SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Folding Top Bow Screws	3 N.m	27 lb in
Folding Top Compression Seal Panel Screws	5 N.m	44 lb in
Folding Top Front Latch Striker Screws	10 N.m	89 lb in
Folding Top Front Latch Upper Screws	7.5 N.m	66 lb in
Folding Top Front Locating Pin	17 N.m	13 lb ft
Folding Top Inside Bow Screws	22 N.m	16 lb ft
Folding Top Latch Cylinder Link Screw	7.5 N.m	66 lb in
Folding Top Main Cylinder Screw	7.5 N.m	66 lb in
Folding Top Number 5 Bow Screws	10 N.m	89 lb in
Folding Top Outside Bow Screws	7.5 N.m	66 lb in
Folding Top Pivot Bracket Bolts	22 N.m	16 lb ft
Folding Top Pump Bracket Nuts	22 N.m	16 lb ft
Folding Top Pump Manifold Plate Bolts	10 N.m	89 lb in
Folding Top Side Rail Bracket Bolts	22 N.m	16 lb ft
Folding Top Stowage Compartment Bracket Nuts	9 N.m	80 lb in
Folding Top Stowage Compartment Extension Outer Panel Bolts	4 N.m	35 lb in
Folding Top Stowage Compartment Lid Hinge Bolts	32 N.m	24 lb ft
Folding Top Stowage Compartment Lid Hinge Nuts	22 N.m	16 lb ft
Reservoir Filler Plug	2 N.m	18 lb in
Roof Retractable Center Panel Weatherstrip Screws	7.5 N.m	66 lb in
Roof Retractable Front Panel Side Weatherstrip Screws	7.5 N.m	66 lb in
Roof Retractable Position Sensor Screw	2 N.m	18 lb in
Roof Retractable Rear Panel Weatherstrip Screws	7.5 N.m	66 lb in

SCHEMATIC WIRING DIAGRAMS

FOLDING TOP WIRING SCHEMATICS

Power, Ground, Serial Data, Sensors and Folding Top Control Switch Wiring Schematics

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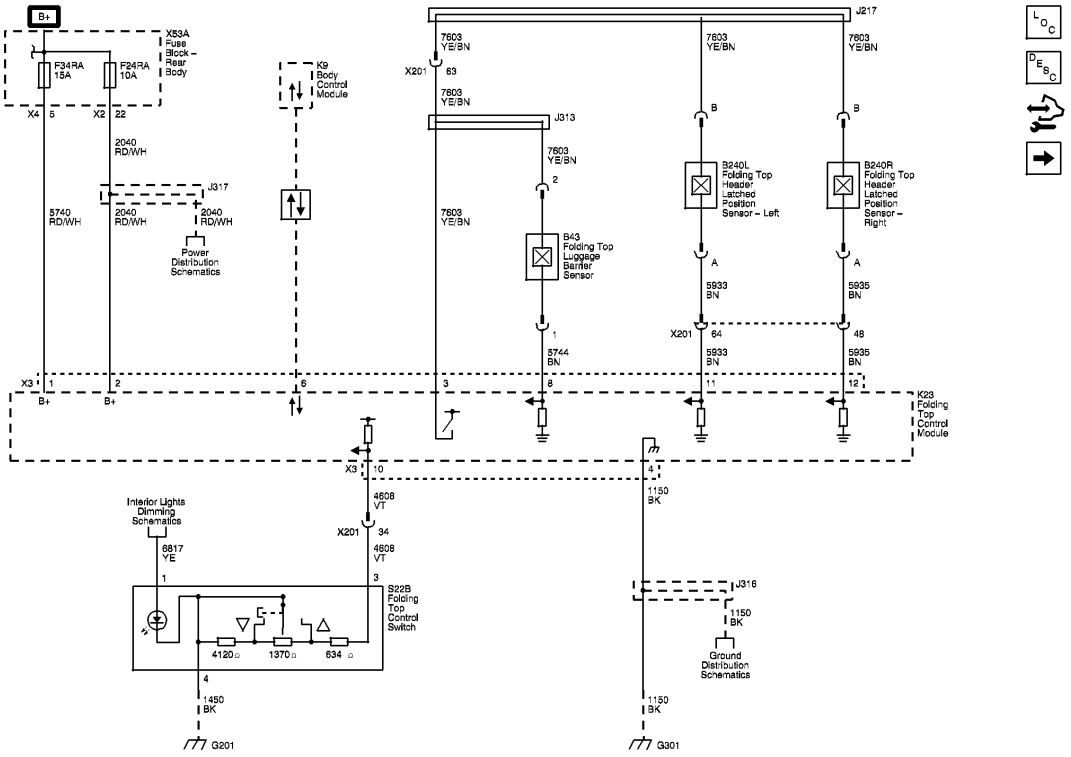

Fig. 1: Power, Ground, Serial Data, Sensors and Folding Top Control Switch Wiring Schematic
Courtesy of GENERAL MOTORS COMPANY

Folding Top Sensors Wiring Schematics

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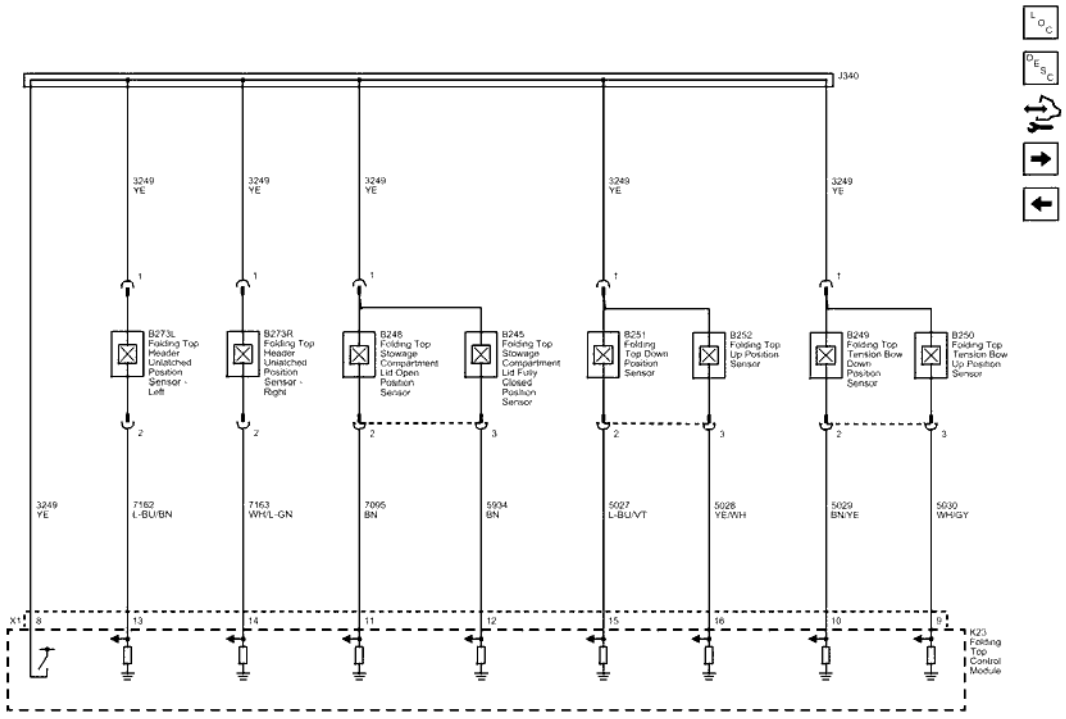

Fig. 2: Folding Top Sensors Wiring Schematic
Courtesy of GENERAL MOTORS COMPANY

Folding Top Hydraulic Unit Wiring Schematics

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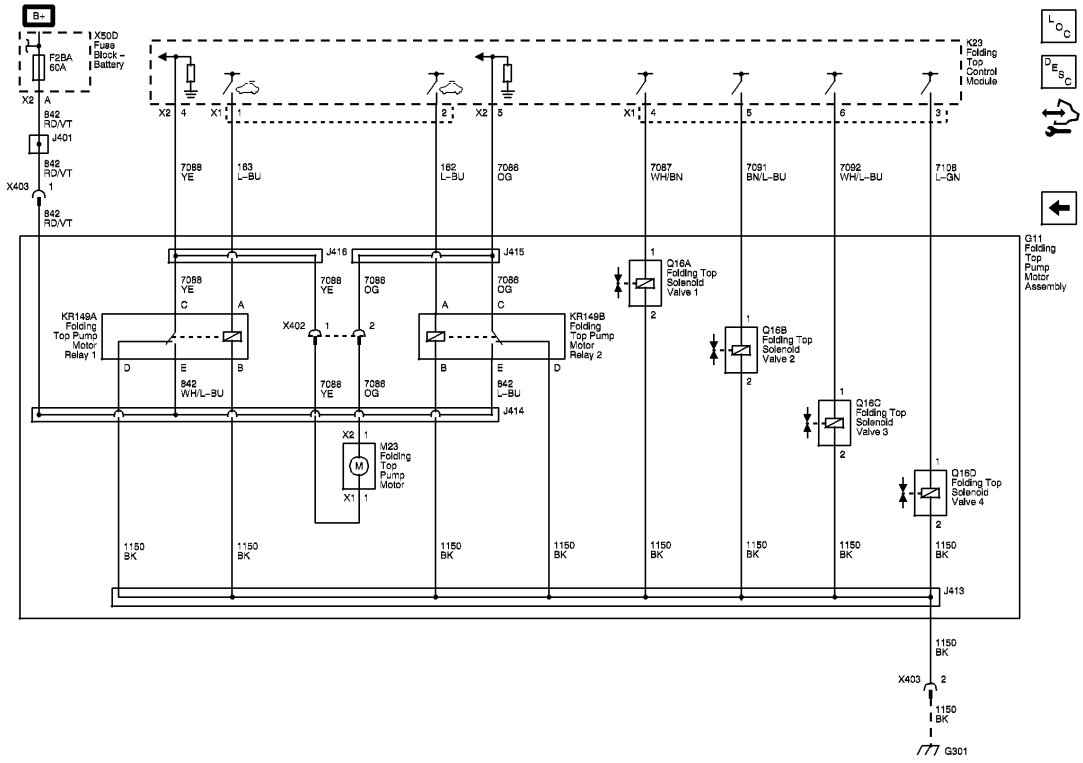

Fig. 3: Folding Top Hydraulic Unit Wiring Schematic
Courtesy of GENERAL MOTORS COMPANY

VISUAL IDENTIFICATION

FOLDING TOP HYDRAULIC CYLINDER HOSE IDENTIFICATION

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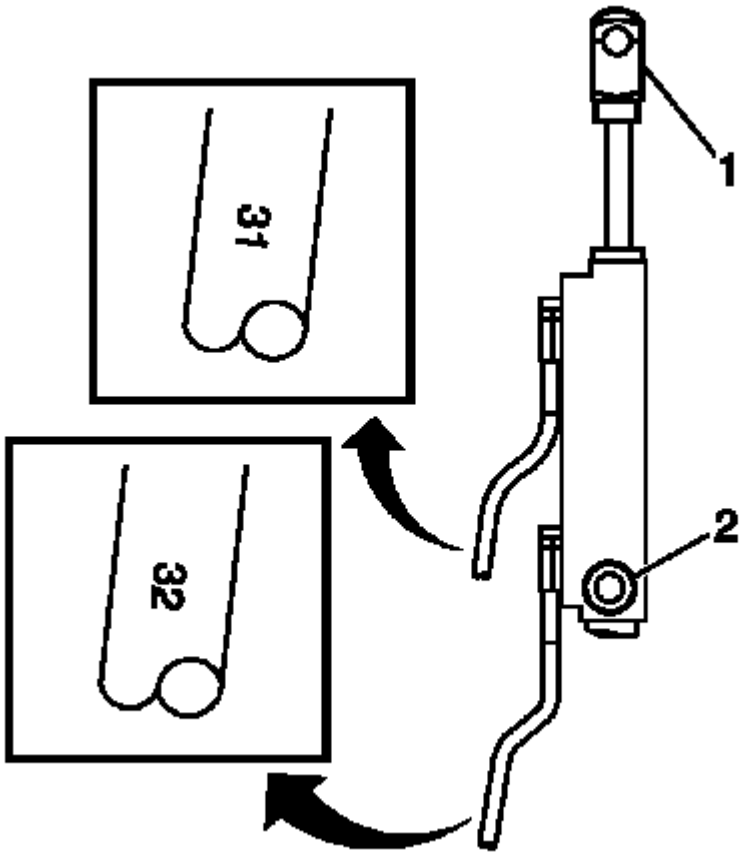

Fig. 4: Identifying Rod End And Closed End
Courtesy of GENERAL MOTORS COMPANY

Each cylinder is serviced by 2 hoses:

- The rod end (1)
- The closed end (2)

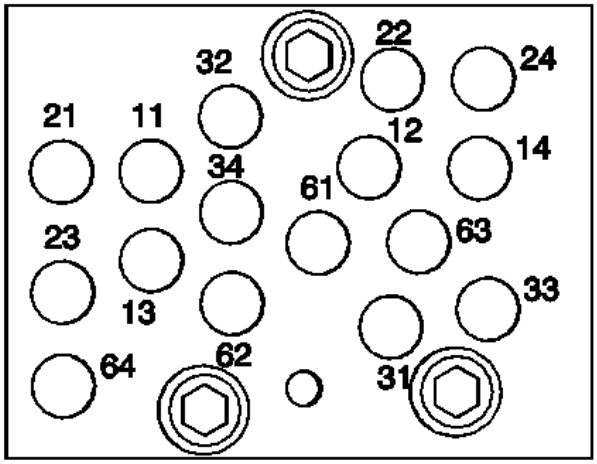

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Fig. 5: Folding Top Hydraulic Cylinder Hose Identification Chart
Courtesy of GENERAL MOTORS COMPANY

Each hose has an identification number stamped on the cylinder side and on the pump side near the connection point. Corresponding numbers are also stamped on the pump manifold plate to aid in identification.

The following chart identifies the hose that supplies fluid to each specific cylinder.

Folding Top Hydraulic Cylinder Hose Identification Chart

Hydraulic Cylinders	Hose Location and Number	
	Rod End	Closed End
Folding Top Latch Hydraulic Cylinder Hose	61 - Left 63 - Right	62 - Left 64 - Right
Folding Top Main Hydraulic Cylinder Hose	12 - Left 13 - Right	11 - Left 14 - Right
Folding Top 5 Bow Hydraulic Cylinder Hose	21 - Left 23 - Right	22 - Left 24 - Right
Folding Top Tonneau Hydraulic Cylinder Hose	31 - Left 33 - Right	32 - Left 34 - Right

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B12FE and B12FF	DTC B12FE Left Folding Top Header Unlatched Sensor Circuit DTC B12FF Right Folding Top Header Unlatched Sensor Circuit
DTC B1308	DTC B1308 Folding Top Up Relay Circuit
DTC B1309	DTC B1309 Folding Top Down Relay Circuit
DTC B130A	DTC B130A Luggage Barrier Sensor Signal Circuit
DTC B1310	DTC B1310 Folding Top Up Position Sensor Circuit
DTC B1311	DTC B1311 Left Folding Top Header Unlatched Sensor Circuit
DTC B1322 and B1323	DTC B1322 Tonneau Up Sensor Circuit DTC B1323 Tonneau Down and Latched Sensor Circuit
DTC B1445	DTC B1445 Control Module Voltage Output Circuit

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DTC B3602	DTC B3602 Folding Top Control Switch
DTC B3674-B3677	DTC B3674 Q16A Folding Top Solenoid Valve 1 Circuit DTC B3675 Q16B Folding Top Solenoid Valve 2 Circuit DTC B3676 Q16C Folding Top Solenoid Valve 3 Circuit DTC B3677 Q16D Folding Top Solenoid Valve 4 Circuit
DTC B3680	DTC B3680 01 Folding Top Pump Motor Circuit Short to Battery DTC B3680 04 Folding Top Pump Motor Circuit Open Circuit
DTC B3685 and B3686	DTC B3685 Folding Top Header Latched Left Sensor Circuit DTC B3686 Folding Top Header Latched Right Sensor Circuit
DTC B3687 and B3688	DTC B3687 Convertible Top Tension Bow Up Sensor Circuit DTC B3688 Convertible Top Tension Bow Down Sensor Circuit

DTC B12FE AND B12FF: FOLDING TOP HEADER UNLATCHED SENSOR

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 B12FE

Left Folding Top Header Unlatched Sensor Circuit

DTC B12FF

Right Folding Top Header Unlatched Sensor Circuit

For symptom byte information, refer to **Symptom Byte List** .

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance

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Left Sensor Signal	B12FE 02	B12FE 06	B12FE 01	B12FE 08, B12FE 5A
Right Sensor Signal	B12FF 02	B12FF 06	B12FF 01	B12FF 08, B12FF 5A
Low Reference	-	B12FE 06, B12FF 06	-	B12FE 08, B12FE 5A, B12FF 08, B12FF 5A

Circuit/System Description

The K23 Folding Top Control Module monitors two hall-effect switches for the folding top header latches: The B266L Folding Top Header Unlatched Position Sensor - Left and B266R Folding Top Header Unlatched Position Sensor - Right. The switches monitor the status of the folding top header latches.

The sensors are two-wire hall effect sensors providing an input to the K23 Folding Top Control Module. One terminal is low reference and the other is a signal circuit.

Conditions for Running the DTC

- Battery voltage must be between 9 to 16V.
- Ignition switch in OFF, ACCESSORY or RUN positions.

Conditions for Setting the DTC

B12FE 02

The K23 Folding Top Control Module has detected a short to ground in the B266L Folding Top Header Unlatched Position Sensor - Left circuit.

B12FE 06

The K23 Folding Top Control Module has detected an open or high voltage in the B266L Folding Top Header Unlatched Position Sensor - Left circuit.

B12FE 08

The K23 Folding Top Control Module has detected an invalid signal in the B266L Folding Top Header Unlatched Position Sensor - Left circuit.

B12FE 5A

The K23 Folding Top Control Module has detected a not plausible condition in the B266L Folding Top Header Unlatched Position Sensor - Left circuit.

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The K23 Folding Top Control Module has detected a short to ground in the B266R Folding Top Header Unlatched Position Sensor - Right circuit.

B12FF 06

The K23 Folding Top Control Module has detected an open or high voltage in the B266R Folding Top Header Unlatched Position Sensor - Right circuit.

B12FF 08

The K23 Folding Top Control Module has detected an invalid signal in the B266R Folding Top Header Unlatched Position Sensor - Right circuit.

B12FF 5A

The K23 Folding Top Control Module has detected a not plausible condition in the B266R Folding Top Header Unlatched Position Sensor - Right circuit.

Action Taken When the DTC Sets

- If folding top switch is pressed, the driver information center will display "Only Manual Operation of Top Possible".

Conditions for Clearing the DTC

The condition responsible for setting the DTC no longer exists.

Reference Information

Schematic Reference

Folding Top Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Folding Top Description and Operation

Electrical Information Reference

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

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Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON
2. Verify the scan tool Folding Top Left Latch Open Status and Folding Top Right Latch Open Status parameters change between Active and Inactive when closing and opening folding top.
   - **If parameters do not change between Active and Inactive**

     Refer to the Circuit/System Testing.

   - **If parameters change between Active and Inactive**
3. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the appropriate B266 Folding Top Header Unlatched Position Sensor circuit, ignition ON.
2. Ignition ON.
3. Test for 10 V or greater between the control circuit terminal 1 and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

   - **If less than 10 V**
   1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module.
   2. Test for infinite resistance between the signal circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance
   3. Test for less than 2 ohms in the signal circuit end to end.
      - If 2 ohms or greater, repair the open/high resistance in the circuit.
      - If less than 2 ohms, replace the K23 Folding Top Control Module.
   - **If greater than 10 V**
4. Disconnect the X1 harness connector at K23 Folding Top Control Module.
5. Test for less than 1 V between the appropriate B266 Folding Top Header Unlatched Position Sensor signal circuit terminal 2 and ground.
   - **If 1 V or greater**

     Repair the short to voltage on the circuit.

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6. Test for infinite resistance between signal circuit and ground.
    - **If less than infinite resistance**

      Repair the short to ground on the circuit.

    - **If infinite resistance**
7. Test for less than 2 ohms in the signal circuit end to end.
    - **If greater than 2 ohms**

      Repair the open/high resistance in the circuit.

    - **If 2 ohms or less**
8. Test or replace the appropriate B266 Folding Top Header Unlatched Position Sensor.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Roof Retractable Position Sensor Replacement (Latch Cylinder)**, **Roof Retractable Position Sensor Replacement (Main Cylinder)**, **Roof Retractable Position Sensor Replacement (5 Bow Cylinder)**, **Roof Retractable Position Sensor Replacement (Latch)**
- **Control Module References** for K23 Folding Top Control Module replacement, programming and setup.

DTC B1308: FOLDING TOP UP RELAY

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 B1308

Folding Top Up Relay Circuit

For symptom byte information, refer to **Symptom Byte List** .

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Relay Coil Control	B1308 02	B1308 04	B1308 01	-

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Relay Coil Ground	-	B1308 04	B1308 01	-
1. Folding Top Malfunction				

Circuit/System Description

The K23 Folding Top Control Module supplies low current control signals to the K149A Folding Top Pump Motor Relay 1 and K149B Folding Top Pump Motor Relay 2. The relays supply high current to the M23 Folding Top Pump Motor. K149A Folding Top Pump Motor Relay 1 allows the M23 Folding Top Pump Motor to run in the direction to close the top and K149B Folding Top Pump Motor Relay 2 allows the motor to run in the opposite direction to open the top. During the OFF state, the motor is grounded on both terminals. The K23 Folding Top Control Module monitors the voltage applied to the M23 Folding Top Pump Motor though sense lines spliced to the wires at J416 and J415.

KR149A Folding Top Pump Motor Relay 1, KR149B Folding Top Pump Motor Relay 2, M23 Folding Top Pump Motor, Q16A Folding Top Solenoid Valve 1, Q16B Folding Top Solenoid Valve 2, Q16C Folding Top Solenoid Valve 3 and Q16D Folding Top Solenoid Valve 4 are not serviceable separately, they are all part of the G11 Folding Top Pump Motor Assembly.

Conditions for Running the DTC

- Battery voltage must be between 9 to 16V.
- Ignition switch in OFF, ACCESSORY or RUN positions.

Conditions for Setting the DTC

B1308 01

The folding top control module has detected a short to battery in the KR149B Folding Top Pump Motor Relay 2 control circuit.

B1308 02

The folding top control module has detected a short to ground in the KR149B Folding Top Pump Motor Relay 2 control circuit.

B1308 04

The folding top control module has detected an open circuit in the KR149B Folding Top Pump Motor Relay 2 control circuit.

Action Taken When the DTC Sets

- If Folding Top Switch is pressed, the Driver Information Center will display "Only Manual Operation of Top Possible".

Conditions for Clearing the DTC

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The condition responsible for setting the DTC no longer exists.

Reference Information

Schematic Reference

Folding Top Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Folding Top 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. Ignition ON.
2. Verify the M23 Folding Top Pump Motor turns on and off when commanding the Folding Top Up Relay parameter On and Off with a scan tool.
    - **If the motor does not turn on and off**

      Refer to Circuit/System Testing.

    - **If the motor turns on and off**
3. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the K149B Folding Top Pump Motor Relay 2. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal B and ground:
    - **If 10 ohms or greater**

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1. Ignition OFF.
2. Test for less than 2 ohms in the ground circuit end to end.
    - If 2 ohms or greater, repair the open/high resistance in the circuit.
    - If less than 2 ohms, repair the open/high resistance in the ground connection.

- **If less than 10 ohms**

3. Connect a test lamp between the control circuit terminal A and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Folding Top Up Relay parameter On and Off with a scan tool.

- **If the test lamp is always OFF**

1. Ignition OFF, remove the test lamp, disconnect the X1 harness connector at the K23 Folding Top Control Module.
2. Test for infinite resistance between the control circuit and ground.
    - If less than infinite resistance, repair the short to ground on the circuit.
    - If infinite resistance
3. Test for less than 2 ohms in the control circuit end to end.
    - If 2 ohms or greater, repair the open/high resistance in the circuit.
    - If less than 2 ohms, replace the K23 Folding Top Control Module.

- **If the test lamp is always ON**

1. Ignition OFF, remove the test lamp, disconnect the X1 harness connector at the K23 Folding Top Control Module, ignition ON.
2. Test for less than 1 V between the control circuit and ground.
    - If 1 V or greater, repair the short to voltage on the circuit.
    - If less than 1 V, replace the K23 Folding Top Control Module.

- **If the test lamp turns ON and OFF**

5. Test or replace the G11 Folding Top Pump Motor Assembly.

Component Testing

Relay Test

1. Ignition OFF, disconnect the K149B Folding Top Pump Motor Relay 2.
2. Test for 85-105 ohms between terminals 85 and 86.
    - **If less than 85 ohms or greater than 105 ohms**

      Replace the G11 Folding Top Pump Motor Assembly.

    - **If between 85-105 ohms**
3. Test for infinite resistance between the terminals listed below:
    - 30 and 86
    - 30 and 87

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- 30 and 85
- 85 and 87
  - **If less than infinite resistance**

    Replace the G11 Folding Top Pump Motor Assembly.

  - **If infinite resistance**

4. Test for less than 2 ohms between terminals 30 and 87A.
   - **If 2 ohms or greater**

     Replace the G11 Folding Top Pump Motor Assembly.

   - **If less than 2 ohms**
5. Install a 3 A fused jumper wire between relay terminal 85 and 12 V. Install a jumper wire between relay terminal 86 and ground.
6. Test for less than 2 ohms between terminals 30 and 87.
   - **If 2 ohms or greater**

     Replace the G11 Folding Top Pump Motor Assembly.

   - **If less than 2 ohms**
7. All OK

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Folding Top Pump Replacement**
- **Control Module References** for folding top control module replacement, programming and setup.

DTC B1309: FOLDING TOP DOWN RELAY

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 B1309

Folding Top Down Relay Circuit

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For symptom byte information, refer to **Symptom Byte List** .

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Relay Coil Control	B1309 02	B1309 04	B1309 01	-
Relay Coil Ground	-	B1309 04	B1309 01	-
1. Folding Top Malfunction				

Circuit/System Description

The K23 Folding Top Control Module supplies low current control signals to the K149A Folding Top Pump Motor Relay 1 and K149B Folding Top Pump Motor Relay 2. The relays supply high current to the M23 Folding Top Pump Motor. K149A Folding Top Pump Motor Relay 1 allows the M23 Folding Top Pump Motor to run in the direction to close the top and K149B Folding Top Pump Motor Relay 2 allows the motor to run in the opposite direction to open the top. During the OFF state, the motor is grounded on both terminals. The K23 Folding Top Control Module monitors the voltage applied to the M23 Folding Top Pump Motor though sense lines spliced to the wires at J416 and J415.

KR149A Folding Top Pump Motor Relay 1, KR149B Folding Top Pump Motor Relay 2, M23 Folding Top Pump Motor, Q16A Folding Top Solenoid Valve 1, Q16B Folding Top Solenoid Valve 2, Q16C Folding Top Solenoid Valve 3 and Q16D Folding Top Solenoid Valve 4 are not serviceable separately, they are all part of the G11 Folding Top Pump Motor Assembly.

Conditions for Running the DTC

- Battery voltage must be between 9 to 16V.
- Ignition switch in OFF, ACCESSORY or RUN positions.

Conditions for Setting the DTC

B1309 01

The folding top control module has detected a short to battery in the KR149A Folding Top Pump Motor Relay 1 control circuit.

B1309 02

The folding top control module has detected a short to ground in the KR149A Folding Top Pump Motor Relay 1 control circuit.

B1309 04

The folding top control module has detected an open circuit in the KR149A Folding Top Pump Motor Relay 1 control circuit.

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Action Taken When the DTC Sets

- If Folding Top Switch is pressed, the Driver Information Center will display "Only Manual Operation of Top Possible".

Conditions for Clearing the DTC

The condition responsible for setting the DTC no longer exists.

Reference Information

Schematic Reference

Folding Top Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Folding Top 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. Ignition ON.
2. Verify the M23 Folding Top Pump Motor turns on and off when commanding the Folding Top Down Relay parameter On and Off with a scan tool.
    - **If the motor does not turn on and off**

      Refer to Circuit/System Testing.

    - **If the motor turns on and off**
3. All OK.

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Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the KR149A Folding Top Pump Motor Relay 1. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal B and ground:
    - **If 10 ohms or greater**
    1. Ignition OFF.
    2. Test for less than 2 ohms in the ground circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, repair the open/high resistance in the ground connection.
    - **If less than 10 ohms**
3. Connect a test lamp between the control circuit terminal A and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Folding Top Up Relay parameter On and Off with a scan tool.
    - **If the test lamp is always OFF**
    1. Ignition OFF, remove the test lamp, disconnect the X1 harness connector at the K23 Folding Top Control Module.
    2. Test for infinite resistance between the control circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    3. Test for less than 2 ohms in the control circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, replace the K23 Folding Top Control Module.
    - **If the test lamp is always ON**
    1. Ignition OFF, remove the test lamp, disconnect the X1 harness connector at the K23 Folding Top Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V, replace the K23 Folding Top Control Module.
    - **If the test lamp turns ON and OFF**
5. Test or replace the G11 Folding Top Pump Motor Assembly.

Component Testing

Relay Test

1. Ignition OFF, disconnect the KR149A Folding Top Pump Motor Relay 1.
2. Test for 85-105 ohms between terminals 85 and 86.
    - **If less than 85 ohms or greater than 105 ohms**

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    - **If between 85-105 ohms**
3. Test for infinite resistance between the terminals listed below:
    - 30 and 86
    - 30 and 87
    - 30 and 85
    - 85 and 87
    - **If less than infinite resistance**

      Replace the G11 Folding Top Pump Motor Assembly.

    - **If infinite resistance**
4. Test for less than 2 ohms between terminals 30 and 87A.
    - **If 2 ohms or greater**

      Replace the G11 Folding Top Pump Motor Assembly.

    - **If less than 2 ohms**
5. Install a 3 A fused jumper wire between relay terminal 85 and 12 V. Install a jumper wire between relay terminal 86 and ground.
6. Test for less than 2 ohms between terminals 30 and 87.
    - **If 2 ohms or greater**

      Replace the G11 Folding Top Pump Motor Assembly.

    - **If less than 2 ohms**
7. All OK

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Folding Top Pump Replacement**
- **Control Module References** for folding top control module replacement, programming and setup.

DTC B130A: LUGGAGE BARRIER SENSOR

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.

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DTC Descriptors

DTC B130A

Luggage Barrier Sensor Signal Circuit

For symptom byte information, refer to **Symptom Byte List** .

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Sensor Signal	B130A 06	B130A 06	B130A 01	B130A 08
Control Voltage	-	U0207 00	-	-

Circuit/System Description

The folding top luggage barrier sensor is a two-wire Hall effect sensor providing an input signal to the folding top control module indicating if the required trunk area is available for stowing the top.

The folding top control module supplies a switched battery voltage to one terminal. The other terminal is the signal circuit.

Conditions for Running the DTC

- Battery voltage must be between 9-16 V.
- Folding top is operated.

Conditions for Setting the DTC

B130A 01

The folding top control module detects a short to voltage in the B43 Folding Top Luggage Barrier Sensor circuit.

B130A 06

The folding top control module detects a low voltage or an open/high resistance in the B43 Folding Top Luggage Barrier Sensor circuit.

B130A 08

The folding top control module detects the B43 Folding Top Luggage Barrier Sensor circuit. voltage is outside the valid range.

Action Taken When the DTC Sets

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- Folding top opens and closes when triggered without luggage barrier in place.
- DIC displays "Clear Top Storage Area" when folding top control switch is activated.

Conditions for Clearing the DTC

The condition responsible for setting the DTC no longer exists.

Reference Information

Schematic Reference

- **Folding Top Schematics**
- **Release Systems Schematics**

Connector End View Reference

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Description and Operation

Power Folding Top 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. Ignition ON
2. Verify the scan tool Folding Top Luggage Switch parameters change between Active and Inactive when installing and removing the luggage barrier.
    - **If parameter does not change between Active and Inactive**

      Refer to the Circuit/System Testing.

    - **If parameter changes between Active and Inactive**
3. All OK.

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Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the B43 Folding Top Luggage Barrier Sensor, ignition ON.
2. Test for 10 V or greater between the control circuit terminal 2 and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

   - **If less than 10 V**
   1. Ignition OFF, disconnect the X3 harness connector at the K23 Folding Top Control Module.
   2. Test for infinite resistance between the signal circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance
   3. Test for less than 2 ohms in the signal circuit end to end.
      - If 2 ohms or greater, repair the open/high resistance in the circuit.
      - If less than 2 ohms, replace the K23 Folding Top Control Module.
   - **If greater than 10 V**
3. Disconnect the X3 harness connector at K23 Folding Top Control Module.
4. Test for less than 1 V between the B43 Folding Top Luggage Barrier Sensor signal circuit terminal 1 and ground.
   - **If 1 V or greater**

     Repair the short to voltage on the circuit.

   - **If less than 1 V**
5. Test for infinite resistance between signal circuit and ground.
   - **If less than infinite resistance**

     Repair the short to ground on the circuit.

   - **If infinite resistance**
6. Test for less than 2 ohms in the signal circuit end to end.
   - **If greater than 2 ohms**

     Repair the open/high resistance in the circuit.

   - **If 2 ohms or less**
7. Test or replace the B43 Folding Top Luggage Barrier Sensor.

Repair Instructions

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Control Module References for folding top control module replacement, programming and setup

DTC B1310: FOLDING TOP UP POSITION SENSOR

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 B1310

Folding Top Up Position Sensor Circuit

For symptom byte information, refer to **Symptom Byte List** .

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Signal	B1310 06	B1310 06	B1310 01	B1310 08
Control Voltage	B1310 06	B1310 06	-	-

Circuit/System Description

The K23 Folding Top Control Module monitors a hall-effect switch for the folding top down position: B252 Folding Top Up Position Sensor. The switch monitors the status of the folding top down position.

The sensor is a two-wire hall effect sensor providing an input to the K23 Folding Top Control Module. One terminal is voltage and the other is a signal circuit. During an open circuit condition, it is normal for the folding top control module voltage output to switch between approximately 12V and 0V.

Conditions for Running the DTC

- Battery voltage must be between 9 to 16V.
- Ignition switch in OFF, ACCESSORY or RUN positions.

Conditions for Setting the DTC

B1310 01

The K23 Folding Top Control Module has detected a short to battery in the B252 Folding Top Up Position Sensor circuit.

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B1310 06

The K23 Folding Top Control Module has detected an open or low voltage in the B252 Folding Top Up Position Sensor circuit.

B1310 08

The K23 Folding Top Control Module has detected an invalid signal in the B252 Folding Top Up Position Sensor circuit.

Action Taken When the DTC Sets

- If folding top switch is pressed, the driver information center will display "Only Manual Operation of Top Possible".

Conditions for Clearing the DTC

The condition responsible for setting the DTC no longer exists.

Reference Information

Schematic Reference

Folding Top Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Folding Top 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

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2. Verify the scan tool Folding Top Closed Sensor parameters change between Active and Inactive when closing and opening folding top.
    - **If parameter does not change between Active and Inactive**

      Refer to the Circuit/System Testing.

    - **If parameter changes between Active and Inactive**
3. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the B252 Folding Top Up Position Sensor, ignition ON.
2. Test for 10 V or greater between the control circuit terminal 1 and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

    - **If less than 10 V**
    1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module.
    2. Test for infinite resistance between the signal circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    3. Test for less than 2 ohms in the signal circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, replace the K23 Folding Top Control Module.
    - **If greater than 10 V**
3. Disconnect the X1 harness connector at K23 Folding Top Control Module.
4. Test for less than 1 V between the B252 Folding Top Up Position Sensor signal circuit terminal 3 and ground.
    - **If 1 V or greater**

      Repair the short to voltage on the circuit.

