

# OWNERS MANUAL

## ITM-T20NPB

### Platform Lift Interlock System For Ford Transit Chassis



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**Notice:** This device is in compliance with **FMVSS403** Paragraph S6.10.2.2:

“S6.10.2.2 Operation of the platform lift from the stowed position until forward or rearward mobility of the vehicle is inhibited, by means of placing the transmission in PARK or placing the transmission in NEUTRAL and actuation the PARKING BRAKE or VEHICLE SERVICE BRAKES by means other than the operator depressing the service brake pedal. Verification with this requirement is made throughout the lift operations specified in S7.9.2 and S7.9.3.”

**Notice:** This unit does not use the ABS based Electronic Park Brake.

## **1. Introduction**

This system is intended for installation in Ford Transit chassis with FMVSS compliant, public-use platform lifts manufactured by The Braun Corporation, Ricon Corporation or Maxon Mobility. If another type of lift is to be used, contact the lift manufacturer to determine compatibility.

The system is designed to meet the requirements of FMVSS 403/404 and therefore must be installed in accordance with the lift manufacturer’s instructions. The installer must be trained and skilled in installing FMVSS compliant lift systems. The installation must also comply with SAE (Society of Automotive Engineers) and Ford Motor Company electrical wiring procedures.

## **2. Product Description**

InPower's Model ITM-T20NPB platform lift interlock system consists of a control module with integral driver's status display and a chassis wiring harness (See Interlock System Diagram on Page 3). The interlock's control/display module is designed to mount on the dash with its wiring harness routed through the dash. The harness contains a T-cable that connects to the shift lock solenoid. The harness also contains a set of blunt-cut wires for connection to the three door switches, lift door switch and Lift Enable output to the platform lift system. The ITM-T20NPB also does not utilize the ABS controlled Park Brake for operation.

The ITM-T20NPB and ITM-T20NPB-ADL interlock systems provide inputs from the platform lift door switch and three other door switches (Door 1 Switch, Door 2 Switch and Door 3 Switch); however, each model responds differently to the door switch signals.

ITM-T20NPB: When Door Switches 1, 2 or 3 are activated (door not fully closed) the DOOR AJAR display indicator will flash. When the Lift Door Switch is activated (door not fully closed) the DOOR AJAR display indicator will flash and the shift lock will be set. If the vehicle is in PARK, the Lift Enable will be set, allowing the platform lift to be operated.

ITM-T20NPB-ADL: When any door switch is activated (door not fully closed), the DOOR AJAR display indicator will flash and the shift lock will be set. If the vehicle is in PARK and the Lift Door is opened, the Lift Enable will be set allowing the platform lift to be operated.

**Installation Note:** The Standard ITM-T20NPB gets +12Vdc power from the Group 2 Red +12V Power wire attached to an ignition source (fused appropriately).

## **3. System Operation**

The interlock system is powered only when the Ignition Switch is on. The following is the interlock system sequence of operation:

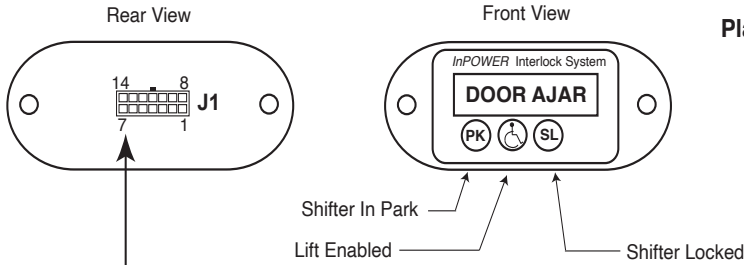
- Step 1 - Turn the Ignition switch on and start the engine.
- Step 2 - Place shifter in Park.
- Step 3 - Open lift door.
  - The display Door Ajar indicator will flash
  - The Shift Lock will activate
- Step 4 - The Lift Enable will activate, allowing operation of platform lift.
- Step 5 - The platform lift may now be operated (Refer to the platform lift operating instructions).
- Step 6 - When the lift cycle is completed return the lift to its fully stowed position.
- Step 7 - Close the lift door.
  - The Lift Enable is now deactivated.
- Step 8 - The cycle is now complete and the vehicle can be taken out of Park and driven.

