Wipers and Washers

Special Tool(s)

 ST2574-A	Flex Probe Kit NUD105-R025D or equivalent
 ST3093-A	Fluke 77-IV Digital Multimeter FLU77-4 or equivalent
 ST2834-A	Vehicle Communication Module (VCM) and Integrated Diagnostic System (IDS) software with appropriate hardware, or equivalent scan tool
 ST3094-A	Test Light SGT27000 or equivalent 250-350 mA incandescent bulb test lamp SGT27000

Principles of Operation

Windshield Wiper Operation

The wiper system is activated by the multifunction switch. The multifunction switch is mounted to the Steering Column Control Module (SCCM). The SCCM commands the wiper motor to activate the appropriate wash, low, high and intermittent modes through a private Local Interconnect Network (LIN).

When the multifunction switch is in the HIGH position, the wiper motor also receives a ground signal which is hardwired directly through the SCCM (bypassing the logic within the module). This fail-safe circuit makes sure that the wipers function in HIGH speed mode in the event of a LIN communication failure.

Vehicles equipped with a front video camera have a front camera washer control switch that is part of the multifunction switch.

Washer System (if not equipped with front video camera)

When the multifunction switch is placed in the WASH position, the SCCM sends the request to the windshield wiper motor through the LIN . The windshield wiper motor supplies voltage to the washer pump, which then directs washer fluid to the windshield.

Washer System (if equipped with front video camera)

When the multifunction switch is placed in the WASH position, the windshield wiper motor supplies voltage to the washer pump. Ground is provided to the washer pump through the normally closed contact in the front camera washer relay (located in the auxiliary Battery Junction Box (BJB)).

When the front video camera washer control is activated, the SCCM sends the request to the windshield wiper motor through the LIN . The windshield wiper motor controls the direction of the washer pump to direct washer fluid to the front video camera.

Courtesy Wipe Feature

When the washer system is activated, the wipers cycle 3 times with washer fluid, followed by one final wipe a few seconds later to clear any remaining fluid that is dripping from the top of the windshield. This feature can be enabled/disabled through the message center. For information on enabling/disabling this feature, refer to the Owner's Literature.

Speed Dependent Wipers

If equipped, the speed dependent feature increases the frequency of wiping to compensate for the extra moisture that accumulates on the windshield as the vehicle speed increases. This feature activates when the multifunction switch is in any intermittent setting except the INT 1 position. As vehicle speed increases, the speed dependent feature gradually shortens the delay between wipes. The SCCM receives Vehicle Speed Sensor (VSS) information from the Body Control Module (BCM) through the High Speed Controller Area Network (HS-CAN). The SCCM sends the VSS information to the wiper motor through the LIN .

Rain Sensitive Wipers (if equipped)

When equipped, the rain sensitive wiper feature replaces the intermittent wiper feature. The rain sensitive feature is active when the multifunction switch is in any of the 5 auto/intermittent sensitivity settings. The setting closest to OFF is the least sensitive to moisture, the highest setting being the most sensitive to moisture.

The rain sensor optically senses water on the windshield. An infrared beam of specific intensity lights a section of the windshield. The intensity of the reflected beam is measured and compared to the intensity of the transmitted beam. If there is water on the surface of the windshield, the beam distorts, reducing the intensity of the beam. If the beam is not reflected completely, it is interpreted as rain on the windshield and the windshield wipers are started.

The rain sensor sends data through the LIN to the windshield wiper motor. When the rain sensitive wiper feature is enabled, based on the data received from the rain sensor and the auto/intermittent setting on the multifunction switch, the system automatically activates and adjusts the wiper speed and frequency when

moisture is detected on the windshield.

A gel-type lens is used as the interface between the rain sensor and the windshield. If the lens is missing or damaged, the rain sensing wipers can be inoperative. The rain sensor gel-type lens is part of the rain sensor and cannot be replaced separately on a rain sensor of this type.

The rain sensitive wiper feature can be enabled/disabled through the message center.

When the rain sensitive wipers are disabled from the message center, or the windshield wiper motor detects a fault with the rain sensor input, the windshield wiper motor changes to a default intermittent mode. The timing of the wipers correspond to a standard intermittent setting based on the auto/intermittent sensitivity setting on the multifunction switch.

Wiper Activated Headlamps

If equipped with automatic headlamps, the SCCM sends a message to the BCM over the HS-CAN to illuminate the exterior lamps within 10 seconds of the wipers being activated by the multifunction switch when the headlamp control switch is in the AUTOLAMP position. The BCM continues to illuminate the exterior lamps for approximately 30 seconds after the wipers have been turned off.

If equipped with rain sensitive wipers (feature must be enabled through the message center) and the multifunction switch is in 1 of the 5 auto/intermittent settings, the SCCM sends a message to the BCM over the HS-CAN to illuminate the exterior lamps within 30 seconds of the wipers being activated by moisture detected on the windshield when the headlamp control switch is in the AUTOLAMP position. The BCM continues to illuminate the exterior lamps for approximately 60 seconds after the wipers have been deactivated (moisture no longer detected on the windshield).

Inspection and Verification

1. Verify the customer concern.

2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical

• Wiper linkage
• Washer nozzles
• Washer fluid hoses
• Wiper blades
	• Battery Junction Box (BJB) fuse(s):
	  ▪ 41 (15A) (vehicles equipped with front video camera only)
	  ▪ 49 (30A)
	  ▪ 54 (5A) (vehicles equipped with front video camera only)
	  ▪ 79 (5A)
	• Wiper relay
	• Rain sensor (if equipped)
	• Wiper motor
	• Washer pump
	• Wiring, terminals or connectors

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to next section.

4. **NOTE:** Make sure to use the latest scan tool software release.

   If the cause is not visually evident, connect the scan tool to the Data Link Connector (DLC).

5. **NOTE:** The Vehicle Communication Module (VCM) LED prove-out confirms power and ground from the DLC are provided to the VCM.

   If the scan tool does not communicate with the VCM:
   - check the VCM connection to the vehicle.
   - check the scan tool connection to the VCM.
   - refer to Section 418-00, No Power To The Scan Tool, to diagnose no power to the scan tool.

6. If the scan tool does not communicate with the vehicle:
   - verify the ignition is ON.
   - verify the scan tool operation with a known good vehicle.
   - refer to Section 418-00, The PCM Does Not Respond To The Scan Tool, to diagnose no response from the PCM.

7. Carry out the network test.
   - If the scan tool responds with no communication for one or more modules, refer to Section 418-00.
   - If the network test passes, retrieve and record the Continuous Memory Diagnostic Trouble Codes (CMDTCs).

8. Clear the CMDTCs and carry out the self-test diagnostics for the Steering Column Control Module (SCCM) and the Body Control Module (BCM).

9. If the DTCs retrieved are related to the concern, refer to the Steering Column Control Module (SCCM) DTC Chart. For all other SCCM DTCs, refer to Section 211-05. For any BCM DTCs, refer to Section 419-10.

10. If no DTCs related to the concern are retrieved, GO to Symptom Chart.

DTC Charts

NOTE: This module utilizes a 5-character DTC followed by a 2-character failure type code. The failure type code provides information about specific fault conditions such as opens or shorts to ground. Continuous Memory Diagnostic Trouble Codes (CMDTCs) have an additional 2-character DTC status code suffix to assist in determining DTC history.

Steering Column Control Module (SCCM) DTC Chart

DTC	Description	Action
B1008:09	Wiper Mode Switch: Component Failure	INSTALL a new multifunction switch. REFER to Section 211-05. CLEAR the DTCs and REPEAT the self-test. If the DTC is retrieved again, INSTALL a new SCCM. REFER to Section 211-05.
B1051:09	Front Washer Switch: Component Failure	INSTALL a new multifunction switch. REFER to Section 211-05. CLEAR the DTCs and REPEAT the self-test. If the DTC is retrieved again, INSTALL a new SCCM. REFER to Section 211-05.

B10AD:02	Rain Sensor: General Signal Failure	GO to Pinpoint Test E .
B10AD:08	Rain Sensor: Bus Signal / Message Failure	GO to Pinpoint Test E .
B10AD:49	Rain Sensor: Internal Electronic Failure	INSTALL a new rain sensor. REFER to Rain Sensor in this section. CLEAR the DTCs. REPEAT the self-test.
B1131:02	Wiper Motor Module: General Signal Failure	GO to Pinpoint Test B .
B1131:08	Wiper Motor Module: Bus Signal / Message Failure	GO to Pinpoint Test B .
B12F7:09	Single Wipe Switch: Component Failure	INSTALL a new multifunction switch. REFER to Section 211-05 . CLEAR the DTCs and REPEAT the self-test. If the DTC is retrieved again, INSTALL a new SCCM . REFER to Section 211-05 .
All other DTCs	—	REFER to Section 211-05 .

