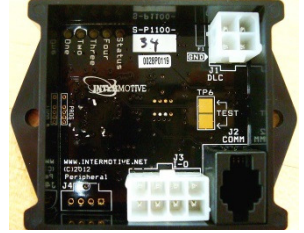


## LOCK515-A Shift Interlock (Manual Lift Door) 2015 - 2018 Ford Transit, 3.7L and 3.5L



### Introduction

The LOCK515-A is a microprocessor driven system for controlling wheelchair lift operation. The default system can operate with the vehicle ignition on or off. Lift operation will be enabled when specific vehicle safety conditions are met and will lock the transmission in Park when the wheelchair lift is in use. Optional Plug and Play harnesses are available for most applications, making installation fast and easy. "Key OFF Only" operation is available with a customer Pat-n-Rub sequence (contact InterMotive for instructions).

### IMPORTANT—READ BEFORE INSTALLATION

It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts and high heat sources. Failure to do so could result in damage to the system or vehicle and create possible safety concerns for the operator and passengers. Avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Avoid radio frequency energy from antennas or inverters next to the module. Avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

### Installation Instructions

**Disconnect vehicle battery before proceeding with installation.**



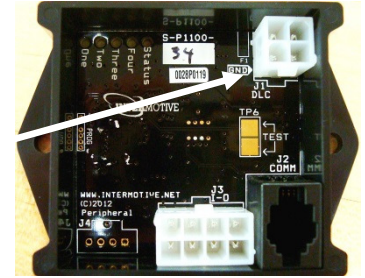
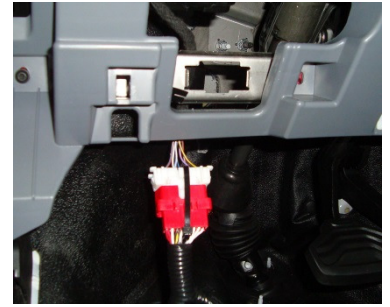
**WARNING**  
Disconnect the battery to  
prevent setting a check engine  
light.

### LOCK515-A Module

Remove the lower dash panel below the steering column area and find a suitable location to mount the module so that the Diagnostic LED's can be viewed with the lower dash panel removed. Locate the module in an area away from any high heat sources (engine heat, heater ducts, etc.). Do not actually mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module.

## Data Link Harness Installation

1. Locate the vehicle OBDII Data Link Connector, mounted below the lower left dash panel.
2. Remove the White OBDII connector from the dash panel by squeezing both sides of the connector. Plug the red connector from the LOCK515-A Data Link Harness into the vehicle's OBDII connector. Ensure the connection is fully seated and secure with the supplied wire tie.
3. Mount the White pass through connector from the LOCK515-A Data Link Harness in the former location of the vehicle's OBDII connector.
4. Secure the LOCK515-A Data Link harness so that it does not hang below the lower dash panel.
5. Plug the free end of the Data Link harness into the mating 4-pin connector on the LOCK515-A module.



## Connecting a Lift Door Input

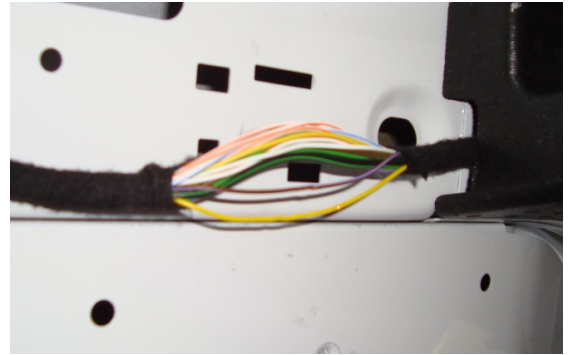
If "Key OFF" operation is desired, a discrete Lift Door input must be made to the module. This is accomplished by connecting into the existing vehicle switch harness above and behind the driver's seat.

Both the slide door wire (yellow) and rear door wire (brown/violet) are included in this harness (see next page) so depending on which door is the Lift Door, one of the two must be connected. Unscrew the Grey cap from the included Posi-Tap connector and install it on the appropriate wire, then screw the rest of the connector onto the cap snugging it down but not overly tight.



## Connecting a Lift Door Input (Continued)

Unscrew the other end of the Posi-Tap connector, strip 1/4" insulation off the Grey wire coming from pin 8 of the module, and insert it through the loose piece so the wire end is even with the piece edge. Hold the wire so it doesn't push back out of the piece, and screw it back into the main Posi-Tap body. Holding the main Posi-Tap body, gently pull on the just-installed wire to make sure it is solidly connected. Secure the connection using tape. **NOTE:** there is an additional sequence that must be run at installation which identifies the lift door to the module (See Page 4).



