Wipers and Washers

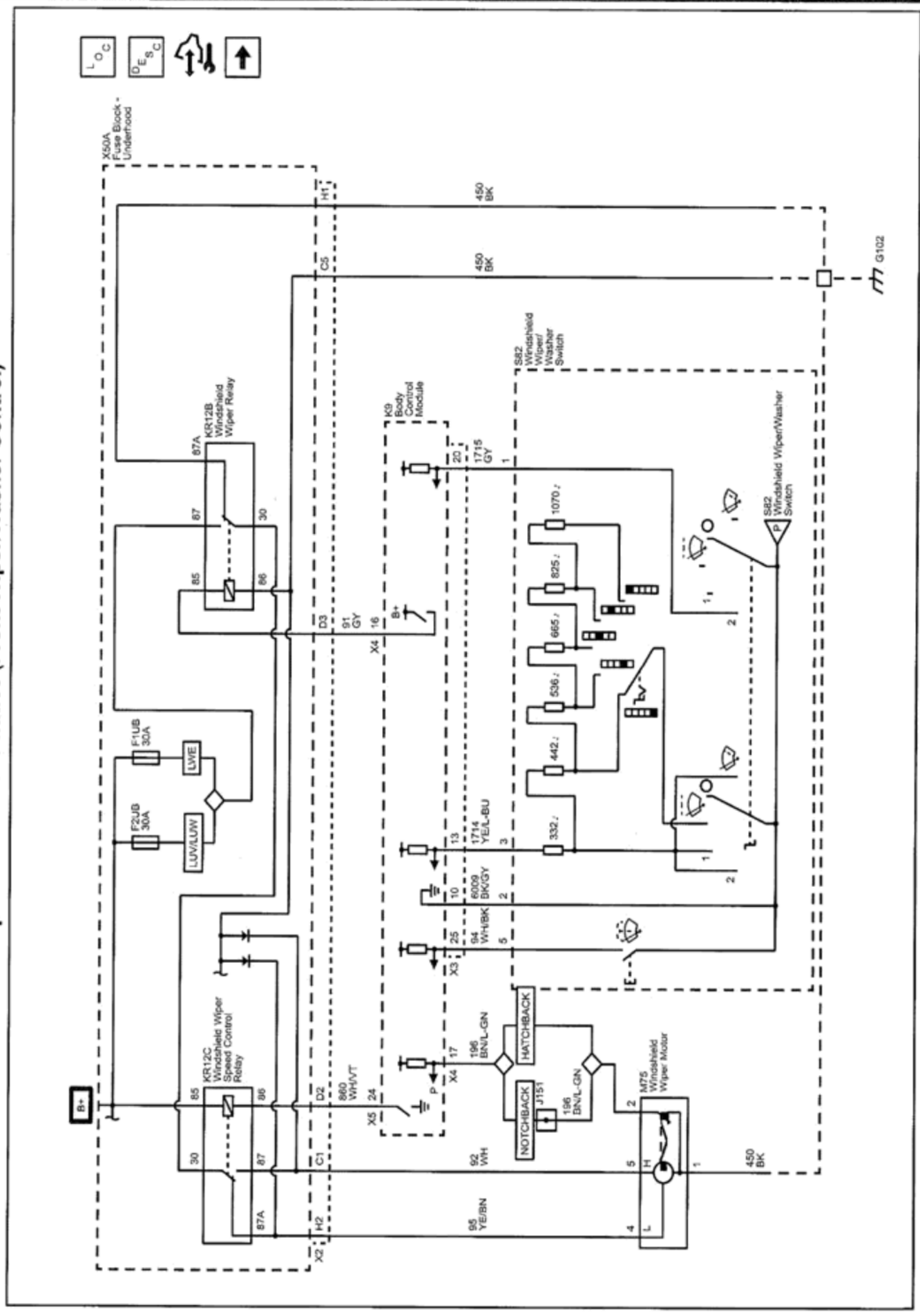
Specifications

Fastener Tightening Specifications

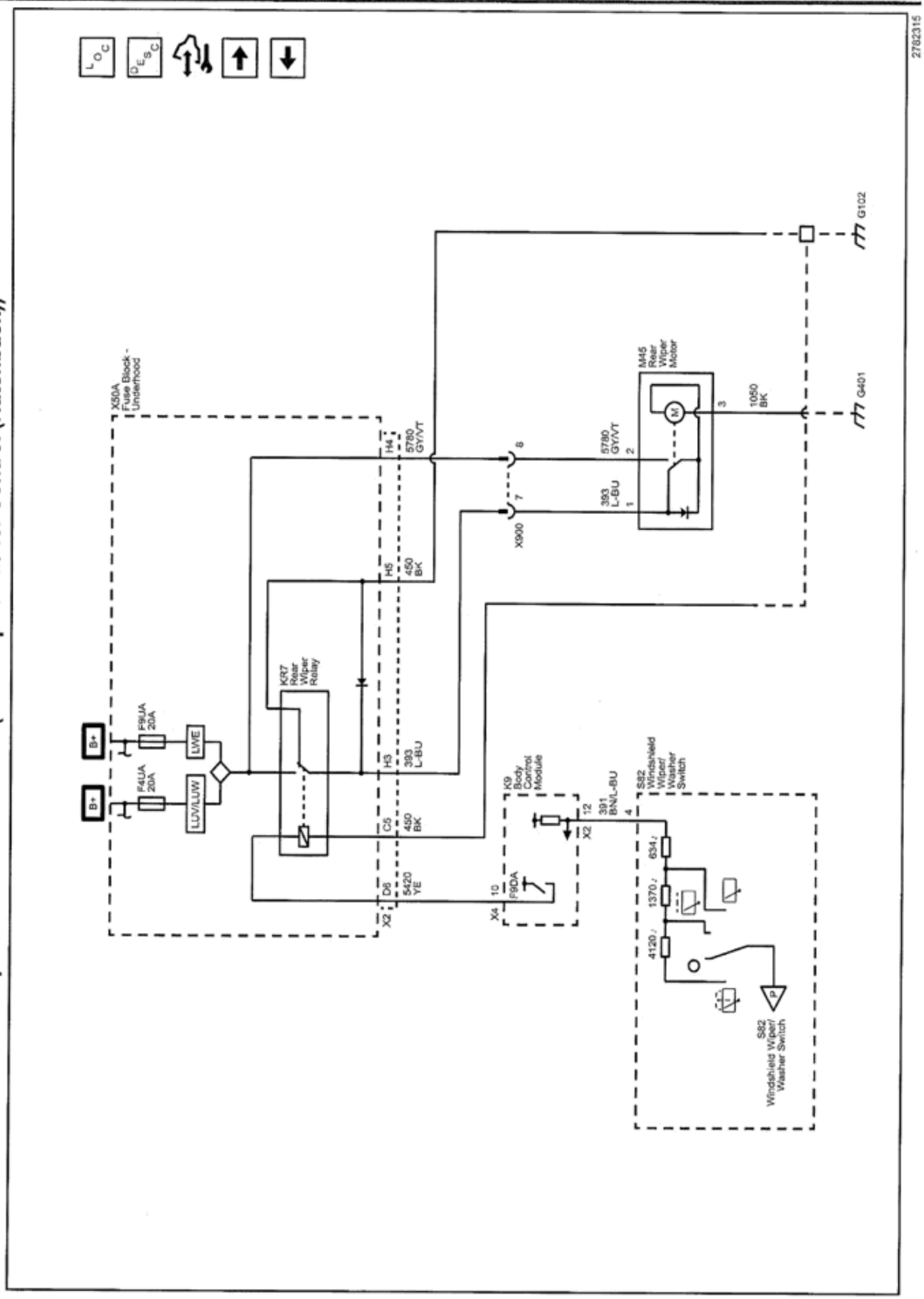
Application	Specification	
	Metric	English
Air Inlet Grille Panel Screw	2.5 N•m	22 lb in
Rear Window Wiper Arm Nut	10 N•m	89 lb in
Rear Window Wiper Motor Bolt	9 N•m	80 lb in
Windshield Washer Solvent Container Nut	5 N•m	44 lb in
Windshield Wiper Arm Nut	25 N•m	18 lb ft
Windshield Wiper Motor Bracket Screw	8.5 N•m	75 lb in
Windshield Wiper System Module Bolt	18 N•m	13 lb ft

Schematic and Routing Diagrams

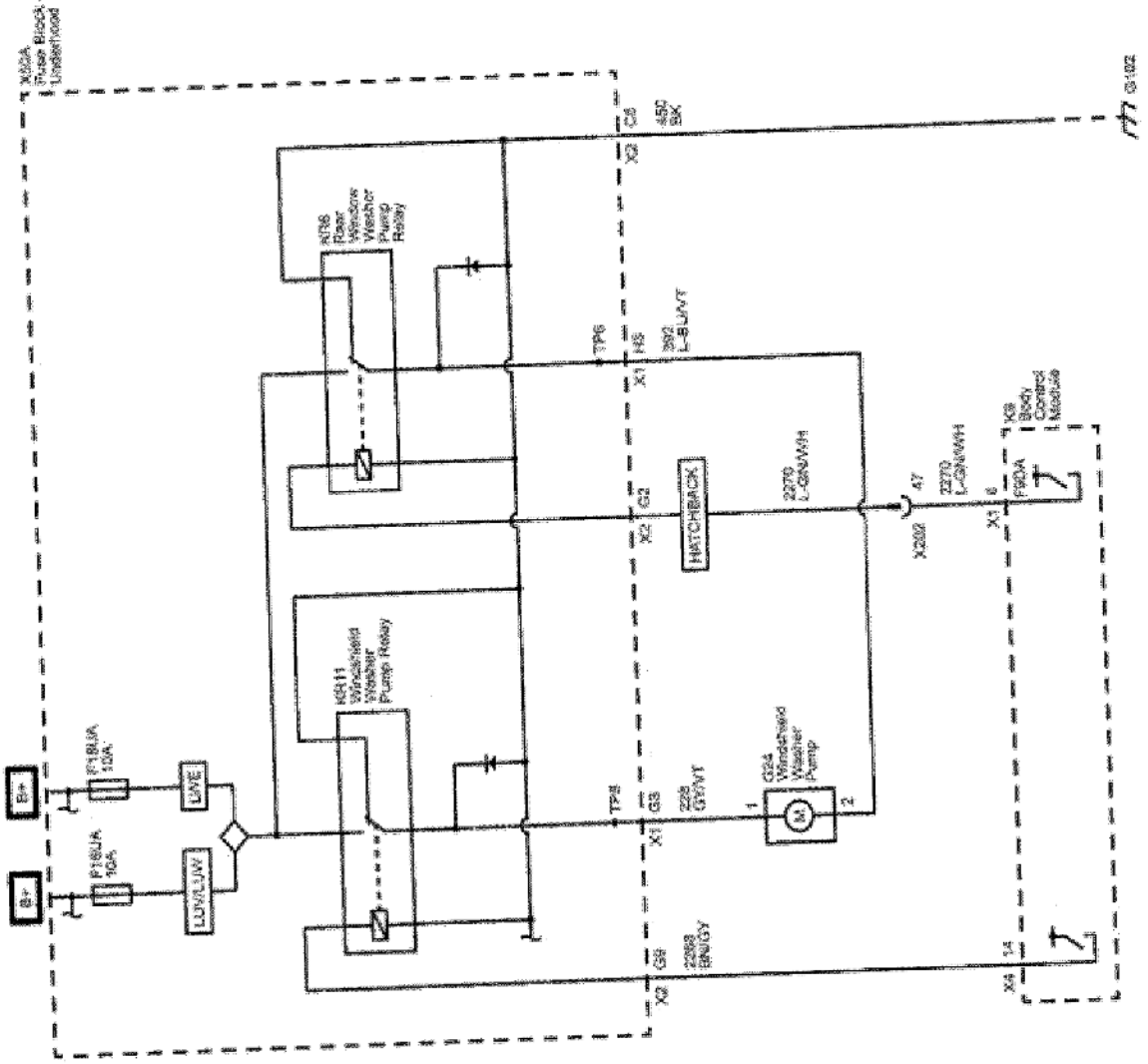
Wiper/Washer Schematics (Front Wiper/Washer Control)



Wiper/Washer Schematics (Rear Wiper/Washer Control (Hatchback))



Wiper/Washer Schematics (Washer)



Diagnostic Information and Procedures

DTC B370B

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptor

DTC B370B: Rear Wiper Function Control Circuit

For symptom byte information, refer to *Symptom Byte List on page 6-85*.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Rear Wiper Motor B+	—	1	—	—
Rear Wiper Switch Signal	1	1	1	—
Rear Wiper Motor Control	1	1	2	—
Rear Wiper Relay Control	B370B 02	B370B 04	B370B 01	—
Rear Wiper Relay Ground	—	1	—	—
Rear Window Wiper Ground	—	1	—	—
1. Rear Wiper Inoperative 2. Rear Wiper Always ON				

Circuit/System Description

The body control module (BCM) controls the rear wiper motor based on an input from the rear wiper switch, which is part of the windshield wiper/washer switch. The BCM monitors the windshield wiper/washer switch through two separate signal circuits and a low reference circuit. The rear wiper switch uses a resistor ladder to determine low speed, intermittent, and rear washer operation. The BCM monitors applies and monitors voltage on the rear wiper switch signal circuit. When the rear wiper switch is placed in the low speed, intermittent, or rear washer position, the voltage is pulled down through a different resistor in the resistor ladder, reducing the voltage seen at the BCM. The BCM will respond by commanding the specific rear wiper function.

The rear wiper motor is controlled by the BCM through the rear wiper relay. A constant B+ and ground are supplied to the rear wiper motor. When rear wiper operation is requested, the BCM will apply voltage to the rear wiper relay control circuit. This will cause the contacts in the rear wiper relay to close and apply B+ to the rear wiper motor through the rear wiper control circuit, enabling rear wiper operation. When the rear wiper request is no longer present, the contacts in the rear wiper relay will open, removing B+ from the rear wiper motor control circuit. The rear wiper motor will continue to operate using the constant B+ circuit until it is in the park position.

Conditions for Running the DTC

- Ignition ON
- The system voltage is between 9–16 V.

Conditions for Setting the DTC

B370B 01

A short to voltage is detected in the rear wiper relay control circuit.

B370B 02

A short to ground is detected in the rear wiper relay control circuit.

B370B 04

An open or high resistance is detected in the rear wiper relay control circuit.

Action Taken When the DTC Sets

Rear wiper operation is disabled.

Conditions for Clearing the DTC

The DTC will clear when the conditions for setting the DTC are no longer present.

Reference Information

Schematic Reference

Wiper/Washer Schematics on page 4-325

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Wiper/Washer System Description and Operation on page 4-384

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool Rear Wiper Switch parameter changes between On and Off when cycling the rear wiper switch ON and OFF.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing – Rear Wiper/ Washer Switch Malfunction.

⇓ **If the parameter changes**

3. Verify the M45 Rear Wiper Motor cycles when commanding the rear wiper ON with the rear wiper switch.

⇒ **If the M45 Rear Wiper Motor does not cycle**

Refer to Circuit/System Testing – Rear Wiper Motor Malfunction

⇓ **If the M45 Rear Wiper Motor cycles**

4. Verify the M45 Rear Wiper Motor returns to the park position when the rear wipers are turned OFF

⇒ **If the M45 Rear Wiper Motor does not return to the park position**

Refer to Circuit/System Testing – Rear Wiper Motor Malfunction

⇓ **If the M45 Rear Wiper Motor returns to the park position**

5. All OK.

Circuit/System Testing

Rear Wiper/Washer Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch. It may take up to 11 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

2.2. Test for less than 2 Ω in the low reference circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Test for greater than 8 V between the signal circuit terminal 4 and ground.

⇒ **If less than 8 V**

4.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

4.2. Test for infinite resistance between the signal circuit and ground

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

⇓ If infinite resistance

4.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇒ **If 8 V or greater**

5. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.
6. Test for less than 1 V between the S82 Windshield Wiper/Washer Switch signal circuit terminal 4 and ground.

⇒ **If 1 V or greater**

Repair the short to voltage on the circuit.

⇓ **If less than 1 V**

7. Test or replace the S82 Windshield Wiper/Washer Switch.

Rear Wiper Motor Malfunction

1. Ignition OFF, and all vehicle systems OFF. Disconnect the harness connector at the M45 Rear Wiper Motor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 3 and ground.

⇒ **If 10 Ω or greater**

2.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 2 and ground.

⇒ **If the test lamp does not illuminate**

4.1. Ignition OFF, remove the test lamp. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood.

4.2. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, test or replace the X50A Fuse Block – Underhood.

⇓ **If the test lamp illuminates**

5. Connect a test lamp between the control circuit terminal 1 and ground.
6. Verify the test lamp does NOT turn ON and OFF when commanding the rear wiper ON and OFF with the rear wiper switch.

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

Test or replace the M45 Rear Wiper Motor.

⇓ **If the test lamp does not turn ON and OFF**

7. Ignition OFF, connect the harness connector at the M45 Rear Wiper Motor. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood, It may take up to 2 min for all vehicle systems to power down.
8. Test for less than 10 Ω between each ground circuit terminal listed below and ground:
   - Terminal C5
   - Terminal H5

⇒ **If 10 Ω or greater**

8.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

9. Ignition ON.
10. Verify the M45 Rear Wiper Motor is not activated.

⇒ **If the M45 Rear Wiper Motor is activated**

10.1. Ignition OFF, disconnect the harness connector at the M45 Rear Wiper Motor, ignition ON.

10.2. Test for less than 1 V between the control circuit terminal 1 and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the M45 Rear Wiper Motor.

⇓ **If the M45 Rear Wiper Motor is not activated**

11. Connect a 20 A fused jumper wire between both of the circuits listed below and B+.
    - B+ Circuit Terminal H4
    - Control Circuit Terminal H3
12. Verify the M45 Rear Wiper Motor activates.

⇒ **If the M45 Rear Wiper Motor does not activate**

12.1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the M45 Rear Wiper Motor, ignition ON.

12.2. Test for infinite resistance between the control circuit and ground.

⇒ If less than Infinite resistance, repair the short to ground on the circuit.

⇓ If infinite resistance

12.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the M45 Rear Wiper Motor.

⇓ **If the M45 Rear Wiper Motor activates**

13. Ignition OFF, connect the X2 harness connector at the X50A Fuse Block – Underhood. Disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
14. Verify the M45 Rear Wiper Motor is not activated.

⇒ **If the M45 Rear Wiper Motor is activated**

14.1. Ignition OFF, disconnect the X2 harness connector at the X50A Fuse Block – Underhood, ignition ON.

14.2. Test for less than 1 V between the control circuit terminal 10 and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the X50A Fuse Block – Underhood.

⇓ **If the M45 Rear Wiper Motor is not activated**

15. Connect a 10 A fused jumper wire between the control circuit terminal 10 and B+.

16. Verify the M45 Rear Wiper Motor activates.

⇒ **If the M45 Rear Wiper Motor does not activate**

16.1. Ignition OFF, remove the jumper wire, disconnect the X2 harness connector at the X50A Fuse Block – Underhood.

16.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If less than infinite resistance

16.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, test or replace the X50A Fuse Block – Underhood.

⇓ **If the M45 Rear Wiper Motor activates**

17. Test or replace the K9 Body Control Module.

Component Testing

Windshield Wiper/Washer Switch

1. Ignition OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch.
2. Test for infinite resistance between the signal terminal 4 and the low reference terminal 2 with the rear wiper switch in the OFF position.

⇒ **If less than infinite resistance**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If infinite resistance**

3. Verify the resistance is within the range specified below between the signal circuit terminal 4 and the low reference circuit terminal 2 by cycling the switch between Rear Wiper position and Rear Washers position.
   - Rear Wiper : 624–644 Ω
   - Rear Wiper Sweep : 1.8–2.2 kΩ
   - Rear Washer : 5.9–6.4 kΩ

⇒ **If not within the specific range**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If within the specific range**

4. All OK

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Rear Window Wiper Motor Replacement (Hatchback) on page 4-380*
- *Front Compartment Fuse Block Replacement on page 11-609*
- *Windshield Wiper and Washer Switch Replacement on page 4-366*
- *Control Module References on page 6-3* for body control module replacement, programming, and setup.

DTC B3715 or B3875

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B3715 01: Windshield Wiper Relay Circuit Short to Battery
DTC B3715 02: Windshield Wiper Relay Circuit Short to Ground
DTC B3715 04: Windshield Wiper Relay Circuit Open
DTC B3875 01: Windshield Wiper High Speed Relay Circuit Short to Battery
DTC B3875 02: Windshield Wiper High Speed Relay Circuit Short to Ground
DTC B3875 04: Windshield Wiper High Speed Relay Circuit Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Windshield Wiper Switch Low Signal terminal 3	1	1	1	—
Windshield Wiper Switch High Signal terminal 1	4	2	2	—
Windshield Wiper Motor Park Switch Signal terminal 2	3	3	—	—
Front Wiper Relay Control terminal 85	B3715 02	B3715 04	B3715 01	—
Windshield Wiper High Speed Relay Control terminal 86	B3875 02	B3875 04	B3875 01	—
Front Wiper Motor Control terminal 4	1	1	4	—
Front Wiper Motor Speed Control terminal 5	1	1	4	—
Windshield Wiper Switch Low Reference terminal 2	—	1, 2	1, 2	—
Windshield Wiper Motor Ground terminal 1	—	1, 2, 3	—	—
Windshield Wiper Relay Ground terminal 86	—	1	—	—

1. Delay or Low Speed Wipers Inoperative
2. High Speed Wipers Inoperative
3. Wipers Do Not Park
4. Wipers Always ON

Circuit/System Description

The body control module (BCM) controls the wiper motor based on input from the windshield wiper/washer switch. The BCM monitors the wiper/washer switch through two separate signal circuits and a low reference circuit. The windshield wiper switch high signal circuit is used to determine high speed wiper operation, the windshield wiper switch low signal is used to determine low speed, intermittent, and mist operation through the use of a resistor ladder, and the windshield washer switch signal circuit is used to determine washer operation.

The BCM controls the windshield wiper motor through two output controls, controlling two relays which determine the desired wiper speed, high or low.

Conditions for Running the DTC

- The DTC runs only when a wiper output is actively being requested by the BCM.
- The system voltage is between 9–16 V.

Conditions for Setting the DTC

- A short to ground is detected in the Front Wiper Relay control circuit or in the High Speed Relay control circuit.
- A short to voltage or an open/high resistance is detected in the Front Wiper Relay control circuit or in the High Speed Relay control circuit.

Action Taken When the DTC Sets

The BCM will not activate the wiper output.

Conditions for Clearing the DTC

- A current DTC will clear when the condition for setting the fault is no longer present.
- A history DTC will clear after 50 consecutive ignition cycles without a fault present.

Reference Information

Schematic Reference

Wiper/Washer Schematics on page 4-325

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Wiper/Washer System Description and Operation on page 4-384

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool Windshield Wiper High Speed Switch parameter changes between Active and Inactive when activating the high speed windshield wipers.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing – Windshield Wiper/Washer Switch Malfunction.

⇓ **If the parameter changes**

3. Verify the scan tool Windshield Wiper Switch parameter changes between Off and Low when activating the low speed windshield wipers.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing – Windshield Wiper/Washer Switch Malfunction.

⇓ **If the parameter changes**

4. Verify the scan tool Windshield Wiper Switch parameter changes between Delay 1 and Delay 5 when cycling the intermittent speed windshield wipers.

⇒ **If the parameter does not change**

Test or replace the S82 Windsheild Wiper/ Washer Switch.

⇓ **If the parameter changes**

5. Verify the M75 Windshield Wiper Motor changes between Off, Low, and High when cycling the S82 Windshield Wiper/Washer Switch between Off, Low, and High.

