

2004 Cadillac SRX

2004 ACCESSORIES & EQUIPMENT Wipers/Washer Systems - SRX

2004 ACCESSORIES & EQUIPMENT

Wipers/Washer Systems - SRX

SPECIFICATIONS

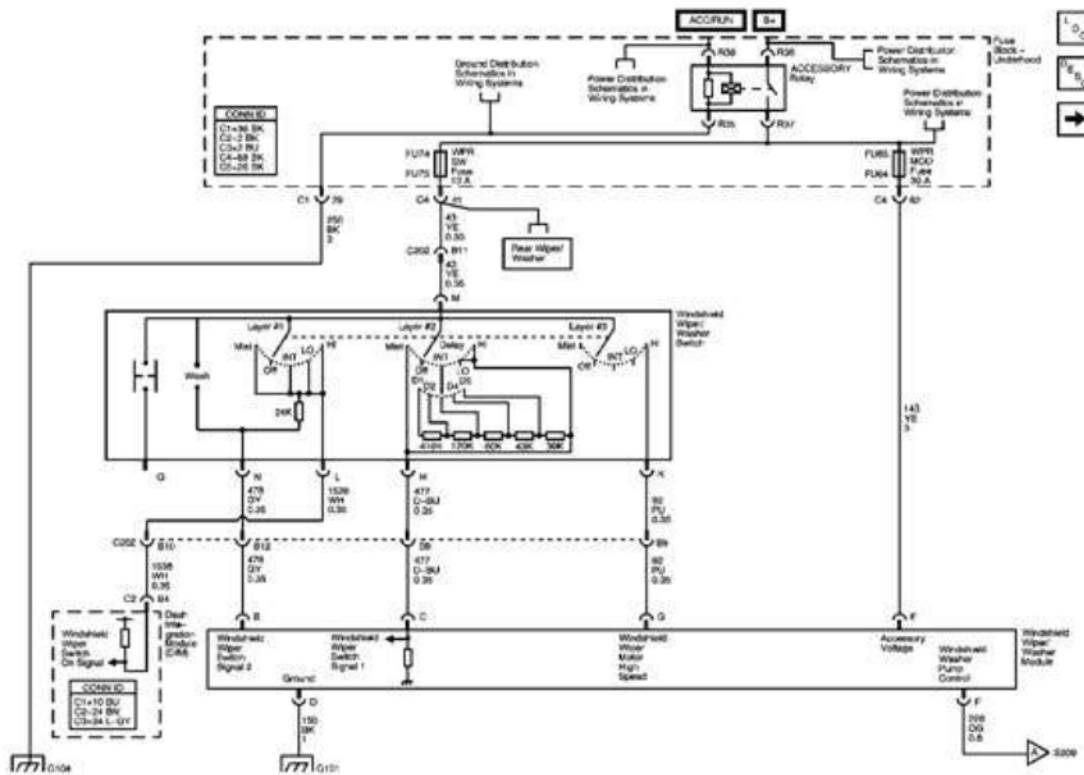
FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Air Inlet Grille Nut-Driver Side	6 N.m	53 lb in
Headlamp Washer Pump Screws to Lower Headlamp Assembly-Export	6 N.m	53 lb in
Rear Wiper Arm Nut	17 N.m	13 lb ft
Washer Solvent Container Fill Neck Bolt to Upper Tie Bar	6 N.m	53 lb in
Washer Solvent Container Horizontal Bracket to Engine Cradle Clinch Nut	6 N.m	53 lb in
Washer Solvent Container Horizontal Bracket to Washer Bottle Nut	6 N.m	53 lb in
Washer Solvent Container Nuts	6 N.m	53 lb in
Washer Solvent Container Screws	6 N.m	53 lb in
Wiper Arm Assembly Nuts	35 N.m	26 lb ft
Wiper Drive System Module Mounting Bolts	10 N.m	89 lb in
Wiper Motor Cover Mounting Screws	2 N.m	18 lb in
Wiper Motor Crank Arm Nut	16 N.m	12 lb ft
Wiper Motor Mounting Screws to Wiper Drive Module Mounting Bracket	11 N.m	97 lb in

SCHEMATIC AND ROUTING DIAGRAMS

WIPER/WASHER SYSTEM SCHEMATICS



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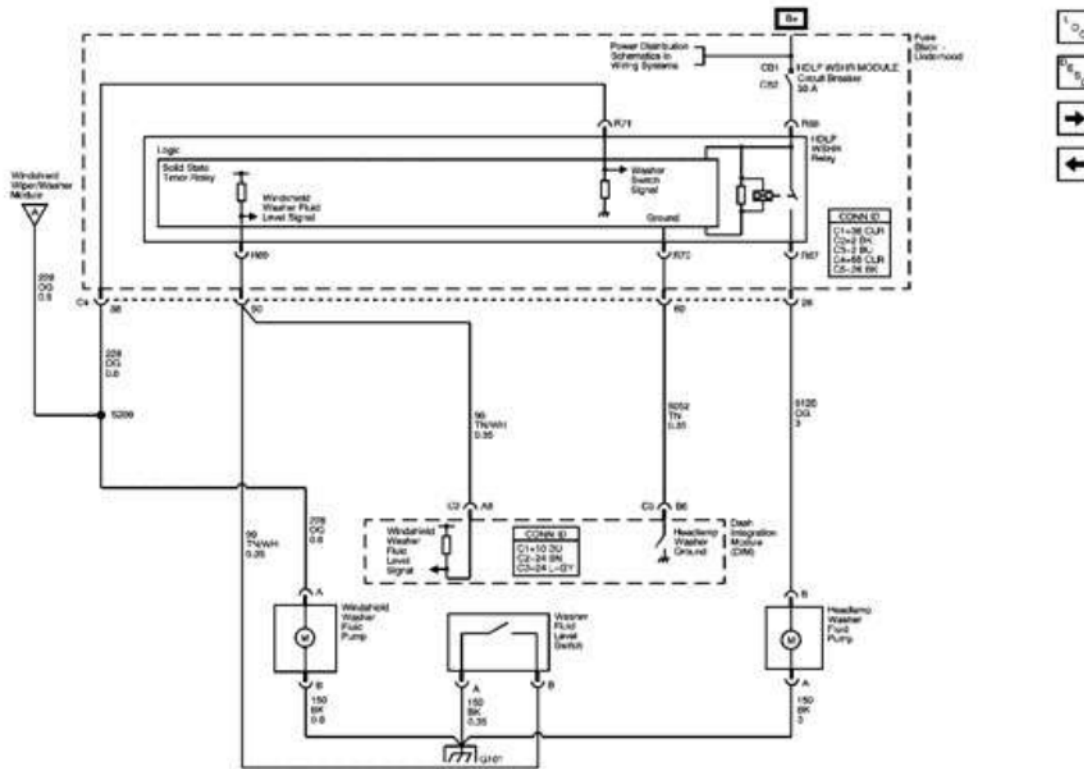


Fig. 2: Front Washer (CE4) Schematic
 Courtesy of GENERAL MOTORS CORP.

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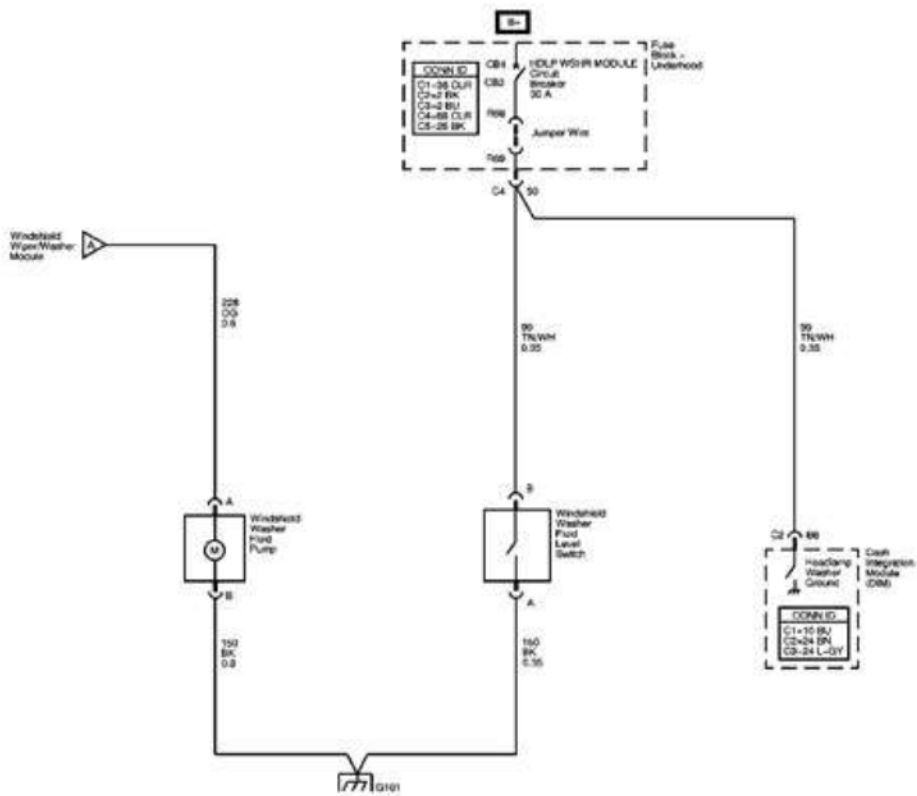


Fig. 3: Front Washer (w/o CE4) Schematic
 Courtesy of GENERAL MOTORS CORP.

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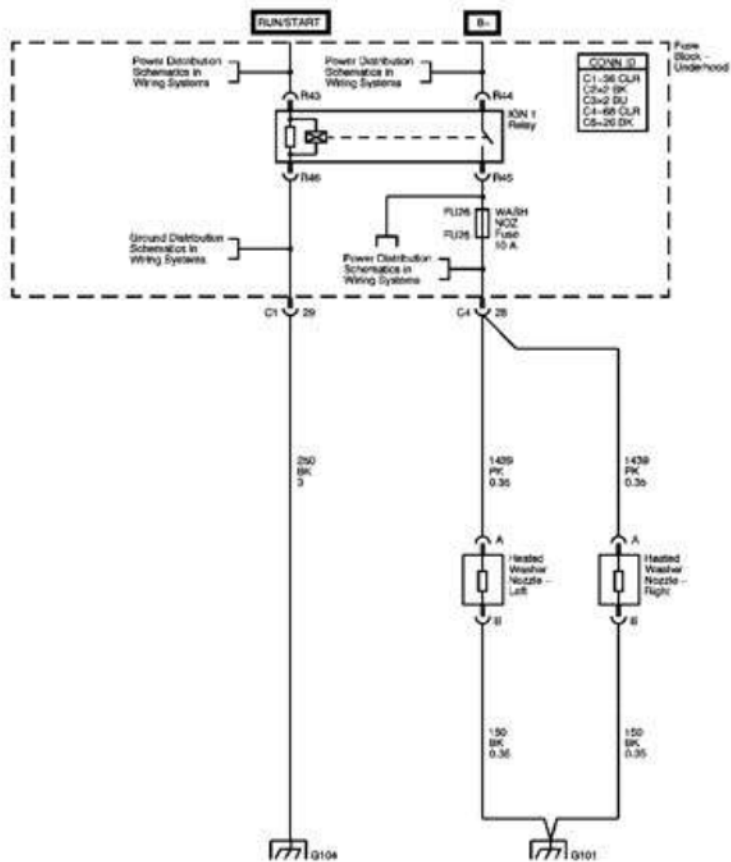


Fig. 4: Heated Washer Nozzles (XA7) Schematic
Courtesy of GENERAL MOTORS CORP.

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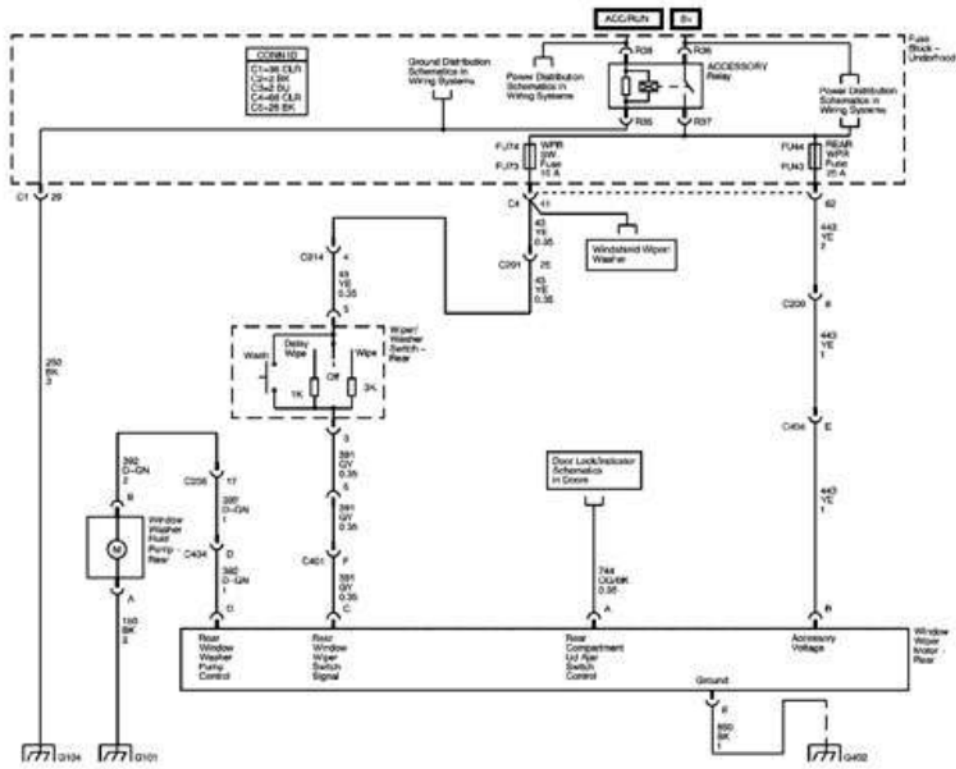


Fig. 5: Rear Wiper/Washer Schematic
 Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

WIPER/WASHER SYSTEM COMPONENT VIEWS

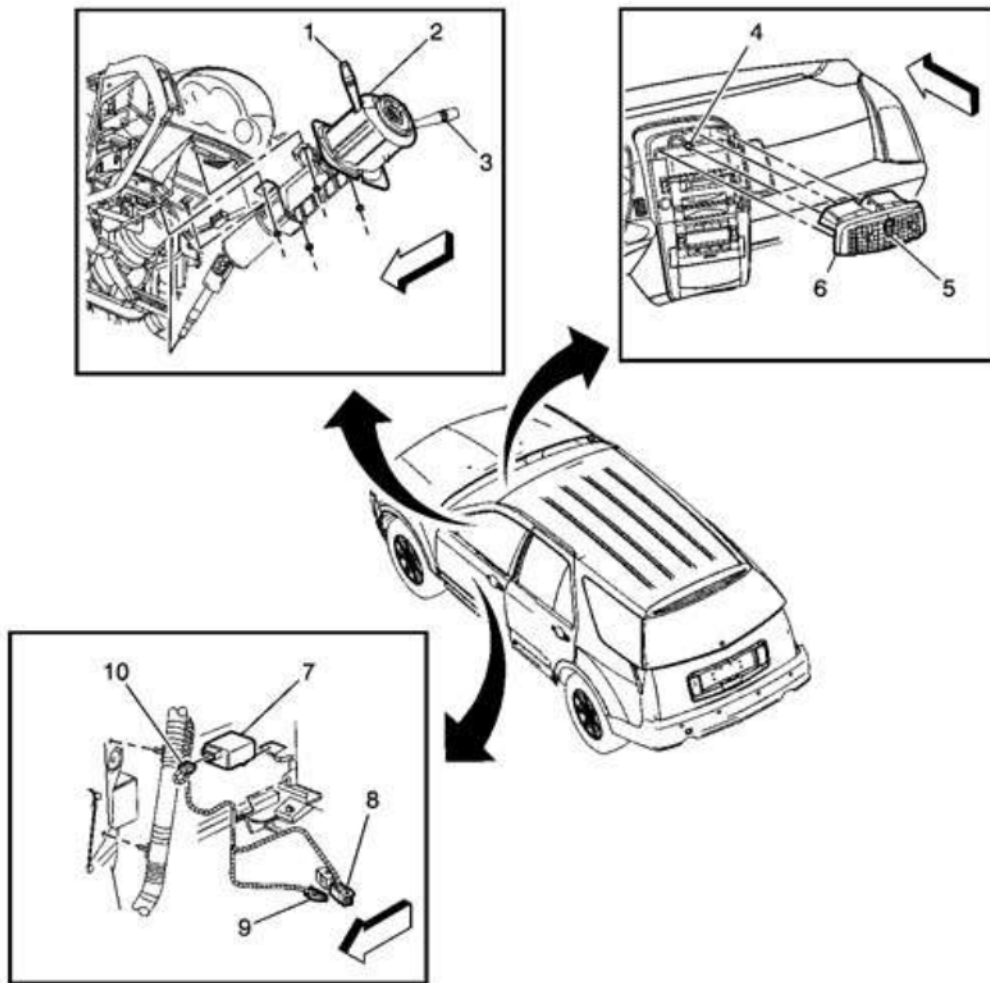


Fig. 6: Lighting Switches & Flasher Module Component View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 6

Callout	Component Name
1	Turn Signal/Multifunction Switch
2	Steering Column
3	Windshield Wiper/Washer Switch
4	Hazard Switch Connector
5	Hazard Switch
6	I/P Air Deflector - Center
7	Turn Signal/Hazard Flasher Module

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8	Data Link Connector (DLC)
9	Park Brake Switch Connector
10	Turn Signal/Hazard Flasher Module Connector

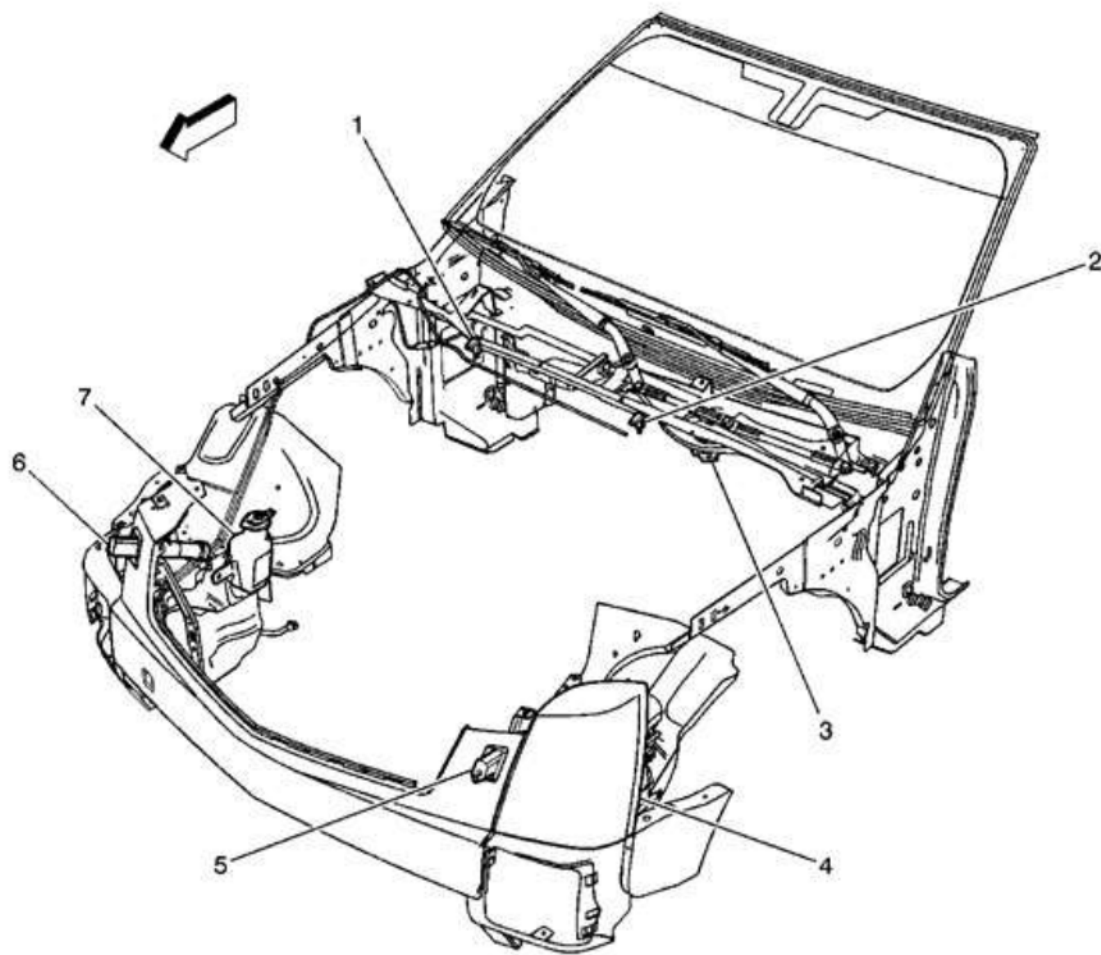


Fig. 7: Wiper Washer Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 7

Callout	Component Name
1	Heated Washer Nozzle - Right
2	Heated Washer Nozzle - Left
3	Windshield Wiper/Washer Module
4	Headlamp - Left
5	Headlamp Washer Nozzle - Left

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6	Headlamp Washer Nozzle - Right
7	Washer Fluid Container

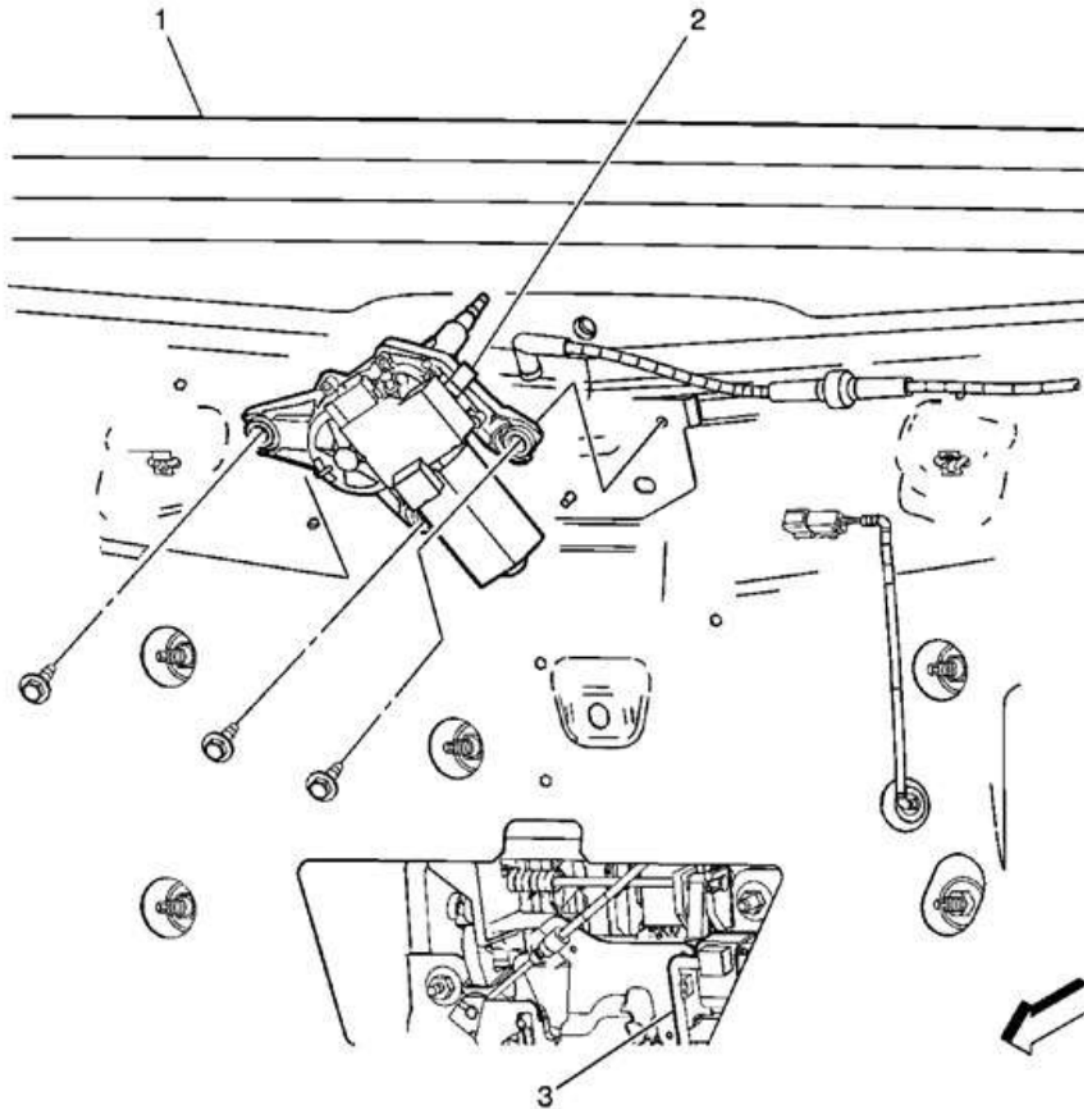


Fig. 8: Center Of Liftgate Component View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 8

Callout	Component Name
1	Rear Window Defogger Grid
2	Rear Wiper Motor
3	Liftgate Latch

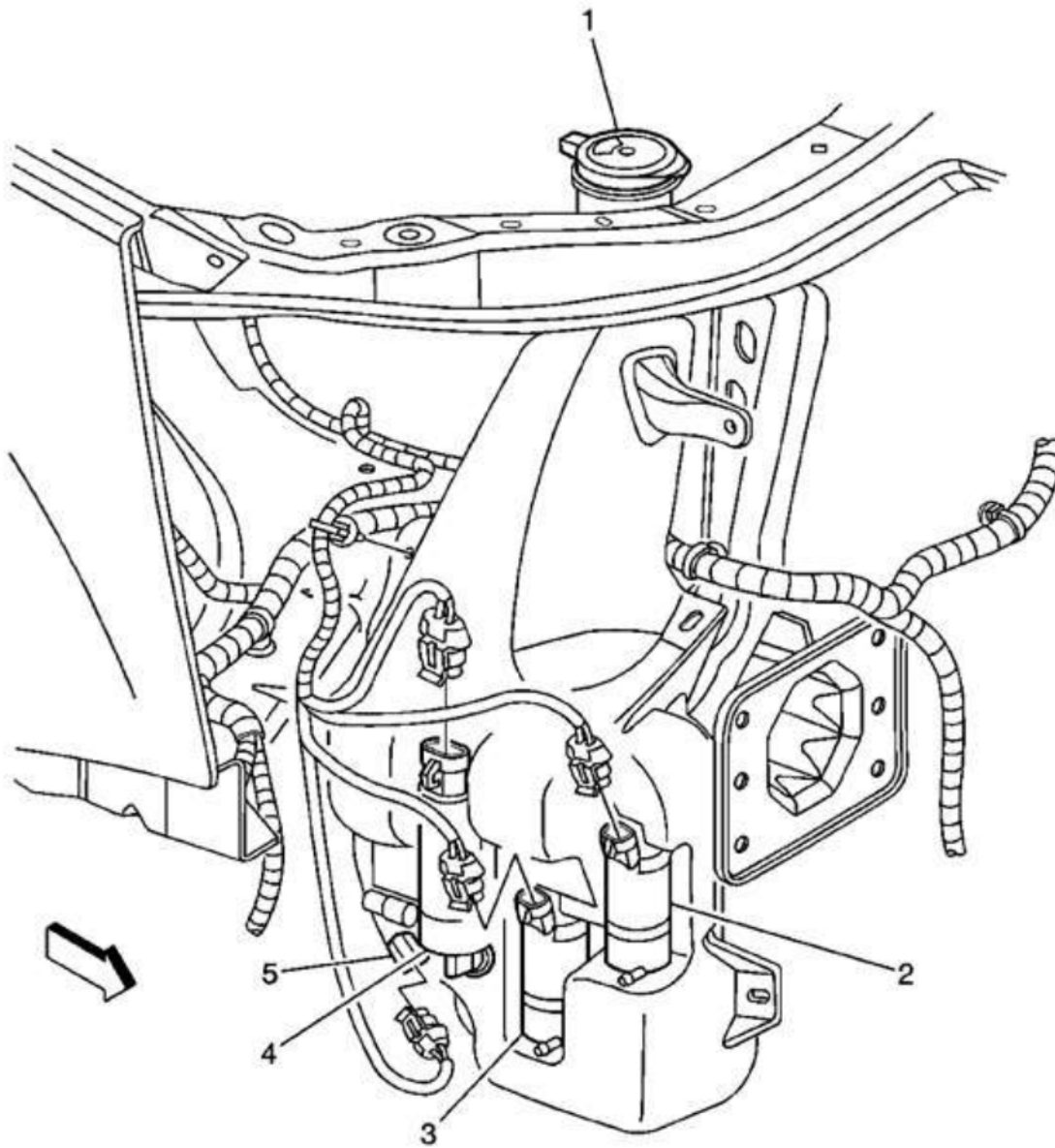


Fig. 9: Lower Right Side Of Fascia Component View
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 9

Callout	Component Name
1	Washer Solvent Container
2	Rear Window Washer Fluid Pump
3	Windshield Washer Fluid Pump
4	Headlamp Washer Fluid Pump (CE4)

5 Washer Fluid Level Switch

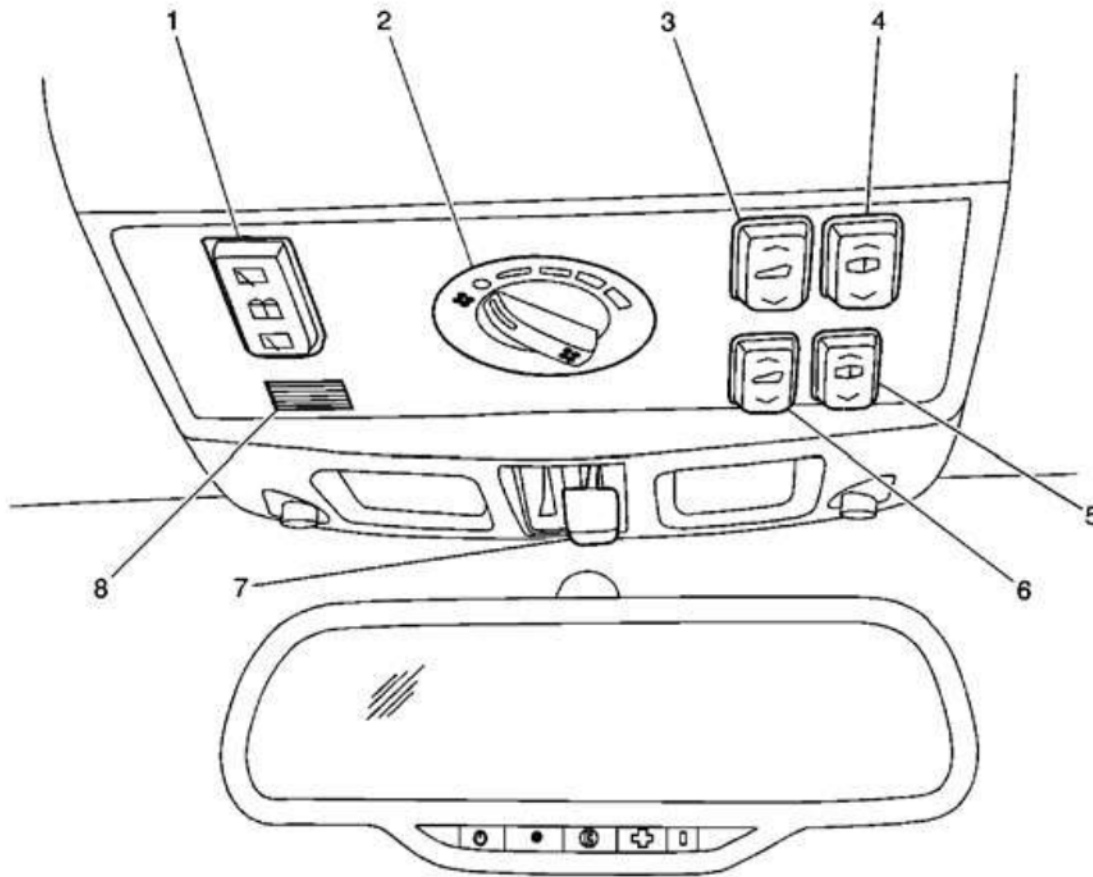


Fig. 10: Overhead Console Component View
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 10

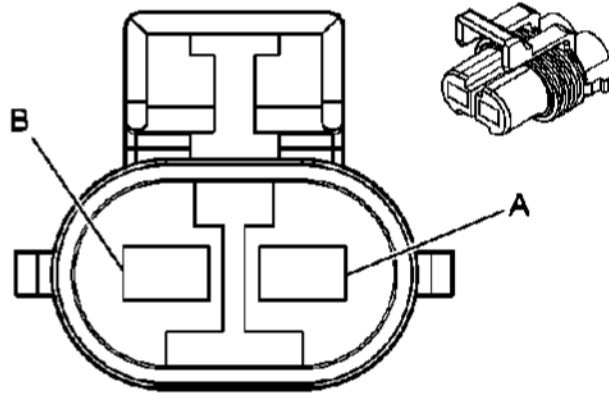
Callout	Component Name
1	Rear Wiper/Washer Switch
2	Blower Motor Switch - Auxiliary
3	Not Used
4	Rear Sunshade Switch (C3B)
5	Front Sunshade Switch (CF5/C3B)
6	Sunroof Switch (CF5/C3B)
7	I/P Lamps Dimmer Switch
8	Noise Compensation Microphone (U57)

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WIPER/WASHER SYSTEM CONNECTOR END VIEWS

Headlamp Washer Fluid Pump Terminal Identification

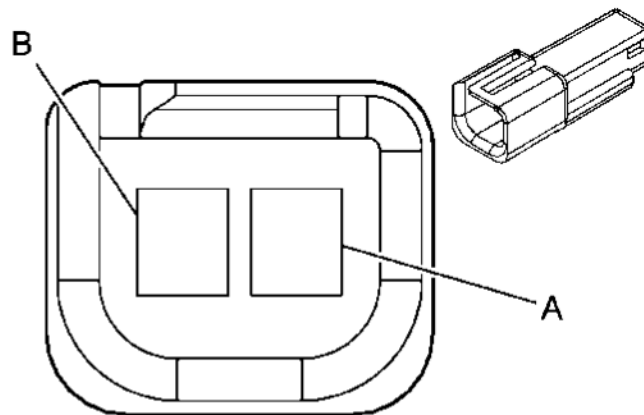


Connector Part Information

- 12052613
- 2-Way F Metri-Pack 480 Series, Sealed (BK)

Pin	Wire Color	Circuit No.	Function
A	BK	150	Ground
B	OG	9120	Headlamp Washer Fluid Pump Control

Heated Washer Nozzle Terminal Identification - Left (XA7)



Connector Part Information

- 12047665
- 2-Way M Metri-Pack 150 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	PK	1439	Ignition 1 Voltage

B	BK	150	Ground
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Heated Washer Nozzle Terminal Identification - Right (XA7)

Connector Part Information		• 12047665 • 2-Way M Metri-Pack 150 Series (BK)	
Pin	Wire Color	Circuit No.	Function
A	PK	1439	Ignition 1 Voltage
B	BK	150	Ground

Rear Window Washer Fluid Pump Terminal Identification

Connector Part Information		• 12020599 • 2-Way F Metri-Pack 280 Series (BK)	
Pin	Wire Color	Circuit No.	Function
A	BK	150	Ground

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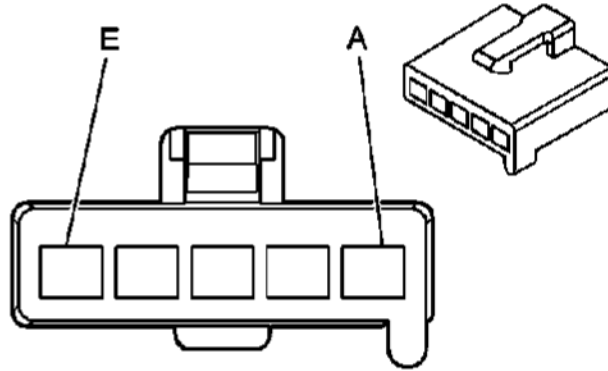
B

D-GN

392

Rear Window Washer Pump Control

Rear Window Wiper Motor Terminal Identification

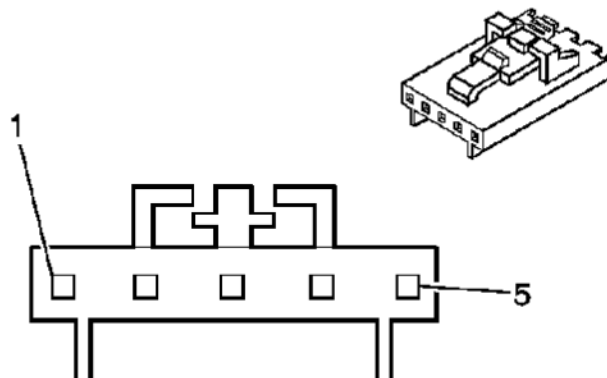


Connector Part Information

- 12041429
- 5-Way F Metri-Pack 280 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	OG/BK	744	Rear Compartment Lid Ajar Switch
B	YE	443	Accessory Voltage
C	GY	391	Rear Window Wiper Switch Signal
D	D-GN	392	Rear Window Washer Pump Control
E	BK	850	Ground

Rear Wiper/Washer Switch Terminal Identification



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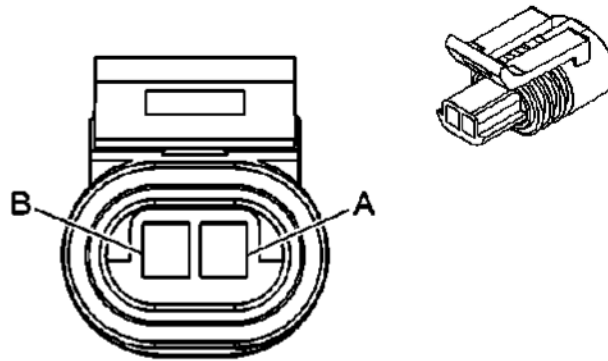
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Connector Part Information

- 50-57-9405
- 5-Way F Molex (BK)

Pin	Wire Color	Circuit No.	Function
1	BK	1050	Ground
2	-	-	Not Used
3	GY	391	Rear Window Wiper Switch Signal
4	YE	1491	Backlight Lamps Control
5	YE	43	Accessory Voltage

Washer Fluid Level Switch Terminal Identification



Connector Part Information

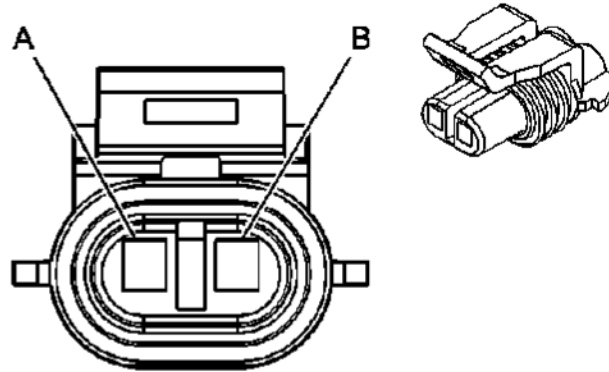
- 12162195
- 2-Way F Metri-Pack 150.2 Series, Sealed (P2S) (BK)

Pin	Wire Color	Circuit No.	Function
A	BK	150	Ground
B	TN/WH	99	Windshield Washer Fluid Level Signal

Windshield Washer Fluid Pump Terminal Identification

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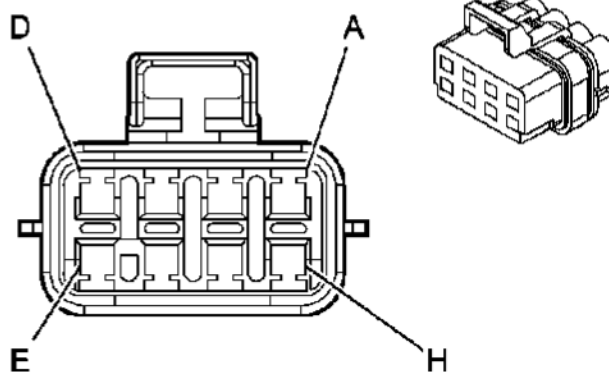


Connector Part Information

- 12052641
- 2-Way F Metri-Pack 150 Series (BK)

Pin	Wire Color	Circuit No.	Function
A	OG	228	Windshield Washer Pump Control
B	BK	150	Ground

Windshield Wiper/Washer Module Terminal Identification



Connector Part Information

- 12176335
- 8-Way F Metri-Pack 280 Series (WH)

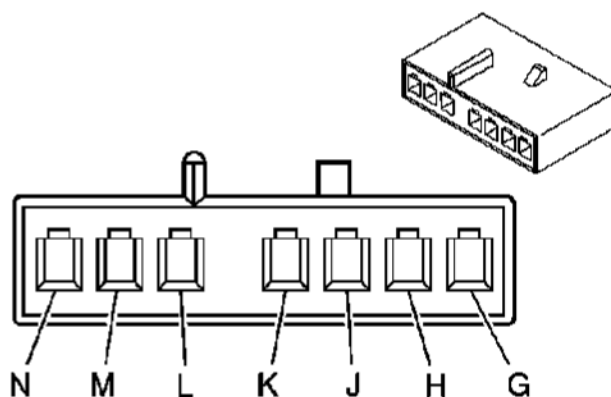
Pin	Wire Color	Circuit No.	Function
A	-	-	Not Used
B	GY	478	Windshield Wiper Switch Signal 2

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C	D-BU	477	Windshield Wiper Switch Signal 1
D	BK	150	Ground
E	YE	143	Accessory Voltage
F	OG	228	Windshield Washer Pump Control
G	PU	92	Windshield Wiper Motor High Speed
H	-	-	Not Used

Windshield Wiper/Washer Switch Terminal Identification



Connector Part Information		• 15339096 • 7-Way F Metri-Pack 150 Series (BK)	
Pin	Wire Color	Circuit No.	Function
G	-	-	Not Used
H	D-BU	477	Windshield Wiper Switch Signal 1
J	-	-	Not Used
K	PU	92	Windshield Wiper Motor High Speed
L	WH	1538	Windshield Wiper Switch On Signal
M	YE	43	Accessory Voltage
N	GY	478	Windshield Wiper Switch Signal 2

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - WIPER/WASHER SYSTEMS

Begin wiper/washer system diagnosis with the **Diagnostic System Check - Wiper/Washer**. The Diagnostic System Check will provide the following information:

- The identification of the control modules which command the system.
- The ability of the control modules to communicate through the serial data circuit.
- The identification of any stored diagnostic trouble codes (DTCs) and their status.

The use of the Diagnostic System Check will identify the correct procedure for diagnosing the system and where the procedure is located.

DIAGNOSTIC SYSTEM CHECK - WIPER/WASHER

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: Lack of communication may be due to a partial malfunction of the class 2 serial data circuit or due to a total malfunction of the class 2 serial data circuit. The specified procedure will determine the particular condition.

3: This step tests for valid system power moding in all ignition switch positions

5: The presence of DTCs which begin with "U" indicate some other module is not communicating. The specified procedure will compile all the available information before tests are performed.

Diagnostic System Check - Wiper/Washer

Step	Action	Yes	No
1	Install a scan tool. Does the scan tool power up?	Go to Step 2	Go to <u>Scan Tool Does Not Power Up</u> in Data Link Communications
2	1. Turn the ignition ON. 2. Attempt to establish communication with the following systems: • Dash integration module • Radio Does the scan tool communicate with the systems listed?	Go to Step 3	Go to <u>Scan Tool Does Not Communicate with Class 2 Device</u> in Data Link Communications
	IMPORTANT: The engine may start during the following step. Turn OFF the engine as soon as you have observed the		

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3	Crank power mode. 1. Access the Class 2 Power Mode parameter in the Diagnostic Circuit Check menu on the scan tool. 2. Rotate the ignition switch through all positions while observing the Class 2 Power Mode parameter. Does the Class 2 Power Mode parameter reading match the ignition switch position for all switch positions?	Go to Step 4	Go to <u>Power Mode Mismatch</u> in Body Control System
4	Select the display the DTC function for the following systems: • Dash integration module • Radio Does the scan tool display any DTCs?	Go to Step 5	Go to <u>Symptoms - Wiper/Washer Systems</u>
5	Does the scan tool display any DTCs which begin with a "U"?	Go to <u>Scan Tool Does Not Communicate with Class 2 Device</u> in Data Link Communications	Go to Step 6
6	Does the scan tool display DTCs B1000, B1004, B1007, or B1009?	Go to <u>Diagnostic Trouble Code (DTC) List</u> in Body Control System	Go to Step 7
7	Does the scan tool display DTCs B1327 or B1328?	Go to <u>Diagnostic Trouble Code (DTC) List</u> in Engine Electrical	Go to <u>Symptoms - Wiper/Washer Systems</u>

SYMPTOMS - WIPER/WASHER SYSTEMS

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

1. Perform the **Diagnostic System Check - Wiper/Washer** 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 the following:
 - **Wiper/Washer System Description and Operation**
 - **Headlamp Washer System Description and Operation**

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the Windshield Wiper/Washer System. Refer to **Checking Aftermarket Accessories** in Wiring Systems.
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.
- Inspect the washer fluid 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** in Wiring Systems.

Symptom List

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

- **Low Washer Fluid Indicator Malfunction**
- **Washers Always On**
- **Washers Inoperative (With XA7 Heated Washer Nozzles)** or **Washers Inoperative (Without XA7)**
- **Wipers Always On**
- **Wipers Inoperative - All Modes**

- Wipers Inoperative - One or More Modes
- Washers Inoperative - Headlamp

LOW WASHER FLUID INDICATOR MALFUNCTION

Low Washer Fluid Indicator Malfunction

Step	Action	Yes	No
Schematic Reference: <u>Wiper/Washer System Schematics</u> Connector End View Reference: <u>Wiper/Washer System Connector End Views</u> DEFINITION: The check washer fluid message is always displayed or does not display with low washer fluid.			
1	Did you perform the Wiper/Washer Diagnostic System Check?	Go to Step 2	Go to <u>Diagnostic System Check - Wiper/Washer</u>
2	Verify the fault is present. Does the system operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems	Go to Step 3
3	1. Turn the ignition OFF. 2. Disconnect the washer fluid level switch connector. 3. Turn the ignition ON. Does the radio display the check washer fluid message?	Go to Step 7	Go to Step 4
4	1. Turn the ignition OFF. 2. Connect a fused jumper wire from the washer fluid level switch signal circuit terminal in the washer fluid level switch connector to a good ground. 3. Turn the ignition ON. Does the radio display the check washer fluid message?	Go to Step 6	Go to Step 5
	1. Install a scan tool.		

