


Rear View Mirrors — Exterior

Special Tool(s)

 <p>ST1137-A</p>	<p>73III Automotive Meter 105-R0057 or equivalent</p>
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Principles of Operation

Exterior Rear View Mirrors

The movement of the LH and RH exterior mirror glass is controlled by the exterior mirror control switch and the LH and RH exterior mirror motors. Adjusting the exterior mirror switch to the LH or RH position determines which exterior mirror motor will be controlled. The exterior mirror control switch logic is the selected movement request from the exterior mirror control switch. When the exterior mirror control switch is adjusted to the left, right, up or down position, the exterior mirror control switch will supply voltage and ground to the selected exterior mirror motor to move the exterior mirror glass to the desired position.

The exterior mirrors use a jumper harness between the vehicle wire harness connector and the exterior mirror motor. The exterior mirror jumper harness is integral to the exterior mirror. If a concern with the exterior mirror jumper harness exists and cannot be repaired, a new exterior mirror must be installed.

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"> • Exterior mirror • Exterior mirror cover 	<ul style="list-style-type: none"> • Smart Junction Box (SJB) fuse 4 (5A) • Exterior mirror control switch • Exterior mirror motor • Exterior mirror • Loose or corroded connections • Wiring harness

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. If the concern is not visually evident, verify the symptom and GO to [Symptom Chart - Exterior Mirrors](#) or GO to [Symptom Chart - NVH](#).

Symptom Chart — Exterior Mirrors

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Condition	Possible Sources	Action
<ul style="list-style-type: none"> The mirrors are inoperative 	<ul style="list-style-type: none"> Fuse Circuitry Exterior mirror control switch 	<ul style="list-style-type: none"> GO to Pinpoint Test A.
<ul style="list-style-type: none"> A single mirror is inoperative 	<ul style="list-style-type: none"> Circuitry Exterior mirror control switch Exterior mirror motor Exterior mirror 	<ul style="list-style-type: none"> GO to Pinpoint Test B.
<ul style="list-style-type: none"> A single mirror does not function with switch logic 	<ul style="list-style-type: none"> Circuitry Exterior mirror control switch Exterior mirror motor Exterior mirror 	<ul style="list-style-type: none"> GO to Pinpoint Test C.

Symptom Chart — NVH

Symptom Chart — NVH

NOTE: NVH symptoms should be identified using the diagnostic tools that are available. For a list of these tools, an explanation of their uses and a glossary of common terms, refer to [Section 100-04](#). Since it is possible any one of multiple systems may be the cause of a symptom, it may be necessary to use a process of elimination type of diagnostic approach to pinpoint the responsible system. If this is not the causal system for the symptom, refer back to [Section 100-04](#) for the next likely system and continue diagnosis.

Condition	Possible Sources	Action
<ul style="list-style-type: none"> Exterior mirror vibrates/loose 	<ul style="list-style-type: none"> Exterior mirror mounting nuts loose Exterior mirror glass loose Aftermarket air deflector/stone shields 	<ul style="list-style-type: none"> TIGHTEN the mounting nuts to the specified value in the Specifications table. PRESS the center of the exterior mirror glass up, down, left and right to make sure that the exterior mirror glass is seated correctly. If the exterior mirror glass is still loose, REMOVE the exterior mirror glass and INSPECT the exterior mirror backing plate for damage. If the exterior mirror backing plate is damaged, INSTALL a new exterior mirror glass. REFER to Exterior Mirror Glass. If possible, REMOVE aftermarket air deflector/stone shield, then ROAD TEST the vehicle. If concern is no longer present, ADVISE customer that aftermarket components were causing undesired vibration.
<ul style="list-style-type: none"> Wind noise 	<ul style="list-style-type: none"> Foam gasket between the rear view mirror and door is missing or damaged Exterior mirror is not correctly fitted to the door 	<ul style="list-style-type: none"> VERIFY that the foam gasket is present and in good condition. If necessary, REPOSITION the foam gasket between the exterior mirror and door frame. VERIFY that there are no gaps between the exterior mirror and the door. If necessary, LOOSEN the exterior mirror nuts and REPOSITION the exterior mirror.

Pinpoint Tests

Pinpoint Test A: The Mirrors are Inoperative

Refer to Wiring Diagrams Cell [124](#), Power Mirrors for schematic and connector information.