### Notes:

1. For model ITM-T20NPB, anytime Doors #1, #2 or #3 are opened (or ajar) the Door Ajar indicator will flash but the shifter will not lock.
2. For model ITM-T20NPB-ADL, anytime any door is opened (or ajar), the Door Ajar indicator will flash and the shifter will lock.

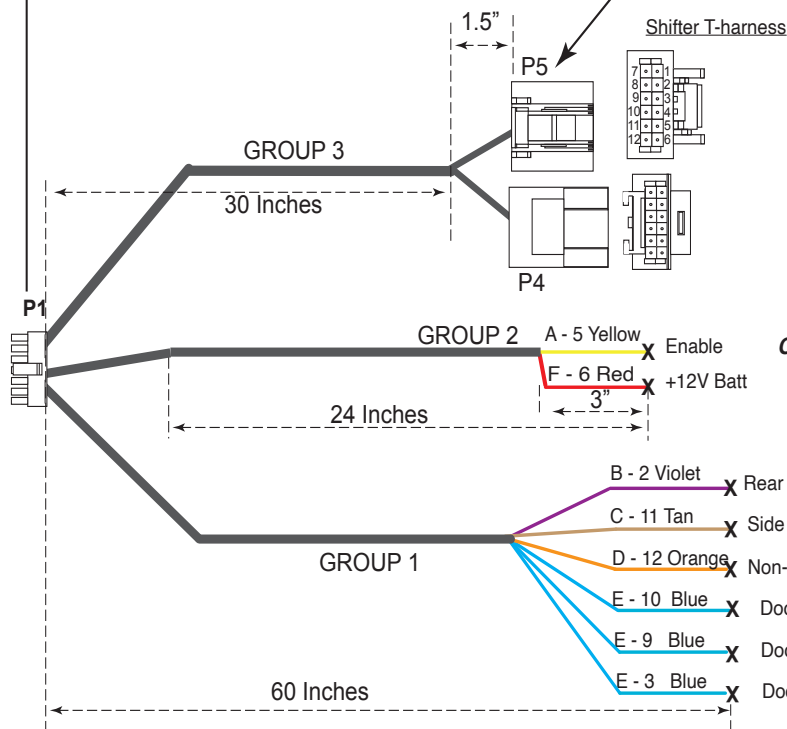
## 4. Interlock System Diagram

### Interlock Control Module



### Platform Lift Interlock System

Note: Fuse 31 on the Auxilliary Junction Box normally supplies 12Vdc Power to Shifter T-harness which powers the ITM-T20 2020+. If F31 is not populated, install a 5 amp or 10 amp fuse to power the ITM-T20. Alternatively, the red wire (properly fused with a 5 amp) may be connected to any switched ignition source.



Item	Color	Description	Sensor Position	Qty
A	Yellow	12V Enable	Enable	1
B	Violet	Gnd=Closed	Rear or Barn Door Side Lift	1
C	Tan	Gnd=Open	Side Slide Lift	1
D	Orange	Gnd=Open	Non-Lift Side Slide	1
E	Blue	Gnd=Closed	Non-Lift Door	1
F	Red	+12V Power	Rev B Only! System Pwr	1

**Chassis Wiring Harness 7201.084 (2020 and up)**  
**ITM-T20 2020+ Transit Plug and Play Harness**

## 5. Installation Procedures

### 5.1 Safety Precautions



This interlock product has been designed and manufactured to meet the intended application requirements and specifications, complying with FMVSS 403/404. Any modifications to the product or to the installation procedure can be dangerous and will void InPower's warranty.

