Fast Idle, Lift Interlock

B-HL552-BD
2020 - 2022 Ford F250-F600*
2021-2022 Ford F650-F750*
2021 - 2023 Ford E-Series
2024 - 2026 Ford E-Series (-G2)
H-HL552-BD
2023 Ford F250-F600 Diesel (-G)
2023 Ford F250-F600 Gas (-G3)
*Fast Idle Available on Gas Engines Only

Introduction

The HighLock 552-BD is a wheelchair lift safety interlock which will only work with the ignition on. It will enable the lift when certain vehicle safety conditions are met, and will lock the transmission shifter in Park when the lift door is open and/or the Park Brake is applied. The HighLock 552-BD also has the Fast Idle feature. The Advanced Fast Idle System (AFIS) elevates engine idle speed in response to a number of triggers in order to assist electrical or mechanical systems on the vehicle.

Installation Instructions

Disconnect vehicle battery before proceeding with installation

CAUTION

All electronic products are susceptible to damage from Electrostatic Discharge or ESD. Ground yourself before handling or working with the module and harnessing by first touching chassis ground, such as the barrel of the cigarette lighter.

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.

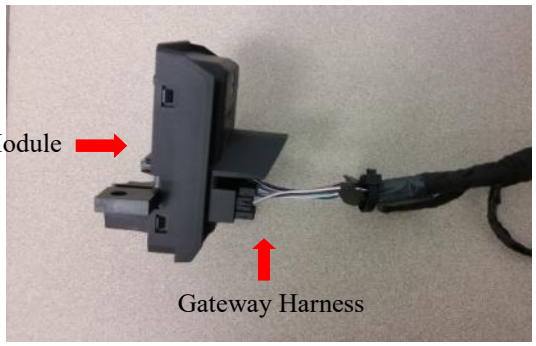
HL552-BD Module

Remove the lower dash panel below the steering column area and find a suitable location to mount the HL552-BD module. Locate the module in an area away from any external heat sources (engine heat, heater ducts, etc.), Do not mount the module until all wire harnesses are routed and secure. The last step of installation is to mount the module.

Installation Instructions (Continued)

(B-) Ford 24-pin Data Link Harness (6-pin connector)

1. Locate the vehicles Gateway Module. It will be mounted below the lower left dash panel.
2. Remove the harness behind the Gateway module by pressing the locking tab and pulling outward.
3. Plug the Female side of the Intermotive Gateway Harness into the back of the Gateway module. Ensure the connection is fully seated and secured by the locking tab.
4. Plug the Male side of the Intermotive Data Link Harness into the Gateway harness.
5. Secure the PRPC Gateway harness so that it does not hang below the lower dash panel.



(H-) Ford 26-pin Data Link Harness Installation

The Ford Super Duty has an OEM Gateway module located on the other side of the SYNC 4 module, which is behind the center console. Follow the steps below to access it:

Installation Instructions (continued)

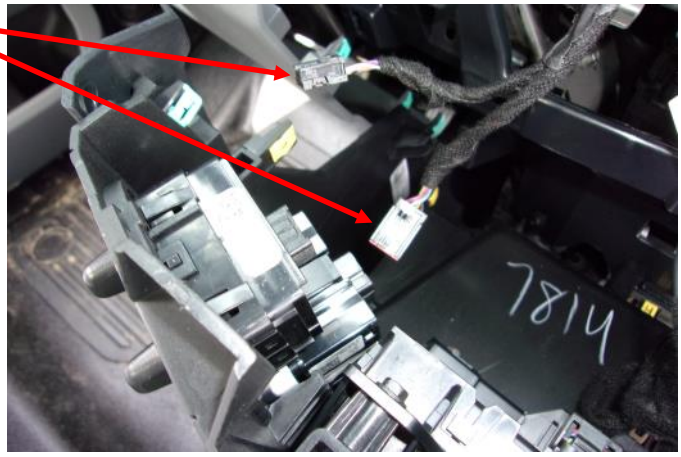
1. Remove the RH instrument panel trim using a trim removal tool. The trim starts at the ignition switch and ends at the silver clip. The glove compartment can be opened to better access the back side of the trim.