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5	2. Display the dash integration module inputs data list. Is the washer fluid level switch parameter displayed as low?	Go to Step 15	Go to Step 9
6	1. Turn the ignition OFF. 2. Connect a fused jumper wire across the washer fluid level switch harness connector terminals. 3. Turn the ignition ON. Does the radio display the check washer fluid message?	Go to Step 11	Go to Step 10
7	1. Install a scan tool. 2. Display the dash integration module inputs data list. Is the washer fluid level switch parameter displayed as low?	Go to Step 8	Go to Step 15
8	Test the washer fluid level switch signal circuit for a short to ground. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 17	Go to Step 13
9	Test the washer fluid level switch signal circuit for an open or high resistance. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 17	Go to Step 13
10	Repair the washer fluid level switch ground circuit for an open or high resistance. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Is the repair complete?	Go to Step 17	-
11	Inspect for poor connections at the washer fluid level switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems.		

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	Did you find and correct the condition?	Go to Step 17	Go to Step 12
12	Replace the washer fluid level switch. Is the repair complete?	Go to Step 17	-
13	Inspect for poor connections at the dash integration module. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 17	Go to Step 14
14	IMPORTANT: Perform the programming or setup procedure for the dash integration module. Replace the dash integration module. Refer to <u>Dash Integration Module Replacement</u> in Body Control System. Is the repair complete?	Go to Step 17	-
15	Inspect for poor connections at the radio. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 17	Go to Step 16
16	Replace the radio. Refer to <u>Radio Replacement</u> in Entertainment. Is the repair complete?	Go to Step 17	-
17	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

WASHERS ALWAYS ON

Washers Always On

Step	Action	Yes	No
Schematic Reference: <u>Wiper/Washer System Schematics</u> Connector End View Reference: <u>Wiper/Washer System Connector End Views</u>			
1	Did you perform the Wiper/Washer Diagnostic System Check?	Go to Step 2	Go to <u>Diagnostic System Check - Wiper/Washer</u>
	Turn the ignition ON.		Go to Testing for

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2	Are the windshield washers always ON?	Go to Step 3	<u>Intermittent Conditions and Poor Connections</u> in Wiring Systems
3	Are the windshield wipers always ON?	Go to Step 4	Go to Step 6
4	Remove the WPR SW 10A fuse. Are the windshield washers always ON?	Go to Step 5	Go to Step 7
5	Test the windshield wiper switch signal 2 circuit for a short to voltage. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 11	Go to Step 9
6	Test the windshield washer pump control circuit for a short to voltage. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 11	Go to Step 9
7	Inspect for poor connections at the windshield wiper/washer switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 11	Go to Step 8
8	Replace the windshield wiper/washer switch. Refer to <u>Multifunction, Turn Signal Switch Replacement</u> in Steering Wheel and Column. Is the repair complete?	Go to Step 11	-
9	Inspect for poor connections at the windshield wiper motor. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 11	Go to Step 10
10	Replace the windshield wiper motor module. Refer to <u>Wiper Motor Cover Replacement - Front</u> . Is the repair complete?	Go to Step 11	-

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11	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3
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WASHERS INOPERATIVE (WITH XA7 HEATED WASHER NOZZLES)

Washers Inoperative (With XA7 Heated Washer Nozzles)

Step	Action	Yes	No
Schematic Reference: <u>Wiper/Washer System Schematics</u>			
Connector End View Reference: <u>Wiper/Washer System Connector End Views</u>			
1	Did you perform the Wiper/Washer Diagnostic System Check?	Go to Step 2	Go to Diagnostic System Check - Wiper/Washer
2	1. Turn the ignition ON. 2. Press the windshield washer switch. Do the windshield washers operate normally?	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems	Go to Step 3
3	While listening for washer pump operation press the windshield washer switch. Does the washer pump operate when the washer switch is pressed?	Go to Step 10	Go to Step 4
4	Do the windshield wipers operate when the washer switch is pressed?	Go to Step 5	Go to Step 8
5	1. Disconnect the windshield washer pump connector. 2. Connect a test lamp across the washer pump connector terminals. 3. Turn the ignition ON. 4. Press the windshield washer switch. Does the test lamp illuminate?	Go to Step 15	Go to Step 6
6	Test the windshield washer pump ground circuit for an open or high resistance. Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 21	Go to Step 7

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7	1. Disconnect the windshield wiper motor connector. 2. Test the windshield washer pump control circuit for an open or short to ground. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 21	Go to Step 17
8	1. Disconnect the windshield wiper motor connector. 2. Connect a test lamp from the windshield wiper switch signal 2 circuit terminal in the wiper motor harness connector to ground. 3. Turn the ignition ON. 4. Press the windshield washer switch. Does the test lamp illuminate?	Go to Step 17	Go to Step 9
9	Test the windshield wiper switch signal 2 circuit for high resistance. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 21	Go to Step 13
10	1. Disconnect an inoperative heated washer nozzle connector. 2. Connect a test lamp from the ignition 1 voltage circuit terminal in the harness connector to a good ground. 3. Turn the ignition ON. Does the test lamp illuminate?	Go to Step 12	Go to Step 11
11	Repair the ignition 1 voltage circuit for an open or short to ground. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Is the repair complete?	Go to Step 21	-
	Test the heated washer nozzle ground circuit		

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12	for an open or high resistance. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 21	Go to Step 19
13	Inspect for poor connections at the windshield wiper/washer switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 21	Go to Step 14
14	Replace the windshield wiper/washer switch. Refer to <u>Multifunction, Turn Signal Switch Replacement</u> in Steering Wheel and Column. Is the repair complete?	Go to Step 21	-
15	Inspect for poor connections at the windshield washer pump. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 21	Go to Step 16
16	Replace the windshield washer pump. Refer to <u>Washer Pump Replacement - Windshield</u> . Is the repair complete?	Go to Step 21	-
17	Inspect for poor connections at the windshield wiper motor. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 21	Go to Step 18
18	Replace the windshield wiper motor cover. Refer to <u>Wiper Motor Cover Replacement - Front</u> . Is the repair complete?	Go to Step 21	-
19	Inspect for poor connections at the heated washer nozzle. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems.		

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	Did you find and correct the condition?	Go to Step 21	Go to Step 20
20	Replace the inoperative heated washer nozzle. Refer to <u>Washer Nozzle Replacement - Front.</u> Is the repair complete?	Go to Step 21	-
21	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

WASHERS INOPERATIVE (WITHOUT XA7)

Washers Inoperative (Without XA7)

Step	Action	Yes	No
Schematic Reference: <u>Wiper/Washer System Schematics</u>			
Connector End View Reference: <u>Wiper/Washer System Connector End Views</u>			
1	Did you perform the Wiper/Washer Diagnostic System Check?	Go to Step 2	Go to <u>Diagnostic System Check - Wiper/Washer</u>
2	1. Turn the ignition ON. 2. Press the windshield washer switch. Do the windshield washers operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems	Go to Step 3
3	Do the wipers operate when the windshield washer switch is pressed?	Go to Step 4	Go to <u>Wipers Inoperative - One or More Modes</u>
4	1. Turn OFF the ignition. 2. Disconnect the harness connector of the windshield washer pump. 3. Connect a test lamp between the control circuit and the ground circuit of the windshield washer pump. 4. Turn the ignition ON. 5. Press the windshield washer switch.		

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	Does the test lamp illuminate?	Go to Step 7	Go to Step 5
5	1. Connect a test lamp from the control circuit of the windshield washer pump to a good ground. 2. Press the windshield washer switch.		
	Does the test lamp illuminate?	Go to Step 9	Go to Step 6
6	Test the control circuit of the windshield washer pump for an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 12	Go to Step 8
7	Inspect for poor connections at the harness connector of the windshield washer pump. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 12	Go to Step 10
8	Inspect for poor connections at the harness connector of the windshield wiper motor. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 12	Go to Step 11
9	Repair an open or high resistance in the ground circuit of the windshield washer pump. Refer to <u>Wiring Repairs</u> in Wiring Systems. Did you complete the repair?	Go to Step 12	-
10	Replace the windshield washer pump. Refer to <u>Washer Pump Replacement - Windshield</u> . Did you complete the replacement?	Go to Step 12	-
11	Replace the windshield wiper motor cover. Refer to <u>Wiper Motor Cover Replacement - Front</u> . Did you complete the replacement?	Go to Step 12	-
12	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

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WIPERS ALWAYS ON

Wipers Always On

Step	Action	Yes	No
Schematic Reference: <u>Symptoms - Wiper/Washer Systems</u>			
Connector End View Reference: <u>Wiper/Washer System Connector End Views</u>			
1	Did you perform the Wiper/Washer Diagnostic System Check?	Go to Step 2	Go to <u>Diagnostic System Check - Wiper/Washer</u>
2	1. Turn the ignition ON. 2. Turn the windshield wiper/washer switch OFF. Are the windshield wipers always ON?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems	Go to Step 3
3	Remove the WPR SW 10A fuse. Are the windshield wipers always ON?	Go to Step 4	Go to Step 7
4	1. Disconnect the windshield wiper motor connector. 2. Test the windshield wiper switch signal 1 circuit for a short to voltage. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 11	Go to Step 5
5	Test the windshield wiper switch signal 2 circuit for a short to voltage. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 11	Go to Step 6
6	Test the windshield wiper motor high speed circuit for a short to voltage. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 11	Go to Step 9
7	Inspect for poor connections at the windshield wiper/washer switch. Refer to <u>Testing for Intermittent Conditions and Poor</u>		

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	Connections and to Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 11	Go to Step 8
8	Replace the windshield wiper/washer switch. Refer to Multifunction, Turn Signal Switch Replacement in Steering Wheel and Column. Is the repair complete?	Go to Step 11	-
9	Inspect for poor connections at the windshield wiper motor. Refer to Testing for Intermittent Conditions and Poor Connections and to Connector Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 11	Go to Step 10
10	Replace the windshield wiper motor cover. Refer to Wiper Motor Cover Replacement - Front . Is the repair complete?	Go to Step 11	-
11	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

WIPERS INOPERATIVE - ALL MODES

Wipers Inoperative - All Modes

Step	Action	Yes	No
Schematic Reference: <u>Wiper/Washer System Schematics</u> Connector End View Reference: <u>Wiper/Washer System Connector End Views</u>			
1	Did you perform the Wiper/Washer Diagnostic System Check?	Go to Step 2	Go to Diagnostic System Check - Wiper/Washer
2	1. Turn the ignition ON, with the engine OFF. 2. Turn the windshield wiper/washer switch through all the switch positions. Does the windshield wiper/washer system operate normally?	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems	Go to Step 3
	1. Turn OFF the ignition.		

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3	- Disconnect the harness connector of the windshield wiper motor. - Turn the ignition ON, with the engine OFF. - Connect a test lamp from the accessory voltage circuit to the ground circuit of the windshield wiper motor. Does the test lamp illuminate?	Go to Step 5	Go to Step 4
4	Connect a test lamp from the accessory voltage circuit of the windshield wiper motor to a good ground. Does the test lamp illuminate?	Go to Step 15	Go to Step 7
5	- Connect the test lamp from the windshield wiper switch signal 2 circuit to a good ground. - Press the windshield washer switch. Does the test lamp illuminate?	Go to Step 13	Go to Step 6
6	- Turn OFF the ignition. - Disconnect the harness connector of the windshield wiper/washer switch. - Turn the ignition ON. - Connect a test lamp from the accessory voltage circuit of the windshield wiper/washer switch to a good ground. Does the test lamp illuminate?	Go to Step 14	Go to Step 9
7	Test the windshield wiper motor accessory voltage circuit for an open or short to ground. Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	Go to Step 18	Go to Step 8
8	Test the windshield washer pump control circuit for a short to ground. Refer to Circuit Testing and to Wiring Repairs in Wiring Systems.		

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	Did you find and correct the condition?	Go to Step 18	Go to Step 13
9	Test the windshield wiper/washer switch accessory voltage circuit for an open or short to ground. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 18	Go to Step 10
10	Test the windshield wiper motor high speed circuit for a short to ground. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 18	Go to Step 11
11	Test the windshield wiper switch signal 1 circuit for a short to ground. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 18	Go to Step 12
12	Test the windshield wiper switch signal 2 circuit for a short to ground. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 18	Go to Step 13
13	Inspect for poor connections at the windshield wiper motor. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 18	Go to Step 16
14	Inspect for poor connections at the windshield wiper/washer switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 18	Go to Step 17
15	Repair the windshield wiper motor ground circuit for an open or high resistance. Refer to <u>Wiring Repairs</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you complete the repair?	Go to Step 18	-

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16	Replace the windshield wiper motor. Refer to <u>Wiper Motor Replacement</u> . Did you complete the replacement?	Go to Step 18	-
17	Replace the windshield wiper/washer switch. Refer to <u>Multifunction, Turn Signal Switch Replacement</u> in Steering Wheel and Column. Did you complete the replacement?	Go to Step 18	-
18	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

WIPERS INOPERATIVE - ONE OR MORE MODES

Test Description

The numbers below refer to the step numbers on the diagnostic table.

7: This step tests for continuity through the 24K ohms resistor in the windshield wiper/washer switch. The connector behind the instrument panel knee bolster is suitable for performing this step.

8: This step tests for continuity through the delay resistors in the windshield wiper/washer switch. The measured resistance will change in sequence from high to low as the delay speed is increased. The connector behind the instrument panel knee bolster is suitable for performing this step.

Wipers Inoperative - One or More Modes

Step	Action	Values	Yes	No
Schematic Reference: <u>Wiper/Washer System Schematics</u>				
Connector End View Reference: <u>Wiper/Washer System Connector End Views</u>				
1	Did you perform the Wiper/Washer Diagnostic System Check?	-	Go to Step 2	Go to <u>Diagnostic System Check</u> = <u>Wiper/Washer</u>
2	1. Turn the ignition ON. 2. Operate the windshield wiper/washer switch through all the switch positions.	-	Go to <u>Testing for Intermittent Conditions and Poor</u>	

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	Does the windshield wiper/washer system operate normally?		Connections in Wiring Systems	Go to Step 3
3	Do the windshield wipers operate in the high speed mode?	-	Go to Step 5	Go to Step 4
4	1. Disconnect the windshield wiper motor connector. 2. Connect a test lamp from the windshield wiper motor high speed circuit terminal to ground. 3. Turn the ignition ON. 4. Operate the windshield wiper/washer switch to the high speed position. Does the test lamp illuminate?	-	Go to Step 14	Go to Step 9
5	1. Disconnect the windshield wiper motor connector. 2. Connect a test lamp from the windshield wiper switch signal 2 circuit terminal to ground. 3. Turn the ignition ON. 4. Press the windshield washer switch. Does the test lamp illuminate?	-	Go to Step 6	Go to Step 10
6	1. Connect a test lamp from the windshield wiper switch signal 1 circuit terminal to ground. 2. Operate the windshield wiper/washer switch to the following positions: • MIST • LO • HI	-		

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	Does the test lamp illuminate in the listed switch positions?		Go to Step 7	Go to Step 11
7	1. Disconnect the windshield wiper/washer switch connector. 2. Measure the resistance through the windshield wiper/washer switch from the signal 2 circuit terminal to the accessory voltage circuit terminal of the wiper/washer switch. 3. Operate the windshield wiper/washer switch to the following positions: • MIST • INT • LO • HI Is the resistance at or near the specified value in all the listed switch positions?	24K ohms		
8	1. Measure the resistance through the windshield wiper/washer switch from the signal 1 circuit terminal to the accessory voltage circuit terminal of the wiper/washer switch. 2. Operate the windshield wiper/washer switch through all of the delay positions. Does the resistance remain within the specified values from high to low as the delay speed is increased?	38K - 690K ohms		
9	Test the windshield wiper motor high speed circuit for an open or high resistance. Refer to Circuit Testing and to Wiring Repairs in Wiring Systems.	-		

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	Did you find and correct the condition?		Go to Step 16	Go to Step 12
10	Test the windshield wiper switch signal 2 circuit for an open or short to ground. Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 16	Go to Step 12
11	Test the windshield wiper switch signal 1 circuit for an open or short to ground. Refer to Circuit Testing and to Wiring Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 16	Go to Step 12
12	Inspect for poor connections at the windshield wiper/washer switch. Refer to Testing for Intermittent Conditions and Poor Connections and to Connector Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 16	Go to Step 13
13	Replace the windshield wiper/washer switch. Refer to Multifunction, Turn Signal Switch Replacement in Steering Wheel and Column. Is the repair complete?	-	Go to Step 16	-
14	Inspect for poor connections at the windshield wiper motor. Refer to Testing for Intermittent Conditions and Poor Connections and to Connector Repairs in Wiring Systems. Did you find and correct the condition?	-	Go to Step 16	Go to Step 15
15	Replace the windshield wiper motor cover. Refer to Wiper Motor Cover Replacement - Front . Is the repair complete?	-	Go to Step 16	-
16	Operate the system in order to verify the repair. Did you correct the condition?	-	System OK	Go to Step 3

WASHER ALWAYS ON - REAR

Washer Always On - Rear

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Step	Action	Yes	No
Schematic Reference: <u>Wiper/Washer System Schematics</u>			
Connector End View Reference: <u>Wiper/Washer System Connector End Views</u>			
1	Did you review the <u>Wiper/Washer System Description and Operation</u> and perform the necessary inspections?	Go to Step 2	Go to Diagnostic Starting Point - Wiper/Washer Systems
2	1. Disconnect the wiper/washer switch connector. 2. Turn the ignition switch ON, engine OFF. Is the washer still on?	Go to Step 3	Go to Step 4
3	Test the control circuit between the wiper/washer switch and the Rear Window Wiper Module for a short to voltage. Refer to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 7	Go to Step 5
4	Replace the wiper/washer switch. Refer to <u>Wipers/Washer Switch Replacement</u> . Is the replacement complete?	Go to Step 7	-
5	Test the control circuit between the Rear Window Washer Fluid Pump and the Rear Window Wiper Module for a short to voltage. Refer to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 7	Go to Step 6
6	Replace the Rear Window Wiper Module. Refer to <u>Wiper Motor Replacement - Liftgate</u> . Is the replacement complete?	Go to Step 7	-
7	Operate the system in order to verify the repair. Did you correct the condition?	System OK	-

WASHER INOPERATIVE - REAR

Washer Inoperative - Rear

Step	Action	Yes	No
Schematic Reference: <u>Wiper/Washer System Schematics</u>			
Connector End View Reference: <u>Wiper/Washer System Connector End Views</u>			

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1	Did you review the Rear Wiper/Washer System Description and Operation and perform the necessary inspections?	Go to Step 2	Go to <u>Symptoms - Wiper/Washer Systems</u>
2	1. Turn the ignition ON. 2. Press the rear washer switch. Does the rear washer operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems	Go to Step 3
3	Does the rear wiper operate when the washer switch is pressed?	Go to Step 4	Go to <u>Wiper Inoperative - Rear</u>
4	1. Turn OFF the ignition. 2. Disconnect the rear washer pump connector. 3. Connect a test lamp from the rear washer control circuit to the ground circuit of the washer pump. 4. Turn the ignition ON, with the engine OFF. 5. Press the rear washer switch. Does the test lamp illuminate when the rear washer switch is pressed?	Go to Step 8	Go to Step 5
5	1. Connect a test lamp from the rear washer control circuit of the washer pump to a good ground. 2. Press the rear washer switch. Does the test lamp illuminate when the rear washer switch is pressed?	Go to Step 7	Go to Step 6
6	Repair the rear washer control circuit for an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you complete the repair?	Go to Step 10	-
	Repair the rear washer pump ground circuit for		

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7	an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you complete the repair?	Go to Step 10	-
8	Inspect for poor connections at the rear washer pump. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 10	Go to Step 9
9	Replace the rear washer pump. Refer to <u>Washer Pump Replacement - Rear</u> . Did you complete the replacement?	Go to Step 10	-
10	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

WASHERS INOPERATIVE - HEADLAMP

Washers Inoperative - Headlamp

Step	Action	Yes	No
Schematic Reference: <u>Wiper/Washer System Schematics</u> Connector End View Reference: <u>Wiper/Washer System Connector End Views</u> DEFINITION: The headlamp washers are inoperative. The windshield washers and headlamps operate normally. The CHECK WASHER FLUID LEVEL message isn't displayed.			
1	Did you perform the Wiper/Washer Diagnostic System Check?	Go to Step 2	Go to <u>Diagnostic System Check - Wiper/Washer</u>
2	1. Turn the ignition ON, with the engine OFF. 2. Turn the headlamps ON. 3. Press the windshield washer switch. Do the headlamp washers operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
	1. Turn OFF the ignition. 2. Turn the headlamps OFF. 3. Disconnect the headlamp washer relay.		

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3	4. Turn the ignition ON, with the engine OFF. 5. Connect a test lamp from the windshield washer pump control circuit to a good ground. 6. Press the windshield washer switch. Does the test lamp illuminate?	Go to Step 4	Go to Step 14
4	Connect a test lamp from the battery voltage circuit of the headlamp washer relay switched input to a good ground. Does the test lamp illuminate?	Go to Step 5	Go to Step 9
5	1. Connect a test lamp from the battery voltage circuit of the headlamp washer relay switched input to the ground circuit of the headlamp washer relay. 2. Turn the headlamps ON. Does the test lamp illuminate?	Go to Step 6	Go to Step 10
6	Connect a 30 ampere fused jumper wire from battery voltage to the headlamp washer relay switched input to relay switched output to the supply voltage circuit of the headlamp washer pump Does the headlamp washer pump operate?	Go to Step 11	Go to Step 7
7	1. Disconnect the harness connector of the headlamp washer pump. 2. Connect a test lamp from the supply voltage circuit to the ground circuit of headlamp washer pump. Does the test lamp illuminate?	Go to Step 12	Go to Step 8
8	Connect a test lamp from the supply voltage circuit of headlamp washer pump to a good ground. Does the test lamp illuminate?	Go to Step 17	Go to Step 16
	Test the battery voltage circuit of the headlamp washer relay switched input for an open or		

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9	short to ground. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 21	Go to Step 15
10	Test the ground circuit of the headlamp washer relay for an open or short to voltage. Refer to <u>Circuit Testing</u> and to <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 21	Go to Step 13
11	Inspect for poor connections at the headlamp washer relay. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 21	Go to Step 18
12	Inspect for poor connections at the headlamp washer pump. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 21	Go to Step 19
13	Inspect for poor connections at the dash integration module. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and to <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 21	Go to Step 20
14	Repair the windshield washer pump control circuit for an open or short to ground. Refer to <u>Wiring Repairs</u> and to <u>Connector Repairs</u> in Wiring Systems. Is the repair complete?	Go to Step 21	-
15	Repair a short to ground on the windshield washer pump supply voltage circuit. Refer to <u>Wiring Repairs</u> and to <u>Connector Repairs</u> in Wiring Systems. Is the repair complete?	Go to Step 21	-
	Repair an open or high resistance on the windshield washer pump supply voltage		

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16	circuit. Refer to Wiring Repairs and to Connector Repairs in Wiring Systems. Is the repair complete?	Go to Step 21	-
17	Repair an open or high resistance on the windshield washer pump ground circuit. Refer to Wiring Repairs and to Connector Repairs in Wiring Systems. Is the repair complete?	Go to Step 21	-
18	Replace the headlamp washer relay. Is the repair complete?	Go to Step 21	-
19	Replace the headlamp washer pump. Refer to Washer Pump Replacement - Headlamp . Is the repair complete?	Go to Step 21	-
20	IMPORTANT: Perform the programming or setup procedure for the dash integration module. Replace the dash integration module. Refer to Dash Integration Module Replacement in Body Control System. Is the repair complete?	Go to Step 21	-
21	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

WIPER ALWAYS ON - REAR

Wiper Always On - Rear

Step	Action	Yes	No
Schematic Reference: <u>Wiper/Washer System Schematics</u> Connector End View Reference: <u>Wiper/Washer System Connector End Views</u>			
1	Did you review the Rear Wiper/Washer System Description and Operation and perform the necessary inspections?	Go to Step 2	Go to Symptoms - Wiper/Washer Systems
2	1. Turn the ignition ON. 2. Turn the rear wiper/washer switch to the OFF position. Is the rear wiper always on?	Go to Step 3	Go to Testing for Intermittent Conditions and Poor Connections in Wiring Systems

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3	1. Disconnect the rear wiper motor connector. 2. Turn the rear wiper/washer switch to the OFF position. 3. Connect a test lamp from the rear wiper switch signal circuit terminal in the rear wiper motor harness connector to ground. 4. Turn the ignition ON. Does the test lamp illuminate?	Go to Step 5	Go to Step 4
4	1. Connect a test lamp from the rear washer pump control circuit terminal in the rear wiper motor harness connector to ground. 2. Turn the ignition ON. Does the test lamp illuminate?	Go to Step 6	Go to Step 8
5	Test the rear wiper switch signal circuit for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 9	Go to Step 7
6	Test the rear washer pump control circuit for a short to voltage. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 9	Go to Step 7
7	Replace the rear wiper/washer switch. Is the repair complete?	Go to Step 9	-
8	Replace the rear wiper motor. Refer to <u>Wiper Motor Replacement - Liftgate</u>. Is the repair complete?	Go to Step 9	-
9	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

WIPER INOPERATIVE - REAR

Wiper Inoperative - Rear

Step	Action	Yes	No
Schematic Reference: <u>Wiper/Washer System Schematics</u>			

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Connector End View Reference: Wiper/Washer System Connector End Views

DEFINITION: The rear wiper motor is inoperative in one or more modes, the rear washer pump may or may not operate.

1	Did you review the Rear Wiper/Washer System Description and Operation and perform the necessary inspections?	Go to Step 2	Go to <u>Symptoms - Wiper/Washer Systems</u>
2	1. Turn the ignition ON, with the engine OFF. 2. Operate the rear wiper/washer system in all the switch positions. Does the rear wiper/washer system operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u> in Wiring Systems	Go to Step 3
3	Does the rear wiper motor operate when the rear washer switch is pressed?	Go to Step 9	Go to Step 4
4	1. Turn OFF the ignition. 2. Disconnect the harness connector of the rear wiper/washer switch. 3. Turn the ignition ON, with the engine OFF. 4. Connect a test lamp from the accessory voltage circuit of the rear wiper/washer switch to a good ground. Does the test lamp illuminate?	Go to Step 5	Go to Step 10
5	Connect a 3-ampere fused jumper from the accessory voltage circuit of the rear wiper switch to the signal circuit of the rear wiper motor. Does the rear wiper motor operate?	Go to Step 14	Go to Step 6
6	1. Turn OFF the ignition. 2. Disconnect the harness connector of the rear wiper motor. 3. Turn the ignition ON, with the engine OFF. 4. Connect a test lamp from the signal circuit of the rear wiper/washer switch to		

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	a good ground.		
	Does the test lamp illuminate?	Go to Step 7	Go to Step 17
7	Connect a test lamp from the accessory voltage circuit to the ground circuit of the rear wiper motor. Does the test lamp illuminate?	Go to Step 15	Go to Step 8
8	Connect a test lamp from the accessory voltage circuit of the rear wiper motor to a good ground. Does the test lamp illuminate?	Go to Step 19	Go to Step 18
9	1. Turn OFF the ignition. 2. Disconnect the harness connector of the rear wiper motor. 3. Turn the ignition ON, with the engine OFF. 4. Connect a test lamp from the signal circuit of the rear wiper/washer switch to a good ground. 5. Turn ON the rear wiper. Does the test lamp illuminate?	Go to Step 15	Go to Step 13
10	Test the accessory voltage circuit of the rear wiper/washer switch for an open or short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 22	Go to Step 11
11	Test the accessory voltage circuit of the rear wiper motor for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 22	Go to Step 12
12	Test the signal circuit of the rear wiper/washer switch for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 22	Go to Step 16
	Test the signal circuit of the rear wiper/washer		

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13	switch for an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 22	Go to Step 14
14	Inspect for poor connections at the rear wiper/washer switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 22	Go to Step 20
15	Inspect for poor connections at the rear wiper motor. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> in Wiring Systems. Did you find and correct the condition?	Go to Step 22	Go to Step 21
16	Repair a short to ground in the control circuit of the rear washer pump. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you complete the repair?	Go to Step 22	-
17	Repair an open or high resistance in the signal circuit of the rear wiper/washer switch. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you complete the repair?	Go to Step 22	-
18	Repair an open or high resistance in the accessory voltage circuit of the rear wiper motor. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you complete the repair?	Go to Step 22	-
19	Repair an open or high resistance in the ground circuit of the rear wiper motor. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> in Wiring Systems. Did you complete the repair?	Go to Step 22	-
20	Replace the rear wiper/washer switch. Refer to <u>Wipers/Washer Switch Replacement</u> . Did you complete the replacement?	Go to Step 22	-

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21	Replace the rear wiper motor. Refer to Wiper Motor Replacement - Liftgate . Did you complete the replacement?	Go to Step 22	-
22	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

WIPER ARM TIP PRESSURE CHECK

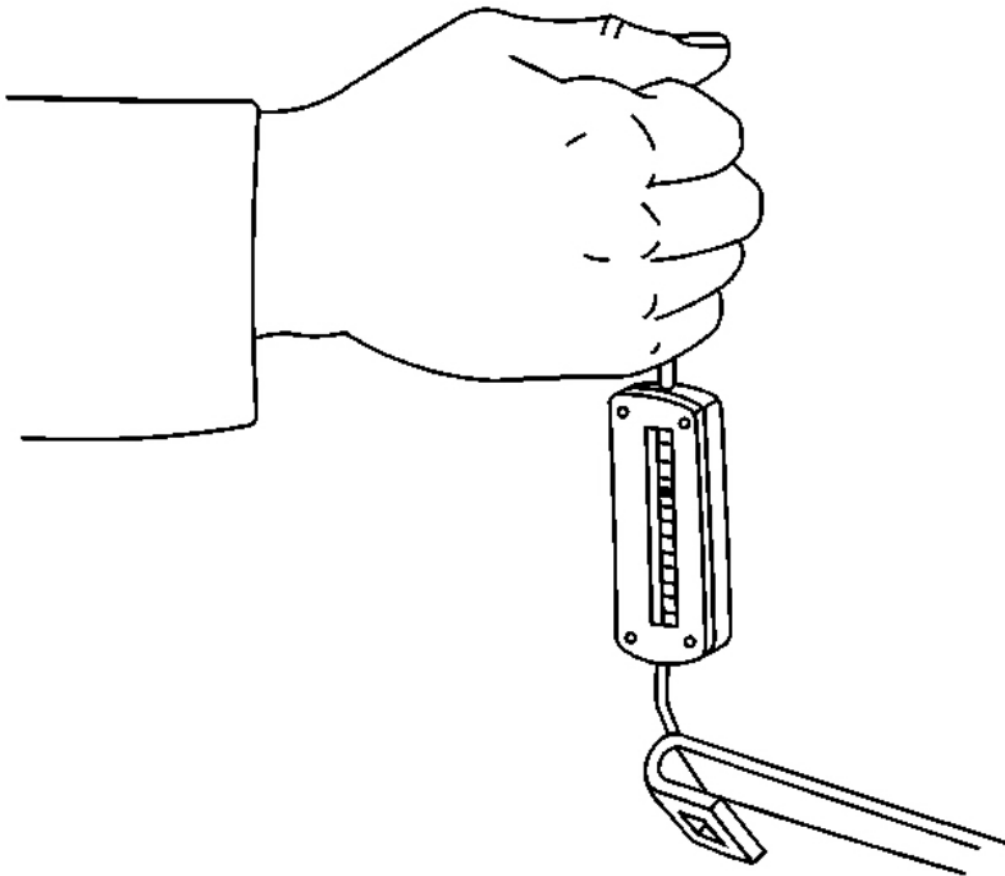


Fig. 11: Wiper Arm Tip Pressure Check
Courtesy of GENERAL MOTORS CORP.

1. Run the wiper arm and blade assemblies to the mid wipe position.

2. Remove the blade from the arm.
3. Attach a scale to the wiper arm tip and measure the force required to lift the arm perpendicular to the windshield to the normal working height of the arm (the height with the blade attached).

The force required should be between 8.3-10.1 N (30-36 oz).

4. Replace the arm if the tip pressure is not within specifications. Refer to **Wiper Arm Replacement**.

WIPER BLADE ELEMENT CHECK

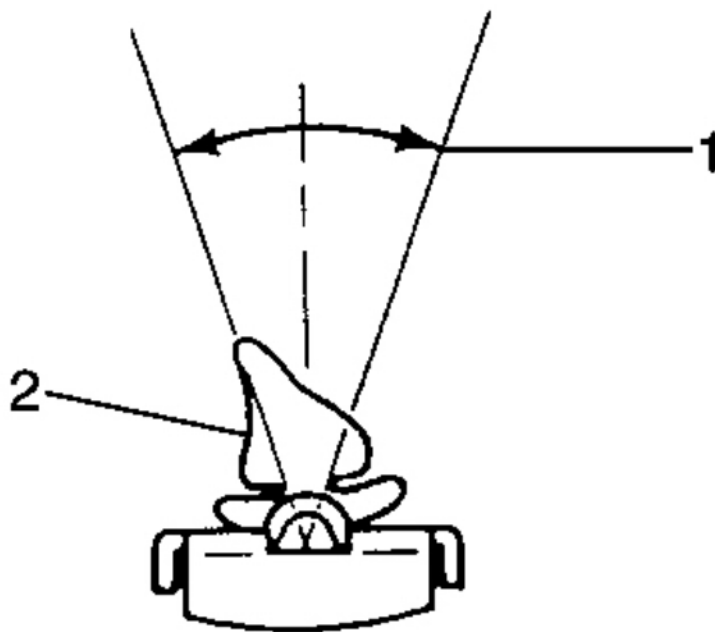


Fig. 12: Wiper Blade Element Check
Courtesy of GENERAL MOTORS CORP.

1. Remove the wiper blade from the wiper arm. Refer to **Wiper Arm Blade Replacement**.
2. Look down the entire length of the blade element.
3. The rubber part of the element (2) that contacts the window must be on the center line of the

blade plus or minus 15 degrees (1).

4. Replace the element (2) if the element exceeds 15 degrees from the centerline of the blade, or if the element is cracked or torn. Refer to **Wiper Blade Element Replacement (Driver Side)** or **Wiper Blade Element Replacement (Passenger Side)**
5. Install the wiper blade onto the wiper arm. Refer to **Wiper Arm Blade Replacement**.

REPAIR INSTRUCTIONS

WASHER SOLVENT CONTAINER REPLACEMENT

Removal Procedure

1. Open the hood.
2. Remove the washer solvent container cap from the container.

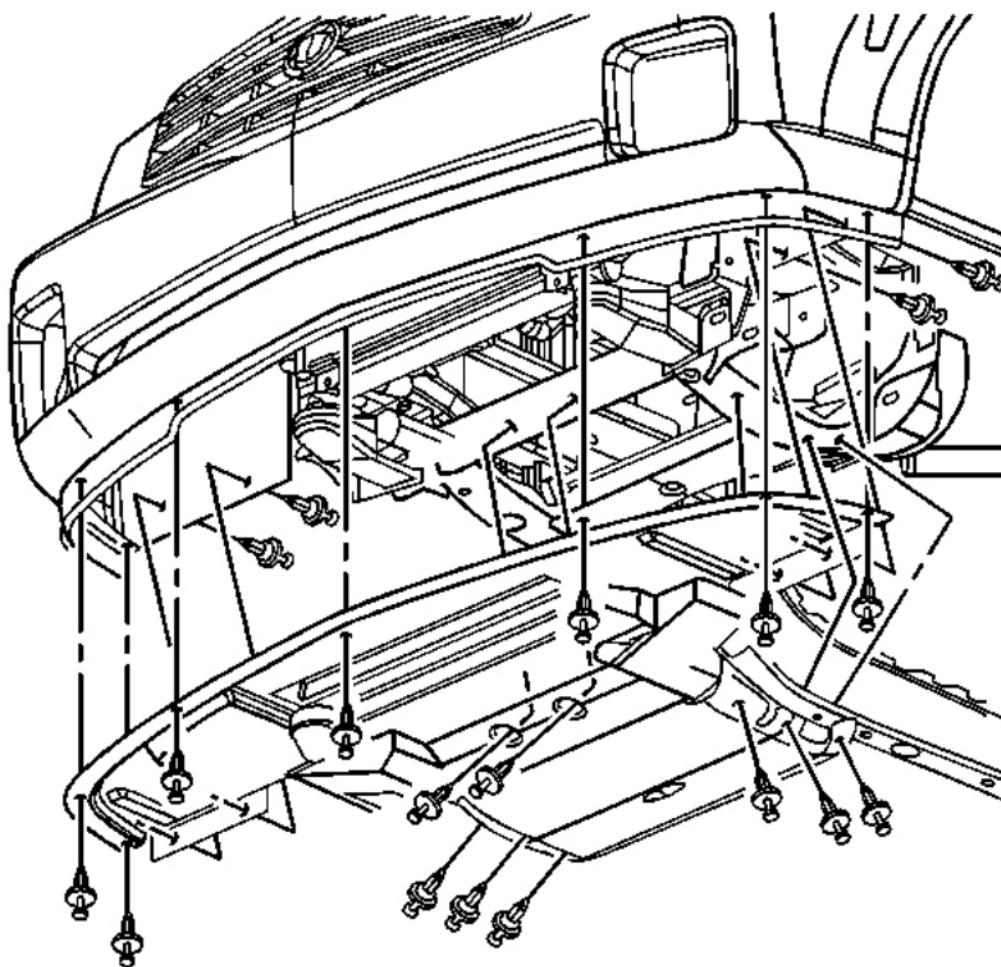


Fig. 13: Removing/Installing Lower Air Deflector
Courtesy of GENERAL MOTORS CORP.

3. Remove the lower air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.
4. Remove the front bumper fascia. Refer to **Fascia Replacement - Front Bumper** in Bumpers.
5. Remove the passenger side headlamp for LHD or the driver side headlamp for RHD. Refer to **Headlamp Assembly or Headlamp Bulb and/or Cornering, Sidemarkers, Park, Turn Signal Bulb Replacement** in Lighting Systems.

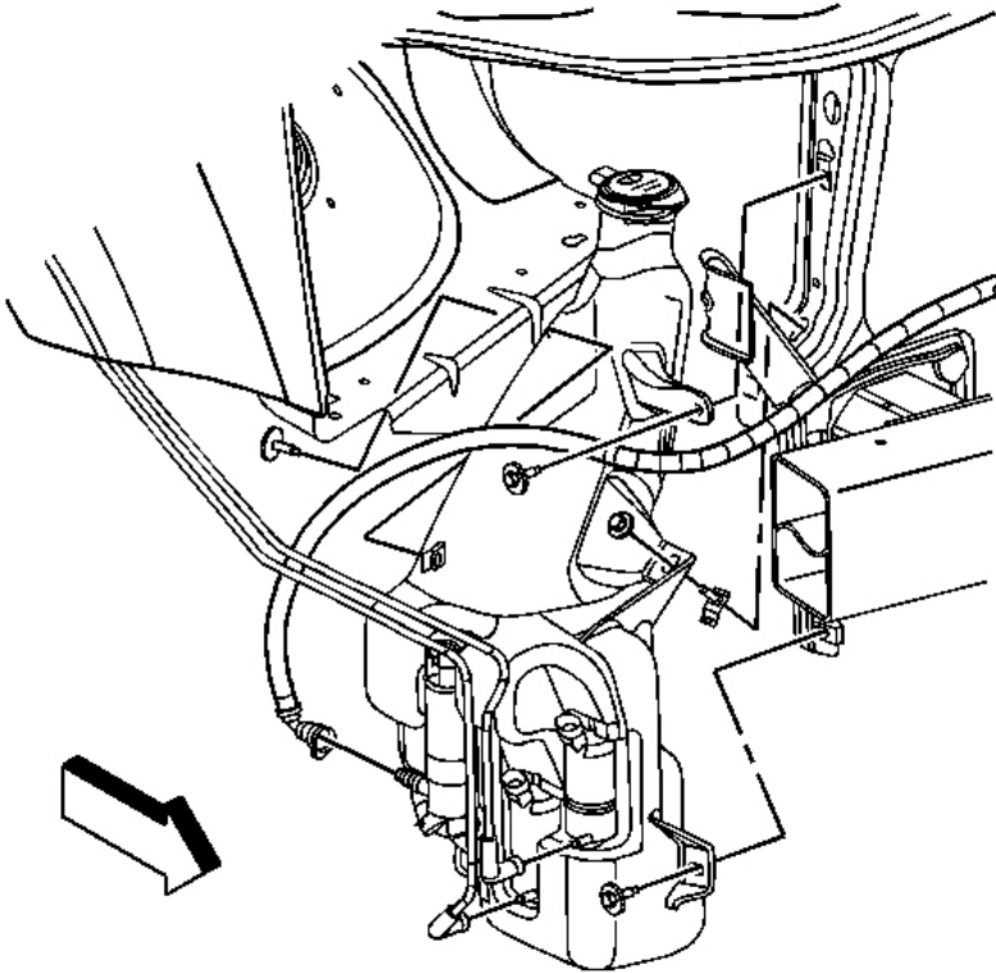


Fig. 14: View Of Washer Solvent Container
Courtesy of GENERAL MOTORS CORP.

6. Drain the solvent from the washer solvent container.
7. Disconnect the washer hoses from the washer pumps.
8. Disengage the electrical harness retainer clip from the washer solvent container.
9. Disconnect the electrical connectors from the washer pumps and washer solvent level sensor.
10. Remove the fasteners from the washer solvent container.

11. Guide the fill neck down through the radiator support.
12. Remove the washer solvent container from the vehicle.

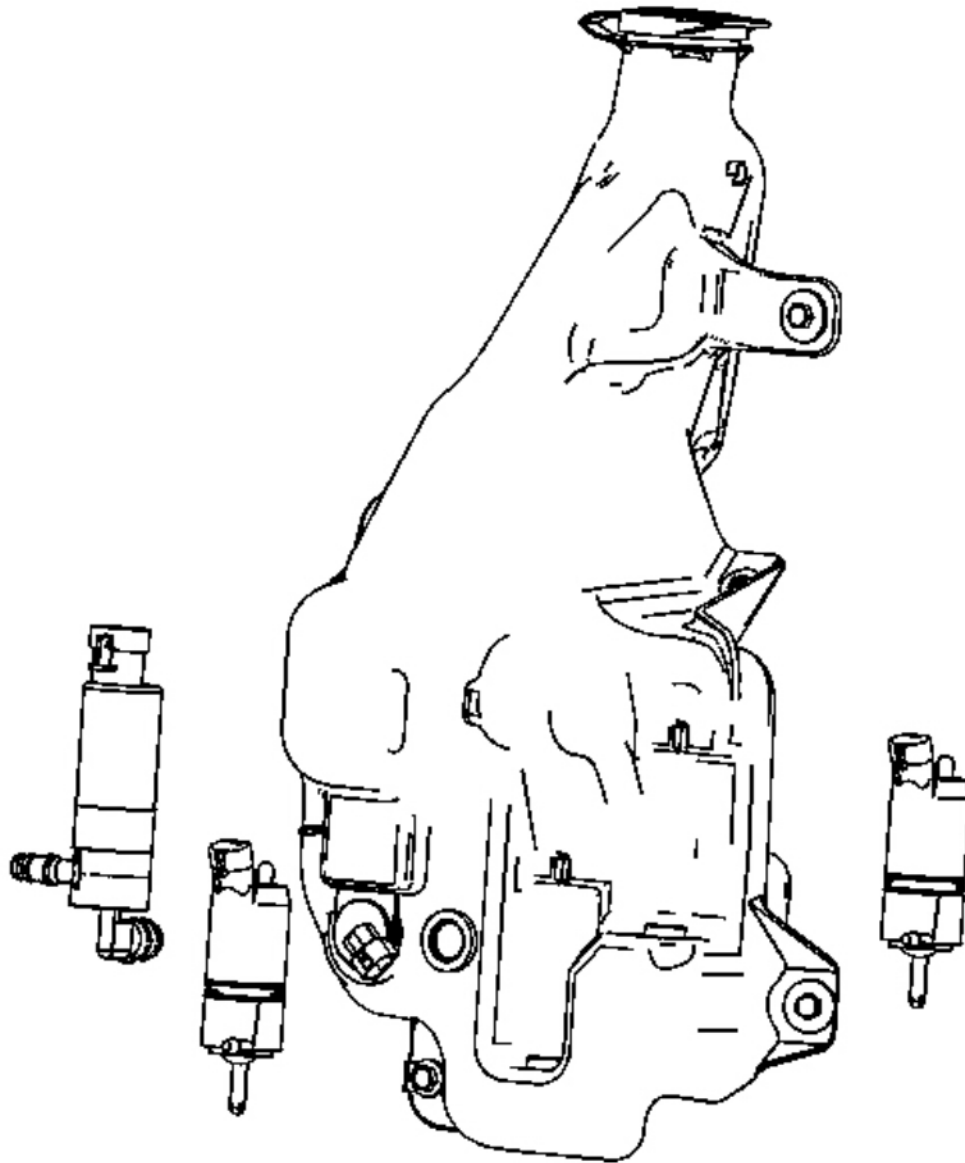


Fig. 15: View Of Washer Solvent Container & Exterior Components
Courtesy of GENERAL MOTORS CORP.

