



Signal[®] Mirror Installation Instructions

Ford F-250 to F-750 Pick-Up, Super-Duty 1998-2007 Trailer Tow Mirror

Ford Excursion XLT/Limited 2000-2002 Trailer Tow Mirror

Ford Excursion (all models) 2003-2005 Trailer Tow Mirror

**** Ford F-250 to F-750 Pick-Up, Super-Duty (PRE-WIRED TURN INDICATORS (SKIP TO PAGE 20 – 24))**



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
- 2 ring connectors
- 1 instruction manual

REQUIRED TOOLS:

- Ratchet with extension or ratcheting screwdriver
- 7mm socket
- 10mm socket
- 7/32" socket
- Medium slotted screwdriver
- Wire crimper and stripper
- Small pry bar
- Heat gun (hair dryer)
- Masking tape
- Multimeter
- Sturdy gloves
- Safety glasses or goggles

Please read instructions prior to installation.

PROBLEMS OR QUESTIONS?

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

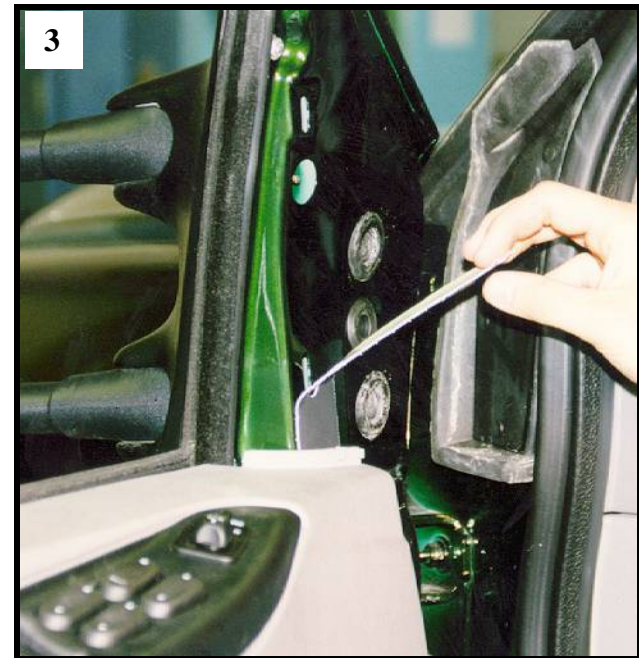
1-800-844-6616

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

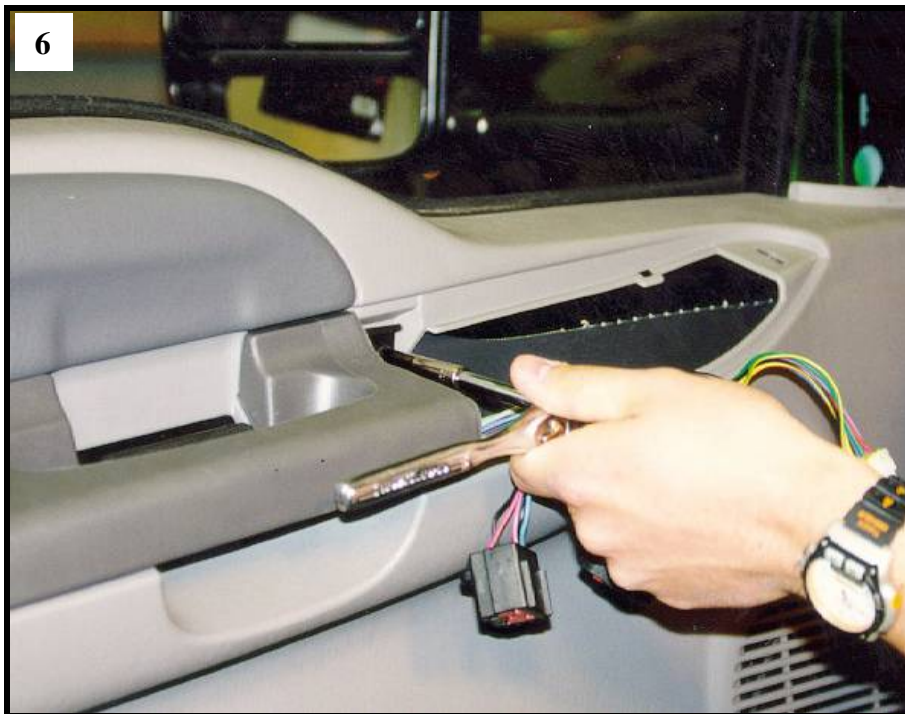
Or through the Muth web site:

www.muthco.com

Or via E-mail: techsupport@muthco.com



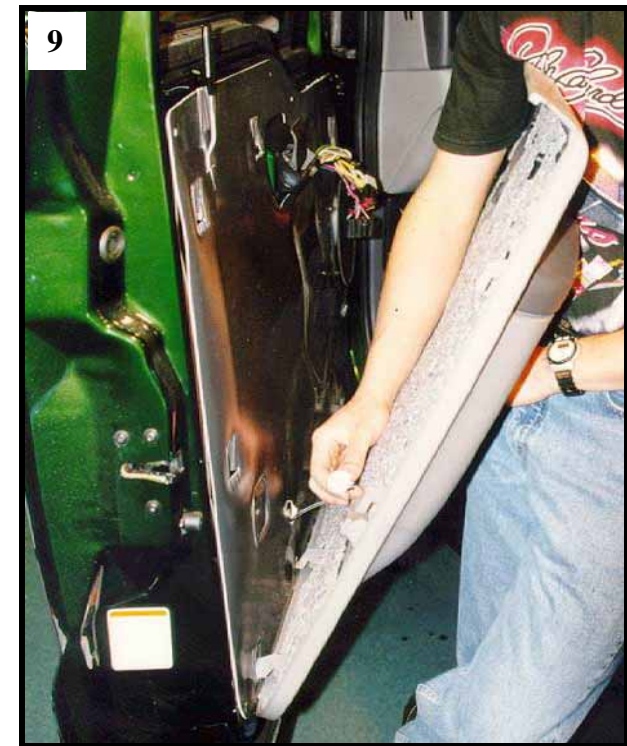
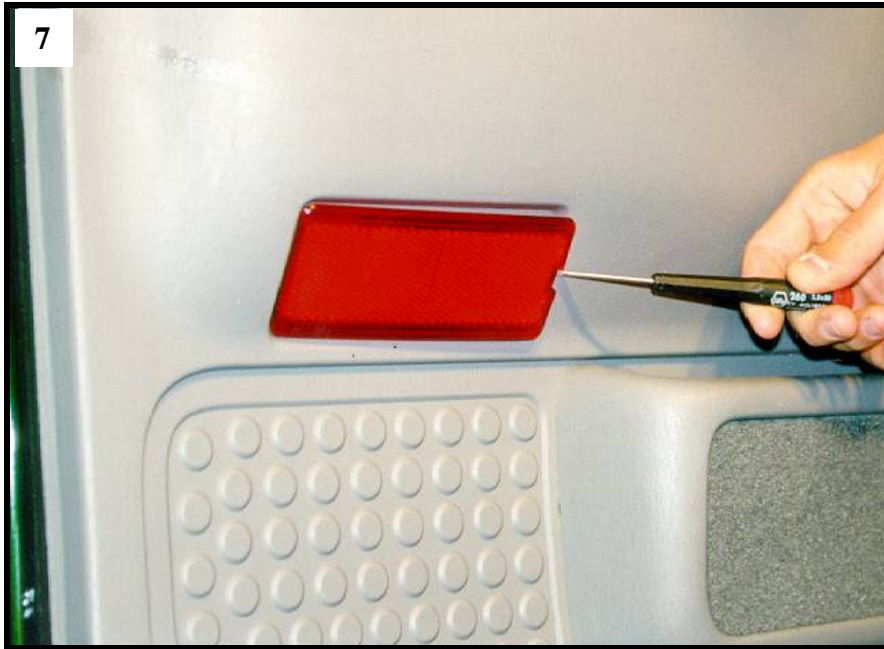
1. Start with the driver's side door and lower the window.
2. Pull the plastic covering off from out of the corner of the door.
3. Remove the tape from underneath the plastic covering.



4. Pry the window control panel out of the armrest. Start by prying from the top of the panel as shown.

5. Disconnect all four wire harnesses from the window control panel.

6. Remove the exposed screw to the right of the door handle.



7. Pry the door reflector out of the door panel. There is a notch on the right side of the reflector where you can insert a medium slotted screwdriver.