⇒ **If the Windshield Wiper Motor does not cycle between Off, Low, and High**

Refer to Circuit/System Testing – Windshield Wiper Motor Malfunction

⇓ **If the Windshield Wiper Motor cycles between Off, Low, and High**

6. Ignition OFF.
7. Verify the scan tool Windshield Wiper Park Switch parameter is Active.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing – Windshield Wiper Motor Malfunction.

⇓ **If the parameter changes**

8. All OK.

Circuit/System Testing

Windshield Wiper/Washer Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch. It may take up to 11 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

2.2. Test for less than 2 Ω in the low reference circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Verify the scan tool Windshield Wiper High Speed Switch parameter is Inactive.

⇒ **If not Inactive**

4.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

4.2. Test for infinite resistance between the signal circuit terminal 1 and ground.

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

⇒ If infinite resistance, replace the K9 Body Control Module.

⇓ **If Inactive**

5. Install a 3 A fused jumper wire between the signal circuit terminal 1 and the low reference circuit terminal 2.

6. Verify the scan tool Windshield Wiper High Speed Switch parameter is Active.

⇒ **If not Active**

6.1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the K9 Body Control Module, ignition ON.

6.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇓ If less than 1 V

6.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If Active**

7. Test for greater than 8 V between the signal circuit terminal 3 and ground.

⇒ **If less than 8 V**

7.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

7.2. Test for infinite resistance between the signal circuit and ground

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

⇓ If infinite resistance

7.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇒ **If 8 V or greater**

8. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module, ignition ON.
9. Test for less than 1 V between the S82 Windshield Wiper/Washer Switch signal circuit terminal 3 and ground.

⇒ **If 1 V or greater**

Repair the short to voltage on the circuit.

⇓ **If less than 1 V**

10. Test or replace the S82 Windshield Wiper/Washer Switch.

Windshield Wiper Motor Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the M75 Windshield Wiper Motor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 1 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

2.2. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Verify the scan tool Windshield Wiper Park Switch parameter is Inactive.

⇒ **If not Inactive**

4.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

4.2. Test for infinite resistance between the signal circuit terminal 2 and ground.

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

⇒ If infinite resistance, replace the K9 Body Control Module.

⇓ **If Inactive**

5. Install a 3 A fused jumper wire between the signal circuit terminal 2 and the ground circuit terminal 1.
6. Verify the scan tool Windshield Wiper Park Switch parameter is Active.

⇒ **If not Active**

6.1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the K9 Body Control Module, ignition ON.

6.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇓ If less than 1 V

6.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If Active**

7. Ignition OFF and all vehicle systems OFF, disconnect the KR12B Windshield Wiper Relay. It may take up to 2 min for all vehicle systems to power down.

8. Test for less than 10 Ω between each ground circuit terminal listed below and ground:
   - Terminal 86
   - Terminal 87A

⇒ **If 10 Ω or greater**

8.1. Ignition OFF.

8.2. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

9. Ignition ON.
10. Verify a test lamp illuminates between the B+ circuit terminal 87 and the ground circuit terminal 87A.

⇒ **If the test lamp does not illuminate and the circuit fuse is good**

Replace the X50A Fuse Block – Underhood.

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

10.1. Ignition OFF, remove the test lamp. Disconnect the KR12C Windshield Wiper Speed Control Relay.

10.2. Test for infinite resistance between each control circuit listed below and ground:
   - Terminal 87A
   - Terminal 87

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

⇒ If infinite resistance, replace the M75 Windshield Wiper Motor

⇓ **If the test lamp illuminates**

11. Connect a test lamp between the control circuit terminal 85 and the ground circuit terminal 86.
12. Verify the test lamp turns ON and OFF when commanding the Windshield Wiper Motor Relay Low and Off with a scan tool.

⇒ **If the test lamp is always OFF**

12.1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K9 Body Control Module.

12.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If infinite resistance

12.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇒ **If the test lamp is always ON**

12.1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K9 Body Control Module, ignition ON.

12.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the K9 Body Control Module.

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

13. Ignition OFF, connect the KR12B Windshield Wiper Relay and disconnect the KR12C Windshield Wiper Speed Control Relay, ignition ON.
14. Test for less than 10 Ω between the control circuit terminal 30 and ground.

⇒ **If 10 Ω or greater**

Test or replace the KR12B Windshield Wiper Relay.

⇓ **If less than 10 Ω**

15. Connect a test lamp between the control circuit terminal 30 and ground.
16. Verify the test lamp turns ON and OFF when commanding the Windshield Wiper Motor Relay Low and Off with a scan tool.

⇒ **If the test lamp does not turn ON and OFF**

Test or replace the KR12B Windshield Wiper Relay.

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

17. Verify a test lamp illuminates between the B+ circuit terminal 85 and ground.

⇒ **If the test lamp does not illuminate**

Replace the X50A Fuse Block – Underhood.

⇓ **If the test lamp illuminates**

18. Connect a test lamp between the B+ circuit terminal 85 and the control circuit terminal 86.
19. Verify the test lamp turns ON and OFF when commanding the Windshield Wiper High Speed Relay High and Off with a scan tool.

⇒ **If the test lamp is always OFF**

19.1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K9 Body Control Module, ignition ON.

19.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇓ If less than 1 V

19.3. Ignition OFF.

19.4. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇒ **If the test lamp is always ON**

19.1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K9 Body Control Module.

19.2. Test for infinite resistance between the control circuit and ground.

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

⇒ If infinite resistance, replace the K9 Body Control Module.

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

20. Ignition OFF, connect the KR12C Windshield Wiper Speed Control Relay.
21. Connect a test lamp between the M75 Windshield Wiper Motor control circuit terminal 4 and ground circuit terminal 1, ignition ON.
22. Verify the test lamp turns ON and OFF when commanding the Windshield Wiper Motor Relay Low and Off with a scan tool.

⇒ **If the test lamp is always OFF**

22.1. Ignition OFF, remove the test lamp, disconnect the KR12C Windshield Wiper Speed Control Relay.

22.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If infinite resistance

22.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, test or replace the KR12C Windshield Wiper Speed Control Relay.

⇒ **If the test lamp is always ON**

22.1. Ignition OFF, remove the test lamp, disconnect the KR12C Windshield Wiper Speed Control Relay, ignition ON.

22.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, test or replace the KR12C Windshield Wiper Speed Control Relay.

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

23. Connect a test lamp between the M75 Windshield Wiper Motor control circuit terminal 5 and ground circuit terminal 1, ignition ON.
24. Verify the test lamp turns ON and OFF when commanding the Windshield Wiper High Speed Relay High and Off with a scan tool.

⇒ **If the test lamp is always OFF**

24.1. Ignition OFF, remove the test lamp, disconnect the KR12C Windshield Wiper Speed Control Relay.

24.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If infinite resistance

24.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, test or replace the KR12C Windshield Wiper Speed Control Relay.

⇒ **If the test lamp is always ON**

24.1. Ignition OFF, remove the test lamp, disconnect the KR12C Windshield Wiper Speed Control Relay, ignition ON.

24.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, test or replace the KR12C Windshield Wiper Speed Control Relay.

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

25. Test or replace the M75 Windshield Wiper Motor.

Component Testing

Windshield Wiper/Washer Switch

1. Ignition OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch.
2. Test for infinite resistance between the signal terminal 1 and the low reference terminal 2 with the high speed switch in the open position.

⇒ **If less than infinite resistance**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If infinite resistance**

3. Test for less than 2 Ω between the signal circuit terminal 1 and the low reference circuit terminal 2 with the high speed switch in the closed position.

⇒ **If 2 Ω or greater**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If less than 2 Ω**

4. Test for infinite resistance between the signal terminal 3 and the low reference terminal 2 with the low speed switch in the open position.

⇒ **If less than infinite resistance**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If infinite resistance**

5. Verify the resistance readings are within the specified range listed below between the signal circuit terminal 3 and the low reference circuit terminal 1 by pushing the switch in the listed positions below:
   - Delay 1 : 3.75-3.85kΩ
   - Delay 2 : 2.75-2.85kΩ
   - Delay 3 : 1.95-2.05kΩ
   - Delay 4 : 1.25-1.35kΩ
   - Delay 5 : 765-775Ω

⇒ **If not within the specified range**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If within the specified range**

6. All OK

Relay Test

1. Ignition OFF, disconnect the appropriate relay.
2. Test for 60–200 Ω between terminals 85 and 86.

⇒ **If less than 60 or greater than 200**

Replace the relay.

⇓ **If between 60–200 Ω**

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

⇒ **If less than infinite resistance**

Replace the relay.

⇓ **If infinite resistance**

4. Test for less than 5 Ω between terminals 30 and 87A.

⇒ **If 5 Ω or greater**

Replace the relay.

⇓ **If less than 5 Ω**

5. Install a 10 A fused jumper wire between relay terminal 85 and 12 V. Install a jumper wire between relay terminal 86 and ground.
6. Test for less than 5 Ω between terminals 30 and 87.

⇒ **If 5 Ω or greater**

Replace the relay.

⇓ **If less than 5 Ω**

7. All OK

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Windshield Wiper Motor Replacement on page 4-379*
- *Front Compartment Fuse Block Replacement on page 11-609*
- *Relay Replacement (Within an Electrical Center) on page 11-607* or *Relay Replacement (Attached to Wire Harness) on page 11-607*
- *Windshield Wiper and Washer Switch Replacement on page 4-366*
- *Control Module References on page 6-3* for BCM replacement, programming and setup

DTC B3811

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptor

DTC B3811: Rear Washer Relay Circuit

For symptom byte information, refer to *Symptom Byte List on page 6-85*.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Rear Washer Switch Signal	1	1	1	—
Rear Window Washer Pump Relay Control	1	B3811 04	B3811 01	—
Rear Windshield Washer Pump Control	1	1	2	—
Rear Windshield Washer Pump Ground	—	1	—	—
1. Rear Washer Inoperative 2. Rear Washer Always ON				

Circuit/System Description

The body control module (BCM) controls the rear washer based on an input from the rear wiper switch, which is part of the windshield wiper/washer switch. The BCM monitors the windshield wiper/washer switch through two separate signal circuits and a low reference circuit. The rear wiper switch uses a resistor ladder to determine low speed, intermittent, and rear washer operation. The BCM monitors applies and monitors voltage on the rear wiper switch signal circuit. When the rear wiper switch is placed in the low speed, intermittent, or rear washer position, the voltage is pulled down through a different resistor in the resistor ladder, reducing the voltage seen at the BCM. The BCM will respond by commanding the specific rear wiper function.

The windshield washer uses a single windshield washer pump to provide fluid for both the front and rear washers. Changing the polarity of the motor will cause it to spin in opposite directions, feeding fluid to the front or rear. When rear washers are requested, the BCM applies voltage to the rear window washer pump relay control circuit. This causes the contacts in the rear washer pump relay to close and supplies voltage to the windshield washer pump. Ground for the windshield washer pump is provided through the windshield washer pump relay, which is switched to ground in it's at-rest state.

Conditions for Running the DTC

- Ignition ON
- The system voltage is between 9–16 V

Conditions for Setting the DTC

B3811 01

A short to voltage has been detected on the rear window washer pump relay control circuit

B3811 04

A open/high resistance has been detected on the rear window washer pump relay control circuit

Action Taken When the DTC Sets

Rear washer operation is disabled.

Conditions for Clearing the DTC

- A current DTC clears when the diagnostic runs and passes.
- A history DTC will clear after 50 consecutive ignition cycles without a fault present.

Reference Information

Schematic Reference

Wiper/Washer Schematics on page 4-325

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Wiper/Washer System Description and Operation on page 4-384

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool Rear Wiper Switch parameter changes between On and Off when cycling the rear wiper switch ON and OFF.

⇒ **If the parameter does not change**

Refer to *Rear Wiper System Malfunction on page 4-359*

⇓ **If the parameter changes**

3. Verify the G24 Windshield Washer Pump turns on and off when commanding the rear washers OFF and ON with the rear washer switch

⇒ **If the Rear Window Washers do not turn ON**

Refer to Circuit/System Testing

⇓ **If the Rear Window Washers turn ON**

4. All OK.

Circuit/System Testing

1. Ignition OFF, and all vehicle systems OFF. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal C5 and ground:

⇒ **If 10 Ω or greater**

2.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Connect the X2 harness connector and disconnect the X1 harness connector at the X50A Fuse Block – Underhood.
4. Test for infinite resistance between each of the control circuit terminals listed below and ground.

4.1. Terminal G3

4.2. Terminal H3

⇒ **If less than Infinite resistance**

Repair the short to ground on the circuit.

⇓ **If infinite resistance**

5. Connect the X1 harness connector at the X50A Fuse Block – Underhood. Disconnect the harness connector at the G24 Windshield Washer Pump, ignition ON.
6. Test for less than 1 V between the control circuit terminals listed below and ground:
   - Terminal 1
   - Terminal 2

⇒ **If 1 V or greater**

6.1. Ignition OFF, disconnect the X1 harness connector at the X50A Fuse Block – Underhood.

6.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, test or replace the X50A Fuse Block – Underhood.

⇓ **If less than 1 V**

7. Ignition OFF, and all vehicle systems OFF. It may take up to 2 min for all vehicle systems to power down.
8. Test for less than 10 Ω between the control circuit terminal 1 and ground.

⇒ **If 10 Ω or greater**

8.1. Ignition OFF, disconnect the X1 harness connectors at the X50A Fuse Block – Underhood.

8.2. Test for less than 2 Ω in the control circuit end to end:

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the X50A Fuse Block – Underhood.

⇓ **If less than 10 Ω**

9. Test for less than 10 Ω between the control circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

9.1. Ignition OFF, disconnect the X1 harness connectors at the X50A Fuse Block – Underhood.

9.2. Test for less than 2 Ω in the control circuit end to end:

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the X50A Fuse Block – Underhood.

⇓ **If less than 10 Ω**

10. Connect a test lamp between the control circuit terminal 1 and the control circuit terminal 2, ignition ON.
11. Verify the test lamp does NOT turn ON and OFF when commanding the rear washer ON and OFF with the rear washer switch.

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

Test or replace the G24 Windshield Washer Pump.

⇓ **If the test lamp does not turn ON and OFF**

12. Ignition OFF, connect the harness connector at the G24 Windshield Washer Pump. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood, ignition ON.

13. Connect a test lamp between the control circuit terminal G2 and ground.
14. Verify the test lamp turns ON and OFF when commanding the rear washer ON and OFF with the rear washer switch.

⇒ **If the test lamp is always OFF**

14.1. Ignition OFF, remove the test lamp. Disconnect the X1 harness connector at the K9 Body Control Module.

14.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If infinite resistance.

14.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the short to ground on the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module

⇒ **If the test lamp is always ON**

14.1. Ignition OFF, remove the test lamp. Disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.

14.2. Test for less than 1 V between the control circuit and ground.

⇒ If 2 Ω or greater, repair the short to voltage on the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module

⇓ **If the test lamp turns ON and OFF.**

15. Test or replace the X50A Fuse Block – Underhood.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Windshield Washer Pump Replacement on page 4-373*
- *Front Compartment Fuse Block Replacement on page 11-609*
- *Windshield Wiper and Washer Switch Replacement on page 4-366*
- *Control Module References on page 6-3* for body control module replacement, programming, and setup.

DTC B3873 (without C25)

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B3873 01: Front Washer Relay Circuit Short to Battery
DTC B3873 02: Front Washer Relay Circuit Short to Ground
DTC B3873 04: Front Washer Relay Circuit Open Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Windshield Washer Switch Signal	2	1	1	—
Windshield Washer Pump Control	1	1	2	—
Windshield Washer Relay Control	B3873 02	B3873 04	B3873 01	—
Windshield Washer Pump Ground	—	1	—	—
1. Washer Inoperative 2. Washer Always ON				

Circuit/System Description

The body control module (BCM) controls the windshield washer pump based on an input from the windshield wiper/washer switch. The BCM monitors the washer switch through the windshield washer switch signal circuit. When the washer switch is closed, low reference is supplied to the windshield washer switch signal circuit. When this is the case, the BCM will command the windshield washer pump and the low speed wipers on.

Conditions for Running the DTC

- Ignition ON.
- The system voltage is between 9–16 V.

Conditions for Setting the DTC

- A short to ground or an open/high resistance is detected in the windshield washer relay control circuit.
- A short to voltage is detected in the windshield washer relay control circuit.

Action Taken When the DTC Sets

Washer operation is suspended.

Conditions for Clearing the DTC

A current DTC clears when the diagnostic runs and passes.

Reference Information

Schematic Reference

Wiper/Washer Schematics on page 4-325

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Wiper/Washer System Description and Operation on page 4-384

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool Windshield Washer Switch parameter changes between Active and Inactive when pressing and releasing the windshield washer switch.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing – Windshield Wiper/Washer Switch Malfunction.

⇓ **If the parameter changes**

3. Verify the windshield washers turn ON when commanding the Windshield Washer Relay Active with a scan tool.

⇒ **If the Windshield Washers do not turn ON**

Refer to Circuit/System Testing – Windshield Washer Pump Malfunction

⇓ **If the Windshield Washers turn ON**

4. All OK.

Circuit/System Testing

Windshield Wiper/Washer Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch. It may take up to 11 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

2.2. Test for less than 2 Ω in the low reference circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Verify the scan tool Windshield Washer Switch parameter is Inactive.

⇒ **If not Inactive**

4.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

4.2. Test for infinite resistance between the signal circuit terminal 5 and ground.

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

⇒ If infinite resistance, replace the K9 Body Control Module.

⇓ **If Inactive**

5. Install a 3 A fused jumper wire between the signal circuit terminal 5 and the low reference circuit terminal 2.
6. Verify the scan tool Windshield Washer Switch parameter is Active.

⇒ **If not Active**

6.1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the K9 Body Control Module, ignition ON.

6.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇓ If less than 1 V

6.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If Active**

7. Test or replace the S82 Windshield Wiper/Washer Switch.

Windshield Washer Pump Malfunction

1. Ignition OFF, and all vehicle systems OFF. Disconnect the harness connector at the G24 Windshield Washer Pump. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

2.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Connect a test lamp between the control circuit terminal 1 and the ground circuit terminal 2, ignition ON.
4. Verify the test lamp does NOT turn ON and OFF when commanding the Windshield Washer Relay Active and Inactive with a scan tool.

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

Test or replace the G24 Windshield Washer Pump.

⇓ **If the test lamp does not turn ON and OFF**

5. Ignition OFF, connect the harness connector at the G24 Windshield Washer Pump. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood, It may take up to 2 min for all vehicle systems to power down.
6. Test for less than 10 Ω between the ground circuit terminal C5 and ground.

⇒ **If 10 Ω or greater**

6.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

7. Ignition ON.
8. Verify the G24 Windshield Washer Pump is not activated.

⇒ **If the G24 Windshield Washer Pump is activated**

8.1. Ignition OFF, disconnect the harness connector at the G24 Windshield Washer Pump, ignition ON.

8.2. Test for less than 1 V between the control circuit terminal 1 and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the G24 Windshield Washer Pump.

⇓ **If the G24 Windshield Washer Pump is not activated**

9. Disconnect the X1 harness connector at the X50A Fuse Block – Underhood.
10. Connect a 20 A fused jumper wire between the control circuit terminal G3 and B+.
11. Verify the G24 Windshield Washer Pump activates.

⇒ **If the G24 Windshield Washer Pump does not activate**

11.1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the G24 Windshield Washer Pump.

11.2. Test for infinite resistance between the control circuit and ground.

⇒ If less than Infinite resistance, repair the short to ground on the circuit.

⇓ If infinite resistance

11.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the G24 Windshield Washer Pump.

⇓ **If the G24 Windshield Washer Pump activates**

12. Ignition OFF, connect the X1 harness connector at the X50A Fuse Block – Underhood. Disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
13. Verify the G24 Windshield Washer Pump is not activated.

⇒ **If the G24 Windshield Washer Pump is activated**

13.1. Ignition OFF, disconnect the X2 harness connector at the X50A Fuse Block – Underhood, ignition ON.

13.2. Test for less than 1 V between the control circuit terminal G9 and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the X50A Fuse Block – Underhood.

⇓ **If the G24 Windshield Washer Pump is not activated**

14. Connect a 10 A fused jumper wire between the control circuit terminal 14 and B+.
15. Verify the G24 Windshield Washer Pump activates.

⇒ **If the G24 Windshield Washer Pump does not activate**

15.1. Ignition OFF, remove the jumper wire, disconnect the X2 harness connector at the X50A Fuse Block – Underhood.

15.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If less than infinite resistance

15.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, test or replace the X50A Fuse Block – Underhood.

⇓ **If the G24 Windshield Washer Pump activates**

16. Replace the K9 Body Control Module.

Component Testing

Windshield Wiper/Washer Switch

1. Ignition OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch.
2. Test for infinite resistance between the signal terminal 5 and the low reference terminal 2 with the switch in the open position.

⇒ **If less than infinite resistance**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If infinite resistance**

3. Test for less than 2 Ω between the signal circuit terminal 5 and the low reference circuit terminal 2 with the switch in the closed position.

⇒ **If 2 Ω or greater**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If less than 2 Ω**

4. All OK

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Front Compartment Fuse Block Replacement on page 11-609*
- *Windshield Washer Pump Replacement on page 4-373*
- *Windshield Wiper and Washer Switch Replacement on page 4-366*
- *Control Module References on page 6-3* for BCM replacement, programming and setup

DTC B3873 (with C25)

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B3873: Front Washer Relay Circuit

For symptom byte information, refer to *Symptom Byte List on page 6-85*.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Windshield Washer Switch Signal	2	1	1	—
Windshield Washer Pump Control	1	1	2	—
Windshield Washer Relay Control	B3873 02	B3873 04	B3873 01	—
Windshield Washer Pump Ground	—	1	—	—
1. Washer Inoperative 2. Washer Always ON				

Circuit/System Description

The body control module (BCM) controls the windshield washer based on an input from the windshield washer switch, which is part of the windshield wiper/washer switch. The BCM monitors the windshield washer switch through a discrete signal circuit. When the washer switch is pressed, the signal circuit is pulled to ground. The BCM will respond by commanding the washer function.

The windshield washer uses a single windshield washer pump to provide fluid for both the front and rear washers. Changing the polarity of the motor will cause it to spin in opposite directions, feeding fluid to the front or rear. When front washers are requested, the BCM applies voltage to the windshield washer pump relay control circuit. This causes the contacts in the windshield washer pump relay to close and supplies voltage to the windshield washer pump. Ground for the windshield washer pump is provided through the rear window washer pump relay, which is switched to ground in it's at-rest state.

Conditions for Running the DTC

- Ignition ON.
- The system voltage is between 9–16 V.

Conditions for Setting the DTC

B3873 01

A short to voltage has been detected on the windshield washer pump relay control circuit

B3873 02

A short to ground has been detected on the windshield washer pump relay control circuit

B3873 04

An open/high resistance has been detected on the windshield washer pump relay control circuit

Action Taken When the DTC Sets

Washer operation is suspended.

Conditions for Clearing the DTC

A current DTC clears when the diagnostic runs and passes.

Reference Information

Schematic Reference

Wiper/Washer Schematics on page 4-325

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Wiper/Washer System Description and Operation on page 4-384

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool Windshield Washer Switch parameter changes between Active and Inactive when pressing and releasing the washer switch.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing – Washer Switch Malfunction.

⇓ **If the parameter changes**

3. Verify the G24 Windshield Washer Pump activates when commanding the Windshield Washer Relay Active with a scan tool.

⇒ **If the Windshield Washers do not turn ON**

Refer to Circuit/System Testing – Windshield Washer Pump Malfunction

⇓ **If the Windshield Washers turn ON**

4. All OK.

Circuit/System Testing

Washer Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch. It may take up to 11 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

2.2. Test for less than 2 Ω in the low reference circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Verify the scan tool Windshield Washer Switch parameter is Inactive.