Symptom Chart

Symptom Chart

Condition	Possible Sources	Action
• All windshield wiper modes are inoperative	• Fuse • Wiring, terminals or connectors • Wiper relay • Multifunction switch • Wiper motor • Steering Column Control Module (SCCM)	• GO to Pinpoint Test A .
• The intermittent and/or low speed windshield wipers are inoperative	• Wiring, terminals or connectors • Multifunction switch • Wiper motor • Rain sensor (if equipped) • SCCM	• GO to Pinpoint Test B .
• The high speed windshield wipers are inoperative	• Windshield wiper motor	• INSTALL a new windshield wiper motor. REFER to Wiper Motor .
• The windshield wipers stay on continuously	• Wiring, terminals or connectors • Wiper relay • Multifunction switch • Wiper motor • SCCM	• GO to Pinpoint Test C .

• The windshield wipers do not operate correctly in the intermittent mode	• Multifunction switch • Wiper motor • SCCM	• If the vehicle is not equipped with rain sensitive wipers, GO to Pinpoint Test D . • If the vehicle is equipped with rain sensitive wipers, GO to Pinpoint Test E .
• The rain sensitive wiper feature is inoperative	• Fuse • Wiring, terminals or connectors • Rain sensitive feature not enabled • Foreign material on windshield, such as dirt, dust or bugs • Wiper blades • Windshield glass • Multifunction switch • Wiper motor • Rain sensor • SCCM	• GO to Pinpoint Test E .
• The rain sensitive wipers have erratic/inconsistent operation	• Foreign material on windshield, such as dirt, dust or bugs • Wiper blades • Windshield glass • Rain sensor	• GO to Pinpoint Test E .
• The rain sensitive wipers are too sensitive/not sensitive enough to moisture	• Foreign material on windshield, such as dirt, dust or bugs • Wiper blades • Damaged windshield glass • Multifunction switch • Rain sensor	• GO to Pinpoint Test E .
• The windshield wipers do not park at the correct position	• Wiper mounting arm and pivot shaft • Wiper motor	• GO to Pinpoint Test F .
• The washer pump is inoperative or always on - vehicles not equipped with front video camera	• Wiring, terminals or connectors • Washer pump • Multifunction switch • Wiper motor • SCCM	• GO to Pinpoint Test G .
• The washer pump is inoperative or always on - vehicles equipped with front video camera	• Wiring, terminals or connectors • Washer pump • Multifunction switch • Wiper motor • Front camera washer relay	• GO to Pinpoint Test H .

Pinpoint Tests

Pinpoint Test A: The Windshield Wipers Are Inoperative

Refer to Wiring Diagrams Cell 81 , Wipers and Washers for schematic and connector information.

Normal Operation

The wiper relay (located in the Battery Junction Box (BJB)) is energized when the ignition is ON. The wiper relay provides voltage to the wiper motor. The multifunction switch is mounted to the Steering Column Control Module (SCCM). The SCCM commands the wiper motor to activate the appropriate wash, low, high and intermittent modes through a Local Interconnect Network (LIN).

When the multifunction switch is in the HIGH position, the wiper motor receives ground which is hardwired directly through the SCCM (bypassing the logic within the SCCM and the wiper motor). This fail-safe circuit makes sure that the wipers function in HIGH speed mode in the event of a LIN communication failure.

This pinpoint test is intended to diagnose the following:

- Fuse
- Wiring, terminals or connectors
- Wiper relay
- Multifunction switch
- Wiper motor
- SCCM

PINPOINT TEST A: ALL WINDSHIELD WIPER MODES ARE INOPERATIVE

NOTICE: **Use the correct probe adapter(s) from the Flex Probe Kit when making measurements. Failure to use the correct probe adapter(s) may damage the connector.**

<table>
<tr><th>Test Step</th><th>Result / Action to Take</th></tr>
<tr><td>A1 CHECK THE WIPER RELAY

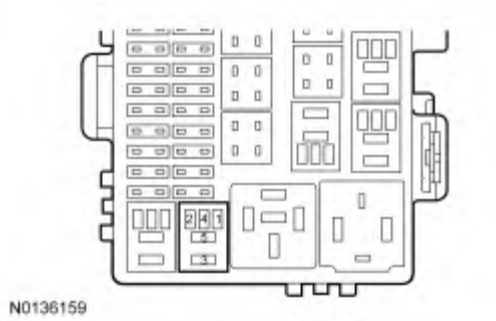
• Disconnect: Wiper Relay .
• Substitute a known good relay and recheck the windshield wiper motor operation.
• Do the wipers operate?</td><td>Yes
REMOVE the known good relay. INSTALL a new wiper relay.

No
REMOVE the known good relay. GO to A2 .</td></tr>
<tr><td>A2 CHECK THE BATTERY SUPPLIED VOLTAGE CIRCUIT TO THE WIPER RELAY FOR AN OPEN

• Ignition OFF.
• Measure the voltage between:

<table>
<tr><th colspan="2">Positive Lead</th><th colspan="2">Negative Lead</th></tr>
<tr><th>Pin</th><th>Circuit</th><th>Pin</th><th>Circuit</th></tr>
<tr><td>Wiper relay pin 3</td><td>SBB49 (RD)</td><td>—</td><td>Ground</td></tr>
</table>
</td><td>Yes
GO to A3 .

No
VERIFY the BJB fuse 49 (30A) is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.</td></tr>
</table>

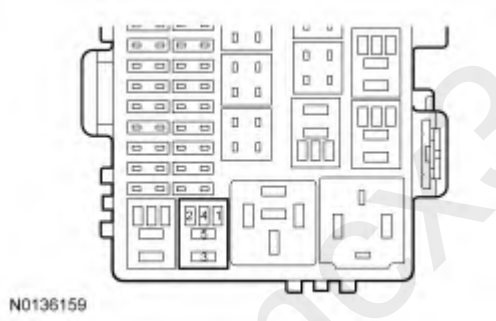


- **Is the voltage greater than 11 volts?**

A3 CHECK THE IGNITION SUPPLIED VOLTAGE CIRCUIT TO THE WIPER RELAY FOR AN OPEN

- Ignition ON.
- Measure the **voltage** between:

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
Wiper relay pin 1	CDC64 (WH/BU)	—	Ground



- **Is the voltage greater than 11 volts?**

Yes
GO to A4 .

No
REPAIR the circuit.

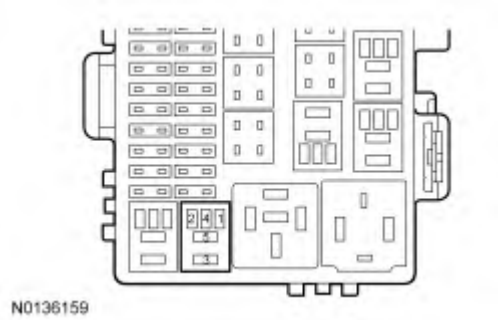
A4 CHECK THE WIPER RELAY COIL GROUND CIRCUIT FOR AN OPEN

- Measure the **voltage** between:

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
Wiper relay pin 1	CDC64 (WH/BU)	Wiper relay pin 2	GD123 (BK/GY)

Yes
GO to A5 .

No
REPAIR the circuit.

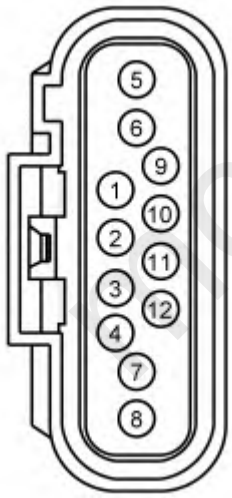


- **Is the voltage greater than 11 volts?**

A5 CHECK THE WINDSHIELD WIPER MOTOR VOLTAGE SUPPLY CIRCUIT FOR AN OPEN

- Ignition OFF.
- Connect: Wiper Relay .
- Disconnect: Windshield Wiper Motor C125 .
- Ignition ON.
- Measure the **voltage** between:

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C125-8	CRW03 (VT/WH)	—	Ground



- **Is the voltage greater than 11 volts?**

Yes
GO to A6 .

No
REPAIR the circuit.