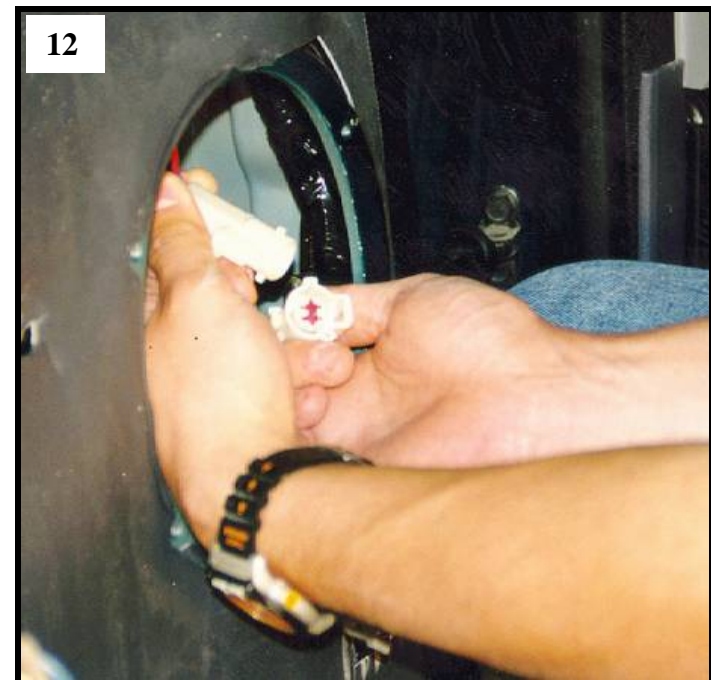
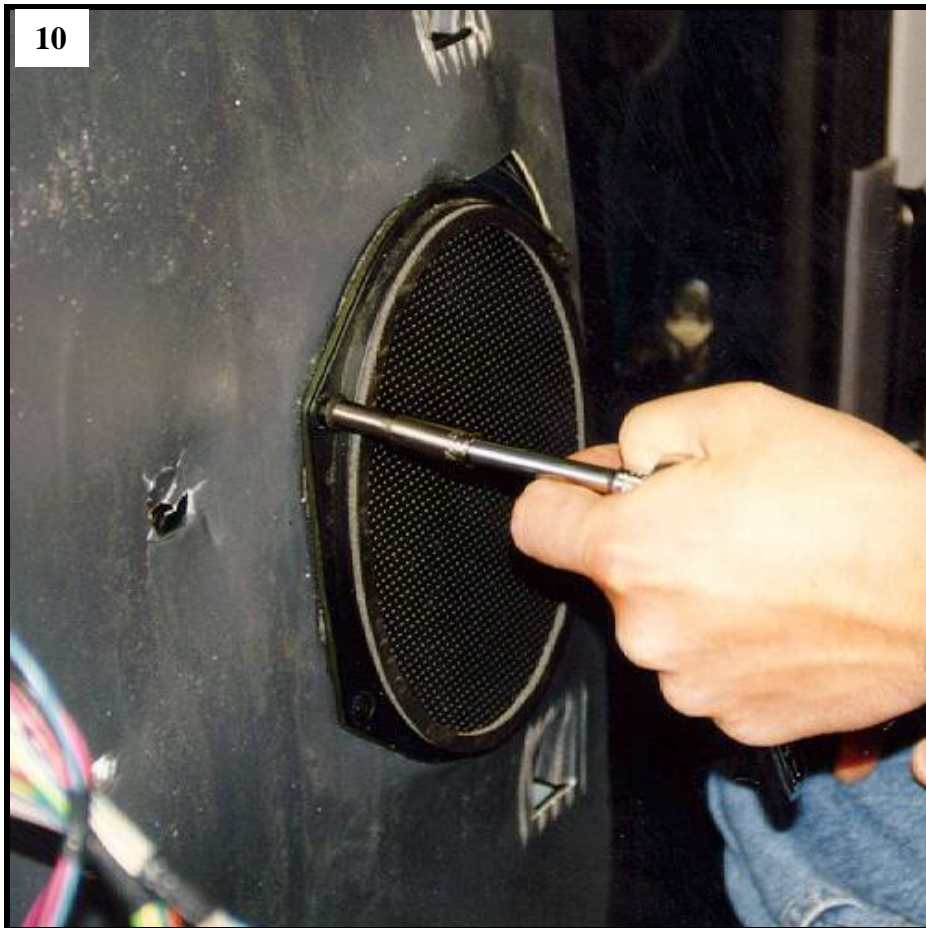
8. Remove the screw from underneath where the door reflector used to be.

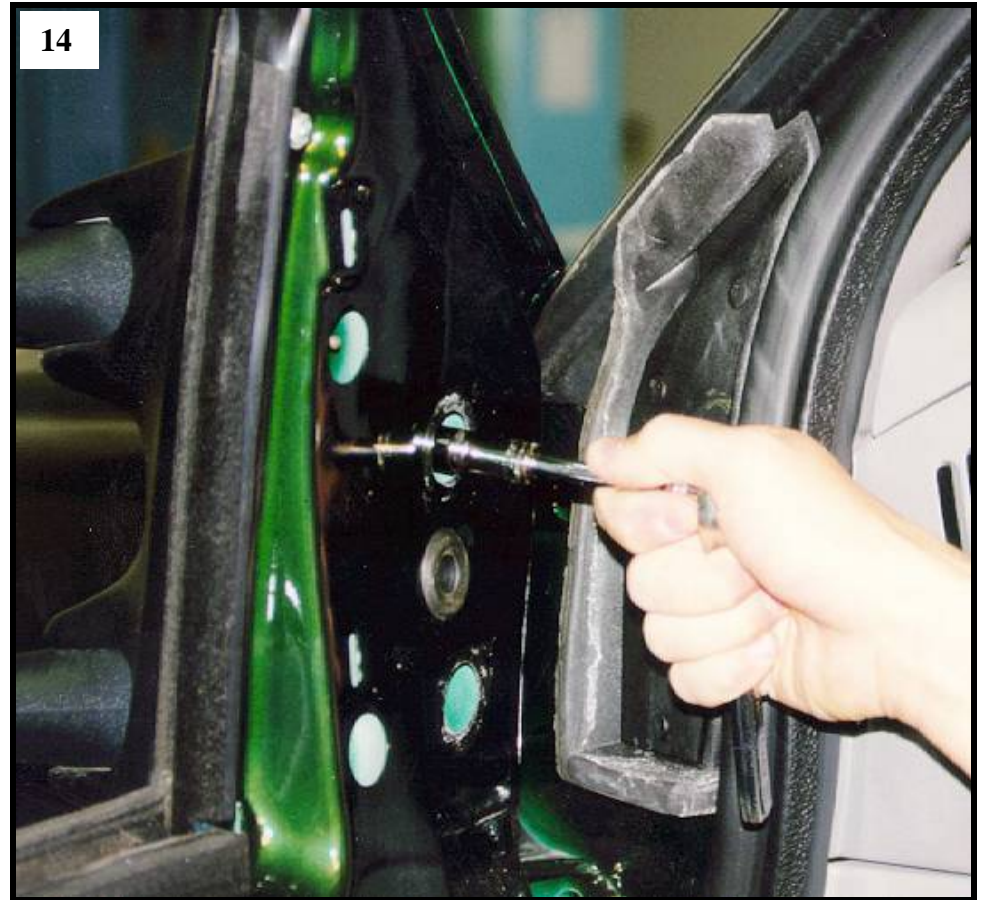
9. Lift the door panel up and off of the door. From behind the door panel, twist the door light socket about a half turn and pull it out of the door panel. Set the door panel aside.

10. Remove the four screws holding the speaker in place.

11. Remove the speaker from the door and disconnect the wire. Set the speaker aside.

12. The mirror wire harness is secured to a wire bundle on the inside of the door with a plastic plug. Dislodge the plug and pull the wire harness slightly out of the speaker hole. Disconnect the mirror wire harness.



