



Signal® Mirror Installation Instructions

2006-2010 Ford Explorer, 2006-2010 Ford Ranger, 2006-2010 Mercury Mountaineer
& 2006-2010 Mazda B-Series



THE safety accessory of the 21st Century.™

Professional Installation Recommended:

Warranty does not cover damage to the vehicle or mirror housing due to improper installation. Muth Mirror Systems, LLC (MMS) assumes no responsibility with regard to the accuracy of this information. MMS assumes no liability or responsibility resulting from improper installation, even in reliance upon this information. Proper installation is the responsibility of the installer. It is your responsibility to verify any circuit before interfacing with it using a digital multimeter.

INCLUDED ITEMS:

- 1-left and 1-right *Signal*® mirror
- 1-left and 1-right wire harness
- 2-wire taps
- 1-ring connector
- 1-instruction manual

REQUIRED TOOLS:

- Ratchet with extension or ratcheting screwdriver
- 6 mm socket
- 7 mm socket
- 8 mm socket
- Socket wrench
- T-30 Torx bit
- Large slotted screwdriver
- Small slotted screwdriver
- Large Phillips screwdriver
- Small Phillips screwdriver
- Small pry bar (nylon, non-scratchable)
- Gopher rod (wire)
- Electrical tape
- Wire crimper and stripper
- Needle nose pliers
- Multimeter or wire tester
- Sturdy gloves
- Safety glasses or goggles
- Utility knife

PLEASE READ INSTRUCTIONS PRIOR TO INSTALLATION.

PROBLEMS OR QUESTIONS?

Technical Assistance is available by calling
Muth Mirror Systems Technicians at:

1-800-844-6616

Monday through Friday
Between 8:00 a.m. and 5:00 p.m. CST

Or through the Muth web site: www.muthco.com

Or via E-mail: techsupport@muthco.com

Explorer / Mountaineer installation instruction starts on page 3

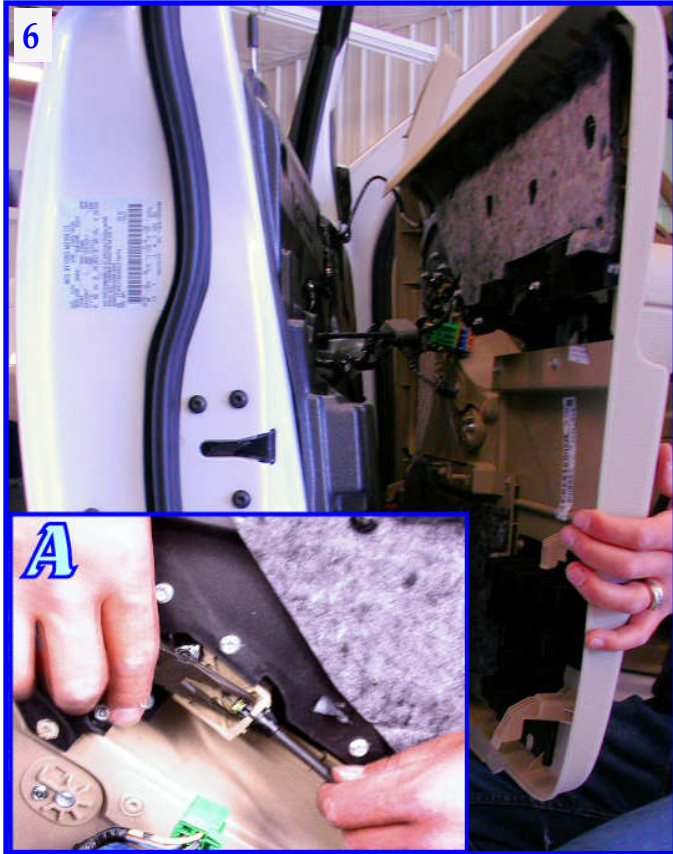
Ranger installation instruction starts on page 10.

Explorer & Mountaineer - Door Panel Removal



1. Start with opening the driver's side door and lowering the window.
2. Remove (2) screws on the bottom of door panel (7mm Socket).
3. Using a nylon, non-scratchable, pry bar - pry, unsnap and remove door handle cover **(A&B)**. Remove the (2) revealed screws using a 7mm socket.
4. With a nylon, non-scratchable, pry bar - pry, unsnap and remove control module cover **(A)**. Remove the (2) revealed screws using a 7mm socket.
5. Lift control module up and out. Turn control module over and disconnect all wiring connections.

