

Wipers and Washers

Diagnostic Trouble Code (DTC) Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices. REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Diagnostic Trouble Code Chart

| Module | DTC | Description | Action |
|----------------------|----------|--|---------------------------------------|
| BCM | B130F:12 | Run Accessory Control: Circuit Short To Battery | GO to Pinpoint Test A |
| BCM | B130F:14 | Run Accessory Control: Circuit Short To Ground or Open | GO to Pinpoint Test A |
| BCM | B130F:14 | Run Accessory Control: Circuit Short To Ground or Open | GO to Pinpoint Test D |
| SCCM | B10AD:02 | Rain Sensor: General Signal Failure | GO to Pinpoint Test F |
| SCCM | B10AD:08 | Rain Sensor: Bus Signal / Message Failure | GO to Pinpoint Test F |
| SCCM | B10AD:49 | Rain Sensor: Internal Electronic Failure | GO to Pinpoint Test K |
| SCCM | B10AD:55 | Rain Sensor: Not Configured | GO to Pinpoint Test M |
| SCCM | B1131:02 | Wiper motor module: General Signal Failure | GO to Pinpoint Test A |
| SCCM | B1131:02 | Wiper Motor Module: General Signal Failure | GO to Pinpoint Test D |
| SCCM | B1131:08 | Wiper motor module: Bus Signal / Message Failure | GO to Pinpoint Test B |
| SCCM | B1131:11 | Wiper motor module: Circuit Short to Ground | GO to Pinpoint Test B |
| SCCM | B1131:49 | Wiper Motor Module: Internal Electronic Failure | GO to Pinpoint Test L |
| SCCM | B1131:55 | Wiper Motor Module: Not Configured | GO to Pinpoint Test M |
| SCCM | B1131:9A | Wiper motor module: Component or System Operating Conditions | GO to Pinpoint Test O |
| SCCM | B124E:96 | Wiper Stalk Switch Pack: Component Internal Failure | GO to Pinpoint Test N |
| SCCM | B124E:9E | Wiper Stalk Switch Pack: Stuck On | GO to Pinpoint Test N |

Global Customer Symptom Code (GCSC) Chart

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices.

Global Customer Symptom Code Chart

| Customer Symptom | Action |
|--|---------------------------------------|
| Lighting/Glass/Vision > Windows/Glass > Windshield > Appearance | GO to Pinpoint Test P |
| Lighting/Glass/Vision > Wipers/Washers > Windshield Wiper > Alignment | GO to Pinpoint Test G |
| Lighting/Glass/Vision > Wipers/Washers > Windshield Wiper > Inoperative | GO to Pinpoint Test C |
| Lighting/Glass/Vision > Wipers/Washers > Windshield Wiper > Inoperative | GO to Pinpoint Test E |
| Lighting/Glass/Vision > Wipers/Washers > Windshield Washer > Inoperative | GO to Pinpoint Test H |
| Lighting/Glass/Vision > Wipers/Washers > Windshield Washer > Inoperative | GO to Pinpoint Test J |

Symptom Chart**Symptom Chart: Wiper and Washer**

Diagnostics in this manual assume a certain skill level and knowledge of Ford-specific diagnostic practices. REFER to: [Diagnostic Methods](#) (100-00 General Information, Description and Operation).

Symptom Chart

| Condition | Actions |
|--|---|
| Wiper blade performance concerns - poor cleaning, streaking, or chatter | <ul style="list-style-type: none"> • GO to Pinpoint Test P |
| All windshield wiper modes are inoperative | <ul style="list-style-type: none"> • GO to Pinpoint Test A |
| The intermittent and/or low speed windshield wipers are inoperative | <ul style="list-style-type: none"> • GO to Pinpoint Test B |
| The high speed windshield wipers are inoperative | <ul style="list-style-type: none"> • GO to Pinpoint Test C |
| The windshield wipers stay on continuously | <ul style="list-style-type: none"> • GO to Pinpoint Test D |
| The windshield wipers do not operate correctly in the intermittent mode | <ul style="list-style-type: none"> • GO to Pinpoint Test E |
| The rain sensitive wiper feature is inoperative | <ul style="list-style-type: none"> • GO to Pinpoint Test F |
| The rain sensitive wipers have erratic/inconsistent operation | <ul style="list-style-type: none"> • GO to Pinpoint Test F |
| The rain sensitive wipers are too sensitive/not sensitive enough to moisture | <ul style="list-style-type: none"> • GO to Pinpoint Test F |
| The windshield wipers do not park at the correct position | <ul style="list-style-type: none"> • GO to Pinpoint Test G |
| The windshield washer is inoperative | <ul style="list-style-type: none"> • GO to Pinpoint Test H |
| The windshield washer is always on | <ul style="list-style-type: none"> • GO to Pinpoint Test I |
| The front camera washer is inoperative | <ul style="list-style-type: none"> • GO to Pinpoint Test J |

Pinpoint Tests**PINPOINT TEST A : ALL WINDSHIELD WIPER MODES ARE INOPERATIVE**

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

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

DTC Fault Trigger Conditions

| DTC | Description | Fault Trigger Condition |
|-------------------------|--|--|
| <u>BCM</u> B130F:12 | Run Accessory Control: Circuit Short To Battery | Sets when the <u>BCM</u> detects a short to voltage from the wiper relay control circuit. |
| <u>BCM</u> B130F:14 | Run Accessory Control: Circuit Short To Ground Or Open | Sets when the <u>BCM</u> detects an open from the wiper relay control circuit. |
| <u>SCCM</u> B1131:02 | Wiper motor module: General Signal Failure | Sets when the input to the windshield wiper motor from the fail-safe circuit does not match the requested input from the <u>SCCM</u> . |

Possible Sources

- Fuse
- Wiring, terminals or connectors
- Wiper/washer switch
- BCMC
- Windshield wiper motor
- SCCM
- BCM

Visual Inspection and Pre-checks

- Inspect BCMC fuses 69 (30A) and 124 (5A)

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

A1 CHECK FOR BCM (BODY CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE) B130F:12, B130F:14 OR SCCM (STEERING COLUMN CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE) B1131:02


- Ignition ON.
- Using a diagnostic scan tool, carry out the BCM self-test.
- Using a diagnostic scan tool, carry out the SCCM self-test.