⇒ **If not Inactive**

4.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

4.2. Test for infinite resistance between the signal circuit terminal 5 and ground.

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

⇒ If infinite resistance, replace the K9 Body Control Module.

⇓ **If Inactive**

5. Install a 3 A fused jumper wire between the signal circuit terminal 5 and the low reference circuit terminal 2.
6. Verify the scan tool Windshield Washer Switch parameter is Active.

⇒ **If not Active**

6.1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the K9 Body Control Module, ignition ON.

6.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇓ If less than 1 V

6.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If Active**

7. Test or replace the S82 Windshield Wiper/Washer Switch.

Windshield Washer Pump Malfunction

1. Ignition OFF, and all vehicle systems OFF. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal C5 and ground:

⇒ **If 10 Ω or greater**

2.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Connect the X2 harness connector and disconnect the X1 harness connector at the X50A Fuse Block – Underhood.
4. Test for infinite resistance between each of the control circuit terminals listed below and ground.

4.1. Terminal G3

4.2. Terminal H3

⇒ **If less than Infinite resistance**

Repair the short to ground on the circuit.

⇓ **If infinite resistance**

5. Connect the X1 harness connector at the X50A Fuse Block – Underhood. Disconnect the harness connector at the G24 Windshield Washer Pump, ignition ON.

6. Test for less than 1 V between the control circuit terminals listed below and ground:
   - Terminal 1
   - Terminal 2

⇒ **If 1 V or greater**

6.1. Ignition OFF, disconnect the X1 harness connector at the X50A Fuse Block – Underhood.

6.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, test or replace the X50A Fuse Block – Underhood.

⇓ **If less than 1 V**

7. Ignition OFF, and all vehicle systems OFF. It may take up to 2 min for all vehicle systems to power down.
8. Test for less than 10 Ω between the control circuit terminal 1 and ground.

⇒ **If 10 Ω or greater**

8.1. Ignition OFF, disconnect the X1 harness connectors at the X50A Fuse Block – Underhood.

8.2. Test for less than 2 Ω in the control circuit end to end:

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the X50A Fuse Block – Underhood.

⇓ **If less than 10 Ω**

9. Test for less than 10 Ω between the control circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

9.1. Ignition OFF, disconnect the X1 harness connectors at the X50A Fuse Block – Underhood.

9.2. Test for less than 2 Ω in the control circuit end to end:

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the X50A Fuse Block – Underhood.

⇓ **If less than 10 Ω**

10. Connect a test lamp between the control circuit terminal 1 and the control circuit terminal 2, ignition ON.
11. Verify the test lamp does NOT turn ON and OFF when commanding the rear washer ON and OFF with the rear washer switch.

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

Test or replace the G24 Windshield Washer Pump.

⇓ **If the test lamp does not turn ON and OFF**

12. Ignition OFF, connect the harness connector at the G24 Windshield Washer Pump. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood, ignition ON.
13. Connect a test lamp between the control circuit terminal G9 and ground.
14. Verify the test lamp turns ON and OFF when commanding the Windshield Washer Relay Active with a scan tool.

⇒ **If the test lamp is always OFF**

14.1. Ignition OFF, remove the test lamp. Disconnect the X4 harness connector at the K9 Body Control Module.

14.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If infinite resistance.

14.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the short to ground on the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module

⇒ **If the test lamp is always ON**

14.1. Ignition OFF, remove the test lamp. Disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.

14.2. Test for less than 1 V between the control circuit and ground.

⇒ If 2 Ω or greater, repair the short to voltage on the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module

⇓ **If the test lamp turns ON and OFF.**

15. Test or replace the X50A Fuse Block – Underhood.

Component Testing

Washer Switch

1. Ignition OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch.
2. Test for infinite resistance between the signal terminal 5 and the low reference terminal 2 with the switch in the open position.

⇒ **If less than infinite resistance**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If infinite resistance**

3. Test for less than 2 Ω between the signal circuit terminal 5 and the low reference circuit terminal 2 with the switch in the closed position.

⇒ **If 2 Ω or greater**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If less than 2 Ω**

4. All OK

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Front Compartment Fuse Block Replacement on page 11-609*
- *Windshield Washer Pump Replacement on page 4-373*
- *Windshield Wiper and Washer Switch Replacement on page 4-366*
- *Control Module References on page 6-3* for body control module replacement, programming, and setup.

Symptoms - Wiper/Washer Systems

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

1. Perform *Diagnostic System Check - Vehicle on page 6-66* , in order to verify that all of the following conditions are true:
   - No DTCs are set.
   - The control modules can communicate via the serial data link.
2. Refer to *Wiper/Washer System Description and Operation on page 4-384* in order to familiarize yourself with the system functions.

Visual/Physical Inspection

- Inspect for aftermarket devices which may affect the operation of the windshield wiper/washer system. Refer to *Checking Aftermarket Accessories on page 11-525*.
- Inspect the easily accessible or visible system components for obvious damage or conditions which may 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 on page 11-531*.

Symptom List

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

- *Windshield Wiper System Malfunction on page 4-347*
- *Washer Malfunction (without C25) on page 4-353* or *Washer Malfunction (with C25) on page 4-356*
- *Rear Washer System Malfunction on page 4-363*
- *Rear Wiper System Malfunction on page 4-359*

Windshield Wiper System Malfunction

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B3715 01: Windshield Wiper Relay Circuit Short to Battery
DTC B3715 02: Windshield Wiper Relay Circuit Short to Ground
DTC B3715 04: Windshield Wiper Relay Circuit Open
DTC B3875 01: Windshield Wiper High Speed Relay Circuit Short to Battery
DTC B3875 02: Windshield Wiper High Speed Relay Circuit Short to Ground
DTC B3875 04: Windshield Wiper High Speed Relay Circuit Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Windshield Wiper Switch Low Signal terminal 3	1	1	1	—
Windshield Wiper Switch High Signal terminal 1	4	2	2	—
Windshield Wiper Motor Park Switch Signal terminal 2	3	3	—	—
Front Wiper Relay Control terminal 85	B3715 02	B3715 04	B3715 01	—
Windshield Wiper High Speed Relay Control terminal 86	B3875 02	B3875 04	B3875 01	—

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Front Wiper Motor Control terminal 4	1	1	4	—
Front Wiper Motor Speed Control terminal 5	1	1	4	—
Windshield Wiper Switch Low Reference terminal 2	—	1, 2	1, 2	—
Windshield Wiper Motor Ground terminal 1	—	1, 2, 3	—	—
Windshield Wiper Relay Ground terminal 86	—	1	—	—

1. Delay or Low Speed Wipers Inoperative
2. High Speed Wipers Inoperative
3. Wipers Do Not Park
4. Wipers Always ON

Circuit/System Description

The body control module (BCM) controls the wiper motor based on input from the windshield wiper/washer switch. The BCM monitors the wiper/washer switch through two separate signal circuits and a low reference circuit. The windshield wiper switch high signal circuit is used to determine high speed wiper operation, the windshield wiper switch low signal is used to determine low speed, intermittent, and mist operation through the use of a resistor ladder, and the windshield washer switch signal circuit is used to determine washer operation.

The BCM controls the windshield wiper motor through two output controls, controlling two relays which determine the desired wiper speed, high or low.

Conditions for Running the DTC

- The DTC runs only when a wiper output is actively being requested by the BCM.
- The system voltage is between 9–16 V.

Conditions for Setting the DTC

- A short to ground is detected in the Front Wiper Relay control circuit or in the High Speed Relay control circuit.
- A short to voltage or an open/high resistance is detected in the Front Wiper Relay control circuit or in the High Speed Relay control circuit.

Action Taken When the DTC Sets

The BCM will not activate the wiper output.

Conditions for Clearing the DTC

- A current DTC will clear when the condition for setting the fault is no longer present.
- A history DTC will clear after 50 consecutive ignition cycles without a fault present.

Reference Information

Schematic Reference

Wiper/Washer Schematics on page 4-325

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Wiper/Washer System Description and Operation on page 4-384

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool Windshield Wiper High Speed Switch parameter changes between Active and Inactive when activating the high speed windshield wipers.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing – Windshield Wiper/Washer Switch Malfunction.

⇓ **If the parameter changes**

3. Verify the scan tool Windshield Wiper Switch parameter changes between Off and Low when activating the low speed windshield wipers.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing – Windshield Wiper/Washer Switch Malfunction.

⇓ **If the parameter changes**

4. Verify the scan tool Windshield Wiper Switch parameter changes between Delay 1 and Delay 5 when cycling the intermittent speed windshield wipers.

⇒ **If the parameter does not change**

Test or replace the S82 Windsheild Wiper/ Washer Switch.

⇓ **If the parameter changes**

5. Verify the M75 Windshield Wiper Motor changes between Off, Low, and High when cycling the S82 Windshield Wiper/Washer Switch between Off, Low, and High.

⇒ **If the Windshield Wiper Motor does not cycle between Off, Low, and High**

Refer to Circuit/System Testing – Windshield Wiper Motor Malfunction

⇓ **If the Windshield Wiper Motor cycles between Off, Low, and High**

6. Ignition OFF.
7. Verify the scan tool Windshield Wiper Park Switch parameter is Active.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing – Windshield Wiper Motor Malfunction.

⇓ **If the parameter changes**

8. All OK.

Circuit/System Testing

Windshield Wiper/Washer Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch. It may take up to 11 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

2.2. Test for less than 2 Ω in the low reference circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Verify the scan tool Windshield Wiper High Speed Switch parameter is Inactive.

⇒ **If not Inactive**

4.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

4.2. Test for infinite resistance between the signal circuit terminal 1 and ground.

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

⇒ If infinite resistance, replace the K9 Body Control Module.

⇓ **If Inactive**

5. Install a 3 A fused jumper wire between the signal circuit terminal 1 and the low reference circuit terminal 2.
6. Verify the scan tool Windshield Wiper High Speed Switch parameter is Active.

⇒ **If not Active**

6.1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the K9 Body Control Module, ignition ON.

6.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇓ If less than 1 V

6.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If Active**

7. Test for greater than 8 V between the signal circuit terminal 3 and ground.

⇒ **If less than 8 V**

7.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

7.2. Test for infinite resistance between the signal circuit and ground

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

⇓ If infinite resistance

7.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇒ **If 8 V or greater**

8. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module, ignition ON.
9. Test for less than 1 V between the S82 Windshield Wiper/Washer Switch signal circuit terminal 3 and ground.

⇒ **If 1 V or greater**

Repair the short to voltage on the circuit.

⇓ **If less than 1 V**

10. Test or replace the S82 Windshield Wiper/Washer Switch.

Windshield Wiper Motor Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the M75 Windshield Wiper Motor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 1 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

2.2. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Verify the scan tool Windshield Wiper Park Switch parameter is Inactive.

⇒ **If not Inactive**

4.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

4.2. Test for infinite resistance between the signal circuit terminal 2 and ground.

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

⇒ If infinite resistance, replace the K9 Body Control Module.

⇓ **If Inactive**

5. Install a 3 A fused jumper wire between the signal circuit terminal 2 and the ground circuit terminal 1.
6. Verify the scan tool Windshield Wiper Park Switch parameter is Active.

⇒ **If not Active**

6.1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the K9 Body Control Module, ignition ON.

6.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇓ If less than 1 V

6.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If Active**

7. Ignition OFF and all vehicle systems OFF, disconnect the KR12B Windshield Wiper Relay. It may take up to 2 min for all vehicle systems to power down.
8. Test for less than 10 Ω between each ground circuit terminal listed below and ground:
   - Terminal 86
   - Terminal 87A

⇒ **If 10 Ω or greater**

8.1. Ignition OFF.

8.2. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

9. Ignition ON.
10. Verify a test lamp illuminates between the B+ circuit terminal 87 and the ground circuit terminal 87A.

⇒ **If the test lamp does not illuminate and the circuit fuse is good**

Replace the X50A Fuse Block – Underhood.

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

10.1. Ignition OFF, remove the test lamp. Disconnect the KR12C Windshield Wiper Speed Control Relay.

10.2. Test for infinite resistance between each control circuit listed below and ground:
   - Terminal 87A
   - Terminal 87

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

⇒ If infinite resistance, replace the M75 Windshield Wiper Motor

⇓ **If the test lamp illuminates**

11. Connect a test lamp between the control circuit terminal 85 and the ground circuit terminal 86.
12. Verify the test lamp turns ON and OFF when commanding the Windshield Wiper Motor Relay Low and Off with a scan tool.

⇒ **If the test lamp is always OFF**

12.1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K9 Body Control Module.

12.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If infinite resistance

12.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇒ **If the test lamp is always ON**

12.1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K9 Body Control Module, ignition ON.

12.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the K9 Body Control Module.

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

13. Ignition OFF, connect the KR12B Windshield Wiper Relay and disconnect the KR12C Windshield Wiper Speed Control Relay, ignition ON.
14. Test for less than 10 Ω between the control circuit terminal 30 and ground.

⇒ **If 10 Ω or greater**

Test or replace the KR12B Windshield Wiper Relay.

⇓ **If less than 10 Ω**

15. Connect a test lamp between the control circuit terminal 30 and ground.
16. Verify the test lamp turns ON and OFF when commanding the Windshield Wiper Motor Relay Low and Off with a scan tool.

⇒ **If the test lamp does not turn ON and OFF**

Test or replace the KR12B Windshield Wiper Relay.

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

17. Verify a test lamp illuminates between the B+ circuit terminal 85 and ground.

⇒ **If the test lamp does not illuminate**

Replace the X50A Fuse Block – Underhood.

⇓ **If the test lamp illuminates**

18. Connect a test lamp between the B+ circuit terminal 85 and the control circuit terminal 86.
19. Verify the test lamp turns ON and OFF when commanding the Windshield Wiper High Speed Relay High and Off with a scan tool.

⇒ **If the test lamp is always OFF**

19.1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K9 Body Control Module, ignition ON.

19.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇓ If less than 1 V

19.3. Ignition OFF.

19.4. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇒ **If the test lamp is always ON**

19.1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K9 Body Control Module.

19.2. Test for infinite resistance between the control circuit and ground.

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

⇒ If infinite resistance, replace the K9 Body Control Module.

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

20. Ignition OFF, connect the KR12C Windshield Wiper Speed Control Relay.
21. Connect a test lamp between the M75 Windshield Wiper Motor control circuit terminal 4 and ground circuit terminal 1, ignition ON.
22. Verify the test lamp turns ON and OFF when commanding the Windshield Wiper Motor Relay Low and Off with a scan tool.

⇒ **If the test lamp is always OFF**

22.1. Ignition OFF, remove the test lamp, disconnect the KR12C Windshield Wiper Speed Control Relay.

22.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If infinite resistance

22.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, test or replace the KR12C Windshield Wiper Speed Control Relay.

⇒ **If the test lamp is always ON**

22.1. Ignition OFF, remove the test lamp, disconnect the KR12C Windshield Wiper Speed Control Relay, ignition ON.

22.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, test or replace the KR12C Windshield Wiper Speed Control Relay.

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

23. Connect a test lamp between the M75 Windshield Wiper Motor control circuit terminal 5 and ground circuit terminal 1, ignition ON.

24. Verify the test lamp turns ON and OFF when commanding the Windshield Wiper High Speed Relay High and Off with a scan tool.

⇒ **If the test lamp is always OFF**

24.1. Ignition OFF, remove the test lamp, disconnect the KR12C Windshield Wiper Speed Control Relay.

24.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If infinite resistance

24.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, test or replace the KR12C Windshield Wiper Speed Control Relay.

⇒ **If the test lamp is always ON**

24.1. Ignition OFF, remove the test lamp, disconnect the KR12C Windshield Wiper Speed Control Relay, ignition ON.

24.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, test or replace the KR12C Windshield Wiper Speed Control Relay.

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

25. Test or replace the M75 Windshield Wiper Motor.

Component Testing

Windshield Wiper/Washer Switch

1. Ignition OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch.
2. Test for infinite resistance between the signal terminal 1 and the low reference terminal 2 with the high speed switch in the open position.

⇒ **If less than infinite resistance**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If infinite resistance**

3. Test for less than 2 Ω between the signal circuit terminal 1 and the low reference circuit terminal 2 with the high speed switch in the closed position.

⇒ **If 2 Ω or greater**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If less than 2 Ω**

4. Test for infinite resistance between the signal terminal 3 and the low reference terminal 2 with the low speed switch in the open position.

⇒ **If less than infinite resistance**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If infinite resistance**

5. Verify the resistance readings are within the specified range listed below between the signal circuit terminal 3 and the low reference circuit terminal 1 by pushing the switch in the listed positions below:
   - Delay 1 : 3.75-3.85kΩ
   - Delay 2 : 2.75-2.85kΩ
   - Delay 3 : 1.95-2.05kΩ
   - Delay 4 : 1.25-1.35kΩ
   - Delay 5 : 765-775Ω

⇒ **If not within the specified range**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If within the specified range**

6. All OK

Relay Test

1. Ignition OFF, disconnect the appropriate relay.
2. Test for 60–200 Ω between terminals 85 and 86.

⇒ **If less than 60 or greater than 200**

Replace the relay.

⇓ **If between 60–200 Ω**

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

⇒ **If less than infinite resistance**

Replace the relay.

⇓ **If infinite resistance**

4. Test for less than 5 Ω between terminals 30 and 87A.

⇒ **If 5 Ω or greater**

Replace the relay.

⇓ **If less than 5 Ω**

5. Install a 10 A fused jumper wire between relay terminal 85 and 12 V. Install a jumper wire between relay terminal 86 and ground.
6. Test for less than 5 Ω between terminals 30 and 87.

⇒ **If 5 Ω or greater**

Replace the relay.

⇓ **If less than 5 Ω**

7. All OK

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Windshield Wiper Motor Replacement on page 4-379*
- *Front Compartment Fuse Block Replacement on page 11-609*
- *Relay Replacement (Within an Electrical Center) on page 11-607* or *Relay Replacement (Attached to Wire Harness) on page 11-607*
- *Windshield Wiper and Washer Switch Replacement on page 4-366*
- *Control Module References on page 6-3* for BCM replacement, programming and setup

Washer Malfunction (without C25)

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B3873 01: Front Washer Relay Circuit Short to Battery
DTC B3873 02: Front Washer Relay Circuit Short to Ground
DTC B3873 04: Front Washer Relay Circuit Open Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Windshield Washer Switch Signal	2	1	1	—
Windshield Washer Pump Control	1	1	2	—
Windshield Washer Relay Control	B3873 02	B3873 04	B3873 01	—
Windshield Washer Pump Ground	—	1	—	—

1. Washer Inoperative
2. Washer Always ON

Circuit/System Description

The body control module (BCM) controls the windshield washer pump based on an input from the windshield wiper/washer switch. The BCM monitors the washer switch through the windshield washer switch signal circuit. When the washer switch is closed, low reference is supplied to the windshield washer switch signal circuit. When this is the case, the BCM will command the windshield washer pump and the low speed wipers on.

Conditions for Running the DTC

- Ignition ON.
- The system voltage is between 9–16 V.

Conditions for Setting the DTC

- A short to ground or an open/high resistance is detected in the windshield washer relay control circuit.
- A short to voltage is detected in the windshield washer relay control circuit.

Action Taken When the DTC Sets

Washer operation is suspended.

Conditions for Clearing the DTC

A current DTC clears when the diagnostic runs and passes.

Reference Information

Schematic Reference

Wiper/Washer Schematics on page 4-325

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Wiper/Washer System Description and Operation on page 4-384

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool Windshield Washer Switch parameter changes between Active and Inactive when pressing and releasing the windshield washer switch.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing – Windshield Wiper/Washer Switch Malfunction.

⇓ **If the parameter changes**

3. Verify the windshield washers turn ON when commanding the Windshield Washer Relay Active with a scan tool.

⇒ **If the Windshield Washers do not turn ON**

Refer to Circuit/System Testing – Windshield Washer Pump Malfunction

⇓ **If the Windshield Washers turn ON**

4. All OK.

Circuit/System Testing

Windshield Wiper/Washer Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch. It may take up to 11 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

2.2. Test for less than 2 Ω in the low reference circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Verify the scan tool Windshield Washer Switch parameter is Inactive.

⇒ **If not Inactive**

4.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

4.2. Test for infinite resistance between the signal circuit terminal 5 and ground.

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

⇒ If infinite resistance, replace the K9 Body Control Module.

⇓ **If Inactive**

5. Install a 3 A fused jumper wire between the signal circuit terminal 5 and the low reference circuit terminal 2.
6. Verify the scan tool Windshield Washer Switch parameter is Active.

⇒ **If not Active**

6.1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the K9 Body Control Module, ignition ON.

6.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇓ If less than 1 V

6.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If Active**

7. Test or replace the S82 Windshield Wiper/Washer Switch.

Windshield Washer Pump Malfunction

1. Ignition OFF, and all vehicle systems OFF. Disconnect the harness connector at the G24 Windshield Washer Pump. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

2.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Connect a test lamp between the control circuit terminal 1 and the ground circuit terminal 2, ignition ON.
4. Verify the test lamp does NOT turn ON and OFF when commanding the Windshield Washer Relay Active and Inactive with a scan tool.

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

Test or replace the G24 Windshield Washer Pump.

⇓ **If the test lamp does not turn ON and OFF**

5. Ignition OFF, connect the harness connector at the G24 Windshield Washer Pump. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood, It may take up to 2 min for all vehicle systems to power down.

6. Test for less than 10 Ω between the ground circuit terminal C5 and ground.

⇒ **If 10 Ω or greater**

6.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

7. Ignition ON.
8. Verify the G24 Windshield Washer Pump is not activated.

⇒ **If the G24 Windshield Washer Pump is activated**

8.1. Ignition OFF, disconnect the harness connector at the G24 Windshield Washer Pump, ignition ON.

8.2. Test for less than 1 V between the control circuit terminal 1 and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the G24 Windshield Washer Pump.

⇓ **If the G24 Windshield Washer Pump is not activated**

9. Disconnect the X1 harness connector at the X50A Fuse Block – Underhood.
10. Connect a 20 A fused jumper wire between the control circuit terminal G3 and B+.
11. Verify the G24 Windshield Washer Pump activates.

⇒ **If the G24 Windshield Washer Pump does not activate**

11.1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the G24 Windshield Washer Pump.

11.2. Test for infinite resistance between the control circuit and ground.

⇒ If less than Infinite resistance, repair the short to ground on the circuit.

⇓ If infinite resistance

11.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the G24 Windshield Washer Pump.

⇓ **If the G24 Windshield Washer Pump activates**

12. Ignition OFF, connect the X1 harness connector at the X50A Fuse Block – Underhood. Disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
13. Verify the G24 Windshield Washer Pump is not activated.

⇒ **If the G24 Windshield Washer Pump is activated**

13.1. Ignition OFF, disconnect the X2 harness connector at the X50A Fuse Block – Underhood, ignition ON.

13.2. Test for less than 1 V between the control circuit terminal G9 and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the X50A Fuse Block – Underhood.

⇓ **If the G24 Windshield Washer Pump is not activated**

14. Connect a 10 A fused jumper wire between the control circuit terminal 14 and B+.
15. Verify the G24 Windshield Washer Pump activates.

⇒ **If the G24 Windshield Washer Pump does not activate**

15.1. Ignition OFF, remove the jumper wire, disconnect the X2 harness connector at the X50A Fuse Block – Underhood.

15.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If less than infinite resistance

15.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, test or replace the X50A Fuse Block – Underhood.

