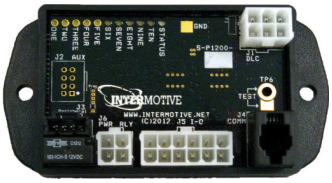
GTWY505
Fast Idle, Shift Interlock, I/O
2009-2019 Ford E-Series



Introduction

The Gateway 505 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 Gateway module may also have the Fast Idle option. 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.

Gateway 505 Add-On Options

In addition to interlock and Fast Idle features, InterMotive offers the following options:

- Gateway with Brakemax: Automatically puts vehicle in Tow Haul mode at start up.
- Gateway with DuraTrans: Automatically disables Overdrive at startup, and engages Overdrive when vehicle speed reaches 55 MPH.
- Gateway with Park Crank Only Module (PCOM): Allows the vehicle to be started in Park only.
- Gateway with Door Ajar: Monitors an additional door other than lift door.
- Gateway with Merlin: Used in conjunction with Merlin Multiplex system.

Installation Instructions

Disconnect vehicle battery before proceeding with installation.

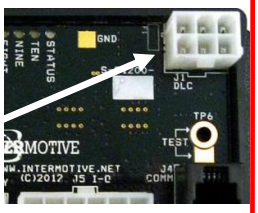
WARNING
Disconnect the battery to prevent setting a check engine light.

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.

Gateway Module

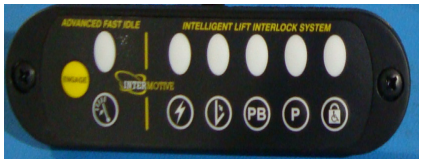
Remove the lower dash panel below the steering column and find a suitable location to mount the module. Do not mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module. Mount the module is in an area away from any external heat sources (engine heat, heater ducts, etc.), Route the harnesses such that the tilt steering column does not contact them in the full down position. When installing the harnesses, leave several inches of take-out in order to remove the module if necessary.

Data Link Harness Installation



1. Locate the vehicle OBDII Data Link Connector. It will be mounted below the lower left dash panel.
2. Remove the mounting screws for the OBDII connector. Plug the Red connector from the GTWY505 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 Black pass through connector from the GTWY505 Data Link Harness in the former location of the vehicle's OBDII connector.
4. Secure the GTWY505 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 6-pin connector on the GTWY505 module.

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 GTWY505 module. Drill a 5/8" hole in the dashboard where the center of the display will be located, being careful not to damage anything behind the dashboard.

2. Attach the 4 Pin LED display harness to the GTWY505 Module's 4-pin connector.
3. Run the free end of the display harness under the dash and out through the 5/8" hole.
4. Attach the end of the display harness to the LED Display Panel.
5. Ensure panel is level, and secure using the supplied screws.

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

The GTWY505 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 GTWY505 from supplying power on its Wheel Chair Lift Output pin (see below). **Note:** The PCOM option requires one of these outputs to provide Park.

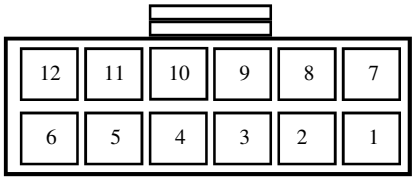
A 12 pin mating connector and seven terminals (two extra) are provided. To use any of these outputs, properly crimp a connector terminal provided to the installer supplied wire using the correct crimping tool (Molex Part# 11-01-0197), and insert into the correct connector pin housing. Ensure the terminals are fully seated in the connector. The largest wire that can be used with these terminals is 16 AWG. Snap this connector into the GTWY505 module's 12-pin connector.

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

Pin #1 - Not Used
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 (Only with Door Ajar Panel Option)
Pin #6 - Not Used
Pin #7 - Not Used
Pin #8 - White - Tow Haul Switch Input (Only with 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 - Not Used

12 Pin IO Connector



Back of Connector

Lift Connector 4-pin

This 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 # 0002081003. The recommended terminal extractor tool is Molex Part # 0011010168. The recommended hand crimp tool is Molex # 0638116800.