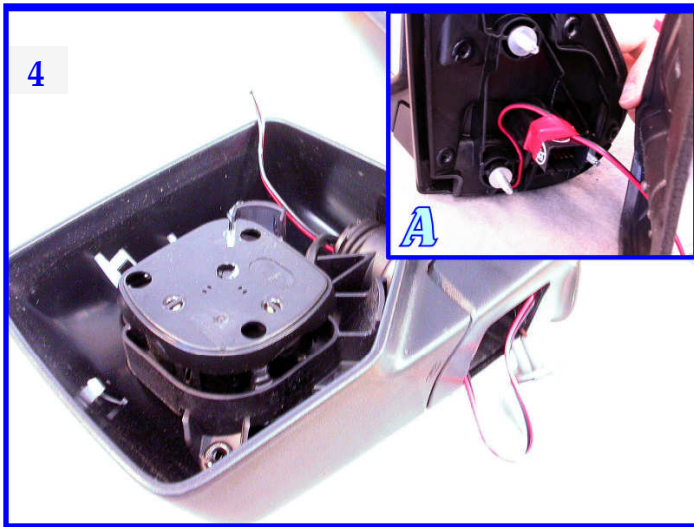
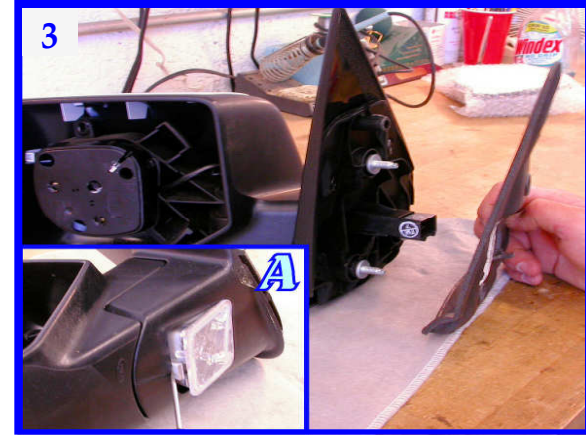
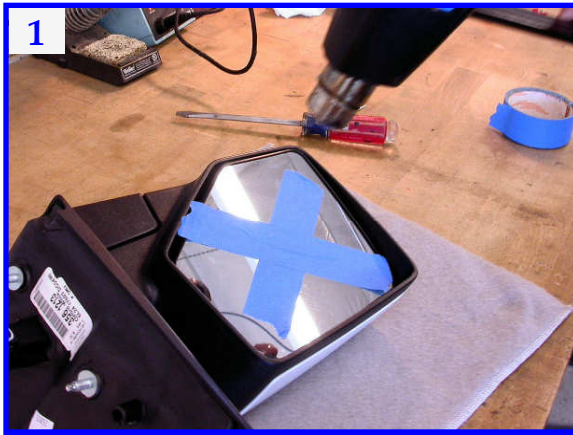
Explorer & Mountaineer - Door Panel Removal Continued



6. Lift the door panel up and off of the door. Hold the door panel a few inches away from the door. Using a needle nose pliers, unclip latch cable **(A)**. Remove door panel and set it aside.
7. Remove corner trim piece and disconnect wiring connector **(A)**. Secure the mirror housing with one hand and remove the three mirror mounting nuts from the corner of the door with 11mm socket. Carefully remove the mirror housing from the door. Lay the mirror housing on a, cloth covered, flat surfaced work bench.

Explorer & Mountaineer - Mirror Replacement

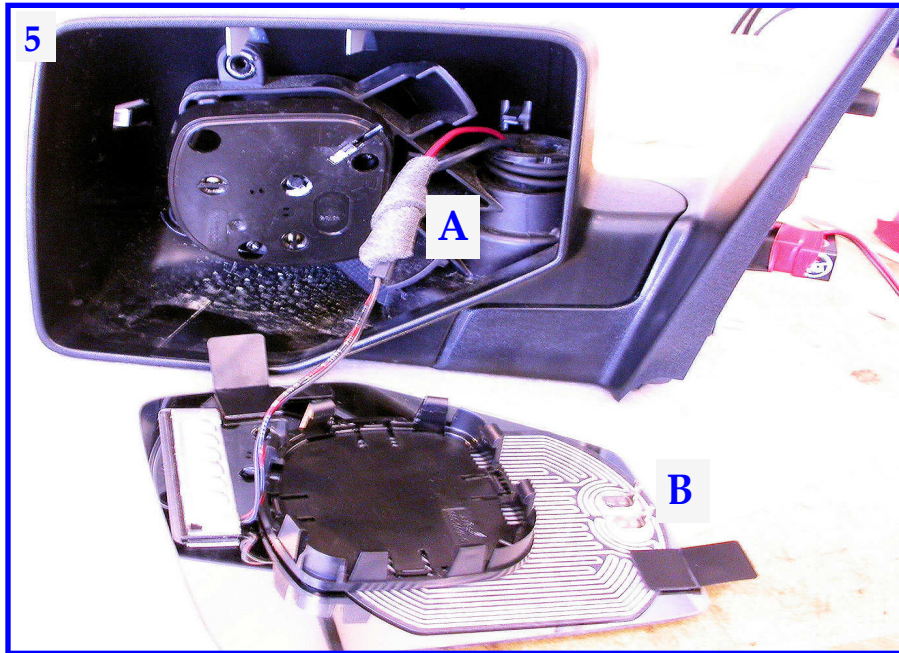
WARNING: Safety glasses and sturdy gloves are required for mirror replacement.



1. Place an 'X' on the mirror glass with masking tape to help prevent glass breakage. With a heater gun (blow dryer), heat around the central portions of the glass (in a circular motion) for about 30 seconds to help loosen backing plate engagement.
2. Push on the outboard side of the mirror to manually pivot mirror fully inward. Insert a large flathead screwdriver down between the motor actuator and the backplate motor mount. Slowly and carefully pry up against mirror and around motor actuator until OE mirror unsnaps. **If heated, disconnect heater wires from heater terminals.** Lift up and remove OE mirror.
3. Push in and unsnap flood light lens cover using a small flathead screwdriver (A). Remove lens cover and set it aside. Remove foam insulation from housing sail.
4. Using the shorter of the two *Signal*® mirror harnesses from the wiring kit, guide the end without the mating connector from inside mirror housing and out through the housing sail leaving about 4" -6" of wiring inside housing for connection. **When routing the *Signal*® mirror harness thru, make sure to follow OE wiring passages.** Pull the *Signal*® mirror harness thru to eliminate any slack inside routing passage. Secure the *Signal*® mirror harness on top of the OE wire connector (shown in (A)) using electrical tape. Re-assemble foam insulation onto housing sail. Snap flood light Lens cover back into place.