⇓ **If the G24 Windshield Washer Pump activates**

16. Replace the K9 Body Control Module.

Component Testing

Windshield Wiper/Washer Switch

1. Ignition OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch.
2. Test for infinite resistance between the signal terminal 5 and the low reference terminal 2 with the switch in the open position.

⇒ **If less than infinite resistance**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If infinite resistance**

3. Test for less than 2 Ω between the signal circuit terminal 5 and the low reference circuit terminal 2 with the switch in the closed position.

⇒ **If 2 Ω or greater**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If less than 2 Ω**

4. All OK

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Front Compartment Fuse Block Replacement on page 11-609*
- *Windshield Washer Pump Replacement on page 4-373*
- *Windshield Wiper and Washer Switch Replacement on page 4-366*
- *Control Module References on page 6-3* for BCM replacement, programming and setup

Washer Malfunction (with C25)

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptors

DTC B3873: Front Washer Relay Circuit

For symptom byte information, refer to *Symptom Byte List on page 6-85*.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Windshield Washer Switch Signal	2	1	1	—
Windshield Washer Pump Control	1	1	2	—
Windshield Washer Relay Control	B3873 02	B3873 04	B3873 01	—
Windshield Washer Pump Ground	—	1	—	—
1. Washer Inoperative 2. Washer Always ON				

Circuit/System Description

The body control module (BCM) controls the windshield washer based on an input from the windshield washer switch, which is part of the windshield wiper/washer switch. The BCM monitors the windshield washer switch through a discrete signal circuit. When the washer switch is pressed, the signal circuit is pulled to ground. The BCM will respond by commanding the washer function.

The windshield washer uses a single windshield washer pump to provide fluid for both the front and rear washers. Changing the polarity of the motor will cause it to spin in opposite directions, feeding fluid to the front or rear. When front washers are requested, the BCM applies voltage to the windshield washer pump relay control circuit. This causes the contacts in the windshield washer pump relay to close and supplies voltage to the windshield washer pump. Ground for the windshield washer pump is provided through the rear window washer pump relay, which is switched to ground in it's at-rest state.

Conditions for Running the DTC

- Ignition ON.
- The system voltage is between 9–16 V.

Conditions for Setting the DTC

B3873 01

A short to voltage has been detected on the windshield washer pump relay control circuit

B3873 02

A short to ground has been detected on the windshield washer pump relay control circuit

B3873 04

An open/high resistance has been detected on the windshield washer pump relay control circuit

Action Taken When the DTC Sets

Washer operation is suspended.

Conditions for Clearing the DTC

A current DTC clears when the diagnostic runs and passes.

Reference Information

Schematic Reference

Wiper/Washer Schematics on page 4-325

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Wiper/Washer System Description and Operation on page 4-384

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool Windshield Washer Switch parameter changes between Active and Inactive when pressing and releasing the washer switch.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing – Washer Switch Malfunction.

⇓ **If the parameter changes**

3. Verify the G24 Windshield Washer Pump activates when commanding the Windshield Washer Relay Active with a scan tool.

⇒ **If the Windshield Washers do not turn ON**

Refer to Circuit/System Testing – Windshield Washer Pump Malfunction

⇓ **If the Windshield Washers turn ON**

4. All OK.

Circuit/System Testing

Washer Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch. It may take up to 11 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

2.2. Test for less than 2 Ω in the low reference circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Verify the scan tool Windshield Washer Switch parameter is Inactive.

⇒ **If not Inactive**

4.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

4.2. Test for infinite resistance between the signal circuit terminal 5 and ground.

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

⇒ If infinite resistance, replace the K9 Body Control Module.

⇓ **If Inactive**

5. Install a 3 A fused jumper wire between the signal circuit terminal 5 and the low reference circuit terminal 2.
6. Verify the scan tool Windshield Washer Switch parameter is Active.

⇒ **If not Active**

6.1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the K9 Body Control Module, ignition ON.

6.2. Test for less than 1 V between the signal circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇓ If less than 1 V

6.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If Active**

7. Test or replace the S82 Windshield Wiper/Washer Switch.

Windshield Washer Pump Malfunction

1. Ignition OFF, and all vehicle systems OFF. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal C5 and ground:

⇒ **If 10 Ω or greater**

2.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Connect the X2 harness connector and disconnect the X1 harness connector at the X50A Fuse Block – Underhood.

4. Test for infinite resistance between each of the control circuit terminals listed below and ground.
   4.1. Terminal G3
   4.2. Terminal H3

⇒ **If less than Infinite resistance**

Repair the short to ground on the circuit.

⇓ **If infinite resistance**

5. Connect the X1 harness connector at the X50A Fuse Block – Underhood. Disconnect the harness connector at the G24 Windshield Washer Pump, ignition ON.
6. Test for less than 1 V between the control circuit terminals listed below and ground:
   - Terminal 1
   - Terminal 2

⇒ **If 1 V or greater**

6.1. Ignition OFF, disconnect the X1 harness connector at the X50A Fuse Block – Underhood.

6.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, test or replace the X50A Fuse Block – Underhood.

⇓ **If less than 1 V**

7. Ignition OFF, and all vehicle systems OFF. It may take up to 2 min for all vehicle systems to power down.
8. Test for less than 10 Ω between the control circuit terminal 1 and ground.

⇒ **If 10 Ω or greater**

8.1. Ignition OFF, disconnect the X1 harness connectors at the X50A Fuse Block – Underhood.

8.2. Test for less than 2 Ω in the control circuit end to end:

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the X50A Fuse Block – Underhood.

⇓ **If less than 10 Ω**

9. Test for less than 10 Ω between the control circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

9.1. Ignition OFF, disconnect the X1 harness connectors at the X50A Fuse Block – Underhood.

9.2. Test for less than 2 Ω in the control circuit end to end:

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the X50A Fuse Block – Underhood.

⇓ **If less than 10 Ω**

10. Connect a test lamp between the control circuit terminal 1 and the control circuit terminal 2, ignition ON.
11. Verify the test lamp does NOT turn ON and OFF when commanding the rear washer ON and OFF with the rear washer switch.

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

Test or replace the G24 Windshield Washer Pump.

⇓ **If the test lamp does not turn ON and OFF**

12. Ignition OFF, connect the harness connector at the G24 Windshield Washer Pump. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood, ignition ON.
13. Connect a test lamp between the control circuit terminal G9 and ground.
14. Verify the test lamp turns ON and OFF when commanding the Windshield Washer Relay Active with a scan tool.

⇒ **If the test lamp is always OFF**

14.1. Ignition OFF, remove the test lamp. Disconnect the X4 harness connector at the K9 Body Control Module.

14.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If infinite resistance.

14.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the short to ground on the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module

⇒ **If the test lamp is always ON**

14.1. Ignition OFF, remove the test lamp. Disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.

14.2. Test for less than 1 V between the control circuit and ground.

⇒ If 2 Ω or greater, repair the short to voltage on the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module

⇓ **If the test lamp turns ON and OFF.**

15. Test or replace the X50A Fuse Block – Underhood.

Component Testing

Washer Switch

1. Ignition OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch.
2. Test for infinite resistance between the signal terminal 5 and the low reference terminal 2 with the switch in the open position.

⇒ **If less than infinite resistance**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If infinite resistance**

3. Test for less than 2 Ω between the signal circuit terminal 5 and the low reference circuit terminal 2 with the switch in the closed position.

⇒ **If 2 Ω or greater**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If less than 2 Ω**

4. All OK

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Front Compartment Fuse Block Replacement on page 11-609*
- *Windshield Washer Pump Replacement on page 4-373*
- *Windshield Wiper and Washer Switch Replacement on page 4-366*
- *Control Module References on page 6-3* for body control module replacement, programming, and setup.

Rear Wiper System Malfunction

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptor

DTC B370B: Rear Wiper Function Control Circuit

For symptom byte information, refer to *Symptom Byte List on page 6-85*.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Rear Wiper Motor B+	—	1	—	—
Rear Wiper Switch Signal	1	1	1	—
Rear Wiper Motor Control	1	1	2	—
Rear Wiper Relay Control	B370B 02	B370B 04	B370B 01	—
Rear Wiper Relay Ground	—	1	—	—
Rear Window Wiper Ground	—	1	—	—

1. Rear Wiper Inoperative
2. Rear Wiper Always ON

Circuit/System Description

The body control module (BCM) controls the rear wiper motor based on an input from the rear wiper switch, which is part of the windshield wiper/washer switch. The BCM monitors the windshield wiper/washer switch through two separate signal circuits and a low reference circuit. The rear wiper switch uses a resistor ladder to determine low speed, intermittent, and rear washer operation. The BCM monitors applies and monitors voltage on the rear wiper switch signal circuit. When the rear wiper switch is placed in the low speed, intermittent, or rear washer position, the voltage is pulled down through a different resistor in the resistor ladder, reducing the voltage seen at the BCM. The BCM will respond by commanding the specific rear wiper function.

The rear wiper motor is controlled by the BCM through the rear wiper relay. A constant B+ and ground are supplied to the rear wiper motor. When rear wiper operation is requested, the BCM will apply voltage to the rear wiper relay control circuit. This will cause the contacts in the rear wiper relay to close and apply B+ to the rear wiper motor through the rear wiper control circuit, enabling rear wiper operation. When the rear wiper request is no longer present, the contacts in the rear wiper relay will open, removing B+ from the rear

wiper motor control circuit. The rear wiper motor will continue to operate using the constant B+ circuit until it is in the park position.

Conditions for Running the DTC

- Ignition ON
- The system voltage is between 9–16 V.

Conditions for Setting the DTC

B370B 01

A short to voltage is detected in the rear wiper relay control circuit.

B370B 02

A short to ground is detected in the rear wiper relay control circuit.

B370B 04

An open or high resistance is detected in the rear wiper relay control circuit.

Action Taken When the DTC Sets

Rear wiper operation is disabled.

Conditions for Clearing the DTC

The DTC will clear when the conditions for setting the DTC are no longer present.

Reference Information

Schematic Reference

Wiper/Washer Schematics on page 4-325

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Wiper/Washer System Description and Operation on page 4-384

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool Rear Wiper Switch parameter changes between On and Off when cycling the rear wiper switch ON and OFF.

⇒ **If the parameter does not change**

Refer to Circuit/System Testing – Rear Wiper/ Washer Switch Malfunction.

⇓ **If the parameter changes**

3. Verify the M45 Rear Wiper Motor cycles when commanding the rear wiper ON with the rear wiper switch.

⇒ **If the M45 Rear Wiper Motor does not cycle**

Refer to Circuit/System Testing – Rear Wiper Motor Malfunction

⇓ **If the M45 Rear Wiper Motor cycles**

4. Verify the M45 Rear Wiper Motor returns to the park position when the rear wipers are turned OFF

⇒ **If the M45 Rear Wiper Motor does not return to the park position**

Refer to Circuit/System Testing – Rear Wiper Motor Malfunction

⇓ **If the M45 Rear Wiper Motor returns to the park position**

5. All OK.

Circuit/System Testing

Rear Wiper/Washer Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch. It may take up to 11 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

2.1. Ignition OFF.

2.2. Test for less than 2 Ω in the low reference circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Test for greater than 8 V between the signal circuit terminal 4 and ground.

⇒ **If less than 8 V**

4.1. Ignition OFF, disconnect the harness connector at the K9 Body Control Module.

4.2. Test for infinite resistance between the signal circuit and ground

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

⇓ If infinite resistance

4.3. Test for less than 2 Ω in the signal circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module.

⇒ **If 8 V or greater**

5. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.

6. Test for less than 1 V between the S82 Windshield Wiper/Washer Switch signal circuit terminal 4 and ground.

⇒ **If 1 V or greater**

Repair the short to voltage on the circuit.

⇓ **If less than 1 V**

7. Test or replace the S82 Windshield Wiper/Washer Switch.

Rear Wiper Motor Malfunction

1. Ignition OFF, and all vehicle systems OFF. Disconnect the harness connector at the M45 Rear Wiper Motor. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 3 and ground.

⇒ **If 10 Ω or greater**

2.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 2 and ground.

⇒ **If the test lamp does not illuminate**

4.1. Ignition OFF, remove the test lamp. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood.

4.2. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, test or replace the X50A Fuse Block – Underhood.

⇓ **If the test lamp illuminates**

5. Connect a test lamp between the control circuit terminal 1 and ground.
6. Verify the test lamp does NOT turn ON and OFF when commanding the rear wiper ON and OFF with the rear wiper switch.

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

Test or replace the M45 Rear Wiper Motor.

⇓ **If the test lamp does not turn ON and OFF**

7. Ignition OFF, connect the harness connector at the M45 Rear Wiper Motor. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood, It may take up to 2 min for all vehicle systems to power down.
8. Test for less than 10 Ω between each ground circuit terminal listed below and ground:
   - Terminal C5
   - Terminal H5

⇒ **If 10 Ω or greater**

8.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

9. Ignition ON.
10. Verify the M45 Rear Wiper Motor is not activated.

⇒ **If the M45 Rear Wiper Motor is activated**

10.1. Ignition OFF, disconnect the harness connector at the M45 Rear Wiper Motor, ignition ON.

10.2. Test for less than 1 V between the control circuit terminal 1 and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the M45 Rear Wiper Motor.

⇓ **If the M45 Rear Wiper Motor is not activated**

11. Connect a 20 A fused jumper wire between both of the circuits listed below and B+.
    - B+ Circuit Terminal H4
    - Control Circuit Terminal H3
12. Verify the M45 Rear Wiper Motor activates.

⇒ **If the M45 Rear Wiper Motor does not activate**

12.1. Ignition OFF, remove the jumper wire, disconnect the harness connector at the M45 Rear Wiper Motor, ignition ON.

12.2. Test for infinite resistance between the control circuit and ground.

⇒ If less than Infinite resistance, repair the short to ground on the circuit.

⇓ If infinite resistance

12.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the M45 Rear Wiper Motor.

⇓ **If the M45 Rear Wiper Motor activates**

13. Ignition OFF, connect the X2 harness connector at the X50A Fuse Block – Underhood. Disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.

14. Verify the M45 Rear Wiper Motor is not activated.

⇒ **If the M45 Rear Wiper Motor is activated**

14.1. Ignition OFF, disconnect the X2 harness connector at the X50A Fuse Block – Underhood, ignition ON.

14.2. Test for less than 1 V between the control circuit terminal 10 and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, replace the X50A Fuse Block – Underhood.

⇓ **If the M45 Rear Wiper Motor is not activated**

15. Connect a 10 A fused jumper wire between the control circuit terminal 10 and B+.
16. Verify the M45 Rear Wiper Motor activates.

⇒ **If the M45 Rear Wiper Motor does not activate**

16.1. Ignition OFF, remove the jumper wire, disconnect the X2 harness connector at the X50A Fuse Block – Underhood.

16.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If less than infinite resistance

16.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, test or replace the X50A Fuse Block – Underhood.

⇓ **If the M45 Rear Wiper Motor activates**

17. Test or replace the K9 Body Control Module.

Component Testing

Windshield Wiper/Washer Switch

1. Ignition OFF, disconnect the harness connector at the S82 Windshield Wiper/Washer Switch.
2. Test for infinite resistance between the signal terminal 4 and the low reference terminal 2 with the rear wiper switch in the OFF position.

⇒ **If less than infinite resistance**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If infinite resistance**

3. Verify the resistance is within the range specified below between the signal circuit terminal 4 and the low reference circuit terminal 2 by cycling the switch between Rear Wiper position and Rear Washers position.
   - Rear Wiper : 624–644 Ω
   - Rear Wiper Sweep : 1.8–2.2 kΩ
   - Rear Washer : 5.9–6.4 kΩ

⇒ **If not within the specific range**

Replace the S82 Windshield Wiper/Washer Switch.

⇓ **If within the specific range**

4. All OK

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Rear Window Wiper Motor Replacement (Hatchback) on page 4-380*
- *Front Compartment Fuse Block Replacement on page 11-609*
- *Windshield Wiper and Washer Switch Replacement on page 4-366*
- *Control Module References on page 6-3* for body control module replacement, programming, and setup.

Rear Washer System Malfunction

Diagnostic Instructions

- Perform the *Diagnostic System Check - Vehicle on page 6-66* prior to using this diagnostic procedure.
- Review *Strategy Based Diagnosis on page 6-58* for an overview of the diagnostic approach.
- *Diagnostic Procedure Instructions on page 6-59* provides an overview of each diagnostic category.

DTC Descriptor

DTC B3811: Rear Washer Relay Circuit

For symptom byte information, refer to *Symptom Byte List on page 6-85*.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Rear Washer Switch Signal	1	1	1	—
Rear Window Washer Pump Relay Control	1	B3811 04	B3811 01	—
Rear Windshield Washer Pump Control	1	1	2	—
Rear Windshield Washer Pump Ground	—	1	—	—
1. Rear Washer Inoperative 2. Rear Washer Always ON				

Circuit/System Description

The body control module (BCM) controls the rear washer based on an input from the rear wiper switch, which is part of the windshield wiper/washer switch. The BCM monitors the windshield wiper/washer switch through two separate signal circuits and a low reference circuit. The rear wiper switch uses a resistor ladder to determine low speed, intermittent, and rear washer operation. The BCM monitors applies and monitors voltage on the rear wiper switch signal circuit. When the rear wiper switch is placed in the low speed, intermittent, or rear washer position, the voltage is pulled down through a different resistor in the resistor ladder, reducing the voltage seen at the BCM. The BCM will respond by commanding the specific rear wiper function.

The windshield washer uses a single windshield washer pump to provide fluid for both the front and rear washers. Changing the polarity of the motor will cause it to spin in opposite directions, feeding fluid to the front or rear. When rear washers are requested, the BCM applies voltage to the rear window washer pump relay control circuit. This causes the contacts in the rear washer pump relay to close and supplies voltage to the windshield washer pump. Ground for the windshield washer pump is provided through the windshield washer pump relay, which is switched to ground in it's at-rest state.

Conditions for Running the DTC

- Ignition ON
- The system voltage is between 9–16 V

Conditions for Setting the DTC

B3811 01

A short to voltage has been detected on the rear window washer pump relay control circuit

B3811 04

A open/high resistance has been detected on the rear window washer pump relay control circuit

Action Taken When the DTC Sets

Rear washer operation is disabled.

Conditions for Clearing the DTC

- A current DTC clears when the diagnostic runs and passes.
- A history DTC will clear after 50 consecutive ignition cycles without a fault present.

Reference Information

Schematic Reference

Wiper/Washer Schematics on page 4-325

Connector End View Reference

Component Connector End Views on page 11-269

Description and Operation

Wiper/Washer System Description and Operation on page 4-384

Electrical Information Reference

- *Circuit Testing on page 11-526*
- *Connector Repairs on page 11-548*
- *Testing for Intermittent Conditions and Poor Connections on page 11-531*
- *Wiring Repairs on page 11-537*

Scan Tool Reference

Control Module References on page 6-3 for scan tool information

Circuit/System Verification

1. Ignition ON.
2. Verify the scan tool Rear Wiper Switch parameter changes between On and Off when cycling the rear wiper switch ON and OFF.

⇒ **If the parameter does not change**

Refer to *Rear Wiper System Malfunction on page 4-359*

⇓ **If the parameter changes**

3. Verify the G24 Windshield Washer Pump turns on and off when commanding the rear washers OFF and ON with the rear washer switch

⇒ **If the Rear Window Washers do not turn ON**

Refer to Circuit/System Testing

⇓ **If the Rear Window Washers turn ON**

4. All OK.

Circuit/System Testing

1. Ignition OFF, and all vehicle systems OFF. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal C5 and ground:

⇒ **If 10 Ω or greater**

2.1. Test for less than 2 Ω in the ground circuit end to end.

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, repair the open/high resistance in the ground connection.

⇓ **If less than 10 Ω**

3. Connect the X2 harness connector and disconnect the X1 harness connector at the X50A Fuse Block – Underhood.
4. Test for infinite resistance between each of the control circuit terminals listed below and ground.

4.1. Terminal G3

4.2. Terminal H3

⇒ **If less than Infinite resistance**

Repair the short to ground on the circuit.

⇓ **If infinite resistance**

5. Connect the X1 harness connector at the X50A Fuse Block – Underhood. Disconnect the harness connector at the G24 Windshield Washer Pump, ignition ON.
6. Test for less than 1 V between the control circuit terminals listed below and ground:
   - Terminal 1
   - Terminal 2

⇒ **If 1 V or greater**

6.1. Ignition OFF, disconnect the X1 harness connector at the X50A Fuse Block – Underhood.

6.2. Test for less than 1 V between the control circuit and ground.

⇒ If 1 V or greater, repair the short to voltage on the circuit.

⇒ If less than 1 V, test or replace the X50A Fuse Block – Underhood.

⇓ **If less than 1 V**

7. Ignition OFF, and all vehicle systems OFF. It may take up to 2 min for all vehicle systems to power down.
8. Test for less than 10 Ω between the control circuit terminal 1 and ground.

⇒ **If 10 Ω or greater**

8.1. Ignition OFF, disconnect the X1 harness connectors at the X50A Fuse Block – Underhood.

8.2. Test for less than 2 Ω in the control circuit end to end:

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the X50A Fuse Block – Underhood.

⇓ **If less than 10 Ω**

9. Test for less than 10 Ω between the control circuit terminal 2 and ground.

⇒ **If 10 Ω or greater**

9.1. Ignition OFF, disconnect the X1 harness connectors at the X50A Fuse Block – Underhood.

9.2. Test for less than 2 Ω in the control circuit end to end:

⇒ If 2 Ω or greater, repair the open/high resistance in the circuit.

⇒ If less than 2 Ω, replace the X50A Fuse Block – Underhood.

⇓ **If less than 10 Ω**

10. Connect a test lamp between the control circuit terminal 1 and the control circuit terminal 2, ignition ON.
11. Verify the test lamp does NOT turn ON and OFF when commanding the rear washer ON and OFF with the rear washer switch.

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

Test or replace the G24 Windshield Washer Pump.

⇓ **If the test lamp does not turn ON and OFF**

12. Ignition OFF, connect the harness connector at the G24 Windshield Washer Pump. Disconnect the X2 harness connector at the X50A Fuse Block – Underhood, ignition ON.

13. Connect a test lamp between the control circuit terminal G2 and ground.
14. Verify the test lamp turns ON and OFF when commanding the rear washer ON and OFF with the rear washer switch.

⇒ **If the test lamp is always OFF**

14.1. Ignition OFF, remove the test lamp. Disconnect the X1 harness connector at the K9 Body Control Module.

14.2. Test for infinite resistance between the control circuit and ground.

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

⇓ If infinite resistance.

14.3. Test for less than 2 Ω in the control circuit end to end.

⇒ If 2 Ω or greater, repair the short to ground on the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module

⇒ **If the test lamp is always ON**

14.1. Ignition OFF, remove the test lamp. Disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.

14.2. Test for less than 1 V between the control circuit and ground.

⇒ If 2 Ω or greater, repair the short to voltage on the circuit.

