



## **Fire Truck**

### **300 Series West Coast Mirror Systems**



If you have any questions, you may contact technical support at:

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387,317

# 300 Series West Coast Mirror System Manual

## General Procedures

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## Troubleshooting & Repair

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## Warranty

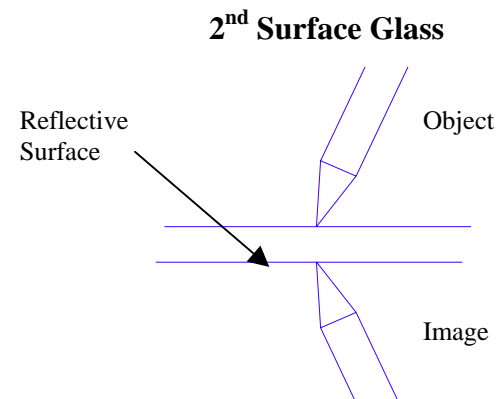
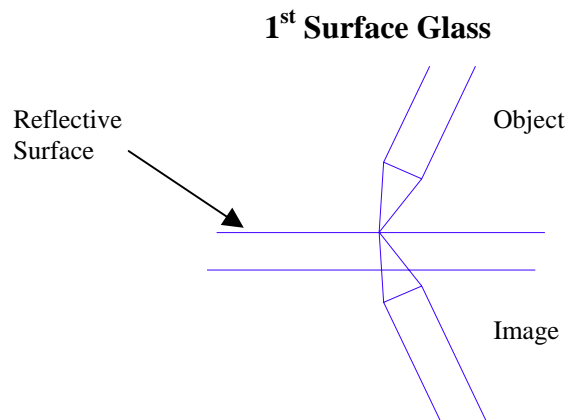
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## (G.3) Cleaning the Mirror Glass

There are two main types of mirror glass: 1<sup>st</sup> surface and 2<sup>nd</sup> surface. Each type has different properties. 1<sup>st</sup> surface glass has an exposed reflective surface, and is not subject to corrosion. 2<sup>nd</sup> surface glass has a shielded reflective surface, and must be protected from corrosion. When cleaning 1<sup>st</sup> surface mirror glass, abrasive cleaners or brushes should be avoided. Excessive abrasion may damage the reflective surface. All glass can be scratched. However, external scratches will not damage the reflective surface of 2<sup>nd</sup> surface glass.

A standard glass cleaner and a soft, clean cloth should be used to clean the mirror surface.

To determine if you have 1<sup>st</sup> or 2<sup>nd</sup> surface glass, place an object such as a pen on the glass surface. Angle the pen to one side, so you can see the tip. If there is a gap between the tip of the object and the tip of the image, your glass is 2<sup>nd</sup> surface. If there is no gap between the tip of the object and the tip of the image, your glass is 1<sup>st</sup> surface.



## (G.4) Removing, Attaching, or Adjusting the Mirror Heads (From the Bracket)

### To Adjust Mirror Head

- 1) Slightly loosen the two clamp bolts using a T-30 driver. To prevent the mirror from sliding down, hold it in place from the bottom.
- 2) Adjust mirror head to desired position. Tighten clamp screws to 10-15 N-m.

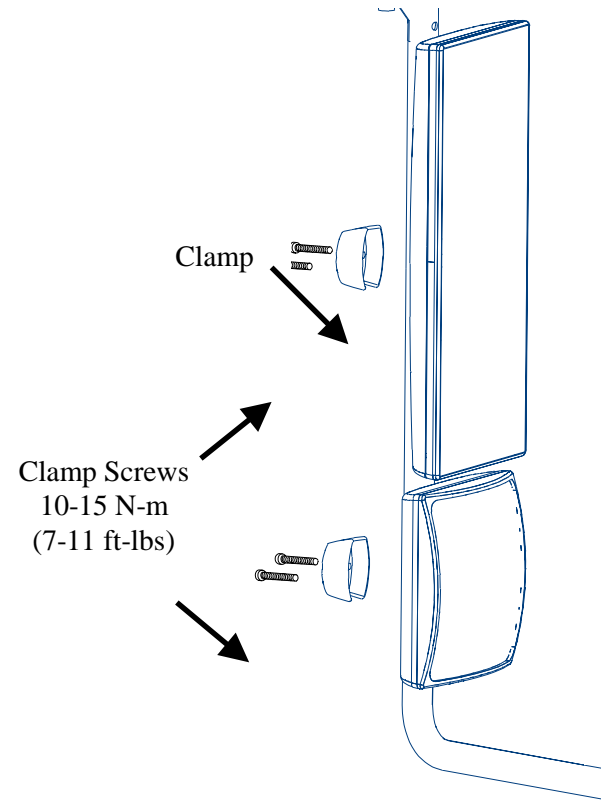
***MAKE SURE THE OPTIMUM VIEWING ANGLE IS ASSURED FOR THE DRIVER OF THE VEHICLE AT ALL TIMES!***

