B-GTWY508 Fast Idle, Shift Interlock, I/O

2020-2022 Ford F250-F600 - 6.2L and 7.3L Gas (-F)
2020-2022 Ford F250-F600 - 6.7L Diesel (-FG)
2021-2022 Ford F650-F750 - 7.3L Engine (-F)
2021-2023 Ford E-Series (-F)
2021-2022 Ford F53/F59 (-F)
2024-2026 Ford E-Series (-FG2)

Introduction

The Gateway 508 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 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. The Brakemax option (GTWY508-B) will automatically engage the OEM Tow Haul mode whenever the vehicle is started. The GTWY508 can also be installed with the Park Crank Only Module (PCOM) which will allow the vehicle to only be started in the Park position (GTWY508-C).

Installation Instructions

Disconnect the vehicle's battery before proceeding with installation.

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

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.

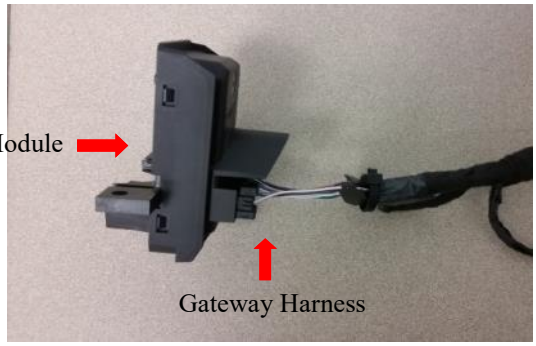
Avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Avoid radio frequency energy from antennas or inverters next to the module. Avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

Gateway 508 Module

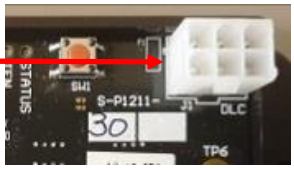
Remove the lower dash panel below the steering column and find a suitable location to mount the module. Verify this location is in an area away from external heat sources (engine heat, heater ducts, etc. Do not mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module. When installing the harnesses, leave several inches of take-out in order to remove the module if necessary.

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. Plug the free end of the Data Link harness into the mating 6-pin connector "DLC" on the GTWY508 module.



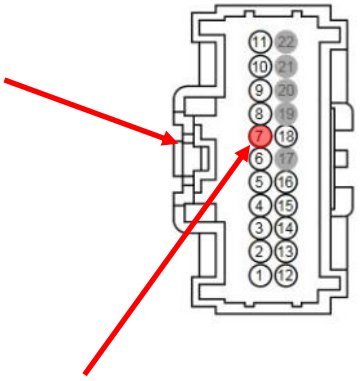
6. Secure the Gateway harness so that it does not hang below the lower dash panel.

Fast Idle

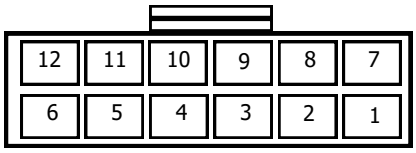
The fast idle system controls engine idle RPM in response to a number of triggers in order to increase electrical and mechanical output of the vehicle. By default, gas engines idle at 1500 RPM while diesel engines idle at 1200 RPM.

<u>Pre 2023 6.7L Diesel ONLY</u>

1. Locate the Customer Access 22-pin harness. It will be located behind the passenger kick panel on the F250-F600 and under the hood on the F650/ F750. (see picture below)
2. The mating 22-pin pigtail is included with the vehicle and should be located in the vehicle's glovebox.
3. Using solder and heat shrink, connect the following wires together: *One of the outputs must be configured to SEIC
4. White/Brown wire from the InterMotive harness (840-00058) to the White/ Brown wire of the OEM 22-pin pigtail.



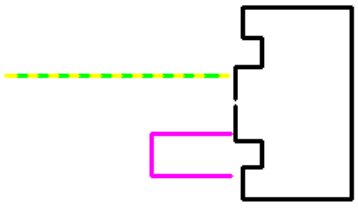
5. Yellow/Green wire from the InterMotive harness (840-00058) to the Yellow/Green (Pin 7) wire of the OEM 22-pin pigtail.
6. Green wire from the InterMotive harness (840-00058) to the Green wire of the OEM 22-pin pigtail.
7. Plug the terminal on the end of the Yellow wire into either pin 3, 4, 9, or 10 (depending on how the module is configured) on the 12 pin connector.