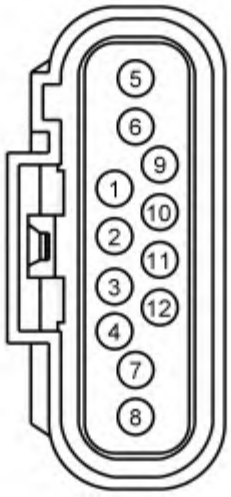
A6 CHECK THE WINDSHIELD WIPER MOTOR GROUND CIRCUIT FOR AN OPEN

- Measure the **voltage** between:

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C125-8	CRW03 (VT/WH)	C125-6	GD120 (BK/GN)

Yes
GO to A7 .

No
REPAIR the circuit.

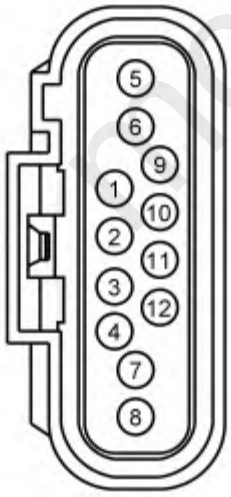


- **Is the voltage greater than 11 volts?**

A7 CHECK THE FAIL-SAFE HIGH SPEED WIPER GROUND CIRCUIT CONTROL

- Ignition OFF.
- Place the multifunction switch to the high speed setting.
- Measure the **resistance** between:

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C125-1	CRW15 (BN/WH)	—	Ground



- **Is the resistance less than 3 ohms?**

Yes
INSTALL a new windshield wiper motor. REFER to Wiper Motor .

No
GO to A8 .

A8 CHECK THE FAIL-SAFE HIGH SPEED WIPER GROUND CIRCUIT FOR AN OPEN

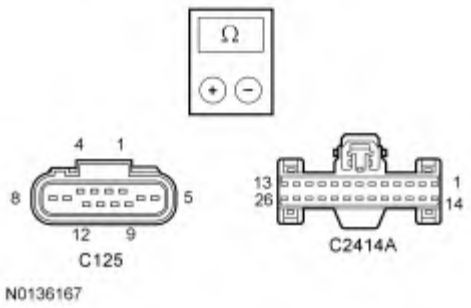
NOTE: If steps A1-A7 did not identify the cause of the concern, a double fault is present. After the fail-safe ground is diagnosed and repaired, it is necessary check all operation modes and diagnose any symptom still

Yes
INSTALL a new multifunction switch. REFER to Section 211-05 . TEST the system for normal operation. If

present.

- Disconnect: SCCM C2414A .
- Measure the **resistance** between:

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C125-1	CRW15 (BN/WH)	C2414A-12	CRW15 (BN/WH)



- **Is the resistance less than 3 ohms?**

Yes
the concern is still present, GO to A9 .

No
REPAIR the circuit.

A9 CHECK FOR CORRECT SCCM OPERATION

- Disconnect and inspect all SCCM connectors.
- Repair:
  - corrosion (install new connector or terminals – clean module pins)
  - damaged or bent pins – install new terminals/pins
  - pushed-out pins – install new pins as necessary
- Reconnect the SCCM connectors. Make sure they seat and latch correctly.
- Operate the system and determine if the concern is still present.
- **Is the concern still present?**

Yes
CHECK On-Line Automotive Service Information System (OASIS) for any applicable TSBs . If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no TSBs address this concern, INSTALL a new SCCM . REFER to Section 211-05 .

No
The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

Pinpoint Test B: The Intermittent And/Or Low Speed Windshield Wipers Are Inoperative

Refer to Wiring Diagrams Cell 81 , Wipers and Washers for schematic and connector information.

Normal Operation

The wiper relay (located in the Battery Junction Box (BJB)) is energized when the ignition is ON. The wiper relay provides voltage to the wiper motor. The multifunction switch is mounted to the Steering Column Control Module (SCCM). The SCCM commands the wiper motor to activate the appropriate wash, low, high and intermittent modes through a Local Interconnect Network (LIN).

When the multifunction switch is in the HIGH position, the wiper motor receives ground which is hardwired

directly through the SCCM (bypassing the logic within the SCCM and the wiper motor). This fail-safe circuit makes sure that the wipers function in HIGH speed mode in the event of a LIN communication failure.

- DTC B1131:02 (Wiper Motor Module: General Signal Failure) — Sets when the SCCM detects a general signal failure occurs on the LIN .
- DTC B1131:08 (Wiper Motor Module: Bus Signal / Message Failure) — Sets when the SCCM loses communication with the windshield wiper motor over the LIN .

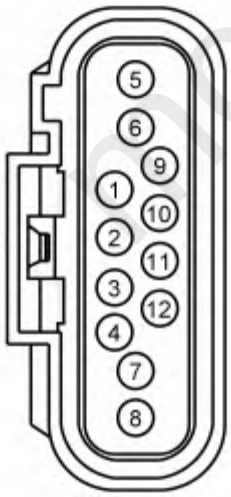
This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- Multifunction switch
- Windshield wiper motor
- Rain sensor (if equipped)
- SCCM

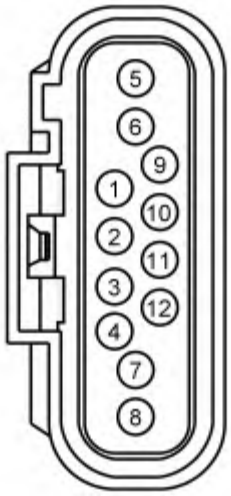
PINPOINT TEST B: THE INTERMITTENT AND/OR LOW SPEED WINDSHIELD WIPERS ARE INOPERATIVE

NOTICE: **Use the correct probe adapter(s) from the Flex Probe Kit when making measurements. Failure to use the correct probe adapter(s) may damage the connector.**

Test Step	Result / Action to Take
B1 CHECK FOR SCCM DTC B1131:02 OR DTC B1131:08	
• Ignition ON. • Using a scan tool, perform the SCCM self-test. • **Is DTC B1131:02 or DTC B1131:08 present?**	**Yes** GO to B4 . **No** GO to B2 .
B2 CHECK THE LOW SPEED WINDSHIELD WIPER OPERATION	
• Place the multifunction switch to the low speed setting and observe the windshield wipers. Place the multifunction switch to the off setting. • **Do the windshield wipers operate with the multifunction switch in the low speed setting?**	**Yes** If not equipped with a rain sensor, GO to Pinpoint Test D . If equipped with a rain sensor, GO to Pinpoint Test E . **No** GO to B3 .
B3 CHECK THE MULTIFUNCTION SWITCH LOW SPEED SETTING INPUT	
• Using a scan tool, monitor the SCCM F_WIP_SLO_SW PID. • Place the multifunction switch to the low speed setting. • **Does the PID indicate the multifunction switch is in the low speed setting?**	**Yes** INSTALL a new windshield wiper motor. REFER to Wiper Motor . **No** INSTALL a new multifunction switch. REFER to Section 211-05 . TEST the system for normal operation. If the concern is still present, INSTALL a new SCCM . REFER to Section 211-05 .

B4 CHECK THE HIGH SPEED WIPER OPERATION	
• Place the multifunction switch to the high speed setting and observe the windshield wipers. Place the multifunction switch to the off setting. • **Do the windshield wipers operate with the multifunction switch in the high speed setting?**	**Yes** If equipped with a rain sensor, GO to B5 . If not equipped with a rain sensor, GO to B6 . **No** GO to Pinpoint Test A .
B5 ISOLATE THE RAIN SENSOR	
• Ignition OFF. • Disconnect: Rain Sensor C914 . • Ignition ON. • **NOTE:** DTC B10AD:02 or DTC B10AD:08 may set and should be ignored. • Using a scan tool, clear the DTCs and then perform the SCCM self-test. • **Is DTC B1131:02 or DTC B1131:08 still present?**	**Yes** GO to B6 . **No** INSTALL a new rain sensor. REFER to Rain Sensor .
B6 CHECK THE WINDSHIELD WIPER MOTOR LOGIC GROUND CIRCUIT FOR AN OPEN	
• Ignition OFF. • Disconnect: Windshield Wiper Motor C125 . • Measure the **resistance** between: Positive Lead: Pin C125-3, Circuit GD120 (BK/GN) — Negative Lead: Pin —, Circuit Ground  • **Is the resistance less than 3 ohms?**	**Yes** GO to B7 . **No** REPAIR the circuit.
B7 CHECK THE LIN CIRCUIT FOR A SHORT TO VOLTAGE	
• Disconnect: SCCM C2414A . • Ignition ON. • Measure the **voltage** between:	**Yes** REPAIR the circuit. **No** GO to B8 .