### To Remove Mirror Head

- 1) Disconnect control cable from mirror head.
- 2) Remove the two clamp bolts using a T-30 driver. To prevent the mirror from sliding down, hold it in place from the bottom.

### To Attach Mirror Head

- 1) Place mirror head on bracket, and tighten the two clamp bolts to 10-15 N-m (7-11 Ft-lbs) using a T-30 driver. Ensure the proper position is set for the driver.
- 2) Attach the control cable inside the mirror head.



## (G.5.1) Mirror Plate Exchange - Removing Mirror Plate

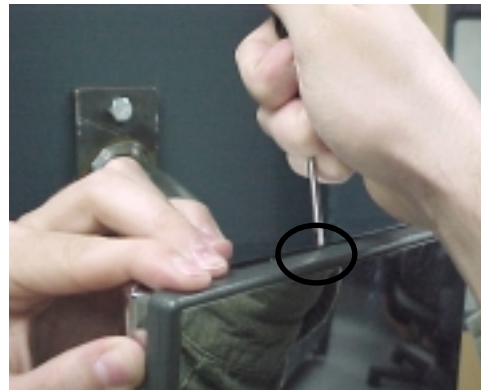
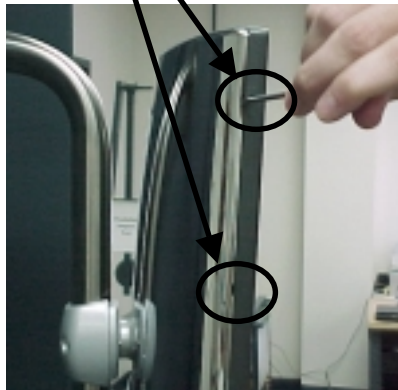
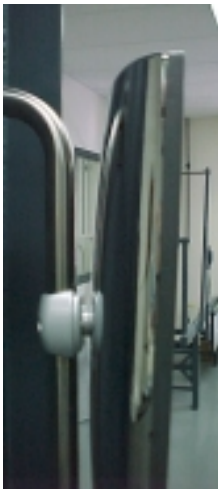
Your Lang-Mekra mirror system is equipped with a durable mirror plate. The mirror glass is reinforced with anti-shattering adhesive to minimize splintering in the event of breakage. We strongly recommend the prompt replacement of damaged mirror plates.

If you have a heated mirror, be careful not to damage the wiring or the heater connections when changing the mirror plate, especially when detaching heater wires from the mirror plate.

### To Remove the Mirror Plate

- 1) Use a small flat-head screwdriver to push in the locking tabs thru the access slits along the mirror housing. **DO NOT use the screwdriver to pry the mirror plate!**
- 2) Start pushing in the tabs near the corner of the mirror, then continue around the mirror while pulling firmly on the mirror plate.
- 3) Pull the mirror plate away from the housing. If the mirror is heated, detach the heater wires. Do not cut the wires.