2. Using a trim removal tool, pop out the upper right corner of the lower steering column close out panel. Position it away from the center stack.

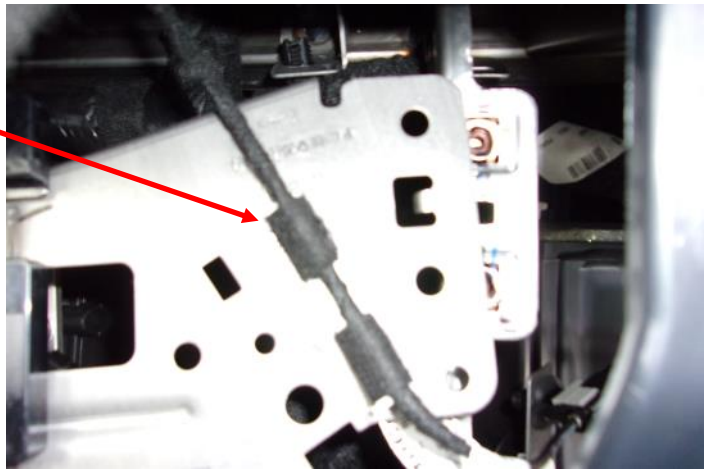
3. Remove the 4 bolts (Size: 7mm) located at the top of the center stack.

4. Release the clips on both sides of the center stack using a trim removal tool. Position the center stack away from the mounting points.

5. Disconnect the 2 connectors behind the center stack.



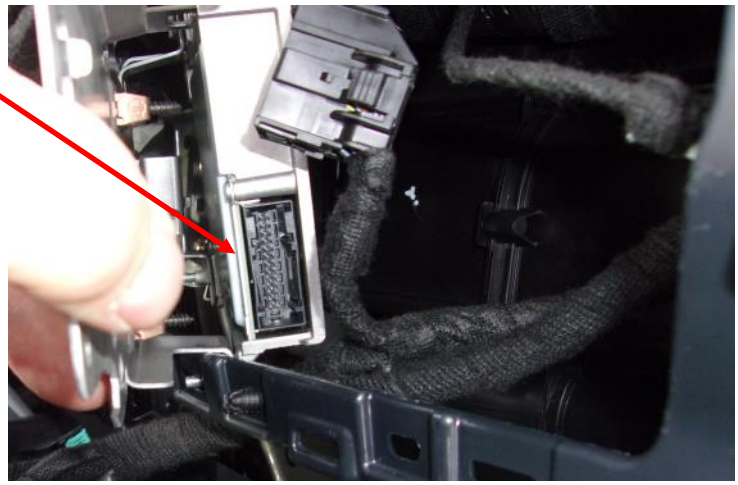
6. Detach the push-mount cable tie from the bracket and position the cable out of the way.



Installation Instructions (continued)

7. Remove the 4 bolts (Size: 7mm) and position the bracket away from the mounting points to access the Gateway Module. The Gateway Module is located behind the bracket.

8. Disconnect the Gateway Connector by pressing down on the tab and pulling the connector away from the module.



9. Install the Datalink Harness between the Gateway Module and the disconnected Gateway Connector.

10. Run the 6-pin connector of the datalink harness to the mounting location of the H-HL552 module.

11. After the Datalink Harness is installed, reverse the installation procedure to reassemble.

Fast Idle

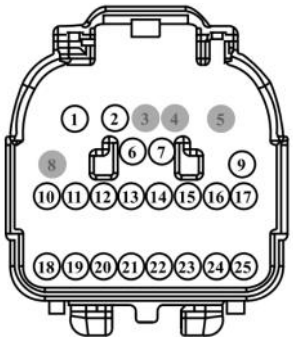
The fast idle system controls engine idle RPM in response to a number of triggers in order to increase electrical and mechanical output of the vehicle. By default, gas engines idle at 1500 RPM while diesel engines idle at 1200 RPM.