Ignition Circuit – The lift must be power-side switched. Connect the Yellow wire from Pin # 2 of the White 4-pin connector to a fused ignition power source (Hot only with ignition on).

Lift Power/Vehicle Secure Circuit - Connect the Orange wire (Lift Power/Vehicle Secure) from Pin #1 of the White 4-pin connector to the vehicle secure input on the lift. The Vehicle Secure circuit must only activate the vehicle secure input on the lift and must not draw more than 8.0 Amps (see lift manufacturers installation instructions). **Note:** Do not power any other loads (ie: lights, motors, etc.) off this circuit that increase the current draw to greater than 8.0 amps.

Lift Door Circuit – Locate the lift door switch circuit. Connect the Gray wire from Pin #4 of the White 4-pin connector to this circuit. **Note:** the door switch must provide a ground with the door open. A switch that provides power with the door open will not operate correctly.

Plug the White 4-Pin connector from the Lift Harness into the GTWY505 control module.

GTWY 505 Additional Options Installation

2008—2012

GTWY 505-B - Gateway with BrakeMax or
GTWY 505-T - Gateway with DuraTrans

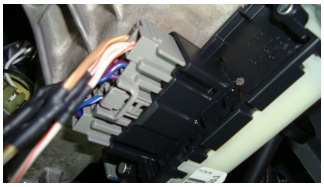
1. Locate the 3-pin C2135 connector located below the steering column.
2. Separate the connector and connect the Black, 3-pin connector in-series with the OEM connector halves. Ensure that the connectors are fully seated.
3. Route the wire harness and insert into Pin #8 of the GTWY505 12 pin connector.

GTWY 505-D - Door Ajar Display Panel - a green wire is included with the panel. Insert one end of the green wire into Pin #5 of the GTWY505 12 pin connector. Attach the other end of the green wire to the door switch wire that provides a ground when the chosen door is open.

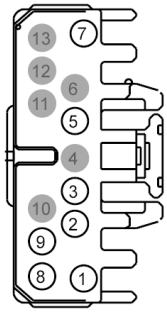
GTWY 505-M - Gateway with Merlin. See LED display panel instructions.

GTWY505-C - Gateway with Park Crank Only Module

PCOM Ignition Switch Connectors



1. Remove the under dash panel and the steering column shroud.
2. Locate the OEM 13-pin connector attached to the ignition switch under the steering column.
3. Locate the Blue-White wire pin #5.
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 heat shrink tubing.
6. Attach the connector side of the Blue-White wire to the Red wire from the PCOM Module using solder and heat shrink tubing.
7. Attach the PCOM Black Park Input wire to the GTWY505-C I/O port that provides a ground signal when in Park.. The actual pin number is determined by the customers configuration of GTWY505-C.
8. Secure the PCOM501B module ensuring there is no strain on the wires.
9. Reinstall the steering column shroud.



Connector C250

GTWY505 Mounting Location

Ensure all the 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 two screws or double sided tape.

Reconnect the 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:

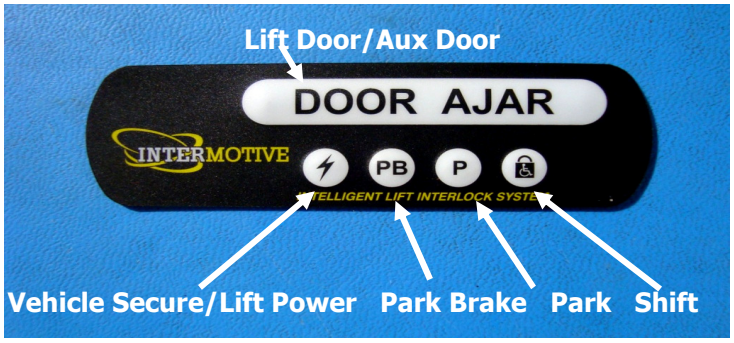
- Lift stowed
- Lift Door Closed
- Park Brake set (PB)
- Transmission in Park (P)
- Ignition off (Key off). Wait until the module goes into "Sleep" mode which takes approximately 40 seconds.

