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Rear rive A le SRX

SPECI ICATIONS

FASTE ER TIGHTE I G SPECIFICATIO S

Application	Specification	
	Metric	English
Differential Case Bolts	45 N.m	33 lb ft
Differential Clutch Bolts	30 N.m	22 lb ft
Differential Clutch Control Module Bolts	6 N.m	53 lb in
Differential Clutch Cover Bolts	6 N.m	53 lb in
Differential Clutch Oil Inspection Plug	14 N.m	10 lb ft
Differential Clutch Pipe Connectors	7 N.m	62 lb in
Differential Clutch Pump Bolts	6 N.m	53 lb in
Differential Clutch Valve ousing	3 N.m	27 lb in
Differential Drain Plug	25 N.m	18 lb ft
Differential Fill Plug	25 N.m	18 lb ft
Propeller Shaft Flange Nut	100 N.m	74 lb ft
Rear Axle Assembly Bolts	40 N.m	30 lb ft 90 Degrees
Rear Axle Bolts	30 N.m	22 lb ft

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Application	uantity		GM Part umber
	Metric	English	
Differential Clutch Without Limited Slip Differential Clutch	0.52 liters	0.55 quarts	Refer to appropriate Electronic Parts Catalogue
Differential Clutch With Limited Slip Differential Clutch	0.56 liters	0.59 quarts	Refer to appropriate Electronic Parts Catalogue
Limited Slip Differential Without Limited Slip Differential Clutch	0.6 liters	0.63 quarts	Refer to appropriate Electronic Parts Catalogue
Limited Slip Differential With Limited Slip Differential Clutch	0.65 liters	0.69 quarts	Refer to appropriate Electronic Parts Catalogue
Limited Slip Differential (Limited Slip Additive)	.05 liters	0.52 quarts	Refer to appropriate Electronic Parts Catalogue
Transfer Case	0.66 liters	0.70 quarts	Refer to appropriate Electronic Parts Catalogue

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Application	Type of Material	GM Part umber
Differential Clutch Cover Seal Lubricant	Grease	Refer to appropriate Electronic Parts Catalogue
Differential Clutch Fluid	Fluid	Refer to appropriate Electronic Parts Catalogue
Differential Rear Axle Fluid	Fluid	Refer to appropriate Electronic Parts Catalogue
Rear Differential Assembly Front Mounting Bolts	Threadlock	Refer to appropriate Electronic Parts Catalogue
Rear Axle Limited Slip Fluid	Fluid	Refer to appropriate Electronic Parts Catalogue
Transfer Case Fluid	Fluid	Refer to appropriate Electronic Parts Catalogue

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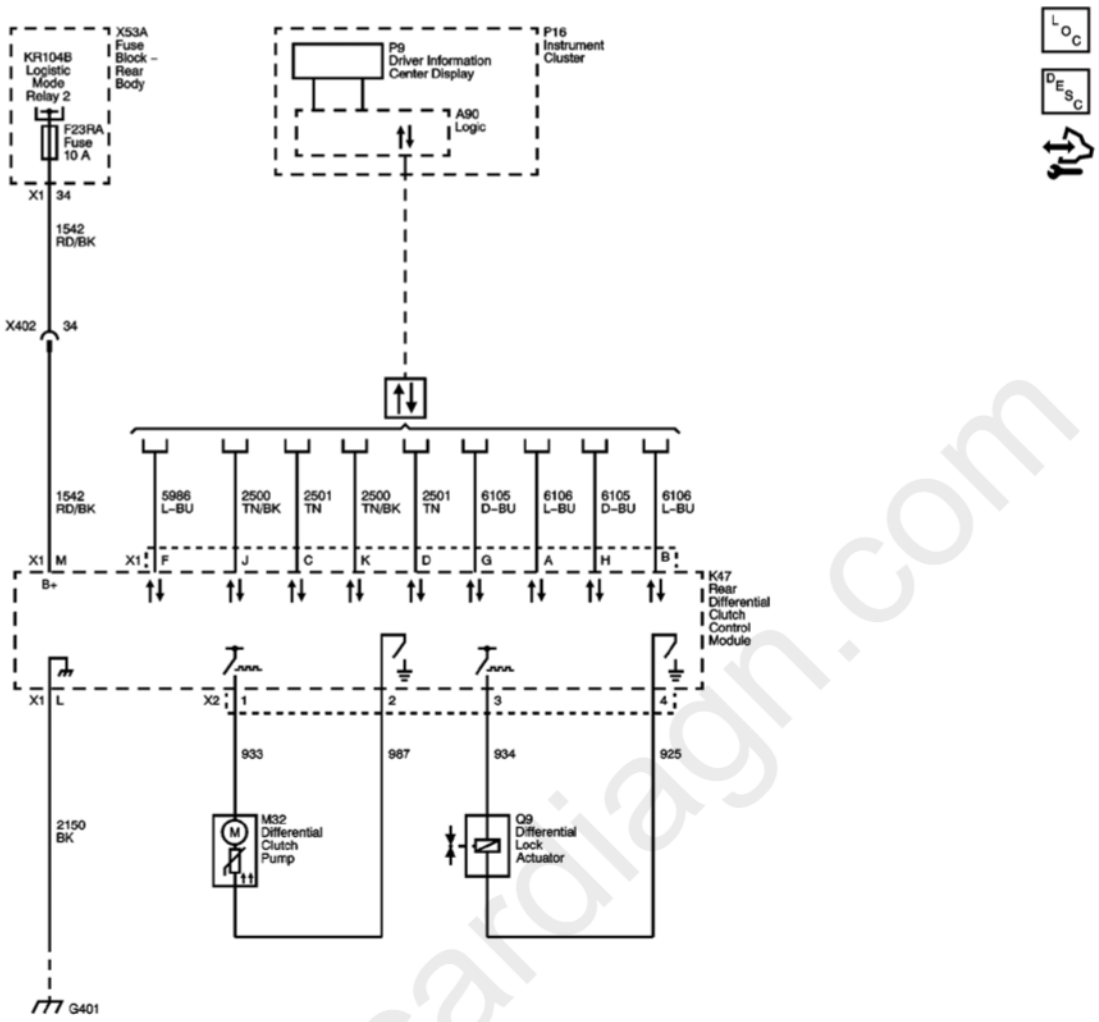


Fig 1 All Wheel Drive Circuit Schematic
Courtesy of GE ERAL MOTORS CORP

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DTC	Description
DTC C0393	C0393 0B: Rear Axle Coupling Solenoid Valve Control Circuit igh Current
DTC C039F	C039F 00: AWD Torque Signal
DTC C0402	C0402 02: Transfer Case Solenoid Valve Short to Ground C0402 04: Transfer Case Solenoid Valve Open C0402 42: Transfer Case Solenoid Valve Calibration Not Programmed C0402 43: Transfer Case Solenoid Valve EEPROM Incorrect

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	Programming C0402 4B: Transfer Case Solenoid Valve Calibration Not Learned C0402 61: Transfer Case Solenoid Valve Stuck
DTC C0403	C0403 62: AWD Oil Filter Reverse Valve Stuck Open
DTC C0406	C0406 0B: Transfer Case Solenoid Valve Control Circuit igh Current
DTC C040	C0407 02: AWD Oil Pump Motor Short to Ground C0407 04: AWD Oil Pump Motor Open C0407 0B: AWD Oil Pump Motor igh Current C0407 64: AWD Oil Pump Motor Component Slipping
DTC C040	C0408 02: Rear Axle Coupling Solenoid Valve Short to Ground C0408 04: Rear Axle Coupling Solenoid Valve Open C0408 42: Rear Axle Coupling Solenoid Valve Calibration Not Programmed C0408 43: Rear Axle Coupling Solenoid Valve EEPROM Incorrect Programming C0408 4B: Rear Axle Coupling Solenoid Valve Calibration Not Learned C0408 61: Rear Axle Coupling Solenoid Valve Stuck
DTC C0 4	C0574 02: Printed Circuit Board Temperature Sensor Short to Ground C0574 04: Printed Circuit Board Temperature Sensor Open C0574 13: Printed Circuit Board Temperature Sensor Low Voltage/ igh Temperature C0574 14: Printed Circuit Board Temperature Sensor igh Voltage/Low Temperature

DTC C0393

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC C0393 0B

Rear Axle Coupling Solenoid Valve Control Circuit igh Current

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Control	C0393 0B, C0408 02	C0408 04	-	C0408 61
Low Reference	-	C0408 04	-	-

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Circuit/System Description

The rear differential clutch solenoid valve is mounted on the rear of the differential housing. The rear differential clutch control module supplies battery voltage to the control circuit and ground to the low reference circuit of the solenoid valve. The solenoid valve is controlled by a pulse width modulation (PWM) signal. The solenoid valve controls the hydraulic pressure to the clutch package of the rear differential. The locking level of the limited slip differential depends on the engagement of the clutch package.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

- The rear differential clutch control module detects a short to ground on the rear differential clutch solenoid valve control circuit.
- The rear differential clutch control module detects a current greater than 5.7 A on the rear differential clutch solenoid valve control circuit.

Action Taken When the DTC Sets

One or more of the following actions may occur:

- All-wheel drive (AWD) is disabled.
- Service Rear Axle is displayed on the driver information center.

Conditions for Clearing the DTC

- The condition for setting the DTC is no longer present.
- The DTC is not detected in 40 consecutive ignition cycles.

Diagnostic Aids

The rear differential clutch solenoid valve harness and differential clutch pump motor harness are all one assembly as part of the differential clutch pump motor. These harnesses should not be repaired and should be replaced if a wiring condition exists.

Reference Information

Schematic Reference

Rear Axle Schematics

Connector End View Reference

Component Connector End Views

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Description and Operation

Rear Drive Axle Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Engine running, observe the scan tool Rear Differential Clutch Status parameter. The scan tool should display NORMAL when stationary.

Circuit/System Testing

IMPORTANT: The rear drive clutch solenoid valve is calibrated with and is part of the rear differential clutch control module. Both components must be replaced as a matched set.

1. Ignition OFF, disconnect the X2 harness connector at the K47 rear differential clutch control module.
2. Test for a infinite resistance between the control circuit terminal 3 and ground.
   - If not the specified value, test the control circuit for a short to ground. If a short to ground is present, replace the M32 oil pump motor/harness assembly. If the circuit tests normal, replace the Q49 rear differential clutch solenoid valve.
3. Test for 2-4 ohms between the control circuit terminal 3 and the ground reference circuit terminal 4.
   - If not within the specified range, replace the Q49 rear differential clutch solenoid valve.
4. Replace the K47 rear differential clutch control module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Limited Slip Differential Clutch Valve Replacement**
- **Differential Clutch Pump Replacement**
- **Control Module References** for rear differential clutch control module replacement, setup, and programming

DTC C039F

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Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC C039F 00

AWD Torque Signal

Circuit/System Description

The rear differential clutch control module monitors the amount of torque transferred through the rear axle. If there is a mechanical malfunction that inhibits the torque transfer process the module will then set DTC C039F.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

A mechanical malfunction exists that inhibits the torque transfer process.

Action Taken When the DTC Sets

One or more of the following actions may occur:

- All-wheel drive (AWD) is disabled.
- Service Rear Axle is displayed on the driver information center.

Conditions for Clearing the DTC

- The condition for setting the DTC is no longer present.
- The DTC is not detected in 40 consecutive ignition cycles.

Reference Information

Schematic Reference

Rear Axle Schematics

Connector End View Reference

Component Connector End Views

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Description and Operation

Rear Drive Axle Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Engine running, observe the scan tool Rear Drive Clutch Status parameter. The scan tool should display TEMPORARILY LIMITED when stationary.
2. Verify that the following DTC's are not set along with DTC C039F:
   - C0402
   - C0403
   - C0406
   - C0407
   - If any of the DTCs listed are set, diagnose those codes first. Refer to **Diagnostic Trouble Code (DTC) List - Vehicle** .
3. Ensure that all differential fluid levels are at the proper levels. Refer to **Rear Axle Lubricant Level Inspection** and **Differential Clutch Oil Inspection**.
   - If a fluid level is below specifications, inspect the rear differential assembly for leaks and repair as necessary. Refill to the proper level, clear codes, and road test. Verify that DTC C039F is not set. If the DTC resets, proceed to Circuit System Testing.

Circuit/System Testing

NOTE: The rear drive clutch solenoid valve is calibrated with and is part of the rear differential clutch control module. Both components must be replaced as a matched set.

Verify DTC C039F is not set.

- If the DTC is set, inspect the rear differential assembly for internal or external mechanical damage and repair as necessary. Clear codes and road test. Verify that DTC C039F is not set. If the DTC resets, replace the K47 rear differential clutch control module/Q48 rear drive clutch solenoid valve assembly.

Repair Procedures

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Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for rear differential clutch control module replacement, setup, and programming

DTC C0402

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC C0402 02

Transfer Case Solenoid Valve Short to Ground

DTC C0402 04

Transfer Case Solenoid Valve Open

DTC C0402 42

Transfer Case Solenoid Valve Calibration Not Programmed

DTC C0402 43

Transfer Case Solenoid Valve EEPROM Incorrect Programming

DTC C0402 4B

Transfer Case Solenoid Valve Calibration Not Learned

DTC C0402 61

Transfer Case Solenoid Valve Stuck

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Control	C0402 02, C0406 0B	C0402 04	-	-
Low Reference	-	C0402 04	-	-

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Circuit/System Description

The rear drive clutch solenoid valve is internal to the torque transfer device housing. The rear differential clutch control module supplies battery voltage to the control circuit and ground to the low reference circuit of the solenoid valve. The solenoid valve is controlled by a pulse width modulation (PWM) signal. The solenoid valve controls the hydraulic pressure to the clutch package of the torque transfer device. The locking level of the torque transfer device depends on the engagement of the clutch package.

Conditions for Running the DTC

C0402 02, C0402 42, C0402 43 and C0402 4B

- The ignition is ON.
- The circuits are tested during start up of the rear differential clutch control module.

C0402 04

The ignition is ON.

C0402 61

- Engine running.
- When requested torque is less than 25 N.m (18 lb ft) and the calculated temperature is in the range of 0-90°C (32-194°F).

Conditions for Setting the DTC

C0402 02

Voltage is applied to the rear drive clutchsolenoid valve. An error is detected if the current is greater than the current which corresponds to less than 2 ohms resistance in the solenoid valve.

C0402 04

The measured current deviates from the nominal value with more than 200 mA for more than 100 ms.

C0402 42 and C0402 43

The solenoid valve calibration values stored in the rear differential clutch control module EEPROM are invalid or out of range.

C0402 4B

There are no solenoid valve calibration values stored in the differential clutch control module EEPROM.

C0402 61

An error is detected if the solenoid valve is not engaging adequately over a predetermined test sequence.

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Action Taken When the DTC Sets

C0402 02, C0402 04 and C0402 61

One or more of the following actions may occur

- All-wheel drive (AWD) is disabled.
- Service Rear Axle is displayed on the driver information center.

C0402 42, C0402 43 and C0402 4B

An error record is stored in the rear differential clutch control module. No action will be performed.

Conditions for Clearing the DTC

- The condition for setting the DTC is no longer present.
- The DTC is not detected in 40 consecutive ignition cycles.

Reference Information

Schematic Reference

Rear Axle Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Rear Drive Axle Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Engine running, observe the scan tool Rear Drive Clutch Status parameter. The scan tool should display TEMPORARILY LIMITED when stationary.

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Circuit/System Testing

NOTE: The rear drive clutch solenoid valve is calibrated with and is part of the rear differential clutch control module. Both components must be replaced as a matched set.

Verify DTC C0402 is not set.

- If the DTC is set, replace the K47 rear differential clutch control module/Q48 rear drive clutch solenoid valve assembly.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for rear differential clutch control module replacement, setup, and programming

DTC C0403

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC C0403 62

AWD Oil Filter Reverse Valve Stuck Open

Circuit/System Description

The differential clutch pump delivers hydraulic oil pressure to the rear drive clutch solenoid valve and the rear differential clutch solenoid valve. The pump is mounted to the torque transfer device housing. The pressure of the system is calculated by the rear differential clutch control module which monitors the differential clutch pump current levels. When the pressure reaches approximately 3200 kPa (464 psi), the rear differential clutch control module determines that the system pressure has been obtained and deacvitates the differential clutch pump. If a voltage is detected after a predetermined time limit when the pump has been deactivated an error is detected. This condition indicates the pump is spinning backwards.

Conditions for Running the DTC

- The ignition is ON.
- Operating temperature range 0-80°C (0-176°F).

Conditions for Setting the DTC

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The rear differential clutch control module detects voltage on the differential clutch pump control circuit 20 seconds after the pump has been deactivated indicating the pump is spinning in reverse direction.

Action Taken When the DTC Sets

One or more of the following actions may occur

- All-wheel drive (AWD) is disabled
- Service Rear Axle is displayed on the driver information center.

Conditions for Clearing the DTC

- The condition for setting the DTC is no longer present.
- The DTC is not detected in 40 consecutive ignition cycles.

Reference Information

Schematic Reference

Rear Axle Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Rear Drive Axle Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Engine running, observe the scan tool Rear Drive Clutch Status parameter. The scan tool should display TEMPORARILY LIMITED when stationary.

Circuit/System Testing

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IMPORTANT: The rear drive clutch solenoid valve is calibrated with and is part of the rear differential clutch control module. Both components must be replaced as a matched set.

1. Ignition OFF, replace the oil filter in the torque transfer device housing.
2. Drive the vehicle under normal operating conditions.
3. Verify DTC C0403 62 is not set.
    - If the DTC is set, replace the K47 rear differential clutch control module/Q48 rear drive clutch solenoid valve assembly.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Differential Clutch Oil Filter Replacement**
- **Control Module References** for rear differential clutch control module replacement, setup, and programming

DTC C0406

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC C0406 0B

Transfer Case Solenoid Valve Control Circuit High Current

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Control	C0402 02, C0406 0B	C0402 04	-	-
Low Reference	-	C0402 04	-	-

Circuit/System Description

The rear drive clutch solenoid valve is internal to the torque transfer device housing. The rear differential clutch control module supplies battery voltage to the control circuit and ground to the low reference circuit of the solenoid valve. The solenoid valve is controlled by a pulse width modulation (PWM) signal. The solenoid valve

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controls the hydraulic pressure to the clutch package of the torque transfer device. The locking level of the torque transfer device depends on the engagement of the clutch package.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

- The rear differential clutch control module detects a short to ground on the control circuit of the rear drive clutch solenoid valve.
- The rear differential clutch control module detects a current more than 11 A on the control circuit of the rear drive clutch solenoid valve.

Action Taken When the DTC Sets

One or more of the following actions may occur

- All-wheel drive (AWD) is disabled.
- Service Rear Axle is displayed on the driver information center.

Conditions for Clearing the DTC

- The condition for setting the DTC is no longer present.
- The DTC is not detected in 40 consecutive ignition cycles.

Reference Information

Schematic Reference

Rear Axle Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Rear Drive Axle Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

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Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Engine running, observe the scan tool Rear Drive Clutch Status parameter. The scan tool should display TEMPORARILY LIMITED when stationary.

Circuit/System Testing

NOTE: The rear drive clutch solenoid valve is calibrated with and is part of the rear differential clutch control module. Both components must be replaced as a matched set.

Verify DTC C0406 is not set.

- If the DTC is set, replace the K47 rear differential clutch control module/Q48 rear drive clutch solenoid valve assembly.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for rear differential clutch control module replacement, setup, and programming

DTC C040

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC C040 02

AWD Oil Pump Motor Short to Ground

DTC C040 04

AWD Oil Pump Motor Open

DTC C040 0B

AWD Oil Pump Motor High Current

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DTC C040 64

AWD Oil Pump Motor Component Slipping

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Control	C0407 02, C0407 0B	C0407 04	-	-
Low Reference	-	C0407 04	-	-

Circuit/System Description

The differential clutch pump delivers hydraulic oil pressure to the rear drive clutch solenoid valve and the rear differential clutch solenoid valve. The pump is mounted to the torque transfer device housing. The pressure of the system is calculated by the rear differential clutch control module which monitors the differential clutch pump motor current levels. When the pressure reaches approximately 3200 kPa (464 psi), the rear differential clutch control module determines that the system pressure has been obtained and deacvitates the differential clutch pump. When the pressure drops below approximately 2700 kPa (392 psi), the rear differential clutch control module will reactivate the differential clutch pump.

Conditions for Running the DTC

- The ignition is ON.
- Operating temperature range 0-80°C (0-176°F).

Conditions for Setting the DTC

C040 02

The differential clutch pump current is greater than 9 A in 20 consecutive test cycles. The current will be retested every 30 seconds.

C040 04

The differential clutch pump current is less than 0.3 A for 30 seconds.

C040 0B

The differential clutch pump current is greater than 7 A for greater than 2 seconds in 10 consecutive test cycles.

C040 64

The differential clutch pump current is below a threshold at the end of a pump activation cycle in 30 consecutive test cycles. The measured current is less than 1.5 A from the threshold. The threshold is temperature dependent.