Fast Idle SEIC connections (2023 Super Duty F250-F600)

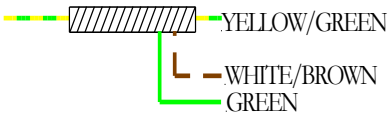
The Ford Super Duty can no longer Fast Idle over the CAN network. Beginning in 2023, the following connections must be made:

1. Locate the Customer Access 25-pin harness located behind the passenger kick panel.
2. The mating 25-pin pigtail is included with the vehicle and will be located in the vehicle's glovebox.
3. Using solder and heat shrink, connect the following wires together:
4. **Diesel:** White/Brown wire from the InterMotive SEIC harness(840-00058) to the White/Brown wire of the OEM 25-pin pigtail.

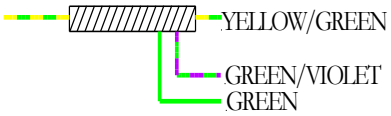
   Gas: Green/Violet wire from the InterMotive SEIC harness(840-00296) to the White/Brown wire of the OEM 25-pin pigtail.
5. Yellow/Green wire from the InterMotive SEIC harness to the Yellow/Green wire (Pin 7) of the OEM 25-pin pigtail.
6. Green wire from the InterMotive SEIC harness to the Green/White wire (Pin 5) of the OEM 25-pin pigtail.
7. Plug the Yellow/Green wire from the InterMotive SEIC Harness into the configured SEIC output of the 12 way connector on harness (S-H64BX).



840-00058

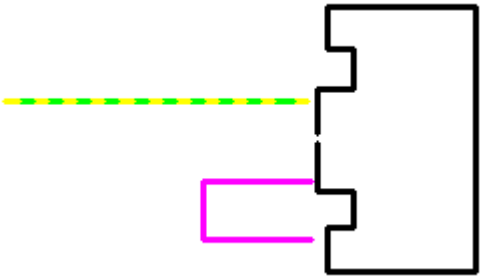


840-00296



Fast Idle SEIC connections (2024-2025 E-Series Only)

1. Locate the Customer Access 16-pin harness C143 located under the hood.
2. Connect the mating 16-pin connector (840-00284) to C143.
3. Run the yellow/green wire to the 30-inch pass-through wire (coming from the 840-00052 harness) through the bulkhead. Use the solder butt connector to join the two wires.



Connector C143

LED Display Panel Mounting—Black 4-pin connector

1. Locate a suitable position on the dashboard, within view of the driver to mount the LED Display Panel. Ensure there is open space behind the dash where the panel is mounted. The harness is 40" in length, which is the maximum distance the display can be from the module.
2. Drill a 5/8" hole in the dash where the center of the display will be located.
3. Attach the Black 4-pin connector of the LED Display Panel Harness to the module. Run the other end of the harness under the dash and out through the 5/8" hole.
4. Attach the end to the LED Display Panel.
5. Ensure the panel is level and secure using supplied screws.

Control Inputs, Output and Lift Inhibit Connections

12-pin I/O connector

The HL552-BD provides three ground side inputs and one ground side output.

Shift Lock Solenoid pin - 1: This output must be connected to the OEM Shift Lock Solenoid. See instructions on page 4.

Lift Inhibit pin - 2: Grounding this input will prevent the module from supplying power on its Wheelchair Lift Output pin.

Door Ajar pin - 5: (Optional input), connect this wire only if an additional door connection is desired. Insert the green wire (provided with panel) into the connector and lengthen as needed, using solder, heat shrink and tape. Connect to the door switch so that a ground is supplied when the door is open.

Transmission=Park pin - 9: This output can be used to control upfitter circuits, by providing a ground when the transmission is in Park. Maximum current draw is 1/2 amp.

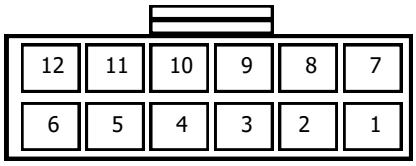
Fast Idle– Engage pin - 10: This input pin can be connected to a ground side switch to activate Fast Idle (gas engines only).

A 12-pin mating connector is provided along with 5 terminals (two extra). To use any of these inputs/output, properly crimp a connector terminal provided to the installer supplied wire using the correct crimping tool (Molex Part# 11-01-0197), and insert into the correct connector pin housing.

