View Of Transfer Case & Bolts

Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

12. Install the engine rear mount bracket. Refer to Engine Rear Mount Replacement .
13. Remove the jackstand from under the transaxle.
14. Install the exhaust flexible pipe. Refer to Exhaust Flexible Pipe Replacement .
15. Install the right wheel drive shaft. Refer to Front Wheel Drive Shaft Replacement .
16. Install the propeller shaft. Refer to Propeller Shaft Replacement .
17. Fill the transfer case with fluid. Refer to Transfer Case Fluid Replacement.
18. Lower the vehicle.

REPAIR INSTRUCTIONS - OFF VEHICLE

TRANSFER CASE DISASSEMBLE

Housing O-ring, Vent Assembly, Drain and Fill Plug Removal

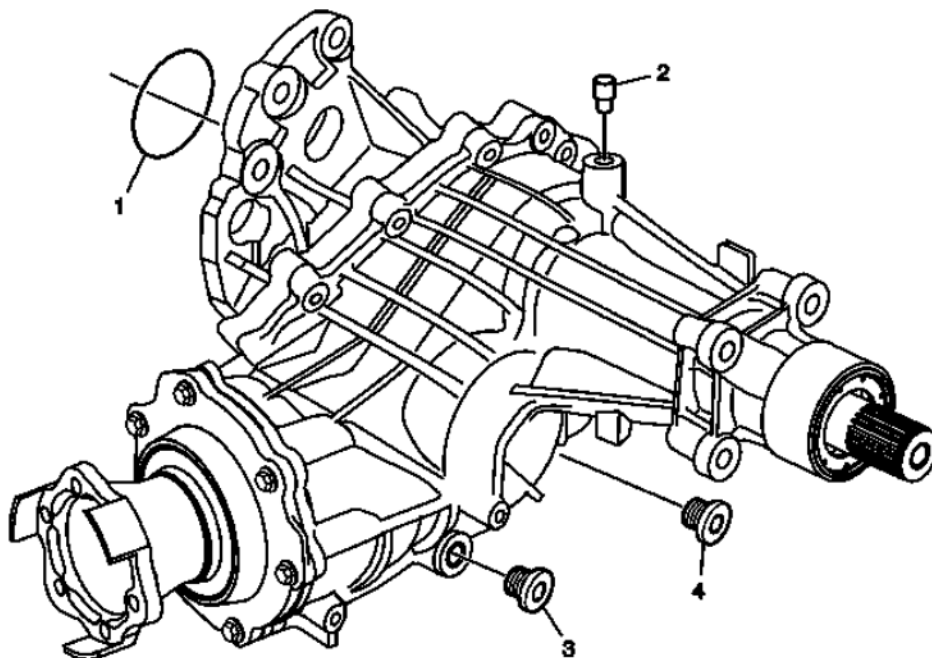


Fig. 27: View Of Transfer Case Housing O-Ring, Vent Assembly, Drain & Fill Plugs
 Courtesy of GENERAL MOTORS COMPANY

Housing O-Ring, Vent Assembly, Drain and Fill Plug Removal

Callout	Component Name
1	Transfer Case O-ring Seal
2	Transfer Case Vent Assembly NOTE: Remove the vent only if damaged or blocked.
3	Transfer Case Drain Plug
4	Transfer Case Fill Plug

Intermediate Drive Shaft Removal

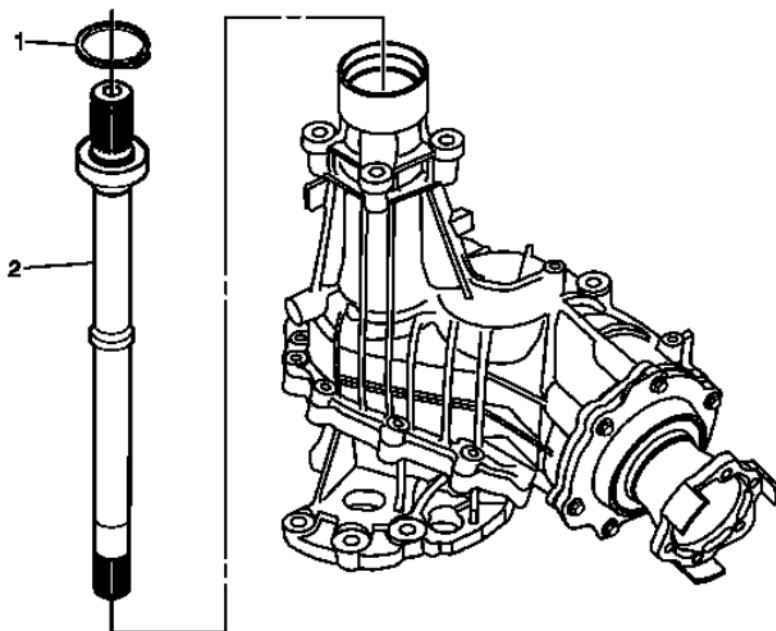


Fig. 28: Identifying Intermediate Drive Shaft
Courtesy of GENERAL MOTORS COMPANY

Intermediate Drive Shaft Removal

Callout	Component Name
1	Front Wheel Drive Retainer
2	Front Wheel Drive Intermediate Shaft

Rear Output Shaft Housing Removal

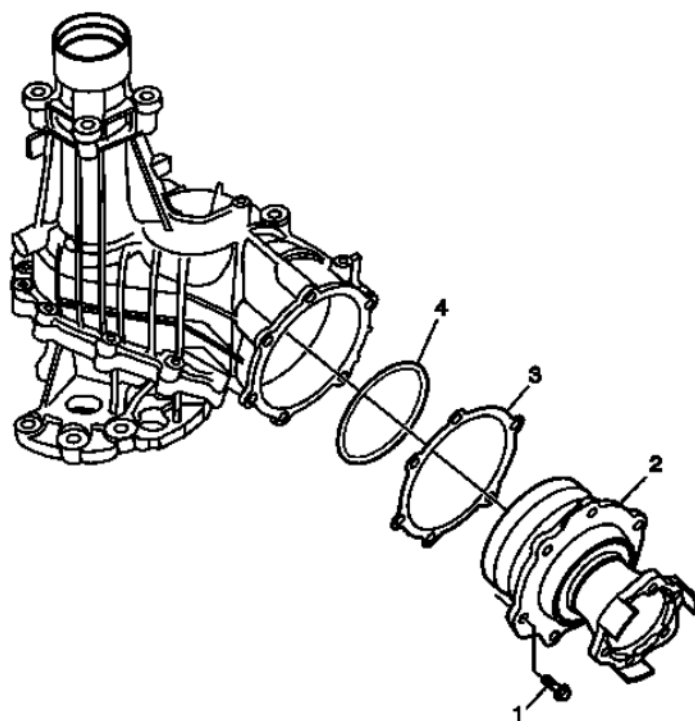


Fig. 29: View Of Rear Output Shaft Housing
 Courtesy of GENERAL MOTORS COMPANY

Rear Output Shaft Housing Removal

Callout	Component Name
1	Transfer Case Rear Output Shaft Housing Bolt (Qty: 6)
2	Transfer Case Rear Output Shaft Housing NOTE: Locate 2 screwdrivers or prybars to the flange area of the housing to ease removal.
3	Transfer Case Rear Output Shim
4	Transfer Case Rear Output Shaft Housing Seal O-ring NOTE: Discard the O-ring after removal.

Right Transfer Case, Input and Output Drive Shaft Removal

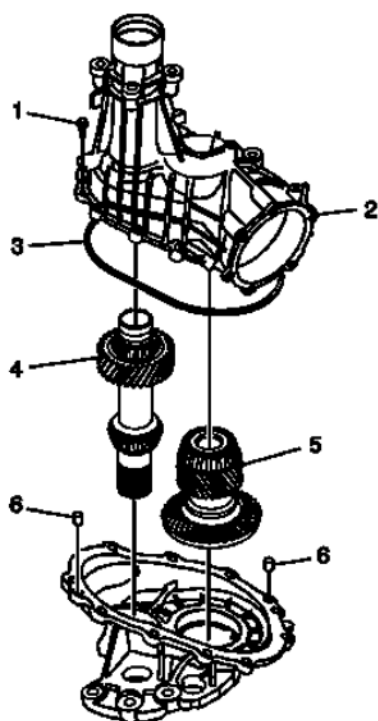


Fig. 30: Identifying Right Transfer Case, Input & Output Drive Shaft
 Courtesy of GENERAL MOTORS COMPANY

Right Transfer Case, Input and Output Drive Shaft Removal

Callout	Component Name
1	Transfer Case Half Bolt (Qty: 11)
2	Transfer Case - Right
3	Transfer Case Seal from the Transfer Case - Right
4	Transfer Case Input Shaft
5	Transfer Case Rear Output Drive Shaft
6	Transfer Case Half Locating Pin (Qty: 2)
	NOTE: • Remove the pins only if damaged. • Inspect the case for similar damage.
	Refer to <u>Transfer Case Cleaning and Inspection</u> .

Rear Output Shaft Housing Disassembly

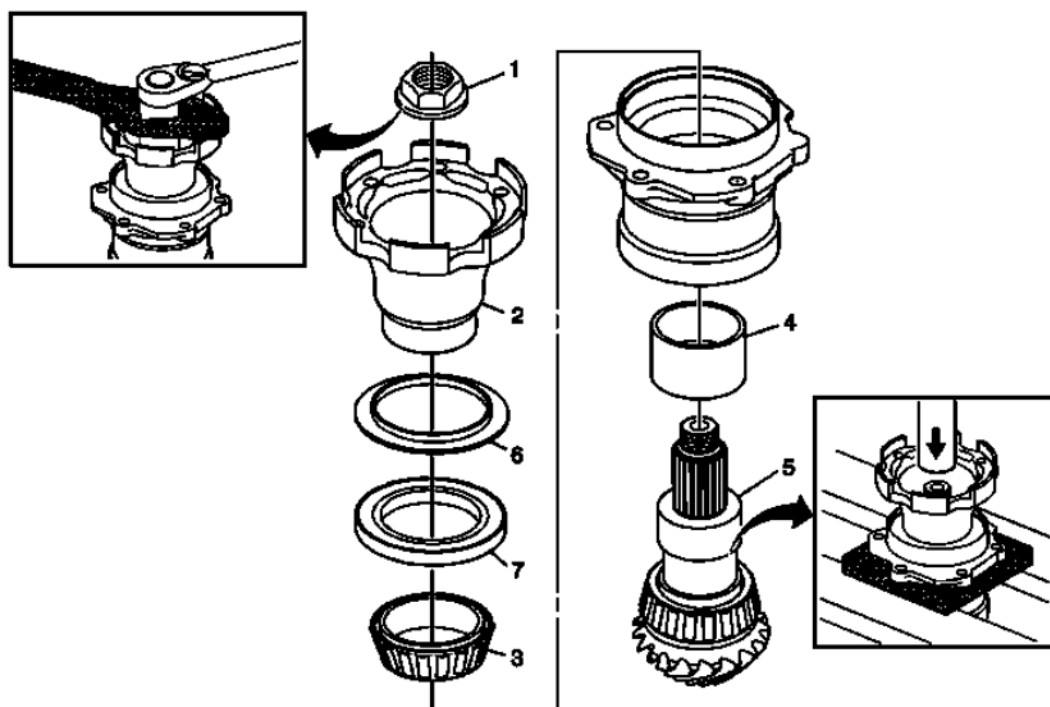


Fig. 31: Exploded View Of Rear Output Shaft Housing
 Courtesy of GENERAL MOTORS COMPANY

Rear Output Shaft Housing Disassembly

Callout	Component Name
1	Transfer Case Rear Output Shaft Gear Nut Procedure Use a 30 mm socket or J-29873 Nozzle Socket 30 mm. Special Tools • J-08614-A Pinion Flange Holder and Remover • J 29873 Nozzle Socket 30 mm For equivalent regional tools, refer to Special Tools .
2	Transfer Case Rear Output Shaft Flange Special Tools DT-48145 Press Support For equivalent regional tools, refer to Special Tools .
3	Transfer Case Rear Output Shaft Bearing Assembly NOTE: Use a press to remove the output shaft from the housing.
4	Transfer Case Rear Output Shaft Bearing Spacer

5	Transfer Case Rear Output Shaft
6	Transfer Case Rear Output Shaft Oil Slinger NOTE: Remove the slinger only if damaged. Refer to Rear Output Drive Housing Cleaning and Inspection .
7	Transfer Case Rear Output Shaft Seal NOTE: Discard the seal after removal.