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C125-4	VDN05 (YE/GY)	—	Ground

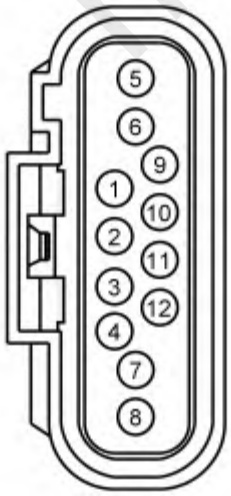


- **Is any voltage present?**

B8 CHECK THE LIN CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Measure the **resistance** between:

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C125-4	VDN05 (YE/GY)	—	Ground

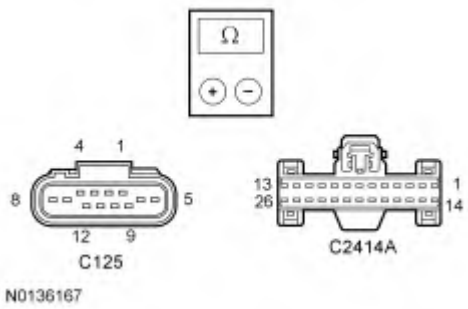


- **Is the resistance greater than 10,000 ohms?**

Yes
GO to B9.

No
REPAIR the circuit.

B9 CHECK THE LIN CIRCUIT FOR AN OPEN

• Measure the **resistance** between: Positive Lead: Pin C125-4, Circuit VDN05 (YE/GY) Negative Lead: Pin C2414A-20, Circuit VDN05 (YE/GY)  • **Is the resistance less than 3 ohms?**	**Yes** INSTALL a new windshield wiper motor. REFER to Wiper Motor . TEST the system for normal operation. If the concern is still present, GO to B10 . **No** REPAIR the circuit.
B10 CHECK FOR CORRECT SCCM OPERATION • Disconnect and inspect all SCCM connectors. • Repair: ▪ corrosion (install new connector or terminals – clean module pins) ▪ damaged or bent pins – install new terminals/pins ▪ pushed-out pins – install new pins as necessary • Reconnect the SCCM connectors. Make sure they seat and latch correctly. • Operate the system and determine if the concern is still present. • **Is the concern still present?**	**Yes** CHECK On-Line Automotive Service Information System (OASIS) for any applicable TSBs . If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no TSBs address this concern, INSTALL a new SCCM . REFER to Section 211-05 . **No** The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

Pinpoint Test C: The Windshield Wipers Stay On Continuously

Refer to Wiring Diagrams Cell 81 , Wipers and Washers for schematic and connector information.

Normal Operation

The wiper relay (located in the Battery Junction Box (BJB)) is energized when the ignition is ON. The wiper relay provides voltage to the wiper motor. The multifunction switch is mounted to the Steering Column Control Module (SCCM). The SCCM commands the wiper motor to activate the appropriate wash, low, high and intermittent modes through a Local Interconnect Network (LIN).

When the multifunction switch is in the HIGH position, the wiper motor receives ground which is hardwired directly through the SCCM (bypassing the logic within the SCCM and the wiper motor). This fail-safe circuit makes sure that the wipers function in HIGH speed mode in the event of a LIN communication failure.

This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- Wiper relay
- Multifunction switch
- Wiper motor
- SCCM

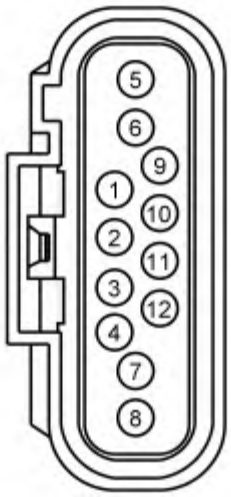
PINPOINT TEST C: THE WINDSHIELD WIPERS STAY ON CONTINUOUSLY

NOTICE: **Use the correct probe adapter(s) from the Flex Probe Kit when making measurements. Failure to use the correct probe adapter(s) may damage the connector.**

Test Step	Result / Action to Take
C1 CHECK THE WINDSHIELD WIPER OPERATION WITH THE IGNITION OFF	
• Ignition OFF. • Observe the windshield wiper operation. • **Are the windshield wipers operating?**	**Yes** GO to C2 . **No** GO to C3 .
C2 CHECK THE WIPER RELAY OUTPUT CIRCUIT FOR A SHORT TO VOLTAGE	
• Disconnect: Wiper Relay . • Observe the windshield wiper operation. • **Do the windshield wipers continue to operate?**	**Yes** REPAIR the circuit. **No** INSTALL a new wiper relay.
C3 CHECK THE MULTIFUNCTION SWITCH INPUT	

• Ignition ON.
• Make sure the multifunction switch is in the off setting.
• Using a scan tool, monitor the SCCM multifunction switch PIDs:
  • F_WASH_SW
  • F_WIP_INT_D1
  • F_WIP_INT_D2
  • F_WIP_INT_D3
  • F_WIP_INT_D4
  • F_WIP_INT_D5
  • F_WIP_SLO_SW
  • F_WIPE_FAST_SW
• **Are all of the PIDs displayed as OFF?**
	Yes
	GO to C4 .
	
	No
	INSTALL a new multifunction switch. REFER to Section 211-05 .
	
	If the concern is still present, INSTALL a new SCCM . REFER to Section 211-05 . TEST the system for normal operation.

C4 CHECK THE WINDSHIELD WIPER OPERATION WITH THE SCCM DISCONNECTED	
• Ignition OFF. • Disconnect: SCCM C2414A . • Ignition ON. • Observe the windshield wiper operation. • **Do the windshield wipers continue to operate?**	**Yes** GO to C5 . **No** INSTALL a new multifunction switch. REFER to Section 211-05 . TEST the system for normal operation. If the concern is still present, GO to C6 .

C5 CHECK THE HIGH SPEED FAIL-SAFE CIRCUIT FOR A SHORT TO GROUND	
• Ignition OFF. • Disconnect: Windshield Wiper Motor C125 . • Measure the **resistance** between: Positive Lead: Pin C125-1, Circuit CRW15 (BN/WH); Negative Lead: Pin —, Circuit Ground  • **Is the resistance greater than 10,000 ohms?**	**Yes** INSTALL a new windshield wiper motor. REFER to Wiper Motor . **No** REPAIR the circuit.
C6 CHECK FOR CORRECT SCCM OPERATION	
• Disconnect and inspect all SCCM connectors. • Repair: ▪ corrosion (install new connector or terminals – clean module pins) ▪ damaged or bent pins – install new terminals/pins ▪ pushed-out pins – install new pins as necessary • Reconnect the SCCM connectors. Make sure they seat and latch correctly. • Operate the system and determine if the concern is still present. • **Is the concern still present?**	**Yes** CHECK On-Line Automotive Service Information System (OASIS) for any applicable TSBs . If a TSB exists for this concern, DISCONTINUE this test and FOLLOW TSB instructions. If no TSBs address this concern, INSTALL a new SCCM . REFER to Section 211-05 . **No** The system is operating correctly at this time. The concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

Pinpoint Test D: The Windshield Wipers Do Not Operate Correctly In The Intermittent Mode

Normal Operation

The wiper relay (located in the Battery Junction Box (BJB)) is energized when the ignition is ON. The wiper relay provides voltage to the wiper motor. The multifunction switch is mounted to the Steering Column Control Module (SCCM). The SCCM commands the wiper motor to activate the appropriate wash, low, high and intermittent modes through a Local Interconnect Network (LIN).