    - **If less than 1 V**
5. Test for infinite resistance between signal circuit and ground.
    - **If less than infinite resistance**

      Repair the short to ground on the circuit.

    - **If infinite resistance**
6. Test for less than 2 ohms in the signal circuit end to end.

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- **If greater than 2 ohms**

  Repair the open/high resistance in the circuit.

- **If 2 ohms or less**

7. Test or replace the B252 Folding Top Up Position Sensor.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Roof Retractable Position Sensor Replacement (Latch Cylinder)**, **Roof Retractable Position Sensor Replacement (Main Cylinder)**, **Roof Retractable Position Sensor Replacement (5 Bow Cylinder)**, **Roof Retractable Position Sensor Replacement (Latch)**
- **Control Module References** for K23 Folding Top Control Module replacement, programming and setup.

DTC B1311: LEFT FOLDING TOP HEADER UNLATCHED SENSOR

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 B1311

Left Folding Top Header Unlatched Sensor Circuit

For symptom byte information, refer to **Symptom Byte List** .

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Signal	B1311 06	B1311 06	B1311 01	B1311 08
Control Voltage	B1311 06	B1311 06	-	-

Circuit/System Description

The K23 Folding Top Control Module monitors a hall-effect switch for the folding top down position: B251 Folding Top Down Position Sensor. The switch monitors the status of the folding top down position.

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The sensor is a two-wire hall effect sensor providing an input to the K23 Folding Top Control Module. One terminal is voltage and the other is a signal circuit. During an open circuit condition, it is normal for the folding top control module voltage output to switch between approximately 12V and 0V.

Conditions for Running the DTC

- Battery voltage must be between 9 to 16V.
- Ignition switch in OFF, ACCESSORY or RUN positions.

Conditions for Setting the DTC

B1311 01

The K23 Folding Top Control Module has detected a short to battery in the B251 Folding Top Down Position Sensor circuit.

B1311 06

The K23 Folding Top Control Module has detected an open or low voltage in the B251 Folding Top Down Position Sensor circuit.

B1311 08

The K23 Folding Top Control Module has detected an invalid signal in the B251 Folding Top Down Position Sensor circuit.

Action Taken When the DTC Sets

- If folding top switch is pressed, the driver information center will display "Only Manual Operation of Top Possible".

Conditions for Clearing the DTC

The condition responsible for setting the DTC no longer exists.

Reference Information

Schematic Reference

Folding Top Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

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Power Folding Top 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. Ignition ON
2. Verify the scan tool Folding Top Left Open Sensor parameters change between Active and Inactive when closing and opening folding top.
    - **If parameter does not change between Active and Inactive**

      Refer to the Circuit/System Testing.

    - **If parameter changes between Active and Inactive**
3. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the B251 Folding Top Down Position Sensor, ignition ON.
2. Test for 10 V or greater between the control circuit terminal 1 and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

    - **If less than 10 V**
    1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module.
    2. Test for infinite resistance between the signal circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    3. Test for less than 2 ohms in the signal circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, replace the K23 Folding Top Control Module.
    - **If greater than 10 V**

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3. Disconnect the X1 harness connector at K23 Folding Top Control Module.
4. Test for less than 1 V between the B251 Folding Top Down Position Sensor signal circuit terminal 2 and ground.
    - **If 1 V or greater**

      Repair the short to voltage on the circuit.

    - **If less than 1 V**
5. Test for infinite resistance between signal circuit and ground.
    - **If less than infinite resistance**

      Repair the short to ground on the circuit.

    - **If infinite resistance**
6. Test for less than 2 ohms in the signal circuit end to end.
    - **If greater than 2 ohms**

      Repair the open/high resistance in the circuit.

    - **If 2 ohms or less**
7. Test or replace the B251 Folding Top Down Position Sensor.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Roof Retractable Position Sensor Replacement (Latch Cylinder)**, **Roof Retractable Position Sensor Replacement (Main Cylinder)**, **Roof Retractable Position Sensor Replacement (5 Bow Cylinder)**, **Roof Retractable Position Sensor Replacement (Latch)**
- **Control Module References** for K23 Folding Top Control Module replacement, programming and setup.

DTC B1322 AND B1323: TONNEAU UP SENSOR/TONNEAU DOWN AND LATCHED SENSOR

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 B1322

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DTC B1323

Tonneau Down and Latched Sensor Circuit

For symptom byte information, refer to **Symptom Byte List** .

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Up Sensor Signal	B1322 06	B1322 06	B1322 01	B1322 08
Down Sensor Signal	B1323 06	B1323 06	B1323 01,	B1323 08
Control Voltage	B1322 06, B1323 06	B1322 06, B1323 06	-	-

Circuit/System Description

The K23 Folding Top Control Module monitor two hall-effect switch for the folding top stowage compartment lid position: B248 Folding Top Stowage Compartment Lid Open Position Sensor and B245 Folding Top Stowage Compartment Lid Fully Closed Position Sensor. The switch monitors the status of the folding top stowage compartment lid (tonneau) position.

The sensor is a two-wire hall effect sensor providing an input to the K23 Folding Top Control Module. One terminal is voltage and the other is a signal circuit. During an open circuit condition, it is normal for the folding top control module voltage output to switch between approximately 12V and 0V.

Conditions for Running the DTC

- Battery voltage must be between 9 to 16V.
- Ignition switch in OFF, ACCESSORY or RUN positions.

Conditions for Setting the DTC

B1322 01

The K23 Folding Top Control Module has detected a short to battery in the B248 Folding Top Stowage Compartment Lid Open Position Sensor circuit.

B1322 06

The K23 Folding Top Control Module has detected an open or low voltage in the B248 Folding Top Stowage Compartment Lid Open Position Sensor circuit.

B1322 08

The K23 Folding Top Control Module has detected an invalid signal in the B248 Folding Top Stowage

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B1323 01

The K23 Folding Top Control Module has detected a short to battery in the B245 Folding Top Stowage Compartment Lid Fully Closed Position Sensor circuit.

B1323 06

The K23 Folding Top Control Module has detected an open or low voltage in the B245 Folding Top Stowage Compartment Lid Fully Closed Position Sensor circuit.

B1323 08

The K23 Folding Top Control Module has detected an invalid signal in the B245 Folding Top Stowage Compartment Lid Fully Closed Position Sensor circuit.

Action Taken When the DTC Sets

- If folding top switch is pressed, the driver information center will display "Only Manual Operation of Top Possible".

Conditions for Clearing the DTC

The condition responsible for setting the DTC no longer exists.

Reference Information

Schematic Reference

Folding Top Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Folding Top Description and Operation

Electrical Information Reference

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

Scan Tool Reference

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Control Module References for scan tool information

Circuit/System Verification

1. Ignition ON
2. Verify the scan tool Folding Top Tonneau Latch Open Status and Folding Top Latch Closed Status parameters change between Active and Inactive when closing and opening folding top.
    - **If parameter does not change between Active and Inactive**

      Refer to the Circuit/System Testing.

    - **If parameter changes between Active and Inactive**
3. All OK.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the B248 Folding Top Stowage Compartment Lid Open Position Sensor and B245 Folding Top Stowage Compartment Lid Fully Closed Position Sensor, ignition ON.
2. Test for 10 V or greater between the control circuit terminal 1 and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

    - **If less than 10 V**
    1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module.
    2. Test for infinite resistance between the signal circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    3. Test for less than 2 ohms in the signal circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, replace the K23 Folding Top Control Module.
    - **If greater than 10 V**
3. Disconnect the X1 harness connector at K23 Folding Top Control Module.
4. Test for less than 1 V between the following signal circuit terminals and ground:
    - B248 Folding Top Stowage Compartment Lid Open Position Sensor terminal 2
    - B245 Folding Top Stowage Compartment Lid Fully Closed Position Sensor terminal 3
    - **If 1 V or greater**

      Repair the short to voltage on the circuit.

    - **If less than 1 V**

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5. Test for infinite resistance between signal circuits and ground.
    - **If less than infinite resistance**

      Repair the short to ground on the circuit.

    - **If infinite resistance**
6. Test for less than 2 ohms in the signal circuits end to end.
    - **If greater than 2 ohms**

      Repair the open/high resistance in the circuit.

    - **If 2 ohms or less**
7. Test or replace the appropriate Folding Top Stowage Compartment Lid Position Sensor.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Roof Retractable Position Sensor Replacement (Latch Cylinder)**, **Roof Retractable Position Sensor Replacement (Main Cylinder)**, **Roof Retractable Position Sensor Replacement (5 Bow Cylinder)**, **Roof Retractable Position Sensor Replacement (Latch)**
- **Control Module References** for K23 Folding Top Control Module replacement, programming and setup.

DTC B1445: FOLDING TOP CONTROL MODULE VOLTAGE

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 B1445

Control Module Voltage Output Circuit

For symptom byte information refer to **Symptom Byte List**

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Relay Coil Control	B1445 02	B1445 04	B1445 01	-

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Ground	-	B1445 04	-	-

Circuit/System Description

The folding top control module controls the output voltage for the folding top hall effect sensors. When there is an open circuit detected, the output voltage will pulse on and off.

Conditions for Running the DTC

The system voltage is between 9-16 V.

Conditions for Setting the DTC

B1445 02

The folding top control module has determined that a short to ground is present in the hall-effect sensor voltage control circuit.

B1445 04

The folding top control module has determined that an open circuit is present in the hall-effect sensor voltage control circuit.

Action Taken When the DTC Sets

B1445 04

Output voltage is pulsed on and off.

B1445 02

The folding top control module output driver will be shut down and not supply voltage to the circuit.

Conditions for Clearing the DTC

- The current DTC will clear when the malfunction is no longer present.
- A history DTC clears when the module ignition cycle counter reaches the reset threshold of 50, without a repeat of the malfunction.

Reference Information

Schematic Reference

Power Moding Schematics

Connector End View Reference

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COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Retained Accessory Power 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. Ignition ON.
2. Verify the KR76 Retained Accessory Power Relay clicks ON and OFF when commanding the Accessory/Retained Accessory Power Relay On and Off with a scan tool.
   - **If the KR76 Retained Accessory Power Relay does not click ON and OFF**

     Refer to Circuit/System Testing.

   - **If the KR76 Retained Accessory Power Relay clicks ON and OFF**
3. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the KR76 Retained Accessory Power Relay. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal 86 and ground.
   - **If 10 ohms or greater**
     1. Ignition OFF.
     2. Test for less than 2 ohms in the ground circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, repair the open/high resistance in the ground connection.
   - **If less than 10 ohms**
3. Ignition ON, connect a test lamp between the control circuit terminal 85 and ground circuit terminal 86.
4. Verify the test lamp turns ON and OFF when commanding the Accessory/Retained Accessory

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Power Relay On and Off with a scan tool.

- **If the test lamp is always OFF**

1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.
2. Test for infinite resistance between the control circuit and ground.
   - If less than infinite resistance, repair the short to ground on the circuit.
   - If infinite resistance
3. Test for less than 2 ohms in the control circuit end to end.
   - If 2 ohms or greater, repair the open/high resistance in the circuit.
   - If less than 2 ohms, replace the K9 Body Control Module.

- **If the test lamp is always ON**

1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module, ignition ON.
2. Test for less than 1 V between the control circuit and ground.
   - If 1 V or greater, repair the short to voltage on the circuit.
   - If less than 1 V, replace the K9 Body Control Module.

- **If the test lamp turns ON and OFF**

5. Test or replace the KR76 Retained Accessory Power Relay.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Relay Replacement (Within an Electrical Center)** , **Relay Replacement (Attached to Wire Harness)**
- **Control Module References** for body control module replacement, programming and setup.

DTC B3602: FOLDING TOP CONTROL SWITCH

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 B3602

Folding Top Control Switch

For symptom byte information, refer to **Symptom Byte List** .

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Signal	B3602 08	B3602 08	1	B3602 08, B3602 59
Ground	-	U0207 00	-	-
1. Power Folding Top Malfunction				

Circuit/System Description

The folding top control module checks the signal circuit from the folding top control switch at least once every 125 milliseconds. The folding top control switch signal circuit is in a ladder configuration. The switch has a different resistance value depending if the open, closed or no switch is pressed. A failure type byte 59 can occur if the switch is active for longer than approximately 10 s.

Conditions for Running the DTC

- Battery voltage is between 9-16 V.
- Folding top is operated.

Conditions for Setting the DTC

The folding top control module detects an invalid signal in the folding top control switch open signal circuit.

Action Taken When the DTC Sets

Motor continues to run after top opens or closes for about 30 seconds.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear after 50 consecutive ignition cycles without a fault present.

Reference Information

Schematic Reference

Folding Top Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Folding Top Description and Operation

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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 Testing

1. Ignition OFF and all vehicle systems OFF. Disconnect the harness connector at the S22B Folding Top Control Switch. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal 4 and ground.
    - **If 10 ohms or greater**
    1. Ignition OFF.
    2. Test for less than 2 ohms in the ground circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, repair the open/high resistance in the ground connection.
    - **If less than 10 ohms**
3. Test for 10 V or greater between the signal circuit terminal 3 and ground.

    NOTE: The voltage may pulse between 12V and 0V - this is normal.

    - **If less than 10 V**
    1. Ignition OFF, disconnect the X3 harness connector at the K23 Folding Top Control Module.
    2. Test for infinite resistance between the signal circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    3. Test for less than 2 ohms in the signal circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, replace the K23 Folding Top Control Module.
    - **If greater than 10 V**
4. Test or replace the S22B Folding Top Control Switch.

Switch Component Testing

1. Ignition OFF, disconnect the harness connector at the S22B Folding Top Control Switch.

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the switch in the normal position.

- **If not 5.5k - 6.8k ohms**

  Replace the S22B Folding Top Control Switch.

- **If 5.5k - 6.8k ohms**

3. Test for 1.8k - 2.2k ohms between the signal circuit terminal 3 and the ground terminal 1 with the switch in the "open top" position.
   - **If not 1.8k - 2.2k ohms**

     Replace the S22B Folding Top Control Switch.

   - **If 1.8k - 2.2k ohms**
4. Test for 570- 700 ohms between the signal circuit terminal 3 and the ground terminal 1 with the switch in the "close top" position.
   - **If not 570- 700 ohms**

     Replace the S22B Folding Top Control Switch.

   - **If 570- 700 ohms**
5. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Folding Top Switch Replacement**
- **Control Module References** for folding top control module replacement, programming and setup

DTC B3674-B3677: FOLDING TOP SOLENOID VALVE 1, 2, 3, 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 Descriptor

DTC B3674

Q16A Folding Top Solenoid Valve 1 Circuit

DTC B3675

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Q16B Folding Top Solenoid Valve 2 Circuit

DTC B3676

Q16C Folding Top Solenoid Valve 3 Circuit

DTC B3677

Q16D Folding Top Solenoid Valve 4 Circuit

For symptom byte information, refer to **Symptom Byte List** .

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Solenoid Valve 1 Signal	B3674 02	B3674 04	B3674 01	-
Solenoid Valve 2 Signal	B3675 02	B3675 04	B3675 01	-
Solenoid Valve 3 Signal	B3676 02	B3676 04	B3676 01	-
Solenoid Valve 4 Signal	B3677 02	B3677 04	B3677 01	-
Ground	-	B3674 04, B3675 04, B3676 04, B3677 04	-	-

Circuit/System Description

The K23 Folding Top Control Module controls four Q16 Folding Top Solenoid Valves in the G11 Folding Top Pump Motor Assembly. The K23 Folding Top Control Module provides a voltage output. Ground is provided through the wiring harness to chassis.

Conditions for Running the DTC

- Battery voltage must be between 9 to 16 V.
- Ignition switch in OFF, ACCESSORY or RUN positions.

Conditions for Setting the DTC

B3674 01

The K23 Folding Top Control Module has detected a short to voltage in the Q16A Folding Top Solenoid Valve 1 circuit.

B3674 02

The K23 Folding Top Control Module has detected a short to ground in the Q16A Folding Top Solenoid Valve 1 circuit.

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B3674 04

The K23 Folding Top Control Module has detected an open circuit in the Q16A Folding Top Solenoid Valve 1 circuit.

B3675 01

The K23 Folding Top Control Module has detected a short to voltage in the Q16B Folding Top Solenoid Valve 2 circuit.

B3675 02

The K23 Folding Top Control Module has detected a short to ground in the Q16B Folding Top Solenoid Valve 2 circuit.

B3675 04

The K23 Folding Top Control Module has detected an open circuit in the Q16B Folding Top Solenoid Valve 2 circuit.

B3676 01

The K23 Folding Top Control Module has detected a short to voltage in the Q16C Folding Top Solenoid Valve 3 circuit.

B36746 02

The K23 Folding Top Control Module has detected a short to ground in the Q16C Folding Top Solenoid Valve 3 circuit.

B3676 04

The K23 Folding Top Control Module has detected an open circuit in the Q16C Folding Top Solenoid Valve 3 circuit.

B3677 01

The K23 Folding Top Control Module has detected a short to voltage in the Q16CD Folding Top Solenoid Valve 4 circuit.

B36747 02

The K23 Folding Top Control Module has detected a short to ground in the Q16D Folding Top Solenoid Valve 4 circuit.

B3677 04

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The K23 Folding Top Control Module has detected an open circuit in the Q16D Folding Top Solenoid Valve 4 circuit.

Action Taken When the DTC Sets

- Solenoid valve will be turned off.
- Soft top failure indication ON.
- If Folding Top Switch is pressed, the Driver Information Center will display "Only Manual Operation of Top Possible".

Conditions for Clearing the DTC

The condition responsible for setting the DTC no longer exists.

Reference Information

Schematic Reference

Folding Top Schematics

Connector End View Reference

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Description and Operation

Power Folding Top 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. Ignition ON
2. Verify the Q16A Folding Top Solenoid Valve 1, Q16B Folding Top Solenoid Valve 2, Q16C Folding Top Solenoid Valve 3 and Q16D Folding Top Solenoid Valve 4 operate when commanding the appropriate Q16 Folding Top Solenoid Valve ON and OFF with a scan tool.

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Refer to the Circuit/System Testing.

- **If the valves operate**

3. All OK.

Circuit/System Testing

1. Disconnect the harness connector at the appropriate Q16 Folding Top Solenoid Valve.
2. Connect a test lamp between the control circuit terminal 1 and the ground circuit terminal 2.
3. Verify the test lamp turns ON and OFF when Commanding the appropriate Q16 Folding Top Solenoid Valve ON and OFF with a scan tool.
   - **If the test lamp is always OFF**
   1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module.
   2. Test for infinite resistance between the control circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance
   3. Test for less than 2 ohms in the control circuit end to end.
      - If 2 ohms or greater, repair the open/high resistance in the circuit.
      - If less than 2 ohms, replace the K23 Folding Top Control Module.
   - **If the test lamp is always ON**
   1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module, ignition ON.
   2. Test for less than 1 V between the control circuit and ground.
      - If 1 V or greater, repair the short to voltage on the circuit.
      - If less than 1 V, replace the K23 Folding Top Control Module.
   - **If the test lamp turns ON and OFF**
4. Replace the G11 Folding Top Pump Motor Assembly.

Component Testing

Static Test

1. Ignition OFF, disconnect the harness connector at the appropriate Q16 Folding Top Solenoid Valve.
2. Test for 7-11 ohms between the control terminal 1 and the low reference terminal 2.
   - **If not between 7-11 ohms**

     Replace the G11 Folding Top Pump Motor Assembly.

   - **If between 7-11 ohms**
3. Test for infinite resistance between each terminal and the Q16 Folding Top Solenoid Valve

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housing/case.

- **If less than infinite resistance**

  Replace the G11 Folding Top Pump Motor Assembly.

- **If infinite resistance**

4. All OK

Dynamic Test

1. Install a 3 A fused jumper wire between the control terminal 1 and 12 V. Install a jumper wire between the low reference terminal 2 and ground.
2. Verify the Q16 Folding Top Solenoid Valve turns on & off/clicks, etc.
   - **If the Q16 Folding Top Solenoid Valve does not turn on & off/clicks, etc.**

     Replace the G11 Folding Top Pump Motor Assembly.

   - **If the Q16 Folding Top Solenoid Valve does turn on & off/clicks, etc.**
3. All OK

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Control Module References**
- **Control Module References** for folding top control module replacement, programming and setup

DTC B3680: FOLDING TOP PUMP MOTOR

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 B3680 01

Folding Top Pump Motor Circuit Short to Battery

DTC B3680 04

Folding Top Pump Motor Circuit Open Circuit

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Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Folding Top Pump Control 1	1	B3680 04	B3680 01	-
Folding Top Pump Control 2	1	B3680 04	B3680 01	-
Folding Top Control Module Ground	-	U0207 00	-	-

1. Folding top inoperative.

Circuit/System Description

Hydraulic pressure for the folding top system is generated by the Folding Top Pump Motor. The Folding Top Control Module controls both voltage and ground for the Folding Top Pump Motor. The Folding Top Control Module also monitors the circuits for proper operation.

Conditions for Running the DTC

- Battery voltage is between 9-16 V.
- Folding top is operated.

Conditions for Setting the DTC

B3680 01

The Folding Top Control Module detects a short to voltage on the folding top pump motor in either direction.

B3680 04

The Folding Top Control Module detects an open on the folding top pump motor in either direction.

Action Taken When the DTC Sets

The top is disabled in one or both directions.

Conditions for Clearing the DTC

The fault is no longer present.

Diagnostic Aids

Scan tool must remain connected and turned on to keep K23 folding top module active during diagnostics

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Reference Information

Schematic Reference

Folding Top Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Power Folding Top 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. Ignition ON.
2. Verify the folding top pump motor operates while commanding the Folding Top Pump Motor command Open and Close with a scan tool.
    - **If the folding top pump motor does not work**

      Refer to Circuit/System Testing

    - **If the folding top pump motor works**
3. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the X1 and X2 harness connectors at the M23 Folding Top Pump Motor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 ohms between the X1 control circuit terminal 1 and ground.
    - **If 10 ohms or greater**
    1. Ignition OFF, disconnect the harness connector at the KR149A Folding Top Pump Motor Relay 1.

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2. Test for less than 10 ohms between the ground terminal D and ground.
    - If 10 ohms or greater, repair the open/high resistance in the circuit.
    - If less than 10 ohms
3. Test for less than 2 ohms between the folding top pump motor relay terminal C and folding top pump motor terminal 1.
    - If 2 ohms or greater, repair the open/high resistance in the circuit.
    - If less than 2 ohms, replace the G11 Folding Top Pump Motor Assembly.

- **If less than 10 ohms**

3. Test for less than 10 ohms between the X2 control circuit terminal 1 and ground.
    - **If 10 ohms or greater**

    1. Ignition OFF, disconnect the harness connector at the KR149B Folding Top Pump Motor Relay 2.
    2. Test for less than 10 ohms between the ground terminal D and ground.
        - If 10 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 10 ohms
    3. Test for less than 2 ohms between the folding top pump motor relay terminal C and folding top pump motor terminal 1.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, replace the G11 Folding Top Pump Motor Assembly.

    - **If less than 10 ohms**

4. Connect a test lamp between X1 control circuit terminal 1 and X2 control circuit terminal 1, ignition ON.
5. Verify the test lamp turns ON when commanding the Folding Top Pump Motor command Open and Close with a scan tool.
    - **If the test lamp remains OFF during either or both of the commands**

    1. Remove the KR149A Folding Top Pump Motor Relay 1 and KR149B Folding Top Pump Motor Relay 2.
    2. Verify a test lamp illuminates between the following B+ circuit terminals and ground:
        - KR149A Folding Top Pump Motor Relay 1 terminal E
        - KR149B Folding Top Pump Motor Relay 2 terminal E
        - If the test lamp does not illuminate and the circuit fuse is good

        1. Ignition OFF.
        2. Test for less than 2 ohms in the B+ circuit end to end.
            - If 2 ohms or greater, repair the open/high resistance in the circuit.
            - If less than 2 ohms, verify the fuse is not open and there is voltage at the fuse.

        - If the test lamp does not illuminate and the circuit fuse is open

        1. Ignition OFF.
        2. Test for infinite resistance between the B+ circuit and ground.

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- If infinite resistance, replace the G11 Folding Top Pump Motor Assembly.
- If the test lamp illuminates

  Test or replace the G11 Folding Top Pump Motor Assembly

- **If the test lamp turns ON during each of the commands**

6. Test or replace the M23 Folding Top Pump Motor.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Folding Top Pump Replacement**
- **Control Module References** for folding top control module replacement, programming and setup

DTC B3685 AND B3686: FOLDING TOP HEADER LATCHED LEFT/RIGHT SENSOR

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 B3685

Folding Top Header Latched Left Sensor Circuit

DTC B3686

Folding Top Header Latched Right Sensor Circuit

For symptom byte information, refer to **Symptom Byte List** .

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Sensor Signal	B3685 06	B3685 06	B3685 01	B3685 08, B3685 5A
Right Sensor Signal	B3686 06	B3686 06	B3686 01	B3686 02, B3686 5A

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Control Voltage	-	B3685 06, B3686 06	-	B3686 08, B3685 5A, B3686 5A

Circuit/System Description

The K23 Folding Top Control Module monitors two hall-effect switches for the folding top header latches: The B240L Folding Top Header Latched Position Sensor - Left and B240R Folding Top Header Latched Position Sensor - Right. The switches monitor the status of the folding top header latches.

The sensors are two-wire hall effect sensors providing an input to the K23 Folding Top Control Module. One terminal is control voltage and the other is a signal circuit.

Conditions for Running the DTC

- Battery voltage must be between 9 to 16V.
- Ignition switch in OFF, ACCESSORY or RUN positions.

Conditions for Setting the DTC

B3685 01

The Folding Top Control Module has detected a short to battery in the Folding Top Header Latched Left Sensor Circuit.

B3685 06

The Folding Top Control Module has detected an open or low voltage in the Folding Top Header Latched Left Sensor Circuit.

B3685 08

The Folding Top Control Module has detected an invalid signal in the Folding Top Header Latched Left Sensor Circuit.

B3685 5A

The Folding Top Control Module has detected a not plausible condition in the Folding Top Header Latched Left Sensor Circuit.

B3686 01

The Folding Top Control Module has detected a short to battery in the Folding Top Header Latched Right Sensor Circuit.

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The Folding Top Control Module has detected an open or low voltage in the Folding Top Header Latched Right Sensor Circuit.

B3686 08

The Folding Top Control Module has detected an invalid signal in the Folding Top Header Latched Right Sensor Circuit.

B3686 5A

The Folding Top Control Module has detected a not plausible condition in the Folding Top Header Latched Right Sensor Circuit.

Action Taken When the DTC Sets

- If Folding Top Switch is pressed, the Driver Information Center will display "Only Manual Operation of Top Possible".

Conditions for Clearing the DTC

The condition responsible for setting the DTC no longer exists.

Reference Information

Schematic Reference

Folding Top Schematics

Connector End View Reference

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

Scan Tool Reference

Control Module References for scan tool information

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Circuit/System Verification

1. Ignition ON
2. Verify the scan tool Folding Top Left and Right Latch Open Status parameters change between Active and Inactive when closing and opening folding top.
    - **If parameters do not change between Active and Inactive**

      Refer to the Circuit/System Testing.

    - **If parameters change between Active and Inactive**
3. All OK.

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF. Disconnect the harness connector at the appropriate B240 Folding Top Header Latched Position Sensor circuit, ignition ON.
2. Test for 10 V or greater between the control circuit terminal B and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

    - **If less than 10 V**
    1. Ignition OFF, disconnect the X3 harness connector at the K23 Folding Top Control Module.
    2. Test for infinite resistance between the signal circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    3. Test for less than 2 ohms in the signal circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, replace the K23 Folding Top Control Module.
    - **If greater than 10 V**
3. Disconnect the X3 harness connector at K23 Folding Top Control Module.
4. Test for less than 1 V between the appropriate signal circuit terminal A and ground.
    - **If 1 V or greater**

      Repair the short to voltage on the circuit.

    - **If less than 1 V**
5. Test for infinite resistance between signal circuits and ground.
    - **If less than infinite resistance**

      Repair the short to ground on the circuit.

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6. Test for less than 2 ohms in the signal circuits end to end.
    - **If greater than 2 ohms**

      Repair the open/high resistance in the circuit.

    - **If 2 ohms or less**
7. Test or replace the appropriate folding top header latched position sensor.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Folding Top Front Latch Replacement**
- **Control Module References** for folding top control module replacement, programming and setup.

DTC B3687 AND B3688: CONVERTIBLE TOP TENSION BOW UP/DOWN SENSOR

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 B3687

Convertible Top Tension Bow Up Sensor Circuit

DTC B3688

Convertible Top Tension Bow Down Sensor Circuit

For symptom byte information, refer to **Symptom Byte List** .

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Up Sensor Signal	B3687 06	B3687 06	B3687 01	B3687 08
Down Sensor Signal	B3688 06	B3688 06	B3688 01,	B3688 08
Control Voltage	B3687 06, B3688 06	B3687 06, B3688 06	-	-

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Circuit/System Description

The K23 Folding Top Control Module monitor two hall-effect switch for the folding top tension bow position: B249 Folding Top Tension Bow Down Position Sensor and B250 Folding Top Tension Bow Up Position Sensor. The switches monitor the status of the folding top tension bow position.

The sensors are two-wire hall effect sensors providing an input to the K23 Folding Top Control Module. One terminal is voltage and the other is a signal circuit. During an open circuit condition, it is normal for the folding top control module voltage output to switch between approximately 12V and 0V.

Conditions for Running the DTC

- Battery voltage must be between 9 to 16V.
- Ignition switch in OFF, ACCESSORY or RUN positions.

Conditions for Setting the DTC

B3687 01

The K23 Folding Top Control Module has detected a short to battery in the B250 Folding Top Tension Bow Up Position Sensor circuit.

B3687 06

The K23 Folding Top Control Module has detected an open or low voltage in the B250 Folding Top Tension Bow Up Position Sensor circuit.

B3687 08

The K23 Folding Top Control Module has detected an invalid signal in the B250 Folding Top Tension Bow Up Position Sensor circuit.

B3688 01

The K23 Folding Top Control Module has detected a short to battery in the B249 Folding Top Tension Bow Down Position Sensor circuit.

B3688 06

The K23 Folding Top Control Module has detected an open or low voltage in the B249 Folding Top Tension Bow Down Position Sensor circuit.

B3688 08

The K23 Folding Top Control Module has detected an invalid signal in the B249 Folding Top Tension Bow Down Position Sensor circuit.

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Action Taken When the DTC Sets

- If folding top switch is pressed, the driver information center will display "Only Manual Operation of Top Possible".

Conditions for Clearing the DTC

The condition responsible for setting the DTC no longer exists.

Reference Information

Schematic Reference

Folding Top Schematics

Connector End View Reference

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Description and Operation

Power Folding Top Description and Operation

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- **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. Ignition ON
2. Verify the scan tool Folding Top Bow Open and Bow Closed Status parameters change between Active and Inactive when closing and opening folding top.
    - **If parameters do not change between Active and Inactive**

      Refer to the Circuit/System Testing.

    - **If parameters change between Active and Inactive**
3. All OK.

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Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the B249 Folding Top Tension Bow Down Position Sensor and B250 Folding Top Tension Bow Up Position Sensor, ignition ON.
2. Test for 10 V or greater between the control circuit terminal 1 and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

   - **If less than 10 V**
   1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module.
   2. Test for infinite resistance between the signal circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance
   3. Test for less than 2 ohms in the signal circuit end to end.
      - If 2 ohms or greater, repair the open/high resistance in the circuit.
      - If less than 2 ohms, replace the K23 Folding Top Control Module.
   - **If greater than 10 V**
3. Disconnect the X1 harness connector at K23 Folding Top Control Module.
4. Test for less than 1 V between the following signal circuit terminals and ground:
   - B249 Folding Top Tension Bow Down Position Sensor terminal 2
   - B250 Folding Top Tension Bow Up Position Sensor terminal 3
   - **If 1 V or greater**

     Repair the short to voltage on the circuit.

   - **If less than 1 V**
5. Test for infinite resistance between signal circuits and ground.
   - **If less than infinite resistance**

     Repair the short to ground on the circuit.

   - **If infinite resistance**
6. Test for less than 2 ohms in the signal circuits end to end.
   - **If greater than 2 ohms**

     Repair the open/high resistance in the circuit.

   - **If 2 ohms or less**
7. Test or replace the appropriate Folding Top Stowage Compartment Lid Position Sensor.

Repair Instructions

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Perform the **Diagnostic Repair Verification** after completing the repair.

- **Roof Retractable Position Sensor Replacement (Latch Cylinder)**, **Roof Retractable Position Sensor Replacement (Main Cylinder)**, **Roof Retractable Position Sensor Replacement (5 Bow Cylinder)**, **Roof Retractable Position Sensor Replacement (Latch)**
- **Control Module References** for K23 Folding Top Control Module replacement, programming and setup.

SYMPTOMS - ROOF

NOTE: The following steps must be completed before using the symptom tables.

1. Perform the **Diagnostic System Check - Vehicle** , before using the Symptom Tables in order to verify that all of the following are true:
   - There are no DTCs set.
   - The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to **Power Folding Top Description and Operation**.

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the folding top system. Refer to **Checking Aftermarket Accessories** .
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.
- Inspect the folding top hydraulic reservoir for the proper fluid level.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections** .

Symptom List

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

-
- **Power Folding Top Malfunction**

POWER FOLDING TOP MALFUNCTION

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.

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- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F34RA fuse B+	1	1	-	-
F24RA fuse B+	1	1	-	-
Folding Top Luggage Barrier and Header Latched Sensors B+, X3 term 3	1	1	1	-
Folding Top Position Sensor B+, X1 term, 8	1	1	1	-
Folding Top Luggage Barrier Sensor Signal	B130A 06	B130A 06	B130A 01	B130A 08
Folding Top Header Latched Position Sensor Signal - Left	B3685 06	B3685 06	B3685 01	B3685 08, B3685 5A
Folding Top Header Latched Position Sensor Signal - Right	B3686 06	B3686 06	B3686 01	B3686 08, B3686 5A
Folding Top Control Switch Signal	B3602 08	B3602 08	1	B3602 08, B3602 59
Folding Top Header Unlatched Position Sensor - Left	B12FE 02	B12FE 06	B12FE 01	B12FE 08, B12FE 5A
Folding Top Header Unlatched Position Sensor - Right	B12FF 02	B12FF 06	B12FF 01	B12FF 08, B12FF 5A
Folding Top Stowage Compartment Lid Open Position	B1322 06	B1322 06	B1322 01	B1322 08
Folding Top Stowage Compartment Lid Fully Closed Position Sensor	B1323 06	B1323 06	B1323 01	B1323 08
Folding Top Down Position Sensor	B1311 06	B1311 06	B1311 01	B1311 08
Folding Top Up Position Sensor	B1310 06	B1310 06	B1310 01	B1310 08
Folding Top Tension Bow Down Position Sensor	B3688 06	B3688 06	B3688 01	B3688 08
Folding Top Tension Bow Up Position Sensor	B3687 06	B3687 06	B3687 01	B3687 08
KR149A Folding Top Pump Motor Relay 1 (Down)	B1309 02	B1309 04	B1309 01	-
	B1308 02	B1308 04	B1308 01	-

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Motor Relay 2 (Up)				
Folding Top Pump Motor	1	B3680 04	B3680 01	-
Folding Top Solenoid Valves	B3674 02, B3675 02, B3676 02, B3677 02	B3674 04, B3675 04, B3676 04, B3677 04	B3674 01, B3675 01, B3676 01, B3677 01	-
1. Power Folding Top Malfunction				

Circuit/System Description

The operation of the convertible top is fully-automatic. The user of the vehicle presses the folding top switch and the control module latches and unlatches the convertible top while hydraulic power actuation provides the force to raise and lower the top. The folding top control switch is a rocker type switch that controls open and close functions of the power folding top. The folding top control module commands the folding top to move in response to the switch signal. Based on the switch input, the module applies voltage to the appropriate controls circuits of the folding top pump motor in order to control the hydraulic system used to operate the folding top.