Is DTC B130F:12, B130F:14 or B1131:02 present?

| | |
|------------|---|
| Yes | For <u>DTC B130F:12</u> , GO to A2 For <u>DTC B130F:14</u> , GO to A4 For <u>DTC B1131:02</u> , GO to A11 |
| No | GO to A7 |

A2 CHECK THE BCMC (BODY CONTROL MODULE C) WIPER RELAY CONTROL CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect BCMC C1035B .
- Ignition ON.
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|---|---------------|
| C1035B-21 |  | Ground |

Is any voltage present?

| | |
|------------|-----------------------------|
| Yes | GO to A3 |
| No | INSTALL a new <u>BCMC</u> . |

A3 ISOLATE THE WIPER RELAY CONTROL CIRCUIT SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect BCM C2280F .
- Ignition ON.
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
|---------------|----------------------|---------------|

C1035B-21



Ground

Is any voltage present?

| | |
|-----|---------------------------|
| Yes | REPAIR the circuit. |
| No | GO to A15 |

A4 CHECK THE WIPER RELAY CONTROL CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect BCM C2280F .
- Disconnect: negative battery cable.
- Ignition ON.
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C2280F-24 | Ω | Ground |

Is the resistance greater than 10,000 ohms?

| | |
|-----|--------------------------|
| Yes | GO to A6 |
| No | GO to A5 |

A5 ISOLATE THE WINDSHIELD WIPER RELAY CONTROL SUPPLY CIRCUIT SHORT TO GROUND

- Disconnect BCMC C1035B .
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C2280F-24 | Ω | Ground |

Is the resistance greater than 10,000 ohms?

| | |
|-----|---------------------------|
| Yes | INSTALL a new <u>BCMC</u> |
| No | REPAIR the circuit. |

A6 CHECK THE WIPER RELAY CONTROL CIRCUIT FOR AN OPEN

- Disconnect BCMC C1035B .
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C1035B-21 | Ω | C2280F-24 |

Is the resistance less than 3 ohms?

| | |
|-----|---------------------------|
| Yes | GO to A15 |
| No | REPAIR the circuit. |

A7 CHECK THE INPUT TO THE SCCM (STEERING COLUMN CONTROL MODULE) USING THE WIPER/WASHER SWITCH PARAMETER IDENTIFICATIONS (PIDS)


- Using a diagnostic scan tool, view the SCCM Parameter Identifications (PIDs).
- Using a diagnostic scan tool, view the following SCCM wiper/washer switch Parameter Identifications (PIDs):
 - Access the SCCM and monitor the F_WASH_SW_PID
 - Access the SCCM and monitor the F_WIP_INT_D1_PID
 - Access the SCCM and monitor the F_WIP_INT_D2_PID
 - Access the SCCM and monitor the F_WIP_INT_D3_PID
 - Access the SCCM and monitor the F_WIP_INT_D4_PID
 - Access the SCCM and monitor the F_WIP_SLO_SW_PID
 - Access the SCCM and monitor the F_WIPE_FAST_SW_PID
- Cycle the wiper/washer switch from off to the high speed setting and then back to off.

Do the Parameter Identifications (PIDs) correspond correctly with each setting selection?

| | |
|-----|--|
| Yes | GO to A8 |
| No | <p>INSTALL a new wiper/washer switch. REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation).</p> <p>TEST the system for normal operation. If the concern is still present, INSTALL a new <u>SCCM</u>. REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). Refer to the appropriate section in Group 211 for the procedure.</p> |

A8 CHECK FOR VOLTAGE TO THE WINDSHIELD WIPER MOTOR

- Ignition OFF.
- Disconnect Windshield Wiper Motor C125 .
- Ignition ON.
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|---|---------------|
| C125-8 |  | Ground |

Is the voltage greater than 11 volts?

| | | |
|--|--|--|
| | | |
|--|--|--|

| | |
|------------|--|
| Yes | GO to A10 |
| No | VERIFY the <u>BCMC</u> fuse 69 (30A) is OK. If OK, GO to A9 If not OK, REFER to the Wiring Diagrams Manual to identify the possible cause of the circuit short. |

A9 CHECK THE WIPER RELAY OUTPUT CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect BCMC C1035B .
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C125-8 | Ω | C1035B-13 |

Is the resistance less than 3 ohms?

| | |
|------------|--|
| Yes | INSTALL a new <u>BCMC</u> . REFER to: Body Control Module C (BCMC) (419-10 Multifunction Electronic Modules, Removal and Installation). |
| No | REPAIR the circuit. |

A10 CHECK THE WINDSHIELD WIPER MOTOR GROUND CIRCUIT FOR AN OPEN

- Ignition ON.
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C125-8 | \bar{V} | C125-6 |


Is the voltage greater than 11 volts?

| | |
|------------|---------------------------|
| Yes | GO to A11 |
| No | REPAIR the circuit. |

A11 CHECK THE FAIL-SAFE HIGH SPEED WIPER GROUND CIRCUIT CONTROL

NOTICE: This pinpoint test step uses a test lamp to simulate normal circuit loads. Use only a Rotunda Test Lamp (SGT27000) or 250-300mA incandescent bulb test lamp. To avoid connector terminal damage, use the Rotunda Flex Probe kit for the test lamp probe connection to the vehicle. Do not use the test lamp probe directly on any connector.

- Ignition OFF.
- Disconnect Windshield Wiper Motor C125 .
- Connect:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|---|---------------|
| C125-8 |  | C125-1 |

- Ignition ON.
- Place the wiper/washer switch to the high speed setting and then off.
- Ignition OFF.

Does the test lamp illuminate when the wiper washer switch is in the high speed setting?

| | |
|-----|---------------------------|
| Yes | GO to A13 |
| No | GO to A12 |

A12 CHECK THE FAIL-SAFE HIGH SPEED WIPER GROUND CIRCUIT FOR AN OPEN

NOTE: If steps A2-A12 did not identify the cause of the concern, a double fault may be present. After the fail-safe ground is diagnosed and repaired, it is necessary to check all operation modes and diagnose any symptom still present.

