




## Wipers and Washers

### Special Tool(s)

 ST1138-A	Flex Probe Kit 105-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

### Principles of Operation

When the ignition switch is in the RUN or ACCESSORY position, voltage is supplied to the wiper relay coil at the Battery Junction Box (BJB). The wiper relay coil is grounded at all times. Voltage is supplied to the wiper relay switch from BJB fuse 9. When the wiper relay is activated, voltage is supplied to the wiper motor.

### Wiper Activated Headlamps (if equipped with Autolamp System)

**NOTE:** The Smart Junction Box (SJB) may also be identified as the Generic Electronic Module (GEM).

The SJB sends a voltage signal to the wiper motor in order to monitor the status of the wipers. When the headlamp control switch is in the AUTOLAMP position and the wipers on, the SJB will activate the headlamps within 10 seconds. When the SJB detects that the wipers have been turned off, the SJB will turn off the headlamps after 30 seconds.

### High-Speed Windshield Wipers

When the multifunction switch is set to the HIGH-speed position, it supplies ground to the internal high/low-speed relay coil and the internal run/park relay coil, which causes the windshield wiper motor to operate at high speed. During HIGH-speed operation only, both the internal high/low-speed relay coil ground and the internal run/park relay coil ground are controlled directly by the multifunction switch. This differs from LOW-speed or INTERMITTENT operation when the internal run/park relay coil is controlled by the microprocessor. When the 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 internal run/park relay then deactivates the relay and disconnects the voltage to the motor.

Since the internal high/low relay coil and the internal run/park relay coil are both controlled by a hard-wired circuit to the multifunction switch, the windshield wipers will still operate in HIGH-speed mode if the internal windshield wiper module fails, but will not automatically park when the multifunction switch is turned to the OFF position.

### Low-Speed Windshield Wipers

When the multifunction switch is set to the LOW-speed position, it supplies ground to the internal windshield wiper motor module low-speed input and the windshield wiper motor operates at low speed. During LOW-speed operation, the internal run/park relay is activated by the microprocessor and supplies 12 volts to the low-speed brush of the windshield wiper motor. The internal run/park relay coil ground is controlled by the internal windshield wiper motor module based on inputs received from the multifunction switch. When the 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 internal run/park relay then deactivates the relay and disconnects the voltage to the motor.

### Intermittent-Speed Windshield Wipers

When the multifunction switch is set to the INTERMITTENT position(s), it supplies ground to the windshield wiper motor module inputs and the windshield wiper motor operates in intermittent mode. During intermittent operation, the windshield wiper motor activates the internal run/park relay coil which sends voltage through the internal high/low relay. The internal high/low relay remains deactivated, supplying the voltage to the low-speed brush of the windshield wiper motor. The windshield motor continues to operate until the internal

Hall-effect sensor senses the magnet (PARK position) and deactivates the internal run/park relay, which disconnects voltage from the wiper motor. The windshield wipers remain parked until the windshield wiper motor module completes a time-out and then repeats the intermittent windshield wiper cycle.

**Washer System**

The windshield washer system consists of the washer reservoir and washer pump. When WASH is selected on the multifunction switch, the windshield wiper motor module activates its integral washer relay which sends voltage to the washer pump to direct fluid to the windshield.

**Software Safe Mode**

The windshield wiper motor defaults to software safe mode when the run/park sensor does not sense the Hall-effect magnet inside the wiper motor. This can be caused by an obstruction of the windshield wipers, a binding linkage or loss of the Hall sensor signal. The motor continues to operate in a high/low-speed condition, and when turned off, the wipers immediately park on the windshield. If necessary, the wipers can be turned on and off until they return to the PARK position.

**Windshield Wiper Circuit Function Table**

Multifunction Switch Position	Circuit CRW07 (GY/BN)	Circuit CRW08 (VT/OG)	Circuit CRW19 (BU/OG)	Circuit CRW18 (VT/WH)	Circuit CRW17 (GN/VT)
OFF	OPEN	OPEN	OPEN	OPEN	OPEN
INT 1	OPEN	OPEN	OPEN	OPEN	GROUND
INT 2	OPEN	OPEN	OPEN	GROUND	GROUND
INT 3	OPEN	OPEN	OPEN	GROUND	OPEN
INT 4	OPEN	OPEN	GROUND	GROUND	OPEN
INT 5	OPEN	OPEN	GROUND	OPEN	OPEN
LOW	OPEN	OPEN	GROUND	OPEN	GROUND
HIGH	OPEN	GROUND	GROUND	OPEN	GROUND
WASH	GROUND	OPEN/GROUND	OPEN/GROUND	OPEN/GROUND	OPEN/GROUND

**Inspection and Verification**

1. Verify the customer concern.
2. Visually inspect for obvious signs of mechanical or electrical damage.

**Visual Inspection Chart**

Mechanical	Electrical
<ul style="list-style-type: none"> <li>• Windshield washer hoses</li> <li>• Wiper linkage</li> <li>• Multifunction switch</li> </ul>	<ul style="list-style-type: none"> <li>• Battery Junction Box (BJB) fuse 9 (30A)</li> <li>• Smart Junction Box (SJB) fuse 45 (5A)</li> <li>• Circuitry</li> <li>• Windshield wiper motor</li> </ul>

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. **NOTE:** The windshield wiper motor does not communicate on the network. The windshield wiper motor provides wiper on/off status directly to the SJB.

**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 key is in the ON position.
- verify the scan tool operation with a known good vehicle.
- refer to [Section 418-00](#) to diagnose no response from the SJB .