Back of Connector

Location of Customer Access 22-pin harness on F650/F750 (under hood)

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 a pass-through wire that goes through the bulkhead using the solder butt connector to join the wires.
4. Take the selected passthrough wire on the other side of the bulkhead and connect it to the 30-inch standalone yellow/ green wire (117-00835-030) using the included solder butt connectors.
5. Plug the Molex pin on the yellow/green wire into the configured pin of the 12-way connector on harness (840-00052).

Connector C143

Fast Idle Triggers		
Trigger Name	**Trigger Conditions**	**Disable Conditions**
Manual Engage Input	Fast Idle Engage Input wire activated	Fast Idle Engage Input wires not active
VBAT Low (if enabled)	VBAT < 12.5V (default)	VBAT > 13.5V for > 5 minutes (default)
Parking Brake (if enabled)	Parking Brake applied	Parking Brake Released

Fast Idle Preconditions

The following preconditions must be met prior to initiating Fast Idle operation:

- Vehicle speed zero
- Transmission in Park
- Accelerator pedal not applied
- Engine Coolant temperature less than 230°F
- Engine RPM must be greater than 200 and less than 2800
- Service Brake not applied
- Parking Brake must be applied if this feature is enabled

Control Outputs, Input, and Lift Inhibit Connections - 12-pin I/O connector

The GTWY508 provides three ground side configurable outputs and one configurable input/output. The outputs can provide vehicle information such as Vehicle Speed, Park, Park Brake, etc., and are configured per customer requirements at InterMotive prior to shipping. These outputs can be used to control upfitter circuits and can sink up to 1/2 amp. The input pin can be connected to a ground side switch to activate Fast Idle or Shift Lock. Grounding the Lift Inhibit Pin 2 input will prevent GTWY508 from supplying power on Vehicle Secure/Lift Power Output pin (4 pin connector). In addition to the above, there is also a dedicated Shift Lock ground activated input on pin 11 which can be connected to an emergency door switch or other equipment. **Note**: The PCOM option requires one of these outputs to provide Park.

A 12 pin mating connector and seven terminals (two extra) are provided. To use any of these outputs, 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. The pin MUST be properly oriented for it to fully seat and click into place. The largest wire that can be used with these terminals is 16 AWG. Plug this connector into the GTWY508 module's 12-pin connector.

LED Display Panel

1. Locate a suitable position on the dashboard within view of the driver for mounting the LED Display Panel. The length of the display harness is 40". This is the maximum distance the display can be mounted from the GTWY508 module.
2. Drill a 5/8" hole in the dashboard where the center of the display will be located. Use caution not to damage anything behind the dashboard.
3. Attach the 4-Pin LED display harness to the GTWY508 Module's 4-pin connector.
4. Run the free end of the display harness under the dash and out through the 5/8" hole.
5. Attach the end of the display harness to the LED Display Panel.
6. Ensure panel is level, and secure using the supplied screws.

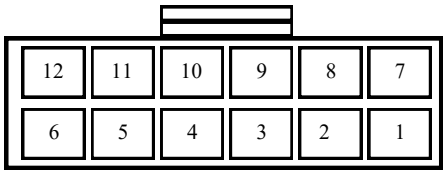
Shift Lock Control Input

Grounding Pin # 11 on the 12 Pin connector will lock the transmission shifter if the vehicle is in Park. This can be used to prevent the vehicle from driving when equipment has not been properly stowed or an emergency door is open, etc. This can be connected to any number of grounding switches (connected in parallel) which can effectively "lock the vehicle down".