- Read and understand the instructions in this manual and any other applicable manuals before starting the installation.
- Make sure that the vehicle battery power is disconnected during installation of the Interlock and lift systems.
- Reconnect the battery when the system installation is complete.
- Wear appropriate safety equipment, such as protective eyeglasses, face shield and clothing when installing equipment and handling the battery.
- Be careful when working near a battery. Make sure that the area is well ventilated and that there are no flames near the battery. Never lay objects on the battery that can short the terminals together. If battery acid gets in your eyes, immediately seek first aid. If acid gets on your skin, immediately wash it off with soap and water.

### 5.2 Getting Started

This manual provides instructions for installing the InPower Interlock System in a Ford transit chassis with a FMVSS compliant, public use (commercial) platform lift. It is important that you follow these instructions carefully and contact InPower if you need assistance or more information. Note that product technical documents are available on InPower's web site.



This interlock system installation requires additional parts and materials that are not supplied with the interlock product. Identify all required parts before starting the installation and ensure that these items are the correct type and quality (See Section 10.2).

Inspect the interlock product and all other components for damage before starting the installation. Do not perform the installation if any problems exist.

Determine the type of interlock interface required for the platform lift. This interlock system provides a +12 volt @ 1.8 amps Enable Lift output to allow the platform lift to be operated. If the lift system is not compatible with this interface signal, you must take the necessary actions to adapt the lift system interface to the interlock system's interface. Refer to the lift manufacturer's installation instructions for further details.

The recommended mounting location for the interlock control module is on the center console of the dashboard, with the wiring harness through the dash. Be certain that the chosen location permits the cable to reach shift lock connector.

The wiring harness will connect to the shift lock solenoid, located under the center console. The unit must not be located in the engine compartment or any location that is not protected from the environment.

## 6. Wiring Instructions



Make sure that the vehicle battery power is disconnected during installation of the interlock and lift system. Reconnect the battery when the system installation is complete.

### Installation Procedure

1. Remove steering column cover. (See Figures 1 and 2)



Figure 1. Steering column



Figure 2. Steering column with panel removed.

2. Drop down glove box
3. Remove HVAC controls cover, cup holder and lift shifter cover. (See figures 3 and 4)



Figure 3. Center console



Figure 4. Covers removed

4. Remove console cover screws and pull back center cover enough to gain access to shifter connector.

(See figure 5)

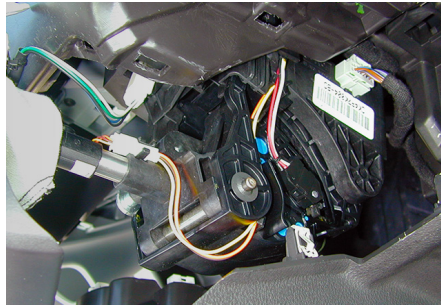


Figure 5. Shifter connector.

5. Mount module in center cover where desired.

6. Install T-harness to shifter connector 2810. Tuck chassis connector and T-harness under shifter to ensure the paneling fits correctly. (See figure 6)

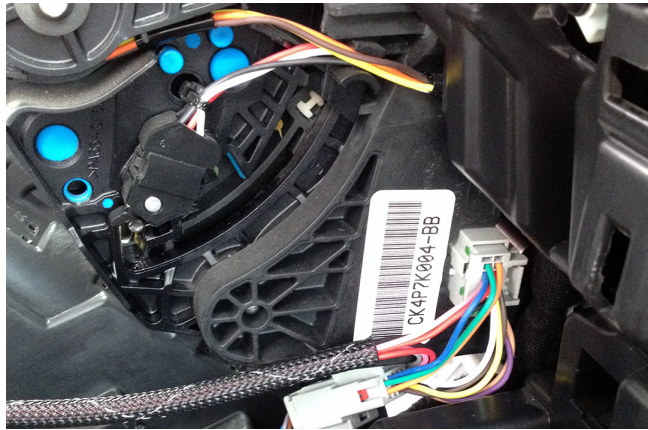


Figure 6. Shifter connector 2810

8. Run door wires to BCM. (See figure 9 on next page)

9. On the Ford Transit, the front driver's, front passenger and rear doors all generate a +12V signal when the doors are open or ajar. The side door, however, generates a ground signal. The lift may be installed on either the rear door or the side door. Therefore, there are two lift door wires. The rear lift door input wire is violet, while the side lift door input wire is tan. There are three blue wires for the driver's, front passenger and rear door ajar signals, and there is one orange wire for the side door ajar signal.