- Disconnect SCCM C226A .
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C125-1 | Ω | C226A-4 |

Is the resistance less than 3 ohms?

| | |
|-----|---|
| Yes | INSTALL a new wiper/washer switch. REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). TEST the system for normal operation. If the concern is still present, GO to A14 |
| No | REPAIR the circuit. |

A13 CHECK FOR CORRECT WINDSHIELD WIPER MOTOR OPERATION

- Disconnect and inspect the windshield wiper motor connector.
- Repair:
 - corrosion (install new connector or terminal - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the windshield wiper motor 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 | CHECK OASIS for any applicable service articles: TSB , GSB , SSM , or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new windshield wiper motor. REFER to: Windshield Wiper Motor (501-16 Wipers and Washers, Removal and Installation). |
| No | The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues. |

A14 CHECK FOR CORRECT SCCM (STEERING COLUMN CONTROL MODULE) OPERATION

- Disconnect and inspect all the 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.

Is the concern still present?

| | |
|------------|--|
| Yes | CHECK OASIS for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> , or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>SCCM</u> . REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). |
| 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. |

A15 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Disconnect and inspect all the BCM 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 BCM connectors. Make sure they seat and latch correctly.

Is the concern still present?

| | |
|------------|--|
| Yes | CHECK OASIS for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> , or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>BCM</u> . REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Removal and Installation). |
| 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 for schematic and connector information.

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

DTC Fault Trigger Conditions

| DTC | Description | Fault Trigger Condition |
|-------------------------|---|---|
| <u>SCCM</u> B1131:08 | Wiper motor module: Bus Signal/Message Failures | Sets when the <u>SCCM</u> detects a communication fault with the windshield wiper motor over the <u>LIN</u> . |
| <u>SCCM</u> B1131:11 | Wiper motor module: Circuit Short To Ground | Sets when the <u>SCCM</u> detects a short to ground from the windshield wiper motor <u>LIN</u> circuit. |

Possible Sources

- Wiring, terminals or connectors
- Wiper/washer switch
- Windshield wiper motor
- Rain sensor
- SCCM

Visual Inspection and Pre-checks

- Inspect the wiper/washer switch for damage

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

NOTE: It may be necessary to disconnect and then reconnect the battery after the repair to enable the wiper operation.

B1 CHECK THE HIGH SPEED WIPER OPERATION

- Ignition ON.
- Place the wiper/washer switch to the high speed setting and observe the windshield wipers. Place the wiper/washer switch to the off setting.

Do the windshield wipers operate with the wiper/washer switch in the high speed setting?

| | |
|------------|---------------------------------------|
| Yes | GO to B2 |
| No | GO to Pinpoint Test A |

B2 CHECK THE LOW SPEED WIPER OPERATION

- Place the wiper/washer switch to the low speed setting and observe the windshield wipers. Place the wiper/washer switch to the off setting.

Do the windshield wipers operate with the wiper/washer switch in the low speed setting?

| | |
|------------|--|
| Yes | If not equipped with a rain sensor, GO to Pinpoint Test E If equipped with a rain sensor, GO to Pinpoint Test F |
| No | GO to B3 |

B3 CHECK THE INPUT TO THE SCCM (STEERING COLUMN CONTROL MODULE) USING THE FRONT WIPER COMMAND LOW SPEED (F_WIP_SLO_SW) PID (PARAMETER IDENTIFICATION)

- Using a diagnostic scan tool, view the SCCM Parameter Identifications (PIDs).
- Access the SCCM and monitor the F_WIP_SLO_SW_PID
- Place the wiper/washer switch to the low speed setting.

Does the PID indicate the wiper/washer switch is in the low speed setting?

| | |
|------------|--|
| Yes | If equipped with a rain sensor, GO to B4 If not equipped with a rain sensor, GO to B5 |
| No | INSTALL a new wiper/washer switch. REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). TEST the system for normal operation. If the concern is still present, INSTALL a new <u>SCCM</u> . REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). |

- Ignition OFF.
- Disconnect Rain Sensor C914 .
- Ignition ON.
- Place the wiper/washer switch to the low speed setting and observe the windshield wipers. Place the wiper/washer switch to the off setting.

Do the windshield wipers operate with the wiper/washer switch in the low speed setting?

| | |
|------------|--|
| Yes | INSTALL a new rain sensor. REFER to: Rain Sensor (501-16 Wipers and Washers, Removal and Installation). |
| No | GO to B5 |

B5 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect Windshield Wiper Motor C125 .
- Disconnect SCCM C226A .
- Ignition ON.
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C125-4 | \bar{V} | Ground |

Is any voltage present?

| | |
|------------|--------------------------|
| Yes | REPAIR the circuit. |
| No | GO to B6 |

B6 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C125-4 | Ω | Ground |

Is the resistance greater than 10,000 ohms?

| | |
|------------|--------------------------|
| Yes | GO to B7 |
| No | REPAIR the circuit. |

B7 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR AN OPEN

- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
|---------------|----------------------|---------------|

Is the resistance less than 3 ohms?

| | |
|------------|--------------------------|
| Yes | GO to B8 |
| No | REPAIR the circuit. |

B8 CHECK FOR CORRECT WINDSHIELD WIPER MOTOR OPERATION

- Disconnect and inspect the windshield wiper motor connector.
- Repair:
 - corrosion (install new connector or terminal - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the windshield wiper motor 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 | CHECK OASIS for any applicable service articles: TSB , GSB , SSM , or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new windshield wiper motor. REFER to: Windshield Wiper Motor (501-16 Wipers and Washers, Removal and Installation). TEST the system for normal operation. If the concern is still present, GO to B9 |
| No | The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues. |

B9 CHECK FOR CORRECT SCCM (STEERING COLUMN CONTROL MODULE) OPERATION

- Disconnect and inspect all the SCCM connectors.
- Repair:
 - corrosion (install new connector or terminal - 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 OASIS for any applicable service articles: TSB , GSB , SSM , or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>SCCM</u> . REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). |
| No | The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues. |

PINPOINT TEST C : THE HIGH SPEED WINDSHIELD WIPERS ARE INOPERATIVE

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

Possible Sources

- Windshield wiper motor
- Wiper/washer switch
- SCCM

C1 CHECK THE INPUT TO THE SCCM (STEERING COLUMN CONTROL MODULE) USING THE FRONT WIPER COMMAND HIGH SPEED (F_WIP_FAST_SW) PID (PARAMETER IDENTIFICATION)

- Ignition ON.
- Using a diagnostic scan tool, view the SCCM Parameter Identifications (PIDs).
- Access the SCCM and monitor the F WIPE FAST SW PID
- Place the wiper/washer switch to the high speed setting.