Explorer & Mountaineer - Mirror Replacement Continued

WARNING: Safety glasses and sturdy gloves are required for mirror replacement.



5. Connect the *Signal*® mirror mating connector to the *Signal*® mirror harness and wrap connectors with the supplied foam wrap (A). **If heated, reconnect the heater wires to the heater terminals on the back of the new *Signal*® mirror (B).** **NOTE: There is no polarity so the wires may be interchanged.**
6. Position and align the mirror mount onto the motor actuator. Carefully tuck all wiring behind motor actuator. **Not doing so, could result in wiring interfering with mirror travel.** Push all anti-vibration tabs inward so that they are inside of mirror housing. Slowly push down on mirror until mirror snaps into place. Firmly press down on all sides of the *Signal*® mirror to ensure mirror is fully seated and functional.

Explorer & Mountaineer - Wire Routing

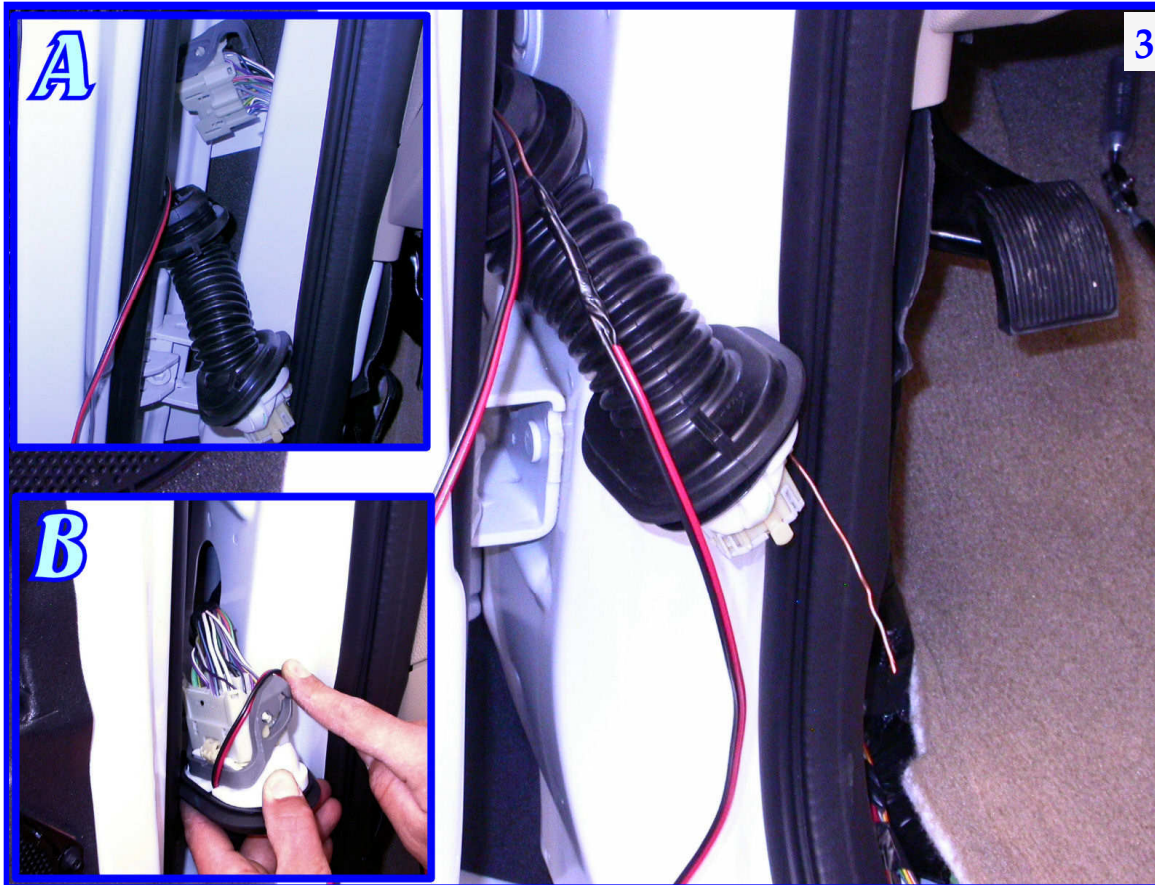
WARNING: When routing wires into vehicle, it is extremely important to not let wires get pinched or crushed at any time. Avoid window track and sharp edges at all times. Not doing so may cause circuit shortage problems in the long run.



TIP: A gopher rod (wire) maybe use to assist in the *Signal*® mirror wire harness routing processes.

1. Guide the wire harnesses through the door frame and position the mirror housing assembly on the mirror mount. Bolt the mirror housing to the mirror mount with three mirror mounting nuts (A). **WARNING! Do not over tighten the mirror mounting nuts.** Reconnect OE wire harness. Locate rubber grommet in door jam. Door frame side - push rubber grommet in and pull it out. Pull back a portion of the plastic door insulation to gain access to door frame cavity. Locate the small hole (B), route *Signal*® mirror harness into the small hole and out the access hole vacated by the removal of the rubber grommet.
2. Remove floor trim piece. Using a T-27 Torx bit, remove screw which secures hood release lever and remove hood release lever (A). Unsnap kick panel to gain access to wiring passages (B).