## Control Inputs/Outputs - 8-pin connector

The LOCK515-A provides three ground side inputs and one 12V, 1 amp output.

Refer to the LOCK515-A CAD drawing as reference when reading these instructions. A control relay may be needed to power some lifts, due to the lift drawing more than 1 amp. Install a TVS (diode clamped) relay as shown on the CAD drawing.

Lengthen the following wires appropriately, using solder and heat shrink tubing or tape.

The blunt-cut (4-wire) harness provides for control connections to the vehicle as follows:

**Orange** – connect this output to the lift or lift relay. Refer to the particular lift model drawing when making this connection. This output provides 12V @ 1 amp when it is safe to operate the lift.

**Grey** – This input must "tap in" to the existing Lift Door switch wire as the instructions show (See previous page).

**Optional Shift Lock Input** Connect the included Yellow wire to any source which provides a High True level to enable shift lock and insert pin into pin #1.

**Brown** – Connect this wire only if "key off" lift operation is desired.

Connect this optional input to the OEM Park Brake switch (as shown) such that the switch is made when the Park Brake is set. Install a standard rectifier diode (RL202-TPCT-ND or equivalent) as shown in the Blunt Cut CAD drawing, to isolate the Parking Brake ground signal. Strip back some insulation off the White/Violet wire, solder the Brown wire on and tape or use heat shrink tubing. This connection is required if lift operation is desired when the vehicle ignition is OFF.

- Pin #1 — OPEN (Optional Shift Lock Input)
- Pin #2 — N/C
- Pin #3 — ORANGE (Vehicle Secure (12V) Output)
- Pin #4 — N/C
- Pin #5 — BROWN (Park Brake (GND) Input) \*Optional
- Pin #6 — N/C
- Pin #7 — ORANGE (Jumpered to Pin#3)
- Pin #8 — GREY (Lift Door Open Input)

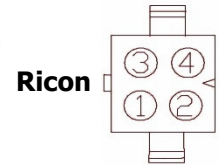


## Connect the 8 pin connector to the module

## **\*\* Optional Plug & Play Lift Harness \*\***

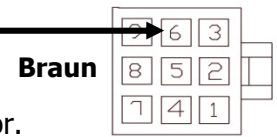
**Orange** – This output provides 12V @ 1 amp when it is safe to operate the lift. Cut the wire to the correct length and attach one of the pins provided using a crimping tool and insert pin into the correct cavity.

**Ricon lifts:** Connected to pin #86 of the control relay. Plug 4-pin connector into lift.



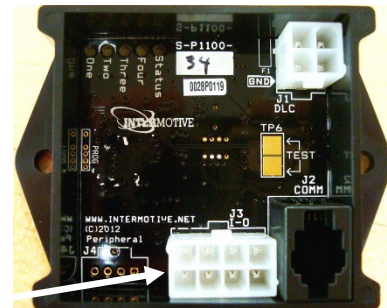
**Braun lifts:** Connect to pin #6 of the 9-pin connector.

**Optional Shift Lock Input:** Connect the included Yellow wire to any source which provides a High True level to enable shift lock and insert pin into pin #1 at the 8-pin connector.



**Grey** – This input must "tap in" to the existing Lift Door switch wire as the instructions show (See installation description on Page 2).

- Pin #1 — OPEN (Optional Shift Lock Input)
- Pin #2 — N/C
- Pin #3 — ORANGE (Vehicle Secure (12V) Output)
- Pin #4 — N/C
- Pin #5 — BROWN (Park Brake (GND) Input) \*Optional
- Pin #6 — N/C
- Pin #7 — ORANGE (Jumpered to Pin#3)
- Pin #8 — GREY (Lift Door Open Input)



**Connect the 8 pin connector to the module**

## **Reconnect vehicle battery**

### **LOCK515-A Module**

Ensure all the harnesses are properly connected and routed. With all connections made, turn KEY to RUN position.