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13. Remove and transfer the following components from the washer solvent container:

- the washer pumps
- the washer level sensor
- the horizontal bracket
- the washer container cap

Installation Procedure

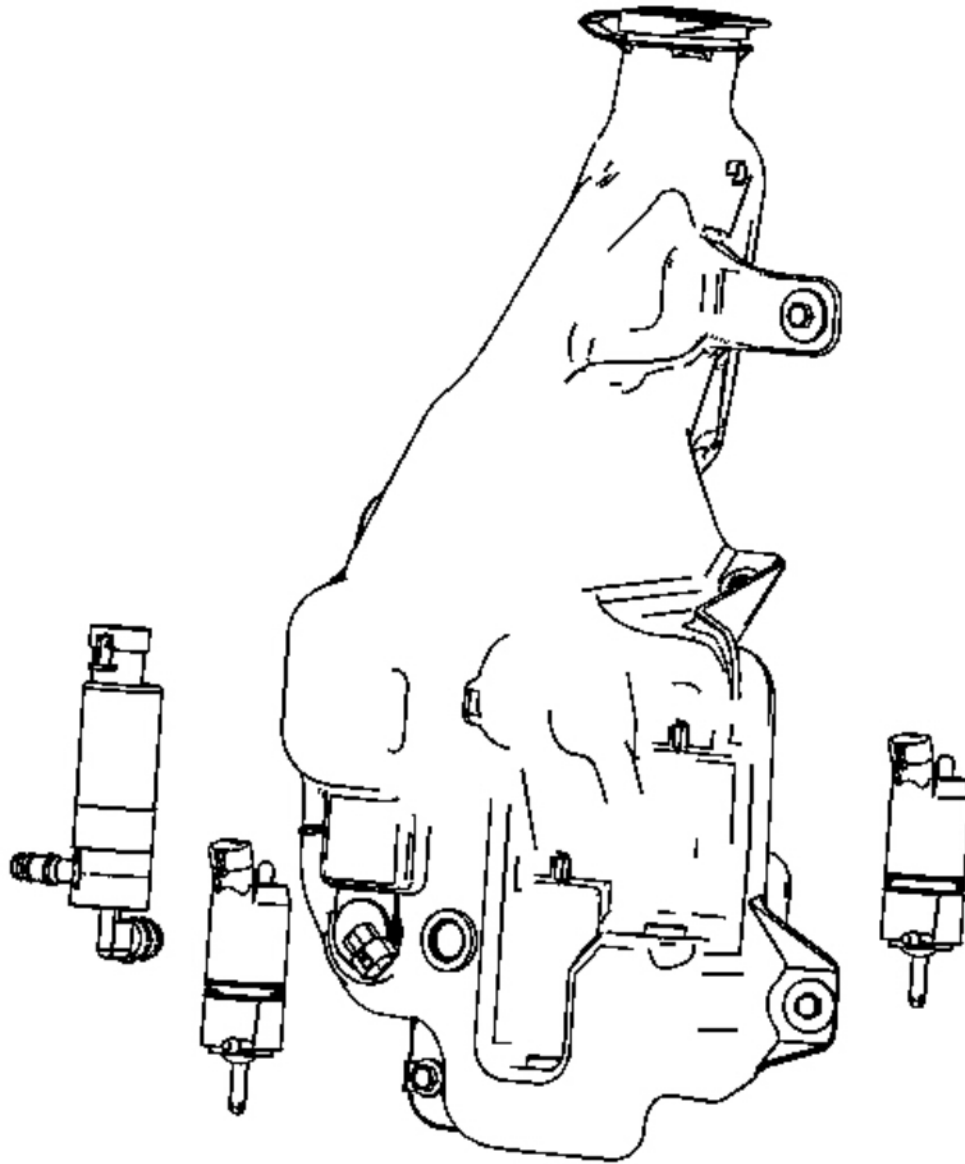


Fig. 16: View Of Washer Solvent Container & Exterior Components
Courtesy of GENERAL MOTORS CORP.

1. Install the following components to the washer solvent container:
 - the washer pumps

- the washer level sensor
- the horizontal bracket
- the washer container cap

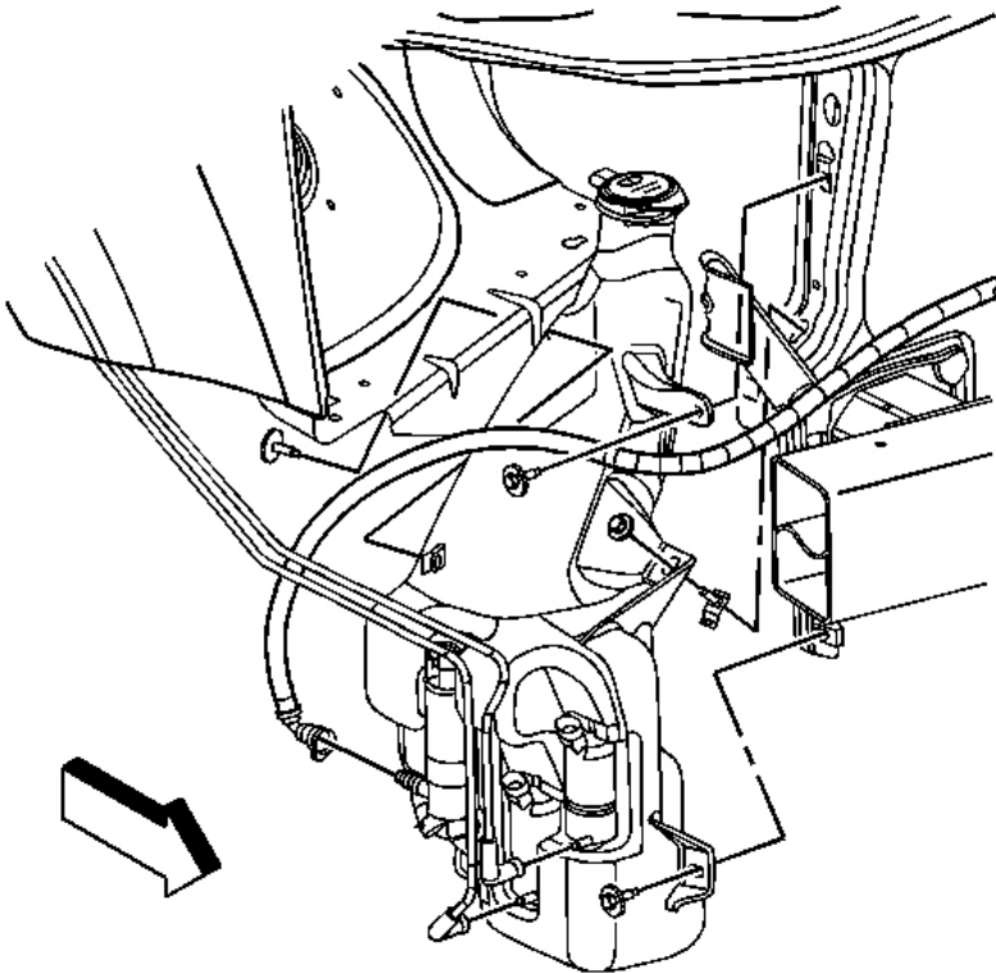


Fig. 17: View Of Washer Solvent Container
Courtesy of GENERAL MOTORS CORP.

2. Position the washer solvent container filler neck up through the radiator support.
3. Engage the electrical harness retainer clip to the washer solvent container.

NOTE: Refer to Fastener Notice in Cautions and Notices.

4. Install the solvent container fasteners.

Tighten: Tighten the solvent container fasteners to 6 N.m (53 lb in).

5. Connect the washer hoses to the washer pumps.
6. Connect the electrical connectors to the washer pumps.
7. Connect the electrical connector to the washer solvent level sensor.
8. Install the headlamp assembly. Refer to Headlamp Assembly or Headlamp Bulb and/or Cornering, Sidemarker, Park, Turn Signal Bulb Replacement in Lighting Systems.
9. Install the front bumper fascia. Refer to Fascia Replacement - Front Bumper in Bumpers.

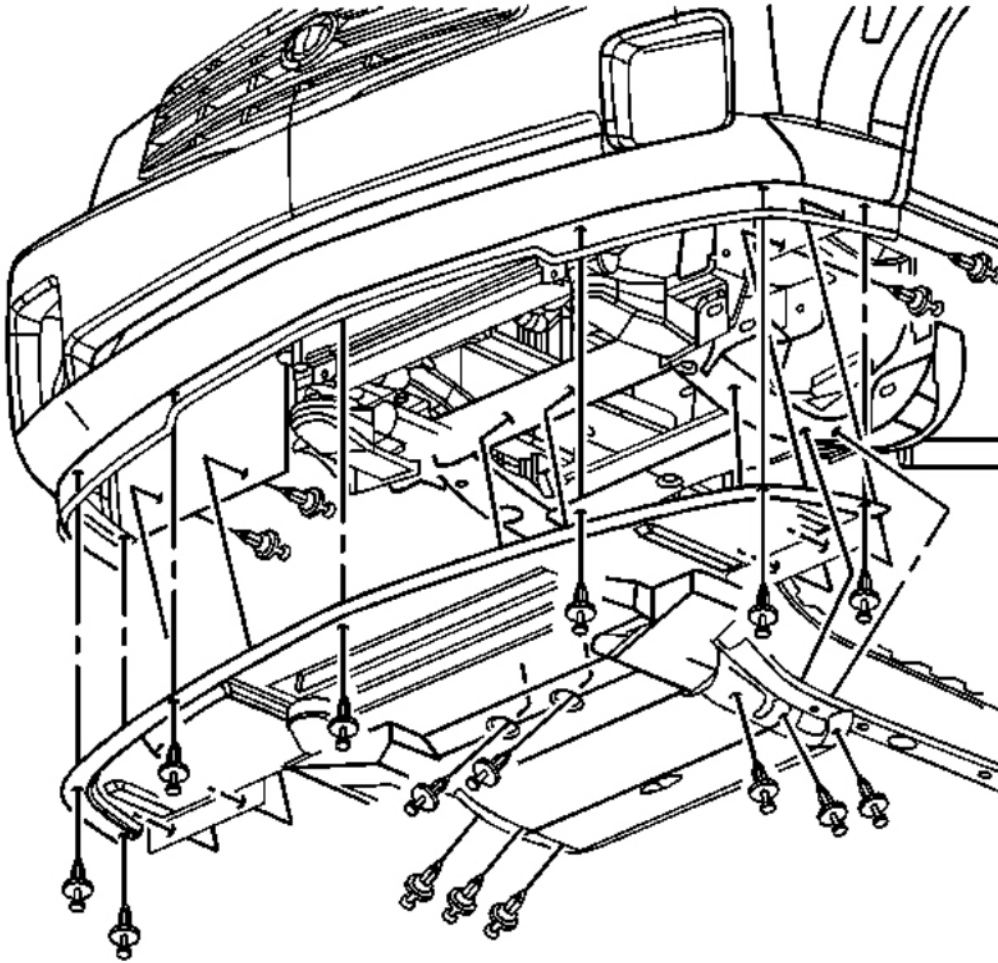


Fig. 18: Removing/Installing Lower Air Deflector
Courtesy of GENERAL MOTORS CORP.

10. Install the lower air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.

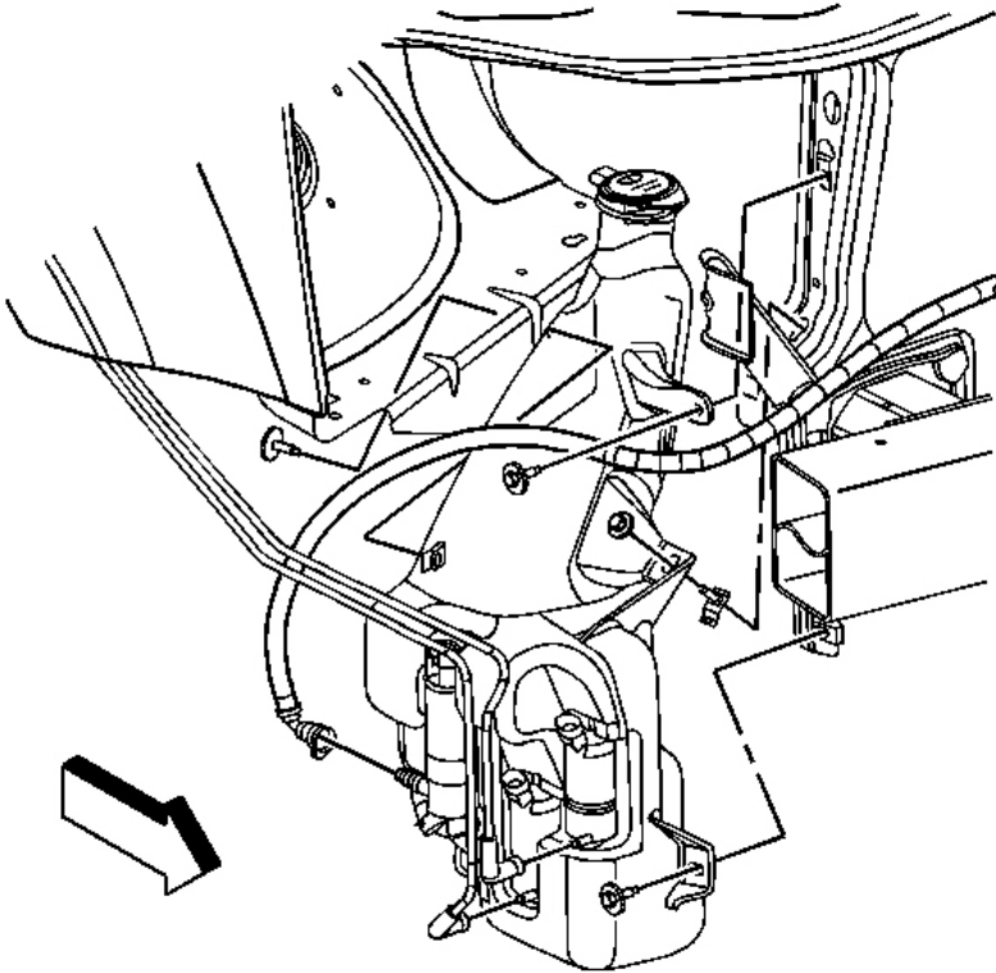


Fig. 19: View Of Washer Solvent Container
Courtesy of GENERAL MOTORS CORP.

11. Install the bolt to secure the washer solvent container filler neck to the upper tie bar.

Tighten: Tighten the bolt to 6 N.m (53 lb in).

12. Fill the washer solvent container.
13. Install the washer solvent container cap to the washer solvent container.
14. Close the hood.

WASHER SOLVENT CONTAINER LEVEL SENSOR REPLACEMENT

Removal Procedure

1. Remove the lower air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.
2. Disconnect the electrical connector from the washer solvent level sensor switch.
3. Place a pan under the area where the level sensor will be removed in order to retain the lost solvent.

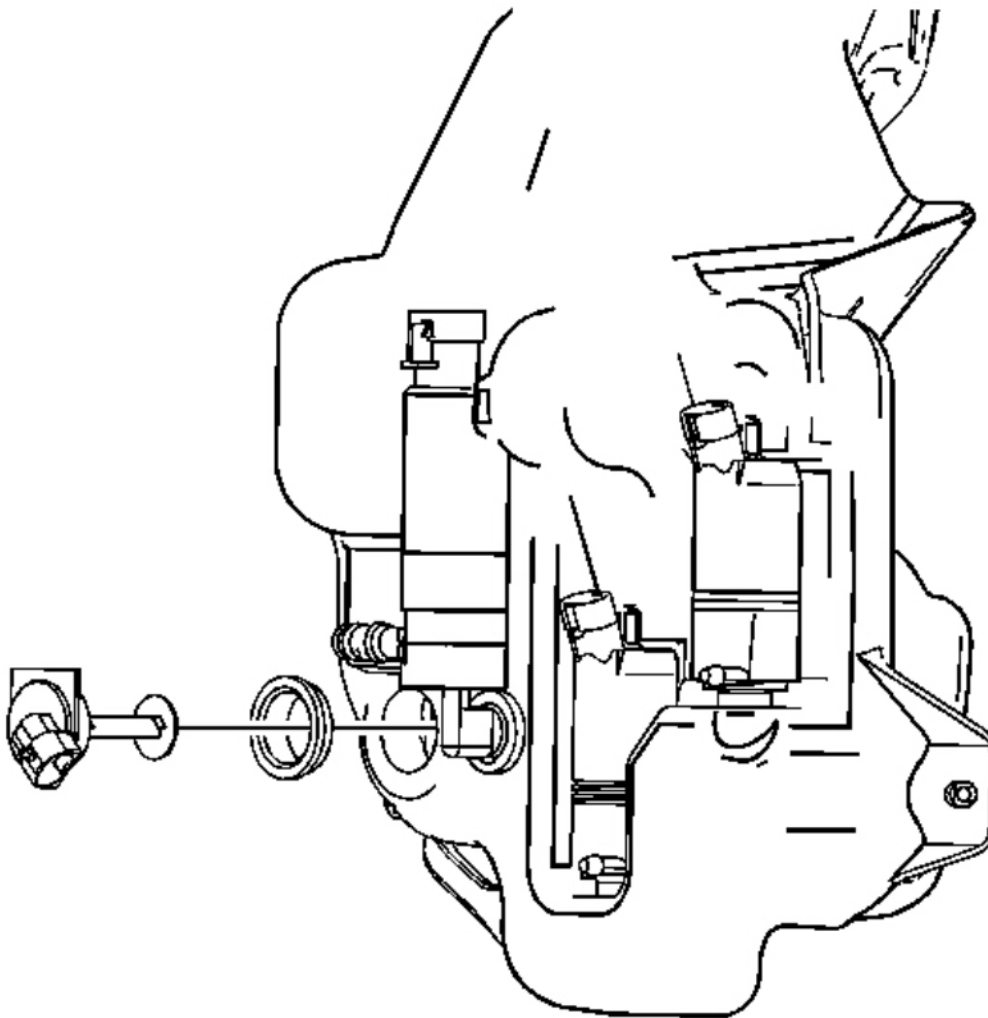


Fig. 20: View Of Washer Solvent Level Sensor Switch
Courtesy of GENERAL MOTORS CORP.

4. Drain the washer solvent into a suitable container.

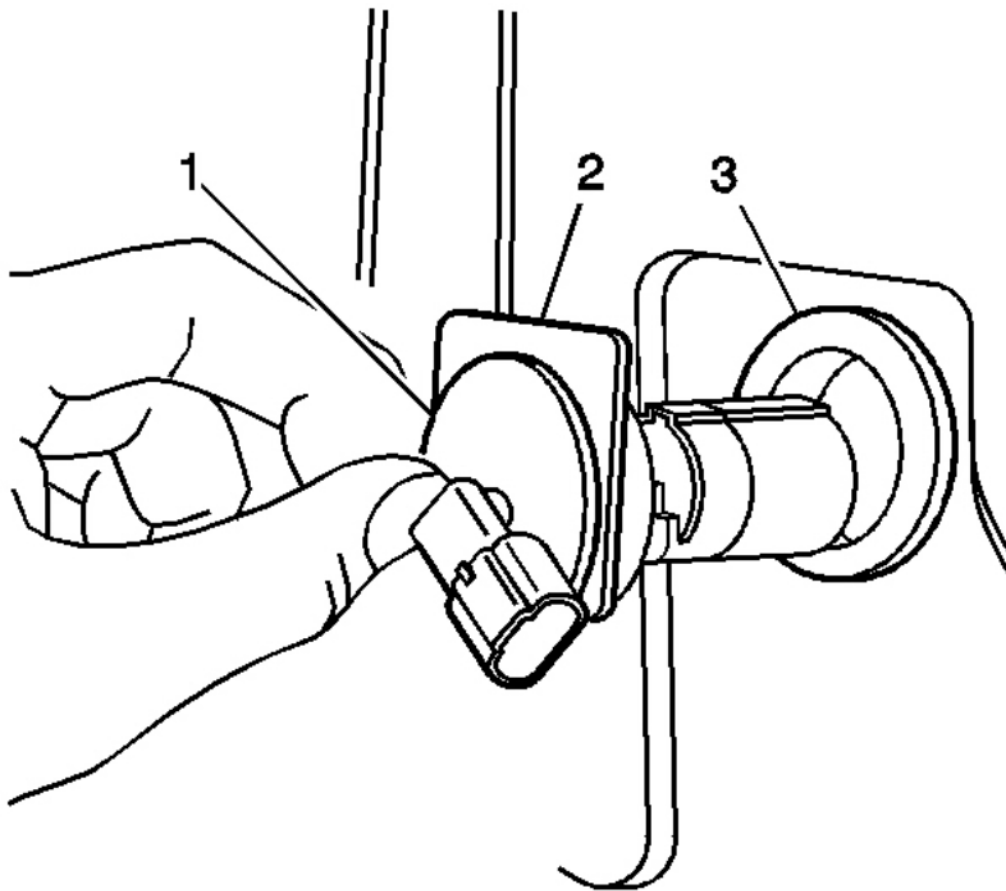


Fig. 21: View Of Washer Solvent Level Sensor Switch & Grommet
Courtesy of GENERAL MOTORS CORP.

5. Using 2 flat-bladed tools, pry outward the washer solvent container level sensor switch (1) from the washer solvent container.
6. Remove the washer solvent level sensor switch from the container.
7. Remove the washer solvent container level sensor grommet (3) from the washer solvent container and discard.

Installation Procedure

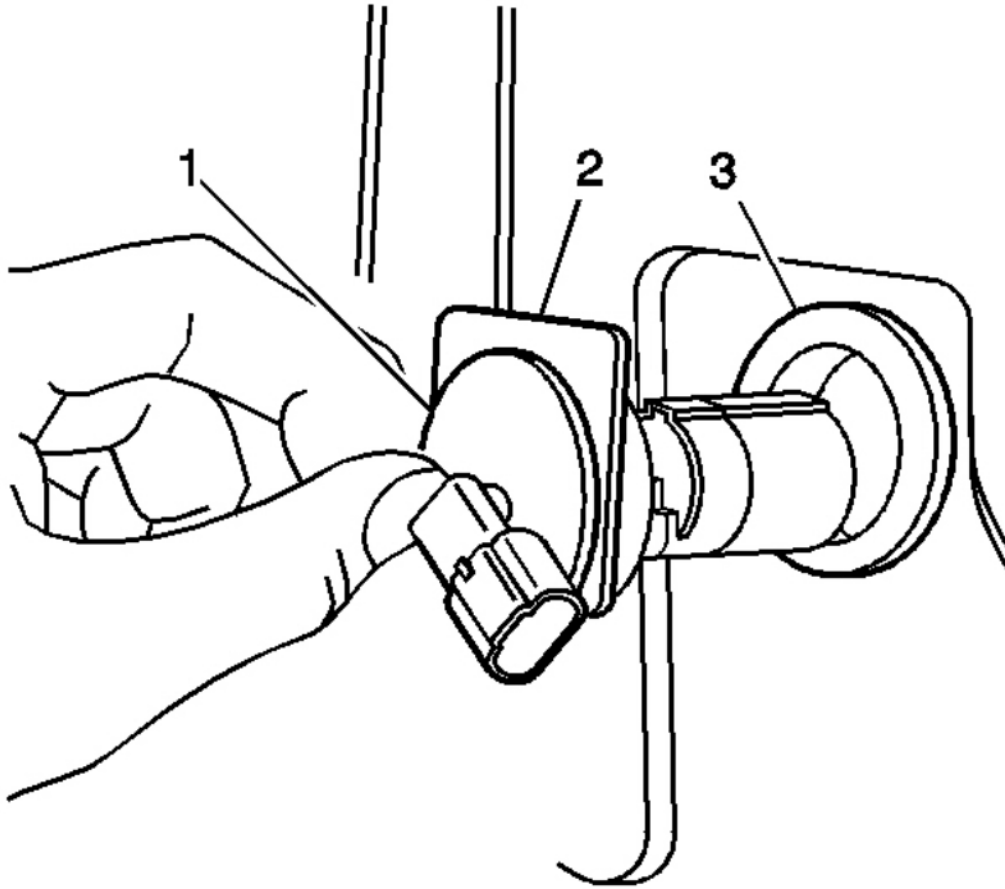


Fig. 22: View Of Washer Solvent Level Sensor Switch & Grommet
Courtesy of GENERAL MOTORS CORP.

1. Install the new washer solvent level sensor switch grommet (3) into the container.
2. Install the washer solvent level sensor switch (1) into the washer solvent container.

IMPORTANT: The square side (2) of the level sensor switch must point upward upon installation.

3. Apply equal inward pressure in order to seat the level sensor switch to the grommet.

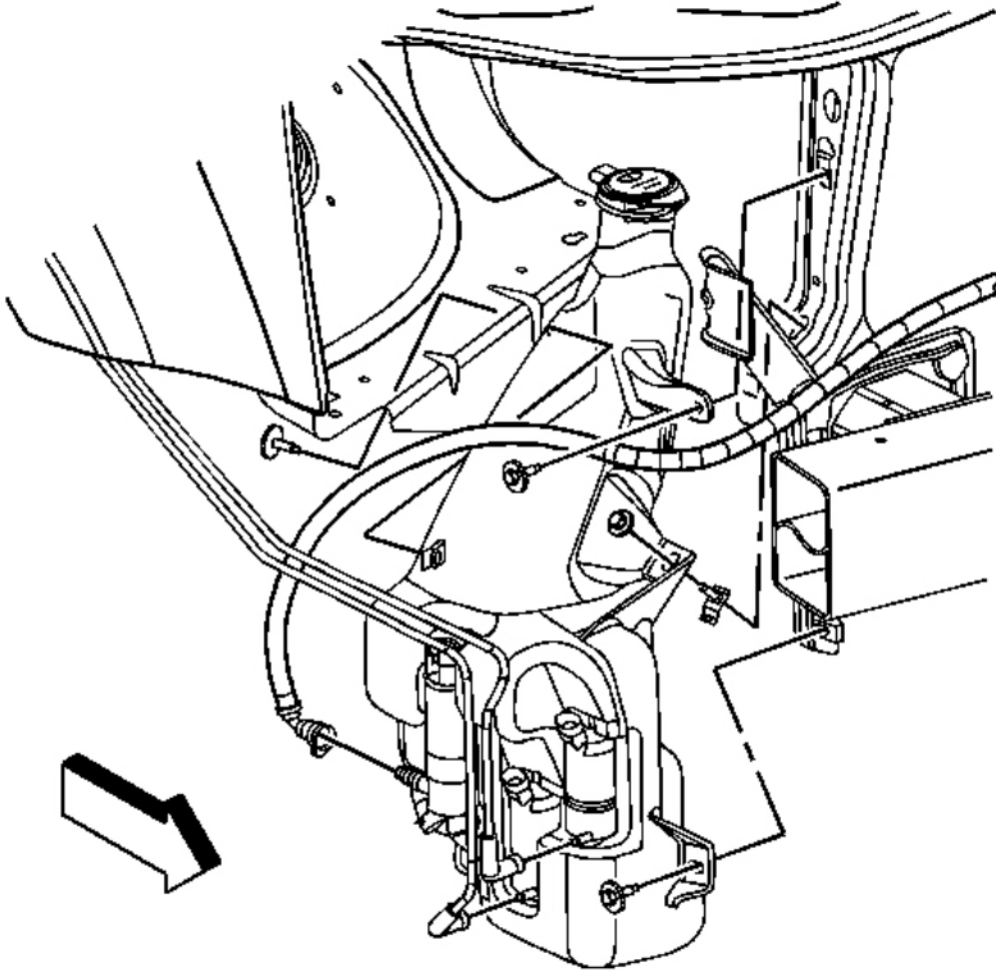


Fig. 23: View Of Washer Solvent Container
Courtesy of GENERAL MOTORS CORP.

4. Connect the electrical connector to the washer solvent level sensor switch.
5. Install the lower air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.
6. Fill the washer solvent container with washer solvent.

WASHER PUMP REPLACEMENT - WINDSHIELD

Removal Procedure

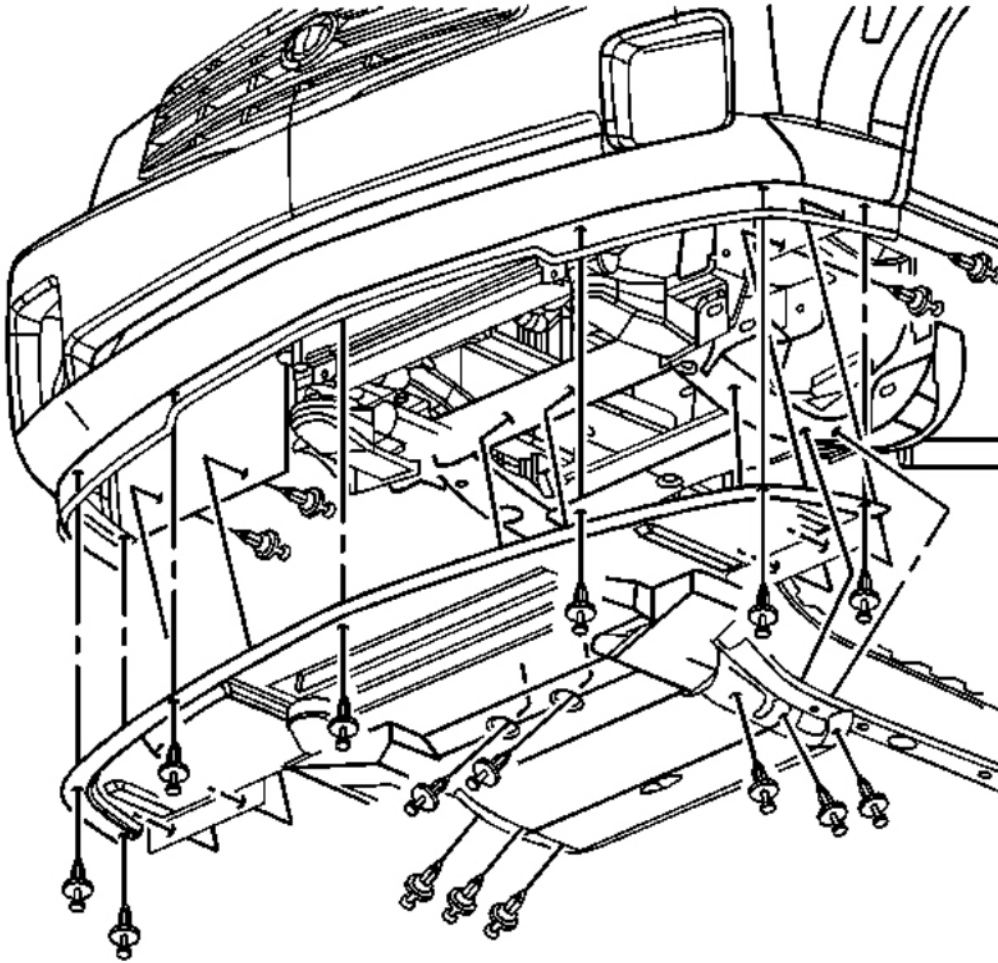


Fig. 24: Removing/Installing Lower Air Deflector
Courtesy of GENERAL MOTORS CORP.

1. Remove the lower air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.
2. Remove the passenger side front wheelhouse liner.

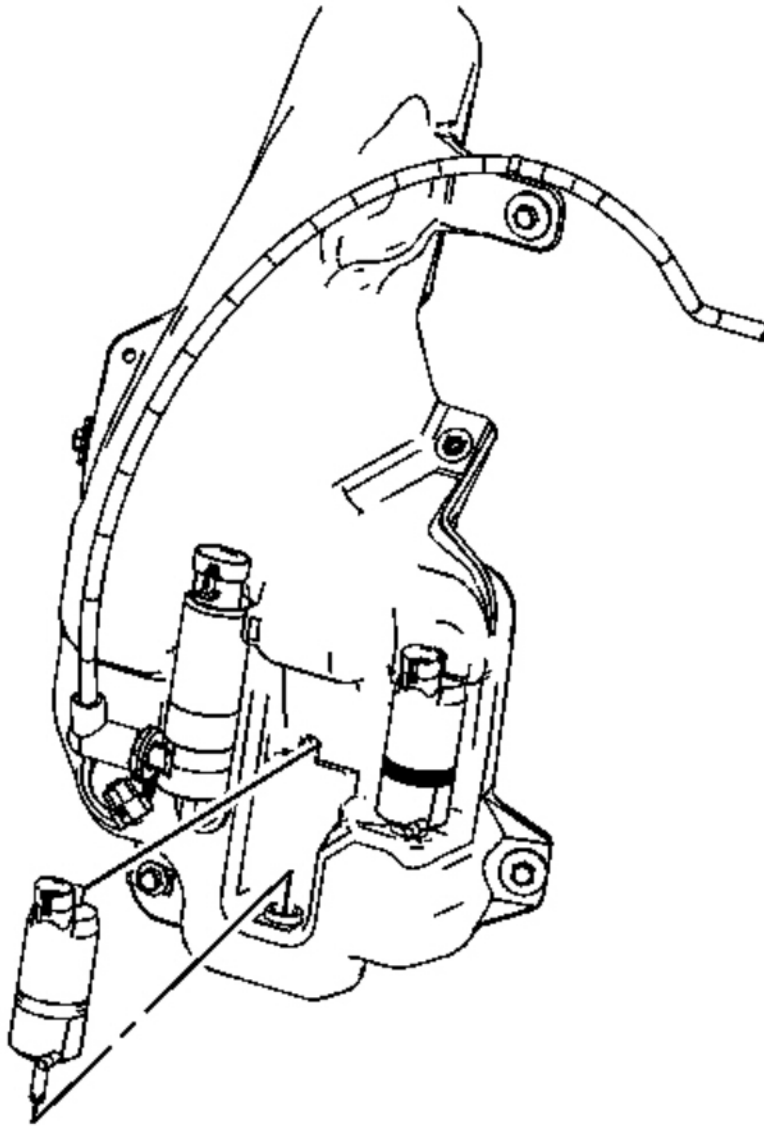


Fig. 25: View Of Windshield Washer Pump
Courtesy of GENERAL MOTORS CORP.

3. Drain the washer solvent into a suitable container.
4. Disconnect the washer hose from the washer pump.
5. Disconnect the electrical connector from the center washer pump.

6. Remove the washer pump from the washer solvent container.

Installation Procedure

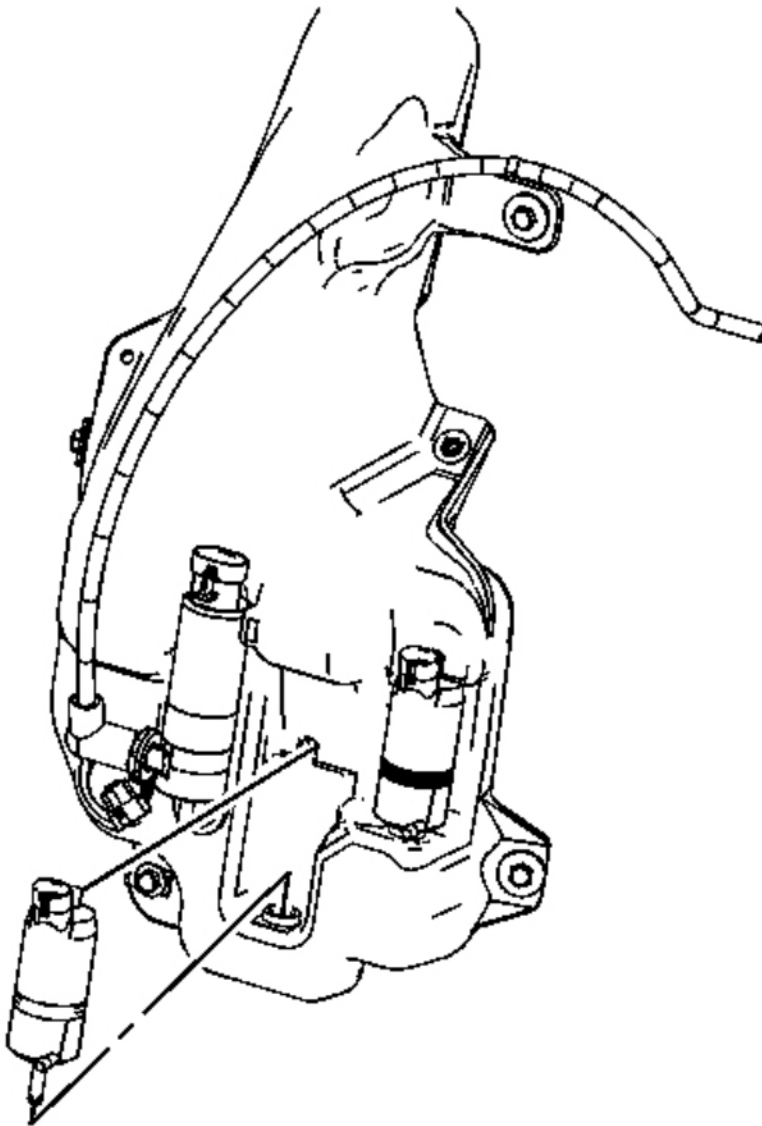


Fig. 26: View Of Windshield Washer Pump
Courtesy of GENERAL MOTORS CORP.

1. Lubricate the washer pump intake nozzle with washer solvent to aid in the installation of the washer pump into the washer container.
2. Secure the washer pump in the washer solvent container.
3. Ensure the washer pump is secure to the washer solvent container.
4. Connect the electrical connector to the washer pump.
5. Connect the washer hose to the washer pump.
6. Install the passenger side front wheelhouse liner.

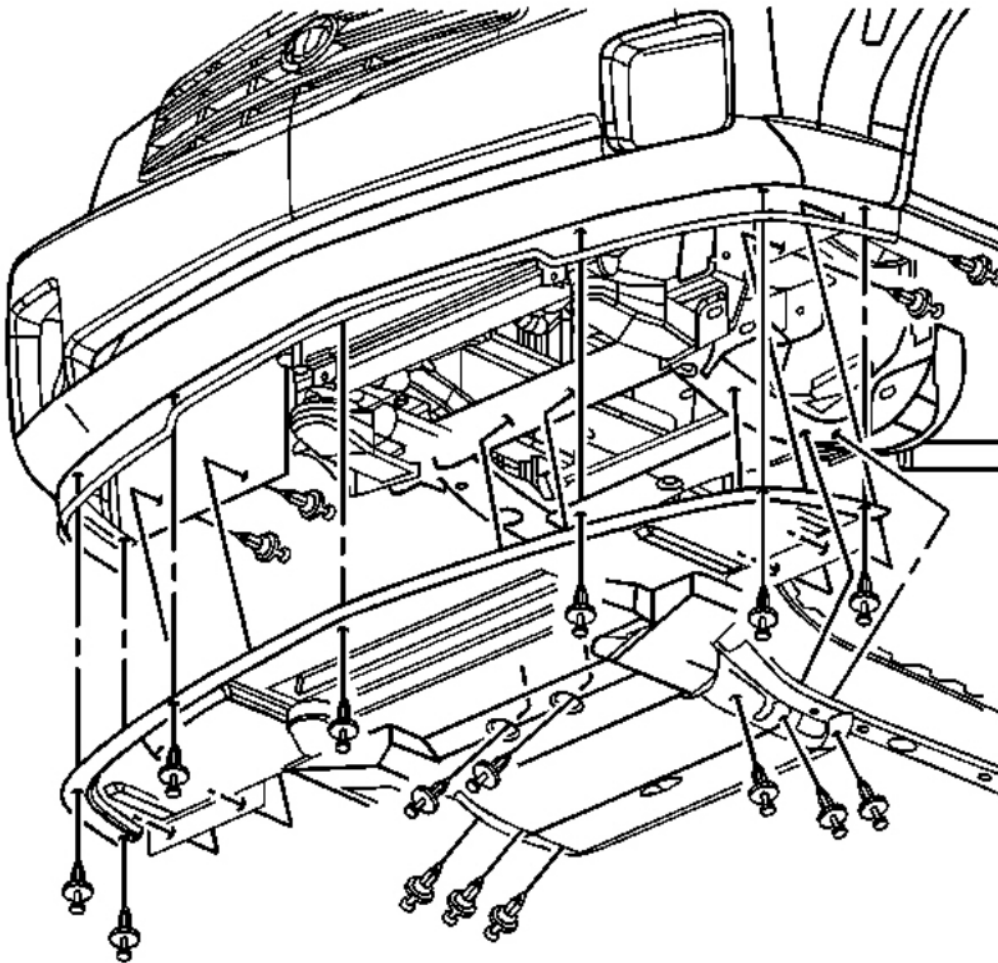


Fig. 27: Removing/Installing Lower Air Deflector
Courtesy of GENERAL MOTORS CORP.

7. Install the lower air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.
8. Open the hood.
9. Fill the washer solvent container with new washer solvent.
10. Verify operation of the pump.
11. Close the hood.

WASHER PUMP REPLACEMENT - HEADLAMP

Removal Procedure

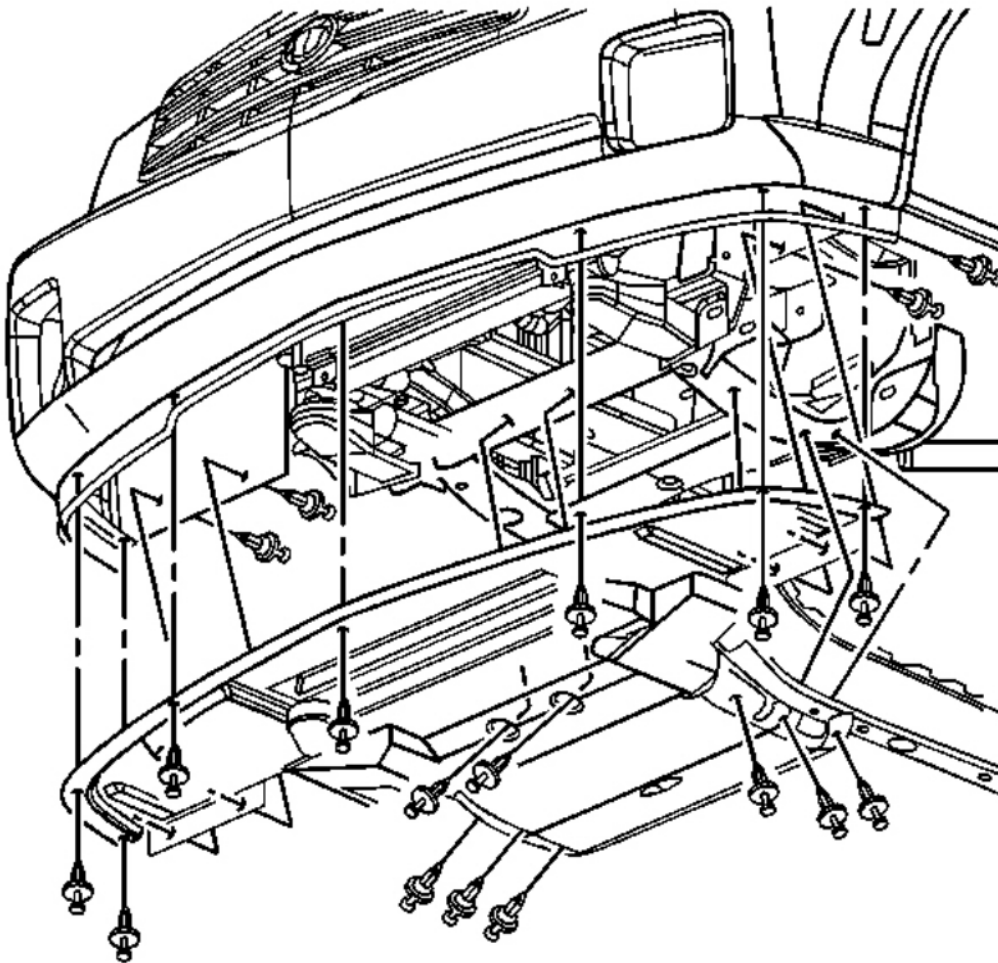


Fig. 28: Removing/Installing Lower Air Deflector
Courtesy of GENERAL MOTORS CORP.

1. Remove the lower air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.
2. Remove the passenger side front wheelhouse liner.
3. Drain the washer solvent container.
4. Disconnect the washer hose from the rearward washer pump.
5. Disconnect the electrical connector from the rearward washer pump.
6. Hold the top of the washer pump with one hand and use a flat-bladed tool in order to pry the pump from the washer solvent container.

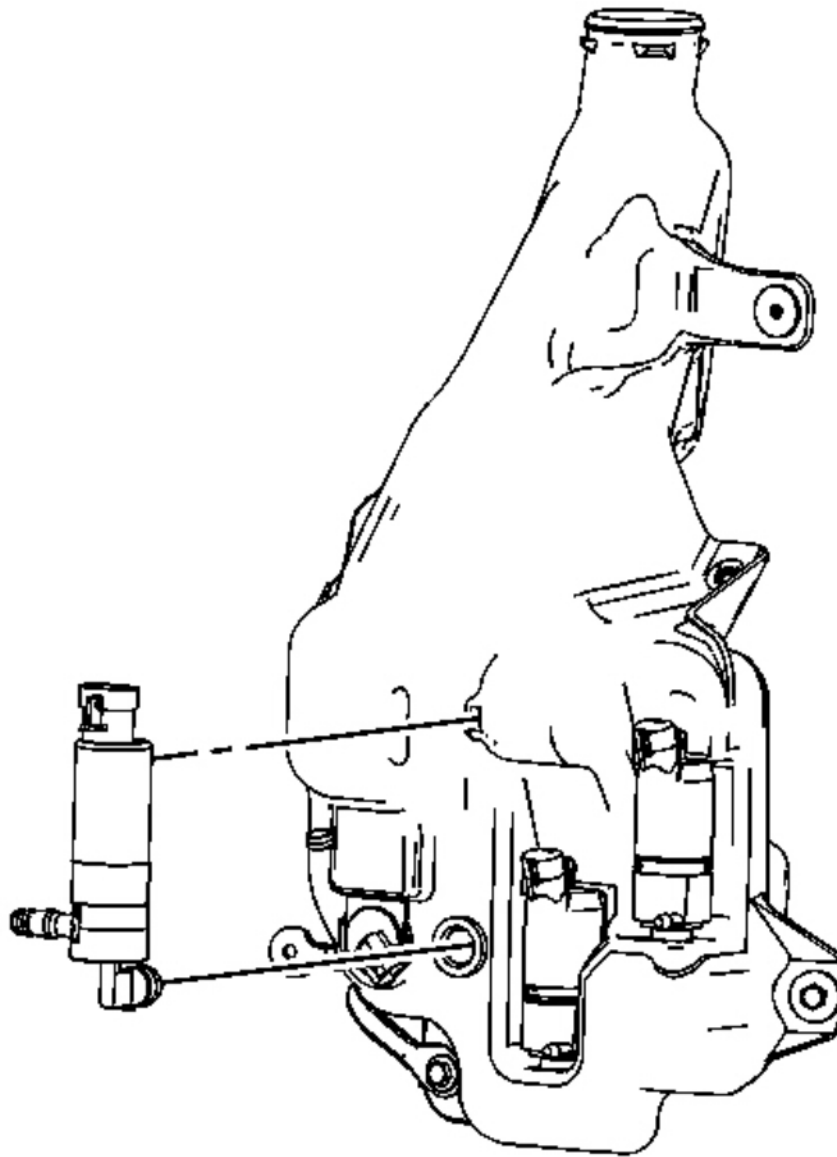


Fig. 29: View Of Headlamp Washer Pump
Courtesy of GENERAL MOTORS CORP.