Explorer & Mountaineer - Wire Routing Continued



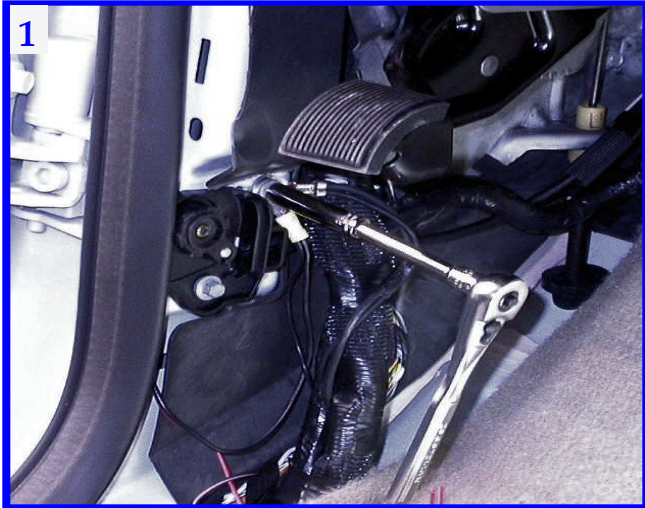
TIP: A gopher rod (wire) maybe use to assist in the *Signal*® mirror wire harness routing processes.

3. Vehicle frame side - with a pliers, pull back weather barrier to expose connectors. **CAUTION: Careful not to damage material.** Disconnect mating connectors. Using a small flathead screwdriver, push tabs to disengage wire connector from vehicle frame (A). With a gopher rod, guide the *Signal*® mirror harness thru rubber grommet and connector. Reconnect mating connectors and fish the *Signal*® mirror harness thru access hole into vehicle. Snap mating connector back into its location. Gently pull the *Signal*® mirror wire harness to remove any slack in the wire.

* Before proceeding, please read remainder of instructions for information regarding wiring identification and options. *

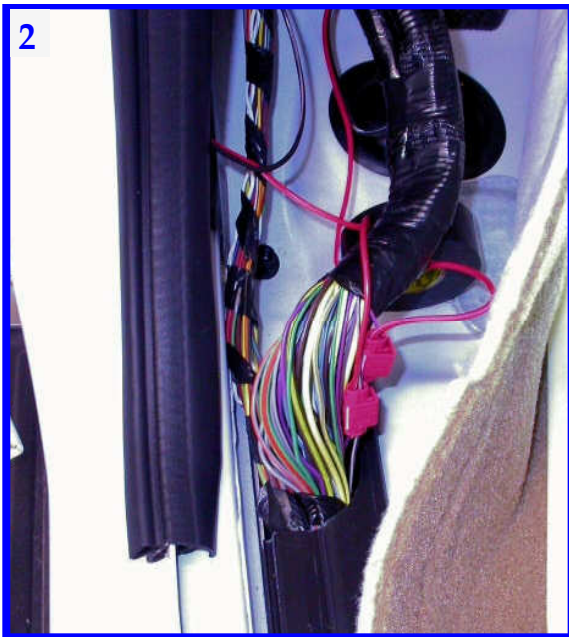
** Repeat all of the previous steps to replace the factory mirror on the passenger side door with the new *Signal*® mirror. **

Explorer & Mountaineer - Wire Identification



GROUNDING WIRES

1. The ground wiring location is located in the driver side kick panel area. Locate the grounding bolt within the driver side kick panel. Route both *Signal*® mirror wire harnesses to the driver side kick panel area. Cut and split the red and black wires on both *Signal*® mirror wire harnesses. Route the black wire to the grounding bolt location. Cut both black wires to length, making sure enough slack is left for splicing. Splice the black wires and attach them to the supplied grounding ring. Attach the grounding ring to the grounding bolt on the vehicle frame.



TURN ONLY

2. The vehicle's electrical wiring is located within the wire bundle along the floor board on the driver side kick panel. Using a utility knife, carefully cut and remove some of the electrical tape to gain access to the wires behind it. Locate the solid GREY w/ BROWN STRIPE wire within the wire bundle. Turn the ignition key so that electrical power is on and activate the driver side turn indicator. Probe the wire with the wire tester to verify that flashing turn directional power is present. Label that wire as '**driver side indicator**'. Locate the PURPLE w/ ORANGE STRIPE wire. Activate the passenger side turn indicator and probe the wire with the wire tester to verify that flashing turn directional power is present. Label that wire as '**passenger side indicator**'.