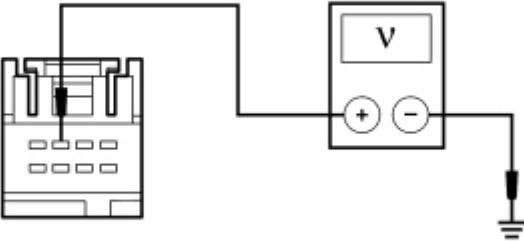
Normal Operation

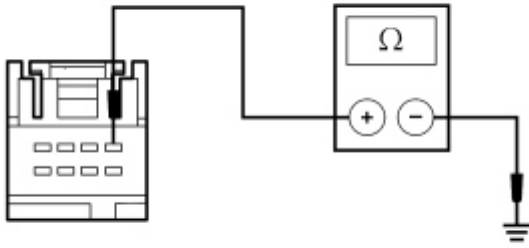
The exterior mirror control switch receives voltage from Smart Junction Box (SJB) fuse 4 (5A) through circuit 956 (OG/LG) and ground through circuit 1205 (BK). The exterior mirror control switch uses circuit 542 (YE) as the common circuit for both exterior mirror up/down and right/left movement.

This pinpoint test is intended to diagnose the following:

- Fuse
- Wiring, terminals or connectors
- Exterior mirror control switch

PINPOINT TEST A: THE MIRRORS ARE INOPERATIVE

Test Step	Result / Action to Take
<p>A1 CHECK CIRCUIT 956 (OG/LG) FOR VOLTAGE</p> <ul style="list-style-type: none"> • Ignition OFF. • Disconnect: Exterior Mirror Control Switch C527. • Ignition ON. • Measure the voltage between exterior mirror control switch C527-3, circuit 956 (OG/LG), harness side and ground.  <p>N0012113</p> <ul style="list-style-type: none"> • Is the voltage greater than 10 volts? 	<p>Yes GO to A2.</p> <p>No VERIFY that SJB fuse 4 (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.</p>
<p>A2 CHECK CIRCUIT 1205 (BK) FOR AN OPEN</p> <ul style="list-style-type: none"> • Ignition OFF. • Measure the resistance between exterior mirror control switch C527-1, circuit 1205 (BK), harness side and ground. 	<p>Yes GO to A3.</p> <p>No REPAIR the circuit. TEST the system for normal operation.</p>

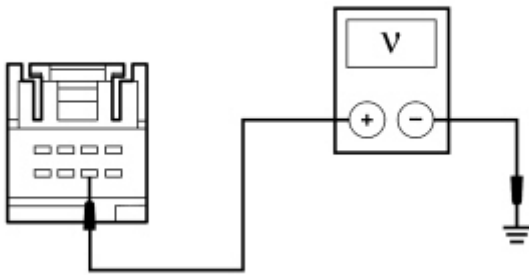


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- Is the resistance less than 5 ohms?

A3 CHECK CIRCUIT 542 (YE) FOR A SHORT TO VOLTAGE

- Ignition ON.
- Measure the voltage between exterior mirror control switch C527-6, circuit 542 (YE), harness side and ground.



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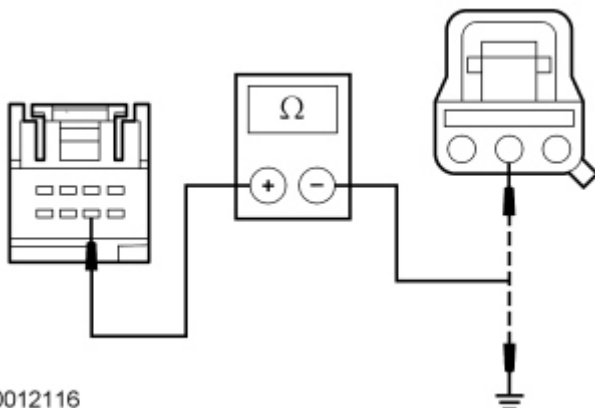
- Is any voltage present?

Yes
REPAIR the circuit. TEST the system for normal operation.

No
GO to [A4](#).

A4 CHECK CIRCUIT 542 (YE) FOR AN OPEN OR A SHORT TO GROUND

- Ignition OFF.
- Disconnect: LH Exterior Mirror C516.
- Measure the resistance between exterior mirror control switch C527-6, circuit 542 (YE), harness side and ground; and between exterior mirror control switch C527-6, circuit 542 (YE), harness side and LH exterior mirror C516-2, circuit 542 (YE), harness side.