### **Lift Door Identification**

The module comes from the factory with the rear door identified as the lift door. If the slide door happens to be the lift door or if a discrete Lift Door connection was made (See Page 2 and 3), the module needs to know which of the two possible doors (slide or rear) is defined to be the lift door; perform the following procedure to accomplish this:

1. Assure Slide and Rear Doors are closed
2. Vehicle is in PARK with Key in the RUN position and engine OFF
3. Park Brake is applied
4. Put the module in diagnostic mode by carefully applying a ground to the TP6 test pad - the module LEDs will scroll, LED1 will "blink out" the firmware version, then LEDs 1 - 3 will come ON steady.
5. Pump the service brake pedal (4 times within 5 sec) till you see module LEDs 1 - 4 blinking together.
6. Now go and open the lift door; The module LEDs will stop blinking and remain OFF.

(Continued on next page)

## **LOCK515-A Module (Continued)**

### Lift Door Identification (continued)

7. Verify the lift door is "known" by opening and closing it while watching LED 4 on the module (LED on when lift door open). If there is no indication or if the sense seems opposite to what it should be, the previous sequence must be repeated.

NOTE: If a discrete connection was made for the lift door (so it would work with key off), the module will use the discrete input (pin 8) exclusively from this point to determine the status of the lift door.

### KEY OFF ONLY mode

The module comes from the factory defaulted to operate with Key ON or Key OFF. In the event that you want the operation to be valid for Key OFF only, please contact Intermotive at (530) 823-1048 ext. 159.



## Post Installation / Check List

### LOCK515-A (Manual Lift Door)

The following checks must be made after installation of the system, 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.

Begin the checklist with the vehicle in the following state:

- Lift stowed
- Lift Door closed
- Park Brake set (PB)
- Transmission in Park (P)
- Ignition off (Key off). Wait until the module goes into "Sleep" mode, which takes approximately 5 minutes.

### **KEY ON CHECK: NOTE—you can skip this section if module set up for Key OFF Only**

1. Turn ignition key on (to "Run").
2. Attempt to deploy the lift. The lift must not deploy with the Lift Door closed. Next, open the lift door.
3. With Lift Door open, Park Brake set and transmission in Park, attempt to deploy the lift. Verify the lift deploys. Stow the lift.
4. With Lift Door open and transmission in Park, release Park Brake and attempt to deploy the lift. Verify the lift does not deploy.
5. With Lift Door closed and Park Brake set, verify transmission will not shift out of Park.
6. With Lift Door open and Park Brake released, verify transmission will not shift out of Park.
8. With Lift Door closed, Park Brake released and Service Brake applied, verify you can shift out of Park.

### **KEY OFF CHECK:**

NOTE: You must have both a discrete Park Brake and Lift Door input connected for the following test. If not, then test can be skipped:

1. Start with the same conditions as for KEY ON check above except do not wait for the module to go to sleep. The key remains OFF throughout this test.
2. Repeat Steps 2 - 5 (above) to complete this test.
3. Close the Lift Door and verify module goes to sleep after 5 min.
4. Open the Lift Door and verify module wakes up.

## Using Module LEDs

The module has 5 on-board LEDs which are used to convey information about the operation of the module. In the normal mode all LEDs are OFF, but they come ON in different situations:

**Operation Errors** - Under certain conditions the module LEDs are used to indicate errors which prevent continued operation. In this case, the Status LED will blink and depending which other LEDs are lit, the error is identified as follows:

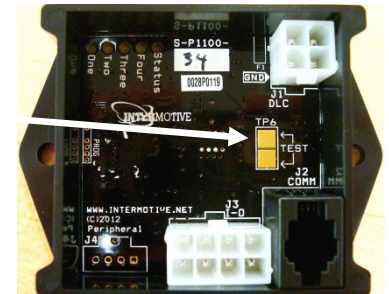
- LED1 ON - Set-up error on output device.
- LED2 ON - Could not set up the CAN communication
- LED3 ON - Output error
- LED 2&3 ON - Loss of CAN traffic

**VIN Errors** - If there is an error while getting the vehicle VIN, LEDs 1-4 will scroll 2 times then another LED will turn on to ID the error as follows:

- LED1 ON - Wrong Mfg.
- LED2 ON - Wrong chassis
- LED3 ON - Wrong engine
- LED4 ON - Wrong model year
- STATUS ON - Bogus VIN (e.g. all characters the same)
- No LEDs ON - No VIN response

**Status** - One can put the module into a diagnostic mode where each LED represents a system status. The module is fully functional in this mode. To enter diagnostic mode, touch a grounded wire to the Test Pad on the module. LED's will scroll a couple times, then LED1 will "blink out" the current firmware version, then the LEDs will reveal system status as follows:

- LED 1 ON when Shift Lock enabled.
- LED 2 ON when transmission is in park.
- LED 3 ON when Park Brake is set.
- LED 4 ON when Lift Door is open.
- STATUS LED ON indicates "Vehicle Secure" or "Lift enabled" meaning there is 12V on Pin 3 (Orange wire) which connects to the lift.
- Cycling the key will exit Diagnostic Mode and all LED's will be off.