If the lift is installed on the rear door, one blue wire and the tan wire will not be used. If the lift is installed on the side door, the violet wire and the orange wire will not be used.

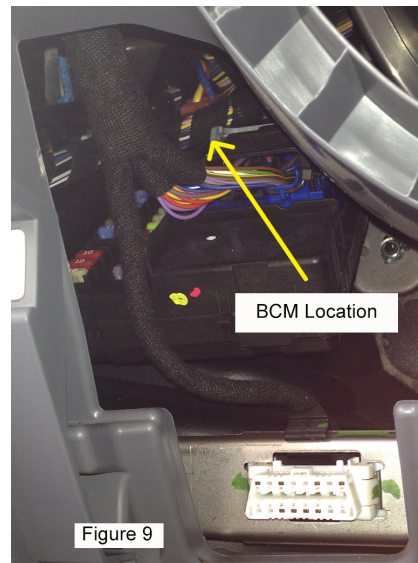
The Door Signals are all available on the Body Control Module BCM Connector (C2280E), located to the down and to the left of the Steering Column. The driver door ajar signal comes from Driver Door C2280E Pin 33 (Green/Violet Wire); the Passenger Door ajar signal comes from C2280E Pin 21 (White Wire); the Right Side Door ajar comes from C2280E Pin 19 (Yellow Wire); the Left Side Door ajar is C2280E Pin 46 (Green Wire); and the Rear Door ajar comes from C2280E Pin 34 (Gray Wire).

10. Review the platform lift installation manual to determine how to wire the interlock system to the platform lift's interlock interface. The yellow blunt cut wire in the interlock harness will supply a +12 volt @ 1.8 amp output to operate the lift. Verify that this is the correct polarity for the platform lift and then connect the yellow wire to the lift enable input on the lift.

11. Test

## 7. System Troubleshooting

This owners manual describes the InPower Model ITM-T20NPB Platform Lift Interlock Systems. Note that the control module contains an integral driver's status display which should be used for system troubleshooting. The interlock systems provide a Lift Enable signal output that is wired to the platform lift system to enable the lift operation when the chassis interlock conditions are satisfied. The Lift Enable signal is +12 volts when the lift can be operated.