Does the PID indicate the wiper/washer switch is in the high speed setting?

| | |
|------------|--|
| Yes | INSTALL a new windshield wiper motor. REFER to: Windshield Wiper Motor (501-16 Wipers and Washers, Removal and Installation). |
| No | INSTALL a new wiper/washer switch. REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). TEST the system for normal operation. If the concern is still present, INSTALL a new <u>SCCM</u> . REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). |

PINPOINT TEST D : THE WINDSHIELD WIPERS STAY ON CONTINUOUSLY

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

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

DTC Fault Trigger Conditions

| <u>DTC</u> | Description | Fault Trigger Condition |
|-------------------------|--|--|
| <u>BCM</u> B130F:14 | Run Accessory Control: Circuit Short To Ground Or Open | Sets when the <u>BCM</u> detects a short to ground from the wiper relay control circuit. |
| <u>SCCM</u> B1131:02 | Wiper motor module: General Signal Failure | Sets when the input to the windshield wiper motor from the fail-safe circuit does not match the requested input from the <u>SCCM</u> . |

Possible Sources

- Wiring, terminals or connectors
- Wiper/washer switch
- Windshield wiper motor
- SCCM
- BCM

Visual Inspection and Pre-checks

- Inspect the wiper/washer switch for damage

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

D1 CHECK THE WINDSHIELD WIPER OPERATION WITH THE IGNITION OFF

- Ignition OFF.
- Observe the windshield wiper operation.

Do the windshield wipers operate with the ignition off?

| | |
|------------|--------------------------|
| Yes | GO to D5 |
| No | GO to D2 |

D2 CHECK THE WINDSHIELD WIPER OPERATION WITH THE SCCM (STEERING COLUMN CONTROL MODULE) DISCONNECTED

- Ignition OFF.
- Disconnect SCCM_C226A .
- Ignition ON.
- Observe the windshield wiper operation.

Does the windshield wiper motor continue to operate?

| | |
|------------|--|
| Yes | GO to D3 |
| No | INSTALL a new wiper/washer switch. Refer to the appropriate section in Group 211 for the procedure. TEST the system for normal operation. If the concern is still present, GO to D9 |

D3 CHECK THE HIGH SPEED FAIL-SAFE CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect Windshield Wiper Motor C125 .
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C125-1 | Ω | Ground |

Is the resistance greater than 10,000 ohms?

| | |
|------------|--------------------------|
| Yes | GO to D4 |
| No | REPAIR the circuit. |

D4 CHECK FOR CORRECT WINDSHIELD WIPER MOTOR OPERATION

- Disconnect and inspect the windshield wiper motor connector.
- Repair:
 - corrosion (install new connector or terminal - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the windshield wiper motor 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 | CHECK OASIS for any applicable service articles: TSB , GSB , SSM , or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new windshield wiper motor. REFER to: Windshield Wiper Motor (501-16 Wipers and Washers, Removal and Installation). |
| No | The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues. |

D5 CHECK FOR BCM (BODY CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE) B130F:14

- Ignition ON.
- Using a diagnostic scan tool, carry out the [BCM](#) self-test.

Is [DTC B130F:14](#) present?

| | |
|------------|--------------------------|
| Yes | GO to D6 |
| No | GO to D8 |

D6 CHECK THE WIPER RELAY CONTROL CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect [BCM C2280F](#) .
- Disconnect: negative battery cable.
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C2280F-24 | Ω | Ground |

Is the resistance greater than 10,000 ohms?

| | |
|------------|---------------------------|
| Yes | GO to D10 |
| No | GO to D7 |

D7 ISOLATE THE WIPER RELAY CONTROL CIRCUIT SHORT TO GROUND

- Ignition OFF.
- Disconnect [BCMC C1035B](#) .
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C2280F-24 | Ω | Ground |


Is the resistance greater than 10,000 ohms?

| | |
|------------|--|
| Yes | INSTALL a new BCMC . REFER to: Body Control Module C (BCMC) (419-10 Multifunction Electronic Modules, Diagnosis and Testing). |
|------------|--|

| | |
|-----------|---------------------|
| No | REPAIR the circuit. |
|-----------|---------------------|

D8 CHECK THE WINDSHIELD WIPER MOTOR VOLTAGE SUPPLY CIRCUIT FOR A SHORT TO VOLTAGE

- Ignition OFF.
- Disconnect BCMC_C1035B .
- Connect:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|---|---------------|
| C1035B-13 |  | Ground |

Is any voltage present?

| | |
|------------|---|
| Yes | REPAIR the circuit. |
| No | INSTALL a new <u>BCMC</u> . REFER to: Body Control Module C (BCMC) (419-10 Multifunction Electronic Modules, Diagnosis and Testing). |

D9 CHECK FOR CORRECT SCCM (STEERING COLUMN CONTROL MODULE) OPERATION

- Disconnect and inspect all the SCCM connectors.
- Repair:
 - corrosion (install new connector or terminal - 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 OASIS for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> , or <u>FSA</u> . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>SCCM</u> . REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). |
| No | The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues. |

D10 CHECK FOR CORRECT BCM (BODY CONTROL MODULE) OPERATION

- Disconnect and inspect all the BCM connectors.
- Repair:
 - corrosion (install new connector or terminal - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the BCM 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 OASIS for any applicable service articles: <u>TSB</u> , <u>GSB</u> , <u>SSM</u> , or <u>FSA</u> . If a service article |
|------------|--|

exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new BCM
REFER to: Body Control Module (BCM) (419-10 Multifunction Electronic Modules, Removal and Installation).

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

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

Normal Operation and Fault Conditions

REFER to: Wipers and Washers - System Operation and Component Description (501-16 Wipers and Washers, Description and Operation).

Possible Sources

- Wiper/washer switch
- Windshield wiper motor
- SCCM

Visual Inspection and Pre-checks

- Inspect the wiper/washer switch for damage

E1 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 E2 |
| No | GO to E3 |

E2 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 F |
| No | GO to E3 |

E3 CHECK THE LOW SPEED WIPER OPERATION

- Ignition ON.
- Place the wiper/washer switch to the low speed setting and observe the windshield wipers. Place the wiper/washer switch to the off setting.

