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## **Guardian II Universal Commercial Lift Interlock (GRD402-A)**

### **Operating Instructions**

The Guardian II is a microprocessor driven system for controlling wheelchair lift operation. Lift operation will only be allowed when all of the following conditions are met:

1. The vehicle ignition power is off.
2. The parking brake is applied.
3. The lift door is open.

The Guardian II also will not allow the engine to be started if the lift door is open.

When the ignition is initially turned on or the lift door is open, the Guardian II LED panel will prove out by illuminating the three red indicators briefly. When the lift door is closed and ignition power is not present for 5 minutes, the Guardian II will enter a low current "sleep" mode of operation. To wake up from "sleep" mode, the ignition must be turned on or the lift door must be opened. After prove out, the operation of the indicators is as follows:

- "Ⓢ" - Illuminates in red if engine start circuit is inhibited.
- "PB" - Illuminates in red when the parking brake is engaged.
- "Lift Door Open Icon" – Illuminates in red when the lift door is open. If illuminated, the engine will not be allowed to start.

The Lift will only operate if all LED's are simultaneously illuminated.

The indicators can also be used for diagnostic purposes. For example, if the Lift Door Open icon is illuminated when the lift door is closed, the driver will not be able to start the vehicle. This means that the Guardian II detects that the lift door is open. Thus, a technician should inspect the lift door switch and its circuit for proper operation.

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### **Installation Instructions**

**Note: For proper installation, you must have a shop manual or wiring diagram for the specific make, model and year of the vehicle on which the installation is to occur. You must properly identify the following circuits:**

1. Parking brake switch and circuit. The parking brake switch **must** provide a ground signal only when the parking brake is applied.
2. Vehicle start/crank circuit. You must verify, with an ammeter, that this circuit does not draw more than 9 Amps while cranking the engine.
3. A fuse protected 12V ignition source. This source must provide voltage in run **and** start key positions only.

If you cannot locate these circuits, or if they do not meet the criteria outlined above, do not attempt installation. If you have identified the proper circuits and they do meet the above criteria, proceed with the installation as outlined below.

**GUARDIAN II MODULE** - Remove the lower dash panel below the steering column. The Guardian II Module should be positioned behind the metal knee bolster bracket below the steering column. It can be secured using self tapping screws, adhesive foam tape, or wire ties. Do not secure the module until all harnesses are installed and proper lift operation has been verified.

**LED DISPLAY PANEL** – This harness can be identified by the blue tape near the 6-pin connector. Locate a suitable position on the dashboard, within clear view of the driver, for the mounting of the LED Display Panel. The length of the display harness is 40". This is the maximum distance the display can be from the Guardian II module. Drill a 3/4" hole in the dashboard where you wish the center of the display to be. Snap the blue taped end of the LED display harness into the Guardian II Module in the connector labeled in blue "Display". Run the other end of the harness under the dash and out through the 3/4" hole. Snap the other end of the LED display harness into the LED Display Panel. Ensure panel is level, and secure using the supplied screws.



**LIFT HARNESS** - This harness can be identified by the green tape near the 6-pin connector. Attach the red wire with the inline fuse to the vehicle battery positive post. There is a large eyelet taped to the fuse holder that can be used for this purpose. Attach the black wire with the eyelet to a good ground point. Run the gray cable back towards the lift. The black wire in the gray cable will attach to the lift door switch. This switch must provide a ground only when the lift door is **open**. Attach the red wire in the gray cable to the interlock input to the lift. This wire will provide 12V to the lift when all interlock conditions are met. Maximum current for this circuit is 8A. The interlock inputs on FMVSS 403/404 compliant lifts are as follows:

Ricon – Red wire to Pin 7 of 9-pin connector (Ricon Part # 32753).

Braun –Red wire to Pin 6 of 9-pin connector (Grey/Red wire).

Maxon –Red wire to white/red wire on Maxon lift.

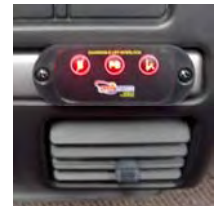
For non FMVSS 403/404 compliant lifts, consult the lift manufacturer for proper hookup.

Finally, snap the green-taped end of the harness into the connector labeled in green “Lift” on the Guardian II Module.



**Before continuing installation, the following check must be performed:**

Verify that the vehicle ignition is off and the lift door is fully closed for at least 5 minutes. This will ensure the Guardian II module is in sleep mode. Open the lift door. All three indicators on the LED Display Panel should briefly illuminate as a prove-out after the module wakes up. If they do not, check to make sure each harness is connected to the proper Guardian II Module connector as outlined in the above steps. Only proceed to the next step if the indicators illuminate. Otherwise, damage can occur to the module.



**VEHICLE 1 HARNESS** – This harness can be identified by the orange tape near the 6-pin connector. Locate the parking brake switch circuit on the vehicle. Verify that it provides a ground signal only when the parking brake is applied. In a convenient location, cut this circuit. Strip back about ½” of the insulation on each cut side. You will connect the brown wire on the vehicle 1 harness in series with this circuit. The arrow on this harness must point towards the parking brake switch. If this harness is installed backwards, the unit will not function properly. These connections must be made using solder and the supplied heat shrink tubing. The heat shrink tubing can be cut to 1” lengths for this purpose. **Do not use butt connectors for these connections! The use of butt connectors in this circuit will void the InterMotive warranty.**



Finally, snap the Vehicle 1 Harness into the Guardian II Module connector labeled in orange “Vehicle 1”.