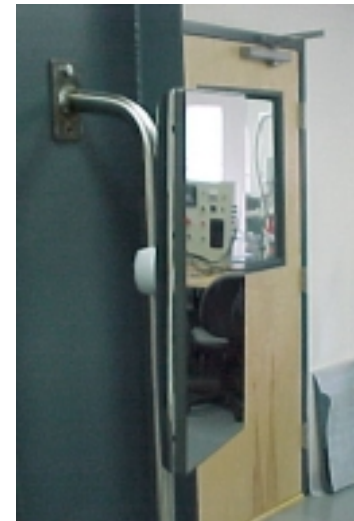
Slits to access  
locking tabs



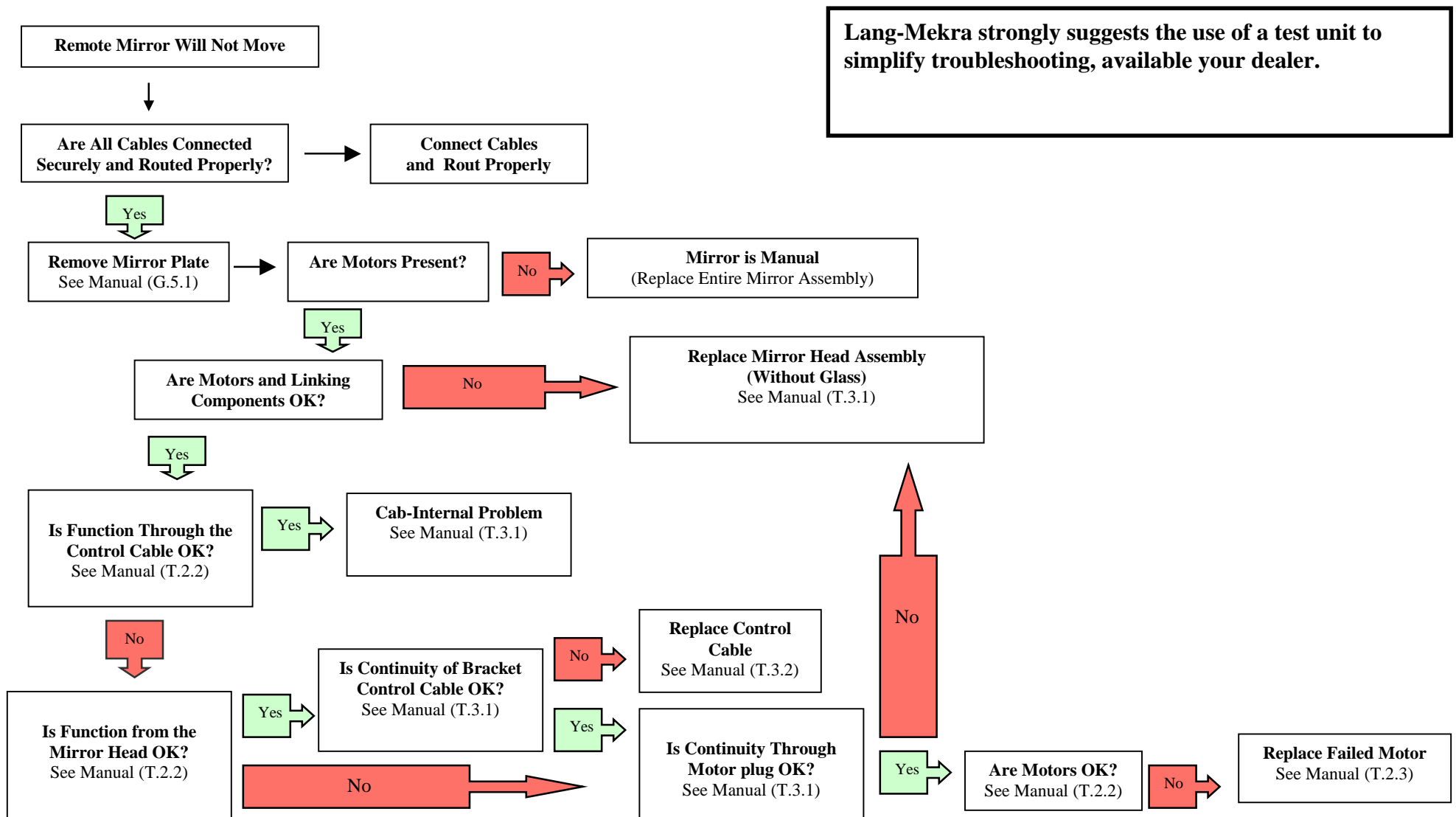
## (G.5.2) Mirror Plate Exchange - Installing Mirror Plate

