



Signal® Mirror Installation Instructions

2008 - 2010 Cadillac CTS



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 connectors
1-instruction manual

REQUIRED TOOLS:

Ratchet with extension or ratcheting screwdriver
7 mm socket
10 mm socket
Socket wrench
Cordless/Electric drill
1/4" drill bit
Dremel tool
1-1/2" dia. cut-off wheel
Large slotted screwdriver
Large 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
White marker
Heater gun or hair dryer

PLEASE READ INSTRUCTIONS PRIOR TO INSTALLATION.

PROBLEMS OR QUESTIONS?

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

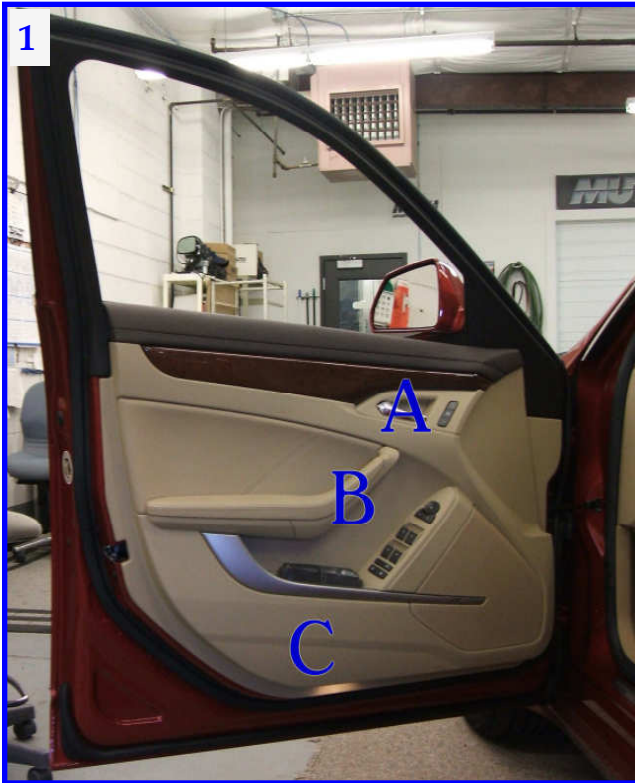
1-800-844-6616

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

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

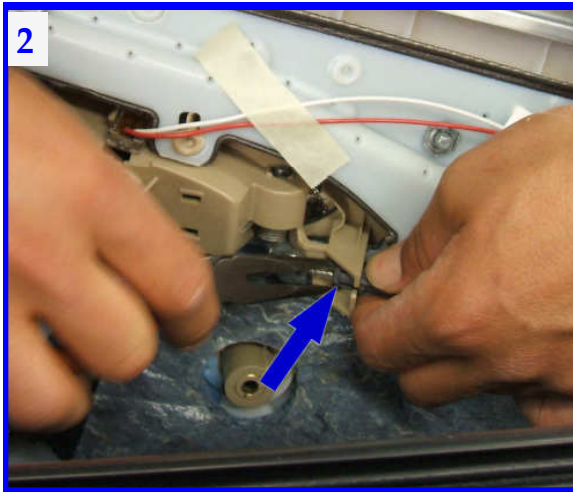
Or via E-mail: techsupport@muthco.com

Door Panel & Mirror Housing Removal

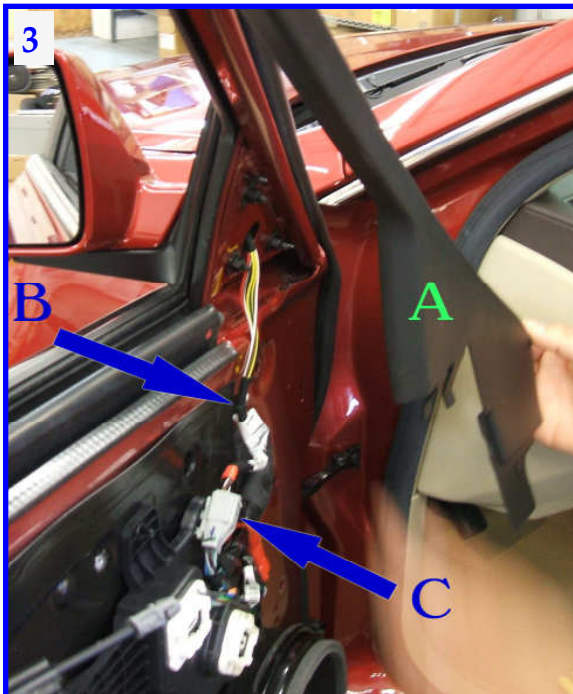


1. Start with opening the driver's side door and lowering the window.
- A. Using nylon, non-scratchable pry bar – pry open trim cover in door lever and unscrew the revealed screw inside.
- B. With the pry, carefully pry plastic cover in door handle to reveal (2) screws. Remove screws using Phillip screw driver.
- C. Grab the base of the door panel, carefully pull to unsnap inserts, around door panel, from door frame.