Intermediate Drive Shaft Disassembly

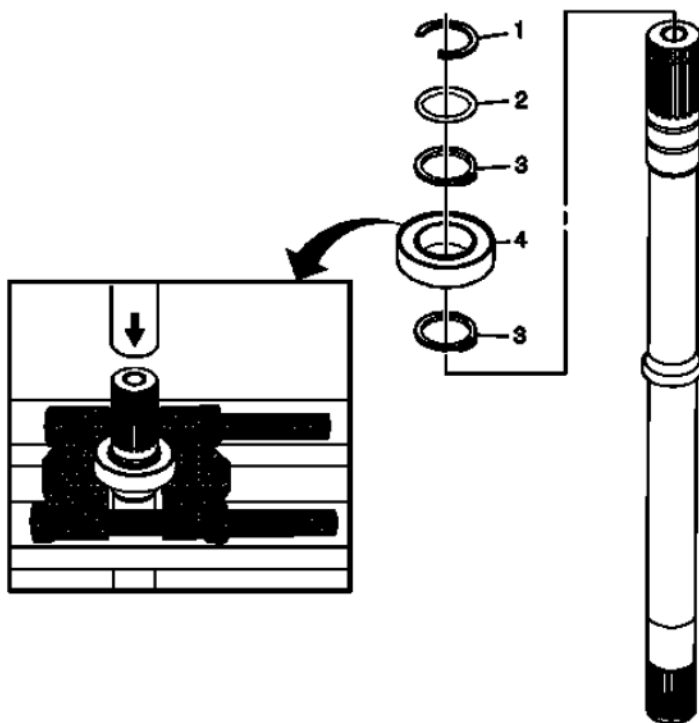


Fig. 32: Identifying Intermediate Drive Shaft
Courtesy of GENERAL MOTORS COMPANY

Intermediate Drive Shaft Disassembly

Callout	Component Name
1	Half Shaft Retainer
2	O-ring
3	Front Wheel Drive Intermediate Shaft Bearing Retainer (Qty: 2)
	Front Wheel Drive Intermediate Shaft Bearing Assembly

4

Procedure

Use a press, with the **J 22912-B** Rear Pinion and Axle Bearing Remover flat side up, in order to remove the bearing assembly.

Special Tools

J 22912-B Rear Pinion and Axle Bearing Remover

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

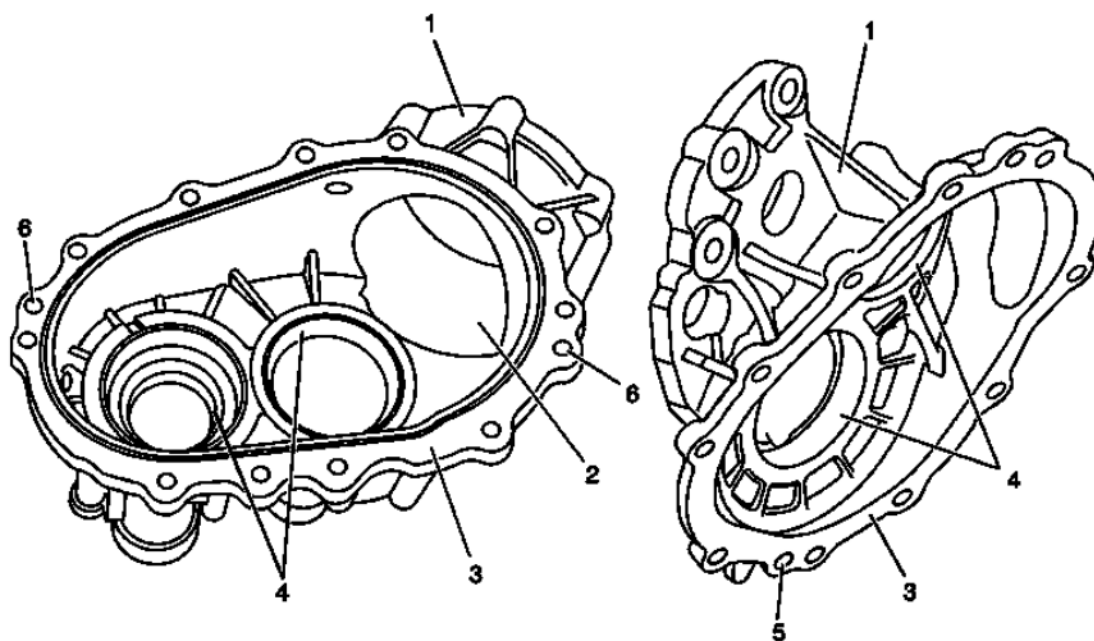
TRANSFER CASE CLEANING AND INSPECTION

Fig. 33: Identifying Transfer Case Components

Courtesy of GENERAL MOTORS COMPANY

Transfer Case Cleaning and Inspection

Callout	Component Name
CAUTION: Refer to <u>Machined Surface Damage Caution</u> .	
Preliminary Procedures 1. Inspect all components or sub-components and perform any repair procedure necessary to fix the damage. If the damage cannot be repaired, replace the component or sub-component as indicated. 2. Clean the left and right transfer case in cleaning solvent and air dry.	
	Transfer Case - Left and Right

1	NOTE: Inspect for cracks, broken areas or other damage. The transfer case assembly must be replaced if damage is found.
2	Transfer Case Rear Output Drive Housing Bore NOTE: Repair small scratches or nicks with light sanding.
3	Case Sealing Surface NOTE: Repair small scratches or nicks with a soft stone.
4	Transfer Case Bearing Races NOTE: Replace the transfer case assembly if a bearing has spun or if cracks are detected.
5	Transfer Case Thread Bolt Holes NOTE: Repair any damaged threads.
6	Transfer Case Half Locating Pin Holes

REAR OUTPUT DRIVE HOUSING CLEANING AND INSPECTION

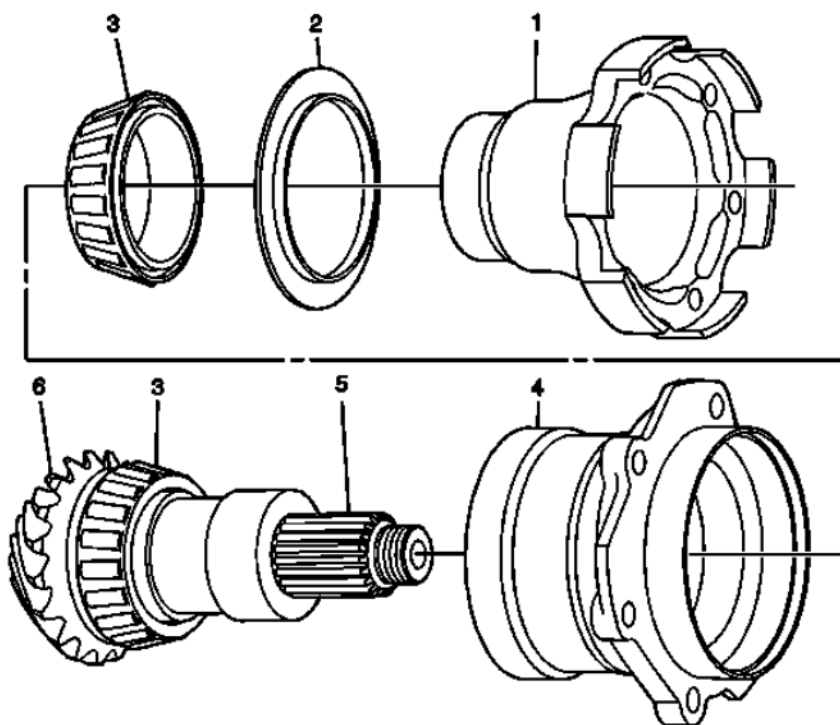


Fig. 34: Exploded View Of Rear Output Drive Housing
 Courtesy of GENERAL MOTORS COMPANY

Rear Output Drive Housing Cleaning and Inspection

Callout	Component Name
Preliminary Procedures 1. Clean all components in cleaning solvent and air dry. 2. The transfer case internal components are not to be serviced. If internal components other than seals are damaged, the transfer case must be replaced.	
1	Transfer Case Rear Output Shaft Flange NOTE: • Replace if flange, threaded holes or splines are damaged. • Inspect sealing surface for corrosion, excessive wear or damage.
2	Transfer Case Rear Output Shaft Oil Slinger NOTE: Replace the slinger if damaged, cracked, loose or distorted.
3	Transfer Case Rear Output Shaft Bearing Assembly NOTE: Inspect bearings for roughness, spalling or pitting.
4	Transfer Case Rear Output Shaft Housing NOTE: • Inspect for cracks, broken areas or other damage. • Inspect bearing races for roughness, brinelling or pitting. • Inspect the O-ring channel for porosity or damage. • Scratches or nicks in other areas may be repaired with light sanding.
5	Transfer Case Rear Output Shaft Splines NOTE: Inspect for damage and press fit to flange.
6	Transfer Case Rear Output Shaft NOTE: Inspect for pitting, excessive wear or damage.

INPUT SHAFT SEAL REPLACEMENT - RIGHT

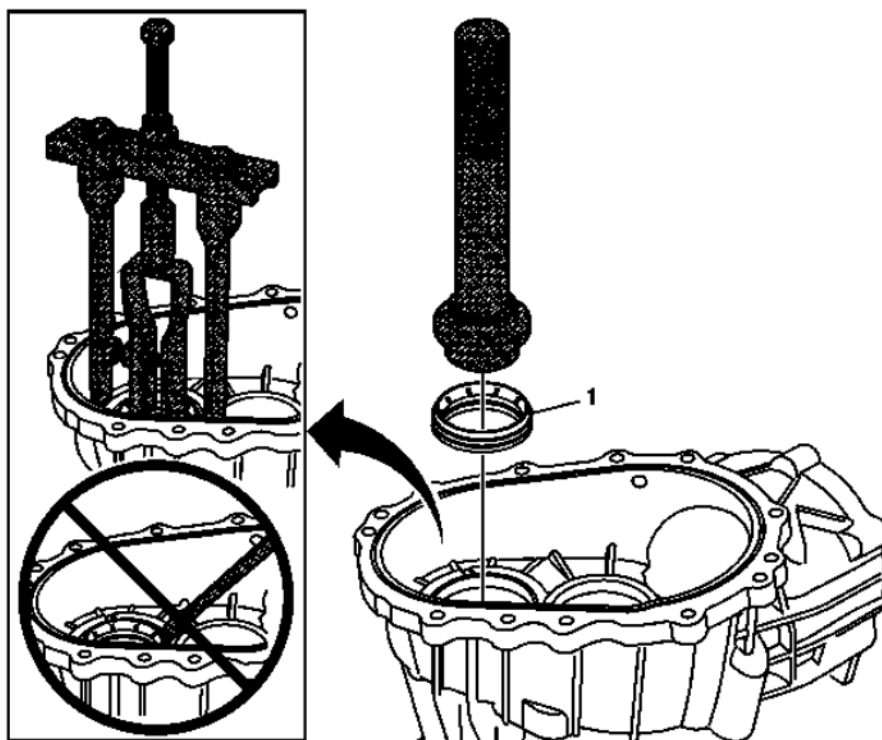


Fig. 35: Identifying Input Shaft Seal - Right
 Courtesy of GENERAL MOTORS COMPANY

Input Shaft Seal Replacement - Right

Callout	Component Name
1	Transfer Case Input Shaft Seal - Right CAUTION: Do not use a screwdriver or punch to remove the seal. Using a screwdriver or punch to remove the seal may damage the aluminum housing sealing surface. Special Tools • DT-48074 Input and Output Shaft Seal Installer • J 8092 Driver Handle • J 26941 Bushing and Bearing Remover - 3-4 in • J 45124 Removal Bridge For equivalent regional tools, refer to Special Tools.

INPUT SHAFT SEAL REPLACEMENT - LEFT

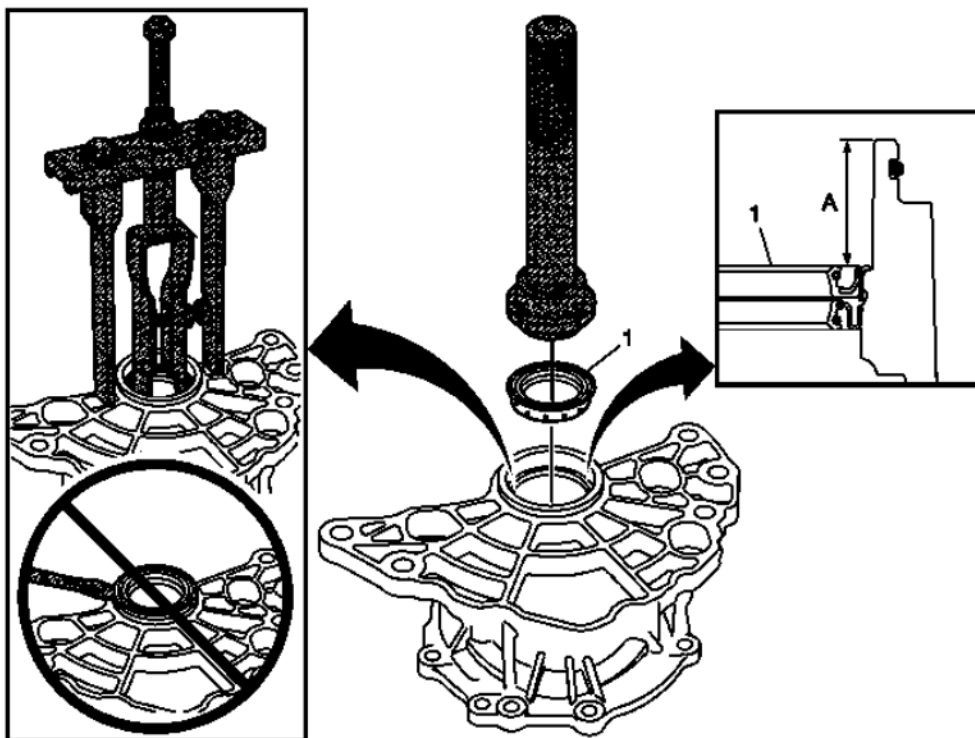


Fig. 36: Identifying Input Shaft Seal - Left
 Courtesy of GENERAL MOTORS COMPANY

Input Shaft Seal Replacement - Left

Callout	Component Name
1	Transfer Case Input Shaft Seal - Left CAUTION: Do not use a screwdriver or punch to remove or install the seal. Using a screwdriver or punch to remove or install the seal may damage the aluminum housing sealing surface. Procedure - Lightly lubricate the outer diameter (OD) of the seal with clean gear lube prior to installation. - To ensure proper alignment and depth of the seal, take four measurements every 90 degrees around the seal circumference, verifying uniform depth. The distance from the top face of the machined surface of the bore to the metal flange of the seal should be 24.3 ± 0.1 mm (0.957 ± 0.004 in). Failure to follow these instructions will result in replacement seal failure. NOTE: Alignment of seal is critical and use of correct tool is necessary. The machined surface of the bore must be clean and free from scratches or nicks.