**Leave in Vehicle**  
**LOCK515-A Shift Interlock (Manual Lift Door) Operating Instructions**  
**2015 - 2018 Ford Transit, 3.7L and 3.5L**

**LOCK515-A (Manual Lift Door)**

The LOCK515-A is a microprocessor driven system for controlling wheelchair lift operation. The system will operate with the vehicle ignition ON or OFF (if optional Park Brake and Lift Door input supplied) or if so set up, the lift will only be energized if the Key is OFF. Lift operation is enabled when specific vehicle safety conditions are met and will lock the transmission in Park when the wheelchair lift is in use. The LOCK515-A prevents the vehicle from being shifted out of park if the lift door is open. As an added feature, the vehicle cannot be shifted out of park anytime the parking brake is applied. This eliminates excessive parking brake wear due to driving with the parking brake applied.

**Key On function:**

1. With the vehicle in Park and either the Park Brake applied or Lift Door open or external Shift Lock input enabled, the transmission cannot be shifted out of Park.
2. With the vehicle in Park, Park Brake applied and Lift Door open, the lift will be operational.

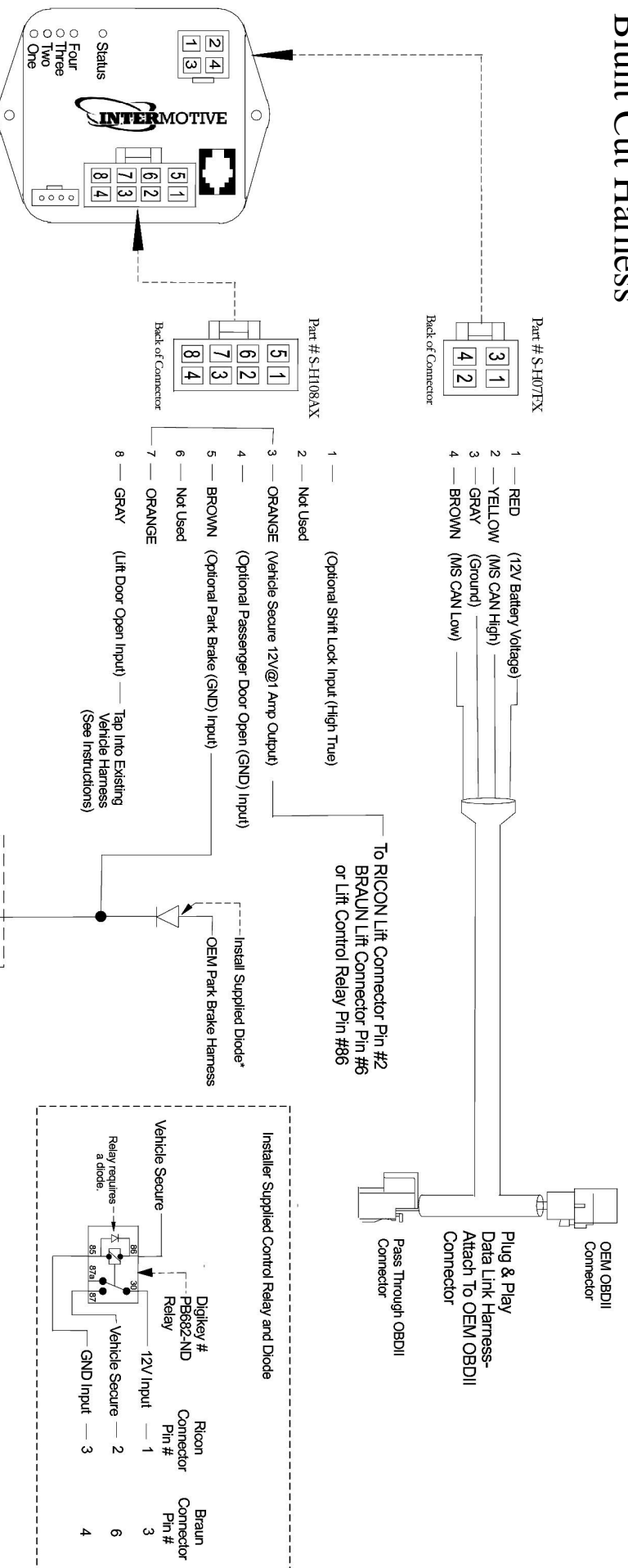
**Key off function:** (if discrete Park Brake and Lift Door input supplied)

1. Vehicle must be in Park before turning key off.
2. With the Park Brake applied and the Lift Door open, the lift will be operational.