7. Remove the washer pump from the washer solvent container.
8. Remove and discard the washer pump grommet.

Installation Procedure

1. Install the washer pump grommet into the washer solvent container.

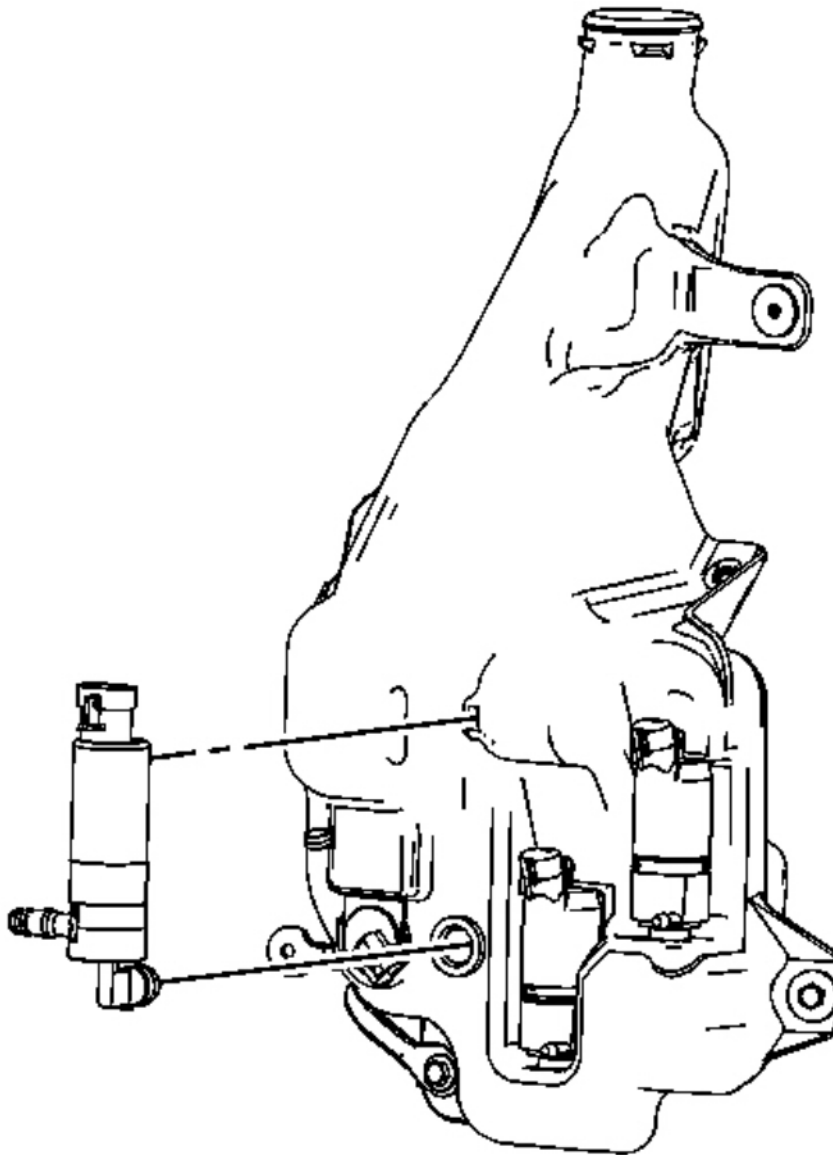


Fig. 30: View Of Headlamp Washer Pump
Courtesy of GENERAL MOTORS CORP.

2. Lubricate the washer pump intake nozzle with clean water to aid in the installation of the pump into the washer container.
3. Install the washer pump nozzle in the washer solvent container by snapping into place.
4. Ensure the washer pump is secure to the washer solvent container.

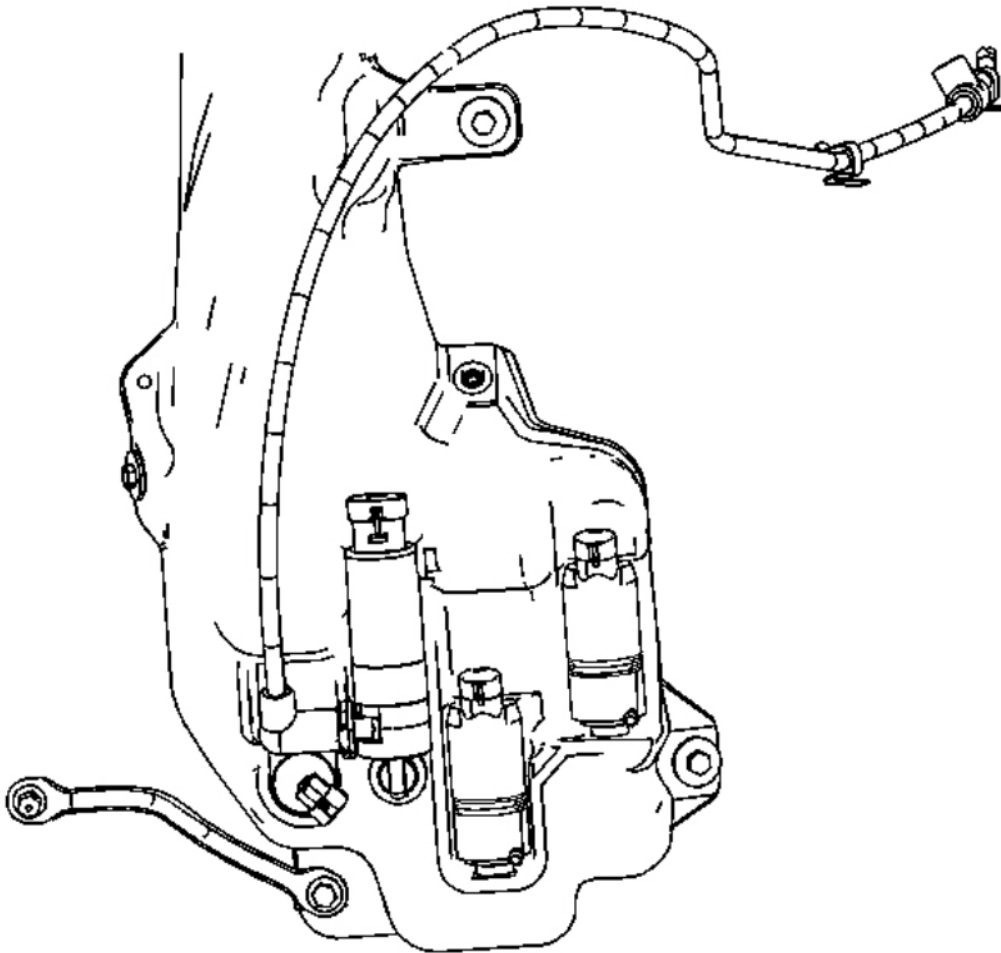


Fig. 31: View Of Washer Pump Electrical Connector
Courtesy of GENERAL MOTORS CORP.

5. Connect the electrical connector to the washer pump.
6. Connect the washer hose to the washer pump.

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7. Install the passenger side front wheelhouse liner.
8. Install the lower air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.
9. Open the hood.
10. Fill the washer solvent container.
11. Close the hood.

WASHER NOZZLE REPLACEMENT - FRONT

Removal Procedure

1. Open the hood.

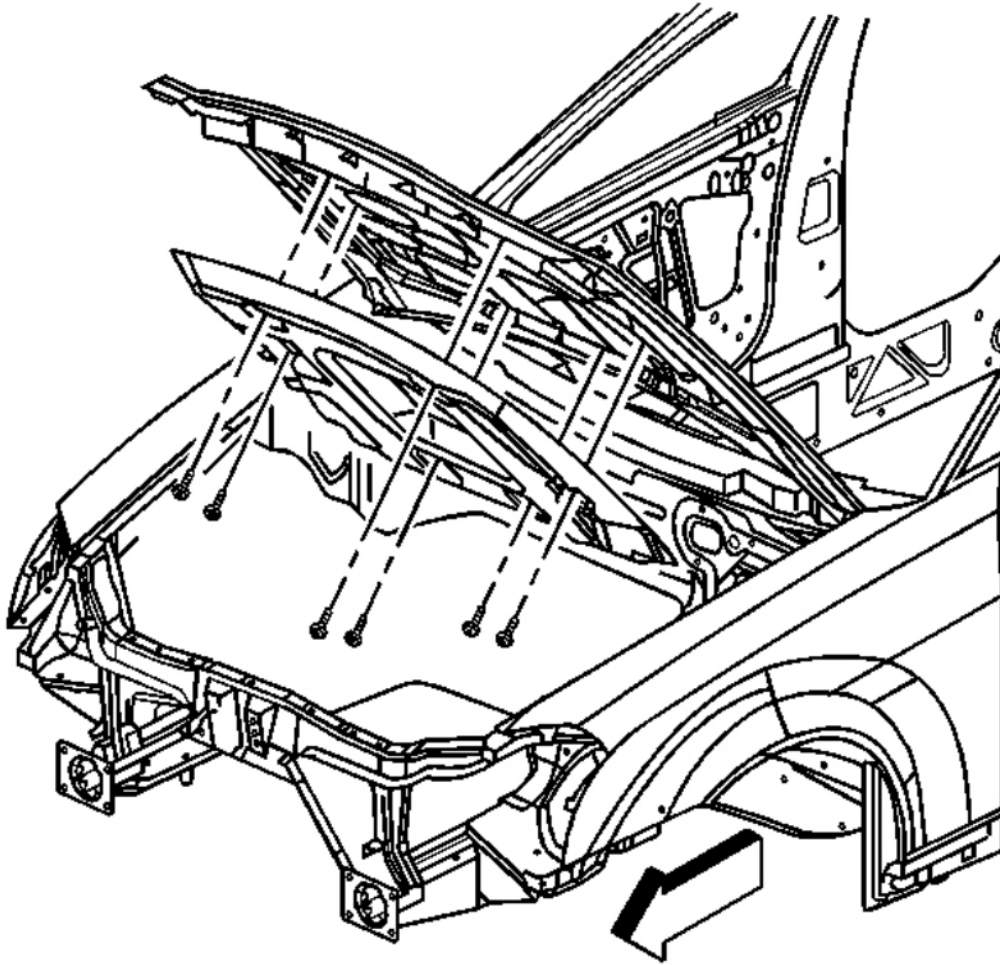


Fig. 32: View Of Hood Insulator And Push-In Retainers
Courtesy of GENERAL MOTORS CORP.

2. Remove the hood insulator. Refer to **Hood Insulator Replacement** in Body Front End.

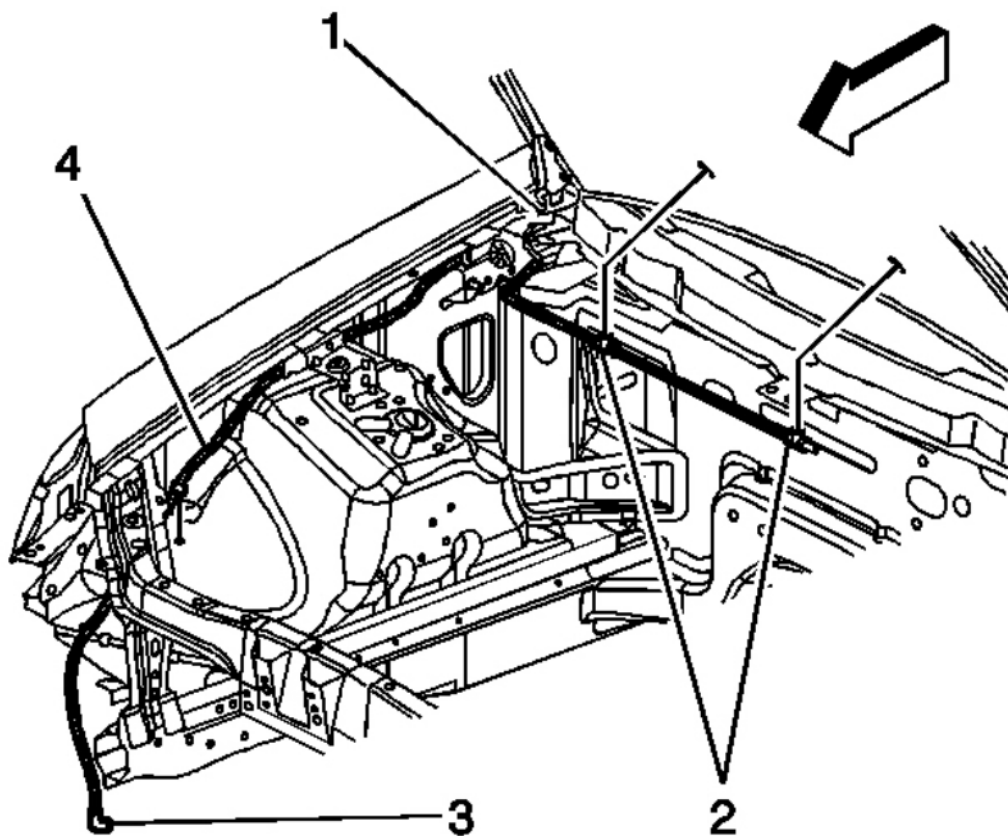


Fig. 33: View Of Washer Hose
Courtesy of GENERAL MOTORS CORP.

3. Disconnect the washer hose connections (2) from the washer nozzles.

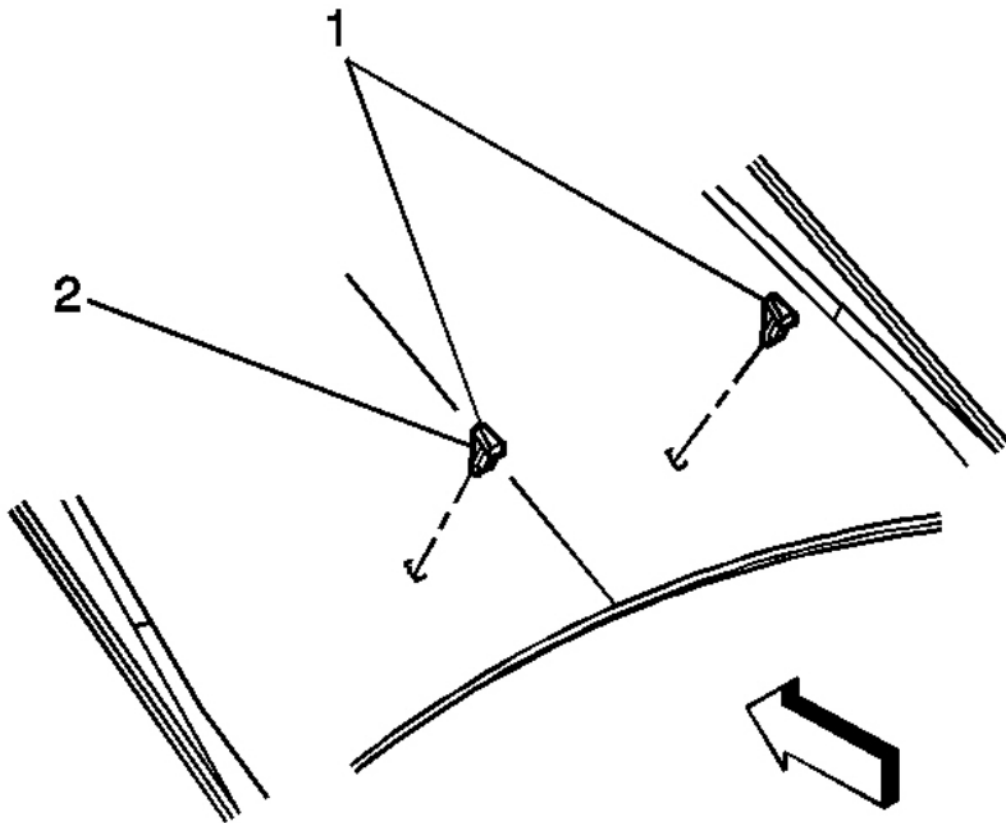


Fig. 34: View Of Front Washer Nozzles
Courtesy of GENERAL MOTORS CORP.

4. Remove the washer nozzles from the hood by pushing the tension clips (2) in towards the windshield.
5. Push the washer nozzle (1), outward toward the windshield.
6. Remove the inoperative washer nozzle (2) from the hood.

Installation Procedure

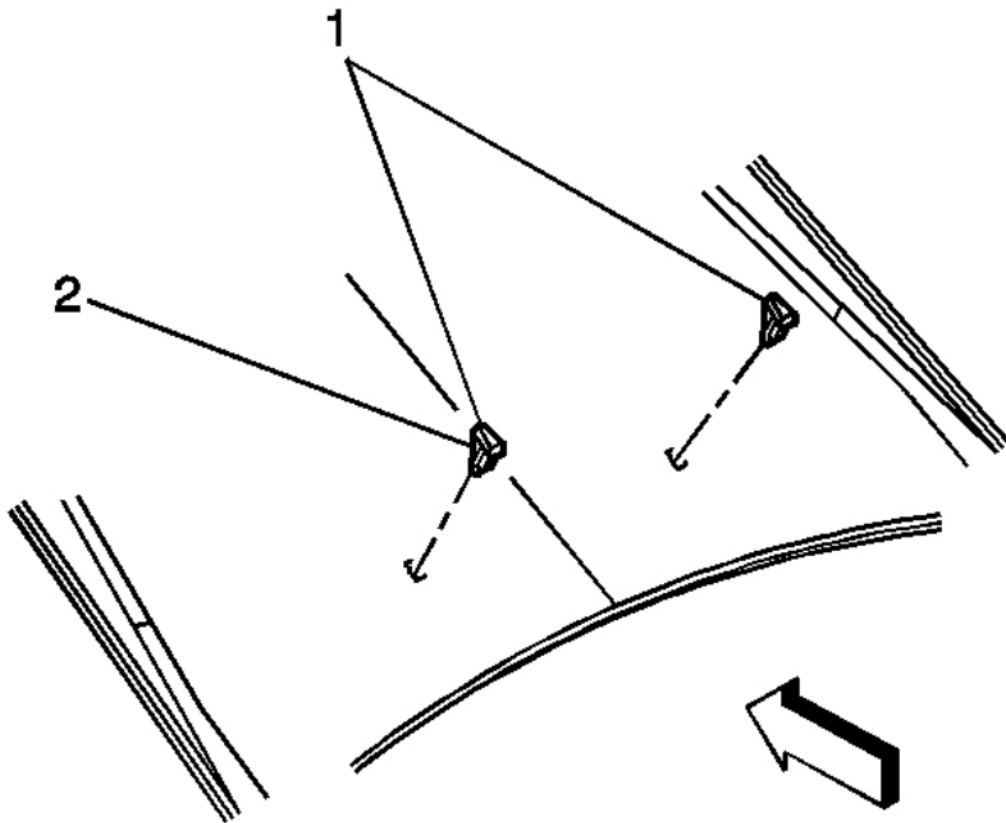


Fig. 35: View Of Front Washer Nozzles
Courtesy of GENERAL MOTORS CORP.

1. Install the washer nozzle (1) to the hood by indexing the tension clips (2) on the nozzle to the opening in the hood.
2. Push downward in order to secure the washer nozzle tension clips (2) to the hood.

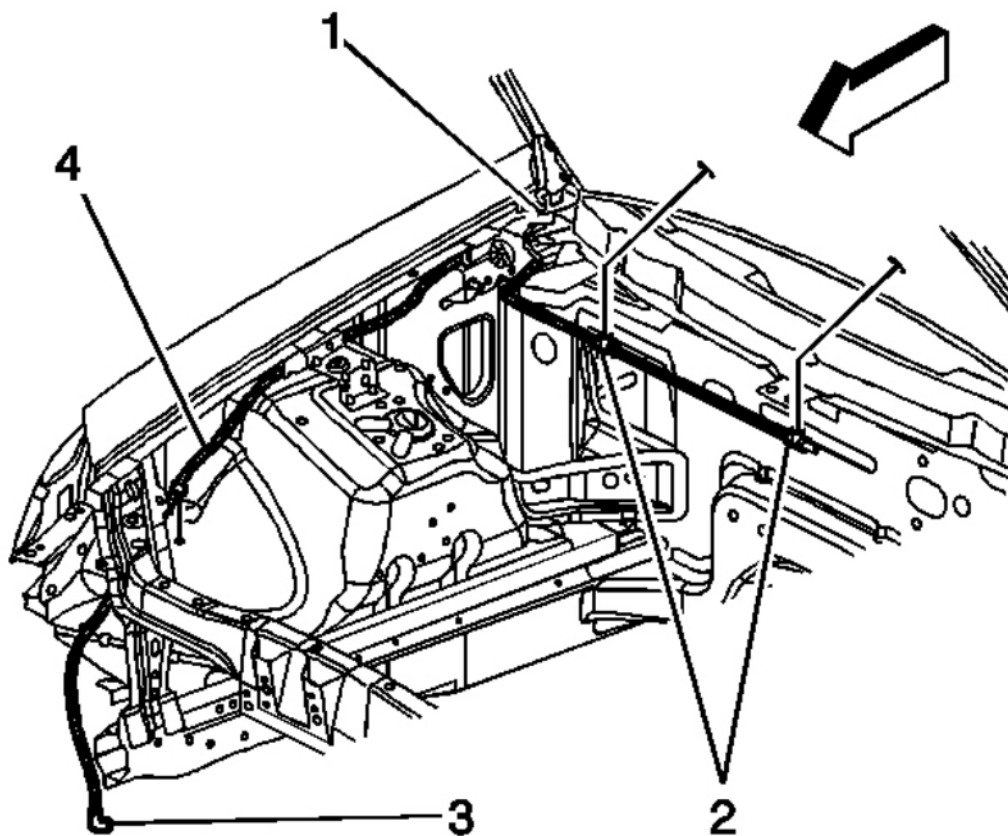


Fig. 36: View Of Washer Hose
Courtesy of GENERAL MOTORS CORP.

3. Connect the washer hose connections (2) to the washer nozzles.

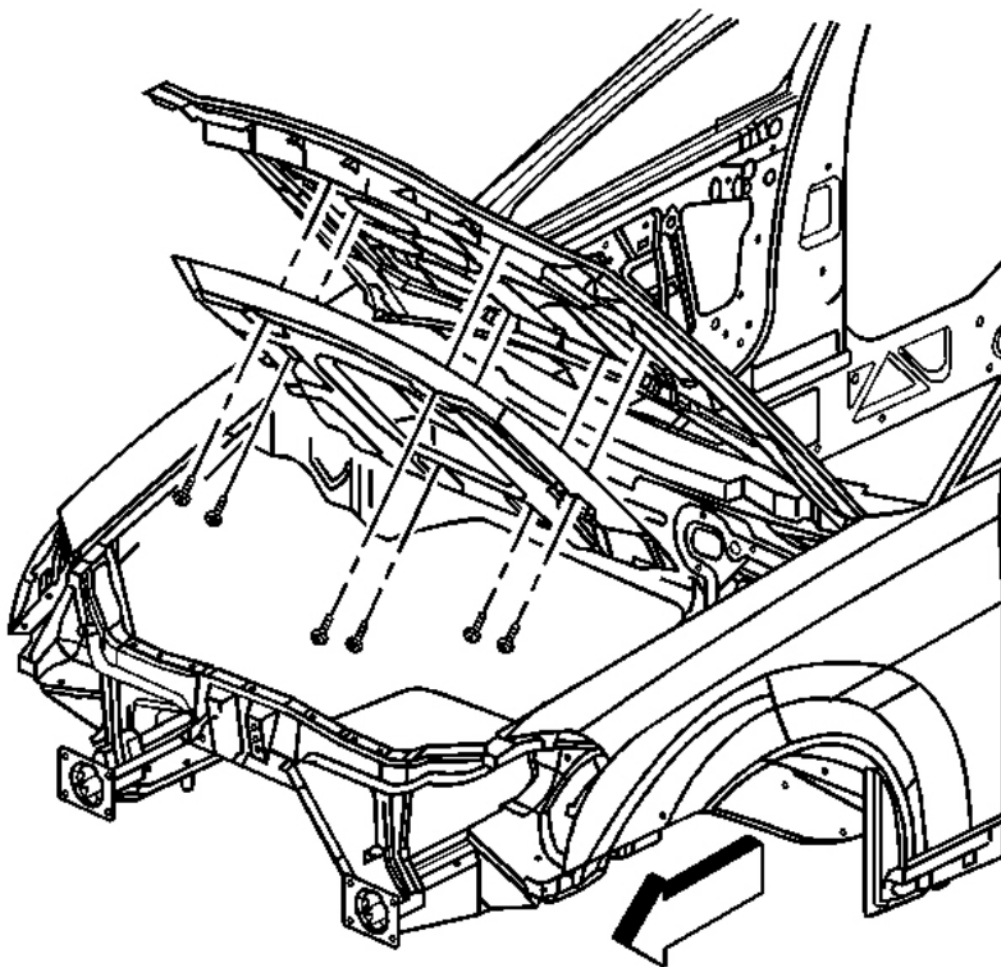


Fig. 37: View Of Hood Insulator And Push-In Retainers
Courtesy of GENERAL MOTORS CORP.

4. Install the hood insulator. Refer to **Hood Insulator Replacement** in Body Front End.
5. Close the hood.

HOSE REPLACEMENT - HEADLAMP WASHER

Removal Procedure

1. Remove the front air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.

2. Drain the washer solvent into a suitable container.

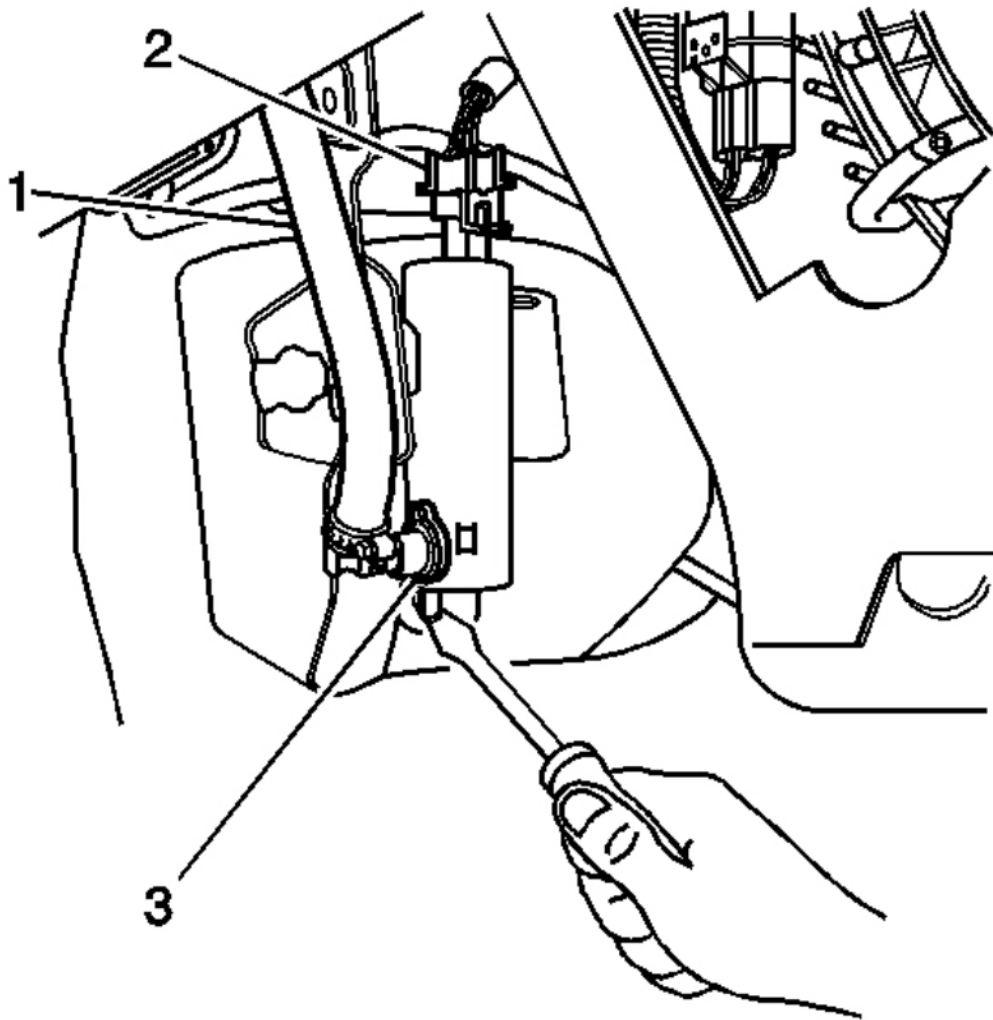


Fig. 38: View Of Headlamp Washer Hose Quick Connect
Courtesy of GENERAL MOTORS CORP.

3. Disconnect the headlamp washer hose (1) quick connect (3) from the washer pump nozzle located on the rear outboard corner of the washer solvent reservoir.
4. Remove the left front headlamp.

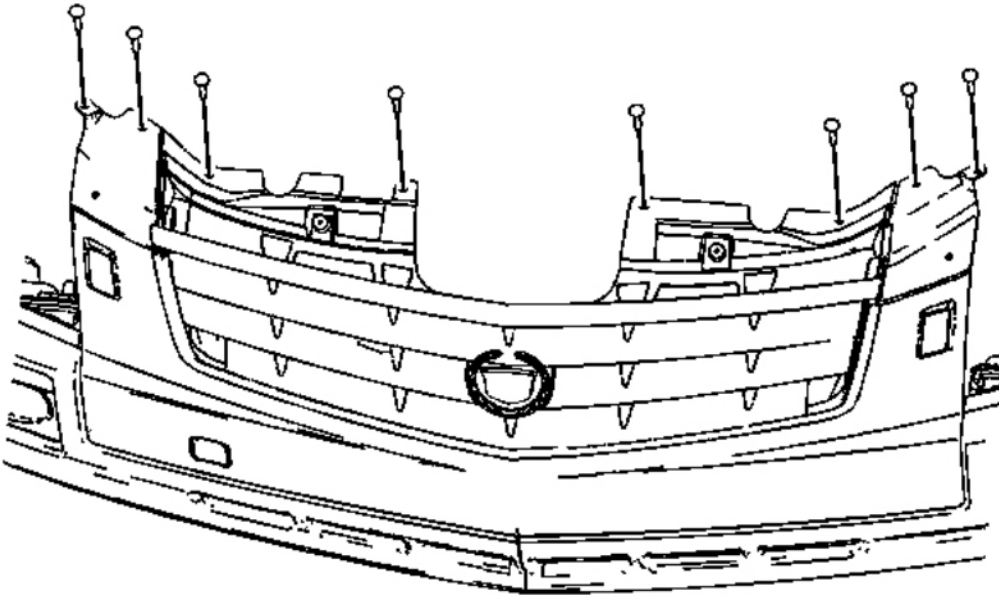


Fig. 39: View Of Fascia/Grille Push Pin Fasteners
Courtesy of GENERAL MOTORS CORP.

5. Remove the push pin fasteners from the fascia/grille to the upper tie bar.
6. Disconnect the headlamp washer hose quick connects from the headlamp washer nozzles located on the bottom side of the headlamps.

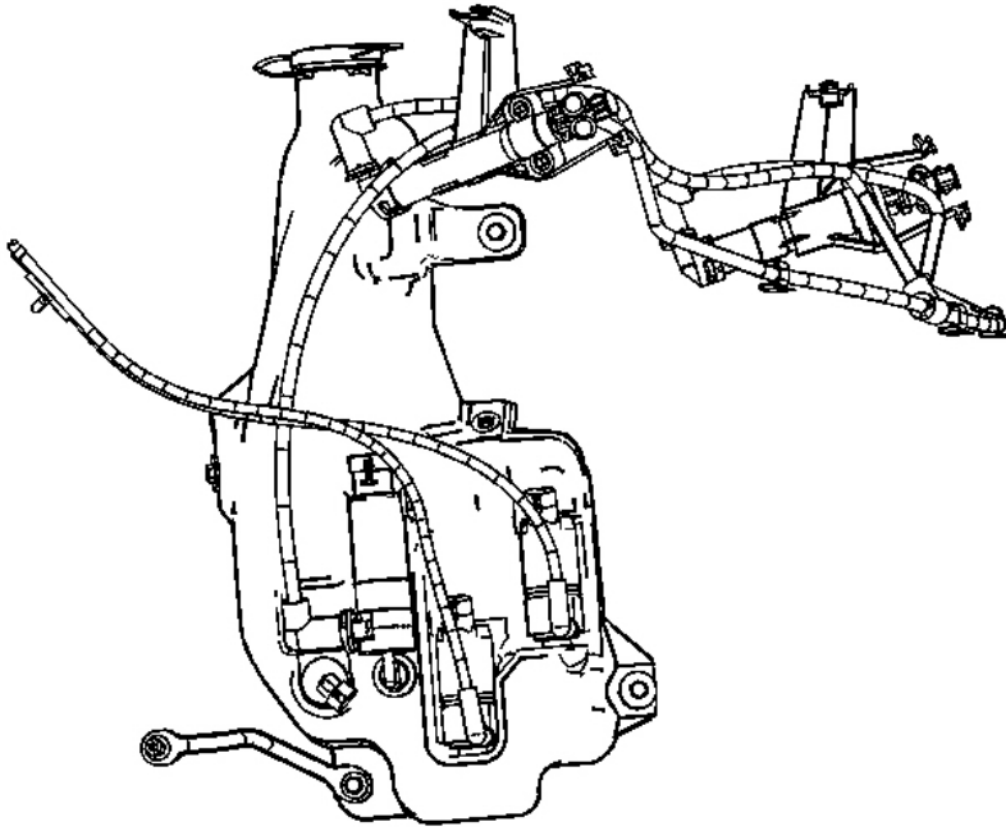


Fig. 40: View Of Washer Hose Assembly
Courtesy of GENERAL MOTORS CORP.

7. Disconnect the washer hose clips from the fascia.
8. Remove the washer hose assembly from the vehicle.

Installation Procedure

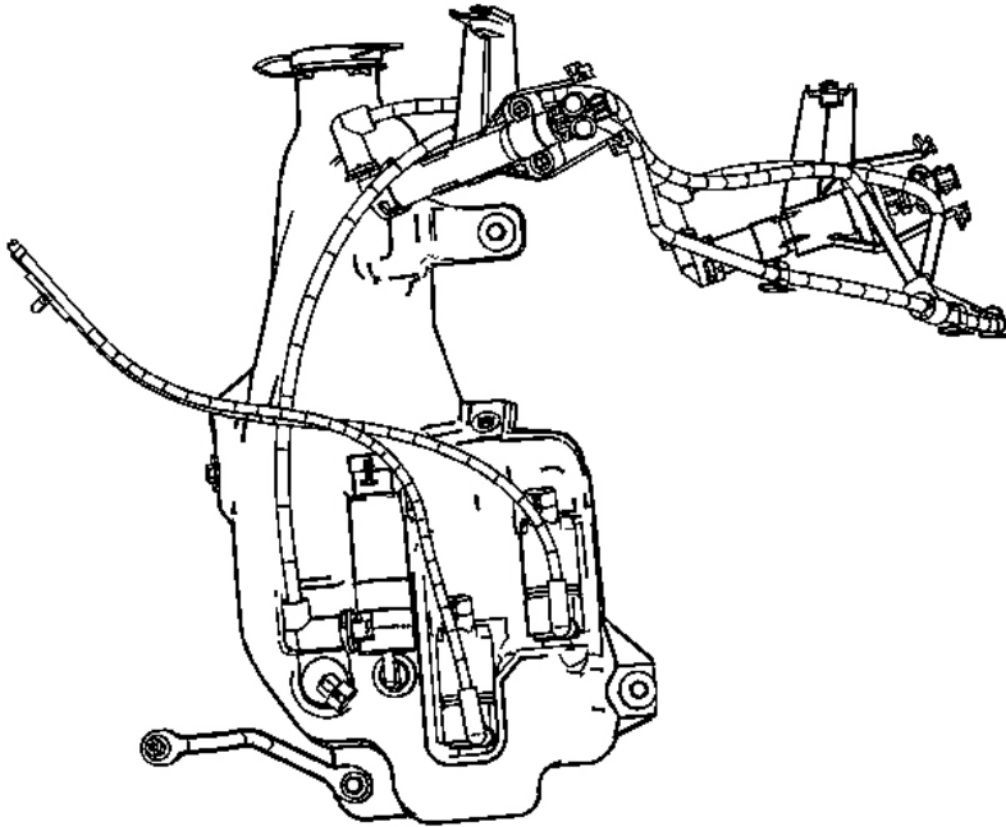


Fig. 41: View Of Washer Hose Assembly
Courtesy of GENERAL MOTORS CORP.

1. Position the washer hose assembly to the vehicle.
2. Secure the washer hose clips to the electrical main body harness.
3. Secure the headlamp washer hose quick connects to both headlamp washer nozzles.

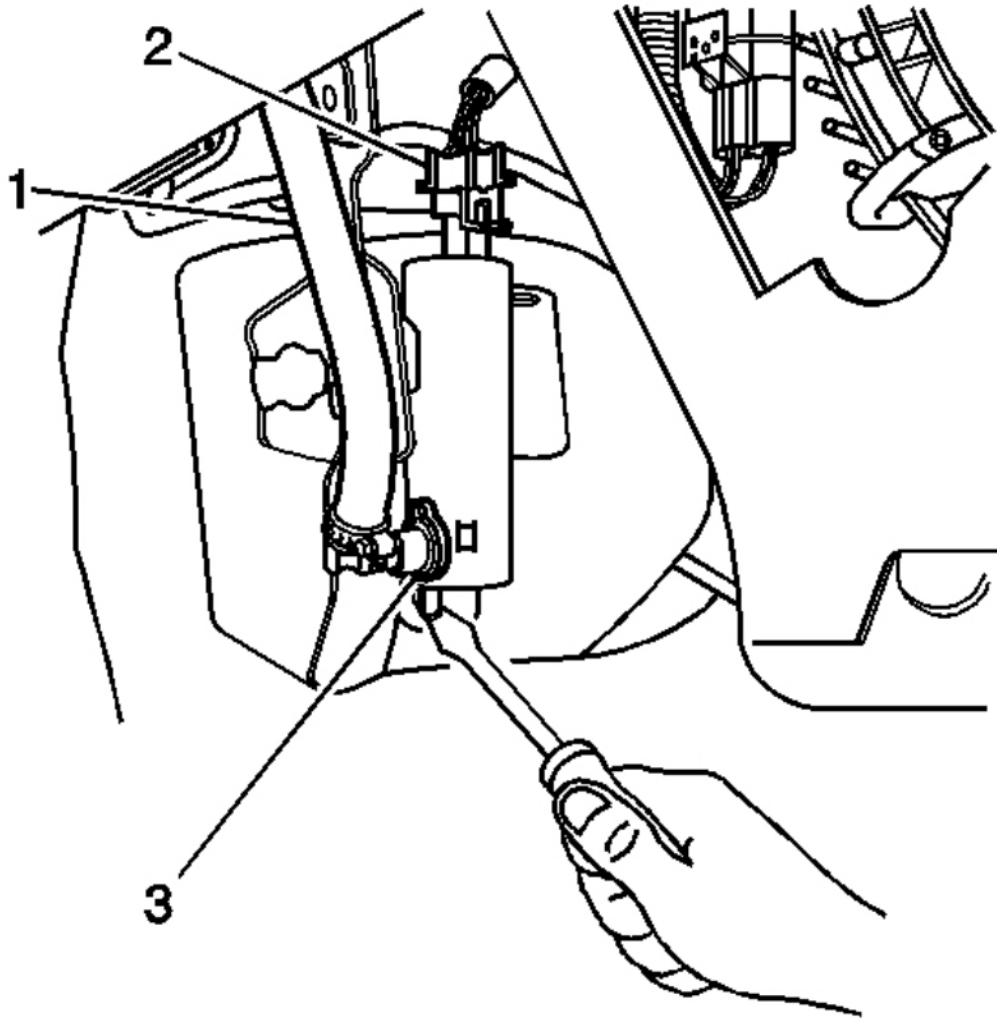


Fig. 42: View Of Headlamp Washer Hose Quick Connect
Courtesy of GENERAL MOTORS CORP.

4. Secure the washer hose quick connect to the headlamp washer pump nozzle (1).

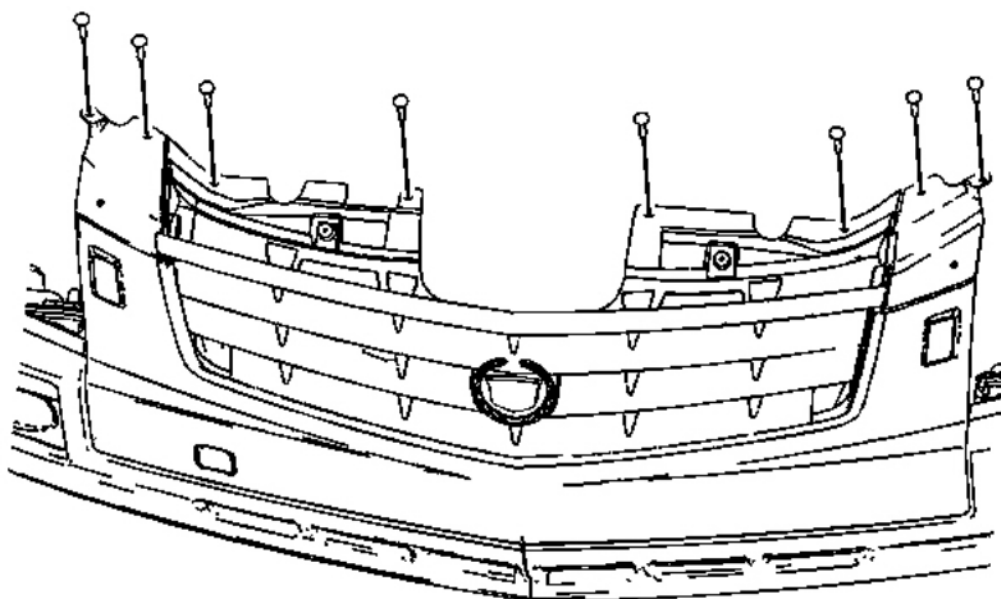


Fig. 43: View Of Fascia/Grille Push Pin Fasteners
Courtesy of GENERAL MOTORS CORP.

5. Install the fascia/grille push pin retainers
6. Install the front air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.
7. Install the left front headlamp
8. Fill the reservoir with washer solvent.
9. Verify the operation of the headlamp washers.

HOSE REPLACEMENT - WINDSHIELD WASHER

Removal Procedure

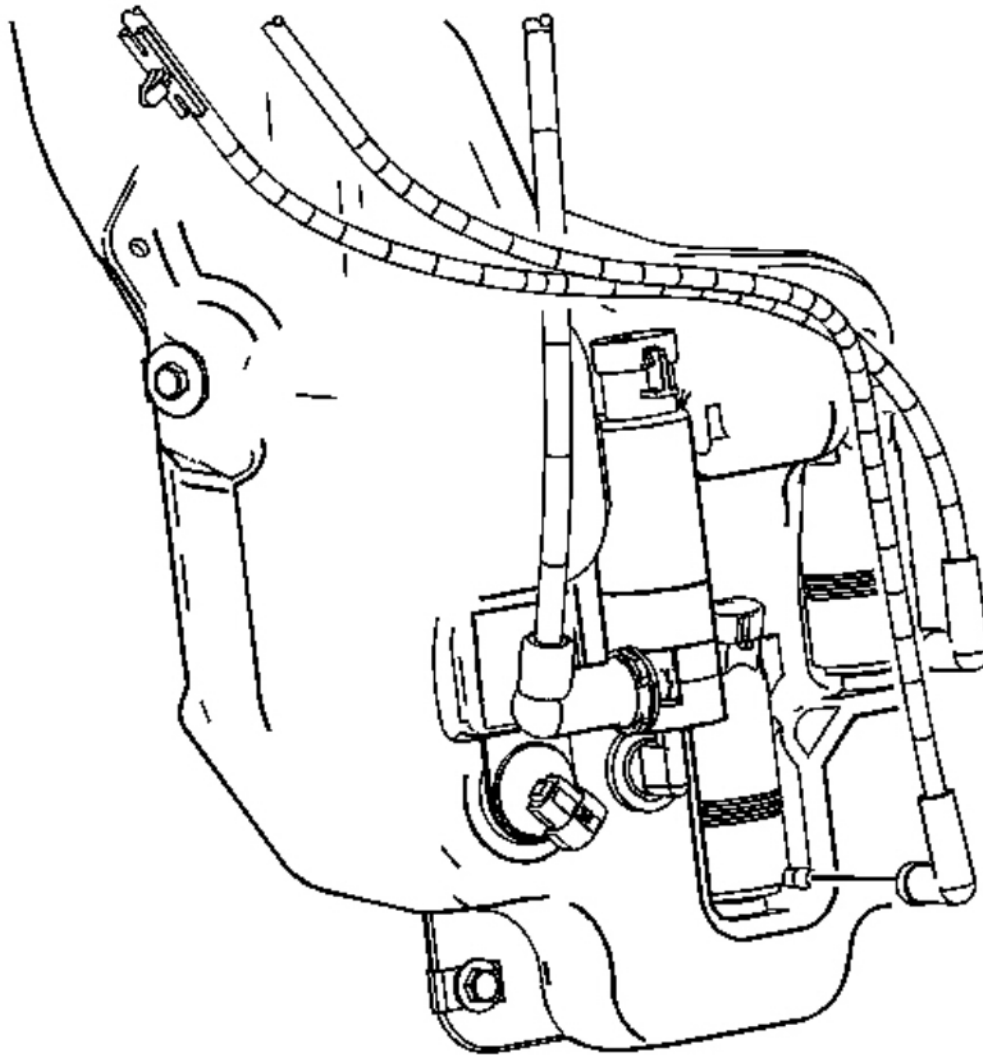


Fig. 44: View Of Windshield Washer Hose
Courtesy of GENERAL MOTORS CORP.

1. Remove the air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.
2. Disconnect the washer hose from the washer pump.
3. Drain the washer solvent into a suitable container.

4. Remove the hood insulator. Refer to **Hood Insulator Replacement** in Body Front End.
5. Remove the passenger side air inlet grille. Refer to **Air Inlet Grille Panel Replacement** in Body Front End.

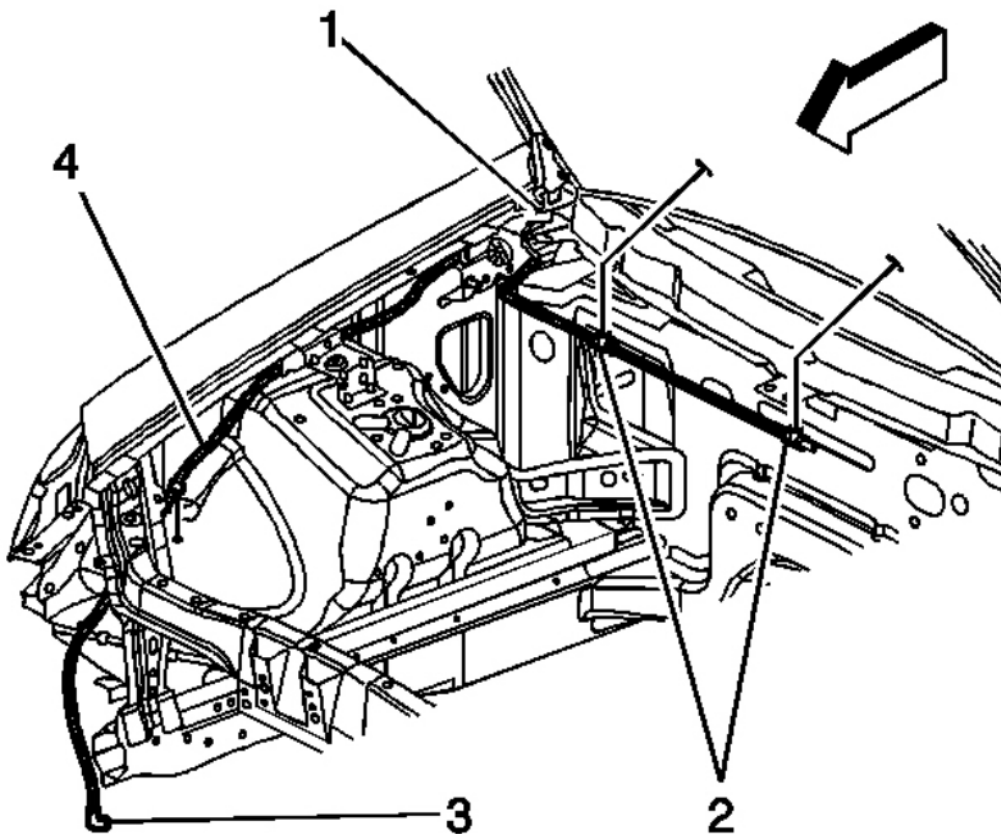


Fig. 45: View Of Washer Hose
Courtesy of GENERAL MOTORS CORP.