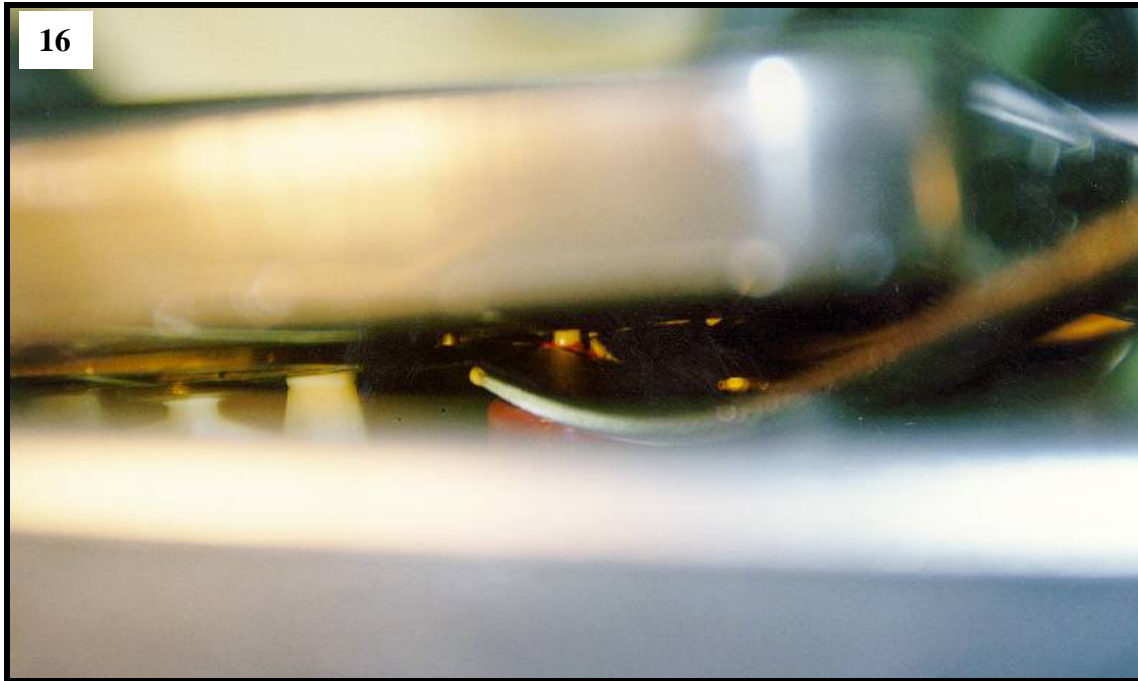


13. There are three rubber plugs in the corner of the door. Remove only the top and bottom rubber plugs to expose the mirror mounting nuts.

14. Secure the mirror with one hand and remove the four mirror mounting nuts.

WARNING! Be careful not to drop components into the door cavity.

15. Remove the mirror housing from the door.



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WARNING! Safety glasses and sturdy gloves are recommended for mirror glass removal.

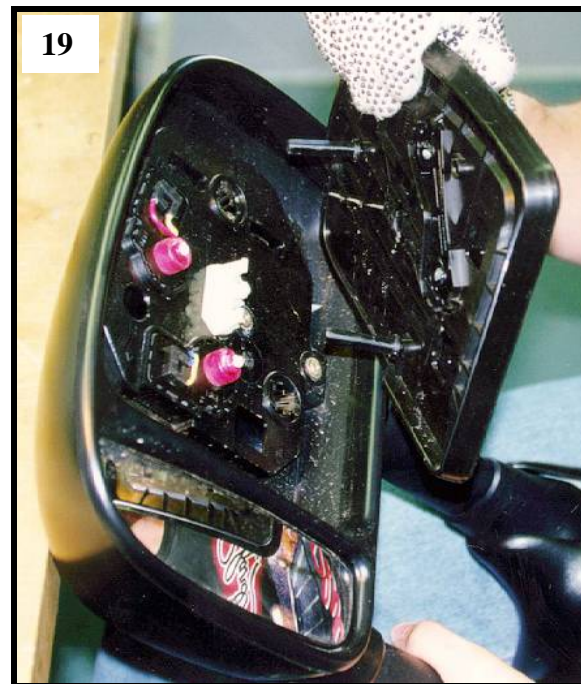
16. Before the mirror can be removed from the mirror housing, two drive pins need to be dislodged from behind the mirror. Press the top edge of the mirror into the housing to lift up the bottom edge of the mirror and expose the bottom drive pin. Place the fork of a small pry bar around the neck of the drive pin.



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NOTE: The neck of the drive pin is located at the base of the mirror.

17. Carefully twist the small pry bar until the head of the drive pin pops out of the socket. Lift the bottom and outside edges of the mirror further to expose the outboard drive pin. Repeat the procedure above to dislodge the outboard drive pin.



18. Once the drive pins are dislodged from the mirror, hold the mirror housing in your lap. Push on the outer edge of the mirror to pivot the mirror fully outward. Reach behind the mirror as shown.

19. Carefully pull the mirror out of the mirror housing. Disconnect the heater wires if you have heated mirrors

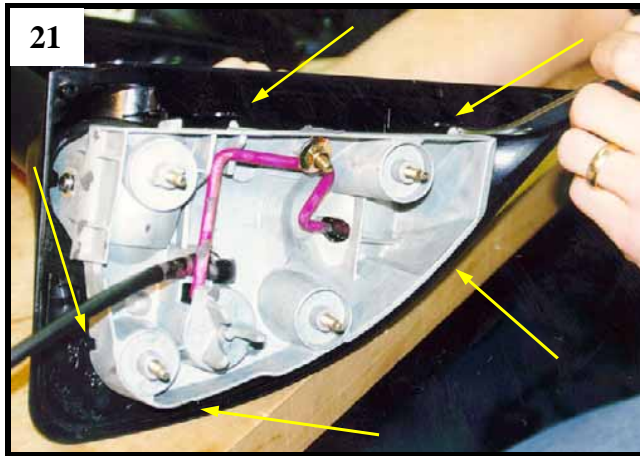
20. Carefully remove the foam insulation at the base of the mirror.

NOTE: Pry up on the section of mirror housing that is directly above the existing mirror wire bundle.

*****ATTENTION*****

****For steps 21 to 31, please use the instruction that pertains to your style of mirror.****

Fixed Mirror (Non-telescoping)



21. There is a plastic housing that covers the base of the mirror. Unsnap the five tabs around the edge of the mirror base and slide the housing away from the base.



22. The plastic housing behind the mirror needs to be removed. Unsnap the four tabs from the inside of the mirror housing.

Telescoping Mirror

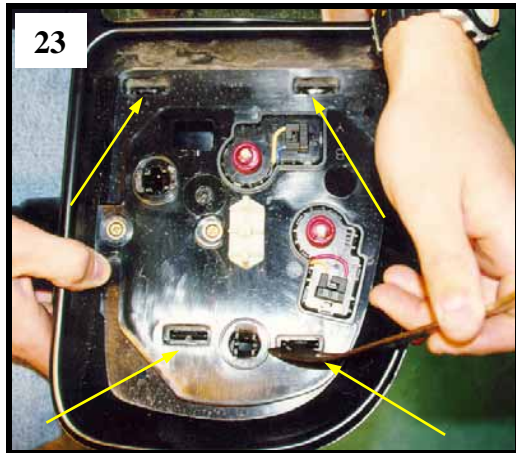


21. Use a small pry bar and remove the bottom mirror from the mirror housing. (Be sure to place the pry bar tip under the center of the mirror as shown) It is held in place with a ball in the housing and a socket in the center of the mirror.

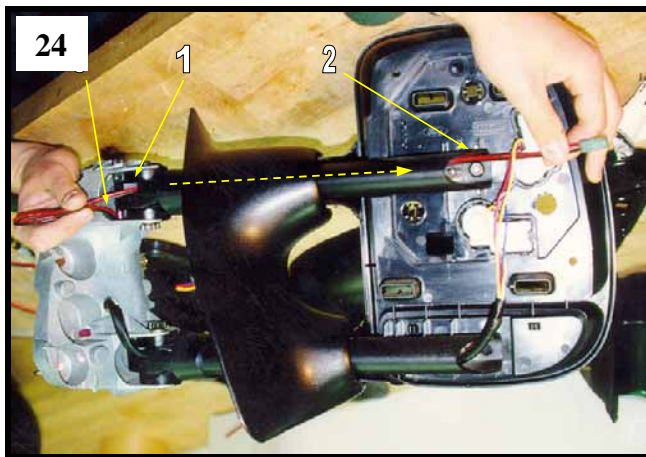


22. Remove the six screws that hold the two halves (front and back) of the mirror housing together.

Fixed Mirror (Non-telescoping)



23. After the tabs have been unsnapped, slide a small pry bar in between the two halves of the mirror housing. Twist the pry bar until the two halves of the mirror housing separate. Set the back half of the mirror housing aside.



24. The wire harness will be routed through the top support bar on the mirror housing. Using the shorter of the two harnesses from the wiring kit, guide the end with the mating connector into the hole on the swivel joint (1). Feed the wire into the hole until about six inches of wire protrude out of the opposite end (2). Guide the end with no mating connector into the hole next to the purple-coated stabilization bar (3). Remove any slack in the wire harness.

Telescoping Mirror



23. Lift the front half of the mirror housing off of the back half. Turn it 90 degrees so that you have access to the bottom portion of the mirror housing.



24. There is a plastic housing that covers the base of the mirror. Unsnap the five tabs around the edge of the mirror base and slide the housing away from the base.