Do the low speed wipers operate when the low speed setting is selected?

| | |
|------------|---------------------------------------|
| Yes | GO to E4 |
| No | GO to Pinpoint Test B |

E4 CHECK THE INPUT TO THE SCCM (STEERING COLUMN CONTROL MODULE) USING THE THE WIPER/WASHER SWITCH PARAMETER IDENTIFICATIONS (PIDS)

- Using a diagnostic scan tool, view the SCCM Parameter Identifications (PIDs).
- Using a diagnostic scan tool, view the following SCCM wiper/washer switch Parameter Identifications (PIDs):
 - Access the SCCM and monitor the F WIP INT D1 PID
 - Access the SCCM and monitor the F WIP INT D2 PID
 - Access the SCCM and monitor the F WIP INT D3 PID
 - Access the SCCM and monitor the F WIP INT D4 PID
- Cycle the wiper/washer switch from off through each of the intermittent settings.

Do the Parameter Identifications (PIDs) correspond correctly with each setting selection?

| | |
|------------|--|
| Yes | INSTALL a new windshield wiper motor. REFER to: Windshield Wiper Motor (501-16 Wipers and Washers, Removal and Installation). |
| No | INSTALL a new wiper/washer switch. REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). TEST the system for normal operation. If the concern is still present, INSTALL a new <u>SCCM</u> . REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). |

PINPOINT TEST F : THE RAIN SENSITIVE WIPER FEATURE IS INOPERATIVE/DOES NOT OPERATE CORRECTLY

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

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

DTC Fault Trigger Conditions

| <u>DTC</u> | <u>Description</u> | <u>Fault Trigger Condition</u> |
|-------------------------|--|---|
| <u>SCCM</u> B10AD:02 | Rain Sensor: General Signal Failure | Sets when the <u>SCCM</u> detects a communication fault with the rain sensor. |
| <u>SCCM</u> B10AD:08 | Rain Sensor: Bus Signal/Message Failures | Sets when the <u>SCCM</u> detects a communication fault with the rain sensor. |

Possible Sources

- Fuse
- Wiring, terminals or connectors
- Rain sensitive feature not enabled
- Foreign material on windshield, such as dirt, dust or bugs
- Wiper blades

- Windshield glass
- Wiper/washer switch
- Windshield wiper motor
- Rain sensor
- SCCM

Visual Inspection and Pre-checks

- Inspect BCMC fuse 124 (5A)
- Inspect the windshield for damage
- Inspect the rain sensor mounting for damage

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

F1 CHECK THE LOW SPEED WIPER OPERATION

- Ignition ON.
- Place the wiper/washer switch to the low speed setting and observe the windshield wipers. Place the wiper/washer switch to the off setting.

Do the low speed wipers operate when the low speed setting is selected?

| | |
|------------|---------------------------------------|
| Yes | GO to F2 |
| No | GO to Pinpoint Test B |

F2 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) B10AD:02 OR B10AD:08

- Using a diagnostic scan tool, carry out the SCCM self-test.

Are any Diagnostic Trouble Codes (DTCs) present?

| | |
|------------|--|
| Yes | For <u>DTC B10AD:02</u> or <u>B10AD:08</u> , GO to F11 For all other Diagnostic Trouble Codes (DTCs), REFER to the <u>SCCM DTC Chart</u> in this section. |
| No | GO to F3 |

F3 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 F4 |
| No | ENABLE the rain sensitive feature. INFORM the customer how to enable/disable the rain sensitive feature. |

F4 CHECK THE INPUT TO THE SCCM (STEERING COLUMN CONTROL MODULE) USING THE WIPER/WASHER SWITCH PARAMETER IDENTIFICATIONS (PIDS)

- Using a diagnostic scan tool, monitor the following SCCM wiper/washer switch Parameter Identifications (PIDs):
 - Access the SCCM and monitor the F WIP INT D1 PID
 - Access the SCCM and monitor the F WIP INT D2 PID
 - Access the SCCM and monitor the F WIP INT D3 PID
 - Access the SCCM and monitor the F WIP INT D4 PID

- Cycle the wiper/washer switch from off through each of the auto/intermittent sensitivity settings.

Do the Parameter Identifications (PIDs) correspond correctly with each setting selection?

| | |
|------------|--|
| Yes | GO to F5 |
| No | <p>INSTALL a new wiper/washer switch. REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation).</p> <p>TEST the system for normal operation. If the concern is still present, INSTALL a new <u>SCCM</u>. REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation).</p> |

F5 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 | <p>INSTALL a new windshield. REFER to: Fixed Glass (501-11 Glass, Frames and Mechanisms, General Procedures).</p> |
| No | GO to F6 |

F6 CHECK THE WINDSHIELD GLASS FOR STREAKING

- Ignition ON.
- Turn the wiper/washer switch to the low speed wiper setting and while applying water to the windshield surface. Observe the wipe quality, especially around the area of the rain sensor.

Is any streaking present on the windshield around the area of the rain sensor?

| | |
|------------|--------------------------|
| Yes | GO to F7 |
| No | GO to F9 |

F7 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 wiper/washer switch to the low speed wiper setting and while applying water to the windshield surface. Observe the wipe quality, especially around the area of the rain sensor.