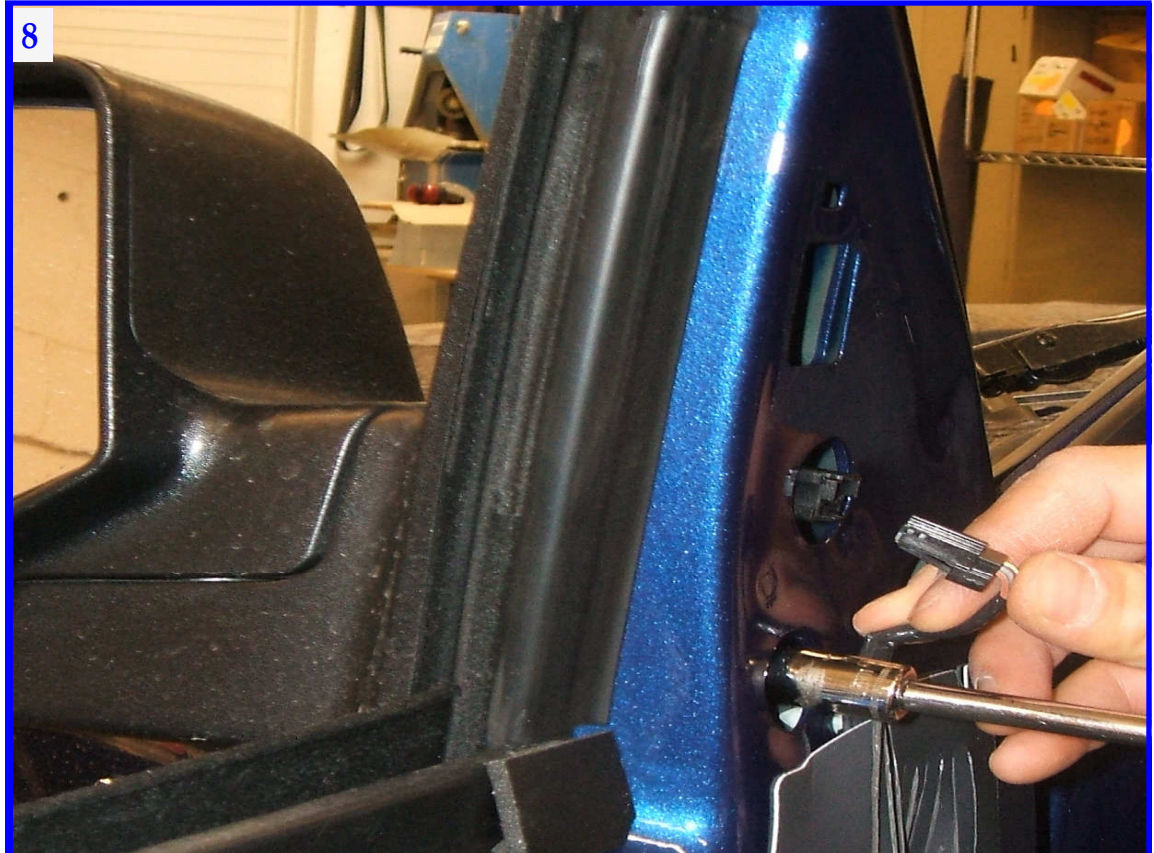
****Skip to last page for wire splicing procedures****

Ranger - Door Panel Removal



1. Start with opening the driver's side door and lowering the window.. Remove the screw on the lower left hand corner of door panel using a Phillips screwdriver **(A)**. Continue removing the (2) screws in the armrest of door panel [Phillips screwdriver] **(B)**.
2. With a nylon, non-scratchable, pry bar - pry around armrest and unsnap armrest. Lift up armrest and disconnect all wiring connections. Remove armrest and set it aside.
3. Using a Phillips screwdriver, remove the screw as shown.
4. Pry around panel cover to disengage it. Remove panel cover.
5. Remove (2) screws on panel plate with a Phillips screwdriver. Remove panel plate.
6. Lift up and pull out door panel and set it aside.

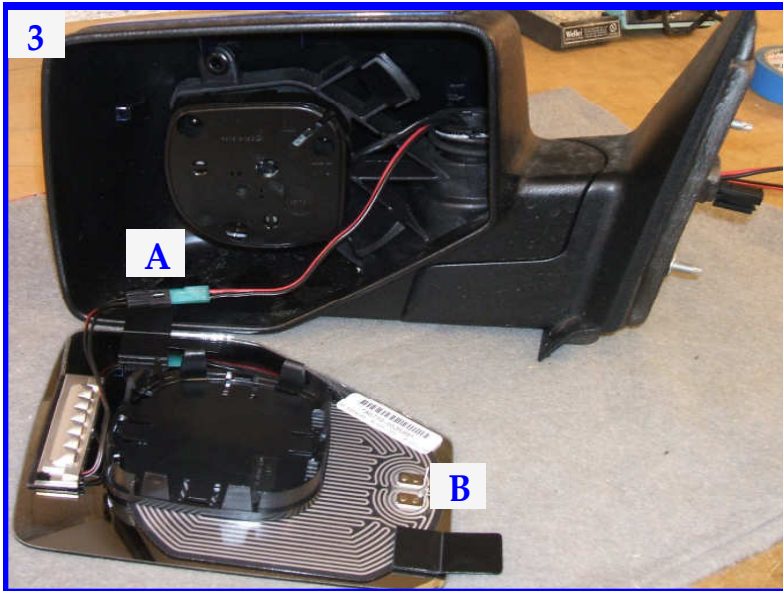
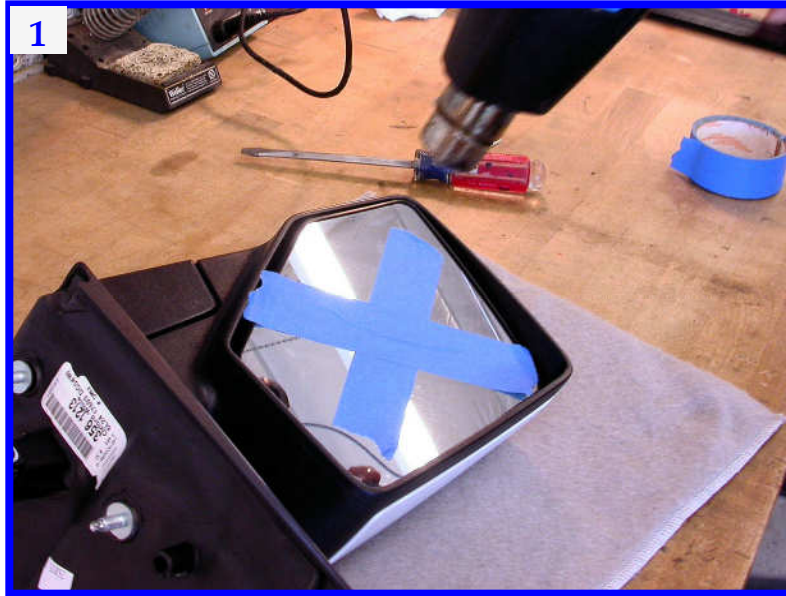
Ranger - Door Panel Removal Continued