**VEHICLE 2 HARNESS** – Attach the red wire to a fuse protected ignition 12V source. This type of circuit can typically be located near the fuse block. It is imperative that this circuit provides 12V in **both** run and start and **only** run and start key positions, or improper operation will occur. Ensure that you solder and heat shrink this connection. Locate the vehicle start/crank circuit. This is typically found near the ignition switch. In a convenient location, cut this circuit. Attach an ammeter in series with this cut circuit and verify that the current draw does not exceed 9 amps while cranking the engine or damage to the Guardian II module can occur. Attach the yellow wire to the cut wire coming from the ignition switch. Attach the blue wire to the cut wire going to the

starter relay. Both connections must be made using solder and the supplied heat shrink tubing.

**Do not use butt connectors for these connections! The use of butt connectors in these circuits will void the InterMotive warranty.**

Finally, snap the Vehicle 2 Harness into the Guardian II Module 4-pin connector labeled in white “Vehicle 2”.



**Secure the Guardian II Module in its final location and test for proper operation. (See Post Installation Check List).**



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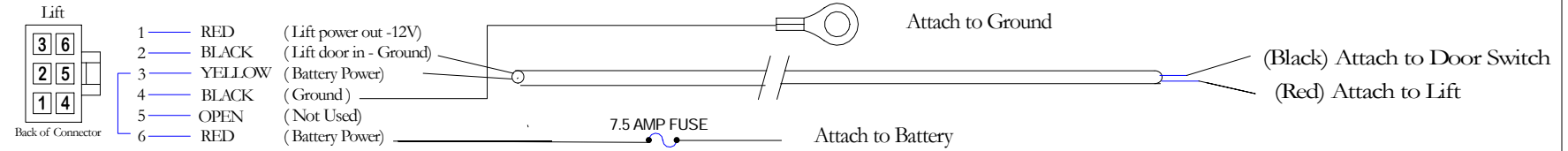
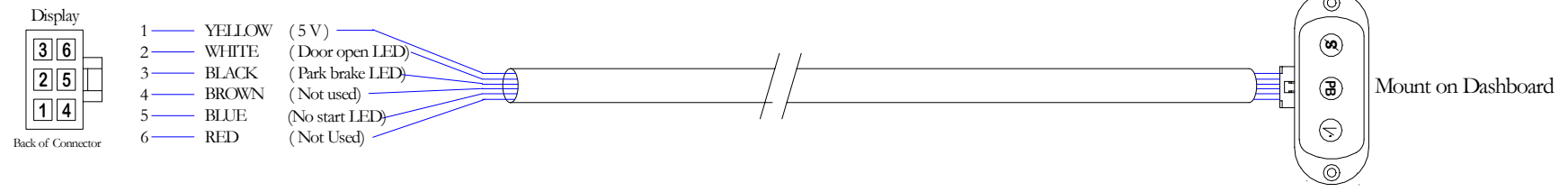
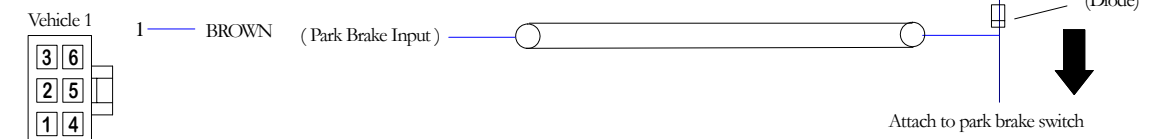
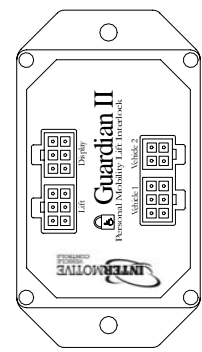
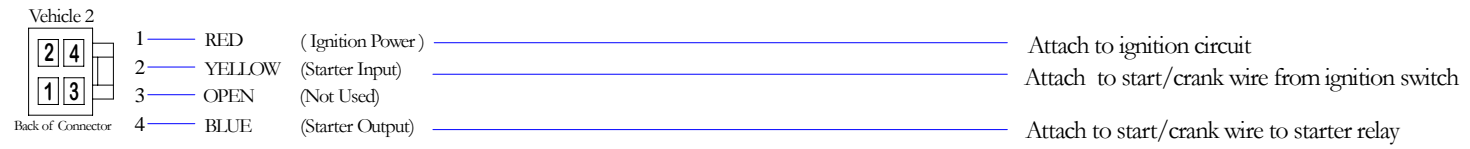
### Post Installation Check List

**The following checks must be made after installation of the InterMotive Guardian GRD402 to ensure correct and safe operation of the lift. If any of the checks do not pass, do not deliver the vehicle. Recheck all connections as per the installation instructions.**

1. Turn off the ignition. Open the lift access door. Release the parking brake. Attempt to deploy the lift. The lift must not deploy. Verify that the LED's prove out and that the lift door LED remains illuminated.
2. With the ignition still off, apply the parking brake. The parking brake LED and the no-start LED should now also illuminate. Attempt to deploy the lift. The lift should now deploy.
3. With the lift deployed, attempt to start the engine. The engine must not crank.
4. Leave the ignition on and attempt to stow the lift. The lift must not operate.
5. Turn the ignition off. The lift should now operate. Stow the lift. Close the lift door. The lift door LED should turn off. Attempt to start the engine. The engine should now start.
6. Turn off the ignition. Verify that the module goes into sleep mode after approximately five minutes. The module is in sleep mode when all LED's on the display are not illuminated.
7. Open the lift access door. The module should prove-out all LED's and the park brake and door open LED's should remain illuminated.
8. Close the lift access door. Installation is complete.

# REVISIONS

DATE :	CHANGE :
11/18/05	



PRODUCT: **Guardian II-Universal**

DRAWN BY:	Bruce Hodge	PART NO:	GRD402-A
DATE DRAWN:	9/9/05	CHECK BY:	Ed Prokopik
		DATE CHECKED:	11/18/05