12-pin Input Output connector pin out definition

12 Pin I/O Connector

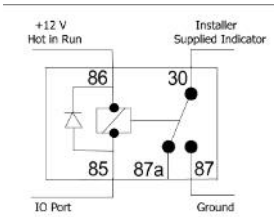
- Pin #1 - Yellow - Shift Lock Solenoid
- Pin #2 - Inhibit input - Ground to Inhibit Lift
- Pin #3 - I/O 2 - Configured output
- Pin #4 - I/O 3 - Configured output
- Pin #5 - Green - Door Ajar Input - Ground Signal (Door Ajar Panel Option)
- Pin #6 - Not Used
- Pin #7 - Red - To Pin #12
- Pin #8 - White - Tow Haul Switch Input (BrakeMax Option)
- Pin #9 - I/O 1 - Configured output
- Pin #10 - I/O 4 - Configured I/O Pin
- Pin #11 - Dedicated Shift Lock input - ground to activate Shift Lock
- Pin #12 - Red - To Pin #7

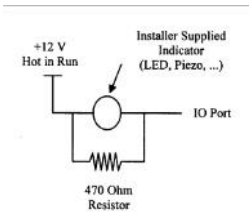


Back of Connector

Note: When using the I/O port outputs to drive installer supplied low current devices, such as LED's or Piezo buzzers, a small amount of current leakage may cause the low current device to activate when the pin is inactive. This is indicated by the LED turning on dimly or the Piezo buzzer sounding faintly when the output is inactive (Conditions not met).

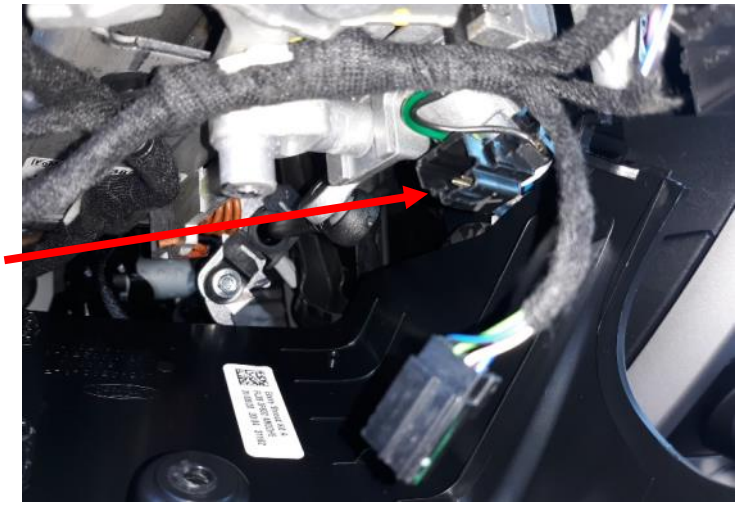
To correct this, install a 470 Ohm 1W resistor across the low current device (**Digikey Part # 470WCT-ND**). Or, drive a relay with the I/O output to switch ground to the low current device (**Digikey Part # PB682-ND**).





Shift Lock Harness

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



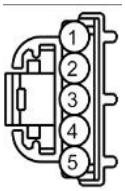
2. Locate the Shift Lock (4-pin) harness.
3. Unplug the Shift Lock connector.
4. Plug the OEM Shift Lock connector into the mating connector on the GTWY508 harness.
5. Plug the 4-pin connector on the GTWY508 harness into the mating connector on the OEM Shift Lock harness.

BrakeMax (B-GTWY508-B Option)

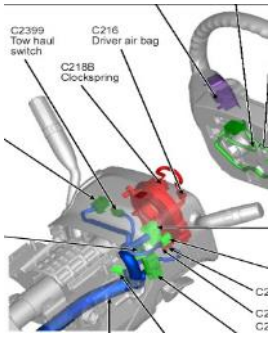
The BrakeMax option will automatically engage Tow Haul mode when the vehicle is started. This is done over the CAN network on all vehicles **except** the Ford E-Series and F650/F750. Please follow the instructions below to install the discrete wires to enable the BrakeMax option.

2021 Ford E-series and Ford F650/F750 ONLY

1. Locate the OEM Black 5-pin tow-haul switch connector (C2399) located on top of the steering column. Locate Pin #2, Brown/Green wire.
2. Attach the GTWY508 12 Pin connector Pin #8 White wire to the OEM Black 5-pin tow-haul switch connector Pin #2, Brown/Green wire. Solder and heat shrink or tape the connection point.
3. Route the wire harness and connect to Pin #8 at the 12-pin connector.