This pinpoint test is intended to diagnose the following:

- Multifunction switch
- Windshield wiper motor
- SCCM

PINPOINT TEST D: THE WINDSHIELD WIPERS DO NOT OPERATE CORRECTLY IN THE INTERMITTENT MODE

Test Step	Result / Action to Take
D1 VERIFY IF THE VEHICLE IS EQUIPPED WITH A RAIN SENSOR	
• Inspect the vehicle for a rain sensor. • **Is the vehicle equipped with a rain sensor?**	**Yes** GO to D2. **No** GO to D3.
D2 VERIFY THE RAIN SENSITIVE WIPER FEATURE IS DISABLED IN THE VEHICLE MESSAGE CENTER	
• Ignition ON. • Access the vehicle settings in the message center using the steering wheel controls and check the rain sensitive feature setting. • **Is the rain sensitive feature enabled?**	**Yes** GO to Pinpoint Test E. **No** GO to D3.
D3 CHECK THE LOW SPEED WIPER OPERATION	
• Ignition ON. • Place the multifunction switch to the low speed setting and observe the windshield wipers. Place the multifunction switch to the off setting. • **Do the low speed wipers operate when the low speed setting is selected?**	**Yes** GO to D4. **No** GO to Pinpoint Test B.
D4 CHECK THE INPUT FROM THE MULTIFUNCTION SWITCH	

• Using a scan tool, monitor the SCCM multifunction switch PIDs:
  • F_WIP_INT_D1
  • F_WIP_INT_D2
  • F_WIP_INT_D3
  • F_WIP_INT_D4
  • F_WIP_INT_D5
• Cycle the multifunction switch from off through each of the intermittent settings.
• **Do the PIDs correspond correctly with each setting selection?**
	Yes
	INSTALL a new windshield wiper motor. REFER to Wiper Motor.
	
	No
	INSTALL a new multifunction switch. REFER to Section 211-05. TEST the system for normal operation. If the concern is still present, INSTALL a new SCCM. REFER to Section 211-05.

Pinpoint Test E: The Rain Sensitive Wiper Feature Is Inoperative

Refer to Wiring Diagrams Cell 81, Wipers and Washers for schematic and connector information.

Normal Operation

The rain sensitive wiper feature replaces the intermittent wiper feature. The rain sensitive feature is active when the multifunction switch is in any of the 5 auto/intermittent sensitivity settings. The setting closest to OFF is the least sensitive to moisture, the highest setting being the most sensitive to moisture.

The rain sensor sends data through the LIN to the windshield wiper motor. When the rain sensitive wiper feature is enabled, based on the data received from the rain sensor and the auto/intermittent setting on the multifunction switch, the system automatically activates and adjusts the wiper speed and frequency when moisture is detected on the windshield.

The rain sensor optically senses water on the windshield. An infrared beam lights a section of the windshield. The intensity of the reflected beam is measured and compared to the intensity of the transmitted beam. If there is water on the surface of the windshield, the beam distorts, reducing the intensity of the beam. If the beam is not reflected completely, it is interpreted as rain on the windshield and the windshield wipers are activated.

A gel-type lens is used as the interface between the rain sensor and the windshield. If the lens is missing or damaged, the rain sensing wipers can be inoperative. The rain sensor gel-type lens is part of the rain sensor and cannot be replaced separately on a rain sensor of this type.

The rain sensitive wiper feature can be enabled/disabled through the message center.

When the rain sensitive wipers are disabled from the message center, or the windshield wiper motor detects a fault with the rain sensor input, the windshield wiper motor changes to a default intermittent mode. The timing of the wipers correspond to a standard intermittent setting based on the auto/intermittent sensitivity setting on the multifunction switch.

- B10AD:02 (Rain Sensor: General Signal Failure) — This DTC sets when the SCCM determines a general signal failure has occurred on the LIN .
- B10AD:08 (Rain Sensor: Bus Signal / Message Failure) — This DTC sets when the SCCM determines a communication error has occurred on the LIN . If the rain sensitive wipers are inoperative only, this DTC may be caused by an open in the rain sensor power or ground circuit or an open in the LIN circuit.

This pinpoint test is intended to diagnose the following:

- Fuse
- Wiring, terminals or connectors
- Rain sensitive feature not enabled
- Foreign material on windshield, such as dirt, dust or bugs
- Wiper blades
- Windshield glass
- Multifunction switch
- Windshield wiper motor
- Rain sensor
- SCCM

PINPOINT TEST E: THE RAIN SENSITIVE WIPER FEATURE IS INOPERATIVE

Test Step	Result / Action to Take
E1 CHECK THE LOW SPEED WIPER OPERATION	

NOTICE: **Use the correct probe adapter(s) from the Flex Probe Kit when making measurements. Failure to use the correct probe adapter(s) may damage the connector.** • Ignition ON. • Place the multifunction switch to the low speed setting and observe the windshield wipers. Place the multifunction switch to the off setting. • **Do the low speed wipers operate when the low speed setting is selected?**	**Yes** GO to E2. **No** GO to Pinpoint Test B.
E2 CHECK FOR DTC B1131:02 OR DTC B1131:08	
• Ignition ON. • Using a scan tool, perform the SCCM self-test. • **Is DTC B1131:02 or DTC B1131:08 present?**	**Yes** GO to Pinpoint Test B. **No** GO to E3.
E3 CHECK FOR DTC B10AD:02 OR DTC B10AD:08	
• Review the results from the SCCM self-test. • **Is DTC B10AD:02 or DTC B10AD:08 present?**	**Yes** GO to E12. **No** GO to E4.
E4 VERIFY THE RAIN SENSITIVE WIPER FEATURE IS ENABLED IN THE VEHICLE MESSAGE CENTER	
• Access the vehicle settings in the message center using the steering wheel controls. Make sure the rain sensitive feature is enabled. • **Is the rain sensitive feature enabled?**	**Yes** GO to E5. **No** ENABLE the rain sensitive feature. INFORM the customer how to enable/disable the rain sensitive feature.
E5 CHECK THE INPUT FROM THE MULTIFUNCTION SWITCH	

• Using a scan tool, monitor the SCCM multifunction switch PIDs:
  • F_WIP_INT_D1
  • F_WIP_INT_D2
  • F_WIP_INT_D3
  • F_WIP_INT_D4
  • F_WIP_INT_D5
• Cycle the multifunction switch from off through each of the auto/intermittent sensitivity settings.
• **Do the PIDs correspond correctly with each setting selection?**
	Yes
	GO to E6.
	
	No
	INSTALL a new multifunction switch. REFER to Section 211-05. TEST the system for normal operation. If the concern is still present, INSTALL a new SCCM. REFER to Section 211-05.

E6 CHECK THE WINDSHIELD FOR DAMAGE	
• Ignition OFF. • Inspect the windshield glass for any cracks, pits or other visible damage around the area of the rain sensor. • **Is any windshield damage present near the area of the rain sensor?**	**Yes** INSTALL a new windshield. REFER to Section 501-11. **No** GO to E7.
E7 CHECK THE WINDSHIELD GLASS FOR STREAKING	
• Ignition ON.	**Yes**

• Turn the multifunction switch to the low speed wiper setting and while applying water to the windshield surface. Observe the wipe quality, especially around the area or the rain sensor. • **Is any streaking present on the windshield around the area of the rain sensor?**	GO to E8 . **No** GO to E10 .
E8 CHECK THE WINDSHIELD WIPER BLADES FOR STREAKING	
• Ignition OFF. • Clean the windshield glass with glass cleaner. • Clean the wiper blades with isopropyl alcohol swabs. Wipe the entire length of the wiper blades. • Ignition ON. • Place the multifunction switch to the low speed wiper setting and while applying water to the windshield surface. Observe the wipe quality, especially around the area or the rain sensor. • **Was there noticeable improvement in the wipe quality after cleaning the glass and the wiper blades?**	**Yes** GO to E9 . **No** INSTALL new wiper blades. GO to E9 .
E9 RECHECK THE RAIN SENSITIVE WIPERS OPERATION	
• Place the multifunction switch to the auto/intermittent 5 setting (most sensitive to moisture) while applying water on the windshield above the rain sensor. • **Do the wipers operate when water is applied to the windshield surface?**	**Yes** The system is operating correctly at this time. The concern may have been caused by poor wipe quality on the windshield around the rain sensor. **No** GO to E10 .
E10 CHECK FOR THE PRESENCE OF THE LENS GEL	
• Ignition OFF. • Lightly press the rain sensor against the windshield and release the rain sensor clips. • **Does the rain sensor remain adhered to the windshield?**	**Yes** ATTACH the retaining clips. GO to E11 . **No** The sensor gel-type lens is missing or damaged. INSTALL a new rain sensor. REFER to Rain Sensor .
E11 INSPECT THE RAIN SENSOR MOUNTING AREA	
NOTE: The rain sensor gel-type lens can be damaged or contaminated during rain sensor removal, rain sensor bracket separation or incorrect installation. • From the outside of the vehicle, inspect the area of the windshield glass where the rain sensor is mounted. The rain sensor contact area should appear black, with no bubbles, air pockets or contaminants between the windshield glass and the rain sensor. • **Does the rain sensor contact area appear black, with no bubbles, air pockets or contaminants between the windshield glass and the rain sensor?**	**Yes** GO to E12 . **No** REMOVE and INSTALL the rain sensor correctly. REFER to Rain Sensor . TEST the system for normal operation. If the concern is still present, GO to E15 .
E12 CHECK THE RAIN SENSOR VOLTAGE SUPPLY CIRCUIT FOR AN OPEN	
• Ignition OFF.	**Yes**