Fixed Mirror (Non-telescoping)

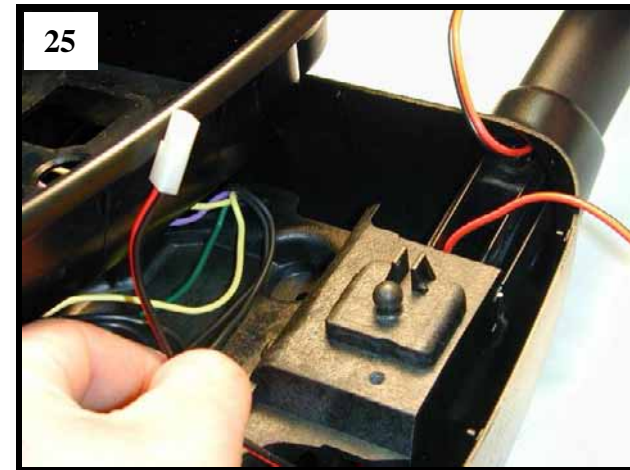


25. Set the factory mirror assembly on a clean flat surface. Using a small pry bar, remove both black friction pins from the back of the factory mirror assembly.

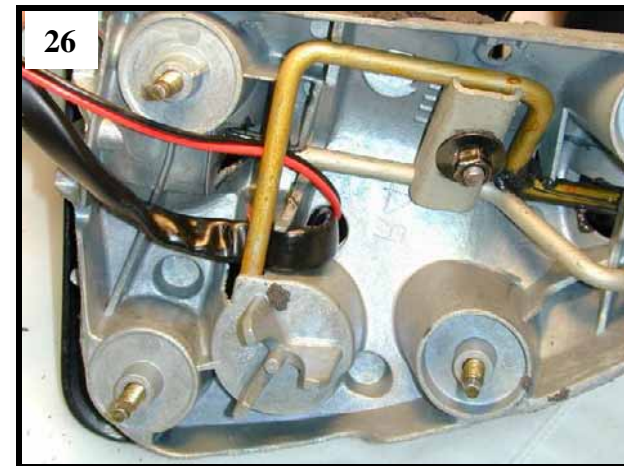


26. Set the new *Signal*[®] mirror on a clean flat surface. The friction pins go in the top and outside holes on the back of the mirror assembly. Using even pressure, snap the drive pins into position.

Telescoping Mirror

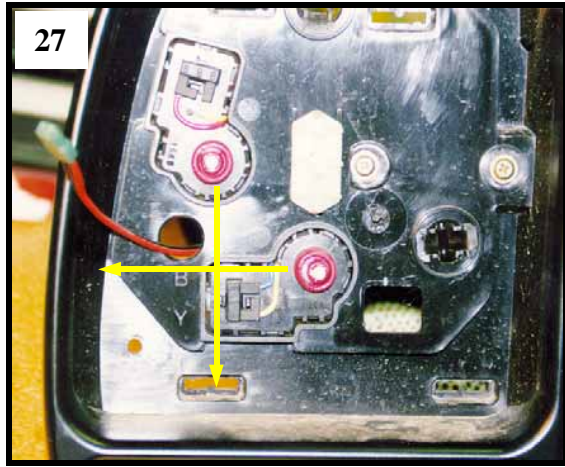


25. The wire harness will be routed through the bottom support bar in the mirror housing. Using the shorter of the two harnesses from the wiring kit, guide the end without the mating connector underneath the bottom mirror mount and into the support bar.

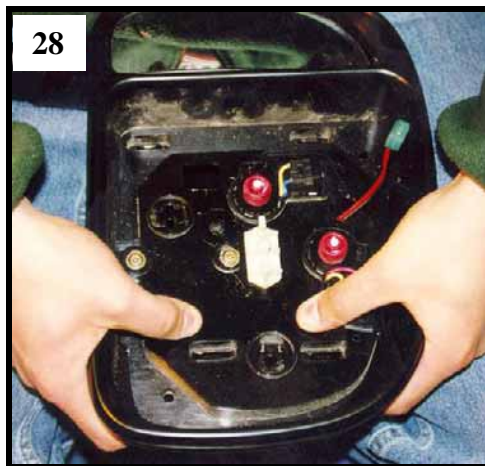


26. Leaving about six inches of wire in the mirror housing, guide the wire harness along the existing factory wire harness. Remove any slack in the wire.

Fixed Mirror (Non-telescoping)



27. Push the white drive pins down until they bottom out in the motor mount. Align the nub on the top drive pin so that it points directly down. Align the nub on the bottom drive pin so that it points to the outside edge of the mirror housing. The direction for the nubs on both drive pins should be perpendicular to each other. **WARNING! The drive pins must be aligned or else the new *Signal*® mirror will not mount correctly. Guide the wire harness through the circular opening next to the drive pins.**



28. Position the back half of the mirror housing and secure it into place by applying even thumb pressure around the snaps as shown. Then snap the plastic housing over the base of the mirror and replace the foam insulation.

Telescoping Mirror



27. Set the factory mirror assembly on a clean flat surface. Using a small pry bar, remove both black friction pins from the back of the factory mirror assembly.



28. Set the new *Signal*® mirror on a clean flat surface. The friction pins go in the top and outside holes on the back of the mirror assembly. Using even pressure, snap the drive pins into position.

Fixed Mirror (Non-telescoping)

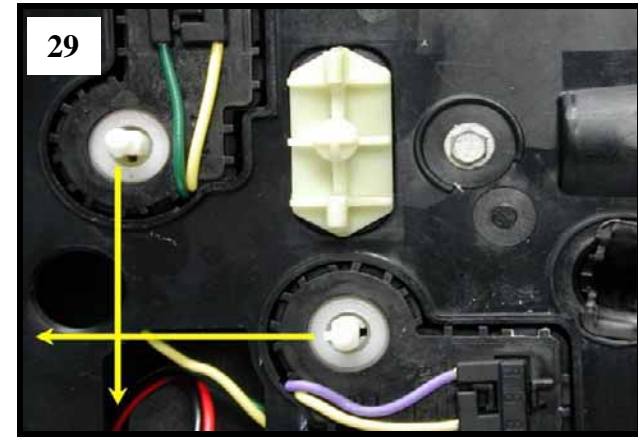


29. Connect the *Signal*® mirror mating connector to the *Signal*® mirror wire harness. Connect the heater wires if you have heated mirrors. Place the *Signal*® mirror over the mirror housing. Guide the top friction pin into its socket and move the *Signal*® mirror closer to the mirror housing. Ensure that all 4 anti-vibration tabs are within the mirror housing before aligning friction pins and center hub. Guide the inboard friction pin into its socket. Align the center hub of the *Signal*® mirror over the mirror mount.



30. Use the entire palm of your hand and apply even pressure until the *Signal*® mirror snaps into position.

Telescoping Mirror



29. Push the white drive pins down until they bottom out in the motor mount. Align the nub on the top drive pin so that it points directly down. Align the nub on the bottom drive pin so that it points to the outside edge of the mirror housing.



30. Connect the *Signal*® mirror mating connector to the *Signal*® mirror wire harness. Connect the heater wires if you have heated mirrors.

Fixed Mirror (Non-telescoping)

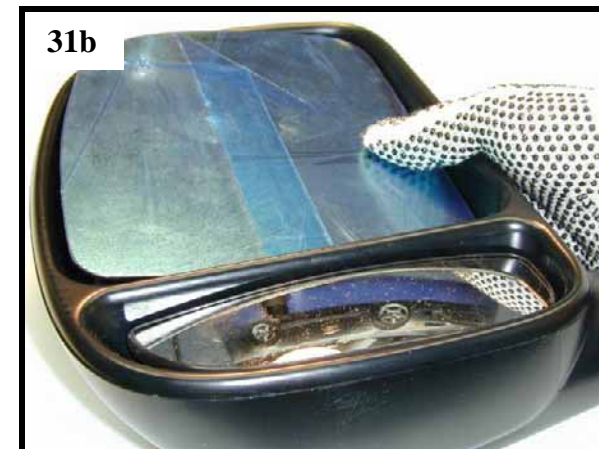


31. Firmly press down on the outboard and bottom edges of the *Signal*[®] mirror to snap it into the drive pegs. Press on all four sides to ensure that the *Signal*[®] mirror is fully seated into the mirror housing. Replace the plastic cover and foam insulation on the mirror base.

Telescoping Mirror



31a. Place the *Signal*[®] mirror over the mirror housing. Guide the top friction pin into its socket and move the *Signal*[®] mirror closer to the mirror housing. Ensure that all 4 anti-vibration tabs are within the mirror housing before aligning friction pins and center hub. Guide the inboard friction pin into its socket. Align the center hub of the *Signal*[®] mirror over the mirror mount. Use the entire palm of your hand and apply even pressure until the *Signal*[®] mirror snaps into position.