Diagnostic Aids

Complete the check list, prior to performing the diagnosis:

- Scan tool must remain connected and turned on to keep K23 folding top module active during diagnostics.
- Pump operating temperature is between 0°C (32°F) and 70°C (158°F).
- Luggage barrier is installed and secured, activating the folding top luggage barrier sensor.
- Whenever the open/close control switch is released or the top becomes inoperative in a suspended state, pressure will be maintained in the hydraulic system to avoid drifting and damage of components.

Reference Information

Schematic Reference

Folding Top Schematics

Connector End View Reference

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- **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. Ignition ON
2. Verify the scan tool Folding Top Luggage Switch parameters change between Active and Inactive when installing and removing the luggage barrier.
    - **If parameter does not change between Active and Inactive**

      Refer to the Circuit/System Testing - Luggage Barrier Sensor Malfunction.

    - **If parameter changes between Active and Inactive**
3. Verify the scan tool Folding Top Left and Right Latch Open Status parameters change between Active and Inactive when closing and opening folding top.
    - **If parameters do not change between Active and Inactive**

      Refer to the Circuit/System Testing - Header Latched Position Sensor Malfunction.

    - **If parameters change between Active and Inactive**
4. Verify the scan tool Folding Top Left Latch Open Status and Folding Top Right Latch Open Status parameters change between Active and Inactive when closing and opening folding top.
    - **If parameters do not change between Active and Inactive**

      Refer to the Circuit/System Testing - Header Unlatched Position Sensor.

    - **If parameters change between Active and Inactive**
5. Verify the scan tool Folding Top Tonneau Latch Open Status and Folding Top Latch Closed Status parameters change between Active and Inactive when closing and opening folding top.
    - **If parameter does not change between Active and Inactive**

      Refer to the Circuit/System Testing - Stowage Compartment Position Sensor.

    - **If parameter changes between Active and Inactive**
6. Verify the scan tool Folding Top Closed Sensor parameters change between Active and Inactive when closing and opening folding top.
    - **If parameter does not change between Active and Inactive**

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Refer to the Circuit/System Testing - Folding Top Up Position Sensor.

- **If parameter changes between Active and Inactive**

7. Verify the scan tool Folding Top Left Open Sensor parameters change between Active and Inactive when closing and opening folding top.
   - **If parameter does not change between Active and Inactive**

     Refer to the Circuit/System Testing - Folding Top Down Position Sensor Malfunction.

   - **If parameter changes between Active and Inactive**
8. Verify the scan tool Folding Top Bow Open and Bow Closed Status parameters change between Active and Inactive when closing and opening folding top.
   - **If parameters do not change between Active and Inactive**

     Refer to the Circuit/System Testing - Tension Bow Position Sensor Malfunction.

   - **If parameters change between Active and Inactive**
9. Verify the M23 Folding Top Pump Motor turns on and off when commanding the Folding Top Up Relay parameter On and Off with a scan tool.
   - **If the motor does not turn on and off**

     Refer to Circuit/System Testing - Folding Top Pump Motor Relay 1 Malfunction.

   - **If the motor turns on and off**
10. Verify the M23 Folding Top Pump Motor turns on and off when commanding the Folding Top Down Relay parameter On and Off with a scan tool.
    - **If the motor does not turn on and off**

      Refer to Circuit/System Testing - Folding Top Pump Motor Relay 1 Malfunction.

    - **If the motor turns on and off**
11. Verify the folding top pump motor operates while commanding the Folding Top Pump Motor command Open and Close with a scan tool.
    - **If the folding top pump motor does not work**

      Refer to Circuit/System Testing

    - **If the folding top pump motor works**
12. Verify the Q16A Folding Top Solenoid Valve 1, Q16B Folding Top Solenoid Valve 2, Q16C Folding Top Solenoid Valve 3 and Q16D Folding Top Solenoid Valve 4 operate when commanding the appropriate Q16 Folding Top Solenoid Valve ON and OFF with a scan tool.
    - **If the valves do not operate**

      Refer to the Circuit/System Testing - Folding Top Solenoid Valve Malfunction.

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- **If the valves operate**

13. All OK.

Circuit/System Testing

Folding Top Control Switch Malfunction

1. Ignition OFF and all vehicle systems OFF. Disconnect the harness connector at the S22B Folding Top Control Switch. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal 4 and ground.
   - **If 10 ohms or greater**
   1. Ignition OFF.
   2. Test for less than 2 ohms in the ground circuit end to end.
      - If 2 ohms or greater, repair the open/high resistance in the circuit.
      - If less than 2 ohms, repair the open/high resistance in the ground connection.
   - **If less than 10 ohms**
3. Test for 10 V or greater between the signal circuit terminal 3 and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

   - **If less than 10 V**
   1. Ignition OFF, disconnect the X3 harness connector at the K23 Folding Top Control Module.
   2. Test for infinite resistance between the signal circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance
   3. Test for less than 2 ohms in the signal circuit end to end.
      - If 2 ohms or greater, repair the open/high resistance in the circuit.
      - If less than 2 ohms, replace the K23 Folding Top Control Module.
   - **If greater than 10 V**
4. Test or replace the S22B Folding Top Control Switch.

Header Latched Position Sensor

1. Ignition OFF and all vehicle systems OFF. Disconnect the harness connector at the appropriate B240 Folding Top Header Latched Position Sensor circuit, ignition ON.
2. Test for 10 V or greater between the control circuit terminal B and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

   - **If less than 10 V**

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1. Ignition OFF, disconnect the X3 harness connector at the K23 Folding Top Control Module.
2. Test for infinite resistance between the signal circuit and ground.
    - If less than infinite resistance, repair the short to ground on the circuit.
    - If infinite resistance
3. Test for less than 2 ohms in the signal circuit end to end.
    - If 2 ohms or greater, repair the open/high resistance in the circuit.
    - If less than 2 ohms, replace the K23 Folding Top Control Module.

- **If greater than 10 V**

3. Disconnect the X3 harness connector at K23 Folding Top Control Module.
4. Test for less than 1 V between the appropriate signal circuit terminal A and ground.
    - **If 1 V or greater**

      Repair the short to voltage on the circuit.

    - **If less than 1 V**
5. Test for infinite resistance between signal circuits and ground.
    - **If less than infinite resistance**

      Repair the short to ground on the circuit.

    - **If infinite resistance**
6. Test for less than 2 ohms in the signal circuits end to end.
    - **If greater than 2 ohms**

      Repair the open/high resistance in the circuit.

    - **If 2 ohms or less**
7. Test or replace the appropriate folding top header latched position sensor.

Luggage Barrier Sensor Malfunction

1. Ignition OFF, disconnect the harness connector at the B43 Folding Top Luggage Barrier Sensor, ignition ON.
2. Test for 10 V or greater between the control circuit terminal 2 and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

    - **If less than 10 V**
    1. Ignition OFF, disconnect the X3 harness connector at the K23 Folding Top Control Module.

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- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance

3. Test for less than 2 ohms in the signal circuit end to end.
   - If 2 ohms or greater, repair the open/high resistance in the circuit.
   - If less than 2 ohms, replace the K23 Folding Top Control Module.

- **If greater than 10 V**

3. Disconnect the X3 harness connector at K23 Folding Top Control Module.
4. Test for less than 1 V between the B43 Folding Top Luggage Barrier Sensor signal circuit terminal 1 and ground.
   - **If 1 V or greater**

     Repair the short to voltage on the circuit.

   - **If less than 1 V**
5. Test for infinite resistance between signal circuit and ground.
   - **If less than infinite resistance**

     Repair the short to ground on the circuit.

   - **If infinite resistance**
6. Test for less than 2 ohms in the signal circuit end to end.
   - **If greater than 2 ohms**

     Repair the open/high resistance in the circuit.

   - **If 2 ohms or less**
7. Test or replace the B43 Folding Top Luggage Barrier Sensor.

Header Unlatched Position Sensor

1. Ignition OFF, disconnect the harness connector at the appropriate B266 Folding Top Header Unlatched Position Sensor circuit, ignition ON.
2. Ignition ON.
3. Test for 10 V or greater between the control circuit terminal 1 and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

   - **If less than 10 V**

1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module.
2. Test for infinite resistance between the signal circuit and ground.

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- If infinite resistance

3. Test for less than 2 ohms in the signal circuit end to end.
   - If 2 ohms or greater, repair the open/high resistance in the circuit.
   - If less than 2 ohms, replace the K23 Folding Top Control Module.

- **If greater than 10 V**

4. Disconnect the X1 harness connector at K23 Folding Top Control Module.
5. Test for less than 1 V between the appropriate B266 Folding Top Header Unlatched Position Sensor signal circuit terminal 2 and ground.
   - **If 1 V or greater**

     Repair the short to voltage on the circuit.

   - **If less than 1 V**
6. Test for infinite resistance between signal circuit and ground.
   - **If less than infinite resistance**

     Repair the short to ground on the circuit.

   - **If infinite resistance**
7. Test for less than 2 ohms in the signal circuit end to end.
   - **If greater than 2 ohms**

     Repair the open/high resistance in the circuit.

   - **If 2 ohms or less**
8. Test or replace the appropriate B266 Folding Top Header Unlatched Position Sensor.

Folding Top Up Position Sensor Malfunction

1. Ignition OFF, disconnect the harness connector at the B252 Folding Top Up Position Sensor, ignition ON.
2. Test for 10 V or greater between the control circuit terminal 1 and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

   - **If less than 10 V**

   1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module.
   2. Test for infinite resistance between the signal circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance

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    - If 2 ohms or greater, repair the open/high resistance in the circuit.
    - If less than 2 ohms, replace the K23 Folding Top Control Module.
  - **If greater than 10 V**
3. Disconnect the X1 harness connector at K23 Folding Top Control Module.
4. Test for less than 1 V between the B252 Folding Top Up Position Sensor signal circuit terminal 3 and ground.
  - **If 1 V or greater**

    Repair the short to voltage on the circuit.

  - **If less than 1 V**
5. Test for infinite resistance between signal circuit and ground.
  - **If less than infinite resistance**

    Repair the short to ground on the circuit.

  - **If infinite resistance**
6. Test for less than 2 ohms in the signal circuit end to end.
  - **If greater than 2 ohms**

    Repair the open/high resistance in the circuit.

  - **If 2 ohms or less**
7. Test or replace the B252 Folding Top Up Position Sensor.

Folding Top Down Position Sensor

1. Ignition OFF, disconnect the harness connector at the B251 Folding Top Down Position Sensor, ignition ON.
2. Test for 10 V or greater between the control circuit terminal 1 and ground.

    NOTE: The voltage may pulse between 12V and 0V - this is normal.

  - **If less than 10 V**
  1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module.
  2. Test for infinite resistance between the signal circuit and ground.
    - If less than infinite resistance, repair the short to ground on the circuit.
    - If infinite resistance
  3. Test for less than 2 ohms in the signal circuit end to end.
    - If 2 ohms or greater, repair the open/high resistance in the circuit.

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- **If greater than 10 V**

3. Disconnect the X1 harness connector at K23 Folding Top Control Module.
4. Test for less than 1 V between the B251 Folding Top Down Position Sensor signal circuit terminal 2 and ground.
   - **If 1 V or greater**

     Repair the short to voltage on the circuit.

   - **If less than 1 V**
5. Test for infinite resistance between signal circuit and ground.
   - **If less than infinite resistance**

     Repair the short to ground on the circuit.

   - **If infinite resistance**
6. Test for less than 2 ohms in the signal circuit end to end.
   - **If greater than 2 ohms**

     Repair the open/high resistance in the circuit.

   - **If 2 ohms or less**
7. Test or replace the B251 Folding Top Down Position Sensor.

Folding Top Pump Motor Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the X1 and X2 harness connectors at the M23 Folding Top Pump Motor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 ohms between the X1 control circuit terminal 1 and ground.
   - **If 10 ohms or greater**
   1. Ignition OFF, disconnect the harness connector at the KR149A Folding Top Pump Motor Relay 1.
   2. Test for less than 10 ohms between the ground terminal D and ground.
      - If 10 ohms or greater, repair the open/high resistance in the circuit.
      - If less than 10 ohms
   3. Test for less than 2 ohms between the folding top pump motor relay terminal C and folding top pump motor terminal 1.
      - If 2 ohms or greater, repair the open/high resistance in the circuit.
      - If less than 2 ohms, replace the G11 Folding Top Pump Motor Assembly.
   - **If less than 10 ohms**
3. Test for less than 10 ohms between the X2 control circuit terminal 1 and ground.
   - **If 10 ohms or greater**

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1. Ignition OFF, disconnect the harness connector at the KR149B Folding Top Pump Motor Relay 2.
2. Test for less than 10 ohms between the ground terminal D and ground.
    - If 10 ohms or greater, repair the open/high resistance in the circuit.
    - If less than 10 ohms
3. Test for less than 2 ohms between the folding top pump motor relay terminal C and folding top pump motor terminal 1.
    - If 2 ohms or greater, repair the open/high resistance in the circuit.
    - If less than 2 ohms, replace the G11 Folding Top Pump Motor Assembly.

- **If less than 10 ohms**

4. Connect a test lamp between X1 control circuit terminal 1 and X2 control circuit terminal 1, ignition ON.
5. Verify the test lamp turns ON when commanding the Folding Top Pump Motor command Open and Close with a scan tool.

- **If the test lamp remains OFF during either or both of the commands**

1. Remove the KR149A Folding Top Pump Motor Relay 1 and KR149B Folding Top Pump Motor Relay 2.
2. Verify a test lamp illuminates between the following B+ circuit terminals and ground:
    - KR149A Folding Top Pump Motor Relay 1 terminal E
    - KR149B Folding Top Pump Motor Relay 2 terminal E
    - If the test lamp does not illuminate and the circuit fuse is good

    1. Ignition OFF.
    2. Test for less than 2 ohms in the B+ circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, verify the fuse is not open and there is voltage at the fuse.

    - If the test lamp does not illuminate and the circuit fuse is open

    1. Ignition OFF.
    2. Test for infinite resistance between the B+ circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance, replace the G11 Folding Top Pump Motor Assembly.

    - If the test lamp illuminates

      Test or replace the G11 Folding Top Pump Motor Assembly

- **If the test lamp turns ON during each of the commands**

6. Test or replace the M23 Folding Top Pump Motor.

Stowage Compartment Lid Position Sensor

1. Ignition OFF, disconnect the harness connector at the B248 Folding Top Stowage Compartment

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Lid Open Position Sensor and B245 Folding Top Stowage Compartment Lid Fully Closed Position Sensor, ignition ON.

2. Test for 10 V or greater between the control circuit terminal 1 and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

   - **If less than 10 V**
   1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module.
   2. Test for infinite resistance between the signal circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance
   3. Test for less than 2 ohms in the signal circuit end to end.
      - If 2 ohms or greater, repair the open/high resistance in the circuit.
      - If less than 2 ohms, replace the K23 Folding Top Control Module.
   - **If greater than 10 V**
3. Disconnect the X1 harness connector at K23 Folding Top Control Module.
4. Test for less than 1 V between the following signal circuit terminals and ground:
   - B248 Folding Top Stowage Compartment Lid Open Position Sensor terminal 2
   - B245 Folding Top Stowage Compartment Lid Fully Closed Position Sensor terminal 3
   - **If 1 V or greater**

     Repair the short to voltage on the circuit.

   - **If less than 1 V**
5. Test for infinite resistance between signal circuits and ground.
   - **If less than infinite resistance**

     Repair the short to ground on the circuit.

   - **If infinite resistance**
6. Test for less than 2 ohms in the signal circuits end to end.
   - **If greater than 2 ohms**

     Repair the open/high resistance in the circuit.

   - **If 2 ohms or less**
7. Test or replace the appropriate Folding Top Stowage Compartment Lid Position Sensor.

Folding Top Tension Bow Position Sensor

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Position Sensor and B250 Folding Top Tension Bow Up Position Sensor, ignition ON.

2. Test for 10 V or greater between the control circuit terminal 1 and ground.

   NOTE: The voltage may pulse between 12V and 0V - this is normal.

   - **If less than 10 V**
   1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module.
   2. Test for infinite resistance between the signal circuit and ground.
      - If less than infinite resistance, repair the short to ground on the circuit.
      - If infinite resistance
   3. Test for less than 2 ohms in the signal circuit end to end.
      - If 2 ohms or greater, repair the open/high resistance in the circuit.
      - If less than 2 ohms, replace the K23 Folding Top Control Module.
   - **If greater than 10 V**
3. Disconnect the X1 harness connector at K23 Folding Top Control Module.
4. Test for less than 1 V between the following signal circuit terminals and ground:
   - B249 Folding Top Tension Bow Down Position Sensor terminal 2
   - B250 Folding Top Tension Bow Up Position Sensor terminal 3
   - **If 1 V or greater**

     Repair the short to voltage on the circuit.

   - **If less than 1 V**
5. Test for infinite resistance between signal circuits and ground.
   - **If less than infinite resistance**

     Repair the short to ground on the circuit.

   - **If infinite resistance**
6. Test for less than 2 ohms in the signal circuits end to end.
   - **If greater than 2 ohms**

     Repair the open/high resistance in the circuit.

   - **If 2 ohms or less**
7. Test or replace the appropriate Folding Top Stowage Compartment Lid Position Sensor.

Folding Top Pump Motor Relay 1 Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the KR149A Folding Top Pump Motor

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2. Test for less than 10 ohms between the ground circuit terminal B and ground:
    - **If 10 ohms or greater**
    1. Ignition OFF.
    2. Test for less than 2 ohms in the ground circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, repair the open/high resistance in the ground connection.
    - **If less than 10 ohms**
3. Connect a test lamp between the control circuit terminal A and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Folding Top Up Relay parameter On and Off with a scan tool.
    - **If the test lamp is always OFF**
    1. Ignition OFF, remove the test lamp, disconnect the X1 harness connector at the K23 Folding Top Control Module.
    2. Test for infinite resistance between the control circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    3. Test for less than 2 ohms in the control circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, replace the K23 Folding Top Control Module.
    - **If the test lamp is always ON**
    1. Ignition OFF, remove the test lamp, disconnect the X1 harness connector at the K23 Folding Top Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V, replace the K23 Folding Top Control Module.
    - **If the test lamp turns ON and OFF**
5. Test or replace the G11 Folding Top Pump Motor Assembly.

Folding Top Pump Motor Relay 2 Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the K149B Folding Top Pump Motor Relay 2. It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 ohms between the ground circuit terminal B and ground:
    - **If 10 ohms or greater**
    1. Ignition OFF.
    2. Test for less than 2 ohms in the ground circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, repair the open/high resistance in the ground connection.
    - **If less than 10 ohms**

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3. Connect a test lamp between the control circuit terminal A and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Folding Top Up Relay parameter On and Off with a scan tool.
    - **If the test lamp is always OFF**
    1. Ignition OFF, remove the test lamp, disconnect the X1 harness connector at the K23 Folding Top Control Module.
    2. Test for infinite resistance between the control circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    3. Test for less than 2 ohms in the control circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, replace the K23 Folding Top Control Module.
    - **If the test lamp is always ON**
    1. Ignition OFF, remove the test lamp, disconnect the X1 harness connector at the K23 Folding Top Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V, replace the K23 Folding Top Control Module.
    - **If the test lamp turns ON and OFF**
5. Test or replace the G11 Folding Top Pump Motor Assembly.

Folding Top Solenoid Malfunction

1. Disconnect the harness connector at the appropriate Q16 Folding Top Solenoid Valve.
2. Connect a test lamp between the control circuit terminal 1 and the ground circuit terminal 2.
3. Verify the test lamp turns ON and OFF when Commanding the appropriate Q16 Folding Top Solenoid Valve ON and OFF with a scan tool.
    - **If the test lamp is always OFF**
    1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module.
    2. Test for infinite resistance between the control circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    3. Test for less than 2 ohms in the control circuit end to end.
        - If 2 ohms or greater, repair the open/high resistance in the circuit.
        - If less than 2 ohms, replace the K23 Folding Top Control Module.
    - **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X1 harness connector at the K23 Folding Top Control Module, ignition ON.

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2. Test for less than 1 V between the control circuit and ground.
    - If 1 V or greater, repair the short to voltage on the circuit.
    - If less than 1 V, replace the K23 Folding Top Control Module.
- **If the test lamp turns ON and OFF**

4. Replace the G11 Folding Top Pump Motor Assembly.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Folding Top Pump Replacement**
- **Folding Top Switch Replacement**
- **Roof Retractable Position Sensor Replacement (Latch Cylinder)**, **Roof Retractable Position Sensor Replacement (Main Cylinder)**, **Roof Retractable Position Sensor Replacement (5 Bow Cylinder)**, **Roof Retractable Position Sensor Replacement (Latch)**
- **Roof Retractable Position Sensor Replacement (Latch Cylinder)**, **Roof Retractable Position Sensor Replacement (Main Cylinder)**, **Roof Retractable Position Sensor Replacement (5 Bow Cylinder)**, **Roof Retractable Position Sensor Replacement (Latch)**
- **Roof Retractable Position Sensor Replacement (Latch Cylinder)**, **Roof Retractable Position Sensor Replacement (Main Cylinder)**, **Roof Retractable Position Sensor Replacement (5 Bow Cylinder)**, **Roof Retractable Position Sensor Replacement (Latch)**
- **Control Module References** for folding top control module replacement, programming and setup

REPAIR INSTRUCTIONS

FOLDING TOP NUMBER 1 BOW REPLACEMENT

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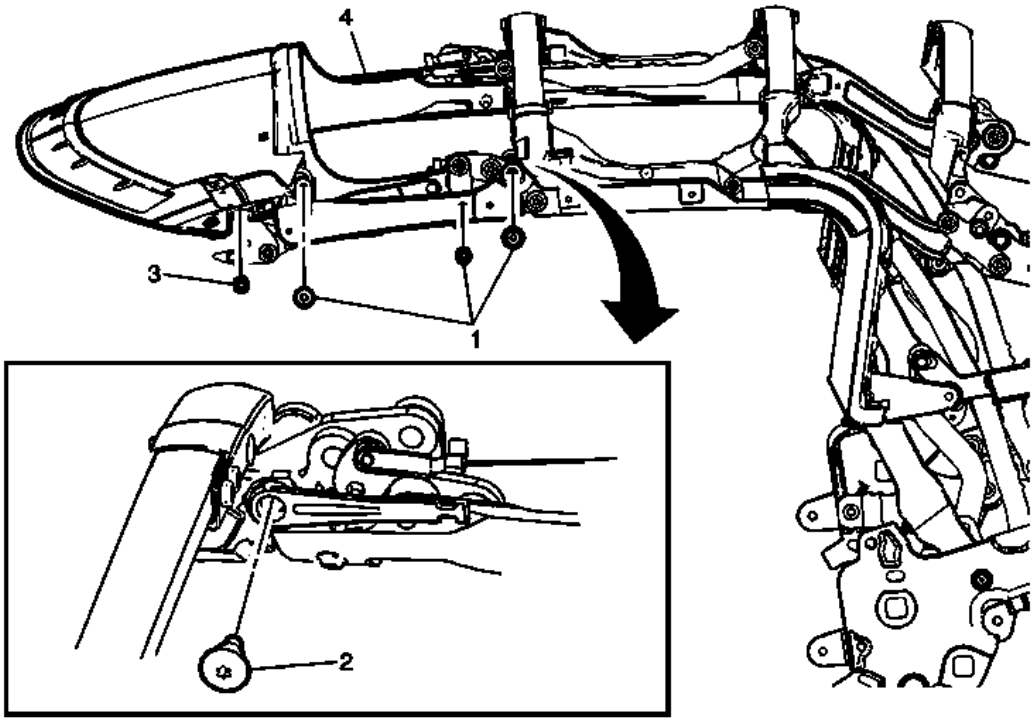

Fig. 6: Folding Top Number 1 Bow
Courtesy of GENERAL MOTORS COMPANY

Folding Top Number 1 Bow Replacement

Callout	Component Name

CAUTION:
Prying against the folding top rails could result in damage to parts.

NOTE:
Manual operation of the folding top cannot be attempted for 5 minutes from the last time the folding top button was pressed. This will allow the hydraulic pressure to bleed off.

Preliminary Procedures

1. Place the folding top to mid-position.
2. Remove the folding top side weatherstrip retainers. Refer to **Roof Retractable Center Panel Weatherstrip Replacement**.
3. Roll the front section of the folding top cover to the center of the roof. Refer to **Folding Top Cover Replacement**.
4. Remove the folding top cover guides from the number 1 bow. Refer to **Folding Top Cover Guide Replacement**.
5. Remove the folding top cover side tension cables from the number 1 bow. Refer to **Folding Top Cover Side Tension Cable Replacement**.

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	Replacement (Latch), **Folding Top Cylinder Replacement (5 Bow)**, **Folding Top Cylinder Replacement (Tonneau)**, **Folding Top Cylinder Replacement (Main)**.
1	Folding Top Outside Bow Screw (Qty: 3) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 7.5 N.m (66 lb in)
2	Folding Top Inside Bow Screw **Tighten** 22 N.m (16 lb ft)
3	Folding Top Front Latch Upper Screw (Qty: 4) **Tighten** 7.5 N.m (66 lb in)
4	Folding Top Number 1 Bow

FOLDING TOP NUMBER 3 BOW REPLACEMENT

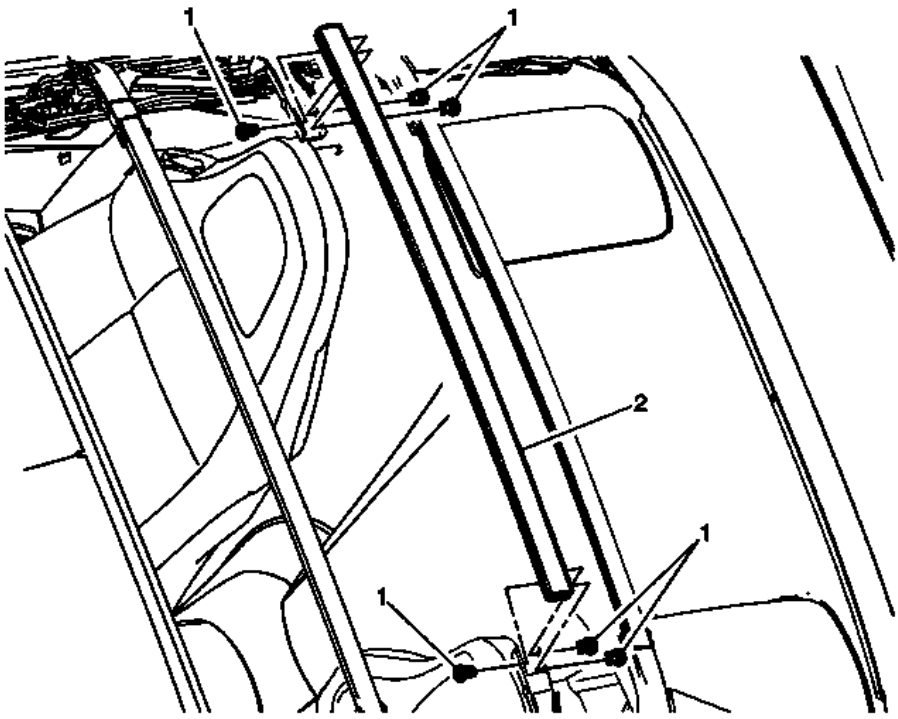

Fig. 7: Folding Top Number 3 Bow
Courtesy of GENERAL MOTORS COMPANY

Folding Top Number 3 Bow Replacement

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Callout	Component Name
CAUTION: **Prying against the folding top rails could result in damage to parts.** **NOTE:** **Manual operation of the folding top cannot be attempted for 5 minutes from the last time the folding top button was pressed. This will allow the hydraulic pressure to bleed off.** **Preliminary Procedures** 1. Place the folding top to mid-position. 2. Remove the folding top cover enough to gain access to the bow. Refer to **Folding Top Cover Replacement**.	
1	Folding Top Bow Screw (Qty: 6) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 3 N.m (27 lb in)
2	Folding Top Number 3 Bow **NOTE:** **Slide bow from either side of the vehicle.**

FOLDING TOP NUMBER 4 BOW REPLACEMENT

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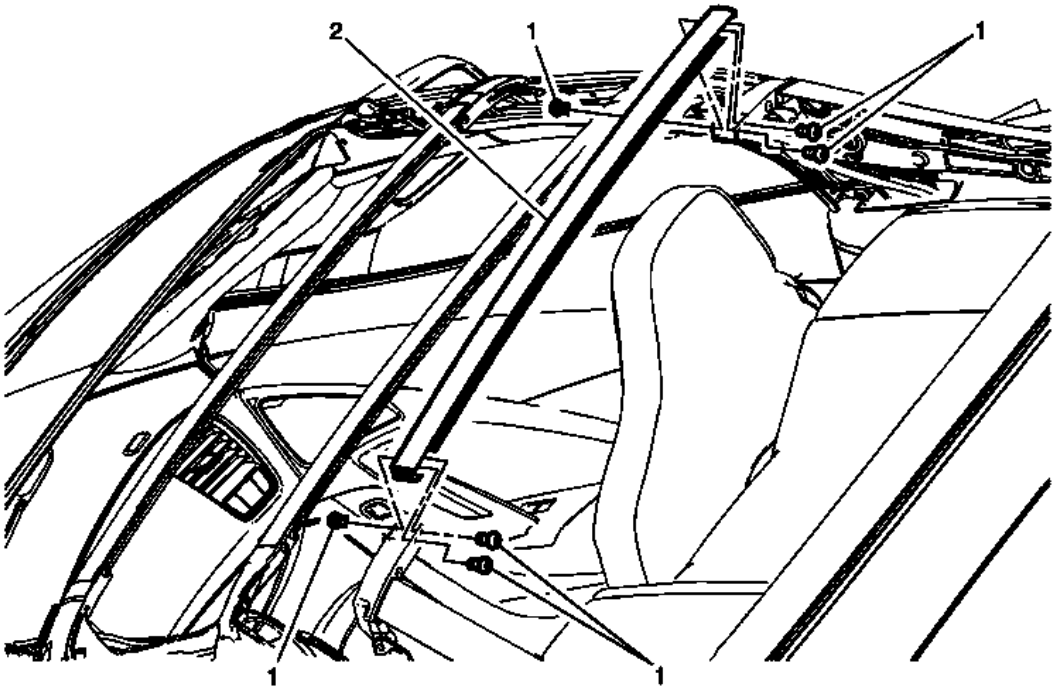

Fig. 8: Folding Top Number 4 Bow
Courtesy of GENERAL MOTORS COMPANY

Folding Top Number 4 Bow Replacement

Callout	Component Name
CAUTION: **Prying against the folding top rails could result in damage to parts.** **NOTE:** **Manual operation of the folding top cannot be attempted for 5 minutes from the last time the folding top button was pressed. This will allow the hydraulic pressure to bleed off.** **Preliminary Procedures** 1. Place the folding top to mid-position. 2. Remove the folding top cover enough to gain access to the bow. Refer to **Folding Top Cover Replacement**.	
1	Folding Top Bow Screw (Qty: 6) **CAUTION:** **Refer to Fastener Caution .**

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	3 N.m (27 lb in)
2	Folding Top Number 4 Bow **NOTE:** **Slide bow from either side of the vehicle.**

FOLDING TOP PIVOT BRACKET REPLACEMENT

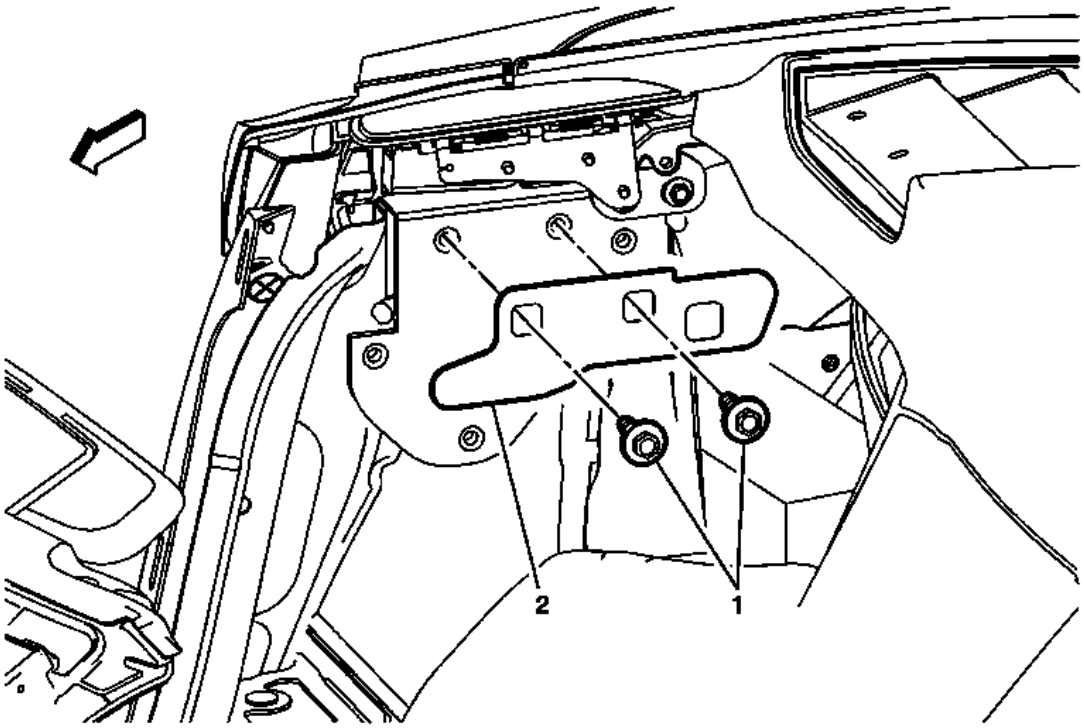

Fig. 9: Folding Top Pivot Bracket
Courtesy of GENERAL MOTORS COMPANY

Folding Top Pivot Bracket Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the folding top side rail. Refer to **Folding Top Side Rail Replacement**. 2. Use a grease pencil to mark the location of the bracket for installation.	
1	Folding Top Pivot Bracket Bolt (Qty: 2) **CAUTION:** **Refer to Fastener Caution .**

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	22 (16 lb ft)
2	Folding Top Pivot Bracket