7. Remove corner trim piece.
8. Disconnect wiring connector. Secure the mirror housing with one hand and remove the three mirror mounting nuts from the corner of the door with 11mm socket. Carefully remove the mirror housing from the door. Lay the mirror housing on a cloth covered, flat surfaced work bench.

Ranger - Mirror Replacement

WARNING: Safety glasses and sturdy gloves are required for mirror replacement.



1. Place an 'X' on the mirror glass with masking tape to help prevent glass breakage. With a heater gun (blow dryer), heat around the central portions of the glass (in a circular motion) for about 30 seconds to help loosen backing plate engagement.
2. Push on the outboard side of the mirror to manually pivot mirror fully inward. Insert a large flathead screwdriver down between the motor actuator and the backplate motor mount. Slowly and carefully pry up against mirror and around motor actuator until OE mirror unsnaps. **If heated, disconnect heater wires from heater terminals.** Lift up and remove OE mirror.
3. **Using the shorter of the two Signal® mirror harnesses from the wiring kit, guide the end without the mating connector from inside mirror housing and out through the housing sail leaving about 4"-6" of wiring inside housing for connection. When routing the Signal® mirror harness thru, make sure to follow OE wiring passages.** Pull the Signal® mirror harness thru to eliminate any slack inside routing passage. Connect the Signal® mirror mating connector to the Signal® mirror harness (A) and wrap connectors with the supplied foam wrap. **If heated, reconnect the heater wires to the heater terminals on the back of the new Signal® mirror (B).** **NOTE: There is no polarity so the wires may be**

Ranger - Mirror Replacement Continued

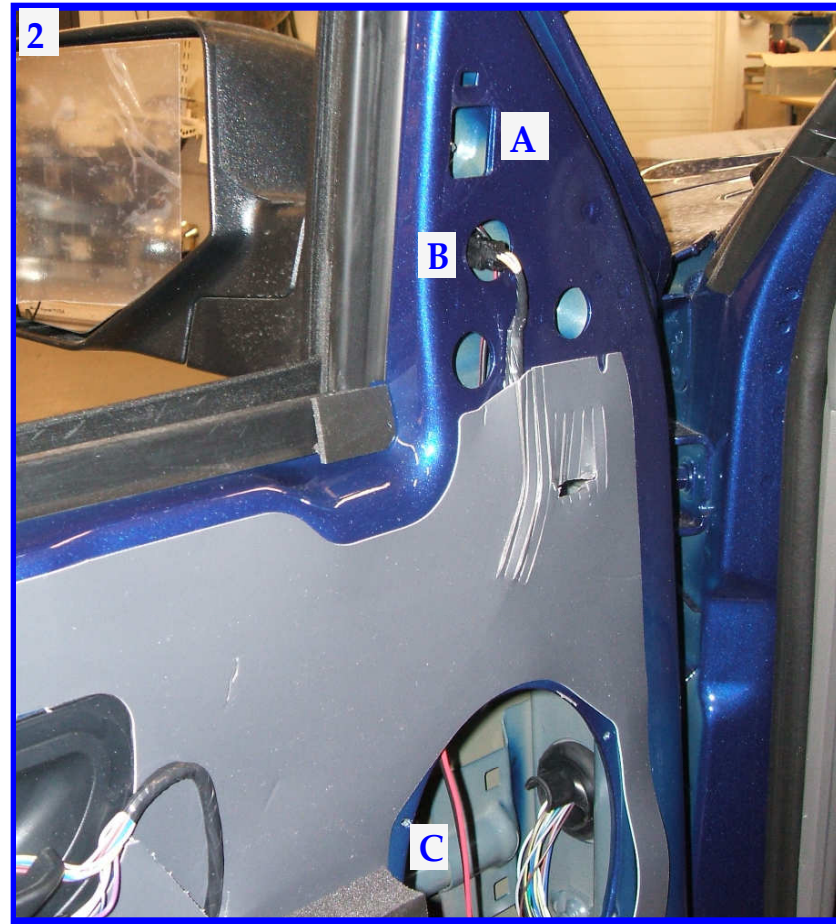
WARNING: Safety glasses and sturdy gloves are required for mirror replacement.



4. Position and align the mirror mount onto the motor actuator. Carefully tuck all wiring behind motor actuator. **Not doing so, could result in wiring interfering with mirror travel.** Push all anti-vibration tabs so that anti-vibration tabs are inside of mirror housing. Slowly push down on mirror until mirror snaps into place. Firmly press down on all sides of the *Signal*® mirror to ensure mirror is fully seated and functional.
5. Route the *Signal*® mirror harness around the OE wires as shown.