Front of Connector



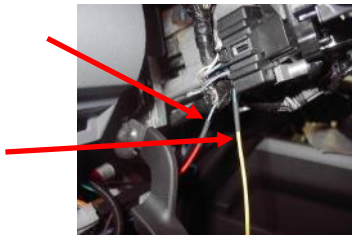
OEM connection for Brake-Max option.

PCOM - (Park Crank Only GTWY508-C Option)

The GTWY508 can be installed with the Park Crank Only Module (PCOM) which will allow the vehicle to only be started in the Park position (GTWY508-C).

PCOM Ignition Switch Connectors

1. Remove the under dash panel and the steering column shroud.
2. Locate the OEM 7-pin connector attached to the ignition switch under the steering column.
3. Locate the Blue-White wire pin #7. This wire is located on the bottom of the connector.
4. Cut the Blue-White wire between the harness and the connector.
5. Attach the harness side of the Blue-White wire to the Yellow wire from the PCOM Module using solder and the supplied heat shrink tubing.
6. Attach the connector side of the Blue-White wire to the Red wire from the PCOM Module using solder and the supplied heat shrink tubing.
7. Attach the PCOM Black Park Input wire to the GTWY508-C I/O port that provides a ground signal when in Park. <u>The actual pin# depends on the customers configuration of GTWY508-C.</u>
8. Secure the PCOM501B module, ensuring there is not strain on the wires.
9. Reinstall the steering column shroud.



Lift Connector 4-pin

This 12 inch harness contains the ignition power, lift power/vehicle secure, and lift door circuits. The mating harness is to be fabricated by the installer. The recommended mating connector is Molex Part #0050841040. The recommended mating terminals are Molex Part Number 0002081003. The recommended terminal extractor tool is Molex Part Number 0011010168. The recommended hand crimp tool is Molex Part Number 0638116800.

1. Ignition Circuit – Connect the Yellow wire Pin 2 of the white 4-pin connector to an 8A (or less) fused source which provides 12V when the key is on. This circuit provides the power for the Vehicle Secure output below.
2. Lift Power/Vehicle Secure Circuit - Connect the Orange wire Pin 1 of the white 4-pin connector to the Vehicle Secure input on the lift. This circuit must only activate the vehicle secure input on the lift and must not draw more than 8.0 amps max. (see lift manufacturers installation instructions). **Note:** Do not power any other loads (i.e.: lights, motors, etc.) from this circuit that could cause the total current draw to exceed 8.0 amps.
3. Lift Door Circuit – Locate the lift door switch circuit. Connect the Gray wire, Pin 4 of the white 4-pin connector to this circuit. **Note**: The door switch must provide a ground when the lift door is open. A switch that provides power with the door is open will not operate correctly.
4. Plug the White 4-pin connector from the Lift Harness into the GTWY508 module connector marked “PWR RLY”.

GTWY508 Module Mounting

Ensure all harnesses are properly connected and routed and are not hanging below the dash area. Mount the module as described on page one and secure using supplied screws or double sided tape.

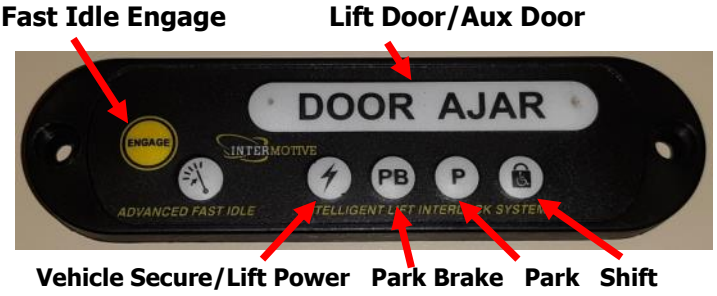
Reconnect Vehicle Battery

Post Installation / Check List

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 40 seconds.