FOLDING TOP COVER GUIDE REPLACEMENT

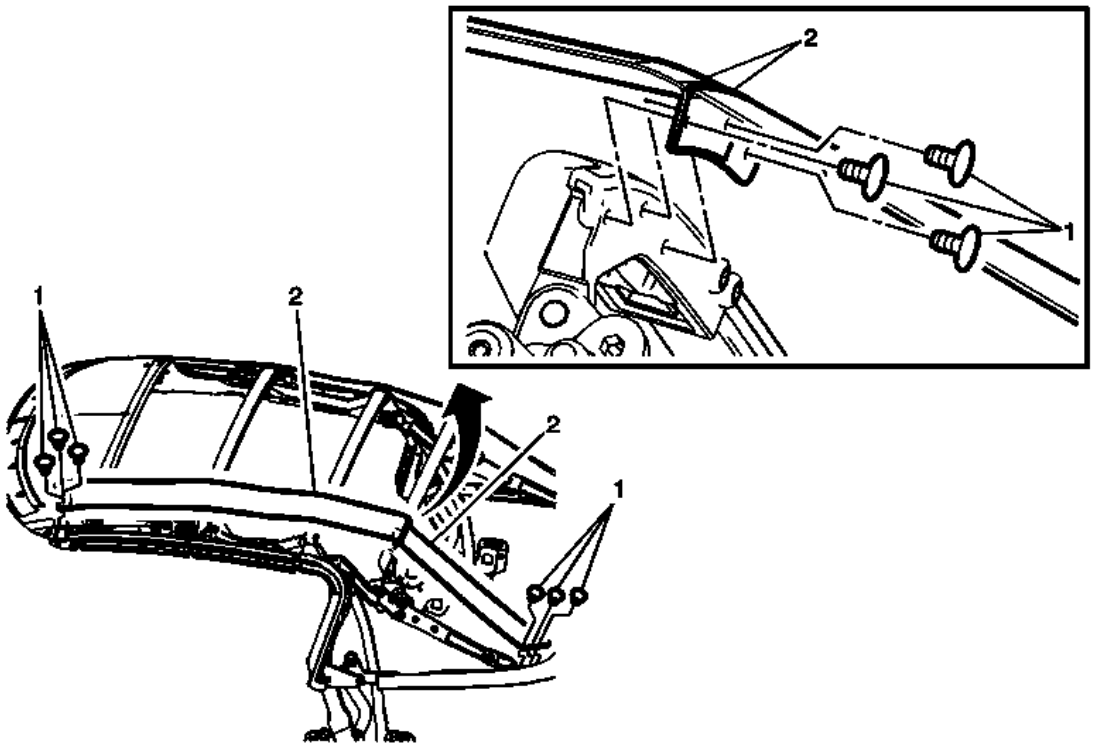

Fig. 10: Folding Top Cover Guide
Courtesy of GENERAL MOTORS COMPANY

Folding Top Cover Guide Replacement

Callout	Component Name
Preliminary Procedure Move the folding top cover enough to gain access to the guide cable. Refer to **Folding Top Cover Replacement**.	
1	Folding Top Cover Guide Fastener (Qty: 9)
2	Folding Top Cover Guide

FOLDING TOP PUMP BRACKET REPLACEMENT

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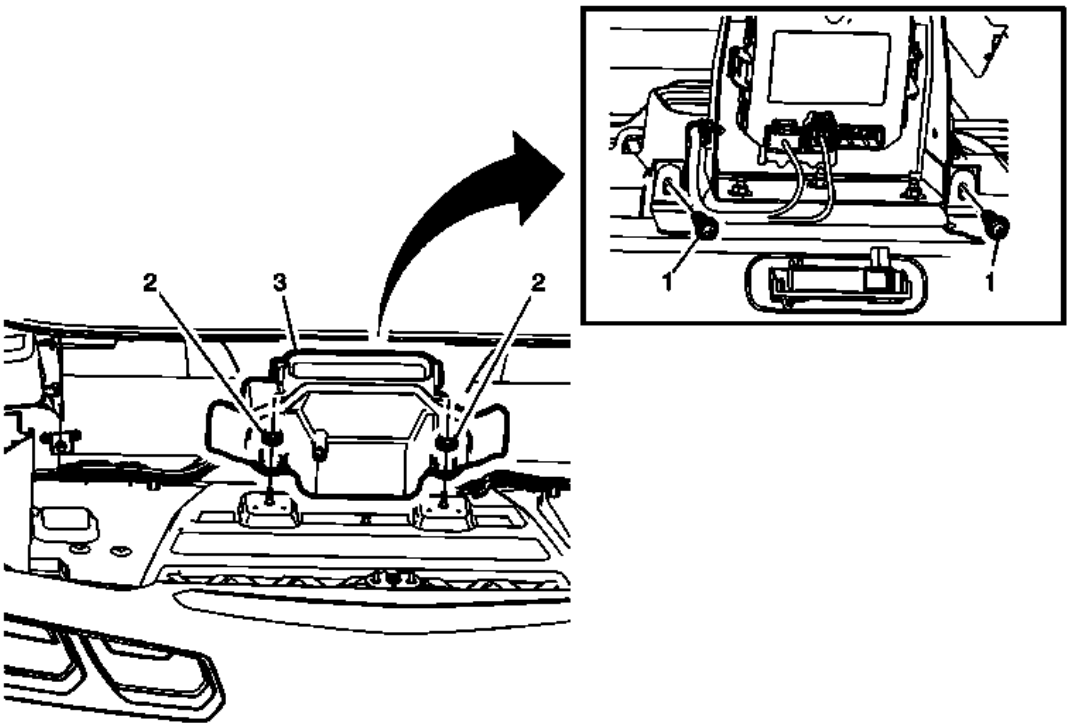

Fig. 11: Folding Top Pump Bracket
Courtesy of GENERAL MOTORS COMPANY

Folding Top Pump Bracket Replacement

Callout	Component Name
Preliminary Procedures 1. Place the folding top in the full closed position. 2. Remove the folding top stowage compartment extension outer panel. Refer to **Folding Top Stowage Compartment Extension Outer Panel Replacement**. 3. Open rear compartment lid. 4. Remove the rear compartment luggage shade. 5. Remove the rear compartment floor panel trim. Refer to **Rear Compartment Floor Panel Trim Replacement (North America)** , **Rear Compartment Floor Panel Trim Replacement (Export - CU9, CV5, CZ3, C4E)** .	
1	Folding Top Pump Bracket Screw (Qty: 2) **CAUTION:** **Refer to Fastener Caution .**
2	Folding Top Pump Bracket Nut (Qty: 2) **Tighten** 22 N.m (12 lb ft)
3	Folding Top Pump Bracket

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FOLDING TOP COVER SIDE TENSION CABLE REPLACEMENT

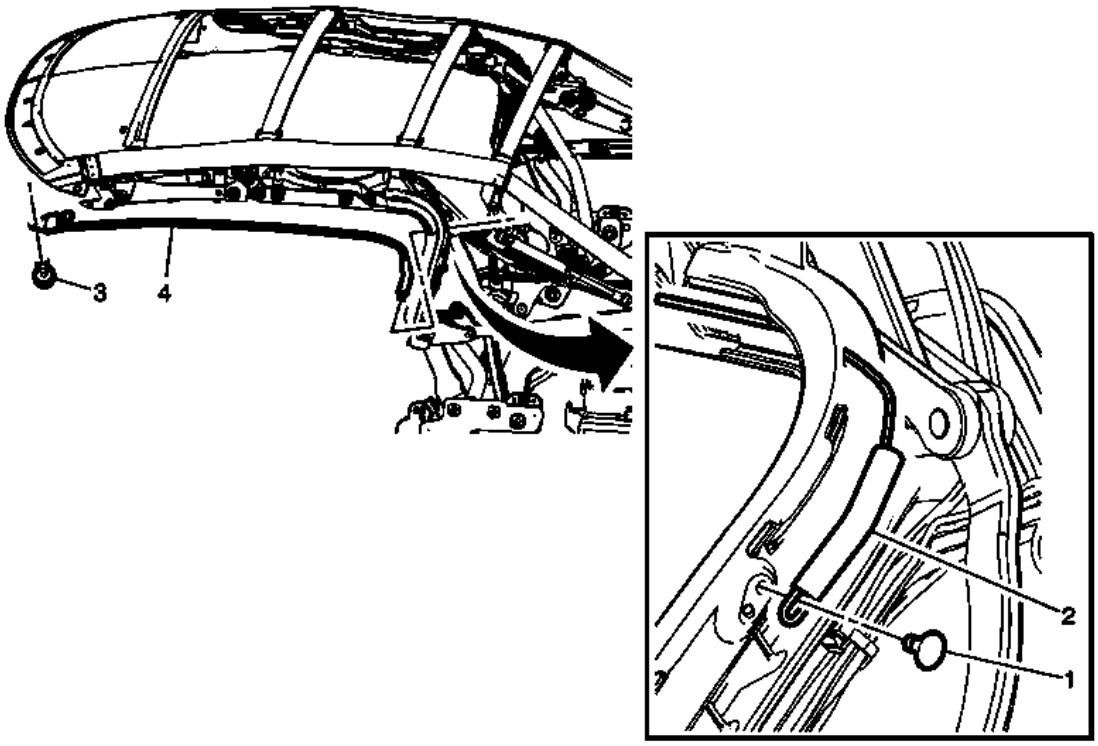

Fig. 12: Folding Top Cover Side Tension Cable
Courtesy of GENERAL MOTORS COMPANY

Folding Top Cover Side Tension Cable Replacement

Callout	Component Name
Preliminary Procedures 1. Position the folding top into mid position. **NOTE:** **It is not necessary to remove the roof retractable center weatherstrip panel.** 2. Move the folding top cover to gain access to the side tension cable. Refer to **Folding Top Cover Replacement**.	
1	Folding Top Cover Side Tension Cable Fastener
2	Folding Top Cover Side Tension Cable Cover **Procedure** Slide the tension cable cover off of the tension cable.
3	Folding Top Cover Side Tension Cable Rivet **Procedures**

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	2. Install NEW pop rivet to folding top side tension cable bracket.
4	Folding Top Cover Side Tension Cable **Procedure** Slide the tension cable forward through the hole in the folding top side rail.

FOLDING TOP COVER REPLACEMENT

Removal Procedure

1. Disconnect rear window heated glass electrical connection.
2. Remove both front weatherstrip retainers. Refer to **Roof Retractable Front Panel Side Weatherstrip Replacement**.
3. Remove both side weatherstrip retainers. Refer to **Roof Retractable Center Panel Weatherstrip Replacement**.

NOTE: **One clip from the roof retractable center side headlining trim panel and one clip from the roof retractable rear side headlining trim panel hold the folding top rear side rail link trim cover to the folding top side rail.**

4. Remove both rear weatherstrip retainers. Refer to **Roof Retractable Rear Panel Weatherstrip Replacement**.

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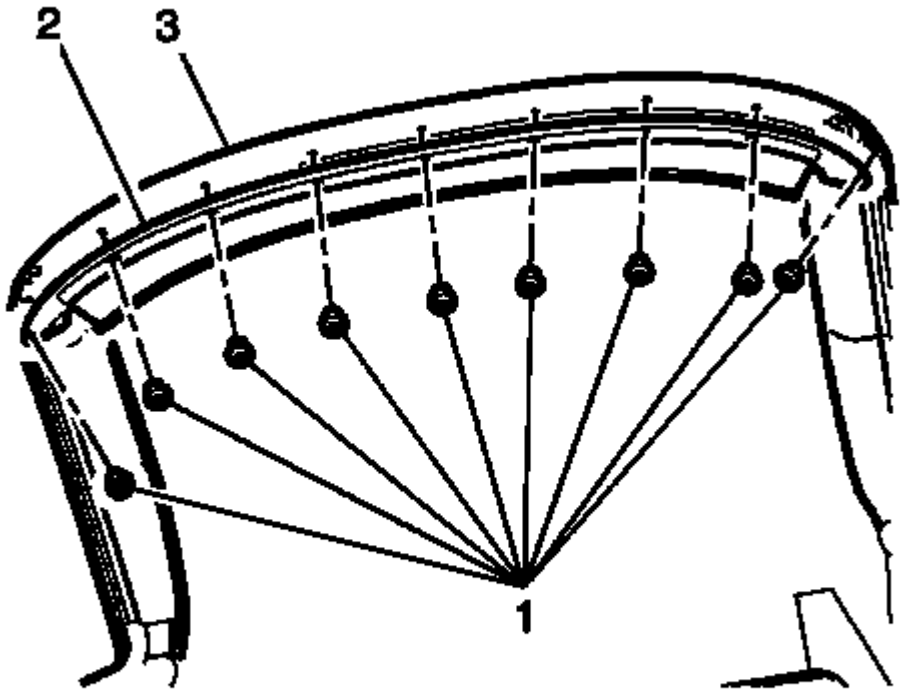

Fig. 13: Folding Top Compression Seal Panel Screws
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5. Remove the folding top compression seal panel screws (1) from the folding top compression seal panel (2).
6. Remove the folding top compression seal panel (2) from the number 1 bow (3).

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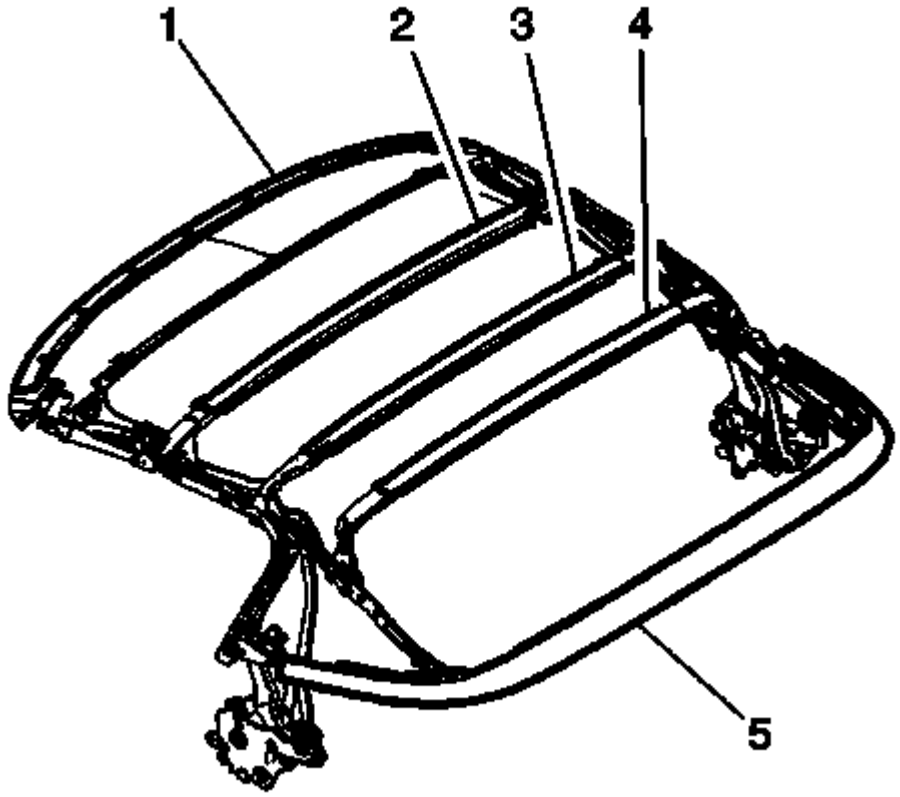

Fig. 14: Top Cover From Number 1 bow
Courtesy of GENERAL MOTORS COMPANY

7. Slide the top cover from the number 1 bow (1). Refer to **Folding Top Number 1 Bow Replacement**.
8. Slide the top cover from the number 2 bow (2). Refer to **Folding Top Number 2 Bow Replacement**.
9. Slide the top cover from the number 3 bow (3). Refer to **Folding Top Number 3 Bow Replacement**.
10. Slide the top cover from the number 4 bow (4). Refer to **Folding Top Number 4 Bow Replacement**.
11. Remove the top cover from the number 5 bow (5) by pulling seam from the number 5 bow groove.

Installation Procedure

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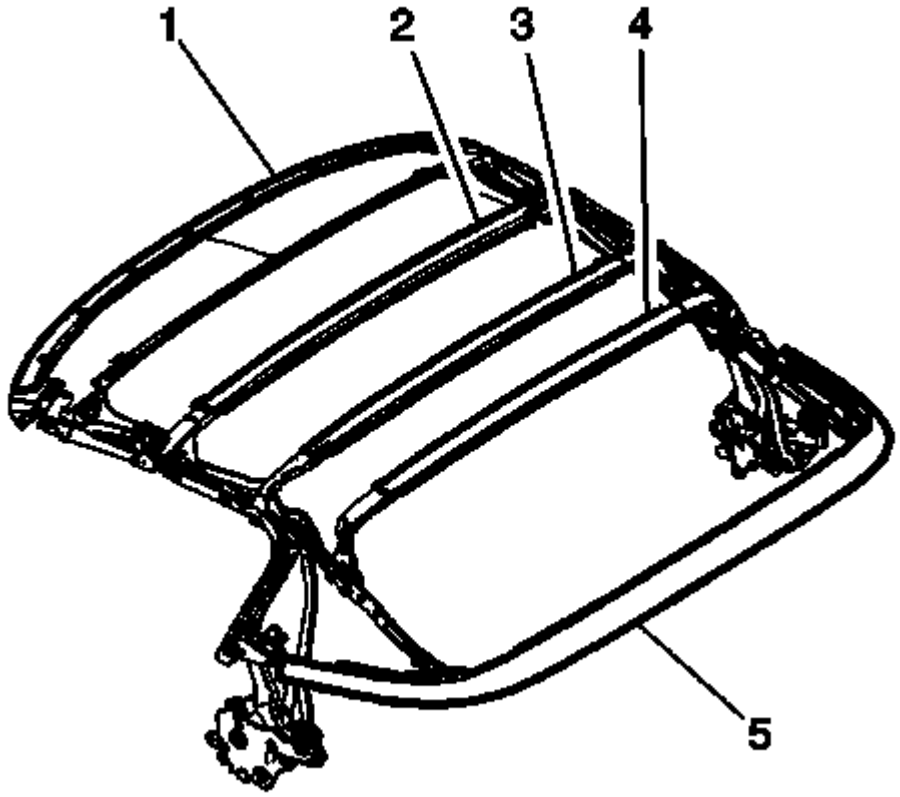

Fig. 15: Top Cover From Number 1 bow
Courtesy of GENERAL MOTORS COMPANY

1. Attach the top cover to the number 5 bow (5) by pressing seam into the number 5 bow groove.
2. Slide the top cover on the number 4 bow (4). Refer to **Folding Top Number 4 Bow Replacement**.
3. Slide the top cover on the number 3 bow (3). Refer to **Folding Top Number 3 Bow Replacement**.
4. Slide the top cover on the number 2 bow (2). Refer to **Folding Top Number 2 Bow Replacement**.
5. Slide the top cover on the number 1 bow (1). Refer to **Folding Top Number 1 Bow Replacement**.

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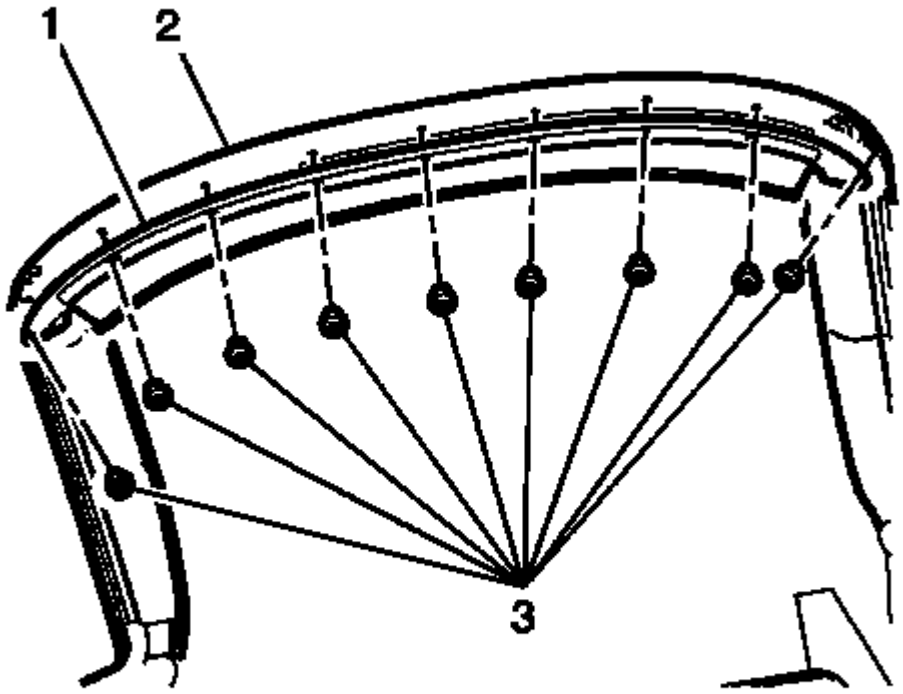

Fig. 16: Installing folding top compression seal panel to number 1 bow
Courtesy of GENERAL MOTORS COMPANY

6. Install the folding top compression seal panel (1) to the number 1 bow (2).
7. Install the folding top compression seal panel screws (3) to the folding top compression seal panel (1) and tighten to 5 (44 lb in).
8. Install both rear weatherstrip retainers. Refer to **Roof Retractable Rear Panel Weatherstrip Replacement**.
9. Install both side weatherstrip retainers. Refer to **Roof Retractable Center Panel Weatherstrip Replacement**.
10. Install both front weatherstrip retainers. Refer to **Roof Retractable Front Panel Side Weatherstrip Replacement**.
11. Attach the rear window electrical connector.

FOLDING TOP CYLINDER REPLACEMENT (LATCH)

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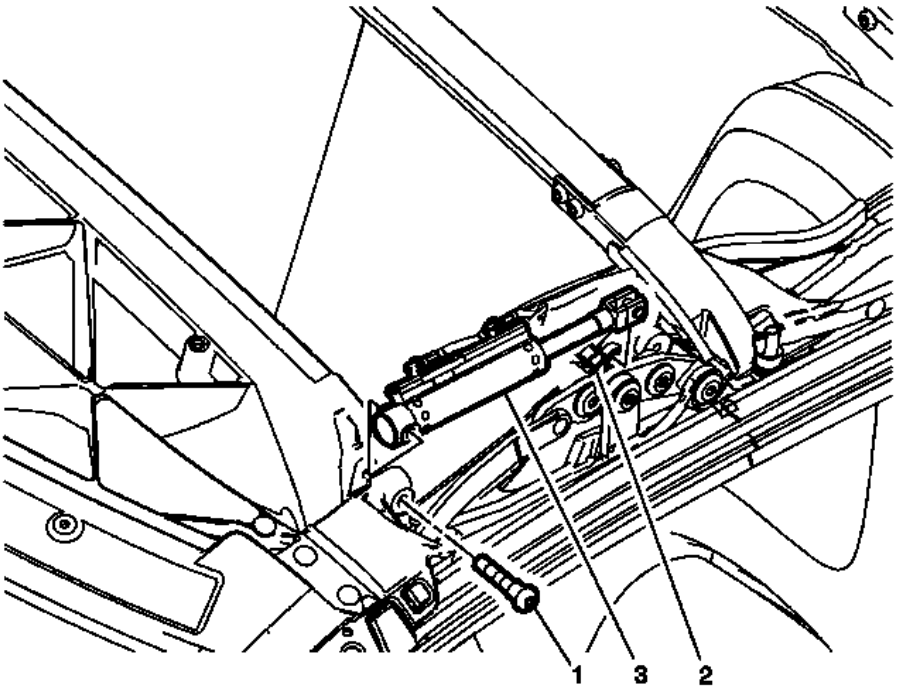

Fig. 17: Folding Top Cylinder (Latch)
Courtesy of GENERAL MOTORS COMPANY

Folding Top Cylinder Replacement (Latch)

Callout	Component Name
WARNING: **Refer to Eye Protection Warning .** **WARNING:** **Refer to Folding Top Hydraulic Pressure Warning .** **WARNING:** **Refer to Servicing Electrical Components Warning .** **CAUTION:** **Refer to Cylinder Hoses Caution .** **Preliminary Procedures** 1. Remove the folding top cover enough to gain access to the hydraulic cylinder. Refer to **Folding Top Cover Replacement**. 2. Place a protective covering over the interior and the adjacent body panels.	
	Folding Top Latch Cylinder Link Screw

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1	**CAUTION:** **Refer to Fastener Caution .** **Tighten** 7.5 N.m (66 lb in)
2	Folding Top Latch Hydraulic Cylinder Clip **Procedure** Push spring clip down and pull out of hydraulic cylinder. **NOTE:** **Do not reuse spring clip. Replace spring clip after disassembly.**
3	Folding Top Cylinder 1. Install a new O-ring onto the cylinder hose. 2. Install the hose into the cylinder port. Press down on the hose until the hose is fully seated in the cylinder. 3. Install a new cylinder hose retainer clip. Inspect the retainer clip to ensure that the clip is fully seated around the hose. 4. Inspect the fluid level and add fluid as needed. Refer to **Folding Top Fluid Addition**. **NOTE:** **Once the cylinder hose or the port plug has been removed, DO NOT move the cylinder rod. This will cause fluid to squirt out of the ports.**

FOLDING TOP CYLINDER REPLACEMENT (5 BOW)

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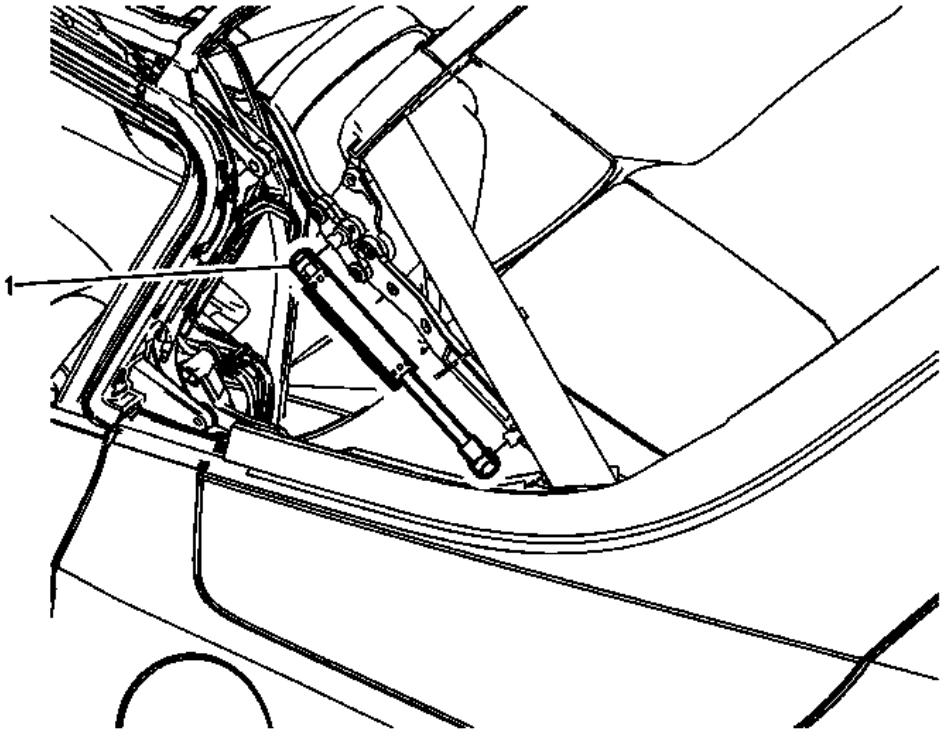

Fig. 18: Folding Top Cylinder (5 Bow)
Courtesy of GENERAL MOTORS COMPANY

Folding Top Cylinder Replacement (5 Bow)

Callout	Component Name
WARNING: **Refer to Eye Protection Warning .** **WARNING:** **Refer to Folding Top Hydraulic Pressure Warning .** **WARNING:** **Refer to Servicing Electrical Components Warning .** **CAUTION:** **Refer to Cylinder Hoses Caution .** **Preliminary Procedures** 1. Raise the folding top 5 bow and support in raised position to gain access to the hydraulic cylinder. 2. Place a protective covering over the interior and the adjacent body panels.	

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1	1. Release the locking tabs on the 5 bow hydraulic cylinder. 2. Ensure the locking tabs are fully seated when the 5 bow hydraulic cylinder is reinstalled. 3. Install a new O-ring onto the cylinder hose. 4. Install the hose into the cylinder port. Press down on the hose until the hose is fully seated in the cylinder. 5. Install a new cylinder hose retainer clip. Inspect the retainer clip to ensure that the clip is fully seated around the hose. 6. Re-attach routing clips, cable ties and tape to properly retain hoses to folding top, if removed. 7. Inspect the fluid level and add fluid as needed. Refer to **Folding Top Fluid Addition**. **NOTE:** **Once the cylinder hose or the port plug has been removed, DO NOT move the cylinder rod. This will cause fluid to squirt out of the ports.**

FOLDING TOP CYLINDER REPLACEMENT (TONNEAU)

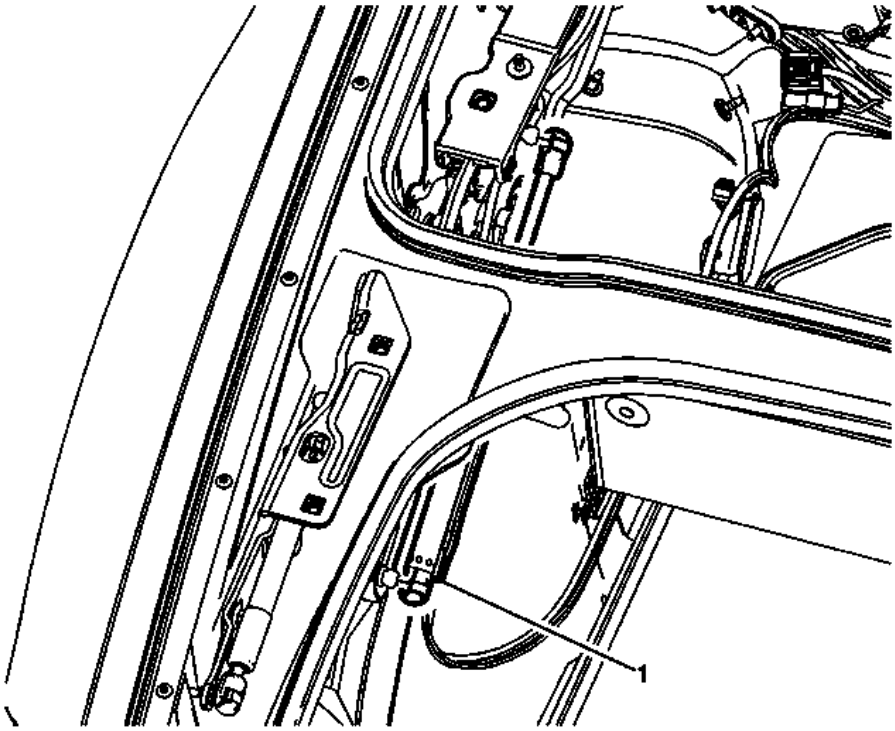

Fig. 19: Folding Top Cylinder
Courtesy of GENERAL MOTORS COMPANY

Folding Top Cylinder Replacement (Tonneau)

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Callout	Component Name
WARNING: **Refer to Eye Protection Warning .** **WARNING:** **Refer to Folding Top Hydraulic Pressure Warning .** **WARNING:** **Refer to Servicing Electrical Components Warning .** **CAUTION:** **Refer to Cylinder Hoses Caution .** **Preliminary Procedures** 1. Remove the rear compartment side trim. Refer to **Rear Compartment Side Trim Replacement - Left Side (Coupe)** , **Rear Compartment Side Trim Replacement - Left Side (Convertible)** or **Rear Compartment Side Trim Replacement - Right Side (Coupe)** , **Rear Compartment Side Trim Replacement - Right Side (Convertible)** . 2. Place a protective covering over the interior and the adjacent body panels.	
1	Folding Top Cylinder 1. Release the locking tabs on the tonneau hydraulic cylinder. 2. Ensure the locking tabs are fully seated when the tonneau hydraulic cylinder is reinstalled. 3. Install a new O-ring onto the cylinder hose. 4. Install the hose into the cylinder port. Press down on the hose until the hose is fully seated in the cylinder. 5. Install a new cylinder hose retainer clip. Inspect the retainer clip to ensure that the clip is fully seated around the hose. 6. Inspect the fluid level and add fluid as needed. Refer to **Folding Top Fluid Addition**. **NOTE:** **Once the cylinder hose or the port plug has been removed, DO NOT move the cylinder rod. This will cause fluid to squirt out of the ports.**

FOLDING TOP CYLINDER REPLACEMENT (MAIN)

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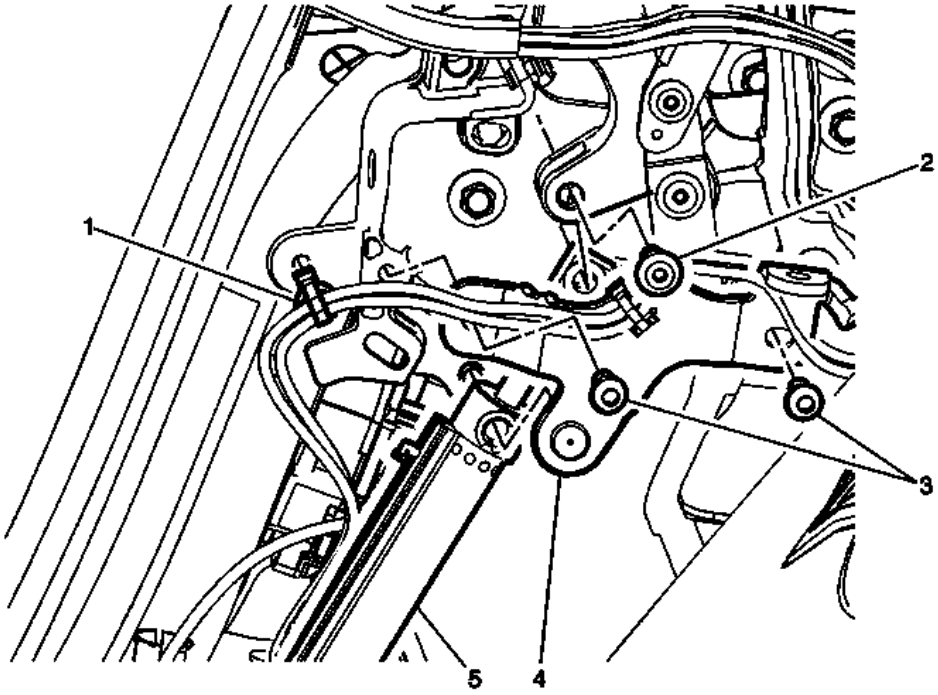

Fig. 20: Folding Top Cylinder
Courtesy of GENERAL MOTORS COMPANY

Folding Top Cylinder Replacement (Main)

Callout	Component Name
WARNING: **Refer to Eye Protection Warning .** **WARNING:** **Refer to Folding Top Hydraulic Pressure Warning .** **WARNING:** **Refer to Servicing Electrical Components Warning .** **Preliminary Procedures** 1. Remove the body lock pillar trim panel. Refer to **Body Lock Pillar Trim Panel Replacement (Coupe)** , **Body Lock Pillar Trim Panel Replacement (Convertible)** . 2. Place a protective covering over the interior and the adjacent body panels.	
1	Folding Top Hydraulic Hose Clip
	Folding Top Main Cylinder Screw **CAUTION:**

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2	**Tighten** 7.5 N.m (66 lb in)
3	Folding Top Side Rail Bracket Screw (Qty: 2) **Tighten** 22 N.m (16 lb ft)
4	Folding Top Side Rail Bracket
5	Folding Top Cylinder 1. Install a new O-ring onto the cylinder hose. 2. Install the hose into the cylinder port. Press down on the hose until the hose is fully seated in the cylinder. 3. Install a new cylinder hose retainer clip. Inspect the retainer clip to ensure that the clip is fully seated around the hose. 4. Inspect the fluid level and add fluid as needed. Refer to **Folding Top Fluid Addition**. **NOTE:** **Once the cylinder hose or the port plug has been removed, DO NOT move the cylinder rod. This will cause fluid to squirt out of the ports.**

ROOF RETRACTABLE FRONT PANEL SIDE WEATHERSTRIP REPLACEMENT

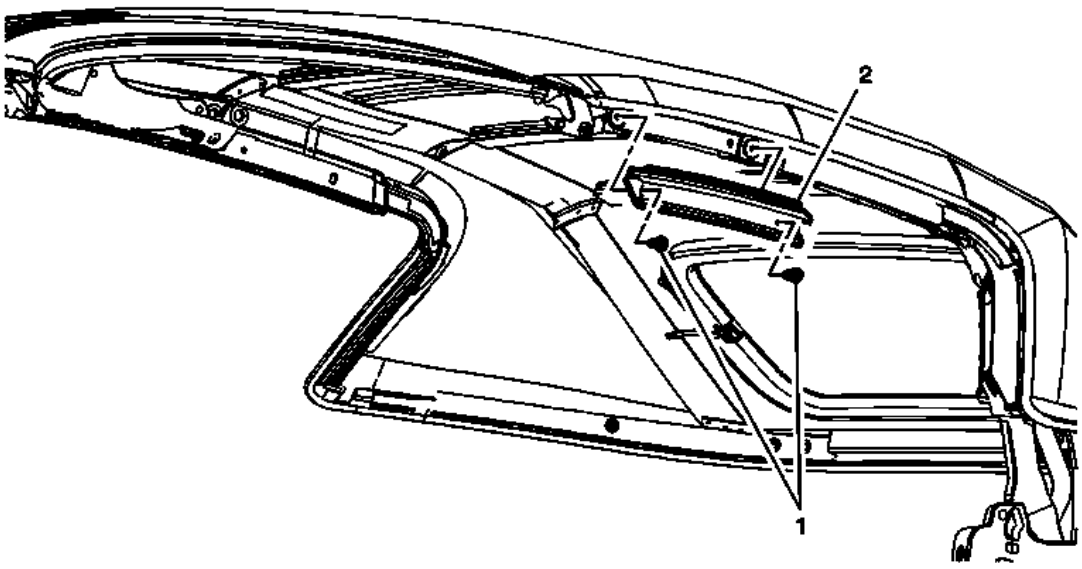

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Fig. 21: Roof Retractable Front Panel Side Weatherstrip
Courtesy of GENERAL MOTORS COMPANY

Roof Retractable Front Panel Side Weatherstrip Replacement

Callout	Component Name
Preliminary Procedures 1. Place the windows in the full down position. 2. Raise the folding top to allow access to the weatherstrip.	
1	Roof Retractable Front Panel Side Weatherstrip Screw (Qty: 2) **CAUTION:** **Refer to Fastener Caution .** **NOTE:** • **Spread the weatherstrip apart to gain access to screws.** • **The weatherstrip and retainer must be removed together.** **Tighten** 7.5 N.m (66 lb in)
2	Roof Retractable Front Panel Side Weatherstrip **NOTE:** **Water test the vehicle to ensure no leaks.**

ROOF RETRACTABLE CENTER PANEL WEATHERSTRIP REPLACEMENT

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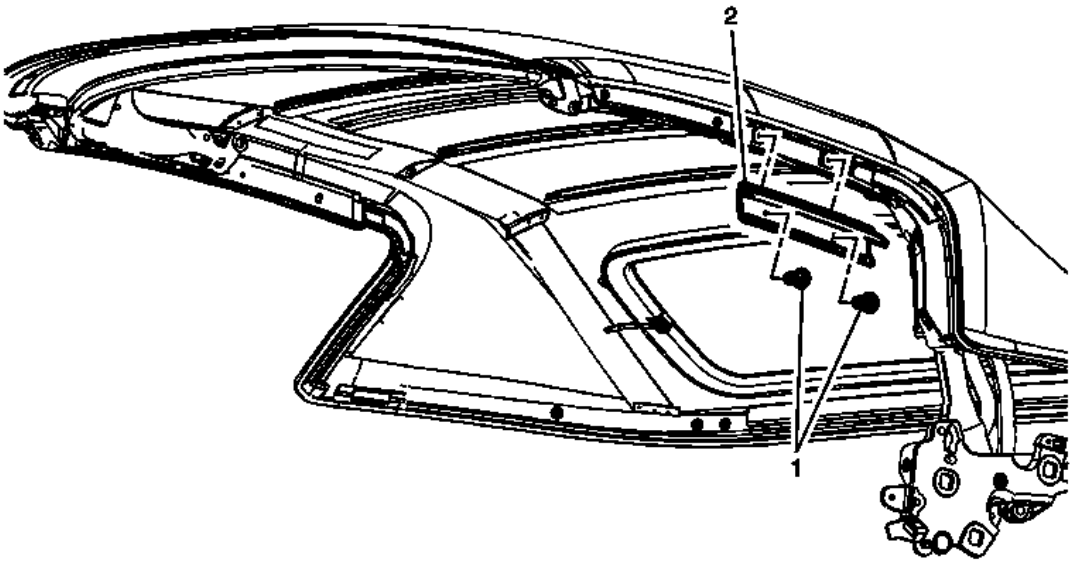

Fig. 22: Roof Retractable Center Panel Weatherstrip
Courtesy of GENERAL MOTORS COMPANY

Roof Retractable Center Panel Weatherstrip Replacement

Callout	Component Name
Preliminary Procedures 1. Place the windows in the full down position. 2. Raise the folding top to allow access to the weatherstrip.	
1	Roof Retractable Center Panel Weatherstrip Screw (Qty: 2) **CAUTION:** **Refer to Fastener Caution .** **NOTE:** • **Spread the weatherstrip apart to gain access to screws.** • **The weatherstrip and retainer must be removed together.** **Tighten** 7.5 N.m (66 lb in)
2	Roof Retractable Center Panel Weatherstrip

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	Water test the vehicle to ensure no leaks.