6. Disconnect the washer hose retainer clip (1) from the inside of the hood hinge.

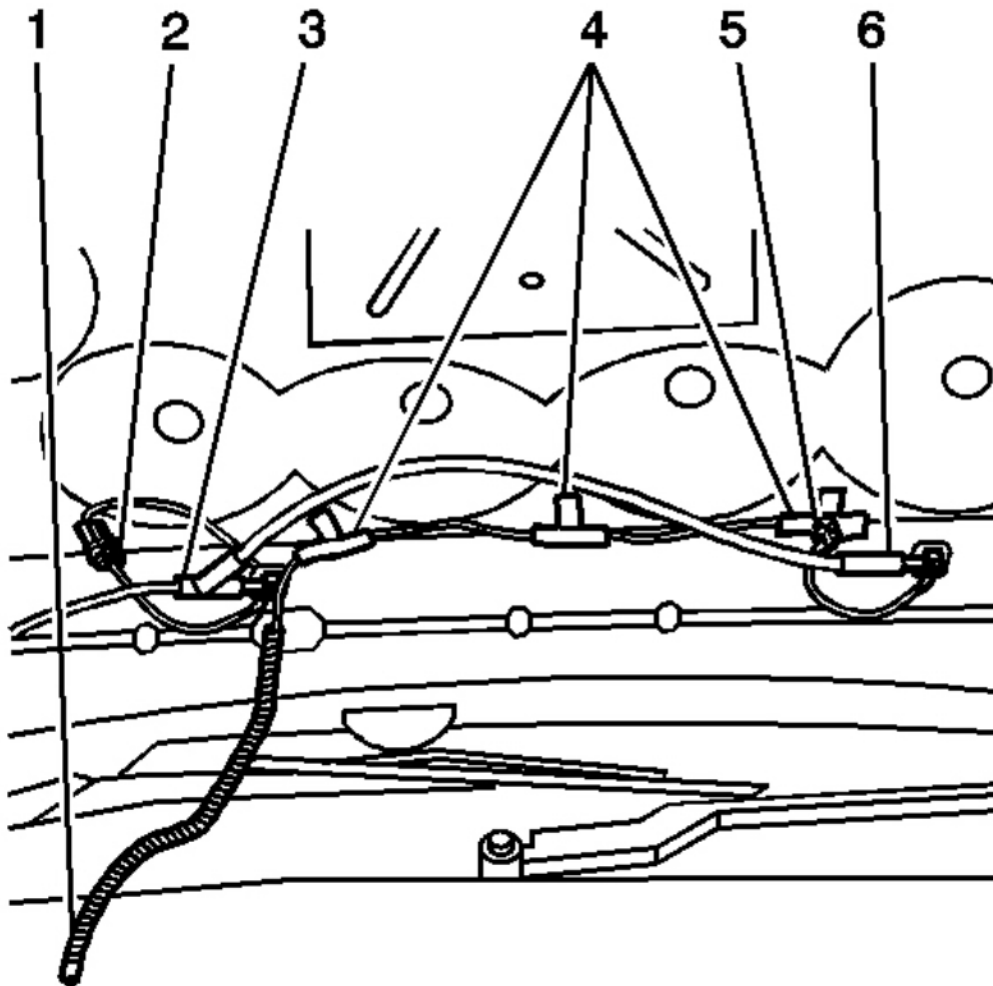


Fig. 46: View Of Washer Hose Connections
Courtesy of GENERAL MOTORS CORP.

7. Disconnect the washer hose connections (3,6) from the washer nozzles.
8. Remove the washer hose from the passenger side inner fender.
9. Remove the hose rearward from the passenger side hood hinge.
10. Remove the washer hose from the vehicle.

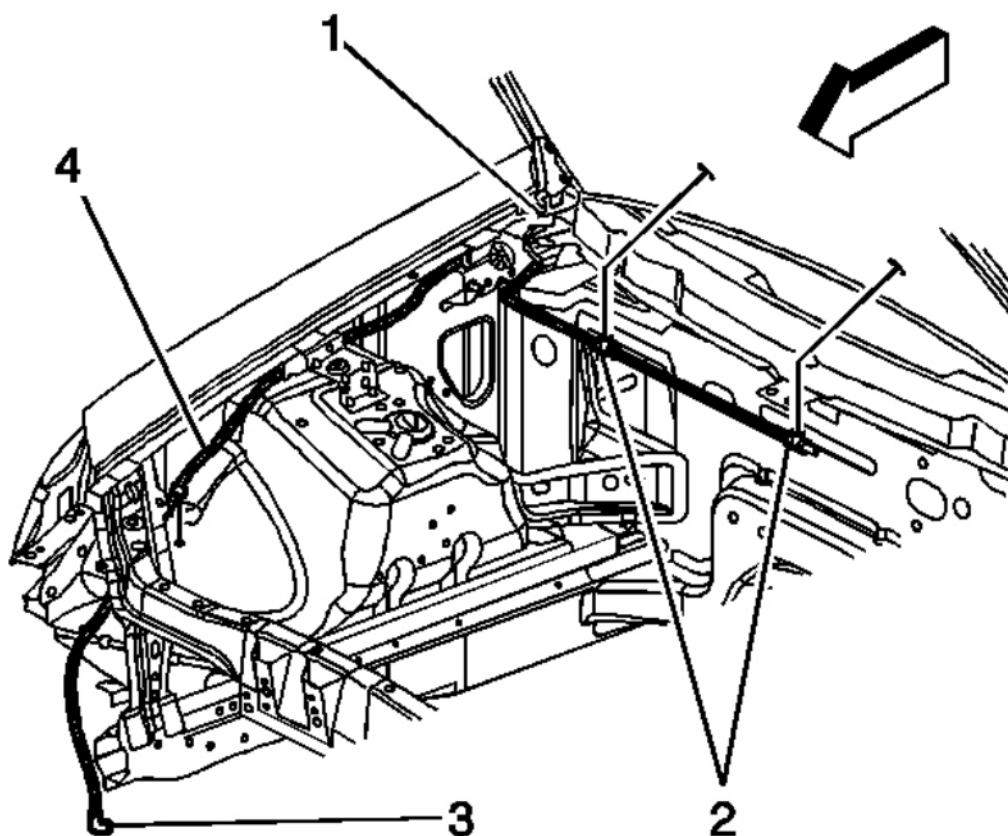


Fig. 47: View Of Washer Hose
Courtesy of GENERAL MOTORS CORP.

1. Position the washer hose around the passenger side hood hinge (1).
2. Route the hose (washer pump end first) forward behind the bracket securing the inner fender to the wheelhouse.
3. Route the hose (4) downward to the washer solvent container.
4. Secure the washer hose retainer (1) to the inside edge of the hood hinge.
5. Connect the washer hose connections (2) to the washer nozzles.
6. Install the air inlet grille (1). Refer to **Air Inlet Grille Panel Replacement** in Body Front End.
7. Install the hood insulator. Refer to **Hood Insulator Replacement** in Body Front End.

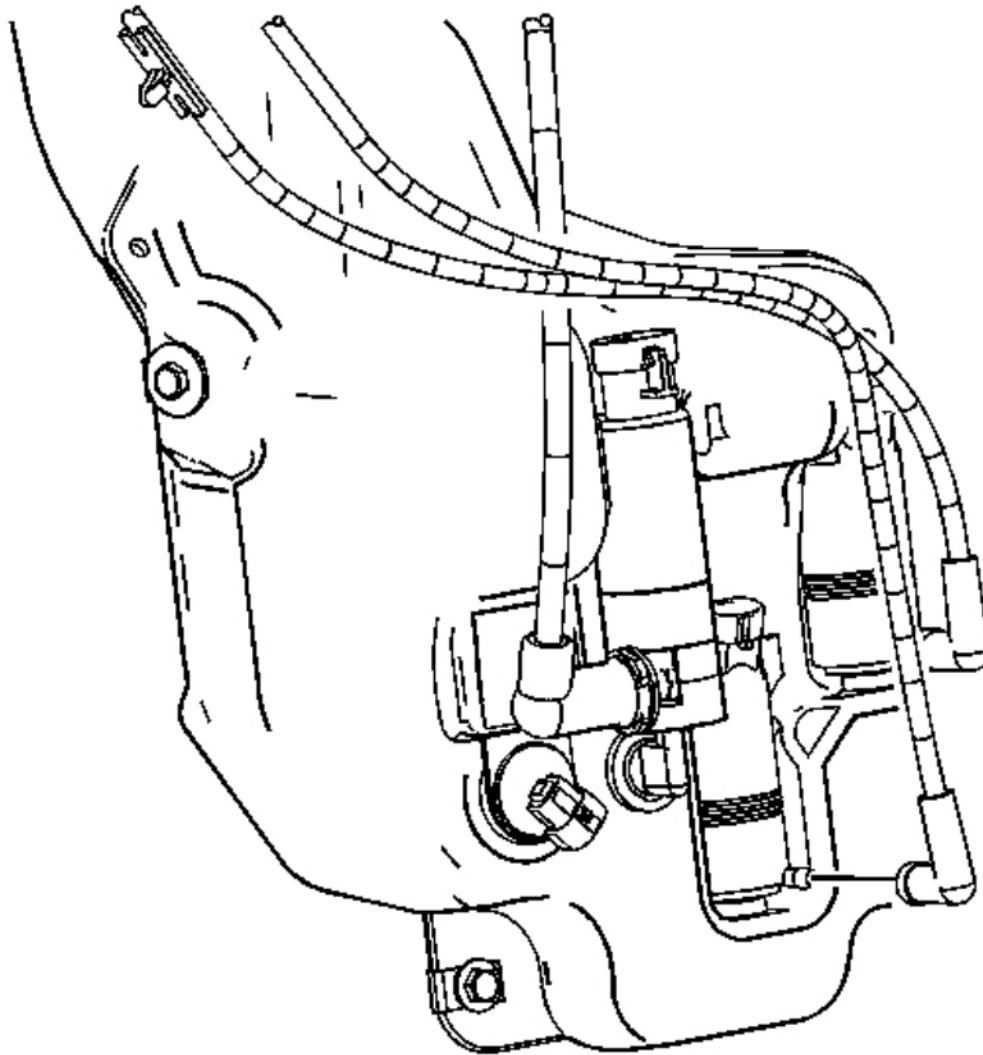


Fig. 48: View Of Windshield Washer Hose
Courtesy of GENERAL MOTORS CORP.

8. Connect the washer hose to the washer pump.
9. Install the air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.
10. Fill the washer solvent container.
11. Verify washer operation.

WIPER ARM REPLACEMENT

Tools Required

J 39822 Wiper Arm Puller. See Special Tools and Equipment.

Removal Procedure

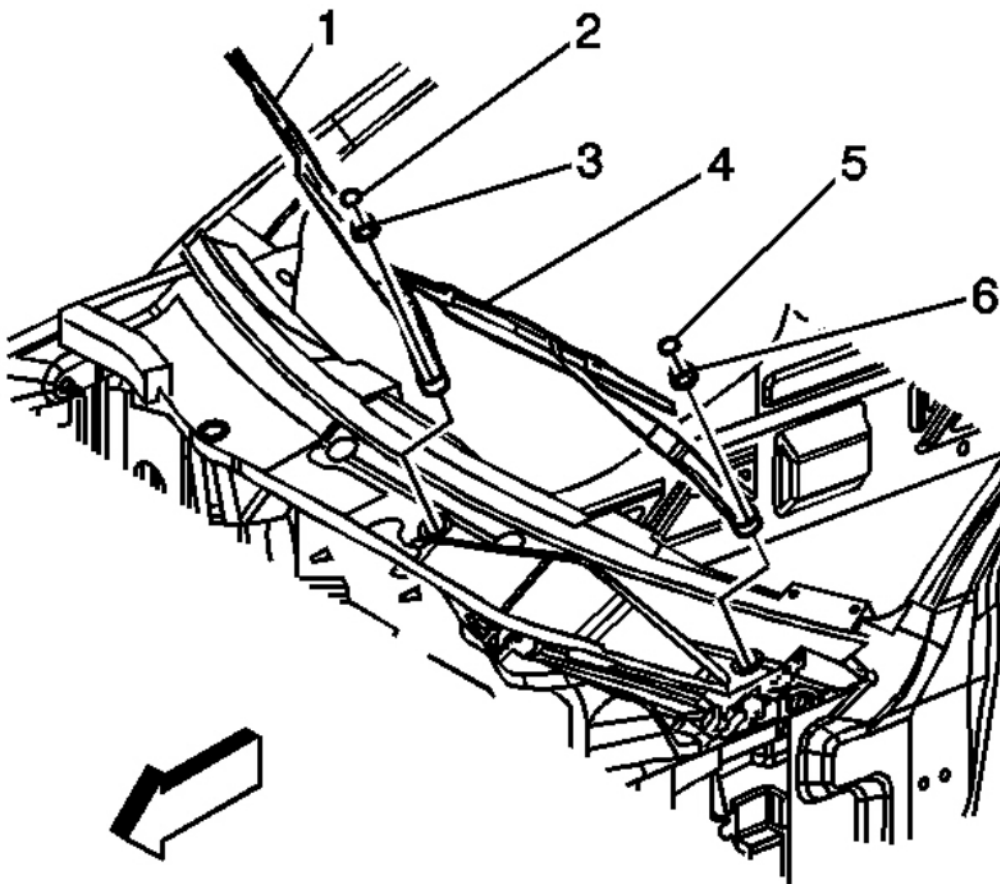


Fig. 49: View Of Wiper Arm Components
Courtesy of GENERAL MOTORS CORP.

1. Set the wipers in the Park position.
2. Open the hood assembly.
3. The driver side wiper (4) aligns with an orange line at the tip of the wiper blade located at

the center lower windshield.

4. The passenger side wiper (1) aligns with an orange dot at the tip of the wiper blade located on the right lower side of the windshield.
5. Remove the covers (2,5) from the wiper arm nuts (3,6).
6. Remove the nut (3,6) from the wiper arm drive spindle.

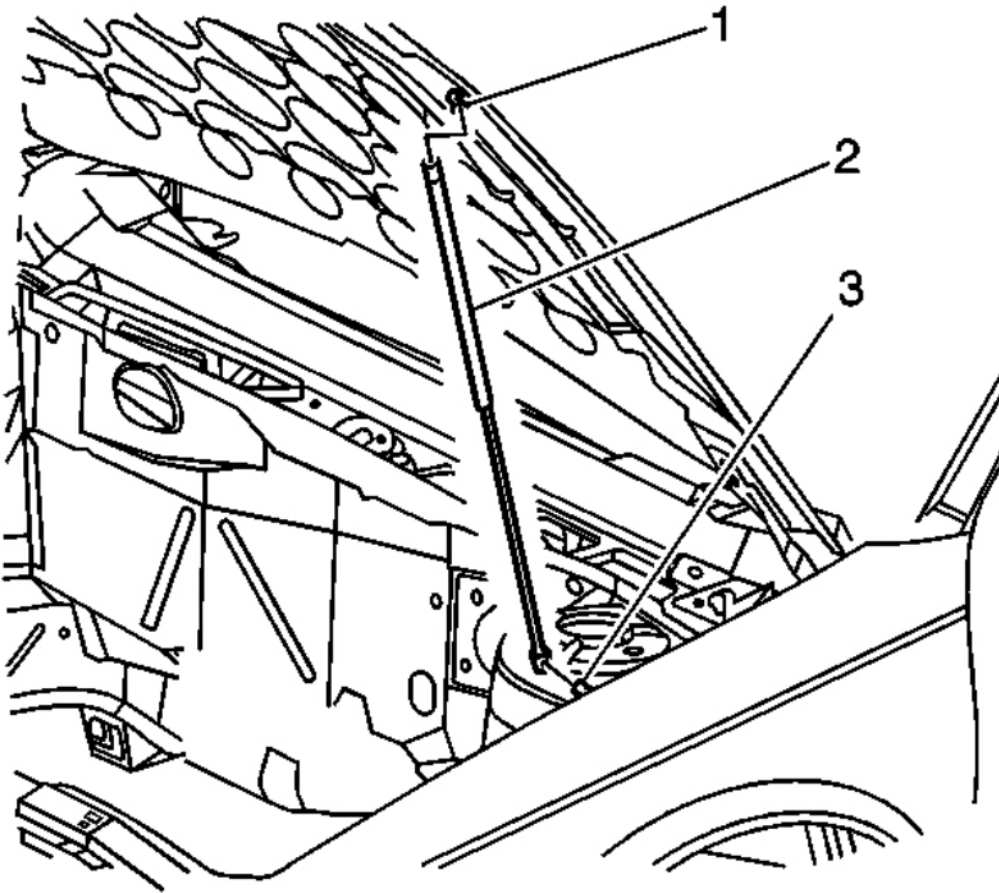


Fig. 50: View Of Upper Hood Assist Rod
Courtesy of GENERAL MOTORS CORP.

NOTE: Apply pressure only at the end of the liftgate/hood assist rod that you are removing or attaching. Do NOT apply pressure to the middle of the rod because damage or bending will result.

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7. Remove the upper hood assist rods from the assist rod ball studs (1) if removing the driver side wiper arm.
8. Tilt the hood rearward to the air inlet grille panel.
9. Support the hood assembly.

IMPORTANT: Use the J 39822 in order to remove the wiper arm if the wiper arm fails to loosen from the wiper arm drive spindle. See Special Tools and Equipment.

10. Remove the wiper arm from the wiper arm drive spindle.
11. Clean the drive spindle knurls with a fine wire brush.
12. Remove the wiper blade from the wiper arm. Refer to Wiper Arm Blade Replacement.

Installation Procedure

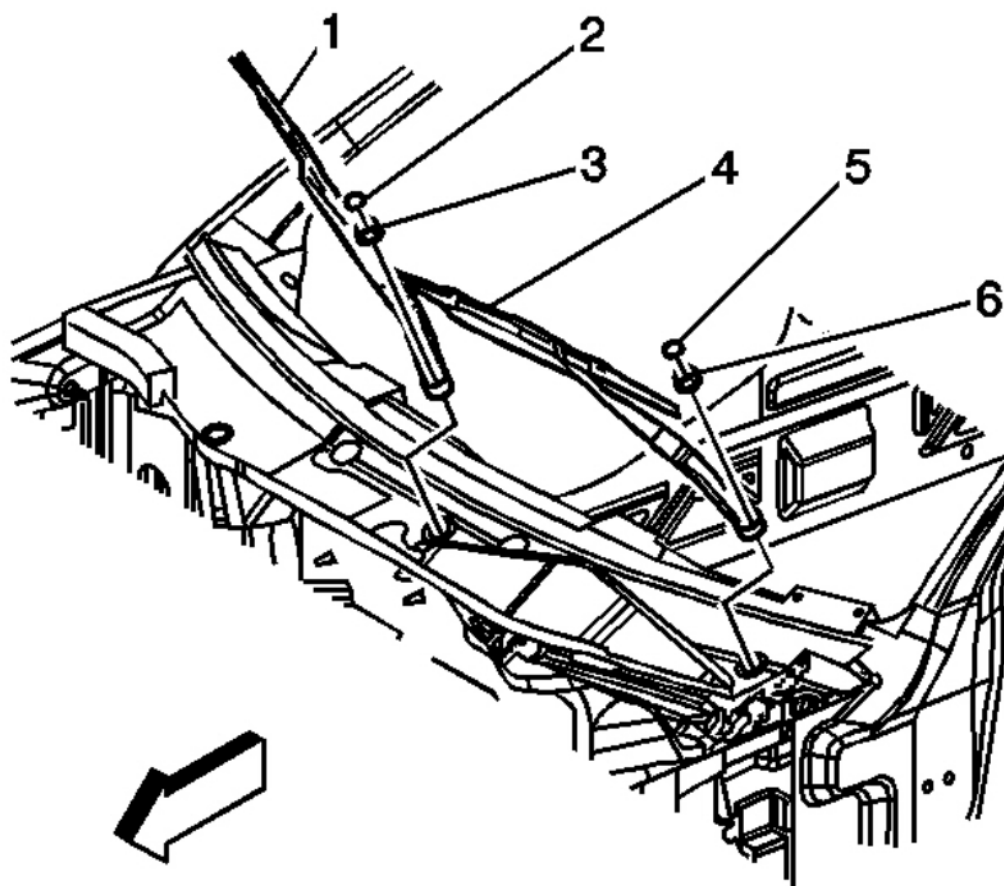


Fig. 51: View Of Wiper Arm Components
Courtesy of GENERAL MOTORS CORP.

1. Install the wiper blade onto the wiper arm. Refer to **Wiper Arm Blade Replacement**.
2. Position the passenger side wiper arm so the wiper blade tip (1) aligns with the orange dot on the lower outer edge of the windshield.
3. Position the driver side wiper arm so that the wiper blade tip (4) aligns with the orange line on the lower center of the windshield.
4. Install the wiper arm onto the wiper arm drive spindle.

NOTE: Refer to Fastener Notice in Cautions and Notices.

IMPORTANT: Hold the wiper arm into position while tightening the nut.

5. Install the nut (3,6) on the wiper arm.

Tighten: Tighten the nut to 35 N.m (26 lb ft).

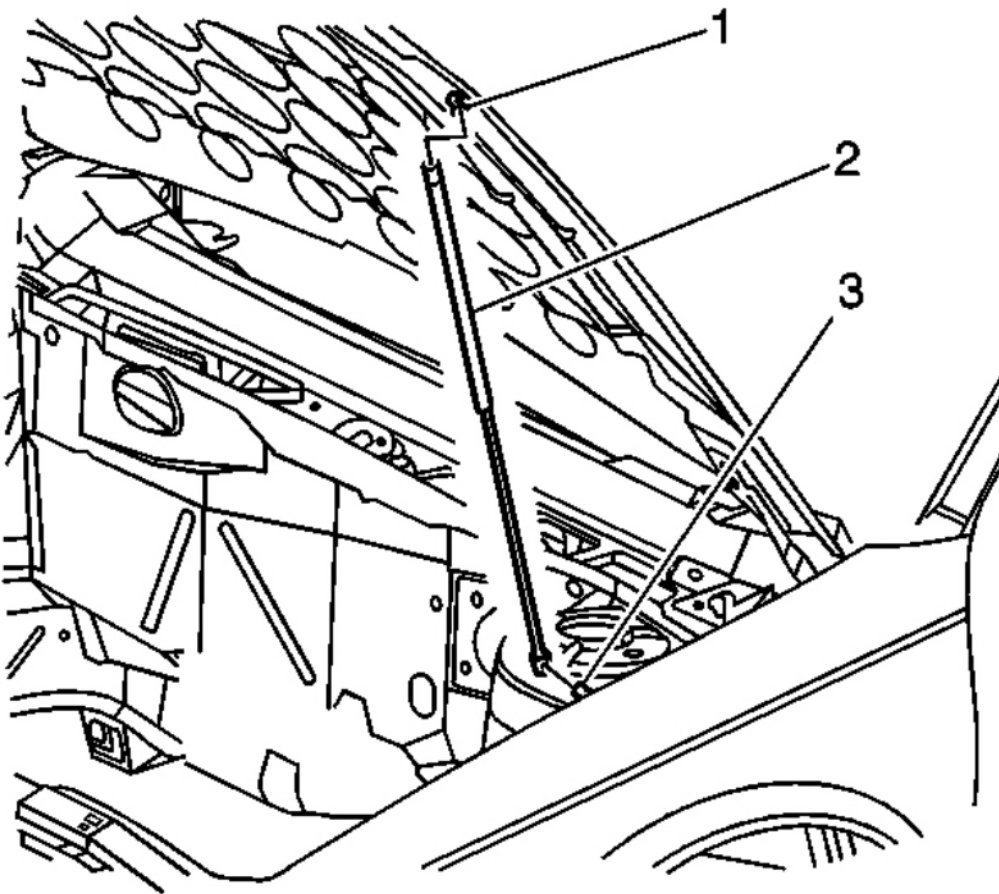


Fig. 52: View Of Upper Hood Assist Rod
Courtesy of GENERAL MOTORS CORP.

6. Secure the upper hood assist rods onto the assist rod ball studs (1) located on the hood assembly.
7. Install the wiper arm nut covers.
8. Close the hood assembly.

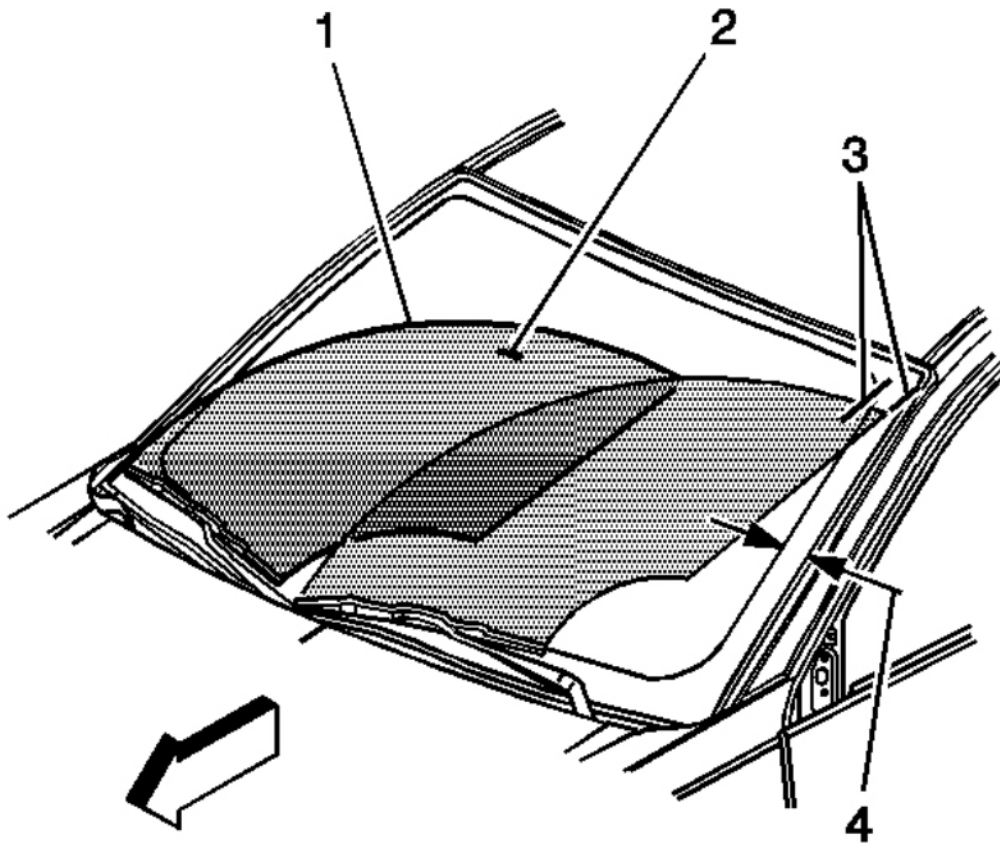


Fig. 53: View Of Proper Wiper Operation
Courtesy of GENERAL MOTORS CORP.

9. Operate the wipers and wash pattern (2) in order to verify the operation.
10. Verify the driver side wiper does not exceed the wipe area (3).

WIPER ARM BLADE REPLACEMENT

Removal Procedure

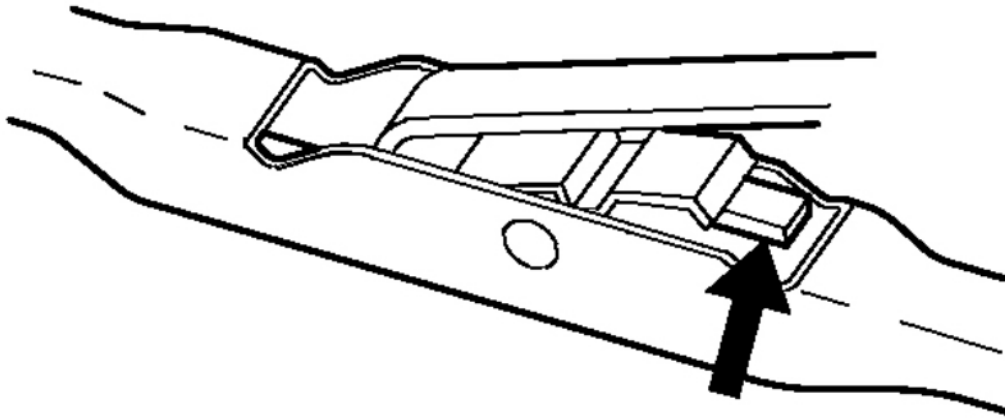


Fig. 54: Identifying Wiper Blade Release Clip
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: The wiper blades need to be cycled to the mid-wipe position to prevent the wiper arms contacting the rear edge of the hood.

1. Cycle the wiper blades to the mid-wipe position on the glass.
2. Push in the button of the wiper blade clip and remove the wiper blade from the inside radius of the wiper arm.

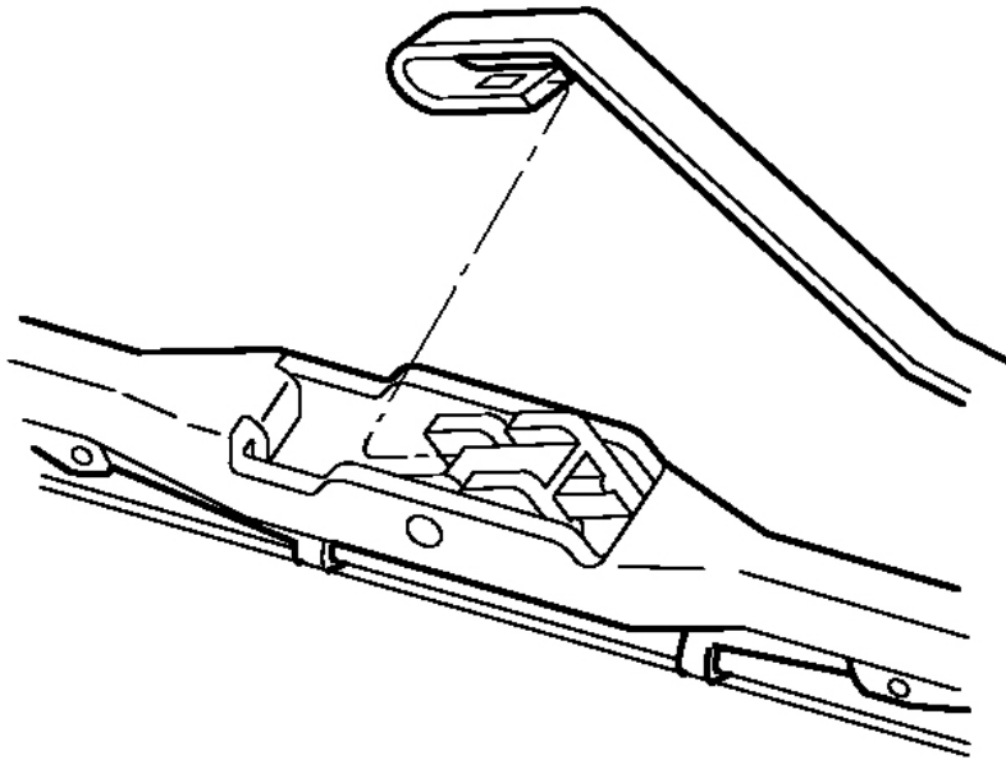


Fig. 55: Removing & Installing Wiper Blade At Wiper Arm Hook
Courtesy of GENERAL MOTORS CORP.

3. Bring the wiper arm out through the opening in the wiper blade.

Installation Procedure

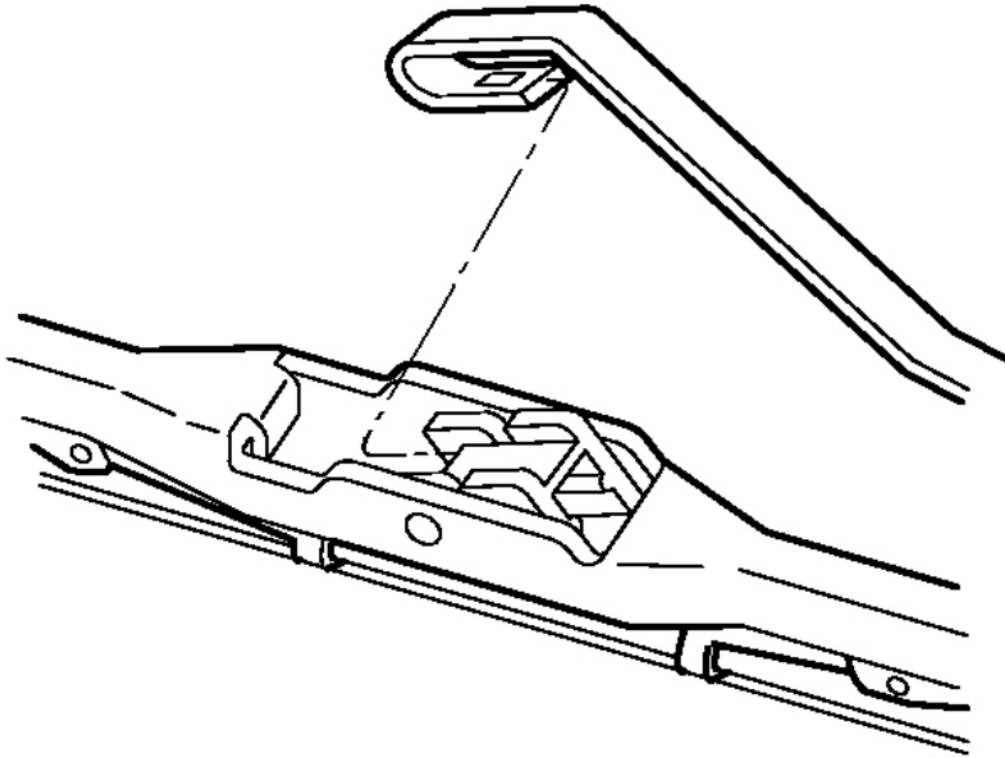


Fig. 56: Removing & Installing Wiper Blade At Wiper Arm Hook
Courtesy of GENERAL MOTORS CORP.

1. Insert the hook of the wiper arm through the opening in the wiper blade.

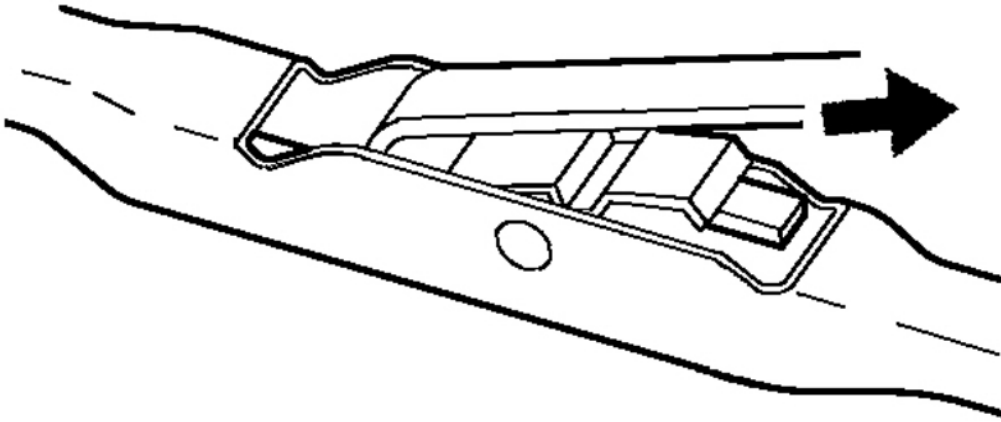


Fig. 57: View Of Wiper Blade Clip
Courtesy of GENERAL MOTORS CORP.

2. Position the wiper blade pivot in the inside radius of the wiper arm hook.
3. Pull the wiper blade pivot into the wiper arm hook until the pivot locks into the hook.
4. Ensure the blade is locked onto the wiper arm.
5. Return the wiper blades to the park position.
6. Operate the wipers and check for proper operation.

WIPER BLADE ELEMENT REPLACEMENT (DRIVER SIDE)

Removal Procedure

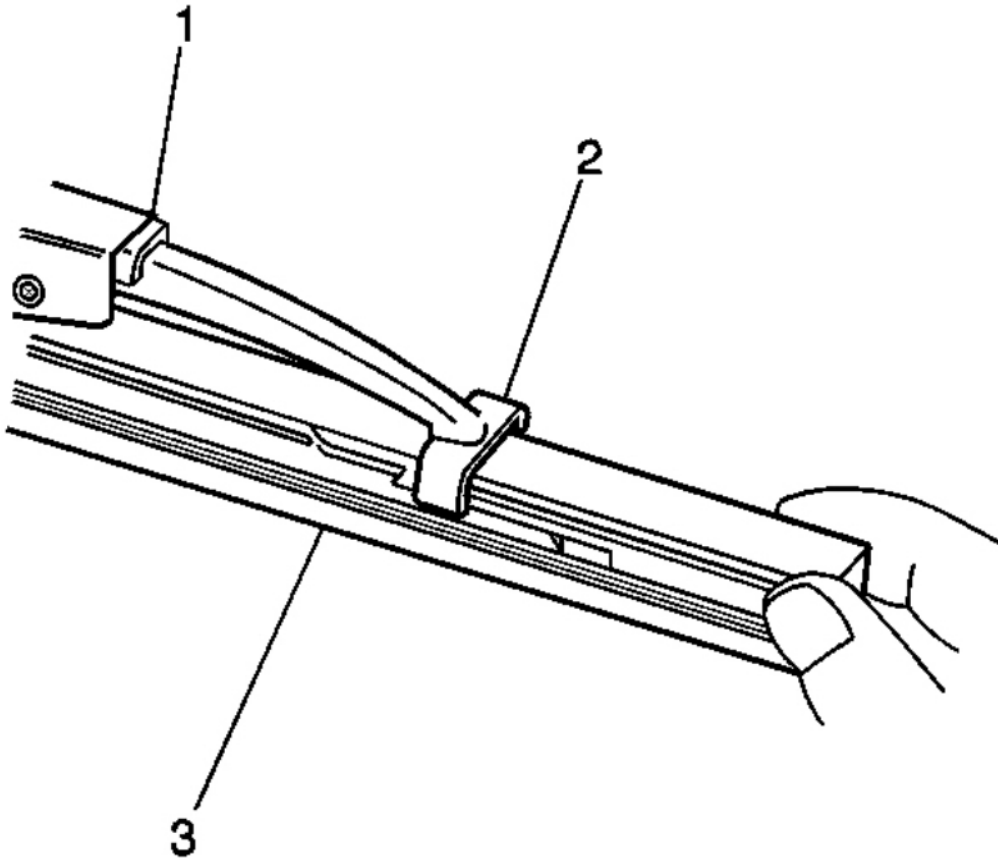


Fig. 58: Identifying Wiper Blade & Components
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Replace the wiper blade element if it is removed from the wiper blade.

1. Remove the wiper blade from the wiper arm. Refer to **Wiper Arm Blade Replacement**.
2. Remove the bottom claws (2) of the wiper blade (1) from the notches in the wiper blade element (3).
3. Pull the wiper blade element (3) out through the wiper blade claws (2).

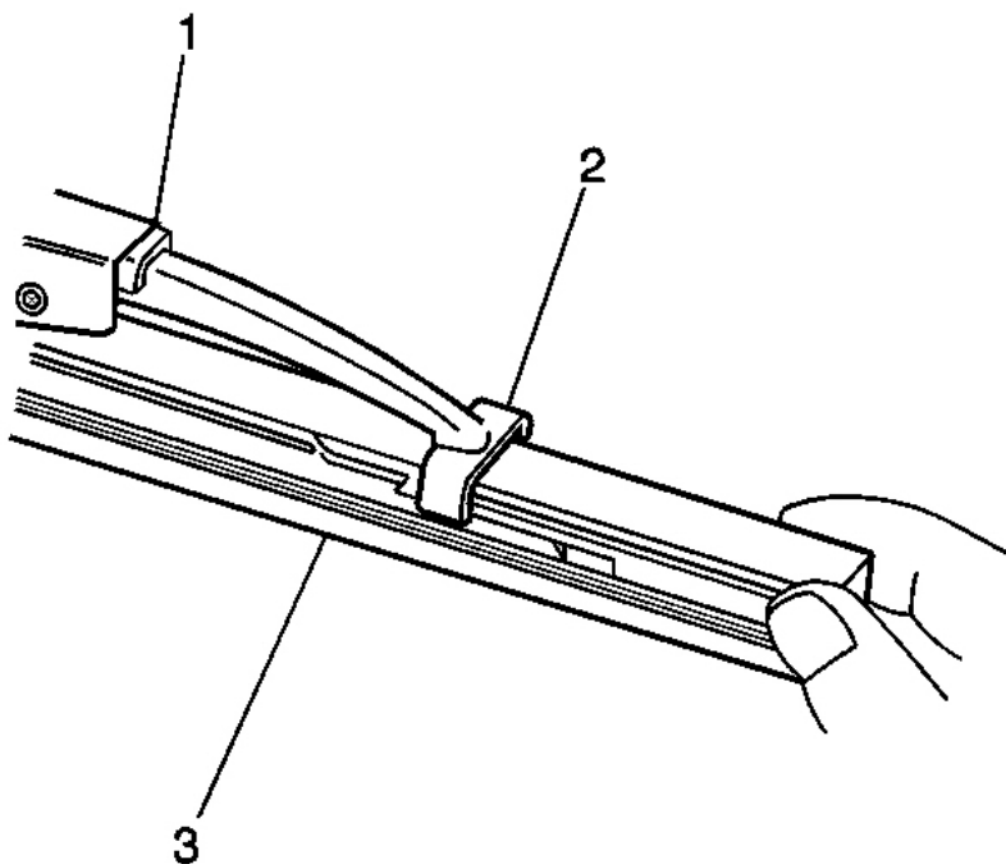


Fig. 59: Identifying Wiper Blade & Components
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Keep the wiper blade claws in the rubber claw channel of the wiper blade element. Do not allow the claws of the wiper blade to contact the metal spline of the wiper blade element.

1. Insert the open end of the wiper blade element (3) into the bottom claws of the wiper blade (2).
2. Guide the wiper blade element (3) through the wiper blade (1) claw sets.
3. Engage the bottom claw (2) of the wiper blade (1) into the notches in wiper blade element (3).
4. Install the wiper blade onto the wiper arm. Refer to **Wiper Arm Blade Replacement**.

WIPER BLADE ELEMENT REPLACEMENT (PASSENGER SIDE)

Removal Procedure

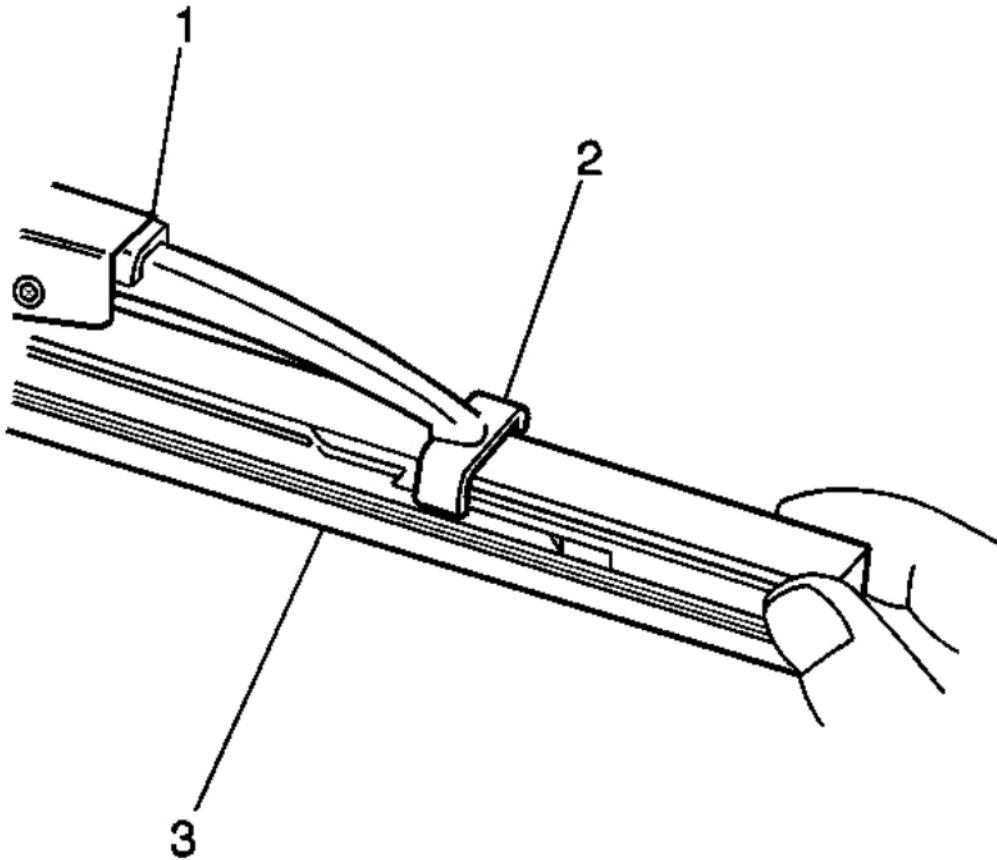


Fig. 60: Identifying Wiper Blade & Components
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Replace the wiper blade element if it is removed from the wiper blade.

1. Remove the wiper blade from the wiper arm. Refer to **Wiper Arm Blade Replacement**.
2. Remove the bottom claws (2) of the wiper blade (1) from the notches in the wiper blade element (3).