1. Turn ignition key on (to "Run"), verify the module wakes up and all 5 LEDs illuminate for approximately 2 seconds, then turn off.
2. Verify that the Park LED, the Park Brake LED, and the Shift Lock LED remain illuminated.
3. Attempt to deploy the Lift. The Lift must 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 lift deploys, then stow the lift. **Note**: If the Lift does not operate, check the GTWY508 LIFT connector. Pin 4 should have 12V (Lift power input), and pin 2 should have 12V (Lift Power/Vehicle Secure output).
5. With key on, Lift Door open, transmission in Park, release Park Brake. Verify that the Park Brake (PB) LED goes out
6. Attempt to deploy the Lift. The Lift should not deploy.
7. With key on, Lift Door closed, Park Brake set, attempt to shift transmission out of Park. Verify transmission will not shift out of Park.
8. With key on, Lift Door open, Park Brake released, attempt to shift transmission out of Park. Verify transmission will not shift out of Park.
9. With key on, Lift Door closed, Park Brake released and the Service Brake applied, attempt to shift transmission out of Park. The transmission shift lever will now 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.

DO NOT PUT VEHICLE IN SERVICE IF IT DOES NOT PASS ALL OF THE ABOVE TESTS!
Contact InterMotive at 530-823-1048 for technical assistance.

Post Installation (continued)

Fast Idle

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).

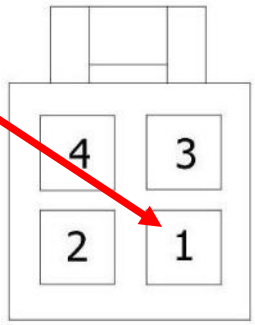
1. Press the Service Brake for 1 second. Fast idle will temporarily disengage anytime the brake pedal is pushed, but will automatically reengage after approximately 2 seconds once the Service Brake pedal is released.
2. Exit Fast Idle mode by pressing the Service Brake and the Yellow Manual ENGAGE button together. Fast Idle will cancel and the Green LED will turn off. This will disable Fast Idle until the key or transmission range is cycled.
3. 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 GTWY508 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.



Back of Connector

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.

Post Installation (continued)

BrakeMax (optional)

The BrakeMax option automatically engages Tow Haul mode when the vehicle is started.

1. Set the Park Brake and start the engine.
2. Verify that the “Tow/Haul” light illuminates on the shifter handle.
3. Press the Tow-Haul button. Verify Tow-Haul light is no longer illuminated. Mode is now deactivated
4. Turn off and restart vehicle. Verify tow-haul mode automatically reengaged.

Park Crank Only (optional)

The PCOM option only allows the vehicle to be started with transmission in Park.

1. Verify the starter will crank only when the transmission is in the “Park” position.

DO NOT PUT VEHICLE IN SERVICE IF IT DOES NOT PASS ALL OF THE ABOVE TESTS

Contact InterMotive at 530-823-1048 for technical assistance.

B-GTWY508 Fast Idle, Shift Interlock, I/O

2020-2022 Ford F250-F600 - 6.2L and 7.3L Gas (-F)
2020-2022 Ford F250-F600 - 6.7L Diesel (-FG)
2021-2022 Ford F650-F750 - 7.3L Engine (-F)
2021-2023 Ford E-Series (-F)
2021-2022 Ford F53/F59 (-F)
2024-2026 Ford E-Series (-FG2)

Gateway 508

The Gateway 508 initializes when the vehicle ignition is on. During initialization, the LED display panel connected to the Gateway 508 performs a prove-out for 2 seconds. After the initialization, the Gateway 508 obtains various vehicle data over the OBDII connector/network and all control logic is performed. When the Gateway 508 has been running and the vehicle ignition is turned to the off or accessory position, the module goes into a very low current consumption “sleep” mode. This may take up to 5 minutes.

In order to not interfere with possible scan tool communication, GTWY508 will refrain from transmitting CAN messages for 10 seconds if scan tool CAN communication is detected. If during these 10 seconds another scan tool message is received, an additional 10 seconds will be added to the end of the first 10 second timeout. When no scan tool messages have been detected for at least 10 seconds, GTWY508 will resume operation.

Advanced Fast Idle

The Advanced Fast-Idle System (AFIS) option of the Gateway 508 includes Charge-Protect as well as fully-automatic 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 (determined by each bus manufacturer), this AFIS feature will increase idle speed and maintain fast idle until the user cycles the shifter, a safety condition is violated or the user manually disengages fast idle. The fully-automatic and manual engage modes also require that all safety conditions are met.