Special Tools

- **DT-48074** Input and Output Shaft Seal Installer
- **J-8092** Driver Handle
- **DT-26941/KM-J-26941** Bushing and Bearing Remover - 3-4 in
- **DT-45124** Removal Bridge

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

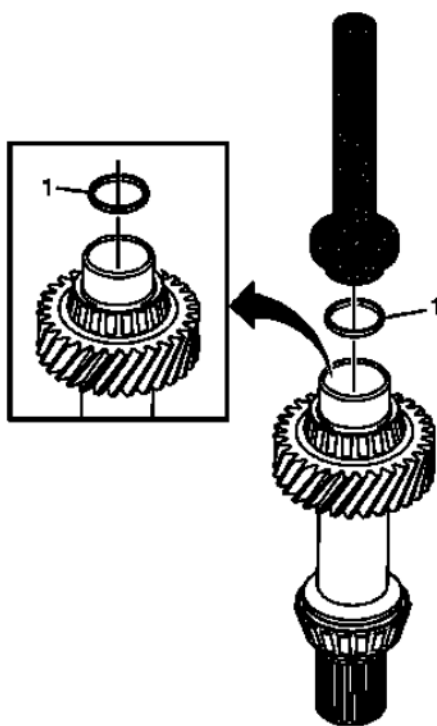
FRONT DRIVE AXLE INNER SHAFT SEAL REPLACEMENT

Fig. 37: Locating Front Drive Axle Inner Shaft Seal

Courtesy of GENERAL MOTORS COMPANY

Front Drive Axle Inner Shaft Seal Replacement

Callout	Component Name
1	Front Drive Axle Intermediate Shaft Seal Assembly NOTE: DT-48078 seal installer seats the seal to a specific depth. Other installation methods may set the seal to a non-functional depth. Special Tools

- **DT-48078** Inner Drive Shaft Seal Installer
- **J 8092** Universal Driver

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

INPUT SHAFT AND REAR OUTPUT DRIVE SHAFT CLEANING AND INSPECTION

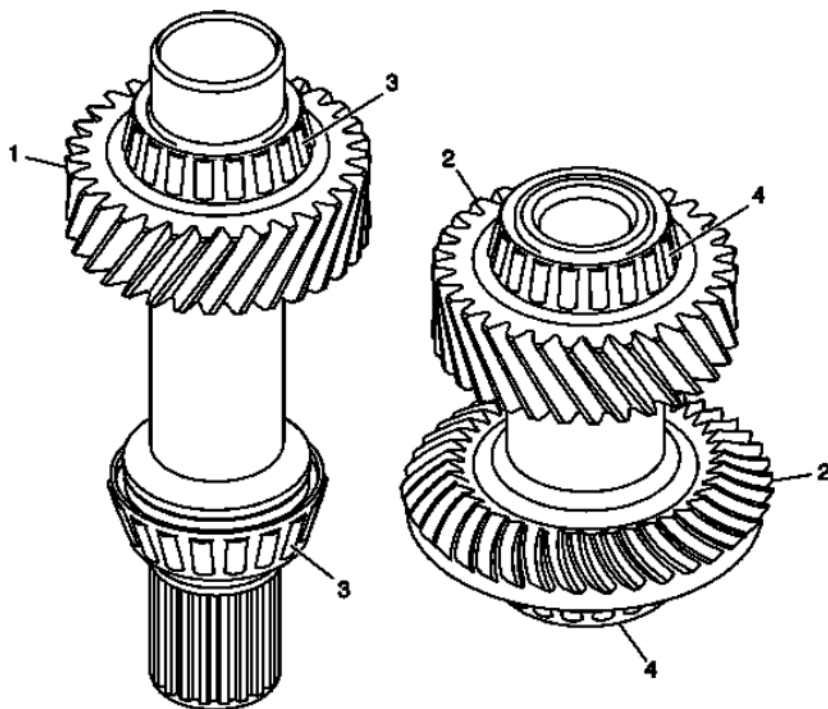


Fig. 38: Identifying Input Shaft & Rear Output Drive Shaft Components
Courtesy of GENERAL MOTORS COMPANY

Input Shaft and Rear Output Drive Shaft Cleaning and Inspection

Callout	Component Name
Preliminary Procedures	
1. Clean all components in cleaning solvent and air dry. 2. The transfer case internal components are not to be serviced. If internal components other than seals are damaged, the transfer case must be replaced.	
1	Transfer Case Input Shaft Gear NOTE: Inspect for pitting, excessive wear or damage.
	Transfer Case Rear Output Drive Shaft Gear

2	NOTE: Inspect for pitting, excessive wear or damage.
3	Transfer Case Input Shaft Bearing Assembly NOTE: Inspect bearings for roughness, spalling or pitting.
4	Transfer Case Rear Output Drive Shaft Bearing Assembly NOTE: Inspect bearings for roughness, spalling or pitting.

TRANSFER CASE ASSEMBLE

Intermediate Drive Shaft Assembly

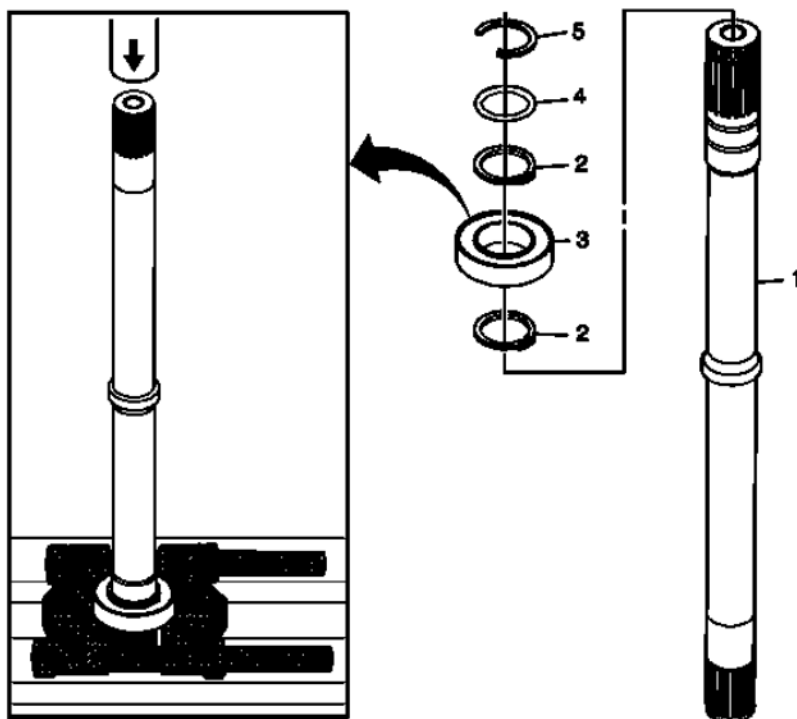


Fig. 39: View Of Intermediate Drive Shaft Components
Courtesy of GENERAL MOTORS COMPANY

Intermediate Drive Shaft Assembly

Callout	Component Name
1	Front Wheel Drive Intermediate Shaft
2	Front Wheel Drive Intermediate Shaft Bearing Retainer (Qty: 2)
	Front Wheel Drive Intermediate Shaft Bearing Assembly
	Procedure

3	Use a press, with the DT-22912-B/KM-307-B Rear Pinion and Axle Bearing Remover flat side up, in order to install the bearing assembly. Special Tools DT-22912-B/KM-307-B Rear Pinion and Axle Bearing Remover For equivalent regional tools, refer to Special Tools .
4	O-ring
5	Half Shaft Retainer

Rear Output Shaft Housing Assembly

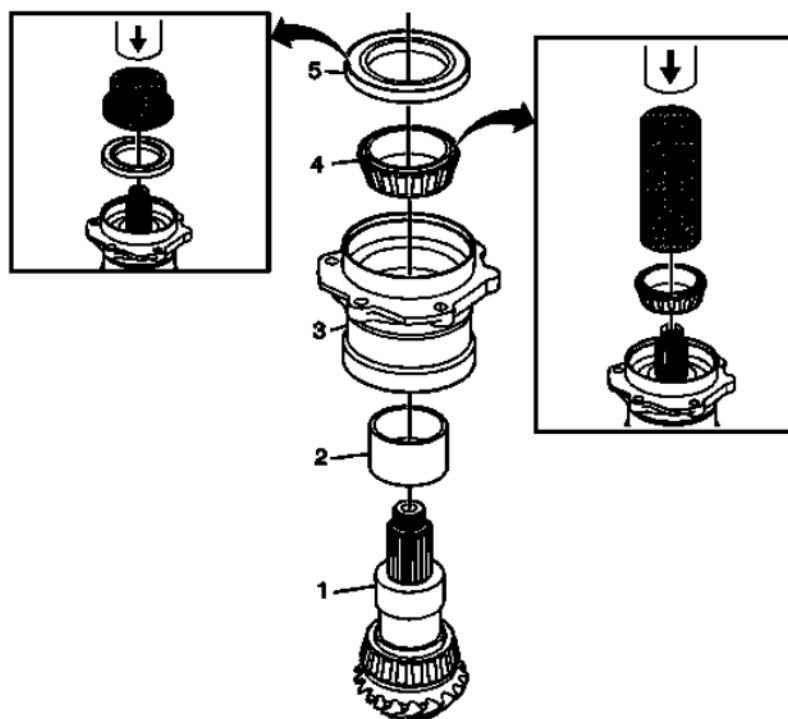


Fig. 40: Identifying Rear Output Shaft Housing Components
Courtesy of GENERAL MOTORS COMPANY

Rear Output Shaft Housing Assembly

Callout	Component Name
1	Transfer Case Rear Output Shaft
2	Transfer Case Rear Output Shaft Bearing Spacer
3	Transfer Case Rear Output Shaft Housing
4	Transfer Case Rear Output Shaft Bearing Assembly Procedure Use a press with the J-5590 Pinion Bearing Race Installer - Rear to install the housing and bearings to the output shaft. Special Tools J-5590 Pinion Bearing Race Installer - Rear For equivalent regional tools, refer to Special Tools .

- 5 Transfer Case Rear Output Shaft Seal
Procedure
 Use a press with the **DT-48075** Output Shaft Seal Installer to install the seal.
Special Tools
DT-48075 Output Shaft Seal Installer
 For equivalent regional tools, refer to **Special Tools**.

Output Flange Installation

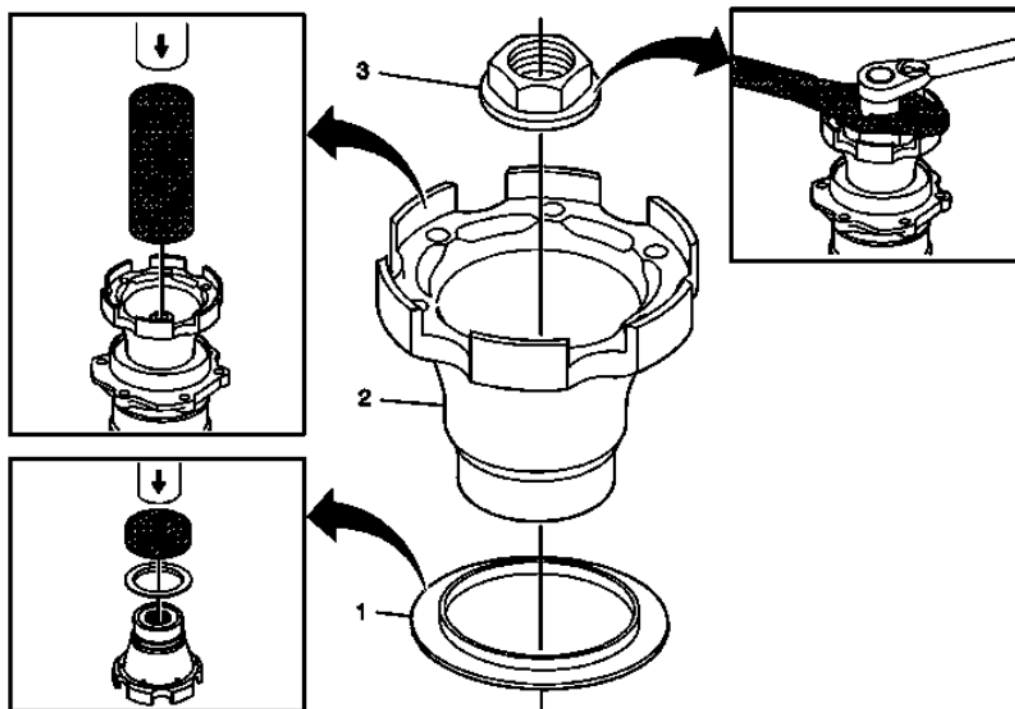


Fig. 41: Exploded View Of Output Flange Components
 Courtesy of GENERAL MOTORS COMPANY

Output Flange Installation

Callout	Component Name
1	Transfer Case Rear Output Shaft Oil Slinger Procedure Use a press with the DT-48077 Output Shaft Slinger Installer in order to install the slinger. Special Tools DT-48077 Output Shaft Slinger Installer For equivalent regional tools, refer to Special Tools .
2	Transfer Case Rear Output Shaft Flange Procedure Use a press with the J-5590 Pinion Bearing Race Installer - Rear to install the flange. Special Tools J-5590 Pinion Bearing Race Installer - Rear

	For equivalent regional tools, refer to Special Tools .
3	Transfer Case Rear Output Shaft Nut CAUTION: Refer to Fastener Caution . Procedure • The rear output shaft nut is supplied with a dry retaining compound patch. If reusing the nut, apply GM P/N 12345382 (Canadian P/N 10953489) to the threads. • Use the J-08614-A Pinion Flange Holder and Remover and a 30 mm socket or the EN-29873 Injector Nozzle Socket 30 mm. Tighten 235 (173 lb ft) Special Tools • J-08614-A Pinion Flange Holder and Remover • EN-29873 Injector Nozzle Socket 30 mm For equivalent regional tools, refer to Special Tools.