ROOF RETRACTABLE REAR PANEL WEATHERSTRIP REPLACEMENT

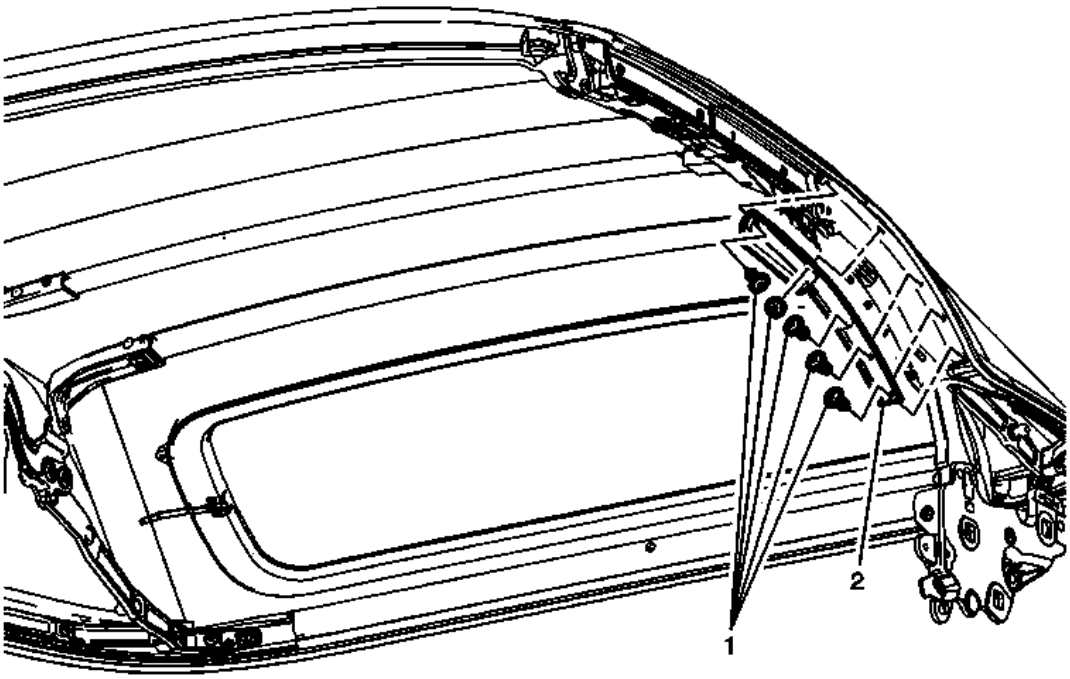

Fig. 23: Roof Retractable Rear Panel Weatherstrip
Courtesy of GENERAL MOTORS COMPANY

Roof Retractable Rear Panel Weatherstrip Replacement

Callout	Component Name
Preliminary Procedure Remove the folding top rear weatherstrip. Refer to **Folding Top Rear Weatherstrip Replacement**.	
1	Roof Retractable Rear Panel Weatherstrip Screw (Qty: 5) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 7.5 N.m (66 lb in)
2	Roof Retractable Rear Panel Weatherstrip

FOLDING TOP STOWAGE COMPARTMENT EXTENSION OUTER PANEL REPLACEMENT

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Removal Procedure

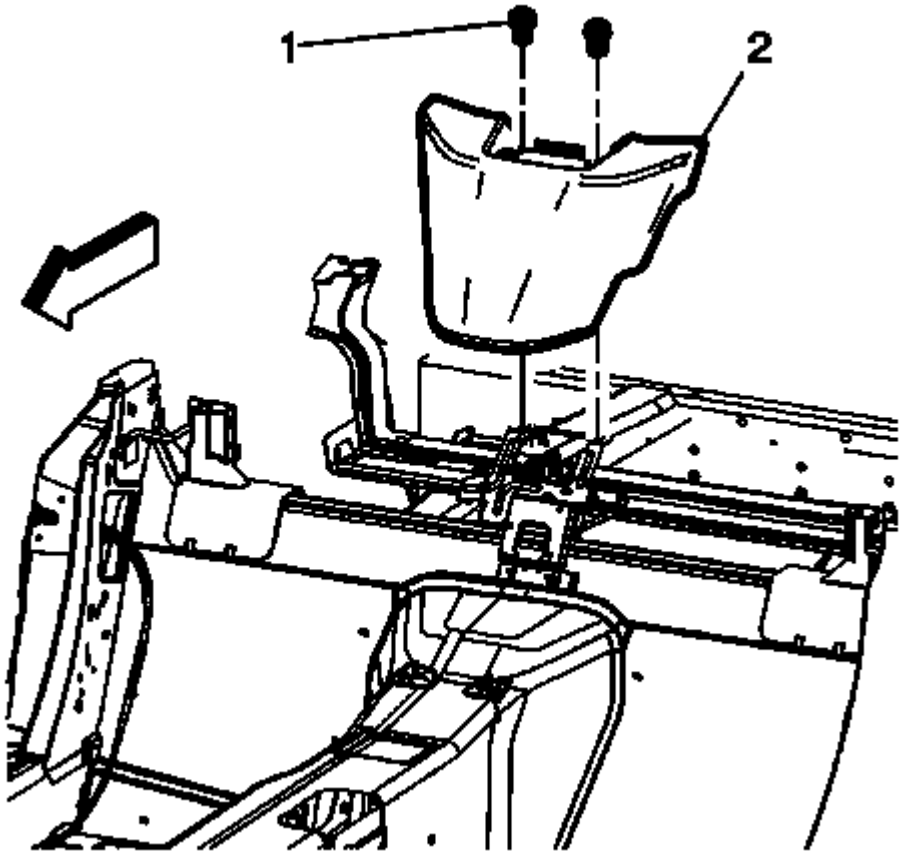

Fig. 24: Extension Panel
Courtesy of GENERAL MOTORS COMPANY

1. Open the folding top stowage compartment lid.
2. Place folding top number 1 and 5 bows in the up position.
3. Remove the screws attaching the top of the extension panel (1).
4. Remove the panel (2) upward from the bracket.

Installation Procedure

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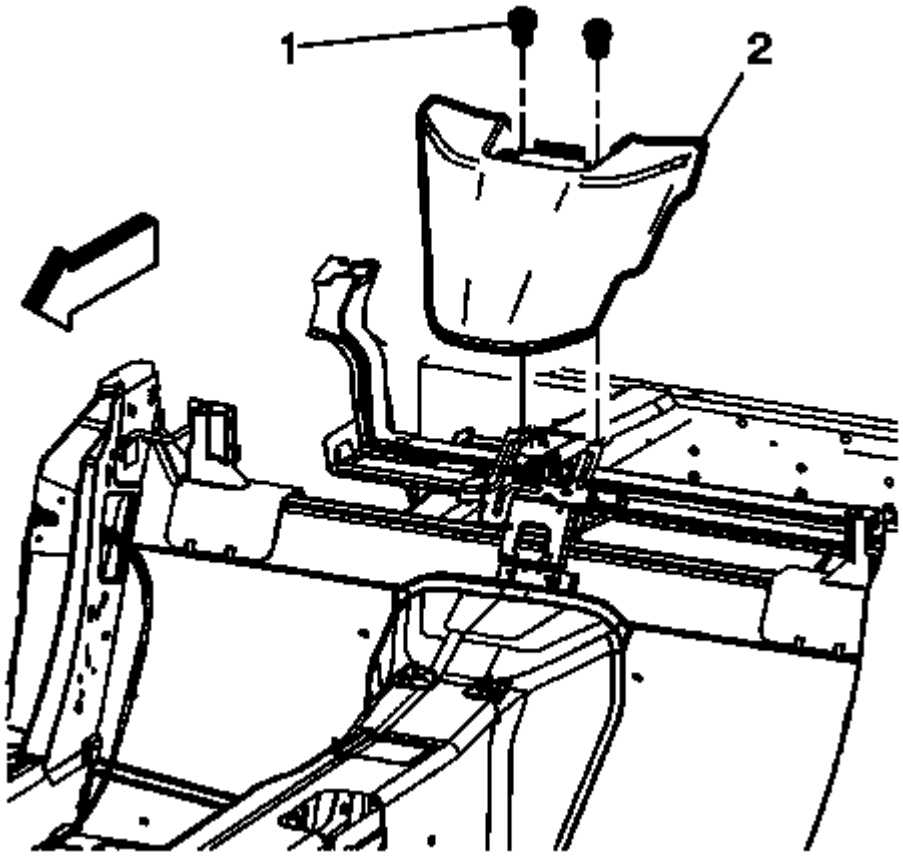

Fig. 25: Extension Panel
Courtesy of GENERAL MOTORS COMPANY

1. Position the extension panel to the bracket with the latch manual release cable extending out from under the panel.

CAUTION: Refer to Fastener Caution .

2. Install the bolts (1) attaching the extension panel (2) to the bracket and tighten to 4 N.m (35 lb in).
3. Close the folding top stowage compartment lid.

FOLDING TOP STOWAGE COMPARTMENT LID HINGE REPLACEMENT

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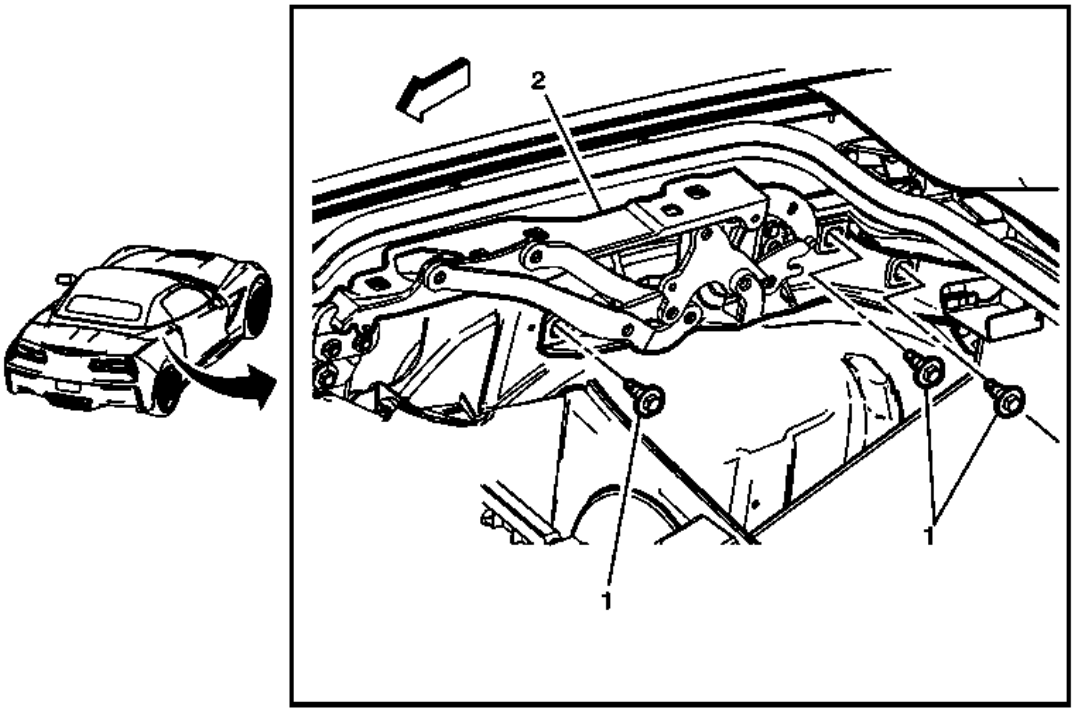

Fig. 26: Folding Top Stowage Compartment Lid Hinge
Courtesy of GENERAL MOTORS COMPANY

Folding Top Stowage Compartment Lid Hinge Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the quarter lower rear trim panel. Refer to **Quarter Lower Rear Trim Panel Replacement** 2. Remove the rear compartment stowage lid. Refer to **Folding Top Stowage Compartment Lid Replacement** 3. Reposition the right and left rear stowage compartment lid strut.	
1	Folding Top Stowage Compartment Lid Hinge Bolts (Qty: 3) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 32 (24 lb ft)
2	Folding Top Stowage Compartment Lid Hinge

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	1. Mark the location of the hinge with a grease pencil.

FOLDING TOP CYLINDER HYDRAULIC HOSE REPLACEMENT

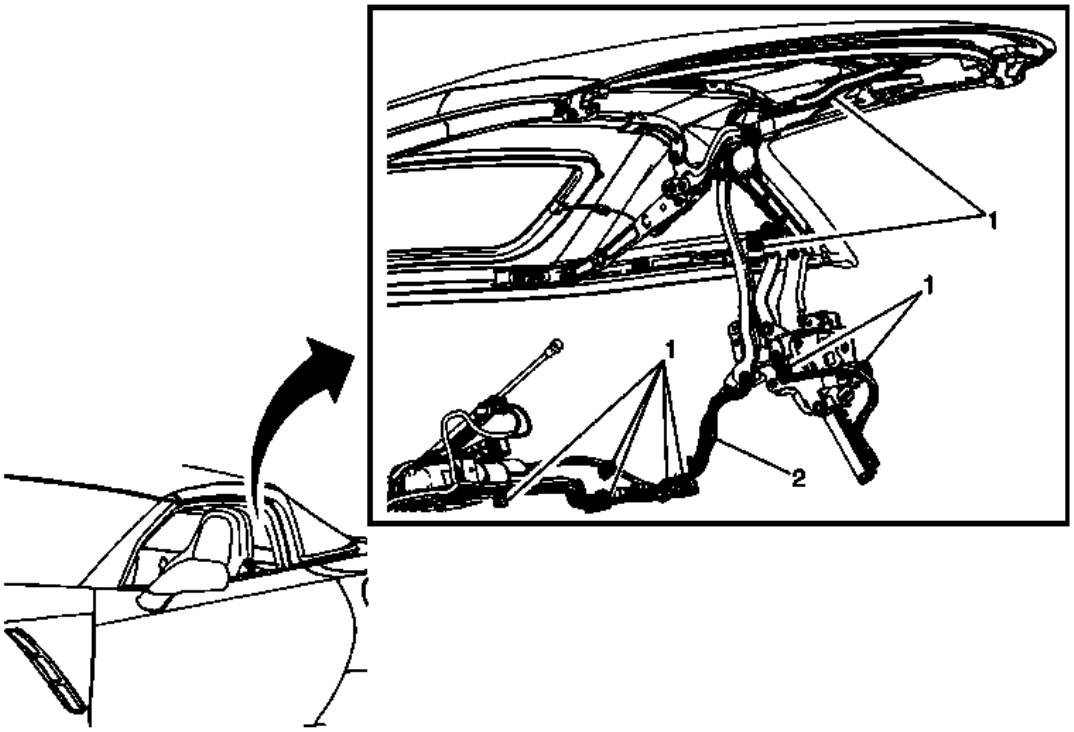

Fig. 27: Folding Top Cylinder Hydraulic Hose
Courtesy of GENERAL MOTORS COMPANY

Folding Top Cylinder Hydraulic Hose Replacement

Callout	Component Name
WARNING: **Refer to Eye Protection Warning .** **WARNING:** **Refer to Folding Top Hydraulic Pressure Warning .** **WARNING:** **Refer to Servicing Electrical Components Warning .** **CAUTION:** **Always put an automatic transmission in P (Park) or a manual transmission in N (Neutral) and set the park brake before raising or lowering the convertible top. If you raise or lower the convertible top while the vehicle is in motion, you could damage the top or the top mechanism.**	

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Do not lower the top in cold weather. If you lower the convertible top on the vehicle in cold weather (0°C (32°F) or lower), you may damage convertible top components.

CAUTION:

Always verify that no objects are in the storage area before lowering the convertible top. Lowering the convertible top when there are objects in the storage area could damage it or break the glass rear window.

CAUTION:

Dry off the convertible top before lowering it. Lowering the convertible top if it is damp, wet or dirty can cause stains, mildew and damage to the inside of the vehicle.

Preliminary Procedures

1. Place the folding top in the full up position.
2. Place all the windows in the full down position.
3. Open the rear compartment lid.
4. Disconnect the power to the folding top motor to prevent the folding top operating.
5. Remove the folding top cylinders on the side being serviced. Refer to **Folding Top Cylinder Replacement (Latch)**, **Folding Top Cylinder Replacement (5 Bow)**, **Folding Top Cylinder Replacement (Tonneau)**, **Folding Top Cylinder Replacement (Main)**.
6. Remove the hydraulic lines at the folding top pump. Refer to **Folding Top Pump Replacement**.

1	Folding Top Cylinder Hydraulic Hose Fasteners **Procedure** 1. Remove all tie wraps, tape, clips, wire looms and conduit on the hydraulic hoses from the folding top. 2. Install all tie wraps, tape, clips, wire looms and conduit to the folding top in the same location as removed for proper installation.
2	Folding Top Cylinder Hydraulic Hose **Procedure** 1. Ensure that all hydraulic hoses being serviced receive new O-rings, because of high pressure. 2. Remove the tape from the hoses. 3. Ensure that the hydraulic fluid level is full. Refer to **Folding Top Fluid Addition**. 4. Connect the power to the folding top motor. 5. Operating and bleeding procedure. Refer to **Folding Top Hydraulic System**

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	6. Inspect the folding top for leaks and proper operation. **NOTE:** • **Hydraulic cylinder hoses can not be repaired, they MUST be replaced.** • **After the cylinder hose has been opened or removed, DO NOT move the hydraulic cylinder rod, this will prevent the fluid from squirt out of the ports.** • **When installing the folding top cylinder hydraulic hose, install the hose to the cylinders first then the pump.**

FOLDING TOP FRONT LATCH REPLACEMENT

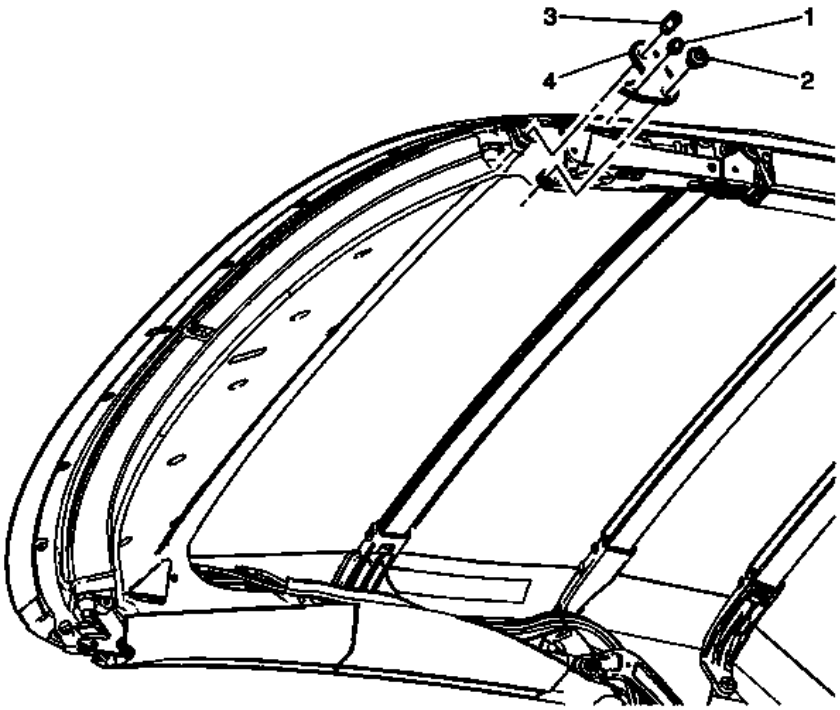

Fig. 28: Folding Top Front Latch
Courtesy of GENERAL MOTORS COMPANY

Folding Top Front Latch Replacement

Callout	Component Name
Preliminary Procedure Fold back the folding top cover from the number one bow. Refer to **Folding Top Cover Replacement**.	
1	Folding Top Mechanism Bolt **CAUTION:** **Refer to Fastener Caution .**

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3	Folding Top Rocker Arm Pivot Bolt
4	Folding Top Front Latch **NOTE:** **Inspect for proper operation of the folding top.**

FOLDING TOP STOWAGE COMPARTMENT LID ADJUSTMENT

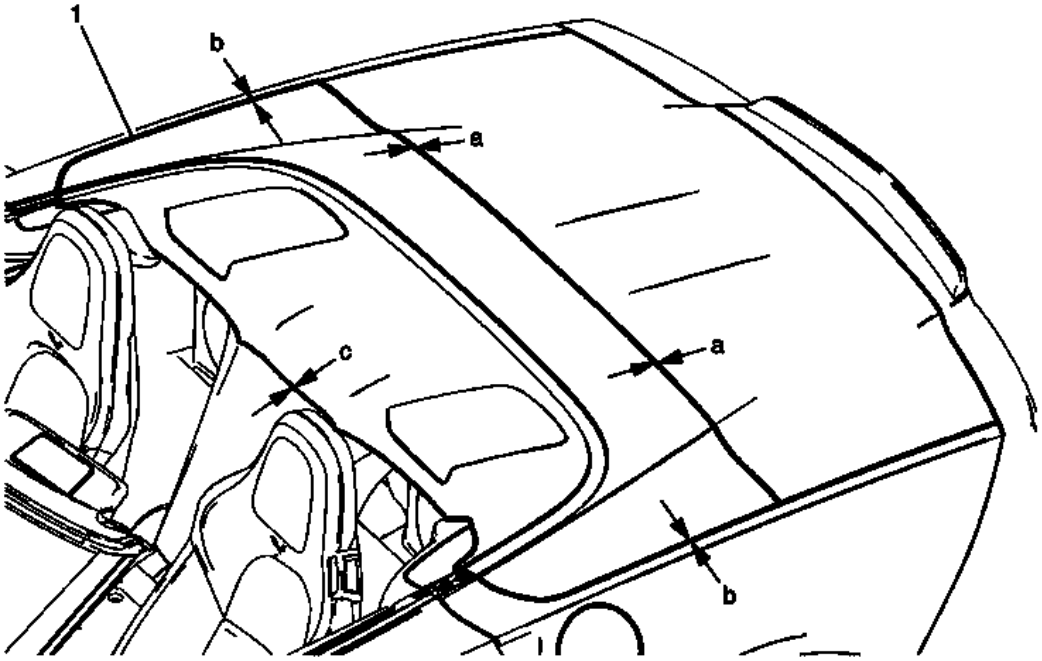

Fig. 29: Folding Top Stowage Compartment Lid
Courtesy of GENERAL MOTORS COMPANY

Folding Top Stowage Compartment Lid Adjustment

Callout	Component Name
	Folding Top Stowage Compartment Lid **CAUTION:** **Refer to Fastener Caution .** **Procedure** 1. Loosen the folding top stowage compartment lid hinge nuts (Qty: 6) to adjust the rear compartment lid. 2. Adjust the folding top stowage compartment lid in order to obtain an even gap

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1	top stowage compartment extension outer panel, so that the folding top stowage compartment lid is flush with the rear compartment lid, quarter outer panel and the folding top stowage compartment extension outer panel. **Adjustment** • Folding top stowage compartment lid to rear compartment lid (a) 4.5 mm +/- 1.0 • Folding top stowage compartment lid to quarter outer panel (b) 3.5 mm +/-1.0 • Folding top stowage compartment lid to folding top stowage compartment extension outer panel (c) 3.5 mm +/-1.0 **Tighten** 22 (16 lb ft)

FOLDING TOP STOWAGE COMPARTMENT LID REPLACEMENT

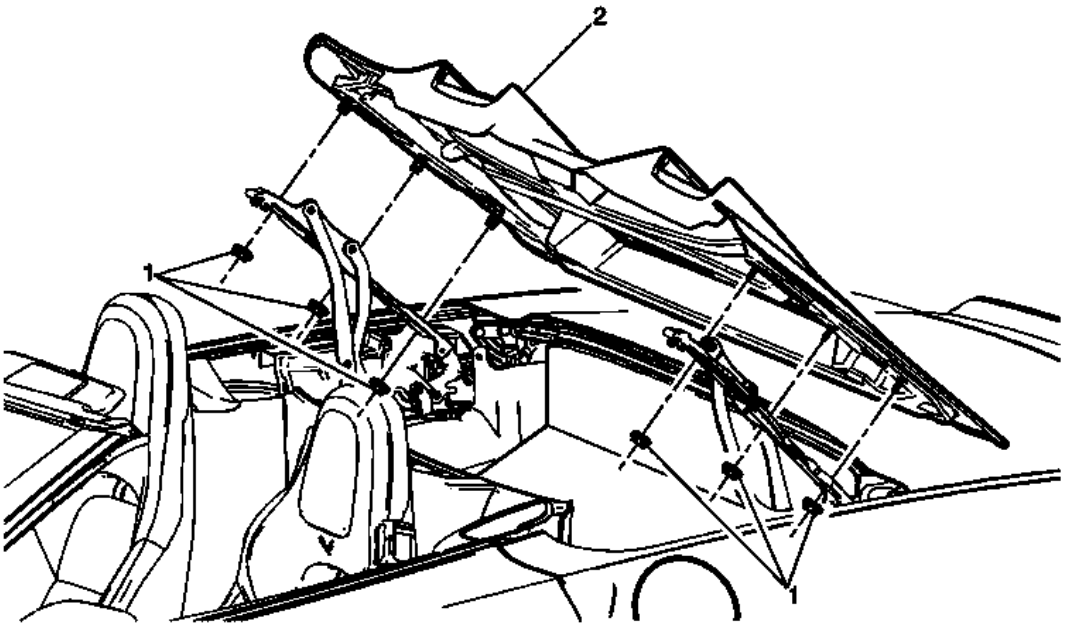

Fig. 30: Folding Top Stowage Compartment Lid
Courtesy of GENERAL MOTORS COMPANY

Folding Top Stowage Compartment Lid Replacement

Callout	Component Name
Preliminary Procedures	

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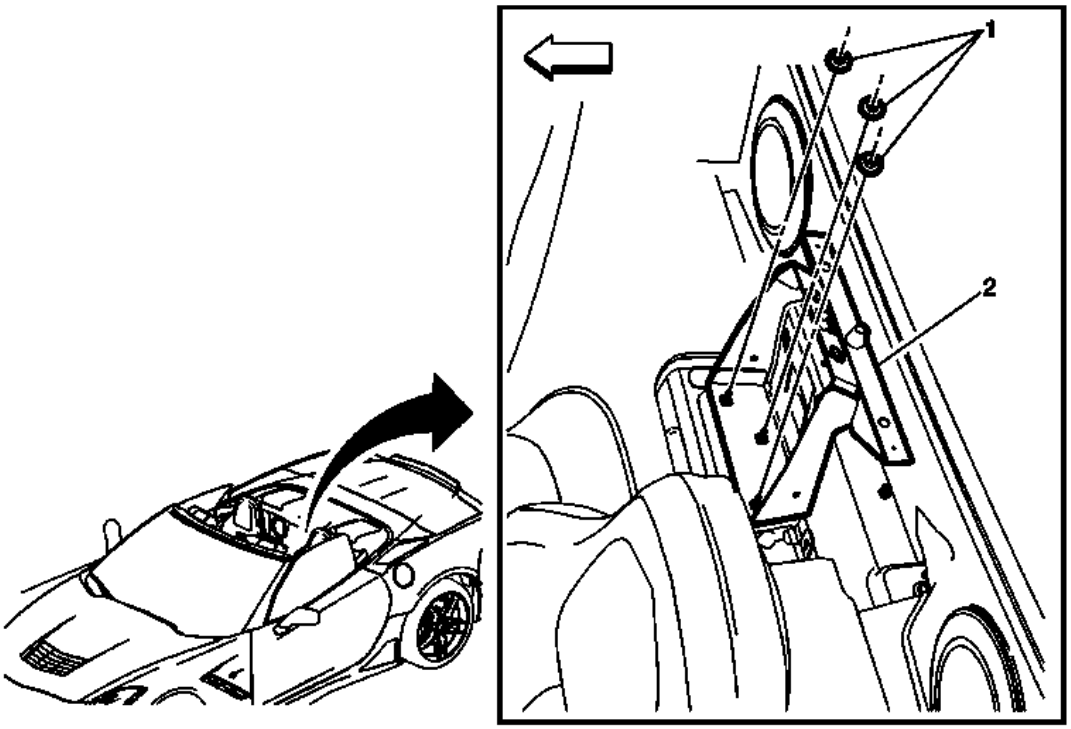
fasteners and minimize tension on pins and linkage.	
1	Folding Top Stowage Compartment Lid Nut (Qty: 6) **CAUTION:** **Refer to Fastener Caution .** **NOTE:** **When replacing the folding top stowage compartment lid, ensure that the clear tape is place in the same location as marked on the old lid. This will prevent wear marks on the lid from the folding top weatherstrip.** **Tighten** 22 (16 lb ft)
2	Folding Top Stowage Compartment Lid **Procedure** 1. Mark the location of the hinge with a grease pencil. 2. Adjust the lid as necessary. Refer to **Folding Top Stowage Compartment Lid Adjustment**

FOLDING TOP STOWAGE COMPARTMENT BRACKET REPLACEMENT



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Courtesy of GENERAL MOTORS COMPANY

Folding Top Stowage Compartment Bracket Replacement

Callout	Component Name
Preliminary Procedures 1. Place the folding top with the number 1 bow and the number 5 in the open position. 2. Open the folding top stowage compartment lid. 3. Remove the folding top stowage compartment extension outer panel. Refer to **Folding Top Stowage Compartment Extension Outer Panel Replacement** 4. Reposition the folding top control module. Refer to **Folding Top Control Module Replacement**	
1	Folding Top Stowage Compartment Bracket Nut (Qty: 3) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 9 (80 lb in)
2	Folding Top Stowage Compartment Bracket

FOLDING TOP CONTROL MODULE REPLACEMENT

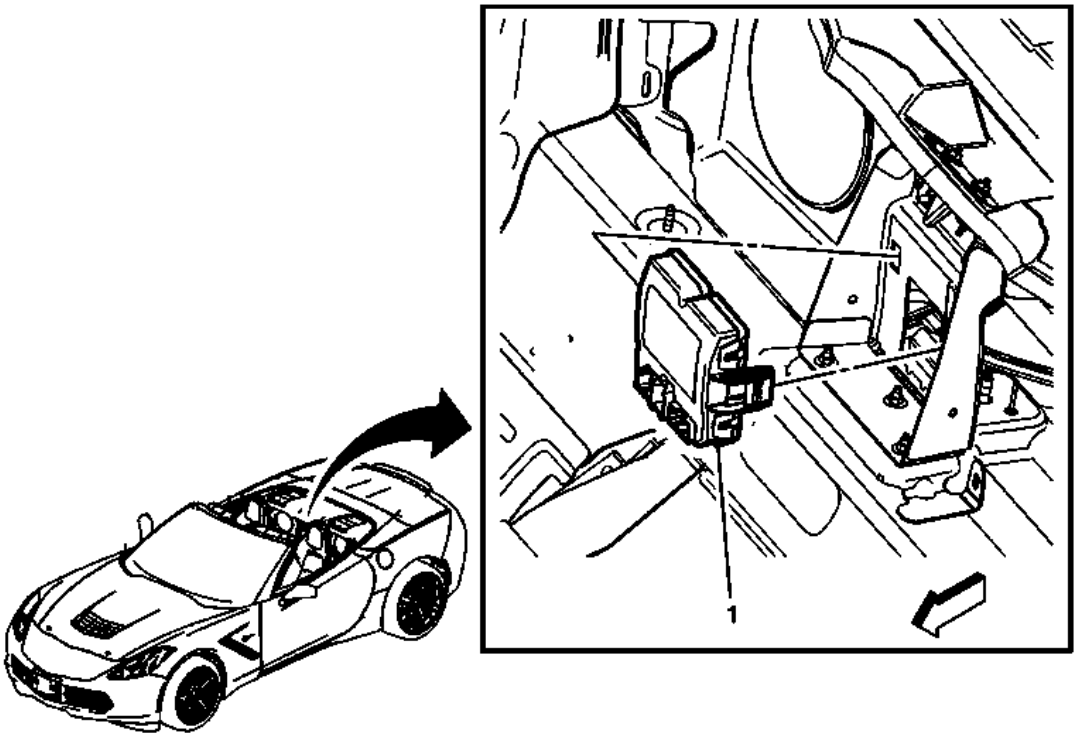

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Fig. 32: Folding Top Control Module
Courtesy of GENERAL MOTORS COMPANY

Folding Top Control Module Replacement

Callout	Component Name
Preliminary Procedure Remove the folding top stowage compartment extension outer panel. Refer to **Folding Top Stowage Compartment Extension Outer Panel Replacement**.	
1	Folding Top Control Module **Procedure** 1. Disconnect the electrical connections. 2. Unsnap module from folding top stowage compartment bracket. 3. For programming and set up procedures, refer to **Control Module References** .