⇒ If less than 2 Ω, replace the K9 Body Control Module

⇓ **If the test lamp turns ON and OFF.**

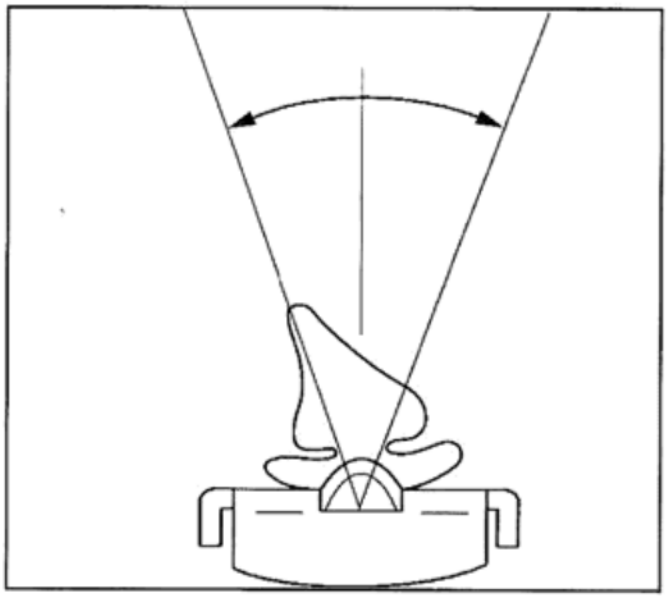
15. Test or replace the X50A Fuse Block – Underhood.

Repair Instructions

Perform the *Diagnostic Repair Verification on page 6-92* after completing the repair.

- *Windshield Washer Pump Replacement on page 4-373*
- *Front Compartment Fuse Block Replacement on page 11-609*
- *Windshield Wiper and Washer Switch Replacement on page 4-366*
- *Control Module References on page 6-3* for body control module replacement, programming, and setup.

Wiper Blade Element Check

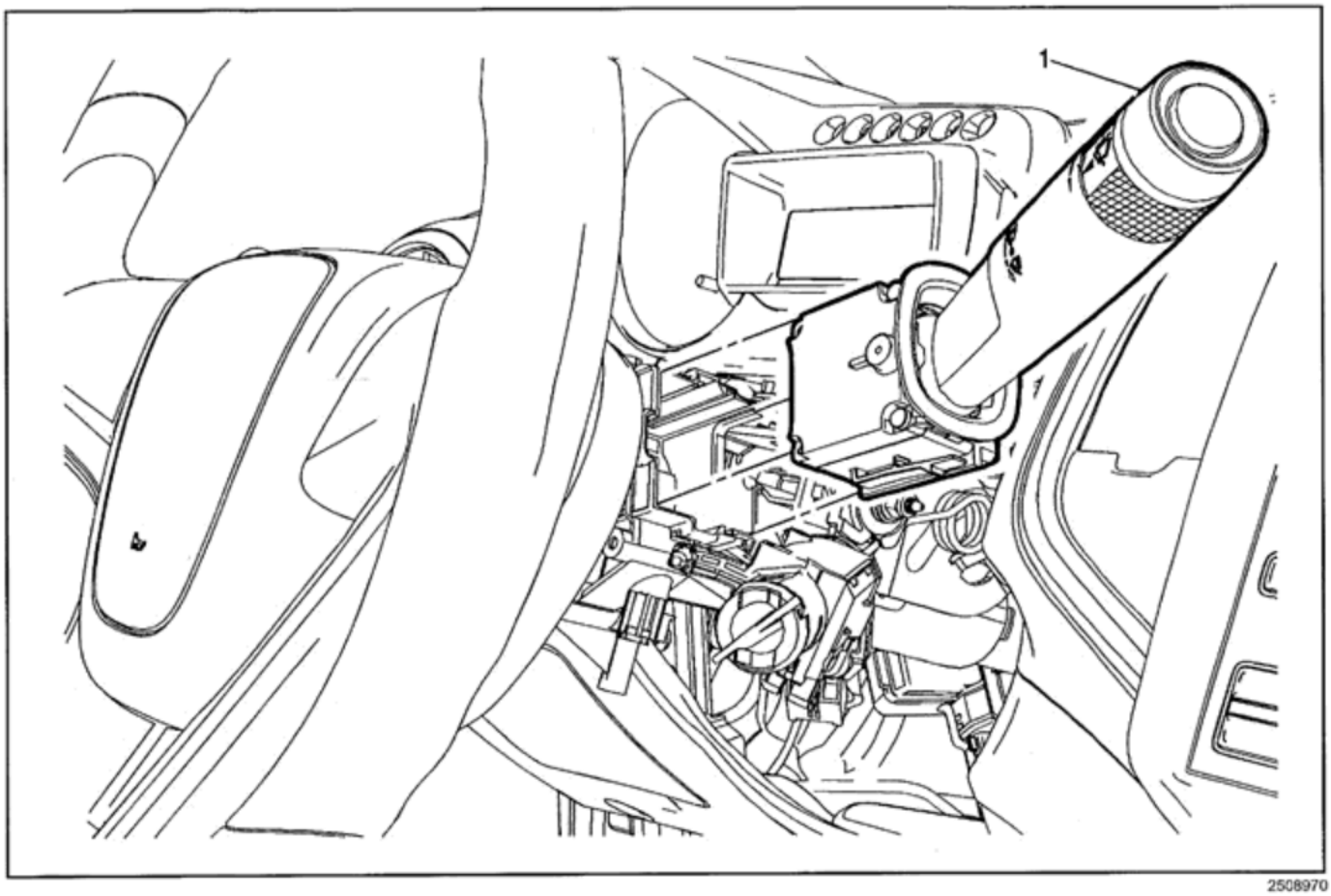


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1. Remove the blade from the wiper arm. Refer to *Windshield Wiper Blade Replacement on page 4-377*.
2. Look down the length of the wiper blade core element.
3. If the blade core element contacting the glass is not ±15 degree within the wiper central line, then replace the blade core element. Install the wiper blades on the wiper arms.

Repair Instructions

Windshield Wiper and Washer Switch Replacement

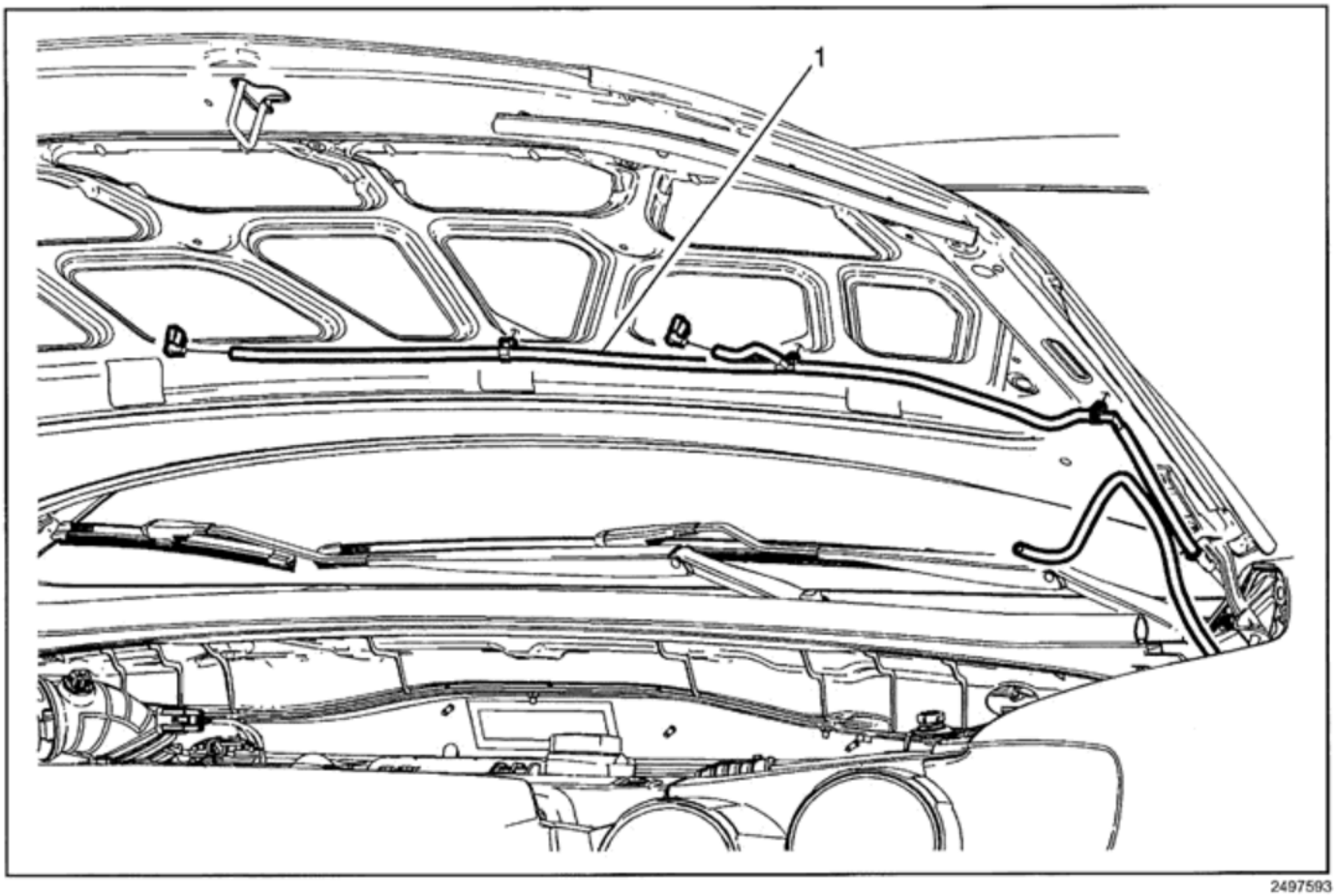


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Windshield Wiper and Washer Switch Replacement

Callout	Component Name
Preliminary Procedure Remove the upper trim cover and the lower trim cover from the steering column. Refer to *Steering Column Lower Trim Cover Replacement on page 15-29*.	
1	Windshield Wiper and Washer Switch **Procedure** 1. Disconnect any electrical connectors as necessary. 2. Release the plastic retaining tabs and remove the windshield wiper and washer switch from the turn signal switch bracket.

Windshield Washer Nozzle Hose Replacement

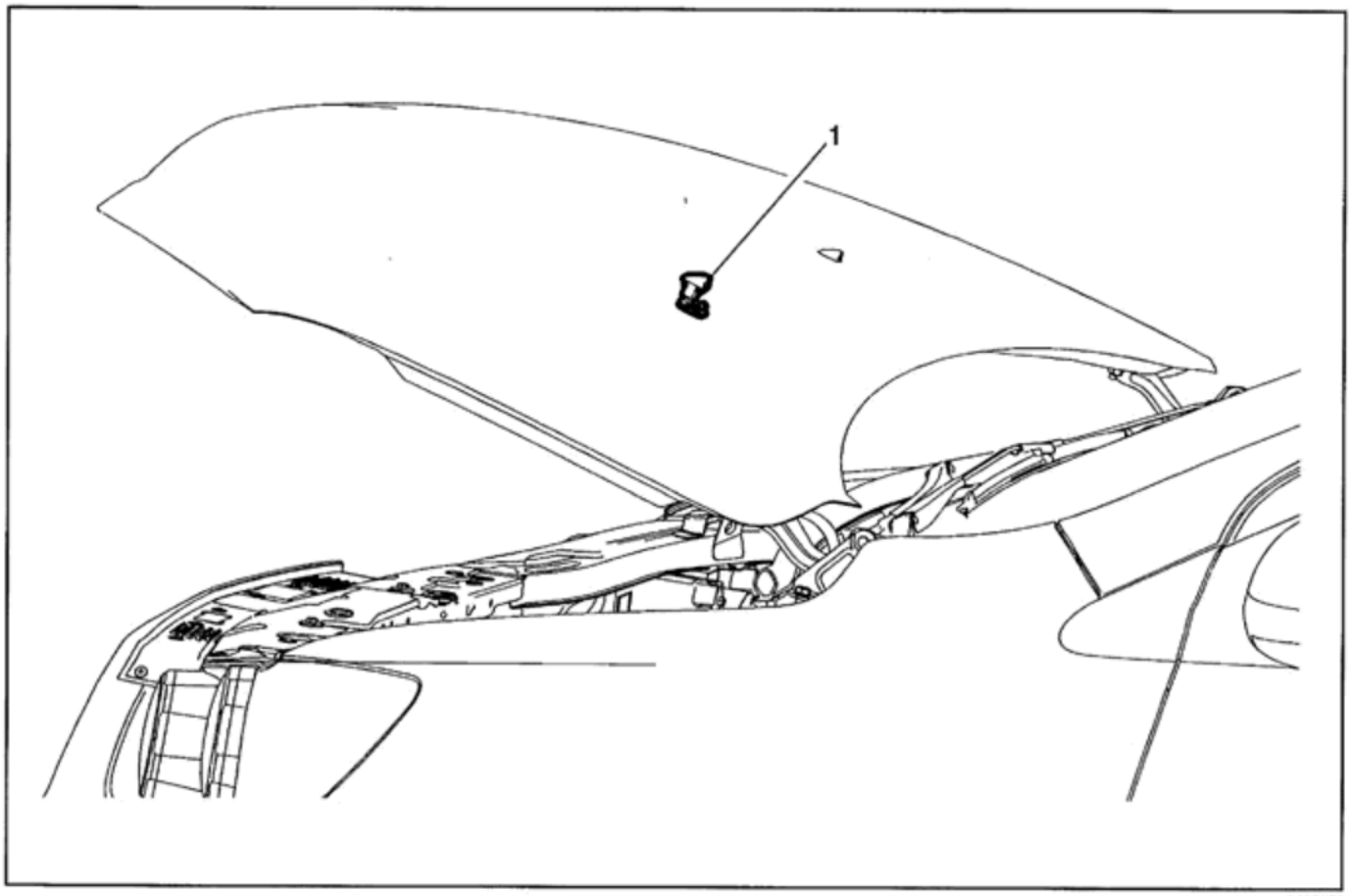


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Windshield Washer Nozzle Hose Replacement

Callout	Component Name
Preliminary Procedure Remove the hood insulator. Refer to *Hood Insulator Replacement on page 3-26*.	
1	Windshield Washer Nozzle Hose **Procedure** 1. Disconnect the windshield washer hose at the front fender upper left hand bracket from the windshield washer solvent container pump hose. 2. Disconnect the windshield washer hose retainer at the hood hinge. 3. Disconnect all three washer hose retainers from the underside of the hood assembly. 4. Disconnect the windshield washer hose at both windshield washer nozzle spouts. 5. Remove the windshield washer hose from the vehicle.

Windshield Washer Nozzle Replacement

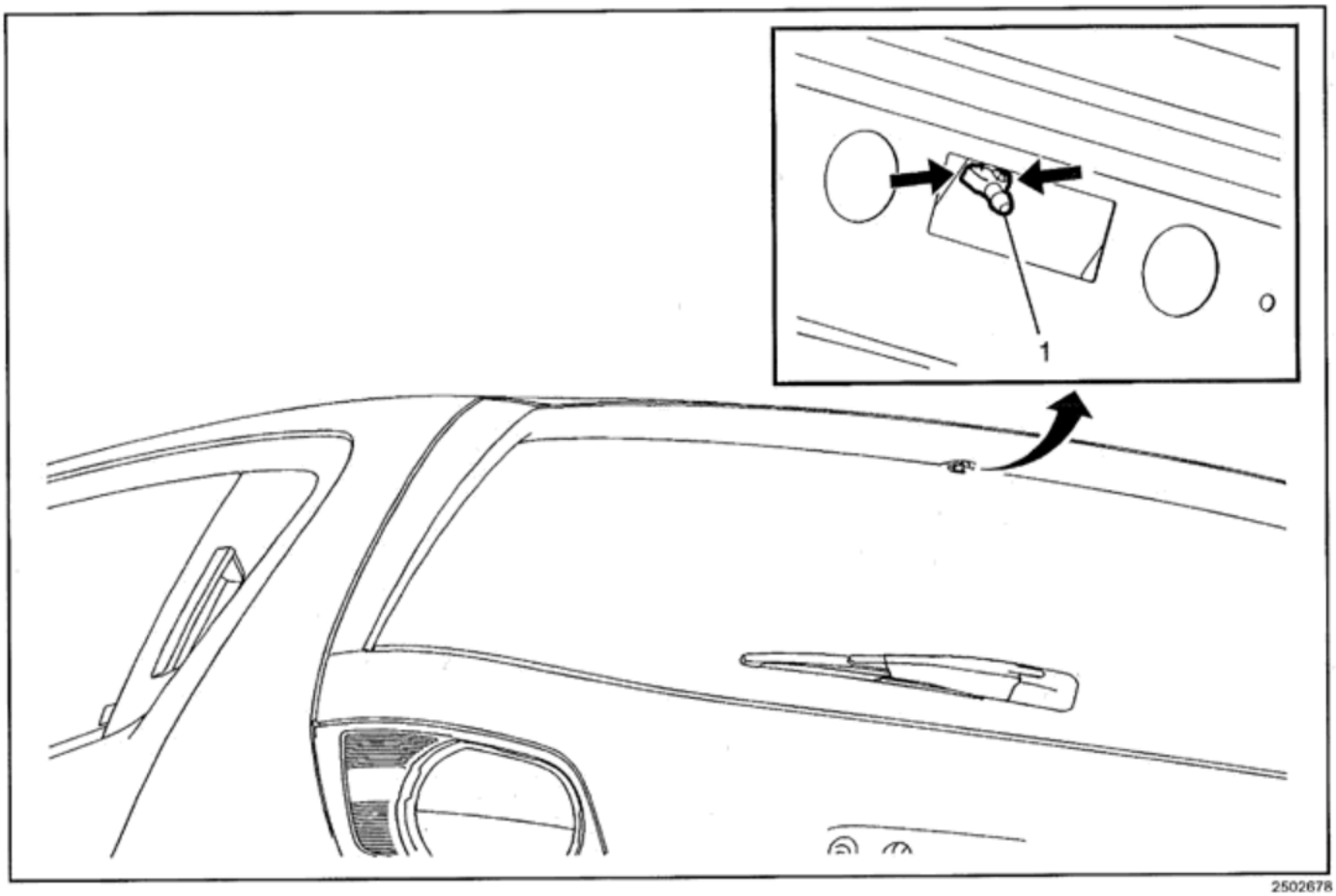


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Windshield Washer Nozzle Replacement

Callout	Component Name
Preliminary Procedure Remove the hood insulator. Refer to *Hood Insulator Replacement on page 3-26*.	
1	Windshield Washer Nozzle **Procedure** 1. Disconnect the windshield washer hose at the washer nozzle being serviced. 2. Using two fingers, squeeze the locking tabs on the underside of the hood on the washer nozzle. 3. Push the washer nozzle outward from the hood while rotating the washer nozzle to the right. 4. Remove the windshield washer nozzle from the hood assembly.

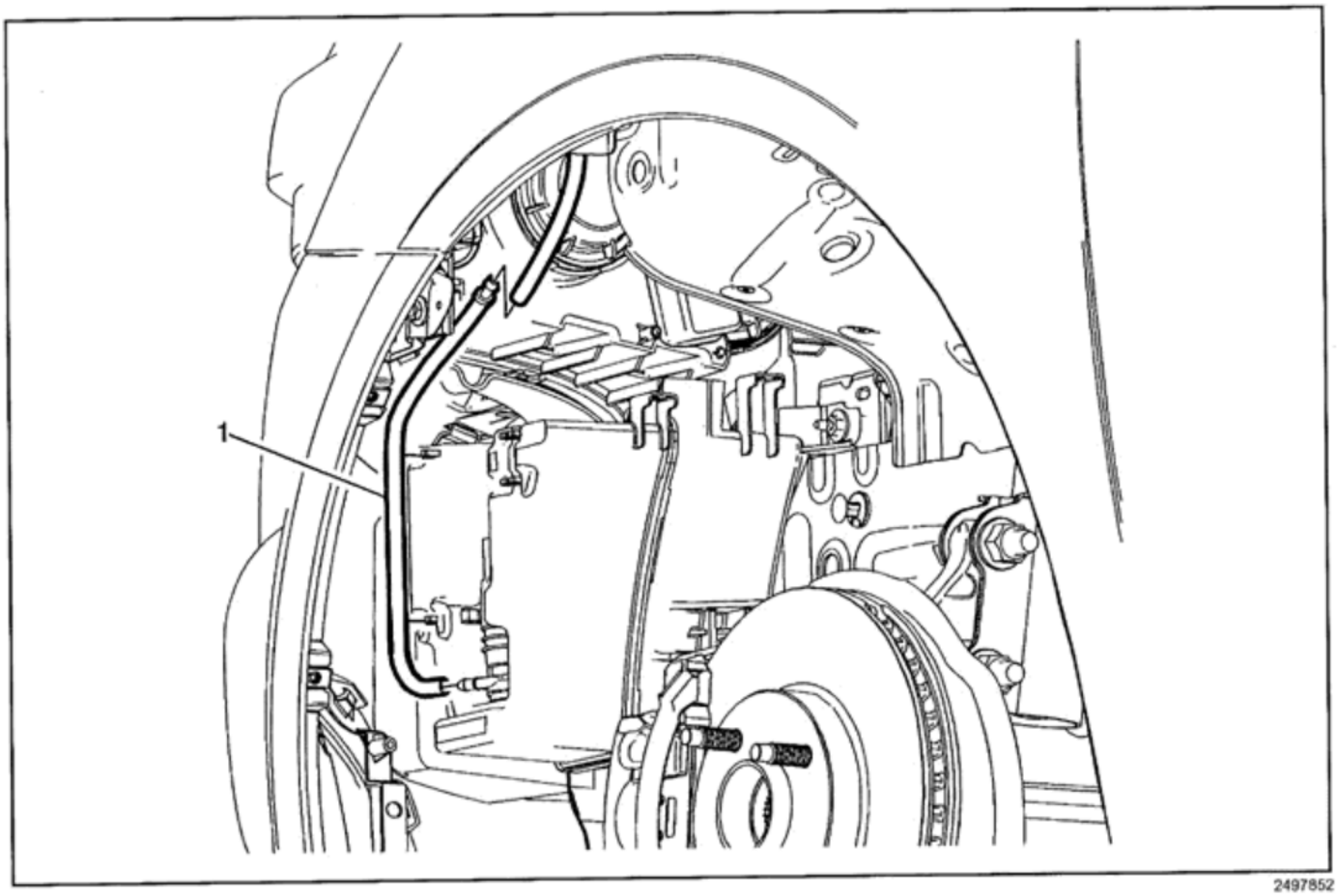
Rear Window Washer Nozzle Replacement



Rear Window Washer Nozzle Replacement

Callout	Component Name
Preliminary Procedure Remove the inside high mount stop lamp. Refer to *High Mount Stop Lamp Replacement (Hatchback) on page 4-205* or *High Mount Stop Lamp Replacement (Sedan) on page 4-204*.	
1	Rear Window Washer Nozzle **Procedure** 1. Access the rear window washer nozzle through the hole in behind the high mounted stop lamp. 2. Disconnect the washer hose from the spout. 3. Pinch the two tabs on the rear window washer nozzle and push the nozzle up through the liftgate hole. 4. Remove the rear window washer nozzle from the vehicle.