Right Transfer Case, Input Shaft and Output Drive Shaft Installation

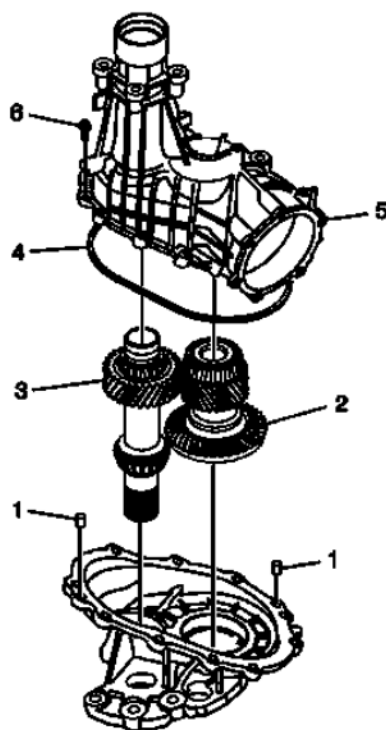


Fig. 42: View Of Right Transfer Case, Input Shaft & Output Drive Shaft
 Courtesy of GENERAL MOTORS COMPANY

Right Transfer Case, Input Shaft and Output Drive Shaft Installation

Callout	Component Name
1	Transfer Case Half Locating Pin (Qty: 2)
2	Transfer Case Input Shaft NOTE: Install the input and output shafts as a set with the splines engaged.
3	Transfer Case Rear Output Drive Shaft
4	Transfer Case Seal to the Transfer Case - Right
5	Transfer Case - Right
6	Transfer Case Half Bolt (Qty: 11) CAUTION: Refer to <u>Fastener Caution</u> Tighten 29 (21 lb ft)

Rear Output Shaft Housing Installation

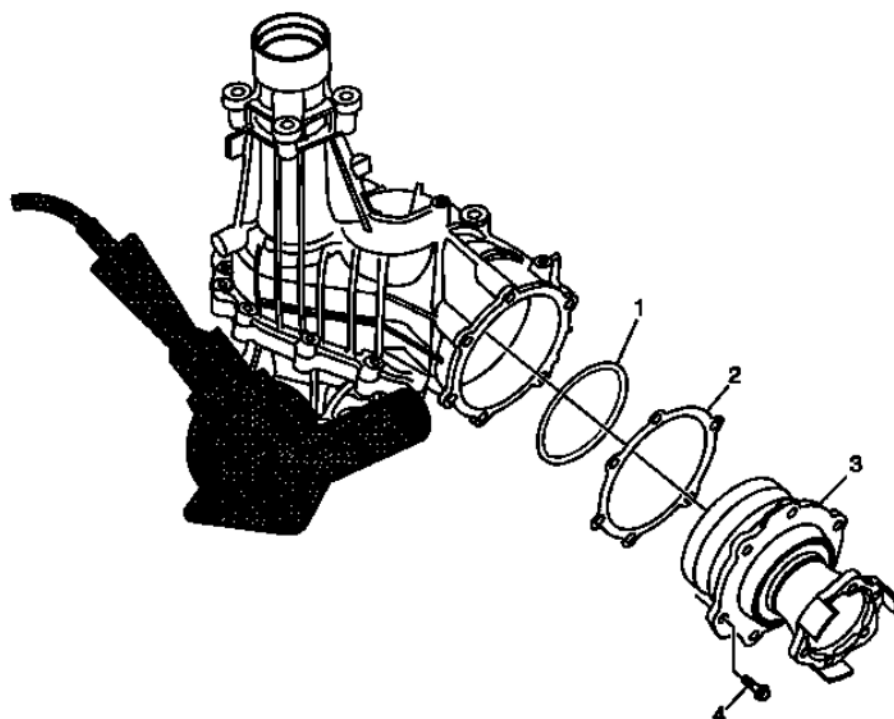


Fig. 43: Identifying Rear Output Shaft Housing
 Courtesy of GENERAL MOTORS COMPANY

Rear Output Shaft Housing Installation

Callout	Component Name
1	Transfer Case Rear Output Shaft Housing Seal O-ring
2	Transfer Case Rear Output Shim
3	Transfer Case Rear Output Shaft Housing CAUTION: Do not use a drive hammer when the splines are not engaged. Use of a drive hammer when the splines are not engaged will damage the output shaft teeth. NOTE: • Use of a heat gun allows easy alignment of the bolt holes to the housing during assembly. • Rotate the pinion gear during assembly to engage the gear teeth. Special Tools EL-25070 Heat Gun - 500-750°F For equivalent regional tools, refer to Special Tools .
	Transfer Case Rear Output Shaft Housing Bolt (Qty: 6)

4

CAUTION:
Refer to Fastener Caution .

Tighten
29 (21 lb ft)

Intermediate Drive Shaft Installation

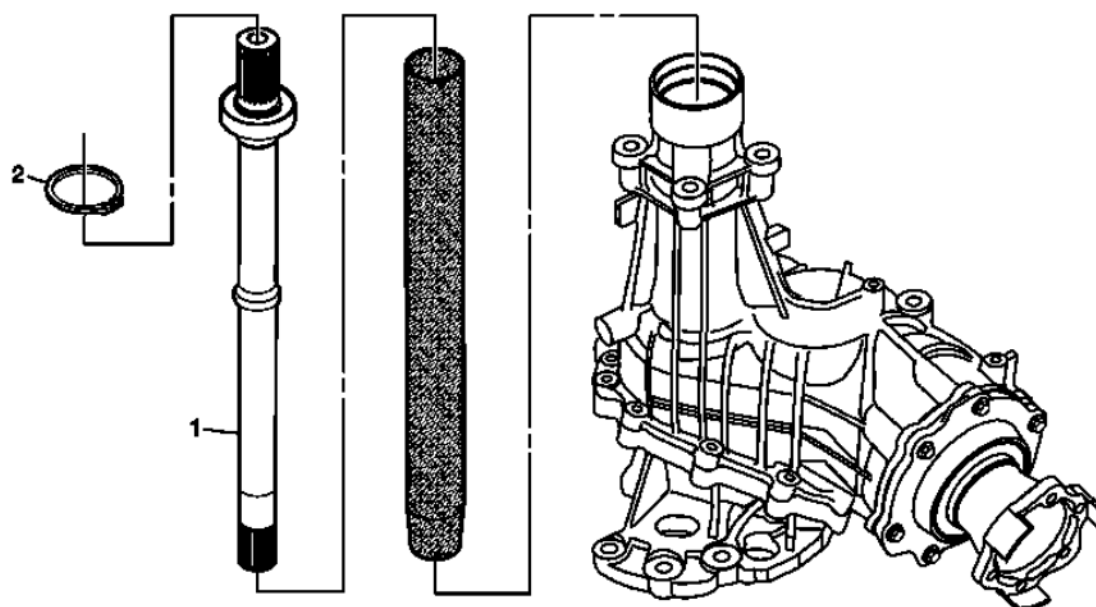


Fig. 44: View Of Intermediate Drive Shaft
Courtesy of GENERAL MOTORS COMPANY

Intermediate Drive Shaft Installation

Callout	Component Name
1	Front Wheel Drive Intermediate Shaft CAUTION: DT-48094 must be used over the intermediate shaft prior to installation in order to protect the intermediate shaft seal from damage. Special Tools DT-48094 Inner Drive Shaft Seal Protector For equivalent regional tools, refer to <u>Special Tools</u>.
2	Front Wheel Drive Retainer

Housing O-Ring, Vent Assembly, Drain and Fill Plug Installation

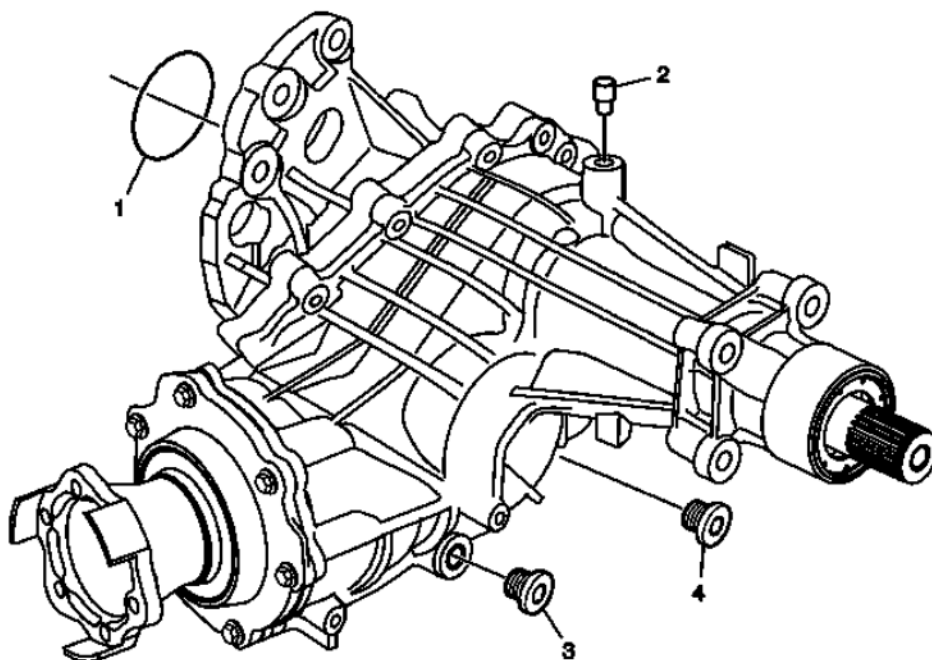


Fig. 45: View Of Transfer Case Housing O-Ring, Vent Assembly, Drain & Fill Plugs
 Courtesy of GENERAL MOTORS COMPANY

Housing O-ring, Vent Assembly, Drain and Fill Plug Installation

Callout	Component Name
1	Transfer Case O-ring Seal
2	Transfer Case Vent Assembly NOTE: Replace the vent if damaged or blocked.
3	Drain Plug CAUTION: Refer to <u>Fastener Caution</u> . Tighten 39 (29 lb ft)
4	Fill Plug Tighten 39 (29 lb ft)

DESCRIPTION AND OPERATION

TRANSFER CASE DESCRIPTION AND OPERATION

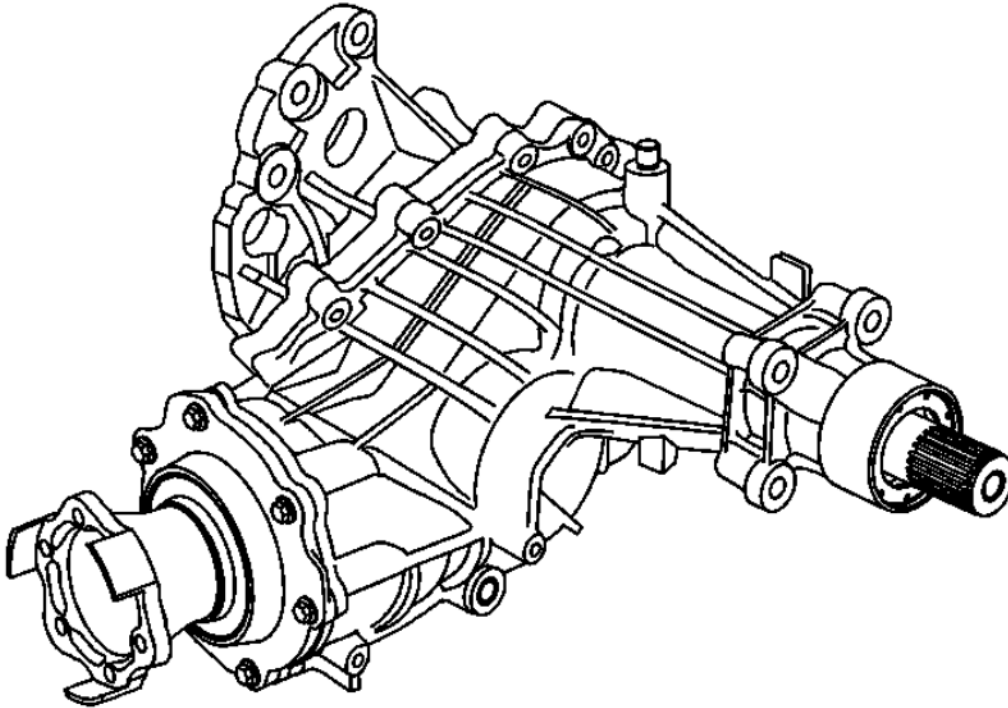


Fig. 46: Identifying Transfer Case
Courtesy of GENERAL MOTORS COMPANY

The transfer case in this vehicle consists of an aluminum housing with input helical gear, output driven helical gear, ring and pinion hypoid gear set and an intermediate drive shaft.