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- Is the resistance greater than 10,000 ohms between the exterior mirror control switch connector and ground and less than 5 ohms between the exterior mirror control switch connector and the exterior mirror connector?

Yes
INSTALL a new exterior mirror control switch. REFER to [Exterior Mirror Control Switch](#) in this section. TEST the system for normal operation.

No
REPAIR the circuit. TEST the system for normal operation.

Refer to Wiring Diagrams Cell [124](#), Power Mirrors for schematic and connector information.

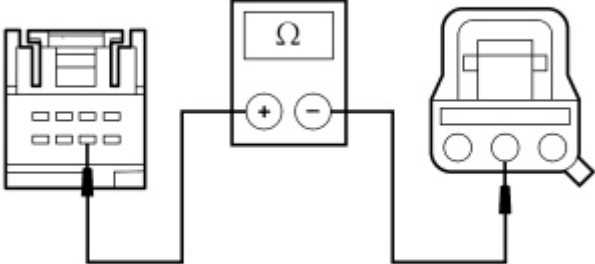
Normal Operation

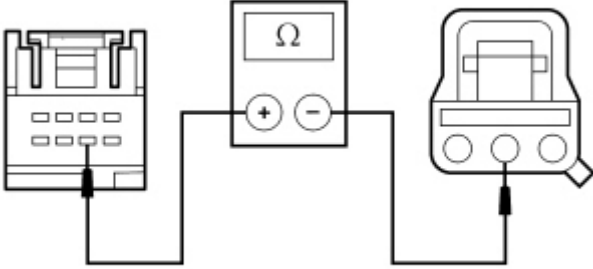
The exterior mirror control switch uses circuit 542 (YE) as the common circuit for both exterior mirror up/down and right/left movement.

This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- Exterior mirror control switch
- Exterior mirror motor
- Exterior mirror

PINPOINT TEST B: A SINGLE MIRROR IS INOPERATIVE

Test Step	Result / Action to Take
<p>B1 CHECK THE LH EXTERIOR MIRROR</p> <ul style="list-style-type: none"> • Set the exterior mirror control switch to the LH mirror position. • Use the exterior mirror control switch to operate the LH exterior mirror. • Does the LH exterior mirror operate? 	<p>Yes GO to B2.</p> <p>No GO to B4.</p>
<p>B2 CHECK THE EXTERIOR MIRROR CONTROL SWITCH</p> <ul style="list-style-type: none"> • Ignition OFF. • Disconnect: Exterior Mirror Control Switch C527 . • Carry out the Exterior Mirror Control Switch Component Test. <p>Refer to Wiring Diagrams Cell 149 for component testing.</p> <ul style="list-style-type: none"> • Did the exterior mirror control switch pass the component test? 	<p>Yes GO to B3.</p> <p>No INSTALL a new exterior mirror control switch. REFER to Exterior Mirror Control Switch in this section. TEST the system for normal operation.</p>
<p>B3 CHECK CIRCUIT 542 (YE) FOR AN OPEN</p> <ul style="list-style-type: none"> • Disconnect: RH Exterior Mirror C622. • Measure the resistance between exterior mirror control switch C527-6, circuit 542 (YE), harness side and RH exterior mirror C622-2, circuit 542 (YE), harness side. <div style="text-align: center;">  <p>The diagram illustrates a resistance measurement setup. On the left is a control switch with a terminal labeled '6'. A wire connects this terminal to the positive (+) lead of a multimeter. On the right is an exterior mirror with a terminal labeled '2'. A wire connects this terminal to the negative (-) lead of the multimeter. The multimeter's display shows the Greek letter Omega (Ω), representing resistance.</p> </div> <p>N0012119</p> <ul style="list-style-type: none"> • Is the resistance less than 5 ohms? 	<p>Yes CHECK the RH exterior mirror jumper harness between the vehicle harness and the exterior mirror motor for open circuits and damaged or pushed-out pins. If the jumper harness is not OK, REPAIR the jumper harness. If the jumper harness cannot be repaired, INSTALL a new exterior mirror. REFER to Exterior Mirror in this section. If the jumper harness is OK, INSTALL a new exterior mirror motor. REFER to Exterior Mirror Motor in this section. TEST the system for normal operation.</p> <p>No REPAIR the circuit. TEST the system for normal operation.</p>
<p>B4 CHECK THE EXTERIOR MIRROR CONTROL SWITCH</p> <ul style="list-style-type: none"> • Ignition OFF. • Disconnect: Exterior Mirror Control Switch C527 . • Carry out the Exterior Mirror Control Switch Component Test. 	<p>Yes GO to B5.</p> <p>No</p>