**Sleep Mode:** When the lift door is closed and ignition power (Key) is turned OFF, the vehicle CAN communication traffic will stop after a delay. Five minutes after this, the system will enter a low current "sleep" mode of operation with all LEDs OFF. To wake from "sleep" mode, turn the ignition on (key on) or open the lift door.

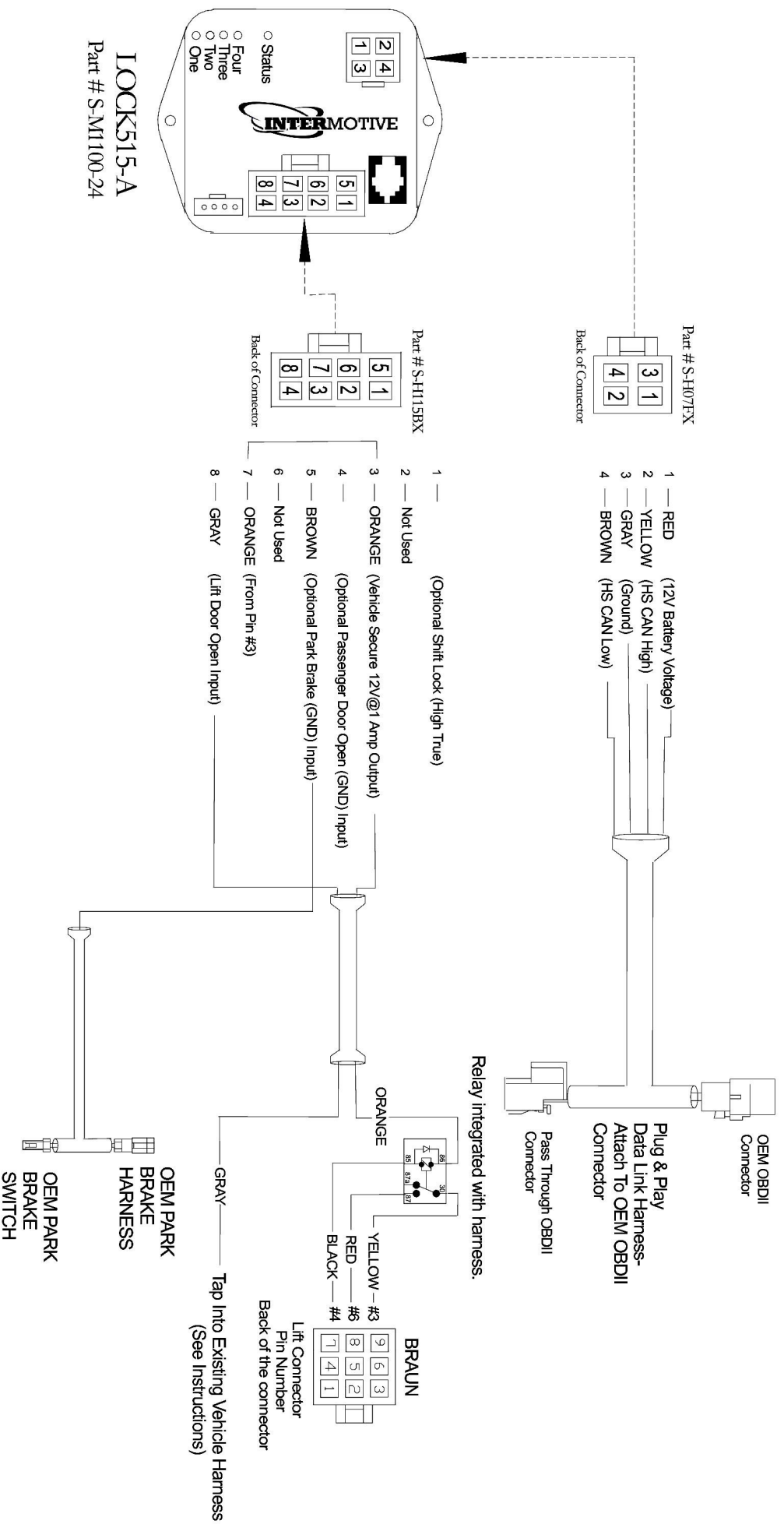


# Blunt Cut Harness



If the LOCK515-A fails any step in the Post Installation Test, review the installation instructions and check all connections.  
If necessary, call InterMotive Technical Support at (530) 823-1048.