The transfer case transfers torque/power to the on-demand rear differential through a prop shaft assembly.

The on-demand rear differential distributes variable torque/power to the rear wheels through individual axle shafts.

Within the rear differential assembly is an active on-demand coupling system.

The on-demand system rear differential control module monitors wheel speed, vehicle speed, wheel slippage and other variables. The module directs the rear differential to distribute torque to the rear wheels as required.

Typical conditions when torque is applied are during vehicle launches, even without wheel slip and when there is front wheel slippage relative to the rear wheels. The amount of torque depends on the vehicle speed and the amount of wheel slippage.

NEW PRODUCT INFORMATION

The purpose of New Product Information is to document, important product changes which occur either model year-to-model year or interim model year.

Changes may include one or more of the following items:

- Specification changes
- New sealants and/or adhesives
- Disassembly and assembly procedure revisions
- Mechanical and diagnostic procedure revisions
- New special tools required
- Interim model year design changes
- A component comparison from the previous model year

TRANSFER CASE IDENTIFICATION

Identification Tag Marking



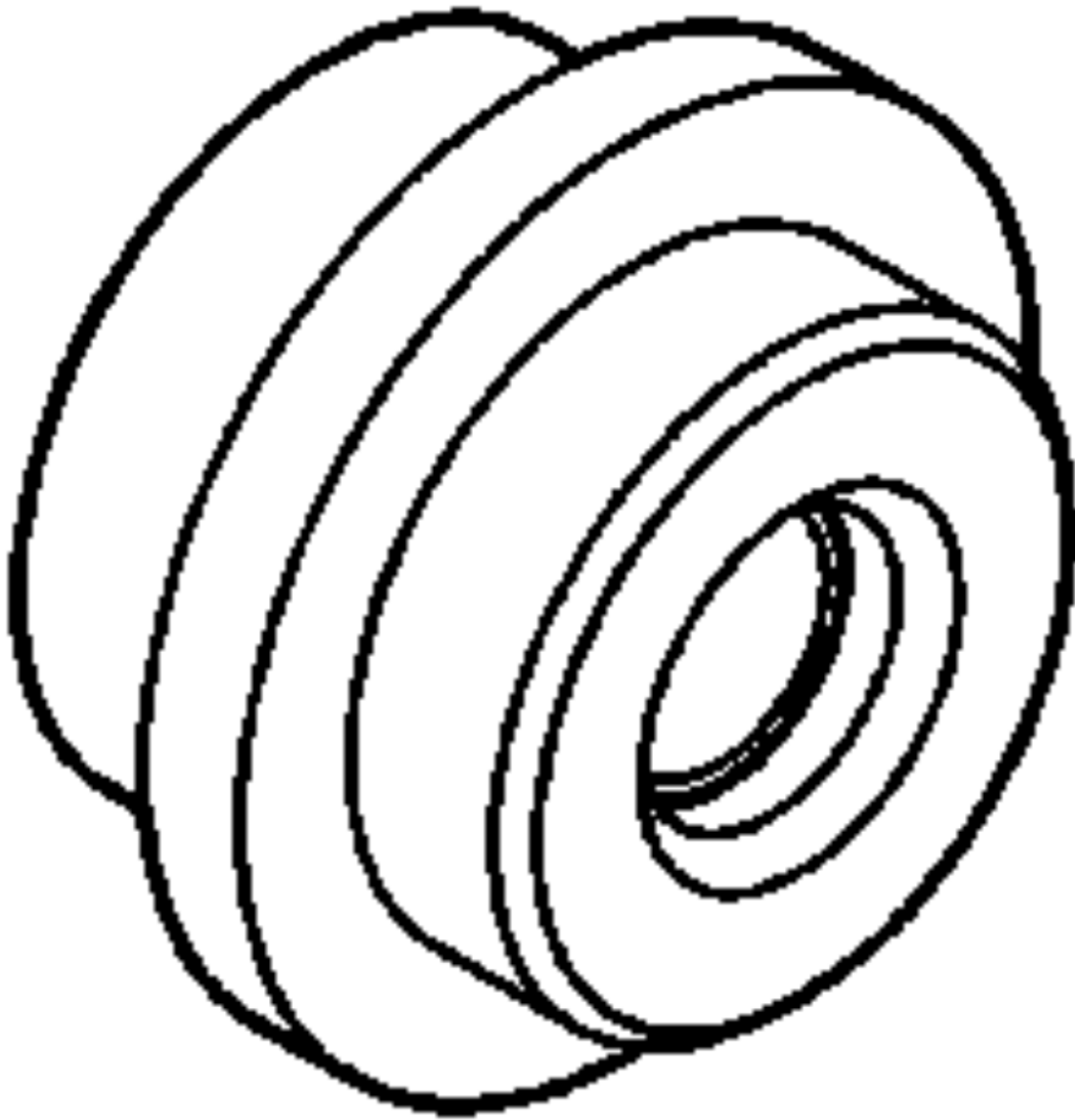
Fig. 47: Identification Tag Marking
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	GM Part Number
2	Getrag Serial Number

SPECIAL TOOLS AND EQUIPMENT

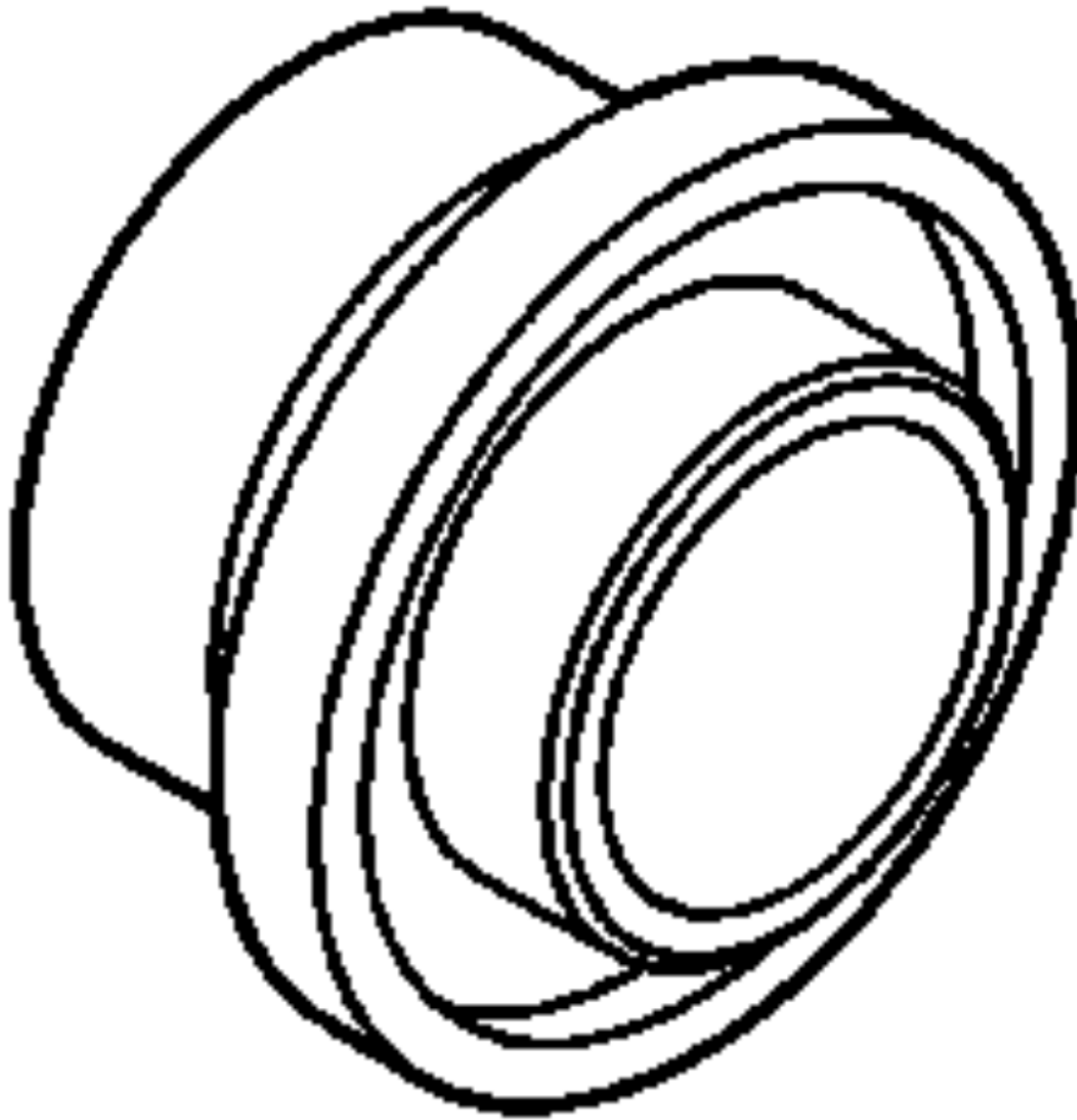
SPECIAL TOOLS

Illustration	Tool Number/Descrip



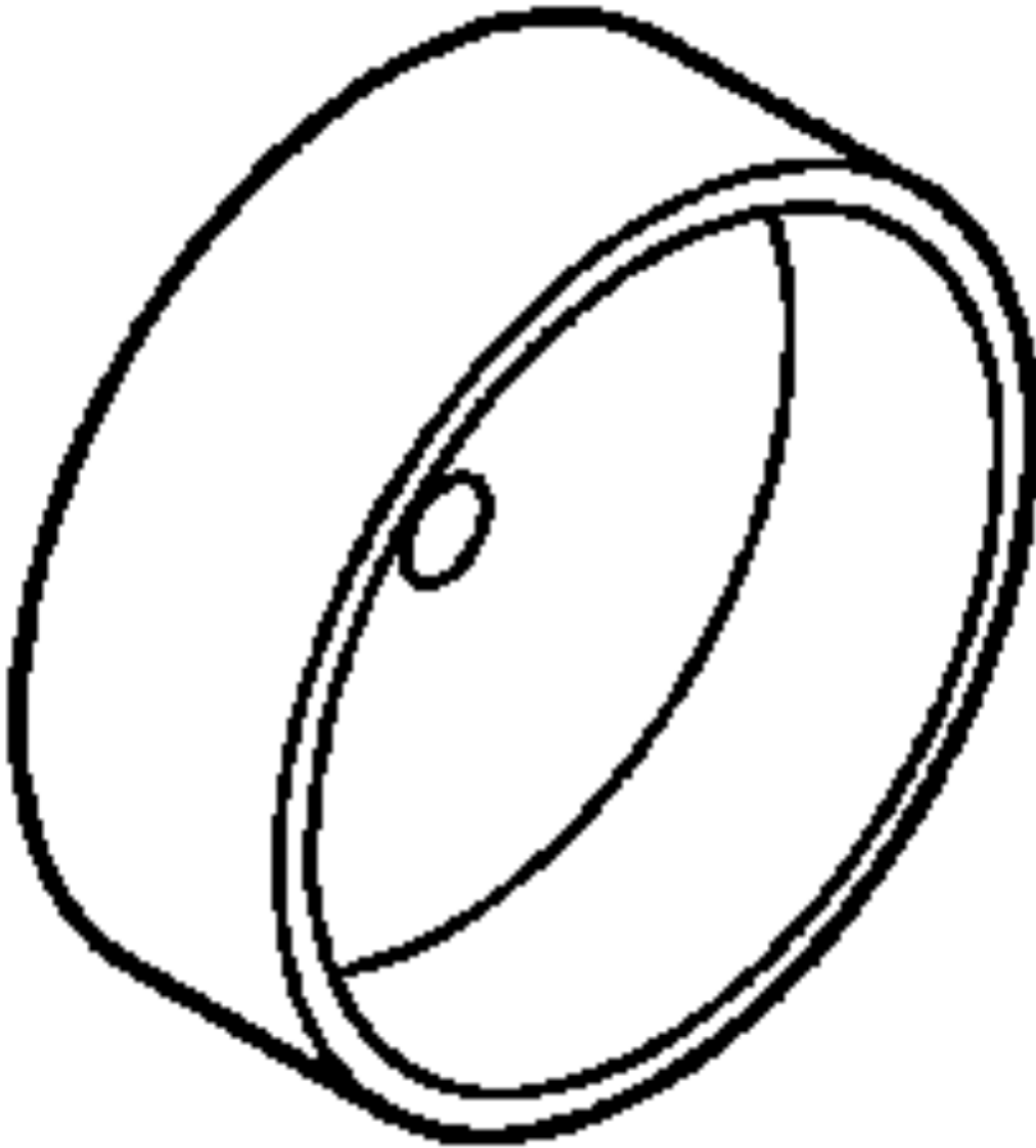
DT-48074
Input and Output
Shaft Seal Instal