<u>Safety conditions that must be met to engage or maintain Fast Idle operation</u>
Vehicle NOT moving
Service Brake NOT pressed
Vehicle Transmission in Park
RPM inside of safe operating range
Transmission Fluid Temperature below 250° F
Engine Coolant Temperature below 230° F

Control / Display Panel

The left side of the Control/Display Panel consists of one LED and a Manual Engage Switch. The green LED will illuminate when Fast Idle is in progress. The LED is also used for diagnostic code retrieval by an authorized service technician. The Manual ENGAGE button can be used to engage Fast Idle operation if all safety conditions are met.

Fast Idle Operation

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). Fast Idle operation will be terminated by a safety condition violation, or an automatic trigger going away. If a Fast Idle operation terminates due to a safety condition violation, automatic Fast Idle is unavailable until the transmission is cycled out of Park and back. Default Fast Idle RPM is 1500.

GTWY508 Operating Instructions (continued)

Manual Fast Idle Start Triggers

- LED panel manual ENGAGE button.
- Fast Idle Input – ground applied to 12 Pin I-O connector Pin 10 (if configured - such as from an A/C unit).

Automatic Fast Idle Start Triggers

- Charge Protection - Battery voltage drops below bus manufacturer set minimum voltage.
- Chassis A/C Boost - OEM A/C clutch engaged with ambient temperature above 70° F.
  Note: shutting off A/C does not disable Fast Idle until transmission range cycled.
- Heater Boost – Ambient air temperature below 70° F and Engine Coolant Temperature below.

Fast Idle Disengagement

- Safety Condition Violation.
- Heater Boost - Engine Coolant Temperature > 120° F. Removes Heater Boost trigger.
- Fast Idle I/O 4 (pin 10) is no longer grounded.
- Transmission Fluid Temperature above 250° F. Overheating condition.
- Ambient Temperature below 70° F (Only in A/C Boost).

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. Fast idle may be manually cancelled by depressing the service brake pedal while simultaneously pressing the manual engage switch.

Manual Operation

To manually engage Fast Idle, the manual ENGAGE button must be pressed for at least a quarter second and released. The Fast Idle operation will begin when the button is released, not when first pressed. Holding down the button for more than five seconds will initiate a diagnostic routine that displays stored status codes from previous operations. If the driver accidentally enters this routine, it can be exited by cycling the vehicle's ignition off and then back on. To exit Fast Idle operation, the driver can simply press the service brake while simultaneously pressing the ENGAGE button.

Note: When Fast Idle is engaged, the OEM PCM will try to maintain the RPM constant regardless of engine load. There may be some RPM variations observed as loads are increased/decreased.

Lift Operation

The GTWY508 Intelligent Lift Interlock System is a microprocessor based 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 Park Brake is applied.
The vehicle ignition is on.
The lift door is open.
The Lift inhibit switch (if installed) is not activated.

GTWY508 will not allow the vehicle to be shifted out of Park if the lift door is open, or if the Park Brake is set. GTWY508 does not lock the shifter when the passenger door is open.

The shift lock can also be activated through the 12 Pin connector Pin #10, if the proper configuration is installed.
If the vehicle has Daytime Running Lights, they will be activated when the Park Brake applied and the Ignition is On.

GTWY508 Operating Instructions (continued)

When the vehicle is first started, or if the key is turned to the "Run" position, the five upper LED's on the display panel will illuminate for 2 seconds as a prove out of the LED's. The lower Icon LED's are backlit and will remain illuminated whenever the Gateway 508 module is awake. The module will stay awake for several minutes after the ignition is turned off. After prove out, the operation of the LED panel is as follows:

Fast Idle indicator - (Tachometer icon) Illuminates green when Fast Idle active.

Vehicle Secure/Lift Enable – (Lightening Icon). Illuminates 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.