ROOF RETRACTABLE POSITION SENSOR REPLACEMENT (LATCH CYLINDER)

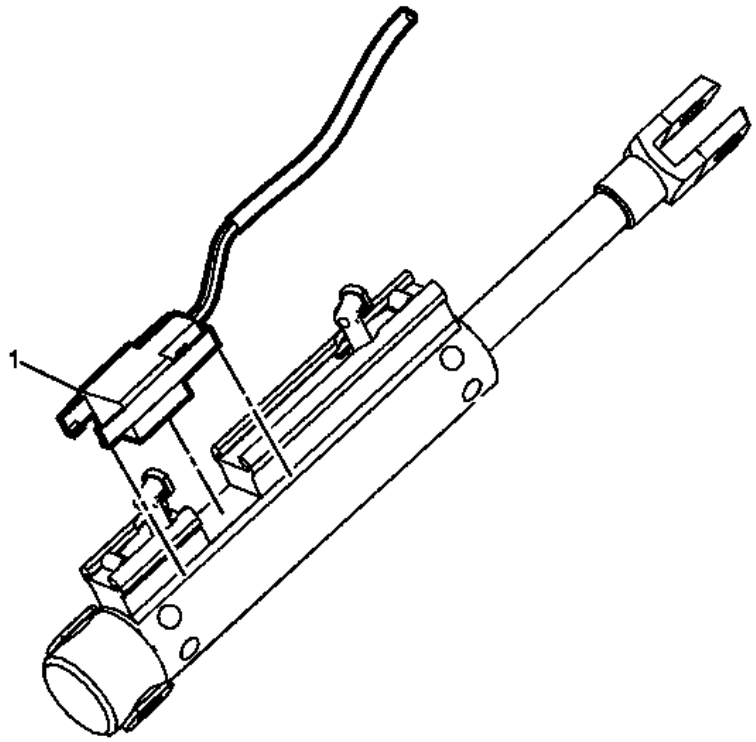

Fig. 33: Roof Retractable Position Sensor
Courtesy of GENERAL MOTORS COMPANY

Roof Retractable Position Sensor Replacement (Latch Cylinder)

Callout	Component Name

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Preliminary Procedure Remove the folding top cylinder without disconnecting the hydraulic lines. Refer to **Folding Top Cylinder Replacement (Latch)**, **Folding Top Cylinder Replacement (5 Bow)**, **Folding Top Cylinder Replacement (Tonneau)**, **Folding Top Cylinder Replacement (Main)**.	
1	Roof Retractable Position Sensor **Procedure** 1. Reposition hydraulic hose to access sensor. 2. Disconnect sensor connector located near pump with motor assembly. 3. Unclip sensor from cylinder. 4. Re-attach routing clips, cable ties and tape to properly retain hoses and wires to vehicle. **NOTE:** **Use suitable tool to insert between hydraulic cylinder and switch to release from hydraulic cylinder.**

ROOF RETRACTABLE POSITION SENSOR REPLACEMENT (MAIN CYLINDER)

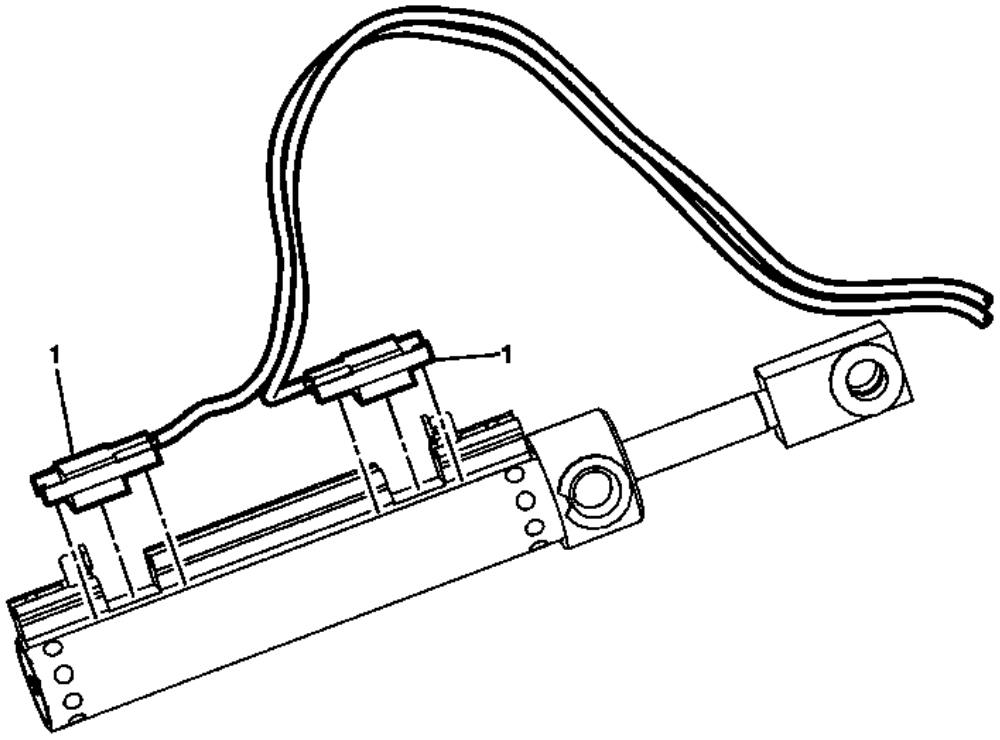

Fig. 34: Roof Retractable Position Sensor
Courtesy of GENERAL MOTORS COMPANY

Roof Retractable Position Sensor Replacement (Main Cylinder)

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Callout	Component Name
Preliminary Procedure Remove the folding top cylinder without disconnecting the hydraulic lines. Refer to **Folding Top Cylinder Replacement (Latch)**, **Folding Top Cylinder Replacement (5 Bow)**, **Folding Top Cylinder Replacement (Tonneau)**, **Folding Top Cylinder Replacement (Main)**.	
1	Roof Retractable Position Sensor **Procedure** 1. Reposition hydraulic hose to access sensor. 2. Disconnect sensor connector located near pump with motor assembly. 3. Unclip sensors from cylinder. 4. Re-attach routing clips, cable ties and tape to properly retain hoses and wires to vehicle. **NOTE:** • **Use suitable tool to insert between hydraulic cylinder and switch to release from hydraulic cylinder.** • **Mark sensors when removing for proper installation of sensors.**

ROOF RETRACTABLE POSITION SENSOR REPLACEMENT (5 BOW CYLINDER)

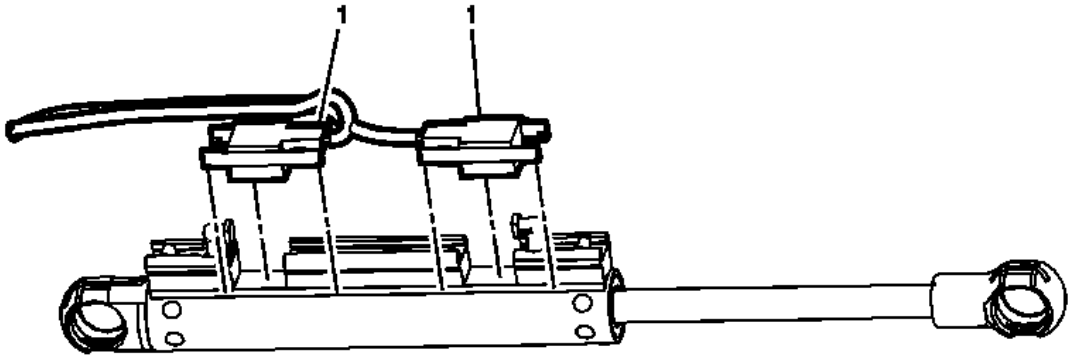

Fig. 35: Roof Retractable Position Sensor (5 Bow Cylinder)

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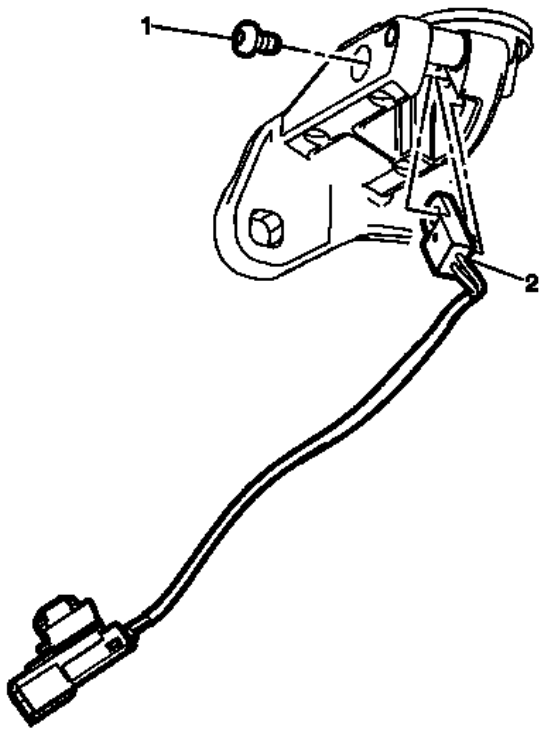
Roof Retractable Position Sensor Replacement (5 Bow Cylinder)

Callout	Component Name
Preliminary Procedure Remove the folding top cylinder without disconnecting the hydraulic lines. Refer to **Folding Top Cylinder Replacement (Latch)**, **Folding Top Cylinder Replacement (5 Bow)**, **Folding Top Cylinder Replacement (Tonneau)**, **Folding Top Cylinder Replacement (Main)**.	
1	Roof Retractable Position Sensor **Procedure** 1. Reposition hydraulic hose to access sensor. 2. Disconnect sensor connector located near pump with motor assembly. 3. Unclip sensors from cylinder. 4. Re-attach routing clips, cable ties and tape to properly retain hoses and wires to vehicle. **NOTE:** • **Use suitable tool to insert between hydraulic cylinder and switch to release from hydraulic cylinder.** • **Mark sensors when removing for proper installation of sensors.**

ROOF RETRACTABLE POSITION SENSOR REPLACEMENT (LATCH)



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Courtesy of GENERAL MOTORS COMPANY

Roof Retractable Position Sensor Replacement (Latch)

Callout	Component Name
Preliminary Procedure Remove the folding top front latch striker. Refer to **Folding Top Front Latch Striker Replacement**.	
1	Roof Retractable Position Sensor Screw **CAUTION:** **Refer to Fastener Caution .** **Tighten** 2 N.m (18 lb in)
2	Roof Retractable Position Sensor **NOTE:** **Inspect the folding top for proper operation.**

REMOVABLE TOP SIDE WEATHERSTRIP REPLACEMENT

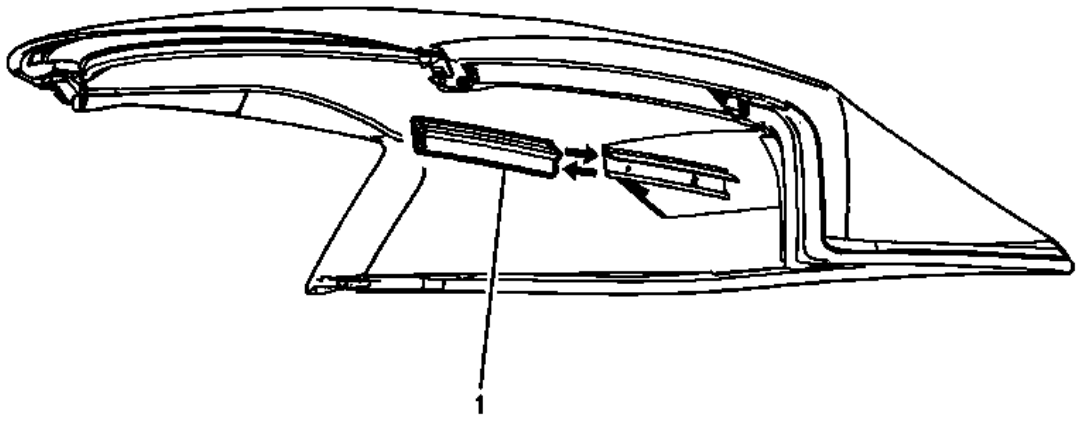

Fig. 37: Removable Top Side Weatherstrip
Courtesy of GENERAL MOTORS COMPANY

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Removable Top Side Weatherstrip Replacement

Callout	Component Name
Preliminary Procedure Remove the folding top center weatherstrip retainer. Refer to **Roof Retractable Center Panel Weatherstrip Replacement**.	
1	Removable Top Side Weatherstrip **Procedures** 1. Slide the weatherstrip from the retainer. 2. Inspect the fit of the seal to door glass. **NOTE:** **Water test the vehicle to ensure no leaks.**

FOLDING TOP FRONT LOCATING PIN REPLACEMENT

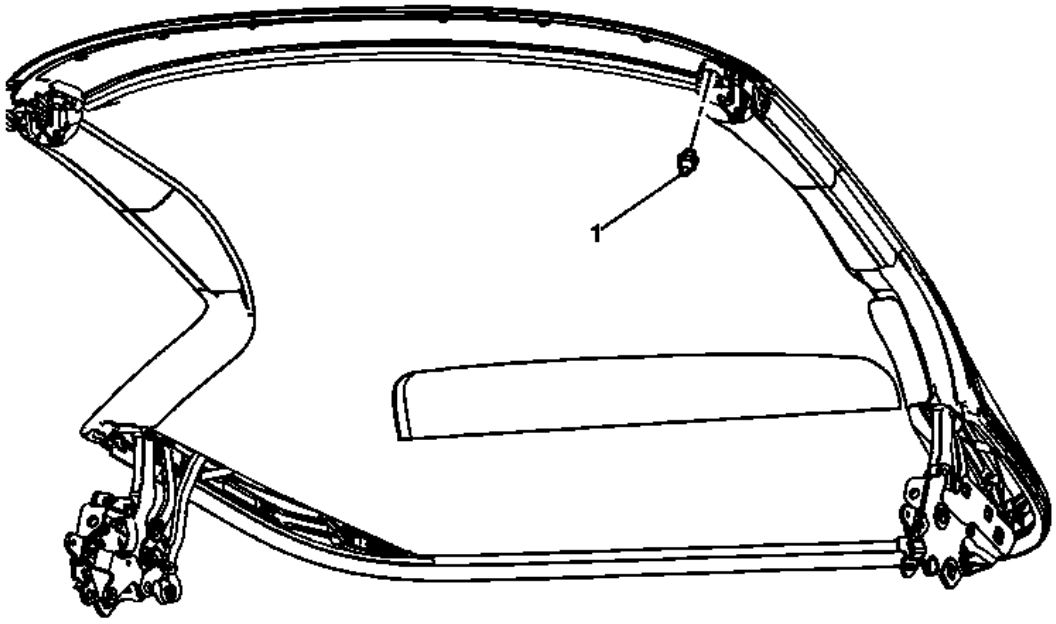

Fig. 38: Folding Top Front Locating Pin
Courtesy of GENERAL MOTORS COMPANY

Folding Top Front Locating Pin Replacement

Callout	Component Name
Preliminary Procedure Raise the folding top to allow access to the pin.	

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1	Folding Top Front Locating Pin **CAUTION:** **Refer to Fastener Caution .** **Tighten** 17 N.m (13 lb ft)

FOLDING TOP PUMP REPLACEMENT

Removal Procedure

WARNING: Refer to Eye Protection Warning .

WARNING: Refer to Folding Top Hydraulic Pressure Warning .

WARNING: Refer to Servicing Electrical Components Warning .

CAUTION: Always put an automatic transmission in P (Park) or a manual transmission in N (Neutral) and set the park brake before raising or lowering the convertible top. If you raise or lower the convertible top while the vehicle is in motion, you could damage the top or the top mechanism.

CAUTION: Do not lower the top in cold weather. If you lower the convertible top on the vehicle in cold weather (0°C (32°F) or lower), you may damage convertible top components.

CAUTION: Dry off the convertible top before lowering it. Lowering the convertible top if it is damp, wet or dirty can cause stains, mildew and damage to the inside of the vehicle.

1. Disconnect the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
2. Remove the rear compartment rear center trim panel and carpet, if needed.
3. Place a protective covering over the rear compartment interior and the adjacent body panels.
4. Remove the folding top pump bracket. Refer to **Folding Top Pump Bracket Replacement**.

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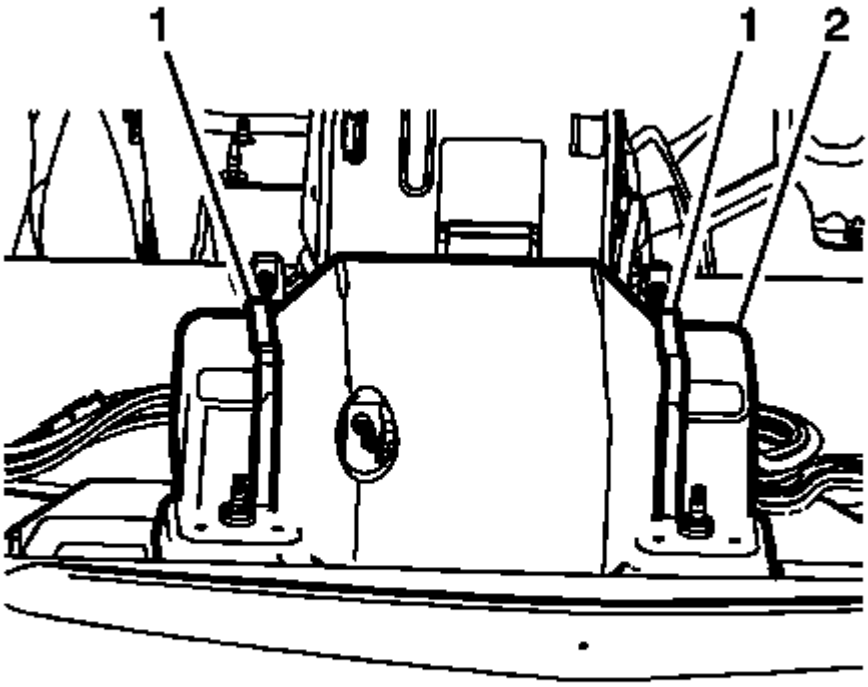

Fig. 39: Folding Top Pump Bracket Ties
Courtesy of GENERAL MOTORS COMPANY

5. Remove the folding top pump bracket ties (1) from the folding top pump bracket insulator (2).

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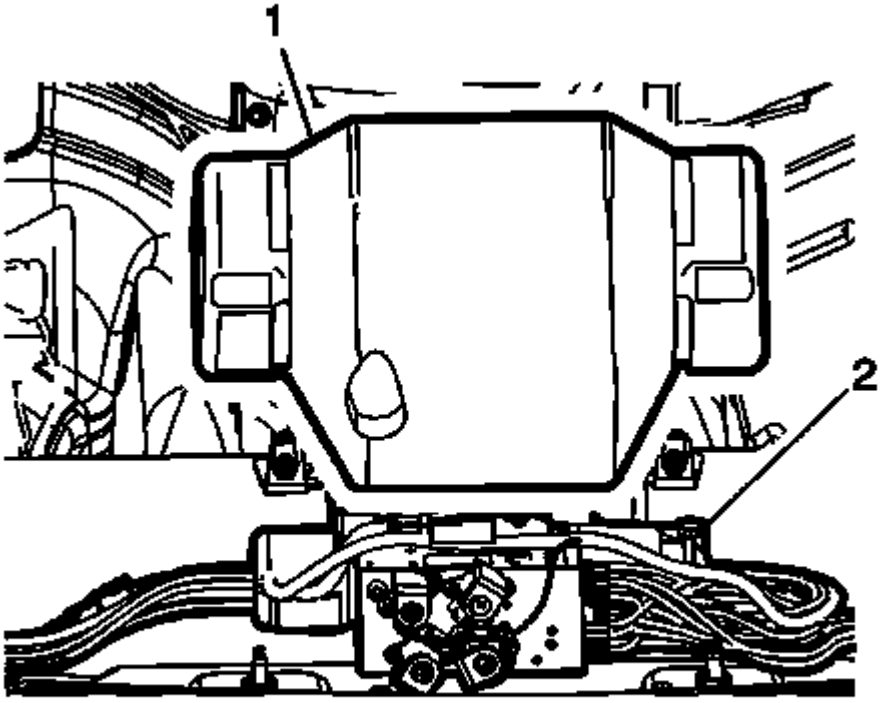

Fig. 40: Folding Top Pump Bracket Insulator
Courtesy of GENERAL MOTORS COMPANY

6. Remove the folding top pump bracket insulator (1) from the folding top pump (2).

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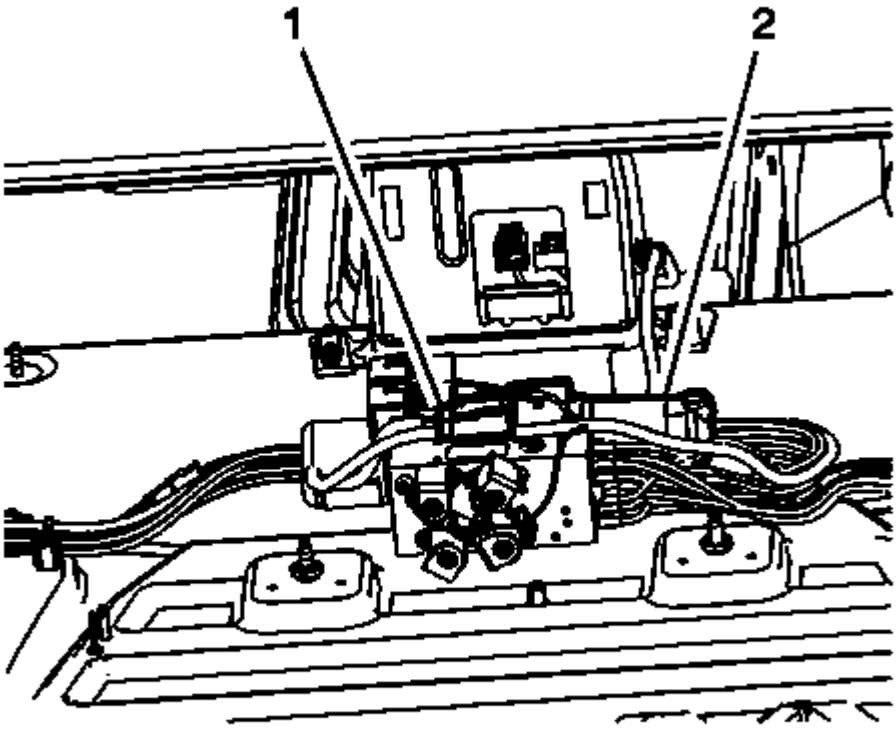

Fig. 41: Electrical Connector And Folding Top Pump
Courtesy of GENERAL MOTORS COMPANY

7. Remove the electrical connector (1) from the folding top pump (2).

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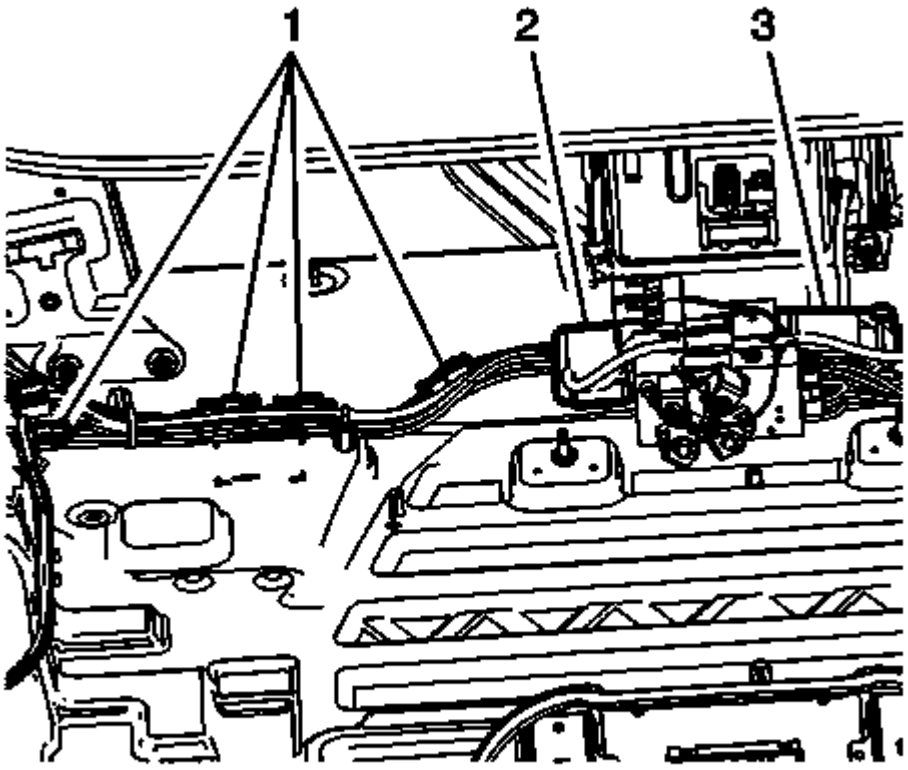

Fig. 42: Electrical Connectors And Folding Top Pump
Courtesy of GENERAL MOTORS COMPANY

8. Remove the 3 electrical connectors (1) by the folding top pump (2).
9. Remove the reservoir filler plug (3).

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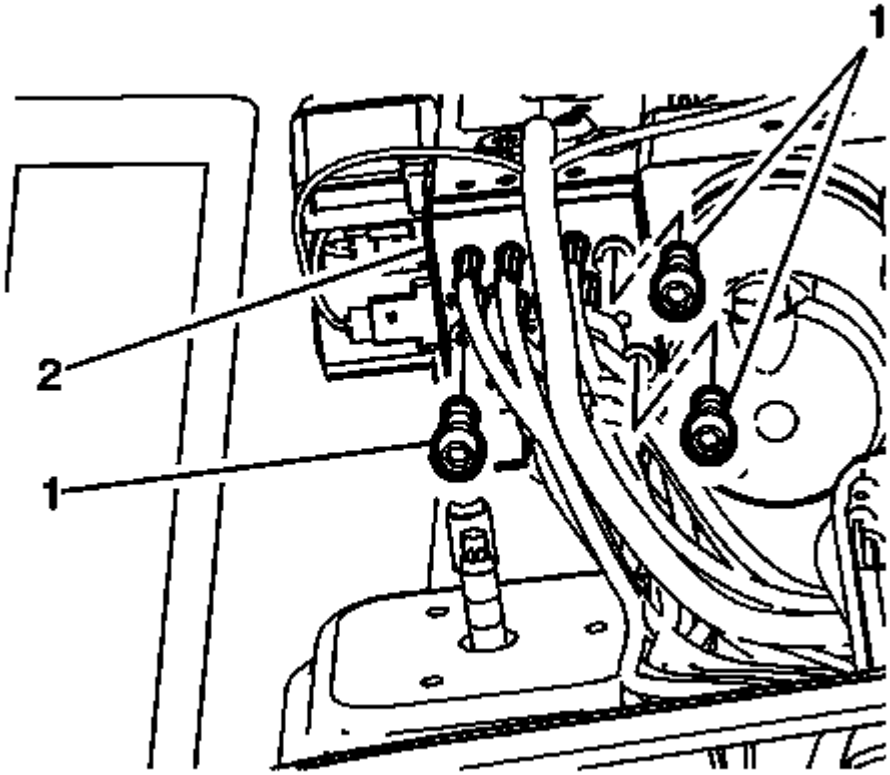

Fig. 43: Folding Top Pump Manifold Plate
Courtesy of GENERAL MOTORS COMPANY

10. Remove the bolts (1) from the folding top pump manifold plate (2).

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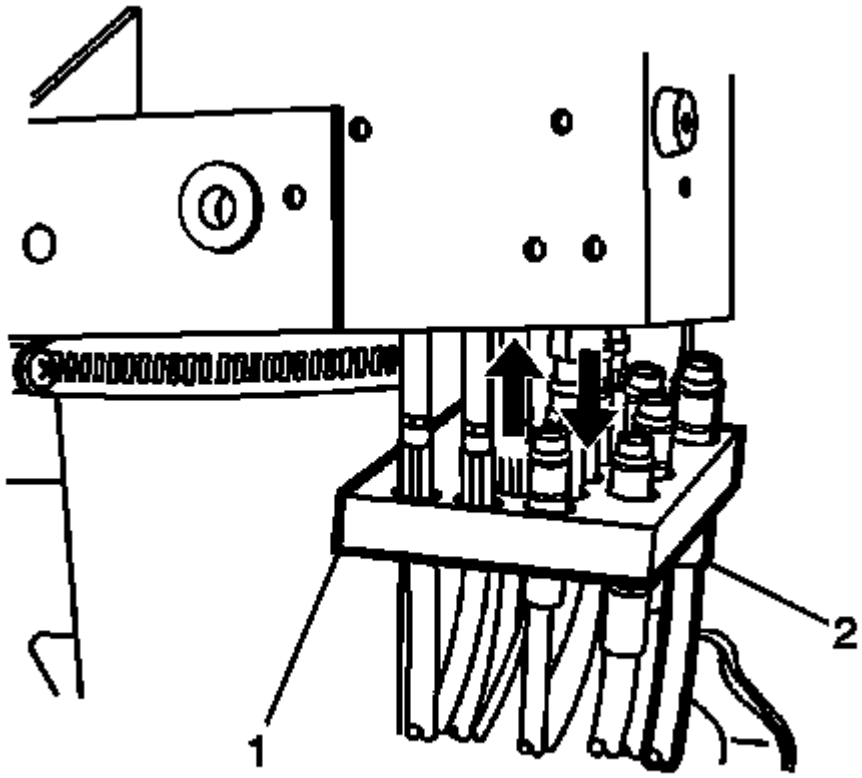

Fig. 44: Folding Top Pump Manifold Plate And Hydraulic Hoses
Courtesy of GENERAL MOTORS COMPANY

11. Remove the folding top pump manifold plate (1) by pulling outward on the plate.
12. Mark the location of each hydraulic hose for proper installation of hoses.
13. Remove the hydraulic hoses (2) by pulling the hoses outward from the pump. Use a clean shop towel to control any hydraulic fluid leakage.
14. Remove the folding top pump from the vehicle.