• Disconnect: Rain Sensor C914 . • Ignition ON. • Measure the **voltage** between: 	Positive Lead		Negative Lead	
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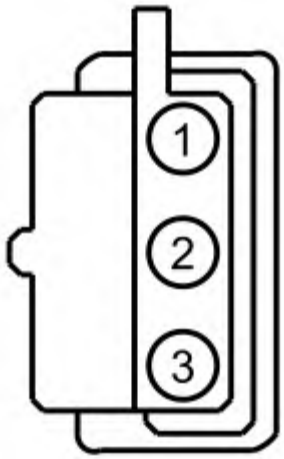
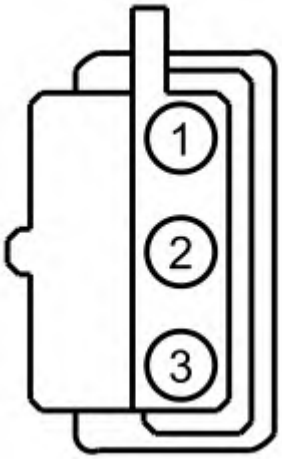
Pin	Circuit	Pin	Circuit
C914-1	SBB79 (YE)	—	Ground	  • **Is the voltage greater than 11 volts?**	GO to E13 . **No** VERIFY BJB fuse 79 (5A) is OK. If OK, REPAIR the circuit. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.
E13 CHECK THE RAIN SENSOR GROUND CIRCUIT FOR AN OPEN • Ignition OFF. • Measure the **resistance** between: 	Positive Lead		Negative Lead	
---	---	---	---
Pin	Circuit	Pin	Circuit
C914-3	GD133 (BK)	—	Ground		**Yes** GO to E14 . **No** REPAIR the circuit.

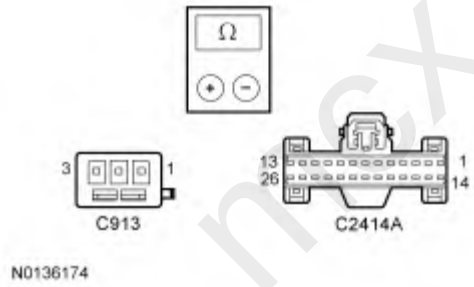


- **Is the resistance less than 3 ohms?**

E14 CHECK THE LIN CIRCUIT FOR AN OPEN

- Disconnect: SCCM C2414B .
- Measure the **resistance** between:

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C914-2	VDN05 (YE/GY)	C2414A-20	VDN05 (YE/GY)



- **Is the resistance less than 3 ohms?**

Yes
GO to E15 .

No
REPAIR the circuit.

E15 CHECK FOR CORRECT RAIN SENSOR OPERATION

- Inspect the rain sensor connector.
- Repair:
  - corrosion (install new connector or terminals – clean module pins)
  - damaged or bent pins – install new terminals/pins
  - pushed-out pins – install new pins as necessary
- Reconnect the rain sensor connector. Make sure it seats and latches correctly.
- Operate the system and determine if the concern is still present.
- **Is the concern still present?**

Yes
INSTALL a new rain sensor. REFER to Rain Sensor . TEST the system for normal operation.

If the concern is still present, INSTALL a new windshield wiper motor. REFER to Wiper Motor .

No
The system is operating correctly at this time. The

	concern may have been caused by module connections. ADDRESS the root cause of any connector or pin issues.

Pinpoint Test F: The Windshield Wipers Do Not Park At The Correct Position

Normal Operation

When the multifunction switch is placed in the OFF position, the motor continues to operate until the motor returns to the PARK position and the internal Hall-effect sensor senses the motor magnet. The output to the integral run/park relay deactivates the relay and disconnects the voltage to the motor.

This pinpoint test is intended to diagnose the following:

- Wiper mounting arm and pivot shaft
- Wiper motor

PINPOINT TEST F: THE WINDSHIELD WIPERS DO NOT PARK AT THE CORRECT POSITION

Test Step	Result / Action to Take
F1 CHECK THE WIPER MOUNTING ARE AND PIVOT SHAFT FOR DAMAGE	
• Ignition OFF. • Inspect the wiper mounting arm and pivot shaft for damage. • **Is the wiper mounting arm and pivot shaft OK?**	**Yes** GO to F2. **No** INSTALL a wiper mounting arm and pivot shaft. REFER to Wiper Mounting Arm and Pivot Shaft.
F2 CHECK THE WINDSHIELD WIPER PARK RELAY OPERATION	
• Ignition ON. • Place the multifunction switch to the low speed setting. When the wiper blades are in the middle of a wipe, place the multifunction switch off. • **Do the windshield wipers immediately stop when the multifunction switch is turned off?**	**Yes** INSTALL a new windshield wiper motor. REFER to Wiper Motor. **No** ADJUST the pivot arms. REFER to Wiper Blade and Pivot Arm Adjustment.

Pinpoint Test G: The Washer Pump Is Inoperative Or Always On - Vehicles Not Equipped With Front Video Camera

Refer to Wiring Diagrams Cell 81, Wipers and Washers for schematic and connector information.

Normal Operation

When the multifunction switch is placed in the WASH position, the Steering Column Control Module (SCCM)

sends the request to the wiper motor over the Local Interconnect Network (LIN). The wiper motor then supplies power to the washer pump, which directs washer fluid to the windshield.

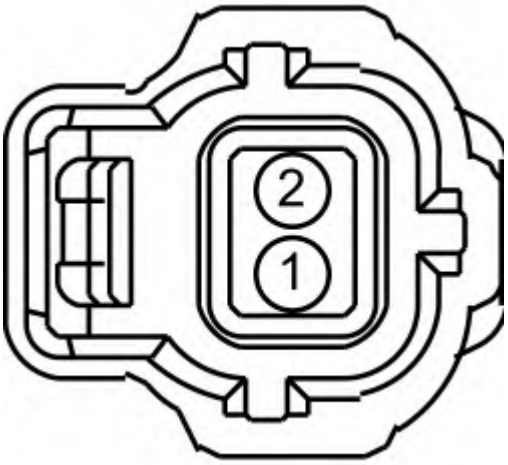
This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- Washer pump
- Windshield wiper motor
- SCCM

PINPOINT TEST G: THE WASHER PUMP IS INOPERATIVE OR ALWAYS ON - VEHICLES NOT EQUIPPED WITH FRONT VIDEO CAMERA

NOTICE: **Use the correct probe adapter(s) from the Flex Probe Kit when making measurements. Failure to use the correct probe adapter(s) may damage the connector.**

Test Step	Result / Action to Take
G1 CHECK THE MULTIFUNCTION SWITCH INPUT	
• Ignition ON. • Using a scan tool, monitor the SCCM F_WASH_SW PID. • Press and release the washer switch on the multifunction switch. • **Does the PID indicate correctly when the switch pressed and released?**	**Yes** If the washer pump is always on, GO to G2. If the washer pump is inoperative, GO to G3. **No** INSTALL a new multifunction switch. REFER to Section 211-05. If the concern is still present, INSTALL a new SCCM. REFER to Section 211-05.
G2 CHECK THE WASHER PUMP SUPPLY CIRCUIT FOR A SHORT TO VOLTAGE	
• Ignition OFF. • Disconnect: Windshield Wiper Motor C125. • Ignition ON. • **Does the washer pump continue to operate?**	**Yes** REPAIR the circuit. **No** INSTALL a new windshield wiper motor. REFER to Wiper Motor.
G3 CHECK THE WASHER PUMP CONTROL CIRCUIT INTEGRITY	
• Ignition OFF. • Disconnect: Washer Pump C137. • Connect a **test light** between: Pin — Positive battery post Pin C137-1 — Circuit CRW14 (BU/WH)	**Yes** GO to G5. **No** GO to G4.