Door Panel & Mirror Housing Removal Continued

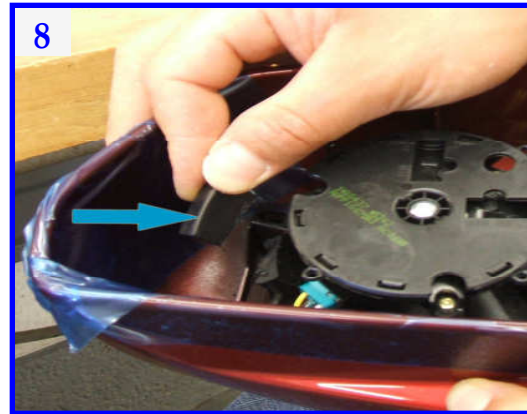
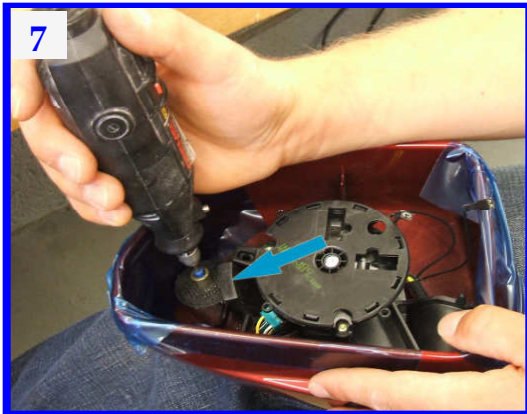
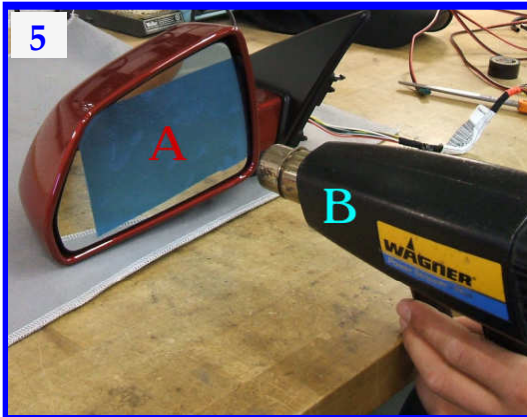


2. Lift up and pull door panel out partially to gain access to latch assembly. Using a needle nose pliers, squeeze latch cable and remove latch assembly. Remove door panel and set panel aside.
3. A) Carefully remove plastic trim cover on door frame.
B) Unclip wiring clip insert.
C) Disconnect wiring connector.
4. Secure the mirror housing with one hand and remove the three mirror mounting nuts from the corner of the door with 10mm socket. Carefully remove the mirror housing from the door. Lay the mirror housing on a cloth covered, flat surfaced work bench.



Mirror Replacement

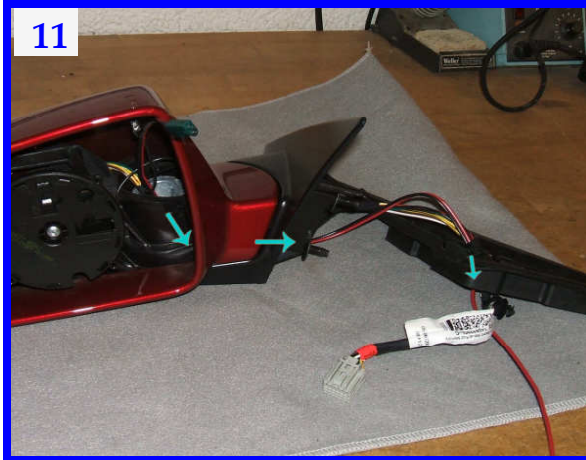
WARNING: Safety glasses and sturdy gloves are required for mirror replacement.