Was there noticeable improvement in the wipe quality after cleaning the glass and the wiper blades?

| | |
|------------|--|
| Yes | GO to F8 |
| No | INSTALL new wiper blades. GO to F8 |

F8 RECHECK THE RAIN SENSITIVE WIPERS OPERATION

- Place the wiper/washer 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 F9 |

F9 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 F10 |
| No | The sensor gel-type lens is missing or damaged. INSTALL a new rain sensor. REFER to: Rain Sensor (501-16 Wipers and Washers, Removal and Installation). |

F10 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 F11 |
| No | REMOVE the rain sensor. REFER to: Rain Sensor (501-16 Wipers and Washers, Removal and Installation). CLEAN the mating surfaces between the windshield glass and the rain sensor. INSTALL the rain sensor correctly. REFER to: Rain Sensor (501-16 Wipers and Washers, Removal and Installation). TEST the system for normal operation. If the concern is still present, INSTALL a new windshield wiper motor. REFER to: Windshield Wiper Motor (501-16 Wipers and Washers, Removal and Installation). |

F11 CHECK THE RAIN SENSOR VOLTAGE SUPPLY CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect Rain Sensor C914 .
- Ignition ON.
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|---|---------------|
| C914-1 |  | Ground |

Is the voltage greater than 11 volts?

| | |
|--|--|
| | |
|--|--|

| | |
|------------|--|
| Yes | GO to F12 |
| No | VERIFY <u>BCMC</u> fuse 124 (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. |

F12 CHECK THE RAIN SENSOR GROUND CIRCUIT FOR AN OPEN

- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C914-1 | \overline{V} | C914-3 |

Is the voltage greater than 11 volts?

| | |
|------------|---------------------------|
| Yes | GO to F13 |
| No | REPAIR the circuit. |

F13 CHECK THE LIN (LOCAL INTERCONNECT NETWORK) CIRCUIT FOR AN OPEN

- Ignition OFF.
- Disconnect SCCM C226A .
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C914-2 | Ω | C226A-3 |

Is the resistance less than 3 ohms?

| | |
|------------|---------------------------|
| Yes | GO to F14 |
| No | REPAIR the circuit. |

F14 CHECK FOR CORRECT SCCM (STEERING COLUMN CONTROL MODULE) OPERATION

- Disconnect and inspect all the SCCM connectors.
- Repair:
 - corrosion (install new connector or terminal - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect all 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 OASIS for any applicable service articles: TSB , GSB , SSM , or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>SCCM</u> . REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 |
|------------|--|

| | |
|-----------|---|
| | Steering Wheel and Column Electrical Components, Removal and Installation). |
| No | The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues. |

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

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

Possible Sources

- Wiper mounting arm and pivot shaft
- Windshield wiper motor

Visual Inspection and Pre-checks

- Inspect the mounting arm and pivot shaft for damage

G1 CHECK THE WIPER MOUNTING ARM 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 G2 |
| No | INSTALL a wiper mounting arm and pivot shaft. REFER to: Windshield Wiper Pivot Arm (501-16 Wipers and Washers, Removal and Installation). |

G2 CHECK THE WINDSHIELD WIPER PARK RELAY OPERATION

- Ignition ON.
- Place the wiper/washer switch to the low speed setting. When the wiper blades are in the middle of a wipe, place the wiper/washer switch off.

Do the windshield wipers immediately stop when the wiper/washer switch is turned off?

| | |
|------------|--|
| Yes | INSTALL a new windshield wiper motor. REFER to: Windshield Wiper Motor (501-16 Wipers and Washers, Removal and Installation). |
| No | ADJUST the pivot arms correctly on the windshield. |

PINPOINT TEST H : THE WINDSHIELD WASHER IS INOPERATIVE

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

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

Possible Sources

- Wiring, terminals or connectors
- Windshield washer hose
- Windshield washer jet
- Washer pump
- Wiper/washer switch
- Windshield wiper motor
- SCCM

Visual Inspection and Pre-checks

- Inspect the wiper/washer switch for damage

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

H1 CHECK THE AMBIENT AIR TEMPERATURE

- Check the ambient air temperature.

Is the ambient air temperature below freezing?

| | |
|------------|--------------------------|
| Yes | GO to H2 |
| No | GO to H4 |

H2 CHECK THE WASHER SOLVENT

- Check the washer solvent and make sure it is of the correct type to use for the temperature conditions present.

Is the correct type of washer solvent present?

| | |
|------------|--|
| Yes | GO to H3 |
| No | ALLOW the vehicle to warm to room temperature. DRAIN and REFILL the windshield washer reservoir with the correct washer solvent type. INFORM the customer of the correct type of washer solvent to use for the temperature conditions present. |

H3 CHECK FOR WASHER SOLVENT TO THE WASHER JETS

- Disconnect the washer hoses from the windshield washer jets and place them in a container to capture fluid.
- Ignition ON.
- Momentarily activate the windshield washer function.

Is washer fluid emitted at the washer hoses?

| | |
|------------|---------------------------------------|
| Yes | INSTALL a new washer jet in question. |
| No | GO to H4 |

H4 CHECK FOR WASHER PUMP ACTIVATION

- Ignition ON.
- While listening for washer pump activation near the right front of the vehicle, have an assistant activate the windshield washer function.

Does the washer pump activate?

| | |
|------------|--------------------------|
| Yes | GO to H5 |
| No | GO to H6 |

H5 CHECK FOR DAMAGED WASHER HOSES

- Inspect the washer hoses for kinks or damage.

Are the washer hoses OK?

| | |
|------------|---|
| Yes | Install a new washer pump. REFER to: Windshield Washer Pump (501-16 Wipers and Washers, Removal and Installation). |
| No | REPAIR the washer hoses as necessary. |

H6 CHECK THE WIPER/WASHER SWITCH INPUT USING THE WASHER SWITCH (FRONT) (F_WASH_SW) PID (PARAMETER IDENTIFICATION)

- Ignition ON.
- Using a diagnostic scan tool, view the SCCM Parameter Identifications (PIDs).
- Access the SCCM and monitor the F_WASH_SW PID

- Activate and release the wash function on the wiper/washer switch.


Does the PID indicate correctly when the switch is activated?

| | |
|------------|--|
| Yes | GO to H7 |
| No | INSTALL a new wiper/washer switch. REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). TEST the system for normal operation. If the concern is still present, INSTALL a new <u>SCCM</u> . REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). |

H7 CHECK FOR VOLTAGE TO THE WASHER PUMP

NOTICE: This pinpoint test step uses a test lamp to simulate normal circuit loads. Use only a Rotunda Test Lamp (SGT27000) or 250-300mA incandescent bulb test lamp. To avoid connector terminal damage, use the Rotunda Flex Probe kit for the test lamp probe connection to the vehicle. Do not use the test lamp probe directly on any connector.

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

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|---|---------------|
| C137-2 |  | Ground |

- Ignition ON.
- Use the wiper/washer switch to activate the windshield washer function.