cardiaqn.com



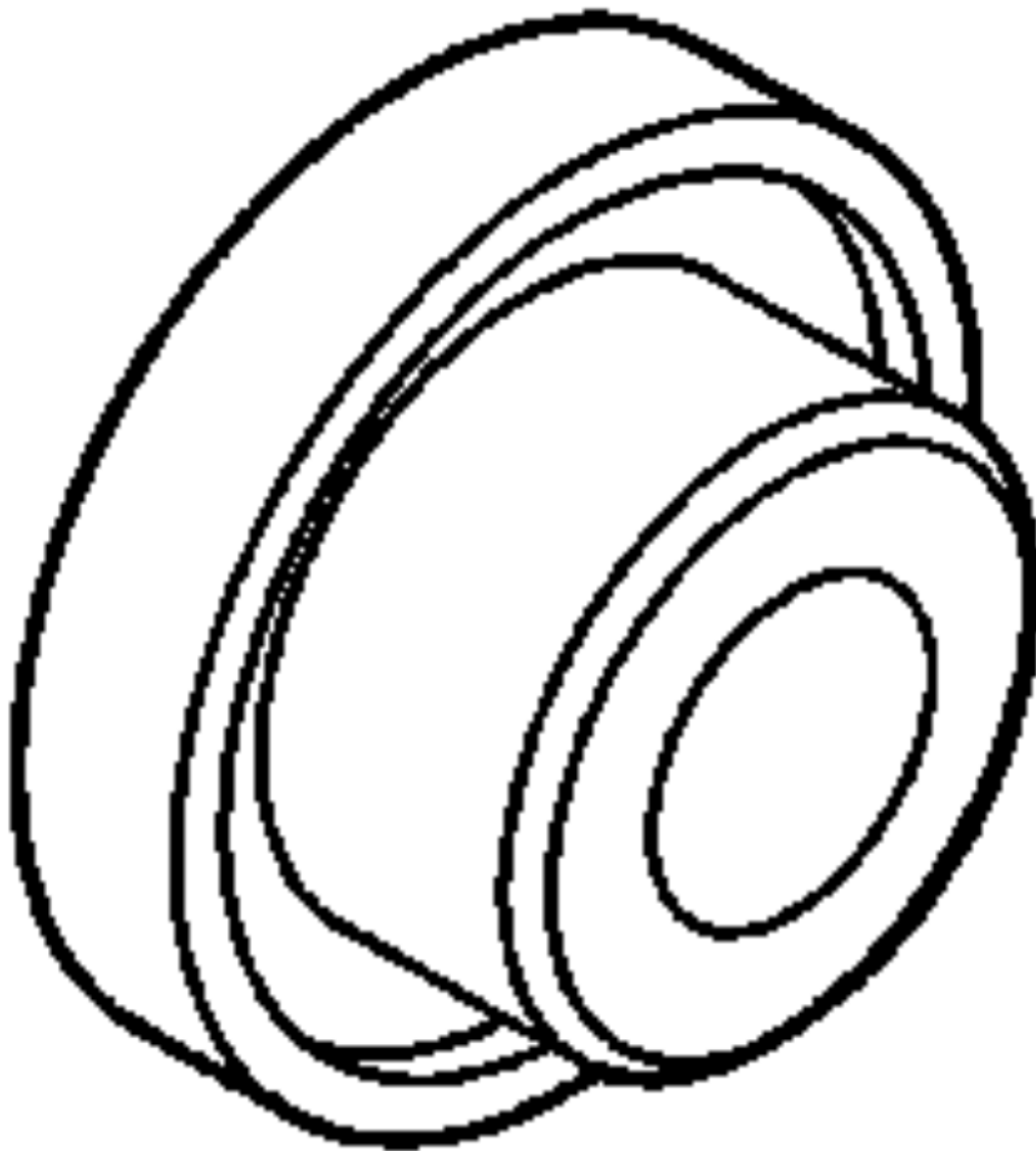
DT-48075
Output Shaft Se
Installer

cardiaqn.com



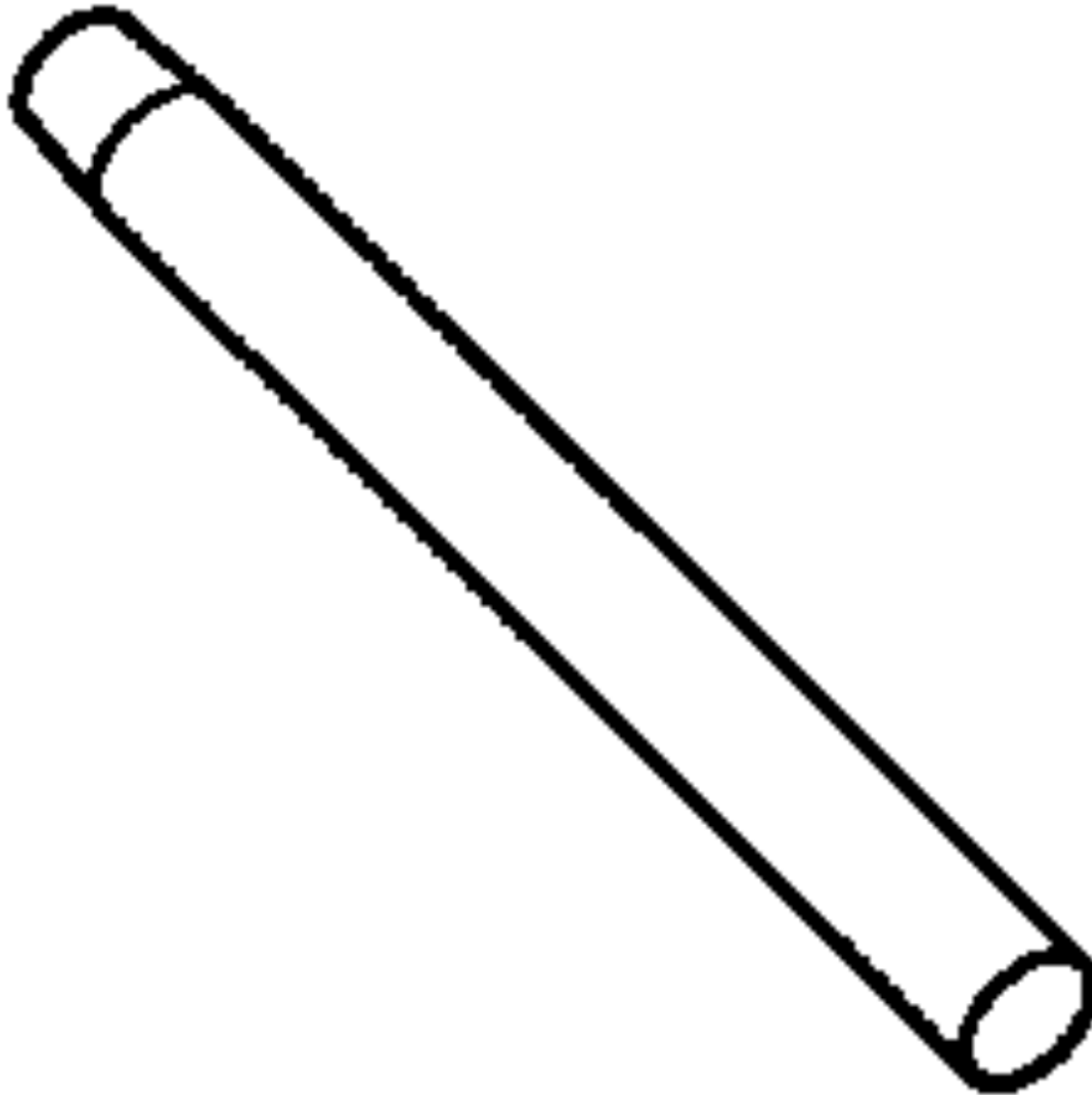
DT-48077
Output Shaft Spline
Installer

cardiaqn.com



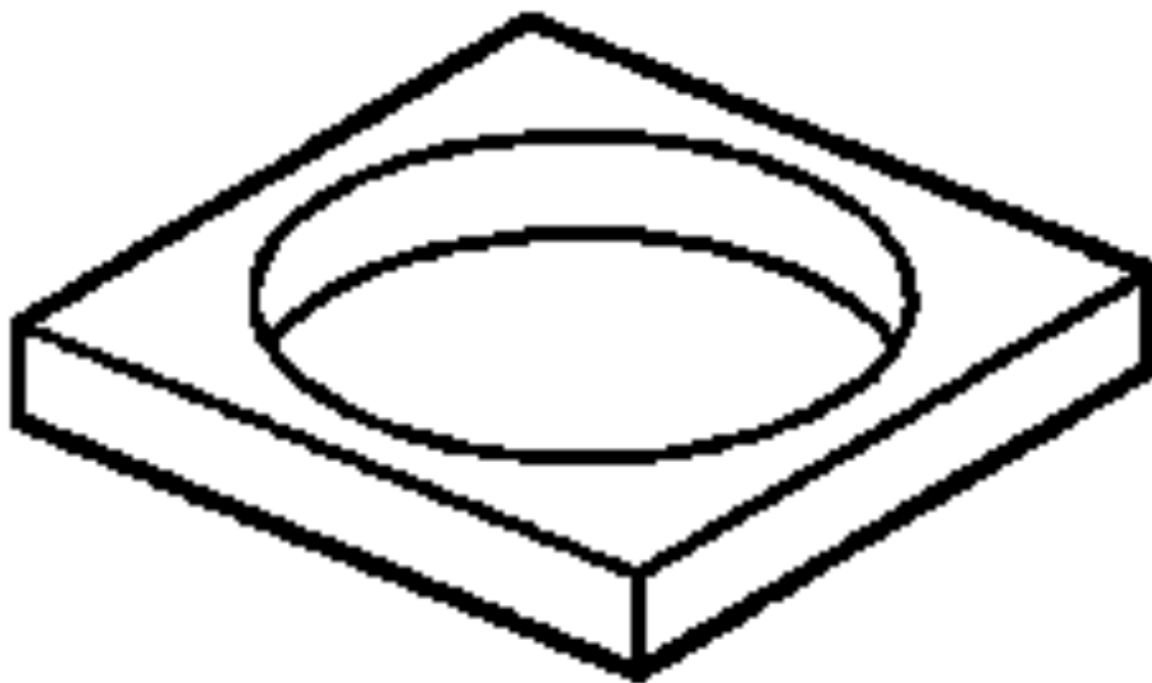
DT-48078
Inner Drive Shaft
Seal Installer

cardiaqn.com



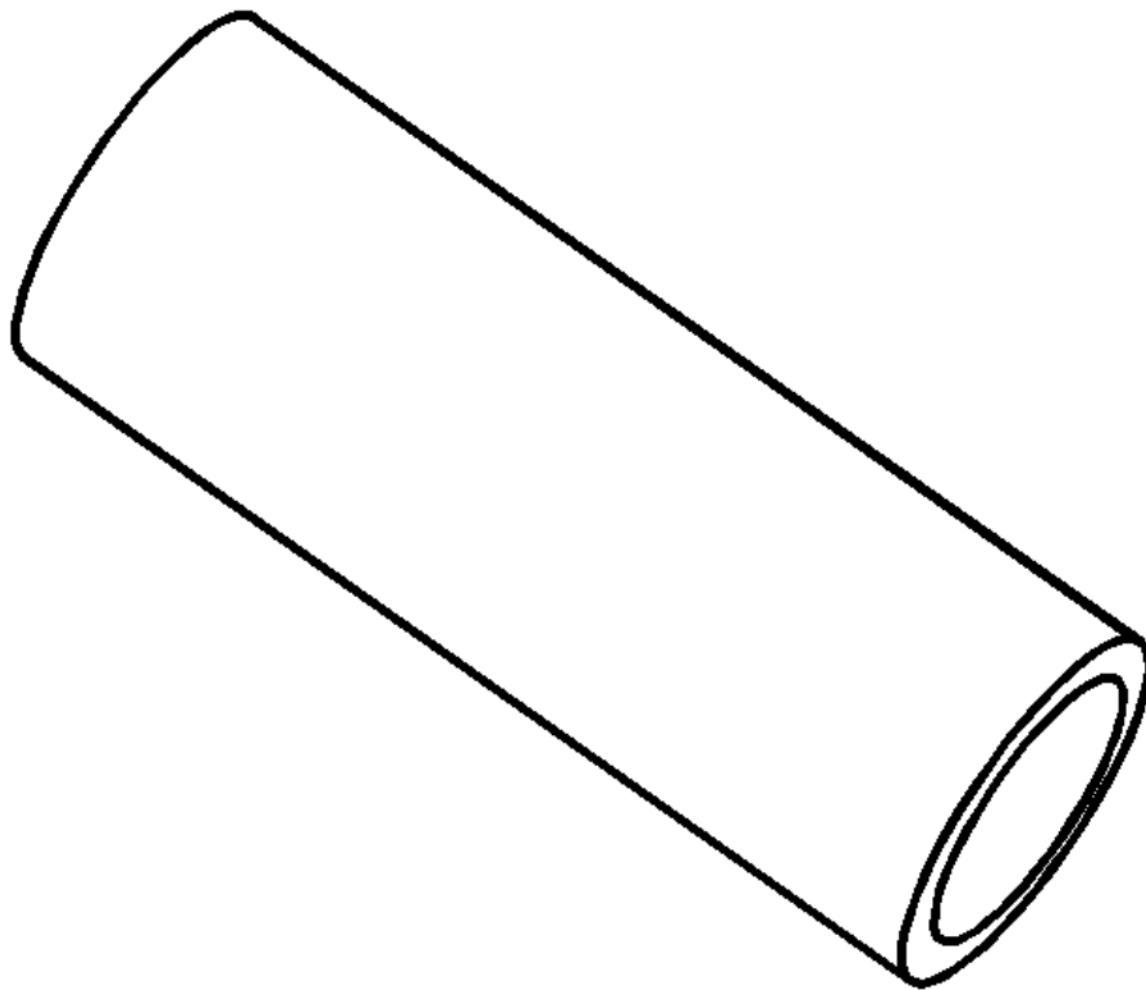
DT-48094
Inner Drive Shaft
Seal Protector