Ensure the terminals are fully seated in the connector. The largest wire that can be used with these terminals is 16 AWG. Snap this connector into the HL552-BD module's 12-pin connector.

12-pin connector pin out definition

- Pin #1 - Yellow - Shift Lock Solenoid
- Pin #2 - Inhibit input - (GND) to Inhibit Lift
- Pin #3 - Not Used
- Pin #4 - Not Used
- Pin #5 - GREEN Wire (Door Ajar Input) * Optional
- Pin #6 - Not Used
- Pin #7 - Red - To Pin #12
- Pin #8 - Not Used
- Pin #9 - Transmission=PARK (output (GND)
- Pin #10 - Fast Idle- Engage (GND)
- Pin #11 - Not Used
- Pin #12 - Red - To Pin #7



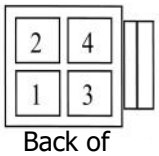
Back of Connector


Mating 12 pin I/O Connector provided

Lift Connector 4-pin

The HL552-BD module provides a 4-pin connector to enable wheelchair lift operation. The pins are defined as follows:

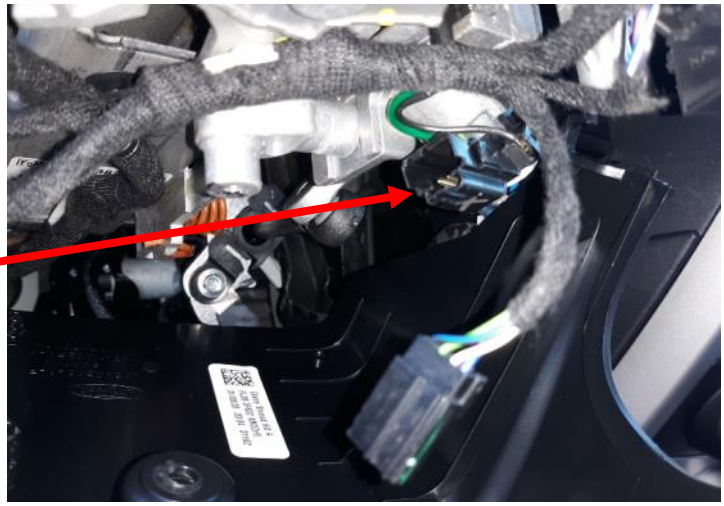
- Pin #1 - RPM Adjust. (Gas Engines Only)
- Pin #2 - Lift power/Vehicle Secure output (Orange wire), connect to Wheel Chair Lift to enable operation.
- Pin #3 - Lift door input (Gray wire), connect to Lift Door switch, grounded when door open.
- Pin #4 - Lift power input (Yellow wire), connect this to a 12V fused ignition source, hot in run and crank.



Back of Connector

Shift Lock Harness

1. Remove the upper and lower steering column covers by removing the 3 screws in the lower column cover.



2. Locate the Shift Lock (4-pin) harness.
3. Unplug the Shift Lock connector.
4. Plug the OEM Shift Lock connector into the mating connector on the HL552 harness.
5. Plug the 4-pin connector on the HL552 harness into the mating connector on the OEM Shift Lock harness.

HL552-BD Module Mounting

Ensure all harnesses are properly connected and routed, and are not hanging below the dash area. Mount the HL552-BD module using screws or double sided tape and reinstall all removed panels.

Reconnect vehicle battery

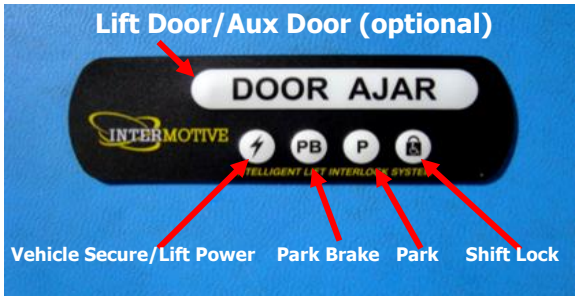
Post Installation Testing

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.

Lift Interlock System Testing

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 (all panel LEDs OFF) which takes approximately 5 minutes.