Does the test lamp illuminate when the washer is activated?

| | |
|------------|--------------------------|
| Yes | GO to H8 |
| No | GO to H9 |

H8 CHECK THE WASHER PUMP GROUND CIRCUIT FOR AN OPEN

NOTICE: This pinpoint test step uses a test lamp to simulate normal circuit loads. Use only a Rotunda Test Lamp (SGT27000) or 250-300mA incandescent bulb test lamp. To avoid connector terminal damage, use the Rotunda Flex Probe kit for the test lamp probe connection to the vehicle. Do not use the test lamp probe directly on any connector.

- Connect:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|---|---------------|
| C137-2 |  | C137-1 |

- Use the wiper/washer switch to activate the windshield washer function.

Does the test lamp illuminate when the washer is activated?

| | |
|------------|---|
| Yes | INSTALL a new washer pump. REFER to: Windshield Washer Pump (501-16 Wipers and Washers, Removal and Installation). |
| No | REPAIR the circuit. |

H9 CHECK THE WASHER PUMP VOLTAGE SUPPLY CIRCUIT FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect Windshield Wiper Motor C125 .
- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C125-7 | Ω | Ground |

Is the resistance greater than 10,000 ohms?

| | |
|------------|---------------------------|
| Yes | GO to H10 |
| No | REPAIR the circuit. |

H10 CHECK THE WASHER PUMP VOLTAGE SUPPLY CIRCUIT FOR AN OPEN

- Measure:

| Positive Lead | Measurement / Action | Negative Lead |
|---------------|----------------------|---------------|
| C125-7 | Ω | C137-2 |

Is the resistance less than 3 ohms?

| | |
|------------|---------------------------|
| Yes | GO to H11 |
| No | REPAIR the circuit. |

H11 CHECK FOR CORRECT WINDSHIELD WIPER MOTOR OPERATION

- Disconnect and inspect the windshield wiper motor connector.
- Repair:
 - corrosion (install new connector or terminal - clean module pins)
 - damaged or bent pins - install new terminals/pins
 - pushed-out pins - install new pins as necessary
- Reconnect the windshield wiper motor 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 | CHECK OASIS for any applicable service articles: TSB , GSB , SSM , or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new windshield wiper motor. REFER to: Windshield Wiper Motor (501-16 Wipers and Washers, Removal and Installation). |
| No | The system is operating correctly at this time. The concern may have been caused by a loose or corroded connector. ADDRESS the root cause of any connector or pin issues. |

PINPOINT TEST I : THE WINDSHIELD WASHER IS ALWAYS ON

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

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

Possible Sources

- Wiper/washer switch
- Windshield wiper motor
- [SCCM](#)

Visual Inspection and Pre-checks

- Inspect the wiper/washer switch for damage

I1 CHECK THE WIPER/WASHER SWITCH INPUT USING THE WASHER SWITCH (FRONT) (F_WASH_SW) PID (PARAMETER IDENTIFICATION)

- Ignition ON.
- Using a diagnostic scan tool, view the [SCCM](#) Parameter Identifications (PIDs).
- Access the [SCCM](#) and monitor the [F WASH SW PID](#)

Does the **PID** indicate the switch is activated?

| | |
|------------|--|
| Yes | INSTALL a new wiper/washer switch REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). TEST the system for normal operation. If the concern is still present, INSTALL a new SCCM . REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 |
|------------|--|

Steering Wheel and Column Electrical Components, Removal and Installation).

No INSTALL a new windshield wiper motor.
REFER to: [Windshield Wiper Motor](#) (501-16 Wipers and Washers, Removal and Installation).

PINPOINT TEST J : THE FRONT CAMERA WASHER IS INOPERATIVE

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

Possible Sources

- Front camera washer hose
- Front camera washer jet

Visual Inspection and Pre-checks

- Inspect the front camera washer jet for damage

J1 CHECK THE WINDSHIELD WASHER OPERATION

- Ignition ON.
- Momentarily activate the windshield washer function.

Does the windshield washer operate?

| | |
|------------|---------------------------------------|
| Yes | GO to J2 |
| No | GO to Pinpoint Test H |

J2 CHECK FOR WASHER SOLVENT TO THE FRONT CAMERA WASHER JET

- Ignition OFF.
- Disconnect the washer hose from the front camera washer jet and place it in a container to capture fluid.
- Ignition ON.
- Momentarily activate the windshield washer function.

Is washer fluid emitted at the washer hose?

| | |
|------------|---|
| Yes | INSTALL a new front camera washer jet. |
| No | INSTALL a new front camera washer hose. |

PINPOINT TEST K : DTC B10AD:49

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

DTC Fault Trigger Conditions

| <u>DTC</u> | Description | Fault Trigger Condition |
|------------|-------------|-------------------------|
|------------|-------------|-------------------------|

SCCM
B10AD:49

Rain Sensor: Internal
Electronic Failure

This DTC sets when the SCCM detects an internal failure in the rain sensor or when the rain Sensor is not installed correctly.

Possible Sources

- Rain Sensor
- SCCM

K1 CHECK FOR DTC B10AD:49

- Ignition ON.
- Verify the Rain Sensor is correctly installed.
- Using a diagnostic scan tool, carry out the SCCM self test.
- CLEAR all DTCs and carry out the SCCM self test again.

Does DTC B10AD:49 return?

| | |
|------------|---|
| Yes | INSTALL a new rain sensor. REFER to: Rain Sensor (501-16 Wipers and Washers, Removal and Installation). TEST the system for normal operation. If the concern is still present, CHECK OASIS for any applicable service articles: TSB , GSB , SSM , or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>SCCM</u> . REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). |
| No | The system is operating correctly at this time. The concern may have been caused by an intermittent condition. DIAGNOSE the observable symptom. |

PINPOINT TEST L : DTC (DIAGNOSTIC TROUBLE CODE) B1131:49

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

DTC Fault Trigger Conditions

| <u>DTC</u> | Description | Fault Trigger Condition |
|------------------|--|---|
| SCCM B1131:49 | Wiper motor module: Internal Electronic Failure | This <u>DTC</u> sets when the <u>SCCM</u> detects an internal failure in the Wiper Motor. |

Possible Sources

- Windshield Wiper Motor
- SCCM

L1 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) B1131:49

- Ignition ON.
- Using a diagnostic scan tool, carry out the SCCM self test.
- CLEAR all DTCs and carry out the SCCM self test again.