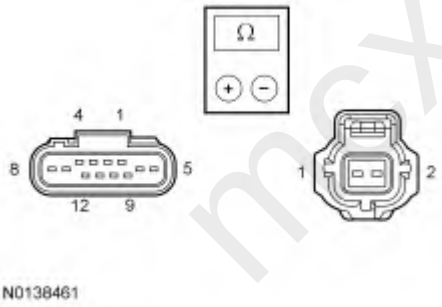


- **Does the test light illuminate?**

G4 CHECK THE WASHER PUMP CONTROL CIRCUIT FOR AN OPEN

- Measure the **resistance** between:

Positive Lead		Negative Lead	
Pin	Circuit	Pin	Circuit
C125-7	CRW14 (BU/WH)	C137-1	CRW14 (BU/WH)



N0138461

- **Is the resistance less than 3 ohms?**

Yes
INSTALL a new windshield wiper motor. REFER to Wiper Motor .

No
REPAIR the circuit.

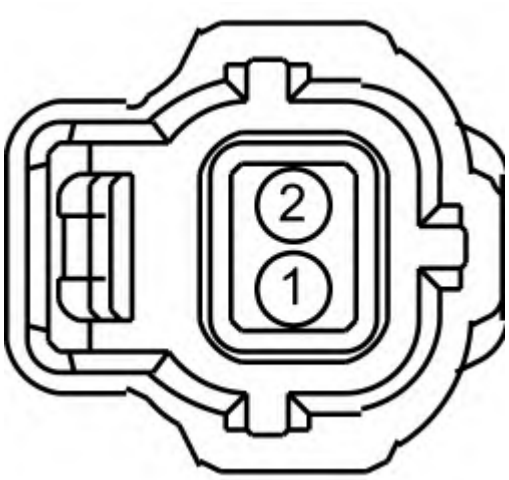
G5 CHECK THE WASHER PUMP GROUND CIRCUIT FOR AN OPEN

- Connect a **test light** between:

Pin	Circuit	Pin	Circuit
—	Positive battery post	C137-2	GD120 (BK/GN)

Yes
INSTALL a new washer pump. REFER to Washer Pump .

No
REPAIR the circuit.

 • **Does the test light illuminate?**	

Pinpoint Test H: The Washer Pump is Inoperative Or Always On — Vehicles Equipped With Front Video Camera

Refer to Wiring Diagrams Cell 81 , Wipers and Washers for schematic and connector information.

Normal Operation

When the multifunction switch is placed in the WASH position, the Steering Column Control Module (SCCM) sends the request to the windshield wiper motor through the Local Interconnect Network (LIN). The wiper motor then supplies power to the washer pump, which directs washer fluid to the windshield. When the front camera washer control is activated, the Steering Column Control Module (SCCM) sends the request to the windshield wiper motor through the Local Interconnect Network (LIN). The windshield wiper motor controls the direction of the washer pump to direct washer fluid to the front video camera.

When a windshield wash is requested, the windshield wiper motor supplies voltage to the washer pump. Ground is provided to the washer pump through the normally closed contact in the front camera washer relay (located in the auxiliary BJB).

When a front camera wash is requested, the windshield wiper motor activates the front camera washer relay. When the front camera washer relay is energized, it provides voltage to the washer pump. Ground is provided to the washer pump through the windshield wiper motor.

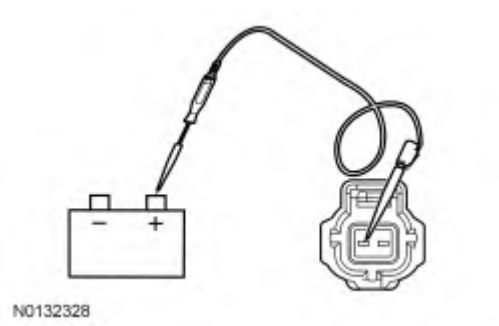
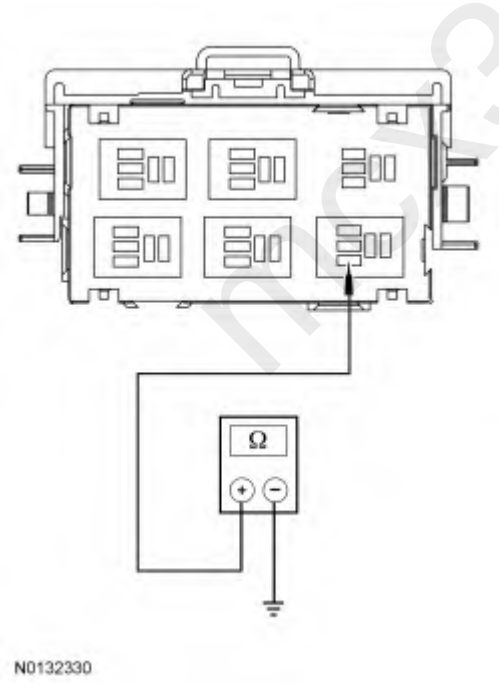
This pinpoint test is intended to diagnose the following:

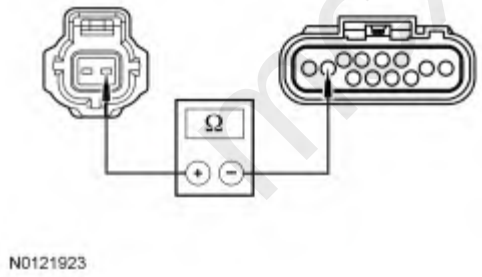
- Fuse
- Front camera washer relay
- SCCM
- Washer pump
- Wiring, terminals or connectors
- Multifunction switch
- Windshield wiper motor

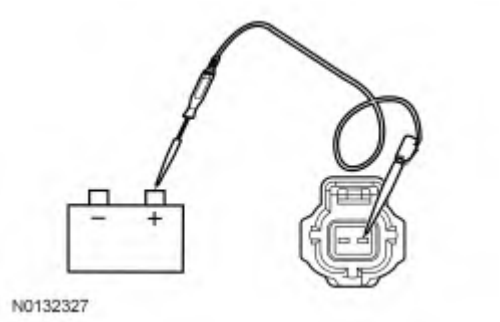
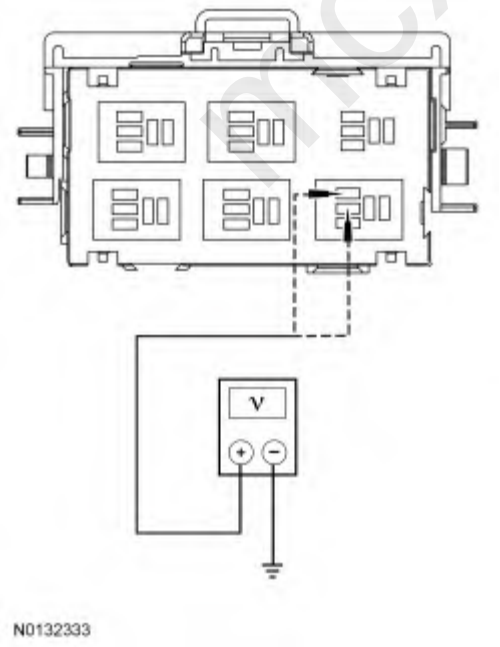
PINPOINT TEST H: THE WASHER PUMP IS INOPERATIVE OR ALWAYS ON — VEHICLES EQUIPPED WITH FRONT VIDEO CAMERA

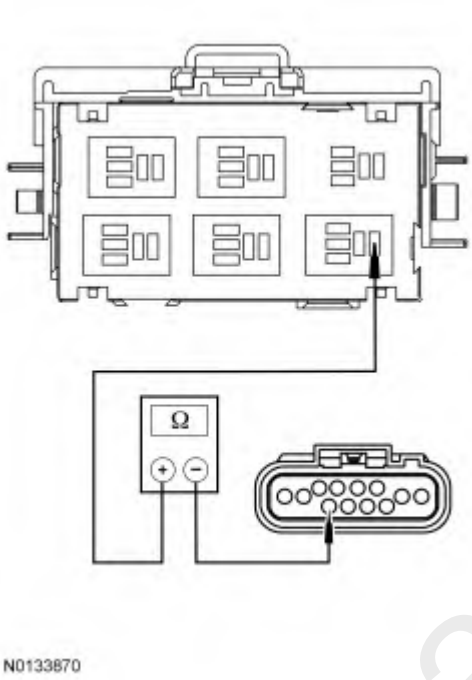
NOTICE: **Use the correct probe adapter(s) from the Flex Probe Kit when making measurements. Failure to use the correct probe adapter(s) may damage the connector.**