1. Turn ignition key on (to "Run"), verify the module wakes up and all 5 LEDs illuminate for approximately 2 seconds then turn off. The lower icon LEDs are backlit and will remain illuminated whenever the module is awake.
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. The Lift should deploy. Stow the lift. Note: If the Lift does not operate, check the GTWY 505 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. Verify the Lift does 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.

Door Ajar LED Panel

Perform the same checks as above.

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

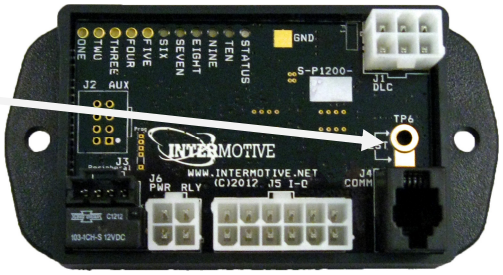
The Fast Idle option has several "auto triggers" that will increase engine RPM. These include low battery voltage, air conditioner on, engine cold, and external switch input on pin #10 of the 12 Pin connector (I/O 4).

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 GTWY505 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:

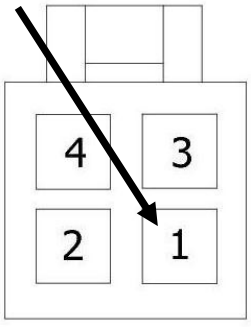
- **Heater Boost Configuration** (Auto Triggers Enabled)



1. Momentarily short the two "test" pads together 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. Short the "test" pads TWO more times until no LED's are lit on the module.

- **Default Configuration**

1. Momentarily short the two "test" pads together **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. Short the "test" pads **ONE** more time until no LED's are lit on the module.



Back of Connector

Duratrans (optional)

The Duratrans option automatically controls Overdrive with no driver input necessary.

1. When the vehicle is started, verify the O/D OFF lamp is illuminated. Overdrive is disabled and remains disabled until the vehicle reaches 55 mph.
2. Drive the vehicle to 55 mph. Verify the O/D OFF lamp is no longer illuminated. Overdrive is now enabled. It will not be disabled until the vehicle drops to 30 mph.
3. Drop vehicle speed to 30 mph. Verify the O/D OFF lamp is illuminated. Overdrive is now disabled.

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 reengages.

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.

Leave in vehicle
Operating Instructions GTWY505
Fast Idle, Shift Interlock, I/O
2009-2019 Ford E Series

Gateway 505 Operation:

The Gateway 505 initializes when the vehicle ignition is on. During initialization, LED display panels connected to the Gateway 505 perform prove-out for 2 seconds. After the initialization, the Gateway 505 requests various vehicle data by sending data request messages across the OEM CAN diagnostic data network and all control logic is performed. When the Gateway 505 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.

The Gateway 505 module obtains data from the onboard vehicle data port. In order to not interfere with a possible scan tool communication, the Gateway 505 will refrain from transmitting CAN messages for 10 seconds if a 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 received for at least 10 seconds, the Gateway 505 module will restart communication.

Advanced Fast Idle (Optional)

The Advanced Fast-Idle System (AFIS) option of the Gateway 505 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 one of the safety conditions is no longer met or the voltage is raised above the minimum level plus .5V. 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 (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.

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. When the vehicle's ignition switch is first turned on, the LED will illuminate for 2 seconds as a prove out of proper LED operation. The LED is also used for diagnostic code retrieval by an authorized service technician. The Manual Engage Switch can be used to engage Fast Idle operation if the voltage is above the minimum level and 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 previous section). Fast Idle operation can be terminated by a safety condition violation, a Merlin Multiplex Network Command, or an automatic Fast Idle disengagement trigger. An automatic Fast Idle disengagement trigger will only act if the vehicle is in the particular type of automatic Fast Idle corresponding with the disengagement trigger. If an automatic Fast Idle is in progress and an automatic Fast Idle disengagement trigger occurs that would cause the Fast Idle to cease, yet there is a different pending automatic Fast Idle trigger, Fast Idle operation will NOT cease. In this case, automatic Fast Idle will continue under the new automatic Fast Idle triggering condition. If a Fast Idle Operation terminates due to an automatic Fast Idle disengagement trigger, automatic Fast Idle is available pending another automatic trigger. 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 may be increased in increments of 100 RPM by subsequent presses of the manual engage button up to a maximum of 2000 RPM. Diesel applications remain fixed at 1200 RPM.