Does DTC B1131:49 return?

| | |
|------------|----------------------------|
| Yes | INSTALL a new wiper motor. |
|------------|----------------------------|

REFER to: [Windshield Wiper Motor](#) (501-16 Wipers and Washers, Removal and Installation).

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

PINPOINT TEST M : DTC (DIAGNOSTIC TROUBLE CODE) B10AD:55 OR B1131:55

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

DTC Fault Trigger Conditions

| DTC | Description | Fault Trigger Condition |
|------------------|------------------------------------|--|
| SCCM B10AD:55 | Rain Sensor: Not Configured | This DTC sets when the SCCM has not been programmed or incorrectly programmed. |
| SCCM B1131:55 | Wiper motor module: Not Configured | This DTC sets when the SCCM has not been programmed or incorrectly programmed. |

Possible Sources

- [SCCM](#)

M1 CHECK FOR DTC (DIAGNOSTIC TROUBLE CODE) B10AD:55 OR B1131:55

- Ignition ON.
- Using a diagnostic scan tool, carry out the [SCCM](#) self test.

Is **DTC B10AD:55** or **B1131:55** present?

| | |
|------------|---|
| Yes | CHECK OASIS for any applicable service articles: TSB , GSB , SSM , or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL SCCM AS BUILT DATA . REFER to: Module Programming (418-01A Module Configuration, General Procedures). |
| No | The system is operating correctly at this time. The concern may have been caused by an intermittent condition. DIAGNOSE the observable symptom. |

PINPOINT TEST N : DTC (DIAGNOSTIC TROUBLE CODE) B124E:96 OR B124E:9E

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

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

DTC Fault Trigger Conditions

| DTC | Description | Fault Trigger Condition |
|------------------|---|---|
| SCCM B124E:96 | Wiper Stalk Switch Pack: Component Internal Failure | Sets when the SCCM detects an improper or unexpected signal from the wiper stalk switch pack. |

SCCM
B124E:9E

Wiper Stalk Switch Pack: Stuck On

Sets when the SCCM detects an improper or unexpected signal from the wiper stalk switch pack.

Possible Sources

- Wiring, terminals or connectors
- Wiper/washer switch
- SCCM

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

N1 CHECK FOR SCCM (STEERING COLUMN CONTROL MODULE) DTC (DIAGNOSTIC TROUBLE CODE) B124E:96 OR B124E:9E

- Ignition ON.
- Using a diagnostic scan tool, carry out the SCCM self-test.

Is DTC B124E:96 OR B124E:9E present?

| | |
|------------|--|
| Yes | REMOVE the Wiper Stalk Switch Pack and inspect the pins and terminals for damage and corrosion and repair as needed. If ok, INSTALL a new Wiper Stalk Switch Pack. REFER to: Steering Column Multifunction Switch LH (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). . CLEAR the <u>DTC</u> and RETEST. If the <u>DTC</u> returns, CHECK OASIS for any applicable service articles: TSB , GSB , SSM , or FSA . If a service article exists for this concern, DISCONTINUE this test and FOLLOW the service article instructions. If no service articles address this concern, INSTALL a new <u>SCCM</u> . REFER to: Steering Column Control Module (SCCM) (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). REFER to: Steering Column Control Module (SCCM) - Vehicles With: Adaptive Steering (211-05 Steering Wheel and Column Electrical Components, Removal and Installation). . |
| 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 O : DTC B1131:9A

Normal Operation and Fault Conditions

REFER to: [Wipers and Washers - System Operation and Component Description](#) (501-16 Wipers and Washers, Description and Operation).

DTC Fault Trigger Conditions

| <u>DTC</u> | <u>Description</u> | <u>Fault Trigger Condition</u> |
|------------------|--|---|
| SCCM B1131:9A | Wiper motor module: Component or System Operating Conditions | Sets when the <u>SCCM</u> detects an operational fault within the wiper motor module. |

Possible Sources

- Windshield wiper motor

O1 CHECK FOR DTC B1131:9A

- Ignition ON.
- Using a diagnostic scan tool, carry out the SCCM self test.

Is DTC B1131:9A present?

| | |
|------------|---|
| Yes | DIAGNOSE the symptom present with the wiper/washer system. REFER to the Symptom Chart in this section. |
| No | The system is operating correctly at this time. The concern may have been caused by an intermittent condition. DIAGNOSE the observable symptom. |

PINPOINT TEST P : WIPER BLADES PERFORMANCE CONCERNS - POOR CLEANING, STREAKING, OR CHATTER

Normal Operation and Fault Conditions

Wiper blade cleaning, streaking, or chatter concerns are commonly caused by dirt, ice, debris, or other foreign material on the wiper blade(s) or glass surface. The wiper blades and glass surface should be cleaned with washer fluid and a soft cloth and retested prior to replacing wiper blades for a cleaning, streaking, or chatter concern.

Check and clean the wiper blades with washer fluid or water using a soft sponge or cloth before replacing new wiper blades according to the warranty manual if the wiper blades are worn or damaged. Use a non-abrasive glass cleaner to clean the glass.

Possible Sources

- Wipers performing poor cleaning, streaking or chattering may be caused by dirt, ice or other foreign materials.
- Wiper blades
- Rubbers problems
- Dirt, ice, debris, or other foreign material on wiper blade(s)
- Dirt, ice, debris, or other foreign material on glass surface
- Damage to wiper blade(s)
- Damage to glass

Visual Inspection and Pre-checks

- Inspect the glass surface for damage

P1 CLEAN THE WIPER BLADES AND GLASS SURFACE

- Ignition OFF.
- Clean the suspect wiper blade(s):
 - Wipe the suspect wiper blade(s) with a clean, lint-free cloth and windshield washer fluid (Motorcraft ZC-32M20-EG or equivalent)
- Clean the glass surface:
 - Wipe the suspect glass surface with a clean, lint-free cloth and glass cleaner (Motorcraft ZC-23 or equivalent)
- Ignition ON.
- Retest the wiper system.

Is the wiper performance concern still present (poor cleaning, streaking, chatter)?

| | |
|------------|---|
| Yes | INSTALL new wiper blade(s) for the blade(s) in question. |
| No | The system is operating correctly. The concern was caused by dirt, ice, debris, or other foreign material on the wiper blade(s) or glass surface. |