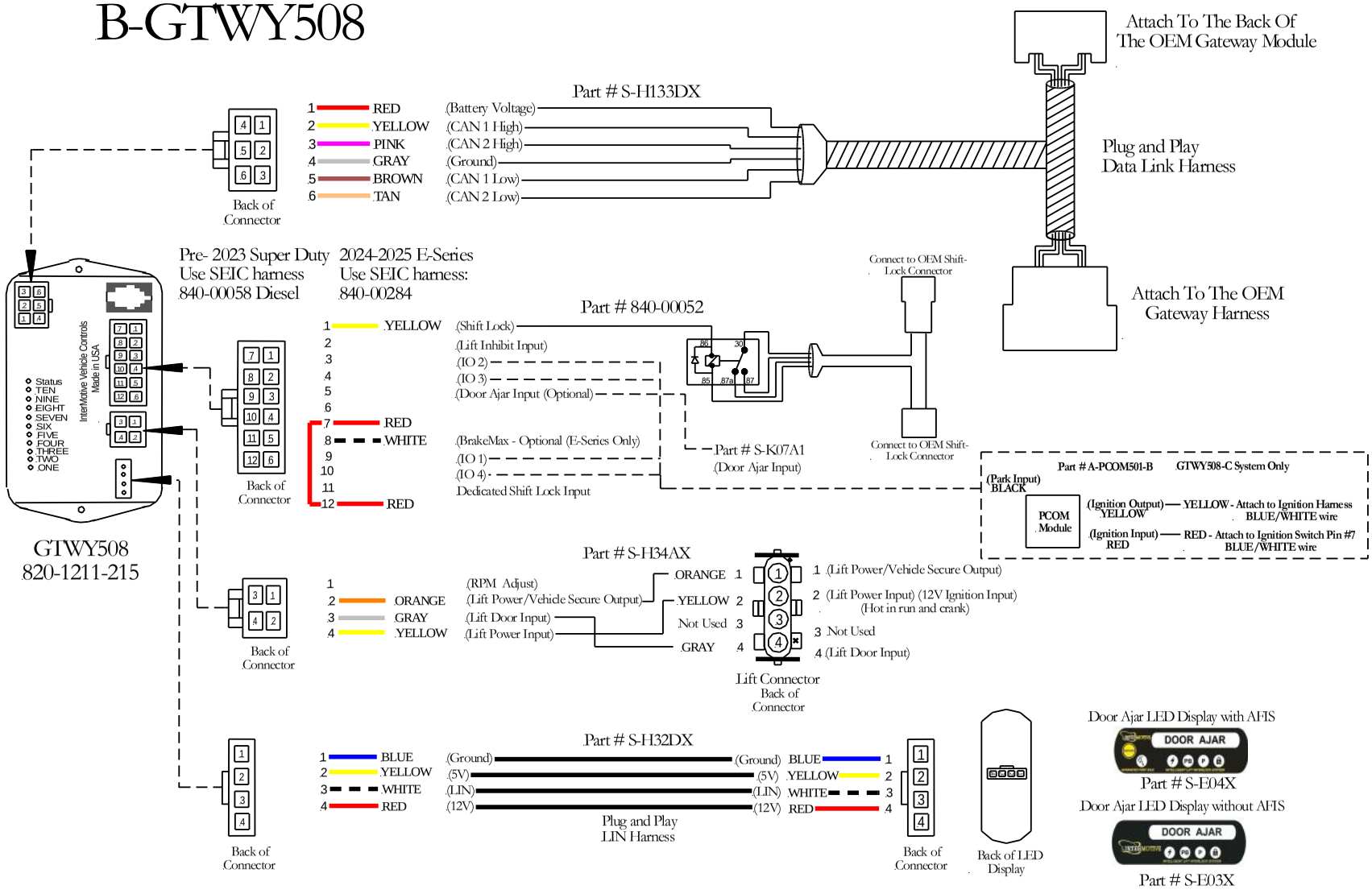
Door Ajar - Illuminates in red when the lift door is open.

Park Brake – (PB icon) Illuminates in red when the parking brake is applied.

Park - (P icon) Illuminates in red when the vehicle transmission is in the park range.

Shift Lock - (Lock icon) Illuminates in Red when transmission shifter is locked in Park. This occurs when the lift door is open and/or the Park Brake is applied. It can also be illuminated from an external command through the I/O 4 input at Pin #10 of the 12 pin connector (proper configuration required). If illuminated, the driver will not be allowed to shift out of Park.

B-GTWY508



Submit product registration at www.InterMotive.net

If the GTWY508 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.