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Action Taken When the DTC Sets

C040 02 and C040 04

- All-wheel drive (AWD) is disabled
- Service Rear Axle is displayed on the driver information center.

C040 0B and C040 64

An error report entry is stored, no further action is performed.

Conditions for Clearing the DTC

- The condition for setting the DTC is no longer present.
- The DTC is not detected in 40 consecutive ignition cycles.

Reference Information

Schematic Reference

Rear Axle Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Rear Drive Axle Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ensure that all differential fluid levels are at the proper levels. Refer to **Rear Axle Lubricant Level Inspection** and **Differential Clutch Oil Inspection**.
    - If a fluid level is below specifications, inspect the rear differential assembly for leaks and repair as

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necessary. Refill to the proper level, clear codes, and road test. Verify that DTC C0407 64 is not set. If the DTC resets, proceed to Circuit System Testing.

- If a fluid level is above specifications, replace the rear differential assembly.

2. Engine running, observe the scan tool Rear Differential Clutch Pump Motor Current parameter. The parameter displayed should be between 2500-3500 mA when the pump is ON.

Circuit/System Testing

IMPORTANT: The rear drive clutch solenoid valve is calibrated with and is part of the rear differential clutch control module. Both components must be replaced as a matched set.

1. Ignition OFF, disconnect the X2 harness connector at the K47 rear differential clutch control module.
2. Test for infinite resistance between the differential clutch pump control circuit terminal 1 and ground.
   - If less than the specified value, replace the M32 differential clutch pump.
3. Test for 1.5-20 ohms between the control circuit terminal 1 and the low reference circuit terminal 2.
   - If not within the specified range, replace the M32 differential clutch pump.
4. Replace the K47 rear differential clutch control module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Differential Clutch Pump Replacement**
- **Differential Carrier Assembly Replacement**
- **Control Module References** for module replacement, setup, and programming

DTC C040

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC C040 02

Rear Axle Coupling Solenoid Valve Short to Ground

DTC C040 04

Rear Axle Coupling Solenoid Valve Open

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DTC C040 42

Rear Axle Coupling Solenoid Valve Calibration Not Programmed

DTC C040 43

Rear Axle Coupling Solenoid Valve EEPROM Incorrect Programming

DTC C040 4B

Rear Axle Coupling Solenoid Valve Calibration Not Learned

DTC C040 61

Rear Axle Coupling Solenoid Valve Stuck

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Control	C0393 0B, C0408 02	C0408 04	-	C0408 61
Low Reference	-	C0408 04	-	-

Circuit/System Description

The rear differential clutch solenoid valve is mounted on the rear of the differential housing. The rear differential clutch control module supplies battery voltage to the control circuit and ground to the low reference circuit of the solenoid valve. The solenoid valve is controlled by a pulse width modulation (PWM) signal. The solenoid valve controls the hydraulic pressure to the clutch package of the limited slip differential. The locking level of the limited slip differential depends on the engagement of the clutch package.

Conditions for Running the DTC

C040 02, C040 42, C040 43 and C040 4B

- The ignition is ON.
- Vehicle is equipped with electronic limited slip differential.
- The test runs during start up of the rear differential clutch control module.

C040 04

- The ignition is ON.
- Vehicle is equipped with electronic limited slip differential.
- The test runs with a frequency of 200 Hz.

C040 61

- Vehicle is equipped with electronic limited slip differential.
- Engine running.
- Test runs when requested torque is less than 25 N.m (18 lb ft) and the calculated temperature is in the range of 0-120°C (32-248°F).

Conditions for Setting the DTC

C040 02

Voltage is applied to the rear differential clutch solenoid valve. An error is detected if the current is greater than the current which corresponds to less than 2.1 ohms resistance in the solenoid valve.

C040 04

The measured current deviates from the nominal value with more than 200 mA for more than 100 ms.

C040 42 and C040 43

The rear differential clutch solenoid valve calibration values stored in the rear differential clutch control module EEPROM are invalid or out of range.

C040 4B

There are no rear differential clutch solenoid valve calibration values stored in the differential clutch control module EEPROM.

C040 61

An error is detected if the rear differential clutch solenoid valve is not engaging adequately over a predetermined test sequence.

Action Taken When the DTC Sets

One or more of the following actions may occur:

- All-wheel drive (AWD) is disabled
- Service Rear Axle is displayed on the driver information center.

Conditions for Clearing the DTC

- The condition for setting the DTC is no longer present.
- The DTC is not detected in 40 consecutive ignition cycles.

Diagnostic Aids

The rear differential clutch solenoid valve harness and differential clutch pump harness are all one assembly as part of the differential clutch pump. These harnesses should not be repaired and should be replaced if a wiring

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condition exists.

Reference Information

Schematic Reference

Rear Axle Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Rear Drive Axle Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Engine running, observe the scan tool Rear Drive Clutch Status parameter. The scan tool should display TEMPORARIL LIMITED when stationary.

Circuit/System Testing

IMPORTANT: The rear drive clutch solenoid valve is calibrated with and is part of the rear differential clutch control module. Both components must be replaced as a matched set.

1. Ignition OFF, disconnect the 2 harness connector at the K47 rear differential clutch control module.
2. Test for a infinite resistance between the control circuit terminal 3 and ground.
   - If not the specified value, test the control circuit for a short to ground. If a short to ground is present, replace the M32 differential clutch pump/harness assembly. If the circuit tests normal, replace the Q49 rear differential clutch solenoid valve.
3. Test for 2-4 ohms between the control circuit terminal 3 and the ground reference circuit terminal 4.
   - If not within the specified range, replace the Q49 rear differential clutch solenoid valve.

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4. Replace the K47 rear differential clutch control module.

C040 61

1. Replace the Q49 rear differential clutch solenoid valve.
2. Ignition ON, verify the DTC does not reset.
   - If the DTC resets, replace the K47 rear differential clutch control module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Limited Slip Differential Clutch Valve Replacement**
- **Differential Clutch Pump Replacement**
- **Control Module References** for rear differential clutch control module replacement, setup, and programming

DTC C0 4

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC C0 4 02

Printed Circuit Board Temperature Sensor Short to round

DTC C0 4 04

Printed Circuit Board Temperature Sensor Open

DTC C0 4 13

Printed Circuit Board Temperature Sensor Low Voltage/ igh Temperature

DTC C0 4 14

Printed Circuit Board Temperature Sensor igh Voltage/Low Temperature

Diagnostic Fault Information

	Short to	Open/High	Short to	Signal

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Circuit	Ground	Resistance	Voltage	Performance
Control	C0574 02	C0574 04	-	C0574 13, C0574 14
Low Reference	-	C0574 04	-	C0574 13, C0574 14

Circuit/System Description

A temperature sensor is installed on the circuit board of the rear differential clutch control module. The sensor is used for calculating the module circuit board and differential clutch fluid temperature.

Conditions for Running the DTC

- The ignition is ON.
- The test runs with a frequency of 50 z.

Conditions for Setting the DTC

C0 4 02

The analog-digital converter circuit is shorted to ground for more than 3 seconds.

C0 4 04

The analog-digital converter circuit is open for more than 3 seconds.

C0 4 13

The board temperature is greater than 115°C (239°F) for more than 3 seconds.

C0 4 14

The board temperature is less than -40°C (-40°F) for more than 3 seconds.

Action Taken When the DTC Sets

One or more of the following actions may occur:

- All-wheel drive (AWD) is disabled.
- Service Rear Axle is displayed on the driver information center.

Conditions for Clearing the DTC

C0 4 02 and C0 4 04

- The condition for setting the DTC is no longer present.
- The circuit is not tested unless the ignition is cycled.

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C0 4 13 and C0 4 14

- The temperature is within the limit for more than 30 s.
- The circuit is tested with a frequency of 50 z.

Diagnostic Aids

C0 4 13 and C0 4 14

The DTCs C0574 13 and C0574 14 indicate that the rear differential clutch control module temperature is out of range. This is a temporary fault. The rear differential clutch control module is protected against running during critical temperatures. As soon as the temperature reaches normal values the actual DTC is cleared.

Reference Information

Schematic Reference

Rear Axle Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Rear Drive Axle Description and Operation

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

Ignition ON, observe the scan tool Rear Differential Clutch Control Module Temperature parameter. The scan tool should display be between -40°C (-40°F) and 115°C (239°F) when stationary.

Circuit/System Testing

IMPORTANT: The rear drive clutch solenoid valve is calibrated with and is part of the rear differential clutch control module. Both components must be replaced as a

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matched set.

C 5 4 and 5 4 4

Ignition ON. Verify that DTC C0574 02 or 0574 04 is not set.

- If a DTC is set, replace the K47 rear differential clutch control module.

C 5 4 and 5 4 4

1. Ignition OFF, allow the housing and the K47 rear differential clutch control module temperature to adjust to within 0-40°C (32-104°F).
2. Ignition ON, verify that DTC C0574 13 or C0574 14 is not set.

- If a DTC is set, replace the K47 rear differential clutch control module.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for rear differential clutch control module replacement, setup, and programming

S MPTOMS LOC ING LIMITED SLIP REAR A LE

Review the system and operation in order to familiarize yourself with the system functions. Refer to **Differential Carrier Assembly Description** and **Limited Slip Differential Description and Operation**.

Visual Physical Inspection

- Inspect the system for the following:
  - Loose or missing fasteners
  - Obvious damage or conditions which may cause the symptom
- Check the system for proper operation.

S MPTOMS REAR DIFFERENTIAL CARRIER

Strategy ased Diagnostics

Review the system operations in order to familiarize yourself with the system functions. Refer to **Differential Carrier Assembly Description**. 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 ased Diagnosis** .

Visual Physical Inspection

- Inspect for aftermarket devices, which could affect the operation of the vehicle. Refer to **Checking**

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Aftermarket Accessories .

- Inspect the easily accessible or visible system components for obvious damage or conditions, which could cause the symptom.
- Check for the correct lubricant level and the proper viscosity.
- 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 make sure you are not trying to correct a normal condition.
- Inspect for all-wheel drive activation and operation.

  Factors that may contribute to an inoperative rear differential include:

  - Low gear oil levels
  - Differential inoperative due to antilock brake system (ABS) function
  - Inoperative engine control module (ECM) and/or wiring system
  - A mini-spare or different size tire installed
  - A fluid over-temperature condition
  - An inoperative or "stuck" clutch pump check valve
  - A defective rear differential assembly
  - An inoperative transfer case assembly
- Sometimes it might be difficult to judge whether the noise is coming from the propeller shaft or rear differential carrier assembly. Refer to **Symptoms Propeller Shaft** .

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:

- Propeller Shaft-Refer to **Symptoms Propeller Shaft** .
- Wheel Drive Shafts-Refer to **Symptoms heel Drive Shafts** .
- Vibration Diagnosis and Correction-Refer to **Symptoms Vibration Diagnosis and Correction** .

S MPTOMS REAR DRIVE A LE

Rear Axle Noise

The proper diagnosis is an important part of rear axle repair. In axle work, one of the most difficult conditions to diagnose is noise. Locating a broken axle shaft or broken differential gear presents little or no problems, but locating and isolating axle noise can be an entirely different matter.

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Any gear driven unit, especially an automotive drive axle where the engine torque multiplication occurs at a 90 degree turn in the driveline, produces a certain amount of noise. Therefore, an interpretation must be made for each vehicle in order to determine where the noise is normal or if a problem actually exists. A certain amount of noise must be expected and cannot be eliminated by conventional repairs or adjustment.

Normal axle noise can be described as a slight noise heard only at a certain speed or under unusual or remote conditions. For example, the noise tends to reach a peak at speeds from 60-100 km/h (40-60 mph) depending on road and load conditions, or on gear ratio and tire size. This slight noise is in no way indicative of trouble in the axle assembly.

Driveline noises may confuse even the best technician. Vehicle noises coming from tires, transmission, propeller shaft, universal joints, and front or rear wheel bearings are often mistaken for axle noise.

Visual Physical Inspection

- Inspect the system for loose or missing fasteners.
- Inspect the system for leaking components.
- Inspect the system for obvious damage or conditions which may cause the symptom.

RE AIR INSTRUCTIONS

REAR DIFFERENTIAL CLUTCH CONTROL MODULE REPLACEMENT

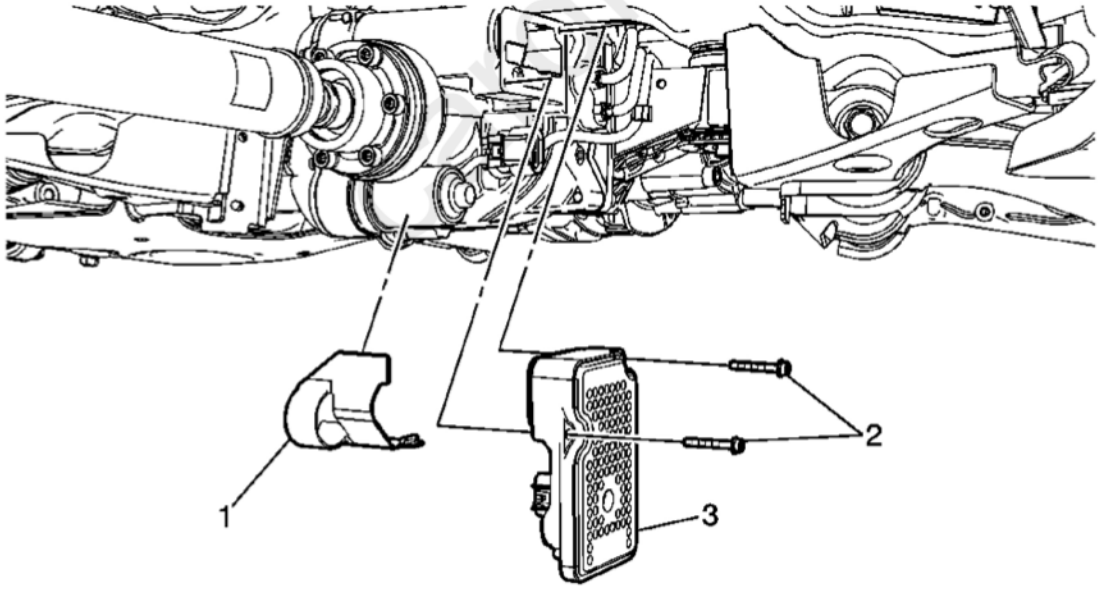


Fig. : Identifying Rear Differential Clutch Control Module
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures:	

Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle**

1	Protective Cover
2	Differential Clutch Control Module Bolts (Qty: 2) **WARNING:** **The hydraulic pressure in the differential clutch is very high. To prevent personal injury, wait for at least 10 minutes before removing any parts from the differential clutch.** **CAUTION:** **Refer to Fastener Caution .** **Procedure:** DO NOT remove the mounting bolts, leave them attached to the Differential Clutch Control Module. **Tighten:** 6 N.m (53 lb in)
3	Rear Differential Clutch Control Module and Seal **Procedure** 1. Disconnect the electrical connector. 2. If the Differential Clutch control Module and the valve separate, perform the following: 1. Pull the valve straight out of the bore. 2. Assembly the Differential Clutch control Module and the valve prior to the installation of the seal. 3. Install the NEW seal. DO NOT re-use the old seal. 4. Clean the area with a lint free cloth prior to installing the Differential Clutch Control Module and the valve. **Tip:** Some oil may leak with the Differential Clutch control Module and valve removed.

REAR A LE LU RICANT LEVEL INSPECTION

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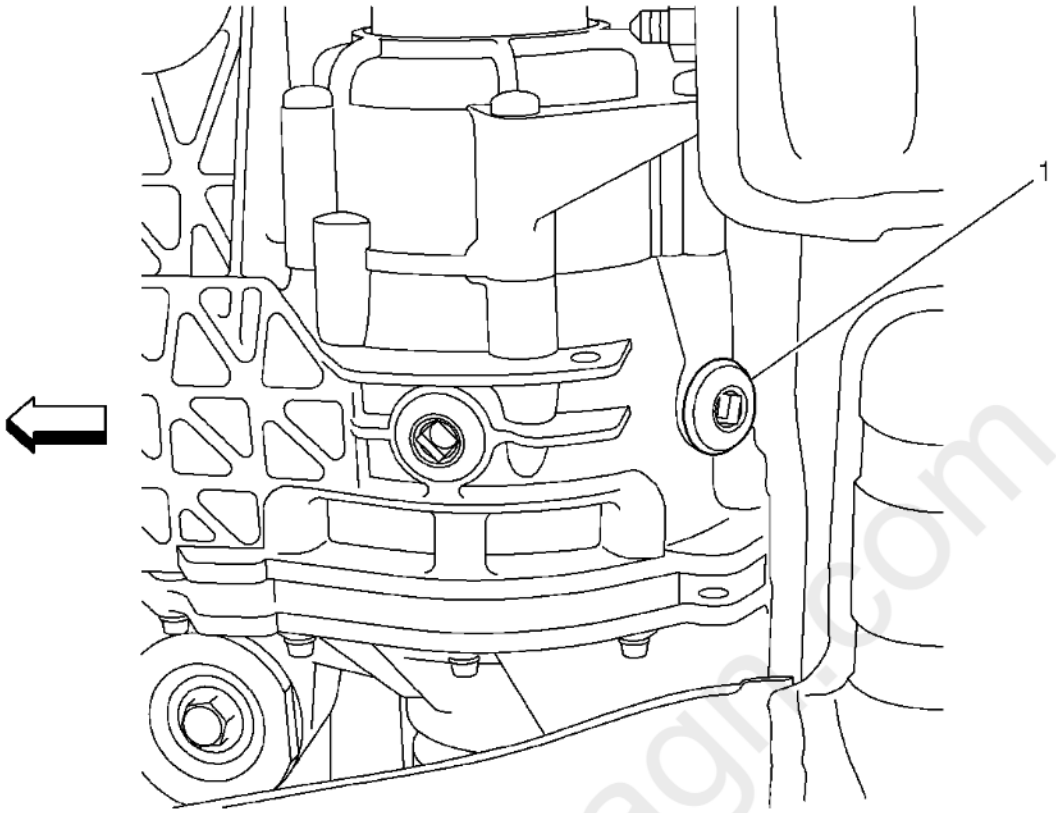


Fig. : Identifying Rear Axle Lubricant Fill Plug
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure 1. Raise the vehicle. Refer to **Lifting and Jacking the Vehicle** . 2. Ensure the vehicle is in level. 3. Inspect the rear axle for leaks. Repair if necessary.	
1	Lubricant Fill Plug **CAUTION:** **Refer to Fastener Caution .** **Procedure** 1. Clean the area around the rear axle fill plug. 2. Add lubricant until the level is even with the bottom edge of the fill plug opening. Use the proper fluid. Refer to **Adhesives, Fluids, Lubricants, and Sealers**. **Tighten:** 25 N.m (18 lb ft)

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DIFFERENTIAL CLUTCH OIL INSPECTION

WARNING: The hydraulic pressure in the differential clutch is very high. To prevent personal injury, wait for at least 10 minutes before removing any parts from the differential clutch.

NOTE: The following steps must be followed to ensure the proper fluid level for the differential clutch fluid.

1. Run the engine at idling speed for 120 seconds to distribute the fluid.
2. In park, cycle throttle to wide open throttle briefly 5 times to cycle solenoids to purge air.
3. Turn the engine off.

NOTE: Ensure that the vehicle is as level as possible.

4. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .

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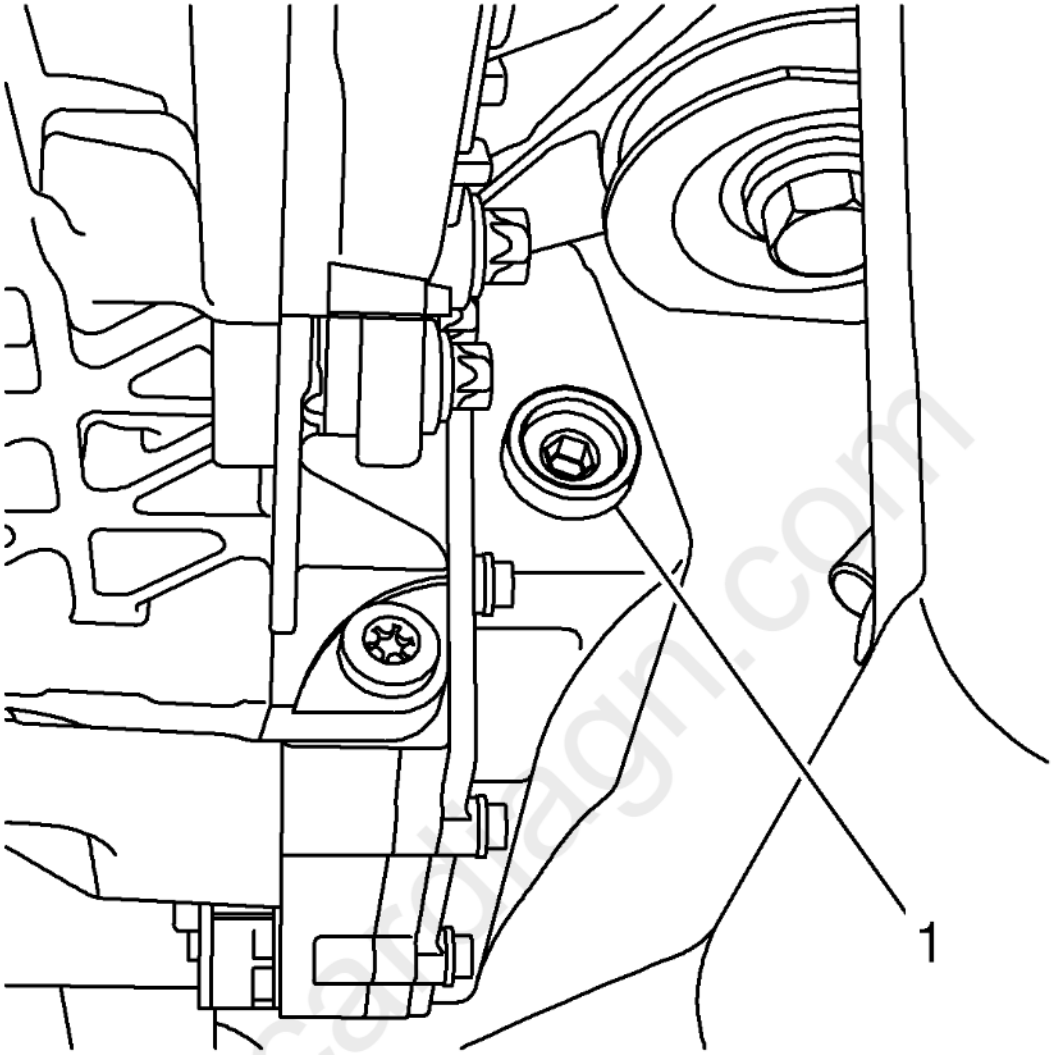


Fig. 4: Identifying Rear Axle Lubricant Fill Plug
Courtesy of GENERAL MOTORS CORP.

CAUTION: It is very important to observe maximum cleanliness when working on the differential clutch. Dirt particles can seriously damage the function and service life of the differential clutch.

NOTE: The differential clutch fluid should be level with the top threads of the fill hole.

5. Remove the fill plug (1) and check the differential clutch fluid level.
6. Add the proper differential clutch fluid, if needed. Refer to **Adhesives, Fluids, Lubricants, and Sealers**.

CAUTION: Refer to Fastener Caution .

7. Install the fill plug (1) and tighten to 14 N.m (10 lb ft).
8. Repeat steps 1-6 to ensure the proper differential clutch fluid level.
9. Remove the supports and lower the vehicle.

DIFFERENTIAL OIL REPLACEMENT

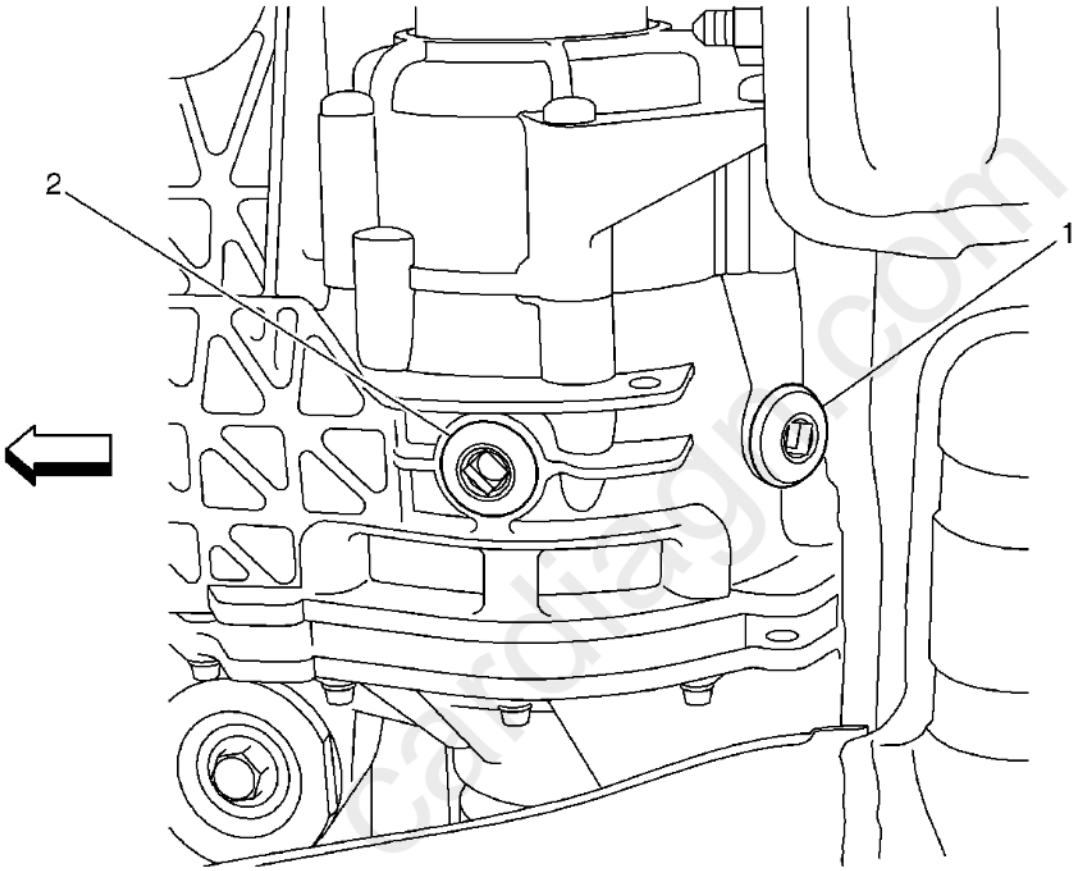


Fig. 5: Identifying Rear Axle Lubricant Fill & Drain Plugs
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure 1. Raise the vehicle. Refer to **Lifting and Jacking the Vehicle** . 2. Ensure the vehicle is in level. 3. Inspect the rear axle for leaks, repair if necessary.	
	Lubricant Fill Plug **CAUTION:** **Refer to Fastener Caution .**

1	**Procedure** 1. Clean the area around the rear axle fill plug. 2. Add lubricant until the level is even with the bottom edge of the fill plug opening. Use the proper fluid. Refer to **Adhesives, Fluids, Lubricants, and Sealers**. **Tighten:** 25 N.m(18 lb ft)
2	Lubricant Drain Plug **Tighten:** 25 N.m(18 lb ft)

DIFFERENTIAL CLUTCH OIL REPLACEMENT

WARNING: The hydraulic pressure in the differential clutch is very high. To prevent personal injury, wait for at least 10 minutes before removing any parts from the differential clutch.

NOTE: The vehicle should be as level as possible when performing this procedure.

1. Raise the vehicle and support the vehicle.
2. Remove the vent hose and the fitting from the differential clutch cover.

CAUTION: It is very important to observe maximum cleanliness when working on the differential clutch. Dirt particles can seriously damage the function and service life of the differential clutch.

3. Remove the differential clutch cover to drain the differential clutch.

NOTE: DO NOT reuse the old gasket. Replace with NEW only.

4. Install the differential clutch cover. Refer to **Differential Clutch Oil Filter Replacement**.

CAUTION: Fluids for the differential clutch and the rear axle are different. The fluids must never be mixed or interchanged or vehicle damage will result.

5. Fill the differential clutch with 350 ml (12 ounces) of the proper differential fluid through the vent hose fitting. Refer to **Adhesives, Fluids, Lubricants, and Sealers**.

CAUTION: Refer to Fastener Caution .

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6. Install the vent hose and fitting, then tighten the fitting to 14 N.m (10 lb ft).
7. Remove the supports lower the vehicle.
8. Start the vehicle and allow to run for 5 minutes at idle.
9. In park, cycle throttle to wide open throttle briefly 5 times to cycle solenoids to purge air.
10. Shut the vehicle off.
11. Raise the vehicle.

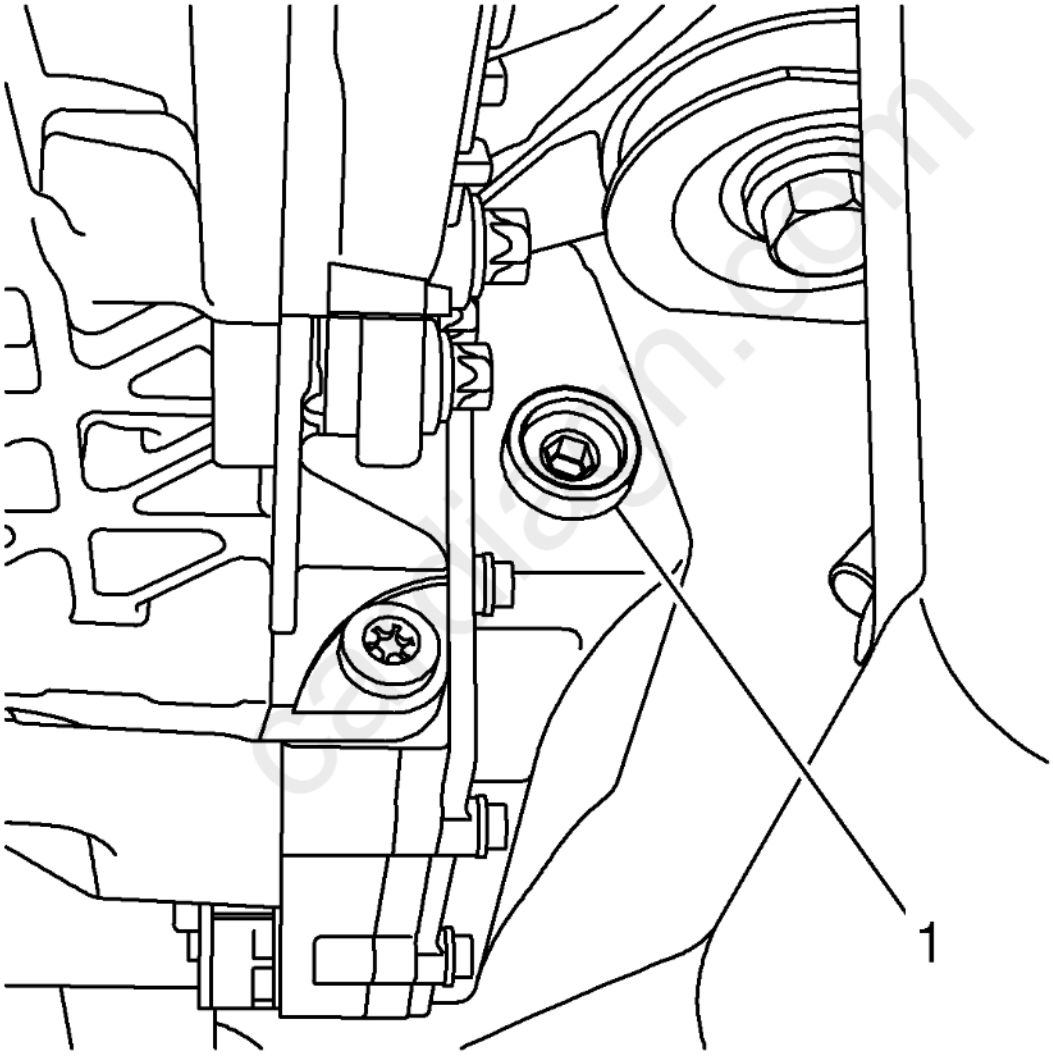


Fig. 6: Identifying Rear Axle Lubricant Fill Plug
Courtesy of GENERAL MOTORS CORP.

12. Remove the differential clutch cover plug (1).
13. The differential clutch fluid should be level with the bottom of the differential clutch cover plug hole. Add fluid if needed
14. Install the differential clutch cover plug (1) and re-tighten to 14 N.m (10 lb ft).

15. Lower the vehicle.

DIFFERENTIAL CARRIER BUSHING REPLACEMENT - FRONT

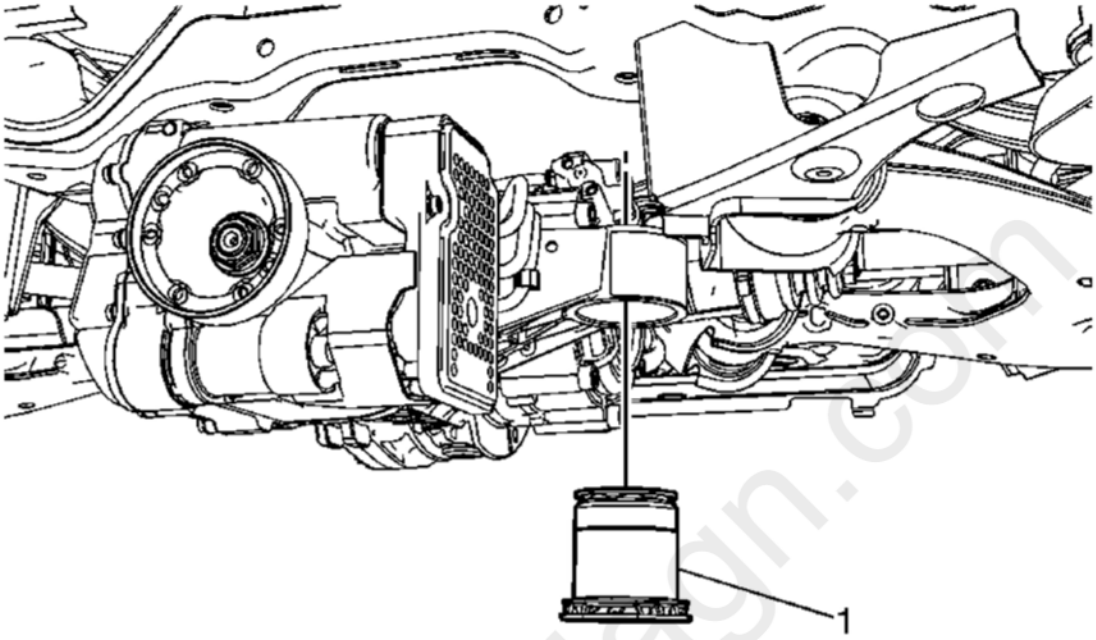


Fig. 7: Identifying Differential Carrier Bushing - Front
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure 1. Raise and support the vehicle. Refer to **Lifting and acking the Vehicle** . 2. Remove the propeller shaft. Refer to **Propeller Shaft Replacement** . 3. Remove the exhaust system. Refer to **Exhaust Muffler Replacement (LF1)** or **Exhaust Muffler Replacement (LAU)** .	
	Differential Carrier Bushing Front (Qty: 2) **Procedure** 1. Support the rear differential with a hydraulic transmission jack stand. 2. Remove the electrical connector from the rear differential clutch control module. Refer to **Rear Differential Clutch Control Module Replacement**. 3. Remove the front and rear differential mounting bolts. Refer to **Differential Carrier Assembly Replacement**. 4. Lower the rear differential until there is enough room to remove the differential carrier bushings

	5. Using the **DT 49126-1:** tool and the **DT 49126-1 :** kit, remove the rear differential bushing. 6. Position the NEW rear differential bushing with the beveled edges facing the housing (up). 7. Using the **DT 49126-2:** tool and the **DT 49126-1 :** kit, install the NEW rear differential bushing.
1	**Special Tools** • **DT 49126-1:** Press ool • **DT 49126-2:** Press ool • **DT 49126-1 :** Bushing Replacer Hardware it For equivalent regional tools, refer to **Special Tools**.

DIFFERENTIAL CARRIER BUSHING REPLACEMENT - REAR

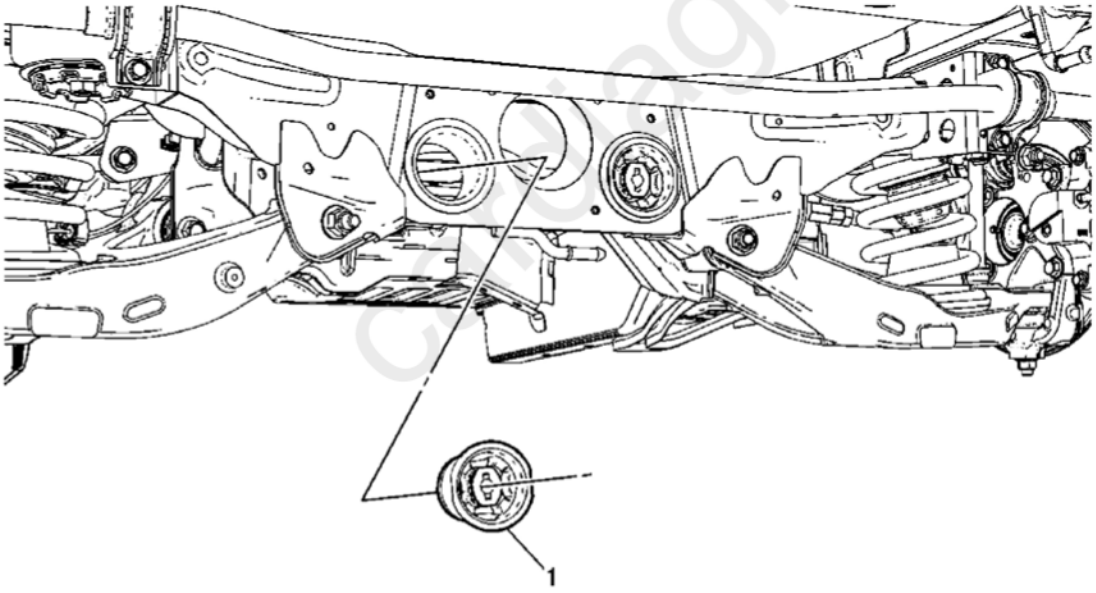


Fig. 8: Identifying Rear Differential Carrier Bushing
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the differential carrier assembly. Refer to **Differential Carrier Assembly Replacement**.	
	Differential Carrier Bushing Rear (Qty: 2) **Procedure**

1	1. Remove any debris from the area around the rear differential carrier bushing prior to removal. 2. Using the **DT 197-1:** tool and the **DT 197-2:** tool, remove the rear differential carrier bushing. 3. Remove any residue from the old bushing before installing the new rear differential bushing. 4. Position the rear differential bushing in the rear support. 5. Using the **DT 197-2:** tool and the **DT 197-3:** tool, install the rear differential bushings. **Special Tools:** **DT 197:** Presstool it For equivalent regional tools, refer to **Special Tools**.