### To Install Mirror Plate

- 1) Attach wire terminals to back of new mirror plate.
- 2) Align locking clips on mirror plate with mirror housing. **Make sure all the clips are inside the housing before pushing on the mirror plate!** This will keep from damaging the locking clips. Failure to install the mirror plate correctly could result in vibration, or loss of mirror plate.
- 3) Press mirror plate into housing firmly, ensuring all clips lock into place.



## T.2.1 Mirror Movement Analysis Flowchart





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## T.2.2 Mirror Movement Analysis

- 1) Follow the flowchart in **T.2.1** to promptly diagnose mirror movement problems.
- 2) Make sure all cables and connections are tight.
- 3) Remove the mirror glass according to **G.5.1**. Check to ensure the mirror is remote (there are motors present). Sometimes, a customer may have a manual mirror with a remote control switch inside the truck. If this is the case, the entire assembly must be replaced if the customer wants a remote control mirror.
- 4) Are the motor arms and linking components in good visual condition and function? If not, replace the appropriate part as indicated in the flowchart.
- 5) Using a tester unit (or supplying power to the control cable according to **T.3.1**) check the mirror function from the end of the control cable at the door (under the lower cover). If the mirror functions properly, the fault is cab-internal.
- 6) Using a tester unit (or supplying power to the mirror head plug according to **T.3.1**) check the function of the mirror head. If the mirror functions at this point, but not from the control cable (at the lower holder), the problem is in the control cable. Check the connections, and if necessary replace the control cable according to **T.3.2**. Always perform a continuity check (see **T.3.1**) on the control cable and confirm the fault before attempting replacement.
- 7) If there is no continuity through the motor plug according to **T.3.1**, the motor must be replaced, or the mirror head assembly must be replaced. To determine which must be replaced, press the wire connections from motor plug.. Put the motor leads to power—if the motor does not function, it must be replaced. See **T.2.5** for details. If the motor function when the leads are directly connected to power, but does not function when power is supplied directly to the mirror head, the motor plug is faulty. The mirror head assembly must be replaced. See **T.2.4** for details.
- 8)

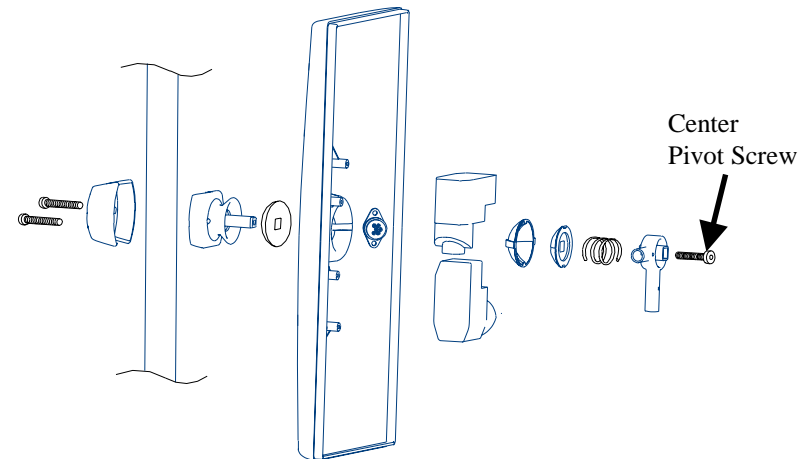
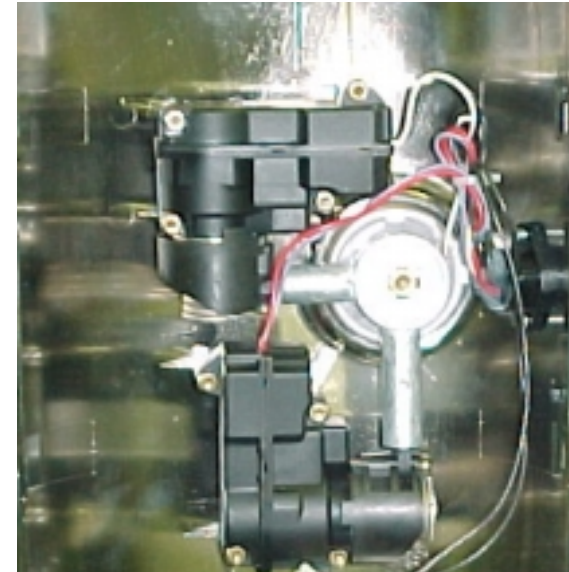
## (T.2.3) Motor (Actuator) Replacement