Ranger - Wire Routing

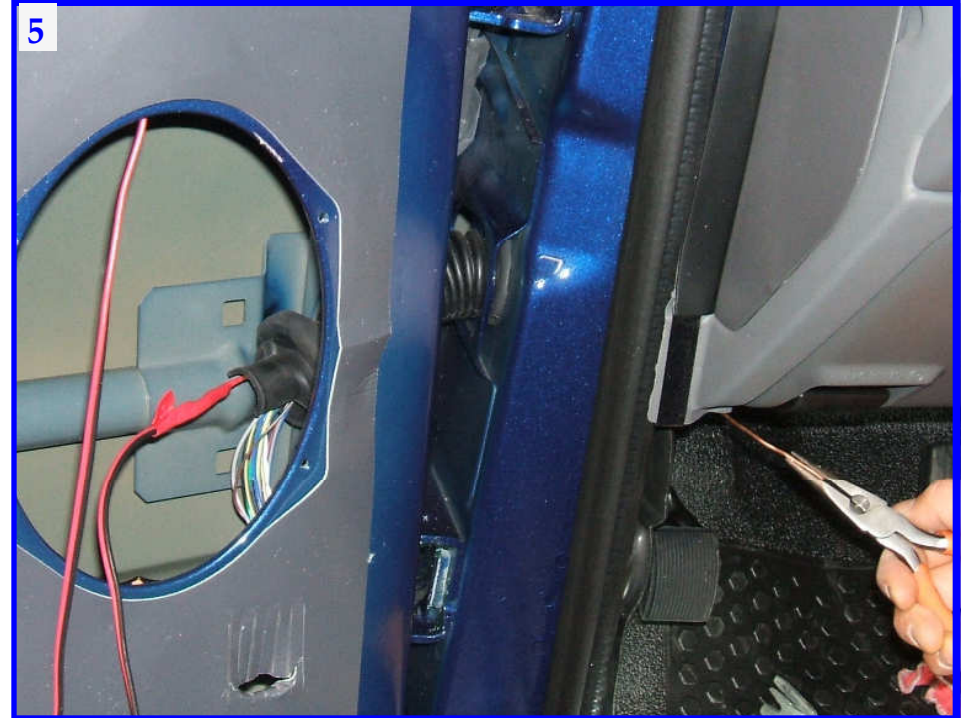
WARNING: When routing wires into vehicle, it is extremely important to not let wires get pinched or crushed at any time. Avoid window track and sharp edges at all times. Not doing so may cause circuit shortage problems in the long run.



TIP: A gopher rod (wire) maybe use to assist in the *Signal*® mirror wire harness routing processes.

1. Using a 6mm socket, remove the (4) speaker screws. Disconnect speaker wire and remove speaker to gain access to wire routing passage.
2. Guide the wire harnesses through the door frame and position the mirror housing assembly on the mirror mount. Bolt the mirror housing to the mirror mount with three mirror mounting nuts (A). **WARNING!** Do not over tighten the mirror mounting nuts. Reconnect OE wire harness (B). Route the *Signal*® mirror harness down in between door frame as shown in (C).

Ranger - Wire Routing Continued



TIP: A gopher rod (wire) maybe use to assist in the *Signal*® mirror wire harness routing processes.

3. Using a push-up tool, remove plastic insert located in the kick panel.
4. With a nylon, non-scratchable, pry bar - lift up on the floor trim partially, unsnap and remove kick panel.
5. With a gopher rod, guide the *Signal*® mirror harness thru rubber grommet and into vehicle as shown. Gently pull the *Signal*® mirror wire harness to remove any slack in the wire. **CAUTION: Careful not to damage material.**
6. To gain access to the wiring location, the knee panel and plate need to be removed. Using a T-30 Torx bit, remove the (2) screws holding the knee panel in place. Unsnap and remove knee panel. Using an 8mm socket, remove the (5) screws around the knee plate and remove knee plate.

* Before proceeding, please read remainder of instructions for information regarding wiring identification and options. *

** Repeat all of the previous steps to replace the factory mirror on the passenger side door with the new *Signal*® mirror. **



Ranger - Wire Identification



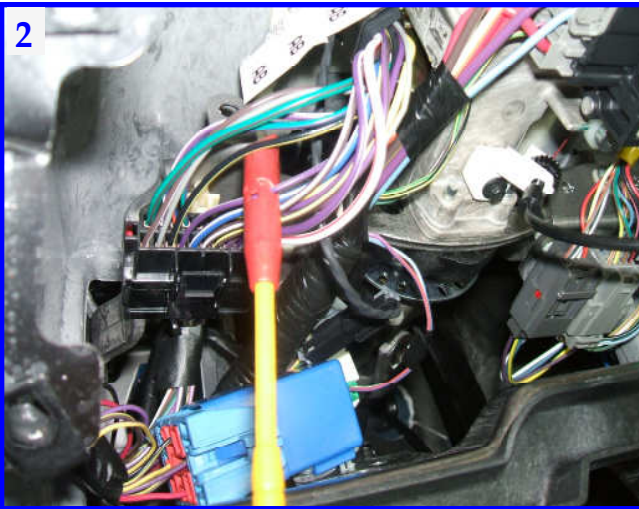
GROUNDING WIRES

1. The ground wiring location is located in the driver side kick panel area. Locate the grounding bolt within the driver side kick panel. Route both *Signal*® mirror wire harnesses to the driver side kick panel area. Cut and split the BLACK w/ RED TRACE and BLACK wires on both *Signal*® mirror wire harnesses. Route the BLACK wire to the grounding bolt location. Cut both BLACK wires to length, making sure enough slack is left for splicing. Splice the BLACK wires and attach them to the supplied grounding ring. Attach the grounding ring to the grounding bolt on the vehicle frame.