REAR A LE SHAFT SEAL REPLACEMENT - LEFT SIDE

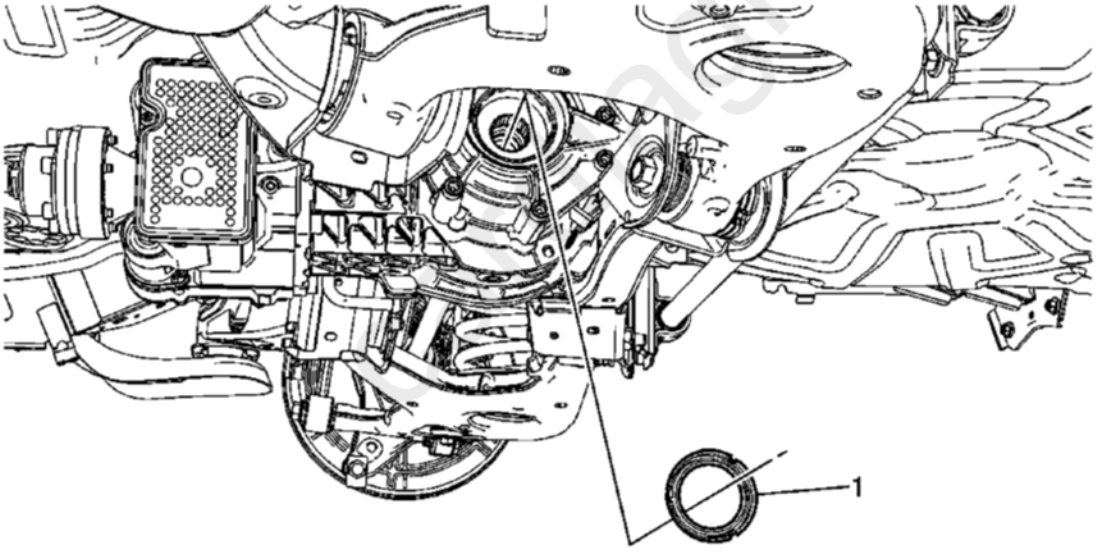


Fig. 9: Identifying Rear Axle Shaft Seal - Left Side
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the left rear wheel drive shaft. Refer to **Rear Wheel Drive Shaft Replacement**	
	Rear xle Shaft Seal **Procedure**

1	1. Using the **GE 239 7-1:** hammer and the **DT 29369-2:** puller, remove the rear axle seal. 2. Using the **DT-49 68:** installer, install the rear axle seal. 3. Check lubricant level. Refer to **Rear Axle Lubricant Level Inspection** **Special Tools** • **DT 29369-2:** Drive Shaft Seal Puller • **DT-49 68:** Seal Installer • **GE 239 7-1:** Slide Hammer For equivalent regional tools, refer to **Special Tools**

REAR A LE SHAFT SEAL REPLACEMENT - RIGHT SIDE

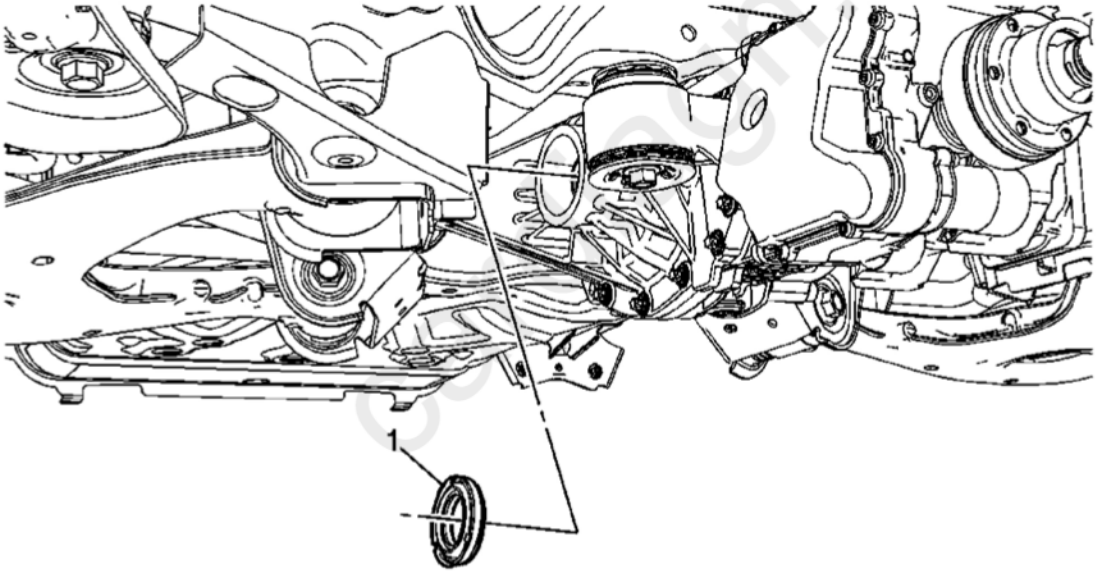


Fig. 1 : Identifying Rear Axle Shaft Seal - Right Side
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the right rear wheel drive shaft. Refer to **Rear Wheel Drive Shaft Replacement**	
	Rear xle Shaft Seal **Procedure** 1. Using the **GE 239 7-1:** hammer and the **DT 29369-2:** puller, remove the rear axle

1	seal. 2. Using the **DT-49 68:** installer, install the rear axle seal. 3. Check lubricant level. Refer to **Rear Axle Lubricant Level Inspection** **Special Tools** • **DT 29369-2:** Drive Shaft Seal Puller • **DT 49 68:** Seal Installer • **GE 239 7-1:** Slide Hammer For equivalent regional tools, refer to **Special Tools**

DIFFERENTIAL CARRIER ASSEMBL REPLACEMENT

Removal Procedure

NOTE T ll i ic c d i al i cl d icl i RPO

1. Raise and support the vehicle. Refer to **Lifting and acking the Vehicle** .
2. If replacing the rear differential assembly, drain the rear differential fluid. Refer to **Differential Clutch Oil Replacement** and **Differential Oil Replacement**.
3. Remove the propeller shaft assembly. Refer to **Propeller Shaft Replacement** .
4. Remove the exhaust muffler assembly. Refer to **Exhaust Muffler Replacement (LF1)** or **Exhaust Muffler Replacement (LAU)** .
5. Remove the electronic park brake control module. Refer to **Electronic Parking Brake Control Module Replacement** .
6. Remove the wheel drive shaft. Refer to **Rear Wheel Drive Shaft Replacement** .
7. Disconnect the electrical connectors from the rear differential assembly to the chassis.

NOTE E a a di ial i c l a d d a lic ac a d

8. Support the rear differential assembly with a hydraulic transmission jack.

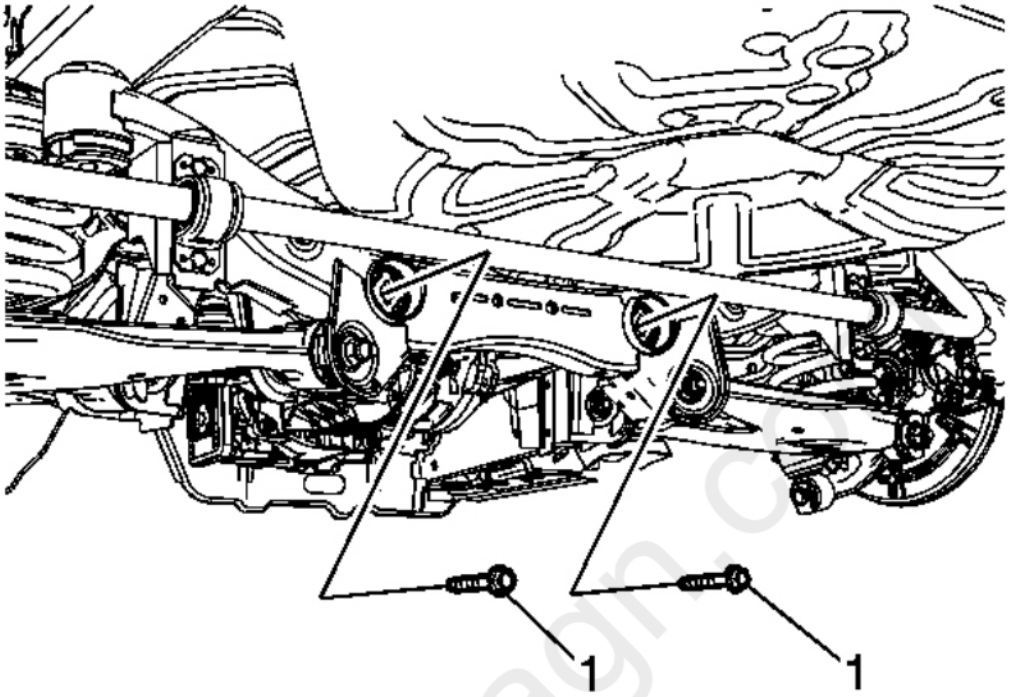


Fig 11 Identifying Rear Differential Assembly Mounting Bolts
Courtesy of GE ERAL MOTORS CORP

9. Remove the rear differential assembly mounting bolts (1).

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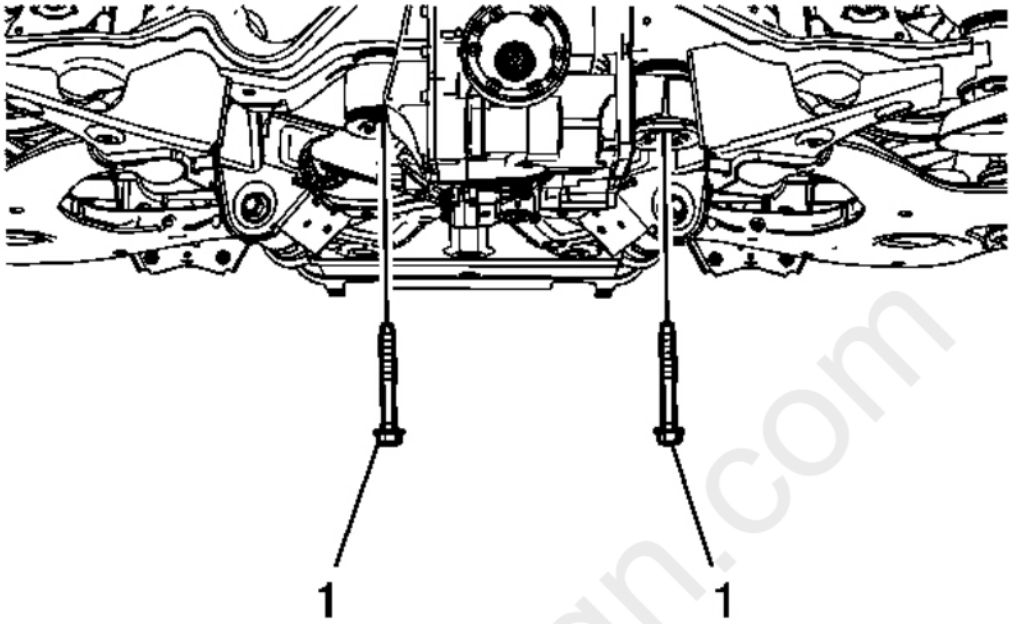


Fig 12 Identifying Front Differential Mounting Bolts
Courtesy of GE ERAL MOTORS CORP

10. Remove the front differential mounting bolts (1).

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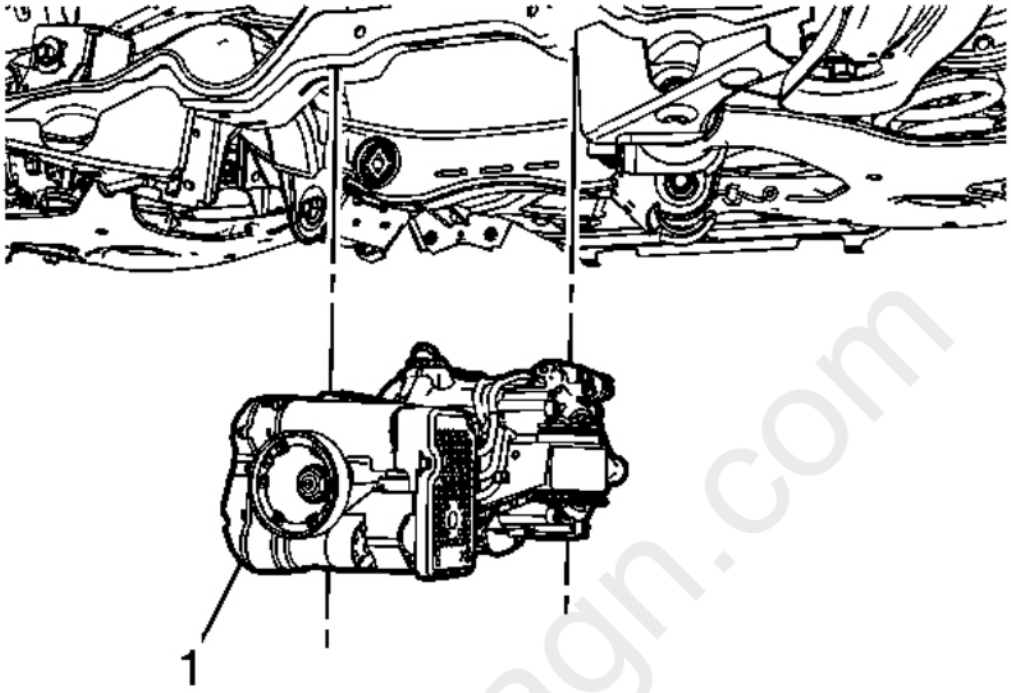


Fig 13 Identifying Rear Differential Assembly
Courtesy of GE ERAL MOTORS CORP

11. Using the hydraulic jack stand, remove the rear differential assembly (1) from the vehicle.
12. Remove the differential clutch assembly, if needed. Refer to **Differential Clutch Replacement**

Installation Procedure

1. Install the differential clutch assembly, if removed. Refer to **Differential Clutch Replacement**

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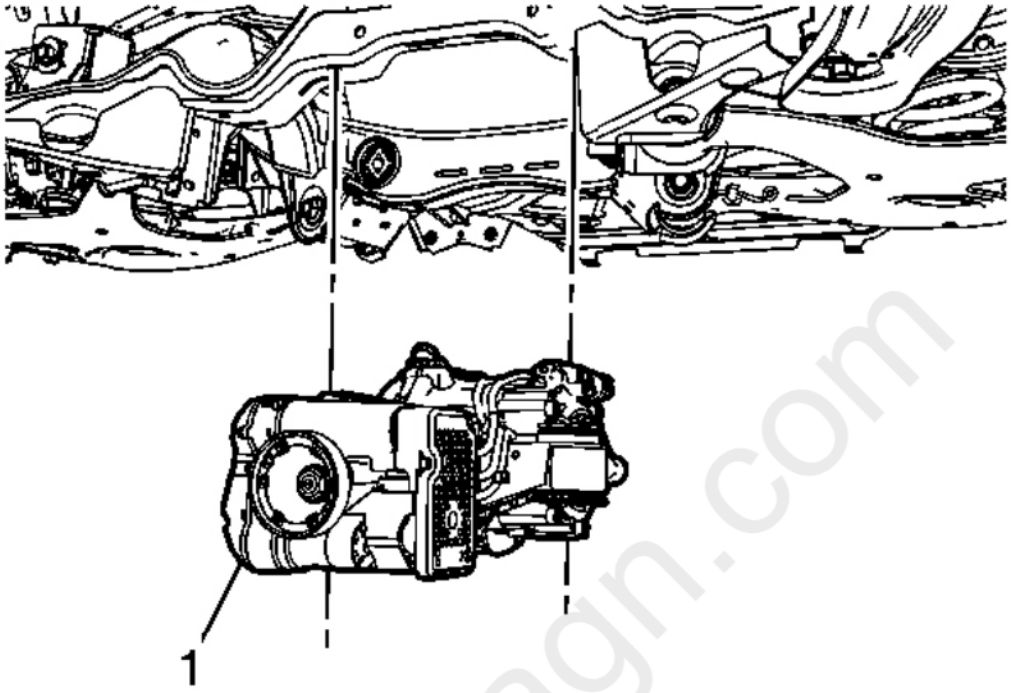


Fig 14 Identifying Rear Differential Assembly
Courtesy of GE ERAL MOTORS CORP

2. Using the hydraulic jack stand, position the rear differential assembly (1) in the vehicle.

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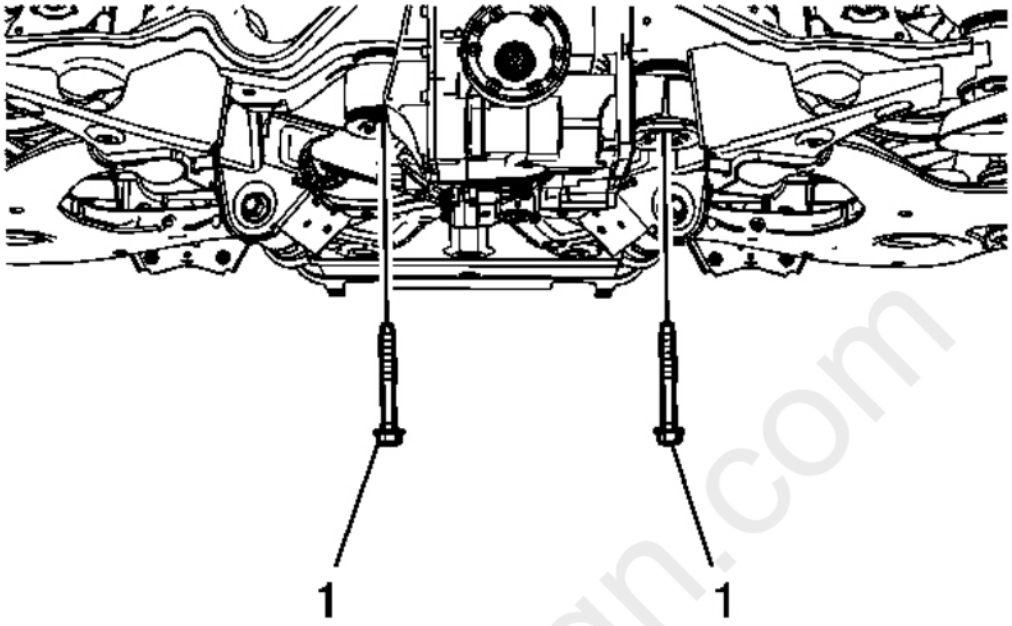


Fig 1 Identifying Front Differential Mounting Bolts
Courtesy of GE ERAL MOTORS CORP

3. Clean the bolts and apply thread locker on the threads. Refer to **Adhesives, Fluids, Lubricants, and Sealers**

CAUTION: Refer to Fastener Caution .

4. Install the front differential mounting bolts (1) and tighten to 40 N.m (30 lb ft) + 90 degrees.

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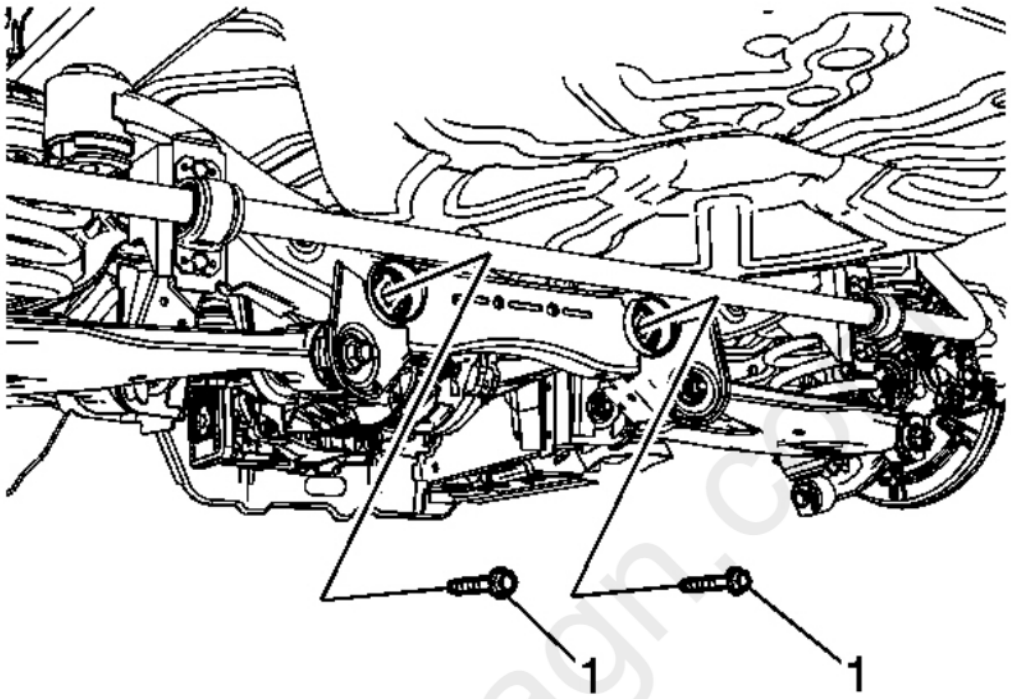


Fig. 16: Identifying Rear Differential Assembly Mounting Bolts
Courtesy of GENERAL MOTORS CORP.

5. Install the rear differential assembly mounting bolts (1) and tighten to 40 N.m (30 lb ft) + 90 degrees.
6. Remove the hydraulic jack stand.
7. Install the wheel drive shafts. Refer to **Rear Wheel Drive Shaft Replacement** .
8. Install the electronic park brake control module. Refer to **Electronic Parking Brake Control Module Replacement** .
9. Reconnect the electrical connectors from the rear differential assembly to the chassis.
10. Install the exhaust muffler assembly. Refer to **Exhaust Muffler Replacement (LF1)** or **Exhaust Muffler Replacement (LAU)** .
11. Install the propeller shaft assembly. Refer to **Propeller Shaft Replacement** .
12. Check the fluid level of the rear differential assembly. Refer to **Differential Clutch Oil Inspection** and **Rear Axle Lubricant Level Inspection**.
13. If installing a NEW rear differential assembly, fill with the proper fluid. Refer to **Differential Clutch Oil Replacement** and **Differential Oil Replacement**.
14. Remove the supports and lower the vehicle.

PROPELLER SHAFT FLANGE REPLACEMENT

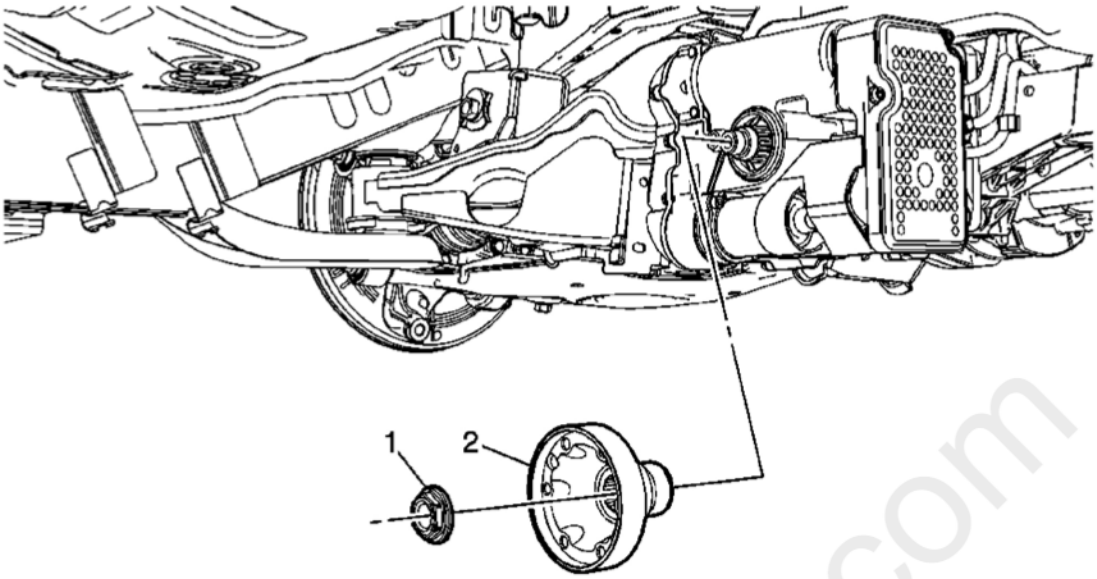


Fig. 17: View Of Propeller Shaft Flange & Nut
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the propeller shaft. Refer to **Propeller Shaft Replacement** .	
1	Propeller Shaft Flange Nut **CAUTION:** **Refer to Fastener Caution .** **Procedure** 1. Using the **DT 44873-2:** holder and the **DT 8614-A:** holder, remove the propeller shaft flange nut. 2. Using the **DT 8614-A:** holder, install the propeller shaft flange nut. **Tighten:** 100 N.m (74 lb ft) **Special Tools** • **DT 8614-A:** Pinion Flange Holder • **DT 44873-2:** Pinion Flange Holder and Remover Bolts For equivalent regional tools, refer to **Special Tools**.
	Propeller Shaft Flange

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2	**Procedure** 1. Replace the Differential Clutch Seal. Refer to **Differential Clutch Pump Replacement**. 2. Inspect the oil level. Refer to **Differential Clutch Oil Inspection**.