### Actuator Removal

- 1) Remove mirror plate (**G.5.1**)
- 2) After identifying the non-functioning motor according to **T.2.1** and **T.2.2**, remove the center pivot screw using a T30 driver. It is not necessary to remove the mirror from the vehicle.
- 3) Remove the four retaining screws with a 4mm torx driver, and disconnect motor plug from control cable.

### Actuator Installation

- 1) If desired, you may solder and shrink wrap the connections. Make sure the wires are not pinched or strained.
- 2) Fasten motor with four screws to 1.5 +/- 0.5 N-m, using a 4mm torx driver.
- 3) Reinstall the center pivot assembly, keeping the components in the original order as shown. Torque center pivot screw to 5 +/- 1 N-m, using a T-30 driver.
- 4) Reinstall the glass, being sure to connect the heater wires (**G.5.2**).





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## (T.3.1) Wiring & Connections

| Mirror Switch Position | Mekra Harness –Bracket Plug |          | Mekra Harness-Bracket Plug |        |
|------------------------|-----------------------------|----------|----------------------------|--------|
|                        | +12 Volts                   | GROUND   | +12 Volts                  | GROUND |
| UP                     | 6 Brown                     | 5 Yellow | 4                          | 1      |
| DOWN                   | 5 Yellow                    | 6 Brown  | 1                          | 4      |
| LEFT                   | 5 Yellow                    | 7 Orange | 1                          | 2      |
| RIGHT                  | 7 Orange                    | 5 Yellow | 2                          | 1      |
| Heater Switch ON       | 1 Red                       | 2 Black  | 3                          | 6      |