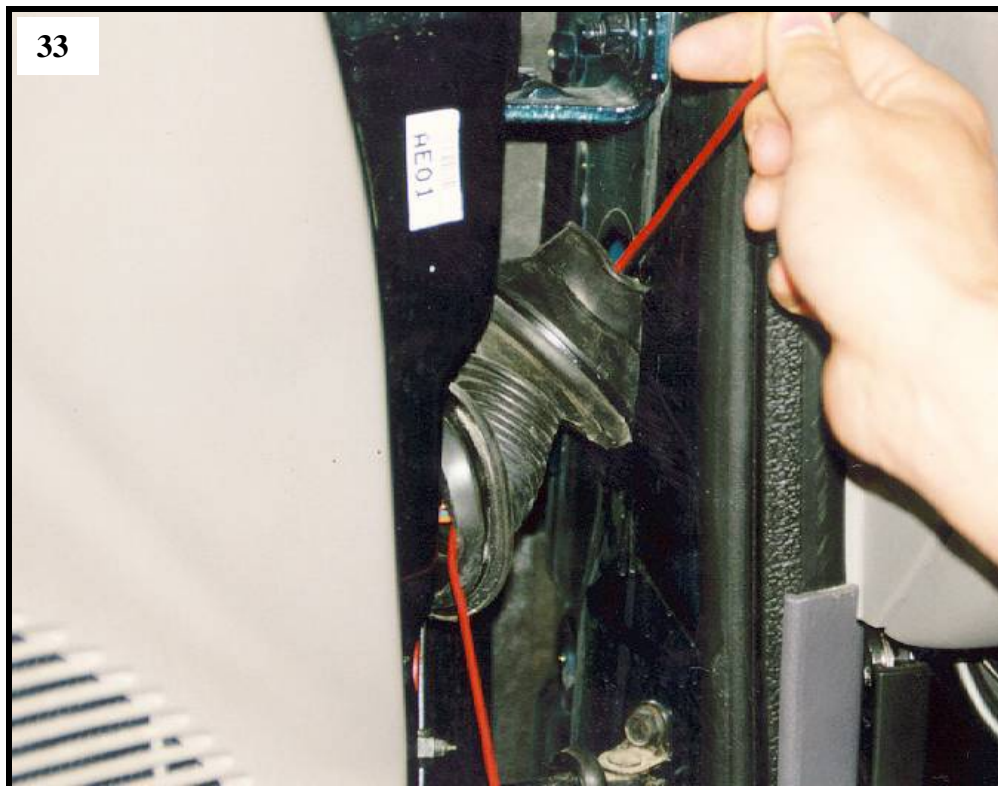
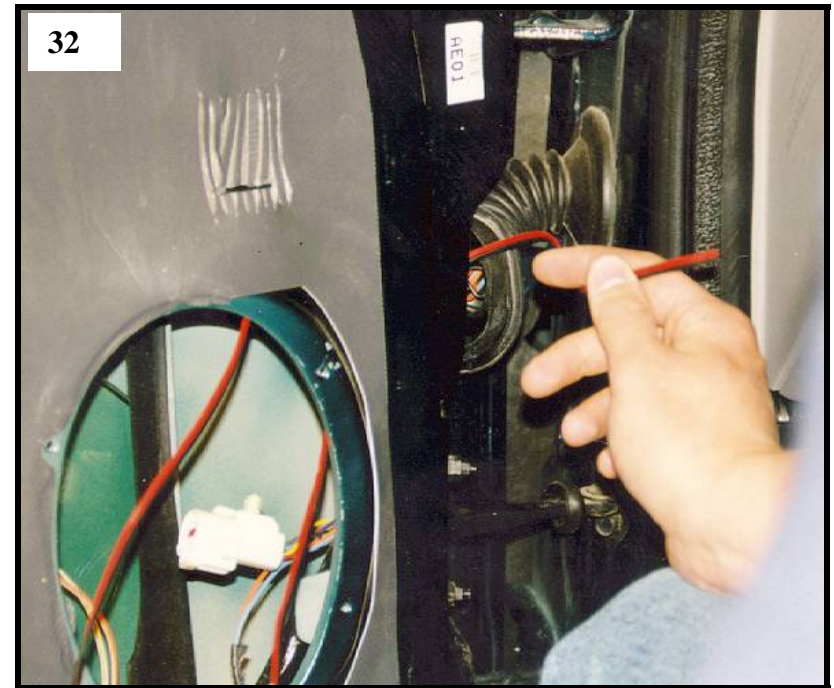
31b. Firmly press down on the outboard and bottom edges of the *Signal*[®] mirror to snap it into the drive pegs. Press on all four sides to ensure that the *Signal*[®] mirror is fully seated into the mirror housing. Replace the plastic cover and foam insulation on the mirror base.

32. Guide the wire harness through the door and position the mirror housing assembly on the mirror mount. Bolt the mirror housing to the mirror mount with the four mirror mounting nuts.

WARNING! Do not over tighten the mirror mounting nuts.

Note: It is possible that your vehicle may be pre-wired for *Signal*® mirrors. To determine this, verify whether there is a (driver side) green with white stripe wire & a (passenger side) white with blue stripe wire in the doors. If you locate these wires, probe to verify presence of current with turn indicator activated. If current is present, make connections as indicated on page 18. If these wires are not present in the doors, then proceed with the following instructions.

Pull the rubber boot out from between the door and door frame. Pass the wire harness through the opening vacated by the rubber boot. Reconnect the factory wire harness.



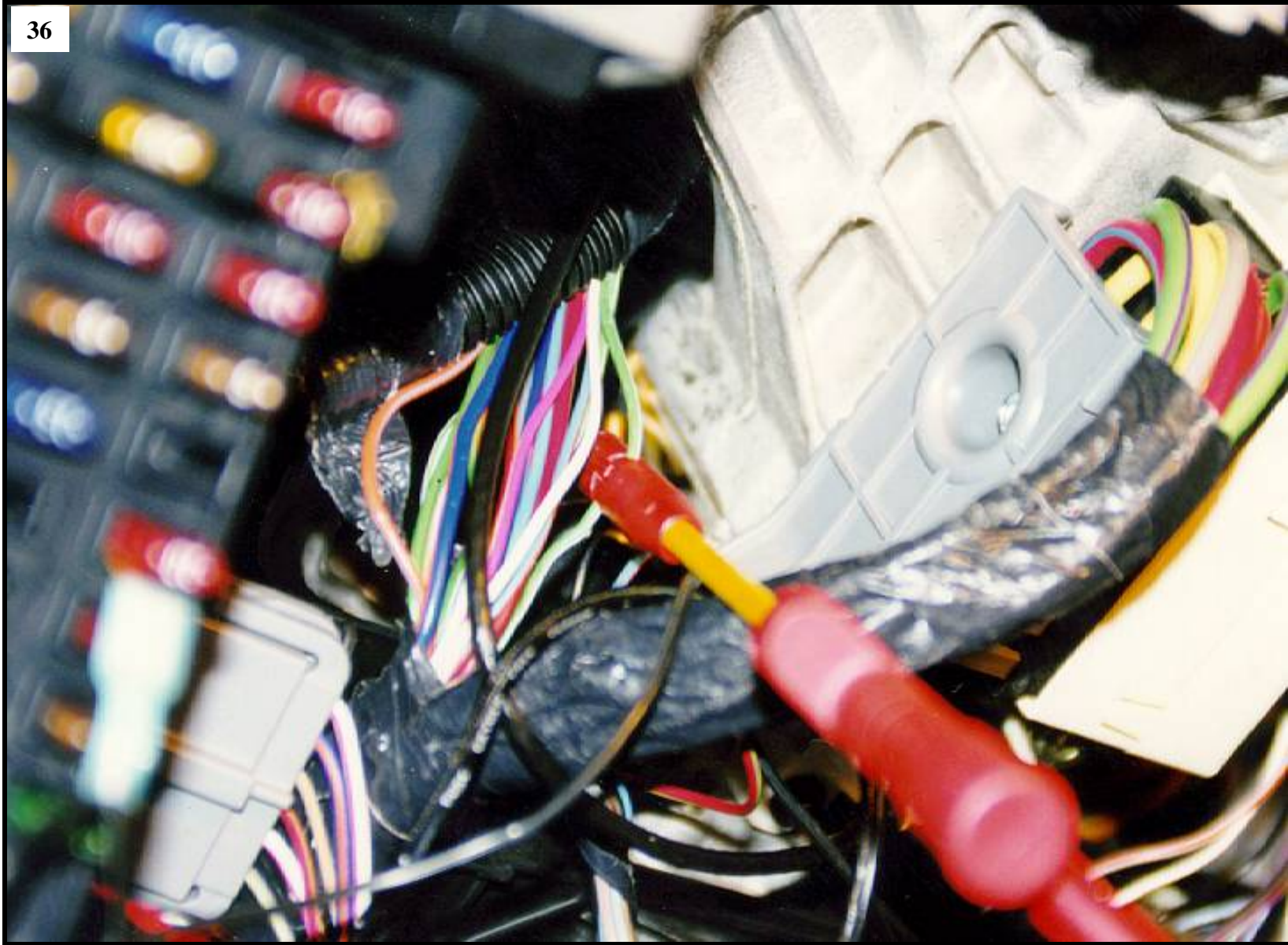
33. Pull the rubber boot off of the door frame and guide the harness through the rubber boot and into the vehicle through the door frame.