Manual Fast Idle Start Triggers:

Manual Engage Switch.
Merlin Multiplex Network Command.
Fast Idle Input – ground applied to 12 Pin connector Pin #10 of the Gateway 505 Module, such as an input from Coach AC. (OPTIONAL)

Automatic Fast Idle Start Triggers:

Charge Protection - Battery voltage stays below minimum voltage for 2 seconds and engine running for 5 seconds.
Chassis A/C Boost - OEM A/C commanded on with ambient temperature above 70° F and engine running for at least 5 seconds.
Heater Boost – Ambient air temperature below 70° F and Engine Coolant Temperature below 170° F.

Fast Idle Disengagement Triggers:

Safety Condition Violation.
Merlin Multiplex Network Command.
Battery Voltage > 0.5 volts above minimum voltage setting (Automatic Fast Idle Disengagement Trigger – Active only in Charge Protect mode).
Engine Coolant Temperature > 170° F (Automatic Fast Idle Disengagement Trigger – Active only in Heater Boost mode).
Open or battery voltage on 12 Pin connector Pin #10 while in Fast Idle caused by 12 Pin connector Pin #10 fast idle input. (OPTIONAL)
Transmission Fluid Temperature above 250° F.
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.

Fast Idle Manual Operation:

To manually engage Fast Idle, press the Yellow ENGAGE button for at least a quarter second and release. The Fast Idle operation will begin when the button is released, not when first pressed. Holding the switch 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 depress the service brake pedal while simultaneously pressing the manual engage switch.

Note: When additional electrical or A/C loads are in use, engine RPM may drop. The AFIS feature will then raise the RPM back up to the fast idle speed. When the load is removed, engine RPM will increase. AFIS will then lower the RPM back to the fast idle speed. This may be more noticeable on cold engine startup.

Lift Operation

The Intelligent Lift Interlock System of the Gateway 505 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 Gateway 505 will not allow the vehicle to be shifted out of park if the lift door is open. The vehicle can be shifted out of park if only the passenger door is open. As an added feature, it 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. The shift lock can also be activated through the 12 Pin connector Pin #10, if the proper configuration is installed or through a command by the InterMotive Merlin Multiplex system, if equipped.

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 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 505 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:

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.
Door Open - Lift Door Display Panel only- Illuminates in red when the lift door is open.
Door Ajar - **Door Ajar Display Panel only-** Illuminates in red when the lift door is open, flashes in red when the passenger door is open.
Shift Lock - Illuminates in Red when the lift door is open and/or the parking 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, if the proper configuration is installed. A command by the InterMotive Merlin Multiplex system, if equipped, will illuminate the shift lock LED. When 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

GTWY 505 Additional Options Operating Instructions

BrakeMax:

- When the vehicle is started, tow-haul mode is automatically engaged and the tow-haul light will be on.
- To deactivate tow-haul mode, press the tow-haul mode button.
- When vehicle is restarted, tow-haul mode will again be automatically reengaged.

DuraTrans:

- When the vehicle is started, Overdrive will be disabled and the O/D OFF lamp will be illuminated.
- Overdrive will remain disabled until the vehicle reaches 55 mph.
- When the vehicle reaches 55 mph, Overdrive will be enabled.
- Once Overdrive is enabled, it will not be disabled until the vehicle drops to 30 mph.
- If the vehicle is below 30 mph, and the driver presses the O/D Cancel button, the O/D OFF lamp will turn off and then immediately turn back on.
- The DuraTrans will not allow Overdrive to be enabled below 30 mph.
- If the vehicle is above 30 mph, manual control is available by pressing the O/D Cancel Button. This is useful if the vehicle is descending a steep grade and the driver wishes the additional engine braking available with Overdrive disabled.