cardiaqn.com



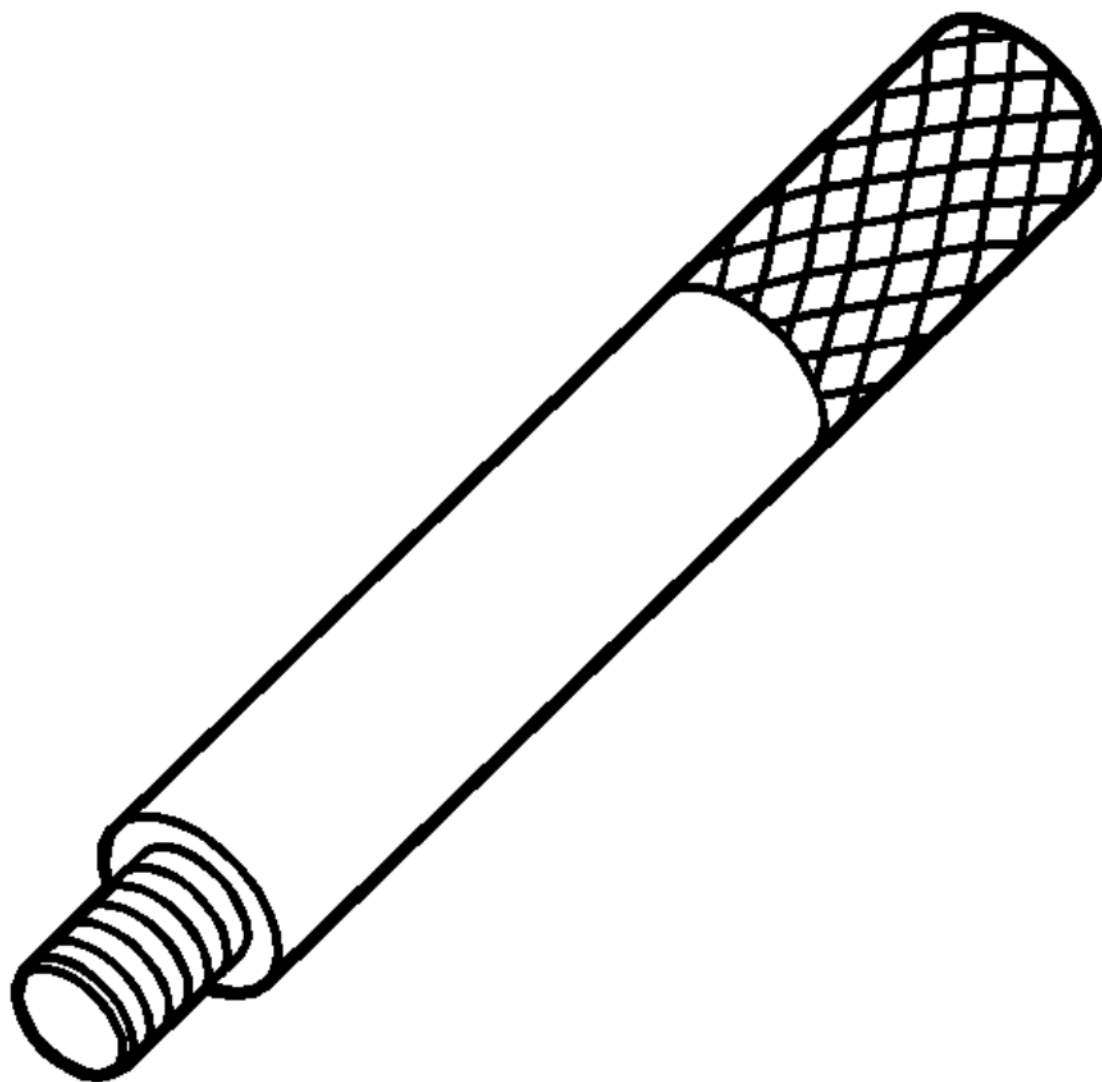
DT-48145
Press Support

cardiaqn.com



J 5590
Pinion Bearing R
Installer - Rea

cardiaqn.com



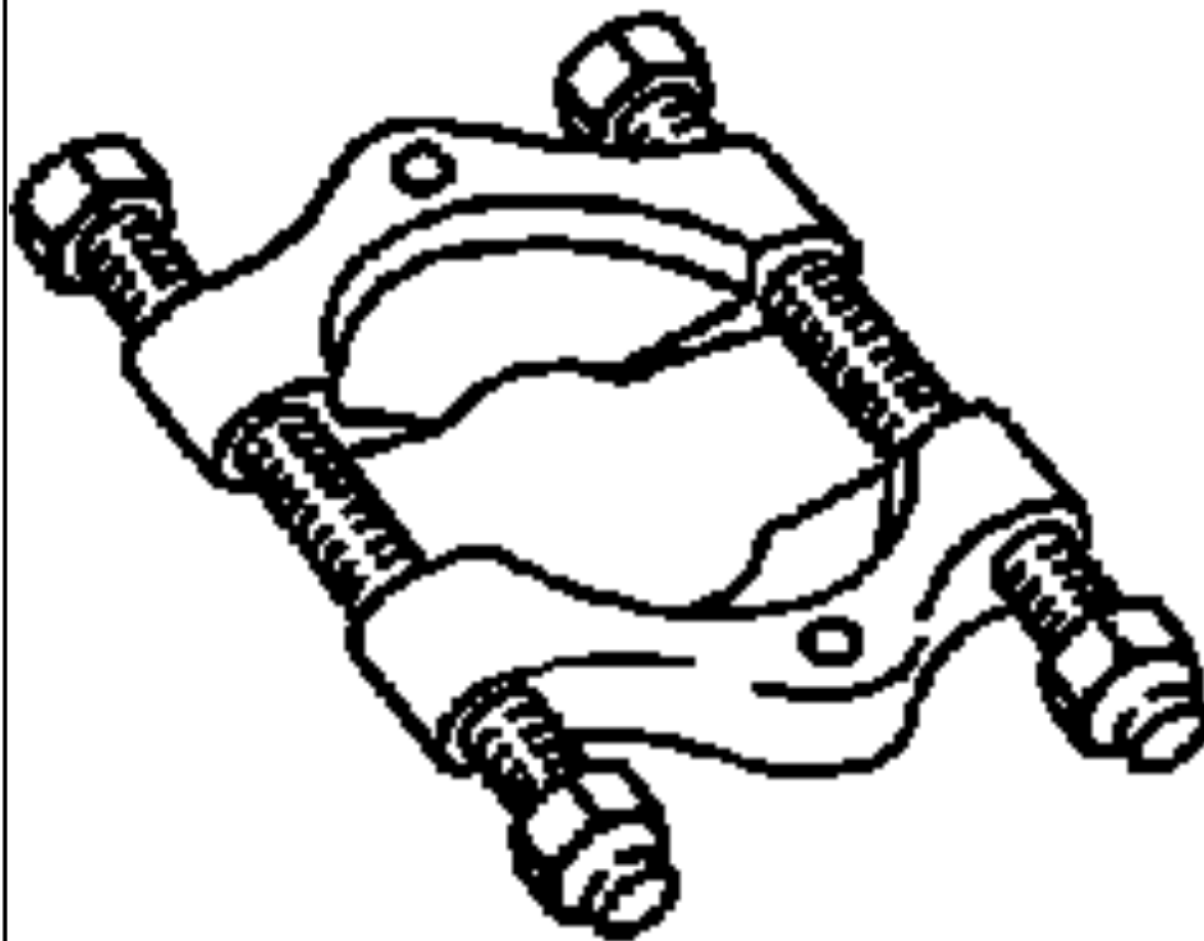
J 8092
Driver Handle

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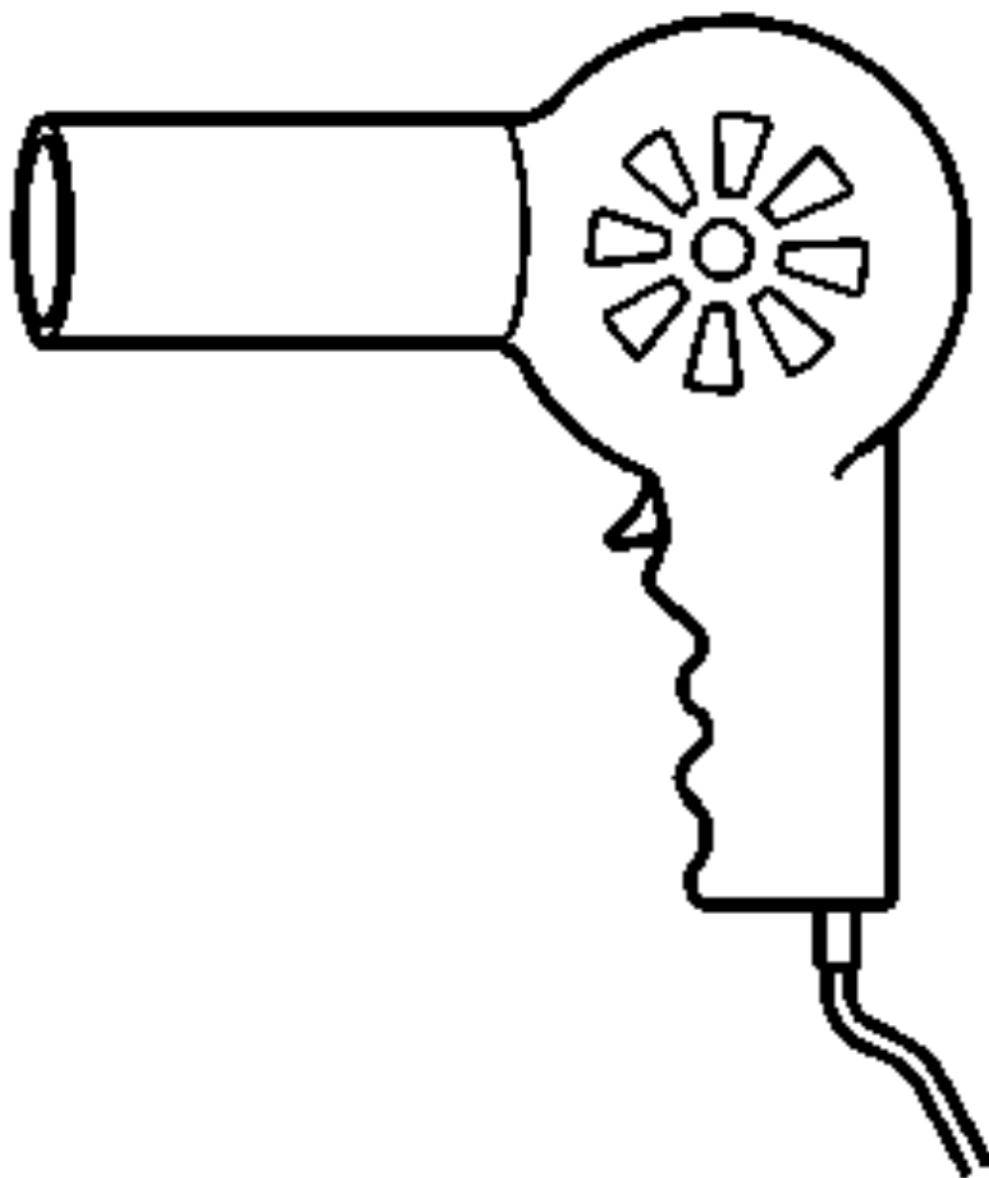
J-08614-A
Pinion Flange Ho
and Remover