34. Repeat all of the previous steps to replace the factory mirror on the passenger side door with the new *Signal*[®] mirror. Guide the *Signal*[®] mirror wire harness through the door frame and up underneath the lower dash panel. Run the wire harness along to the driver's side lower dash panel.

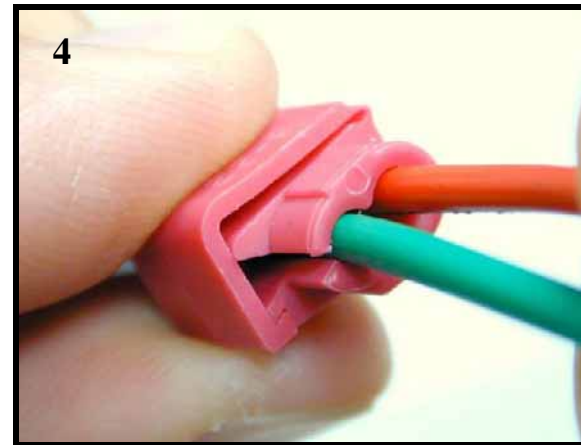
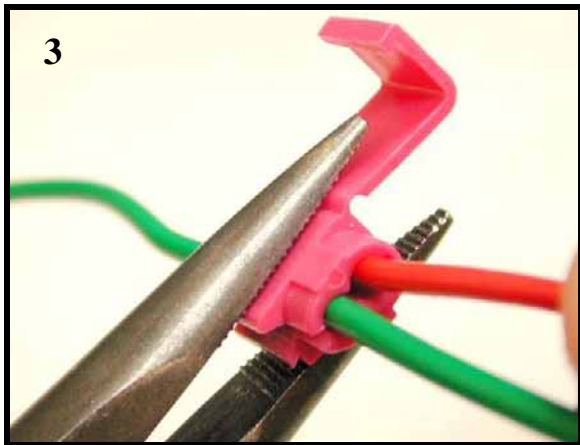
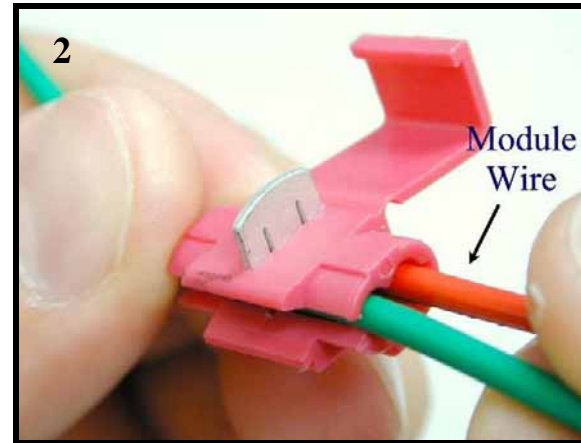
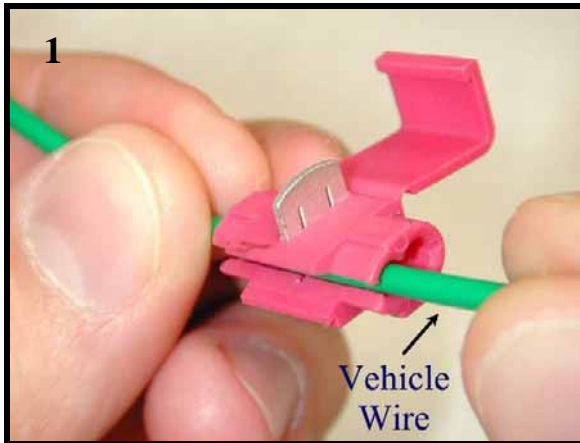


35. To gain access to the vehicle's electrical system, remove the lower dash panel from the steering column by removing the four screws in each corner of the panel.

36



36. Locate the GREEN WITH WHITE STRIPE wire from 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 indicator power is present. Label that wire as 'driver side turn'. Locate the WHITE WITH BLUE STRIPE wire from within the wire bundle. Activate the passenger side turn indicator and probe the wire with the wire tester to verify that flashing turn indicator power is present. Label that wire as 'passenger side turn'.



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

37. Make sure the harnesses are routed securely under the dash and enough slack is left for splicing.
38. Splice the RED wire from the driver side harness into the green with white stripe wire previously labeled 'driver side turn'.
39. Splice the RED wire from the passenger side harness into the white with blue stripe wire previously labeled 'passenger side turn'.
40. Strip and twist together the ends of the black wires from each harness. Crimp them together in the supplied ring connector and ground to a suitable nearby location on the metal framework of the vehicle.
41. Activate each turn indicator to verify that the *Signal*[®] mirrors are working.
42. Replace the lower dash panel, speakers, door panels, and all accessories.

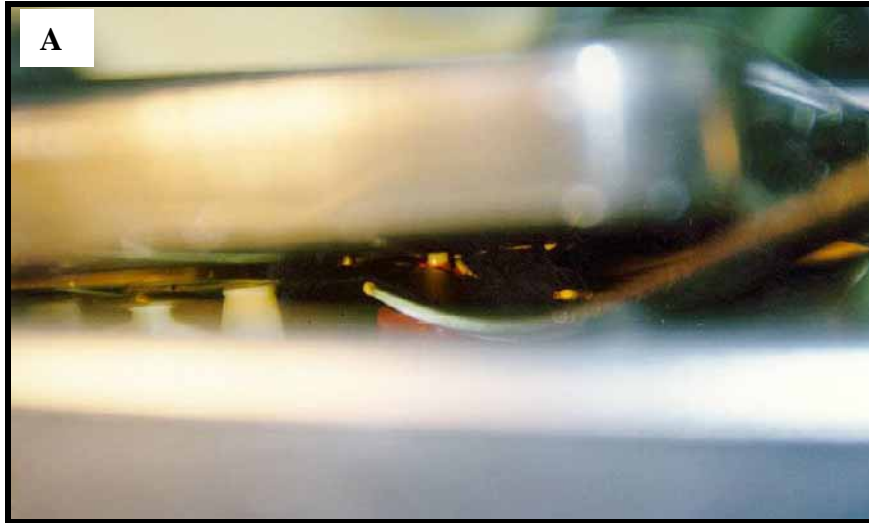
Muth products are protected by these, and other pending, United States Patents

| | | | | | | | | | | | |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|
| 3,075,779 | 5,005,009 | 5,014,167 | 5,128,659 | 5,207,492 | 5,355,284 | 5,361,190 | 5,481,409 | 5,528,422 | 5,619,374 | 5,619,375 | |
| 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 |
| D394,833 | D409,540 | D425,466 | D426,506 | D426,507 | D427,128 | D428,372 | D428,373 | D428,842 | D429,202 | D430,088 | |

Ford F-250 to F-750 Pick-Up, Super-Duty (PRE-WIRED TURN INDICATOR)

Signal® mirror replacement

(Mirror replacement does not require mirror head to be removed from vehicle)