<p>Refer to Wiring Diagrams Cell 149 for component testing.</p> <ul style="list-style-type: none"> ● Did the exterior mirror control switch pass the component test? 	<p>INSTALL a new exterior mirror control switch. REFER to Exterior Mirror Control Switch in this section. TEST the system for normal operation.</p>
<p>B5 CHECK CIRCUIT 542 (YE) FOR AN OPEN</p> <ul style="list-style-type: none"> ● Disconnect: LH Exterior Mirror C516. ● Measure the resistance between exterior mirror control switch C527-6, circuit 542 (YE), harness side and LH exterior mirror C516-2, circuit 542 (YE), harness side.  <p>N0012119</p> <ul style="list-style-type: none"> ● Is the resistance less than 5 ohms? 	<p>Yes CHECK the LH exterior mirror jumper harness between the vehicle harness and the exterior mirror motor for open circuits and damaged or pushed-out pins. If the jumper harness is not OK, REPAIR the jumper harness. If the jumper harness cannot be repaired, INSTALL a new exterior mirror. REFER to Exterior Mirror in this section. If the jumper harness is OK, INSTALL a new exterior mirror motor. REFER to Exterior Mirror Motor in this section. TEST the system for normal operation.</p> <p>No REPAIR the circuit. TEST the system for normal operation.</p>

Pinpoint Test C: A Single Mirror Does Not Function With Switch Logic

Refer to Wiring Diagrams Cell [124](#), Power Mirrors for schematic and connector information.

Normal Operation

The exterior mirror control switch controls the LH exterior mirror movement by switching voltage and ground to circuits 541 (DB), 540 (RD) and 542 (YE). The exterior mirror switch controls the RH exterior mirror movement by switching voltage and ground to circuits 544 (VT), 543 (DG) and 542 (YE).

Mirror Movement

- When the LH/RH exterior mirror motor receives power through circuit 541 (DB)/544 (VT) and ground through circuit 542 (YE), the LH/RH exterior mirror will operate upward.
- When the LH/RH exterior mirror motor receives ground through circuit 541 (DB)/544 (VT) and power through circuit 542 (YE), the LH/RH exterior mirror will operate downward.
- When the LH/RH exterior mirror motor receives power through circuit 540 (RD)/543 (DG) and ground through circuit 542 (YE), the LH/RH exterior mirror will operate left.
- When the LH/RH exterior mirror motor receives ground through circuit 540 (RD)/543 (DG) and power through circuit 542 (YE), the LH/RH exterior mirror will operate right.

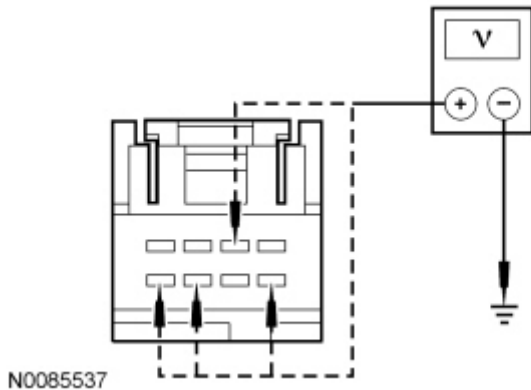
This pinpoint test is intended to diagnose the following:

- Wiring, terminals or connectors
- Exterior mirror control switch
- Exterior mirror motor
- Exterior mirror

PINPOINT TEST C: A SINGLE MIRROR DOES NOT FUNCTION WITH SWITCH LOGIC

Test Step	Result / Action to Take
C1 CHECK THE EXTERIOR MIRROR CONTROL CIRCUITS FOR A SHORT TO VOLTAGE	

- Ignition OFF.
- Disconnect: Exterior Mirror Control Switch C527.
- Ignition ON.
- Measure the voltage between ground and exterior mirror control switch:
 - C527-2, circuit 544 (VT), harness side.
 - C527-5, circuit 541 (DB), harness side.
 - C527-7, circuit 543 (DG), harness side.
 - C527-8, circuit 540 (RD), harness side.