7. Carry out the network test.

- If the scan tool responds with no communication from 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 continuous DTCs and carry out the self-test diagnostics for the SJB .

9. If the DTCs retrieved are related to the concern, go to the Smart Junction Box (SJB) DTC Chart. For all other DTCs, refer to [Section 419-10](#).

10. If no DTCs related to the concern are retrieved, GO to [Symptom Chart](#).

## DTC Chart

### Smart Junction Box (SJB) DTC Chart

DTC	Description	Action
B2008	Wipers On Signal Circuit Short to Ground	<a href="#">GO to Pinpoint Test F.</a>
All Other DTCs	—	REFER to the Master DTC Chart in <a href="#">Section 419-10</a> .

## Symptom Chart

### Symptom Chart

Condition	Possible Sources	Action
• The wipers are inoperative	<ul style="list-style-type: none"> <li>• Fuse(s)</li> <li>• Multifunction switch</li> <li>• Circuitry</li> <li>• Windshield wiper motor</li> <li>• Wiper relay</li> </ul>	• <a href="#">GO to Pinpoint Test A.</a>
• The wipers stay on continuously	<ul style="list-style-type: none"> <li>• Windshield wiper motor</li> <li>• Multifunction switch</li> <li>• Circuitry</li> </ul>	• <a href="#">GO to Pinpoint Test B.</a>
• The high/low wiper speeds do not operate correctly	<ul style="list-style-type: none"> <li>• Multifunction switch</li> <li>• Circuitry</li> <li>• Windshield wiper motor</li> </ul>	• <a href="#">GO to Pinpoint Test C.</a>
• The intermittent wiper speed does not operate correctly	<ul style="list-style-type: none"> <li>• Multifunction switch</li> <li>• Circuitry</li> </ul>	• <a href="#">GO to Pinpoint Test D.</a>

	<ul style="list-style-type: none"> <li>Windshield wiper motor</li> </ul>	
<ul style="list-style-type: none"> <li>The wash and wipe function is inoperative</li> </ul>	<ul style="list-style-type: none"> <li>Windshield wiper motor</li> </ul>	<ul style="list-style-type: none"> <li>If the washer pump is inoperative, <a href="#">GO to Pinpoint Test E.</a></li> <li>If the washer pump is operative, INSTALL a new windshield wiper motor. TEST the system for normal operation.</li> </ul>
<ul style="list-style-type: none"> <li>The washer pump is inoperative</li> </ul>	<ul style="list-style-type: none"> <li>Circuitry</li> <li>Windshield washer pump</li> <li>Multifunction switch</li> <li>Windshield wiper motor</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">GO to Pinpoint Test E.</a></li> </ul>
<ul style="list-style-type: none"> <li>The wipers will not park in the correct position</li> </ul>	<ul style="list-style-type: none"> <li>Linkage</li> <li>Windshield wiper motor</li> <li>Pivot arm adjustment</li> </ul>	<ul style="list-style-type: none"> <li>If the wipers immediately stop on the windshield as soon as they are turned off, INSTALL a new windshield wiper motor.</li> <li>CHECK the windshield wiper linkage for binding or incorrect adjustment. ALIGN the wiper pivot arms. TEST the system for normal operation.</li> </ul>
<ul style="list-style-type: none"> <li>The headlamps do not illuminate when the wipers are on</li> </ul>	<ul style="list-style-type: none"> <li>Circuitry</li> <li>Windshield wiper motor</li> <li>Smart Junction Box (SJB)</li> </ul>	<ul style="list-style-type: none"> <li><a href="#">GO to Pinpoint Test F.</a></li> </ul>

**Pinpoint Tests**

**Pinpoint Test A: The Wipers Are Inoperative**

Refer to Wiring Diagrams Cell [81](#), Wipers and Washers for schematic and connector information.

**Normal Operation**

When the ignition switch is in the RUN or ACCESSORY position, voltage is supplied to the wiper relay coil through circuit CBP45 (YE). The wiper relay coil is grounded at all times through circuit GD129 (BK/YE). Voltage is supplied to the wiper relay switch through circuit SBB09 (RD). When the wiper relay is activated, voltage is supplied to the wiper motor through circuit CRW03 (VT/WH) and through CBP45 (YE) when the ignition switch is in the RUN or ACCESSORY position. The wiper motor is grounded through circuits GD129 (BK/YE) and GD123 (BK/GY). The multifunction switch is grounded through circuit GD116 (BK/VT). The multifunction switch sends open and ground input signals to the wiper motor through circuits CRW17 (GN/VT), CRW18 (VT/WH), CRW19 (BU/OG) and CRW08 (VT/OG) in order to activate the wiper motor to the requested modes.

**This pinpoint test is intended to diagnose the following:**

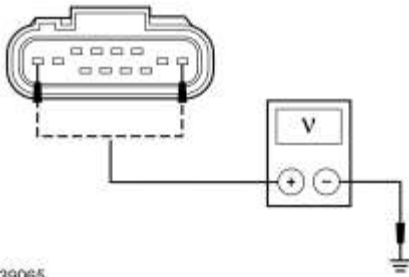
- Fuse(s)
- Wiper motor
- Wiper relay
- Multifunction switch
- Wiring, terminals or connectors

**PINPOINT TEST A : THE 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.**

**A1 CHECK THE WINDSHIELD WIPER MOTOR FOR VOLTAGE**

- Disconnect: Wiper Motor C125.
- Ignition ON.
- Measure the voltage between ground and wiper motor:
  - [C125](#) Pin 5, circuit CRW03 (VT/WH), harness side.
  - [C125](#) Pin 8, circuit CBP45 (YE), harness side.