1. Turn ignition key on (to "Run"), verify the module wakes up and all 5 LEDs illuminate for approximately 2 seconds.
2. Verify that the Park LED, the Park Brake LED, and the Shift Lock LED remain illuminated.
3. Attempt to deploy the lift. Verify the lift does not deploy with the Lift Door closed.
4. With key on, Lift Door open, Park Brake set and transmission in Park, all 5 LEDs will be illuminated. Attempt to deploy the lift. Verify the lift deploys. Stow the lift.
5. With key on, Lift Door open, transmission in Park, release Park Brake. Verify that the Park Brake (PB) and Vehicle Secure LEDs go out. Attempt to deploy the lift. Verify the lift does not deploy.
6. With key on, Lift Door closed, Park Brake set, attempt to shift the transmission out of Park Verify the transmission will not shift out of Park.
7. With key on, Lift Door open, Park Brake released, attempt to shift the transmission out of Park. Verify the transmission will not shift out of Park.
8. With key on, Lift Door closed, Park Brake released and the Service Brake applied, verify the transmission lever will shift out of Park.

When an additional door (Aux Door), is open, the Door Ajar LED will blink on the display panel until the door is closed. If the **Lift Door** is open, the Door Ajar LED will stay on steady, taking priority over the additional door input.

Post Installation (continued)

Fast Idle (Gas Engines Only)

The Fast Idle option has several "auto triggers" that will increase engine RPM. These include low battery voltage, air conditioner on, engine cold, and external switch input on pin #10 of the 12 Pin connector (I/O 4).

1. Press the Service Brake for 1 second. Fast idle will temporarily disengage anytime the brake pedal is pushed, but will automatically reengage after approximately 2 seconds once the Service Brake pedal is released.
2. Shut down the engine and verify that all LED's turn off, which may take a few minutes. Do not activate any vehicle controls during this time (windows, mirrors, doors, etc.).

Setting Fast Idle RPM Speeds (900 RPM - 2000 RPM)

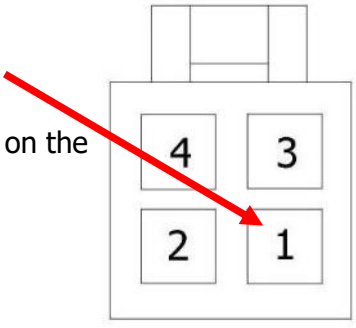
The HL552-BD has two separate configurable RPM settings (heater boost and the default setting). The heater boost is triggered on engine start-up and aids in warming up the engine quickly. The default setting is triggered by low battery voltage, air conditioner On, or external switch inputs. The two settings are changed by doing the following procedure:

Heater Boost Configuration (Auto Triggers Enabled)

1. Momentarily press the Red "Test" button **TWO** times. The Status LED on the module will flash a 2-2 code (two short flashes, a pause, and two more short flashes).
2. The vehicle RPM will increase to the currently configured setting.
3. To raise the RPM by 50, momentarily ground pin 1 on the 4-pin connector until the desired RPM is set.
4. Momentarily press the Red "Test" button **TWO** more times until no LED's are lit on the module.

Default Configuration

1. Momentarily press the Red "Test" button **THREE** times. The status LED on the module will flash a 3-3 code (three short flashes, a pause, and three more short flashes).
2. The vehicle RPM will increase to the currently configured setting.
3. To raise the RPM by 50, momentarily ground pin 1 on the 4-pin connector until the desired RPM is set.
4. Momentarily press the Red "Test" button **ONE** more time until no LED's are lit on the module.



Back of Connector

Leave in Vehicle
Fast Idle, Lift Interlock

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Advanced Fast Idle Operation (Gas Engines Only)

The Advanced Fast-Idle System (AFIS) option of the HL552-BD includes Charge-Protect and Manual engage modes. Charge-Protect is a feature that maintains vehicle charging system voltage by increasing and controlling vehicle idle speed when necessary. Whenever charging system voltage falls below a minimum voltage of 12.5V, this AFIS feature will increase idle speed and maintain fast idle until one of the safety conditions is no longer met, the user cycles the shift lever or the user manually disengages fast idle. The Charge-Protect and Manual engage modes also require that all safety conditions are met.