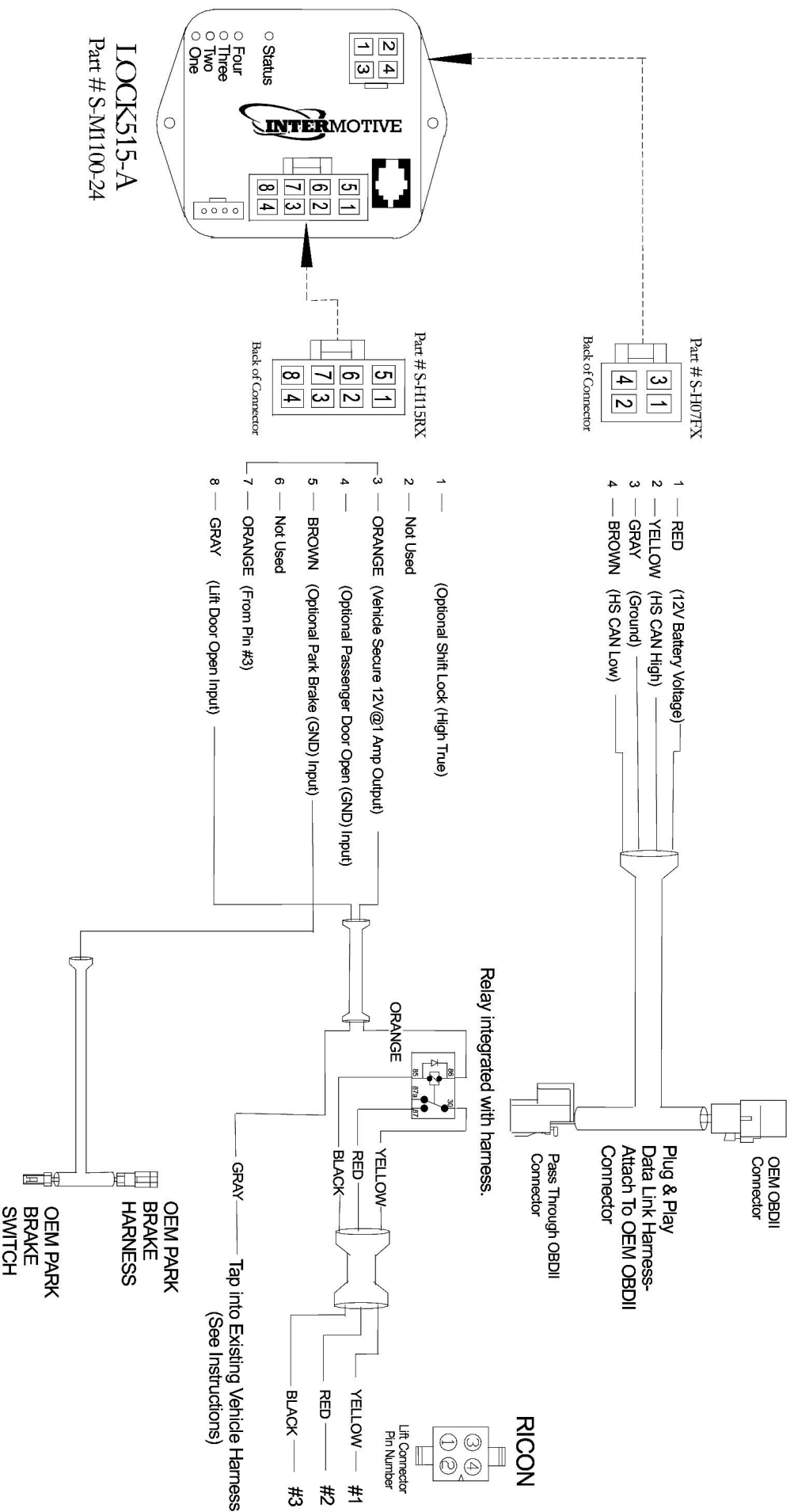
# Braun Plug and Play Lift Harness



If the LOCK515-A fails any step in the Post Installation Test, review the installation instructions and check all connections.

If necessary, call InterMotive Technical Support at (530) 823-1048.

# Ricon Plug and Play Lift Harness



If the LOCK515-A fails any step in the Post Installation Test, review the installation instructions and check all connections. If necessary, call InterMotive Technical Support at (530) 823-1048.