Please refer to the appropriate model and year, of your vehicle, to get the correct wire color information

2006 Ranger & Mazda B-Series

2a. The vehicle's electrical wiring is located within the wire bundle along the steering column. Locate the left-front: LIGHT GREEN w/ WHITE STRIPE (left-rear: LIGHT GREEN w/ ORANGE STRIPE - includes brake) wire within the wire bundle. Turn the ignition key so that electrical power is on and activate the driver side turn indicator. Probe the wire with the wire tester to verify that flashing turn directional power is present. Label that wire as 'driver side indicator'. Find the right-front: WHITE w/ LIGHT BLUE STRIPE (right-rear: ORANGE w/ LIGHT BLUE STRIPE - includes brake). Activate the passenger side turn indicator and probe the wire with the wire tester to verify that flashing turn directional power is present. Label that wire as 'passenger side indicator'.

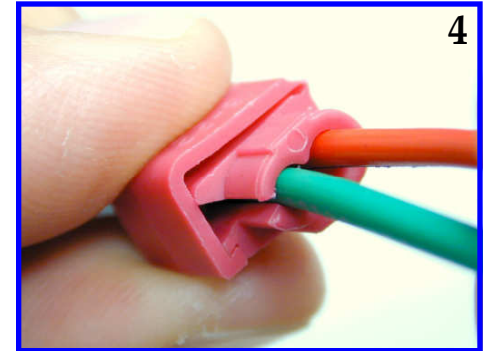
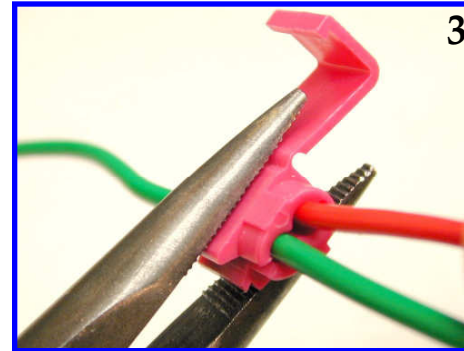
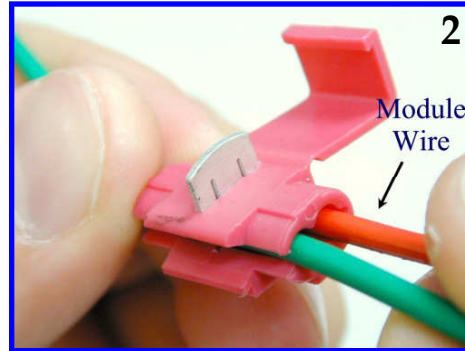
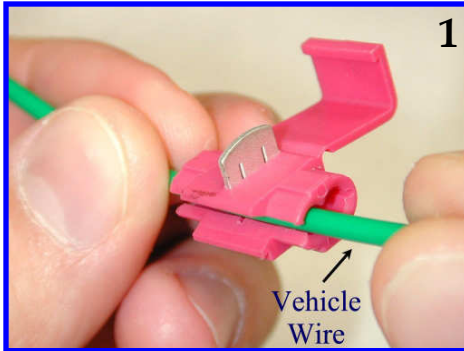


2007-2010 Ranger & Mazda B-Series (can include brake so probe carefully)

2b. The vehicle's electrical wiring is located within the wire bundle along the steering column. Locate the solid VIOLET w/ WHITE STRIPE wire within the wire bundle. Turn the ignition key so that electrical power is on and activate the driver side turn indicator. Probe the wire with the wire tester to verify that flashing turn directional power is present. Label that wire as 'driver side indicator'. **NOTE: There are (3) violet w/ white stripe wires in this location. Please verify with wire tester to confirm you have correctly identified the correct wire.** Locate the GREY w/ YELLOW STRIPE wire. Activate the passenger side turn indicator and probe the wire with the wire tester to verify that flashing turn directional power is present. Label that wire as 'passenger side indicator'.

2006-2010 Sportrac, Explorer & Mountaineer

2c. The vehicle's electrical wiring is located within the wire bundle along the steering column. Locate the left-front: BLUE w/ GREEN STRIPE (left-rear: GRAY w/ BROWN STRIPE - includes brake) wire within the wire bundle. Turn the ignition key so that electrical power is on and activate the driver side turn indicator. Probe the wire with the wire tester to verify that flashing turn directional power is present. Label that wire as 'driver side indicator'. Find the right-front: YELLOW w/ VIOLET STRIPE (right-rear: VIOLET w/ ORANGE STRIPE - includes brake). Activate the passenger side turn indicator and probe the wire with the wire tester to verify that flashing turn directional power is present. Label that wire as 'passenger side indicator'.



USE THE INCLUDED WIRE TAPS AND FOLLOW THE FOUR STEPS ABOVE TO SPLICE INTO THE TURN INDICATOR WIRES

- A. Make sure the harnesses are routed securely and enough slack is left for splicing.
- B. Splice the BLACK w/ RED TRACE wire from the driver side harness into the wire previously labeled 'driver side indicator'.
- C. Splice the BLACK w/ RED TRACE wire from the passenger side harness into the wire previously labeled 'passenger side indicator'.
- D. Activate each turn indicator to verify that the *Signal*® mirrors are working properly.
- E. Reconnect all original wiring. Turn the ignition power to on, check to verify all features are working properly.
- F. Replace the plastic door frame moldings, trim, door panels, and all accessories.

Muth products are protected by these, and other pending, United States Patents

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5,788,357 6,005,724 6,045,243 6,076,948 6,257,746 6,700,123 6,749,325 6,918,685 7,008,091 7,015,642 7,104,676 D363,920
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