3. Pull the wiper blade element (3) out through the wiper blade claws (2).

Installation Procedure

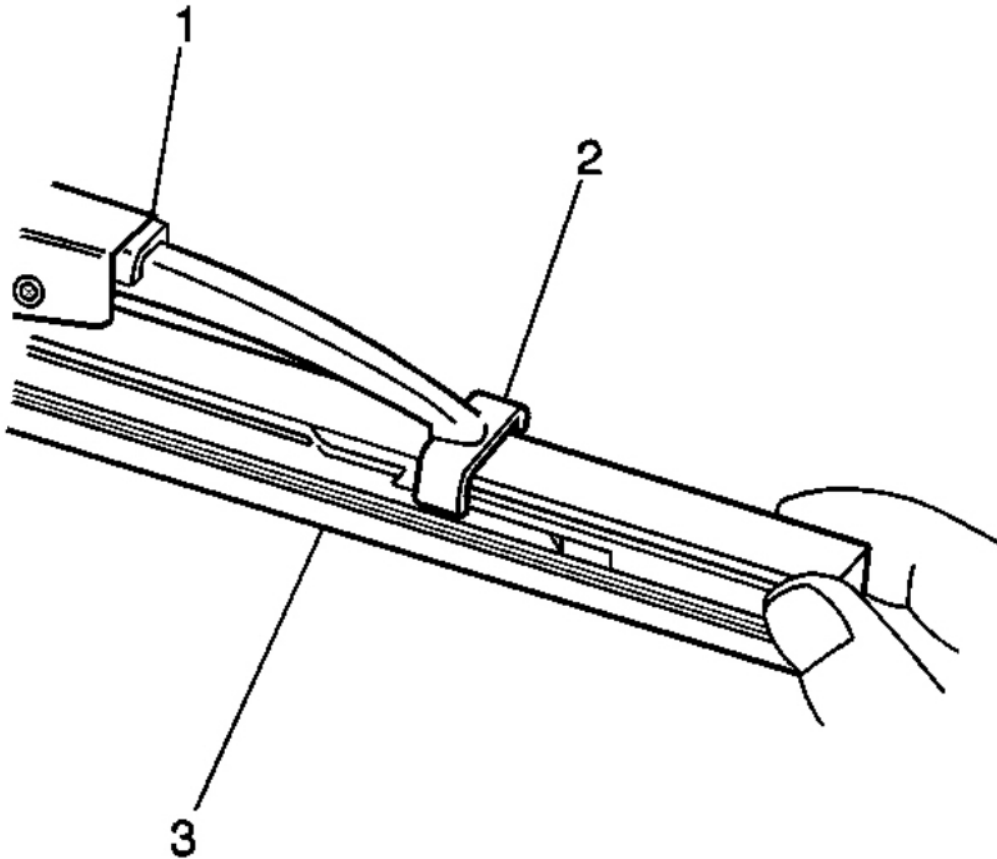


Fig. 61: Identifying Wiper Blade & Components
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Keep the wiper blade claws in the rubber claw channel of the wiper blade element. Do not allow the claws of the wiper blade to contact the metal spline of the wiper blade element.

1. Insert the open end of the wiper blade element (3) into the bottom claws of the wiper blade (2).

2. Guide the wiper blade element (3) through the wiper blade (1) claw sets.
3. Engage the bottom claw (2) of the wiper blade (1) into the notches in wiper blade element (3).
4. Install the wiper blade onto the wiper arm. Refer to **Wiper Arm Blade Replacement**.

WIPER MOTOR COVER REPLACEMENT - FRONT

Removal Procedure

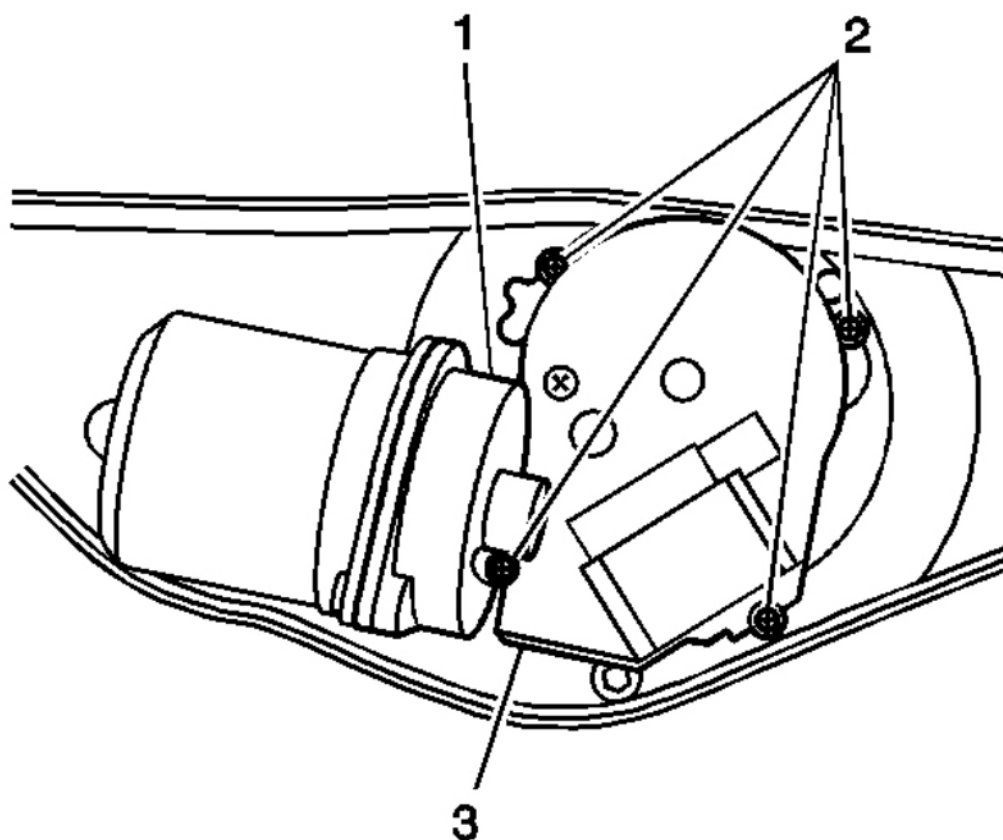


Fig. 62: View Of Front Wiper Motor Housing & Cover
Courtesy of GENERAL MOTORS CORP.

1. Remove the wiper motor module. Refer to **Wiper Motor Module Replacement**.
2. Remove the fasteners (2) from the wiper motor cover (3).

3. Carefully remove the wiper motor cover from the wiper motor housing (1).

Installation Procedure

1. Ensure the wiper motor cover housing sealing surface is clean and dry.
2. Position the wiper motor cover (3) to the wiper motor housing.

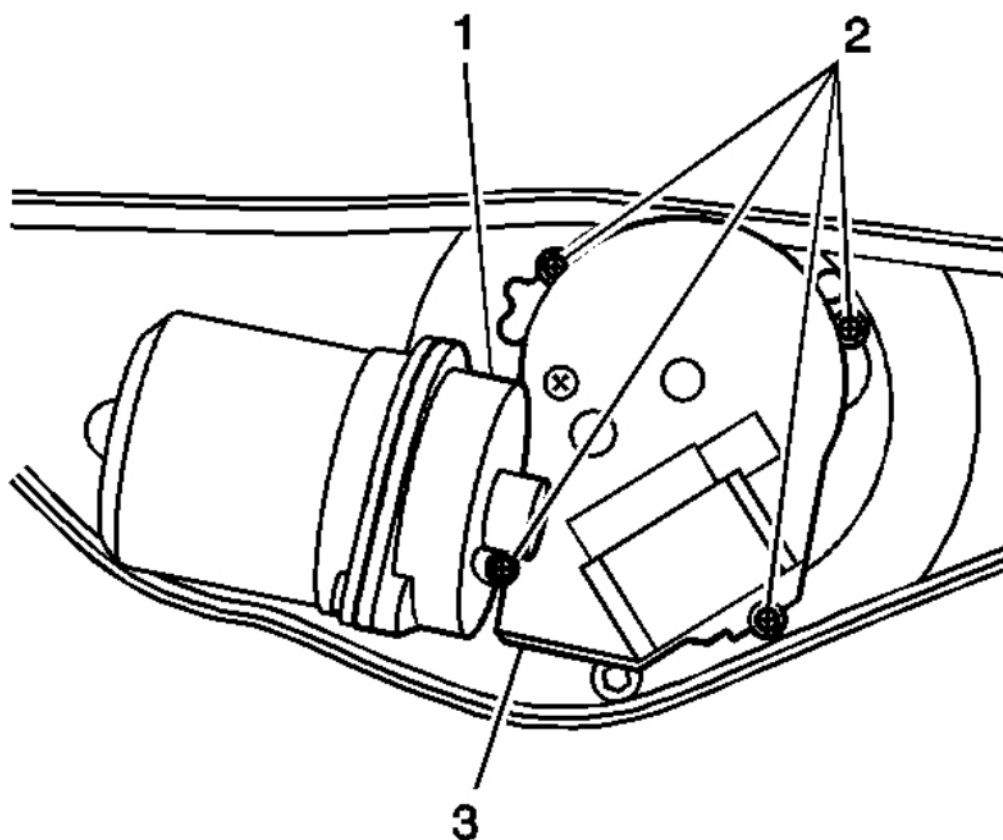


Fig. 63: View Of Front Wiper Motor Housing & Cover
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: To ensure proper wiper cover seal to wiper motor housing contact, the cover fasteners need to be equally tightened to the motor housing.

3. Install the wiper motor cover fasteners (2).

NOTE: Refer to Fastener Notice in Cautions and Notices.

4. Tighten the fasteners in an "X" pattern as follows:

Tighten:

1. Tighten the fasteners on the first pass to 0.67 N.m (6 lb in).
2. Tighten the fasteners on the second pass to 1.35 N.m (12 lb in).
3. Tighten the fasteners on the third and final pass to 2.0 N.m (18 lb in) to ensure equal sealing pressure is applied to the cover seal.

5. Install the wiper motor module. Refer to Wiper Motor Module Replacement.

WIPER MOTOR REPLACEMENT

Tools Required

- **J 39232** Wiper Linkage Separator. See Special Tools and Equipment.
- **J 39529** Wiper Linkage Installer. See Special Tools and Equipment.

Removal Procedure

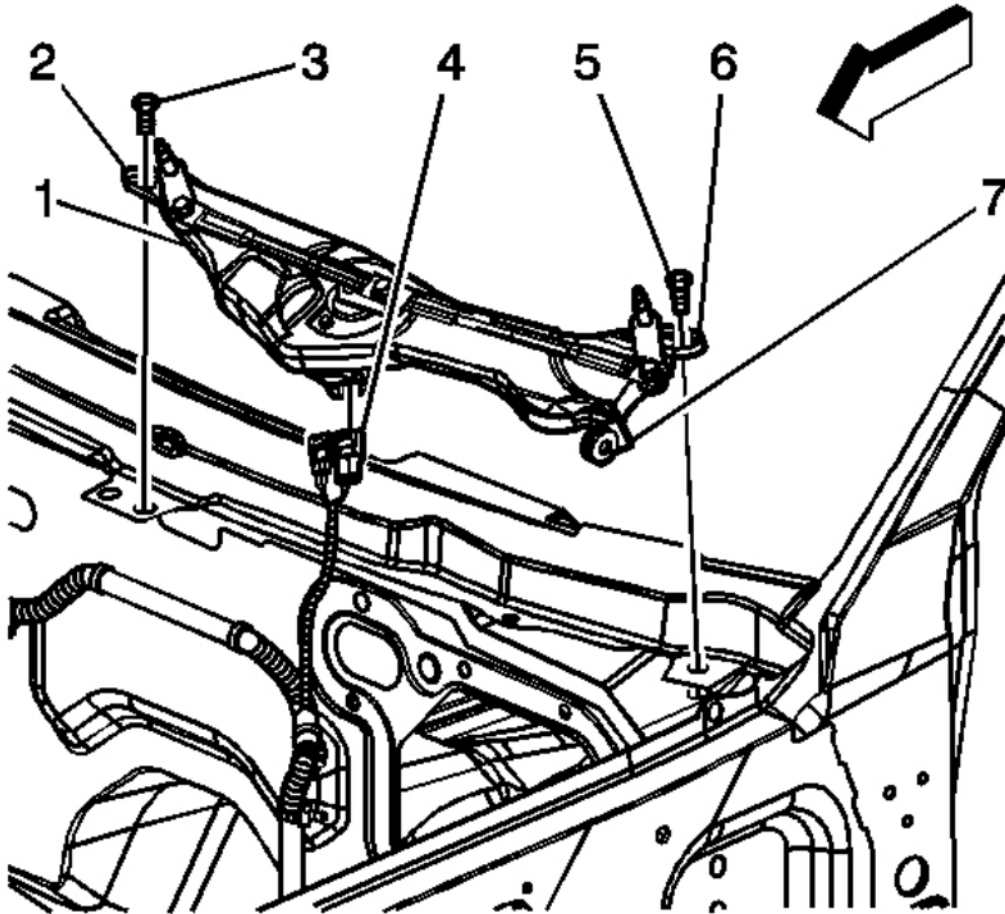


Fig. 64: Wiper Transmission View

Courtesy of GENERAL MOTORS CORP.

1. Remove the wiper motor module assembly (1). Refer to **Wiper Motor Module Replacement**.

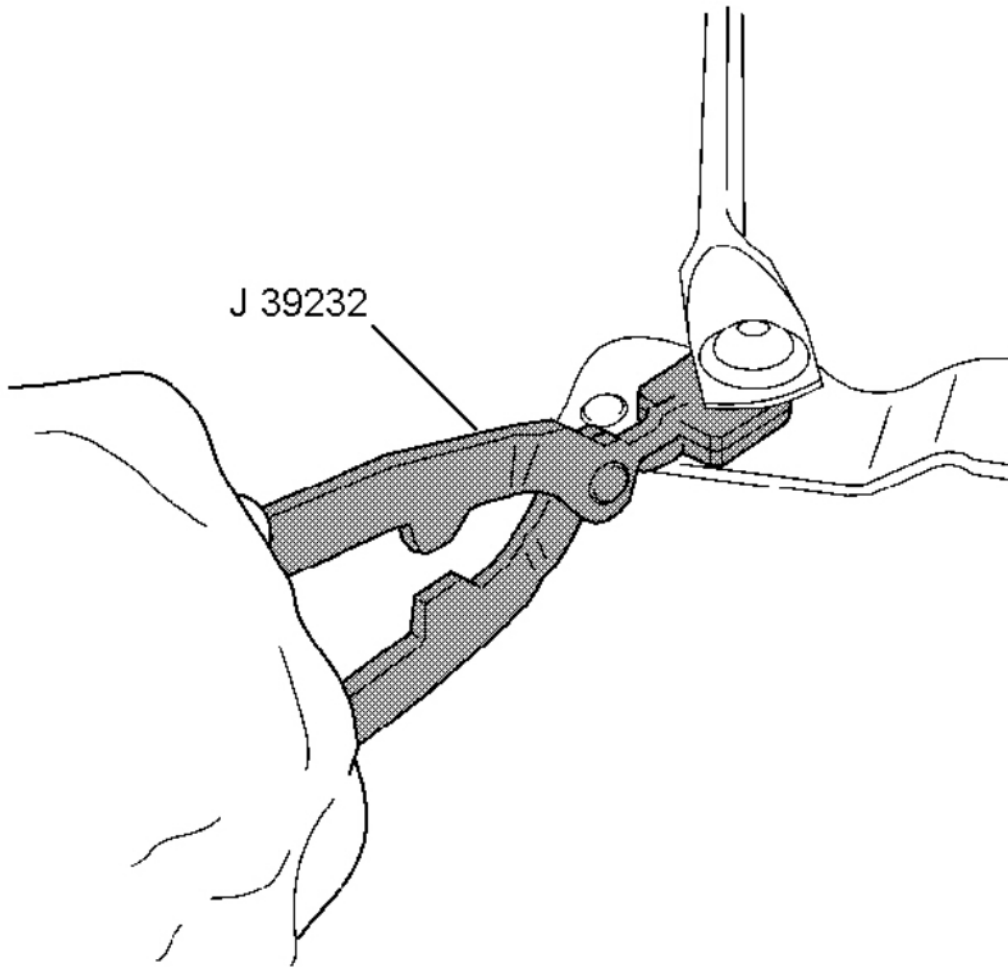


Fig. 65: Disconnecting Wiper Transmission From Wiper Motor Crank Arm
Courtesy of GENERAL MOTORS CORP.

2. Remove the drive links from the wiper motor crank arm to the wiper motor using the J 39232 . See **Special Tools and Equipment**.

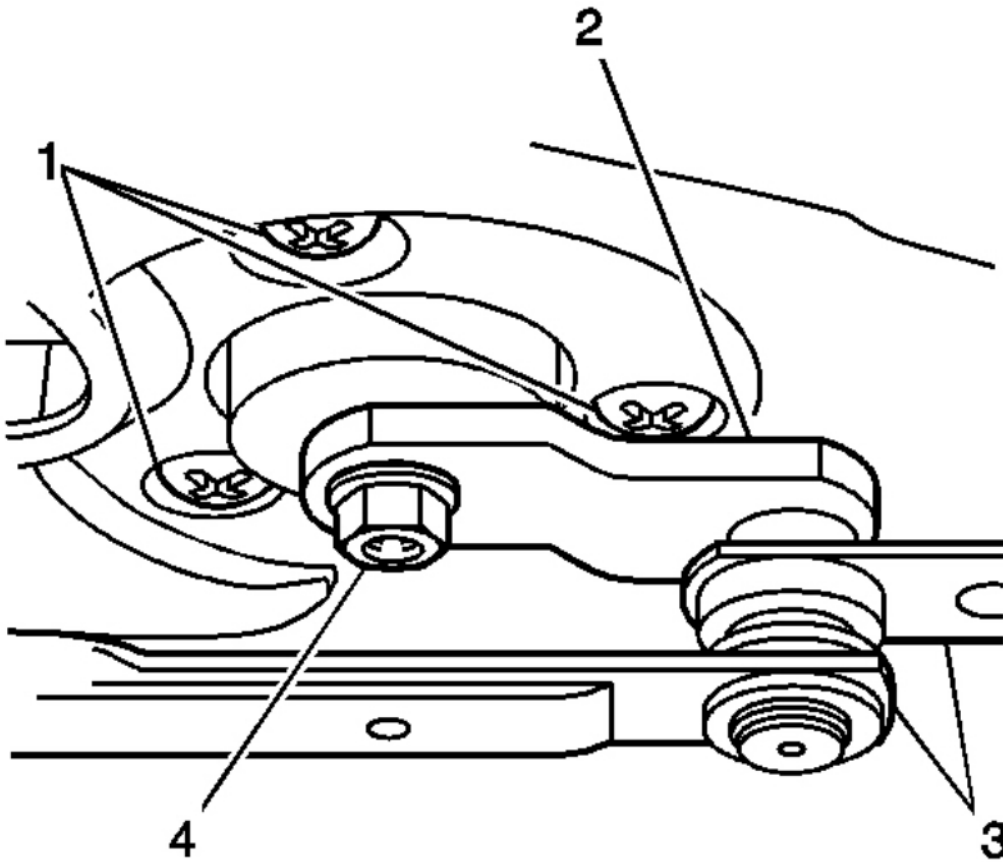


Fig. 66: View Of Wiper Motor-To-Wiper Motor Module Retaining Screws
Courtesy of GENERAL MOTORS CORP.

3. Remove the 3 screws (1) retaining the wiper motor to the wiper motor module.
4. Remove the wiper motor.

Installation Procedure

NOTE: Refer to Fastener Notice in Cautions and Notices.

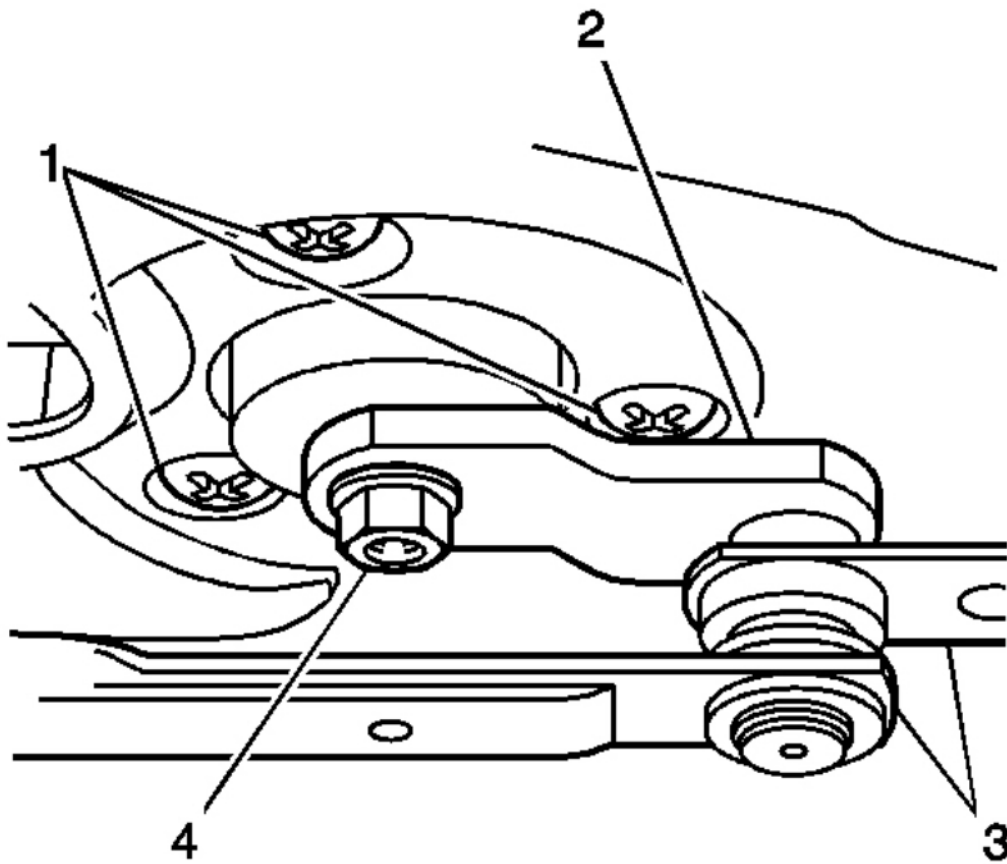


Fig. 67: View Of Wiper Motor-To-Wiper Motor Module Retaining Screws
Courtesy of GENERAL MOTORS CORP.

1. Install the wiper motor onto the wiper motor module assembly with the screws (1).

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

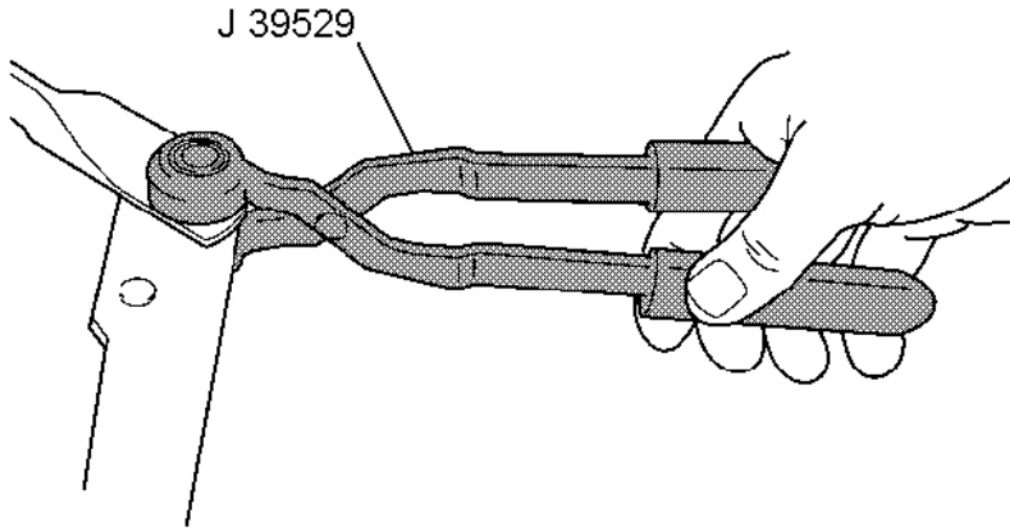


Fig. 68: Installing Wiper Transmission To Wiper Motor Crank Arm
Courtesy of GENERAL MOTORS CORP.

2. Install the drive links onto the wiper motor crank arm using the **J 39529** . See **Special Tools and Equipment**.

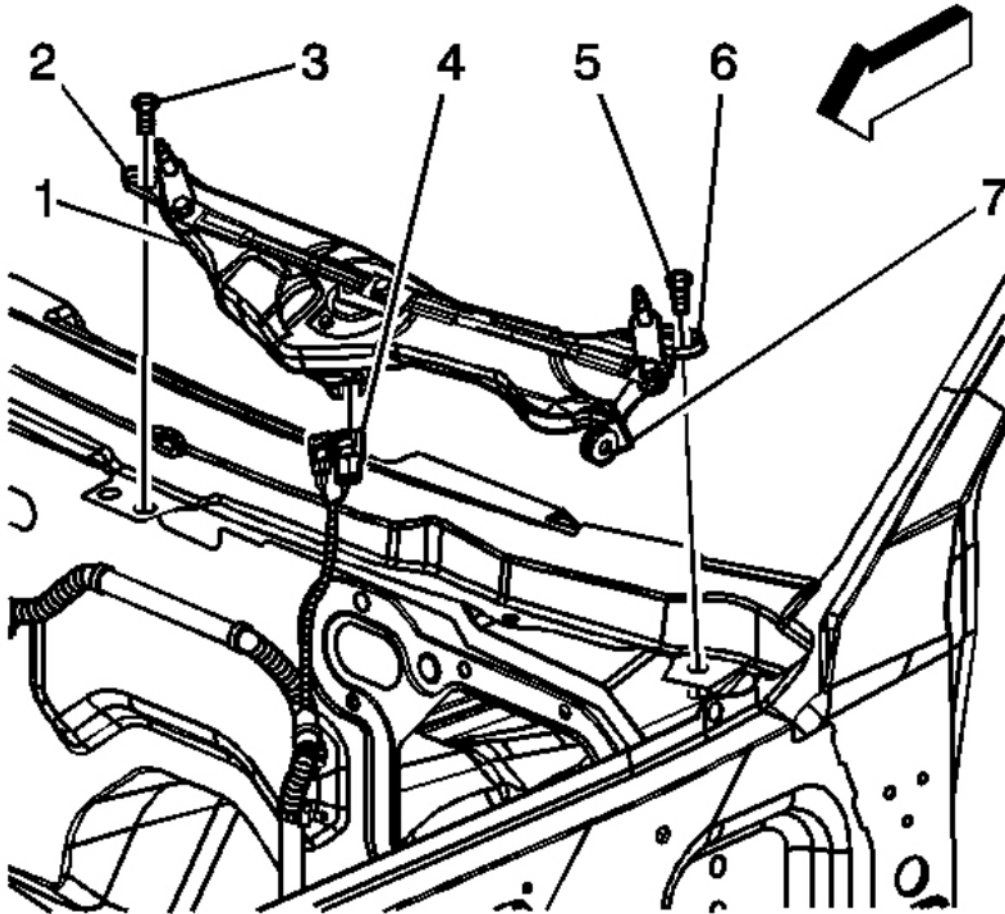


Fig. 69: Wiper Transmission View
Courtesy of GENERAL MOTORS CORP.

3. Install the wiper motor module assembly. Refer to **Wiper Motor Module Replacement**.
4. Operate the wipers and check for proper operation.

WIPER TRANSMISSION REPLACEMENT

Tools Required

- **J 39232** Wiper Linkage Separator. See **Special Tools and Equipment**.
- **J 39529** Wiper Linkage Installer. See **Special Tools and Equipment**.

Removal Procedure

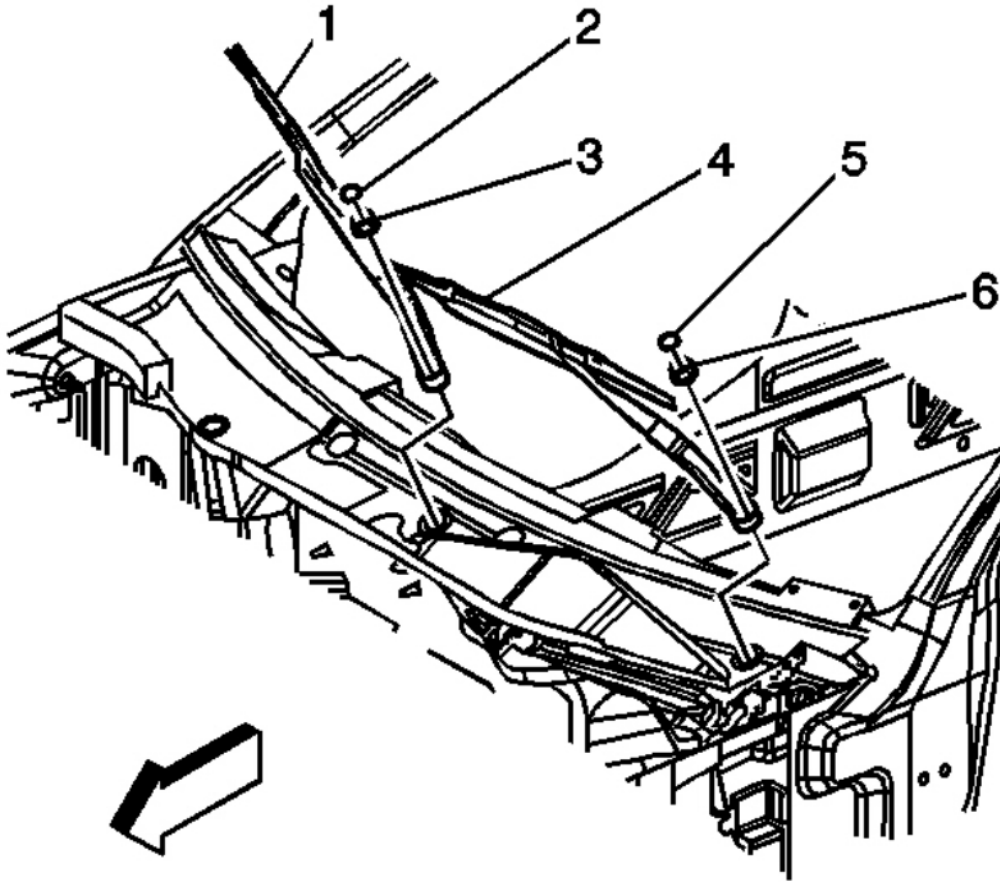


Fig. 70: View Of Wiper Arm Components
Courtesy of GENERAL MOTORS CORP.

1. Remove the wiper arms (1,4). Refer to Wiper Arm Replacement.
2. Remove the air inlet grille panel. Refer to Air Inlet Grille Panel Replacement in Body Front End.

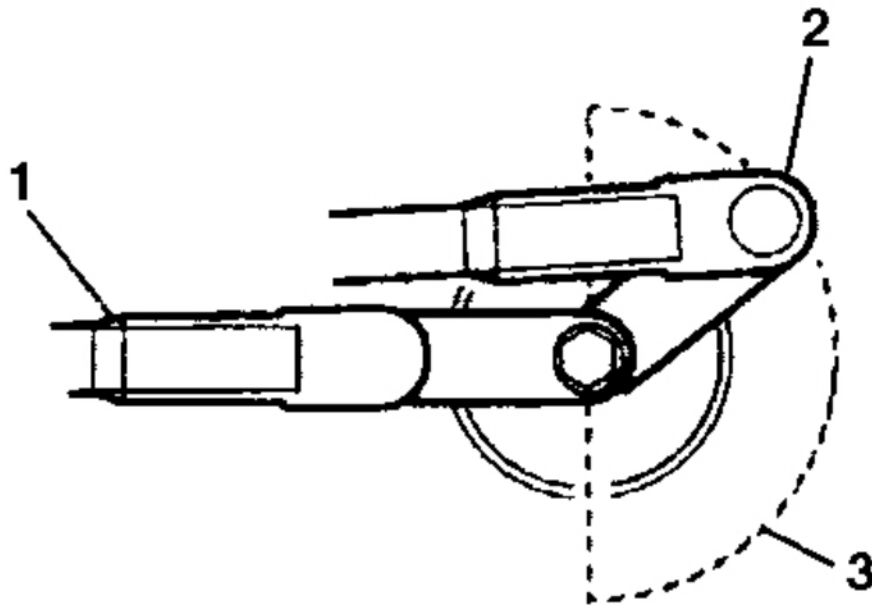


Fig. 71: Rotating Wiper Motor Crank Arm
Courtesy of GENERAL MOTORS CORP.

3. Pull or push on the wiper transmission linkage to rotate the wiper motor crank arm (2) from the park position (1) to the area opposite the park position (3).

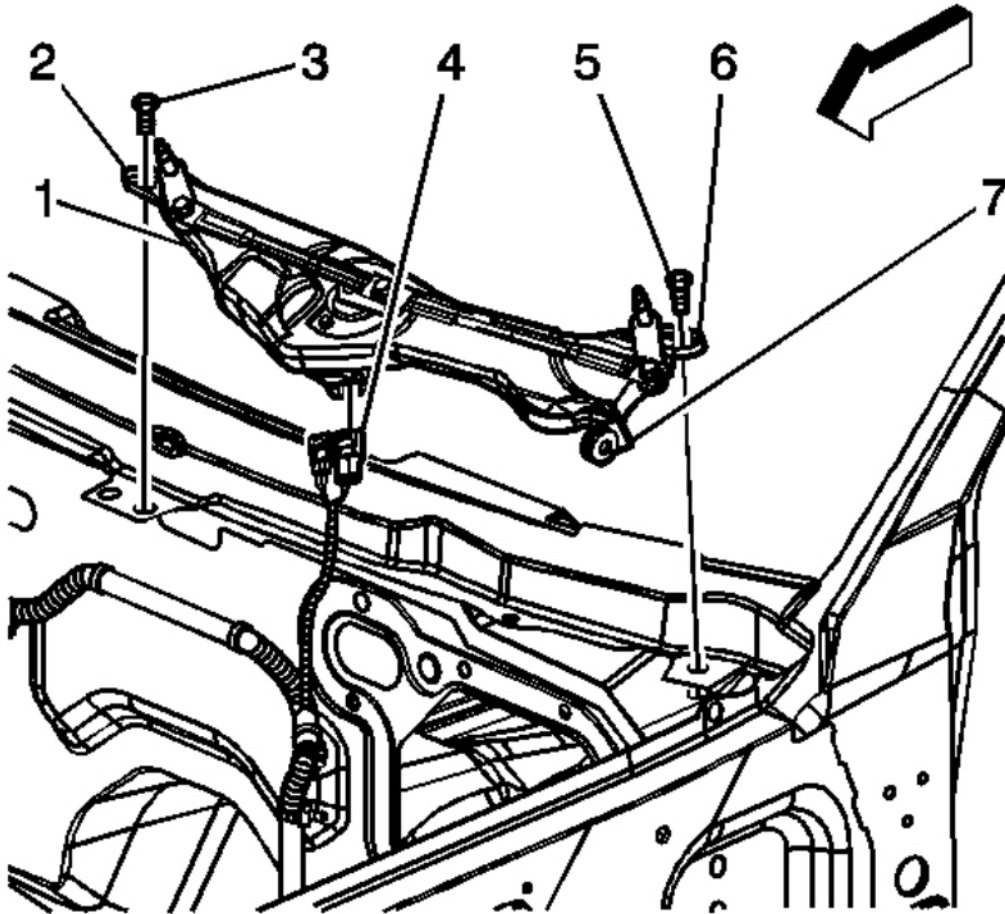


Fig. 72: Wiper Transmission View
Courtesy of GENERAL MOTORS CORP.

4. Disconnect the wiper motor harness connector (4).
5. Remove the 2 screws (3,5) retaining the wiper system drive module.
6. Remove the wiper system drive module (1) from the vehicle.

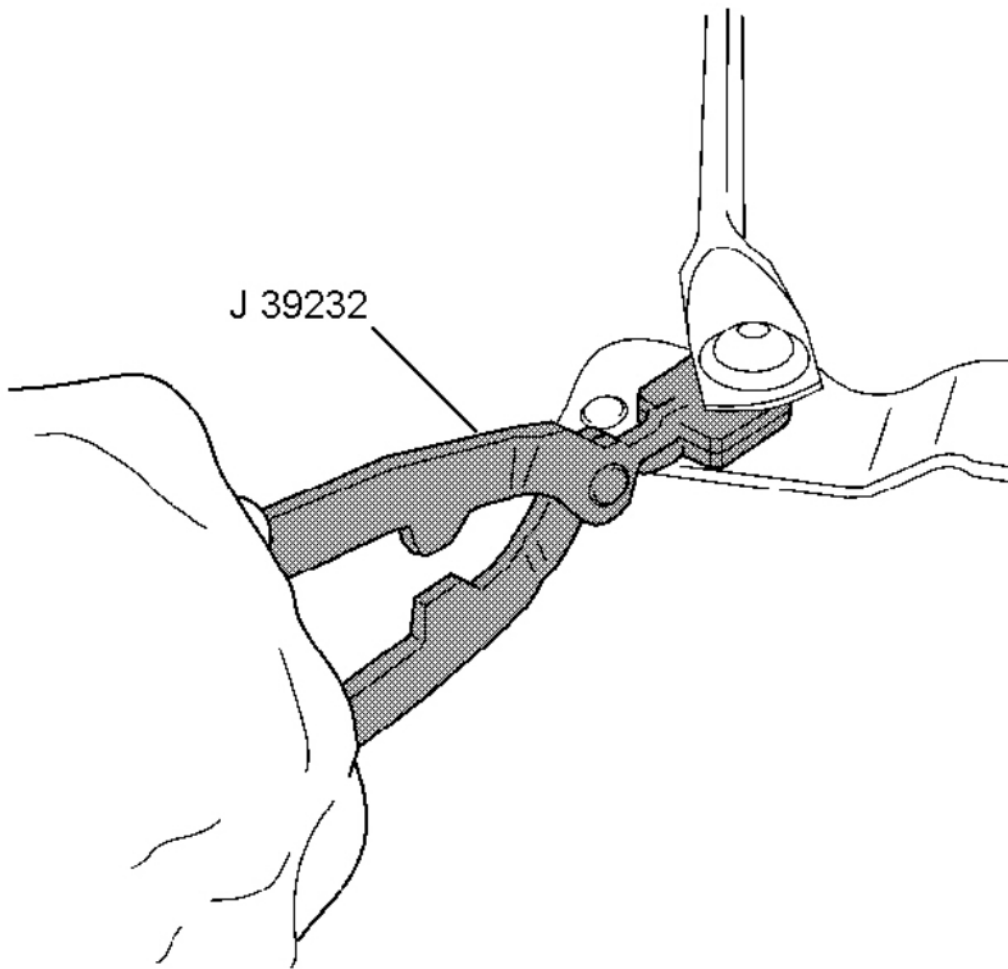


Fig. 73: Disconnecting Wiper Transmission From Wiper Motor Crank Arm
Courtesy of GENERAL MOTORS CORP.

7. Remove the drive links from the wiper motor crank arm and the wiper transmission drive shafts with the **J 39232** . See **Special Tools and Equipment**.
8. Remove the transmission links from the module.

Installation Procedure

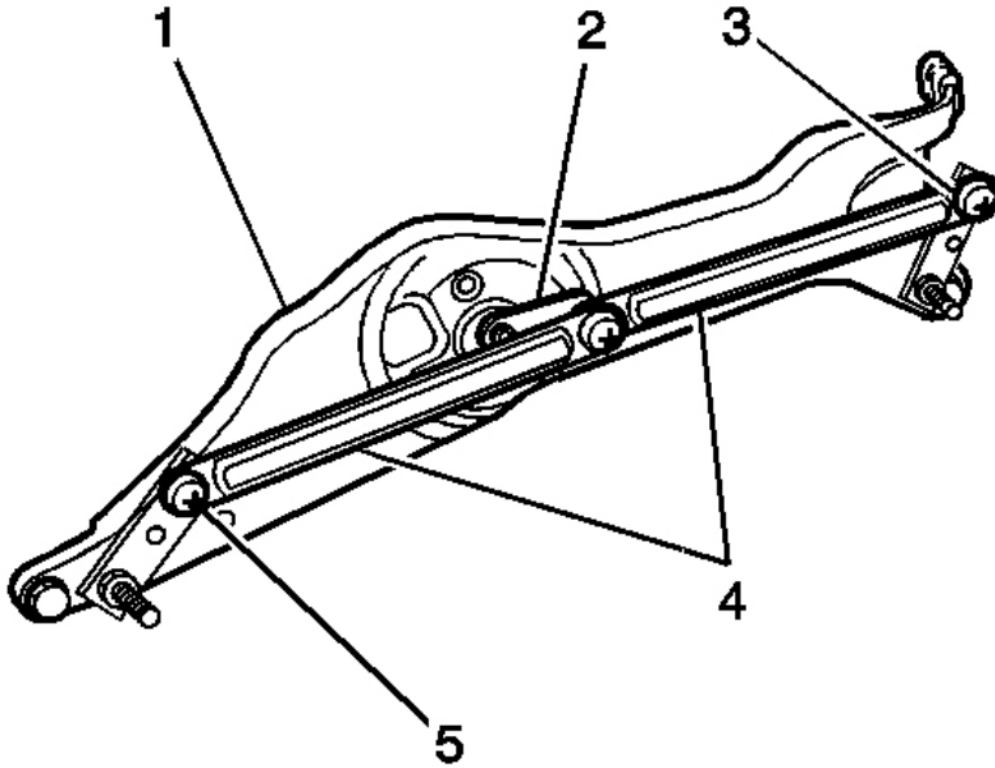


Fig. 74: View Of Pivot Arms & Drive Links
Courtesy of GENERAL MOTORS CORP.

1. Position the transmission drive links (4) to the pivot arms (3,5).

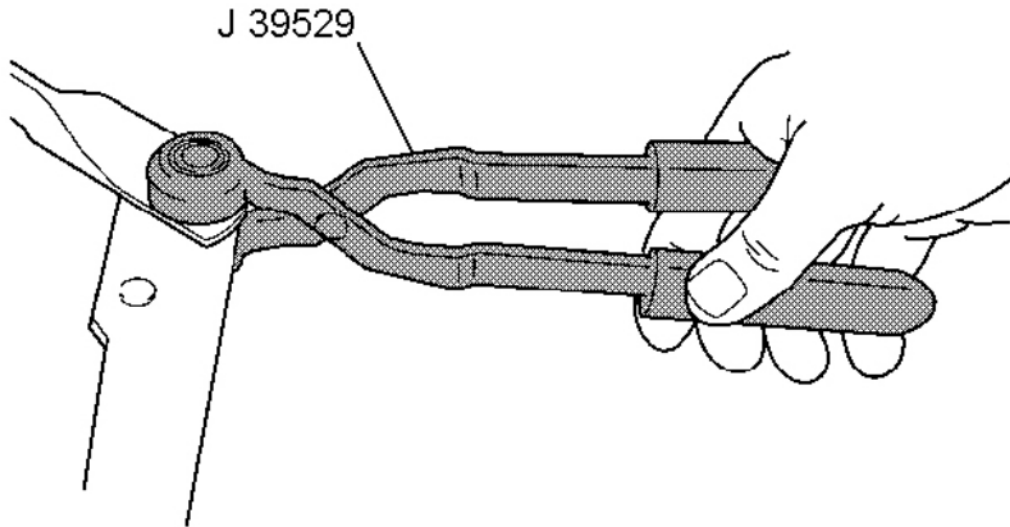


Fig. 75: Installing Wiper Transmission To Wiper Motor Crank Arm
Courtesy of GENERAL MOTORS CORP.

2. Install the drive links onto the wiper motor crank arm and the wiper transmission drive shafts with the **J 39529** . See **Special Tools and Equipment**.

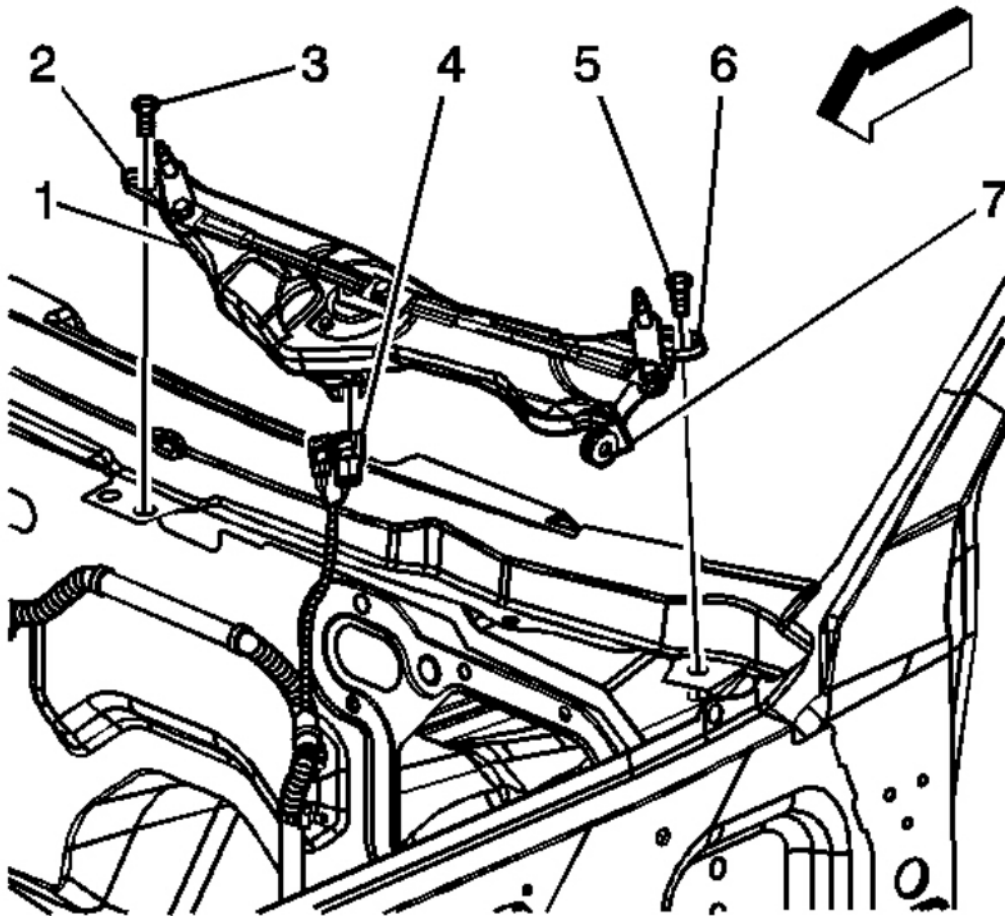
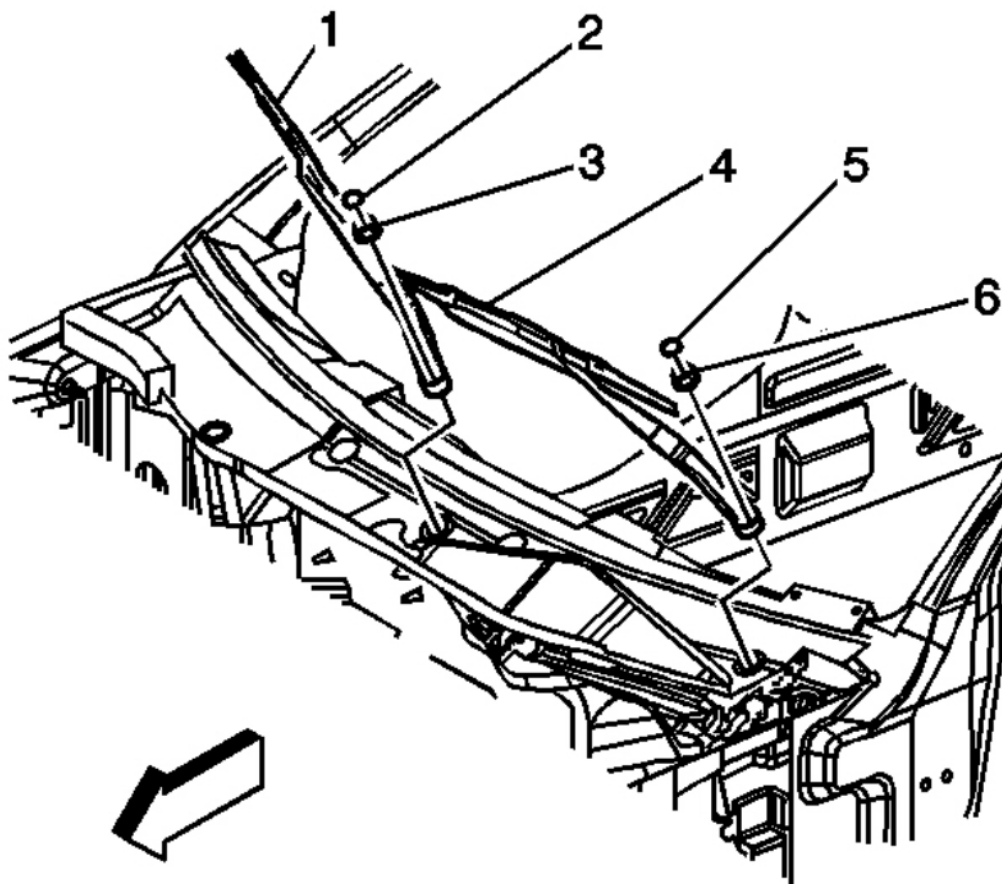


Fig. 76: Wiper Transmission View
Courtesy of GENERAL MOTORS CORP.