LIMITED SLIP DIFFERENTIAL CLUTCH PIPE CONNECTOR REPLACEMENT

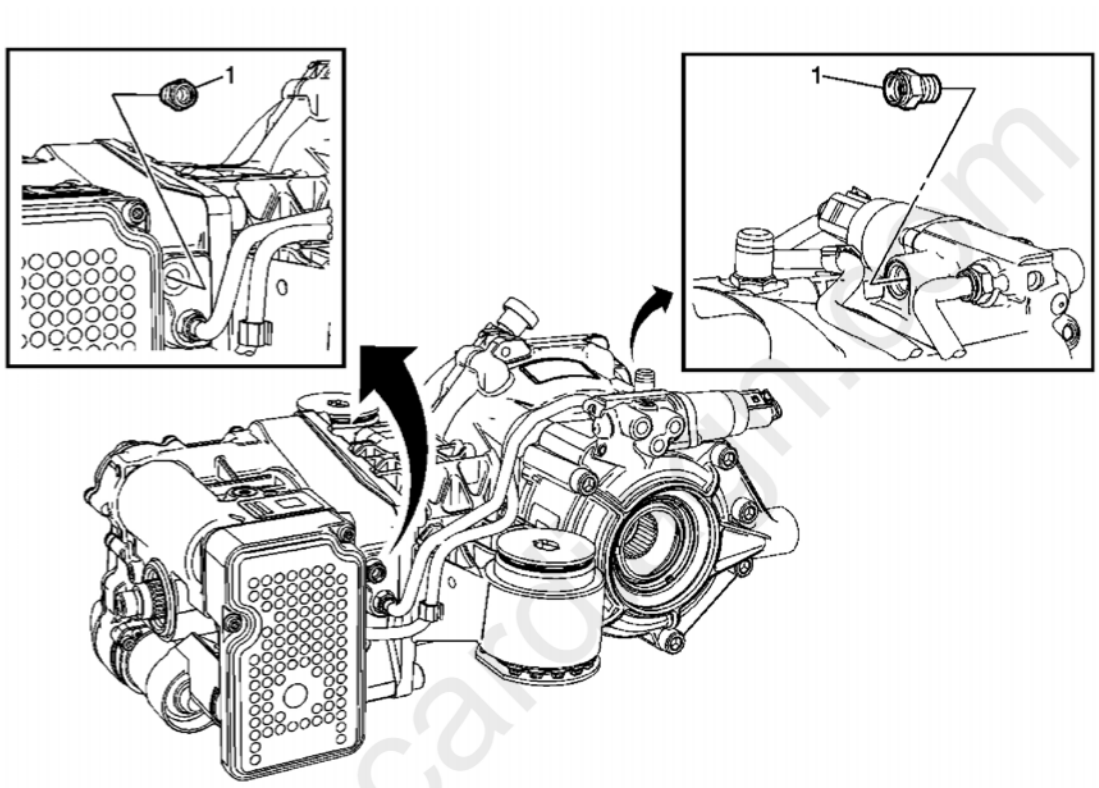


Fig. 18: Identifying Limited Slip Differential Clutch Pipe Connector
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
CAUTION: **It is very important to observe maximum cleanliness when working on the differential clutch. Dirt particles can seriously damage the function and service life of the differential clutch.** **Preliminary Procedure:** Remove the rear differential carrier assembly. Refer to **Differential Carrier Assembly Replacement**.	
	Limited Slip Differential Clutch Pipe Connectors (Qty: 4) **WARNING:** **The hydraulic pressure in the differential clutch is very high. To prevent personal injury, wait for at least 10 minutes before removing any parts from the differential**

	clutch. **CAUTION:** Refer to Fastener Caution . **Procedure**
1	1. Remove the limited slip differential clutch low pressure pipe, refer to **Limited Slip Differential Clutch Low Pressure Pipe Replacement**, or limited slip differential clutch high pressure pipe, refer to **Limited Slip Differential Clutch High Pressure Pipe Replacement**. 2. Check the fluid level of the rear differential clutch. Refer to **Differential Clutch Oil Inspection**. **Tighten:** 7 N.m (62 lb in)

LIMITED SLIP DIFFERENTIAL CLUTCH LOW PRESSURE PIPE REPLACEMENT

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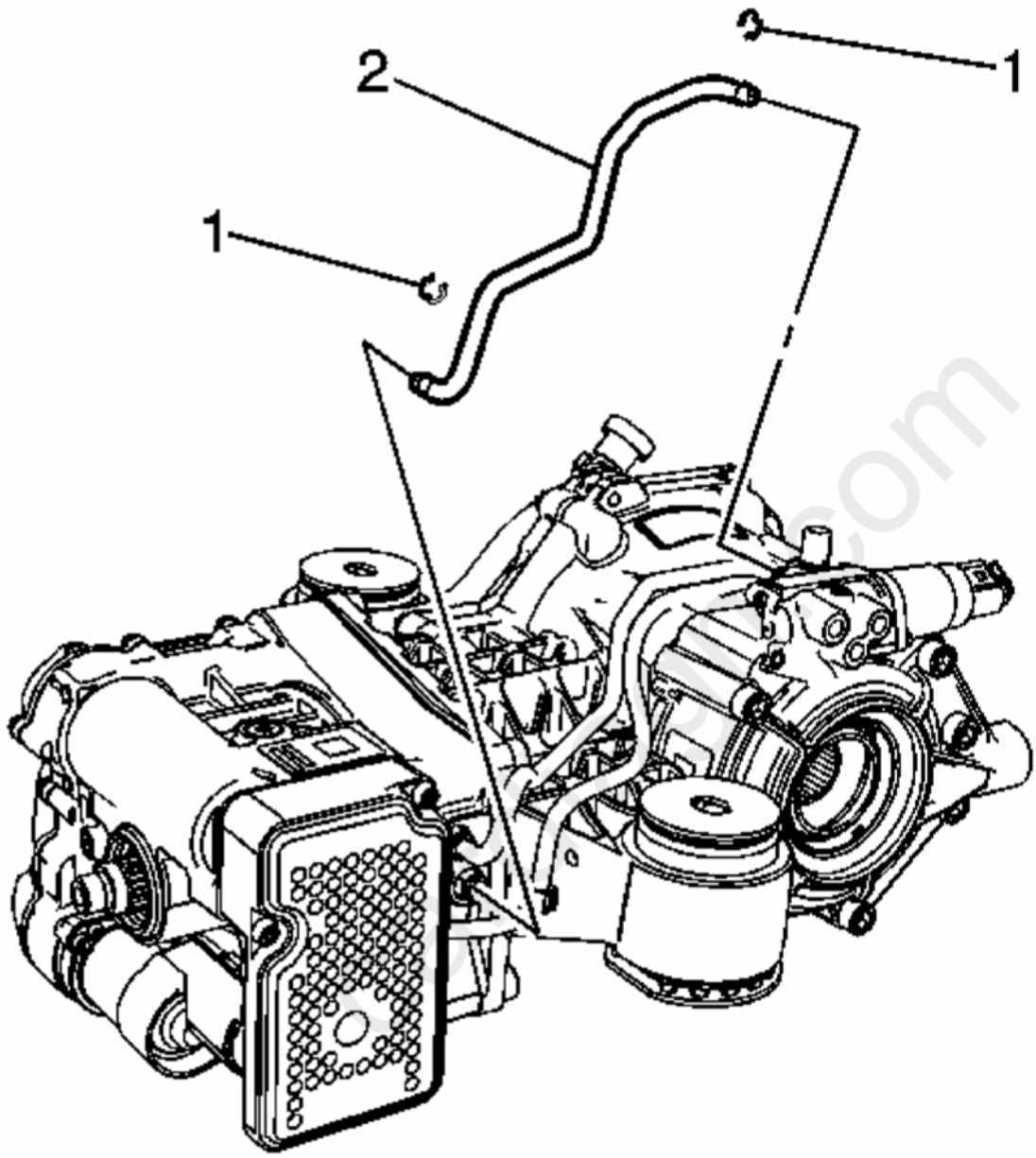


Fig. 19: View Of Limited Slip Differential Clutch Low Pressure Pipe
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
CAUTION: **It is very important to observe maximum cleanliness when working on the differential clutch. Dirt particles can seriously damage the function and service life of the differential clutch.** **Preliminary Procedure:** Remove the differential carrier assembly. Refer to **Differential Carrier Assembly Replacement**.	

1	imited Slip Differential Clutch ow Pressure Pipe Spring (Qty: 2) **Procedure** Using a small pick or flat bladed screwdriver, remove and discard the spring from the connector and replace with N . **Tip** nsure that the pipe is fully inserted into the connector before installing the spring.
2	imited Slip Differential Clutch ow Pressure Pipe **WARNING:** **The hydraulic pressure in the differential clutch is very high. To prevent personal injury, wait for at least 10 minutes before removing any parts from the differential clutch.** **Procedure** Check the fluid level of the rear differential clutch. Refer to **Differential Clutch Oil Inspection**.

LIMITED SLIP DIFFERE TIAL CL TCH HIGH PRESS RE PIPE REPLACEME T

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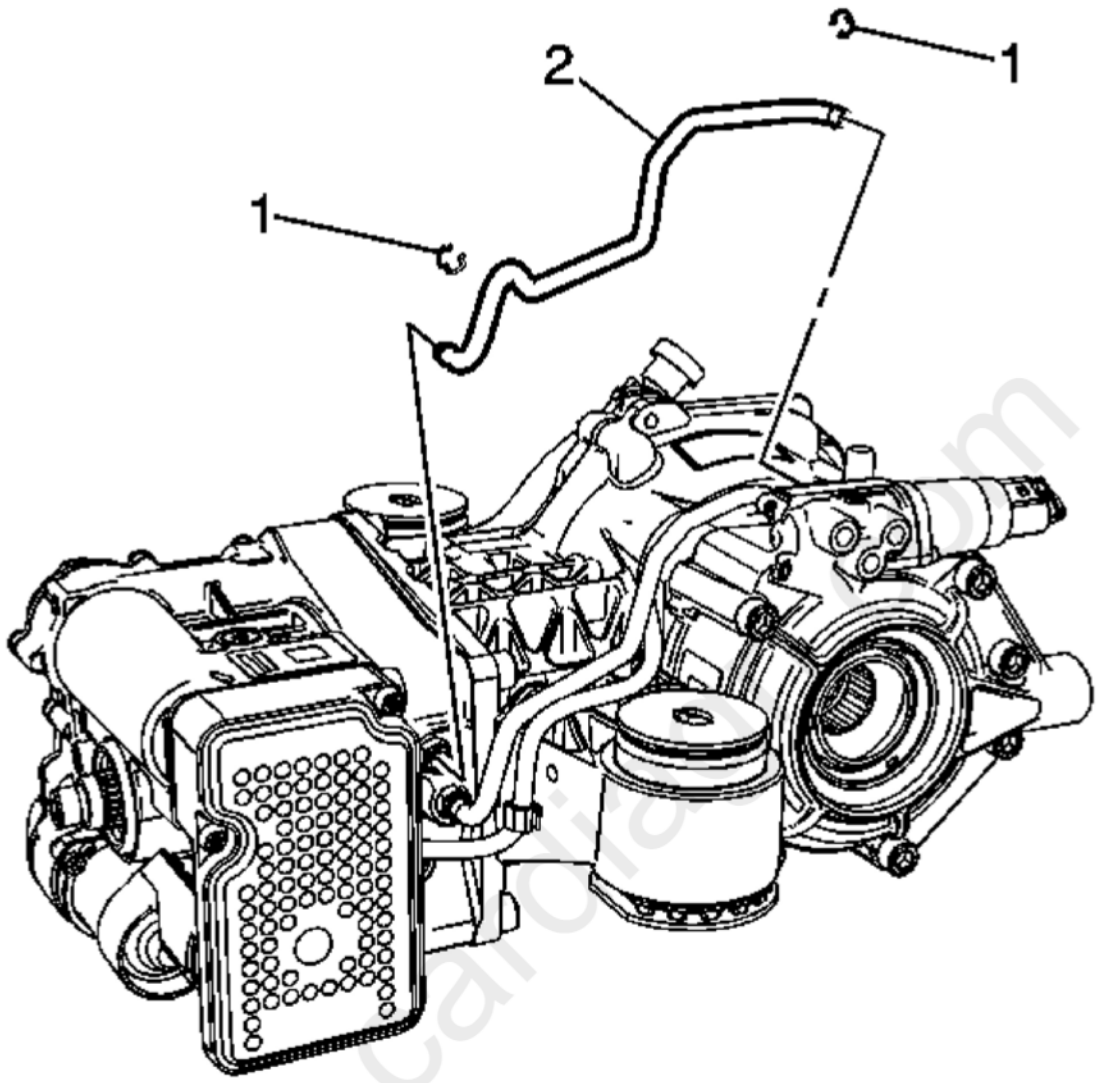


Fig 20 Identifying Limited Slip Differential Clutch High Pressure Pipe
Courtesy of GE ERAL MOTORS CORP

Callout	Component ame
CAUTION: **It is very important to observe maximum cleanliness when working on the differential clutch. Dirt particles can seriously damage the function and service life of the differential clutch.** **Preliminary Procedure** Remove the differential carrier assembly. Refer to **Differential Carrier Assembly Replacement**.	
1	imited Slip Differential Clutch High Pressure Pipe Spring (Qty: 2) **Procedure** Using a small pick or flat bladed screwdriver, remove and discard the spring from the connector and replace with N .

	Tip nsure that the pipe is fully inserted into the connector before installing the spring.
2	imited Slip Differential Clutch High Pressure Pipe **WARNING:** **The hydraulic pressure in the differential clutch is very high. To prevent personal injury, wait for at least 10 minutes before removing any parts from the differential clutch.** **Procedure** Check the fluid level of the rear differential clutch. Refer to **Differential Clutch Oil Inspection**.

LIMITED SLIP DIFFERE TIAL CL TCH VALVE REPLACEME T

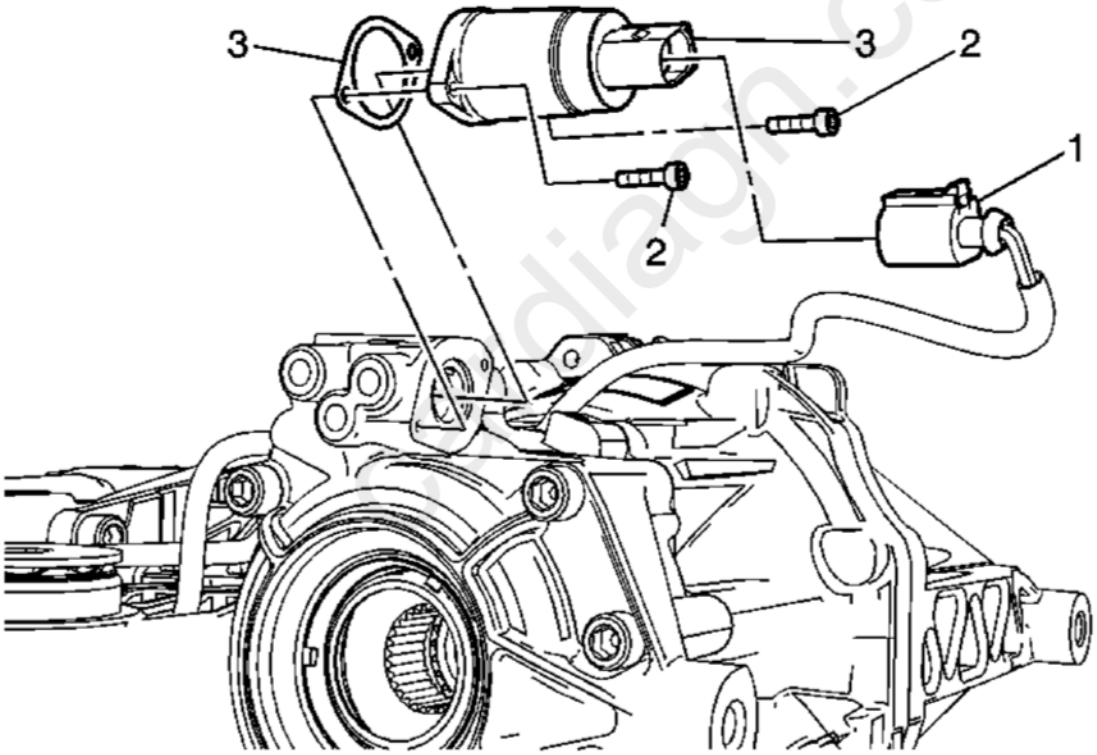
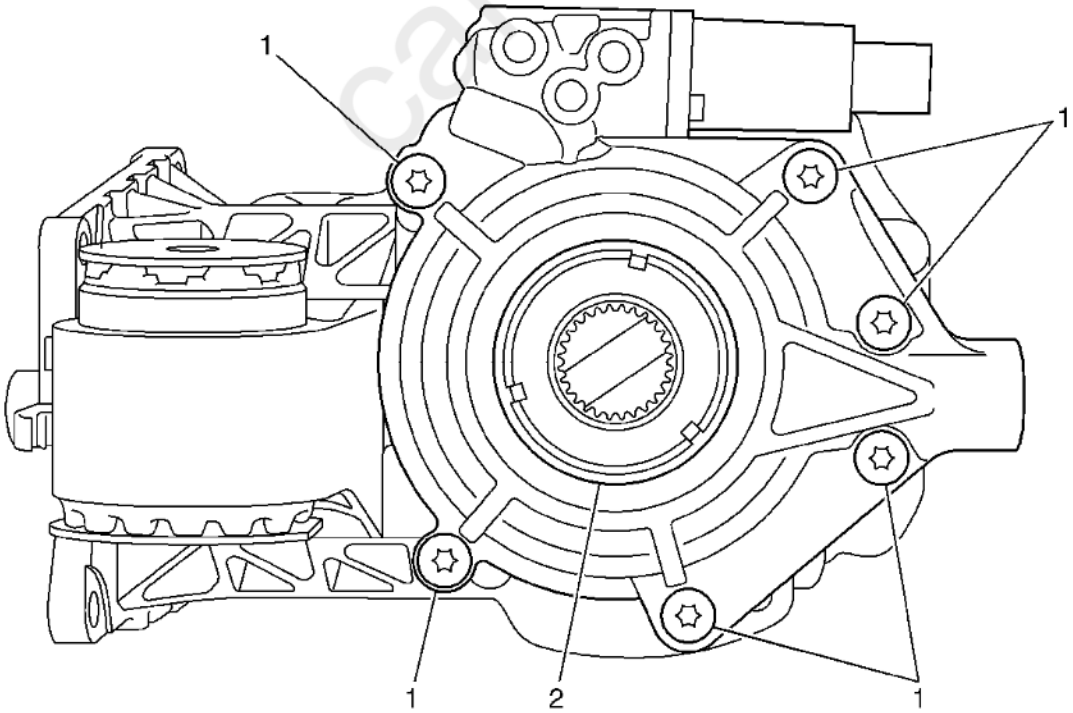


Fig 21 View Of Limited Slip Differential Clutch Valve
Courtesy of GE ERAL MOTORS CORP

Callout	Component ame
CAUTION: **It is very important to observe maximum cleanliness when working on the differential clutch. Dirt particles can seriously damage the function and service life of the differential clutch.**	

Preliminary Procedure Remove the propeller shaft. Refer to **Propeller Shaft Replacement** .	
1	Differential Clutch alve lectrical Connector **Procedure** ower the rear axle assembly to gain access to the differential clutch valve. Refer to **Differential Carrier Assembly Replacement**.
2	Differential Clutch alve Fastener (Qty: 2) **WARNING:** **The hydraulic pressure in the differential clutch is very high. To prevent personal injury, wait for at least 10 minutes before removing any parts from the differential clutch.** **CAUTION:** **Refer to Fastener Caution .** **Tighten** 3 N.m (2 lb in)
3	imited Slip Differential Clutch alve and Gasket **Procedure** Check the fluid level of the rear differential clutch. Refer to **Differential Clutch Oil Inspection**. **Tip** Preassemble assembly on the bench and use a new gasket. DO NOT reuse the old gasket.