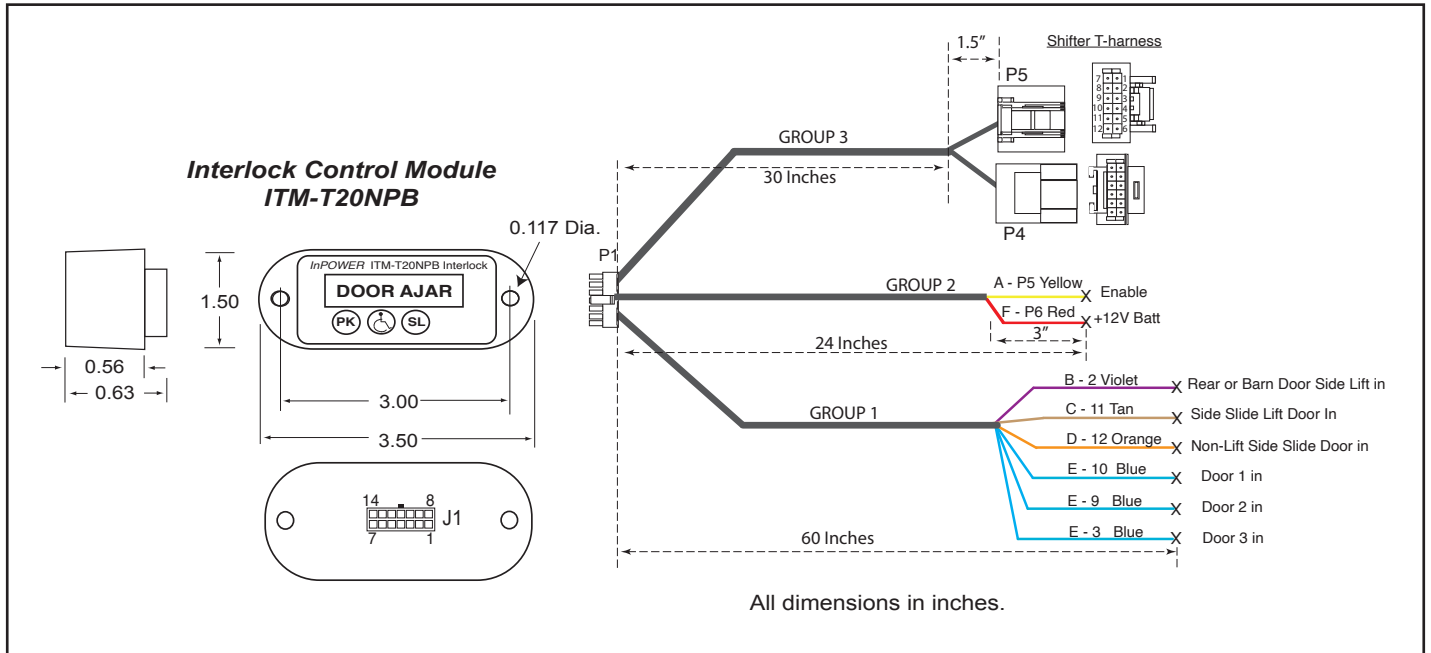
### Replacement Parts

- |  |  |
|--|--|
| 1. ITM-T20NPB Control/Display Module<br>OR ITM-T20NPB-ADL Control/Display Module | P/N: ITM-T20NPB-MODULE<br>P/N: ITM-T20NPB-ADL-MODULE |
| 2. Chassis Wiring Harness  | P/N: 7201.052  |

### Troubleshooting Procedures and Tips:

1. On Chassis from 2020 and up, +12V should be available on the Group 2 Red Wire from the Ignition (+12V). With power, you should have some display lights on. Note that the interlock system gets its ground from pin 11 of the BCM C2280E connector shown in Figure 9.
2. If the interlock system has power and is not operating there is a high probability that the control module is good but that there is a problem with one or more of the system inputs (e.g., the Lift Door Switch not working correctly). Operate each remote door switch and determine if the correct display indicator operates properly. You can also measure voltage at the J1 connector pins to see if the remote devices are working correctly. A common problem on interlock systems is the lift door switch failing or sticking in the open position. This will cause the interlock system to not fully complete its cycle.
3. If the interlock system appears to be working properly but the platform lift system will not work check the voltage on the Lift Enable output to the lift system. This signal is on pin 4 of connector J1. There should be +12 volts present to operate the lift. **CAUTION - Do not apply an external +12 volt power source to this circuit to see if the lift will operate without disconnecting the wire from the interlock system! Applying power will cause a circuit breaker to trip in the Lift Enable output circuit. If tripped, remove the power source and the circuit breaker will reset automatically.** With the Lift Enable wire disconnected from the interlock control module it is safe to apply +12 volts to the lift system's Enable input to see if the lift will operate.

## 8. Mechanical Drawing



## 9. Reference Information

### Company Contacts:

Ford Motor Company  
Truck Body Builder Advisory Service  
Product Development Center  
MD 410  
PO Box 2053  
Dearborn, MI 48121-2053  
1-877-840-4338  
[www.fleet.ford.com/truckbbas/index.htm](http://www.fleet.ford.com/truckbbas/index.htm)  
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