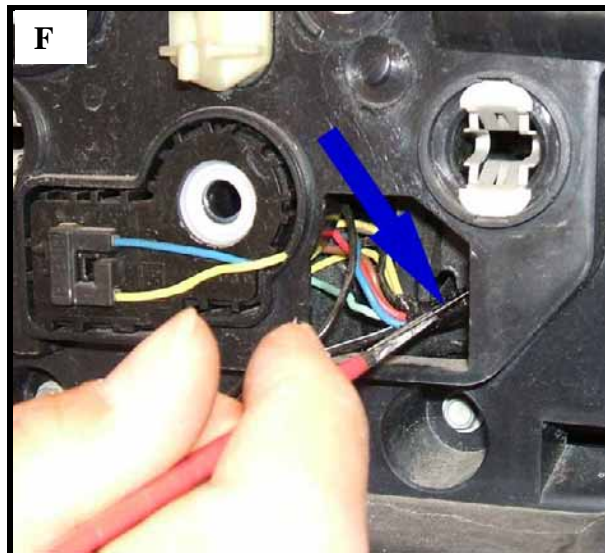
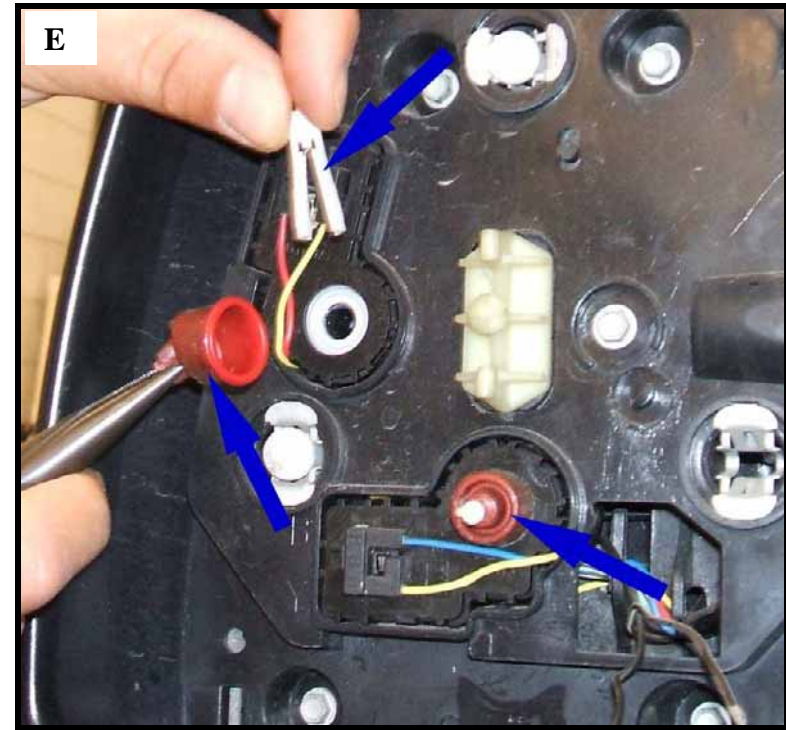
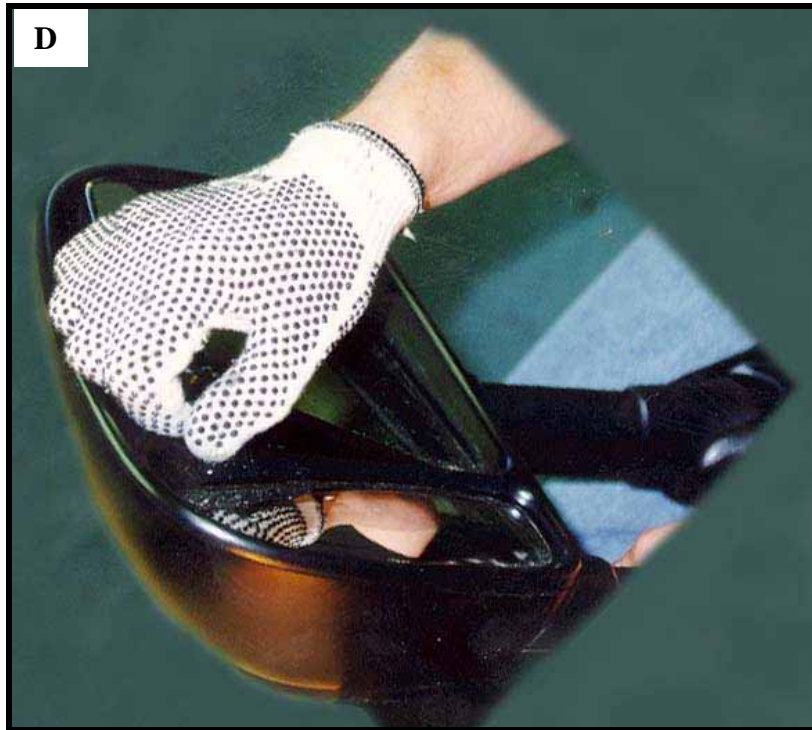
WARNING! Safety glasses and sturdy gloves are recommended for mirror glass removal.

- A. Before the mirror can be removed from the mirror housing, two drive pins need to be dislodged from behind the mirror. Press the top edge of the mirror into the housing to lift up the bottom edge of the mirror and expose the bottom drive pin. Place the fork of a small pry bar around the neck of the drive pin.

NOTE: The neck of the drive pin is located at the base of the mirror.

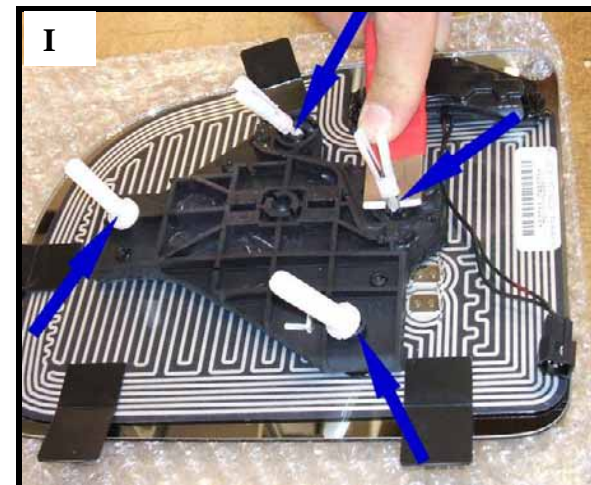
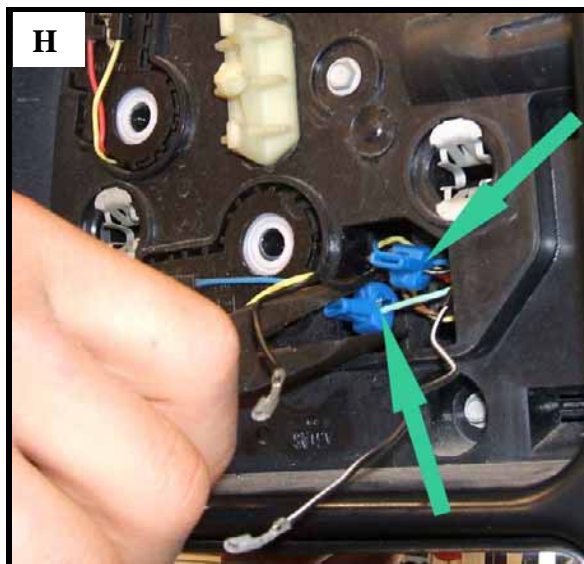
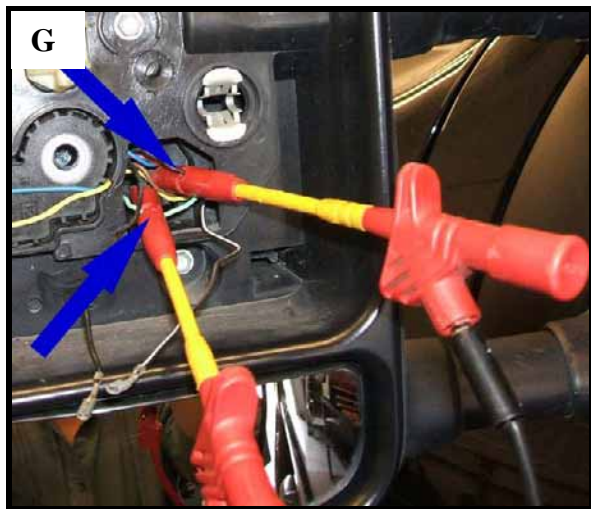
- B. Carefully twist the small pry bar until the head of the drive pin pops out of the socket. Lift the bottom and outside edges of the mirror further to expose the outboard drive pin. Repeat the procedure above to dislodge the outboard drive pin.
- C. Heat the OE mirror, in a circular motion, for 15-25 seconds with a heater gun to help loosen the mirror backing plate.

Ford F-250 to F-750 Pick-Up, Super-Duty (PRE-WIRED TURN INDICATOR) Signal® mirror replacement continued