Windshield Washer Solvent Container Hose Replacement

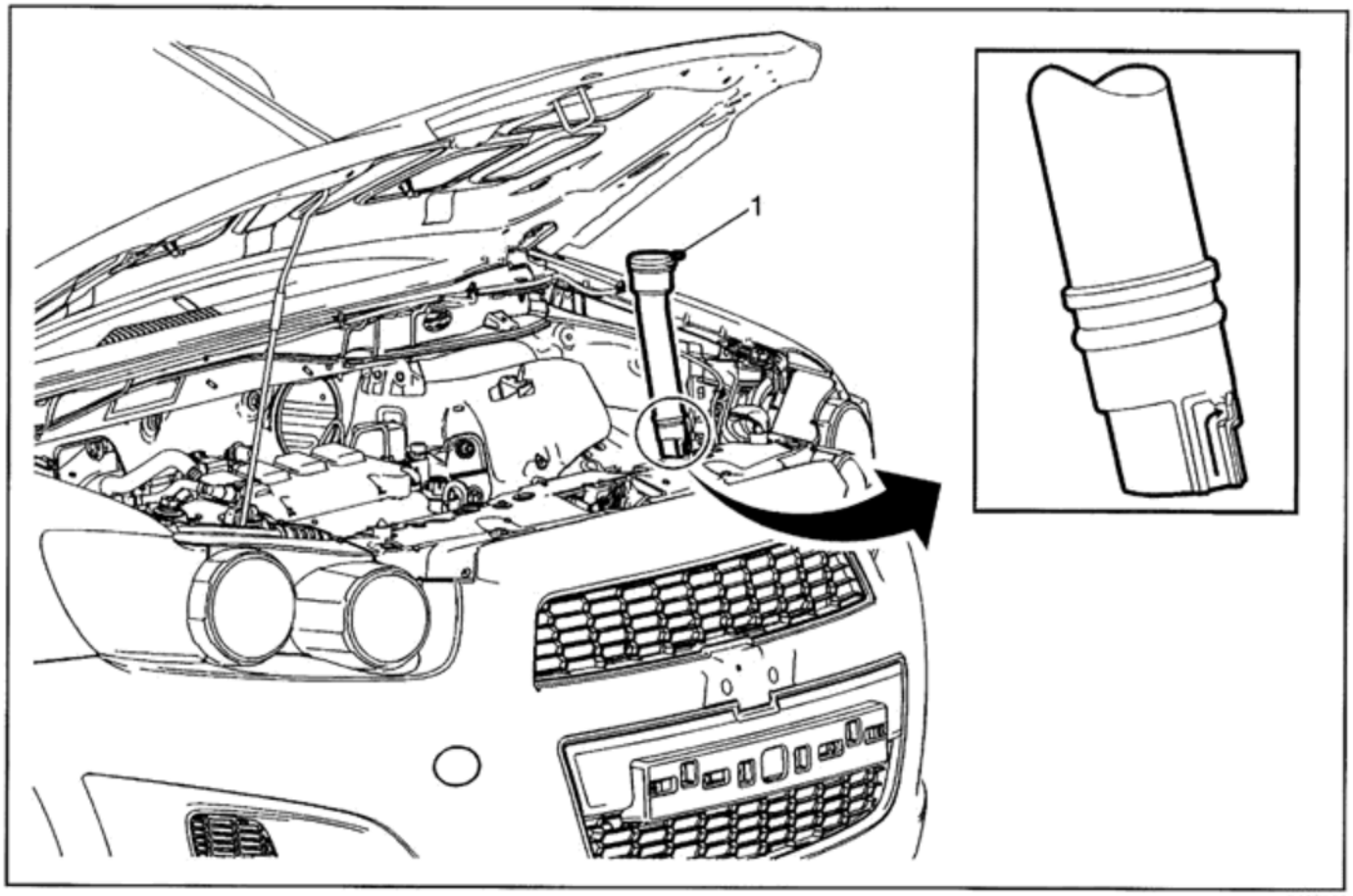


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Windshield Washer Solvent Container Hose Replacement

Callout	Component Name
Preliminary Procedure Remove the left front wheelhouse liner. Refer to *Front Wheelhouse Liner Replacement (Rear) on page 3-151* or *Front Wheelhouse Liner Replacement (Front) on page 3-150*.	
1	Windshield Washer Pump Hose **Procedure** 1. Place a clean suitable drain pan under the washer pump area. 2. Pull the hose from the windshield washer pump spout first. 3. Recover the windshield washer solvent from inside the hose. 4. Disconnect the windshield washer pump hose from the windshield washer nozzle hose near the front fender front bracket. 5. Disengage the windshield washer pump hose from the two retention clips on the windshield washer container. 6. Remove the windshield washer pump hose from the vehicle.

Windshield Washer Solvent Container Filler Tube Replacement

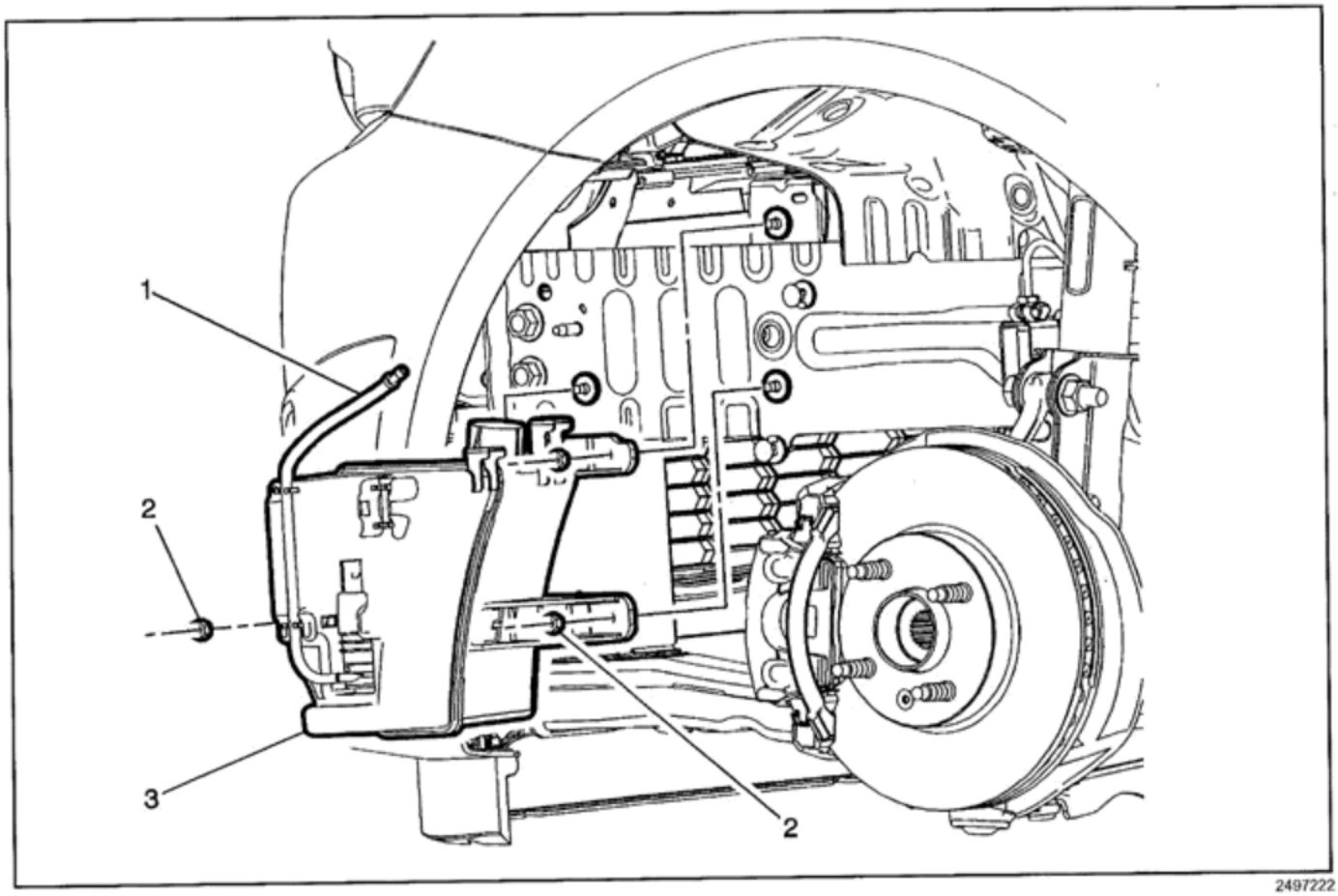


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Windshield Washer Solvent Container Filler Tube Replacement

Callout	Component Name
Preliminary Procedure 1. Open and support the hood assembly. 2. Grasp the top portion of the windshield washer container filler tube and rotate the tube 1/8 turn counterclockwise to unlock from the windshield washer solvent container lock tabs. 3. Pull the tube straight from the windshield washer solvent container. 4. Inspect and/or replace the seal on the windshield washer container filler tube if damaged.	
1	Windshield Washer Solvent Container Filler Tube **Procedure** 1. Inspect the seal on the filler tube, replace as needed. 2. Remove and transfer the windshield washer solvent container cap. 3. Upon installation of the windshield washer solvent container filler tube back into the windshield washer solvent container, ensure to twist the filler tube 1/8 turn clockwise and lock the filler tube into the container lock tabs.

Windshield Washer Solvent Container Replacement

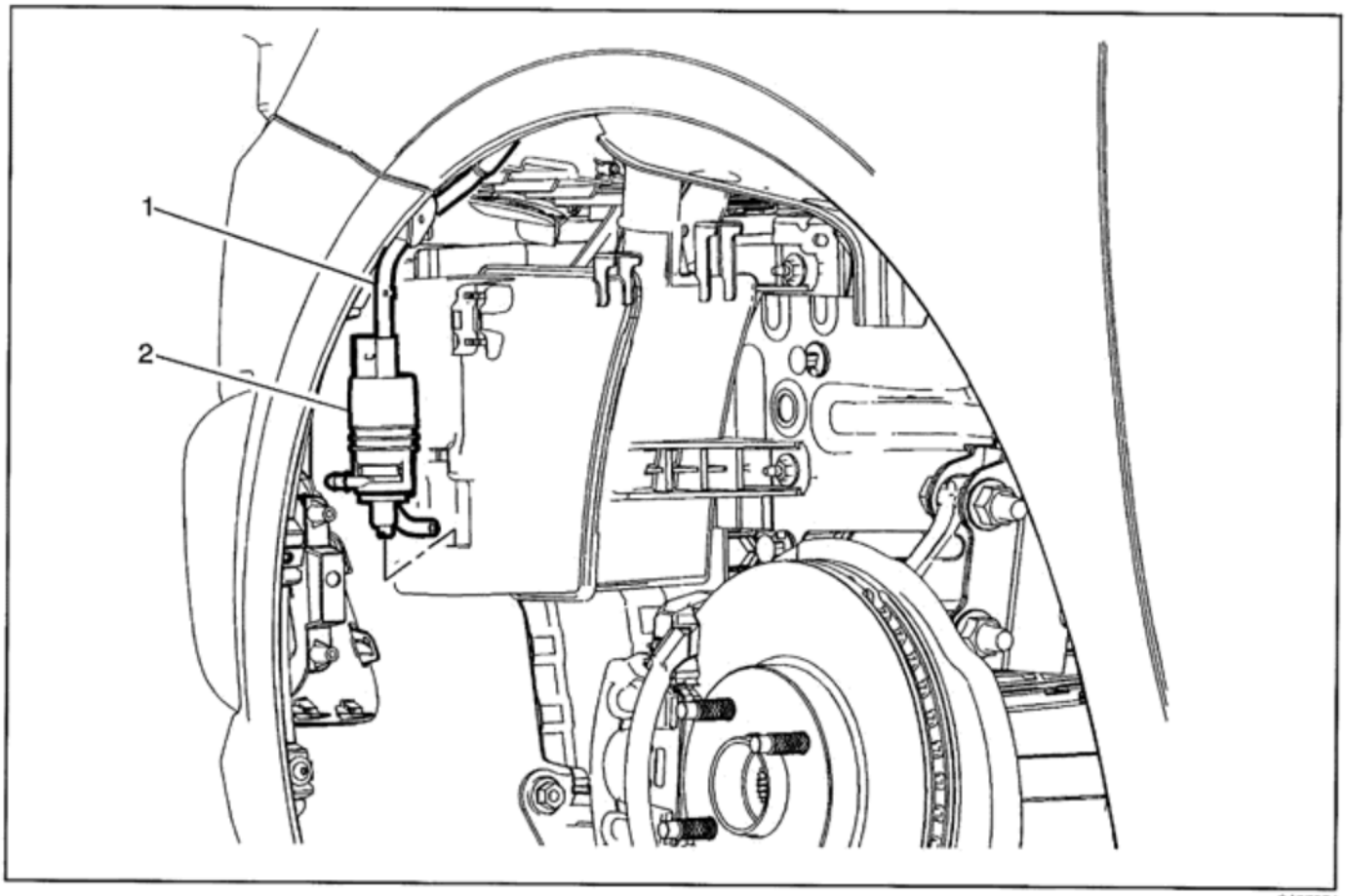


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Windshield Washer Solvent Container Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the windshield washer solvent container filler tube. Refer to *Windshield Washer Solvent Container Filler Tube Replacement on page 4-371*. 2. Remove the left side front portion of the front wheelhouse liner. Refer to *Front Wheelhouse Liner Replacement (Rear) on page 3-151* or *Front Wheelhouse Liner Replacement (Front) on page 3-150*. 3. Disconnect the windshield washer hose from the windshield washer solvent container washer pump hose. 4. Disconnect the windshield washer pump electrical connector from the washer pump.	
1	Windshield Washer Solvent Container Washer Pump Hose **Procedure** Disengage the washer pump hose from the washer pump spout and the windshield washer container retention tabs.
2	Windshield Washer Solvent Container Nut (Qty: 3) **Caution:** Refer to *Fastener Caution on page 0-8*. **Tighten** 5.0 N•m (44 lb in)
3	Windshield Washer Solvent Container **Procedure** 1. Remove the windshield washer solvent container from the three studs on the front compartment front outer side rail and battery tray support. 2. Remove the windshield washer pump from the windshield washer solvent container. 3. Empty the windshield washer solvent into a suitable approved clean container. 4. Transfer parts as needed.

Windshield Washer Pump Replacement

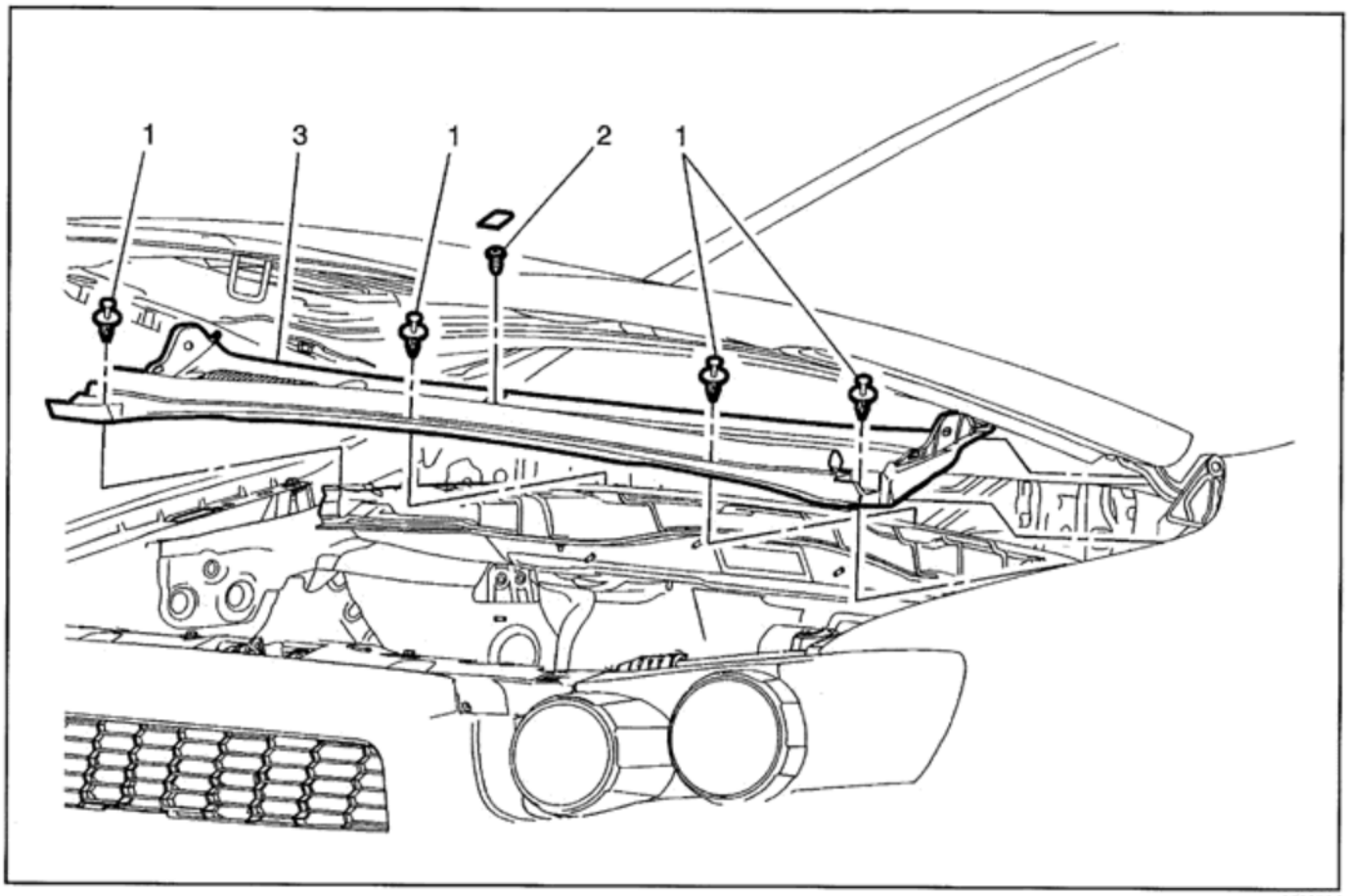


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Windshield Washer Pump Replacement

Callout	Component Name
Preliminary Procedure Remove the front left front wheelhouse liner. Refer to *Front Wheelhouse Liner Replacement (Rear) on page 3-151* or *Front Wheelhouse Liner Replacement (Front) on page 3-150*.	
1	Windshield Washer Pump Hose **Procedure** Place a clean suitable drain pan under the windshield washer pump area to recover the windshield washer solvent when the windshield washer pump hose is disconnected.
2	Windshield Washer Pump **Procedure** 1. Disconnect the electrical connector to the windshield washer pump. 2. Using two flat-bladed tools, place the blades on each side of the washer pump, under the windshield washer pump grommet. 3. Twist the two flat-blades in opposite directions to lift the washer pump from the windshield washer solvent container. 4. Disengage the washer pump from the windshield washer container. 5. Remove the windshield washer pump and discard the windshield washer pump grommet.

Air Inlet Grille Panel Replacement

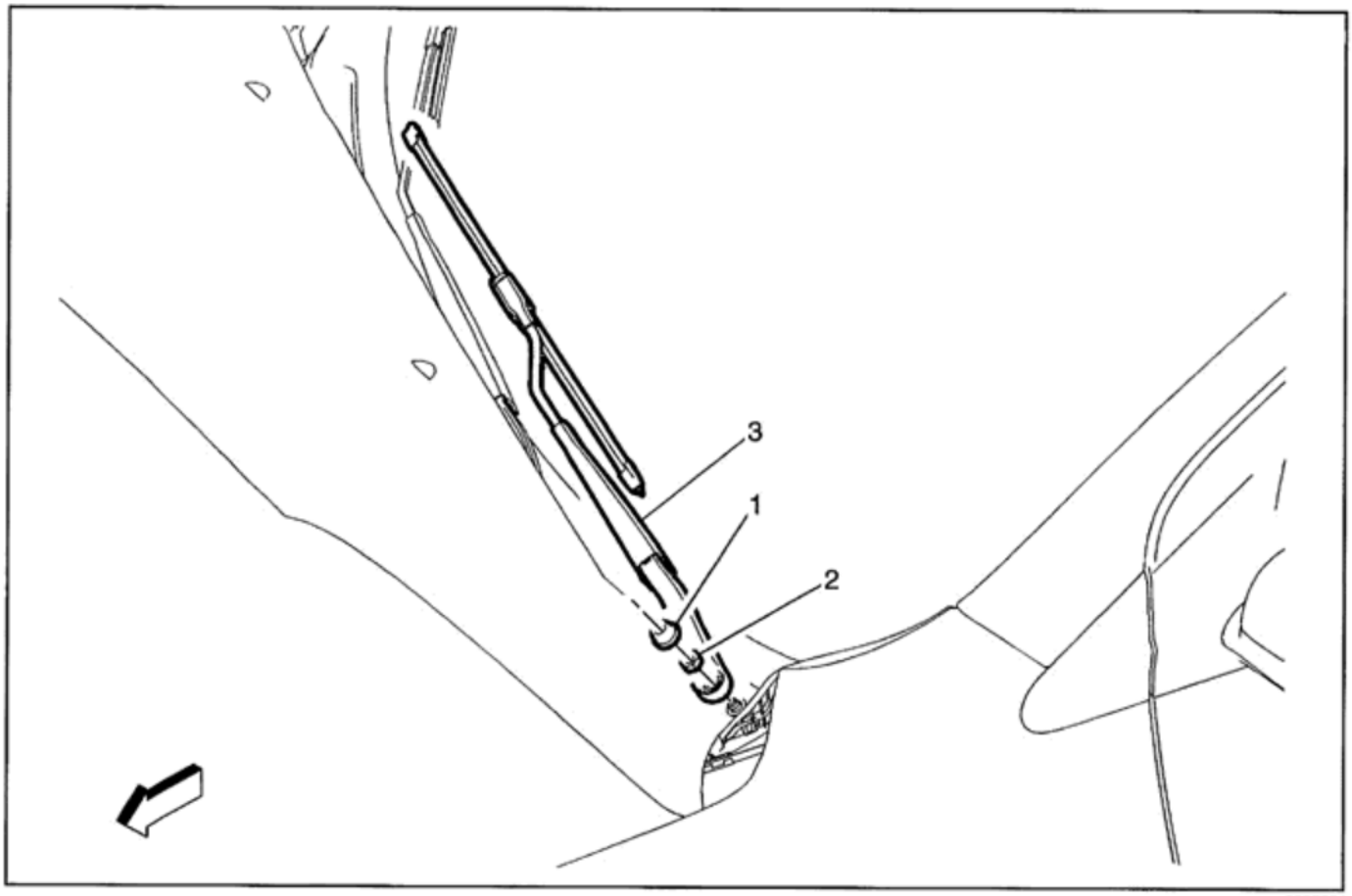


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Air Inlet Grille Panel Replacement

Callout	Component Name
Preliminary Procedure 1. Remove both wiper arm assemblies. Refer to *Windshield Wiper Arm Replacement on page 4-375*. 2. Remove both outer hood rear seals. Refer to *Hood Rear Seal Replacement on page 3-37*.	
1	Air Inlet Grille Panel Retainer (Qty: 4) **Procedure** Release and remove the retainers from the air inlet grille panel.
2	Air Inlet Panel Screw **Caution:** Refer to *Fastener Caution on page 0-8*. **Procedure** 1. Remove the screw cover from the air inlet grille panel. 2. Remove the air inlet grille panel screw. **Tighten** 2.5 N•m (22 lb in)
3	Air Inlet Grille Panel **Procedure** 1. Lift the front edge of the grille panel off the front edge of the dash upper extension panel opening cover. 2. Slide the grille panel forward from both hood hinges. 3. Remove the grille panel from the vehicle. 4. Remove the hood rear weather-strip. Refer to *Hood Rear Weatherstrip Replacement on page 3-38*.