5. A) Apply protective tape or masking tape on OE mirror to prevent glass breakage during removal.
B) Using a heater gun or a hair dryer, carefully heat (circular motion for 15 - 20 sec.) the OE mirror to help loosen mirror mount snap features.
6. Flip mirror housing upside down on cloth covered surface. Apply a protective cloth or tape between large slotted screwdriver and mirror housing to prevent scratching mirror housing. Push on the lower inboard edge of the mirror to manually pivot it fully outward. Insert a large slotted screwdriver down between the motor actuator ear tab and the OE mirror backing plate. Slowly and carefully pry until OE mirror backing unsnaps. If heated, disconnect heater wires from heater terminals and remove OE mirror.
7. To prevent scratches to mirror housing, place protective tape around the inside and outside of mirror housing before proceeding with next step. With a dremel and a 1-1/2" dia. cut-off wheel, carefully cut the optic interfering plastic tab from OE mirror housing. The cut-off length of the tab should be around 3/4" - 1".
8. An after shot of the cut-off tab shown for reference.
9. Using a white marker, mark the location of the sail rubber insulation boot.
10. Cut the securing cable tie using a side cutter and remove cable tie.

Mirror Replacement Continued

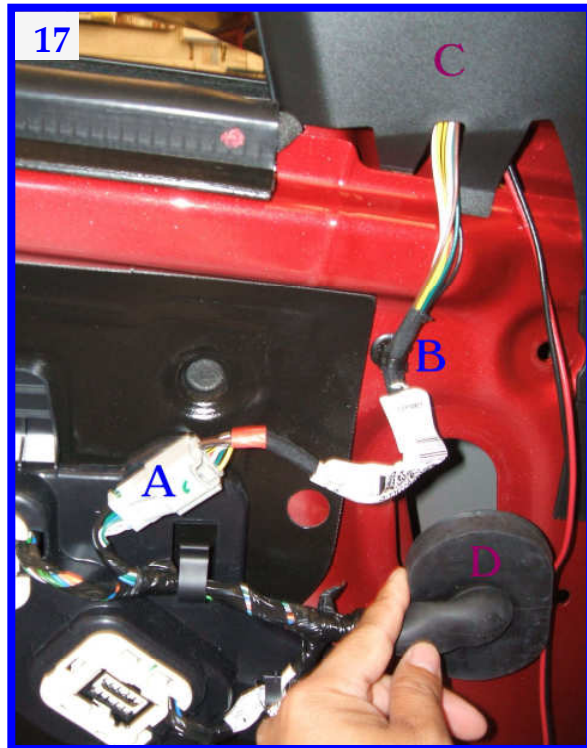
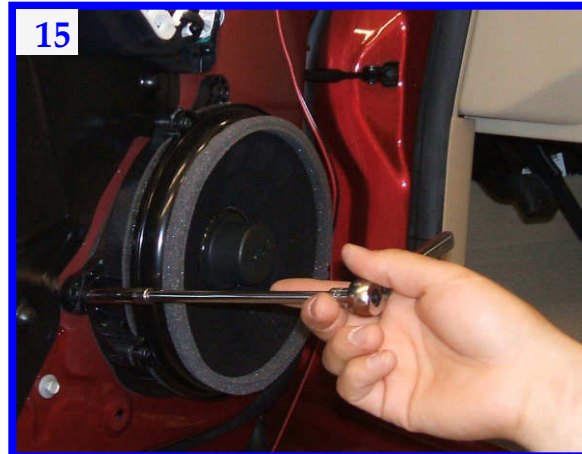
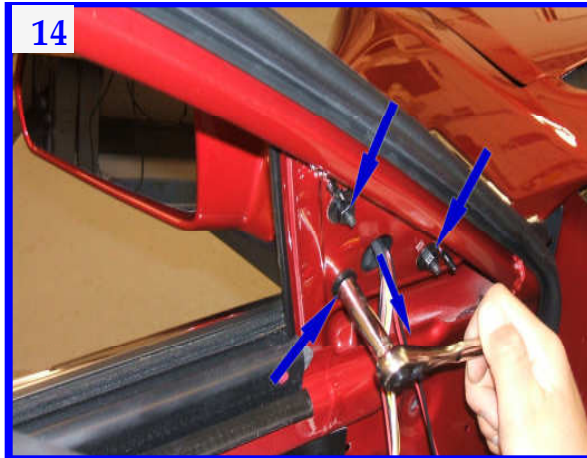
WARNING: Safety glasses and sturdy gloves are required for mirror replacement.