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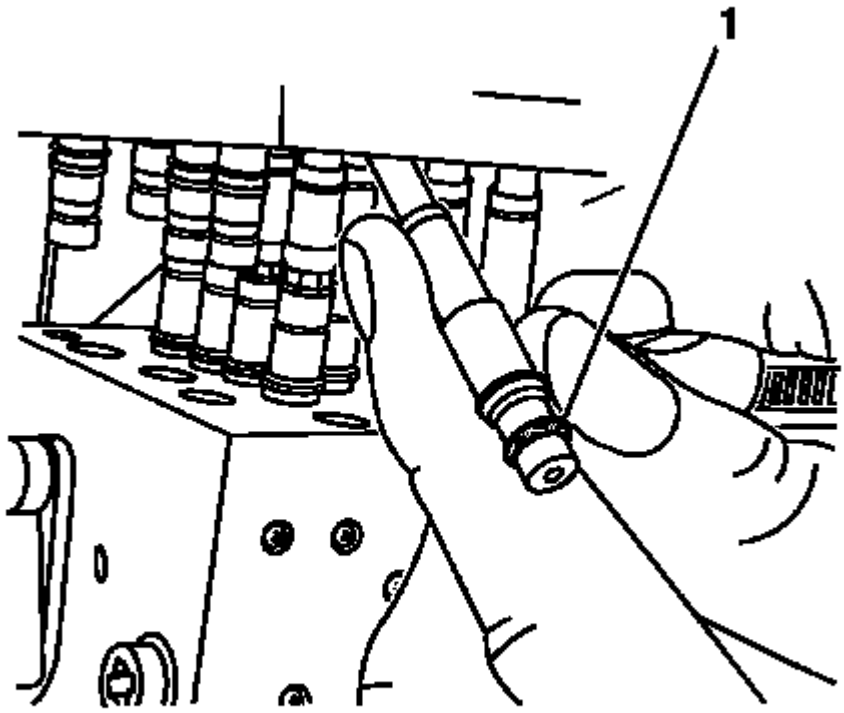

Fig. 45: View Of O-Ring Hose
Courtesy of GENERAL MOTORS COMPANY

15. Remove the O-ring (1) from each hose.

Installation Procedure

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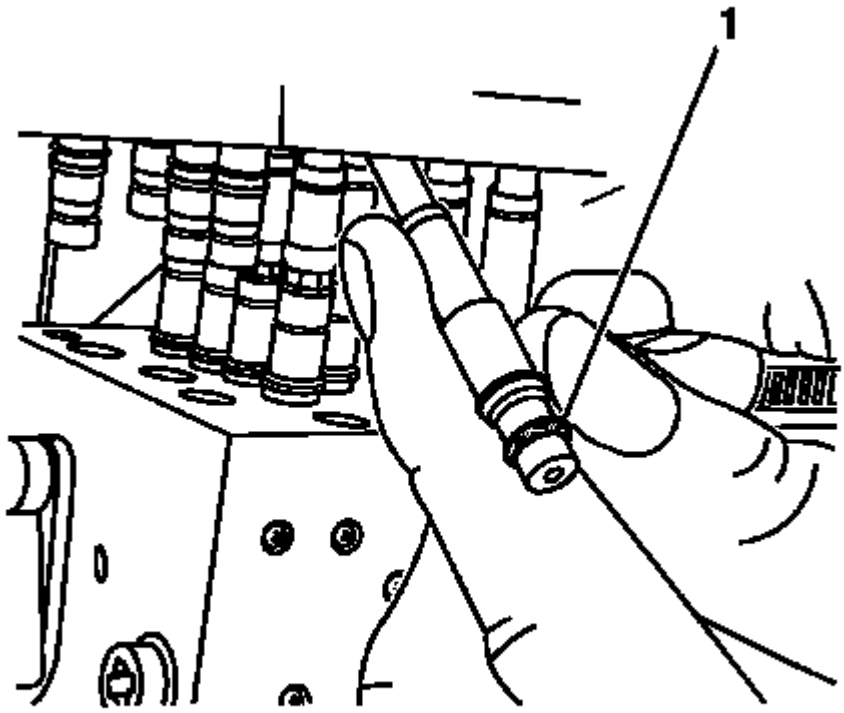

Fig. 46: View Of O-Ring Hose
Courtesy of GENERAL MOTORS COMPANY

1. Install a new O-ring (1) on each cylinder hose.

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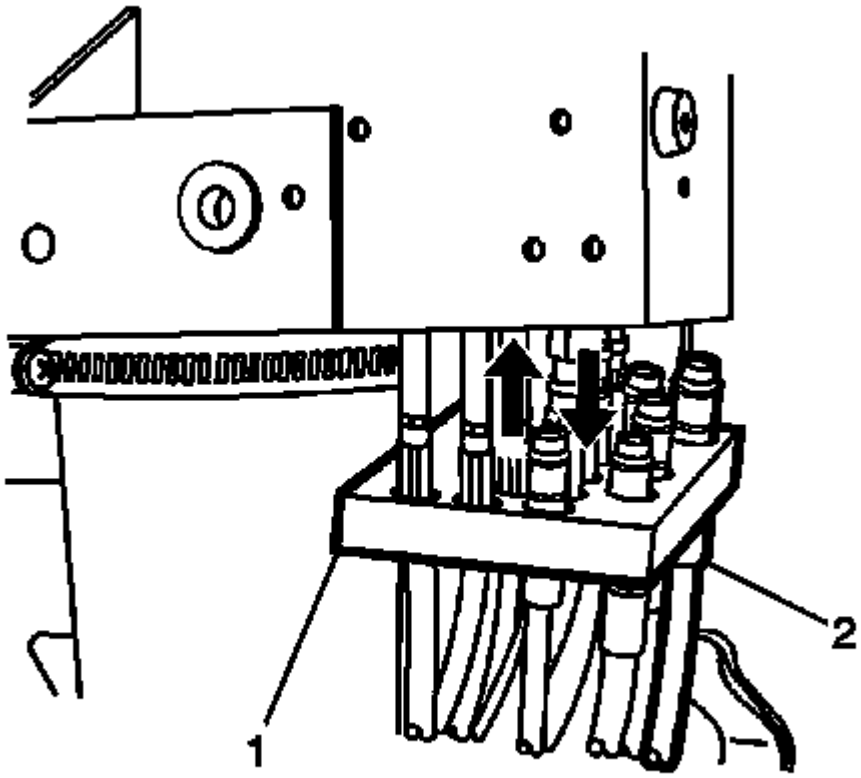

Fig. 47: Folding Top Pump Manifold Plate And Hydraulic Hoses
Courtesy of GENERAL MOTORS COMPANY

2. Install the hydraulic hoses (1) by pushing the hoses inward to the folding top pump manifold plate (2). Use a clean shop towel to control any hydraulic fluid leakage. Refer to **Folding Top Hydraulic Cylinder Hose Identification**.
3. Install the folding top pump manifold plate (2) to the pump by pushing inward on the plate.

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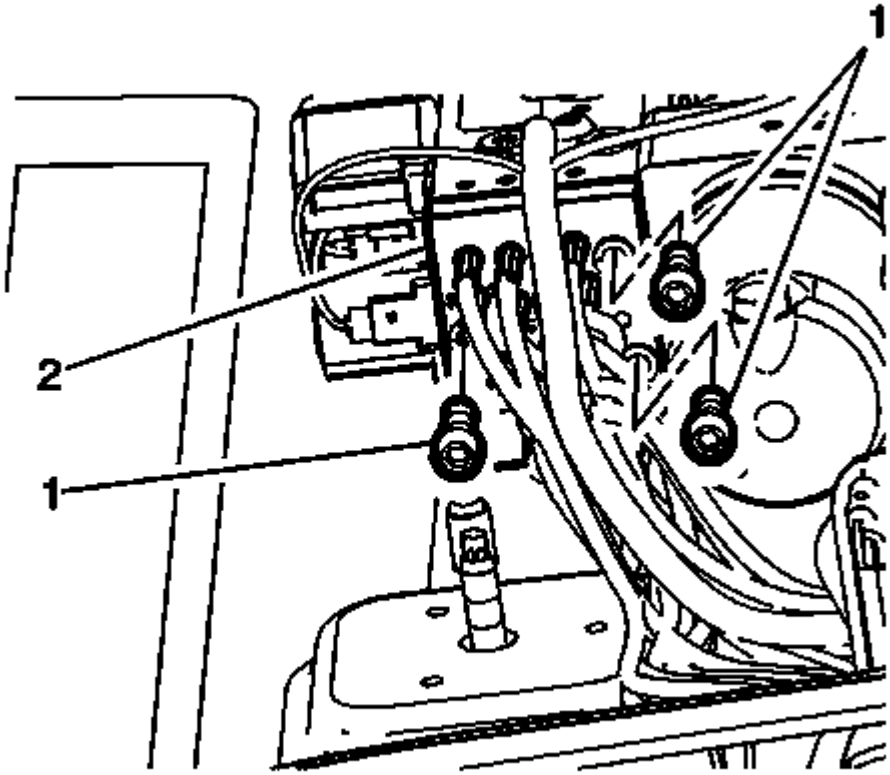

Fig. 48: Folding Top Pump Manifold Plate
Courtesy of GENERAL MOTORS COMPANY

4. Install the folding top pump manifold plate bolts (1). DO NOT tighten.

   CAUTION: Refer to Fastener Caution .

5. Push inward on the folding top pump manifold plate and verify that all of the cylinder hoses are seated properly.

   Tighten

   Tighten the bolts to 10 N.m (89 lb in)

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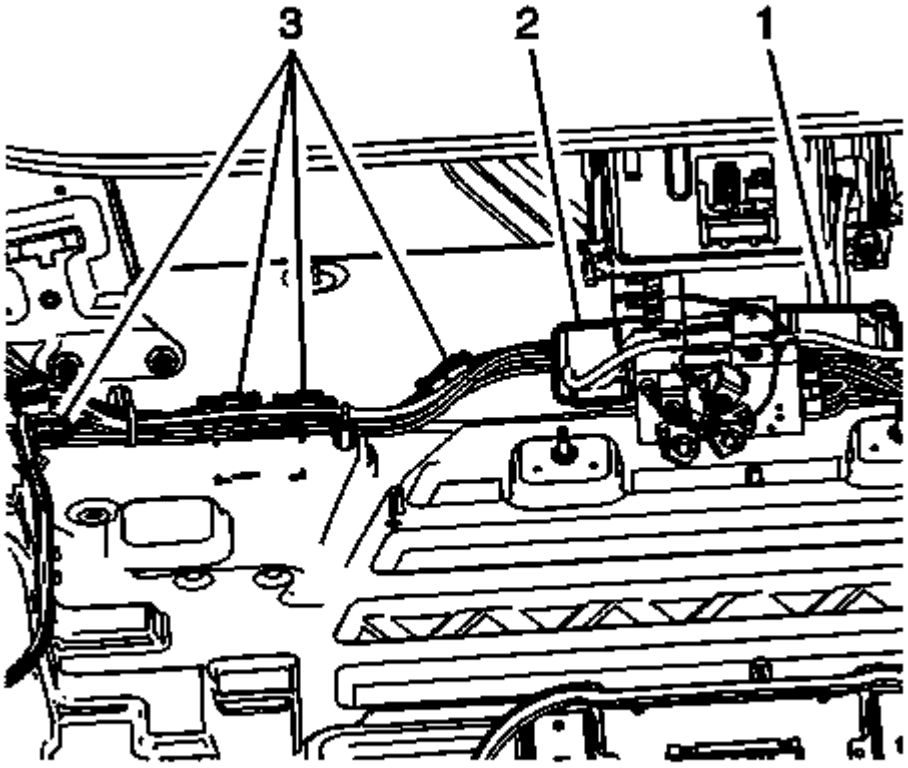

Fig. 49: Reservoir Filler Plug
Courtesy of GENERAL MOTORS COMPANY

6. Install the reservoir filler plug (1).
7. Position the folding top pump (2) to the mounting location.
8. Install the 3 electrical connectors (3) by the folding top pump (2).

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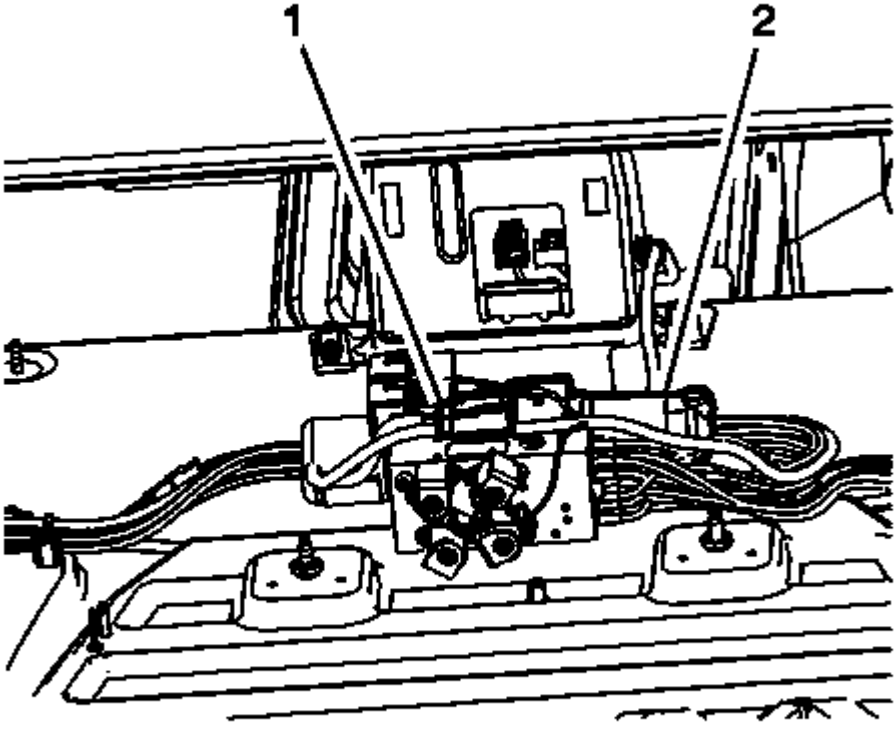

Fig. 50: Electrical Connector And Folding Top Pump
Courtesy of GENERAL MOTORS COMPANY

9. Install the electrical connector (1) to the folding top pump (2).

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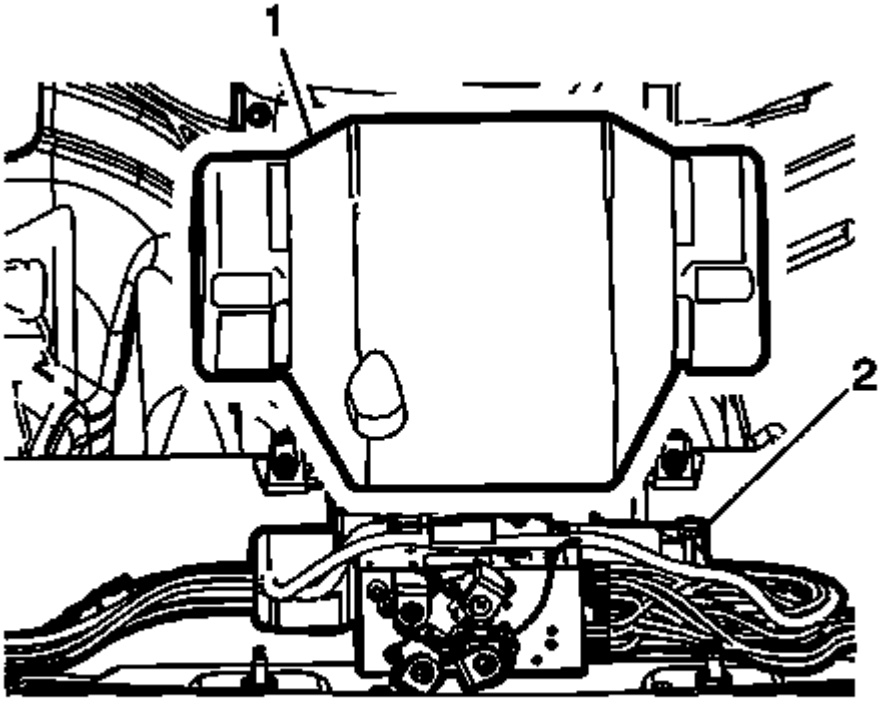

Fig. 51: Folding Top Pump Bracket Insulator
Courtesy of GENERAL MOTORS COMPANY

10. Install the folding top pump bracket insulator (1) to the folding top pump (2).

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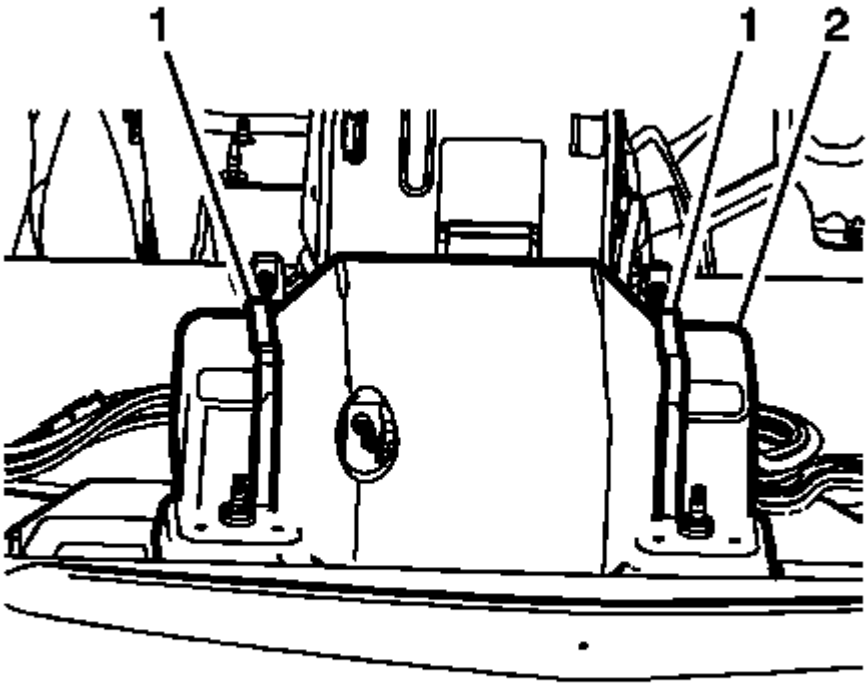

Fig. 52: Folding Top Pump Bracket Ties
Courtesy of GENERAL MOTORS COMPANY

11. Install the folding top pump bracket ties (1) to the folding top pump bracket insulator (2).
12. Install the folding top pump bracket. Refer to **Folding Top Pump Bracket Replacement**.
13. Connect the battery. Refer to **Battery Negative Cable Disconnection and Connection** .
14. Inspect the hydraulic system fluid level and add fluid as needed. Refer to **Folding Top Fluid Addition**.
15. Bleed the hydraulic system. Refer to **Folding Top Hydraulic System Bleeding**.
16. Inspect the folding top for proper operation. Refer to **Power Folding Top Description and Operation**.
17. Install the rear compartment rear center trim panel and carpet, if removed.
18. Remove all protective covering from the rear compartment interior and the adjacent body panels.
19. Close the rear compartment lid.

FOLDING TOP NUMBER 2 BOW REPLACEMENT

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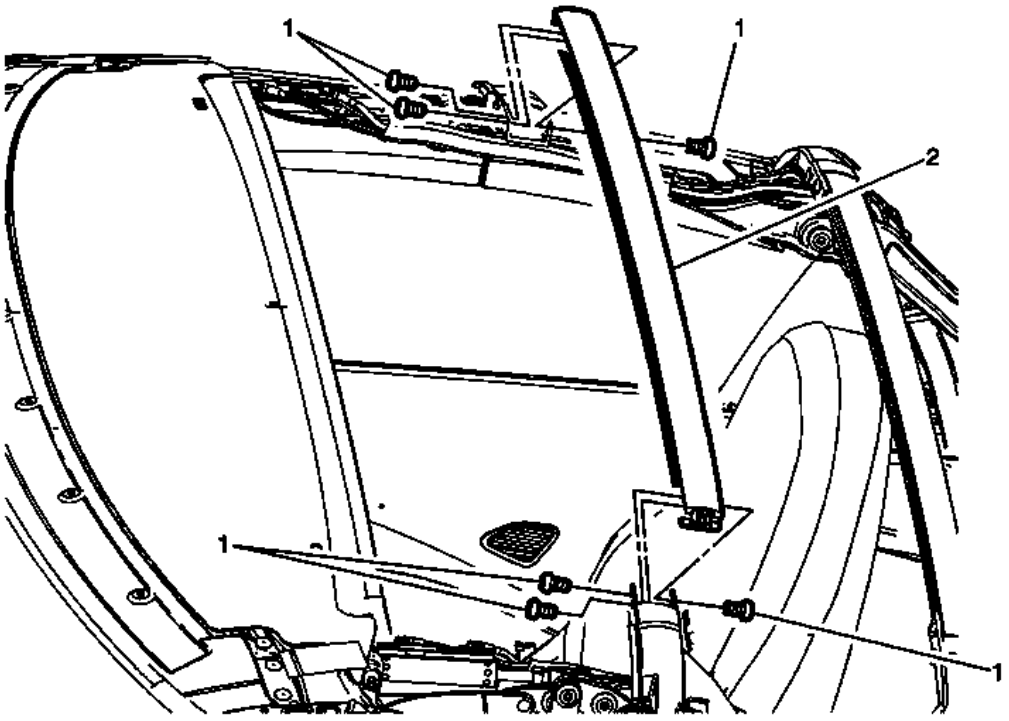

Fig. 53: Folding Top Number 2 Bow
Courtesy of GENERAL MOTORS COMPANY

Folding Top Number 2 Bow Replacement

Callout	Component Name
CAUTION: **Prying against the folding top rails could result in damage to parts.** **NOTE:** **Manual operation of the folding top cannot be attempted for 5 minutes from the last time the folding top button was pressed. This will allow the hydraulic pressure to bleed off.** **Preliminary Procedures** 1. Place the folding top to mid-position. 2. Remove the folding top cover enough to gain access to the bow. Refer to **Folding Top Cover Replacement**.	
1	Folding Top Bow Screw (Qty: 6) **CAUTION:** **Refer to Fastener Caution .**

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	3 N.m (27 lb in)
2	Folding Top Number 2 Bow **NOTE:** **Slide bow from either side of the vehicle.**

FOLDING TOP NUMBER 5 BOW REPLACEMENT

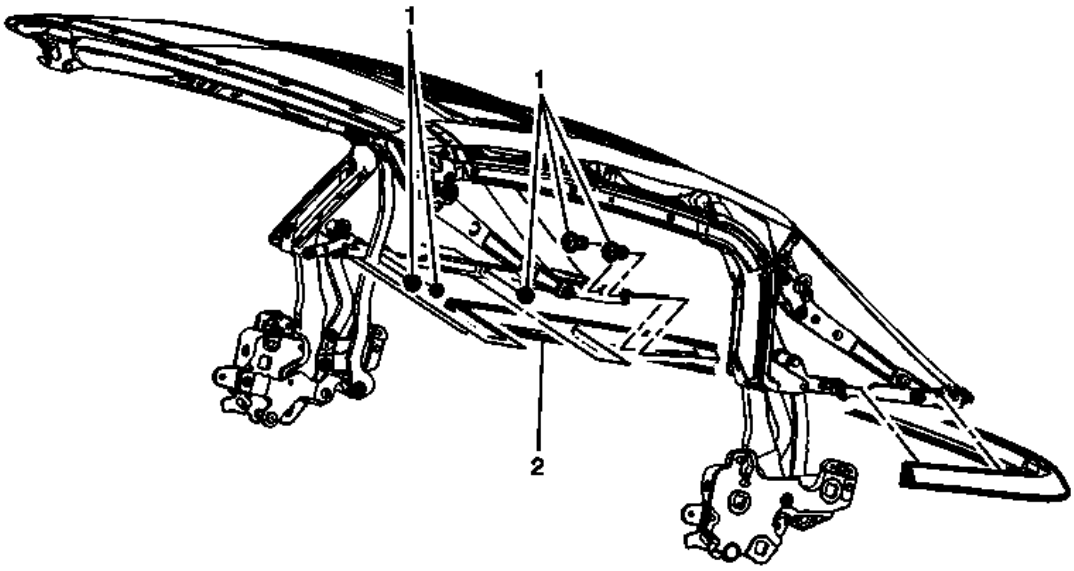

Fig. 54: Folding Top Number 5 Bow
Courtesy of GENERAL MOTORS COMPANY

Folding Top Number 5 Bow Replacement

Callout	Component Name
CAUTION: **Prying against the folding top rails could result in damage to parts.** **NOTE:** **Manual operation of the folding top cannot be attempted for 5 minutes from the last time the folding top button was pressed. This will allow the hydraulic pressure to bleed off.** **Preliminary Procedures** 1. Position the folding top with the number 5 bow into mid-position.	

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	Weatherstrip Replacement. 3. Remove the folding top cover from the folding top number 5 bow by pulling seam from number 5 bow groove.
1	Folding Top Number 5 Bow Screw (Qty: 10) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 10 N.m (89 lb in)
2	Folding Top Number 5 Bow **NOTE:** **Water test the vehicle to ensure no leaks.**

FOLDING TOP SIDE RAIL REPLACEMENT

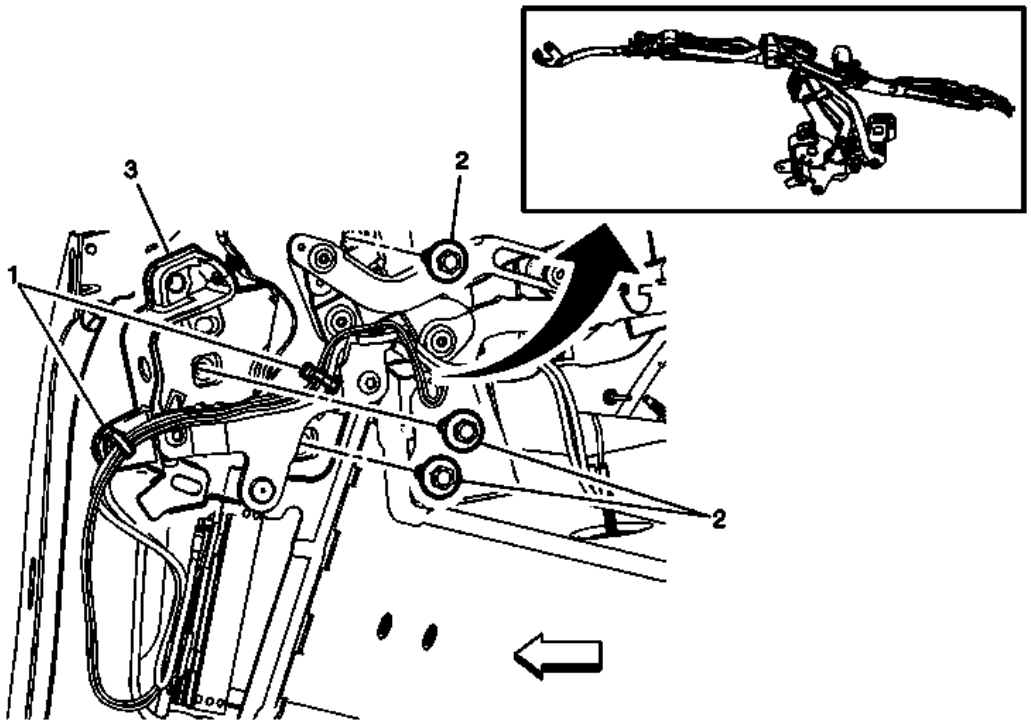

Fig. 55: Folding Top Side Rail
Courtesy of GENERAL MOTORS COMPANY

Folding Top Side Rail Replacement

Callout	Component Name
CAUTION:	

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Prying against the folding top rails could result in damage to parts.

NOTE:
Manual operation of the power convertible top cannot be attempted for 5 minutes from the last time the convertible top button was pressed. This will allow the hydraulic pressure to bleed off.

Preliminary Procedures

1. Remove the folding top number 1 bow from the side rail. Refer to **Folding Top Number 1 Bow Replacement**.
2. Remove the folding top number 2 bow from the side rail. Refer to **Folding Top Number 2 Bow Replacement**.
3. Remove the folding top number 3 bow from the side rail. Refer to **Folding Top Number 3 Bow Replacement**.
4. Remove the folding top number 4 bow from the side rail. Refer to **Folding Top Number 4 Bow Replacement**.
5. Remove the folding top number 5 bow from the side rail. Refer to **Folding Top Number 5 Bow Replacement**.
6. Disconnect the main cylinder from the side rail. Refer to **Folding Top Cylinder Replacement (Latch)**, **Folding Top Cylinder Replacement (5 Bow)**, **Folding Top Cylinder Replacement (Tonneau)**, **Folding Top Cylinder Replacement (Main)**.
7. Disconnect the 5 bow cylinder from the side rail. Refer to **Folding Top Cylinder Replacement (Latch)**, **Folding Top Cylinder Replacement (5 Bow)**, **Folding Top Cylinder Replacement (Tonneau)**, **Folding Top Cylinder Replacement (Main)**.

1	Folding Top hydraulic Line Clip (Qty: 3) **Procedure** Disconnect the clips from the side rail.
2	Folding Top Side Rail Bracket Bolt (Qty: 3) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 22 (16 lb ft)
3	Folding Top Side Rail **Procedure** Transfer all necessary components. **NOTE:** **Inspect for proper operation of the folding top**

FOLDING TOP REAR SIDE RAIL LINK TRIM COVER REPLACEMENT

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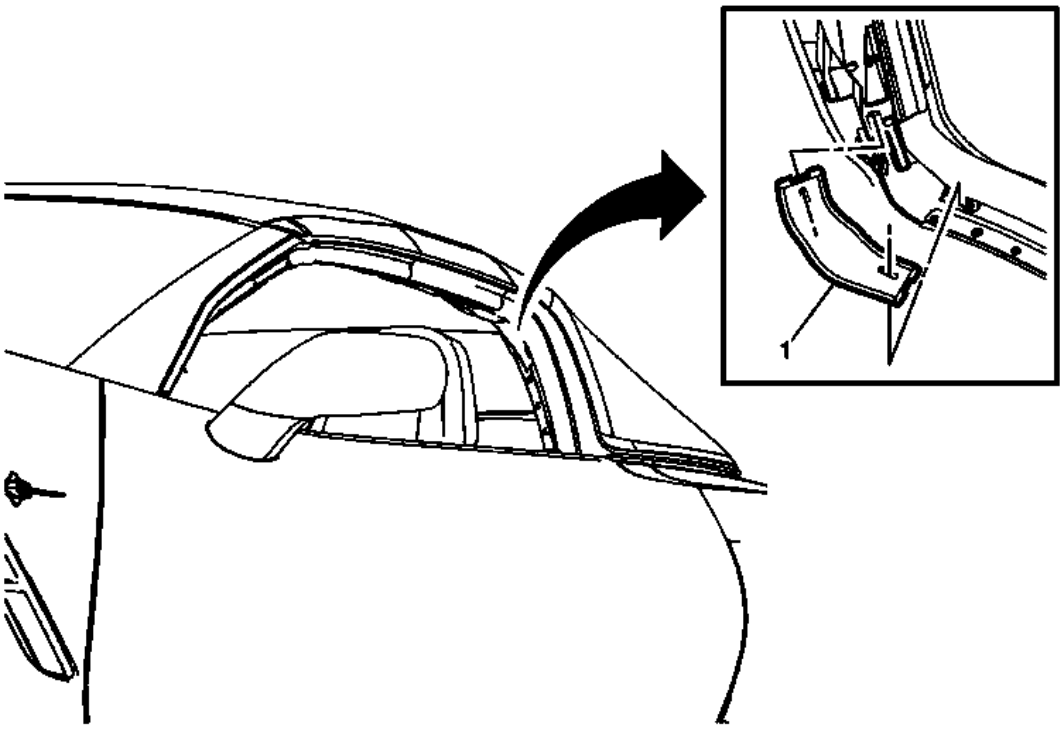

Fig. 56: Folding Top Rear Side Rail Link Trim Cover
Courtesy of GENERAL MOTORS COMPANY

Folding Top Rear Side Rail Link Trim Cover Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the roof retractable center side headlining trim panel. Refer to **Roof Retractable Center Side Headlining Trim Panel Replacement** . 2. Remove the roof retractable rear side headlining trim panel. Refer to **Roof Retractable Rear Side Headlining Trim Panel Replacement** .	
1	Folding Top Rear Side Rail Link Trim Cover **NOTE:** **One clip from the roof retractable center side headlining trim panel and one clip from the roof retractable rear side headlining trim panel hold the folding top rear side rail link trim cover to the folding top side rail.**

FOLDING TOP FRONT LATCH STRIKER REPLACEMENT

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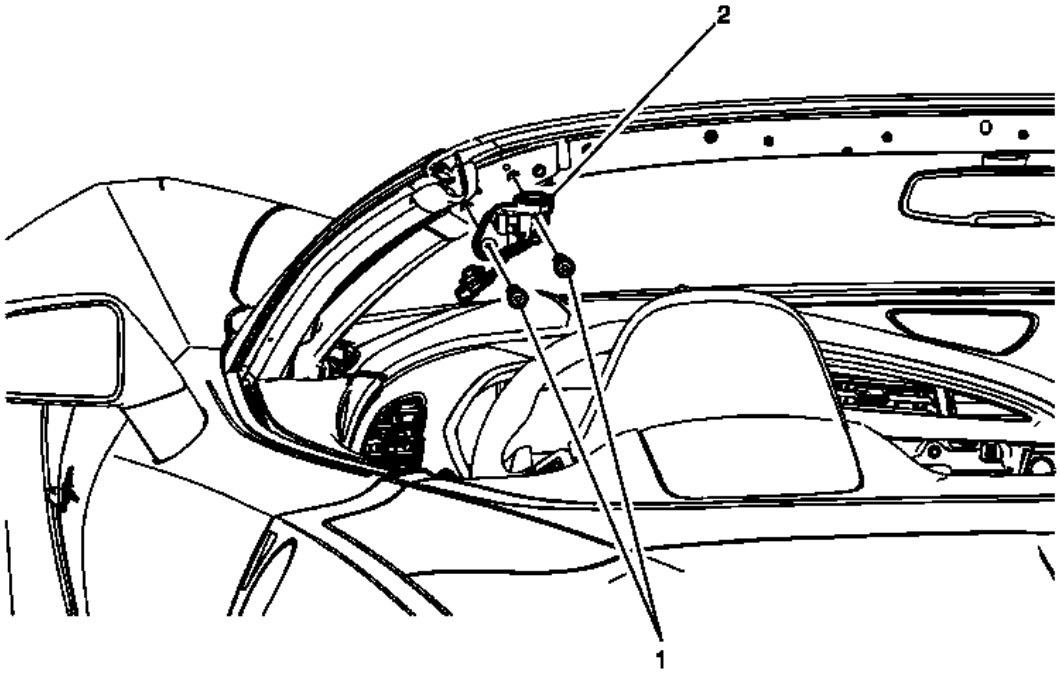

Fig. 57: Folding Top Front Latch Striker
Courtesy of GENERAL MOTORS COMPANY

Folding Top Front Latch Striker Replacement

Callout	Component Name
CAUTION: **Always verify that no objects are in the storage area before lowering the convertible top. Lowering the convertible top when there are objects in the storage area could damage it or break the glass rear window.** **Preliminary Procedures** 1. Place the folding top in mid-position. 2. Remove the windshield garnish molding. Refer to **Windshield Garnish Molding Replacement** . 3. Using a grease pencil, mark the location of the latch striker. 4. Disconnect the electrical connector, if equipped.	
1	Folding Top Front Latch Striker Screw (Qty :2) **CAUTION:** **Refer to Fastener Caution .**

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	10 N.m (89 lb in)
2	Folding Top Front Latch Striker 1. Close and latch the folding top while inspecting the alignment of the locating pin to the striker. 2. Cycle the folding top one complete cycle in both directions. **NOTE:** **Inspect the folding top for proper operation.**

FOLDING TOP SWITCH REPLACEMENT

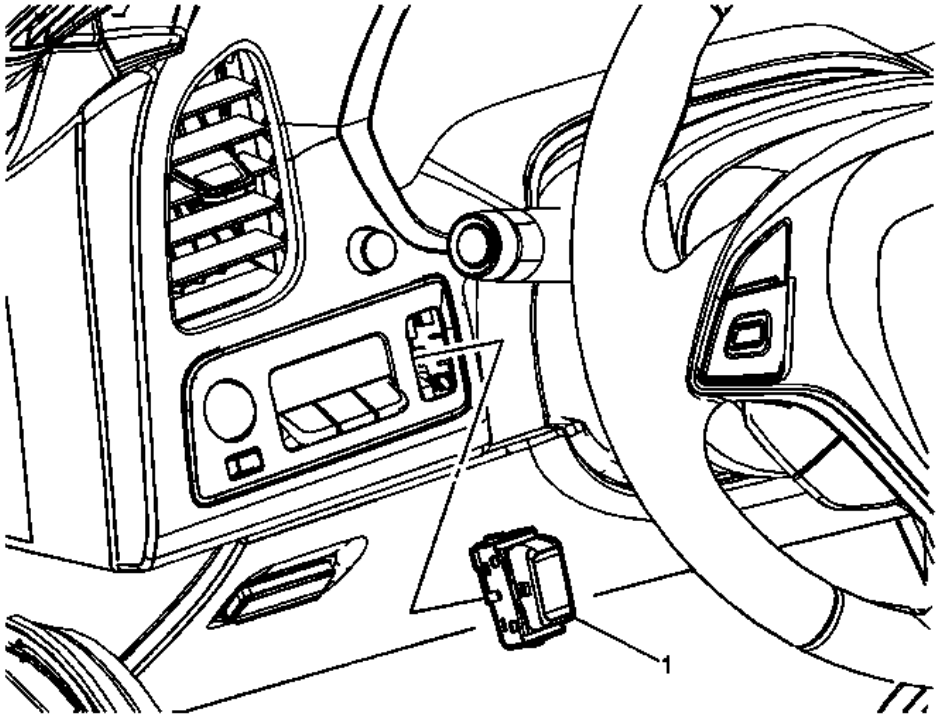

Fig. 58: Folding Top Switch
Courtesy of GENERAL MOTORS COMPANY

Folding Top Switch Replacement

Callout	Component Name
1	Folding Top Switch **Procedures** 1. Use a flat-bladed tool in order to release the switch from the instrument panel cluster trim plate. 2. Disconnect the electrical connections.

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FOLDING TOP FLUID ADDITION

WARNING: Refer to Eye Protection Warning .

NOTE:

- **When servicing the hydraulic system do not allow the fluid level to drop below the minimum indicator line on the reservoir.**
- **Inspect the hydraulic fluid level with the vehicle parked on a level surface, the folding top in the closed position and the rear compartment open.**
- **When new, the power folding top hydraulic fluid is green. As the system is cycled, it picks up the carbon black from the numerous O-ring seals used in the system. The carbon black acts like a dye and causes the fluid to darken considerably and take on a black appearance. This is a normal occurrence and no repair attempts should be performed, as replacement fluid will also darken.**

1. Park the vehicle on a level surface.
2. Remove the folding top pump bracket. Refer to **Folding Top Pump Bracket Replacement**.