Safety conditions that must be met to engage or maintain Fast Idle operation
Vehicle NOT moving (speed = 0 MPH).
Service Brake NOT pressed.
Vehicle Transmission Range in Park
RPM inside of safe operating range.
Transmission Fluid Temperature below 250° F.
Engine Coolant Temperature below 230° F.

Fast Idle may be initiated by either a manual or automatic Fast Idle trigger. The AFIS strategy can only command elevated idle when certain safety conditions are met (see above section). Fast Idle operation can be terminated by a safety condition violation. If a Fast Idle operation terminates due to a safety condition violation, automatic Fast Idle is unavailable until Park is de-asserted and re-asserted (shift out of Park and back into Park). The base Fast Idle RPM level is determined by the type of engine (Gas or Diesel) in the vehicle. For Gas engine vehicles, the idle speed is 1500 RPM and Diesel applications remain fixed at 1200 RPM.

Manual Fast Idle Start Trigger
Fast Idle Input – ground applied to 12 Pin connector Pin #10 of the HL552-BD Module, such as an input from Coach AC.

Automatic Fast Idle Start Trigger
Charge Protection - Battery voltage less than 12.5V.

Fast Idle Disengagement Triggers
Safety Condition Violation.
Engine Coolant Temperature > 230° F.
Open or battery voltage on 12 Pin connector Pin #10 while in Fast Idle caused by 12 Pin connector Pin #10 fast idle input.
Transmission Fluid Temperature above 250° F.

Note: Fast idle will temporarily stop anytime the brake pedal is depressed, but will automatically reengage after approximately 2 seconds once the brake pedal is released.

When additional electrical or A/C loads are in use, engine RPM may drop. The AFIS feature will raise the RPM back up to the fast idle speed. When the load is removed, engine RPM will increase. AFIS will lower the RPM back to the fast idle speed.

Lift Operation

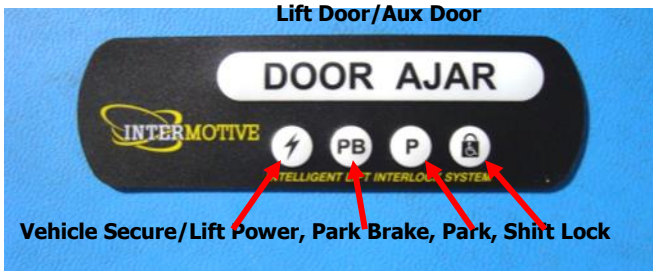
The Intelligent Lift Interlock System of the HL552-BD is a microprocessor driven system for controlling wheelchair lift operation. Lift operation will only be allowed when all of the following conditions are met:

The vehicle is in "Park"
The parking brake is applied
The vehicle ignition is on
The lift door is open
Lift inhibit is not activated

The HL552-BD will not allow the vehicle to be shifted out of park if the lift door is open. As an added feature, it also will not allow the vehicle to be shifted out of park when the parking brake is applied. This feature eliminates excessive parking brake wear due to driving with the parking brake applied.

If the vehicle has Daytime Running Lights, they will be activated when the Lift Door is Open and/or the Park Brake is On and the Ignition key is On.

When the vehicle is first started, or if the key is turned to the "Run" position, the five LED's on the display panel will illuminate for 2 seconds as a prove out of the LED's. The module will stay awake for several minutes after the ignition is turned off.