11. Route the shorter of the two (supplied) *Signal*® mirror harnesses from inside housing, thru housing sail and thru housing sail rubber insulation. **NOTE: Routing of *Signal*® mirror harness should follow OE wiring path.** Carefully pull the *Signal*® mirror harness thru leaving about 4" to 6" inside housing for connectivity.
12. Lay the new *Signal*® mirror next to the mirror housing as shown.
 - A) Make the connection between the new *signal*® mirror and the *Signal*® mirror harness.
 - B) **If heated**, reconnect the heater wires to the heater terminals on the back of the new *Signal*® mirror. **NOTE: There is no polarity so the wires may be interchanged.**
 - C) Remove the PSA liner from inside mirror motor mount. Pull on the *Signal*® mirror harness to remove any slack in the harness. Carefully tuck all wiring behind motor actuator. **Not doing so, could result in wiring interfering with mirror travel.** Position and align the mirror mount over the motor actuator. Carefully press down firmly on the new *Signal*® mirror until mirror snaps into place. Carefully press down on all sides of the mirror to ensure proper engagement of the new *Signal*® mirror. **CAUTION: Not doing so, could result in *Signal*® mirror falling off if not properly snapped in.**
13. Carefully position the housing sail rubber insulation onto the previously marked location and cable tie it into place. Cut off the excess cable tie. Replace housing sail rubber insulation onto the housing sail.

Wiring 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.

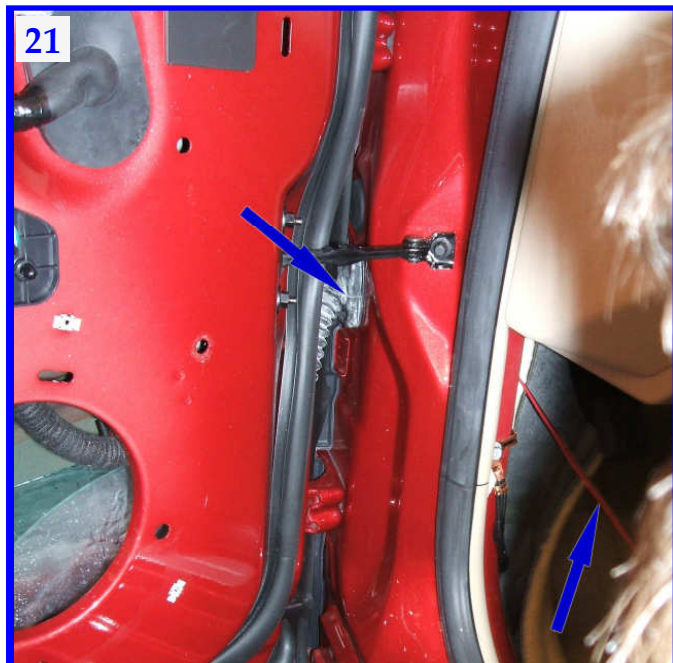
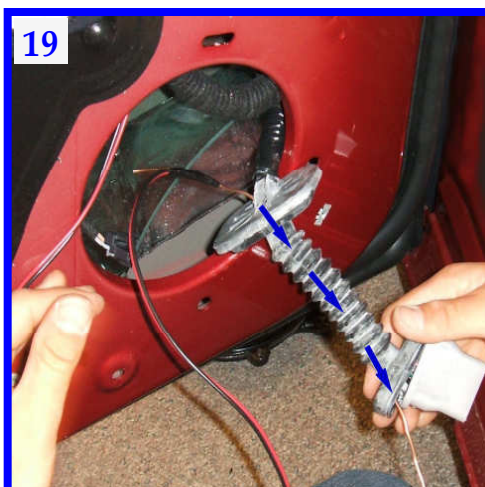
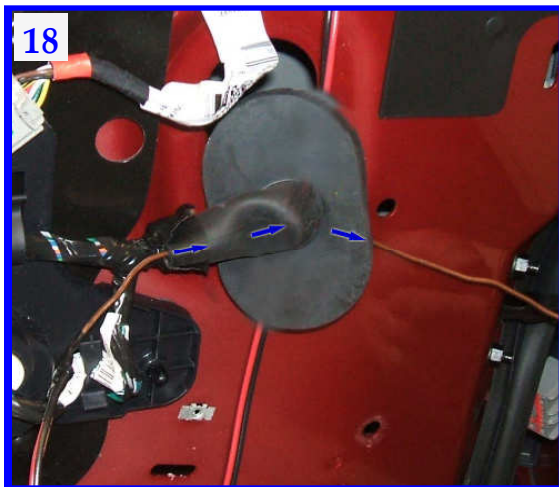


TIP: A gopher rod (wire) may be used to assist in the *Signal*® mirror wire harness routing processes.