Windshield Wiper Arm Replacement

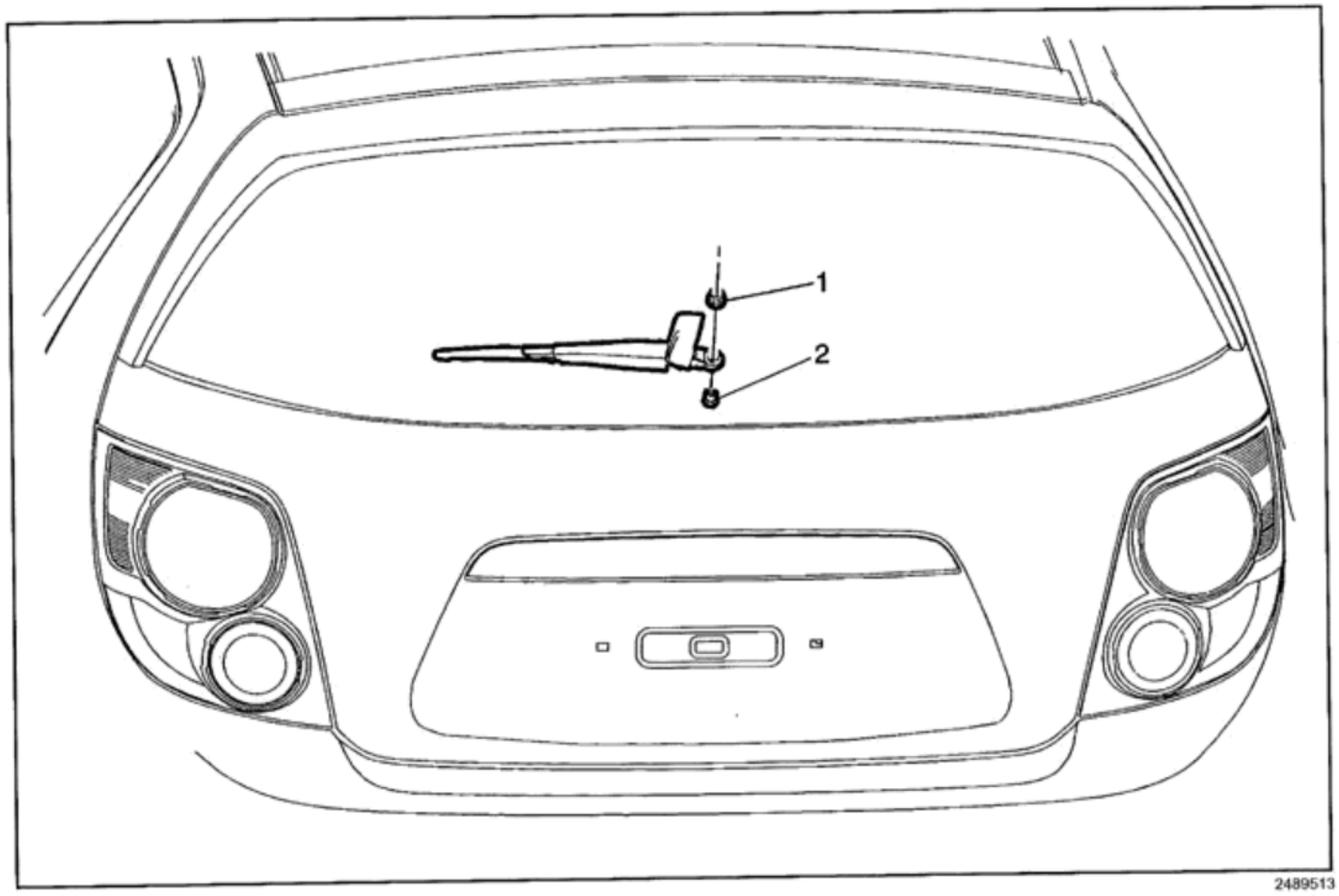


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Windshield Wiper Arm Replacement

Callout	Component Name
Preliminary Procedure Open and support the hood assembly.	
1	Windshield Wiper Arm Nut Cap **Tip:** Use a small flat-bladed tool in order to release the finish cap from the wiper arm assembly.
2	Windshield Wiper Arm Nut **Caution:** Refer to *Fastener Caution on page 0-8*. **Tighten** 25 N•m(18 lb ft)
3	Windshield Wiper Arm **Procedure** 1. Use the *BO−49385* puller in order to assist in the removal of the wiper arm from the wiper module pivot shaft. 2. Remove the wiper arm from the pivot shaft. 3. Clean the pivot shaft knurls with a soft wire brush before installing a new wiper arm. **Special Tools** *BO−49385* Wiper Arm Puller For equivalent regional tools, refer to *Special Tools on page 4-386*.

Rear Window Wiper Arm Replacement

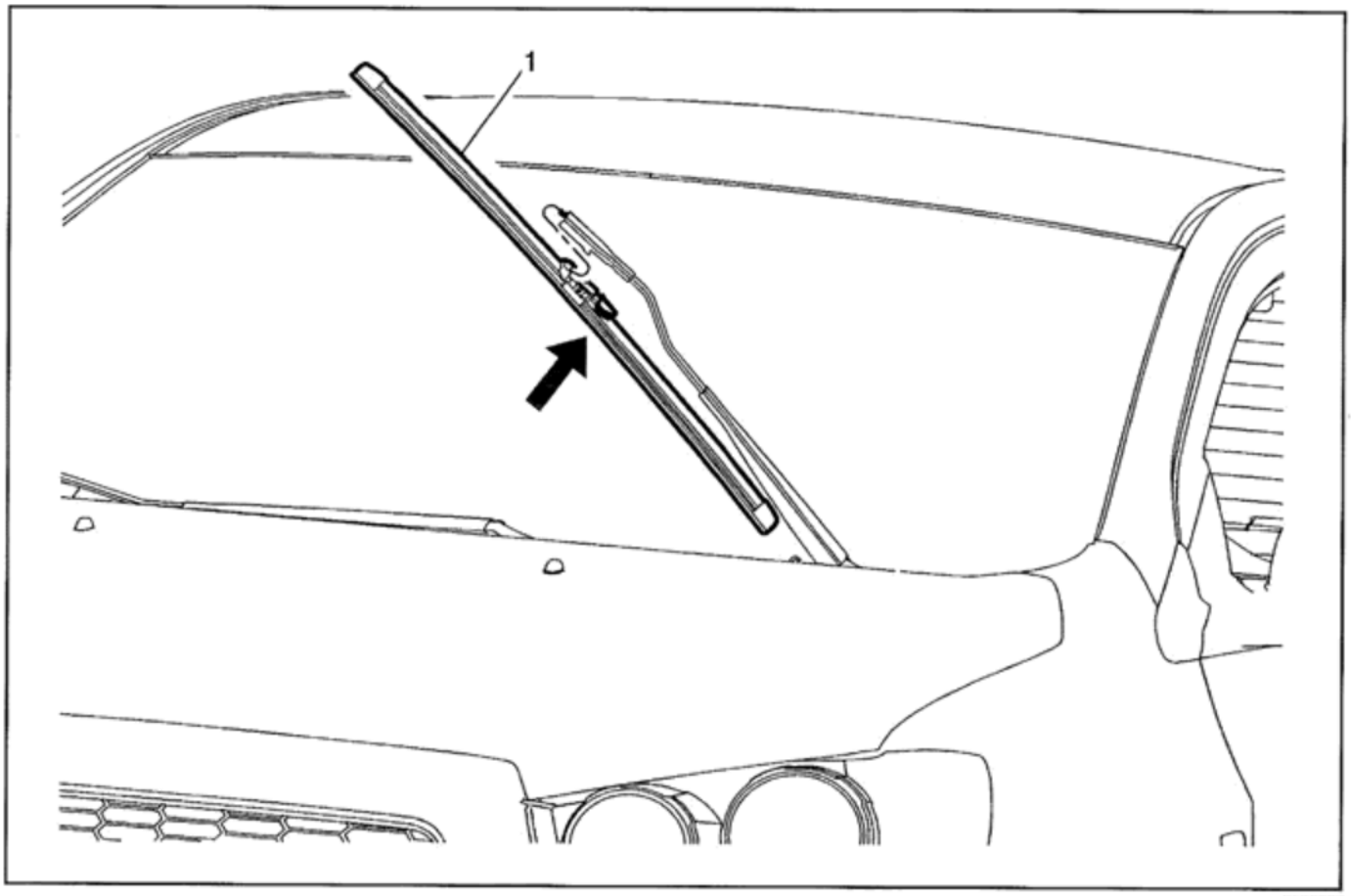


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Rear Window Wiper Arm Replacement

Callout	Component Name
Preliminary Procedure Using a small flat-bladed tool, release the locking tabs and lift the end of the wiper arm nut cover in order to access and remove the rear wiper arm nut.	
1	Rear Window Wiper Arm Nut **Caution:** Refer to *Fastener Caution on page 0-8.* **Tighten** 10 N•m (89 lb in)
2	Rear Window Wiper Arm **Tip:** Align and hold the rear window wiper arm blade to the edge of the blackout on the rear liftgate window while tightening.

Windshield Wiper Blade Replacement

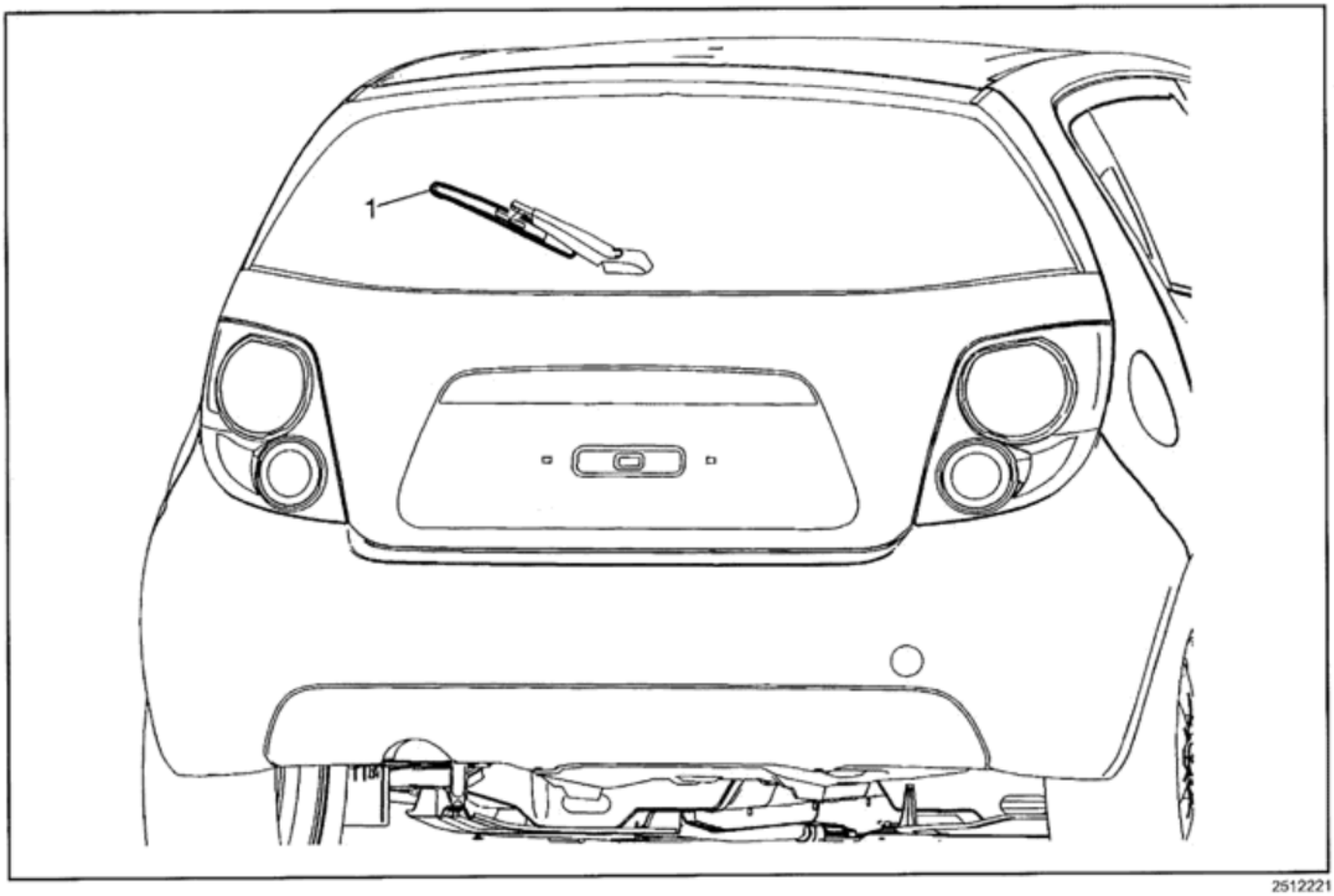


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Windshield Wiper Blade Replacement

Callout	Component Name
Preliminary Procedure 1. Service Up and hold the wiper arm off the windshield when performing the wiper blade replacement. 2. Pinch the two tabs on top of the wiper blade. 3. Rotate the bottom edge of the wiper blade, downward, away from the wiper arm. 4. Detach the wiper blade from the hook end of the windshield wiper arm. 5. Carefully return the windshield wiper arm back to the glass until the new wiper blade is installed.	
1	Windshield Wiper Blade Assembly

Rear Window Wiper Blade Replacement

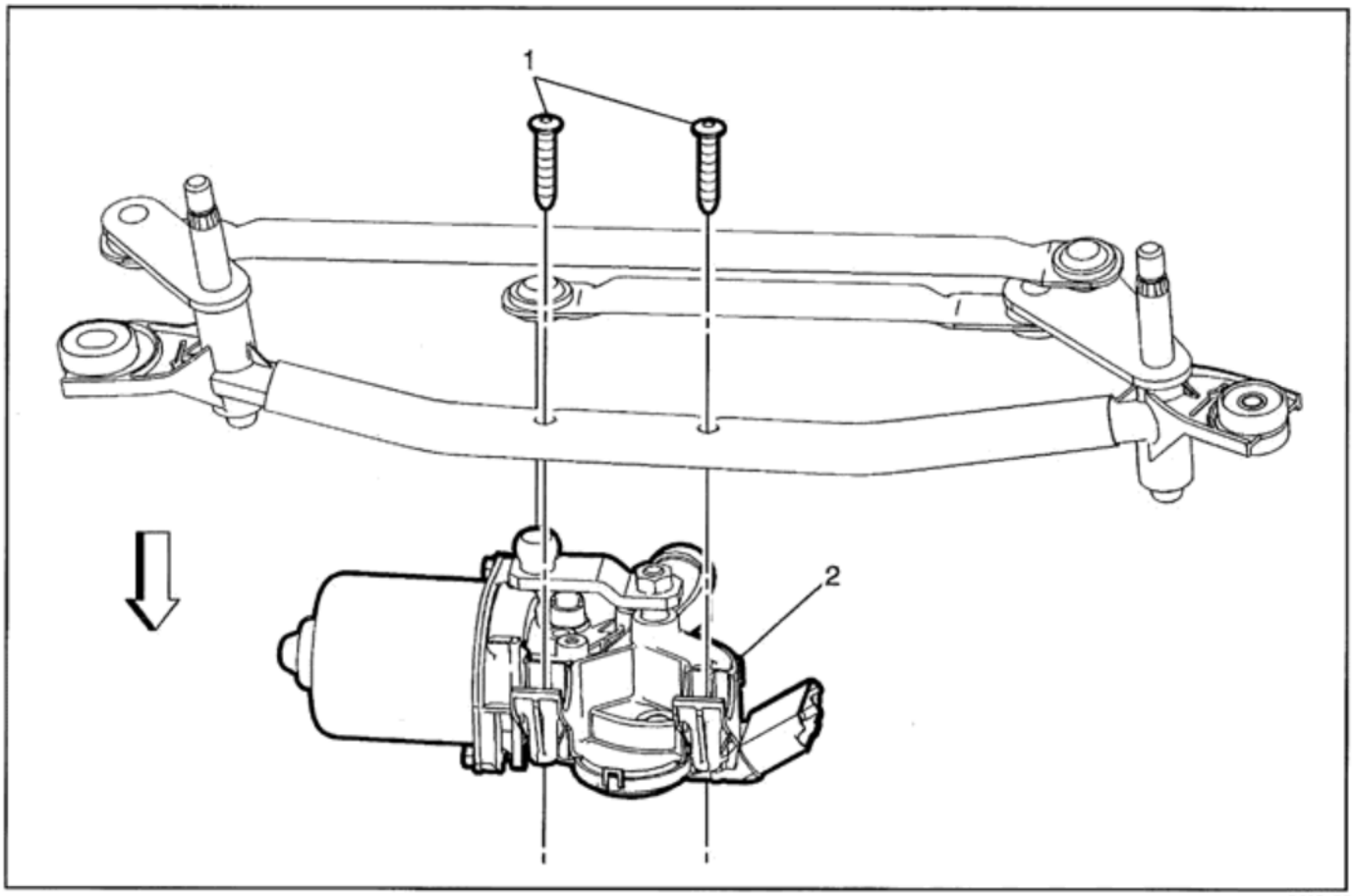


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Rear Window Wiper Blade Replacement

Callout	Component Name
Preliminary Procedure Lift the rear window wiper arm off the rear window and release the rear window wiper blade from the rear window wiper arm.	
1	Rear Window Wiper Blade

Windshield Wiper Motor Replacement

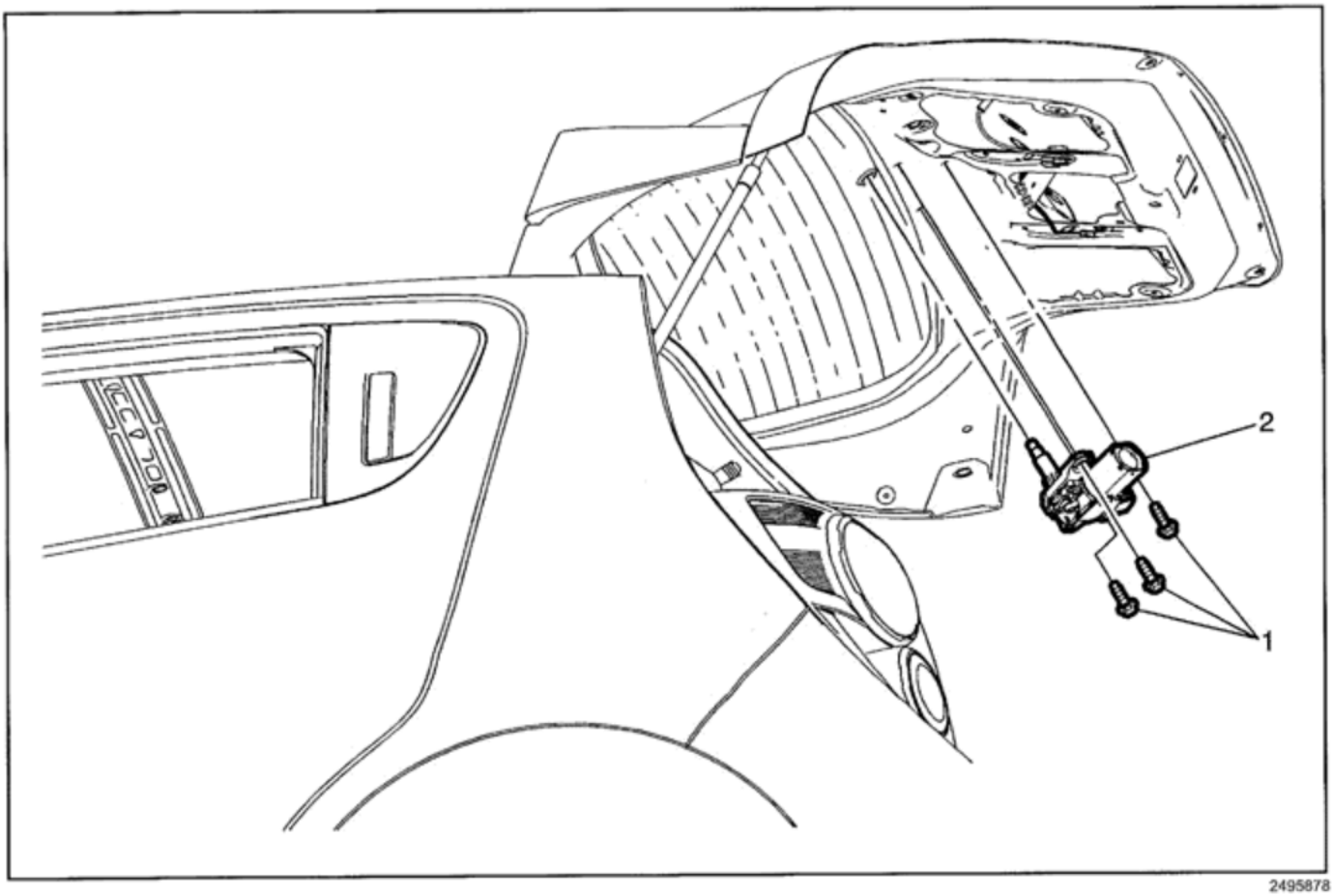


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Windshield Wiper Motor Replacement

Callout	Component Name
Preliminary Procedure Remove the wiper system module. Refer to *Windshield Wiper System Module Replacement on page 4-381*	
1	Windshield Wiper Motor Bracket Screw (Qty: 2) **Caution:** Refer to *Fastener Caution on page 0-8*. **Tighten** 8.5 N•m (75 lb in)
2	Windshield Wiper Motor **Procedure** 1. Use a wiper linkage separator or similar tool, separate the transmission drive link from the wiper motor crank arm ball stud. 2. Use a wiper linkage installer or similar tool, install the transmission drive link onto the wiper motor crank arm ball stud. **Tip:** Apply a small amount of grease to the inner cup on the transmission link to aid in installation.

Rear Window Wiper Motor Replacement (Hatchback)

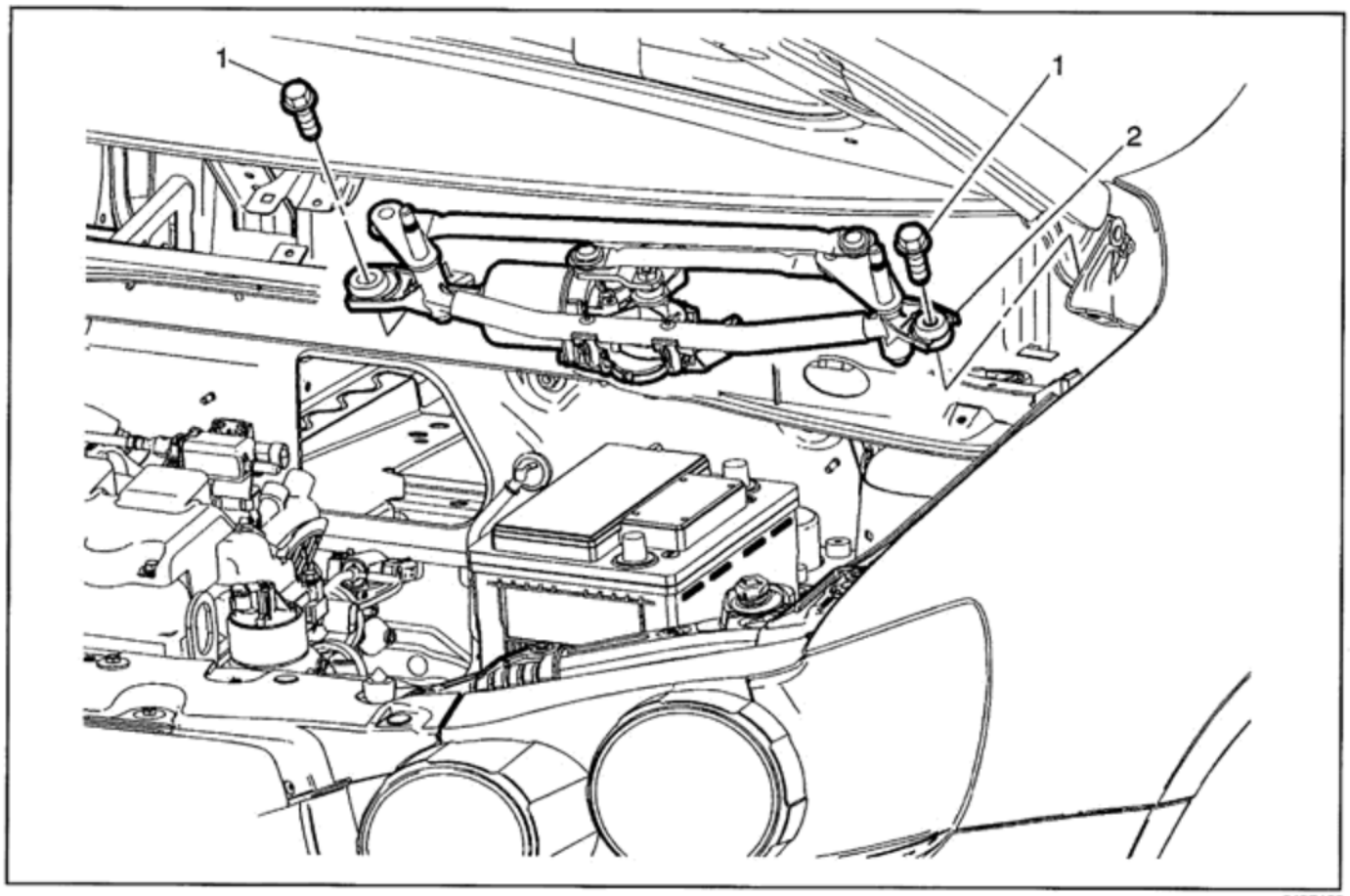


2495878

Rear Window Wiper Motor Replacement (Hatchback)

Callout	Component Name
Preliminary Procedure 1. Open and support the liftgate assembly. 2. Remove the rear window wiper arm assembly. Refer to *Rear Window Wiper Arm Replacement on page 4-376*. 3. Remove the rear liftgate trim finish panel. Refer to *Liftgate Trim Finish Panel Replacement (Hatchback) on page 2-86*. 4. Disconnect the rear window wiper motor electrical connector.	
1	Rear Window Wiper Motor Bolt (Qty: 3) **Caution:** Refer to *Fastener Caution on page 0-8*. **Tighten** 9 N•m (80 lb in)
2	Rear Window Wiper Motor **Procedure** 1. Pull the rear window wiper motor inward from the rear liftgate. 2. Release the wiper motor pivot shaft from the rear window wiper motor window grommet. 3. Carefully remove the rear window wiper motor from the liftgate inner panel assembly.