A0039065

Are the voltages greater than 10 volts?

<b>Yes</b>	GO to <a href="#">A6</a> .
<b>No</b>	GO to <a href="#">A2</a> .

## A2 CHECK THE WIPER RELAY

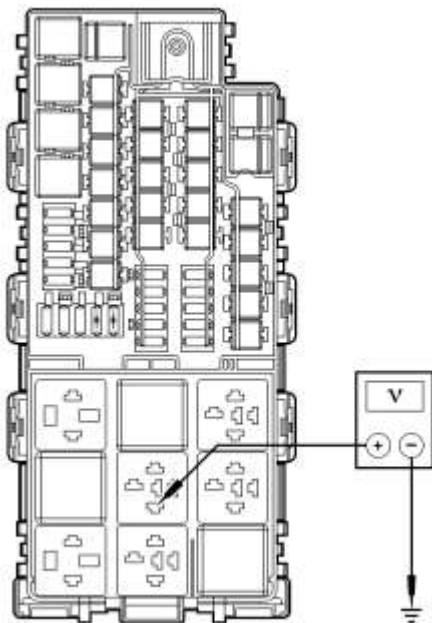
- Ignition OFF.
- Disconnect: Wiper Relay.
- Carry out the Micro ISO Relay component test for the wiper relay. Refer to Wiring Diagrams Cell [149](#) for component testing.

Did the wiper relay pass the component test?

<b>Yes</b>	GO to <a href="#">A3</a> .
<b>No</b>	INSTALL a new wiper relay. TEST the system for normal operation.

## A3 CHECK THE VOLTAGE TO THE WIPER RELAY COIL

- Ignition ON.
- Measure the voltage between Battery Junction Box (BJB) wiper relay pin 86, circuit CBP45 (YE), harness side and ground.



N0097905

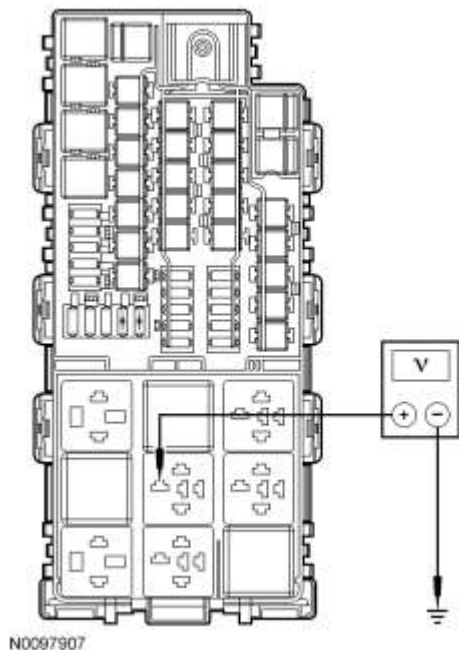
Is the voltage greater than 10 volts?

<b>Yes</b>	GO to <a href="#">A4</a> .
------------	----------------------------

<b>No</b>	VERIFY Smart Junction Box (SJB) fuse 45 (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. TEST the system for normal operation.
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#### A4 CHECK THE VOLTAGE TO THE WIPER RELAY SWITCH

- Measure the voltage between BJB wiper relay pin 30, circuit SBB09 (RD), harness side and ground.

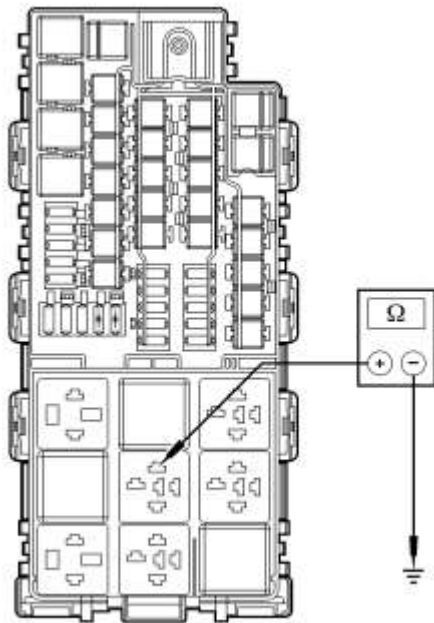


Is the voltage greater than 10 volts?

<b>Yes</b>	GO to <a href="#">A5</a> .
<b>No</b>	VERIFY <u>BJB</u> fuse 9 (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. TEST the system for normal operation.

#### A5 CHECK THE GROUND TO THE WIPER RELAY COIL

- Measure the resistance between BJB wiper relay pin 85, circuit GD129 (BK/YE), harness side and ground.



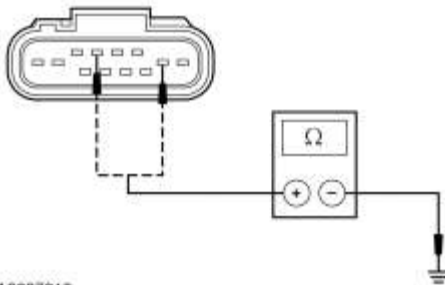
N0097908

**Is the resistance less than 5 ohms?**

<b>Yes</b>	REPAIR open in circuit CRW03 (VT/WH). TEST the system for normal operation.
<b>No</b>	REPAIR open in circuit GD129 (BK/YE). TEST the system for normal operation.