3. Install the wiper motor module assembly Refer to **Wiper Motor Module Replacement**.



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- ## WIPER MOTOR MODULE REPLACEMENT

1. Remove the wiper motor mini 10 A and 30 A fuses. The wiper motor fuses are located in

the underhood fuse block.

2. Remove the wiper arm assemblies. Refer to Wiper Arm Replacement.
3. Remove the air inlet grille. Refer to Air Inlet Grille Panel Replacement in Body Front End.

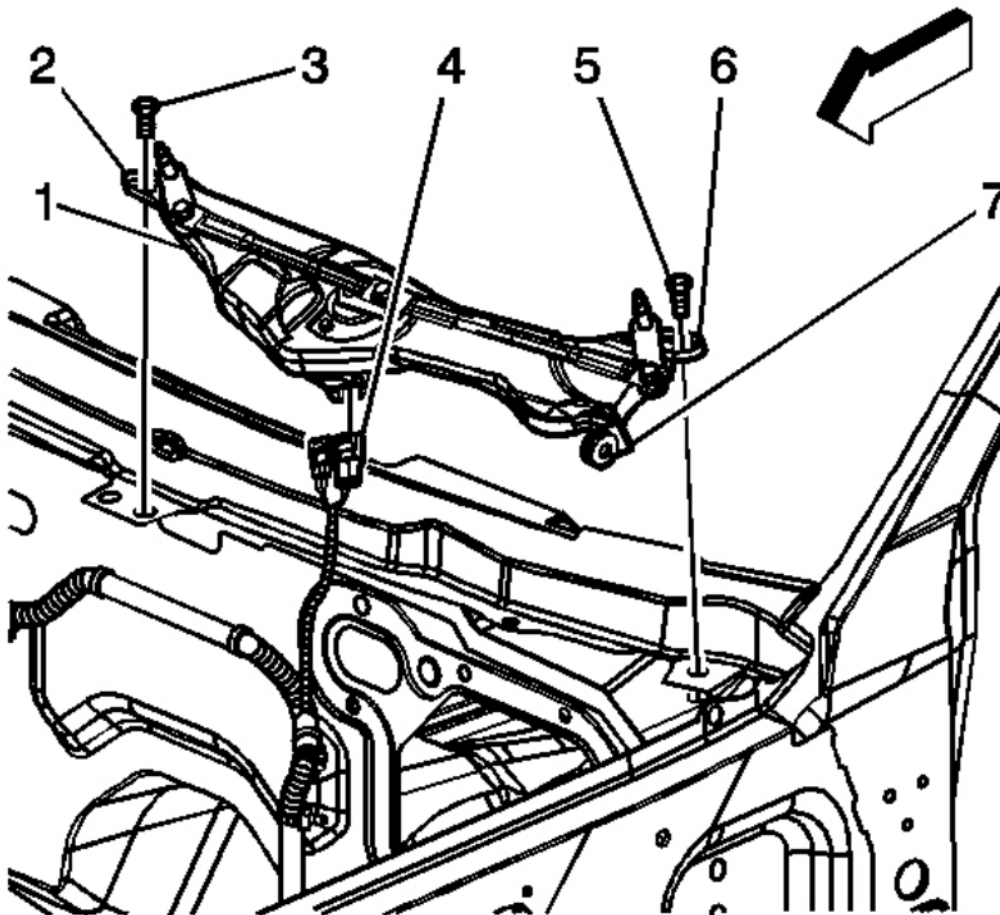


Fig. 78: Wiper Transmission View
Courtesy of GENERAL MOTORS CORP.

4. Remove the wiper motor module mounting bolts (3,5).
5. Disconnect the wiper motor electrical connector (4).
6. Remove the wiper motor module (1) from the vehicle.

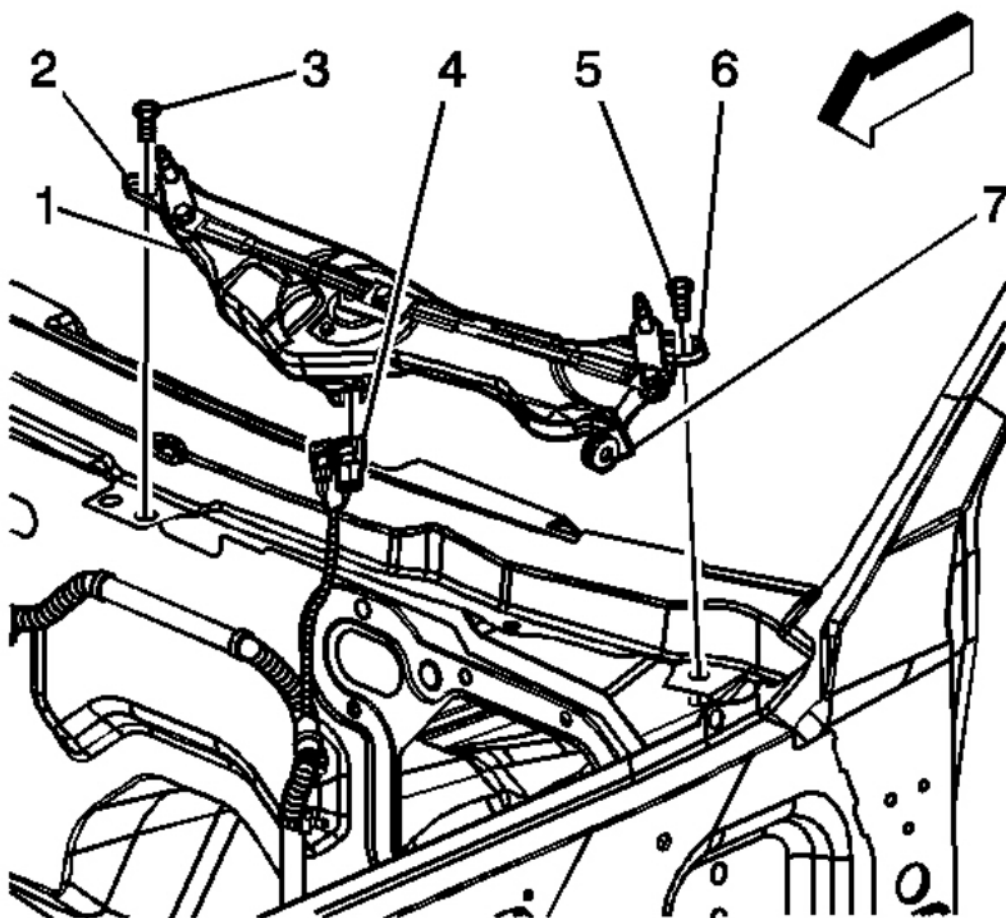
Installation Procedure

Fig. 79: Wiper Transmission View
Courtesy of GENERAL MOTORS CORP.

1. Place the wiper motor module into the vehicle.
2. Connect the wiper motor module electrical connector (4).
3. Align the wiper module locator hole (7) to the pin located inside rail of the driver side fender.
4. Align the locator hole (6) to the hole in the pillar flange.

NOTE: Refer to Fastener Notice in Cautions and Notices.

5. Install the outer bolt (5).

Tighten: Tighten the outer bolt to 10 N.m (89 lb in).

6. Install the center bolt (3).

Tighten: Tighten the center bolt to 10 N.m (89 lb in).

7. Install the air inlet grille. Refer to **Air Inlet Grille Panel Replacement** in Body Front End.
8. Install the wiper arm assemblies. Refer to **Wiper Arm Replacement**.
9. Install the wiper motor fuses to the underhood fuse block.

WIPER MOTOR MODULE GROMMET REPLACEMENT

Removal Procedure

1. Remove the wiper motor fuse. The wiper motor fuse is located in the underhood fuse block.
2. Remove the wiper arm assemblies. Refer to **Wiper Arm Replacement**.
3. Remove the air inlet grille. Refer to **Air Inlet Grille Panel Replacement** in Body Front End.

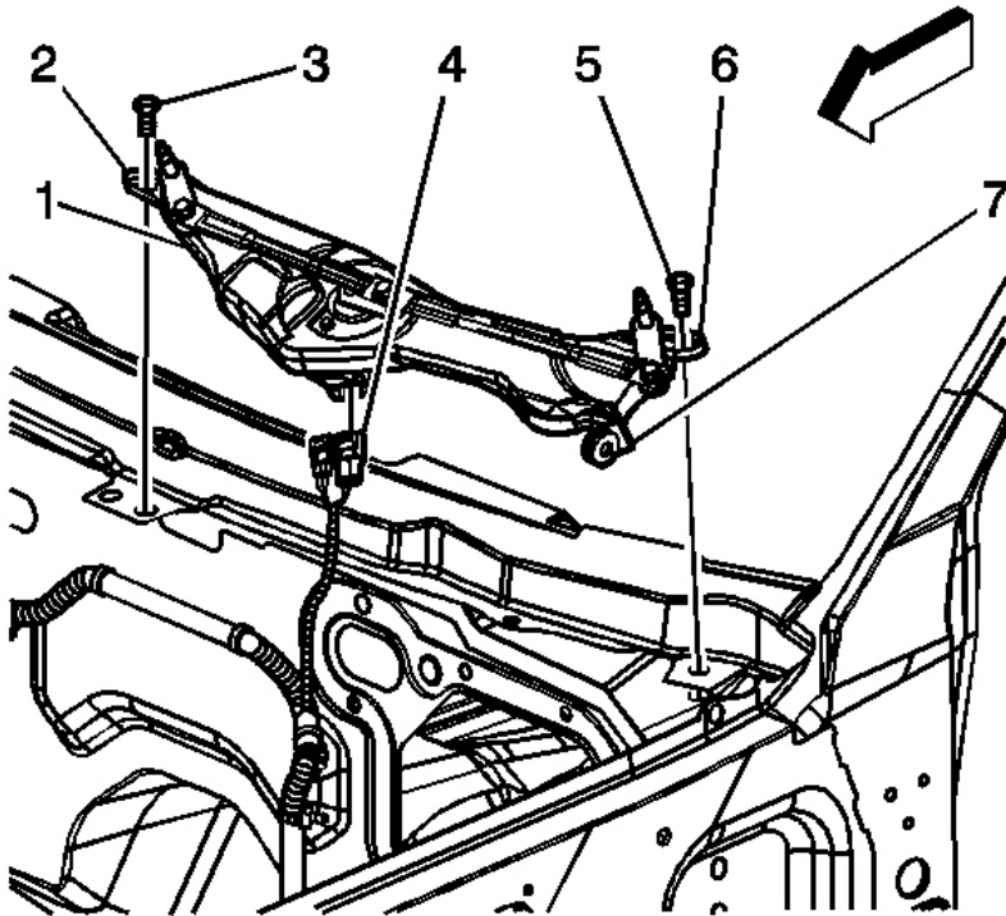


Fig. 80: Wiper Transmission View
Courtesy of GENERAL MOTORS CORP.

4. Remove the wiper motor module mounting bolts (3,5).
5. Disconnect the wiper motor electrical connector (4).
6. Remove the wiper motor module (1) from the vehicle.
7. Remove the following wiper motor module grommets:
 - round (2)
 - oval (6)
 - pin (7)

Installation Procedure

1. Install the following wiper motor module grommets:

- round (2)
- oval (6)
- pin (7)

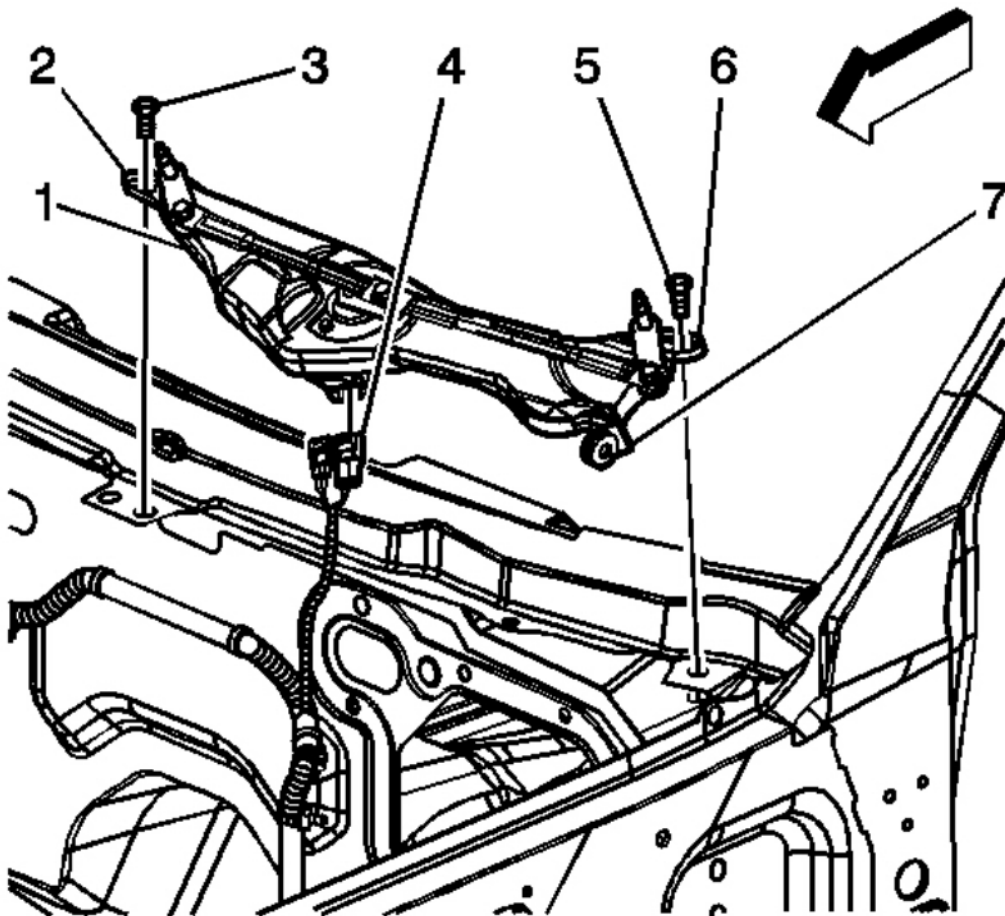


Fig. 81: Wiper Transmission View
Courtesy of GENERAL MOTORS CORP.

2. Place the wiper motor module into the vehicle.
3. Connect the wiper motor module electrical connector (4).

4. Align the wiper module locator hole (7) to the pin located inside rail of the driver side fender.
5. Align the locator hole (6) to the hole in the pillar flange.

NOTE: Refer to Fastener Notice in Cautions and Notices.

6. Install the outer fastener (5).

Tighten: Tighten the outer fastener to 10 N.m (89 lb in).

7. Install the center fastener (3).

Tighten: Tighten the center fastener to 10 N.m (89 lb in).

8. Install the air inlet grille. Refer to Air Inlet Grille Panel Replacement in Body Front End.
9. Install the wiper arm assemblies. Refer to Wiper Arm Replacement.
10. Install the wiper motor fuse in the underhood fuse block.

WIPER CHATTER REPAIR

Some vehicles may exhibit a condition where the windshield wipers chatter and/or wipe unevenly. Several items may contribute to this condition. To completely repair this condition, ALL of the items listed should be tested and repaired as necessary.

1. Perform the wiper arm pressure test. Refer to Wiper Arm Tip Pressure Check
2. Inspect the wiper blade element set. Refer to Wiper Blade Element Check
3. Clean the wiper blade elements. Refer to Blade Element Cleaning
4. Clean the windshield glass. Refer to Windshield Glass Cleaning

WINDSHIELD GLASS CLEANING

Clean the windshield with windshield cleaner, GM P/N 1050011 (Canadian P/N 992727) or equivalent. The cleaner should not harm the paint finish or scratch the glass. The glass is clean when the water no longer beads, but sheets across the entire glass surface.

BLADE ELEMENT CLEANING

Lift each blade assembly off of the windshield and clean the element with a cloth saturated with full strength washer solvent. Hold the blade in one hand and wipe the element with the saturated cloth until the black residue disappears. Then rinse the blade assembly elements with clean

drinkable water.

WASHER PUMP REPLACEMENT - REAR

Removal Procedure

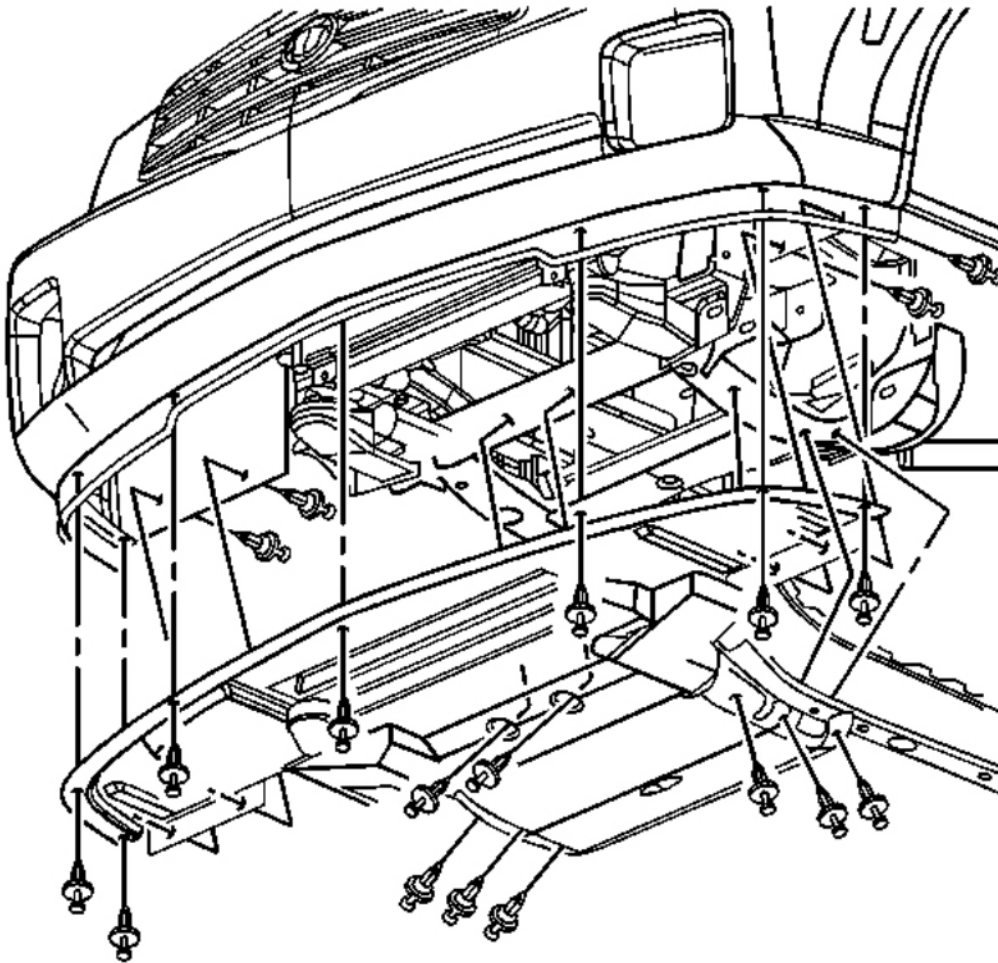


Fig. 82: Removing/Installing Lower Air Deflector
Courtesy of GENERAL MOTORS CORP.

1. Remove the lower air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.
2. Remove the passenger side front wheelhouse liner.

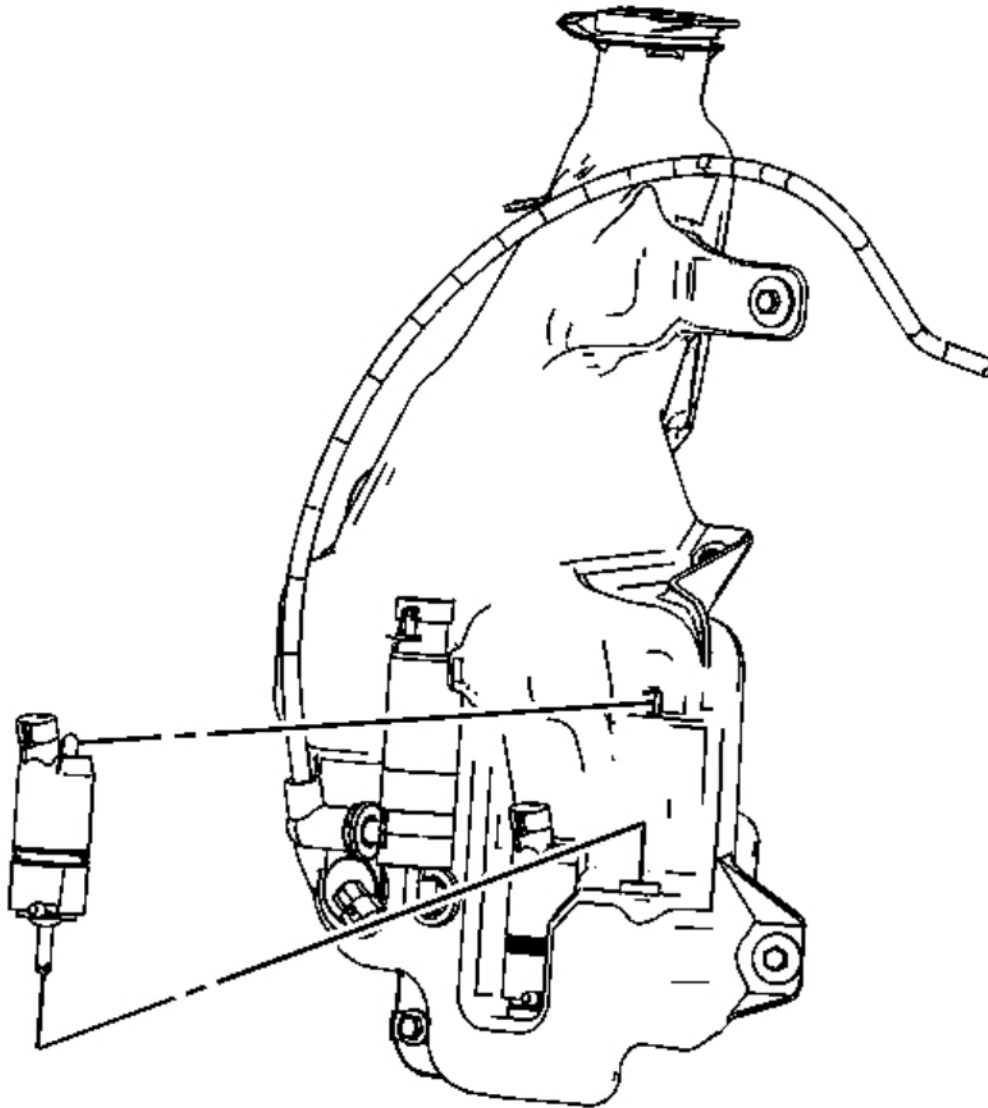


Fig. 83: View Of Rear Washer Pump
Courtesy of GENERAL MOTORS CORP.

3. Drain the washer solvent into a suitable container.
4. Disconnect the washer hose from the front washer pump.
5. Disconnect the electrical connector from the front washer pump.

6. Remove the washer pump from the washer solvent container.

Installation Procedure

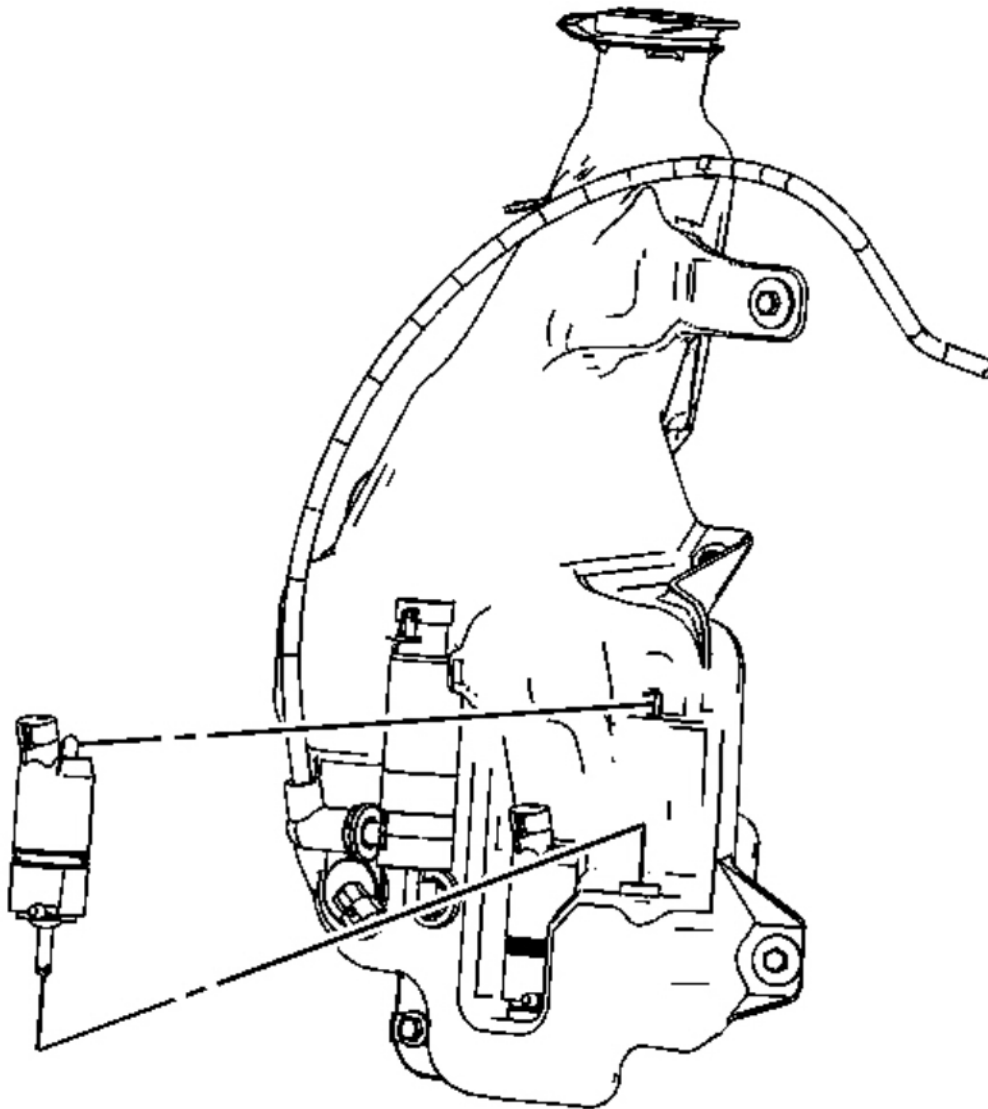


Fig. 84: View Of Rear Washer Pump
Courtesy of GENERAL MOTORS CORP.

1. Lubricate the washer pump intake nozzle with washer solvent to aid in the installation of the washer pump into the washer container.
2. Secure the washer pump in the washer solvent container.
3. Ensure the washer pump is secure to the washer solvent container.
4. Connect the electrical connector to the washer pump.
5. Connect the washer hose to the washer pump.

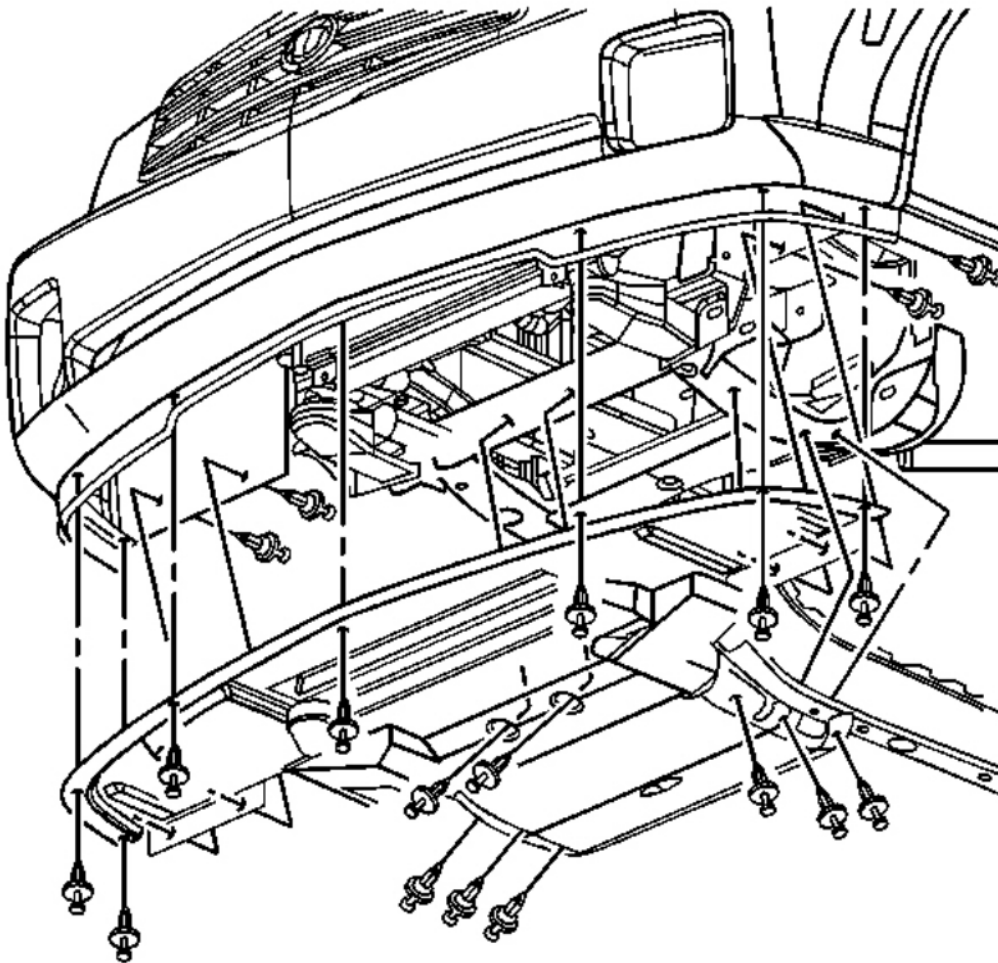


Fig. 85: Removing/Installing Lower Air Deflector
Courtesy of GENERAL MOTORS CORP.

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6. Install the passenger side front wheelhouse liner.
7. Install the lower air deflector. Refer to **Air Deflector Replacement - Front** in Body Front End.
8. Open the hood.
9. Fill the washer solvent container with new washer solvent.
10. Verify operation of the pump.
11. Close the hood.

WASHER NOZZLE REPLACEMENT - REAR

Removal Procedure

1. Use a grease pencil to mark the washer nozzle alignment on the wiper motor shaft.
2. Grasp the washer nozzle with pliers.
3. Pull to remove the washer nozzle from the wiper motor shaft.

Installation Procedure

1. Align the washer nozzle with the alignment marks on the wiper motor shaft.
2. Push the washer nozzle into the wiper motor shaft until the washer nozzle is fully seated on the wiper motor shaft.

WIPER ARM REPLACEMENT - REAR

Removal Procedure

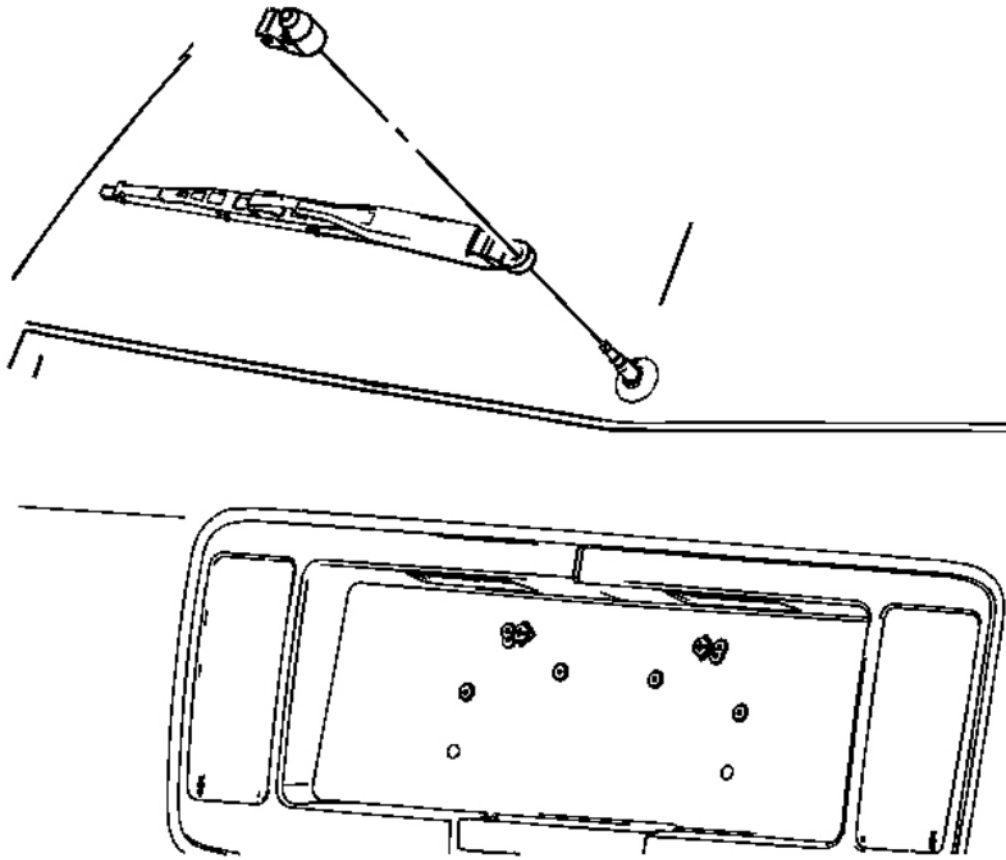


Fig. 86: View Of Rear Wiper Arm
Courtesy of GENERAL MOTORS CORP.

1. Mark the position of rear wiper blade on the rear window with tape or an erasable marker.
2. Pivot the rear wiper arm nut cap.
3. Remove the rear wiper arm nut.
4. Grasp the wiper arm. Rock the wiper arm from the wiper motor until the wiper arm disengages from the wiper motor.
5. Remove the rear wiper blade from the rear wiper arm. Refer to **Wiper Arm Blade Replacement - Rear.**

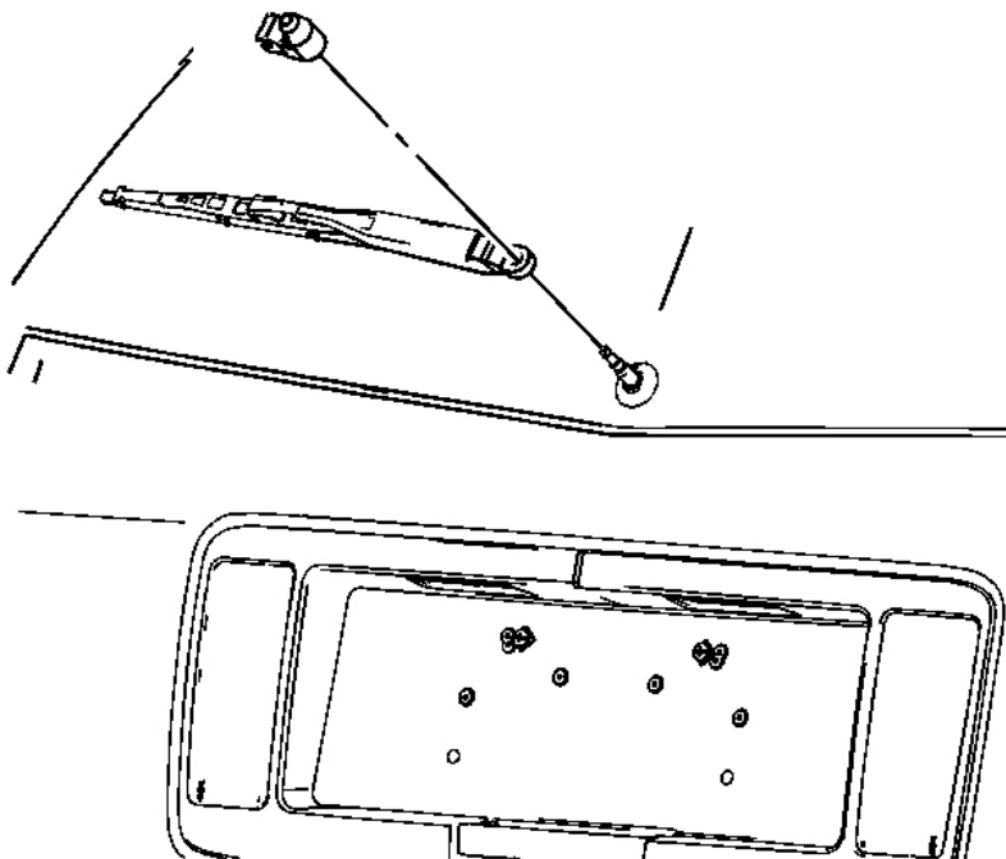


Fig. 87: View Of Rear Wiper Arm
Courtesy of GENERAL MOTORS CORP.

1. Install the rear wiper blade onto the rear wiper arm. Refer to **Wiper Arm Blade Replacement - Rear**.
2. Position the rear wiper arm onto the wiper motor while aligning the rear wiper blade to the mark made on the rear window.

NOTE: Refer to **Fastener Notice** in Cautions and Notices.

3. Install the rear wiper arm nut.

Tighten: Tighten the nut to 17 N.m (13 lb ft).

4. Install the rear wiper arm nut cap.
5. Remove the tape or the mark from the rear window.
6. Inspect the rear wiper system for proper operation.

WIPER ARM BLADE REPLACEMENT - REAR

Remove Procedure

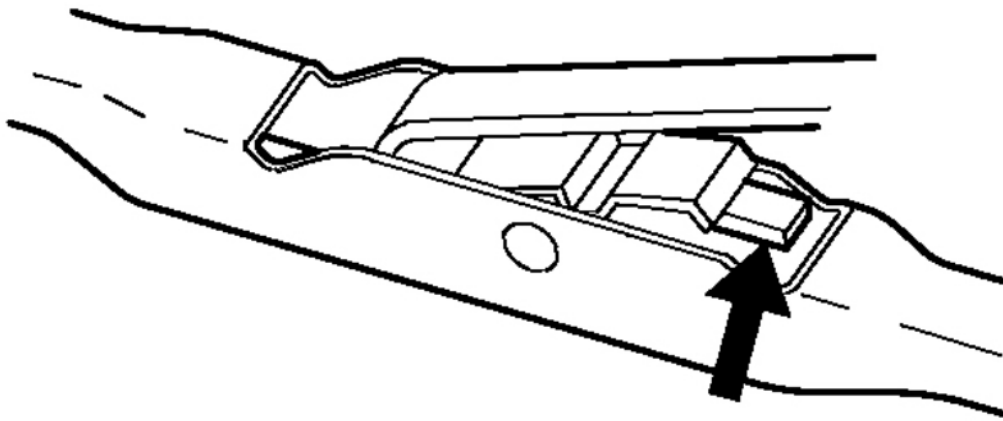


Fig. 88: Identifying Wiper Blade Release Clip
Courtesy of GENERAL MOTORS CORP.

1. Push in the button of the wiper blade clip and remove the wiper blade from the inside radius of the wiper arm.

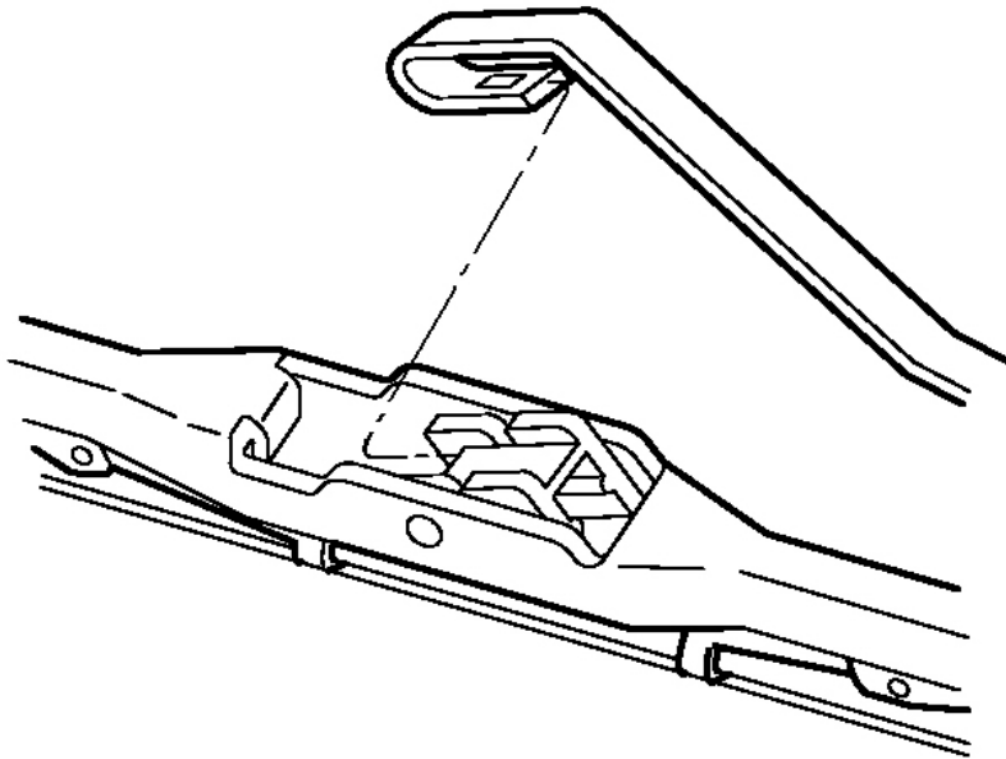


Fig. 89: Removing & Installing Wiper Blade At Wiper Arm Hook
Courtesy of GENERAL MOTORS CORP.

2. Bring the hook of the wiper arm out through the opening in the wiper blade.

Installation Procedure

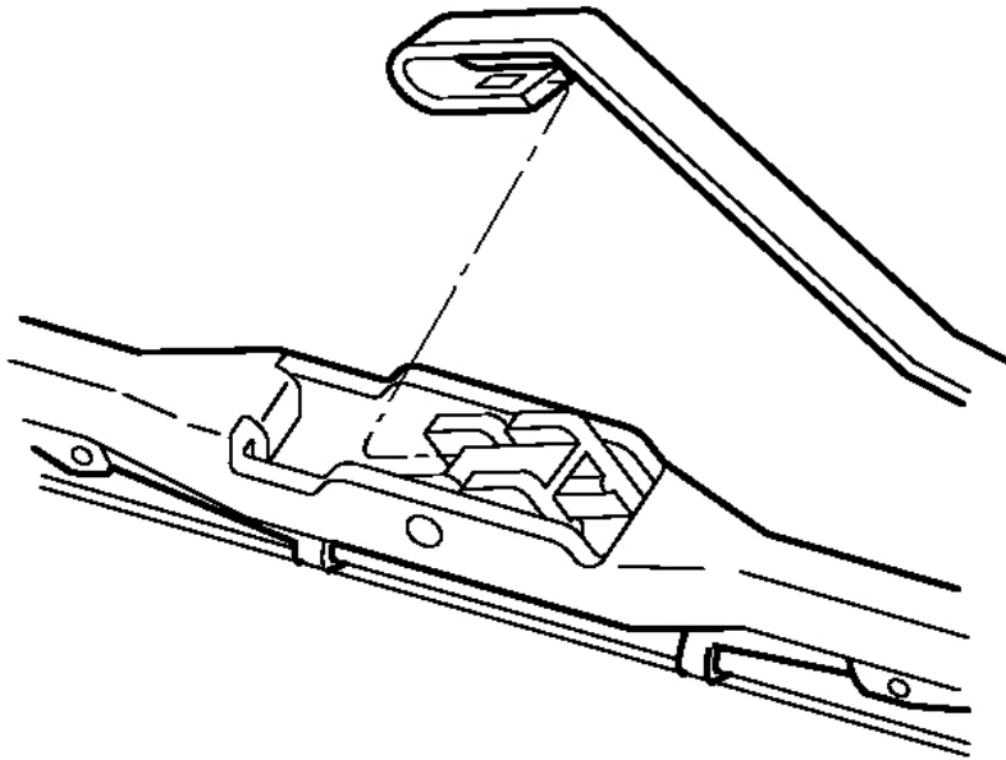


Fig. 90: Removing & Installing Wiper Blade At Wiper Arm Hook
Courtesy of GENERAL MOTORS CORP.