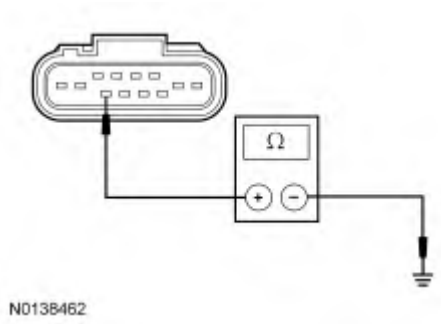
Test Step	Result / Action to Take
H1 CHECK THE MULTIFUNCTION SWITCH (F_WASH_SW) AND (F_CAMRA_WASHSW) PIDs	
• Ignition ON. • Enter the following diagnostic mode on the scan tool: DataLogger — SCCM. • While monitoring the SCCM F_WASH_SW PID, place the multifunction switch into the windshield wiper WASH position. • While monitoring the SCCM F_CAMRA_WASHSW PID, rotate the front camera washer control to the WASH position. • **Do each of the PIDs change to the ON state when the multifunction switch and front camera washer control are in the applicable WASH positions?**	**Yes** If a washer function is inoperative, GO to H2. If the windshield washer function is always on, GO to H12. If the front camera washer function is always on, GO to H13. **No** INSTALL a new multifunction switch. REFER to section Section 211-05. TEST the system for normal operation. If the concern is still present, INSTALL a new SCCM. REFER to Section 211-05. TEST the system for normal operation.
H2 CHECK THE WINDSHIELD WASH FUNCTION	
• Ignition ON. • Attempt to operate the windshield wash function. • **Does the washer pump operate in the windshield WASH position?**	**Yes** GO to H8. **No** GO to H3.
H3 CHECK THE WASHER PUMP CONTROL CIRCUIT FOR AN OPEN	
NOTICE: **The following step uses a test light to simulate normal circuit loads. Use only the test light recommended in the Special Tools table at the beginning of this section. To avoid connector terminal damage, use the Flex Probe Kit for the test light probe connection to the vehicle. Do not use the test light probe directly on any connector.** • Ignition OFF. • Disconnect: Washer Pump Motor C137 . • Connect a 12-volt incandescent test light between the positive battery post and the washer pump motor C137-1, circuit CRW24 (BU/WH), harness side.	**Yes** GO to H6. **No** GO to H4.

 N0132328 • **Does the test light illuminate?**	
H4 CHECK THE FRONT CAMERA WASHER RELAY (WINDSHIELD WASH)	
• Disconnect: Front Camera Washer Relay . • Carry out the front camera washer relay component test. Refer to Wiring Diagrams Cell 149 for component testing. • **Did the front camera washer relay pass the component test?**	**Yes** GO to H5 . **No** INSTALL a new front camera washer relay. TEST the system for normal operation.
H5 CHECK THE FRONT CAMERA WASHER RELAY GROUND CIRCUIT FOR AN OPEN	
• Measure the resistance between the camera washer relay socket pin 4, circuit GD120 (BK/GN) and ground.  N0132330 • **Is the resistance less than 3 ohms?**	**Yes** REPAIR circuit CRW24 (BU/WH) for an open. TEST the system for normal operation. **No** REPAIR circuit GD120 (BK/GN) for an open. TEST the system for normal operation.
H6 CHECK THE WASHER PUMP CONTROL CIRCUIT FOR AN OPEN	
NOTICE: **The following step uses a test light to simulate normal circuit loads. Use only the test light recommended in**	**Yes** INSTALL a new washer pump. REFER to Washer

the Special Tools table at the beginning of this section. To avoid connector terminal damage, use the Flex Probe Kit for the test light probe connection to the vehicle. Do not use the test light probe directly on any connector. • Ignition ON. • Connect a 12-volt incandescent test light between the washer pump motor C137-1, circuit CRW24 (BU/WH), harness side and the washer pump motor C137-2, circuit CRW14 (GY), harness side.  N0119238 • Observe the test light while placing the multifunction switch into the windshield WASH position. • **Does the test light illuminate when WASH is selected?**	Pump in this section. TEST the system for normal operation. **No** GO to H7 .
H7 CHECK THE WASHER PUMP CONTROL CIRCUIT FOR AN OPEN	
• Ignition OFF. • Disconnect: Windshield Wiper Motor C125 . • Measure the resistance between the washer pump C137-2, circuit CRW14 (GY), harness side and the windshield wiper motor C125-7, circuit CRW14 (GY), harness side.  N0121923 • **Is the resistance less than 3 ohms?**	**Yes** INSTALL a new windshield wiper motor. REFER to Wiper Motor in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
H8 CHECK THE WINDSHIELD WIPER MOTOR FOR AN INTERNAL OPEN	
***NOTICE:* The following step uses a test light to simulate normal circuit loads. Use only the test light recommended in the Special Tools table at the beginning of this section. To avoid connector terminal damage, use the Flex Probe Kit for the test light probe connection to the vehicle. Do not use the test light probe directly on any connector.** • Ignition OFF. • Disconnect: Washer Pump Motor C137 . • Connect a 12-volt incandescent test light between the positive battery post and the washer pump motor C137-2, circuit CRW14	**Yes** GO to H9 . **No** INSTALL a new windshield wiper motor. REFER to Wiper Motor in this section. TEST the system for normal operation.

(GY), harness side.  N0132327 • **Does the test light illuminate?**	
H9 CHECK THE FRONT CAMERA WASHER RELAY (INOPERATIVE)	
• Disconnect: Front Camera Washer Relay . • Carry out the front camera washer relay component test. Refer to Wiring Diagrams Cell 149 for component testing. • **Did the front camera washer relay pass the component test?**	**Yes** GO to H10 . **No** INSTALL a new front camera washer relay. TEST the system for normal operation.
H10 CHECK FOR VOLTAGE TO THE FRONT CAMERA WASHER RELAY	
• Ignition ON. • Measure the voltage between the front camera washer relay socket pin 1, circuit CBB54 (VT/OG) and ground; and between the front camera washer relay socket pin 5, circuit SBB41 (RD) and ground.  N0132333 • **Are the voltages greater than 11?**	**Yes** GO to H11 . **No** VERIFY BJB fuses 41 (15A) and 54 (5A) are OK. If OK, REPAIR the circuit in question. TEST the system for normal operation. If not OK, REFER to the Wiring Diagrams manual to identify the possible causes of the circuit short.

H11 CHECK THE FRONT CAMERA WASHER RELAY CONTROL CIRCUIT FOR AN OPEN	
• Ignition OFF. • Disconnect: Windshield Wiper Motor C125 . • Measure the resistance between the front camera washer relay socket pin 3, circuit CRW34 (BU/BN) and the windshield wiper motor C125-12, circuit CRW34 (BU/BN), harness side.  N0133870 • **Is the resistance less than 3 ohms?**	**Yes** INSTALL a new windshield wiper motor. REFER to Wiper Motor in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
H12 CHECK THE WASHER PUMP SUPPLY CIRCUIT FROM THE WIPER MOTOR FOR A SHORT TO VOLTAGE	
• Ignition OFF. • Disconnect: Windshield Wiper Motor C125 . • Ignition ON. • **Does the washer pump continue to operate?**	**Yes** REPAIR circuit CRW14 (GY) for a short to voltage. TEST the system for normal operation. **No** INSTALL a new windshield wiper motor. REFER to Wiper Motor .
H13 CHECK THE FRONT CAMERA WASHER RELAY OUTPUT CIRCUIT FOR A SHORT TO VOLTAGE	
• Ignition OFF. • Disconnect: Front Camera Washer Relay . • Ignition ON. • **Does the washer pump continue to operate?**	**Yes** REPAIR circuit CRW24 (BU/WH) for a short to voltage. TEST the system for normal operation. **No** GO to H14 .
H14 CHECK THE FRONT CAMERA WASHER RELAY (ALWAYS ON)	

• Ignition OFF. • Carry out the front camera washer relay component test. Refer to Wiring Diagrams Cell 149 for component testing. • **Did the front camera washer relay pass the component test?**	**Yes** GO to H15 . **No** INSTALL a new front camera washer relay. TEST the system for normal operation.
H15 CHECK THE FRONT CAMERA WASHER RELAY CONTROL CIRCUIT FOR A SHORT TO GROUND	
• Disconnect: Windshield Wiper Motor C125 . • Measure the resistance between the windshield wiper motor C125-12, circuit CRW34 (BU/BN), harness side.  N0138462 • **Is the resistance greater than 10,000 ohms?**	**Yes** REPAIR the circuit. TEST the system for normal operation. **No** INSTALL a new windshield wiper motor. REFER to Wiper Motor .