14. Guide all wire harnesses through the centered hole in the mirror housing mounting frame. Position the mirror housing assembly on the mirror mount. Bolt the mirror housing assembly to the mirror mount with the (3) mirror mounting nuts. **WARNING!** Do not over tighten the mirror mounting nuts.
15. Using a 7mm socket, remove (3) screws securing the speaker to the door frame. Disconnect speaker harness behind speaker and remove speaker.
16. Locate rubber grommet in door jam. With a large slotted screwdriver, pull back weather barrier to expose connectors. **WARNING!** Careful not to damage material. Disconnect the connectors. Push in and pull the rubber grommet thru door frame access hole and out the speaker access hole to provide enough room to allow work to be done.
17. A) Reconnect OE wiring harness.
B) Snap in OE wiring clip.
C) Carefully replace mirror mount trim cover.
D) Pop out the rubber grommet on the door frame.

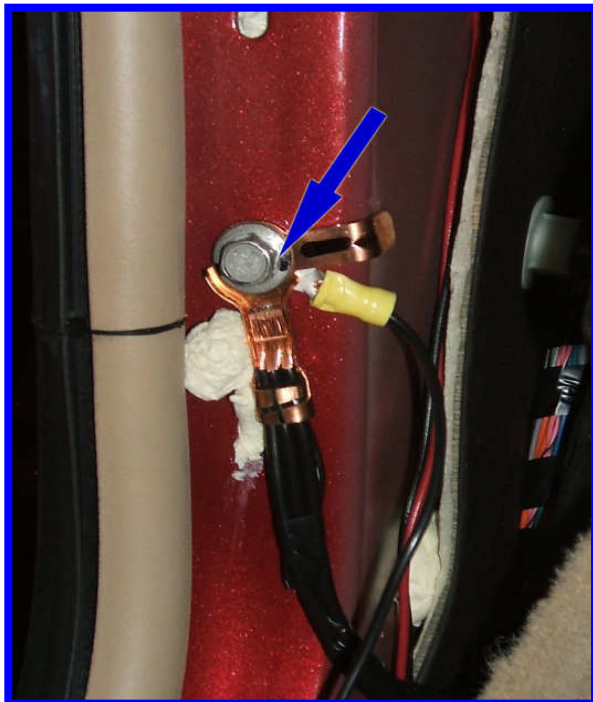
Wire Routing Continued

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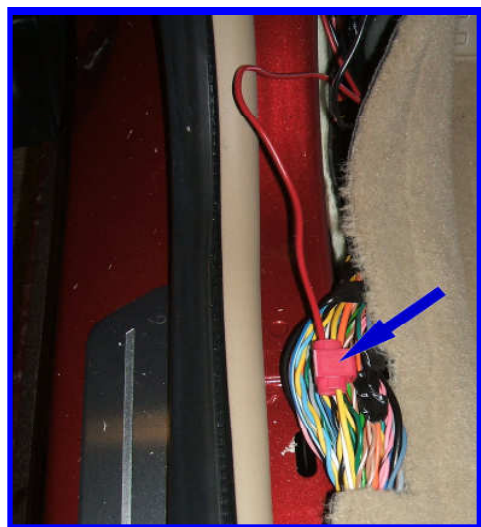
18. **First rubber grommet:** With a utility knife, cut out some electrical tape on the grommet end to gain access to route wire thru. Using a gopher rod, route the *Signal*® mirror harness thru rubber grommet as shown. Continue routing the *Signal*® mirror harness into door cavity and out the speaker access hole. Pull on the *Signal*® mirror harness to eliminate slack in the wire. Re-wrap grommet end with electrical tape and replace grommet onto the door frame.
19. **Second rubber grommet:** Cut a small opening in the grommet (door frame side) using a utility knife. With the help of a gopher rod, route the *Signal*® mirror harness thru grommet. Gently pull wire thru to eliminate slack in the wire.
20. Locate one of the two grooves on the connector (either one). Starting from the grommet end of the connector, drill a hole in the second slot of the connector out to one of the grooves as shown using a 1/4" drill bit. **WARNING! This hole should NOT be inside where the terminals are located but on the outer area.** Route the *Signal*® mirror harness thru the newly drilled hole, removing any slack in the *Signal*® mirror harness. Replace grommet onto connector and reposition grommet into place in door jam. Reconnect speaker harness and screw speaker into place.
21. Remove kick panel. Continue to route *Signal*® mirror harness thru access hole into vehicle. Snap the wiring connector into place. Check to make sure rubber grommet is properly secured into place.