Windshield Wiper System Module Replacement

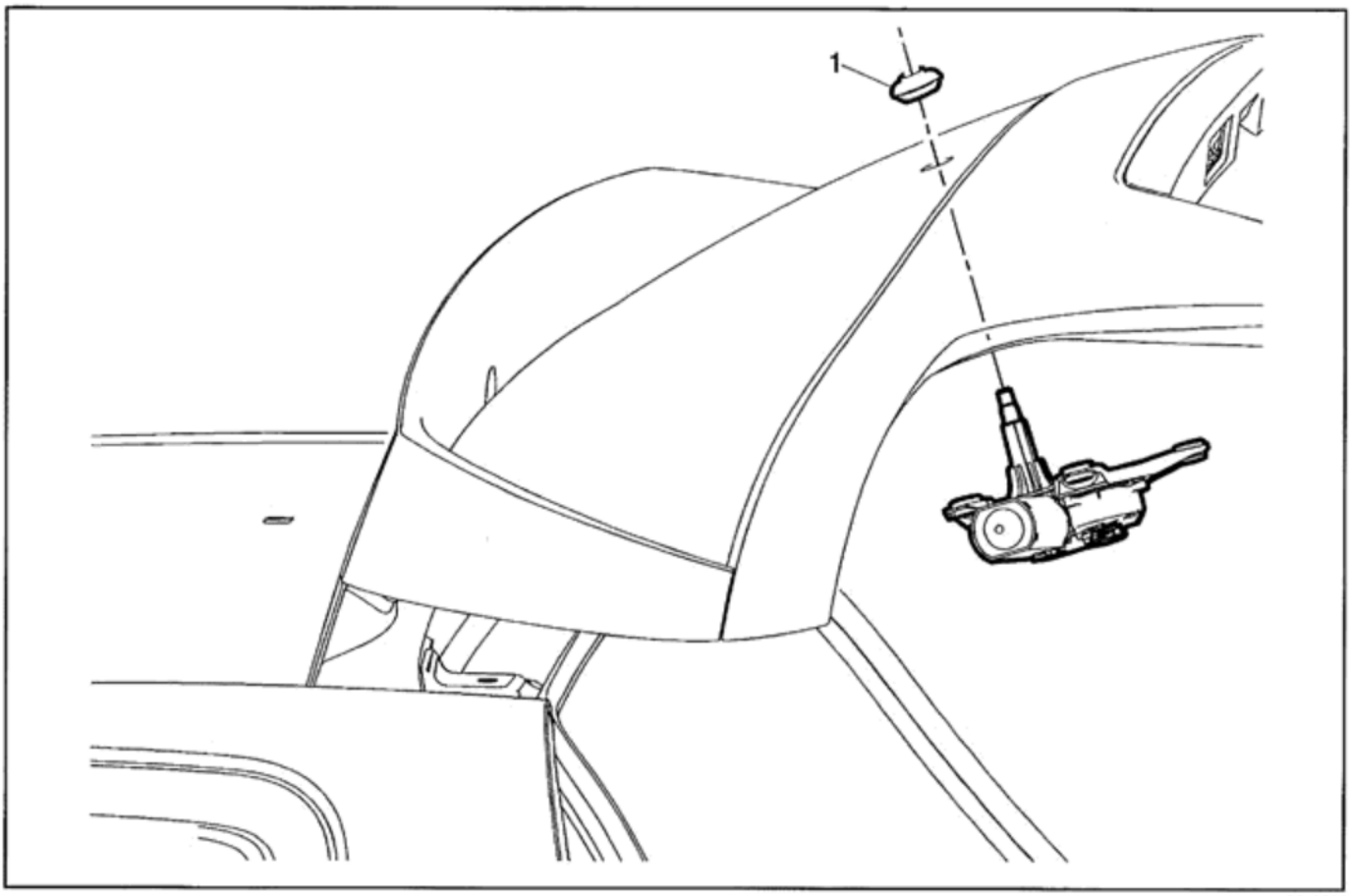


2497153

Windshield Wiper System Module Replacement

Callout	Component Name
Preliminary Procedures 1. Open and support the hood assembly. 2. Remove the air inlet grille panel. Refer to *Air Inlet Grille Panel Replacement on page 4-374*.	
1	Windshield Wiper System Module Bolt (Qty: 2) **Caution:** Refer to *Fastener Caution on page 0-8*. **Tighten** 18 N•m (13 lb ft)
2	Windshield Wiper System Module **Procedure** 1. Lift the wiper system module from the plenum brackets. 2. Disconnect the electrical connector from the windshield wiper motor. 3. Remove the windshield wiper system module from the plenum.

Rear Window Wiper Motor Grommet Replacement

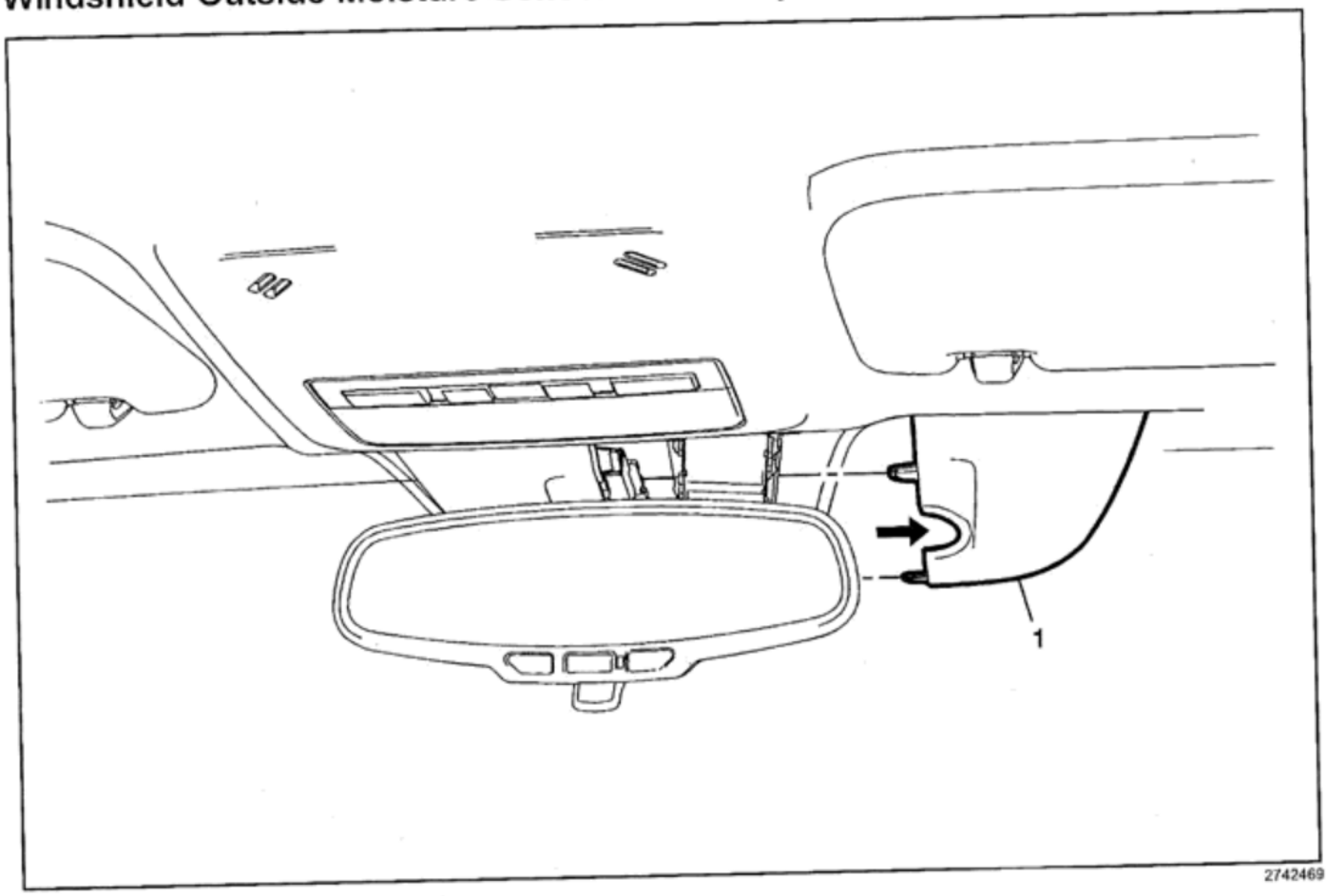


2510804

Rear Window Wiper Motor Grommet Replacement

Callout	Component Name
Preliminary Procedure Remove the rear window wiper motor. Refer to *Rear Window Wiper Motor Replacement (Hatchback) on page 4-380.*	
1	Rear Window Wiper Motor Grommet **Tip:** Apply some lubricant to the outside of the grommet upon installation to aid in installation through the liftgate glass opening.

Windshield Outside Moisture Sensor Cover Replacement



Windshield Outside Moisture Sensor Cover Replacement

Callout	Component Name
1	Windshield Outside Moisture Sensor Cover **Procedure** Grasp the cover in the center and gently slide to the right.

Windshield Glass Cleaning

Clean the windshield with windshield cleaner. Refer to the electronic parts catalog or use equivalent cleaner. 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.

Wiper Blade Element Cleaning

Lift each blade assembly off of the windshield and clean the element with a cloth saturated with full strength washer solvent. Then rinse the blade assemblies with clear water.

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.

- Clean the windshield glass. Refer to *Windshield Glass Cleaning on page 4-383*.
- Clean the wiper blade elements. Refer to *Wiper Blade Element Cleaning on page 4-383*.
- Inspect the wiper blade element set.

Description and Operation

Rear Wiper/Washer System Description and Operation

The rear window wiper motor is located inside the hatchback door and is directly connected to the rear window wiper. Ignition voltage is supplied to the rear wiper motor through the wiper switch. The hatchback rear window washer systems equipped with a separate washer fluid pump, hose, and nozzle. Ignition voltage is supplied to the washer pump through the wiper switch. Attached to the reservoir is a washer pump, which pumps fluid through a hose to the nozzle mounted on the hatch.

Wiper/Washer System Description and Operation

Wiper/Washer System Components

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

- Windshield Wiper Relay
- Windshield Wiper Speed Control Relay
- Windshield Washer Pump Relay
- Windshield Outside Moisture Sensor
- Windshield Washer Fluid Pump
- Windshield Wiper Motor
- Window Wiper/Washer Switch
- Windshield Wiper Motor Fuse
- Windshield Washer Fluid Pump Fuse
- Body Control Module (BCM)
- Rear Window Wiper Motor
- Rear Window Wiper Motor Fuse
- Rear Window Wiper Relay
- Rear Window Washer Pump Relay
- Rear Window Washer Pump Fuse

Windshield Wiper System

The body control module (BCM) determines the front wipe/wash system mode of operation by monitoring several signals from the front wipe/wash switch as indicated in the wiper switch.

The front wipe/wash switch receives a reference ground signal from the BCM. Each input of the BCM provides a switched battery pull-up for each front wiper/ washer switch output signal it receives. All the BCM inputs are recognized as active when the wiper switch provides a path to the referenced ground signal. The first signal received by the BCM is the result of 6 resistors in the front wiper switch configured as a resistor ladder network. This signal is connected to a BCM analog to digital input. Depending on the function selected (High, Low, Intermittent 1 thru 5, Mist, Off), the front wiper control switch connects a different set of resistors into the circuit resulting in different voltages appearing on the BCM A/D input. By monitoring this voltage, the BCM determines how to control the wiper motor On/Off Relay. It should be noted that High, Low, and Mist all have the same value on this signal circuit.

The second signal received from the front wiper switch is active only when the front wiper switch is in the high speed wiper position. When the wiper switch is not in the high speed position, the switch is open and the signal circuit is pulled to battery by the BCM. When the wiper switch is in the high speed position, the switch pulls the circuit low. The BCM determines how to control the Wiper high/low speed relay from this input. The third signal received from the front wiper switch is from the momentary windshield wash control switch. When the washer switch is not active the switch is open and the signal circuit is pulled to battery by the BCM. When the washer switch is active, the switch pulls the circuit low. The BCM controls the windshield wash and windshield wash activated wiper operation based on this input.

The BCM controls front wiper motor operation through two output signals and the monitoring of one input signal. The two outputs (one high side drive, one low side drive) are used to control two external wiper motor relays: front wiper motor on/off relay: which provides the wiper motor with battery power when it is activated by the high side drive signal (switched battery) from the BCM. When left deactivated, the normally closed contacts provide a ground to the wiper motor. Wiper high/low speed relay: when activated by a low side drive signal (ground) from the BCM, it switches the power supplied by the wiper motors on/off relay to the motors high speed input. When left deactivated, the normally closed contacts connect the power supplied by the wiper motors on/off relay to the motors low speed input. The input used by the BCM is from the park switch located in the wiper motor assembly. When the wiper blades are not in the park position, the wiper park switch is open and the circuit is pulled up to battery by the BCM. When the wiper blades are in the park position at the bottom of the glass, the wiper park switch closes to ground pulling the park signal circuit low.

To initiate low speed operation, the BCM only energizes the front wiper motor on/off relay. This allows battery voltage from the wiper fuse to be applied through the switched contacts of the wiper motor on/off relay, through the normally closed contacts of the wiper high/ low speed relay, to the low speed control circuit of the windshield wiper motor.

Redundant high speed switch pass through. The BCM provides redundant circuitry which places battery power on its wiper motor on/off relay output with activation of its low assertion high speed wiper switch input. The BCM shall be capable of doing this, even if the module has lost all microprocessor control. This redundant circuit shall supply power while in the RUN and CRANK power modes. however; while in the CRANK power mode, the pass through shall only be active if the BCM is NOT in a computer operating properly state.

To initiate high speed operation, the BCM energizes both the front wiper motor on/off relay and the wiper high/low speed relay . This allows battery voltage from the wiper fuse to be applied through the switched contacts of the wiper motor on/off relay, through the switched contacts of the wiper high/low speed relay, to the high speed control circuit of the windshield wiper motor.

Parking the wiper motor. In order to perform an accurate read of the park switch and to ensure the wipers will come to rest while still in the park position, parking of the wipers only occurs while in a low speed wiper mode. This requires that if the wipers are performing a high speed wiper operation at the time they are required to park, the BCM shall transition the Wipers to low speed by deactivating the wiper high/low relay before attempting to park. In order to park the wipers, the BCM monitors the park circuit until the park switch pulls the park circuit to ground. At this time, the BCM will immediately deactivate the wiper motor on/off relay. The relay contacts will switch back to their normally closed position and will apply ground to the wiper motor power inputs through the normally closed contacts of the wiper high/low relay. This deactivates and dynamically brakes the wiper motor in the park position. When the wiper switch is turned to the OFF position while the wiper motor is somewhere in mid-cycle, the BCM will continue to operate the motor until the wipers reach the park position. If the BCM is running the wiper motor and does not see a state transition of the park switch after 8 s, the wipers will stop immediately when the wiper switch is turned to OFF. If the ignition is turned OFF while the wipers are in mid-cycle, the wipers will stop immediately, regardless of position. The BCM will park the wipers next time the ignition is turned ON.

The windshield wiper system MIST operation is identical to LOW speed operation, except that the MIST switch is a press and release type switch. 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 wiper motor will operate in the LOW speed mode until the switch is released.

Windshield wiper intermittent operation is a low speed wiper motor function with a variable delay interval between the wiper motor cycles. The duration of the delay is controlled by the front wiper control switches intermittent 1 thru intermittent 5 settings. The wiper operation is as follows

1. The BCM will initiate a single wipe by activating its front wiper ON/OFF relay output.
2. At the completion of a single wipe, the BCM will park the wipers as described above.
3. The BCM will then pause the wipers in their park position for the time duration associated with intermittent delay switch setting.
4. When the delay time expires repeat Steps 1 and 3 until the system is turned off or taken out of intermittent mode. If the wiper switch is moved from a longer delay interval to a shorter delay interval, the BCM will command an immediate wipe cycle and reset the delay timer to the shorter delay interval.

Intermittent wiper operation may be vehicle speed sensitive. When enabled, the speed compensated intermittent feature causes the intermittent wiper delay intervals to become shorter as a function of increased speed. As vehicle speed is reduced the intervals will become closer to the predetermined

Windshield Washer System

The BCM controls the windshield wash operation and windshield wash activated wiper operation. When the BCM detects the activation of the momentary windshield wash control switch, it activates its washer pump relay drive output which supplies battery power to the coil of the washer pump relay. This energizes the relay, which switches battery power to the pump motor. The BCM will also activate continuous low speed windshield wipes as described above. Upon deactivation of the windshield wash control switch, the wiper control module (BCM) shall deactivate the wash motor and will also park the wiper motor as described above unless the drip wipe feature is enabled. On some vehicles the drip wipe feature will be enabled and cause the system to provide additional wiping of the windshield after the switch has been released and fluid is no longer being applied. The front wash feature may attempt to detect a stuck switch. When enabled, activation of the wash feature shall be limited to 10 seconds.

On vehicles with the Rear Wash feature a single reversing wash motor may be utilized for both the front and rear wash operation. In this system the wash motor is operated in one direction to spray fluid on the front windshield and then operated in the reverse direction to spray fluid on the rear window. The BCM Controls the reversing wash motor through two High Side Drive outputs. One controls the Front Wiper Motor Relay and one controls the Rear Wiper Relay.

Rain Sense Mode and Rain Sense Indicator

When this feature is activated on rain sense equipped vehicles, the wiper subsystem performs front windshield wipes according to the amount of moisture detected on the windshield. The BCM will control the wiper motor speed, as indicated above, based on wipe requests that it receives from a moisture sensor (rain sense module) which is mechanically attached to the windshield through a windshield mounted optic coupler. The system uses a master/slave configuration utilizing a local interconnect network (LIN) based serial data communication system. The BCM is designated as the master, while the rain sense module is designated the slave. As the system master, the BCM uses the LIN serial communication bus to enable or disable rain sense module operation, communicate wiper control switch settings, and wiper motor position information to the rain sense module. The rain sense module requests wiper motor function, and provides the BCM with system status and diagnostic information for diagnostic reporting. When this feature is present, the BCM uses the front wiper control switches intermittent 1 thru intermittent 5 settings to activate the system and to act as the automatic wiper sensitivity control. This allows the driver to adjust the moisture level at which the rain Sensor requests the BCM to automatically wipe the windshield. The intermittent 1 setting corresponds to the lowest sensitivity and intermittent 5 the highest sensitivity.

Some vehicles (if calibrated) shall display an AUTO front wiper indicator when the feature is active. This indicator shall notify the driver of the vehicle that the rain sensor is ready to perform automatic wiping of the windshield upon detection of moisture.

This indicator shall be requested when all of the following are true:

1. Power mode is RUN.
2. If single steering column switch equipped: The front wiper switch is SENSITIVITY 1 through SENSITIVITY 5.
3. If dual steering column stalk equipped: The front wiper switch stalk angle is SENSITIVITY.

The above indicator shall be turned OFF when any of the following become true:

1. Power mode becomes OFF, CRANK or ACCESSORY.
2. Front wiper switch is changed to OFF, MIST, LOW or HIGH.

Rear Wiper System

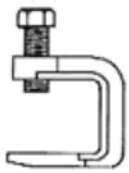
On vehicles equipped with a Rear Wiper, the BCM determines of the Rear Wipe/Wash System Mode of Operation by monitoring the multiplexed output of the Rear Wipe/Wash Switch. The Rear Wipe Wash Switch uses a reference ground signal from the BCM. The BCM provides a switched Battery pull-up for the Rear Wiper/Washer Switch output signal it receives. All the BCM inputs are recognized as active when the Rear Wiper Switch provides a path to the referenced ground signal. The Rear Wiper/Washer signal received by the BCM is the result of 3 resistors in the Rear Wiper Switch configured as a resistor ladder network. This signal is connected to a BCM Analog to Digital Input which also provides a switched Battery pull-up for the circuit. Depending on the function selected (Low, Intermittent, Off, Wash), the Rear Wiper Control Switch connects a different set of resistors into the circuit resulting in different voltages appearing on the BCM A/D input. By monitoring this voltage, the BCM determines how to control the Rear Wiper Motor Relay and the Rear Washer Relay.

The BCM Controls the single speed Rear Wiper Motor by its Active High output to the external Rear Wiper Motor Relay. When the BCM activates its output and applies Battery to the coil of the relay, the relay energizes, allowing Battery voltage from the fuse to be applied through the switched contacts of the Rear Wiper Motor Relay to the Rear Wiper Motors control input. The motor then operates continuously at low speed. The BCM does not control the parking of the Rear Wiper Motor, it is self parking. When the BCM deactivates its output, the contacts of the Rear Wiper Motor Relay switch back to ground which will be used by the wiper for Dynamic Braking. The Rear Wipers internal park switch and circuitry will sustain motor operation until the wiper arm has returned to its Park position.

Rear Wash

When the Body Control Module detects that the Rear wiper/wash switch has activated the momentary Wash switch, it activates a High Side Drive output which supplies Battery to the coil of the Rear Washer Pump Relay. This energizes the Relay, which switches Battery Power to the Washer Pump Motor. The BCM will also activate continuous Low Speed Windshield Wipers as described above. The BCM software will attempt to detect a stuck Rear Wash Switch. A stuck Rear Wash Switch condition is detected if the Rear Wash Motor Relay Output has been continuously active for 10 seconds or more. Upon detecting this the BCM will fail soft the state of the Rear Wash Control to Inactive. This shall cause the System to perform as if the momentary Wash control had been released.

Special Tools and Equipment

Illustration	Tool Number/Description
 70147	BO-49385 BO-6626 KM-6626 S0201912 Wiper Arm Puller