cardiaqn.com



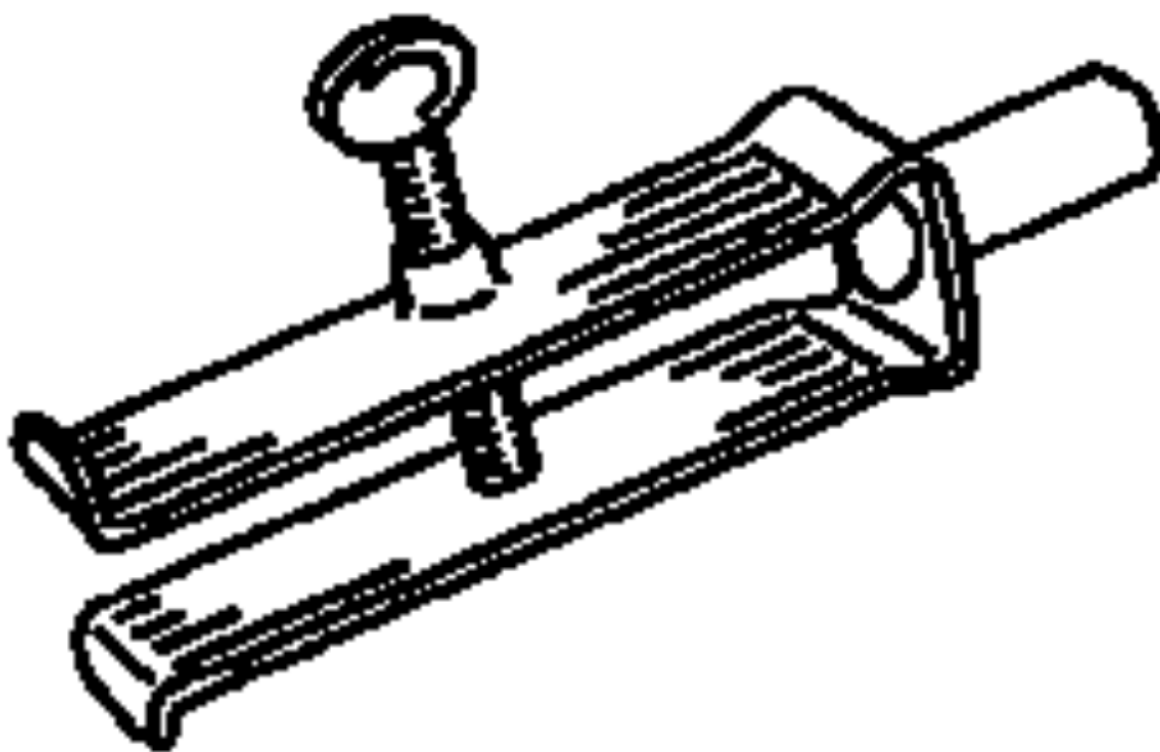
DT-22912-B
J 22912-B
KM-307-B
Rear Pinion and /
Bearing Remov

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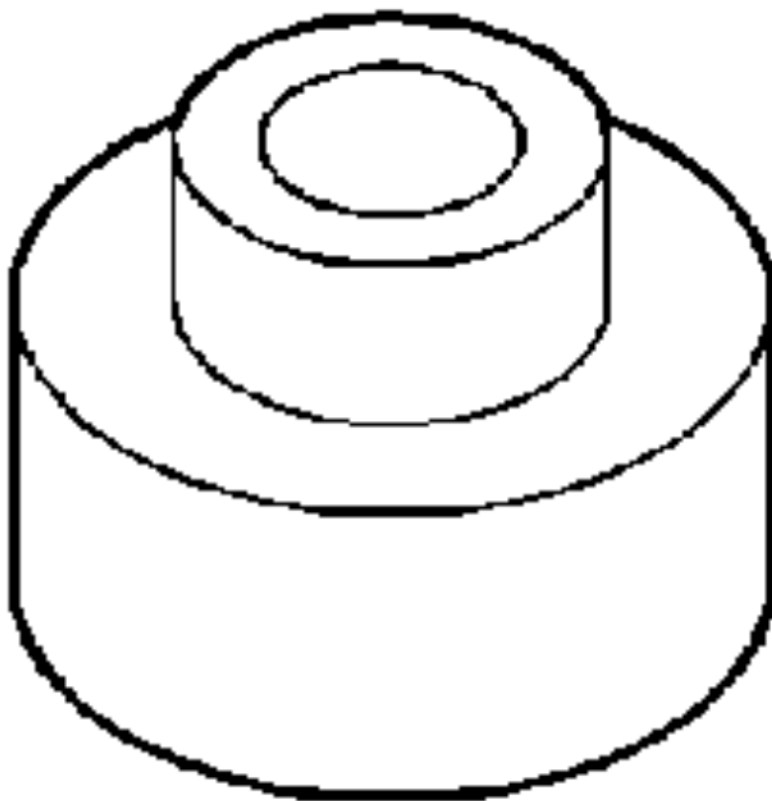


EL-25070
J 25070
Heat Gun - 500-7
F

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DT 26941
J 26941
KM-J 26941
Bushings and Bearings
Remover - 3-4



GE 28431-6
J 28431-6
Fluorescent Oil L
6 1-oz

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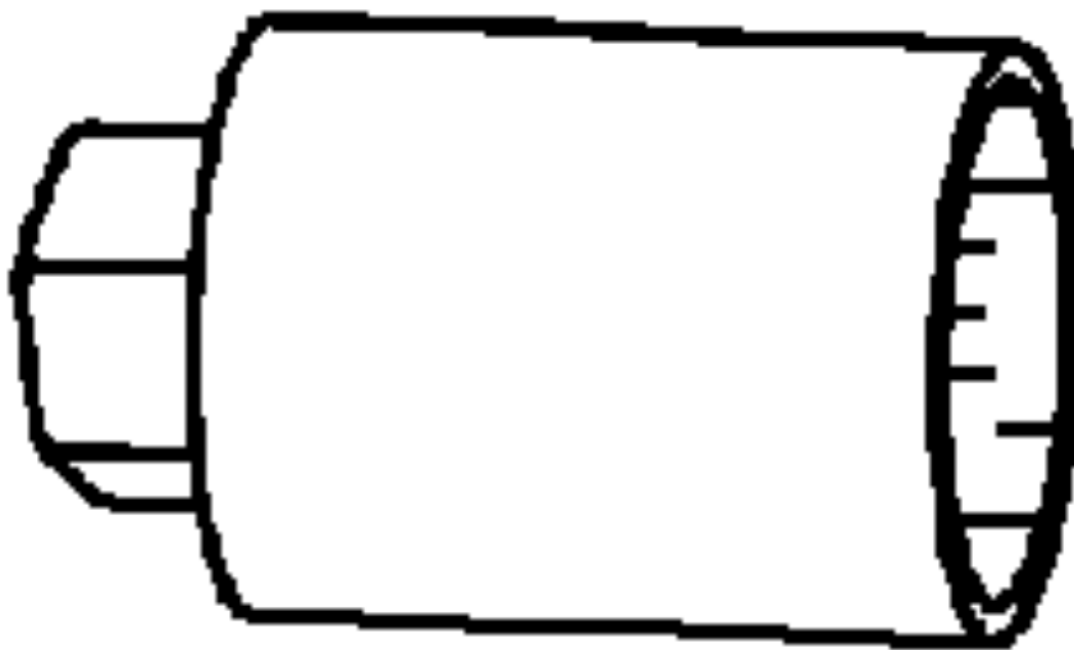
2014 GMC Acadia Denali

2014 TRANSMISSION Transfer Case - Getrag 790 - Acadia, Enclave And Traverse



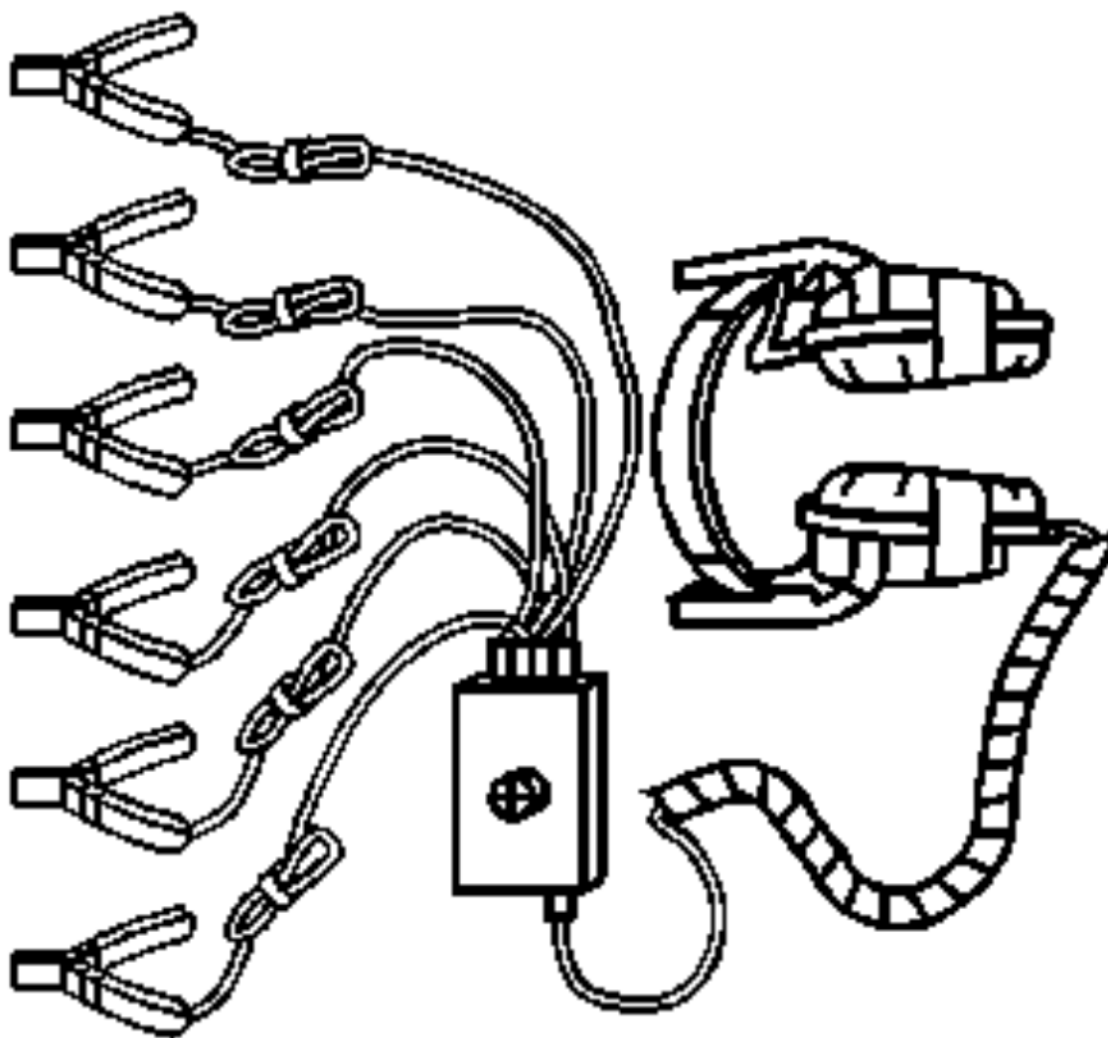
GE 28428-E
J 4220
J 28428-E
High-Intensity Bl
Light Kit

cardiaqn.com



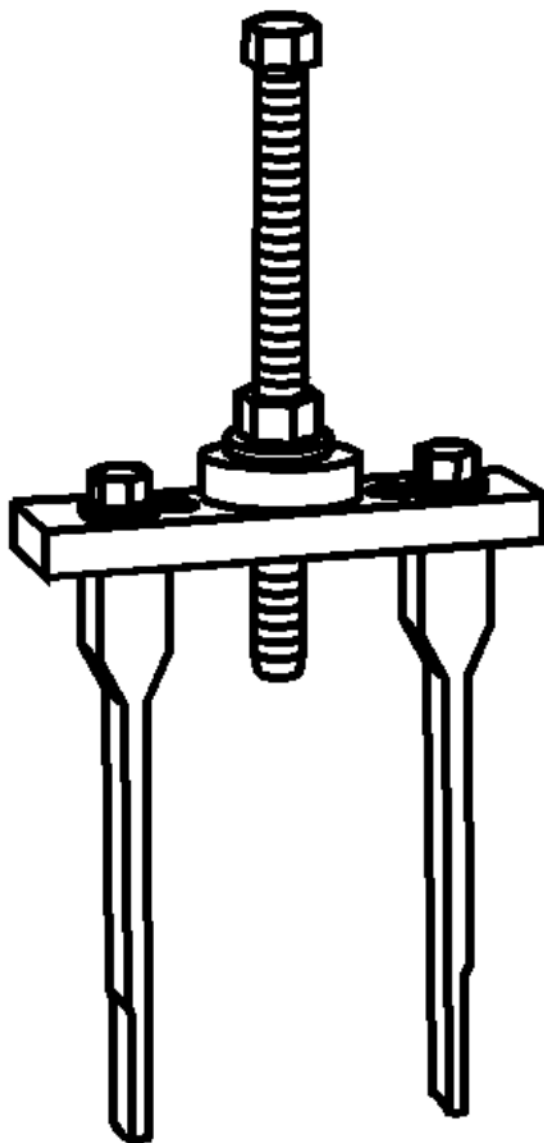
EN 29873
J 29873
Injector Nozzle
Socket 30 mm

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CH 39570
J 39570
Chassis Ears

cardiaqn.com



DT 45124
J 45124
Removal Bridge

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