#### **A6 CHECK WIPER MOTOR CIRCUITS GD129 (BK/YE) AND GD123 (BK/GY) FOR AN OPEN**

- Ignition OFF.
- Measure the resistance between ground and wiper motor:
  - [C125](#) Pin 3, circuit GD129 (BK/YE), harness side.
  - [C125](#) Pin 6, circuit GD123 (BK/GY), harness side.



A0037610

**Are the resistances less than 5 ohms?**

<b>Yes</b>	GO to <a href="#">A7</a> .
<b>No</b>	REPAIR the circuit(s). TEST the system for normal operation.

#### **A7 CHECK THE MULTIFUNCTION SWITCH**

- Disconnect: Multifunction Switch C202.
- Carry out the Multifunction Switch component test.  
Refer to Wiring Diagrams Cell [149](#) for component testing.

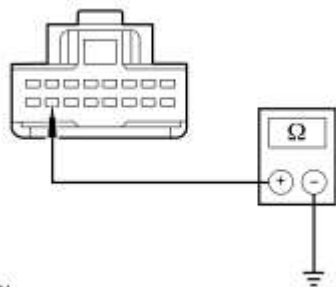
**Did the multifunction switch pass the component test?**

<b>Yes</b>	GO to <a href="#">A8</a> .
------------	----------------------------

**No** INSTALL a new multifunction switch. REFER to [Section 211-05](#).

### A8 CHECK CIRCUIT GD116 (BK/VT) FOR AN OPEN

- Measure the resistance between multifunction switch [C202](#) Pin 15, circuit GD116 (BK/VT), harness side and ground.



**Is the resistance less than 5 ohms?**

<b>Yes</b>	GO to <a href="#">A9</a> .
<b>No</b>	REPAIR the circuit. TEST the system for normal operation.

### A9 CHECK FOR CORRECT WIPER MOTOR OPERATION

- Disconnect all wiper motor connectors.
- Check for:
  - corrosion.
  - pushed-out pins.
- Connect all wiper motor connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.

**Is the concern still present?**

<b>Yes</b>	INSTALL a new wiper motor. REFER to <a href="#">Wiper Motor</a> in this section.
<b>No</b>	The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. TEST the system for normal operation.

### Pinpoint Test B: The Wipers Stay On Continuously

Refer to Wiring Diagrams Cell [81](#), Wipers and Washers for schematic and connector information.

#### Normal Operation

Under normal operation, the windshield wiper motor receives open and ground inputs from the multifunction switch through circuits CRW17 (GN/VT), CRW18 (VT/WH), CRW19 (BU/OG) and CRW08 (VT/OG) to activate the wipers to the appropriate modes. Mode of operation is dependent on the signal(s) received from the multifunction switch.

**This pinpoint test is intended to diagnose the following:**

- Wiring, terminals or connectors
- Windshield wiper motor
- Multifunction switch

### PINPOINT TEST B : THE 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.



## B1 CHECK THE MULTIFUNCTION SWITCH

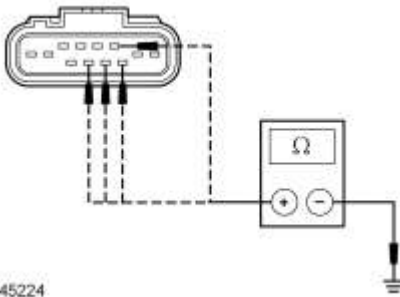
- Ignition OFF.
- Disconnect: Multifunction Switch C202.
- Carry out the Multifunction Switch component test.  
Refer to Wiring Diagrams Cell [149](#) for component testing.

**Did the multifunction switch pass the component test?**

<b>Yes</b>	GO to <a href="#">B2</a> .
<b>No</b>	INSTALL a new multifunction switch. REFER to <a href="#">Section 211-05</a> .

## B2 CHECK CIRCUITS CRW19 (BU/OG), CRW18 (VT/WH), CRW08 (VT/OG) AND CRW17 (GN/VT) FOR A SHORT TO GROUND

- Disconnect: Windshield Wiper Motor C125.
- Measure the resistance between ground and windshield wiper motor:
  - [C125](#) Pin 1, circuit CRW08 (VT/OG), harness side.
  - [C125](#) Pin 9, circuit CRW17 (GN/VT), harness side.
  - [C125](#) Pin 10, circuit CRW19 (BU/OG), harness side.
  - [C125](#) Pin 11, circuit CRW18 (VT/WH), harness side.



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

<b>Yes</b>	GO to <a href="#">B3</a> .
<b>No</b>	REPAIR the circuit(s) in question. TEST the system for normal operation.

## B3 CHECK FOR CORRECT WIPER MOTOR OPERATION

- Disconnect all wiper motor connectors.
- Check for:
  - corrosion.
  - pushed-out pins.
- Connect all wiper motor connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.

**Is the concern still present?**

<b>Yes</b>	INSTALL a new windshield wiper motor. REFER to <a href="#">Wiper Motor</a> in this section.
<b>No</b>	The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. TEST the system for normal operation.

## Pinpoint Test C: The High/Low Wiper Speeds Do Not Operate Correctly

Refer to Wiring Diagrams Cell [81](#), Wipers and Washers for schematic and connector information.