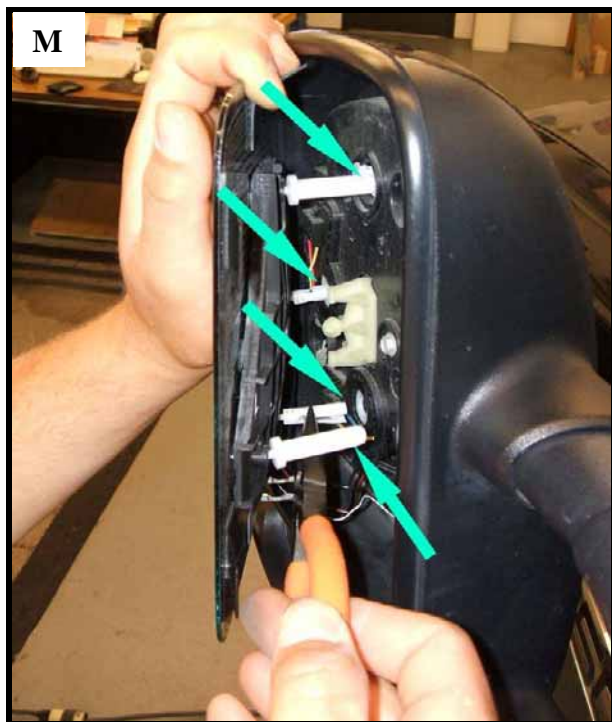
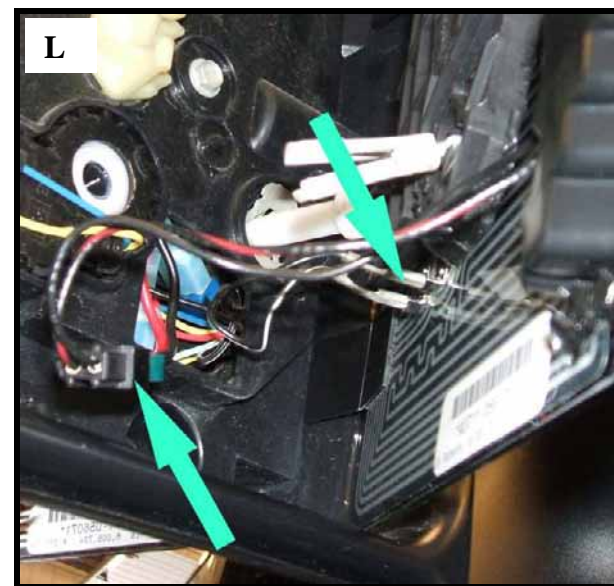
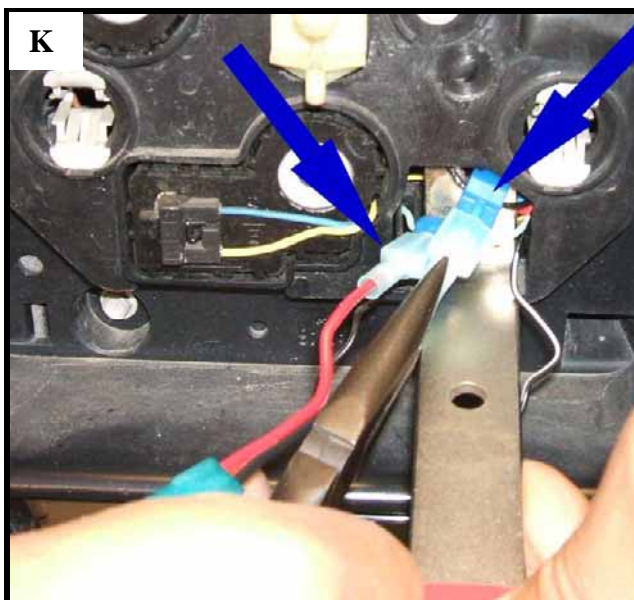
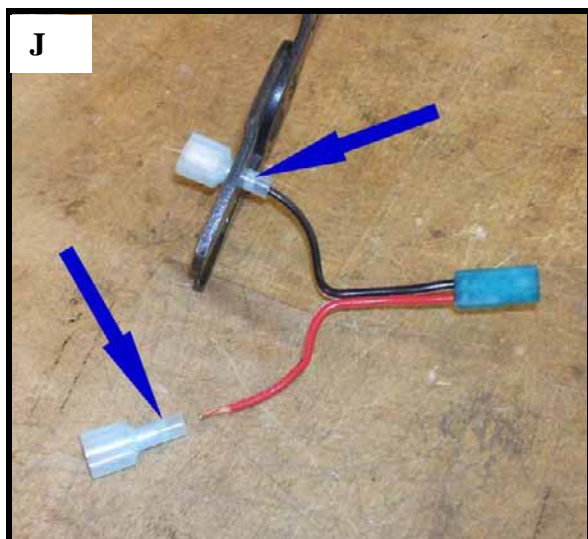
- D. Push in on the upper inboard edge of the large OE mirror to pivot the lower outboard edge fully outward. **NOTE: The mirror is held in place with a ball in the housing and a socket in the center of the OE mirror.** With a glove hand, grab the lower outboard edge of the OE mirror and carefully pull until OE mirror pops off. If heated, disconnect heater wires from the back of the OE mirror and remove OE mirror.
- E. Remove the (2) white motor pins. Careful, not to loose the spring clips inside motor pins. Remove the dust boots and discard.
- F. Using a utility knife, carefully cut the electrical tape around the wire bundle within the mirror housing.

Ford F-250 to F-750 Pick-Up, Super-Duty (PRE-WIRED TURN INDICATOR) Signal® mirror replacement continued

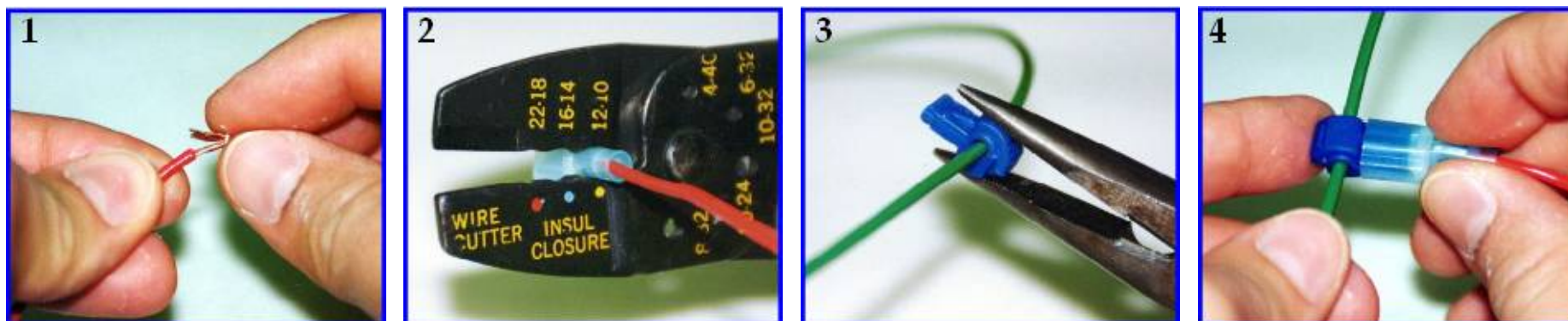


- G. **DRIVER SIDE:** Locate the LIGHT GREEN (HOT) wire and the BLACK (GND) wire within the wire bundle. Turn the ignition key so that electrical power is on and activate the driver side turn indicator. Probe the wire with the wire tester to verify that flashing turn indicator power is present. Label LIGHT GREEN wire as ‘driver side turn’.
- PASSENGER SIDE:** Locate the WHITE (HOT) wire and the BLACK (GND) wire from within the wire bundle. Activate the passenger side turn indicator and probe the wire with the wire tester to verify that flashing turn indicator power is present. Label the WHITE wire as ‘passenger side turn’.
- H. **NOTE:** For splicing into the turn directional indicator wires, a variety of options can be perform such as soldering, using wire taps, using T-Taps, etc. These diagrams showed the connections are made using T-Taps (not supplied with *Signal*® mirror kit). These T-Taps wiring kits can be purchase from various autopart or hardware stores. Otherwise, use whichever method you preferred to splice the new *Signal*® mirror harnesses to the turn directional indicator wires. Splice into the driver side turn and the BLACK wires using T-Taps to make the connection. Repeat step for passenger side turn.
- I. Insert all (4) white motor pins into their respective sockets on the mirror mount of the new *Signal*® mirror.

Ford F-250 to F-750 Pick-Up, Super-Duty (PRE-WIRED TURN INDICATOR) Signal® mirror replacement continued



- J. Locate one of the two supplied *Signal*® mirror harnesses, cut the end with the molex connector to about 4 – 6 inches. Split the wires up and strip about 1/4 inch off of both ends. Insert and crimp the stripped ends into the spade connectors as shown. Give the crimped ends several tugs to ensure wires are securely in place.
- K. Insert the RED wire spade connector into the driver side turn T-Tap. Repeat process for the BLACK (GND) wire.
- L. Connect the Molex connectors on the new *Signal*® mirror and the new *Signal*® mirror harness. If heated, reconnect the heater wires to the heater terminals on the back of the new *Signal*® mirror. **NOTE:** There is no polarity on the heater wires so they can be interchange.
- M. Tuck all wiring connectors and wires inside mirror housing access hole, if possible. Position the new *Signal*® mirror over the center nub of the mirror housing. Align and insert all (4) white motor pins into there respective slots on the mirror housing. Slowly push in the middle of the new *Signal*® mirror until the new *Signal*® mirror snaps into place. Press down on all sides to ensure proper engagement and function. **CAUTION:** Improper *Signal*® mirror assembly could result in *Signal*® mirror falling off.



T-TAPS (NOT INCLUDED IN KIT) SPLICING PROCEDURE – FOLLOW THE 4-STEP DIAGRAMS ABOVE TO SPLICE INTO THE TURN INDICATORS AND GROUND WIRES

WIRE TAPS (SUPPLIED WITH KIT) SPLICING PROCEDURE – FOLLOW THE 4-STEP DIAGRAMS ON PAGE-19 TO SPLICE INTO THE TURN INDICATORS AND GROUND WIRES

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

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|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------|
| 3,075,779 | 5,005,009 | 5,014,167 | 5,128,659 | 5,207,492 | 5,355,284 | 5,361,190 | 5,481,409 | 5,528,422 | 5,619,374 | 5,619,375 | |
| 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 |
| D394,833 | D409,540 | D425,466 | D426,506 | D426,507 | D427,128 | D428,372 | D428,373 | D428,842 | D429,202 | D430,088 | |