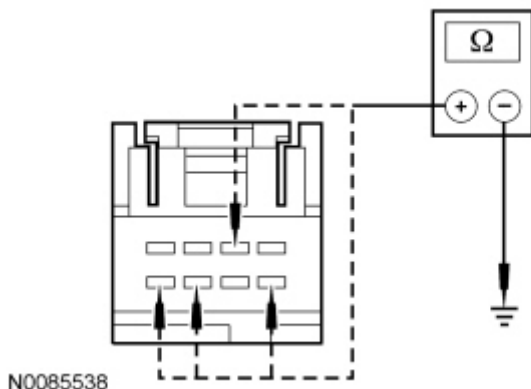
- Is any voltage present?

Yes
REPAIR the circuit(s). TEST the system for normal operation.

No
GO to [C2](#).

C2 CHECK THE EXTERIOR MIRROR CONTROL CIRCUITS FOR A SHORT TO GROUND

- Ignition OFF.
- Disconnect: Exterior Mirror C516 (LH) or C622 (RH).
- Measure the resistance between ground and exterior mirror control switch:
 - C527-2, circuit 544 (VT), harness side.
 - C527-5, circuit 541 (DB), harness side.
 - C527-7, circuit 543 (DG), harness side.
 - C527-8, circuit 540 (RD), harness side.



- Are the resistances greater than 10,000 ohms?

Yes
GO to [C3](#).

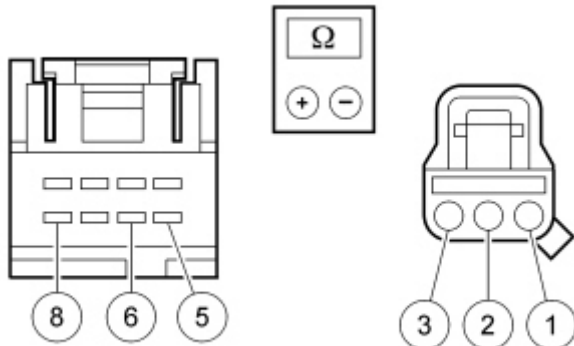
No
REPAIR the circuit(s). TEST the system for normal operation.

C3 CHECK THE EXTERIOR MIRROR CONTROL CIRCUITS FOR AN OPEN

- **LH mirror:** Measure the resistance between exterior mirror control switch:
 - C527-6, circuit 542 (YE), harness side and LH exterior mirror C516-2, circuit 542 (YE), harness side.
 - C527-8, circuit 540 (RD), harness side and LH exterior mirror C516-3, circuit 540 (RD), harness side.
 - C527-5, circuit 541 (DB), harness side and LH

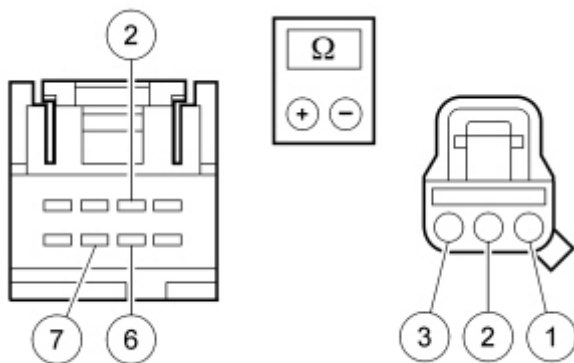
Yes
CHECK the LH or RH exterior mirror jumper harness between the vehicle harness and the exterior mirror motor for open or shorted circuits and damaged or pushed-out pins. If the jumper harness is not OK, REPAIR the jumper harness. If the jumper harness cannot be repaired, INSTALL a new LH

exterior mirror C516-1, circuit 541 (DB), harness side.



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- **RH mirror:** Measure the resistance between exterior mirror control switch:
 - C527-6, circuit 542 (YE), harness side and RH exterior mirror C622-2, circuit 542 (YE), harness side.
 - C527-7, circuit 543 (DG), harness side and RH exterior mirror C622-3, circuit 543 (DG), harness side.
 - C527-2, circuit 544 (VT), harness side and RH exterior mirror C622-1, circuit 544 (VT), harness side.



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

or RH exterior mirror. REFER to [Exterior Mirror](#) in this section. If the jumper harness is OK, INSTALL a new LH or RH exterior mirror motor. REFER to [Exterior Mirror Motor](#) in this section. TEST the system for normal operation.

No
REPAIR the circuit(s). TEST the system for normal operation.