**Normal Operation**

Under normal operation, the windshield wiper motor receives open and ground inputs from the multifunction switch through circuits CRW17 (GN/VT), CRW18 (VT/WH), CRW19 (BU/OG) and CRW08 (VT/OG) to activate the wipers to the appropriate modes. Mode of operation is dependent on the signal(s) received from the multifunction switch.

**This pinpoint test is intended to diagnose the following:**

- Wiring, terminals or connectors
- Windshield wiper motor
- Multifunction switch

**PINPOINT TEST C : THE HIGH/LOW WIPER SPEEDS DO NOT OPERATE CORRECTLY**

**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.**

**C1 CHECK THE MULTIFUNCTION SWITCH**

- Ignition OFF.
- Disconnect: Multifunction Switch C202.
- Carry out the Multifunction Switch component test. Refer to Wiring Diagrams Cell [149](#) for component testing.

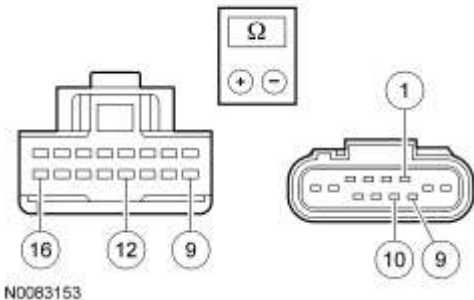
**Did the multifunction switch pass the component test?**

<b>Yes</b>	GO to <a href="#">C2</a> .
<b>No</b>	INSTALL a new multifunction switch. REFER to <a href="#">Section 211-05</a> . TEST the system for normal operation.

**C2 CHECK CIRCUITS CRW19 (BU/OG), CRW08 (VT/OG) AND CRW17 (GN/VT) FOR AN OPEN**

- Disconnect: Windshield Wiper Motor C125.
- Measure the resistance between multifunction switch C202 harness side and windshield wiper motor C125, harness side using the following chart:

Multifunction Switch	Circuit	Windshield Wiper Motor
<a href="#">C202</a> Pin 9	CRW08 (VT/OG)	<a href="#">C125</a> Pin 1
<a href="#">C202</a> Pin 12	CRW17 (GN/VT)	<a href="#">C125</a> Pin 9
<a href="#">C202</a> Pin 16	CRW19 (BU/OG)	<a href="#">C125</a> Pin 10



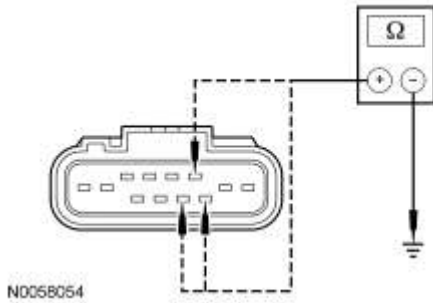
**Is the resistance less than 5 ohms?**

<b>Yes</b>	GO to <a href="#">C3</a> .
<b>No</b>	REPAIR the circuit(s) in question. TEST the system for normal operation.

**C3 CHECK CIRCUITS CRW19 (BU/OG), CRW08 (VT/OG) AND CRW17 (GN/VT) FOR A SHORT TO GROUND**

- Measure the resistance between ground and windshield wiper motor:

- [C125](#) Pin 1, circuit CRW08 (VT/OG), harness side.
- [C125](#) Pin 9, circuit CRW17 (GN/VT), harness side.
- [C125](#) Pin 10, circuit CRW19 (BU/OG), harness side.



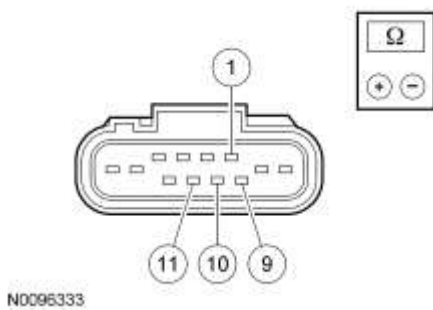
**Is the resistance greater than 10,000 ohms?**

<b>Yes</b>	GO to <a href="#">C4</a> .
<b>No</b>	REPAIR the circuit(s) in question. TEST the system for normal operation.

#### C4 CHECK FOR SHORTS IN THE WINDSHIELD WIPER MOTOR HARNESS

- Measure the resistance at windshield wiper motor C125, harness side, between the circuits shown in the following chart.

Windshield Wiper Motor	Circuits	Windshield Wiper Motor
<a href="#">C125</a> Pin 10	CRW19 (BU/OG)/ CRW08 (VT/OG)	<a href="#">C125</a> Pin 1
<a href="#">C125</a> Pin 10	CRW19 (BU/OG)/ CRW17 (GN/VT)	<a href="#">C125</a> Pin 9
<a href="#">C125</a> Pin 10	CRW19 (BU/OG)/ CRW18 (VT/WH)	<a href="#">C125</a> Pin 11
<a href="#">C125</a> Pin 11	CRW18 (VT/WH)/ CRW08 (VT/OG)	<a href="#">C125</a> Pin 1
<a href="#">C125</a> Pin 11	CRW18 (VT/WH)/ CRW17 (GN/VT)	<a href="#">C125</a> Pin 9
<a href="#">C125</a> Pin 1	CRW08 (VT/OG)/ CRW17 (GN/VT)	<a href="#">C125</a> Pin 9



**Is the resistance greater than 10,000 ohms for all measurements?**

<b>Yes</b>	GO to <a href="#">C5</a> .
<b>No</b>	REPAIR the circuit. TEST the system for normal operation.