Wire Identification



GROUNDING WIRES

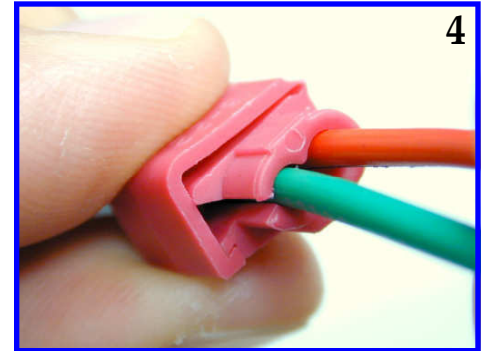
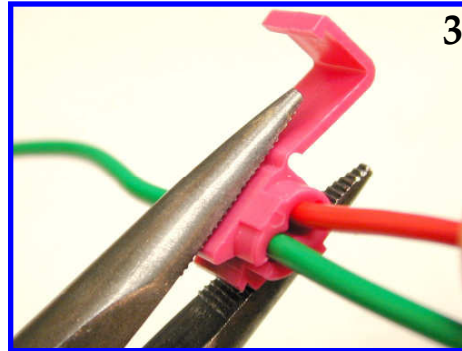
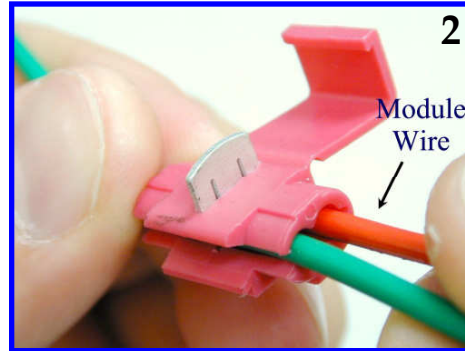
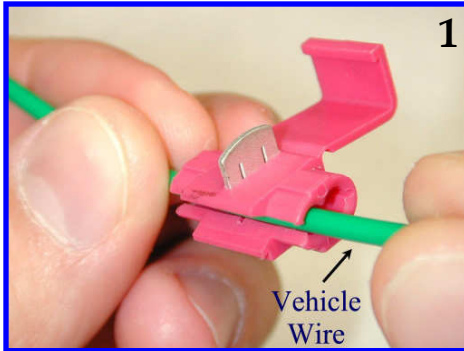
The driver side ground wiring location is located in the driver side kick panel area. Locate the grounding bolt within the driver side kick panel. Cut and split the red and black wire on the driver side *Signal*® mirror wire harness. Route the black wire to the grounding bolt location. Cut the black wire to length, making sure enough slack is left for splicing. Splice the black wire and attach one of the supplied grounding ring to it. Attach the grounding ring to the grounding bolt on the vehicle frame as shown. Repeat process for the passenger side ground wire. **NOTE: The passenger side ground wiring location is located on the passenger side kick panel area.**



TURN & BRAKE

The driver side electrical wiring is located within the wire bundle along the floor board on the driver side. Using a utility knife, carefully cut and remove some of the electrical tape to gain access to the wires behind it. Locate the solid YELLOW wire within the wire bundle. Turn the ignition key so that electrical power is on and activate the driver side turn indicator. Probe the YELLOW wire with the wire tester to verify that flashing turn directional power is present. Label that wire as 'driver side indicator'.

The passenger side electrical wiring is located within the wire bundle along the floor board on the passenger side. Using a utility knife, carefully cut and remove some of the electrical tape to gain access to the wires behind it. Locate the DARK GREEN wire. Activate the passenger side turn indicator and probe the DARK GREEN 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 RED wire from the driver side harness into the wire previously labeled 'driver side indicator'.
- C. Splice the RED 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
D394,833	D409,540	D425,466	D426,506	D426,507	D427,128	D428,372	D428,373	D428,842	D429,202	D430,088