LIMITED SLIP DIFFERE TIAL CL TCH REPLACEME T



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Fig 22 View Of Limited Slip Differential Clutch
Courtesy of GE ERAL MOTORS CORP

Callout	Component ame
CAUTION: **It is very important to observe maximum cleanliness when working on the differential clutch. Dirt particles can seriously damage the function and service life of the differential clutch.** **Preliminary Procedures** 1. Remove the rear axle assembly. Refer to **Differential Carrier Assembly Replacement**. 2. Drain the rear differential fluid. Refer to **Differential Oil Replacement**. 3. Remove the limited slip differential clutch low pressure pipes. Refer to **Limited Slip Differential Clutch Low Pressure Pipe Replacement**. 4. Remove the limited slip differential clutch high pressure pipes. Refer to **Limited Slip Differential Clutch High Pressure Pipe Replacement**.	
1	imited Slip Differential Clutch Bolt (Qty: 6) **WARNING:** **The hydraulic pressure in the differential clutch is very high. To prevent personal injury, wait for at least 10 minutes before removing any parts from the differential clutch.** **CAUTION:** **Refer to Fastener Caution .** **Procedure** Remove the electrical connector for the limited slip differential valve. **Tighten** 30 N.m(22 lb ft)
2	imited Slip Differential Clutch **Procedure** 1. nsure sealing surface is clean and free of any old seal material and new seal is attached to clutch upon installation. 2. Check the fluid level of the rear drive axle. Refer to **Differential Clutch Oil Inspection** and **Differential Oil Replacement**.

DIFFERE TIAL SEAL REPLACEME T

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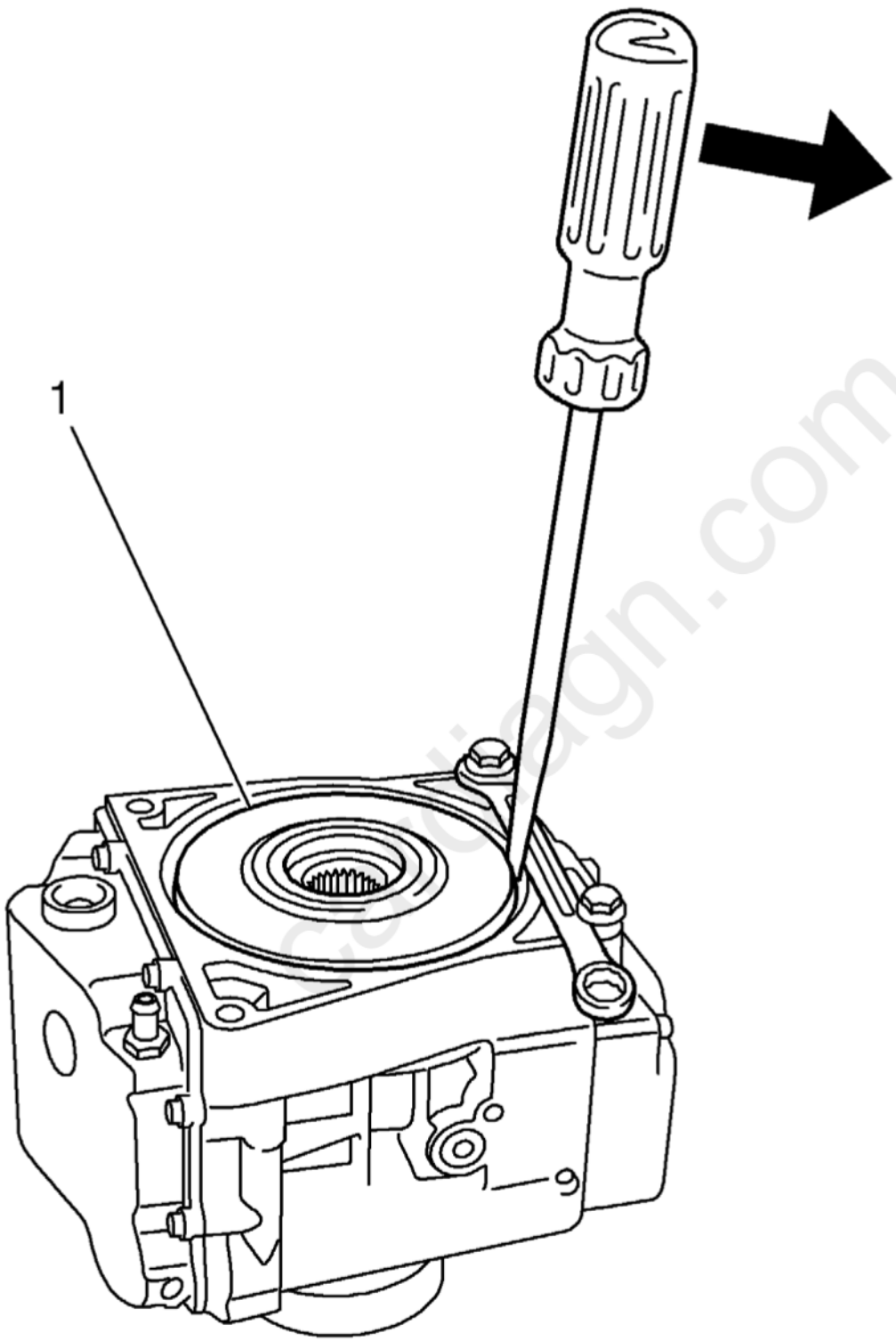


Fig. 23: Locating Differential Seal
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name

Preliminary Procedure:
Remove the differential clutch. Refer to **Differential Clutch Replacement**.

1	Differential Clutch Seal **Procedure** 1. Position a wrench cross the differential clutch. 2. Using a flat bladed screwdriver, remove the differential clutch. 3. Remove the open end wrench. 4. Apply a small amount of lubricant to the seal prior to installing it in the differential clutch. Refer to **Adhesives, Fluids, Lubricants, and Sealers**. 5. Using the **DT 0022:** installer and the **DT 8092:** handle, install the differential clutch seal. **Tip:** The seal shall be flush with the axle. **Special Tools** • **DT 8092:** Universal Handle • **DT 0022:** Seal Installer For equivalent regional tools, refer to **Special Tools**.

DIFFERENTIAL CLUTCH REPLACEMENT

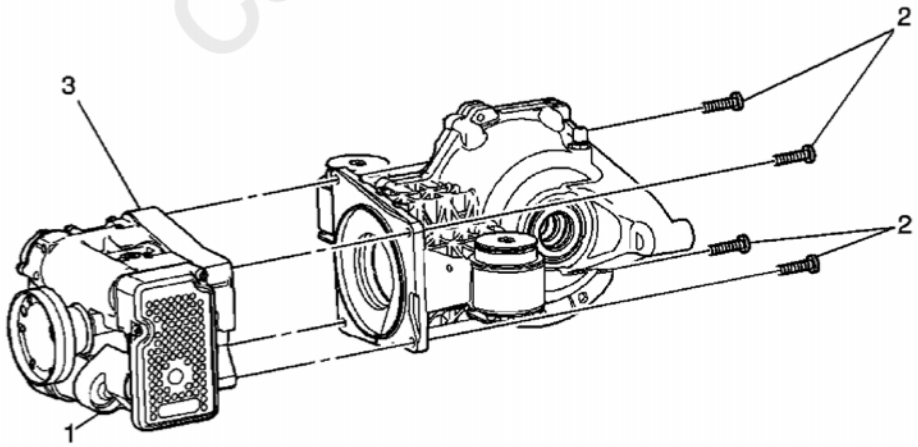


Fig. 2 : Identifying Differential Clutch Assembly Bolts
Courtesy of GENERAL MOTORS CORP.

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Callout	Component Name
CAUTION: **It is very important to observe maximum cleanliness when working on the differential clutch. Dirt particles can seriously damage the function and service life of the differential clutch.** **Preliminary Procedure:** Remove the rear differential assembly from the vehicle. Refer to **Differential Carrier Assembly Replacement**.	
1	Protective Cover
2	Rear Axle Fastener (Qty: 4) **WARNING:** **The hydraulic pressure in the differential clutch is very high. To prevent personal injury, wait for at least 10 minutes before removing any parts from the differential clutch.** **CAUTION:** **Refer to Fastener Caution .** **Tighten:** 30 N.m (22 lb ft)
3	Differential Clutch **Procedure** 1. Remove the limited slip differential clutch pipes, if needed. • For the limited slip differential clutch low pressure pipe, refer to **Limited Slip Differential Clutch Low Pressure Pipe Replacement** . • For the limited slip differential clutch high pressure pipe, refer to **Limited Slip Differential Clutch High Pressure Pipe Replacement** . 2. Check/fill oil level in the rear differential clutch. Refer to **Differential Clutch Oil Inspection**. 3. Program the rear differential clutch control module. Refer to **Service Programming System (SPS)** .

DIFFERENTIAL CLUTCH PUMP REPLACEMENT

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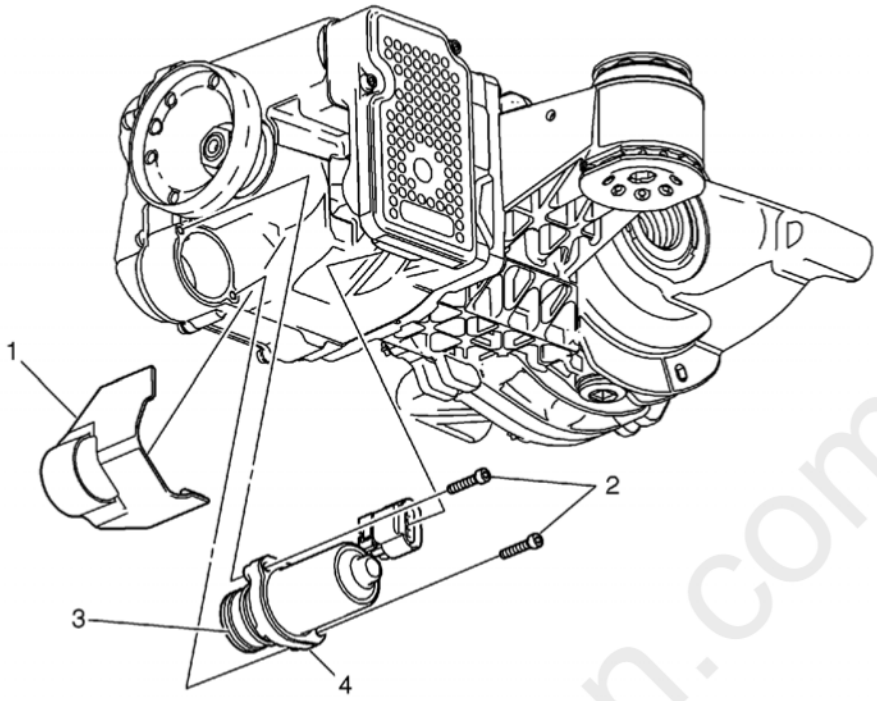


Fig. 2 : Identifying Differential Clutch Pump
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
CAUTION: **It is very important to observe maximum cleanliness when working on the differential clutch. Dirt particles can seriously damage the function and service life of the differential clutch.** **Preliminary Procedure:** Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .	
1	Differential Carrier Splash Guard Shield, If Installed
2	Differential Clutch Pump Bolts **CAUTION:** **Refer to Fastener Caution .** **Tighten:** 6 N.m (53 lb in)
3	Differential Clutch Pump O-rings (Qty: 2)
	Differential Clutch Pump **WARNING:** **The hydraulic pressure in the differential clutch is very high. To prevent personal injury, wait for at least 10 minutes before removing any parts from the differential clutch.**

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4	**Procedure** 1. Remove the electrical connector from the differential clutch pump. 2. Check the fluid level of the differential clutch. Refer to **Differential Clutch Oil Inspection**. **Tip:** Approximately 80 ml of oil will drain when the pump is removed.

DIFFERENTIAL CLUTCH SEAL REPLACEMENT

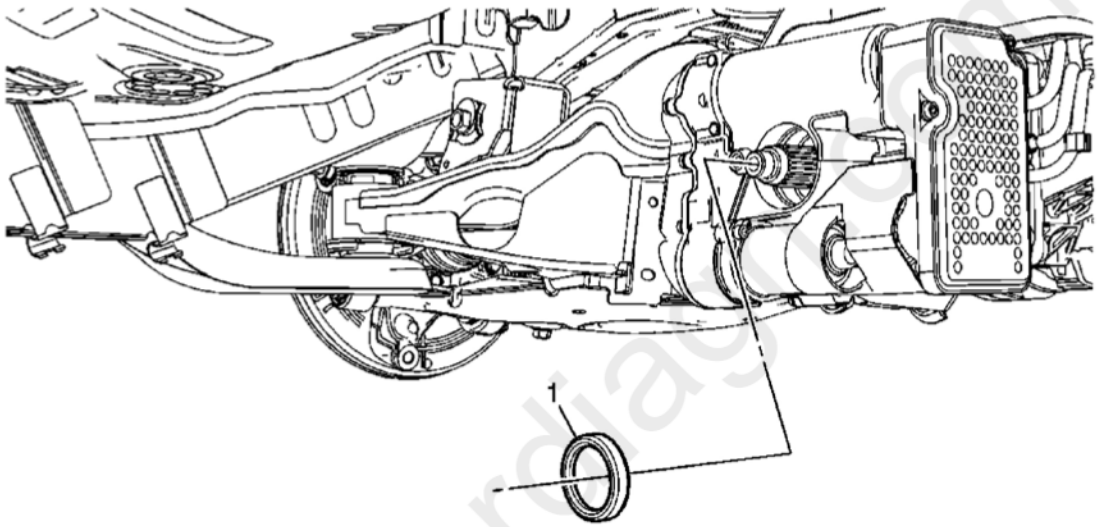


Fig. 2 : Identifying Differential Clutch Seal
Courtesy of GENERAL MOTORS CORP.

Callous	Component Name
Preliminary Procedure: Remove the propeller shaft flange. Refer to **Propeller Shaft Flange Replacement**.	
1	Differential Clutch Seal **Procedure** 1. Remove the differential clutch seal. 2. Using the **DT 90 :** installer, install the differential clutch seal. 3. Check lubricant level. Refer to **Differential Clutch Oil Inspection**. **Special Tools:** **DT 90 :** Seal Installer For equivalent regional tools, refer to **Special Tools**.

DIFFERENTIAL CLUTCH OIL FILTER REPLACEMENT

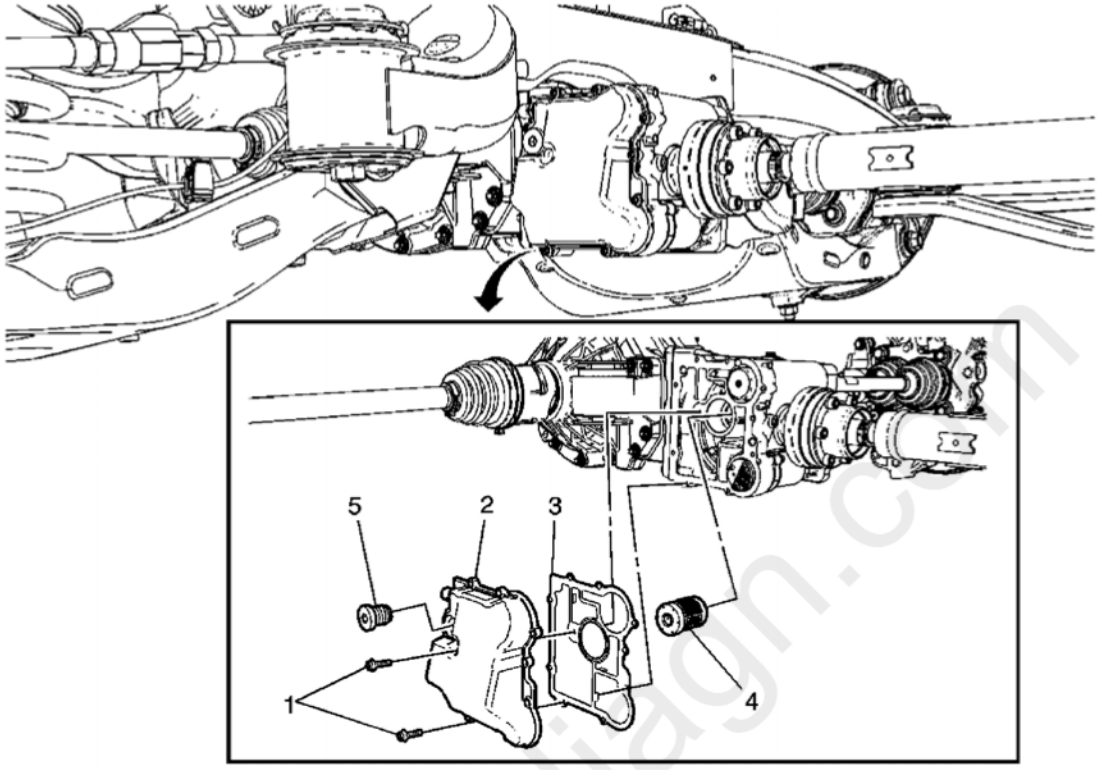


Fig. 27: View Of Differential Clutch Oil Filter
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure 1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** 2. Remove the exhaust muffler assembly. Refer to **Exhaust Muffler Replacement (LF1)** or **Exhaust Muffler Replacement (LAU)** .	
1	Differential Clutch Cover Bolts (Qty: 10) **WARNING:** **The hydraulic pressure in the differential clutch is very high. To prevent personal injury, wait for at least 10 minutes before removing any parts from the differential clutch.** **CAUTION:** **It is very important to observe maximum cleanliness when working on the differential clutch. Dirt particles can seriously damage the function and service life of the differential clutch.**

	CAUTION: **Refer to Fastener Caution .** **Procedure:** Tighten the differential clutch cover bolts twice in a star pattern to ensure proper sealing around the accumulator and the filter. **Tighten:** 6 N.m (53 lb in)
2	Differential Clutch Cover **Procedure:** Remove the vent hose.
3	Differential Clutch Gasket **Procedure** 1. Remove and discard the gasket and replace with NEW only. 2. Ensure that the sealing surface is clean and free of any foreign material.
4	Differential Clutch Oil Filter
5	Differential Clutch Cover Plug **Procedure:** Fill the differential clutch with fluid. Refer to **Differential Clutch Oil Replacement** **Tighten:** 14 N.m (10 lb ft)

LIMITED SLIP DIFFERENTIAL DISASSEMBLE

CAUTION: Refer to Fastener Caution .

1. Drain the oil from the limited slip differential and fit the drain plug with a new seal and tighten to 25 N.m (18.4 lb ft).
2. Remove the complete unit, differential clutch and limited slip differential. Refer to **Differential Carrier Assembly Replacement**
3. Seal the drive shaft holes in the limited slip differential and clean the housing.
4. Place the unit on its side.