#### C5 CHECK FOR CORRECT WIPER MOTOR OPERATION

- Disconnect all wiper motor connectors.
- Check for:
  - corrosion.
  - pushed-out pins.

- Connect all wiper motor connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.

**Is the concern still present?**

<b>Yes</b>	INSTALL a new windshield wiper motor. REFER to <a href="#">Wiper Motor</a> in this section.
<b>No</b>	The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. TEST the system for normal operation.

**Pinpoint Test D: The Intermittent Wiper Speed Does Not Operate Correctly**

Refer to Wiring Diagrams Cell [81](#), Wipers and Washers for schematic and connector information.

**Normal Operation**

Under normal operation, the windshield wiper motor receives open and ground inputs from the multifunction switch through circuits CRW17 (GN/VT), CRW18 (VT/WH), CRW19 (BU/OG) and CRW08 (VT/OG) to activate the wipers to the appropriate modes. Mode of operation is dependent on the signal(s) received from the multifunction switch.

**This pinpoint test is intended to diagnose the following:**

- Wiring, terminals or connectors
- Windshield wiper motor
- Multifunction switch

**PINPOINT TEST D : THE INTERMITTENT WIPER SPEED DOES NOT OPERATE CORRECTLY**

**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.

**D1 CHECK THE MULTIFUNCTION SWITCH**

- Ignition OFF.
- Disconnect: Multifunction Switch C202.
- Carry out the Multifunction Switch component test.  
Refer to Wiring Diagrams Cell [149](#) for component testing.

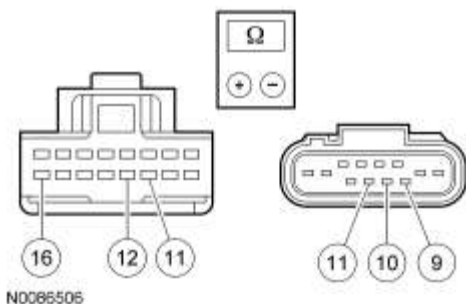
**Did the multifunction switch pass the component test?**

<b>Yes</b>	GO to <a href="#">D2</a> .
<b>No</b>	INSTALL a new multifunction switch. REFER to <a href="#">Section 211-05</a> . TEST the system for normal operation.

**D2 CHECK CIRCUITS CRW19 (BU/OG), CRW18 (VT/WH) AND CRW17 (GN/VT) FOR AN OPEN**

- Disconnect: Windshield Wiper Motor C125.
- Measure the resistance between multifunction switch C202 harness side and windshield wiper motor C125, harness side using the following chart:

Multifunction Switch	Circuit	Windshield Wiper Motor
<a href="#">C202</a> Pin 11	CRW18 (VT/WH)	<a href="#">C125</a> Pin 11
<a href="#">C202</a> Pin 12	CRW17 (GN/VT)	<a href="#">C125</a> Pin 9
<a href="#">C202</a> Pin 16	CRW19 (BU/OG)	<a href="#">C125</a> Pin 10

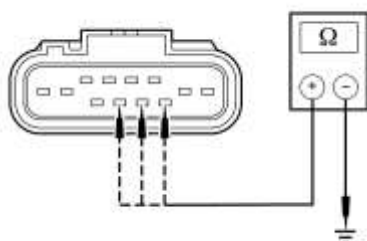


Is the resistance less than 5 ohms?

<b>Yes</b>	GO to <a href="#">D3</a> .
<b>No</b>	REPAIR the circuit(s) in question. TEST the system for normal operation.

**D3 CHECK CIRCUITS CRW19 (BU/OG), CRW18 (VT/WH) AND CRW17 (GN/VT) FOR A SHORT TO GROUND**

- Measure the resistance between ground and windshield wiper motor:
  - [C125](#) Pin 9, circuit CRW17 (GN/VT), harness side.
  - [C125](#) Pin 10, circuit CRW19 (BU/OG), harness side.
  - [C125](#) Pin 11, circuit CRW18 (VT/WH), harness side.



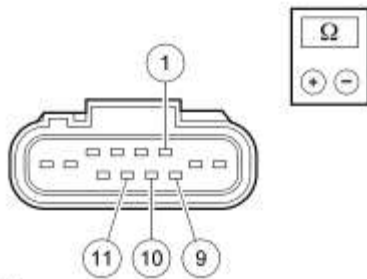
Is the resistance greater than 10,000 ohms?

<b>Yes</b>	GO to <a href="#">D4</a> .
<b>No</b>	REPAIR the circuit(s) in question. TEST the system for normal operation.

**D4 CHECK FOR SHORTS IN THE WINDSHIELD WIPER MOTOR HARNESS**

- Measure the resistance at windshield wiper motor C125, harness side, between the circuits shown in the following chart.

Windshield Wiper Motor	Circuits	Windshield Wiper Motor
<a href="#">C125</a> Pin 10	CRW19 (BU/OG)/ CRW08 (VT/OG)	<a href="#">C125</a> Pin 1
<a href="#">C125</a> Pin 10	CRW19 (BU/OG)/ CRW17 (GN/VT)	<a href="#">C125</a> Pin 9
<a href="#">C125</a> Pin 10	CRW19 (BU/OG)/ CRW18 (VT/WH)	<a href="#">C125</a> Pin 11
<a href="#">C125</a> Pin 11	CRW18 (VT/WH)/ CRW08 (VT/OG)	<a href="#">C125</a> Pin 1
<a href="#">C125</a> Pin 11	CRW18 (VT/WH)/ CRW17 (GN/VT)	<a href="#">C125</a> Pin 9
<a href="#">C125</a> Pin 1	CRW08 (VT/OG)/ CRW17 (GN/VT)	<a href="#">C125</a> Pin 9



N0095333

**Is the resistance greater than 10,000 ohms for all measurements?**

<b>Yes</b>	GO to <a href="#">D5</a> .
<b>No</b>	REPAIR the circuit. TEST the system for normal operation.