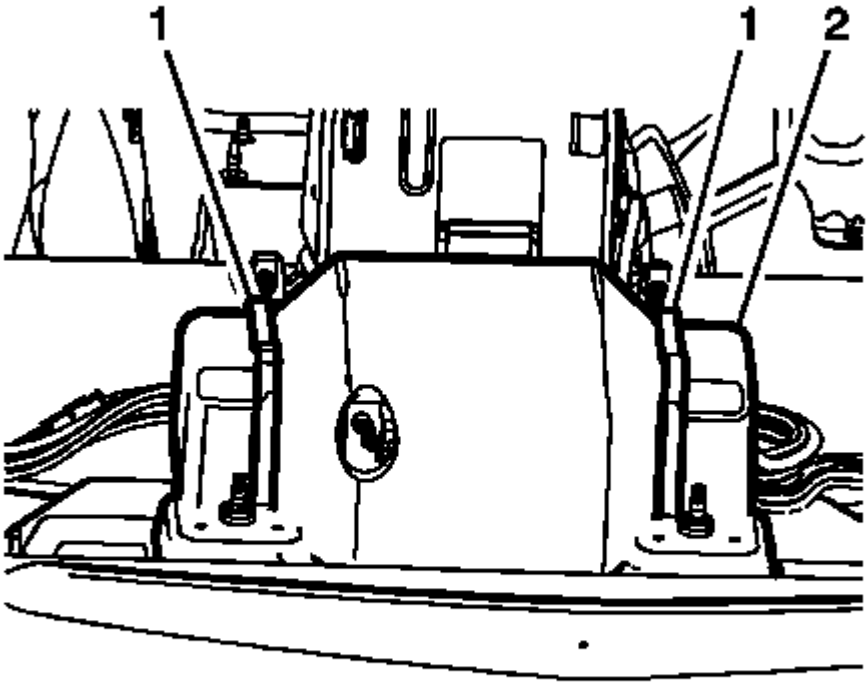

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Fig. 59: Folding Top Pump Bracket Ties
Courtesy of GENERAL MOTORS COMPANY

3. Remove the folding top pump bracket ties (1) from the folding top pump bracket insulator (2).

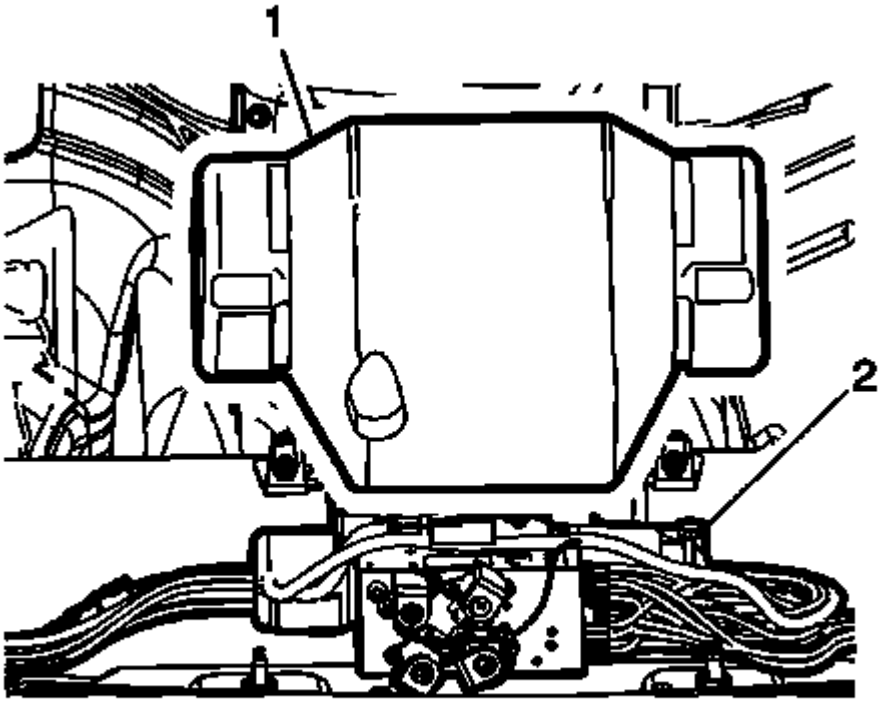

Fig. 60: Folding Top Pump Bracket Insulator
Courtesy of GENERAL MOTORS COMPANY

4. Remove the folding top pump bracket insulator (1) from the folding top pump (2).
5. Place a protective covering over the rear compartment interior and the adjacent body panels.
6. Place a shop towel around the pump motor to control any hydraulic fluid spillage.

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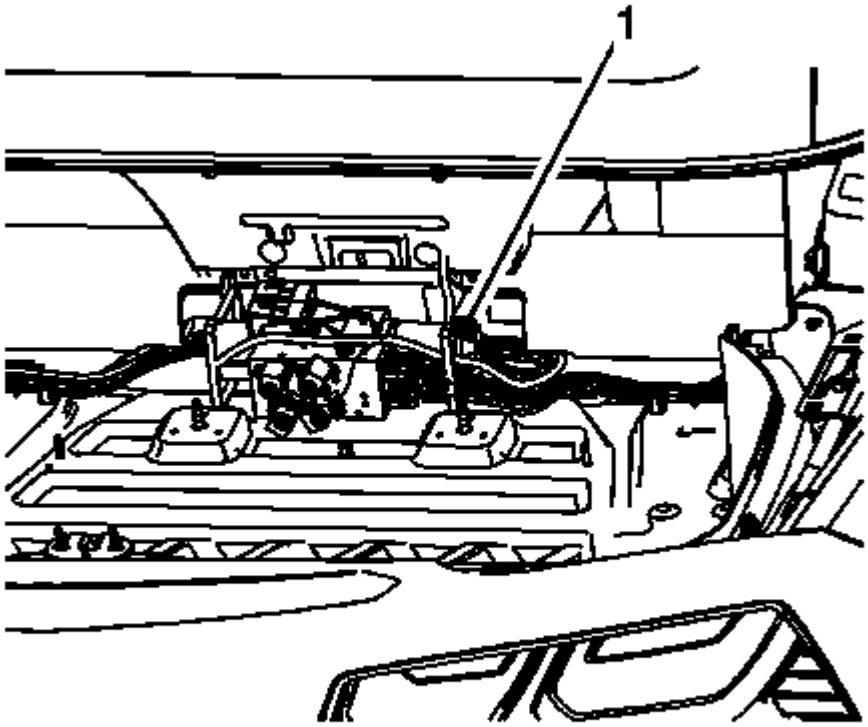

Fig. 61: Reservoir Filler Plug
Courtesy of GENERAL MOTORS COMPANY

7. Remove the reservoir filler plug (1)
8. Add fluid P/N 88901975 until the fluid level is between the MAXIMUM and the MINIMUM indicator lines on the reservoir.
9. Inspect the fluid level and add fluid as necessary.

CAUTION: Refer to Fastener Caution .

10. Install the reservoir filler plug (1).

Tighten

Tighten the plug to 2 N.m (18 lb in).

11. Close the rear compartment lid.
12. Cycle the folding top under power through one complete cycle in both directions.

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14. Open the rear compartment lid.
15. Remove the shop towels from around the pump motor.
16. Remove the protective covering from the rear compartment interior.

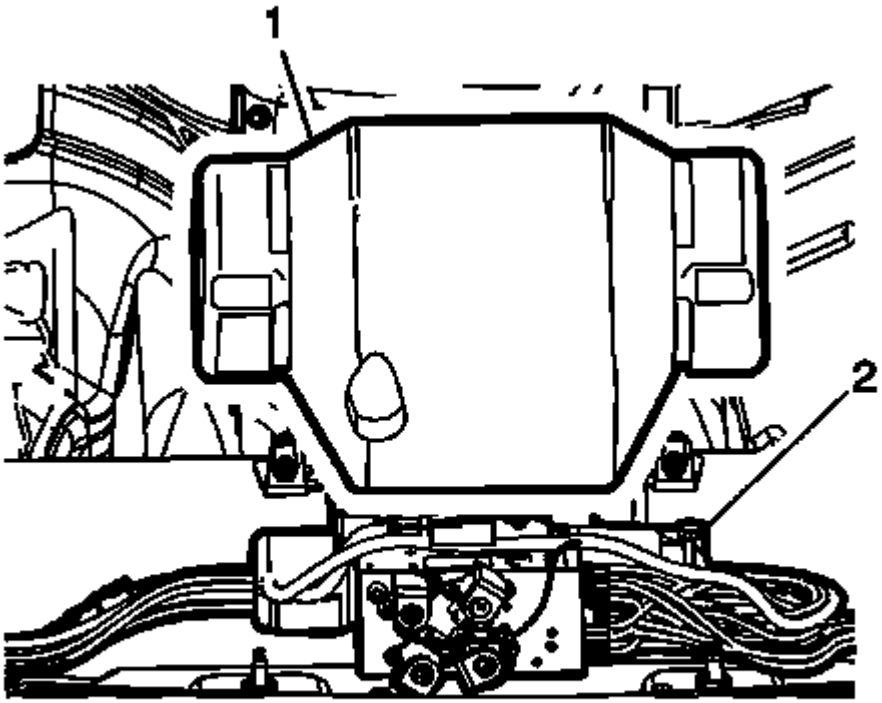

Fig. 62: Folding Top Pump Bracket Insulator
Courtesy of GENERAL MOTORS COMPANY

17. Install the folding top pump bracket insulator (1) from the folding top pump (2).

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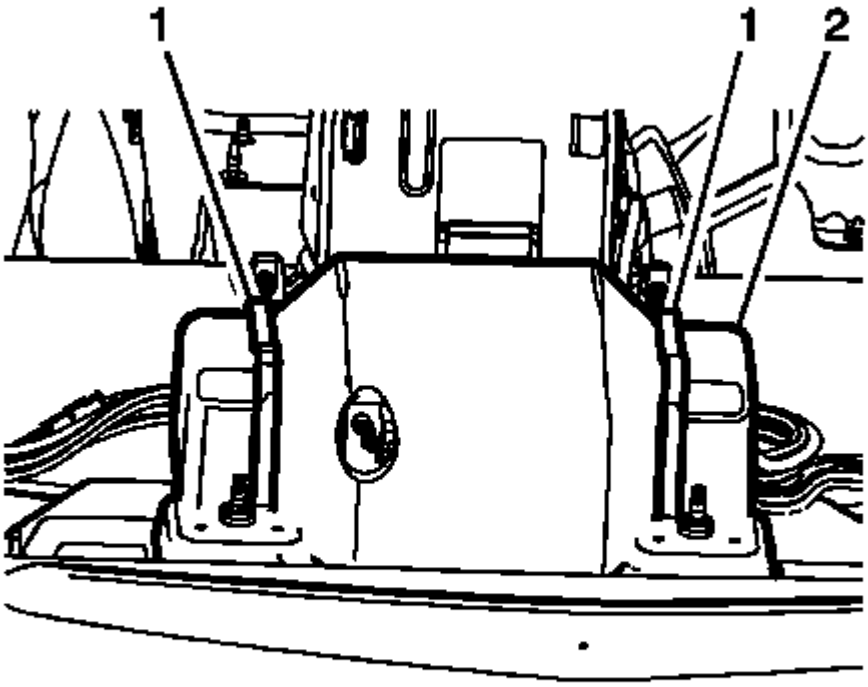

Fig. 63: Folding Top Pump Bracket Ties
Courtesy of GENERAL MOTORS COMPANY

18. Install the folding top pump bracket ties (1) from the folding top pump bracket insulator (2).
19. Install the folding top pump bracket. Refer to **Folding Top Pump Bracket Replacement**.
20. Close the rear compartment.
21. Inspect the folding top for proper operation. Refer to **Power Folding Top Description and Operation**.

FOLDING TOP REPLACEMENT

Removal Procedure

CAUTION: Always put an automatic transmission in P (Park) or a manual transmission in N (Neutral) and set the park brake before raising or lowering the convertible top. If you raise or lower the convertible top while the vehicle is in motion, you could damage the top or the top mechanism.

CAUTION: Do not lower the top in cold weather. If you lower the convertible top

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on the vehicle in cold weather (0°C (32°F) or lower), you may damage convertible top components.

CAUTION: Always verify that no objects are in the storage area before lowering the convertible top. Lowering the convertible top when there are objects in the storage area could damage it or break the glass rear window.

CAUTION: Dry off the convertible top before lowering it. Lowering the convertible top if it is damp, wet or dirty can cause stains, mildew and damage to the inside of the vehicle.

1. Apply a double layer of masking tape around the lower rear roof perimeter of all the painted surfaces prior to the removal.
2. Disconnect the rear window defogger harness at the rear window.
3. Key On - Engine Off.
4. Place all the windows in the full down position.
5. Lower the folding top.
6. Key Off.
7. Remove the body lock pillar trim panel. Refer to **Body Lock Pillar Trim Panel Replacement (Coupe)** , **Body Lock Pillar Trim Panel Replacement (Convertible)** .
8. Disconnect the hydraulic hose assembly from the folding top pump motor. Refer to **Folding Top Cylinder Hydraulic Hose Replacement**.
9. Remove the folding top side rail bracket. Refer to **Folding Top Side Rail Replacement**

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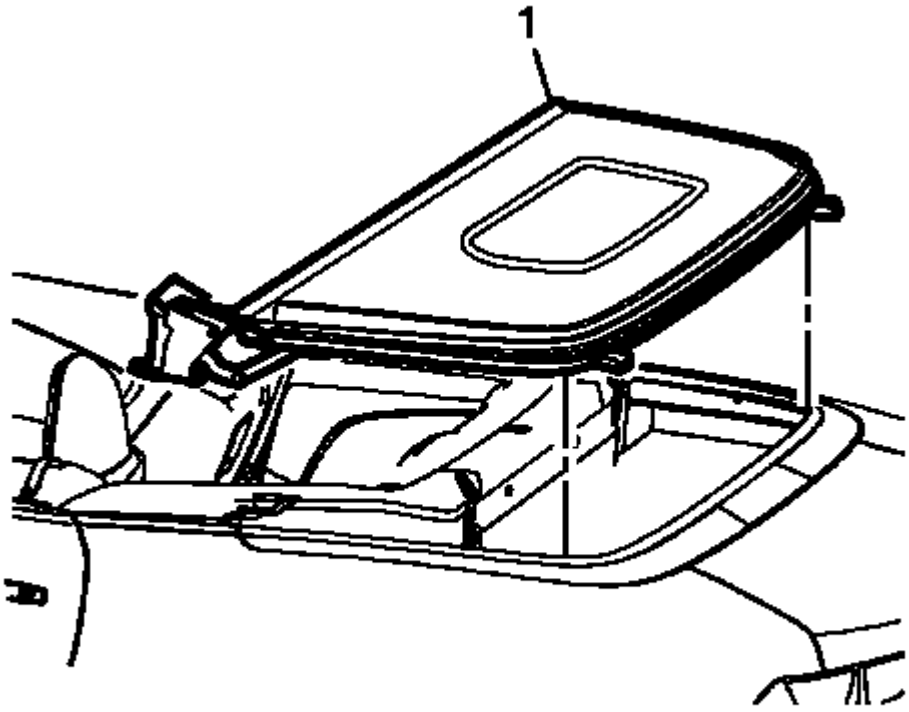

Fig. 64: Folding Top Frame Assembly
Courtesy of GENERAL MOTORS COMPANY

10. With an assistant remove the folding top assembly (1) from the vehicle.

Installation Procedure

1. Transfer all necessary components.

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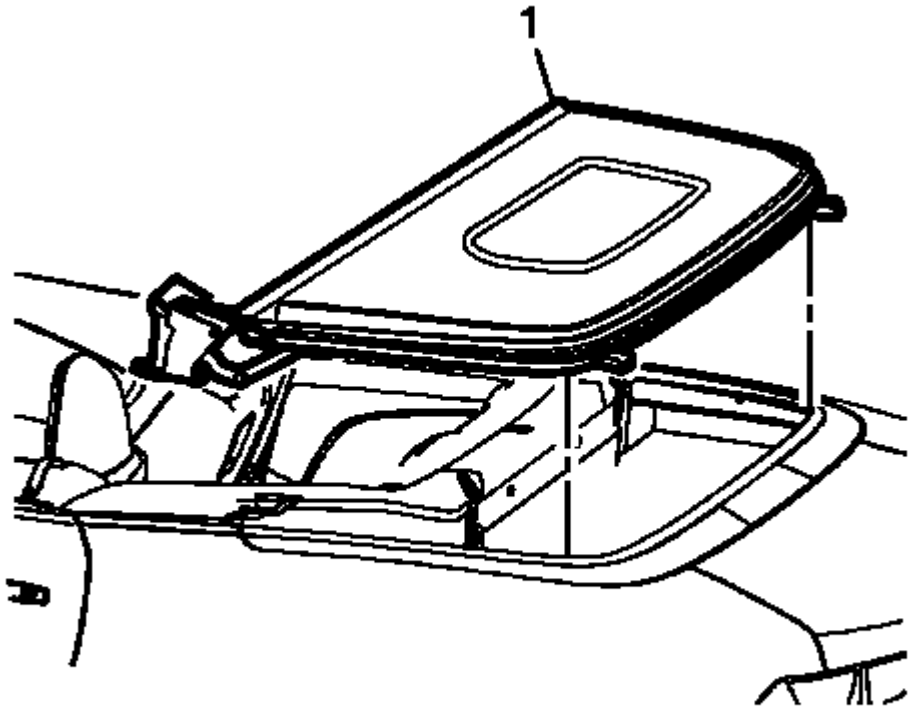

Fig. 65: Folding Top Frame Assembly
Courtesy of GENERAL MOTORS COMPANY

2. With an assistant, place the folding top assembly (1) in the stowage compartment.
3. Install the folding top side rail bracket. Refer to **Folding Top Side Rail Replacement**
4. Connect the hydraulic hose assembly to the folding top pump motor. Refer to **Folding Top Cylinder Hydraulic Hose Replacement**.
5. Key On - Engine Off, place the folding top in the closed position.
6. Install the body lock pillar trim panel. Refer to **Body Lock Pillar Trim Panel Replacement (Coupe)** , **Body Lock Pillar Trim Panel Replacement (Convertible)** .
7. Connect the rear window defogger harness at the rear window.
8. Remove the double layer of masking tape from around the lower rear roof opening perimeter.
9. Place the folding top in the lock position, check for appearance and fit.
10. Inspect the front edge of the folding top to windshield upper frame for a good seal.
11. Water test the vehicle to ensure a proper water tight seal.

FOLDING TOP FRONT WEATHERSTRIP REPLACEMENT

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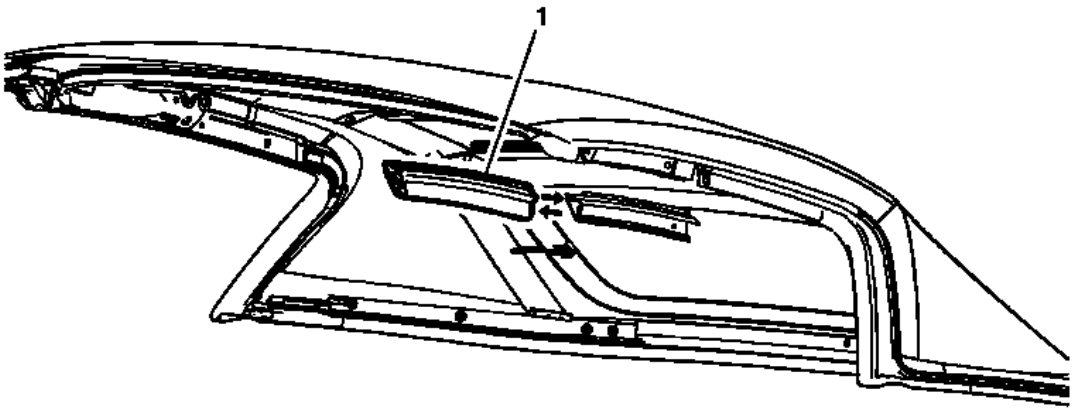

Fig. 66: Folding Top Front Weatherstrip
Courtesy of GENERAL MOTORS COMPANY

Folding Top Front Weatherstrip Replacement

Callout	Component Name
Preliminary Procedure Remove the folding top front weatherstrip retainer. Refer to **Roof Retractable Front Panel Side Weatherstrip Replacement**.	
1	Folding Top Front Weatherstrip **Procedures** 1. Slide the weatherstrip from the retainer. 2. After installed, inspect the fit of the seal to door glass. **NOTE:** **Water test the vehicle to ensure no leaks.**

FOLDING TOP REAR WEATHERSTRIP REPLACEMENT

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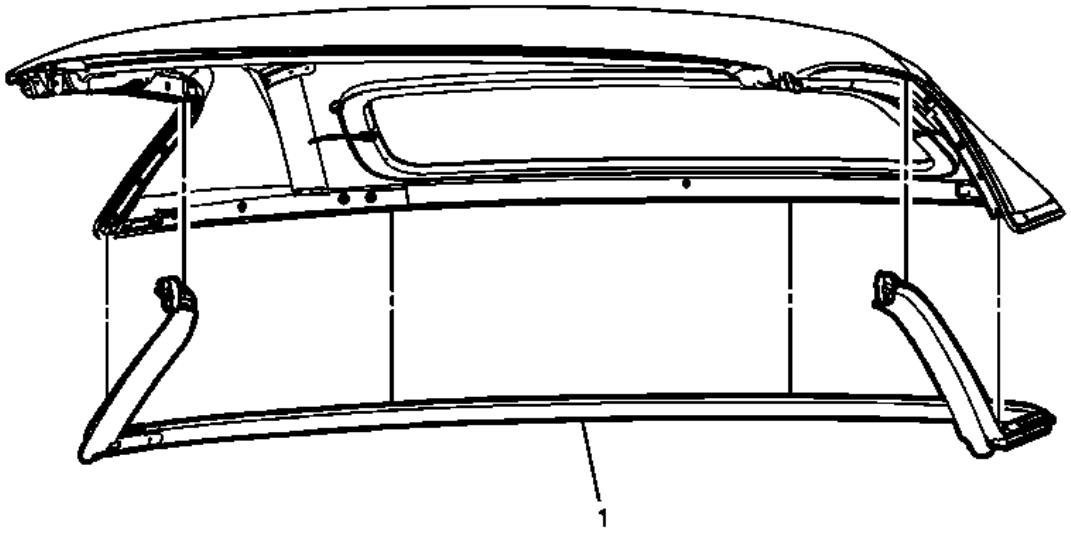

Fig. 67: Folding Top Rear Weatherstrip
Courtesy of GENERAL MOTORS COMPANY

Folding Top Rear Weatherstrip Replacement

Callout	Component Name
Preliminary Procedures 1. Place the windows in the full down position. 2. Place the folding top in mid-position. 3. Remove the folding top rear side rail link trim panel. Refer to **Folding Top Rear Side Rail Link Trim Cover Replacement**.	
1	Folding Top Rear Weatherstrip **Procedures** 1. Start at a corner and pull the weatherstrip from the retainers. 2. Work the weatherstrip back and forth in a rocking motion. This will assist in fully seating the weatherstrip in the retainers. 3. Inspect the fit of the seal to door glass. 4. Ensure waterbag is attached properly to number 5 bow and rear weatherstrip. **NOTE:** **Water test the vehicle to ensure no leaks.**

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FOLDING TOP STOWAGE COMPARTMENT LID WEATHERSTRIP REPLACEMENT

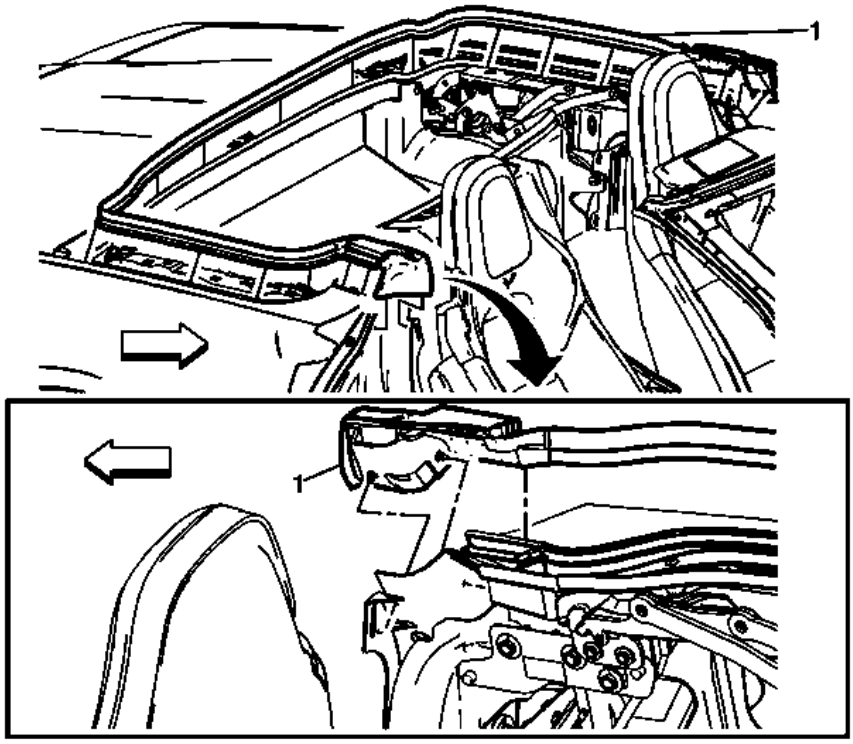

Fig. 68: Folding Top Stowage Compartment Lid Weatherstrip
Courtesy of GENERAL MOTORS COMPANY

Folding Top Stowage Compartment Lid Weatherstrip Replacement

Callout	Component Name
Preliminary Procedure 1. Position the #1 bow and the #5 bow up. 2. Open the folding top stowage compartment lid.	
1	Folding Top Stowage Compartment Lid Weatherstrip **Procedure** 1. Using a trim tool release the retainers from the lock pillar end of the folding top stowage compartment lid weatherstrip. 2. Pull the weatherstrip from the folding top stowage compartment flange.

FOLDING TOP HYDRAULIC SYSTEM BLEEDING

WARNING: Refer to Eye Protection Warning .

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NOTE: **When servicing the hydraulic system do not allow the fluid level to drop below the minimum indicator line on the reservoir or pump damage may occur.**

Inspect the hydraulic fluid level with the vehicle parked on a level surface, the folding top in the up position and the rear compartment open.

The hydraulic system is self-bleeding and does not require any type of conventional bleeding procedures.

1. Inspect the fluid level and add fluid as necessary. Refer to **Folding Top Fluid Addition**.
2. Start the vehicle.
3. Cycle the folding top under power through one complete cycle in both directions.
4. Inspect the fluid level again and add more fluid as necessary. Refer to **Folding Top Fluid Addition**.
5. Cycle the folding top under power through 5 complete cycles in both directions. Allow 5 minutes between each cycle.
6. Inspect the folding top for proper operation. Refer to **Power Folding Top Description and Operation**.

DESCRIPTION AND OPERATION

FOLDING TOP MANUAL OPERATION

Under normal circumstances the power folding top is not intended to be operated manually. If the DIC displays "Only Manual Operation of Top Possible" message, there is a malfunction with the system and power folding top operation cannot be completed. Refer to the owner's manual for instructions on how to operate the top manually.

POWER FOLDING TOP DESCRIPTION AND OPERATION

Overview

The operation of the convertible top is fully-automatic. The user of the vehicle presses the folding top switch and the control module latches and unlatches the convertible top while hydraulic power actuation provides the force to raise and lower the top.

The electrical portion of the power convertible top system consists of the following:

- Folding Top Control Module
- Folding Top Control Switch
- Folding Top Header Latch Position Sensors
- Folding Top Luggage Barrier Sensor
- Folding Top Pump Motor

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- Folding Top Pump Motor Relays
- Folding Top Solenoid Valves
- Folding Top Stowage Compartment Lid Position Sensors
- Folding Top Tension Bow Position Sensors
- Folding Top Up/Down Position Sensor

Folding Top Control Module

The folding top control module determines folding top movement by controlling the activation and direction of the hydraulic pump's electric motor based on hardwired inputs and vehicle status information it receives via low speed GMLAN. It also uses low speed GMLAN to interact with other sub-systems, communicate convertible top status and position and interface with the driver via the driver information center.

The folding top control module also contains an internal thermocouple which it uses to measure the outside ambient temperature in order to take its affect on the hydraulic fluid into account. This internal thermocouple value is not accessible to the outside world.

Switches and Sensors

Control Switches

The folding top control switch is a two-way rocker switch with center off and is connected directly to the folding top control module. It contains two momentary contacts providing a signal to the folding top control module thorough a resistor ladder network. One resistance value signals the open command and another resistance signals the close command.

The folding top control module determines requested top operation by monitoring the signal from the folding top control switch. Each signal input is recognized as active when the contacts in the folding top control switch complete the circuit path though a specific resistance value to ground signal. When either contact is inactive, the circuit is open and the signal circuit is pulled up to battery by the folding top control module.

Header Latch Position Sensors

There are 4 header latch position sensors that monitor the latched/unlatched status of the header latches. The front header latch secures the folding top to the top of the windshield area when the top is closed. The switch provides an input signal to the folding top control module indicating whether or not the front header latch is engaged.

The Folding Control Module provides the Header Latch Switch with a referenced ground signal and monitors the input signal from the Header Latch Switch. The signal input is recognized as latched when the contact in the Header Latch Switch completes the circuit path to the referenced ground signal. When the switch is unlatched, the circuit is open and the signal circuit is pulled up to Battery by the folding top control module.

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Folding Top Luggage Barrier Sensor

The luggage barrier is a trunk partition used to divide the rear compartment into distinct sections. The luggage barrier contains a magnet in the stem that fits into the retainer slot containing the folding top luggage barrier sensor. The folding top luggage barrier sensor is sensitive to the presence or absence of the magnetic field produced by this magnet.

The folding top luggage barrier sensor is a two-wire hall effect sensor providing an input signal to the folding top control module indicating if the required trunk area is available for stowing the top.

The folding top control module supplies a switched filtered battery voltage to one terminal. The other terminal is a current source providing the signal to the folding top control module.

When the luggage barrier is deployed and properly seated in the retainer, the magnet is close enough to change the sensor's output current into the 2 to 7ma range and the sensor is considered active. When the luggage shade stem is removed from the retaining slot, the magnet is moved away from the sensor and this changes the sensor's output current into the 12 to 17ma range and the sensor is considered inactive.

Folding Top Stowage Compartment Lid Position Sensors

The folding top stowage compartment lid fully closed position sensor and folding top stowage compartment lid open position sensor are two-wire hall effect sensors providing input signals to the folding top control module indicating whether or not the top is fully retracted into its trunk storage area (down) and properly stowed or if the top is in an open condition. The folding top control module supplies switched filtered battery voltage to one terminal. The other terminal is a current source providing a signal to the folding top control module.

Folding Top Tension Bow Position Sensors

The folding top tension bow up position sensor and folding top tension bow down position sensor are two-wire hall effect sensors providing input signals to the folding top control module indicating whether or not the tension bow is in the up or down position. The folding top control module supplies a switched filtered battery voltage to one terminal. The other terminal is a current source providing a signal to the folding top control module.

Folding Top Up/Down Position Sensors

The folding top up position sensor and folding top down position sensor are two-wire hall effect sensors providing input signals to the folding top control module indicating whether or not the top is fully retracted into its trunk storage area (Down) and properly stowed. The folding top control module supplies a switched filtered battery voltage to one terminal. The other terminal is a current source providing a signal to the folding top control module.

When the hydraulic cylinder is fully retracted, the top is down (open) and stowed. At this point the cylinder's piston is near the folding top down position sensor which affects the sensor's internal magnetic field which is a signal to the folding top control module that the top is down. When the

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hydraulic cycling is fully extended, the top is closed. At this point the cylinder's piston is near the folding top up position sensor which signals to the folding top control module that the top is up. The sensor's output current enters into the 2 to 5ma range and the sensor is considered active. As the cylinder moves from the fully open or fully closed position, the cylinder's piston moves away from the sensor changing its magnetic field back to its normal state. The sensor's output current enters into the 12 to 17ma range and the sensor is considered inactive.

Pump Motor Control

Folding Top Pump Motor

The hydraulic pump's electric motor generates the pressure of the system's hydraulic fluid used to provide the actuating force for the folding top.

Folding Top Pump Motor Relays

The direction of the motor is determined by the polarity of the voltage applied to it. The folding top control module output provides battery power to energize the appropriate relay. When energized, the relay supplies the battery voltage to the pump motor. The opposite relay that is not energized supplies the ground connection for the motor.

Folding Top Solenoid Valves

The solenoid values direct the pressurized hydraulic fluid to the appropriate actuators to control folding top operation.

Power Top Operation

Once folding top movement has begun, the switch must be held active for the full range of motion. If the switch returns to the OFF position while the power convertible top is in motion all motion will cease.

Open/Down

When the folding top control module sees the open signal from the folding top control switch, it will start to open the folding top provided all of the following are true.

Condition	Source of Info
System Power Mode is Run or Accessory	Serial Data
Voltage is between 10-16 V	Module inputs
No Diagnostics Faults are detected with pump motor	Module inputs
Ambient Temperature is above 0°C	Thermocouple Internal to Module
Pump Motor is not in an Over temperature condition	Module Software algorithm
Vehicle Speed Below 50 kph	Serial Data

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Luggage Barrier Active or a fault is detected	Module input
The windows have been indexed after a battery disconnection.	Serial Data
Trunk is not Open	Serial Data

Once folding top movement has begun, the switch must be held active for the full range of motion. If the switch returns to the 'off' position while the power convertible top is in motion all motion will cease.

If the Control Switch is held active while the pump motor is turned on, the motor will run for approximately 35 seconds unless the Stowed Switch becomes active. After this time the motor will be turned off until the Control Switch returns to the Off position and is re-activated.

When the folding top is moving down (open) and the Stowed Sensor becomes active, the pump will continue to run for up to 4 seconds or until a motor stall is detected. This is true whether the switch is held or released. This is to insure the proper pressure remains in the system to keep the top properly secured in the stowed position

Although a vehicle speed of less than 3 kph is required to initiate motion, top movement will continue until vehicle speed reaches 16 kph. Top movement will cease for vehicle speeds above this.

Close/Up

When the folding top control module sees the close signal from the folding top control switch, it will start to close the folding top provided all of the following are true.

Condition	Source of Info
System Power Mode is Run or Accessory	Serial Data
Voltage is between 10-16 V	Module inputs
No Diagnostics Faults are detected with pump motor	Module inputs
Ambient Temperature is above -0°C	Thermocouple Internal to Module
Vehicle Speed Below 50 Kph	Serial Data
Trunk is not Open	Serial Data

System Protection Functions

Normal operation of the folding top system may be altered by one of the following events.

Obstacle Detection (aka: Blockage Detection)

The obstacle detection implemented for the power convertible top is only to protect the folding top mechanism and/or to detect a catastrophic mechanical failure.

If an excessive current draw is detected while the folding top motor is operating for a defined period of time the folding top controller will turn off the folding top motor to prevent overheating or damage to

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Folding Top System Thermal Protection

The folding top control module has a thermal protection algorithm to protect the folding top pump motor from damage due to overheating conditions resulting from excessive motor actuation. After the thermal protection has been triggered any new power convertible top command in the open direction will be ignored until the motor is allowed to cool. A close request during an over temperature condition will be allowed.

Driver Information Messages

Refer to the owner manual for a complete list of convertible top messages.

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