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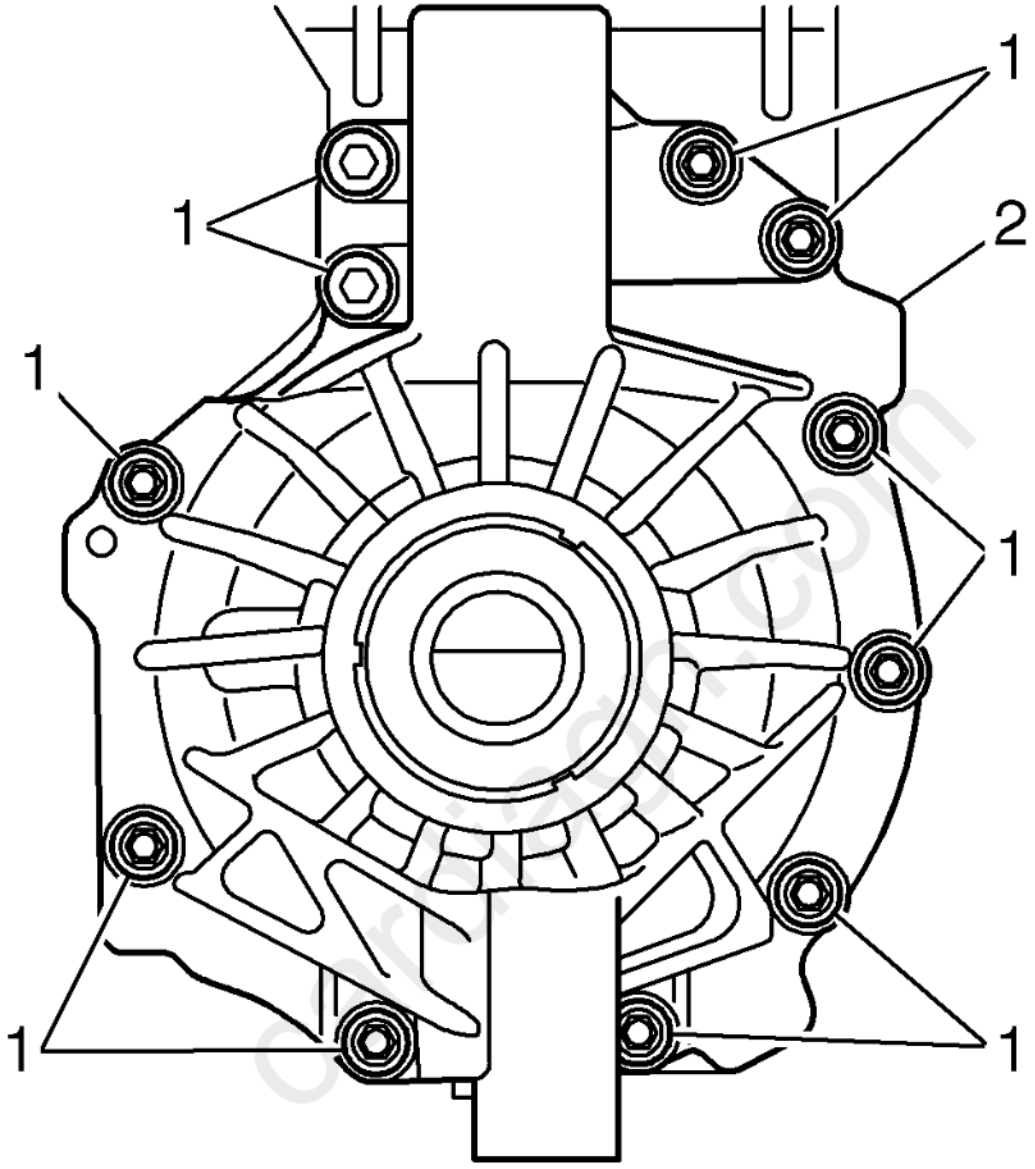


Fig. 28: Identifying Differential Housing Bolt Loosening/Tightening Sequence
Courtesy of GENERAL MOTORS CORP.

5. Remove the bolts (1).
6. Remove the right-hand limited slip differential housing (2).

LIMITED SLIP DIFFERENTIAL ASSEMBLE

1. Clean sealant from the sealing surfaces and wash with a suitable degreaser. Refer to **Adhesives, Fluids, Lubricants, and Sealers**

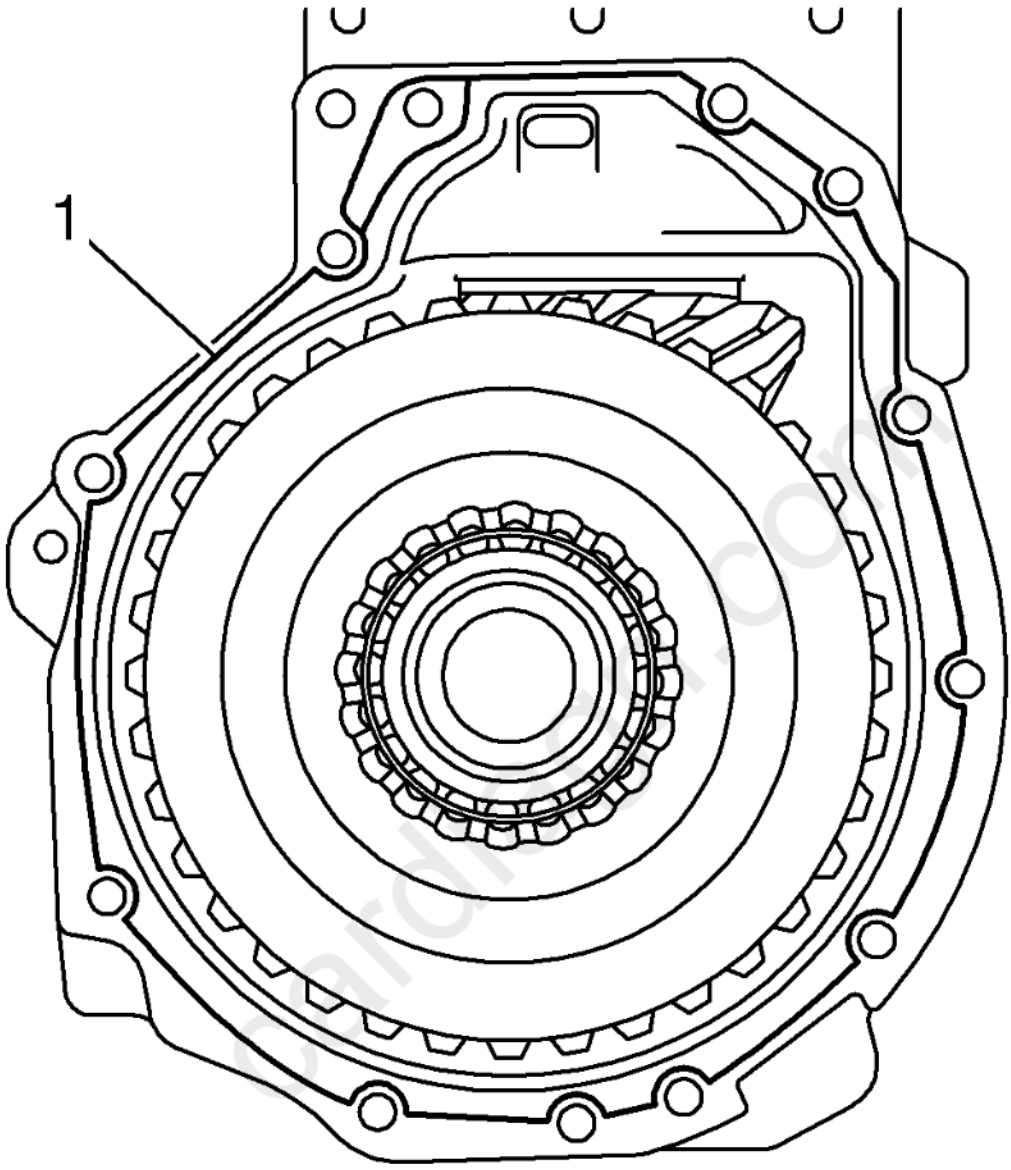


Fig. 29: Identifying Sealant Bead Application Area
Courtesy of GENERAL MOTORS CORP.

2. Apply a bead of (1) Sealing adhesive to one sealing surface Refer to **Adhesives, Fluids, Lubricants, and Sealers**

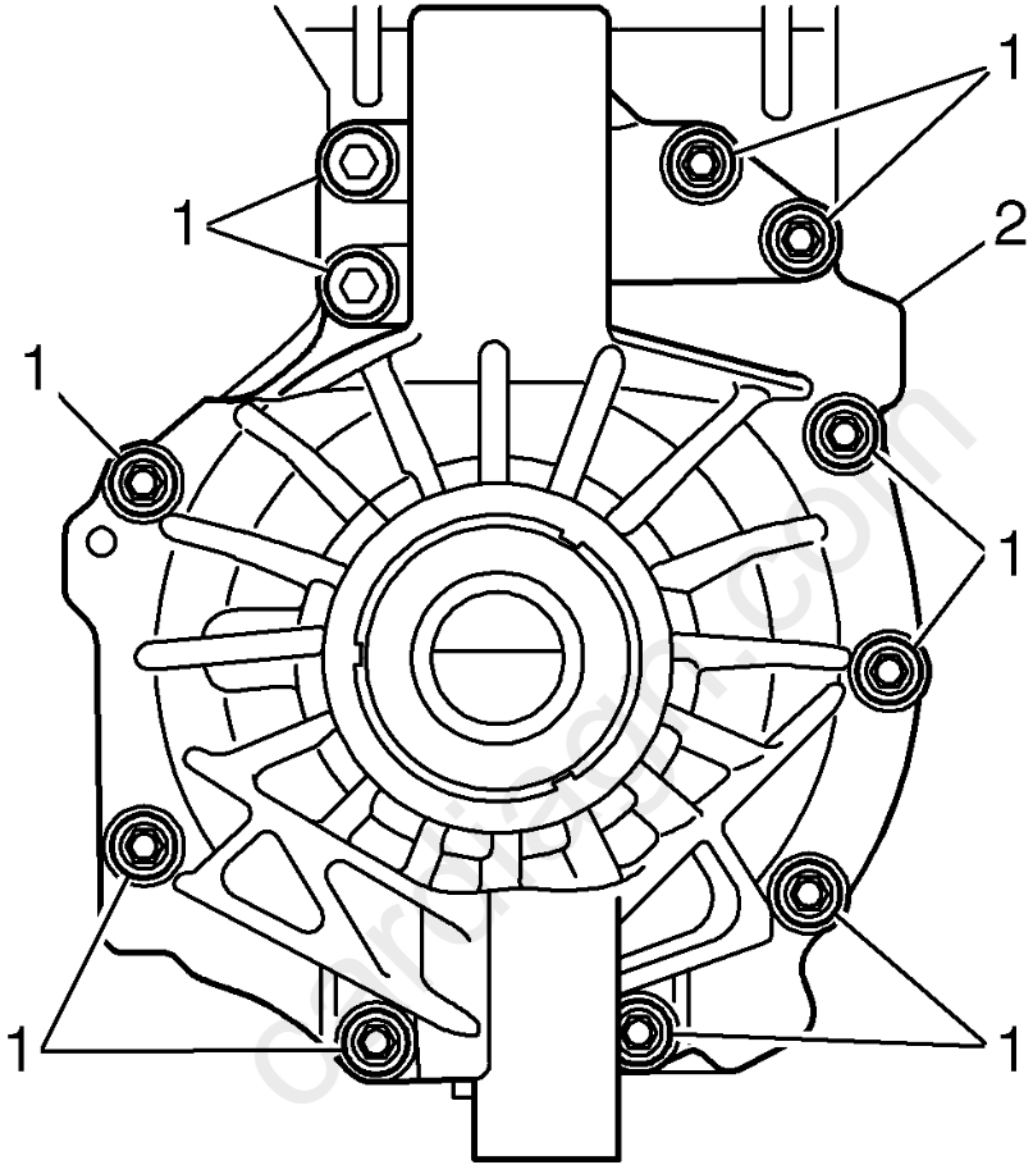


Fig. 30: Identifying Differential Housing Bolt Loosening/Tightening Sequence
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Fastener Caution .

3. Fit the right-hand limited slip differential housing (2) using new bolts (1) and tighten to 45 N.m (33 lb ft).
4. Fit Complete unit, differential clutch and limited slip differential. Refer to **Differential Carrier Assembly Replacement**
5. Fill the limited slip differential with oil, using a clean funnel and hose. The oil level should be below the hole. For oil type and volume refer to **Adhesives, Fluids, Lubricants, and Sealers**.
6. Fit the level plug with a new sealing washer and tighten to 25 N.m (18.4 lb ft).

ESCRIPTION AN OPERATION

DIFFERENTIAL CARRIER ASSEMBLY DESCRIPTION

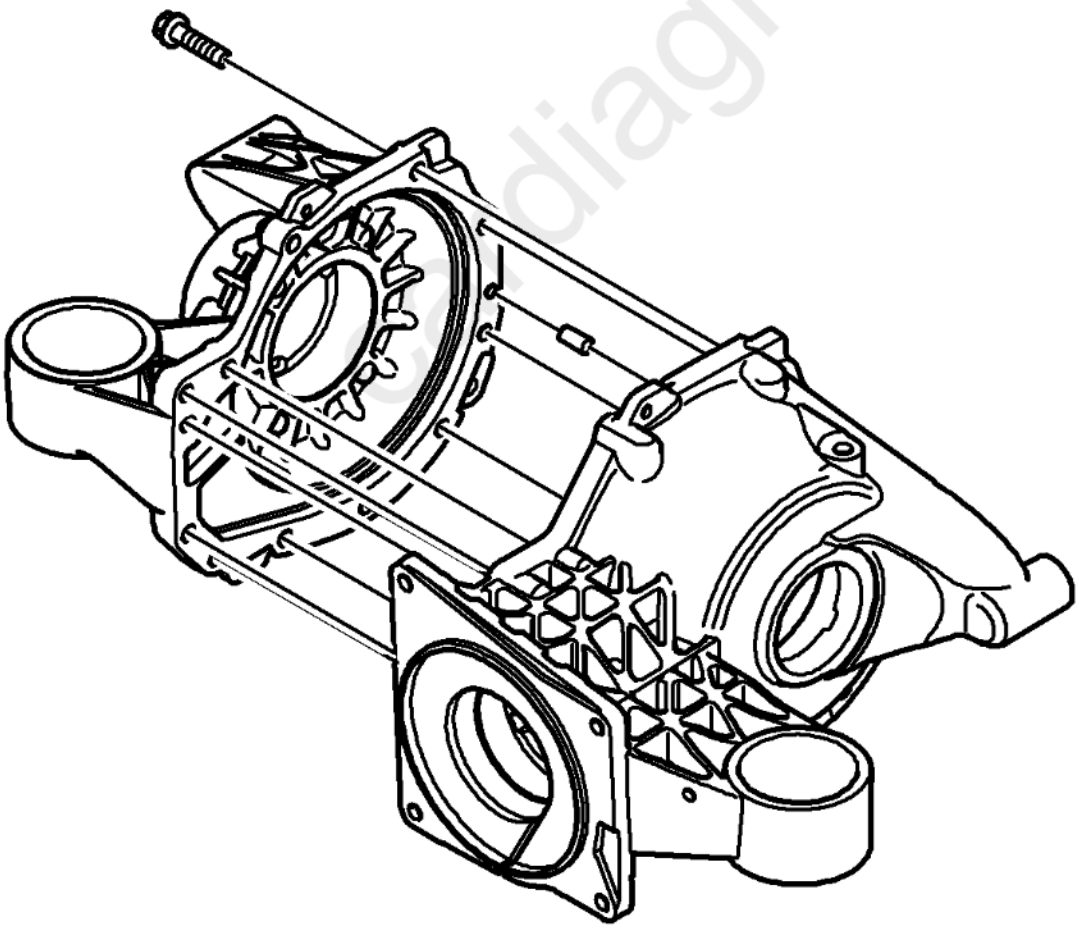
General

The differential carrier assembly is located in the rear subframe and the drive shafts extend from it to each respective rear wheel. The final drive gear consists of a hypoid gear and a differential. The assembly is bolted to the subframe with 4 bolts.

The splines-equipped pinion shaft for the final drive gear is directly inserted into the disc cage for the differential.

During manufacture the differential carrier assembly is filled with oil, which then does not require changing. The correct type of oil must be used without exception when filling. The incorrect type of oil may destroy the differential. The differential is fully mechanical.

Housing



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Fig. 31: Identifying Differential Carrier Assembly Housing & Bolts
Courtesy of GENERAL MOTORS CORP.

The differential carrier assembly housing consists of two halves, a right and left-hand half, bolted to each other with 11 bolts. Their relative position is governed by two guide pins. Housing and cover are produced from a high-pressure cast aluminium alloy. A number of reinforcement ribs are fitted in suitable locations to strengthen the housing and cover. The mating face between them is sealed using sealant.

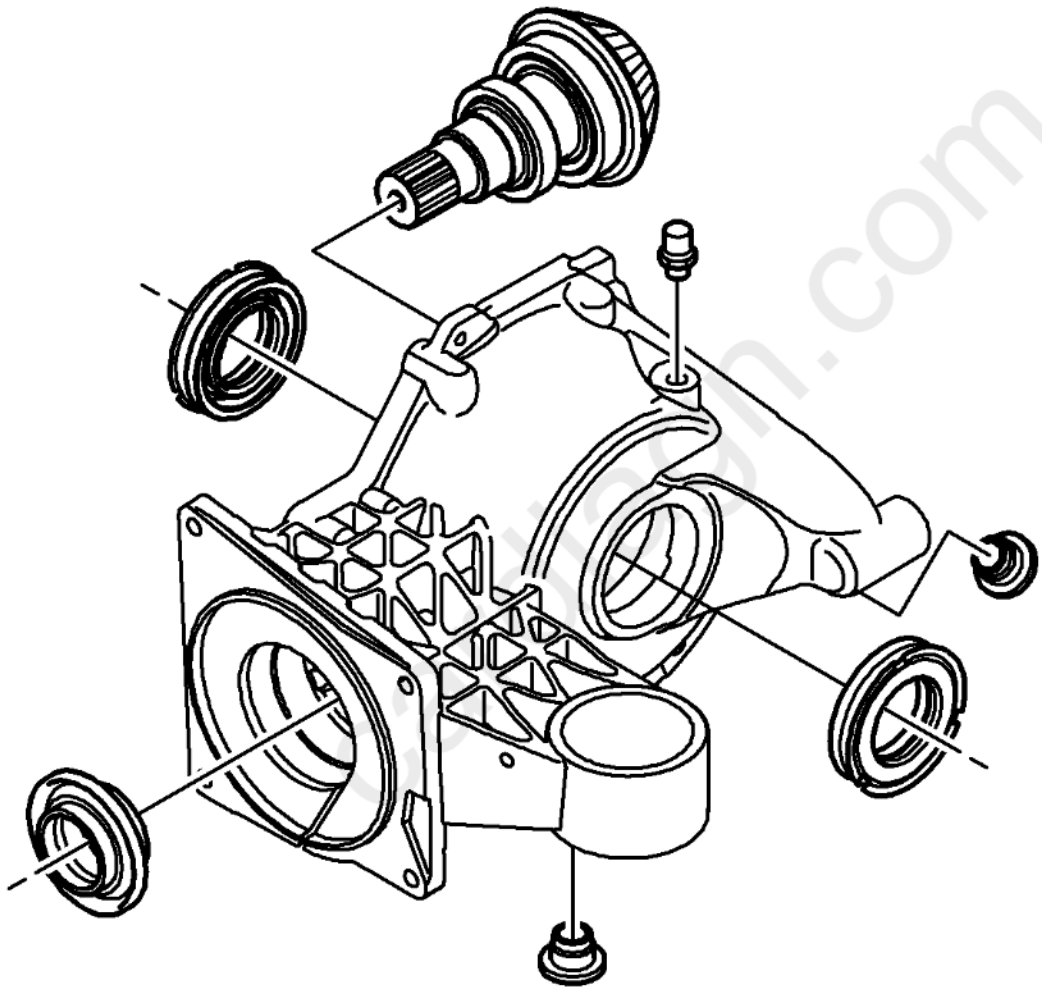


Fig. 32: Locating Differential Carrier Assembly Housing & Seals
Courtesy of GENERAL MOTORS CORP.

The left-hand half contains pinion, oil level plug, drain plug, air valve, bearing race for the final drive gear's left-hand bearing, stuffing box for sealing at the drive shaft lead-through. If the car is equipped with limited slip differential clutch then it is bolted to the left-hand half of the final drive gear.

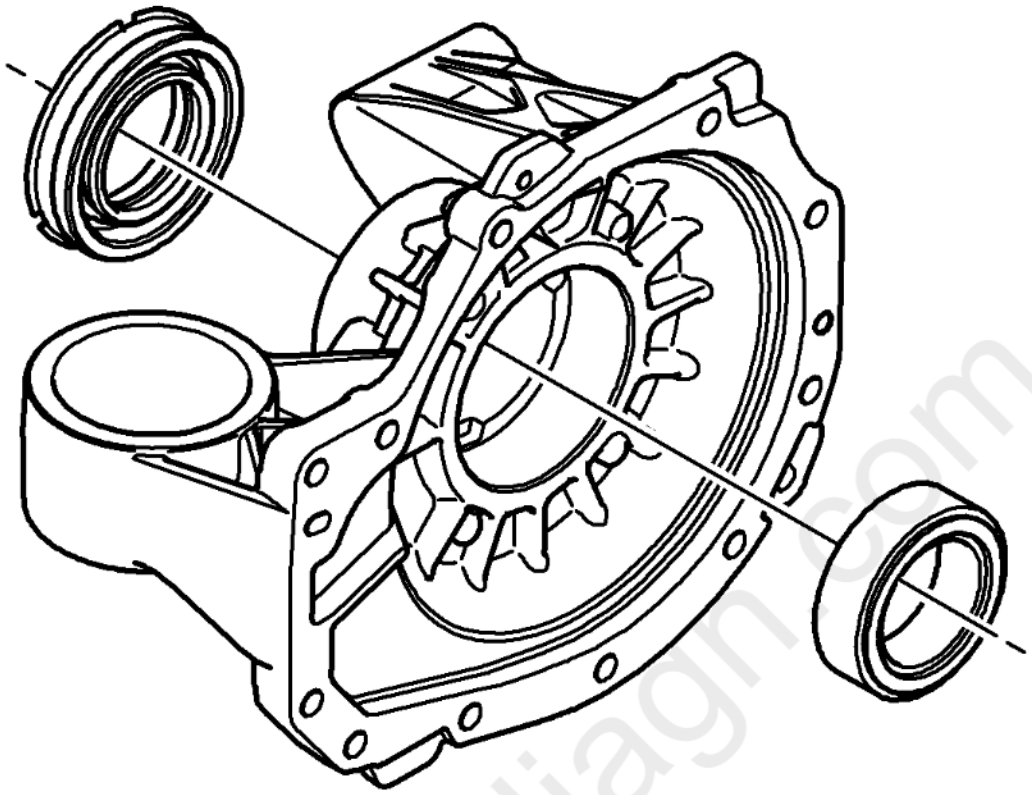


Fig. 33: View Of Final Drive Bearings
Courtesy of GENERAL MOTORS CORP.