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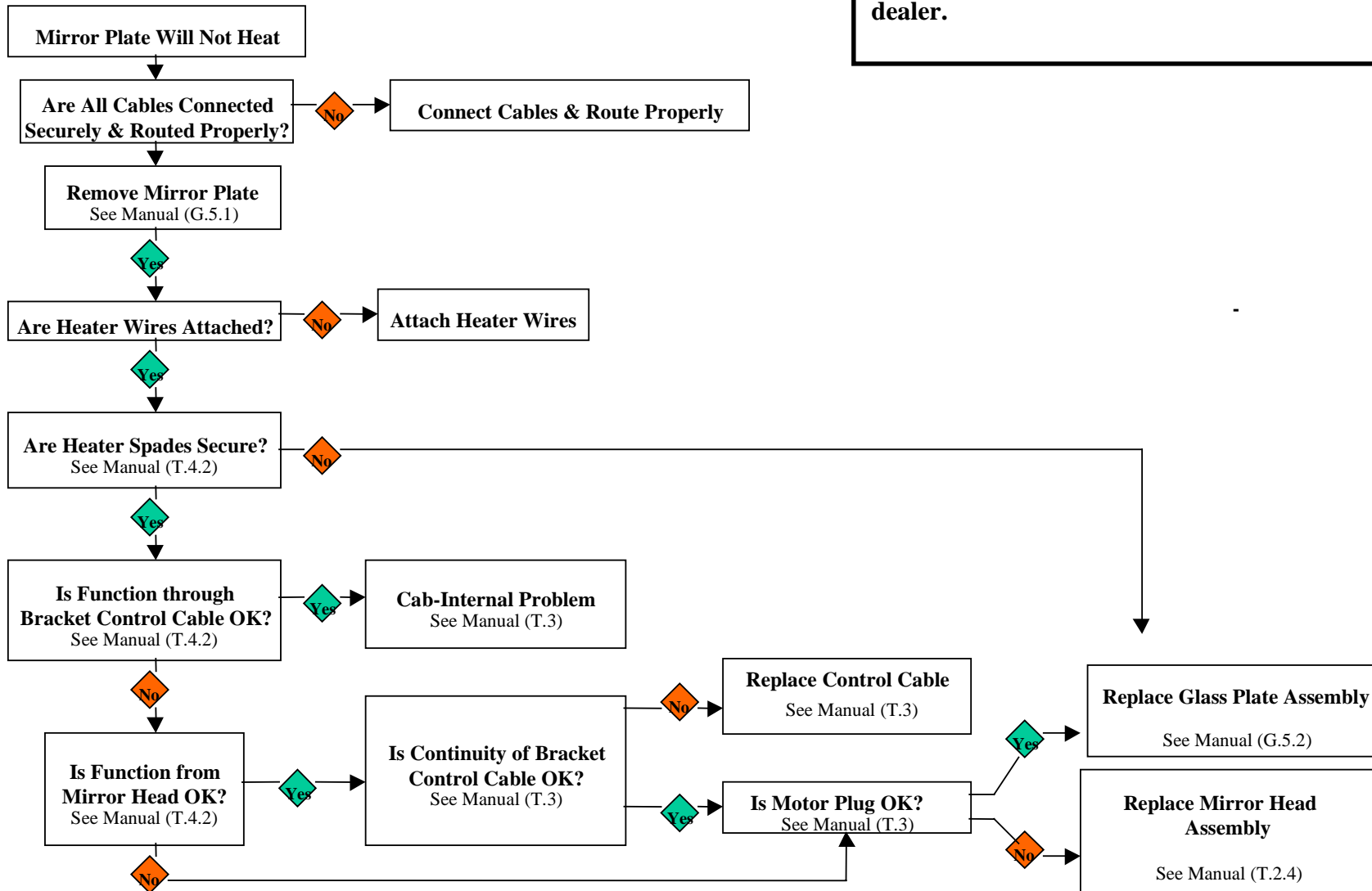
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## **(T.3.2) Control Cable Replacement**

Remove bracket end cap from tube located at the lower holder. Pull control cable out from hole located at main mirror head, feeding cable into bracket at convex (if heated). Once cable is removed, discard. To install new cable, start by inserting the end into the hole located by the main mirror head. As the cable is fed through the bracket, watch for convex connection at lower hole. Once the end reaches the hole pull out and apply grommet. Continue to string cable out the end of the tube and replace end cap. Now place grommet onto main mirror connection. To reattach cable to mirror heads refer to G.4. Call our toll-free technical support hotline for assistance (1-888-MEKRA-4-U).

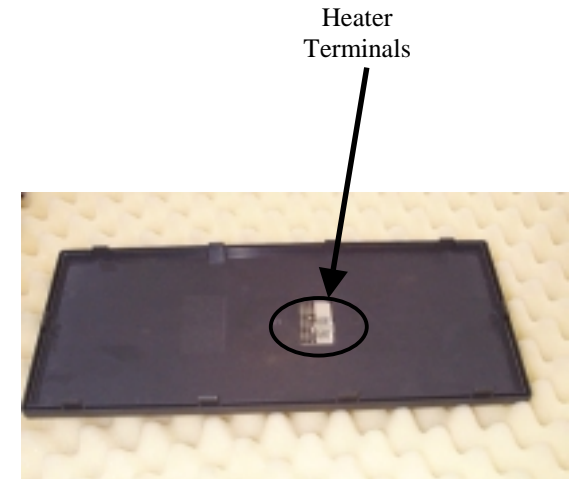
## (T.4.1) Mirror Heat Analysis Flowchart

Lang-Mekra strongly suggests the use of a test unit to simplify troubleshooting, available through your truck dealer.