### D5 CHECK FOR CORRECT WIPER MOTOR OPERATION

- Disconnect all wiper motor connectors.
- Check for:
  - corrosion.
  - pushed-out pins.
- Connect all wiper motor connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.

**Is the concern still present?**

<b>Yes</b>	INSTALL a new windshield wiper motor. REFER to <a href="#">Wiper Motor</a> in this section.
<b>No</b>	The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. TEST the system for normal operation.

### Pinpoint Test E: The Washer Pump is Inoperative

Refer to Wiring Diagrams Cell [81](#), Wipers and Washers for schematic and connector information.

#### Normal Operation

During normal operation, the windshield wiper motor receives voltage through Battery Junction Box (BJB) fuse 9 (30A), circuit SBB09 (RD) and through Smart Junction Box (SJB) fuse 45 (5A), circuit CBP45 (YE) when the ignition switch is in the RUN or ACC positions. Ground is provided to the windshield wiper motor through circuits GD129 (BK/YE) and GD123 (BK/GY). The internal run/park and internal high/low relays are contained in the wiper motor electronics. Mode of operation is dependent on the signal(s) received from the multifunction switch. When the correct input is received from the multifunction switch, the windshield wiper motor activates the washer pump by providing power through circuit CRW14 (BU/WH). Ground is provided to the washer pump through circuit GD123 (BK/GY).

**This pinpoint test is intended to diagnose the following:**

- Wiring, terminals or connectors
- Multifunction switch
- Washer pump
- Windshield wiper motor

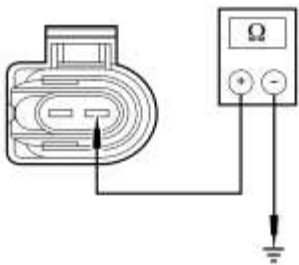
### PINPOINT TEST E : THE WASHER PUMP IS INOPERATIVE

**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.**

#### E1 CHECK CIRCUIT GD123 (BK/GY) FOR AN OPEN

- Ignition OFF.
- Disconnect: Washer Pump Motor C137.

- Measure the resistance between washer pump motor [C137](#) Pin 2, circuit GD123 (BK/GY), harness side and ground.



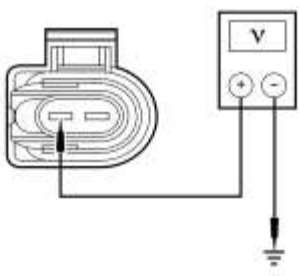
N0063857

**Is the resistance less than 5 ohms?**

<b>Yes</b>	GO to <a href="#">E2</a> .
<b>No</b>	REPAIR the circuit. TEST the system for normal operation.

**E2 CHECK CIRCUIT CRW14 (BU/WH) FOR VOLTAGE**

- Ignition ON.
- Measure the voltage between washer pump motor [C137](#) Pin 1, circuit CRW14 (BU/WH), harness side and ground while depressing the multifunction switch to the WASH position.



N0063860

**Is the voltage greater than 10 volts?**

<b>Yes</b>	INSTALL a new washer pump. REFER to <a href="#">Washer Pump and Reservoir</a> in this section.
<b>No</b>	GO to <a href="#">E3</a> .

**E3 CHECK THE MULTIFUNCTION SWITCH**

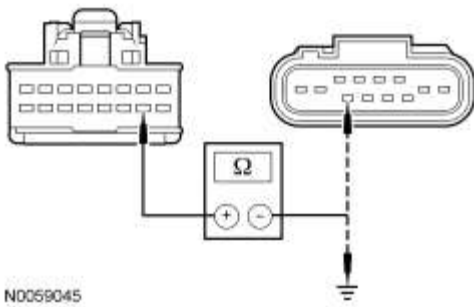
- Ignition OFF.
- Disconnect: Multifunction Switch C202.
- Carry out the Multifunction Switch component test.  
Refer to Wiring Diagrams Cell [149](#) for component testing.

**Did the multifunction switch pass the component test?**

<b>Yes</b>	GO to <a href="#">E4</a> .
<b>No</b>	INSTALL a new multifunction switch. REFER to <a href="#">Section 211-05</a> .

**E4 CHECK CIRCUIT CRW07 (GY/BN) FOR AN OPEN**

- Ignition OFF.
- Disconnect: Windshield Wiper Motor C125.
- Measure the resistance between windshield wiper motor [C125](#) Pin 12, circuit CRW07 (GY/BN), harness side and multifunction switch [C202](#) Pin 10, circuit CRW07 (GY/BN), harness side and between multifunction switch [C202](#) Pin 10, circuit CRW07 (GY/BN), harness side and ground.

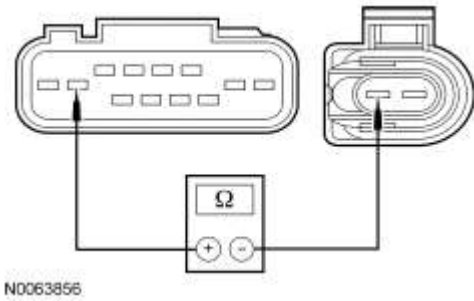


**Is the resistance less than 5 ohms?**

<b>Yes</b>	GO to <a href="#">E5</a> .
<b>No</b>	REPAIR the circuit. TEST the system for normal operation.