The right-hand half contains bearing race for the final drive gear's right-hand bearing as well as stuffing box for sealing at the drive shaft lead-through.

Pinion

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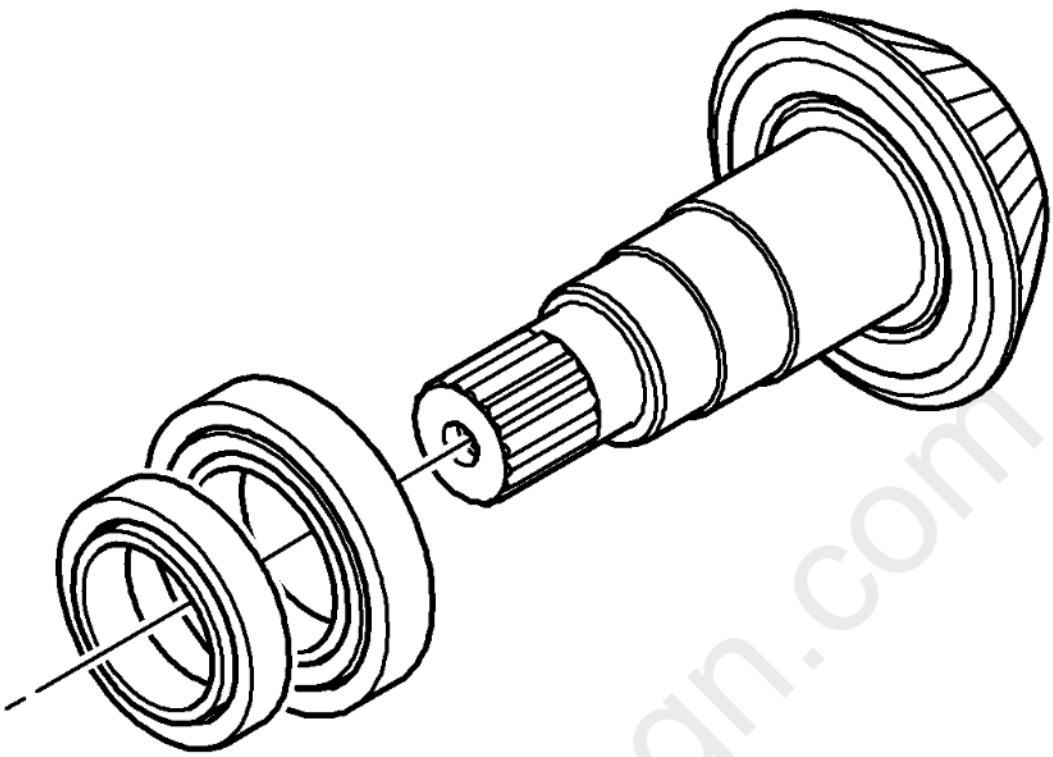


Fig. 34: View Of Final Drive Gear Bearing
Courtesy of GENERAL MOTORS CORP.

The pinion is fitted in the final drive gear's left-hand housing and cannot be replaced. It is mounted with two conical roller bearings, fitted towards each other. The bearing closest to the pinion gear absorbs forces that attempt to press the pinion gear from the crown wheel, while the farther bearing absorbs the forces that attempt to press the pinion gear into the crown wheel. The bearings have the correct preload by means of a nut fitted on the shaft being tightened until the correct bearing preload is obtained.

The pinion gear's gear contact to the crown wheel is governed by shims. A stuffing box in the front edge of the left-hand housing seals against the pinion shaft.

The pinion is matched together with the crown wheel.

Differential, assembly

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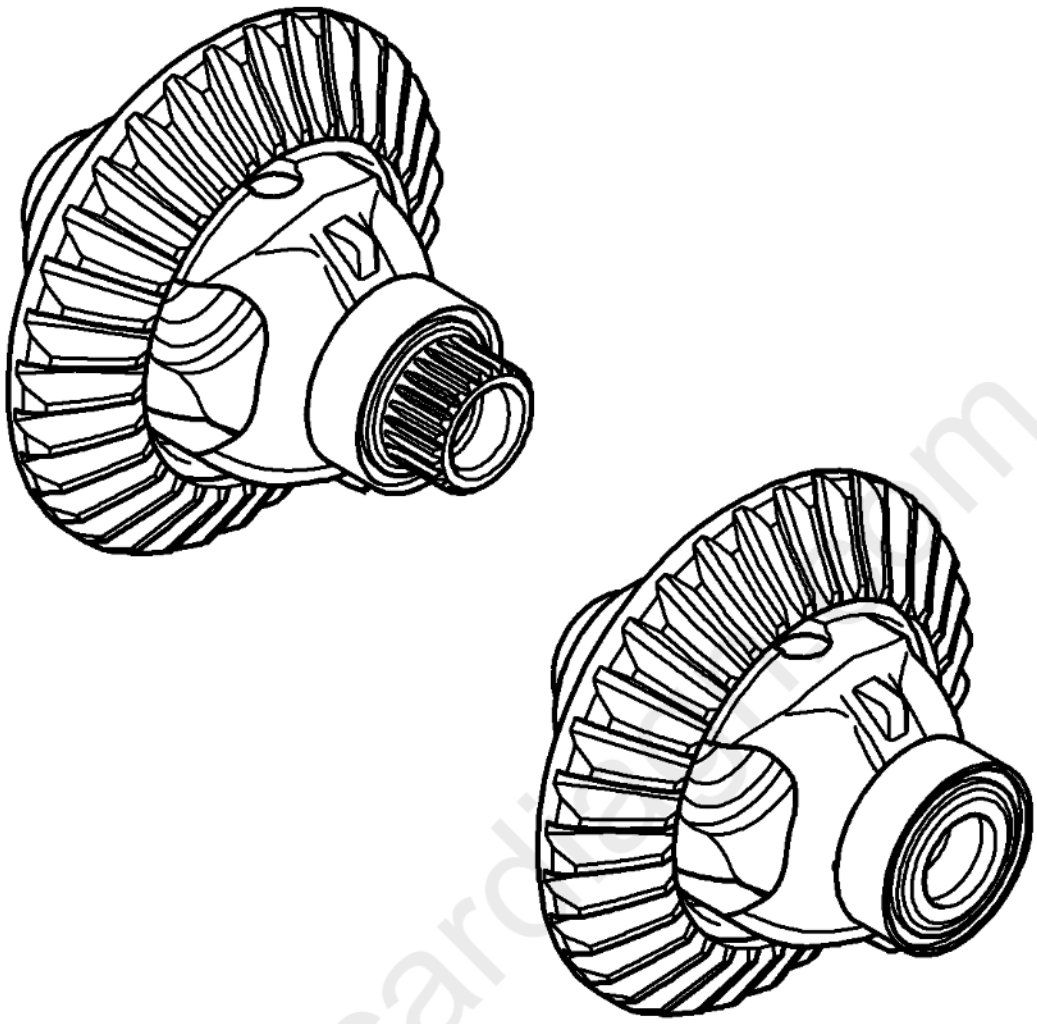


Fig. 35: Identifying Differential, assembly
Courtesy of GENERAL MOTORS CORP.

The differential consists of a crown wheel and differential housing with associated gears. It is fitted in the left-hand half of the final drive gear housing. The crown wheel is laser welded to the differential housing.

The differential is made up of a forged housing, two differential gears and two drive shaft gears. The differential gears are mounted on a ground and hardened shaft journal, the ends of which are attached into the differential housing and locked by the crown wheel. The drive shaft gears are internally equipped with splines in which the drive shafts fit. Behind the gears, towards the differential housing, there is a spring-loaded thrust washer which provides the drive shaft gears with the correct gear contact to the differential gears. The drive shafts are mounted directly in the differential housing material, the lead-throughs are equipped with lubricating grooves.

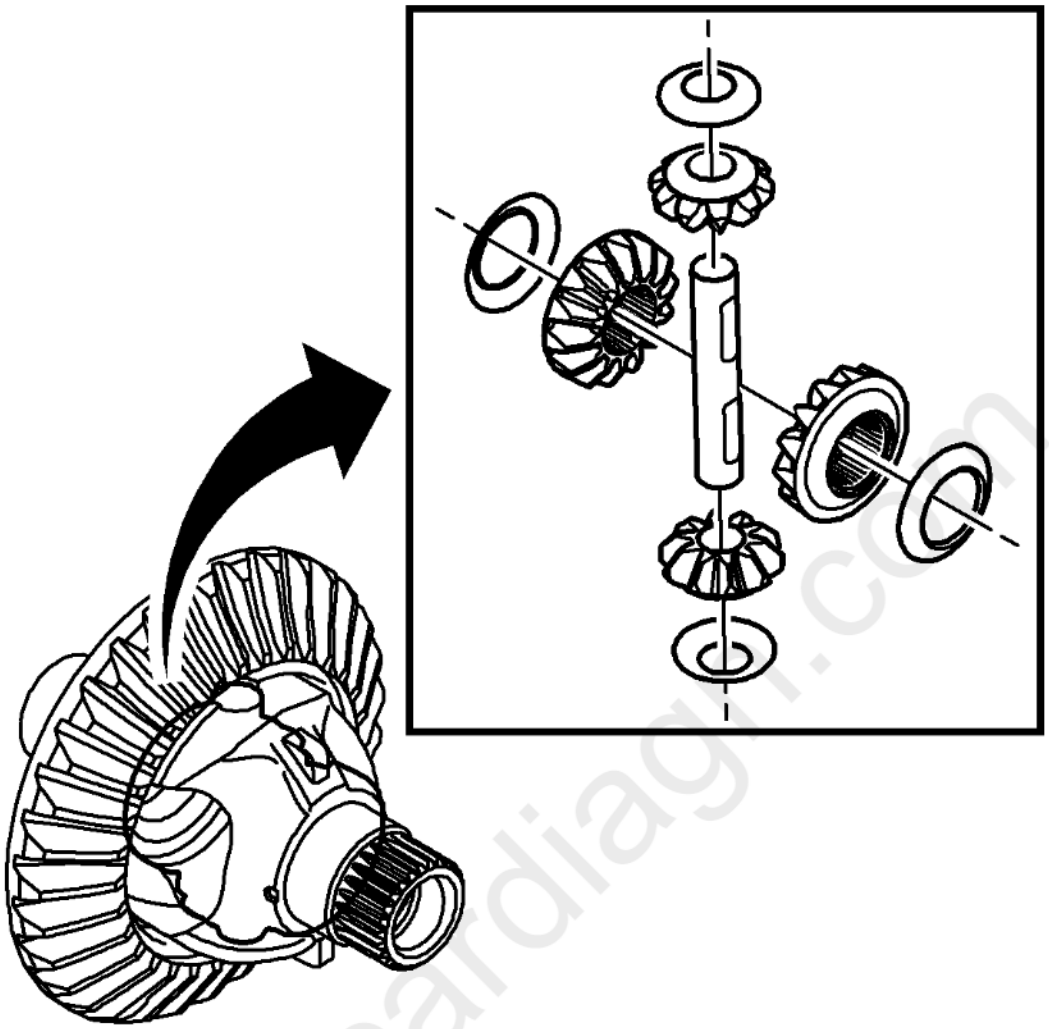


Fig 36 View Of Differential nit Components
Courtesy of GE ERAL MOTORS CORP

The differential unit is mounted in two conical roller bearings. The bearings are given the correct preload at manufacture by means of shims being fitted behind the bearing races in the respective housing.

The function of the differential is to allow the outer wheel to rotate faster than the inner wheel when cornering.

LIMITED SLIP DIFFERE TIAL DESCRIPTIO A D OPERATIO

The limited slip differential clutch is bolted with 6 bolts to the left-hand side of the differential carrier. Their relative position is governed by 2 guide pins and a flange on the final drive gear.

Its function is to fully or partly lock the left-hand drive shaft to the differential housing. When this takes place wheel torque can be distributed between the rear wheels.

The limited slip differential clutch is a disc type, and it is electro-hydraulically controlled by the rear drive

control module (RDCM) via a pressure control valve which is fitted on the limited slip differential clutch housing. The disc pack assembly consists of a hub, smooth steel driven plates with friction material, clutch cage, thrust bearing and journal bearing. The disc pack function is to steplessly distribute the torque between the rear wheels It consists of 9 driven plates connected to the hub. They are produced in steel and are smooth. Between the smooth steel driven plates are 8 steel discs equipped with friction material.

The disc pack is compressed by means of an operating piston. On the rear of the piston a variable oil pressure (0-30 bar, 0-3000 kPa) acts via the pressure control valve which is controlled by the RDCM.

For cooling and lubrication of the disc pack the hub is equipped with 3 longitudinal oil ducts. They are supplied with oil from a chamber in connection with differential carrier. The oil is led through the ducts to the center of the disc pack and is thrown out through the driven plates when they rotate.

REAR DRIVE A LE DESCRIPTIO A D OPERATIO

Components

The all-wheel drive system consists of 6 main components:

- transfer case
- propeller shaft
- rear drive clutch solenoid valve
- differential clutch pump
- rear differential clutch solenoid valve
- rear differential clutch control module

Transfer Case

The transfer case is mounted on the side of the transmission. Its function is to take power from the gearbox and transfer it via a hypoid gear and a propeller shaft to the differential clutch.

Differential Clutch

The function of the differential clutch is to control the torque to the rear wheels. It can be varied between 0-100% drive via a hydraulically controlled multi-disc clutch. The differential clutch is bolted to the limited slip differential with 4 bolts and has a dedicated oil supply separate from the differential.

Propeller Shaft

The function of the propeller shaft is to transfer power from the transfer case to the differential clutch.

Limited Slip Differential

The limited slip differential, also referred to as the rear drive module, is located in the subframe and the drive shafts extend from it to each rear wheel. The limited slip differential consists of a hypoid gear and a differential which has a dedicated oil supply separate from the differential clutch. The limited slip differential is fully

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mechanical. The limited slip differential clutch, if installed, is bolted with 6 bolts to the left-hand side of the limited slip differential. Its function is to fully or partly lock the left-hand drive shaft to the differential housing. When this takes place the drive torque can be distributed between the rear wheels. The limited slip differential clutch is a disc type, and it is electro-hydraulically controlled by the rear differential clutch control module via a pressure control valve which is fitted on the limited slip differential clutch housing. The rear differential clutch control module calculates drive torque distribution. There are two variants: with and without limited slip differential clutch for the rear wheels.

Differential Clutch Pump

The differential clutch pump consists of an electric motor and a pump. It is supplied with voltage from the rear differential clutch control module. The differential clutch pump produces an operating pressure of 2700-3200 kPa (392-464 PSI). The rear drive clutch solenoid valve is electrically controlled and regulates the hydraulic pressure between 0-3000 kPa (435 PSI). It is directly connected to the rear differential clutch control module which supplies it with a pulse width modulated voltage. The rear differential control module activates the output to the differential clutch pump as soon as the the engine started. The output is active until the calculated pressure is approximately 3200 kPa (464 PSI). The pressure is calculated by the rear differential control module by measuring the differential clutch pump electric motor power consumption. The higher the pressure, the greater the resistance is for the electric motor to drive the pump therefore the current required increases. When the system pressure is approximately 3200 kPa (464 PSI), the rear drive clutch solenoid valve bleeds off the excess pressure so that the pressure does not increase any further. The current to the motor does not increase any further but remains constant. When the maximum system pressure is reached, the rear differential control module shuts down the pump. Restart takes place when the calculated pressure drops below approx. 2700 kPa (392 PSI).

Rear Differential Clutch Control Module

The rear differential clutch control module is fitted on the housing. The hydraulic pressure is built up by the differential clutch pump, and is controlled by the rear differential clutch control module via the rear drive clutch solenoid valve. Utilizing information on the serial data bus, the rear differential clutch control module calculates the drive torque distribution between front and rear axles as well as the distribution between the rear wheels for vehicles with limited slip differential clutch. The rear differential clutch control module is connected to the vehicle's high speed communication bus. The serial data messages are used to determine the operating/driving conditions for the vehicle and how much drive torque should be transferred to the rear wheels. Since the rear differential clutch control module and the rear drive clutch solenoid valve are calibrated as a matched set, they must be replaced together without exception.

The rear differential clutch control module is constantly monitoring for bus communication, inputs, outputs, certain mechanical faults and internal control module faults. If relevant control module functions are missing or other mechanical or electrical faults are recognized, diagnostic trouble codes are generated.

- Internal signals

  The control module has a monitoring for internal control module faults.

- Input signals

  The control module has an input for an internal temperature sensor. The temperature sensor is fitted on

the rear differential control module circuit board and is monitored for electrical faults. The temperature sensor is also used by the rear differential control module to calculate the current fluid and disc pack temperature in the differential clutch.

- Output signals

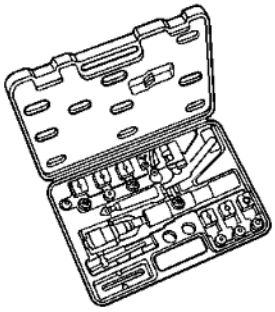
  The rear differential clutch control module has outputs for the rear drive clutch solenoid valve and the rear differential clutch solenoid valve for the limited slip differential clutch (if equipped) as well as for the differential clutch pump. These are all monitored for electrical faults.

- Mechanical functions

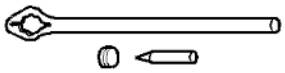
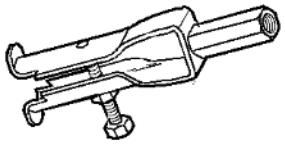
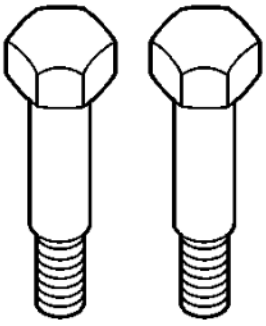
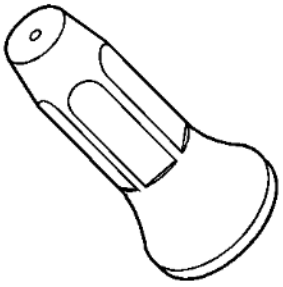
  The control module can diagnose clogged pressure control valves and leaking check valves.

SPECIAL TOOLS AND EQUIPMENT

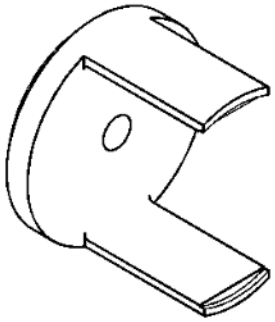
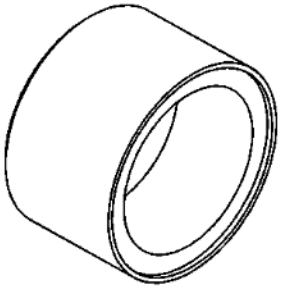
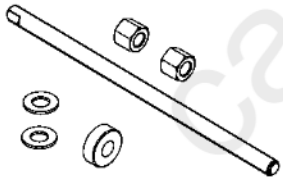
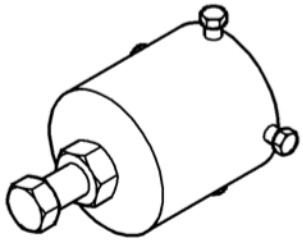
SPECIAL TOOLS

Illustration	Tool number/Description
	GE 23907-1 DW 0991758010 J 23907 Slide Hammer
	DT 8092 GE 8092 J 8092 KMJ 8092 Universal Handle
	DT 8614-A J 8614-A

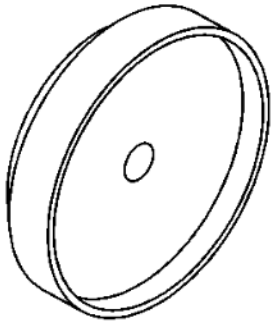
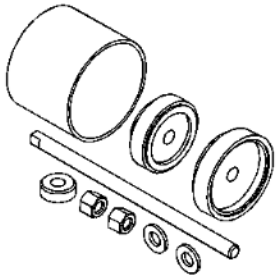
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	Holding Fixture
	DT 29369-2 J 29369-1 Puller Drive Shaft Seal
	DT 44873-2 J 44873-2 Pinion Flange Holder and Remover Bolts
	DT 49065 Seal Installer
	DT 49068 Fitting Drift

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	DT 49126-1 Press Tool
	DT 49126-2 Press Tool
	DT 49126-10 Bushing Replacer Hardware Kit
	DT 49231 Puller

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	DT 50022 Seal Installer
	DT 50197 Press Tool Kit

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