## (T.4.2) Mirror Heat Analysis

- 1) Follow the flowchart in **T.4.1** to promptly diagnose mirror heat problems.
- 2) Remove the mirror glass according to **G.5.1**. Check to ensure the mirror is heated. (Heater spades are present.)
- 3) Make sure all cables and connections are tight.
- 4) Check to see if the heater terminals are secure. (See Illustration). If not, replace the glass plate assembly.
- 5) Using a tester unit, or supplying power to the bracket cable according to **T.3**, test the function of the heat from control cable at the door (under the lower cover). If the mirror functions properly, the fault is cab-internal.
- 6) Using a tester unit, or supplying power to the mirror head socket flange according to **T.3**, test the function of the heat from mirror head. If the heat functions at this point, but not from the control cable, the problem is in the control cable (inside the bracket). Check the connections, and if necessary replace the control cable as indicated in the flowchart. Always perform a continuity check (see **T.3**) on the control cable and confirm the fault before attempting to replace the control cable.
- 7) If there is no continuity from the socket flange according to **T.3**, the mirror head assembly must be replaced. See **T.2.4** for details.



When attaching or detaching the heater wires, be sure to push or pull on the white terminal cover. Do not pull on the wires, or pull up or down on the heater terminals.

## (T.5) Surface Finishes

The paint on the bracket and upper holder is a flexible, weather-resistant powder-coating. This coating requires no topcoat. If the paint is chipped or otherwise damaged, use Dupont paint number 373-P-23290 for repainting of silhouette gray systems. For bright or chrome systems, a matching wet paint may be used after the surface is sufficiently prepared. Painting of the lower cover is performed by Freightliner Corporation, and is not currently conducted by Lang-Mekra North America.



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## (W.2) Available Service Parts

The following list represents all parts currently available for service and after-market use relating to the Lang-Mekra West Coast 300 Series mirrors.

| Lang Mekra<br>West Coast<br>Series Part Number | Description  |
|--|--|
| 584070100-PDC                                  | Stainless Steel Mirror Bracket Assembly                        |
| 584070200-PDC                                  | Black Mirror Bracket Assembly                                  |
| 514090029-PDC                                  | Main Mirror Head, Remote, Chrome Right Hand w/o Glass or Clamp |
| 514090028-PDC                                  | Main Mirror Head, Remote, Chrome Left Hand w/o Glass or Clamp  |
| 514090025-PDC                                  | Main Mirror Head, Manual, Heated, Chrome w/o Glass or Clamp    |
| 514090024-PDC                                  | Main Mirror Head, Manual, Unheated, Chrome w/o Glass or Clamp  |
| 514090027-PDC                                  | Main Mirror Head Remote, Black Right Hand w/o Glass or Clamp   |
| 514090026-PDC                                  | Main Mirror Head Remote, Black Left Hand w/o Glass or Clamp    |
| 514090021-PDC                                  | Main Mirror Head Manual, Heated, Black w/o Glass or Clamp      |
| 514090020-PDC                                  | Main Mirror Head, Manual, Unheated, Black w/o Glass or Clamp   |
| 564090025-PDC                                  | Convex Mirror Head, Heated, Chrome w/o Glass or Clamp          |
| 564090024-PDC                                  | Convex Mirror Head, Unheated, Chrome w/o Glass or Clamp        |
| 564090021-PDC                                  | Convex Mirror Head, Heated, Black w/o Glass or Clamp           |
| 564090020-PDC                                  | Convex Mirror Head, Unheated, Black w/o Glass or Clamp         |
| 613871998-PDC                                  | Remote/Heated Control Cable                                    |
| 613871997-PDC                                  | Heated Control Cable   |
| 153832107-PDC                                  | Main Mirror Head Glass Carrier Plate Assembly                  |
| 153882117-PDC                                  | Convex Mirror Head Glass Carrier Plate Assembly                |
| 113870510B-PDC                                 | Mirror Head Clamp Kit  |
| *084090002-PDC                                 | RH Actuator (2 Motor Set) Replacement Assembly                 |
| *084090001-PDC                                 | LH Actuator (2 Motor Set) Replacement Assembly                 |
| 903840100-PDC                                  | Tester Unit Box, Complete                                      |