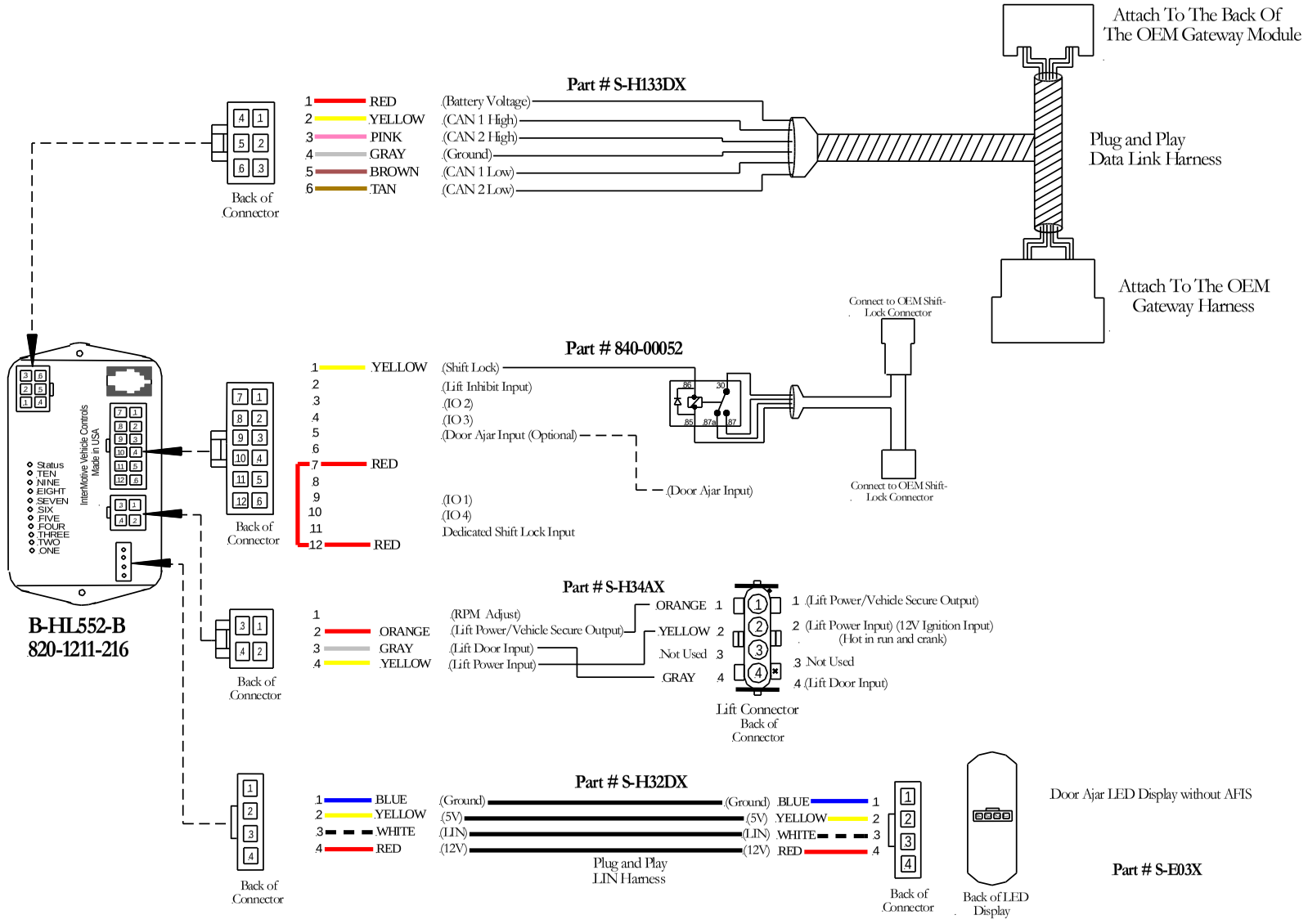
Door Ajar Display Panel

After prove out, the operation of the LED panel is as follows:

Vehicle Secure – Illuminates in green if the lift is enabled. This means that all conditions for lift operation have been met and the lift has been supplied a vehicle secure signal.
Park Brake – Illuminates in red when the parking brake is applied.
Park - Illuminates in red when the vehicle transmission is in the park range.
Lift Door - Illuminates in red when the lift door is open.
Shift Lock - Illuminates in Red when the lift door is open and/or the parking brake is applied. If illuminated, the driver will not be allowed to shift out of park.
Confirmation Signal – The vehicle lamps and radio will cycle briefly when the ignition is on and the lift door is initially closed. This is a confirmation signal sent from the Ford Econoline controller.