1. Insert the hook of the wiper arm through the opening in the wiper blade.

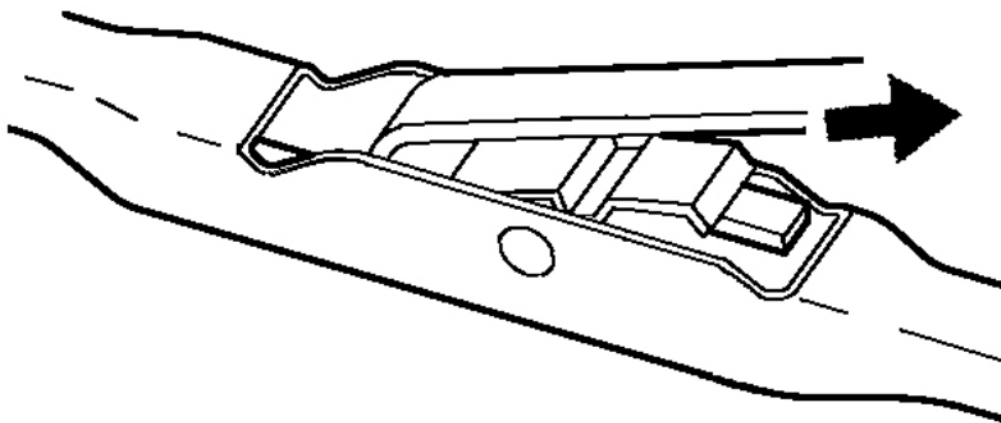


Fig. 91: View Of Wiper Blade Clip
Courtesy of GENERAL MOTORS CORP.

2. Position the wiper blade pivot in the inside radius of the wiper arm hook.
3. Pull the wiper blade pivot into the wiper arm hook until the pivot locks into the hook.
4. Operate the wipers and check for proper operation.

BLADE ELEMENT REPLACEMENT - REAR

The wiper blade element can not be replaced as a separate assembly. Replace the wiper arm blade only.

WIPER MOTOR REPLACEMENT - LIFTGATE

Removal Procedure

1. Remove the rear wiper arm. Refer to **Wiper Arm Replacement - Rear.**

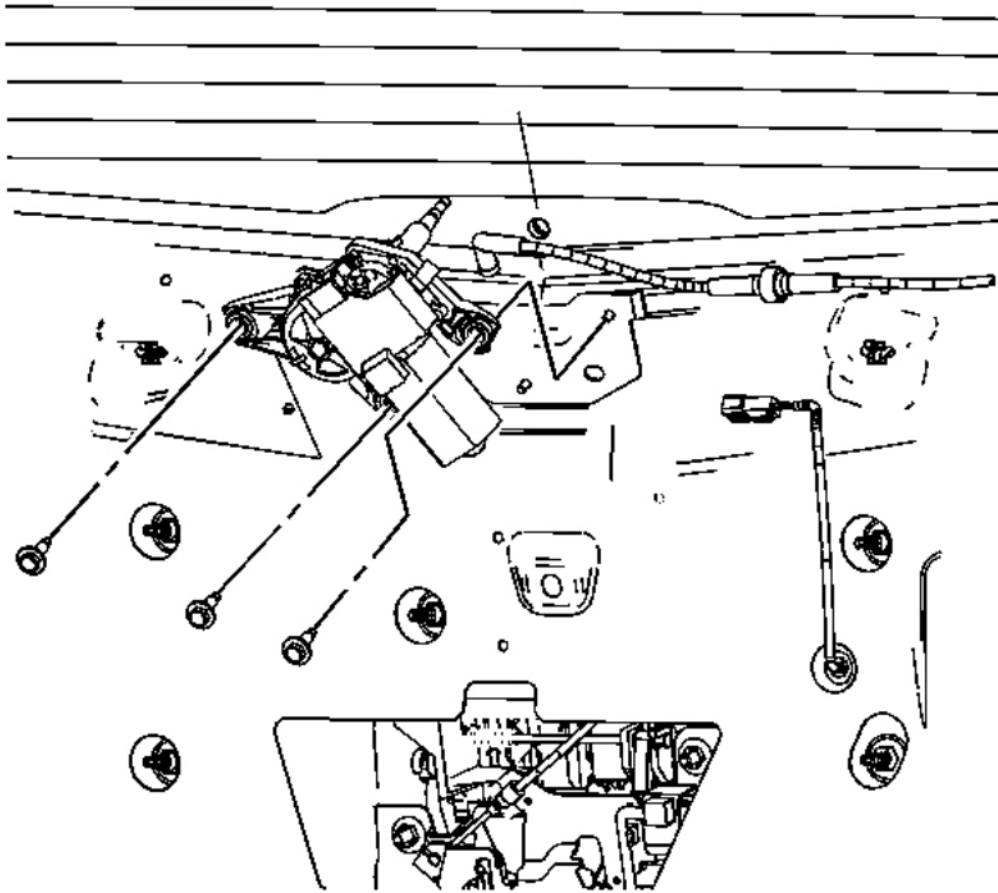


Fig. 92: View Of Liftgate Wiper Motor
Courtesy of GENERAL MOTORS CORP.

2. Remove the interior liftgate trim panel. Refer to **Trim Panel Replacement - Liftgate** in Body Rear End.
3. Disconnect the fluid line from the wiper motor.
4. Disconnect the wire connector from the wiper motor.
5. Remove the wiper motor attaching bolts.
6. Pull the wiper motor through the shaft grommet.

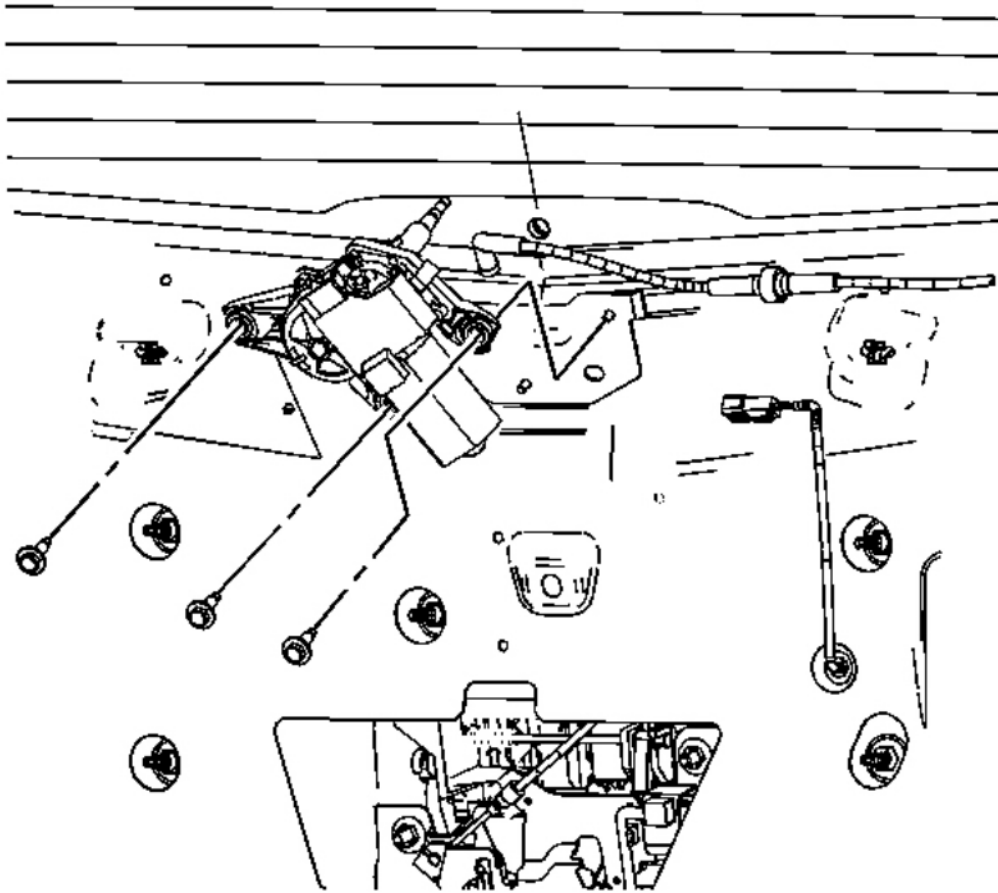


Fig. 93: View Of Liftgate Wiper Motor
Courtesy of GENERAL MOTORS CORP.

1. Lubricate the wiper motor shaft with windshield washer fluid. Push the wiper motor shaft through the grommet.
2. Apply thread lock to the wiper motor attaching bolts.

NOTE: Refer to Fastener Notice in Cautions and Notices.

3. Install the wiper motor attaching bolts.

Tighten: Tighten the bolts to 7 N.m (62 lb in).

4. Connect the wire connector to the wiper motor.
5. Connect the fluid line to the wiper motor.
6. Install the interior liftgate trim panel. Refer to **Trim Panel Replacement - Liftgate** in Body Rear End.
7. Install the rear wiper arm. Refer to **Wiper Arm Replacement - Rear**.

HEADLAMP WASHER NOZZLE ASSEMBLY REPLACEMENT

Removal Procedure

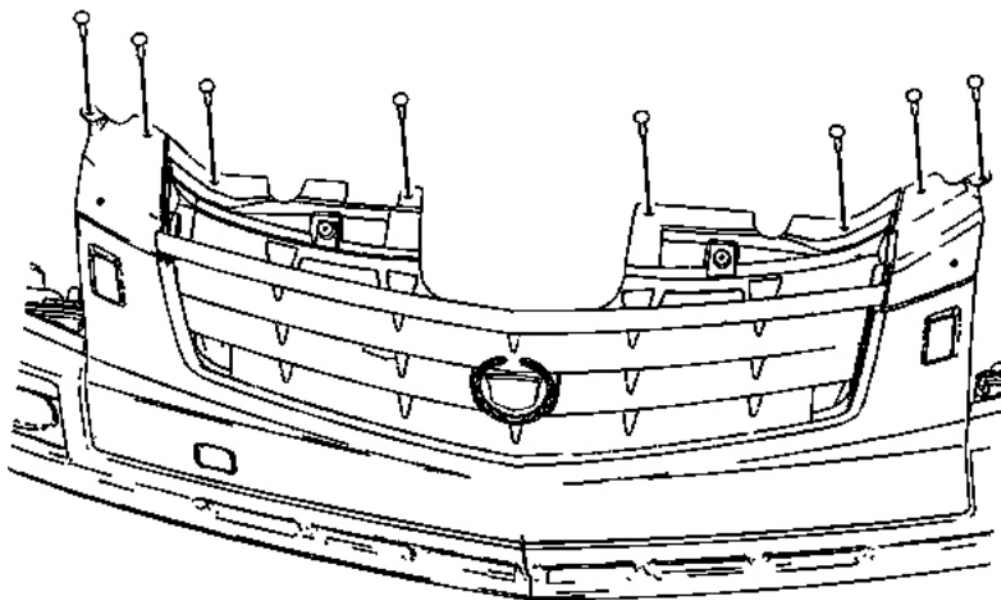


Fig. 94: View Of Fascia/Grille Push Pin Fasteners
Courtesy of GENERAL MOTORS CORP.

1. Remove the upper fascia/grille to tie bar push pins.
2. Remove the washer to fascia retaining screw.

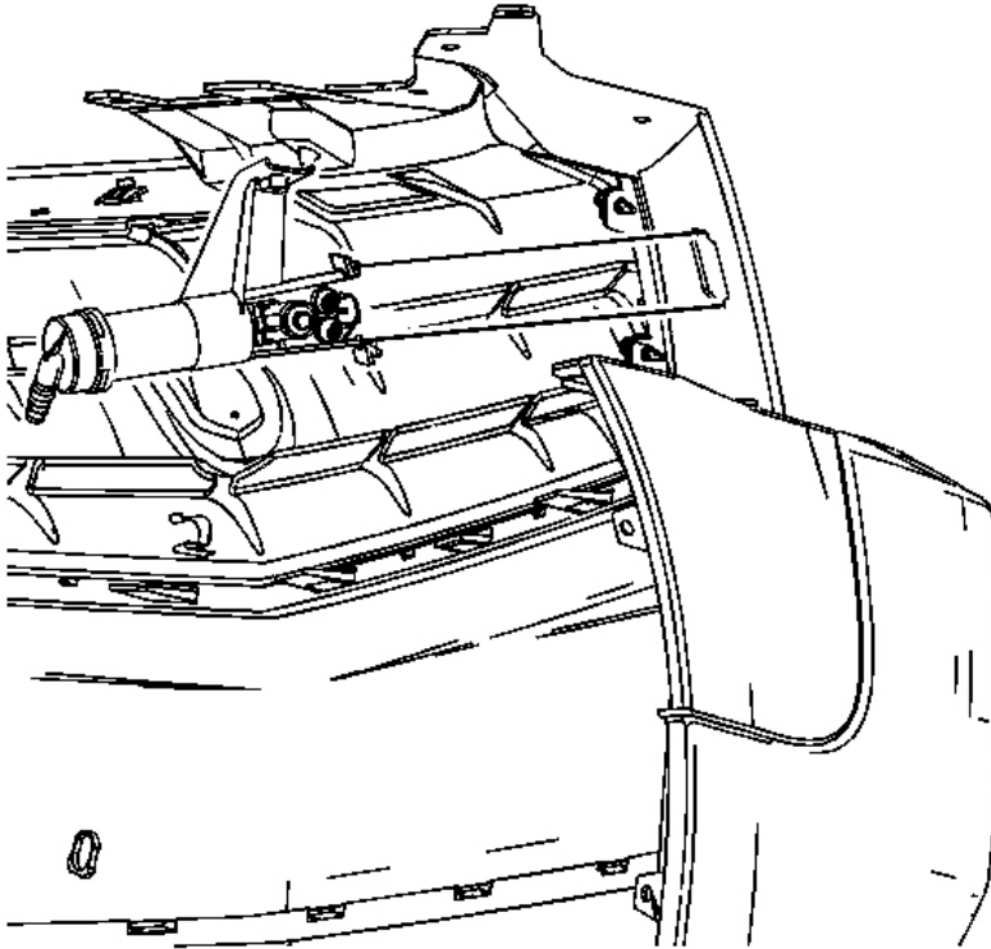


Fig. 95: View Of Headlamp Washer Body
Courtesy of GENERAL MOTORS CORP.

3. Squeeze the locking tabs on the washer body to release the washer from the fascia.
4. Pull the nozzle shaft out. Lock the nozzle shaft extended in place with the washer body locking tabs.

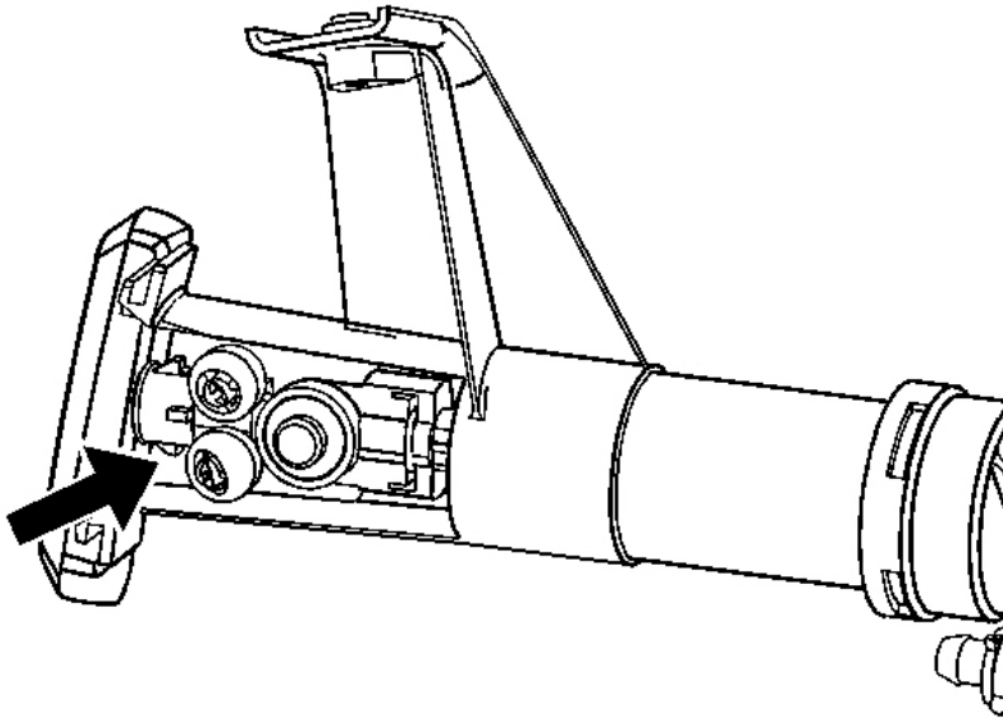


Fig. 96: View Of Headlamp Washer Nozzle
Courtesy of GENERAL MOTORS CORP.

5. Use a small flat-bladed too to release the trim cover from the headlamp washer nozzle.
6. Disconnect the fluid line. Remove the washer from the vehicle.

Installation Procedure

1. Lock the washer nozzle shaft extended. Position the washer nozzle shaft through the opening in the fascia.

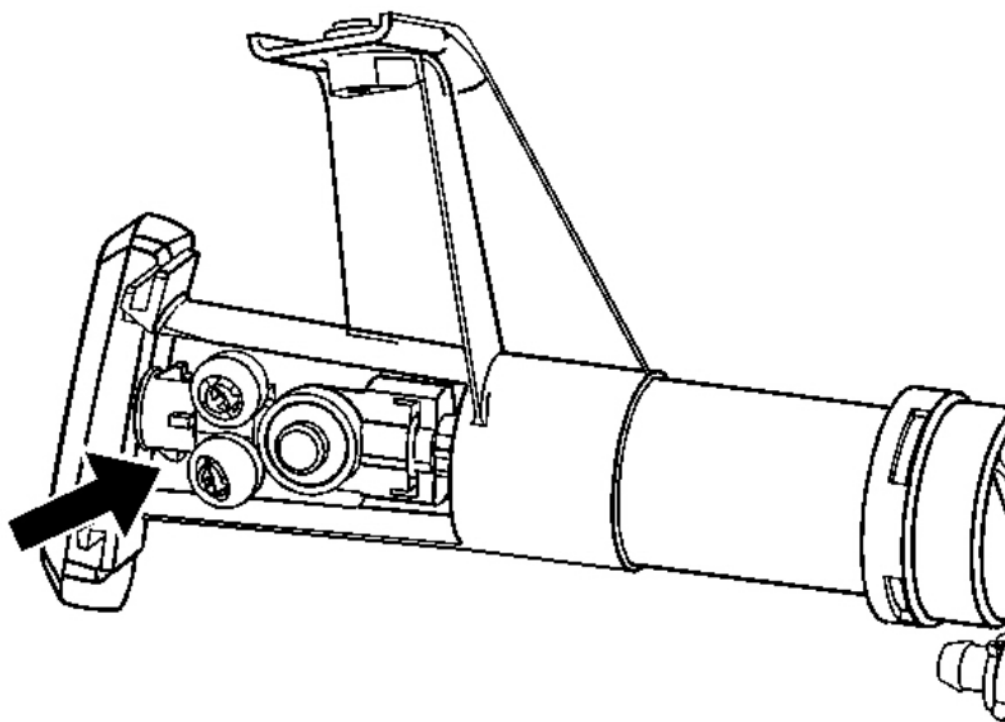


Fig. 97: View Of Headlamp Washer Nozzle
Courtesy of GENERAL MOTORS CORP.

2. Install the trim cover to the nozzle shaft.

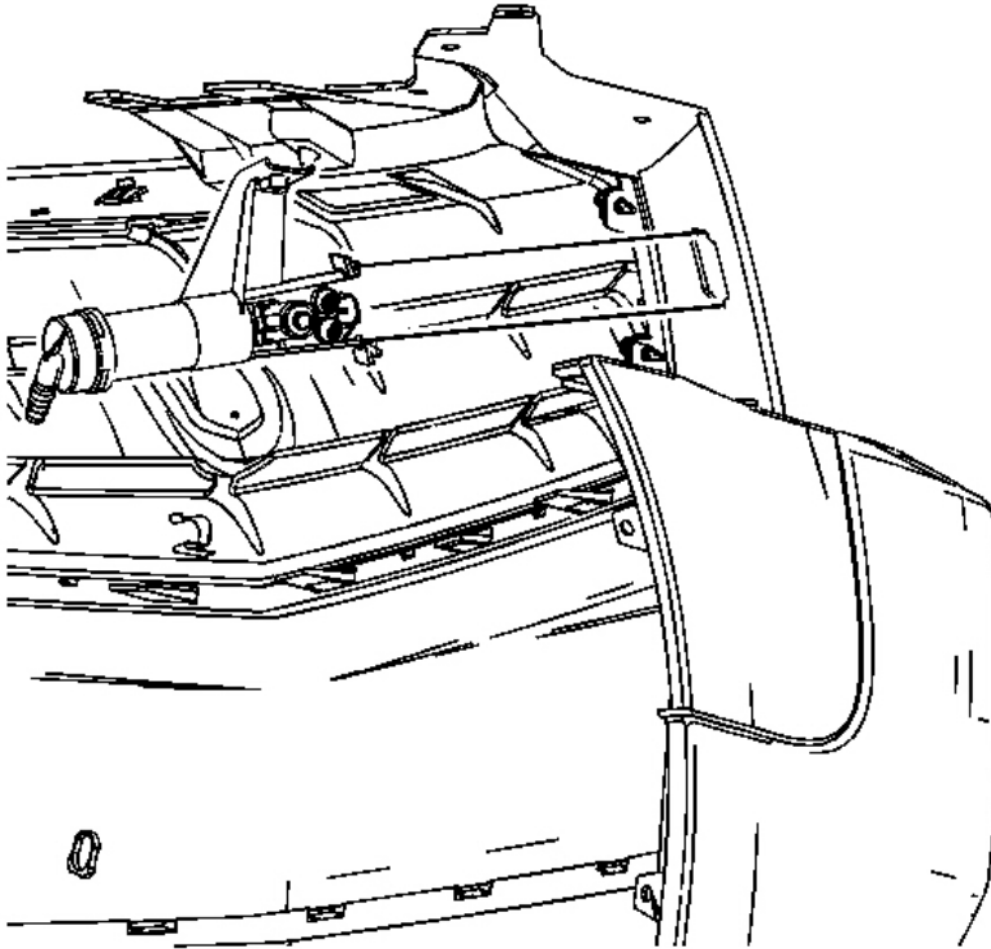


Fig. 98: View Of Headlamp Washer Body
Courtesy of GENERAL MOTORS CORP.

3. Install the washer body locking tabs to the fascia.
4. Connect the fluid line.
5. Install the washer to the fascia with a retaining screw.

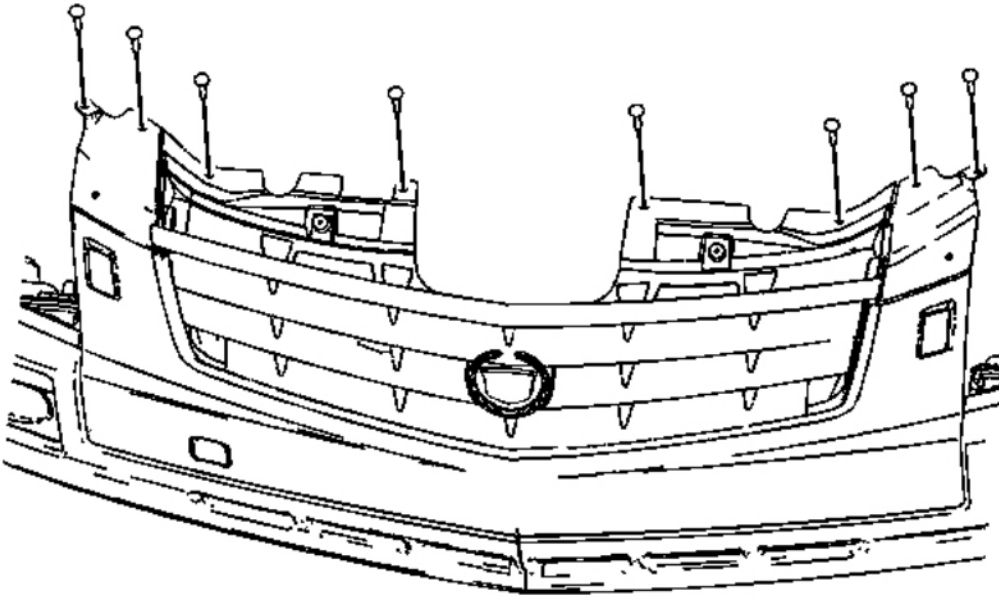


Fig. 99: View Of Fascia/Grille Push Pin Fasteners
Courtesy of GENERAL MOTORS CORP.

6. Install the fascia/grille to the tie bar push pins

WIPERS/WASHER SWITCH REPLACEMENT

Removal Procedure

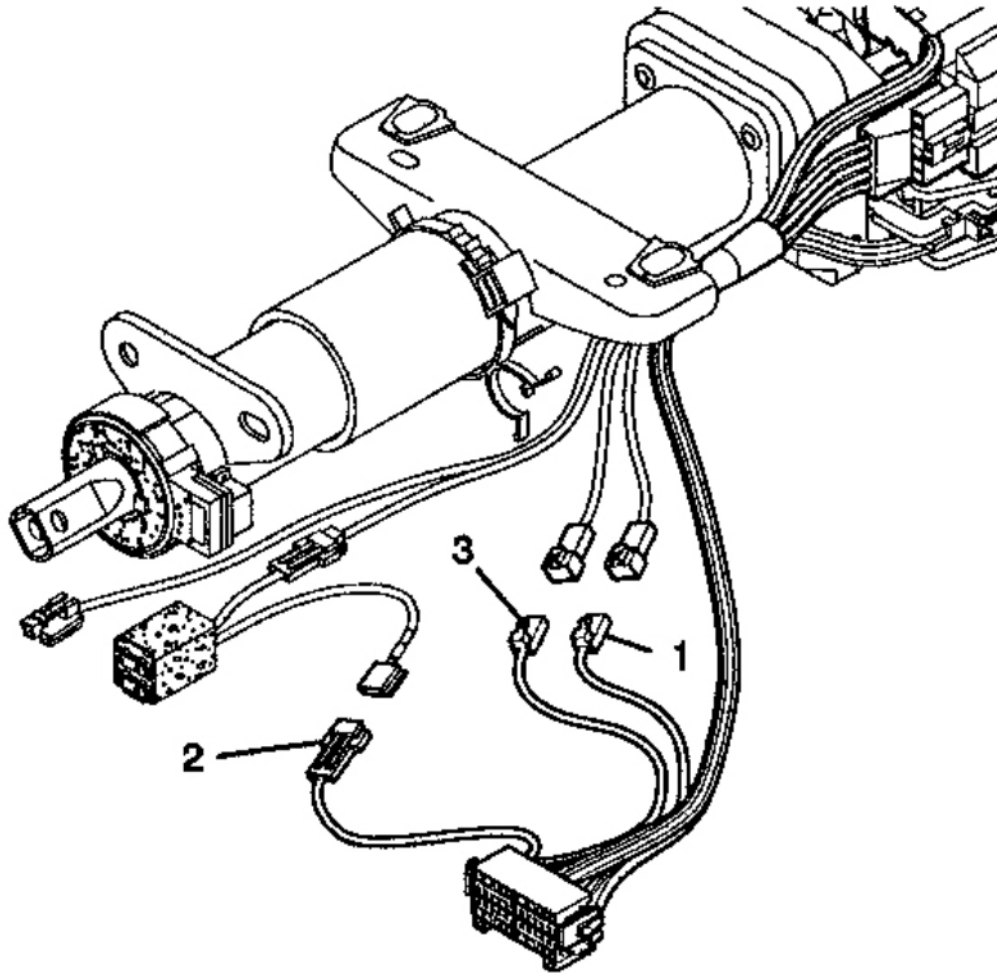


Fig. 100: View Of Windshield & Washer Switch Electrical Connectors
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to SIR Caution in Cautions and Notices.

1. Disable the SIR system. Refer to **SIR Disabling and Enabling Zone 3** in SIR.
2. Remove the steering column trim covers. Refer to **Steering Column Trim Covers Replacement** in Steering Wheel and Column.
3. Remove the steering column wiring harness tie straps.

4. Disconnect the electrical connectors (1, 3) from the windshield and washer switch.

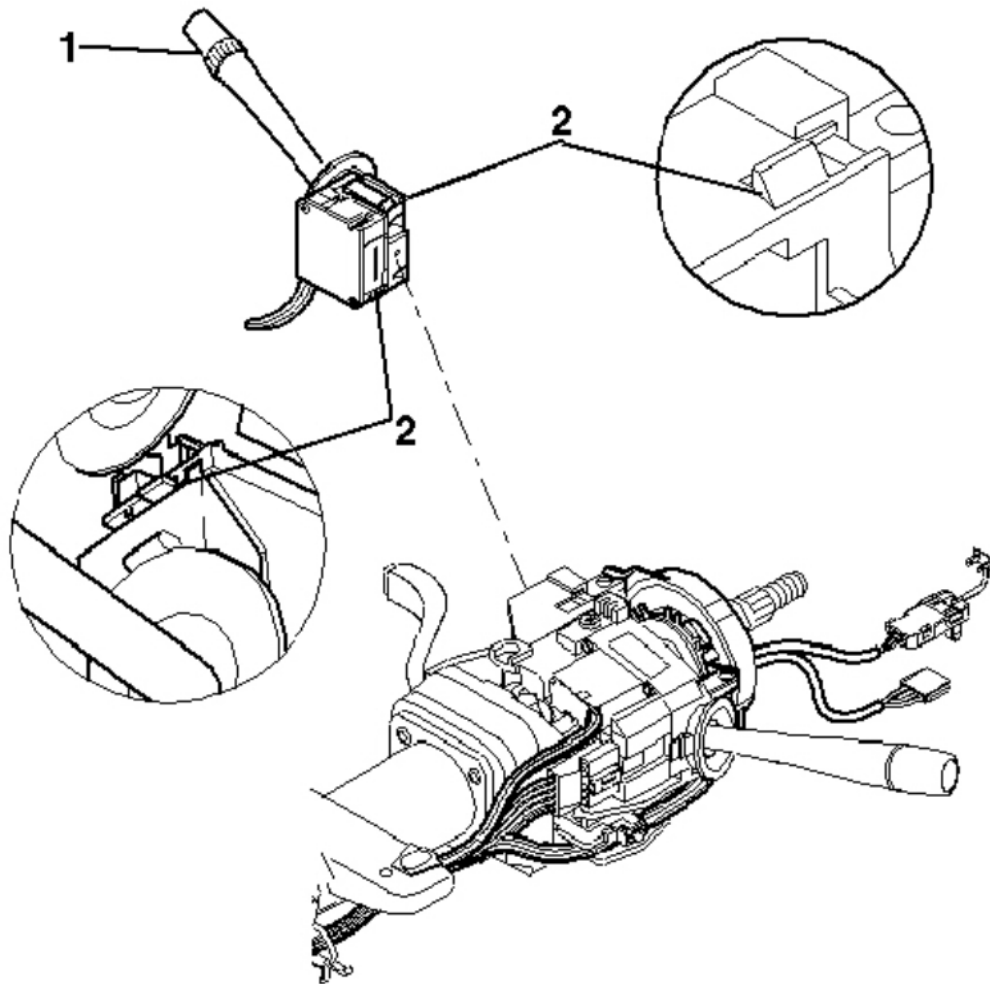


Fig. 101: View Of Windshield Wiper & Washer Switch
Courtesy of GENERAL MOTORS CORP.

5. Depress the locking tab (2) on the windshield wiper and washer switch (1) and remove the switch from the steering column.

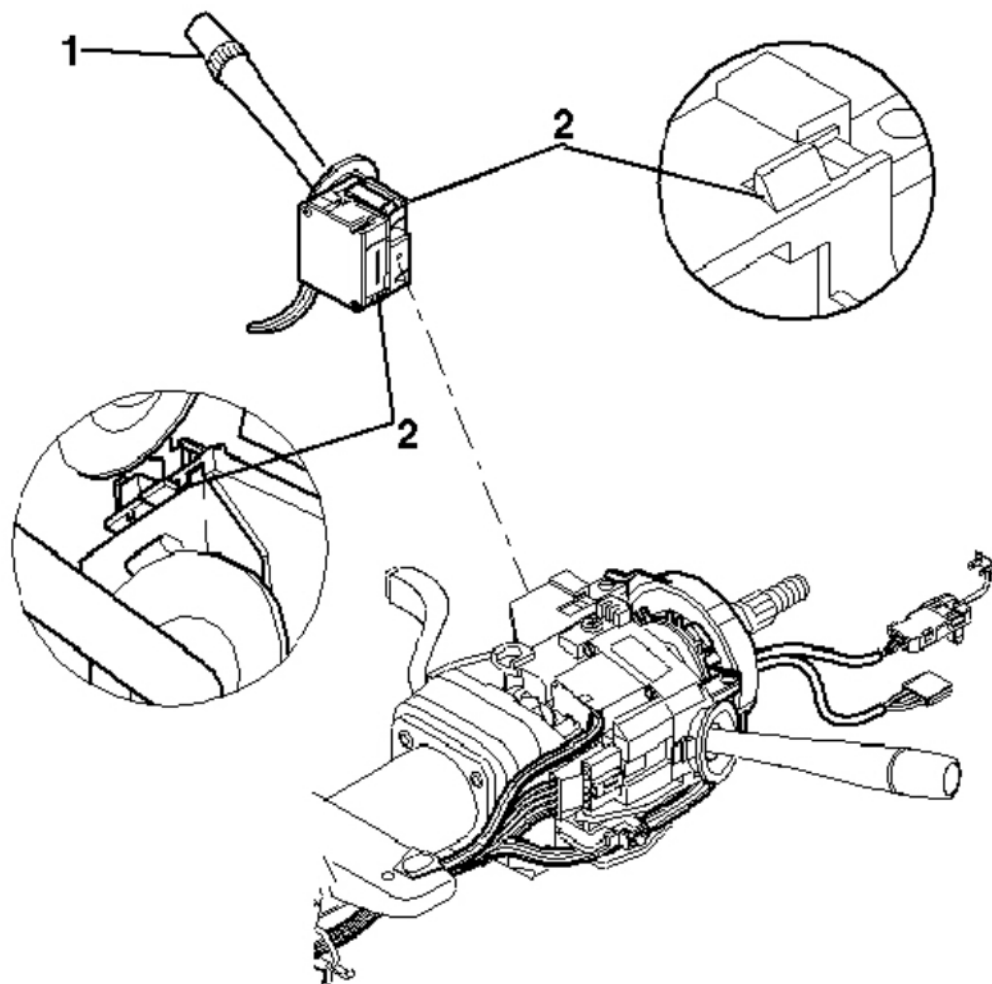


Fig. 102: View Of Windshield Wiper & Washer Switch
Courtesy of GENERAL MOTORS CORP.

1. Install the windshield wiper and washer switch (1) to the steering column.

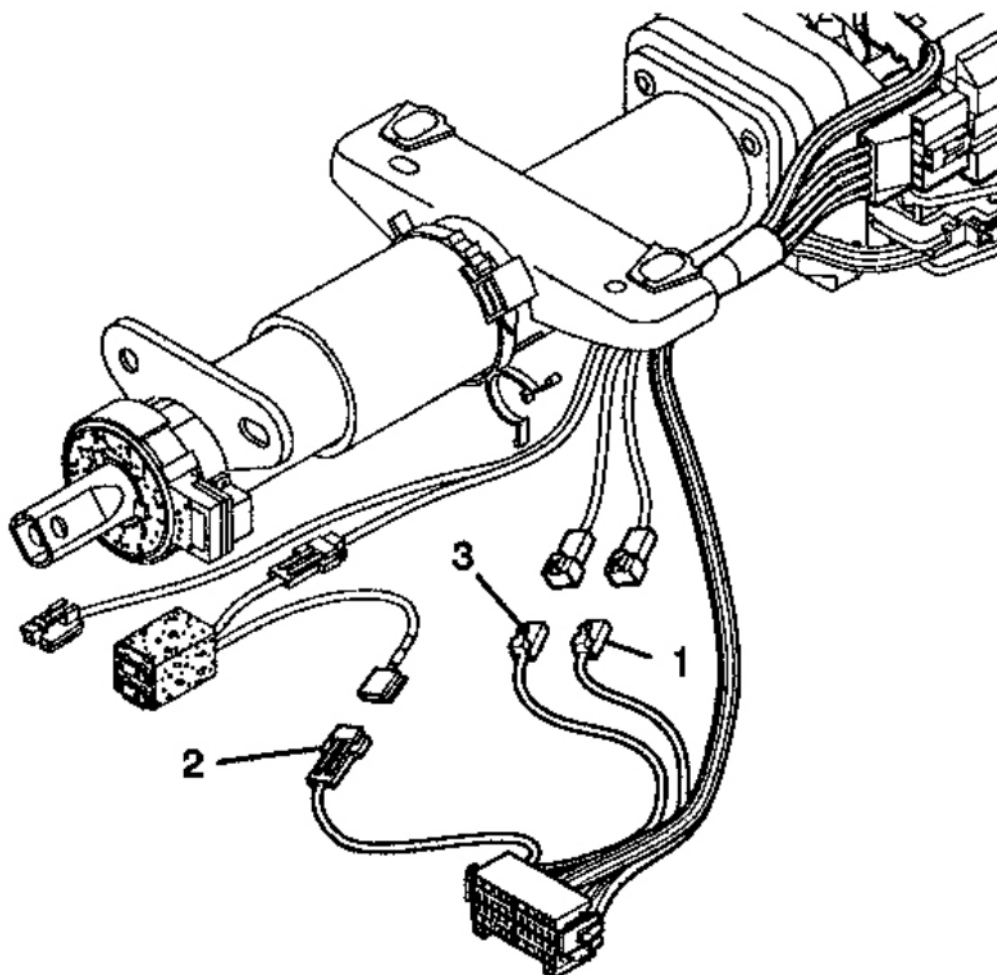


Fig. 103: View Of Windshield & Washer Switch Electrical Connectors
Courtesy of GENERAL MOTORS CORP.

2. Connect the electrical connectors (1, 3) on the windshield wiper and washer switch.
3. Route and connect the electrical connector from the windshield wiper and washer switch.
4. Install the wiring harness tie straps.
5. Install the steering column trim covers. Refer to **Steering Column Trim Covers Replacement** in Steering Wheel and Column.
6. Enable the SIR system. Refer to **SIR Disabling and Enabling Zone 3** in SIR.

DESCRIPTION AND OPERATION

WIPER/WASHER SYSTEM DESCRIPTION AND OPERATION

Wiper/Washer System Components

The Wiper/Washer System consists of the following electrical components:

- Accessory relay
- Heated washer nozzles w/XA7
- WASH NOZ 10A fuse
- Windshield washer fluid level switch
- Windshield washer pump motor
- Windshield wiper motor
- Windshield wiper motor module
- Windshield wiper/washer switch
- Wiper/washer switch 10A fuse
- Wiper motor 30A fuse

Wiper/Washer System Operation

The windshield wiper motor module is part of the windshield wiper motor cover and controls wiper motor operation. The accessory voltage supply circuit to the windshield wiper motor assembly is used to operate the wiper motor in all modes. The windshield wiper motor is a 2 speed motor and is operated at low speed in all modes except HIGH. The accessory voltage supply circuit to the windshield wiper/washer switch is used to supply the windshield wiper switch signal circuits. The windshield wiper switch signal circuit voltage levels to the wiper motor module determine the wiper motor operating mode.

When the wiper/washer switch is in the LOW position voltage is supplied through a 24K ohm resistor within the switch to the windshield wiper switch signal 1 circuit, and accessory voltage is supplied to the windshield wiper switch signal 2 circuit. The reduced voltage from the wiper switch signal 1 circuit and accessory voltage from the wiper switch signal 2 circuit causes the wiper motor module to close the wiper motor accessory voltage supply circuit to the wiper motor low speed terminal.

Windshield wiper/washer system MIST operation is identical to LOW operation except that the MIST switch is a press and release type. When the wiper switch is moved to the MIST position and released, low speed wiper motor operation is started and will continue until 1 cycle is

complete. If the wiper switch is moved to the MIST position and held, the windshield wiper motor will operate in the LOW mode until the switch is released.

Windshield wiper DELAY operation is a low speed wiper motor function with a variable delay interval between the wiper motor cycles. The DELAY interval is controlled through a series of resistors within the wiper/washer switch. During DELAY wiper operation the wiper switch signal 1 circuit is at the same voltage level used for LOW operation, but the wiper switch signal 2 circuit voltage is reduced through the DELAY resistors. The windshield wiper motor module uses a capacitor feed by the wiper switch signal 2 circuit to determine the frequency of the low speed wiper motor cycles. When the wiper switch signal 2 circuit is at the accessory voltage level as in the LOW switch position, the capacitor charges fast causing continuous low speed wiper motor operation. The DELAY switch position indicating the longest interval between wiper motor cycles is the switch position with the highest resistance resulting in low voltage on the wiper switch signal 2 circuit. The low voltage charges the capacitor slowly causing a long delay interval between wiper motor cycles. As the DELAY switch is turned to positions indicating more frequent wiper cycles, the resistance through the wiper/washer switch is reduced and the wiper switch signal 2 circuit voltage increases. When the wiper switch signal 2 circuit voltage increases the capacitor charges faster and the delay interval between wiper motor cycles decreases.

When the wiper/washer switch is in the HIGH position the accessory voltage to the wiper/washer switch is closed to the wiper motor high speed circuit. The accessory voltage on the high speed circuit causes the wiper motor module to close the wiper motor accessory voltage supply circuit to the wiper motor high speed terminal. During HIGH speed wiper motor operation the wiper switch signal 1 and signal 2 circuits are at the LOW speed signal voltages, but the LOW speed signal circuit inputs to the wiper motor module are overridden by the active wiper motor high speed circuit.

The windshield wiper motor module controls the operating voltage to the wiper motor and the windshield washer pump during the wiper/washer system WASH mode. The windshield wiper/washer switch WASH switch contact closes the wiper/washer switch accessory voltage supply circuit to the wiper switch signal 1 circuit. Accessory voltage on the wiper switch signal 1 circuit indicates to the wiper motor module the WASH command is active. When the wiper motor module activates the WASH function the wiper motor accessory voltage supply circuit is closed to the wiper motor low speed terminal and the windshield washer pump control circuit. When the wiper/washer system WASH function is activated the low speed wipers and windshield washer pump will operate for a minimum of 3.5 seconds or as long as the WASH command is active followed by 2 wiper motor cycles.

Windshield wiper motor park operation is controlled by the wiper motor module using an input from the park switch within the wiper motor assembly. When the windshield wiper/washer switch

is turned to the OFF position while the wiper motor is somewhere in mid-cycle, the wiper motor module will continue to operate the wiper motor until the wipers reach the park position.

Heated Washer Nozzles w/XA7

Vehicles equipped with XA7 utilize heated washer nozzles. The heated washers nozzles are current limiting and are always ON when the ignition switch is in the RUN position. When the ignition switch is in the RUN position, voltage is supplied to the coil side of the IGN 1 relay closing the relay switch side contacts. When the IGN 1 relay switch side contacts close, voltage is supplied through the WASH NOZ 10A fuse to the heated washer nozzles. This helps prevent the washer fluid from freezing at the washer nozzles in extreme cold environments.

Check Washer Fluid Message

The Check Washer Fluid message is displayed by the radio when commanded by the dash integration module using an input from the washer fluid level switch. The washer fluid level switch signal circuit is supplied ignition voltage through a resistor then monitored within the dash integration module. The washer fluid level switch is normally open so the dash integration module detects ignition voltage on the washer fluid level signal circuit whenever the washer fluid level is not low. When the washer fluid reaches the point where the driver should be informed that the washer fluid is low, the washer fluid level switch closes. When the washer fluid level switch is closed the washer fluid level switch signal circuit voltage is pulled low, and the dash integration module commands the radio with a class 2 message over the serial data circuit to display the Check Washer Fluid message. In order to prevent the Check Washer Fluid message from being displayed while sloshing is occurring in the washer fluid container, the dash integration module is programmed with a 1 minute delay before changing states of the Check Washer Fluid message during an ignition cycle.

REAR WIPER/WASHER SYSTEM DESCRIPTION AND OPERATION

Rear Wiper/Washer System Components

The rear wiper/washer system consists of the following components:

- Rear wiper/washer switch
- Rear wiper motor
- Rear wiper motor module
- Rear washer pump
- WIPER SW 10A fuse
- WIPER MOD 25A fuse

Rear Wiper/Washer System Operation

The rear wiper motor module is part of the rear wiper motor assembly and controls wiper motor operation. Battery voltage supplied to the wiper motor assembly is used to operate the wiper motor in all modes and to return the rear wiper arm to the park position after the ignition is turned off. Accessory voltage supplied to the rear wiper/washer switch is used to supply the rear wiper switch signal circuits and the rear washer pump. When the rear wiper switch is in the DELAY position the accessory voltage to the rear wiper/washer switch is closed to the wiper switch signal circuit. The accessory voltage on the wiper switch signal circuit causes the wiper motor module to operate the wiper motor in the DELAY mode. The rear washer control circuit is used to provide the operating voltage for the rear washer pump for as long as the rear washer switch is pressed. The rear washer control circuit is also used as a wash signal to the rear wiper motor module. When the rear wiper/washer switch or ignition switch is turned OFF during a rear wiper motor cycle, the park switch within the wiper motor assembly supplies battery voltage to continue wiper motor operation until the wiper motor reaches the park position and the switch opens.

HEADLAMP WASHER SYSTEM DESCRIPTION AND OPERATION**Headlamp Washer System Components**

The headlamp washer system consists of the following components:

- Headlamp washer relay
- Washer fluid level switch
- Headlamp washer pump
- HDLP WASH 30A circuit breaker

Headlamp Washer System Controls

The headlamp washer system is controlled by the following components:

- Headlamp washer relay
- Dash integration module
- Washer fluid level switch
- Windshield wiper/washer switch

Headlamp Washer System Operation

Battery voltage is supplied to the headlamp washer relay switched input. The windshield washer pump control circuit is spliced to the headlamp washer relay. When the windshield washer switch

2004 Cadillac SRX

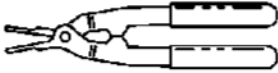
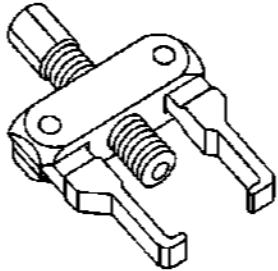
2004 ACCESSORIES & EQUIPMENT Wipers/Washer Systems - SRX

is pressed, battery voltage is supplied on washer switch signal circuit to the headlamp washer relay which energizes the relay. This allows battery voltage from the headlamp washer relay switched input to relay switched output to supply voltage circuit of the headlamp washer pump. The windshield washer fluid level switch also provides a signal circuit to the headlamp washer relay and does not allow the relay to be energized when the fluid level is insufficient for pump operation. The dash integration module controls the ground of the headlamp washer relay and the headlamps must be on for the relay to receive ground and operate.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Special Tools

Illustration	Tool Number/ Description
	J 39232 Wiper Linkage Separator
	J 39529 Wiper Linkage Installer
	J 39822 Wiper Arm Puller