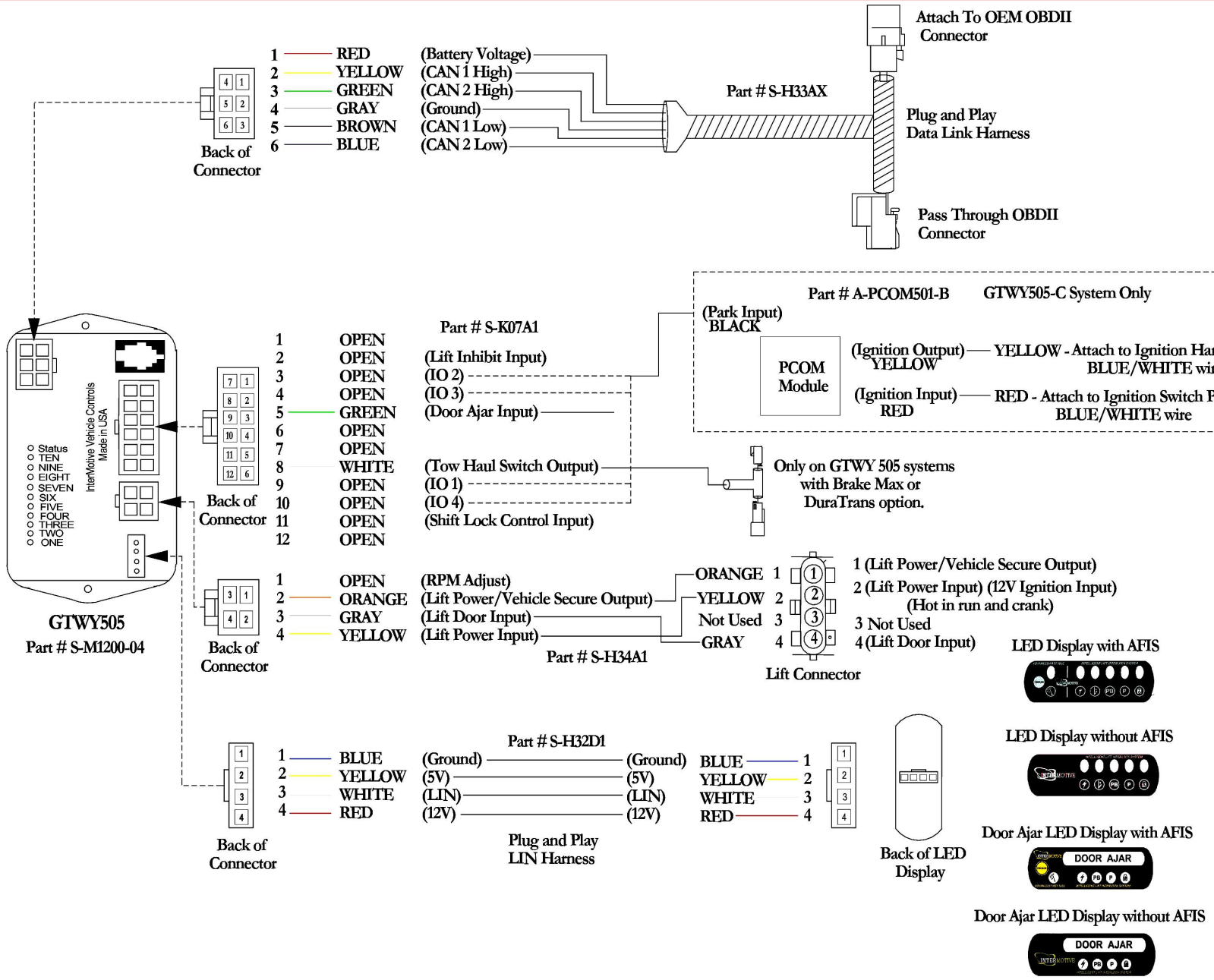
PCOM:

- Once installed, the starter will crank only when the transmission is in the "Park" position.

Door AJAR:

- When an additional 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.

If the GTWY505 fails any step in the System Operating instructions review the instructions. If necessary, call InterMotive Technical Support at (530) 823-1048.



Submit product registration at www.intermotive.net

If the GTWY505 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.