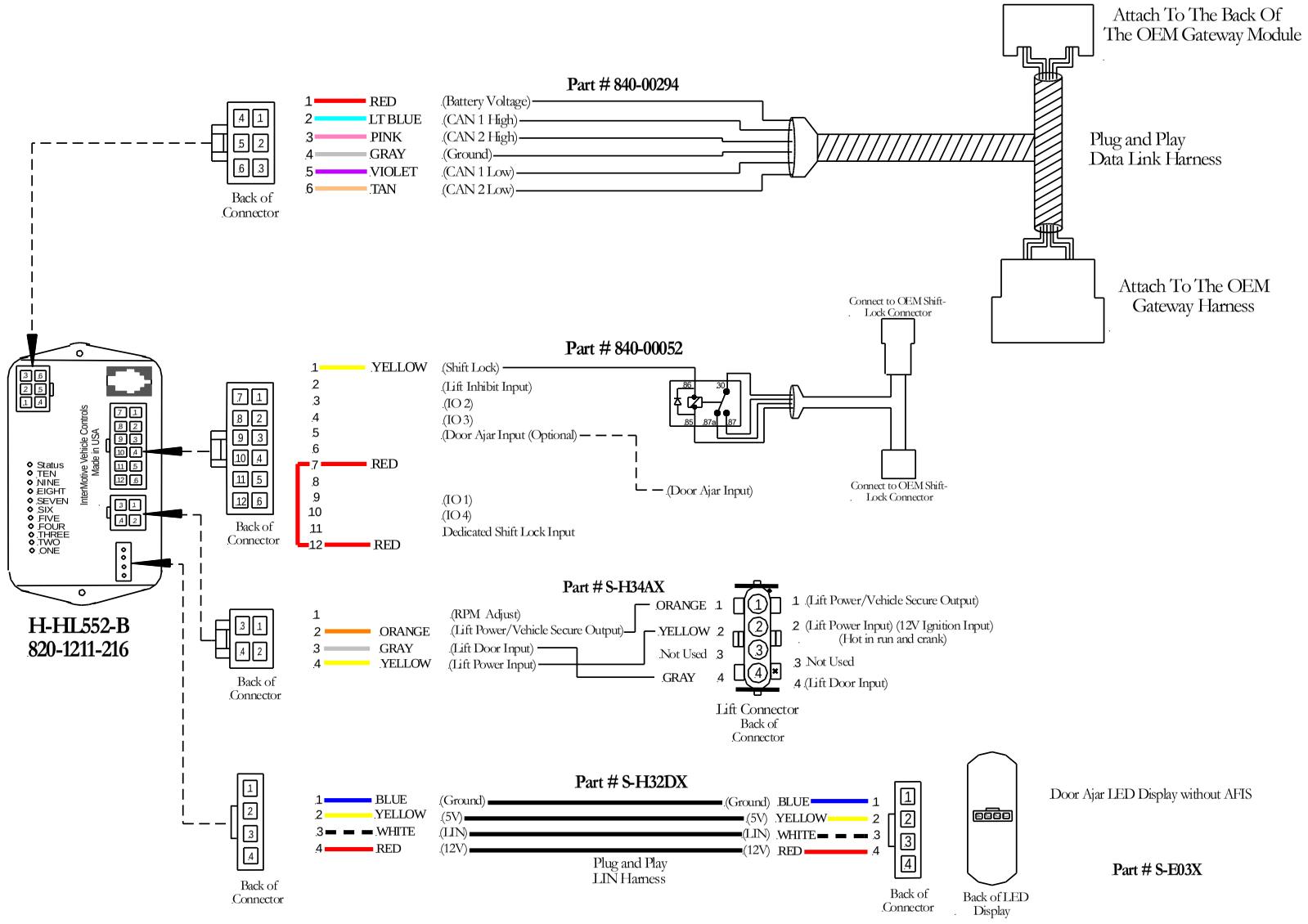
All Five Interlock LED's must be illuminated for the Wheelchair Lift to operate

The HL552-BD initializes when the vehicle ignition is on. After the initialization, the HL552-BD requests various vehicle data by sending data request messages across the OEM CAN diagnostic data network and all control logic is performed. When the HL552-BD module has been running and the vehicle ignition is turned to the off or accessory positions, the module goes into a low current consumption "sleep" mode. This may take up to 5 minutes.



Submit product registration at www.intermotive.net

If the HL552-BD 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.



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