**E5 CHECK CIRCUIT CRW14 (BU/WH) FOR AN OPEN**

- Measure the resistance between windshield wiper motor [C125](#) Pin 7, circuit CRW14 (BU/WH), harness side and washer pump motor [C137](#) Pin 1, circuit CRW14 (BU/WH), harness side.



**Is the resistance less than 5 ohms?**

<b>Yes</b>	GO to <a href="#">E6</a> .
<b>No</b>	REPAIR the circuit. TEST the system for normal operation.

**E6 CHECK FOR CORRECT WIPER MOTOR OPERATION**

- Disconnect all wiper motor connectors.
- Check for:
  - corrosion.
  - pushed-out pins.
- Connect all wiper motor connectors and make sure they seat correctly.
- Operate the system and verify the concern is still present.

**Is the concern still present?**

<b>Yes</b>	INSTALL a new windshield wiper motor. REFER to <a href="#">Wiper Motor</a> in this section.
<b>No</b>	The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. TEST the system for normal operation.

**Pinpoint Test F: The Headlamps Do Not Illuminate When the Wipers are On**

**Normal Operation**



The Smart Junction Box (SJB) monitors the status of the wipers through circuit CRW01 (WH). When the headlamp control switch is in the AUTOLAMP position and the wipers are on, the wiper motor module will pull the voltage reference signal low. Within 10 seconds, the SJB will activate the headlamps.

- DTC B2008 Wipers On Signal Circuit Short to Ground — Short to ground on wiper motor on input circuit.

**This pinpoint test is intended to diagnose the following:**

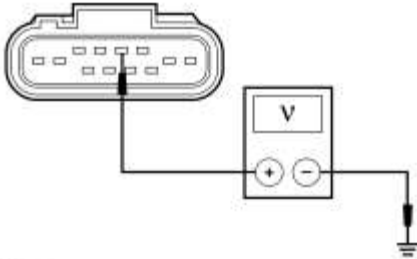
- Wiring, terminals or connectors
- Wiper motor
- SJB

**PINPOINT TEST F : THE HEADLAMPS DO NOT ILLUMINATE WHEN THE WIPERS ARE ON**

**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.**

**F1 CHECK THE WIPER MOTOR ON INPUT VOLTAGE TO THE WINDSHIELD WIPER MOTOR**

- Disconnect: Wiper Motor C125.
- Ignition ON.
- Turn the headlamp control switch to the AUTOLAMP position.
- Measure the voltage between wiper motor C125 Pin 2 circuit CRW01 (WH), harness side and ground.



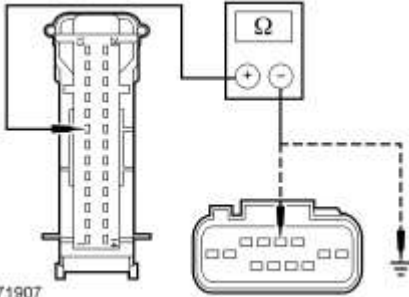
A0083000

**Is the voltage greater than 10 volts?**

<b>Yes</b>	GO to <u>F3</u> .
<b>No</b>	GO to <u>F2</u> .

**F2 CHECK CIRCUIT CRW01 (WH) FOR AN OPEN OR SHORT TO GROUND**

- Ignition OFF.
- Disconnect: SJB C2280F.
- Measure the resistance between SJB C2280F Pin 8 circuit CRW01 (WH), harness side and wiper motor C125 Pin 2 circuit CRW01 (WH); and between SJB C2280F Pin 8 circuit CRW01 (WH), harness side and ground.



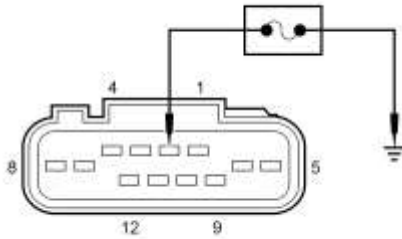
N0071907

**Is the resistance less than 5 ohms between the SJB and wiper motor and greater than 10,000 ohms between the SJB and ground?**

<b>Yes</b>	GO to <u>F4</u> .
<b>No</b>	REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test.

### F3 CHECK THE WIPER ACTIVATED HEADLAMPS OPERATION

- **NOTE:** When performing the following test, the light sensor must have enough light to have the headlamps deactivated. Connect a fused jumper wire between wiper motor [C125](#) Pin 2 circuit CRW01 (WH), harness side and ground.



N0098846

**Do the headlamps turn on within 10 seconds?**

<b>Yes</b>	INSTALL a new wiper motor. REFER to <a href="#">Wiper Motor</a> in this section. CLEAR the DTCs. REPEAT the self-test.
<b>No</b>	GO to <a href="#">F4</a> .

### F4 CHECK FOR CORRECT MODULE OPERATION

- Disconnect all the [SJB](#) connectors.
- Check for:
  - corrosion.
  - pushed-out pins.
- Connect all the [SJB](#) connectors and make sure they are seated correctly.
- Operate the system and verify the concern is still present.

**Is the concern still present?**

<b>Yes</b>	INSTALL a new <a href="#">SJB</a> . REFER to <a href="#">Section 419-10</a> . CLEAR the DTCs. REPEAT the self-test.
<b>No</b>	The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.